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ROTOR REDESIGN FOR A HIGHLY LOADED 1800 FT/SEC TIP SPEED FAN
II. FINAL PERFORMANCE REPORT

by

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FOREWORD

The work described herein was performed under NASA Contract NAS3-20591 by the United Technologies Corporation, Pratt & Whitney Aircraft Group, Commercial Products Division, Hartford, Connecticut under the direction of Mr. N. T. Monsarrat, Program Manager. The NASA Project Manager was Mr. L. J. Herrig, NASA-Lewis Research Center, Fluid Mechanics and Acoustics Division.

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

LIST OF ILLUSTRATIONS (Cont'd)

LIST OF TABLES

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1.0 SUMMARY

A fan stage with a rotor tip speed of 548.6 m/sec (1800 ft/sec) was tested to evaluate the performance of a redesigned rotor blade. The rotor was designed (ref. 1) using a quasi three-dimensional design system, and blade shapes were designed using four-part multiple-circular-arc airfoil sections. The rotor had a hub/tip radius ratio of 0.5 and an aspect ratio of 2.87 (average span/hub axial chord). The stator was designed with multiple-circular-arc airfoils and was not changed from a previously tested configuration (ref. 2 and 3).

At design speed the peak rotor adiabatic efficiency was 86.1% or 0.7% below the design goal. The stage adiabatic efficiency was 82.8% (after 0.6 of a point performance deterioration), which was one percent below the design objective. At this operating condition the mass flow was approximately equal to design flow, and the rotor pressure ratio (2.26) and stage pressure ratio (2.20) were below design level. The surge margin from the peak efficiency point was 13%, which exceeded the 7% design level. A summary of the design speed peak efficiency point test values and design intent values is presented in Table I.

TABLE I

SUMMARY OF DESIGN SPEED
PEAK EFFICIENCY PERFORMANCE
(Point 110-10-04)

	DESIGN	TEST
Stage Adiabatic Efficiency, %	83.8	82.8[a]
Stage Pressure Ratio	2.28	2.20
Corrected Inlet Flow, kg/sec (lbm/sec)	78.8 (173.8)	78.59 (173.3)
Surge Margin	7%	13%
Rotor Adiabatic Efficiency, %	86.8	86.1
Rotor Pressure Ratio	2.34	2.26
Running Tip Clearance, meters (inches)	762×10^{-6} (0.030)	610×10^{-6} (0.024)

[a]Efficiency obtained after deterioration.

2.0 INTRODUCTION

A replacement rotor for the 548.6 m/sec (1800 ft/sec) tip speed, transonic fan stage was designed, fabricated, and tested. The purpose of the program originally reported (ref. 2 and 3) was to demonstrate improved efficiency by greater control over shock loss. The replacement rotor was designed using a quasi three-dimensional design system, and blade shapes were designed using four-part, multiple-circular-arc airfoil sections. The design is discussed in detail in reference 1.

In this report the experimental data obtained during the program are presented and compared with design values. High frequency response static pressure data measured over the rotor tip are presented in isobar contours. Laser velocimetry measurements of the rotor flow field were also obtained and are discussed in reference 4.

The symbols used in this report are defined in Appendix A.

3.0 APPARATUS

3.1 FAN STAGE

The fan stage (Figure 1) was a single-stage, axial-flow fan without inlet guide vanes. A detailed description is given in the Design Report (ref. 1). The stage was designed to provide a pressure ratio of 2.28, an adiabatic efficiency of 0.838, and a specific flow rate of 188.9 kg/sec-m^2 (38.7 lbm/sec-ft^2). The stage flowpath was maintained from the original configuration described in reference 2. The stage design parameters are summarized in Table II.

TABLE II

DESIGN PARAMETERS

Corrected Speed, rpm	12464	
Rotor Tip Speed, m/sec (ft/sec)	548.6	(1800)
Corrected Flow, kg/sec (lbm/sec)	78.8	(173.8)
Corrected Weight Flow Per Unit Annulus Area, kg/m^2-sec (lbm/ft^2-sec)	188.9 (38.7)	
Rotor Pressure Ratio	2.34	
Stage Pressure Ratio	2.28	
Rotor Adiabatic Efficiency, %	0.868	
Stage Adiabatic Efficiency, %	0.838	
Tip Diameter, meters (in.)	0.8409 (33.108)	
Hub/Tip Ratio at Rotor Inlet	0.50	
Rotor Tip Solidity	1.635	
Rotor Aspect Ratio(a)	2.87	
Stator Hub Solidity	2.204	
Stator Aspect Ratio(a)	2.22	
Stage Average Exit Flow Angle, degrees	0	
Number of Rotor Blades	38	
Number of Stator Vanes	60	

[a]Aspect Ratio = average span/axial chord at hub

The rotor blade and assembly are shown in Figures 2 and 3, respectively. The rotor was designed to operate at 548.6 m/sec (1800 ft/sec) with a pressure ratio of 2.34 and an adiabatic efficiency of 0.868. The rotor had 38 blades with an aspect ratio of 2.87 (average span/hub axial chord). The blade consists of standard multiple-circular-arc sections from the hub to 20 percent span and four-part, multiple-circular-arc sections from 34 percent span to the tip. The region between 20 and 34 percent span provided a smooth transition from a standard multiple-circular-arc section to a four-part, multiple-circular-arc section. Details of the rotor design are given in reference 1.

The stator vane and assembly (Figures 4 and 5) were retained from the previous configurations. The stator vane had multiple-circular-arc sections. There were 60 stator vanes with an aspect ratio of 2.22 (average span/hub axial chord). Details of the stator design are provided in reference 2.

3.2 TEST FACILITY

The test program was conducted in a modern compressor test facility, Figure 6, equipped with a synchronous motor with a multi-ratio gearbox to provide speed range capability. The inlet air flowed through a flatplate orifice and through an inlet plenum to provide a uniform total pressure and temperature profile to the test rig. The airflow was exhausted from the rig into a toroidal collector through a set of valves of various sizes, providing coarse and fine adjustment of backpressure or throttling for the test compressor, and then through exhausters. Strain-gage instrumentation signals from the rotor were transmitted via telemetry to recording equipment.

3.3 INSTRUMENTATION AND CALIBRATION

3.3.1 Overall and Blade Element Instrumentation

Airflow to the stage was measured by means of a flatplate orifice designed to the specifications defined by the International Organization for Standards. All orifice related instrumentation was installed per Power Test Code 19.5, 4-1959. This system provided a flow rate measurement accurate to within $\pm$1.0 percent.

The rotor speed was measured using an impulse type pickup through a frequency-to-DC converter. The measurement accuracy was within $\pm$0.1 percent of the indicated speed.

All temperatures were measured with Chromel-Alumel Type K thermocouples with an individual wire calibration applied to each sensor. Sample elements from the temperature pole rakes were calibrated over the expected Mach number range to determine recovery factor variations with yaw and pitch angle. Variations of the recovery correction with pressure were applied as noted in NASA Technical Note 3766 and complemented by results of testing at Pratt & Whitney Aircraft. Overall root mean square temperature accuracy was estimated to be $\pm$0.28 K ($\pm$0.5^{o}F).

Measurements of airflow angle were obtained by radially traversing 15-degree included angle wedge probes. Total pressure recovery and yaw angle deviations were calibrated as functions of Mach number and pitch angle. The measurement accuracy of the air angle probe system was ±0.5 degrees.

All pressures from wake rakes and static pressure taps were measured with transducers on scanivalves and recorded by an automatic data acquisition system. The accuracy of the pressure measurements was ±0.1 percent of the full scale value for that transducer.

Nine high-frequency-response pressure transducers were installed* in the case over the rotor tips to measure instantaneous static-pressure fluctuations. Ten taps for measuring wall steady state static-pressure were also installed over the rotor blade tips in axial locations corresponding to the pressure transducers to measure the average static-pressure level. Figure 7 shows the rotor-blade tip-shock pressure instrumentation in relation to the blades.

Two proximity detectors, located over the rotor blade tips but apart from the pressure transducers, generated an electrical pulse for each blade passing. The signals from both the pressure transducers and the proximity detectors were recorded on the same time reference by a multichannel tape recorder.

Photographs of typical instrumentation are shown in Figure 8, and the axial and circumferential positions of the instrumentation are shown in Figures 9 and 10.

Instrumentation for measuring overall and blade-element performance data is listed in Table III.

TABLE III

PERFORMANCE AND BLADE ELEMENT INSTRUMENTATION

All measurements were recorded by automatic data acquisition system unless noted otherwise.

Instrument Plane Location	Parameter	Type and Quantity
Inlet Flow Measuring Orifice	P_S	4 Static taps downstream and 4 static taps upstream of inlet orifice
	Delta P	2 delta P transducers sensing the differential pressure between the upstream and downstream orifice pressures

*Orginally ten transducers had been planned, but because of an installation problem, one transducer had to be omitted.

TABLE III (Cont'd)

Instrument Plane Location	Parameter	Type and Quantity
Inlet Flow Measuring Orifice (Cont'd)	T_T	6 total temperature thermocouples located upstream of the orifice
Station 0 Plenum Chamber	P_S	9 static pressure taps circumferentially equally spaced on the plenum wall
	T_T	10 bare wire thermocouples located in a plane in the plenum chamber and distributed equally in the radial and circumferential direction
Station 1.0 Instrumentation Ring	P_S	4 O.D. wall static taps
Station 2.0 Inlet Duct 3.0 4.0 7.0 9.0	P_S	2 O.D. and 2 I.D. wall static taps, 180 degrees apart
Station 11 Rotor Inlet (within 1/2 chord)	P_T, P_S, Radial	2 wedge traverse probes 11 radial positions
	P_S	4 O.D. and 4 I.D. wall static taps
Stations 13 to 14 Rotor Casing	P_S	10 high frequency response pressure transducers mounted in axial line over rotor blade tips. Recorded on magnetic tape.
	P_S	10 O.D. wall static taps in axial line over rotor blade tip.
	Blade Clearance	Two proximity detectors positioned apart from the pressure transducers and in a line at about the rotor blade tip-chord angle. Recorded on magnetic tape.

TABLE III (Cont'd)

Instrument Plane Location	Parameter	Type and Quantity
Station 15 Stator Leading Edge	P_S	4 O.D. and 4 I.D. wall static taps equally spaced and located on extension of midchannel lines.
	P_S	4 O.D. and 4 I.D. wall static taps spaced across one vane gap.
Station 17 Stator Exit	P_T, Radial	2 circumferential wake rakes (14 kiel headed elements) traversable to each of eleven radial location. Each wake rake spans at least one vane gap at O.D.
	T_T, Radial	2 circumferential wake rakes (11 kiel headed elements) traversable to each of eleven radial locations. Each wake rake spans at least one vane gap at O.D.
	P_T P_S, Radial	2 wedge traverse probes, 11 radial positions. Probes spaced 162 degrees apart.
	P_S	4 O.D. and 4 I.D. wall static taps equally spaced and located on the extension of a stator mid-channel streamline
	P_S	4 O.D. and 4 I.D. wall static taps spaced across vane gap.
Station 22 Rig Exit	P_T	1 fixed five-element circumferential rake located at about 30% span.

The eleven radial positions called out for the wake rake traverses are defined by the intersection of the axial station and design streamlines that pass through 5, 10, 15, 30, 50, 60, 65, 70, 85, 90, and 95 percent of the passage height at the rotor trailing edge.

3.3.2 Special Instrumentation

Stall detection instrumentation was installed at the leading edge of the rotor blade row and at the trailing edge of the stator vane row. This instrumentation consisted of high frequency response thermocouples and static pressure taps with close-mounted pressure transducers. All sensors were connected to the test stand safety monitoring system which automatically sequenced the compressor to stall recovery. This system was used along with the automatic data recording system to identify the point of compressor instability.

A hot-film probe at the rotor inlet with sensors at 25, 50, and 85 percent of blade height from the hub was used to continuously record velocity fluctuations on a multichannel tape recorder when operating near or within the stall region.

Strain gages on selected blades and vanes, as well as the hot film probe, were used to detect excessive vibratory or flutter stresses.

Special instrumentation for measuring both aerodynamic and mechanical characteristics during excursions into stall are listed in Table IV.

TABLE IV

SPECIAL INSTRUMENTATION

Instrument Plane Location	Parameter	Type and Quantity
Inlet Orifice	P_S	1 static tap downstream and 1 static tap upstream of inlet orifice.
	Delta P	A delta P transducer sensing the differential pressure between the upstream and downstream orifice static pressures.
	T_T	One orifice upstream total temperature.
Station 0 Plenum	P_S	One plenum static tap.
	T_T	One plenum total temperature.

Table IV (Cont'd)

Instrument Plane Location	Parameter	Type and Quantity
Station 11 Rotor Inlet	Velocity	One probe with three hot film sensors at 25, 50, and 85 percent of the blade height from the hub.
	T_T	1 high frequency response bare wire thermocouple near the outer wall.
	P_S	1 static pressure tap on outer wall with close-coupled mounted transducer.
Station 17 Stator Exit	T_T	1 high frequency response bare wire thermocouple near the outer wall.
Station 17 Stator Exit (Cont'd)		
	P_S	1 static pressure tap on outer wall with close-coupled transducers.
Station 22 Rig Exit	P_T	5 total pressure taps located on the fixed wake rake connected to close coupled transducers.
Rotor Blades	Stress	24 strain gages distributed on six rotor blades.
Stator Vanes	Stress	22 strain gages distributed on six stator vanes.
Gearbox	Speed	Impulse pickup.

4.0 PROCEDURES

4.1 TEST PROCEDURES

4.1.1 Shakedown and Stator Stagger Angle Optimization Tests

Shakedown tests were conducted to establish the mechanical integrity of the compressor and to locate stress boundaries that might limit the operating range over which tests could be conducted.

The compressor stage was accelerated to 50, 70, 80, 95, and 100 percent of design speed along the wide-open discharge line with the stator stagger angle set at design. Rotor and stator vibratory stresses were recorded during the acceleration. Vibration levels on several critical compressor components were also recorded along the wide-open line.

Four data points for overall and blade-element performance were taken over a range of flows between wide-open throttle and stall and at a stall point. The data were taken at design speed with the stator at five degrees open, at design, and at five degrees closed. These data points were used to select the stagger angle that would produce the best stage efficiency without sacrificing flow range. Based on these data, the design stagger angle was used in all subsequent performance tests.

Upon setting the stator stagger angle to design position, a stress survey was conducted along the wide open discharge line, the operating line and above the operating line. Along each acceleration line, steady state data and stress levels were acquired at 50, 70, 80, 95, 100, and 105 percent speed. After the stress survey, four data points for overall and blade element performance were taken at design speed to check instrumentation. A review of these data showed a decrease of efficiency at design speed as compared with the previous data. The efficiency loss was investigated by acquiring overall and blade element performance data at design speed with the stator set at design, 2.5 degrees open, and 1.25 degrees open. Data were also taken at 1.25 degrees open after the rotor blades were cleaned to remove any dirt accumulation.

4.1.2 Overall and Blade Element Performance Tests (Design Vane Stages)

Overall and blade-element performance data were acquired at 100, 95, 80, 105, 50, and 70 percent design corrected speed in the order listed. Data points were taken between the wide-open flow and the stability limit as represented by rotating stall or surge. Stall point flows were measured at all speeds tested.

Each data point consisted of: 1) a radial wake rake traverse at two circumferential locations, measuring total pressure and temperature covering one stator vane gap each at the stator exit, and 2) a radial wedge probe traverse at the inlet of the rotor and at the exit of the stator vanes to acquire air angle data. Static pressure fluctuations (measured by high-frequency response pressure transducers) over the rotor blade tip were recorded for one point at

70 percent speed, for three points at 95 percent speed, for five points at 100 percent speed, and for four points at 105 percent speed. These data were used to obtain a static pressure field relative to the rotor blade tips for indicating shock position and strength. Rotating stall surveys were conducted at 70, 95, 100, and 105 percent of design speed. A three-sensor, hot-film probe was used to detect rotating stall by measuring rotor inlet velocity fluctuations at 25, 50, and 85 percent of the rotor inlet passage height. Readings from the probe were recorded along with a speed signal by a multichannel tape recorder. Readings of other transient parameters were recorded every three seconds as the fan stage was throttled into stall.

Tip clearances were measured at all speeds at or near their peak efficiency settings; proximity pickup detectors were employed.

4.2 DATA REDUCTION PROCEDURES

An automated data reduction and analysis program was used to condition, organize, and process the raw data into engineering units and to perform circumferential mass averaging for use in the flowfield analysis program. All performance data were automatically recorded in millivolts, converted to engineering units, corrected, and averaged as described below.

The data reduction program conditioned total pressure and total temperature data from the two pressure and two temperature traversing wake rakes located downstream of the stator. Total temperature measurements were corrected for temperature recovery as a function of Mach number modified for pressure level effects using the procedure outlined in reference 5.

Overall stage performance and gap-wise mass-flow averaged total pressure ratio and total temperature ratio were calculated for each rake at each radial location. Static pressure for the mass-flow averaging was taken from a linear interpolation of the hub and tip wall static pressure tap readings; the static pressures were assumed to be constant circumferentially. Total temperatures required for gap-wise mass-flow averaging of total pressure were obtained by interpolation from a radial and circumferential matrix of temperatures generated from averages of readings made with the two temperature rakes. A similar procedure was used to obtain the total pressures for gap-wise mass-flow averaging of total temperature from each rake. This process resulted in two radial distributions of gap-wise, mass-flow averaged pressures and two radial distributions of gap-wise, mass-flow averaged temperatures. The two gap-wise averaged pressures and two gap-wise averaged temperatures were averaged at each corresponding radial location to give one radial distribution of pressure and one radial distribution of temperature for input to the flowfield analysis program. Radial locations at which averaged data were input were determined by averaging the radial locations at which redundant temperatures or pressures were measured.

The data reduction program also conditioned data from the radially traversed wedge probes. Two equally spaced wedge probes were used at the rotor inlet and at the stator exit. The measured flow angles were corrected using calibration curves for each individual probe and averaged.

The flowfield analysis program was used to construct the flowfield and provide overall performance and blade-element performance parameters at blade row leading and trailing edges. This program solved the continuity, energy, and radial equilibrium equations for axisymmetric flow at stations corresponding to blade edges and instrumentation planes and at other stations required to define the flowfield. Curvature, enthalpy, and entropy gradient terms were included in the equilibrium calculations. Thermodynamic properties of air were calculated from gas tables for the component gases, including water vapor. Input to the flowfield analysis program consisted of the geometry of the compressor flowpath and blade rows, blockage factors, and the following aerodynamic data:

Location	Data
Compressor Inlet	Corrected mass flow, corrected speed, NASA standard day sea level values of total pressure, and total temperature. (Zero inlet swirl was assumed.)
Stator Inlet	Radial distribution of total pressure ratio.
Stator Exit	Radial distributions of total pressure ratio, total temperature ratio, and absolute air angle.

The radial distribution of total pressure ratio at the rotor exit was interpreted from the stator exit total pressure and total temperature measurements. The normal procedure was to choose the peak value from the stator gapwise total pressure profiles. The peak total pressure value was carried forward along a streamline to the stator leading edge where it was defined as the rotor exit total pressure.

Using the maximum value, the peak pressure analysis procedure, as utilized in reference 3, produced unrealistic rotor-stator loss splits. This is illustrated in Figure 11 where rotor losses at the root are shown as being negative, indicating efficiency levels over 100 percent.

A review of the stator gapwise total pressure profiles indicated a root analysis problem. The total pressure variation across the stator gap at 15, 30, and 50 percent spans is shown in Figure 12. The 50 percent span data were characteristic of the profiles between 50 percent and 95 percent span where the total pressure profile was flat with distinct stator wakes. At 30 and 15 percent span the peak total pressure occurred as a local maximum and not representative of the rotor exit total pressure. The gapwise total temperature data at the stator exit (Figure 13) indicated that the local total pressure peak was accompanied by a local total temperature peak. An efficiency calculated using the normal method of the peak total pressure and gap mass average total temperature was substantially higher than the efficiency calculated using the local total pressure and total temperature values.

Because of this root analysis problem, an alternative data analysis method was employed. This method produced a realistic rotor-stator loss split.

The alternative data analysis method consists of two parts:

a. In regions where the exit total pressure is flat with distinct stator wakes (50% span - 95% span), the peak pressure carried forward along a streamline to the stator leading edge was designated to be the rotor exit total pressure.

b. In regions where the exit total pressure was not flat, the average of the three highest efficiency points at the stator exit was carried forward to the stator leading edge along a streamline and designated to be the rotor efficiency.

This procedure was used for the 5, 10, 15, and 30 percent span data. Examples of local efficiency profiles are given in Figure 14.

This alternative data analysis method provided a reasonable rotor-stator loss split, as shown in Figure 15. The stator loss was essentially the same as when previously tested with the precompression rotor (ref. 3). Table V summarizes rotor performance determined with both analysis methods.

TABLE V

ROTOR PERFORMANCE VS METHOD OF DATA ANALYSIS

	Rotor Adiabatic Efficiency, %	Efficiency from Design, %
Design	86.8	0
Alternative Data Analysis Method	86.1	-0.7
Peak Pressure Method	87.6	+0.8

The alternative data analysis method was used for all overall performance and blade element data analyses.

Flow blockage factors were used to provide effective flow areas for static pressure and velocity calculations at blade-row stations. Axial distributions of flow blockage factors were selected so that the hub and tip static pressure obtained from the flowfield calculation matched the wall static pressure measurements for a representative data point at design speed. The calculated I.D. and O.D. static pressure distribution obtained using the design blockage factors showed good agreement with the measured wall static pressures (Figure 16). The design flow-blockage factors used in the data reduction flowfield calculation are shown in Table VI.

TABLE VI

FLOW FIELD BLOCKAGES

Station	Blockage, %
Upstream to Rotor Leading Edge	2.6
Rotor Trailing Edge	3.3
Stator Leading Edge	3.3
Stator Trailing Edge and Downstream	4.0

To calculate performance at blade leading and trailing edge, the flowfield analysis program was used to translate data along streamlines from instrumentation planes to blade edges. Blade element performance parameters were calculated for each streamline, and linear interpolations were made between streamlines to provide data at selected radial locations. For the 548.6 m/sec (1800 ft/sec) fan, these locations were defined by design streamlines that pass through the trailing edge of the rotor at 5, 10, 15, 30, 50, 60, 75, 70, 85, 90, and 95 percent of passage height. Performance parameter definitions are given in Appendix B. The output of the flowfield analysis program also included overall performance of the rotor and stator as well as for the stage.

5.0 RESULTS AND DISCUSSION

5.1 SHAKEDOWN AND STATOR STAGGER ANGLE OPTIMIZATION

The shakedown test included measurements of rotor and vane stress along a wide open throttle line. All stress levels were found to be within acceptable limits. The shakedown test was conducted with the stator stagger angle set at the nominal (design) setting.

The optimum stator stagger angle was determined at 100 percent design speed by varying the vane stagger angle from the nominal setting to 5 degrees open and 5 degrees closed. The resulting performance and surge line data are shown in Figure 17. The nominal vane setting achieved the maximum stage efficiency without sacrificing flow range or surge margin. The stator recovery vs stagger setting is shown in Figure 18 and confirms that the nominal setting is optimum. The nominal stator setting was chosen for the performance test program.

After optimizing the stator stagger angle, a complete stress survey program was run. Again all stress levels were within acceptable limits. Following the stress survey program, performance data were acquired for the 100 percent

speedline to recheck the instrumentation prior to the performance testing. These data indicated a decrease in the efficiency level relative to the previous data. Figure 19 shows the difference between the data acquired during stator optimization (before the stress survey) and the data obtained during the performance test. The most significant difference was the deterioration of stage peak adiabatic efficiency from 83.4% to 82.8%. The spanwise stage efficiency profiles shown in Figure 20 were examined to determine the source of the performance deterioration. Small efficiency losses were seen near the hub and in the 85 to 90 percent span region. The spanwise stage total pressure profiles, shown in Figure 21, indicated that slight declines occurred in the regions with reduced efficiency.

The following steps were taken to identify the source of the efficiency deterioration:

- o Remeasured Static Blade Tip Clearance
- o Cleaned Rig of Accumulated Dirt
- o Check Axial Location of Rotor
- o Repaired Minor Leading Edge Damage
- o Acquired Performance Data with Stator Settings Modified by 1.25 Degree Increments to Verify Exit Air Angle.

These efforts failed to reveal the source of the performance loss. After completion of the test program, the rig was disassembled and carefully examined, and it was discovered that the rubber seals covering the leakage path between rotor platforms had been destroyed. These missing seals are the suspected cause of the performance deterioration. Since the damaged platform seals were the only source of deterioration identified, the 83.4% stage efficiency measured before deterioration occurred is believed to represent the true efficiency potential of this stage, although the bulk of the data presented and discussed herein reflects performance levels after the initial deterioration had occurred. Additionally, the data point taken prior to deterioration is shown in the figure for reference to indicate the potential for this stage. The prior to deterioration data are also summerized in tabular form at the end of Appendix C, pages 170 and 171.

5.2 OVERALL PERFORMANCE

The overall performance of the fan stage is summarized by the stage performance map in Figure 22. The map indicates that at the design speed peak efficiency point the mass flow was approximately the same as the design level. The total pressure ratio was 2.20 as compared with the design value of 2.28. The stage adiabatic efficiency was 82.8%, or 1% below the design goal. This point is identified as (04) on Figure 22. The point identified as (07) was close to the stage operating line. Here the stage efficiency was 81.6%, and the pressure ratio was 2.26. The mass flow at this point was 1.9% below the design level. At design speed the stall margin was 13% from the peak efficiency point and 10% from the design operating line point. Additionally, the data point taken prior to deterioration is shown in the figure for reference in order to indicate the potential for this stage. The prior-to-deterioration data are also summarized in tabular form at the end of Appendix C, pages 170 and 171.

The influence of speed over the envelope of maximum efficiency for this stage was unlike that observed for fans designed at moderate inlet Mach numbers. Here the trend of maximum efficiency versus speed peaked locally at the design speed, suggesting that the rotor was optimized at the correct speed. However, it also indicates that within a practical operating range there would be a substantal off-design-speed penalty. The abrupt fall-off in peak efficiency at 95 percent speed is believed to be the result of increased shock loss as the shock structure moves forward of the leading edge and becomes more nearly normal to the flow.

Evidence to support the conclusion that the shock moves forward at part speed was provided by the tip static pressure data at the 95 and 100 percent speed peak efficiency conditions. Figure 23 shows that at 100 percent speed the diffusion began gradually at the leading edge, suggesting that the shock structure was contained within the rotor passage. In contrast, at 95 percent speed the steep pressure rise began immediately at the leading edge, and the last 40 percent of chord contributed far less to the total diffusion. The conclusion that the variation in rotor efficiency was associated with the change in shock structure is supported by the data from reference 6. This 487.6 m/sec (1600 ft/sec) fan tested under NASA Contract NAS3-13498 exhibited a similar trend of peak efficiency vs speed, and hologram data was shown which demonstrates the shock movement. The tendency for strong shocks and high shock losses at speeds below design but within the normal operating range appears to be a basic problem in this design speed range and may limit the usefulness of high speed fans unless shock strength can be controlled over a range of speeds.

The rotor performance is summarized by the map in Figure 24. At the design speed peak efficiency point, the rotor total pressure ratio was 2.26 as compared with the design level of 2.34. The rotor adiabatic efficiency was 86.1%, which was 0.7% below the design goal and 1.3% above the performance of the precompression rotor. The rotor map also exhibits the local peak in the trend of maximum efficiency vs speed, which is attributed to the shock unstarting phenomenon.

5.3 BLADE ELEMENT DATA

The spanwise comparisons of the blade-element data to the design intent are summarized in Figures 25 to 30. The design speed peak efficiency point and operating line point have been selected for this comparison. Figure 25 shows the stage spanwise total pressure profile compared with the design intent and with the test results from the precompression rotor test. The measured total pressure at peak efficiency was below design intent except at the hub. At the design operating line, the pressure ratio was still below the design level, reflecting the fact that the measured mass flow was below design intent.

The stage spanwise adiabatic efficiency profile is presented in Figure 26. The measured efficiency exceeds the design goal between 60 and 85 percent span, reflecting a significant improvement in shroud loss. The efficiency exceeds that of the precompression rotor test between 50 percent span and the tip. Between 85 and 95 percent span the improvement is very substantial. The tip

clearance measurements suggest that only a small part of this improvement can be attributed to tighter tip clearances. The running tip clearance was 610 x 10^{-6} meters (0.024 in.) for the present rotor and 762 x 10^{-6} meters (0.030 in.) for the precompression rotor. Only 0.1 to 0.2% of the 1.3% improvement in rotor efficiency relative to the precompression rotor is attributable to this difference in tip clearance. The rotor total pressure ratio and adiabatic efficiency comparisons in Figures 27 and 28 show the same comparison trends as the stage data. Figure 29 shows the temperature profile for the peak efficiency and operating line point. The high temperature at the tip corresponds to the fall off in tip efficiency below design intent. The temperature ratio is below design intent in the shroud region where the efficiency exceeds design intent. Near the hub the temperature ratio reflects the local high pressure ratio which resulted from less than expected deviation in this region. Figures 30 and 31 compare the design values of loss, diffusion factor, deviation, and incidence to the test results for the rotor and stator. At peak efficiency the rotor incidence is in reasonable agreement with the design intent. The rotor loss is above the design level except in the shroud region. The rotor diffusion factor is in good agreement with the design intent.

The variation in the shapes of the design and test incidence curves corresponds directly to the design-test discrepancy of rotor ρV_m ratio in Figure 32. The ρV_m ratio variation, however, is not believed to be the cause, but rather a secondary symptom of a fundamental data analysis problem. Figure 33 describes the effect of using intrablade throughflow calculations on the predicted incidence. The discrepancy here (using the same mass flow) is virtually the same as that shown in Figure 30. The differences between the design and test incidences were caused primarily by the fact that the design aerodynamic calculation was done with an intrablade procedure while the data reduction analysis was not. The shape of the test incidence curve, which cannot be reliably evaluated without an appropriate intrablade calculation, is believed to be in better agreement with design intent than indicated by the data analysis.

The rotor deviation shows the most significant discrepancy between test results and design intent. The over prediction of the deviation near the hub and the under prediction of the deviation in the outer half of the span resulted in the corresponding discrepancy between the design intent total pressure profile and the test results. The detailed variation of the rotor and stator blade element performance vs incidence is provided in Figures 34 and 35. These data are in general agreement with the design principles of reference 1. The individual flow field definitions from which the blade element data were obtained are available in Appendix C.

5.4 ROTOR TIP STATIC PRESSURE CONTOURS

High frequency response static pressure taps were installed over the rotor tip for the purpose of qualitatively defining the flow field in the tip region of the rotor. Unfortunately, the probe at 18 percent chord was not installed because the threads in the hole had been damaged during assembly, and the recorder for the 31 percent probe malfunctioned. No data are available between the leading edge and 43 percent chord, and the primary (leading edge) shock is undefined. The operating points for which the tip high frequency response

pressure data were obtained are shown in Figure 36. The data obtained on 95, 100, and 105 percent speed lines are presented as isobar plots in Figures 37a-37k. The 100 percent speed low pressure ratio flow field in Figure 37a shows a trailing edge shock. A segment of the leading edge shock impinging on the suction surface near the 60 percent chord can also be seen. The same features are observed at the slightly higher pressure ratio peak efficiency point (37b) except that the trailing edge shock is slightly weaker. At the two higher pressure ratio points (37c, d), the trailing edge shock vanishes and the leading edge data suggest that the leading edge shock becomes increasingly detached. The 95 percent design speed data (Figure 37e) show a trailing edge shock that moves forward at the higher pressure ratio (37f). At the near surge point (37g) the leading edge shock is again detached.

At the 105 percent design speed choke point (Figure 37h), a strong shock is observed downstream of the trailing edge. As the pressure ratio is increased, the aft shock weakens and moves into the passage (Figures 37i, j, k). No indication of the detached leading edge shock was observed at the 105 percent speed condition.

5.5 ROTOR LEADING EDGE HOT FILM DATA AT SURGE

Hot-film data were taken at surge in the leading edge plane for the rotor hub, midspan, and tip. In Figure 38 the data are presented for the nominal stator setting at 95, 100, and 105 percent of design speed and for the 5 degrees open and 5 degrees closed settings at 100 percent speed. Rotating stall did not occur during these tests.

6.0 CONCLUSIONS

1. The peak efficiency for this stage at design speed was 82.8% at a point slightly below the operating line. This is one percent below the design goal.

2. At design speed near the design operating line the efficiency was 81.6% at a flow 1.9% below design and a pressure ratio of 2.26--design goal was 2.28. These values were measured after performance deterioration.

3. The indicated efficiency potential for this stage, as measured before performance deterioration, was 83.4%, which is 0.4% below the design goal.

4. The rotor peak efficiency was 86.1% (after 0.6 percent deterioration in stage performance), which is a 1.3% improvement relative to the precompression rotor, but is 0.7% below the design goal. Before performance deterioration, the peak rotor efficiency essentially met its design goal.

5. The stall margin was 13% for the peak efficiency point and 10% for the design speed operating line--the design goal was 7%.

6. High shock losses at speeds below design and their effect on efficiency may limit the practical application of fans in this design speed range.

7.0 REFERENCES

1. Norton, J. M., Tari, U., and Weber, R. M.: "Rotor Redesign for a Highly Loaded 1800 ft/sec Tip Speed Fan Stage - I. Aerodynamic and Mechanical Design," NASA CR-159596, PWA-5523-42, 1979.

2. Morris, A. L., Halle, J. E., and Kennedy, E.: "High-Loading, 1800 ft/sec Tip Speed Transonic Compressor Fan Stage - I. Aerodynamic and Mechanical Design," NASA-CR-120907, PWA-4534, 1972.

3. Morris, A. L., and Sulam D. H.: "High-Loading, 1800 ft/sec Tip Speed Transonic Compressor Fan Stage - II. Final Report," NASA CR-12091, PWA-4463, 1972.

4. 1800 ft/sec Tip Speed Fan Stage - II Final LDV Report

5. ASME Research Committee on Fluid Meters, "Fluid Meters - Their Theory and Application, "Fifth Edition, American Society of Mechanical Engineers, New York, 1959, p. 47.

6. Ware, T. C., Kobayashi, R. J., and Jackson, R. J., "High-Tip-Speed, Low-Loading Transonic Fan Stage," NASA CR-121263, AiResearch 73-9488, 1974.

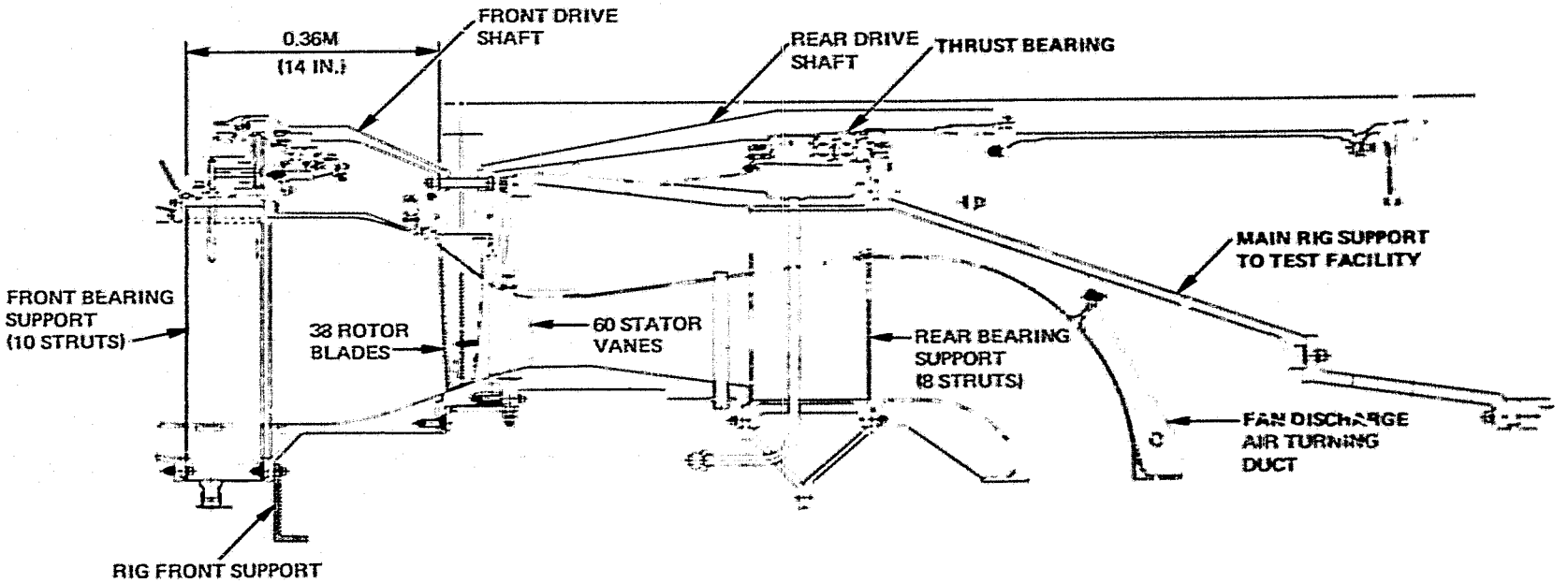


Figure 1 Cross Section of Test Compressor

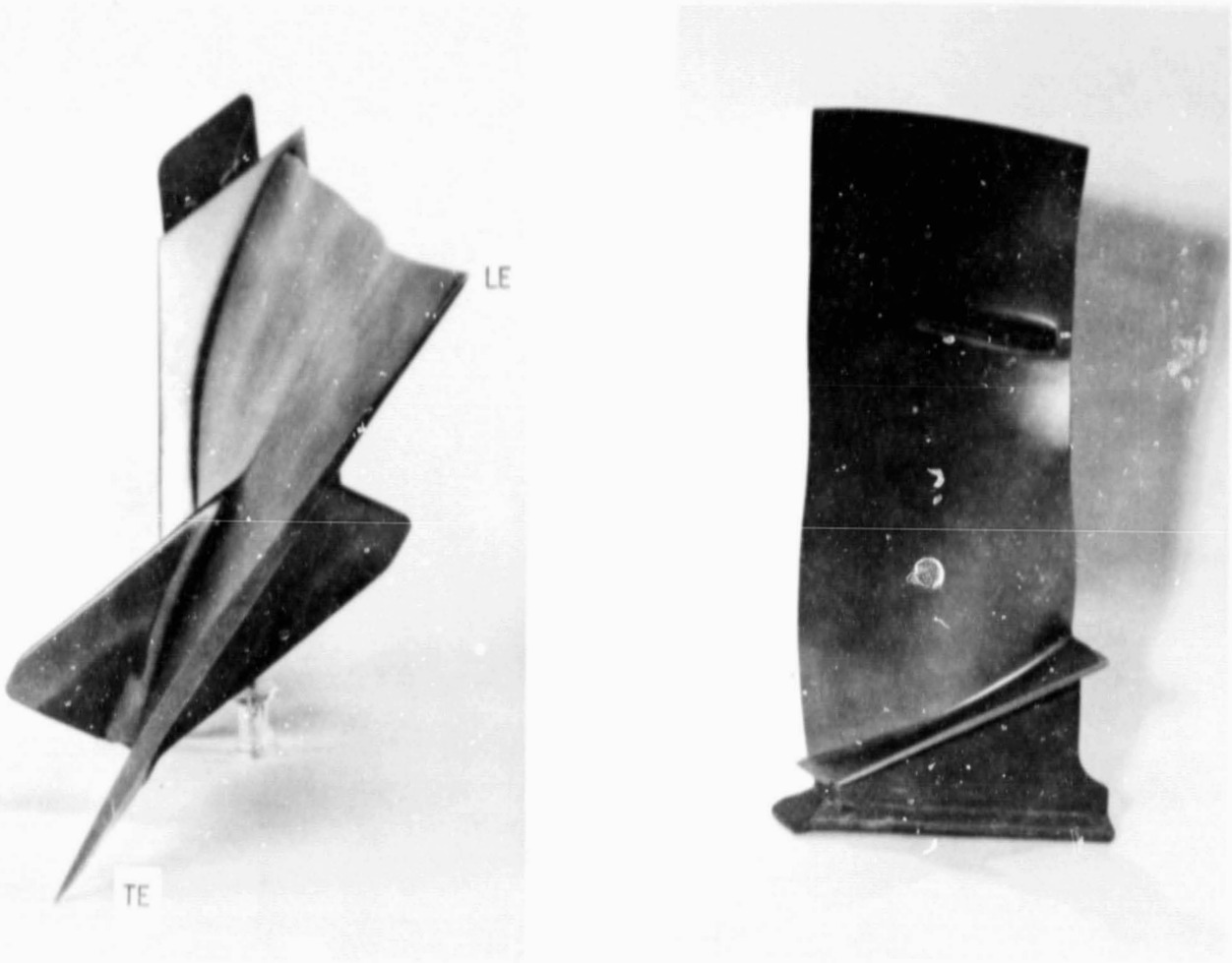
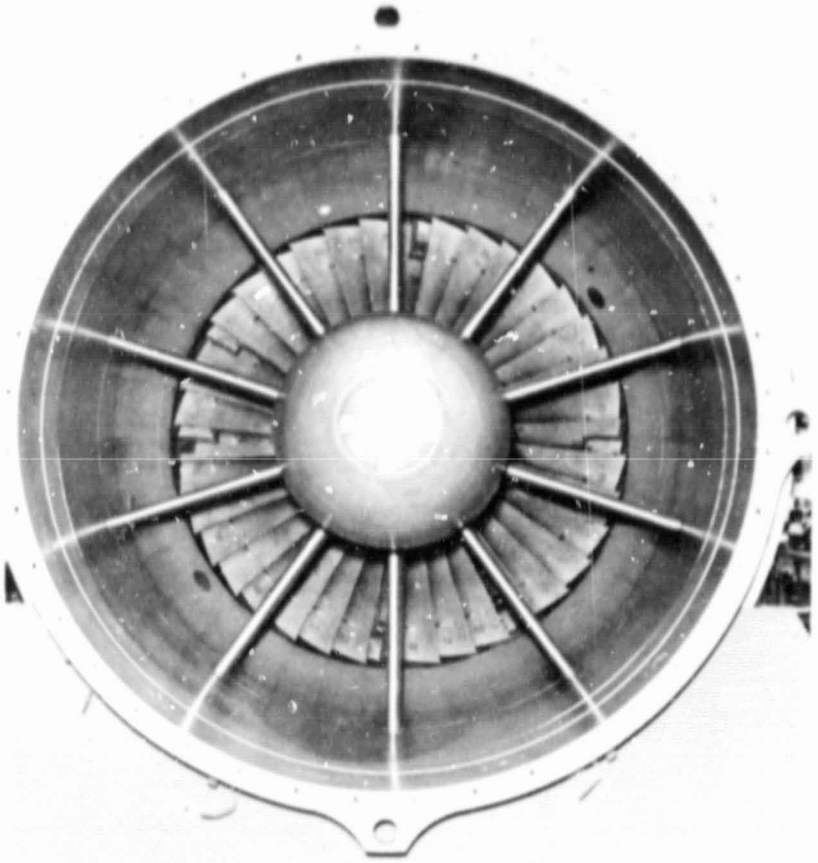
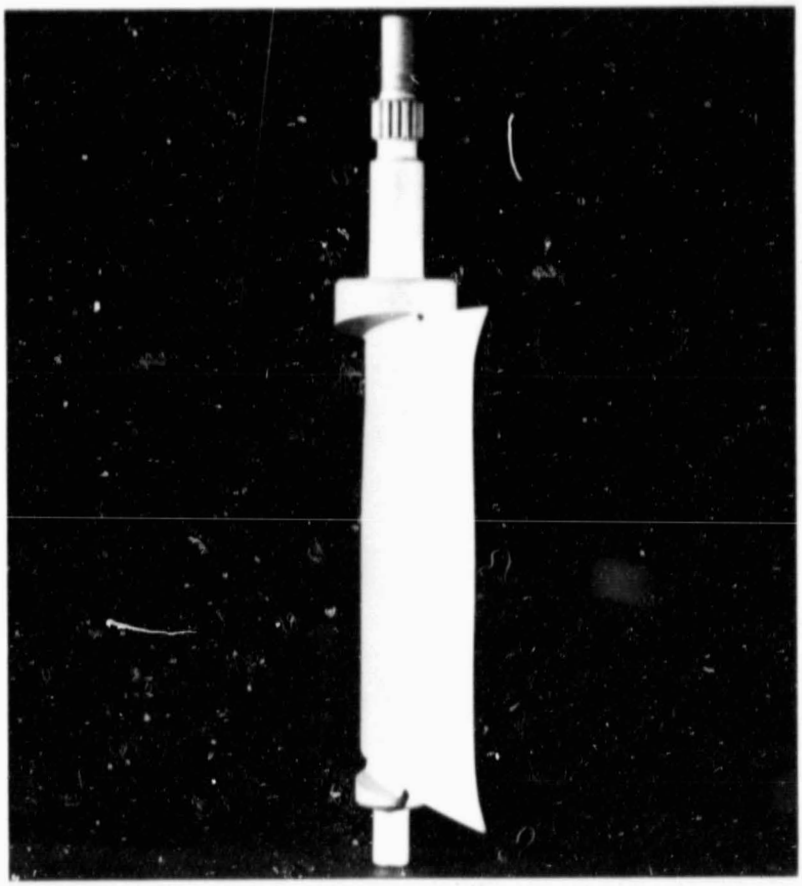


Figure 2 Redesigned Rotor Blade



VIEWED FROM RIG INLET

Figure 3 Rotor Assembly Installed in the Test Rig



VIEWED FROM LEADING EDGE SUCTION SURFACE

Figure 4 Stator Vane

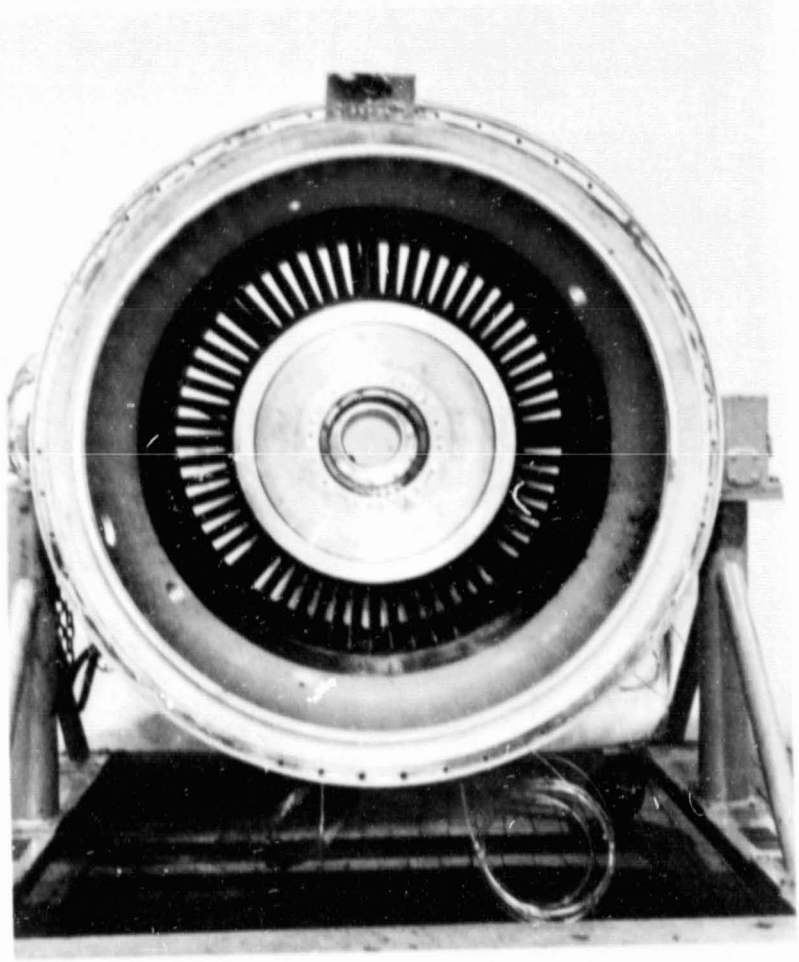


Figure 5 Stator Assembly Installed in the Test Rig

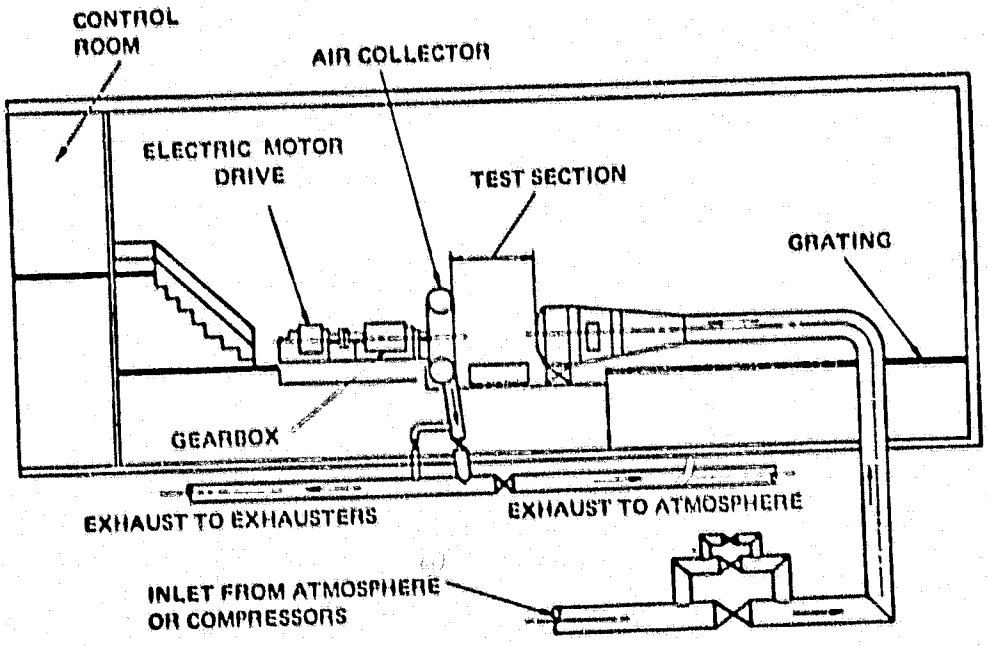


Figure 6 Schematic of Test Stand

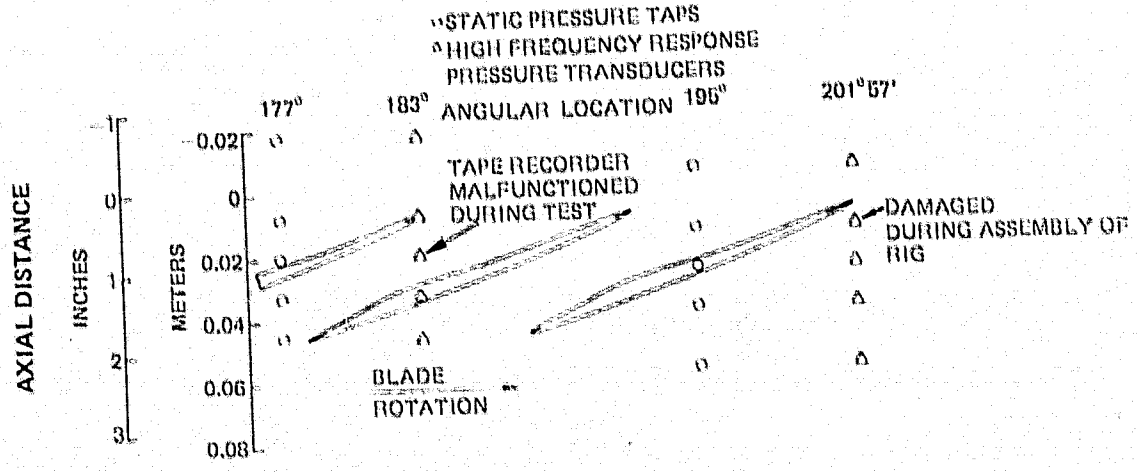
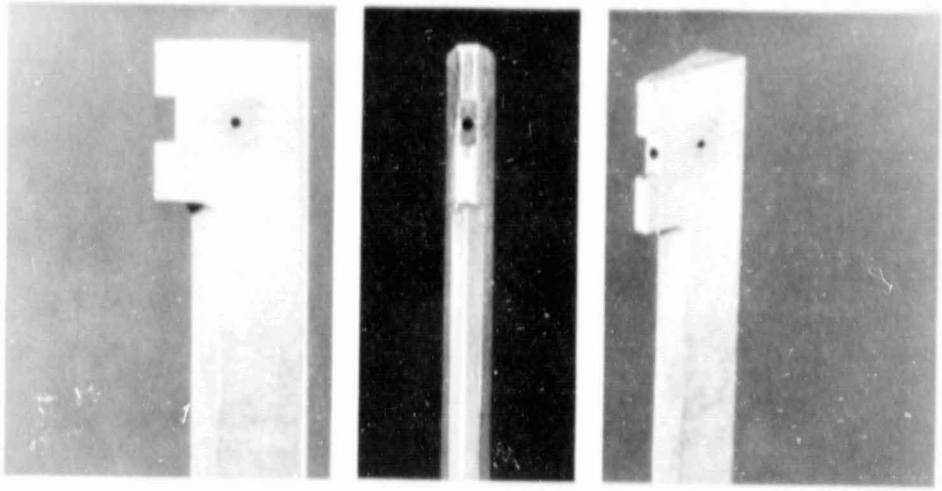
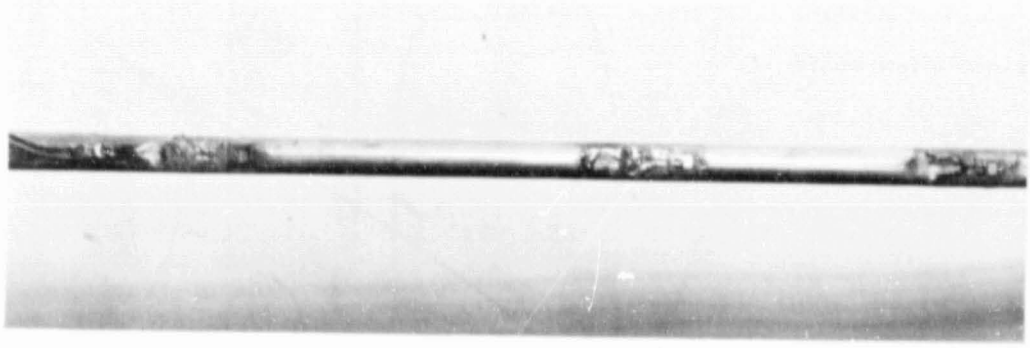


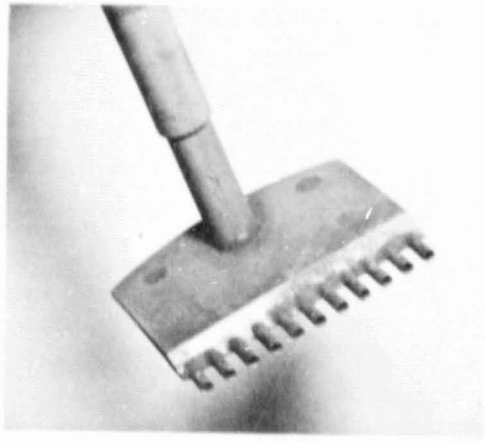
Figure 7 Casing Instrumentation Over Rotor Blade Tips



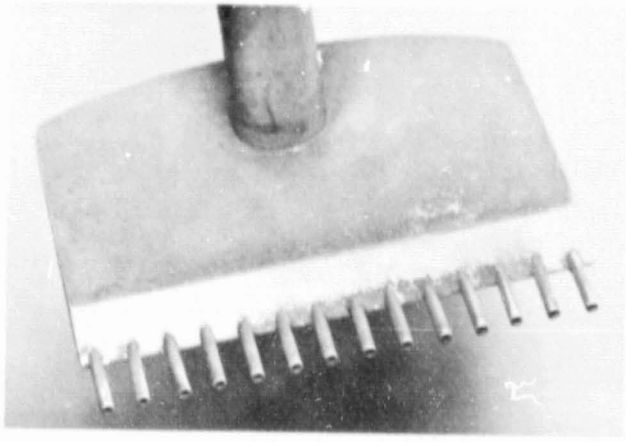
WEDGE PROBE



HOT FILM PROBE



PRESSURE WAKE RAKE



TEMPERATURE WAKE RAKE

Figure 8 Typical Instrumentation

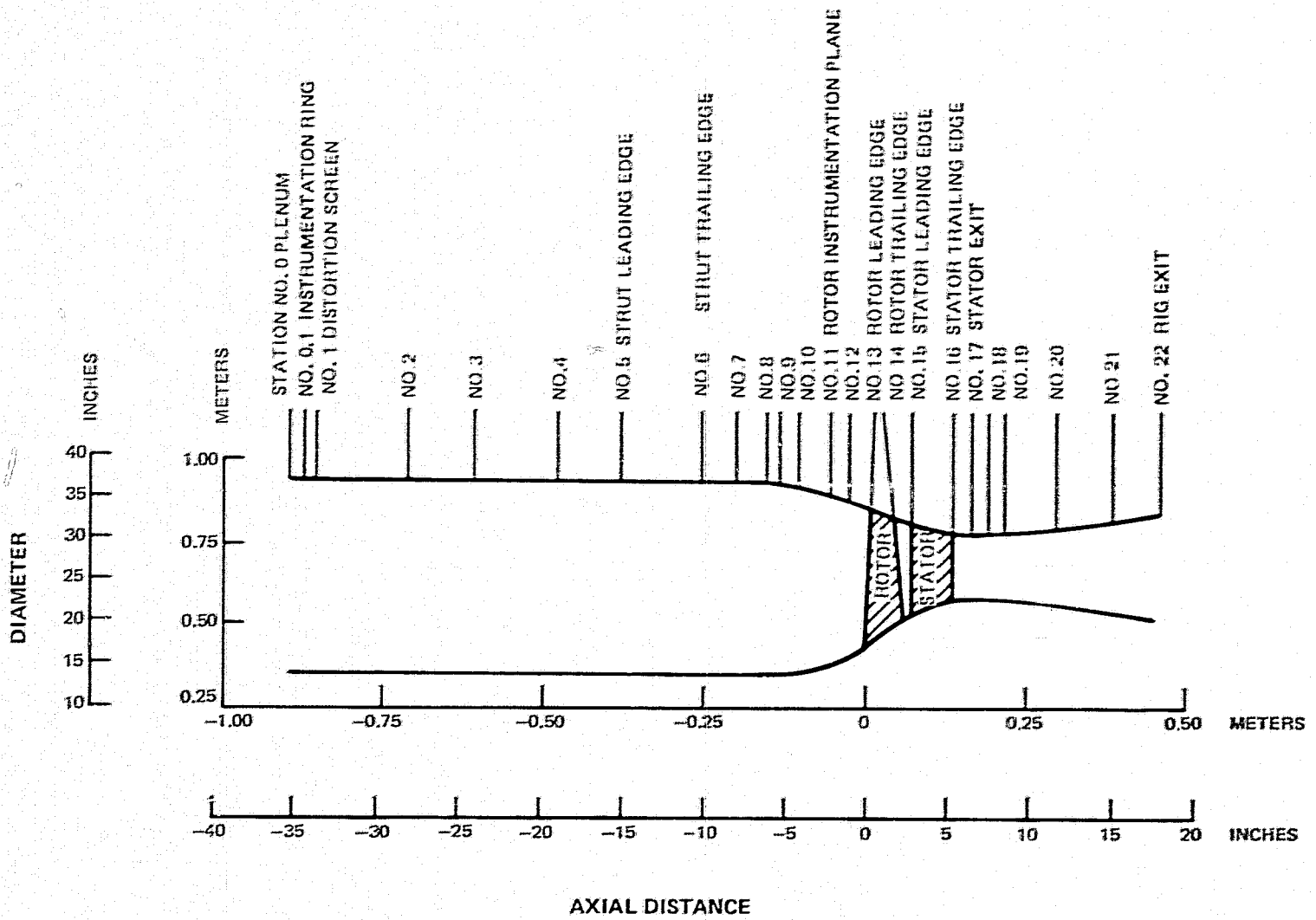


Figure 9 Axial Station Number and Location of Instrumentation Stations

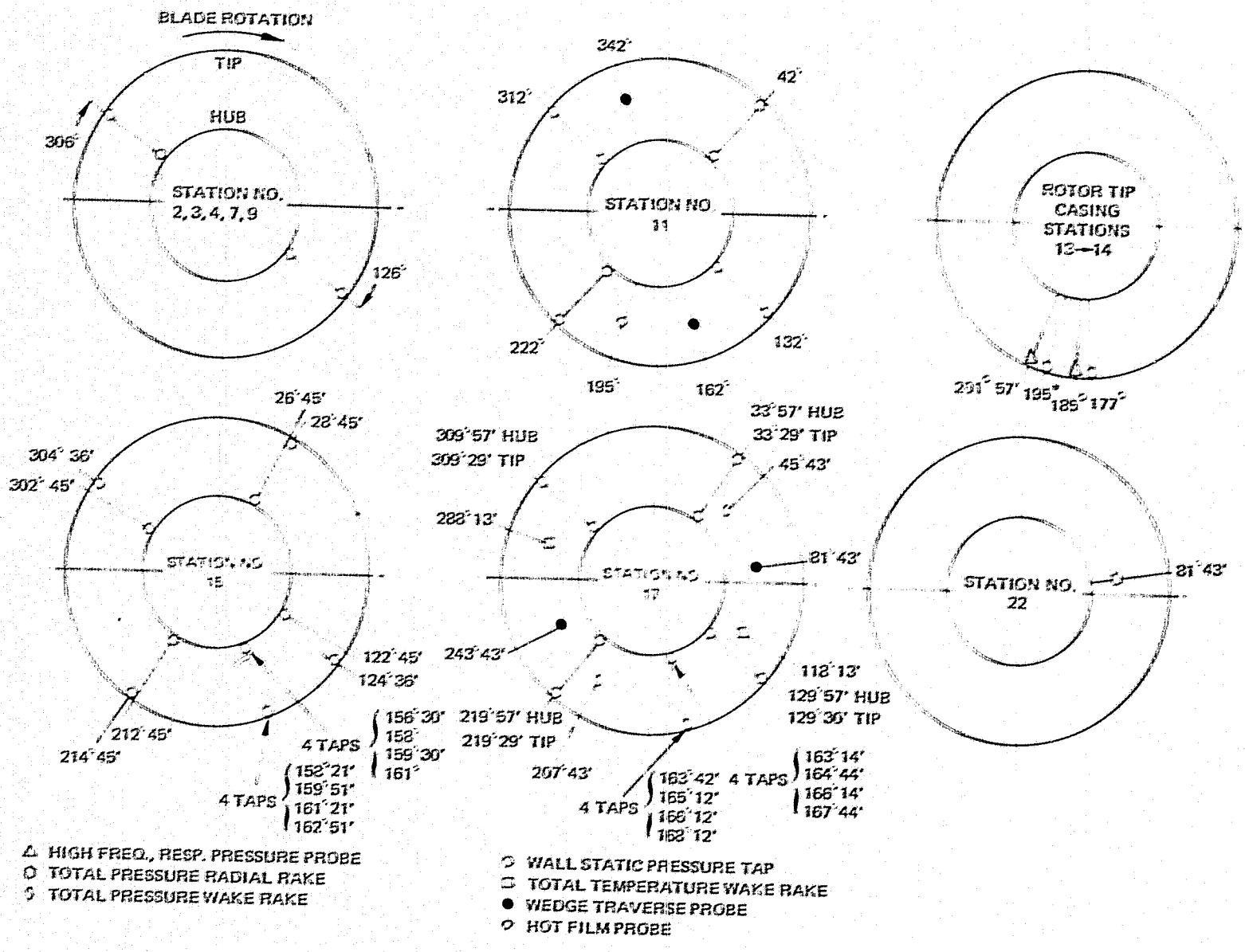


Figure 10 Circumferential Location of Aerodynamic InstrumentationViewed from Rear

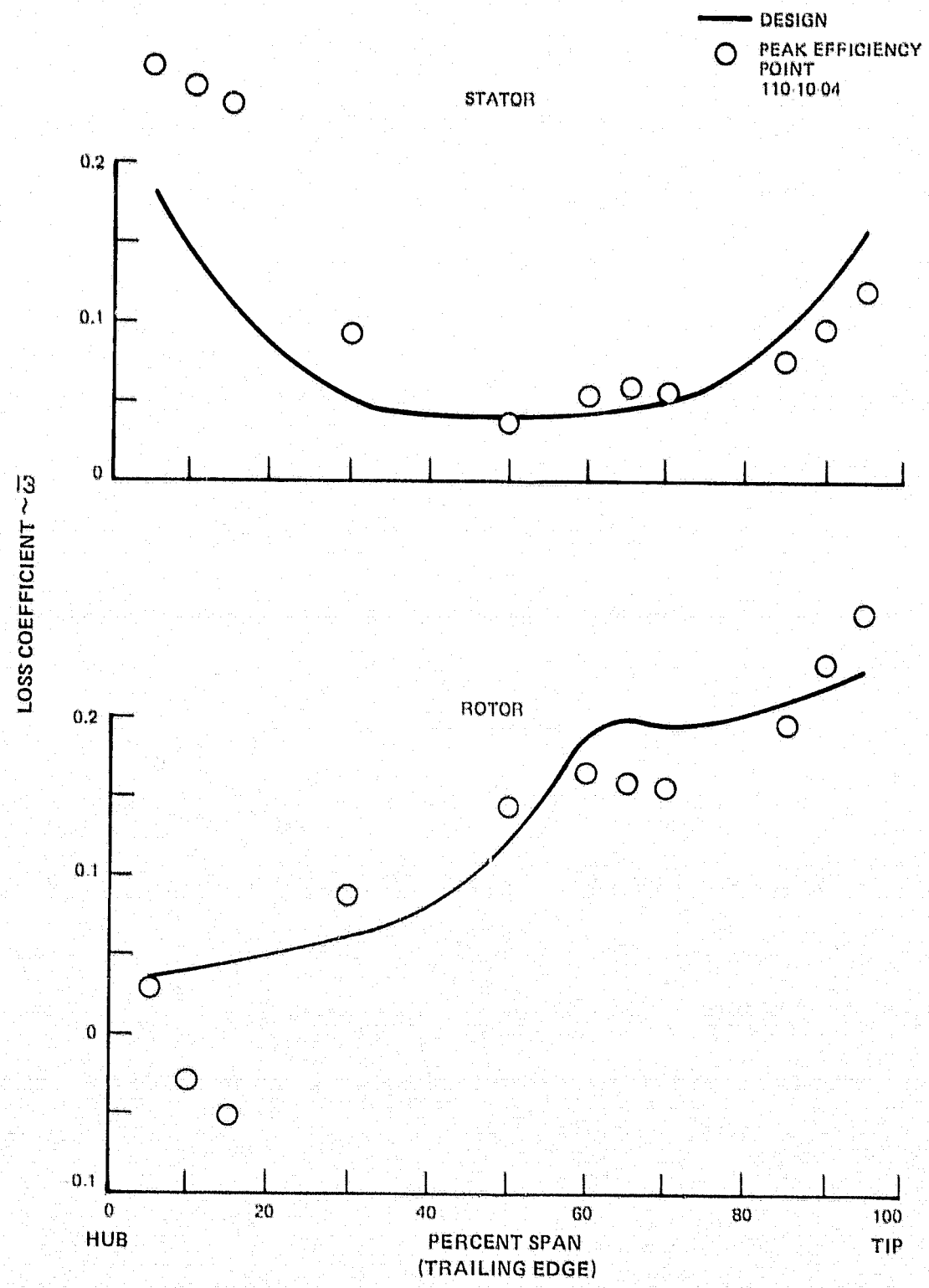


Figure 11 Rotor and Stator Loss at the Design Speed Peak Efficiency Point (Peak Pressure Analysis Method)

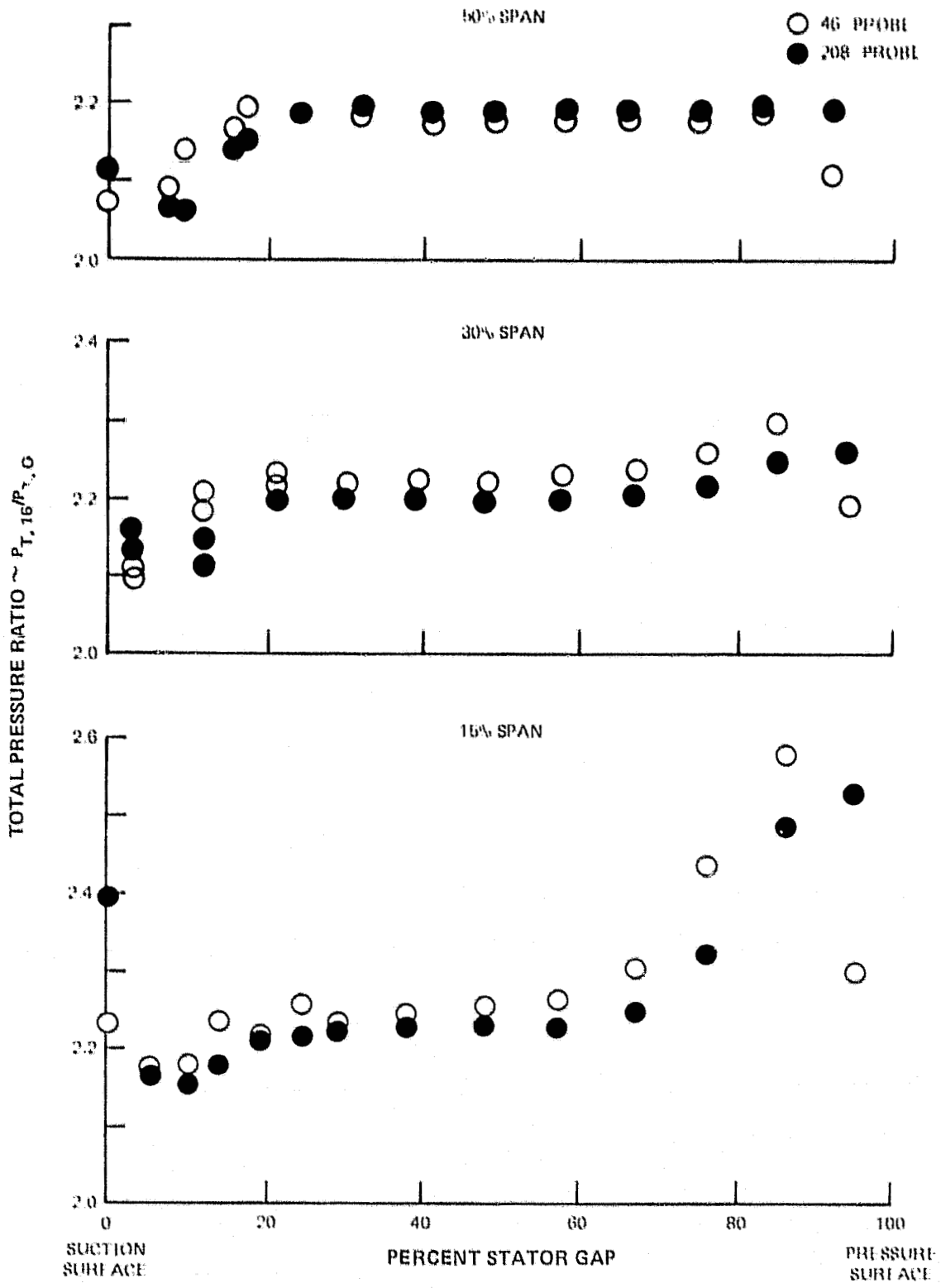


Figure 12 Stator Exit Total Pressure Data

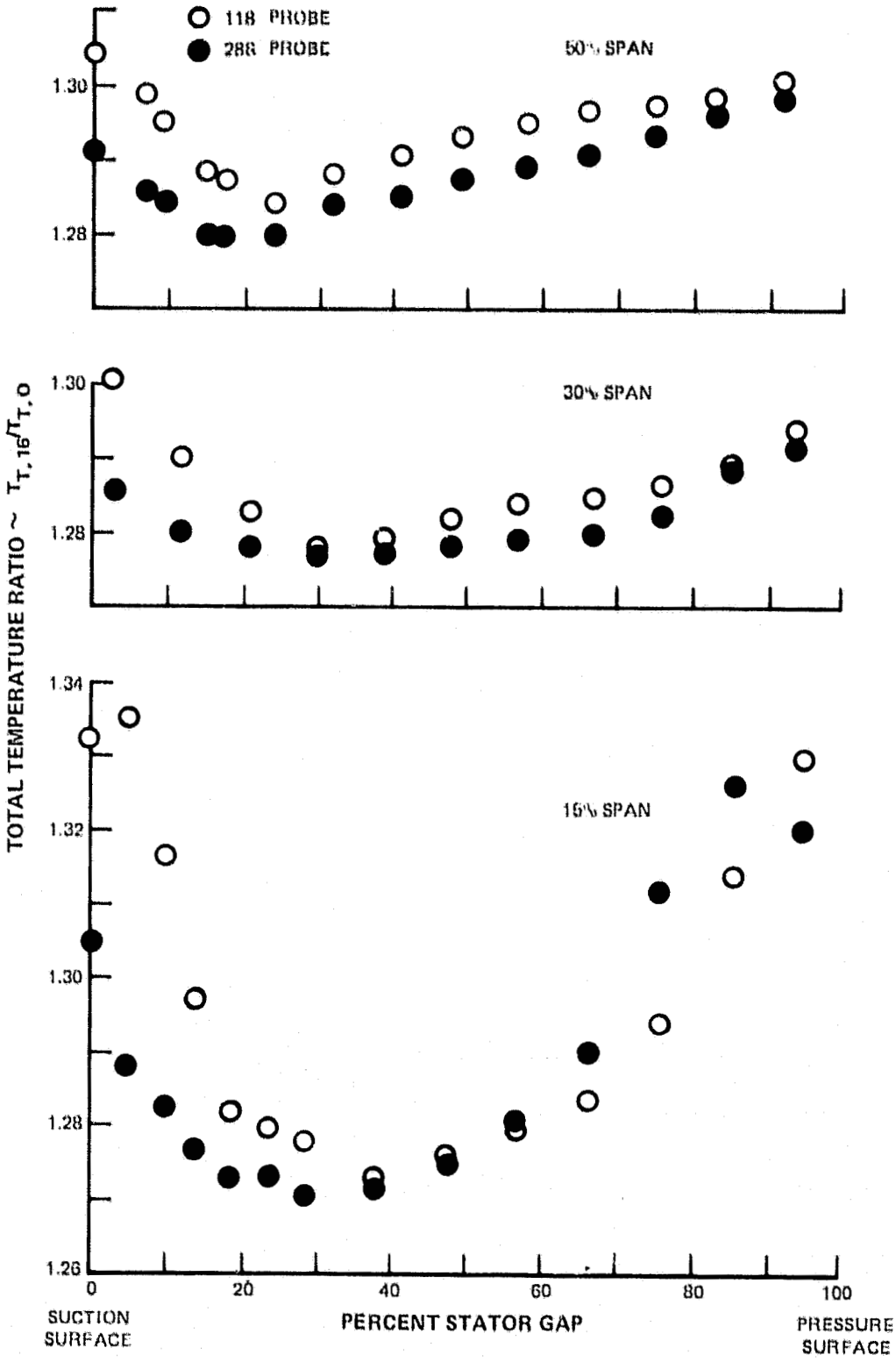
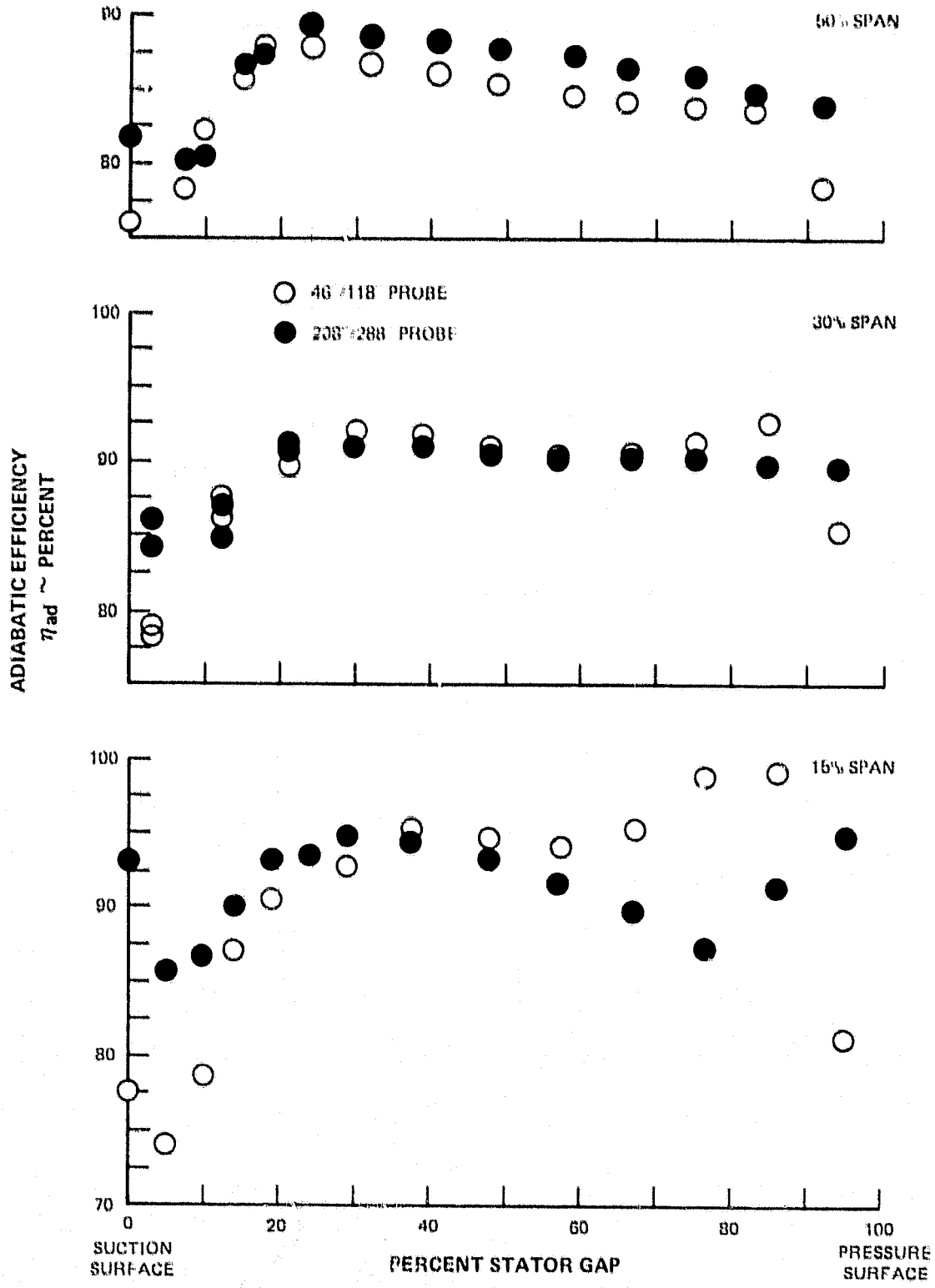


Figure 13 Stator Exit Total Temperature Data



4 Stator Exit Efficiency Profiles

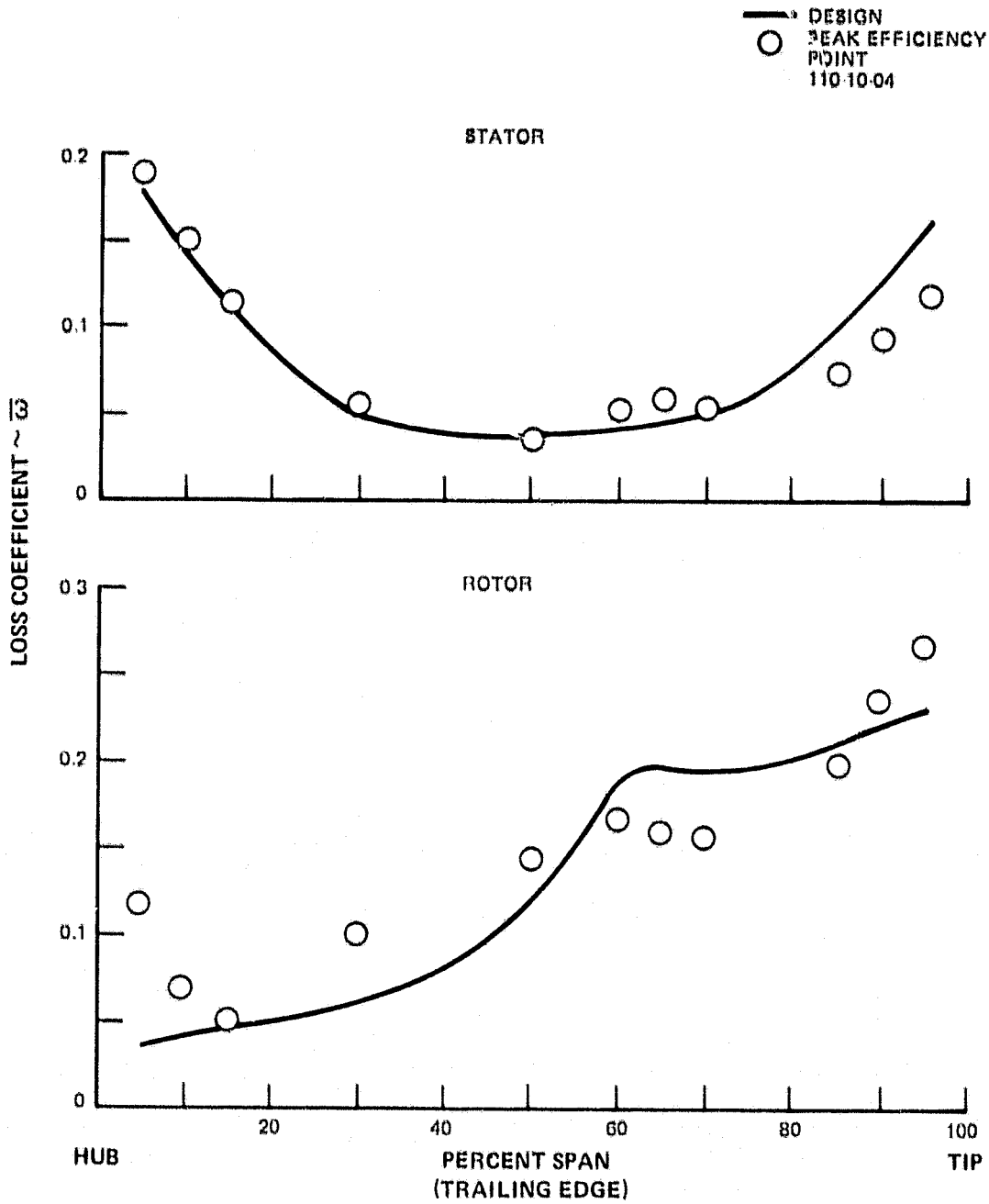


Figure 15 Rotor and Stator Loss at the Design Speed Peak Efficiency Point (Alternative Data Analysis Method)

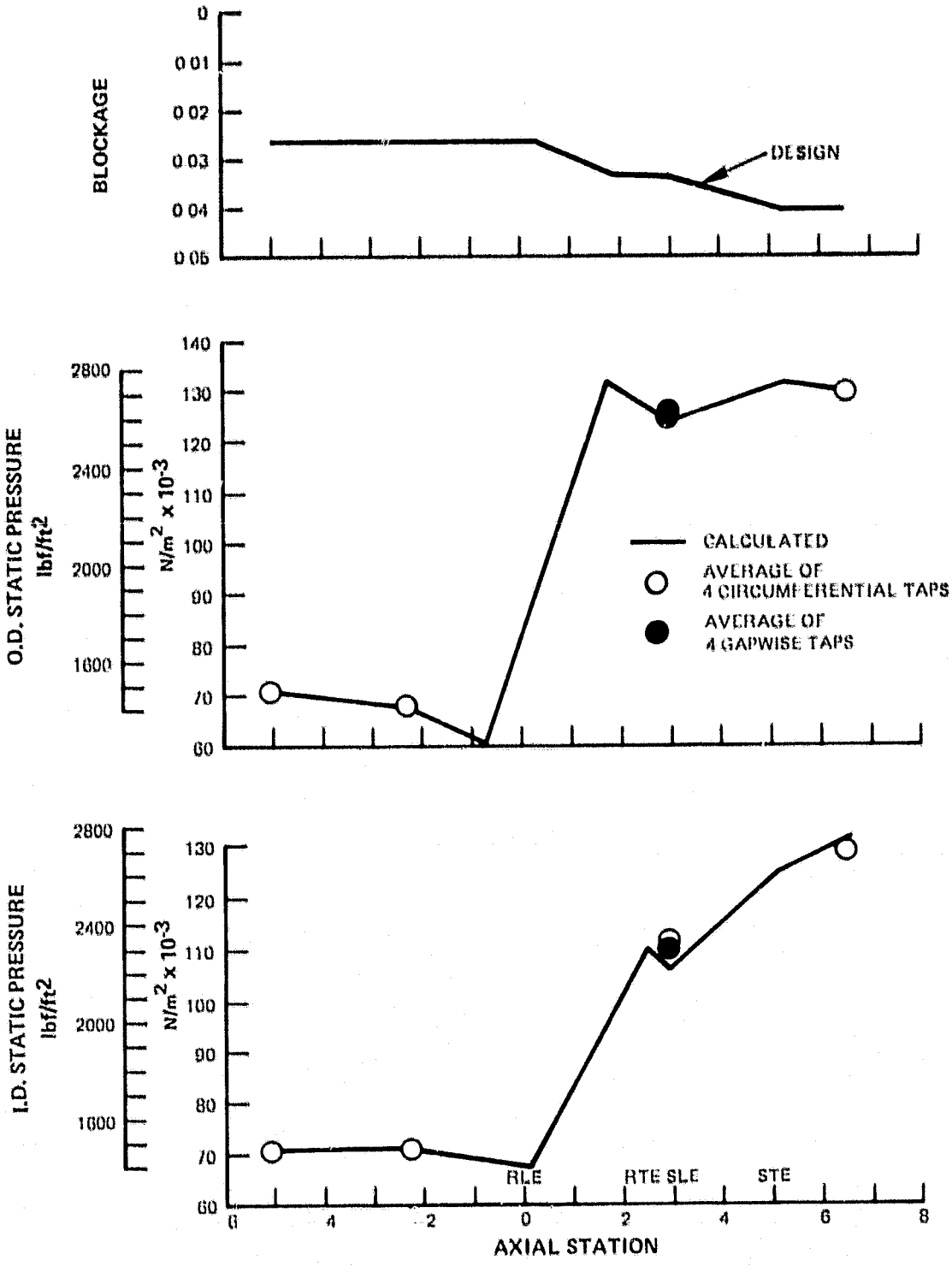


Figure 16 Axial Distribution of Aerodynamic Blockage Substantiated by Measured Endwall Static Pressures

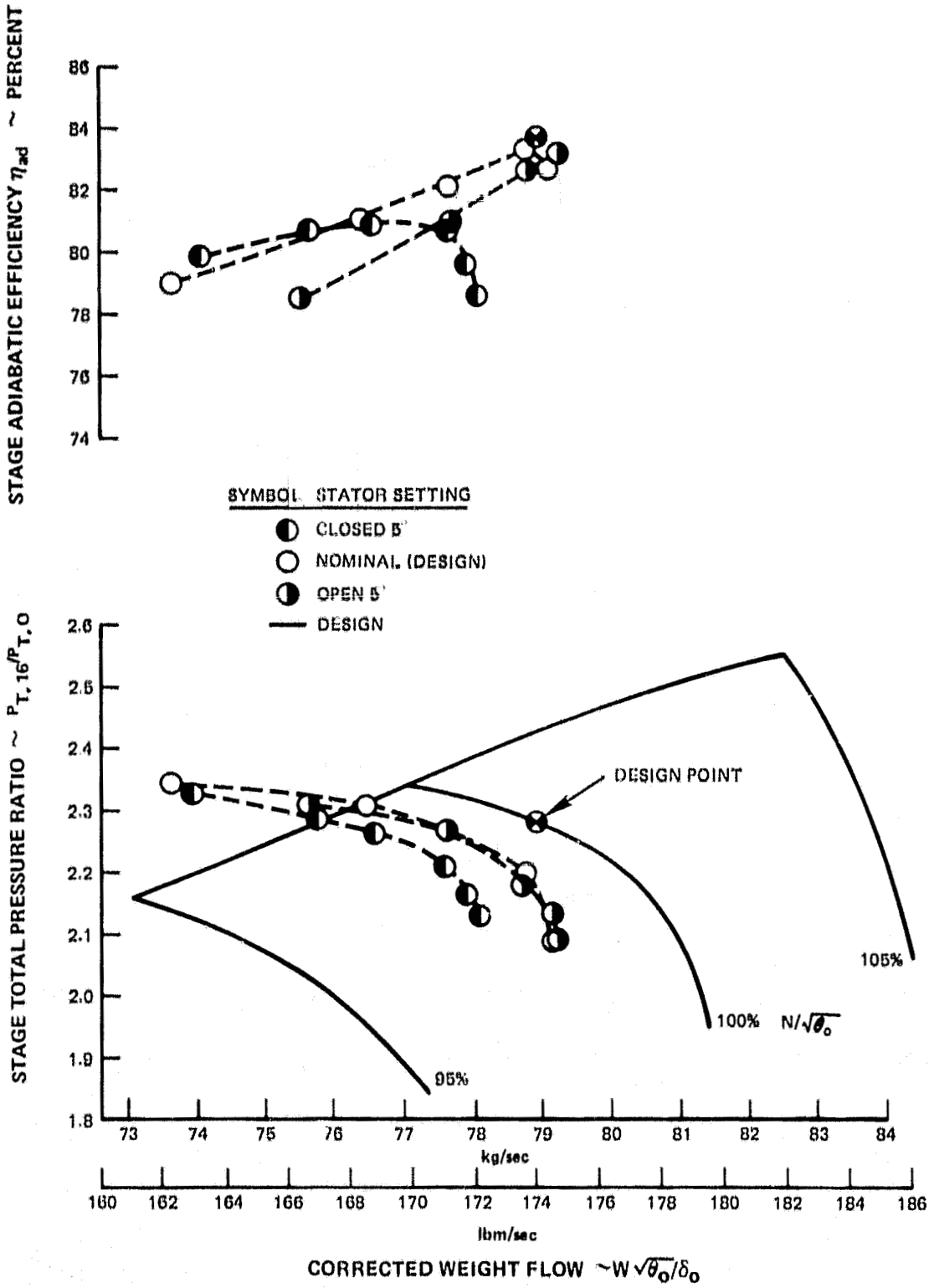


Figure 17 Stage Performance for Stator Stagger Angle OptimizationTest

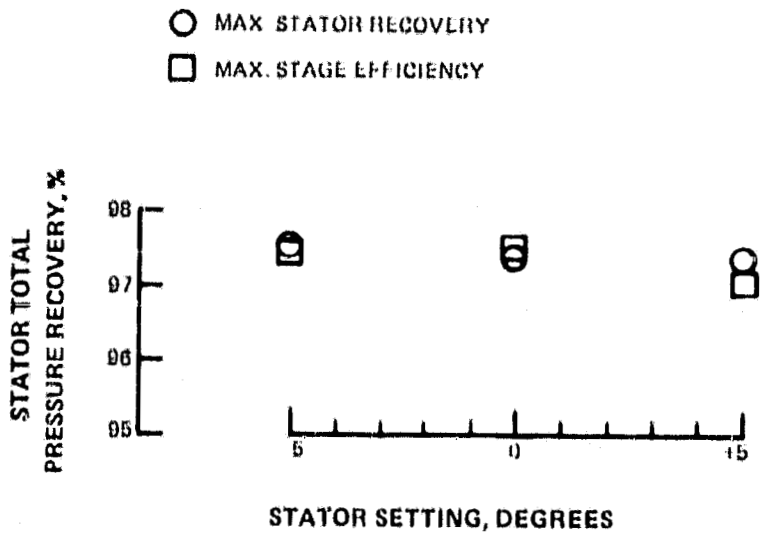


Figure 18 Stator Recovery vs Stagger Setting for Stage Optimization Tests

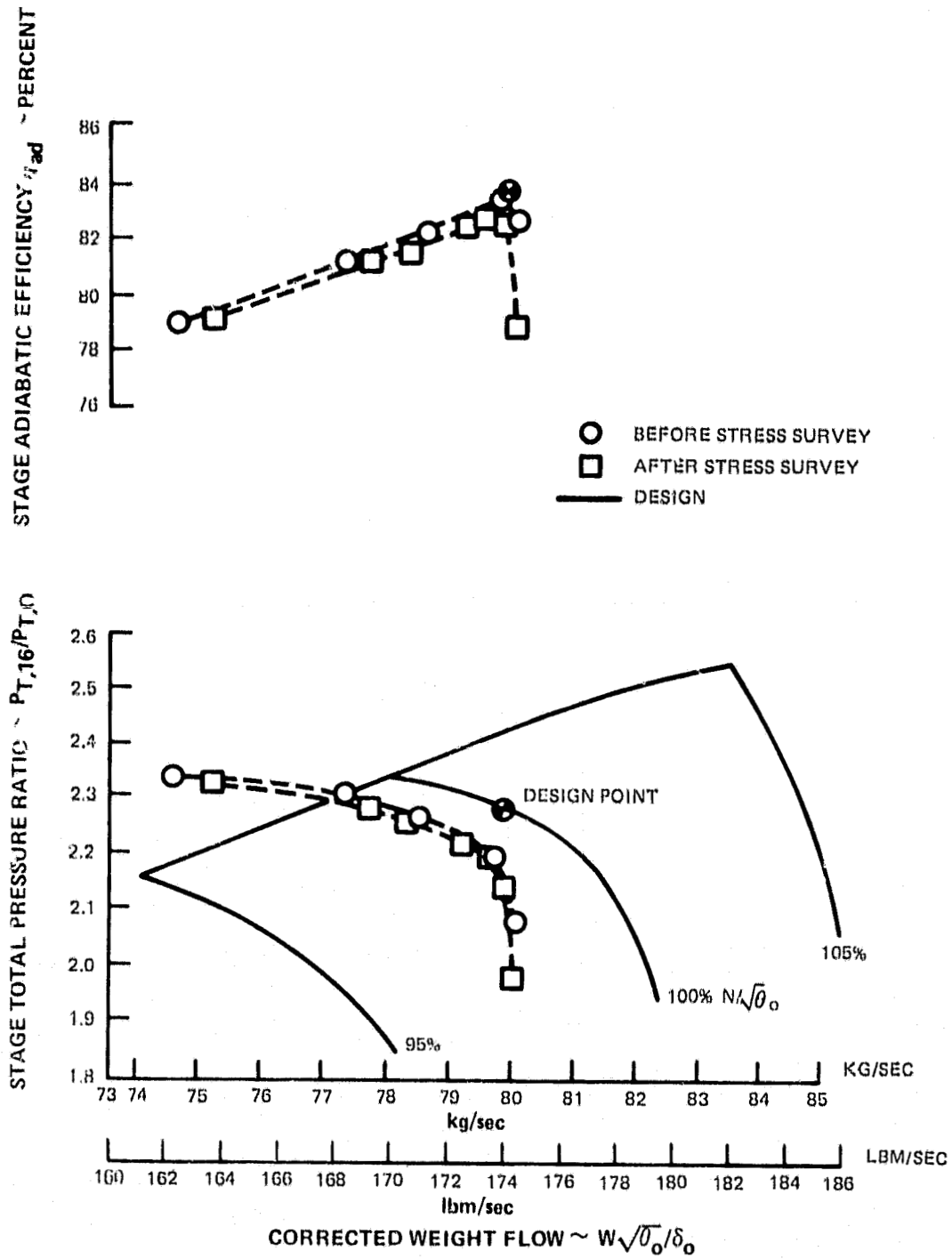


Figure 19 Stage Performance Before and After Stress Survey Showing 0.6% Loss in Efficiency Due to Deterioration

