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TWO-STAGE FAN
II. DATA AND PERFORMANCE WITH REDESIGNED SECOND STAGE ROTOR UNIFORM AND DISTORTED INLET FLOWS

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16. Abstract

A two-stage fan with a first rotor tip speed of 1450 ft/sec (441.96 m/sec) and no inlet guide vanes was tested with uniform and distorted inlet flows. The test was conducted with a redesigned second rotor having a part span shroud to prevent flutter, with variable-stagger stators set in nominal positions, and without rotor casing treatment.

At design speed the fan achieved a pressure ratio of 2.8 at a corrected flow of 185.4 lbm/sec (84.0 kg/sec), an adiabatic efficiency of 85.0 percent, and a stall margin of 12 percent. The redesigned second rotor did not flutter.

Tip radial distortion reduced the stall margin at intermediate speed, but had little effect on stall margin at high or low speeds. Hub radial distortion reduced the stall margin at design speed but increased stall margin at low speed. Circumferential distortion reduced stall pressure ratio and flow to give approximately the same stall line as with uniform inlet flow. Distortions were attenuated by the fan.

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FOREWORD

This report was prepared for the National Aeronautics and Space Administration, Lewis Research Center, under Contract NAS3-13494 to present data and performance of a two-stage fan tested with a redesigned second stage rotor, resettable stators in their nominal positions, and without tip casing treatments, and to describe aerodynamic and mechanical details of the rotor redesign. Mr. R. S. Ruggeri was the NASA Project Manager for this effort, and Mr. H. V. Marman the Pratt & Whitney Aircraft Program Manager. This report was prepared by H. E. Messenger and M. J. Keenan, with contributions from B. Gray, T. Hodges, G. Burger, A. Merrow, J. Ruschak, A. Finke and other Pratt & Whitney Aircraft personnel.

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TWO-STAGE FAN
II. DATA AND PERFORMANCE WITH REDESIGNED SECOND STAGE ROTOR UNIFORM AND DISTORTED INLET FLOWS

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SUMMARY

Tests were conducted on a highly-loaded, two-stage fan with a 1st-stage rotor tip-speed of 1450 ft/sec [422 m/sec]. The purpose of the tests was to determine detailed aerodynamic performance of the basic configuration (i.e., with nominal stator settings and without tip-casing treatment) both with uniform and with distorted inlet flow. Good aerodynamic performance had been documented during earlier tests, but flutter encountered with the 2nd-stage rotor blades curtailed testing and led to a redesign of this rotor. A partspan shroud was added at 60 percent span from the hub of the new 2nd-stage rotor which, together with other minor geometric changes, eliminated flutter in the fan operating range. The redesigned 2nd-stage rotor also incorporated a radially skewed (negatively sloped) exit total pressure profile to increase hub velocity, thereby reducing critical loadings to increase stall margin.

With uniform inlet flow at design speed and pressure ratio, the fan with the redesigned rotor achieved an adiabatic efficiency of 85.0% which is 1.3% above the redesign value and 0.7% below the value attained in tests with the unshrouded rotor 2. A fan flow of 185.4 lbm/sec [84.0 kg/sec] was achieved which is 0.7% above the design value of 184.2 lbm/sec [83.5 kg/sec]. Fan stall margin was approximately 12% based on operation at design pressure ratio, about 2% higher than in the earlier tests. Peak fan efficiencies over the operating range from 50 to 100 percent speed were above 83%; efficiencies at overspeed decreased to a peak value of 79.2% at 110 percent of design speed.

Hub and tip radial distortions, each covering approximately 40 percent of the inlet annulus area and having distortion parameters, $(P_{max.} - P_{min.})/P_{max.}$, of 0.14 at design speed, caused small changes in fan efficiency relative to uniform inlet flow but more significant changes in fan stall margin. Relative to a constant throttle operating line through the design point, the tip-radial distortion reduced fan stall margin to 7% at 85 percent of design speed but had little effect on the stall line at 70 and 100 percent speeds. The hub-radial distortion caused reductions in fan maximum flow of 1% to 3% and reduced stall margin at design speed to 6%, half the value obtained with uniform inlet flow. A gain in stall margin of seven percentage points was noted at 70 percent speed. At design speed, fan attenuation of tip-radial distortion was nearly complete; hub-radial distortion was slightly overattenuated. Circumferential distortion covered approximately a 90-degree segment at the fan inlet with a peak distortion parameter of 0.14 at design speed. Stall occurred at a lower pressure ratio with this distortion than with uniform inlet flow but at a lower flow so that the stall line was essentially unchanged. The fan significantly attenuated this distortion except at the hub.

INTRODUCTION

Fans and compressors for advanced aircraft engines must have light weight, high efficiency, adequate stall margin, and tolerance to inlet flow distortions. For advanced aircraft which fly mixed supersonic-subsonic missions, turbofan engines having low bypass ratios and high fan pressure ratios are required. Inasmuch as multistage fans are required, the use of high tip speeds and high blade loadings permits reductions in the number of fan stages.

NASA has conducted an extensive in-house and contractual research program on high-speed, highly-loaded fan stages. Fan stages with tip speeds from 800 to 1800 ft/sec[244 to 549 m/sec] and design pressure ratios from 1.15 to 2.28 have been tested (ref. 1 to 8). This research program has proven that high-speed, highly-loaded stages can give good performance. Based on these results, a two-stage, highly-loaded, high-speed fan has been designed, fabricated, and tested. The objectives of the two-stage-fan program are to evaluate the stage matching problems, distortion tolerance, response to stator adjustment, and effectiveness of casing treatment for such a fan. Design tip speed for the two-stage fan is 1450 ft/sec [442 m/sec], design pressure ratio is 2.8, tip diameter is 31 in. [0.787 m], design corrected flow is 184.2 lbm/sec [83.55 kg/sec], and inlet hub-tip ratio is 0.4. Details of the aerodynamic and mechanical design were presented in an earlier report (ref. 9).

Good aerodynamic performance was demonstrated during the first test of this two-stage fan. At design speed and pressure ratio, the measured flow closely matched the design value. Efficiency at this design operating point was 85.7% and stall margin was 10%. Measured rotor losses were about equal to design values, but stator losses were less than design values. This first test effort was curtailed due to flutter on the 2nd-stage rotor blades and cracking of stator vane root leading edges. First bending, subsonic stall flutter was encountered near the stall limit at speeds between 77 and 93 percent of the design value. Supersonic stall flutter was encountered at speeds above 105 percent of design. Failure of one 1st-stage stator vane root leading edge section was attributed to a locally thin section, and failure of one 2nd-stage stator vane root leading edge was attributed to a stress concentration resulting from a brazed-on leading edge sensor. The results of the first test were reported by Ruggeri and Benser of NASA (ref 10).

Because of the problems encountered during the first test effort, the 2nd-stage rotor was redesigned. A partspan shroud was added to the rotor blades to eliminate flutter. The 2nd-stage rotor was also redesigned to provide a radially skewed exit total pressure profile (i.e., higher total pressure at the hub than at the tip) to increase stall margin by raising hub exit velocities, thereby reducing aerodynamic loadings at the hub. The 2nd-stage stator was predicted to operate satisfactorily with this revised pressure ratio profile. Additional 1st-stage vanes were fabricated to insure that a sufficient number of vanes meeting design thickness specifications were available for the second test of the fan. Data obtained from the first test (i.e., before the redesign) showed that the stator-exit instrumentation provides the same information as the 2nd-stage stator leading edge sensors with good accuracy. Therefore, these 2nd-stage sensors were eliminated from the rebuild, avoiding the resulting stress concentrations.†

†Instrumentation was not installed on the leading edge of the 1st-stage stator vanes in either the first or second test of the fan.

Tests of this modified two-stage fan were run with uniform inlet flow at 50, 70, 85, 95, 100, 105, and 110 percent of design speed, and data were obtained between open throttle and stall at each speed except at 110 percent speed where the fan was not stalled. Overall and blade element performance data were obtained at 70, 85, and 100 percent of design speed with tip radially distorted and hub radially distorted inlet flows. Overall performance data with circumferentially distorted inlet flow were obtained at 70, 90, and 100 percent of design speed; 90 percent speed was used rather than 85 percent speed to avoid a 1st-stage rotor first-bending 4E resonance that had been encountered during shakedown testing with circumferentially distorted inlet flow. Measurements were made to determine overall performance and velocity distribution data at the fan inlet, first-stage exit, and fan exit.

This report presents the details of the aerodynamic and mechanical redesigns and the results of testing the two-stage fan with the redesigned 2nd-stage rotor. Special terms, abbreviations, and symbols used in this report are defined in Appendix A.

APPARATUS AND PROCEDURE

AERODYNAMIC DESIGN

A schematic of the two-stage fan test rig is shown in Figure 1. The fan was designed to provide a pressure ratio of 2.8 with a 1st-stage rotor tip speed of 1450 ft/sec [442 m/sec], an adiabatic efficiency of 83.9%, and a flow rate of 184.2 lbm/sec [83.54 kg/sec]. The fan was designed without inlet-guide-vanes (IGV) but with the provision for adding a variable-camber IGV at a later date. Both stators were designed to give axial exit flow. The hub-tip ratio was 0.4, and the specific flow at the 1st-stage rotor was set at 42.0 lbm/sec-ft^2 [205 kg/sec-m^2]. The average Mach number at the fan exit was approximately 0.5, a practical value for thrust augmentation. Flowpath convergence and wall curvature between inlet and exit were used to control velocity profiles and blade aerodynamic loadings (diffusion factors) near the walls. Design loadings were similar to those for which good single-stage performance had been obtained during earlier programs.

The 1st-stage rotor inlet tip-diameter was selected as 31 in. [0.787 m] to permit use of existing hardware and to allow adequate horsepower margin for the drive engine. With a required 1st-stage rotor tip-speed of 1450 ft/sec [442 m/sec], the design speed corrected to standard inlet conditions was 10,720 rpm. The inlet inner case diameter was held at 10 in. [0.254 m] minimum to permit clearance for the front bearing compartment.

As shown in the flowpath drawing presented in Figure 2, axial spacings between the rotor and stator of the first-stage and between the rotor and stator of the second-stage were held to a minimum which is in line with actual engine design practice. A spacing of slightly more than one inch [0.0254 meters] was allowed between stages to provide room for radial and tangential traverse instrumentation at the exit of the 1st-stage stator.

REDESIGN OF THE SECOND-STAGE ROTOR

The 2nd-stage rotor was redesigned to prevent the flutter that occurred in the operating regime of the fan during testing of the original configuration and to improve stall margin. Vector diagrams calculated for this redesign were checked to determine whether the existing designs of the 1st-stage rotor and stator and the 2nd-stage stator would operate satisfactorily with the redesigned rotor. It was found that satisfactory operating conditions would be obtained without modifying these blade rows. The geometry of the 2nd-stage rotor was selected and checked for structural integrity. Details of the redesign are given in the following sections.

Performance parameters at the design point for the original and redesigned fans are summarized in Table I. Photographs of the blades and vanes are shown in Figure 3.

TABLE I

DESIGN PERFORMANCE

corrected speed $N/\sqrt{\theta}$ = 10,720 rpm

corrected flow $W/\sqrt{\theta}/\delta$ = 184.2 lbm/sec [83.55 kg/sec]

	Pressure Ratio		Adiabatic Efficiency (%)	
	Local	Cumulative	Local	Cumulative
Rotor 1	1.787 (1.786)	1.787 (1.786)	89.4	89.4
Stator 1	0.977 (.976)	1.744 (1.742)	.....	85.4 (85.3)
Rotor 2	1.646 (1.655)	2.872 (2.884)	89.2 (89.9)	86.2 (86.5)
Stator 2	0.975 (.971)	2.80 (2.80)	.....	83.9 (83.7)

(Redesign Values in Parentheses)

The primary purpose of redesigning rotor 2, as previously stated, was to move the region of 1st bending-mode flutter out of the fan operating range. To accomplish this, a partspan shroud was added to the blade at 60 percent of span. The spanwise location of the shroud was selected to satisfy structural requirements and to minimize its loss by placing it in the wake generated by the 1st-stage rotor shroud. The efficiency profile calculated from interstage measurements in tests of the original configuration is shown in Figure 4.

A second objective of the redesign was to increase the stall range of the 2nd-stage stator and rotor by raising their exit hub velocities and thereby reducing their hub aerodynamic loading levels. To achieve these lower loadings, the 2nd-stage rotor was redesigned to provide a radially skewed exit total pressure profile (a total pressure approximately 12% higher at the hub than at the tip) while retaining the average fan overall pressure ratio of 2.80 (Figure 5).

Velocity Vectors

Except for small adjustments in position of the leading and trailing edges of the 2nd-stage rotor, the fan flowpath (Figure 2) was unchanged from the original design. The changes listed in Figure 2 resulted from changes in the axial locations of the blade edges at the hub and tip. Design losses for the 2nd-stage rotor were assumed to be unchanged since changes in Mach number and solidity were small.

Blockages were included in the aerodynamic design to account for boundary layer growth on the casing walls. Boundary layer displacement thickness at the inlet to the 1st-stage rotor was assumed to be equal to that measured downstream of inlet bellmouths used in PWA research programs. Growth of the wall displacement thickness through the blade rows was estimated using a correlation developed by W. T. Hanley (ref. 11) wherein growth along the casing walls is chiefly a function of wall static pressure gradient.

Blockages were also included to account for the presence of partspan shrouds. For each rotor, a blockage equal to the percent of total annulus area occupied by the shroud was applied at the exit of that rotor and the inlet of the following stator and half this amount was used at the inlet plane of the rotor. No allowance for shroud blockage was applied at either the 1st-stage or 2nd-stage stator exits. Total blockage input to the streamline analysis calculation at various axial locations was computed as the sum of endwall blockages and shroud blockages and applied equally to all stream-tubes. The blockages used in the flow-field calculation for the original design were used for the redesign with the addition of the increments required to account for the blockage and wake of the 2nd-stage rotor partspan shroud. The magnitudes of these blockage increments were the same as these used for the 1st-rotor partspan shroud. These design values of blockage at the 1st-stage rotor inlet and exit were verified by flowfield calculations of test data points in which the calculated wall static pressures agreed with measured values (ref. 10).

Flowfield calculations for the original design had been made using a computer program that required a concentration of streamlines near the hub. Streamline analyses for the redesign were made using an improved program which permitted a more even radial distribution of streamlines. Recalculation of the original design aerodynamics using the improved program showed some differences (e.g., velocity changes up to 30 ft/sec [9.1 m/sec]); the comparisons of aerodynamic parameters for the original design and the redesign shown in Figures 6 through 12 are based on the results obtained with the improved program. Inlet relative air-angles (Figure 6) for the redesigned rotor 2 are slightly smaller than those for the original rotor 2 primarily to account for the added blockage of the partspan shroud. The exit relative air-angle decreased by 9.5 degrees at the hub (increased turning) and increased slightly at the tip (less turning) to achieve the skewed (negatively sloped) total pressure profile incorporated in the redesign (Figure 5).

Distributions of velocity and Mach number at the leading and trailing edges of the rotor (Figures 7 and 8) showed increased rotor exit hub velocity with the negatively sloped total pressure profile, which reduced rotor hub aerodynamic loadings (Figure 9) by 0.028 from the calculated value for the original design. The rather high hub loadings of the 2nd-stage stator also decreased somewhat (Figure 10) while tip loadings increased, giving a more balanced spanwise loading distribution. Stator 2 hub Mach numbers (Figure 11) were somewhat higher for the redesign, and stator 2 inlet air-angles (Figure 12) differed by as much as two degrees from the original design. These changes in angle are considered small in relation to the low-loss incidence range demonstrated in tests with the original design (ref. 10). Because of this and the fact that the redesigned 2nd-stage rotor gave larger angles (higher incidence) into the hub of the 2nd-stage stator and smaller angles (lower incidence) into the tip, no adjustment was made to the 2nd-stage stator settings. Smaller incidence angle changes were calculated for the other blade rows. The maximum change for the 1st-stage rotor was a 0.86 degree lower incidence at ten percent span from the hub. The 1st-stage stator incidence increased by a maximum of 0.23 degrees at ten percent span. The maximum 2nd-stage rotor incidence change was a 1.22 degree lower incidence at five percent span. The maximum incidence changes on the 2nd-stage stator were an increase of 2.5 degrees at five percent span and a decrease of 2.7 degrees at 90 percent span. Based on these small angle changes, it was concluded that the original 1st-stage rotor and 2nd-stage stator would operate satisfactorily with the redesigned 2nd-stage rotor.

Variable positioning of stator-stagger was available to optimize fan performance if needed. However, results reported herein were obtained using the original design stagger settings on both stators. A complete tabulation of aerodynamic parameters for the redesign at blade row leading and trailing edges is given in Appendix C, Tables XVI to XVIII.

Airfoil Design

Rotor and stator blade sections for both stages of the fan were multiple-circular-arc (MCA) airfoils designed on conical surfaces approximating stream surfaces of revolution. Blade setting angles were determined from design flow-angles and from incidence and deviation angle criteria described in an earlier report (ref. 9). Blade chords were chosen to be consistent with moderate axial lengths, acceptable rotor loadings, and structural requirements. Airfoil leading and trailing edge radii and blade thicknesses were chosen to provide mechanical integrity while maintaining adequate flow area.

Leading and trailing edge metal angles for the redesigned rotor (Figure 13) were determined from redesign velocity vectors and the application of the same incidence and deviation criteria used in the original design. Rotor incidence angles and deviation angles are shown in Figures 14 and 15, respectively. Although data from tests of the original configuration indicated that deviation angles at the rotor 2 hub were higher than had been anticipated (up to 5 deg. higher at ten percent span from the hub), no attempt was made to alter deviation criteria for the redesign since experience has shown that it is difficult to determine accurate deviation angles at rotor hubs. Blade front camber angles (Figure 16) were chosen at values which, in combination with specified incidence and total camber angles, provided minimum critical channel area ratios A/A^* similar to those of the original design as shown in Figure 17. Distributions of flow area ratios through the blade channels for several percents of span for the redesigned rotor 2 are shown in Figure 18.

Airfoil geometry on design conical surfaces for all blades and vanes, including both the original and redesigned rotor 2 is summarized in Appendix B, Tables XI through XV. Details of rotor 1, stator 1, rotor 2 (original), and stator 2 designs, including manufacturing sections defined on planes normal to the stacking line, were provided in a previous report (ref. 9). Manufacturing sections for the redesigned rotor 2 are given in Appendix D. A summary of important geometric design parameters for the blades and vanes is given in Table II below.

TABLE II

BLADE AND VANE GEOMETRIC PARAMETERS

	ROTOR 1	STATOR 1	ROTOR 2 Redesign	STATOR 2
Number of Airfoils	28	46	60	59
Aspect Ratio†	2.48	2.75	2.63	2.20
Hub Chord-inch	3.62 [0.092m]	2.75 [0.070m]	2.10 [0.053m]	2.22 [0.056m]
Tip Chord-inch	4.55 [0.116m]	3.10 [0.079m]	1.89 [0.048m]	2.45 [0.062m]
Hub Solidity	2.38	2.52	2.24	2.25
Tip Solidity	1.33	1.55	1.27	1.66

† Average length/axially – projected – root – chord

The redesign of the rotor included changes to the blade chord and thickness-to-chord ratio dictated by structural requirements. To avoid a 1st-bending 4E resonance in the operating range, the blade chord, originally constant, was decreased ten percent at the tip, fairing to no taper between the location of the partspan shroud and the hub (Figure 19). The front chord and blade solidity (Figures 20 and 21) were decreased correspondingly. These changes reduced the blade mass above the shroud and, thereby, moved the predicted 1st-bending 4E resonance point above 110 percent of design speed. To increase chordwise bending frequency, which had been excited by a 46E resonance during tests of the original configuration, airfoil sections were stiffened by increasing tip maximum thickness from 2.5% to 3% of chord (Figure 22) and by moving the chordwise location of maximum thickness of most of the sections toward the leading edge (Figure 23).

Structural Design

Blade Stresses

Blade structural data for the 1st-stage rotor and stator, the original 2nd-stage rotor, and the 2nd-stage stator were provided in the earlier report (ref. 9). Combined centrifugal, untwist, and restraint stresses were calculated for the redesigned rotor at 110 percent of design speed. The results (Figure 24) showed that the rotor 2 combined stresses would be below those of other comparable NASA fan blade designs. A Goodman diagram for the blade (Figure 25) showed an allowable continuous vibratory stress of approximately 11,350 lbf/in^2 [7.8 x 10^7 N/m^2] at the maximum predicted combined steady-stress of 58,000 lbf/in.^{2} [4.0 x 10^8 N/m^2] which would provide an adequate vibratory stress margin since predicted critical resonances did not occur within the operating range.

Partspan Shroud Design

The redesigned blades were provided with a partspan shroud at 60 percent span to eliminate the bending flutter encountered during testing of the original two-stage fan. This shroud, coupled with a 10% chordal taper from the shroud to the blade tip and a tip thickness increase from 2.5% to 3% of chord, also removed a critical 4E resonance from the operating range, providing a 6.8% margin on 1st-bending resonance at 110 percent of design speed (Figure 26). Shroud parameters are summarized in Table III, and a sketch of the shroud is shown in Figure 27.

