NAS CR-134996
PWA-5302

MODELING AND ANALYSIS OF THE TF30-P-3 COMPRESSOR SYSTEM WITH INLET PRESSURE DISTORTION

by

R. S. Mazzawy and G. A. Banks

PRATT & WHITNEY AIRCRAFT
DIVISION OF UNITED TECHNOLOGIES CORPORATION

April 1976

(NASA-CR-134996) MODELING AND ANALYSIS OF THE TF30-P-3 COMPRESSOR SYSTEM WITH INLET PRESSURE DISTORTION (Pratt and Whitney Aircraft) 133 p HC $6.00 CSCL 21E N76-21205 Unclas G3/07 25216

prepared for

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
NASA-Lewis Research Center
NAS3-18535

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
NASA CR-134996		

4. Title and Subtitle
MODELING AND ANALYSIS OF THE TF30-P-3 COMPRESSOR SYSTEM WITH INLET PRESSURE DISTORTION

5. Report Date
April 1976

6. Performing Organization Code

7. Author(s)
R. S. Mazzawy
G. A. Banks

8. Performing Organization Report No.
PWA-5302

9. Performing Organization Name and Address
PRATT & WHITNEY AIRCRAFT DIVISION
UNITED TECHNOLOGIES CORPORATION
EAST HARTFORD, CT 06108

10. Work Unit No.

11. Contract or Grant No.
NAS3-18535

12. Sponsoring Agency Name and Address
National Aeronautics and Space Administration
Washington, D. C. 20546

13. Type of Report and Period Covered
Contractor Report

14. Sponsoring Agency Code

15. Supplementary Notes
Project Manager, David G. Evans, Engine Research Branch, Air-Breathing Engine Division, NASA-Lewis Research Center, Cleveland, Ohio

16. Abstract
Circumferential inlet distortion testing of a TF30-P-3 afterburning turbofan engine was conducted at NASA-Lewis Research Center. Pratt & Whitney Aircraft has analyzed the data using its multiple segment parallel compressor model and classical parallel compressor theory. Distortion attenuation analysis resulted in a detailed flow field calculation with good agreement between multiple segment model predictions and the test data. Sensitivity of the engine stall line to circumferential inlet distortion was calculated on the basis of parallel compressor theory to be more severe than indicated by the data. However, the calculated stall site location was in agreement with high response instrumentation measurements.

17. Key Words (Suggested by Author(s))	18. Distribution Statement
Turbofan Inlet Flow Distortion Compressor Stall Compressor Modeling	Unclassified - Unlimited

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of Pages	22. Price*
Unclassified	Unclassified	134	

* For sale by the National Technical Information Service, Springfield, Virginia 22151

NASA-C-168 (Rev. 6-71)

FOREWORD

This report was prepared for the National Aeronautics and Space Administration, Lewis Research Center, under Contract NAS3-18535 to present the results of the analysis of circumferential inlet distortion data for the TF30-P-3 afterburning turbofan engine. Mr. D. G. Evans was the NASA Project Manager for this effort, assisted by Dr. A. Kurkov and Mr. W. M. Braithwaite, and Mr. R. S. Mazzawy was the P&WA Program Manager. This report was prepared by R. S. Mazzawy and G. A. Banks, with assistance from P. M. Dadd and other P&WA contributors.

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SUMMARY

The analysis of circumferential inlet flow distortion data taken by NASA-Lewis Research Center personnel from testing of a Pratt & Whitney Aircraft TF30-P-3 afterburning turbofan engine is presented herein. The distortion was generated by a NASA-developed air jet device which was capable of varying the amplitude, circumferential extent, and circumferential position of a low total pressure region. The data included detailed steady state instrumentation measurements for distortion levels below those required to stall the engine, as well as steady state and high response instrumentation measurements to document engine stall.

Data analysis was primarily performed through the use of the P&WA-developed multiple segment parallel compressor model. This model exists as a computer program and provides a detailed blade row by blade row definition of the distorted flow field for the TF30-P-3 compression system. The required pressure and temperature rise characteristics for each blade row were provided from previous P&WA compressor component rig testing. The results of this program were compared in detail with available pressure and temperature measurements at two low rotor speeds: 7400 rpm and 8600 rpm. Generally good agreement was obtained between the model calculations and the test data. The predicted attenuation and circumferential movement of the distorted region through the compressor were verified by the data. An analysis of the same data by NASA-LeRC personnel was presented in Reference 1 without the assistance of the model. Some of the conclusions reached in that data analysis are also included in this report for comparison purposes.

The engine stall data was analyzed on the basis of classical two-segment parallel compressor theory. A comparison is made between the distortion level which was observed to cause engine stall and the distortion level predicted by using parallel compressor theory. In general, the predicted level was lower than that which was measured experimentally. On the basis of the prediction, however, an estimate was made of the origin of the stall which was in reasonable agreement with the stall site determined from high response records. The data analyzed covered a low rotor speed range from 7300 rpm to 8700 rpm. It was determined in each case that stall was initiated in the front stages of the low pressure compressor.

INTRODUCTION

NASA Lewis Research Center (NASA LeRC) testing of the P&WA TF30 P-3 afterburning turbofan engine with circumferential total pressure distortion has provided detailed measurements of distortion attenuation and sensitivity. A description of the test may be found in Reference 1. These data have been analyzed by Pratt & Whitney Aircraft using its extensive background of experience with this engine and also using parallel compressor theory and the P&WA-developed multiple segment parallel compressor model. This model calculates a row by row prediction of distortion attenuation and provides an analytical basis for interpreting the engine measurements. A description of the model is presented in Appendix A.

The multiple segment model makes use of blade row performance (pressure and temperature rise) characteristics which have been derived from component rig testing with uniform inlet conditions. For this reason, the undistorted inlet data for the NASA TF30-P-3 engine, supplemented by similar measurements made by P&WA on a number of TF30 engines, were analyzed to verify suitability of the model and provide a sound basis for interpreting the engine data with the non-uniform inlet pressure.

The circumferential distortion attenuation data were predicted and compared graphically with the measured data at two rotational speeds: 7400 and 8600 rpm (approximately 77 and 90 percent of low rotor design speed) at a Reynold's Number Index of 0.5. Flow velocity distortion predictions were also reproduced graphically. The circumferential variations of blade incidence and loading were also calculated and are included in a summary tabulation in Appendix B of this report.

Classical parallel compressor theory was used to predict the stall line sensitivity of the TF30-P-3 engine to circumferential pressure distortion. This calculation was based upon the same blade row characteristics used for the uniform inlet and distortion attenuation analysis. The distortion level was varied systematically until the amplitude necessary for stall was reached at the measured average engine operating point. The predicted level was compared to the observed level of distortion at stall for four rotational speeds: 7300, 7800, 8200 and 8700 rpm. The maximum loading as defined by diffusion factor was calculated for each blade row in order to fix the origin of compressor stall. High response instrumentation records for the NASA LeRC engine test were used to verify the initial stall location.

The work reported herein was done in the U. S. Customary system of units. The information in this report is provided in those units as well as the International System of Units (SI).

PROGRAM INPUT

NASA LeRC DATA

The Pratt & Whitney Aircraft TF30-P-3 turbofan engine was tested with 180° circumferential total pressure distortion in an altitude test chamber. An engine cross-section with the instrumentation station locations is shown in Figure 1. The distortion was generated by a NASA-developed air-jet device (Reference 2). This device produces total pressure distortion patterns through the injection of secondary air one diameter upstream of the engine directed against the primary inlet airflow. The distortion was rotated in 60° increments in order to effectively increase the instrumentation coverage and provide a better definition of the distortion pattern.

The data obtained by rotating the distortion pattern was reduced, analyzed and reported by NASA LeRC personnel in Reference 1. Two rotational speeds were tested: 7400 and 8600 rpm at approximately two-thirds the level of inlet distortion required to stall the engine. Inlet distortion amplitude (Pt_{max} - Pt_{min}/Ptavg) at stall was approximately 13 percent at 8600 rpm and 9 percent at 7400 rpm.

A subsequent test series using the same engine investigated the distortion sensitivity of the TF30-P-3 engine. These results were not included in Reference 1, but are related in Reference 3. During these tests the distortion amplitude was systematically increased at constant low rotor speed until an engine stall was recorded using high response instrumentation. The engine was then decelerated with the air-jet device setting held at the pre-surge position. The high pressure compressor 12th stage overboard bleeds were then held open and the engine was accelerated back to the pre-surge low rotor speed. Steady state instrumentation was recorded in order to document the distortion level and engine operating condition. This procedure was followed for a range of low rotor speeds from approximately 6700 rpm to 9000 rpm. Four low rotor speeds within this range have been selected for analysis under this contract. These are approximately 7300, 7800, 8200, and 8700 rpm.

P&WA RIG DATA AND COMPRESSOR MODEL

Pratt & Whitney Aircraft's TF30 compressor model is based upon individual static pressure and total temperature rise characteristics for each blade row. These non-linear characteristics are based upon mean diameter (defined as that diameter which separates the annulus into two equal flow areas) with the exception of the fan. The first three stages of the engine are separated into two regions representative of the flow which enters the fan duct and that which enters the engine core. The outer annulus is referred to herein as the fan, and the inner annulus, stations 2 to 2.3, as the first three stages of the low pressure compressor. These two regions are separated by a pseudo-boundary located at a diameter which is dependent upon the engine bypass ratio and fan geometry. These characteristics were derived from component rig testing of the TF30 compressors with uniform inlet conditions, by using measured static pressures and total temperatures. The necessary velocity triangles are determined by assuming that the exit angle for each blade row is constant in its own coordinate system. That is to say, the relative air angle is equal to the trailing edge metal angle minus a fixed deviation. This deviation is determined for each blade row at design incidence from two-dimensional cascade correlations. The inlet air angle relative to the following blade row is then calculated by using local mean values for axial velocity and wheel speed. The P&WA model additionally uses multiple circumferential segments and accounts for unsteady flow effects and circumferential crossflow which take place due to the distortion. Thirty-six segments have been used for the analysis of the TF30-P-3 distortion attenuation data.

This model is not capable of determining an engine operating point a priori since it has no simulations of any engine components except the compression system. Hence, necessary input requirements include total corrected airflow and engine bypass ratio, as well as high and low rotor speeds. The model may be exercised with either uniform flow conditions or with circumferentially non-uniform inlet total pressure and/or total temperature, and/or non-uniform exit static pressure. The operation of the model under non-uniform flow conditions may optionally be based upon classic parallel compressor theory or as the more complete multiple segment parallel compressor analysis.

DATA ANALYSIS AND RESULTS

UNIFORM INLET DATA

Uniform inlet data from NASA-LeRC tests were analyzed to verify the applicability of the P&WA blade row performance characteristics from TF30 compressor rig testing. The undistorted data analysis revealed that some measurements which are critical for the determination of engine bypass ratio were made with an insufficient number of instrumentation locations. In order to correct this deficiency the available data were supplemented by similar measurements made by P&WA on a number of TF30 engines. The complete data analysis during this phase verified that the blade row characteristics provided an adequate representation of the TF30 engine performance. An exception was the speed-airflow relationship for the fan, but this was corrected by modifying the characteristics to reflect slightly higher total airflow capacity for the engine tested at NASA LeRC relative to the component rig results.

The P&WA characteristics were derived from rig testing with different instrumentation and different Reynold's Number levels than were used in the NASA engine testing. The use of engine airflow for cooling purposes is another difference between the two tests. These differences resulted in real and apparent flow capacity shifts and were necessarily considered when the applicability of the characteristics was evaluated. The most convenient procedure for this task was to adjust the engine data for these differences and make comparisons with compressor rig overall performance maps. The engine core airflow calculation was an important part of this procedure and particular attention was given to using the most accurate technique available.

The TF30-P-3 turbofan is a mixed flow engine since the engine core and fan bypass flows mix together and exit through a common tailpipe and nozzle. This type of configuration precludes the separate measurement of engine and fan flows as is done in compressor rig testing. It is customary, therefore, to measure the total airflow and to calculate the engine bypass ratio (fan duct flow/engine flow) using other measured engine parameters. The calculation used for this purpose is based upon an energy balance between the compressors and turbines, the fuel and air flow entering and the flow leaving the engine. The equations as well as the measured and assumed parameters required for this calculation are outlined in Figure 2.

Initial calculations of engine bypass ratio for NASA LeRC uniform inlet data made on the basis of an energy balance between the compressors, burner, and turbines indicated unusual flow characteristics. Engine flow was calculated to increase as power setting was reduced in the intermediate operating range. It was initially suspected that the assumed primary burner efficiency used for this calculation was in error at reduced power. A thorough investigation revealed that the source of the problem was the use of only two turbine exit temperature rakes. It can be seen in Figure 3 that the right side and left side rake readings are significantly different in the intermediate speed range. An investigation of the distortion data showed a similar problem with the turbine exit temperature measurement over this range. The difference in temperature measurement is attributed to the change in circumferential swirl of the air through the turbine with rotor speed. As swirl changes with speed, the different rakes can be exposed to locally colder or hotter regions in the burner exit profile which are not representative of true average conditions. For this reason, experimental engines tested at P&WA normally have six turbine exit temperature rakes to obtain accurate data. A comparison of the NASA LeRC data with other available engine data indicates that the left side rake measurement is closer to the actual temperature than the average of the two rakes. The left side temperature was therefore corrected to represent an average temperature using other engine experience. Bypass ratios were recalculated and the results were found to be more consistent with the other engine and compressor rig experence.

In summary, the following analysis has been conducted using the NASA LeRC uniform inlet data:

1. The engine bypass ratio has been calculated on the basis of an energy balance between the compressors, burner and turbines. Inconsistencies in turbine exit temperature measurements were caused by limited instrumentation coverage. These inconsistencies have been resolved on the basis of other TF30-P-3 engine data with more extensive instrumentation coverage.

2. Parasitic airflow (.67% for cooling purposes) is removed from the main airflow at station 3.0 (high pressure compressor inlet). This reduction in airflow was accounted for in determining high pressure compressor performance.

3. The large (for structural integrity) station 3.0 total pressure rakes cause a known backpressure effect which raised the indicated total pressure measurement approximately 4% above the true level. The higher Pt 3.0 was accounted for to accurately determine the relative airflow matching and performance of the low pressure compressor and high pressure compressor. Small adjustments in total pressure level for differences in radial instrumentation between engine and rig tests were similarly accountable.

4. Different levels of Reynold's Number existed between the rig and engine tests. Flow capacity shifts due to these differences were applied for the fan, low pressure and high pressure compressors.

The resulting adjusted engine data has been plotted on the rig performance maps in Figures 4 through 6. The fan operating line, (Figure 4), falls below the normal sea level operating line because the NASA test was run with a choked exit nozzle, which has the same effect as running unchoked with a larger nozzle area. It is also observed that the NASA total corrected airflow is somewhat higher than that measured in the rig test. The difference, about 1.5%, can be attributed to engine-to-engine variation, and measurement error tolerances.

The low pressure compressor operating line is above the normal operating line, see Figure 5. This result is characteristic of the TF30 engine with a low fan operating line. Relative speed-flow differences at high speed are also expected because of the influence of the bypass ratio (which is relatively higher with the choked jet nozzle) on the low pressure compressor. The agreement of the data on the high pressure compressor map is quite good as shown on Figure 6.

Predictions of the engine data using P&WA's compressor characteristics are also shown on the figures. Fan predictions were based on compressor characteristics with the fan blade rows modified to reflect the 1.5% greater total corrected airflow measured by NASA. These predictions automatically include the effects of bypass ratio on the low pressure compressor map. The P&WA characteristics are seen to be quite adequate for use in predicting the NASA data for this contract. It should be noted that data were not available from the NASA LeRC engine test to substantiate the level of the rig-generated stall lines shown on the three maps. However, P&WA experience with TF30 engine and dual spool rig testing (Reference 6) supports the assumption that rig and engine stall lines are synonymous at the same Reynolds Number.

DISTORTION ATTENUATION

The circumferential distortion attenuation data analysis done under this contract is based upon the P&WA developed multiple segment parallel compressor model. This model provides a detailed prediction of the distorted flow field which is used for the purpose of interpreting the measured pressure and temperature distortion profiles at the different measurement planes within the engine. The data analysis of Reference 1 was done without the aid of such a calculation. Accordingly, some of the conclusions drawn in that analysis are different than those reached in this present work. These differences will be commented on later in the data analysis section.

Data Analysis

The NASA LeRC TF30-P-3 turbofan tests were conducted to evaluate the response of this engine to circumferential inlet total pressure distortion. The air jet device used to produce the circumferential distortion is described in detail in NASA TMX-1946. Rotation of the distortion in 60° increments provided detailed definition of the distorted flow field. 180° extent distortion rotation data were obtained at two locations on the engine operating line: one at approximately 7400 rpm, the other at approximately 8600 rpm. The data were normalized by NASA LeRC for variations in inlet total pressure. Additionally, the P&WA data analysis consisted of:

1. averaging data over the six distortion positions,

2. calculating the compressor performance parameters,

3. executing the P&WA multiple segment parallel model compressor program with appropriate input from the distortion rotation data including inlet pressure profile,

4. comparing the compressor performance parameters from the P&WA compressor model predictions with those calculated from the test data and with P&WA compressor rig experience,

5. comparing the flow field profiles as measured and as predicted by the P&WA compressor model at the axial locations used by NASA LeRC to measure flow properties within the compression system.

After the data were averaged over the six rotations at the stations required to determine the performance characteristics for the components of the TF30 compression system, the bypass ratios were determined by using the turbine exit temperature calibration obtained from the clean inlet data in the energy balance equations. The resulting compressor performance parameters were then adjusted as were the uniform inlet data for differences in Reynolds Number, station 3.0 total pressure instrumentation, and internal parasitic flows, between the NASA LeRC engine test and the P&WA compressor rig test. Inlet pressure measurements were then used to determine suitable pressure profiles for input to the multiple segment parallel compressor computer program.

Multiple Segment Model Calculation

The necessary boundary conditions for the multiple segment parallel compressor calculation are the inlet total pressure and temperature distribution (Pt, Tt, vs. θ), the circumferential exit static pressure distribution (Ps/Ps avg. vs. θ), the total airflow, bypass ratio and the rotor speeds. The exit plane for the fan stream was considered to be station 2.6F where measurements indicated that the static pressure was uniform circumferentially. The core stream exit plane was nominally at station 4.0 where static pressure was similarly uniform. An alternate exit plane used was station 3.0. Here the static pressure was also uniform and computer time could be saved by using this exit plane to determine the low pressure compressor response. The predicted output (total pressure and temperature distribution) of the low pressure compressor could then be input to the high pressure compressor as a separate computer run. This procedure was generally followed since it avoided having to make calculations in the high pressure compressor when iteratively determining the low pressure compressor solution and vice-versa. This procedure was also expedient for reducing the engine airflow into the high pressure compressor consistent with the parasitic bleed air removed at station 3.0. In summary, then, the model input requirements include:

1. inlet total pressure at each segment (from profile),
2. inlet total temperature (flat profile input avg of rotations),
3. low rotor speed,
4. total inlet airflow,
5. bypass ratio,
5. high rotor speed,
7. high pressure compressor airflow (low pressure compressor flow minus parasitic flow),
8. locations at which circumferential cross flows are significant.
9. Exit static pressure profile (P/P_{avg}) if not uniform.

Crossflow Calculation

When a total pressure distortion is imposed on a compressor, the inlet distortion level, the exit static pressure boundary condition, and the overall pressure rise characteristics determine the resultant velocity distortion and the distortion attenuation. When two compressors are involved (dual spool engine), the resultant velocity distortion depends upon how the two spools are coupled aerodynamically. If the axial spacing between spools is small and no large crossflow cavities are at the common boundary, then the combined overall pressure rise characteristics will determine the inlet velocity distortion. That is to say the downstream compressor will have the same effect as additional stages on the rear of the upstream compressor. When the axial spacing is large or crossflow cavities exist, the two compressors operate independently and the downstream compressor has little or no effect on the inlet velocity distortion. The TF30 engine has large crossflow cavities at station 3.0 directly in front of the tenth rotor. Flow is redistributed circumferentially within these cavities so that the velocity distortion exiting the low pressure compressor is reduced as it enters the high pressure compressor. The problem is complicated somewhat by the extraction of parasitic airflow (for cooling purposes) at this same axial location.

The realization that the two compressors are de-coupled, however, makes a very straightforward solution possible. This decoupling implies that the low pressure compressor exit static pressure should be circumferentially uniform whether the high pressure compressor is present (as in an engine) or not present (as in a single spool compressor rig). Hence the low pressure compressor solution can be obtained independently and the resultant exit total pressure and temperature distortion can be input as the inlet boundary conditions to the high pressure compressor. The total mass flow entering the high pressure compressor is reduced below the low pressure compressor exit mass flow by the amount of the parasitic airflow rate. The difference between the calculated flow distributions for the low and high pressure compressors gives a direct calculation of the circumferential crossflow required to satisfy simultaneously the boundary conditions for both compressors.

It was not known at the start of the analysis how many of the external cavities contributed significantly to the circumferential crossflow. Therefore, the first calculations were made assuming that the most significant flow occurred at the boundary between the low pressure and high pressure compressors, station 3.0. An inspection of the TF30-P-3 engine cross-section, Figure 1, shows large cavities at this location. The uniformity of static pressure at this station is another indication of a significant circumferential flow behind the low pressure compressor. The results of the initial calculation were then compared with the data. Subsequent calculations included additional major crossflow cavities chosen on the basis of geometrical considerations. This process was continued until the solution was not significantly altered by including additional crossflow in the calculation. In total, the seven crossflow locations shown in Figure 7 were included in the final calculation. The largest external cavities, besides station 3.0, are located at the IGV, stator 3, stator 7, and stator 12. Another cavity, though somewhat smaller, is located at stator 5. The axial slot which connects the compressor flowpath to this cavity was relatively large, and it provided a good measure of the significance of performing crossflow calculations for additional small cavities. Crossflows at all of these locations were determined by using a general correlation of flow coefficients as described in Appendix A.

The circumferential flow distribution within these cavities was determined which satisfied a continuity balance between the cavity and the compressor flowpath. The comparison with data is made using this final calculation, but the initial results based upon crossflow only at station 3.0 are shown for comparison at selected axial locations.

Program Output

The results of the distortion model include a detailed blade row definition of flow properties, velocity triangles and diffusion factor, and these results are presented in tabular form in Appendix B. Results are presented both in U. S. Customary and S. I. units. A summary table of terminology and units is also presented in Appendix B. Thirty-six segments were used to define the circumferential flow field at the inlet and through the compressor. Each segment is identified by number and also by circumferential position at the inlet of each blade row. The average swirl of a segment is identified at each axial station as flow swirl. The average circumferential displacement or swirl of a fluid particle as it moves axially through the compressor is also provided in the tabulations, and is referred to as particle swirl.

Comparison of Predictions with Data

Overall Performance

Compressor performance parameters for the two distortion rotation tests are presented in Figures 8 through 10. These are compared to the multiple segment compressor model program predicted performance for the fan, low pressure compressor and high pressure compressor. As mentioned in the section covering the analysis of clean inlet, the existing fan characteristics in the model were adjusted to reflect the fan uniform inlet speed-flow characteristics of the engine tested by NASA. The agreement of the distortion rotation points is at the same level as the uniform inlet data. On the LPC at the 7400 rpm low rotor corrected speed point, the model predicts a lower pressure ratio than that measured from the engine; at 8600 the model predicted pressure ratio was 3.5% lower than measured. The agreement is good if allowances are made for measurement accuracy. Agreement on the HPC is excellent.

Attenuation Prediction

The attenuation of the total pressure distortion by the TF30 compression system has been predicted for two different rotor speeds (7400 and 8600 rpm). Plots of total and static pressure and total temperature distortions have been compared at the instrumentation locations. The flow velocity predictions were also plotted at these locations but no comparison has been made with experimental results because there was no direct velocity measurement, and the measured data do not provide necessary circumferential detail to make an accurate velocity calculation. In addition, the prediction of the inlet flow angle at the IGV leading edge is presented but no data are available for comparison.

The predictions at 8600 rpm are shown in Figures 11 through 22. Figure 11 presents the inlet total and static pressure and total temperature distortions. The total quantities are input for the multiple segment model while the static pressure is calculated from the calculated velocity distribution. It appears that the measured static pressure distortion is approximately two thirds of the prediction, but an inspection reveals that the static pressure instrumentation was located six inches upstream of the inlet guide vane leading edge. There is an exponential decay of the static pressure distortion upstream of the engine (Reference 7) as shown in Figure 12. The location of the engine instrumentation indicates that the distortion level measured at the station 2.0 instrumentation plane will be 64% of the distortion level at the IGV. This is verified by NASA LeRC data taken during another TF30 inlet distortion test program. The model prediction is for the IGV leading edge and is in good agreement with the data when the upstream attenuation is taken into account. The predicted variation in inlet air angle is shown in Figure 13. While no data exist with which to compare the prediction, the correct velocity distortion (as shown by the static pressure prediction) calculation implies an accurate air angle distribution. Further substantiation can be obtained from a comparison of measured and predicted inlet air angles, see Figure 14, for a NASA fan stage by using the same analysis (Reference 5). The fan attenuation results are displayed on Figure 15. Here it is shown that total pressure and temperature predictions are in very good agreement with the experimental measurements. The static pressure data exhibit a fair degree of scatter but are generally in agreement with the predicted results. The flow velocity prediction at this station is also included as seen on Figure 16.

Attention will now be directed to station 2.1 on Figure 17. The data and the prediction are in reasonably good agreement although the data are slightly more attenuated. The instrumentation locations do not permit verification of the predicted "bumps" in the total temperature distribution. The nearest temperature measurements do show a trend in the vicinity of the distortion edges which agrees with the prediction. In Reference 1, it was reported that a two-lobed velocity distortion pattern existed at station 2.1. No such patterns were predicted by the multiple segment analysis. An inspection of the static and total pressure distortions in the fan reveals that a precise definition of the distortion profiles, particularly near the edge of the total pressure distortion, is quite difficult to obtain solely on the basis of the measured data. The conclusion is that the two-lobe velocity pattern does not exist but is the result of insufficient data used in the velocity calculation.

At station 2.3 a comparison is presented between two different predictions and the experimental measurements. The first calculation (solid line) shown on Figure 18 was performed assuming that all crossflow occurred downstream of the low pressure compressor at station 3.0. The second calculation (open circles) incorporated the effect of circumferential crossflows in other major cavities as discussed previously. The inclusion of the additional crossflow resulted in greater attenuation of the total pressure distortion in the front stage with a resultant improvement in the agreement with the test data.

At station 2.6 there is a similar comparison made between the initial and final calculation in Figure 19. The trend towards increased attenuation can still be seen but is less pronounced between stations 2.3 and 2.6. The data show somewhat more pressure attenuation than is predicted by the model. The disagreement was difficult to understand because of the good agreement of the predicted temperature distortion with the data. The data which show the greatest disparity also indicate that the pressure is above the average value in the low pressure region and vice-versa.

An investigation revealed that the low rotor speed was somewhat low for two of the distortion rotation points (total pressure data shown at 60° and 120° and the two lower static pressure data points at approximately 40° and 100° as well as the single low static pressure data points at approximately 220° and 280°). The lower pressures resulting from the reduced speed cause an error in the calculation of the average pressure as well as in the indicated distortion. The fact that the speed measurably affected the pressures is supported by the three static pressure measurements which were only in disagreement when one or more of them were recorded at the lower speed. This same problem contributes to the data scatter which is visible at the other measurement stations.

Advancing to station 3.0 as depicted by figure 20, it can be seen that the total pressure distortion has been attenuated to the point where it is of the same order of magnitude as the data scatter. The prediction appears to be as good a fit through the data as can be made. The predicted temperature distortion becomes a better indicator of the model accuracy, and agreement is quite good. The temperature distortion has swirled approximately one quarter of a revolution at this point, a fact which has been accurately predicted by the analysis (note predicted particle swirl of 96.21° (at stator 9, Appendix B, pg. 122).

It was also observed in reference 1 that there was an amplification of total pressure distortion between stations 2.6 and 3.0 at the hub measurement diameter. Two possible explanations were offered: the hub pressure rise characteristics, or the station 3.0 crossflows. The multiple segment model predictions are based on mean diameter performance characteristics and did not predict any amplification. The hub performance characteristics are more likely to produce amplication and do provide a plausible explanation. The station 3.0 crossflows do increase the velocity distortion upstream of that axial location and would normally produce more attenuation of the distortion. However, a positive-sloped pressure rise - airflow characteristic would result in more amplification. Therefore, it is likely that both of these effects contribute to the observed data.

At station 3.12, solutions are once again compared with different assumptions on the circumferential crossflow. The difference in the two solutions is quite small at this station as seen in Figure 21. As at station 3.0, the pressure distortion is on the same order of magnitude of the data scatter. Although a small discrepancy appears to occur near the boundary between the high and low temperature region, the temperature distortion prediction is in good agreement with the test data.

Reference 1 reports two zones of static pressure distortion at station 3.12 and an inspection of Figure 21 does reveal them in the data. The two zones of pressure distortion were most likely due to the variation in engine rotor speed over the period of time required to rotate the distortion. The ranges of low compressor rotor speed were approximately 140 rpm for the 7400 rpm point and 30 rpm for the 8600 rpm point. These rotor speed variations, along with normal measurement error, result in pressure variations which are of the same order of magnitude as the pressure distortions in the high pressure compressor. Without the aid of the multiple segment model predictions it is extremely difficult to interpret the experimental results.

Finally, at station 4.0, see Figure 22, the same conclusion can be drawn concerning the amplitude of the pressure distortion and the data scatter. The agreement of the temperature distortion prediction and the experimental measurement is quite good. The large amount of circumferential swirl of the temperature distortion relative to the inlet pressure distortion location (nearly 160°) was accurately predicted by the multiple segment model (note predicted particle swirl of 161.86° in Appendix B). The engine core stream velocity distortion predictions at 8600 rpm are shown in Figure 23.

The results at 7400 rpm are presented in Figures 24 through 34, and are qualitatively the same as at 8600 rpm. The attenuation of the total pressure distortion is more gradual at the lower speed so that comparisons at stations 3.0 and 3.12 between data and predictions are more meaningful. In general, the model duplicates the test data quite well. The trends observed with the variation in circumferential crossflow at 8600 rpm are repeated at the lower rotor speed. The circumferential swirl of the distortion patterns is likewise well predicted at the various axial measurement stations in the engine.

A numerical calculation of the attenuation of the pressure distortion and the increase of the temperature distortion through the engine has been reported in reference 1. Some thought was given to a similar calculation using the model predictions; however, the distortions are not "square waves" at most axial positions, and thus any attenuation definition becomes somewhat subjective. Using the absolute maximum and minimum values of the calculated pressures, temperature and flow velocity, the distortion amplitudes at various axial locations can be approximately determined. This information is provided in Figures 35 through 38. The general conclusion to be drawn from these calculations is that the pressure attenuation occurs for the most part in the fan from stations 2.1F to 2.3F, and in the low pressure compressor from stations 2.3 to 3.0. Furthermore, the temperature distortion is created primarily in the fan. These conclusions are in general agreement with the data (Reference 1).

The average rotation or swirl of the low mass flow region through the compressor is predicted by the multiple segment distortion model as shown in Figure 39. The amount of swirl of a fluid particle is shown in Figure 40. These two "paths" are described in more detail in Appendix A and are approximately comparable to those followed by the pressure and temperature distortion respectively. The term "approximately" is used because while the low pressure and low flow region are generally coincident,the pressure can be modified by unsteady flow effects. These effects are dominant near the edges of the distorted region and can result in apparent shifts of the distorted region. In general, however, the unsteady effects are of second order for a multi-stage high pressure ratio machine like the TF30. The temperature distortion "path" is influenced by the swirl of the low flow region and thus has a component in phase (actually, 180° out of phase) with the pressure distortion as predicted by parallel compressor theory. The particle swirl influence on the temperature change across the rotor, however, provides the dominant effect on the distorted temperature region. This is obvious from an inspection of the data and the multiple segment model prediction.

DISTORTION SENSITIVITY DATA

The distortion sensitivity data analysis is performed using classical parallel compressor theory (Reference 4). Predictions are made for the distortion amplitude required to cause a compressor stall, and these are compared with the observed level. The stalling stage group is determined from high response instrumentation records supplied by NASA

LeRC. Within the indicated stage group the individual blade row aerodynamic loading (as calculated by the model) is used to locate the stall site.

Data Analysis

Sensitivity of the stability limit of the engine to 180° circumferential inlet pressure distortion was evaluated by increasing the level of inlet distortion while maintaining a fixed level of low rotor speed until the engine stalled. High response pressure data was recorded to determine the stalling stage group. Following stall, the 12th stage bleed was opened and the engine was decelerated to idle speed. The engine was then reaccelerated to the low rotor speed being investigated, and steady data was taken with 12th stage bleeds open and with the distortion generator at the same setting at which stall occurred. This data required additional adjustments for the effect of 12th stage bleed valve position, and instrumentation coverage, as well as for Reynolds Number, station 3.0 pressure instrumentation configuration, and internal parasitic flows. The procedure used to calculate the engine compression system performance at stall was as follows:

1. Measurements were adjusted to represent the circumferential average by using factors, normalized for distortion magnitude, which were based on distortion position and the air-jet distortion rotation measurements.

2. Bypass ratio was calculated using the energy balance method.

3. Compressor performance parameters were calculated, including the effect of internal parasitic flows.

4. Adjustments were made to the compressor performance parameters for the 12th stage bleed valve position. Influence factors were obtained from a P&WA computer simulation of engine operation, 12th stage bleeds open and closed.

5. Station 3.0 pressure instrumentation and Reynolds Number corrections were made.

Fixed instrumentation will often give misleading circumferential average measurements when used with circumferential inlet distortion. Rotation of the distortion, in effect, multiples the fixed number of instrumentation circumferential positions, to give better average measurements. Data from the distortion rotation points were used to generate correction factors (Table I) for use in calculating the distortion stall points.

TABLE I

CORRECTION FACTORS FOR SINGLE DISTORTION POSITION

$N1/\sqrt{\theta_{T2}}$	7400	7400	8600	8600
DISTORTION POSITION (i)	0° – 180°	180° – 360°	0 – 180°	180° – 360°
P_{T2} CORRECTION	– .0132	– .0828	– .0446	– .0309
$P_{T2.3F}$ CORRECTION	– .0376	– .0754	– .0160	– .0884
$P_{T3.0}$ CORRECTION	– .0913	– .1235	– .1001	– .1628
$T_{T3.0}$ CORRECTION	.9979	1.0025	.9989	1.0090
$T_{T7.0G}$ CORRECTION	.9950	1.0083	.9931	1.0071
$T_{T7.0F}$ CORRECTION	.9991	1.0022	.9977	.9986

$$\text{PRESSURE CORRECTION} = \frac{(\bar{P}_T - P_{Ti})/P_{Ti}}{\left(\dfrac{P_{T_{max}} - P_{T_{min}}}{P_{T_{avg}}}\right)_i}$$

$$\text{TEMPERATURE CORRECTION} = \bar{T}_T/T_{Ti}$$

CORRECTIONS NOT CALCULATED FOR $P_{T2.6F}$, AND $P_{T4.0}$ CONSIDERED TO BE FULLY ATTENUATED

$\bar{\ }$ AVERAGE OF PROBES FOR ALL SCREEN POSITIONS AT INDICATED STATION

i AVERAGE OF PROBES FOR SINGLE SCREEN POSITION AT INDICATED STATION

These factors scale the readings at a given distortion position and rotor speed to the average for the complete series of rotations. It was assumed that the difference between the fixed position reading and the full rotation average was proportional to the inlet distortion level. Also, the effect of speed on the scale factors was assumed to be linear, and based on the two distortion rotation speeds. The effect of 12th stage bleed valve position on compression system operating parameters was estimated, using a TF30-P-3 simulation program. The 12th stage bleed air is exhausted into the fan duct which tends to back pressure the fan slightly reducing the total inlet corrected flow. The effect on the high pressure compressor is to lower the operating line, increase the inlet flow capacity, and increase the rotor speed. The increased high rotor speed and high pressure compressor flow capacity result in a lower low pressure compressor operating line. The results of the calculations indicated that the only significant variation of compressor performance parameters with distortion were the LPC pressure ratio (2.5% lower) and HPC corrected rotor speed (1.6% higher). All other parameters were in agreement with uniform inlet data.

Approximately forty high response pressure measurements were recorded for analysis of the engine stalls to locate the stalling stages. Selected measurements are presented herein to support the conclusions of the analysis. It should be noted that for the cases at 7300, 7900 and 8200 rpm the inlet distortion (low total pressure) region was located between 0° and 180° at station 2.0. The distortion swirls somewhat circumferentially so that lowest velocity and highest blade incidence probably occur in the third quadrant (180° to 270°). It will be seen from the high response records that the initial stall activity originated in the third quadrant for these cases. For the 8700 rpm point, however, the distortion was located between 180° and 360°. Hence, all of the stall activity started in the first quadrant at this speed.

The stall site was identified by locating periodic and/or large pressure fluctuations in the data records. As indicated in Reference 6, the sign of these fluctuations provides evidence of the stall initiating stage group. Pressure increases are normally observed at measuring stations upstream of the stall, with pressure decreases occurring downstream. There may be some exceptions to this guideline due to radial variations in the stall region, but multiple measurement locations can normally be used to sort out these uncertainties. The conclusions presented herein are based upon observations supported by the majority of the instrumentation.

Record 330 (7300 rpm)

The initial instability detected was a rotating stall which occurred between stations 2.3 and 2.6. Evidence to support this conclusion comes from total pressure records at stations 2.3, 2.6 and 3.0, see Figures 41 and 42. First of all an increase in pressure is observed at station 2.3 ($\theta = 265°$) at approximately .155 seconds, and also at station 2.3 ($\theta = 85°$) at approximately .163 seconds. The time interval (.008 seconds) required to travel from 265° to 85° (½ revolution) converts to a rotational velocity of 3750 rpm which is equal to 51 percent of low spool rotor speed (7341 rpm), a typical rotating stall frequency. At station 2.6 ($\theta = 88°$) a decrease in pressure is observed at approximately .163 seconds. The change in sign of the pressure change indicates that the stall initiated between these two stations. Looking further to station 3.0 ($\theta = 118°$) there is observed a decrease in pressure at approximately .164 seconds which serves to further confirm the origin within the low pressure compressor and the rotating stall cell frequency.

Shortly thereafter at approximately .169 seconds, a surge occurs in the high pressure compressor. The surge originates between stations 3.0 and 3.12 as can be seen from total pressure records at these two stations. For example, an increase in pressure is seen at station 3.0 ($\theta = 262°$) while a decrease in pressure is noted at station 3.12 ($\theta = 268°$) at this time (.169 seconds). Subsequently the surge progresses to other axial and circumferential locations involving the entire compression system by approximately .175 seconds.

Record 331 (7900 rpm)

The initial instability for this speed is also rotating stall occurring between stations 2.3 and 2.6. Evidence of this can be seen in Figures 43 and 44, at station 2.3 ($\theta = 265°$) at approximately .202 seconds and also ($\theta = 85°$) at approximately .209 seconds. The increase in pressure signifies that the stall site is downstream of station 2.3. The variation in the time the stall cell is observed at different circumferential locations verifies that there is a rotating stall cell. An inspection of the data record at station 2.6 ($\theta = 69°$) shows a decrease in pressure at approximately the same time a pressure increase is observed at station 2.3, thus locating the stall origin. A decrease in pressure at station 3.0 ($\theta = 118°$) at .212 seconds further substantiates a low pressure compressor stall.

A large overpressure at stations 2.3 and 2.6 at approximately .215 and .22 seconds is due to a high pressure compressor surge. Note that the location at 2.3 ($\theta = 265°$) picks up the surge first due to the circumferential position of the distortion. Records at station 3.0 ($\theta = 118°$) and station 3.12 ($\theta = 69°$) confirm that the surge started in the front stages of the high pressure compressor.

Record 336 (8200 rpm)

The initial instability within the compressor is observed at station 2.3 ($\theta = 265°$) at about .242 seconds on Figure 45. Later, there can be seen a sharp decrease in the total pressure measurement at station 2.6 ($\theta = 88°$) at approximately .249 seconds. At about the same time there is a sharp increase in static pressure at station 2.3 ($\theta = 111°$) which indicates that the stall originated between stations 2.3 and 2.6. There is also a decrease in total pressure at station 3.0 ($\theta = 118°$) at .252 seconds to substantiate the occurrence of a low pressure compressor stall. Shortly following the initial stall, there is a surge from the low pressure compressor in between stations 2.3 and 2.6 at approximately .250 seconds. The large decrease in station 3.0 total pressure ($\theta = 118°$) at .255 seconds in Figure 46 indicates that the low pressure compressor surged. The increased pressure at station 2.3 ($\theta = 111°$) and the reduction at station 2.6 ($\theta = 88°$) further fix the location. There was also some evidence that pointed towards the final surge event occurring behind station 2.6 ($\theta = 69°$ and $\theta = 88°$) since these records show an increase in pressure. The initial instability, however, clearly occurred between stations 2.3 and 2.6.

Record 341 (8700 rpm)

This stall also originated within the low pressure compressor as can be seen from high response records at station 2.3, (θ = 111°) station 2.6, (θ = 88°) and station 3.0 (θ = 118°), Figures 47 and 48. The increase in pressure at station 2.3 at approximately .382 seconds coincides with pressure decreases at the other two stations. A second, larger stall cell is observed later at the same stations at approximately .392 seconds. Very little activity was observed on the opposite side of the engine during this period in the station 2.3 pressure, (θ = 265°). The stall cell apparently decayed after it rotated a significant circumferential distance beyond the distorted region at this high rotor speed point.

An overpressure is observed at about .395 seconds at all the aforementioned locations when the high pressure compressor surges. The decrease in pressure at this time at station 3.12 (θ = 82°) verifies that the surge originated in the front stages of the high pressure compressor.

For the three lower rotational speeds the inlet distortion was circumferentially located between 0° and 180°, while it was located between 180° and 360° for the highest rotational speed. There is approximately 20° to 30° of rotation (swirl) of the distorted region between the inlet and the station 2.3 to station 2.6 stage group. The stall cell is most likely to originate within the distorted region. Due to unsteady flow effects the highest incidence region is usually not reached immediately as the rotor enters the distorted region, but is somewhere near the point at which the rotor leaves the distortion. After a stall cell is formed, it will rotate out of the distorted region and be recorded by the high response instrumentation. For the lower speed, the stall cell was first observed at 265° which is just past the distortion into the undistorted region. At a later time it rotates past the instrumentation located at 90-100°. which is just into the distorted region. This effect was verified when the distortion position was reversed for the high speed stall because the stall was observed to originate in the 90-100° circumferential region. Another feature of the high speed stall was the dissipation of the stall cell before it completed ½ revolution. This is probably because the static pressure rise characteristics are steeper at higher speeds so that the amplitude of the velocity distortion is reduced. Therefore, a smaller increase in velocity is required to unstall the flow at high speeds than at lower speed.

Parallel Compressor Predictions

Distortion sensitivity was predicted on the basis of classic parallel compressor theory for four low rotor speeds. A low rotor speed range of approximately 7300 rpm to 8700 rpm was included in the analysis of the experimental data. The criterion for stall was based upon the compressor stall lines observed for uniform inlet rig testing. This was necessary because engine stall line data with a uniform inlet was not available. There is a large amount of data to support the assumption that the engine and rig stall line data are identical for the TF30. These data include dual spool testing of the TF30 compression system under USAF Contract No. F33615-70-C-1549 and Arnold Engineering Development Center (AEDC) engine testing of a TF30-P-3 engine. Documentation of both of these results is contained in Reference 6. Similar unpublished engine data obtained for TF30 engines at Pratt & Whitney Aircraft support the same conclusion.

The procedure followed in this analysis was to determine the level of distortion required to stall the compression system at the engine operating point. The distortion level was systematically varied until the low total pressure region intersected the uniform inlet stall line for some component of the engine compression system. Since the NASA LeRC tests were conducted at a lower Reynolds Number index than was the P&WA rig testing, the critical distortion level determined from the rig stall line should be higher than the NASA test levels. In order to correct for this, an adjustment to the predicted levels was made on the basis of Figure 49. The curves in this figure were empirically derived from the TF30 engine testing by P&WA at different Reynolds Number indices, and relate the necessary distortion amplitude required to stall the engine. The stalling distortion levels determined by parallel compressor have been compared with the NASA data on Figure 50. The closest agreement is obtained at 8700 rpm but the theory falls well short of the data at lower rotor speeds. This trend with speed is most likely due to unsteady flow effects which are minimized at higher speeds where compressor performance characteristics are nearly vertical and velocity distortions are small. The LPC high speed pressure rise characteristics are closer to being vertical than the low speed characteristics, so the results are consistent with the predictions made by parallel compressor theory.

From analysis of pressure traces, it was determined that the low pressure compressor stall line was reached first and initiated the engine stall. This conclusion is supported by the operation of the LPC on the rig stall line for the distorted flow region as seen in Figure 52. The fan and high pressure compressor are seen to be away from their respective stall lines in Figures 51 and 53.

An investigation of diffusion factors was made in an attempt to estimate the origin of stall within the low pressure compressor. Diffusion factor is a measure of the relative aerodynamic loading of a cascade of airfoils and is defined by the following equation from Reference 8:

$$\text{Diffusion Factor} = (1 - V_2/V_1) + \frac{1}{2\delta} \; \frac{\Delta V_\theta}{V_1}$$

where V_2 = exit velocity

V_1 = inlet velocity

ΔV_θ = change in tangential component of velocity (exit minus inlet)

δ = cascade solidity

The diffusion factors were calculated for each blade row on the basis of meanline air angles and geometry. The diffusion factors for the low pressure region were compared to those calculated with a streamline analysis for the uniform inlet engine design point at a sea level (Mach number = 1.2) flight condition. A comparison of the two calculations has been made in Figure 54 in an attempt to locate the probable stall site. From the figure it is observed that diffusion factors are relatively high on rotor 3 and stator 3, (low speed only) rotor 5 and rotor 6. Rotor 3, however, is not located between stations 2.3 and 2.6 where all the initial instabilities were detected with the high response instrumentation.

On this basis, the best estimate for the stall site would be either S3, R5 or R6 at the lowest speed (7300 rpm) and R5 or R6 at the other speeds. Diffusion factors calculated for the high pressure compressor are not high as can be seen in Figure 55. The engine design point levels are again shown for comparison. The low-levels verify that the high pressure compressor did not initiate the stall. The high pressure compressor, however, will be additionally distorted by the rotating stall from the low pressure compressor. The additional loading which the rotating stall imposes on the high pressure compressor and which causes the final engine surge is not reflected in the parallel compressor calculation.

A comparison shows that the stall sites from the high response records and the diffusion factor analysis are in qualitative agreement. It is difficult to estimate the exact stall location because of the distribution of the high response instrumentation. Furthermore, the diffusion factor analysis is based upon a mean diameter calculation and does not reflect radial variations in blade loading. The significant point is that basic parallel compressor theory gives a reasonable prediction for the origin of stall for the TF30 engine. This was true despite the fact that the predicted distortion level required to stall the engine was in disagreement with the test data.

SUMMARY OF RESULTS

The data analyses performed on the basis of the multiple segment and classical parallel compressor model predictions for attenuation and sensitivity with 180° circumferential pressure distortion are summarized as follows:

1. The square wave inlet total pressure distortions result in non-square inlet velocity distortions. The primary reasons for this are the inlet air angle variation caused by circumferential flow redistribution upstream of the fan and unsteady flow effects.

2. Circumferential crossflow within the compression system resulted in increased attenuation in the front stages.

3. The low mass flow region moves circumferentially as it travels through the compression system by an amount equal to the swirl of the acoustic path. This amounts to approximately 10-20 degrees in the fan and 65 degrees in the core in the direction of rotor rotation. The static and total pressure distortion swirl about the same distance.

4. The total temperature distortion is primarily created by the attenuation within the front stages. The temperature distortion swirls approximately 35 degrees in the fan and 165 degrees in the core in the direction of rotor rotation. This is comparable to the circumferential displacement of a fluid particle as it passes through the TF30 compression system.

5. The static pressure uniformity at station 3.0 indicates that the low and high pressure compressors are decoupled by the crossflow cavities at station 3.0. The good prediction of the distortion attenuation with this station 3.0 boundary condition verifies the decoupling.

6. Over the speed range of 7300 to 8700 RPM, instability began as a rotating stall between the 3rd and 6th stages of the low pressure compressor. A compression system surge occurred shortly after the initial instability in each case.

7. The diffusion factors calculated by parallel compressor in the low pressure region were relatively high in the front low compressor stages. This circumstance is consistent with the observed origin of the initial instability.

8. The predicted distortion level for stall falls below the test level at all rotor speeds.

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2. "Technique for Inducing Controlled Steady-State and Dynamic Inlet Pressure Disturbances for Jet Engine Tests", C. L. Meyer, J. E. McAulay, T. J. Biesiadny, NASA TMX-1946, 1970.

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6. "Compressor Stability Assessment Program", AFAPL-TR-74-107, Volume 1, Final Report by P&WA under USAF Contract F33615-70-C-1549, December 1974, pp. 197-208, 210.

7. "Attenuation of Circumferential Inlet Distortion in Multi-Stage Compressors" by G. Plourde and A. Stenning, Journal of Aircraft Vol. 5, No. 3, June 1968, pp. 236-242.

8. "Aerodynamic Design of Axial Flow Compressors, NASA SP-36, 1965.

TF30

INSTRUMENTATION LOCATION

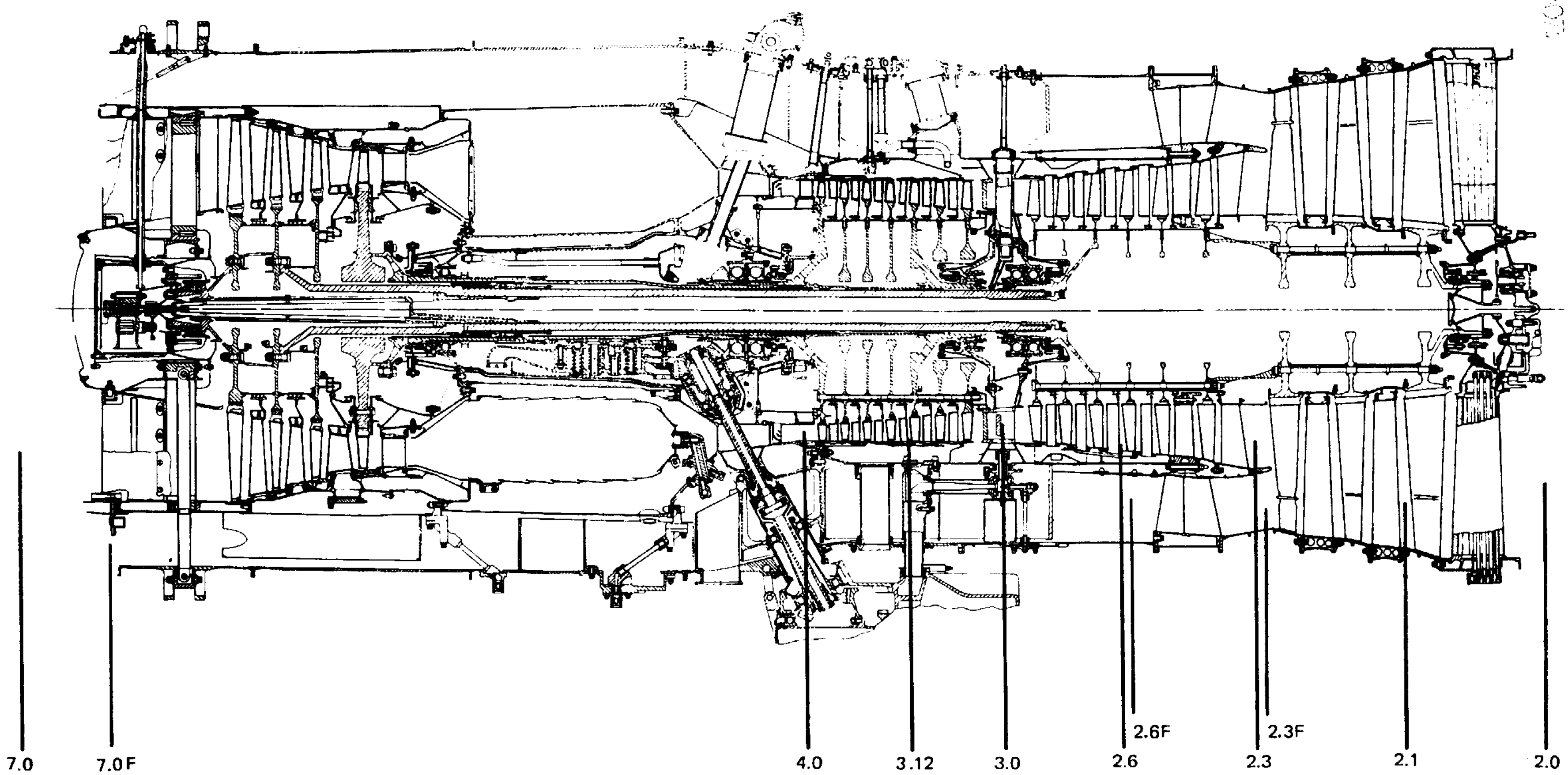
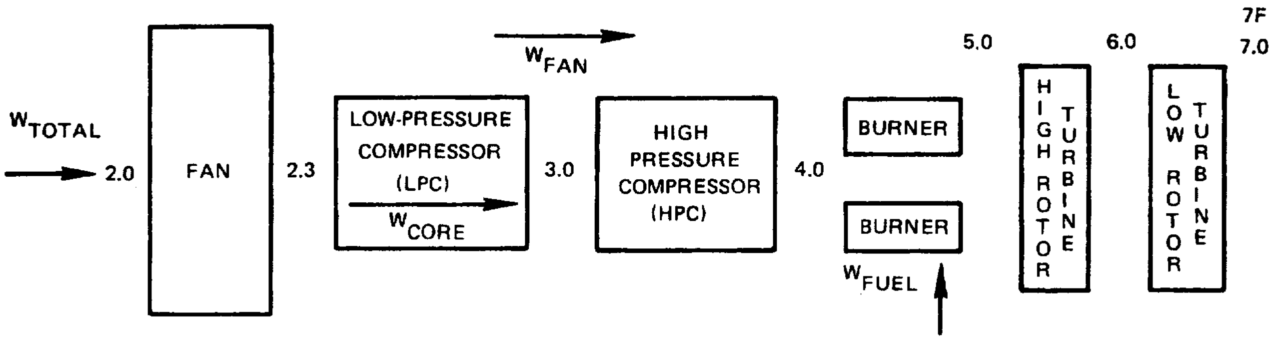


Figure 1 Engine Cross Section with Instrumentation Locations



W total, W core and W fan are airflows through the components and W fuel is fuel flow added in burner.

Energy Balance

- Basic Equations:
  1. Wtotal = Wcore + Wfan
  2. Wcore (hT7.0 - hT2.0) - Wfuel (hv-hT7.0) + Wfan (hT7F - hT2.0)= 0

  Where:
  hT = Total Enthalpy
  hv = (Heating value of fuel) x (burner efficiency) + (enthalpy of liquid fuel)

- Measured Parameters:
  1. Total airflow
  2. Fuel flow
  3. Inlet (2.0) and fan exit (7F) total temperature
  4. Turbine exit (7.0) temperature

- Assumptions:
  1. Burner efficiency (.99)

Figure 2 Engine Airflow Calculation Techniques

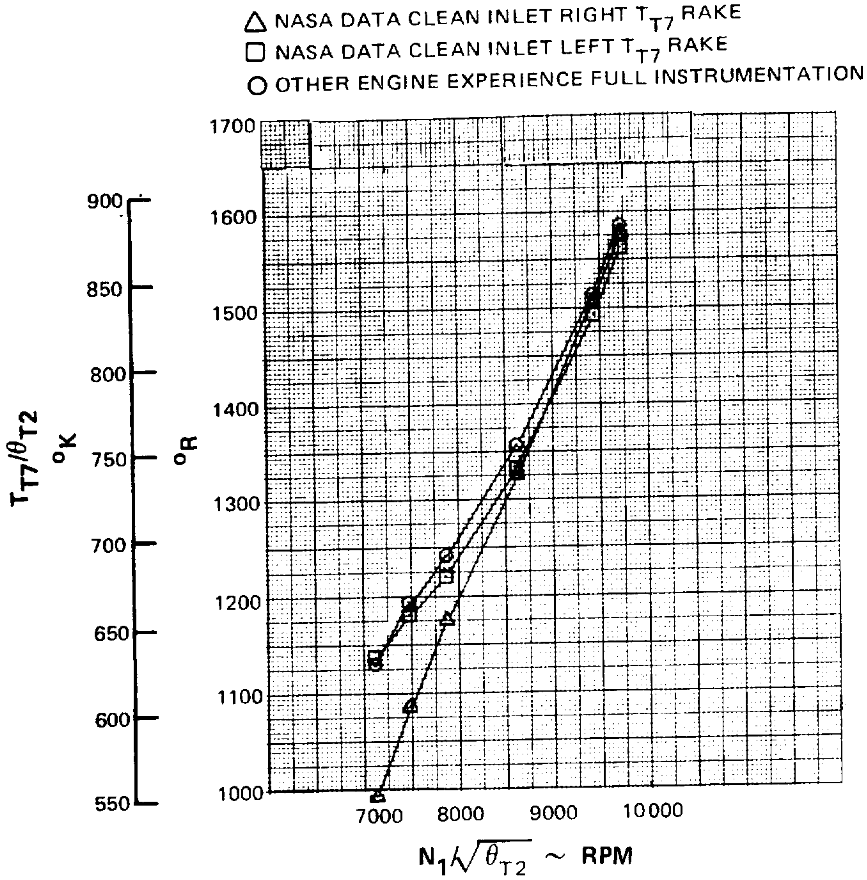


Figure 3 Comparison of NASA Turbine Exit Temperature Measurements with P&WA Experience

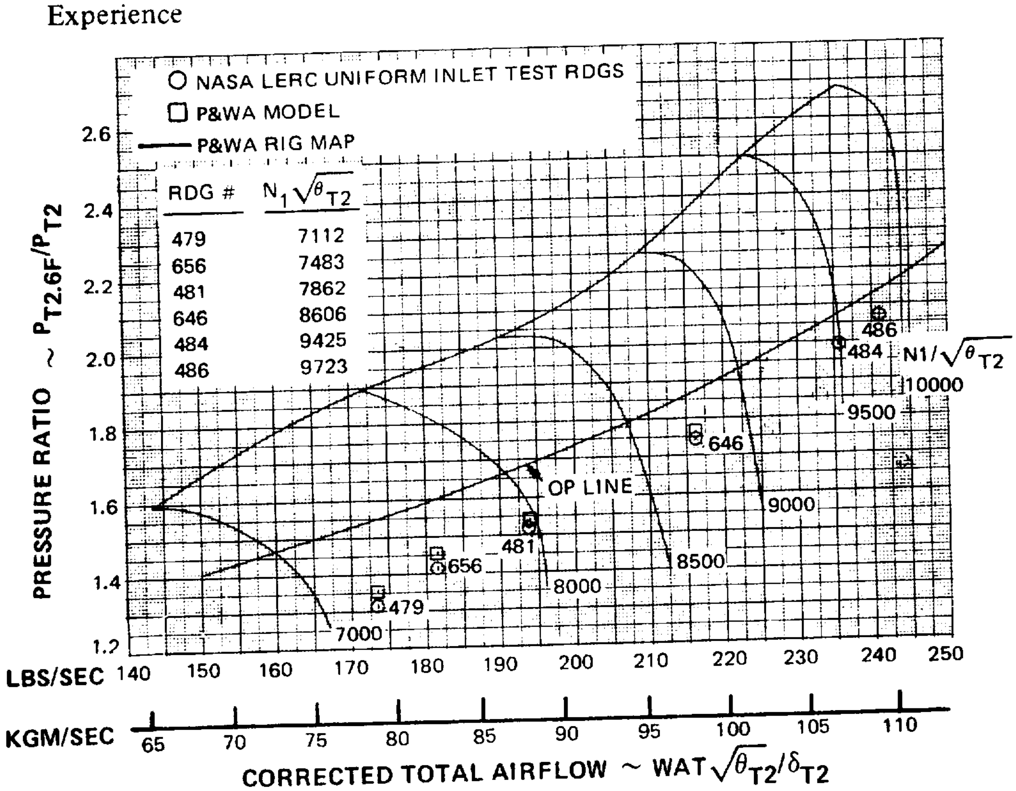


Figure 4 Comparison of Uniform Inlet Test Data with P&WA Multi-segment Model (Fan Performance Map)

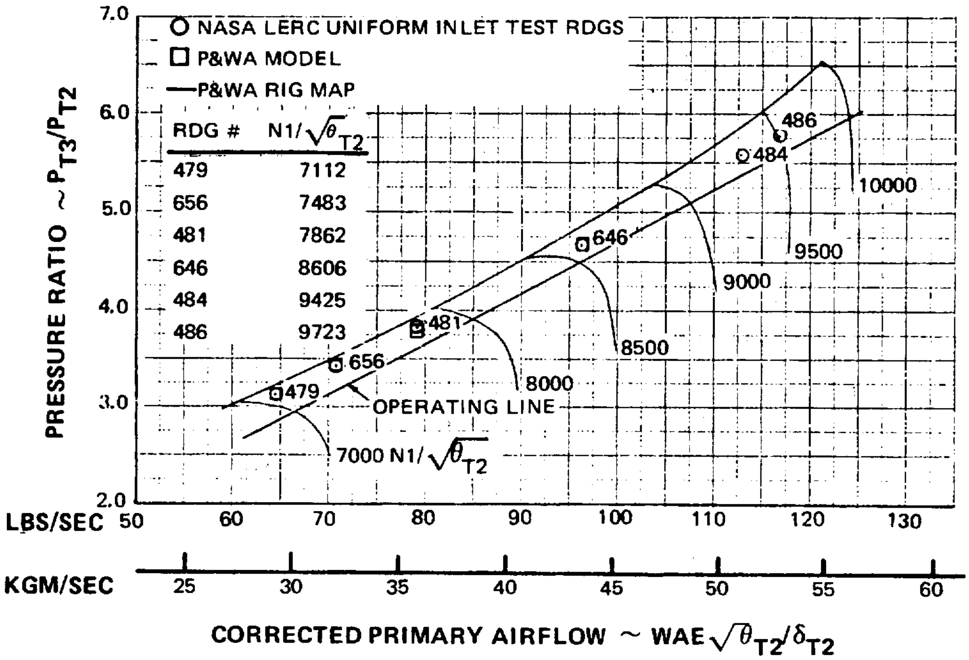


Figure 5 Comparison of Uniform Inlet Test Data with P&WA Multi-segment Model (LPC Performance Map)

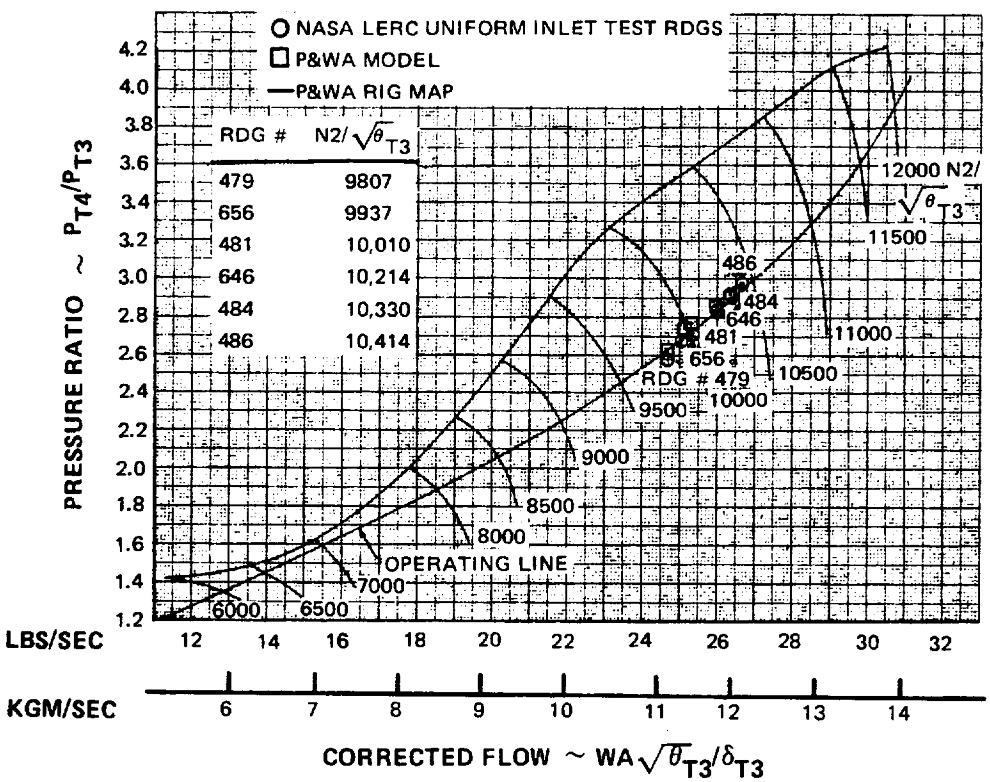


Figure 6 Comparison of Uniform Inlet Test Data with P&WA Multi-segment Model (HPC Performance Map)

TF30

CROSSFLOW CAVITY LOCATIONS

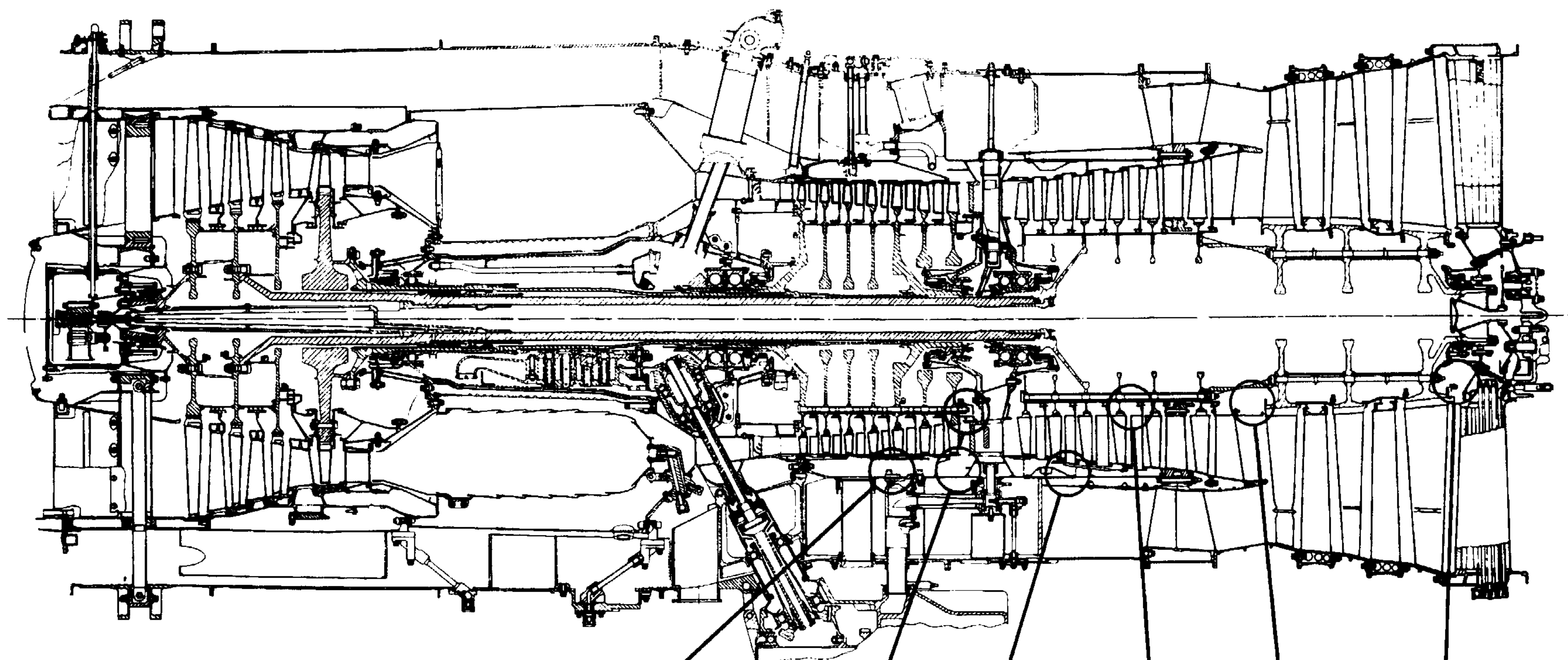


Figure 7 Engine Cross Section with Crossflow Cavity Locations

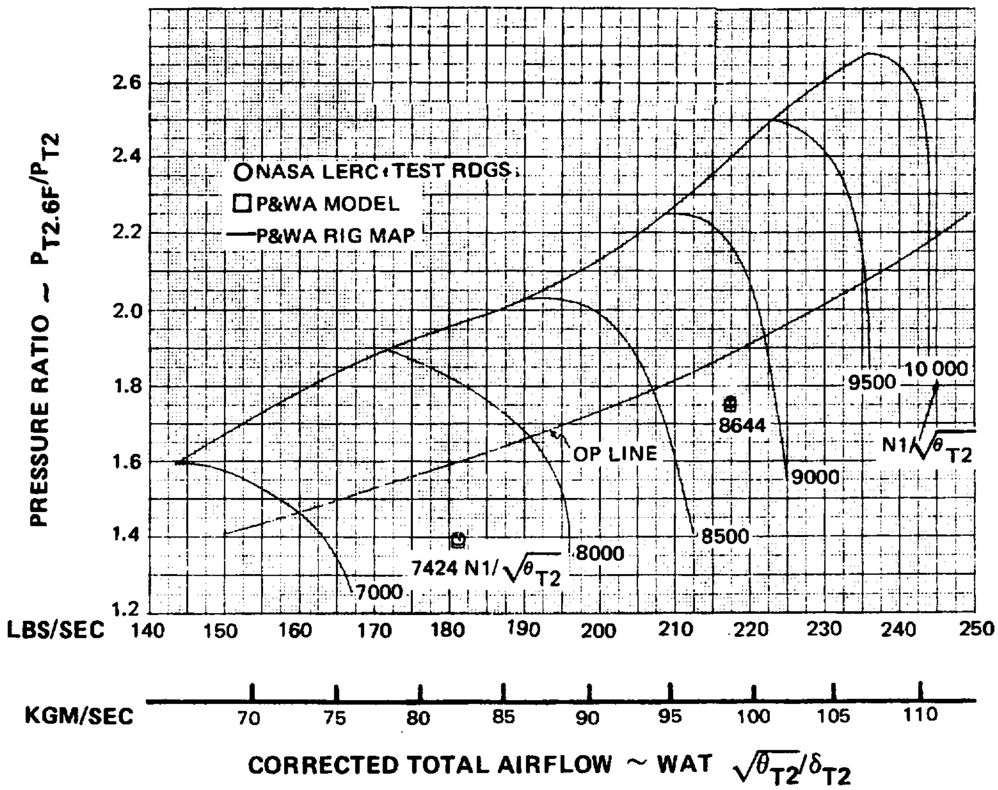


Figure 8 Comparison of Distortion Rotation Test Data with P&WA Multi-segment Model (Fan Performance Map)

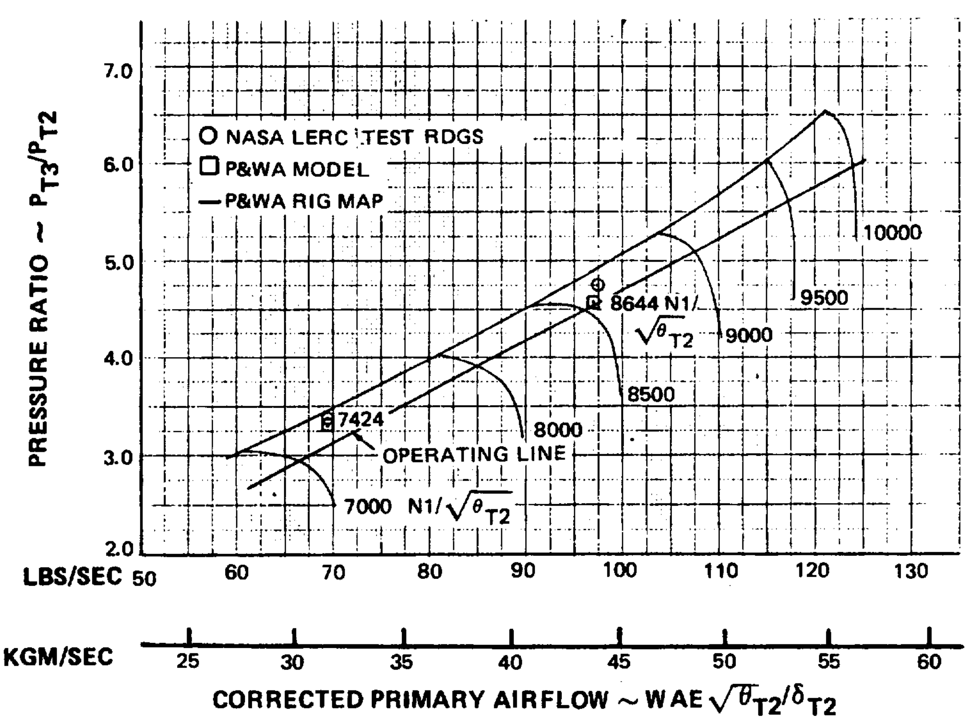


Figure 9 Comparison of Distortion Rotation Test Data with P&WA Multi-segment Model (LPC Performance Map)

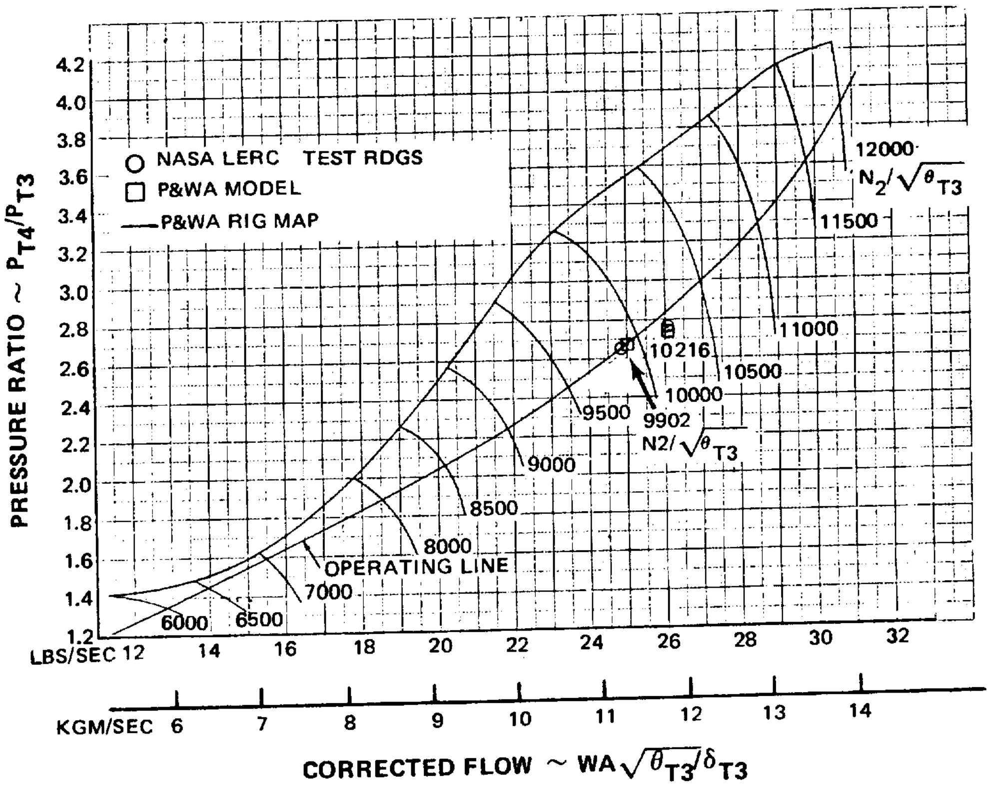


Figure 10 Comparison of Distortion Rotation Test Data with P&WA Multi-segment Model (HPC Performance Map)

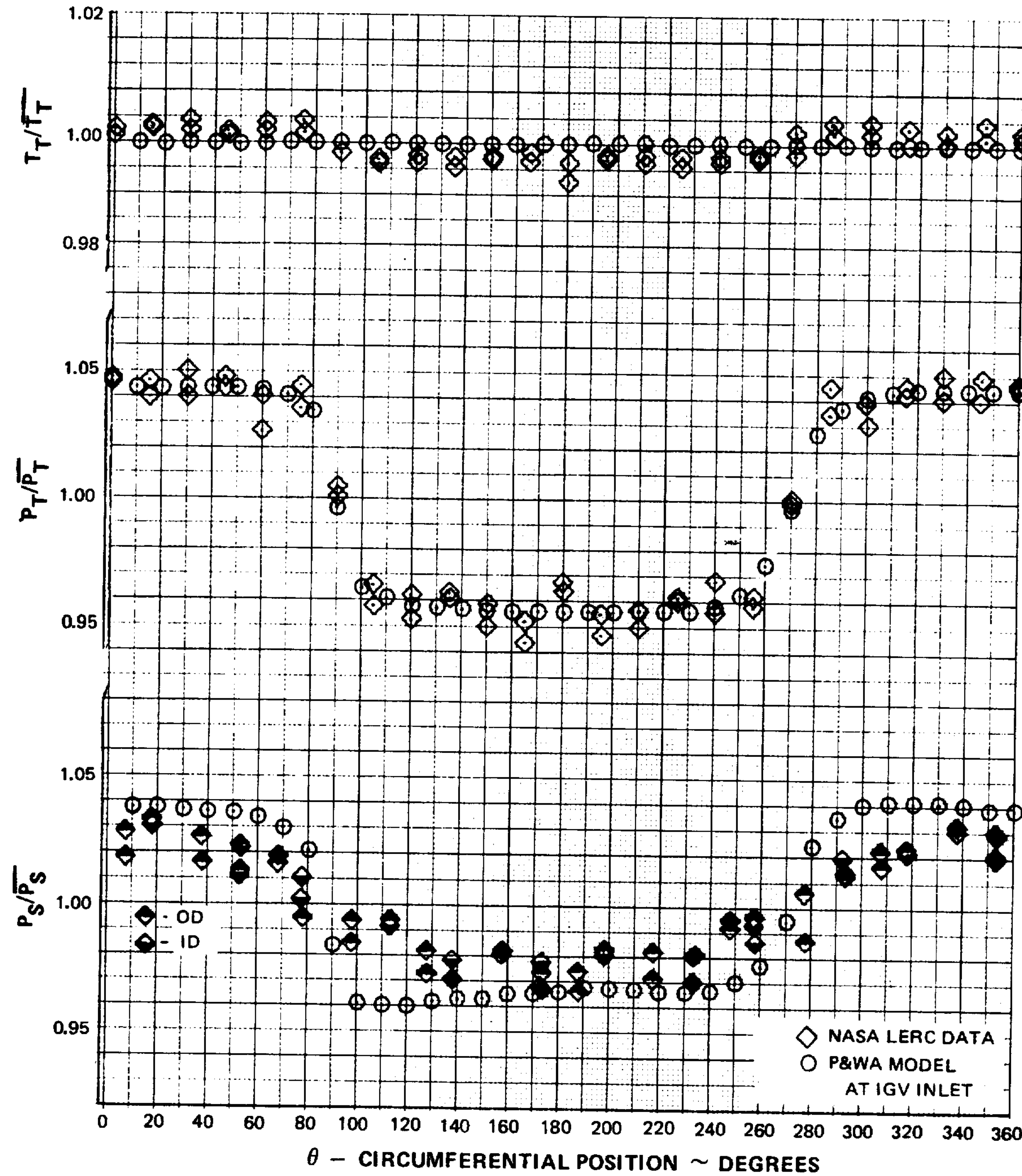


Figure 11 Circumferential Variation of Inlet Pressure and Temperature at 8600 rpm

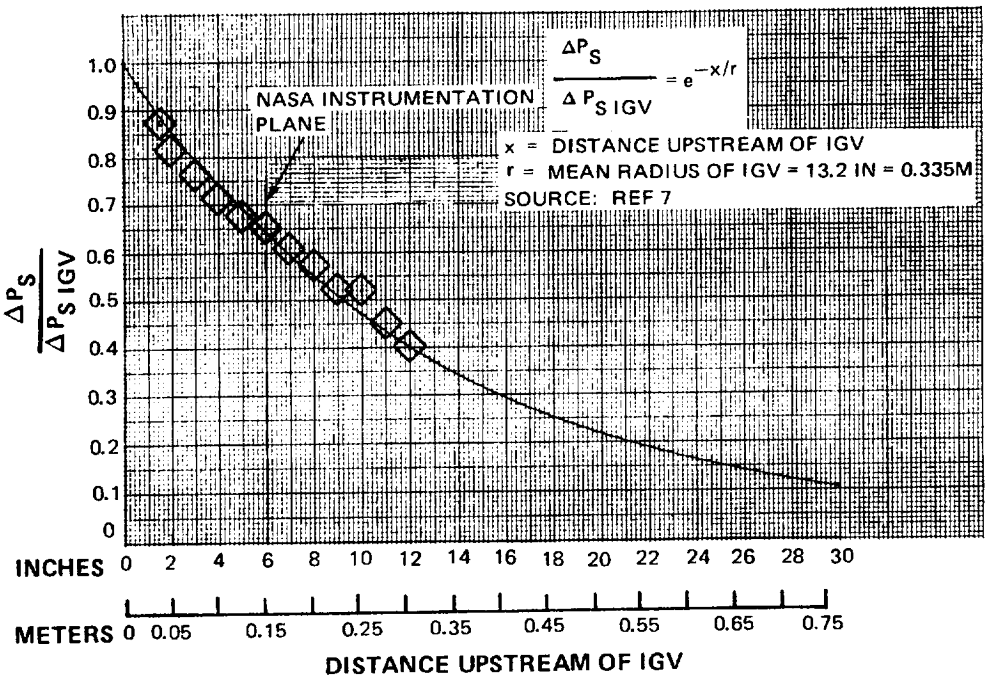


Figure 12 Upstream Attenuation of Pressure Distortion

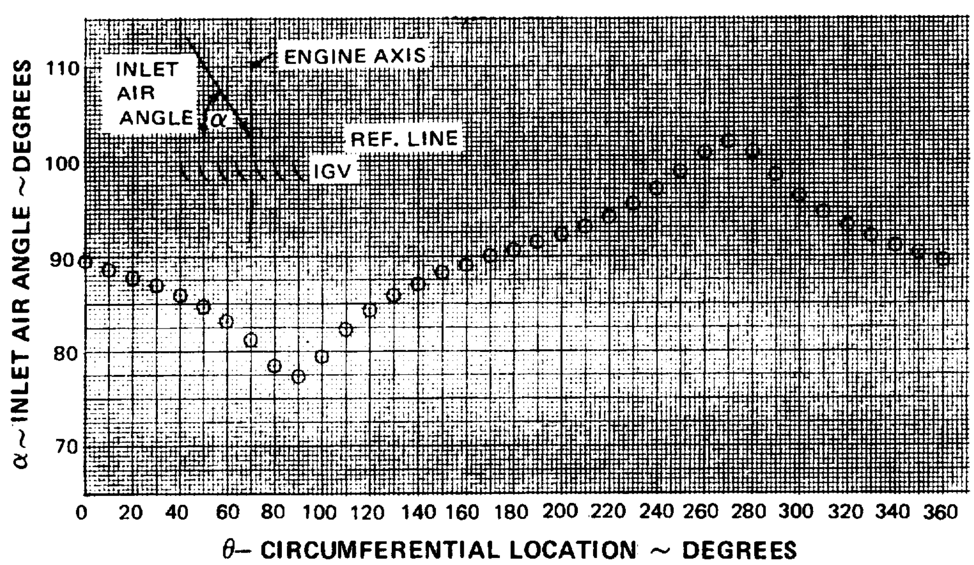


Figure 13 Circumferential Variation of Inlet Air Angle at 8600 rpm

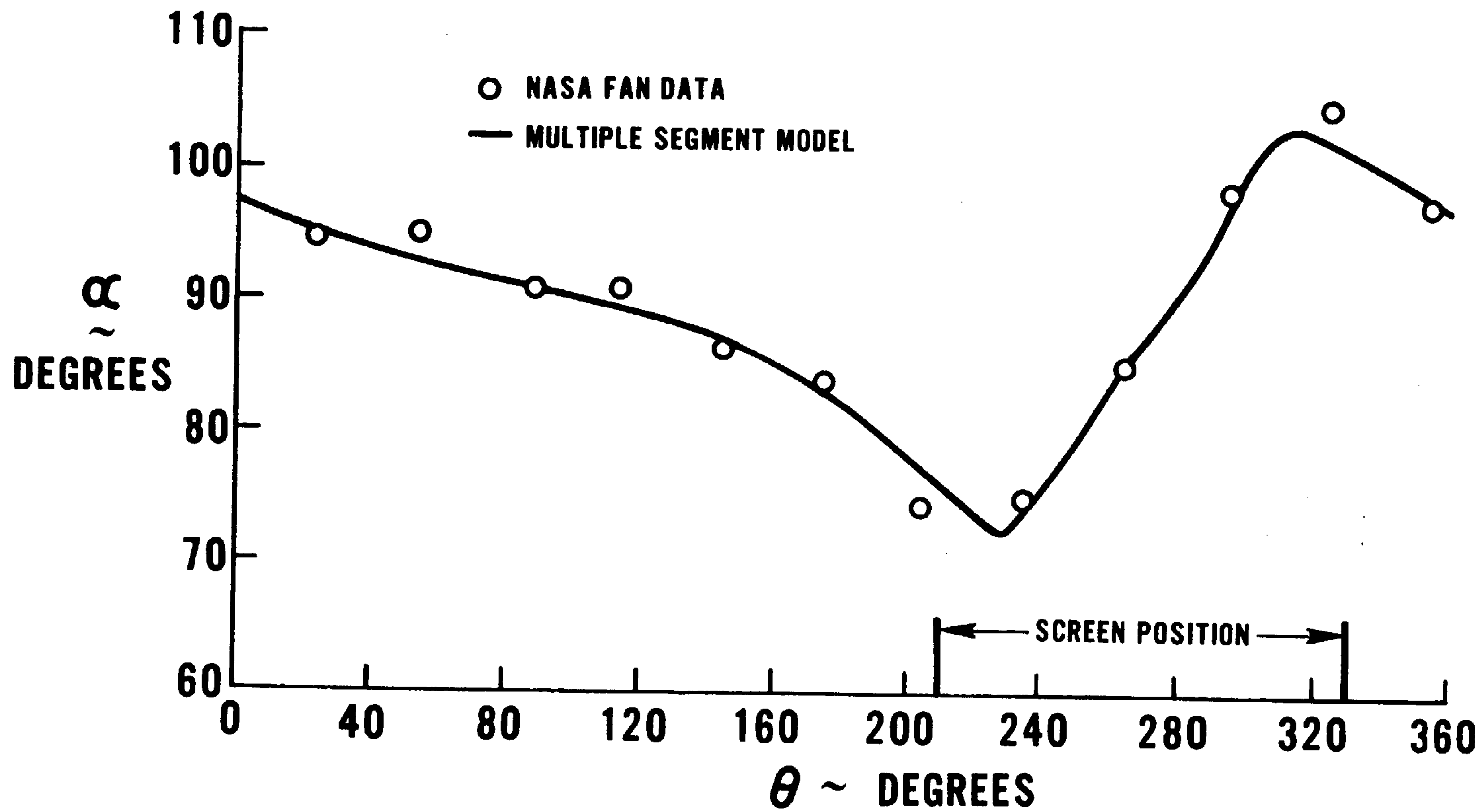


Figure 14 Inlet Air Angle Variation For a NASA Fan Stage

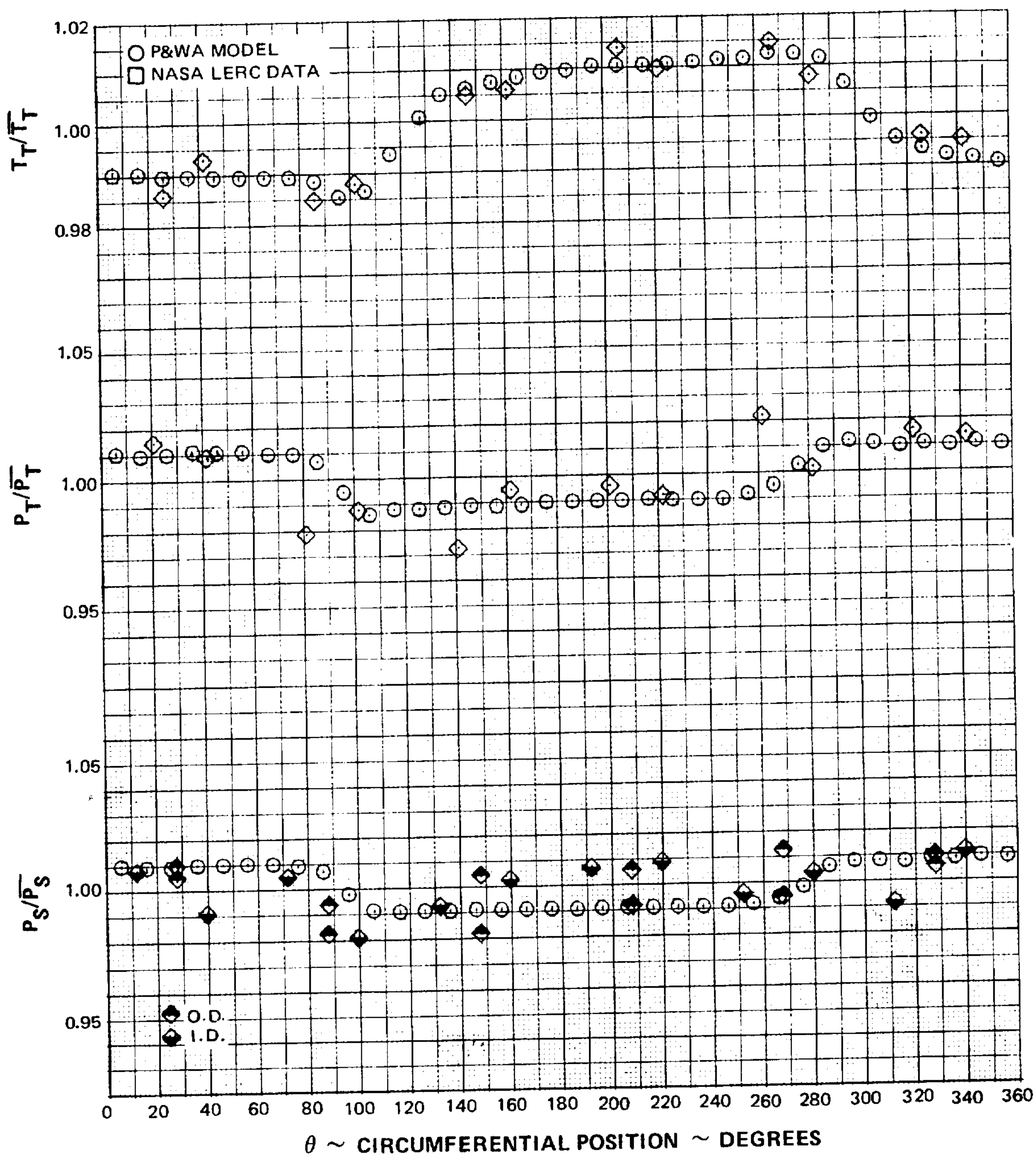


Figure 15 Circumferential Variation of Pressure and Temperature at Station 2.3F at 8600 rpm