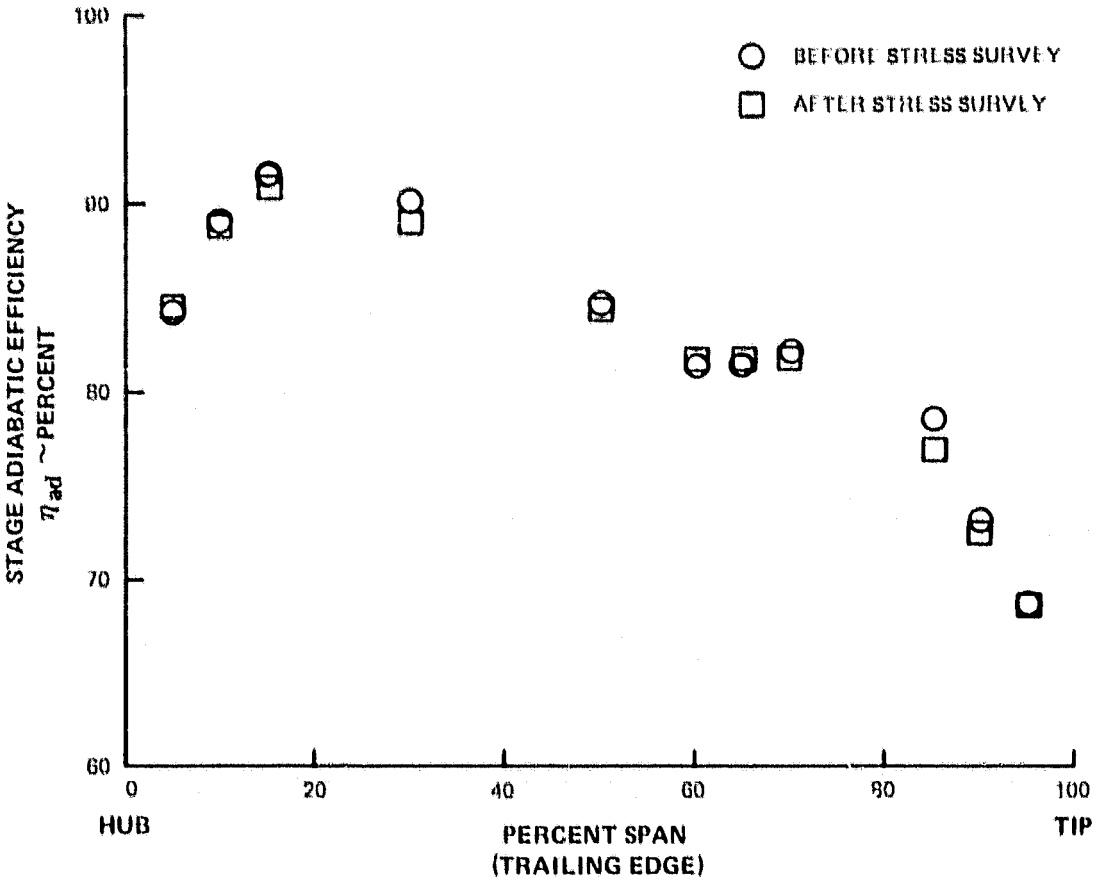


Figure 20 Stage Efficiency Proifle Before and After Stress Survey

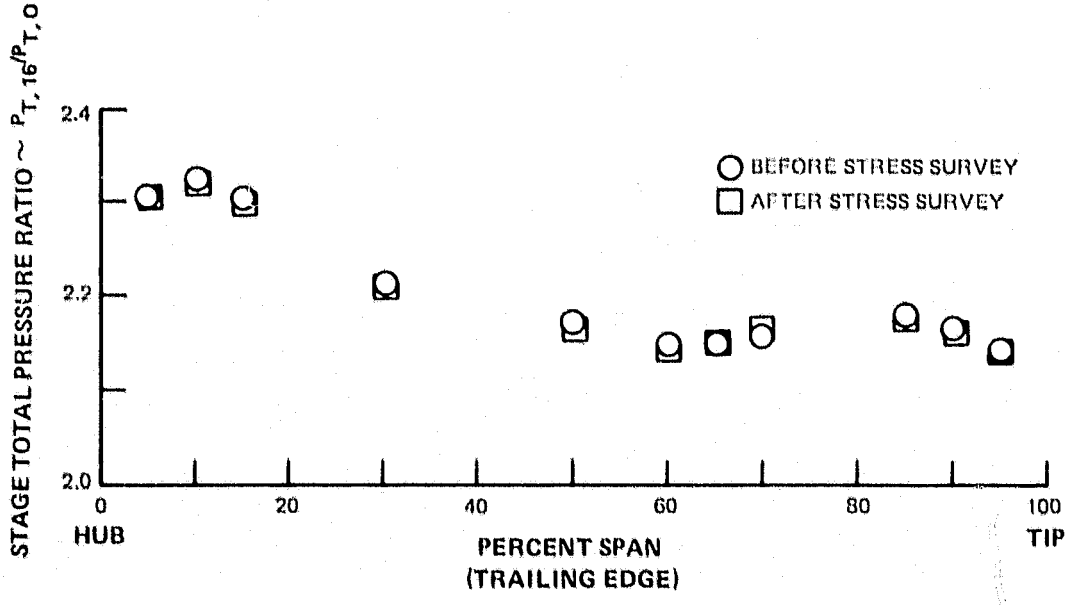


Figure 21 Stage Pressure Ratio Before and After Stress Survey

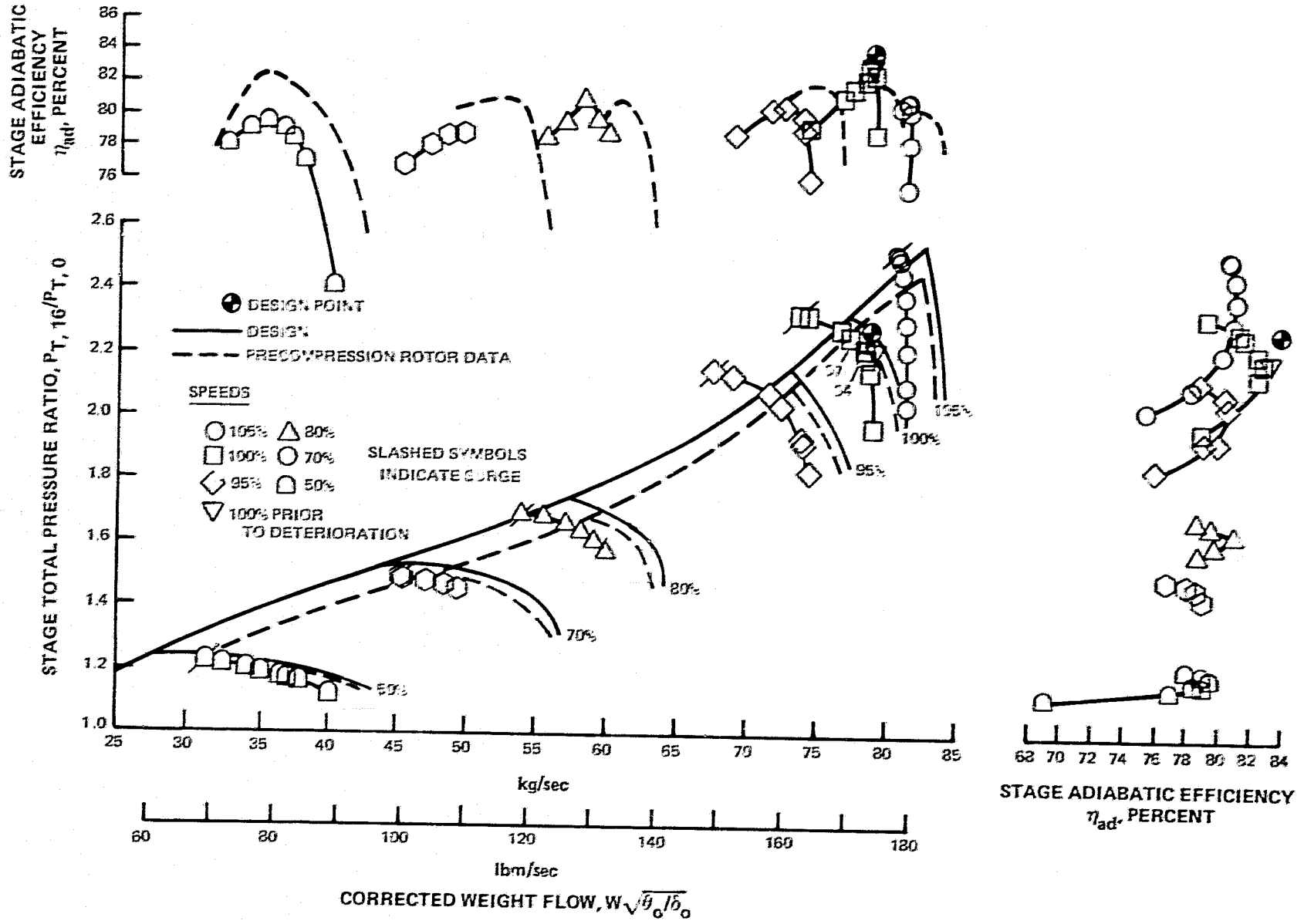


Figure 22 Stage Performance Map

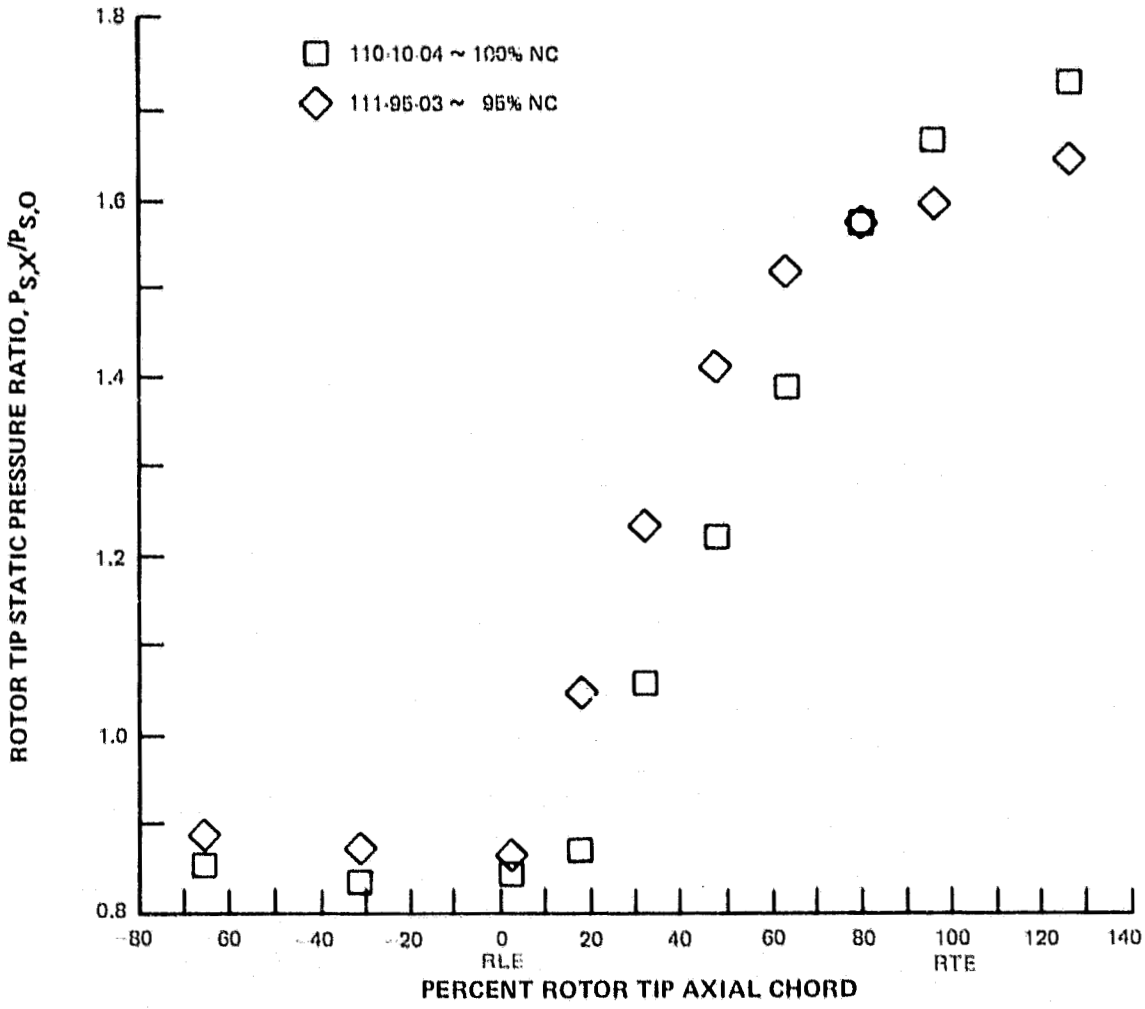


Figure 23 Fan Tip Static Pressure Diffusion with Started and Unstarted Shock

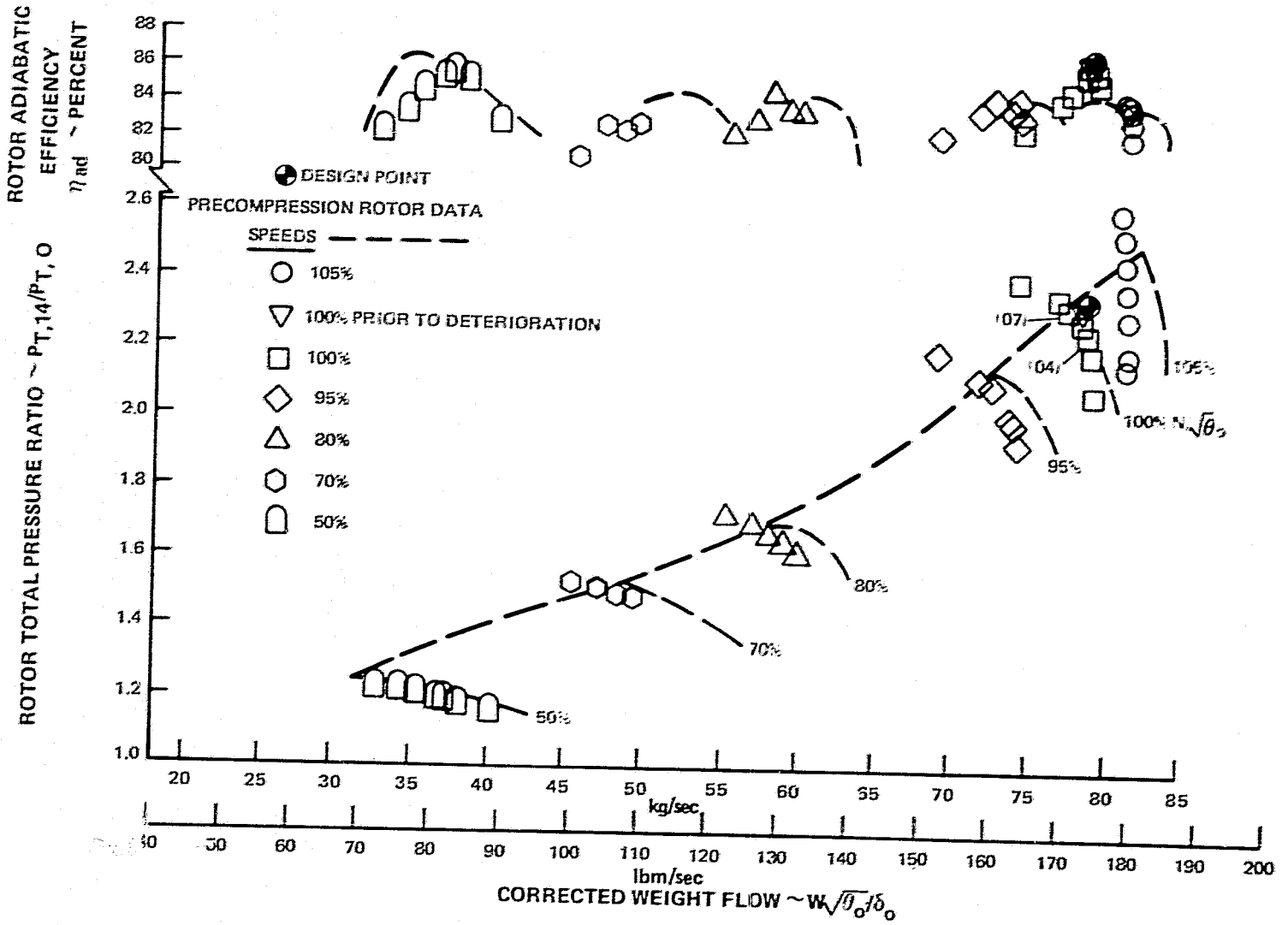


Figure 24 Rotor Performance Map

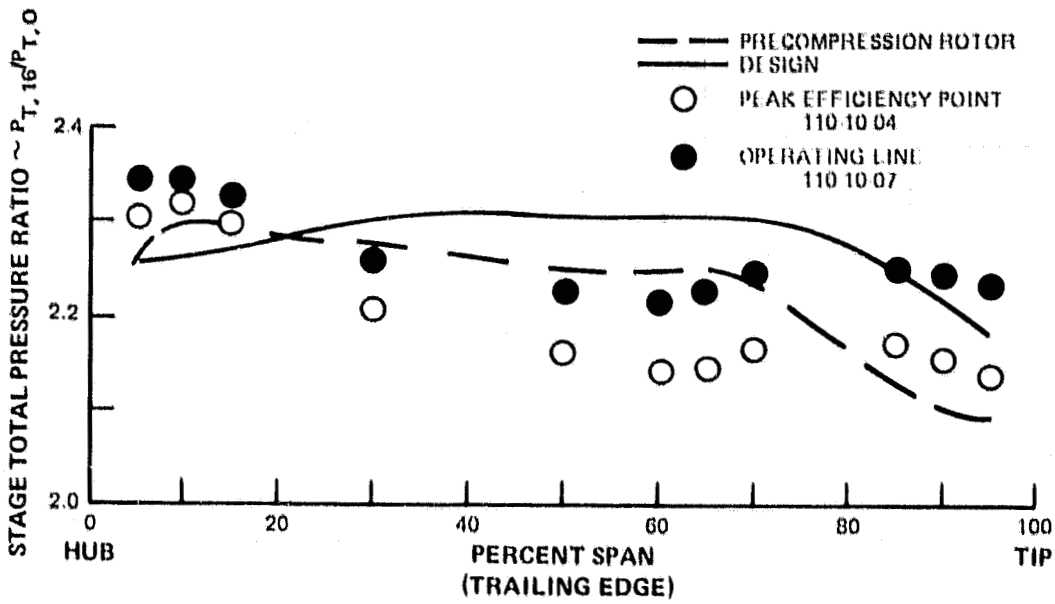


Figure 25 Stage Total Pressure Profile

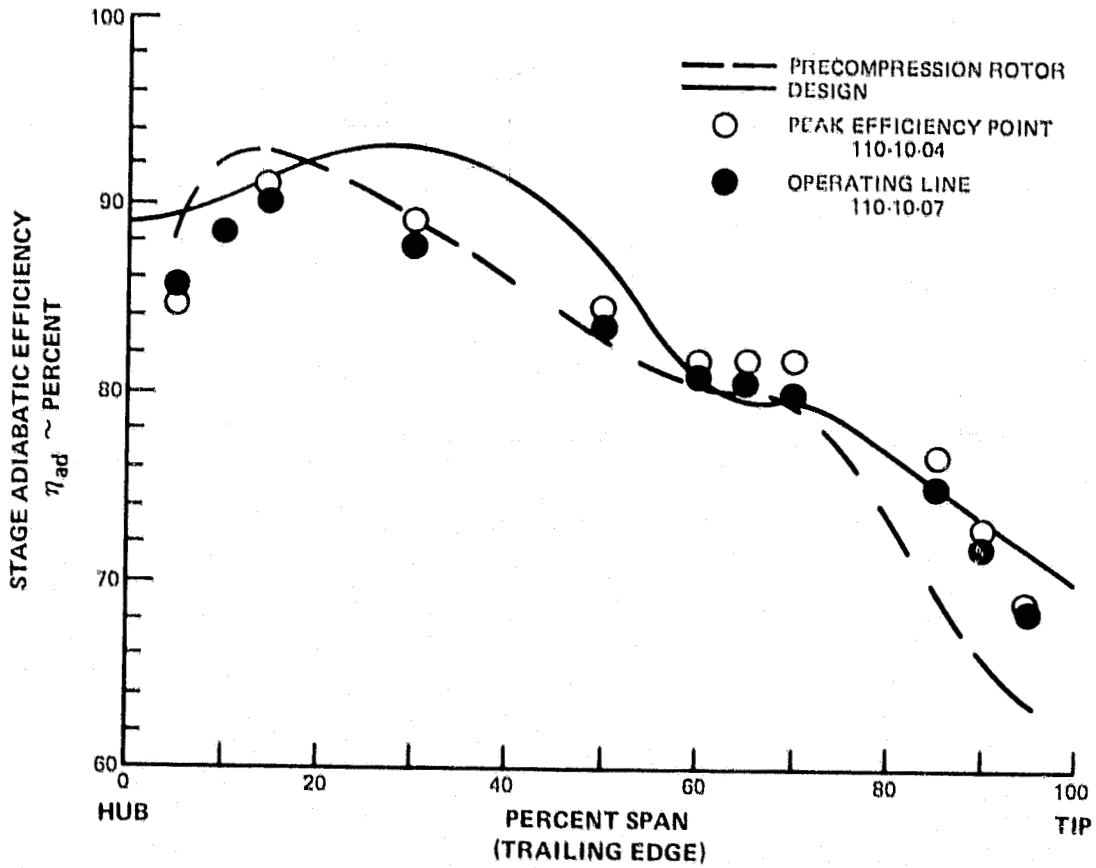


Figure 26 Stage Efficiency Profile

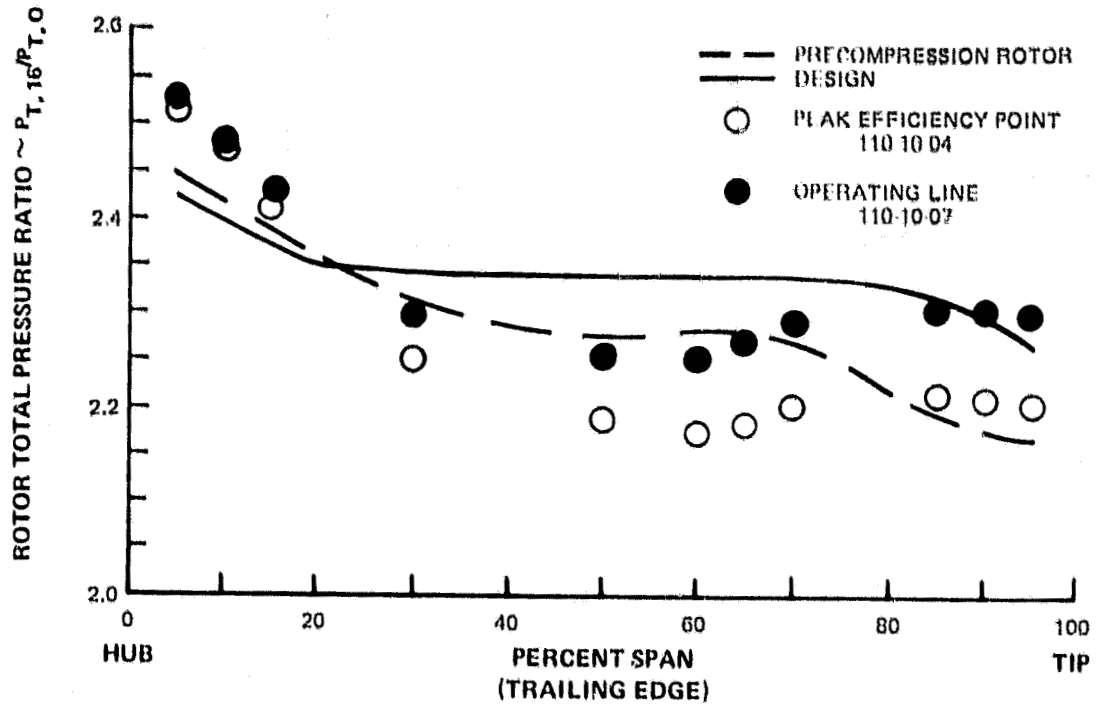


Figure 27 Rotor Total Pressure Profile

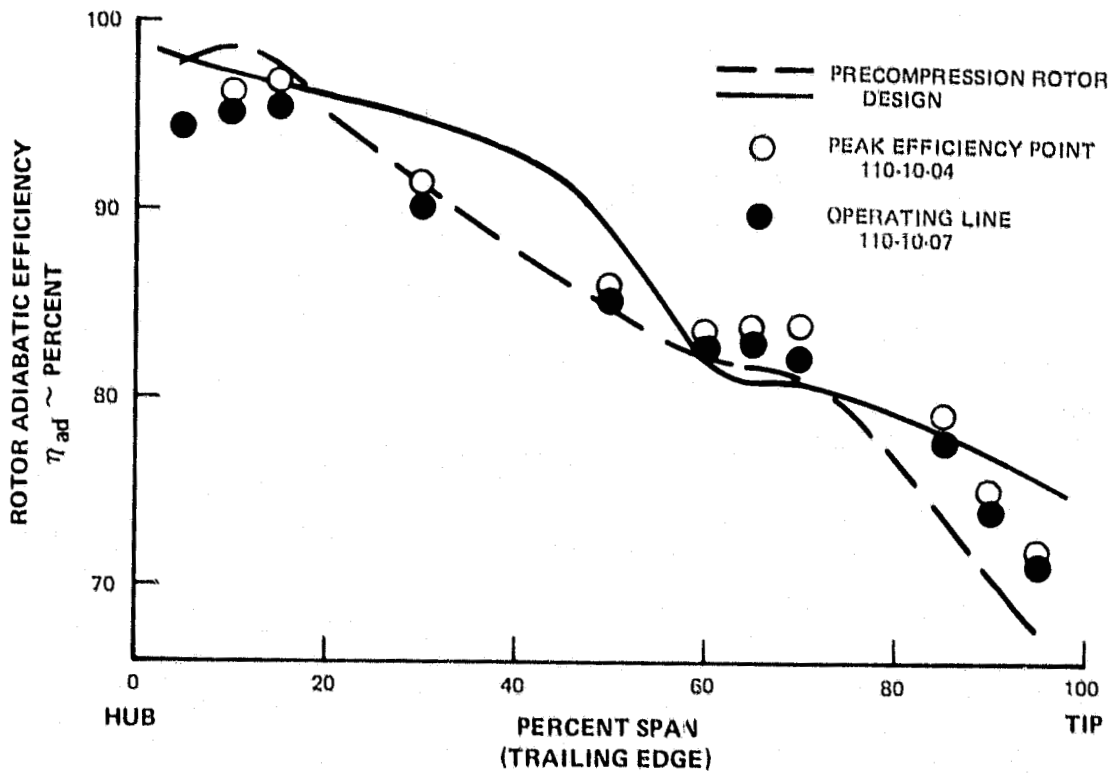


Figure 28 Rotor Efficiency Profile

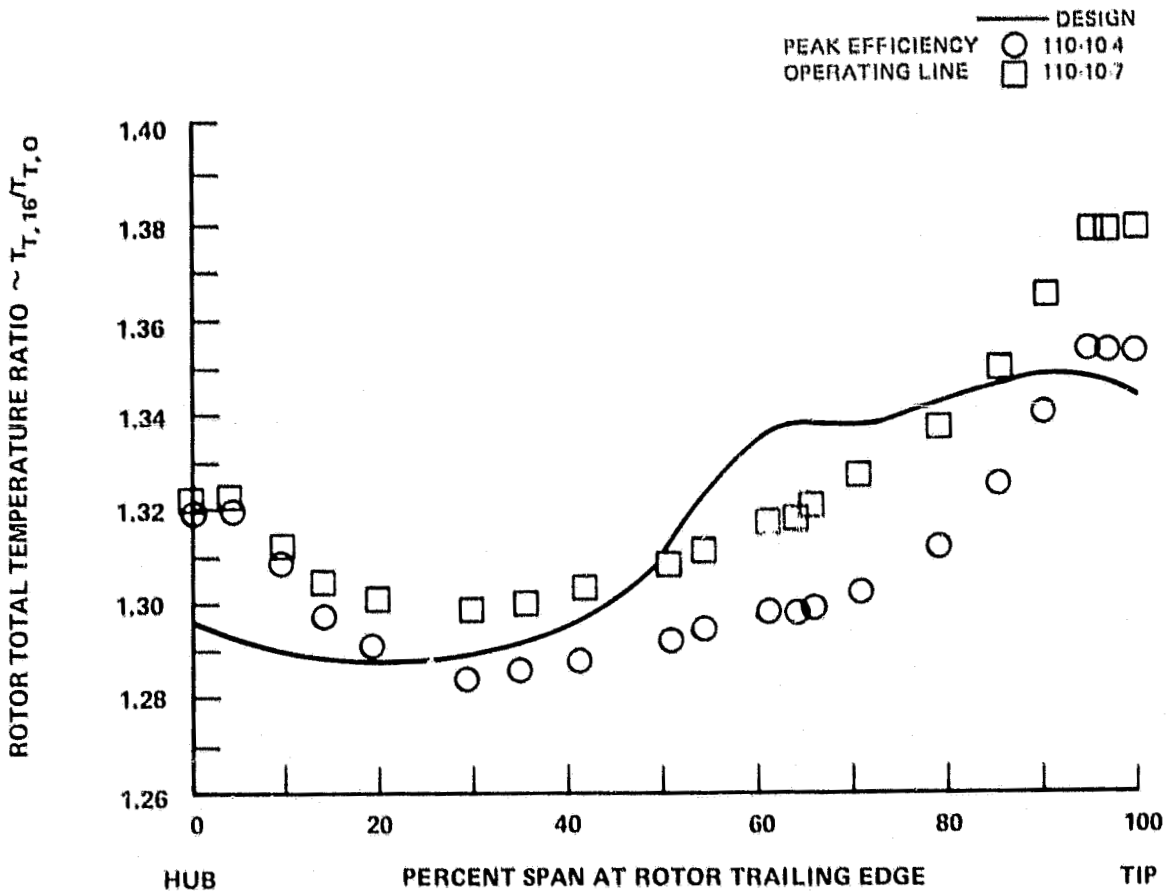


Figure 29 Rotor Total Temperature Profile

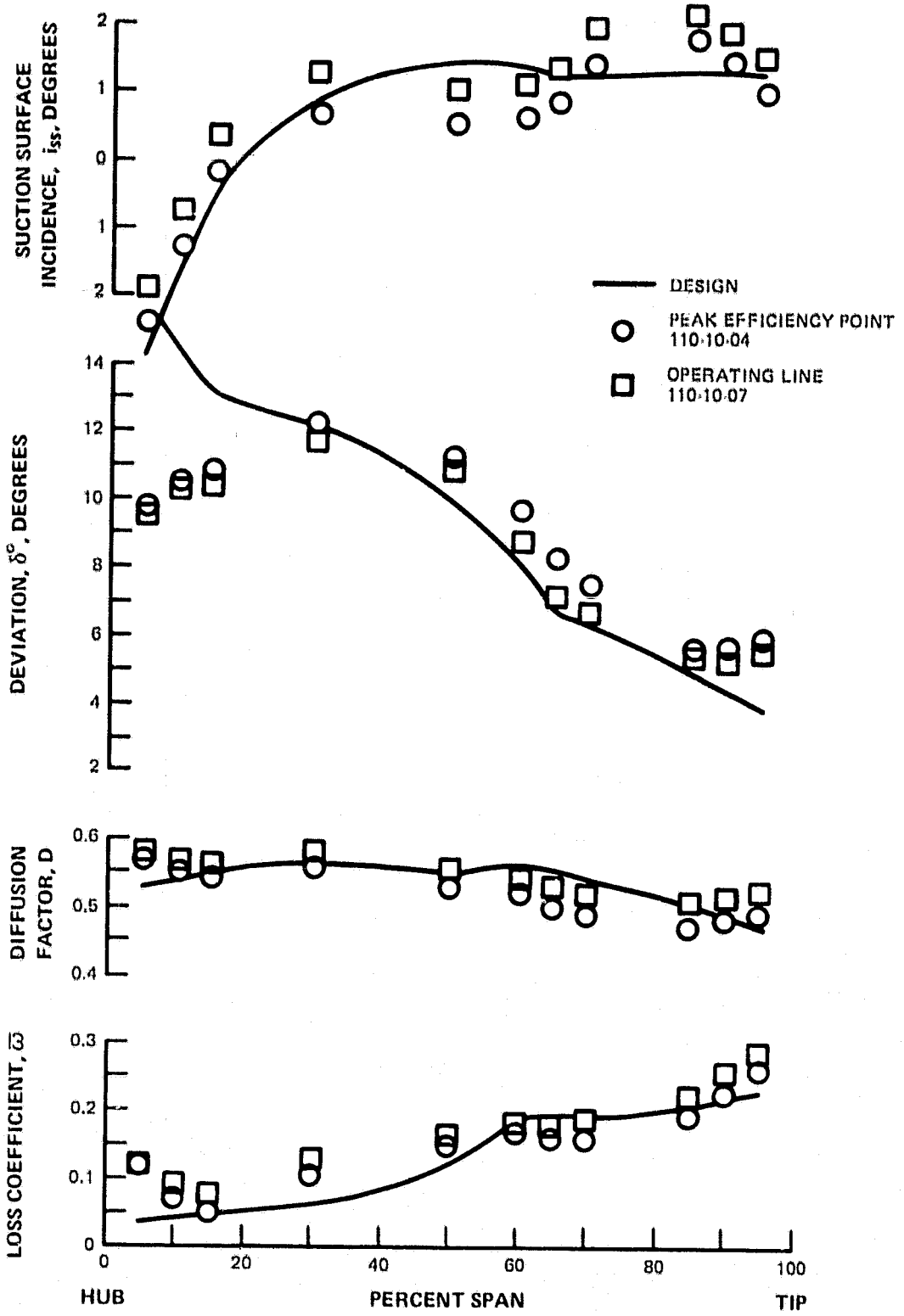


Figure 30 Rotor Blade Element Performance vs Span

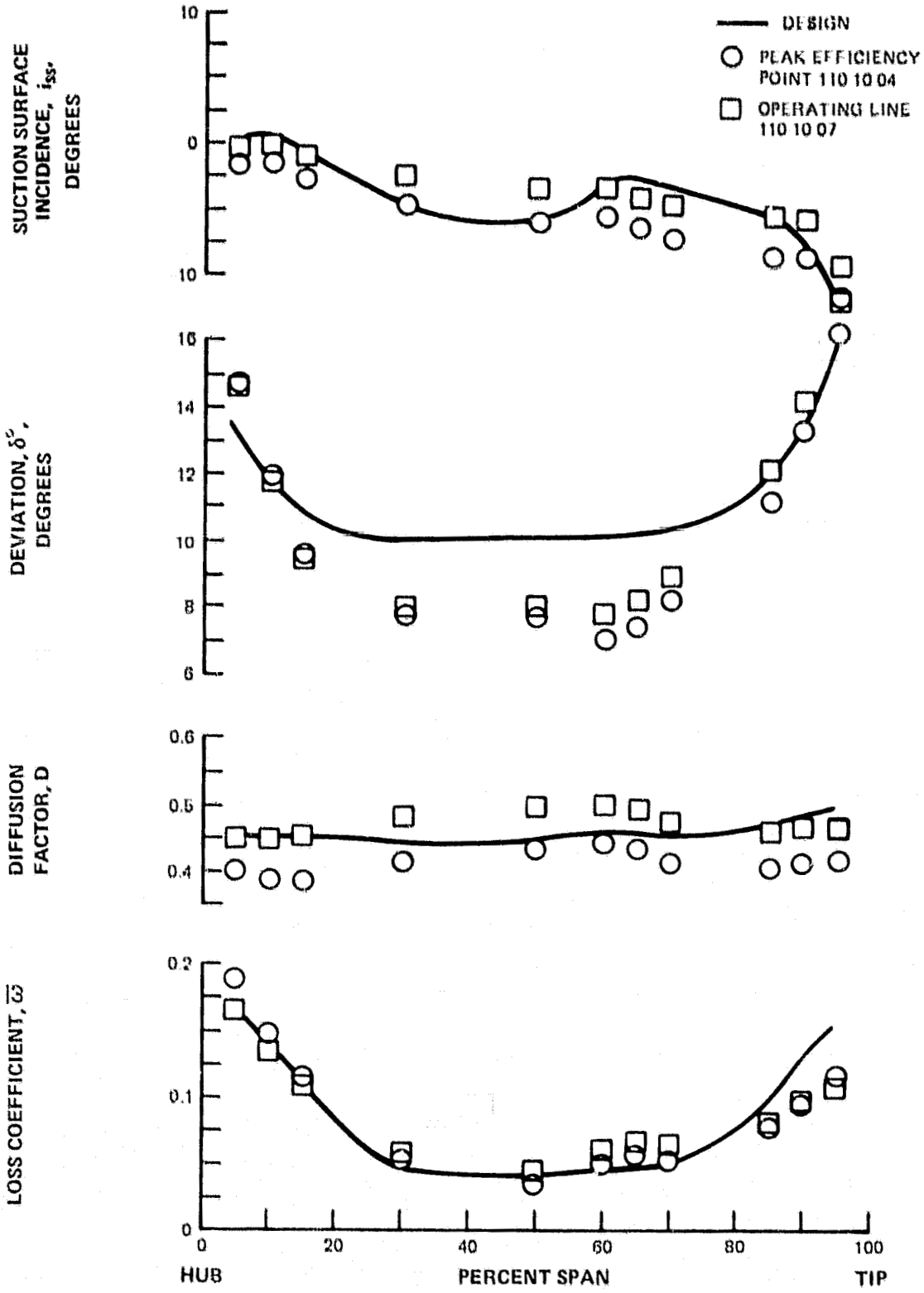


Figure 31 Stator Blade Element Performance vs Span

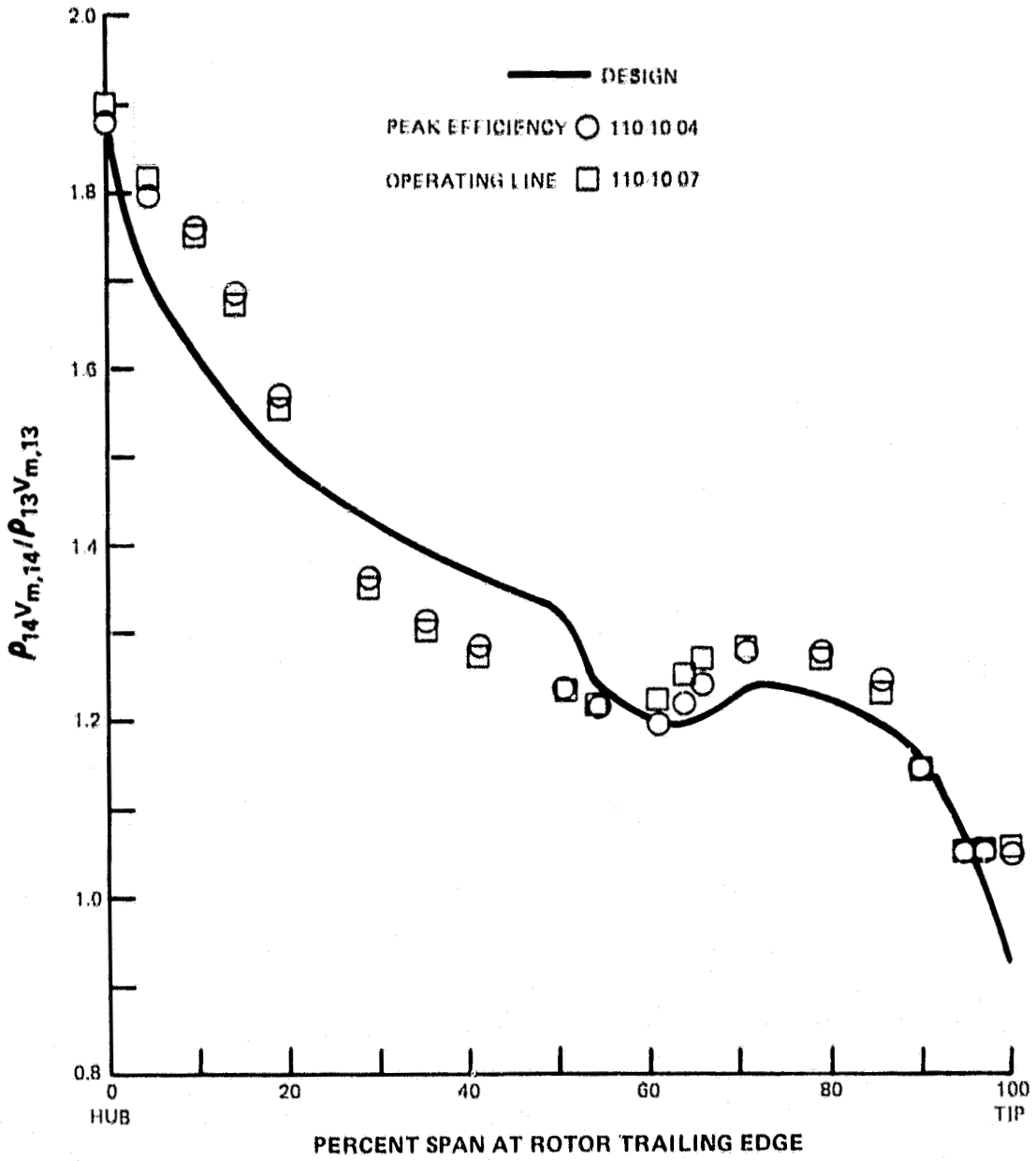


Figure 32 Ratio of Density - Meridional Velocity Across the Rotor

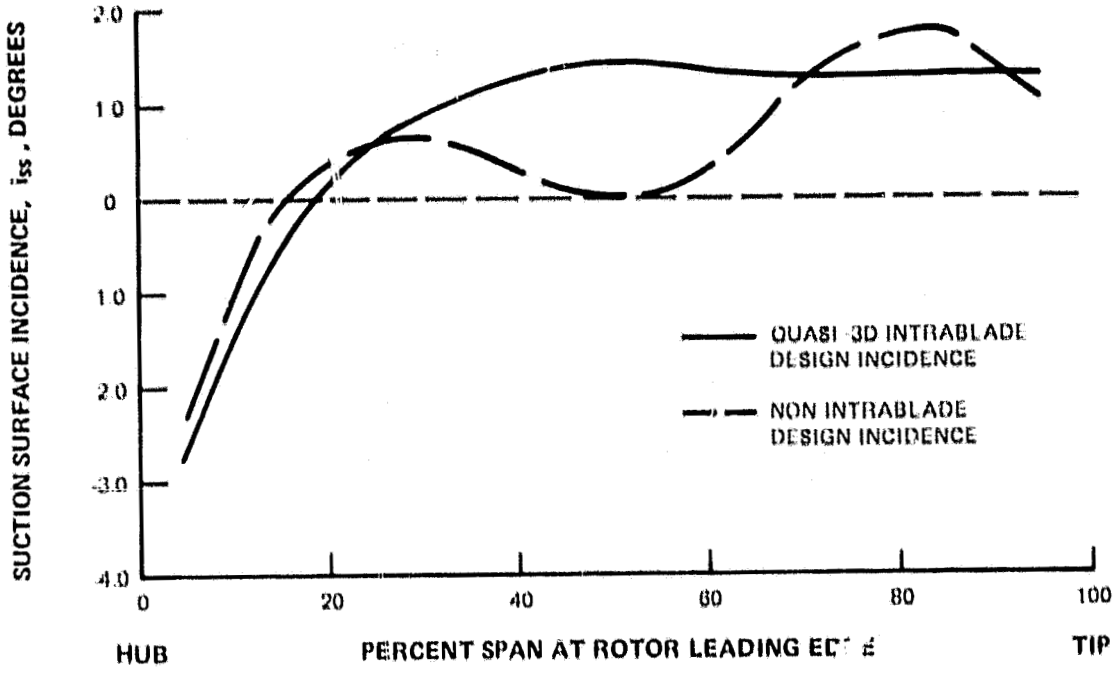


Figure 33 Design Incidence Evaluated with Intrablade and Non-Intrablade Through Flow Calculations

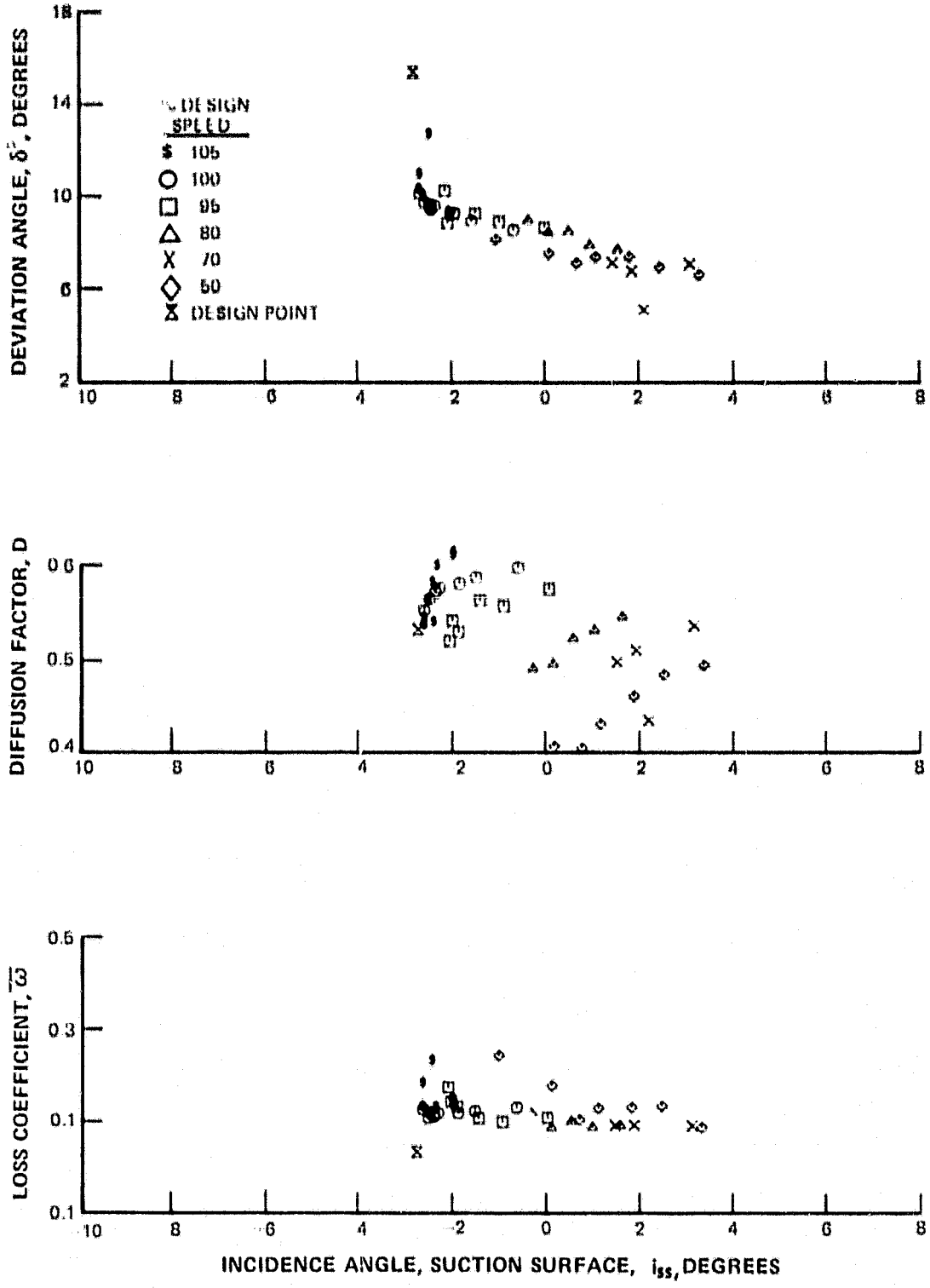


Figure 34a Rotor Blade Element Performance vs Incidence
(Five Percent Span)

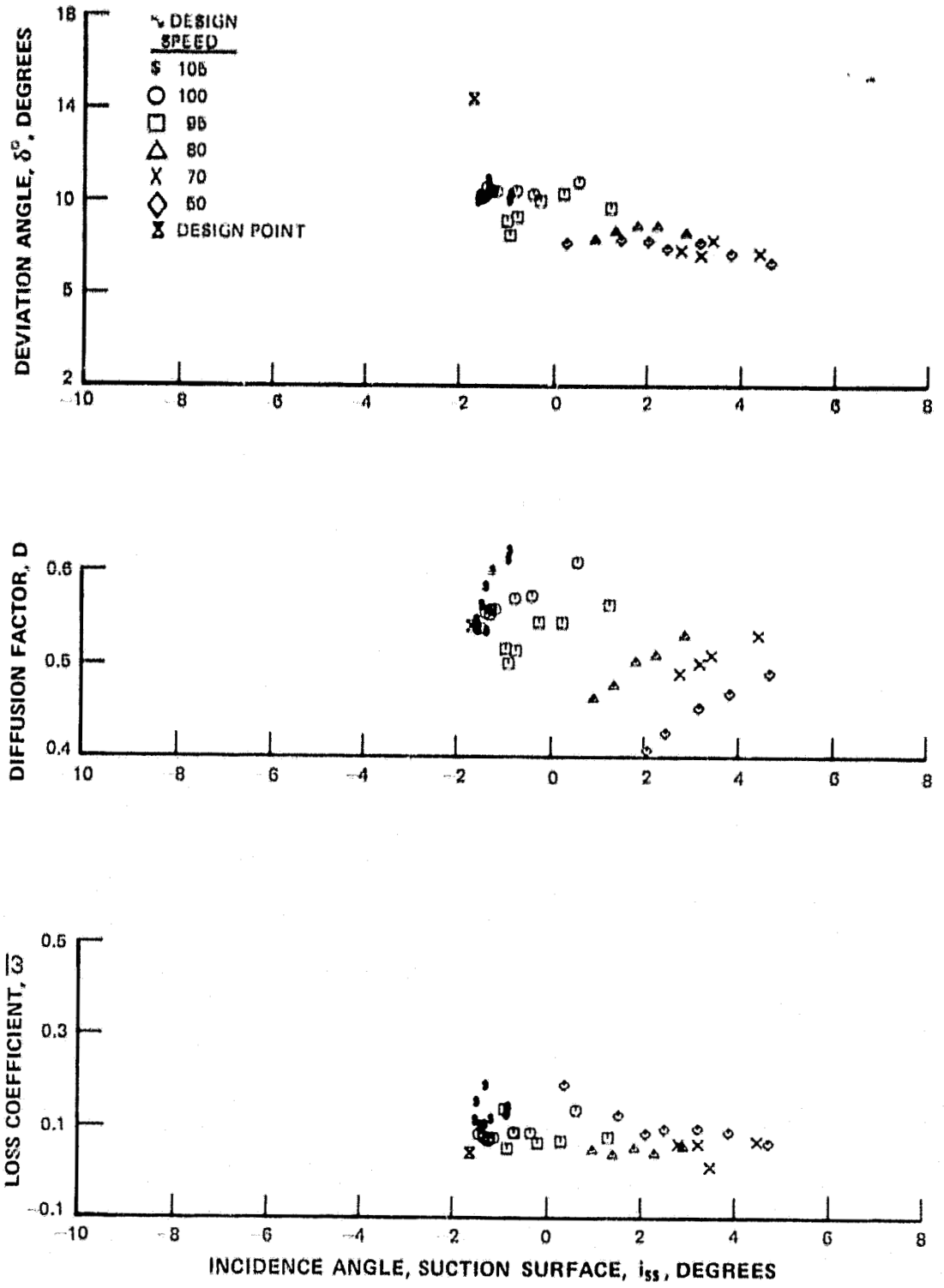


Figure 34b Rotor Blade Element Performance vs Incidence
(Ten Percent Span)

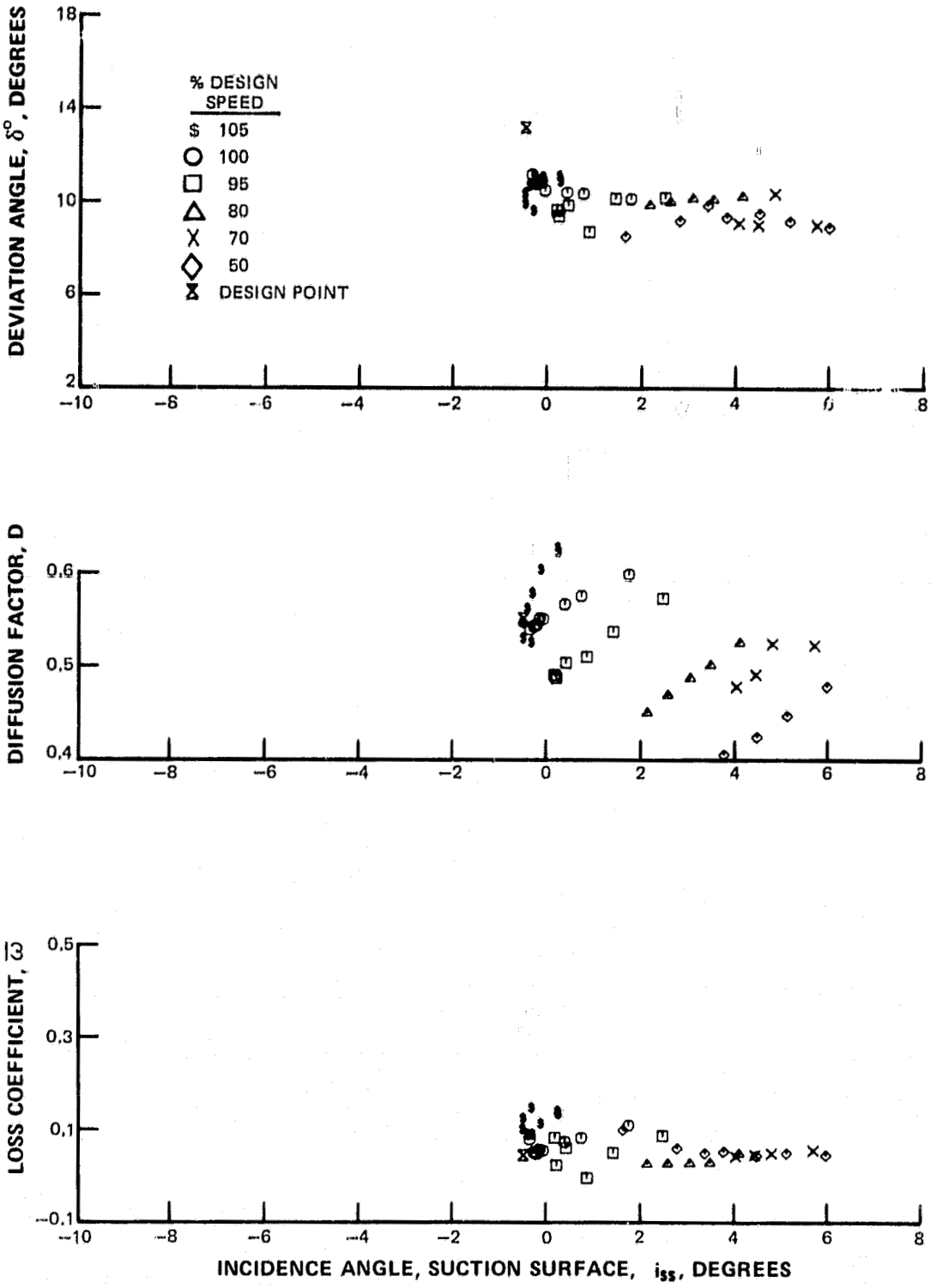


Figure 34c Rotor Blade Element Performance vs Incidence (Fifteen Percent Span)

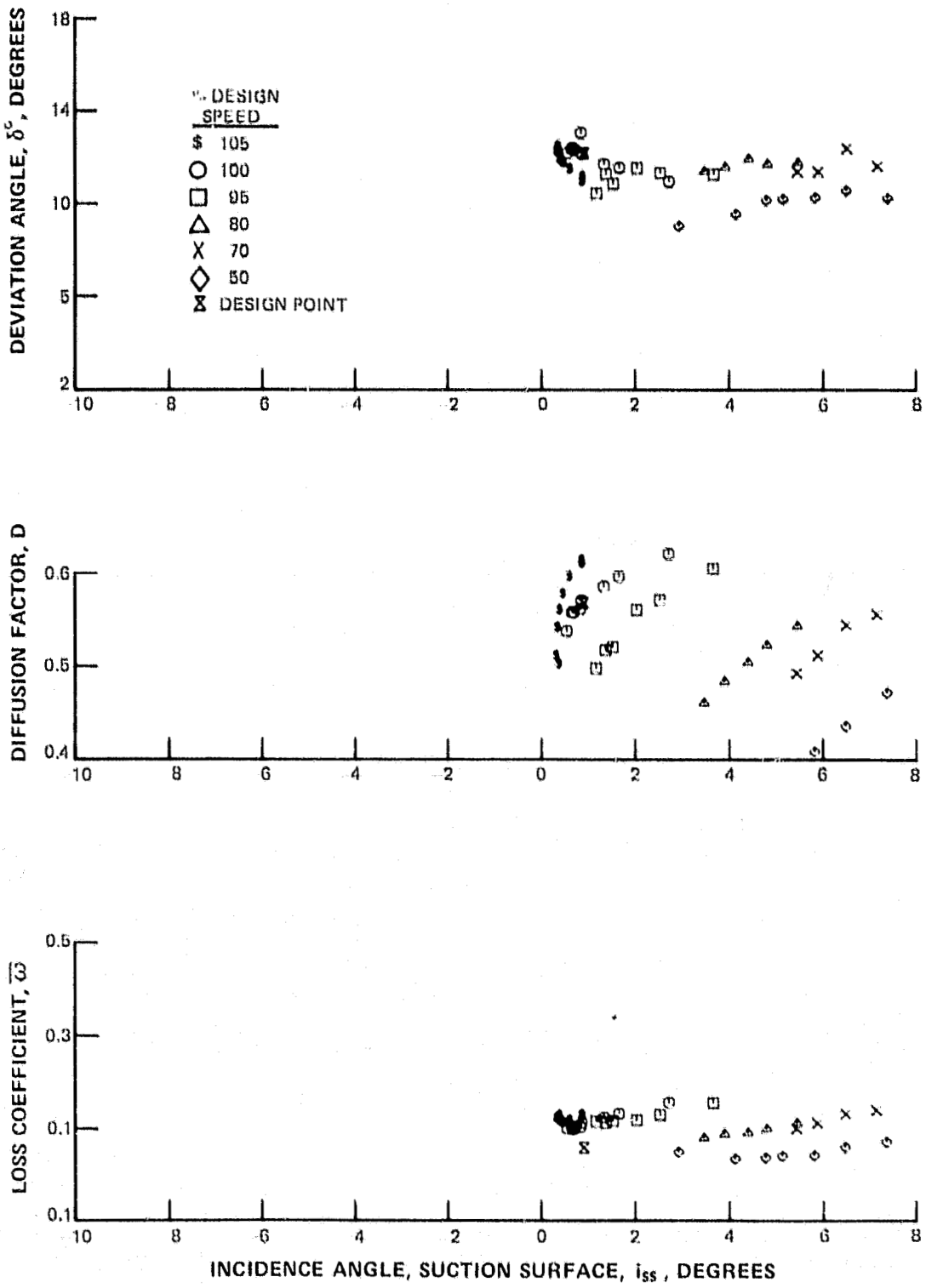


Figure 34d Rotor Blade Element Performance vs Incidence (Thirty Percent Span)

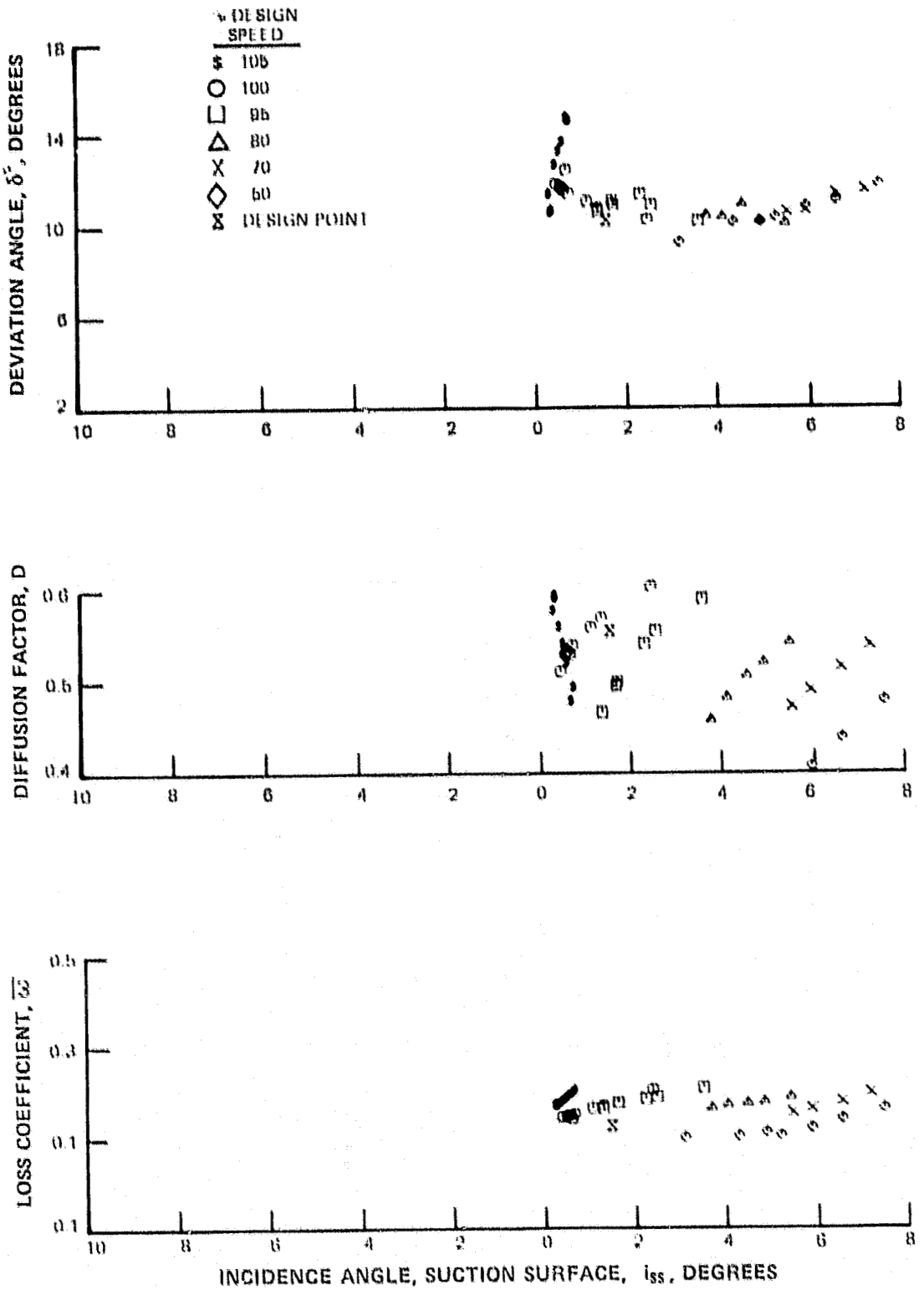


Figure 34e Rotor Blade Element Performance vs Incidence
(Fifty Percent Span)

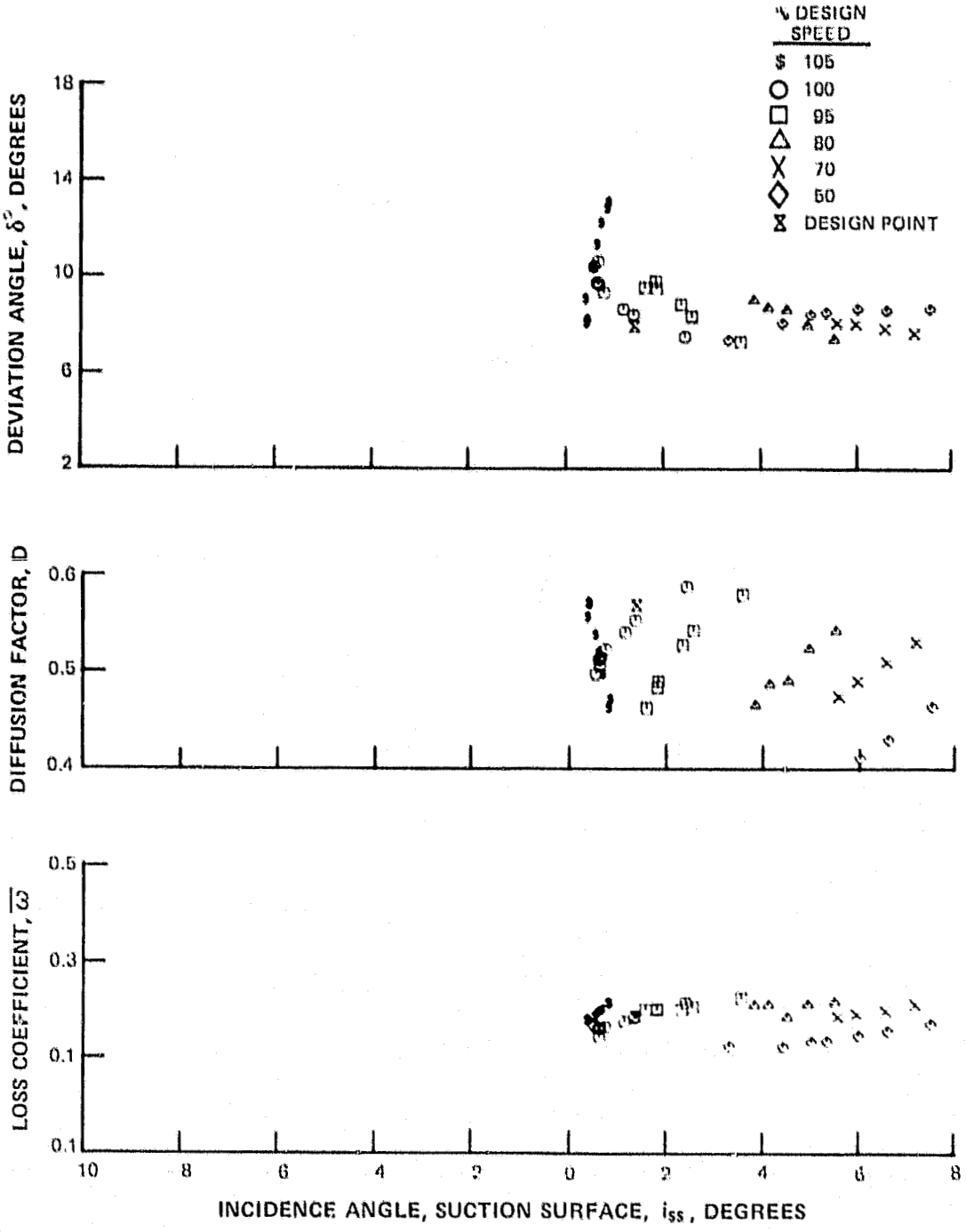


Figure 34f Rotor Blade Element Performance vs Incidence
(Sixty Percent Span)

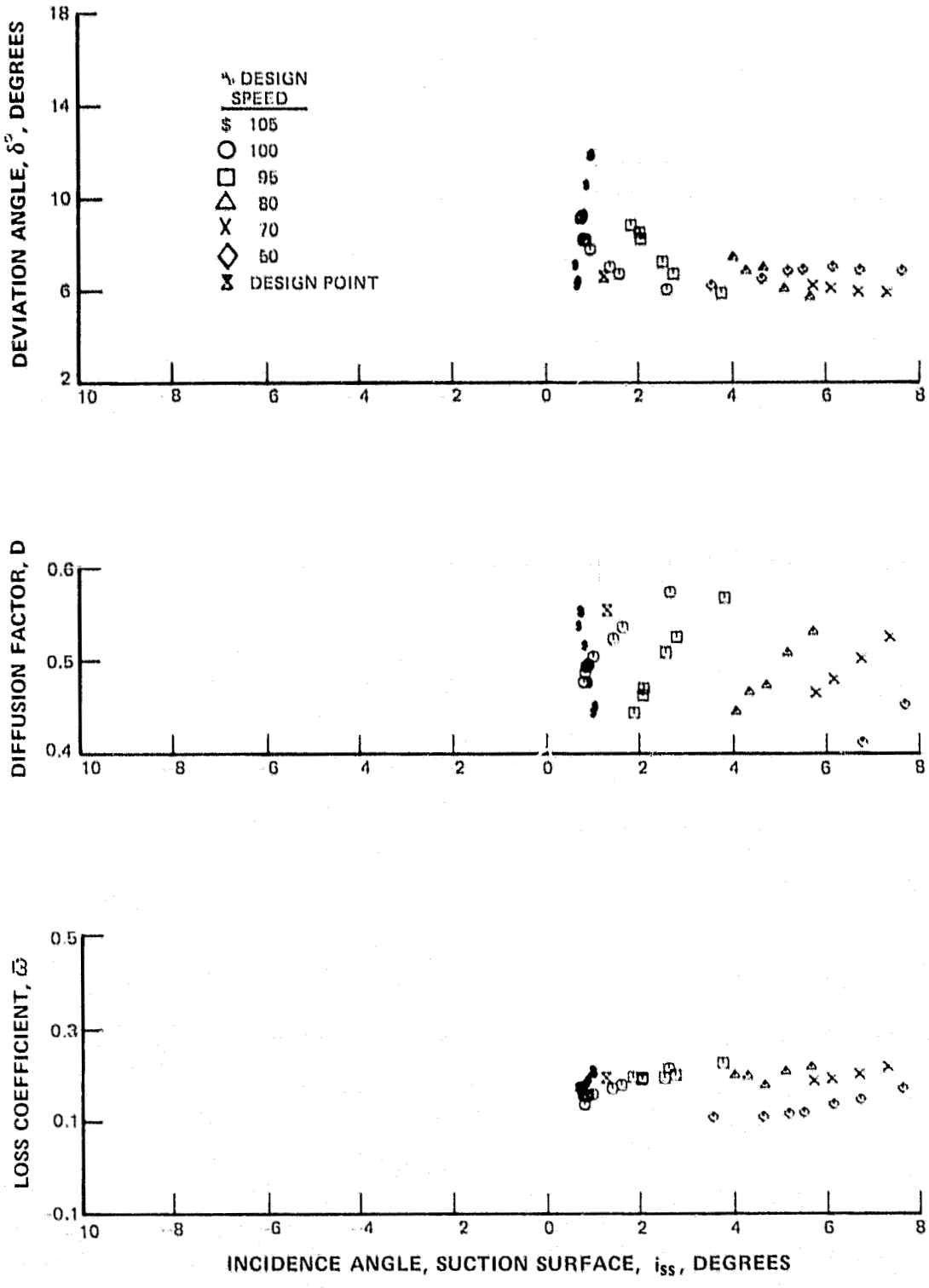


Figure 34g Rotor Blade Element Performance vs Incidence (Sixty-Five Percent Span)

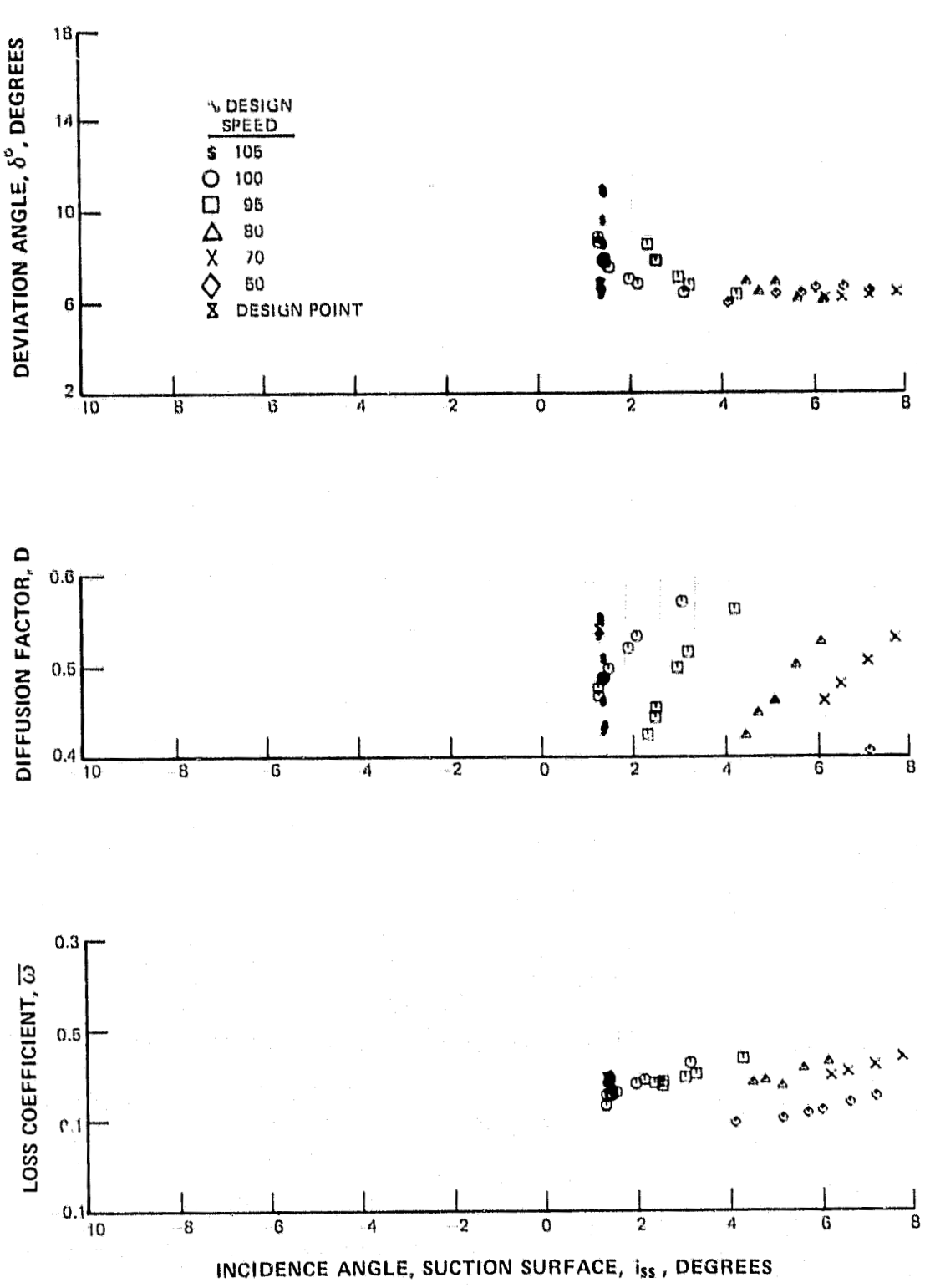


Figure 34h Rotor Blade Element Performance vs Incidence (Seventy Percent Span)

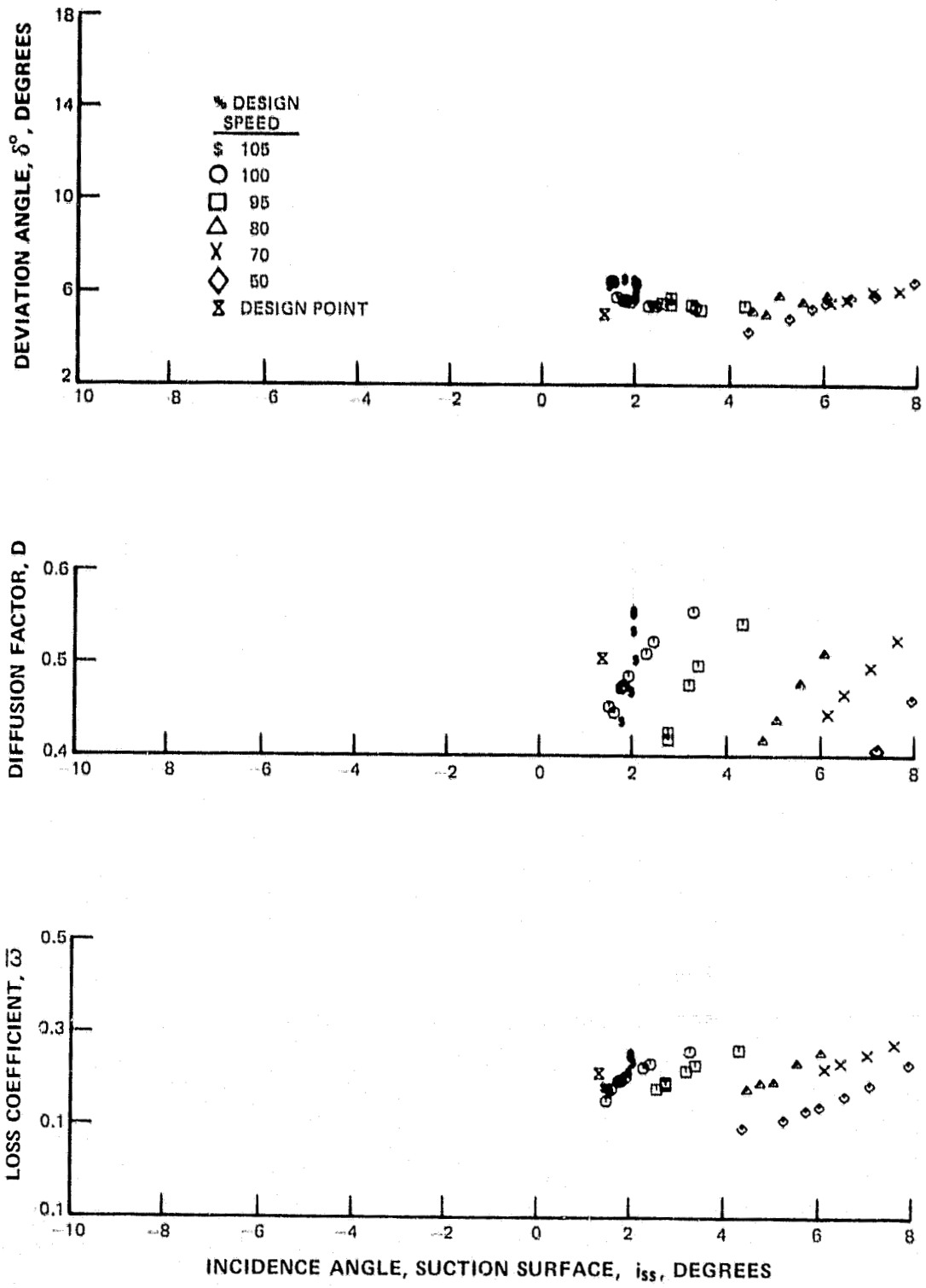


Figure 34i Rotor Blade Element Performance vs Incidence (Eighty-Five Percent Span)

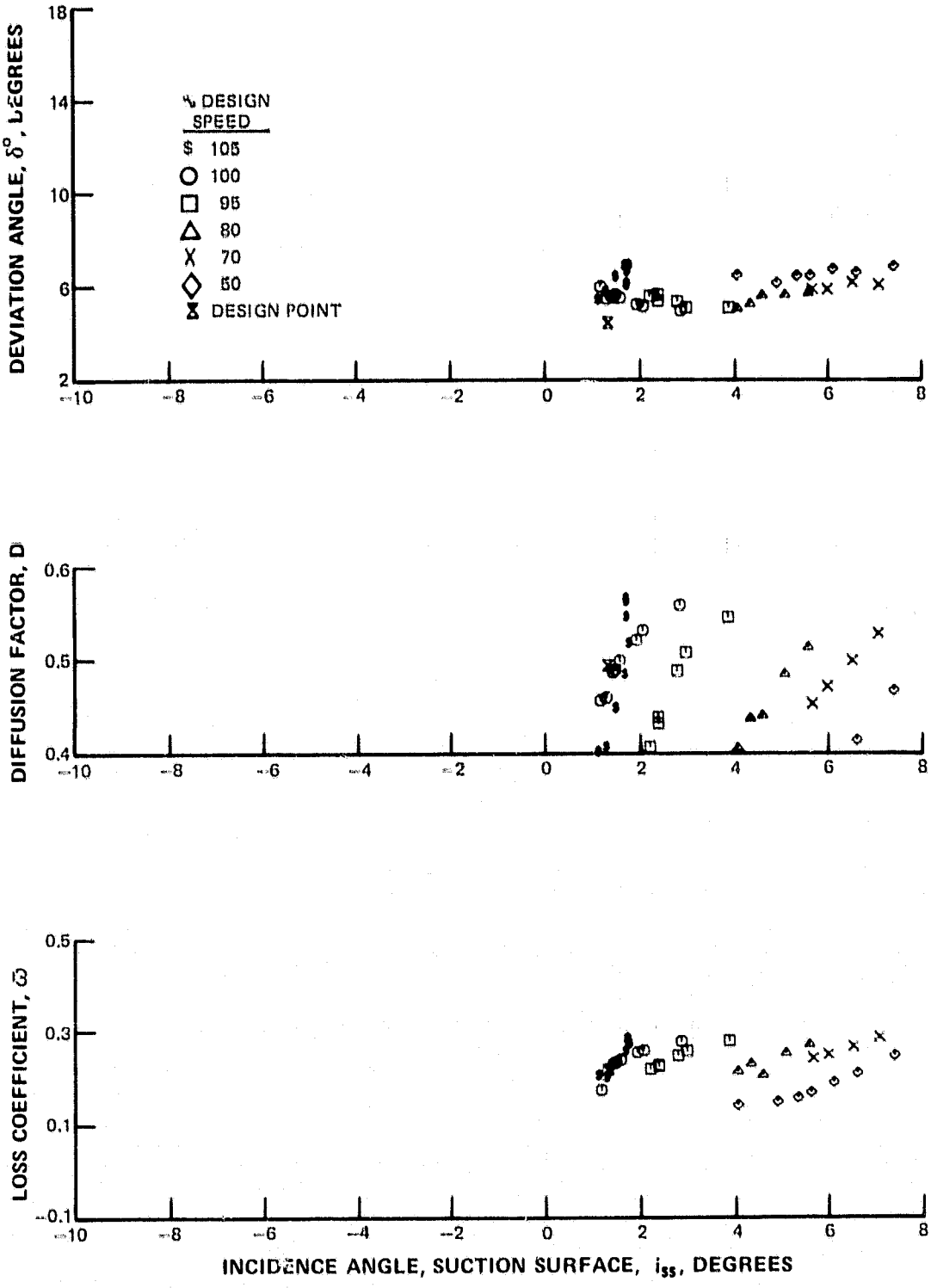


Figure 34j Rotor Blade Element Performance vs Incidence (Ninety Percent Span)

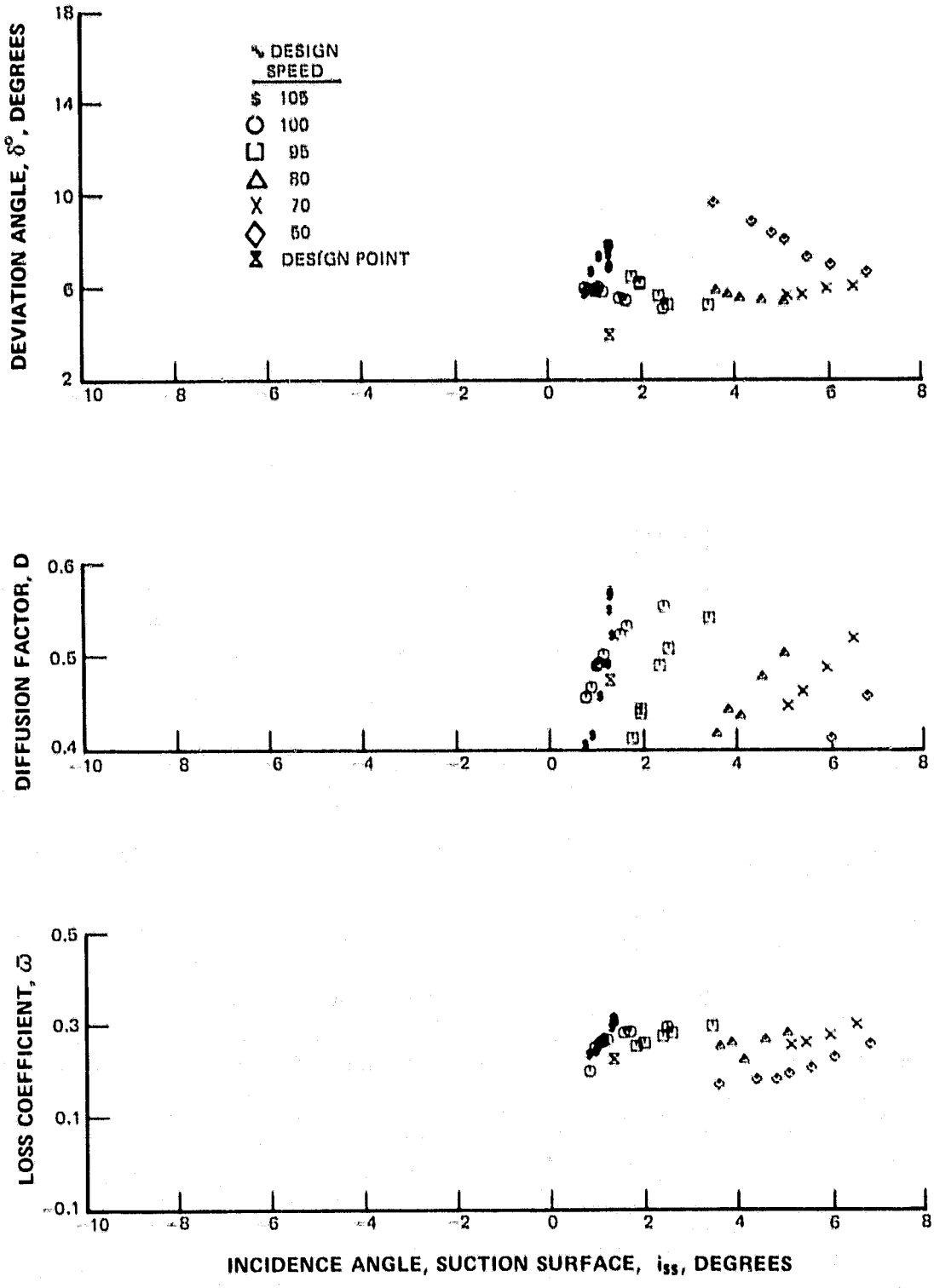


Figure 34k Rotor Blade Element Performance vs Incidence (Ninety-Five Percent Span)

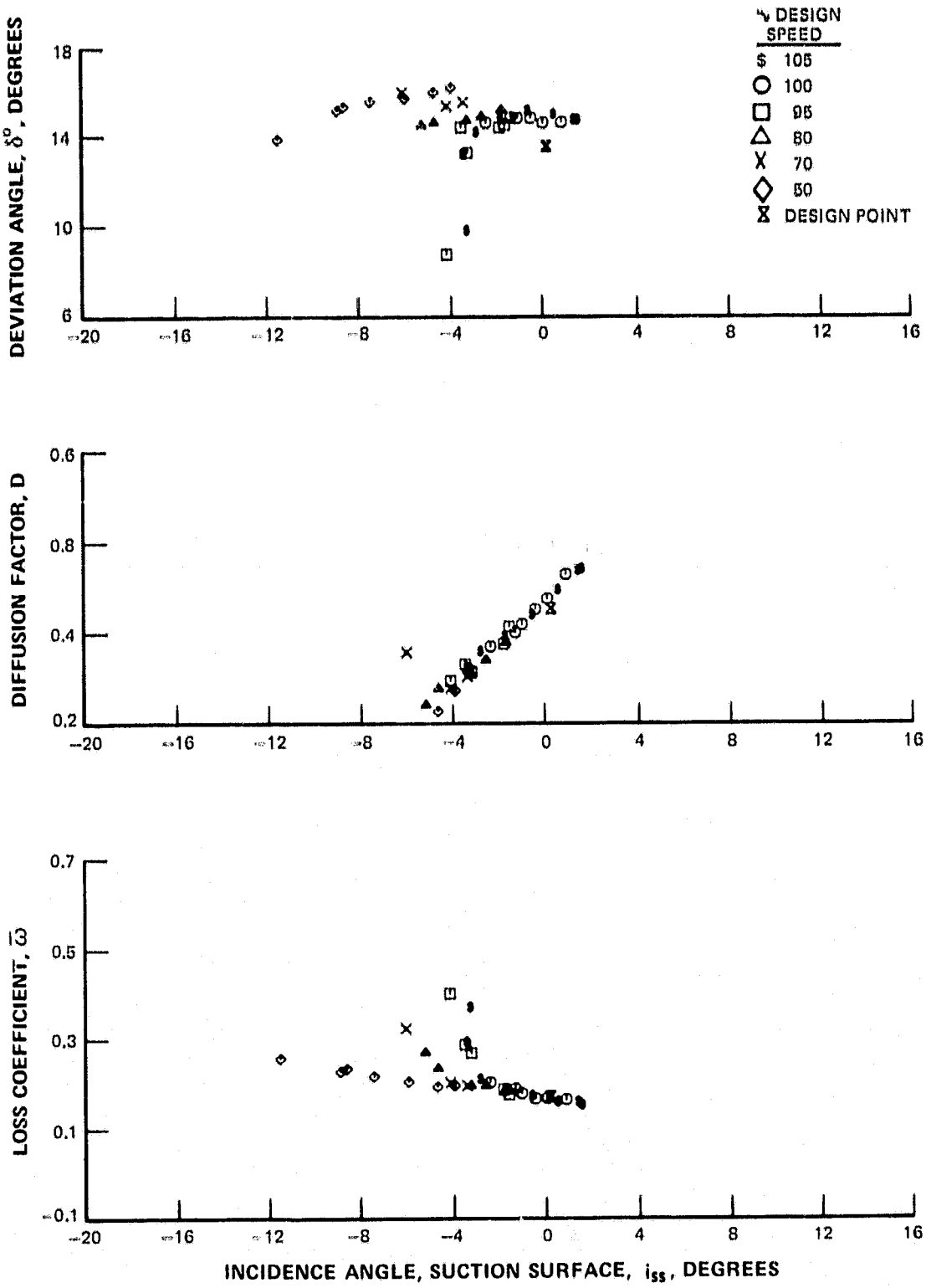


Figure 35a Stator Blade Element Performance vs Incidence (Five Percent Span)

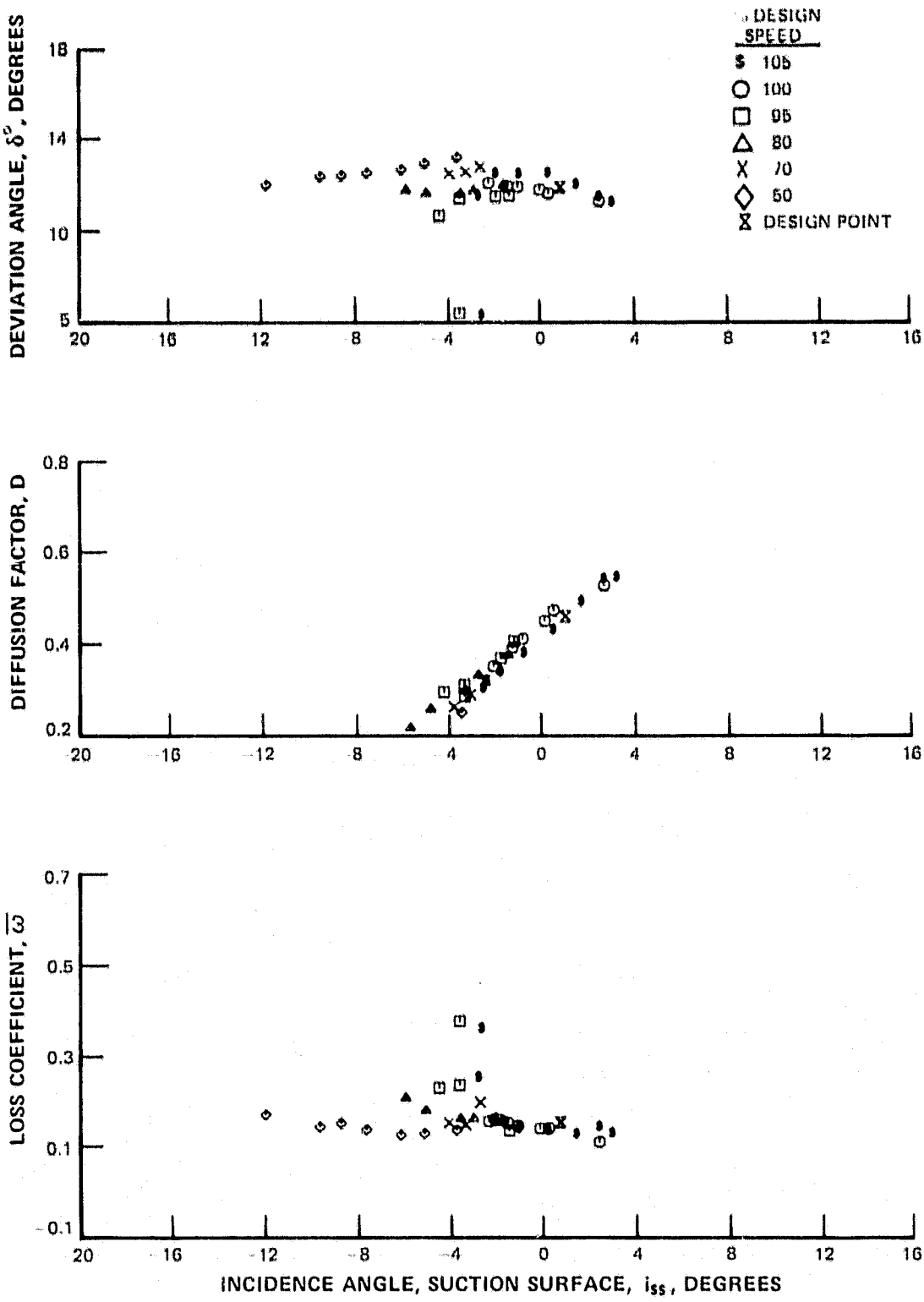


Figure 35b Stator Blade Element Performance vs Incidence (Ten Percent Span)