TABLE III

PARTSPAN SHROUD PARAMETERS FOR REDESIGNED ROTOR 2

Shroud Chord - inch	0.725 [0.0184m]
Shroud Contact Angle from plane of rotation - degrees	60
Shroud Location - Percent Span From Hub	60
Shroud Thickness - inch	0.118 [0.003m]
Bearing Stress Predicted - lbf/in.^{2}	2980 [2.06 x 10^7 N/m^2]
Bearing Stress Allowable - lbf/in.^{2}	5000 [3.45 x 10^7 N/m^2]
Bending Stress Predicted - lbf/in.^{2}	49,000 [3.38 x 10^8 N/m^2]
Bending Stress Allowable - lbf/in.^{2}	70,000 [4.83 x 10^8 N/m^2]

Blade Flutter

Flutter is a self-excited and self-sustaining vibration which occurs in either a torsional or bending mode or a combination of both. Flutter parameters for the redesigned 2nd-stage rotor blade were calculated at 110 percent of design speed and compared with results from previous tests. The peak predicted coupled mode flutter parameter $\psi c/d$ of 0.175 lies within the range of experience where flutter problems have not been encountered. The predicted value of supersonic torsional flutter parameter, $24V'c\omega_t$, of 1.66 also lies within the envelope of successful (no flutter) experience.

Blade Tip Chordwise Bending

In tests of the original fan configuration, the tip of the unshrouded 2nd-stage blade was identified as a potential failure area due to high vibratory stresses associated with a 46E resonance in the tip chordwise 2nd-bending mode. The 46 vanes of the 1st-stage stator formed the source of excitation. A resonance diagram for the 1st and 2nd tip chordwise bending modes for the redesigned blade (Figure 28) shows that the changes in blade design moved the predicted 46E resonance out of the high operating range. The second mode 59E resonance at 85 percent of design speed was not anticipated to be a problem since the 59 vanes of the 2nd-stage stator did not appear to be a strong source of excitation (no 59E response had been observed during tests with the original blade).

Critical Speed Analysis

Excessive vibrations were measured on the front bearing housing at approximately 10,550 rpm during tests of the original fan. Critical speed analysis had predicted modes at 9,000 rpm and 13,100 rpm, and subsequent improvements to the analytical model shifted the 9,000 rpm mode to 9600 rpm. In considering methods of eliminating possible excessive rig vibration, it was assumed that either predicted mode might be encountered during testing with the redesigned 2nd-stage rotor. Using variations on the mathematical model shown in Figure 29, forced response analyses were conducted and the sensitivity at the No. 1 bearing to a one oz-in. [0.007 N-m] imbalance located at various positions was evaluated. Table IV shows that the predicted vibration amplitude at the original No. 1 bearing is highest for the 9,600 rpm mode when the one oz-in [0.007 N-m] imbalance is located at the rear diaphragm. Maximum amplitude for the 13,100 rpm mode is caused by imbalance at either the 1st-stage or 2nd-stage rotor plane. An oil-damped front bearing was incorporated in the test rig to minimize rig vibrations and to eliminate a potential need for trim balancing. Figure 30 indicates that use of oil damped No. 1 bearing reduced the 9600 rpm mode amplitude 72% and eliminated the 13,100 rpm mode.

TABLE IV

PREDICTED VIBRATION AMPLITUDES AT NUMBER 1 BEARING
(Imbalance One oz-in. [0.007 N-m]

LOCATION OF IMBALANCE	VIBRATION AMPLITUDE AT NO. 1 BEARING LOCATION 9,600 rpm Mode	13,100 rpm Mode
Rotor 1	4.5×10^{-3} in [1.14×10^{-4} m]	6.2×10^{-3} in. [1.58×10^{-4} m]
Rotor 2	1.6×10^{-3} in. [0.41×10^{-4} m]	6.3×10^{-3} in. [1.60×10^{-4} m]
Rear Diaphragm	13.6×10^{-3} in. [3.45×10^{-4} m]	4.5×10^{-3} in. [1.14×10^{-4} m]

TEST FACILITY

The test program was carried out in a sea-level compressor test stand (Figure 31). The stand was equipped with a gas turbine drive-engine with a 2.1:1 gearbox to provide speed range capability. Airflow entered the rig through a calibrated nozzle, and a 72-ft [21.9 m] straight section of 42 in. [1.07 m] diameter pipe ran from the nozzle to a 90 in. [2.29 m] diameter inlet plenum. A wire mesh screen and an "egg-crate" structure located in the plenum provided a uniform total pressure profile to the compressor. The airflow was exhausted from the compressor into a toroidal collector and then into a 6 ft. [1.83 m] diameter discharge stack which contained a 6 ft [1.83 m] diameter valve to provide backpressure or throttling for the test compressor. A 24-in. [0.61 m] and a 12 in. [0.35 m] valve was located in bypass lines to provide fine adjustment of backpressure.

For tests with distorted inlet flow, the desired inlet distortion patterns were generated by means of screens attached to a 1 in. x 1 in. [.0254 m x .0254 m] mesh base screen of 1/8 in. [.0032 m] diameter wire. A rotatable case with 12 struts located 33 in. [0.84 m] upstream of the rotor leading edge was used to support the base screen. Sketches of the hub-radial, tip-radial, and circumferential distortion screens are shown in Figure 32.

Ten struts located 14 in. [0.356 m] upstream of the rotor leading edge (Figure 1) supported the forward bearing and the assembly for the strain-gage slip-ring. Eight struts located 11 in. [0.28 m] downstream of the stator trailing edge supported the rear bearing. Rotor strain-gage and inlet hub static pressure instrumentation leads were routed through the nonrotating nose fairing.

INSTRUMENTATION AND CALIBRATION

Airflow to the compressor was measured by means of a calibrated nozzle designed to ISO† standards. Airflow measurements were within one percent accuracy. The compressor speed was measured by means of an impulse type pick-up. The pick-up was an electromagnetic device which counted the number of gear teeth that passed within an interval of time and converted the count to RPM. The accuracy between 4,000 rpm and 12,000 rpm was within 0.2%.

All temperatures were measured with chromel-alumel, type-K thermocouples and were recorded in millivolts by means of an automatic data-acquisition system. Temperature elements were calibrated for Mach numbers over their full operating range. Effects of total pressure level on temperature recovery were accounted for by using the corrections given by Glawe, Simms, and Stickney (ref.12). The thermocouple leads were calibrated for each temperature element. Overall rms temperature accuracy was estimated to be $\pm 1.0°R$ ($\pm 0.56°K$). Wedge probes for measuring total pressure, static pressure, and air angle were calibrated for Mach number as a function of indicated ratio of static-pressure-to-total-pressure with pitch angle as a parameter. Total pressure recovery and yaw-angle deviation were calibrated as functions of Mach number and pitch angle. Accuracy of the measured air-angles was within 1.0 degree.

The pressures sensed by probes, fixed rakes, and static taps were measured by means of transducers and recorded in millivolts by an automatic data-acquisition system. The accuracy of the pressure was ±0.1% of the full-scale value. The pressures from sensors located upstream of the rotor 1 trailing edge were measured using 15 $lbf/in.^2$ [1.033×10^5 N/m^2] full-scale transducers. Pressures from the trailing edge of rotor 1 and from all downstream locations were measured using 50 $lbf/in.^2$ [3.46×10^5 N/m^2] full-scale transducers.

Two proximity detectors located over the tips of each rotor blade at midchord were used to monitor blade tip clearance.

Photographs of typical instrumentation are shown in Figure 33, and the axial and circumferential positions of the instrumentation are shown in Figures 34 and 35, respectively. Instrumentation for measuring overall and blade-element performance data is listed in Table V.

The eleven radial positions at each axial station were defined by the intersection of the axial station and the redesign streamlines which pass through 5, 10, 15, 30, 50, 60, 65, 70, 85, 90, and 95 percent of the passage height at the 1st-stage rotor trailing edge. For tests with radially distorted inlet flow, five radial positions on the streamlines which pass through 10, 30, 50, 70, and 90 percent of the passage height at the trailing edge of the 1st-stage rotor were used. The radial locations at which these streamlines passed the leading and trailing edges of each blade row are given in Appendix C, Table XVII.

Table VI lists the parameters that were recorded continually during excursions into stall or surge and to detect and evaluate rotating stall. Two hot-film probes, located at the fan inlet and exit (Station 6 and 16) and with sensors at 25, 50, and 85 percent of passage height from the hub, were used to record velocity fluctuations continuously on a multichannel tape recorder when operating near or within the stall region.

†International Organization for Standardization

TABLE V

PERFORMANCE AND BLADE ELEMENT INSTRUMENTATION

INSTRUMENT PLANE LOCATION	PARAMETER	TYPE AND QUANTITY
Sta. 0 - - Inlet Plenum Chamber	p	6 pressure taps on plenum wall
	T	6 bare wire chromel-alumel thermocouples
Sta. 6 - - Rotor 1 Inlet (2.25 in. [0.0673 m] upstream of Rotor 1)	p	6 O.D. and I.D. wall static taps.
	†P, p & air angle β	2 wedge radial traverse probes spaced 180° apart circumferentially.
	P	two radial rakes with sensors at 10, 30, 50, 70, and 90 percent span (distortion tests only)
Sta. 8 - - Rotor 1 Exit (approx. halfway between Rotor 1 T.E. and Stator 1 L.E.)	††p	4 O.D. wall static taps approximately equally spaced circumferentially.
Sta. 11 - - Stator 1 Exit (halfway between T.E. of Stator 1 and L.E. of Rotor 2)	††p	4 O.D. and 4 I.D. wall static taps, approximately equally spaced circumferentially.
	†T, P, p, & air angle β	Two NASA combination probes - one with circumferential traverse of one vane gap, plus radial traverse, and second probe with radial traverse at midgap.
Sta. 14 - - Rotor 2 Exit	††p	4. O.D. and I.D. wall static taps, approximately equally spaced circumferentially.
Sta. 16 - - Fan Discharge (within ½ chord downstream of Stator 2)	††p	4 O.D. and 4 I.D. wall static taps approximately equally spaced circumferentially.
	†P, p, & air angle β	2 wedge probes, radial traverse, approxmately 180° apart and located at vane midchannel.
	†T	2 wake rakes located approximately 180° apart, radially traversed; 10 elements across stator gap.
	†p	2 wake rakes located approximately 180° apart, radially traversed; 13 elements across stator gaps.
Sta. 17 - - Rig Exit	P	One circumferential P rake, 5 stations located at 50 percent span (used for setting points).

† 11 radial locations for uniform inlet flow tests (5, 10, 15, 30, 50, 60, 65, 70, 85, 90, and 95% of passage height); 5 radial locations for distorted inlet flow tests (10, 30, 50, 70, and 90% of passage height).

†† Static pressure taps ahead of and behind stators are located on approximate extensions of mean channel streamlines.

TABLE VI

STALL TRANSIENT INSTRUMENTATION

INSTRUMENTATION PLANE LOCATION	PARAMETER	TYPE AND QUANTITY
Inlet Nozzle	p	1 static tap downstream and 1 static tap upstream of inlet nozzle
	Δp	A Δp transducer sensing the differential pressure between the upstream and downstream nozzle static pressures
	T	One nozzle temperature
Sta. 0 – Plenum	p	One plenum static tap
	T	One plenum temperature
Sta. 6 – Rotor Inlet	V	One hot-film probe
Rotor 1, Stator 1, and Rotor 2 Exit	p	One O.D. static tap. each location
Rotor Blades	Stress	Various strain-gages
Stator Blades	Stress	Various strain-gages
Sta. 16 – Fan Discharge	p	One O.D. static tap
	V	One hot-film probe
Sta. 17 – Fan Discharge	P	One circumferential pressure rake at 50 percent span
Gearbox	N	Impulse pick-up

Accelerometers were used to measure shaft vibration, and stationary and rotating critical parts were instrumented with strain-gages to determine levels of vibratory stress over the operating range of the compressor.

TEST PROCEDURE

Shakedown Tests

Shakedown tests were conducted with uniform inlet flow to establish the mechanical integrity of the compressor and to locate stress boundaries that might limit the operating range over which tests could be conducted. During the shakedown tests, the stability limits of the fan were determined for a range from 50 to 110 percent of design speed. The redesigned 2ndstage rotor had no stability problems, and flutter was not encountered on any blades or vanes. Shaft vibration problems were not encountered, and the rig was cleared for tests between 50 and 110 percent of design speed. Running tip clearances on rotors 1 and 2 at design speed were approximately 0.026 in. [0.00066 m] and 0.018 in. [0.00046 m], respectively.

For speeds of 50, 70, 85, 95, 100, and 105 percent of design, rotating stall or surge surveys were conducted. Readings from the hot-film probes and selected rotor and stator strain-gages were recorded along with a speed signal and stator exit O.D. static pressure. These readings were recorded simultaneously by a multichannel tape recorder. Readings of the other transient parameters shown in Table VI were recorded every 1.5 seconds as the fan stage was throttle toward stall; approximately 100 scans were made by the automatic recording system from wide-open throttle to the minimum flow condition.

Overall and Blade Element Performance Mapping

Fan overall and blade element performance data were obtained at speeds from 50 to 110 percent of design for uniform inlet flow. At each speed, data points were taken between the maximum flow attainable and the low-flow stability limit except at 110 percent speed where points were spread between open throttle and high pressure ratio but stall point was not obtained.

Overall and blade element performance data were obtained at 70, 85, and 100 percent of design speed with tip radially distorted and hub radially distorted inlet flow. Overall performance data with circumferentially distorted inlet flow were obtained at 70, 90, and 100 percent of design speed. With circumferential distortion, a first bending 4E resonance was encountered on the 1st-stage rotor at 85 percent speed. Stresses did not exceed allowable values, but potential problems were avoided by substituting 90 percent speed in place of 85 percent speed for this test.

Disassembly Inspection

Following the test program, which included stator setting optimization and casing treatment studies (not reported herein), the 1st-stage blade-tip rub-strip (composite material) failed while taking a post-test check point. The failure caused a sudden drop in flow, pressure ratio, and efficiency. No deterioration in performance had been seen prior to the final check point, and routine inspection did not show any indication that there had been a rubstrip or blade damage prior to this failure.

DATA REDUCTION TECHNIQUES

Data Correction and Averaging

All steady-state performance data were automatically recorded in millivolts on computer cards. These data were then converted to engineering units, corrected, and used to calculate overall and blade element parameters as described in the following sections. Data obtained from impact tube type total pressure probes (fixed radial rakes and traversing wake rakes) were corrected for shock loss when located in supersonic flow. Wedge probes were used to measure total pressure, air angle, and static pressure. Mach number was determined from calibrations of measured total and static pressures. The measured total pressure and flow angle from these probes were corrected using Mach number calibration curves for individual probes. The resulting calibrated Mach number and corrected total pressure were then used in conjunction with standard tables of air properties to calculate static pressure.

Combination probes were used to measure total pressure, air angle, static pressure, and total temperature. Corrections were based on probe calibrations similar to those previously described for wedge probes but with an additional calibration of total temperature recovery versus Mach number. The temperature calibration was consistent with the general method for temperature correction described below.

Thermocouple signals were converted to temperature measurements using wire calibrations for individual sensors. These temperature measurements were converted into total temperature using Mach number calibrations for individual sensors and the pressure-level corrections given by Glawe, Simms, and Stickney (ref. 12).

For tests with uniform inlet flow, circumferential distributions of total pressure obtained at the 1st-stage and 2nd-stage stator exits were mass-flow averaged at each radial position using the corresponding measured distribution of total temperature and a constant circumferential static pressure that was determined by linearly interpolating static pressure data from the wall or wedge probe. The arithmetic average of the three highest values from the circumferential total pressure distribution measured across the passage between adjacent stator vanes at each radial location was chosen to represent the free-stream or stator inlet pressure at the appropriate percent of span. A circumferential mass-flow average total temperature was also calculated at each radial position using the total temperatures and pressures given by the measured circumferential distributions and static pressures linearly interpolated between wedge probe or inner and outer wall static tap measurements. Circumferentially mass-flow-averaged temperatures from the two temperature wake rakes at the 2nd-stage stator exit were arithmetically averaged at each radial location. One pressure wake rake did not traverse properly on some data points. Comparison of measurements showed excellent agreement when both rakes were functioning properly. On the basis of this agreement, the only data used for the analysis were from the pressure rake which worked consistently.

Air angles measured by circumferential traverses at the 1st-stage stator exit were mass-flow-averaged at each radial location. Air angles measured by the two wedge probes at the 2nd-stage stator exit were arithmetically averaged at each radial location.

For tests with distorted inlet flows, radial traverses at the exit of the 1st-stage stator were made at the midgap instead of the combined circumferential and radial traverses used for uniform inlet flow tests. Ratios of gapwise mass-flow-averaged total pressure and temperature and of free-stream total pressure to midgap measurements were correlated for uniform inlet flow data. These correlations were then used to calculate performance and blade element parameters for the 1st-stage rotor and stator with distorted inlet flow. An example of one of the pressure correlations is shown in Figure 36. This type of correlation was checked using data from a previous single-stage fan test (ref. 2) and found to give good agreement with midrange†, radial distortion data. The major disadvantage of this method is that the calculated total pressure loss for stator 1 does not vary with incidence angle. The resulting error is greatest for data points at open-throttle and near-stall. Fan overall performance data were not affected by inaccuracies inherent in this method.

For tests with circumferentially distorted inlet flow, fan inlet total pressure was calculated by radially mass-flow-averaging the measurements made by each fixed rake and by arithmetically averaging these radial mass-flow averages. This arithmetic average included inlet rake measurements made at all rotations of the circumferential inlet distortion screen.

First-stage exit radial traverses of temperature and pressure were corrected using the correlations of gap-average versus midgap values. These corrected pressures and temperatures were then radially mass-flow averaged for each probe position relative to the distortion screen. First-stage exit overall total pressure and temperature were calculated by arithmetically averaging these radially mass-flow averaged temperatures and pressures. Fan exit total pressures and temperatures were measured by wake rake traverses at all rotations of the distortion screen. Total pressures and temperatures were each circumferentially mass-flow averaged for each rake at each radial location. These values were radially mass flow averaged at each rake position relative to the screen. Overall average total pressure and temperature were calculated by arithmetically averaging the circumferentially and radially mass-flow averaged values for each wake rake position.

Performance Parameter Calculations

Overall and blade element performance parameters for uniform and radially distorted inlet flows were calculated by means of a flowfield analysis computer program. All parameters were corrected to standard-day conditions. Inputs to the flowfield program are listed in Table VII.

TABLE VII

PARAMETERS INPUT TO FLOWFIELD PROGRAM

LOCATION	PARAMETERS
Compressor Inlet (Station 0, Figure 34)	1) Corrected mass flow 2) Corrected rotor speed
Rotor 1 Inlet Instrument Plane (Station 6)	1) Total pressure ratio †† versus radius 2) Constant radial blockage factor

† Not wide open throttle or near stall.

†† Ratio = 1.0 for uniform inlet flow. For radial distortions, ratio is local value of total pressure divided by mass-flow-average of total pressure at Station 6.

TABLE VII (Cont'd)

PARAMETERS INPUT TO FLOWFIELD PROGRAM

LOCATION	PARAMETERS
Stator 1 Inlet (Station 8)	1) Total pressure ratio versus radius 2) Constant radial blockage factor
Stator 1 Exit Instrument Plane (Station 11)	1) Total temperature ratio versus radius 2) Total pressure ratio versus radius 3) Constant radial blockage factor 4) Absolute air angle versus radius
Stator 2 Inlet (Station 14)	1) Total pressure ratio versus radius 2) Constant radial blockage factor
Stator 2 Exit Instrument Plane (Station 16)	1) Total temperature ratio versus radius 2) Total pressure ratio versus radius 3) Constant radial blockage factor 4) Absolute air angle versus radius

Total pressures and temperatures were ratioed to compressor inlet values (station 6). Compressor inlet total pressure was assumed equal to the inlet plenum pressure for tests with uniform inlet flow. For tests with distorted inlet flows, overall pressures were ratioed to the mass-flow average of the total pressures measured by the rakes at the fan inlet. Temperatures were always ratioed to the inlet plenum temperature.

A flow blockage factor was used at each axial location to improve the accuracy of the static pressure and velocity calculations of the flowfield program. Blockages were applied equally to all stream tubes at each of the axial locations. Axial distributions of flow blockage factors were selected so that the hub and tip static pressures obtained from the flowfield calculations gave the best agreement with the wall average static pressure for a representative midthrottle operating point at design speed. As shown in Table VIII, the flow blockage factors used in the data reduction flowfield calculations were the same as those blockages used in the redesign except at the stator 2 trailing edge where 3% blockage was added to the calculation for data reduction. Figures 37 through 41 show that the measured and calculated statics for a near design data point agreed quite well at axial locations upstream of each rotor and at the fan exit and that there was lesser agreement for locations downstream of each rotor.