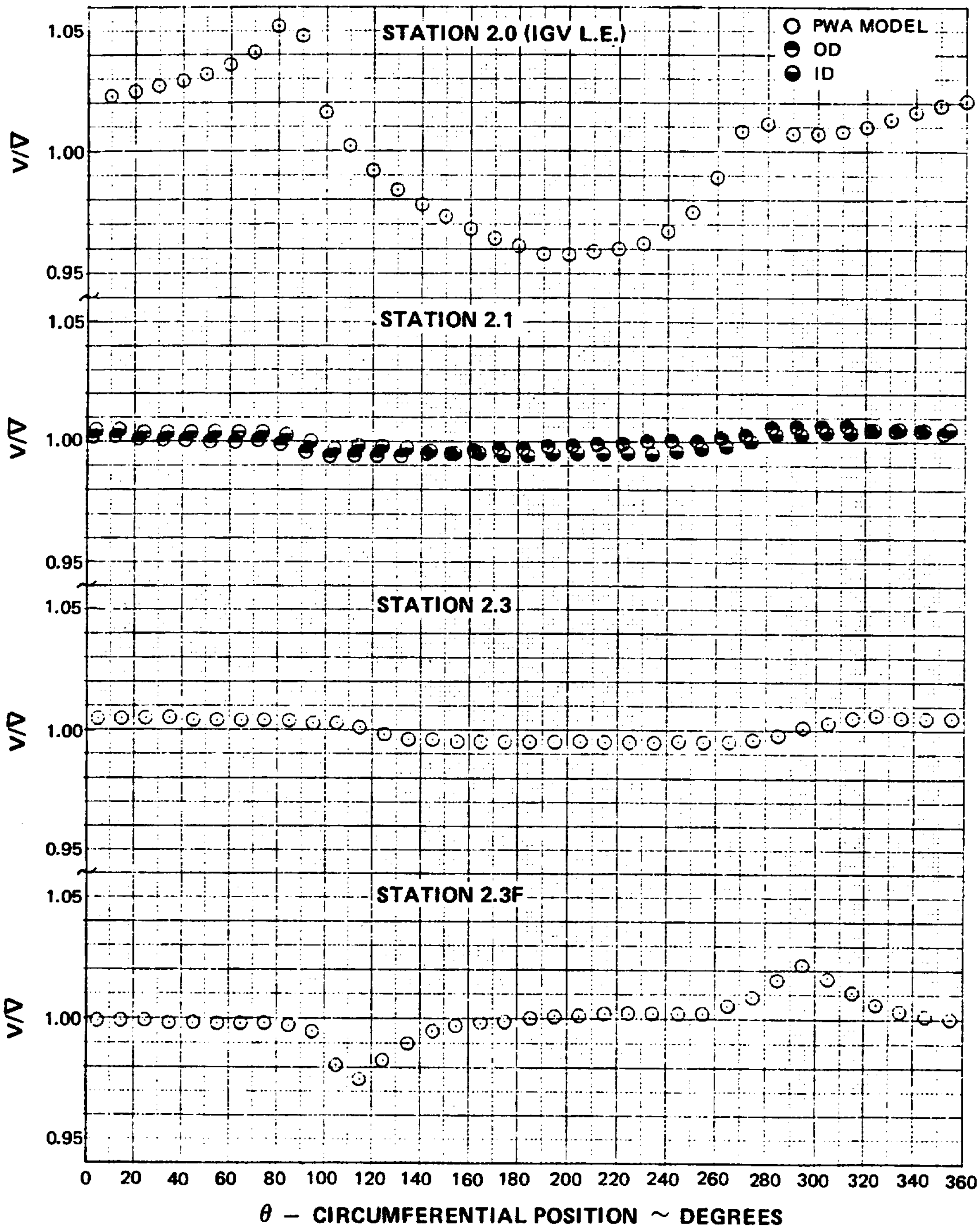


Figure 16 Circumferential Variation of Velocity at Stations 2.0, 2.1, 2.3, and 2.3F at 8600 rpm

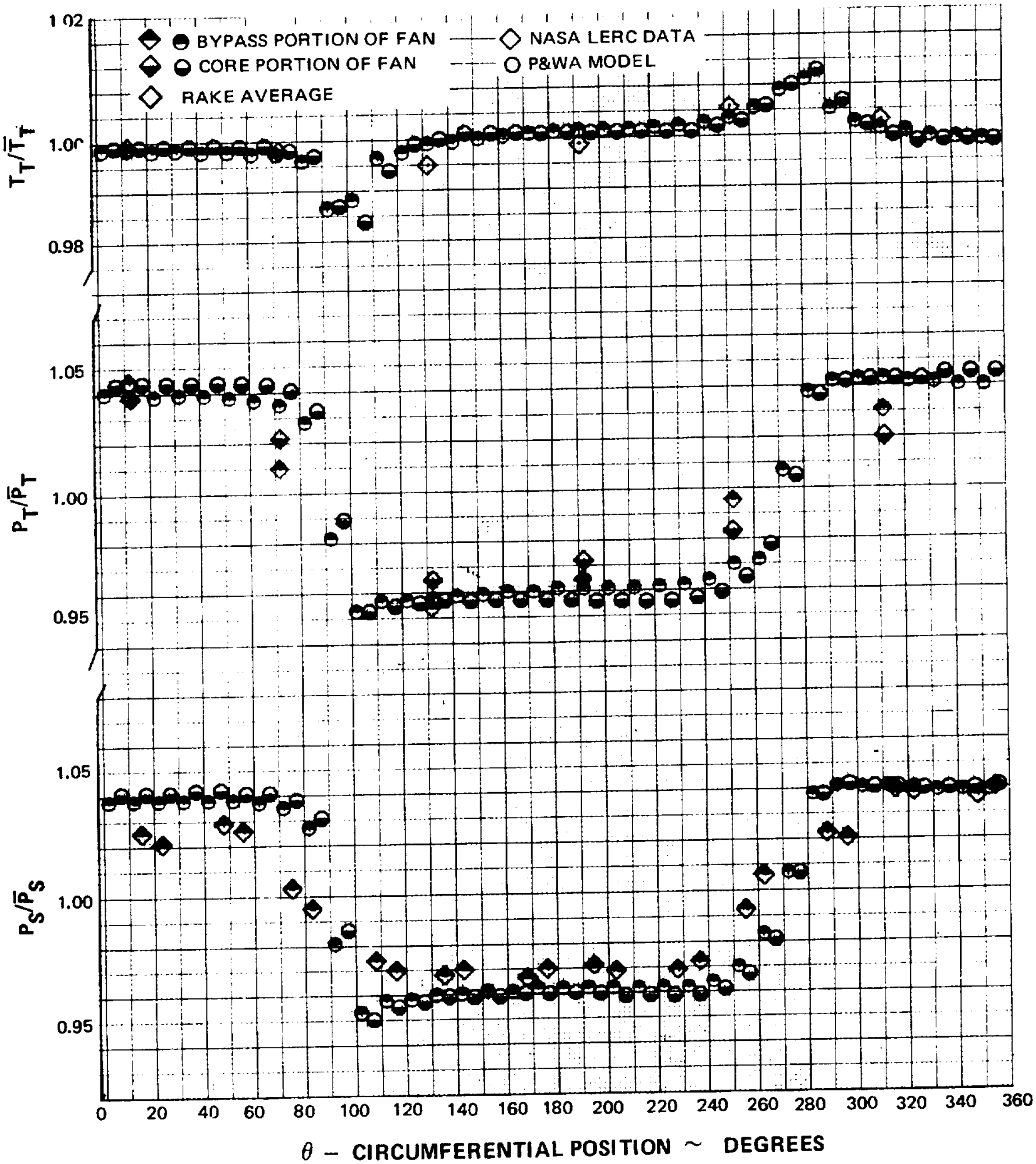


Figure 17 Circumferential Variation of Pressure and Temperature at Station 2.1 at 8600 rpm

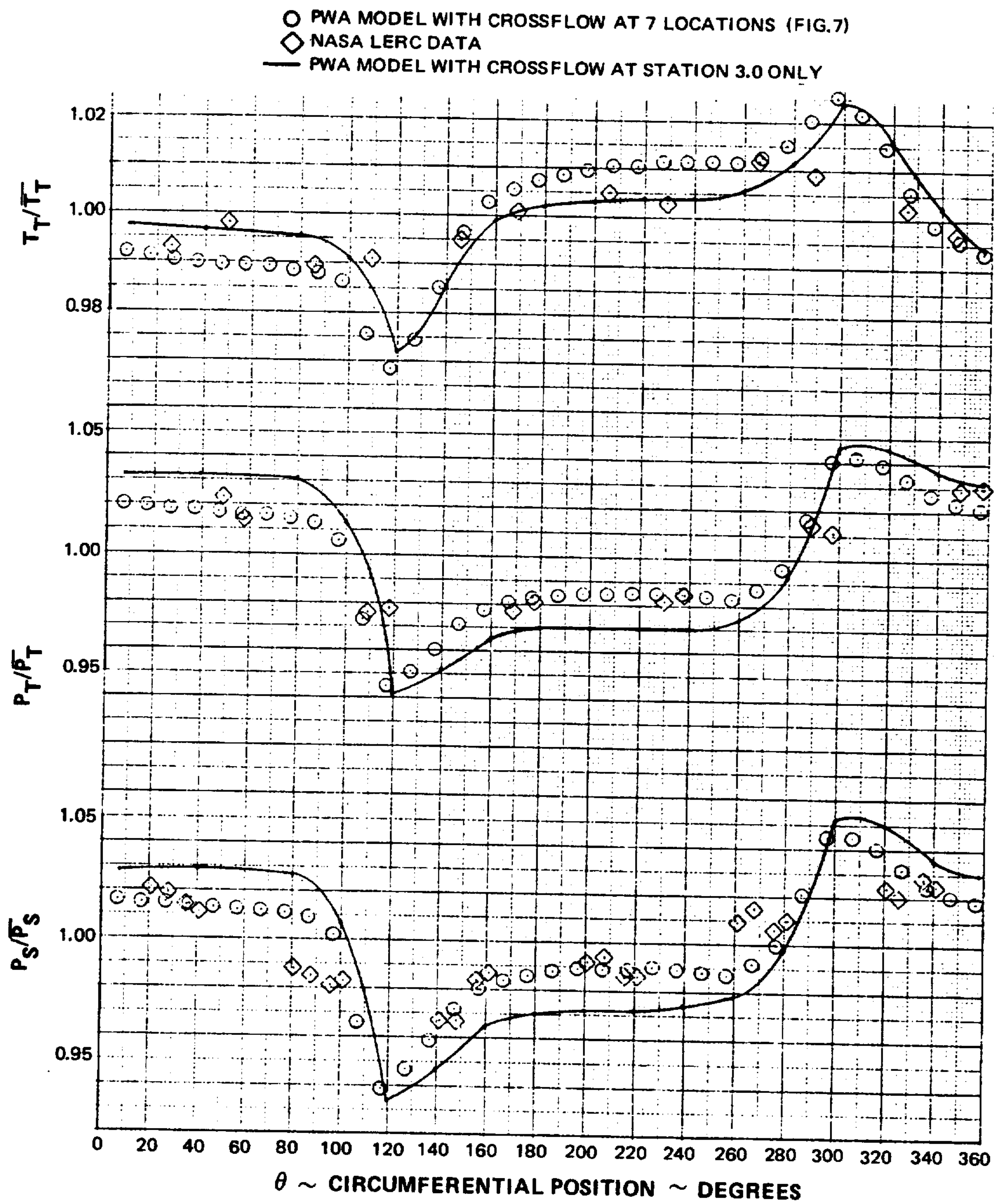


Figure 18 Circumferential Variation of Pressure and Temperature at Station 2.3 at 8600 rpm

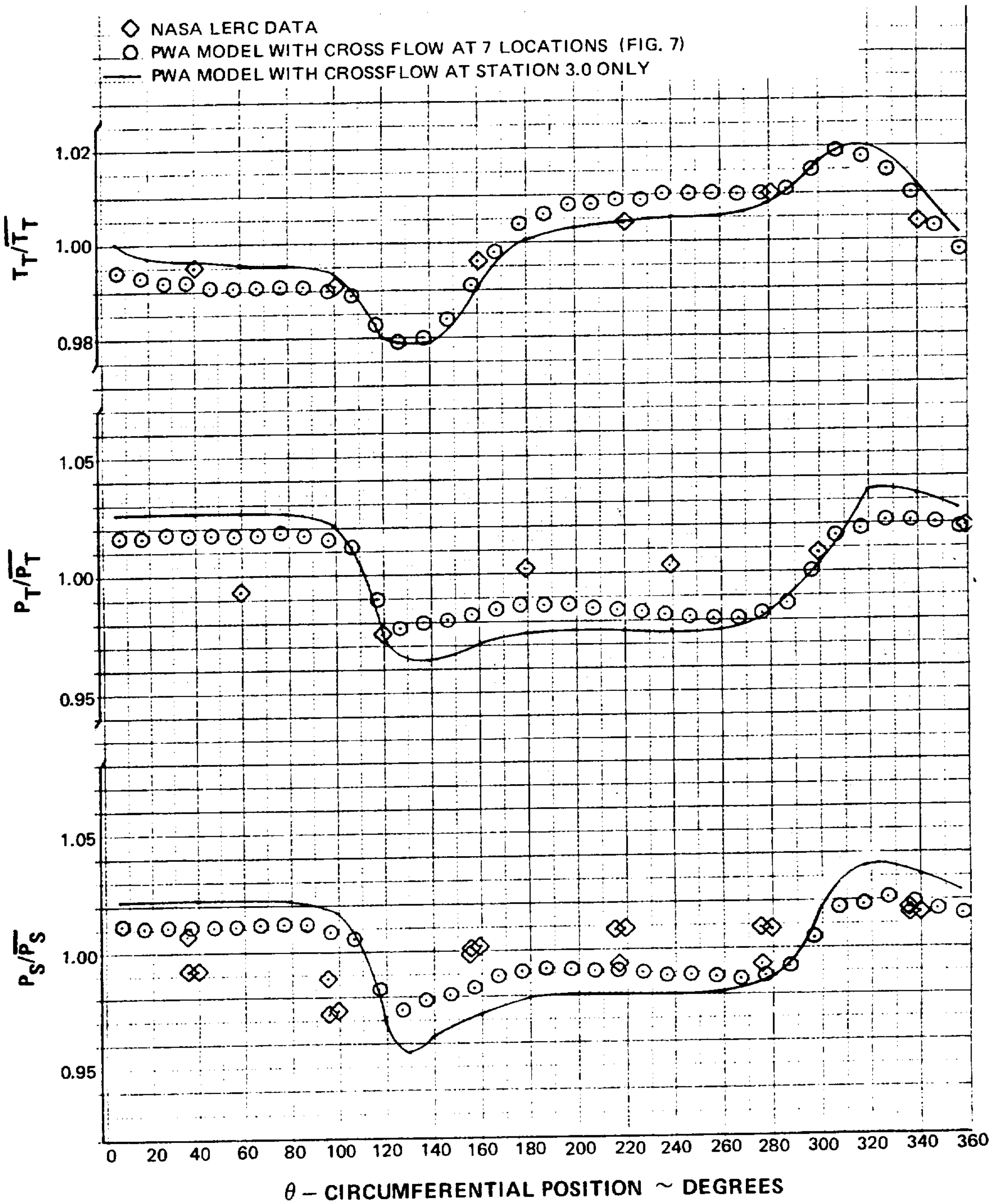


Figure 19 Circumferential Variation of Pressure and Temperature at Station 2.6 at 8600 rpm

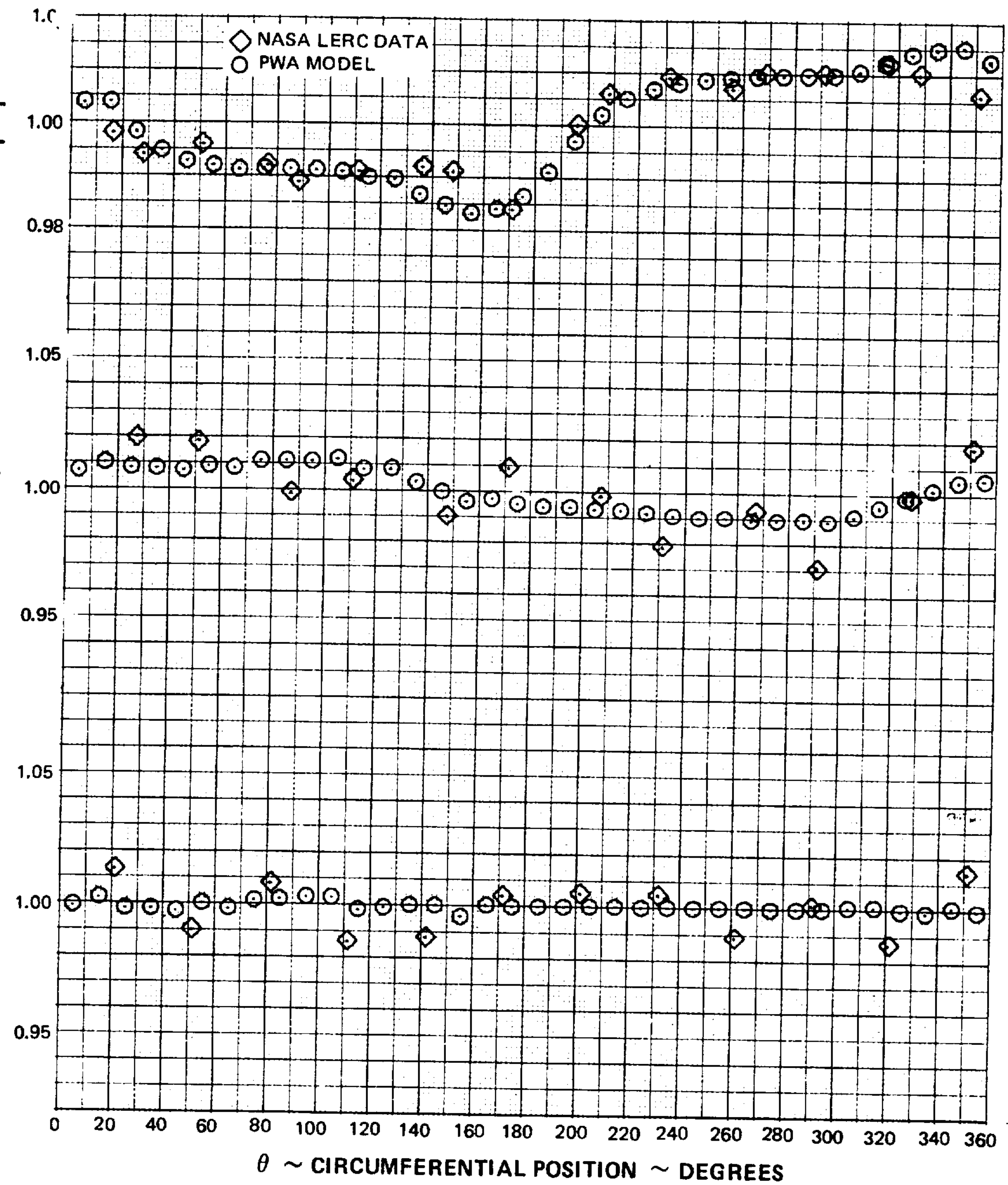


Figure 20 Circumferential Variation of Pressure and Temperature at Station 3.0 at 8600 rpm

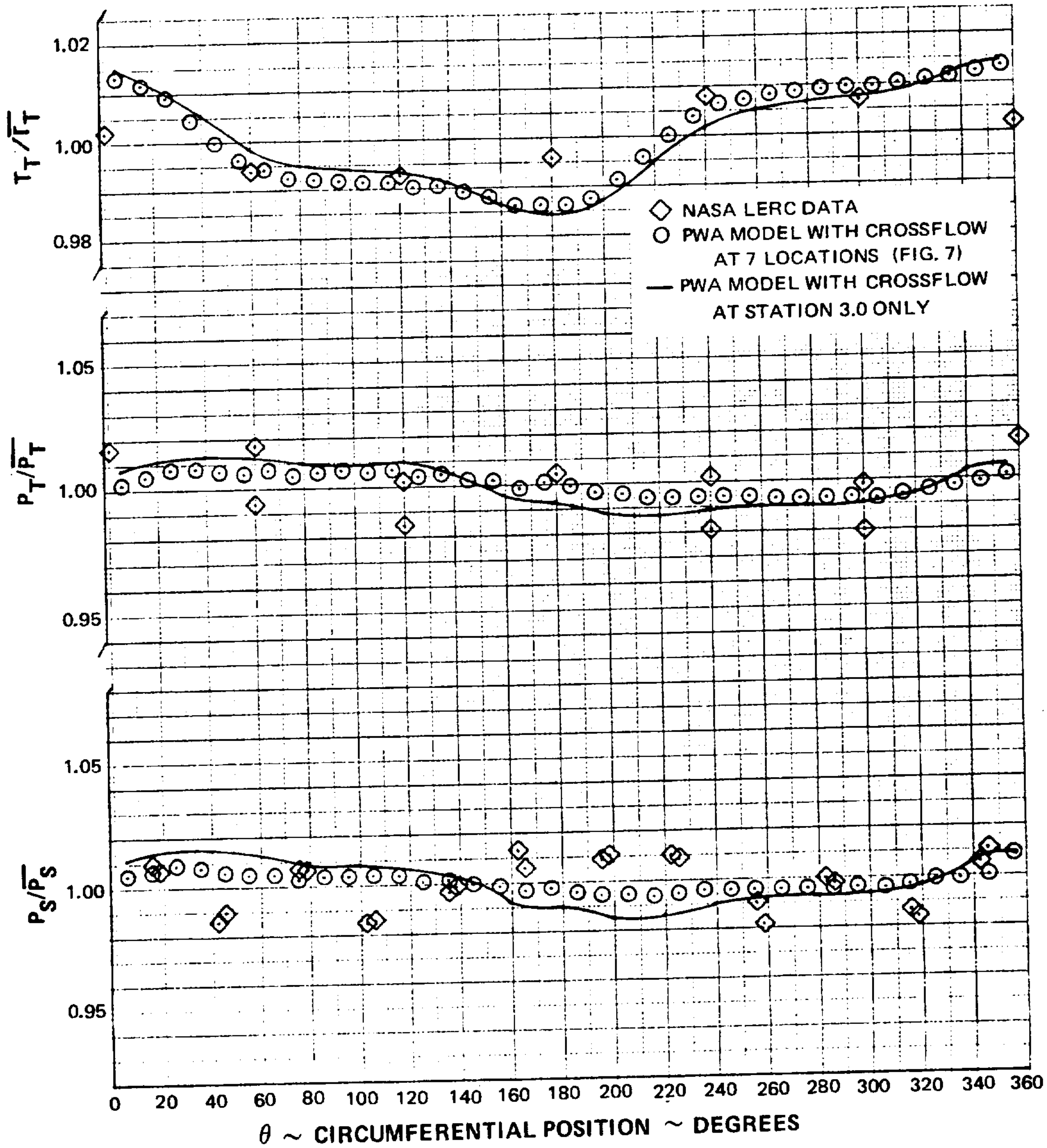


Figure 21 Circumferential Variation of Pressure and Temperature at Station 3.12 at 8600 rpm

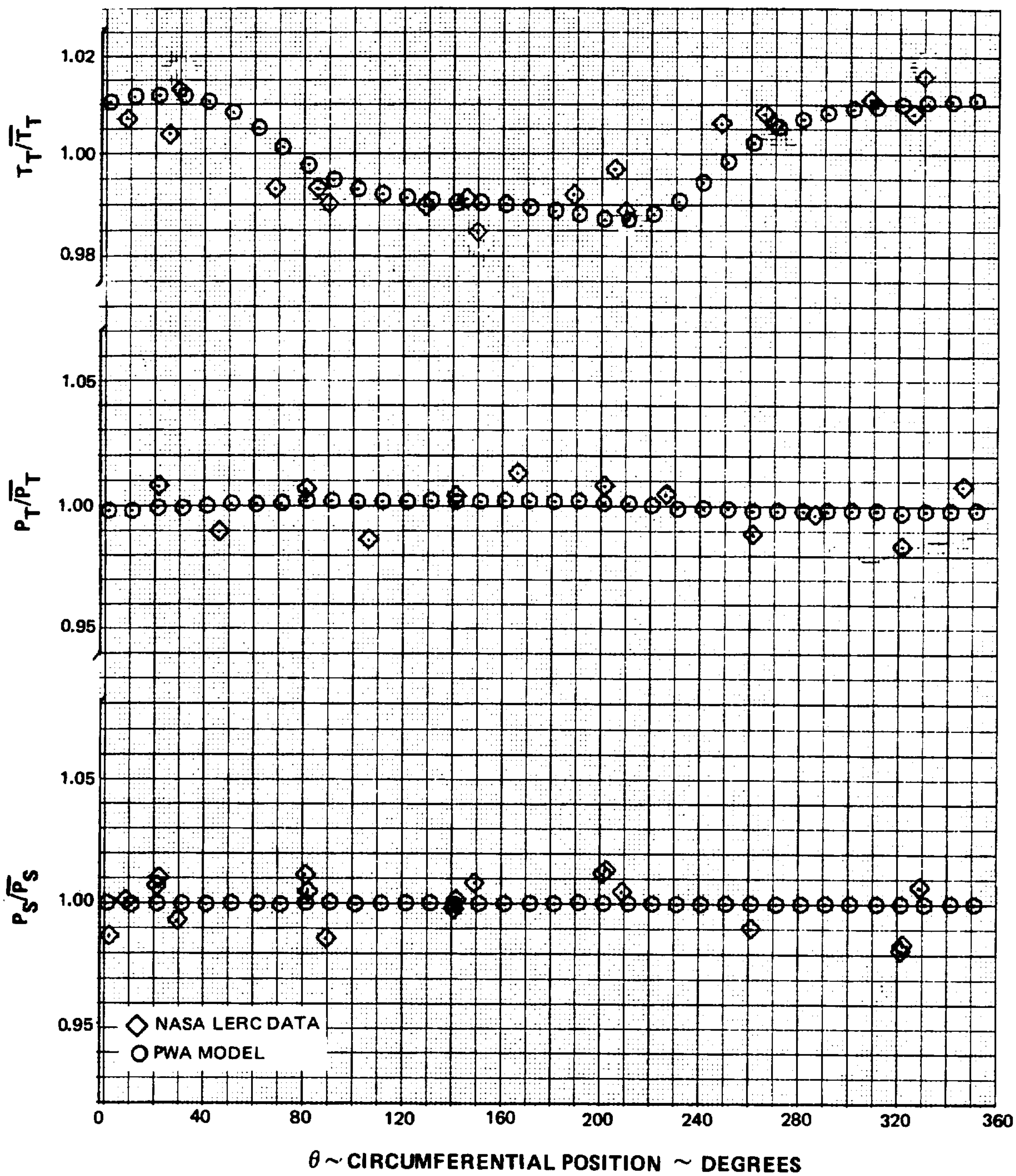


Figure 22 Circumferential Variation of Pressure and Temperature at Station 4.0 at 8600 rpm

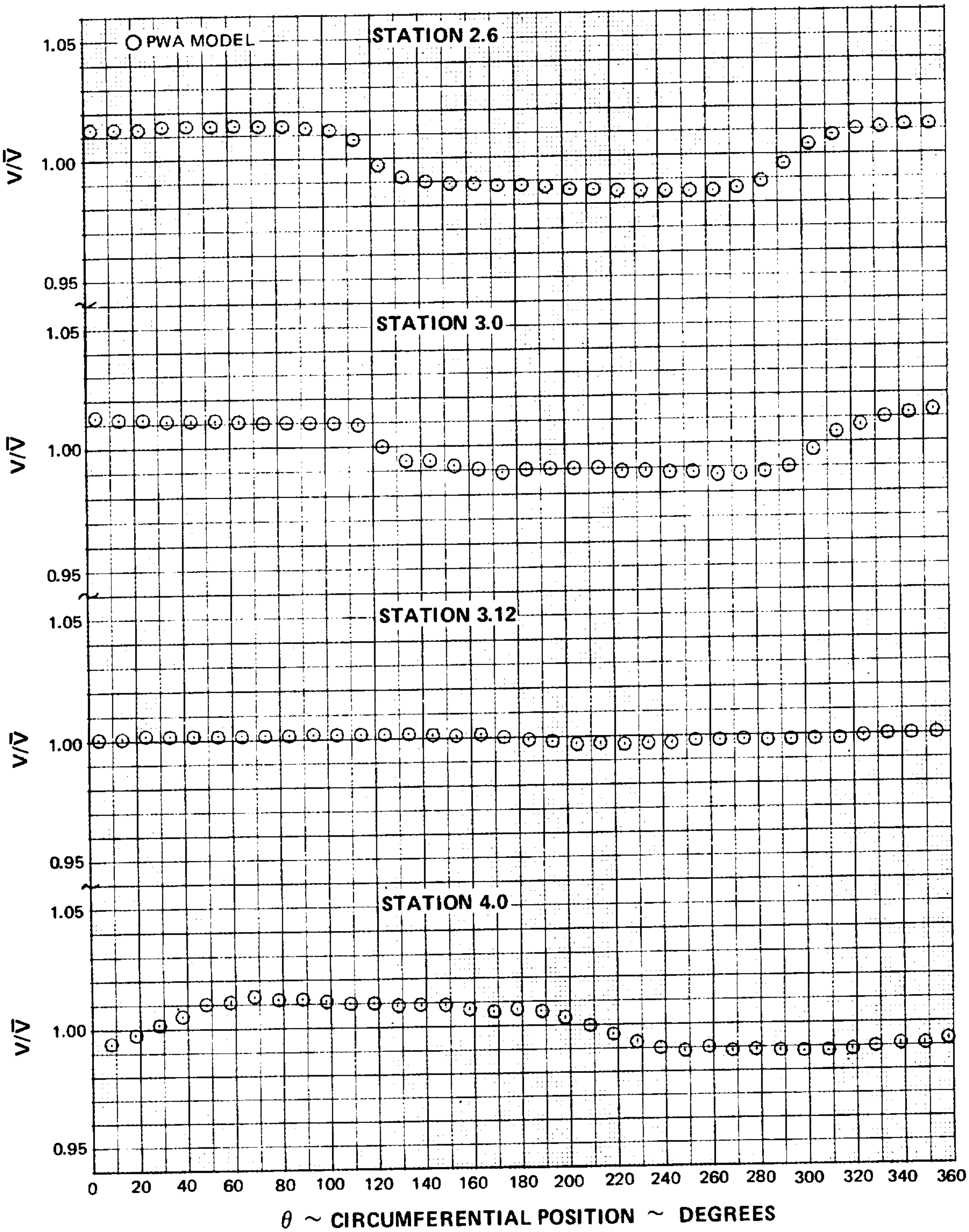


Figure 23 Circumferential Variation of Velocity at Stations 2.6, 3.0, 3.12 and 4.0 at 8600 rpm

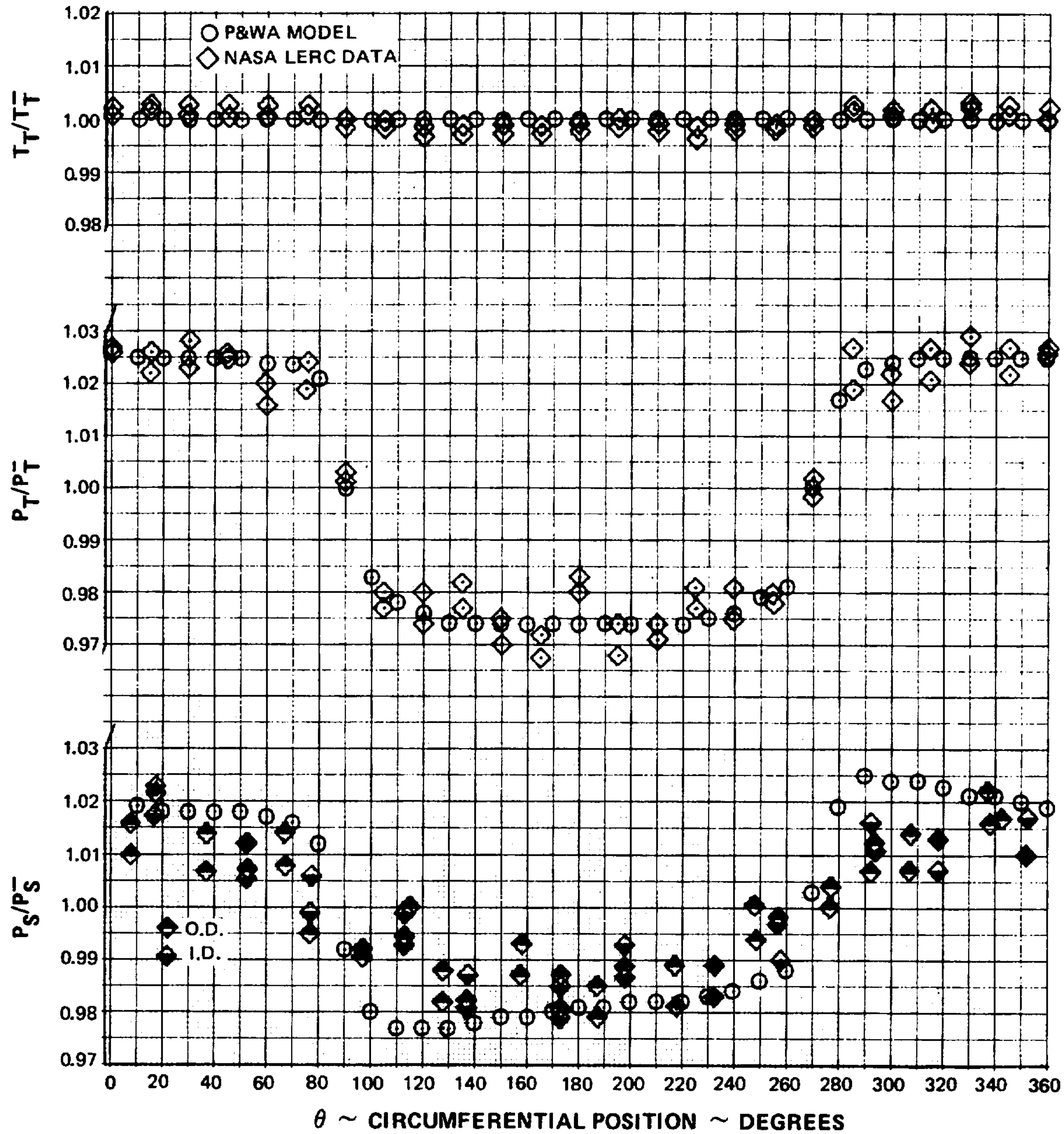


Figure 24 Circumferential Variation of Inlet Pressure and Temperature at 7400 rpm

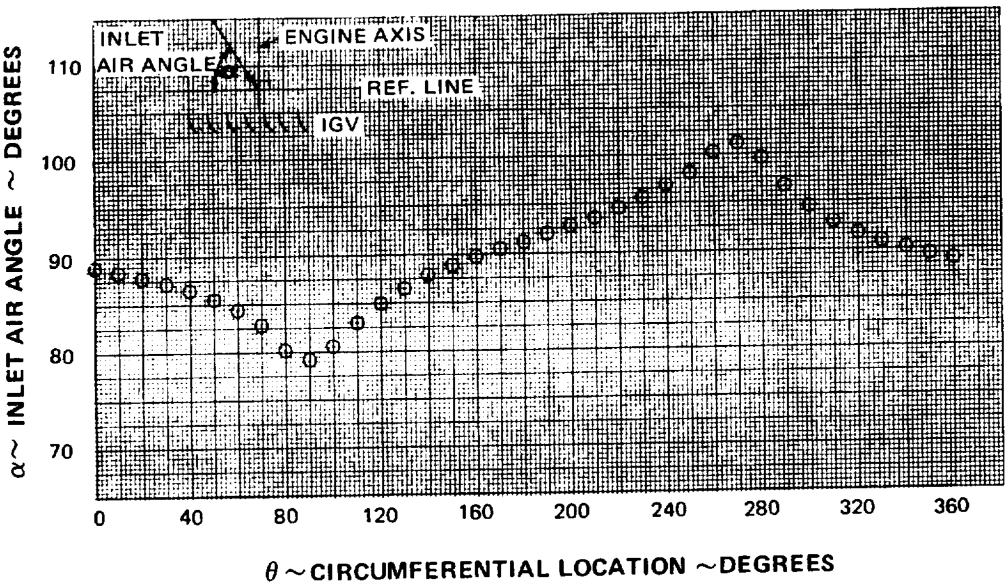


Figure 25 Circumferential Variation of Inlet Air Angle at 7400 rpm

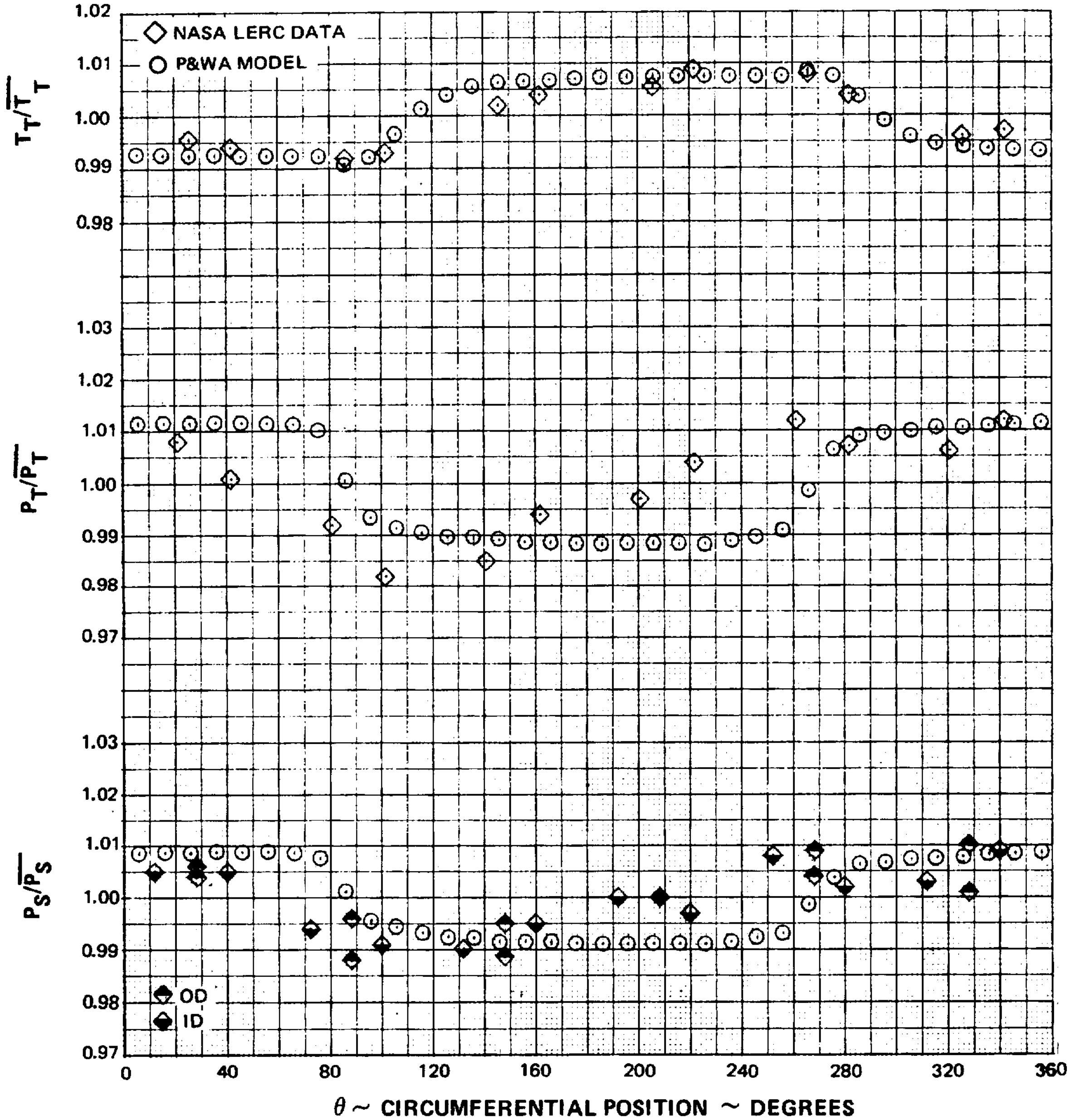


Figure 26 Circumferential Variation of Pressure and Temperature at Station 2.3F at 7400 rpm

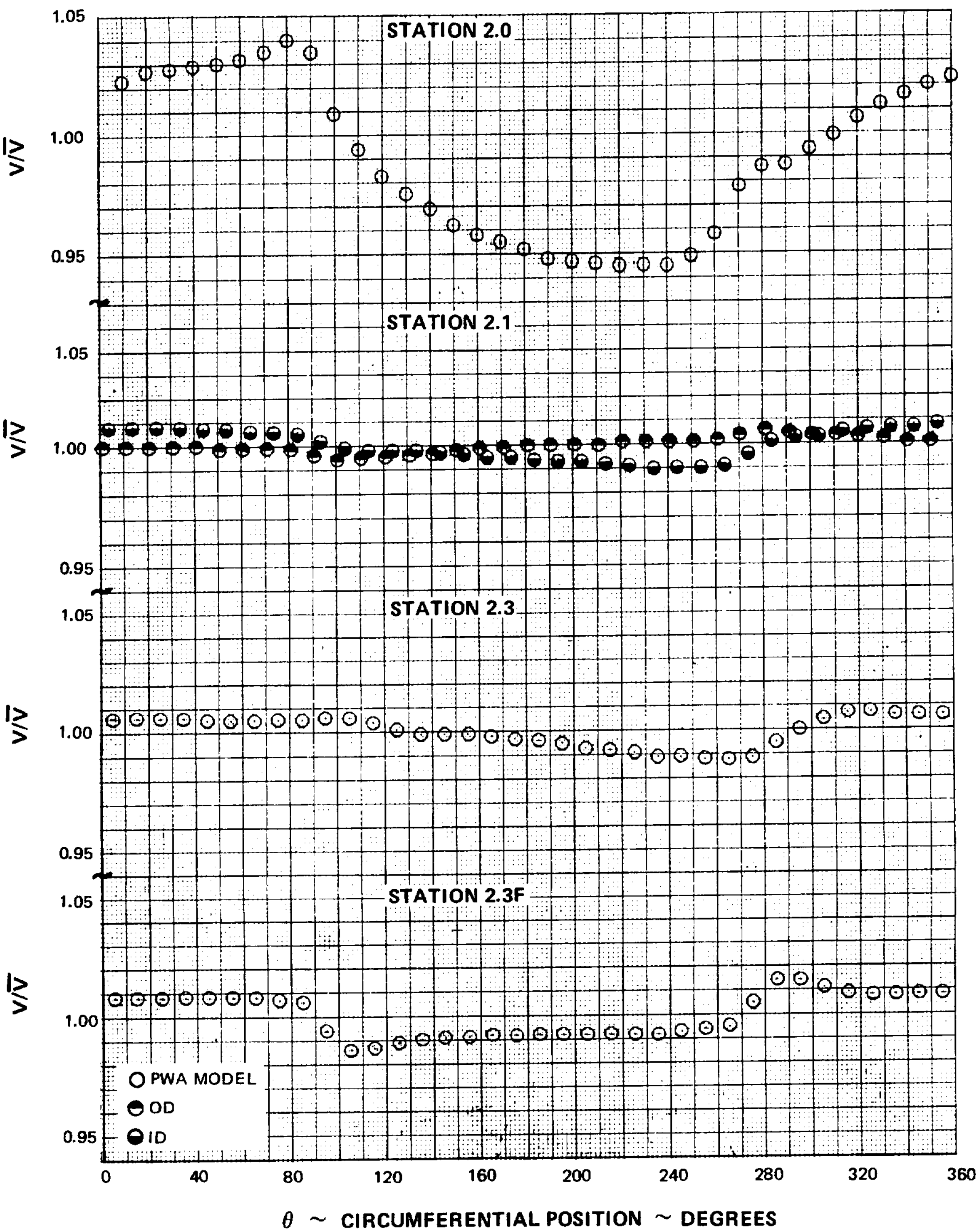


Figure 27 Circumferential Variation of Velocity at Stations 2.0, 2.1, 2.3, and 2.3F at 7400 rpm

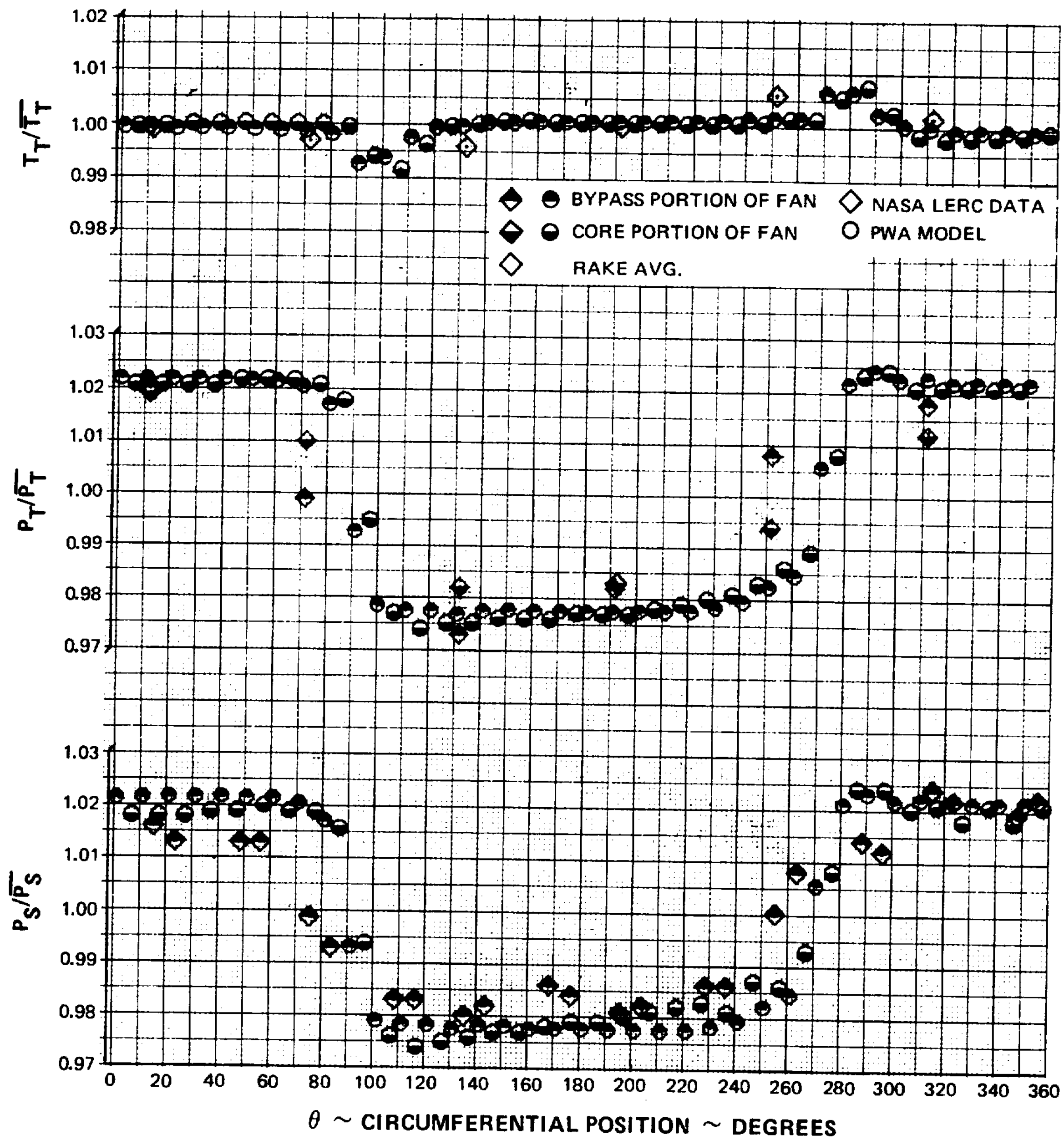


Figure 28 Circumferential Variation of Pressure and Temperature at Station 2.1 at 7400 rpm

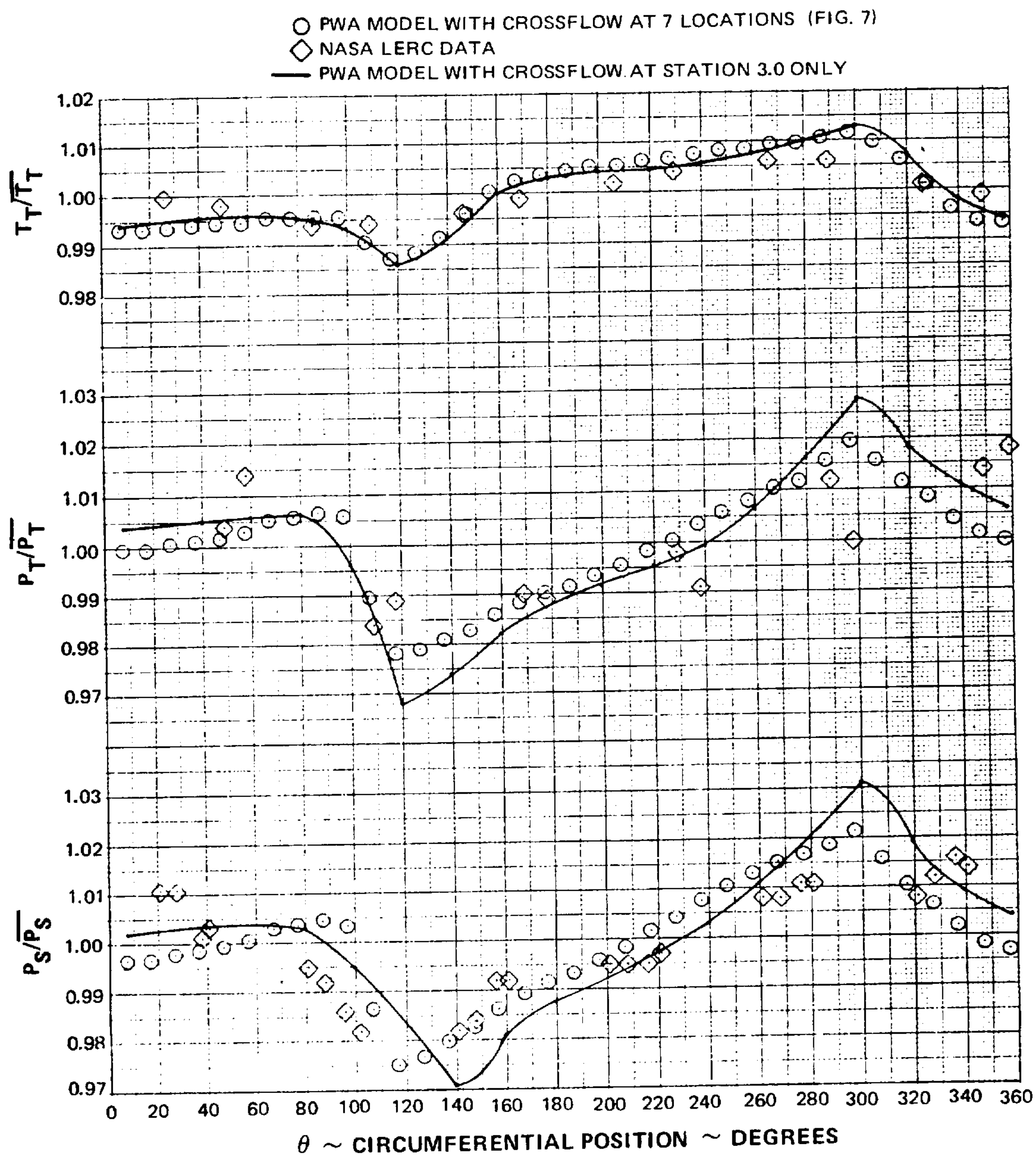


Figure 29 Circumferential Variation of Pressure and Temperature at Station 2.3 at 7400 rpm

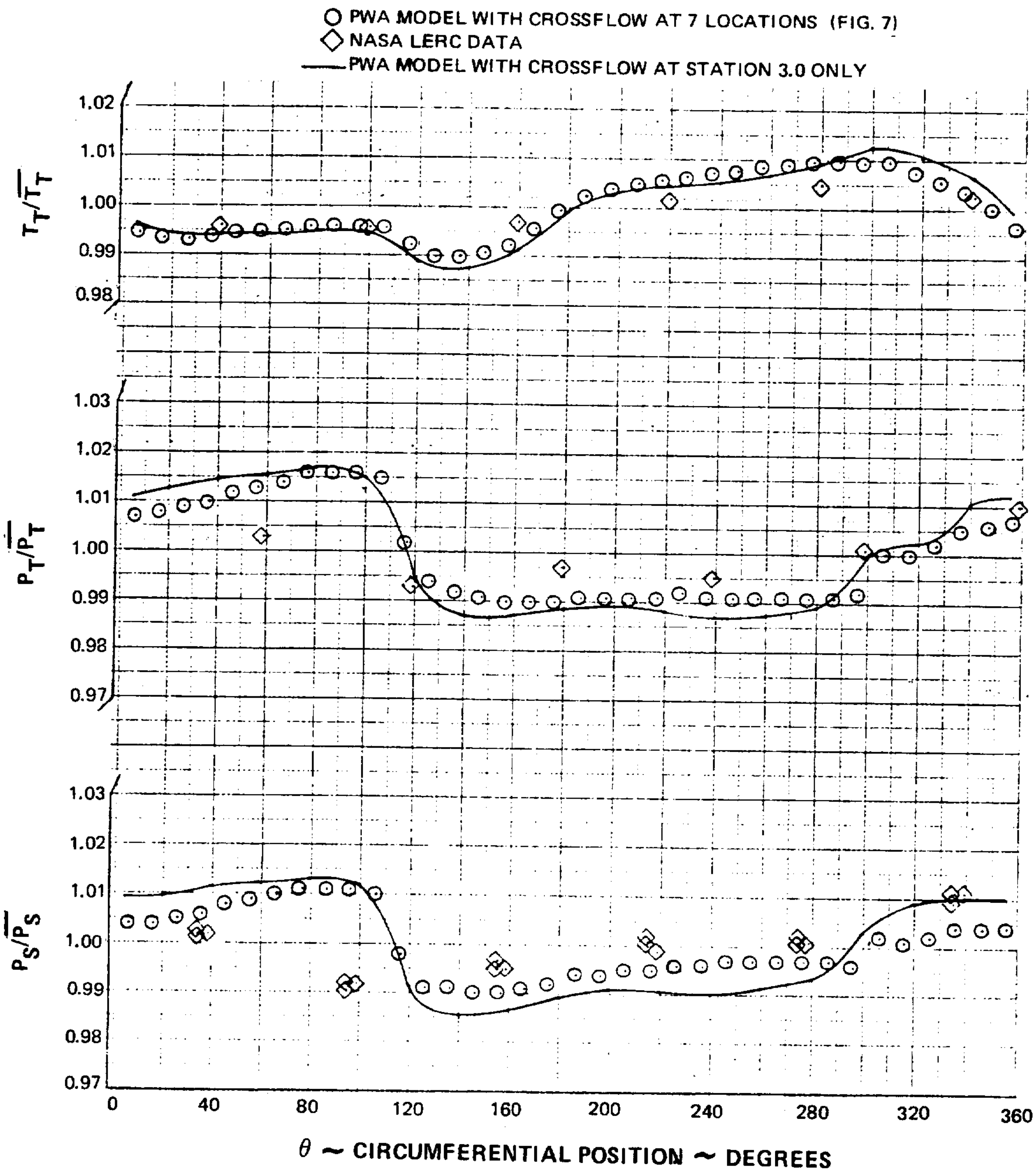


Figure 30 Circumferential Variation of Pressure and Temperature at Station 2.6 at 7400 rpm

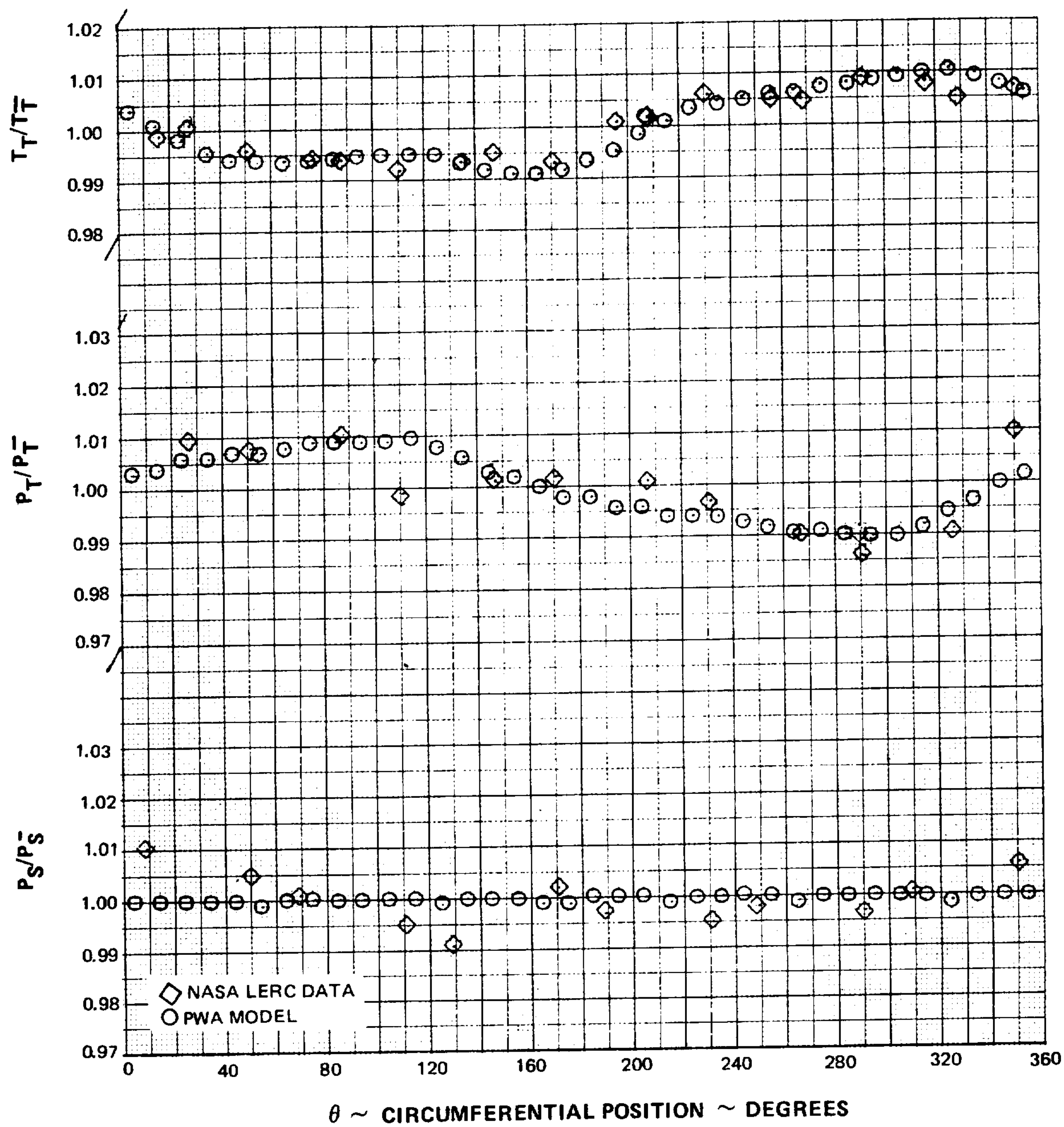


Figure 31 Circumferential Variation of Pressure and Temperature at Station 3.0 at 7400 rpm

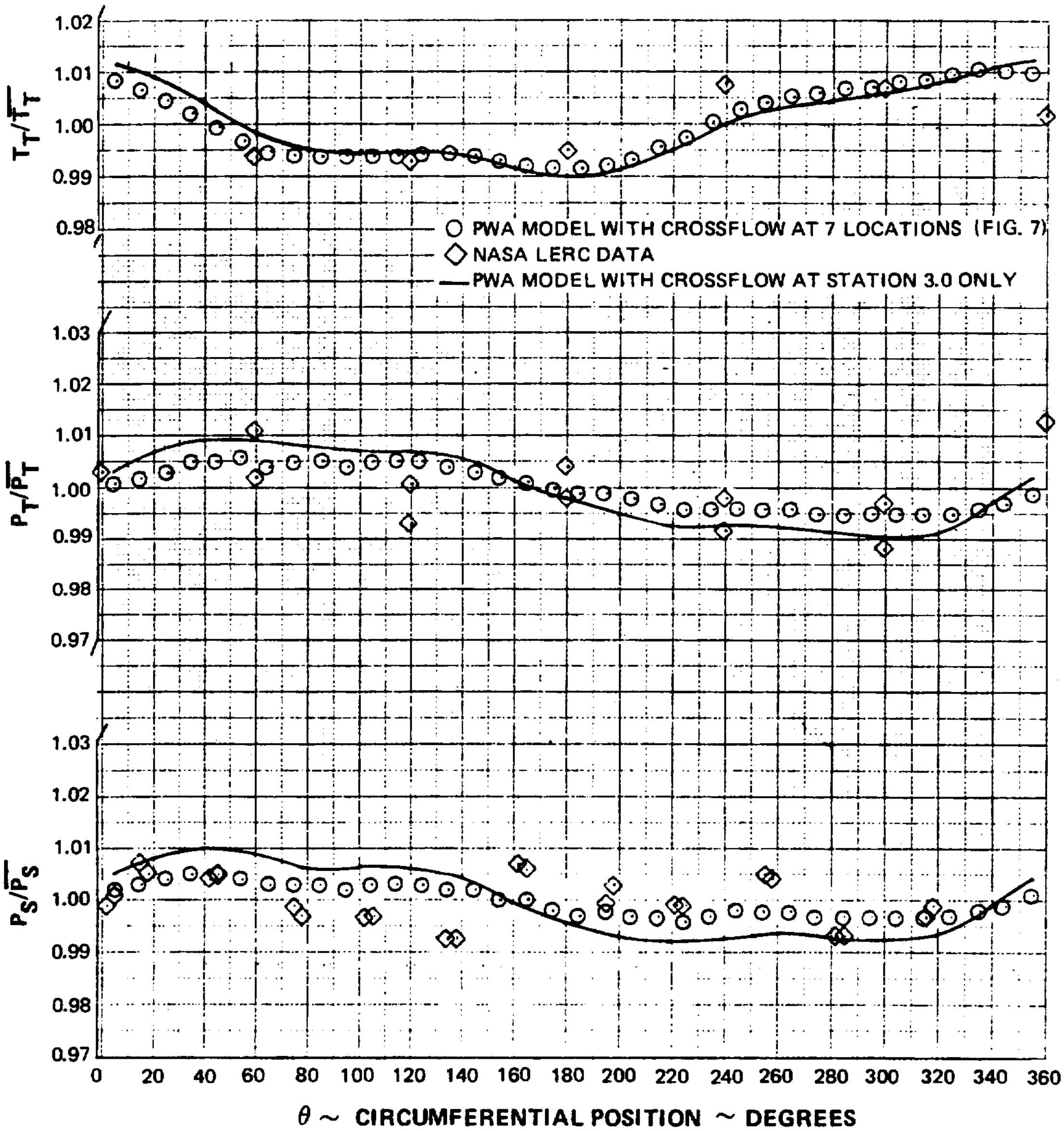


Figure 32 Circumferential Variation of Pressure and Temperature at Station 3.12 at 7400 rpm

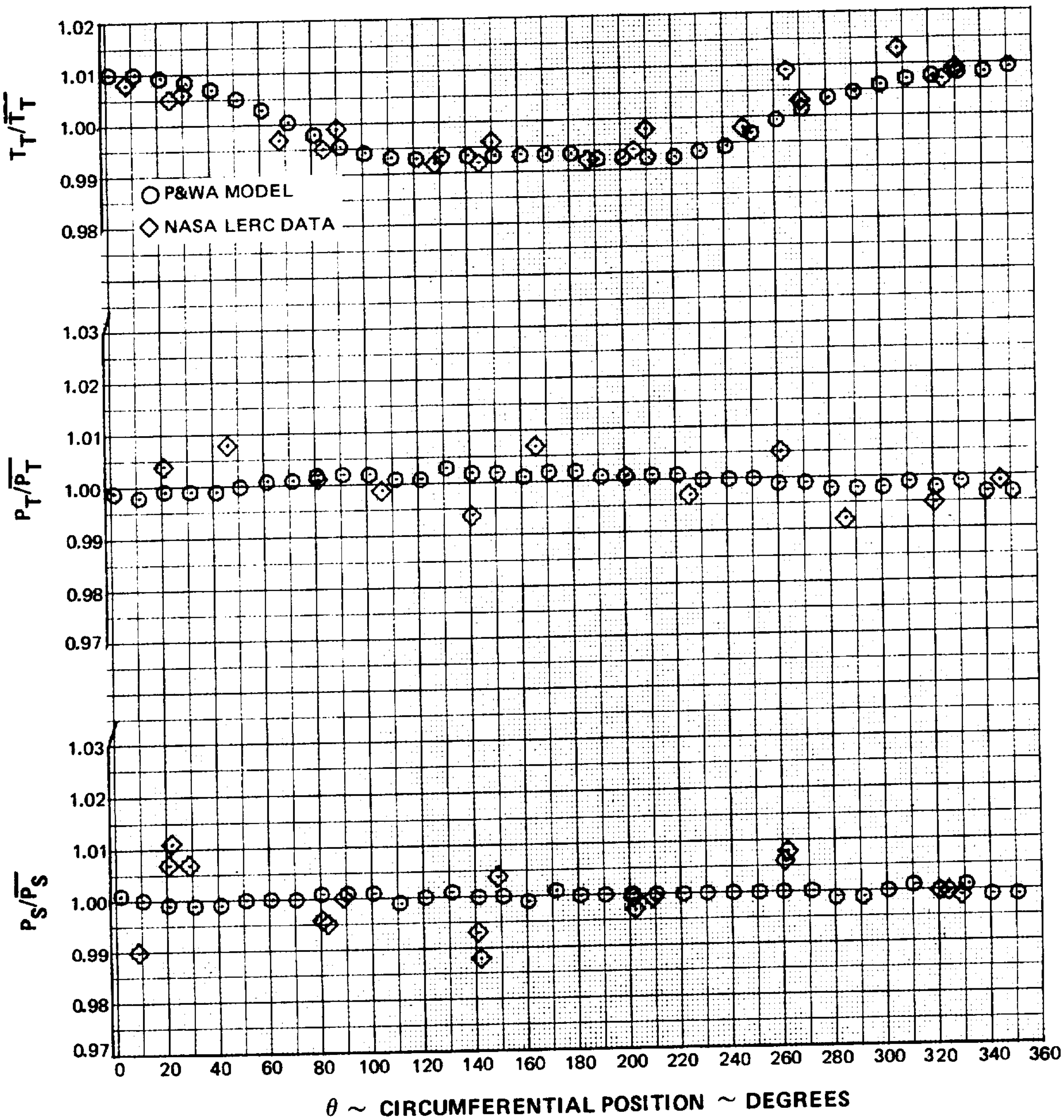


Figure 33 Circumferential Variation of Pressure and Temperature at Station 4.0 at 7400 rpm

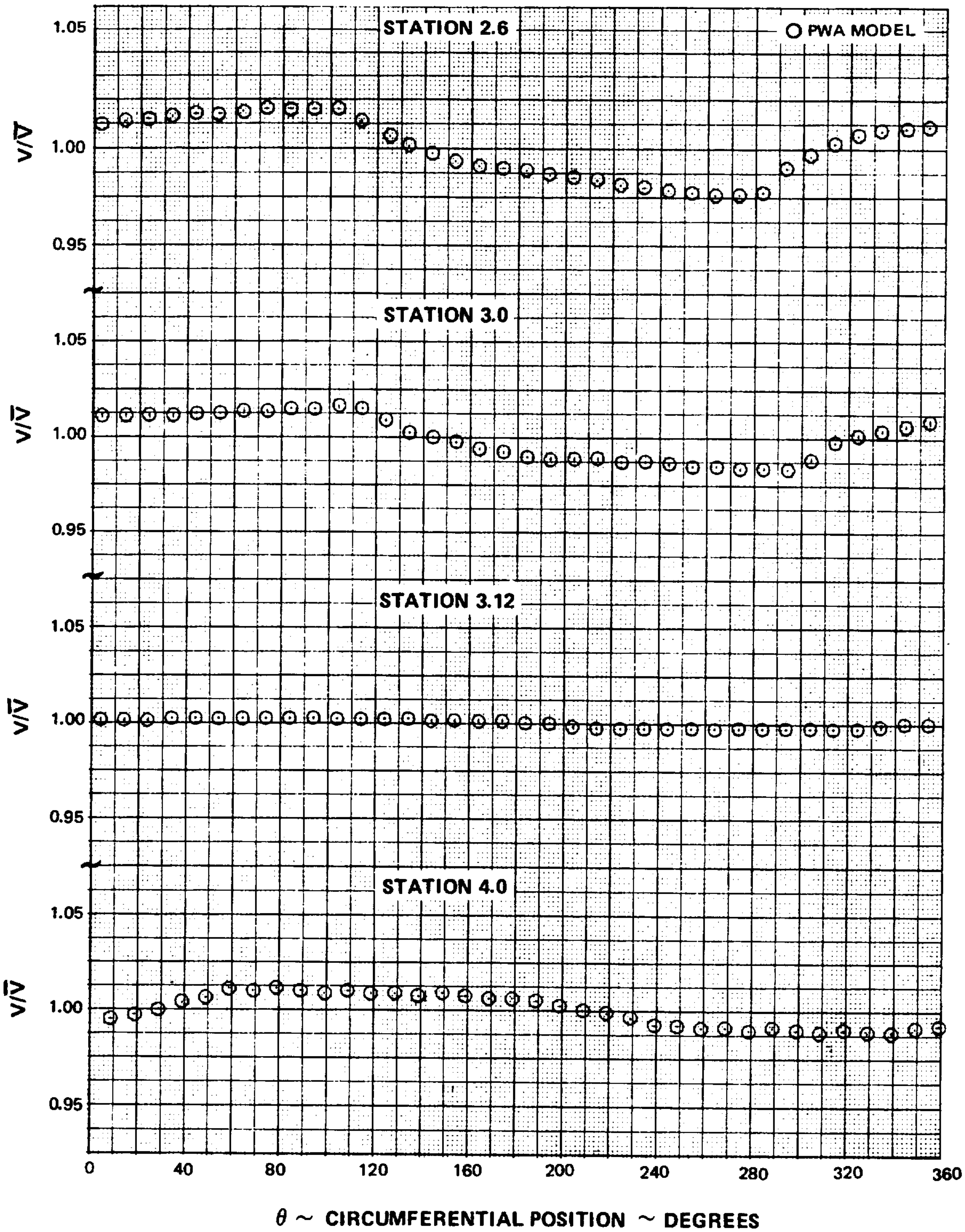


Figure 34 Circumferential Variation of Velocity at Stations 2.6, 3.0, 3.12 and 4.0 at 7400 rpm