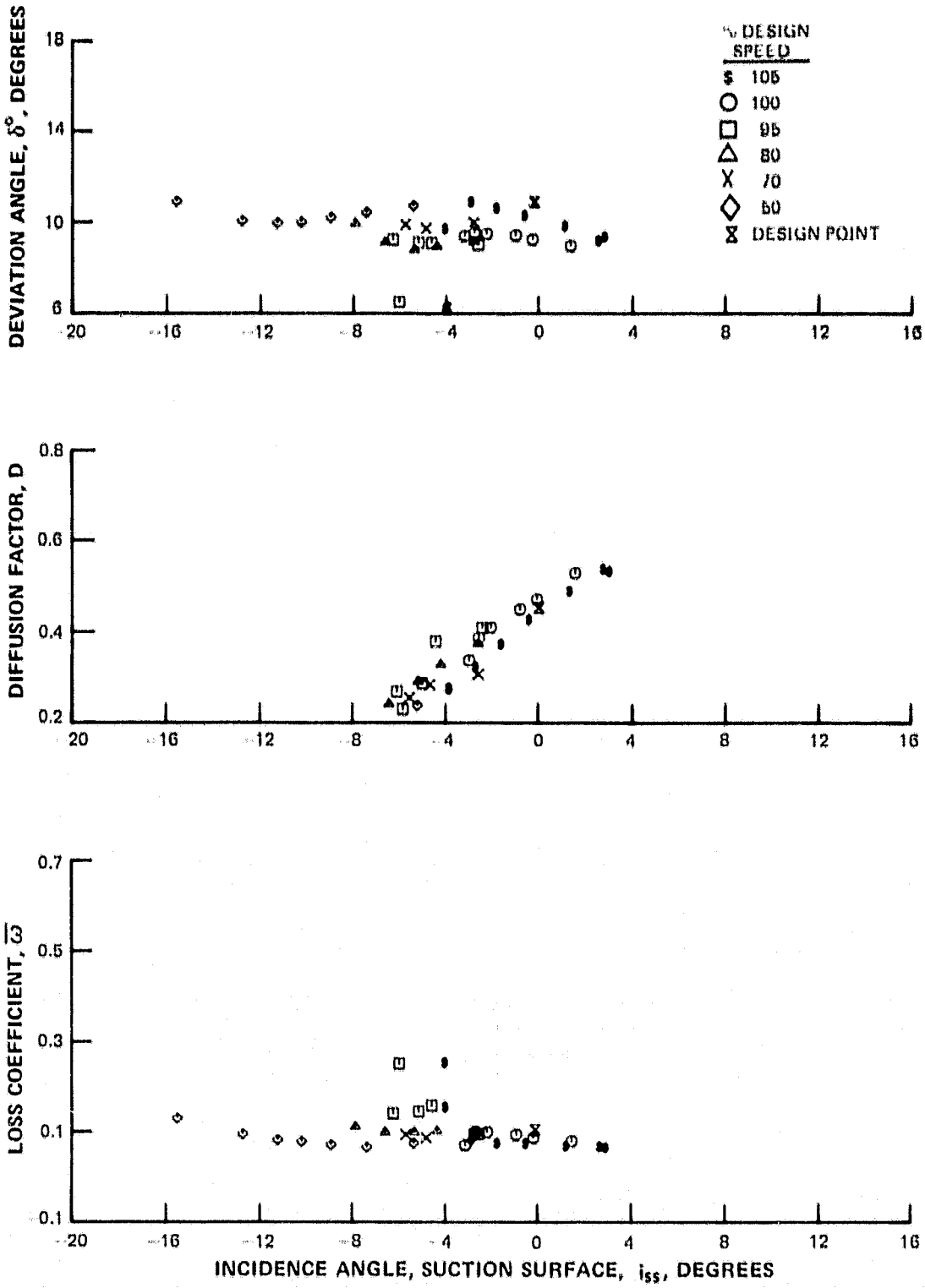


Figure 35c Stator Blade Element Performance vs Incidence (Fifteen Percent Span)

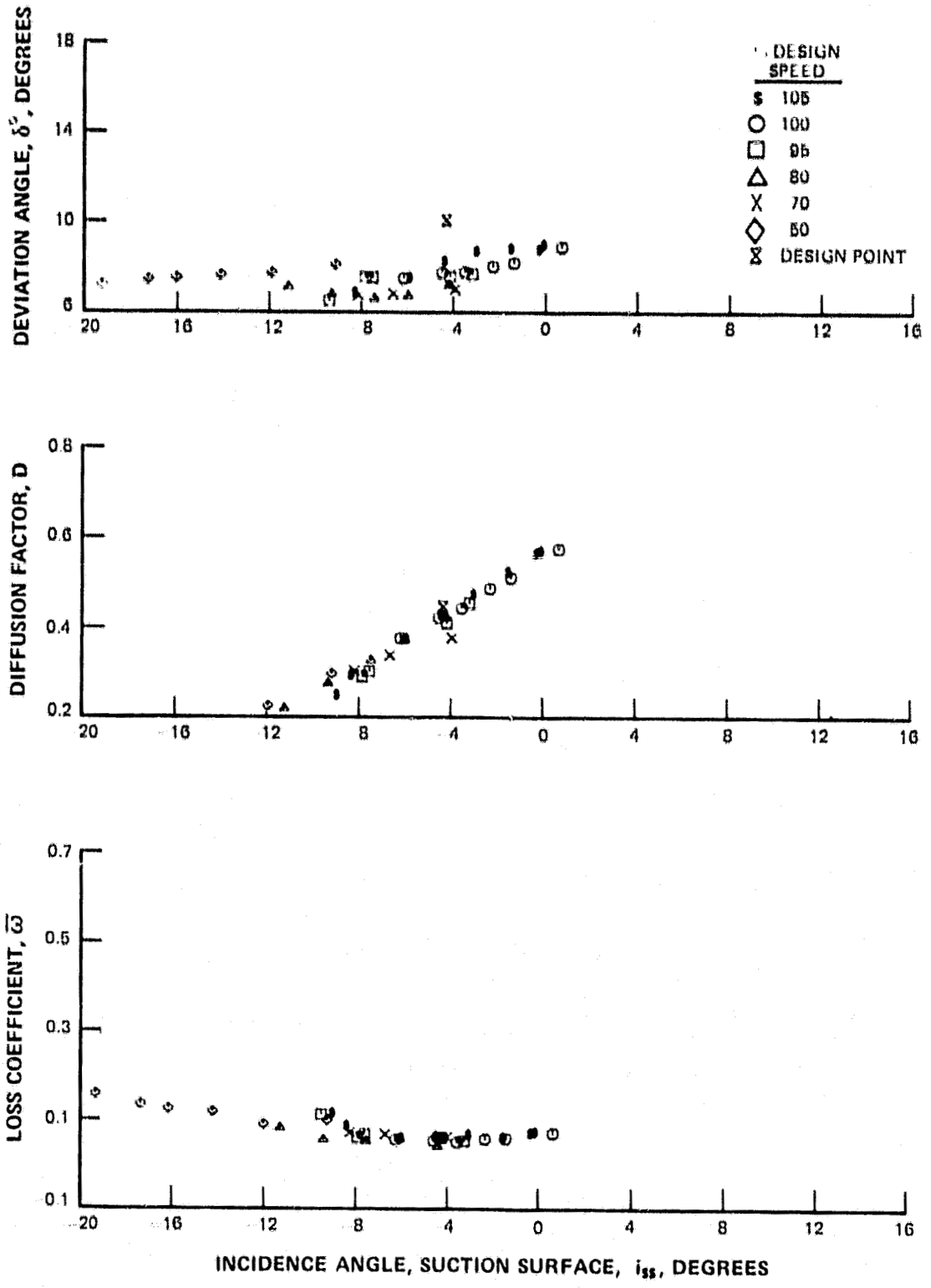


Figure 35d Stator Blade Element Performance vs Incidence (Thirty Percent Span)

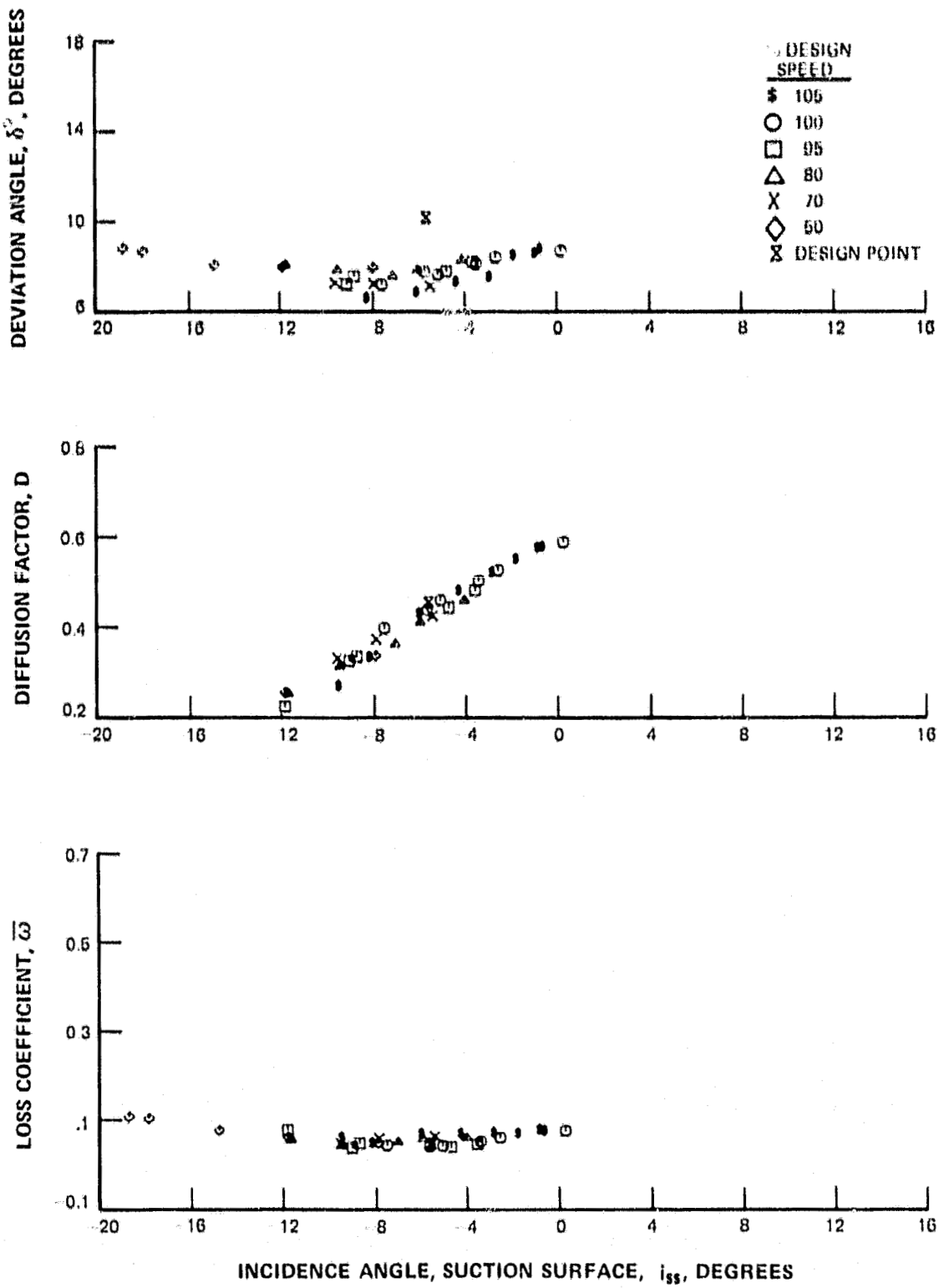


Figure 35e Stator Blade Element Performance vs Incidence (Fifty Percent Span)

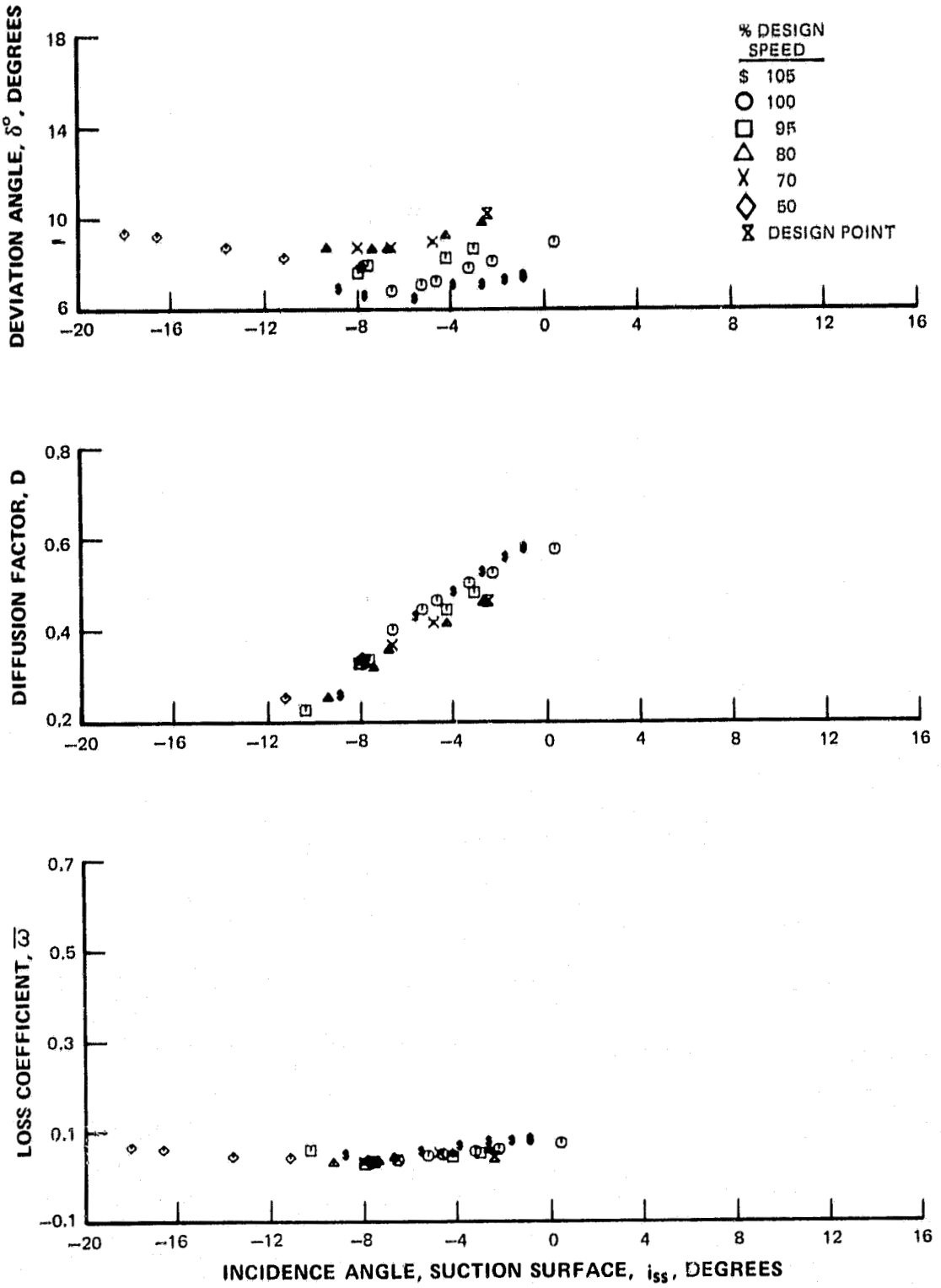


Figure 35f Stator Blade Element Performance vs Incidence (Sixty Percent Span)

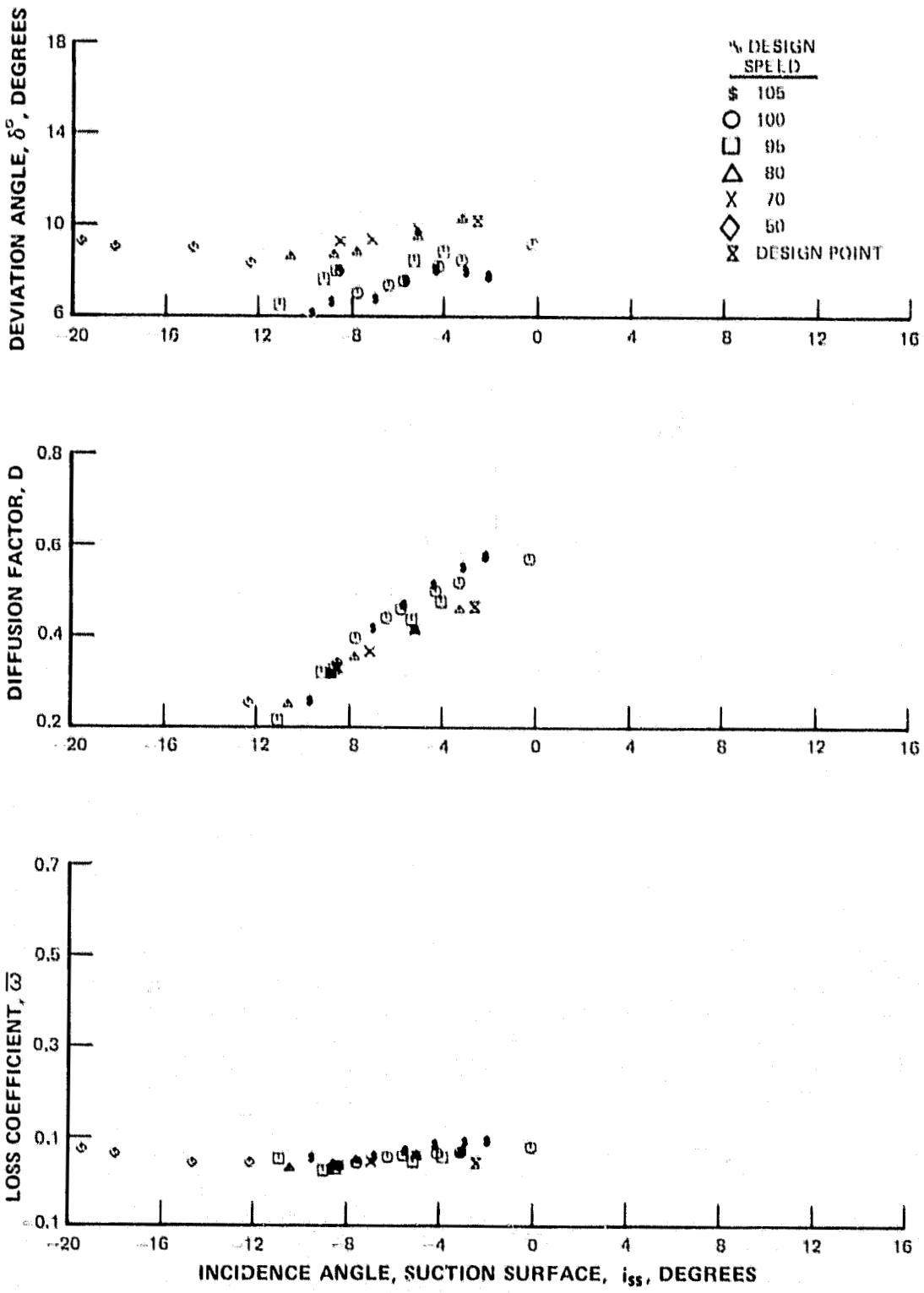


Figure 35g Stator Blade Element Performance vs Incidence (Sixty-Five Percent Span)

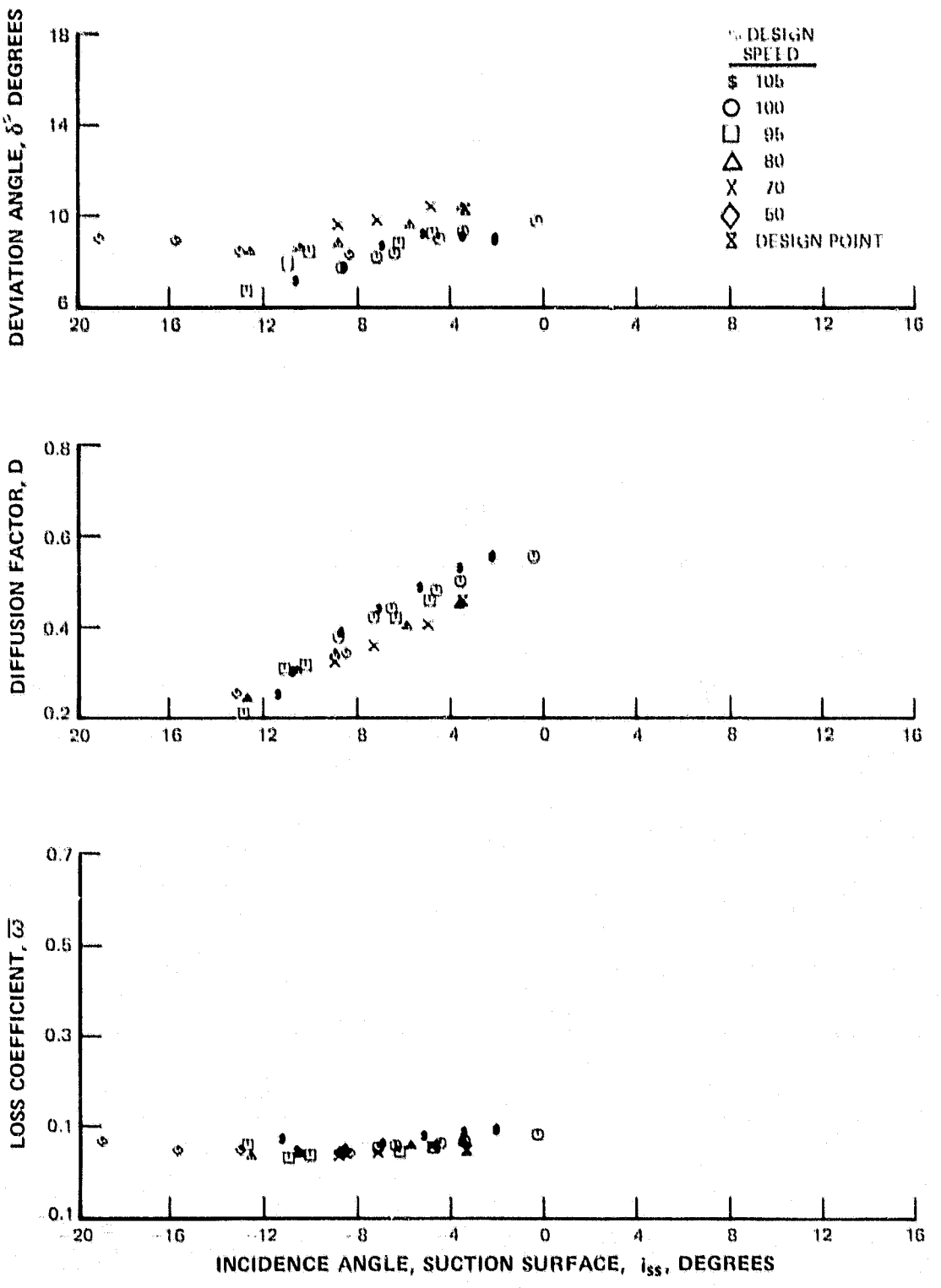


Figure 35h Stator Blade Element Performance vs Incidence (Seventy Percent Span)

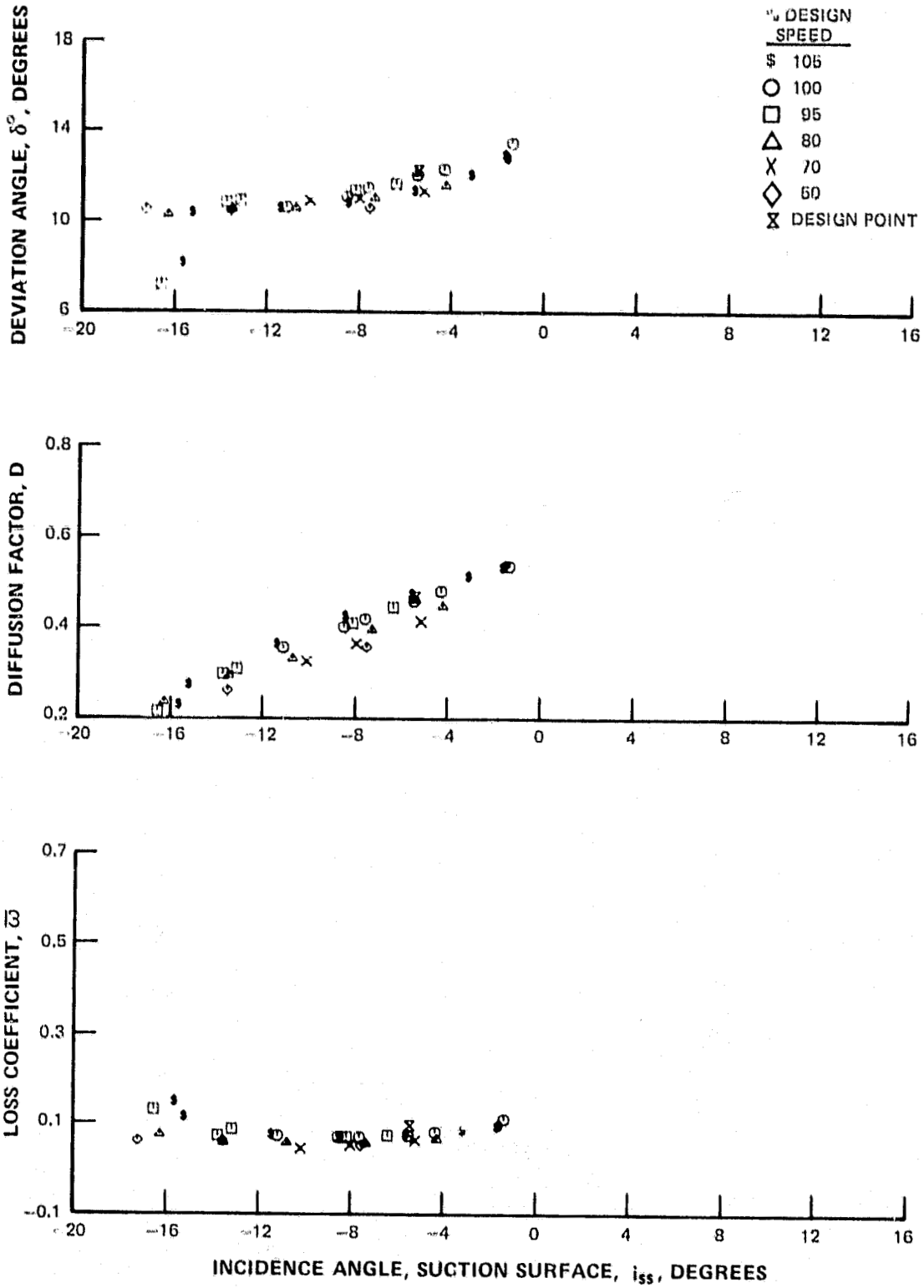


Figure 35i Stator Blade Element Performance vs Incidence (Eighty-Five Percent Span)

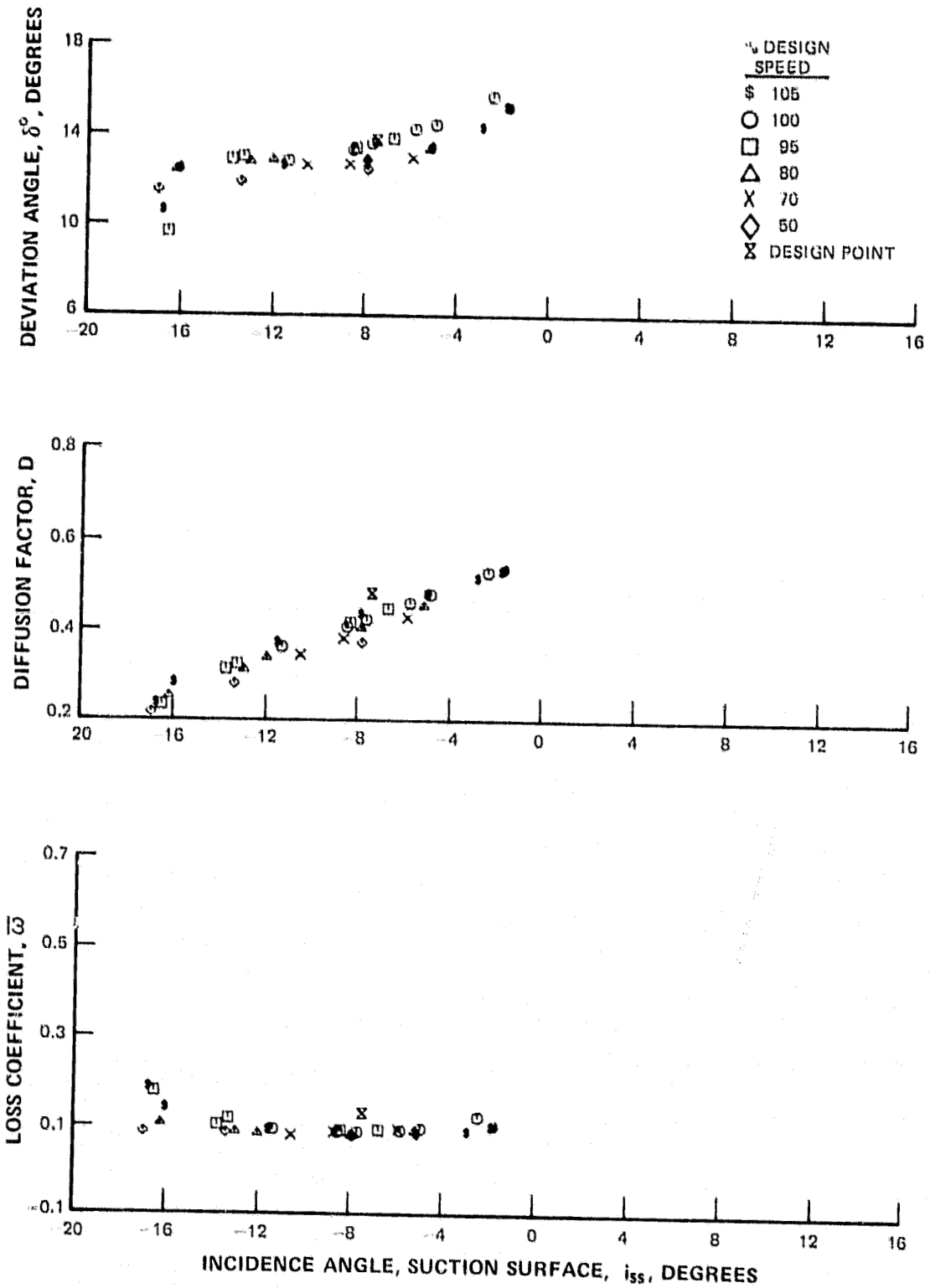


Figure 35j Stator Blade Element Performance vs Incidence (Ninety Percent Span)

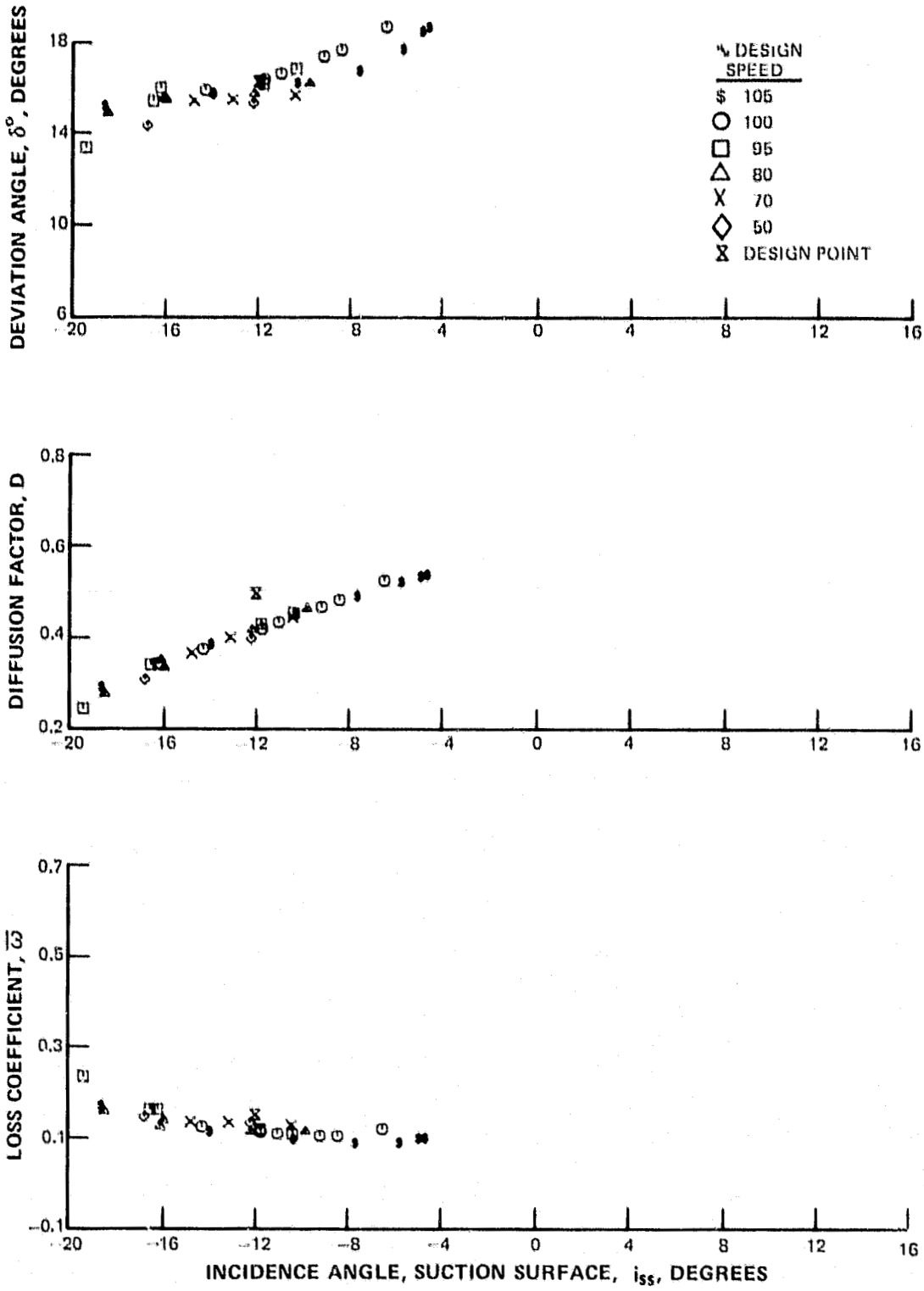


Figure 35k Stator Blade Element Performance vs Incidence (Ninety-Five Percent Span)

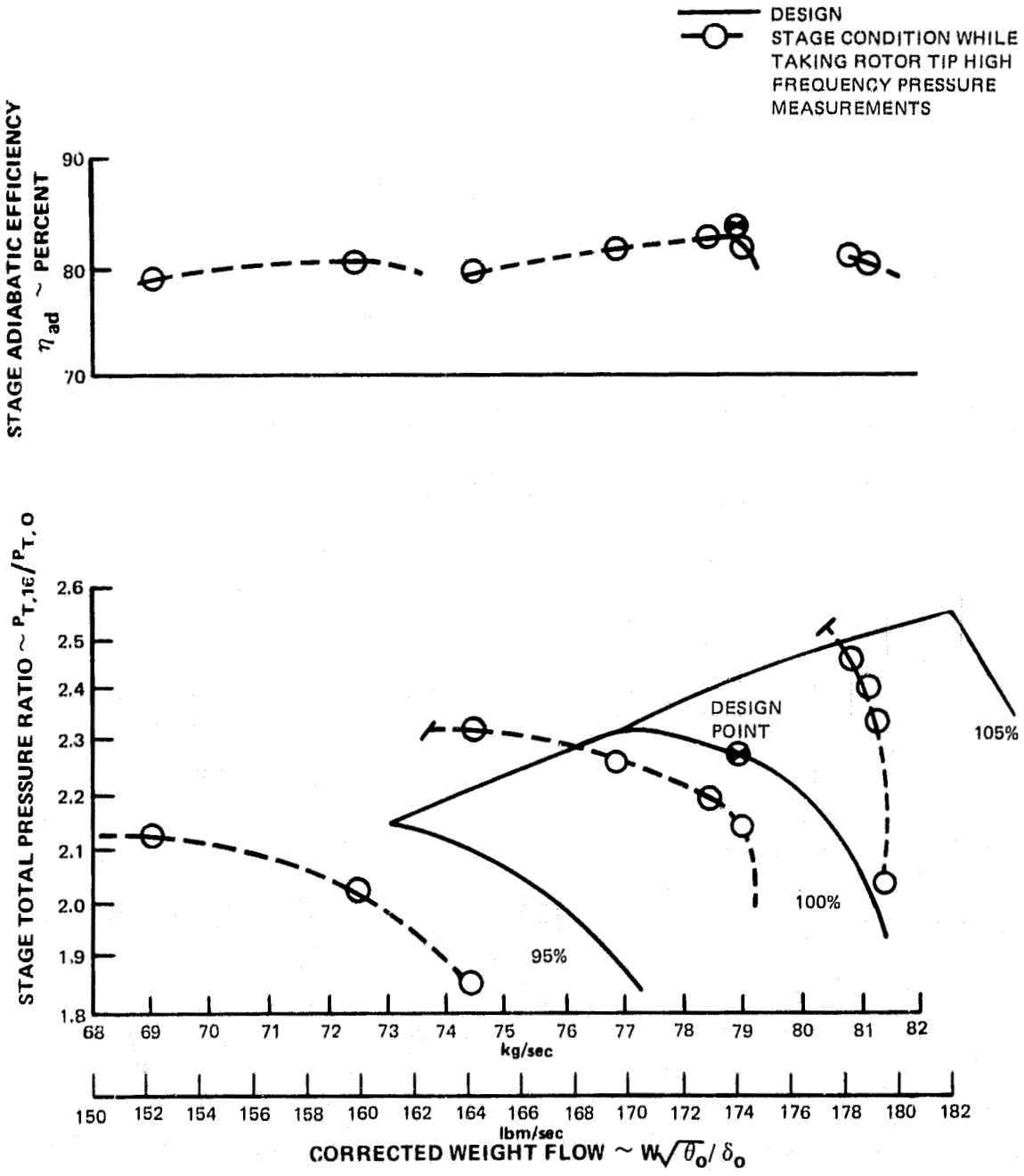
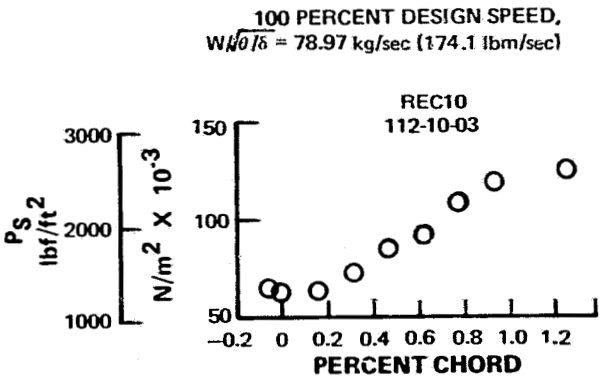


Figure 36 Stage Overall Performance with Rotor Tip High Frequency Response Pressure Transducer Data Points

CURVE LABEL	$N/m^2 \times 10^{-3}$	lbf/in^2
3	62	9
4	69	10
5	76	11
6	83	12
7	90	13
8	97	14
9	103	15
10	110	16
11	117	17
12	124	18
13	131	19



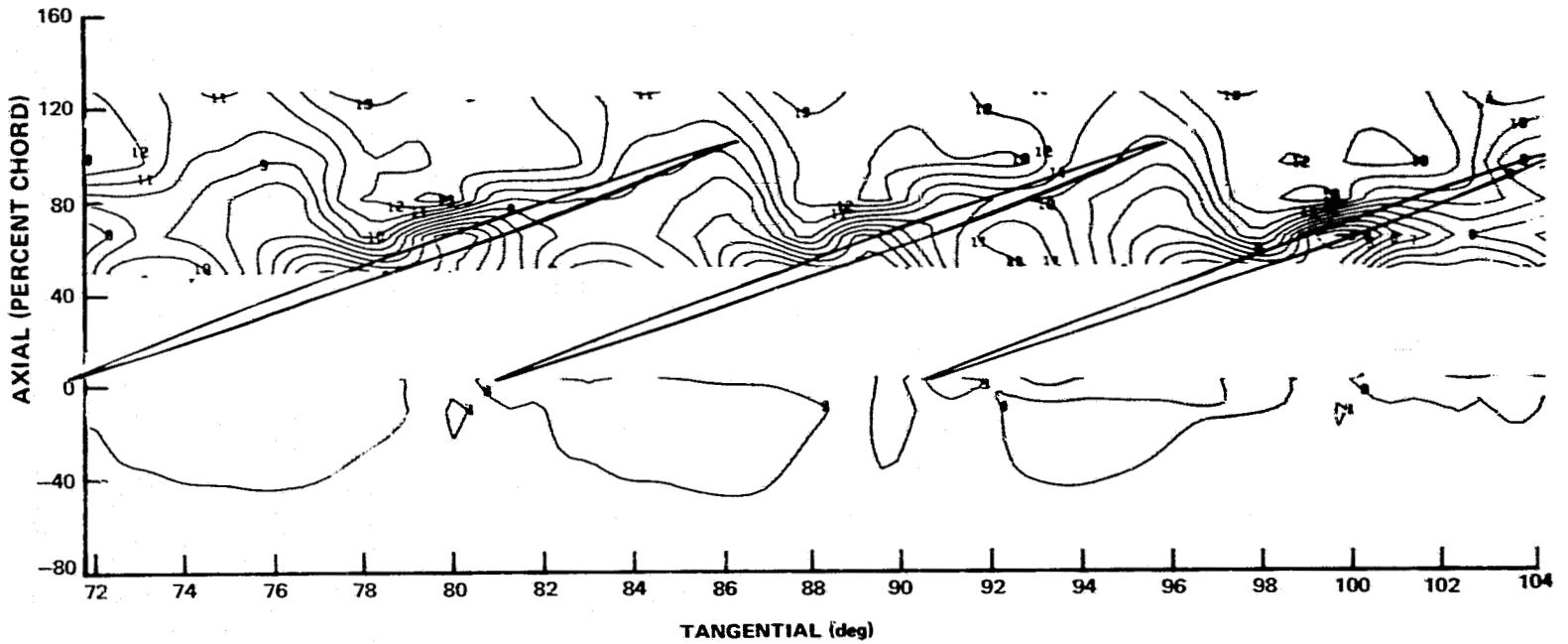


Figure 37a Rotor Tip Static Pressure Contours from High Frequency Response Pressure Transducer Data

CURVE LABEL	N/m^2 x 10^{-3}	lbf/in^2
3	62	9
4	69	10
5	76	11
6	83	12
7	90	13
8	97	14
9	103	15
10	110	16
11	117	17
12	124	18
13	131	19
14	138	20

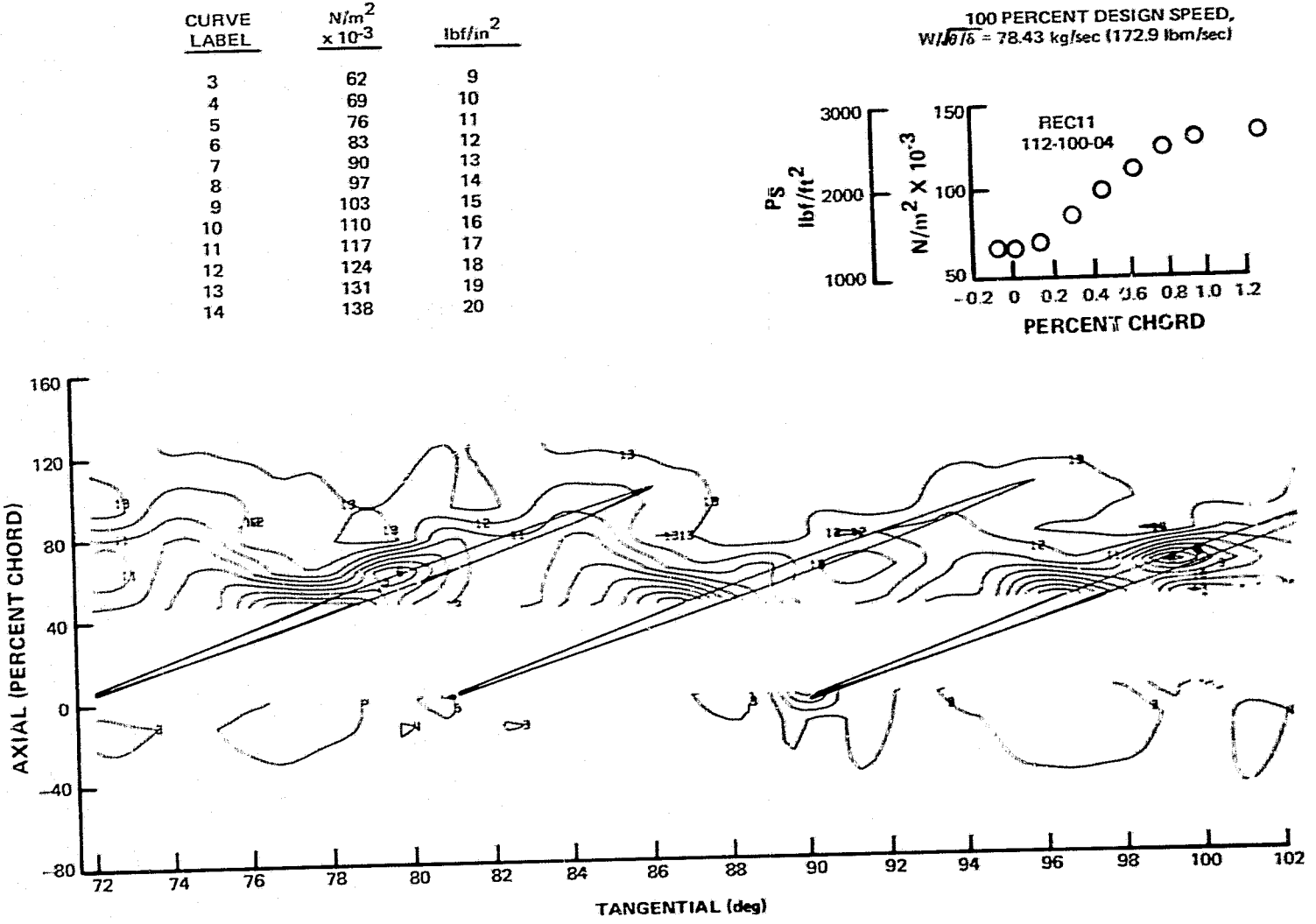


Figure 37b Rotor Tip Static Pressure Contours from High Frequency Response Pressure Transducer Data

CURVE LABEL	$N/m^2 \times 10^{-3}$	lbf/in^2
3	62	9
4	69	10
5	76	11
6	83	12
7	90	13
8	97	14
9	103	15
10	110	16
11	117	17
12	124	18
13	131	19
14	138	20

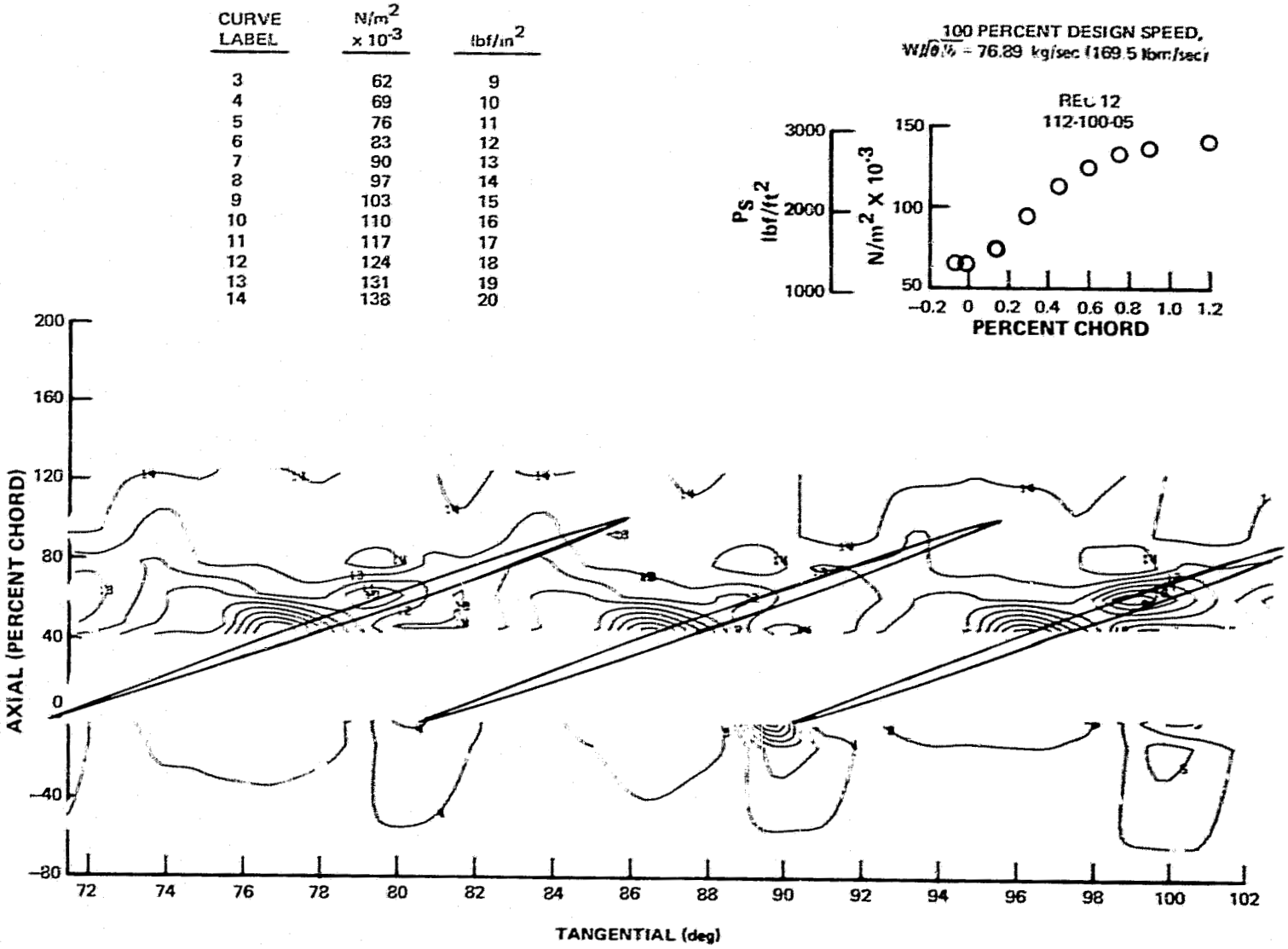


Figure 37c Rotor Tip Static Pressure Contours from High Frequency Response Pressure Transducer Data

CURVE LABEL	$N/m^2 \times 10^{-3}$	lbf/in^2
2	55	8
3	62	9
4	69	10
5	76	11
6	83	12
7	90	13
8	97	14
9	103	15
10	110	16
11	117	17
12	124	18
13	131	19
14	138	20
15	145	21

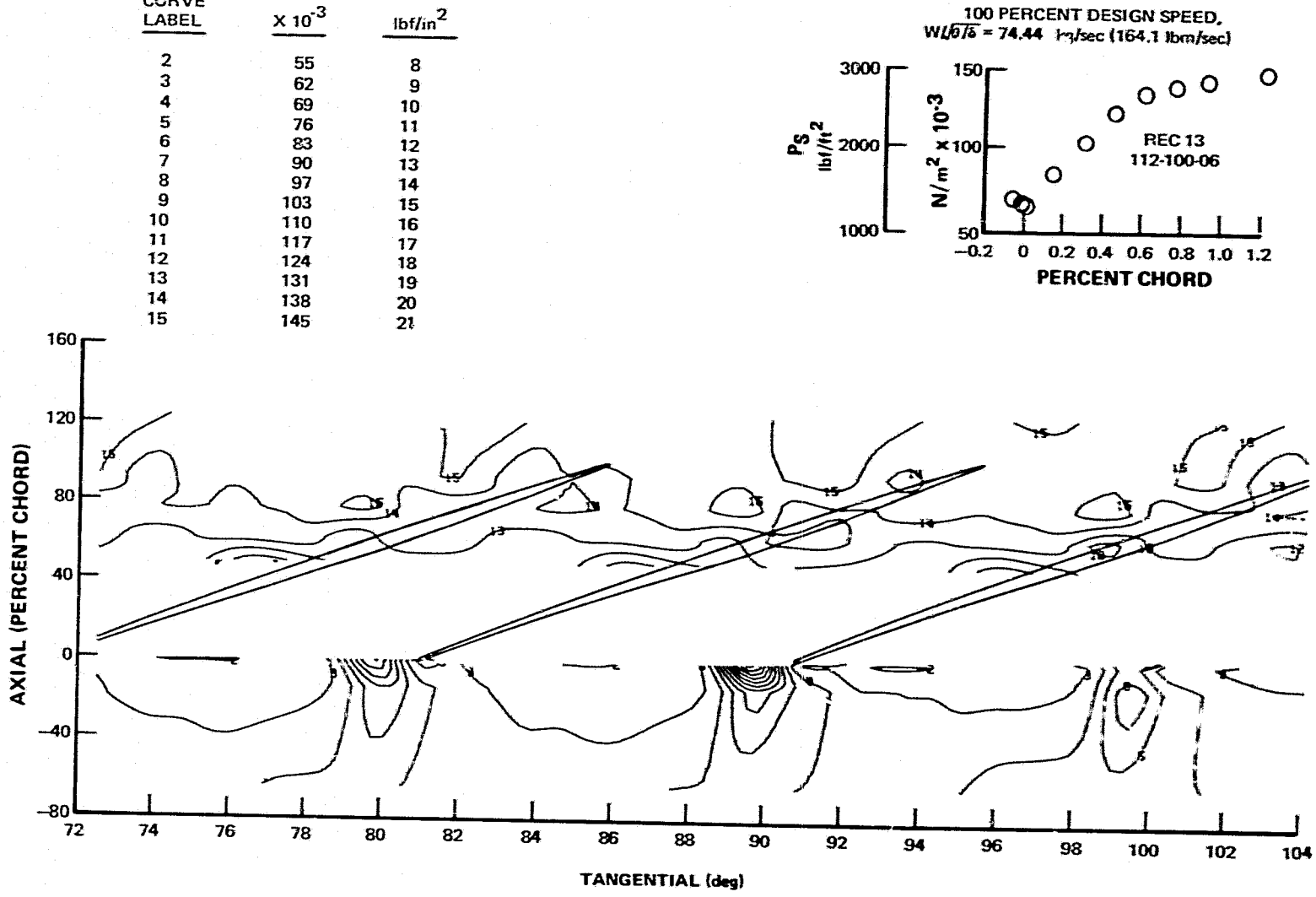
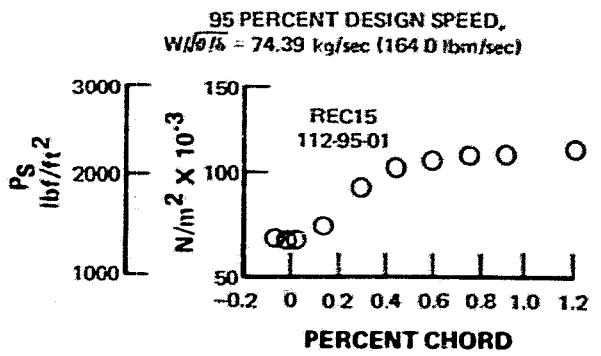


Figure 37d Rotor Tip Static Pressure Contours from High Frequency Response Pressure Transducer Data

CURVE LABEL	$N/m^2 \times 10^{-3}$	lbf/in^2
3	62	9
4	69	10
5	76	11
6	83	12
7	90	13
8	97	14
9	103	15
10	110	16
11	117	17
12	124	18
13	131	19
14	138	20



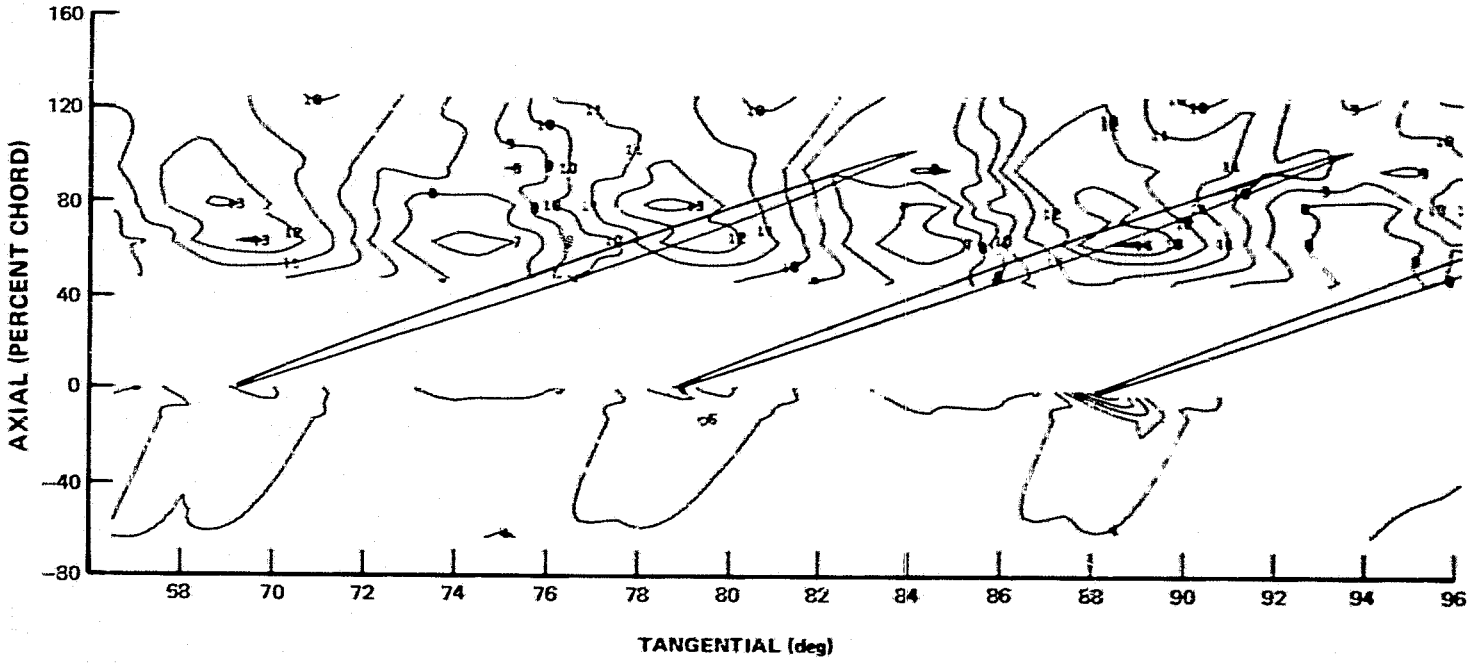


Figure 37e Rotor Tip Static Pressure Contours from High Frequency Response Pressure Transducer Data

CURVE LABEL	$N/m^2 \times 10^{-3}$	lbf/in^2
3	62	9
4	69	10
5	76	11
6	83	12
7	90	13
8	97	14
9	103	15
10	110	16
11	117	17
12	124	18
13	131	19

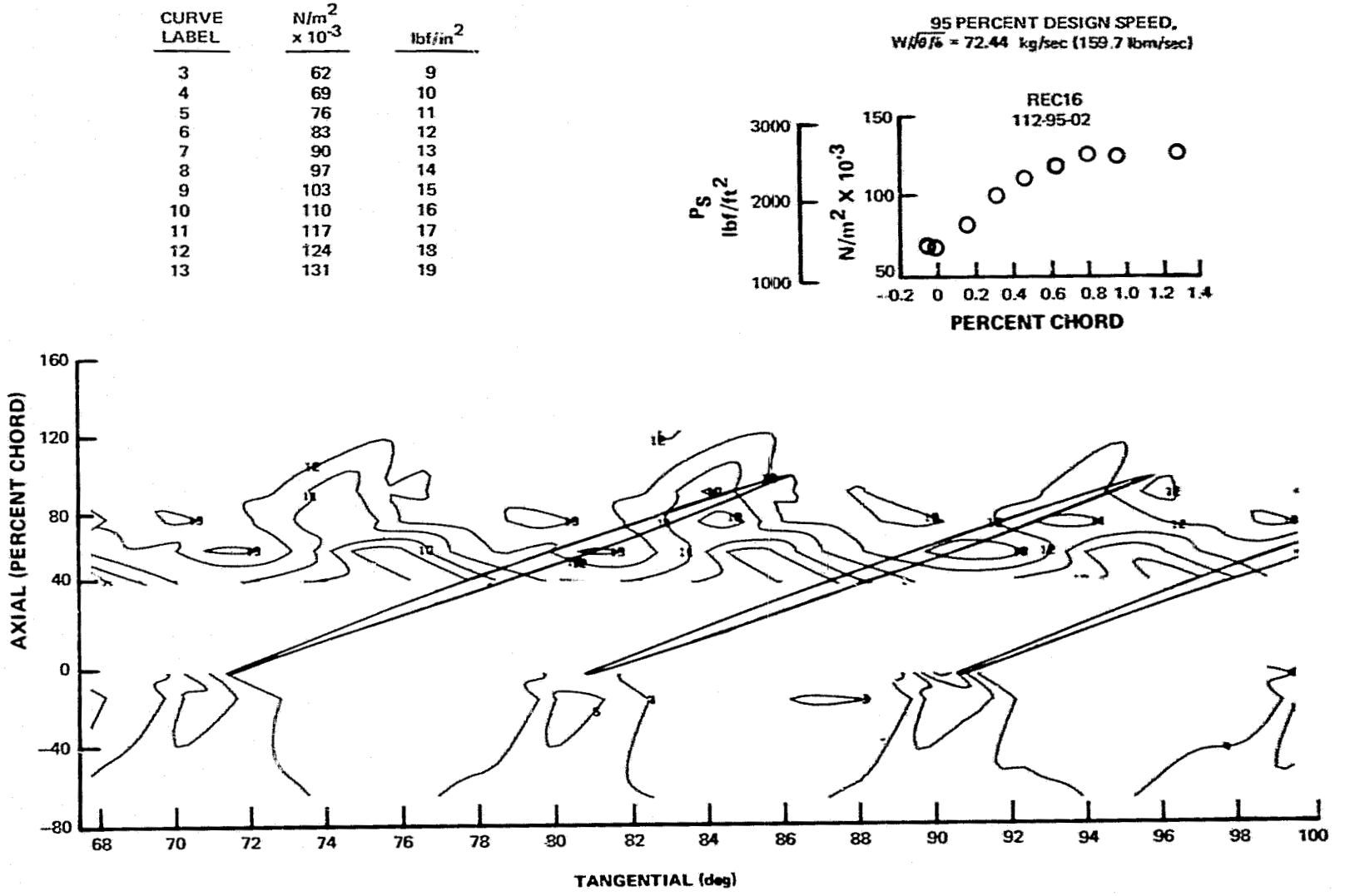


Figure 37f Rotor Tip Static Pressure Contours from High Frequency Resp e Pressure Transducer Data

CURVE LABEL	$N/m^2 \times 10^{-3}$	lbf/in^2
3	62	9
4	69	10
5	76	11
6	83	12
7	90	13
8	97	14
9	103	15
10	110	16
11	117	17
12	124	18
13	131	19
14	138	20

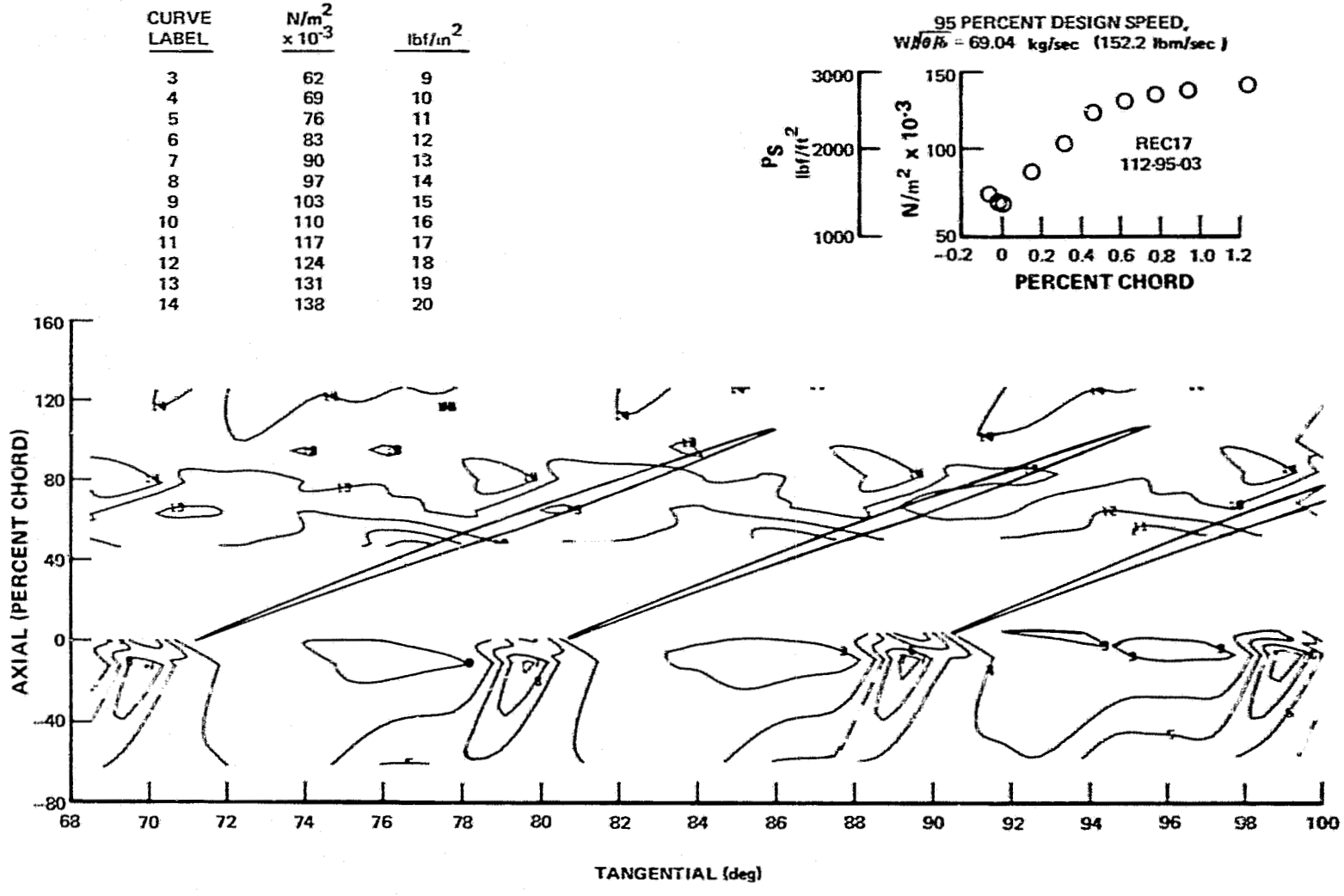


Figure 37g Rotor Tip Static Pressure Contours from High Frequency Response Pressure Transducer Data

CURVE LABEL	$N/m^2 \times 10^{-3}$	lbf/in^2
3	62	9
4	69	10
5	76	11
6	83	12
7	90	13
8	97	14
9	103	15
10	110	16
11	117	17
12	124	18
13	131	19
14	138	20
15	145	21

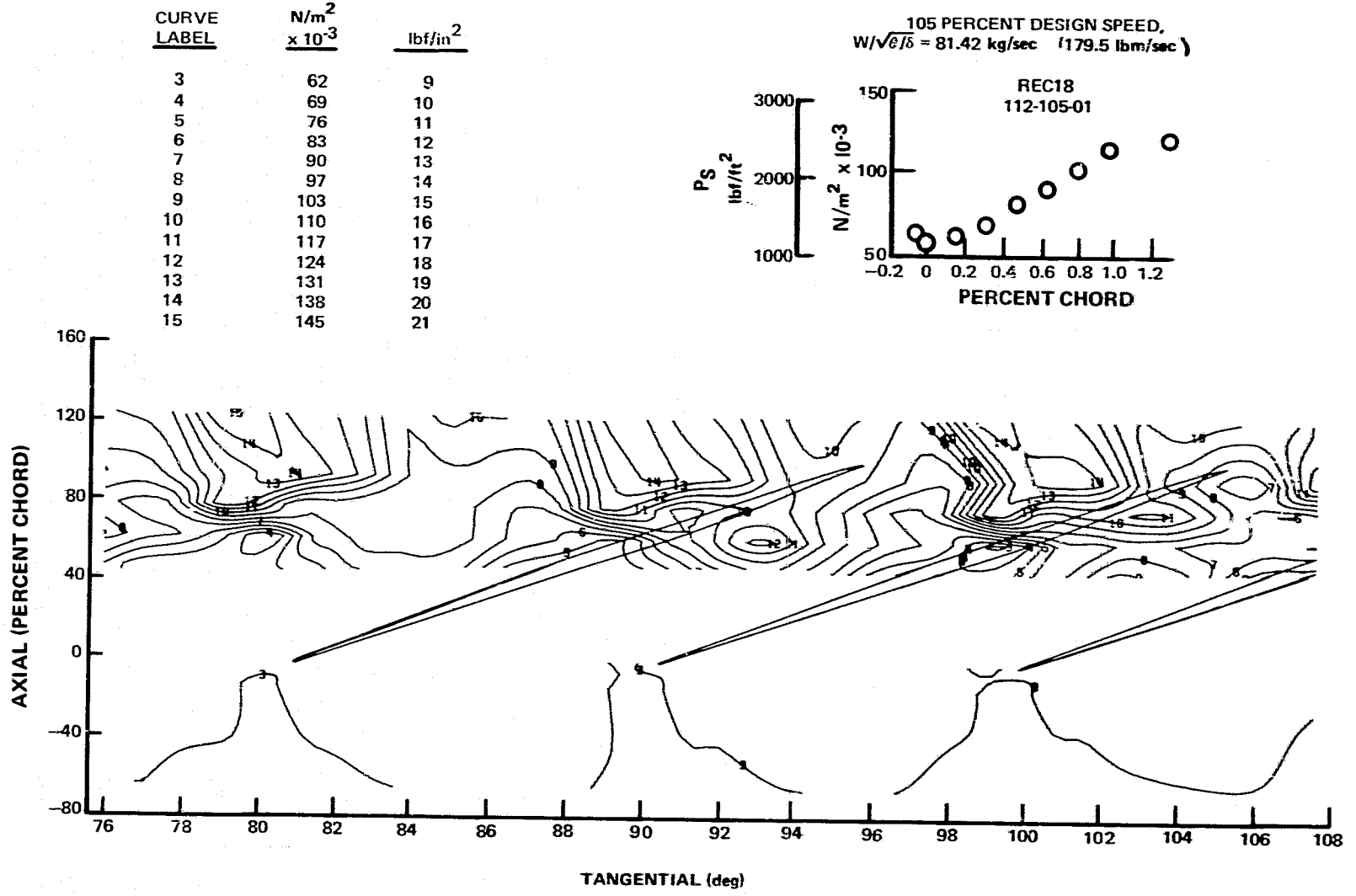


Figure 37h Rotor Tip Static Pressure Contours from High Frequency Response Pressure Transducer Data

CURVE LABEL	$N/m^2 \times 10^{-3}$	lbf/in^2
3	62	9
4	69	10
5	76	11
6	83	12
7	90	13
8	97	14
9	103	15
10	110	16
11	117	17
12	124	18
13	131	19
14	138	20

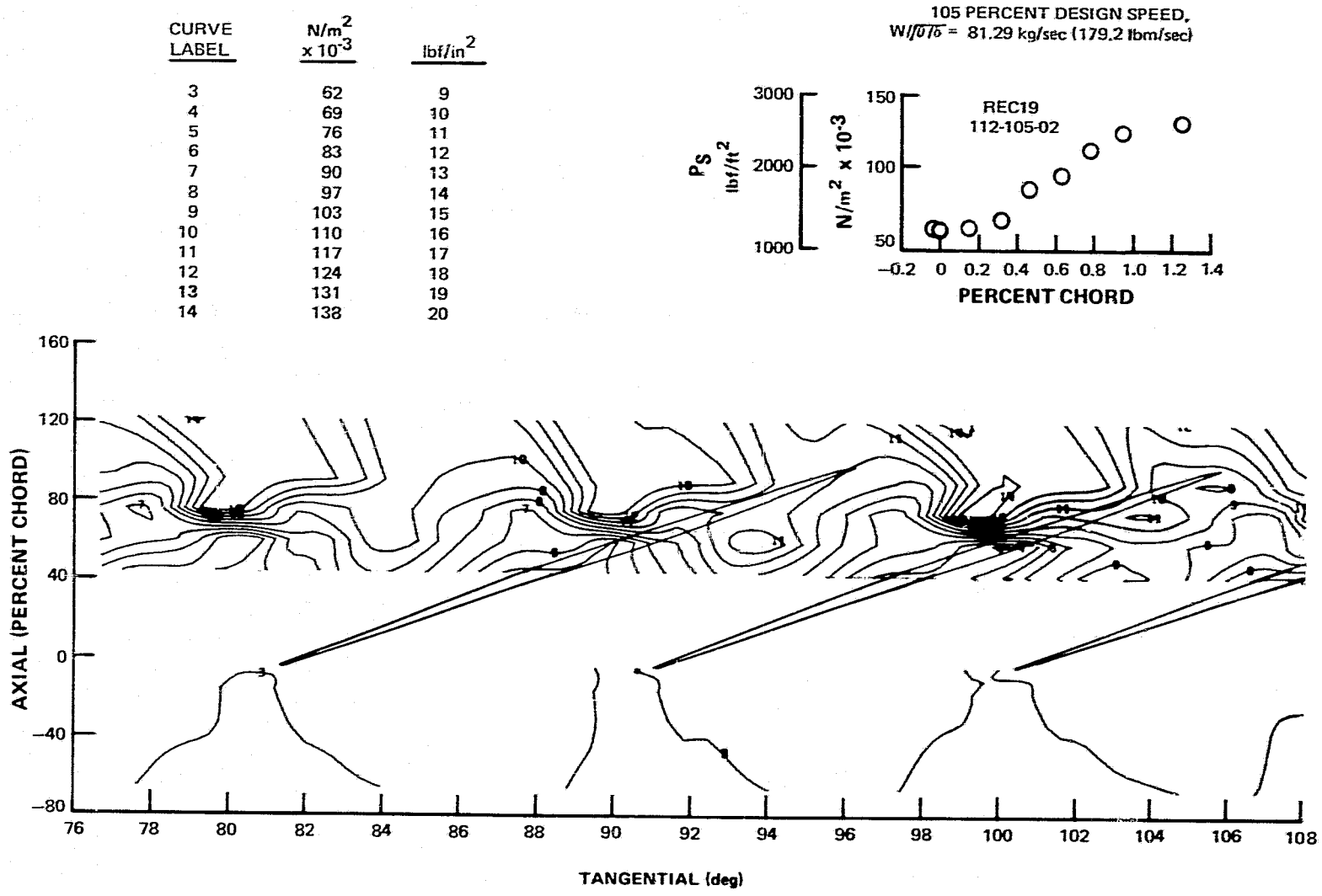


Figure 37i Rotor Tip Static Pressure Contours from High Frequency Response Pressure Transducer Data

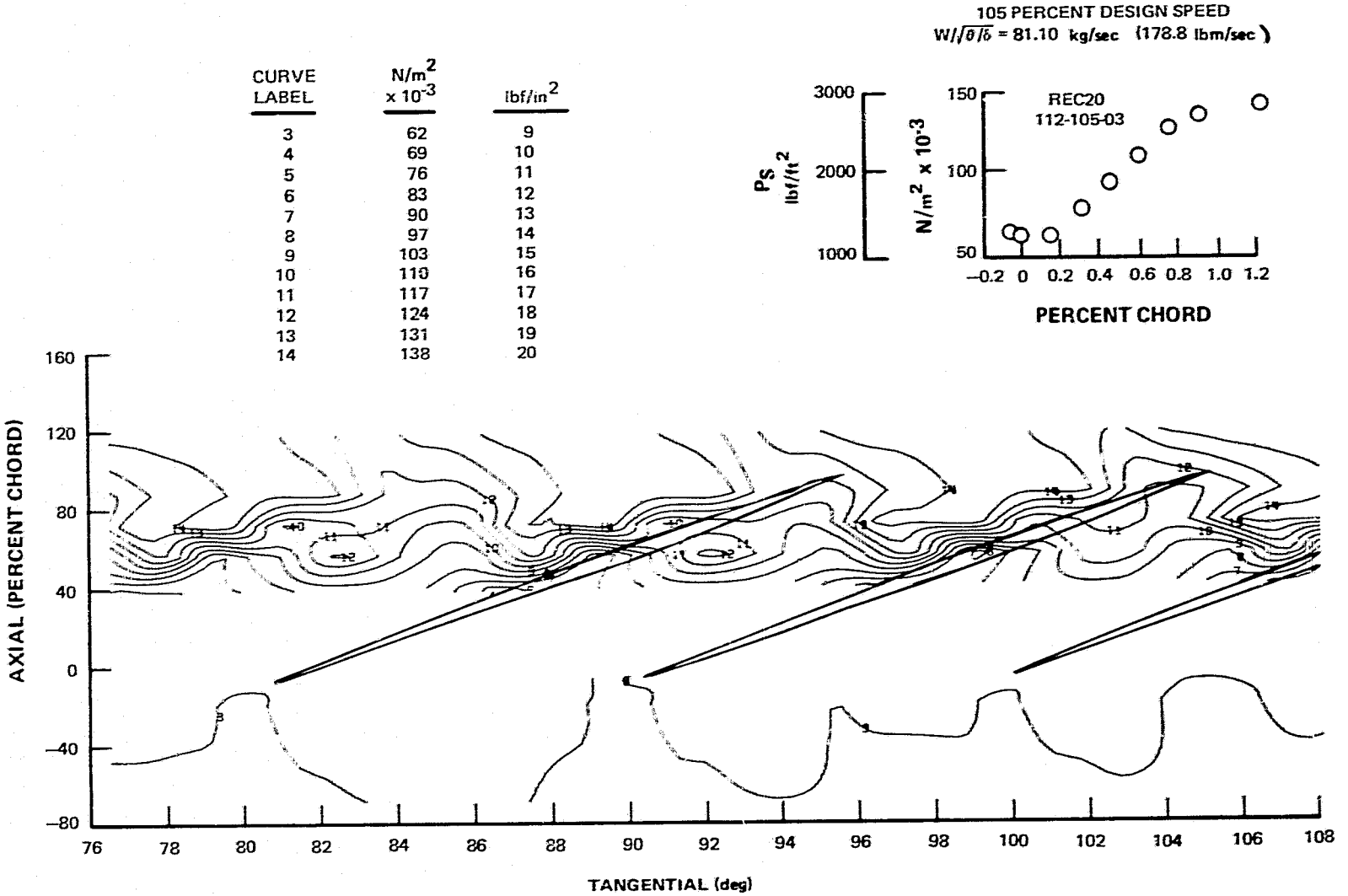


Figure 37j Rotor Tip Static Pressure Contours from High Frequency Response Pressure Transducer Data

CURVE LABEL	$N/m^2 \times 10^{-3}$	lbf/in^2
3	62	9
4	69	10
5	76	11
6	83	12
7	90	13
8	97	14
9	103	15
10	110	16
11	117	17
12	124	18
13	131	19
14	138	20
15	145	21
16	152	22

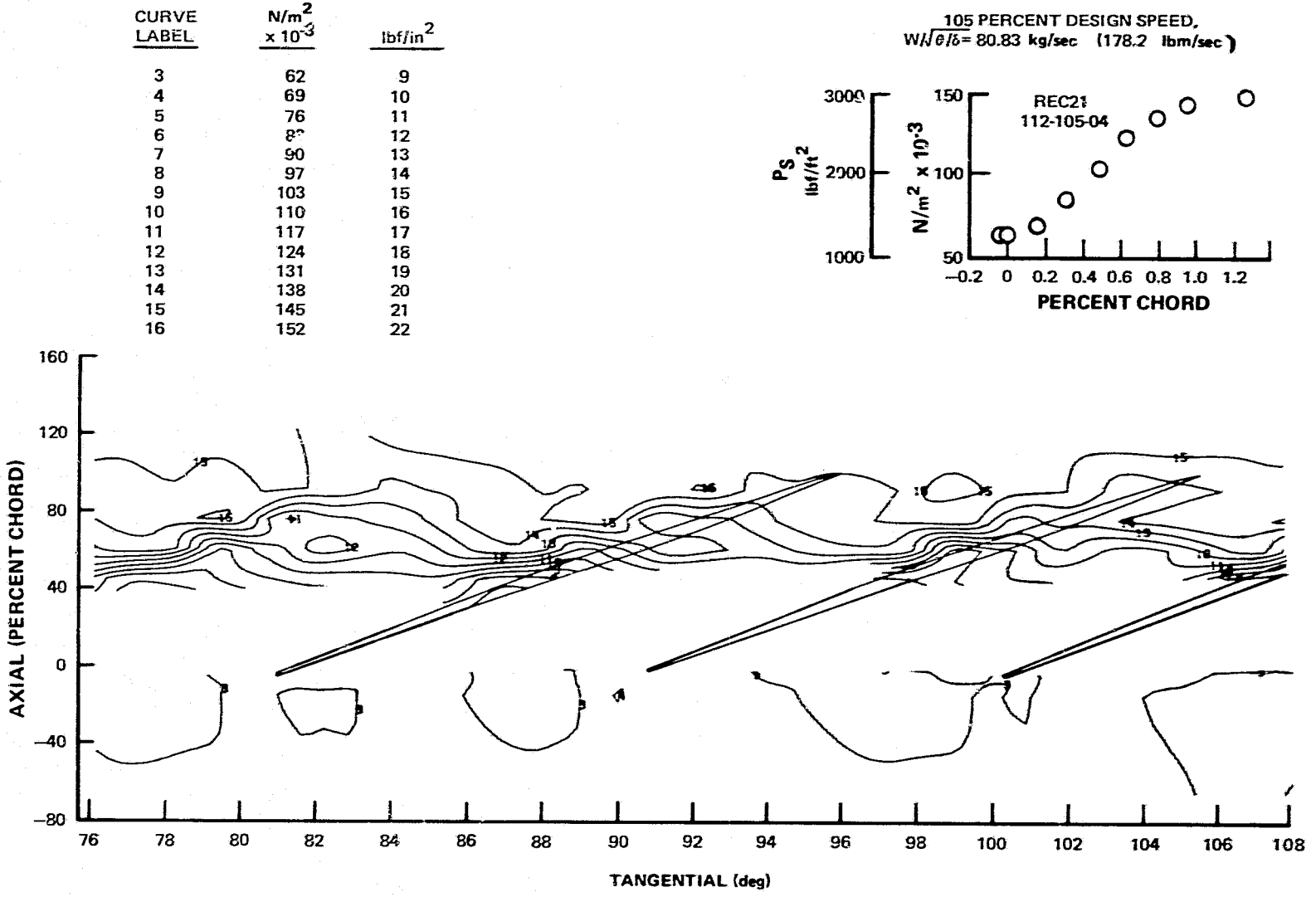


Figure 37k Rotor Tip Static Pressure Contours from High Frequency Response Pressure Transducer Data

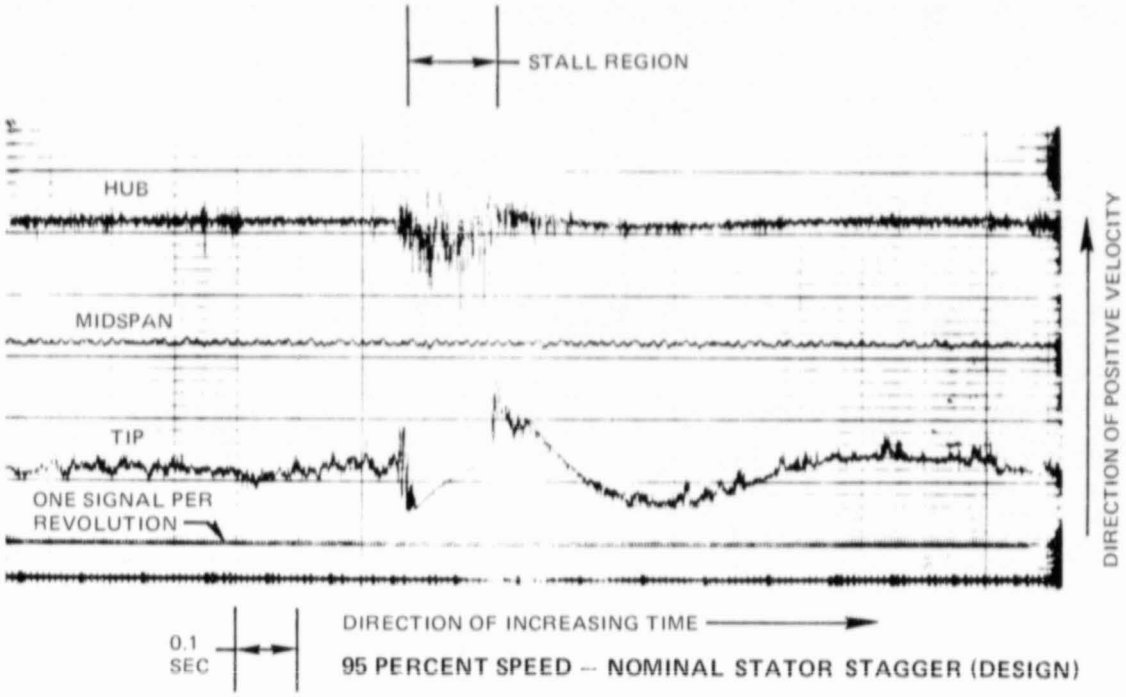


Figure 38a Rotor Leading Edge Hot Film Data at Surge

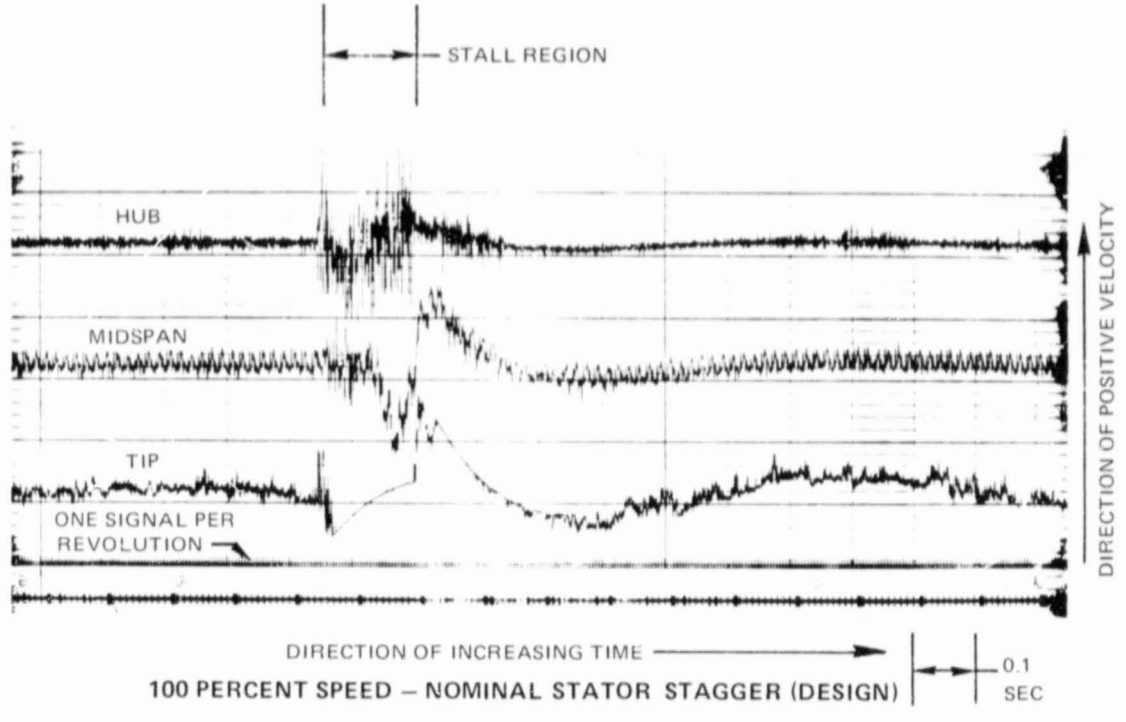


Figure 38b Rotor Leading Edge Hot Film Data at Surge

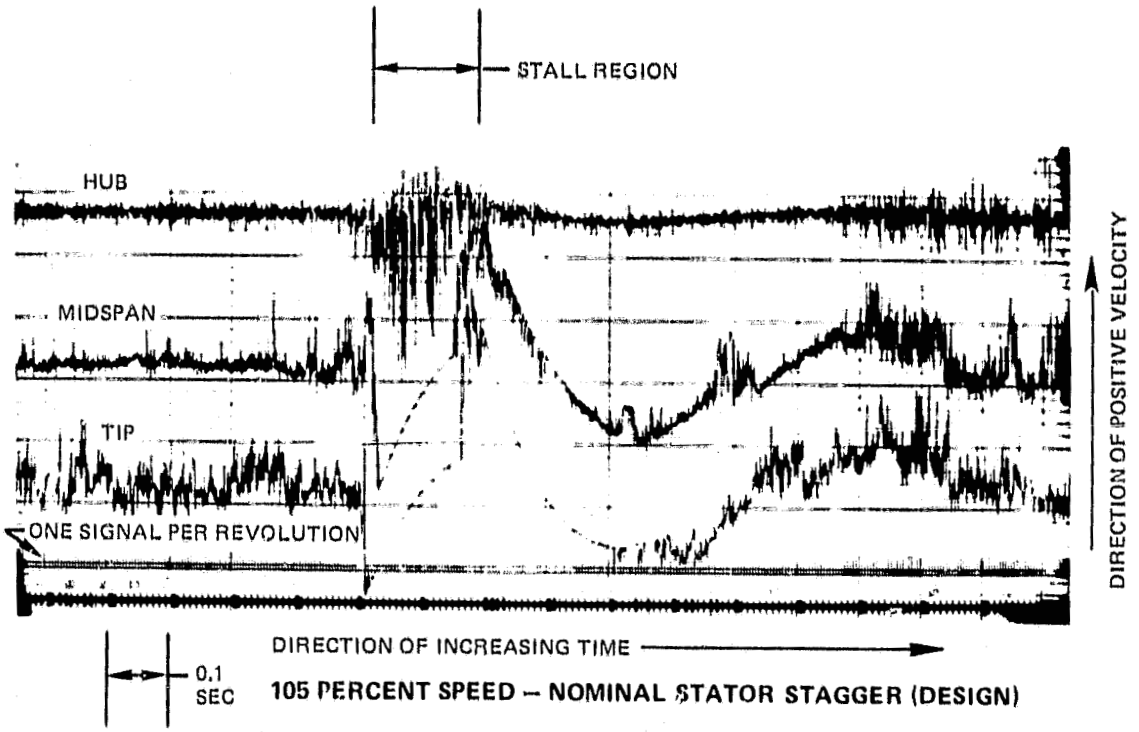


Figure 38c Rotor Leading Edge Hot Film Data at Surge

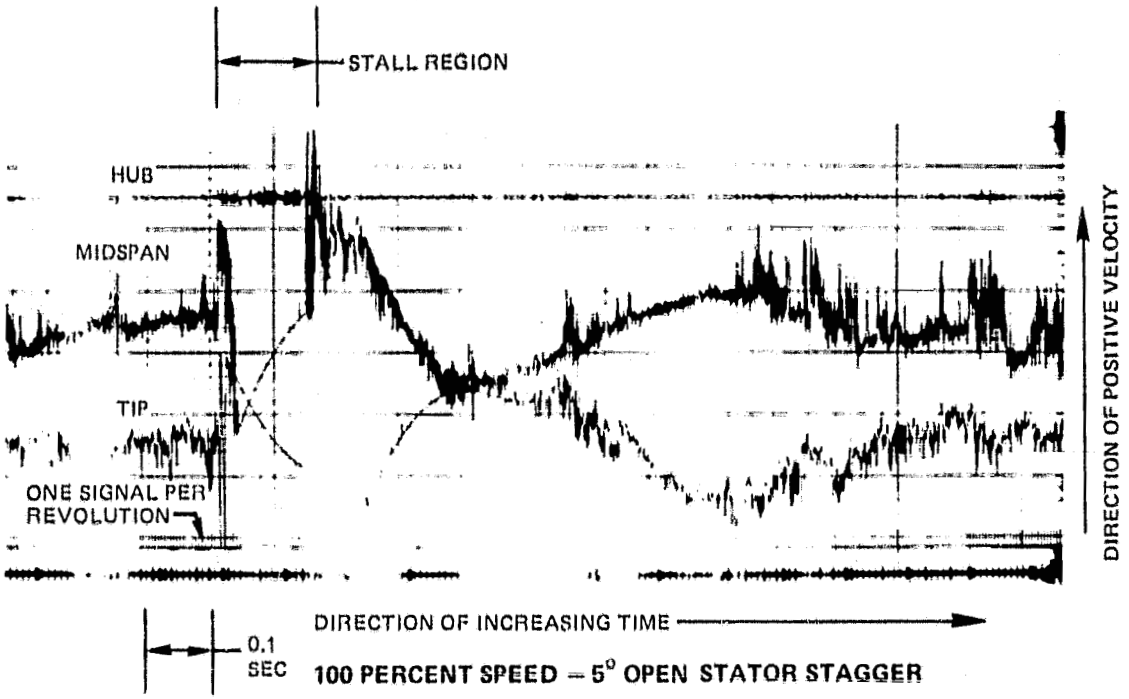


Figure 38d Rotor Leading Edge Hot Film Data at Surge

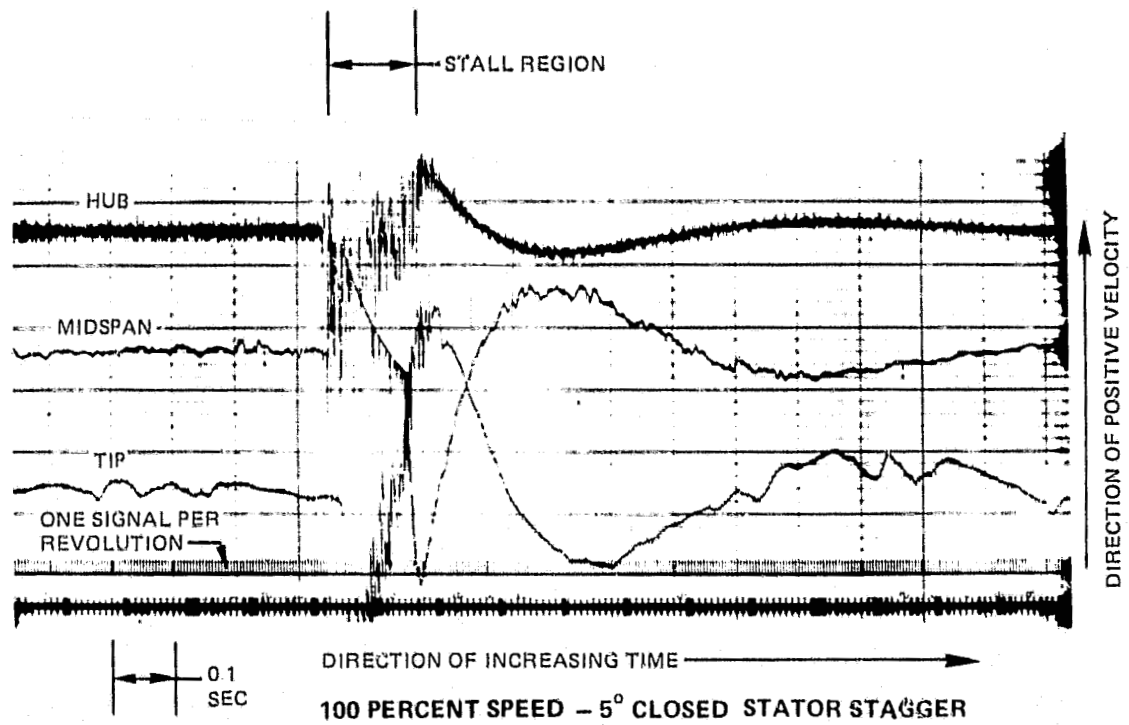


Figure 38e Rotor Leading Edge Hot Film Data at Surge

APPENDIX A

SYMBOLS

A	area, meters^2 (inches^2)
av	average
C_p	specific heat at constant pressure, joule/kg-K (Btu/lbm-^oR)
D	diffusion factor
g_c	conversion factor - 32.17 lbm-ft/lbf-sec^2
i_m	incidence angle, angle between inlet air direction and line tangent to blade mean camber line at leading edge, degrees
i_{ss}	incidence angle, angle between inlet air direction and line tangent to blade suction surface at leading edge, degrees
J	conversion factor, 1.00m-kg/joule (778 ft-lbf/Btu)
M	Mach number
N	rotor speed, rpm
P_T	total pressure, N/m^2 or lbf/ft^2
P_S	static pressure, N/m^2 or lbf/ft^2
R	gas constant for air
r	radius measured from rig centerline, meters (inches)
SL	streamline number
T_T	total temperature, K (^oR)
T_S	static temperature, K (^oR)
t	blade maximum thickness, meters (inches)
U	rotor speed, m/sec (ft/sec)
V	air velocity, m/sec (ft/sec)
V_m	meridional velocity $(V_r^2 + z^2)1/2$, m/sec (ft/sec)
V_θ	tangential velocity, m/sec (ft/sec)
W	mass flow rate, kg/sec (lbm/sec)