Traverses were not made at rotor-exit instrumentation stations and, therefore, only wall static pressure measurements were available for comparison with calculated values. However, the radial gradient of static pressure indicated by wall static pressures at the exit of rotor 2 (Figure 40) did not seem to be compatible with swirl determined by temperature rise and with streamline curvature limited by flowpath walls. No hub wall static pressure measurements were made at the exit of rotor 1 due to the difficulty in leading tubing out through variable geometry stators. Static pressure in the unmixed boundary layer and core flows from rotor blades would be expected to be lower than the pressure calculated by the axisymmetric-flow-field streamline calculation.

Other criteria used to set blockage indicate that proper values were applied in reducing the data. Calculated rotor exit relative air-angles are in reasonable agreement with deviation-rules derived using test data from many rotors. Stator loss versus incidence curves also appear to be reasonable. In particular, the onset of choke losses appear to have occurred at the right combinations of Mach number and flow angle.

The blockage selection method is consistent with the method used in reducing the data in other programs (ref. 1, 2, 3, 9 & 13). The successful use of these data in the design of the subject two-stage fan is further justification of this method.

TABLE VIII

ANNULUS BLOCKAGES

STATION	DATA REDUCTION (%)	REDESIGN (%)
Rotor 1 Leading Edge	2.4	2.4
Rotor 1 Trailing Edge	4.1	4.1
Stator 1 Leading Edge	4.1	4.1
Stator 1 Trailing Edge	2.8	2.8
Rotor 2 Leading Edge	2.8	2.8
Rotor 2 Trailing Edge	5.3	5.3
Stator 2 Leading Edge	5.3	5.3
Stator 2 Trailing Edge and Downstream	6.5	3.5

All static pressure distributions and air angles behind the rotor were calculated by assuming axisymmetric flow and using mass-flow continuity, radial equilibrium, and energy equations. Curvature, enthalpy, and entropy gradient terms were included in the equilibrium calculations. Aerodynamic conditions at the blade edges were calculated by translating the measured data from the instrument plane along streamlines to blade edges. Blade element parameters were calculated for airfoil sections lying on conical surfaces defined by the intersections of design streamlines and the blade edges. Calculations were made on streamlines passing through the rotor 1 trailing edge at 5, 10, 15, 30, 50, 60, 65, 70, 85, 90, and 95 percent of the passage height for uniform inlet flow and 10, 30, 50, 70, and 90 percent for radially distorted inlet flow. Blade-edge stations for the flowfield calculation (Figure 2) were input as slanted straight-lines which closely approximate the meridional profiles of the manufactured blade edges. In addition to the blade element parameters, the output of the flowfield analysis program included overall performance of the 1st-stage rotor, the 1st-stage, the 2nd-stage rotor, and the complete two-stage fan. Blade element performance data for uniform and radially distorted flow tests are tabulated in Appendices E, F, and G. Accumulated overall performance to the exit of each blade row is tabulated at the bottom of the blade element data sheet for that blade row.

RESULTS AND DISCUSSION

UNIFORM INLET FLOW

Fan Overall Performance

The overall performance of the two-stage fan is shown in Figure 42, and the performance at design speed is shown on an expanded scale in Figure 43. Overall performance parameters are listed in Appendix E, Table XX. Performance of the original fan with the unshrouded 2nd-stage rotor (ref. 10) is also plotted on these figures. Adiabatic efficiency was 85.0% at design speed and pressure ratio, which is 1.3 percentage points above the redesign value but 0.7 percentage points below the efficiency attained in tests with the unshrouded 2nd-stage rotor. Peak efficiency at design speed was 85.4% and occurred at a pressure ratio of 2.93. The fan exhibited peak efficiencies above 83% over the speed range from 50 to 100 percent speed. As speed was increased beyond the design value, however, maximum efficiency decreased rather rapidly, and peak values occurred at the highest levels of back pressure tested. At 110 percent of design speed, an efficiency higher than the peak test value of 79.2% would likely have resulted from testing the fan at higher back pressures, but the risk of excessive stresses associated with an overspeed surge outweighted the utility of such data. Stall margin was calculated for all speeds using the constant throttle operating line shown in Figure 42. This operating line passes through the design point and corresponds to a fixed area fan nozzle. Nozzle Mach numbers were determined by a ratio of static-pressure to total-pressure equal to the reciprocal of the fan overall total pressure ratio. The nozzle flow was corrected to inlet conditions based on the selected pressure ratio and a temperature ratio derived from test efficiencies. Efficiency data were interpolated to obtain the plot of operating-line efficiency versus corrected flow presented in Figure 44. Peak adiabatic efficiency on the operating line exceeded 85.5% and was obtained in the speed range between 85 and 95 percent of design speed. Efficiency then dropped gradually with decreasing speed to 83% at 50 percent speed. Operating line efficiency decreased to 82% at 105 percent speed and to 78.5% at 110 percent speed.

The redesigned 2nd-stage rotor provided higher overall fan pressure ratios at all speeds and flow rates. This higher pressure ratio also increased maximum flow rates when flow was limited by system resistance or by stator 2 choke. At 85 percent of design speed and below, maximum flow was limited by system resistance, as shown by Figure 45. At higher speeds the increased pressure ratio gave a lower corrected flow into stator 2 for a given fan-inlet corrected flow. This delayed stator 2 choke and permitted higher fan inlet flows. Figure 45 shows that stator choke and system resistance limits in tests with the redesigned rotor were the same as in tests with the original rotor.

At design speed and pressure ratio, the flow was 185.4 lbm/sec [84.0 kg/sec], about 0.7% above the design flow of 184.2 lbm/sec [kg/sec]. At all speeds less than design, maximum flows exceeded values obtained in the previous test, with a 2.5% increase at 70 and 85 percent of design speed (Figure 42).

A five percentage point improvement in fan stall margin (based on the assumed operating line) at design speed was one of the goals of the redesign. Rotor 2 was redesigned with a higher total pressure ratio at the hub than at the tip in order to keep rotor 2 and stator 2 exit hub velocities high, thereby reducing their hub aerodynamic loadings. The stall margin actually achieved at design speed was approximately 12% based on the operating line shown in Figure 42, about two percentage points higher than that obtained in tests with the original 2nd-stage rotor.

Minimum flow at all speeds tested up to and including 105 percent of design speed was limited by fan surge with a cycle period of approximately one second. Momentary rotating stall was detected at the fan exit during both the decreasing flow and the recovery portion of the surge cycle. Stall margin (based on the assumed operating line) was lowest at design speed, increased to 15% at 105 percent speed, and increased steadily with decreasing speed to a value of 22% at 50 percent of design speed. A complete listing of stall flows and pressure ratios for uniform inlet flow is included in Appendix E, Table XX.

Overall Performance of First Stage, First-Stage Rotor

Overall performance of the 1st-stage and of the 1st-stage rotor with uniform inlet flow is shown in Figures 46 and 47, respectively. These plots each show a pressure-flow characteristic curve at design speed that very nearly passed through the design point. At the operating point closest to design flow and pressure ratio, the 1st-stage rotor adiabatic efficiency of 91.2% was approximately 1.8% higher than the design value, and 1st-stage efficiency of 87.3% was about 2.0% higher than design. At low speeds the curves of efficiency versus flow show that the 1st-stage operated on the stall side of peak efficiency because the flow capacity of the 2nd-stage limited the maximum flow and efficiency attainable by the 1st-stage rotor and the 1st-stage.

Nondimensional Performance Data

Nondimensional plots of pressure coefficients and adiabatic efficiency versus flow coefficient for the 1st-stage rotor, the 1st-stage, the 2nd-stage rotor, and the 2nd-stage are presented in Figures 48 through 51. These plots are qualitatively similar to those from tests of the fan with the unshrouded 2nd-stage rotor, (ref. 10). The spread of curves for different speeds for rotor 1 and stage 1 shows the marked compressibility effects characteristic of high pressure ratio, high specific flow stages. At low speeds, rotor 1 and stage 1 pressure coefficients increased steadily with decreasing flow coefficient although operating on the stall (low flow-coefficient) side of peak efficiency. At design speed and higher speeds, points are clustered at the low pressure-coefficient ends of the 1st-stage characteristic curves, showing that the 2nd-stage limited maximum flow at high speeds also. Rotor 1 efficiency remained fairly constant between 50 and 100 percent of design speed but diminished rapidly with overspeed. A comparison of rotor 1 and stage 1 characteristics shows that stator 1 losses were not severe. There are no indications of stator 1 choke.

The flattening of the pressure coefficient-flow coefficient curves at high speeds for rotor 2 and stage 2 at high values of pressure coefficient, in contrast to the more sloped curves for rotor 1 and stage 1, indicates that the 2nd-stage had approached a loading limit and had set the stall flow of the fan.

As speed increased, maximum flow-coefficient decreased (Figures 50 and 51). Maximum flow-coefficient at 110 percent speed was 5% lower than at design speed. The open-throttle point at 110 percent speed (shaded symbol in Figure 50) had a flow coefficient that was no higher than the point represented by the half-shaded symbol which had a higher pressure coefficient. Stator 2 was choked at the open throttle point, as shown by Figure 45, but it could not have been choked at the other point which had the same flow but a higher rotor pressure ratio. The large efficiency drop between the half-shaded and fully shaded symbol data points on Figure 50 indicates that rotor 2 was choked. Rotor 2 choke is the most probable cause of flow limits at high speeds.

Blade Element Data

The spanwise efficiencies for the near-design data points (Figures 52 and 53) showed generally good agreement with design predictions. Efficiency profiles for both the 1st-stage rotor and the 1st-stage (Figures 52 and 53) exhibited a region of low efficiency which extended as much as ten percent of the passage height on either side of the location of the rotor partspan shroud. The 2nd-stage rotor efficiency profile for the same data point did not exhibit a comparable low efficiency region near the location of its partspan shroud, perhaps because its shroud was designed to lie in the wake of the 1st-stage rotor shroud.

The average efficiency for the 2nd-stage rotor for the data point presented is approximately 0.5 percentage points lower than the design value due to less-than-design efficiencies in the tip region of the blade. The decreased efficiency in the tip region may be the result of taper at the tip of the redesigned rotor blade, which decreases its solidity relative to the original untapered blade. This solidity effect has been described by W. A. Benser of NASA (ref. 13).

Pressure ratio profiles for the near-design data point (Figures 54 and 55) show effects of partspan shrouds consistent with those of the efficiency profiles described above. The 2nd-stage rotor and overall fan pressure ratios followed in general the negatively sloped profile of the rotor 2 redesign, which was included in an attempt to increase fan stall margin.

Figure 55 shows that the spanwise gradient of overall pressure ratio was approximately equal to the design value, except for the region of low pressure in the wake of the partspan shrouds. The pressure ratio of the 1st-stage and of the 1st-stage rotor was higher at the hub and lower at the tip than the design values, and the opposite was true for the 2nd-stage rotor (Figure 54). The spanwise region of high pressure ratio at the exit of the 1st-stage resulted in a decreased incidence on rotor 2 and resulted in lower-than-design work at this spanwise location for the rotor. Conversely, regions of low pressure ratio in rotor 1 were regions of high work in rotor 2. In this manner, the 2nd-stage rotor corrected the total pressure profile to obtain the desired gradient at the fan exit.

The two measurement stations added at 55 percent and 60 percent of span gave a better definition of 1st-stage rotor shroud losses than was obtained in tests of the original fan with unshrouded 2nd-stage rotor, as shown by the pressure ratio profiles in Figure 54. Figure 54 also shows that the measured exit pressure profile of the 1st-stage rotor with the redesigned 2nd-stage rotor was very nearly the same as with the original 2nd-stage rotor (flat pressure profile).

Figures 56 through 59 give spanwise profiles of loss, diffusion factor, deviation angle, and suction surface leading edge incidence angle for each of the four fan blade rows for a near design data point. With certain exceptions, blade element data for the near-design data point showed good agreement with the predicted design performance. Losses for the four blade-rows were somewhat below design values except for the higher values for the 1st-stage rotor in the area of its partspan shroud and for 1st-stage stator and 2nd-stage rotor from 60 percent span to the tip. Deviation angles for the data point were higher than design for both the 1st-stage and 2nd-stage rotors near the location of their partspan shrouds and near the hub of the 2nd-stage rotor and generally about two degrees lower than design for the 1st-stage stator. Incidence angles for blade elements for the 1st-stage stator and the 2nd-stage rotor were low in spanwise regions where the 1st-stage rotor pressure ratio was higher than design, and were high in regions where the 1st-stage rotor pressure ratio was below the design level. The 2nd-stage stator, which was designed for a constant spanwise inlet total pressure, had low incidence angles at the hub and high incidence angles at the tip when used with the redesigned rotor. Loss coefficients were reasonably low on all blade elements despite the somewhat skewed radial profiles of incidence angle.

Blade element plots of loss, diffusion factor, and deviation angle versus incidence for all data obtained with uniform inlet flow are presented for eleven radial locations in Figures 60 through 63. Complete tabulations of blade element data for uniform inlet flow are given in Appendix E, Table XXI.

First-Stage Rotor

The blade element data for the 1st-stage rotor (Figure 60) showed trends typical of a moderately high speed fan rotor. At speeds at and above design, the range of rotor incidence angle was quite small. At lower speeds, the range of incidence angle increased and the level of minimum loss decreased. The blade appeared to have run somewhat stalled at low speeds, particularly at the tip as indicated by high losses and diffusion factors at high incidence angles. Negative loss coefficients were calculated for the 1st-stage rotor for blade elements near the hub for certain data points. These negative losses were attributed to two causes: 1) low temperature rise at low speeds magnified the effect of temperature measurement errors (at 50 percent speed a 1°F [0.555°K] error would change efficiency by approximately 8%) and 2) temperature and pressure sensors were offset radially, and the interpolations in regions of steep radial gradients may not have matched temperatures and pressures accurately. Distribution of loss between rotors and stators is not believed to be the source of the problem since stator losses appear to be reasonable for these points.

First-Stage Stator

The blade element data for the 1st-stage stator (Figure 61) showed a lack of any trend of loss with changes in incidence angle or speed except at spans that were affected by the part-span shroud and near the hub where Mach numbers were highest. Loss levels were slightly lower than design predictions for the inner half of the vane span and slightly higher than design for the outer half. For points near stall, the stator attained loading levels (diffusion factors) of between 0.55 and 0.60 near the hub at design speed and 0.62 at 70 percent speed near the tip.

Second-Stage Rotor

The blade element data for the 2nd-stage rotor (Figure 62) showed deviation and diffusion factor levels similar to those of the previously tested unshrouded rotor. Deviation angles near the hub were several degrees higher than design values for all speeds, but values for the outer 75 percent of span of the blade agreed well with design levels. Diffusion factors were also quite high near the hub, reaching 0.64 at 8 percent of span at design speed. Since 0.65 is sometimes considered a stall limit for rotor blades, this rotor may have been involved in initiation of surge at design speed. This hypothesis is consistent with strain-gage activity recorded during stall which indicated that either the 2nd-stage rotor or the 2nd-stage stator had initiated fan stall (Figure 64). The data for this rotor showed a rather narrow incidence angle range near the tip, particularly at high speeds, but a wider range near the hub, with well-defined minimum loss levels at several speeds. High losses in the hub region may indicate choking at high speeds.

Second-Stage Stator

The blade element data for the 2nd-stage stator (Figure 63) reflected strong evidence of choking near the hub, extending over the lower half of the vane span at all speeds, as shown by a rapid increase of loss with decreasing incidence. This rise in loss to levels up to three times design values was accompanied by abrupt decreases in deviation angles to values considerably lower than design. These low indicated deviation angles may be the result of large stator wakes reaching the gapwise location of the probe and affecting the angle measurement. The data also indicated that this stator underwent quite a rapid rise in loading with increasing incidence angle at high speeds, reaching diffusion factors of approximately 0.60 near the hub (3 percent span) and in the area of partspan shroud wakes. The rapid rate at which loading was increasing with incidence angle and the strain-gage record (Figure 64) indicate that the stator might have set the stall limit at high speeds. Peak loadings were, however, lower than values attained in tests of the fan with the unshrouded rotor (0.67 at 10 percent span at design speed), indicating that the negatively sloped total pressure profile of the redesigned rotor successfully reduced critical loadings to increase stall margin.

RADIALLY DISTORTED INLET FLOW

Radial distortion screens (Figure 32) were used to generate patterns that covered approximately the inner and outer 40 percent of the 1st-stage rotor inlet annulus area and provided distortion parameters, $(P_{max.} - P_{min.})/P_{max.}$, of 0.14 with the discharge throttle wide open at design speed. Figure 65 shows the spanwise total pressure profiles at the measurement plane of the 1st-stage rotor inlet for the wide-open and near-stall throttle conditions at design speed. Figure 66 shows the distortion parameter plotted as a function of fan inlet corrected flow for hub and tip radial distortions. The distortion expressed in terms of a meridional velocity defect $(V_{max.} - V_{min.})/V_{max.}$ is plotted versus corrected flow in Figure 67. This velocity defect parameter governs the changes in incidence angles caused by the distortions. Although the total pressure distortion parameter (Figure 66) decreased with flow (and therefore with speed), the velocity defect parameter of Figure 67 shows that the changes in incidence angle were largest at low speed and smallest at high speed.

Tip Distorted Flow

Overall Performance

Overall performance for the fan, the 1st-stage, and the 1st-stage rotor with tip radially distorted inlet flow is shown in Figures 68, 69, and 70, respectively. Overall performance parameters are listed in Appendix F, Table XXII along with stall flows and pressure ratios for each speed. Performance with uniform inlet flow is included in the figures as dashed lines for comparison.

At design speed, the tip-radial distortion increased stall margin by approximately two percentage points relative to the undistorted flow stall line (Figure 71). Stall margin was reduced by eight percentage points at 85 percent speed and did not change at 70 percent speed. The tip distortion at design speed apparently relieved the hub loadings that caused stall with uniform inlet flow, resulting in the small gain (two percentage points) in stall margin. Tip-radial distortion had been expected to reduce the stall margin severely at 70 percent speed since tip loadings were the probable cause of stall with undistorted flow. At this speed, the stall line was unchanged but stall occurred at a lower flow and lower pressure ratio than with undistorted flows. Pressure ratio dropped slightly as stall was approached in contrast to the steadily increasing pressure with undistorted flow. These trends of pressure ratio versus flow can also be seen in the performance maps for the 1st-stage rotor and for the 1st-stage. The large reduction in stall line at 85 percent speed appears out of line with the stall margin changes at 70 and 100 percents of design speed (Figure 71). Strain-gage and hot-film data recorded at the time of stall at 85 percent speed (Figure 72) show evidence of rotating stall before major instabilities and stresses occurred. A strong vibratory stress can be seen on rotor 1 just before indications of major instabilities. The flow-instability time shown in Figure 72 was selected as the first indication that the relatively quiet periodic rotating stall was developing into a major flow instability. This first bending mode vibration resonance with 4 excitations per revolution is consistent with the predicted resonance diagram (Figure 73). Figure 74 shows that at design speed, rotating stall indications were similar to those at 85 percent speed, but that the first bending mode vibrations occurred after major instabilities had already begun. It is not known whether or not this vibration actually contributed to aerodynamic instability, but it is believed to be a possible explanation for the unique response of the fan to tip-radial distortion at 85 percent speed. Pressure ratios were higher with the tip distortion than with uniform inlet flow for a given speed and corrected flow, except near stall at 70 percent speed. This indicates that rotor tips were not severely stalled and that they produced higher pressure ratios at the higher incidence angles. Increased maximum flow rates at part-speeds were a result of increased pressure ratio on the system-resistance pressure ratio (Figure 45).

Efficiencies appeared to have been higher with tip-radially distorted flow than with uniform flow (Figure 68). Most of this increase in efficiency occurred in the 1st-stage rotor. The reduced number of measurements for distortion tests (five radial locations instead of eleven used in undistorted flow tests) did not include all endwall region and partspan shroud region losses. The effect on overall performance was checked by recalculating a near-design uniform inlet flow data point with input data profiles specified at five radial locations. The reduced sampling increased calculated efficiency by approximately one percent.

Blade Element Data

A major effect of the tip-radial distortion was to increase the pressure ratio of the 1st-stage and to decrease pressure ratio of the 2nd-stage for a given overall pressure ratio. This redistribution is illustrated by Figure 75 which shows spanwise profiles of pressure ratio along streamlines. The 1st-stage pressure ratio profile was about the same when operating with distorted flow at a fan overall pressure ratio of 2.683 as when operating with undistorted flow at a fan overall pressure ratio of 2.860. For the same data points, the 2nd-stage pressure ratio was much lower than for uniform inlet flow. The 2nd-stage pressure profile was about the same when operating with distorted flow at fan overall pressure ratio of 3.041 as when operating with undistorted flow at a pressure ratio of 2.860. The spanwise distributions of pressure ratio were not changed as much as the pressure ratio levels. Fan overall efficiency profiles were also nearly the same for distorted and undistorted flow tests, as shown by Figure 76.