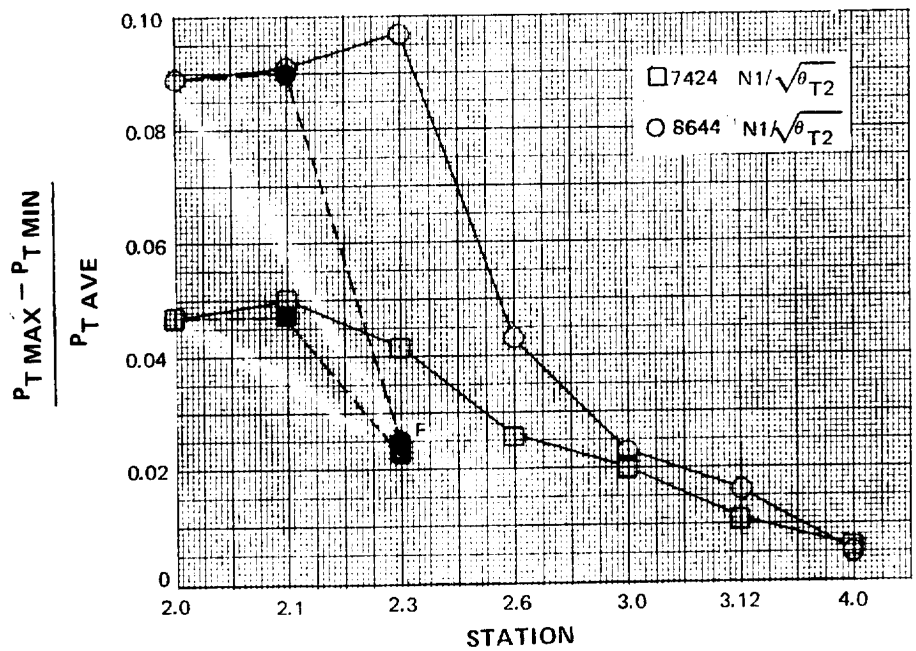


Figure 35 Predicted Attenuation of Total Pressure

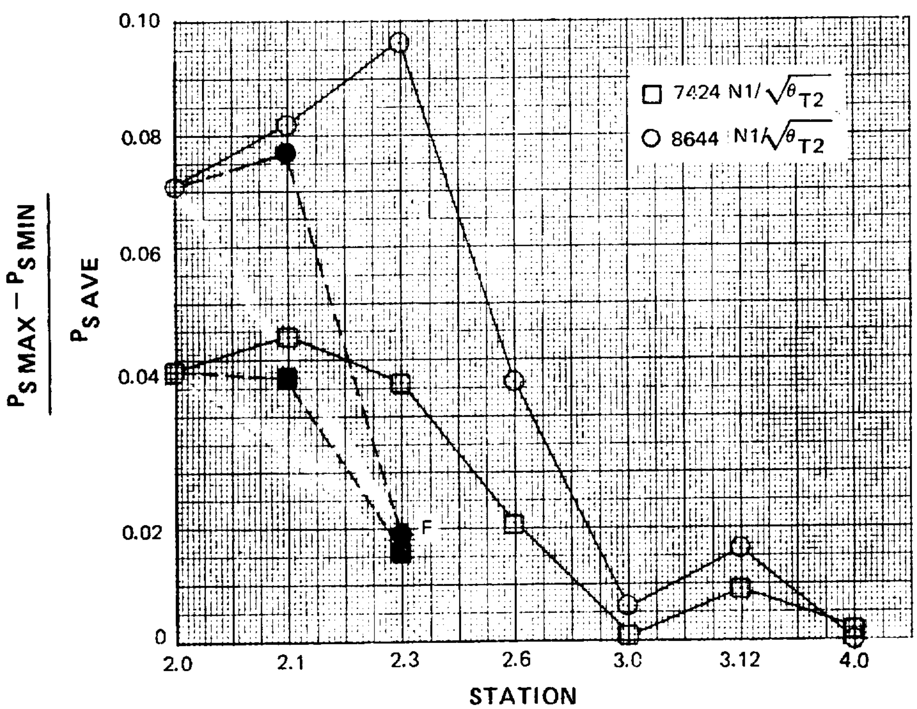


Figure 36 Predicted Attenuation of Static Pressure Distortion

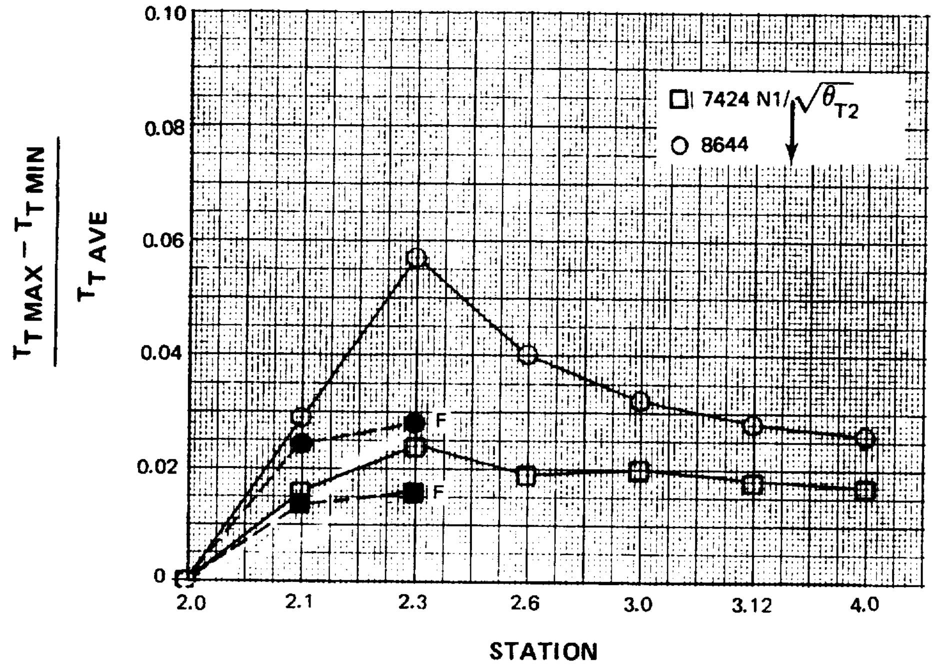


Figure 37 Predicted Generation of Total Temperature Distortion

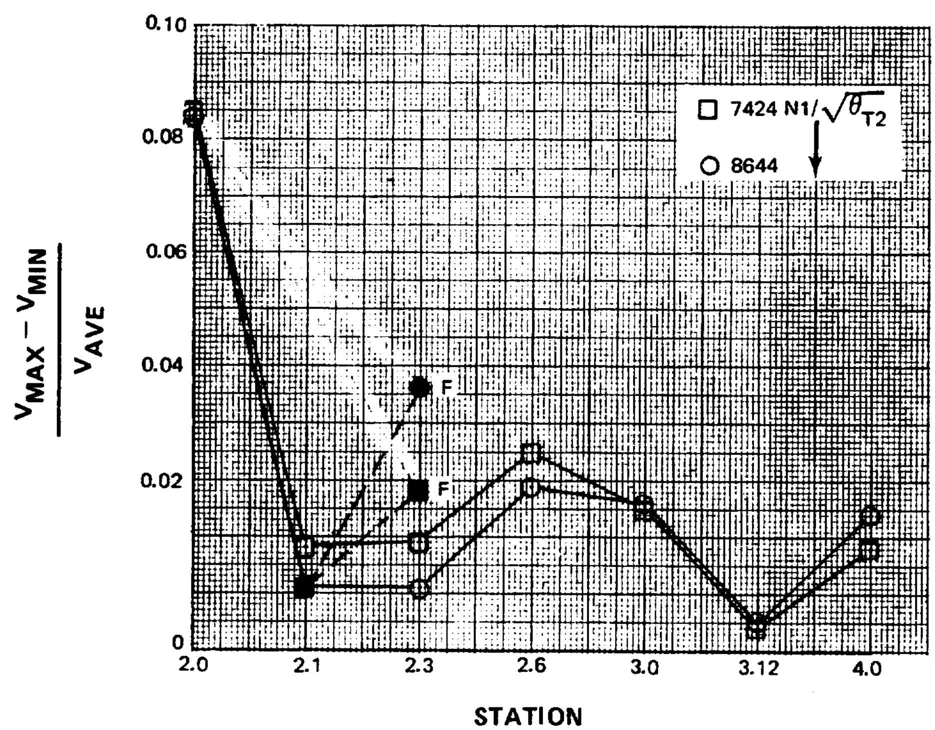


Figure 38 Predicted Velocity Distortion

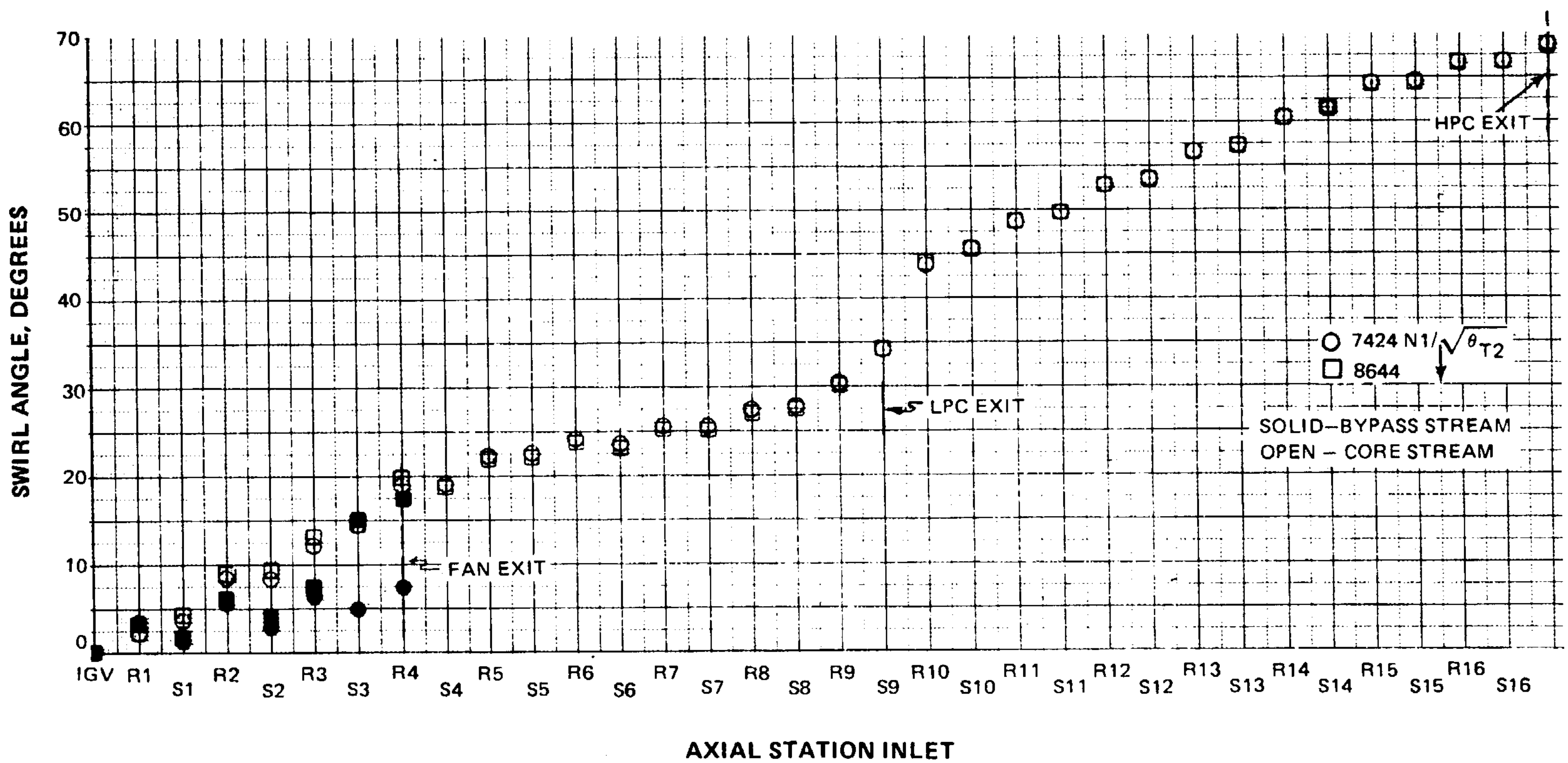


Figure 39   Predicted Flow Swirl (Acoustic Path) through Compressor System

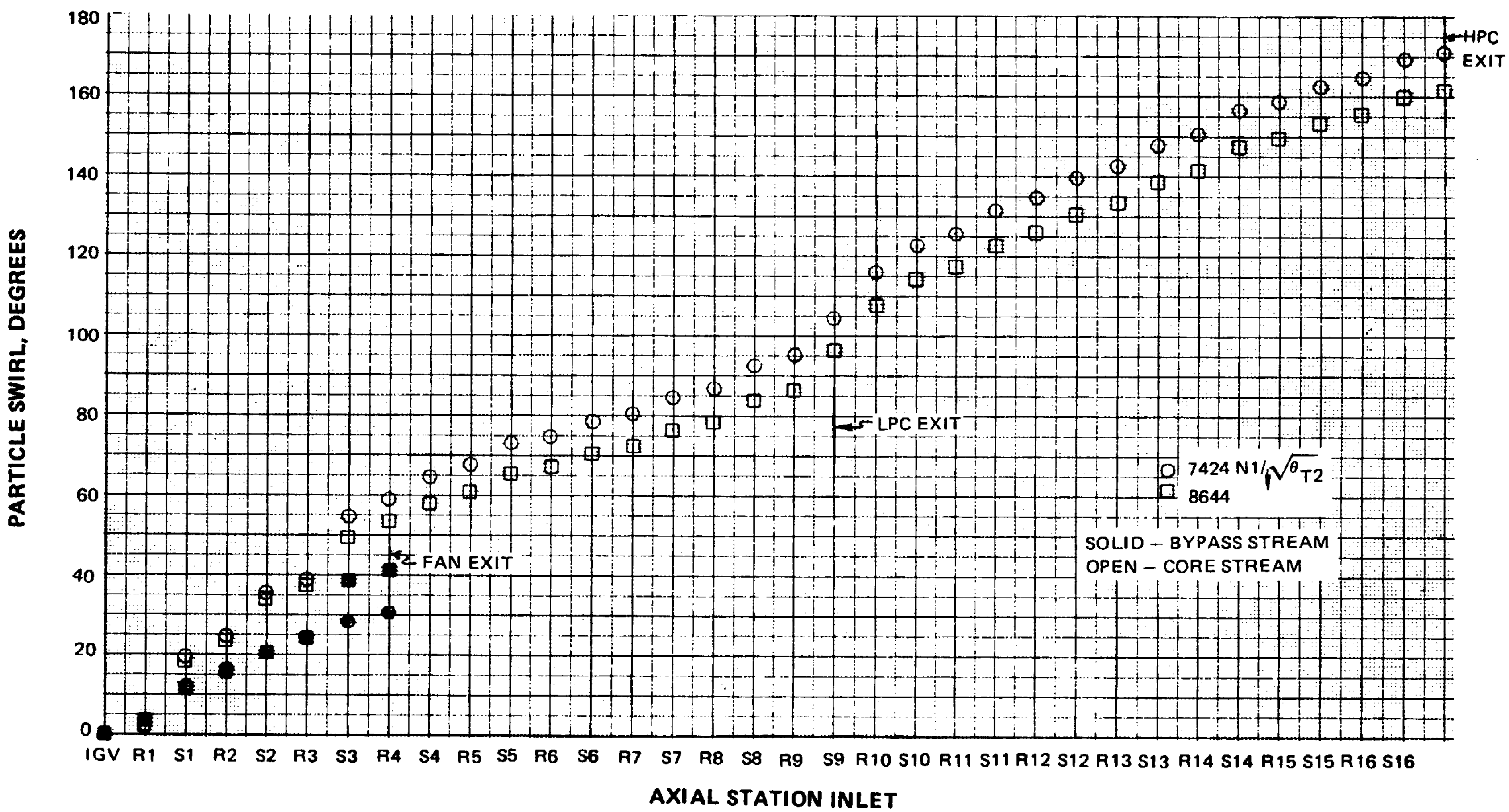


Figure 40 Predicted Particle Swirl (Particle Path) through Compressor System

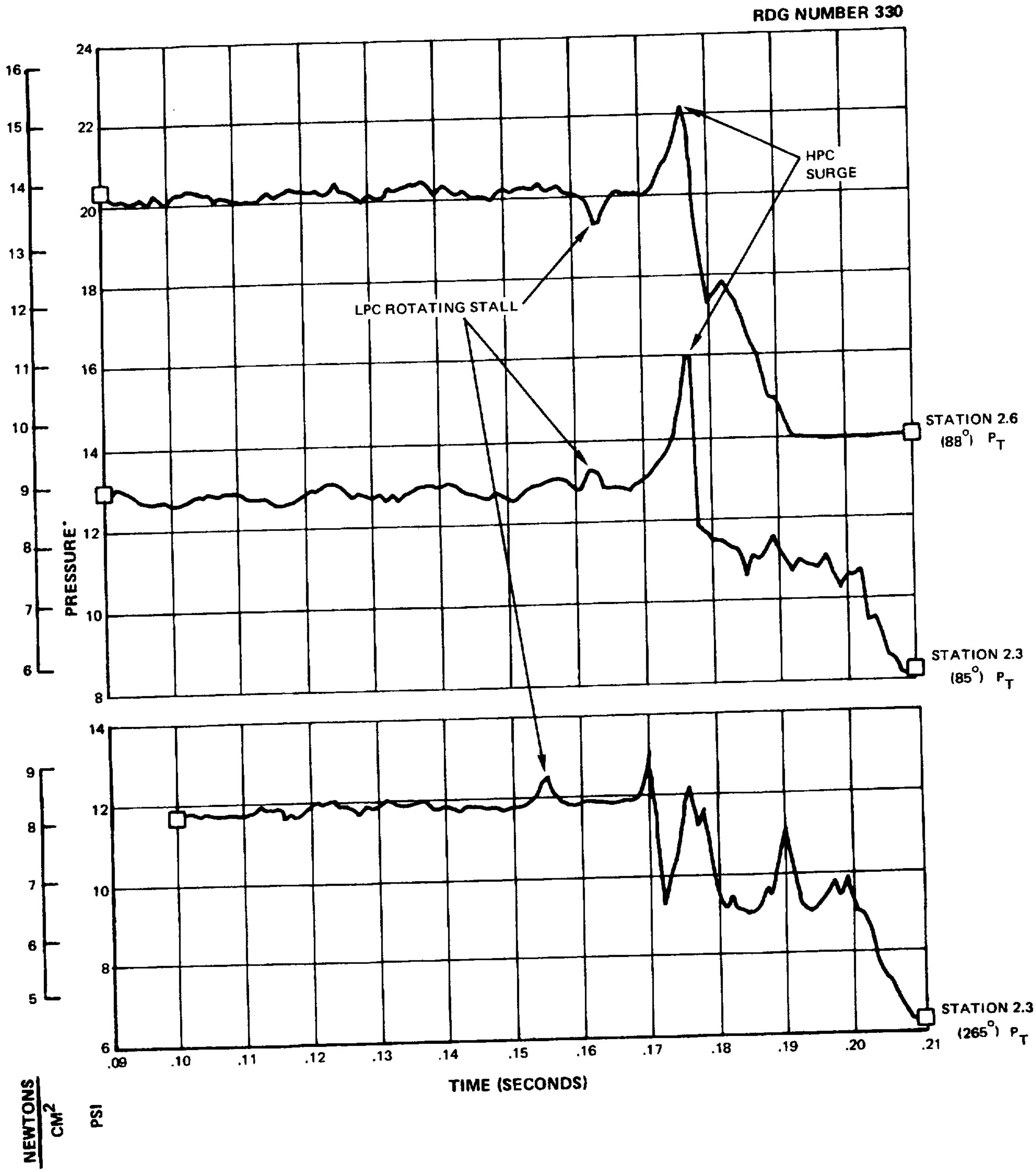


Figure 41 High Response Records at Stations 2.3 and 2.6 at 7300 rpm

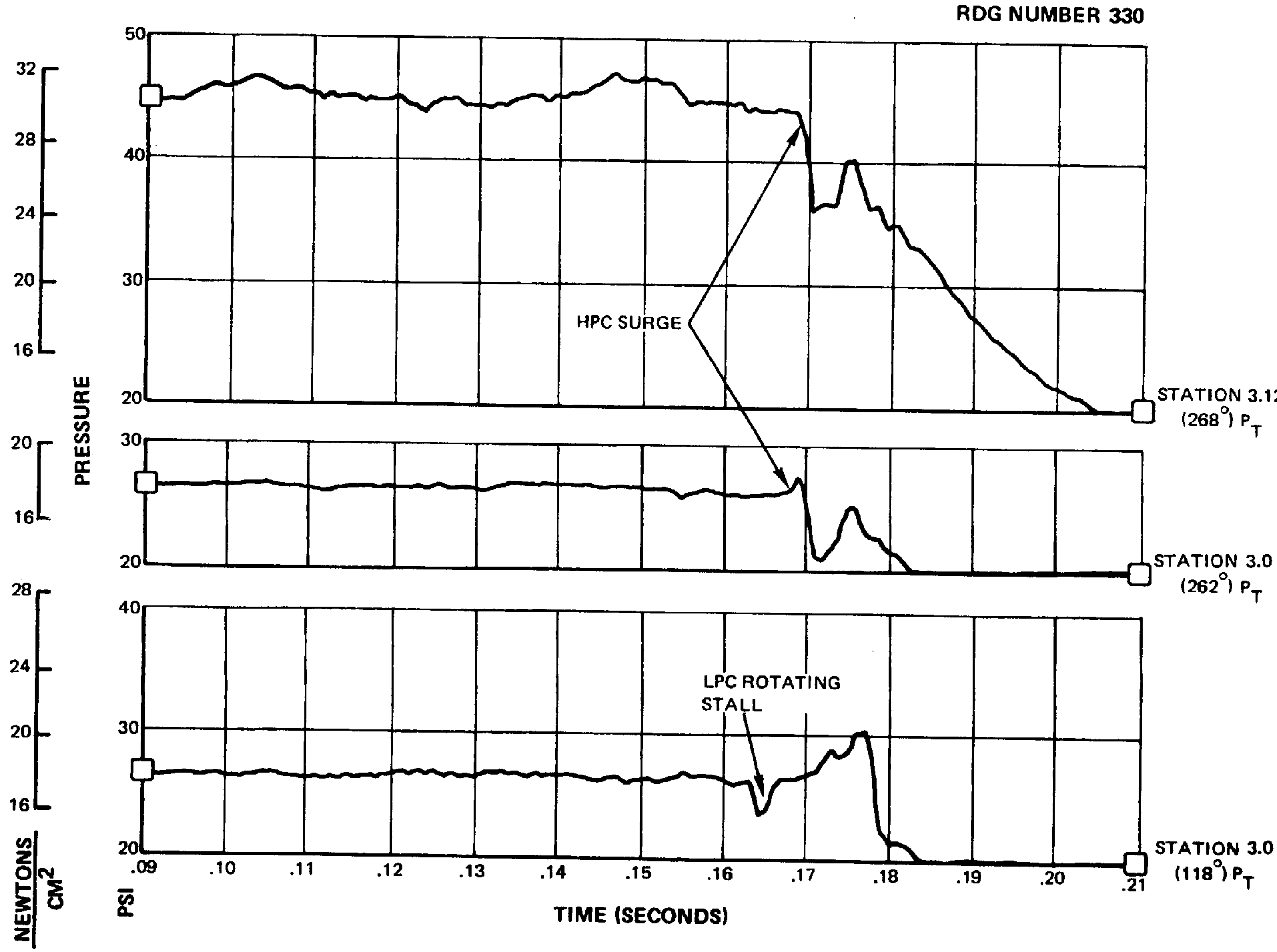


Figure 42 High Response Records at Stations 3.0 and 3.12 at 7300 rpm

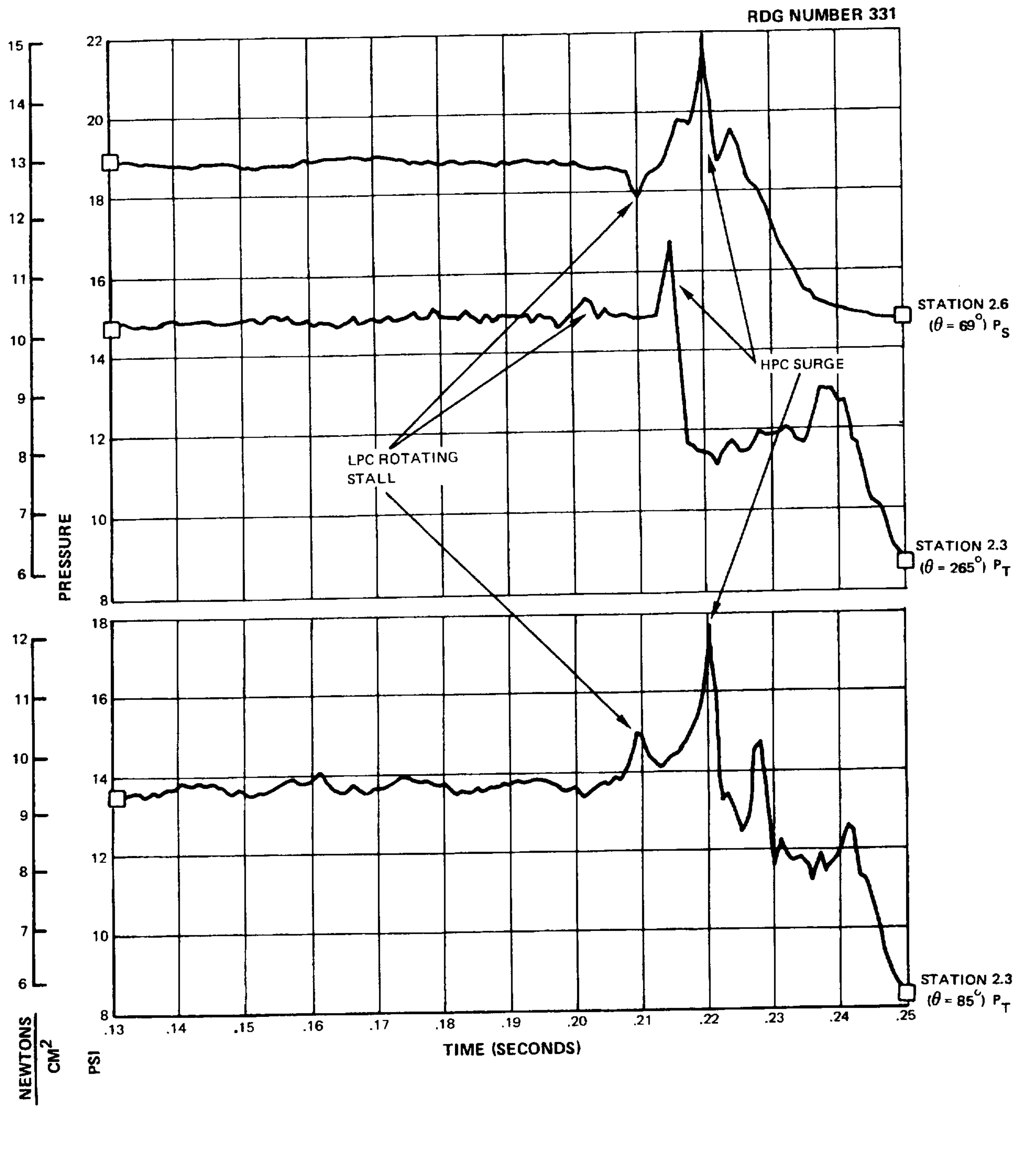


Figure 43 High Response Records at Stations 2.3 and 2.6 at 7900 rpm

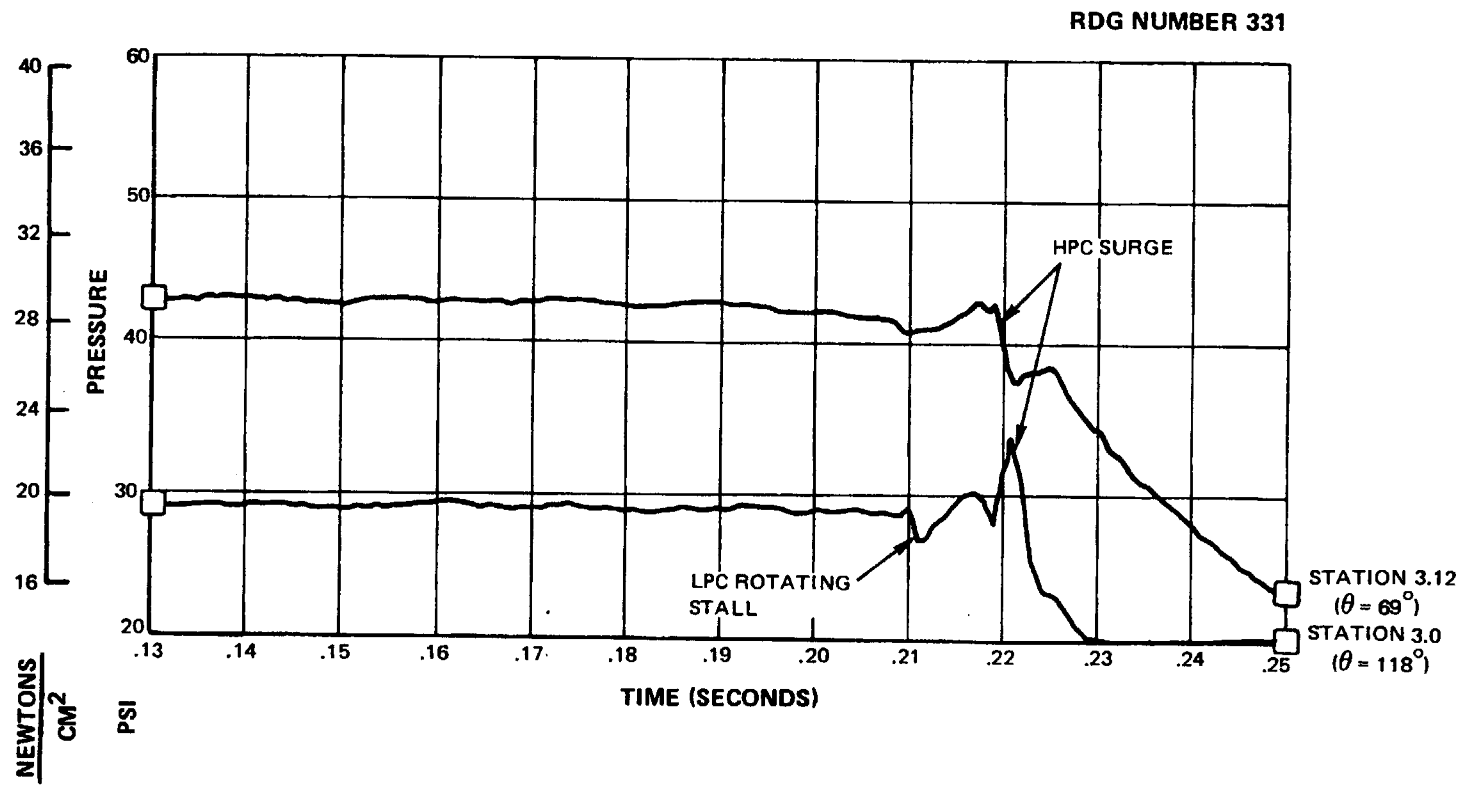


Figure 44 High Response Records at Stations 3.0 and 3.12 at 7900 rpm

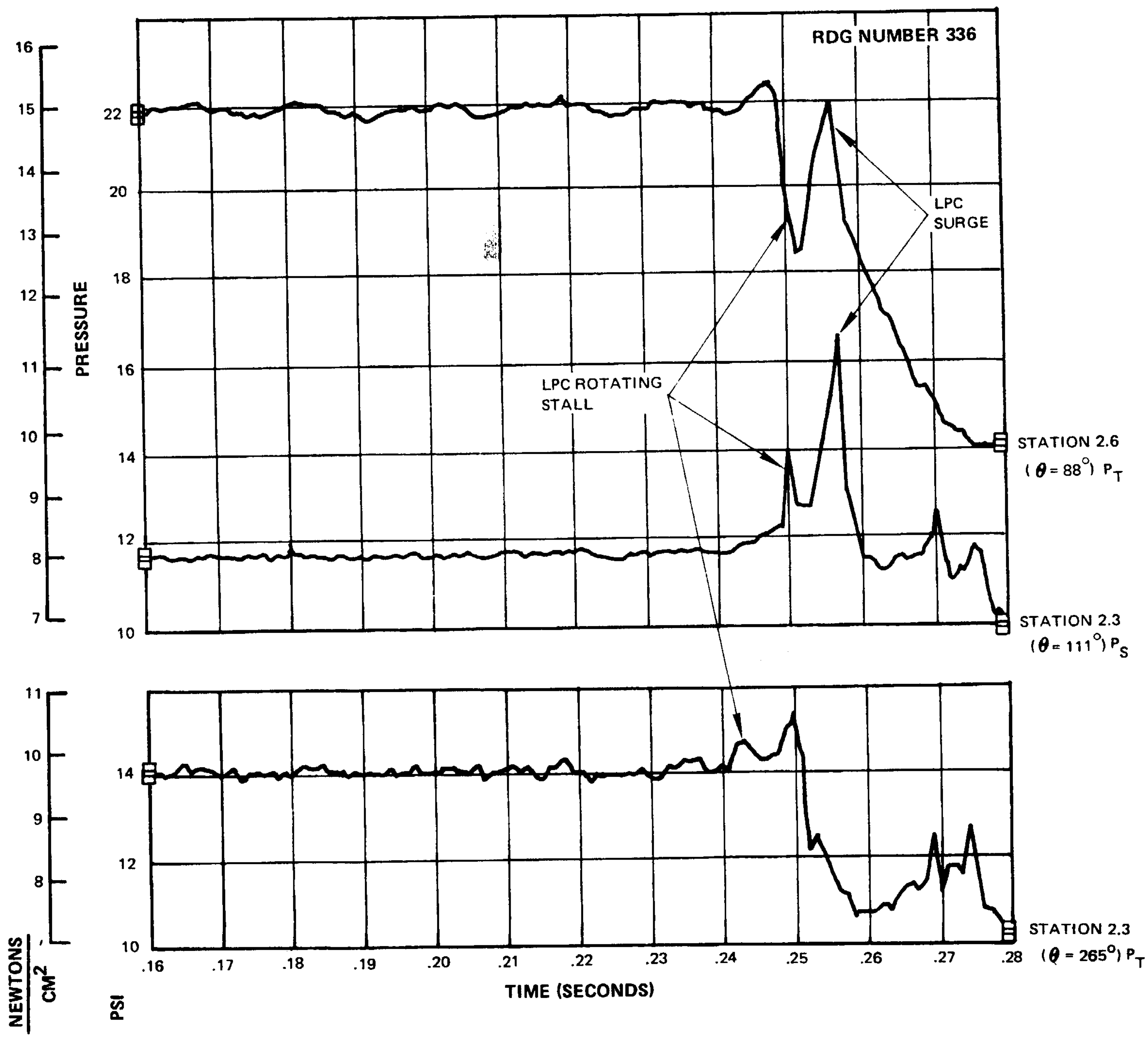


Figure 45 High Response Records at Stations 2.3 and 2.6 at 8200 rpm

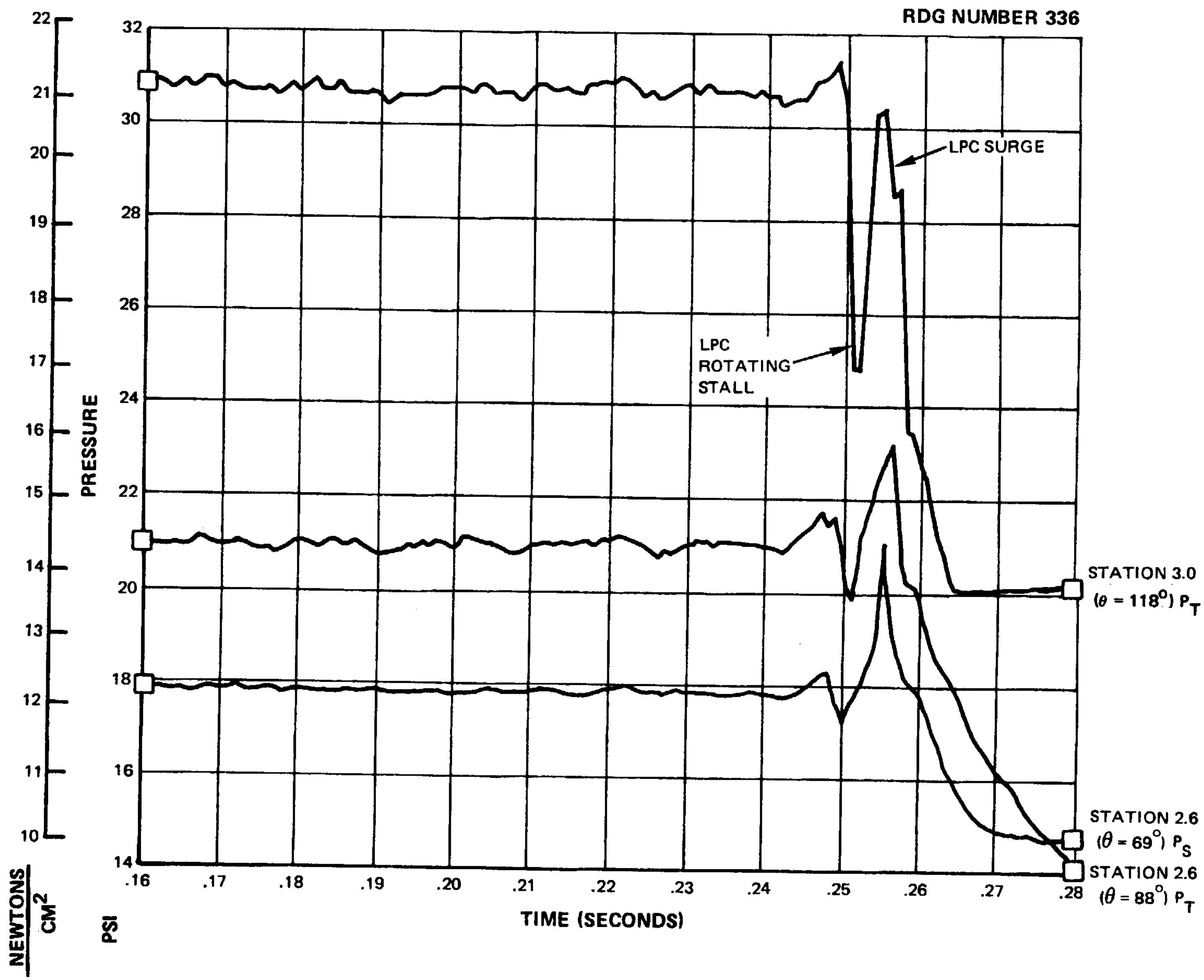


Figure 46 High Response Records at Stations 2.6 and 3.0 at 8200 rpm

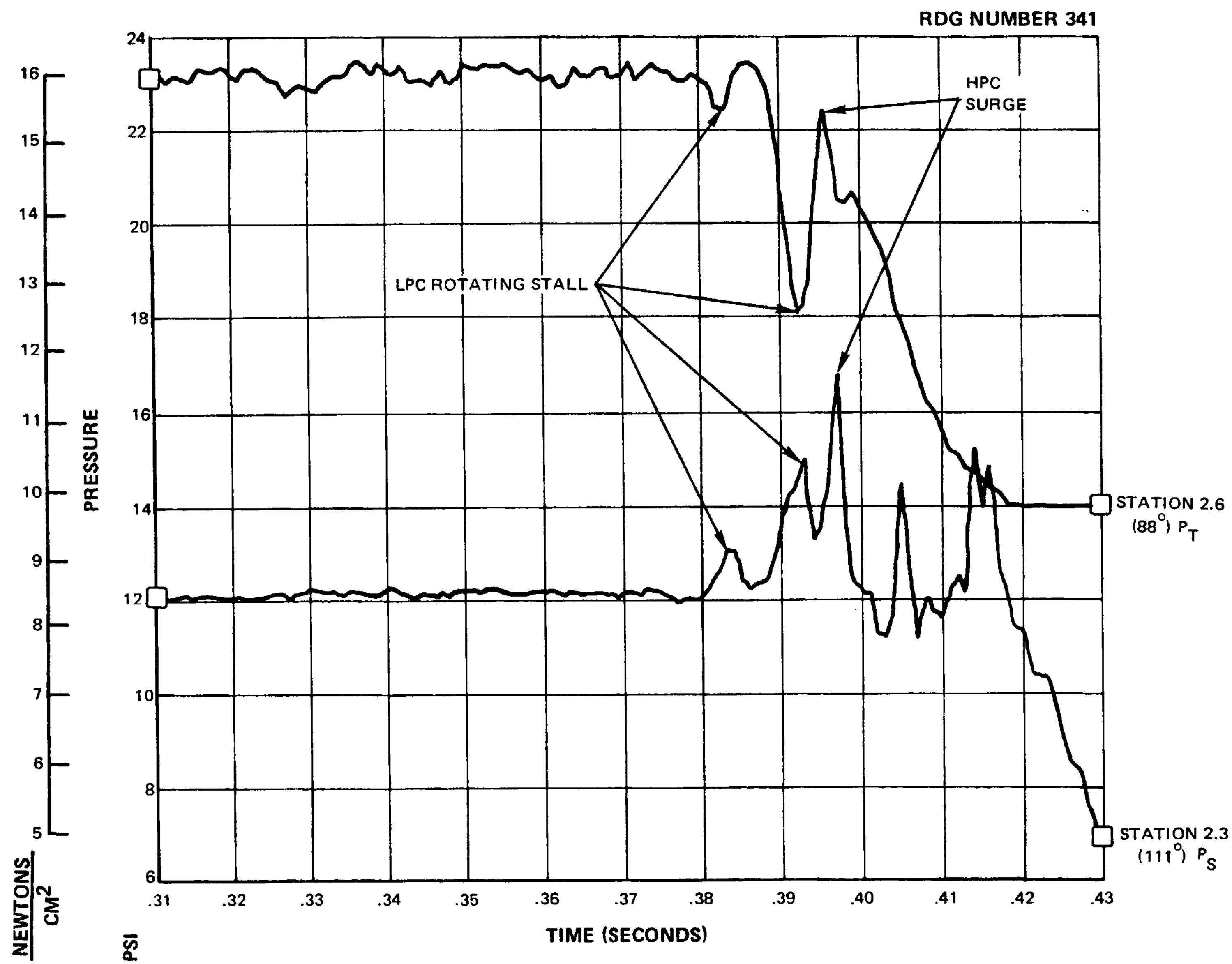


Figure 47 High Response Records at Stations 2.3 and 2.6 at 8700 rpm

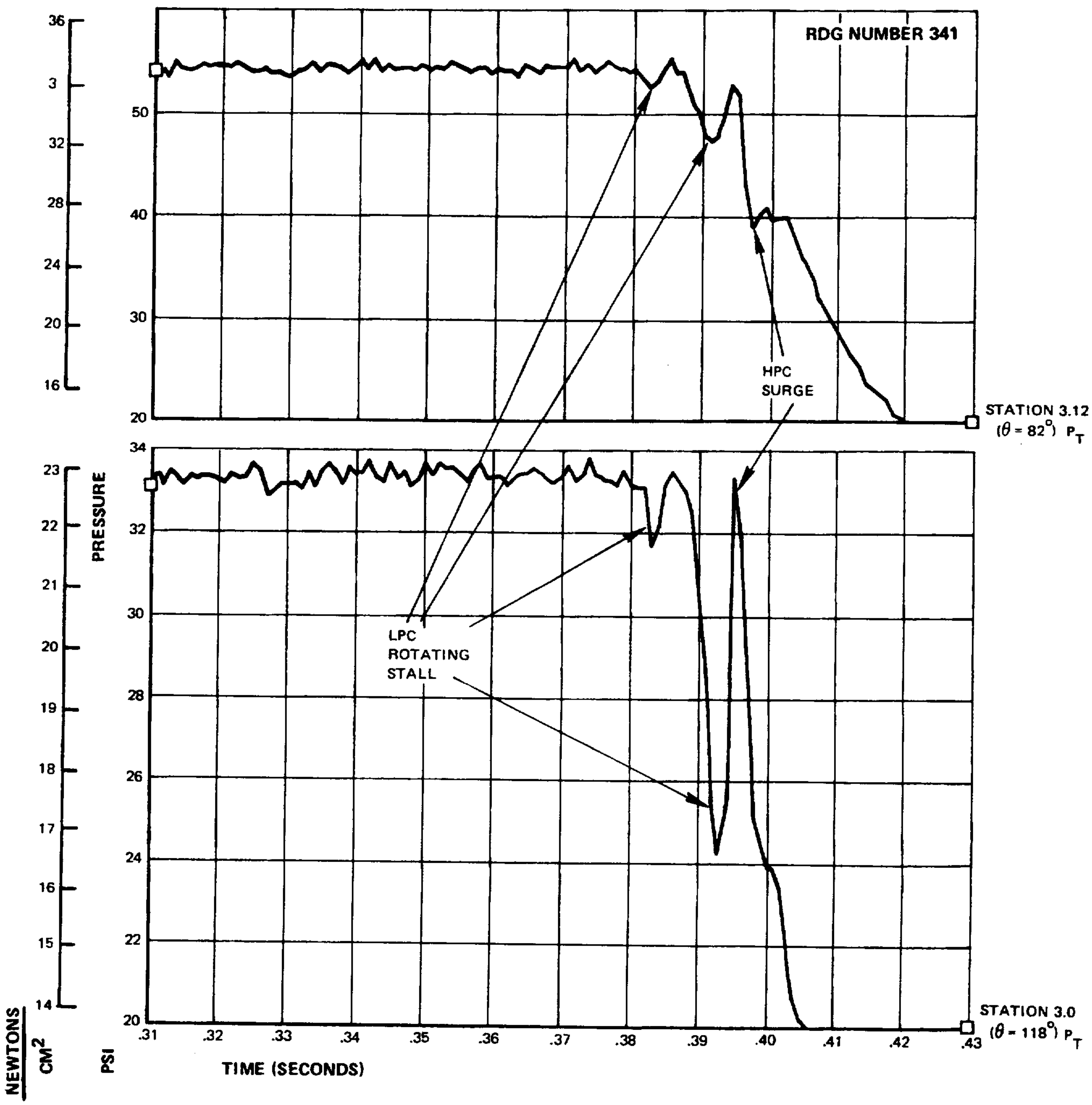


Figure 48 High Response Records at Stations 3.0 and 3.12 at 8700 rpm

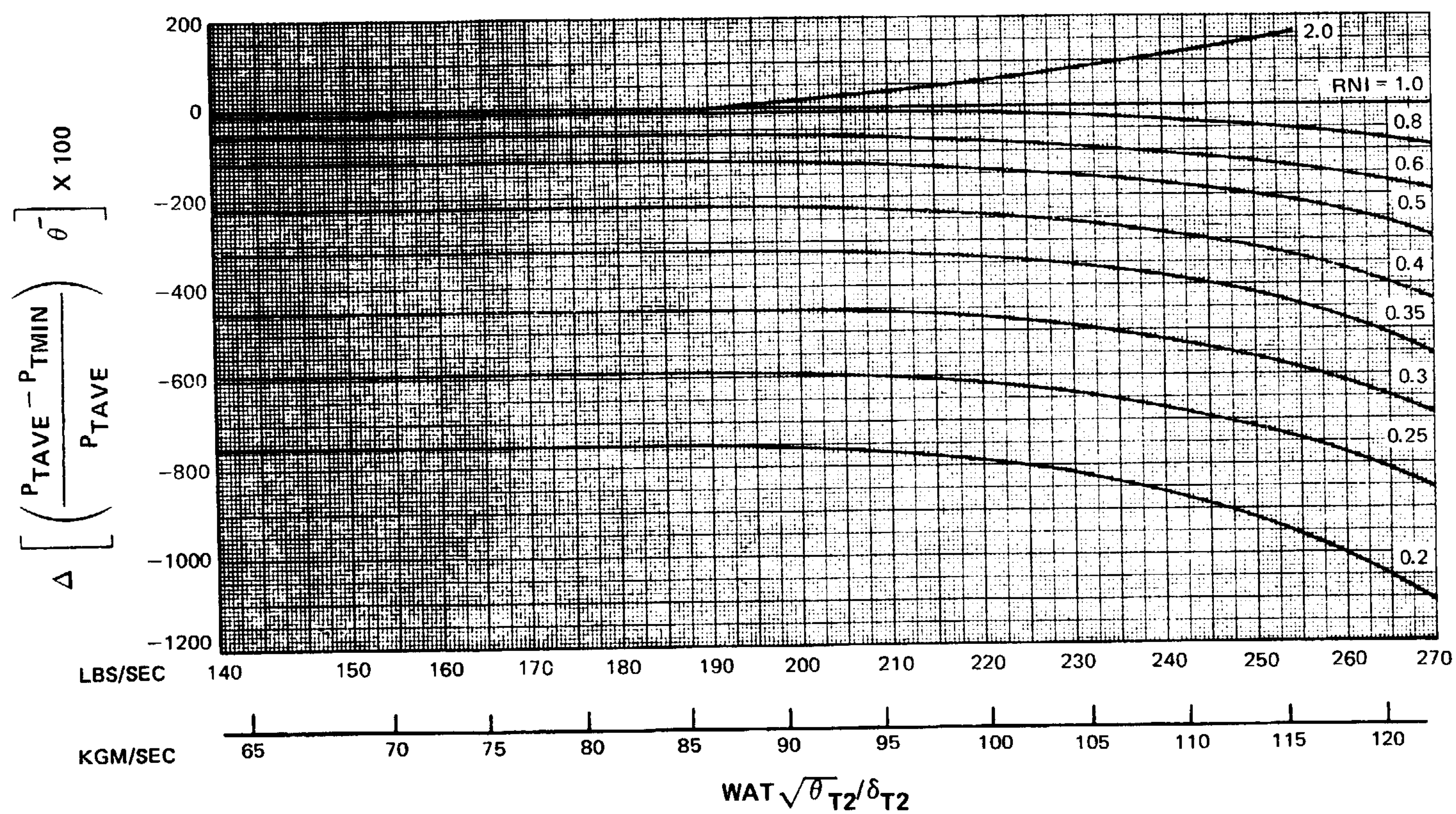


Figure 49 Effect of Reynolds Number on Distortion Levels to Stall

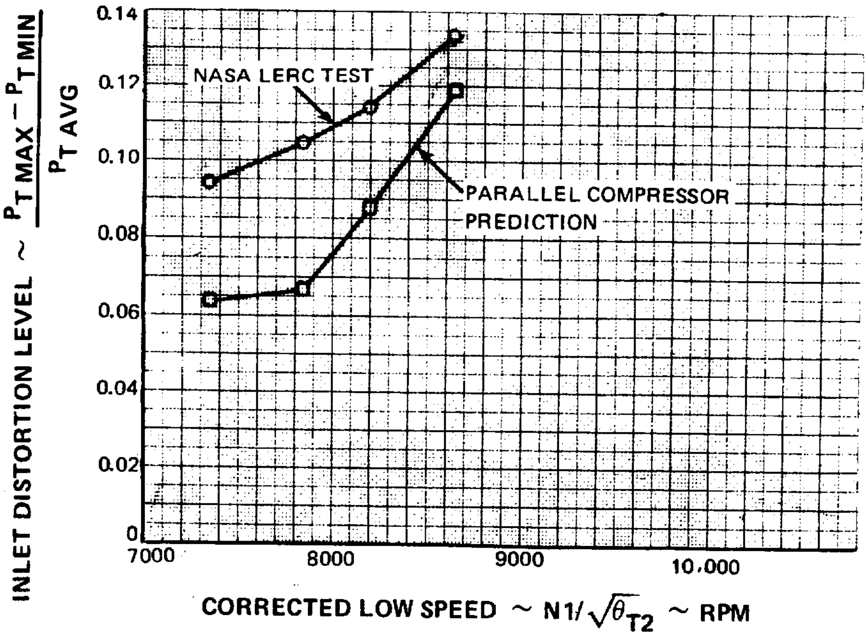


Figure 50 Distortion Levels to Stall

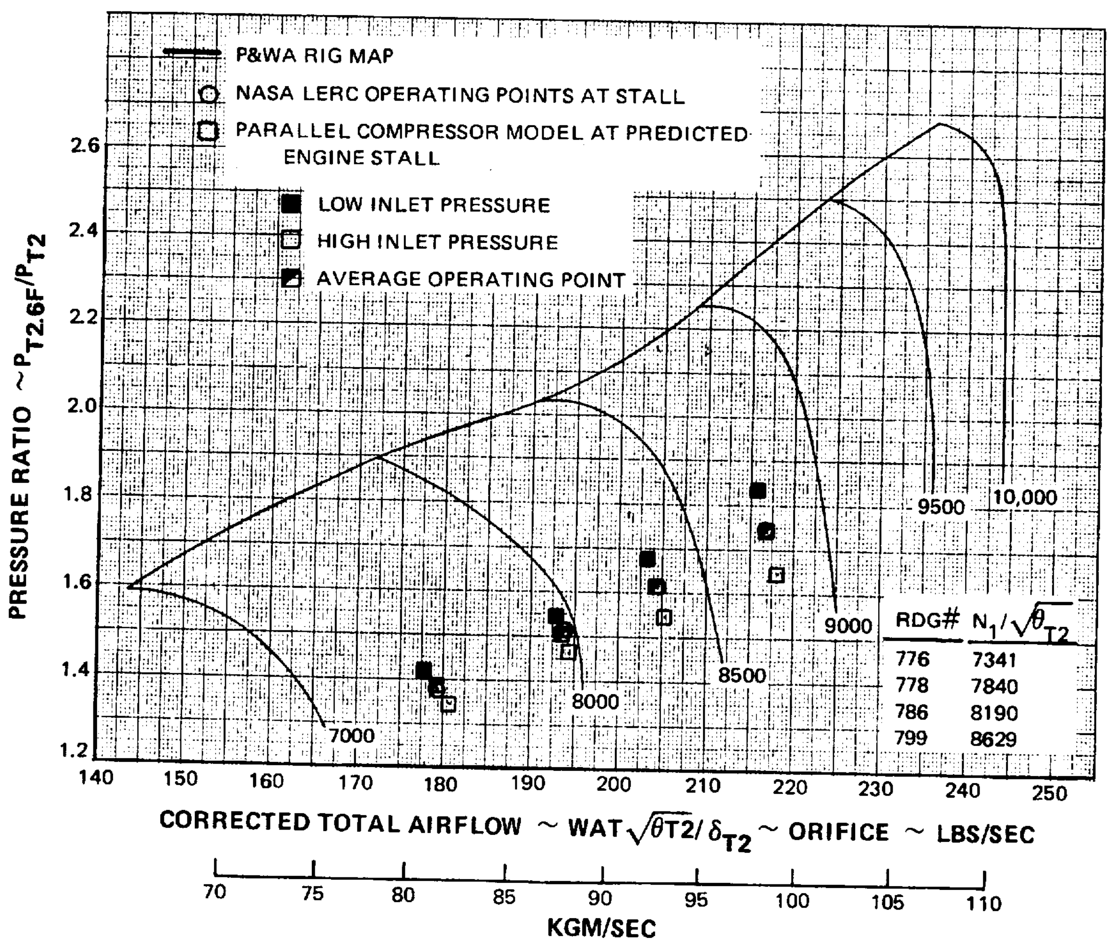


Figure 51 Comparison of Distorted Fan Performance at Engine Stall With Two-Segment Parallel Compressor Model

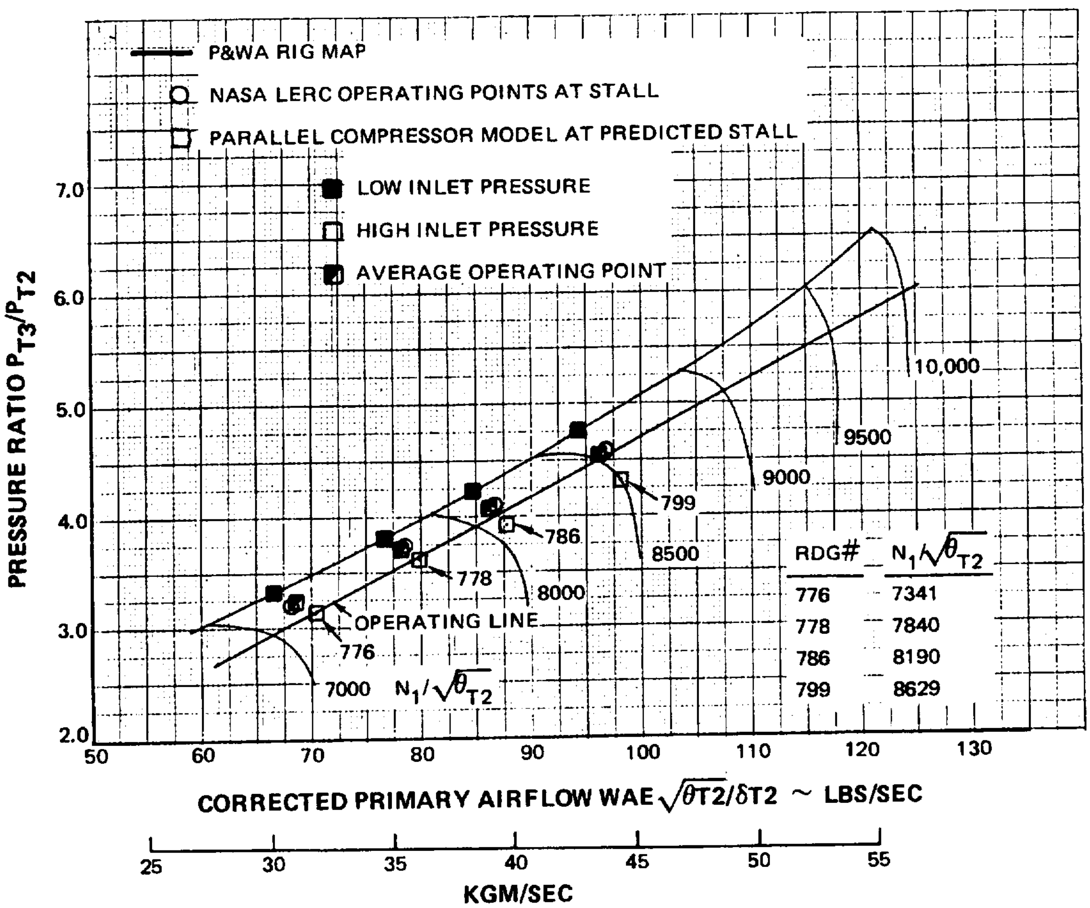


Figure 52 Comparison of Distorted LPC Performance at Stall With Two-Segment Parallel Compressor Model

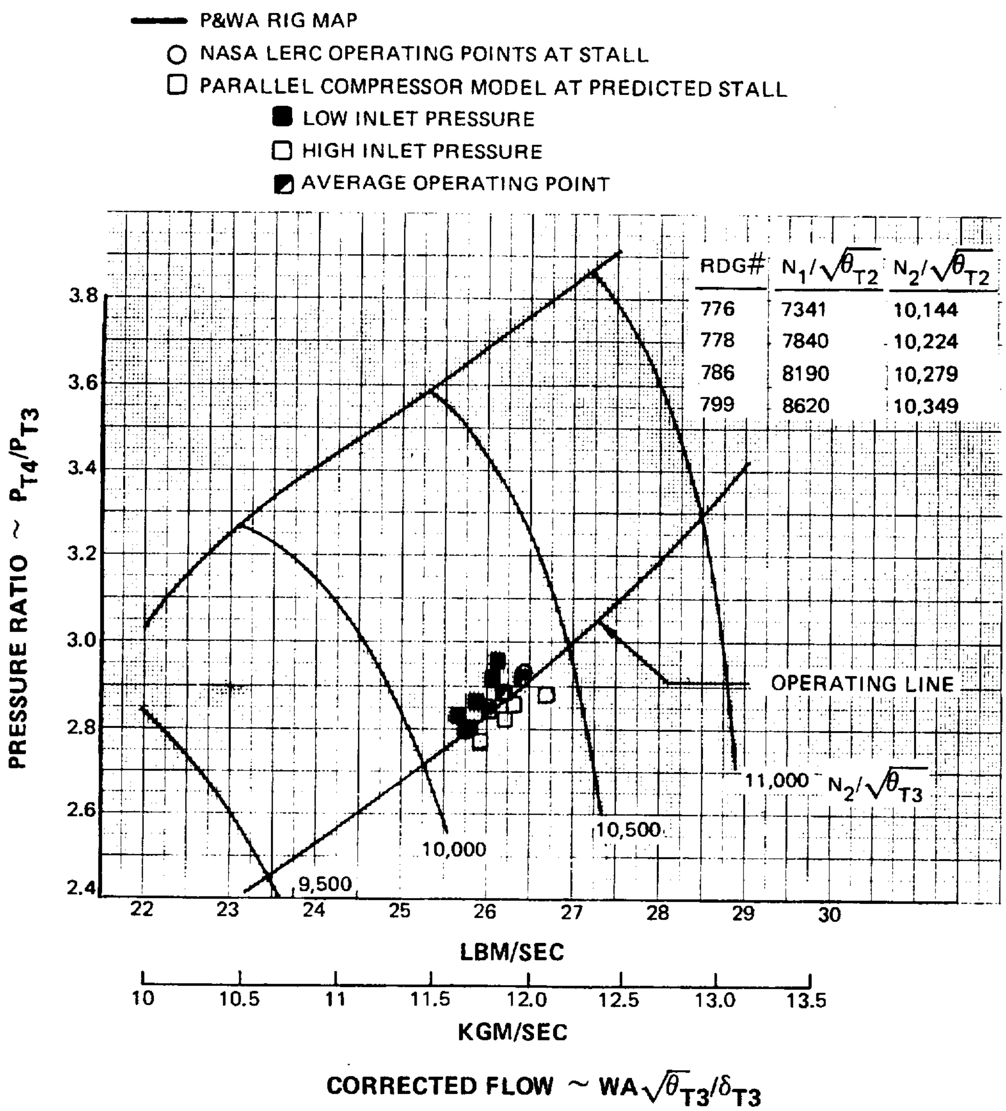


Figure 53 Comparison of Distorted HPC Performance at Engine Stall With Two-Segment Parallel Compressor Model

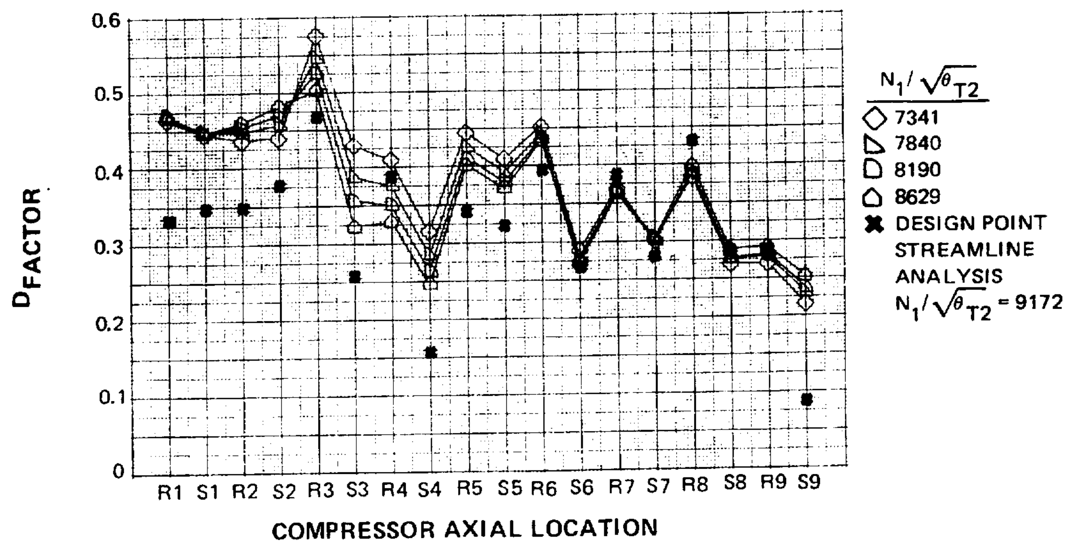


Figure 54 Distorted Inlet Diffusion Factors in Low Pressure Compressor

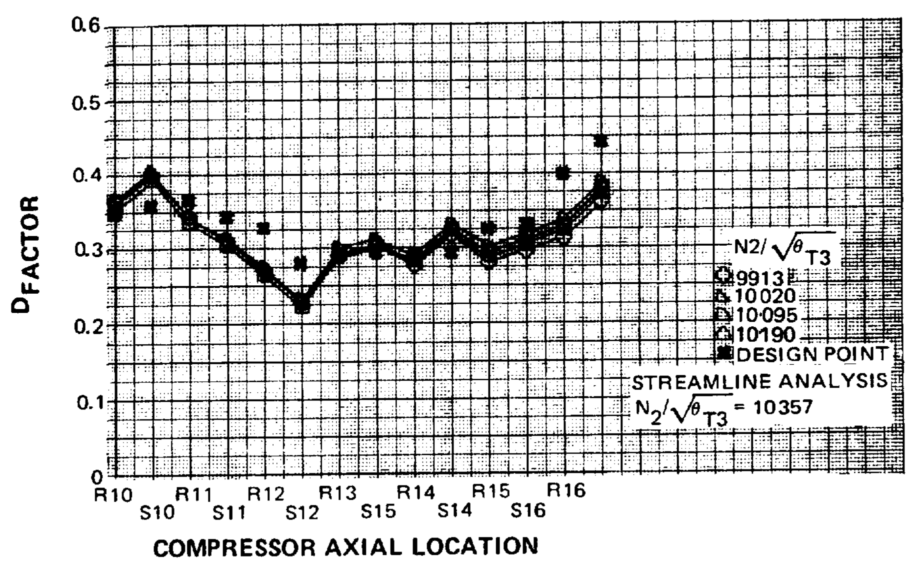


Figure 55 Distorted Inlet Diffusion Factors in High Speed Spool

APPENDIX A – CIRCUMFERENTIAL DISTORTION MODEL

Parallel Compressor Theory

Parallel compressor theory considers the circumference of the compressor to be divided into two flow regions: one of relatively low velocity such as would exist behind a distortion inducing screen and one of relatively high velocity. The essential points of parallel compressor theory are illustrated in Figure A-1. The compressor performance in each region is assumed to be that obtained from uniform flow operation at the local value of inlet velocity. It is further assumed that circumferential crossflow within the compressor is negligible and that the exit static pressure is uniform. The total pressure distortion is attenuated by the compressor because of the difference in pressure ratio between the high and low velocity regions. In addition, a temperature distortion is created out of phase (high temperature-low pressure) with the pressure distortion due to this attenuation. The limit of stability (stall point) of the distorted compressor is predicted to occur when the low velocity region reaches the uniform flow (undistorted) compressor stall point. The resultant performance at stall is calculated as the area average of the two regions.

Multiple Segment Parallel Compressor Model

The current model expands the basic parallel compressor theory by using multiple parallel segments to provide a detailed definition of the circumferential flow field. These segments pass through the compressor from inlet to exit. They do not, in general, enter and exit the compressor at the same relative circumferential location, but swirl to some degree commensurate with blade stagger angles, rotor rotation, and propagation characteristics of the flow properties assumed for the model and discussed in the following section. The flow rate in each segment is determined from its boundary conditions (inlet total pressure & total temperature and exit static pressure) and the compressor's performance within that segment in a manner quite similar to classic parallel compressor. The concept of using multiple parallel segments, however, is much more complex than the multiplication of the classic calculation. The complexity arises from two dimensional flow effects and from unsteady flow effects caused by the relative motion of rotor blades through the distorted flow region.

Consider a circumferential segment as it approaches the compressor. In the presence of a non-uniform inlet total pressure, circumferential static pressure gradients exist at the compressor inlet which redistribute the flow and can alter the flow velocity and direction of that segment. The performance of the first blade row will depend on the local flow angle as well as the local inlet flow rate within the segment. Proceeding through the compressor, the circumferentially non-uniform static pressure can cause further flow redistribution, particularly when "stagnant" air cavities exist external to the compressor flow path. This redistribution will result in a different amount of airflow in the segment at different axial locations within the compressor. When the segment encounters a rotor blade row, unsteady flow effects must be accounted for due to the circumferential nonuniformity of the flow field. The rotor performance depends not only on the local flow velocity and incidence but the time dependent (in the rotating reference) velocity and incidence gradients it experiences as it rotates past the segment.

Finally, the exit static pressure may not be uniform so it is necessary to know the angular displacement of the segment as it traverses the compressor in order to apply the proper downstream boundary condition. None of these effects are considered by basic parallel compressor theory but are all accounted for in the multiple segment model. The only restriction to the multiple segment approach is that the circumferential extent of the segment should span several blade passages. The flow properties in each segment are then representative of local average conditions. This restriction poses no problem as long as the distortion is large relative to the blade pitch or spacing, which, as previously stated, covers most cases of practical interest.

A further departure from parallel compressor theory is the use of individual blade row performance on the premise that deviations from uniform inlet performance will result in changes to the front-to-rear matching of the compressor blade rows. Such changes cannot be easily assessed on the basis of an overall performance representation. However, regardless of the way in which the uniform inlet performance is presented, the important point is to recognize the deviations from this performance that can occur under distorted flow conditions.

Procedurally, the multiple segment model calculation is similar to a classic two-segment parallel compressor solution. Each segment has known inlet and exit boundary conditions, and the mass flow rate consistent with these boundary conditions is to be determined. The major distinction is that the compressor segment performance is influenced by the distorted flow and is not identical to uniform flow performance as assumed by classic parallel compressor. In order to evaluate unsteady flow effects, the flow rates of adjacent segments are required in determining a given segment's performance. It is necessary, therefore, to establish a periodic solution around the circumference of the compressor. It is only after periodicity of mass flow rate is established that a calculation is considered complete. This is in contrast to the discontinuities in mass flow rate allowed by classic parallel compressor at the boundaries of the distorted region.

Calculation Procedure

Each segment has a constant circumferential extent with a fraction of the total mass flow entering the compressor. The fraction of the total mass flow in a given segment is dependent upon that particular segment's boundary conditions and the overall performance characteristic of the compressor for that segment. The performance characteristic effectively changes from segment to segment because of the various phenomena outlined in the previous section.

The inlet boundary condition for a segment is easily defined from the prescribed inlet total pressure and total temperature. The other boundary condition required is the static pressure at the exit of each segment. The average level of exit static pressure required to satisfy the specified total mass flow must be determined iteratively. Furthermore, the possibility of having non-uniform exit static pressure (Reference 1, for example) makes it necessary to know the proper circumferential location of each segment at the exit of the compressor.

Each segment moves circumferentially as it passes through the compressor since mean flow angles within the rotors, stators and gaps are seldom axial. In addition, the rotation of the rotor provides additional angular displacement. This is illustrated schematically in Figure A-2. Note that the segment displacement due to the rotor ($\Delta\theta$ segment) is less than that for a fluid particle ($\Delta\theta$ particle). This is because the acoustic path is important in establishing the non-steady flow in the rotating reference frame. Since an acoustical signal exceeds local fluid velocity in the forward direction, the "residence time" in the rotor is less than that for a fluid particle.

Angular Displacement = Residence Time x Angular Velocity

$$\Delta\theta_{\text{Segment}} = \left(\frac{b}{u+a}\right) \omega$$

or

$$\Delta\theta_{\text{Particle}} = \left(\frac{b}{u}\right) \omega$$

The angular displacement of each segment is calculated from local conditions and an average for all the segments is used to match proper inlet and exit boundary conditions. The average angular displacement of the segments is denoted as "flow swirl".

The compressor performance as well as the exit boundary conditions is therefore partially dependent upon the mass flow distribution. Consequently, an iteration scheme is utilized which necessarily assumes a mass flow distribution and solves for the mass flow in each segment on the basis of this assumption. The calculated mass flow distribution then replaces the original assumption and the procedure is repeated until the calculated mass flow distribution agrees with the assumed mass flow distribution. The necessity of knowing the mass flow distribution in order to calculate compressor performance will now be illustrated by a discussion of the various distorted flow phenomena incorporated in the multiple segment model.

Distortion Induced Inlet Flow Redistribution

Flow redistribution takes place upstream of a compressor operating with non-uniform flow as the compressor acts to create an upstream attenuation of the inlet flow distortion. A further description of this phenomenon may be found in Reference 2. The resultant inlet static pressure imbalance and a streamline curvature, Figure A-3, causes a variation in inlet air angle. With no inlet guide vane the incidence on the first rotor blade varies as in Figure A-4. The multiple segment model calculates this inlet angle variation in order to properly determine the first blade row performance.

The procedure for calculating the upstream flow redistribution is based on the use of a distribution of sources and sinks at the compressor inlet plane to represent the effect of the compressor on the upstream flow. As the fluid approaches the compressor, the axial velocity distribution is altered from the values far upstream of the compressor. In some regions around the circumference the fluid velocity is decreased as it gets closer to the compressor so that a flow source opposing this fluid may be thought to exist. Similarly, a flow sink would account for an increase in the velocity of the fluid as it approaches the compressor. The strengths of these sources and sinks are calculated in the following manner.

The upstream velocity distortion is separated into its rotational and irrotational components, both of which are considered to have amplitudes such that a linearized description can be adapted. The rotational component is associated with the inlet total pressure distortion. Since the total pressure is convected by the flow from far upstream to the compressor, the rotational velocity distortion can be evaluated far upstream ($-\infty$) where the irrotational component is zero.

$$\delta C_{X_{ROT}} = \delta C_{X_{-\infty}} = \frac{1}{\rho \bar{C}_X} \frac{\delta P_{O_{-\infty}}}{\left(1+\frac{\gamma-1}{2}\bar{M}^2\right)^{\frac{\gamma}{\gamma-1}}} \qquad (\delta P_{S_{-\infty}} = 0)$$

The irrotational part of the velocity distortion is due to the upstream flow redistribution induced by the compressor. Since there are multiple segments, the compressor can be represented by an array of sources and sinks located at the compressor inlet plane with the effect of compressibility accounted for by using a Prandtl-Glauert transformation. The local strength of the source (sink) is calculated from the irrotational component of axial velocity at the inlet.

$$\delta C_{X_{IRROT}} = \delta C_{X_{INLET}} - \delta C_{X_{ROT}}$$

The inlet velocity distortion, $\delta C_{X_{inlet}}$, is a function of the compressor performance and local boundary conditions for each segment and is determined iteratively. The source (sink) strengths determined from $\delta C_{X_{irrot}}$ can be used in a formulation from Reference 3 to determine the velocity potential function for such an array. The tangential velocity perturbation component can then be determined from this potential function. It should be noted that although the analysis has been derived on the basis of small perturbations, comparison with measured data shows that the calculation has provided an accurate solution for the inlet air angle distribution even when the imposed inlet total pressure distortion was quite large (see Figure 14).

Circumferential Crossflow

Circumferential flow redistribution can also occur within the compressor as well as upstream of it. Within the compressor, this flow redistribution can take two different forms as illustrated by Figure A-5. First of all, the compressor flowpath has axial gaps between blade rows which provide a means for redistributing the flow. This occurs primarily near the edges of the distorted region where static pressure gradients are largest. Since it is localized to the edges and since normal axial spacing in a modern engine is small, this form of cross-flow can normally be considered negligible, and is not included in this analysis.

The second form of cross flow can take place within cavities (roots of shrouded stators and bleed plenums) which are exposed to the circumferential pressure gradient. Since the static pressure differences can be large and the fluid within a cavity has negligible axial momentum, the crossflow can be significant. This was demonstrated qualitatively by a flow visualization experiment on a 3 stage compressor with inlet distortion, the results of which are shown in Figure A-6. In this experiment, felt tufts were mounted in an annular plenum external to the compressor flowpath. The tufts were viewed through a plexiglass cover and indicated substantial circumferential flow velocities consistent with the imposed pressure distortion.

The calculation procedure in the current model consists of an evaluation of mass flow transfer between each segment and the external flow cavity. The flowpath circumferential static pressure distribution is assumed to be known but the cavity pressure distribution must be determined iteratively. Since the crossflow occurs as a steady flow process there can be no mass accumulation within the cavity. Therefore, the solution for the static pressure distribution within the cavity must satisfy a continuity balance. The calculation depends upon the flow characteristics of the cavities as well as those of the passages connecting the cavities with the flowpath. Large cavities induce the most crossflow and for these the flow characteristics of the connecting passages are more significant than the cavity flow characteristics for determining crossflow rate.

In general, exact flow characteristics for these connecting passages are not available. The model makes use of a general correlation of flow coefficients for air being bled off perpendicular to the flow direction. This correlation was empirically derived in Reference 4 and is reproduced on Figure A-7. Because of the general nature of this correlation, the results of the current model are only approximate. However, the usual amplitude of crossflow within any single cavity is only a small percentage of the total airflow. The use of generalized flow coefficients is normally adequate.

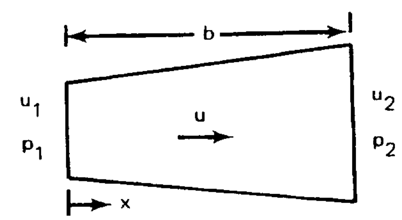
The sequence of the iteration starts with a single segment (one having a relatively high flowpath static pressure is selected) by assuming the local static pressure within the cavity. Flow characteristics for the passage connecting the flowpath with the cavity are used to determine the mass transfer into the cavity. These characteristics depend upon the static pressure difference across the connecting passage, the cross-sectional area of the passage, and flow conditions (static pressure, total temperature, Mach number) on the high pressure end of the passage. The mass flow which enters from the first segment into the cavity is used to calculate the Mach number in the cavity, based upon the cavity geometry. Proceeding in the direction of rotor rotation to the next segment, a change in total pressure occurs due to the friction or drag of the cavity walls. These walls may be either stationary or rotating and the frictional losses depend on the relative flow velocities. The mass transfer calculation is repeated at the next segment based upon the local flow parameters. The mass flow rate within the cavity and the flowpath are appropriately adjusted and the calculation is continued until a full circuit around the circumference is completed. A check is then made for continuity of mass flow into and out of the cavity. If continuity of mass is satisfied within a preset tolerance the solution is accepted. If not, the calculation is repeated using a higher or lower guess for cavity pressure depending upon whether the net cumulative mass flow into the cavity is positive or negative. The iteration is continued until a solution (zero net mass flow into the cavity) is obtained.

Unsteady Flow Effects

Another reason why distorted performance differs from uniform inlet values is because the rotor experiences time variant changes in velocity and incidence as it moves through the distorted flow field. First of all, the acceleration of fluid through the rotor implies a local static pressure difference between the leading and trailing edges over and above that indicated by the quasi-steady pressure rise characterstic. This additional pressure rise must be accounted for in determining the distorted compressor performance.

In order to simply illustrate the basic fluid mechanics of this unsteady static pressure change across the blade row, the blade passage can be modeled in the rotating reference frame as a one-dimensional, inviscid, linear diffuser with unsteady flow.

For this one-dimensional inviscid diffuser, it will be assumed that area varies linearly from inlet to exit as illustrated in the figure below. The unsteady pressure change can be determined from application of the Momentum Equation.



$$-\frac{1}{\rho}\frac{\partial p}{\partial x} = u\frac{\partial u}{\partial x} + \frac{\partial u}{\partial t}$$

$$-\int_0^b \frac{\partial p}{\partial x}\,dx = \int_0^b \rho u \frac{\partial u}{\partial x}\,dx + \int_0^b \rho \frac{\partial u}{\partial t}\,dx \qquad (1)$$

The first term on the right is the quasi-steady state pressure rise due to diffusion and is considered to be the static pressure rise across the blade row with uniform, time invariant inlet conditions. This term is evaluated like an actuator disk for the circumferentially local mass flow rate and combined with the second term which represents the effect of local acceleration of the fluid within the blade passage. For simplicity, this term will now be evaluated for the case of an incompressible fluid in order to indicate the controlling parameters. The effects of compressibility have been determined separately and are included in the computer model in an approximate manner. The circumferential displacement of the segment by the rotor provides for the proper acoustic delay of the static pressure rise.

Assumptions:

$$u_1 = \bar{u}_1 + u_1'$$

$$\frac{\partial u_1}{\partial t} = \frac{\partial u_1'}{\partial t}$$

$$u(x) = u_1 \frac{A_1}{A(x)}$$

$$A(x) = A_1 + \frac{A_2 - A_1}{b} x$$

Substituting into Equation 1

$$\int_0^b \rho \frac{\partial u}{\partial t} dx = \rho \int_0^b \frac{\partial u_1'}{\partial t} \frac{1}{1 + \frac{A_2 - A_1}{A_1 b} x} dx \qquad (2)$$

$$\int_0^b \rho \frac{\partial u}{\partial t} dx = \rho \frac{\partial u_1'}{\partial t} \underbrace{\frac{A_1 b}{A_2 - A_1} \ln \frac{A_2}{A_1}}_{\mathcal{L}}$$

$$p_2 - p_1 = \int_0^b \rho u \frac{\partial u}{\partial x} dx - \rho \mathcal{L} \frac{\partial u_1'}{\partial t} \qquad (3)$$

The unsteady part of the pressure rise is thus proportional to the rotor chord length and the change of relative inlet velocity. This acceleration rate can be determined from the fixed coordinate system velocity distortion and the rotational speed of the rotor.

In order to calculate the change in stagnation temperature due to this unsteadiness, the following relation between fluid properties, which may be derived from the First Law of Thermodynamics, is applicable:

$$T\,ds = dh - \frac{1}{\rho}\,dp \tag{4}$$

$$h_o = h + \frac{u^2}{2}$$

$$\therefore dh_o = dh + u\,du$$

$$T\,ds = dh_o - u\,du - \frac{1}{\rho}\,dp$$

Integrating across the diffuser:

$$\int_0^b T\frac{\partial s}{\partial x}\,dx = \int_0^b \left(\frac{\partial h_o}{\partial x} - u\frac{\partial u}{\partial x} - \frac{1}{\rho}\frac{\partial p}{\partial x}\right)dx \tag{5}$$

From Momentum Equation:

$$-\frac{1}{\rho}\frac{\partial p}{\partial x} = \frac{\partial u}{\partial t} + u\frac{\partial u}{\partial x}$$

$$\int_0^b \frac{\partial h_o}{\partial x}\,dx = -\int_0^b \frac{\partial u}{\partial t}\,dx + \int_0^b T\frac{\partial s}{\partial x}\,dx \tag{6}$$

Thus, the change in stagnation enthalpy relative to the rotor is composed of two terms. The first term corresponds to the unsteady pressure rise and will be treated by making the same assumptions concerning compressibility.

$$\int_0^b \frac{\partial u}{\partial t}\,dx = \mathcal{L}\,\frac{\partial u_1'}{\partial t}$$

$$T_{02} - T_{01} = -\frac{1}{C_p}\,\mathcal{L}\,\frac{\partial u_1'}{\partial t} + \frac{1}{C_p}\int_0^b T\frac{\partial s}{\partial x}\,dx \tag{7}$$

This unsteady total temperature rise is added to the steady rotor temperature rise as determined from uniform inlet flow conditions. The steady and unsteady total temperature rises are combined in a manner similar to the static pressure rise. Like the unsteady pressure rise, the unsteady temperature rise is proportional to the rotor chord length and the time rate of change of velocity relative to the rotor. Even though the analysis is an inviscid one, the second term is generally non-zero because of the entropy gradients associated with the upstream total pressure (or temperature) distortion. In order to properly account for the entropy gradients, it is necessary to know the path line followed by fluid particles through the compressor. The second term is evaluated for each segment using the difference between the circumferential displacement of a fluid particle and the circumferential displacement of the segment to define the amplitude of the entropy gradient. The temperature change so determined is then added to the steady and unsteady temperature change for each segment.

Fluid Particle Displacement Effects

It is necessary to calculate the fluid particle displacement because the particles within a rotor blade passage can swirl into and out of the distorted flow region. When viewed from a fixed reference frame, the entropy of the fluid entering a rotor passage may be different from that of the fluid leaving that same passage at that instant in time as shown in Figure A-8. This difference in entropy must be accounted for in calculating the changes in the temperature across the blade passage, as can be seen from Equation 7.

Since the flow process across the blade row was considered inviscid in this analysis, any entropy change across the blade row must be due to a difference in instantaneous inlet and exit fluid properties. This difference becomes evident when it is realized that fluid particles are displaced circumferentially by the rotor and that the fluid within the blade passage at any time originated from a circumferential sector of finite extent. The extent of this sector is a function of the rotational speed, the rotor chord length and the relative fluid velocity. The properties of the fluid leaving the rotor passage originated at the beginning of this sector while the entering fluid comes from the end of the sector. Thus, the entropy change across the rotor is equal to the circumferential entropy difference across the sector, which is easily defined from the imposed rotor inlet total pressure and total temperature distortion and the sector extent. The displacement of the fluid by each rotor blade row is calculated and accumulated in the multiple segment parallel compressor model in order to provide an accurate exit total temperature distortion profile.

This effect on total temperature due to particle displacement accounts for the observation often made with multistage compressors that the exit total temperature distortion is not aligned with the attenuated total pressure distortion as predicted by parallel compressor theory. This is illustrated in Figure A-9 where the exit total temperature distortion has been calculated from measured attenuation of an imposed inlet total pressure distortion. The agreement with data is greatly improved by accounting for particle displacement when calculating the temperature distortion.

The impact of particle swirl on distorted compressor stage matching is illustrated in Figure A-10. As shown in the figure for parallel compressor, the low total pressure region and high total temperature region are aligned throughout the compressor. Note that in this particular example no circumferential displacement (flow swirl) of the distorted region is assumed. When particle swirl is taken into account, however, there is a region of relatively low total temperature in the rear stages of the low total pressure region. This results in lower corrected flow and higher corrected speed in these stages relative to conditions that would normally be obtained with a uniform inlet and the same inlet values of corrected flow and speed. There is thus a tendency to increase incidence in the rear stages which effects a rematch of the front-to-rear loading distribution of the compressor stages. A similar rematch in the reverse direction occurs in the undistorted region of the compressor. The net effect of the rematch is to reduce the circumferential variation in velocity at the front and increase the velocity variation at the rear of the compressor relative to that calculated from parallel compressor theory. The consequences of particle swirl with respect to the distorted stall line are therefore dependent on the axial location of the limiting stage.

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3. "Hydrodynamics" by Sir Horace Lamb, Dover Publications, 1945, (pp. 51, 71).

4. "A Study of Perforation Configurations for Supersonic Diffusers", G. McLafferty, UARL Report R-53372-7, December, 1950.

LIST OF SYMBOLS

A	Area
a	Sonic Velocity
b	Chord Length
Cp	Specific Heat at Constant Pressure
h	Enthalpy
N1	Low Rotor Speed
N2	High Rotor Speed
p, P	Pressure
s	Entropy
T	Temperature
t	Time
u, U	Velocity
α, β	Air Angle
δ	Perturbation Quantity
θ_{T2}	Inlet Corrected Temperature
θ_{T3}	HPC Inlet Corrected Temperature
ρ	Density
τ	Empirical Time Constant
ω	Circular Frequency

SUBSCRIPTS

o, T	Total Conditions
INLET, I	Inlet
2	Exit
$-\infty$	Upstream Infinity
x	Axial Direction
Q.S.	Quasi-steady Value

SUPERSCRIPTS

—	Average
′	Perturbation Quantity

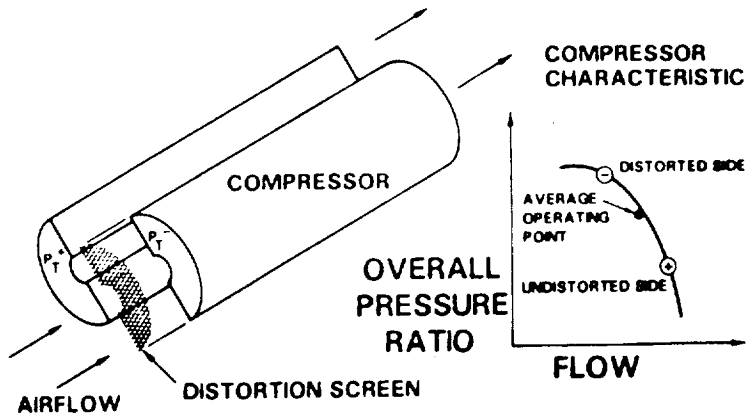

Figure A-1 Parallel Compressor Distortion Analysis

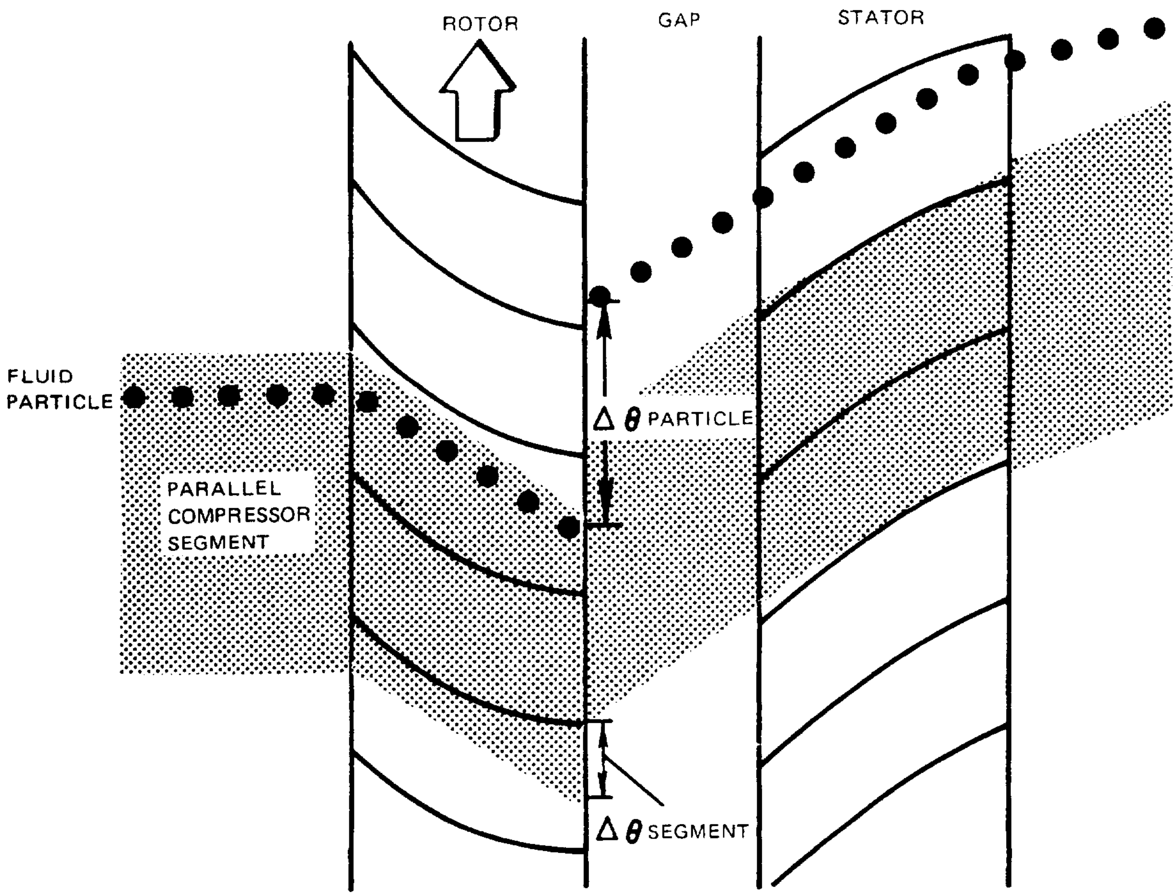

Figure A-2 Segment (Flow) and Particle Swirl Through A Compressor

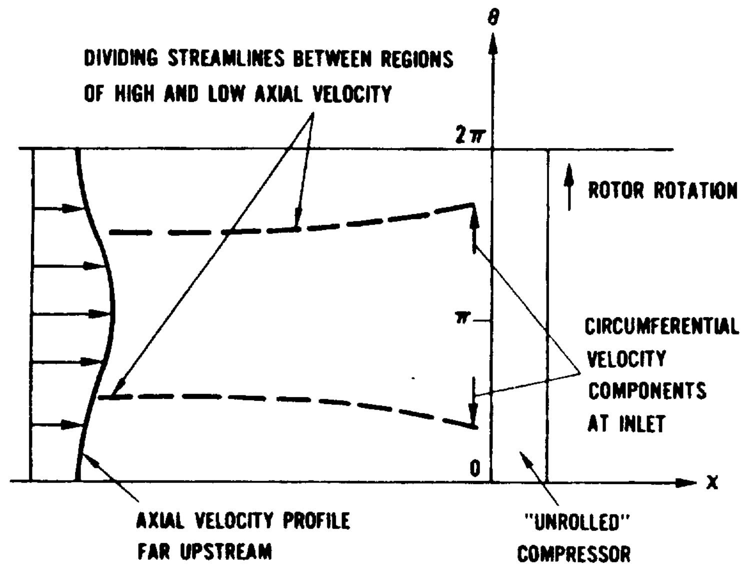

Figure A-3 Asymmetric Flowfield Upstream of Compressor

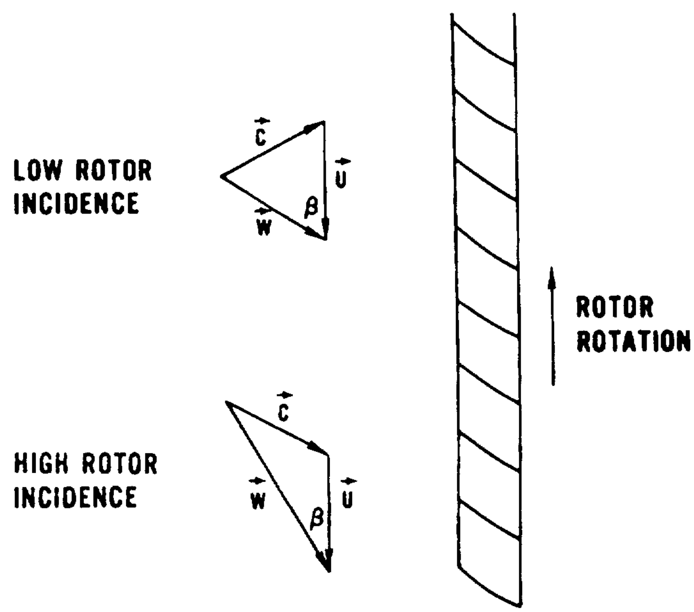

Figure A-4 Effect of Upstream Circumferencial Velocity on Rotor Incidence

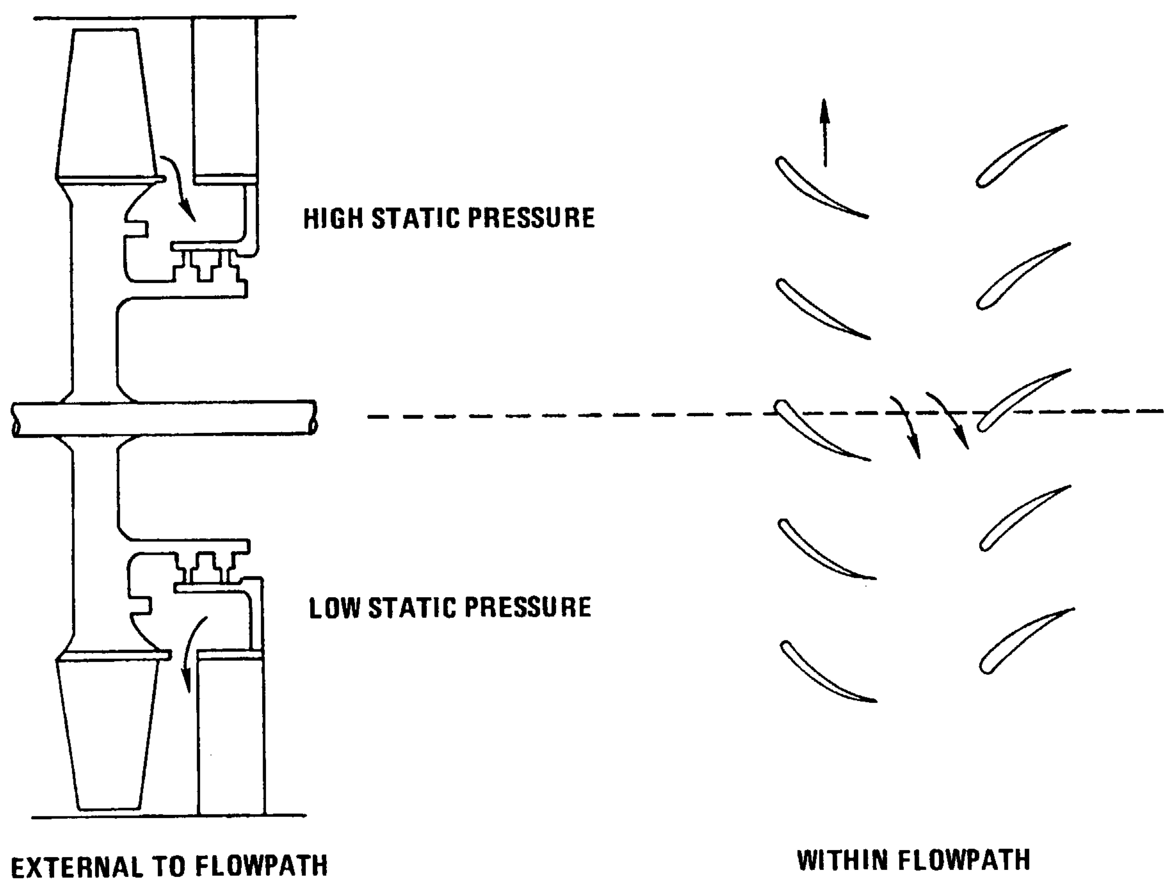

Figure A-5 Circumferential Flow in a Compressor Subjected to Circumferential Inlet Distortion

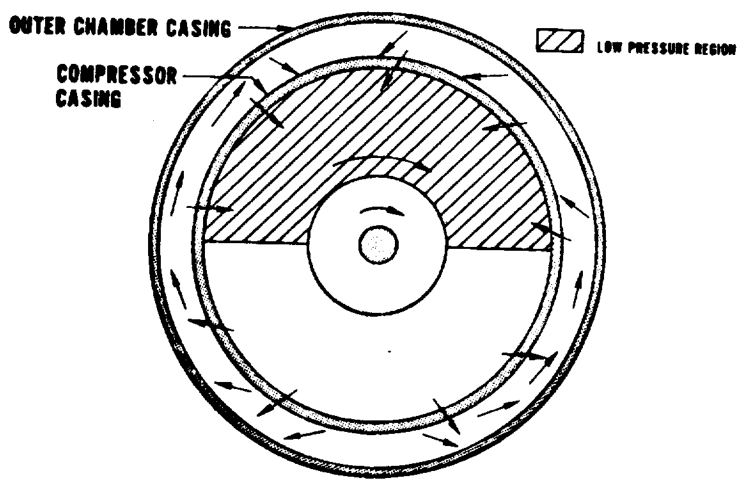

Figure A-6 Flow Redistribution Due to External Flow Chamber

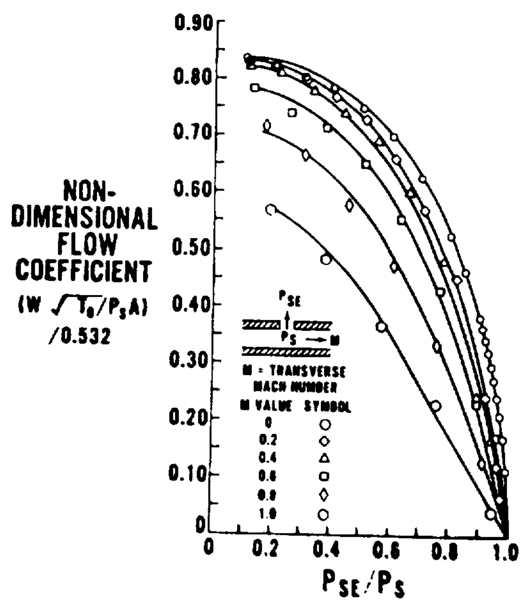

Figure A-7 Flow Coefficients for Passages From Flowpath to External Cavities

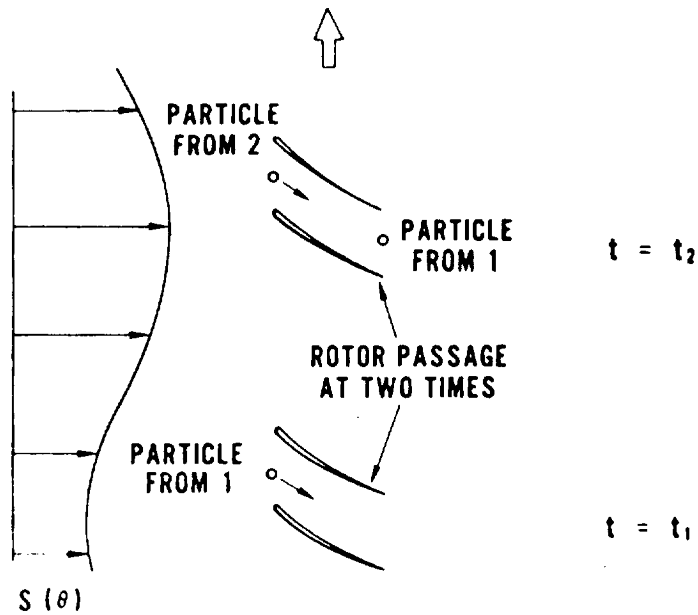

Figure A-8 Entropy Difference Due to Rotor Rotation

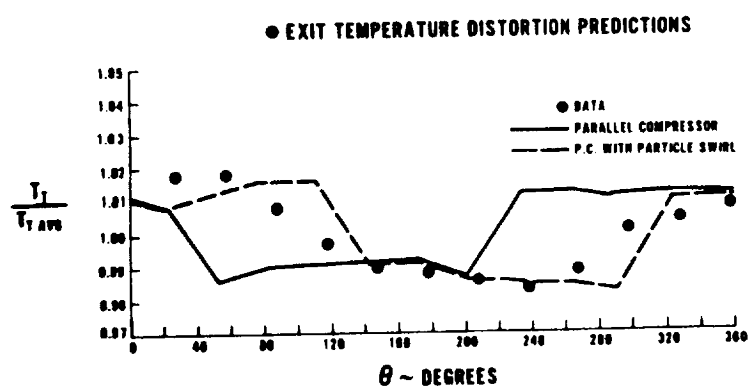

Figure A-9 Particle Swirl Effect

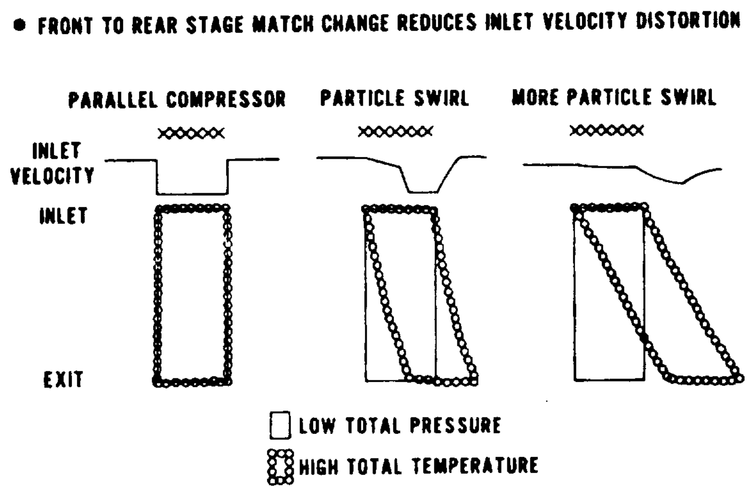

Figure A-10 Particle Swirl Effect

APPENDIX B – PROGRAM OUTPUT SYMBOLS AND TABULAR RESULTS

Legend of Symbols for Distortion Deck Print

Symbol	Description
ALPHA IN DEG	Blade inlet flow angle (absolute frame of reference) measured in degrees
AXIAL VEL	Axial velocity/average axial velocity
AXVELAVG	Circumferential average axial velocity
BETA IN DEG	Blade inlet flow angle (relative frame of reference) measured in degrees
BYPASS RATIO	Ratio of fan duct flow to engine flow
CORR FLOW	Corrected flow
DEG	Degrees
DEG K	Degrees Kelvin
DEG R	Degrees Rankine
DF	Diffusion factor
EXIT	Axial station located at the exit plane of the last row
FLOW SWIRL	Circumferential pressure distortion swirl through the engine
FPS	Feet per second
HPC	High pressure compressor
IGV	Inlet guide vane
INCIDENCE IN DEG	Blade incidence angle measured in degrees
KG/SEC	Kilograms per second
LBM/SEC	Pounds-mass per second

APPENDIX B (Cont'd)

Symbol	Description
MAX-MIN/AVG	Depth of distortion - Maximum total pressure minus the minimum total pressure over the average total pressure
MN	Mach number
MPS	Meters per second
NICORR	Low rotor speed corrected to the inlet
N2CORR	High rotor speed corrected to Station 3.0
N2/N1 (MECH)	Ratio of high rotor mechanical speed to low rotor mechanical speed
PA	Pascals (Newton/Square Meter)
PARTICLE SWIRL	Circumferential particle swirl through the engine
PRESS RATIO	Pressure ratio
PS	Static pressure/average static pressure
PSAVG	Circumferential average static pressure
PSIA	Pounds pressure per square inch absolute
PT	Total pressure/average total pressure
PTAVG	Circumferential average total pressure
REL VEL	Relative velocity/average relative velocity
RVELAVG	Average relative velocity
SEG NO	Segment number
THETA	Circumferential position in direction of rotation
THETM	Theta-minus - extent of distortion
TT	Total temperature/average total temperature

APPENDIX B (Cont'd)

Symbol	Description
TTAVG	Circumferential average total temperature
U	Mean diameter rotor velocity
VEL	Velocity/average velocity (absolute)
VELAVG	Circumferential average velocity
WBL	Cross flow from segment to external cavity
WCORR	Total corrected air flow
2.6F/2	Fan O.D. exit over inlet
3/2	Major Station 3.0 over major Station 2.0
4/3	Major Station 4.0 over major Station 3.0

APPENDIX B – DISTORTION PROGRAM TABULAR OUTPUT

WCORR=181.4LBM/SEC= 82.3KG/SEC   N1CORR= 7424.RPM   N2CORR= 9902.RPM   N2/N1(MECH)=1.417

INCIR=16.0.DEG   BYPASS RATIO=1.626   MAX-MIN/AVG=0.045

FAN OD OUTPUT -

	CORR FLOW	PRESS RATIO	EFFICIENCY
FAN OD PERFORMANCE 226F/2	112.32 LBM/SEC 50.95 KG/SEC	1.395	0.780

---- ROW OUTPUT ----

IGV

FLOW SWIRL= 0.0 DEG   PARTICLE SWIRL= 0.0 DEG   PSAVG= 6.77PSIA = 46704.PA
PTAVG= 7.39PSIA = 50951.PA   TTAVG= 531.0DEG R = 295.0DEG K   VELAVG= 396.5FPS =120.8MPS
RVELAVG=1097.2FPS = 334.4MPS   AXVELAVG= 393.9FPS =120.1MPS   U=1024.FPS = 312.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEC	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
10.	1	0.997	0.3540	1.0255	1.0251	1.0000	0.0	0.0	-.238	4.57	89.0	1.003	0.994
20.	2	0.998	0.3545	1.0253	1.0251	1.0000	0.0	0.0	-.228	3.70	88.1	1.004	0.989
30.	3	0.999	0.3547	1.0251	1.0251	1.0000	0.0	0.0	-.218	2.76	87.2	1.004	0.984
40.	4	1.000	0.3552	1.0249	1.0251	1.0000	0.0	0.0	-.206	1.72	86.1	1.004	0.978
50.	5	1.002	0.3560	1.0245	1.0251	1.0000	0.0	0.0	-.191	0.47	84.9	1.005	0.970
60.	6	1.006	0.3572	1.0236	1.0244	1.0000	0.0	0.0	-.172	-1.03	83.4	1.005	0.962
70.	7	1.011	0.3591	1.0219	1.0237	1.0000	0.0	0.0	-.145	-2.98	81.4	1.006	0.950
80.	8	1.022	0.3632	1.0173	1.0210	1.0000	0.0	0.0	-.104	-5.67	78.5	1.008	0.935
90.	9	1.030	0.3660	0.9949	1.0000	1.0000	0.0	0.0	-.092	-7.34	77.1	1.010	0.924
100.	10	1.022	0.3633	0.9794	0.9831	1.0000	0.0	0.0	-.107	-5.70	78.7	1.009	0.934
110.	11	1.011	0.3593	0.9766	0.9777	1.0000	0.0	0.0	-.143	-3.13	81.3	1.006	0.949
120.	12	1.004	0.3565	0.9753	0.9757	1.0000	0.0	0.0	-.171	-1.66	83.3	1.003	0.961
130.	13	0.998	0.3545	0.9745	0.9743	1.0000	0.0	0.0	-.192	0.58	85.0	1.001	0.971
140.	14	0.995	0.3532	0.9751	0.9743	1.0000	0.0	0.0	-.209	1.96	86.4	0.999	0.979
150.	15	0.992	0.3522	0.9755	0.9743	1.0000	0.0	0.0	-.221	3.07	87.5	0.998	0.985
160.	16	0.990	0.3516	0.9758	0.9743	1.0000	0.0	0.0	-.232	4.04	88.4	0.996	0.990
170.	17	0.989	0.3512	0.9760	0.9743	1.0000	0.0	0.0	-.242	4.94	89.3	0.996	0.996
180.	18	0.989	0.3510	0.9761	0.9743	1.0000	0.0	0.0	-.251	5.81	90.2	0.995	1.000
190.	19	0.988	0.3509	0.9762	0.9743	1.0000	0.0	0.0	-.259	6.67	91.1	0.995	1.005
200.	20	0.988	0.3510	0.9761	0.9743	1.0000	0.0	0.0	-.268	7.58	92.0	0.994	1.011
210.	21	0.989	0.3512	0.9760	0.9743	1.0000	0.0	0.0	-.277	8.56	93.0	0.994	1.016
220.	22	0.990	0.3516	0.9762	0.9743	1.0000	0.0	0.0	-.286	9.70	94.1	0.994	1.023
230.	23	0.992	0.3523	0.9765	0.9750	1.0000	0.0	0.0	-.297	11.03	95.4	0.994	1.031
240.	24	0.995	0.3538	0.9770	0.9761	1.0000	0.0	0.0	-.308	12.57	97.0	0.995	1.040
250.	25	1.000	0.3552	0.9789	0.9788	1.0000	0.0	0.0	-.320	14.35	98.7	0.995	1.051
260.	26	1.009	0.3585	0.9801	0.9815	1.0000	0.0	0.0	-.334	16.86	101.3	0.996	1.066
270.	27	1.015	0.3605	0.9976	1.0000	1.0000	0.0	0.0	-.342	18.40	102.8	0.996	1.076
280.	28	1.008	0.3582	1.0159	1.0172	1.0000	0.0	0.0	-.335	17.01	101.4	0.995	1.067
290.	29	1.000	0.3553	1.0234	1.0233	1.0000	0.0	0.0	-.320	14.32	98.7	0.995	1.051
300.	30	0.997	0.3540	1.0249	1.0241	1.0000	0.0	0.0	-.305	12.14	96.5	0.997	1.038
310.	31	0.995	0.3535	1.0261	1.0251	1.0000	0.0	0.0	-.293	10.52	94.9	0.998	1.029
320.	32	0.995	0.3533	1.0259	1.0251	1.0000	0.0	0.0	-.282	9.18	93.6	1.000	1.021
330.	33	0.995	0.3534	1.0258	1.0251	1.0000	0.0	0.0	-.272	8.10	92.5	1.001	1.015
340.	34	0.995	0.3535	1.0257	1.0251	1.0000	0.0	0.0	-.264	7.14	91.5	1.002	1.009
350.	35	0.996	0.3536	1.0257	1.0251	1.0000	0.0	0.0	-.255	6.26	90.7	1.002	1.004
360.	36	0.996	0.3538	1.0256	1.0251	1.0000	0.0	0.0	-.246	5.41	89.8	1.003	0.999