SYMBOLS (Con't)

z	axial distance - meters (inches)
β	absolute air angle, $\cot^{-1}$ (V_m/V_θ), degrees
β'	relative air angle, $\cot^{-1}$ (V_m/V_θ'), degrees
$\Delta\beta$	air turning angle, degrees
γ	ratio of specific heats for air
δ	ratio of total pressure to standard pressure of 1.01325×10^5 N/m^2 (2.116×10^3 lbf/ft^2)
δ^o	deviation angle, exit air angle minus tangent to blade mean camber line at trailing edge, degrees
ϵ	angle between tangent to streamline projected on meridional plane and axial direction, degrees
η	efficiency
θ	ratio of total temperature to standard temperature of 288.16K (518.7°R)
ρ	mass density - kg/m^3 (lbm/ft^3)
σ	solidity, ratio of aerodynamic chord to gap between blades
ω	angular velocity of rotor, radians/sec
$\bar{\omega}$	total pressure loss coefficient

SUPERSCRIPTS

'	relative to rotor
*	blade metal angle

SUBSCRIPTS

ad	adiabatic
des.	design
in	inlet
m	meridional direction

SUBSCRIPTS (Cont'd)

n	selected operating point
p	polytropic or profile
r	radial direction; radius
r	ratio (e.g., $P_{T,r}$ = total pressure ratio)
RLE	rotor leadinq edge
RTE	rotor trailing edge
SLE	stator leading edge
STE	stator trailing edge
ss	suction surface
z	axial component
θ	tangential component
0	plenum chamber
13	station at rotor inlet
14	station at rotor exit
15	station at stator inlet
16	station at stator exit

APPENDIX B

PERFORMANCE PARAMETERS

a) Relative total temperature

$$T'_{T,RLE} = T_{S,RLE}\left[1 + \frac{\gamma - 1}{2}(M'_{RLE})^2\right] \qquad \text{(rotor) IN}$$

$$T'_{T,RTE} = T'_{T,RLE} + \left[\frac{(\omega r)^2_{RLE} - (\omega r)^2_{RTE}}{\frac{2}{\gamma - 1}\frac{\gamma}{Rg_c}}\right] \qquad \text{(rotor) OUT}$$

b) Incidence angle based on mean camber line

$$i_m = \beta'_{RLE} - \beta^*_{RLE} \qquad \text{(rotor)}$$

$$i_m = \beta_{SLE} - \beta^*_{SLE} \qquad \text{(stator)}$$

Incidence angle based on suction surface metal angle

$$i_{ss} = \beta'_{RLE} - \beta^*_{ss,RLE} \qquad \text{(rotor)}$$

$$i_{ss} = \beta_{SLE} - \beta^*_{ss,SLE} \qquad \text{(stator)}$$

c) Deviation angle

$$\delta^\circ = \beta'_{RTE} - \beta^*_{RTE} \qquad \text{(rotor)}$$

$$\delta^\circ = \beta_{STE} - \beta^*_{STE} \qquad \text{(stator)}$$

d) Diffusion factor

$$D = 1 - \frac{V'_{RTE}}{V'_{RLE}} + \frac{r_{RTE} V_{\theta\,RTE} - r V_{\theta\,RLE}}{(r_{RTE} + r_{RLE})\,\sigma V'_{RLE}} \qquad \text{(rotor)}$$

$$D = 1 - \frac{V_{STE}}{V_{SLE}} + \frac{r_{SLE} V_{\theta\,SLE} - r_{STE} V_{\theta\,STE}}{(r_{SLE} + r_{STE})\,\sigma V_{SLE}} \qquad \text{(stator)}$$

e) Loss coefficient

$$\bar{\omega} = \frac{P'_{T,RLE}\left[\frac{T'_{T,RTE}}{T'_{T,RLE}}\right]^{\frac{\gamma}{\gamma-1}} - P'_{T,RTE}}{P'_{T,RLE} - P_{S,RLE}} \qquad \text{(rotor)}$$

$$\bar{\omega} = \frac{P_{T,SLE} - P_{T,STE}}{P_{T,SLE} - P_{S,SLE}} \qquad \text{(stator)}$$

f) Loss parameter

$$\frac{\bar{\omega} \cos \beta'_{RTE}}{2\sigma} \qquad \text{(rotor)}$$

$$\frac{\bar{\omega} \cos \beta_{STE}}{2\sigma} \qquad \text{(stator)}$$

g) Polytropic efficiency

$$\eta_p = \frac{\frac{\gamma-1}{\gamma} \ln \frac{P_{T,RTE}}{P_{T,RLE}}}{\ln \frac{T_{T,RTE}}{T_{T,RLE}}} \qquad \text{(rotor)}$$

$$\eta_p = \frac{\frac{\gamma-1}{\gamma} \ln \frac{P_{T,STE}}{P_{T,RLE}}}{\ln \frac{T_{T,STE}}{T_{T,RLE}}} \qquad \text{(stage)}$$

h) Adiabatic efficiency

$$\eta_{ad} = \frac{\left[\frac{P_{T,RTE}}{P_{T,RLE}}\right]^{\frac{\gamma-1}{\gamma}} - 1}{\left[\frac{T_{T,RTE}}{T_{T,RLE}}\right] - 1} \qquad \text{(rotor)}$$

$$\eta_{ad} = \frac{\left[\frac{P_{T,STE}}{P_{T,RLE}}\right]^{\frac{\gamma-1}{\gamma}} - 1}{\left[\frac{T_{T,STE}}{T_{T,RLE}}\right] - 1} \qquad \text{(stage)}$$

i) Surge margin

$$SM = \left[\left(\frac{P_{T,STE}/P_{T,RLE}}{W\sqrt{\theta}\ /\ \delta} \right)_{\text{Stall}} \frac{W\sqrt{\theta}\ /\ \delta}{P_{T,STE}/P_{T,RLE}}_{\substack{\text{Reference} \\ \text{Point or} \\ \text{Operating Point}}} - 1 \right] 100$$

APPENDIX C

Overall and Blade Element Performance Tabulations
Design Stagger

COMPUTER TABLE SYMBOL TRANSLATION

AIRFOIL AERODYNAMIC SUMMARY PRINT

xx PERCENT DESIGN SPEED (ROTOR PERFORMANCE) RUN NO xxx SPEED CODE xx POINT NO x

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	U-1 M/SEC	U-2 M/SEC	V'-1 M/SEC	V'-2 M/SEC	VO'-1 M/SEC	VO'-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1																
2																
3	V_{RLE}		$V_{m,RLE}$		$V_{\theta,RLE}$		U_{RLE}		V'_{RLE}		$V'_{\theta,RLE}$		$\rho V_{m,RLE}$		ϵ_{RLE}	
4		V_{RTE}		$V_{m,RTE}$		$V_{\theta,RTE}$		U_{RTE}		V'_{RTE}		$V'_{\theta,RTE}$		$\rho V_{m,RTE}$		ϵ_{RTE}
5																
6																
7																
8																
9																

SL	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	M-1	M-2	M'-1	M'-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	%EFF-A TOTAL	%EFF-P TOTAL
1																		
2																		
3	β_{RLE}		β'_{RLE}		M_{RLE}		M'_{RLE}		i_{ss}		δ^o		D	$\frac{\bar{\omega}\cos\beta'}{2\sigma}$ RTE			η_{ad}	
4		β_{RTE}		β'_{RTE}		M_{RTE}		M'_{RTE}		i_m		$\Delta\beta'$		$\bar{\omega}$				η_p
5																$\frac{P_{T,RTE}}{P_{T,RLE}}$	$\frac{RTE}{RLE}$	
6																		
7																		$\frac{RTE}{RLE}$
8																		
9																		

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	EPSI-1 DEGREE	EPSI-2 DEGREE	PCT TE SPAN
1																	
2																	
3	V_{RLE}		$V_{m,RLE}$		$V_{\theta,RLE}$		U_{RLE}		V'_{RLE}		$V'_{\theta,RLE}$		$\rho V_{m,RLE}$		ϵ_{RLE}		% span
4		V_{RTE}		$V_{m,RTE}$		$V_{\theta,RTE}$		U_{RTE}		V'_{RTE}		$V'_{\theta,RTE}$		$\rho V_{m,RTE}$		ϵ_{RTE}	
5																	RTE
6																	
7																	
8																	
9																	

WC1/A1 LBM/SEC SQFT $\frac{W\sqrt{\theta}}{\delta A}$	WC1/A1 KG/SEC SQM $\frac{W\sqrt{\theta}}{\delta A}$	T02/T01 $\frac{T_{T,RTE}}{T_{T,RLE}}$	P02/P01 $\frac{P_{T,RTE}}{P_{T,RLE}}$	EFF-AD ROTOR % η_{ad} $\frac{RTE}{RLE}$	EFF-P ROTOR % η_p $\frac{RTE}{RLE}$

C-2

COMPUTER TABLE SYMBOL TRANSLATION

AIRFOIL AERODYNAMIC SUMMARY PRINT

** PERCENT DESIGN SPEED (STATOR PERFORMANCE) RUN NO xxx SPEED CODE ** POINT NO *

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1										
2										
3	V_{SLE}		$V_{m,SLE}$		$V_{\theta,SLE}$		$\rho V_{m,SLE}$		ϵ_{SLE}	
4		V_{STE}		$V_{m,STE}$		$V_{\theta,STE}$		$\rho V_{m,STE}$		ϵ_{STE}
5										
6										
7										
8										
9										

SL	B-1 DEGREE	B-2 DEGREE	M-1	M-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	PO/PO STAGE	TO/TO STAGE	%EFF-A TOT-STG	%EFF-P TOT-STG
1																
2																
3	β_{SLE}		M_{SLE}		i_{ss}		δ°		D	$\frac{\bar{\omega}\cos\beta}{2\sigma}$ STE			$\frac{P_{T,STE}}{P_{T,RLE}}$		η_{ad}	
4		β_{STE}		M_{STE}		i_m		$\Delta\beta$								η_p
5										$\bar{\omega}$		$\frac{P_{T,STE}}{P_{T,SLE}}$		$\frac{T_{T,STE}}{T_{T,RLE}}$	$\frac{STE}{RLE}$	$\frac{STE}{RLE}$
6																
7																
8																
9																

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	PCT TE SPAN	EPSI-1 DEGREE	EPSI-2 DEGREE
1											
2											
3	V_{SLE}		$V_{m,SLE}$		$V_{\theta,SLE}$		$\rho V_{m,SLE}$		% span		ϵ_{STE}
4		V_{STE}		$V_{m,STE}$		$V_{\theta,STE}$		$\rho V_{m,STE}$	STE	ϵ_{SLE}	
5											
6											
7											
8											
9											

	NCORR INLET RPM $\frac{N}{\sqrt{\delta}}$	WCORR INLET LBM/SEC $\frac{W\sqrt{\theta}}{\delta}$	WCORR INLET KG/SEC $\frac{W\sqrt{\theta}}{\delta}$	TO/TO STAGE	P02/P01	PO/PO STAGE	EFF-AD STAGE %	EFF-P STAGE %
				$\frac{T_{T,STE}}{T_{T,RLE}}$		$\frac{P_{T,STE}}{P_{T,RLE}}$	η_{ad}	η_p
					$\frac{P_{T,STE}}{P_{T,SLE}}$		$\frac{STE}{RLE}$	$\frac{STE}{RLE}$
	RLE	RLE	RLE					

AIRFOIL AERODYNAMIC SUMMARY PRINT

50 PERCENT DESIGN SPEED (ROTOR PERFORMANCE)

RUN NO 111 SPEED CODE 50 POINT NO 2

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	U-1 M/SEC	U-2 M/SEC	V'-1 M/SEC	V'-2 M/SEC	VO'-1 M/SEC	VO'-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	68.9	171.5	68.9	121.8	0.0	120.8	143.4	166.5	159.1	130.1	-143.4	-45.8	81.76	149.72	0.5105	0.5102
2	73.6	165.6	73.6	122.5	0.0	111.5	152.6	171.3	169.5	136.3	-152.6	-59.8	87.01	151.21	0.4228	0.4379
3	78.0	159.0	78.0	124.9	0.0	93.3	161.6	176.0	179.5	147.1	-161.6	-77.7	91.96	155.13	0.3492	0.3654
4	86.7	138.9	86.7	117.4	0.0	74.2	185.2	190.3	204.5	165.2	-185.2	-116.1	101.49	146.55	0.1268	0.1795
5	88.7	121.7	88.7	106.1	0.0	59.7	211.5	209.3	229.3	183.4	-211.5	-149.6	103.71	131.06	-0.0757	0.0077
6	88.2	116.3	88.2	101.3	0.0	57.0	223.3	218.8	240.1	190.9	-223.3	-161.8	103.18	124.39	-0.1478	-0.0649
7	87.9	115.4	87.9	102.0	0.0	53.9	229.0	223.6	245.3	193.0	-229.0	-169.6	102.82	125.22	-0.1804	-0.1015
8	87.3	116.4	87.3	104.7	0.0	51.0	234.6	228.3	250.3	205.9	-234.6	-177.3	102.20	128.51	-0.2144	-0.1388
9	84.2	110.2	84.2	100.8	0.0	44.6	251.0	242.6	264.7	222.2	-251.0	-198.0	98.76	123.23	-0.3179	-0.2577
10	82.9	96.1	82.9	85.3	0.0	44.4	256.1	247.3	269.2	220.1	-256.1	-203.0	97.37	103.62	-0.3440	-0.2950
11	82.1	79.2	82.1	67.4	0.0	41.5	261.0	252.1	273.6	221.1	-261.0	-210.6	96.44	81.60	-0.3492	-0.3228

SL	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	M-1	M-2	M'-1	M'-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	%EFF-A TOTAL	%EFF-P TOTAL
1	0.0	44.4	64.04	20.36	0.2104	0.5161	0.4959	0.3915	-1.04	3.06	8.42	43.68	0.3566	0.2427	0.0481	1.2407	85.45	85.89
2	0.0	42.2	64.05	25.98	0.2248	0.4984	0.5176	0.4103	0.32	4.03	8.20	38.05	0.3539	0.1884	0.0377	1.2309	86.63	87.03
3	0.0	38.3	64.07	31.94	0.2385	0.4799	0.5486	0.4433	1.63	5.02	8.49	32.12	0.3190	0.1017	0.0202	1.2197	91.22	91.46
4	0.0	32.4	64.86	44.82	0.2653	0.4188	0.6259	0.4979	2.95	5.24	9.02	20.04	0.2962	0.0515	0.0097	1.1807	93.00	93.17
5	0.0	29.3	67.25	54.60	0.2716	0.3665	0.7022	0.5522	3.08	4.94	9.04	12.65	0.2802	0.0958	0.0164	1.1394	82.14	82.48
6	0.0	29.2	68.45	57.73	0.2701	0.3497	0.7352	0.5743	3.32	5.05	7.44	10.72	0.2790	0.1272	0.0208	1.1252	74.39	74.73
7	0.0	27.6	69.01	58.71	0.2691	0.3474	0.7508	0.5958	3.57	5.25	6.33	10.30	0.2623	0.1152	0.0185	1.1223	75.17	74.57
8	0.0	25.7	69.60	59.13	0.2673	0.3508	0.7662	0.6203	4.08	5.63	5.54	10.46	0.2425	0.0957	0.0154	1.1226	77.95	78.31
9	0.0	23.6	71.55	62.74	0.2575	0.3329	0.8160	0.6595	4.41	5.83	4.27	8.81	0.2160	0.0935	0.0136	1.1081	74.52	74.89
10	0.0	27.3	72.16	67.00	0.2536	0.2889	0.8235	0.6615	4.06	5.44	6.47	5.17	0.2349	0.1447	0.0178	1.0876	59.52	59.99
11	0.0	31.5	72.59	72.13	0.2510	0.2375	0.8369	0.6631	3.54	4.83	9.52	0.45	0.2397	0.1753	0.0167	1.0662	47.71	48.19

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	EPSI-1 DEGREE	EPSI-2 DEGREE	PCT TE SPAN
1	226.2	562.6	226.2	399.5	0.0	395.2	470.6	546.4	522.2	426.8	-470.6	-150.2	16.74	30.66	29.255	29.231	0.0500
2	241.4	543.3	241.4	401.8	0.0	365.7	500.8	562.0	556.0	447.2	-500.8	-196.3	17.22	30.97	24.225	25.092	0.1000
3	256.0	521.5	256.0	409.7	0.0	322.6	530.3	577.6	588.8	482.6	-530.3	-255.0	18.83	31.77	19.493	20.935	0.1500
4	284.4	455.8	284.4	385.3	0.0	243.4	607.7	624.4	671.0	541.9	-607.7	-381.0	20.79	30.02	7.265	10.284	0.3000
5	291.1	399.4	291.1	348.0	0.0	195.9	693.9	686.8	752.5	601.7	-693.9	-490.9	21.24	26.84	-4.337	0.440	0.5000
6	289.5	381.4	289.5	332.4	0.0	187.0	732.8	718.0	787.9	626.4	-732.8	-530.9	21.13	25.48	-8.468	-3.717	0.6000
7	288.4	378.7	288.4	334.8	0.0	177.0	751.2	733.6	804.7	649.5	-751.2	-556.6	21.06	25.65	-10.338	-5.817	0.6500
8	286.6	382.0	286.6	343.4	0.0	167.4	769.6	749.2	821.3	675.6	-769.6	-581.8	20.93	26.32	-12.283	-7.952	0.7000
9	276.2	361.5	276.2	330.6	0.0	146.3	823.5	795.0	868.6	728.9	-823.5	-649.7	20.23	25.24	-18.165	-14.767	0.8500
10	272.0	315.5	272.0	279.8	0.0	145.6	849.4	811.6	883.3	722.3	-840.4	-665.9	19.94	21.22	-19.711	-16.902	0.9000
11	269.3	259.9	269.3	221.3	0.0	136.3	856.4	827.1	897.8	725.4	-856.4	-690.9	19.75	16.71	-19.953	-18.495	0.9500

WC1/A1 LBM/SEC SQFT	WC1/A1 KG/SEC SQM	T02/T01	P02/P01	EFF-AD ROTOR %	EFF-P ROTOR %
19.93	97.25	1.0502	1.1528	82.70	83.05

AIRFOIL AERODYNAMIC SUMMARY PRINT

50 PERCENT DESIGN SPEED (STATOR PERFORMANCE)

RUN NO 111 SPEED CODE 50 POINT NO 2

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VU-1 M/SEC	VU-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	189.7	204.0	135.7	204.0	118.1	0.0	165.63	226.08	0.4648	0.0828
2	174.1	203.4	135.4	203.4	109.5	0.0	164.97	228.82	0.4068	0.0711
3	167.4	197.0	136.6	197.0	96.7	0.0	167.59	224.44	0.3436	0.0615
4	148.5	172.6	129.1	172.6	73.3	0.0	159.12	199.31	0.1969	0.0344
5	130.7	154.4	116.4	154.4	59.5	0.0	142.39	178.94	0.0604	-0.0037
6	125.2	151.5	111.5	151.5	57.0	0.0	135.52	175.55	-0.0086	-0.0249
7	124.5	151.4	112.2	151.4	54.1	0.0	136.39	175.49	-0.0426	-0.0357
8	125.7	151.5	114.8	151.5	51.3	0.0	139.47	175.68	-0.0737	-0.0465
9	122.1	147.0	113.5	147.0	45.0	0.0	137.23	169.65	-0.1619	-0.0759
10	111.6	139.3	102.0	139.3	45.2	0.0	122.31	159.66	-0.1955	-0.0865
11	97.3	123.5	87.6	123.5	42.3	0.0	104.53	140.42	-0.2443	-0.0969

SL	B-1 DEGREE	B-2 DEGREE	M-1	M-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	P0/P0 STAGE	T0/T0 STAGE	%EFF-A TOT-STG	%EFF-P TOT-STG
1	42.9	0.0	0.5454	0.6211	-11.52	-8.57	13.66	42.92	0.0141	0.2565	0.0591	0.9531	1.1818	1.0743	65.97	66.78
2	40.5	0.0	0.5255	0.6202	-11.89	-8.76	11.97	40.53	-0.0312	0.1644	0.0385	0.9719	1.1960	1.0698	74.93	75.61
3	36.3	0.0	0.5057	0.6015	-15.44	-12.07	10.64	36.33	-0.0513	0.1445	0.0346	0.9772	1.1895	1.0630	80.89	81.28
4	29.9	0.0	0.4488	0.5255	-23.08	-18.83	10.00	29.90	-0.0494	0.2129	0.0536	0.9731	1.1459	1.0517	76.78	77.22
5	27.1	0.0	0.3954	0.4687	-26.84	-21.48	10.07	27.13	-0.0638	0.2059	0.0560	0.9791	1.1138	1.0463	67.72	68.21
6	27.1	0.0	0.3774	0.4598	-26.72	-20.98	10.10	27.09	-0.0852	0.1534	0.0428	0.9857	1.1084	1.0460	65.02	65.53
7	25.7	0.0	0.3755	0.4595	-28.07	-22.20	10.15	25.72	-0.0907	0.1414	0.0400	0.9868	1.1077	1.0445	65.76	67.24
8	24.1	0.0	0.3794	0.4692	-29.74	-23.75	10.26	24.07	-0.0877	0.1448	0.0416	0.9863	1.1070	1.0439	68.53	68.98
9	21.7	0.0	0.3689	0.4467	-34.25	-28.03	12.36	21.68	-0.0903	0.1741	0.0521	0.9843	1.0919	1.0409	63.87	64.32
10	24.0	0.0	0.3361	0.4224	-34.24	-28.09	13.78	24.02	-0.1170	0.1980	0.0600	0.9655	1.0744	1.0419	50.48	50.97
11	26.1	0.0	0.2927	0.3735	-37.57	-31.43	16.43	26.06	-0.1339	0.3701	0.1135	0.9786	1.0434	1.0388	31.52	31.94

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VU-1 FT/SEC	VU-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	PCT TE SPAN	EPSI-1 DEGREE	EPSI-2 DEGREE
1	592.8	669.5	448.5	669.5	387.6	0.0	33.92	46.29	0.0430	26.633	4.743
2	571.3	667.2	444.2	667.2	359.3	0.0	33.79	46.86	0.0901	23.310	4.077
3	549.2	646.4	448.3	646.4	317.3	0.0	34.32	45.97	0.1419	19.688	3.522
4	487.2	566.3	423.7	566.3	240.6	0.0	32.59	40.82	0.2939	11.283	1.970
5	428.9	506.5	381.8	506.5	195.3	0.0	29.15	36.65	0.5096	3.458	-0.212
6	410.9	497.2	365.8	497.2	187.1	0.0	27.75	35.95	0.6103	-0.491	-1.428
7	408.6	496.6	368.0	496.6	177.4	0.0	27.92	35.94	0.6593	-2.440	-2.044
8	412.4	495.9	376.5	496.9	168.2	0.0	28.57	35.99	0.7107	-4.221	-2.664
9	400.7	482.2	372.5	482.2	147.7	0.0	28.11	34.74	0.8629	-9.275	-4.348
10	366.0	457.1	334.6	457.1	148.3	0.0	25.05	32.70	0.9101	-11.199	-4.957
11	319.3	405.2	287.5	405.2	138.9	0.0	21.41	28.76	0.9571	-13.996	-5.555

NCORR INLET RPM	WCORR INLET LBM/SEC	WCORR INLET KG/SEC
6234.70	88.80	40.27

T0/T0 STAGE	P02/P01	P0/P0 STAGE	EFF-AD STAGE %	EFF-P STAGE %
1.0502	0.9776	1.1269	69.27	69.79

AIRFOIL AERODYNAMIC SUMMARY PRINT

50 PERCENT DESIGN SPEED (ROTOR PERFORMANCE) RUN NO 111 SPEED CODE 50 POINT NO 3

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	U-1 M/SEC	U-2 M/SEC	V'-1 M/SEC	V'-2 M/SEC	VO'-1 M/SEC	VO'-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	65.3	159.3	65.3	114.7	0.0	124.4	143.2	156.2	157.3	122.1	-143.2	-41.8	78.38	145.22	0.5095	0.5097
2	69.7	162.5	69.7	115.9	0.0	113.9	152.3	171.0	167.5	129.1	-152.3	-57.0	83.41	147.31	0.4806	0.4869
3	73.8	154.4	73.8	116.6	0.0	101.2	161.3	175.7	177.4	138.3	-161.3	-74.4	88.11	148.99	0.3371	0.3645
4	81.8	135.4	81.8	109.3	0.0	79.9	184.9	189.9	202.1	155.1	-184.9	-110.0	97.08	140.23	0.1243	0.1775
5	83.5	118.3	83.5	96.9	0.0	67.8	211.1	202.9	227.0	171.1	-211.1	-141.1	98.98	123.18	-0.0759	0.0088
6	83.1	113.9	83.1	93.1	0.0	65.5	222.9	218.4	237.9	179.0	-222.9	-152.9	98.51	117.91	-0.1451	-0.0665
7	82.8	114.2	82.8	94.9	0.0	63.5	228.5	223.1	243.0	185.7	-228.5	-159.5	98.19	120.10	-0.1773	-0.1034
8	82.3	114.6	82.3	95.9	0.0	61.3	234.1	227.9	248.1	192.7	-234.1	-166.6	97.63	122.55	-0.2111	-0.1407
9	79.5	108.0	79.5	92.3	0.0	56.1	250.5	242.1	262.8	207.7	-250.5	-186.0	94.55	116.49	-0.3096	-0.2573
10	78.4	99.1	78.4	81.2	0.0	56.8	255.6	246.9	267.4	206.6	-255.6	-190.0	93.34	101.92	-0.3353	-0.2939
11	77.7	85.2	77.7	65.9	0.0	55.6	260.5	251.6	271.8	206.8	-260.5	-196.0	92.49	82.42	-0.3414	-0.3218

SL	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	M-1	M-2	M'-1	M'-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	%EFF-A TOTAL	%EFF-P TOTAL
1	0.0	46.9	65.19	19.76	0.1994	0.5589	0.4805	0.3672	0.11	4.20	7.81	45.43	0.4055	0.1770	0.0352	1.2625	89.90	90.24
2	0.0	44.4	65.20	26.13	0.2129	0.4887	0.5118	0.3883	1.47	5.18	8.34	39.07	0.3932	0.1232	0.0245	1.2511	91.64	91.90
3	0.0	41.0	65.23	32.60	0.2256	0.4647	0.5423	0.4163	2.79	6.18	9.15	32.63	0.3849	0.0817	0.0122	1.2365	94.93	95.08
4	0.0	36.3	66.06	45.33	0.2503	0.4073	0.6187	0.4656	4.16	6.44	9.53	20.73	0.3654	0.0357	0.0067	1.2010	95.55	95.67
5	0.0	34.9	68.43	55.46	0.2555	0.3550	0.6949	0.5137	4.26	6.11	9.90	12.97	0.3371	0.0388	0.0164	1.1632	84.09	84.43
6	0.0	34.9	69.56	58.45	0.2543	0.3414	0.7282	0.5367	4.43	6.16	8.15	11.11	0.3328	0.1250	0.0200	1.1529	78.23	78.67
7	0.0	33.5	70.09	59.00	0.2534	0.3426	0.7440	0.5579	4.65	6.32	6.62	11.08	0.3177	0.1159	0.0185	1.1527	78.92	79.35
8	0.0	32.0	70.64	59.52	0.2518	0.3440	0.7595	0.5784	5.12	6.68	5.92	11.13	0.3012	0.1037	0.0165	1.1528	80.17	80.58
9	0.0	31.0	72.44	63.33	0.2433	0.3239	0.8041	0.6228	5.29	6.72	4.85	9.11	0.2782	0.1105	0.0157	1.1403	76.06	76.51
10	0.0	34.7	72.99	66.66	0.2399	0.2954	0.8180	0.6182	4.89	6.26	6.13	6.34	0.2941	0.1521	0.0189	1.1272	66.95	67.51
11	0.0	40.0	73.40	71.30	0.2376	0.2574	0.8315	0.6174	4.35	5.69	8.69	2.09	0.3026	0.1852	0.0184	1.1104	58.61	59.22

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	EPSI-1 DEGREE	EPSI-2 DEGREE	PCT TE SPAN
1	214.2	555.4	214.2	376.5	0.0	408.3	469.7	545.3	516.2	400.7	-469.7	-137.1	16.05	29.74	29.190	29.203	0.0500
2	228.6	533.2	228.6	380.2	0.0	373.9	499.8	560.9	549.6	423.7	-499.8	-187.0	17.08	30.17	24.101	25.031	0.1000
3	242.1	506.7	242.1	382.6	0.0	332.2	529.2	576.5	582.0	453.9	-529.2	-244.3	18.05	30.82	19.315	20.882	0.1500
4	268.3	444.2	268.3	358.6	0.0	262.1	606.5	623.2	663.2	508.9	-606.5	-361.1	19.88	28.72	7.120	10.173	0.3000
5	274.0	388.0	274.0	317.8	0.0	222.6	692.5	685.4	744.7	561.5	-692.5	-462.8	20.27	25.23	-4.347	0.335	0.5000
6	272.6	373.5	272.6	305.4	0.0	215.0	731.3	716.5	760.4	587.2	-731.3	-501.5	20.18	24.13	-8.315	-3.817	0.6500
7	271.6	374.7	271.6	311.4	0.0	208.4	749.7	732.1	797.4	609.2	-749.7	-523.7	20.11	24.69	-10.157	-5.922	0.6500
8	270.0	376.1	270.0	317.9	0.0	201.0	768.1	747.7	814.2	632.4	-768.1	-546.7	20.00	25.12	-12.037	-8.062	0.7000
9	260.9	354.4	260.9	292.8	0.0	184.0	821.9	794.4	862.3	681.4	-821.9	-610.4	19.35	23.86	-17.740	-14.740	0.8500
10	257.3	325.1	257.3	266.3	0.0	186.5	838.7	809.9	877.3	678.0	-838.7	-623.5	19.12	20.87	-19.213	-16.641	0.9000
11	254.9	282.9	254.9	216.2	0.0	182.4	854.7	825.5	891.9	678.5	-854.7	-643.1	18.94	16.88	-19.558	-18.440	0.9500

WCI/AI LBM/SEC SQFT	WCI/AI KG/SEC SQM	T02/T01	P02/P01	EFF-AD ROTOR %	EFF-P ROTOR %
18.90	92.21	1.0566	1.1787	85.11	85.46

AIRFOIL AERODYNAMIC SUMMARY PRINT

50 PERCENT DESIGN SPEED (STATOR PERFORMANCE) RUN NO 111 SPEED CODE 50 POINT NO 3

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	177.1	186.0	128.6	185.9	121.7	4.3	160.71	219.78	0.4648	0.0831
2	169.8	184.8	127.6	184.8	112.0	1.2	160.51	221.56	0.4068	0.0719
3	161.7	178.1	127.3	178.1	99.6	-2.6	161.02	215.69	0.3443	0.0623
4	143.6	155.5	119.9	155.3	79.0	-7.7	152.27	190.11	0.1968	0.0355
5	126.1	139.1	106.4	139.1	67.6	-2.2	134.15	170.56	0.0580	-0.0038
6	121.7	136.5	102.6	136.5	65.6	-0.7	128.70	167.19	-0.0139	-0.0257
7	122.2	136.4	104.3	136.4	63.7	-0.8	130.84	167.09	-0.0482	-0.0354
8	122.8	136.2	106.3	136.2	61.6	-1.6	133.35	166.81	-0.0794	-0.0471
9	118.5	132.3	104.0	132.1	56.7	-6.5	129.93	160.96	-0.1719	-0.0763
10	111.9	126.1	95.9	125.9	57.7	-7.7	119.01	152.36	-0.2049	-0.0867
11	101.4	115.7	84.1	115.0	56.7	-12.5	103.85	138.28	-0.2597	-0.0962

SL	B-1 DEGREE	B-2 DEGREE	M-1	M-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	P0/P0 STAGE	TO/TO STAGE	%EFF-A TOT-STG	%EFF-P TOT-STG
1	45.5	1.3	0.5336	0.5622	-8.91	-5.96	15.13	44.27	0.0947	0.2274	0.0523	0.9690	1.2112	1.0764	73.79	74.50
2	42.8	0.4	0.5117	0.5690	-9.58	-6.46	12.32	42.48	0.0524	0.1380	0.0324	0.9775	1.2211	1.0714	82.47	82.97
3	39.1	-0.8	0.4875	0.5401	-12.67	-9.30	10.00	39.94	0.0367	0.1102	0.0264	0.9837	1.2138	1.0659	87.69	88.03
4	33.7	-2.8	0.4329	0.4704	-19.29	-15.04	7.19	36.50	0.0590	0.1545	0.0390	0.9816	1.1762	1.0559	85.07	85.41
5	32.5	-0.9	0.3792	0.4196	-21.50	-16.14	9.18	33.36	0.0413	0.1116	0.0392	0.9895	1.1495	1.0526	77.32	77.77
6	32.6	-0.3	0.3656	0.4114	-21.21	-15.47	9.81	32.88	0.0309	0.0793	0.0221	0.9930	1.1447	1.0520	74.34	74.83
7	31.4	-0.3	0.3671	0.4113	-22.39	-16.51	9.81	31.75	0.0344	0.0862	0.0244	0.9923	1.1440	1.0525	74.79	75.27
8	30.1	-0.7	0.3692	0.4109	-23.73	-17.73	9.61	30.73	0.0379	0.0944	0.0271	0.9915	1.1427	1.0517	75.21	75.68
9	28.7	-2.8	0.3561	0.3989	-27.24	-21.02	9.56	31.50	0.0443	0.1112	0.0332	0.9907	1.1299	1.0503	70.71	71.22
10	31.2	-3.4	0.3356	0.3794	-27.03	-20.79	10.33	34.68	0.0540	0.1423	0.0430	0.9894	1.1163	1.0521	61.41	62.00
11	34.3	-6.1	0.3035	0.3473	-29.28	-23.14	10.33	40.44	0.0699	0.2080	0.0634	0.9871	1.0961	1.0519	51.26	51.89

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	PCT TE SPAN	EPSI-1 DEGREE	EPSI-2 DEGREE
1	589.9	610.2	421.8	610.0	399.4	14.0	32.91	45.01	0.0430	26.630	4.762
2	557.1	606.5	418.8	606.5	367.4	3.9	32.87	45.38	0.0901	23.310	4.118
3	530.4	584.4	417.8	584.3	326.8	-8.7	32.98	44.17	0.1410	19.728	3.572
4	471.1	510.2	393.5	509.6	259.1	-25.2	31.19	38.94	0.2989	11.277	2.032
5	413.7	456.4	349.2	456.3	221.9	-7.1	27.48	34.93	0.5086	3.321	-0.219
6	399.4	447.9	336.5	447.9	215.2	-2.2	26.36	34.24	0.6103	-0.794	-1.473
7	400.9	447.6	342.1	447.6	209.0	-2.7	26.80	34.22	0.6593	-2.763	-2.026
8	402.9	447.0	348.7	447.0	202.0	-5.1	27.31	34.16	0.7107	-4.549	-2.698
9	388.7	434.1	341.3	433.6	186.0	-21.4	26.61	32.97	0.8620	-9.850	-4.373
10	367.1	413.9	314.5	413.1	189.3	-25.2	24.37	31.20	0.9101	-11.737	-4.967
11	332.7	379.6	275.9	377.4	185.9	-40.9	21.27	28.32	0.9571	-14.362	-5.543

NCORR INLET RPM	WCORR INLET LBM/SEC	WCORR INLET KG/SEC
6226.80	84.20	38.19

TO/TO STAGE	P02/P01	P0/P0 STAGE	EFF-AD STAGE %	EFF-P STAGE %
1.0566	0.9859	1.1610	77.13	77.62

AIRFOIL AERODYNAMIC SUMMARY PRINT

50 PERCENT DESIGN SPEED (ROTOR PERFORMANCE) RUN NO 111 SPEED CODE 50 POINT NO 7

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	U-1 M/SEC	U-2 M/SEC	V'-1 M/SEC	V'-2 M/SEC	VO'-1 M/SEC	VO'-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	63.4	170.0	63.4	115.2	0.0	125.0	142.9	166.0	156.4	122.2	-142.9	-41.0	76.92	148.73	0.5077	0.5194
2	67.6	161.7	67.6	113.8	0.0	114.8	152.1	170.7	166.5	126.8	-152.1	-55.9	81.88	147.43	0.4175	0.4379
3	71.6	151.5	71.6	111.9	0.0	102.2	161.0	175.4	176.2	133.7	-161.0	-73.2	86.45	145.46	0.3331	0.3660
4	79.2	132.9	79.2	104.5	0.0	82.2	184.6	189.6	200.8	149.9	-184.6	-107.5	95.07	136.31	0.1215	0.1778
5	80.8	118.3	80.8	93.4	0.0	72.5	210.7	208.6	225.7	165.0	-210.7	-136.1	96.93	120.81	-0.0774	0.0054
6	80.4	113.2	80.4	88.8	0.0	70.3	222.5	218.0	236.6	172.4	-222.5	-147.8	96.45	114.27	-0.1459	-0.0674
7	80.1	113.5	80.1	91.0	0.0	67.8	228.1	222.8	241.8	179.7	-228.1	-154.9	96.15	117.16	-0.1773	-0.1042
8	79.6	114.8	79.6	93.5	0.0	66.6	233.7	227.5	246.9	186.1	-233.7	-160.9	95.61	120.50	-0.2109	-0.1418
9	77.0	107.3	77.0	87.5	0.0	62.2	250.1	241.7	261.7	199.7	-250.1	-179.5	92.66	112.27	-0.3059	-0.2574
10	76.1	99.3	76.1	77.6	0.0	62.0	255.2	246.5	266.3	200.2	-255.2	-184.5	91.56	99.31	-0.3306	-0.2932
11	75.4	89.6	75.4	65.8	0.0	60.9	260.1	251.2	270.8	201.3	-260.1	-190.3	90.77	83.89	-0.3358	-0.3209

SL	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	M-1	M-2	M'-1	M'-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	%EFF-A TOTAL	%EFF-P TOTAL
1	0.0	47.0	65.78	19.34	0.1940	0.5125	0.4787	0.3685	0.70	4.79	7.40	46.44	0.4032	0.4031	0.0206	1.2788	94.20	94.40
2	0.0	45.2	65.77	26.09	0.2072	0.4873	0.5099	0.3821	2.05	5.76	8.30	39.68	0.4066	0.0[illegible]	0.0167	1.2627	94.39	94.57
3	0.0	42.5	65.82	33.25	0.2194	0.4569	0.5402	0.4030	3.38	6.77	9.80	32.57	0.3901	0.0512	0.0100	1.2426	95.84	95.97
4	0.0	38.3	66.71	45.94	0.2429	0.4005	0.6162	0.4516	4.81	7.09	10.13	20.77	0.3705	0.0330	0.0070	1.2078	95.42	95.54
5	0.0	37.8	69.03	55.47	0.2480	0.3554	0.6927	0.4950	4.87	6.72	9.90	13.57	0.3663	0.1058	0.0177	1.1757	84.00	84.36
6	0.0	38.1	70.15	58.80	0.2467	0.3398	0.7261	0.5173	5.01	6.74	8.50	11.35	0.3632	0.1355	0.0215	1.1650	78.07	78.55
7	0.0	36.4	70.65	59.33	0.2459	0.3407	0.7420	0.5395	5.21	6.89	6.95	11.33	0.3445	0.1228	0.0194	1.1650	79.21	79.66
8	0.0	35.1	71.19	59.53	0.2444	0.3449	0.7577	0.5590	5.67	7.23	5.93	11.66	0.3311	0.1147	0.0183	1.1670	79.88	80.32
9	0.0	35.1	72.91	63.74	0.2363	0.3219	0.8028	0.5988	5.77	7.19	5.27	9.17	0.3128	0.1302	0.0183	1.1541	74.56	75.07
10	0.0	38.3	73.43	66.96	0.2333	0.2974	0.8168	0.5992	5.32	6.70	6.43	6.47	0.3214	0.1605	0.0197	1.1424	68.11	68.71
11	0.0	42.6	73.82	70.81	0.2311	0.2679	0.8305	0.6017	4.77	6.11	8.20	3.01	0.3256	0.1855	0.0189	1.1298	62.25	62.90

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	EPSI-1 DEGREE	EPSI-2 DEGREE	PCT TE SPAN
1	207.9	557.6	207.9	377.8	0.0	410.1	469.0	544.5	513.0	401.0	-469.0	-134.4	15.75	30.46	29.089	29.245	0.0500
2	221.9	530.4	221.9	373.3	0.0	376.8	499.0	560.0	546.1	415.9	-499.0	-183.3	16.77	30.19	23.924	25.092	0.1000
3	234.9	497.2	234.9	367.0	0.0	335.4	528.4	575.6	578.3	438.6	-528.4	-240.1	17.71	29.79	19.084	20.972	0.1500
4	259.7	436.2	259.7	342.9	0.0	269.6	605.6	622.2	658.9	491.8	-605.6	-352.6	19.47	27.92	6.963	10.187	0.3000
5	265.1	388.0	265.1	306.5	0.0	237.9	691.4	684.3	740.5	541.5	-69[illegible]4	-446.4	19.85	24.74	-4.434	0.312	0.5000
6	263.7	371.5	263.7	291.3	0.0	230.6	730.1	715.4	776.3	565.6	-730.1	-484.8	19.75	23.40	-8.357	-3.861	0.6000
7	262.8	372.3	262.8	298.5	0.0	222.6	748.5	731.0	793.3	589.5	-748.5	-508.4	19.69	23.99	-10.157	-5.972	0.6500
8	261.3	376.8	261.3	306.9	0.0	218.5	766.9	746.5	810.2	610.7	-766.9	-528.0	19.58	24.68	-12.085	-8.122	0.7000
9	252.7	352.2	252.7	286.9	0.0	204.2	820.6	793.1	858.7	655.1	-820.6	-588.9	18.98	22.99	-17.583	-14.750	0.8500
10	249.6	325.9	249.6	254.7	0.0	203.4	837.4	808.7	873.8	656.7	-837.4	-605.3	18.75	20.34	-18.943	-16.800	0.9000
11	247.3	294.1	247.3	215.8	0.0	199.8	853.4	824.2	888.5	660.6	-853.4	-624.4	18.59	17.18	-19.299	-18.387	0.9500

WC1/A1 LBM/SEC SQFT	WC1/A1 KG/SEC SQM	T02/T01	P02/P01	EFF-AD ROTOR %	EFF-P ROTOR %
18.40	89.80	1.0599	1.1905	85.35	85.71

AIRFOIL AERODYNAMIC SUMMARY PRINT

50 PERCENT DESIGN SPEED (STATOR PERFORMANCE) RUN NO 111 SPEED CODE 50 POINT NO /

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	177.2	179.5	128.2	179.5	122.3	4.6	163.69	218.78	0.4684	0.0836
2	168.4	177.1	125.0	177.1	112.9	1.3	160.31	218.50	0.4124	0.0729
3	158.3	169.9	122.2	169.9	100.6	-2.8	157.40	211.72	0.3508	0.0634
4	140.7	147.8	114.8	147.7	81.3	-6.7	148.32	185.86	0.1995	0.0364
5	125.5	132.4	102.6	132.4	72.3	-3.1	132.64	166.68	0.0588	-0.0028
6	120.5	129.5	98.0	129.5	70.3	-1.9	125.17	162.82	-0.0142	-0.0248
7	121.0	129.8	100.1	129.8	68.0	-2.0	127.90	163.17	-0.0493	-0.0355
8	122.5	130.5	102.6	130.4	66.9	-2.6	131.09	163.92	-0.0807	-0.0462
9	117.2	126.3	98.9	126.1	63.0	-6.7	125.70	157.57	-0.1763	-0.0761
10	111.1	120.1	91.6	119.8	62.9	-7.9	115.92	148.87	-0.2103	-0.0866
11	103.5	111.6	82.9	110.9	62.1	-11.7	104.44	137.07	-0.2551	-0.0967

SL	B-1 DEGREE	B-2 DEGREE	M-1	M-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	P0/P0 STAGE	T0/T0 STAGE	%EFF-A TOT-STG	%EFF-P TOT-STG
1	45.8	1.4	0.5355	0.5431	-8.64	-5.68	15.29	44.38	0.1326	0.2332	0.0537	0.9586	1.2252	1.0772	77.52	78.17
2	43.8	0.4	0.5087	0.5364	-8.67	-5.54	12.37	43.35	0.0928	0.1462	0.0343	0.9763	1.2309	1.0725	84.53	84.99
3	40.6	-0.9	0.4781	0.5152	-11.16	-7.79	9.91	41.55	0.0707	0.0980	0.0234	0.9860	1.2227	1.0661	89.58	89.88
4	35.6	-2.6	0.4246	0.4472	-17.34	-13.10	7.43	38.20	0.0979	0.1308	0.0330	0.9850	1.1874	1.0579	87.05	87.36
5	35.2	-1.3	0.3779	0.3993	-18.77	-13.41	8.75	36.52	0.1027	0.1003	0.0271	0.9907	1.1632	1.0565	78.24	78.70
6	35.7	-0.8	0.3626	0.3902	-18.15	-12.41	9.26	36.50	0.0929	0.0667	0.0186	0.9942	1.1580	1.0570	75.19	75.71
7	34.2	-0.9	0.3640	0.3911	-19.60	-13.73	9.28	35.06	0.0943	0.0725	0.0205	0.9936	1.1580	1.0564	75.98	76.48
8	33.1	-1.1	0.3685	0.3932	-20.70	-14.70	9.12	34.25	0.0979	0.0783	0.0225	0.9930	1.1584	1.0565	76.02	76.51
9	32.6	-3.0	0.3523	0.3803	-23.31	-17.09	9.34	35.64	0.1017	0.0882	0.0263	0.9928	1.1457	1.0562	70.70	71.26
10	34.7	-3.8	0.3335	0.3609	-23.55	-17.31	10.03	38.46	0.1155	0.1219	0.0369	0.9910	1.1325	1.0570	63.58	64.21
11	37.3	-5.9	0.3101	0.3347	-26.38	-20.24	10.50	43.18	0.1432	0.1878	0.0573	0.9879	1.1161	1.0571	55.92	56.61

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	PCT TE SPAN	EPSI-1 DEGREE	EPSI-2 DEGREE
1	581.4	589.1	420.6	588.9	401.4	15.2	33.52	44.81	0.0430	26.840	4.790
2	552.6	580.9	410.0	580.9	370.5	4.1	32.83	44.75	0.0901	23.629	4.177
3	519.4	557.5	401.0	557.4	330.1	-9.2	32.24	43.36	0.1410	20.101	3.634
4	461.5	485.1	376.7	484.6	266.6	-21.9	30.38	38.07	0.2989	11.433	2.087
5	411.9	434.5	336.7	434.4	237.2	-10.0	26.96	34.14	0.5086	3.367	-0.161
6	395.8	425.0	321.5	425.0	230.8	-6.3	25.64	33.35	0.6103	-0.816	-1.418
7	397.1	425.8	328.4	425.8	223.2	-6.5	26.19	33.42	0.6598	-2.824	-2.032
8	402.0	428.1	336.7	428.0	219.6	-8.5	25.85	33.57	0.7107	-4.626	-2.648
9	384.6	414.4	324.4	413.8	206.6	-22.0	25.74	32.27	0.8620	-10.100	-4.358
10	364.7	394.0	300.6	393.1	206.5	-26.1	23.74	30.49	0.9101	-12.047	-4.965
11	339.7	366.0	271.9	364.0	203.7	-38.3	21.39	28.07	0.9571	-14.615	-5.538

NCORR INLET RPM	WCORR INLET LBM/SEC	WCORR INLET KG/SEC	T0/T0 STAGE	P02/P01	P0/P0 STAGE	EFF-AD STAGE %	EFF-P STAGE %
6235.10	82.00	37.19	1.0599	0.9866	1.1746	78.59	79.08

AIRFOIL AERODYNAMIC SUMMARY PRINT

50 PERCENT DESIGN SPEED (ROTOR PERFORMANCE) RUN NO 111 SPEED CODE 50 POINT NO 6

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	U-1 M/SEC	U-2 M/SEC	V'-1 M/SEC	V'-2 M/SEC	VO'-1 M/SEC	VO'-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	62.3	168.2	62.3	111.2	0.0	126.1	143.2	166.2	156.2	118.2	-143.2	-40.1	75.72	143.87	0.5086	0.5105
2	66.5	161.6	66.5	111.5	0.0	117.0	152.4	171.0	166.3	123.9	-152.4	-54.0	80.61	144.83	0.4191	0.4379
3	70.4	152.3	70.4	110.6	0.0	104.8	161.3	175.7	176.0	131.4	-161.3	-71.0	85.15	144.17	0.3349	0.3657
4	78.0	132.8	78.0	102.6	0.0	84.3	184.9	190.0	200.7	147.3	-184.9	-105.7	93.73	134.36	0.1227	0.1773
5	79.6	117.9	79.6	92.2	0.0	73.6	211.1	208.9	225.6	163.7	-211.1	-135.3	95.59	119.77	-0.0773	0.0047
6	79.1	113.6	79.1	87.2	0.0	72.7	222.9	218.4	236.6	169.8	-222.9	-145.7	95.06	112.74	-0.1467	-0.0682
7	78.8	113.9	78.8	89.5	0.0	70.4	228.5	223.2	241.8	177.1	-228.5	-152.8	94.73	115.80	-0.1783	-0.1052
8	78.3	114.7	78.3	91.4	0.0	69.2	234.2	227.9	246.9	183.2	-234.2	-158.7	94.16	118.26	-0.2119	-0.1428
9	75.8	107.5	75.8	85.2	0.0	65.5	250.6	242.2	261.8	196.2	-250.6	-176.7	91.23	109.84	-0.3061	-0.2579
10	74.8	100.7	74.8	76.1	0.0	66.1	255.7	246.9	266.4	196.2	-255.7	-180.8	90.17	97.67	-0.3292	-0.2932
11	74.1	92.6	74.1	65.3	0.0	65.6	260.6	251.7	270.9	197.2	-260.6	-186.1	89.39	83.62	-0.3357	-0.3207

SL	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	M-1	M-2	M'-1	M'-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	%EFF-A TOTAL	%EFF-P TOTAL
1	0.0	48.2	66.18	19.60	0.1907	0.5062	0.4777	0.3559	1.10	5.19	7.66	46.58	0.4289	0.1277	0.0255	1.2774	92.91	93.16
2	0.0	46.3	66.18	25.77	0.2036	0.4865	0.5088	0.3729	2.45	6.17	7.98	40.41	0.4253	0.0939	0.0188	1.2665	93.86	94.06
3	0.0	43.5	66.22	32.74	0.2157	0.4585	0.5391	0.3954	3.78	7.17	9.29	33.47	0.4052	0.0544	0.0107	1.2488	95.79	95.84
4	0.0	39.5	67.07	45.98	0.2389	0.3995	0.6151	0.4432	5.16	7.45	10.18	21.09	0.3850	0.0407	0.0075	1.2130	95.25	95.37
5	0.0	38.6	69.36	55.69	0.2440	0.3540	0.6918	0.4914	5.19	7.04	10.12	13.67	0.3733	0.0981	0.0164	1.1817	85.41	85.75
6	0.0	39.6	70.47	58.90	0.2426	0.3402	0.7252	0.5087	5.33	7.06	8.60	11.57	0.3771	0.1369	0.0217	1.1722	78.58	79.07
7	0.0	37.9	70.98	59.39	0.2417	0.3413	0.7412	0.5308	5.53	7.21	7.01	11.59	0.3582	0.1244	0.0197	1.1725	79.62	80.08
8	0.0	36.8	71.51	59.76	0.2401	0.3437	0.7569	0.5490	5.99	7.55	6.16	11.76	0.3465	0.1200	0.0190	1.1736	79.73	80.18
9	0.0	37.2	73.20	63.97	0.2321	0.3216	0.8021	0.5870	6.06	7.48	5.50	9.23	0.3301	0.1391	0.0194	1.1616	74.13	74.67
10	0.0	40.7	73.70	66.97	0.2292	0.3009	0.8162	0.5859	5.60	6.97	6.44	6.73	0.3411	0.1716	0.0211	1.1518	67.90	68.54
11	0.0	44.9	74.09	70.53	0.2271	0.2759	0.8300	0.5878	5.04	6.38	7.92	3.55	0.3464	0.1971	0.0204	1.1411	62.59	63.29

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	EPSI-1 DEGREE	EPSI-2 DEGREE	PCT TE SPAN
1	204.5	551.7	204.5	364.9	0.0	413.8	469.8	545.5	512.4	387.9	-469.8	-131.7	15.51	29.47	29.143	29.248	0.0500
2	218.3	530.4	218.3	365.9	0.0	383.9	499.9	561.0	545.5	406.5	-499.9	-177.1	16.51	29.65	24.015	25.090	0.1000
3	231.1	499.8	231.1	362.7	0.0	343.8	529.3	576.6	577.6	431.0	-529.3	-232.8	17.44	29.53	19.187	20.952	0.1500
4	255.8	435.7	255.8	336.8	0.0	276.5	606.6	623.3	658.3	483.4	-606.6	-346.8	19.20	27.52	7.032	10.158	0.3000
5	261.1	387.0	261.1	302.4	0.0	241.5	692.7	685.6	740.3	537.2	-692.7	-444.1	19.58	24.53	-4.430	0.270	0.5000
6	259.6	372.6	259.6	286.1	0.0	238.6	731.4	716.7	776.2	557.1	-731.4	-478.1	19.47	23.09	-8.405	-3.910	0.6000
7	258.7	373.6	258.7	293.7	0.0	230.8	749.9	732.3	793.2	581.1	-749.9	-501.4	19.40	23.72	-10.219	-6.028	0.6500
8	257.0	376.3	257.0	300.0	0.0	227.1	768.3	747.8	810.1	600.9	-768.3	-520.7	19.29	24.22	-12.142	-8.184	0.7000
9	248.6	352.6	248.6	279.6	0.0	214.9	822.1	794.5	858.8	643.6	-822.1	-579.7	18.69	22.50	-17.539	-14.776	0.8500
10	245.5	330.6	245.5	249.5	0.0	216.8	838.9	810.1	874.1	643.7	-838.9	-593.3	18.47	20.09	-18.862	-16.801	0.9000
11	243.3	303.7	243.3	214.3	0.0	215.2	854.9	825.7	888.8	647.0	-854.9	-610.5	18.31	17.13	-19.234	-18.374	0.9500

WC1/A1 LBM/SEC SQFT	WC1/A1 KG/SEC SQM	T02/T01	P02/P01	EFF-AD ROTOR %	EFF-P ROTOR %
18.11	88.38	1.0618	1.1965	85.18	85.56

AIRFOIL AERODYNAMIC SUMMARY PRINT

50 PERCENT DESIGN SPEED (STATOR PERFORMANCE) RUN NO 111 SPEED CODE 50 POINT NO 6

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	175.0	174.4	124.1	174.4	123.4	5.2	158.78	214.92	0.4673	0.0834
2	168.0	173.4	122.5	173.4	115.0	1.6	157.55	216.25	0.4106	0.0724
3	158.7	166.2	120.6	166.2	103.1	-2.6	155.84	209.22	0.3486	0.0630
4	140.1	144.1	112.7	144.0	83.3	-6.3	146.15	182.97	0.1975	0.0363
5	124.9	128.6	101.1	128.6	73.4	-3.3	130.33	163.49	0.0582	-0.0021
6	120.6	126.3	96.2	126.3	72.8	-2.1	123.45	160.18	-0.0136	-0.0236
7	121.1	126.7	98.4	126.6	70.6	-2.5	126.32	160.71	-0.0483	-0.0343
8	122.1	127.3	100.3	127.2	69.6	-2.9	128.73	161.34	-0.0799	-0.0451
9	117.0	123.2	96.4	123.1	66.3	-6.1	123.13	155.16	-0.1773	-0.0753
10	112.0	117.8	89.7	117.6	67.1	-7.1	113.95	147.38	-0.2115	-0.0861
11	105.7	110.1	81.9	109.6	66.8	-10.3	103.61	136.52	-0.2558	-0.0964

SL	B-1 DEGREE	B-2 DEGREE	M-1	M-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	P0/P0 STAGE	T0/T0 STAGE	%EFF-A TOT-STG	%EFF-P TOT-STG
1	47.0	1.6	0.5279	0.5262	-7.47	-4.51	15.51	45.33	0.1517	0.2170	0.0500	0.9625	1.2289	1.0779	78.00	78.64
2	44.8	0.5	0.5066	0.5238	-7.58	-4.45	12.48	44.33	0.1150	0.1327	0.0311	0.9787	1.2376	1.0739	85.24	85.69
3	41.7	-0.9	0.4785	0.5026	-10.11	-6.73	9.95	42.56	0.0987	0.0942	0.0225	0.9865	1.2292	1.0577	89.84	90.14
4	36.8	-2.5	0.4203	0.4349	-16.16	-11.91	7.50	39.31	0.1237	0.1213	0.0305	0.9862	1.1940	1.0593	87.75	88.05
5	36.0	-1.5	0.3755	0.3870	-17.94	-12.58	8.61	37.49	0.1324	0.0955	0.0258	0.9912	1.1700	1.0575	79.98	80.43
6	37.1	-1.0	0.3619	0.3794	-16.71	-10.97	9.14	38.06	0.1264	0.0610	0.0170	0.9947	1.1660	1.0591	76.06	76.58
7	35.6	-1.1	0.3635	0.3807	-18.16	-12.28	9.04	36.75	0.1267	0.0628	0.0178	0.9945	1.1663	1.0585	76.86	77.36
8	34.7	-1.3	0.3665	0.3825	-19.97	-13.08	8.96	36.04	0.1283	0.0653	0.0187	0.9942	1.1665	1.0588	76.65	77.16
9	34.6	-2.8	0.3508	0.3700	-21.30	-15.08	9.56	37.43	0.1337	0.0749	0.0224	0.9939	1.1546	1.0591	71.10	71.69
10	37.0	-3.4	0.3351	0.3530	-21.23	-14.99	10.35	40.46	0.1520	0.1070	0.0324	0.9920	1.1430	1.0608	64.16	64.83
11	39.7	-5.3	0.3158	0.3291	-23.96	-17.82	11.12	44.97	0.1850	0.1718	0.0525	0.9885	1.1280	1.0615	57.01	57.75

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	PCT TE SPAN	EPSI-1 DEGREE	EPSI-2 DEGREE
1	574.2	572.4	407.1	572.1	404.9	17.0	32.52	44.02	0.0430	26.772	4.776
2	551.3	568.8	401.8	568.8	377.4	5.2	32.27	44.29	0.0901	23.523	4.150
3	520.6	545.4	395.6	545.3	338.3	-8.7	31.92	42.85	0.1410	19.973	3.610
4	459.8	472.9	369.7	472.5	273.3	-20.7	29.93	37.47	0.2989	11.316	2.082
5	409.8	422.1	331.6	421.9	240.8	-10.7	26.69	33.48	0.5086	3.336	-0.120
6	395.7	414.3	315.6	414.3	238.7	-7.0	25.28	32.81	0.6103	-0.781	-1.354
7	397.3	415.6	322.8	415.5	231.5	-8.1	25.87	32.91	0.6598	-2.770	-1.966
8	400.5	417.5	329.1	417.4	228.2	-9.5	26.36	33.04	0.7107	-4.580	-2.584
9	383.9	404.4	316.4	403.9	217.4	-19.9	25.22	31.78	0.8620	-10.157	-4.312
10	367.4	386.6	294.2	385.8	220.0	-23.4	23.34	30.19	0.9101	-12.118	-4.933
11	346.7	361.1	268.6	359.5	219.3	-33.8	21.22	27.96	0.9571	-14.659	-5.522

NCORR INLET RPM	WCORR INLET LBM/SEC	WCORR INLET KG/SEC	T0/T0 STAGE	P02/P01	P0/P0 STAGE	EFF-AD STAGE %	EFF-P STAGE %
6241.00	80.70	36.60	1.0618	0.9878	1.1819	79.21	79.71

AIRFOIL AERODYNAMIC SUMMARY PRINT

50 PERCENT DESIGN SPEED (ROTOR PERFORMANCE)

RUN NO 111 SPEED CODE 50 POINT NO 4

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	U-1 M/SEC	U-2 M/SEC	V'-1 M/SEC	V'-2 M/SEC	VO'-1 M/SEC	VO'-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	60.3	166.4	60.3	106.8	0.0	127.6	143.1	166.2	155.3	113.5	-143.1	-38.5	73.42	133.98	0.5099	0.5099
2	64.3	159.8	64.3	107.1	0.0	118.5	152.3	170.9	165.3	119.3	-152.3	-52.4	78.17	140.05	0.4196	0.4363
3	68.1	151.1	68.1	107.4	0.0	106.3	161.3	175.7	175.1	127.8	-161.3	-69.4	82.61	141.03	0.3352	0.3645
4	75.4	132.3	75.4	99.5	0.0	87.2	184.8	189.9	199.6	143.0	-184.8	-102.7	90.96	131.11	0.1205	0.1763
5	76.8	117.3	76.8	87.4	0.0	78.2	211.0	208.9	224.6	157.2	-211.0	-130.7	92.55	114.38	-0.0788	0.0042
6	76.3	114.2	76.3	83.8	0.0	77.6	222.9	218.4	235.6	163.8	-222.9	-140.7	92.03	109.09	-0.1465	-0.0689
7	76.0	114.6	76.0	85.7	0.0	76.1	228.5	223.1	240.8	170.2	-228.5	-147.0	91.71	111.64	-0.1779	-0.1060
8	75.6	115.6	75.6	87.9	0.0	75.1	234.1	227.9	246.0	176.2	-234.1	-152.8	91.16	114.46	-0.2110	-0.1437
9	73.1	108.7	73.1	81.0	0.0	72.5	250.5	242.1	260.9	188.0	-250.5	-169.6	88.40	105.14	-0.3034	-0.2562
10	72.3	102.7	72.3	72.0	0.0	73.2	255.6	246.8	265.6	188.0	-255.6	-173.6	87.43	93.21	-0.3245	-0.2926
11	71.7	97.9	71.7	65.4	0.0	72.9	260.5	251.6	270.2	190.3	-260.5	-178.7	86.72	84.42	-0.3312	-0.3196

SL	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	M-1	M-2	M'-1	M'-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	%EFF-A TOTAL	%EFF-P TOTAL
1	0.0	49.7	66.88	19.61	0.1840	0.4597	0.4743	0.3409	1.81	5.99	7.66	47.27	0.4583	0.1290	0.0257	1.2804	92.99	93.24
2	0.0	47.8	66.89	26.00	0.1965	0.4797	0.5052	0.3581	3.16	6.87	8.22	40.88	0.4519	0.0945	0.0189	1.3697	93.97	94.17
3	0.0	44.8	66.92	32.90	0.2082	0.4539	0.5352	0.3840	4.48	7.86	9.45	34.01	0.4241	0.0459	0.0090	1.2541	96.48	96.59
4	0.0	41.4	67.74	46.05	0.2306	0.3969	0.6108	0.4290	5.84	8.12	10.25	21.69	0.4079	0.0416	0.0077	1.2204	95.31	95.45
5	0.0	41.7	70.03	56.15	0.2349	0.3510	0.6873	0.4704	5.86	7.71	10.59	13.88	0.4055	0.1141	0.0188	1.1900	84.07	84.47
6	0.0	42.6	71.10	59.04	0.2335	0.3411	0.7209	0.4892	5.97	7.70	8.75	12.07	0.4062	0.1477	0.0233	1.1834	78.40	78.91
7	0.0	41.3	71.60	59.51	0.2327	0.3423	0.7369	0.5083	6.16	7.83	7.13	12.09	0.3917	0.1415	0.0223	1.1842	78.53	79.08
8	0.0	40.2	72.12	59.80	0.2312	0.3452	0.7527	0.5263	6.60	8.15	6.21	12.32	0.3794	0.1368	0.0216	1.1860	78.67	79.19
9	0.0	41.5	73.73	64.21	0.2237	0.3239	0.7982	0.5603	6.59	8.01	5.73	9.53	0.3673	0.1621	0.0224	1.1754	72.64	73.27
10	0.0	45.1	74.19	67.24	0.2211	0.3055	0.8125	0.5591	6.09	7.47	6.72	6.95	0.3780	0.1932	0.0235	1.1669	67.29	67.01
11	0.0	47.9	74.56	69.77	0.2192	0.2907	0.8263	0.5652	5.52	6.85	7.16	4.79	0.3780	0.2093	0.0225	1.1611	64.12	64.88

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	EPSI-1 DEGREE	EPSI-2 DEGREE	PCT SPAN
1	197.7	546.0	197.7	350.2	0.0	418.8	469.7	545.3	509.6	372.4	-469.7	-126.5	15.04	28.46	29.156	29.218	0.4500
2	211.0	524.2	211.0	351.5	0.0	388.9	499.8	560.8	542.5	391.3	-499.8	-172.0	16.01	28.68	24.040	25.039	0.3000
3	223.5	495.8	223.5	352.3	0.0	348.9	529.2	576.4	574.4	419.4	-529.2	-227.5	16.92	28.88	19.208	20.835	0.1500
4	247.3	434.0	247.3	326.3	0.0	286.1	606.4	623.1	654.9	469.1	-606.4	-337.0	18.63	26.85	6.904	10.100	0.3000
5	251.9	384.9	251.9	286.9	0.0	256.6	692.5	685.3	736.8	515.8	-692.5	-428.7	18.95	23.43	-4.515	0.242	0.5000
6	250.4	374.7	250.4	274.8	0.0	254.7	731.2	716.5	772.9	537.4	-731.2	-461.8	18.85	22.34	-8.397	-3.945	0.6000
7	249.5	376.1	249.5	281.2	0.0	249.7	749.6	732.0	790.0	558.3	-749.6	-482.3	18.78	22.86	-10.190	-6.072	0.6500
8	247.9	379.2	247.9	288.3	0.0	246.4	768.0	747.6	807.0	578.2	-768.0	-501.2	18.67	23.44	-12.089	-8.232	0.7000
9	240.0	356.5	240.0	265.7	0.0	237.7	821.8	794.3	856.1	616.8	-821.8	-556.6	18.10	21.53	-17.382	-14.794	0.8500
10	237.2	337.0	237.2	236.4	0.0	240.2	838.6	809.8	871.5	616.8	-838.6	-569.7	17.91	19.09	-18.591	-16.765	0.9000
11	235.2	321.1	235.2	214.4	0.0	239.0	854.6	825.4	886.4	624.3	-854.6	-586.4	17.76	17.29	-18.979	-19.312	0.9500

WC1/A1 LBM/SEC SQFT	WC1/A1 KG/SEC SQM
17.50	85.42

TO2/TO1	P02/P01	EFF-AD ROTOR %	EFF-P ROTOR %
1.0652	1.2063	84.50	84.91

AIRFOIL AERODYNAMIC SUMMARY PRINT

50 PERCENT DESIGN SPEED (STATOR PERFORMANCE) RUN NO 111 SPEED CODE 50 POINT NO 4

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	172.6	166.0	119.1	165.9	124.9	5.3	153.64	208.65	0.4664	0.0337
2	165.6	165.1	117.7	165.1	116.5	2.0	152.53	209.96	0.4089	0.0730
3	156.9	158.4	116.9	158.4	104.6	-1.9	152.34	203.21	0.3470	0.0639
4	138.9	136.6	108.9	136.5	86.2	-5.7	142.43	176.38	0.1996	0.0385
5	123.7	121.9	96.0	121.8	78.0	-4.3	124.76	157.42	0.0602	0.0303
6	120.7	119.9	92.4	119.9	77.7	-3.0	119.53	154.59	-0.0129	-0.0214
7	121.3	120.8	94.3	120.8	76.3	-2.4	121.99	155.71	-0.0482	-0.0322
8	122.5	121.9	96.5	121.8	75.5	-3.0	124.73	156.96	-0.0803	-0.0433
9	117.6	117.8	91.9	117.7	73.3	-3.7	118.23	150.67	-0.1895	-0.0742
10	113.1	112.9	85.2	112.8	74.3	-4.5	109.19	143.55	-0.2161	-0.0854
11	109.8	107.1	80.9	107.0	74.3	-5.5	103.31	135.47	-0.2598	-0.0960

SL	B-1 DEGREE	B-2 DEGREE	M-1	M-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	P0/P0 STAGE	T0/T0 STAGE	%EFF-A TOT-STG	%EFF-P TOT-STG
1	48.5	1.8	0.5194	0.4986	-5.98	-3.03	15.64	46.69	0.1904	0.2053	0.0473	0.9655	1.2357	1.0786	79.41	80.03
2	46.3	0.7	0.4980	0.4958	-6.09	-2.97	12.63	45.66	0.1536	0.1217	0.0285	0.9811	1.2433	1.0746	86.50	86.92
3	42.9	-0.7	0.4720	0.4771	-8.83	-5.46	10.15	43.64	0.1404	0.0870	0.0208	0.9879	1.2364	1.0685	91.37	91.63
4	38.7	-2.4	0.4176	0.4103	-14.26	-10.01	7.64	41.08	0.1763	0.1152	0.0291	0.9871	1.2027	1.0613	88.44	88.75
5	39.1	-2.0	0.3707	0.3650	-14.84	-9.49	8.02	41.17	0.1927	0.0710	0.0192	0.9936	1.1816	1.0609	80.33	80.79
6	40.0	-1.4	0.3611	0.3587	-13.76	-8.02	8.66	41.48	0.1935	0.0486	0.0136	0.9958	1.1785	1.0630	76.39	76.94
7	39.0	-1.1	0.3629	0.3613	-14.82	-8.94	9.01	40.11	0.1897	0.0461	0.0131	0.9960	1.1797	1.0631	76.79	77.24
8	38.0	-1.4	0.3663	0.3645	-15.77	-9.77	8.87	39.43	0.1898	0.0477	0.0137	0.9958	1.1808	1.0636	76.58	77.13
9	38.7	-1.8	0.3510	0.3517	-17.19	-10.97	10.58	40.53	0.1969	0.0640	0.0191	0.9948	1.1694	1.0651	70.32	70.98
10	41.4	-2.3	0.3370	0.3364	-16.90	-10.66	11.52	43.62	0.2160	0.0903	0.0274	0.9932	1.1591	1.0671	64.31	65.06
11	43.0	-2.9	0.3268	0.3187	-20.60	-14.46	13.55	45.91	0.2498	0.1606	0.0492	0.9885	1.1478	1.0681	59.07	59.87

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	PCT TE SPAN	EPSI-1 DEGREE	EPSI-2 DEGREE
1	566.4	544.8	390.9	544.5	409.8	17.5	31.47	42.73	0.0430	26.721	4.794
2	543.3	541.8	386.1	541.8	382.2	6.4	31.24	43.00	0.0901	23.426	4.183
3	514.8	519.8	383.6	519.8	343.2	-6.4	31.20	41.62	0.1410	19.884	3.660
4	455.9	448.1	357.4	447.7	282.9	-18.6	29.17	36.12	0.2989	11.437	2.203
5	406.0	399.9	315.1	399.7	255.9	-14.3	25.55	32.24	0.5086	3.452	0.015
6	396.1	393.5	303.2	393.4	254.9	-9.9	24.48	31.66	0.6103	-0.741	-1.226
7	398.1	396.4	309.4	396.3	250.5	-7.9	24.98	31.89	0.6598	-2.759	-1.848
8	401.8	399.8	316.5	399.7	247.6	-9.7	25.55	32.15	0.7107	-4.602	-2.479
9	385.7	386.5	301.5	386.3	240.6	-12.1	24.21	30.86	0.8620	-10.339	-4.249
10	371.0	370.4	279.7	370.1	243.8	-14.8	22.36	29.40	0.9101	-12.380	-4.891
11	360.2	351.5	265.3	351.0	243.6	-17.9	21.16	27.74	0.9571	-14.886	-5.501

NCORR INLET RPM	WCORR INLET LBM/SEC	WCORR INLET KG/SEC	T0/T0 STAGE	P02/P01	P0/P0 STAGE	EFF-AD STAGE %	EFF-P STAGE %
6230.60	78.00	35.37	1.0652	0.9893	1.1932	79.51	80.02

AIRFOIL AERODYNAMIC SUMMARY PRINT

50 PERCENT DESIGN SPEED (ROTOR PERFORMANCE) RUN NO 111 SPEED CODE 50 POINT NO 5

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	U-1 M/SEC	U-2 M/SEC	V'-1 M/SEC	V'-2 M/SEC	VO'-1 M/SEC	VO'-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	58.4	166.0	58.4	103.7	0.0	129.6	143.1	166.1	154.5	110.0	-143.1	-36.6	71.54	136.23	0.5096	0.5088
2	62.3	160.0	62.3	105.4	0.0	120.4	152.3	170.9	164.5	116.8	-152.3	-50.5	76.21	139.00	0.4202	0.4355
3	66.0	151.0	66.0	104.6	0.0	108.9	161.2	175.6	174.2	124.1	-161.2	-66.7	80.54	138.56	0.3349	0.3638
4	72.8	131.3	72.8	95.3	0.0	90.3	184.8	189.9	198.6	137.8	-184.8	-99.5	88.47	126.64	0.1195	0.1763
5	74.0	117.6	74.0	83.4	0.0	82.9	211.0	208.8	223.6	151.0	-211.0	-125.9	89.89	109.99	-0.0767	0.0051
6	73.7	115.5	73.7	81.3	0.0	82.0	222.8	218.3	234.7	158.7	-222.8	-136.3	89.45	106.91	-0.1437	-0.0679
7	73.4	116.1	73.4	83.4	0.0	80.7	228.4	223.0	239.9	165.0	-228.4	-142.3	89.17	109.74	-0.1757	-0.1052
8	72.9	117.3	72.9	85.5	0.0	80.3	234.0	227.8	245.1	170.5	-234.0	-147.5	88.63	112.48	-0.2097	-0.1432
9	70.6	110.8	70.6	77.5	0.0	79.1	250.4	242.0	260.2	180.4	-250.4	-162.9	85.90	101.56	-0.3021	-0.2581
10	69.8	106.1	69.8	69.7	0.0	80.0	255.5	246.8	264.9	180.7	-255.5	-166.7	84.97	91.07	-0.3227	-0.2925
11	69.2	102.7	69.2	63.6	0.0	80.6	260.4	251.5	269.4	182.4	-260.4	-170.9	84.28	82.98	-0.3298	-0.3196

SL	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	M-1	M-2	M'-1	M'-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	%EFF-A TOTAL	%EFF-P TOTAL
1	0.0	50.9	67.54	19.16	0.1783	0.4985	0.4722	0.3304	2.46	6.56	7.22	48.38	0.4813	0.1313	0.0262	1.2855	93.03	93.28
2	0.0	48.7	67.54	25.54	0.1904	0.4804	0.5029	0.3509	3.81	7.52	7.75	42.00	0.4670	0.0868	0.0174	1.2765	94.56	94.76
3	0.0	46.2	67.56	32.57	0.2018	0.4535	0.5328	0.3727	5.12	8.51	9.12	34.99	0.4470	0.0517	0.0102	1.2501	96.19	96.23
4	0.0	43.6	68.42	46.36	0.2229	0.3939	0.6080	0.4133	6.51	8.80	10.56	22.06	0.4354	0.0594	0.0109	1.2247	93.57	93.76
5	0.0	44.8	70.68	56.42	0.2267	0.3515	0.6846	0.4513	6.51	8.36	10.86	14.26	0.4365	0.1349	0.0219	1.1932	82.42	82.87
6	0.0	45.0	71.70	58.98	0.2255	0.3447	0.7184	0.4736	6.57	8.30	8.69	12.73	0.4310	0.1577	0.0249	1.1944	78.24	78.79
7	0.0	43.8	72.18	59.37	0.2247	0.3464	0.7345	0.4923	6.74	8.42	6.99	12.81	0.4168	0.1519	0.0241	1.1958	78.37	78.91
8	0.0	42.8	72.69	59.61	0.2233	0.3499	0.7503	0.5088	7.17	8.72	6.02	13.08	0.4068	0.1501	0.0239	1.1983	78.12	78.68
9	0.0	45.2	74.26	64.28	0.2160	0.3296	0.7961	0.5367	7.12	8.54	5.80	9.99	0.4025	0.1852	0.0255	1.1891	71.30	72.00
10	0.0	48.6	74.71	67.09	0.2135	0.3152	0.8105	0.5366	6.60	7.98	6.56	7.62	0.4116	0.2127	0.0260	1.1827	66.95	67.73
11	0.0	51.5	75.06	69.44	0.2117	0.3044	0.8244	0.5407	6.02	7.35	6.83	5.62	0.4143	0.2315	0.0252	1.1789	63.94	64.79

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	EPSI-1 DEGREE	EPSI-2 DEGREE	PCT TE SPAN
1	191.5	544.6	191.5	340.4	0.0	425.1	469.5	545.1	507.0	360.9	-469.5	-120.0	14.65	27.90	29.200	29.152	0.0500
2	204.4	524.8	204.4	345.7	0.0	394.9	499.6	560.7	539.8	383.4	-499.6	-165.8	15.61	28.47	24.079	24.955	0.1000
3	216.5	495.4	216.5	343.2	0.0	357.3	529.0	576.2	571.6	407.1	-529.0	-219.0	16.49	28.38	19.187	20.847	0.1500
4	238.9	430.9	238.9	312.8	0.0	296.4	606.3	622.9	651.6	452.1	-606.3	-326.5	18.12	25.94	6.848	10.100	0.3000
5	242.9	385.8	242.9	273.6	0.0	272.1	692.2	685.1	733.6	495.4	-692.2	-413.0	18.41	22.53	-4.395	0.292	0.5000
6	241.7	378.9	241.7	266.7	0.0	269.1	731.0	716.2	769.9	520.6	-731.0	-447.1	18.32	21.90	-8.232	-3.893	0.6900
7	240.8	380.8	240.8	273.7	0.0	264.9	749.4	731.8	787.1	541.2	-749.4	-466.9	18.26	22.47	-10.066	-6.028	0.6500
8	239.3	384.7	239.3	280.5	0.0	263.3	767.8	747.4	804.2	559.5	-767.8	-484.0	18.15	23.04	-12.017	-8.206	0.7000
9	231.6	363.4	231.6	254.3	0.0	259.6	821.6	794.0	853.6	591.8	-821.6	-534.4	17.59	20.80	-17.312	-14.789	0.8500
10	229.0	348.2	229.0	228.7	0.0	262.6	838.4	809.6	869.1	592.9	-838.4	-547.0	17.40	18.65	-18.489	-16.758	0.9000
11	227.0	336.9	227.0	208.8	0.0	264.4	854.4	825.2	884.0	598.4	-854.4	-560.8	17.26	17.00	-18.898	-18.309	0.9500

WC1/A1 LBM/SEC SQFT	WC1/A1 KG/SEC SQM	T02/T01	P02/P01	EFF-AD ROTOR %	EFF-P ROTOR %
16.97	82.79	1.0689	1.2155	83.32	83.78

AIRFOIL AERODYNAMIC SUMMARY PRINT

50 PERCENT DESIGN SPEED (STATOR PERFORMANCE) RUN NO 111 SPEED CODE 50 POINT NO 5

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	171.6	159.2	115.7	159.1	126.8	5.9	150.62	204.14	0.4657	0.0841
2	165.2	157.9	115.3	157.8	118.3	2.6	150.98	204.63	0.4091	0.0738
3	156.2	151.4	113.7	151.4	107.2	-1.3	149.45	197.84	0.3493	0.0648
4	137.4	129.9	104.4	129.8	89.3	-5.2	137.68	170.85	0.2026	0.0392
5	123.5	115.8	91.7	115.7	82.7	-4.3	120.20	152.04	0.0596	0.0006
6	121.5	114.4	89.5	114.3	82.1	-3.8	117.02	149.95	-0.0141	-0.0208
7	122.3	115.4	91.6	115.4	81.0	-3.6	119.73	151.27	-0.0485	-0.0314
8	123.6	116.9	93.7	116.8	80.7	-3.7	122.42	153.01	-0.0798	-0.0422
9	119.1	113.2	88.1	113.1	80.1	-3.6	114.45	147.05	-0.1804	-0.0731
10	115.7	109.3	82.4	109.2	81.3	-3.6	106.59	141.26	-0.2167	-0.0844
11	113.6	105.1	78.4	105.0	82.1	-3.9	101.24	135.17	-0.2607	-0.0954

SL	B-1 DEGREE	B-2 DEGREE	M-1	M-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	P0/P0 STAGE	TO/TO STAGE	%EFF-A TOT-STG	%EFF-P TOT-STG
1	49.7	2.0	0.5164	0.4772	-4.73	-1.78	15.91	47.67	0.2276	0.1942	0.0447	0.9677	1.2436	1.0799	80.57	81.17
2	47.3	0.9	0.4969	0.4739	-5.08	-1.95	12.89	46.42	0.1978	0.1249	0.0293	0.9806	1.2500	1.0759	86.94	87.35
3	44.5	-0.5	0.4698	0.4549	-7.31	-3.93	10.36	44.95	0.1850	0.0822	0.0197	0.9886	1.2431	1.0704	91.23	91.49
4	40.9	-2.3	0.4127	0.3895	-12.04	-7.80	7.73	43.20	0.2212	0.0869	0.0220	0.9905	1.2113	1.0637	88.54	88.85
5	42.1	-2.1	0.3696	0.3459	-11.88	-6.53	7.92	44.23	0.2516	0.0558	0.0151	0.9950	1.1916	1.0646	79.61	80.12
6	42.5	-1.9	0.3630	0.3414	-11.29	-5.55	8.21	44.40	0.2562	0.0464	0.0129	0.9960	1.1896	1.0667	76.42	77.00
7	41.5	-1.8	0.3654	0.3444	-12.33	-6.45	8.36	43.26	0.2535	0.0476	0.0135	0.9958	1.1910	1.0671	76.48	77.06
8	40.7	-1.8	0.3694	0.3487	-13.09	-7.09	8.43	42.55	0.2520	0.0504	0.0145	0.9955	1.1928	1.0681	76.04	76.63
9	42.4	-1.8	0.3548	0.3369	-13.49	-7.27	10.54	44.26	0.2630	0.0683	0.0204	0.9943	1.1825	1.0712	69.06	69.80
10	44.9	-1.9	0.3442	0.3247	-13.36	-7.12	11.92	46.76	0.2810	0.0921	0.0279	0.9927	1.1743	1.0734	64.09	64.91
11	46.8	-2.1	0.3374	0.3118	-16.84	-10.70	14.32	48.89	0.3098	0.1477	0.0453	0.9888	1.1657	1.0754	59.48	60.36

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	PCT TE SPAN	EPSI-1 DEGREE	EPSI-2 DEGREE
1	563.2	522.3	379.6	521.9	416.0	19.3	30.85	41.81	0.0430	26.681	4.818
2	542.0	517.9	378.4	517.8	388.1	8.5	30.92	41.91	0.0901	23.441	4.228
3	512.5	496.7	372.9	496.7	351.6	-4.3	30.61	40.52	0.1410	20.014	3.715
4	450.9	426.2	342.6	425.9	293.1	-17.0	28.20	34.99	0.2989	11.607	2.245
5	405.2	379.8	300.9	379.6	271.3	-14.2	24.62	31.14	0.5086	3.413	0.034
6	398.6	375.4	293.8	375.2	269.4	-12.4	23.97	30.71	0.6103	-0.809	-1.194
7	401.2	378.7	300.6	378.5	265.7	-11.9	24.52	30.98	0.6598	-2.779	-1.801
8	405.7	383.4	307.4	383.2	264.7	-12.2	25.07	31.34	0.7107	-4.574	-2.420
9	390.6	371.3	289.0	371.1	262.8	-11.9	23.44	30.12	0.8620	-10.335	-4.187
10	379.6	358.5	270.2	358.3	266.7	-11.8	21.83	28.93	0.9101	-12.417	-4.836
11	372.6	344.9	257.3	344.7	269.4	-12.8	20.73	27.68	0.9571	-14.935	-5.463

NCORR INLET RPM	WCORR INLET LBM/SEC	WCORR INLET KG/SEC	TO/TO STAGE	P02/P01	PO/PO STAGE	EFF-AD STAGE %	EFF-P STAGE %
6233.20	75.60	34.29	1.0689	0.9903	1.2037	79.06	79.61

AIRFOIL AERODYNAMIC SUMMARY PRINT

50 PERCENT DESIGN SPEED (ROTOR PERFORMANCE) RUN NO 111 SPEED CODE 59 POINT NO 9

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	U-1 M/SEC	U-2 M/SEC	V'-1 M/SEC	V'-2 M/SEC	VO'-1 M/SEC	VO'-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	55.8	165.9	55.8	102.4	0.0	139.5	142.9	165.9	153.4	108.3	-142.9	-35.4	69.17	136.97	0.5067	0.5101
2	59.5	159.6	59.5	102.6	0.0	122.3	152.0	170.6	163.3	113.4	-152.0	-48.3	73.67	137.71	0.4152	0.4374
3	63.0	150.4	63.0	100.5	0.0	111.9	161.0	175.3	172.9	118.9	-161.0	-63.5	77.83	135.41	0.3281	0.3655
4	69.4	132.0	69.4	91.5	0.0	95.1	184.5	189.6	197.1	131.4	-184.5	-94.4	85.37	123.40	0.1098	0.1755
5	70.2	117.5	70.2	77.4	0.0	88.4	210.7	208.5	222.0	142.8	-210.7	-120.1	86.36	103.63	-0.0967	0.0049
6	69.8	116.9	69.8	77.5	0.0	87.5	222.4	218.0	233.1	151.7	-222.4	-130.4	85.82	103.59	-0.1523	-0.0665
7	69.5	118.1	69.5	79.3	0.0	87.5	228.0	222.7	238.4	156.7	-228.0	-135.1	85.46	105.87	-0.1848	-0.1070
8	68.9	119.0	68.9	79.7	0.0	88.3	233.6	227.4	243.6	160.3	-233.6	-139.1	84.85	106.27	-0.2183	-0.1459
9	66.6	113.8	66.6	70.4	0.0	89.4	250.0	241.6	258.7	167.8	-250.0	-152.2	82.13	93.48	-0.3041	-0.2597
10	65.9	110.8	65.9	64.6	0.0	90.0	255.1	246.4	263.5	169.1	-255.1	-155.3	81.29	85.53	-0.3215	-0.2929
11	65.4	108.6	65.4	61.0	0.0	89.9	260.0	251.1	268.1	172.4	-260.0	-161.2	80.66	80.78	-0.3285	-0.3192

SL	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	M-1	M-2	M'-1	M'-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	XEFF-A TOTAL	XEFF-P TOTAL
1	0.0	51.5	68.38	18.83	0.1707	0.4990	0.4595	0.3259	3.39	7.40	6.88	49.56	0.4905	0.0943	0.0169	1.2972	95.69	95.76
2	0.0	49.9	68.37	25.16	0.1822	0.4890	0.4999	0.3409	4.64	8.36	7.37	43.21	0.4883	0.0628	0.0127	1.2873	96.15	96.28
3	0.0	48.1	68.40	32.31	0.1930	0.4522	0.5296	0.3574	5.96	9.35	8.86	36.09	0.4781	0.0473	0.0094	1.2693	96.53	96.65
4	0.0	46.3	69.30	46.04	0.2127	0.3969	0.6043	0.3944	7.39	9.67	10.23	23.26	0.4710	0.0697	0.0129	1.2362	92.86	93.07
5	0.0	48.7	71.59	57.13	0.2153	0.3513	0.6808	0.4269	7.42	9.27	11.56	14.46	0.4774	0.1561	0.0251	1.2034	80.80	81.31
6	0.0	48.2	72.61	59.06	0.2139	0.3490	0.7148	0.4529	7.47	9.20	8.77	13.55	0.4659	0.1718	0.0271	1.2075	77.80	78.39
7	0.0	47.5	73.09	59.35	0.2129	0.3524	0.7309	0.4675	7.64	9.32	6.97	13.74	0.4573	0.1749	0.0277	1.2100	76.98	77.69
8	0.0	47.6	73.59	59.91	0.2113	0.3546	0.7468	0.4779	8.07	9.63	6.32	13.68	0.4558	0.1849	0.0291	1.2119	75.39	76.05
9	0.0	51.4	75.09	64.91	0.2042	0.3380	0.7929	0.4982	7.95	9.37	6.43	10.18	0.4604	0.2307	0.0311	1.2056	68.12	68.96
10	0.0	54.1	75.49	67.34	0.2020	0.3285	0.8075	0.5015	7.39	8.76	6.81	8.15	0.4649	0.2500	0.0302	1.2021	65.28	66.18
11	0.0	55.6	75.82	69.13	0.2003	0.3217	0.8215	0.5105	6.78	8.11	6.51	6.70	0.4592	0.2589	0.0286	1.2006	63.79	64.64

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	EPSI-1 DEGREE	EPSI-2 DEGREE	PCT TE SPAN
1	183.0	544.2	183.0	336.0	0.0	458.2	468.8	544.3	503.2	355.5	-468.8	-116.1	14.17	28.05	29.031	29.224	0.0500
2	195.3	523.7	195.3	336.5	0.0	401.3	498.8	559.8	535.7	372.0	-498.8	-158.5	15.09	28.20	23.789	25.060	0.1000
3	206.7	493.5	206.7	329.8	0.0	367.1	528.2	575.3	567.2	390.1	-528.2	-208.2	15.94	27.73	18.799	20.944	0.1500
4	227.6	433.0	227.6	300.1	0.0	312.2	605.3	621.9	646.7	431.3	-605.3	-309.8	17.49	25.27	6.291	10.054	0.3000
5	230.4	385.6	230.4	254.0	0.0	290.2	691.2	684.1	728.5	458.7	-691.2	-393.9	17.69	21.22	-4.966	0.281	0.5000
6	228.9	383.7	228.9	254.4	0.0	287.2	729.8	715.1	764.9	497.9	-729.8	-427.9	17.58	21.22	-8.726	-3.931	0.6000
7	227.9	387.6	227.9	260.2	0.0	287.2	748.2	730.6	782.2	514.1	-748.2	-443.4	17.50	21.68	-10.589	-5.133	0.6500
8	226.2	390.3	226.2	261.5	0.0	289.7	766.6	746.2	799.3	526.0	-766.6	-456.4	17.38	21.76	-12.510	-8.357	0.7000
9	218.6	373.4	218.6	231.1	0.0	293.3	820.3	792.8	848.9	550.4	-820.3	-499.5	16.82	19.15	-17.421	-14.880	0.8500
10	216.3	363.5	216.3	211.9	0.0	295.4	837.0	808.3	864.5	555.0	-837.0	-512.9	16.65	17.52	-18.423	-16.784	0.9000
11	214.5	356.4	214.5	200.2	0.0	294.9	853.0	823.9	879.6	565.6	-853.0	-529.0	16.52	16.54	-18.824	-18.289	0.9500

WC1/A1 LBM/SEC SQFT	WC1/A1 KG/SEC SQM	T02/T01	P02/P01	EFF-AD ROTOR %	EFF-P ROTOR %
16.16	78.85	1.0	1.2290	82.19	82.70

AIRFOIL AERODYNAMIC SUMMARY PRINT

50 PERCENT DESIGN SPEED (STATOR PERFORMANCE) RUN NO 111 SPEED CODE 50 POINT NO 9

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VU-1 M/SEC	VU-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	171.0	151.3	113.7	151.2	127.7	6.2	150.86	199.74	0.4695	0.0850
2	164.3	149.6	112.0	149.6	120.3	3.2	149.37	199.42	0.4150	0.0758
3	155.1	142.8	109.1	142.8	110.2	-0.5	146.04	191.63	0.3563	0.0672
4	137.3	121.3	100.0	121.2	94.1	-4.1	134.03	163.69	0.2119	0.0452
5	122.7	105.8	85.3	105.8	88.2	-4.1	113.57	143.90	0.0707	0.0679
6	122.2	106.0	85.2	105.9	87.6	-4.2	113.11	142.51	-0.0029	-0.0134
7	123.5	107.5	86.9	107.4	87.8	-4.1	115.30	144.49	-0.0357	-0.0240
8	124.6	109.0	87.5	108.9	88.8	-3.8	115.93	145.20	-0.0590	-0.0352
9	121.2	106.2	80.6	106.1	90.5	-3.2	106.17	141.24	-0.1779	-0.0691
10	119.2	103.2	76.5	103.2	91.4	-2.4	100.41	136.74	-0.2173	-0.0817
11	118.1	100.2	74.5	100.2	91.6	-2.0	97.77	132.29	-0.2612	-0.0942

SL	B-1 DEGREE	B-2 DEGREE	M-1	M-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	P0/P0 STAGE	T0/T0 STAGE	%EFF-A TOT-STG	%EFF-P TOT-STG
1	50.5	2.3	0.5151	0.4533	-3.97	-1.02	15.12	48.22	0.2725	0.1966	0.0452	0.9674	1.2547	1.0908	83.05	83.59
2	48.7	1.2	0.4948	0.4488	-3.79	-0.57	13.16	47.52	0.2480	0.1330	0.0312	0.9795	1.2598	1.0776	88.03	88.42
3	46.5	-0.2	0.4667	0.4284	-5.28	-1.91	10.65	46.68	0.2498	0.0912	0.0218	0.9874	1.2521	1.0729	91.21	91.50
4	43.7	-1.9	0.4125	0.3831	-9.27	-5.02	8.09	45.62	0.2926	0.0970	0.0245	0.9893	1.2221	1.0573	87.73	88.08
5	46.0	-2.2	0.3671	0.3186	-7.96	-2.60	7.87	48.21	0.3329	0.0413	0.0111	0.9953	1.2038	1.0629	79.07	79.62
6	45.8	-2.3	0.3651	0.3157	-8.00	-2.26	7.84	48.06	0.3424	0.0407	0.0114	0.9954	1.2032	1.0713	75.28	76.90
7	45.3	-2.2	0.3629	0.3200	-8.51	-2.64	7.98	47.46	0.3492	0.0450	0.0113	0.9954	1.2054	1.0727	75.58	76.22
8	45.4	-2.0	0.3719	0.3243	-8.42	-2.42	8.29	47.36	0.3399	0.0427	0.0122	0.9951	1.2074	1.0748	74.05	74.75
9	48.4	-1.7	0.3604	0.3149	-7.49	-1.27	10.66	50.14	0.3582	0.0584	0.0178	0.9949	1.1998	1.0804	66.52	67.38
10	50.4	-1.3	0.3539	0.3057	-7.89	-1.65	12.48	51.67	0.3754	0.0859	0.0260	0.9929	1.1936	1.0827	62.79	63.71
11	51.3	-1.1	0.3504	0.2964	-12.30	-5.16	15.29	52.46	0.3980	0.1366	0.0419	0.9889	1.1872	1.0843	59.72	60.69