Blade element performance parameters for each blade row at five radial positions are shown in Figures 77 through 80. The 1st-stage rotor tip (90 percent of span from the hub) operated at high positive incidence due to the low axial velocity caused by the tip distortion. The maximum loading level for any blade row did not exceed 0.6. The highest diffusion factor (0.59) occurred at the tip of the 1st-stage rotor at 70 percent of design speed. The loss of stall margin at 85 percent speed apparently cannot be explained by high diffusion factors (maximum D = 0.54). As also noted in the uniform inlet flow data, the blade element data for tip radially distorted inlet flow showed choking losses on the 2nd-stage stator at low back pressures and deviation angles near the hub of the 2nd-stage rotor were several degrees higher than design values. Calculated losses for the 2nd-stage rotor were negative at 25 percent span for some part-speed points. This anomaly does not appear to have resulted from an improper division of loss between rotor and stator of the 2nd-stage but is more likely associated with temperatures from the correlated 1st-stage exit data as explained in the section "Data Correction and Averaging".

Hub Distorted Flow

Overall Performance

Overall performance for the fan, the 1st-stage, and the 1st-stage rotor with hub radially distorted inlet flow is shown in Figures 81, 82, and 83, and overall performance parameters are listed in Appendix G, Table XXIV. Hub-radial distortion caused a reduction in maximum flow at all speeds tested, ranging from 3% at design speed to less than 1% at 70 percent speed. At design speed, where excessive loadings at the hub caused stall with uniform inlet flow, the hub distortion increased stall margin. In particular, stall margin at design speed with respect to a constant throttle operating line through the design point decreased to 6%, half the value achieved with uniform inlet flow. A smaller decrease in stall margin was noted at 85 percent of design speed, and a 7% gain was attained at 70 percent (Figure 71). Efficiency levels were similar to values with uniform inlet flow but at design speed peak fan efficiency occurred near stall. At 85 percent speed, only two data points were obtained, an insufficient number to determine a peak efficiency. As can be seen in the plots of performance for the 1st-stage and 1st-stage rotor, the rise in pressure ratio achieved with the hub distortion was rather small compared to the rise achieved with uniform inlet flow as the fan was backpressured from wide open throttle to stall, particularly at low speeds.

Blade Element Data

The spanwise profiles of total pressure ratio for hub-radially distorted and undistorted flows presented in Figure 84 show that the 1st-stage had a higher pressure ratio at the hub with the distortion for near-operating-line data points. The profiles of the midspan and tip regions of the 1st-stage and the complete profile of the 2nd-stage are similar in shape to profiles with undistorted flow.

Pressure ratio at the hub of the 1st-stage decreased at all speeds as the fan was throttled toward stall. For example, at design speed the 1st-stage pressure ratio at 10 percent span from the hub was 1.986 at the open-throttle point and 1.945 at the near stall point. This trend, associated with past-axial exit relative flow angles, caused a small rise in pressure ratio as the fan was throttled. The spanwise efficiency profile presentation (Figure 76) shows efficiency lower in the distorted region and higher in the undistorted region than with uniform inlet flow.

Blade element data for each blade row at five radial positions are shown in Figures 85 through 88. As expected, the 1st-stage rotor and the 1st-stage stator operated at high incidence angles near the hub due to the reduced axial velocities associated with the hub distortion. The 1st-stage rotor hub losses and diffusion factors increased substantially at low speeds as the fan operated towards stall; the rotor attained a diffusion factor of 0.72 at 30 percent span at 70 percent of design speed. At 70 and 85 percent speeds and near-stall operating conditions, the 1st-stage stator loadings also exceeded design predicted levels over the inner half of the vane span (Figure 86). In general, the blade element data from tests with the hub distortion aligned reasonably well with undistorted flow data. Rotor loss data have more scatter, with negative loss coefficients calculated at 10 percent span for both rotors (100%N for R1 and 70%N for R2). Deviation data for the 2nd-stage stator have more scatter than with undistorted flow, particularly for points having high loss coefficients.

Attenuation of Radial Distortion

Attenuations of radial distortions through the two-stage fan were calculated for three data points with hub distortion, and three points with tip distortion at design speed. To account for the radial variation in total pressure present in the design (uniform inlet flow) profiles at the fan exit and 1st-stage exit, an attenuation parameter, A_r, at a given axial location x was defined as:

$$\frac{(Ar)x}{100} = 1 - \left[\frac{\left(\frac{\Delta P}{P}\right)_x - \left(\frac{\Delta P}{P}\right)_{Design}}{\left(\frac{\Delta P}{P}\right)_{Inlet}} \right]$$

where $\Delta P/P = (P_{max} - P_{min})/P_{max}$, and where a negative sign is attached to each $\Delta P/P$ for which the pressure in the hub region exceeds the pressure in the tip region. Thus the $(\Delta P/P)$ design was negative since the design exit total pressure was higher at the hub than at the tip. The $\Delta P/P$ at the inlet was positive for hub distortions, and negative for tip distortions. Any time the test $\Delta P/P$ at the fan exit matched the design $\Delta P/P$ at the fan exit, the distortion was considered fully attenuated and the value of Ar was 100. Negative values of Ar represent amplified distortions, values of Ar between 0 and 100 represent the percentages of attenuation, and values greater than 100 represent over-attenuated distortions.

Table IX presents a summary of attenuation parameters calculated at design speed for hub and tip radially distorted inlet flow, and Figures 89 and 90 give pressure profiles at the fan inlet, 1st-stage exit, and fan exit for these data points. These profiles indicate that the fan attenuated radial distortions well; in fact, the fan slightly over-attenuated hub-radial distortion.

TABLE IX

ATTENUATION PARAMETERS AT DESIGN SPEED FOR HUB AND TIP RADIALLY DISTORTED INLET FLOW

TYPE OF DISTORTION	POINT NUMBER	FIRST-STAGE ROTOR INLET			FIRST-STAGE EXIT			FAN EXIT		
		$(\Delta P/P)$ Test	$(\Delta P/P)$ Design	A_{r6} %	$(\Delta P/P)$ Test	$(\Delta P/P)$ Design	A_{r11} %	$(\Delta P/P)$ Test	$(\Delta P/P)$ Design	A_{r16} %
	6-10-31	-0.1440	0	0	-.1143	.0213	5.8	-.1427	-.0922	65.0
Tip Radial	6-10-32	-0.1430	0	0	-.1104	.0213	7.9	-.1494	-.0922	60.0
	6-10-34	-0.1373	0	0	-.0468	.0213	-50.4	-.1104	-.0922	86.7
	5-10-01	0.1426	0	0	-.0632	.0213	159.3	-.1322	-.0922	128.0
Hub Radial	5-10-03	0.1415	0	0	-.0401	.0213	143.3	-.0752	-.0922	87.9
	5-10-04	0.1444	0	0	-.0618	.0213	157.6	-.1134	-.0922	114.7

CIRCUMFERENTIALLY DISTORTED INLET FLOW

Circumferential distortion screens (Figure 32) were used to generate distortion patterns covering approximately a 90-degree segment of the 1st-stage rotor inlet annulus area and provided distortion parameters, $(P_{max}, -P_{min})P_{max}$, of 0.118, 0.142, and 0.143 at 12, 52, and 93 percent of span, respectively, at a near-design data point (Figure 91).

Overall Performance

Overall performance with circumferentially distorted inlet flow is shown in Figures 92 and 93 for the fan and first stage, and overall performance parameters are listed in Table XXVI, Appendix H. On these plots, filled symbols are used to designate data points based on six screen positions (data 30-degree increments), open symbols are used based on two screen-positions (90-degree increments), and dashed lines are used to indicate performance with uniform inlet flow. Data were taken at 90 percent of design speed instead of 85 percent to avoid high rotor 1 stresses associated with a first bending 4E resonance detected at 85 percent speed.

Fan and first stage overall performance appears to have been relatively unaffected by the circumferential inlet flow distortions employed in this test. The fan stall lines shown in the figures are nearly identical to those of uniform inlet flow and only minor changes in maximum flow are apparent. Some flattening of the pressure-flow characteristic occurs at design speed with circumferential distortion and indicated fan peak efficiencies decrease somewhat. Some of the difference in efficiency may be due to the non-flowfield program method of calculating efficiency values for circumferential distortion. The extremely high efficiencies shown in Figure 93 for the first stage are two-screen-position data points and are not considered to be as accurate as the lower efficiency six-screen-position data points.

Circumferential Distributions of Flow Field Parameters

The circumferential distributions of static pressure at design speed are shown in Figures 94 and 95. The pressures were measured by means of taps located on the outer case and inner hub at five axial-planes between the distortion screen and the 1st-stage rotor inlet. The profiles show regions of lower static pressure behind the screen, which is consistent with the results obtained during other fan test programs (ref. 2 & 3); however, in general the circumferential variation of pressure is less than had been observed in the tests of the other fans.

At both the hub and the tip, differences between maximum and minimum static pressures measured around the circumference were highest at the two axial-locations nearest the rotor leading edge, almost as high just downstream of the distortion screen, and lowest at the two axial-stations in between. The circumferential extent of the region of low static pressure decreased in the direction of flow, which gave steeper circumferential gradients of static pressure as the rotor was approached.

Circumferential distributions of total pressure ratio, static pressure ratio, absolute Mach number, relative air-angle, absolute air-angle, and meridional velocity at the 1st-stage rotor inlet are shown in Figure 96 at 10, 50, and 90 percent span for data points at design speed for wide-open and near-stall throttle settings. Distributions of total pressure ratio, static pressure ratio, absolute Mach number, total temperature ratio, absolute air-angle, and meridional velocity at the first-stage exit and fan exit are presented in Figures 97 and 98, respectively. Of interest in these plots is the attenuation of total pressure distortion at 50 percent and 90 percent of span and the apparent amplification at the hub. These plots also reflect the potential inaccuracies in performance based on two screen-positions instead of the six used throughout previous programs. Where parameters are known to vary significantly around the circumference, appreciable differences in calculated average values may have resulted, as suggested by the plots of inlet total pressure (Figure 96).

The rather improbable "sawtooth" distribution of absolute air-angle at the fan exit (Figure 96) is probably due to disagreement in readings of the two wedge-probes rather than actual angle variation. Table X summarizes attenuations for the two design-speed points based on six screen-positions, indicating that the first stage amplified distortion, while the second stage attenuated it with a sizable net attenuation by the fan except at the hub. The attenuation parameter, Ac, at a given station, x, is defined as:

$$\frac{(Ac)x}{100} = 1 - \frac{\left(\frac{P_{max.} - P_{min.}}{P_{max.}}\right)_x}{\left(\frac{P_{max.} - P_{min.}}{P_{max.}}\right)_{inlet}}$$

Negative values of Ac represent amplified distortions and positive values represent percentages of attenuation.

Additional velocity vector parameters are given in Appendix H, Tables XXVII, XXVIII, and XXIX. Also given are circumferential distributions of total temperature ratio at first-stator exit and fan exit (Tables XXX and XXXI).

TABLE X

ATTENUATION PARAMETERS AT DESIGN SPEED
FOR CIRCUMFERENTIALLY DISTORTED INLET FLOW

PERCENT	POINT 007-10-02			POINT 007-10-03		
SPAN	$\left(\frac{P_{MAX.} - P_{MIN.}}{P_{MAX.}}\right)_6$	(Ac) 11	(Ac) 16	$\left(\frac{P_{MAX.} - P_{MIN.}}{P_{MAX.}}\right)_6$	(Ac) 11	(Ac) 16
10	0.1176	-264	0.6	0.1024	-139	-41.3
50	0.1416	- 18.2	39.1	0.1327	- 44.4	67.6
90	0.1429	- 9.7	46.9	0.1266	- 10.6	31.1

Station 6: Fan Inlet
Station 11: First-Stage Exit
Station 16: Fan Exit

REMARKS

The two-stage fan was well matched at design speed, and it is unlikely that resetting the stators would have improved overall efficiency. The loadings of the second-stage hub appear to have caused stall, but it could not be determined whether the 2nd-stage rotor or the stator instigated the stall. If the stator initiated stall, it is probable that stall margin can be increased by closing stator 2 to reduce its loading and incidence angles.

The rapid decrease in efficiency at speeds above design, indicates mismatched incidence angles, which generate high losses. The high Mach numbers entering each blade row at overspeed operation reduced the low-loss incidence ranges of the blade rows, accentuating the importance of incidence angle matching. It is probable that resetting the stators will improve high-speed efficiency significantly.

At part-speed, the first stage was highly loaded while the second stage was relatively lightly loaded. It may be possible to delay stall by redistributing loadings between stages through the use of variable stator settings. Redistribution of loading is more easily obtained with a variable inlet guide vane, which was not available on this rig. Improvements in efficiency would be difficult to obtain since the ranges of low-loss incidence covered most of the operating range of all blades rows at part-speed.

Rotor tip casing treatment over the 1st-stage rotor would probably increase tip-loading capability and delay stall at low speed, particularly with tip radially distorted inlet flow. The calculated loadings at the tip of the 2nd-stage rotor do not appear to have been sufficiently high to have caused stall, and it is unlikely that casing treatment over this rotor would improve stall margin.

SUMMARY OF RESULTS

Tests of the two-stage fan having a 1st-stage rotor tip speed of 1450 ft/sec [442 m/sec] (and the redesigned 2nd-stage rotor) produced the following significant results:

1. A corrected flow of 185.4 lbm/sec [84.0 kg/sec] and a pressure ratio of 2.8 were achieved at design speed at an adiabatic efficiency of 85.0% and a stall margin of 12%.

2. The addition of a partspan shroud on the redesigned 2nd-stage rotor prevented flutter at all operating conditions.

3. Peak operating-line adiabatic efficiency was 85.5% and was obtained at 85 percent and 95 percent of design speed. Operating line efficiency dropped to 83.0% at 50 percent speed and dropped rapidly with overspeed to values of 82.0% and 78.5% at 105 percent and 110 percent design of speed, respectively.

4. Losses due to the 2nd-stage rotor partspan shroud reduced fan efficiency. At design speed and pressure ratio, overall adiabatic efficiency was 85% compared to 85.7% in a previous test with a shroudless 2nd-stage rotor.

5. Stall margin was 21% at 50 percent speed, dropping monotonically to 12% at design speed. Stall margin then increased to 15% at 105 percent speed. Stalls were initiated by high loadings at the tip of the first stage at low speeds and by high loadings at the hub of the second stage at high speeds.

6. The skewed pressure-ratio profile of the redesigned 2nd-stage rotor, with higher pressure at the hub than at the tip, gave two percentage points more stall margin at design speed than the constant radial pressure profile of the original rotor.

7. The fan maintained at least 6% stall margin when operating with severe tip-radial, hub-radial, and circumferential distortions. The hub distortion reduced stall margin at design speed, where excessive hub loadings caused stall with undistorted flow. At low speeds, where excessive tip loadings caused stall with undistorted flow, the hub distortion increased stall margin. The tip distortion increased stall margin at high speeds by relieving hub loadings. At 85 percent of design speed, the tip distortion reduced stall margin but had little effect at 70 percent speed. The circumferential distortion had little effect on stall margin at all speeds tested.

8. Radial distortions were always attenuated. Circumferential distortions were also attenuated except for the near-stall data points where distortion at the hub was amplified.

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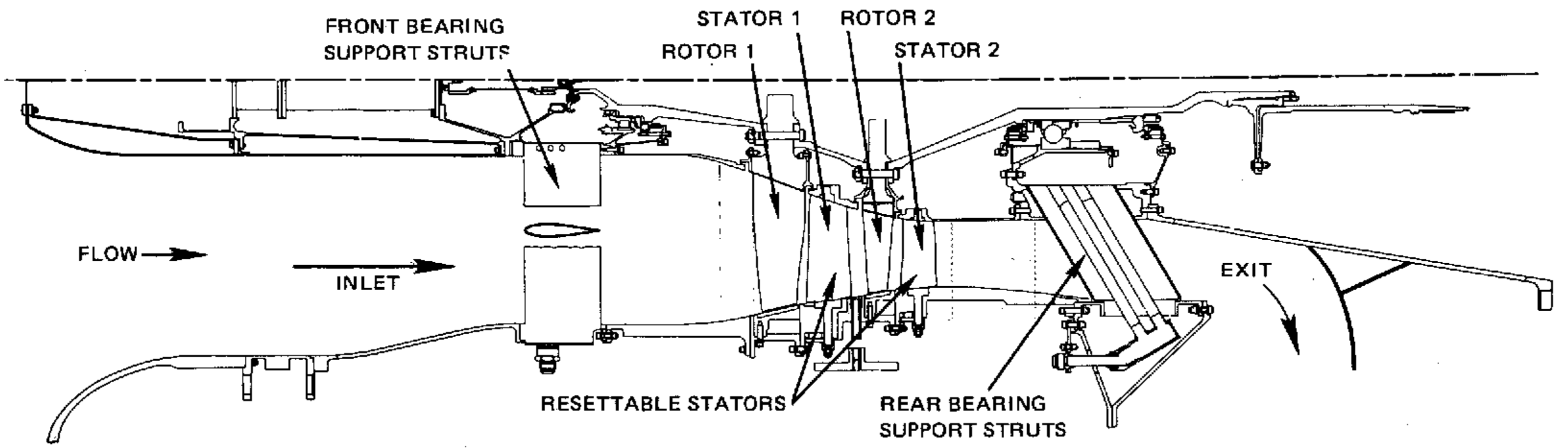


Figure 1 Schematic of Two-Stage Fan Test Arrangement

DIMENSION IN INCHES
(METERS)

	DIAMETER		AXIAL DISTANCE FROM ROTOR 1 LEADING EDGE	
STA	I.D.	O.D.	z - I.D.	z - O.D.
4	10.00 (0.254)	32.48 (0.825)	-5.20 (-0.132)	-5.20 (-0.132)
5	10.26 (0.261)	32.33 (0.821)	-3.70 (-0.094)	-3.70 (-0.094)
6	10.94 (0.278)	31.96 (0.811)	-2.245 (-0.057)	-2.245 (-0.057)
7	12.40 (0.315)	31.00 (0.787)	0.0 (0.0)	0.42 (0.011)
8	14.84 (0.377)	29.93 (0.760)	3.30 (0.084)	2.75 (0.070)
9	15.22 (0.387)	29.67 (0.754)	3.80 (0.097)	3.45 (0.088)
10	16.85 (0.428)	28.96 (0.736)	6.15 (0.156)	6.33 (0.161)
11	17.18 (0.436)	28.82 (0.752)	6.75 (0.172)	6.75 (0.172)
*12	17.39 (0.442)	28.58 (0.726)	7.23 (0.184)	7.57 (0.192)
** 12	17.39 (0.442)	28.55 (0.725)	7.23 (0.184)	7.65 (0.194)
*13	18.35 (0.467)	28.12 (0.714)	9.20 (0.234)	8.82 (0.224)
** 13	18.37 (0.467)	28.14 (0.715)	9.27 (0.236)	8.76 (0.223)
14	18.58 (0.472)	27.90 (0.709)	9.80 (0.249)	9.59 (0.244)
15	18.90 (0.480)	27.60 (0.701)	11.85 (0.301)	11.93 (0.303)
16	18.90 (0.480)	27.60 (0.701)	13.50 (0.343)	13.50 (0.343)