STAGE 1
ROTOR

FLOW SWIRL= 5.37DEG   PARTICLE SWIRL= 5.37DEG   PSAVG= 6.67PSIA = 46020.PA
PTAVG= 7.37PSIA = 50789.PA   TTAVG= 531.0DEG R = 295.0DEG K   VELAVG= 421.1FPS =128.4MPS
RVELAVG= 989.9FPS = 301.7MPS   AXVELAVG= 403.4FPS =123.0MPS   U=1025.FPS = 312.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEC	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
13.	1	1.004	0.3795	1.0243	1.0252	1.0000	0.0	0.0	0.252	5.84	24.2	1.004	1.000
23.	2	1.005	0.3796	1.0242	1.0252	1.0000	0.0	0.0	0.252	5.84	24.2	1.005	1.000
33.	3	1.005	0.3797	1.0242	1.0251	1.0000	0.0	0.0	0.252	5.83	24.2	1.005	1.000
43.	4	1.005	0.3798	1.0241	1.0251	1.0000	0.0	0.0	0.251	5.83	24.2	1.005	1.000
53.	5	1.005	0.3798	1.0240	1.0251	1.0000	0.0	0.0	0.251	5.82	24.2	1.005	1.000
63.	6	1.005	0.3799	1.0237	1.0247	1.0000	0.0	0.0	0.251	5.82	24.2	1.005	1.000
73.	7	1.005	0.3799	1.0228	1.0239	1.0000	0.0	0.0	0.251	5.81	24.2	1.005	1.000
83.	8	1.006	0.3800	1.0198	1.0210	1.0000	0.0	0.0	0.251	5.81	24.2	1.006	1.000
93.	9	1.007	0.3806	0.9984	0.9998	1.0000	0.0	0.0	0.253	5.78	24.2	1.007	1.000
103.	10	1.007	0.3806	0.9817	0.9831	1.0000	0.0	0.0	0.254	5.78	24.2	1.007	1.000
113.	11	1.005	0.3799	0.9769	0.9779	1.0000	0.0	0.0	0.257	5.82	24.2	1.005	1.000
123.	12	1.003	0.3791	0.9753	0.9759	1.0000	0.0	0.0	0.259	5.87	24.1	1.003	1.000
133.	13	1.001	0.3784	0.9746	0.9743	1.0000	0.0	0.0	0.261	5.91	24.1	1.001	1.000
143.	14	1.000	0.3777	0.9743	0.9743	1.0000	0.0	0.0	0.263	5.95	24.0	1.000	1.000
153.	15	0.998	0.3772	0.9746	0.9742	1.0000	0.0	0.0	0.264	5.98	24.0	0.998	1.000
163.	16	0.997	0.3768	0.9747	0.9742	1.0000	0.0	0.0	0.265	6.01	24.0	0.997	1.000
173.	17	0.997	0.3765	0.9749	0.9742	1.0000	0.0	0.0	0.265	6.03	24.0	0.997	1.000
183.	18	0.996	0.3763	0.9750	0.9742	1.0000	0.0	0.0	0.266	6.04	24.0	0.996	1.000
193.	19	0.996	0.3761	0.9751	0.9742	1.0000	0.0	0.0	0.266	6.05	23.9	0.996	1.000
203.	20	0.995	0.3760	0.9751	0.9742	1.0000	0.0	0.0	0.266	6.06	23.9	0.995	1.000
213.	21	0.995	0.3759	0.9751	0.9742	1.0000	0.0	0.0	0.267	6.07	23.9	0.995	1.000
223.	22	0.995	0.3758	0.9755	0.9745	1.0000	0.0	0.0	0.267	6.07	23.9	0.995	1.000
233.	23	0.995	0.3758	0.9761	0.9751	1.0000	0.0	0.0	0.267	6.07	23.9	0.995	1.000
243.	24	0.995	0.3757	0.9772	0.9761	1.0000	0.0	0.0	0.267	6.08	23.9	0.995	1.000
253.	25	0.994	0.3756	0.9790	0.9787	1.0000	0.0	0.0	0.267	6.08	23.9	0.994	1.000
263.	26	0.994	0.3756	0.9823	0.9812	1.0000	0.0	0.0	0.266	6.08	23.9	0.994	1.000
273.	27	0.993	0.3752	1.0009	0.9995	1.0000	0.0	0.0	0.265	6.11	23.9	0.993	1.000
283.	28	0.993	0.3751	1.0182	1.0168	1.0000	0.0	0.0	0.264	6.11	23.9	0.993	1.000
293.	29	0.995	0.3756	1.0243	1.0232	1.0000	0.0	0.0	0.261	6.07	23.9	0.995	1.000
303.	30	0.997	0.3766	1.0249	1.0242	1.0000	0.0	0.0	0.259	6.02	24.0	0.997	1.000
313.	31	0.999	0.3772	1.0256	1.0253	1.0000	0.0	0.0	0.257	5.98	24.0	0.999	1.000
323.	32	1.000	0.3779	1.0250	1.0250	1.0000	0.0	0.0	0.255	5.94	24.1	1.000	1.000
333.	33	1.002	0.3784	1.0248	1.0251	1.0000	0.0	0.0	0.254	5.91	24.1	1.002	1.000
343.	34	1.002	0.3788	1.0246	1.0251	1.0000	0.0	0.0	0.253	5.89	24.1	1.002	1.000
353.	35	1.003	0.3791	1.0245	1.0251	1.0000	0.0	0.0	0.253	5.87	24.1	1.003	1.000
3.	36	1.004	0.3793	1.0244	1.0252	1.0000	0.0	0.0	0.252	5.85	24.1	1.004	1.000

APPENDIX B (Cont'd)

STATOR

FLOW SWIRL= 1.16DEG PARTICLE SWIRL= 12.12DEG PSAVG= 8.01PSIA = 55259.PA
PTAVG= 9.07PSIA = 62556.PA TTAVG= 575.2DEG R = 319.6DEG K VELAVG= 490.7FPS =149.6MPS
RVELAVG= 821.7FPS = 250.4MPS AXVELAVG= 406.1FPS =123.8MPS U= 990.FPS = 302.MPS

THETA	SEC NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEC	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
11.	1	1.000	0.4249	1.0218	1.0219	0.9992	0.0	0.0	0.216	-10.02	56.4	1.006	1.006
21.	2	1.000	0.4249	1.0218	1.0219	0.9991	0.0	0.0	0.215	-10.04	56.4	1.006	1.006
31.	3	1.000	0.4247	1.0219	1.0219	0.9991	0.0	0.0	0.215	-10.06	56.5	1.006	1.006
41.	4	1.000	0.4247	1.0219	1.0219	0.9991	0.0	0.0	0.215	-10.07	56.5	1.006	1.006
51.	5	0.999	0.4246	1.0216	1.0218	0.9991	0.0	0.0	0.214	-10.08	56.5	1.007	1.007
61.	6	0.999	0.4246	1.0214	1.0214	0.9990	0.0	0.0	0.214	-10.09	56.5	1.007	1.007
71.	7	0.999	0.4245	1.0206	1.0205	0.9989	0.0	0.0	0.214	-10.09	56.5	1.007	1.007
81.	8	0.999	0.4245	1.0173	1.0172	0.9982	0.0	0.0	0.214	-10.08	56.5	1.007	1.007
91.	9	0.998	0.4244	0.9931	0.9929	0.9928	0.0	0.0	0.217	-9.96	56.4	1.006	1.006
101.	10	0.994	0.4235	0.9790	0.9784	0.9939	0.0	0.0	0.219	-9.84	56.2	1.004	1.004
111.	11	0.995	0.4228	0.9784	0.9774	0.9979	0.0	0.0	0.224	-9.65	56.0	1.002	1.002
121.	12	0.995	0.4227	0.9786	0.9775	0.9995	0.0	0.0	0.228	-9.43	55.6	1.000	1.000
131.	13	0.996	0.4229	0.9770	0.9766	0.9999	0.0	0.0	0.231	-9.26	55.7	0.998	0.998
141.	14	0.997	0.4232	0.9781	0.9773	1.0006	0.0	0.0	0.234	-9.14	55.5	0.997	0.997
151.	15	0.998	0.4236	0.9781	0.9775	1.0007	0.0	0.0	0.236	-9.04	55.4	0.996	0.996
161.	16	0.999	0.4239	0.9779	0.9775	1.0008	0.0	0.0	0.237	-8.98	55.4	0.995	0.995
171.	17	0.999	0.4241	0.9778	0.9775	1.0008	0.0	0.0	0.238	-8.93	55.3	0.995	0.995
181.	18	1.000	0.4243	0.9777	0.9775	1.0008	0.0	0.0	0.239	-8.90	55.3	0.994	0.994
191.	19	1.000	0.4244	0.9776	0.9774	1.0009	0.0	0.0	0.240	-8.87	55.3	0.994	0.994
201.	20	1.000	0.4246	0.9775	0.9774	1.0009	0.0	0.0	0.240	-8.85	55.3	0.994	0.994
211.	21	1.000	0.4246	0.9774	0.9774	1.0009	0.0	0.0	0.240	-8.84	55.2	0.994	0.994
221.	22	1.001	0.4247	0.9776	0.9778	1.0010	0.0	0.0	0.240	-8.83	55.2	0.993	0.993
231.	23	1.001	0.4247	0.9784	0.9784	1.0011	0.0	0.0	0.241	-8.82	55.2	0.993	0.993
241.	24	1.001	0.4248	0.9794	0.9795	1.0012	0.0	0.0	0.241	-8.82	55.2	0.993	0.993
251.	25	1.001	0.4249	0.9822	0.9823	1.0017	0.0	0.0	0.240	-8.84	55.2	0.994	0.994
261.	26	1.002	0.4250	0.9844	0.9846	1.0017	0.0	0.0	0.240	-8.86	55.3	0.994	0.994
271.	27	1.004	0.4251	1.0056	1.0058	1.0065	0.0	0.0	0.238	-8.96	55.4	0.995	0.995
281.	28	1.006	0.4258	1.0212	1.0219	1.0063	0.0	0.0	0.235	-9.09	55.5	0.996	0.996
291.	29	1.005	0.4265	1.0230	1.0241	1.0025	0.0	0.0	0.231	-9.26	55.7	0.998	0.998
301.	30	1.004	0.4266	1.0214	1.0225	1.0002	0.0	0.0	0.227	-9.47	55.9	1.000	1.000
311.	31	1.004	0.4263	1.0219	1.0229	0.9999	0.0	0.0	0.224	-9.64	56.0	1.002	1.002
321.	32	1.003	0.4260	1.0212	1.0220	0.9993	0.0	0.0	0.221	-9.76	56.2	1.003	1.003
331.	33	1.002	0.4257	1.0214	1.0220	0.9993	0.0	0.0	0.219	-9.85	56.2	1.004	1.004
341.	34	1.001	0.4254	1.0215	1.0220	0.9993	0.0	0.0	0.218	-9.91	56.3	1.005	1.005
351.	35	1.001	0.4252	1.0216	1.0219	0.9992	0.0	0.0	0.217	-9.96	56.4	1.005	1.005
1.	36	1.000	0.4250	1.0217	1.0219	0.9997	0.0	0.0	0.216	-10.00	56.4	1.006	1.006

STAGE 2
ROTOR

FLOW SWIRL= 5.59DEG PARTICLE SWIRL= 16.56DEG PSAVG= 8.29PSIA = 57156.PA
PTAVG= 9.18PSIA = 63317.PA TTAVG= 575.2DEG R = 319.6DEG K VELAVG= 446.4FPS =136.1MPS
RVELAVG= 931.6FPS = 284.0MPS AXVELAVG= 424.2FPS =129.3MPS U= 969.FPS = 295.MPS

THETA	SEC NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEC	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
16.	1	1.007	0.3880	1.0209	1.0224	0.9992	0.0	0.0	0.130	0.73	27.3	1.007	1.000
26.	2	1.007	0.3881	1.0209	1.0224	0.9991	0.0	0.0	0.130	0.73	27.3	1.007	1.001
36.	3	1.007	0.3882	1.0209	1.0224	0.9991	0.0	0.0	0.130	0.72	27.3	1.007	1.001
46.	4	1.007	0.388[illegible]	1.0208	1.0224	0.9991	0.0	0.0	0.129	0.72	27.3	1.007	1.001
56.	5	1.007	0.3883	1.0208	1.0224	0.9991	0.0	0.0	0.129	0.71	27.3	1.007	1.001
66.	6	1.007	0.3883	1.0204	1.0220	0.9990	0.0	0.0	0.129	0.71	27.3	1.007	1.001
76.	7	1.007	0.3884	1.0195	1.0212	0.9989	0.0	0.0	0.129	0.71	27.3	1.007	1.001
86.	8	1.007	0.3884	1.0162	1.0180	0.9987	0.0	0.0	0.130	0.72	27.3	1.007	1.001
96.	9	1.006	0.3890	0.9922	0.9941	0.9928	0.0	0.0	0.137	0.75	27.3	1.006	1.000
106.	10	1.004	0.388[illegible]	0.9783	0.9798	0.9939	0.0	0.0	0.144	0.79	27.2	1.004	1.000
116.	11	1.002	0.3864	0.9781	0.9787	0.9974	0.0	0.0	0.148	0.86	27.1	1.002	1.000
126.	12	1.000	0.3852	0.9786	0.9786	0.9995	0.0	0.0	0.150	0.92	27.1	1.000	1.000
136.	13	0.998	0.3843	0.9778	0.9773	0.9999	0.0	0.0	0.152	0.98	27.0	0.998	1.000
146.	14	0.996	0.3836	0.9785	0.9777	1.0006	0.0	0.0	0.154	1.01	27.0	0.996	1.000
156.	15	0.995	0.3831	0.9787	0.9776	1.0007	0.0	0.0	0.154	1.04	27.0	0.995	1.000
166.	16	0.994	0.3828	0.9786	0.9774	1.0001	0.0	0.0	0.155	1.06	26.9	0.994	1.000
176.	17	0.994	0.3826	0.9786	0.9772	1.0008	0.0	0.0	0.156	1.08	26.9	0.994	1.000
186.	18	0.994	0.3825	0.9785	0.9771	1.0008	0.0	0.0	0.156	1.09	26.9	0.994	1.000
196.	19	0.993	0.3825	0.9784	0.9770	1.0009	0.0	0.0	0.156	1.10	26.9	0.993	1.000
206.	20	0.993	0.3823	0.9784	0.9769	1.0009	0.0	0.0	0.157	1.10	26.9	0.993	0.999
216.	21	0.993	0.3822	0.9784	0.9768	1.0009	0.0	0.0	0.157	1.11	26.9	0.993	0.999
226.	22	0.993	0.3821	0.9787	0.9771	1.0010	0.0	0.0	0.157	1.11	26.9	0.993	0.999
236.	23	0.993	0.3821	0.9794	0.9778	1.0011	0.0	0.0	0.157	1.11	26.9	0.993	0.999
246.	24	0.993	0.3821	0.9804	0.9788	1.0012	0.0	0.0	0.157	1.11	26.9	0.993	0.999
256.	25	0.993	0.3820	0.9831	0.9815	1.0017	0.0	0.0	0.156	1.11	26.9	0.993	0.999
266.	26	0.993	0.3821	0.9854	0.9838	1.0017	0.0	0.0	0.155	1.10	26.9	0.993	0.999
276.	27	0.994	0.3817	1.0064	1.0046	1.0066	0.0	0.0	0.150	1.07	26.9	0.994	1.000
286.	28	0.996	0.3825	1.0219	1.0204	1.0063	0.0	0.0	0.143	1.03	27.0	0.996	1.000
296.	29	0.998	0.3839	1.0235	1.0228	1.0025	0.0	0.0	0.139	0.97	27.0	0.998	1.000
306.	30	1.000	0.3857	1.0216	1.0216	1.0007	0.0	0.0	0.137	0.91	27.1	1.000	1.000
316.	31	1.002	0.3860	1.0218	1.0223	0.9996	0.0	0.0	0.135	0.86	27.1	1.002	1.000
326.	32	1.003	0.3867	1.0209	1.0217	0.9993	0.0	0.0	0.134	0.82	27.2	1.003	1.000
336.	33	1.005	0.3871	1.0209	1.0219	0.9993	0.0	0.0	0.133	0.79	27.2	1.005	1.000
346.	34	1.005	0.3874	1.0209	1.0221	0.9993	0.0	0.0	0.132	0.77	27.2	1.005	1.000
356.	35	1.006	0.3877	1.0209	1.0222	0.9992	0.0	0.0	0.131	0.75	27.2	1.006	1.000
6.	36	1.006	0.3876	1.0209	1.0223	0.9992	0.0	0.0	0.130	0.74	27.3	1.006	1.000

STATOR

FLOW SWIRL= 2.85DEG PARTICLE SWIRL= 20.78DEG PSAVG= 9.31PSIA = 64157.PA
PTAVG= 10.40PSIA = 71706.PA TTAVG= 603.1DEG R = 335.0DEG K VELAVG= 476.3FPS =145.2MPS
RVELAVG= 844.7FPS = 257.5MPS AXVELAVG= 423.2FPS =129.0MPS U= 949.FPS = 289.MPS

THETA	SEC NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEC	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
13.	1	1.001	0.4027	1.0170	1.0174	0.9918	0.0	0.0	0.182	-22.25	63.8	1.010	1.010
23.	2	1.001	0.4027	1.0170	1.0174	0.9988	0.0	0.0	0.182	-22.28	63.8	1.011	1.011
33.	3	1.001	0.4027	1.0170	1.0174	0.9968	0.0	0.0	0.181	-22.30	63.8	1.011	1.011
43.	4	1.001	0.4027	1.0170	1.0174	0.9966	0.0	0.0	0.181	-22.31	63.8	1.011	1.011
53.	5	1.001	0.4027	1.0170	1.0174	0.9988	0.0	0.0	0.181	-22.32	63.8	1.011	1.011
63.	6	1.001	0.4026	1.0166	1.0170	0.9987	0.0	0.0	0.181	-22.32	63.8	1.011	1.011
73.	7	1.001	0.4026	1.0159	1.0163	0.9985	0.0	0.0	0.181	-22.31	63.8	1.011	1.011
83.	8	1.001	0.4026	1.0132	1.0135	0.9970	0.0	0.0	0.182	-22.24	63.7	1.010	1.010
93.	9	0.999	0.4027	0.9928	0.9932	0.9922	0.0	0.0	0.191	-21.73	63.2	1.005	1.005
103.	10	0.995	0.4015	0.9804	0.9802	0.9909	0.0	0.0	0.200	-21.18	62.7	1.000	1.000
113.	11	0.994	0.4005	0.9817	0.9806	0.9956	0.0	0.0	0.207	-20.86	62.4	0.997	0.997
123.	12	0.995	0.4006	0.9834	0.9824	0.9990	0.0	0.0	0.210	-20.67	62.2	0.995	0.995
133.	13	0.996	0.4003	0.9828	0.9819	1.0000	0.0	0.0	0.213	-20.50	62.0	0.993	0.993
143.	14	0.997	0.4004	0.9831	0.9823	1.0007	0.0	0.0	0.215	-20.40	61.9	0.992	0.992
153.	15	0.998	0.4007	0.9830	0.9824	1.0011	0.0	0.0	0.217	-20.32	61.8	0.991	0.991
163.	16	0.998	0.4009	0.9826	0.9822	1.0011	0.0	0.0	0.218	-20.26	61.8	0.991	0.991
173.	17	0.998	0.4010	0.9826	0.9821	1.0011	0.0	0.0	0.219	-20.22	61.7	0.990	0.990
183.	18	0.999	0.4011	0.9824	0.9819	1.0011	0.0	0.0	0.219	-20.19	61.7	0.990	0.990
193.	19	0.999	0.4011	0.9823	0.9818	1.0012	0.0	0.0	0.220	-20.16	61.7	0.990	0.990
203.	20	0.999	0.4012	0.9822	0.9818	1.0012	0.0	0.0	0.220	-20.15	61.6	0.990	0.990
213.	21	0.999	0.4012	0.9821	0.9817	1.0012	0.0	0.0	0.220	-20.13	61.6	0.989	0.989
223.	22	0.999	0.4012	0.9824	0.9820	1.0013	0.0	0.0	0.220	-20.13	61.6	0.989	0.989
233.	23	0.999	0.4012	0.9829	0.9826	1.0014	0.0	0.0	0.220	-20.14	61.6	0.989	0.989
243.	24	0.999	0.4013	0.9838	0.9834	1.0016	0.0	0.0	0.220	-20.16	61.7	0.990	0.990
253.	25	1.000	0.4013	0.9861	0.9858	1.0021	0.0	0.0	0.219	-20.22	61.7	0.990	0.990
263.	26	1.000	0.4014	0.9881	0.9879	1.0023	0.0	0.0	0.218	-20.28	61.8	0.991	0.991
273.	27	1.002	0.4012	1.0061	1.0057	1.0070	0.0	0.0	0.211	-20.69	62.2	0.995	0.995
283.	28	1.005	0.4020	1.0200	1.0201	1.0069	0.0	0.0	0.201	-21.22	62.7	1.000	1.000
293.	29	1.006	0.4032	1.0203	1.0210	1.0049	0.0	0.0	0.195	-21.55	63.0	1.003	1.003
303.	30	1.005	0.4036	1.0172	1.0182	1.0009	0.0	0.0	0.192	-21.72	63.2	1.005	1.005
313.	31	1.004	0.4034	1.0171	1.0179	0.9996	0.0	0.0	0.189	-21.86	63.4	1.006	1.006
323.	32	1.003	0.4033	1.0166	1.0173	0.9991	0.0	0.0	0.187	-21.97	63.5	1.007	1.007
333.	33	1.002	0.4031	1.0167	1.0173	0.9989	0.0	0.0	0.186	-22.05	63.6	1.008	1.008
343.	34	1.002	0.4029	1.0168	1.0174	0.9989	0.0	0.0	0.184	-22.12	63.6	1.009	1.009
353.	35	1.002	0.4028	1.0169	1.0174	0.9989	0.0	0.0	0.183	-22.18	63.7	1.010	1.010
3.	36	1.002	0.4028	1.0169	1.0174	0.9988	0.0	0.0	0.183	-22.22	63.7	1.010	1.010

STAGE 3 ROTOR

FLOW SWIRL= 6.31DEG PARTICLE SWIRL= 24.24DEG PSAVG= 9.42PSIA = 64941.PA
PTAVG= 10.40PSIA = 71735.PA TTAVG= 603.1DEG R = 335.0DEG K VELAVG= 450.7FPS =137.4MPS
RVELAVG= 966.4FPS = 294.6MPS AXVELAVG= 444.7FPS =135.5MPS U= 931.FPS = 284.MPS

THETA	SEC NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEC	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
16.	1	1.012	0.3845	1.0153	1.0178	0.9988	0.0	0.0	-.057	-2.29	27.7	1.012	1.002
26.	2	1.012	0.3846	1.0152	1.0178	0.9988	0.0	0.0	-.058	-2.30	27.7	1.012	1.002
36.	3	1.012	0.3847	1.0152	1.0178	0.9986	0.0	0.0	-.057	-2.31	27.7	1.012	1.002
46.	4	1.012	0.3847	1.0152	1.0178	0.9988	0.0	0.0	-.058	-2.31	27.7	1.012	1.002
56.	5	1.012	0.3848	1.0151	1.0176	0.9988	0.0	0.0	-.057	-2.31	27.7	1.012	1.002
66.	6	1.012	0.3848	1.0146	1.0174	0.9987	0.0	0.0	-.057	-2.31	27.7	1.012	1.002
76.	7	1.012	0.3848	1.0141	1.0167	0.9985	0.0	0.0	-.056	-2.31	27.7	1.012	1.002
86.	8	1.012	0.3846	1.0113	1.0139	0.9978	0.0	0.0	-.054	-2.29	27.7	1.012	1.002
96.	9	1.006	0.3838	0.9912	0.9932	0.9922	0.0	0.0	-.035	-2.16	27.6	1.006	1.001
106.	10	1.000	0.3817	0.9795	0.9804	0.9909	0.0	0.0	-.021	-2.01	27.4	1.000	1.000
116.	11	0.996	0.3792	0.9817	0.9814	0.9956	0.0	0.0	-.021	-1.91	27.3	0.996	0.999
126.	12	0.994	0.3776	0.9841	0.9829	0.9990	0.0	0.0	-.024	-1.85	27.2	0.994	0.999
136.	13	0.992	0.3766	0.9838	0.9822	1.0000	0.0	0.0	-.025	-1.80	27.2	0.992	0.999
146.	14	0.991	0.3760	0.9843	0.9824	1.0007	0.0	0.0	-.025	-1.77	27.2	0.991	0.999
156.	15	0.990	0.3756	0.9845	0.9823	1.0011	0.0	0.0	-.025	-1.75	27.1	0.990	0.999
166.	16	0.989	0.3754	0.9843	0.9821	1.0011	0.0	0.0	-.025	-1.73	27.1	0.989	0.998
176.	17	0.989	0.3752	0.9842	0.9818	1.0011	0.0	0.0	-.025	-1.72	27.1	0.989	0.998
186.	18	0.989	0.3750	0.9841	0.9817	1.0011	0.0	0.0	-.025	-1.71	27.1	0.989	0.998
196.	19	0.988	0.3749	0.9840	0.9815	1.0012	0.0	0.0	-.024	-1.70	27.1	0.988	0.998
206.	20	0.988	0.3748	0.9839	0.9814	1.0012	0.0	0.0	-.024	-1.70	27.1	0.988	0.998
216.	21	0.988	0.3748	0.9838	0.9813	1.0012	0.0	0.0	-.024	-1.69	27.1	0.988	0.998
226.	22	0.988	0.3747	0.9842	0.9816	1.0013	0.0	0.0	-.024	-1.69	27.1	0.988	0.998
236.	23	0.988	0.3747	0.9847	0.9822	1.0014	0.0	0.0	-.025	-1.69	27.1	0.988	0.998
246.	24	0.988	0.3748	0.9855	0.9830	1.0016	0.0	0.0	-.026	-1.70	27.1	0.988	0.998
256.	25	0.989	0.3749	0.9879	0.9854	1.0021	0.0	0.0	-.028	-1.72	27.1	0.989	0.998
266.	26	0.990	0.3752	0.9898	0.9875	1.0023	0.0	0.0	-.030	-1.73	27.1	0.990	0.998
276.	27	0.994	0.3759	1.0077	1.0057	1.0070	0.0	0.0	-.048	-1.84	27.2	0.994	0.999
286.	28	0.999	0.3777	1.0211	1.0206	1.0089	0.0	0.0	-.062	-1.98	27.4	0.999	1.000
296.	29	1.003	0.3800	1.0204	1.0205	1.0049	0.0	0.0	-.063	-2.08	27.5	1.003	1.000
306.	30	1.005	0.3817	1.0167	1.0177	1.0009	0.0	0.0	-.060	-2.14	27.5	1.005	1.001
316.	31	1.007	0.3826	1.0162	1.0176	0.9996	0.0	0.0	-.058	-2.18	27.6	1.007	1.001
326.	32	1.008	0.3832	1.0154	1.0172	0.9991	0.0	0.0	-.057	-2.21	27.6	1.008	1.001
336.	33	1.009	0.3836	1.0153	1.0173	0.9989	0.0	0.0	-.057	-2.24	27.6	1.009	1.001
346.	34	1.010	0.3839	1.0153	1.0175	0.9985	0.0	0.0	-.057	-2.26	27.7	1.010	1.001
356.	35	1.011	0.3841	1.0153	1.0176	0.9989	0.0	0.0	-.057	-2.27	27.7	1.011	1.002
6.	36	1.011	0.3843	1.0153	1.0177	0.9988	0.0	0.0	-.057	-2.29	27.7	1.011	1.002

STATOR

FLOW SWIRL= 4.81DEG PARTICLE SWIRL= 26.14DEG PSAVG= 9.67PSIA = 66660.PA
PTAVG= 10.85PSIA = 74839.PA TTAVG= 599.0DEG R = 332.8DEG K VELAVG= 483.9FPS =147.5MPS
RVELAVG= 997.6FPS = 304.1MPS AXVELAVG= 476.4FPS =145.2MPS U= 961.FPS = 293.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEC	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
15.	1	1.008	0.4150	1.0086	1.0114	0.9929	0.0	0.0	-.042	-27.29	81.3	1.012	1.012
25.	2	1.008	0.4150	1.0087	1.0115	0.9927	0.0	0.0	-.042	-27.29	81.3	1.012	1.012
35.	3	1.008	0.4150	1.0089	1.0117	0.9926	0.0	0.0	-.042	-27.29	81.3	1.012	1.012
45.	4	1.008	0.4150	1.0088	1.0116	0.9925	0.0	0.0	-.043	-27.30	81.3	1.012	1.012
55.	5	1.008	0.4150	1.0089	1.0117	0.9924	0.0	0.0	-.043	-27.30	81.3	1.012	1.012
65.	6	1.008	0.4149	1.0089	1.0116	0.9924	0.0	0.0	-.042	-27.27	81.3	1.012	1.012
75.	7	1.007	0.4148	1.0086	1.0113	0.9923	0.0	0.0	-.041	-27.22	81.2	1.011	1.011
85.	8	1.006	0.4141	1.0077	1.0100	0.9922	0.0	0.0	-.039	-27.01	81.0	1.010	1.010
95.	9	0.996	0.4091	1.0013	1.0007	0.9909	0.0	0.0	-.017	-25.47	79.5	0.996	0.996
105.	10	0.986	0.4056	0.9959	0.9934	0.9921	0.0	0.0	-.001	-24.39	78.4	0.986	0.986
115.	11	0.987	0.4050	0.9941	0.9913	0.9967	0.0	0.0	0.001	-24.36	78.4	0.986	0.986
125.	12	0.989	0.4052	0.9933	0.9907	1.0014	0.0	0.0	0.000	-24.55	78.5	0.988	0.988
135.	13	0.990	0.4050	0.9925	0.9897	1.0040	0.0	0.0	0.001	-24.57	78.6	0.988	0.988
145.	14	0.991	0.4051	0.9922	0.9895	1.0054	0.0	0.0	0.001	-24.60	78.6	0.988	0.988
155.	15	0.991	0.4051	0.9918	0.9891	1.0062	0.0	0.0	0.001	-24.60	78.6	0.988	0.988
165.	16	0.992	0.4051	0.9916	0.9888	1.0066	0.0	0.0	0.002	-24.58	78.6	0.988	0.988
175.	17	0.992	0.4050	0.9915	0.9887	1.0069	0.0	0.0	0.002	-24.55	78.6	0.988	0.988
185.	18	0.992	0.4050	0.9913	0.9885	1.0071	0.0	0.0	0.002	-24.53	78.5	0.987	0.987
195.	19	0.992	0.4050	0.9911	0.9883	1.0072	0.0	0.0	0.003	-24.53	78.5	0.987	0.987
205.	20	0.992	0.4049	0.9910	0.9882	1.0073	0.0	0.0	0.003	-24.51	78.5	0.987	0.987
215.	21	0.992	0.4050	0.9909	0.9881	1.0075	0.0	0.0	0.003	-24.51	78.5	0.987	0.987
225.	22	0.992	0.4050	0.9911	0.9883	1.0075	0.0	0.0	0.003	-24.52	78.5	0.987	0.987
235.	23	0.992	0.4051	0.9912	0.9885	1.0075	0.0	0.0	0.002	-24.57	78.6	0.988	0.988
245.	24	0.993	0.4053	0.9914	0.9888	1.0076	0.0	0.0	0.001	-24.64	78.6	0.988	0.988
255.	25	0.994	0.4059	0.9922	0.9899	1.0076	0.0	0.0	-.002	-24.83	78.8	0.990	0.990
265.	26	0.995	0.4064	0.9931	0.9910	1.0075	0.0	0.0	-.004	-24.99	79.0	0.992	0.992
275.	27	1.005	0.4105	0.9965	0.9967	1.0086	0.0	0.0	-.024	-26.40	80.4	1.004	1.004
285.	28	1.014	0.4141	1.0041	1.0063	1.0078	0.0	0.0	-.040	-27.52	81.5	1.014	1.014
295.	29	1.014	0.4151	1.0061	1.0090	1.0036	0.0	0.0	-.043	-27.66	81.7	1.015	1.015
305.	30	1.011	0.4148	1.0067	1.0094	0.9989	0.0	0.0	-.041	-27.39	81.4	1.013	1.013
315.	31	1.009	0.4148	1.0074	1.0101	0.9960	0.0	0.0	-.041	-27.28	81.3	1.012	1.012
325.	32	1.008	0.4147	1.0076	1.0103	0.9947	0.0	0.0	-.041	-27.22	81.2	1.011	1.011
335.	33	1.008	0.4148	1.0079	1.0106	0.9940	0.0	0.0	-.041	-27.23	81.2	1.012	1.012
345.	34	1.008	0.4149	1.0082	1.0109	0.9935	0.0	0.0	-.041	-27.25	81.2	1.012	1.012
355.	35	1.008	0.4149	1.0084	1.0112	0.9933	0.0	0.0	-.042	-27.26	81.3	1.012	1.012
5.	36	1.008	0.4150	1.0084	1.0112	0.9930	0.0	0.0	-.042	-27.29	81.3	1.012	1.012

EXIT

FLOW SWIRL= 7.42DEG PARTICLE SWIRL= 30.76DEG PSAVG= 8.98PSIA = 61913.PA
PTAVG= 10.31PSIA = 71063.PA TTAVG= 599.0DEG R = 332.8DEG K VELAVG= 527.2FPS =160.7MPS
RVELAVG= 0.0FPS = 0.0MPS AXVELAVG= 0.0FPS = 0.0MPS U= 961.FPS = 293.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEC	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
17.	1	1.020	0.4590	1.0000	1.0066	0.9924	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27.	2	1.020	0.4591	0.9999	1.0066	0.9927	0.0	0.0	0.0	0.0	0.0	0.0	0.0
37.	3	1.020	0.4591	1.0001	1.0066	0.9926	0.0	0.0	0.0	0.0	0.0	0.0	0.0
47.	4	1.020	0.4592	0.9999	1.0067	0.9925	0.0	0.0	0.0	0.0	0.0	0.0	0.0
57.	5	1.020	0.4592	1.0000	1.0067	0.9924	0.0	0.0	0.0	0.0	0.0	0.0	0.0
67.	6	1.020	0.4590	1.0001	1.0067	0.9924	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77.	7	1.019	0.4587	1.0001	1.0065	0.9923	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87.	8	1.016	0.4575	1.0006	1.0057	0.9927	0.0	0.0	0.0	0.0	0.0	0.0	0.0
97.	9	0.997	0.4486	1.0001	1.0003	0.9909	0.0	0.0	0.0	0.0	0.0	0.0	0.0
107.	10	0.983	0.4417	1.0000	0.9961	0.9921	0.0	0.0	0.0	0.0	0.0	0.0	0.0
117.	11	0.981	0.4398	1.0000	0.9956	0.9967	0.0	0.0	0.0	0.0	0.0	0.0	0.0
127.	12	0.982	0.4392	1.0000	0.9946	1.0014	0.0	0.0	0.0	0.0	0.0	0.0	0.0
137.	13	0.981	0.4384	1.0000	0.9941	1.0040	0.0	0.0	0.0	0.0	0.0	0.0	0.0
147.	14	0.981	0.4380	1.0001	0.9940	1.0054	0.0	0.0	0.0	0.0	0.0	0.0	0.0
157.	15	0.981	0.4376	1.0000	0.9937	1.0062	0.0	0.0	0.0	0.0	0.0	0.0	0.0
167.	16	0.980	0.4375	1.0000	0.9936	1.0066	0.0	0.0	0.0	0.0	0.0	0.0	0.0
177.	17	0.980	0.4372	1.0001	0.9935	1.0069	0.0	0.0	0.0	0.0	0.0	0.0	0.0
187.	18	0.980	0.4370	1.0001	0.9934	1.0071	0.0	0.0	0.0	0.0	0.0	0.0	0.0
197.	19	0.980	0.4370	0.9999	0.9932	1.0072	0.0	0.0	0.0	0.0	0.0	0.0	0.0
207.	20	0.979	0.4368	1.0000	0.9932	1.0073	0.0	0.0	0.0	0.0	0.0	0.0	0.0
217.	21	0.979	0.4365	0.9999	0.9931	1.0073	0.0	0.0	0.0	0.0	0.0	0.0	0.0
227.	22	0.979	0.4365	1.0001	0.9933	1.0075	0.0	0.0	0.0	0.0	0.0	0.0	0.0
237.	23	0.980	0.4371	1.0000	0.9933	1.0075	0.0	0.0	0.0	0.0	0.0	0.0	0.0
247.	24	0.981	0.4375	1.0000	0.9935	1.0076	0.0	0.0	0.0	0.0	0.0	0.0	0.0
257.	25	0.983	0.4385	0.9999	0.9942	1.0076	0.0	0.0	0.0	0.0	0.0	0.0	0.0
267.	26	0.985	0.4395	1.0001	0.9949	1.0075	0.0	0.0	0.0	0.0	0.0	0.0	0.0
277.	27	1.003	0.4474	0.9998	0.9992	1.0086	0.0	0.0	0.0	0.0	0.0	0.0	0.0
287.	28	1.018	0.4545	1.0001	1.0039	1.0078	0.0	0.0	0.0	0.0	0.0	0.0	0.0
297.	29	1.021	0.4570	1.0000	1.0053	1.0036	0.0	0.0	0.0	0.0	0.0	0.0	0.0
307.	30	1.019	0.4572	1.0000	1.0054	0.9989	0.0	0.0	0.0	0.0	0.0	0.0	0.0
317.	31	1.018	0.4576	1.0001	1.0058	0.9960	0.0	0.0	0.0	0.0	0.0	0.0	0.0
327.	32	1.018	0.4574	1.0000	1.0059	0.9947	0.0	0.0	0.0	0.0	0.0	0.0	0.0
337.	33	1.019	0.4572	0.9999	1.0060	0.9940	0.0	0.0	0.0	0.0	0.0	0.0	0.0
347.	34	1.019	0.4565	1.0000	1.0062	0.9935	0.0	0.0	0.0	0.0	0.0	0.0	0.0
357.	35	1.019	0.4566	1.0001	1.0064	0.9933	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7.	36	1.020	0.4569	0.9998	1.0064	0.9930	0.0	0.0	0.0	0.0	0.0	0.0	0.0

LOW SPOOL OUTPUT

	CORR FLOW	PRESS RATIO	EFFICIENCY
LOW SPOOL PERFORMANCE 3/2	69.44 LBM/SEC 31.50 KG/SEC	3.430	0.867

RAKE CORRECTED PRESSURE RATIO =3.299

---- ROW OUTPUT ----

IGV

FLOW SWIRL= 0.0 DEG PARTICLE SWIRL= 0.0 DEG PSAVG= 6.77PSIA = 46684.PA
PTAVG= 7.29PSIA = 50951.PA TTAVG= 531.0DEG R = 295.0DEG K VELAVG= 397.1FPS =121.0MPS
FVELAVG= 752.8FPS = 229.5MPS AXVELAVG= 395.4FPS =120.5MPS U= 640.FPS = 195.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
10.	1	1.035	0.3685	1.0186	1.0251	1.0000	0.0	0.0	-.087	-0.67	86.5	1.039	0.999
20.	2	1.037	0.3691	1.0183	1.0251	1.0000	0.0	0.0	-.083	-1.23	88.0	1.040	0.994
30.	3	1.038	0.3696	1.0181	1.0251	1.0000	0.0	0.0	-.078	-1.86	87.3	1.041	0.990
40.	4	1.039	0.3700	1.0179	1.0251	1.0000	0.0	0.0	-.072	-2.58	86.6	1.042	0.984
50.	5	1.040	0.3704	1.0177	1.0251	1.0000	0.0	0.0	-.064	-3.50	85.7	1.042	0.977
60.	6	1.042	0.3709	1.0167	1.0244	1.0000	0.0	0.0	-.054	-4.64	84.6	1.042	0.966
70.	7	1.045	0.3720	1.0155	1.0237	1.0000	0.0	0.0	-.039	-6.17	83.0	1.041	0.955
80.	8	1.050	0.3739	1.0119	1.0210	1.0000	0.0	0.0	-.015	-8.55	80.6	1.040	0.936
90.	9	1.045	0.3722	0.9923	1.0000	1.0000	0.0	0.0	-.003	-9.66	79.5	1.032	0.926
100.	10	1.019	0.3626	0.9802	0.9831	1.0000	0.0	0.0	-.019	-8.17	81.0	1.011	0.932
110.	11	1.004	0.3572	0.9773	0.9777	1.0000	0.0	0.0	-.042	-5.88	83.3	1.002	0.948
120.	12	0.993	0.3533	0.9772	0.9757	1.0000	0.0	0.0	-.060	-4.02	85.2	0.994	0.961
130.	13	0.985	0.3501	0.9773	0.9743	1.0000	0.0	0.0	-.073	-2.52	86.7	0.987	0.970
140.	14	0.979	0.3479	0.9783	0.9743	1.0000	0.0	0.0	-.083	-1.29	87.9	0.982	0.978
150.	15	0.972	0.3457	0.9793	0.9743	1.0000	0.0	0.0	-.090	-0.34	88.9	0.976	0.984
160.	16	0.968	0.3442	0.9800	0.9743	1.0000	0.0	0.0	-.096	0.46	89.7	0.973	0.989
170.	17	0.965	0.3430	0.9805	0.9743	1.0000	0.0	0.0	-.102	1.20	90.4	0.969	0.994
180.	18	0.962	0.3419	0.9810	0.9743	1.0000	0.0	0.0	-.106	1.91	91.1	0.966	0.999
190.	19	0.958	0.3405	0.9816	0.9743	1.0000	0.0	0.0	-.111	2.58	91.8	0.962	1.003
200.	20	0.957	0.34[illegible]	0.9819	0.9743	1.0000	0.0	0.0	-.115	3.25	92.5	0.960	1.007
210.	21	0.956	0.3397	0.9820	0.9743	1.0000	0.0	0.0	-.120	4.02	93.2	0.959	1.013
220.	22	0.955	0.3394	0.9821	0.9743	1.0000	0.0	0.0	-.125	4.93	94.1	0.957	1.019
230.	23	0.955	0.3393	0.9829	0.9750	1.0000	0.0	0.0	-.131	5.99	95.2	0.955	1.027
240.	24	0.955	0.3395	0.9839	0.9761	1.0000	0.0	0.0	-.137	7.20	96.4	0.954	1.036
250.	25	0.958	0.3405	0.9861	0.9788	1.0000	0.0	0.0	-.143	8.53	97.7	0.954	1.046
260.	26	0.967	0.3438	0.9873	0.9815	1.0000	0.0	0.0	-.150	10.48	99.7	0.958	1.063
270.	27	0.989	0.3514	1.0024	1.0000	1.0000	0.0	0.0	-.152	11.47	100.7	0.975	1.076
280.	28	0.996	0.3542	1.0183	1.0172	1.0000	0.0	0.0	-.148	9.92	99.1	0.988	1.068
290.	29	0.997	0.3546	1.0242	1.0233	1.0000	0.0	0.0	-.137	7.24	96.4	0.995	1.049
300.	30	1.003	0.3568	1.0236	1.0241	1.0000	0.0	0.0	-.126	5.12	94.3	1.004	1.035
310.	31	1.009	0.3591	1.0224	1.0251	1.0000	0.0	0.0	-.117	3.66	92.9	1.012	1.025
320.	32	1.016	0.3616	1.0221	1.0251	1.0000	0.0	0.0	-.110	2.53	91.7	1.020	1.019
330.	33	1.022	0.3637	1.0210	1.0251	1.0000	0.0	0.0	-.105	1.71	90.9	1.026	1.014
340.	34	1.026	0.3651	1.0204	1.0251	1.0000	0.0	0.0	-.100	1.04	90.2	1.030	1.010
350.	35	1.030	0.3665	1.0196	1.0251	1.0000	0.0	0.0	-.096	0.43	89.6	1.034	1.006
360.	36	1.033	0.3676	1.0191	1.0251	1.0000	0.0	0.0	-.092	-0.13	89.1	1.037	1.002

STAGE1 ROTOR

FLOW SWIRL= 2.35DEG PARTICLE SWIRL= 2.15DEG PSAVG= 6.58PSIA = 45336.PA
PTAVG= 7.24PSIA = 49939.PA TTAVG= 531.0DEG R = 295.0DEG K VELAVG= 416.8FPS =127.0MPS
FVELAVG= 72[illegible]FPS = 219.6MPS AXVELAVG= 413.4FPS =126.0MPS U= 643.FPS = 196.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
12.	1	1.023	0.3827	1.0221	1.0267	1.0000	0.013	0.006	0.437	6.00	35.7	1.023	1.006
22.	2	1.024	0.3832	1.0218	1.0267	1.0000	0.013	0.006	0.437	5.96	35.7	1.024	1.007
32.	3	1.025	0.3835	1.0217	1.0267	1.0000	0.013	0.006	0.436	5.94	35.8	1.025	1.007
42.	4	1.025	0.3836	1.0216	1.0267	1.0000	0.013	0.006	0.436	5.93	35.8	1.025	1.007
52.	5	1.025	0.3835	1.0216	1.0266	1.0000	0.013	0.006	0.437	5.94	35.8	1.025	1.007
62.	6	1.025	0.3834	1.0210	1.0259	1.0000	0.013	0.006	0.438	5.95	35.7	1.025	1.007
72.	7	1.024	0.3831	1.0203	1.0251	1.0000	0.013	0.006	0.438	5.97	35.7	1.024	1.007
82.	8	[illegible]	0.3826	1.0176	1.0222	1.0000	0.012	0.006	0.439	5.99	35.7	1.023	1.006
92.	9	1.025	0.3832	0.9967	1.0015	1.0000	0.004	0.002	0.442	5.96	35.7	1.025	1.007
102.	10	1.024	0.3822	0.9776	0.9823	1.0000	-0.01[illegible]	-0.005	0.444	5.97	35.7	1.024	1.007
112.	11	1.020	0.381[illegible]	0.9728	0.9764	1.0000	-0.013	-0.006	0.447	6.09	35.6	1.020	1.005
122.	12	1.014	0.3795	0.9715	0.9742	1.0000	-0.014	-0.006	0.450	6.26	35.4	1.014	1.004
132.	13	1.009	0.3771	0.9711	0.9726	1.0000	-0.015	-0.007	0.453	6.43	35.3	1.009	1.002
142.	14	1.003	0.3751	0.9721	0.9726	1.0000	-0.015	-0.007	0.456	6.58	35.1	1.003	1.001
152.	15	0.999	0.3733	0.9727	0.9724	1.0000	-0.016	-0.007	0.459	6.71	35.0	0.999	1.000
162.	16	0.995	0.3718	0.9735	0.9724	1.0000	-0.016	-0.007	0.462	6.83	34.9	0.995	0.999
172.	17	0.991	0.3704	0.9741	0.9724	1.0000	-0.015	-0.007	0.464	6.94	34.8	0.991	0.998
182.	18	0.988	0.3691	0.9747	0.9723	1.0000	-0.015	-0.007	0.466	7.03	34.7	0.988	0.997
192.	19	0.985	0.3679	0.9751	0.9721	1.0000	-0.016	-0.007	0.469	7.13	34.6	0.985	0.996
202.	20	0.981	0.3666	0.9759	0.9723	1.0000	-0.015	-0.007	0.471	7.23	34.5	0.981	0.995
212.	21	0.978	0.3654	0.9767	0.9725	1.0000	-0.014	-0.007	0.473	7.33	34.4	0.978	0.994
222.	22	0.975	0.3641	0.9775	0.9726	1.0000	-0.013	-0.006	0.476	7.43	34.3	0.975	0.993
232.	23	0.971	0.3627	0.9790	0.9734	1.0000	-0.013	-0.006	0.478	7.53	34.2	0.971	0.992
242.	24	0.968	0.3614	0.9806	0.9747	1.0000	-0.012	-0.005	0.480	7.63	34.1	0.968	0.991
252.	25	0.965	0.3603	0.9844	0.9777	1.0000	-0.010	-0.004	0.481	7.72	34.0	0.965	0.991
262.	26	0.963	0.3596	0.9881	0.9816	1.0000	-0.006	-0.003	0.482	7.78	33.9	0.963	0.990
272.	27	0.963	0.3596	1.0061	1.0009	1.0000	0.007	0.003	0.477	7.77	33.9	0.963	0.990
282.	28	0.967	0.3611	1.0249	1.0183	1.0000	0.014	0.007	0.471	7.65	34.0	0.967	0.991
292.	29	0.975	0.3644	1.0296	1.0247	1.0000	0.015	0.007	0.466	7.40	34.3	0.975	0.993
302.	30	0.986	0.3684	1.0287	1.0253	1.0000	0.015	0.007	0.460	7.09	34.6	0.986	0.996
312.	31	0.995	0.3720	1.0274	1.0263	1.0000	0.014	0.006	0.454	6.82	34.9	0.995	0.999
322.	32	1.003	0.3750	1.0259	1.0264	1.0000	0.014	0.006	0.449	6.59	35.1	1.003	1.001
332.	33	1.009	0.3774	1.0247	1.0265	1.0000	0.014	0.006	0.445	6.40	35.3	1.009	1.002
342.	34	1.014	0.3793	1.0238	1.0266	1.0000	0.013	0.006	0.442	6.26	35.4	1.014	1.004
352.	35	1.018	0.3808	1.0230	1.0266	1.0000	0.013	0.006	0.440	6.14	35.6	1.018	1.005
2.	36	1.021	0.3819	1.0225	1.0267	1.0000	0.013	0.006	0.438	6.06	35.6	1.021	1.006

APPENDIX B (Cont'd)

STATOR

FLOW SWIRL= 2.64DEG PARTICLE SWIRL= 19.82DEG PSAVG= 7.33PSIA = 50552.PA
PTAVG= 8.73PSIA = 60225.PA TTAVG= 560.2DEG R = 311.2DEG K VELAVG= 573.2FPS =174.7MPS
PVELAVG= 501.9FPS = 153.0MPS AXVELAVG= 429.8FPS =131.0MPS U= 636.FPS = 195.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WEL KG/SEC	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
14.	1	1.008	0.5105	1.0189	1.0218	0.9994	0.0	0.0	0.411	-9.41	49.8	1.026	1.026
24.	2	1.008	0.5105	1.0192	1.0220	0.9997	0.0	0.0	0.410	-9.46	49.9	1.027	1.027
34.	3	1.008	0.5104	1.0194	1.0222	0.9998	0.0	0.0	0.410	-9.48	49.9	1.027	1.027
44.	4	1.007	0.5102	1.0196	1.0224	0.9999	0.0	0.0	0.410	-9.48	49.9	1.027	1.027
54.	5	1.007	0.5100	1.0203	1.0228	1.0000	0.0	0.0	0.410	-9.45	49.9	1.027	1.027
64.	6	1.006	0.5097	1.0200	1.0223	0.9999	0.0	0.0	0.411	-9.41	49.8	1.026	1.026
74.	7	1.006	0.5095	1.0197	1.0219	0.9998	0.0	0.0	0.412	-9.36	49.8	1.025	1.025
84.	8	1.005	0.5092	1.0171	1.0191	0.9993	0.0	0.0	0.413	-9.30	49.7	1.023	1.023
94.	9	1.002	0.5088	0.9946	0.9963	0.9939	0.0	0.0	0.415	-9.17	49.6	1.021	1.021
104.	10	0.999	0.5070	0.9765	0.9775	0.9917	0.0	0.0	0.418	-9.01	49.4	1.017	1.017
114.	11	0.999	0.5065	0.9752	0.9752	0.9962	0.0	0.0	0.421	-8.85	49.3	1.014	1.014
124.	12	0.998	0.5056	0.9762	0.9757	0.9997	0.0	0.0	0.425	-8.63	49.0	1.009	1.009
134.	13	0.998	0.5049	0.9761	0.9751	1.0004	0.0	0.0	0.429	-8.38	48.8	1.004	1.004
144.	14	0.997	0.5045	0.9770	0.9757	1.0008	0.0	0.0	0.433	-8.16	48.6	0.999	0.999
154.	15	0.996	0.5041	0.9775	0.9760	1.0009	0.0	0.0	0.437	-7.95	48.3	0.995	0.995
164.	16	0.996	0.5037	0.9780	0.9762	1.0008	0.0	0.0	0.440	-7.76	48.2	0.991	0.991
174.	17	0.995	0.5034	0.9783	0.9764	1.0007	0.0	0.0	0.443	-7.60	48.0	0.988	0.988
184.	18	0.994	0.5030	0.9788	0.9766	1.0007	0.0	0.0	0.446	-7.45	47.9	0.985	0.985
194.	19	0.993	0.5027	0.9791	0.9766	1.0006	0.0	0.0	0.449	-7.30	47.7	0.981	0.981
204.	20	0.993	0.5022	0.9800	0.9772	1.0007	0.0	0.0	0.451	-7.14	47.5	0.978	0.978
214.	21	0.992	0.5018	0.9807	0.9777	1.0007	0.0	0.0	0.454	-6.99	47.4	0.975	0.975
224.	22	0.991	0.5013	0.9816	0.9783	1.0007	0.0	0.0	0.457	-6.82	47.2	0.972	0.972
234.	23	0.990	0.5009	0.9832	0.9796	1.0014	0.0	0.0	0.460	-6.66	47.1	0.968	0.968
244.	24	0.990	0.5005	0.9850	0.9812	1.0011	0.0	0.0	0.462	-6.51	46.9	0.965	0.965
254.	25	0.990	0.5005	0.9883	0.9844	1.0016	0.0	0.0	0.464	-6.41	46.8	0.963	0.963
264.	26	0.990	0.5007	0.9912	0.9875	1.0019	0.0	0.0	0.465	-6.36	46.8	0.962	0.962
274.	27	0.990	0.5026	1.0095	1.0070	1.0060	0.0	0.0	0.460	-6.63	47.0	0.968	0.968
284.	28	1.001	0.5050	1.0231	1.0222	1.0075	0.0	0.0	0.453	-7.03	47.4	0.976	0.976
294.	29	1.007	0.5073	1.0235	1.0239	1.0030	0.0	0.0	0.446	-7.41	47.8	0.984	0.984
304.	30	1.003	0.5084	1.0199	1.0213	0.9990	0.0	0.0	0.439	-7.82	48.2	0.992	0.992
314.	31	1.005	0.5093	1.0194	1.0214	0.9983	0.0	0.0	0.432	-8.22	48.6	1.001	1.001
324.	32	1.006	0.5098	1.0188	1.0212	0.9985	0.0	0.0	0.426	-8.56	49.0	1.008	1.008
334.	33	1.007	0.5101	1.0185	1.0211	0.9986	0.0	0.0	0.421	-8.84	49.2	1.014	1.014
344.	34	1.007	0.5104	1.0184	1.0211	0.9989	0.0	0.0	0.417	-9.06	49.5	1.016	1.016
354.	35	1.008	0.5105	1.0184	1.0213	0.9992	0.0	0.0	0.414	-9.22	49.6	1.022	1.022
4.	36	1.008	0.5106	1.0186	1.0215	0.9994	0.0	0.0	0.412	-9.34	49.7	1.024	1.024

STAGE [illegible]
ROTOR

FLOW SWIRL= [illegible].40DEG PARTICLE SWIRL= 24.63DEG PSAVG= 7.88PSIA = 54321.PA
PTAVG= 8.73PSIA = 60183.PA TTAVG= 560.2DEG R = 311.2DEG K VELAVG= 440.6FPS =134.3MPS
PVELAVG= 717.6FPS = 218.7MPS AXVELAVG= 435.7FPS =132.8MPS U= 635.FPS = 194.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WEL KG/SEC	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
18.	1	1.026	0.3957	1.0178	1.0234	0.9996	0.0	0.0	0.407	0.90	38.2	1.026	1.008
28.	2	1.027	0.3960	1.0181	1.0239	0.9997	0.0	0.0	0.407	0.87	38.2	1.027	1.008
38.	3	1.028	0.3962	1.0183	1.0242	0.9998	0.0	0.0	0.407	0.86	38.2	1.028	1.008
48.	4	1.028	0.3962	1.0186	1.0245	0.9999	0.0	0.0	0.407	0.86	38.2	1.028	1.008
58.	5	1.027	0.3959	1.0192	1.0249	1.0000	0.0	0.0	0.408	0.87	38.2	1.027	1.008
68.	6	1.026	0.3956	1.0189	1.0248	0.9999	0.0	0.0	0.408	0.90	38.2	1.026	1.008
78.	7	1.025	0.3952	1.0186	1.0246	0.9998	0.0	0.0	0.409	0.93	38.2	1.025	1.007
88.	8	1.024	0.3947	1.0161	1.0211	0.9995	0.0	0.0	0.411	0.98	38.1	1.024	1.007
98.	9	1.021	0.3948	0.9934	0.9994	0.9929	0.0	0.0	0.414	1.06	38.0	1.021	1.006
108.	10	1.018	0.3939	0.9754	0.9766	0.9917	0.0	0.0	0.419	1.16	37.9	1.016	1.005
118.	11	1.014	0.3915	0.9744	0.9776	0.9962	0.0	0.0	0.423	1.27	37.8	1.014	1.004
128.	12	1.009	0.3885	0.9751	0.9776	0.9997	0.0	0.0	0.426	1.42	37.7	1.009	1.003
138.	13	1.004	0.3866	0.9754	0.9766	1.0004	0.0	0.0	0.429	1.58	37.5	1.004	1.001
148.	14	0.999	0.3846	0.9771	0.9767	1.0008	0.0	0.0	0.431	1.73	37.4	0.999	1.000
158.	15	0.995	0.3829	0.9778	0.9765	1.0009	0.0	0.0	0.434	1.87	37.2	0.995	0.998
168.	16	0.991	0.3813	0.9784	0.9764	1.0008	0.0	0.0	0.436	1.99	37.1	0.991	0.997
178.	17	0.987	0.3800	0.9789	0.9762	1.0007	0.0	0.0	0.439	2.10	37.0	0.987	0.996
188.	18	0.984	0.3787	0.9795	0.9761	1.0007	0.0	0.0	0.441	2.20	36.9	0.984	0.995
198.	19	0.981	0.3774	0.9799	0.9759	1.0006	0.0	0.0	0.443	2.30	36.8	0.981	0.994
208.	20	0.977	0.3761	0.9810	0.9763	1.0007	0.0	0.0	0.445	2.41	36.7	0.977	0.993
218.	21	0.974	0.3745	0.9819	0.9765	1.0007	0.0	0.0	0.448	2.51	36.6	0.974	0.992
228.	22	0.971	0.3734	0.9829	0.9764	1.0007	0.0	0.0	0.450	2.62	36.5	0.971	0.991
238.	23	0.967	0.3721	0.9846	0.9779	1.0009	0.0	0.0	0.452	2.72	36.4	0.967	0.990
248.	24	0.964	0.3709	0.9866	0.9790	1.0011	0.0	0.0	0.454	2.81	36.3	0.964	0.990
258.	25	0.962	0.3705	0.9896	0.9816	1.0016	0.0	0.0	0.455	2.88	36.2	0.962	0.989
268.	26	0.962	0.3696	0.9925	0.9845	1.0019	0.0	0.0	0.455	2.90	36.2	0.962	0.989
278.	27	0.967	0.3710	1.0113	1.0035	1.0064	0.0	0.0	0.448	2.73	36.4	0.967	0.990
288.	28	0.975	0.374	1.0244	1.0164	1.0075	0.0	0.0	0.440	2.47	36.6	0.975	0.993
298.	29	0.984	0.3761	1.0244	1.0205	1.0034	0.0	0.0	0.432	2.22	36.9	0.984	0.995
308.	30	0.992	0.3822	1.0204	1.0188	0.9992	0.0	0.0	0.427	1.95	37.2	0.992	0.998
318.	31	1.001	0.3858	1.0195	1.0197	0.9983	0.0	0.0	0.423	1.68	37.4	1.001	1.000
328.	32	1.008	0.3887	1.0186	1.0203	0.9985	0.0	0.0	0.419	1.46	37.6	1.008	1.002
338.	33	1.014	0.3910	1.0179	1.0210	0.9986	0.0	0.0	0.415	1.27	37.8	1.014	1.004
348.	34	1.019	0.3928	1.0176	1.0216	0.9989	0.0	0.0	0.412	1.13	38.0	1.019	1.006
358.	35	1.022	0.3941	1.0175	1.0223	0.9992	0.0	0.0	0.410	1.03	38.1	1.022	1.007
8.	36	1.025	0.3951	1.0176	1.0228	0.9994	0.0	0.0	0.408	0.95	38.2	1.025	1.007

APPENDIX B (Cont'd)

STATOR

FLOW SWIRL= [illegible]DEG PARTICLE SWIRL= 35.43DEG PSAVG= 9.00PSIA = 62042.PA
PTAVG= 10.50PSIA = 72364.PA TTAVG= 591.4DEG R = 328.6DEG K VELAVG= 553.0FPS =168.6MPS
FVELAVG= 512.2FPS = 156.1MPS AXVELAVG= 427.8FPS =130.4MPS U= 632.FPS = 193.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
18.	1	1.008	0.4796	1.0137	1.0169	0.9969	0.0	0.0	0.393	-11.70	52.1	1.026	1.028
28.	2	1.008	0.4793	1.0143	1.0174	0.9971	0.0	0.0	0.392	-11.74	52.1	1.029	1.029
38.	3	1.008	0.4789	1.0148	1.0178	0.9972	0.0	0.0	0.392	-11.75	52.2	1.029	1.029
48.	4	1.008	0.4787	1.0155	1.0185	0.9974	0.0	0.0	0.392	-11.74	52.1	1.029	1.029
58.	5	1.008	0.4784	1.0166	1.0194	0.9977	0.0	0.0	0.393	-11.69	52.1	1.028	1.026
68.	6	1.007	0.4782	1.0167	1.0192	0.9977	0.0	0.0	0.394	-11.63	52.0	1.027	1.027
78.	7	1.007	0.4779	1.0168	1.0192	0.9977	0.0	0.0	0.396	-11.56	52.0	1.025	1.025
88.	8	1.006	0.4777	1.0147	1.0170	0.9971	0.0	0.0	0.396	-11.47	51.9	1.024	1.024
98.	9	1.004	0.4786	0.9936	0.9969	0.9915	0.0	0.0	0.403	-11.25	51.7	1.019	1.019
108.	10	1.000	0.4771	0.9769	0.9788	0.9878	0.0	0.0	0.410	-10.94	51.3	1.013	1.013
118.	11	0.997	0.4746	0.9764	0.9765	0.9936	0.0	0.0	0.417	-10.64	51.0	1.007	1.007
128.	12	0.996	0.4737	0.9791	0.9785	0.9960	0.0	0.0	0.421	-10.43	50.6	1.003	1.003
138.	13	0.997	0.4725	0.9804	0.9794	0.9996	0.0	0.0	0.426	-10.24	50.8	0.999	0.999
148.	14	0.996	0.4720	0.9817	0.9803	1.0012	0.0	0.0	0.430	-10.04	50.4	0.995	0.995
158.	15	0.996	0.4714	0.9823	0.9806	1.0019	0.0	0.0	0.435	-9.84	50.2	0.991	0.991
168.	16	0.995	0.4711	0.9829	0.9810	1.0024	0.0	0.0	0.439	-9.67	50.1	0.986	0.988
178.	17	0.994	0.4707	0.9831	0.9811	1.0025	0.0	0.0	0.442	-9.51	49.9	0.985	0.985
188.	18	0.994	0.4702	0.9837	0.9812	1.0027	0.0	0.0	0.446	-9.36	49.8	0.982	0.982
198.	19	0.993	0.4699	0.9843	0.9816	1.0029	0.0	0.0	0.449	-9.20	49.6	0.979	0.979
208.	20	0.992	0.4693	0.9856	0.9826	1.0033	0.0	0.0	0.453	-9.03	49.4	0.975	0.975
218.	21	0.991	0.4689	0.9866	0.9833	1.0036	0.0	0.0	0.457	-8.87	49.3	0.972	0.972
228.	22	0.990	0.4684	0.9877	0.9841	1.0040	0.0	0.0	0.460	-8.70	49.1	0.969	0.969
238.	23	0.990	0.4679	0.9891	0.9852	1.0043	0.0	0.0	0.464	-8.55	48.9	0.966	0.966
248.	24	0.989	0.4677	0.990[illegible]	0.9862	1.0046	0.0	0.0	0.466	-8.42	48.8	0.964	0.964
258.	25	0.989	0.4676	0.9927	0.9886	1.0052	0.0	0.0	0.468	-8.36	48.8	0.962	0.962
268.	26	0.990	0.4678	0.9948	0.9908	1.0055	0.0	0.0	0.466	-8.36	48.8	0.962	0.962
278.	27	0.996	0.4693	1.0095	1.0063	1.0092	0.0	0.0	0.456	-8.60	49.2	0.971	0.971
288.	28	1.003	0.4712	1.0207	1.0188	1.0119	0.0	0.0	0.446	-9.35	49.7	0.982	0.982
298.	29	1.004	0.4741	1.0205	1.0205	1.0083	0.0	0.0	0.434	-9.67	50.3	0.992	0.992
308.	30	1.005	0.4767	1.0161	1.0174	1.0022	0.0	0.0	0.426	-10.24	50.6	0.999	0.999
318.	31	1.005	0.4772	1.0146	1.0165	0.9982	0.0	0.0	0.419	-10.55	50.9	1.005	1.005
328.	32	1.006	0.4778	1.0133	1.0157	0.9967	0.0	0.0	0.412	-10.66	51.3	1.011	1.011
338.	33	1.007	0.4784	1.0127	1.0154	0.9965	0.0	0.0	0.405	-11.15	51.5	1.017	1.017
348.	34	1.006	0.4787	1.0125	1.0155	0.9964	0.0	0.0	0.401	-11.36	51.8	1.021	1.021
358.	35	1.008	0.4790	1.0127	1.0158	0.9965	0.0	0.0	0.397	-11.52	51.9	1.025	1.025
8.	36	1.008	0.4791	1.0131	1.0162	0.9967	0.0	0.0	0.394	-11.64	52.0	1.027	1.027

STAGE
ROTOR

FLOW SWIRL= 12.[illegible]1DEG PARTICLE SWIRL= 39.11DEG PSAVG= 9.31PSIA = 64219.PA
PTAVG= 10.27PSIA = 70841.PA TTAVG= 591.4DEG R = 328.6DEG K VELAVG= 443.1FPS =135.1MPS
FVELAVG= 750.6FPS = 228.8MPS AXVELAVG= 442.6FPS =134.9MPS U= 626.FPS = 191.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
22.	1	1.038	0.3923	1.0027	1.0107	0.9969	0.0	0.0	0.538	-2.10	37.2	1.038	1.013
32.	2	1.039	0.3927	1.0029	1.0111	0.9971	0.0	0.0	0.537	-2.13	37.2	1.039	1.013
42.	3	1.040	0.3928	1.0032	1.0115	0.9972	0.0	0.0	0.537	-2.14	37.2	1.040	1.013
52.	4	1.039	0.3926	1.0040	1.0122	0.9974	0.0	0.0	0.538	-2.13	37.2	1.039	1.013
62.	5	1.038	0.3920	1.0055	1.0134	0.9977	0.0	0.0	0.539	-2.09	37.2	1.038	1.012
72.	6	1.036	0.3914	1.0060	1.0136	0.9977	0.0	0.0	0.540	-2.05	37.1	1.036	1.012
82.	7	1.035	0.3907	1.0066	1.0138	0.9977	0.0	0.0	0.541	-2.00	37.1	1.035	1.011
92.	8	1.032	0.3898	1.0053	1.0120	0.9971	0.0	0.0	0.543	-1.92	37.0	1.032	1.010
102.	9	1.026	0.3887	0.9860	0.9919	0.9915	0.0	0.0	0.548	-1.76	36.9	1.026	1.008
112.	10	1.018	0.3866	0.9717	0.9762	0.9878	0.0	0.0	0.555	-1.53	36.6	1.018	1.006
122.	11	1.010	0.3824	0.9734	0.9769	0.9906	0.0	0.0	0.561	-1.30	36.4	1.010	1.003
132.	12	1.004	0.3791	0.9777	0.9787	0.9960	0.0	0.0	0.565	-1.14	36.2	1.004	1.001
142.	13	0.999	0.3764	0.9805	0.9802	0.9996	0.0	0.0	0.568	-1.00	36.1	0.999	0.999
152.	14	0.993	0.3740	0.9834	0.9819	1.0012	0.0	0.0	0.569	-0.84	35.9	0.993	0.998
162.	15	0.988	0.3718	0.9856	0.9829	1.0019	0.0	0.0	0.571	-0.70	35.8	0.988	0.996
172.	16	0.983	0.3700	0.9875	0.9839	1.0024	0.0	0.0	0.574	-0.57	35.7	0.983	0.995
182.	17	0.979	0.3684	0.9889	0.9845	1.0025	0.0	0.0	0.576	-0.45	35.5	0.979	0.993
192.	18	0.975	0.3668	0.9907	0.9855	1.0027	0.0	0.0	0.578	-0.33	35.4	0.975	0.992
202.	19	0.971	0.3651	0.9926	0.9865	1.0029	0.0	0.0	0.581	-0.21	35.3	0.971	0.991
212.	20	0.967	0.3633	0.9951	0.9882	1.0033	0.0	0.0	0.584	-0.08	35.2	0.967	0.989
222.	21	0.962	0.3617	0.9973	0.9896	1.0036	0.0	0.0	0.586	0.04	35.1	0.962	0.988
232.	22	0.958	0.3599	0.9997	0.9911	1.0040	0.0	0.0	0.589	0.16	34.9	0.958	0.986
242.	23	0.954	0.3583	1.0023	0.9929	1.0043	0.0	0.0	0.592	0.26	34.8	0.954	0.985
252.	24	0.951	0.3571	1.0045	0.9945	1.0046	0.0	0.0	0.593	0.37	34.7	0.951	0.984
262.	25	0.949	0.3563	1.0075	0.9970	1.0052	0.0	0.0	0.594	0.42	34.7	0.949	0.984
272.	26	0.949	0.3562	1.0096	0.9991	1.0055	0.0	0.0	0.593	0.42	34.7	0.949	0.984
282.	27	0.961	0.3599	1.0212	1.0125	1.0092	0.0	0.0	0.587	0.09	35.0	0.961	0.987
292.	28	0.975	0.3650	1.0285	1.0222	1.0110	0.0	0.0	0.571	-0.32	35.4	0.975	0.992
302.	29	0.988	0.3708	1.0245	1.0212	1.0083	0.0	0.0	0.561	-0.71	35.6	0.988	0.996
312.	30	0.998	0.3757	1.0172	1.0164	1.0022	0.0	0.0	0.555	-0.98	36.1	0.998	0.999
322.	31	1.007	0.3797	1.0131	1.0145	0.9982	0.0	0.0	0.551	-1.22	36.3	1.007	1.002
332.	32	1.015	0.3834	1.0092	1.0128	0.9967	0.0	0.0	0.548	-1.46	36.6	1.015	1.005
342.	33	1.023	0.3864	1.0062	1.0111	0.9965	0.0	0.0	0.544	-1.66	36.8	1.023	1.007
352.	34	1.029	0.3888	1.0043	1.0104	0.9964	0.0	0.0	0.541	-1.84	36.9	1.029	1.009
2.	35	1.033	0.3905	1.0031	1.0101	0.9965	0.0	0.0	0.539	-1.96	37.1	1.033	1.011
12.	36	1.036	0.3917	1.0025	1.0102	0.9967	0.0	0.0	0.538	-2.05	37.2	1.036	1.012

APPENDIX B (Cont'd)

STATOR

FLOW SWIRL= 14.52DEG PARTICLE SWIRL= 54.64DEG PSAVG= 10.62PSIA = 74595.PA
PTAVG= [illegible]PSIA = [illegible]42.PA TTAVG= 627.4DEG R = 348.6DEG K VELAVG= 549.1FPS =167.4MPS
RVELAVG= 4[illegible].FPS = 139.2MPS AXVELAVG= 385.3FPS =117.4MPS U= 634.FPS = 193.MPS

THETA	SEC NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEC	CF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
20.	1	1.0[illegible]	0.4606	0.9957	1.0012	0.9941	0.001	0.000	0.375	4.77	46.5	1.038	1.036
30.	2	1.0[illegible]	0.4614	0.9992	1.0019	0.9943	0.001	0.000	0.376	4.74	46.6	1.039	1.039
40.	3	1.0[illegible]	0.46[illegible]	1.0001	1.0024	0.9945	0.001	0.000	0.376	4.73	46.6	1.040	1.040
50.	4	1.0[illegible]	0.4601	1.0015	1.0037	0.9944	0.001	0.000	0.378	4.75	46.5	1.039	1.039
60.	5	1.0[illegible]	0.4596	1.003[illegible]	1.0059	0.9956	0.000	0.000	0.380	4.82	46.5	1.037	1.037
70.	6	1.0[illegible]	0.45[illegible]	1.0046	1.0066	0.9956	-0.000	-0.000	0.381	4.88	46.4	1.036	1.036
80.	7	1.035	0.4555	1.0052	1.0074	0.9959	-0.001	-0.000	0.382	4.94	46.4	1.035	1.035
90.	8	1.0[illegible]	0.4553	1.0043	1.0067	0.9955	-0.002	-0.001	0.383	5.01	46.3	1.033	1.033
100.	9	1.026	0.4612	0.9972	0.9914	0.9951	-0.004	-0.002	0.387	5.24	46.1	1.026	1.026
110.	10	1.004	0.4614	0.9754	0.9786	0.9972	-0.006	-0.003	0.394	5.69	45.6	1.019	1.019
120.	11	1.0[illegible]1	0.4599	0.9774	0.97[illegible]	0.9984	-0.006	-0.003	0.401	6.12	45.2	1.009	1.009
130.	12	1.000	0.4587	0.9802	0.9813	0.9915	-0.006	-0.002	0.406	6.43	44.9	1.003	1.003
140.	13	0.990	0.4569	0.9820	0.9837	0.9962	-0.005	-0.003	0.410	6.65	44.7	0.996	0.998
150.	14	0.990	0.4556	0.9866	0.9863	1.0018	-0.004	-0.002	0.413	6.86	44.4	0.994	0.994
160.	15	0.98[illegible]	0.45[illegible]	0.98[illegible]	0.9[illegible]25	1.0028	-0.003	-0.001	0.417	7.10	44.2	0.986	0.988
170.	16	[illegible]	0.4542	0.9918	0.9902	1.002[illegible]	-0.002	-0.001	0.420	7.34	44.0	0.983	0.983
180.	17	0.9[illegible]	0.45[illegible]	0.9931	0.9914	1.0044	-0.001	-0.001	0.424	7.56	43.7	0.979	0.979
190.	18	0.9[illegible]	0.4527	0.9955	0.9932	1.0050	-0.000	-0.000	0.428	7.81	43.5	0.973	0.973
200.	19	0.9[illegible]	0.4519	0.99[illegible]	0.9957	1.0015	0.000	0.000	0.432	8.06	43.2	0.968	0.968
210.	20	0.9[illegible]	0.4516	1.0011	0.9978	1.0002	0.001	0.000	0.436	8.31	43.0	0.963	0.963
220.	21	0.9[illegible]1	0.4504	1.0036	[illegible]	[illegible]	0.001	0.001	0.439	8.53	42.1	0.958	0.958
230.	22	0.9[illegible]	0.4497	[illegible]	1.0023	1.0074	0.002	0.001	0.443	8.77	42.5	0.953	0.953
240.	23	0.9[illegible]	0.4491	1.0092	1.0046	1.0081	0.002	0.001	0.447	8.97	42.3	0.949	0.949
250.	24	0.9[illegible]	0.4488	1.0112	1.0066	[illegible]	0.002	0.001	0.449	9.13	42.2	0.945	0.945
260.	25	0.9[illegible]	0.4487	1.0134	1.0086	1.0089	0.003	0.001	0.450	9.26	42.1	0.944	0.944
270.	26	0.9[illegible]	0.4490	1.0146	1.0099	1.0092	0.003	0.001	0.450	9.18	42.1	0.945	0.944
280.	27	0.9[illegible]	0.4518	1.0175	1.0146	1.0104	0.003	0.001	0.436	8.37	42.9	0.962	0.962
290.	28	1.0[illegible]	0.4526	1.0206	1.0196	1.0114	0.003	0.001	0.425	7.54	43.8	0.979	0.979
300.	29	1.0[illegible]	0.4563	1.0156	1.0165	1.0095	0.003	0.001	0.411	6.80	44.5	0.995	0.995
310.	30	1.0[illegible]7	0.4553	1.0104	1.0115	1.0059	0.002	0.001	0.403	6.30	45.0	1.006	1.006
320.	31	1.0[illegible]	0.4594	1.0069	[illegible]	1.0010	0.002	0.001	0.391	5.95	45.3	1.013	1.013
330.	32	1.0[illegible]	0.4603	1.0022	1.0046	0.9967	0.002	0.001	0.393	5.66	45.6	1.019	1.019
340.	33	1.0[illegible]	0.46[illegible]7	[illegible]	1.0016	0.9936	0.002	0.001	0.389	5.36	45.9	1.026	1.026
350.	34	1.0[illegible]	0.4606	0.9978	1.0005	0.9935	0.002	0.001	0.385	5.13	46.2	1.031	1.031
360.	35	1.0[illegible]	0.4627	0.9975	1.0002	0.9925	0.001	0.001	0.382	4.96	46.3	1.034	1.034
10.	36	1.0[illegible]	0.4637	0.9976	1.0032	0.9937	0.001	0.001	0.380	4.84	46.5	1.037	1.037

STAGE 4 ROTOR

FLOW SWIRL= [illegible]DEG PARTICLE SWIRL= 58.94DEG PSAVG= 11.15PSIA = 76874.PA
PTAVG= 1[illegible].21PSIA = [illegible]181.PA TTAVG= 627.4DEG R = 348.6DEG K VELAVG= 439.[illegible]FPS =133.9MPS
RVELAVG= 693.5FPS = 211.4MPS AXVELAVG= 433.2FPS =132.0MPS U= 614.FPS = 187.MPS

THETA	SEC NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEC	CF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
20.	1	1.02[illegible]	0.3754	1.0056	1.0121	0.9941	0.0	0.0	0.362	0.23	39.7	1.032	1.010
30.	2	1.0[illegible]	0.3756	1.0064	1.0130	0.9943	0.0	0.0	0.363	0.21	39.7	1.032	1.010
40.	3	1.0[illegible]	0.3757	1.0071	1.0127	0.9948	0.0	0.0	0.363	0.21	39.7	1.033	1.010
50.	4	1.032	0.3754	1.0085	1.0155	0.9949	0.0	0.0	0.363	0.22	39.7	1.032	1.010
60.	5	1.021	0.3747	1.0108	1.0169	0.9955	0.0	0.0	0.365	0.27	39.6	1.031	1.010
70.	6	1.03[illegible]	0.3742	1.0114	1.0173	0.9956	0.0	0.0	0.366	0.31	39.6	1.030	1.009
80.	7	1.029	0.3739	1.0120	1.0177	0.9958	0.0	0.0	0.367	0.34	39.6	1.029	1.009
90.	8	1.027	0.3734	1.0108	1.0163	0.9959	0.0	0.0	0.368	0.38	39.5	1.027	1.008
100.	9	1.022	0.3727	[illegible]	0.9983	0.9006	0.0	0.0	0.373	0.52	39.4	1.023	1.007
110.	10	1.015	0.3723	0.9[illegible]01	0.9136	0.9972	0.0	0.0	0.381	0.77	39.1	1.015	1.004
120.	11	1.007	0.3672	0.9811	0.9823	0.9884	0.0	0.0	0.388	1.02	38.9	1.007	1.002
130.	12	1.001	0.3645	0.9817	0.9826	0.9915	0.0	0.0	0.393	1.19	38.7	1.001	1.000
140.	13	[illegible]	0.3622	0.9934	0.9832	0.9962	0.0	0.0	0.396	1.31	38.6	0.996	0.999
150.	14	0.994	0.36[illegible]	0.99[illegible]	0.9847	1.0005	0.0	0.0	0.399	1.42	38.5	0.994	0.998
160.	15	0.9[illegible]	0.3583	0.9874	0.9853	1.0028	0.0	0.0	0.401	1.55	38.4	0.990	0.997
170.	16	0.9[illegible]	0.3566	0.9886	0.9855	1.0039	0.0	0.0	0.404	1.67	38.2	0.986	0.996
180.	17	0.9[illegible]	0.3551	0.9891	0.9854	1.0044	0.0	0.0	0.407	1.79	38.1	0.983	0.995
190.	18	0.978	0.3535	0.9904	0.9862	1.0050	0.0	0.0	0.411	1.93	38.0	0.978	0.993
200.	19	0.974	0.3518	0.9915	0.9865	1.0055	0.0	0.0	0.414	2.06	37.8	0.974	0.992
210.	20	0.97[illegible]	0.3501	0.9938	0.9875	1.0062	0.0	0.0	0.418	2.20	37.7	0.970	0.991
220.	21	0.966	0.3488	0.9954	0.9886	1.0068	0.0	0.0	0.421	2.32	37.6	0.966	0.990
230.	22	0.962	0.3476	0.9973	0.9897	1.0074	0.0	0.0	0.425	2.45	37.4	0.962	0.988
240.	23	0.959	0.3456	0.9991	0.9910	1.0081	0.0	0.0	0.427	2.56	37.3	0.959	0.987
250.	24	0.95[illegible]	0.3446	1.0005	0.9918	1.0075	0.0	0.0	0.429	2.65	37.2	0.956	0.987
260.	25	0.955	0.3441	1.0023	0.9934	1.0086	0.0	0.0	0.430	2.69	37.2	0.955	0.986
270.	26	0.955	0.3442	1.0045	0.9945	1.0092	0.0	0.0	0.429	2.67	37.2	0.955	0.986
280.	27	0.97[illegible]	0.3453	1.0097	1.0026	1.0104	0.0	0.0	0.414	2.21	37.7	0.970	0.991
290.	28	[illegible]	0.3[illegible]	1.0155	1.0117	1.0114	0.0	0.0	0.401	1.76	38.1	0.964	0.995
300.	29	0.996	0.3[illegible]	1.0143	1.0126	1.0095	0.0	0.0	0.390	1.36	38.5	0.996	0.999
310.	30	1.005	0.3671	1.0111	1.0113	1.0059	0.0	0.0	0.383	1.06	38.8	1.005	1.001
320.	31	1.011	0.3662	1.0094	1.0111	1.0017	0.0	0.0	0.376	0.89	39.0	1.011	1.003
330.	32	1.015	0.3689	1.0065	1.0096	0.9982	0.0	0.0	0.375	0.75	39.2	1.015	1.005
349.	33	1.02[illegible]	0.3712	1.0048	1.0091	0.9939	0.0	0.0	0.371	0.59	39.3	1.020	1.006
350.	34	1.0[illegible]	0.3720	1.0041	1.0093	0.9935	0.0	0.0	0.368	0.45	39.4	1.025	1.008
360.	35	1.028	0.3742	1.0041	1.0099	0.9935	0.0	0.0	0.366	0.35	39.6	1.028	1.009
10.	36	1.0[illegible]1	0.3751	1.0044	1.0107	0.9937	0.0	0.0	0.364	0.27	39.6	1.031	1.010

STATOR

FLOW SWIRL= 19.[illegible]DEG PARTICLE SWIRL= 64.57DEG PSAVG= 12.04PSIA = 83032.PA
PTAVG= 13.83PSIA = 95322.PA TTAVG= 655.8DEG R = 364.3DEG K VELAVG= 552.1FPS =168.3MPS
RVELAVG= 541.2FPS = 165.0MPS AXVELAVG= 456.2FPS =139.0MPS U= 602.FPS = 183.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEC	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
29.	1	1.013	0.4564	1.0038	1.0084	0.9932	0.0	0.0	0.269	1.27	57.4	1.033	1.033
39.	2	1.013	0.4564	1.0047	1.0094	0.9934	0.0	0.0	0.269	1.25	57.5	1.033	1.033
49.	3	1.013	0.4564	1.0055	1.0101	0.9936	0.0	0.0	0.269	1.24	57.5	1.034	1.034
59.	4	1.013	0.4561	1.0072	1.0117	0.9941	0.0	0.0	0.269	1.28	57.4	1.033	1.033
69.	5	1.012	0.4555	1.0098	1.0139	0.9947	0.0	0.0	0.271	1.37	57.3	1.031	1.031
79.	6	1.011	0.4553	1.0105	1.0145	0.9949	0.0	0.0	0.272	1.43	57.3	1.030	1.030
89.	7	1.011	0.4551	1.0110	1.0149	0.9951	0.0	0.0	0.273	1.47	57.2	1.029	1.029
99.	8	1.010	0.4548	1.0101	1.0137	0.9948	0.0	0.0	0.274	1.55	57.1	1.027	1.027
109.	9	1.006	0.4545	0.9943	0.9977	0.9905	0.0	0.0	0.279	1.84	56.9	1.022	1.022
119.	10	1.003	0.4531	0.9631	0.9656	0.9875	0.0	0.0	0.287	2.34	56.4	1.012	1.012
129.	11	1.000	0.4512	0.9834	0.9849	0.9884	0.0	0.0	0.294	2.76	55.9	1.004	1.004
139.	12	0.997	0.4495	0.9845	0.9850	0.9907	0.0	0.0	0.299	3.07	55.6	0.998	0.998
149.	13	0.995	0.4479	0.9854	0.9849	0.9944	0.0	0.0	0.302	3.27	55.4	0.994	0.994
159.	14	0.995	0.4465	0.9876	0.9862	0.9989	0.0	0.0	0.305	3.42	55.3	0.991	0.991
169.	15	0.994	0.4453	0.9894	0.9873	1.0022	0.0	0.0	0.307	3.59	55.1	0.988	0.988
179.	16	0.993	0.4445	0.9904	0.9878	1.0039	0.0	0.0	0.310	3.77	54.9	0.984	0.984
189.	17	0.992	0.4438	0.9910	0.9880	1.0048	0.0	0.0	0.313	3.95	54.8	0.981	0.981
199.	18	0.990	0.4429	0.9927	0.9891	1.0056	0.0	0.0	0.317	4.17	54.5	0.977	0.977
209.	19	0.989	0.4420	0.9941	0.9901	1.0062	0.0	0.0	0.321	4.39	54.3	0.972	0.972
219.	20	0.987	0.4411	0.9963	0.9917	1.0071	0.0	0.0	0.324	4.62	54.1	0.968	0.968
229.	21	0.986	0.4404	0.9978	0.9926	1.0077	0.0	0.0	0.328	4.81	53.9	0.964	0.964
239.	22	0.984	0.4395	0.9998	0.9943	1.0085	0.0	0.0	0.331	5.03	53.7	0.960	0.960
249.	23	0.983	0.4389	1.0014	0.9955	1.0092	0.0	0.0	0.334	5.19	53.5	0.957	0.957
259.	24	0.983	0.4385	1.0025	0.9963	1.0097	0.0	0.0	0.336	5.32	53.4	0.955	0.955
269.	25	0.983	0.4384	1.0037	0.9975	1.0101	0.0	0.0	0.337	5.35	53.3	0.954	0.954
279.	26	0.983	0.4386	1.0044	0.9982	1.0103	0.0	0.0	0.336	5.31	53.4	0.955	0.955
289.	27	0.991	0.4424	1.0060	1.0021	1.0106	0.0	0.0	0.320	4.40	54.3	0.972	0.972
299.	28	0.997	0.4449	1.0117	1.0093	1.0112	0.0	0.0	0.307	3.62	55.1	0.987	0.987
309.	29	1.002	0.4476	1.0100	1.0093	1.0094	0.0	0.0	0.296	2.96	55.7	1.000	1.000
319.	30	1.005	0.4497	1.0077	1.0082	1.0065	0.0	0.0	0.289	2.51	56.2	1.009	1.009
329.	31	1.008	0.4517	1.0069	1.0087	1.0026	0.0	0.0	0.284	2.20	56.5	1.015	1.015
339.	32	1.009	0.4535	1.0046	1.0074	0.9977	0.0	0.0	0.281	1.99	56.7	1.019	1.019
349.	33	1.010	0.4547	1.0027	1.0063	0.9942	0.0	0.0	0.278	1.79	56.9	1.023	1.023
359.	34	1.011	0.4556	1.0018	1.0059	0.9926	0.0	0.0	0.275	1.59	57.1	1.027	1.027
9.	35	1.012	0.4561	1.0019	1.0062	0.9927	0.0	0.0	0.272	1.44	57.3	1.030	1.030
19.	36	1.013	0.4564	1.0023	1.0070	0.9928	0.0	0.0	0.270	1.32	57.4	1.032	1.032