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VU-1 FT/SEC	VU-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	PCT TE SPAN	EPSI-1 DEGREE	EPSI-2 DEGREE
1	561.0	496.4	372.9	496.0	419.1	20.2	30.90	40.91	0.9430	25.901	4.872
2	539.2	491.0	367.5	490.9	394.6	10.5	30.59	40.84	0.0901	23.780	4.343
3	508.7	468.5	358.0	468.5	361.4	-1.5	29.91	39.25	0.1410	20.412	3.822
4	450.5	393.0	328.0	397.8	308.8	-13.3	27.45	33.52	0.2589	12.141	2.590
5	402.5	350.5	279.9	350.3	289.3	-13.5	23.26	29.47	0.5185	4.051	0.455
6	400.8	347.8	279.4	347.5	287.4	-13.7	23.17	29.19	0.6103	-0.166	-0.766
7	405.3	352.6	285.0	352.4	288.1	-13.4	23.61	29.57	0.6593	-2.104	-1.377
8	408.9	357.6	287.0	357.4	291.2	-12.3	23.74	29.94	0.7107	-3.953	-2.018
9	397.6	348.4	264.5	348.3	296.8	-10.4	21.74	28.93	0.8620	-19.192	-3.957
10	391.0	338.8	250.8	338.7	299.9	-7.8	20.57	28.00	0.9101	-12.448	-4.581
11	387.5	328.8	244.6	328.8	300.5	-6.6	20.03	27.08	0.9571	-14.957	-5.394

NCORR INLET PPM	WCORR INLET LBM/SEC	WCORR INLET KG/SEC
6235.70	72.00	32.65

T0/T0 STAGE	P02/P01	P0/P0 STAGE	EFF-AD STAGE %	EFF-P STAGE %
1.0749	0.9903	1.2179	78.17	78.78

AIRFOIL AERODYNAMIC SUMMARY PRINT

70 PERCENT DESIGN SPEED (ROTOR PERFORMANCE) RUN NO 111 SPEED CODE 70 POINT NO 5

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	U-1 M/SEC	U-2 M/SEC	V'-1 M/SEC	V'-2 M/SEC	VO'-1 M/SEC	VO'-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	85.3	230.0	85.3	142.4	0.0	180.7	199.2	231.3	216.7	151.1	-199.2	-50.6	97.79	190.13	0.5083	0.5126
2	91.2	221.5	91.2	143.3	0.0	168.9	212.0	237.9	230.7	159.0	-212.0	-69.0	104.03	192.85	0.4180	0.4425
3	96.7	209.6	96.7	141.1	0.0	155.0	224.4	244.5	244.4	167.1	-224.4	-89.5	109.78	191.00	0.3317	0.3723
4	106.8	180.8	106.8	122.1	0.0	133.4	257.2	264.3	278.5	179.0	-257.2	-130.9	120.08	165.38	0.1184	0.1844
5	109.1	167.1	109.1	113.4	0.0	122.8	293.7	290.7	313.3	202.6	-293.7	-167.9	122.39	152.57	-0.0722	0.0108
6	108.6	165.5	108.6	109.3	0.0	124.2	310.1	303.9	328.6	210.3	-310.1	-179.6	121.91	146.16	-0.1413	-0.0646
7	108.3	167.5	108.3	111.7	0.0	124.8	317.9	310.5	335.9	216.7	-317.9	-185.7	121.53	149.16	-0.1733	-0.1028
8	107.6	168.0	107.6	112.9	0.0	124.3	325.7	317.1	343.0	223.4	-325.7	-192.7	120.84	150.83	-0.2063	-0.1413
9	104.3	159.5	104.3	104.0	0.0	120.9	348.6	336.9	363.8	239.7	-348.6	-216.0	117.59	138.52	-0.2941	-0.2555
10	103.3	155.0	103.3	95.6	0.0	122.0	355.7	343.5	370.4	241.2	-355.7	-221.4	116.51	126.97	-0.3144	-0.2894
11	102.4	152.4	102.4	90.5	0.0	122.6	362.5	350.1	376.7	244.8	-362.5	-227.4	115.63	119.97	-0.3244	-0.3171

SL	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	M-1	M-2	M'-1	M'-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	%EFF-A TOTAL	%EFF-P TOTAL
1	0.0	51.4	66.52	19.36	0.2632	0.6857	0.6688	0.4504	1.45	5.54	7.41	47.17	0.4950	0.0903	0.0180	1.6305	95.39	95.70
2	0.0	49.7	66.48	25.68	0.2817	0.6600	0.7129	0.4738	2.75	6.47	7.90	40.80	0.4885	0.0621	0.0125	1.6089	96.29	96.54
3	0.0	47.8	66.48	32.49	0.2991	0.6242	0.7558	0.4976	4.04	7.42	9.04	33.98	0.4780	0.0444	0.0088	1.5725	96.85	97.04
4	0.0	47.7	67.36	47.16	0.3310	0.5357	0.8630	0.5302	5.46	7.74	11.36	20.21	0.4921	0.0997	0.0181	1.4865	90.42	90.95
5	0.0	47.2	69.62	55.90	0.3383	0.4927	0.9713	0.5971	5.45	7.30	10.34	13.72	0.4706	0.1[illegible]	0.0245	1.4481	83.09	83.96
6	0.0	48.4	70.69	58.46	0.3368	0.4859	1.0187	0.6174	5.55	7.28	8.17	12.22	0.4754	0.1[illegible]	0.0300	1.4438	77.90	79.03
7	0.0	47.9	71.19	58.72	0.3356	0.4911	1.0411	0.6354	5.74	7.42	6.34	12.47	0.4697	0.1[illegible]	0.0311	1.4510	76.99	78.17
8	0.0	47.4	71.71	59.33	0.3334	0.4920	1.0632	0.6545	6.19	7.75	5.74	12.38	0.4617	0.1966	0.0314	1.4546	76.21	77.44
9	0.0	48.9	73.30	64.00	0.3232	0.4650	1.1269	0.6990	6.16	7.58	5.52	9.30	0.4451	0.2204	0.0307	1.4391	71.53	72.96
10	0.0	51.6	73.75	66.39	0.3198	0.4507	1.1469	0.7012	5.64	7.02	5.86	7.36	0.4504	0.2444	0.0307	1.4307	68.33	69.90
11	0.0	53.3	74.14	68.14	0.3171	0.4420	1.1662	0.7099	5.09	6.43	5.53	6.00	0.4491	0.2590	0.0299	1.4282	66.37	68.03

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	EPSI-1 DEGREE	EPSI-2 DEGREE	PCT TE SPAN
1	279.8	754.7	279.8	467.1	0.0	592.7	653.6	758.8	710.9	495.8	-653.6	-166.1	20.03	38.94	29.122	29.371	0.0500
2	299.2	726.8	299.2	470.2	0.0	554.2	695.4	780.4	757.1	521.8	-695.4	-226.2	21.31	39.50	23.949	25.351	0.1000
3	317.3	687.8	317.3	463.0	0.0	508.6	736.4	802.1	801.8	548.2	-736.4	-293.5	22.48	39.12	19.004	21.331	0.1500
4	350.5	593.3	350.5	400.6	0.0	437.7	843.9	867.1	913.8	587.3	-843.9	-429.4	24.59	33.87	6.781	10.565	0.3000
5	358.0	548.4	358.0	372.0	0.0	402.9	963.6	953.7	1028.0	664.6	-963.6	-550.8	25.07	31.25	-4.134	0.620	0.5000
6	356.5	543.0	356.5	358.8	0.0	407.6	1017.5	997.0	1078.2	690.0	-1017.5	-589.4	24.97	29.94	-8.095	-3.704	0.6000
7	355.2	549.4	355.2	366.4	0.0	409.4	1043.2	1018.7	1102.0	710.9	-1043.2	-609.2	24.89	30.55	-9.928	-5.893	0.6500
8	353.0	551.1	353.0	370.5	0.0	407.9	1068.7	1040.3	1125.5	733.0	-1068.7	-632.4	24.75	30.89	-11.820	-8.094	0.7000
9	342.3	523.2	342.3	341.2	0.0	396.7	1143.6	1105.3	1193.7	786.5	-1143.6	-708.6	24.08	28.37	-16.852	-14.639	0.8500
10	338.8	508.7	338.8	313.8	0.0	400.4	1167.0	1127.0	1215.2	791.4	-1167.0	-726.6	23.86	26.00	-18.012	-16.584	0.9000
11	336.0	500.1	336.0	296.9	0.0	402.4	1189.3	1148.6	1235.8	803.1	-1189.3	-746.2	23.68	24.57	-18.586	-18.170	0.9500

WC1/A1 LBM/SEC SQFT	WC1/A1 KG/SEC SQM	T02/T01	P02/P01	EFF-AD ROTOR %	EFF-P ROTOR %
24.44	119.26	1.1446	1.4847	82.81	83.74

AIRFOIL AERODYNAMIC SUMMARY PRINT

70 PERCENT DESIGN SPEED (STATOR PERFORMANCE) RUN NO 111 SPEED CODE 70 POINT NO 5

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	237.6	209.3	158.6	209.2	176.8	5.5	208.55	273.94	0.4714	0.0834
2	228.5	205.9	156.9	205.8	166.2	1.8	208.24	273.73	0.4194	0.0730
3	216.5	196.5	153.5	196.5	152.7	-3.5	205.14	264.66	0.3628	0.0543
4	189.1	167.9	135.5	167.6	131.9	-9.7	181.09	228.16	0.2139	0.0397
5	175.3	153.2	125.4	153.0	122.5	-7.7	166.73	208.38	0.0647	0.0017
6	173.9	152.2	121.5	152.2	124.4	-3.9	160.46	205.91	-0.0091	-0.0191
7	176.1	154.6	123.8	154.6	125.2	-2.3	163.33	208.77	-0.0450	-0.0299
8	177.0	156.9	125.4	156.9	124.9	-1.8	165.20	211.46	-0.0787	-0.0411
9	171.1	153.4	119.6	153.3	122.4	-3.7	156.70	204.21	-0.1871	-0.0730
10	168.4	149.0	114.0	148.9	124.0	-2.9	148.56	196.60	-0.2233	-0.0845
11	167.5	145.7	111.4	145.7	125.1	-2.7	144.69	190.73	-0.2653	-0.0953

SL	B-1 DEGREE	B-2 DEGREE	M-1	M-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	P0/P0 STAGE	T0/T0 STAGE	%EFF-A TOT-STG	%EFF-P TOT-STG
1	50.3	1.4	0.7104	0.6190	-4.17	-1.22	15.31	48.83	0.2790	0.2030	0.0467	0.9420	1.5354	1.1572	83.01	84.01
2	48.4	0.5	0.6827	0.6098	-4.03	-0.91	12.47	47.89	0.2605	0.1488	0.0349	0.9601	1.5432	1.1510	87.58	88.31
3	46.1	-1.0	0.6464	0.5827	-5.63	-2.26	9.84	47.15	0.2576	0.1102	0.0264	0.9731	1.5278	1.1423	90.58	91.13
4	44.7	-3.3	0.5618	0.4953	-8.29	-4.04	6.72	47.97	0.2975	0.0701	0.0177	0.9865	1.4649	1.1328	86.94	87.63
5	44.4	-2.9	0.5180	0.4499	-9.61	-4.25	7.20	47.23	0.3262	0.0412	0.0111	0.9931	1.4377	1.1349	81.18	82.12
6	45.7	-1.5	0.5118	0.4453	-8.15	-2.41	8.65	47.11	0.3312	0.0366	0.0102	0.9940	1.4354	1.1424	76.52	77.70
7	45.3	-0.9	0.5177	0.4519	-8.59	-2.63	9.30	45.15	0.3275	0.0415	0.0118	0.9931	1.4409	1.1459	75.47	76.71
8	44.9	-0.7	0.5199	0.4583	-8.91	-2.91	9.60	45.56	0.3207	0.0380	0.0109	0.9936	1.4454	1.1485	74.86	76.14
9	45.9	-1.4	0.5007	0.4465	-10.07	-3.85	10.98	47.24	0.3271	0.0530	0.0158	0.9917	1.4273	1.1533	69.88	71.35
10	47.7	-1.1	0.4913	0.4324	-10.54	-4.30	12.66	48.83	0.3466	0.0884	0.0268	0.9865	1.4115	1.1578	65.64	67.27
11	48.8	-1.0	0.4877	0.4219	-14.81	-8.67	15.40	49.85	0.3671	0.1384	0.0425	0.9792	1.3985	1.1618	62.22	63.97

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	PCT TE SPAN	EPSI-1 DEGREE	EPSI-2 DEGREE
1	779.4	686.7	520.5	686.5	580.2	17.9	42.71	56.11	0.0430	27.011	4.777
2	749.8	675.4	514.8	675.4	545.2	6.0	42.65	56.07	0.0901	24.030	4.184
3	710.4	644.9	503.7	644.8	501.0	-11.5	42.02	54.20	0.1410	20.785	3.687
4	620.5	550.7	444.6	549.8	432.9	-31.7	37.09	46.73	0.2989	12.256	2.277
5	575.1	502.8	411.5	502.1	401.8	-25.1	34.15	42.68	0.5026	3.706	0.096
6	570.5	499.4	398.7	499.3	408.1	-12.7	32.86	42.17	0.6103	-0.522	-1.097
7	577.8	507.4	406.3	507.3	410.7	-7.6	33.45	42.76	0.6593	-2.578	-1.710
8	580.8	514.9	411.4	514.8	410.0	-6.0	33.83	43.31	0.7107	-4.510	-2.352
9	561.5	503.2	392.4	503.0	401.6	-12.2	32.09	41.82	0.8629	-10.719	-4.180
10	552.5	488.8	374.0	488.7	406.7	-9.5	30.43	40.27	0.9101	-12.794	-4.842
11	549.5	478.2	365.5	478.1	410.4	-8.7	29.63	39.06	0.9571	-15.199	-5.459

NCORR INLET RPM	WCORR INLET LBM/SEC	WCORR INLET KG/SEC	T0/T0 STAGE	P02/P01	P0/P0 STAGE	EFF-AD STAGE %	EFF-P STAGE %
8731.90	108.90	49.39	1.1446	0.9830	1.4595	79.02	80.11

AIRFOIL AERODYNAMIC SUMMARY PRINT

70 PERCENT DESIGN SPEED (ROTOR PERFORMANCE) RUN NO 111 SPEED CODE 70 POINT NO 4

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	U-1 M/SEC	U-2 M/SEC	V'-1 M/SEC	V'-2 M/SEC	VO'-1 M/SEC	VO'-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	83.5	230.0	83.5	140.2	0.0	182.3	199.1	231	215.9	148.5	-199.1	-48.9	96.35	188.72	0.5079	0.5124
2	89.3	221.3	89.3	141.3	0.0	170.4	211.9	237.6	229.9	156.6	-211.9	-67.4	102.53	191.67	0.4172	0.4423
3	94.7	209.2	94.7	138.6	0.0	156.7	224.4	244.4	243.5	164.0	-224.4	-87.6	108.19	189.02	0.3303	0.3722
4	104.5	181.2	104.5	118.8	0.0	136.9	257.1	264.2	277.5	174.1	-257.1	-127.3	118.27	162.04	0.1169	0.1843
5	106.7	168.0	106.7	110.4	0.0	126.7	293.6	290.6	312.4	197.6	-293.6	-163.9	120.54	149.86	-0.0721	0.0109
6	106.3	166.9	106.3	107.2	0.0	127.9	310.0	303.8	327.7	205.9	-310.0	-175.8	120.10	144.69	-0.1412	-0.0645
7	105.9	169.1	105.9	109.8	0.0	128.6	317.8	310.4	335.0	212.4	-317.8	-181.8	119.72	148.16	-0.1738	-0.1030
8	105.2	169.4	105.2	110.2	0.0	128.7	325.6	317.0	342.2	218.1	-325.6	-188.2	119.01	148.57	-0.2072	-0.1416
9	102.0	161.6	102.0	100.7	0.0	126.4	348.4	336.8	363.1	233.3	-348.4	-210.4	115.78	135.43	-0.2938	-0.2555
10	101.0	157.8	101.0	93.4	0.0	127.1	355.6	343.4	369.6	235.6	-355.6	-216.3	114.73	125.30	-0.3137	-0.2893
11	100.2	154.8	100.2	88.6	0.0	127.0	362.4	350.0	375.9	239.9	-362.4	-223.0	113.87	118.73	-0.3239	-0.3170

SL	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	M-1	M-2	M'-1	M'-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	%EFF-A TOTAL	%EFF-P TOTAL
1	0.0	52.1	66.94	19.00	0.2578	0.6851	0.6663	0.4423	1.86	5.96	7.06	47.94	0.5072	0.0903	0.0181	1.6374	95.45	95.76
2	0.0	50.3	66.89	25.49	0.2758	0.6590	0.7101	0.4661	3.17	6.88	7.70	41.40	0.4992	0.0612	0.0123	1.6155	96.39	96.63
3	0.0	48.7	66.89	32.43	0.2927	0.6224	0.7528	0.4878	4.45	7.84	8.98	34.47	0.4909	0.0480	0.0095	1.5781	96.63	96.84
4	0.0	49.2	67.80	47.16	0.3236	0.5360	0.8595	0.5150	5.90	8.18	11.36	20.64	0.5113	0.1113	0.0202	1.4953	89.58	90.16
5	0.0	48.9	70.03	55.98	0.3307	0.4944	0.9679	0.5816	5.86	7.71	10.41	14.05	0.4884	0.1564	0.0259	1.4607	82.61	83.52
6	0.0	49.8	71.07	58.42	0.3294	0.4893	1.0154	0.6036	5.93	7.66	8.12	12.65	0.4908	0.1922	0.0308	1.4591	77.97	79.12
7	0.0	49.2	71.56	58.61	0.3281	0.4950	1.0378	0.6219	6.12	7.80	6.23	12.95	0.4845	0.1971	0.0319	1.4673	77.16	78.36
8	0.0	49.1	72.08	59.35	0.3259	0.4954	1.0600	0.6377	6.56	8.12	5.76	12.73	0.4797	0.2045	0.0328	1.4708	75.94	77.22
9	0.0	51.1	73.64	64.12	0.3159	0.4701	1.1239	0.6785	6.50	7.92	5.65	9.52	0.4664	0.2330	0.0323	1.4577	71.03	72.53
10	0.0	53.4	74.07	66.38	0.3126	0.4575	1.1439	0.6833	5.97	7.35	5.85	7.69	0.4687	0.2530	0.0318	1.4511	68.38	70.00
11	0.0	54.9	74.46	68.17	0.3100	0.4481	1.1633	0.6944	5.41	6.75	5.56	6.29	0.4644	0.2640	0.0305	1.4483	66.78	68.47

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	EPSI-1 DEGREE	EPSI-2 DEGREE	PCT TE SPAN
1	274.1	754.6	274.1	460.0	0.0	598.2	653.3	758.5	708.5	487.2	-653.3	-160.3	19.73	38.65	29.100	29.361	0.0500
2	293.0	726.2	293.0	463.6	0.0	559.0	695.2	780.2	754.4	513.6	-695.2	-221.2	21.00	39.26	23.902	25.341	0.1000
3	310.7	686.5	310.7	454.7	0.0	514.3	736.1	801.8	799.0	538.0	-736.1	-287.5	22.16	39.71	18.926	21.323	0.1500
4	342.8	594.6	342.8	389.7	0.0	449.1	843.6	866.8	910.6	571.3	-843.6	-417.7	24.22	33.19	6.698	10.558	0.3000
5	350.2	551.3	350.2	362.3	0.0	415.6	963.3	953.4	1024.9	648.4	-963.3	-537.8	24.69	30.69	-4.128	0.627	0.5000
6	348.8	547.6	348.8	351.7	0.0	419.8	1017.2	996.7	1075.3	675.6	-1017.2	-576.9	24.60	29.63	-8.090	-3.697	0.6000
7	347.5	554.7	347.5	360.3	0.0	421.8	1042.8	1018.3	1099.2	696.9	-1042.8	-596.5	24.52	30.34	-9.959	-5.899	0.6500
8	345.3	556.0	345.3	361.6	0.0	422.3	1068.4	1039.9	1122.8	715.7	-1068.4	-617.6	24.38	30.43	-11.872	-8.112	0.7000
9	334.8	530.2	334.8	330.5	0.0	414.6	1143.2	1104.9	1191.2	765.4	-1143.2	-690.3	23.71	27.74	-16.835	-14.641	0.8500
10	331.4	517.6	331.4	306.6	0.0	417.0	1166.6	1126.6	1212.7	772.9	-1166.6	-709.5	23.50	25.66	-17.971	-16.577	0.9000
11	328.7	508.0	328.7	290.6	0.0	416.6	1188.9	1148.2	1233.5	787.2	-1188.9	-731.6	23.32	24.32	-18.561	-18.161	0.9500

WC1/A1 LBM/SEC SQFT	WC1/A1 KG/SEC SQM	T02/T01	P02/P01	EFF-AD ROTOR %	EFF-P ROTOR %
23.97	116.96	1.1486	1.4976	82.41	83.39

AIRFOIL AERODYNAMIC SUMMARY PRINT

70 PERCENT DESIGN SPEED (STATOR PERFORMANCE) RUN NO 111 SPEED CODE 70 POINT NO 4

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	237.0	203.2	156.0	203.1	178.5	5.9	206.95	271.53	0.4716	0.0836
2	227.9	199.7	154.4	199.7	167.6	2.1	206.81	270.98	0.4199	0.0735
3	215.6	190.3	150.5	190.3	154.4	-4.0	202.92	261.29	0.3638	0.0649
4	188.9	161.8	131.8	161.5	135.4	-9.2	177.56	223.76	0.2148	0.0405
5	175.6	147.1	122.1	146.9	126.3	-7.5	163.81	203.27	0.0650	0.0030
6	174.8	147.1	118.9	147.1	128.1	-3.7	158.72	202.39	-0.0083	-0.0175
7	177.2	149.8	121.5	149.8	129.0	-2.1	162.01	205.76	-0.0434	-0.0281
8	178.0	152.4	122.3	152.4	129.4	-1.2	162.75	208.77	-0.0768	-0.0393
9	172.7	149.4	116.0	149.3	127.9	-3.4	153.52	202.06	-0.1868	-0.0720
10	170.4	145.5	111.2	145.5	129.1	-2.7	146.55	195.31	-0.2235	-0.0839
11	169.2	142.5	108.8	142.5	129.5	-2.5	143.05	189.84	-0.2654	-0.0950

SL	B-1 DEGREE	B-2 DEGREE	M-1	M-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	P0/P0 STAGE	T0/T0 STAGE	%EFF-A TOT-STG	%EFF-P TOT-STG
1	51.0	1.6	0.7081	0.5992	-3.44	-0.49	15.48	49.39	0.3043	0.1971	0.0454	0.9439	1.5452	1.1586	83.60	84.57
2	49.1	0.6	0.6802	0.5898	-3.33	-0.20	12.54	48.52	0.2870	0.1440	0.0338	0.9616	1.5521	1.1523	88.05	88.77
3	47.0	-1.2	0.6431	0.5626	-4.74	-1.37	9.66	48.21	0.2862	0.1036	0.0248	0.9749	1.5364	1.1439	90.83	91.37
4	46.2	-3.2	0.5601	0.4758	-6.75	-2.50	6.77	49.46	0.3331	0.0669	0.0169	0.9872	1.4749	1.1362	86.35	87.08
5	46.0	-2.9	0.5180	0.4303	-7.94	-2.59	7.16	48.93	0.3683	0.0512	0.0138	0.9914	1.4480	1.1389	80.42	81.42
6	47.1	-1.5	0.5136	0.4290	-6.69	-0.95	8.65	48.56	0.3692	0.0441	0.0123	0.9927	1.4485	1.1464	76.38	77.59
7	46.7	-0.8	0.5201	0.4365	-7.11	-1.24	9.36	47.48	0.3642	0.0501	0.0142	0.9916	1.4547	1.1501	75.41	76.68
8	46.6	-0.5	0.5218	0.4435	-7.20	-1.21	9.80	47.07	0.3564	0.0446	0.0128	0.9924	1.4599	1.1535	74.46	75.79
9	48.0	-1.3	0.5039	0.4331	-7.94	-1.72	11.08	49.27	0.3655	0.0607	0.0181	0.9903	1.4439	1.1601	69.20	70.75
10	49.6	-1.1	0.4959	0.4208	-8.69	-2.45	12.71	50.64	0.3835	0.0945	0.0286	0.9854	1.4301	1.1643	65.59	67.29
11	50.5	-1.0	0.4915	0.4111	-13.18	-7.03	15.45	51.43	0.4003	0.1372	0.0421	0.9791	1.4180	1.1674	62.75	64.54

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	PCT TE SPAN	EPSI-1 DEGREE	EPSI-2 DEGREE
1	777.7	666.7	511.9	666.4	585.5	19.5	42.38	55.61	0.0430	27.020	4.790
2	747.7	655.1	506.6	655.1	549.9	6.8	42.36	55.50	0.0901	24.059	4.209
3	707.5	624.5	493.9	624.3	506.6	-13.1	41.56	53.51	0.1410	20.842	3.720
4	619.8	530.8	432.3	530.0	444.2	-30.1	36.37	45.83	0.2989	12.310	2.323
5	576.3	482.6	400.5	481.9	414.4	-24.5	33.55	41.63	0.5086	3.725	0.173
6	573.6	482.7	390.3	482.5	420.3	-12.2	32.51	41.45	0.6103	-0.473	-1.003
7	581.4	491.6	398.7	491.6	423.1	-6.8	33.18	42.14	0.6598	-2.485	-1.612
8	584.1	500.0	401.2	500.0	424.5	-4.0	33.33	42.76	0.7107	-4.400	-2.254
9	566.7	490.0	380.7	489.9	419.8	-11.0	31.44	41.38	0.8620	-10.702	-4.127
10	559.1	477.5	364.9	477.4	423.6	-9.0	30.01	40.00	0.9101	-12.806	-4.805
11	555.0	467.5	357.1	467.4	424.8	-8.1	29.30	38.88	0.9571	-15.209	-5.441

NCORR INLET RPM	WCORR INLET LBM/SEC	WCORR INLET KG/SEC	T0/T0 STAGE	P02/P01	P0/P0 STAGE	EFF-AD STAGE %	EFF-P STAGE %
8728.00	106.80	48.44	1.1486	0.9829	1.4719	78.68	79.82

AIRFOIL AERODYNAMIC SUMMARY PRINT

70 PERCENT DESIGN SPEED (ROTOR PERFORMANCE) RUN NO 111 SPEED CODE 70 POINT NO 8

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	U-1 M/SEC	U-2 M/SEC	V'-1 M/SEC	V'-2 M/SEC	VO'-1 M/SEC	VO'-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	82.1	240.4	82.1	157.6	0.0	181.5	199.1	231.1	215.4	165.3	-199.1	-49.7	95.62	219.99	0.5902	0.5154
2	87.7	219.6	87.7	139.5	0.0	169.5	211.8	237.7	229.3	155.3	-211.8	-68.2	101.62	193.67	0.4037	0.4492
3	92.6	204.7	92.6	130.7	0.0	157.5	224.3	244.3	242.7	156.9	-224.3	-85.8	105.87	181.43	0.3134	0.3768
4	101.1	179.4	101.1	111.1	0.0	140.9	257.1	264.1	276.2	165.9	-257.1	-123.3	115.73	153.50	0.1032	0.1874
5	103.0	167.6	103.0	104.5	0.0	131.1	293.5	290.5	311.1	190.6	-293.5	-159.5	117.71	143.72	-0.0755	0.0145
6	102.7	169.3	102.7	104.9	0.0	132.9	310.0	303.7	326.5	200.4	-310.0	-170.8	117.44	143.76	-0.1437	-0.0618
7	102.4	171.6	102.4	107.0	0.0	134.1	317.8	310.3	333.9	206.2	-317.8	-176.2	117.06	146.55	-0.1775	-0.1013
8	101.7	171.6	101.7	106.3	0.0	134.7	325.6	316.9	341.1	210.9	-325.6	-182.2	116.34	145.28	-0.2114	-0.1406
9	98.5	164.3	98.5	95.8	0.0	133.5	348.4	336.7	362.0	224.7	-348.4	-203.3	113.04	130.51	-0.2969	-0.2558
10	97.5	161.1	97.5	89.1	0.0	134.2	355.5	343.3	368.6	227.3	-355.5	-209.1	112.00	121.10	-0.3155	-0.2897
11	96.7	158.4	96.7	84.7	0.0	133.9	362.3	349.9	375.0	232.0	-362.3	-216.0	111.17	115.10	-0.3250	-0.3172

SL	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	M-1	M-2	M'-1	M'-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	%EFF-A TOTAL	%EFF-P TOTAL
1	0.0	48.7	67.20	17.33	0.2535	0.7202	0.6652	0.4952	2.12	6.22	5.38	49.88	0.4324	-0.1271	-0.0257	1.7225	106.22	105.75
2	0.0	50.6	67.15	26.11	0.2710	0.6543	0.7083	0.4627	3.42	7.14	8.33	41.04	0.5077	0.0117	0.0023	1.6349	99.13	99.19
3	0.0	50.5	67.24	33.76	0.2865	0.6085	0.7598	0.4565	4.80	8.19	10.31	33.48	0.5238	0.0511	0.0100	1.5811	96.35	96.58
4	0.0	51.9	68.43	48.17	0.3132	0.5299	0.8560	0.4901	6.52	8.81	12.37	20.25	0.5439	0.1305	0.0232	1.5033	88.05	88.71
5	0.0	51.4	70.68	56.72	0.3193	0.4926	0.9644	0.5593	6.51	8.36	11.15	13.96	0.5132	0.1709	0.0277	1.4737	81.61	82.59
6	0.0	51.5	71.66	58.22	0.3184	0.4950	1.0122	0.5870	6.53	8.26	7.93	13.44	0.5106	0.1988	0.0321	1.4814	78.05	79.24
7	0.0	51.1	72.15	58.46	0.3173	0.5018	1.0348	0.6031	6.71	8.38	6.08	13.69	0.5066	0.2067	0.0336	1.4900	76.95	78.21
8	0.0	51.4	72.67	59.45	0.3150	0.5009	1.0571	0.6158	7.15	8.70	5.85	13.22	0.5043	0.2183	0.0349	1.4925	75.32	76.68
9	0.0	54.0	74.20	64.48	0.3050	0.4768	1.1213	0.6522	7.06	8.48	6.00	9.72	0.4948	0.2518	0.0344	1.4812	70.11	71.72
10	0.0	56.1	74.61	66.68	0.3019	0.4663	1.1415	0.6578	6.51	7.88	6.15	7.93	0.4959	0.2699	0.0336	1.4766	67.79	69.52
11	0.0	57.5	74.98	68.43	0.2993	0.4577	1.1610	0.6701	5.93	7.27	5.82	6.54	0.4900	0.2792	0.0319	1.4747	66.44	68.22

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	EPSI-1 DEGREE	EPSI-2 DEGREE	PCT TE SPAN
1	269.4	788.6	269.4	517.1	0.0	595.4	653.2	758.4	706.6	542.2	-653.2	-163.0	19.58	45.06	28.659	29.532	0.0500
2	287.7	720.4	287.7	457.7	0.0	556.3	695.1	780.0	752.3	509.5	-695.1	-223.8	20.81	39.67	23.129	25.739	0.1000
3	303.8	671.6	303.8	428.9	0.0	516.8	736.0	801.7	796.2	514.9	-736.0	-284.9	21.89	37.16	17.956	21.590	0.1500
4	331.6	588.5	331.6	364.4	0.0	462.2	843.5	856.6	906.3	544.4	-843.5	-404.5	23.70	31.44	5.911	10.738	0.3000
5	337.9	549.9	337.9	342.7	0.0	430.0	963.1	953.2	1020.6	625.4	-963.1	-523.2	24.11	29.44	-4.331	0.829	0.5000
6	337.0	555.6	337.0	344.2	0.0	436.2	1017.0	996.5	1071.4	657.6	-1017.0	-560.3	24.05	29.44	-8.234	-3.544	0.6000
7	335.8	562.9	335.8	351.2	0.0	439.9	1042.6	1018.1	1095.4	676.5	-1042.6	-578.2	23.98	30.01	-10.169	-5.802	0.6500
8	333.5	562.9	333.5	348.6	0.0	441.9	1068.2	1039.8	1119.1	692.1	-1068.2	-597.9	23.83	29.75	-12.111	-8.059	0.7000
9	323.1	539.0	323.1	314.3	0.0	437.9	1143.0	1104.7	1187.8	737.2	-1143.0	-666.9	23.15	26.73	-17.008	-14.554	0.8500
10	319.8	528.5	319.8	292.3	0.0	440.4	1166.4	1126.4	1209.4	745.6	-1166.4	-686.0	22.94	24.80	-18.979	-16.599	0.9000
11	317.2	519.8	317.2	277.8	0.0	439.4	1188.7	1148.0	1230.3	761.1	-1188.7	-708.6	22.77	23.57	-18.623	-18.176	0.9500

WC1/A1 LBM/SEC SQFT	WC1/A1 KG/SEC SQM	T02/T01	P02/P01	EFF-AD ROTOR %	EFF-P ROTOR %
23.34	113.89	1.1540	1.5215	82.83	83.82

AIRFOIL AERODYNAMIC SUMMARY PRINT

70 PERCENT DESIGN SPEED (STATOR PERFORMANCE) RUN NO 111 SPEED CODE 70 POINT NO 8

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	247.4	198.4	172.1	198.3	177.7	7.3	236.85	271.52	0.4880	0.0879
2	226.0	193.6	152.2	193.6	167.0	2.8	209.04	268.91	0.4445	0.0809
3	210.6	183.5	142.2	183.5	155.3	-3.0	195.42	257.88	0.3875	0.0723
4	186.5	154.1	123.9	153.8	139.3	-8.1	169.40	218.08	0.2329	0.0474
5	174.6	138.4	115.9	138.2	130.6	-7.2	157.79	195.72	0.0738	0.0084
6	176.5	140.7	116.0	140.7	133.0	-3.0	157.31	198.21	-0.0004	-0.0124
7	179.0	143.9	118.2	143.9	134.5	-0.8	160.05	202.21	-0.0348	-0.0231
8	179.5	146.3	118.0	146.3	135.3	0.3	159.35	205.03	-0.0682	-0.0346
9	174.7	143.7	110.7	143.6	135.1	-2.4	148.62	198.75	-0.1813	-0.0692
10	172.9	140.6	106.3	140.6	136.3	-2.0	142.19	193.00	-0.2200	-0.0817
11	171.8	138.5	104.2	138.5	136.5	-1.9	139.10	188.96	-0.2633	-0.0940

SL	B-1 DEGREE	B-2 DEGREE	M-1	M-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	P0/P0 STAGE	T0/T0 STAGE	%EFF-A TOT-STG	%EFF-P TOT-STG
1	48.4	2.0	0.7436	0.5849	-6.09	-3.13	15.90	46.32	0.3574	0.3238	0.0745	0.8984	1.5574	1.1589	85.04	85.95
2	49.7	0.8	0.6750	0.5711	-2.70	0.43	12.76	48.93	0.3180	0.1925	0.0451	0.9475	1.5613	1.1537	88.48	89.18
3	49.1	-0.9	0.6273	0.5414	-2.69	0.68	9.92	50.01	0.3092	0.1091	0.0261	0.9742	1.5453	1.1461	90.74	91.29
4	48.9	-3.0	0.5520	0.4518	-4.06	0.19	6.99	51.93	0.3718	0.0620	0.0157	0.9884	1.4864	1.1405	85.47	86.26
5	48.5	-3.0	0.5143	0.4037	-5.48	-0.12	7.07	51.49	0.4204	0.0580	0.0157	0.9904	1.4596	1.1438	79.48	80.56
6	48.9	-1.2	0.5182	0.4092	-4.90	0.83	8.89	50.11	0.4169	0.0588	0.0164	0.9902	1.4659	1.1521	76.04	77.30
7	48.7	-0.3	0.5248	0.4178	-5.14	0.73	9.82	48.99	0.4101	0.0642	0.0182	0.9890	1.4732	1.1565	74.91	76.25
8	48.9	0.1	0.5254	0.4244	-4.90	1.09	10.39	48.77	0.4028	0.0582	0.0167	0.9900	1.4781	1.1607	73.59	75.00
9	50.8	-1.0	0.5085	0.4148	-5.11	1.11	11.41	51.77	0.4159	0.0715	0.0214	0.9884	1.4645	1.1692	68.14	69.81
10	52.3	-0.8	0.5020	0.4048	-5.93	0.31	13.00	53.11	0.4324	0.1013	0.0307	0.9840	1.4532	1.1737	64.97	66.76
11	53.1	-0.8	0.4980	0.3982	-10.51	-4.37	15.65	55.89	0.4444	0.1336	0.0410	0.9792	1.4440	1.1769	62.65	64.53

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	PCT TE SPAN	EPSI-1 DEGREE	EPSI-2 DEGREE
1	811.7	651.1	564.6	650.6	583.2	24.0	48.51	55.61	0.0430	27.961	5.039
2	741.5	635.2	499.4	635.1	548.1	9.1	42.81	55.08	0.0901	25.471	4.633
3	691.0	602.0	466.7	602.0	509.6	-9.9	40.02	52.82	0.1410	22.200	4.144
4	611.7	505.5	406.5	504.8	457.1	-26.7	34.70	44.67	0.2989	13.343	2.718
5	572.9	454.1	380.2	453.5	428.6	-23.7	32.32	40.08	0.5086	4.229	0.480
6	579.2	461.7	380.7	461.6	436.5	-9.7	32.22	40.60	0.6103	-0.020	-0.709
7	587.4	472.0	387.8	472.0	441.1	-2.8	32.78	41.41	0.6598	-1.991	-1.323
8	589.0	480.1	387.0	480.1	444.1	1.1	32.64	41.99	0.7107	-3.910	-1.982
9	573.1	471.4	363.3	471.3	443.2	-7.9	30.44	40.71	0.8620	-10.388	-3.965
10	567.2	461.2	348.9	461.2	447.2	-6.4	29.12	39.53	0.9101	-12.607	-4.684
11	563.6	454.5	342.0	454.4	448.0	-6.2	28.49	38.70	0.9571	-15.088	-5.384

NCORR INLET RPM	WCORR INLET LBM/SEC	WCORR INLET KG/SEC	T0/T0 STAGE	P02/P01	P0/P0 STAGE	EFF-AD STAGE %	EFF-P STAGE %
8737.50	104.00	47.17	1.1540	0.9774	1.4872	78.05	79.25

AIRFOIL AERODYNAMIC SUMMARY PRINT

70 PERCENT DESIGN SPEED (ROTOR PERFORMANCE) RUN NO 111 SPEED CODE 70 POINT NO 6

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	U-1 M/SEC	U-2 M/SEC	V'-1 M/SEC	V'-2 M/SEC	VO'-1 M/SEC	VO'-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	78.5	227.4	78.5	134.3	0.0	183.5	199.0	231.1	214.0	142.5	-199.0	-47.6	92.23	184.90	0.5070	0.5118
2	83.9	219.5	83.9	134.9	0.0	173.1	211.8	237.7	227.8	149.6	-211.8	-64.6	98.16	187.16	0.4149	0.4415
3	88.9	208.1	88.9	132.3	0.0	160.7	224.3	244.3	241.3	156.5	-224.3	-83.6	103.60	186.43	0.3260	0.3715
4	97.8	181.9	97.8	110.7	0.0	144.4	257.0	264.1	275.0	163.0	-257.0	-119.7	112.96	154.11	0.1079	0.1841
5	99.4	169.2	99.4	100.4	0.0	136.2	293.5	290.5	309.9	184.0	-293.5	-154.2	114.71	139.16	-0.0766	0.0128
6	99.1	171.9	99.1	102.4	0.0	138.1	309.9	303.6	325.3	194.6	-309.9	-165.5	114.34	141.53	-0.1454	-0.0629
7	98.6	174.0	98.6	103.8	0.0	139.6	317.7	310.2	332.7	199.7	-317.7	-170.6	113.90	143.32	-0.1799	-0.1023
8	97.9	173.9	97.9	102.3	0.0	140.6	325.5	316.8	339.9	203.8	-325.5	-176.2	113.12	141.01	-0.2140	-0.1417
9	94.7	168.5	94.7	91.9	0.0	141.2	348.3	336.6	360.9	215.9	-348.3	-195.4	109.75	126.14	-0.2981	-0.2566
10	93.7	166.3	93.7	86.1	0.0	142.2	355.4	343.2	367.6	218.7	-355.4	-201.0	108.72	118.03	-0.3166	-0.2906
11	93.0	163.9	93.0	80.9	0.0	142.6	362.2	349.8	373.9	222.4	-362.2	-207.2	107.90	110.81	-0.3258	-0.3179

SL	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	M-1	M-2	M'-1	M'-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	%EFF-A TOTAL	%EFF-P TOTAL
1	0.0	53.5	68.18	19.30	0.2422	0.6766	0.6601	0.4249	3.10	7.19	7.35	48.88	0.5327	0.0881	0.0176	1.6445	95.64	95.93
2	0.0	52.0	68.13	25.56	0.2591	0.6526	0.7034	0.4448	4.40	8.11	7.77	42.56	0.5288	0.0667	0.0134	1.6258	96.15	96.41
3	0.0	50.7	68.13	32.41	0.2748	0.6182	0.7455	0.4649	5.69	9.07	8.96	35.72	0.5222	0.0577	0.0114	1.5917	96.07	95.31
4	0.0	52.7	69.08	47.41	0.3025	0.5367	0.8511	0.4810	7.17	9.46	11.61	21.67	0.5550	0.1379	0.0249	1.5148	87.74	88.44
5	0.0	53.5	71.30	56.87	0.3078	0.4961	0.9593	0.5395	7.13	8.98	11.31	14.42	0.5373	0.1901	0.0307	1.4950	80.28	81.35
6	0.0	53.2	72.28	58.04	0.3067	0.5024	1.0072	0.5687	7.14	8.87	7.75	14.23	0.5314	0.2122	0.0344	1.4972	77.38	78.64
7	0.0	53.1	72.76	58.42	0.3054	0.5074	1.0298	0.5826	7.32	9.00	6.04	14.34	0.5295	0.2224	0.0362	1.5055	76.07	77.41
8	0.0	53.6	73.28	59.56	0.3030	0.5061	1.0520	0.5931	7.75	9.31	5.97	13.71	0.5297	0.2361	0.0376	1.5084	74.29	75.73
9	0.0	56.6	74.77	64.54	0.2930	0.4872	1.1165	0.6244	7.63	9.06	6.06	10.24	0.5243	0.2735	0.0373	1.5034	69.02	70.75
10	0.0	58.5	75.18	66.57	0.2899	0.4794	1.1368	0.6306	7.07	8.45	6.04	8.50	0.5246	0.2899	0.0362	1.5019	67.04	68.87
11	0.0	60.2	75.53	68.53	0.2875	0.4716	1.1563	0.6399	6.49	7.82	5.91	7.01	0.5213	0.3020	0.0343	1.5011	65.51	67.42

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	EPSI-1 DEGREE	EPSI-2 DEGREE	PCT TE SPAN
1	257.6	746.0	257.6	440.5	0.0	602.0	653.1	758.2	702.1	467.4	-653.1	-156.2	18.89	37.87	29.050	29.322	0.0500
2	275.4	720.1	275.4	442.7	0.0	567.9	694.9	779.9	747.5	490.8	-694.9	-211.9	20.10	38.33	23.774	25.296	0.1000
3	291.8	682.8	291.8	434.0	0.0	527.2	735.8	801.5	791.6	513.4	-735.8	-274.3	21.22	37.77	18.679	21.287	0.1500
4	320.7	595.9	320.7	363.2	0.0	473.7	843.3	866.5	902.2	534.9	-843.3	-392.7	23.14	31.56	6.181	10.547	0.3000
5	326.2	555.3	326.2	329.5	0.0	447.0	952.9	953.0	1016.6	603.8	-952.9	-506.0	23.49	28.50	-4.388	0.733	0.5000
6	325.0	564.1	325.0	336.0	0.0	453.2	1016.8	996.3	1067.5	638.6	-1016.8	-543.1	23.42	28.99	-8.329	-3.601	0.6000
7	323.7	570.8	323.7	340.6	0.0	458.1	1042.4	1017.9	1091.5	655.3	-1042.4	-559.9	23.33	29.35	-10.309	-5.861	0.6500
8	321.2	570.5	321.2	335.7	0.0	461.4	1068.0	1039.5	1115.2	668.6	-1068.0	-578.2	23.17	28.88	-12.262	-8.121	0.7000
9	310.8	552.8	310.8	301.4	0.0	463.4	1142.8	1104.5	1184.3	708.5	-1142.8	-641.1	22.48	25.83	-17.081	-14.701	0.8500
10	307.6	545.5	307.6	282.5	0.0	466.6	1166.1	1126.1	1206.0	717.4	-1166.1	-659.5	22.27	24.17	-18.140	-16.648	0.9000
11	305.0	537.9	305.0	265.3	0.0	467.9	1188.4	1147.8	1226.9	729.8	-1188.4	-679.9	22.10	22.70	-18.668	-18.215	0.9500

WC1/A1 LBM/SEC SQFT	WC1/A1 KG/SEC SQM	T02/T01	P02/P01	EFF-AD ROTOR %	EFF-P ROTOR %
22.51	109.84	1.1594	1.5270	80.76	81.88

AIRFOIL AERODYNAMIC SUMMARY PRINT

70 PERCENT DESIGN SPEED (STATOR PERFORMANCE) RUN NO 111 SPEED CODE 70 POINT NO 6

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	233.3	186.6	148.9	186.6	179.6	0.0	202.63	262.72	0.4725	0.0947
2	225.0	182.9	147.0	182.9	170.3	0.0	201.83	260.66	0.4220	0.0756
3	213.5	174.2	143.2	174.2	158.3	0.0	197.76	250.71	0.3678	0.0679
4	188.2	146.4	122.6	146.4	142.8	0.0	169.00	211.72	0.2238	0.0452
5	175.5	129.6	111.1	129.6	135.8	0.0	152.61	186.57	0.0725	0.0093
6	178.4	133.1	112.7	133.1	138.2	0.0	154.29	190.78	0.0012	-0.0103
7	180.7	136.4	114.2	136.4	140.0	0.0	156.14	195.07	-0.0316	-0.0206
8	181.1	138.7	113.3	138.7	141.3	0.0	154.52	197.72	-0.0645	-0.0318
9	178.0	138.6	106.1	138.6	142.9	0.0	143.65	195.00	-0.1786	-0.0670
10	177.1	136.9	102.4	136.9	144.4	0.0	138.23	191.21	-0.2179	-0.0799
11	176.2	135.8	99.5	135.8	145.4	0.0	134.02	188.38	-0.2620	-0.0929

SL	B-1 DEGREE	B-2 DEGREE	M-1	M-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	P0/P0 STAGE	T0/T0 STAGE	%EFF-A TOT-STG	%EFF-P TOT-STG
1	52.5	0.0	0.6961	0.5472	-1.96	0.99	13.86	52.49	0.3719	0.1814	0.0418	0.9498	1.5617	1.1598	85.10	86.01
2	50.9	0.0	0.6703	0.5370	-1.48	1.65	11.97	50.94	0.3584	0.1402	0.0329	0.9635	1.5659	1.1550	88.32	89.04
3	49.2	0.0	0.6353	0.5117	-2.57	0.80	10.84	49.21	0.3559	0.1013	0.0242	0.9759	1.5523	1.1479	90.66	91.22
4	49.9	0.0	0.5563	0.4275	-3.12	1.13	10.00	49.86	0.4111	0.0516	0.0156	0.9883	1.4968	1.1438	85.05	85.88
5	50.8	0.0	0.5153	0.3769	-3.21	2.15	10.07	50.77	0.4704	0.0720	0.0195	0.9881	1.4673	1.1491	77.74	78.91
6	50.8	0.0	0.5221	0.3851	-3.00	2.73	10.10	50.80	0.4684	0.0771	0.0215	0.9870	1.4762	1.1575	74.82	76.17
7	50.8	0.0	0.5281	0.3943	-3.04	2.83	10.15	50.75	0.4635	0.0823	0.0233	0.9858	1.4836	1.1623	73.60	75.04
8	51.2	0.0	0.5284	0.4003	-2.58	3.42	10.26	51.23	0.4589	0.0777	0.0223	0.9865	1.4882	1.1671	72.09	73.61
9	53.6	0.0	0.5161	0.3980	-2.37	3.85	12.36	53.57	0.4639	0.0871	0.0261	0.9855	1.4819	1.1785	66.72	68.51
10	54.9	0.0	0.5121	0.3920	-3.33	2.91	13.78	54.93	0.4769	0.1125	0.0341	0.9815	1.4743	1.1835	64.01	65.93
11	56.1	0.0	0.5086	0.3880	-7.56	-1.42	16.43	56.06	0.4860	0.1380	0.0423	0.9777	1.4676	1.1879	61.71	63.72

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	PCT TE SPAN	EPSI-1 DEGREE	EPSI-2 DEGREE
1	765.6	612.2	488.7	612.2	589.3	0.0	41.50	53.81	0.0430	27.072	4.852
2	738.1	600.2	482.4	600.2	558.7	0.0	41.34	53.39	0.0901	24.178	4.331
3	700.3	571.5	469.9	571.5	519.3	0.0	40.50	51.35	0.1410	21.076	3.890
4	617.5	480.2	402.2	480.2	468.5	0.0	34.61	43.36	0.2989	12.825	2.592
5	575.7	425.1	364.7	425.1	445.5	0.0	31.26	38.21	0.5086	4.157	0.532
6	585.2	436.7	369.8	436.7	453.6	0.0	31.60	39.07	0.6103	0.071	-0.589
7	592.9	447.6	374.8	447.6	459.3	0.0	31.98	39.95	0.6598	-1.812	-1.178
8	594.3	455.2	371.9	455.2	463.6	0.0	31.65	40.49	0.7107	-3.693	-1.820
9	584.1	454.9	348.1	454.9	469.0	0.0	29.42	39.94	0.8620	-10.234	-3.837
10	580.9	449.2	336.0	449.2	473.9	0.0	28.31	39.16	0.9101	-12.486	-4.577
11	578.1	445.6	326.5	445.6	477.1	0.0	27.45	38.58	0.9571	-15.010	-5.324

NCORR INLET RPM	WCORR INLET LBM/SEC	WCORR INLET KG/SEC	T0/T0 STAGE	P02/P01	P0/P0 STAGE	EFF-AD STAGE %	EFF-P STAGE %
8730.10	100.30	45.49	1.1594	0.9812	1.4983	76.93	78.21

AIRFOIL AERODYNAMIC SUMMARY PRINT

80 PERCENT DESIGN SPEED (ROTOR PERFORMANCE) RUN NO 111 SPEED CODE 80 POINT NO 2

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	U-1 M/SEC	U-2 M/SEC	V'-1 M/SEC	V'-2 M/SEC	VO'-1 M/SEC	VO'-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	106.9	260.2	106.9	163.7	0.0	202.3	229.5	266.5	253.2	175.8	-229.5	-64.2	111.40	297.58	0.5092	0.5141
2	114.4	255.9	114.4	171.4	0.0	190.0	244.2	274.1	269.7	190.9	-244.2	-84.0	118.35	220.23	0.4192	0.4457
3	121.6	240.5	121.6	168.1	0.0	172.0	258.6	281.7	285.8	200.8	-258.6	-109.7	124.78	217.59	0.3331	0.3763
4	135.2	207.8	135.2	147.9	0.0	145.9	296.3	304.5	325.7	216.9	-296.3	-158.6	136.39	191.41	0.1190	0.1888
5	137.9	191.8	137.9	134.6	0.0	136.6	338.4	334.9	365.4	239.6	-338.4	-198.3	138.69	171.32	-0.0749	0.0138
6	137.2	185.7	137.2	124.5	0.0	137.8	357.3	350.1	382.8	246.1	-357.3	-212.3	138.09	156.61	-0.1387	-0.0620
7	136.9	185.8	136.9	127.7	0.0	135.0	366.3	357.7	391.1	256.7	-366.3	-222.7	137.84	151.00	-0.1660	-0.0995
8	136.3	186.7	136.3	133.7	0.0	130.4	375.3	365.3	399.3	270.3	-375.3	-234.9	137.36	169.41	-0.1965	-0.1371
9	132.7	178.3	132.7	130.3	0.0	121.8	401.6	388.1	423.0	295.5	-401.6	-266.4	134.37	165.89	-0.2889	-0.2521
10	131.3	174.8	131.3	120.9	0.0	126.2	409.8	395.7	430.3	295.4	-409.8	-269.6	133.14	152.80	-0.3140	-0.2878
11	130.1	168.8	130.1	107.4	0.0	130.2	417.6	403.3	437.4	293.5	-417.6	-273.2	132.10	134.64	-0.3262	-0.3170

SL	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	M-1	M-2	M'-1	M'-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	%EFF-A TOTAL	%EFF-P TOTAL
1	0.0	50.7	64.73	21.20	0.3281	0.7628	0.7773	0.5155	-0.35	3.74	9.26	43.53	0.4887	0.1183	0.0233	1.8215	93.88	94.37
2	0.0	48.0	64.65	26.13	0.3519	0.7513	0.8294	0.5604	0.92	4.63	8.35	38.51	0.4620	0.0486	0.0097	1.8211	97.10	97.34
3	0.0	45.8	64.59	33.28	0.3746	0.7058	0.8802	0.5891	2.15	5.54	9.83	31.31	0.4502	0.0281	0.0055	1.7602	97.97	98.13
4	0.0	44.8	65.40	47.18	0.4177	0.6063	1.0066	0.6328	3.49	5.78	11.38	18.22	0.4606	0.0815	0.0147	1.6361	92.01	92.54
5	0.0	45.4	67.83	55.77	0.4266	0.5554	1.1301	0.6939	3.66	5.52	10.20	12.07	0.4563	0.1601	0.0266	1.5719	81.61	82.75
6	0.0	47.7	68.98	59.41	0.4243	0.5345	1.1835	0.7083	3.84	5.58	9.11	9.57	0.4667	0.2134	0.0333	1.5496	74.79	76.30
7	0.0	46.3	69.47	59.91	0.4233	0.5348	1.2091	0.7389	4.03	5.71	7.53	9.56	0.4495	0.2052	0.0320	1.5532	75.16	76.65
8	0.0	43.9	69.99	60.05	0.4214	0.5382	1.2344	0.7790	4.47	6.02	6.45	9.94	0.4239	0.1829	0.0287	1.5609	77.09	78.48
9	0.0	42.7	71.65	63.62	0.4100	0.5130	1.3063	0.8530	4.50	5.93	5.14	8.03	0.3885	0.1764	0.0249	1.5464	75.97	77.41
10	0.0	45.9	72.17	65.57	0.4053	0.5001	1.3285	0.8453	4.06	5.44	5.05	6.59	0.4039	0.2164	0.0281	1.5381	70.95	72.67
11	0.0	50.2	72.62	68.38	0.4014	0.4800	1.3501	0.8350	3.57	4.91	5.76	4.24	0.4194	0.2572	0.0294	1.5240	65.96	67.92

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	EPSI-1 DEGREE	EPSI-2 DEGREE	PCT TE SPAN
1	350.6	853.7	350.6	537.1	0.0	663.6	753.0	874.3	830.6	576.9	-753.0	-210.6	22.82	42.51	29.173	29.454	0.0500
2	375.5	839.7	375.5	562.5	0.0	623.5	801.3	899.2	884.9	626.4	-801.3	-275.7	24.24	45.11	24.016	25.534	0.1000
3	399.0	789.1	399.0	551.7	0.0	564.3	848.4	924.1	937.6	658.7	-848.4	-359.9	25.56	44.56	19.082	21.558	0.1500
4	443.4	681.8	443.4	485.4	0.0	478.8	972.3	999.0	1068.7	711.5	-972.3	-520.2	27.93	39.20	6.820	10.817	0.3000
5	452.6	629.3	452.6	441.7	0.0	448.3	1110.2	1098.8	1198.9	786.3	-1110.2	-650.5	28.40	35.09	-4.290	0.791	0.5000
6	450.2	609.2	450.2	408.3	0.0	452.1	1172.4	1148.7	1255.8	807.4	-1172.4	-696.6	28.28	32.07	-7.945	-3.553	0.6000
7	449.2	609.6	449.2	418.9	0.0	442.9	1201.9	1173.7	1283.1	842.3	-1201.9	-730.7	28.23	32.97	-9.509	-5.703	0.6500
8	447.3	612.7	447.3	438.5	0.0	427.8	1231.4	1198.6	1310.1	886.8	-1231.4	-770.8	28.13	34.70	-11.259	-7.855	0.7000
9	435.5	585.1	435.5	427.5	0.0	399.5	1317.6	1273.5	1387.7	972.9	-1317.6	-874.0	27.52	33.98	-16.554	-14.443	0.8500
10	430.7	573.4	430.7	396.8	0.0	414.0	1344.5	1298.4	1411.9	969.3	-1344.5	-884.4	27.27	31.30	-17.993	-16.492	0.9000
11	426.7	553.7	426.7	352.4	0.0	427.1	1370.3	1323.4	1435.2	963.1	-1370.3	-896.3	27.06	27.58	-18.692	-18.165	0.9500

WC1/A1 LBM/SEC SQFT	WC1/A1 KG/SEC SQM	T02/T01	P02/P01	EFF-AD ROTOR %	EFF-P ROTOR %
29.69	144.89	1.1768	1.6192	83.58	84.66

AIRFOIL AERODYNAMIC SUMMARY PRINT

80 PERCENT DESIGN SPEED (STATOR PERFORMANCE) RUN NO 111 SPEED CODE 80 POINT NO 2

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	270.6	248.6	184.5	248.6	198.0	2.8	228.47	293.32	0.4708	0.0839
2	265.6	251.1	188.5	251.1	187.0	-1.0	237.13	303.99	0.4206	0.0736
3	256.1	243.0	184.0	243.0	169.5	-4.0	233.39	300.63	0.3654	0.0643
4	219.3	210.4	165.1	210.2	144.3	-10.7	209.21	265.23	0.2187	0.0377
5	203.0	191.0	150.5	190.9	136.2	-6.8	188.01	240.39	0.0703	-0.0026
6	197.3	186.7	141.1	186.6	137.9	-4.8	174.27	232.84	-0.0115	-0.0247
7	197.8	188.2	144.2	188.2	135.3	-5.0	178.46	234.92	-0.0531	-0.0359
8	199.0	190.6	149.9	190.5	131.0	-6.1	186.26	238.22	-0.0898	-0.0479
9	193.8	187.1	149.6	187.0	123.2	-6.7	185.96	231.34	-0.1928	-0.0759
10	192.5	184.7	143.5	184.7	128.2	-4.5	176.56	225.18	-0.2234	-0.0863
11	189.1	179.2	134.6	179.2	132.8	-4.9	163.78	214.84	-0.2634	-0.0961

SL	B-1 DEGREE	B-2 DEGREE	M-1	M-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	P0/P0 STAGE	T0/T0 STAGE	%EFF-A TOT-STG	%EFF-P TOT-STG
1	49.2	0.6	0.7972	0.7253	-5.26	-2.31	14.48	48.56	0.2423	0.2711	0.0624	0.9072	1.6525	1.1992	77.53	79.06
2	46.5	-0.2	0.7828	0.7356	-5.89	-2.76	11.75	46.75	0.2149	0.2031	0.0476	0.9322	1.6975	1.1926	84.88	85.97
3	44.0	-0.9	0.7369	0.7138	-7.80	-4.43	9.91	44.91	0.1892	0.1274	0.0304	0.9513	1.6912	1.1790	90.60	91.28
4	41.6	-2.9	0.6425	0.6146	-11.33	-7.09	7.11	44.54	0.2156	0.0795	0.0201	0.9808	1.6033	1.1643	87.97	88.75
5	42.2	-2.1	0.5899	0.5528	-11.76	-6.40	8.01	44.27	0.2484	0.0503	0.0136	0.9895	1.5540	1.1697	79.18	80.43
6	44.3	-1.5	0.5699	0.5374	-9.46	-3.72	8.63	45.81	0.2563	0.0353	0.0099	0.9930	1.5390	1.1785	73.52	75.08
7	43.2	-1.5	0.5714	0.5423	-10.62	-4.75	8.63	44.70	0.2501	0.0351	0.0099	0.9930	1.5432	1.1783	74.10	75.62
8	41.2	-1.8	0.5760	0.5500	-12.63	-6.64	8.42	43.01	0.2409	0.0363	0.0104	0.9927	1.5491	1.1760	75.76	77.21
9	39.7	-2.0	0.5602	0.5396	-16.23	-10.01	10.33	41.73	0.2374	0.0782	0.0234	0.9650	1.5230	1.1748	73.13	74.68
10	42.1	-1.4	0.5536	0.5300	-16.17	-9.93	12.40	43.48	0.2519	0.1098	0.0333	0.9794	1.5063	1.1848	67.26	69.09
11	45.1	-1.5	0.5410	0.5112	-18.52	-12.37	14.89	46.65	0.2787	0.1601	0.0491	0.9711	1.4796	1.1944	60.99	63.08

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	PCT TE SPAN	EPSI-1 DEGREE	EPSI-2 DEGREE
1	888.0	815.8	605.4	815.7	649.5	9.2	46.79	60.08	0.0430	26.977	4.809
2	871.3	824.0	618.6	824.0	613.6	-3.2	48.57	62.26	0.0901	24.097	4.215
3	820.6	797.3	603.6	797.2	556.0	-13.2	47.80	61.57	0.1410	20.933	3.683
4	719.4	690.4	541.6	689.6	473.6	-35.1	42.85	54.32	0.2989	12.532	2.159
5	665.9	626.7	493.7	626.3	446.9	-22.5	38.51	49.23	0.5086	4.029	-0.149
6	647.3	612.4	462.8	612.2	452.5	-15.7	35.69	47.69	0.6103	-0.658	-1.416
7	648.9	617.6	473.2	617.4	444.9	-16.5	36.55	48.11	0.6598	-3.043	-2.056
8	653.1	625.3	491.7	625.0	429.8	-20.1	38.15	48.79	0.7107	-5.148	-2.693
9	636.0	613.8	490.9	613.4	404.3	-21.9	38.09	47.38	0.8620	-11.045	-4.350
10	631.5	606.1	470.9	605.9	420.7	-14.8	36.16	46.12	0.9101	-12.799	-4.947
11	620.4	588.0	441.6	587.8	435.8	-16.0	33.54	44.00	0.9571	-15.094	-5.509

NCORR INLET RPM	WCORR INLET LBM/SEC	WCORR INLET KG/SEC	T0/T0 STAGE	P02/P01	P0/P0 STAGE	EFF-AD STAGE %	EFF-P STAGE %
9970.00	132.30	60.00	1.1768	0.9747	1.5762	78.84	80.15

AIRFOIL AERODYNAMIC SUMMARY PRINT

80 PERCENT DESIGN SPEED (ROTOR PERFORMANCE) RUN NO 111 SPEED CODE 80 POINT NO 3

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	U-1 M/SEC	U-2 M/SEC	V'-1 M/SEC	V'-2 M/SEC	VO'-1 M/SEC	VO'-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	104.6	261.1	104.6	163.0	0.0	203.9	229.2	266.1	251.9	174.5	-229.2	-62.2	110.06	210.58	0.5095	0.5149
2	112.1	253.5	112.1	167.3	0.0	190.4	243.9	273.7	268.4	186.8	-243.9	-83.2	117.01	218.48	0.4195	0.4463
3	119.1	238.8	119.1	163.3	0.0	174.2	258.2	281.3	284.4	195.3	-258.2	-107.1	123.41	214.67	0.3333	0.3773
4	132.3	207.1	132.3	142.6	0.0	150.2	295.9	304.1	324.2	209.8	-295.9	-153.8	134.92	187.43	0.1206	0.1893
5	135.3	193.5	135.3	130.4	0.0	143.0	337.9	334.4	364.0	231.6	-337.9	-191.4	137.46	169.09	-0.0704	0.0150
6	134.9	188.8	134.9	122.0	0.0	144.1	356.8	349.6	381.5	239.0	-356.8	-205.5	137.11	156.90	-0.1336	-0.0607
7	134.7	189.9	134.7	126.4	0.0	141.8	365.8	357.2	389.8	249.8	-365.8	-215.4	136.93	162.91	-0.1634	-0.0994
8	134.1	190.5	134.1	131.5	0.0	137.8	374.8	364.8	398.1	262.3	-374.8	-227.0	136.46	170.30	-0.1954	-0.1363
9	130.5	181.8	130.5	126.5	0.0	130.5	401.0	387.6	421.7	286.5	-401.0	-257.1	133.37	164.37	-0.2899	-0.2525
10	129.0	178.0	129.0	115.4	0.0	135.5	409.2	395.2	429.1	284.2	-409.2	-259.7	132.14	148.74	-0.3141	-0.2889
11	127.9	173.8	127.9	104.9	0.0	138.5	417.1	402.8	436.2	284.3	-417.1	-264.3	131.12	134.46	-0.3256	-0.3168

SL	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	M-1	M-2	M'-1	M'-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	XEFF-A TOTAL	XEFF-P TOTAL
1	0.0	51.1	65.17	20.68	0.3214	0.7662	0.7742	0.5120	0.09	4.19	8.73	44.50	0.4937	0.0872	0.0173	1.8493	95.55	95.92
2	0.0	48.8	65.08	25.50	0.3449	0.7441	0.8261	0.5485	1.35	5.07	8.71	38.59	0.4757	0.0391	0.0078	1.8306	97.68	97.87
3	0.0	47.0	65.03	33.42	0.3671	0.7004	0.8766	0.5728	2.59	5.98	9.97	31.61	0.4691	0.0292	0.0057	1.7730	97.91	98.07
4	0.0	46.7	65.83	47.37	0.4091	0.6037	1.0025	0.6114	3.93	6.21	11.56	18.47	0.4832	0.0096	0.0162	1.6549	91.48	92.97
5	0.0	47.6	68.18	55.68	0.4187	0.5594	1.1265	0.6695	4.01	5.86	10.12	12.50	0.4809	0.1663	0.0278	1.6048	81.68	82.86
6	0.0	49.5	69.27	59.08	0.4174	0.5428	1.1804	0.6870	4.13	5.87	8.79	10.19	0.4881	0.2133	0.0336	1.5899	75.89	77.42
7	0.0	48.0	69.75	59.34	0.4167	0.5459	1.2062	0.7179	4.31	5.98	6.96	10.41	0.4706	0.2044	0.0324	1.5979	76.38	77.89
8	0.0	46.0	70.26	59.60	0.4149	0.5479	1.2315	0.7545	4.74	6.29	6.00	10.66	0.4479	0.1868	0.0297	1.6053	77.74	79.18
9	0.0	45.5	71.92	63.48	0.4033	0.5212	1.3036	0.8216	4.78	6.20	5.01	8.44	0.4171	0.1898	0.0269	1.5902	75.61	77.15
10	0.0	49.2	72.43	65.77	0.3987	0.5074	1.3259	0.8101	4.33	5.70	5.25	6.66	0.4351	0.2330	0.0300	1.5810	70.50	72.34
11	0.0	52.6	72.87	68.18	0.3949	0.4929	1.3475	0.8066	3.82	5.16	5.57	4.69	0.4447	0.2644	0.0305	1.5726	66.82	68.87

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	EPSI-1 DEGREE	EPSI-2 DEGREE	PCT TE SPAN
1	343.2	856.6	343.2	534.9	0.0	669.0	752.0	873.1	826.6	572.5	-752.0	-204.0	22.54	43.13	29.193	29.499	0.0500
2	367.6	831.6	367.6	548.8	0.0	624.8	800.2	898.0	880.6	613.0	-800.2	-273.1	23.96	44.75	24.035	25.599	0.1000
3	390.8	783.5	390.8	535.8	0.0	571.6	847.3	922.9	933.0	640.7	-847.3	-351.2	25.28	43.97	19.098	21.620	0.1500
4	434.0	679.7	434.0	467.9	0.0	493.0	971.0	997.7	1063.6	688.2	-971.0	-504.7	27.63	38.39	6.908	10.848	0.3000
5	443.9	634.9	443.9	427.8	0.0	469.2	1108.7	1097.3	1194.3	759.9	-1108.7	-628.1	28.15	34.63	-4.031	0.857	0.5000
6	442.5	619.6	442.5	400.4	0.0	472.9	1170.7	1147.1	1251.6	784.2	-1170.7	-674.3	28.08	32.13	-7.710	-3.479	0.6000
7	441.8	623.1	441.8	414.6	0.0	465.2	1200.2	1172.1	1279.0	819.5	-1200.2	-706.9	28.04	33.37	-9.362	-5.637	0.6500
8	440.0	625.0	440.0	431.4	0.0	452.2	1229.7	1197.0	1306.0	860.7	-1229.7	-744.7	27.95	34.88	-11.197	-7.810	0.7000
9	428.1	596.4	428.1	415.1	0.0	428.3	1315.8	1271.7	1383.7	940.1	-1315.8	-843.5	27.32	33.67	-16.608	-14.465	0.8500
10	423.4	584.0	423.4	378.7	0.0	444.6	1342.7	1296.7	1407.9	932.5	-1342.7	-852.1	27.06	30.46	-17.998	-16.499	0.9000
11	419.5	570.1	419.5	344.2	0.0	454.5	1368.4	1321.6	1431.7	932.9	-1368.4	-867.1	26.85	27.54	-18.655	-18.154	0.9500

WC1/A1 LBM/SEC SQFT	WC1/A1 KG/SEC SQM	T02/T01	P02/P01	EFF-AD ROTOR %	EFF-P ROTOR %
29.29	142.91	1.1845	1.6511	83.57	84.69

AIRFOIL AERODYNAMIC SUMMARY PRINT

80 PERCENT DESIGN SPEED (STATOR PERFORMANCE) RUN NO 111 SPEED CODE 80 POINT NO 3

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	270.6	239.3	182.7	239.2	199.6	3.2	230.86	297.66	0.4731	0.0832
2	262.3	238.0	183.5	238.0	187.4	-1.5	235.20	302.77	0.4235	0.0727
3	247.6	228.6	178.4	228.5	171.7	-7.1	230.36	295.89	0.3680	0.0638
4	217.6	198.2	159.0	197.9	148.6	-11.2	205.16	260.58	0.2191	0.0379
5	203.8	181.1	145.6	180.9	142.6	-7.2	185.67	237.12	0.0676	-0.0026
6	199.6	177.3	137.9	177.3	144.3	-4.7	174.27	230.18	-0.0134	-0.0245
7	200.9	179.6	142.0	179.5	142.2	-4.5	179.86	233.14	-0.0536	-0.0353
8	202.0	182.4	147.1	182.3	138.5	-5.3	186.96	237.07	-0.0888	-0.0462
9	196.4	180.0	145.3	179.9	132.1	-5.6	184.53	231.38	-0.1904	-0.0752
10	194.7	177.2	137.7	177.2	137.7	-3.1	172.97	224.51	-0.2223	-0.0859
11	192.8	172.9	131.2	172.9	141.3	-3.0	163.40	215.97	-0.2635	-0.0959

SL	B-1 DEGREE	B-2 DEGREE	M-1	M-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	P0/P0 STAGE	T0/T0 STAGE	%EFF-A TOT-STG	%EFF-P TOT-STG
1	49.7	0.7	0.7976	0.6957	-4.71	-1.75	14.59	49.01	0.2776	0.2354	0.0542	0.9194	1.7001	1.2011	81.49	82.82
2	47.4	-0.4	0.7731	0.6943	-5.02	-1.89	11.61	47.76	0.2559	0.1756	0.0412	0.9426	1.7251	1.1932	87.38	88.31
3	45.3	-1.8	0.7288	0.6680	-6.52	-3.15	9.09	47.01	0.2439	0.1156	0.0276	0.9655	1.7107	1.1815	91.42	92.04
4	43.5	-3.2	0.6368	0.5759	-9.44	-5.19	6.78	46.75	0.2716	0.0532	0.0134	0.9873	1.6327	1.1694	88.83	89.58
5	44.5	-2.3	0.5911	0.5213	-9.52	-4.16	7.77	46.74	0.3096	0.0371	0.0100	0.9922	1.5912	1.1779	79.84	81.12
6	46.3	-1.5	0.5756	0.5079	-7.52	-1.78	8.57	47.81	0.3208	0.0388	0.0108	0.9922	1.5784	1.1870	74.55	76.14
7	45.0	-1.4	0.5796	0.5146	-8.77	-2.89	8.71	46.47	0.3140	0.0435	0.0123	0.9911	1.5845	1.1876	74.96	76.53
8	43.3	-1.7	0.5832	0.5233	-10.51	-4.51	8.59	44.97	0.3024	0.0412	0.0118	0.9915	1.5917	1.1864	76.26	77.78
9	42.5	-1.8	0.5657	0.5158	-13.44	-7.22	10.61	44.25	0.2958	0.0643	0.0192	0.9875	1.5702	1.1876	73.40	75.04
10	45.3	-1.0	0.5578	0.5050	-12.96	-6.72	12.79	46.30	0.3118	0.0939	0.0284	0.9821	1.5528	1.1984	67.58	69.52
11	47.6	-1.0	0.5500	0.4904	-16.00	-9.86	15.45	48.60	0.3359	0.1416	0.0434	0.9737	1.5311	1.2070	62.58	64.75

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	PCT TE SPAN	EPSI-1 DEGREE	EPSI-2 DEGREE
1	887.8	785.0	599.3	784.9	655.0	10.4	47.28	60.96	0.0430	27.107	4.770
2	860.7	781.0	602.2	780.9	615.0	-5.1	48.17	62.01	0.0901	24.264	4.166
3	812.3	750.1	585.3	749.8	563.3	-23.4	47.18	60.60	0.1410	21.085	3.653
4	714.1	650.4	521.8	649.3	487.5	-36.7	42.02	53.37	0.2989	12.551	2.174
5	668.6	594.1	477.8	593.6	467.8	-23.8	38.03	48.57	0.5086	3.872	-0.151
6	654.8	581.8	452.4	581.6	473.3	-15.5	35.69	47.14	0.6103	-0.770	-1.402
7	659.3	589.2	465.9	589.0	466.4	-14.8	36.84	47.75	0.6598	-3.068	-2.023
8	662.7	598.4	482.5	598.2	454.3	-17.5	38.29	48.55	0.7107	-5.086	-2.648
9	644.4	590.5	476.8	590.2	433.5	-18.2	37.79	47.39	0.8620	-10.909	-4.309
10	638.9	581.4	451.9	581.3	451.7	-10.2	35.43	45.98	0.9101	-12.734	-4.919
11	632.6	567.4	430.4	567.3	463.6	-9.8	33.47	44.23	0.9571	-15.100	-5.494

NCORR INLET RPM	WCORR INLET LBM/SEC	WCORR INLET KG/SEC	T0/T0 STAGE	P02/P01	P0/P0 STAGE	EFF-AD STAGE %	EFF-P STAGE %
9969.70	130.50	59.18	1.1845	0.9784	1.6155	79.68	81.01

AIRFOIL AERODYNAMIC SUMMARY PRINT

80 PERCENT DESIGN SPEED (ROTOR PERFORMANCE) RUN NO 111 SPEED CODE 80 POINT NO 5

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	U-1 M/SEC	U-2 M/SEC	V'-1 M/SEC	V'-2 M/SEC	VO'-1 M/SEC	VO'-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	102.4	258.5	102.4	156.4	0.0	205.9	228.2	255.7	259.7	167.4	-228.8	-59.8	108.91	205.38	0.5135	0.5143
2	109.6	259.6	109.6	160.4	0.0	192.6	243.5	273.3	267.9	179.5	-243.5	-80.7	115.75	212.51	0.4201	0.4456
3	116.4	237.1	116.4	158.4	0.0	175.4	257.8	280.8	282.9	189.7	-257.8	-104.4	122.95	211.86	0.3347	0.3757
4	129.1	236.0	129.1	137.0	0.0	153.9	295.5	308.6	322.4	202.9	-295.5	-149.7	133.31	183.63	0.1228	0.1882
5	132.0	193.1	132.0	123.9	0.0	148.1	337.4	333.9	362.3	223.3	-337.4	-185.8	135.88	164.44	-0.0681	0.0143
6	131.9	189.4	131.9	121.3	0.0	145.4	355.3	349.1	378.9	237.0	-355.3	-208.6	135.74	160.71	-0.1282	-0.0515
7	131.7	189.9	131.7	124.3	0.0	143.7	365.2	356.7	388.2	246.6	-365.2	-213.0	135.57	165.02	-0.1591	-0.0995
8	131.1	189.9	131.1	127.3	0.0	140.9	374.2	364.2	396.5	257.1	-374.2	-223.3	135.07	169.54	-0.1922	-0.1375
9	127.7	180.8	127.7	119.2	0.0	135.9	400.4	387.0	420.3	277.9	-400.4	-251.0	132.17	159.05	-0.2824	-0.2519
10	126.5	176.8	126.5	112.9	0.0	135.1	408.5	394.6	427.7	282.0	-408.6	-258.5	131.19	150.43	-0.3055	-0.2852
11	125.4	173.2	125.4	106.1	0.0	135.9	416.4	402.2	434.9	285.7	-416.4	-265.2	130.13	141.64	-0.3199	-0.3148

SL	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	M-1	M-2	M'-1	M'-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	%EFF-A TOTAL	%EFF-P TOTAL
1	0.0	52.5	65.69	29.72	0.3150	0.7592	0.7712	0.4911	0.52	4.62	8.73	44.88	0.5205	0.0939	0.0198	1.6843	94.47	95.39
2	0.0	50.2	65.54	25.73	0.3377	0.7352	0.8227	0.5267	1.61	5.52	8.94	38.61	0.5014	0.0823	0.0104	1.8356	95.95	97.21
3	0.0	48.3	65.50	33.56	0.3592	0.6952	0.8728	0.5562	3.06	6.45	10.11	31.94	0.4871	0.0697	0.0059	1.7862	97.33	98.09
4	0.0	48.5	66.33	47.73	0.3994	0.6099	0.9978	0.5910	4.43	6.71	11.92	18.61	0.5039	0.0919	0.0165	1.6752	91.52	92.11
5	0.0	59.0	68.62	56.25	0.4529	0.5573	1.1220	0.6446	4.45	6.30	10.62	12.37	0.5046	0.1692	0.0279	1.6350	82.09	83.28
6	0.0	49.9	69.65	59.61	0.4584	0.5443	1.1764	0.6819	4.51	6.24	8.71	10.64	0.4915	0.1873	0.0295	1.6292	79.24	80.62
7	0.0	48.8	70.12	59.47	0.4977	0.5451	1.2922	0.7030	4.62	6.36	7.09	10.65	0.4777	0.1837	0.0290	1.6352	79.26	80.65
8	0.0	47.6	70.63	60.61	0.4558	0.5458	1.2275	0.7382	5.11	6.67	6.42	10.62	0.4611	0.1751	0.0275	1.6407	79.71	81.07
9	0.0	48.4	72.21	64.28	0.3952	0.5172	1.3902	0.7953	5.07	6.49	5.81	7.93	0.4289	0.1923	0.0265	1.6264	76.22	77.85
10	0.0	50.0	72.62	66.13	0.3913	0.5044	1.3228	0.8045	4.58	5.95	5.60	6.55	0.4331	0.2090	0.0266	1.6193	74.01	75.71
11	0.0	52.0	73.12	68.08	0.3878	0.4924	1.3445	0.8122	4.08	5.41	5.41	5.10	0.4334	0.2274	0.0264	1.6139	71.66	73.50

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	PHOVM-1 LBM/FT2SEC	PHOVM-2 LBM/FT2SEC	EPSI-1 DEGREE	EPSI-2 DEGREE	PCT TE SPAN
1	335.9	848.2	335.9	512.0	0.0	675.4	749.2	871.7	822.5	549.3	-749.2	-196.3	22.31	42.00	29.193	29.466	0.0500
2	359.6	822.2	359.6	526.2	0.0	631.8	798.9	896.5	876.1	588.0	-798.9	-264.7	23.71	43.59	24.071	25.528	0.1000
3	381.9	777.8	381.9	519.6	0.0	572.8	845.9	921.4	928.1	622.3	-845.9	-342.6	25.00	43.39	19.178	21.523	0.1500
4	423.4	676.0	423.4	449.6	0.0	504.9	969.4	995.1	1057.9	665.9	-969.4	-491.2	27.30	37.61	7.037	10.731	0.3000
5	433.2	633.5	433.2	405.5	0.0	495.9	1106.9	1095.5	1188.7	732.7	-1106.9	-659.6	27.83	33.62	-3.515	0.821	0.5000
6	432.7	621.3	432.7	398.0	0.0	477.1	1168.9	1145.3	1246.4	777.7	-1168.9	-668.2	27.80	32.92	-7.346	-3.526	0.6000
7	432.0	623.2	432.0	407.7	0.0	471.3	1198.3	1170.2	1273.8	809.1	-1198.3	-698.9	27.77	33.80	-9.118	-5.699	0.6500
8	430.1	622.9	430.1	417.5	0.0	462.3	1227.7	1195.1	1300.9	843.4	-1227.7	-732.8	27.65	34.72	-11.013	-7.876	0.7000
9	419.1	593.2	419.1	391.1	0.0	445.0	1313.7	1269.7	1379.0	911.8	-1313.7	-823.7	27.07	32.57	-16.177	-14.382	0.8500
10	415.1	580.2	415.1	370.4	0.0	445.6	1340.6	1294.5	1403.4	925.4	-1340.6	-848.0	26.85	30.80	-17.594	-16.340	0.9000
11	411.5	568.2	411.5	348.0	0.0	449.2	1366.2	1319.5	1426.8	937.3	-1366.2	-870.3	26.65	28.29	-18.330	-18.037	0.9500

WC1/A1 LBM/SEC SQFT	WC1/A1 KG/SEC SQM	P02/P01	P02/P01	EFF-AD ROTOR %	EFF-P ROTOR %
28.77	140.39	1.1825	1.6777	84.60	85.69

AIRFOIL AERODYNAMIC SUMMARY PRINT

80 PERCENT DESIGN SPEED (STATOR PERFORMANCE) RUN NO 111 SPEED CODE 80 POINT NO 5

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VD-1 M/SEC	VD-2 M/SEC	PHO/M-1 KG/M2 SEC	PHO/M-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	267.0	228.7	175.2	228.6	201.5	3.4	225.35	297.86	0.4713	0.0325
2	258.5	224.9	175.9	224.9	189.5	-1.5	229.48	293.38	0.4200	0.0716
3	244.9	215.0	172.6	214.8	173.8	-2.0	227.22	289.47	0.3635	0.0631
4	215.5	186.7	152.5	186.3	152.2	-11.2	201.03	254.56	0.2149	0.0380
5	202.5	171.7	138.6	171.6	147.7	-7.7	181.19	232.83	0.0591	-0.0031
6	199.2	169.8	136.0	169.7	145.6	-4.5	177.39	229.28	-0.0297	-0.0245
7	200.3	172.0	139.1	172.0	144.1	-4.9	181.65	232.15	-0.0584	-0.0350
8	200.7	174.9	142.3	174.9	141.6	-4.5	186.25	236.95	-0.0924	-0.0458
9	194.7	173.1	137.7	173.0	137.6	-5.2	179.79	230.47	-0.1983	-0.0754
10	192.6	170.6	134.0	170.6	138.3	-2.7	174.33	225.34	-0.2312	-0.0661
11	191.2	168.1	130.5	168.1	139.7	-2.7	168.95	219.72	-0.2694	-0.0959

SL	B-1 DEGREE	B-2 DEGREE	M-1	M-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	P0/P0 STAGE	T0/T0 STAGE	%EFF-A TOT-STG	%EFF-P TOT-STG
1	51.2	0.8	0.7251	0.6525	-3.29	-0.33	14.53	50.34	0.3026	0.1975	0.0455	0.9339	1.7313	1.2031	83.66	84.87
2	48.9	-0.4	0.7609	0.6529	-3.55	-0.42	11.60	49.24	0.2962	0.1577	0.0370	0.9498	1.7416	1.1952	88.13	89.02
3	46.5	-2.1	0.7204	0.6251	-5.26	-1.29	8.74	48.61	0.2933	0.1155	0.0276	0.9663	1.7233	1.1838	91.62	92.24
4	45.4	-3.4	0.6295	0.5402	-7.53	-3.34	6.52	48.81	0.3221	0.0818	0.0139	0.9880	1.6573	1.1738	89.01	89.77
5	45.9	-2.6	0.5864	0.4924	-7.11	-1.75	7.50	49.43	0.3587	0.0444	0.0120	0.9908	1.6192	1.1843	89.20	81.50
6	47.0	-1.5	0.5749	0.4855	-6.85	-1.11	8.59	48.46	0.3587	0.0470	0.0131	0.9906	1.6131	1.1890	77.50	78.96
7	46.9	-1.3	0.5777	0.4929	-7.72	-1.90	8.81	47.35	0.3515	0.0519	0.0147	0.9895	1.6187	1.1905	77.48	78.95
8	44.9	-1.5	0.5790	0.5006	-8.91	-2.92	8.78	46.37	0.3390	0.0460	0.0132	0.9906	1.6257	1.1908	78.12	79.57
9	45.3	-1.7	0.5593	0.4840	-10.62	-4.46	10.66	45.96	0.3329	0.0651	0.0195	0.9875	1.6059	1.1957	74.12	75.79
10	46.3	-0.9	0.5519	0.4859	-11.99	-5.75	12.89	47.16	0.3382	0.0910	0.0276	0.9839	1.5915	1.1998	71.11	72.93
11	47.5	-0.9	0.5454	0.4772	-16.15	-10.01	15.51	48.49	0.3525	0.1276	0.0391	0.9765	1.5759	1.2049	67.76	69.75

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VD-1 FT/SEC	VD-2 FT/SEC	PHO/M-1 LBM/FT2SEC	PHO/M-2 LBM/FT2SEC	PCT TE SPAN	EPSI-1 DEGREE	EPSI-2 DEGREE
1	875.9	750.2	574.7	750.1	661.1	11.1	46.15	61.01	0.0439	27.001	4.724
2	848.2	737.8	577.1	737.8	621.6	-4.9	47.00	61.11	0.6901	24.063	4.103
3	803.5	705.3	566.1	704.8	570.2	-26.4	46.54	59.29	0.1410	20.825	3.613
4	706.9	612.5	500.4	611.4	499.3	-35.8	41.17	52.14	0.2929	12.311	2.175
5	664.5	563.4	454.7	562.9	484.6	-25.2	37.09	47.69	0.5586	3.387	-0.177
6	653.6	557.0	446.1	556.8	477.7	-14.7	36.31	46.96	0.6103	-1.187	-1.406
7	657.1	564.4	456.3	564.3	472.8	-13.3	37.21	47.55	0.6593	-3.343	-2.003
8	658.6	573.9	466.8	573.7	464.6	-14.8	38.15	48.35	0.7107	-5.293	-2.624
9	638.7	567.9	451.7	567.6	451.6	-17.9	36.82	47.20	0.8520	-11.351	-4.323
10	631.9	559.9	439.8	559.8	453.8	-9.9	35.70	46.15	0.9101	-13.246	-4.934
11	627.2	551.5	428.2	551.4	453.3	-8.9	34.60	45.00	0.9571	-15.434	-5.494

NCORR INLET RPM	WCORR INLET LBM/SEC	WCORR INLET KG/SEC
9368.39	128.20	58.14

T0/T0 STAGE	P02/P01	P0/P0 STAGE	EFF-AD STAGE %	EFF-P STAGE %
1.1835	0.9798	1.6438	81.03	82.31

AIRFOIL AERODYNAMIC SUMMARY PRINT

80 PERCENT DESIGN SPEED (ROTOR PERFORMANCE) RUN NO 111 SPEED CODE 80 POINT NO 4

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	U-1 M/SEC	U-2 M/SEC	V'-1 M/SEC	V'-2 M/SEC	VO'-1 M/SEC	VO'-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	100.3	259.8	100.3	165.2	0.0	208.4	229.0	265.9	250.0	165.5	-229.0	-57.5	107.35	295.62	0.5036	0.5154
2	107.4	250.4	107.4	158.8	0.0	193.6	243.7	278.5	266.3	177.7	-243.7	-79.9	114.16	283.01	0.4184	0.4472
3	114.1	236.9	114.1	155.4	0.0	178.2	258.0	281.9	282.1	186.0	-258.0	-102.2	120.43	269.91	0.3324	0.3771
4	126.7	207.6	126.7	134.2	0.0	158.4	295.7	303.8	321.7	197.8	-295.7	-145.4	131.77	181.47	0.1291	0.1884
5	129.7	197.1	129.7	124.1	0.0	153.1	337.6	324.2	361.7	219.5	-337.6	-181.1	134.40	156.39	-0.0719	0.0144
6	129.2	195.3	129.2	118.6	0.0	155.2	356.5	349.3	379.2	227.5	-356.5	-194.2	133.95	157.99	-0.1395	-0.0515
7	128.8	197.1	128.8	122.3	0.0	154.6	355.5	356.9	387.5	236.4	-365.5	-252.3	133.62	163.10	-0.1706	-0.1001
8	128.0	197.0	128.0	124.1	0.0	153.0	374.5	364.5	395.7	245.2	-374.5	-211.5	132.95	165.68	-0.2032	-0.1323
9	124.3	187.6	124.3	114.9	0.0	148.2	400.7	387.3	419.5	265.3	-400.7	-239.1	129.71	153.52	-0.2905	-0.2538
10	123.1	184.1	123.1	107.0	0.0	149.9	408.9	394.9	427.0	267.3	-408.9	-245.0	128.59	142.41	-0.3116	-0.2878
11	122.0	181.4	122.0	101.1	0.0	150.6	416.7	402.5	434.2	271.4	-416.7	-251.9	127.65	134.52	-0.3230	-0.3152

SL	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	M-1	M-2	M'-1	M'-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	%EFF-A TOTAL	%EFF-P TOTAL
1	0.0	53.0	66.05	20.13	0.3322	0.7612	0.7623	0.4349	0.97	5.06	8.18	45.92	0.5293	0.0674	0.0174	1.8745	95.58	96.05
2	0.0	50.7	65.97	25.73	0.3305	0.7337	0.8195	0.5297	2.24	5.96	8.94	39.24	0.5081	0.0409	0.0081	1.8431	97.64	97.83
3	0.0	49.2	65.93	33.51	0.3517	0.6934	0.8594	0.5444	3.49	6.88	10.06	32.42	0.5011	0.0313	0.0061	1.7978	97.34	98.01
4	0.0	49.9	66.73	47.50	0.3915	0.6031	0.9942	0.5748	4.83	7.11	11.69	19.24	0.5224	0.1000	0.0180	1.6939	91.02	91.66
5	0.0	50.9	69.00	55.52	0.4319	0.5575	1.1186	0.6324	4.83	6.68	9.95	13.43	0.5188	0.1718	0.0288	1.6621	82.34	83.56
6	0.0	52.4	70.07	58.36	0.3994	0.5595	1.1727	0.6517	4.94	6.67	8.07	11.72	0.5244	0.2138	0.0344	1.6597	77.44	78.99
7	0.0	51.4	70.58	58.57	0.3932	0.5641	1.1923	0.6765	5.13	6.81	6.19	12.00	0.5126	0.2132	0.0346	1.6709	77.16	78.75
8	0.0	50.6	71.10	59.29	0.3958	0.5631	1.2235	0.7010	5.58	7.14	5.70	11.81	0.5003	0.2123	0.0341	1.6754	76.78	78.41
9	0.0	51.8	72.71	64.02	0.3840	0.5332	1.2960	0.7541	5.57	6.99	5.54	8.69	0.4779	0.2324	0.0323	1.6583	73.00	74.85
10	0.0	54.2	73.17	66.15	0.3801	0.5215	1.3186	0.7670	5.06	6.44	5.62	7.02	0.4821	0.2557	0.0325	1.6523	70.26	72.28
11	0.0	55.9	73.58	67.95	0.3767	0.5121	1.3405	0.7664	4.54	5.87	5.34	5.63	0.4802	0.2708	0.0316	1.6500	68.43	70.57

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	EPSI-1 DEGREE	EPSI-2 DEGREE	PCT TE SPAN
1	329.1	852.5	329.1	509.3	0.0	683.7	751.3	872.3	820.2	543.1	-751.3	-188.5	21.99	42.15	29.141	29.532	0.0500
2	352.4	821.6	352.4	521.0	0.0	635.3	799.5	897.2	873.7	583.1	-799.5	-261.9	23.33	43.63	23.973	25.623	0.1000
3	374.4	777.3	374.4	509.8	0.0	586.7	845.5	922.1	925.6	610.2	-845.5	-335.4	24.67	42.99	19.048	21.607	0.1500
4	415.6	681.1	415.6	449.2	0.0	519.7	970.1	995.8	1055.4	649.1	-970.1	-477.1	26.99	37.17	6.283	10.792	0.3000
5	425.4	646.5	425.4	407.2	0.0	502.2	1107.7	1096.4	1186.5	720.3	-1107.7	-594.2	27.53	34.08	-4.117	0.824	0.5000
6	423.7	640.9	423.7	389.2	0.0	509.1	1162.7	1146.2	1244.1	746.5	-1169.7	-637.0	27.44	32.36	-7.991	-3.531	0.6000
7	422.5	646.8	422.5	401.3	0.0	507.3	1199.2	1171.0	1271.5	775.7	-1199.2	-663.8	27.37	33.41	-9.775	-5.734	0.6500
8	420.0	646.3	420.0	407.1	0.0	502.0	1228.6	1195.9	1298.4	804.5	-1228.6	-693.9	27.23	33.93	-11.641	-7.952	0.7000
9	407.9	615.4	407.9	377.1	0.0	486.3	1314.7	1270.7	1376.5	870.3	-1314.7	-784.4	26.57	31.44	-16.645	-14.540	0.8500
10	403.8	604.2	403.8	351.0	0.0	491.8	1341.6	1295.5	1401.0	877.0	-1341.6	-803.8	26.34	29.17	-17.851	-16.488	0.9000
11	400.4	595.1	400.4	331.8	0.0	494.0	1367.2	1320.4	1424.6	899.6	-1367.2	-826.5	26.14	27.55	-18.508	-18.117	0.9500

WCI/AI LBM/SEC SQFT	WCI/AI KG/SEC SQM	T02/T01	P02/P01	EFF-AD ROTOR %	EFF-P ROTOR %
28.21	137.66	1.1982	1.7040	83.08	84.30

AIRFOIL AERODYNAMIC SUMMARY PRINT

80 PERCENT DESIGN SPEED (STATOR PERFORMANCE) RUN NO 111 SPEED CODE 80 POINT NO 4

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	267.8	221.1	173.4	221.0	204.0	3.9	225.88	296.06	0.4733	0.0828
2	257.8	216.2	173.7	216.2	190.5	-0.9	229.42	294.77	0.4231	0.0726
3	244.2	205.9	169.1	205.8	176.1	-7.2	225.14	284.41	0.3668	0.0648
4	216.3	178.5	149.2	178.2	156.6	-10.3	198.68	249.14	0.2176	0.0423
5	205.7	165.1	137.9	164.9	152.6	-6.6	182.28	229.28	0.0693	0.0039
6	204.4	163.6	132.8	163.6	155.3	-2.7	174.28	225.41	-0.0073	-0.0173
7	206.5	166.5	136.4	166.5	155.1	-1.9	179.07	228.99	-0.0446	-0.0282
8	206.9	169.4	138.4	169.4	153.8	-2.0	181.80	232.75	-0.0791	-0.0395
9	200.5	167.5	132.9	167.5	150.0	-3.7	173.97	227.35	-0.1839	-0.0716
10	198.8	165.3	127.8	165.3	152.3	-2.4	166.30	222.13	-0.2240	-0.0833
11	198.0	163.7	125.0	163.7	153.6	-2.1	162.06	218.04	-0.2655	-0.0946