*ORIGINAL
**REDESIGN } DENOTES CHANGES IN AXIAL POSITION DUE TO REDESIGN

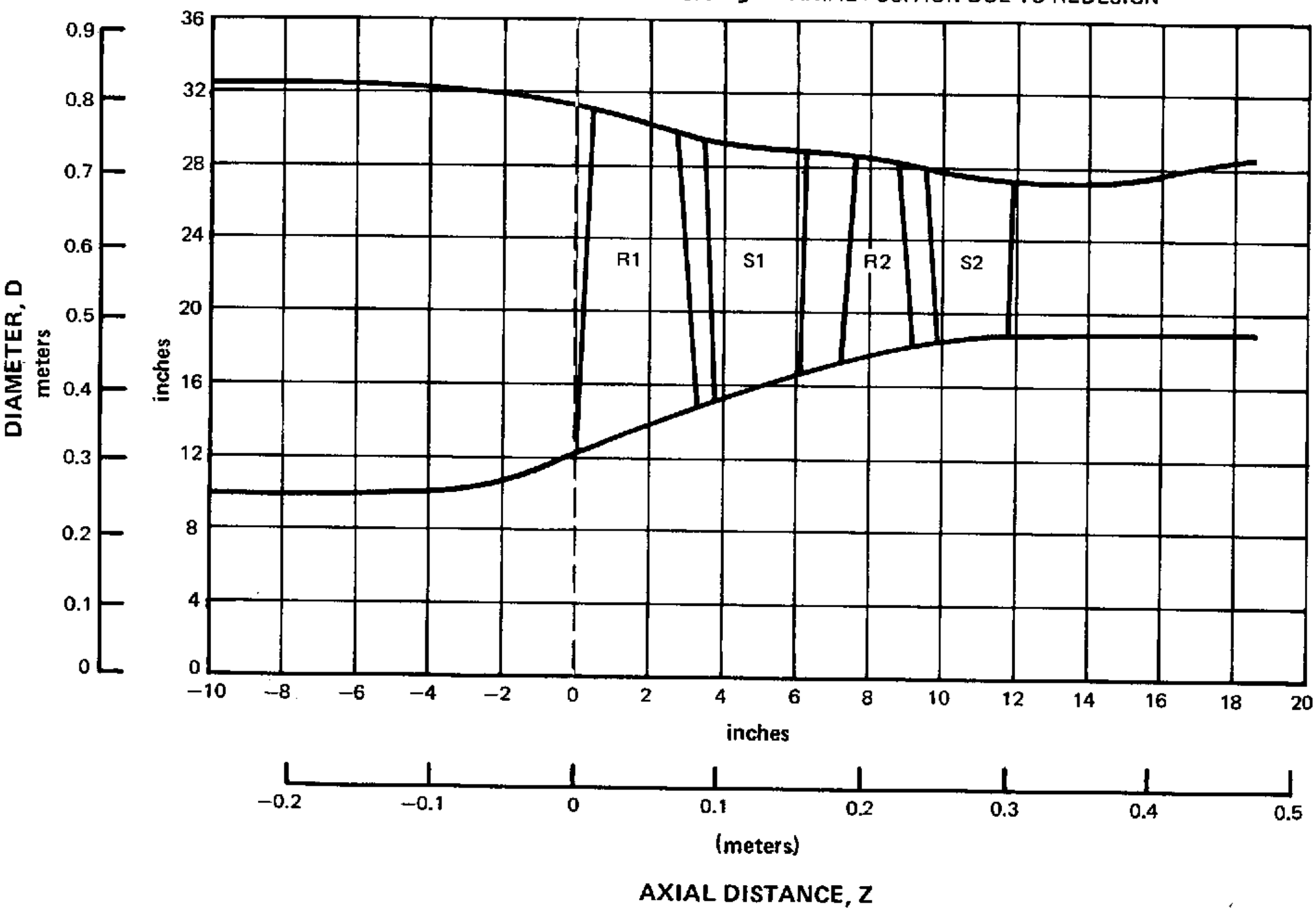
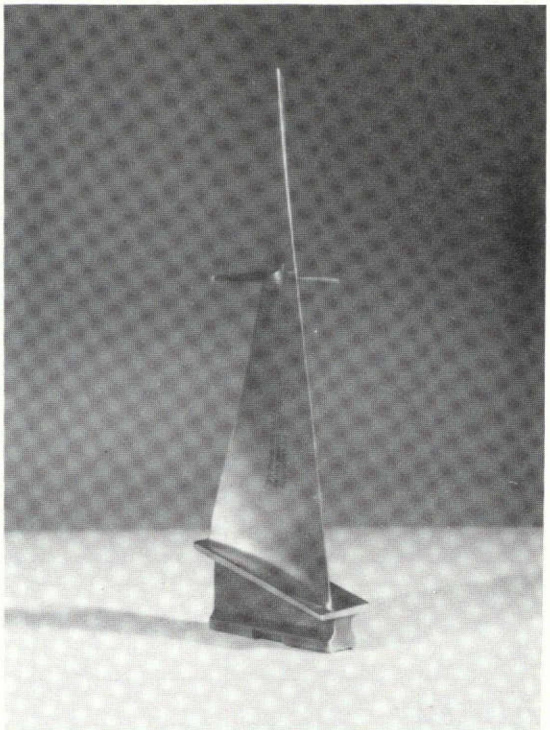
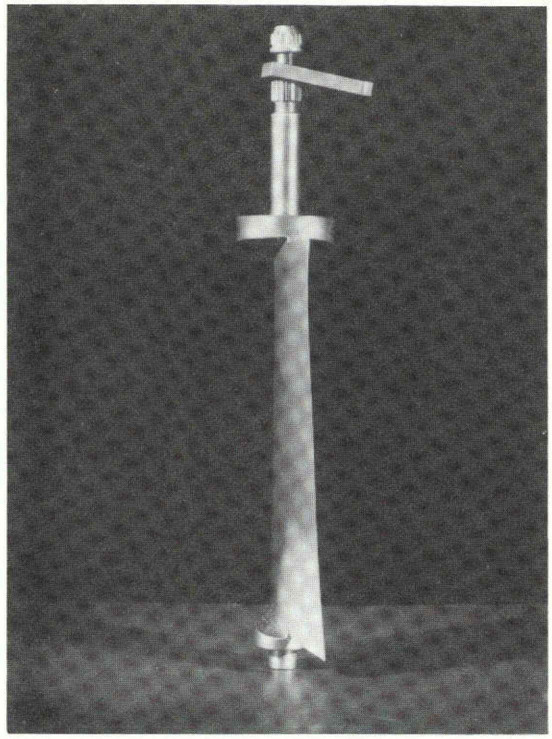


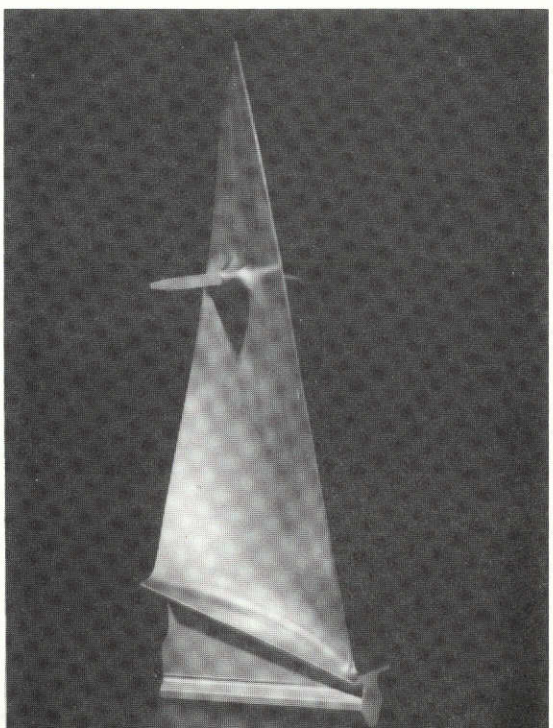
Figure 2 Fan Flowpath



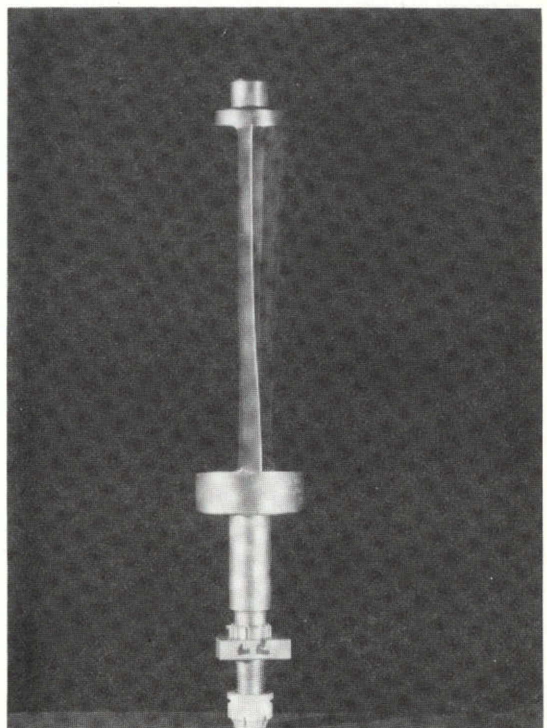
First-Stage Blade



First-Stage Vane



Second-Stage Redesigned Blade



Second-Stage Vane

Figure 3   Photographs of Blades and Vanes

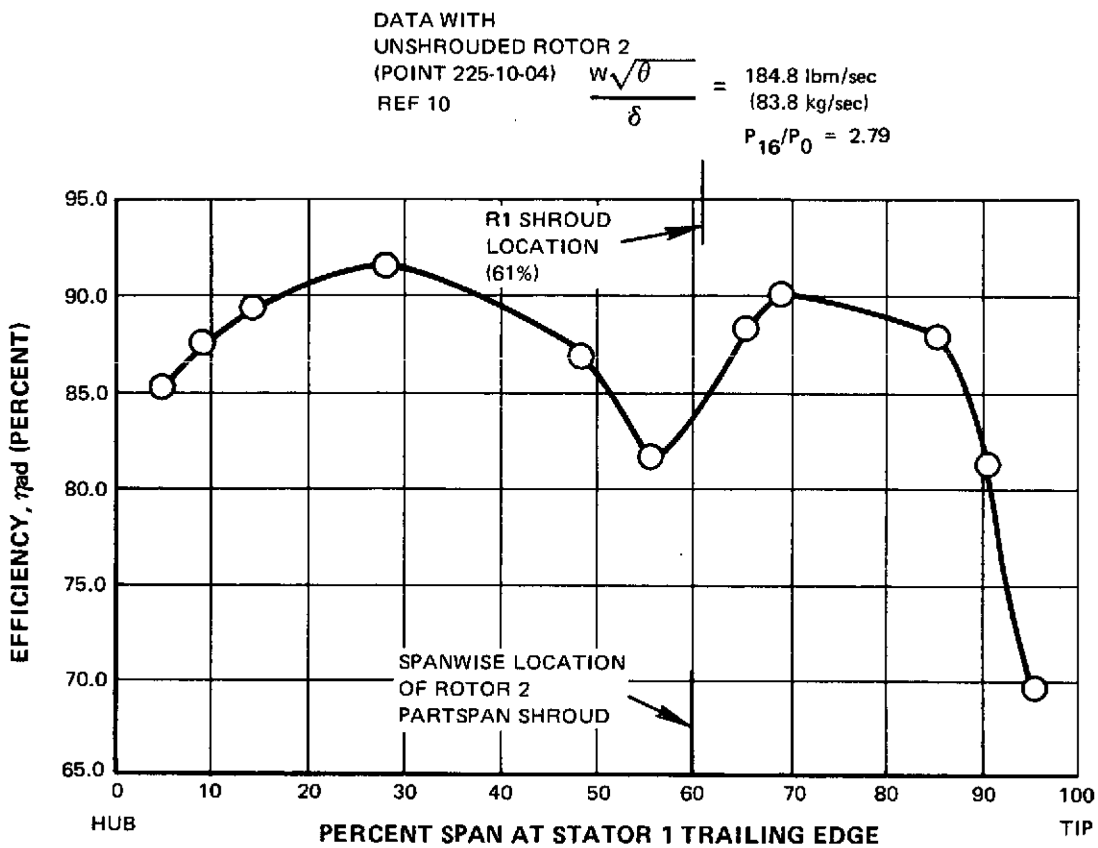


Figure 4 Stage 1 Efficiency Versus Span Showing Wake of the Part-Span Shroud

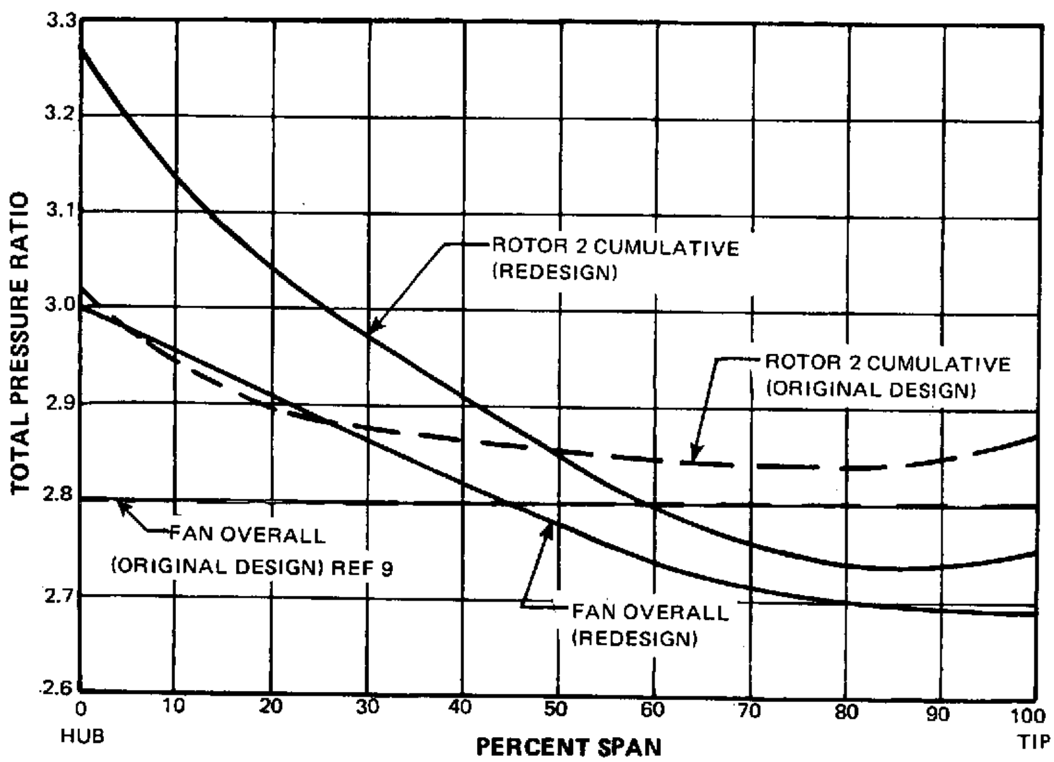


Figure 5 Design Total Pressure Ratio Versus Span at Rotor 2 Exit and Fan Exit

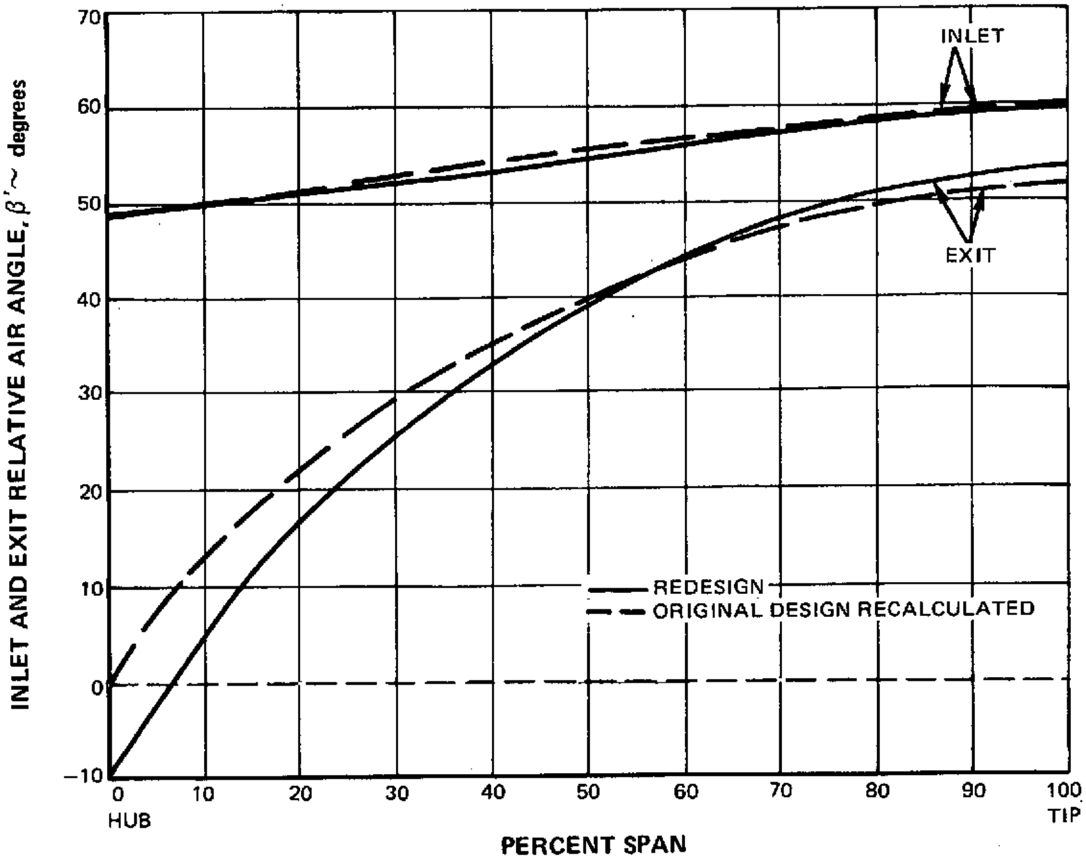


Figure 6 Design Inlet and Exit Relative Air Angle Versus Span for Original and Redesigned Rotor 2

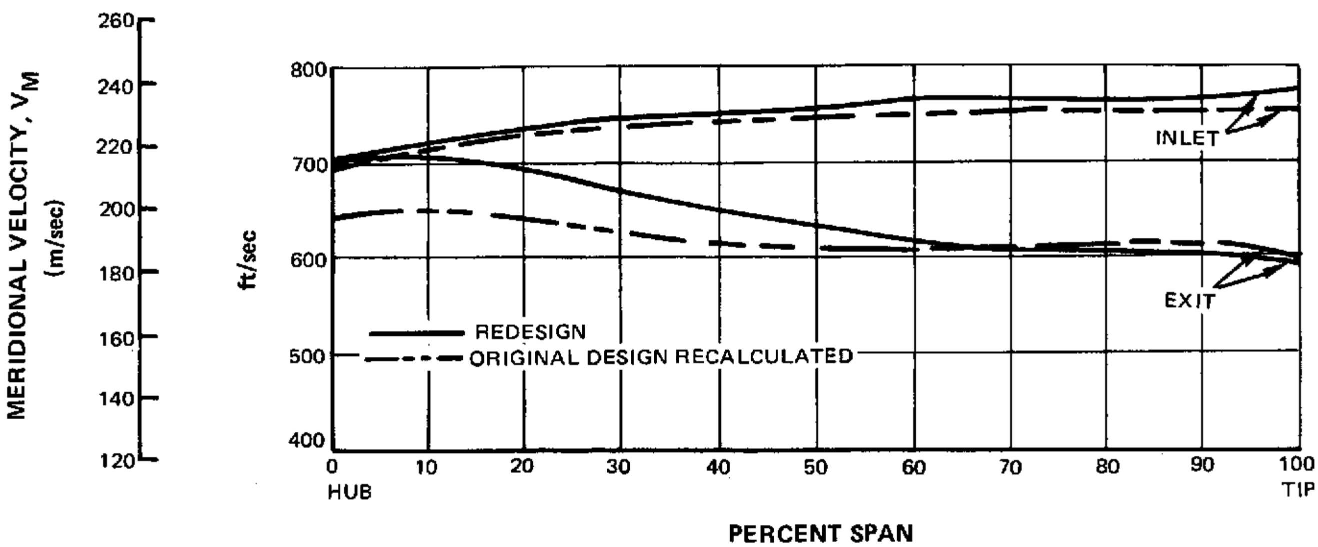


Figure 7 Design Meridional Velocity Versus Span for Original and Redesigned Rotor 2

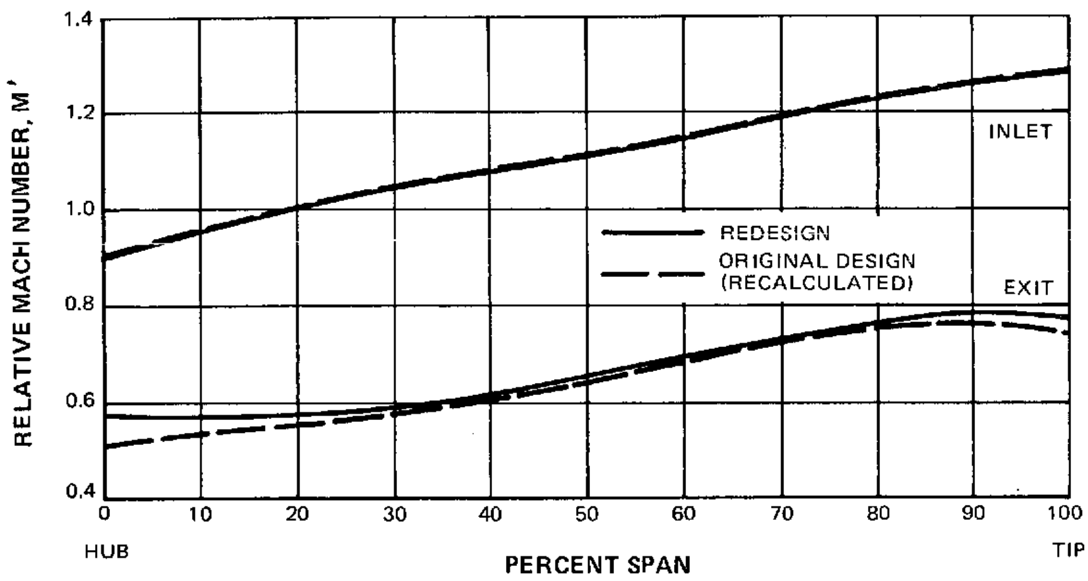


Figure 8 Design Relative Mach Number Versus Span for Original and Redesigned Rotor 2