STAGE 5 ROTOR

FLOW SWIRL= 22.30DEG PARTICLE SWIRL= 67.81DEG PSAVG= 12.70PSIA = 87582.PA
PTAVG= 14.04PSIA = 96770.PA TTAVG= 655.8DEG R = 364.3DEG K VELAVG= 470.3FPS =143.4MPS
RVELAVG= 688.9FPS = 210.0MPS AXVELAVG= 462.7FPS =141.0MPS U= 594.FPS = 181.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
32.	1	1.034	0.3949	1.0024	1.0100	0.9932	0.0	0.0	0.406	0.67	43.3	1.034	1.012
42.	2	1.034	0.3950	1.0033	1.0110	0.9934	0.0	0.0	0.406	0.66	43.3	1.034	1.012
52.	3	1.035	0.3951	1.0041	1.0118	0.9936	0.0	0.0	0.405	0.65	43.4	1.035	1.013
62.	4	1.034	0.3947	1.0058	1.0133	0.9941	0.0	0.0	0.406	0.68	43.3	1.034	1.012
72.	5	1.032	0.3938	1.0084	1.0155	0.9947	0.0	0.0	0.408	0.73	43.3	1.032	1.012
82.	6	1.031	0.3933	1.0092	1.0160	0.9949	0.0	0.0	0.408	0.77	43.2	1.031	1.011
92.	7	1.030	0.3929	1.0098	1.0163	0.9951	0.0	0.0	0.409	0.81	43.2	1.030	1.011
102.	8	1.026	0.3923	1.0089	1.0152	0.9948	0.0	0.0	0.410	0.86	43.1	1.028	1.010
112.	9	1.022	0.3907	0.9937	0.9991	0.9905	0.0	0.0	0.416	1.06	42.9	1.022	1.008
122.	10	1.012	0.3872	0.9833	0.9866	0.9875	0.0	0.0	0.424	1.40	42.6	1.012	1.004
132.	11	1.003	0.3837	0.9840	0.9857	0.9884	0.0	0.0	0.430	1.68	42.3	1.003	1.001
142.	12	0.997	0.3809	0.9853	0.9855	0.9907	0.0	0.0	0.435	1.88	42.1	0.997	0.999
152.	13	0.993	0.3788	0.9862	0.9855	0.9944	0.0	0.0	0.436	2.01	42.0	0.993	0.997
162.	14	0.990	0.3767	0.9883	0.9863	0.9989	0.0	0.0	0.439	2.10	41.9	0.990	0.996
172.	15	0.987	0.3740	0.9900	0.9871	1.0022	0.0	0.0	0.441	2.21	41.8	0.987	0.995
182.	16	0.984	0.3731	0.9911	0.9874	1.0039	0.0	0.0	0.443	2.33	41.7	0.984	0.994
192.	17	0.980	0.3716	0.9918	0.9873	1.0048	0.0	0.0	0.445	2.44	41.6	0.980	0.993
202.	18	0.976	0.3698	0.9936	0.9882	1.0056	0.0	0.0	0.448	2.59	41.4	0.976	0.991
212.	19	0.972	0.3680	0.9952	0.9889	1.0062	0.0	0.0	0.450	2.73	41.3	0.972	0.990
222.	20	0.967	0.3662	0.9975	0.9902	1.0071	0.0	0.0	0.453	2.88	41.1	0.967	0.988
232.	21	0.964	0.3646	0.9991	0.9911	1.0077	0.0	0.0	0.455	3.01	41.0	0.964	0.987
242.	22	0.960	0.3629	1.0012	0.9924	1.0085	0.0	0.0	0.458	3.15	40.9	0.960	0.986
252.	23	0.956	0.3615	1.0029	0.9933	1.0092	0.0	0.0	0.460	3.26	40.7	0.956	0.984
262.	24	0.954	0.3605	1.0040	0.9939	1.0097	0.0	0.0	0.461	3.34	40.7	0.954	0.984
272.	25	0.953	0.3602	1.0053	0.9950	1.0101	0.0	0.0	0.461	3.36	40.6	0.953	0.983
282.	26	0.954	0.3605	1.0059	0.9958	1.0103	0.0	0.0	0.460	3.33	40.7	0.954	0.984
292.	27	0.972	0.3673	1.0069	1.0001	1.0106	0.0	0.0	0.446	2.73	41.3	0.972	0.990
302.	28	0.987	0.3731	1.0118	1.0079	1.0112	0.0	0.0	0.436	2.21	41.8	0.987	0.995
312.	29	1.001	0.3786	1.0095	1.0085	1.0094	0.0	0.0	0.426	1.77	42.2	1.001	1.000
322.	30	1.009	0.3826	1.0069	1.0080	1.0065	0.0	0.0	0.420	1.48	42.5	1.009	1.003
332.	31	1.015	0.3857	1.0060	1.0087	1.0026	0.0	0.0	0.416	1.28	42.7	1.015	1.005
342.	32	1.019	0.3883	1.0037	1.0078	0.9977	0.0	0.0	0.414	1.15	42.9	1.019	1.007
352.	33	1.023	0.3905	1.0019	1.0071	0.9942	0.0	0.0	0.412	1.02	43.0	1.023	1.008
2.	34	1.027	0.3923	1.0009	1.0071	0.9928	0.0	0.0	0.410	0.89	43.1	1.027	1.010
12.	35	1.030	0.3936	1.0006	1.0077	0.9927	0.0	0.0	0.408	0.79	43.2	1.030	1.011
22.	36	1.033	0.3945	1.0011	1.0085	0.9928	0.0	0.0	0.406	0.71	43.3	1.033	1.012

APPENDIX B (Cont'd)

STATOR

FLOW SWIRL= 22.49DEG PARTICLE SWIRL= 72.96DEG PSAVG= 13.96PSIA = 96237.PA
PTAVG= 16.18PSIA = 111584.PA TTAVG= 681.7DEG R = 378.7DEG K VELAVG= 582.5FPS =177.5MPS
RVELAVG= 515.1FPS = 157.0MPS AXVELAVG= 460.4FPS =140.3MPS U= 588.FPS = 179.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
32.	1	1.013	0.4729	1.0044	1.0092	0.9934	0.0	0.0	0.370	2.19	53.7	1.033	1.033
42.	2	1.013	0.4729	1.0054	1.0103	0.9937	0.0	0.0	0.370	2.17	53.7	1.033	1.033
52.	3	1.013	0.4729	1.0062	1.0111	0.9939	0.0	0.0	0.369	2.16	53.7	1.033	1.033
62.	4	1.012	0.4725	1.0081	1.0127	0.9943	0.0	0.0	0.370	2.20	53.7	1.032	1.032
72.	5	1.011	0.4719	1.0109	1.0152	0.9950	0.0	0.0	0.372	2.29	53.6	1.030	1.030
82.	6	1.011	0.4717	1.0115	1.0156	0.9952	0.0	0.0	0.372	2.34	53.6	1.029	1.029
92.	7	1.011	0.4715	1.0120	1.0160	0.9953	0.0	0.0	0.373	2.38	53.5	1.028	1.028
102.	8	1.010	0.4712	1.0113	1.0150	0.9951	0.0	0.0	0.374	2.46	53.4	1.027	1.027
112.	9	1.007	0.4705	0.9974	1.0008	0.9911	0.0	0.0	0.380	2.79	53.1	1.019	1.019
122.	10	1.002	0.4687	0.9881	0.9903	0.9883	0.0	0.0	0.389	3.30	52.6	1.008	1.008
132.	11	0.998	0.4670	0.9882	0.9893	0.9888	0.0	0.0	0.395	3.69	52.2	0.999	0.999
142.	12	0.996	0.4655	0.9885	0.9887	0.9993	0.0	0.0	0.399	3.95	51.9	0.994	0.994
152.	13	0.994	0.4641	0.9884	0.9876	0.9931	0.0	0.0	0.402	4.13	51.8	0.990	0.990
162.	14	0.994	0.4627	0.9896	0.9880	0.9971	0.0	0.0	0.404	4.24	51.7	0.987	0.987
172.	15	0.993	0.4615	0.9909	0.9886	1.0008	0.0	0.0	0.406	4.35	51.5	0.985	0.985
182.	16	0.992	0.4606	0.9918	0.9890	1.0032	0.0	0.0	0.408	4.48	51.4	0.982	0.982
192.	17	0.991	0.4600	0.9923	0.9890	1.0044	0.0	0.0	0.410	4.61	51.3	0.979	0.979
202.	18	0.990	0.4591	0.9934	0.9896	1.0054	0.0	0.0	0.412	4.78	51.1	0.976	0.976
212.	19	0.989	0.4583	0.9942	0.9900	1.0060	0.0	0.0	0.415	4.95	51.0	0.972	0.972
222.	20	0.988	0.4575	0.9957	0.9909	1.0069	0.0	0.0	0.418	5.12	50.8	0.969	0.969
232.	21	0.986	0.4568	0.9965	0.9913	1.0075	0.0	0.0	0.420	5.26	50.6	0.965	0.965
242.	22	0.965	0.4560	0.9980	0.9923	1.0082	0.0	0.0	0.423	5.42	50.5	0.962	0.962
252.	23	0.984	0.4555	0.9988	0.9928	1.0089	0.0	0.0	0.425	5.54	50.4	0.959	0.959
262.	24	0.984	0.4551	0.9993	0.9930	1.0093	0.0	0.0	0.426	5.63	50.3	0.958	0.958
272.	25	0.984	0.4551	1.0000	0.9937	1.0097	0.0	0.0	0.426	5.64	50.3	0.957	0.957
282.	26	0.985	0.4554	1.0004	0.9943	1.0099	0.0	0.0	0.425	5.59	50.3	0.959	0.959
292.	27	0.993	0.4594	1.0008	0.9972	1.0097	0.0	0.0	0.412	4.75	51.2	0.976	0.976
302.	28	0.998	0.4618	1.0074	1.0052	1.0107	0.0	0.0	0.401	4.06	51.6	0.991	0.991
312.	29	1.003	0.4645	1.0062	1.0056	1.0092	0.0	0.0	0.391	3.50	52.4	1.004	1.004
322.	30	1.006	0.4664	1.0051	1.0058	1.0070	0.0	0.0	0.385	3.13	52.6	1.012	1.012
332.	31	1.008	0.4682	1.0054	1.0073	1.0046	0.0	0.0	0.381	2.86	53.0	1.018	1.018
342.	32	1.010	0.4699	1.0042	1.0072	0.9997	0.0	0.0	0.378	2.70	53.2	1.021	1.021
352.	33	1.010	0.4712	1.0028	1.0067	0.9957	0.0	0.0	0.376	2.57	53.3	1.024	1.024
2.	34	1.011	0.4721	1.0020	1.0064	0.9935	0.0	0.0	0.374	2.44	53.5	1.027	1.027
12.	35	1.012	0.4726	1.0022	1.0069	0.9929	0.0	0.0	0.372	2.32	53.6	1.030	1.030
22.	36	1.012	0.4730	1.0027	1.0076	0.9930	0.0	0.0	0.371	2.22	53.7	1.032	1.032

STAGE ROTOR

FLOW SWIRL= 24.00DEG PARTICLE SWIRL= 74.57DEG PSAVG= 14.51PSIA = 100050.PA
PTAVG= 15.98PSIA = 110152.PA TTAVG= 681.7DEG R = 378.7DEG K VELAVG= 471.0FPS =143.6MPS
RVELAVG= 726.5FPS = 221.4MPS AXVELAVG= 470.1FPS =143.3MPS U= 582.FPS = 177.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
34.	1	1.037	0.3866	1.0036	1.0105	0.9934	0.002	0.001	0.417	-5.16	41.3	1.032	1.012
44.	2	1.033	0.3875	1.0043	1.0115	0.9937	0.001	0.001	0.416	-5.21	41.3	1.033	1.013
54.	3	1.035	0.3880	1.0049	1.0123	0.9939	0.000	0.000	0.415	-5.26	41.4	1.035	1.014
64.	4	1.036	0.3884	1.0060	1.0137	0.9943	-0.001	-0.001	0.414	-5.30	41.4	1.036	1.014
74.	5	1.038	0.3890	1.0076	1.0156	0.9951	-0.004	-0.002	0.413	-5.35	41.4	1.036	1.015
84.	6	1.039	0.3893	1.0075	1.0157	0.9952	-0.005	-0.002	0.412	-5.37	41.5	1.039	1.015
94.	7	1.039	0.3895	1.0075	1.0156	0.9953	-0.006	-0.003	0.412	-5.34	41.5	1.039	1.015
104.	8	1.039	0.3895	1.0064	1.0146	0.9951	-0.008	-0.003	0.412	-5.35	41.5	1.039	1.015
114.	9	1.033	0.3876	0.9930	1.0002	0.9911	-0.008	-0.004	0.419	-5.19	41.3	1.033	1.013
124.	10	1.021	0.3835	0.9845	0.9895	0.9883	-0.009	-0.004	0.428	-4.84	40.9	1.021	1.008
134.	11	1.012	0.3799	0.9852	0.9883	0.9888	-0.008	-0.004	0.434	-4.57	40.7	1.012	1.004
144.	12	1.004	0.3768	0.9861	0.9877	0.9903	-0.005	-0.003	0.439	-4.35	40.5	1.004	1.001
154.	13	0.998	0.3738	0.9869	0.9870	0.9931	-0.006	-0.003	0.443	-4.17	40.3	0.998	0.999
164.	14	0.993	0.3710	0.9890	0.9877	0.9971	-0.004	-0.002	0.447	-4.01	40.1	0.993	0.997
174.	15	0.988	0.3685	0.9911	0.9884	1.0006	-0.003	-0.001	0.449	-3.86	40.0	0.988	0.995
184.	16	0.982	0.3663	0.9928	0.9890	1.0032	-0.001	-0.001	0.452	-3.71	39.8	0.982	0.993
194.	17	0.977	0.3638	0.9940	0.9892	1.0044	0.0	0.0	0.455	-3.55	39.7	0.977	0.991
204.	18	0.973	0.3619	0.9954	0.9896	1.0354	0.000	0.000	0.457	-3.41	39.5	0.973	0.989
214.	19	0.968	0.3601	0.9965	0.9901	1.0060	0.001	0.000	0.460	-3.26	39.4	0.968	0.988
224.	20	0.964	0.3583	0.9982	0.9906	1.0069	0.001	0.001	0.463	-3.14	39.2	0.964	0.986
234.	21	0.960	0.3567	0.9992	0.9908	1.0075	0.002	0.001	0.465	-3.03	39.1	0.960	0.985
244.	22	0.956	0.3550	1.0009	0.9916	1.0082	0.002	0.001	0.467	-2.90	39.0	0.956	0.983
254.	23	0.952	0.3538	1.0019	0.9920	1.0089	0.002	0.001	0.468	-2.61	38.9	0.953	0.982
264.	24	0.950	0.3525	1.0026	0.9922	1.0093	0.003	0.001	0.470	-2.72	38.8	0.950	0.981
274.	25	0.949	0.3521	1.0035	0.9928	1.0097	0.003	0.002	0.470	-2.66	38.8	0.949	0.980
284.	26	0.949	0.3522	1.0040	0.9934	1.0099	0.004	0.002	.465	-2.70	38.8	0.949	0.981
294.	27	0.961	0.3594	1.0037	0.9966	1.0097	0.005	0.002	0.455	-3.28	39.4	0.966	0.988
304.	28	0.983	0.3650	1.0094	1.0050	1.0107	0.005	0.002	.446	-3.73	39.8	0.983	0.993
314.	29	0.997	0.3713	1.0076	1.0059	1.0092	0.006	0.003	0.437	-4.13	40.2	0.997	0.999
324.	30	1.005	0.3741	1.0060	1.0067	1.0076	0.006	0.003	0.432	-4.39	40.5	1.005	1.002
334.	31	1.012	0.3771	1.0060	1.0078	1.0040	0.006	0.003	0.428	-4.58	40.7	1.012	1.004
344.	32	1.016	0.3795	1.0047	1.0077	.9997	0.006	0.002	.426	-4.75	40.8	1.016	1.006
354.	33	1.019	0.3816	1.0030	1.0074	0.9957	0.005	0.002	.424	-4.80	40.9	1.019	1.007
4.	34	1.023	0.3834	1.0027	1.0073	0.9935	0.005	0.002	0.422	-4.91	41.0	1.023	1.009
14.	35	1.026	0.3848	1.0021	1.0079	0.9924	0.004	0.002	0.420	-5.01	41.1	1.026	1.010
24.	36	1.029	0.3854	1.0024	1.0087	0.9930	0.004	0.002	0.419	-5.09	41.2	1.029	1.011

STATOR

FLOW SWIRL= 23.46DEG
PTAVG= 18.24PSIA = 125726.PA
FVELAVG= 533.1FPS = 162.6MPS

PARTICLE SWIRL= 78.28DEG
TTAVG= 739.3DEG R = 394.1DEG K
AXVELAVG= 454.2FPS =138.5MPS

PSAVG= 16.12PSIA = 111119.PA
VELAVG= 543.7FPS =165.7MPS
U= 578.FPS = 176.MPS

THETA	SEC NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEC	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
33.	1	1.012	0.4315	1.0045	1.0086	0.9933	0.0	0.0	0.252	-7.23	58.2	1.030	1.030
43.	2	1.014	0.4317	1.0054	1.0096	0.9935	0.0	0.0	0.251	-7.31	58.3	1.032	1.032
53.	3	1.014	0.4319	1.0060	1.0104	0.9938	0.0	0.0	0.250	-7.38	58.4	1.033	1.033
63.	4	1.015	0.4321	1.0071	1.0116	0.9941	0.0	0.0	0.249	-7.45	58.4	1.035	1.035
73.	5	1.016	0.4323	1.0085	1.0131	0.9947	0.0	0.0	0.247	-7.54	58.5	1.036	1.036
83.	6	1.016	0.4326	1.0086	1.0133	0.9946	0.0	0.0	0.247	-7.58	58.6	1.037	1.037
93.	7	1.016	0.4324	1.0088	1.0125	0.9950	0.0	0.0	0.246	-7.60	58.6	1.036	1.036
103.	8	1.016	0.4324	1.0078	1.0125	0.9949	0.0	0.0	0.247	-7.58	58.6	1.037	1.037
113.	9	1.011	0.4311	0.9968	1.0006	0.9915	0.0	0.0	0.253	-7.15	58.2	1.029	1.029
123.	10	1.005	0.4287	0.9962	0.9927	0.9883	0.0	0.0	0.263	-6.49	57.5	1.015	1.015
133.	11	1.001	0.4271	0.9951	0.9916	0.9894	0.0	0.0	0.270	-6.05	57.1	1.007	1.007
143.	12	0.998	0.4256	0.9963	0.9910	0.9904	0.0	0.0	0.275	-5.69	56.7	1.000	1.000
153.	13	0.995	0.4242	0.9953	0.9900	0.9924	0.0	0.0	0.279	-5.38	56.4	0.993	0.993
163.	14	0.993	0.4223	0.9915	0.9903	0.9959	0.0	0.0	0.283	-5.13	56.1	0.989	0.989
173.	15	0.992	0.4204	0.9927	0.9907	0.9996	0.0	0.0	0.285	-4.93	55.9	0.985	0.985
183.	16	0.991	0.4197	0.9940	0.9912	1.0025	0.0	0.0	0.288	-4.73	55.7	0.981	0.981
193.	17	0.989	0.4187	0.9948	0.9916	1.0042	0.0	0.0	0.291	-4.51	55.5	0.977	0.977
203.	18	0.988	0.4179	0.9957	0.9920	1.0053	0.0	0.0	0.294	-4.32	55.3	0.973	0.973
213.	19	0.987	0.4171	0.9964	0.9922	1.0061	0.0	0.0	0.296	-4.12	55.1	0.969	0.969
223.	20	0.985	0.4163	0.9977	0.9931	1.0070	0.0	0.0	0.299	-3.92	54.9	0.965	0.965
233.	21	0.984	0.4157	0.9980	0.9930	1.0076	0.0	0.0	0.301	-3.76	54.8	0.962	0.962
243.	22	0.983	0.4150	0.9988	0.9935	1.0083	0.0	0.0	0.303	-3.60	54.6	0.959	0.959
253.	23	0.982	0.4146	0.9989	0.9933	1.0089	0.0	0.0	0.305	-3.49	54.5	0.957	0.957
263.	24	0.981	0.4141	0.9990	0.9932	1.0094	0.0	0.0	0.306	-3.37	54.4	0.955	0.955
273.	25	0.981	0.4141	0.9991	0.9933	1.0097	0.0	0.0	0.306	-3.35	54.4	0.955	0.955
283.	26	0.982	0.4143	0.9993	0.9936	1.0099	0.0	0.0	0.306	-3.39	54.4	0.955	0.955
293.	27	0.987	0.4187	0.9974	0.9942	1.0091	0.0	0.0	0.293	-4.39	55.4	0.974	0.974
303.	28	0.997	0.4208	1.0042	1.0021	1.0100	0.0	0.0	0.263	-5.09	56.1	0.988	0.988
313.	29	1.002	0.4232	1.0034	1.0026	1.0087	0.0	0.0	0.274	-5.71	56.7	1.000	1.000
323.	30	1.005	0.4248	1.0033	1.0035	1.0071	0.0	0.0	0.269	-6.10	57.1	1.006	1.006
333.	31	1.007	0.4263	1.0044	1.0055	1.0046	0.0	0.0	0.264	-6.40	57.4	1.014	1.014
343.	32	1.008	0.4277	1.0044	1.0063	1.0011	0.0	0.0	0.262	-6.57	57.6	1.017	1.017
353.	33	1.009	0.4291	1.0036	1.0063	0.9972	0.0	0.0	0.260	-6.71	57.7	1.020	1.020
3.	34	1.011	0.4300	1.0029	1.0067	0.9943	0.0	0.0	0.258	-6.84	57.6	1.022	1.022
13.	35	1.011	0.4307	1.0029	1.0065	0.9932	0.0	0.0	0.256	-6.98	58.0	1.025	1.025
23.	36	1.012	0.4311	1.0033	1.0071	0.9929	0.0	0.0	0.254	-7.10	58.1	1.026	1.026

STAGE [illegible]
ROTOR

FLOW SWIRL= 25.44DEG
PTAVG= 18.15PSIA = 125142.PA
FVELAVG= 674.3FPS = 205.5MPS

PARTICLE SWIRL= 80.36DEG
TTAVG= 739.2DEG R = 394.1DEG K
AXVELAVG= 460.1FPS =140.2MPS

PSAVG= 16.57PSIA = 114270.PA
VELAVG= 467.2FPS =142.4MPS
U= 574.FPS = 175.MPS

THETA	SEC NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEC	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
36.	1	1.028	0.3748	1.0061	1.0119	0.9933	0.0	0.0	0.340	-4.06	44.0	1.026	1.011
46.	2	1.030	0.3754	1.0069	1.0130	0.9935	0.0	0.0	0.339	-4.12	44.0	1.030	1.011
56.	3	1.032	0.3759	1.0074	1.0139	0.9938	0.0	0.0	0.338	-4.16	44.1	1.032	1.012
66.	4	1.033	0.3764	1.0084	1.0151	0.9941	0.0	0.0	0.337	-4.21	44.1	1.033	1.013
76.	5	1.035	0.3770	1.0097	1.0167	0.9947	0.0	0.0	0.336	-4.28	44.2	1.035	1.013
86.	6	1.036	0.3777	1.0098	1.0170	0.9949	0.0	0.0	0.335	-4.30	44.2	1.036	1.014
96.	7	1.036	0.3774	1.0100	1.0172	0.9950	0.0	0.0	0.335	-4.31	44.2	1.036	1.014
106.	8	1.036	0.3773	1.0090	1.0162	0.9940	0.0	0.0	0.335	-4.31	44.2	1.036	1.014
116.	9	1.027	0.3745	0.9984	1.0041	0.9915	0.0	0.0	0.343	-4.01	43.9	1.027	1.010
126.	10	1.014	0.3700	0.9919	0.9953	0.9893	0.0	0.0	0.352	-3.58	43.5	1.014	1.005
136.	11	1.005	0.3668	0.9917	0.9935	0.9894	0.0	0.0	0.357	-3.30	43.2	1.005	1.002
146.	12	0.998	0.3641	0.9918	0.9922	0.9904	0.0	0.0	0.362	-3.07	43.0	0.998	0.999
156.	13	0.993	0.3616	0.9912	0.9904	0.9924	0.0	0.0	0.365	-2.88	42.8	0.993	0.997
166.	14	0.988	0.3594	0.9919	0.9901	0.9959	0.0	0.0	0.368	-2.74	42.6	0.986	0.996
176.	15	0.985	0.3574	0.9928	0.9900	0.9996	0.0	0.0	0.370	-2.62	42.5	0.985	0.994
186.	16	0.981	0.3556	0.9936	0.9899	1.0025	0.0	0.0	0.372	-2.50	42.4	0.981	0.993
196.	17	0.978	0.3539	0.9941	0.9895	1.0042	0.0	0.0	0.374	-2.38	42.3	0.978	0.992
206.	18	0.974	0.3524	0.9946	0.9894	1.0053	0.0	0.0	0.376	-2.26	42.2	0.974	0.990
216.	19	0.971	0.3511	0.9948	0.9889	1.0061	0.0	0.0	0.378	-2.15	42.1	0.971	0.989
226.	20	0.968	0.3497	0.9955	0.9890	1.0070	0.0	0.0	0.380	-2.04	41.9	0.968	0.988
236.	21	0.965	0.3487	0.9952	0.9882	1.0076	0.0	0.0	0.381	-1.96	41.9	0.965	0.987
246.	22	0.963	0.3476	0.9955	0.9880	1.0083	0.0	0.0	0.383	-1.87	41.6	0.963	0.986
256.	23	0.961	0.3469	0.9953	0.9874	1.0089	0.0	0.0	0.384	-1.81	41.7	0.961	0.985
266.	24	0.959	0.3461	0.9950	0.9868	1.0094	0.0	0.0	0.385	-1.75	41.6	0.959	0.985
276.	25	0.959	0.3459	0.9950	0.9867	1.0097	0.0	0.0	0.385	-1.73	41.6	0.959	0.985
286.	26	0.959	0.3461	0.9953	0.9871	1.0099	0.0	0.0	0.384	-1.76	41.7	0.959	0.985
296.	27	0.970	0.3523	0.9963	0.9910	1.0091	0.0	0.0	0.371	-2.31	42.2	0.976	0.991
306.	28	0.988	0.3567	1.0041	1.0009	1.0100	0.0	0.0	0.364	-2.73	42.6	0.986	0.995
316.	29	0.999	0.3611	1.0042	1.0031	1.0087	0.0	0.0	0.357	-3.10	43.0	0.999	1.000
326.	30	1.007	0.3641	1.0043	1.0046	1.0071	0.0	0.0	0.353	-3.35	43.2	1.007	1.002
336.	31	1.012	0.3667	1.0055	1.0073	1.0046	0.0	0.0	0.349	-3.54	43.4	1.012	1.005
346.	32	1.016	0.3686	1.0056	1.0083	1.0011	0.0	0.0	0.347	-3.65	43.5	1.016	1.006
356.	33	1.018	0.3703	1.0051	1.0066	0.9972	0.0	0.0	0.345	-3.74	43.6	1.018	1.007
6.	34	1.021	0.3718	1.0045	1.0088	0.9943	0.0	0.0	0.344	-3.82	43.7	1.021	1.006
16.	35	1.023	0.3730	1.0045	1.0094	0.9932	0.0	0.0	0.343	-3.90	43.8	1.023	1.009
26.	36	1.026	0.3739	1.0049	1.0103	0.9929	0.0	0.0	0.341	-3.98	43.9	1.026	1.010

APPENDIX B (Cont'd)

STATOR

FLOW SWIRL= 25.43DEG PARTICLE SWIRL= 84.78DEG PSAVG= 17.76PSIA = 122435.PA
PTAVG= [illegible].17PSIA = 129075.PA TTAVG= 735.8DEG R = 408.8DEG K VELAVG= 562.3FPS =171.4MPS
FVELAVG= 570.5FPS = 1[illegible].6MPS AXVELAVG= 458.9FPS =139.8MPS U= 571.FPS = 174.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEC	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
35.	1	1.011	0.4379	1.0079	1.0117	0.9933	0.0	0.0	0.268	-9.65	56.0	1.027	1.027
45.	2	1.012	0.4381	1.0090	1.0128	0.9935	0.0	0.0	0.267	-9.73	56.0	1.029	1.029
55.	3	1.013	0.4383	1.0095	1.0136	0.9937	0.0	0.0	0.266	-9.78	56.1	1.030	1.030
65.	4	1.013	0.4385	1.0105	1.0147	0.9940	0.0	0.0	0.264	-9.85	56.2	1.031	1.031
75.	5	1.014	0.4387	1.0116	1.0160	0.9945	0.0	0.0	0.263	-9.94	56.2	1.033	1.033
85.	6	1.014	0.4388	1.0120	1.0164	0.9947	0.0	0.0	0.262	-9.97	56.3	1.034	1.034
95.	7	1.014	0.4388	1.0122	1.0166	0.9949	0.0	0.0	0.262	-9.99	56.3	1.034	1.034
105.	8	1.014	0.4388	1.0114	1.0158	0.9947	0.0	0.0	0.262	-9.97	56.3	1.034	1.034
115.	9	1.005	0.4370	1.0027	1.0061	0.9921	0.0	0.0	0.270	-9.49	55.8	1.023	1.023
125.	10	[illegible]	0.4346	0.9972	0.9991	0.9902	0.0	0.0	0.281	-8.84	55.1	1.010	1.010
135.	11	[illegible]	0.4333	0.9957	0.9968	0.9901	0.0	0.0	0.287	-8.48	54.8	1.002	1.002
145.	12	0.997	[illegible]	0.9948	0.9950	0.9906	0.0	0.0	0.292	-8.19	54.5	0.996	0.996
155.	13	0.995	0.4306	0.9931	0.9927	0.9920	0.0	0.0	0.296	-7.93	54.2	0.990	0.990
165.	14	0.993	0.4292	0.9929	0.9917	0.9948	0.0	0.0	0.299	-7.74	54.0	0.986	0.986
175.	15	0.992	0.4279	0.9930	0.9910	0.9983	0.0	0.0	0.302	-7.59	53.9	0.983	0.983
185.	16	0.991	0.4269	0.9933	0.9907	1.0014	0.0	0.0	0.304	-7.46	53.8	0.981	0.981
195.	17	[illegible]	0.4260	0.9932	0.9901	1.0036	0.0	0.0	0.306	-7.32	53.6	0.978	0.978
205.	18	[illegible]	0.4253	0.9931	0.9897	1.0049	0.0	0.0	0.308	-7.19	53.5	0.975	0.975
215.	19	[illegible]	0.4247	0.9927	0.9889	1.0057	0.0	0.0	0.310	-7.06	53.4	0.972	0.972
225.	20	0.987	0.4241	0.9929	0.9887	1.0066	0.0	0.0	0.312	-6.93	53.2	0.970	0.970
235.	21	[illegible]	0.4236	0.9921	0.9877	1.0072	0.0	0.0	0.313	-6.83	53.1	0.968	0.968
245.	22	0.985	0.4231	0.9920	0.9872	1.0079	0.0	0.0	0.315	-6.72	53.0	0.965	0.965
255.	23	[illegible]	0.4228	0.9913	0.9864	1.0084	0.0	0.0	0.316	-6.65	53.0	0.964	0.964
265.	24	[illegible]	0.4224	0.9907	0.9856	1.0089	0.0	0.0	0.318	-6.57	52.9	0.962	0.962
275.	25	[illegible]	0.4224	[illegible]	0.9853	1.0094	0.0	0.0	0.317	-6.57	52.9	0.962	0.962
285.	26	[illegible]	0.4226	0.9906	0.9856	1.0096	0.0	0.0	0.317	-6.62	52.9	0.963	0.963
295.	27	[illegible]	[illegible]	[illegible]	0.9882	1.0091	0.0	0.0	[illegible]	-7.45	53.7	0.980	0.980
305.	28	[illegible]	0.4292	1.0005	0.9986	1.0100	0.0	0.0	0.295	-7.98	54.3	0.991	0.991
315.	29	1.002	0.4302	1.0020	1.0013	1.0088	0.0	0.0	0.287	-8.46	54.8	1.001	1.001
325.	30	1.004	0.4318	1.0036	1.0037	1.0075	0.0	0.0	0.282	-8.76	55.1	1.006	1.006
335.	31	1.007	0.4337	1.0056	1.0065	1.0057	0.0	0.0	0.278	-9.02	55.3	1.013	1.013
345.	32	[illegible]	0.4342	1.0065	1.0082	1.0026	0.0	0.0	0.275	-9.17	55.5	1.017	1.017
355.	33	1.009	0.4355	1.0065	1.0089	0.9968	0.0	0.0	0.274	-9.26	55.6	1.019	1.019
5.	34	[illegible]	0.4364	1.0062	1.0091	0.9956	0.0	0.0	0.272	-9.36	55.7	1.021	1.021
15.	35	1.010	0.4371	1.0063	1.0096	0.9937	0.0	0.0	0.271	-9.45	55.8	1.023	1.023
25.	36	1.010	0.4375	1.0067	1.0103	0.9931	0.0	0.0	0.270	-9.54	55.8	1.025	1.025

STAGE [illegible]
ROTOR

FLOW SWIRL= 27.30DEG PARTICLE SWIRL= 86.73DEG PSAVG= 18.56PSIA = 127963.PA
PTAVG= [illegible]PSIA = 14[illegible].PA TTAVG= 735.8DEG R = 408.8DEG K VELAVG= 483.5FPS =147.4MPS
FVELAVG= [illegible].9FPS = [illegible].5MPS AXVELAVG= 477.3FPS =145.5MPS U= 563.FPS = 172.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEC	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
37.	1	1.017	0.3774	1.0093	1.0133	0.9933	0.009	0.004	0.360	-5.26	45.1	1.017	1.007
47.	2	1.019	0.3774	1.0102	1.0144	0.9935	0.009	0.004	0.359	-5.32	45.1	1.019	1.008
57.	3	[illegible]	0.3777	1.0108	1.0152	0.9937	0.010	0.004	0.359	-5.35	45.2	1.020	1.008
67.	4	1.020	0.3780	1.0118	1.0163	0.9940	0.010	0.005	0.358	-5.38	45.2	1.020	1.008
77.	5	1.022	0.3784	1.0131	1.0177	0.9945	0.011	0.005	0.357	-5.42	45.2	1.022	1.009
87.	6	1.022	0.3785	1.0133	1.0181	0.9947	0.012	0.005	0.357	-5.43	45.2	1.022	1.009
97.	7	1.022	0.3785	1.0136	1.0184	0.9949	0.012	0.005	0.357	-5.44	45.2	1.022	1.009
107.	8	1.022	0.3785	1.0128	1.0175	0.9947	0.011	0.005	0.357	-5.43	45.2	1.022	1.009
117.	9	1.017	0.3774	1.0038	1.0078	0.9921	0.006	0.003	0.361	-5.27	45.1	1.017	1.007
127.	10	1.010	0.3748	0.9977	1.0006	0.9903	-0.000	-0.000	0.367	-5.05	44.8	1.010	1.004
137.	11	1.006	0.3731	0.9957	0.9978	0.9901	-0.003	-0.001	0.370	-4.89	44.7	1.006	1.002
147.	12	1.002	0.3718	0.9941	0.9952	0.9906	-0.005	-0.002	0.372	-4.77	44.6	1.002	1.001
157.	13	0.998	0.3699	0.9921	0.9925	0.9920	-0.007	-0.003	0.375	-4.65	44.5	0.998	0.999
167.	14	0.995	0.3683	0.9916	0.9911	0.9948	-0.008	-0.003	0.377	-4.55	44.4	0.995	0.998
177.	15	0.993	0.3667	0.9914	0.9902	0.9983	-0.008	-0.004	0.379	-4.47	44.3	0.993	0.997
187.	16	0.991	0.3653	0.9915	0.9896	1.0014	-0.008	-0.004	0.380	-4.39	44.2	0.991	0.996
197.	17	0.988	0.3639	0.9913	0.9887	1.0036	-0.009	-0.004	0.381	-4.31	44.1	0.988	0.995
207.	18	0.986	0.3629	0.9911	0.9880	1.0049	-0.009	-0.004	0.382	-4.24	44.0	0.986	0.994
217.	19	0.984	0.3619	0.9906	0.9869	1.0057	-0.010	-0.004	0.383	-4.17	44.0	0.984	0.993
227.	20	0.982	0.3612	0.9904	0.9864	1.0066	-0.011	-0.005	0.384	-4.12	43.9	0.982	0.993
237.	21	[illegible]	0.3604	0.9896	0.9853	1.0072	-0.011	-0.005	0.385	-4.05	43.9	0.980	0.992
247.	22	0.979	0.3597	0.9893	0.9846	1.0079	-0.012	-0.005	0.386	-4.00	43.8	0.979	0.991
257.	23	0.977	[illegible]	0.9887	0.9836	1.0084	-0.012	-0.005	0.387	-3.95	43.7	0.977	0.991
267.	24	0.976	0.3583	0.9881	0.9827	1.0089	-0.012	-0.005	0.388	-3.89	43.7	0.976	0.990
277.	25	0.975	0.3578	0.9882	0.9826	1.0094	-0.011	-0.005	0.388	-3.86	43.7	0.975	0.990
287.	26	0.974	0.3577	0.9886	0.9830	1.0096	-0.010	-0.005	0.388	-3.65	43.6	0.974	0.990
297.	27	0.978	0.3591	0.9930	0.9879	1.0091	-0.000	-0.000	0.385	-3.96	43.8	0.978	0.991
307.	28	0.988	0.3627	1.0022	0.9985	1.0100	0.001	0.001	0.377	-4.30	44.1	0.988	0.995
317.	29	0.995	0.3655	1.0038	1.0019	1.0088	0.005	0.007	0.373	-4.53	44.3	0.995	0.998
327.	30	1.000	0.3677	1.0053	1.0045	1.0075	0.006	0.003	0.370	-4.70	44.5	1.000	1.000
337.	31	1.004	0.3696	1.0072	1.0074	1.0057	0.008	0.004	0.367	-4.84	44.6	1.004	1.002
347.	32	1.007	0.3714	1.0081	1.0092	1.0026	0.008	0.004	0.364	-4.95	44.8	1.007	1.003
357.	33	1.010	0.3730	1.0081	1.0100	0.9988	0.008	0.004	0.363	-5.03	44.8	1.010	1.004
7.	34	1.012	0.3744	1.0078	1.0104	0.9956	0.008	0.004	0.362	-5.10	44.9	1.012	1.005
17.	35	1.014	0.3755	1.0078	1.0110	0.9937	0.008	0.004	0.362	-5.16	45.0	1.014	1.006
27.	36	1.016	0.3763	1.0082	1.0118	0.9931	0.008	0.004	0.361	-5.22	45.0	1.016	1.006

STATOR

FLOW SWIRL= 27.6[illegible]DEG PARTICLE SWIRL= 92.27DEG PSAVG= 19.81PSIA = 136593.PA
PTAVG= 22.89PSIA = 157826.PA TTAVG= 758.7DEG R = 421.5DEG K VELAVG= 607.3FPS =185.1MPS
PVELAVG= 521.1FPS = 158.8MPS AXVELAVG= 484.5FPS =147.7MPS U= 556.FPS = 170.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
38.	1	1.008	0.4657	1.0072	1.0107	0.9929	0.0	0.0	0.238	-14.28	53.7	1.018	1.018
48.	2	1.009	0.4659	1.0079	1.0116	0.9930	0.0	0.0	0.237	-14.34	53.7	1.020	1.020
58.	3	1.009	0.4660	1.0085	1.0123	0.9931	0.0	0.0	0.236	-14.37	53.8	1.020	1.020
68.	4	1.010	0.4662	1.0094	1.0132	0.9934	0.0	0.0	0.235	-14.41	53.8	1.021	1.021
78.	5	1.010	0.4663	1.0104	1.0143	0.9937	0.0	0.0	0.234	-14.46	53.9	1.022	1.022
88.	6	1.010	0.4664	1.0107	1.0147	0.9939	0.0	0.0	0.234	-14.48	53.9	1.023	1.023
98.	7	1.010	0.4664	1.0109	1.0149	0.9941	0.0	0.0	0.234	-14.49	53.9	1.023	1.023
108.	8	1.010	0.4663	1.0103	1.0142	0.9940	0.0	0.0	0.234	-14.47	53.9	1.023	1.023
118.	9	1.007	0.4651	1.0035	1.0067	0.9919	0.0	0.0	0.240	-14.20	53.6	1.016	1.016
128.	10	1.003	0.4637	0.9991	1.0014	0.9905	0.0	0.0	0.246	-13.88	53.3	1.006	1.006
138.	11	1.001	0.4627	0.9973	0.9989	0.9902	0.0	0.0	0.250	-13.68	53.1	1.004	1.004
148.	12	0.999	0.4618	0.9959	0.9970	0.9906	0.0	0.0	0.254	-13.51	52.9	1.000	1.000
158.	13	0.997	0.4605	0.9942	0.9946	0.9916	0.0	0.0	0.257	-13.34	52.7	0.996	0.996
168.	14	0.995	0.4592	0.9936	0.9931	0.9938	0.0	0.0	0.260	-13.21	52.6	0.992	0.992
178.	15	0.994	0.4579	0.9933	0.9920	0.9969	0.0	0.0	0.261	-13.10	52.5	0.990	0.990
188.	16	0.994	0.4568	0.9933	0.9913	1.0002	0.0	0.0	0.263	-13.02	52.4	0.988	0.988
198.	17	0.993	0.4559	0.9932	0.9907	1.0028	0.0	0.0	0.264	-12.94	52.3	0.986	0.986
208.	18	0.992	0.4553	0.9930	0.9901	1.0046	0.0	0.0	0.266	-12.87	52.3	0.985	0.985
218.	19	0.992	0.4547	0.9926	0.9893	1.0057	0.0	0.0	0.267	-12.79	52.2	0.983	0.983
228.	20	0.991	0.4542	0.9924	0.9889	1.0066	0.0	0.0	0.268	-12.73	52.1	0.981	0.981
238.	21	0.990	0.4537	0.9918	0.9880	1.0073	0.0	0.0	0.270	-12.66	52.1	0.979	0.979
248.	22	0.990	0.4533	0.9915	0.9874	1.0080	0.0	0.0	0.271	-12.60	52.0	0.978	0.978
258.	23	0.989	0.4528	0.9911	0.9867	1.0086	0.0	0.0	0.272	-12.53	51.9	0.976	0.976
268.	24	0.989	0.4524	0.9906	0.9860	1.0092	0.0	0.0	0.274	-12.46	51.9	0.975	0.975
278.	25	0.988	0.4521	0.9906	0.9858	1.0097	0.0	0.0	0.274	-12.42	51.8	0.974	0.974
288.	26	0.989	0.4521	0.9909	0.9861	1.0101	0.0	0.0	0.274	-12.43	51.8	0.974	0.974
298.	27	0.992	0.4536	0.9941	0.9902	1.0104	0.0	0.0	0.270	-12.64	52.0	0.979	0.979
308.	28	0.997	0.4562	1.0006	0.9982	1.0108	0.0	0.0	0.260	-13.13	52.5	0.991	0.991
318.	29	1.000	0.4578	1.0020	1.0006	1.0094	0.0	0.0	0.255	-13.41	52.8	0.997	0.997
328.	30	1.002	0.4591	1.0035	1.0028	1.0061	0.0	0.0	0.251	-13.62	53.0	1.002	1.002
338.	31	1.004	0.4604	1.0052	1.0054	1.0064	0.0	0.0	0.247	-13.81	53.2	1.007	1.007
348.	32	1.006	0.4618	1.0062	1.0072	1.0039	0.0	0.0	0.244	-13.95	53.3	1.010	1.010
358.	33	1.007	0.4631	1.0063	1.0083	1.0004	0.0	0.0	0.243	-14.05	53.4	1.012	1.012
8.	34	1.007	0.4642	1.0062	1.0088	0.9968	0.0	0.0	0.241	-14.11	53.5	1.014	1.014
18.	35	1.007	0.4649	1.0061	1.0092	0.9943	0.0	0.0	0.240	-14.16	53.6	1.015	1.015
28.	36	1.008	0.4653	1.0063	1.0096	0.9931	0.0	0.0	0.239	-14.21	53.6	1.016	1.016

STAGE 9
ROTOR

FLOW SWIRL= 30.45DEG PARTICLE SWIRL= 95.04DEG PSAVG= 20.29PSIA = 139895.PA
PTAVG= 22.58PSIA = 155700.PA TTAVG= 758.7DEG R = 421.5DEG K VELAVG= 524.0FPS =159.7MPS
PVELAVG= 625.6FPS = 190.7MPS AXVELAVG= 495.0FPS =150.9MPS U= 554.FPS = 169.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
40.	1	1.020	0.4042	1.0054	1.0104	0.9929	0.0	0.0	0.243	-9.20	53.1	1.020	1.009
50.	2	1.021	0.4048	1.0059	1.0113	0.9930	0.0	0.0	0.242	-9.26	53.2	1.021	1.010
60.	3	1.022	0.4052	1.0064	1.0120	0.9931	0.0	0.0	0.241	-9.29	53.2	1.022	1.010
70.	4	1.023	0.4055	1.0072	1.0130	0.9934	0.0	0.0	0.240	-9.33	53.2	1.023	1.011
80.	5	1.024	0.4060	1.0080	1.0140	0.9937	0.0	0.0	0.239	-9.38	53.3	1.024	1.011
90.	6	1.025	0.4062	1.0082	1.0144	0.9939	0.0	0.0	0.239	-9.41	53.3	1.025	1.012
100.	7	1.025	0.4062	1.0084	1.0146	0.9941	0.0	0.0	0.236	-9.42	53.3	1.025	1.012
110.	8	1.025	0.4061	1.0079	1.0140	0.9940	0.0	0.0	0.239	-9.40	53.3	1.025	1.011
120.	9	1.017	0.4035	1.0020	1.0067	0.9919	0.0	0.0	0.246	-9.11	53.0	1.017	1.006
130.	10	1.009	0.4002	0.9987	1.0015	0.9905	0.0	0.0	0.252	-8.76	52.7	1.009	1.004
140.	11	1.003	0.3981	0.9975	0.9992	0.9902	0.0	0.0	0.256	-8.55	52.4	1.003	1.001
150.	12	0.999	0.3963	0.9965	0.9972	0.9906	0.0	0.0	0.259	-8.38	52.3	0.999	1.000
160.	13	0.995	0.3943	0.9952	0.9949	0.9916	0.0	0.0	0.263	-8.20	52.1	0.995	0.996
170.	14	0.991	0.3925	0.9947	0.9935	0.9938	0.0	0.0	0.265	-8.06	52.0	0.991	0.996
180.	15	0.989	0.3908	0.9946	0.9924	0.9969	0.0	0.0	0.267	-7.96	51.9	0.989	0.995
190.	16	0.987	0.3894	0.9947	0.9917	1.0002	0.0	0.0	0.268	-7.88	51.8	0.987	0.994
200.	17	0.985	0.3880	0.9946	0.9910	1.0028	0.0	0.0	0.269	-7.80	51.7	0.985	0.993
210.	18	0.983	0.3870	0.9945	0.9904	1.0046	0.0	0.0	0.270	-7.73	51.6	0.983	0.992
220.	19	0.981	0.3860	0.9943	0.9896	1.0057	0.0	0.0	0.271	-7.65	51.6	0.981	0.991
230.	20	0.980	0.3853	0.9942	0.9891	1.0066	0.0	0.0	0.271	-7.59	51.5	0.980	0.991
240.	21	0.978	0.3843	0.9937	0.9882	1.0073	0.0	0.0	0.273	-7.52	51.4	0.978	0.990
250.	22	0.976	0.3836	0.9935	0.9876	1.0080	0.0	0.0	0.274	-7.46	51.4	0.976	0.989
260.	23	0.975	0.3828	0.9932	0.9868	1.0086	0.0	0.0	0.275	-7.39	51.3	0.975	0.989
270.	24	0.973	0.3820	0.9924	0.9861	1.0092	0.0	0.0	0.276	-7.32	51.2	0.973	0.988
280.	25	0.972	0.3816	0.9929	0.9859	1.0097	0.0	0.0	0.276	-7.28	51.2	0.972	0.987
290.	26	0.972	0.3816	0.9931	0.9862	1.0101	0.0	0.0	0.276	-7.29	51.2	0.972	0.987
300.	27	0.978	0.3837	0.9960	0.9900	1.0104	0.0	0.0	0.271	-7.51	51.4	0.978	0.990
310.	28	0.990	0.3886	1.0015	0.9981	1.0106	0.0	0.0	0.261	-8.01	51.9	0.990	0.995
320.	29	0.997	0.3917	1.0023	1.0006	1.0094	0.0	0.0	0.256	-8.29	52.2	0.997	0.999
330.	30	1.002	0.3941	1.0033	1.0028	1.0081	0.0	0.0	0.253	-8.51	52.4	1.002	1.001
340.	31	1.007	0.3964	1.0045	1.0053	1.0064	0.0	0.0	0.250	-8.70	52.6	1.007	1.003
350.	32	1.011	0.3984	1.0051	1.0070	1.0039	0.0	0.0	0.247	-8.85	52.8	1.011	1.005
0.	33	1.014	0.4002	1.0051	1.0079	1.0004	0.0	0.0	0.245	-8.95	52.9	1.014	1.006
10.	34	1.015	0.4015	1.0048	1.0084	0.9968	0.0	0.0	0.245	-9.01	52.9	1.015	1.007
20.	35	1.016	0.4026	1.0047	1.0089	0.9943	0.0	0.0	0.244	-9.07	53.0	1.016	1.007
30.	36	1.018	0.4034	1.0047	1.0094	0.9931	0.0	0.0	0.244	-9.12	53.0	1.018	1.008

STATOR

FLOW SWIRL= 34.17DEG PARTICLE SWIRL=104.24DEG PSAVG= 22.47PSIA = 154892.PA
PTAVG= 26.04PSIA = 179538.PA TTAVG= 789.8DEG R = 438.8DEG K VELAVG= 626.3FPS =190.9MPS
RVELAVG= 524.4FPS = 159.8MPS AXVELAVG= 494.9FPS =150.9MPS U= 557.FPS = 170.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
44.	1	1.010	0.4717	1.0049	1.0089	0.9933	0.0	0.0	0.177	-3.94	53.0	1.021	1.021
54.	2	1.010	0.4720	1.0052	1.0094	0.9932	0.0	0.0	0.176	-4.00	53.1	1.022	1.022
64.	3	1.011	0.4722	1.0056	1.0099	0.9934	0.0	0.0	0.175	-4.05	53.1	1.023	1.023
74.	4	1.011	0.4724	1.0059	1.0104	0.9936	0.0	0.0	0.174	-4.10	53.2	1.025	1.025
84.	5	1.012	0.4728	1.0063	1.0109	0.9939	0.0	0.0	0.172	-4.17	53.3	1.027	1.027
94.	6	1.012	0.4728	1.0065	1.0112	0.9941	0.0	0.0	0.171	-4.19	53.3	1.027	1.027
104.	7	1.013	0.4728	1.0067	1.0114	0.9943	0.0	0.0	0.171	-4.20	53.3	1.027	1.027
114.	8	1.012	0.4726	1.0064	1.0110	0.9942	0.0	0.0	0.172	-4.17	53.3	1.027	1.027
124.	9	1.007	0.4705	1.0038	1.0070	0.9926	0.0	0.0	0.181	-3.78	52.9	1.017	1.017
134.	10	1.002	0.4685	1.0015	1.0034	0.9914	0.0	0.0	0.190	-3.40	52.5	1.007	1.007
144.	11	1.000	0.4675	0.9999	1.0013	0.9908	0.0	0.0	0.196	-3.18	52.3	1.002	1.002
154.	12	0.998	0.4665	0.9988	0.9995	0.9908	0.0	0.0	0.200	-2.99	52.1	0.997	0.997
164.	13	0.995	0.4652	0.9976	0.9975	0.9913	0.0	0.0	0.205	-2.79	51.9	0.992	0.992
174.	14	0.994	0.4639	0.9966	0.9959	0.9929	0.0	0.0	0.208	-2.64	51.7	0.988	0.988
184.	15	0.992	0.4627	0.9962	0.9945	0.9954	0.0	0.0	0.211	-2.53	51.6	0.986	0.986
194.	16	0.991	0.4616	0.9959	0.9935	0.9985	0.0	0.0	0.213	-2.46	51.6	0.984	0.984
204.	17	0.991	0.4606	0.9957	0.9927	1.0013	0.0	0.0	0.214	-2.40	51.5	0.982	0.982
214.	18	0.991	0.4600	0.9954	0.9921	1.0035	0.0	0.0	0.215	-2.35	51.5	0.981	0.981
224.	19	0.990	0.4594	0.9951	0.9914	1.0049	0.0	0.0	0.217	-2.28	51.4	0.979	0.979
234.	20	0.990	0.4590	0.9949	0.9909	1.0059	0.0	0.0	0.218	-2.23	51.3	0.978	0.978
244.	21	0.989	0.4584	0.9945	0.9902	1.0066	0.0	0.0	0.220	-2.15	51.2	0.976	0.976
254.	22	0.988	0.4579	0.9941	0.9895	1.0073	0.0	0.0	0.221	-2.09	51.2	0.975	0.975
264.	23	0.987	0.4574	0.9939	0.9890	1.0079	0.0	0.0	0.223	-2.02	51.1	0.973	0.973
274.	24	0.987	0.4569	0.9936	0.9884	1.0085	0.0	0.0	0.224	-1.95	51.0	0.971	0.971
284.	25	0.987	0.4567	0.9934	0.9881	1.0091	0.0	0.0	0.225	-1.92	51.0	0.971	0.971
294.	26	0.987	0.4568	0.9934	0.9881	1.0096	0.0	0.0	0.224	-1.94	51.0	0.971	0.971
304.	27	0.991	0.4585	0.9950	0.9907	1.0102	0.0	0.0	0.216	-2.23	51.3	0.978	0.978
314.	28	0.998	0.4619	0.9985	0.9963	1.0107	0.0	0.0	0.204	-2.81	51.9	0.993	0.993
324.	29	1.001	0.4634	1.0001	0.9989	1.0097	0.0	0.0	0.197	-3.09	52.2	0.999	0.999
334.	30	1.003	0.4648	1.0014	1.0010	1.0085	0.0	0.0	0.192	-3.30	52.4	1.005	1.005
344.	31	1.005	0.4663	1.0027	1.0032	1.0071	0.0	0.0	0.187	-3.50	52.6	1.010	1.010
354.	32	1.007	0.4677	1.0035	1.0050	1.0051	0.0	0.0	0.184	-3.67	52.8	1.014	1.014
4.	33	1.009	0.4690	1.0040	1.0063	1.0021	0.0	0.0	0.181	-3.77	52.9	1.016	1.016
14.	34	1.009	0.4700	1.0043	1.0072	0.9988	0.0	0.0	0.180	-3.81	52.9	1.018	1.018
24.	35	1.009	0.4708	1.0044	1.0078	0.9958	0.0	0.0	0.180	-3.84	52.9	1.018	1.018
34.	36	1.009	0.4712	1.0045	1.0081	0.9940	0.0	0.0	0.179	-3.88	53.0	1.019	1.019

	CORR FLOW	PRESS RATIO	EFFICIENCY
HIGH SPOOL PERFORMANCE 4/3	25.00 LBM/SEC 11.34 KG/SEC	2.674	0.828

---- ROW OUTPUT ----

STAGE 10
ROTOR

FLOW SWIRL= 43.83DEG PARTICLE SWIRL=115.96DEG PSAVG= 22.53PSIA = 155365.PA
PTAVG= 25.35PSIA = 174751.PA TTAVG= 789.8DEG R = 438.8DEG K VELAVG= 561.8FPS =171.2MPS
RVELAVG= 840.1FPS = 256.1MPS AXVELAVG= 509.1FPS =155.2MPS U= 906.FPS = 276.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
54.	1	1.003	0.4182	1.0053	1.0067	0.9933	0.042	0.019	0.355	6.59	37.4	1.003	1.000
64.	2	1.004	0.4188	1.0054	1.0072	0.9932	0.042	0.019	0.353	6.55	37.5	1.004	1.001
74.	3	1.005	0.4190	1.0056	1.0075	0.9934	0.042	0.019	0.353	6.52	37.5	1.005	1.001
84.	4	1.005	0.4191	1.0060	1.0079	0.9936	0.041	0.018	0.352	6.51	37.5	1.005	1.001
94.	5	1.005	0.4191	1.0064	1.0083	0.9939	0.041	0.018	0.352	6.50	37.5	1.005	1.001
104.	6	1.005	0.4191	1.0066	1.0085	0.9941	0.040	0.018	0.352	6.50	37.5	1.005	1.001
114.	7	1.005	0.4191	1.0067	1.0086	0.9943	0.038	0.017	0.352	6.50	37.5	1.005	1.001
124.	8	1.005	0.4190	1.0065	1.0084	0.9942	0.034	0.016	0.352	6.51	37.5	1.005	1.001
134.	9	1.005	0.4192	1.0035	1.0055	0.9926	0.009	0.004	0.353	6.52	37.5	1.005	1.001
144.	10	1.005	0.4194	1.0008	1.0029	0.9914	-0.024	-0.011	0.353	6.52	37.5	1.005	1.001
154.	11	1.004	0.4195	0.9992	1.0014	0.9908	-0.036	-0.016	0.353	6.53	37.5	1.004	1.001
164.	12	1.004	0.4195	0.9978	0.9999	0.9908	-0.042	-0.019	0.353	6.53	37.5	1.004	1.001
174.	13	1.004	0.4194	0.9965	0.9985	0.9913	-0.047	-0.021	0.354	6.53	37.5	1.004	1.001
184.	14	1.004	0.4189	0.9955	0.9973	0.9929	-0.048	-0.022	0.354	6.54	37.5	1.004	1.001
194.	15	1.003	0.4181	0.9950	0.9964	0.9954	-0.050	-0.023	0.355	6.56	37.4	1.003	1.000
204.	16	1.002	0.4170	0.9947	0.9955	0.9985	-0.048	-0.022	0.357	6.60	37.4	1.002	1.000
214.	17	1.001	0.4159	0.9946	0.9947	1.0013	-0.047	-0.021	0.358	6.65	37.4	1.001	1.000
224.	18	1.000	0.4148	0.9947	0.9941	1.0035	-0.046	-0.021	0.359	6.71	37.3	1.000	1.000
234.	19	0.998	0.4138	0.9947	0.9936	1.0049	-0.046	-0.021	0.361	6.76	37.2	0.998	1.000
244.	20	0.997	0.4131	0.9947	0.9932	1.0059	-0.046	-0.021	0.362	6.81	37.2	0.997	1.000
254.	21	0.996	0.4125	0.9943	0.9926	1.0066	-0.045	-0.020	0.363	6.84	37.2	0.996	0.999
264.	22	0.995	0.4121	0.9941	0.9922	1.0073	-0.045	-0.020	0.364	6.87	37.1	0.995	0.999
274.	23	0.995	0.4118	0.9938	0.9916	1.0079	-0.045	-0.020	0.364	6.89	37.1	0.995	0.999
284.	24	0.994	0.4114	0.9934	0.9911	1.0085	-0.044	-0.020	0.365	6.91	37.1	0.994	0.999
294.	25	0.994	0.4112	0.9934	0.9909	1.0091	-0.041	-0.018	0.365	6.92	37.1	0.994	0.999
304.	26	0.994	0.4109	0.9937	0.9911	1.0096	-0.034	-0.016	0.365	6.93	37.1	0.994	0.999
314.	27	0.994	0.4108	0.9954	0.9928	1.0102	-0.002	-0.001	0.365	6.93	37.1	0.994	0.999
324.	28	0.994	0.4108	0.9994	0.9967	1.0107	0.022	0.010	0.364	6.92	37.1	0.994	0.999
334.	29	0.995	0.4113	1.0010	0.9986	1.0097	0.031	0.014	0.363	6.89	37.1	0.995	0.999
344.	30	0.995	0.4119	1.0024	1.0003	1.0085	0.037	0.017	0.362	6.86	37.1	0.995	0.999
354.	31	0.996	0.4126	1.0036	1.0018	1.0071	0.040	0.018	0.361	6.83	37.2	0.996	0.999
4.	32	0.997	0.4133	1.0046	1.0033	1.0051	0.044	0.020	0.360	6.80	37.2	0.997	1.000
14.	33	0.998	0.4142	1.0052	1.0044	1.0021	0.044	0.020	0.359	6.78	37.2	0.998	1.000
24.	34	0.998	0.4153	1.0053	1.0051	0.9988	0.043	0.020	0.358	6.75	37.2	0.998	1.000
34.	35	1.000	0.4164	1.0052	1.0056	0.9958	0.043	0.020	0.357	6.70	37.3	1.000	1.000
44.	36	1.001	0.4174	1.0052	1.0062	0.9940	0.042	0.019	0.356	6.65	37.4	1.001	1.000

STATOR

FLOW SWIRL= 45.61DEG PARTICLE SWIRL=122.67DEG PSAVG= 25.91PSIA = 178672.PA
PTAVG= 32.18PSIA = 221888.PA TTAVG= 848.5DEG R = 471.4DEG K VELAVG= 782.6FPS =238.5MPS
RVELAVG= 669.2FPS = 204.0MPS AXVELAVG= 560.0FPS =170.7MPS U= 913.FPS = 278.MPS

THETA	SFG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
56.	1	1.001	0.5695	1.0052	1.0070	0.9940	0.0	0.0	0.393	4.75	45.9	1.003	1.003
66.	2	1.001	0.5696	1.0051	1.0070	0.9936	0.0	0.0	0.392	4.70	45.9	1.004	1.004
76.	3	1.001	0.5695	1.0052	1.0071	0.9937	0.0	0.0	0.391	4.66	45.9	1.005	1.005
86.	4	1.001	0.5695	1.0056	1.0074	0.9938	0.0	0.0	0.391	4.65	46.0	1.005	1.005
96.	5	1.001	0.5694	1.0059	1.0077	0.9941	0.0	0.0	0.390	4.64	46.0	1.006	1.006
106.	6	1.001	0.5693	1.0062	1.0079	0.9943	0.0	0.0	0.390	4.64	46.0	1.006	1.006
116.	7	1.001	0.5692	1.0063	1.0079	0.9945	0.0	0.0	0.390	4.64	46.0	1.006	1.006
126.	8	1.001	0.5692	1.0061	1.0078	0.9945	0.0	0.0	0.390	4.64	46.0	1.006	1.006
136.	9	1.001	0.5697	1.0036	1.0056	0.9934	0.0	0.0	0.391	4.65	45.9	1.005	1.005
146.	10	1.001	0.5700	1.0010	1.0033	0.9921	0.0	0.0	0.391	4.67	45.9	1.005	1.005
156.	11	1.001	0.5701	0.9995	1.0018	0.9914	0.0	0.0	0.391	4.69	45.9	1.005	1.005
166.	12	1.001	0.5700	0.9981	1.0004	0.9911	0.0	0.0	0.392	4.70	45.9	1.004	1.004
176.	13	1.000	0.5698	0.9967	0.9988	0.9914	0.0	0.0	0.392	4.71	45.9	1.004	1.004
186.	14	1.000	0.5692	0.9957	0.9974	0.9924	0.0	0.0	0.393	4.75	45.9	1.003	1.003
196.	15	0.999	0.5683	0.9950	0.9960	0.9944	0.0	0.0	0.394	4.79	45.8	1.002	1.002
206.	16	0.999	0.5672	0.9946	0.9948	0.9971	0.0	0.0	0.395	4.85	45.8	1.001	1.001
216.	17	0.999	0.5662	0.9945	0.9939	0.9999	0.0	0.0	0.396	4.91	45.7	1.000	1.000
226.	18	0.999	0.5655	0.9947	0.9936	1.0023	0.0	0.0	0.397	4.98	45.6	0.999	0.999
236.	19	0.999	0.5650	0.9949	0.9934	1.0046	0.0	0.0	0.399	5.05	45.6	0.997	0.997
246.	20	0.999	0.5647	0.9950	0.9932	1.0051	0.0	0.0	0.400	5.11	45.5	0.996	0.996
256.	21	0.999	0.5644	0.9946	0.9927	1.0059	0.0	0.0	0.401	5.15	45.5	0.995	0.995
266.	22	0.999	0.5642	0.9945	0.9923	1.0066	0.0	0.0	0.402	5.18	45.4	0.994	0.994
276.	23	0.998	0.5640	0.9941	0.9918	1.0072	0.0	0.0	0.402	5.21	45.4	0.994	0.994
286.	24	0.998	0.5638	0.9937	0.9913	1.0077	0.0	0.0	0.403	5.23	45.4	0.993	0.993
296.	25	0.998	0.5636	0.9937	0.9911	1.0083	0.0	0.0	0.403	5.25	45.4	0.993	0.993
306.	26	0.998	0.5635	0.9939	0.9913	1.0089	0.0	0.0	0.403	5.26	45.3	0.993	0.993
316.	27	0.999	0.5634	0.9955	0.9928	1.0095	0.0	0.0	0.403	5.24	45.4	0.993	0.993
326.	28	0.999	0.5635	0.9992	0.9965	1.0104	0.0	0.0	0.402	5.21	45.4	0.994	0.994
336.	29	1.000	0.5640	1.0007	0.9984	1.0098	0.0	0.0	0.401	5.15	45.5	0.995	0.995
346.	30	1.000	0.5645	1.0020	1.0000	1.0087	0.0	0.0	0.400	5.10	45.5	0.996	0.996
356.	31	1.000	0.5650	1.0031	1.0016	1.0075	0.0	0.0	0.399	5.05	45.6	0.997	0.997
6.	32	1.001	0.5657	1.0043	1.0033	1.0059	0.0	0.0	0.398	5.00	45.6	0.998	0.998
16.	33	1.001	0.5666	1.0053	1.0050	1.0035	0.0	0.0	0.397	4.97	45.6	0.999	0.999
26.	34	1.001	0.5677	1.0057	1.0062	1.0005	0.0	0.0	0.396	4.93	45.7	1.000	1.000
36.	35	1.001	0.5686	1.0056	1.0068	0.9975	0.0	0.0	0.395	4.87	45.7	1.001	1.001
46.	36	1.001	0.5692	1.0054	1.0071	0.9952	0.0	0.0	0.394	4.81	45.8	1.002	1.002

STAGE 11
ROTOR

FLOW SWIRL= 48.73DEG PARTICLF SWIRL=125.79DEG PSAVG= 27.52PSIA = 189749.PA
PTAVG= 31.40PSIA = 216521.PA TTAVG= 848.5DEG R = 471.4DEG K VELAVG= 614.5FPS =187.3MPS
RVELAVG= 872.0FPS = 265.8MPS AXVELAVG= 561.1FPS =171.0MPS U= 918.FPS = 280.MPS

THETA	SFG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
59.	1	1.003	0.4427	1.0055	1.0072	0.9940	0.0	0.0	0.329	-0.08	40.2	1.003	1.001
69.	2	1.004	0.4432	1.0055	1.0075	0.9936	0.0	0.0	0.328	-0.12	40.2	1.004	1.001
79.	3	1.005	0.4435	1.0056	1.0077	0.9937	0.0	0.0	0.328	-0.14	40.2	1.005	1.001
89.	4	1.005	0.4436	1.0059	1.0081	0.9938	0.0	0.0	0.327	-0.15	40.3	1.005	1.001
99.	5	1.005	0.4437	1.0063	1.0085	0.9941	0.0	0.0	0.327	-0.16	40.3	1.005	1.001
109.	6	1.005	0.4436	1.0065	1.0087	0.9943	0.0	0.0	0.327	-0.16	40.3	1.005	1.001
119.	7	1.005	0.4436	1.0065	1.0087	0.9945	0.0	0.0	0.327	-0.16	40.3	1.005	1.001
129.	8	1.005	0.4436	1.0064	1.0086	0.9945	0.0	0.0	0.327	-0.16	40.3	1.005	1.001
139.	9	1.005	0.4437	1.0039	1.0062	0.9934	0.0	0.0	0.327	-0.15	40.2	1.005	1.001
149.	10	1.005	0.4438	1.0015	1.0038	0.9921	0.0	0.0	0.328	-0.13	40.2	1.005	1.001
159.	11	1.004	0.4438	1.0000	1.0023	0.9914	0.0	0.0	0.329	-0.12	40.2	1.004	1.001
169.	12	1.004	0.4437	0.9986	1.0009	0.9911	0.0	0.0	0.329	-0.11	40.2	1.004	1.001
179.	13	1.004	0.4435	0.9973	0.9994	0.9914	0.0	0.0	0.330	-0.09	40.2	..004	1.001
189.	14	1.003	0.4430	0.9962	0.9980	0.9924	0.0	0.0	0.331	-0.07	40.2	1.003	1.001
199.	15	1.002	0.4421	0.9954	0.9966	0.9944	0.0	0.0	0.333	-0.04	40.1	1.002	1.000
209.	16	1.001	0.4411	0.9948	0.9954	0.9971	0.0	0.0	0.334	0.00	40.1	1.001	1.000
219.	17	1.000	0.4399	0.9945	0.9944	0.9999	0.0	0.0	0.336	0.05	40.0	1.000	1.000
229.	18	0.999	0.4388	0.9945	0.9938	1.0023	0.0	0.0	0.337	0.10	40.0	0.999	1.000
239.	19	0.997	0.4378	0.9946	0.9933	1.0040	0.0	0.0	0.338	0.15	40.0	0.997	0.999
249.	20	0.996	0.4371	0.9947	0.9930	1.0051	0.0	0.0	0.340	0.19	39.9	0.996	0.999
259.	21	0.995	0.4365	0.9943	0.9923	1.0059	0.0	0.0	0.341	0.23	39.9	0.995	0.999
269.	22	0.995	0.4360	0.9941	0.9918	1.0066	0.0	0.0	0.341	0.25	39.8	0.995	0.999
279.	23	0.994	0.4357	0.9937	0.9912	1.0072	0.0	0.0	0.342	0.27	39.8	0.994	0.999
289.	24	0.994	0.4354	0.9933	0.9906	1.0077	0.0	0.0	0.342	0.29	39.8	0.994	0.999
299.	25	0.993	0.4351	0.9933	0.9904	1.0083	0.0	0.0	0.343	0.30	39.8	0.993	0.999
309.	26	0.993	0.4349	0.9935	0.9905	1.0089	0.0	0.0	0.343	0.31	39.8	0.993	0.999
319.	27	0.994	0.4349	0.9950	0.9920	1.0095	0.0	0.0	0.342	0.29	39.8	0.994	0.999
329.	28	0.994	0.4351	0.9986	0.9957	1.0104	0.0	0.0	0.340	0.26	39.8	0.994	0.999
339.	29	0.996	0.4358	1.0001	0.9976	1.0098	0.0	0.0	0.338	0.21	39.9	0.996	0.999
349.	30	0.997	0.4364	1.0015	0.9993	1.0087	0.0	0.0	0.337	0.18	39.9	0.997	0.999
359.	31	0.998	0.4372	1.0026	1.0010	1.0075	0.0	0.0	0.335	0.14	40.0	0.998	1.000
9.	32	0.998	0.4379	1.0039	1.0027	1.0059	0.0	0.0	0.334	0.11	40.0	0.998	1.000
19.	33	0.999	0.4387	1.0051	1.0044	1.0035	0.0	0.0	0.333	0.08	40.0	0.999	1.000
29.	34	1.000	0.4397	1.0056	1.0055	1.0005	0.0	0.0	0.333	0.05	40.0	1.000	1.000
39.	35	1.001	0.4408	1.0058	1.0063	0.9975	0.0	0.0	0.332	0.02	40.1	1.001	1.000
49.	36	1.002	0.4418	1.0057	1.0068	0.9952	0.0	0.0	0.331	-0.03	40.1	1.002	1.000

STATOR

FLOW SWIRL= 49.81DEG PARTICLE SWIRL=131.41DEG PSAVG= 30.74PSIA = 211972.PA
PTAVG= 37.26PSIA = 256874.PA TTAVG= 897.1DEG R = 498.4DEG K VELAVG= 759.2FPS =231.4MPS
RVELAVG= 693.9FPS = 211.5MPS AXVELAVG= 559.6FPS =170.6MPS U= 924.FPS = 281.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
60.	1	1.002	0.5359	1.0046	1.0063	0.9946	0.0	0.0	0.297	0.29	47.7	1.005	1.005
70.	2	1.001	0.5360	1.0042	1.0060	0.9938	0.0	0.0	0.296	0.23	47.8	1.006	1.006
80.	3	1.001	0.5360	1.0041	1.0056	0.9936	0.0	0.0	0.295	0.20	47.8	1.006	1.006
90.	4	1.001	0.5359	1.0043	1.0060	0.9938	0.0	0.0	0.294	0.18	47.8	1.007	1.007
100.	5	1.001	0.5359	1.0046	1.0063	0.9940	0.0	0.0	0.294	0.17	47.8	1.007	1.007
110.	6	1.001	0.5358	1.0047	1.0064	0.9942	0.0	0.0	0.294	0.16	47.8	1.007	1.007
120.	7	1.001	0.5358	1.0048	1.0064	0.9943	0.0	0.0	0.294	0.16	47.8	1.007	1.007
130.	8	1.001	0.5357	1.0048	1.0063	0.9944	0.0	0.0	0.294	0.17	47.8	1.007	1.007
140.	9	1.001	0.5360	1.0027	1.0045	0.9936	0.0	0.0	0.295	0.19	47.8	1.006	1.006
150.	10	1.001	0.5362	1.0008	1.0027	0.9925	0.0	0.0	0.296	0.23	47.8	1.006	1.006
160.	11	1.001	0.5363	0.9997	1.0017	0.9918	0.0	0.0	0.296	0.27	47.7	1.005	1.005
170.	12	1.001	0.5363	0.9984	1.0004	0.9913	0.0	0.0	0.297	0.29	47.7	1.004	1.004
180.	13	1.000	0.5361	0.9973	0.9991	0.9914	0.0	0.0	0.298	0.34	47.7	1.004	1.004
190.	14	1.000	0.5356	0.9964	0.9978	0.9921	0.0	0.0	0.299	0.39	47.6	1.003	1.003
200.	15	0.999	0.5348	0.9957	0.9967	0.9937	0.0	0.0	0.301	0.47	47.5	1.001	1.001
210.	16	0.999	0.5339	0.9952	0.9955	0.9960	0.0	0.0	0.302	0.54	47.5	1.000	1.000
220.	17	0.998	0.5330	0.9951	0.9947	0.9987	0.0	0.0	0.304	0.62	47.4	0.998	0.998
230.	18	0.998	0.5322	0.9953	0.9943	1.0013	0.0	0.0	0.305	0.68	47.3	0.997	0.997
240.	19	0.998	0.5317	0.9957	0.9944	1.0033	0.0	0.0	0.306	0.75	47.3	0.996	0.996
250.	20	0.998	0.5313	0.9961	0.9945	1.0047	0.0	0.0	0.307	0.81	47.2	0.994	0.994
260.	21	0.998	0.5311	0.9959	0.9941	1.0056	0.0	0.0	0.308	0.86	47.1	0.993	0.993
270.	22	0.998	0.5309	0.9958	0.9939	1.0063	0.0	0.0	0.309	0.90	47.1	0.993	0.993
280.	23	0.998	0.5307	0.9955	0.9934	1.0069	0.0	0.0	0.310	0.93	47.1	0.992	0.992
290.	24	0.998	0.5305	0.9952	0.9930	1.0075	0.0	0.0	0.310	0.95	47.0	0.992	0.992
300.	25	0.998	0.5303	0.9952	0.9929	1.0081	0.0	0.0	0.311	0.97	47.0	0.991	0.991
310.	26	0.998	0.5302	0.9953	0.9929	1.0086	0.0	0.0	0.311	0.98	47.0	0.991	0.991
320.	27	0.999	0.5302	0.9963	0.9939	1.0093	0.0	0.0	0.310	0.93	47.1	0.992	0.992
330.	28	0.999	0.5303	0.9992	0.9968	1.0102	0.0	0.0	0.308	0.85	47.1	0.994	0.994
340.	29	1.000	0.5307	1.0000	0.9980	1.0099	0.0	0.0	0.306	0.74	47.3	0.996	0.996
350.	30	1.000	0.5312	1.0012	0.9995	1.0091	0.0	0.0	0.304	0.67	47.3	0.997	0.997
360.	31	1.001	0.5317	1.0021	1.0007	1.0078	0.0	0.0	0.303	0.60	47.4	0.998	0.998
10.	32	1.001	0.5322	1.0033	1.0023	1.0064	0.0	0.0	0.301	0.54	47.5	1.000	1.000
20.	33	1.001	0.5329	1.0047	1.0042	1.0045	0.0	0.0	0.301	0.50	47.5	1.000	1.000
30.	34	1.001	0.5338	1.0054	1.0056	1.0018	0.0	0.0	0.300	0.46	47.5	1.001	1.001
40.	35	1.002	0.5348	1.0056	1.0065	0.9988	0.0	0.0	0.299	0.41	47.6	1.002	1.002
50.	36	1.002	0.5354	1.0053	1.0067	0.9963	0.0	0.0	0.298	0.35	47.6	1.003	1.003

STAGE 12
ROTOR

FLOW SWIRL= 52.91DEG PARTICLE SWIRL=134.51DEG PSAVG= 32.35PSIA = 223020.PA
PTAVG= 36.78PSIA = 253557.PA TTAVG= 897.1DEG R = 498.4DEG K VELAVG= 623.2FPS =190.0MPS
RVELAVG= 862.4FPS = 262.9MPS AXVELAVG= 560.7FPS =170.9MPS U= 927.FPS = 283.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
63.	1	1.005	0.4373	1.0046	1.0065	0.9946	0.0	0.0	0.252	-3.04	40.7	1.005	1.001
73.	2	1.006	0.4380	1.0041	1.0064	0.9938	0.0	0.0	0.251	-3.08	40.8	1.006	1.001
83.	3	1.006	0.4383	1.0039	1.0064	0.9936	0.0	0.0	0.251	-3.11	40.8	1.006	1.001
93.	4	1.007	0.4385	1.0041	1.0067	0.9938	0.0	0.0	0.250	-3.13	40.8	1.007	1.001
103.	5	1.007	0.4386	1.0043	1.0069	0.9940	0.0	0.0	0.250	-3.14	40.8	1.007	1.001
113.	6	1.007	0.4386	1.0044	1.0071	0.9942	0.0	0.0	0.250	-3.14	40.8	1.007	1.001
123.	7	1.007	0.4385	1.0045	1.0071	0.9943	0.0	0.0	0.250	-3.14	40.8	1.007	1.001
133.	8	1.007	0.4385	1.0044	1.0070	0.9944	0.0	0.0	0.250	-3.14	40.8	1.007	1.001
143.	9	1.007	0.4384	1.0025	1.0050	0.9936	0.0	0.0	0.251	-3.11	40.8	1.007	1.001
153.	10	1.006	0.4383	1.0007	1.0032	0.9925	0.0	0.0	0.252	-3.08	40.8	1.006	1.001
163.	11	1.005	0.4380	0.9998	1.0021	0.9918	0.0	0.0	0.253	-3.05	40.7	1.005	1.001
173.	12	1.004	0.4378	0.9986	1.0008	0.9913	0.0	0.0	0.254	-3.02	40.7	1.004	1.001
183.	13	1.003	0.4374	0.9976	0.9995	0.9914	0.0	0.0	0.256	-2.99	40.7	1.003	1.001
193.	14	1.002	0.4367	0.9967	0.9983	0.9921	0.0	0.0	0.258	-2.94	40.6	1.002	1.000
203.	15	1.001	0.4357	0.9961	0.9971	0.9937	0.0	0.0	0.260	-2.88	40.6	1.001	1.000
213.	16	0.999	0.4346	0.9955	0.9958	0.9960	0.0	0.0	0.262	-2.82	40.5	0.999	1.000
223.	17	0.998	0.4334	0.9953	0.9949	0.9987	0.0	0.0	0.263	-2.77	40.5	0.998	1.000
233.	18	0.997	0.4323	0.9955	0.9944	1.0013	0.0	0.0	0.265	-2.72	40.4	0.997	0.999
243.	19	0.995	0.4313	0.9959	0.9943	1.0033	0.0	0.0	0.266	-2.67	40.4	0.995	0.999
253.	20	0.994	0.4304	0.9963	0.9942	1.0047	0.0	0.0	0.267	-2.62	40.3	0.994	0.999
263.	21	0.993	0.4298	0.9962	0.9937	1.0056	0.0	0.0	0.268	-2.58	40.3	0.993	0.999
273.	22	0.993	0.4293	0.9961	0.9933	1.0063	0.0	0.0	0.269	-2.55	40.3	0.993	0.999
283.	23	0.992	0.4289	0.9958	0.9928	1.0069	0.0	0.0	0.269	-2.53	40.2	0.992	0.999
293.	24	0.991	0.4286	0.9955	0.9923	1.0075	0.0	0.0	0.270	-2.51	40.2	0.991	0.998
303.	25	0.991	0.4283	0.9954	0.9921	1.0081	0.0	0.0	0.270	-2.50	40.2	0.991	0.998
313.	26	0.991	0.4282	0.9955	0.9921	1.0086	0.0	0.0	0.270	-2.50	40.2	0.991	0.998
323.	27	0.992	0.4284	0.9964	0.9931	1.0093	0.0	0.0	0.269	-2.53	40.2	0.992	0.999
333.	28	0.994	0.4291	0.9991	0.9961	1.0102	0.0	0.0	0.266	-2.60	40.3	0.994	0.999
343.	29	0.996	0.4301	0.9998	0.9974	1.0099	0.0	0.0	0.262	-2.69	40.4	0.996	0.999
353.	30	0.997	0.4309	1.0009	0.9990	1.0091	0.0	0.0	0.261	-2.75	40.4	0.997	1.000
3.	31	0.999	0.4316	1.0017	1.0003	1.0078	0.0	0.0	0.259	-2.81	40.5	0.999	1.000
13.	32	1.000	0.4326	1.0029	1.0020	1.0064	0.0	0.0	0.257	-2.85	40.6	1.000	1.000
23.	33	1.001	0.4334	1.0043	1.0039	1.0045	0.0	0.0	0.256	-2.89	40.6	1.001	1.000
33.	34	1.002	0.4343	1.0052	1.0053	1.0018	0.0	0.0	0.255	-2.91	40.6	1.002	1.000
43.	35	1.002	0.4354	1.0055	1.0062	0.9988	0.0	0.0	0.254	-2.95	40.6	1.002	1.000
53.	36	1.003	0.4363	1.0053	1.0066	0.9963	0.0	0.0	0.254	-2.99	40.7	1.003	1.001

STATOR

FLOW SWIRL= 53.55DEG   PARTICLE SWIRL=139.38DEG   PSAVG= 35.21PSIA = 242737.PA
PTAVG= 42.02PSIA = 289723.PA   TTAVG= 935.9DEG R = 519.9DEG K   VELAVG= 745.0FPS =227.1MPS
RVELAVG= 729.5FPS = 222.4MPS   AXVELAVG= 570.8FPS =174.0MPS   U= 933.FPS = 284.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
64.	1	1.002	0.5142	1.0036	1.0052	0.9950	0.004	0.002	0.207	-4.34	50.3	1.006	1.006
74.	2	1.002	0.5144	1.0029	1.0047	0.9939	0.004	0.002	0.206	-4.39	50.4	1.007	1.007
84.	3	1.002	0.5145	1.0026	1.0045	0.9934	0.004	0.002	0.205	-4.42	50.4	1.008	1.008
94.	4	1.002	0.5144	1.0028	1.0046	0.9935	0.004	0.002	0.205	-4.44	50.4	1.008	1.008
104.	5	1.002	0.5144	1.0030	1.0048	0.9936	0.004	0.002	0.204	-4.45	50.5	1.008	1.008
114.	6	1.002	0.5143	1.0032	1.0049	0.9938	0.004	0.002	0.204	-4.46	50.5	1.008	1.008
124.	7	1.002	0.5142	1.0032	1.0049	0.9940	0.004	0.002	0.204	-4.46	50.5	1.008	1.008
134.	8	1.002	0.5142	1.0033	1.0049	0.9941	0.004	0.002	0.204	-4.45	50.5	1.008	1.008
144.	9	1.001	0.5143	1.0017	1.0034	0.9935	0.003	0.001	0.205	-4.41	50.4	1.007	1.007
154.	10	1.001	0.5144	1.0005	1.0022	0.9927	0.002	0.001	0.207	-4.36	50.4	1.006	1.006
164.	11	1.001	0.5144	0.9998	1.0016	0.9920	0.001	0.001	0.208	-4.29	50.3	1.005	1.005
174.	12	1.001	0.5144	0.9988	1.0006	0.9915	0.001	0.000	0.209	-4.24	50.2	1.004	1.004
184.	13	1.000	0.5142	0.9980	0.9997	0.9915	-0.000	-0.000	0.211	-4.18	50.2	1.003	1.003
194.	14	1.000	0.5137	0.9976	0.9989	0.9920	-0.002	-0.001	0.213	-4.08	50.1	1.001	1.001
204.	15	0.999	0.5130	0.9973	0.9981	0.9933	-0.003	-0.001	0.215	-3.97	50.0	0.999	0.999
214.	16	0.998	0.5122	0.9968	0.9970	0.9953	-0.004	-0.002	0.217	-3.87	49.9	0.997	0.997
224.	17	0.998	0.5113	0.9966	0.9962	0.9979	-0.005	-0.002	0.219	-3.78	49.8	0.996	0.996
234.	18	0.998	0.5106	0.9966	0.9958	1.0005	-0.005	-0.002	0.220	-3.73	49.7	0.995	0.995
244.	19	0.998	0.5101	0.9972	0.9959	1.0028	-0.005	-0.002	0.222	-3.66	49.7	0.994	0.994
254.	20	0.998	0.5095	0.9977	0.9961	1.0044	-0.005	-0.002	0.223	-3.60	49.6	0.993	0.993
264.	21	0.998	0.5092	0.9976	0.9958	1.0055	-0.005	-0.002	0.224	-3.55	49.6	0.992	0.992
274.	22	0.998	0.5090	0.9975	0.9956	1.0063	-0.005	-0.002	0.225	-3.52	49.5	0.991	0.991
284.	23	0.998	0.5088	0.9972	0.9952	1.0069	-0.005	-0.002	0.225	-3.48	49.5	0.990	0.990
294.	24	0.998	0.5087	0.9970	0.9948	1.0075	-0.005	-0.002	0.226	-3.46	49.5	0.990	0.990
304.	25	0.998	0.5085	0.9969	0.9946	1.0081	-0.005	-0.002	0.226	-3.44	49.4	0.990	0.990
314.	26	0.998	0.5084	0.9968	0.9944	1.0087	-0.005	-0.002	0.226	-3.45	49.4	0.990	0.990
324.	27	0.998	0.5085	0.9971	0.9948	1.0093	-0.004	-0.002	0.224	-3.53	49.5	0.991	0.991
334.	28	0.999	0.5088	0.9989	0.9968	1.0101	-0.002	-0.001	0.221	-3.67	49.7	0.994	0.994
344.	29	1.000	0.5093	0.9988	0.9971	1.0098	0.001	0.000	0.218	-3.83	49.8	0.997	0.997
354.	30	1.000	0.5096	1.0000	0.9984	1.0092	0.002	0.001	0.216	-3.92	49.9	0.998	0.998
4.	31	1.001	0.5102	1.0006	0.9994	1.0081	0.003	0.002	0.213	-4.02	50.0	1.000	1.000
14.	32	1.001	0.5107	1.0017	1.0009	1.0068	0.004	0.002	0.212	-4.09	50.1	1.001	1.001
24.	33	1.001	0.5112	1.0033	1.0028	1.0051	0.004	0.002	0.211	-4.15	50.1	1.002	1.002
34.	34	1.002	0.5120	1.0043	1.0044	1.0028	0.004	0.002	0.210	-4.19	50.2	1.003	1.003
44.	35	1.002	0.5129	1.0047	1.0054	0.9999	0.004	0.002	0.209	-4.24	50.2	1.004	1.004
54.	36	1.002	0.5136	1.0045	1.0057	0.9972	0.004	0.002	0.208	-4.28	50.3	1.005	1.005

STAGE 13
ROTOR

FLOW SWIRL= 56.52DEG   PARTICLE SWIRL=142.35DEG   PSAVG= 36.66PSIA = 252761.PA
PTAVG= 41.98PSIA = 289414.PA   TTAVG= 935.9DEG R = 519.9DEG K   VELAVG= 653.6FPS =199.2MPS
RVELAVG= 859.6FPS = 262.0MPS   AXVELAVG= 579.6FPS =176.6MPS   U= 937.FPS = 286.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
67.	1	1.001	0.4482	1.0044	1.0055	0.9950	0.0	0.0	0.271	-7.46	42.5	1.001	1.000
77.	2	1.002	0.4489	1.0037	1.0057	0.9939	0.0	0.0	0.270	-7.50	42.5	1.002	1.000
87.	3	1.003	0.4493	1.0033	1.0050	0.9934	0.0	0.0	0.270	-7.53	42.5	1.003	1.001
97.	4	1.003	0.4495	1.0034	1.0052	0.9935	0.0	0.0	0.270	-7.54	42.5	1.003	1.001
107.	5	1.004	0.4496	1.0036	1.0054	0.9936	0.0	0.0	0.269	-7.55	42.6	1.004	1.001
117.	6	1.004	0.4496	1.0037	1.0056	0.9938	0.0	0.0	0.269	-7.56	42.6	1.004	1.001
127.	7	1.004	0.4496	1.0037	1.0056	0.9940	0.0	0.0	0.269	-7.56	42.6	1.004	1.001
137.	8	1.004	0.4496	1.0037	1.0056	0.9941	0.0	0.0	0.269	-7.56	42.6	1.004	1.001
147.	9	1.004	0.4496	1.0022	1.0041	0.9935	0.0	0.0	0.269	-7.56	42.6	1.004	1.001
157.	10	1.004	0.4497	1.0009	1.0029	0.9927	0.0	0.0	0.269	-7.55	42.5	1.004	1.001
167.	11	1.003	0.4497	1.0003	1.0023	0.9920	0.0	0.0	0.270	-7.54	42.5	1.003	1.001
177.	12	1.003	0.4498	0.9992	1.0013	0.9915	0.0	0.0	0.270	-7.53	42.5	1.003	1.001
187.	13	1.003	0.4498	0.9983	1.0003	0.9915	0.0	0.0	0.270	-7.53	42.5	1.003	1.001
197.	14	1.003	0.4497	0.9973	0.9993	0.9920	0.0	0.0	0.270	-7.53	42.5	1.003	1.001
207.	15	1.003	0.4494	0.9964	0.9982	0.9933	0.0	0.0	0.271	-7.53	42.5	1.003	1.001
217.	16	1.003	0.4487	0.9956	0.9969	0.9953	0.0	0.0	0.272	-7.51	42.5	1.093	1.001
227.	17	1.002	0.4478	0.9952	0.9960	0.9979	0.0	0.0	0.273	-7.48	42.5	1.002	1.000
237.	18	1.001	0.4468	0.9952	0.9954	1.0005	0.0	0.0	0.274	-7.44	42.4	1.001	1.000
247.	19	1.000	0.4458	0.9958	0.9954	1.0028	0.0	0.0	0.275	-7.40	42.4	1.000	1.000
257.	20	0.999	0.4449	0.9964	0.9954	1.0044	0.0	0.0	0.276	-7.35	42.3	0.999	1.000
267.	21	0.998	0.4442	0.9964	0.9951	1.0055	0.0	0.0	0.277	-7.31	42.3	0.998	1.000
277.	22	0.997	0.4437	0.9964	0.9948	1.0063	0.0	0.0	0.278	-7.28	42.3	0.997	0.999
287.	23	0.997	0.4433	0.9962	0.9943	1.0069	0.0	0.0	0.278	-7.26	42.3	0.997	0.999
297.	24	0.996	0.4429	0.9959	0.9938	1.0075	0.0	0.0	0.279	-7.23	42.2	0.996	0.999
307.	25	0.996	0.4427	0.9959	0.9936	1.0081	0.0	0.0	0.279	-7.22	42.2	0.996	0.999
317.	26	0.996	0.4424	0.9959	0.9934	1.0087	0.0	0.0	0.279	-7.21	42.2	0.996	0.999
327.	27	0.995	0.4422	0.9966	0.9940	1.0093	0.0	0.0	0.280	-7.20	42.2	0.995	0.999
337.	28	0.995	0.4421	0.9990	0.9964	1.0101	0.0	0.0	0.279	-7.20	42.2	0.995	0.999
347.	29	0.995	0.4421	0.9996	0.9970	1.0098	0.0	0.0	0.279	-7.20	42.2	0.995	0.999
357.	30	0.995	0.4423	1.0009	0.9984	1.0092	0.0	0.0	0.279	-7.21	42.2	0.995	0.999
7.	31	0.996	0.4427	1.0016	0.9993	1.0081	0.0	0.0	0.278	-7.22	42.2	0.996	0.999
17.	32	0.996	0.4432	1.0028	1.0009	1.0068	0.0	0.0	0.277	-7.24	42.2	0.996	0.999
27.	33	0.997	0.4440	1.0043	1.0028	1.0051	0.0	0.0	0.276	-7.28	42.3	0.997	0.999
37.	34	0.998	0.4449	1.0054	1.0044	1.0028	0.0	0.0	0.275	-7.31	42.3	0.998	1.000
47.	35	0.999	0.4460	1.0058	1.0055	0.9999	0.0	0.0	0.273	-7.36	42.4	0.999	1.000
57.	36	1.000	0.4472	1.0055	1.0059	0.9972	0.0	0.0	0.272	-7.41	42.4	1.000	1.080