SL	B-1 DEGREE	B-2 DEGREE	M-1	M-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEE	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	P0/P0 STAGE	T0/T0 STAGE	%EFF-A TOT-STG	%EFF-P TOT-STG
1	51.8	1.0	0.7873	0.6377	-2.64	0.31	14.85	..22	0.3405	0.1976	0.0455	0.9337	1.7499	1.2056	84.41	85.59
2	49.4	-0.2	0.7578	0.6251	-2.99	0.13	11.74	49.66	0.3293	0.1578	0.0370	0.9509	1.7549	1.1964	88.84	89.69
3	47.5	-2.0	0.7168	0.5959	-4.27	-0.90	8.88	49.47	0.3310	0.1185	0.0283	0.9656	1.7349	1.1865	91.50	92.13
4	46.9	-3.3	0.6304	0.5137	-6.10	-1.86	6.70	50.17	0.3676	0.0581	0.0147	0.9854	1.6705	1.1788	88.42	89.23
5	47.9	-2.3	0.5942	0.4709	-6.02	-0.67	7.77	50.24	0.4065	0.0526	0.0142	0.9838	1.6435	1.1900	80.36	81.69
6	49.5	-0.9	0.5872	0.4644	-4.34	1.39	9.16	50.40	0.4152	0.0578	0.0161	0.9820	1.6394	1.2012	75.47	77.12
7	48.6	-0.7	0.5928	0.4722	-5.14	0.73	9.49	49.31	0.4097	0.0658	0.0186	0.9861	1.6472	1.2047	74.92	76.62
8	48.0	-0.7	0.5933	0.4804	-5.80	0.20	9.59	48.68	0.3990	0.0589	0.0169	0.9875	1.6545	1.2069	74.83	76.55
9	48.7	-1.2	0.5721	0.4736	-7.27	-1.05	11.11	49.91	0.3966	0.0636	0.0190	0.9873	1.6376	1.2129	71.12	73.05
10	50.3	-0.8	0.5655	0.4657	-7.94	-1.70	12.95	51.15	0.4074	0.0369	0.0263	0.9830	1.6245	1.2195	67.81	69.92
11	51.4	-0.7	0.5617	0.4601	-12.27	-5.13	15.70	52.08	0.4175	0.1169	0.0358	0.9775	1.6128	1.2250	65.08	67.34

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	PCT TE SPAN	EPSI-1 DEGREE	EPSI-2 DEGREE
1	878.6	725.4	569.0	725.2	669.4	12.9	46.26	60.64	0.0430	27.115	4.743
2	846.0	709.4	569.9	709.4	625.2	-2.9	46.99	60.37	0.0901	24.240	4.158
3	801.2	675.7	554.8	675.3	577.9	-23.6	46.11	58.25	0.1410	21.015	3.713
4	709.7	585.6	489.4	584.7	513.9	-33.9	40.69	51.03	0.2989	12.469	2.424
5	674.9	541.5	452.6	541.1	500.6	-21.7	37.33	46.95	0.5086	3.968	0.222
6	670.6	536.8	435.8	536.7	509.7	-8.8	35.69	46.17	0.6103	-0.419	-0.994
7	677.6	546.2	447.5	546.2	508.8	-6.3	36.68	46.90	0.6598	-2.555	-1.615
8	678.8	555.8	454.1	555.8	504.5	-6.5	37.23	47.67	0.7107	-4.535	-2.260
9	657.7	549.7	436.2	549.5	492.3	-12.0	35.63	46.56	0.8520	-10.823	-4.103
10	652.2	542.3	419.3	542.2	499.6	-8.0	34.06	45.49	0.9101	-12.837	-4.773
11	649.6	537.2	410.1	537.2	503.8	-6.9	33.19	44.66	0.9571	-15.211	-5.420

NCORR INLET RPM	WCORR INLET LBM/SEC	WCORR INLET KG/SEC	T0/T0 STAGE	P02/P01	P0/P0 STAGE	EFF-AD STAGE %	EFF-P STAGE %
9969.40	125.70	57.01	1.1982	0.9785	1.6674	79.44	80.87

AIRFOIL AERODYNAMIC SUMMARY PRINT

80 PERCENT DESIGN SPEED (ROTOR PERFORMANCE) RUN NO 111 SPEED CODE 80 POINT NO 6

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	U-1 M/SEC	U-2 M/SEC	V'-1 M/SEC	V'-2 M/SEC	VO'-1 M/SEC	VO'-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	97.4	259.9	97.4	151.9	0.0	259.8	228.7	268.5	248.6	161.8	-228.7	-55.7	105.59	234.42	0.5066	0.5132
2	104.2	249.7	104.2	154.1	0.0	196.5	243.3	273.1	264.7	172.1	-243.3	-75.6	112.25	259.61	0.4190	0.4443
3	110.6	235.3	110.6	149.5	0.0	181.7	257.7	280.7	280.4	179.3	-257.7	-93.9	118.48	254.68	0.3315	0.3745
4	122.6	207.9	122.6	129.7	0.0	152.5	295.3	303.4	319.7	191.5	-295.3	-140.9	129.48	178.94	0.1199	0.1877
5	125.6	199.1	125.6	120.4	0.0	158.6	337.2	333.7	359.8	212.5	-337.2	-175.1	132.19	164.16	-0.0764	0.0146
6	125.2	199.3	125.2	117.3	0.0	161.1	356.1	348.9	377.4	221.4	-356.1	-187.8	131.79	159.12	-0.1397	-0.0613
7	124.7	200.7	124.7	119.6	0.0	161.2	365.9	356.5	385.7	229.0	-355.0	-195.3	131.40	162.31	-0.1723	-0.1001
8	123.9	200.1	123.9	120.1	0.0	160.0	374.0	364.0	394.0	236.7	-374.0	-204.0	130.68	163.12	-0.2055	-0.1392
9	120.2	191.4	120.2	109.0	0.0	157.4	409.2	386.8	417.8	254.0	-409.2	-229.4	127.33	147.82	-0.2907	-0.2541
10	119.1	188.9	119.1	102.5	0.0	158.6	408.4	394.3	425.4	257.1	-408.4	-235.8	126.25	138.68	-0.3103	-0.2878
11	118.1	186.5	118.1	98.1	0.0	158.6	416.2	401.9	432.6	262.4	-416.2	-243.3	125.34	132.90	-0.3218	-0.3161

SL	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	M-1	M-2	M'-1	M'-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	%EFF-A TOTAL	%EFF-P TOTAL
1	0.0	53.8	66.64	19.93	0.2995	0.7591	0.7645	0.4742	1.56	5.66	7.99	46.71	0.5432	0.0898	0.0179	1.8826	95.61	95.99
2	0.0	51.9	66.57	26.43	0.3209	0.7315	0.8153	0.5041	2.25	6.56	8.64	49.14	0.5293	0.0551	0.0110	1.8565	96.25	97.11
3	0.0	50.7	66.55	33.64	0.3412	0.6884	0.8648	0.5244	4.11	7.50	10.19	32.91	0.5249	0.0505	0.0099	1.8023	96.58	96.85
4	0.0	51.6	67.37	47.56	0.3791	0.6037	0.9697	0.5559	5.47	7.75	11.75	19.82	0.5429	0.1122	0.0202	1.7690	90.20	90.91
5	0.0	52.7	69.57	55.43	0.3887	0.5720	1.1134	0.6115	5.40	7.25	9.85	14.14	0.5403	0.1822	0.0306	1.6877	81.91	83.20
6	0.0	53.7	70.62	57.78	0.3873	0.5704	1.1677	0.6337	5.49	7.22	7.49	12.83	0.5432	0.2128	0.0357	1.6938	77.72	79.31
7	0.0	53.1	71.12	58.24	0.3859	0.5736	1.1934	0.6504	5.68	7.35	5.85	12.88	0.5351	0.2231	0.0365	1.7040	75.95	78.62
8	0.0	52.8	71.65	59.20	0.3833	0.5709	1.2186	0.6755	6.13	7.69	5.61	12.45	0.5253	0.2261	0.0364	1.7071	76.18	77.91
9	0.0	54.9	73.23	64.29	0.3716	0.5424	1.2913	0.7197	6.03	7.51	5.82	8.94	0.5097	0.2656	0.0352	1.6929	71.69	73.70
10	0.0	56.8	73.66	66.23	0.3678	0.5324	1.3141	0.7261	5.56	6.93	5.70	7.44	0.5103	0.2738	0.0347	1.6907	69.58	71.74
11	0.0	58.0	74.06	67.86	0.3647	0.5253	1.3362	0.7399	5.01	6.35	5.25	6.20	0.5042	0.2843	0.0333	1.6906	68.26	70.50

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	EPSI-1 DEGREE	EPSI-2 DEGREE	PCT TE SPAN
1	319.5	849.8	319.5	498.4	0.0	688.3	750.3	871.2	815.5	530.9	-750.3	-182.8	21.62	41.87	29.140	29.406	0.0500
2	341.9	819.4	341.9	505.7	0.0	644.7	798.4	896.0	868.6	564.6	-798.4	-251.3	22.99	42.93	23.951	25.449	0.1000
3	363.0	772.1	363.0	490.6	0.0	595.3	845.4	920.9	920.1	588.2	-845.4	-324.6	24.25	41.92	18.994	21.454	0.1500
4	402.3	682.3	402.3	425.5	0.0	533.3	968.9	995.5	1049.1	628.2	-968.9	-462.2	26.52	35.45	6.869	10.755	0.3000
5	412.1	653.4	412.1	395.1	0.0	520.4	1105.3	1094.9	1180.6	697.3	-1106.3	-574.5	27.07	33.62	-4.034	0.838	0.5000
6	410.7	652.9	410.7	394.9	0.0	528.6	1168.2	1144.7	1238.3	726.4	-1168.2	-616.1	26.99	32.59	-8.007	-3.515	0.6000
7	409.3	658.5	409.3	392.4	0.0	528.8	1197.6	1169.5	1265.6	751.3	-1197.6	-640.7	26.91	33.24	-9.870	-5.737	0.6500
8	406.6	656.5	406.6	394.1	0.0	525.9	1227.0	1194.4	1292.5	776.7	-1227.0	-669.4	26.76	33.41	-11.777	-7.976	0.7000
9	394.5	628.1	394.5	357.6	0.0	516.3	1313.0	1269.0	1371.0	833.3	-1313.0	-752.7	26.08	30.28	-16.657	-14.559	0.8500
10	390.6	619.7	390.6	336.6	0.0	520.3	1339.2	1293.9	1395.5	843.6	-1339.2	-773.6	25.86	28.44	-17.782	-16.491	0.9000
11	387.4	611.9	387.4	322.0	0.0	520.4	1365.4	1318.7	1419.3	860.8	-1365.4	-798.4	25.67	27.22	-18.441	-18.111	0.9500

WCI/A1 LBM/SEC SQFT	WCI/A1 KG/SEC SQM	T02/T01	P02/P01	EFF-AD ROTOR %	EFF-P ROTOR %
27.47	134.04	1.2057	1.7276	82.28	83.59

AIRFOIL AERODYNAMIC SUMMARY PRINT

80 PERCENT DESIGN SPEED (STATOR PERFORMANCE) RUN NO 111 SPEED CODE 80 POINT NO 6

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	266.0	209.9	169.1	209.9	205.4	4.9	223.96	291.77	0.4717	0.0837
2	256.3	204.5	168.3	204.5	193.3	0.0	225.74	288.62	0.4211	0.0742
3	241.8	194.0	162.5	193.9	179.0	-6.0	219.69	276.99	0.3656	0.0666
4	215.7	167.8	143.8	167.6	160.7	-8.3	194.76	241.81	0.2180	0.0448
5	206.9	156.9	133.5	156.8	158.1	-5.1	179.60	224.74	0.0704	0.0073
6	207.5	157.3	130.5	157.3	161.3	-1.1	174.64	223.45	-0.0036	-0.0138
7	209.3	160.1	132.9	160.1	161.7	0.4	177.77	226.84	-0.0394	-0.0247
8	209.2	162.5	133.8	162.5	160.8	0.2	179.00	229.84	-0.0734	-0.0361
9	203.4	160.9	126.5	160.9	159.3	-2.0	168.29	224.43	-0.1867	-0.0698
10	202.5	159.4	122.6	159.4	161.1	-1.1	162.47	220.37	-0.2241	-0.0819
11	201.9	159.0	120.9	159.0	161.7	-0.7	159.80	218.18	-0.2661	-0.0938

SL	B-1 DEGREE	B-2 DEGREE	M-1	M-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	P0/P0 STAGE	T0/T0 STAGE	%EFF-A TOT-STG	%EFF-P TOT-STG
1	52.7	1.3	0.7820	0.6035	-1.78	1.18	15.15	51.39	0.3785	0.1872	0.0431	0.9378	1.7651	1.2073	85.13	86.27
2	50.7	0.0	0.7528	0.5888	-1.71	1.41	11.97	50.70	0.3727	0.1537	0.0360	0.9518	1.7660	1.1996	88.48	89.37
3	49.1	-1.7	0.7091	0.5590	-2.70	0.67	9.09	50.83	0.3757	0.1095	0.0262	0.9687	1.7449	1.1898	90.92	91.61
4	48.6	-2.8	0.6279	0.4813	-4.33	-0.08	7.18	51.47	0.4176	0.0560	0.0142	0.9869	1.6866	1.1837	87.79	88.66
5	49.9	-1.9	0.5970	0.4461	-4.08	1.28	8.21	51.75	0.4544	0.0547	0.0148	0.9883	1.6679	1.1969	80.00	81.39
6	51.0	-0.4	0.5954	0.4448	-2.80	2.94	9.70	51.40	0.4598	0.0653	0.0182	0.9861	1.6694	1.2087	75.60	77.29
7	50.6	0.1	0.5997	0.4521	-3.24	2.64	10.28	50.43	0.4537	0.0718	0.0203	0.9845	1.6768	1.2134	74.62	76.39
8	50.2	0.1	0.5988	0.4586	-3.59	2.40	10.34	50.13	0.4455	0.0667	0.0191	0.9856	1.6827	1.2164	74.12	75.94
9	51.7	-0.7	0.5786	0.4521	-4.19	2.03	11.66	52.45	0.4492	0.0740	0.0221	0.9850	1.6679	1.2262	69.62	71.72
10	53.0	-0.4	0.5741	0.4465	-5.22	1.02	13.38	53.44	0.4586	0.0977	0.0296	0.9804	1.6577	1.2324	66.89	69.15
11	53.7	-0.3	0.5714	0.4445	-9.90	-3.76	16.16	53.99	0.4629	0.1206	0.0370	0.9760	1.6501	1.2373	64.87	67.25

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	PCT TE SPAN	EPSI-1 DEGREE	EPSI-2 DEGREE
1	872.8	688.7	554.8	688.5	673.8	16.0	45.87	59.76	0.0430	27.027	4.798
2	840.9	671.0	552.1	671.0	634.3	0.0	46.23	59.11	0.0901	24.126	4.251
3	793.3	636.4	533.3	636.1	587.3	-19.8	44.99	56.73	0.1410	20.946	3.817
4	707.6	550.7	471.9	550.0	527.3	-27.3	39.89	49.53	0.2989	12.491	2.565
5	678.9	514.9	437.9	514.6	518.8	-16.7	36.78	46.03	0.5086	4.033	0.417
6	680.7	516.0	428.2	516.0	529.1	-3.6	35.77	45.77	0.6103	-0.204	-0.791
7	686.6	525.1	436.0	525.1	530.4	1.2	36.41	46.46	0.6598	-2.256	-1.413
8	686.5	533.1	439.1	533.0	527.7	0.8	36.66	47.07	0.7107	-4.204	-2.069
9	667.4	527.9	415.0	527.9	522.7	-6.5	34.47	45.97	0.8620	-10.696	-3.997
10	664.3	522.9	402.3	522.8	528.6	-3.7	33.28	45.13	0.9101	-12.840	-4.695
11	662.4	521.6	396.5	521.6	530.7	-2.4	32.73	44.68	0.9571	-15.249	-5.377

NCORR INLET RPM	WCORR INLET LBM/SEC	WCORR INLET KG/SEC	T0/T0 STAGE	P02/P01	P0/P0 STAGE	EFF-AD STAGE %	EFF-P STAGE %
9969.80	122.40	55.51	1.2057	0.9785	1.6905	78.76	80.27

AIRFOIL AERODYNAMIC SUMMARY PRINT

95 PERCENT DESIGN SPEED (ROTOR PERFORMANCE) RUN NO 111 SPEED CODE 95 POINT NO 1

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	U-1 M/SEC	U-2 M/SEC	V'-1 M/SEC	V'-2 M/SEC	VO'-1 M/SEC	VO'-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	136.4	300.3	136.4	184.4	0.0	237.1	270.6	314.1	303.0	199.8	-270.6	-77.0	128.08	229.34	0.5111	0.5166
2	146.6	295.4	146.6	188.0	0.0	227.9	287.9	323.1	323.1	210.8	-287.9	-95.2	135.74	237.06	0.4230	0.4507
3	156.6	282.8	156.6	190.4	0.0	209.1	304.8	332.0	342.7	226.6	-304.8	-122.9	142.85	243.51	0.3399	0.3814
4	176.8	249.7	176.8	171.6	0.0	181.4	349.4	359.0	391.6	246.9	-349.4	-177.6	155.99	220.82	0.1290	0.1970
5	182.0	225.2	182.0	157.9	0.0	160.6	398.9	394.8	438.5	282.4	-398.9	-234.2	159.07	200.95	-0.0696	0.0208
6	180.9	215.3	180.9	146.4	0.0	157.9	421.2	412.7	458.4	293.9	-421.2	-254.8	158.41	184.15	-0.1373	-0.0570
7	180.3	211.4	180.3	145.4	0.0	153.4	431.8	421.7	468.0	305.2	-431.8	-268.3	158.07	183.16	-0.1649	-0.0956
8	179.4	211.0	179.4	150.2	0.0	148.2	442.4	430.7	477.4	319.9	-442.4	-282.5	157.52	190.23	-0.1940	-0.1337
9	174.2	207.9	174.2	152.2	0.0	141.7	473.4	457.6	504.4	350.7	-473.4	-315.9	154.35	194.15	-0.2857	-0.2498
10	172.0	202.4	172.0	140.0	0.0	146.1	483.1	466.5	512.8	349.6	-483.1	-320.4	153.03	176.82	-0.3128	-0.2861
11	170.3	193.8	170.3	124.7	0.0	148.4	492.3	475.5	520.9	350.1	-492.3	-327.1	151.91	156.27	-0.3255	-0.3161

SL	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	M-1	M-2	M'-1	M'-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	%EFF-A TOTAL	%EFF-P TOTAL
1	0.0	51.9	62.95	22.48	0.4252	0.8729	0.9443	0.5806	-2.13	1.96	10.53	40.47	0.5188	0.1749	0.0342	2.2120	91.12	92.05
2	0.0	50.6	62.79	26.93	0.4583	0.8578	1.0097	0.6120	-0.94	2.78	9.15	35.85	0.5152	0.1373	0.0272	2.2111	92.13	92.95
3	0.0	47.9	62.63	33.06	0.4909	0.8218	1.0743	0.6586	0.19	3.58	9.61	29.57	0.4903	0.0852	0.0167	2.1576	94.31	94.89
4	0.0	46.8	63.09	46.23	0.5580	0.7201	1.2356	0.7122	1.19	3.47	10.43	16.86	0.4976	0.1178	0.0217	1.9980	89.52	90.49
5	0.0	45.4	65.48	55.96	0.5754	0.6452	1.3861	0.8091	1.31	3.16	10.39	9.52	0.4650	0.1597	0.0264	1.8760	82.76	84.22
6	0.0	46.9	66.74	59.90	0.5716	0.6130	1.4487	0.8366	1.61	3.34	9.61	6.84	0.4637	0.2039	0.0313	1.8289	76.98	78.84
7	0.0	46.2	67.30	61.28	0.5697	0.6013	1.4785	0.8683	1.86	3.53	8.90	6.02	0.4483	0.2012	0.0301	1.8166	76.63	78.51
8	0.0	44.2	67.87	61.69	0.5666	0.6010	1.5079	0.9113	2.35	3.90	8.10	6.18	0.4255	0.1835	0.0273	1.8222	78.10	79.86
9	0.0	42.5	69.72	63.95	0.5491	0.5908	1.5903	0.9962	2.58	4.00	5.47	5.77	0.3921	0.1793	0.0250	1.8297	77.47	79.29
10	0.0	45.9	70.31	66.13	0.5420	0.5708	1.6155	0.9863	2.21	3.58	5.60	4.18	0.4059	0.2223	0.0282	1.8108	72.29	74.49
11	0.0	49.7	70.82	68.97	0.5361	0.5432	1.6401	0.9812	1.78	3.11	6.36	1.85	0.4145	0.2580	0.0287	1.7837	67.93	70.41

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	EPSI-1 DEGREE	EPSI-2 DEGREE	PCT TE SPAN
1	447.6	985.4	447.6	604.9	0.0	777.9	887.7	1030.6	994.2	655.5	-887.7	-252.7	26.23	46.97	29.282	29.598	0.0500
2	481.1	969.4	481.1	617.0	0.0	747.7	944.6	1060.0	1060.1	691.5	-944.6	-312.4	27.80	48.55	24.235	25.822	0.1000
3	513.9	927.9	513.9	624.7	0.0	686.1	1000.2	1089.4	1124.5	743.6	-1000.2	-403.4	29.26	49.87	19.472	21.850	0.1500
4	580.2	819.1	580.2	562.9	0.0	595.0	1146.2	1177.7	1284.7	810.2	-1146.2	-582.7	31.95	45.23	7.393	11.289	0.3000
5	597.1	739.0	597.1	518.0	0.0	527.0	1308.8	1295.4	1438.6	926.6	-1308.8	-768.3	32.58	41.16	-3.991	1.191	0.5000
6	593.5	706.6	593.5	480.4	0.0	518.1	1382.0	1354.2	1504.1	964.2	-1382.0	-836.1	32.44	37.72	-7.866	-3.265	0.6000
7	591.6	693.5	591.6	477.1	0.0	503.2	1416.9	1383.6	1535.4	1001.3	-1416.9	-880.4	32.37	37.51	-9.447	-5.480	0.6500
8	588.6	692.2	588.6	492.7	0.0	486.2	1451.6	1413.0	1566.4	1049.6	-1451.6	-926.8	32.26	38.96	-11.116	-7.662	0.7000
9	571.4	682.3	571.4	499.4	0.0	464.8	1553.3	1501.3	1655.1	1150.5	-1553.3	-1036.5	31.61	39.76	-16.426	-14.314	0.8500
10	564.5	663.9	564.5	459.2	0.0	479.4	1585.0	1530.7	1682.6	1147.2	-1585.0	-1051.2	31.34	36.22	-17.925	-16.393	0.9000
11	558.7	635.8	558.7	409.0	0.0	486.8	1615.3	1560.1	1709.2	1148.6	-1615.3	-1073.3	31.11	32.01	-18.652	-18.111	0.9500

WC1/A1 LBM/SEC SQFT	WC1/A1 KG/SEC SQM	T02/T01	P02/P01	EFF-AD ROTOR %	EFF-P ROTOR %
36.78	179.49	1.2498	1.9375	83.34	84.81

AIRFOIL AERODYNAMIC SUMMARY PRINT

95 PERCENT DESIGN SPEED (STATOR PERFORMANCE) RUN NO 111 SPEED CODE 95 POINT NO 1

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	311.9	278.3	208.4	277.1	232.1	-25.6	251.53	302.75	0.4727	0.0255
2	306.3	278.1	208.7	276.8	224.2	-27.7	255.98	309.56	0.4236	0.0771
3	293.8	279.7	209.4	278.9	206.0	-21.8	260.91	323.67	0.3671	0.0695
4	263.4	261.5	192.8	261.0	179.4	-16.2	241.10	316.37	0.2226	0.0414
5	239.3	235.4	177.8	234.5	160.1	-20.9	220.41	286.88	0.0747	-0.0033
6	230.0	226.8	167.1	225.9	158.0	-20.6	204.69	273.66	-0.0060	-0.0255
7	226.7	225.7	166.5	225.2	153.8	-14.3	204.10	272.84	-0.0491	-0.0366
8	226.8	226.9	171.1	226.5	148.9	-14.1	210.79	274.72	-0.0886	-0.0478
9	227.0	227.2	175.9	226.3	143.4	-20.4	216.95	269.77	-0.1940	-0.0766
10	224.2	222.3	167.9	221.7	148.5	-16.0	204.34	258.87	-0.2239	-0.0870
11	218.9	215.2	158.2	214.9	151.3	-11.6	190.27	246.13	-0.2639	-0.0965

SL	B-1 DEGREE	B-2 DEGREE	M-1	M-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	P0/P0 STAGE	T0/T0 STAGE	%EFF-A TOT-STG	%EFF-P TOT-STG
1	50.3	-5.1	0.9118	0.8003	-4.18	-1.22	8.76	55.37	0.2941	0.4014	0.0921	0.8326	1.8418	1.2796	68.21	70.80
2	48.9	-5.6	0.8940	0.8005	-3.57	-0.44	6.40	54.42	0.2832	0.3634	0.0860	0.8503	1.8830	1.2776	71.44	73.84
3	45.9	-4.4	0.8581	0.8114	-5.91	-2.53	6.46	50.25	0.2329	0.2646	0.0631	0.8984	1.9442	1.2615	80.05	81.82
4	43.4	-3.5	0.7642	0.7579	-9.54	-5.29	6.48	46.96	0.1943	0.1097	0.0277	0.9647	1.9301	1.2446	84.56	85.91
5	42.1	-5.1	0.6892	0.6770	-11.90	-6.55	4.97	47.16	0.2194	0.0712	0.0192	0.9807	1.8385	1.2383	79.80	81.45
6	43.4	-5.2	0.6583	0.6483	-10.42	-4.68	4.89	48.59	0.2298	0.0632	0.0176	0.9841	1.7984	1.2446	74.69	76.68
7	42.7	-3.6	0.6484	0.6453	-11.08	-5.21	6.53	46.34	0.2151	0.0557	0.0157	0.9863	1.7922	1.2426	74.83	76.80
8	41.0	-3.5	0.6498	0.6501	-12.77	-6.78	6.71	44.59	0.2071	0.0617	0.0177	0.9848	1.7950	1.2395	76.02	77.91
9	39.4	-5.1	0.6491	0.6498	-16.51	-10.29	7.25	44.53	0.2169	0.1331	0.0397	0.9672	1.7697	1.2436	72.77	74.86
10	41.8	-4.1	0.6369	0.6312	-16.46	-10.22	9.69	45.89	0.2331	0.1813	0.0548	0.9567	1.7318	1.2563	66.31	68.79
11	44.2	-3.0	0.6186	0.6074	-19.40	-13.26	13.39	47.26	0.2479	0.2354	0.0721	0.9465	1.6873	1.2652	60.82	63.57

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	PCT TE SPAN	EPSI-1 DEGREE	EPSI-2 DEGREE
1	1023.3	913.1	683.6	909.2	761.4	-84.0	51.52	62.01	0.0430	27.081	4.905
2	1004.9	912.6	684.6	908.0	735.7	-90.9	52.43	63.40	0.0901	24.272	4.418
3	963.8	917.8	687.2	915.0	675.8	-71.4	53.44	66.29	0.1410	21.033	3.980
4	864.2	857.9	632.7	856.3	588.7	-53.0	49.38	64.80	0.2989	12.753	2.370
5	785.1	772.5	583.5	769.4	525.3	-68.6	45.14	58.75	0.5086	4.281	-0.187
6	754.7	744.1	548.4	741.1	518.5	-67.6	41.92	56.05	0.6103	-0.344	-1.459
7	743.7	740.4	546.4	738.9	504.5	-46.9	41.80	55.88	0.6598	-2.814	-2.097
8	744.2	744.5	561.5	743.0	488.4	-46.2	43.17	56.26	0.7107	-5.076	-2.739
9	744.7	745.5	577.2	742.4	470.5	-66.9	44.43	55.25	0.8620	-11.115	-4.391
10	735.4	729.3	551.0	727.4	487.1	-52.6	41.85	53.02	0.9101	-12.829	-4.986
11	718.3	706.2	519.1	705.2	496.5	-37.9	38.97	50.41	0.9571	-15.119	-5.527

NCORR INLET RPM	WCORR INLET LBM/SEC	WCORR INLET KG/SEC	T0/T0 STAGE	P02/P01	P0/P0 STAGE	EFF-AD STAGE %	EFF-P STAGE %
11845.20	163.90	74.33	1.2498	0.9483	1.8373	76.04	78.00

AIRFOIL AERODYNAMIC SUMMARY PRINT

95 PERCENT DESIGN SPEED (ROTOR PERFORMANCE) RUN NO 111 SPEED CODE 95 POINT NO 4

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	U-1 M/SEC	U-2 M/SEC	V'-1 M/SEC	V'-2 M/SEC	VO'-1 M/SEC	VO'-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	136.1	303.3	136.1	181.3	0.0	243.1	270.5	314.0	302.8	194.7	-270.5	-70.9	128.27	231.01	0.5128	0.5092
2	146.4	298.3	146.4	193.5	0.0	227.0	287.8	323.0	322.9	216.0	-287.8	-95.0	135.96	251.56	0.4249	0.4397
3	156.3	283.7	156.3	192.4	0.0	208.6	304.8	332.0	342.5	228.5	-304.8	-123.4	143.04	252.98	0.3387	0.3729
4	175.0	246.4	175.0	164.3	0.0	183.6	349.3	358.9	390.7	240.3	-349.3	-175.3	155.38	215.28	0.1217	0.1929
5	179.2	225.5	179.2	149.9	0.0	168.5	398.8	394.7	437.2	271.3	-398.8	-226.2	157.94	194.13	-0.0660	0.0174
6	178.7	216.8	178.7	141.1	0.0	164.5	421.1	412.6	457.4	285.4	-421.1	-248.1	157.58	181.76	-0.1293	-0.0595
7	178.4	215.2	178.4	143.4	0.0	169.5	431.7	421.6	467.1	297.9	-431.7	-261.1	157.40	185.36	-0.1572	-0.0973
8	177.6	216.6	177.6	150.2	0.0	156.2	442.3	430.5	476.6	312.8	-442.3	-274.4	156.93	195.44	-0.1890	-0.1345
9	172.3	210.0	172.3	146.3	0.0	159.6	473.3	457.4	503.7	339.9	-473.3	-306.8	153.68	191.30	-0.2859	-0.2495
10	170.2	206.0	170.2	135.4	0.0	155.3	483.0	466.4	512.1	339.3	-483.0	-311.1	152.36	175.56	-0.3114	-0.2860
11	168.5	200.6	168.5	122.1	0.0	159.2	492.2	475.4	520.2	338.9	-492.2	-316.2	151.25	157.01	-0.3239	-0.3162

SL	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	M-1	M-2	M'-1	M'-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	%EFF-A TOTAL	%EFF-P TOTAL
1	0.0	52.9	63.01	21.09	0.4243	0.8801	0.9437	0.5650	-2.07	2.02	9.14	41.92	0.5402	0.1444	0.0225	2.2832	92.84	93.62
2	0.0	49.5	62.85	26.33	0.4574	0.8680	1.0091	0.6285	-0.88	2.83	8.55	36.51	0.4998	0.0527	0.0105	2.2890	97.00	97.33
3	0.0	47.5	62.67	32.80	0.4898	0.8253	1.0735	0.6648	0.23	3.62	9.35	29.87	0.4871	0.0259	0.0051	2.2161	98.23	98.42
4	0.0	48.4	63.30	47.06	0.5521	0.7089	1.2321	0.6912	1.39	3.68	11.26	16.23	0.5170	0.1144	0.0208	2.0176	89.82	90.77
5	0.0	48.3	65.79	56.42	0.5562	0.6429	1.3810	0.7736	1.62	3.48	10.85	9.38	0.4942	0.1735	0.0284	1.9185	81.98	83.55
6	0.0	49.1	66.97	60.15	0.5642	0.6147	1.4446	0.8095	1.83	3.57	9.86	6.82	0.4848	0.2037	0.0311	1.8838	77.86	79.74
7	0.0	47.9	67.49	60.96	0.5632	0.6102	1.4749	0.8447	2.05	3.72	8.58	6.52	0.4670	0.1960	0.0295	1.8847	78.20	80.05
8	0.0	45.8	68.04	60.99	0.5605	0.6150	1.5946	0.8879	2.52	4.08	7.40	7.05	0.4444	0.1773	0.0270	1.9008	79.83	81.56
9	0.0	45.4	69.91	64.17	0.5429	0.5932	1.5871	0.9602	2.77	4.19	5.70	5.74	0.4181	0.1877	0.0260	1.8951	77.50	79.42
10	0.0	48.5	70.49	66.21	0.5360	0.5781	1.6124	0.9521	2.39	3.76	5.68	4.29	0.4307	0.2277	0.0288	1.8831	72.95	75.23
11	0.0	52.3	70.99	68.72	0.5303	0.5591	1.6371	0.9445	1.95	3.29	6.11	2.27	0.4414	0.2650	0.0293	1.8674	68.80	71.40

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	EPSI-1 DEGREE	EPSI-2 DEGREE	PCT TE SPAN
1	446.7	995.2	446.7	595.0	0.0	797.7	887.4	1030.3	993.5	638.8	-887.4	-232.6	26.27	47.31	29.380	29.177	0.0500
2	480.2	978.8	480.2	635.0	0.0	744.9	944.3	1059.7	1059.4	708.8	-944.3	-314.8	27.85	51.54	24.344	25.195	0.1000
3	512.7	931.0	512.7	631.2	0.0	684.3	999.9	1089.1	1123.7	749.9	-999.9	-404.8	29.30	51.81	19.406	21.365	0.1500
4	574.3	808.4	574.3	539.2	0.0	602.3	1145.9	1177.4	1281.8	788.3	-1145.9	-575.0	31.82	44.69	6.973	11.050	0.3000
	588.1	739.9	588.1	491.7	0.0	552.9	1308.4	1295.0	1434.5	890.2	-1308.4	-742.1	32.35	39.76	-3.783	0.999	0.5000
	586.2	711.2	586.2	463.1	0.0	539.8	1381.7	1353.8	1500.9	936.5	-1381.7	-814.0	32.27	37.23	-7.407	-3.415	0.6000
	585.2	706.0	585.2	470.5	0.0	526.4	1416.5	1383.2	1532.6	977.4	-1416.5	-856.7	32.24	37.96	-9.006	-5.577	0.6500
	582.6	710.8	582.6	492.6	0.0	512.4	1451.2	1412.6	1563.8	1026.2	-1451.2	-900.2	32.14	40.03	-10.831	-7.705	0.7000
	565.3	689.0	565.3	480.1	0.0	494.2	1552.9	1500.9	1652.6	1115.3	-1552.9	-1006.6	31.47	39.18	-16.380	-14.294	0.8500
	558.5	676.0	558.5	444.4	0.0	509.4	1584.6	1530.3	1680.1	1113.4	-1584.6	-1020.8	31.20	35.96	-17.843	-16.386	0.9000
11	552.9	658.2	552.9	400.5	0.0	522.3	1614.9	1559.7	1706.9	1112.0	-1614.9	-1037.4	30.98	32.16	-18.556	-18.114	0.9500

WC1/A1 LBM/SEC SQFT	WC1/A1 KG/SEC SQM	T02/T01	P02/P01	EFF-AD ROTOR %	EFF-P ROTOR %
36.58	178.51	1.2588	1.9939	84.28	85.73

AIRFOIL AERODYNAMIC SUMMARY PRINT

95 PERCENT DESIGN SPEED (STATOR PERFORMANCE) RUN NO 111 SPEED CODE 95 POINT NO 4

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	314.5	269.7	205.8	269.7	237.9	-3.0	254.59	330.10	0.4636	0.0844
2	308.6	270.4	213.2	270.3	223.2	-6.4	269.98	340.77	0.4128	0.0741
3	294.1	263.8	210.4	263.7	205.4	-7.8	269.90	340.99	0.3627	0.0643
4	259.1	232.2	184.8	232.0	181.6	-10.2	235.90	306.35	0.2250	0.0337
5	238.4	209.4	169.1	209.1	168.0	-10.7	213.78	275.57	0.0649	-0.0091
6	230.2	202.6	160.8	202.4	164.7	-9.0	202.05	264.64	-0.0189	-0.0302
7	229.1	204.4	163.1	204.2	160.9	-9.0	205.70	267.26	-0.0604	-0.0405
8	231.1	208.3	169.7	208.1	156.9	-8.6	215.29	272.63	-0.0956	-0.0509
9	227.9	207.5	169.3	207.5	152.5	-5.4	214.49	266.96	-0.1936	-0.0783
10	226.4	205.0	162.3	205.0	157.8	-3.1	203.18	259.04	-0.2249	-0.0881
11	223.8	199.1	154.0	199.1	162.4	-3.6	190.51	246.60	-0.2658	-0.0968

SL	B-1 DEGREE	B-2 DEGREE	M-1	M-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D-FAC	OMEGA-B. TOTAL	LOSS-P TOTAL	P02/ P01	P0/P0 STAGE	T0/T0 STAGE	%EFF-A TOT-STG	%EFF-P TOT-STG
1	51.2	-0.6	0.9181	0.7705	-3.26	-0.31	13.24	51.81	0.3134	0.2695	0.0621	0.8867	2.0251	1.2863	78.07	80.12
2	48.0	-1.3	0.9026	0.7764	-4.45	-1.32	10.64	49.30	0.2927	0.2247	0.0527	0.9078	2.0758	1.2748	84.51	86.00
3	45.6	-1.7	0.8596	0.7605	-6.17	-2.80	9.18	47.27	0.2711	0.1566	0.0374	0.9400	2.0809	1.2598	89.72	90.72
4	45.0	-2.5	0.7494	0.6645	-7.96	-3.71	7.50	47.52	0.2863	0.0591	0.0149	0.9817	1.9774	1.2474	87.00	88.18
5	44.9	-2.9	0.6829	0.5935	-9.10	-3.75	7.14	47.79	0.3214	0.0319	0.0086	0.9915	1.8979	1.2503	80.30	81.99
6	45.7	-2.6	0.6558	0.5719	-8.12	-2.38	7.[illegible]	48.23	0.3296	0.0331	0.0092	0.9917	1.8677	1.2548	76.75	78.69
7	44.6	-2.5	0.6529	0.5777	-9.19	-3.31	7.64	47.12	0.3192	0.0300	0.0085	0.9925	1.8734	1.2537	77.48	79.37
8	42.8	-2.4	0.6596	0.5896	-11.02	-5.03	7.90	45.15	0.3057	0.0333	0.0096	0.9916	1.8860	1.2525	78.76	80.56
9	42.2	-1.5	0.6477	0.5857	-13.70	-7.47	10.89	43.71	0.2988	0.0785	0.0235	0.9807	1.8582	1.2591	74.79	76.87
10	44.5	-0.9	0.6395	0.5749	-13.75	-7.51	12.92	45.37	0.3126	0.1085	0.0329	0.9739	1.8335	1.2725	69.44	71.91
11	47.0	-1.0	0.6285	0.5544	-16.59	-10.45	15.40	48.06	0.3414	0.1639	0.0503	0.9617	1.7952	1.2847	63.94	66.75

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	PCT TE SPAN	EPSI-1 DEGREE	EPSI-2 DEGREE
1	1032.0	884.9	675.2	884.9	780.5	-10.0	52.14	67.61	0.0430	26.562	4.838
2	1012.6	887.1	699.5	886.9	732.2	-21.1	55.29	69.79	0.0901	23.653	4.244
3	964.8	865.7	690.4	865.3	674.0	-25.5	55.28	69.84	0.1410	20.781	3.683
4	850.1	762.0	606.4	761.2	595.8	-33.5	48.31	62.74	0.2989	12.893	1.929
5	782.0	687.0	554.8	686.1	551.2	-35.1	43.78	56.44	0.5086	3.720	-0.520
6	755.1	664.7	527.5	664.1	540.3	-29.6	41.38	54.20	0.6103	-1.083	-1.728
7	751.8	670.8	535.3	670.1	527.8	-29.5	42.13	54.74	0.6598	-3.461	-2.319
8	758.4	683.4	556.9	682.8	514.8	-28.2	44.09	55.84	0.7107	-5.479	-2.917
9	747.6	680.9	555.5	680.7	500.3	-17.6	43.93	54.68	0.8629	-11.094	-4.486
10	742.7	672.7	532.6	672.6	517.6	-10.3	41.61	53.05	0.9101	-12.886	-5.045
11	734.4	653.2	505.3	653.1	533.0	-11.9	39.02	50.51	0.9571	-15.228	-5.546

NCORR INLET RPM	WCORR INLET LBM/SEC	WCORR INLET KG/SEC	T0/T0 STAGE	P02/P01	P0/P0 STAGE	EFF-AD STAGE %	EFF-P STAGE %
11843.10	163.00	73.92	1.2588	0.9683	1.9308	79.97	81.73

95 PERCENT DESIGN SPEED (ROTOR PERFORMANCE)

AIRFOIL AERODYNAMIC SUMMARY PRINT

RUN NO 111 SPEED CODE 95 POINT NO 2

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	U-1 M/SEC	U-2 M/SEC	V'-1 M/SEC	V'-2 M/SEC	VO'-1 M/SEC	VO'-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	135.2	302.9	135.2	183.7	0.0	240.9	270.3	313.9	302.3	197.6	-270.3	-73.0	127.79	234.36	0.5112	0.5146
2	145.2	294.6	145.2	188.1	0.0	226.8	287.7	322.8	322.2	211.2	-287.7	-96.1	135.37	243.61	0.4229	0.4475
3	154.9	281.1	154.9	186.5	0.0	210.3	304.6	331.8	341.7	222.5	-304.6	-121.4	142.36	244.12	0.3386	0.3792
4	174.0	248.2	174.0	164.6	0.0	185.7	349.1	358.7	390.0	238.8	-349.1	-172.9	155.03	216.29	0.1274	0.1948
5	178.9	226.5	178.9	149.6	0.0	170.1	398.6	394.5	436.9	269.8	-398.6	-224.4	158.03	194.87	-0.0638	0.0188
6	178.4	218.6	178.4	141.2	0.0	166.9	420.9	412.4	457.1	283.2	-420.9	-245.5	157.72	182.81	-0.1285	-0.0584
7	178.1	217.3	178.1	143.3	0.0	163.3	431.5	421.4	466.8	295.2	-431.5	-258.0	157.53	186.11	-0.1571	-0.0964
8	177.3	217.8	177.3	148.4	0.0	159.5	442.1	430.3	476.3	308.8	-442.1	-270.9	157.06	193.81	-0.1886	-0.1349
9	172.2	212.5	172.2	146.5	0.0	153.9	473.1	457.2	503.4	336.9	-473.1	-303.3	153.88	192.53	-0.2845	-0.2493
10	170.1	208.4	170.1	135.8	0.0	158.1	482.7	466.2	511.8	336.7	-482.7	-308.1	152.57	177.06	-0.3106	-0.2856
11	168.3	201.7	168.3	121.7	0.0	160.8	491.9	475.1	520.0	337.1	-491.9	-314.3	151.44	157.65	-0.3239	-0.3158

SL	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	M-1	M-2	M'-1	M'-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-A TOTAL	%EFF-P TOTAL
1	0.0	52.4	63.14	21.46	0.4215	0.8804	0.9424	0.5744	-1.94	2.15	9.52	41.67	0.5283	0.1331	0.026?	2.2784	93.37	94.09
2	0.0	50.4	63.00	27.10	0.4539	0.8562	1.0074	0.6138	-0.73	2.99	9.32	35.90	0.5132	0.0858	0.017?	2.2550	95.09	95.61
3	0.0	48.7	62.87	33.27	0.4856	0.8163	1.0714	0.6462	0.43	3.81	9.82	29.60	0.5034	0.0639	0.0123	2.1912	95.80	96.23
4	0.0	48.7	63.44	46.64	0.5489	0.7141	1.2305	0.6970	1.54	3.82	10.84	16.80	0.5203	0.1186	0.0217	2.0310	89.64	90.62
5	0.0	48.6	65.82	56.25	0.5654	0.6458	1.3808	0.7691	1.65	3.50	10.69	9.57	0.4990	0.1749	0.0286	1.9318	82.11	83.69
6	0.0	49.5	66.99	59.87	0.5637	0.6199	1.4444	0.8029	1.85	3.58	9.58	7.11	0.4908	0.2061	0.0317	1.9011	77.90	79.79
7	0.0	48.4	67.51	60.69	0.5626	0.6157	1.4748	0.8364	2.07	3.74	8.31	6.82	0.4744	0.2003	0.0305	1.9029	78.04	79.92
8	0.0	46.7	68.06	60.97	0.5600	0.6175	1.5044	0.8756	2.54	4.10	7.38	7.09	0.4544	0.1865	0.0284	1.9149	79.10	80.91
9	0.0	46.0	69.91	63.89	0.5428	0.5996	1.5872	0.9507	2.77	4.19	5.42	6.02	0.4257	0.1928	0.0269	1.9168	77.28	79.26
10	0.0	49.0	70.49	65.94	0.5359	0.5842	1.6125	0.9439	2.39	3.76	5.41	4.55	0.4372	0.2305	0.0295	1.9047	73.01	75.33
11	0.0	52.6	71.00	68.67	0.5301	0.5618	1.6372	0.9391	1.96	3.29	6.05	2.34	0.4456	0.2646	0.0299	1.8841	69.13	71.73

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	EPSI-1 DEGREE	EPSI-2 DEGREE	PCT TE SPAN
1	443.6	993.8	443.6	602.6	0.0	790.3	887.0	1029.8	991.7	648.4	-887.0	-239.5	26.17	48.00	29.291	29.487	0.0500
2	476.4	966.6	476.4	617.1	0.0	744.0	943.8	1059.2	1057.2	693.0	-943.8	-315.2	27.72	49.89	24.229	25.640	0.1000
3	508.2	922.3	508.2	611.8	0.0	690.1	999.4	1088.6	1121.2	730.1	-999.4	-398.5	29.16	50.00	19.400	21.726	0.1500
4	570.9	814.3	570.9	540.1	0.0	609.4	1145.3	1176.8	1279.7	783.4	-1145.3	-567.4	31.75	44.39	7.298	11.163	0.3000
5	587.0	743.2	587.0	491.0	0.0	557.9	1307.8	1294.3	1433.5	885.1	-1307.8	-736.4	32.37	39.91	-3.653	1.077	0.5000
6	585.3	717.4	585.3	463.4	0.0	547.6	1381.0	1353.1	1499.9	929.2	-1381.0	-805.5	32.30	37.44	-7.361	-3.345	0.6000
7	584.3	712.9	584.3	470.1	0.0	535.9	1415.8	1382.5	1531.6	968.4	-1415.8	-846.6	32.26	38.12	-9.003	-5.525	0.6500
8	581.7	714.6	581.7	486.8	0.0	523.2	1450.5	1411.9	1562.8	1013.2	-1450.5	-888.7	32.17	39.69	-10.809	-7.680	0.7000
9	564.9	697.1	564.9	480.6	0.0	504.9	1552.1	1500.1	1651.7	1105.2	-1552.1	-995.2	31.52	39.43	-16.300	-14.286	0.8500
10	558.1	683.7	558.1	445.4	0.0	518.6	1583.8	1529.5	1679.3	1104.6	-1583.8	-1010.8	31.25	36.26	-17.795	-16.362	0.9000
11	552.3	661.6	552.3	399.3	0.0	527.5	1614.1	1558.9	1706.0	1105.9	-1614.1	-1031.3	31.02	32.29	-18.561	-18.092	0.9500

WC1/A1 LBM/SEC SQFT	WC1/A1 KG/SEC SQM
36.47	177.96

T02/T01	P02/P01	EFF-AD ROTOR %	EFF-P ROTOR %
1.2621	2.0017	83.73	85.24

AIRFOIL AERODYNAMIC SUMMARY PRINT

95 PERCENT DESIGN SPEED (STATOR PERFORMANCE) RUN NO 111 SPEED CODE 95 POINT NO 2

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	313.6	262.2	206.7	262.2	235.8	2.4	256.54	323.62	0.4712	0.0342
2	304.6	252.3	207.5	262.3	223.1	-2.7	262.08	332.28	0.4216	0.0740
3	291.1	257.3	204.5	257.1	207.2	-8.2	261.47	333.76	0.3667	0.0647
4	260.6	231.1	184.8	230.9	183.7	-10.2	236.64	306.99	0.2206	0.0358
5	239.2	208.2	168.7	208.0	169.5	-9.4	214.48	276.07	0.0651	-0.0070
6	231.8	202.5	160.7	202.4	167.1	-7.9	203.05	266.49	-0.0175	-0.0284
7	231.0	204.4	162.9	204.2	163.8	-7.6	205.45	268.98	-0.0586	-0.0389
8	232.1	207.4	168.0	207.3	160.2	-6.6	213.88	273.14	-0.0949	-0.0495
9	230.1	207.3	169.4	207.2	155.8	-5.0	215.72	268.27	-0.1954	-0.0775
10	228.5	204.6	162.5	204.6	160.6	-2.8	204.65	260.27	-0.2256	-0.0875
11	224.8	199.0	153.7	199.0	164.0	-1.7	191.44	248.66	-0.2653	-0.0966

SL	B-1 DEGREE	B-2 DEGREE	M-1	M-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	P0/P0 STAGE	T0/T0 STAGE	%EFF-A TOT-STG	%EFF-P TOT-STG
1	50.9	0.5	0.9164	0.7478	-3.53	-0.58	14.37	50.41	0.3302	0.2877	0.0662	0.8793	2.0034	1.2842	77.30	79.39
2	48.8	-0.6	0.8896	0.7509	-3.58	-0.45	11.40	49.41	0.3083	0.2305	0.0540	0.9071	2.0466	1.2755	82.49	84.15
3	46.7	-1.8	0.8494	0.7391	-5.06	-1.69	9.05	48.50	0.2893	0.1606	0.0384	0.9395	2.0590	1.2625	87.38	88.59
4	45.3	-2.5	0.7536	0.6606	-7.65	-3.41	7.49	47.84	0.2976	0.0662	0.0167	0.9793	1.9871	1.2505	85.60	87.83
5	45.2	-2.6	0.6851	0.5895	-8.78	-3.42	7.49	47.78	0.3301	0.0408	0.0110	0.9891	1.9976	1.2529	80.20	81.91
6	46.1	-2.2	0.6604	0.5711	-7.70	-1.95	7.87	48.34	0.3367	0.0374	0.0104	0.9905	1.8824	1.2590	76.53	78.52
7	45.2	-2.1	0.6579	0.5766	-8.64	-2.77	8.01	47.29	0.3265	0.0341	0.0095	0.9914	1.8980	1.2587	77.03	78.98
8	43.7	-1.8	0.6616	0.5860	-10.13	-4.13	8.43	45.51	0.3143	0.0389	0.0112	0.9901	1.8973	1.2580	77.88	79.77
9	42.9	-1.4	0.6534	0.5839	-13.08	-6.86	10.98	44.23	0.3107	0.0933	0.0279	0.9768	1.8721	1.2647	74.15	76.32
10	45.0	-0.8	0.6450	0.5729	-13.26	-7.02	13.02	45.77	0.3241	0.1233	0.0374	0.9699	1.8470	1.2775	69.08	71.61
11	47.4	-0.5	0.6309	0.5538	-16.25	-10.11	15.96	47.85	0.3440	0.1644	0.0504	0.9614	1.8105	1.2876	64.30	67.12

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	PCT TE SPAN	EPSI-1 DEGREE	EPSI-2 DEGREE
1	1028.8	860.3	678.3	860.2	773.6	7.9	52.54	66.28	0.0459	26.995	4.822
2	999.4	860.5	680.7	860.5	731.8	-8.8	53.68	68.05	0.0901	24.154	4.237
3	955.2	844.1	671.0	843.7	679.8	-26.8	53.55	68.36	0.1410	21.011	3.709
4	854.9	758.3	606.3	757.6	602.7	-33.5	48.47	62.88	0.2939	12.641	2.050
5	784.7	683.0	553.5	682.3	556.2	-30.7	43.93	56.54	0.5086	3.729	-0.402
6	760.7	664.5	527.3	664.0	548.2	-25.9	41.59	54.58	0.6103	-1.004	-1.626
7	758.0	670.5	534.6	670.0	537.4	-25.0	42.28	55.09	0.6598	-3.359	-2.231
8	761.7	680.5	551.2	680.2	525.7	-21.7	43.80	55.94	0.7107	-5.436	-2.842
9	755.0	680.1	555.7	679.9	511.1	-16.5	44.18	54.94	0.8620	-11.195	-4.440
10	749.7	671.4	533.2	671.3	527.0	-9.1	41.91	53.31	0.9101	-12.926	-5.015
11	737.4	652.9	504.1	652.9	538.2	-5.4	39.21	50.93	0.9571	-15.199	-5.537

NCORR INLET RPM	WCORR INLET LBM/SEC	WCORR INLET KG/SEC	T0/T0 STAGE	P02/P01	P0/P0 STAGE	EFF-AD STAGE %	EFF-P STAGE %
11844.60	162.50	73.70	1.2621	0.9663	1.9343	79.20	81.03

AIRFOIL AERODYNAMIC SUMMARY PRINT

95 PERCENT DESIGN SPEED (ROTOR PERFORMANCE) RUN NO 111 SPEED CODE 95 POINT NO 5

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	U-1 M/SEC	U-2 M/SEC	V'-1 M/SEC	V'-2 M/SEC	VO'-1 M/SEC	VO'-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	132.6	300.3	132.6	174.5	0.0	244.5	270.5	314.1	301.3	187.8	-270.5	-69.6	126.55	229.88	0.5120	0.5095
2	142.4	290.0	142.4	178.0	0.0	228.9	287.9	323.1	321.2	201.4	-287.9	-74.2	134.13	238.26	0.4252	0.4371
3	152.1	285.0	152.1	187.5	0.0	214.7	304.8	332.0	340.7	221.2	-304.8	-117.4	141.24	255.41	0.3490	0.3694
4	170.0	247.2	170.0	153.2	0.0	194.0	349.3	358.9	388.5	225.1	-349.3	-164.9	153.47	207.53	0.1172	0.1916
5	174.1	229.3	174.1	139.3	0.0	182.2	398.9	394.8	435.2	254.2	-398.9	-212.6	156.05	187.69	-0.0611	0.0184
6	174.2	226.8	174.2	137.0	0.0	180.7	421.2	412.7	455.8	269.4	-421.2	-232.0	156.09	184.40	-0.1240	-0.0576
7	174.0	227.1	174.0	140.5	0.0	178.3	431.8	421.7	465.6	281.0	-431.8	-243.3	155.99	189.88	-0.1548	-0.0952
8	173.2	227.0	173.2	143.8	0.0	175.7	442.4	430.6	475.1	292.7	-442.4	-254.9	155.52	195.10	-0.1885	-0.1327
9	168.2	220.8	168.2	137.7	0.0	172.6	473.4	457.5	502.4	316.5	-473.4	-285.0	152.28	187.50	-0.2845	-0.2487
10	166.3	218.2	166.3	127.9	0.0	176.8	483.1	466.5	510.9	316.7	-483.1	-289.7	151.01	173.03	-0.3089	-0.2851
11	164.6	214.9	164.6	117.5	0.0	179.9	492.3	475.5	519.1	318.1	-492.3	-295.6	149.92	158.33	-0.3218	-0.3154

SL	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	M-1	M-2	M'-1	M'-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	%EFF-A TOTAL	%EFF-P TOTAL
1	0.0	54.1	63.60	21.48	0.4129	0.8694	0.9379	0.5437	-1.48	2.62	9.53	42.13	0.5617	0.1052	0.0213	2.3262	94.72	95.31
2	0.0	52.0	63.48	27.81	0.4445	0.8390	1.0024	0.5828	-0.24	3.47	10.03	35.67	0.5436	0.0646	0.0127	2.2911	96.40	95.79
3	0.0	49.0	63.31	32.14	0.4760	0.8264	1.0661	0.6413	0.87	4.26	8.59	31.18	0.5100	-0.0012	-0.0002	2.2926	100.07	100.05
4	0.0	51.9	63.95	47.33	0.5352	0.7069	1.2228	0.6436	2.05	4.33	11.52	16.63	0.5604	0.1203	0.0217	2.0906	89.80	90.80
5	0.0	52.5	66.41	56.71	0.5487	0.6490	1.3717	0.7192	2.24	4.09	11.14	9.70	0.5396	0.1819	0.0295	2.0187	82.40	84.04
6	0.0	52.6	67.48	59.21	0.5489	0.6385	1.4366	0.7585	2.35	4.08	8.92	8.27	0.5282	0.2050	0.0322	2.0195	79.51	81.42
7	0.0	51.5	67.98	59.72	0.5484	0.6387	1.4673	0.7984	2.54	4.22	7.33	8.27	0.5130	0.2008	0.0315	2.0314	79.58	81.50
8	0.0	50.3	68.53	60.25	0.5459	0.6381	1.4971	0.8226	3.01	4.57	6.66	8.28	0.4976	0.1952	0.0304	2.0426	79.77	81.68
9	0.0	51.0	70.35	63.87	0.5291	0.6161	1.5803	0.8831	3.21	4.63	5.40	6.48	0.4767	0.2176	0.0304	2.0424	76.44	78.66
10	0.0	53.8	70.90	65.90	0.5226	0.6050	1.6059	0.8781	2.80	4.17	5.38	5.00	0.4865	0.2510	0.0322	2.0379	72.94	75.48
11	0.0	56.6	71.39	68.14	0.5172	0.5924	1.6309	0.8769	2.35	3.68	5.53	3.25	0.4924	0.2794	0.0323	2.0323	70.03	72.83

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	EPSI-1 DEGREE	EPSI-2 DEGREE	PCT TE SPAN
1	435.2	985.4	435.2	572.4	0.0	802.1	887.6	1030.6	988.6	616.3	-887.6	-228.4	25.92	47.08	29.333	29.135	0.0500
2	467.3	951.3	467.3	584.1	0.0	750.9	944.5	1060.0	1053.8	660.8	-944.5	-309.0	27.47	48.80	24.363	25.046	0.1000
3	499.0	935.1	499.0	615.1	0.0	704.3	1000.1	1089.4	1117.7	725.7	-1000.1	-385.0	28.93	52.31	19.482	21.168	0.1500
4	557.9	811.0	557.9	502.5	0.0	636.6	1146.2	1177.6	1274.7	738.4	-1146.2	-541.1	31.43	42.50	6.714	10.979	0.3000
5	571.2	752.5	571.2	457.1	0.0	597.8	1308.7	1295.3	1427.9	833.9	-1308.7	-697.5	31.96	38.44	-3.499	1.053	0.5000
6	571.4	744.1	571.4	449.6	0.0	592.9	1382.0	1354.1	1495.4	884.0	-1382.0	-761.2	31.97	37.77	-7.106	-3.302	0.6000
7	570.9	745.0	570.9	461.1	0.0	585.1	1416.8	1383.5	1527.5	922.0	-1416.8	-798.4	31.95	38.89	-8.868	-5.455	0.6500
8	568.4	744.9	568.4	471.7	0.0	576.5	1451.5	1412.9	1558.9	960.2	-1451.5	-836.4	31.85	39.95	-10.801	-7.602	0.7000
9	551.8	724.4	551.8	451.9	0.0	566.2	1553.2	1501.2	1648.3	1038.4	-1553.2	-934.9	31.19	38.40	-16.299	-14.250	0.8500
10	545.5	715.9	545.5	419.6	0.0	580.0	1584.9	1530.6	1676.2	1039.0	-1584.9	-950.6	30.93	35.44	-17.699	-16.333	0.9000
11	540.1	705.0	540.1	385.5	0.0	590.2	1615.2	1560.0	1703.2	1043.6	-1615.2	-969.8	30.70	32.43	-18.437	-18.072	0.9500

WC1/A1 LBM/SEC SQFT	WC1/A1 KG/SEC SQM	T02/T01	P02/P01	EFF-AD ROTOR %	EFF-P ROTOR %
35.84	174.89	1.2803	2.1012	84.35	85.88

AIRFOIL AERODYNAMIC SUMMARY PRINT

95 PERCENT DESIGN SPEED (STATOR PERFORMANCE) RUN NO 111 SPEED CODE 95 POINT NO 5

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	309.6	245.7	196.6	245.6	239.2	2.3	252.90	337.13	0.4624	0.0837
2	298.8	241.0	196.7	241.0	224.9	-2.1	257.60	337.60	0.4075	0.0731
3	293.5	232.5	203.6	232.4	211.4	-7.5	271.77	[illegible]6	0.3562	0.0648
4	257.5	203.2	171.8	203.1	191.9	-8.8	227.97	[illegible]8	0.2274	0.0394
5	240.1	185.9	157.0	185.8	181.7	-7.6	207.24	266.18	0.0619	-0.0029
6	238.0	184.5	154.7	184.4	181.0	-6.2	203.83	262.05	-0.0200	-0.0240
7	238.8	188.1	158.3	188.0	178.9	-5.6	209.26	267.14	-0.0578	-0.0344
8	239.5	192.1	161.7	192.1	176.6	-4.9	214.51	272.72	-0.0909	-0.0451
9	236.6	193.2	159.5	193.2	174.7	-3.1	211.10	269.42	-0.1911	-0.0746
10	236.2	192.6	153.3	192.6	179.6	-1.2	200.94	264.65	-0.2243	-0.0850
11	235.3	191.6	147.2	191.6	183.6	-1.0	191.45	259.30	-0.2660	-0.0951

SL	B-1 DEGREE	B-2 DEGREE	M-1	M-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	P0/P0 STAGE	TO/TO STAGE	%EFF-A TOT-STG	%EFF-P TOT-STG
1	52.6	0.5	0.9004	0.6942	-1.86	1.10	14.37	52.08	0.3758	0.1896	0.0437	0.9226	2.1436	1.2874	84.74	86.28
2	50.4	-0.5	0.8683	0.6830	-2.02	1.11	11.49	50.88	0.3656	0.1550	0.0363	0.9399	2.1543	1.2764	88.75	89.89
3	47.3	-1.8	0.8545	0.6595	-4.49	-1.11	9.03	49.11	0.3808	0.1732	0.0414	0.9345	2.1396	1.2671	90.93	91.84
4	48.7	-2.5	0.7395	0.5721	-4.28	-0.03	7.54	51.16	0.4048	0.0613	0.0155	0.9813	2.0507	1.2614	87.20	88.42
5	49.2	-2.4	0.6821	0.5186	-4.75	0.60	7.71	51.57	0.4384	0.0336	0.0091	0.9910	2.0004	1.2707	80.99	82.74
6	49.5	-1.9	0.6729	0.5123	-4.33	1.41	8.19	51.39	0.4449	0.0503	0.0140	0.9868	1.9933	1.2804	77.73	79.77
7	48.5	-1.7	0.6747	0.5225	-5.29	0.58	8.44	50.21	0.4323	0.0501	0.0142	0.9868	2.0057	1.2823	77.98	80.01
8	47.5	-1.5	0.6761	0.5339	-6.26	-0.27	8.80	49.01	0.4168	0.0454	0.0130	0.9880	2.0187	1.2840	78.29	80.31
9	47.8	-0.9	0.6638	0.5345	-8.11	-1.89	11.43	48.75	0.4108	0.0775	0.0232	0.9802	2.0019	1.2961	74.10	76.48
10	49.8	-0.4	0.6588	0.5299	-8.41	-2.17	13.42	50.21	0.4191	0.0981	0.0297	0.9752	1.9874	1.3090	70.20	72.90
11	51.8	-0.3	0.6532	0.5245	-11.86	-5.72	16.12	52.07	0.4298	0.1226	0.0376	0.9694	1.9702	1.3210	66.62	69.61

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	PCT TE SPAN	EPSI-1 DEGREE	EPSI-2 DEGREE
1	1015.8	806.0	644.9	806.0	784.7	7.5	51.80	69.05	0.0430	26.491	4.793
2	980.3	790.7	645.4	790.7	737.8	-6.7	52.76	69.14	0.0901	23.348	4.191
3	963.0	762.9	668.2	762.5	693.4	-24.6	55.66	67.68	0.1410	20.410	3.714
4	844.9	666.8	563.6	666.2	629.5	-28.8	46.69	59.86	0.2989	13.029	2.256
5	787.7	610.1	515.0	609.6	596.0	-25.1	42.44	54.52	0.5086	3.544	-0.165
6	781.0	605.3	507.4	605.0	593.7	-20.2	41.75	53.67	0.6103	-1.147	-1.375
7	783.6	617.1	519.3	616.9	586.9	-18.4	42.86	54.71	0.6598	-3.312	-1.970
8	785.7	630.3	530.6	630.1	579.5	-16.1	43.93	55.85	0.7107	-5.208	-2.585
9	776.3	634.0	523.4	633.9	573.3	-10.3	43.24	55.18	0.8620	-10.949	-4.274
10	774.8	632.0	502.9	632.0	589.4	-4.0	41.15	54.20	0.9101	-12.851	-4.871
11	772.1	628.6	483.1	628.6	602.3	-3.4	39.21	53.11	0.9571	-15.241	-5.449

NCORR INLET RPM	WCORR INLET LBM/SEC	WCORR INLET KG/SEC	TO/TO STAGE	P02/P01	P0/P0 STAGE	EFF-AD STAGE %	EFF-P STAGE %
11842.00	159.70	72.43	1.2803	0.9708	2.0400	80.63	82.46

AIRFOIL AERODYNAMIC SUMMARY PRINT

95 PERCENT DESIGN SPEED (ROTOR PERFORMANCE) RUN NO 111 SPEED CODE 95 POINT NO 3

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	U-1 M/SEC	U-2 M/SEC	V'-1 M/SEC	V'-2 M/SEC	VO'-1 M/SEC	VO'-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	129.5	302.1	129.5	176.4	0.0	245.2	270.5	314.0	299.9	189.4	-270.5	-68.8	124.63	233.83	0.5095	0.5188
2	139.1	289.4	139.1	177.3	0.0	228.7	287.8	323.0	319.6	200.8	-287.8	-94.3	132.18	238.31	0.4208	0.4530
3	148.3	278.9	148.3	176.3	0.0	216.1	304.7	331.9	338.9	210.9	-304.7	-115.9	139.16	239.52	0.3369	0.3835
4	166.4	248.8	166.4	150.7	0.0	197.9	349.2	358.8	386.9	220.5	-349.2	-160.9	151.84	205.77	0.1277	0.1958
5	172.0	233.0	172.0	138.2	0.0	187.6	393.8	394.7	434.3	248.9	-393.8	-207.0	155.47	188.64	-0.0575	0.0207
6	172.2	231.0	172.2	136.2	0.0	186.6	421.1	412.6	454.9	263.9	-421.1	-226.0	155.58	185.84	-0.1243	-0.0564
7	172.0	231.6	172.0	139.6	0.0	184.8	431.7	421.6	464.7	274.9	-431.7	-236.8	155.47	191.30	-0.1563	-0.0950
8	171.2	231.0	171.2	142.0	0.0	182.2	442.3	430.5	474.3	286.0	-442.3	-248.3	154.96	195.30	-0.1900	-0.1336
9	166.3	225.4	166.3	135.2	0.0	180.4	473.3	457.4	501.6	308.3	-473.3	-277.1	151.73	186.49	-0.2837	-0.2501
10	164.4	223.4	164.4	126.0	0.0	184.4	482.9	466.4	510.2	308.8	-482.9	-281.9	150.48	173.00	-0.3080	-0.2853
11	162.8	220.7	162.8	116.6	0.0	187.4	492.2	475.3	518.4	310.7	-492.2	-288.0	149.38	159.56	-0.3219	-0.3152

SL	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	M-1	M-2	M'-1	M'-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	%EFF-A TOTAL	%EFF-P TOTAL
1	0.0	54.0	64.11	21.13	0.4029	0.8753	0.9331	0.5486	-0.97	3.12	9.19	42.98	0.5555	0.1000	0.0197	2.3412	95.17	95.71
2	0.0	52.4	63.97	28.11	0.4338	0.8375	0.9971	0.5810	0.25	3.96	10.32	35.87	0.5431	0.0679	0.0133	2.2878	96.20	96.61
3	0.0	51.0	63.86	33.56	0.4638	0.8059	1.0599	0.6096	1.42	4.80	10.11	30.30	0.5368	0.0529	0.0103	2.2457	96.59	96.95
4	0.0	52.9	64.45	47.11	0.5235	0.7104	1.2167	0.6297	2.55	4.83	11.31	17.34	0.5708	0.1317	0.0239	2.1100	89.22	90.29
5	0.0	53.6	66.65	56.22	0.5420	0.6583	1.3684	0.7032	2.48	4.34	10.66	10.43	0.5536	0.1863	0.0306	2.0599	82.51	84.18
6	0.0	53.6	67.70	58.71	0.5426	0.6490	1.4336	0.7414	2.57	4.30	8.42	9.00	0.5431	0.2089	0.0332	2.0658	79.72	81.67
7	0.0	52.6	68.21	59.19	0.5420	0.6501	1.4643	0.7714	2.77	4.44	6.81	9.02	0.5294	0.2064	0.0329	2.0805	79.62	81.59
8	0.0	51.7	68.76	59.92	0.5394	0.6475	1.4940	0.8018	3.24	4.80	6.32	8.84	0.5149	0.2027	0.0319	2.0896	79.59	81.58
9	0.0	52.8	70.55	63.67	0.5229	0.6267	1.5776	0.8571	3.40	4.83	5.19	6.88	0.4970	0.2295	0.0323	2.0943	75.94	78.29
10	0.0	55.3	71.09	65.64	0.5167	0.6173	1.6034	0.8535	2.99	4.36	5.11	5.46	0.5057	0.2604	0.0337	2.0935	72.80	75.45
11	0.0	57.9	71.59	67.77	0.5113	0.6066	1.6284	0.8540	2.54	3.88	5.16	3.81	0.5104	0.2862	0.0336	2.0914	70.21	73.09

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	EPSI-1 DEGREE	EPSI-2 DEGREE	PCT TE SPAN
1	424.9	991.2	424.9	578.9	0.0	804.7	887.4	1030.3	983.9	621.3	-887.4	-225.6	25.53	47.89	29.197	29.722	0.0500
2	456.3	949.4	456.3	581.6	0.0	750.4	944.3	1059.7	1048.7	658.7	-944.3	-309.2	27.07	48.81	24.111	25.955	0.1000
3	486.6	914.9	486.6	578.3	0.0	708.9	999.9	1089.1	1112.0	692.1	-999.9	-380.2	28.50	49.06	19.392	21.971	0.1500
4	546.1	816.2	546.1	494.5	0.0	649.3	1145.9	1177.3	1269.3	723.4	-1145.9	-528.0	31.10	42.14	7.318	11.217	0.3000
5	564.4	764.6	564.4	453.5	0.0	615.6	1308.4	1294.9	1424.9	816.8	-1308.4	-679.3	31.84	38.64	-3.297	1.189	0.5000
6	565.0	757.8	565.0	446.8	0.0	612.2	1381.6	1353.7	1492.7	865.8	-1381.6	-741.6	31.86	38.06	-7.122	-3.232	0.6000
7	564.4	760.0	564.4	458.2	0.0	606.4	1416.4	1383.1	1524.7	901.8	-1416.4	-776.8	31.84	39.18	-8.954	-5.444	0.6500
8	561.8	757.9	561.8	465.8	0.0	597.9	1451.2	1412.5	1556.1	938.4	-1451.2	-814.7	31.74	40.00	-10.888	-7.655	0.7000
9	545.5	739.5	545.5	443.5	0.0	591.8	1552.8	1500.8	1645.8	1011.4	-1552.8	-909.0	31.08	38.19	-16.258	-14.332	0.8500
10	539.4	732.9	539.4	413.5	0.0	605.1	1584.5	1530.2	1673.8	1013.2	-1584.5	-925.0	30.82	35.43	-17.648	-16.348	0.9000
11	534.0	724.1	534.0	382.7	0.0	614.8	1614.8	1559.6	1700.8	1019.4	-1614.8	-944.8	30.59	32.68	-18.441	-18.057	0.9500

WC1/A1 LBM/SEC SQFT	WC1/A1 KG/SEC SQM	T02/T01	P02/P01	EFF-AD ROTOR %	EFF-P ROTOR %
35.44	172.92	1.2884	2.1285	83.56	85.20

AIRFOIL AERODYNAMIC SUMMARY PRINT

95 PERCENT DESIGN SPEED (STATOR PERFORMANCE) RUN NO 111 SPEED CODE 95 POINT NO 3

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VU-1 M/SEC	VU-2 M/SEC	PHOVM-1 KG/M2 SEC	PHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	310.7	235.2	197.1	235.2	240.2	2.6	255.58	324.38	0.4755	0.0815
2	297.4	229.2	194.5	229.2	225.9	-1.8	256.47	332.22	0.4263	0.0703
3	286.7	220.4	192.2	220.3	212.8	-7.4	256.49	323.45	0.3629	0.0622
4	258.4	193.3	168.8	193.2	195.7	-8.0	225.96	285.01	0.2168	0.0394
5	243.1	179.4	155.2	179.3	187.1	-5.1	207.85	263.96	0.5597	-0.0016
6	241.6	178.8	153.2	178.7	185.8	-4.7	204.95	260.87	-0.0193	-0.0221
7	242.8	182.5	156.8	182.5	185.4	-4.2	210.49	266.04	-0.0564	-0.0322
8	242.8	186.3	159.5	186.2	183.2	-3.4	214.59	271.31	-0.0902	-0.0428
9	240.7	189.0	156.7	189.0	182.7	-2.1	210.27	270.42	-0.1935	-0.0727
10	240.7	189.4	151.0	189.4	187.5	0.2	200.94	267.28	-0.2257	-0.0836
11	240.4	190.4	145.8	190.4	191.2	1.1	192.59	264.98	-0.2655	-0.0945

SL	B-1 DEGREE	B-2 DEGREE	M-1	M-2	INCS DEGREE	INOM DEGREE	DEV DEGREE	TURN DEGREE	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	P0/P0 STAGE	TO/TO STAGE	%EFF-A TOT-STG	%EFF-P TOT-STG
1	52.8	0.6	0.9949	0.6619	-1.63	1.32	14.48	52.20	0.4129	0.1783	0.0411	0.9267	2.1698	1.2590	85.70	87.16
2	51.0	-0.4	0.8649	0.5468	-1.45	1.67	11.53	51.49	0.4023	0.1316	0.0309	0.9493	2.1711	1.2773	89.47	90.55
3	49.3	-1.9	0.8317	0.4922	-2.51	0.86	8.95	51.14	0.4100	0.1107	0.0254	0.9597	2.1541	1.2693	91.02	91.99
4	48.7	-2.4	0.7411	0.5416	-3.39	0.95	7.54	52.04	0.4485	0.0542	0.0137	0.9834	2.0745	1.2668	86.95	88.22
5	50.4	-1.9	0.6894	0.4922	-3.61	1.74	8.13	52.29	0.4764	0.0397	0.0107	0.9892	2.0374	1.2784	81.02	82.81
6	50.6	-1.5	0.6816	0.4941	-3.16	2.58	8.52	52.16	0.4818	0.0585	0.0163	0.9844	2.0337	1.2892	77.77	79.86
7	49.8	-1.3	0.6842	0.5042	-4.02	1.85	8.84	51.09	0.4702	0.0505	0.0171	0.9837	2.0465	1.2925	77.65	79.76
8	49.0	-1.0	0.6828	0.5147	-4.83	1.17	9.21	50.03	0.4559	0.0559	0.0158	0.9852	2.0634	1.2945	77.82	79.93
9	49.6	-0.6	0.6728	0.5197	-5.32	-0.19	11.72	50.24	0.4466	0.0816	0.0244	0.9786	2.0495	1.3093	73.59	76.09
10	51.5	0.1	0.6693	0.5182	-6.78	-0.54	13.25	51.49	0.4512	0.0992	0.0301	0.9743	2.0396	1.3221	70.16	72.96
11	53.2	0.3	0.6652	0.5185	-10.45	-4.32	16.77	52.23	0.4539	0.1132	0.0347	0.9709	2.0306	1.3342	67.13	70.19

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VU-1 FT/SEC	VU-2 FT/SEC	PHOVM-1 LBM/FT2SEC	PHOVM-2 LBM/FT2SEC	PCT TE SPAN	EPSI-1 DEGREE	EPSI-2 DEGREE
1	1019.4	771.7	646.7	771.7	788.0	8.6	52.34	68.48	0.0430	27.243	4.672
2	975.7	752.0	638.1	752.0	738.2	-5.9	52.53	68.04	0.0901	24.424	4.028
3	940.8	723.2	630.6	722.8	698.1	-24.1	52.53	66.25	0.1410	21.138	3.561
4	848.0	634.4	553.9	633.8	642.1	-26.3	46.28	58.58	0.2939	12.424	2.201
5	797.7	588.7	509.4	588.4	613.9	-19.9	42.57	54.06	0.5086	3.419	-0.091
6	792.8	586.6	502.7	586.4	613.9	-15.5	41.98	53.43	0.6103	-1.196	-1.254
7	796.6	598.8	514.5	598.7	608.2	-13.7	43.09	54.49	0.6598	-3.233	-1.845
8	796.8	611.1	523.2	611.0	601.9	-11.2	43.95	55.57	0.7107	-5.168	-2.453
9	789.6	620.2	514.1	620.2	599.3	-6.9	43.07	55.38	0.8620	-11.094	-4.163
10	789.9	621.5	495.5	621.5	615.1	0.8	41.15	54.74	0.9101	-12.931	-4.787
11	788.8	624.6	478.3	624.6	627.2	3.8	39.45	54.27	0.9571	-15.214	-5.416

WCORR INLET PPM	WCORR INLET LBM/SEC	WCORR INLET KG/SEC
11843.90	157.90	71.61

TO/TO STAGE	P02/P01	P0/P0 STAGE	EFF-AD STAGE %	EFF-P STAGE %
1.2284	0.9745	2.0742	80.39	82.28

AIRFOIL AERODYNAMIC SUMMARY PRINT

95 PERCENT DESIGN SPEED (ROTOR PERFORMANCE) RUN NO 111 SPEED CODE 95 POINT NO 6

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	U-1 M/SEC	U-2 M/SEC	V'-1 M/SEC	V'-2 M/SEC	VO'-1 M/SEC	VO'-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	123.8	301.7	123.8	171.4	0.0	248.2	270.5	314.0	297.4	183.6	-270.5	-65.8	121.81	232.17	0.5080	0.5221
2	132.7	290.6	132.7	172.8	0.0	233.6	287.8	323.0	316.9	194.6	-287.8	-89.4	129.18	237.54	0.4178	0.4576
3	141.2	277.8	141.2	166.2	0.0	222.6	304.7	331.9	335.9	198.9	-304.7	-109.3	135.91	230.08	0.3339	0.3863
4	158.0	251.3	158.0	142.5	0.0	207.0	349.2	358.8	383.3	208.2	-349.2	-151.8	148.37	199.02	0.1293	0.1956
5	163.8	240.3	163.8	133.5	0.0	199.9	398.7	394.7	431.1	236.1	-398.7	-194.8	152.36	187.29	-0.0589	0.0208
6	163.8	240.7	163.8	132.9	0.0	200.7	421.1	412.6	451.8	250.1	-421.1	-211.9	152.37	186.65	-0.1297	-0.0573
7	163.4	241.4	163.4	134.7	0.0	200.3	431.7	421.5	461.6	259.0	-431.7	-221.2	152.11	189.68	-0.1630	-0.0966
8	162.4	240.1	162.4	134.7	0.0	198.8	442.3	430.5	471.2	268.0	-442.3	-231.7	151.46	190.08	-0.1965	-0.1356
9	157.7	233.7	157.7	126.2	0.0	196.7	473.2	457.4	498.8	289.6	-473.2	-260.7	148.17	178.91	-0.2844	-0.2512
10	156.1	232.0	156.1	119.6	0.0	198.8	482.9	466.3	507.5	293.1	-482.9	-267.6	146.98	169.32	-0.3974	-0.2856
11	154.6	229.4	154.6	111.5	0.0	200.5	492.1	475.3	515.8	296.6	-492.1	-274.8	145.91	157.64	-0.3216	-0.3151

SL	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	M-1	M-2	M'-1	M'-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	%EFF-A TOTAL	%EFF-P TOTAL
1	0.0	55.2	65.09	20.86	0.3846	0.8724	0.9242	0.5309	0.01	4.11	8.92	44.23	0.5736	0.1078	0.0213	2.3577	94.91	95.48
2	0.0	53.7	64.98	27.50	0.4133	0.8393	0.9869	0.5620	1.25	4.97	9.71	37.48	0.5619	0.0764	0.0151	2.3169	95.81	96.28
3	0.0	53.5	64.92	33.59	0.4408	0.7997	1.0483	0.5726	2.48	5.87	10.14	31.33	0.5724	0.0895	0.0175	2.2577	94.44	95.03
4	0.0	55.7	65.59	47.05	0.4957	0.7146	1.2023	0.5922	3.69	5.97	11.25	18.54	0.6042	0.1564	0.0284	2.1520	87.82	89.05
5	0.0	56.2	67.66	55.53	0.5146	0.6756	1.3545	0.6638	3.49	5.34	9.96	12.13	0.5880	0.2041	0.0342	2.1380	81.90	83.71
6	0.0	56.3	68.71	57.67	0.5146	0.6726	1.4197	0.6989	3.57	5.30	7.38	11.03	0.5800	0.2274	0.0373	2.1593	79.18	81.29
7	0.0	55.8	69.23	58.37	0.5133	0.6731	1.4502	0.7221	3.78	5.46	5.99	10.85	0.5713	0.2318	0.0378	2.1758	78.47	80.66
8	0.0	55.5	69.78	59.51	0.5102	0.6680	1.4799	0.7455	4.26	5.82	5.91	10.27	0.5613	0.2355	0.0375	2.1818	77.72	80.01
9	0.0	56.9	71.48	63.84	0.4947	0.6444	1.5645	0.7985	4.33	5.76	5.37	7.64	0.5417	0.2620	0.0367	2.1866	74.18	76.82
10	0.0	58.6	71.98	65.63	0.4893	0.6366	1.5909	0.8043	3.88	5.25	5.10	6.35	0.5428	0.2817	0.0365	2.1902	72.17	75.02
11	0.0	60.7	72.45	67.74	0.4843	0.6265	1.6163	0.8100	3.41	4.74	5.13	4.71	0.5431	0.3010	0.0354	2.1905	70.22	73.27

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	EPSI-1 DEGREE	EPSI-2 DEGREE	PCT TE SPAN
1	406.1	989.8	406.1	562.4	0.0	814.5	887.3	1030.2	975.9	602.4	-887.3	-215.7	24.95	47.55	29.108	29.915	0.0500
2	435.5	953.4	435.5	567.1	0.0	766.4	944.2	1059.6	1039.8	638.4	-944.2	-293.2	26.46	48.65	23.937	26.217	0.1000
3	463.4	911.6	463.4	545.3	0.0	730.5	999.8	1089.0	1101.9	652.6	-999.8	-358.5	27.83	47.12	19.129	22.136	0.1500
4	518.5	824.5	518.5	467.5	0.0	679.1	1145.8	1177.3	1257.6	683.2	-1145.8	-498.2	30.39	40.76	7.410	11.210	0.3000
5	537.3	788.5	537.3	437.9	0.0	655.8	1308.3	1294.9	1414.3	774.7	-1308.3	-639.1	31.21	38.36	-3.372	1.191	0.5000
6	537.3	789.8	537.3	436.1	0.0	658.5	1381.5	1353.7	1482.3	820.6	-1381.5	-695.2	31.21	38.23	-7.433	-3.284	0.6000
7	536.1	792.2	536.1	442.1	0.0	657.3	1416.3	1383.1	1514.4	849.8	-1416.3	-725.7	31.15	38.85	-9.340	-5.533	0.6500
8	533.0	787.9	533.0	441.9	0.0	652.3	1451.1	1412.4	1545.9	879.2	-1451.1	-760.1	31.02	38.93	-11.258	-7.770	0.7000
9	517.6	766.9	517.6	414.2	0.0	645.4	1552.7	1500.7	1636.7	950.3	-1552.7	-855.3	30.35	36.64	-16.297	-14.392	0.8500
10	512.1	761.2	512.1	392.5	0.0	652.2	1584.4	1530.1	1665.1	961.7	-1584.4	-877.9	30.10	34.68	-17.615	-16.366	0.9000
11	507.2	752.6	507.2	365.8	0.0	657.7	1614.7	1559.5	1692.5	973.1	-1614.7	-901.7	29.88	32.29	-18.427	-18.055	0.9500

WC1/A1 LBM/SEC SQFT	WC1/A1 KG/SEC SQM	T02/T01	P02/P01	EFF-AD ROTOR %	EFF-P ROTOR %
34.11	166.55	1.3063	2.1940	82.19	84.03

AIRFOIL AERODYNAMIC SUMMARY PRINT

95 PERCENT DESIGN SPEED (STATOR PERFORMANCE) RUN NO 111 SPEED CODE 95 POINT NO 6

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	308.6	214.0	190.0	214.0	243.1	0.0	252.94	323.79	0.4797	0.0219
2	297.0	207.1	188.3	207.1	229.8	0.0	254.92	318.69	0.4324	0.0719
3	284.1	198.9	180.7	198.9	219.2	0.0	246.69	308.61	0.3727	0.0653
4	259.2	174.8	159.0	174.8	204.7	0.0	218.51	272.54	0.2137	0.0448
5	248.8	166.7	149.0	166.7	199.3	0.0	205.64	258.01	0.0624	0.0050
6	249.9	169.4	148.4	169.4	201.0	0.0	204.83	260.13	-0.0123	-0.0146
7	251.1	173.5	150.6	173.5	201.0	0.0	208.06	265.50	-0.0482	-0.0253
8	250.6	176.5	151.1	176.5	199.9	0.0	209.10	269.53	-0.0824	-0.0367
9	247.4	178.2	146.8	178.2	199.2	0.0	202.82	267.31	-0.1927	-0.0695
10	247.6	179.4	143.1	179.4	202.0	0.0	196.26	266.34	-0.2258	-0.0812
11	247.1	182.1	138.7	182.1	204.5	0.0	189.29	267.45	-0.2653	-0.0934

SL	B-1 DEGREE	B-2 DEGREE	M-1	M-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	P0/P0 STAGE	T0/T0 STAGE	%EFF-A TOT-STG	%EFF-P TOT-STG
1	54.2	0.0	0.8955	0.5957	-0.24	2.72	13.26	54.21	0.4827	0.1703	0.0392	0.9309	2.1952	1.2928	86.05	87.49
2	52.5	0.0	0.8605	0.5785	0.11	3.24	11.97	52.53	0.4795	0.1454	0.0341	0.9442	2.1899	1.2836	88.56	89.74
3	51.9	0.0	0.8201	0.5556	0.10	3.47	10.84	51.82	0.4806	0.1245	0.0259	0.9626	2.1752	1.2775	89.61	90.68
4	52.6	0.0	0.7395	0.4846	-0.39	3.86	10.00	52.59	0.5232	0.0603	0.0153	0.9816	2.1127	1.2736	85.56	86.99
5	53.3	0.0	0.7018	0.4580	-0.70	4.65	10.07	53.27	0.5464	0.0635	0.0172	0.9821	2.1090	1.2957	79.88	81.85
6	53.5	0.0	0.7006	0.4633	-0.26	5.48	10.10	53.54	0.5457	0.0789	0.0220	0.9780	2.1102	1.3097	76.82	79.10
7	53.1	0.0	0.7027	0.4736	-0.64	5.23	10.15	53.15	0.5362	0.0812	0.0230	0.9772	2.1240	1.3163	75.94	78.32
8	52.9	0.0	0.6998	0.4815	-0.90	5.10	10.26	52.91	0.5258	0.0777	0.0223	0.9783	2.1334	1.3205	75.44	77.88
9	53.8	0.0	0.6855	0.4832	-2.10	4.12	12.36	53.84	0.5231	0.1062	0.0318	0.9713	2.1235	1.3369	71.27	74.11
10	55.0	0.0	0.6830	0.4847	-3.26	2.98	13.78	55.00	0.5249	0.1206	0.0365	0.9676	2.1190	1.3468	69.01	72.06
11	56.3	0.0	0.6790	0.4993	-7.29	-1.15	16.43	56.33	0.5204	0.1241	0.0381	0.9670	2.1183	1.3573	66.94	70.19

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	PCT TE SPAN	EPSI-1 DEGREE	EPSI-2 DEGREE
1	1012.4	702.0	623.5	702.0	797.7	0.0	51.80	66.31	0.0430	27.487	4.693
2	974.6	679.5	617.7	679.5	753.8	0.0	52.21	65.15	0.0901	24.776	4.119
3	932.1	652.6	592.9	652.6	719.2	0.0	50.52	63.21	0.1410	21.354	3.744
4	850.4	573.4	521.8	573.4	671.5	0.0	44.75	55.82	0.2989	12.242	2.568
5	816.4	546.8	488.8	546.8	653.9	0.0	42.12	52.84	0.5086	3.574	0.346
6	819.8	555.9	487.0	555.9	659.4	0.0	41.95	53.28	0.6103	-0.705	-0.837
7	823.9	569.2	494.0	569.2	659.4	0.0	42.61	54.38	0.6598	-2.762	-1.449
8	822.2	579.1	495.9	579.1	655.8	0.0	42.83	55.20	0.7107	-4.722	-2.102
9	811.9	584.7	481.6	584.7	653.6	0.0	41.54	54.75	0.8620	-11.040	-3.979
10	812.2	588.6	469.5	588.6	662.8	0.0	40.32	54.55	0.9101	-12.935	-4.651
11	810.7	597.4	454.9	597.4	671.0	0.0	38.89	54.78	0.9571	-15.198	-5.349

NCORR INLET RPM	WCORR INLET LBM/SEC	WCORR INLET KG/SEC	T0/T0 STAGE	P02/P01	P0/P0 STAGE	EFF-AD STAGE %	EFF-P STAGE %
11843.10	152.00	68.93	1.3063	0.9710	2.1305	78.77	80.88

AIRFOIL AERODYNAMIC SUMMARY PRINT

100 PERCENT DESIGN SPEED (ROTOR PERFORMANCE) RUN NO 110 SPEED CODE 10 POINT NO 2

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	U-1 M/SEC	U-2 M/SEC	V'-1 M/SEC	V'-2 M/SEC	VO'-1 M/SEC	VO'-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	146.1	308.6	146.1	126.5	0.0	245.9	282.8	328.3	318.3	203.9	-282.8	-82.4	133.23	235.33	0.5126	0.5157
2	157.2	303.9	157.2	191.3	0.0	236.2	300.9	337.7	339.5	216.5	-300.9	-101.5	140.98	245.08	0.4252	0.4501
3	168.1	291.2	168.1	191.2	0.0	219.6	318.6	347.0	360.2	229.8	-318.6	-127.4	148.13	248.38	0.3428	0.3805
4	190.8	251.3	190.8	171.9	0.0	183.3	365.1	375.1	412.0	257.6	-365.1	-191.8	161.33	226.66	0.1343	0.1975
5	197.3	225.6	197.3	154.8	0.0	164.2	416.9	412.6	461.2	292.7	-416.9	-248.5	164.67	202.60	-0.0573	0.0202
6	197.0	214.4	197.0	142.3	0.0	160.3	440.2	431.4	482.3	306.1	-440.2	-271.0	164.51	194.95	-0.1159	-0.0583
7	197.1	210.5	197.1	141.4	0.0	155.9	451.3	440.7	492.5	318.0	-451.3	-284.8	164.55	194.36	-0.1404	-0.0965
8	196.8	213.1	196.8	147.8	0.0	153.5	462.4	450.1	502.6	331.4	-462.4	-296.6	164.45	194.11	-0.1680	-0.1323
9	193.1	216.7	193.1	157.5	0.0	148.8	494.8	478.2	531.1	365.1	-494.8	-329.4	162.54	210.61	-0.2648	-0.2425
10	191.0	213.9	191.0	150.9	0.0	151.5	504.9	487.6	539.8	368.4	-504.9	-336.0	161.44	201.22	-0.2953	-0.2787
11	188.8	206.7	188.8	137.7	0.0	154.2	514.5	495.9	548.1	369.4	-514.5	-342.8	160.26	182.47	-0.3158	-0.3114

SL	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	M-1	M-2	M'-1	M'-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	%EFF-A TOTAL	%EFF-P TOTAL
1	0.0	52.5	62.40	23.62	0.4597	0.8967	1.0016	0.5924	-2.68	1.41	11.68	38.78	0.5350	0.1793	0.0348	2.3680	90.95	91.98
2	0.0	51.1	62.22	28.02	0.4954	0.8825	1.0719	0.6286	-1.51	2.21	10.23	34.20	0.5270	0.1361	0.0267	2.3717	92.25	93.13
3	0.0	49.2	62.03	33.89	0.5328	0.8451	1.1416	0.6668	-0.41	2.98	10.43	28.14	0.5130	0.1005	0.0195	2.3137	93.42	94.14
4	0.0	47.1	62.36	48.39	0.6098	0.7252	1.3164	0.7433	0.45	2.74	12.58	13.97	0.4973	0.1002	0.0177	2.1126	91.08	91.96
5	0.0	46.6	64.66	58.02	0.6320	0.6458	1.4776	0.8378	0.49	2.34	12.45	6.64	0.4699	0.1436	0.0233	1.9883	84.21	85.66
6	0.0	48.2	65.82	62.09	0.6310	0.6098	1.5449	0.8705	0.68	2.41	11.79	3.73	0.4643	0.1960	0.0267	1.9419	79.36	81.19
7	0.0	47.5	66.29	63.35	0.6312	0.5982	1.5775	0.9037	0.85	2.53	10.97	2.94	0.4490	0.1823	0.0254	1.9333	79.30	81.12
8	0.0	45.7	66.77	63.21	0.6305	0.6058	1.6097	0.9423	1.25	2.81	9.61	3.57	0.4321	0.1696	0.0240	1.9573	80.51	82.25
9	0.0	42.9	68.47	64.07	0.6177	0.6149	1.6987	1.0359	1.33	2.75	5.59	4.40	0.3975	0.1521	0.0211	2.0154	81.89	83.58
10	0.0	44.7	69.08	65.49	0.6105	0.6036	1.7251	1.0397	0.98	2.35	4.96	3.59	0.4025	0.1784	0.0232	2.0133	78.78	80.75
11	0.0	47.9	69.69	67.91	0.6029	0.5795	1.7500	1.0357	0.64	1.98	5.30	1.77	0.4106	0.2135	0.0249	1.9908	74.62	76.94