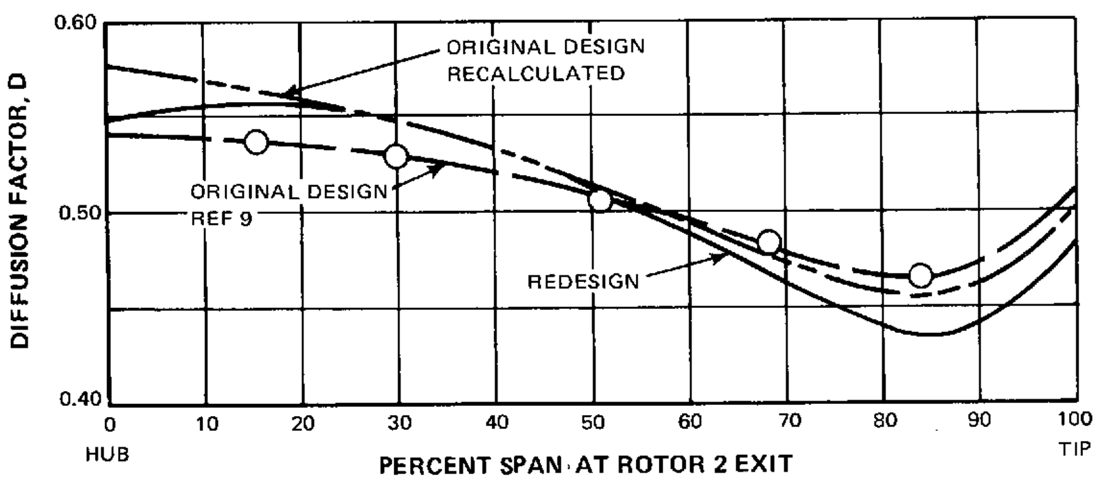


Figure 9 Design Diffusion Factor Versus Span for Original and Redesigned Rotor 2

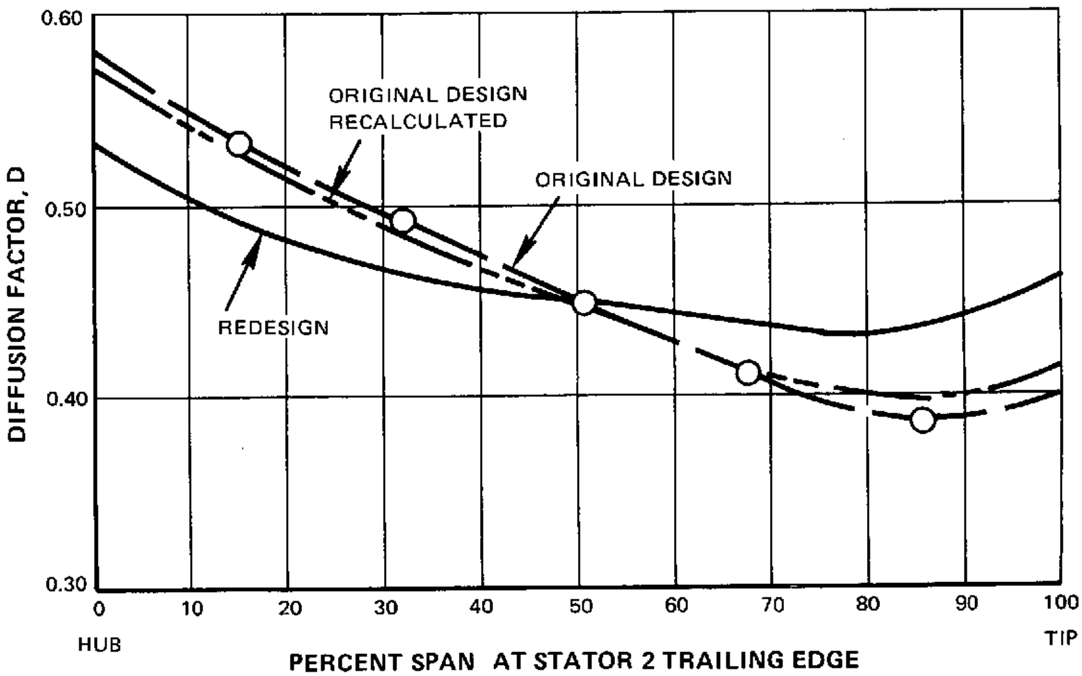


Figure 10 Stator Design Diffusion Factor Versus Span for Original and Redesigned Rotor 2

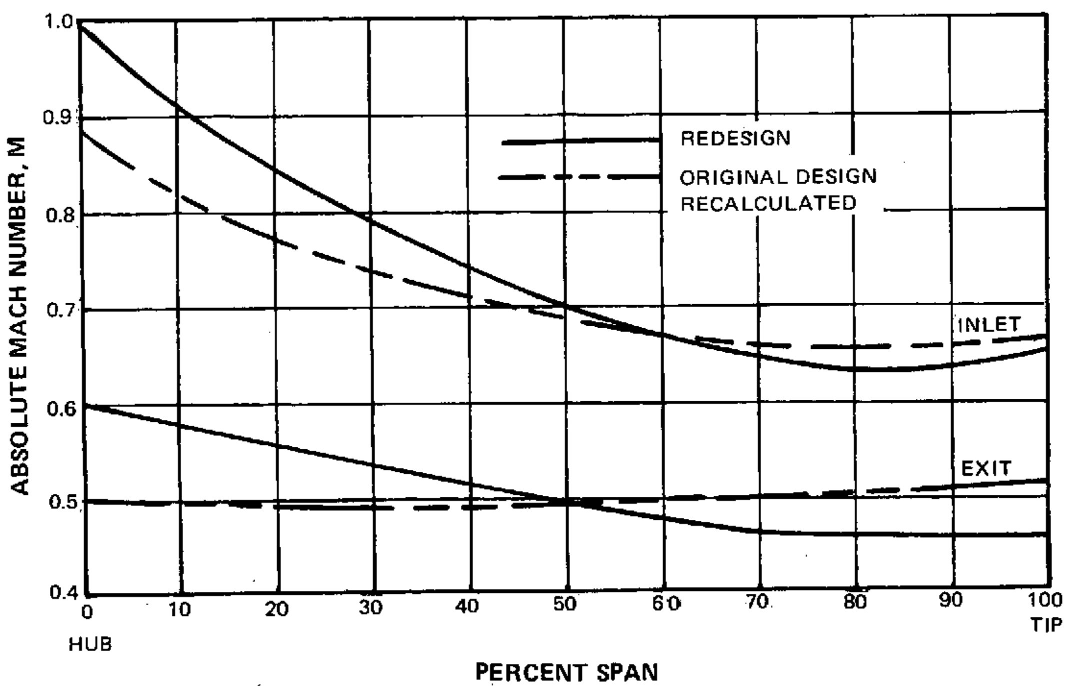


Figure 11 Stator 2 Design Mach Number Versus Span for Original and Redesigned Rotor 2

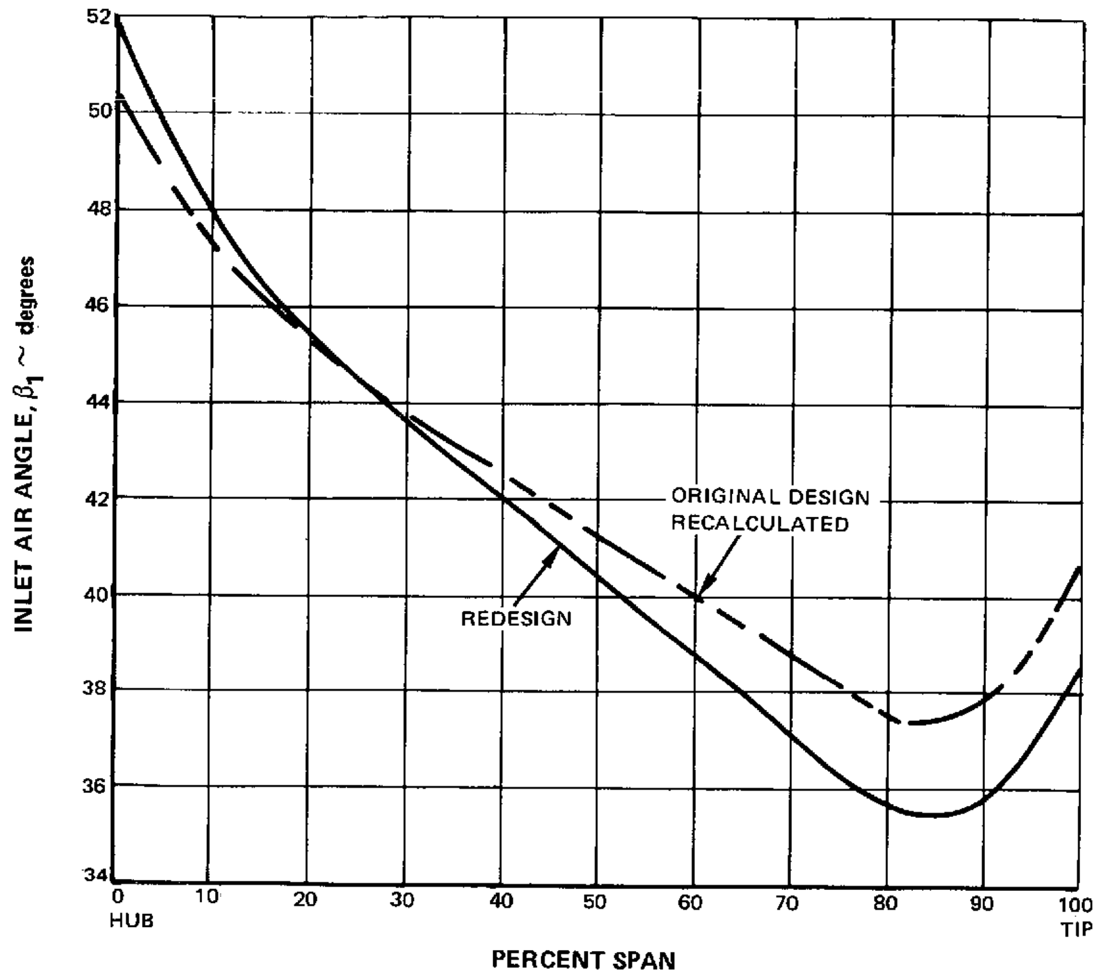


Figure 12 Stator 2 Design Inlet Air Angle Versus Span for Original and Redesigned Rotor 2