STATOR

FLOW SWIRL= 57.39DEG PARTICLE SWIRL=147.49DEG PSAVG= 39.90PSIA = 275090.PA
PTAVG= 48.11PSIA = 331679.PA TTAVG= 980.3DEG R = 544.6DEG K VELAVG= 783.5FPS =238.8MPS
RVELAVG= 723.6FPS = 220.5MPS AXVELAVG= 587.1FPS =179.0MPS U= 942.FPS = 287.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
67.	1	1.001	0.5289	1.0042	1.0055	0.9959	0.0	0.0	0.281	-3.16	48.7	1.002	1.002
77.	2	1.001	0.5293	1.0033	1.0049	0.9944	0.0	0.0	0.281	-3.20	48.7	1.003	1.003
87.	3	1.001	0.5294	1.0029	1.0045	0.9937	0.0	0.0	0.280	-3.22	48.7	1.004	1.004
97.	4	1.001	0.5293	1.0030	1.0046	0.9935	0.0	0.0	0.280	-3.23	48.7	1.004	1.004
107.	5	1.001	0.5293	1.0031	1.0047	0.9936	0.0	0.0	0.280	-3.25	48.7	1.004	1.004
117.	6	1.001	0.5292	1.0032	1.0047	0.9938	0.0	0.0	0.279	-3.25	48.8	1.004	1.004
127.	7	1.001	0.5292	1.0032	1.0047	0.9939	0.0	0.0	0.279	-3.25	48.8	1.004	1.004
137.	8	1.001	0.5292	1.0032	1.0047	0.9940	0.0	0.0	0.279	-3.26	48.8	1.004	1.004
147.	9	1.001	0.5293	1.0018	1.0034	0.9936	0.0	0.0	0.279	-3.25	48.8	1.004	1.004
157.	10	1.001	0.5295	1.0007	1.0024	0.9930	0.0	0.0	0.280	-3.24	48.7	1.004	1.004
167.	11	1.001	0.5296	1.0004	1.0022	0.9924	0.0	0.0	0.280	-3.22	48.7	1.004	1.004
177.	12	1.001	0.5297	0.9994	1.0013	0.9918	0.0	0.0	0.281	-3.21	48.7	1.003	1.003
187.	13	1.001	0.5297	0.9984	1.0002	0.9916	0.0	0.0	0.281	-3.20	48.7	1.003	1.003
197.	14	1.000	0.5295	0.9973	0.9990	0.9919	0.0	0.0	0.281	-3.19	48.7	1.003	1.003
207.	15	1.000	0.5291	0.9963	0.9977	0.9928	0.0	0.0	0.281	-3.18	48.7	1.003	1.003
217.	16	1.000	0.5283	0.9955	0.9964	0.9944	0.0	0.0	0.282	-3.13	48.6	1.002	1.002
227.	17	0.999	0.5275	0.9951	0.9954	0.9967	0.0	0.0	0.283	-3.08	48.6	1.001	1.001
237.	18	0.999	0.5267	0.9952	0.9949	0.9993	0.0	0.0	0.284	-3.03	48.5	1.000	1.000
247.	19	0.999	0.5260	0.9958	0.9950	1.0018	0.0	0.0	0.285	-2.98	48.5	0.999	0.999
257.	20	0.999	0.5254	0.9967	0.9955	1.0037	0.0	0.0	0.286	-2.92	48.4	0.998	0.998
267.	21	0.999	0.5251	0.9968	0.9954	1.0050	0.0	0.0	0.287	-2.87	48.4	0.997	0.997
277.	22	0.999	0.5248	0.9968	0.9952	1.0059	0.0	0.0	0.287	-2.84	48.3	0.996	0.996
287.	23	0.999	0.5247	0.9965	0.9948	1.0065	0.0	0.0	0.288	-2.82	48.3	0.996	0.996
297.	24	0.999	0.5244	0.9964	0.9945	1.0072	0.0	0.0	0.288	-2.79	48.3	0.995	0.995
307.	25	0.999	0.5243	0.9963	0.9943	1.0078	0.0	0.0	0.289	-2.77	48.3	0.995	0.995
317.	26	0.999	0.5241	0.9962	0.9941	1.0084	0.0	0.0	0.289	-2.77	48.3	0.995	0.995
327.	27	0.999	0.5240	0.9970	0.9948	1.0090	0.0	0.0	0.289	-2.76	48.3	0.995	0.995
337.	28	0.999	0.5239	0.9992	0.9969	1.0099	0.0	0.0	0.289	-2.77	48.3	0.995	0.995
347.	29	0.999	0.5240	0.9998	0.9976	1.0098	0.0	0.0	0.288	-2.79	48.3	0.995	0.995
357.	30	0.999	0.5242	1.0011	0.9990	1.0095	0.0	0.0	0.288	-2.80	48.3	0.995	0.995
7.	31	1.000	0.5246	1.0018	1.0000	1.0085	0.0	0.0	0.287	-2.83	48.3	0.996	0.996
17.	32	1.000	0.5251	1.0029	1.0015	1.0074	0.0	0.0	0.287	-2.86	48.4	0.997	0.997
27.	33	1.000	0.5257	1.0043	1.0033	1.0059	0.0	0.0	0.286	-2.92	48.4	0.998	0.998
37.	34	1.001	0.5265	1.0053	1.0049	1.0038	0.0	0.0	0.284	-2.98	48.5	0.999	0.999
47.	35	1.001	0.5275	1.0057	1.0059	1.0012	0.0	0.0	0.283	-3.05	48.5	1.000	1.000
57.	36	1.001	0.5283	1.0053	1.0062	0.9984	0.0	0.0	0.282	-3.11	48.6	1.001	1.001

STAGE 14
ROTOR

FLOW SWIRL= 60.45DEG PARTICLE SWIRL=150.55DEG PSAVG= 42.58PSIA = 293600.PA
PTAVG= 48.31PSIA = 333055.PA TTAVG= 980.3DEG R = 544.6DEG K VELAVG= 645.9FPS =196.9MPS
RVELAVG= 879.6FPS = 268.1MPS AXVELAVG= 580.2FPS =176.8MPS U= 945.FPS = 288.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
70.	1	1.002	0.4328	1.0043	1.0054	0.9959	0.0	0.0	0.252	-4.36	41.4	1.002	1.000
80.	2	1.003	0.4335	1.0034	1.0049	0.9944	0.0	0.0	0.252	-4.40	41.4	1.003	1.001
90.	3	1.004	0.4338	1.0030	1.0047	0.9937	0.0	0.0	0.252	-4.41	41.4	1.004	1.001
100.	4	1.004	0.4340	1.0030	1.0049	0.9935	0.0	0.0	0.252	-4.42	41.4	1.004	1.001
110.	5	1.004	0.4341	1.0031	1.0050	0.9936	0.0	0.0	0.252	-4.43	41.4	1.004	1.001
120.	6	1.004	0.4341	1.0032	1.0050	0.9938	0.0	0.0	0.251	-4.44	41.4	1.004	1.001
130.	7	1.004	0.4341	1.0032	1.0050	0.9939	0.0	0.0	0.251	-4.44	41.4	1.004	1.001
140.	8	1.004	0.4342	1.0031	1.0050	0.9940	0.0	0.0	0.251	-4.45	41.4	1.004	1.001
150.	9	1.004	0.4342	1.0018	1.0037	0.9936	0.0	0.0	0.251	-4.44	41.4	1.004	1.001
160.	10	1.004	0.4342	1.0008	1.0027	0.9930	0.0	0.0	0.252	-4.43	41.4	1.004	1.001
170.	11	1.003	0.4340	1.0006	1.0024	0.9924	0.0	0.0	0.253	-4.41	41.4	1.003	1.001
180.	12	1.003	0.4340	0.9997	1.0015	0.9918	0.0	0.0	0.253	-4.39	41.4	1.003	1.001
190.	13	1.003	0.4340	0.9987	1.0005	0.9916	0.0	0.0	0.253	-4.38	41.4	1.003	1.001
200.	14	1.003	0.4339	0.9976	0.9993	0.9919	0.0	0.0	0.254	-4.38	41.4	1.003	1.001
210.	15	1.002	0.4336	0.9966	0.9981	0.9928	0.0	0.0	0.254	-4.37	41.4	1.002	1.000
220.	16	1.002	0.4328	0.9957	0.9969	0.9944	0.0	0.0	0.256	-4.33	41.3	1.002	1.000
230.	17	1.001	0.4319	0.9952	0.9958	0.9967	0.0	0.0	0.257	-4.30	41.3	1.001	1.000
240.	18	1.000	0.4310	0.9952	0.9952	0.9993	0.0	0.0	0.258	-4.26	41.3	1.000	1.000
250.	19	0.999	0.4300	0.9958	0.9953	1.0018	0.0	0.0	0.259	-4.23	41.2	0.999	1.000
260.	20	0.998	0.4291	0.9966	0.9956	1.0037	0.0	0.0	0.260	-4.18	41.2	0.998	1.000
270.	21	0.997	0.4285	0.9968	0.9954	1.0050	0.0	0.0	0.261	-4.14	41.1	0.997	0.999
280.	22	0.996	0.4280	0.9968	0.9951	1.0059	0.0	0.0	0.262	-4.12	41.1	0.996	0.999
290.	23	0.996	0.4277	0.9965	0.9946	1.0065	0.0	0.0	0.262	-4.10	41.1	0.996	0.999
300.	24	0.995	0.4272	0.9964	0.9943	1.0072	0.0	0.0	0.263	-4.08	41.1	0.995	0.999
310.	25	0.995	0.4270	0.9963	0.9940	1.0078	0.0	0.0	0.263	-4.06	41.1	0.995	0.999
320.	26	0.995	0.4268	0.9962	0.9938	1.0084	0.0	0.0	0.263	-4.06	41.1	0.995	0.999
330.	27	0.995	0.4266	0.9969	0.9944	1.0090	0.0	0.0	0.263	-4.05	41.1	0.995	0.999
340.	28	0.995	0.4266	0.9990	0.9965	1.0099	0.0	0.0	0.262	-4.07	41.1	0.995	0.999
350.	29	0.995	0.4267	0.9996	0.9971	1.0098	0.0	0.0	0.262	-4.08	41.1	0.995	0.999
0.	30	0.996	0.4269	1.0009	0.9986	1.0095	0.0	0.0	0.261	-4.09	41.1	0.996	0.999
10.	31	0.996	0.4274	1.0016	0.9995	1.0085	0.0	0.0	0.260	-4.12	41.1	0.996	0.999
20.	32	0.997	0.4279	1.0027	1.0010	1.0074	0.0	0.0	0.259	-4.14	41.1	0.997	0.999
30.	33	0.998	0.4288	1.0041	1.0028	1.0059	0.0	0.0	0.258	-4.19	41.2	0.998	1.000
40.	34	0.999	0.4297	1.0052	1.0045	1.0038	0.0	0.0	0.256	-4.24	41.2	0.999	1.000
50.	35	1.000	0.4308	1.0056	1.0055	1.0012	0.0	0.0	0.254	-4.29	41.3	1.000	1.000
60.	36	1.001	0.4319	1.0053	1.0059	0.9984	0.0	0.0	0.253	-4.33	41.3	1.001	1.000

STATOR

FLOW SWIRL= 61.62DEG PARTICLE SWIRL=156.17DEG PSAVG= 45.08PSIA = 310786.PA
PTAVG= 53.79PSIA = 370881.PA TTAVG=1022.8DEG R = 568.2DEG K VELAVG= 778.6FPS =237.3MPS
RVELAVG= 746.7FPS = 227.6MPS AXVELAVG= 596.8FPS =181.9MPS U= 949.FPS = 289.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
72.	1	1.002	0.5142	1.0037	1.0049	0.9968	0.0	0.0	0.292	-4.75	50.2	1.004	1.004
82.	2	1.002	0.5146	1.0028	1.0043	0.9949	0.0	0.0	0.292	-4.77	50.3	1.004	1.004
92.	3	1.001	0.5147	1.0024	1.0040	0.9939	0.0	0.0	0.292	-4.78	50.3	1.004	1.004
102.	4	1.001	0.5147	1.0025	1.0040	0.9936	0.0	0.0	0.292	-4.78	50.3	1.004	1.004
112.	5	1.001	0.5147	1.0025	1.0040	0.9935	0.0	0.0	0.292	-4.79	50.3	1.005	1.005
122.	6	1.001	0.5146	1.0025	1.0040	0.9936	0.0	0.0	0.291	-4.80	50.3	1.005	1.005
132.	7	1.001	0.5146	1.0025	1.0040	0.9938	0.0	0.0	0.291	-4.80	50.3	1.005	1.005
142.	8	1.001	0.5146	1.0023	1.0039	0.9939	0.0	0.0	0.291	-4.81	50.3	1.005	1.005
152.	9	1.001	0.5147	1.0012	1.0028	0.9936	0.0	0.0	0.291	-4.80	50.3	1.005	1.005
162.	10	1.001	0.5148	1.0004	1.0021	0.9932	0.0	0.0	0.292	-4.79	50.3	1.005	1.005
172.	11	1.001	0.5148	1.0006	1.0022	0.9928	0.0	0.0	0.293	-4.74	50.2	1.004	1.004
182.	12	1.001	0.5149	0.9998	1.0015	0.9921	0.0	0.0	0.293	-4.72	50.2	1.003	1.003
192.	13	1.001	0.5149	0.9989	1.0006	0.9918	0.0	0.0	0.294	-4.70	50.2	1.003	1.003
202.	14	1.000	0.5148	0.9976	0.9993	0.9918	0.0	0.0	0.294	-4.69	50.2	1.003	1.003
212.	15	1.000	0.5144	0.9967	0.9981	0.9924	0.0	0.0	0.294	-4.65	50.2	1.002	1.002
222.	16	0.999	0.5137	0.9961	0.9970	0.9938	0.0	0.0	0.296	-4.58	50.1	1.001	1.001
232.	17	0.999	0.5129	0.9956	0.9960	0.9958	0.0	0.0	0.297	-4.52	50.0	1.000	1.000
242.	18	0.999	0.5121	0.9956	0.9954	0.9983	0.0	0.0	0.298	-4.46	50.0	0.999	0.999
252.	19	0.999	0.5114	0.9962	0.9955	1.0008	0.0	0.0	0.299	-4.42	49.9	0.998	0.998
262.	20	0.998	0.5108	0.9972	0.9961	1.0030	0.0	0.0	0.299	-4.36	49.9	0.997	0.997
272.	21	0.999	0.5105	0.9975	0.9961	1.0045	0.0	0.0	0.300	-4.32	49.8	0.996	0.996
282.	22	0.999	0.5102	0.9974	0.9959	1.0055	0.0	0.0	0.301	-4.30	49.8	0.995	0.995
292.	23	0.999	0.5100	0.9972	0.9955	1.0063	0.0	0.0	0.301	-4.27	49.8	0.995	0.995
302.	24	0.996	0.5098	0.9972	0.9954	1.0070	0.0	0.0	0.302	-4.23	49.7	0.994	0.994
312.	25	0.998	0.5096	0.9970	0.9951	1.0076	0.0	0.0	0.302	-4.22	49.7	0.994	0.994
322.	26	0.998	0.5095	0.9969	0.9948	1.0082	0.0	0.0	0.302	-4.22	49.7	0.994	0.994
332.	27	0.999	0.5094	0.9976	0.9954	1.0088	0.0	0.0	0.302	-4.22	49.7	0.994	0.994
342.	28	0.999	0.5093	0.9993	0.9971	1.0097	0.0	0.0	0.301	-4.26	49.8	0.995	0.995
352.	29	0.999	0.5094	0.9998	0.9977	1.0098	0.0	0.0	0.301	-4.28	49.8	0.995	0.995
2.	30	0.999	0.5096	1.0011	0.9991	1.0097	0.0	0.0	0.300	-4.31	49.8	0.996	0.996
12.	31	1.000	0.5100	1.0016	0.9999	1.0089	0.0	0.0	0.299	-4.36	49.9	0.997	0.997
22.	32	1.000	0.5104	1.0026	1.0012	1.0079	0.0	0.0	0.298	-4.41	49.9	0.997	0.997
32.	33	1.001	0.5111	1.0037	1.0027	1.0065	0.0	0.0	0.297	-4.49	50.0	0.999	0.999
42.	34	1.001	0.5118	1.0046	1.0042	1.0047	0.0	0.0	0.295	-4.57	50.1	1.001	1.001
52.	35	1.002	0.5127	1.0049	1.0051	1.0022	0.0	0.0	0.294	-4.66	50.2	1.002	1.002
62.	36	1.002	0.5135	1.0047	1.0055	0.9995	0.0	0.0	0.293	-4.71	50.2	1.003	1.003

STAGE 15
ROTOR

FLOW SWIRL= 64.30DEG PARTICLE SWIRL=158.85DEG PSAVG= 48.34PSIA = 333285.PA
PTAVG= 54.32PSIA = 374531.PA TTAVG=1022.8DEG R = 568.2DEG K VELAVG= 635.1FPS =193.6MPS
RVELAVG= 917.8FPS = 279.7MPS AXVELAVG= 585.8FPS =178.6MPS U= 952.FPS = 290.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
74.	1	1.004	0.4169	1.0035	1.0048	0.9968	0.0	0.0	0.246	-5.92	39.8	1.004	1.001
84.	2	1.004	0.4175	1.0027	1.0044	0.9949	0.0	0.0	0.246	-5.93	39.8	1.004	1.001
94.	3	1.004	0.4177	1.0024	1.0042	0.9939	0.0	0.0	0.247	-5.93	39.8	1.004	1.001
104.	4	1.004	0.4176	1.0025	1.0043	0.9936	0.0	0.0	0.247	-5.94	39.8	1.004	1.001
114.	5	1.005	0.4179	1.0024	1.0043	0.9935	0.0	0.0	0.246	-5.94	39.8	1.005	1.001
124.	6	1.005	0.4179	1.0025	1.0043	0.9936	0.0	0.0	0.246	-5.95	39.8	1.005	1.001
134.	7	1.005	0.4179	1.0024	1.0043	0.9938	0.0	0.0	0.246	-5.95	39.9	1.005	1.001
144.	8	1.005	0.4180	1.0023	1.0042	0.9939	0.0	0.0	0.246	-5.96	39.9	1.005	1.001
154.	9	1.005	0.4180	1.0012	1.0031	0.9936	0.0	0.0	0.246	-5.95	39.8	1.005	1.001
164.	10	1.005	0.4179	1.0005	1.0023	0.9932	0.0	0.0	0.247	-5.94	39.8	1.005	1.001
174.	11	1.004	0.4176	1.0008	1.0025	0.9928	0.0	0.0	0.248	-5.90	39.8	1.004	1.001
184.	12	1.003	0.4175	1.0000	1.0017	0.9921	0.0	0.0	0.249	-5.88	39.8	1.003	1.001
194.	13	1.003	0.4174	0.9992	1.0008	0.9918	0.0	0.0	0.250	-5.86	39.8	1.003	1.001
204.	14	1.002	0.4173	0.9980	0.9995	0.9918	0.0	0.0	0.250	-5.86	39.8	1.002	1.000
214.	15	1.002	0.4168	0.9971	0.9984	0.9924	0.0	0.0	0.251	-5.83	39.7	1.002	1.000
224.	16	1.000	0.4160	0.9966	0.9973	0.9938	0.0	0.0	0.253	-5.78	39.7	1.000	1.000
234.	17	0.999	0.4151	0.9960	0.9963	0.9958	0.0	0.0	0.255	-5.73	39.6	0.999	1.000
244.	18	0.998	0.4141	0.9959	0.9957	0.9983	0.0	0.0	0.256	-5.70	39.6	0.998	1.000
254.	19	0.997	0.4133	0.9964	0.9957	1.0008	0.0	0.0	0.257	-5.67	39.6	0.997	0.999
264.	20	0.997	0.4125	0.9973	0.9961	1.0030	0.0	0.0	0.258	-5.64	39.5	0.997	0.999
274.	21	0.996	0.4118	0.9976	0.9960	1.0045	0.0	0.0	0.258	-5.61	39.5	0.996	0.999
284.	22	0.995	0.4114	0.9975	0.9957	1.0055	0.0	0.0	0.259	-5.59	39.5	0.995	0.999
294.	23	0.995	0.4111	0.9972	0.9953	1.0063	0.0	0.0	0.259	-5.57	39.5	0.995	0.999
304.	24	0.994	0.4107	0.9973	0.9951	1.0070	0.0	0.0	0.260	-5.55	39.4	0.994	0.999
314.	25	0.994	0.4105	0.9971	0.9948	1.0076	0.0	0.0	0.260	-5.54	39.4	0.994	0.999
324.	26	0.994	0.4103	0.9969	0.9945	1.0082	0.0	0.0	0.260	-5.54	39.4	0.994	0.999
334.	27	0.994	0.4102	0.9975	0.9950	1.0088	0.0	0.0	0.260	-5.54	39.4	0.994	0.999
344.	28	0.995	0.4104	0.9991	0.9967	1.0097	0.0	0.0	0.258	-5.57	39.5	0.995	0.999
354.	29	0.995	0.4106	0.9995	0.9973	1.0098	0.0	0.0	0.257	-5.59	39.5	0.995	0.999
4.	30	0.996	0.4109	1.0008	0.9987	1.0097	0.0	0.0	0.257	-5.61	39.5	0.996	0.999
14.	31	0.997	0.4114	1.0013	0.9995	1.0089	0.0	0.0	0.255	-5.65	39.5	0.997	0.999
24.	32	0.998	0.4120	1.0023	1.0008	1.0079	0.0	0.0	0.254	-5.68	39.6	0.998	1.000
34.	33	0.999	0.4130	1.0033	1.0023	1.0065	0.0	0.0	0.251	-5.75	39.6	0.999	1.000
44.	34	1.001	0.4140	1.0042	1.0039	1.0047	0.0	0.0	0.249	-5.80	39.7	1.001	1.000
54.	35	1.002	0.4152	1.0045	1.0048	1.0022	0.0	0.0	0.247	-5.86	39.8	1.002	1.000
64.	36	1.003	0.4161	1.0044	1.0053	0.9995	0.0	0.0	0.246	-5.90	39.8	1.003	1.001

STATOR

FLOW SWIRL= 64.41DEG   PARTICLE SWIRL=162.53DEG   PSAVG= 52.31PSIA = 360684.PA
PTAVG= 60.72PSIA = 418639.PA   TTAVG=1061.4DEG R = 589.6DEG K   VELAVG= 729.6FPS =222.4MPS
RVELAVG= 774.5FPS = 236.1MPS   AXVELAVG= 580.7FPS =177.0MPS   U= 954.FPS = 291.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
74.	1	1.002	0.4715	1.0024	1.0034	0.9975	0.0	0.0	0.262	-5.48	53.1	1.006	1.006
84.	2	1.002	0.4718	1.0019	1.0031	0.9954	0.0	0.0	0.262	-5.48	53.1	1.006	1.006
94.	3	1.001	0.4720	1.0018	1.0031	0.9942	0.0	0.0	0.262	-5.46	53.1	1.005	1.005
104.	4	1.001	0.4720	1.0018	1.0032	0.9936	0.0	0.0	0.262	-5.45	53.1	1.005	1.005
114.	5	1.001	0.4721	1.0017	1.0030	0.9935	0.0	0.0	0.262	-5.46	53.1	1.005	1.005
124.	6	1.001	0.4720	1.0017	1.0030	0.9935	0.0	0.0	0.262	-5.47	53.1	1.006	1.006
134.	7	1.001	0.4720	1.0016	1.0030	0.9936	0.0	0.0	0.262	-5.47	53.1	1.006	1.006
144.	8	1.001	0.4720	1.0013	1.0027	0.9937	0.0	0.0	0.262	-5.49	53.1	1.006	1.006
154.	9	1.001	0.4720	1.0005	1.0018	0.9935	0.0	0.0	0.262	-5.47	53.1	1.005	1.005
164.	10	1.001	0.4720	1.0000	1.0013	0.9932	0.0	0.0	0.263	-5.44	53.0	1.005	1.005
174.	11	1.001	0.4719	1.0008	1.0021	0.9930	0.0	0.0	0.264	-5.37	53.0	1.004	1.004
184.	12	1.001	0.4720	1.0002	1.0016	0.9924	0.0	0.0	0.265	-5.33	52.9	1.003	1.003
194.	13	1.000	0.4720	0.9996	1.0010	0.9920	0.0	0.0	0.265	-5.29	52.9	1.002	1.002
204.	14	1.000	0.4720	0.9984	0.9997	0.9919	0.0	0.0	0.266	-5.27	52.9	1.002	1.002
214.	15	1.000	0.4716	0.9976	0.9989	0.9923	0.0	0.0	0.267	-5.20	52.8	1.001	1.001
224.	16	0.999	0.4710	0.9977	0.9984	0.9936	0.0	0.0	0.269	-5.07	52.7	0.999	0.999
234.	17	0.999	0.4704	0.9972	0.9975	0.9953	0.0	0.0	0.271	-4.99	52.6	0.998	0.998
244.	18	0.998	0.4697	0.9970	0.9969	0.9976	0.0	0.0	0.272	-4.93	52.5	0.996	0.996
254.	19	0.998	0.4691	0.9974	0.9968	1.0001	0.0	0.0	0.272	-4.89	52.5	0.996	0.996
264.	20	0.998	0.4685	0.9983	0.9974	1.0025	0.0	0.0	0.273	-4.84	52.4	0.995	0.995
274.	21	0.998	0.4681	0.9986	0.9975	1.0041	0.0	0.0	0.274	-4.80	52.4	0.994	0.994
284.	22	0.998	0.4679	0.9984	0.9971	1.0053	0.0	0.0	0.274	-4.79	52.4	0.994	0.994
294.	23	0.998	0.4677	0.9982	0.9968	1.0061	0.0	0.0	0.275	-4.77	52.4	0.994	0.994
304.	24	0.998	0.4674	0.9985	0.9969	1.0069	0.0	0.0	0.276	-4.71	52.3	0.993	0.993
314.	25	0.998	0.4673	0.9981	0.9964	1.0075	0.0	0.0	0.276	-4.71	52.3	0.993	0.993
324.	26	0.998	0.4673	0.9977	0.9960	1.0080	0.0	0.0	0.275	-4.72	52.3	0.993	0.993
334.	27	0.998	0.4671	0.9983	0.9965	1.0087	0.0	0.0	0.275	-4.72	52.3	0.993	0.993
344.	28	0.999	0.4672	0.9992	0.9975	1.0095	0.0	0.0	0.274	-4.81	52.4	0.994	0.994
354.	29	0.999	0.4672	0.9996	0.9978	1.0097	0.0	0.0	0.273	-4.85	52.4	0.995	0.995
4.	30	0.999	0.4674	1.0007	0.9990	1.0097	0.0	0.0	0.272	-4.90	52.5	0.996	0.996
14.	31	1.000	0.4677	1.0009	0.9995	1.0091	0.0	0.0	0.271	-4.98	52.6	0.997	0.997
24.	32	1.000	0.4681	1.0017	1.0006	1.0081	0.0	0.0	0.269	-5.05	52.7	0.999	0.999
34.	33	1.001	0.4688	1.0021	1.0014	1.0068	0.0	0.0	0.267	-5.19	52.8	1.001	1.001
44.	34	1.001	0.4694	1.0029	1.0025	1.0051	0.0	0.0	0.265	-5.30	52.9	1.003	1.003
54.	35	1.002	0.4702	1.0029	1.0031	1.0028	0.0	0.0	0.263	-5.41	53.0	1.005	1.005
64.	36	1.002	0.4709	1.0031	1.0037	1.0002	0.0	0.0	0.262	-5.46	53.1	1.005	1.005

STAGE 1C
ROTOR

FLOW SWIRL= 66.73DEG   PARTICLE SWIRL=164.85DEG   PSAVG= 54.25PSIA = 374048.PA
PTAVG= 60.24PSIA = 415332.PA   TTAVG=1061.4DEG R = 589.6DEG K   VELAVG= 613.4FPS =187.0MPS
RVELAVG= 956.3FPS = 291.5MPS   AXVELAVG= 581.0FPS =177.1MPS   U= 956.FPS = 291.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
77.	1	1.006	0.3956	1.0020	1.0036	0.9975	0.0	0.0	0.271	-5.43	37.6	1.006	1.001
87.	2	1.006	0.3960	1.0014	1.0032	0.9954	0.0	0.0	0.272	-5.42	37.6	1.006	1.001
97.	3	1.006	0.3961	1.0014	1.0032	0.9942	0.0	0.0	0.273	-5.41	37.6	1.006	1.001
107.	4	1.006	0.3962	1.0014	1.0033	0.9936	0.0	0.0	0.273	-5.40	37.6	1.006	1.001
117.	5	1.006	0.3963	1.0013	1.0032	0.9935	0.0	0.0	0.273	-5.41	37.6	1.006	1.001
127.	6	1.006	0.3963	1.0012	1.0032	0.9935	0.0	0.0	0.273	-5.42	37.6	1.006	1.001
137.	7	1.006	0.3963	1.0012	1.0032	0.9936	0.0	0.0	0.273	-5.42	37.6	1.006	1.001
147.	8	1.006	0.3965	1.0009	1.0029	0.9937	0.0	0.0	0.273	-5.43	37.6	1.006	1.001
157.	9	1.006	0.3963	1.0001	1.0020	0.9935	0.0	0.0	0.273	-5.41	37.6	1.006	1.001
167.	10	1.005	0.3962	0.9996	1.0015	0.9932	0.0	0.0	0.274	-5.40	37.6	1.005	1.001
177.	11	1.004	0.3957	1.0006	1.0022	0.9930	0.0	0.0	0.276	-5.35	37.6	1.004	1.001
187.	12	1.003	0.3955	1.0000	1.0016	0.9924	0.0	0.0	0.276	-5.33	37.5	1.003	1.001
197.	13	1.003	0.3953	0.9995	1.0009	0.9920	0.0	0.0	0.277	-5.30	37.5	1.003	1.001
207.	14	1.002	0.3952	0.9983	0.9996	0.9919	0.0	0.0	0.278	-5.29	37.5	1.002	1.000
217.	15	1.001	0.3946	0.9978	0.9988	0.9923	0.0	0.0	0.280	-5.25	37.4	1.001	1.000
227.	16	0.999	0.3934	0.9979	0.9983	0.9936	0.0	0.0	0.283	-5.17	37.4	0.999	1.000
237.	17	0.997	0.3925	0.9974	0.9973	0.9953	0.0	0.0	0.285	-5.12	37.3	0.997	0.999
247.	18	0.996	0.3916	0.9973	0.9968	0.9976	0.0	0.0	0.286	-5.08	37.3	0.996	0.999
257.	19	0.996	0.3909	0.9977	0.9967	1.0001	0.0	0.0	0.287	-5.06	37.3	0.996	0.999
267.	20	0.995	0.3900	0.9987	0.9973	1.0025	0.0	0.0	0.288	-5.03	37.2	0.995	0.999
277.	21	0.994	0.3894	0.9990	0.9973	1.0041	0.0	0.0	0.288	-5.00	37.2	0.994	0.999
287.	22	0.994	0.3891	0.9989	0.9970	1.0053	0.0	0.0	0.288	-4.99	37.2	0.994	0.999
297.	23	0.993	0.3888	0.9986	0.9966	1.0061	0.0	0.0	0.288	-4.98	37.2	0.993	0.999
307.	24	0.992	0.3883	0.9990	0.9967	1.0069	0.0	0.0	0.289	-4.95	37.1	0.992	0.998
317.	25	0.992	0.3882	0.9986	0.9962	1.0075	0.0	0.0	0.289	-4.95	37.1	0.992	0.998
327.	26	0.993	0.3881	0.9982	0.9958	1.0080	0.0	0.0	0.289	-4.95	37.2	0.993	0.998
337.	27	0.993	0.3880	0.9988	0.9963	1.0087	0.0	0.0	0.289	-4.95	37.2	0.993	0.998
347.	28	0.994	0.3885	0.9996	0.9974	1.0095	0.0	0.0	0.286	-5.01	37.2	0.994	0.999
357.	29	0.995	0.3887	0.9999	0.9978	1.0097	0.0	0.0	0.286	-5.03	37.2	0.995	0.999
7.	30	0.996	0.3891	1.0009	0.9990	1.0097	0.0	0.0	0.284	-5.07	37.3	0.996	0.999
17.	31	0.997	0.3898	1.0011	0.9995	1.0091	0.0	0.0	0.282	-5.11	37.3	0.997	0.999
27.	32	0.998	0.3905	1.0018	1.0006	1.0081	0.0	0.0	0.280	-5.16	37.4	0.998	1.000
37.	33	1.001	0.3917	1.0020	1.0015	1.0068	0.0	0.0	0.277	-5.24	37.4	1.001	1.000
47.	34	1.003	0.3928	1.0026	1.0027	1.0051	0.0	0.0	0.275	-5.3[illegible]	37.5	1.003	1.001
57.	35	1.005	0.3941	1.0026	1.0033	1.0028	0.0	0.0	0.272	-5.38	37.6	1.005	1.001
67.	36	1.006	0.3950	1.0027	1.0039	1.0002	0.0	0.0	0.271	-5.41	37.6	1.006	1.001

STATOR

FLOW SWIRL= 66.72DEG PARTICLE SWIRL=169.20DEG
PTAVG= 65.84PSIA = 453929.PA TTAVG=1099.7DEG R = 611.0DEG K PSAVG= 57.40PSIA = 395734.PA
RVELAVG= 794.9FPS = 242.3MPS AXVELAVG= 580.4FPS =176.9MPS VELAVG= 713.2FPS =217.4MPS
U= 958.FPS = 292.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
77.	1	1.003	0.4526	1.0008	1.0018	0.9982	0.0	0.0	0.329	-12.06	55.0	1.008	1.008
87.	2	1.002	0.4529	1.0006	1.0018	0.9960	0.0	0.0	0.329	-12.03	54.9	1.007	1.007
97.	3	1.002	0.4529	1.0009	1.0021	0.9945	0.0	0.0	0.330	-11.97	54.9	1.007	1.007
107.	4	1.001	0.4530	1.0009	1.0022	0.9937	0.0	0.0	0.331	-11.95	54.8	1.006	1.006
117.	5	1.002	0.4531	1.0005	1.0019	0.9934	0.0	0.0	0.331	-11.96	54.9	1.006	1.006
127.	6	1.001	0.4531	1.0005	1.0019	0.9933	0.0	0.0	0.331	-11.97	54.9	1.006	1.006
137.	7	1.001	0.4531	1.0005	1.0018	0.9934	0.0	0.0	0.331	-11.97	54.9	1.006	1.006
147.	8	1.002	0.4531	1.0000	1.0013	0.9934	0.0	0.0	0.330	-12.00	54.9	1.007	1.007
157.	9	1.001	0.4530	0.9997	1.0009	0.9934	0.0	0.0	0.331	-11.95	54.8	1.006	1.006
167.	10	1.001	0.4530	0.9993	1.0006	0.9932	0.0	0.0	0.331	-11.92	54.8	1.006	1.006
177.	11	1.001	0.4527	1.0009	1.0020	0.9933	0.0	0.0	0.333	-11.81	54.7	1.004	1.004
187.	12	1.001	0.4529	1.0003	1.0015	0.9927	0.0	0.0	0.333	-11.78	54.7	1.003	1.003
197.	13	1.000	0.4528	0.9999	1.0011	0.9923	0.0	0.0	0.334	-11.72	54.6	1.002	1.002
207.	14	1.000	0.4528	0.9987	0.9999	0.9920	0.0	0.0	0.335	-11.69	54.6	1.002	1.002
217.	15	0.999	0.4524	0.9987	0.9996	0.9924	0.0	0.0	0.336	-11.57	54.5	1.000	1.000
227.	16	0.998	0.4516	0.9996	1.0000	0.9935	0.0	0.0	0.339	-11.38	54.3	0.997	0.997
237.	17	0.998	0.4511	0.9990	0.9991	0.9950	0.0	0.0	0.341	-11.28	54.2	0.995	0.995
247.	18	0.998	0.4504	0.9988	0.9985	0.9971	0.0	0.0	0.341	-11.26	54.1	0.994	0.994
257.	19	0.998	0.4499	0.9989	0.9983	0.9995	0.0	0.0	0.342	-11.17	54.1	0.994	0.994
267.	20	0.998	0.4493	1.0000	0.9990	1.0019	0.0	0.0	0.342	-11.11	54.0	0.993	0.993
277.	21	0.998	0.4490	1.0002	0.9990	1.0038	0.0	0.0	0.343	-11.09	54.0	0.992	0.992
287.	22	0.998	0.4488	0.9998	0.9985	1.0050	0.0	0.0	0.342	-11.09	54.0	0.993	0.993
297.	23	0.998	0.4486	0.9996	0.9982	1.0060	0.0	0.0	0.343	-11.07	54.0	0.992	0.992
307.	24	0.998	0.4482	1.0003	0.9987	1.0069	0.0	0.0	0.344	-11.01	53.9	0.991	0.991
317.	25	0.998	0.4483	0.9995	0.9979	1.0074	0.0	0.0	0.343	-11.02	53.9	0.991	0.991
327.	26	0.998	0.4482	0.9990	0.9973	1.0080	0.0	0.0	0.343	-11.04	53.9	0.992	0.992
337.	27	0.998	0.4481	0.9995	0.9976	1.0087	0.0	0.0	0.343	-11.04	53.9	0.992	0.992
347.	28	0.999	0.4484	0.9994	0.9978	1.0092	0.0	0.0	0.341	-11.18	54.1	0.994	0.994
357.	29	0.999	0.4483	0.9998	0.9982	1.0096	0.0	0.0	0.340	-11.23	54.1	0.995	0.995
7.	30	0.999	0.4485	1.0006	0.9991	1.0097	0.0	0.0	0.339	-11.31	54.2	0.996	0.996
17.	31	1.000	0.4489	1.0003	0.9991	1.0091	0.0	0.0	0.337	-11.43	54.3	0.998	0.998
27.	32	1.001	0.4493	1.0009	0.9999	1.0083	0.0	0.0	0.336	-11.53	54.4	0.999	0.999
37.	33	1.002	0.4502	1.0003	0.9998	1.0069	0.0	0.0	0.333	-11.73	54.6	1.003	1.003
47.	34	1.002	0.4508	1.0008	1.0006	1.0054	0.0	0.0	0.331	-11.87	54.8	1.005	1.005
57.	35	1.003	0.4516	1.0005	1.0009	1.0032	0.0	0.0	0.329	-12.02	54.9	1.007	1.007
67.	36	1.003	0.4521	1.0010	1.0017	1.0008	0.0	0.0	0.329	-12.06	55.0	1.008	1.008

EXIT

FLOW SWIRL= 68.54DEG PARTICLE SWIRL=171.02DEG
PTAVG= 67.79PSIA = 467364.PA TTAVG=1099.7DEG R = 611.0DEG K PSAVG= 62.32PSIA = 429675.PA
RVELAVG= 0.0FPS = 0.0MPS AXVELAVG= 0.0FPS = 0.0MPS VELAVG= 560.3FPS =170.8MPS
U= 958.FPS = 292.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	IN DEG	AXIAL VEL	REL VEL
79.	1	1.009	0.3552	1.0000	1.0016	0.9982	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89.	2	1.008	0.3553	1.0000	1.0018	0.9960	0.0	0.0	0.0	0.0	0.0	0.0	0.0
99.	3	1.007	0.3551	1.0006	1.0022	0.9945	0.0	0.0	0.0	0.0	0.0	0.0	0.0
109.	4	1.006	0.3551	1.0008	1.0024	0.9937	0.0	0.0	0.0	0.0	0.0	0.0	0.0
119.	5	1.007	0.3552	1.0004	1.0021	0.9934	0.0	0.0	0.0	0.0	0.0	0.0	0.0
129.	6	1.007	0.3552	1.0004	1.0021	0.9933	0.0	0.0	0.0	0.0	0.0	0.0	0.0
139.	7	1.007	0.3552	1.0003	1.0020	0.9934	0.0	0.0	0.0	0.0	0.0	0.0	0.0
149.	8	1.007	0.3554	0.9997	1.0015	0.9934	0.0	0.0	0.0	0.0	0.0	0.0	0.0
159.	9	1.006	0.3551	0.9995	1.0012	0.9934	0.0	0.0	0.0	0.0	0.0	0.0	0.0
169.	10	1.006	0.3550	0.9992	1.0008	0.9932	0.0	0.0	0.0	0.0	0.0	0.0	0.0
179.	11	1.004	0.3543	1.0011	1.0023	0.9933	0.0	0.0	0.0	0.0	0.0	0.0	0.0
189.	12	1.003	0.3541	1.0006	1.0018	0.9927	0.0	0.0	0.0	0.0	0.0	0.0	0.0
199.	13	1.002	0.3538	1.0004	1.0014	0.9923	0.0	0.0	0.0	0.0	0.0	0.0	0.0
209.	14	1.001	0.3536	0.9993	1.0002	0.9920	0.0	0.0	0.0	0.0	0.0	0.0	0.0
219.	15	0.995	0.3528	0.9995	1.0000	0.9924	0.0	0.0	0.0	0.0	0.0	0.0	0.0
229.	16	0.996	0.3514	1.0006	1.0005	0.9935	0.0	0.0	0.0	0.0	0.0	0.0	0.0
239.	17	0.994	0.3506	1.0001	0.9996	0.9950	0.0	0.0	0.0	0.0	0.0	0.0	0.0
249.	18	0.993	0.3498	0.9998	0.9989	0.9971	0.0	0.0	0.0	0.0	0.0	0.0	0.0
259.	19	0.993	0.3492	0.9997	0.9986	0.9995	0.0	0.0	0.0	0.0	0.0	0.0	0.0
269.	20	0.992	0.3485	1.0007	0.9992	1.0019	0.0	0.0	0.0	0.0	0.0	0.0	0.0
279.	21	0.992	0.3461	1.0008	0.9991	1.0038	0.0	0.0	0.0	0.0	0.0	0.0	0.0
289.	22	0.992	0.3480	1.0002	0.9985	1.0050	0.0	0.0	0.0	0.0	0.0	0.0	0.0
299.	23	0.992	0.3478	1.0000	0.9981	1.0060	0.0	0.0	0.0	0.0	0.0	0.0	0.0
309.	24	0.991	0.3472	1.0007	0.9986	1.0069	0.0	0.0	0.0	0.0	0.0	0.0	0.0
319.	25	0.991	0.3472	0.9998	0.9977	1.0074	0.0	0.0	0.0	0.0	0.0	0.0	0.0
329.	26	0.991	0.3473	0.9992	0.9971	1.0080	0.0	0.0	0.0	0.0	0.0	0.0	0.0
339.	27	0.992	0.3472	0.9997	0.9976	1.0087	0.0	0.0	0.0	0.0	0.0	0.0	0.0
349.	28	0.994	0.3480	0.9993	0.9975	1.0092	0.0	0.0	0.0	0.0	0.0	0.0	0.0
359.	29	0.995	0.3483	0.9995	0.9979	1.0096	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9.	30	0.996	0.3487	1.0002	0.9988	1.0097	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19.	31	0.998	0.3496	0.9997	0.9987	1.0091	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29.	32	1.000	0.3503	1.0002	0.9995	1.0083	0.0	0.0	0.0	0.0	0.0	0.0	0.0
39.	33	1.004	0.3518	0.9993	0.9993	1.0069	0.0	0.0	0.0	0.0	0.0	0.0	0.0
49.	34	1.006	0.3529	0.9996	1.0002	1.0054	0.0	0.0	0.0	0.0	0.0	0.0	0.0
59.	35	1.008	0.3542	0.9992	1.0004	1.0032	0.0	0.0	0.0	0.0	0.0	0.0	0.0
69.	36	1.009	0.3548	0.9999	1.0014	1.0008	0.0	0.0	0.0	0.0	0.0	0.0	0.0

WCORR=217.3LBM/SEC= 98.6KG/SEC   N1CORR= 8644.RPM   N2CORR=10216.RPM   N2/N1(MECH)=1.309

THETM=180.0DEG   BYPASS RATIO=1.253   MAX-MIN/AVG=0.132

FAN OD OUTPUT -

	CORR FLOW	PRESS RATIO	EFFICIENCY
FAN OD PERFORMANCE 2.6F/2	120.83 LBM/SEC 54.81 KG/SEC	1.750	0.763

---- ROW OUTPUT ----

IGV

FLOW SWIRL= 0.0 DEG   PARTICLE SWIRL= 0.0 DEG   PSAVG= 6.36PSIA = 43859.PA
PTAVG= 7.28PSIA = 50197.PA   TTAVG= 532.6DEG R = 295.9DEG K   VELAVG= 492.4FPS =150.1MPS
RVELAVG=1311.2FPS = 399.7MPS   AXVELAVG= 488.7FPS =149.0MPS   U=1217.FPS = 371.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
10.	1	0.993	0.4404	1.0457	1.0439	1.0000	0.0	0.0	-.259	4.49	88.9	1.001	0.993
20.	2	0.994	0.4409	1.0454	1.0439	1.0000	0.0	0.0	-.248	3.52	87.9	1.001	0.987
30.	3	0.996	0.4415	1.0451	1.0439	1.0000	0.0	0.0	-.236	2.48	86.9	1.002	0.981
40.	4	0.998	0.4423	1.0445	1.0439	1.0000	0.0	0.0	-.223	1.32	85.7	1.002	0.974
50.	5	1.000	0.4436	1.0438	1.0439	1.0000	0.0	0.0	-.205	-0.05	84.3	1.003	0.966
60.	6	1.005	0.4456	1.0419	1.0432	1.0000	0.0	0.0	-.182	-1.76	82.6	1.004	0.956
70.	7	1.012	0.4490	1.0380	1.0414	1.0000	0.0	0.0	-.151	-3.99	80.4	1.005	0.942
80.	8	1.026	0.4554	1.0283	1.0354	1.0000	0.0	0.0	-.103	-7.10	77.3	1.008	0.923
90.	9	1.035	0.4596	0.9878	0.9972	1.0000	0.0	0.0	-.079	-8.53	75.9	1.011	0.914
100.	10	1.024	0.4547	0.9590	0.9652	1.0000	0.0	0.0	-.115	-6.32	78.1	1.010	0.928
110.	11	1.011	0.4485	0.9579	0.9608	1.0000	0.0	0.0	-.161	-3.31	81.1	1.006	0.946
120.	12	1.004	0.4451	0.9571	0.9581	1.0000	0.0	0.0	-.189	-1.24	83.2	1.004	0.959
130.	13	0.999	0.4428	0.9577	0.9574	1.0000	0.0	0.0	-.211	0.39	84.8	1.002	0.969
140.	14	0.995	0.4413	0.9579	0.9567	1.0000	0.0	0.0	-.227	1.69	86.1	1.001	0.976
150.	15	0.993	0.4401	0.9578	0.9560	1.0000	0.0	0.0	-.241	2.85	87.2	0.999	0.983
160.	16	0.991	0.4393	0.9583	0.9560	1.0000	0.0	0.0	-.253	3.91	88.3	0.998	0.989
170.	17	0.990	0.4387	0.9586	0.9560	1.0000	0.0	0.0	-.263	4.88	89.3	0.997	0.995
180.	18	0.989	0.4384	0.9588	0.9560	1.0000	0.0	0.0	-.273	5.80	90.2	0.997	1.001
190.	19	0.989	0.4382	0.9589	0.9560	1.0000	0.0	0.0	-.282	6.72	91.1	0.996	1.006
200.	20	0.989	0.4383	0.9589	0.9560	1.0000	0.0	0.0	-.292	7.68	92.1	0.996	1.012
210.	21	0.989	0.4386	0.9587	0.9560	1.0000	0.0	0.0	-.301	8.71	93.1	0.995	1.018
220.	22	0.991	0.4392	0.9584	0.9560	1.0000	0.0	0.0	-.311	9.89	94.3	0.995	1.025
230.	23	0.993	0.4403	0.9580	0.9563	1.0000	0.0	0.0	-.323	11.33	95.7	0.996	1.034
240.	24	0.997	0.4421	0.9588	0.9581	1.0000	0.0	0.0	-.335	13.10	97.5	0.996	1.045
250.	25	1.003	0.4450	0.9625	0.9631	1.0000	0.0	0.0	-.348	15.18	99.6	0.997	1.058
260.	26	1.012	0.4489	0.9716	0.9745	1.0000	0.0	0.0	-.359	17.35	101.7	0.998	1.072
270.	27	1.017	0.4514	0.9927	0.9972	1.0000	0.0	0.0	-.365	18.68	103.1	0.999	1.080
280.	28	1.012	0.4489	1.0239	1.0270	1.0000	0.0	0.0	-.361	17.68	102.1	0.997	1.074
290.	29	1.003	0.4446	1.0366	1.0370	1.0000	0.0	0.0	-.348	15.22	99.6	0.996	1.058
300.	30	0.997	0.4420	1.0423	1.0414	1.0000	0.0	0.0	-.335	13.05	97.5	0.996	1.045
310.	31	0.994	0.4406	1.0450	1.0432	1.0000	0.0	0.0	-.322	11.25	95.6	0.996	1.034
320.	32	0.992	0.4399	1.0460	1.0439	1.0000	0.0	0.0	-.310	9.75	94.1	0.997	1.025
330.	33	0.992	0.4397	1.0462	1.0439	1.0000	0.0	0.0	-.299	8.49	92.9	0.998	1.017
340.	34	0.992	0.4397	1.0462	1.0439	1.0000	0.0	0.0	-.289	7.39	91.8	0.999	1.011
350.	35	0.992	0.4398	1.0461	1.0439	1.0000	0.0	0.0	-.279	6.39	90.8	1.000	1.005
360.	36	0.993	0.4401	1.0459	1.0439	1.0000	0.0	0.0	-.269	5.44	89.8	1.000	0.999

STAGE 1
ROTOR

FLOW SWIRL= 3.29DEG   PARTICLE SWIRL= 3.29DEG   PSAVG= 6.16PSIA = 42486.PA
PTAVG= 7.21PSIA = 49714.PA   TTAVG= 532.6DEG R = 295.9DEG K   VELAVG= 530.1FPS =161.6MPS
RVELAVG=1180.2FPS = 359.7MPS   AXVELAVG= 507.9FPS =154.8MPS   U=1217.FPS = 371.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
13.	1	1.002	0.4801	1.0436	1.0444	1.0000	0.0	0.0	0.234	4.45	25.6	1.002	1.000
23.	2	1.003	0.4803	1.0435	1.0444	1.0000	0.0	0.0	0.234	4.44	25.6	1.003	1.000
33.	3	1.003	0.4805	1.0433	1.0444	1.0000	0.0	0.0	0.234	4.43	25.6	1.003	1.000
43.	4	1.003	0.4806	1.0432	1.0443	1.0000	0.0	0.0	0.234	4.42	25.6	1.003	1.000
53.	5	1.004	0.4807	1.0430	1.0442	1.0000	0.0	0.0	0.234	4.42	25.6	1.004	1.000
63.	6	1.004	0.4808	1.0421	1.0433	1.0000	0.0	0.0	0.234	4.41	25.6	1.004	1.000
73.	7	1.004	0.4809	1.0399	1.0412	1.0000	0.0	0.0	0.234	4.41	25.6	1.004	1.000
83.	8	1.004	0.4811	1.0333	1.0347	1.0000	0.0	0.0	0.234	4.40	25.6	1.004	1.000
93.	9	1.006	0.4819	0.9944	0.9963	1.0000	0.0	0.0	0.234	4.36	25.6	1.006	1.000
103.	10	1.007	0.4822	0.9629	0.9649	1.0000	0.0	0.0	0.235	4.34	25.7	1.007	1.000
113.	11	1.005	0.4816	0.9591	0.9608	1.0000	0.0	0.0	0.237	4.37	25.6	1.005	1.000
123.	12	1.004	0.4810	0.9570	0.9582	1.0000	0.0	0.0	0.240	4.40	25.6	1.004	1.000
133.	13	1.003	0.4804	0.9568	0.9576	1.0000	0.0	0.0	0.242	4.44	25.6	1.003	1.000
143.	14	1.002	0.4798	0.9565	0.9570	1.0000	0.0	0.0	0.244	4.47	25.5	1.002	1.000
153.	15	1.001	0.4793	0.9561	0.9563	1.0000	0.0	0.0	0.245	4.49	25.5	1.001	1.000
163.	16	1.000	0.4788	0.9564	0.9563	1.0000	0.0	0.0	0.246	4.52	25.5	1.000	1.000
173.	17	0.999	0.4784	0.9566	0.9563	1.0000	0.0	0.0	0.247	4.54	25.5	0.999	1.000
183.	18	0.998	0.4780	0.9568	0.9562	1.0000	0.0	0.0	0.248	4.55	25.4	0.998	1.000
193.	19	0.998	0.4778	0.9569	0.9562	1.0000	0.0	0.0	0.248	4.57	25.4	0.998	1.000
203.	20	0.997	0.4775	0.9570	0.9562	1.0000	0.0	0.0	0.249	4.58	25.4	0.997	1.000
213.	21	0.997	0.4773	0.9571	0.9561	1.0000	0.0	0.0	0.249	4.59	25.4	0.997	1.000
223.	22	0.997	0.4772	0.9571	0.9560	1.0000	0.0	0.0	0.249	4.60	25.4	0.997	1.000
233.	23	0.996	0.4771	0.9573	0.9562	1.0000	0.0	0.0	0.249	4.60	25.4	0.996	1.000
243.	24	0.996	0.4769	0.9590	0.9578	1.0000	0.0	0.0	0.249	4.61	25.4	0.996	1.000
253.	25	0.996	0.4768	0.9642	0.9628	1.0000	0.0	0.0	0.249	4.62	25.4	0.996	1.000
263.	26	0.995	0.4765	0.9753	0.9738	1.0000	0.0	0.0	0.249	4.63	25.4	0.995	1.000
273.	27	0.994	0.4761	0.9978	0.9960	1.0000	0.0	0.0	0.249	4.65	25.3	0.994	1.000
283.	28	0.994	0.4758	1.0281	1.0260	1.0000	0.0	0.0	0.247	4.67	25.3	0.994	1.000
293.	29	0.995	0.4763	1.0384	1.0366	1.0000	0.0	0.0	0.245	4.64	25.4	0.995	1.000
303.	30	0.996	0.4769	1.0425	1.0411	1.0000	0.0	0.0	0.242	4.61	25.4	0.996	1.000
313.	31	0.997	0.4775	1.0441	1.0432	1.0000	0.0	0.0	0.240	4.58	25.4	0.997	1.000
323.	32	0.998	0.4781	1.0446	1.0440	1.0000	0.0	0.0	0.238	4.55	25.4	0.998	1.000
333.	33	0.999	0.4787	1.0444	1.0442	1.0000	0.0	0.0	0.237	4.52	25.5	0.999	1.000
343.	34	1.000	0.4791	1.0441	1.0443	1.0000	0.0	0.0	0.236	4.50	25.5	1.000	1.000
353.	35	1.001	0.4795	1.0439	1.0443	1.0000	0.0	0.0	0.235	4.48	25.5	1.001	1.000
3.	36	1.002	0.4798	1.0438	1.0444	1.0000	0.0	0.0	0.235	4.46	25.5	1.002	1.000

STATOR

FLOW SWIRL= 1.74DEG
PARTICLE SWIRL= 11.48DEG
PSAVG= 7.89PSIA = 54406.PA
PTAVG= 9.37PSIA = 64597.PA
TTAVG= 587.6DEG R = 326.5DEG K
VELAVG= 581.5FPS =177.2MPS
RVELAVG= 991.8FPS = 302.3MPS
AXVELAVG= 490.1FPS =149.4MPS
U=1175.FPS = 358.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
12.	1	1.002	0.5027	1.0384	1.0393	0.9985	0.0	0.0	0.187	-11.62	58.0	1.006	1.006
22.	2	1.001	0.5025	1.0383	1.0391	0.9983	0.0	0.0	0.186	-11.64	58.0	1.006	1.006
32.	3	1.001	0.5023	1.0382	1.0389	0.9982	0.0	0.0	0.186	-11.66	58.1	1.006	1.006
42.	4	1.001	0.5022	1.0382	1.0387	0.9981	0.0	0.0	0.185	-11.67	58.1	1.006	1.006
52.	5	1.000	0.5021	1.0380	1.0385	0.9980	0.0	0.0	0.185	-11.68	58.1	1.006	1.006
62.	6	1.000	0.5020	1.0370	1.0374	0.9977	0.0	0.0	0.185	-11.68	58.1	1.006	1.006
72.	7	1.000	0.5020	1.0346	1.0350	0.9973	0.0	0.0	0.185	-11.68	58.1	1.007	1.007
82.	8	0.999	0.5020	1.0272	1.0276	0.9960	0.0	0.0	0.185	-11.68	58.1	1.007	1.007
92.	9	0.996	0.5028	0.9811	0.9820	0.9867	0.0	0.0	0.185	-11.68	58.1	1.006	1.006
102.	10	0.994	0.5015	0.9531	0.9532	0.9883	0.0	0.0	0.186	-11.64	58.0	1.006	1.006
112.	11	0.994	0.4993	0.9584	0.9570	0.9966	0.0	0.0	0.188	-11.56	58.0	1.005	1.005
122.	12	0.994	0.4988	0.9584	0.9568	0.9978	0.0	0.0	0.191	-11.38	57.8	1.003	1.003
132.	13	0.994	0.4987	0.9599	0.9582	0.9990	0.0	0.0	0.196	-11.15	57.5	1.001	1.001
142.	14	0.995	0.4988	0.9604	0.9587	0.9995	0.0	0.0	0.200	-10.97	57.4	0.999	0.999
152.	15	0.995	0.4990	0.9606	0.9590	1.0000	0.0	0.0	0.203	-10.82	57.2	0.998	0.998
162.	16	0.996	0.4992	0.9613	0.9599	1.0006	0.0	0.0	0.205	-10.71	57.1	0.997	0.997
172.	17	0.997	0.4995	0.9617	0.9604	1.0010	0.0	0.0	0.207	-10.63	57.0	0.996	0.996
182.	18	0.997	0.4997	0.9619	0.9608	1.0012	0.0	0.0	0.208	-10.56	57.0	0.995	0.995
192.	19	0.998	0.4999	0.9621	0.9611	1.0015	0.0	0.0	0.210	-10.51	56.9	0.994	0.994
202.	20	0.998	0.5001	0.9622	0.9613	1.0017	0.0	0.0	0.210	-10.47	56.9	0.994	0.994
212.	21	0.999	0.5003	0.9622	0.9615	1.0018	0.0	0.0	0.211	-10.44	56.8	0.994	0.994
222.	22	0.999	0.5005	0.9622	0.9616	1.0019	0.0	0.0	0.211	-10.42	56.8	0.994	0.994
232.	23	1.000	0.5006	0.9624	0.9619	1.0021	0.0	0.0	0.212	-10.40	56.8	0.993	0.993
242.	24	1.000	0.5006	0.9644	0.9639	1.0026	0.0	0.0	0.212	-10.39	56.8	0.993	0.993
252.	25	1.000	0.5007	0.9704	0.9698	1.0038	0.0	0.0	0.212	-10.38	56.8	0.993	0.993
262.	26	1.002	0.5007	0.9827	0.9822	1.0056	0.0	0.0	0.212	-10.38	56.8	0.993	0.993
272.	27	1.003	0.5008	1.0074	1.0070	1.0091	0.0	0.0	0.212	-10.40	56.8	0.993	0.993
282.	28	1.006	0.5015	1.0380	1.0380	1.0111	0.0	0.0	0.211	-10.45	56.9	0.994	0.994
292.	29	1.006	0.5033	1.0409	1.0421	1.0050	0.0	0.0	0.208	-10.58	57.0	0.995	0.995
302.	30	1.006	0.5040	1.0414	1.0431	1.0027	0.0	0.0	0.205	-10.75	57.2	0.997	0.997
312.	31	1.006	0.5041	1.0410	1.0429	1.0013	0.0	0.0	0.200	-10.97	57.4	0.999	0.999
322.	32	1.005	0.5040	1.0403	1.0422	1.0004	0.0	0.0	0.196	-11.15	57.6	1.001	1.001
332.	33	1.005	0.5038	1.0394	1.0411	0.9997	0.0	0.0	0.193	-11.29	57.7	1.003	1.003
342.	34	1.004	0.5035	1.0390	1.0404	0.9993	0.0	0.0	0.191	-11.40	57.8	1.004	1.004
352.	35	1.003	0.5032	1.0387	1.0399	0.9990	0.0	0.0	0.189	-11.48	57.9	1.004	1.004
2.	36	1.002	0.5030	1.0385	1.0396	0.9987	0.0	0.0	0.188	-11.54	57.9	1.005	1.005

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
									0.187	-11.59	58.0	1.006	1.006

STAGE 2
ROTOR

FLOW SWIRL= 6.08DEG
PARTICLE SWIRL= 15.82DEG
PSAVG= 8.16PSIA = 56249.PA
PTAVG= 9.45PSIA = 65160.PA
TTAVG= 587.6DEG R = 326.5DEG K
VELAVG= 539.1FPS =164.3MPS
RVELAVG=1107.1FPS = 337.4MPS
AXVELAVG= 512.2FPS =156.1MPS
U=1150.FPS = 350.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
16.	1	1.007	0.4667	1.0374	1.0396	0.9985	0.0	0.0	0.168	0.26	27.7	1.007	1.001
26.	2	1.007	0.4669	1.0372	1.0396	0.9983	0.0	0.0	0.168	0.25	27.7	1.007	1.001
36.	3	1.007	0.4670	1.0371	1.0395	0.9982	0.0	0.0	0.168	0.24	27.8	1.007	1.001
46.	4	1.007	0.4671	1.0370	1.0395	0.9981	0.0	0.0	0.168	0.24	27.8	1.007	1.001
56.	5	1.007	0.4672	1.0368	1.0394	0.9980	0.0	0.0	0.168	0.24	27.8	1.007	1.001
66.	6	1.007	0.4673	1.0357	1.0384	0.9977	0.0	0.0	0.168	0.24	27.8	1.007	1.001
76.	7	1.007	0.4674	1.0333	1.0360	0.9973	0.0	0.0	0.169	0.24	27.8	1.007	1.001
86.	8	1.007	0.4677	1.0259	1.0287	0.9960	0.0	0.0	0.170	0.24	27.8	1.007	1.001
96.	9	1.007	0.4697	0.9797	0.9837	0.9867	0.0	0.0	0.177	0.24	27.8	1.007	1.001
106.	10	1.006	0.4689	0.9519	0.9553	0.9883	0.0	0.0	0.185	0.25	27.8	1.007	1.001
116.	11	1.004	0.4658	0.9575	0.9590	0.9966	0.0	0.0	0.188	0.28	27.7	1.006	1.000
126.	12	1.001	0.4643	0.9579	0.9586	0.9978	0.0	0.0	0.190	0.33	27.7	1.004	1.000
136.	13	0.999	0.4630	0.9598	0.9596	0.9990	0.0	0.0	0.192	0.41	27.6	1.001	1.000
146.	14	0.997	0.4620	0.9606	0.9599	0.9995	0.0	0.0	0.193	0.46	27.5	0.999	1.000
156.	15	0.996	0.4613	0.9610	0.9598	1.0000	0.0	0.0	0.194	0.51	27.5	0.997	1.000
166.	16	0.995	0.4607	0.9619	0.9604	1.0006	0.0	0.0	0.195	0.55	27.5	0.996	1.000
176.	17	0.994	0.4602	0.9625	0.9606	1.0010	0.0	0.0	0.195	0.57	27.4	0.995	1.000
186.	18	0.994	0.4599	0.9628	0.9608	1.0012	0.0	0.0	0.196	0.59	27.4	0.994	1.000
196.	19	0.993	0.4596	0.9631	0.9609	1.0015	0.0	0.0	0.196	0.61	27.4	0.994	1.000
206.	20	0.993	0.4594	0.9632	0.9609	1.0017	0.0	0.0	0.196	0.62	27.4	0.993	0.999
216.	21	0.993	0.4592	0.9634	0.9609	1.0018	0.0	0.0	0.197	0.63	27.4	0.993	0.999
226.	22	0.992	0.4591	0.9634	0.9609	1.0019	0.0	0.0	0.197	0.64	27.4	0.993	0.999
236.	23	0.992	0.4590	0.9637	0.9611	1.0021	0.0	0.0	0.197	0.65	27.4	0.992	0.999
246.	24	0.992	0.4588	0.9657	0.9630	1.0026	0.0	0.0	0.197	0.65	27.3	0.992	0.999
256.	25	0.992	0.4585	0.9717	0.9688	1.0038	0.0	0.0	0.196	0.65	27.3	0.992	0.999
266.	26	0.992	0.4582	0.9840	0.9809	1.0056	0.0	0.0	0.193	0.65	27.3	0.992	0.999
276.	27	0.993	0.4577	1.0088	1.0053	1.0091	0.0	0.0	0.188	0.63	27.4	0.992	0.999
286.	28	0.995	0.4579	1.0393	1.0359	1.0111	0.0	0.0	0.180	0.59	27.4	0.993	0.999
296.	29	0.997	0.4603	1.0418	1.0399	1.0050	0.0	0.0	0.175	0.53	27.4	0.995	1.000
306.	30	0.999	0.4621	1.0419	1.0412	1.0027	0.0	0.0	0.173	0.47	27.5	0.997	1.000
316.	31	1.001	0.4634	1.0412	1.0413	1.0013	0.0	0.0	0.171	0.41	27.5	0.999	1.000
326.	32	1.003	0.4644	1.0402	1.0409	1.0004	0.0	0.0	0.170	0.36	27.6	1.001	1.000
336.	33	1.004	0.4652	1.0390	1.0403	0.9997	0.0	0.0	0.169	0.33	27.6	1.003	1.000
346.	34	1.005	0.4658	1.0383	1.0400	0.9993	0.0	0.0	0.169	0.30	27.7	1.004	1.000
356.	35	1.006	0.4662	1.0379	1.0398	0.9990	0.0	0.0	0.169	0.28	27.7	1.005	1.000
6.	36	1.006	0.4665	1.0376	1.0397	0.9987	0.0	0.0	0.168	0.27	27.7	1.006	1.000

STATOR

FLOW SWIRL= 4.19DEG PARTICLE SWIRL= 20.57DEG PSAVG= 9.78PSIA = 67464.PA
PTAVG= 11.38PSIA = 78485.PA TTAVG= 626.1DEG R = 347.8DEG K VELAVG= 564.3FPS =172.0MPS
RVELAVG= 972.7FPS = 296.5MPS AXVELAVG= 487.3FPS =148.5MPS U=1126.FPS = 343.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
14.	1	1.001	0.4714	1.0318	1.0326	0.9972	0.0	0.0	0.214	-19.32	60.8	1.011	1.011
24.	2	1.001	0.4713	1.0317	1.0324	0.9969	0.0	0.0	0.213	-19.34	60.8	1.011	1.011
34.	3	1.001	0.4712	1.0318	1.0325	0.9968	0.0	0.0	0.213	-19.34	60.8	1.011	1.011
44.	4	1.000	0.4712	1.0318	1.0324	0.9967	0.0	0.0	0.213	-19.34	60.8	1.011	1.011
54.	5	1.000	0.4712	1.0317	1.0323	0.9965	0.0	0.0	0.213	-19.34	60.8	1.011	1.011
64.	6	1.000	0.4711	1.0309	1.0315	0.9963	0.0	0.0	0.214	-19.32	60.8	1.011	1.011
74.	7	1.000	0.4712	1.0287	1.0293	0.9957	0.0	0.0	0.214	-19.30	60.8	1.011	1.011
84.	8	0.999	0.4712	1.0220	1.0227	0.9943	0.0	0.0	0.216	-19.21	60.7	1.010	1.010
94.	9	0.997	0.4724	0.9807	0.9821	0.9844	0.0	0.0	0.226	-18.66	60.2	1.004	1.004
104.	10	0.992	0.4703	0.9546	0.9547	0.9823	0.0	0.0	0.239	-18.03	59.5	0.998	0.998
114.	11	0.990	0.4672	0.9623	0.9605	0.9923	0.0	0.0	0.246	-17.79	59.3	0.995	0.995
124.	12	0.992	0.4669	0.9661	0.9641	0.9978	0.0	0.0	0.250	-17.61	59.1	0.994	0.994
134.	13	0.994	0.4672	0.9677	0.9658	0.9994	0.0	0.0	0.254	-17.45	59.0	0.992	0.992
144.	14	0.995	0.4676	0.9682	0.9666	1.0004	0.0	0.0	0.256	-17.35	58.8	0.991	0.991
154.	15	0.996	0.4680	0.9681	0.9667	1.0010	0.0	0.0	0.258	-17.27	58.8	0.990	0.990
164.	16	0.997	0.4683	0.9686	0.9674	1.0017	0.0	0.0	0.259	-17.21	58.7	0.990	0.990
174.	17	0.998	0.4685	0.9689	0.9678	1.0022	0.0	0.0	0.260	-17.17	58.7	0.989	0.989
184.	18	0.998	0.4687	0.9690	0.9681	1.0026	0.0	0.0	0.261	-17.14	58.6	0.989	0.989
194.	19	0.999	0.4688	0.9691	0.9682	1.0028	0.0	0.0	0.262	-17.11	58.6	0.989	0.989
204.	20	0.999	0.4690	0.9690	0.9683	1.0031	0.0	0.0	0.262	-17.10	58.6	0.988	0.988
214.	21	0.999	0.4690	0.9691	0.9684	1.0033	0.0	0.0	0.262	-17.08	58.6	0.988	0.988
224.	22	0.999	0.4691	0.9690	0.9683	1.0034	0.0	0.0	0.263	-17.07	58.6	0.988	0.988
234.	23	1.000	0.4691	0.9691	0.9685	1.0036	0.0	0.0	0.263	-17.07	58.6	0.988	0.988
244.	24	1.000	0.4691	0.9709	0.9702	1.0041	0.0	0.0	0.262	-17.09	58.6	0.988	0.988
254.	25	1.000	0.4690	0.9763	0.9756	1.0055	0.0	0.0	0.261	-17.17	58.7	0.989	0.989
264.	26	1.002	0.4691	0.9872	0.9865	1.0078	0.0	0.0	0.257	-17.36	58.9	0.991	0.991
274.	27	1.004	0.4692	1.0089	1.0083	1.0118	0.0	0.0	0.248	-17.78	59.3	0.995	0.995
284.	28	1.007	0.4701	1.0354	1.0353	1.0150	0.0	0.0	0.236	-18.39	59.9	1.002	1.002
294.	29	1.009	0.4725	1.0365	1.0380	1.0092	0.0	0.0	0.227	-18.76	60.3	1.005	1.005
304.	30	1.008	0.4733	1.0336	1.0357	1.0035	0.0	0.0	0.222	-18.96	60.5	1.007	1.007
314.	31	1.007	0.4731	1.0327	1.0346	1.0010	0.0	0.0	0.219	-19.10	60.6	1.009	1.009
324.	32	1.005	0.4727	1.0323	1.0339	0.9997	0.0	0.0	0.217	-19.18	60.7	1.010	1.010
334.	33	1.004	0.4723	1.0317	1.0331	0.9987	0.0	0.0	0.216	-19.24	60.7	1.010	1.010
344.	34	1.003	0.4720	1.0316	1.0327	0.9981	0.0	0.0	0.215	-19.27	60.8	1.011	1.011
354.	35	1.002	0.4717	1.0315	1.0325	0.9977	0.0	0.0	0.214	-19.30	60.8	1.011	1.011
4.	36	1.002	0.4715	1.0316	1.0325	0.9974	0.0	0.0	0.214	-19.32	60.8	1.011	1.011

STAGE 3
ROTOR

FLOW SWIRL= 7.58DEG PARTICLE SWIRL= 23.96DEG PSAVG= 9.74PSIA = 67131.PA
PTAVG= 11.11PSIA = 76619.PA TTAVG= 626.1DEG R = 347.8DEG K VELAVG= 528.0FPS =160.9MPS
RVELAVG=1144.1FPS = 348.7MPS AXVELAVG= 521.0FPS =158.8MPS U=1104.FPS = 337.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
18.	1	1.015	0.4463	1.0268	1.0313	0.9972	0.0	0.0	0.215	-2.07	27.5	1.015	1.002
28.	2	1.015	0.4465	1.0266	1.0312	0.9969	0.0	0.0	0.214	-2.08	27.5	1.015	1.002
38.	3	1.016	0.4465	1.0266	1.0312	0.9968	0.0	0.0	0.215	-2.08	27.5	1.016	1.002
48.	4	1.016	0.4466	1.0265	1.0312	0.9967	0.0	0.0	0.215	-2.08	27.5	1.016	1.002
58.	5	1.016	0.4467	1.0264	1.0311	0.9965	0.0	0.0	0.215	-2.08	27.5	1.016	1.002
68.	6	1.015	0.4466	1.0256	1.0303	0.9963	0.0	0.0	0.216	-2.08	27.5	1.015	1.002
78.	7	1.015	0.4466	1.0235	1.0282	0.9957	0.0	0.0	0.218	-2.07	27.5	1.015	1.002
88.	8	1.014	0.4464	1.0170	1.0216	0.9943	0.0	0.0	0.223	-2.04	27.4	1.014	1.002
98.	9	1.008	0.4459	0.9766	0.9807	0.9844	0.0	0.0	0.258	-1.89	27.3	1.008	1.001
108.	10	1.000	0.4426	0.9526	0.9547	0.9823	0.0	0.0	0.284	-1.68	27.1	1.000	1.000
118.	11	0.995	0.4381	0.9626	0.9622	0.9923	0.0	0.0	0.281	-1.56	27.0	0.995	0.999
128.	12	0.992	0.4354	0.9680	0.9661	0.9978	0.0	0.0	0.276	-1.48	26.9	0.992	0.999
138.	13	0.989	0.4340	0.9706	0.9678	0.9994	0.0	0.0	0.274	-1.42	26.8	0.989	0.999
148.	14	0.988	0.4331	0.9718	0.9684	1.0004	0.0	0.0	0.273	-1.38	26.8	0.988	0.998
158.	15	0.987	0.4324	0.9722	0.9684	1.0010	0.0	0.0	0.273	-1.35	26.8	0.987	0.998
168.	16	0.986	0.4318	0.9731	0.9690	1.0017	0.0	0.0	0.273	-1.33	26.7	0.986	0.998
178.	17	0.985	0.4314	0.9737	0.9694	1.0022	0.0	0.0	0.273	-1.31	26.7	0.985	0.998
188.	18	0.985	0.4311	0.9740	0.9696	1.0026	0.0	0.0	0.273	-1.30	26.7	0.985	0.998
198.	19	0.984	0.4309	0.9742	0.9696	1.0028	0.0	0.0	0.273	-1.29	26.7	0.984	0.998
208.	20	0.984	0.4307	0.9743	0.9697	1.0031	0.0	0.0	0.273	-1.29	26.7	0.984	0.998
218.	21	0.984	0.4306	0.9745	0.9697	1.0033	0.0	0.0	0.273	-1.28	26.7	0.984	0.998
228.	22	0.984	0.4305	0.9745	0.9696	1.0034	0.0	0.0	0.273	-1.27	26.7	0.984	0.998
238.	23	0.983	0.4304	0.9746	0.9698	1.0036	0.0	0.0	0.272	-1.27	26.7	0.983	0.998
248.	24	0.984	0.4304	0.9764	0.9715	1.0041	0.0	0.0	0.271	-1.28	26.7	0.984	0.998
258.	25	0.985	0.4305	0.9816	0.9768	1.0055	0.0	0.0	0.267	-1.30	26.7	0.985	0.998
268.	26	0.987	0.4312	0.9920	0.9875	1.0078	0.0	0.0	0.256	-1.37	26.8	0.987	0.998
278.	27	0.992	0.4327	1.0125	1.0088	1.0118	0.0	0.0	0.237	-1.50	26.9	0.992	0.999
288.	28	1.000	0.4356	1.0370	1.0349	1.0150	0.0	0.0	0.212	-1.70	27.1	1.000	1.000
298.	29	1.006	0.4393	1.0362	1.0364	1.0092	0.0	0.0	0.209	-1.84	27.2	1.006	1.001
308.	30	1.009	0.4421	1.0317	1.0337	1.0035	0.0	0.0	0.211	-1.92	27.3	1.009	1.001
318.	31	1.011	0.4437	1.0297	1.0327	1.0010	0.0	0.0	0.214	-1.98	27.4	1.011	1.002
328.	32	1.013	0.4446	1.0286	1.0321	0.9997	0.0	0.0	0.215	-2.01	27.4	1.013	1.002
338.	33	1.014	0.4453	1.0275	1.0314	0.9987	0.0	0.0	0.215	-2.04	27.4	1.014	1.002
348.	34	1.014	0.4457	1.0271	1.0312	0.9981	0.0	0.0	0.215	-2.05	27.5	1.014	1.002
358.	35	1.015	0.4460	1.0268	1.0311	0.9977	0.0	0.0	0.215	-2.06	27.5	1.015	1.002
8.	36	1.015	0.4462	1.0267	1.0312	0.9974	0.0	0.0	0.215	-2.07	27.5	1.015	1.002

STATOR

FLOW SWIRL= 15.33DEG PARTICLE SWIRL= 38.52DEG PSAVG= 11.73PSIA = 80844.PA
PTAVG= 13.36PSIA = 92126.PA TTAVG= 653.8DEG R = 363.2DEG K VELAVG= 536.6FPS =163.6MPS
RVELAVG= 950.6FPS = 289.7MPS AXVELAVG= 453.8FPS =138.3MPS U=1121.FPS = 342.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
25.	1	0.998	0.4379	1.0091	1.0100	0.9894	0.0	0.0	0.266	-6.40	60.4	1.025	1.025
35.	2	0.998	0.4381	1.0082	1.0092	0.9890	0.0	0.0	0.264	-6.48	60.5	1.026	1.026
45.	3	0.998	0.4378	1.0089	1.0097	0.9889	0.0	0.0	0.265	-6.43	60.4	1.026	1.026
55.	4	0.998	0.4378	1.0089	1.0097	0.9887	0.0	0.0	0.265	-6.43	60.4	1.026	1.026
65.	5	0.998	0.4379	1.0085	1.0094	0.9886	0.0	0.0	0.265	-6.45	60.5	1.026	1.026
75.	6	0.997	0.4375	1.0092	1.0099	0.9885	0.0	0.0	0.267	-6.31	60.3	1.024	1.024
85.	7	0.997	0.4374	1.0081	1.0087	0.9882	0.0	0.0	0.269	-6.21	60.2	1.023	1.023
95.	8	0.994	0.4365	1.0067	1.0068	0.9878	0.0	0.0	0.278	-5.71	59.7	1.019	1.019
105.	9	0.981	0.4309	0.9983	0.9951	0.9847	0.0	0.0	0.332	-2.63	56.6	0.988	0.988
115.	10	0.973	0.4274	0.9921	0.9869	0.9860	0.0	0.0	0.374	-0.36	54.4	0.966	0.966
125.	11	0.982	0.4295	0.9917	0.9878	0.9935	0.0	0.0	0.370	-0.62	54.6	0.968	0.968
135.	12	0.989	0.4312	0.9921	0.9891	1.0012	0.0	0.0	0.364	-0.97	55.0	0.972	0.972
145.	13	0.994	0.4326	0.9924	0.9902	1.0056	0.0	0.0	0.360	-1.20	55.2	0.974	0.974
155.	14	0.997	0.4333	0.9922	0.9904	1.0072	0.0	0.0	0.359	-1.23	55.2	0.974	0.974
165.	15	0.999	0.4339	0.9917	0.9902	1.0083	0.0	0.0	0.359	-1.24	55.2	0.974	0.974
175.	16	1.000	0.4342	0.9917	0.9904	1.0093	0.0	0.0	0.359	-1.25	55.2	0.975	0.975
185.	17	1.001	0.4344	0.9918	0.9906	1.0100	0.0	0.0	0.359	-1.25	55.3	0.975	0.975
195.	18	1.001	0.4345	0.9918	0.9907	1.0106	0.0	0.0	0.359	-1.25	55.2	0.975	0.975
205.	19	1.002	0.4347	0.9918	0.9907	1.0110	0.0	0.0	0.359	-1.25	55.2	0.975	0.975
215.	20	1.002	0.4348	0.9916	0.9906	1.0113	0.0	0.0	0.359	-1.26	55.3	0.975	0.975
225.	21	1.002	0.4347	0.9919	0.9909	1.0117	0.0	0.0	0.360	-1.22	55.2	0.974	0.974
235.	22	1.003	0.4349	0.9915	0.9906	1.0118	0.0	0.0	0.359	-1.25	55.2	0.975	0.975
245.	23	1.003	0.4350	0.9912	0.9903	1.0119	0.0	0.0	0.359	-1.29	55.3	0.975	0.975
255.	24	1.003	0.4352	0.9917	0.9909	1.0122	0.0	0.0	0.356	-1.40	55.4	0.976	0.976
265.	25	1.005	0.4359	0.9931	0.9927	1.0127	0.0	0.0	0.350	-1.78	55.8	0.980	0.980
275.	26	1.009	0.4375	0.9950	0.9957	1.0130	0.0	0.0	0.334	-2.67	56.7	0.989	0.989
285.	27	1.016	0.4408	0.9992	1.0018	1.0130	0.0	0.0	0.303	-4.40	58.4	1.006	1.006
295.	28	1.024	0.4447	1.0047	1.0097	1.0115	0.0	0.0	0.265	-6.60	60.6	1.027	1.027
305.	29	1.019	0.4436	1.0069	1.0112	1.0059	0.0	0.0	0.258	-6.92	60.9	1.030	1.030
315.	30	1.012	0.4418	1.0078	1.0110	0.9994	0.0	0.0	0.261	-6.71	60.7	1.028	1.028
325.	31	1.006	0.4403	1.0081	1.0104	0.9949	0.0	0.0	0.264	-6.54	60.5	1.027	1.027
335.	32	1.003	0.4392	1.0088	1.0105	0.9928	0.0	0.0	0.266	-6.43	60.4	1.026	1.026
345.	33	1.001	0.4388	1.0081	1.0096	0.9914	0.0	0.0	0.265	-6.45	60.5	1.026	1.026
355.	34	1.000	0.4383	1.0086	1.0097	0.9906	0.0	0.0	0.266	-6.42	60.4	1.026	1.026
5.	35	0.999	0.4383	1.0080	1.0092	0.9899	0.0	0.0	0.265	-6.47	60.5	1.026	1.026
15.	36	0.998	0.4380	1.0087	1.0097	0.9896	0.0	0.0	0.265	-6.42	60.4	1.026	1.026

EXIT

FLOW SWIRL= 17.88DEG PARTICLE SWIRL= 41.07DEG PSAVG= 11.47PSIA = 79106.PA
PTAVG= 12.74PSIA = 87845.PA TTAVG= 653.8DEG R = 363.2DEG K VELAVG= 481.0FPS =146.6MPS
RVELAVG= 0.0FPS = 0.0MPS AXVELAVG= 0.0FPS = 0.0MPS U=1121.FPS = 342.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
28.	1	1.033	0.4051	1.0004	1.0085	0.9894	0.0	0.0	0.0	0.0	0.0	0.0	0.0
38.	2	1.034	0.4056	0.9992	1.0076	0.9890	0.0	0.0	0.0	0.0	0.0	0.0	0.0
48.	3	1.033	0.4054	1.0000	1.0082	0.9889	0.0	0.0	0.0	0.0	0.0	0.0	0.0
58.	4	1.033	0.4054	0.9999	1.0082	0.9887	0.0	0.0	0.0	0.0	0.0	0.0	0.0
68.	5	1.034	0.4056	0.9995	1.0079	0.9886	0.0	0.0	0.0	0.0	0.0	0.0	0.0
78.	6	1.032	0.4048	1.0008	1.0087	0.9885	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88.	7	1.030	0.4043	1.0000	1.0077	0.9882	0.0	0.0	0.0	0.0	0.0	0.0	0.0
98.	8	1.024	0.4018	1.0001	1.0064	0.9878	0.0	0.0	0.0	0.0	0.0	0.0	0.0
108.	9	0.987	0.3874	0.9996	0.9982	0.9847	0.0	0.0	0.0	0.0	0.0	0.0	0.0
118.	10	0.958	0.3757	1.0001	0.9926	0.9860	0.0	0.0	0.0	0.0	0.0	0.0	0.0
128.	11	0.961	0.3753	0.9998	0.9922	0.9935	0.0	0.0	0.0	0.0	0.0	0.0	0.0
138.	12	0.965	0.3754	1.0001	0.9925	1.0012	0.0	0.0	0.0	0.0	0.0	0.0	0.0
148.	13	0.967	0.3755	1.0003	0.9927	1.0056	0.0	0.0	0.0	0.0	0.0	0.0	0.0
158.	14	0.967	0.3753	1.0002	0.9925	1.0072	0.0	0.0	0.0	0.0	0.0	0.0	0.0
168.	15	0.967	0.3751	0.9998	0.9921	1.0083	0.0	0.0	0.0	0.0	0.0	0.0	0.0
178.	16	0.968	0.3750	0.9999	0.9921	1.0093	0.0	0.0	0.0	0.0	0.0	0.0	0.0
188.	17	0.968	0.3748	1.0001	0.9922	1.0100	0.0	0.0	0.0	0.0	0.0	0.0	0.0
198.	18	0.967	0.3747	1.0003	0.9922	1.0106	0.0	0.0	0.0	0.0	0.0	0.0	0.0
208.	19	0.967	0.3746	1.0002	0.9922	1.0110	0.0	0.0	0.0	0.0	0.0	0.0	0.0
218.	20	0.967	0.3745	1.0001	0.9920	1.0113	0.0	0.0	0.0	0.0	0.0	0.0	0.0
228.	21	0.967	0.3743	1.0005	0.9923	1.0117	0.0	0.0	0.0	0.0	0.0	0.0	0.0
238.	22	0.967	0.3744	1.0000	0.9919	1.0118	0.0	0.0	0.0	0.0	0.0	0.0	0.0
248.	23	0.968	0.3745	0.9997	0.9916	1.0119	0.0	0.0	0.0	0.0	0.0	0.0	0.0
258.	24	0.969	0.3751	0.9999	0.9921	1.0122	0.0	0.0	0.0	0.0	0.0	0.0	0.0
268.	25	0.974	0.3768	1.0004	0.9934	1.0127	0.0	0.0	0.0	0.0	0.0	0.0	0.0
278.	26	0.984	0.3809	1.0001	0.9953	1.0130	0.0	0.0	0.0	0.0	0.0	0.0	0.0
288.	27	1.005	0.3892	1.0001	0.9996	1.0130	0.0	0.0	0.0	0.0	0.0	0.0	0.0
298.	28	1.032	0.4003	0.9997	1.0051	1.0115	0.0	0.0	0.0	0.0	0.0	0.0	0.0
308.	29	1.037	0.4035	0.9995	1.0067	1.0059	0.0	0.0	0.0	0.0	0.0	0.0	0.0
318.	30	1.035	0.4041	1.0000	1.0076	0.9994	0.0	0.0	0.0	0.0	0.0	0.0	0.0
328.	31	1.034	0.4043	1.0001	1.0078	0.9949	0.0	0.0	0.0	0.0	0.0	0.0	0.0
338.	32	1.033	0.4043	1.0008	1.0085	0.9928	0.0	0.0	0.0	0.0	0.0	0.0	0.0
348.	33	1.033	0.4048	0.9997	1.0077	0.9914	0.0	0.0	0.0	0.0	0.0	0.0	0.0
358.	34	1.033	0.4048	1.0001	1.0081	0.9906	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8.	35	1.034	0.4053	0.9992	1.0075	0.9899	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18.	36	1.033	0.4051	1.0000	1.0081	0.9896	0.0	0.0	0.0	0.0	0.0	0.0	0.0

APPENDIX B (Cont'd)

LOW SPOOL OUTPUT -

	CORR FLOW	PRESS RATIO	EFFICIENCY
LOW SPOOL PERFORMANCE 3/2	96.88 LBM/SEC 43.94 KG/SEC	4.759	0.847

RAKE CORRECTED PRESSURE RATIO =4.585

---- ROW OUTPUT ----

IGV

FLOW SWIRL= 0.0 DEG PARTICLE SWIRL= 0.0 DEG PSAVG= 6.35PSIA = 43812.PA
PTAVG= 7.28PSIA = 50195.PA TTAVG= 532.6DEG R = 295.9DEG K VELAVG= 493.7FPS =150.5MPS
RVELAVG= 924.0FPS = 281.6MPS AXVELAVG= 491.0FPS =149.7MPS U= 782.FPS = 238.MPS

THETA	SEC NO	VEL	MN	PS	PT	TT	WEL LBM/SEC	WEL KG/SEC	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
10.	1	1.023	0.4554	1.0375	1.0439	1.0000	0.0	0.0	-.119	-0.59	88.6	1.028	0.996
20.	2	1.025	0.4563	1.0369	1.0439	1.0000	0.0	0.0	-.113	-1.33	87.9	1.030	0.991
30.	3	1.027	0.4572	1.0363	1.0439	1.0000	0.0	0.0	-.106	-2.13	87.1	1.031	0.985
40.	4	1.029	0.4583	1.0356	1.0439	1.0000	0.0	0.0	-.098	-3.04	86.2	1.033	0.978
50.	5	1.032	0.4595	1.0346	1.0439	1.0000	0.0	0.0	-.086	-4.14	85.1	1.034	0.970
60.	6	1.036	0.4612	1.0331	1.0432	1.0000	0.0	0.0	-.074	-5.52	83.7	1.035	0.959
70.	7	1.041	0.4638	1.0297	1.0415	1.0000	0.0	0.0	-.055	-7.37	81.8	1.036	0.944
80.	8	1.052	0.4685	1.0208	1.0354	1.0000	0.0	0.0	-.025	-9.96	79.2	1.039	0.924
90.	9	1.048	0.4669	0.9844	0.9972	1.0000	0.0	0.0	-.012	-11.02	78.2	1.031	0.914
100.	10	1.018	0.4521	0.9613	0.9652	1.0000	0.0	0.0	-.036	-9.06	80.1	1.006	0.924
110.	11	1.002	0.4455	0.9606	0.9606	1.0000	0.0	0.0	-.066	-6.36	82.8	0.999	0.943
120.	12	0.992	0.4408	0.9605	0.9581	1.0000	0.0	0.0	-.085	-4.47	84.7	0.993	0.956
130.	13	0.984	0.4374	0.9616	0.9574	1.0000	0.0	0.0	-.099	-3.01	86.2	0.987	0.966
140.	14	0.976	0.4345	0.9627	0.9567	1.0000	0.0	0.0	-.109	-1.85	87.3	0.982	0.974
150.	15	0.973	0.4320	0.9634	0.9560	1.0000	0.0	0.0	-.118	-0.84	88.4	0.978	0.980
160.	16	0.968	0.4298	0.9647	0.9560	1.0000	0.0	0.0	-.125	0.05	89.3	0.973	0.986
170.	17	0.964	0.4280	0.9657	0.9560	1.0000	0.0	0.0	-.131	0.82	90.0	0.969	0.991
180.	18	0.961	0.4266	0.9665	0.9560	1.0000	0.0	0.0	-.136	1.54	90.7	0.966	0.996
190.	19	0.959	0.4255	0.9671	0.9560	1.0000	0.0	0.0	-.141	2.21	91.4	0.963	1.000
200.	20	0.958	0.4255	0.9671	0.9560	1.0000	0.0	0.0	-.146	2.91	92.1	0.963	1.005
210.	21	0.959	0.4256	0.9670	0.9560	1.0000	0.0	0.0	-.151	3.71	92.9	0.963	1.011
220.	22	0.960	0.4262	0.9667	0.9560	1.0000	0.0	0.0	-.157	4.65	93.8	0.963	1.019
230.	23	0.962	0.4272	0.9664	0.9563	1.0000	0.0	0.0	-.163	5.80	95.0	0.964	1.028
240.	24	0.967	0.4294	0.9662	0.9570	1.0000	0.0	0.0	-.171	7.35	96.5	0.966	1.041
250.	25	0.975	0.4330	0.9704	0.9632	1.0000	0.0	0.0	-.179	9.16	98.4	0.970	1.056
260.	26	0.989	0.4393	0.9787	0.9746	1.0000	0.0	0.0	-.185	10.92	100.1	0.978	1.073
270.	27	1.008	0.4485	0.9955	0.9972	1.0000	0.0	0.0	-.188	12.02	101.2	0.994	1.088
280.	28	1.011	0.4499	1.0245	1.0270	1.0000	0.0	0.0	-.185	11.12	100.3	1.000	1.083
290.	29	1.007	0.4481	1.0353	1.0371	1.0000	0.0	0.0	-.177	8.79	98.0	1.003	1.064
300.	30	1.007	0.4478	1.0398	1.0415	1.0000	0.0	0.0	-.167	6.75	96.0	1.007	1.049
310.	31	1.008	0.4483	1.0413	1.0432	1.0000	0.0	0.0	-.159	5.09	94.3	1.011	1.037
320.	32	1.01[illegible]	0.4493	1.0413	1.0439	1.0000	0.0	0.0	-.150	3.74	92.9	1.014	1.027
330.	33	1.013	0.4506	1.0405	1.0439	1.0000	0.0	0.0	-.142	2.65	91.8	1.016	1.019
340.	34	1.016	0.4520	1.0396	1.0439	1.0000	0.0	0.0	-.137	1.72	90.9	1.021	1.013
350.	35	1.019	0.4532	1.0388	1.0439	1.0000	0.0	0.0	-.131	0.92	90.1	1.024	1.007
360.	36	1.021	0.4542	1.0382	1.0439	1.0000	0.0	0.0	-.125	0.15	89.4	1.026	1.002