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	EPSI-1 DEGREE	EPSI-2 DEGREE	PCT TE SPAN
1	479.3	1012.6	479.3	611.9	0.0	806.8	927.7	1077.1	1044.2	668.9	-927.7	-270.3	27.29	48.20	29.367	29.548	0.0500
2	515.7	997.2	515.7	627.6	0.0	775.0	987.2	1107.9	1113.8	710.4	-987.2	-332.9	28.87	50.19	24.361	25.787	0.1000
3	551.6	955.4	551.6	627.4	0.0	720.6	1045.3	1138.6	1181.9	753.9	-1045.3	-418.0	30.34	50.87	19.643	21.804	0.1500
4	626.1	824.4	626.1	563.9	0.0	601.4	1197.9	1230.9	1351.7	845.1	-1197.9	-629.4	33.04	46.42	7.694	11.314	0.3000
5	647.3	740.3	647.3	507.9	0.0	538.6	1367.8	1353.8	1513.3	960.5	-1367.8	-815.2	33.72	41.49	-3.284	1.156	0.5000
6	646.3	703.4	646.3	467.0	0.0	526.1	1444.4	1415.3	1582.4	1004.3	-1444.4	-889.2	33.69	37.88	-6.695	-3.341	0.6000
7	646.6	690.5	646.6	463.8	0.0	511.6	1480.8	1446.0	1615.8	1043.2	-1480.8	-934.4	33.70	37.76	-8.046	-5.527	0.6500
8	645.9	699.1	645.9	485.0	0.0	503.5	1517.1	1476.7	1648.9	1087.4	-1517.1	-973.2	33.68	39.76	-9.626	-7.583	0.7000
9	633.6	711.1	633.6	516.9	0.0	488.3	1623.4	1569.0	1742.7	1197.9	-1623.4	-1080.7	33.29	43.13	-15.173	-13.894	0.8500
10	626.8	701.8	626.8	495.2	0.0	497.2	1656.5	1599.7	1771.2	1208.6	-1656.5	-1102.5	33.06	41.21	-16.920	-15.971	0.9000
11	619.5	678.2	619.5	451.8	0.0	505.8	1688.2	1630.5	1798.3	1212.0	-1688.2	-1124.7	32.82	37.37	-18.096	-17.841	0.9500

WC1/A1 LBM/SEC SQFT	WC1/A1 KG/SEC SQM	T02/T01	P02/P01	EFF-AD ROTOR %	EFF-P ROTOR %
39.14	190.99	1.2730	2.0800	85.31	86.74

AIRFOIL AERODYNAMIC SUMMARY PRINT

100 PERCENT DESIGN SPEED (STATOR PERFORMANCE) RUN NO 110 SPEED CODE 10 POINT NO 2

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	320.0	273.5	210.9	273.0	240.7	-17.2	258.14	314.95	0.4708	0.0851
2	314.6	277.3	212.2	276.7	232.3	-18.9	264.48	327.75	0.4215	0.0753
3	302.1	279.5	210.9	279.0	216.3	-17.3	266.65	341.79	0.3636	0.0662
4	265.2	251.8	193.6	251.5	181.3	-11.0	247.78	321.01	0.2159	0.0359
5	240.1	226.1	175.7	225.3	163.7	-19.1	223.65	285.41	0.0605	-0.0074
6	229.7	219.6	164.3	219.2	160.5	-13.2	207.61	278.14	-0.0290	-0.0292
7	226.9	219.7	164.4	219.0	156.4	-17.6	208.37	277.90	-0.0759	-0.0400
8	230.1	224.5	170.6	224.1	154.3	-13.9	217.58	284.02	-0.1167	-0.0509
9	236.7	234.9	182.4	234.4	150.8	-15.7	235.11	292.01	-0.2166	-0.0787
10	236.3	233.7	179.0	233.5	154.3	-10.7	228.96	285.83	-0.2420	-0.0882
11	232.6	230.2	171.3	230.0	157.4	-8.0	216.82	276.23	-0.2735	-0.0969

SL	B-1 DEGREE	B-2 DEGREE	M-1	M-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	P0/P0 STAGE	T0/T0 STAGE	%EFF-A TOT-STG	%EFF-P TOT-STG
1	50.9	-3.5	0.9354	0.7816	-3.52	-0.56	10.38	54.41	0.3264	0.3707	0.0852	0.8399	1.9990	1.3972	70.70	73.37
2	49.4	-3.8	0.9185	0.7947	-3.07	0.06	8.16	53.16	0.3029	0.3173	0.0742	0.8663	2.0565	1.3042	75.24	77.60
3	47.0	-3.5	0.8816	0.8065	-4.74	-1.37	7.35	50.53	0.2579	0.2120	0.0506	0.9156	2.1220	1.2907	82.55	84.29
4	43.6	-2.5	0.7700	0.7268	-9.38	-5.14	7.51	46.08	0.2313	0.0960	0.0243	0.9689	2.0463	1.2618	86.80	88.05
5	43.0	-4.8	0.6911	0.6471	-10.96	-5.61	5.22	47.85	0.2621	0.0699	0.0188	0.9810	1.9470	1.2582	81.28	82.94
6	44.3	-3.4	0.6570	0.6255	-9.47	-3.74	6.66	47.77	0.2536	0.0494	0.0138	0.9876	1.9139	1.2637	77.34	79.30
7	43.6	-4.6	0.6486	0.6263	-10.19	-4.32	5.57	48.18	0.2504	0.0525	0.0148	0.9870	1.9119	1.2616	77.83	79.75
8	42.2	-3.5	0.6581	0.6408	-11.58	-5.59	6.71	45.78	0.2370	0.0699	0.0200	0.9823	1.9284	1.2634	78.42	80.31
9	40.0	-3.8	0.6762	0.6706	-15.97	-9.75	8.56	43.76	0.2209	0.1408	0.0420	0.9628	1.9429	1.2717	76.97	79.01
10	41.2	-2.6	0.6721	0.6540	-17.06	-10.81	11.19	43.80	0.2251	0.1806	0.0547	0.9529	1.9174	1.2826	72.39	74.78
11	43.1	-2.0	0.6580	0.6503	-20.49	-14.35	14.45	45.12	0.2315	0.2180	0.0668	0.9451	1.8796	1.2923	67.63	70.35

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	PCT TE SPAN	EPSI-1 DEGREE	EPSI-2 DEGREE
1	1049.8	897.5	691.8	895.7	789.7	-56.5	52.87	64.51	0.0430	26.976	4.873
2	1032.3	909.9	696.2	907.7	762.2	-62.1	54.17	67.13	0.0901	24.152	4.314
3	991.3	917.1	691.9	915.3	709.8	-56.9	54.61	69.98	0.1410	20.831	3.795
4	870.2	826.1	635.1	825.3	595.0	-36.1	50.75	65.75	0.2989	12.372	2.056
5	787.9	741.8	576.6	739.2	537.0	-62.7	45.81	59.07	0.5086	3.456	-0.426
6	753.8	720.4	539.2	719.1	526.7	-43.2	42.52	56.96	0.6103	-1.661	-1.675
7	744.4	720.7	539.3	718.4	513.9	-57.6	42.68	56.92	0.6598	-4.347	-2.294
8	754.9	736.7	559.9	735.2	506.3	-45.7	44.56	58.17	0.7107	-6.687	-2.917
9	776.5	770.6	598.3	768.9	494.9	-51.4	48.15	59.81	0.8620	-12.409	-4.512
10	775.3	766.9	587.3	766.1	506.2	-35.0	46.89	58.54	0.9101	-13.866	-5.056
11	763.3	755.2	562.2	754.7	516.4	-26.4	44.41	56.57	0.9571	-15.669	-5.550

NCORR INLET RPM	WCORR INLET LBM/SEC	WCORR INLET KG/SEC	T0/T0 STAGE	P02/P01	P0/P0 STAGE	EFF-AD STAGE %	EFF-P STAGE %
12464.70	174.40	79.09	1.2730	0.9514	1.9790	78.92	80.84

AIRFOIL AERODYNAMIC SUMMARY PRINT

100 PERCENT DESIGN SPEED (ROTOR PERFORMANCE) RUN NO 110 SPEED CODE 10 POINT NO 8

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	U-1 M/SEC	U-2 M/SEC	V'-1 M/SEC	V'-2 M/SEC	VO'-1 M/SEC	VO'-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	146.6	313.5	146.6	185.7	0.0	252.6	284.0	329.7	319.6	201.0	-284.0	-77.0	132.74	239.29	0.5119	0.5176
2	157.6	305.1	157.6	189.8	0.0	238.9	302.2	339.1	340.8	214.6	-302.2	-100.2	140.33	248.68	0.4238	0.4524
3	168.3	288.9	168.3	183.4	0.0	223.2	319.9	348.5	361.5	222.1	-319.9	-125.3	147.30	242.77	0.3415	0.3828
4	190.8	255.7	190.8	164.6	0.0	195.7	366.7	376.7	413.3	244.7	-366.7	-181.0	160.37	221.39	0.1384	0.1971
5	198.8	234.7	198.8	151.5	0.0	179.2	418.7	414.4	463.5	279.7	-418.7	-235.1	164.46	204.36	-0.0520	0.0204
6	198.9	226.1	198.9	143.2	0.0	175.0	442.1	433.2	484.8	295.2	-442.1	-258.2	164.50	192.76	-0.1187	-0.0569
7	198.7	224.5	198.7	145.6	0.0	170.8	453.2	442.6	494.9	308.3	-453.2	-271.7	164.42	196.95	-0.1487	-0.0950
8	197.8	225.8	197.8	149.9	0.0	168.8	464.4	452.0	504.7	320.4	-464.4	-283.2	164.00	203.85	-0.1814	-0.1325
9	191.9	224.2	191.9	148.9	0.0	167.5	496.9	480.2	532.6	346.4	-496.9	-312.7	160.95	203.54	-0.2790	-0.2480
10	189.4	221.6	189.4	139.1	0.0	172.6	507.0	489.6	541.3	346.2	-507.0	-317.1	159.65	188.69	-0.3060	-0.2840
11	187.3	217.6	187.3	126.2	0.0	177.3	516.7	499.0	549.6	345.6	-516.7	-321.8	158.47	169.93	-0.3214	-0.3147

SL	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	M-1	M-2	M'-1	M'-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	%EFF-A TOTAL	%EFF-P TOTAL
1	0.0	53.4	62.40	22.35	0.4594	0.9061	1.0015	0.5809	-2.67	1.42	10.41	40.05	0.5511	0.1274	0.0249	2.4677	93.72	94.47
2	0.0	51.7	62.25	27.93	0.4954	0.8813	1.0714	0.6198	-1.48	2.23	10.14	34.32	0.5371	0.0836	0.0165	2.4459	95.28	95.83
3	0.0	50.8	62.10	34.57	0.5309	0.8323	1.1405	0.6400	-0.34	3.04	11.12	27.53	0.5387	0.0814	0.0157	2.3591	94.72	95.31
4	0.0	50.2	62.47	47.97	0.6069	0.7307	1.3147	0.6991	0.57	2.85	12.16	14.51	0.5375	0.1032	0.0184	2.2072	91.29	92.20
5	0.0	49.7	64.58	57.14	0.6343	0.6646	1.4788	0.7920	0.41	2.26	11.58	7.44	0.5095	0.1435	0.0230	2.1250	85.79	87.20
6	0.0	50.5	65.71	60.77	0.6346	0.6367	1.5469	0.8314	0.57	2.31	10.47	4.94	0.4988	0.1709	0.0256	2.0952	82.31	84.04
7	0.0	49.3	66.23	61.55	0.6340	0.6319	1.5790	0.8678	0.79	2.47	9.17	4.68	0.4813	0.1633	0.0242	2.0986	82.71	84.41
8	0.0	48.0	66.81	61.78	0.6311	0.6352	1.6100	0.9014	1.29	2.84	8.19	5.02	0.4670	0.1577	0.0234	2.1175	83.07	84.75
9	0.0	47.9	68.76	64.20	0.6106	0.6262	1.6949	0.9676	1.61	3.04	5.72	4.56	0.4468	0.1789	0.0247	2.1430	80.19	82.18
10	0.0	50.8	69.38	66.03	0.6023	0.6148	1.7207	0.9604	1.28	2.65	5.50	3.36	0.4580	0.2172	0.0277	2.1382	76.12	78.50
11	0.0	54.3	69.95	68.40	0.5949	0.5992	1.7458	0.9517	0.91	2.24	5.79	1.55	0.4689	0.2555	0.0292	2.1272	72.15	74.90

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	EPSI-1 DEGREE	EPSI-2 DEGREE	PCT TE SPAN
1	481.0	1028.7	481.0	609.1	0.0	828.9	931.7	1081.7	1048.5	659.5	-931.7	-252.8	27.19	49.01	29.328	29.654	0.0500
2	516.9	1001.1	516.9	622.6	0.0	783.9	991.4	1112.5	1118.0	704.0	-991.4	-328.6	28.74	50.93	24.283	25.923	0.1000
3	552.1	947.9	552.1	601.8	0.0	732.3	1049.7	1143.4	1186.0	728.8	-1049.7	-411.1	30.17	49.72	19.565	21.935	0.1500
4	626.0	838.9	626.0	540.0	0.0	642.1	1203.0	1236.1	1356.1	802.7	-1203.0	-594.0	32.85	45.34	7.929	11.292	0.3000
5	652.2	770.1	652.2	497.2	0.0	588.1	1373.6	1359.5	1520.6	917.8	-1373.6	-771.4	33.68	41.85	-2.982	1.169	0.5000
6	652.5	741.9	652.5	469.9	0.0	574.1	1450.5	1421.3	1590.5	968.7	-1450.5	-847.1	33.69	39.48	-6.800	-3.259	0.6000
7	651.9	736.5	651.9	477.7	0.0	560.6	1487.0	1452.1	1623.7	1011.5	-1487.0	-891.6	33.67	40.34	-8.518	-5.441	0.6500
8	649.1	740.8	649.1	491.9	0.0	553.9	1523.5	1483.0	1656.1	1051.3	-1523.5	-929.1	33.59	41.75	-10.391	-7.594	0.7000
9	629.6	735.5	629.6	488.7	0.0	549.7	1630.2	1575.6	1747.6	1136.4	-1630.2	-1026.0	32.96	41.69	-15.984	-14.212	0.8500
10	621.6	727.2	621.6	456.4	0.0	566.2	1663.6	1606.5	1775.9	1136.0	-1663.6	-1040.3	32.70	38.64	-17.530	-16.272	0.9000
11	614.4	714.0	614.4	414.1	0.0	581.6	1695.4	1637.4	1803.3	1134.1	-1695.4	-1055.7	32.46	34.80	-18.415	-18.030	0.9500

WC1/A1 LBM/SEC SQFT	WC1/A1 KG/SEC SQM	T02/T01	P02/P01	EFF-AD ROTOR %	EFF-P ROTOR %
39.03	190.44	1.2939	2.1968	85.82	87.29

AIRFOIL AERODYNAMIC SUMMARY PRINT

100 PERCENT DESIGN SPEED (STATOR PERFORMANCE) RUN NO 110 SPEED CODE 10 POINT NO 8

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	323.6	258.2	208.7	258.2	247.3	3.3	261.83	344.85	0.4726	0.0810
2	314.7	257.7	209.3	257.7	235.0	0.4	267.78	352.35	0.4234	0.0683
3	298.7	249.3	202.1	249.2	219.9	-6.7	261.37	346.95	0.3638	0.0580
4	267.8	218.4	185.0	218.2	193.6	-9.7	242.58	308.84	0.2053	0.0288
5	247.0	200.6	170.4	200.3	178.7	-10.3	224.42	282.85	0.0513	-0.0107
6	239.0	194.6	162.5	194.3	175.2	-11.3	213.55	272.03	-0.0281	-0.0304
7	238.1	196.3	165.3	196.0	171.3	-10.7	218.16	274.70	-0.0670	-0.0398
8	240.0	201.7	169.7	201.5	169.8	-8.9	224.82	282.07	-0.1014	-0.0496
9	241.8	208.7	172.2	208.6	169.7	-6.1	227.87	286.31	-0.1996	-0.0764
10	241.7	208.7	166.2	208.6	175.5	-3.5	217.37	281.52	-0.2288	-0.0865
11	240.5	207.2	158.4	207.2	180.9	-2.1	204.83	274.22	-0.2667	-0.0959

SL	B-1 DEGREE	B-2 DEGREE	M-1	M-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	PO/PO STAGE	TO/TO STAGE	%EFF-A TOT-STG	%EFF-P TOT-STG
1	52.0	0.7	0.9402	0.7275	-2.44	0.51	14.57	51.30	0.3697	0.2046	0.0471	0.9112	2.2481	1.3140	82.97	84.78
2	50.1	0.1	0.9134	0.7287	-2.33	0.80	12.06	49.99	0.3484	0.1516	0.0355	0.9368	2.2874	1.3051	87.45	88.81
3	48.7	-1.5	0.8644	0.7061	-3.07	0.30	9.34	50.21	0.3394	0.0874	0.0209	0.9664	2.2739	1.2928	90.38	91.42
4	46.7	-2.5	0.7691	0.6154	-6.29	-2.04	7.46	49.22	0.3710	0.0558	0.0141	0.9821	2.1628	1.2781	88.70	89.85
5	46.4	-3.0	0.7026	0.5612	-7.58	-2.23	7.12	49.34	0.3925	0.0371	0.0100	0.9897	2.0988	1.2809	84.02	85.59
6	47.1	-3.3	0.6761	0.5422	-6.66	-0.92	6.76	50.48	0.4028	0.0413	0.0115	0.9892	2.0699	1.2865	80.66	82.53
7	46.0	-3.1	0.6735	0.5475	-7.74	-1.87	7.02	49.18	0.3932	0.0471	0.0133	0.9876	2.0753	1.2854	81.31	83.12
8	45.1	-2.5	0.6788	0.5629	-8.75	-2.75	7.73	47.59	0.3751	0.0453	0.0130	0.9880	2.0943	1.2883	81.61	83.40
9	44.9	-1.7	0.6797	0.5798	-11.08	-4.86	10.69	46.52	0.3569	0.0799	0.0239	0.9788	2.0976	1.3038	77.64	79.82
10	46.9	-0.9	0.6750	0.5764	-11.34	-5.10	12.84	47.86	0.3635	0.1005	0.0304	0.9736	2.0816	1.3188	73.15	75.74
11	49.3	-0.6	0.6674	0.5685	-14.32	-8.18	15.85	49.89	0.3754	0.1272	0.0390	0.9672	2.0571	1.3340	68.54	71.52

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	PCT TE SPAN	EPSI-1 DEGREE	EPSI-2 DEGREE
1	1061.7	847.3	684.7	847.2	811.4	10.8	53.63	70.63	0.0430	27.079	4.641
2	1032.6	845.6	686.8	845.6	771.1	1.4	54.84	72.17	0.0901	24.261	3.911
3	979.9	817.9	663.2	817.6	721.4	-21.8	53.53	71.06	0.1410	20.845	3.324
4	878.5	716.7	607.1	716.0	635.0	-31.9	49.68	63.25	0.2989	11.764	1.653
5	810.3	658.1	559.2	657.2	586.4	-33.9	45.96	57.93	0.5086	2.937	-0.611
6	784.1	638.5	533.3	637.4	574.8	-37.2	43.74	55.71	0.6103	-1.611	-1.740
7	781.1	644.1	542.3	643.2	562.2	-35.2	44.68	56.26	0.6598	-3.839	-2.280
8	787.6	661.8	556.8	661.2	557.0	-29.3	46.04	57.77	0.7107	-5.810	-2.840
9	793.3	684.6	565.1	684.3	556.9	-20.0	46.67	58.64	0.8620	-11.438	-4.377
10	793.0	684.7	545.2	684.6	575.8	-11.4	44.52	57.66	0.9101	-13.110	-4.947
11	789.1	679.7	519.8	679.7	593.7	-7.0	41.95	56.16	0.9571	-15.279	-5.497

NCORR INLET RPM	WCORR INLET LBM/SEC	WCORR INLET KG/SEC	TO/TO STAGE	P02/P01	PO/PO STAGE	EFF-AD STAGE %	EFF-P STAGE %
12464.60	173.90	78.87	1.2939	0.9740	2.1396	82.62	84.37

AIRFOIL AERODYNAMIC SUMMARY PRINT

100 PERCENT DESIGN SPEED (ROTOR PERFORMANCE) RUN NO 110 SPEED CODE 10 POINT NO 4

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	U-1 M/SEC	U-2 M/SEC	V'-1 M/SEC	V'-2 M/SEC	VO'-1 M/SEC	VO'-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	144.4	312.8	144.4	180.3	0.0	255.6	282.6	328.1	317.4	194.3	-282.6	-72.5	132.63	238.65	0.5124	0.5131
2	155.5	301.4	155.5	183.8	0.0	238.9	300.7	337.5	338.6	208.6	-300.7	-98.6	140.48	247.70	0.4249	0.4456
3	166.4	288.4	166.4	181.8	0.0	223.8	318.4	346.8	359.3	219.6	-318.4	-123.0	147.70	248.21	0.3418	0.3769
4	188.6	254.9	188.6	158.6	0.0	199.5	364.9	374.9	410.8	236.5	-364.9	-175.4	160.85	219.17	0.1357	0.1954
5	196.5	237.1	196.5	147.4	0.0	185.8	416.7	412.4	460.7	270.3	-416.7	-226.6	165.00	204.44	-0.0497	0.0209
6	197.0	230.7	197.0	142.8	0.0	181.3	440.0	431.1	482.1	287.8	-440.0	-249.9	165.22	198.27	-0.1175	-0.0555
7	196.8	230.1	196.8	145.9	0.0	178.0	451.1	440.5	492.1	300.3	-451.1	-262.5	165.14	203.55	-0.1498	-0.0934
8	195.8	230.8	195.8	149.1	0.0	176.2	462.1	449.8	501.9	311.6	-462.1	-273.6	164.65	208.99	-0.1848	-0.1312
9	189.3	228.6	189.3	143.7	0.0	177.8	494.5	477.9	529.5	332.8	-494.5	-300.1	161.22	201.40	-0.2842	-0.2485
10	186.8	225.9	186.8	132.5	0.0	182.9	504.6	487.3	538.1	332.0	-504.6	-304.4	159.88	184.21	-0.3095	-0.2850
11	184.8	222.2	184.8	120.9	0.0	186.5	514.3	496.7	546.5	332.9	-514.3	-310.2	158.74	167.14	-0.3226	-0.3154

SL	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	M-1	M-2	M'-1	M'-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	%EFF-A TOTAL	%EFF-P TOTAL
1	0.0	54.5	62.65	21.69	0.4547	0.9066	0.9991	0.5632	-2.43	1.66	9.74	40.96	0.5712	0.1157	0.0227	2.5156	94.40	95.07
2	0.0	52.5	62.45	28.23	0.4913	0.8734	1.0693	0.6044	-1.28	2.44	10.45	34.22	0.5518	0.0695	0.0136	2.4726	96.12	96.58
3	0.0	51.1	62.25	34.25	0.5275	0.8344	1.1388	0.6352	-0.19	3.20	10.80	28.00	0.5438	0.0513	0.0099	2.4117	96.71	97.09
4	0.0	51.7	62.62	48.11	0.6026	0.7299	1.3125	0.6772	0.72	3.00	12.31	14.51	0.5575	0.1018	0.0181	2.2510	91.56	92.46
5	0.0	51.5	64.72	56.90	0.6299	0.6724	1.4766	0.7664	0.56	2.41	11.34	7.82	0.5310	0.1462	0.0236	2.1898	86.00	87.45
6	0.0	51.5	65.81	60.04	0.6314	0.6510	1.5454	0.8120	0.67	2.41	9.74	5.77	0.5154	0.1655	0.0253	2.1739	83.45	85.15
7	0.0	50.4	66.34	60.66	0.6309	0.6490	1.5776	0.8467	0.89	2.57	8.28	5.67	0.4993	0.1599	0.0244	2.1836	83.69	85.37
8	0.0	49.4	66.93	61.09	0.6275	0.6502	1.6083	0.8778	1.41	2.97	7.49	5.85	0.4864	0.1576	0.0239	2.2000	83.68	85.37
9	0.0	50.6	68.95	64.08	0.6050	0.6378	1.6923	0.9284	1.81	3.23	5.60	4.88	0.4757	0.1971	0.0274	2.2197	79.04	81.24
10	0.0	53.7	69.58	66.20	0.5966	0.6255	1.7181	0.9193	1.47	2.85	5.67	3.38	0.4876	0.2362	0.0299	2.2129	75.04	77.63
11	0.0	56.8	70.12	68.53	0.5896	0.6115	1.7434	0.9159	1.07	2.41	5.92	1.58	0.4944	0.2681	0.0305	2.2046	71.83	74.74

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	EPSI-1 DEGREE	EPSI-2 DEGREE	PCT TE SPAN
1	473.9	1026.1	473.9	591.4	0.0	838.6	927.2	1076.5	1041.3	637.5	-927.2	-238.0	27.16	48.88	29.358	29.398	0.0500
2	510.3	989.0	510.3	603.1	0.0	783.8	986.6	1107.2	1110.8	684.4	-986.6	-323.5	28.77	50.73	24.344	25.534	0.1000
3	546.0	946.2	546.0	596.6	0.0	734.3	1044.7	1138.0	1178.8	720.3	-1044.7	-403.6	30.25	50.84	19.585	21.595	0.1500
4	618.8	836.2	618.8	520.4	0.0	654.6	1197.3	1230.2	1347.8	775.9	-1197.3	-575.6	32.94	44.89	7.773	11.195	0.3000
5	644.8	778.1	644.8	483.6	0.0	609.6	1367.1	1353.1	1511.5	886.9	-1367.1	-743.5	33.79	41.87	-2.847	1.198	0.5000
6	646.2	757.0	646.2	468.4	0.0	594.7	1443.6	1414.5	1581.6	944.2	-1443.6	-819.8	33.84	40.61	-6.734	-3.182	0.6000
7	645.7	755.1	645.7	478.5	0.0	584.1	1480.0	1445.2	1614.7	985.1	-1480.0	-861.1	33.82	41.69	-8.584	-5.349	0.6500
8	642.5	757.4	642.5	489.2	0.0	578.1	1516.3	1475.9	1646.8	1022.4	-1516.3	-897.8	33.72	42.80	-10.586	-7.514	0.7000
9	621.1	750.2	621.1	471.6	0.0	583.4	1622.5	1568.1	1737.3	1091.9	-1622.5	-984.8	33.02	41.25	-16.283	-14.238	0.8500
10	613.0	741.1	613.0	434.7	0.0	600.2	1655.6	1598.9	1765.5	1089.2	-1655.6	-998.7	32.74	37.73	-17.734	-16.329	0.9000
11	606.3	729.2	606.3	396.7	0.0	611.9	1687.3	1629.6	1792.9	1092.3	-1687.3	-1017.7	32.51	34.23	-18.483	-18.073	0.9500

WC1/A1 LBM/SEC SQFT	WC1/A1 KG/SEC SQM	T02/T01	P02/P01	EFF-AD ROTOR %	EFF-P ROTOR %
38.89	189.79	1.3052	2.2609	86.06	87.55

AIRFOIL AERODYNAMIC SUMMARY PRINT

100 PERCENT DESIGN SPEED (STATOR PERFORMANCE) RUN NO 110 SPEED CODE 10 POINT NO 4

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	321.8	247.3	202.4	247.2	250.1	4.2	261.62	348.63	0.4669	0.0820
2	310.1	242.6	202.5	242.6	234.8	-0.2	266.88	349.56	0.4152	0.0700
3	297.1	233.6	199.2	233.5	220.4	-5.7	266.26	341.60	0.3579	0.0606
4	265.7	206.3	178.0	206.1	197.3	-8.3	240.34	305.80	0.2031	0.0328
5	248.4	192.7	165.5	192.5	185.3	-8.0	224.46	284.70	0.0503	-0.0075
6	242.6	188.0	161.0	187.7	181.5	-10.1	218.55	275.53	-0.0267	-0.0273
7	242.6	190.2	164.3	190.0	178.6	-9.3	223.98	278.79	-0.0626	-0.0367
8	244.0	195.2	167.8	195.1	177.2	-7.1	229.40	285.87	-0.0941	-0.0465
9	245.3	202.2	166.5	202.1	180.1	-4.3	226.23	289.77	-0.1907	-0.0745
10	244.8	202.0	159.3	202.0	185.9	-1.6	213.94	284.70	-0.2229	-0.0849
11	243.8	201.0	152.4	201.0	190.3	-0.4	202.73	278.59	-0.2646	-0.0951

SL	B-1 DEGREE	B-2 DEGREE	M-1	M-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	P0/P0 STAGE	T0/T0 STAGE	%EFF-A TOT-STG	%EFF-P TOT-STG
1	53.1	0.9	0.9372	0.6960	-1.37	1.59	14.81	52.13	0.4008	0.1908	0.0439	0.9176	2.3063	1.3189	84.60	86.29
2	50.9	-0.1	0.8024	0.6852	-1.52	1.61	11.92	50.95	0.3879	0.1483	0.0348	0.9394	2.3183	1.3063	88.70	89.95
3	49.1	-1.4	0.8633	0.6604	-2.66	0.72	9.46	50.50	0.3891	0.1159	0.0277	0.9556	2.2988	1.2953	90.97	91.96
4	48.4	-2.3	0.7645	0.5802	-4.62	-0.37	7.70	50.66	0.4154	0.0546	0.0138	0.9825	2.2085	1.2853	89.10	90.24
5	48.3	-2.4	0.7073	0.5381	-5.71	-0.35	7.69	50.63	0.4329	0.0356	0.0096	0.9899	2.1652	1.2926	84.45	86.04
6	48.4	-3.1	0.6875	0.5230	-5.38	0.36	7.02	51.51	0.4454	0.0522	0.0145	0.9859	2.1424	1.2983	81.59	83.44
7	47.4	-2.8	0.6873	0.5294	-6.39	-0.52	7.36	50.19	0.4364	0.0596	0.0169	0.9838	2.1499	1.2990	81.80	83.64
8	46.6	-2.1	0.6906	0.5433	-7.21	-1.22	8.18	48.68	0.4182	0.0549	0.0158	0.9850	2.1677	1.3023	81.89	83.73
9	47.5	-1.2	0.6083	0.5592	-8.48	-2.26	11.16	48.66	0.4026	0.0777	0.0232	0.9789	2.1727	1.3234	76.79	79.15
10	49.7	-0.5	0.6824	0.5552	-8.54	-2.30	13.33	50.17	0.4094	0.0952	0.0289	0.9745	2.1568	1.3387	72.54	75.31
11	51.8	-0.1	0.6757	0.5494	-11.83	-5.69	16.31	51.92	0.4187	0.1173	0.0360	0.9691	2.1364	1.3528	68.67	71.78

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	PCT TE SPAN	EPSI-1 DEGREE	EPSI-2 DEGREE
1	1055.8	811.3	664.2	811.2	820.7	13.9	53.58	71.40	0.0430	26.753	4.696
2	1017.3	796.0	664.3	796.0	770.5	-0.7	54.66	71.59	0.0901	23.790	4.011
3	974.8	766.3	653.7	766.1	723.1	-18.8	54.53	69.96	0.1410	20.505	3.470
4	871.9	676.8	584.0	676.2	647.4	-27.4	49.22	62.63	0.2989	11.925	1.878
5	814.9	632.3	542.8	631.7	607.8	-26.2	45.97	58.31	0.5086	2.884	-0.429
6	795.9	616.7	528.1	615.8	595.4	-33.1	44.76	56.43	0.6103	-1.529	-1.565
7	796.0	624.1	538.9	623.3	585.9	-30.4	45.87	57.10	0.6598	-3.589	-2.105
8	800.5	640.4	550.4	640.0	581.3	-23.3	46.98	58.55	0.7107	-5.393	-2.666
9	804.7	663.4	546.4	663.2	590.7	-14.0	46.33	59.35	0.8620	-10.927	-4.271
10	803.2	662.7	522.6	662.6	609.8	-5.3	43.82	58.31	0.9101	-12.770	-4.865
11	799.8	659.5	500.0	659.5	624.3	-1.4	41.52	57.06	0.9571	-15.159	-5.449

NCORR INLET RPM	WCORR INLET LBM/SEC	WCORR INLET KG/SEC	T0/T0 STAGE	P02/P01	P0/P0 STAGE	EFF-AD STAGE %	EFF-P STAGE %
12467.10	173.30	78.59	1.3052	0.9728	2.1995	82.81	84.59

AIRFOIL AERODYNAMIC SUMMARY PRINT

100 PERCENT DESIGN SPEED (ROTOR PERFORMANCE) RUN NO 110 SPEED CODE 10 POINT NO 5

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	U-1 M/SEC	U-2 M/SEC	V'-1 M/SEC	V'-2 M/SEC	VO'-1 M/SEC	VO'-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	144.0	312.1	144.0	178.9	0.0	255.7	282.6	328.1	317.2	193.0	-282.6	-72.4	132.43	237.25	0.5127	0.5147
2	154.9	301.3	154.9	182.3	0.0	240.0	300.7	337.5	338.2	206.7	-300.7	-97.5	140.17	245.91	0.4254	0.4482
3	165.6	289.6	165.6	181.0	0.0	226.1	318.4	346.8	358.9	217.5	-318.4	-120.7	147.30	247.35	0.3427	0.3791
4	187.3	256.5	187.3	156.1	0.0	203.5	364.9	374.9	410.2	231.9	-364.9	-171.4	160.32	215.32	0.1378	0.1965
5	195.5	238.8	195.5	146.6	0.0	188.5	416.7	412.4	460.2	267.6	-416.7	-223.9	164.64	204.39	-0.0466	0.0220
6	196.0	233.5	196.0	142.6	0.0	184.9	440.0	431.1	481.7	284.6	-440.0	-246.2	164.93	199.15	-0.1156	-0.0548
7	195.9	233.4	195.9	146.1	0.0	182.1	451.1	440.5	493.8	296.9	-451.1	-258.4	164.85	204.98	-0.1488	-0.0928
8	194.9	234.2	194.9	149.0	0.0	180.7	462.1	449.8	505.7	307.7	-462.1	-269.1	164.33	209.95	-0.1843	-0.1310
9	188.3	230.9	188.3	142.2	0.0	181.9	494.5	477.9	529.5	328.4	-494.5	-296.0	160.84	200.32	-0.2837	-0.2487
10	185.8	228.6	185.8	131.5	0.0	187.0	504.6	487.3	537.7	327.8	-504.6	-300.3	159.49	183.86	-0.3088	-0.2849
11	183.8	225.5	183.8	120.5	0.0	190.6	514.2	496.7	546.1	328.9	-514.2	-306.1	158.34	167.64	-0.3222	-0.3153

SL	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	M-1	M-2	M'-1	M'-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	%EFF-A TOTAL	%EFF-P TOTAL
1	0.0	54.7	62.73	21.82	0.4530	0.9040	0.9980	0.5592	-2.35	1.74	9.87	40.91	0.5749	0.1191	0.0234	2.5116	94.24	94.93
2	0.0	52.8	62.56	28.20	0.4889	0.8723	1.0678	0.5984	-1.17	2.54	10.41	34.36	0.5574	0.0757	0.0149	2.4735	95.79	96.29
3	0.0	51.5	62.38	33.90	0.5244	0.8372	1.1368	0.6288	-0.06	3.32	10.45	28.48	0.5502	0.0574	0.0112	2.4229	96.35	96.77
4	0.0	52.7	62.79	47.92	0.5981	0.7329	1.3095	0.6626	0.88	3.17	12.12	14.87	0.5703	0.1151	0.0205	2.2653	90.61	91.62
5	0.0	52.1	64.84	56.72	0.6261	0.6761	1.4740	0.7577	0.67	2.52	11.16	8.11	0.5378	0.1487	0.0241	2.2106	85.97	87.43
6	0.0	52.1	65.90	59.70	0.6280	0.6577	1.5430	0.8016	0.77	2.50	9.40	6.21	0.5237	0.1689	0.0261	2.2019	83.39	85.11
7	0.0	50.9	66.43	60.24	0.6275	0.6570	1.5752	0.8355	0.99	2.67	7.86	6.19	0.5082	0.1640	0.0253	2.2150	83.57	85.28
8	0.0	50.1	67.03	60.69	0.6240	0.6584	1.6059	0.8647	1.51	3.07	7.10	6.34	0.4957	0.1637	0.0252	2.2326	83.36	85.12
9	0.0	51.6	69.05	64.00	0.6013	0.6426	1.6898	0.9138	1.91	3.33	5.53	5.05	0.4860	0.2039	0.0284	2.2480	78.67	80.93
10	0.0	54.5	69.67	66.07	0.5930	0.6317	1.7157	0.9056	1.57	2.94	5.54	3.60	0.4974	0.2415	0.0308	2.2440	74.88	77.53
11	0.0	57.5	70.21	68.34	0.5859	0.6190	1.7411	0.9030	1.17	2.50	5.72	1.88	0.5037	0.2720	0.0312	2.2385	71.84	74.81

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	EPSI-1 DEGREE	EPSI-2 DEGREE	PCT TE SPAN
1	472.4	1023.9	472.4	587.1	0.0	838.9	927.2	1076.5	1040.6	633.3	-927.2	-237.6	27.12	48.59	29.375	29.490	0.0500
2	508.1	988.7	508.1	598.0	0.0	787.3	986.6	1107.2	1109.8	678.2	-986.6	-319.9	28.71	50.36	24.374	25.677	0.1000
3	543.2	950.3	543.2	593.8	0.0	741.9	1044.7	1137.9	1177.5	713.7	-1044.7	-396.0	30.17	50.66	19.635	21.720	0.1500
4	614.7	841.5	614.7	512.2	0.0	667.6	1197.2	1230.1	1345.8	760.3	-1197.2	-562.5	32.84	44.22	7.897	11.258	0.3000
5	641.4	783.5	641.4	481.1	0.0	618.5	1367.1	1353.0	1510.0	878.1	-1367.1	-734.5	33.72	41.86	-2.669	1.258	0.5000
6	643.2	766.1	643.2	468.0	0.0	606.5	1443.6	1414.5	1580.4	933.7	-1443.6	-807.9	33.78	40.79	-6.623	-3.137	0.6000
7	642.7	765.9	642.7	479.3	0.0	597.3	1479.9	1445.2	1613.5	974.0	-1479.9	-847.9	33.76	41.98	-8.523	-5.319	0.6500
8	639.4	768.5	639.4	489.0	0.0	592.9	1516.2	1475.9	1645.5	1009.4	-1516.2	-883.0	33.66	43.00	-10.562	-7.505	0.7000
9	617.8	757.7	617.8	466.7	0.0	597.0	1622.4	1568.1	1736.1	1077.4	-1622.4	-971.1	32.94	41.03	-16.253	-14.249	0.8500
10	609.7	750.1	609.7	431.4	0.0	613.7	1655.6	1598.8	1764.3	1075.4	-1655.6	-985.1	32.67	37.66	-17.693	-16.325	0.9000
11	603.0	739.8	603.0	395.3	0.0	625.4	1687.2	1629.5	1791.8	1079.2	-1687.2	-1004.2	32.43	34.33	-18.461	-18.063	0.9500

WC1/A1 LBM/SEC SQFT	WC1/A1 KG/SEC SQM	T02/T01	P02/P01	EFF-AD ROTOR %	EFF-P ROTOR %
38.73	189.02	1.3104	2.2817	85.66	87.21

AIRFOIL AERODYNAMIC SUMMARY PRINT

100 PERCENT DESIGN SPEED (STATOR PERFORMANCE) RUN NO 110 SPEED CODE 10 POINT NO 5

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	320.8	241.2	200.6	241.2	250.3	4.0	259.94	345.88	0.4687	0.0818
2	309.6	236.8	200.5	236.8	235.9	-0.3	264.88	346.51	0.4177	0.0698
3	297.9	228.4	198.0	228.4	222.7	-5.8	265.17	338.87	0.3598	0.0608
4	266.9	202.0	175.3	201.9	201.3	-3.1	237.17	303.14	0.2076	0.0335
5	249.7	188.9	164.4	188.8	188.0	-8.2	224.28	282.87	0.0492	-0.0066
6	245.0	185.5	160.6	185.3	185.1	-9.5	219.27	275.45	-0.0267	-0.0263
7	245.6	188.2	164.2	188.0	182.6	-8.6	225.21	279.30	-0.0620	-0.0357
8	247.1	193.3	167.5	193.2	181.7	-6.4	230.22	286.59	-0.0932	-0.0455
9	247.3	200.0	165.0	200.0	184.3	-2.9	225.40	290.28	-0.1908	-0.0738
10	247.3	200.3	158.2	200.3	190.1	-0.6	213.72	285.99	-0.2232	-0.0844
11	246.7	200.1	151.8	200.1	194.5	0.5	203.23	281.13	-0.2546	-0.0949

SL	B-1 DEGREE	B-2 DEGREE	M-1	M-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	P0/P0 STAGE	T0/T0 STAGE	%EFF-A TOT-STG	%EFF-P TOT-STG
1	53.4	0.9	0.9334	0.6771	-1.08	1.87	14.77	52.46	0.4183	0.1799	0.0414	0.9227	2.3160	1.3190	85.06	86.70
2	51.3	-0.1	0.9000	0.6668	-1.08	2.04	11.90	51.40	0.4070	0.1414	0.0331	0.9424	2.3278	1.3077	88.78	90.02
3	49.6	-1.4	0.8647	0.6437	-2.16	1.21	9.42	51.04	0.4104	0.1147	0.0274	0.9559	2.3114	1.2983	90.71	91.73
4	49.3	-2.3	0.7662	0.5660	-3.63	0.62	7.73	51.62	0.4376	0.0506	0.0129	0.9837	2.2258	1.2907	88.39	89.62
5	48.9	-2.5	0.7100	0.5260	-5.12	0.24	7.57	51.35	0.4544	0.0366	0.0099	0.9895	2.1855	1.2956	84.45	86.06
6	49.1	-2.9	0.6932	0.5144	-4.75	0.99	7.17	51.99	0.4648	0.0554	0.0154	0.9848	2.1683	1.3040	81.46	83.35
7	48.0	-2.6	0.6945	0.5218	-5.74	0.13	7.55	50.65	0.4553	0.0633	0.0179	0.9826	2.1777	1.3056	81.53	83.42
8	47.4	-1.9	0.6978	0.5361	-6.44	-0.45	8.35	49.27	0.4374	0.0592	0.0170	0.9836	2.1961	1.3096	81.44	83.36
9	48.4	-0.8	0.6924	0.5511	-7.56	-1.34	11.54	49.20	0.4199	0.0769	0.0230	0.9789	2.2004	1.3305	76.50	78.93
10	50.5	-0.2	0.6877	0.5485	-7.71	-1.47	13.62	50.71	0.4260	0.0940	0.0285	0.9745	2.1871	1.3459	72.47	75.29
11	52.5	0.1	0.6822	0.5450	-11.11	-4.97	16.56	52.39	0.4333	0.1135	0.0348	0.9696	2.1705	1.3603	68.81	71.97

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	PCT TE SPAN	EPSI-1 DEGREE	EPSI-2 DEGREE
1	1052.4	791.4	658.3	791.3	821.1	13.0	53.24	70.84	0.0430	26.857	4.685
2	1015.8	777.0	657.8	777.0	774.0	-0.9	54.25	70.97	0.0901	23.933	4.001
3	977.5	749.5	649.5	749.3	730.5	-19.0	54.31	69.40	0.1410	20.612	3.481
4	875.7	662.8	575.2	662.3	660.3	-26.5	48.57	62.09	0.2989	11.896	1.921
5	819.3	619.9	539.4	619.3	616.7	-27.0	45.93	57.94	0.5086	2.819	-0.380
6	804.0	608.7	526.8	607.9	607.3	-31.1	44.91	56.41	0.6103	-1.530	-1.506
7	805.9	617.4	538.8	616.7	599.2	-28.1	46.13	57.20	0.6598	-3.554	-2.044
8	810.7	634.4	549.5	634.0	596.1	-21.1	47.15	58.70	0.7107	-5.339	-2.606
9	811.5	656.2	541.4	656.2	604.6	-9.5	46.16	59.45	0.8620	-10.931	-4.230
10	811.3	657.1	519.0	657.1	623.7	-1.8	43.77	58.57	0.9101	-12.786	-4.833
11	809.4	656.6	498.0	656.6	638.1	1.5	41.62	57.58	0.9571	-15.161	-5.435

NCORR INLET RPM	WCORR INLET LBM/SEC	WCORR INLET KG/SEC	T0/T0 STAGE	P02/P01	P0/P0 STAGE	EFF-AD STAGE %	EFF-P STAGE %
12462.80	172.60	78.28	1.3104	0.9734	2.2210	82.53	84.36

AIRFOIL AERODYNAMIC SUMMARY PRINT

100 PERCENT DESIGN SPEED (ROTOR PERFORMANCE) RUN NO 110 SPEED CODE 10 POINT NO 7

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	U-1 M/SEC	U-2 M/SEC	V'-1 M/SEC	V'-2 M/SEC	VO'-1 M/SEC	VO'-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	141.5	313.8	141.5	178.2	0.0	253.3	283.4	329.0	316.8	191.7	-283.4	-70.7	130.82	237.22	0.5103	0.5212
2	152.3	301.9	152.3	179.3	0.0	242.8	301.6	338.4	337.8	208.2	-301.6	-95.6	138.55	242.62	0.4222	0.4574
3	162.6	290.6	162.6	176.9	0.0	230.5	319.3	347.8	358.3	212.3	-319.3	-117.3	145.61	242.33	0.3400	0.3865
4	184.1	260.0	184.1	154.0	0.0	209.5	365.9	376.0	409.6	226.8	-365.9	-166.5	158.79	214.14	0.1376	0.1988
5	192.5	243.5	192.5	144.1	0.0	196.2	417.8	413.5	460.0	260.8	-417.8	-217.3	163.38	202.23	-0.0497	0.0236
6	193.0	239.9	193.0	142.5	0.0	193.0	441.2	432.3	481.6	278.5	-441.2	-239.3	163.64	200.46	-0.1205	-0.0544
7	192.7	240.4	192.7	146.1	0.0	191.0	452.3	441.7	491.7	290.2	-452.3	-250.8	163.49	206.45	-0.1545	-0.0937
8	191.6	240.8	191.6	147.3	0.0	190.5	463.4	451.1	501.5	299.3	-463.4	-260.6	162.90	208.64	-0.1897	-0.1329
9	185.1	237.2	185.1	139.1	0.0	192.2	495.9	479.3	529.3	319.0	-495.9	-287.1	159.37	197.03	-0.2849	-0.2505
10	182.8	235.6	182.8	129.6	0.0	196.8	506.0	488.7	538.0	319.3	-506.0	-291.8	158.03	182.45	-0.3095	-0.2858
11	180.8	233.1	180.8	118.8	0.0	200.6	515.7	498.1	546.5	320.3	-515.7	-297.5	156.88	166.46	-0.3232	-0.3155

SL	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	M-1	M-2	M'-1	M'-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	%EFF-A TOTAL	%EFF-P TOTAL
1	0.0	55.2	63.16	21.51	0.4440	0.9062	0.9936	0.5537	-1.92	2.18	9.57	41.65	0.5802	0.1199	0.0236	2.5288	94.27	94.97
2	0.0	53.7	62.98	28.22	0.4791	0.8705	1.0629	0.5859	-0.75	2.97	10.43	34.76	0.5688	0.0372	0.0171	2.4811	95.22	95.78
3	0.0	52.8	62.84	33.81	0.5134	0.8361	1.1311	0.6108	0.40	3.78	10.36	29.02	0.5660	0.0763	0.0149	2.4336	95.25	95.80
4	0.0	53.9	63.25	47.49	0.5856	0.7396	1.3028	0.6452	1.35	3.63	11.68	15.77	0.5851	0.1260	0.0227	2.3995	90.02	91.11
5	0.0	53.6	65.24	56.39	0.6142	0.6855	1.4678	0.7342	1.07	2.92	10.83	8.85	0.5572	0.1626	0.0266	2.2559	85.12	86.71
6	0.0	53.3	66.31	59.00	0.6159	0.6721	1.5368	0.7802	1.17	2.90	8.71	7.30	0.5415	0.1794	0.0283	2.2585	82.91	84.73
7	0.0	52.3	66.85	59.49	0.6149	0.6728	1.5688	0.8121	1.41	3.08	7.11	7.36	0.5274	0.1768	0.0279	2.2753	82.86	84.71
8	0.0	51.9	67.46	60.20	0.6111	0.6722	1.5994	0.8356	1.94	3.49	6.60	7.26	0.5195	0.1826	0.0285	2.2903	82.06	84.01
9	0.0	53.7	69.43	63.82	0.5890	0.6552	1.6840	0.8811	2.29	3.71	5.35	5.61	0.5099	0.2247	0.0315	2.3060	77.28	79.76
10	0.0	56.3	70.03	65.78	0.5811	0.6464	1.7102	0.8760	1.93	3.30	5.26	4.25	0.5190	0.2576	0.0332	2.3070	74.05	76.88
11	0.0	59.1	70.57	68.07	0.5743	0.6353	1.7358	0.8732	1.52	2.86	5.45	2.50	0.5253	0.2871	0.0333	2.3050	71.21	74.34

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	EPSI-1 DEGREE	EPSI-2 DEGREE	PCT TE SPAN
1	464.4	1029.6	464.4	584.7	0.0	847.4	929.8	1079.5	1039.3	629.1	-929.8	-232.1	26.79	48.59	29.269	29.860	0.0500
2	499.6	990.4	499.6	588.3	0.0	796.7	989.4	1110.3	1108.4	666.7	-989.4	-313.6	28.38	49.69	24.191	26.204	0.1000
3	533.6	953.4	533.6	580.5	0.0	756.3	1047.6	1141.1	1175.7	696.5	-1047.6	-384.8	29.82	49.63	19.479	22.143	0.1500
4	604.1	853.0	604.1	505.3	0.0	687.3	1200.6	1233.6	1344.0	744.2	-1200.6	-546.3	32.52	43.86	7.884	11.392	0.3000
5	631.6	798.9	631.6	472.9	0.0	643.8	1370.9	1356.8	1509.4	855.6	-1370.9	-713.0	33.46	41.42	-2.850	1.353	0.5000
6	633.2	787.1	633.2	467.5	0.0	633.3	1447.6	1418.4	1580.1	913.8	-1447.6	-785.1	33.51	41.06	-6.906	-3.119	0.6000
7	632.3	788.9	632.3	479.4	0.0	626.5	1484.1	1449.2	1613.2	952.2	-1484.1	-822.7	33.48	42.29	-8.854	-5.366	0.6500
8	628.6	790.1	628.6	483.3	0.0	625.0	1520.5	1480.0	1645.3	982.1	-1520.5	-855.0	33.36	42.73	-10.868	-7.614	0.7000
9	607.5	778.4	607.5	456.5	0.0	630.5	1627.0	1572.5	1736.7	1046.8	-1627.0	-942.0	32.64	40.35	-16.325	-14.352	0.8500
10	599.8	773.1	599.8	425.1	0.0	645.8	1660.2	1603.3	1765.3	1047.7	-1660.2	-957.5	32.37	37.37	-17.732	-16.375	0.9000
11	593.2	764.7	593.2	389.6	0.0	658.0	1692.0	1634.1	1793.0	1051.0	-1692.0	-976.1	32.13	34.09	-18.515	-18.078	0.9500

WC1/A1 LBM/SEC SQFT	WC1/A1 KG/SEC SQM	T02/T01	P02/P01	EFF-AD ROTOR %	EFF-P ROTOR %
38.26	186.72	1.3219	2.3247	84.69	86.38

AIRFOIL AERODYNAMIC SUMMARY PRINT

100 PERCENT DESIGN SPEED (STATOR PERFORMANCE) RUN NO 110 SPEED CODE 10 POINT NO 7

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	321.9	232.1	199.2	232.1	252.9	3.8	259.54	342.70	0.4762	0.0805
2	309.6	226.0	197.0	226.0	238.8	-0.8	261.51	339.53	0.4273	0.0686
3	298.3	218.1	193.6	218.0	227.0	-5.8	260.27	331.56	0.3658	0.0607
4	269.7	193.5	172.7	193.3	207.2	-6.9	235.19	297.04	0.2059	0.0367
5	253.7	182.2	161.4	182.1	195.7	-6.5	221.90	278.87	0.0523	-0.0027
6	250.7	180.9	159.7	180.7	193.3	-7.4	220.03	274.87	-0.0221	-0.0222
7	251.9	183.9	163.4	183.7	191.6	-6.4	225.98	279.09	-0.0569	-0.0318
8	253.0	188.8	165.2	188.8	191.6	-4.2	228.57	285.85	-0.0890	-0.0418
9	253.0	195.5	161.6	195.5	194.6	-0.8	222.10	289.71	-0.1913	-0.0716
10	253.5	196.4	155.6	196.4	200.0	1.7	212.00	286.75	-0.2232	-0.0827
11	253.3	197.7	149.3	197.7	204.6	3.1	201.69	284.17	-0.2636	-0.0942

SL	B-1 DEGREE	B-2 DEGREE	M-1	M-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	P0/P0 STAGE	T0/T0 STAGE	%EFF-A TOT-STG	%EFF-P TOT-STG
1	54.0	0.9	0.9337	0.6469	-0.50	2.46	14.77	53.04	0.4510	0.1690	0.0389	0.9274	2.3444	1.3218	85.67	87.26
2	52.3	-0.2	0.8962	0.6312	-0.13	2.99	11.78	52.47	0.4454	0.1349	0.0316	0.9453	2.3443	1.3112	88.58	89.86
3	50.9	-1.5	0.8615	0.6094	-0.92	2.45	9.35	52.34	0.4502	0.1092	0.0261	0.9582	2.3299	1.3037	90.04	91.14
4	50.6	-2.0	0.7705	0.5375	-2.40	1.85	7.98	52.60	0.4805	0.0579	0.0146	0.9813	2.2555	1.2986	87.64	88.96
5	50.5	-2.0	0.7170	0.5028	-3.46	1.90	8.03	52.55	0.4964	0.0457	0.0124	0.9868	2.2253	1.3077	83.47	85.21
6	50.4	-2.4	0.7052	0.4973	-3.37	2.37	7.74	52.79	0.5023	0.0625	0.0174	0.9823	2.2186	1.3163	80.88	82.88
7	49.5	-2.0	0.7077	0.5052	-4.25	1.62	8.17	51.52	0.4927	0.0689	0.0195	0.9805	2.2295	1.3193	80.66	82.69
8	49.3	-1.3	0.7094	0.5183	-4.55	1.44	8.99	50.52	0.4765	0.0646	0.0185	0.9816	2.2469	1.3251	80.08	82.19
9	50.5	-0.2	0.7026	0.5329	-5.41	0.81	12.11	50.77	0.4602	0.0811	0.0243	0.9772	2.2529	1.3479	75.11	77.75
10	52.4	0.5	0.6998	0.5324	-5.83	0.41	14.26	51.94	0.4641	0.0984	0.0298	0.9725	2.2436	1.3627	71.63	74.62
11	54.4	0.9	0.6954	0.5332	-9.28	-3.13	17.31	53.47	0.4666	0.1114	0.0342	0.9692	2.2341	1.3779	68.32	71.64

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	PCT TE SPAN	EPSI-1 DEGREE	EPSI-2 DEGREE
1	1056.3	761.6	653.6	761.4	829.8	12.5	53.16	70.19	0.0430	27.284	4.613
2	1015.8	741.5	646.4	741.5	783.6	-2.5	53.56	69.54	0.0901	24.484	3.929
3	978.7	715.6	635.1	715.3	744.7	-19.0	53.31	67.91	0.1410	20.957	3.479
4	884.9	634.7	566.7	634.3	679.7	-22.6	48.17	60.84	0.2989	11.798	2.103
5	832.3	597.9	529.6	597.5	642.0	-21.3	45.45	57.11	0.5086	2.999	-0.153
6	822.6	593.5	523.9	593.0	634.1	-24.4	45.06	56.30	0.6103	-1.266	-1.273
7	826.3	603.2	536.2	602.9	628.7	-20.9	46.28	57.16	0.6598	-3.261	-1.820
8	830.0	619.5	542.0	619.3	628.6	-13.7	46.81	58.54	0.7107	-5.100	-2.396
9	829.9	641.4	530.1	641.4	638.6	-2.8	45.49	59.34	0.8620	-10.961	-4.104
10	831.6	644.4	510.7	644.3	656.3	5.4	43.42	58.73	0.9101	-12.788	-4.741
11	831.1	648.8	489.9	648.7	671.4	10.1	41.31	58.20	0.9571	-15.100	-5.395

NCORR INLET RPM	WCORR INLET LBM/SEC	WCORR INLET KG/SEC	T0/T0 STAGE	P02/P01	P0/P0 STAGE	EFF-AD STAGE %	EFF-P STAGE %
12467.40	170.50	77.32	1.3219	0.9727	2.2612	81.58	83.55

AIRFOIL AERODYNAMIC SUMMARY PRINT
RUN NO 110 SPEED CODE 10 POINT NO 6

100 PERCENT DESIGN SPEED (ROTOR PERFORMANCE)

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	U-1 M/SEC	U-2 M/SEC	V'-1 M/SEC	V'-2 M/SEC	VO'-1 M/SEC	VO'-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	139.1	314.1	139.1	176.6	0.0	259.8	283.0	328.5	315.3	189.5	-283.0	-68.8	129.79	237.00	0.5110	0.5232
2	149.7	301.9	149.7	178.3	0.0	243.6	301.1	337.9	336.3	201.7	-301.1	-94.3	137.56	243.42	0.4223	0.4602
3	159.9	290.2	159.9	174.0	0.0	232.2	318.8	347.3	356.7	208.7	-318.8	-115.1	144.65	240.21	0.3404	0.3886
4	181.4	261.0	181.4	151.5	0.0	212.6	365.4	375.4	407.9	222.4	-365.4	-162.8	158.11	212.45	0.1398	0.1995
5	190.2	245.7	190.2	142.8	0.0	199.9	417.2	412.9	458.5	256.4	-417.2	-213.0	163.08	202.53	-0.0490	0.0238
6	190.8	242.5	190.8	140.7	0.0	197.5	440.6	431.7	480.1	273.2	-440.6	-234.2	163.40	200.12	-0.1205	-0.0546
7	190.6	243.4	190.6	144.7	0.0	195.7	451.7	441.1	490.2	284.8	-451.7	-245.3	163.27	206.65	-0.1546	-0.0941
8	189.5	243.5	189.5	145.6	0.0	195.2	462.7	450.4	500.0	293.8	-462.7	-255.2	162.68	208.43	-0.1897	-0.1336
9	183.3	239.6	183.3	136.6	0.0	196.8	495.2	478.6	528.0	313.1	-495.2	-281.7	159.23	195.67	-0.2839	-0.2508
10	181.1	238.1	181.1	128.0	0.0	200.7	505.3	487.9	536.7	314.4	-505.3	-287.2	157.93	182.53	-0.3084	-0.2858
11	179.1	235.6	179.1	117.6	0.0	204.2	514.9	497.3	545.2	315.9	-514.9	-293.2	156.78	167.20	-0.3226	-0.3154

SL	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	M-1	M-2	M'-1	M'-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	%EFF-A TOTAL	%EFF-P TOTAL
1	0.0	55.6	63.52	21.17	0.4368	0.9078	0.9399	0.5478	-1.56	2.54	9.22	42.36	0.5363	0.1232	0.0243	2.5416	94.18	94.89
2	0.0	54.0	63.34	28.07	0.4714	0.8714	1.0588	0.5822	-0.39	3.33	10.29	35.26	0.5715	0.0859	0.0169	2.4926	95.32	95.88
3	0.0	53.5	63.19	33.77	0.5052	0.8353	1.1267	0.6006	0.75	4.14	10.32	29.42	0.5750	0.0852	0.0166	2.4497	94.76	95.37
4	0.0	54.8	63.57	47.33	0.5771	0.7426	1.2980	0.6327	1.67	3.95	11.53	16.24	0.5957	0.1342	0.0242	2.3185	89.55	90.71
5	0.0	54.4	65.47	56.10	0.6073	0.6916	1.4640	0.7219	1.30	3.15	10.54	9.36	0.5574	0.1675	0.0276	2.2860	84.95	86.58
6	0.0	54.3	66.52	58.77	0.6093	0.6789	1.5332	0.7659	1.38	3.11	8.48	7.74	0.5538	0.1867	0.0295	2.2916	82.54	84.44
7	0.0	53.2	67.05	59.19	0.6085	0.6805	1.5653	0.7963	1.61	3.28	6.81	7.86	0.5401	0.1845	0.0294	2.3115	82.45	84.38
8	0.0	52.9	67.65	59.98	0.6048	0.6791	1.5950	0.8195	2.13	3.68	6.39	7.67	0.5321	0.1904	0.0299	2.3257	81.64	83.66
9	0.0	54.9	69.59	63.81	0.5837	0.6609	1.6813	0.8637	2.44	3.87	5.34	5.78	0.5226	0.2327	0.0326	2.3418	76.90	79.46
10	0.0	57.1	70.18	65.71	0.5760	0.6527	1.7077	0.8629	2.07	3.45	5.18	4.47	0.5292	0.2615	0.0338	2.3447	74.07	76.95
11	0.0	59.8	70.71	67.96	0.5694	0.6420	1.7334	0.8607	1.66	3.00	5.35	2.75	0.5343	0.2899	0.0337	2.3441	71.44	74.60

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	EPSI-1 DEGREE	EPSI-2 DEGREE	PCT TE SPAN
1	456.5	1030.5	456.5	579.4	0.0	852.2	928.4	1077.9	1034.6	621.8	-928.4	-225.7	26.58	48.54	29.276	29.975	0.0500
2	491.2	990.4	491.2	584.9	0.0	799.2	987.9	1108.7	1103.3	661.8	-987.9	-309.5	28.17	49.85	24.195	26.369	0.1000
3	524.8	952.1	524.8	571.0	0.0	761.9	1046.1	1139.5	1170.3	684.5	-1046.1	-377.6	29.63	49.20	19.506	22.268	0.1500
4	595.1	856.4	595.1	497.0	0.0	697.5	1198.8	1231.8	1338.4	729.7	-1193.8	-534.3	32.38	43.51	8.011	11.429	0.3000
5	624.1	806.2	624.1	468.6	0.0	656.0	1368.9	1354.8	1504.4	841.4	-1368.9	-698.8	33.40	41.48	-2.897	1.364	0.5000
6	626.0	795.6	626.0	461.7	0.0	647.9	1445.5	1416.3	1575.2	896.5	-1445.5	-768.4	33.47	40.99	-6.992	-3.131	0.6000
7	625.2	798.6	625.2	474.7	0.0	642.2	1481.9	1447.1	1608.4	934.4	-1481.9	-804.9	33.44	42.32	-8.856	-5.392	0.6500
8	621.7	798.9	621.7	477.6	0.0	640.4	1518.3	1477.9	1640.6	964.0	-1518.3	-837.4	33.32	42.69	-10.870	-7.655	0.7000
9	601.4	786.1	601.4	448.2	0.0	645.8	1624.6	1570.2	1732.4	1027.3	-1624.6	-924.3	32.61	40.08	-15.266	-14.369	0.8500
10	594.0	781.1	594.0	419.8	0.0	658.6	1657.8	1600.9	1761.0	1031.6	-1657.8	-942.3	32.35	37.38	-17.657	-16.373	0.9000
11	587.6	773.1	587.6	386.0	0.0	669.8	1689.5	1631.7	1788.8	1036.4	-1689.5	-961.9	32.11	34.24	-18.485	-18.070	0.9500

WC1/A1 LBM/SEC SQFT	WC1/A1 KG/SEC SQM	T02/T01	P02/P01	EFF-AD ROTOR %	EFF-P ROTOR %
37.97	185.30	1.3281	2.3513	84.34	86.09

AIRFOIL AERODYNAMIC SUMMARY PRINT

100 PERCENT DESIGN SPEED (STATOR PERFORMANCE) RUN NO 110 SPEED CODE 10 POINT NO 6

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	321.7	225.1	196.8	225.1	254.4	2.8	258.98	339.46	0.4785	0.0804
2	309.0	219.2	195.2	219.2	239.6	-1.4	261.89	336.42	0.4396	0.0687
3	297.3	211.9	190.1	211.8	228.6	-6.3	257.93	328.81	0.3680	0.0613
4	270.2	187.9	169.6	187.8	210.2	-6.2	233.32	294.02	0.2047	0.0382
5	255.4	178.0	159.6	177.9	199.4	-5.4	221.98	277.39	0.0531	-0.0009
6	252.9	177.6	157.6	177.5	197.8	-6.4	219.66	274.81	-0.0208	-0.0204
7	254.4	181.2	161.7	181.2	196.4	-5.4	226.13	280.15	-0.0559	-0.0302
8	255.3	186.0	163.2	185.9	196.3	-3.1	228.39	286.69	-0.0884	-0.0404
9	255.0	192.2	158.9	192.2	199.4	0.1	221.06	289.90	-0.1923	-0.0708
10	255.5	193.5	153.7	193.5	204.0	2.4	212.23	288.02	-0.2242	-0.0821
11	255.4	195.7	147.8	195.7	208.3	4.1	202.51	287.05	-0.2639	-0.0939

SL	B-1 DEGREE	B-2 DEGREE	M-1	M-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	P0/P0 STAGE	T0/T0 STAGE	%EFF-A TOT-STG	%EFF-P TOT-STG
1	54.5	0.7	0.9334	0.6262	0.02	2.98	14.56	53.77	0.4743	0.1705	0.0393	0.9267	2.3552	1.3243	85.53	87.15
2	52.7	-0.4	0.8952	0.6113	0.25	3.37	11.62	53.02	0.4680	0.1352	0.0317	0.9452	2.3559	1.3129	88.70	89.97
3	51.6	-1.7	0.8587	0.5912	-0.19	3.19	9.16	53.27	0.4715	0.1026	0.0245	0.9608	2.3444	1.3065	89.96	91.08
4	51.5	-1.9	0.7715	0.5210	-1.49	2.76	8.13	53.36	0.5043	0.0591	0.0149	0.9808	2.2736	1.3035	87.19	88.58
5	51.4	-1.8	0.7217	0.4900	-2.61	2.74	8.32	53.11	0.5197	0.0546	0.0148	0.9840	2.2493	1.3139	83.06	84.86
6	51.4	-2.1	0.7108	0.4870	-2.37	3.37	8.03	53.51	0.5234	0.0673	0.0188	0.9807	2.2471	1.3238	80.41	82.49
7	50.5	-1.7	0.7143	0.4968	-3.25	2.62	8.44	52.25	0.5122	0.0723	0.0205	0.9792	2.2609	1.3276	80.15	82.27
8	50.3	-1.0	0.7152	0.5093	-3.52	2.47	9.29	51.25	0.4964	0.0693	0.0199	0.9800	2.2776	1.3333	79.57	81.77
9	51.7	0.0	0.7073	0.5224	-4.26	1.96	12.37	51.66	0.4820	0.0887	0.0265	0.9748	2.2822	1.3568	74.54	77.28
10	53.3	0.7	0.7048	0.5235	-4.94	1.39	14.47	52.63	0.4835	0.1038	0.0315	0.9707	2.2757	1.3705	71.49	74.55
11	55.1	1.2	0.7008	0.5269	-8.52	-2.38	17.60	53.94	0.4820	0.1122	0.0344	0.9686	2.2705	1.3852	68.54	71.90

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	PCT TE SPAN	EPSI-1 DEGREE	EPSI-2 DEGREE
1	1055.4	738.5	645.9	738.5	834.7	9.3	53.04	69.53	0.0430	27.414	4.608
2	1013.9	719.1	640.5	719.1	786.0	-4.5	53.64	68.90	0.0901	24.674	3.937
3	975.5	695.3	623.6	695.0	750.1	-20.8	52.83	67.34	0.1410	21.086	3.513
4	886.4	616.6	556.6	616.3	689.8	-20.3	47.79	60.22	0.2939	11.730	2.186
5	837.9	583.9	523.6	583.6	654.2	-17.8	45.46	56.81	0.5086	3.042	-0.049
6	829.7	582.7	517.2	582.3	648.8	-21.1	44.99	56.28	0.6103	-1.192	-1.171
7	834.8	594.7	530.5	594.4	644.5	-17.8	46.31	57.38	0.6598	-3.200	-1.728
8	837.6	610.2	535.4	610.1	644.1	-10.3	46.78	58.72	0.7107	-5.065	-2.314
9	836.5	630.5	521.3	630.5	654.2	0.2	45.27	59.37	0.8620	-11.020	-4.059
10	838.2	635.0	504.4	634.9	669.5	7.7	43.47	58.99	0.9101	-12.846	-4.704
11	838.0	642.2	484.9	642.1	683.4	13.3	41.48	58.79	0.9571	-15.119	-5.377

NCORR INLET RPM	WCORR INLET LBM/SEC	WCORR INLET KG/SEC	T0/T0 STAGE	P02/P01	P0/P0 STAGE	EFF-AD STAGE %	EFF-P STAGE %
12467.50	169.20	76.73	1.3281	0.9718	2.2850	81.18	83.22

AIRFOIL AERODYNAMIC SUMMARY PRINT

100 PERCENT DESIGN SPEED (ROTOR PERFORMANCE) RUN NO 110 SPEED CODE 10 POINT NO 10

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	U-1 M/SEC	U-2 M/SEC	V'-1 M/SEC	V'-2 M/SEC	VO'-1 M/SEC	VO'-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	134.4	316.1	134.4	174.8	0.0	263.4	284.4	330.2	314.6	187.1	-284.4	-66.8	126.65	235.85	0.5103	0.5192
2	144.3	299.9	144.3	167.6	0.0	248.7	302.7	339.7	335.3	190.7	-302.7	-90.9	134.15	228.79	0.4224	0.4537
3	153.9	291.9	153.9	168.5	0.0	238.3	320.5	349.1	355.5	201.7	-320.5	-110.7	141.10	233.30	0.3410	0.3834
4	173.8	266.4	173.8	147.6	0.0	221.8	367.3	377.4	406.3	214.5	-367.3	-155.6	154.31	207.82	0.1388	0.1981
5	181.6	254.1	181.6	137.8	0.0	213.5	419.4	415.1	457.0	244.2	-419.4	-201.6	159.01	196.00	-0.0468	0.0242
6	182.2	253.2	182.2	137.8	0.0	212.4	442.8	433.9	478.9	260.8	-442.8	-221.5	159.37	196.87	-0.1180	-0.0536
7	182.0	253.9	182.0	140.3	0.0	211.6	454.0	443.3	489.1	270.9	-454.0	-231.7	159.25	201.19	-0.1524	-0.0926
8	181.1	253.2	181.1	140.1	0.0	210.9	465.1	452.7	499.1	279.5	-465.1	-241.8	158.69	201.53	-0.1874	-0.1315
9	175.8	248.4	175.8	131.3	0.0	210.8	497.7	481.0	527.8	300.4	-497.7	-270.2	155.50	189.80	-0.2795	-0.2481
10	173.8	247.0	173.8	124.5	0.0	213.4	507.9	490.5	536.8	303.7	-507.9	-277.1	154.30	179.71	-0.3037	-0.2834
11	172.0	244.4	172.0	116.3	0.0	215.0	517.6	499.9	545.4	307.7	-517.6	-284.9	153.19	167.83	-0.3192	-0.3140

SL	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	M-1	M-2	M'-1	M'-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	%EFF-A TOTAL	%EFF-P TOTAL
1	0.0	56.2	64.42	20.77	0.4189	0.9079	0.9808	0.5374	-0.66	3.43	8.82	43.65	0.5962	0.1303	0.0258	2.5533	93.92	94.66
2	0.0	56.2	64.30	28.61	0.4510	0.8579	1.0482	0.5454	0.57	4.29	10.82	35.69	0.6074	0.1350	0.0264	2.4684	92.76	93.61
3	0.0	55.0	64.19	33.55	0.4824	0.8335	1.1145	0.5758	1.75	5.14	10.10	30.65	0.5980	0.1120	0.0219	2.4492	93.26	94.05
4	0.0	56.6	64.64	46.75	0.5485	0.7516	1.2821	0.6049	2.74	5.02	10.94	17.90	0.6203	0.1579	0.0288	2.3544	88.09	89.43
5	0.0	57.1	66.56	55.59	0.5746	0.7077	1.4460	0.6801	2.39	4.24	10.03	10.97	0.6016	0.2015	0.0337	2.3436	82.72	84.64
6	0.0	56.8	67.56	57.88	0.5767	0.7012	1.5155	0.7223	2.43	4.16	7.58	9.69	0.5881	0.2185	0.0356	2.3677	80.59	82.77
7	0.0	56.2	68.08	58.53	0.5760	0.7015	1.5478	0.7484	2.63	4.31	6.15	9.55	0.5775	0.2208	0.0358	2.3882	80.08	82.34
8	0.0	56.1	68.64	59.58	0.5728	0.6977	1.5790	0.7700	3.12	4.68	5.99	9.06	0.5698	0.2270	0.0361	2.4007	79.20	81.57
9	0.0	57.7	70.43	63.74	0.5549	0.6771	1.6666	0.8190	3.29	4.71	5.27	6.69	0.5545	0.2596	0.0365	2.4200	75.36	78.18
10	0.0	59.4	70.97	65.51	0.5484	0.6700	1.6938	0.8238	2.87	4.25	4.99	5.46	0.5562	0.2805	0.0365	2.4277	73.32	76.38
11	0.0	61.4	71.49	67.61	0.5425	0.6596	1.7199	0.8304	2.44	3.78	4.09	3.88	0.5555	0.2994	0.0354	2.4295	71.46	74.74

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	EPSI-1 DEGREE	EPSI-2 DEGREE	PCT TE SPAN
1	440.9	1037.2	440.9	573.4	0.0	864.2	933.2	1083.5	1032.1	613.9	-933.2	-219.3	25.94	48.30	29.241	29.746	0.0500
2	473.3	984.0	473.3	549.9	0.0	816.0	993.0	1114.4	1100.1	625.6	-993.0	-298.4	27.48	46.86	24.203	25.995	0.1000
3	504.9	957.7	504.9	553.0	0.0	782.0	1051.5	1145.3	1166.4	661.7	-1051.5	-363.4	28.90	47.78	19.539	21.966	0.1500
4	570.3	874.2	570.3	484.4	0.0	727.7	1205.0	1238.1	1333.2	703.6	-1205.0	-510.4	31.60	42.56	7.953	11.349	0.3000
5	595.9	833.7	595.9	452.1	0.0	700.4	1375.9	1361.8	1499.4	801.1	-1375.9	-661.4	32.57	40.14	-2.683	1.389	0.5000
6	597.9	830.8	597.9	452.1	0.0	697.0	1452.9	1423.6	1571.1	855.8	-1452.9	-726.6	32.64	40.32	-6.761	-3.069	0.6000
7	597.2	832.9	597.2	460.2	0.0	694.2	1489.5	1454.5	1604.8	888.7	-1489.5	-760.3	32.61	41.21	-8.732	-5.304	0.6500
8	594.1	830.8	594.1	459.6	0.0	692.1	1526.1	1485.5	1637.6	916.9	-1526.1	-793.4	32.50	41.27	-10.738	-7.535	0.7000
9	576.6	814.9	576.6	430.8	0.0	691.7	1633.0	1578.3	1731.8	985.7	-1633.0	-886.6	31.85	38.87	-16.013	-14.215	0.8500
10	570.3	810.5	570.3	408.4	0.0	700.1	1666.3	1609.2	1761.2	996.6	-1666.3	-909.1	31.60	36.81	-17.400	-16.236	0.9000
11	564.4	802.0	564.4	381.6	0.0	705.4	1698.2	1640.1	1789.5	1009.6	-1698.2	-934.7	31.37	34.37	-18.290	-17.988	0.9500

WC1/A1 LBM/SEC SQFT	WC1/A1 KG/SEC SQM	T02/T01	P02/P01	EFF-AD ROTOR %	EFF-P ROTOR %
36.71	179.16	1.3447	2.4035	82.61	84.59

AIRFOIL AERODYNAMIC SUMMARY PRINT

100 PERCENT DESIGN SPEED (STATOR PERFORMANCE) RUN NO 110 SPEED CODE 10 POINT NO 10

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	322.4	209.1	193.4	209.1	257.9	2.7	256.85	327.15	0.4759	0.0831
2	305.8	202.8	183.7	202.8	244.5	-2.5	247.17	321.73	0.4254	0.0728
3	297.9	196.8	183.5	196.7	234.6	-6.9	250.45	315.05	0.3641	0.0654
4	274.2	174.3	164.5	174.3	219.3	-3.6	227.74	280.38	0.2093	0.0438
5	262.7	168.6	153.9	168.5	212.9	-4.3	215.14	269.05	0.0571	0.0056
6	262.7	172.3	154.0	172.3	212.8	-3.8	216.00	273.13	-0.0173	-0.0150
7	263.9	176.5	156.8	176.5	212.3	-3.1	220.47	279.11	-0.0524	-0.0255
8	264.1	180.6	157.3	180.6	212.1	-1.6	221.53	284.70	-0.0853	-0.0366
9	262.7	184.8	153.0	184.8	213.5	3.9	215.18	285.27	-0.1933	-0.0693
10	263.3	187.2	149.2	187.1	216.9	6.4	208.94	285.74	-0.2268	-0.0808
11	262.9	191.2	145.0	191.1	219.3	7.4	202.12	288.64	-0.2664	-0.0930

SL	B-1 DEGREE	B-2 DEGREE	M-1	M-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	P0/P0 STAGE	T0/T0 STAGE	%EFF-A TOT-STG	%EFF-P TOT-STG
1	55.3	0.7	0.9289	0.5748	0.83	3.78	14.58	54.55	0.5279	0.1670	0.0385	0.9286	2.3715	1.3271	85.56	87.19
2	54.8	-0.7	0.8773	0.5583	2.40	5.53	11.28	55.51	0.5213	0.1040	0.0244	0.9590	2.3674	1.3176	87.91	89.27
3	53.2	-2.0	0.8529	0.5419	1.46	4.84	8.83	55.20	0.5289	0.0948	0.0227	0.9641	2.3612	1.3128	88.96	90.20
4	53.5	-1.2	0.7759	0.4768	0.56	4.81	8.82	54.71	0.5674	0.0701	0.0177	0.9770	2.3003	1.3146	85.44	87.03
5	54.2	-1.4	0.7342	0.4571	0.20	5.56	8.62	55.62	0.5815	0.0699	0.0189	0.9789	2.2942	1.3327	80.49	82.60
6	54.1	-1.3	0.7300	0.4653	0.29	6.02	8.83	55.36	0.5738	0.0801	0.0223	0.9761	2.3089	1.3456	78.15	80.54
7	53.6	-1.0	0.7321	0.4760	-0.24	5.63	9.16	54.54	0.5621	0.0837	0.0237	0.9749	2.3245	1.3515	77.53	80.00
8	53.4	-0.5	0.7307	0.4865	-0.36	5.64	9.74	53.97	0.5492	0.0839	0.0241	0.9749	2.3385	1.3577	76.80	79.36
9	54.6	1.2	0.7200	0.4942	-1.33	4.89	13.55	53.41	0.5372	0.1171	0.0350	0.9658	2.3361	1.3798	72.21	75.28
10	55.8	1.9	0.7182	0.4988	-2.47	3.77	15.72	53.84	0.5331	0.1294	0.0392	0.9624	2.3354	1.3917	69.99	73.29
11	57.0	2.2	0.7142	0.5077	-6.62	-0.48	18.60	54.83	0.5234	0.1283	0.0393	0.9630	2.3395	1.4033	68.11	71.62

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	PCT TE SPAN	EPSI-1 DEGREE	EPSI-2 DEGREE
1	1057.7	686.2	634.6	686.1	846.2	9.0	52.60	67.00	0.0430	27.268	4.760
2	1003.4	665.3	602.7	665.2	802.2	-8.3	50.62	65.89	0.0901	24.375	4.170
3	977.3	645.6	602.0	645.2	769.8	-22.5	51.29	64.52	0.1410	20.863	3.750
4	899.5	572.0	539.7	571.9	719.6	-11.8	46.64	57.42	0.2989	11.993	2.508
5	862.0	553.1	505.0	552.9	698.6	-13.9	44.06	55.10	0.5086	3.270	0.323
6	851.8	565.3	505.4	565.2	698.1	-12.6	44.24	55.94	0.6103	-0.992	-0.857
7	866.0	579.0	514.4	579.0	696.6	-10.0	45.15	57.16	0.6598	-3.000	-1.459
8	866.4	592.6	516.1	592.6	695.9	-5.4	45.37	58.31	0.7107	-4.890	-2.099
9	861.9	606.4	502.0	606.3	700.6	12.7	44.07	58.43	0.8620	-11.076	-3.968
10	863.8	614.3	489.7	614.0	711.6	21.0	42.79	58.52	0.9101	-12.993	-4.630
11	862.6	627.4	475.7	627.0	719.6	24.1	41.40	59.12	0.9571	-15.265	-5.328

NCORR INLET RPM	WCORR INLET LBM/SEC	WCORR INLET KG/SEC	T0/T0 STAGE	P02/P01	P0/P0 STAGE	EFF-AD STAGE %	EFF-P STAGE %
12464.40	163.60	74.20	1.3447	0.9686	2.3279	79.22	81.51

AIRFOIL AERODYNAMIC SUMMARY PRINT

105 PERCENT DESIGN SPEED (ROTOR PERFORMANCE) RUN NO 111 SPEED CODE 5 POINT NO 1

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	U-1 M/SEC	U-2 M/SEC	V'-1 M/SEC	V'-2 M/SEC	VO'-1 M/SEC	VO'-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	154.3	323.6	154.3	194.3	0.0	258.8	301.4	349.9	338.6	214.6	-301.4	-91.2	135.07	238.19	0.5129	0.5178
2	166.4	320.8	166.4	199.9	0.0	250.9	320.7	359.9	361.3	227.7	-320.7	-109.0	142.92	248.93	0.4261	0.4532
3	178.4	313.6	178.4	202.7	0.0	239.2	339.6	369.9	383.6	241.2	-339.6	-130.7	150.19	256.12	0.3440	0.3837
4	203.6	271.0	203.6	184.7	0.0	198.3	389.2	399.9	439.2	273.4	-389.2	-201.6	163.44	237.34	0.1302	0.1988
5	208.9	231.2	208.9	153.3	0.0	173.1	444.4	439.8	491.1	307.7	-444.4	-266.8	165.89	193.70	-0.0632	0.0219
6	208.4	223.1	208.4	145.9	0.0	168.7	469.3	459.8	513.5	325.6	-469.3	-291.1	165.65	183.59	-0.1175	-0.0578
7	208.5	219.6	208.5	145.6	0.0	164.4	481.1	469.8	524.3	338.3	-481.1	-305.4	165.71	183.87	-0.1400	-0.0965
8	208.3	221.9	208.3	152.7	0.0	161.0	492.9	479.8	535.1	353.5	-492.9	-318.8	165.63	194.43	-0.1668	-0.1328
9	204.4	227.1	204.4	164.0	0.0	157.1	527.4	509.8	565.6	388.9	-527.4	-352.7	163.81	212.75	-0.2630	-0.2430
10	202.1	224.8	202.1	157.7	0.0	160.2	538.2	519.7	575.9	392.6	-538.2	-359.6	162.74	203.93	-0.2936	-0.2788
11	199.7	217.8	199.7	144.9	0.0	162.6	548.5	529.7	583.7	394.7	-548.5	-367.2	161.56	186.40	-0.3148	-0.3112

SL	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	M-1	M-2	M'-1	M'-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	%EFF-A TOTAL	%EFF-P TOTAL
1	0.0	52.9	62.62	24.94	0.4790	0.9199	1.0511	0.6101	-2.46	1.63	12.99	37.68	0.5397	0.2345	0.0450	2.4691	88.24	89.62
2	0.0	51.6	62.40	28.73	0.5183	0.9109	1.1257	0.6464	-1.33	2.38	10.94	33.67	0.5343	0.1885	0.0368	2.4896	89.39	90.66
3	0.0	50.0	62.15	33.05	0.5581	0.8898	1.2000	0.6844	-0.29	3.09	9.60	29.10	0.5255	0.1510	0.0296	2.4721	90.42	91.55
4	0.0	47.3	62.33	47.74	0.6429	0.7651	1.3871	0.7719	0.42	2.71	11.94	14.58	0.5028	0.1331	0.0238	2.2372	88.44	89.67
5	0.0	48.4	64.81	60.07	0.6613	0.6457	1.5543	0.8593	0.64	2.50	14.50	4.75	0.4779	0.1965	0.0290	2.0193	79.22	81.15
6	0.0	48.9	65.98	63.17	0.6595	0.6199	1.6248	0.9048	0.85	2.58	12.88	2.81	0.4639	0.2202	0.0304	1.9886	75.87	78.06
7	0.0	48.2	66.45	64.27	0.6599	0.6098	1.6593	0.9395	1.00	2.68	11.89	2.18	0.4485	0.2159	0.0291	1.9826	75.84	78.03
8	0.0	46.1	66.92	64.11	0.6593	0.6167	1.6933	0.9823	1.40	2.95	10.51	2.81	0.4296	0.2000	0.0274	2.0069	77.32	79.41
9	0.0	43.3	68.60	64.70	0.6457	0.6295	1.7869	1.0782	1.46	2.88	6.22	3.90	0.3963	0.1831	0.0248	2.0764	78.63	80.69
10	0.0	45.0	69.21	66.00	0.6380	0.6196	1.8145	1.0822	1.11	2.49	5.48	3.21	0.4012	0.2086	0.0266	2.0773	75.70	78.04
11	0.0	48.0	69.83	68.26	0.6296	0.5963	1.8405	1.0809	0.79	2.12	5.65	1.57	0.4075	0.2400	0.0276	2.0556	72.02	74.67

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	EPSI-1 DEGREE	EPSI-2 DEGREE	PCT TE SPAN
1	506.3	1061.8	506.3	637.5	0.0	849.1	988.9	1148.2	1111.0	704.2	-988.9	-299.1	27.66	48.78	29.387	29.665	0.0500
2	545.8	1052.5	545.8	655.7	0.0	823.3	1052.3	1180.9	1185.5	746.9	-1052.3	-357.7	29.27	50.98	24.415	25.965	0.1000
3	585.3	1028.8	585.3	665.1	0.0	785.0	1114.2	1213.7	1258.5	791.3	-1114.2	-428.7	30.76	52.45	19.709	21.986	0.1500
4	667.9	889.3	667.9	606.2	0.0	650.7	1277.0	1312.0	1441.1	897.1	-1277.0	-661.3	33.47	48.61	7.461	11.389	0.3000
5	685.5	758.6	685.5	502.9	0.0	567.9	1458.1	1443.1	1611.2	1009.4	-1458.1	-875.2	33.98	39.67	-3.624	1.252	0.5000
6	683.8	732.0	683.8	478.8	0.0	553.6	1539.7	1508.6	1684.7	1068.3	-1539.7	-955.0	33.93	37.60	-6.730	-3.309	0.6000
7	684.2	720.5	684.2	477.7	0.0	539.4	1578.5	1541.4	1720.4	1110.1	-1578.5	-1002.0	33.94	37.66	-8.021	-5.528	0.6500
8	683.6	728.0	683.6	501.0	0.0	528.2	1617.2	1574.2	1755.7	1159.7	-1617.2	-1045.9	33.92	39.82	-9.558	-7.611	0.7000
9	670.6	745.1	670.6	538.1	0.0	515.4	1730.5	1672.5	1855.9	1276.1	-1730.5	-1157.1	33.55	43.57	-15.066	-13.923	0.8500
10	663.2	737.4	663.2	517.3	0.0	525.6	1765.8	1705.3	1886.2	1288.1	-1765.8	-1179.7	33.33	41.77	-16.821	-15.974	0.9000
11	655.1	714.5	655.1	475.4	0.0	533.3	1799.6	1738.0	1915.1	1295.1	-1799.6	-1204.7	33.09	38.18	-18.037	-17.828	0.9500

WC1/A1 LBM/SEC SQFT	WC1/A1 KG/SEC SQM	T02/T01	P02/P01	EFF-AD ROTOR %	EFF-P ROTOR %
40.24	196.36	1.2997	2.1626	82.25	84.05

AIRFOIL AERODYNAMIC SUMMARY PRINT

105 PERCENT DESIGN SPEED (STATOR PERFORMANCE) RUN NO 111 SPEED CODE 5 POINT NO 1

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	335.6	290.0	220.2	289.2	253.3	-21.2	261.37	320.78	0.4730	0.0841
2	331.9	289.7	222.1	288.3	246.7	-29.2	268.60	326.83	0.4250	0.0745
3	324.9	296.0	223.6	295.0	235.7	-24.8	274.56	345.33	0.3680	0.0662
4	285.5	271.3	207.4	270.0	196.3	-26.8	258.23	333.31	0.2260	0.0373
5	246.8	232.7	176.4	231.9	172.5	-20.3	216.57	287.43	0.0703	-0.0073
6	239.4	227.0	169.6	226.7	168.9	-12.8	207.16	278.87	-0.0269	-0.0294
7	236.8	227.3	170.1	226.8	164.8	-15.8	208.45	278.99	-0.0759	-0.0402
8	239.8	232.2	176.9	231.5	161.8	-18.3	218.45	284.72	-0.1183	-0.0510
9	248.0	244.1	190.0	243.5	159.3	-17.7	237.37	293.70	-0.2198	-0.0786
10	248.1	243.6	186.9	243.2	163.2	-13.4	231.57	287.92	-0.2448	-0.0882
11	244.7	239.7	179.8	239.3	165.9	-14.6	220.45	277.80	-0.2750	-0.0968

SL	B-1 DEGREE	B-2 DEGREE	M-1	M-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	P0/P0 STAGE	T0/T0 STAGE	%EFF-A TOT-STG	%EFF-P TOT-STG
1	51.2	-4.0	0.9602	0.8111	-3.27	-0.31	9.82	55.22	0.3199	0.3719	0.0854	0.8336	2.0582	1.3338	68.60	71.57
2	49.8	-5.6	0.9479	0.8105	-2.61	0.51	6.35	55.43	0.3185	0.3539	0.0826	0.8443	2.1021	1.3332	70.91	73.78
3	47.9	-4.7	0.9272	0.8326	-3.91	-0.54	6.13	52.58	0.2792	0.2668	0.0636	0.8859	2.1955	1.3272	76.98	79.35
4	43.9	-5.6	0.8112	0.7658	-9.03	-4.78	4.36	49.59	0.2462	0.1132	0.0285	0.9601	2.1512	1.2927	83.59	85.25
5	44.4	-5.0	0.6932	0.6603	-9.55	-4.19	5.07	49.41	0.2669	0.0555	0.0150	0.9848	1.9870	1.2811	77.13	79.21
6	44.9	-3.2	0.6691	0.6316	-8.92	-3.18	6.88	48.10	0.2623	0.0532	0.0148	0.9863	1.9585	1.2865	73.90	76.22
7	44.1	-4.0	0.6616	0.6330	-9.66	-3.78	6.16	48.13	0.2573	0.0574	0.0162	0.9854	1.9570	1.2845	74.34	76.62
8	42.6	-4.5	0.6706	0.6477	-11.26	-5.26	5.74	47.07	0.2499	0.0751	0.0215	0.9804	1.9741	1.2850	75.27	77.50
9	40.4	-4.1	0.6924	0.6806	-15.58	-9.36	8.24	44.47	0.2321	0.1520	0.0454	0.9583	1.9931	1.2964	73.50	75.92
10	41.6	-3.1	0.6894	0.6754	-16.68	-10.44	10.65	44.71	0.2369	0.1908	0.0577	0.9481	1.9686	1.3088	69.16	71.92
11	43.3	-3.4	0.6761	0.6611	-20.34	-14.20	12.98	46.74	0.2492	0.2320	0.0710	0.9389	1.9278	1.3183	64.81	67.85

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	PCT TE SPAN	EPSI-1 DEGREE	EPSI-2 DEGREE
1	1101.2	951.5	722.5	949.0	831.0	-69.5	53.53	65.70	0.0430	27.101	4.821
2	1089.0	950.7	728.6	945.8	809.3	-95.6	55.01	66.94	0.0901	24.349	4.266
3	1066.1	971.3	733.7	967.9	773.4	-81.4	56.23	70.73	0.1410	21.085	3.794
4	936.9	890.1	680.5	885.7	643.9	-88.1	52.89	68.27	0.2989	12.949	2.139
5	809.7	763.6	578.9	760.7	566.1	-66.5	44.36	58.87	0.5086	4.025	-0.421
6	785.5	744.9	556.6	743.7	554.3	-41.8	42.43	57.11	0.6103	-1.544	-1.685
7	777.0	745.8	558.0	744.0	540.7	-51.9	42.69	57.14	0.6598	-4.351	-2.304
8	786.7	762.0	580.5	759.6	530.9	-60.1	44.74	58.31	0.7107	-6.779	-2.923
9	813.5	801.0	623.5	798.9	522.5	-58.0	48.61	60.15	0.8620	-12.591	-4.502
10	814.1	799.2	613.3	797.9	535.3	-44.1	47.43	58.97	0.9101	-14.024	-5.051
11	802.7	786.5	589.9	785.0	544.4	-47.9	45.15	56.90	0.9571	-15.758	-5.549

NCORR INLET RPM	WCORR INLET LBM/SEC	WCORR INLET KG/SEC	T0/T0 STAGE	P02/P01	P0/P0 STAGE	EFF-AD STAGE %	EFF-P STAGE %
13081.70	179.30	81.32	1.2997	0.9435	2.0403	75.40	77.71

AIRFOIL AERODYNAMIC SUMMARY PRINT

105 PERCENT DESIGN SPEED (ROTOR PERFORMANCE) RUN NO 111 SPEED CODE 5 POINT NO 2

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	U-1 M/SEC	U-2 M/SEC	V'-1 M/SEC	V'-2 M/SEC	VO'-1 M/SEC	VO'-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	155.8	331.1	155.8	199.8	0.0	264.0	302.0	350.6	339.8	217.8	-302.0	-86.6	135.75	248.54	0.5118	0.5140
2	167.9	323.9	167.9	202.3	0.0	253.0	321.3	360.6	362.6	229.1	-321.3	-107.7	143.56	255.21	0.4245	0.4466
3	179.9	312.6	179.9	201.8	0.0	238.8	340.2	370.6	384.9	241.0	-340.2	-131.8	150.71	257.75	0.3411	0.3788
4	204.4	270.1	204.4	181.9	0.0	199.7	389.9	400.6	440.3	271.1	-389.9	-200.9	163.47	235.39	0.1256	0.1962
5	208.9	234.1	208.9	151.4	0.0	178.5	445.2	440.7	491.8	302.6	-445.2	-262.0	165.54	192.38	-0.0646	0.0189
6	208.4	223.6	208.4	143.2	0.0	171.7	470.2	460.7	514.3	322.5	-470.2	-288.9	165.30	181.81	-0.1164	-0.0599
7	208.6	220.9	208.6	144.6	0.0	167.0	482.0	470.7	525.2	336.3	-482.0	-303.6	165.38	184.43	-0.1390	-0.0976
8	208.3	223.8	208.3	152.8	0.0	163.5	493.8	480.7	536.0	352.1	-493.8	-317.2	165.28	196.73	-0.1675	-0.1327
9	203.6	227.0	203.6	163.0	0.0	158.0	528.4	510.7	566.3	388.6	-528.4	-352.7	163.12	213.70	-0.2690	-0.2428
10	201.1	223.8	201.1	154.7	0.0	161.7	539.2	520.7	575.5	391.0	-539.2	-359.0	161.91	201.84	-0.3003	-0.2799
11	198.6	215.1	198.6	137.4	0.0	165.5	549.5	530.7	584.3	390.2	-549.5	-365.2	160.71	177.56	-0.3191	-0.3127