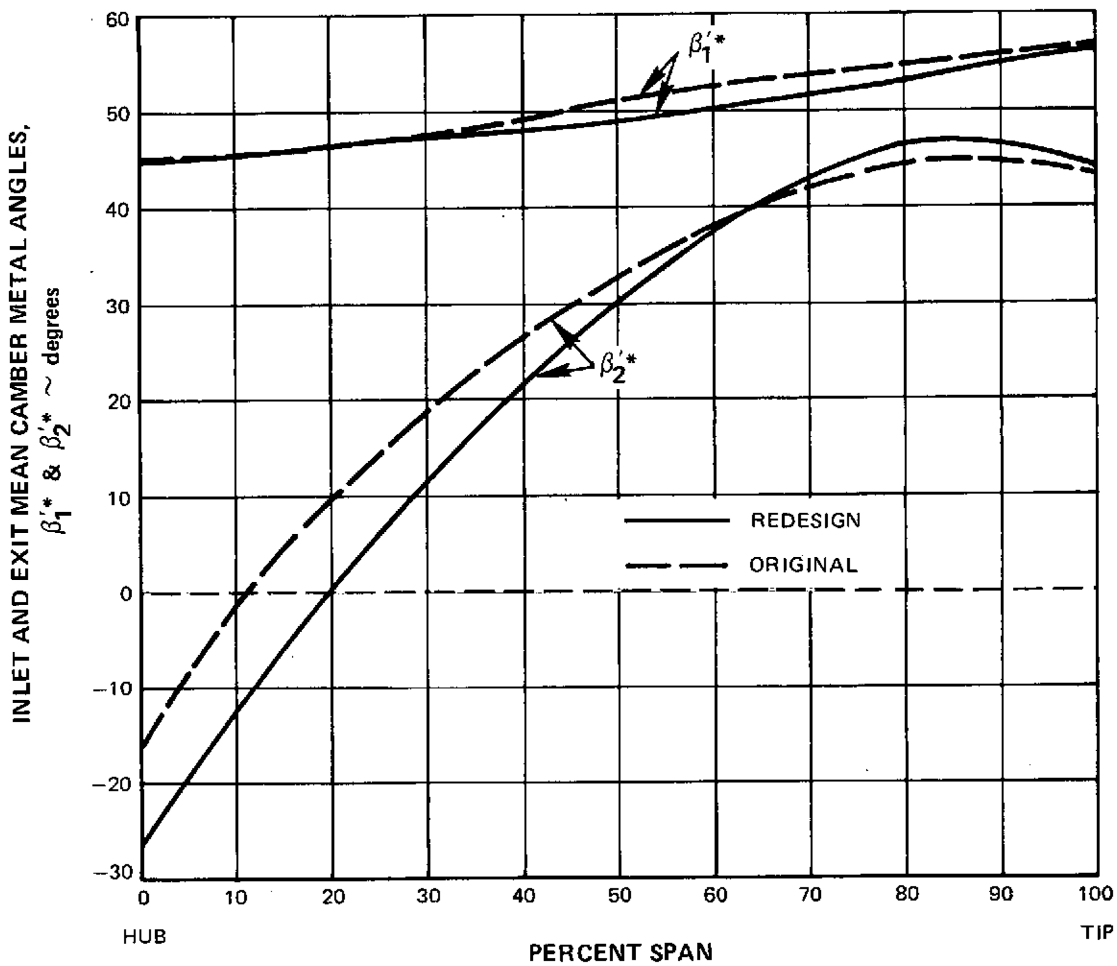


Figure 13 Redesigned Rotor 2 Inlet and Exit Metal Angles Versus Span

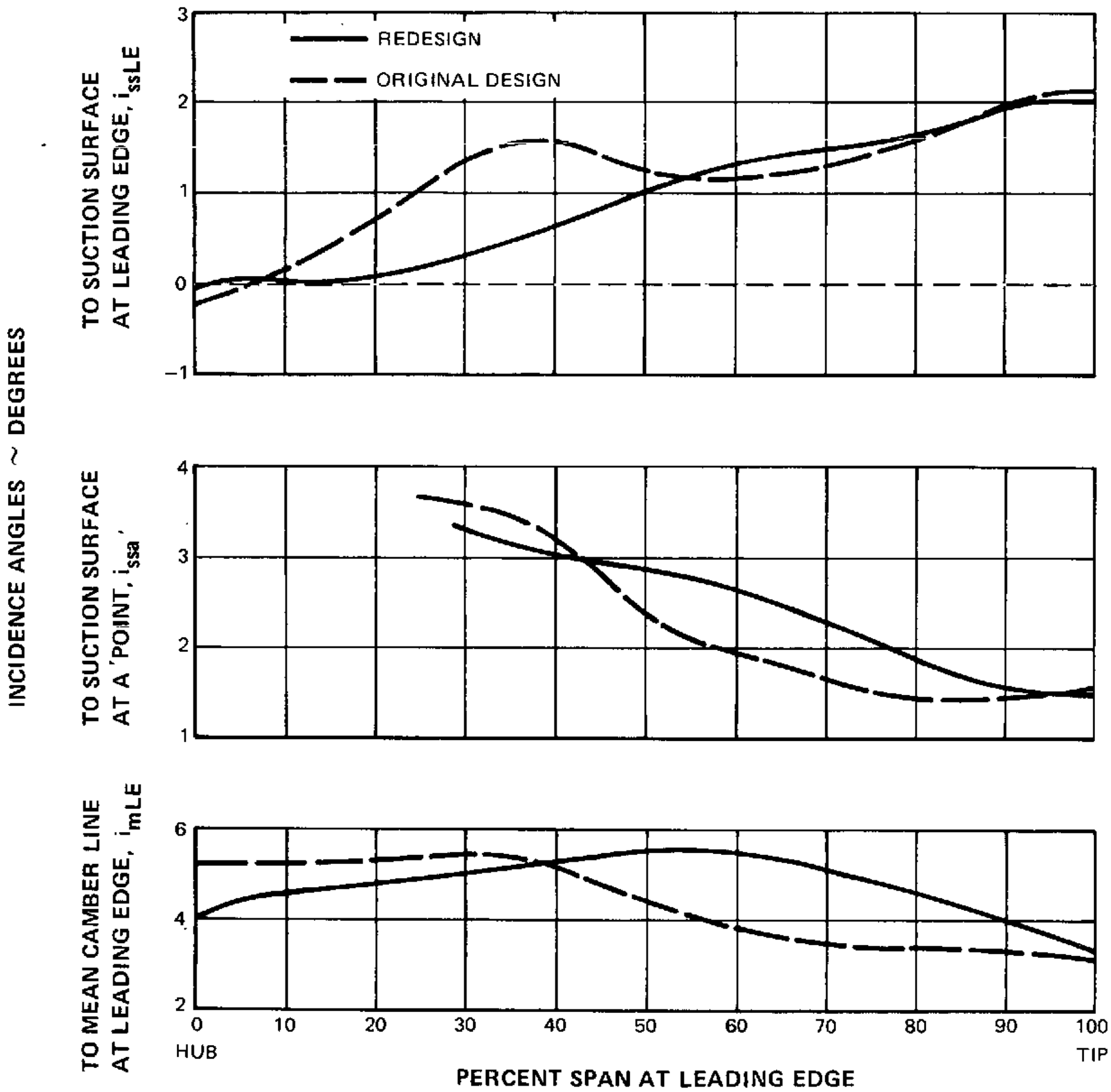


Figure 14 Redesigned Rotor 2 Incidence Angle Versus Span

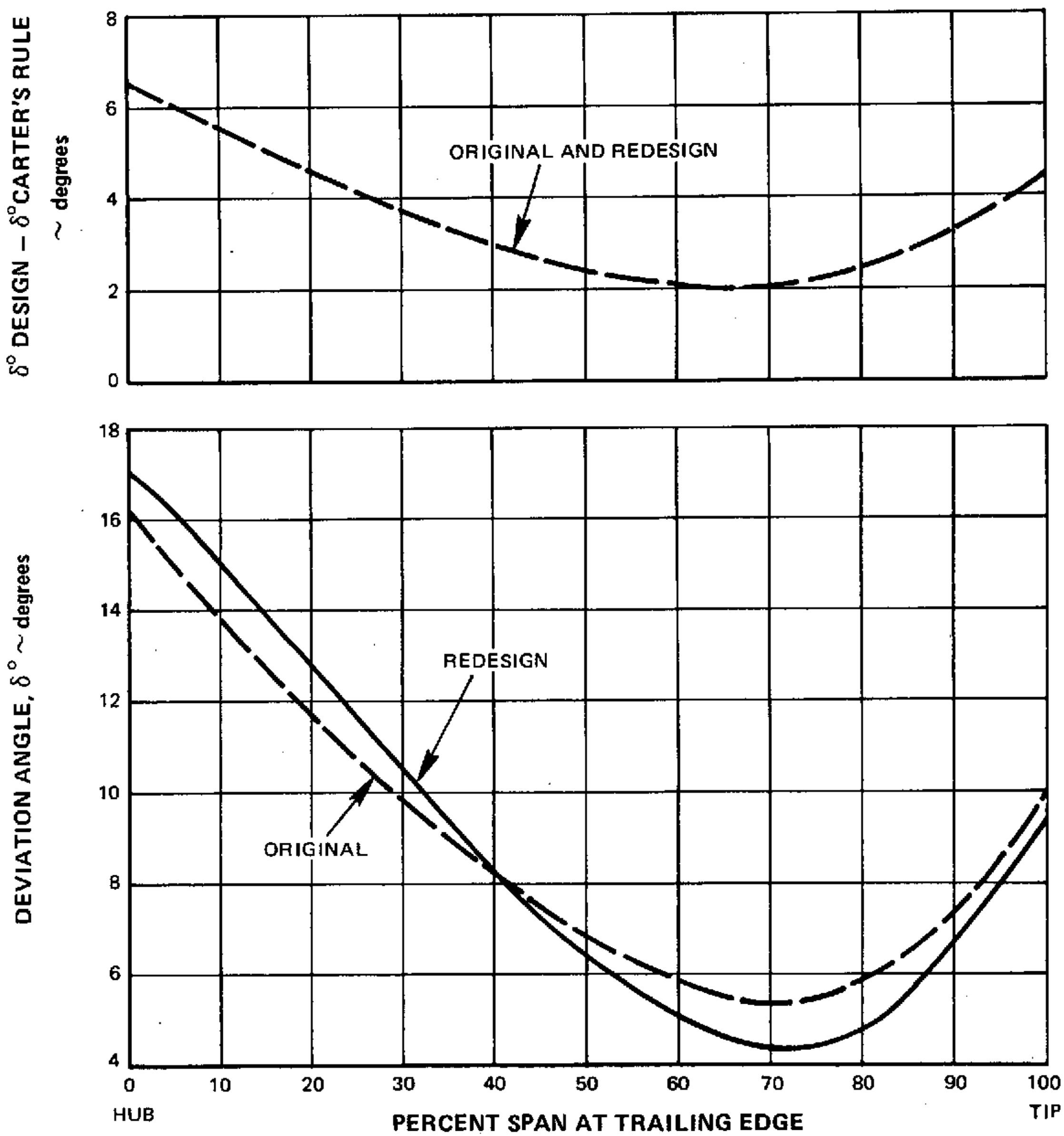


Figure 15 Redesigned Rotor 2 Deviation Angles Versus Span

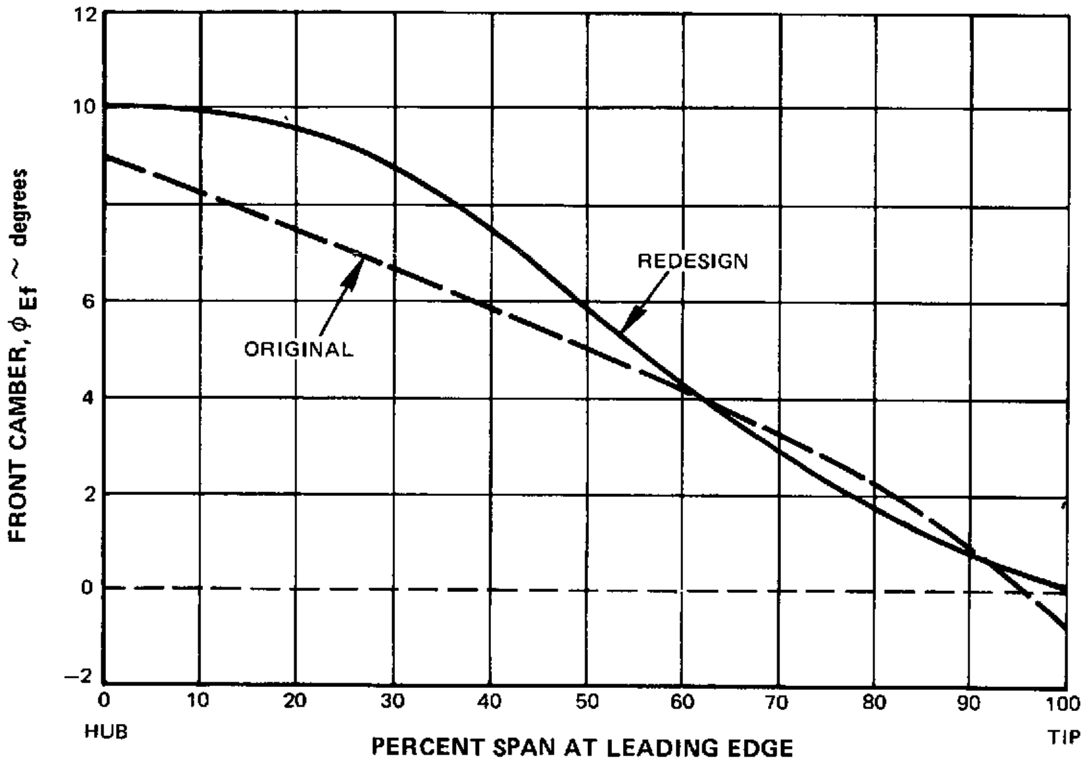


Figure 16 Redesigned Rotor 2 Front Camber Angles Versus Span

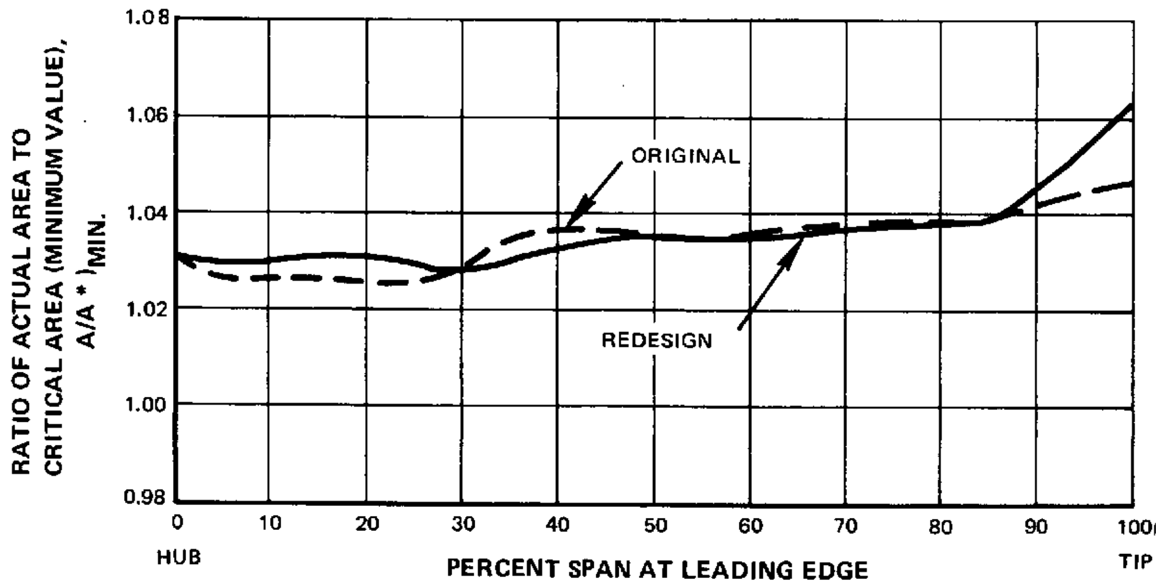


Figure 17 Redesigned Rotor 2 Minimum Channnel Area Ratios Versus Span

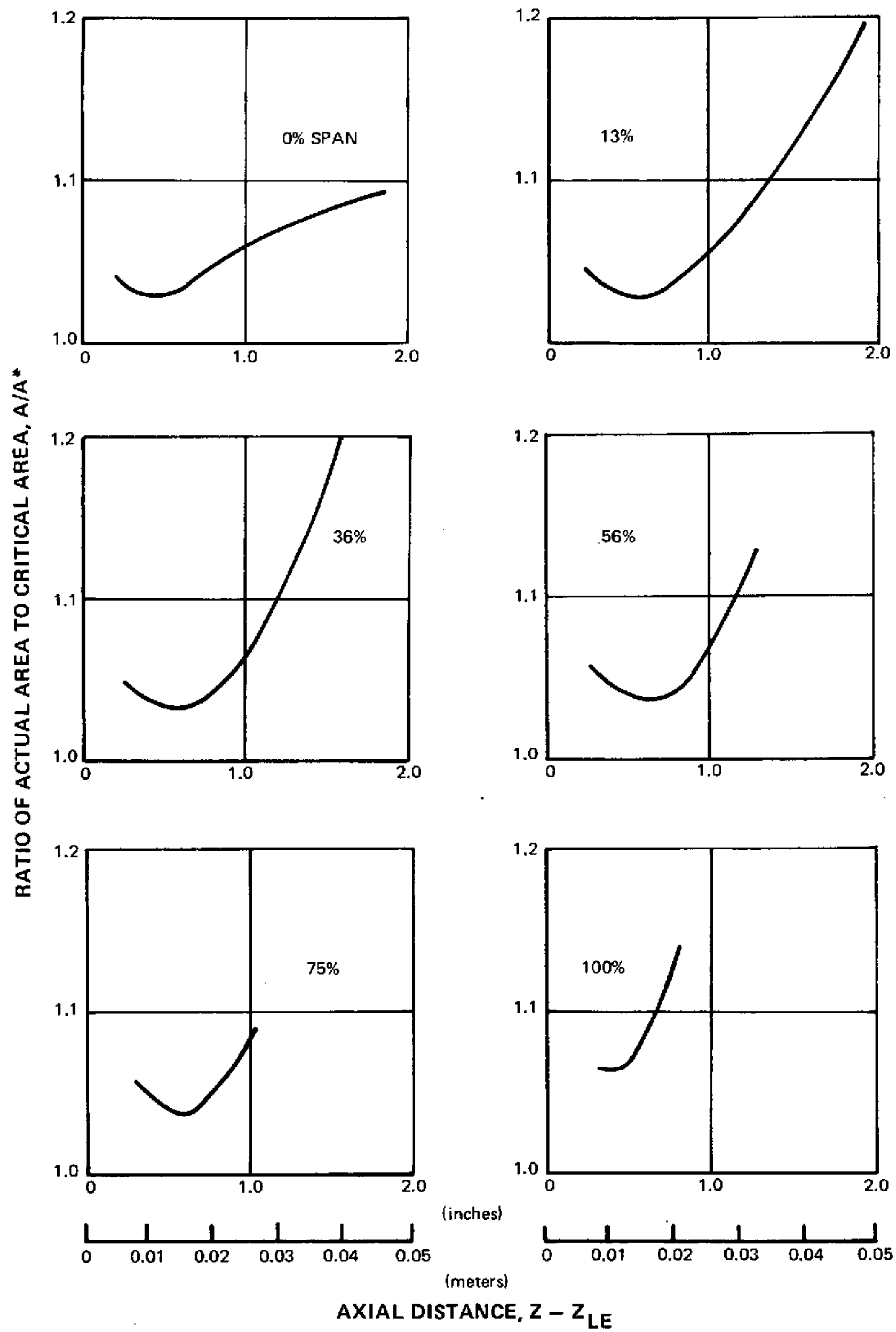


Figure 18 Redesigned Rotor 2 Channnel Area Ratios Versus Axial Distance Percent Span at Blade Leading Edge

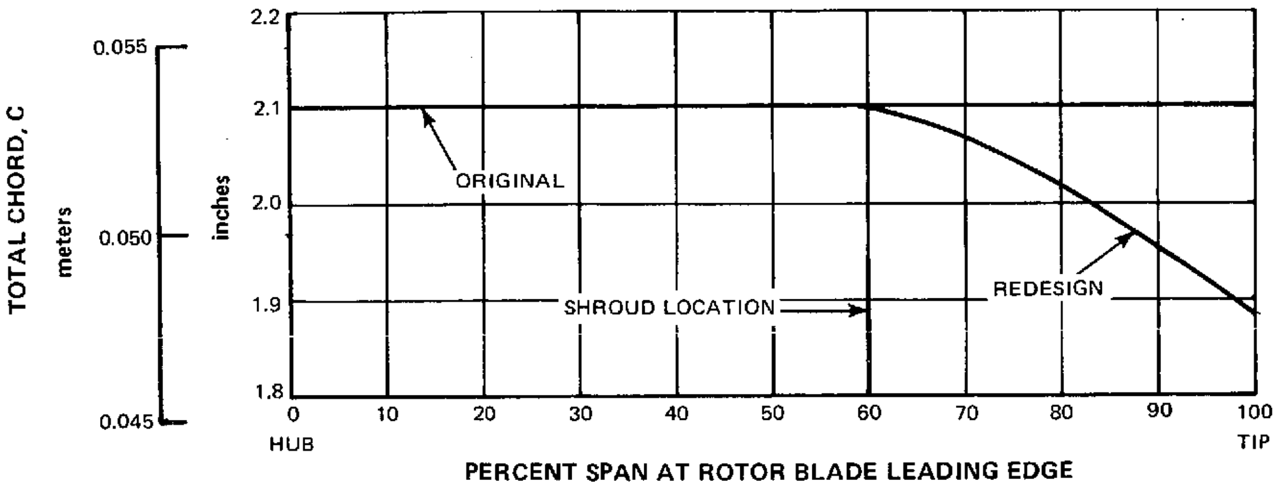


Figure 19 Chord Versus Span for Original and Redesigned Rotor 2

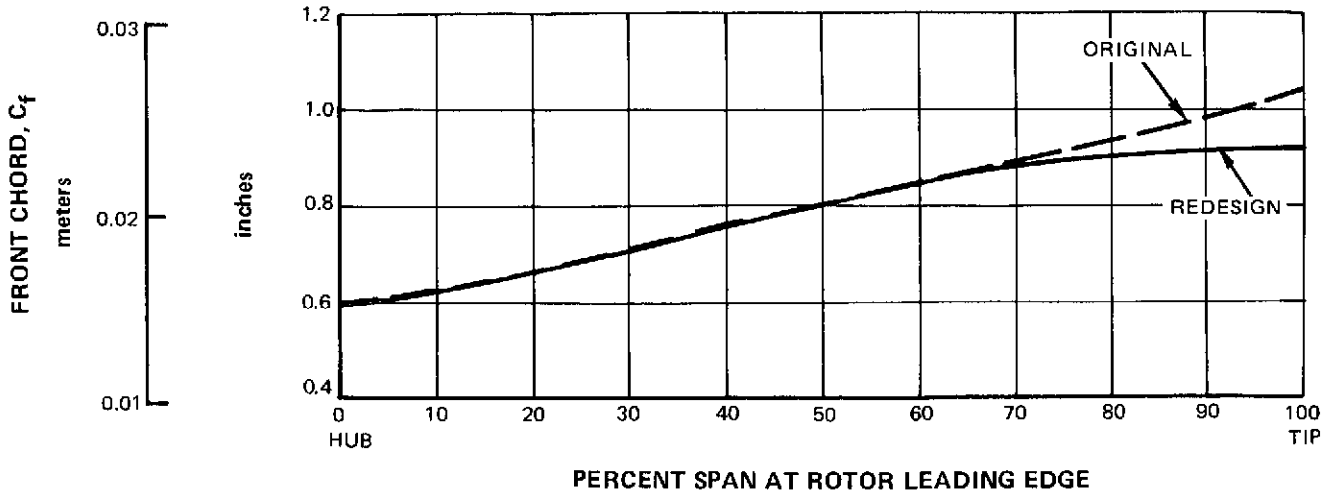


Figure 20 Front Chord Versus Span for Original and Redesigned Rotor 2

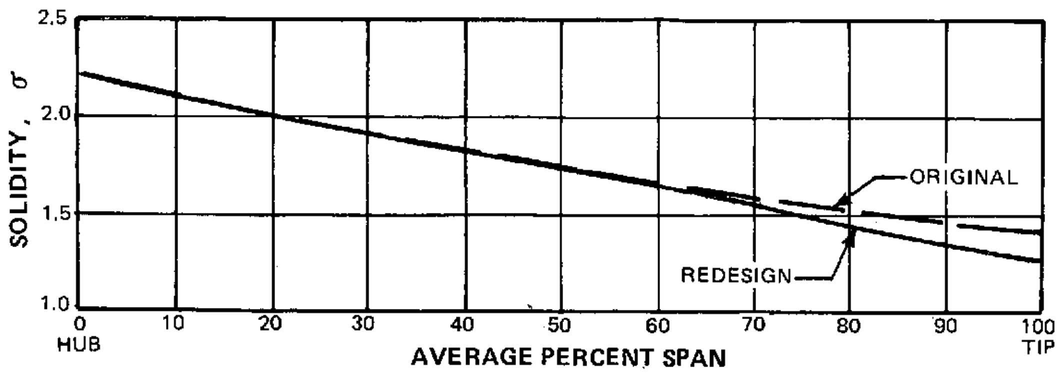


Figure 21 Solidity Versus Span for Original and Redesigned Rotor 2

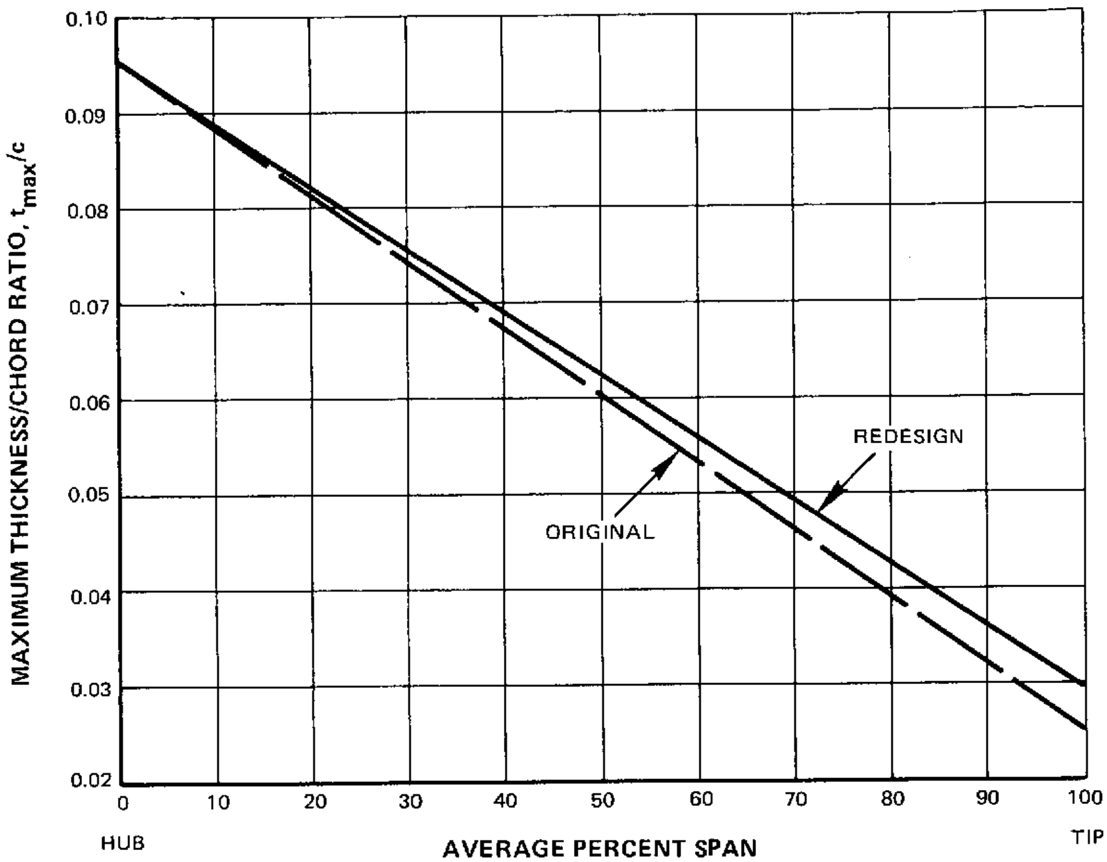


Figure 22 Maximum Thickness/Chord Ratio Versus Span for Original and Redesigned Rotor 2

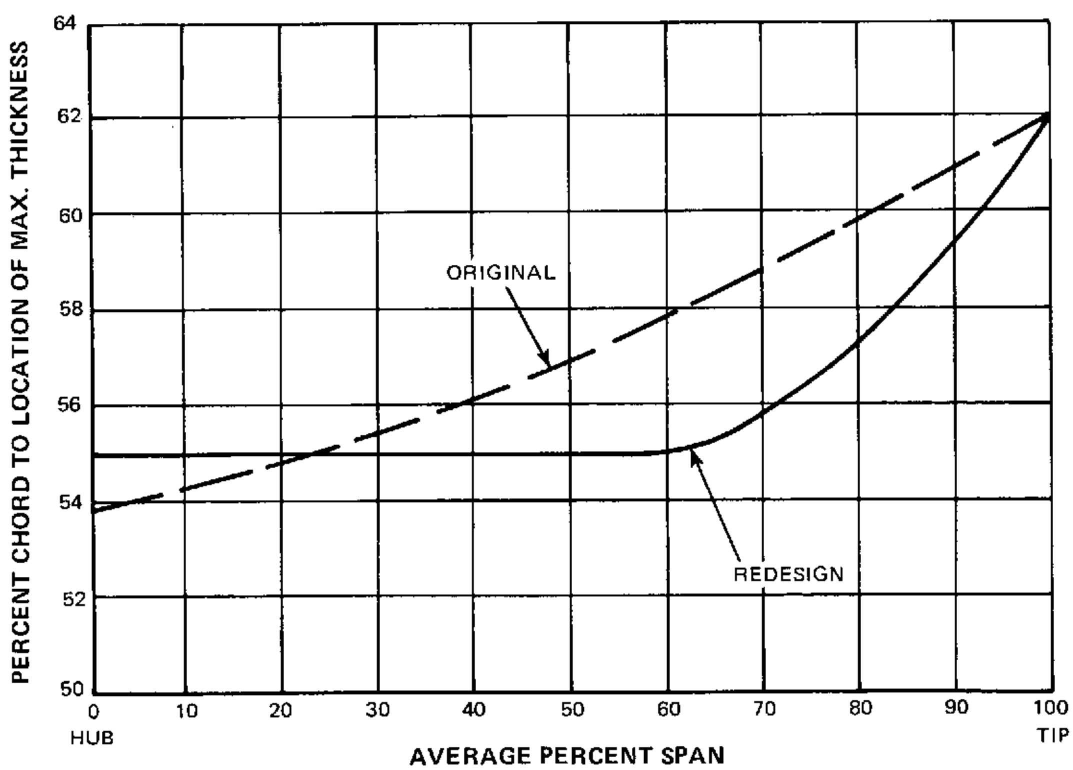


Figure 23 Chordwise Location of Airfoil Maximum Thickness Versus Span for Original and Redesigned Rotor 2