STAGE 1 ROTOR

FLOW SWIRL= 2.26DEG PARTICLE SWIRL= 2.26DEG PSAVG= 6.01PSIA = 41451.PA
PTAVG= 7.02PSIA = 48389.PA TTAVG= 532.6DEG R = 295.9DEG K VELAVG= 526.2FPS =160.4MPS
RVELAVG= 117.8FPS = 270.6MPS AXVELAVG= 521.9FPS =159.1MPS U= 785.FPS = 239.MPS

THETA	SEC NO	VEL	MN	PS	PT	TT	WEL LBM/SEC	WEL KG/SEC	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
12.	1	1.009	0.4796	1.0445	1.0474	1.0000	0.018	0.008	0.451	5.42	36.3	1.009	1.003
22.	2	1.010	0.4802	1.0442	1.0475	1.0000	0.018	0.008	0.451	5.35	36.3	1.010	1.003
32.	3	1.011	0.4807	1.0439	1.0475	1.0000	0.018	0.008	0.450	5.30	36.3	1.011	1.003
42.	4	1.012	0.4811	1.0436	1.0475	1.0000	0.018	0.008	0.450	5.34	36.4	1.012	1.003
52.	5	1.012	0.4814	1.0434	1.0474	1.0000	0.019	0.008	0.450	5.32	36.4	1.012	1.004
62.	6	1.013	0.4816	1.0424	1.0468	1.0000	0.019	0.008	0.450	5.31	36.4	1.013	1.004
72.	7	1.013	0.4819	1.0402	1.0446	1.0000	0.018	0.008	0.450	5.29	36.4	1.013	1.004
82.	8	1.014	0.4822	1.0335	1.0381	1.0000	0.018	0.008	0.450	5.27	36.4	1.014	1.004
92.	9	1.018	0.4840	0.9941	0.9997	1.0000	0.005	0.002	0.451	5.17	36.5	1.018	1.005
102.	10	1.0[illegible]2	0.4853	0.9572	0.9635	1.0000	-0.015	-0.007	0.452	5.09	36.6	1.020	1.006
112.	11	1.016	0.4842	0.9532	0.9587	1.0000	-0.017	-0.008	0.452	5.15	36.5	1.016	1.005
122.	12	1.014	0.4824	0.9512	0.9555	1.0000	-0.019	-0.008	0.454	5.26	36.4	1.014	1.004
132.	13	1.010	0.4803	0.9515	0.9546	1.0000	-0.019	-0.009	0.457	5.38	36.3	1.010	1.003
142.	14	1.006	0.4782	0.9518	0.9537	1.0000	-0.020	-0.009	0.460	5.50	36.2	1.006	1.002
152.	15	1.002	0.4763	0.9521	0.9527	1.0000	-0.020	-0.009	0.462	5.62	36.1	1.002	1.001
162.	16	0.999	0.4745	0.9529	0.9524	1.0000	-0.021	-0.009	0.464	5.73	36.0	0.999	1.000
172.	17	0.996	0.4733	0.9536	0.9522	1.0000	-0.021	-0.010	0.466	5.82	35.9	0.996	0.999
182.	18	0.993	0.4717	0.9542	0.9520	1.0000	-0.022	-0.010	0.467	5.90	35.8	0.993	0.998
192.	19	0.991	0.4706	0.9546	0.9518	1.0000	-0.022	-0.010	0.468	5.97	35.7	0.991	0.997
202.	20	0.989	0.4697	0.9553	0.9520	1.0000	-0.021	-0.010	0.468	6.02	35.7	0.989	0.997
212.	21	0.988	0.4691	0.9558	0.9521	1.0000	-0.020	-0.009	0.469	6.06	35.6	0.988	0.997
222.	22	0.987	0.4686	0.9563	0.9522	1.0000	-0.020	-0.009	0.469	6.09	35.6	0.987	0.996
232.	23	0.986	0.4683	0.9569	0.9527	1.0000	-0.019	-0.008	0.469	6.11	35.6	0.986	0.996
242.	24	0.986	0.4681	0.9582	0.9539	1.0000	-0.017	-0.008	0.469	6.12	35.6	0.986	0.996
252.	25	0.985	0.4677	0.9651	0.9605	1.0000	-0.015	-0.007	0.469	6.14	35.6	0.985	0.996
262.	26	0.984	0.4672	0.9764	0.9734	1.0000	-0.008	-0.004	0.468	6.17	35.5	0.984	0.995
272.	27	0.982	0.4663	1.0039	0.9982	1.0000	0.007	0.003	0.467	6.23	35.5	0.982	0.995
282.	28	0.980	0.4654	1.0348	1.0284	1.0000	0.016	0.007	0.466	6.20	35.4	0.980	0.994
292.	29	0.983	0.4667	1.0445	1.0387	1.0000	0.018	0.008	0.465	6.21	35.5	0.983	0.995
302.	30	0.987	0.4685	1.0480	1.0436	1.0000	0.019	0.009	0.462	6.09	35.6	0.987	0.996
312.	31	0.991	0.4706	1.0487	1.0457	1.0000	0.018	0.008	0.460	5.95	35.7	0.991	0.997
322.	32	0.995	0.4729	1.0482	1.0467	1.0000	0.018	0.008	0.457	5.82	35.9	0.995	0.999
332.	33	0.999	0.4749	1.0472	1.0469	1.0000	0.017	0.008	0.455	5.71	36.0	0.999	1.000
342.	34	1.003	0.4765	1.0463	1.0471	1.0000	0.017	0.008	0.454	5.61	36.1	1.003	1.001
352.	35	1.005	0.4770	1.0456	1.0472	1.0000	0.017	0.008	0.453	5.53	36.2	1.005	1.001
2.	36	1.007	0.4788	1.0450	1.0473	1.0000	0.017	0.008	0.452	5.47	36.2	1.007	1.002

STATOR

FLOW SWIRL= 4.34DEG PARTICLE SWIRL= 18.54DEG PSAVC= 7.08PSIA = 48828.PA
PTAVC= 9.15PSIA = 63101.PA TTAVC= 576.4DEG R = 320.2DEG K VELAVG= 699.6FPS =213.2MPS
FVELAVC= 618.6FPS = 188.6MPS AXVELAVG= 529.7FPS =161.5MPS U= 776.FPS = 237.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
14.	1	1.005	0.6199	1.0413	1.0441	0.9986	0.0	0.0	0.422	-9.35	49.8	1.011	1.011
24.	2	1.004	0.6198	1.0415	1.0443	0.9986	0.0	0.0	0.421	-9.39	49.8	1.012	1.012
34.	3	1.004	0.6197	1.0416	1.0443	0.9986	0.0	0.0	0.420	-9.42	49.8	1.012	1.012
44.	4	1.004	0.6196	1.0417	1.0443	0.9986	0.0	0.0	0.419	-9.44	49.8	1.013	1.013
54.	5	1.004	0.6196	1.0417	1.0443	0.9986	0.0	0.0	0.419	-9.46	49.9	1.013	1.013
64.	6	1.004	0.6196	1.0408	1.0434	0.9984	0.0	0.0	0.419	-9.47	49.9	1.013	1.013
74.	7	1.004	0.6196	1.0386	1.0411	0.9980	0.0	0.0	0.418	-9.48	49.9	1.014	1.014
84.	8	1.005	0.6197	1.0312	1.0339	0.9966	0.0	0.0	0.418	-9.48	49.9	1.014	1.014
94.	9	1.000	0.6204	0.9870	0.9901	0.9870	0.0	0.0	0.419	-9.42	49.8	1.012	1.012
104.	10	0.997	0.6197	0.9509	0.9534	0.9840	0.0	0.0	0.419	-9.39	49.8	1.012	1.012
114.	11	0.998	0.6172	0.9549	0.9555	0.9938	0.0	0.0	0.420	-9.37	49.8	1.011	1.011
124.	12	0.998	0.6155	0.9567	0.9559	0.9983	0.0	0.0	0.424	-9.23	49.6	1.008	1.008
134.	13	0.997	0.6143	0.9584	0.9567	0.9996	0.0	0.0	0.429	-9.02	49.4	1.004	1.004
144.	14	0.996	0.6135	0.9591	0.9568	1.0003	0.0	0.0	0.433	-8.83	49.2	1.000	1.000
154.	15	0.995	0.6128	0.9592	0.9564	1.0006	0.0	0.0	0.437	-8.65	49.1	0.996	0.996
164.	16	0.995	0.6124	0.9595	0.9564	1.0010	0.0	0.0	0.440	-8.51	48.9	0.994	0.994
174.	17	0.994	0.6123	0.9595	0.9563	1.0013	0.0	0.0	0.442	-8.40	48.8	0.991	0.991
184.	18	0.994	0.6122	0.9593	0.9560	1.0014	0.0	0.0	0.444	-8.31	48.7	0.989	0.989
194.	19	0.995	0.6123	0.9589	0.9557	1.0014	0.0	0.0	0.446	-8.24	48.6	0.988	0.988
204.	20	0.995	0.6124	0.9590	0.9558	1.0016	0.0	0.0	0.447	-8.19	48.6	0.987	0.987
214.	21	0.995	0.6125	0.9589	0.9558	1.0016	0.0	0.0	0.447	-8.15	48.6	0.986	0.986
224.	22	0.995	0.6126	0.9587	0.9558	1.0016	0.0	0.0	0.448	-8.13	48.5	0.986	0.986
234.	23	0.995	0.6128	0.9588	0.9566	1.0016	0.0	0.0	0.448	-8.12	48.5	0.985	0.965
244.	24	0.996	0.6131	0.9597	0.9571	1.0018	0.0	0.0	0.448	-8.13	48.5	0.986	0.986
254.	25	0.997	0.6132	0.9671	0.9645	1.0035	0.0	0.0	0.447	-8.15	48.6	0.986	0.986
264.	26	0.998	0.6133	0.9810	0.9785	1.0060	0.0	0.0	0.447	-8.19	48.6	0.987	0.987
274.	27	1.000	0.6135	1.0081	1.0054	1.0103	0.0	0.0	0.446	-8.22	48.6	0.987	0.987
284.	28	1.003	0.6138	1.0390	1.0367	1.0133	0.0	0.0	0.445	-8.26	48.7	0.988	0.988
294.	29	1.003	0.6161	1.0424	1.0420	1.0071	0.0	0.0	0.443	-8.36	48.8	0.990	0.990
304.	30	1.003	0.6179	1.0417	1.0429	1.0024	0.0	0.0	0.440	-8.53	48.9	0.994	0.994
314.	31	1.004	0.6191	1.0411	1.0432	1.0005	0.0	0.0	0.436	-8.72	49.1	0.996	0.998
324.	32	1.005	0.6197	1.0406	1.0433	0.9995	0.0	0.0	0.432	-8.89	49.3	1.001	1.001
334.	33	1.005	0.6201	1.0402	1.0431	0.9991	0.0	0.0	0.429	-9.04	49.4	1.004	1.004
344.	34	1.005	0.6201	1.0403	1.0433	0.9988	0.0	0.0	0.426	-9.15	49.6	1.007	1.007
354.	35	1.005	0.6201	1.0406	1.0436	0.9987	0.0	0.0	0.424	-9.24	49.6	1.009	1.009
4.	36	1.005	0.6200	1.0410	1.0439	0.9986	0.0	0.0	0.423	-9.30	49.7	1.010	1.010

STAGE 7
ROTOR

FLOW SWIRL= 5.00DEG PARTICLE SWIRL= 23.20DEG PSAVC= 7.67PSIA = 52890.PA
PTAVC= 8.93PSIA = 61530.PA TTAVC= 576.4DEG R = 320.2DEG K VELAVG= 541.2FPS =165.0MPS
RVELAVC= 874.0FPS = 266.4MPS AXVELAVG= 535,3FPS =163.2MPS U= 771.FPS = 235.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
19.	1	1.014	0.4768	1.0383	1.0426	0.9986	0.0	0.0	0.437	0.91	38.2	1.014	1.004
29.	2	1.015	0.4773	1.0381	1.0430	0.9986	0.0	0.0	0.436	0.87	38.2	1.015	1.004
39.	3	1.015	0.4778	1.0380	1.0431	0.9986	0.0	0.0	0.436	0.85	38.3	1.015	1.005
49.	4	1.016	0.4781	1.0376	1.0431	0.9986	0.0	0.0	0.435	0.83	38.3	1.016	1.005
59.	5	1.017	0.4783	1.0377	1.0432	0.9986	0.0	0.0	0.435	0.81	38.3	1.017	1.005
69.	6	1.017	0.4785	1.0366	1.0423	0.9984	0.0	0.0	0.435	0.80	38.3	1.017	1.005
79.	7	1.017	0.4788	1.0342	1.0400	0.9980	0.0	0.0	0.435	0.79	38.3	1.017	1.005
89.	8	1.017	0.4792	1.0267	1.0327	0.9966	0.0	0.0	0.435	0.79	38.3	1.017	1.005
99.	9	1.017	0.4815	0.9817	0.9869	0.9870	0.0	0.0	0.436	0.80	38.3	1.017	1.005
109.	10	1.017	0.4823	0.9454	0.9527	0.9840	0.0	0.0	0.442	0.81	38.3	1.017	1.005
119.	11	1.015	0.4788	0.9505	0.9558	0.9938	0.0	0.0	0.445	0.86	38.2	1.015	1.005
129.	12	1.011	0.4755	0.9537	0.9571	0.9982	0.0	0.0	0.447	0.99	38.1	1.011	1.003
139.	13	1.005	0.4724	0.9570	0.9564	0.9996	0.0	0.0	0.450	1.17	37.9	1.005	1.002
149.	14	1.000	0.4697	0.9589	0.9588	1.0007	0.0	0.0	0.453	1.33	37.8	1.000	1.000
159.	15	0.995	0.4674	0.9600	0.9585	1.0006	0.0	0.0	0.455	1.47	37.6	0.995	0.999
169.	16	0.992	0.4655	0.9612	0.9565	1.0013	0.0	0.0	0.457	1.58	37.5	0.992	0.997
179.	17	0.989	0.4640	0.9619	0.9583	1.0013	0.0	0.0	0.458	1.67	37.4	0.969	0.997
189.	18	0.987	0.4624	0.9622	0.9579	1.0014	0.0	0.0	0.459	1.74	37.4	0.987	0.996
199.	19	0.985	0.4620	0.9623	0.9575	1.0014	0.0	0.0	0.460	1.80	27.3	0.985	0.995
209.	20	0.983	0.4615	0.9627	0.9575	1.0016	0.0	0.0	0.461	1.64	37.3	0.983	0.995
219.	21	0.983	0.4609	0.9629	0.9574	1.0016	0.0	0.0	0.461	1.67	37.2	0.983	0.995
229.	22	0.982	0.4606	0.9629	0.9572	1.0016	0.0	0.0	0.461	1.89	37.2	0.982	0.995
239.	23	0.982	0.4605	0.9631	0.9573	1.0016	0.0	0.0	0.461	1.90	37.2	0.982	0.994
249.	24	0.982	0.4605	0.9640	0.9583	1.0018	0.0	0.0	0.461	1.89	37.2	0.982	0.995
259.	25	0.983	0.4604	0.9712	0.9654	1.0035	0.0	0.0	0.459	1.87	37.2	0.983	0.995
269.	26	0.983	0.4603	0.9850	0.9790	1.0060	0.0	0.0	0.458	1.84	37.2	0.983	0.995
279.	27	0.984	0.4597	1.0120	1.0055	1.0103	0.0	0.0	0.455	1.81	37.3	0.984	0.995
289.	28	0.985	0.4596	1.0428	1.0360	1.0133	0.0	0.0	0.452	1.76	37.3	0.985	0.996
299.	29	0.988	0.4621	1.0460	1.0409	1.0071	0.0	0.0	0.449	1.71	37.4	0.988	0.996
309.	30	0.992	0.4652	1.0447	1.0415	1.0024	0.0	0.0	0.447	1.58	37.5	0.992	0.997
319.	31	0.997	0.4680	1.0429	1.0417	1.0005	0.0	0.0	0.445	1.43	37.7	0.997	0.999
329.	32	1.001	0.4705	1.0414	1.0417	0.9995	0.0	0.0	0.442	1.29	37.8	1.001	1.000
339.	33	1.005	0.4724	1.0400	1.0418	0.9991	0.0	0.0	0.441	1.18	37.9	1.005	1.001
349.	34	1.008	0.4741	1.0392	1.0418	0.9988	0.0	0.0	0.439	1.08	38.0	1.008	1.002
359.	35	1.010	0.4752	1.0368	1.0422	0.9987	0.0	0.0	0.438	1.01	38.1	1.010	1.003
9.	36	1.012	0.4761	1.0365	1.0425	0.9986	0.0	0.0	0.437	0.95	38.1	1.012	1.004

STATOR

FLOW SWIRL= 9.62DEG PARTICLE SWIRL= 33.06DEG PSAVG= 9.19PSIA = 63363.PA
PTAVG= 11.19PSIA = 77565.PA TTAVG= 620.6DEG R = 344.8DEG K VELAVG= 667.3FPS =203.4MPS
RVELAVG= 612.1FPS = 186.6MPS AXVELAVG= 511.2FPS =155.8MPS U= 765.FPS = 233.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
20.	1	1.005	0.5681	1.0331	1.0366	0.9949	0.0	0.0	0.445	-10.37	50.8	1.015	1.015
30.	2	1.005	0.5681	1.0330	1.0365	0.9947	0.0	0.0	0.443	-10.41	50.8	1.016	1.016
40.	3	1.005	0.5682	1.0329	1.0364	0.9945	0.0	0.0	0.443	-10.45	50.8	1.017	1.017
50.	4	1.005	0.5682	1.0327	1.0363	0.9943	0.0	0.0	0.442	-10.47	50.9	1.017	1.017
60.	5	1.005	0.5682	1.0326	1.0361	0.9942	0.0	0.0	0.441	-10.49	50.9	1.018	1.018
70.	6	1.005	0.5683	1.0315	1.0352	0.9939	0.0	0.0	0.441	-10.51	50.9	1.018	1.018
80.	7	1.005	0.5684	1.0292	1.0328	0.9933	0.0	0.0	0.441	-10.51	50.9	1.018	1.018
90.	8	1.004	0.5687	1.0219	1.0257	0.9916	0.0	0.0	0.441	-10.50	50.9	1.018	1.018
100.	9	1.002	0.5704	0.9795	0.9845	0.9807	0.0	0.0	0.445	-10.32	50.7	1.014	1.014
110.	10	0.997	0.5691	0.9433	0.9478	0.9736	0.0	0.0	0.450	-10.07	50.5	1.009	1.009
120.	11	0.995	0.5656	0.9444	0.9508	0.9824	0.0	0.0	0.455	-9.90	50.3	1.006	1.006
130.	12	0.995	0.5625	0.9572	0.9574	0.9927	0.0	0.0	0.460	-9.74	50.1	1.003	1.003
140.	13	0.995	0.5607	0.9634	0.9613	0.9987	0.0	0.0	0.465	-9.53	49.9	0.998	0.998
150.	14	0.994	0.5597	0.9660	0.9632	1.0009	0.0	0.0	0.471	-9.31	49.7	0.994	0.994
160.	15	0.994	0.5591	0.9673	0.9640	1.0024	0.0	0.0	0.476	-9.13	49.5	0.990	0.990
170.	16	0.994	0.5587	0.9682	0.9647	1.0035	0.0	0.0	0.480	-8.98	49.4	0.988	0.988
180.	17	0.994	0.5584	0.9686	0.9649	1.0045	0.0	0.0	0.482	-8.88	49.3	0.985	0.985
190.	18	0.994	0.5584	0.9686	0.9648	1.0051	0.0	0.0	0.484	-8.80	49.2	0.984	0.984
200.	19	0.994	0.5583	0.9685	0.9647	1.0056	0.0	0.0	0.486	-8.73	49.1	0.983	0.983
210.	20	0.994	0.5583	0.9686	0.9647	1.0060	0.0	0.0	0.487	-8.69	49.1	0.982	0.982
220.	21	0.994	0.5583	0.9686	0.9647	1.0063	0.0	0.0	0.488	-8.66	49.1	0.981	0.981
230.	22	0.995	0.5584	0.9683	0.9645	1.0064	0.0	0.0	0.488	-8.65	49.1	0.981	0.981
240.	23	0.995	0.5586	0.9680	0.9644	1.0064	0.0	0.0	0.488	-8.66	49.1	0.981	0.981
250.	24	0.995	0.5589	0.9683	0.9649	1.0065	0.0	0.0	0.487	-8.70	49.1	0.982	0.982
260.	25	0.996	0.5589	0.9746	0.9712	1.0081	0.0	0.0	0.485	-8.77	49.2	0.983	0.983
270.	26	0.997	0.5589	0.9874	0.9839	1.0111	0.0	0.0	0.482	-8.89	49.3	0.986	0.986
280.	27	1.002	0.5585	1.0135	1.0096	1.0166	0.0	0.0	0.478	-9.04	49.4	0.989	0.989
290.	28	1.005	0.5588	1.0433	1.0396	1.0211	0.0	0.0	0.474	-9.22	49.6	0.992	0.992
300.	29	1.005	0.5619	1.0455	1.0441	1.0161	0.0	0.0	0.469	-9.43	49.8	0.996	0.996
310.	30	1.006	0.5646	1.0416	1.0424	1.0082	0.0	0.0	0.465	-9.60	50.0	1.000	1.000
320.	31	1.006	0.5662	1.0375	1.0395	1.0021	0.0	0.0	0.461	-9.76	50.2	1.003	1.003
330.	32	1.006	0.5671	1.0352	1.0379	0.9992	0.0	0.0	0.457	-9.93	50.3	1.006	1.006
340.	33	1.006	0.5676	1.0338	1.0369	0.9974	0.0	0.0	0.453	-10.07	50.5	1.009	1.009
350.	34	1.005	0.5679	1.0332	1.0365	0.9963	0.0	0.0	0.450	-10.16	50.6	1.011	1.011
360.	35	1.005	0.5680	1.0331	1.0364	0.9957	0.0	0.0	0.448	-10.26	50.7	1.013	1.013
10.	36	1.005	0.5681	1.0331	1.0365	0.9953	0.0	0.0	0.446	-10.32	50.7	1.014	1.014

STAGE ROTOR

FLOW SWIRL= 13.18DEG PARTICLE SWIRL= 37.43DEG PSAVG= 9.79PSIA = 67479.PA
PTAVG= 11.12PSIA = 76667.PA TTAVG= 620.6DEG R = 344.8DEG K VELAVG= 517.1FPS =157.6MPS
RVELAVG= 897.7FPS = 273.6MPS AXVELAVG= 516.6FPS =157.5MPS U= 757.FPS = 231.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
23.	1	1.023	0.4429	1.0241	1.0309	0.9949	0.0	0.0	0.463	-0.68	35.8	1.023	1.007
33.	2	1.025	0.4436	1.0233	1.0306	0.9947	0.0	0.0	0.462	-0.72	35.8	1.025	1.008
43.	3	1.026	0.4441	1.0227	1.0303	0.9945	0.0	0.0	0.461	-0.75	35.8	1.026	1.008
53.	4	1.027	0.4445	1.0221	1.0300	0.9943	0.0	0.0	0.460	-0.77	35.9	1.027	1.008
63.	5	1.027	0.4449	1.0217	1.0297	0.9942	0.0	0.0	0.460	-0.79	35.9	1.027	1.009
73.	6	1.028	0.4452	1.0204	1.0286	0.9939	0.0	0.0	0.460	-0.80	35.9	1.028	1.009
83.	7	1.028	0.4454	1.0179	1.0262	0.9933	0.0	0.0	0.460	-0.81	35.9	1.028	1.009
93.	8	1.028	0.4457	1.0106	1.0191	0.9916	0.0	0.0	0.461	-0.80	35.9	1.028	1.009
103.	9	1.023	0.4462	0.9692	0.9776	0.9807	0.0	0.0	0.470	-0.68	35.8	1.023	1.007
113.	10	1.016	0.4446	0.9360	0.9433	0.9736	0.0	0.0	0.481	-0.48	35.6	1.016	1.005
123.	11	1.011	0.4400	0.9442	0.9489	0.9824	0.0	0.0	0.487	-0.33	35.4	1.011	1.003
133.	12	1.005	0.4351	0.9546	0.9565	0.9927	0.0	0.0	0.492	-0.17	35.3	1.005	1.001
143.	13	0.998	0.4306	0.9637	0.9632	0.9987	0.0	0.0	0.495	0.03	35.1	0.998	0.999
153.	14	0.991	0.4271	0.9691	0.9665	1.0009	0.0	0.0	0.498	0.22	34.9	0.991	0.997
163.	15	0.985	0.4242	0.9726	0.9685	1.0024	0.0	0.0	0.502	0.38	34.7	0.985	0.995
173.	16	0.981	0.4220	0.9753	0.9699	1.0035	0.0	0.0	0.504	0.50	34.6	0.981	0.994
183.	17	0.978	0.4203	0.9771	0.9707	1.0045	0.0	0.0	0.506	0.59	34.5	0.978	0.993
193.	18	0.975	0.4191	0.9780	0.9710	1.0051	0.0	0.0	0.507	0.66	34.4	0.975	0.992
203.	19	0.973	0.4181	0.9787	0.9712	1.0056	0.0	0.0	0.508	0.72	34.4	0.973	0.992
213.	20	0.972	0.4175	0.9793	0.9714	1.0060	0.0	0.0	0.508	0.75	34.3	0.972	0.991
223.	21	0.971	0.4170	0.9797	0.9715	1.0063	0.0	0.0	0.509	0.78	34.3	0.971	0.991
233.	22	0.971	0.4169	0.9795	0.9713	1.0064	0.0	0.0	0.508	0.79	34.3	0.971	0.991
243.	23	0.971	0.4169	0.9793	0.9711	1.0064	0.0	0.0	0.508	0.78	34.3	0.971	0.991
253.	24	0.972	0.4174	0.9792	0.9713	1.0065	0.0	0.0	0.506	0.75	34.3	0.972	0.991
263.	25	0.974	0.4180	0.9848	0.9772	1.0081	0.0	0.0	0.504	0.69	34.4	0.974	0.992
273.	26	0.978	0.4189	0.9964	0.9891	1.0111	0.0	0.0	0.499	0.59	34.5	0.978	0.993
283.	27	0.982	0.4198	1.0208	1.0138	1.0166	0.0	0.0	0.493	0.46	34.6	0.982	0.994
293.	28	0.988	0.4213	1.0486	1.0424	1.0211	0.0	0.0	0.486	0.31	34.8	0.988	0.996
303.	29	0.993	0.4248	1.0494	1.0452	1.0161	0.0	0.0	0.480	0.16	34.9	0.993	0.998
313.	30	0.998	0.4285	1.0441	1.0422	1.0082	0.0	0.0	0.476	0.02	35.1	0.998	0.999
323.	31	1.003	0.4322	1.0376	1.0379	1.0021	0.0	0.0	0.474	-0.12	35.2	1.003	1.001
333.	32	1.009	0.4353	1.0328	1.0351	0.9992	0.0	0.0	0.471	-0.27	35.4	1.009	1.003
343.	33	1.013	0.4377	1.0294	1.0331	0.9974	0.0	0.0	0.468	-0.40	35.5	1.013	1.004
353.	34	1.017	0.4396	1.0272	1.0323	0.9963	0.0	0.0	0.466	-0.50	35.6	1.017	1.005
3.	35	1.020	0.4410	1.0258	1.0314	0.9957	0.0	0.0	0.465	-0.57	35.7	1.020	1.006
13.	36	1.022	0.4420	1.0249	1.0312	0.9953	0.0	0.0	0.464	-0.63	35.7	1.022	1.007

STATOR

FLOW SWIRL= 14.63DEG   PARTICLE SWIRL= 49.22DEG   PSAVG= 11.64PSIA = 80241.PA
PTAVG= 14.15PSIA = 97579.PA   TTAVG= 669.5DEG R = 371.9DEG K   VELAVG= 661.4FPS =201.6MPS
PVELAVG= 612.2FPS = 186.6MPS   AXVELAVG= 516.3FPS =157.4MPS   U= 739.FPS = 225.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
25.	1	1.005	0.5418	1.0146	1.0184	0.9906	0.003	0.002	0.275	-1.45	52.7	1.024	1.024
35.	2	1.005	0.5419	1.0137	1.0176	0.9900	0.004	0.002	0.274	-1.50	52.8	1.026	1.026
45.	3	1.004	0.5420	1.0130	1.0169	0.9896	0.004	0.002	0.273	-1.54	52.8	1.026	1.026
55.	4	1.004	0.5420	1.0124	1.0163	0.9894	0.004	0.002	0.272	-1.57	52.9	1.027	1.027
65.	5	1.004	0.5419	1.0121	1.0160	0.9891	0.004	0.002	0.272	-1.59	52.9	1.027	1.027
75.	6	1.004	0.5420	1.0109	1.0148	0.9887	0.004	0.002	0.272	-1.61	52.9	1.028	1.028
85.	7	1.004	0.5421	1.0086	1.0126	0.9880	0.004	0.002	0.272	-1.61	52.9	1.028	1.028
95.	8	1.003	0.5424	1.0022	1.0064	0.9862	0.003	0.001	0.273	-1.57	52.9	1.027	1.027
105.	9	1.003	0.5454	0.9666	0.9727	0.9758	-0.004	-0.002	0.277	-1.34	52.6	1.022	1.022
115.	10	1.001	0.5464	0.9389	0.9455	0.9686	-0.009	-0.004	0.286	-0.89	52.2	1.013	1.013
125.	11	0.998	0.5426	0.9472	0.9513	0.9746	-0.008	-0.004	0.294	-0.50	51.8	1.005	1.005
135.	12	0.996	0.5384	0.9587	0.9600	0.9853	-0.008	-0.004	0.300	-0.18	51.5	0.999	0.999
145.	13	0.996	0.5350	0.9716	0.9705	0.9966	-0.006	-0.003	0.305	0.10	51.2	0.994	0.994
155.	14	0.995	0.5331	0.9796	0.9771	1.0028	-0.005	-0.002	0.310	0.41	50.9	0.987	0.987
165.	15	0.995	0.5321	0.9839	0.9808	1.0055	-0.005	-0.002	0.315	0.68	50.6	0.982	0.982
175.	16	0.995	0.5316	0.9863	0.9828	1.0073	-0.005	-0.002	0.318	0.86	50.4	0.978	0.978
185.	17	0.995	0.5312	0.9878	0.9841	1.0087	-0.004	-0.002	0.321	1.00	50.3	0.976	0.976
195.	18	0.995	0.5309	0.9886	0.9846	1.0097	-0.004	-0.002	0.322	1.11	50.2	0.974	0.974
205.	19	0.995	0.5306	0.9893	0.9851	1.0105	-0.004	-0.002	0.324	1.20	50.1	0.972	0.972
215.	20	0.995	0.5305	0.9894	0.9852	1.0110	-0.003	-0.002	0.324	1.25	50.1	0.971	0.971
225.	21	0.995	0.5304	0.9896	0.9853	1.0114	-0.003	-0.002	0.325	1.29	50.0	0.970	0.970
235.	22	0.995	0.5304	0.9891	0.9847	1.0115	-0.003	-0.001	0.325	1.30	50.0	0.970	0.970
245.	23	0.995	0.5304	0.9884	0.9840	1.0115	-0.002	-0.001	0.325	1.29	50.0	0.970	0.970
255.	24	0.995	0.5304	0.9875	0.9831	1.0113	-0.001	-0.001	0.324	1.24	50.1	0.971	0.971
265.	25	0.995	0.5301	0.9917	0.9872	1.0127	0.0	0.0	0.323	1.14	50.2	0.973	0.973
275.	26	0.996	0.5301	1.0003	0.9957	1.0151	0.002	0.001	0.319	0.91	50.4	0.978	0.978
285.	27	0.998	0.5298	1.0213	1.0163	1.0204	0.004	0.002	0.312	0.59	50.7	0.984	0.984
295.	28	1.001	0.5299	1.0454	1.0404	1.0254	0.006	0.003	0.305	0.19	51.1	0.992	0.992
305.	29	1.003	0.5325	1.0452	1.0421	1.0218	0.006	0.003	0.298	-0.17	51.5	0.999	0.999
315.	30	1.005	0.5385	1.0402	1.0393	1.0147	0.006	0.003	0.293	-0.43	51.7	1.004	1.004
325.	31	1.006	0.5383	1.0316	1.0328	1.0054	0.005	0.002	0.289	-0.65	51.9	1.008	1.008
335.	32	1.005	0.5400	1.0244	1.0269	0.9987	0.004	0.002	0.285	-0.86	52.2	1.013	1.013
345.	33	1.005	0.5409	1.0202	1.0233	0.9954	0.004	0.002	0.282	-1.05	52.3	1.016	1.016
355.	34	1.005	0.5414	1.0177	1.0212	0.9933	0.004	0.002	0.279	-1.19	52.5	1.019	1.019
5.	35	1.005	0.5416	1.0163	1.0199	0.9921	0.004	0.002	0.277	-1.30	52.6	1.021	1.021
15.	36	1.005	0.5417	1.0155	1.0192	0.9912	0.003	0.002	0.276	-1.38	52.7	1.023	1.023

STAGE 4
ROTOR

FLOW SWIRL= 18.94DEG   PARTICLE SWIRL= 53.[illegible]DEG   PSAVG= 12.21PSIA = 84186.PA
PTAVG= 14.17PSIA = 97674.PA   TTAVG= 669.5DEG R = 371.9DEG K   VELAVG= 578.0FPS =176.2MPS
PVELAVG= 842.7FPS = 256.9MPS   AXVELAVG= 570.1FPS =173.8MPS   U= 716.FPS = 218.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
29.	1	1.026	0.4806	1.0141	1.0234	0.9906	0.0	0.0	0.275	-3.51	43.4	1.026	1.010
39.	2	1.027	0.4812	1.0133	1.0230	0.9900	0.0	0.0	0.274	-3.55	43.4	1.027	1.010
49.	3	1.028	0.4818	1.0125	1.0226	0.9896	0.0	0.0	0.273	-3.58	43.5	1.028	1.010
59.	4	1.028	0.4821	1.0120	1.0224	0.9894	0.0	0.0	0.273	-3.60	43.5	1.028	1.011
69.	5	1.029	0.4824	1.0117	1.0222	0.9891	0.0	0.0	0.273	-3.61	43.5	1.029	1.011
79.	6	1.029	0.4826	1.0106	1.0212	0.9887	0.0	0.0	0.273	-3.62	43.5	1.029	1.011
89.	7	1.029	0.4828	1.0083	1.0190	0.9880	0.0	0.0	0.273	-3.62	43.5	1.029	1.011
99.	8	1.028	0.4828	1.0021	1.0128	0.9862	0.0	0.0	0.274	-3.59	43.5	1.028	1.011
109.	9	1.023	0.4830	0.9671	0.9776	0.9758	0.0	0.0	0.283	-3.43	43.3	1.023	1.009
119.	10	1.013	0.4798	0.9405	0.9487	0.9686	0.0	0.0	0.299	-3.10	43.0	1.013	1.005
129.	11	1.004	0.4738	0.9494	0.9540	0.9746	0.0	0.0	0.309	-2.80	42.7	1.004	1.001
139.	12	0.997	0.4679	0.9608	0.9619	0.9853	0.0	0.0	0.315	-2.59	42.5	0.997	0.999
149.	13	0.992	0.4625	0.9730	0.9709	0.9966	0.0	0.0	0.318	-2.40	42.3	0.992	0.997
159.	14	0.986	0.4582	0.9807	0.9759	1.0028	0.0	0.0	0.322	-2.21	42.1	0.986	0.995
169.	15	0.981	0.4551	0.9848	0.9781	1.0055	0.0	0.0	0.325	-2.04	41.9	0.981	0.993
179.	16	0.977	0.4529	0.9871	0.9791	1.0073	0.0	0.0	0.327	-1.92	41.8	0.977	0.991
189.	17	0.975	0.4514	0.9884	0.9795	1.0087	0.0	0.0	0.328	1.83	41.7	0.975	0.991
199.	18	0.973	0.4503	0.9889	0.9793	1.0097	0.0	0.0	0.330	-1.77	41.7	0.973	0.990
209.	19	0.971	0.4494	0.9893	0.9792	1.0105	0.0	0.0	0.330	-1.72	41.6	0.971	0.989
219.	20	0.970	0.4489	0.9893	0.9788	1.0110	0.0	0.0	0.331	-1.69	41.6	0.970	0.989
229	21	0.970	0.4485	0.9893	0.9787	1.0114	0.0	0.0	0.331	-1.67	41.6	0.970	0.989
239.	22	0.970	0.4484	0.9887	0.9780	1.0115	0.0	0.0	0.331	-1.67	41.6	0.970	0.989
249.	23	0.970	0.4485	0.9881	0.9774	1.0115	0.0	0.0	0.331	-1.67	41.6	0.970	0.989
259.	24	0.971	0.4489	0.9873	0.9768	1.0113	0.0	0.0	0.330	-1.70	41.6	0.971	0.989
269.	25	0.972	0.4494	0.9918	0.9817	1.0127	0.0	0.0	0.327	-1.76	41.7	0.972	0.990
279.	26	0.977	0.4510	1.0005	0.9912	1.0151	0.0	0.0	0.322	-1.90	41.8	0.977	0.991
289.	27	0.983	0.4530	1.0210	1.0127	1.0204	0.0	0.0	0.313	-2.13	42.0	0.983	0.994
299.	28	0.992	0.4558	1.0446	1.0378	1.0254	0.0	0.0	0.303	-2.40	42.3	0.992	0.997
309.	29	0.999	0.4602	1.0440	1.0402	1.0218	0.0	0.0	0.295	-2.65	42.6	0.999	1.000
319.	30	1.005	0.4646	1.0390	1.0379	1.0147	0.0	0.0	0.290	-2.84	42.7	1.005	1.002
329.	31	1.009	0.4689	1.0307	1.0325	1.0054	0.0	0.0	0.286	-2.98	42.9	1.009	1.003
339.	32	1.013	0.4726	1.0238	1.0279	0.9987	0.0	0.0	0.284	-3.12	43.0	1.013	1.005
349.	33	1.017	0.4753	1.0196	1.0256	0.9954	0.0	0.0	0.281	-3.25	43.1	1.017	1.006
359.	34	1.020	0.4773	1.0172	1.0244	0.9933	0.0	0.0	0.279	-3.35	43.2	1.020	1.008
9.	35	1.023	0.4787	1.0158	1.0239	0.9921	0.0	0.0	0.278	-3.41	43.3	1.023	1.008
19.	36	1.024	0.4797	1.0150	1.0238	0.9912	0.0	0.0	0.276	-3.47	43.4	1.024	1.009

STATOR

FLOW SWIRL= 18.74DEG PARTICLE SWIRL= 57.79DEG PSAVG= 13.45PSIA = 92726.PA

PTAVG= 16.33PSIA = 112573.PA TTAVG= 704.5DEG R = 391.4DEG K VELAVG= 675.5FPS =205.9MPS
RVELAVG= 703.5FPS = 214.4MPS AXVELAVG= 592.9FPS =180.7MPS U= 702.FPS = 214.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
29.	1	1.016	0.5463	1.0081	1.0166	0.9896	0.0	0.0	0.195	-4.28	63.0	1.031	1.031
39.	2	1.016	0.5467	1.0072	1.0160	0.9890	0.0	0.0	0.194	-4.33	63.0	1.032	1.032
49.	3	1.017	0.5471	1.0064	1.0155	0.9885	0.0	0.0	0.193	-4.38	63.1	1.033	1.033
59.	4	1.017	0.5473	1.0059	1.0152	0.9882	0.0	0.0	0.193	-4.41	63.1	1.033	1.033
69.	5	1.017	0.5474	1.0057	1.0150	0.9880	0.0	0.0	0.192	-4.42	63.1	1.033	1.033
79.	6	1.017	0.5475	1.0046	1.0141	0.9876	0.0	0.0	0.192	-4.43	63.1	1.034	1.034
89.	7	1.017	0.5476	1.0026	1.0121	0.9870	0.0	0.0	0.192	-4.42	63.1	1.034	1.034
99.	8	1.016	0.5474	0.9977	1.0070	0.9854	0.0	0.0	0.194	-4.33	63.0	1.032	1.032
109.	9	1.010	0.5466	0.9690	0.9775	0.9765	0.0	0.0	0.203	-3.83	62.5	1.022	1.022
119.	10	0.999	0.5424	0.9503	0.9558	0.9702	0.0	0.0	0.217	-2.95	61.6	1.005	1.005
129.	11	0.993	0.5375	0.9603	0.9625	0.9750	0.0	0.0	0.226	-2.36	61.1	0.994	0.994
139.	12	0.990	0.5331	0.9699	0.9690	0.9835	0.0	0.0	0.232	-2.01	60.7	0.987	0.987
149.	13	0.988	0.5290	0.9805	0.9766	0.9942	0.0	0.0	0.235	-1.78	60.5	0.983	0.983
159.	14	0.986	0.5260	0.9885	0.9827	1.0021	0.0	0.0	0.236	-1.53	60.2	0.978	0.978
169.	15	0.985	0.5243	0.9925	0.9854	1.0061	0.0	0.0	0.241	-1.32	60.0	0.974	0.974
179.	16	0.985	0.5233	0.9939	0.9862	1.0081	0.0	0.0	0.243	-1.18	59.9	0.971	0.971
189.	17	0.984	0.5226	0.9946	0.9863	1.0095	0.0	0.0	0.245	-1.08	59.8	0.970	0.970
199.	18	0.983	0.5221	0.9946	0.9860	1.0106	0.0	0.0	0.246	-1.01	59.7	0.968	0.968
209.	19	0.983	0.5216	0.9946	0.9859	1.0115	0.0	0.0	0.247	-0.94	59.6	0.967	0.967
219.	20	0.983	0.5215	0.9944	0.9854	1.0121	0.0	0.0	0.247	-0.92	59.6	0.967	0.967
229.	21	0.983	0.5213	0.9943	0.9851	1.0125	0.0	0.0	0.247	-0.90	59.6	0.966	0.966
239.	22	0.983	0.5213	0.9935	0.9843	1.0127	0.0	0.0	0.247	-0.90	59.6	0.966	0.966
249.	23	0.983	0.5215	0.9926	0.9836	1.0127	0.0	0.0	0.247	-0.92	59.6	0.967	0.967
259.	24	0.984	0.5219	0.9914	0.9827	1.0125	0.0	0.0	0.246	-0.98	59.7	0.968	0.968
269.	25	0.985	0.5224	0.9950	0.9865	1.0135	0.0	0.0	0.244	-1.11	59.8	0.970	0.970
279.	26	0.989	0.5239	1.0011	0.9937	1.0154	0.0	0.0	0.238	-1.44	60.1	0.976	0.976
289.	27	0.994	0.5255	1.0182	1.0117	1.0200	0.0	0.0	0.230	-1.93	60.6	0.985	0.985
299.	28	1.001	0.5279	1.0374	1.0326	1.0245	0.0	0.0	0.220	-2.55	61.2	0.997	0.997
309.	29	1.006	0.5315	1.0359	1.0336	1.0215	0.0	0.0	0.212	-3.03	61.7	1.006	1.006
319.	30	1.009	0.5348	1.0318	1.0320	1.0156	0.0	0.0	0.208	-3.34	62.0	1.012	1.012
329.	31	1.011	0.5382	1.0250	1.0276	1.0072	0.0	0.0	0.205	-3.54	62.2	1.016	1.016
339.	32	1.012	0.5416	1.0182	1.0229	0.9997	0.0	0.0	0.203	-3.71	62.4	1.020	1.020
349.	33	1.013	0.5429	1.0137	1.0198	0.9952	0.0	0.0	0.200	-3.88	62.6	1.023	1.023
359.	34	1.014	0.5442	1.0112	1.0182	0.9928	0.0	0.0	0.198	-4.02	62.7	1.026	1.026
9.	35	1.015	0.5450	1.0100	1.0176	0.9913	0.0	0.0	0.197	-4.12	62.8	1.028	1.026
19.	36	1.015	0.5456	1.0091	1.0172	0.9904	0.0	0.0	0.196	-4.20	62.9	1.029	1.029

STAGE 5
ROTOR

FLOW SWIRL= 22.03DEG PARTICLE SWIRL= 61.08DEG PSAVG= 14.33PSIA = 98793.PA
PTAVG= 16.73PSIA = 115372.PA TTAVG= 704.5DEG R = 391.4DEG K VELAVG= 605.4FPS =184.5MPS
RVELAVG= 834.6FPS = 254.4MPS AXVELAVG= 595.7FPS =181.6MPS U= 693.FPS = 211.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WEL KG/SEG	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
32.	1	1.032	0.4950	1.0058	1.0178	0.9896	0.0	0.0	0.353	-2.62	46.6	1.032	1.014
42.	2	1.034	0.4957	1.0046	1.0173	0.9890	0.0	0.0	0.352	-2.66	46.7	1.034	1.014
52.	3	1.035	0.4963	1.0039	1.0168	0.9885	0.0	0.0	0.352	-2.69	46.7	1.035	1.015
62.	4	1.035	0.4967	1.0035	1.0166	0.9882	0.0	0.0	0.351	-2.71	46.7	1.035	1.015
72.	5	1.035	0.4969	1.0032	1.0165	0.9880	0.0	0.0	0.351	-2.72	46.7	1.035	1.015
82.	6	1.036	0.4971	1.0021	1.0156	0.9876	0.0	0.0	0.351	-2.73	46.7	1.036	1.015
92.	7	1.035	0.4972	1.0002	1.0137	0.9870	0.0	0.0	0.352	-2.72	46.7	1.035	1.015
102.	8	1.033	0.4965	0.9957	1.0086	0.9854	0.0	0.0	0.354	-2.65	46.6	1.033	1.014
112.	9	1.022	0.4932	0.9687	0.9792	0.9765	0.0	0.0	0.366	-2.28	46.3	1.022	1.009
122.	10	1.003	0.4851	0.9523	0.9575	0.9702	0.0	0.0	0.383	-1.63	45.6	1.003	1.001
132.	11	0.991	0.4779	0.9631	0.9639	0.9750	0.0	0.0	0.391	-1.23	45.2	0.991	0.996
142.	12	0.984	0.4724	0.9727	0.9701	0.9835	0.0	0.0	0.395	-1.00	45.0	0.984	0.993
152.	13	0.980	0.4679	0.9828	0.9774	0.9942	0.0	0.0	0.396	-0.87	44.9	0.980	0.992
162.	14	0.976	0.4636	0.9906	0.9827	1.0021	0.0	0.0	0.398	-0.72	44.7	0.976	0.990
172.	15	0.972	0.4610	0.9946	0.9849	1.0061	0.0	0.0	0.399	-0.59	44.6	0.972	0.988
182.	16	0.970	0.4593	0.9961	0.9853	1.0081	0.0	0.0	0.400	-0.50	44.5	0.970	0.987
192.	17	0.968	0.4580	0.9968	0.9852	1.0095	0.0	0.0	0.401	-0.43	44.4	0.968	0.987
202.	18	0.967	0.4571	0.9969	0.9847	1.0106	0.0	0.0	0.402	-0.38	44.4	0.967	0.986
212.	19	0.965	0.4563	0.9971	0.9844	1.0115	0.0	0.0	0.402	-0.34	44.3	0.965	0.986
222.	20	0.965	0.4560	0.9967	0.9838	1.0121	0.0	0.0	0.402	-0.33	44.3	0.965	0.985
232.	21	0.965	0.4557	0.9966	0.9835	1.0125	0.0	0.0	0.402	-0.32	44.3	0.965	0.985
242.	22	0.965	0.4557	0.9957	0.9827	1.0127	0.0	0.0	0.402	-0.32	44.3	0.965	0.985
252.	23	0.965	0.4559	0.9948	0.9819	1.0127	0.0	0.0	0.402	-0.33	44.3	0.965	0.965
262.	24	0.966	0.4565	0.9935	0.9810	1.0125	0.0	0.0	0.401	-0.37	44.4	0.966	0.986
272.	25	0.969	0.4575	0.9969	0.9849	1.0135	0.0	0.0	0.398	-0.46	44.5	0.969	0.987
282.	26	0.975	0.4604	1.0024	0.9922	1.0154	0.0	0.0	0.391	-0.70	44.7	0.975	0.996
292.	27	0.985	0.4642	1.0184	1.0104	1.0200	0.0	0.0	0.382	-1.04	45.0	0.985	0.994
302.	28	0.998	0.4696	1.0360	1.0313	1.0245	0.0	0.0	0.370	-1.49	45.5	0.998	0.999
312.	29	1.008	0.4751	1.0336	1.0325	1.0215	0.0	0.0	0.363	-1.82	45.6	1.008	1.003
322.	30	1.014	0.4795	1.0295	1.0313	1.0156	0.0	0.0	0.360	-2.02	46.0	1.014	1.006
332.	31	1.018	0.4834	1.0226	1.0272	1.0072	0.0	0.0	0.356	-2.15	46.1	1.018	1.007
342.	32	1.021	0.4868	1.0163	1.0230	0.9997	0.0	0.0	0.357	-2.25	46.3	1.021	1.009
352.	33	1.024	0.4896	1.0118	1.0203	0.9952	0.0	0.0	0.356	-2.36	46.4	1.024	1.010
2.	34	1.027	0.4916	1.0092	1.0190	0.9928	0.0	0.0	0.355	-2.45	46.5	1.027	1.011
12.	35	1.029	0.4929	1.0079	1.0185	0.9913	0.0	0.0	0.355	-2.51	46.5	1.029	1.012
22.	36	1.031	0.4940	1.0070	1.0183	0.9904	0.0	0.0	0.354	-2.57	46.6	1.031	1.013

STATOR

FLOW SWIRL= 22.15DEG PARTICLE SWIRL= 65.50DEG PSAVG= 16.28PSIA = 112237.PA
PTAVG= 19.87PSIA = 136992.PA TTAVG= 739.7DEG R = 411.0DEG K VELAVG= 701.5FPS =213.8MPS
RVELAVG= 649.0FPS = 197.8MPS AXVELAVG= 580.1FPS =176.8MPS U= 685.FPS = 209.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
32.	1	1.015	0.5537	1.0065	1.0149	0.9902	0.0	0.0	0.322	-1.41	57.3	1.033	1.033
42.	2	1.016	0.5541	1.0058	1.0145	0.9895	0.0	0.0	0.321	-1.45	57.3	1.034	1.034
52.	3	1.016	0.5545	1.0050	1.0140	0.9890	0.0	0.0	0.320	-1.49	57.4	1.035	1.035
62.	4	1.016	0.5546	1.0048	1.0138	0.9887	0.0	0.0	0.320	-1.50	57.4	1.035	1.035
72.	5	1.016	0.5546	1.0048	1.0138	0.9885	0.0	0.0	0.320	-1.51	57.4	1.035	1.035
82.	6	1.016	0.5548	1.0038	1.0129	0.9881	0.0	0.0	0.320	-1.52	57.4	1.035	1.035
92.	7	1.016	0.5548	1.0022	1.0113	0.9875	0.0	0.0	0.320	-1.49	57.4	1.035	1.035
102.	8	1.014	0.5542	0.9988	1.0075	0.9862	0.0	0.0	0.323	-1.36	57.3	1.032	1.032
112.	9	1.005	0.5513	0.9775	0.9839	0.9787	0.0	0.0	0.335	-0.65	56.6	1.016	1.016
122.	10	0.993	0.5458	0.9657	0.9682	0.9732	0.0	0.0	0.354	0.42	55.5	0.993	0.993
132.	11	0.989	0.5425	0.9732	0.9734	0.9761	0.0	0.0	0.362	0.92	55.0	0.982	0.982
142.	12	0.987	0.5395	0.9789	0.9771	0.9822	0.0	0.0	0.366	1.18	54.7	0.977	0.977
152.	13	0.986	0.5364	0.9858	0.9817	0.9914	0.0	0.0	0.367	1.28	54.6	0.975	0.975
162.	14	0.985	0.5337	0.9923	0.9863	0.9998	0.0	0.0	0.368	1.40	54.5	0.972	0.972
172.	15	0.985	0.5323	0.9954	0.9883	1.0048	0.0	0.0	0.370	1.50	54.4	0.970	0.970
182.	16	0.985	0.5315	0.9961	0.9885	1.0072	0.0	0.0	0.371	1.56	54.3	0.968	0.968
192.	17	0.985	0.5309	0.9962	0.9881	1.0087	0.0	0.0	0.372	1.64	54.3	0.967	0.967
202.	18	0.984	0.5304	0.9959	0.9876	1.0098	0.0	0.0	0.372	1.69	54.2	0.966	0.966
212.	19	0.984	0.5300	0.9959	0.9872	1.0107	0.0	0.0	0.373	1.73	54.2	0.965	0.965
222.	20	0.984	0.5299	0.9951	0.9864	1.0113	0.0	0.0	0.373	1.74	54.2	0.965	0.965
232.	21	0.984	0.5297	0.9949	0.9860	1.0118	0.0	0.0	0.373	1.75	54.1	0.965	0.965
242.	22	0.984	0.5298	0.9938	0.9851	1.0120	0.0	0.0	0.373	1.74	54.2	0.965	0.965
252.	23	0.985	0.5300	0.9928	0.9841	1.0120	0.0	0.0	0.373	1.71	54.2	0.966	0.966
262.	24	0.985	0.5305	0.9913	0.9830	1.0118	0.0	0.0	0.372	1.65	54.3	0.967	0.967
272.	25	0.987	0.5312	0.9938	0.9859	1.0128	0.0	0.0	0.369	1.49	54.4	0.970	0.970
282.	26	0.991	0.5332	0.9974	0.9909	1.0143	0.0	0.0	0.362	1.10	54.8	0.979	0.979
292.	27	0.997	0.5354	1.0110	1.0060	1.0186	0.0	0.0	0.353	0.53	55.4	0.991	0.991
302.	28	1.005	0.5385	1.0262	1.0233	1.0229	0.0	0.0	0.341	-0.18	56.1	1.006	1.006
312.	29	1.009	0.5415	1.0253	1.0246	1.0210	0.0	0.0	0.333	-0.63	56.5	1.016	1.016
322.	30	1.012	0.5440	1.0237	1.0249	1.0166	0.0	0.0	0.329	-0.87	56.8	1.021	1.021
332.	31	1.013	0.5467	1.0196	1.0228	1.0094	0.0	0.0	0.328	-0.99	56.9	1.024	1.024
342.	32	1.013	0.5491	1.0148	1.0197	1.0020	0.0	0.0	0.327	-1.07	57.0	1.025	1.025
352.	33	1.014	0.5508	1.0110	1.0172	0.9967	0.0	0.0	0.326	-1.15	57.0	1.027	1.027
2.	34	1.014	0.5520	1.0088	1.0159	0.9937	0.0	0.0	0.324	-1.23	57.1	1.029	1.029
12.	35	1.014	0.5526	1.0082	1.0157	0.9921	0.0	0.0	0.324	-1.26	57.2	1.030	1.030
22.	36	1.015	0.5531	1.0075	1.0155	0.9910	0.0	0.0	0.323	-1.34	57.2	1.031	1.031

STAGE + ROTOR

FLOW SWIRL= 22.74DEG PARTICLE SWIRL= 67.09DEG PSAVG= 17.12PSIA = 118065.PA
PTAVG= 19.65PSIA = 135507.PA TTAVG= 739.7DEG R = 411.0DEG K VELAVG= 585.6FPS =178.5MPS
RVELAVG= 869.4FPS = 265.0MPS AXVELAVG= 584.5FPS =178.2MPS U= 679.FPS = 207.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
34.	1	1.027	0.4636	1.0069	1.0160	0.9902	0.007	0.003	0.389	-6.96	43.1	1.027	1.011
44.	2	1.026	0.4641	1.0062	1.0156	0.9895	0.007	0.003	0.389	-6.98	43.1	1.028	1.012
54.	3	1.029	0.4646	1.0054	1.0151	0.9890	0.007	0.003	0.386	-7.00	43.1	1.029	1.012
64.	4	1.029	0.4648	1.0052	1.0150	0.9887	0.007	0.003	0.388	-7.01	43.1	1.029	1.012
74.	5	1.029	0.4650	1.0051	1.0150	0.9885	0.007	0.003	0.388	-7.02	43.1	1.029	1.012
84.	6	1.029	0.4651	1.0041	1.0141	0.9881	0.007	0.003	0.388	-7.02	43.1	1.029	1.012
94.	7	1.029	0.4651	1.0026	1.0126	0.9875	0.007	0.003	0.389	-7.01	43.1	1.029	1.012
104.	8	1.028	0.4648	0.9990	1.0088	0.9862	0.005	0.002	0.390	-6.97	43.1	1.028	1.012
114.	9	1.022	0.4640	0.9753	0.9843	0.9787	-0.006	-0.003	0.397	-6.81	42.9	1.022	1.009
124.	10	1.008	0.4568	0.9612	0.9671	0.9732	-0.016	-0.007	0.410	-6.40	42.5	1.008	1.003
134.	11	0.997	0.4528	0.9696	0.9719	0.9761	-0.016	-0.007	0.418	-6.06	42.2	0.997	0.999
144.	12	0.991	0.4484	0.9750	0.9755	0.9822	-0.016	-0.007	0.421	-5.88	42.0	0.991	0.996
154.	13	0.987	0.4447	0.9829	0.9804	0.9914	-0.014	-0.006	0.423	-5.77	41.9	0.987	0.995
164.	14	0.984	0.4413	0.9894	0.9848	0.9995	-0.013	-0.006	0.424	-5.67	41.8	0.984	0.993
174.	15	0.981	0.4386	0.9930	0.9869	1.0048	-0.012	-0.005	0.425	-5.57	41.7	0.981	0.992
184.	16	0.978	0.4365	0.9944	0.9871	1.0072	-0.011	-0.005	0.426	-5.47	41.6	0.978	0.991
194.	17	0.975	0.4350	0.9951	0.9869	1.0087	-0.010	-0.004	0.428	-5.39	41.5	0.975	0.989
204.	18	0.973	0.4338	0.9953	0.9864	1.0098	-0.008	-0.004	0.429	-5.32	41.4	0.973	0.989
214.	19	0.971	0.4328	0.9956	0.9861	1.0107	-0.008	-0.003	0.430	-5.27	41.4	0.971	0.988
224.	20	0.970	0.4321	0.9953	0.9854	1.0113	-0.006	-0.003	0.431	-5.23	41.3	0.970	0.987
234.	21	0.969	0.4316	0.9953	0.9852	1.0118	-0.006	-0.003	0.431	-5.21	41.3	0.969	0.987
244.	22	0.968	0.4312	0.9947	0.9843	1.0120	-0.005	-0.002	0.432	-5.16	41.3	0.968	0.987
254.	23	0.968	0.4310	0.9941	0.9836	1.0120	-0.004	-0.002	0.432	-5.17	41.3	0.968	0.986
264.	24	0.968	0.4309	0.9932	0.9827	1.0118	-0.002	-0.001	0.432	-5.16	41.3	0.968	0.986
274.	25	0.969	0.4315	0.9962	0.9859	1.0123	-0.001	-0.000	0.430	-5.21	41.3	0.969	0.987
284.	26	0.973	0.4331	1.0005	0.9911	1.0143	0.003	0.002	0.426	-5.34	41.4	0.973	0.989
294.	27	0.983	0.4365	1.0127	1.0062	1.0186	0.007	0.003	0.416	-5.63	41.7	0.983	0.993
304.	28	0.996	0.4416	1.0282	1.0236	1.0229	0.011	0.005	0.405	-6.03	42.1	0.996	0.998
314.	29	1.005	0.4463	1.0268	1.0251	1.0210	0.012	0.005	0.399	-6.31	42.4	1.005	1.002
324.	30	1.011	0.4500	1.0249	1.0255	1.0166	0.012	0.005	0.395	-6.48	42.6	1.011	1.005
334.	31	1.015	0.4533	1.0207	1.0234	1.0094	0.010	0.005	0.393	-6.59	42.7	1.015	1.006
344.	32	1.017	0.4562	1.0159	1.0204	1.0020	0.009	0.004	0.393	-6.67	42.8	1.017	1.007
354.	33	1.020	0.4587	1.0120	1.0180	0.9967	0.008	0.004	0.392	-6.75	42.8	1.020	1.008
4.	34	1.022	0.4605	1.0096	1.0168	0.9937	0.008	0.003	0.391	-6.82	42.9	1.022	1.009
14.	35	1.024	0.4617	1.0088	1.0167	0.9921	0.007	0.003	0.390	-6.87	43.0	1.024	1.010
24.	36	1.026	0.4626	1.0080	1.0165	0.9910	0.007	0.003	0.390	-6.92	43.0	1.026	1.011

STATOR

FLOW SWIRL= 25.12DEG PARTICLE SWIRL= 70.37DEG PSAVG= 19.64PSIA = 135409.PA
PTAVG= 23.06PSIA = 159000.PA TTAVG= 776.8DEG R = 431.6DEG K VELAVG= 647.1FPS =197.2MPS
RVELAVG= 651.9FPS = 198.7MPS AXVELAVG= 555.1FPS =169.2MPS U= 674.FPS = 205.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL BM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
33.	1	1.014	0.4950	1.0067	1.0128	0.9903	0.0	0.0	0.225	-9.53	60.5	1.028	1.028
43.	2	1.014	0.4952	1.0063	1.0126	0.9896	0.0	0.0	0.225	-9.55	60.6	1.029	1.029
53.	3	1.014	0.4954	1.0057	1.0121	0.9891	0.0	0.0	0.225	-9.57	60.6	1.029	1.029
63.	4	1.014	0.4955	1.0057	1.0121	0.9886	0.0	0.0	0.224	-9.58	60.6	1.029	1.029
73.	5	1.014	0.4956	1.0057	1.0122	0.9886	0.0	0.0	0.224	-9.59	60.6	1.030	1.030
83.	6	1.014	0.4956	1.0049	1.0114	0.9882	0.0	0.0	0.224	-9.59	60.6	1.029	1.029
93.	7	1.013	0.4956	1.0036	1.0101	0.9877	0.0	0.0	0.225	-9.56	60.6	1.029	1.029
103.	8	1.012	0.4953	1.0006	1.0071	0.9866	0.0	0.0	0.226	-9.47	60.5	1.027	1.027
113.	9	1.007	0.4945	0.9807	0.9664	0.9800	0.0	0.0	0.233	-9.05	60.0	1.019	1.019
123.	10	0.997	0.4902	0.9724	0.9752	0.9756	0.0	0.0	0.246	-8.11	59.1	1.000	1.000
133.	11	0.992	0.4873	0.9797	0.9806	0.9777	0.0	0.0	0.257	-7.54	58.5	0.989	0.989
143.	12	0.990	0.4850	0.9824	0.9821	0.9819	0.0	0.0	0.260	-7.29	58.3	0.984	0.984
153.	13	0.989	0.4827	0.9867	0.9848	0.9895	0.0	0.0	0.262	-7.16	58.2	0.982	0.982
163.	14	0.989	0.4803	0.9916	0.9881	0.9977	0.0	0.0	0.263	-7.07	58.1	0.980	0.980
173.	15	0.988	0.4787	0.9946	0.9901	1.0035	0.0	0.0	0.264	-6.95	58.0	0.976	0.978
183.	16	0.988	0.4776	0.9957	0.9905	1.0067	0.0	0.0	0.266	-6.83	57.8	0.976	0.976
193.	17	0.987	0.4769	0.9960	0.9903	1.0084	0.0	0.0	0.267	-6.72	57.7	0.973	0.973
203.	18	0.986	0.4763	0.9958	0.9897	1.0095	0.0	0.0	0.268	-6.63	57.6	0.972	0.972
213.	19	0.986	0.4758	0.9957	0.9893	1.0105	0.0	0.0	0.269	-6.54	57.5	0.970	0.970
223.	20	0.985	0.4754	0.9952	0.9886	1.0111	0.0	0.0	0.270	-6.49	57.5	0.969	0.969
233.	21	0.985	0.4752	0.9949	0.9882	1.0116	0.0	0.0	0.271	-6.45	57.5	0.968	0.968
243.	22	0.985	0.4750	0.9942	0.9874	1.0118	0.0	0.0	0.271	-6.41	57.4	0.966	0.966
253.	23	0.985	0.4750	0.9935	0.9866	1.0119	0.0	0.0	0.271	-6.39	57.4	0.967	0.967
263.	24	0.985	0.4750	0.9925	0.9856	1.0118	0.0	0.0	0.271	-6.39	57.4	0.967	0.967
273.	25	0.986	0.4756	0.9945	0.9880	1.0126	0.0	0.0	0.270	-6.52	57.5	0.970	0.970
283.	26	0.989	0.4768	0.9973	0.9915	1.0139	0.0	0.0	0.265	-6.61	57.8	0.975	0.975
293.	27	0.996	0.4793	1.0071	1.0028	1.0174	0.0	0.0	0.256	-7.46	58.5	0.988	0.988
303.	28	1.004	0.4824	1.0164	1.0162	1.0211	0.0	0.0	0.244	-8.26	59.3	1.003	1.003
313.	29	1.008	0.4847	1.0185	1.0177	1.0200	0.0	0.0	0.236	-8.72	59.7	1.012	1.012
323.	30	1.010	0.4866	1.0188	1.0193	1.0167	0.0	0.0	0.233	-8.98	60.0	1.017	1.017
333.	31	1.011	0.4887	1.0167	1.0186	1.0107	0.0	0.0	0.231	-9.12	60.1	1.020	1.020
343.	32	1.012	0.4907	1.0135	1.0167	1.0037	0.0	0.0	0.230	-9.20	60.2	1.022	1.022
353.	33	1.012	0.4923	1.0104	1.0147	0.9979	0.0	0.0	0.229	-9.28	60.3	1.023	1.023
3.	34	1.013	0.4934	1.0085	1.0135	0.9944	0.0	0.0	0.228	-9.35	60.4	1.025	1.025
13.	35	1.013	0.4940	1.0081	1.0136	0.9925	0.0	0.0	0.227	-9.41	60.4	1.026	1.026
23.	36	1.013	0.4945	1.0075	1.0134	0.9912	0.0	0.0	0.226	-9.47	60.5	1.027	1.027

STAGE 7
ROTOR

FLOW SWIRL= 25.20DEG PARTICLE SWIRL= 72.46DEG PSAVG= 20.41PSIA = 140708.PA
PTAVG= 23.06PSIA = 158990.PA TTAVG= 776.8DEG R = 431.6DEG K VELAVG= 565.6FPS =172.4MPS
RVELAVG= 797.8FPS = 243.2MPS AXVELAVG= 556.9FPS =169.8MPS U= 670.FPS = 204.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
35.	1	1.029	0.4368	1.0059	1.0143	0.9903	0.0	0.0	0.323	-5.33	45.2	1.029	1.011
45.	2	1.029	0.4372	1.0055	1.0141	0.9896	0.0	0.0	0.322	-5.35	45.3	1.029	1.012
55.	3	1.030	0.4375	1.0049	1.0137	0.9891	0.0	0.0	0.322	-5.36	45.3	1.030	1.012
65.	4	1.030	0.4377	1.0048	1.0137	0.9888	0.0	0.0	0.322	-5.37	45.3	1.030	1.012
75.	5	1.030	0.4378	1.0048	1.0138	0.9886	0.0	0.0	0.322	-5.38	45.3	1.030	1.012
85.	6	1.030	0.4378	1.0041	1.0131	0.9882	0.0	0.0	0.322	-5.37	45.3	1.030	1.012
95.	7	1.029	0.4376	1.0029	1.0118	0.9877	0.0	0.0	0.323	-5.35	45.3	1.029	1.012
105.	8	1.027	0.4370	1.0003	1.0088	0.9866	0.0	0.0	0.325	-5.28	45.2	1.027	1.011
115.	9	1.018	0.4344	0.9814	0.9882	0.9800	0.0	0.0	0.333	-4.98	44.9	1.018	1.007
125.	10	0.998	0.4267	0.9744	0.9768	0.9756	0.0	0.0	0.349	-4.32	44.2	0.998	0.999
135.	11	0.987	0.4212	0.9820	0.9814	0.9777	0.0	0.0	0.355	-3.94	43.8	0.987	0.995
145.	12	0.982	0.4183	0.9846	0.9823	0.9819	0.0	0.0	0.357	-3.78	43.7	0.982	0.993
155.	13	0.980	0.4158	0.9885	0.9848	0.9895	0.0	0.0	0.359	-3.72	43.6	0.980	0.992
165.	14	0.979	0.4134	0.9929	0.9879	0.9977	0.0	0.0	0.359	-3.67	43.6	0.979	0.992
175.	15	0.977	0.4114	0.9957	0.9895	1.0035	0.0	0.0	0.360	-3.60	43.5	0.977	0.991
185.	16	0.975	0.4098	0.9965	0.9895	1.0067	0.0	0.0	0.360	-3.53	43.4	0.975	0.990
195.	17	0.973	0.4087	0.9965	0.9889	1.0084	0.0	0.0	0.361	-3.47	43.4	0.973	0.989
205.	18	0.971	0.4077	0.9962	0.9880	1.0095	0.0	0.0	0.362	-3.41	43.3	0.971	0.989
215.	19	0.970	0.4069	0.9960	0.9874	1.0105	0.0	0.0	0.362	-3.36	43.3	0.970	0.988
225.	20	0.969	0.4064	0.9953	0.9664	1.0111	0.0	0.0	0.363	-3.33	43.2	0.969	0.988
235.	21	0.968	0.4060	0.9950	0.9859	1.0116	0.0	0.0	0.363	-3.31	43.2	0.968	0.987
245.	22	0.968	0.4056	0.9943	0.9850	1.0118	0.0	0.0	0.363	-3.28	43.2	0.968	0.987
255.	23	0.967	0.4055	0.9935	0.9841	1.0119	0.0	0.0	0.364	-3.27	43.2	0.967	0.987
265.	24	0.967	0.4055	0.9925	0.9831	1.0118	0.0	0.0	0.363	-3.27	43.2	0.967	0.987
275.	25	0.970	0.4064	0.9946	0.9857	1.0126	0.0	0.0	0.361	-3.35	43.3	0.970	0.988
285.	26	0.975	0.4084	0.9977	0.9898	1.0139	0.0	0.0	0.357	-3.54	43.4	0.975	0.990
295.	27	0.988	0.4132	1.0071	1.0018	1.0174	0.0	0.0	0.347	-3.97	43.9	0.988	0.995
305.	28	1.004	0.4193	1.0179	1.0160	1.0211	0.0	0.0	0.336	-4.50	44.4	1.004	1.001
315.	29	1.013	0.4236	1.0173	1.0179	1.0200	0.0	0.0	0.330	-4.82	44.7	1.013	1.005
325.	30	1.018	0.4265	1.0174	1.0197	1.0167	0.0	0.0	0.327	-4.99	44.9	1.018	1.007
335.	31	1.021	0.4290	1.0154	1.0192	1.0107	0.0	0.0	0.325	-5.08	45.0	1.021	1.008
345.	32	1.023	0.4312	1.0125	1.0175	1.0037	0.0	0.0	0.324	-5.13	45.0	1.023	1.009
355.	33	1.024	0.4330	1.0095	1.0157	0.9979	0.0	0.0	0.324	-5.17	45.1	1.024	1.010
5.	34	1.025	0.4344	1.0077	1.0147	0.9944	0.0	0.0	0.324	-5.22	45.1	1.025	1.010
15.	35	1.026	0.4353	1.0074	1.0149	0.9925	0.0	0.0	0.324	-5.25	45.2	1.026	1.010
25.	36	1.028	0.4361	1.0068	1.0148	0.9912	0.0	0.0	0.323	-5.30	45.2	1.028	1.011

STATOR

FLOW SWIRL= 25.17DEG PARTICLE SWIRL= 76.65DEG PSAVG= 22.30PSIA = 153754.PA
PTAVG= 26.20PSIA = 180654.PA TTAVG= 812.7DEG R = 451.5DEG K VELAVG= 663.2FPS =202.1MPS
RVELAVG= 623.3FPS = 190.0MPS AXVELAVG= 549.4FPS =167.5MPS J= 666.FPS = 203.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
35.	1	1.013	0.4958	1.0070	1.0128	0.9906	0.0	0.0	0.256	-10.99	57.3	1.028	1.028
45.	2	1.013	0.4959	1.0068	1.0128	0.9899	0.0	0.0	0.256	-11.00	57.3	1.029	1.029
55.	3	1.013	0.4961	1.0063	1.0124	0.9894	0.0	0.0	0.256	-11.02	57.3	1.029	1.029
65.	4	1.013	0.4962	1.0063	1.0125	0.9890	0.0	0.0	0.256	-11.02	57.3	1.029	1.029
75.	5	1.013	0.4963	1.0064	1.0125	0.9888	0.0	0.0	0.255	-11.03	57.3	1.029	1.029
85.	6	1.013	0.4963	1.0057	1.0119	0.9884	0.0	0.0	0.256	-11.02	57.3	1.029	1.029
95.	7	1.012	0.4962	1.0048	1.0110	0.9880	0.0	0.0	0.256	-10.98	57.3	1.028	1.028
105.	8	1.011	0.4957	1.0030	1.0088	0.9871	0.0	0.0	0.258	-10.86	57.2	1.026	1.026
115.	9	1.005	0.4940	0.9873	0.9919	0.9816	0.0	0.0	0.268	-10.31	56.6	1.014	1.014
125.	10	0.994	0.4892	0.9837	0.9852	0.9786	0.0	0.0	0.286	-9.29	55.6	0.992	0.992
135.	11	0.990	0.4871	0.9883	0.9884	0.9795	0.0	0.0	0.293	-8.82	55.1	0.963	0.983
145.	12	0.989	0.4858	0.9679	0.9872	0.9818	0.0	0.0	0.296	-8.64	54.9	0.979	0.979
155.	13	0.988	0.4838	0.9898	0.9879	0.9876	0.0	0.0	0.297	-8.55	54.8	0.977	0.977
165.	14	0.988	0.4817	0.9931	0.9898	0.9952	0.0	0.0	0.297	-8.56	54.8	0.976	0.976
175.	15	0.986	0.4802	0.9953	0.9910	1.0016	0.0	0.0	0.298	-8.47	54.8	0.975	0.975
185.	16	0.986	0.4793	0.9957	0.9908	1.0055	0.0	0.0	0.298	-8.42	54.7	0.974	0.974
195.	17	0.988	0.4787	0.9954	0.9901	1.0077	0.0	0.0	0.299	-8.36	54.7	0.973	0.973
205.	18	0.987	0.4782	0.9947	0.9891	1.0090	0.0	0.0	0.300	-8.30	54.6	0.972	0.972
215.	19	0.987	0.4777	0.9942	0.9883	1.0100	0.0	0.0	0.301	-8.25	54.5	0.971	0.971
225.	20	0.987	0.4775	0.9933	0.9872	1.0106	0.0	0.0	0.301	-8.21	54.5	0.970	0.970
235.	21	0.987	0.4773	0.9926	0.9866	1.0112	0.0	0.0	0.302	-8.19	54.5	0.970	0.970
245.	22	0.986	0.4771	0.9920	0.9857	1.0115	0.0	0.0	0.302	-8.17	54.5	0.969	0.969
255.	23	0.986	0.4771	0.9911	0.9848	1.0116	0.0	0.0	0.302	-8.15	54.5	0.969	0.969
265.	24	0.987	0.4777	0.9900	0.9837	1.0115	0.0	0.0	0.302	-8.16	54.5	0.969	0.969
275.	25	0.988	0.4778	0.9915	0.9856	1.0122	0.0	0.0	0.300	-8.30	54.6	0.972	0.972
285.	26	0.991	0.4789	0.9941	0.9889	1.0132	0.0	0.0	0.295	-8.57	54.9	0.978	0.978
295.	27	0.997	0.4816	1.0022	0.9966	1.0167	0.0	0.0	0.285	-9.23	55.5	0.991	0.991
305.	28	1.005	0.4848	1.0117	1.0102	1.0194	0.0	0.0	0.271	-10.03	56.3	1.006	1.006
315.	29	1.009	0.4866	1.0130	1.0127	1.0190	0.0	0.0	0.264	-10.43	56.7	1.016	1.016
325.	30	1.011	0.4881	1.0149	1.0156	1.0169	0.0	0.0	0.260	-10.65	57.0	1.021	1.021
335.	31	1.012	0.4900	1.0143	1.0162	1.0120	0.0	0.0	0.258	-10.76	57.1	1.024	1.024
345.	32	1.012	0.4917	1.0124	1.0156	1.0057	0.0	0.0	0.258	-10.83	57.1	1.025	1.025
355.	33	1.012	0.4932	1.0101	1.0142	0.9997	0.0	0.0	0.258	-10.85	57.1	1.025	1.025
5.	34	1.012	0.4942	1.0086	1.0134	0.9955	0.0	0.0	0.258	-10.87	57.2	1.026	1.026
15.	35	1.012	0.4947	1.0085	1.0136	0.9932	0.0	0.0	0.258	-10.89	57.2	1.026	1.026
25.	36	1.013	0.4953	1.0078	1.0133	0.9916	0.0	0.0	0.257	-10.95	57.2	1.027	1.027

STAGE 8
ROTOR

FLOW SWIRL= 27.11DEG PARTICLE SWIRL= 78.59DEG PSAVG= 23.57PSIA = 162462.PA
PTAVG= 26.57PSIA = 183195.PA TTAVG= 812.7DEG R = 451.5DEG K VELAVG= 573.7FPS =174.9MPS
RVELAVG= 799.7FPS = 243.7MPS AXVELAVG= 566.2FPS =172.6MPS U= 657.FPS = 200.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
37.	1	1.017	0.4283	1.0091	1.0146	0.9906	0.010	0.005	0.356	-5.86	45.7	1.017	1.007
47.	2	1.018	0.4285	1.0090	1.0146	0.9899	0.010	0.005	0.356	-5.87	45.7	1.018	1.007
57.	3	1.018	0.4287	1.0085	1.0142	0.9894	0.010	0.005	0.356	-5.87	45.7	1.018	1.007
67.	4	1.018	0.4288	1.0086	1.0143	0.9890	0.010	0.005	0.356	-5.87	45.7	1.018	1.007
77.	5	1.018	0.4289	1.0086	1.0144	0.9888	0.010	0.005	0.356	-5.87	45.7	1.018	1.008
87.	6	1.018	0.4289	1.0080	1.0138	0.9884	0.010	0.005	0.356	-5.87	45.7	1.018	1.007
97.	7	1.017	0.4288	1.0071	1.0129	0.9880	0.010	0.004	0.357	-5.86	45.7	1.017	1.007
107.	8	1.016	0.4286	1.0052	1.0108	0.9871	0.008	0.003	0.358	-5.82	45.6	1.016	1.007
117.	9	1.008	0.4260	0.9900	0.9941	0.9816	0.003	0.002	0.367	-5.54	45.3	1.008	1.002
127.	10	0.999	0.4229	0.9834	0.9857	0.9786	-0.010	-0.005	0.374	-5.25	45.1	0.999	1.000
137.	11	0.995	0.4210	0.9861	0.9874	0.9795	-0.015	-0.007	0.376	-5.12	44.9	0.995	0.998
147.	12	0.992	0.4193	0.9854	0.9857	0.9818	-0.016	-0.007	0.379	-5.03	44.8	0.992	0.997
157.	13	0.991	0.4175	0.9869	0.9862	0.9876	-0.016	-0.007	0.381	-4.99	44.8	0.991	0.996
167.	14	0.991	0.4157	0.9897	0.9880	0.9952	-0.016	-0.007	0.381	-4.98	44.8	0.991	0.996
177.	15	0.990	0.4141	0.9916	0.9890	1.0016	-0.015	-0.007	0.381	-4.95	44.8	0.990	0.996
187.	16	0.989	0.4127	0.9921	0.9887	1.0055	-0.015	-0.007	0.381	-4.91	44.7	0.989	0.995
197.	17	0.987	0.4116	0.9919	0.9879	1.0077	-0.014	-0.006	0.382	-4.85	44.7	0.987	0.995
207.	18	0.985	0.4105	0.9915	0.9869	1.0090	-0.013	-0.006	0.383	-4.79	44.6	0.985	0.994
217.	19	0.984	0.4096	0.9913	0.9861	1.0100	-0.013	-0.006	0.384	-4.73	44.5	0.984	0.993
227.	20	0.982	0.4087	0.9907	0.9851	1.0106	-0.012	-0.005	0.385	-4.68	44.5	0.982	0.992
237.	21	0.981	0.4080	0.9906	0.9846	1.0112	-0.011	-0.005	0.386	-4.63	44.4	0.981	0.992
247.	22	0.979	0.4074	0.9901	0.9837	1.0115	-0.010	-0.004	0.387	-4.58	44.4	0.979	0.991
257.	23	0.978	0.4068	0.9897	0.9830	1.0116	-0.009	-0.004	0.388	-4.54	44.3	0.978	0.991
267.	24	0.977	0.4062	0.9891	0.9821	1.0115	-0.007	-0.003	0.389	-4.49	44.3	0.977	0.990
277.	25	0.977	0.4064	0.9913	0.9844	1.0122	-0.005	-0.002	0.388	-4.52	44.3	0.977	0.991
287.	26	0.980	0.4074	0.9947	0.9883	1.0132	-0.003	-0.001	0.385	-4.62	44.4	0.980	0.992
297.	27	0.988	0.4104	1.0038	0.9990	1.0162	0.002	0.001	0.378	-4.89	44.7	0.988	0.995
307.	28	0.999	0.4144	1.0132	1.0106	1.0194	0.010	0.005	0.368	-5.26	45.1	0.999	1.000
317.	29	1.006	0.4173	1.0143	1.0134	1.0190	0.012	0.006	0.363	-5.48	45.3	1.006	1.002
327.	30	1.010	0.4196	1.0161	1.0164	1.0169	0.013	0.006	0.360	-5.62	45.4	1.010	1.004
337.	31	1.013	0.4216	1.0156	1.0171	1.0120	0.013	0.006	0.358	-5.70	45.5	1.013	1.005
347.	32	1.014	0.4234	1.0140	1.0166	1.0057	0.012	0.006	0.357	-5.74	45.5	1.014	1.006
357.	33	1.015	0.4251	1.0119	1.0155	0.9957	0.011	0.005	0.356	-5.76	45.6	1.015	1.006
7.	34	1.015	0.4263	1.0105	1.0148	0.9955	0.010	0.005	0.357	-5.79	45.6	1.015	1.006
17.	35	1.016	0.4271	1.0105	1.0153	0.9932	0.010	0.004	0.357	-5.81	45.6	1.016	1.007
27.	36	1.017	0.4279	1.0098	1.0150	0.9916	0.010	0.004	0.356	-5.85	45.6	1.017	1.007

STATOR

FLOW SWIRL= 27.57DEG PARTICLE SWIRL= 84.08DEG PSAVG= 25.61PSIA = 176585.PA
PTAVG= 30.61PSIA = 211065.PA TTAVG= 843.9DEG R = 468.9DEG K VELAVG= 710.0FPS =216.4MPS
RVELAVG= 611.1FPS = 186.3MPS AXVELAVG= 568.2FPS =173.2MPS U= 650.FPS = 198.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
38.	1	1.010	0.5209	1.0060	1.0115	0.9905	0.0	0.0	0.233	-14.66	54.1	1.022	1.022
48.	2	1.010	0.5211	1.0060	1.0115	0.9898	0.0	0.0	0.233	-14.66	54.1	1.022	1.022
58.	3	1.010	0.5212	1.0056	1.0113	0.9891	0.0	0.0	0.233	-14.66	54.1	1.022	1.022
68.	4	1.010	0.5213	1.0057	1.0114	0.9888	0.0	0.0	0.233	-14.66	54.1	1.021	1.021
78.	5	1.010	0.5214	1.0057	1.0115	0.9885	0.0	0.0	0.233	-14.67	54.1	1.022	1.022
88.	6	1.010	0.5214	1.0053	1.0110	0.9881	0.0	0.0	0.233	-14.65	54.1	1.021	1.021
98.	7	1.009	0.5213	1.0046	1.0103	0.9877	0.0	0.0	0.234	-14.63	54.0	1.021	1.021
108.	8	1.009	0.5211	1.0032	1.0088	0.9870	0.0	0.0	0.235	-14.57	54.0	1.019	1.019
118.	9	1.002	0.5185	0.9933	0.9971	0.9830	0.0	0.0	0.247	-14.04	53.4	1.007	1.007
128.	10	0.997	0.5165	0.9891	0.9915	0.9805	0.0	0.0	0.257	-13.59	53.0	0.996	0.996
138.	11	0.995	0.5156	0.9910	0.9928	0.9807	0.0	0.0	0.260	-13.42	52.8	0.992	0.992
148.	12	0.993	0.5141	0.9902	0.9910	0.9818	0.0	0.0	0.264	-13.25	52.6	0.988	0.988
158.	13	0.992	0.5122	0.9908	0.9903	0.9859	0.0	0.0	0.266	-13.15	52.6	0.986	0.986
168.	14	0.991	0.5103	0.9925	0.9907	0.9925	0.0	0.0	0.266	-13.14	52.5	0.985	0.985
178.	15	0.992	0.5087	0.9939	0.9909	0.9992	0.0	0.0	0.266	-13.14	52.5	0.985	0.985
188.	16	0.992	0.5075	0.9944	0.9907	1.0040	0.0	0.0	0.266	-13.11	52.5	0.985	0.985
198.	17	0.992	0.5067	0.9945	0.9902	1.0070	0.0	0.0	0.267	-13.06	52.5	0.983	0.983
208.	18	0.991	0.5059	0.9944	0.9896	1.0087	0.0	0.0	0.268	-12.98	52.4	0.981	0.981
218.	19	0.990	0.5052	0.9944	0.9891	1.0099	0.0	0.0	0.270	-12.90	52.3	0.980	0.980
228.	20	0.990	0.5046	0.9941	0.9883	1.0107	0.0	0.0	0.271	-12.83	52.2	0.978	0.978
238.	21	0.989	0.5041	0.9941	0.9880	1.0114	0.0	0.0	0.273	-12.76	52.2	0.976	0.976
248.	22	0.988	0.5037	0.9938	0.9875	1.0118	0.0	0.0	0.274	-12.70	52.1	0.975	0.975
258.	23	0.988	0.5033	0.9936	0.9870	1.0121	0.0	0.0	0.275	-12.63	52.0	0.973	0.973
268.	24	0.987	0.5030	0.9933	0.9865	1.0121	0.0	0.0	0.277	-12.57	52.0	0.972	0.972
278.	25	0.988	0.5033	0.9947	0.9881	1.0127	0.0	0.0	0.275	-12.63	52.0	0.973	0.973
288.	26	0.990	0.5043	0.9966	0.9906	1.0135	0.0	0.0	0.272	-12.81	52.2	0.977	0.977
298.	27	0.996	0.5068	1.0020	0.9976	1.0156	0.0	0.0	0.262	-13.29	52.7	0.989	0.989
308.	28	1.003	0.5097	1.0077	1.0053	1.0181	0.0	0.0	0.250	-13.88	53.3	1.003	1.003
318.	29	1.006	0.5114	1.0087	1.0074	1.0181	0.0	0.0	0.243	-14.19	53.6	1.010	1.010
328.	30	1.008	0.5131	1.0105	1.0104	1.0168	0.0	0.0	0.238	-14.42	53.8	1.016	1.016
338.	31	1.010	0.5149	1.0107	1.0119	1.0131	0.0	0.0	0.236	-14.54	53.9	1.019	1.019
348.	32	1.011	0.5167	1.0100	1.0125	1.0076	0.0	0.0	0.235	-14.60	54.0	1.020	1.020
358.	33	1.011	0.5184	1.0084	1.0120	1.0016	0.0	0.0	0.234	-14.62	54.0	1.021	1.021
8.	34	1.010	0.5194	1.0073	1.0117	0.9967	0.0	0.0	0.234	-14.62	54.0	1.021	1.021
18.	35	1.010	0.5200	1.0074	1.0122	0.9937	0.0	0.0	0.234	-14.62	54.0	1.021	1.021
28.	36	1.010	0.5207	1.0065	1.0117	0.9917	0.0	0.0	0.233	-14.66	54.1	1.022	1.022