SL	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	M-1	M-2	M'-1	M'-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	%EFF-A TOTAL	%EFF-P TOTAL
1	0.0	52.6	62.42	23.21	0.4831	0.9407	1.0538	0.6188	-2.66	1.44	11.27	39.21	0.5367	0.1863	0.0362	2.5665	90.78	91.91
2	0.0	51.4	62.21	28.06	0.5227	0.9188	1.1287	0.6501	-1.52	2.19	10.28	34.14	0.5352	0.1536	0.0302	2.5492	91.35	92.41
3	0.0	50.0	61.97	33.35	0.5623	0.8857	1.2030	0.6829	-0.47	2.92	9.90	28.62	0.5296	0.1281	0.0251	2.4957	91.78	92.76
4	0.0	47.9	62.26	48.08	0.6448	0.7607	1.3890	0.7632	0.36	2.64	12.28	14.18	0.5116	0.1275	0.0227	2.2556	88.88	90.07
5	0.0	49.7	64.86	59.93	0.6603	0.6513	1.5546	0.8418	0.69	2.54	14.37	4.92	0.4928	0.2018	0.0299	2.0575	79.07	81.06
6	0.0	49.9	66.02	63.43	0.6585	0.6195	1.6252	0.8933	0.88	2.62	13.14	2.59	0.4728	0.2182	0.0299	2.0186	76.38	78.57
7	0.0	48.8	66.48	64.30	0.6591	0.6118	1.6598	0.9313	1.04	2.71	11.92	2.18	0.4550	0.2103	0.0284	2.0174	76.78	78.93
8	0.0	46.6	66.96	63.97	0.6584	0.6205	1.6937	0.9761	1.44	2.99	10.38	2.99	0.4347	0.1922	0.0265	2.0457	78.49	80.52
9	0.0	43.6	68.74	64.84	0.6423	0.6280	1.7861	1.0750	1.60	3.02	6.37	3.90	0.3988	0.1734	0.0234	2.1049	79.84	81.82
10	0.0	45.8	69.39	66.38	0.6336	0.6152	1.8132	1.0748	1.28	2.66	5.85	3.01	0.4061	0.2048	0.0258	2.0994	76.25	78.57
1	0.0	50.0	69.99	69.20	0.6252	0.5864	1.8393	1.0640	0.94	2.28	6.59	0.79	0.4176	0.2471	0.0272	2.0675	71.42	74.14

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	EPSI-1 DEGREE	EPSI-2 DEGREE	PCT TE SPAN
1	511.1	1086.2	511.1	655.5	0.0	866.1	990.8	1150.3	1114.9	714.5	-990.8	-284.3	27.80	50.90	29.326	29.450	0.0500
2	550.9	1062.6	550.9	663.6	0.0	829.9	1054.3	1183.2	1189.5	751.8	-1054.3	-353.2	29.40	52.27	24.321	25.591	0.1000
3	590.2	1025.7	590.2	662.0	0.0	783.4	1116.3	1216.0	1262.8	790.8	-1116.3	-432.6	30.87	52.79	19.546	21.704	0.1500
4	670.6	886.3	670.6	596.9	0.0	655.2	1279.4	1314.5	1444.5	889.3	-1279.4	-659.3	33.48	48.21	7.198	11.240	0.3000
5	685.4	768.2	685.4	496.6	0.0	586.1	1460.8	1445.8	1613.6	992.8	-1460.8	-859.7	33.90	39.40	-3.699	1.084	0.5000
6	683.7	733.7	683.7	470.0	0.0	563.4	1542.6	1511.5	1687.3	1058.1	-1542.6	-948.0	33.86	37.24	-6.671	-3.431	0.6000
7	684.3	724.8	684.3	474.3	0.0	548.1	1581.4	1544.3	1723.1	1103.4	-1581.4	-996.2	33.87	37.77	-7.964	-5.594	0.6500
8	683.5	734.3	683.5	501.4	0.0	536.5	1620.2	1577.1	1758.5	1155.1	-1620.2	-1040.6	33.85	40.29	-9.595	-7.602	0.7000
9	668.1	744.7	668.1	534.8	0.0	518.3	1733.7	1675.7	1858.0	1274.9	-1733.7	-1157.3	33.41	43.77	-15.415	-13.909	0.8500
10	659.8	734.3	659.8	507.7	0.0	530.4	1769.2	1708.5	1888.2	1282.8	-1769.2	-1178.0	33.16	41.34	-17.207	-16.038	0.9000
11	651.7	705.7	651.7	450.8	0.0	542.9	1803.0	1741.3	1917.2	1280.4	-1803.0	-1198.4	32.92	36.37	-18.284	-17.918	0.9500

WC1/A1 LBM/SEC SQFT	WC1/A1 KG/SEC SQM	T02/T01	P02/P01	EFF-AD ROTOR %	EFF-P ROTOR %
40.26	196.47	1.3034	2.1976	83.14	84.88

AIRFOIL AERODYNAMIC SUMMARY PRINT

105 PERCENT DESIGN SPEED (STATOR PERFORMANCE) RUN NO 111 SPEED CODE 5 POINT NO 2

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	343.0	290.7	225.6	290.7	258.4	-3.5	271.51	345.21	0.4704	0.0831
2	335.1	290.5	224.6	290.5	248.7	-2.2	275.08	353.57	0.4205	0.0719
3	324.0	289.8	222.8	289.8	235.2	-6.1	276.53	362.50	0.3659	0.0610
4	284.3	253.6	204.4	253.2	197.6	-14.1	256.61	327.97	0.2257	0.0288
5	248.9	217.4	173.8	217.0	178.1	-13.3	214.93	279.79	0.0651	-0.0131
6	239.0	211.1	166.1	210.7	171.9	-12.9	205.02	270.23	-0.0323	-0.0338
7	237.1	213.3	167.9	212.9	167.4	-13.0	208.31	273.37	-0.0798	-0.0440
8	240.7	220.2	175.9	219.9	164.3	-11.9	220.03	282.58	-0.1189	-0.0544
9	246.8	229.6	187.8	229.4	160.0	-7.7	237.61	289.98	-0.2115	-0.0804
10	246.2	228.9	183.2	228.9	164.5	-5.3	229.43	284.01	-0.2360	-0.0894
11	241.2	224.3	172.1	224.3	168.9	-4.8	212.54	272.50	-0.2693	-0.0974

SL	B-1 DEGREE	B-2 DEGREE	M-1	M-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	P0/P0 STAGE	T0/T0 STAGE	%EFF-A TOT-STG	%EFF-P TOT-STG
1	51.0	-0.7	0.9810	0.8099	-3.43	-0.47	13.20	51.68	0.3232	0.2947	0.0678	0.8645	2.2186	1.3402	75.12	77.71
2	49.7	-0.4	0.9562	0.8109	-2.75	0.37	11.54	50.10	0.3036	0.2485	0.0583	0.8895	2.2672	1.3353	78.55	80.84
3	47.9	-1.2	0.9231	0.8125	-3.89	-0.52	9.65	49.08	0.2779	0.1699	0.0406	0.9281	2.3145	1.3250	83.35	85.18
4	44.6	-3.2	0.8055	0.7094	-8.41	-4.17	6.84	47.73	0.2897	0.0856	0.0216	0.9704	2.1813	1.2938	84.96	86.50
5	45.8	-3.5	0.6961	0.6013	-8.22	-2.86	6.56	49.25	0.3304	0.0425	0.0115	0.9884	2.0275	1.2897	77.24	79.36
6	46.0	-3.5	0.6657	0.5823	-7.82	-2.08	6.59	49.49	0.3302	0.0339	0.0094	0.9914	1.9976	1.2908	75.18	77.45
7	45.0	-3.5	0.6605	0.5893	-8.83	-2.95	6.66	48.46	0.3175	0.0354	0.0100	0.9910	2.0044	1.2888	76.12	78.31
8	43.2	-3.1	0.6715	0.6096	-10.65	-4.66	7.16	46.26	0.2997	0.0484	0.0139	0.9873	2.0299	1.2892	77.51	79.61
9	40.8	-1.9	0.6875	0.6354	-15.16	-8.94	10.45	42.68	0.2762	0.1192	0.0357	0.9676	2.0392	1.2975	75.89	78.15
10	42.3	-1.3	0.6821	0.6300	-15.94	-9.70	12.47	43.63	0.2822	0.1456	0.0441	0.9611	2.0166	1.3111	71.34	73.99
11	45.0	-1.2	0.6632	0.6132	-18.62	-12.48	15.20	46.23	0.2939	0.1719	0.0527	0.9561	1.9746	1.3238	66.26	69.28

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	PCT TE SPAN	EPSI-1 DEGREE	EPSI-2 DEGREE
1	1125.4	953.7	740.2	953.7	847.7	-11.4	55.63	70.70	0.0430	26.952	4.763
2	1099.4	953.1	736.8	953.1	816.0	-7.4	56.34	72.41	0.0901	24.094	4.117
3	1062.9	951.0	730.9	950.8	771.8	-20.1	56.64	74.24	0.1410	20.965	3.495
4	932.9	832.1	670.6	830.8	648.5	-46.2	52.56	67.17	0.2989	12.934	1.648
5	816.5	713.3	570.3	712.0	584.4	-43.6	44.02	57.30	0.5086	3.733	-0.753
6	784.3	692.5	545.0	691.2	564.0	-42.4	41.99	55.35	0.6103	-1.849	-1.939
7	778.0	699.7	550.9	698.4	549.4	-42.7	42.66	55.99	0.6598	-4.573	-2.523
8	789.9	722.4	577.2	721.3	539.2	-39.2	45.06	57.87	0.7107	-6.811	-3.117
9	809.7	753.2	616.3	752.7	525.1	-25.2	48.66	59.39	0.8620	-12.119	-4.606
10	807.8	751.1	601.1	750.9	539.7	-17.3	46.99	58.17	0.9101	-13.524	-5.123
11	791.3	735.9	564.8	735.8	554.2	-15.9	43.53	55.81	0.9571	-15.457	-5.580

NCORR INLET RPM	WCORR INLET LBM/SEC	WCORR INLET KG/SEC	T0/T0 STAGE	P02/P01	P0/P0 STAGE	EFF-AD STAGE %	EFF-P STAGE %
13090.20	179.40	81.36	1.3034	0.9584	2.1062	78.16	80.30

AIRFOIL AERODYNAMIC SUMMARY PRINT

105 PERCENT DESIGN SPEED (ROTOR PERFORMANCE) RUN NO 111 SPEED CODE 5 POINT NO 3

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	U-1 M/SEC	U-2 M/SEC	V'-1 M/SEC	V'-2 M/SEC	VO'-1 M/SEC	VO'-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	155.9	333.2	155.9	199.2	0.0	267.1	302.1	350.8	340.0	216.1	-302.1	-83.7	135.65	253.96	0.5112	0.5144
2	168.0	324.6	168.0	200.1	0.0	255.5	321.5	360.8	362.8	226.1	-321.5	-105.3	143.45	258.56	0.4231	0.4473
3	179.9	310.5	179.9	196.1	0.0	240.7	340.4	370.8	385.1	235.3	-340.4	-130.1	150.55	256.08	0.3390	0.3797
4	204.2	270.8	204.2	173.6	0.0	207.8	390.1	400.9	440.4	259.6	-390.1	-193.1	163.19	229.44	0.1270	0.1960
5	210.3	242.2	210.3	150.6	0.0	189.7	445.5	440.9	492.6	292.9	-445.5	-251.2	165.95	197.62	-0.0606	0.0190
6	210.1	232.0	210.1	143.2	0.0	182.6	470.4	460.9	515.2	313.0	-470.4	-278.3	165.85	187.94	-0.1191	-0.0581
7	210.0	231.5	210.0	147.3	0.0	178.6	482.3	470.9	526.0	327.4	-482.3	-292.4	165.84	194.51	-0.1466	-0.0955
8	209.3	234.3	209.3	155.2	0.0	175.5	494.1	481.0	536.6	342.6	-494.1	-305.4	165.48	206.52	-0.1794	-0.1319
9	202.5	232.5	202.5	155.4	0.0	172.9	528.7	511.0	566.2	372.1	-528.7	-338.1	162.36	208.22	-0.2819	-0.2472
10	199.6	228.6	199.6	143.9	0.0	177.6	539.5	521.0	575.3	372.3	-539.5	-343.4	161.00	191.21	-0.3100	-0.2845
11	197.3	222.0	197.3	126.9	0.0	182.2	549.8	531.0	584.1	371.2	-549.8	-348.8	159.83	166.96	-0.3240	-0.3156

SL	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	M-1	M-2	M'-1	M'-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	%EFF-A TOTAL	%EFF-P TOTAL
1	0.0	53.0	62.41	22.58	0.4832	0.9454	1.0536	0.6132	-2.67	1.42	10.63	39.83	0.5447	0.1354	0.0264	2.6518	93.39	94.22
2	0.0	52.0	62.18	27.79	0.5227	0.9190	1.1284	0.6402	-1.55	2.17	10.01	34.39	0.5464	0.1142	0.0225	2.6217	93.62	94.42
3	0.0	51.0	61.96	33.77	0.5620	0.8770	1.2026	0.6647	-0.48	2.90	10.32	28.19	0.5465	0.1051	0.0205	2.5443	93.27	94.09
4	0.0	50.4	62.30	48.28	0.6438	0.7581	1.3880	0.7270	0.39	2.68	12.48	14.02	0.5420	0.1293	0.0229	2.3243	89.08	90.28
5	0.0	51.5	64.72	59.00	0.6646	0.6703	1.5567	0.8105	0.55	2.40	13.44	5.72	0.5195	0.1900	0.0289	2.1815	81.28	83.20
6	0.0	51.7	65.86	62.58	0.6638	0.6392	1.6278	0.8623	0.73	2.46	12.28	3.29	0.4988	0.2052	0.0289	2.1454	78.85	80.97
7	0.0	50.2	66.36	63.01	0.6636	0.6377	1.6620	0.9018	0.92	2.60	10.63	3.36	0.4802	0.1958	0.0276	2.1556	79.46	81.53
8	0.0	48.1	66.92	62.75	0.6609	0.6458	1.6948	0.9442	1.40	2.96	9.16	4.17	0.4611	0.1815	0.0261	2.1847	80.69	82.67
9	0.0	47.6	68.93	64.98	0.6378	0.6367	1.7832	1.0189	1.79	3.21	6.50	3.96	0.4372	0.1957	0.0263	2.2112	78.43	80.67
10	0.0	50.6	69.59	66.98	0.6281	0.6213	1.8099	1.0119	1.49	2.96	6.46	2.61	0.4477	0.2341	0.0287	2.1984	74.28	76.93
11	0.0	54.9	70.15	69.85	0.6201	0.5985	1.8361	1.0006	1.11	2.44	7.23	0.31	0.4592	0.2754	0.0295	2.1738	69.93	72.98

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	EPSI-1 DEGREE	EPSI-2 DEGREE	PCT TE SPAN
1	511.6	1093.2	511.6	653.6	0.0	876.3	991.4	1151.0	1115.6	709.0	-991.4	-274.7	27.78	52.01	29.290	29.476	0.0500
2	551.4	1064.9	551.4	656.5	0.0	838.4	1054.9	1183.8	1190.3	741.8	-1054.9	-345.4	29.38	52.96	24.240	25.628	0.1000
3	590.4	1018.6	590.4	643.3	0.0	789.8	1117.0	1216.7	1263.4	772.1	-1117.0	-426.9	30.83	52.45	19.423	21.758	0.1500
4	670.1	888.3	670.1	569.6	0.0	681.7	1280.1	1315.2	1444.9	851.9	-1280.1	-633.5	33.42	46.99	7.278	11.229	0.3000
5	690.0	794.7	690.0	494.1	0.0	622.4	1461.6	1446.6	1616.3	961.0	-1461.6	-824.2	33.99	40.47	-3.472	1.091	0.5000
6	689.3	761.3	689.3	469.7	0.0	599.1	1543.4	1512.3	1690.4	1026.9	-1543.4	-913.2	33.97	38.49	-6.825	-3.330	0.6000
7	689.2	759.5	689.2	483.3	0.0	585.9	1582.3	1545.2	1725.9	1074.1	-1582.3	-959.2	33.96	39.84	-8.397	-5.472	0.6500
8	686.6	768.7	686.6	509.2	0.0	576.0	1621.1	1578.0	1760.5	1124.0	-1621.1	-1002.0	33.89	42.30	-10.278	-7.560	0.7000
9	664.3	762.9	664.3	510.0	0.0	567.3	1734.7	1676.6	1857.5	1220.9	-1734.7	-1109.2	33.25	42.65	-16.154	-14.163	0.8500
10	655.0	750.1	655.0	472.3	0.0	582.8	1770.1	1709.4	1887.4	1221.6	-1770.1	-1126.7	32.97	39.16	-17.762	-16.302	0.9000
11	647.3	728.5	647.3	416.4	0.0	597.7	1804.0	1742.3	1916.6	1217.9	-1804.0	-1144.5	32.73	34.20	-18.566	-18.084	0.9500

WC1/A1 LBM/SEC SQFT	WC1/A1 KG/SEC SQM	T02/T01	P02/P01	EFF-AD ROTOR %	EFF-P ROTOR %
40.24	196.36	1.3197	2.2953	83.79	85.55

AIRFOIL AERODYNAMIC SUMMARY PRINT

105 PERCENT DESIGN SPEED (STATOR PERFORMANCE)

RUN NO 111 SPEED CODE 5 POINT NO 3

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	344.0	278.1	223.7	278.1	261.4	1.5	276.81	364.99	0.4715	0.0811
2	334.8	277.3	221.2	277.3	251.3	2.7	278.36	371.91	0.4219	0.0680
3	320.8	270.0	216.1	270.0	237.1	-0.1	275.08	369.39	0.3669	0.0560
4	283.4	230.4	195.2	230.2	205.6	-10.1	251.09	320.49	0.2186	0.0237
5	255.0	199.4	171.0	199.1	189.1	-11.3	218.98	274.47	0.0581	-0.0147
6	245.4	193.7	163.7	193.3	182.8	-12.3	209.70	265.27	-0.0289	-0.0332
7	245.5	198.2	168.0	197.9	179.1	-11.7	216.36	271.91	-0.0698	-0.0423
8	248.9	206.8	175.6	206.6	176.4	-9.2	227.63	284.36	-0.1034	-0.0518
9	250.4	213.6	179.0	213.5	175.1	-6.3	232.11	288.40	-0.1952	-0.0778
10	249.1	212.5	171.7	212.4	180.5	-4.2	219.89	281.91	-0.2238	-0.0873
11	245.6	209.4	160.6	209.4	185.9	-2.7	202.78	272.38	-0.2638	-0.0964

SL	B-1 DEGREE	B-2 DEGREE	M-1	M-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	P0/P0 STAGE	T0/T0 STAGE	%EFF-A TOT-STG	%EFF-P TOT-STG
1	51.6	0.3	0.9821	0.7689	-2.84	0.11	14.17	51.30	0.3596	0.2123	0.0489	0.9023	2.3918	1.3437	82.28	84.29
2	50.4	0.5	0.9530	0.7681	-2.02	1.11	12.51	49.86	0.3384	0.1590	0.0373	0.9297	2.4327	1.3377	85.59	87.26
3	49.0	-0.0	0.9108	0.7494	-2.78	0.60	10.82	49.02	0.3260	0.0996	0.0238	0.9588	2.4288	1.3264	88.39	89.73
4	47.0	-2.5	0.7980	0.6355	-6.01	-1.76	7.50	49.47	0.3708	0.0606	0.0153	0.9796	2.2636	1.3051	86.13	87.62
5	47.9	-3.2	0.7091	0.5439	-6.05	-0.69	6.82	51.17	0.4266	0.0647	0.0175	0.9818	2.1347	1.3074	78.68	80.80
6	48.1	-3.7	0.6792	0.5273	-5.65	0.08	6.45	51.80	0.4315	0.0623	0.0173	0.9835	2.1090	1.3091	76.88	79.15
7	46.9	-3.4	0.6798	0.5403	-6.94	-1.06	6.78	50.23	0.4144	0.0611	0.0173	0.9837	2.1257	1.3088	77.84	80.04
8	45.2	-2.5	0.6897	0.5647	-8.61	-2.61	7.73	47.74	0.3859	0.0523	0.0150	0.9857	2.1590	1.3102	79.26	81.36
9	44.6	-1.7	0.6901	0.5812	-11.33	-5.11	10.68	46.29	0.3662	0.0834	0.0249	0.9773	2.1610	1.3246	75.85	78.29
10	46.7	-1.1	0.6819	0.5745	-11.51	-5.27	12.67	47.85	0.3745	0.1006	0.0305	0.9731	2.1393	1.3396	71.45	74.29
11	49.7	-0.7	0.6673	0.5622	-13.96	-7.82	15.70	50.40	0.3863	0.1174	0.0360	0.9697	2.1076	1.3552	66.80	70.04

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	PCT TE SPAN	EPSI-1 DEGREE	EPSI-2 DEGREE
1	1128.8	912.6	733.9	912.6	857.7	5.1	56.69	74.75	0.0430	27.018	4.646
2	1098.4	909.7	725.8	909.7	824.5	8.8	57.01	76.17	0.0901	24.173	3.896
3	1052.6	886.0	708.9	886.0	778.1	-0.3	56.34	75.65	0.1410	21.020	3.210
4	930.0	756.0	640.3	755.3	674.5	-33.2	51.42	65.64	0.2989	12.524	1.355
5	836.6	654.2	561.1	653.1	620.6	-37.0	44.85	56.21	0.5086	3.329	-0.842
6	805.0	635.6	537.1	634.3	599.7	-40.5	42.95	54.33	0.6103	-1.655	-1.901
7	805.6	650.4	551.1	649.3	587.5	-38.3	44.31	55.69	0.6598	-4.000	-2.421
8	816.7	678.5	576.1	677.8	578.9	-30.1	46.62	58.24	0.7107	-5.927	-2.969
9	821.6	700.8	587.4	700.5	574.5	-20.7	47.54	59.07	0.8620	-11.183	-4.460
10	817.3	697.1	563.4	697.0	592.1	-13.6	45.04	57.74	0.9101	-12.822	-5.005
11	805.9	687.1	526.9	687.0	609.8	-8.9	41.53	55.79	0.9571	-15.116	-5.521

NCORR INLET RPM	WCORR INLET LBM/SEC	WCORR INLET KG/SEC
13086.70	179.30	81.32

T0/T0 STAGE	P02/P01	P0/P0 STAGE	EFF-AD STAGE %	EFF-P STAGE %
1.3197	0.9690	2.2241	80.24	82.31

AIRFOIL AERODYNAMIC SUMMARY PRINT

105 PERCENT DESIGN SPEED (ROTOR PERFORMANCE) RUN NO 111 SPEED CODE 5 POINT NO 4

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	U-1 M/SEC	U-2 M/SEC	V'-1 M/SEC	V'-2 M/SEC	VO'-1 M/SEC	VO'-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	155.6	333.5	155.6	194.8	0.0	270.6	302.6	351.3	340.2	210.8	-302.6	-80.6	135.17	251.84	0.5119	0.5152
2	167.6	323.6	167.6	195.2	0.0	258.1	321.9	361.3	363.0	220.8	-321.9	-103.2	142.95	256.01	0.4242	0.4484
3	179.5	309.0	179.5	190.8	0.0	243.1	340.9	371.3	385.3	229.9	-340.9	-128.3	150.06	253.11	0.3407	0.3806
4	204.3	273.5	204.3	170.2	0.0	214.2	390.7	401.4	440.9	253.0	-390.7	-187.2	162.97	229.05	0.1305	0.1967
5	211.4	247.2	211.4	148.4	0.0	197.7	446.1	441.5	493.6	285.4	-446.1	-243.8	166.16	199.09	-0.0594	0.0215
6	211.3	240.1	211.3	143.7	0.0	192.4	471.0	461.5	516.3	305.1	-471.0	-269.2	166.14	192.92	-0.1223	-0.0546
7	211.1	241.2	211.1	150.3	0.0	188.6	482.9	471.6	527.0	320.4	-482.9	-283.0	166.03	203.12	-0.1536	-0.0923
8	209.8	243.4	209.8	156.9	0.0	186.1	494.8	481.6	537.4	334.6	-494.8	-295.5	165.48	213.32	-0.1895	-0.1305
9	201.4	239.0	201.4	150.4	0.0	185.8	529.4	511.7	566.4	358.9	-529.4	-325.8	161.60	204.03	-0.2935	-0.2502
10	198.3	234.7	198.3	135.3	0.0	191.8	540.2	521.7	575.5	356.6	-540.2	-329.9	160.09	181.53	-0.3192	-0.2877
11	196.0	229.5	196.0	118.8	0.0	196.3	550.6	531.7	584.4	355.8	-550.6	-335.4	158.95	158.06	-0.3290	-0.3177

SL	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	M-1	M-2	M'-1	M'-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	%EFF-A TOTAL	%EFF-P TOTAL
1	0.0	54.0	62.50	22.27	0.4814	0.9434	1.0529	0.5965	-2.58	1.51	10.33	40.23	0.5625	0.1217	0.0238	2.6984	94.13	94.89
2	0.0	53.0	62.28	27.92	0.5208	0.9134	1.1276	0.6232	-1.44	2.27	10.14	34.36	0.5623	0.1013	0.0199	2.6607	94.41	95.12
3	0.0	52.1	62.06	34.12	0.5600	0.8700	1.2017	0.6473	-0.38	3.00	10.67	27.94	0.5616	0.0935	0.0181	2.5815	94.10	94.83
4	0.0	51.8	62.33	47.97	0.6431	0.7629	1.3879	0.7057	0.43	2.71	12.17	14.36	0.5608	0.1215	0.0217	2.3961	90.02	91.16
5	0.0	53.0	64.64	58.61	0.6674	0.6810	1.5586	0.7862	0.47	2.32	13.04	6.03	0.5401	0.1830	0.0282	2.2707	82.56	84.43
6	0.0	53.0	65.78	61.69	0.6672	0.6582	1.6301	0.8365	0.64	2.37	11.40	4.09	0.5209	0.1998	0.0290	2.2506	80.18	82.29
7	0.0	51.1	66.31	61.75	0.6663	0.6612	1.6638	0.8786	0.87	2.55	9.37	4.56	0.5007	0.1881	0.0277	2.2704	81.02	83.06
8	0.0	49.5	66.93	61.70	0.6621	0.6673	1.6957	0.9172	1.41	2.97	8.11	5.23	0.4837	0.1790	0.0267	2.2968	81.67	83.66
9	0.0	50.6	69.13	64.92	0.6333	0.6490	1.7811	0.9743	1.99	3.41	6.44	4.21	0.4690	0.2153	0.0290	2.3015	77.18	79.67
10	0.0	54.5	69.80	67.46	0.6228	0.6317	1.8074	0.9597	1.69	3.07	6.93	2.34	0.4834	0.2602	0.0313	2.2832	72.57	75.52
11	0.0	58.6	70.32	70.34	0.6151	0.6128	1.8338	0.9502	1.28	2.61	7.73	-0.02	0.4936	0.2985	0.0312	2.2645	68.77	72.09

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	EPSI-1 DEGREE	EPSI-2 DEGREE	PCT TE SPAN
1	510.4	1094.1	510.4	639.2	0.0	888.0	992.7	1152.5	1116.2	691.7	-992.7	-264.5	27.68	51.58	29.328	29.521	0.0500
2	550.0	1061.7	550.0	640.4	0.0	846.8	1056.3	1185.4	1190.9	724.4	-1056.3	-338.6	29.28	52.43	24.303	25.694	0.1000
3	589.1	1013.8	589.1	626.0	0.0	797.5	1118.5	1218.3	1264.1	754.3	-1118.5	-420.8	30.73	51.84	19.523	21.804	0.1500
4	670.3	897.5	670.3	558.3	0.0	702.7	1281.8	1317.0	1446.5	830.1	-1281.8	-614.3	33.38	46.91	7.475	11.270	0.3000
5	693.5	811.2	693.5	487.1	0.0	648.7	1463.6	1448.6	1619.6	936.5	-1463.6	-799.8	34.03	40.77	-3.404	1.233	0.5000
6	693.3	787.8	693.3	471.5	0.0	631.1	1545.5	1514.3	1693.9	1001.2	-1545.5	-883.2	34.03	39.51	-7.006	-3.131	0.6000
7	692.5	791.2	692.5	493.2	0.0	618.7	1584.4	1547.2	1729.2	1051.4	-1584.4	-928.5	34.00	41.60	-8.801	-5.279	0.6500
8	688.4	798.7	688.4	514.9	0.0	610.5	1623.3	1580.1	1763.2	1097.8	-1623.3	-969.6	33.89	43.69	-10.855	-7.475	0.7000
9	660.8	784.3	660.8	493.3	0.0	609.7	1737.0	1678.8	1858.4	1177.4	-1737.0	-1069.1	33.10	41.79	-16.814	-14.336	0.8500
10	650.7	770.0	650.7	443.8	0.0	629.2	1772.5	1711.7	1888.1	1169.9	-1772.5	-1082.5	32.79	37.18	-18.288	-16.486	0.9000
11	643.1	753.0	643.1	389.9	0.0	644.2	1806.4	1744.6	1917.5	1167.4	-1806.4	-1100.4	32.55	32.37	-18.851	-18.202	0.9500

WC1/A1 LBM/SEC SQFT	WC1/A1 KG/SEC SQM	T02/T01	P02/P01	EFF-AD ROTOR %	EFF-P ROTOR %
40.17	196.03	1.3333	2.3753	84.07	85.87

AIRFOIL AERODYNAMIC SUMMARY PRINT

105 PERCENT DESIGN SPEED (STATOR PERFORMANCE) RUN NO 111 SPEED CODE 5 POINT NO 4

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	343.3	265.6	218.4	265.6	264.9	5.0	274.84	367.83	0.4718	0.0905
2	333.0	263.0	215.5	262.9	253.8	2.5	275.95	371.44	0.4218	0.0673
3	318.5	253.7	210.0	253.7	239.4	-1.3	272.22	364.28	0.3656	0.0559
4	285.0	218.0	190.7	217.9	211.8	-6.8	250.44	316.91	0.2159	0.0257
5	258.8	190.8	167.7	190.5	197.1	-9.3	219.93	274.27	0.0604	-0.0117
6	252.1	186.6	162.8	186.3	192.6	-10.0	213.63	266.59	-0.0210	-0.0299
7	253.7	192.1	169.0	191.9	189.1	-8.6	223.24	275.10	-0.0578	-0.0388
8	256.5	199.9	175.5	199.8	187.0	-5.5	232.79	286.64	-0.0884	-0.0481
9	255.6	204.7	173.1	204.7	188.0	-5.3	227.87	287.54	-0.1800	-0.0752
10	253.7	202.9	162.8	202.9	194.6	-3.6	211.27	279.84	-0.2124	-0.0854
11	251.3	200.7	151.9	200.7	200.2	-0.9	194.51	271.60	-0.2577	-0.0955

SL	B-1 DEGREE	B-2 DEGREE	M-1	M-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	P0/P0 STAGE	T0/T0 STAGE	%EFF-A TOT-STG	%EFF-P TOT-STG
1	52.6	1.0	0.9764	0.7284	-1.80	1.15	14.91	51.60	0.3942	0.1851	0.0426	0.9155	2.4690	1.3478	84.65	86.46
2	51.4	0.5	0.9443	0.7225	-1.01	2.12	12.49	50.89	0.3790	0.1374	0.0322	0.9401	2.4948	1.3405	87.62	89.10
3	50.1	-0.3	0.9008	0.6979	-1.71	1.66	10.55	50.35	0.3750	0.0909	0.0217	0.9630	2.4750	1.3292	89.71	90.93
4	48.5	-1.8	0.7989	0.5958	-4.50	-0.26	8.22	50.26	0.4220	0.0653	0.0165	0.9779	2.3327	1.3147	86.97	88.42
5	49.7	-2.8	0.7160	0.5158	-4.31	1.04	7.28	52.45	0.4764	0.0658	0.0178	0.9811	2.2240	1.3205	80.01	82.11
6	49.8	-3.1	0.6942	0.5030	-4.01	1.72	7.03	52.85	0.4843	0.0751	0.0209	0.9794	2.2049	1.3255	77.84	80.14
7	48.2	-2.6	0.6987	0.5186	-5.58	0.29	7.58	50.78	0.4649	0.0750	0.0212	0.9791	2.2263	1.3258	78.83	81.05
8	46.8	-1.6	0.7064	0.5402	-6.96	-0.97	8.69	48.41	0.4378	0.0640	0.0184	0.9819	2.2568	1.3284	79.69	81.86
9	47.5	-1.5	0.6981	0.5499	-8.40	-2.13	10.90	48.99	0.4275	0.0759	0.0227	0.9789	2.2531	1.3475	75.13	77.77
10	50.3	-1.0	0.6876	0.5412	-7.93	-1.69	12.77	51.34	0.4396	0.0885	0.0268	0.9760	2.2301	1.3646	70.60	73.68
11	53.2	-0.2	0.6759	0.5315	-10.38	-4.24	16.18	53.49	0.4500	0.1021	0.0313	0.9731	2.2042	1.3815	66.35	69.81

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	PCT TE SPAN	EPSI-1 DEGREE	EPSI-2 DEGREE
1	1126.4	871.5	716.5	871.4	869.2	16.5	56.29	75.33	0.0430	27.033	4.614
2	1092.4	862.7	707.0	862.7	832.7	8.0	56.52	76.07	0.0901	24.170	3.855
3	1044.9	832.4	688.9	832.4	785.6	-4.2	55.75	74.61	0.1410	20.947	3.204
4	935.1	715.4	625.6	715.0	695.1	-22.4	51.29	64.91	0.2989	12.371	1.471
5	849.1	625.9	550.2	625.	646.8	-30.4	45.04	56.17	0.5086	3.463	-0.672
6	827.2	612.2	534.0	611.3	631.8	-32.7	43.75	54.60	0.6103	-1.204	-1.715
7	832.3	630.3	554.7	629.7	629.5	-28.3	45.72	56.34	0.6598	-3.310	-2.223
8	841.5	655.9	575.7	655.6	613.7	-18.0	47.68	58.71	0.7107	-5.064	-2.758
9	838.6	671.8	567.9	671.5	616.9	-17.2	46.67	58.89	0.8620	-10.315	-4.308
10	832.5	665.8	534.3	665.7	638.5	-11.9	43.27	57.31	0.9101	-12.169	-4.891
11	824.4	658.5	498.2	658.5	656.8	-2.9	39.84	55.63	0.9571	-14.768	-5.469

NCORR INLET RPM	WCORR INLET LBM/SEC	WCORR INLET KG/SEC	T0/T0 STAGE	P02/P01	P0/P0 STAGE	EFF-AD STAGE %	EFF-P STAGE %
13089.40	179.00	81.18	1.3333	0.9704	2.3050	80.80	82.89

AIRFOIL AERODYNAMIC SUMMARY PRINT

105 PERCENT DESIGN SPEED (ROTOR PERFORMANCE) RUN NO 111 SPEED CODE 5 POINT NO 5

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	U-1 M/SEC	U-2 M/SEC	V'-1 M/SEC	V'-2 M/SEC	VO'-1 M/SEC	VO'-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	155.0	333.7	155.0	189.7	0.0	274.5	302.7	351.5	340.1	204.7	-302.7	-76.9	134.78	247.74	0.5114	0.5158
2	167.0	322.5	167.0	189.0	0.0	261.2	322.1	361.5	362.8	214.0	-322.1	-100.2	142.56	250.61	0.4237	0.4490
3	178.9	307.4	178.9	184.8	0.0	245.7	341.1	371.5	385.1	223.6	-341.1	-125.8	149.67	248.17	0.3414	0.3799
4	203.9	276.4	203.9	167.0	0.0	220.3	390.9	401.6	440.9	246.6	-390.9	-181.4	162.80	228.62	0.1346	0.1959
5	212.1	252.8	212.1	147.4	0.0	205.4	446.3	441.7	494.2	278.5	-446.3	-236.3	166.49	201.99	-0.0565	0.0217
6	212.2	247.6	212.2	144.8	0.0	200.9	471.3	461.8	516.9	298.4	-471.3	-260.9	166.54	199.01	-0.1235	-0.0538
7	211.8	249.6	211.8	152.1	0.0	197.9	483.2	471.8	527.6	313.4	-483.2	-274.0	166.35	210.30	-0.1576	-0.0919
8	210.2	251.6	210.2	156.8	0.0	196.8	495.0	481.9	537.8	325.4	-495.0	-285.1	165.66	217.65	-0.1952	-0.1310
9	200.9	246.9	200.9	144.9	0.0	199.9	529.7	512.0	566.5	344.0	-529.7	-312.0	161.34	199.71	-0.2987	-0.2521
10	197.7	243.0	197.7	129.7	0.0	205.5	540.5	522.0	575.5	342.1	-540.5	-316.5	159.78	176.95	-0.3229	-0.2892
11	195.4	238.8	195.4	114.3	0.0	209.7	550.9	532.0	584.5	342.0	-550.9	-322.4	158.64	154.83	-0.3310	-0.3185

SL	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	M-1	M-2	M'-1	M'-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	%EFF-A TOTAL	%EFF-P TOTAL
1	0.0	55.1	62.60	21.87	0.4794	0.9418	1.0520	0.5778	-2.48	1.61	9.93	40.72	0.5823	0.1229	0.0241	2.7324	94.15	94.92
2	0.0	54.2	62.38	28.00	0.5186	0.9078	1.1266	0.6024	-1.35	2.37	10.21	34.38	0.5819	0.1047	0.0206	2.6858	94.30	95.04
3	0.0	53.3	62.17	34.46	0.5575	0.8633	1.2005	0.6279	-0.27	3.11	11.01	27.71	0.5780	0.0934	0.0180	2.6058	94.20	94.93
4	0.0	53.1	62.40	47.59	0.6417	0.7688	1.3873	0.6857	0.50	2.78	11.78	14.81	0.5780	0.1172	0.0210	2.4629	90.67	91.76
5	0.0	54.3	64.56	58.00	0.6697	0.6940	1.5603	0.7647	0.39	2.25	12.44	6.56	0.5586	0.1761	0.0276	2.3619	83.77	85.60
6	0.0	54.0	65.70	60.75	0.6701	0.6765	1.6320	0.8153	0.57	2.30	10.45	4.95	0.5393	0.1919	0.0287	2.3549	81.63	83.68
7	0.0	52.1	66.27	60.69	0.6686	0.6816	1.6655	0.8559	0.82	2.50	8.31	5.58	0.5202	0.1820	0.0277	2.3813	82.30	84.30
8	0.0	51.1	66.93	60.86	0.6631	0.6863	1.6967	0.8875	1.41	2.97	7.26	6.07	0.5077	0.1811	0.0277	2.4067	82.15	84.19
9	0.0	53.7	69.22	64.78	0.6313	0.6651	1.7804	0.9266	2.08	3.50	6.30	4.44	0.5032	0.2357	0.0319	2.4063	76.08	78.81
10	0.0	57.4	69.89	67.48	0.6205	0.6490	1.8066	0.9136	1.78	3.16	6.95	2.41	0.5161	0.2772	0.0333	2.3900	71.98	75.15
11	0.0	61.2	70.40	70.33	0.6128	0.6331	1.8330	0.9068	1.36	2.69	7.72	0.07	0.5243	0.3116	0.0326	2.3766	66.70	72.21

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	EPSI-1 DEGREE	EPSI-2 DEGREE	PCT TE SPAN
1	508.5	1094.9	508.5	622.5	0.0	900.7	993.2	1153.1	1115.8	671.7	-993.2	-252.5	27.60	50.74	29.304	29.553	0.0500
2	548.0	1058.0	548.0	620.3	0.0	857.1	1056.9	1186.0	1190.5	702.1	-1056.9	-328.9	29.20	51.33	24.275	25.725	0.1000
3	586.8	1008.7	586.8	606.4	0.0	806.0	1119.1	1219.0	1263.6	733.6	-1119.1	-412.9	30.65	50.83	19.559	21.766	0.1500
4	669.1	907.0	669.1	548.0	0.0	722.7	1282.5	1317.7	1446.5	809.0	-1282.5	-595.0	33.34	46.82	7.713	11.225	0.3000
5	696.0	829.4	696.0	483.5	0.0	673.9	1464.4	1449.4	1621.4	913.8	-1464.4	-775.4	34.10	41.37	-3.238	1.245	0.5000
6	696.3	812.5	696.3	475.2	0.0	659.0	1546.3	1515.2	1695.9	979.2	-1546.3	-856.2	34.11	40.76	-7.073	-3.085	0.6000
7	694.9	818.8	694.9	499.0	0.0	649.2	1585.3	1548.1	1730.9	1028.1	-1585.3	-898.9	34.07	43.07	-9.027	-5.264	0.6500
8	689.7	825.6	689.7	514.5	0.0	645.6	1624.2	1581.0	1764.6	1067.5	-1624.2	-935.4	33.93	44.58	-11.183	-7.506	0.7000
9	659.0	810.2	659.0	475.6	0.0	656.0	1738.0	1679.7	1858.7	1128.8	-1738.0	-1023.8	33.04	40.90	-17.112	-14.444	0.8500
10	648.6	797.3	648.6	425.6	0.0	674.2	1773.5	1712.7	1888.3	1122.3	-1773.5	-1038.5	32.72	36.24	-18.500	-16.568	0.9000
11	641.1	783.5	641.1	375.1	0.0	687.9	1807.4	1745.6	1917.7	1122.2	-1807.4	-1057.7	32.49	31.71	-18.968	-18.250	0.9500

WC1/A1 LBM/SEC SQFT	WC1/A1 KG/SEC SQM	T02/T01	P02/P01	EFF-AD ROTOR %	EFF-P ROTOR %
40.13	195.81	1.3473	2.4552	84.19	86.04

AIRFOIL AERODYNAMIC SUMMARY PRINT

105 PERCENT DESIGN SPEED (STATOR PERFORMANCE) RUN NO 111 SPEED CODE 5 POINT NO 5

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	342.3	250.1	212.0	250.1	268.7	5.7	270.52	362.26	0.4713	0.0809
2	330.7	246.0	208.3	246.0	256.9	2.5	270.43	362.68	0.4201	0.0683
3	315.8	236.5	202.9	236.5	241.9	-2.6	267.06	353.80	0.3611	0.0582
4	286.7	207.2	186.3	207.2	217.8	-4.9	249.46	313.32	0.2089	0.0302
5	263.3	184.8	165.5	184.6	204.8	-8.3	222.21	276.42	0.0578	-0.0070
6	258.6	181.3	162.7	181.1	201.1	-9.7	218.87	269.32	-0.0185	-0.0252
7	261.0	187.0	169.6	186.9	198.5	-7.0	229.45	278.21	-0.0520	-0.0340
8	263.7	194.2	174.4	194.2	197.8	-3.6	236.51	288.76	-0.0805	-0.0434
9	262.7	199.5	167.7	199.5	202.2	-3.2	224.46	289.67	-0.1730	-0.0719
10	261.1	198.5	157.1	198.5	208.5	-1.0	207.56	283.50	-0.2075	-0.0828
11	259.3	198.3	146.9	198.3	213.7	0.9	191.93	278.35	-0.2547	-0.0942

SL	B-1 DEGREE	B-2 DEGREE	M-1	M-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	PO/PO STAGE	TO/TO STAGE	%EFF-A TOT-STG	%EFF-P TOT-STG
1	53.8	1.3	0.9705	0.6803	-0.61	2.34	15.13	52.57	0.4395	0.1756	0.0404	0.9205	2.5133	1.3527	85.34	87.10
2	52.7	0.6	0.9349	0.6703	0.25	3.38	12.54	52.10	0.4283	0.1322	0.0310	0.9432	2.5267	1.3446	87.95	89.40
3	51.3	-0.6	0.8904	0.6452	-0.51	2.86	10.22	51.89	0.4264	0.0904	0.0216	0.9638	2.5040	1.3331	89.98	91.18
4	49.9	-1.3	0.8008	0.5621	-3.10	1.14	8.65	51.22	0.4685	0.0687	0.0174	0.9765	2.3988	1.3240	87.61	89.02
5	51.1	-2.6	0.7258	0.4962	-2.87	2.48	7.49	53.68	0.5161	0.0671	0.0181	0.9802	2.3136	1.3329	81.31	83.36
6	51.0	-3.1	0.7094	0.4852	-2.78	2.95	7.04	54.08	0.5266	0.0848	0.0236	0.9759	2.2979	1.3398	78.92	81.21
7	49.5	-2.1	0.7161	0.5008	-4.31	1.56	8.02	51.61	0.5073	0.0893	0.0252	0.9742	2.3202	1.3417	79.52	81.77
8	48.6	-1.1	0.7225	0.5201	-5.21	0.78	9.21	49.65	0.4836	0.0811	0.0233	0.9762	2.3481	1.3466	79.62	81.89
9	50.5	-0.9	0.7116	0.5298	-5.48	0.74	11.44	51.37	0.4764	0.0859	0.0257	0.9753	2.3480	1.3723	74.12	76.99
10	53.2	-0.3	0.7019	0.5237	-5.06	1.18	13.50	53.48	0.4848	0.0928	0.0281	0.9739	2.3303	1.3893	70.17	73.45
11	55.9	0.3	0.6925	0.5198	-7.74	-1.60	16.70	55.61	0.4900	0.0973	0.0299	0.9733	2.3141	1.4066	66.54	70.18

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	PCT TE SPAN	EPSI-1 DEGREE	EPSI-2 DEGREE
1	1123.0	820.7	695.7	820.5	881.6	18.8	55.41	74.19	0.0430	27.003	4.636
2	1085.2	807.2	683.5	807.2	842.9	8.3	55.39	74.28	0.0901	24.072	3.915
3	1036.1	775.9	665.9	775.9	793.8	-8.6	54.70	72.46	0.1410	20.689	3.332
4	940.6	680.0	611.4	679.8	714.7	-16.1	51.09	64.17	0.2989	11.971	1.731
5	863.9	606.2	543.0	605.6	672.0	-27.3	45.51	56.61	0.5085	3.313	-0.402
6	848.6	594.9	533.7	594.1	659.7	-31.8	44.83	55.16	0.6103	-1.058	-1.445
7	856.5	613.6	556.4	613.1	651.1	-22.8	46.99	56.98	0.6598	-2.979	-1.950
8	865.2	637.2	572.2	637.1	648.9	-11.7	48.44	59.14	0.7107	-4.612	-2.487
9	861.8	654.5	550.2	654.4	663.3	-10.6	45.97	59.33	0.8620	-9.911	-4.120
10	856.5	651.4	515.6	651.4	683.9	-3.3	42.51	58.06	0.9101	-11.890	-4.747
11	850.8	650.8	482.1	650.8	701.1	3.1	39.31	57.01	0.9571	-14.596	-5.400

NCORR INLET RPM	WCORR INLET LBM/SEC	WCORR INLET KG/SEC	TO/TO STAGE	P02/P01	PO/PO STAGE	EFF-AD STAGE %	EFF-P STAGE %
13092.60	178.80	81.09	1.3473	0.9694	2.3802	80.91	83.07

AIRFOIL AERODYNAMIC SUMMARY PRINT

RUN NO 111 SPEED CODE 5 POINT NO 10

105 PERCENT DESIGN SPEED (ROTOR PERFORMANCE)

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	U-1 M/SEC	U-2 M/SEC	V'-1 M/SEC	V'-2 M/SEC	VO'-1 M/SEC	VO'-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	151.8	332.4	151.8	180.9	0.0	278.8	302.2	359.8	338.2	194.8	-302.2	-72.0	133.49	239.35	0.5117	0.5237
2	163.4	321.7	163.4	180.0	0.0	266.6	321.5	360.9	360.7	203.2	-321.5	-94.2	141.20	242.11	0.4238	0.4612
3	174.7	306.6	174.7	169.5	0.0	255.5	340.5	370.9	382.7	205.0	-340.5	-115.3	148.21	230.14	0.3448	0.3884
4	200.4	281.2	200.4	159.5	0.0	231.6	390.2	400.9	438.7	232.6	-390.2	-169.3	162.14	223.81	0.1495	0.2018
5	212.4	265.6	212.4	148.7	0.0	220.1	445.4	441.0	493.6	266.3	-445.5	-220.9	167.65	211.88	-0.0466	0.0266
6	212.9	262.1	212.9	148.1	0.0	216.2	470.5	461.0	516.4	286.1	-470.5	-244.7	167.87	212.29	-0.1230	-0.0516
7	212.3	263.4	212.3	153.3	0.0	214.2	482.3	471.0	527.0	299.1	-482.3	-256.8	167.59	220.96	-0.1600	-0.0915
8	210.4	263.9	210.4	153.5	0.0	214.7	494.2	481.0	537.1	307.4	-494.2	-266.3	166.76	221.39	-0.1982	-0.1322
9	200.9	260.0	200.9	138.1	0.0	220.2	528.8	511.1	565.6	321.9	-528.8	-290.8	162.37	197.81	-0.2969	-0.2523
10	197.8	257.8	197.8	126.0	0.0	224.9	539.6	521.1	574.7	321.8	-539.6	-296.1	160.84	179.34	-0.3206	-0.2880
11	195.4	255.1	195.4	112.9	0.0	228.8	549.9	531.1	583.6	322.7	-549.9	-302.3	159.66	159.92	-0.3310	-0.3169

SL	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	M-1	M-2	M'-1	M'-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	%EFF-A TOTAL	%EFF-P TOTAL
1	0.0	56.9	63.04	21.59	0.4700	0.9369	1.0470	0.5489	-2.04	2.06	9.65	41.45	0.6113	0.1452	0.0286	2.7504	93.24	94.12
2	0.0	56.2	62.85	27.82	0.5077	0.9042	1.1206	0.5711	-0.88	2.84	10.04	35.02	0.6106	0.1262	0.0248	2.7134	93.33	94.19
3	0.0	56.7	62.70	34.53	0.5449	0.8573	1.1934	0.5732	0.26	3.65	11.08	28.17	0.6270	0.1435	0.0277	2.6330	91.50	92.57
4	0.0	55.7	62.82	46.98	0.6310	0.7795	1.3810	0.6449	0.91	3.20	11.18	15.84	0.6107	0.1309	0.0238	2.5586	90.24	91.44
5	0.0	55.9	64.48	56.01	0.6720	0.7269	1.5616	0.7288	0.31	2.17	10.44	8.48	0.5897	0.1691	0.0280	2.5367	85.45	87.21
6	0.0	55.3	65.59	58.59	0.6738	0.7136	1.6342	0.7789	0.45	2.19	8.29	7.00	0.5713	0.1827	0.0292	2.5470	83.59	85.58
7	0.0	54.1	66.19	58.87	0.6715	0.7163	1.6671	0.8133	0.75	2.42	6.49	7.32	0.5560	0.1790	0.0288	2.5736	83.64	85.65
8	0.0	54.1	66.89	59.71	0.6650	0.7153	1.6977	0.8331	1.37	2.92	5.12	7.18	0.5508	0.1903	0.0302	2.5909	82.38	84.55
9	0.0	57.6	69.17	64.29	0.6326	0.6942	1.7811	0.8598	2.03	3.45	5.82	4.88	0.5525	0.2534	0.0349	2.6008	75.92	78.89
10	0.0	60.4	69.83	66.70	0.6220	0.6835	1.8073	0.8533	1.73	3.10	6.17	3.13	0.5609	0.2863	0.0356	2.5981	72.82	76.16
11	0.0	63.6	70.37	69.37	0.6141	0.6718	1.8336	0.8497	1.32	2.66	6.76	1.00	0.5667	0.3158	0.0345	2.5953	70.15	73.81

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	EPSI-1 DEGREE	EPSI-2 DEGREE	PCT TE SPAN
1	498.0	1090.6	498.0	593.7	0.0	914.8	991.5	1151.1	1109.5	639.0	-991.5	-236.3	27.34	49.02	29.319	30.007	0.0500
2	536.2	1055.6	536.2	590.7	0.0	874.9	1055.0	1184.0	1183.4	666.7	-1055.0	-309.1	28.92	49.59	24.284	26.422	0.1000
3	573.3	1006.0	573.3	556.1	0.0	838.4	1117.1	1216.8	1255.6	672.6	-1117.1	-378.4	30.35	47.13	19.735	22.251	0.1500
4	657.6	922.6	657.6	523.4	0.0	759.8	1280.2	1315.4	1439.2	763.3	-1280.2	-555.6	33.21	45.84	8.568	11.565	0.3000
5	696.9	871.3	696.9	487.8	0.0	722.0	1461.8	1446.8	1619.4	873.6	-1461.8	-724.8	34.34	43.40	-2.670	1.526	0.5000
6	698.6	860.0	698.6	486.0	0.0	709.5	1543.6	1512.5	1694.3	938.6	-1543.6	-803.0	34.38	43.48	-7.045	-2.956	0.6000
7	696.4	864.3	696.4	503.1	0.0	702.8	1582.5	1545.3	1729.0	981.3	-1582.5	-842.6	34.32	45.25	-9.170	-5.242	0.6500
8	690.3	865.8	690.3	503.5	0.0	704.4	1621.3	1578.2	1762.1	1008.5	-1621.3	-873.8	34.15	45.34	-11.358	-7.577	0.7000
9	659.1	852.9	659.1	453.1	0.0	722.6	1734.9	1676.8	1855.9	1056.3	-1734.9	-954.2	33.25	40.51	-17.012	-14.457	0.8500
10	648.9	845.8	648.9	413.3	0.0	738.0	1770.3	1709.6	1885.5	1055.9	-1770.3	-971.7	32.94	36.73	-18.369	-16.500	0.9000
11	641.2	837.0	641.2	370.3	0.0	750.7	1804.2	1742.5	1914.7	1058.7	-1804.2	-991.8	32.70	32.75	-18.967	-18.157	0.9500

WC1/A1 LBM/SEC SQFT	WC1/A1 KG/SEC SQM	T02/T01	P02/P01	EFF-AD ROTOR %	EFF-P ROTOR %
39.95	194.93	1.3724	2.5929	83.94	85.93

AIRFOIL AERODYNAMIC SUMMARY PRINT

105 PERCENT DESIGN SPEED (STATOR PERFORMANCE) RUN NO 111 SPEED CODE 5 POINT NO 10

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	338.9	216.8	200.9	216.7	273.0	3.3	261.14	338.11	0.4785	0.0811
2	328.1	212.0	197.3	212.0	262.2	-1.8	261.33	334.79	0.4303	0.0697
3	313.1	206.2	186.3	206.2	251.6	-5.8	249.12	328.95	0.3635	0.0625
4	289.6	186.0	177.3	185.9	229.0	-4.1	244.14	300.08	0.1956	0.0388
5	274.7	178.4	165.2	178.4	219.5	-4.8	231.08	285.89	0.0522	0.0014
6	271.9	178.0	164.5	177.8	216.5	-8.3	231.23	283.21	-0.0158	-0.0176
7	273.8	181.3	169.7	181.1	214.9	-7.6	239.56	288.19	-0.0472	-0.0269
8	275.1	187.1	170.5	187.0	215.8	-4.4	240.57	296.52	-0.0761	-0.0368
9	274.8	194.0	160.7	194.0	222.9	2.3	223.77	299.50	-0.1745	-0.0682
10	274.7	195.3	152.8	195.2	228.2	5.2	210.77	297.21	-0.2075	-0.0803
11	274.3	198.3	144.5	198.2	233.1	7.0	197.58	297.18	-0.2524	-0.0934

SL	B-1 DEGREE	B-2 DEGREE	M-1	M-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	P0/P0 STAGE	T0/T0 STAGE	%EFF-A TOT-STG	%EFF-P TOT-STG
1	55.8	0.8	0.9585	0.5825	1.37	4.33	14.71	54.98	0.5379	0.1632	0.0376	0.9273	2.5505	1.3592	85.31	87.10
2	54.8	-0.5	0.9251	0.5702	2.41	5.54	11.50	55.30	0.5371	0.1389	0.0326	0.9410	2.5539	1.3534	86.87	88.47
3	54.7	-1.6	0.8780	0.5549	2.95	6.32	9.27	56.30	0.5330	0.0800	0.0191	0.9685	2.5493	1.3479	88.04	89.49
4	52.6	-1.3	0.8058	0.4989	-0.39	3.86	8.73	53.86	0.5585	0.0708	0.0179	0.9754	2.4946	1.3409	87.48	88.98
5	53.1	-1.5	0.7546	0.4750	-0.91	4.45	8.54	54.59	0.5709	0.0741	0.0200	0.9767	2.4776	1.3563	83.00	85.01
6	52.8	-2.7	0.7431	0.4721	-1.04	4.70	7.43	55.43	0.5763	0.0894	0.0249	0.9725	2.4757	1.3655	80.83	83.09
7	51.7	-2.4	0.7476	0.4806	-2.10	3.77	7.74	54.11	0.5671	0.0983	0.0278	0.9697	2.4891	1.3692	80.55	82.85
8	51.7	-1.3	0.7487	0.4952	-2.12	3.87	8.92	53.02	0.5494	0.0946	0.0272	0.9706	2.5113	1.3768	79.80	82.21
9	54.3	0.7	0.7379	0.5081	-1.60	4.62	13.03	53.66	0.5355	0.1016	0.0304	0.9691	2.5230	1.4098	73.66	76.81
10	56.4	1.5	0.7329	0.5087	-1.86	4.38	15.28	54.90	0.5365	0.1087	0.0329	0.9673	2.5137	1.4259	70.66	74.15
11	58.6	2.0	0.7273	0.5137	-5.04	1.10	18.42	56.59	0.5328	0.1079	0.0331	0.9680	2.5125	1.4437	67.76	71.58

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	PCT TE SPAN	EPSI-1 DEGREE	EPSI-2 DEGREE
1	1112.0	711.2	659.0	711.1	895.6	10.9	53.48	69.25	0.0430	27.418	4.644
2	1076.6	695.5	647.5	695.5	860.1	-5.8	53.52	68.57	0.0901	24.655	3.993
3	1027.2	676.6	611.3	676.4	825.5	-18.9	51.02	67.37	0.1410	20.826	3.578
4	950.2	610.1	581.6	610.0	751.4	-13.6	50.00	61.46	0.2939	11.206	2.224
5	901.3	585.4	542.0	585.2	720.1	-15.6	47.33	58.55	0.5086	2.993	0.078
6	892.1	584.0	539.7	583.4	710.3	-27.2	47.36	58.00	0.6103	-0.908	-1.009
7	898.3	594.8	556.7	594.3	705.1	-25.1	49.06	59.02	0.6598	-2.707	-1.543
8	902.5	613.8	559.4	613.6	708.2	-14.4	49.27	60.73	0.7107	-4.362	-2.110
9	901.5	636.4	527.3	636.4	731.2	7.5	45.83	61.34	0.8620	-9.995	-3.910
10	901.2	640.7	501.4	640.4	748.8	16.9	43.17	60.27	0.9101	-11.892	-4.601
11	899.9	650.7	474.0	650.3	765.0	23.0	40.47	60.86	0.9571	-14.464	-5.349

NCORR INLET RPM	WCORR INLET LBM/SEC	WCORR INLET KG/SEC	T0/T0 STAGE	P02/P01	P0/P0 STAGE	EFF-AD STAGE %	EFF-P STAGE %
13092.20	178.00	80.73	1.3724	0.9679	2.5096	80.67	82.98

AIRFOIL AERODYNAMIC SUMMARY PRINT

105 PERCENT DESIGN SPEED (ROTOR PERFORMANCE) RUN NO 111 SPEED CODE 5 POINT NO 8

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	U-1 M/SEC	U-2 M/SEC	V'-1 M/SEC	V'-2 M/SEC	VO'-1 M/SEC	VO'-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	151.9	333.1	151.9	180.4	0.0	280.0	302.6	351.3	338.6	194.0	-302.6	-71.3	133.09	237.28	0.5120	0.5237
2	163.5	320.8	163.5	176.7	0.0	267.8	322.0	361.4	361.2	200.0	-322.0	-93.6	140.78	236.06	0.4249	0.4611
3	174.9	307.9	174.9	171.5	0.0	255.7	341.0	371.4	383.2	206.9	-341.0	-115.7	147.81	232.20	0.3462	0.3883
4	200.8	282.7	200.8	159.6	0.0	233.3	390.7	401.5	439.3	231.8	-390.7	-168.2	161.78	222.91	0.1497	0.2022
5	212.8	266.7	212.8	148.4	0.0	221.6	446.2	441.6	494.3	265.4	-446.2	-220.0	167.29	210.72	-0.0456	0.0274
6	213.5	263.2	213.5	148.7	0.0	217.2	471.1	461.6	517.2	286.1	-471.1	-244.4	167.56	212.48	-0.1221	-0.0508
7	212.8	264.7	212.8	154.1	0.0	215.2	483.0	471.7	527.8	299.2	-483.0	-256.5	167.29	221.44	-0.1596	-0.0907
8	210.9	265.4	210.9	154.3	0.0	215.9	494.9	481.7	537.9	307.3	-494.9	-265.8	166.47	221.95	-0.1982	-0.1315
9	201.3	261.7	201.3	138.6	0.0	222.0	529.5	511.8	566.5	321.2	-529.5	-289.8	162.03	197.80	-0.2981	-0.2518
10	198.1	259.4	198.1	125.9	0.0	226.8	540.3	521.8	575.5	320.8	-540.3	-295.1	160.48	178.65	-0.3220	-0.2877
11	195.7	256.5	195.7	112.0	0.0	230.7	550.7	531.8	584.4	321.3	-550.7	-301.1	159.28	158.13	-0.3324	-0.3168

SL	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	M-1	M-2	M'-1	M'-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	%EFF-A TOTAL	%EFF-P TOTAL
1	0.0	57.1	63.06	21.47	0.4695	0.9370	1.0466	0.5456	-2.02	2.07	9.52	41.59	0.6148	0.1519	0.0299	2.7483	92.93	93.86
2	0.0	56.8	62.88	28.11	0.5072	0.8992	1.1202	0.5604	-0.85	2.86	10.32	34.77	0.6206	0.1429	0.0281	2.6973	92.47	93.44
3	0.0	56.4	62.72	34.29	0.5446	0.8600	1.1931	0.5778	0.28	3.67	10.84	28.43	0.6224	0.1374	0.0266	2.6400	91.88	92.91
4	0.0	55.9	62.81	46.77	0.6311	0.7821	1.3808	0.6414	0.90	3.19	10.97	16.04	0.6142	0.1342	0.0245	2.5657	90.03	91.26
5	0.0	56.1	64.47	55.94	0.6722	0.7285	1.5614	0.7249	0.30	2.15	10.37	8.53	0.5929	0.1719	0.0285	2.5428	85.26	87.05
6	0.0	55.4	65.56	58.45	0.6744	0.7155	1.6342	0.7776	0.43	2.16	8.16	7.11	0.5725	0.1824	0.0292	2.5544	83.66	85.65
7	0.0	54.1	66.16	58.71	0.6723	0.7186	1.6672	0.8122	0.72	2.39	6.33	7.45	0.5571	0.1785	0.0288	2.5823	83.73	85.74
8	0.0	54.1	66.86	59.52	0.6658	0.7180	1.6979	0.8314	1.34	2.90	5.93	7.34	0.5524	0.1902	0.0303	2.6011	82.44	84.61
9	0.0	57.7	69.17	64.13	0.6328	0.6974	1.7809	0.8560	2.03	3.45	5.66	5.04	0.5555	0.2551	0.0353	2.6119	75.84	78.83
10	0.0	60.6	69.83	66.63	0.6221	0.6862	1.8070	0.8487	1.73	3.10	6.10	3.21	0.5643	0.2885	0.0359	2.6081	72.70	76.07
11	0.0	63.9	70.37	69.43	0.6140	0.6738	1.8333	0.8440	1.33	2.66	6.82	0.94	0.5707	0.3187	0.0348	2.6037	69.96	73.66

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	EPSI-1 DEGREE	EPSI-2 DEGREE	PCT TE SPAN
1	498.4	1092.8	498.4	591.8	0.0	918.7	992.9	1152.7	1111.0	636.4	-992.9	-234.0	27.26	48.60	29.333	30.005	0.0500
2	536.6	1052.7	536.6	579.8	0.0	878.6	1056.5	1185.6	1184.9	656.1	-1056.5	-307.0	28.83	48.35	24.343	26.421	0.1000
3	574.0	1010.3	574.0	562.8	0.0	839.0	1118.7	1218.5	1257.3	678.8	-1118.7	-379.5	30.27	47.56	19.838	22.248	0.1500
4	658.8	927.5	658.8	523.6	0.0	765.5	1282.0	1317.3	1441.4	760.6	-1282.0	-551.7	33.13	45.65	8.579	11.587	0.3000
5	698.3	875.1	698.3	487.1	0.0	727.1	1463.9	1448.8	1621.9	870.7	-1463.9	-721.8	34.26	43.16	-2.615	1.568	0.5000
6	700.3	863.7	700.3	487.9	0.0	712.7	1545.8	1514.6	1697.1	938.7	-1545.8	-801.9	34.32	43.52	-6.998	-2.912	0.6000
7	698.3	868.5	698.3	505.6	0.0	706.1	1584.8	1547.5	1731.8	981.7	-1584.8	-841.4	34.26	45.35	-9.142	-5.199	0.6500
8	692.1	870.7	692.1	506.3	0.0	708.4	1623.6	1580.4	1765.0	1008.3	-1623.6	-872.0	34.10	45.46	-11.355	-7.535	0.7000
9	660.5	858.6	660.5	454.6	0.0	728.4	1737.4	1679.2	1858.7	1053.9	-1737.4	-950.8	33.18	40.51	-17.080	-14.429	0.8500
10	650.1	851.1	650.1	413.2	0.0	744.0	1772.9	1712.1	1888.3	1052.6	-1772.9	-968.1	32.87	36.59	-18.451	-16.484	0.9000
11	642.2	841.5	642.2	367.6	0.0	757.0	1806.7	1745.0	1917.5	1054.1	-1806.7	-987.9	32.62	32.39	-19.046	-18.150	0.9500

WC1/A1 LBM/SEC SQFT	WC1/A1 KG/SEC SQM	T02/T01	P02/P01	EFF-AD ROTOR %	EFF-P ROTOR %
39.95	194.93	1.3739	2.5994	83.84	85.85

AIRFOIL AERODYNAMIC SUMMARY PRINT

105 PERCENT DESIGN SPEED (STATOR PERFORMANCE) RUN NO 111 SPEED CODE 5 POINT NO 8

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	339.5	216.2	200.3	216.2	274.1	3.3	259.09	337.08	0.4782	0.0809
2	327.1	210.6	194.1	210.6	263.3	-2.6	255.38	332.10	0.4292	0.0693
3	314.3	205.2	188.2	205.1	251.8	-6.3	250.85	327.20	0.3620	0.0622
4	291.0	185.4	177.4	185.3	230.8	-3.5	243.21	298.51	0.1964	0.0392
5	275.8	178.6	165.0	178.5	221.0	-4.1	229.96	285.66	0.0523	0.0015
6	273.0	178.2	165.1	178.0	217.5	-8.6	231.34	283.21	-0.0159	-0.0176
7	275.1	181.5	170.4	181.3	215.9	-7.5	239.93	288.19	-0.0470	-0.0269
8	276.5	187.4	171.3	187.3	217.1	-4.1	241.01	296.69	-0.0754	-0.0368
9	276.5	194.2	161.2	194.2	224.6	1.8	223.70	299.34	-0.1723	-0.0683
10	276.2	195.4	152.9	195.3	230.0	5.0	210.20	296.86	-0.2054	-0.0804
11	275.6	198.3	144.0	198.1	235.1	7.6	196.14	296.48	-0.2504	-0.0935

SL	B-1 DEGREE	B-2 DEGREE	M-1	M-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	P0/P0 STAGE	T0/T0 STAGE	%EFF-A TOT-STG	%EFF-P TOT-STG
1	56.0	0.8	0.9583	0.5798	1.55	4.51	14.71	55.16	0.5409	0.1564	0.0360	0.9303	2.5568	1.3600	85.37	87.16
2	55.4	-0.7	0.9197	0.5650	2.95	6.08	11.27	56.07	0.5413	0.1251	0.0293	0.9474	2.5550	1.3541	86.73	88.35
3	54.5	-1.7	0.8806	0.5512	2.68	6.05	9.10	56.20	0.5386	0.0827	0.0198	0.9673	2.5527	1.3475	88.28	89.71
4	52.8	-1.1	0.8082	0.4960	-0.19	4.06	8.94	53.85	0.5637	0.0729	0.0184	0.9746	2.4993	1.3428	87.20	88.72
5	53.3	-1.3	0.7561	0.4742	-0.69	4.66	8.74	54.60	0.5731	0.0710	0.0192	0.9776	2.4859	1.3581	82.93	84.95
6	52.8	-2.8	0.7449	0.4716	-1.01	4.73	7.34	55.55	0.5787	0.0870	0.0243	0.9732	2.4845	1.3665	80.95	83.21
7	51.7	-2.4	0.7497	0.4801	-2.09	3.78	7.77	54.08	0.5693	0.0968	0.0274	0.9700	2.4977	1.3701	80.68	82.98
8	51.7	-1.2	0.7514	0.4950	-2.10	3.90	9.02	52.95	0.5515	0.0945	0.0271	0.9705	2.5205	1.3781	79.87	82.29
9	54.4	0.5	0.7410	0.5075	-1.49	4.73	12.89	53.92	0.5398	0.1034	0.0309	0.9684	2.5287	1.4122	73.55	76.72
10	56.6	1.4	0.7355	0.5077	-1.69	4.55	15.23	55.12	0.5408	0.1102	0.0334	0.9667	2.5221	1.4283	70.53	74.05
11	58.9	2.2	0.7292	0.5123	-4.76	1.38	18.60	56.69	0.5367	0.1084	0.0332	0.9577	2.5201	1.4464	67.59	71.45

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	PCT TE SPAN	EPSI-1 DEGREE	EPSI-2 DEGREE
1	1113.9	709.5	657.2	709.4	899.4	10.8	53.06	69.04	0.0430	27.401	4.635
2	1073.3	690.9	637.0	690.8	863.9	-8.7	52.30	68.02	0.0901	24.591	3.971
3	1031.3	673.3	617.4	673.0	826.1	-20.8	51.38	67.01	0.1410	20.742	3.561
4	954.9	608.1	581.9	608.0	757.1	-11.3	49.81	61.14	0.2989	11.254	2.246
5	905.0	585.8	541.5	585.7	725.1	-13.6	47.10	58.51	0.5086	2.999	0.087
6	895.8	584.6	541.6	583.9	713.5	-28.2	47.38	58.00	0.6103	-0.909	-1.006
7	902.5	595.4	559.1	594.9	708.4	-24.7	49.14	59.02	0.6598	-2.695	-1.539
8	907.3	614.8	562.1	614.7	712.2	-13.4	49.36	60.76	0.7107	-4.322	-2.107
9	907.1	637.2	528.9	637.2	736.9	6.0	45.81	61.31	0.8620	-9.873	-3.912
10	906.3	641.1	501.8	640.9	754.7	16.4	43.05	60.80	0.9101	-11.766	-4.605
11	904.4	650.6	472.4	650.1	771.2	25.0	40.17	60.72	0.9571	-14.345	-5.359

NCORR INLET RPM	WCORR INLET LBM/SEC	WCORR INLET KG/SEC	T0/T0 STAGE	P02/P01	P0/P0 STAGE	EFF-AD STAGE %	EFF-P STAGE %
13089.40	178.00	80.73	1.3739	0.9681	2.5165	80.61	82.93

AIRFOIL AERODYNAMIC SUMMARY PRINT

105 PERCENT DESIGN SPEED (ROTOR PERFORMANCE) RUN NO 111 SPEED CODE 5 POINT NO 6

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	U-1 M/SEC	U-2 M/SEC	V'-1 M/SEC	V'-2 M/SEC	VO'-1 M/SEC	VO'-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	154.3	333.3	154.3	184.7	0.0	277.4	302.7	351.4	339.7	199.0	-302.7	-74.0	134.53	242.54	0.5118	0.5178
2	166.1	321.0	166.1	183.2	0.0	263.6	322.0	361.4	362.3	207.7	-322.0	-97.8	142.15	244.36	0.4242	0.4524
3	177.6	307.0	177.6	177.0	0.0	250.8	341.0	371.4	384.5	214.2	-341.0	-120.6	149.13	238.89	0.3435	0.3819
4	202.9	279.0	202.9	162.9	0.0	226.5	390.8	401.5	440.3	239.1	-390.8	-175.0	162.54	225.80	0.1432	0.1981
5	213.3	260.9	213.3	149.0	0.0	214.1	446.2	441.6	494.6	272.0	-446.2	-227.5	167.23	208.56	-0.0498	0.0246
6	213.7	256.4	213.7	147.3	0.0	209.9	471.2	461.7	517.4	291.7	-471.2	-251.8	167.40	206.95	-0.1226	-0.0516
7	213.1	258.1	213.1	153.4	0.0	207.6	483.1	471.7	528.0	305.5	-483.1	-264.2	167.16	216.79	-0.1590	-0.0904
8	211.3	259.5	211.3	155.9	0.0	207.4	494.9	481.7	538.1	315.6	-494.9	-274.4	166.37	220.86	-0.1977	-0.1305
9	201.4	255.0	201.4	140.7	0.0	212.6	529.6	511.8	566.6	330.6	-529.6	-299.2	161.83	197.41	-0.3001	-0.2523
10	198.2	251.6	198.2	126.3	0.0	217.6	540.4	521.9	575.6	329.5	-540.4	-304.3	160.25	175.82	-0.3234	-0.2890
11	195.9	248.5	195.9	112.4	0.0	221.6	550.7	531.9	584.5	330.0	-550.7	-310.3	159.10	155.64	-0.3315	-0.3182

SL	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	M-1	M-2	M'-1	M'-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	%EFF-A TOTAL	%EFF-P TOTAL
1	0.0	56.1	62.69	21.65	0.4774	0.9390	1.0508	0.5607	-2.38	1.71	9.70	41.04	0.6001	0.1346	0.0265	2.7449	93.66	94.49
2	0.0	55.3	62.52	28.21	0.5155	0.9018	1.1248	0.5835	-1.21	2.50	10.42	34.31	0.5991	0.1167	0.0229	2.6920	93.73	94.53
3	0.0	55.0	62.35	34.50	0.5534	0.8594	1.1980	0.5996	-0.09	3.30	11.05	27.84	0.6034	0.1165	0.0225	2.6223	92.93	93.82
4	0.0	54.5	62.54	47.31	0.6383	0.7738	1.3852	0.6632	0.64	2.92	11.50	15.23	0.5963	0.1224	0.0221	2.5167	90.58	91.71
5	0.0	55.1	64.43	56.72	0.6739	0.7144	1.5625	0.7448	0.26	2.11	11.16	7.71	0.5763	0.1701	0.0276	2.4657	84.93	86.70
6	0.0	54.7	65.54	59.45	0.6753	0.6985	1.6349	0.7947	0.41	2.14	9.16	6.09	0.5578	0.1853	0.0288	2.4663	82.90	84.91
7	0.0	53.2	66.13	59.57	0.6733	0.7026	1.6680	0.8315	0.69	2.36	7.19	6.56	0.5411	0.1793	0.0282	2.4934	83.17	85.17
8	0.0	52.7	66.83	60.05	0.6670	0.7046	1.6987	0.8570	1.31	2.86	6.46	6.78	0.5325	0.1850	0.0290	2.5156	82.41	84.52
9	0.0	56.2	69.17	64.52	0.6332	0.6824	1.7813	0.8849	2.03	3.45	6.04	4.66	0.5340	0.2490	0.0340	2.5164	75.68	78.59
10	0.0	59.6	69.84	67.22	0.6223	0.6681	1.8073	0.8750	1.73	3.11	6.69	2.62	0.5445	0.2860	0.0348	2.5045	72.12	75.43
11	0.0	62.9	70.36	69.93	0.6145	0.6554	1.8337	0.8702	1.31	2.65	7.32	0.43	0.5512	0.3174	0.0338	2.4984	69.25	72.88

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	EPSI-1 DEGREE	EPSI-2 DEGREE	PCT TE SPAN
1	506.4	1093.5	506.4	606.1	0.0	910.1	993.0	1152.9	1114.7	652.9	-993.0	-242.7	27.55	49.67	29.324	29.668	0.0500
2	544.8	1053.2	544.8	601.1	0.0	864.8	1056.6	1185.8	1188.8	681.5	-1056.6	-321.0	29.11	50.05	24.302	25.922	0.1000
3	582.6	1007.2	582.6	580.7	0.0	822.9	1118.8	1218.7	1261.4	702.7	-1118.8	-395.8	30.54	48.93	19.683	21.882	0.1500
4	665.8	915.3	665.8	534.5	0.0	743.1	1282.2	1317.4	1444.7	784.5	-1282.2	-574.3	33.29	46.25	8.207	11.350	0.3000
5	699.8	855.9	699.8	489.0	0.0	702.5	1464.1	1449.0	1622.7	892.4	-1464.1	-746.5	34.25	42.71	-2.852	1.411	0.5000
6	701.1	841.3	701.1	483.2	0.0	688.7	1546.0	1514.8	1697.6	957.1	-1546.0	-826.2	34.28	42.39	-7.023	-2.957	0.6000
7	699.3	846.8	699.3	503.3	0.0	681.0	1584.9	1547.7	1732.4	1002.2	-1584.9	-866.7	34.24	44.40	-9.108	-5.181	0.6500
8	693.3	851.3	693.3	511.6	0.0	680.4	1623.8	1580.6	1765.7	1035.4	-1623.8	-900.2	34.07	45.23	-11.327	-7.480	0.7000
9	660.9	836.5	660.9	461.5	0.0	697.7	1737.6	1679.4	1859.0	1084.8	-1737.6	-981.7	33.14	40.43	-17.192	-14.457	0.8500
10	650.3	825.4	650.3	414.4	0.0	713.8	1773.1	1712.3	1888.6	1081.0	-1773.1	-998.4	32.82	36.01	-18.528	-16.559	0.9000
11	642.7	815.5	642.7	368.9	0.0	727.2	1807.0	1745.2	1917.9	1082.7	-1807.0	-1017.9	32.59	31.88	-18.994	-18.230	0.9500

WC1/A1 LBM/SEC SQFT	WC1/A1 KG/SEC SQM	T02/T01	P02/P01	EFF-AD ROTOR %	EFF-P ROTOR %
40.08	195.59	1.3616	2.5340	84.06	85.99

AIRFOIL AERODYNAMIC SUMMARY PRINT

105 PERCENT DESIGN SPEED (STATOR PERFORMANCE) RUN NO 111 SPEED CODE 5 POINT NO 6

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	340.7	231.5	205.7	231.5	271.5	4.5	264.82	350.30	0.4725	0.0814
2	328.2	226.3	201.4	226.3	259.1	0.3	263.82	347.77	0.4218	0.0696
3	314.3	218.3	194.4	218.3	246.9	-4.2	257.77	339.17	0.3592	0.0608
4	288.2	195.5	181.3	195.4	224.0	-4.2	246.35	307.09	0.2007	0.0347
5	270.5	181.7	166.1	181.6	213.5	-5.1	228.03	282.89	0.0543	-0.0027
6	266.6	179.1	164.2	178.9	210.1	-9.0	226.13	276.73	-0.0160	-0.0212
7	268.9	183.1	170.1	183.0	208.2	-7.0	235.42	282.87	-0.0474	-0.0301
8	270.9	189.6	173.0	189.6	208.4	-3.9	239.65	292.31	-0.0750	-0.0396
9	270.1	195.7	163.5	195.7	215.0	-0.7	223.01	294.05	-0.1696	-0.0695
10	268.9	195.6	153.6	195.6	220.7	2.1	207.16	289.47	-0.2051	-0.0811
11	268.2	197.4	144.6	197.3	225.9	4.3	193.11	287.37	-0.2529	-0.0935

SL	B-1 DEGREE	B-2 DEGREE	M-1	M-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	P0/P0 STAGE	T0/T0 STAGE	%EFF-A TOT-STG	%EFF-P TOT-STG
1	55.0	1.1	0.9636	0.6247	0.51	3.47	14.95	53.87	0.4946	0.1629	0.0375	0.9270	2.5427	1.3565	85.65	87.40
2	53.9	0.1	0.9253	0.6117	1.44	4.57	12.04	53.79	0.4884	0.1239	0.0291	0.9475	2.5467	1.3482	87.86	89.34
3	53.0	-1.1	0.8829	0.5903	1.24	4.61	9.75	54.11	0.4903	0.0844	0.0202	0.9666	2.5305	1.3406	89.12	90.43
4	51.4	-1.2	0.8026	0.5265	-1.60	2.64	8.77	52.60	0.5185	0.0617	0.0156	0.9788	2.4609	1.3334	87.97	89.38
5	52.1	-1.6	0.7437	0.4850	-1.83	3.53	8.45	53.76	0.5461	0.0654	0.0177	0.9800	2.4150	1.3465	82.61	84.61
6	52.0	-2.9	0.7293	0.4764	-1.81	3.93	7.23	54.86	0.5580	0.0861	0.0240	0.9743	2.4031	1.3547	80.20	82.46
7	50.7	-2.2	0.7349	0.4870	-3.05	2.82	7.96	52.93	0.5454	0.0949	0.0268	0.9715	2.4188	1.3579	80.15	82.43
8	50.3	-1.2	0.7389	0.5038	-3.52	2.48	9.09	51.46	0.5253	0.0900	0.0258	0.9727	2.4437	1.3644	79.74	82.10
9	52.9	-0.2	0.7270	0.5147	-3.07	3.15	12.15	53.07	0.5161	0.0930	0.0278	0.9724	2.4481	1.3951	73.71	76.76
10	55.4	0.6	0.7187	0.5114	-2.90	3.34	14.38	54.76	0.5207	0.0977	0.0296	0.9715	2.4354	1.4114	70.30	73.73
11	57.8	1.2	0.7122	0.5129	-5.87	0.27	17.65	56.53	0.5204	0.0986	0.0302	0.9717	2.4284	1.4293	67.10	70.88

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	PCT TE SPAN	EPSI-1 DEGREE	EPSI-2 DEGREE
1	1117.7	759.6	674.9	759.4	891.0	14.9	54.24	71.75	0.0430	27.072	4.665
2	1076.7	742.6	660.7	742.6	850.2	0.9	54.03	71.23	0.0901	24.170	3.986
3	1031.1	716.3	637.7	716.2	810.2	-13.9	52.79	69.47	0.1410	20.583	3.482
4	945.6	641.4	594.9	641.2	734.9	-13.9	50.45	62.89	0.2989	11.501	1.990
5	887.6	596.1	545.1	595.8	700.5	-16.8	46.70	57.94	0.5086	3.110	-0.154
6	874.9	587.7	538.6	587.0	689.4	-29.4	46.31	56.68	0.6103	-0.916	-1.214
7	882.1	600.9	558.1	600.4	683.1	-23.0	48.22	57.93	0.6598	-2.715	-1.725
8	888.8	622.1	567.7	622.0	683.9	-12.7	49.08	59.87	0.7107	-4.298	-2.270
9	886.1	642.0	536.3	642.0	705.4	-2.3	45.67	60.22	0.8620	-9.718	-3.985
10	882.2	641.7	503.9	641.7	724.1	6.7	42.43	59.29	0.9101	-11.753	-4.647
11	879.9	647.6	474.3	647.4	741.1	14.0	39.55	58.86	0.9571	-14.490	-5.355

NCORR INLET RPM	WCORR INLET LBM/SEC	WCORR INLET KG/SEC	T0/T0 STAGE	P02/P01	P0/P0 STAGE	EFF-AD STAGE %	EFF-P STAGE %
13091.00	178.60	81.00	1.3616	0.9699	2.4578	80.94	83.16

DATA TAKEN PRIOR TO DETERIORATION

AIRFOIL AERODYNAMIC SUMMARY PRINT

100 PERCENT DESIGN SPEED (ROTOR PERFORMANCE) RUN NO 101 SPEED CODE 10 POINT NO 8

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	U-1 M/SEC	U-2 M/SEC	V'-1 M/SEC	V'-2 M/SEC	VO'-1 M/SEC	VO'-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	148.3	319.9	148.3	183.1	0.0	262.3	288.4	334.8	324.3	196.9	-288.4	-72.5	130.45	231.40	0.5123	0.5167
2	159.4	305.3	159.4	183.4	0.0	244.1	306.9	344.4	345.8	209.0	-306.9	-100.3	137.96	235.65	0.4254	0.4508
3	170.3	291.1	170.3	181.3	0.0	227.7	324.9	353.9	366.9	220.9	-324.9	-126.2	144.89	236.24	0.3450	0.3798
4	193.8	261.6	193.8	165.8	0.0	202.4	372.4	382.6	419.8	244.9	-372.4	-180.2	158.15	220.61	0.1421	0.1955
5	202.2	243.7	202.2	152.5	0.0	190.0	425.2	420.8	470.8	276.6	-425.2	-230.8	162.32	203.45	-0.0516	0.0198
6	202.1	234.9	202.1	143.4	0.0	186.1	449.0	439.9	492.4	291.6	-449.0	-253.9	162.31	191.02	-0.1195	-0.0567
7	201.9	232.5	201.9	144.5	0.0	182.2	460.3	449.5	502.6	303.8	-460.3	-267.3	162.21	193.19	-0.1493	-0.0943
8	201.0	233.2	201.0	149.6	0.0	178.8	471.6	459.0	512.7	317.7	-471.6	-280.2	161.79	201.45	-0.1821	-0.1317
9	194.6	233.1	194.6	150.4	0.0	178.1	504.6	487.7	540.8	344.2	-504.6	-309.6	158.55	203.52	-0.2832	-0.2491
10	191.9	231.5	191.9	136.9	0.0	186.7	514.9	497.3	549.5	339.4	-514.9	-310.6	157.17	183.13	-0.3106	-0.2857
11	189.7	227.5	189.7	122.6	0.0	191.6	524.8	506.8	558.0	338.2	-524.8	-315.2	155.99	162.75	-0.3242	-0.3158

SL	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	M-1	M-2	M'-1	M'-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	%EFF-A TOTAL	%EFF-P TOTAL
1	0.0	54.8	62.51	21.42	0.4571	0.9077	0.9997	0.5587	-2.57	1.52	9.47	41.09	0.5767	0.1306	0.0257	2.5086	93.69	94.44
2	0.0	53.2	62.36	28.77	0.4930	0.8652	1.0695	0.5924	-1.37	2.35	10.98	33.59	0.5624	0.0948	0.0185	2.4428	94.70	95.32
3	0.0	51.7	62.21	35.05	0.5286	0.8239	1.1386	0.6252	-0.23	3.16	11.60	27.15	0.5506	0.0706	0.0135	2.3796	95.49	96.00
4	0.0	50.9	62.49	47.62	0.6064	0.7347	1.3138	0.6878	0.58	2.87	11.82	14.86	0.5477	0.0853	0.0153	2.2633	92.95	93.71
5	0.0	51.2	64.55	56.48	0.6347	0.6769	1.4783	0.7685	0.38	2.23	10.92	8.07	0.5304	0.1400	0.0229	2.2018	86.61	88.00
6	0.0	52.1	65.69	60.31	0.6347	0.6487	1.5461	0.8051	0.56	2.29	10.02	5.38	0.5208	0.1701	0.0258	2.1722	83.01	84.74
7	0.0	51.3	66.22	61.34	0.6340	0.6415	1.5781	0.8381	0.78	2.46	8.96	4.88	0.5052	0.1669	0.0249	2.1725	82.96	84.70
8	0.0	49.?	66.80	61.58	0.6310	0.6431	1.6090	0.8764	1.28	2.83	7.98	5.22	0.4866	0.1564	0.0234	2.1900	83.76	85.43
9	0.0	49.4	68.81	63.76	0.6091	0.6384	1.6931	0.9427	1.67	3.09	5.29	5.05	0.4655	0.1780	0.0250	2.2248	80.93	82.93
10	0.0	53.4	69.46	65.93	0.6001	0.6282	1.7186	0.9209	1.36	2.73	5.40	3.53	0.4868	0.2312	0.0296	2.2219	75.59	78.14
11	0.0	57.2	70.02	68.57	0.5926	0.6126	1.7437	0.9109	0.98	2.31	5.96	1.45	0.4981	0.2697	0.0306	2.2103	71.73	74.66

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	EPSI-1 DEGREE	EPSI-2 DEGREE	PCT TE SPAN
1	486.5	1049.6	486.5	600.7	0.0	860.7	946.2	1098.5	1063.9	646.0	-946.2	-237.8	26.72	47.39	29.351	29.606	0.0500
2	522.9	1001.6	522.9	601.7	0.0	800.7	1006.8	1129.9	1134.5	685.8	-1006.8	-329.1	28.25	48.26	24.375	25.828	0.1000
3	558.8	955.0	558.8	594.8	0.0	747.1	1066.1	1161.2	1203.5	724.7	-1066.1	-414.1	29.67	48.38	19.764	21.763	0.1500
4	635.8	858.3	635.8	543.9	0.0	664.0	1221.8	1255.3	1377.3	803.5	-1221.8	-591.3	32.39	45.18	8.140	11.202	0.3000
5	663.3	799.5	663.3	500.5	0.0	623.5	1395.0	1380.7	1544.7	907.6	-1395.0	-757.2	33.24	41.67	-2.955	1.136	0.5000
6	663.2	770.8	663.2	470.7	0.0	610.5	1473.1	1443.4	1615.5	956.7	-1473.1	-832.9	33.24	39.12	-6.847	-3.251	0.6000
7	662.5	763.0	662.5	474.0	0.0	597.9	1510.2	1474.8	1649.2	996.8	-1510.2	-876.9	33.22	39.57	-8.555	-5.404	0.6500
8	659.6	765.0	659.6	491.0	0.0	586.6	1547.3	1506.1	1682.0	1042.4	-1547.3	-919.5	33.14	41.26	-10.432	-7.544	0.7000
9	638.3	764.8	638.3	493.4	0.0	584.3	1655.7	1600.2	1774.5	1129.4	-1655.7	-1015.9	32.47	41.68	-16.226	-14.272	0.8500
10	629.6	759.7	629.6	449.3	0.0	612.6	1689.5	1631.6	1803.0	1113.6	-1689.5	-1019.0	32.19	37.51	-17.793	-16.369	0.9000
11	622.3	746.4	622.3	402.4	0.0	628.6	1721.8	1662.9	1830.8	1109.8	-1721.8	-1034.3	31.95	33.33	-18.575	-18.096	0.9500

WC1/A1 LBM/SEC SQFT	WC1/A1 KG/SEC SQM	T02/T01	P02/P01	EFF-AD ROTOR %	EFF-P ROTOR %
38.98	190.22	1.3036	2.2591	86.34	87.80

DATA TAKEN PRIOR TO DETERIORATION

AIRFOIL AERODYNAMIC SUMMARY PRINT

100 PERCENT DESIGN SPEED (STATOR PERFORMANCE) RUN NO 101 SPEED CODE 10 POINT NO 8

SL	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VO-1 M/SEC	VO-2 M/SEC	RHOVM-1 KG/M2 SEC	RHOVM-2 KG/M2 SEC	EPSI-1 RADIAN	EPSI-2 RADIAN
1	329.0	251.0	205.7	251.0	256.8	0.0	253.84	340.18	0.4703	0.0808
2	314.1	247.2	202.7	247.2	240.0	0.0	254.88	342.86	0.4184	0.0679
3	300.1	237.5	199.5	237.5	224.2	0.0	254.46	334.64	0.3556	0.0584
4	272.8	211.3	185.3	211.3	200.2	0.0	240.86	301.87	0.1999	0.0314
5	255.1	197.8	170.8	197.8	189.5	0.0	222.76	281.13	0.0513	-0.0077
6	247.0	191.8	162.2	191.8	186.3	0.0	211.17	270.17	-0.0261	-0.0279
7	245.4	192.4	163.8	192.4	182.7	0.0	214.04	270.91	-0.0647	-0.0376
8	246.6	196.5	169.0	196.5	179.7	0.0	221.98	276.70	-0.0989	-0.0475
9	250.0	206.2	173.1	206.2	180.4	0.0	227.15	285.25	-0.1936	-0.0745
10	250.9	207.2	164.1	207.2	189.8	0.0	211.90	280.88	-0.2226	-0.0848
11	249.5	206.2	155.1	206.2	195.5	0.0	198.01	274.30	-0.2629	-0.0952

SL	B-1 DEGREE	B-2 DEGREE	M-1	M-2	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	PO/PO STAGE	TO/TO STAGE	%EFF-A TOT-STG	%EFF-P TOT-STG
1	53.4	0.0	0.9380	0.6911	-1.03	1.92	13.86	53.42	0.4098	0.1842	0.0424	0.9204	2.3060	1.3200	84.23	85.96
2	51.5	0.0	0.8942	0.6836	-0.90	2.22	11.97	51.51	0.3842	0.1155	0.0271	0.9534	2.3238	1.3058	89.07	90.28
3	49.6	0.0	0.8531	0.6579	-2.22	1.15	10.84	49.56	0.3799	0.0809	0.0193	0.9696	2.3016	1.2935	91.60	92.52
4	47.6	0.0	0.7697	0.5826	-5.41	-1.16	10.00	47.57	0.4068	0.0594	0.0150	0.9808	2.2166	1.2830	90.21	91.23
5	48.0	0.0	0.7117	0.5410	-5.96	-0.61	10.07	48.01	0.4239	0.0407	0.0110	0.9884	2.1732	1.2927	84.83	86.38
6	49.0	0.0	0.6850	0.5222	-4.85	0.89	10.10	48.95	0.4339	0.0433	0.0121	0.9884	2.1450	1.2993	81.38	83.25
7	48.1	0.0	0.6800	0.5239	-5.65	0.23	10.15	48.14	0.4280	0.0495	0.0140	0.9868	2.1456	1.2990	81.49	83.35
8	46.8	0.0	0.6837	0.5356	-7.00	-1.00	10.26	46.81	0.4141	0.0542	0.0156	0.9854	2.1593	1.2997	82.06	83.88
9	46.4	0.0	0.6889	0.5598	-9.52	-3.30	12.36	46.42	0.3933	0.0797	0.0239	0.9783	2.1762	1.3167	78.55	80.73
10	49.5	0.0	0.6853	0.5581	-8.79	-2.55	13.78	49.47	0.4051	0.0973	0.0295	0.9738	2.1639	1.3373	73.15	75.86
11	52.0	0.0	0.6770	0.5518	-11.58	-5.44	16.43	52.05	0.4172	0.1165	0.0357	0.9692	2.1425	1.3541	68.65	71.77

SL	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	RHOVM-1 LBM/FT2SEC	RHOVM-2 LBM/FT2SEC	PCT TE SPAN	EPSI-1 DEGREE	EPSI-2 DEGREE
1	1079.4	823.6	674.8	823.6	842.5	0.0	51.99	69.67	0.0430	26.948	4.628
2	1030.7	811.0	665.1	811.0	787.4	0.0	52.20	70.22	0.0901	23.973	3.890
3	984.6	779.3	654.4	779.3	735.7	0.0	52.12	68.54	0.1410	20.373	3.344
4	895.0	693.2	608.1	693.2	656.7	0.0	49.33	61.83	0.2989	11.452	1.797
5	837.0	649.0	560.3	649.0	621.8	0.0	45.62	57.58	0.5086	2.938	-0.442
6	810.5	629.2	532.2	629.2	611.2	0.0	43.25	55.33	0.6103	-1.495	-1.596
7	805.1	631.1	537.3	631.1	599.5	0.0	43.84	55.48	0.6598	-3.709	-2.157
8	809.2	644.6	554.3	644.6	589.6	0.0	45.46	56.67	0.7107	-5.667	-2.722
9	820.4	676.4	568.0	676.4	591.9	0.0	46.52	58.42	0.8620	-11.093	-4.270
10	823.1	679.7	538.3	679.7	622.8	0.0	43.40	57.53	0.9101	-12.752	-4.859
11	818.7	676.6	508.9	676.6	641.4	0.0	40.55	56.18	0.9571	-15.065	-5.454

NCORR INLET RPM	WCORR INLET LBM/SEC	WCORR INLET KG/SEC	TO/TO STAGE	P02/P01	PO/PO STAGE	EFF-AD STAGE %	EFF-P STAGE %
12456.19	173.70	78.78	1.3036	0.9750	2.2027	83.35	85.08