STAGE ROTOR

FLOW SWIRL= 30.34DEG PARTICLE SWIRL= 86.85DEG PSAVG= 26.36PSIA = 181730.PA
PTAVG= 30.07PSIA = 207350.PA TTAVG= 843.9DEG R = 468.9DEG K VELAVG= 612.3FPS =186.6MPS
RVELAVG= 730.2FPS = 222.6MPS AXVELAVG= 578.4FPS =176.3MPS U= 646.FPS = 197.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
40.	1	1.025	0.4529	1.0024	1.0104	0.9905	0.0	0.0	0.250	-9.48	53.4	1.025	1.011
50.	2	1.025	0.4532	1.0023	1.0104	0.9898	0.0	0.0	0.250	-9.48	53.4	1.025	1.011
60.	3	1.025	0.4533	1.0020	1.0102	0.9891	0.0	0.0	0.250	-9.48	53.4	1.025	1.011
70.	4	1.025	0.4533	1.0021	1.0103	0.9888	0.0	0.0	0.250	-9.48	53.4	1.025	1.011
80.	5	1.025	0.4535	1.0020	1.0103	0.9885	0.0	0.0	0.250	-9.49	53.4	1.025	1.011
90.	6	1.024	0.4534	1.0017	1.0099	0.9881	0.0	0.0	0.250	-9.47	53.4	1.024	1.011
100.	7	1.024	0.4532	1.0012	1.0093	0.9877	0.0	0.0	0.251	-9.44	53.3	1.024	1.011
110.	8	1.022	0.4525	1.0001	1.0078	0.9870	0.0	0.0	0.252	-9.38	53.3	1.022	1.010
120.	9	1.007	0.4465	0.9930	0.9970	0.9830	0.0	0.0	0.264	-8.78	52.7	1.007	1.003
130.	10	0.994	0.4412	0.9910	0.9919	0.9805	0.0	0.0	0.271	-8.26	52.2	0.994	0.997
140.	11	0.990	0.4391	0.9935	0.9932	0.9807	0.0	0.0	0.272	-8.08	52.0	0.990	0.995
150.	12	0.985	0.4367	0.9932	0.9915	0.9818	0.0	0.0	0.275	-7.90	51.8	0.985	0.993
160.	13	0.983	0.4348	0.9939	0.9911	0.9859	0.0	0.0	0.277	-7.80	51.7	0.983	0.992
170.	14	0.983	0.4332	0.9955	0.9917	0.9925	0.0	0.0	0.278	-7.79	51.7	0.983	0.992
180.	15	0.983	0.4318	0.9966	0.9920	0.9992	0.0	0.0	0.278	-7.80	51.7	0.983	0.992
190.	16	0.982	0.4305	0.9971	0.9917	1.0040	0.0	0.0	0.277	-7.78	51.7	0.982	0.992
200.	17	0.981	0.4293	0.9972	0.9912	1.0070	0.0	0.0	0.277	-7.73	51.6	0.981	0.991
210.	18	0.979	0.4280	0.9973	0.9905	1.0087	0.0	0.0	0.276	-7.64	51.5	0.979	0.990
220.	19	0.977	0.4269	0.9975	0.9900	1.0099	0.0	0.0	0.279	-7.56	51.5	0.977	0.989
230.	20	0.975	0.4259	0.9973	0.9892	1.0107	0.0	0.0	0.280	-7.49	51.4	0.975	0.989
240.	21	0.973	0.4250	0.9974	0.9889	1.0114	0.0	0.0	0.281	-7.42	51.3	0.973	0.988
250.	22	0.972	0.4242	0.9974	0.9884	1.0118	0.0	0.0	0.281	-7.35	51.3	0.972	0.987
260.	23	0.970	0.4234	0.9973	0.9879	1.0121	0.0	0.0	0.282	-7.29	51.2	0.970	0.986
270.	24	0.969	0.4226	0.9972	0.9873	1.0121	0.0	0.0	0.283	-7.22	51.1	0.969	0.986
280.	25	0.970	0.4232	0.9984	0.9889	1.0127	0.0	0.0	0.282	-7.28	51.2	0.970	0.986
290.	26	0.975	0.4251	0.9998	0.9913	1.0135	0.0	0.0	0.278	-7.47	51.4	0.975	0.988
300.	27	0.987	0.4302	1.0039	0.9983	1.0156	0.0	0.0	0.270	-7.97	51.9	0.987	0.994
310.	28	1.003	0.4368	1.0074	1.0056	1.0181	0.0	0.0	0.260	-8.61	52.5	1.003	1.001
320.	29	1.012	0.4408	1.0070	1.0075	1.0181	0.0	0.0	0.255	-8.96	52.9	1.012	1.005
330.	30	1.018	0.4439	1.0078	1.0102	1.0168	0.0	0.0	0.251	-9.21	53.1	1.018	1.008
340.	31	1.021	0.4463	1.0075	1.0113	1.0131	0.0	0.0	0.248	-9.35	53.3	1.021	1.010
350.	32	1.023	0.4482	1.0066	1.0117	1.0076	0.0	0.0	0.247	-9.41	53.3	1.023	1.011
0.	33	1.024	0.4499	1.0049	1.0110	1.0016	0.0	0.0	0.247	-9.44	53.3	1.024	1.011
10.	34	1.024	0.4510	1.0038	1.0106	0.9967	0.0	0.0	0.248	-9.44	53.3	1.024	1.011
20.	35	1.024	0.4517	1.0039	1.0111	0.9937	0.0	0.0	0.249	-9.44	53.3	1.024	1.011
30.	36	1.025	0.4527	1.0028	1.0106	0.9917	0.0	0.0	0.249	-9.48	53.4	1.025	1.011

STATOR

FLOW SWIRL= 34.29DEG PARTICLE SWIRL= 96.21DEG PSAVG= 29.73PSIA = 204960.PA
PTAVG= 35.53PSIA = 244996.PA TTAVG= 886.2DEG R = 492.4DEG K VELAVG= 727.8FPS =221.8MPS
RVELAVG= 606.6FPS = 184.9MPS AXVELAVG= 572.6FPS =174.5MPS U= 650.FPS = 198.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
44.	1	1.011	0.5216	1.0050	1.0106	0.9916	0.0	0.0	0.192	-3.74	52.8	1.024	1.024
54.	2	1.011	0.5218	1.0050	1.0107	0.9906	0.0	0.0	0.192	-3.73	52.8	1.023	1.023
64.	3	1.011	0.5218	1.0048	1.0106	0.9899	0.0	0.0	0.193	-3.72	52.8	1.023	1.023
74.	4	1.010	0.5219	1.0050	1.0108	0.9895	0.0	0.0	0.193	-3.71	52.8	1.023	1.023
84.	5	1.011	0.5221	1.0048	1.0107	0.9892	0.0	0.0	0.193	-3.73	52.8	1.023	1.023
94.	6	1.010	0.5219	1.0047	1.0105	0.9889	0.0	0.0	0.193	-3.70	52.8	1.023	1.023
104.	7	1.010	0.5218	1.0043	1.0101	0.9885	0.0	0.0	0.194	-3.67	52.8	1.022	1.022
114.	8	1.009	0.5214	1.0036	1.0092	0.9879	0.0	0.0	0.196	-3.59	52.7	1.020	1.020
124.	9	0.999	0.5171	1.0003	1.0027	0.9853	0.0	0.0	0.212	-2.89	52.0	1.002	1.002
134.	10	0.995	0.5150	0.9966	0.9977	0.9829	0.0	0.0	0.223	-2.44	51.5	0.991	0.991
144.	11	0.994	0.5150	0.9961	0.9972	0.9821	0.0	0.0	0.226	-2.33	51.4	0.988	0.988
154.	12	0.992	0.5136	0.9949	0.9950	0.9822	0.0	0.0	0.230	-2.13	51.2	0.984	0.984
164.	13	0.990	0.5120	0.9944	0.9935	0.9846	0.0	0.0	0.233	-2.02	51.1	0.981	0.981
174.	14	0.989	0.5103	0.9948	0.9927	0.9896	0.0	0.0	0.233	-1.99	51.1	0.980	0.980
184.	15	0.989	0.5088	0.9953	0.9922	0.9958	0.0	0.0	0.232	2.00	51.1	0.980	0.980
194.	16	0.990	0.5077	0.9955	0.9916	1.0013	0.0	0.0	0.232	-2.02	51.1	0.981	0.981
204.	17	0.990	0.5069	0.9956	0.9911	1.0051	0.0	0.0	0.232	-2.01	51.1	0.981	0.981
214.	18	0.990	0.5061	0.9955	0.9905	1.0074	0.0	0.0	0.233	-1.95	51.1	0.979	0.979
224.	19	0.989	0.5054	0.9954	0.9899	1.0089	0.0	0.0	0.234	-1.89	51.0	0.978	0.978
234.	20	0.989	0.5049	0.9949	0.9890	1.0098	0.0	0.0	0.236	-1.83	50.9	0.976	0.976
244.	21	0.988	0.5045	0.9947	0.9886	1.0106	0.0	0.0	0.237	-1.78	50.9	0.975	0.975
254.	22	0.988	0.5041	0.9944	0.9880	1.0111	0.0	0.0	0.238	-1.72	50.8	0.974	0.974
264.	23	0.987	0.5037	0.9941	0.9875	1.0114	0.0	0.0	0.240	-1.67	50.8	0.972	0.972
274.	24	0.987	0.5033	0.9938	0.9869	1.0116	0.0	0.0	0.241	-1.61	50.7	0.971	0.971
284.	25	0.988	0.5039	0.9943	0.9878	1.0120	0.0	0.0	0.239	-1.69	50.8	0.973	0.973
294.	26	0.991	0.5051	0.9953	0.9896	1.0125	0.0	0.0	0.234	-1.89	51.0	0.978	0.978
304.	27	0.997	0.5082	0.9985	0.9948	1.0140	0.0	0.0	0.222	-2.41	51.5	0.990	1.990
314.	28	1.004	0.5116	1.0021	1.0007	1.0160	0.0	0.0	0.207	-3.04	52.1	1.006	1.006
324.	29	1.007	0.5130	1.0041	1.0036	1.0168	0.0	0.0	0.200	-3.34	52.4	1.013	1.013
334.	30	1.010	0.5147	1.0057	1.0063	1.0166	0.0	0.0	0.194	-3.60	52.7	1.020	1.020
344.	31	1.012	0.5163	1.0065	1.0083	1.0142	0.0	0.0	0.191	-3.75	52.8	1.024	1.024
354.	32	1.013	0.5179	1.0068	1.0097	1.0099	0.0	0.0	0.189	-3.81	52.9	1.025	1.025
4.	33	1.013	0.5194	1.0061	1.0101	1.0043	0.0	0.0	0.189	-3.82	52.9	1.026	1.026
14.	34	1.012	0.5203	1.0057	1.0104	0.9992	0.0	0.0	0.191	-3.78	52.9	1.025	1.025
24.	35	1.011	0.5208	1.0063	1.0112	0.9956	0.0	0.0	0.192	-3.73	52.8	1.023	1.023
34.	36	1.012	0.5215	1.0050	1.0105	0.9930	0.0	0.0	0.191	-3.76	52.9	1.024	1.024

HIGH SPOOL OUTPUT -

	CORR FLOW	PRESS RATIO	EFFICIENCY
HIGH SPOOL PERFORMANCE 4/3	26.09 LBM/SEC 11.84 KG/SEC	2.742	0.810

---- ROW OUTPUT ----

STAGE 10
ROTOR

FLOW SWIRL= 43.95DEG PARTICLE SWIRL=107.88DEG PSAVG= 30.39PSIA = 209553.PA
PTAVG= 34.64PSIA = 238852.PA TTAVG= 886.2DEG R = 492.4DEG K VELAVG= 627.3FPS =191.2MPS
RVELAVG= 921.0FPS = 280.7MPS AXVELAVG= 568.5FPS =173.3MPS U= 990.FPS = 302.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
54.	1	1.002	0.4426	1.0075	1.0092	0.9916	0.062	0.028	0.333	5.79	38.2	1.002	1.000
64.	2	1.004	0.4434	1.0067	1.0089	0.9906	0.062	0.028	0.332	5.74	38.3	1.004	1.001
74.	3	1.004	0.4440	1.0062	1.0087	0.9899	0.061	0.028	0.331	5.71	38.3	1.004	1.001
84.	4	1.005	0.4443	1.0066	1.0093	0.9895	0.060	0.027	0.330	5.69	38.3	1.005	1.001
94.	5	1.005	0.4446	1.0067	1.0096	0.9892	0.061	0.028	0.330	5.67	38.3	1.005	1.001
104.	6	1.006	0.4448	1.0061	1.0091	0.9889	0.060	0.027	0.330	5.66	38.3	1.006	1.001
114.	7	1.006	0.4449	1.0054	1.0085	0.9885	0.057	0.026	0.330	5.66	38.3	1.006	1.001
124.	8	1.006	0.4450	1.0047	1.0078	0.9679	0.050	0.023	0.330	5.66	38.3	1.006	1.001
134.	9	1.005	0.4455	0.9991	1.0025	0.9853	-0.002	-0.001	0.330	5.67	38.3	1.005	1.001
144.	10	1.005	0.4459	0.9953	0.9990	0.9829	-0.071	-0.032	0.330	5.68	38.3	1.005	1.001
154.	11	1.005	0.4461	0.9943	0.9961	0.9821	-0.081	-0.037	0.331	5.68	38.3	1.005	1.001
164.	12	1.005	0.4461	0.9927	0.9964	0.9822	-0.091	-0.041	0.331	5.68	38.3	1.005	1.001
174.	13	1.006	0.4457	0.9916	0.9952	0.9846	-0.093	-0.042	0.331	5.66	38.3	1.006	1.001
184.	14	1.006	0.4446	0.9917	0.9946	0.9696	-0.090	-0.041	0.332	5.66	38.3	1.006	1.001
194.	15	1.005	0.4428	0.9922	0.9940	0.9958	-0.087	-0.039	0.333	5.69	38.3	1.005	1.001
204.	16	1.003	0.4408	0.9928	0.9934	1.0013	-0.082	-0.037	0.335	5.76	38.2	1.003	1.000
214.	17	1.001	0.4389	0.9934	[illegible]	1.0051	-0.078	-0.035	0.337	5.85	38.2	1.001	1.000
224.	18	0.999	0.4374	0.9936	0.9922	1.0074	-0.076	-0.034	0.339	5.93	38.1	0.999	1.000
234.	19	0.997	0.4364	0.9935	0.9916	1.0089	-0.073	-0.033	0.340	5.99	38.0	0.997	1.000
244.	20	0.996	0.4357	0.9933	0.9909	1.0098	-0.070	-0.032	0.341	6.03	38.0	0.996	0.999
254.	21	0.995	0.4353	0.9932	0.9906	1.0106	-0.069	-0.031	0.341	6.06	27.9	0.995	0.999
264.	22	0.995	0.4349	0.9929	0.9901	1.0111	-0.068	-0.031	0.342	6.07	37.9	0.995	0.999
274.	23	0.995	0.4347	0.9925	0.9896	1.0114	-0.065	-0.029	0.342	6.09	37.9	0.995	0.999
284.	24	0.994	0.4345	0.9921	0.9891	1.0116	-0.060	-0.027	0.343	6.10	37.9	0.994	0.999
294.	25	0.994	0.4344	0.9929	0.9898	1.0120	-0.049	-0.022	0.343	6.11	37.9	0.994	0.999
304.	26	0.994	0.4342	0.9944	0.9912	1.0125	-0.026	-0.012	0.343	6.11	37.9	0.994	0.999
314.	27	0.994	0.4341	0.9982	0.9949	1.0140	0.014	0.007	0.342	6.09	37.9	0.994	0.999
324.	28	0.995	0.4339	1.0031	0.9996	1.0160	0.054	0.024	0.341	6.07	37.9	0.995	0.999
334.	29	0.995	0.4339	1.0056	1.0021	1.0168	0.067	0.031	0.340	6.06	37.9	0.995	0.999
344.	30	0.995	0.4339	1.0080	1.0045	1.0166	0.075	0.034	0.340	6.06	37.9	0.995	0.999
354.	31	0.995	0.4343	1.0093	1.0061	1.0142	0.076	0.035	0.340	6.07	37.9	0.995	0.999
4.	32	0.995	0.4353	1.0098	1.0072	1.0099	0.077	0.035	0.339	6.07	37.9	0.995	0.999
14.	33	0.996	0.4368	1.0099	1.0081	1.0043	0.074	0.033	0.339	6.04	38.0	0.996	0.999
24.	34	0.997	0.4385	1.0089	1.0082	0.9992	0.070	0.032	0.337	5.99	38.0	0.997	1.000
34.	35	0.999	0.4401	1.0083	1.0086	0.9956	0.064	0.029	0.336	5.92	38.1	0.999	1.000
44.	36	1.001	0.4415	1.0077	1.0088	0.9930	0.063	0.028	0.334	5.86	38.1	1.001	1.000

STATOR

FLOW SWIRL= 45.67DEG PARTICLE SWIRL=114.34DEG PSAVG= 35.09PSIA = 241913.PA
PTAVG= 44.25PSIA = 305083.PA TTAVG= 955.8DEG R = 531.0DEG K VELAVG= 858.9FPS =261.8MPS
RVELAVG= 747.2FPS = 227.7MPS AXVELAVG= 625.3FPS =190.6MPS U= 998.FPS = 304.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
56.	1	1.001	0.5917	1.0075	1.0099	0.9927	0.0	0.0	0.374	3.72	46.9	1.003	1.003
66.	2	1.001	0.5920	1.0067	1.0094	0.9915	0.0	0.0	0.373	3.67	46.9	1.004	1.004
76.	3	1.001	0.5923	1.0062	1.0091	0.9908	0.0	0.0	0.372	3.62	47.0	1.005	1.005
86.	4	1.001	0.5924	1.0066	1.0097	0.9903	0.0	0.0	0.372	3.60	47.0	1.006	1.006
96.	5	1.001	0.5925	1.0068	1.0099	0.9900	0.0	0.0	0.371	3.58	47.0	1.006	1.006
106.	6	1.001	0.5926	1.0061	1.0093	0.9895	0.0	0.0	0.371	3.57	47.0	1.006	1.006
116.	7	1.001	0.5927	1.0056	1.0089	0.9892	0.0	0.0	0.371	3.57	47.0	1.006	1.006
126.	8	1.001	0.5928	1.0050	1.0084	0.9868	0.0	0.0	0.371	3.58	47.0	1.006	1.006
136.	9	1.002	0.5936	0.9999	1.0038	0.9867	0.0	0.0	0.372	3.59	47.0	1.006	1.006
146.	10	1.002	0.5942	0.9965	1.0009	0.9847	0.0	0.0	0.372	3.60	47.0	1.006	1.006
156.	11	1.001	0.5944	0.9956	1.0001	0.9835	0.0	0.0	0.373	3.62	47.0	1.005	1.005
166.	12	1.001	0.5943	0.9937	0.9982	0.9831	0.0	0.0	0.373	3.63	47.0	1.005	1.005
176.	13	1.000	0.5934	0.9922	0.9961	0.9844	0.0	0.0	0.373	3.65	47.0	1.005	1.005
186.	14	0.999	0.5917	0.9918	0.9942	0.9879	0.0	0.0	0.374	3.68	46.9	1.004	1.004
196.	15	0.998	0.5895	0.9919	0.9927	0.9932	0.0	0.0	0.375	3.75	46.9	1.003	1.003
206.	16	0.998	0.5877	0.9925	0.9919	0.9988	0.0	0.0	0.376	3.82	46.8	1.001	1.001
216.	17	0.996	0.5864	0.9933	0.9916	1.0032	0.0	0.0	0.378	3.91	46.7	0.999	0.999
226.	18	0.998	0.5856	0.9935	0.9912	1.0060	0.0	0.0	0.379	3.99	46.6	0.997	0.997
236.	19	0.998	0.5851	0.9935	0.9908	1.0077	0.0	0.0	0.381	4.06	46.5	0.996	0.996
246.	20	0.998	0.5849	0.9933	0.9904	1.0088	0.0	0.0	0.382	4.11	46.5	0.995	0.995
256.	21	0.999	0.5847	0.9931	0.9901	1.0096	0.0	0.0	0.382	4.13	46.5	0.995	0.995
266.	22	0.999	0.5845	0.9928	0.9896	1.0102	0.0	0.0	0.383	4.16	46.4	0.994	0.994
276.	23	0.999	0.5844	0.9924	0.9892	1.0106	0.0	0.0	0.383	4.17	46.4	0.994	0.994
286.	24	0.999	0.5844	0.9921	0.9888	1.0108	0.0	0.0	0.383	4.18	46.4	0.994	0.994
296.	25	0.999	0.5842	0.9929	0.9896	1.0112	0.0	0.0	0.383	4.19	46.4	0.993	0.993
306.	26	0.999	0.5841	0.9942	0.9908	1.0117	0.0	0.0	0.383	4.19	46.4	0.993	0.993
316.	27	0.999	0.5838	0.9975	0.9938	1.0129	0.0	0.0	0.382	4.16	46.4	0.994	0.994
326.	28	0.999	0.5834	1.0018	0.9978	1.0147	0.0	0.0	0.381	4.11	46.5	0.995	0.995
336.	29	0.999	0.5833	1.0041	1.0000	1.0156	0.0	0.0	0.381	4.08	46.5	0.996	0.996
346.	30	0.999	0.5834	1.0067	1.0026	1.0159	0.0	0.0	0.380	4.07	46.5	0.996	0.996
356.	31	1.000	0.5842	1.0086	1.0051	1.0146	0.0	0.0	0.380	4.06	46.5	0.996	0.996
6.	32	1.001	0.5856	1.0097	1.0073	1.0114	0.0	0.0	0.380	4.04	46.6	0.997	0.997
16.	33	1.002	0.5874	1.0102	1.0093	1.0067	0.0	0.0	0.379	3.99	46.6	0.998	0.998
26.	34	1.002	0.5891	1.0094	1.0098	1.0015	0.0	0.0	0.378	3.94	46.7	0.999	0.999
36.	35	1.002	0.5903	1.0085	1.0099	0.9975	0.0	0.0	0.377	3.86	46.7	1.000	1.000
46.	36	1.002	0.5912	1.0079	1.0099	0.9946	0.0	0.0	0.376	3.79	46.8	1.002	1.002

STAGE 11
ROTOR

FLOW SWIRL= 48.80DEG PARTICLE SWIRL=117.46DEG PSAVG= 37.42PSIA = 258023.PA
PTAVG= 43.27PSIA = 298336.PA TTAVG= 955.8DEG R = 531.0DEG K VELAVG= 683.4FPS =208.3MPS
RVELAVG= 956.3FPS = 291.5MPS AXVELAVG= 624.1FPS =190.2MPS U=1003.FPS = 306.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
59.	1	1.003	0.4657	1.0081	1.0099	0.9927	0.0	0.0	0.310	-0.75	40.8	1.003	1.001
69.	2	1.004	0.4665	1.0073	1.0097	0.9915	0.0	0.0	0.309	-0.79	40.9	1.004	1.001
79.	3	1.005	0.4671	1.0069	1.0096	0.9908	0.0	0.0	0.308	-0.82	40.9	1.005	1.001
89.	4	1.005	0.4674	1.0073	1.0103	0.9903	0.0	0.0	0.307	-0.84	40.9	1.005	1.001
99.	5	1.005	0.4676	1.0075	1.0106	0.9900	0.0	0.0	0.307	-0.85	41.0	1.005	1.001
109.	6	1.006	0.4679	1.0069	1.0101	0.9895	0.0	0.0	0.307	-0.86	41.0	1.006	1.001
119.	7	1.006	0.4679	1.0064	1.0096	0.9892	0.0	0.0	0.307	-0.86	41.0	1.006	1.001
129.	8	1.005	0.4679	1.0059	1.0091	0.9888	0.0	0.0	0.307	-0.85	40.9	1.005	1.001
139.	9	1.005	0.4682	1.0009	1.0044	0.9867	0.0	0.0	0.308	-0.84	40.9	1.005	1.001
149.	10	1.005	0.4685	0.9977	1.0014	0.9847	0.0	0.0	0.309	-0.82	40.9	1.005	1.001
159.	11	1.004	0.4685	0.9969	1.0006	0.9835	0.0	0.0	0.310	-0.80	40.9	1.004	1.001
169.	12	1.004	0.4685	0.9951	0.9988	0.9831	0.0	0.0	0.311	-0.79	40.9	1.004	1.001
179.	13	1.004	0.4681	0.9935	0.9969	0.9844	0.0	0.0	0.312	-0.78	40.9	1.004	1.001
189.	14	1.003	0.4670	0.9927	0.9954	0.9879	0.0	0.0	0.313	-0.76	40.9	1.003	1.001
199.	15	1.002	0.4652	0.9924	0.9940	0.9932	0.0	0.0	0.315	-0.72	40.8	1.002	1.000
209.	16	1.001	0.4634	0.9926	0.9930	0.9988	0.0	0.0	0.316	-0.67	40.8	1.001	1.000
219.	17	0.999	0.4616	0.9930	0.9923	1.0032	0.0	0.0	0.318	-0.61	40.7	0.999	1.000
229.	18	0.998	0.4602	0.9930	0.9914	1.0060	0.0	0.0	0.319	-0.56	40.7	0.998	1.000
239.	19	0.997	0.4592	0.9929	0.9907	1.0077	0.0	0.0	0.320	-0.50	40.6	0.997	0.999
249.	20	0.996	0.4586	0.9926	0.9900	1.0088	0.0	0.0	0.321	-0.47	40.6	0.996	0.999
259.	21	0.995	0.4582	0.9924	0.9895	1.0096	0.0	0.0	0.321	-0.46	40.6	0.995	0.999
269.	22	0.995	0.4579	0.9920	0.9890	1.0102	0.0	0.0	0.322	-0.44	40.5	0.995	0.999
279.	23	0.995	0.4576	0.9917	0.9885	1.0106	0.0	0.0	0.322	-0.43	40.5	0.995	0.999
289.	24	0.994	0.4575	0.9913	0.9880	1.0106	0.0	0.0	0.322	-0.42	40.5	0.994	0.999
299.	25	0.994	0.4573	0.9921	0.9887	1.0112	0.0	0.0	0.322	-0.41	40.5	0.994	0.999
309.	26	0.994	0.4572	0.9934	0.9900	1.0117	0.0	0.0	0.322	-0.42	40.5	0.994	0.999
319.	27	0.995	0.4573	0.9966	0.9932	1.0129	0.0	0.0	0.321	-0.44	40.5	0.995	0.999
329.	28	0.996	0.4574	1.0006	0.9973	1.0147	0.0	0.0	0.319	-0.49	40.6	0.996	0.999
339.	29	0.997	0.4575	1.0029	0.9996	1.0156	0.0	0.0	0.318	-0.51	40.6	0.997	0.999
349.	30	0.997	0.4576	1.0054	1.0022	1.0159	0.0	0.0	0.317	-0.52	40.6	0.997	0.999
359.	31	0.997	0.4580	1.0074	1.0044	1.0146	0.0	0.0	0.317	-0.53	40.6	0.997	0.999
9.	32	0.998	0.4589	1.0088	1.0063	1.0114	0.0	0.0	0.316	-0.54	40.6	0.998	0.999
19.	33	0.998	0.4602	1.0097	1.0081	1.0067	0.0	0.0	0.315	-0.57	40.7	0.998	1.000
29.	34	0.999	0.4618	1.0093	1.0087	1.0015	0.0	0.0	0.314	-0.60	40.7	0.999	1.000
39.	35	1.000	0.4634	1.0087	1.0092	0.9975	0.0	0.0	0.312	-0.65	40.8	1.000	1.000
49.	36	1.001	0.4647	1.0083	1.0095	0.9946	0.0	0.0	0.311	-0.70	40.8	1.001	1.000

STATOR

FLOW SWIRL= 49.84DEG PARTICLE SWIRL=122.87DEG PSAVG= 41.85PSIA = 288550.PA
PTAVG= 51.37PSIA = 354186.PA TTAVG=1013.1DEG R = 562.8DEG K VELAVG= 832.7FPS =253.8MPS
RVELAVG= 773.0FPS = 235.6MPS AXVELAVG= 623.4FPS =190.0MPS U=1009.FPS = 308.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
60.	1	1.002	0.5556	1.0071	1.0092	0.9936	0.0	0.0	0.279	−0.71	48.7	1.005	1.005
70.	2	1.002	0.5559	1.0061	1.0084	0.9921	0.0	0.0	0.278	−0.76	48.8	1.006	1.006
80.	3	1.002	0.5562	1.0053	1.0079	0.9912	0.0	0.0	0.277	−0.81	48.8	1.007	1.007
90.	4	1.002	0.5563	1.0057	1.0084	0.9908	0.0	0.0	0.276	−0.84	48.8	1.007	1.007
100.	5	1.002	0.5565	1.0057	1.0085	0.9903	0.0	0.0	0.276	−0.86	48.9	1.008	1.008
110.	6	1.002	0.5566	1.0051	1.0079	0.9899	0.0	0.0	0.276	−0.87	48.9	1.008	1.008
120.	7	1.002	0.5566	1.0047	1.0076	0.9896	0.0	0.0	0.276	−0.86	48.9	1.008	1.008
130.	8	1.001	0.5566	1.0046	1.0075	0.9892	0.0	0.0	0.277	−0.84	48.8	1.007	1.007
140.	9	1.001	0.5571	1.0003	1.0035	0.9875	0.0	0.0	0.277	−0.80	48.8	1.006	1.006
150.	10	1.001	0.5576	0.9978	1.0014	0.9658	0.0	0.0	0.278	−0.76	48.8	1.006	1.006
160.	11	1.001	0.5577	0.9976	1.0013	0.9847	0.0	0.0	0.280	−0.70	46.7	1.005	1.005
170.	12	1.001	0.5577	0.9960	0.9997	0.9839	0.0	0.0	0.281	−0.67	48.7	1.004	1.004
180.	13	1.000	0.5571	0.9943	0.9976	0.9844	0.0	0.0	0.282	−0.62	48.6	1.003	1.003
190.	14	0.999	0.5558	0.9932	0.9955	0.9869	0.0	0.0	0.283	−0.55	48.6	1.002	1.002
200.	15	0.998	0.5540	0.9928	0.9938	0.9913	0.0	0.0	0.285	−0.46	48.5	1.000	1.000
210.	16	0.998	0.5523	0.9927	0.9925	0.9965	0.0	0.0	0.286	−0.40	48.4	0.999	0.999
220.	17	0.998	0.5510	0.9935	0.9922	1.0013	0.0	0.0	0.287	−0.31	48.3	0.997	0.997
230.	18	0.998	0.5501	0.9939	0.9920	1.0047	0.0	0.0	0.288	−0.24	48.2	0.996	0.996
240.	19	0.998	0.5496	0.9942	0.9919	1.0068	0.0	0.0	0.290	−0.18	48.2	0.994	0.994
250.	20	0.998	0.5493	0.9941	0.9916	1.0081	0.0	0.0	0.291	−0.14	48.1	0.994	0.994
260.	21	0.998	0.5492	0.9957	0.9911	1.0090	0.0	0.0	0.291	−0.12	48.1	0.993	0.993
270.	22	0.998	0.5490	0.9956	0.9908	1.0097	0.0	0.0	0.291	−0.10	48.1	0.993	0.993
280.	23	0.998	0.5489	0.9933	0.9904	1.0101	0.0	0.0	0.292	−0.08	46.1	0.993	0.993
290.	24	0.998	0.5488	0.9929	0.9901	1.0104	0.0	0.0	0.292	−0.07	48.1	0.992	0.992
300.	25	0.998	0.5487	0.9937	0.9908	1.0109	0.0	0.0	0.292	−0.06	48.1	0.992	0.992
310.	26	0.999	0.5487	0.9948	0.9918	1.0113	0.0	0.0	0.292	−0.08	48.1	0.992	0.992
320.	27	0.999	0.5486	0.9971	0.9940	1.0123	0.0	0.0	0.290	−0.15	48.1	0.994	0.994
330.	28	0.999	0.5484	1.0001	0.9969	1.0137	0.0	0.0	0.268	−0.24	48.2	0.996	0.996
340.	29	0.999	0.5483	1.0019	0.9986	1.0147	0.0	0.0	0.286	−0.30	48.3	0.997	0.997
350.	30	1.000	0.5483	1.0043	1.0010	1.0152	0.0	0.0	0.286	−0.34	48.3	0.997	0.997
360.	31	1.000	0.5488	1.0065	1.0035	1.0146	0.0	0.0	0.285	−0.37	48.4	0.998	0.998
10.	32	1.001	0.5498	1.0082	1.0060	1.0123	0.0	0.0	0.284	−0.41	48.4	0.999	0.999
20.	33	1.002	0.5513	1.0095	1.0084	1.0084	0.0	0.0	0.283	−0.47	48.5	1.000	1.000
30.	34	1.002	0.5528	1.0094	1.0094	1.0036	0.0	0.0	0.283	−0.51	48.5	1.001	1.001
40.	35	1.002	0.5541	1.0085	1.0095	0.9992	0.0	0.0	0.281	−0.58	48.6	1.002	1.002
50.	36	1.002	0.5550	1.0079	1.0095	0.9959	0.0	0.0	0.280	−0.64	48.6	1.003	1.003

STAGE 12
ROTOR

FLOW SWIRL= 52.94DEG PARTICLE SWIRL=125.97DEG PSAVG= 44.14PSIA = 304363.PA
PTAVG= 50.81PSIA = 350290.PA TTAVG=1013.1DEG R = 562.8DEG K VELAVG= 692.5FPS =211.1MPS
RVELAVG= 945.5FPS = 288.2MPS AXVELAVG= 623.1FPS =189.9MPS U=1013.FPS = 309.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
63.	1	1.005	0.4592	1.0072	1.0094	0.9936	0.0	0.0	0.234	−3.71	41.4	1.005	1.001
73.	2	1.006	0.4601	1.0061	1.0088	0.9921	0.0	0.0	0.234	−3.75	41.5	1.006	1.001
83.	3	1.007	0.4607	1.0053	1.0084	0.9912	0.0	0.0	0.233	−3.79	41.5	1.007	1.001
93.	4	1.007	0.4611	1.0056	1.0090	0.9908	0.0	0.0	0.232	−3.81	41.5	1.007	1.001
103.	5	1.008	0.4614	1.0056	1.0092	0.9903	0.0	0.0	0.232	−3.83	41.5	1.008	1.001
113.	6	1.008	0.4617	1.0049	1.0087	0.9899	0.0	0.0	0.232	−3.84	41.5	1.008	1.002
123.	7	1.008	0.4616	1.0047	1.0084	0.9896	0.0	0.0	0.232	−3.83	41.5	1.008	1.001
133.	8	1.007	0.4614	1.0046	1.0082	0.9892	0.0	0.0	0.233	−3.81	41.5	1.007	1.001
143.	9	1.006	0.4614	1.0006	1.0041	0.9875	0.0	0.0	0.234	−3.77	41.5	1.006	1.001
153.	10	1.005	0.4613	0.9984	1.0019	0.9858	0.0	0.0	0.236	−3.74	41.4	1.005	1.001
163.	11	1.004	0.4610	0.9984	1.0017	0.9847	0.0	0.0	0.238	−3.68	41.4	1.004	1.001
173.	12	1.003	0.4607	0.9969	1.0001	0.9839	0.0	0.0	0.239	−3.65	41.3	1.003	1.001
183.	13	1.002	0.4601	0.9953	0.9981	0.9844	0.0	0.0	0.241	−3.61	41.3	1.002	1.000
193.	14	1.001	0.4590	0.9941	0.9962	0.9869	0.0	0.0	0.243	−3.56	41.3	1.001	1.000
203.	15	0.999	0.4572	0.9935	0.9945	0.9913	0.0	0.0	0.246	−3.49	41.2	0.999	1.000
213.	16	0.998	0.4555	0.9932	0.9931	0.9965	0.0	0.0	0.247	−3.45	41.2	0.998	1.000
223.	17	0.997	0.4538	0.9937	0.9926	1.0013	0.0	0.0	0.248	−3.40	41.1	0.997	0.999
233.	18	0.996	0.4525	0.9940	0.9920	1.0047	0.0	0.0	0.249	−3.35	41.0	0.996	0.999
243.	19	0.994	0.4514	0.9943	0.9917	1.0068	0.0	0.0	0.250	−3.30	41.0	0.994	0.999
253.	20	0.994	0.4507	0.9942	0.9912	1.0081	0.0	0.0	0.250	−3.27	41.0	0.994	0.999
263.	21	0.993	0.4504	0.9938	0.9906	1.0090	0.0	0.0	0.250	−3.26	41.0	0.993	0.999
273.	22	0.993	0.4501	0.9936	0.9902	1.0097	0.0	0.0	0.251	−3.24	40.9	0.993	0.999
283.	23	0.993	0.4498	0.9933	0.9897	1.0101	0.0	0.0	0.251	−3.23	40.9	0.993	0.999
293.	24	0.992	0.4496	0.9930	0.9893	1.0104	0.0	0.0	0.251	−3.22	40.9	0.992	0.999
303.	25	0.992	0.4495	0.9937	0.9900	1.0109	0.0	0.0	0.251	−3.21	40.9	0.992	0.999
313.	26	0.993	0.4496	0.9947	0.9910	1.0113	0.0	0.0	0.250	−3.23	40.9	0.993	0.999
323.	27	0.994	0.4501	0.9968	0.9934	1.0123	0.0	0.0	0.248	−3.29	41.0	0.994	0.999
333.	28	0.996	0.4507	0.9994	0.9964	1.0137	0.0	0.0	0.245	−3.37	41.1	0.996	0.999
343.	29	0.997	0.4511	1.0010	0.9982	1.0147	0.0	0.0	0.243	−3.42	41.1	0.997	1.000
353.	30	0.998	0.4514	1.0033	1.0006	1.0152	0.0	0.0	0.242	−3.46	41.2	0.998	1.000
3.	31	0.999	0.4518	1.0055	1.0031	1.0146	0.0	0.0	0.241	−3.48	41.2	0.999	1.000
13.	32	1.000	0.4527	1.0073	1.0054	1.0123	0.0	0.0	0.239	−3.52	41.2	1.000	1.000
23.	33	1.001	0.4540	1.0088	1.0078	1.0084	0.0	0.0	0.238	−3.55	41.3	1.001	1.000
33.	34	1.001	0.4554	1.0090	1.0088	1.0036	0.0	0.0	0.237	−3.58	41.3	1.001	1.000
43.	35	1.002	0.4569	1.0084	1.0091	0.9992	0.0	0.0	0.236	−3.62	41.3	1.002	1.000
53.	36	1.003	0.4581	1.0079	1.0094	0.9959	0.0	0.0	0.236	−3.66	41.4	1.003	1.001

STATOR

FLOW SWIRL= 53.55DEG   PARTICLE SWIRL=130.67DEG   PSAVG= 48.17PSIA = 332101.PA
PTAVG= 58.15PSIA = 400912.PA   TTAVG=1058.6DEG R = 588.1DEG K   VELAVG= 816.8FPS =249.0MPS
RVELAVG= 810.2FPS = 246.9MPS   AXVELAVG= 635.9FPS =193.2MPS   U=1020.FPS = 311.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
64.	1	1.002	0.5325	1.0061	1.0061	0.9943	0.006	0.003	0.189	-5.25	51.3	1.006	1.006
74.	2	1.002	0.5329	1.0050	1.0073	0.9925	0.005	0.002	0.188	-5.29	51.3	1.007	1.007
84.	3	1.002	0.5332	1.0040	1.0066	0.9913	0.005	0.002	0.187	-5.34	51.3	1.008	1.008
94.	4	1.002	0.5333	1.0044	1.0070	0.9908	0.005	0.002	0.186	-5.37	51.4	1.008	1.008
104.	5	1.002	0.5335	1.0044	1.0071	0.9903	0.005	0.002	0.186	-5.39	51.4	1.009	1.009
114.	6	1.002	0.5336	1.0038	1.0066	0.9898	0.005	0.002	0.186	-5.40	51.4	1.009	1.009
124.	7	1.002	0.5335	1.0039	1.0066	0.9896	0.004	0.002	0.186	-5.37	51.4	1.008	1.008
134.	8	1.002	0.5334	1.0042	1.0068	0.9893	0.003	0.001	0.187	-5.33	51.3	1.008	1.008
144.	9	1.001	0.5336	1.0006	1.0036	0.9880	0.001	0.001	0.189	-5.26	51.3	1.006	1.006
154.	10	1.001	0.5339	0.9991	1.0022	0.9866	0.0	0.0	0.190	-5.20	51.2	1.005	1.005
164.	11	1.001	0.5339	0.9999	1.0030	0.9857	-0.002	-0.001	0.193	-5.09	51.1	1.003	1.003
174.	12	1.000	0.5339	0.9986	1.0017	0.9848	-0.004	-0.002	0.195	-5.02	51.0	1.002	1.002
184.	13	1.000	0.5335	0.9972	1.0000	0.9848	-0.006	-0.003	0.197	-4.93	50.9	1.000	1.000
194.	14	0.998	0.5324	0.9962	0.9982	0.9865	-0.008	-0.003	0.199	-4.81	50.8	0.998	0.998
204.	15	0.997	0.5308	0.9956	0.9965	0.9901	-0.010	-0.004	0.202	-4.68	50.7	0.996	0.996
214.	16	0.997	0.5294	0.9946	0.9944	0.9948	-0.010	-0.004	0.203	-4.63	50.6	0.995	0.995
224.	17	0.997	0.5280	0.9951	0.9939	0.9997	-0.009	-0.004	0.204	-4.57	50.6	0.994	0.994
234.	18	0.997	0.5272	0.9952	0.9934	1.0035	-0.008	-0.004	0.205	-4.53	50.5	0.993	0.993
244.	19	0.997	0.5266	0.9955	0.9933	1.0062	-0.007	-0.003	0.206	-4.48	50.5	0.992	0.992
254.	20	0.998	0.5263	0.9953	0.9929	1.0078	-0.006	-0.003	0.206	-4.46	50.5	0.992	0.992
264.	21	0.998	0.5262	0.9947	0.9922	1.0087	-0.005	-0.002	0.206	-4.47	50.5	0.992	0.992
274.	22	0.998	0.5259	0.9946	0.9920	1.0095	-0.005	-0.002	0.207	-4.44	50.4	0.992	0.992
284.	23	0.998	0.5258	0.9943	0.9916	1.0100	-0.005	-0.002	0.207	-4.43	50.4	0.991	0.991
294.	24	0.998	0.5258	0.9940	0.9912	1.0104	-0.004	-0.002	0.207	-4.42	50.4	0.991	0.991
304.	25	0.998	0.5257	0.9946	0.9918	1.0109	-0.004	-0.002	0.207	-4.42	50.4	0.991	0.991
314.	26	0.998	0.5257	0.9953	0.9925	1.0113	-0.003	-0.002	0.205	-4.45	50.5	0.992	0.992
324.	27	0.999	0.5259	0.9963	0.9937	1.0119	-0.001	-0.000	0.203	-4.56	50.6	0.994	0.994
334.	28	1.000	0.5260	0.9979	0.9953	1.0129	0.002	0.001	0.200	-4.73	50.7	0.997	0.997
344.	29	1.000	0.5259	0.9994	0.9966	1.0138	0.004	0.002	0.198	-4.81	50.8	0.998	0.998
354.	30	1.000	0.5258	1.0015	0.9987	1.0145	0.005	0.002	0.197	-4.87	50.9	0.999	0.999
4.	31	1.001	0.5261	1.0037	1.0012	1.0144	0.006	0.003	0.195	-4.93	50.9	1.000	1.000
14.	32	1.001	0.5271	1.0054	1.0035	1.0127	0.006	0.004	0.193	-5.01	51.0	1.002	1.002
24.	33	1.002	0.5283	1.0072	1.0061	1.0096	0.009	0.004	0.192	-5.09	51.1	1.003	1.003
34.	34	1.002	0.5296	1.0079	1.0078	1.0052	0.008	0.004	0.191	-5.12	51.1	1.004	1.004
44.	35	1.003	0.5308	1.0074	1.0082	1.0007	0.007	0.003	0.191	-5.16	51.2	1.005	1.005
54.	36	1.002	0.5317	1.0070	1.0085	0.9970	0.006	0.003	0.190	-5.19	51.2	1.005	1.005

STAGE 13 ROTOR

FLOW SWIRL= 56.52DEG   PARTICLE SWIRL=133.64DEG   PSAVG= 50.16PSIA = 345838.PA
PTAVG= 58.14PSIA = 400890.PA   TTAVG=1058.6DEG R = 588.1DEG K   VELAVG= 725.4FPS =221.1MPS
RVELAVG= 942.3FPS = 287.2MPS   AXVELAVG= 643.3FPS =196.1MPS   U=1024.FPS = 312.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
67.	1	1.001	0.4697	1.0071	1.0083	0.9943	0.0	0.0	0.254	-8.11	43.1	1.001	1.000
77.	2	1.002	0.4708	1.0058	1.0077	0.9925	0.0	0.0	0.253	-8.16	43.2	1.002	1.001
87.	3	1.003	0.4715	1.0047	1.0070	0.9913	0.0	0.0	0.252	-8.20	43.2	1.003	1.001
97.	4	1.004	0.4718	1.0050	1.0076	0.9908	0.0	0.0	0.251	-8.22	43.2	1.004	1.001
107.	5	1.004	0.4721	1.0050	1.0077	0.9903	0.0	0.0	0.251	-8.23	43.2	1.004	1.001
117.	6	1.004	0.4723	1.0044	1.0073	0.9896	0.0	0.0	0.251	-8.25	43.2	1.004	1.001
127.	7	1.005	0.4725	1.0044	1.0074	0.9896	0.0	0.0	0.251	-8.25	43.3	1.005	1.001
137.	8	1.005	0.4726	1.0046	1.0076	0.9893	0.0	0.0	0.251	-8.26	43.3	1.005	1.001
147.	9	1.005	0.4730	1.0012	1.0044	0.9880	0.0	0.0	0.251	-8.26	43.3	1.005	1.001
157.	10	1.005	0.4732	0.9995	1.0030	0.9866	0.0	0.0	0.251	-8.25	43.3	1.005	1.001
167.	11	1.005	0.4734	0.9999	1.0034	0.9857	0.0	0.0	0.251	-8.25	43.3	1.005	1.001
177.	12	1.005	0.4738	0.9981	1.0020	0.9848	0.0	0.0	0.251	-8.27	43.3	1.005	1.001
187.	13	1.005	0.4739	0.9962	1.0000	0.9848	0.0	0.0	0.251	-8.28	43.3	1.005	1.001
197.	14	1.005	0.4735	0.9944	0.9980	0.9865	0.0	0.0	0.251	-8.28	43.3	1.005	1.001
207.	15	1.005	0.4725	0.9932	0.9962	0.9901	0.0	0.0	0.252	-8.27	43.3	1.005	1.001
217.	16	1.004	0.4711	0.9921	0.9941	0.9948	0.0	0.0	0.253	-8.24	43.2	1.004	1.001
227.	17	1.003	0.4692	0.9927	0.9935	0.9997	0.0	0.0	0.255	-8.17	43.2	1.003	1.001
237.	18	1.001	0.4675	0.9932	0.9930	1.0035	0.0	0.0	0.257	-8.10	43.1	1.001	1.000
247.	19	0.999	0.4660	0.9940	0.9928	1.0062	0.0	0.0	0.259	-8.02	43.0	0.999	1.000
257.	20	0.998	0.4648	0.9942	0.9923	1.0078	0.0	0.0	0.261	-7.96	43.0	0.998	1.000
267.	21	0.997	0.4641	0.9940	0.9917	1.0087	0.0	0.0	0.262	-7.92	42.9	0.997	0.999
277.	22	0.996	0.4636	0.9941	0.9914	1.0095	0.0	0.0	0.263	-7.88	42.9	0.996	0.999
287.	23	0.995	0.4632	0.9939	0.9910	1.0100	0.0	0.0	0.263	-7.86	42.9	0.995	0.999
297.	24	0.995	0.4629	0.9937	0.9906	1.0104	0.0	0.0	0.264	-7.84	42.8	0.995	0.999
307.	25	0.995	0.4627	0.9944	0.9912	1.0109	0.0	0.0	0.264	-7.83	42.8	0.995	0.999
317.	26	0.995	0.4625	0.9953	0.9920	1.0113	0.0	0.0	0.264	-7.82	42.8	0.995	0.999
327.	27	0.994	0.4623	0.9970	0.9935	1.0119	0.0	0.0	0.264	-7.82	42.8	0.995	0.999
337.	28	0.995	0.4622	0.9989	0.9954	1.0129	0.0	0.0	0.263	-7.83	42.8	0.995	0.999
347.	29	0.995	0.4621	1.0004	0.9967	1.0138	0.0	0.0	0.263	-7.84	42.8	0.995	0.999
357.	30	0.995	0.4619	1.0025	0.9988	1.0145	0.0	0.0	0.263	-7.84	42.8	0.995	0.999
7.	31	0.995	0.4621	1.0048	1.0012	1.0144	0.0	0.0	0.262	-7.85	42.8	0.995	0.999
17.	32	0.995	0.4625	1.0067	1.0033	1.0127	0.0	0.0	0.261	-7.85	42.9	0.995	0.999
27.	33	0.996	0.4635	1.0086	1.0058	1.0096	0.0	0.0	0.260	-7.87	42.9	0.996	0.999
37.	34	0.997	0.4650	1.0094	1.0076	1.0052	0.0	0.0	0.259	-7.92	42.9	0.997	0.999
47.	35	0.998	0.4667	1.0088	1.0081	1.0007	0.0	0.0	0.257	-7.98	43.0	0.998	1.000
57.	36	1.000	0.4683	1.0082	1.0085	0.9970	0.0	0.0	0.255	-8.04	43.0	1.000	1.000

STATOR

FLOW SWIRL= 57.37DEG PARTICLE SWIRL=138.63DEG PSAVG= 54.73PSIA = 377360.PA
PTAVG= 66.76PSIA = 460309.PA TTAVG=1110.9DEG R = 617.2DEG K VELAVG= 859.1FPS =261.8MPS
RVELAVG= 803.1FPS = 244.8MPS AXVELAVG= 651.7FPS =198.6MPS U=1029.FPS = 314.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
67.	1	1.002	0.5473	1.0067	1.0083	0.9955	0.0	0.0	0.268	-3.98	49.5	1.003	1.003
77.	2	1.002	0.5476	1.0054	1.0074	0.9933	0.0	0.0	0.267	-4.03	49.5	1.004	1.004
87.	3	1.001	0.5482	1.0043	1.0066	0.9919	0.0	0.0	0.266	-4.07	49.6	1.004	1.004
97.	4	1.001	0.5483	1.0046	1.0070	0.9912	0.0	0.0	0.266	-4.09	49.6	1.005	1.005
107.	5	1.001	0.5484	1.0046	1.0071	0.9907	0.0	0.0	0.266	-4.10	49.6	1.005	1.005
117.	6	1.001	0.5485	1.0041	1.0066	0.9902	0.0	0.0	0.265	-4.11	49.6	1.005	1.005
127.	7	1.001	0.5486	1.0041	1.0067	0.9899	0.0	0.0	0.265	-4.12	49.6	1.005	1.005
137.	8	1.001	0.5467	1.0042	1.0069	0.9897	0.0	0.0	0.265	-4.13	49.6	1.006	1.006
147.	9	1.001	0.5490	1.0011	1.0040	0.9885	0.0	0.0	0.265	-4.12	49.6	1.006	1.006
157.	10	1.001	0.5494	0.9998	1.0030	0.9874	0.0	0.0	0.266	-4.11	49.6	1.005	1.005
167.	11	1.001	0.5496	1.0002	1.0036	0.9866	0.0	0.0	0.266	-4.11	49.6	1.005	1.005
177.	12	1.001	0.5499	0.9984	1.0028	0.9854	0.0	0.0	0.266	-4.12	49.6	1.006	1.006
167.	13	1.001	0.5499	0.9963	0.9999	0.9850	0.0	0.0	0.266	-4.12	49.6	1.005	1.005
197.	14	1.000	0.5492	0.9944	0.9974	0.9860	0.0	0.0	0.266	-4.10	49.6	1.005	1.005
207.	15	1.000	0.5480	0.9929	0.9951	0.9887	0.0	0.0	0.267	-4.05	49.6	1.004	1.004
217.	16	0.999	0.5464	0.9915	0.9926	0.9928	0.0	0.0	0.268	-4.00	49.5	1.003	1.003
227.	17	0.998	0.5448	0.9923	0.9922	0.9976	0.0	0.0	0.269	-3.90	49.4	1.001	1.001
237.	18	0.998	0.5435	0.9931	0.9920	1.0018	0.0	0.0	0.271	-3.82	49.3	1.000	1.000
247.	19	0.996	0.5426	0.9942	0.9925	1.0050	0.0	0.0	0.273	-3.73	49.2	0.998	0.998
257.	20	0.998	0.5421	0.9947	0.9926	1.0069	0.0	0.0	0.274	-3.65	49.1	0.996	0.996
267.	21	0.998	0.5419	0.9944	0.9921	1.0081	0.0	0.0	0.275	-3.61	49.1	0.996	0.996
277.	22	0.998	0.5416	0.9947	0.9922	1.0090	0.0	0.0	0.276	-3.56	49.1	0.995	0.995
287.	23	0.998	0.5415	0.9944	0.9918	1.0096	0.0	0.0	0.276	-3.54	49.0	0.994	0.994
297.	24	0.998	0.5413	0.9943	0.9916	1.0100	0.0	0.0	0.277	-3.52	49.0	0.994	0.994
307.	25	0.998	0.5412	0.9950	0.9922	1.0106	0.0	0.0	0.277	-3.51	49.0	0.994	0.994
317.	26	0.999	0.5411	0.9958	0.9929	1.0110	0.0	0.0	0.277	-3.50	49.0	0.994	0.994
327.	27	0.999	0.5410	0.9973	0.9943	1.0116	0.0	0.0	0.277	-3.51	49.0	0.994	0.994
337.	28	0.999	0.5408	0.9990	0.9959	1.0124	0.0	0.0	0.277	-3.52	49.0	0.994	0.994
347.	29	0.999	0.5406	1.0002	0.9969	1.0132	0.0	0.0	0.276	-3.54	49.0	0.994	0.994
357.	30	0.999	0.5405	1.0023	0.9989	1.0141	0.0	0.0	0.276	-3.55	49.1	0.994	0.994
7.	31	0.999	0.5407	1.0045	1.0013	1.0143	0.0	0.0	0.275	-3.58	49.1	0.995	0.995
17.	32	1.000	0.5413	1.0065	1.0037	1.0132	0.0	0.0	0.274	-3.61	49.1	0.996	0.996
27.	33	1.000	0.5423	1.0086	1.0065	1.0108	0.0	0.0	0.273	-3.67	49.2	0.997	0.997
37.	34	1.001	0.5438	1.0094	1.0084	1.0070	0.0	0.0	0.272	-3.74	49.2	0.998	0.998
47.	35	1.002	0.5453	1.0088	1.0089	1.0025	0.0	0.0	0.271	-3.82	49.3	1.000	1.000
57.	36	1.002	0.5465	1.0060	1.0090	0.9986	0.0	0.0	0.269	-3.90	49.4	1.001	1.001

STAGE 14
ROTOR

FLOW SWIRL= 60.45DEG PARTICLE SWIRL=141.69DEG PSAVG= 58.57PSIA = 403857.PA
PTAVG= 67.14PSIA = 462941.PA TTAVG=1110.9DEG R = 617.2DEG K VELAVG= 715.1FPS =218.0MPS
RVELAVG= 963.7FPS = 293.7MPS AXVELAVG= 642.2FPS =195.8MPS U=1033.FPS = 315.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
70.	1	1.003	0.4522	1.0067	1.0081	0.9955	0.0	0.0	0.238	-4.91	41.9	1.003	1.001
80.	2	1.004	0.4531	1.0055	1.0074	0.9933	0.0	0.0	0.237	-4.94	41.9	1.004	1.001
90.	3	1.004	0.4537	1.0044	1.0068	0.9919	0.0	0.0	0.237	-4.97	42.0	1.004	1.002
100.	4	1.005	0.4540	1.0047	1.0072	0.9912	0.0	0.0	0.237	-4.99	42.0	1.005	1.001
110.	5	1.005	0.4543	1.0047	1.0074	0.9907	0.0	0.0	0.237	-5.00	42.0	1.005	1.001
120.	6	1.005	0.4545	1.0042	1.0070	0.9902	0.0	0.0	0.236	-5.01	42.0	1.005	1.001
130.	7	1.005	0.4546	1.0042	1.0071	0.9899	0.0	0.0	0.236	-5.01	42.0	1.005	1.001
140.	8	1.005	0.4548	1.0043	1.0073	0.9897	0.0	0.0	0.236	-5.02	42.0	1.005	1.001
150.	9	1.005	0.4549	1.0014	1.0045	0.9885	0.0	0.0	0.237	-5.01	42.0	1.005	1.001
160.	10	1.005	0.4550	1.0002	1.0034	0.9874	0.0	0.0	0.237	-5.00	42.0	1.005	1.001
170.	11	1.005	0.4552	1.0007	1.0040	0.9866	0.0	0.0	0.237	-5.00	42.0	1.005	1.001
160.	12	1.005	0.4555	0.9990	1.0024	0.9854	0.0	0.0	0.237	-5.00	42.0	1.005	1.001
190.	13	1.005	0.4556	0.9969	1.0004	0.9850	0.0	0.0	0.237	-5.00	42.0	1.005	1.001
200.	14	1.005	0.4551	0.9949	0.9981	0.9860	0.0	0.0	0.239	-4.98	42.0	1.005	1.001
210.	15	1.004	0.4541	0.9933	0.9959	0.9887	0.0	0.0	0.240	-4.95	41.9	1.004	1.001
220.	16	1.003	0.4528	0.9917	0.9934	0.9926	0.0	0.0	0.242	-4.91	41.9	1.003	1.001
230.	17	1.001	0.4509	0.9923	0.9929	0.9976	0.0	0.0	0.244	-4.84	41.8	1.001	1.000
240.	18	1.000	0.4493	0.9929	0.9925	1.0018	0.0	0.0	0.246	-4.76	41.8	1.000	1.000
250.	19	0.998	0.4478	0.9940	0.9927	1.0050	0.0	0.0	0.247	-4.71	41.7	0.998	1.000
260.	20	0.996	0.4467	0.9946	0.9926	1.0069	0.0	0.0	0.249	-4.65	41.7	0.996	0.999
270.	21	0.996	0.4460	0.9943	0.9920	1.0081	0.0	0.0	0.249	-4.62	41.6	0.996	0.999
280.	22	0.995	0.4454	0.9946	0.9919	1.0090	0.0	0.0	0.250	-4.58	41.6	0.995	0.999
290.	23	0.994	0.4451	0.9943	0.9915	1.0096	0.0	0.0	0.250	-4.56	41.6	0.994	0.999
300.	24	0.994	0.4448	0.9943	0.9912	1.0100	0.0	0.0	0.251	-4.54	41.5	0.994	0.999
310.	25	0.994	0.4446	0.9949	0.9917	1.0106	0.0	0.0	0.251	-4.54	41.5	0.994	0.999
320.	26	0.994	0.4445	0.9957	0.9925	1.0110	0.0	0.0	0.251	-4.54	41.5	0.994	0.999
330.	27	0.994	0.4444	0.9972	0.9939	1.0116	0.0	0.0	0.251	-4.54	41.5	0.994	0.999
340.	28	0.994	0.4444	0.9987	0.9954	1.0124	0.0	0.0	0.250	-4.55	41.6	0.994	0.999
350.	29	0.995	0.4444	0.9998	0.9965	1.0132	0.0	0.0	0.249	-4.57	41.6	0.995	0.999
0.	30	0.995	0.4444	1.0018	0.9984	1.0141	0.0	0.0	0.249	-4.59	41.6	0.995	0.999
10.	31	0.996	0.4447	1.0039	1.0007	1.0143	0.0	0.0	0.247	-4.61	41.6	0.996	0.999
20.	32	0.996	0.4452	1.0059	1.0030	1.0132	0.0	0.0	0.246	-4.64	41.6	0.996	0.999
30.	33	0.997	0.4462	1.0081	1.0058	1.0108	0.0	0.0	0.244	-4.68	41.7	0.997	0.999
40.	34	0.999	0.4476	1.0091	1.0077	1.0070	0.0	0.0	0.242	-4.74	41.7	0.999	1.000
50.	35	1.000	0.4493	1.0087	1.0083	1.0025	0.0	0.0	0.240	-4.79	41.8	1.000	1.000
60.	36	1.001	0.4508	1.0060	1.0086	0.9986	0.0	0.0	0.239	-4.85	41.8	1.001	1.000

STATOR

FLOW SWIRL= 61.50DEG PARTICLE SWIRL=147.10DEG PSAVG= 62.13PSIA = 428395.PA
PTAVG= 74.93PSIA = 516614.PA TTAVG=1161.0DEG R = 645.0DEG K VELAVG= 853.3FPS =260.1MPS
RVELAVG= 826.5FPS = 251.9MPS AXVELAVG= 660.5FPS =201.3MPS U=1037.FPS = 316.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
72.	1	1.002	0.5314	1.0058	1.0074	0.9966	0.0	0.0	0.281	-5.48	51.0	1.005	1.005
82.	2	1.002	0.5319	1.0047	1.0066	0.9940	0.0	0.0	0.281	-5.50	51.0	1.005	1.005
92.	3	1.002	0.5323	1.0037	1.0059	0.9924	0.0	0.0	0.281	-5.52	51.0	1.005	1.005
102.	4	1.002	0.5324	1.0040	1.0062	0.9916	0.0	0.0	0.281	-5.54	51.0	1.006	1.006
112.	5	1.002	0.5325	1.0041	1.0064	0.9910	0.0	0.0	0.280	-5.54	51.0	1.006	1.006
122.	6	1.002	0.5327	1.0035	1.0060	0.9904	0.0	0.0	0.280	-5.55	51.0	1.006	1.006
132.	7	1.002	0.5328	1.0036	1.0061	0.9901	0.0	0.0	0.280	-5.56	51.1	1.006	1.006
142.	8	1.002	0.5328	1.0037	1.0062	0.9898	0.0	0.0	0.280	-5.57	51.1	1.006	1.006
152.	9	1.001	0.5330	1.0011	1.0038	0.9888	0.0	0.0	0.281	-5.54	51.0	1.006	1.006
162.	10	1.001	0.5333	1.0002	1.0031	0.9880	0.0	0.0	0.281	-5.53	51.0	1.006	1.006
172.	11	1.002	0.5335	1.0007	1.0038	0.9873	0.0	0.0	0.281	-5.53	51.0	1.006	1.006
182.	12	1.002	0.5338	0.9990	1.0023	0.9861	0.0	0.0	0.281	-5.53	51.0	1.006	1.006
192.	13	1.001	0.5338	0.9971	1.0003	0.9853	0.0	0.0	0.282	-5.50	51.0	1.005	1.005
202.	14	1.000	0.5333	0.9953	0.9981	0.9857	0.0	0.0	0.283	-5.44	50.9	1.004	1.004
212.	15	0.999	0.5322	0.9937	0.9958	0.9877	0.0	0.0	0.285	-5.35	50.9	1.002	1.002
222.	16	0.999	0.5308	0.9920	0.9931	0.9911	0.0	0.0	0.286	-5.27	50.8	1.001	1.001
232.	17	0.998	0.5292	0.9927	0.9927	0.9957	0.0	0.0	0.288	-5.17	50.7	0.999	0.999
242.	18	0.998	0.5280	0.9934	0.9925	1.0001	0.0	0.0	0.289	-5.10	50.6	0.998	0.998
252.	19	0.998	0.5270	0.9947	0.9932	1.0037	0.0	0.0	0.290	-5.02	50.5	0.996	0.996
262.	20	0.998	0.5264	0.9955	0.9935	1.0062	0.0	0.0	0.291	-4.95	50.4	0.995	0.995
272.	21	0.998	0.5262	0.9951	0.9929	1.0076	0.0	0.0	0.292	-4.92	50.4	0.994	0.994
282.	22	0.998	0.5258	0.9956	0.9932	1.0087	0.0	0.0	0.293	-4.87	50.4	0.993	0.993
292.	23	0.998	0.5257	0.9952	0.9927	1.0093	0.0	0.0	0.293	-4.86	50.4	0.993	0.993
302.	24	0.998	0.5255	0.9953	0.9927	1.0099	0.0	0.0	0.293	-4.83	50.3	0.993	0.993
312.	25	0.998	0.5255	0.9958	0.9931	1.0104	0.0	0.0	0.293	-4.83	50.3	0.993	0.993
322.	26	0.998	0.5254	0.9965	0.9938	1.0109	0.0	0.0	0.293	-4.83	50.3	0.993	0.993
332.	27	0.998	0.5253	0.9978	0.9950	1.0115	0.0	0.0	0.293	-4.85	50.3	0.993	0.993
342.	28	0.998	0.5252	0.9991	0.9962	1.0121	0.0	0.0	0.292	-4.87	50.4	0.993	0.993
352.	29	0.999	0.5250	0.9999	0.9969	1.0128	0.0	0.0	0.292	-4.90	50.4	0.994	0.994
2.	30	0.999	0.5249	1.0017	0.9986	1.0136	0.0	0.0	0.291	-4.93	50.4	0.995	0.995
12.	31	0.999	0.5251	1.0035	1.0005	1.0140	0.0	0.0	0.290	-5.00	50.5	0.996	0.996
22.	32	1.000	0.5256	1.0054	1.0027	1.0135	0.0	0.0	0.289	-5.06	50.6	0.997	0.997
32.	33	1.001	0.5266	1.0074	1.0054	1.0117	0.0	0.0	0.287	-5.16	50.7	0.999	0.999
42.	34	1.002	0.5279	1.0082	1.0073	1.0084	0.0	0.0	0.285	-5.27	50.8	1.001	1.001
52.	35	1.002	0.5293	1.0079	1.0079	1.0042	0.0	0.0	0.283	-5.35	50.8	1.002	1.002
62.	36	1.002	0.5305	1.0072	1.0081	1.0000	0.0	0.0	0.282	-5.41	50.9	1.004	1.004

STAGE 15
ROTOR

FLOW SWIRL= 64.26DEG PARTICLE SWIRL=149.86DEG PSAVG= 66.82PSIA = 460702.PA
PTAVG= 75.75PSIA = 522248.PA TTAVG=1161.0DEG R = 645.0DEG K VELAVG= 701.1FPS =213.7MPS
RVELAVG=1005.0FPS = 306.3MPS AXVELAVG= 646.7FPS =197.1MPS U=1040.FPS = 317.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
74.	1	1.005	0.4342	1.0055	1.0072	0.9966	0.0	0.0	0.235	-6.34	40.2	1.005	1.001
84.	2	1.005	0.4349	1.0045	1.0066	0.9940	0.0	0.0	0.235	-6.36	40.3	1.005	1.001
94.	3	1.006	0.4354	1.0036	1.0060	0.9924	0.0	0.0	0.235	-6.37	40.3	1.006	1.001
104.	4	1.006	0.4357	1.0039	1.0064	0.9916	0.0	0.0	0.235	-6.38	40.3	1.006	1.001
114.	5	1.006	0.4358	1.0040	1.0067	0.9910	0.0	0.0	0.235	-6.38	40.3	1.006	1.001
124.	6	1.006	0.4360	1.0035	1.0063	0.9904	0.0	0.0	0.235	-6.38	40.3	1.006	1.001
134.	7	1.006	0.4361	1.0035	1.0064	0.9901	0.0	0.0	0.235	-6.39	40.3	1.006	1.001
144.	8	1.006	0.4363	1.0036	1.0065	0.9898	0.0	0.0	0.235	-6.40	40.3	1.006	1.001
154.	9	1.006	0.4362	1.0012	1.0041	0.9888	0.0	0.0	0.236	-6.37	40.3	1.006	1.001
164.	10	1.005	0.4362	1.0004	1.0033	0.9880	0.0	0.0	0.236	-6.36	40.3	1.005	1.001
174.	11	1.005	0.4364	1.0010	1.0040	0.9873	0.0	0.0	0.236	-6.36	40.3	1.005	1.001
184.	12	1.005	0.4366	0.9995	1.0026	0.9861	0.0	0.0	0.237	-6.35	40.3	1.005	1.001
194.	13	1.005	0.4365	0.9976	1.0007	0.9853	0.0	0.0	0.238	-6.33	40.2	1.005	1.001
204.	14	1.003	0.4358	0.9959	0.9986	0.9857	0.0	0.0	0.240	-6.28	40.2	1.003	1.001
214.	15	1.002	0.4346	0.9944	0.9964	0.9877	0.0	0.0	0.243	-6.21	40.1	1.002	1.000
224.	16	1.000	0.4332	0.9926	0.9937	0.9911	0.0	0.0	0.245	-6.16	40.1	1.000	1.000
234.	17	0.998	0.4314	0.9932	0.9933	0.9957	0.0	0.0	0.248	-6.09	40.0	0.998	1.000
244.	18	0.997	0.4300	0.9937	0.9929	1.0001	0.0	0.0	0.249	-6.05	39.9	0.997	0.999
254.	19	0.996	0.4286	0.9949	0.9934	1.0037	0.0	0.0	0.250	-5.99	39.9	0.996	0.999
264.	20	0.995	0.4275	0.9957	0.9935	1.0062	0.0	0.0	0.251	-5.95	39.8	0.995	0.999
274.	21	0.994	0.4270	0.9953	0.9928	1.0076	0.0	0.0	0.251	-5.93	39.8	0.994	0.999
284.	22	0.993	0.4264	0.9958	0.9930	1.0087	0.0	0.0	0.252	-5.90	39.8	0.993	0.999
294.	23	0.993	0.4262	0.9954	0.9925	1.0093	0.0	0.0	0.252	-5.89	39.8	0.993	0.999
304.	24	0.993	0.4258	0.9955	0.9924	1.0099	0.0	0.0	0.253	-5.87	39.8	0.993	[illegible]
314.	25	0.993	0.4257	0.9959	0.9928	1.0104	0.0	0.0	0.252	-5.87	39.8	0.993	0.998
324.	26	0.993	0.4257	0.9966	0.9934	1.0109	0.0	0.0	0.252	-5.87	39.8	0.993	0.998
334.	27	0.993	0.4257	0.9979	0.9946	1.0115	0.0	0.0	0.252	-5.88	39.8	0.993	0.999
344.	28	0.994	0.4258	0.9990	0.9958	1.0121	0.0	0.0	0.251	-5.90	39.8	0.994	0.999
354.	29	0.994	0.4259	0.9997	0.9966	1.0128	0.0	0.0	0.250	-5.93	39.8	0.994	0.999
4.	30	0.995	0.4261	1.0013	0.9982	1.0136	0.0	0.0	0.249	-5.96	39.9	0.995	0.999
14.	31	0.996	0.4266	1.0029	1.0002	1.0140	0.0	0.0	0.246	-6.01	39.9	0.996	0.999
24.	32	0.998	0.4273	1.0047	1.0023	1.0135	0.0	0.0	0.244	-6.06	40.0	0.998	1.000
34.	33	0.999	0.4285	1.0066	1.0050	1.0117	0.0	0.0	0.241	-6.13	40.0	0.999	1.000
44.	34	1.001	0.4301	1.0075	1.0067	1.0084	0.0	0.0	0.238	-6.21	40.1	1.001	1.000
54.	35	1.003	0.4316	1.0073	1.0074	1.0042	0.0	0.0	0.236	-6.26	40.2	1.003	1.001
64.	36	1.004	0.4330	1.0068	1.0078	1.0000	0.0	0.0	0.235	-6.30	40.2	1.004	1.001

STATOR

FLOW SWIRL= 64.37DEG PARTICLE SWIRL=153.46DEG PSAVG= 72.54PSIA = 500152.PA
PTAVG= 84.89PSIA = 585316.PA TTAVG=1206.7DEG R = 670.4DEG K VELAVG= 798.8FPS =243.5MPS
RVELAVG= 853.9FPS = 260.3MPS AXVELAVG= 640.2FPS =195.1MPS U=1043.FPS = 318.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
74.	1	1.003	0.4865	1.0037	1.0050	0.9973	0.0	0.0	0.251	-6.12	53.7	1.008	1.008
84.	2	1.002	0.4869	1.0032	1.0048	0.9946	0.0	0.0	0.251	-6.11	53.7	1.007	1.007
94.	3	1.002	0.4872	1.0024	1.0042	0.9927	0.0	0.0	0.251	-6.10	53.7	1.007	1.007
104.	4	1.002	0.4874	1.0027	1.0047	0.9918	0.0	0.0	0.251	-6.10	53.7	1.007	1.007
114.	5	1.002	0.4875	1.0029	1.0049	0.9911	0.0	0.0	0.251	-6.10	53.7	1.007	1.007
124.	6	1.002	0.4876	1.0025	1.0046	0.9905	0.0	0.0	0.251	-6.10	53.7	1.007	1.007
134.	7	1.002	0.4877	1.0025	1.0047	0.9902	0.0	0.0	0.251	-6.11	53.7	1.007	1.007
144.	8	1.002	0.4878	1.0025	1.0047	0.9899	0.0	0.0	0.251	-6.12	53.7	1.008	1.008
154.	9	1.001	0.4878	1.0007	1.0029	0.9890	0.0	0.0	0.252	-6.06	53.7	1.007	1.007
164.	10	1.001	0.4880	1.0002	1.0025	0.9883	0.0	0.0	0.252	-6.03	53.6	1.006	1.006
174.	11	1.002	0.4882	1.0006	1.0033	0.9877	0.0	0.0	0.252	-6.04	53.6	1.006	1.006
184.	12	1.001	0.4884	0.9994	1.0021	0.9866	0.0	0.0	0.252	-6.02	53.6	1.006	1.006
194.	13	1.001	0.4884	0.9981	1.0007	0.9858	0.0	0.0	0.254	-5.95	53.5	1.005	1.005
204.	14	1.000	0.4878	0.9971	0.9994	0.9859	0.0	0.0	0.256	-5.81	53.4	1.002	1.002
214.	15	0.999	0.4869	0.9962	0.9978	0.9874	0.0	0.0	0.259	-5.65	53.3	1.000	1.000
224.	16	0.998	0.4859	0.9943	0.9952	0.9902	0.0	0.0	0.261	-5.54	53.1	0.998	0.998
234.	17	0.997	0.4844	0.9951	0.9951	0.9946	0.0	0.0	0.264	-5.40	53.0	0.996	0.996
244.	18	0.997	0.4834	0.9951	0.9945	0.9989	0.0	0.0	0.265	-5.35	52.9	0.995	0.995
254.	19	0.997	0.4824	0.9965	0.9952	1.0028	0.0	0.0	0.266	-5.27	52.9	0.993	0.993
264.	20	0.997	0.4818	0.9973	0.9956	1.0056	0.0	0.0	0.267	-5.21	52.8	0.992	0.992
274.	21	0.998	0.4816	0.9966	0.9947	1.0072	0.0	0.0	0.267	-5.22	52.8	0.992	0.992
284.	22	0.998	0.4812	0.9973	0.9952	1.0085	0.0	0.0	0.268	-5.16	52.8	0.992	0.992
294.	23	0.998	0.4812	0.9967	0.9946	1.0092	0.0	0.0	0.268	-5.16	52.8	0.992	0.992
304.	24	0.998	0.4809	0.9971	0.9948	1.0098	0.0	0.0	0.269	-5.12	52.7	0.991	0.991
314.	25	0.998	0.4809	0.9972	0.9949	1.0104	0.0	0.0	0.268	-5.14	52.7	0.991	0.991
324.	26	0.998	0.4809	0.9978	0.9954	1.0109	0.0	0.0	0.268	-5.15	52.8	0.991	0.991
334.	27	0.998	0.4808	0.9988	0.9964	1.0114	0.0	0.0	0.267	-5.18	52.8	0.992	0.992
344.	28	0.998	0.4808	0.9995	0.9971	1.0119	0.0	0.0	0.267	-5.23	52.8	0.993	0.993
354.	29	0.999	0.4808	0.9998	0.9974	1.0124	0.0	0.0	0.266	-5.28	52.9	0.994	0.994
4.	30	0.999	0.4807	1.0010	0.9986	1.0132	0.0	0.0	0.264	-5.35	52.9	0.995	0.995
14.	31	1.000	0.4810	1.0019	0.9996	1.0136	0.0	0.0	0.262	-5.47	53.1	0.997	0.997
24.	32	1.000	0.4814	1.0033	1.0012	1.0134	0.0	0.0	0.260	-5.59	53.2	0.999	0.999
34.	33	1.001	0.4822	1.0047	1.0032	1.0120	0.0	0.0	0.257	-5.76	53.4	1.001	1.001
44.	34	1.002	0.4834	1.0051	1.0043	1.0090	0.0	0.0	0.254	-5.93	53.5	1.004	1.004
54.	35	1.003	0.4846	1.0052	1.0052	1.0051	0.0	0.0	0.252	-6.02	53.6	1.006	1.006
64.	36	1.003	0.4856	1.0049	1.0056	1.0010	0.0	0.0	0.251	-6.08	53.7	1.007	1.007

STAGE 16
ROTOR

FLOW SWIRL= 66.69DEG PARTICLE SWIRL=155.78DEG PSAVG= 75.20PSIA = 518493.PA
PTAVG= 84.12PSIA = 580006.PA TTAVG=1206.7DEG R = 670.4DEG K VELAVG= 676.5FPS =206.2MPS
RVELAVG=1047.1FPS = 319.1MPS AXVELAVG= 640.8FPS =195.3MPS U=1045.FPS = 319.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
77.	1	1.008	0.4117	1.0030	1.0051	0.9973	0.0	0.0	0.259	-5.82	38.0	1.008	1.002
87.	2	1.008	0.4122	1.0025	1.0049	0.9946	0.0	0.0	0.260	-5.81	38.0	1.008	1.002
97.	3	1.008	0.4125	1.0018	1.0044	0.9927	0.0	0.0	0.261	-5.81	38.0	1.008	1.002
107.	4	1.008	0.4127	1.0021	1.0048	0.9918	0.0	0.0	0.261	-5.81	38.0	1.008	1.002
117.	5	1.008	0.4129	1.0023	1.0051	0.9911	0.0	0.0	0.261	-5.81	38.0	1.008	1.002
127.	6	1.008	0.4130	1.0016	1.0047	0.9905	0.0	0.0	0.261	-5.81	38.0	1.008	1.002
137.	7	1.008	0.4131	1.0019	1.0048	0.9902	0.0	0.0	0.261	-5.81	38.0	1.008	1.002
147.	8	1.008	0.4133	1.0018	1.0048	0.9899	0.0	0.0	0.261	-5.82	38.0	1.008	1.002
157.	9	1.007	0.4130	1.0001	1.0030	0.9890	0.0	0.0	0.263	-5.78	38.0	1.007	1.002
167.	10	1.007	0.4129	0.9997	1.0025	0.9883	0.0	0.0	0.263	-5.76	38.0	1.007	1.001
177.	11	1.007	0.4130	1.0003	1.0032	0.9877	0.0	0.0	0.263	-5.77	38.0	1.007	1.001
187.	12	1.006	0.4132	0.9989	1.0019	0.9866	0.0	0.0	0.263	-5.76	38.0	1.006	1.001
197.	13	1.005	0.4128	0.9977	1.0005	0.9858	0.0	0.0	0.265	-5.71	37.9	1.005	1.001
207.	14	1.003	0.4117	0.9970	0.9992	0.9859	0.0	0.0	0.269	-5.62	37.8	1.003	1.001
217.	15	1.000	0.4101	0.9963	0.9976	0.9874	0.0	0.0	0.274	-5.52	37.7	1.000	1.000
227.	16	0.998	0.4087	0.9945	0.9951	0.9902	0.0	0.0	0.277	-5.45	37.6	0.998	0.999
237.	17	0.995	0.4068	0.9956	0.9950	0.9946	0.0	0.0	0.280	-5.36	37.6	0.995	0.999
247.	18	0.994	0.4055	0.9957	0.9944	0.9989	0.0	0.0	0.280	-5.33	37.5	0.994	0.999
257.	19	0.993	0.4042	0.9971	0.9952	1.0028	0.0	0.0	0.281	-5.28	37.5	0.993	0.999
267.	20	0.992	0.4032	0.9980	0.9955	1.0056	0.0	0.0	0.282	-5.25	37.4	0.992	0.998
277.	21	0.992	0.4029	0.9973	0.9946	1.0072	0.0	0.0	0.281	-5.25	37.4	0.992	0.998
287.	22	0.991	0.4022	0.9981	0.9951	1.0085	0.0	0.0	0.282	-5.21	37.4	0.991	0.998
297.	23	0.991	0.4021	0.9975	0.9944	1.0092	0.0	0.0	0.282	-5.21	37.4	0.991	0.998
307.	24	0.990	0.4017	0.9979	0.9946	1.0098	0.0	0.0	0.283	-5.19	37.4	0.990	0.998
317.	25	0.991	0.4016	0.9979	0.9946	1.0104	0.0	0.0	0.282	-5.20	37.4	0.991	0.998
327.	26	0.991	0.4017	0.9985	0.9952	1.0109	0.0	0.0	0.281	-5.21	37.4	0.991	0.998
337.	27	0.991	0.4019	0.9995	0.9962	1.0114	0.0	0.0	0.281	-5.23	37.4	0.991	0.998
347.	28	0.992	0.4021	1.0002	0.9970	1.0119	0.0	0.0	0.279	-5.26	37.5	0.992	0.998
357.	29	0.993	0.4024	1.0004	0.9974	1.0124	0.0	0.0	0.278	-5.29	37.5	0.993	0.999
7.	30	0.994	0.4027	1.0015	0.9987	1.0132	0.0	0.0	0.277	-5.33	37.5	0.994	0.999
17.	31	0.997	0.4036	1.0022	0.9998	1.0136	0.0	0.0	0.273	-5.41	37.6	0.997	0.999
27.	32	0.999	0.4046	1.0033	1.0015	1.0134	0.0	0.0	0.270	-5.49	37.7	0.999	1.000
37.	33	1.002	0.4061	1.0045	1.0035	1.0120	0.0	0.0	0.266	-5.59	37.8	1.002	1.000
47.	34	1.005	0.4079	1.0046	1.0046	1.0090	0.0	0.0	0.262	-5.70	37.9	1.005	1.001
57.	35	1.006	0.4094	1.0046	1.0054	1.0051	0.0	0.0	0.260	-5.76	38.0	1.006	1.001
67.	36	1.007	0.4107	1.0042	1.0056	1.0010	0.0	0.0	0.259	-5.79	38.0	1.007	1.002

STATOR

FLOW SWIRL= 66.68DEG PARTICLE SWIRL=160.04DEG PSAVG= 79.72PSIA = 549632.PA
PTAVG= 92.12PSIA = 635136.PA TTAVG=1252.2DEG R = 695.6DEG K VELAVG= 781.0FPS =238.0MPS
RVELAVG= 876.4FPS = 267.1MPS AXVELAVG= 639.9FPS =195.0MPS U=1047.FPS = 319.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
77.	1	1.004	0.4669	1.0010	1.0024	0.9981	0.0	0.0	0.321	-12.81	55.7	1.011	1.011
87.	2	1.003	0.4671	1.0014	1.0030	0.9953	0.0	0.0	0.323	-12.73	55.6	1.010	1.010
97.	3	1.003	0.4674	1.0008	1.0026	0.9932	0.0	0.0	0.324	-12.70	55.6	1.009	1.009
107.	4	1.002	0.4676	1.0011	1.0030	0.9920	0.0	0.0	0.324	-12.69	55.6	1.009	1.009
117.	5	1.002	0.4677	1.0013	1.0033	0.9912	0.0	0.0	0.324	-12.66	55.6	1.009	1.009
127.	6	1.002	0.4678	1.0010	1.0030	0.9905	0.0	0.0	0.324	-12.67	55.6	1.009	1.009
137.	7	1.002	0.4679	1.0009	1.0031	0.9901	0.0	0.0	0.324	-12.67	55.6	1.009	1.009
147.	8	1.002	0.4681	1.0007	1.0029	0.9898	0.0	0.0	0.324	-12.70	55.6	1.009	1.009
157.	9	1.002	0.4678	1.0001	1.0021	0.9892	0.0	0.0	0.326	-12.58	55.5	1.007	1.007
167.	10	1.002	0.4679	0.9996	1.0018	0.9886	0.0	0.0	0.326	-12.55	55.5	1.007	1.007
177.	11	1.002	0.4683	0.9998	1.0022	0.9881	0.0	0.0	0.326	-12.59	55.5	1.007	1.007
187.	12	1.002	0.4684	0.9988	1.0013	0.9870	0.0	0.0	0.326	-12.56	55.5	1.007	1.007
197.	13	1.001	0.4681	0.9985	1.0008	0.9863	0.0	0.0	0.328	-12.42	55.3	1.005	1.005
207.	14	0.999	0.4674	0.9989	1.0007	0.9863	0.0	0.0	0.332	-12.19	55.1	1.001	1.001
217.	15	0.996	0.4664	0.9989	1.0001	0.9875	0.0	0.0	0.335	-11.94	54.8	0.997	0.997
227.	16	0.997	0.4655	0.9970	0.9976	0.9896	0.0	0.0	0.338	-11.77	54.7	0.995	0.995
237.	17	0.996	0.4641	0.9983	0.9980	0.9936	0.0	0.0	0.340	-11.58	54.5	0.992	0.992
247.	18	0.996	0.4633	0.9975	0.9967	0.9977	0.0	0.0	0.340	-11.56	54.5	0.991	0.991
257.	19	0.996	0.4623	0.9990	0.9976	1.0018	0.0	0.0	0.341	-11.49	54.4	0.990	0.990
267.	20	0.996	0.4617	0.9997	0.9979	1.0050	0.0	0.0	0.341	-11.45	54.4	0.989	0.989
277.	21	0.997	0.4617	0.9984	0.9965	1.0067	0.0	0.0	0.340	-11.50	54.4	0.990	0.990
287.	22	0.997	0.4611	0.9998	0.9976	1.0084	0.0	0.0	0.341	-11.43	54.3	0.989	0.989
297.	23	0.997	0.4612	0.9987	0.9965	1.0091	0.0	0.0	0.341	-11.46	54.4	0.990	0.990
307.	24	0.997	0.4608	0.9995	0.9971	1.0100	0.0	0.0	0.341	-11.40	54.3	0.989	0.989
317.	25	0.998	0.4610	0.9989	0.9966	1.0104	0.0	0.0	0.340	-11.46	54.4	0.990	0.990
327.	26	0.998	0.4609	0.9995	0.9972	1.0110	0.0	0.0	0.340	-11.48	54.4	0.990	0.990
337.	27	0.998	0.4609	1.0001	0.9978	1.0114	0.0	0.0	0.339	-11.52	54.4	0.991	0.991
347.	28	0.998	0.4610	1.0004	0.9982	1.0118	0.0	0.0	0.338	-11.60	54.5	0.992	0.992
357.	29	0.999	0.4611	1.0003	0.9981	1.0122	0.0	0.0	0.337	-11.67	54.6	0.993	0.993
7.	30	0.999	0.4611	1.0011	0.9989	1.0128	0.0	0.0	0.336	-11.75	54.7	0.994	0.994
17.	31	1.000	0.4616	1.0007	0.9988	1.0131	0.0	0.0	0.333	-11.95	54.8	0.997	0.997
27.	32	1.001	0.4620	1.0015	0.9998	1.0130	0.0	0.0	0.331	-12.12	55.0	1.000	1.000
37.	33	1.002	0.4630	1.0018	1.0007	1.0119	0.0	0.0	0.327	-12.38	55.3	1.004	1.004
47.	34	1.004	0.4643	1.0013	1.0010	1.0093	0.0	0.0	0.323	-12.64	55.5	1.008	1.006
57.	35	1.004	0.4651	1.0019	1.0022	1.0059	0.0	0.0	0.322	-12.73	55.6	1.010	1.010
67.	36	1.004	0.4661	1.0020	1.0029	1.0020	0.0	0.0	0.322	-12.78	55.7	1.011	1.011

EXIT

FLOW SWIRL= 68.50DEG PARTICLE SWIRL=161.86DEG PSAVG= 86.90PSIA = 599132.PA
PTAVG= 95.00PSIA = 655012.PA TTAVG=1252.2DEG R = 695.6DEG K VELAVG= 615.5FPS =187.6MPS
RVELAVG= 0.0FPS = 0.0MPS AXVELAVG= 0.0FPS = 0.0MPS U=1047.FPS = 319.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEG	DF	INCIDENCE IN DEG	IN DEG	AXIAL VEL	REL VEL
78.	1	1.012	0.3684	0.9995	1.0019	0.9981	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88.	2	1.011	0.3683	1.0004	1.0027	0.9953	0.0	0.0	0.0	0.0	0.0	0.0	0.0
98.	3	1.010	0.3683	1.0001	1.0025	0.9932	0.0	0.0	0.0	0.0	0.0	0.0	0.0
108.	4	1.010	0.3685	1.0005	1.0030	0.9920	0.0	0.0	0.0	0.0	0.0	0.0	0.0
118.	5	1.009	0.3685	1.0009	1.0034	0.9912	0.0	0.0	0.0	0.0	0.0	0.0	0.0
128.	6	1.009	0.3685	1.0006	1.0031	0.9905	0.0	0.0	0.0	0.0	0.0	0.0	0.0
138.	7	1.009	0.3686	1.0006	1.0032	0.9901	0.0	0.0	0.0	0.0	0.0	0.0	0.0
148.	8	1.010	0.3689	1.0004	1.0030	0.9896	0.0	0.0	0.0	0.0	0.0	0.0	0.0
158.	9	1.007	0.3681	1.0001	1.0024	0.9892	0.0	0.0	0.0	0.0	0.0	0.0	0.0
168.	10	1.007	0.3680	0.9998	1.0021	0.9886	0.0	0.0	0.0	0.0	0.0	0.0	0.0
178.	11	1.007	0.3683	1.0000	1.0024	0.9881	0.0	0.0	0.0	0.0	0.0	0.0	0.0
188.	12	1.007	0.3682	0.9992	1.0016	0.9870	0.0	0.0	0.0	0.0	0.0	0.0	0.0
198.	13	1.004	0.3674	0.9993	1.0013	0.9863	0.0	0.0	0.0	0.0	0.0	0.0	0.0
206.	14	1.000	0.3658	1.0003	1.0015	0.9863	0.0	0.0	0.0	0.0	0.0	0.0	0.0
218.	15	0.995	0.3640	1.0008	1.0011	0.9875	0.0	0.0	0.0	0.0	0.0	0.0	0.0
228.	16	0.993	0.3626	0.9990	0.9986	0.9896	0.0	0.0	0.0	0.0	0.0	0.0	0.0
238.	17	0.990	0.3607	1.0003	0.9989	0.9936	0.0	0.0	0.0	0.0	0.0	0.0	0.0
248.	18	0.990	0.3600	0.9991	0.9974	0.9977	0.0	0.0	0.0	0.0	0.0	0.0	0.0
258.	19	0.989	0.3590	1.0002	0.9961	1.0018	0.0	0.0	0.0	0.0	0.0	0.0	0.0
268.	20	0.989	0.3583	1.0007	0.9982	1.0050	0.0	0.0	0.0	0.0	0.0	0.0	0.0
278.	21	0.990	0.3584	0.9991	0.9966	1.0067	0.0	0.0	0.0	0.0	0.0	0.0	0.0
288.	22	0.988	0.3577	1.0004	0.9976	1.0084	0.0	0.0	0.0	0.0	0.0	0.0	0.0
298.	23	0.989	0.3578	0.9992	0.9965	1.0091	0.0	0.0	0.0	0.0	0.0	0.0	0.0
308.	24	0.988	0.3573	1.0001	0.9970	1.0100	0.0	0.0	0.0	0.0	0.0	0.0	0.0
318.	25	0.989	0.3576	0.9993	0.9964	1.0104	0.0	0.0	0.0	0.0	0.0	0.0	0.0
328.	26	0.990	0.3576	0.9998	0.9969	1.0110	0.0	0.0	0.0	0.0	0.0	0.0	0.0
338.	27	0.990	0.3579	1.0003	0.9975	1.0114	0.0	0.0	0.0	0.0	0.0	0.0	0.0
348.	28	0.992	0.3583	1.0004	0.9978	1.0118	0.0	0.0	0.0	0.0	0.0	0.0	0.0
358.	29	0.993	0.3587	1.0001	0.9978	1.0122	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8.	30	0.995	0.3592	1.0006	0.9985	1.0128	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18.	31	0.998	0.3605	0.9998	0.9983	1.0131	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28.	32	1.001	0.3616	1.0001	0.9992	1.0130	0.0	0.0	0.0	0.0	0.0	0.0	0.0
38.	33	1.006	0.3635	0.9999	0.9999	1.0119	0.0	0.0	0.0	0.0	0.0	0.0	0.0
48.	34	1.010	0.3656	0.9990	1.0000	1.0093	0.0	0.0	0.0	0.0	0.0	0.0	0.0
58.	35	1.012	0.3667	0.9996	1.0014	1.0059	0.0	0.0	0.0	0.0	0.0	0.0	0.0
68.	36	1.012	0.3677	1.0001	1.0022	1.0020	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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Penn State
Attn: Dr. Robert Henderson
Associate Prof. of Engr. Research
Ordinance Research Laboratory
P. O. Box 30
State College, PA 16801

The Ohio State University
Attn: Prof. John D. Lee
Dept. of Aeronautical & Astronautical Engr.
Neil Avenue
Columbus, OH 43210

Iowa State University
Attn: Dr. George Serovy
Department of Mechanical Engineering
Ames, IA 50010

Purdue University
Attn: Prof. Mel R. L'Ecuyer
School of Mechanical Engineering
Jet Propulsion Center
Lafayette, IN 47097

Attn:
Prof. S. N. B. Murthy

Pennsylvania State University
Department of Aerospace Engineering
Attn: Dr. N. Litaram
233 Hammond Bldg.
University Park, PA 16802

Daniel and Florence Guggenheim
Jet Propulsion Center
California Institute of Technology
Attn: Prof. W. D. Rannie
Pasadina, CA 91109