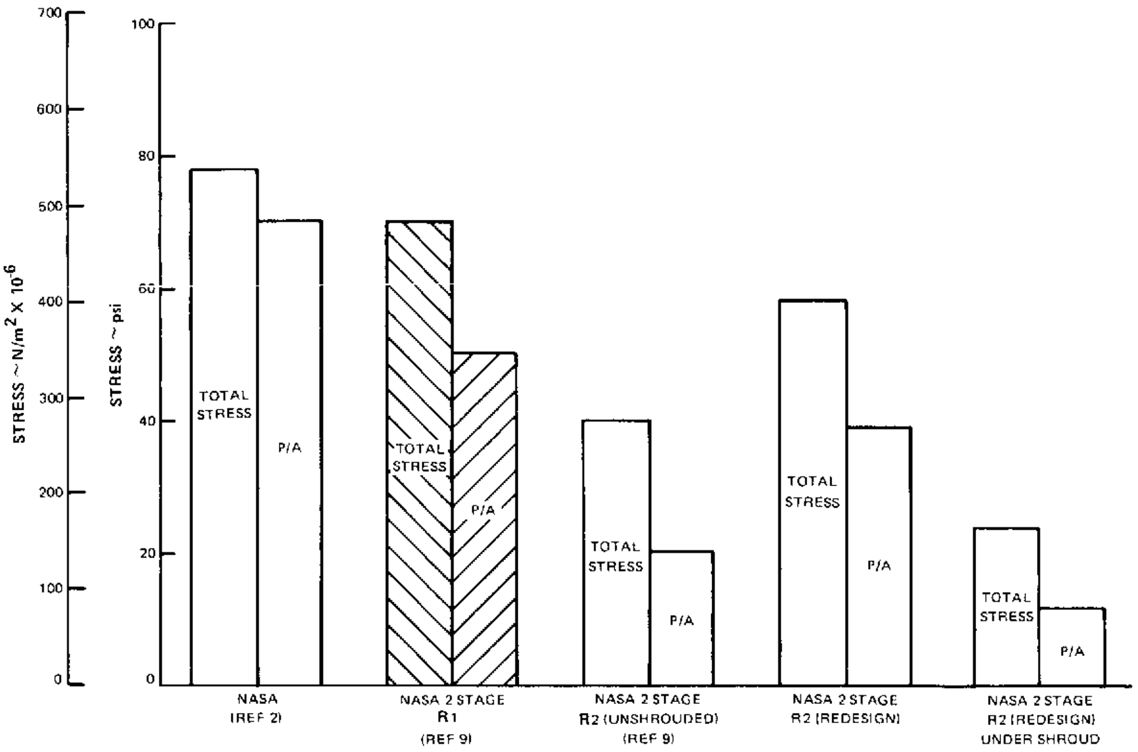


Figure 24 Redesigned Rotor 2 Combined Stress Compared to Successful Experience

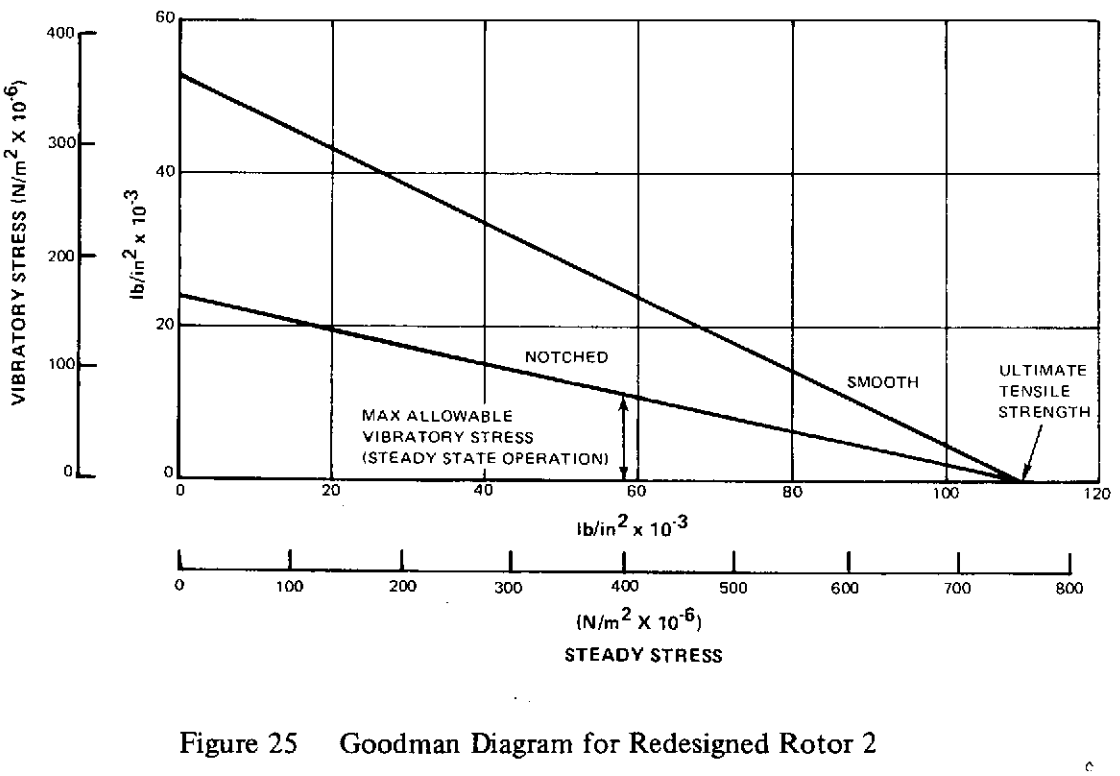


Figure 25 Goodman Diagram for Redesigned Rotor 2

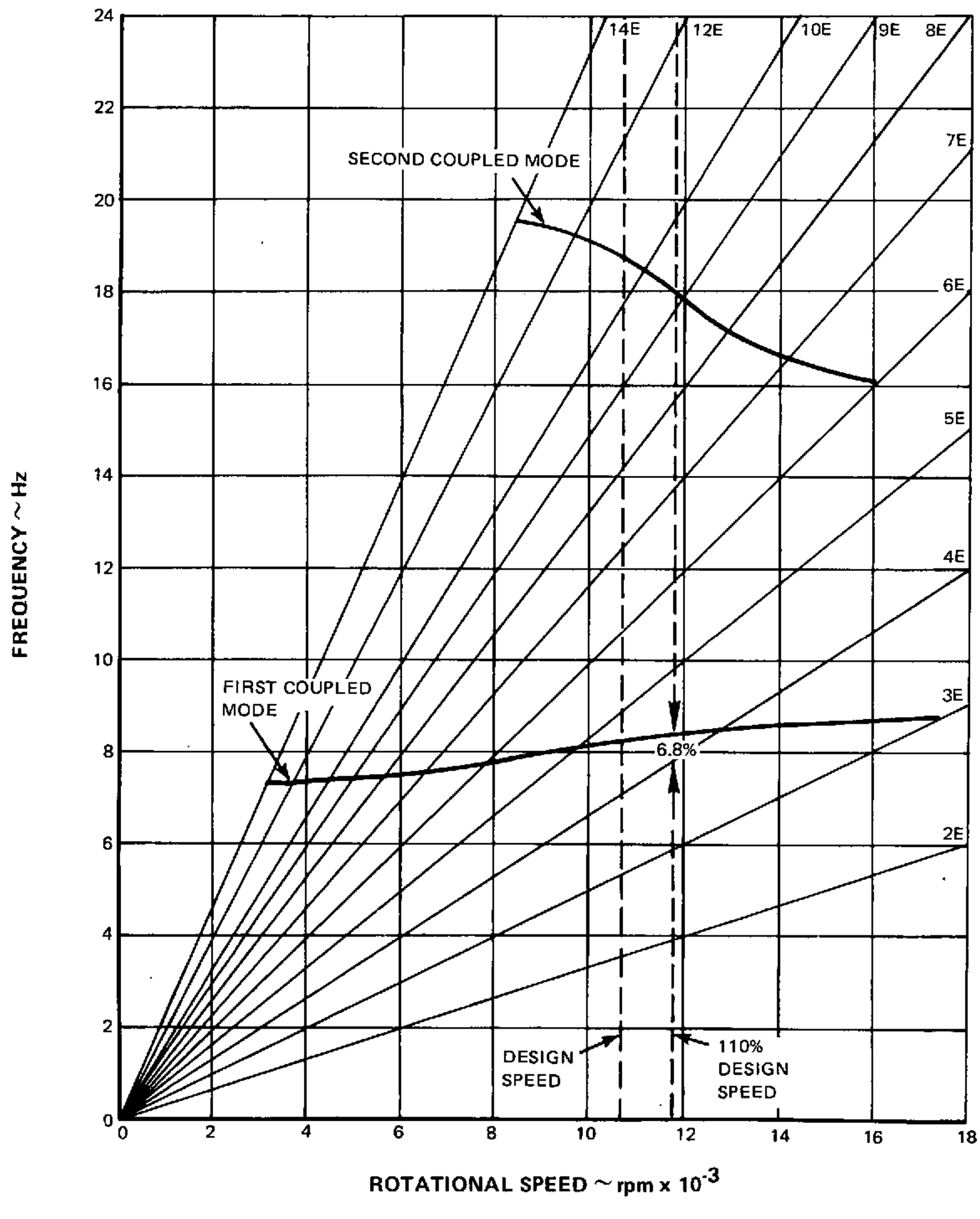


Figure 26 Resonance Diagram for Redesigned Rotor 2

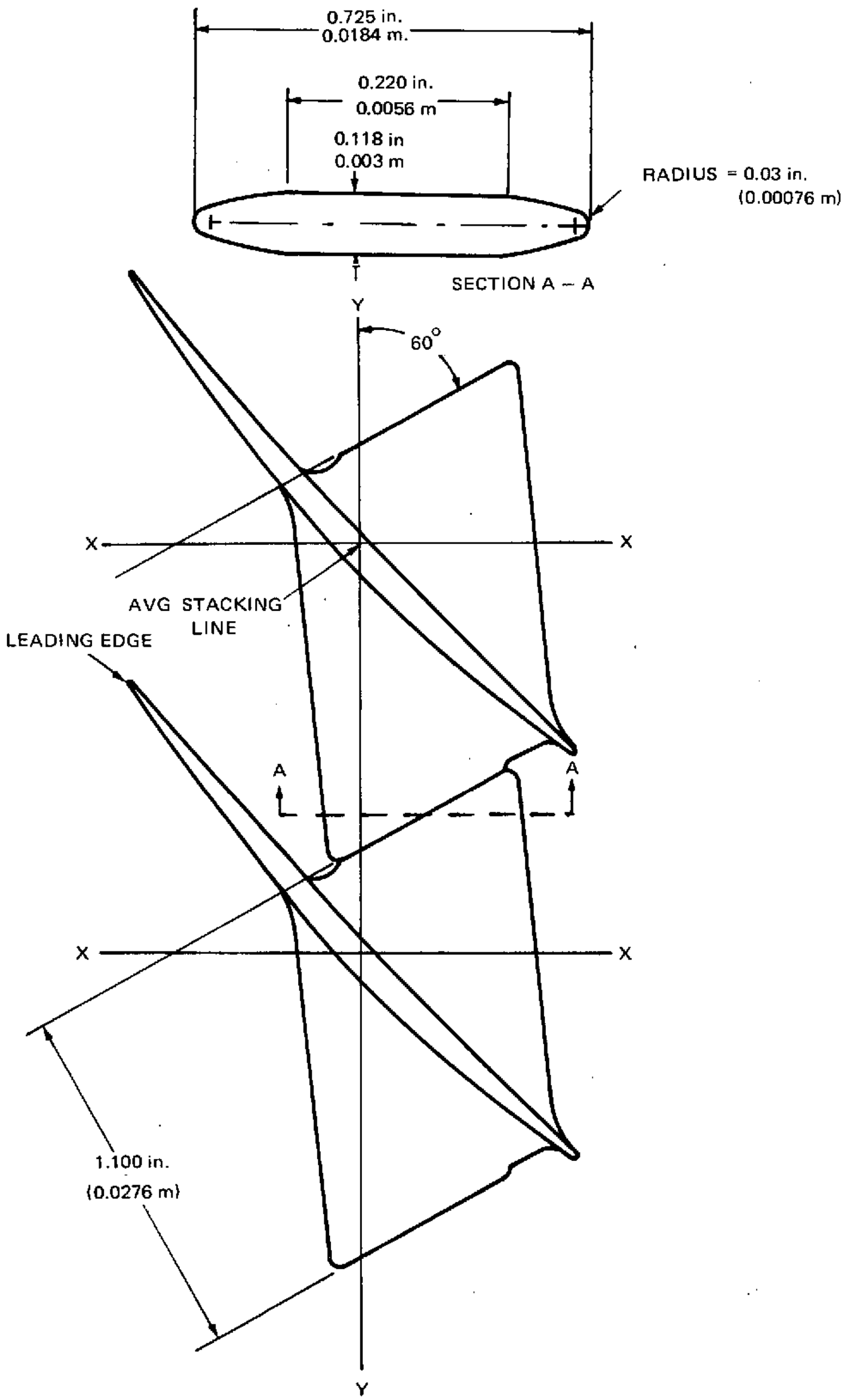


Figure 27 Part-Span Shroud – Rotor 2 (Not to Scale)

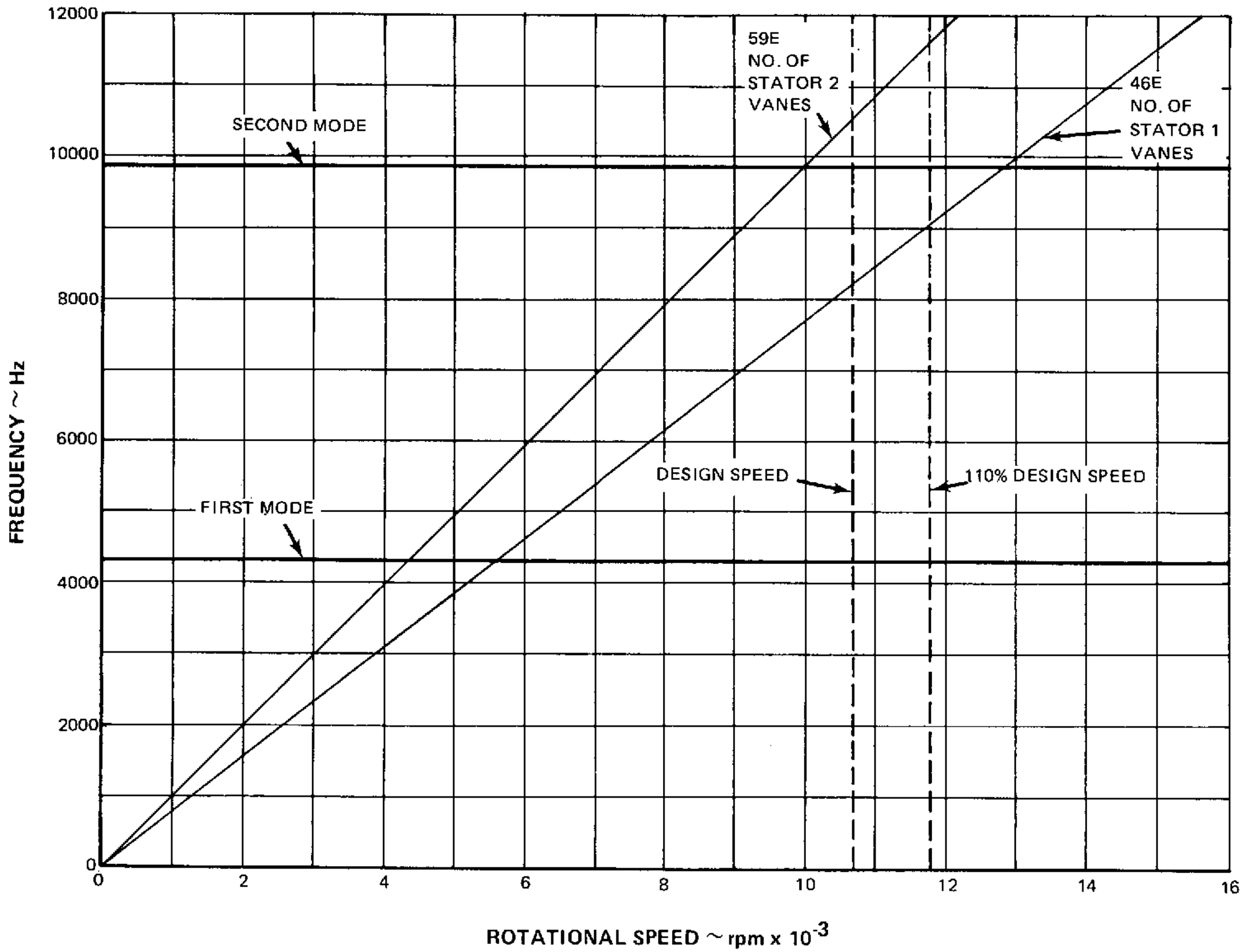
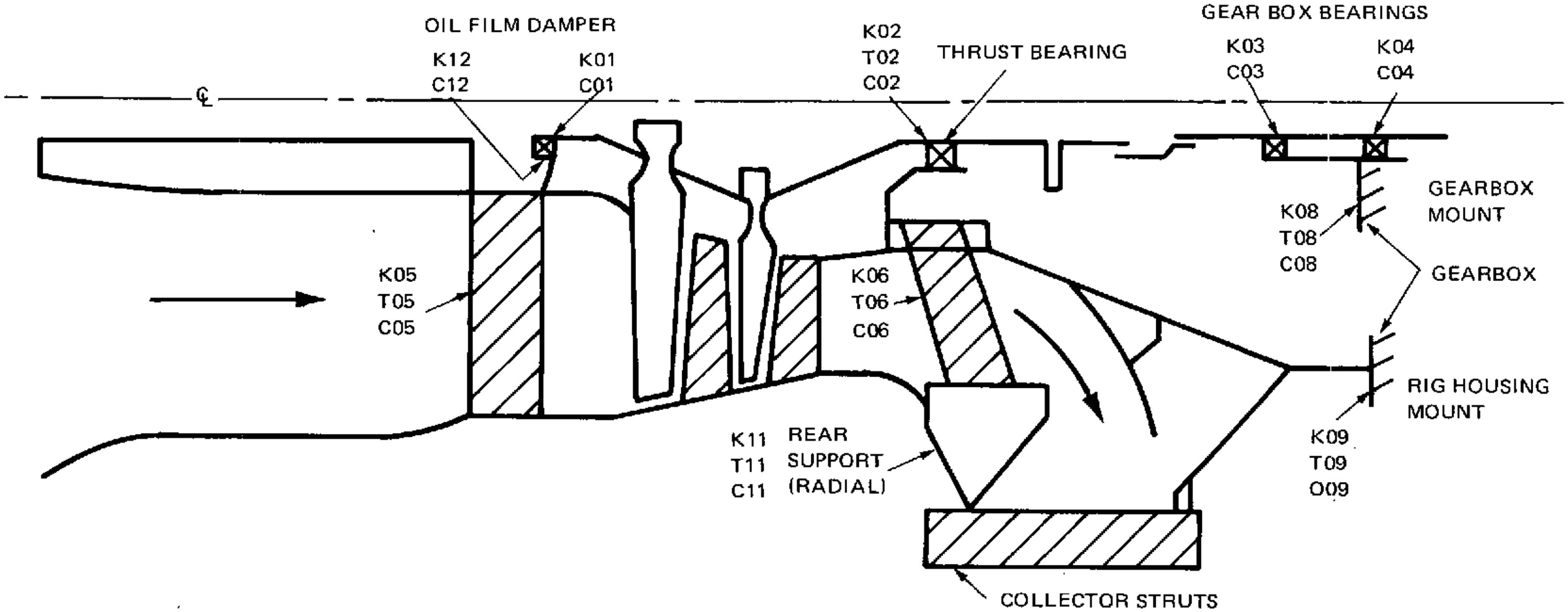


Figure 28 Resonance Diagram for Tip Chordwise Bending Modes of Redesigned Rotor 2



LINEAR SPRINGS	lb/in. X 10^{-8}	N/m X 10^{-10}	TORSIONAL SPRINGS	in-lb/deg X 10^{-8}	m-N/rad X 10^{-8}	DAMPER CONSTANTS	lb-sec/in.	N-sec/m X 10^{-2}
K01	0.042	0.073	T02	0.005	.032	C01	10	17.5
K02	0.018	0.036	T05	1.500	9.7	C02	10	17.5
K03	0.005	0.009	T06	0.220	1.43	C03	10	17.5
K04	0.010	0.017	T08	10.000	64.8	C04	10	17.5
K05	0.020	0.035	T09	10.000	64.8	C05	100	175
K06	0.190	0.33	T11	12.700	82.3	C06	100	175
K08	1.000	1.75				C08	200	350
K09	1.000	1.75				C09	200	350
K11	0.179	0.314				C11	100	175

Figure 29 Spring-Mass Model for Critical Speed Analysis of Two-Stage Fan Rig

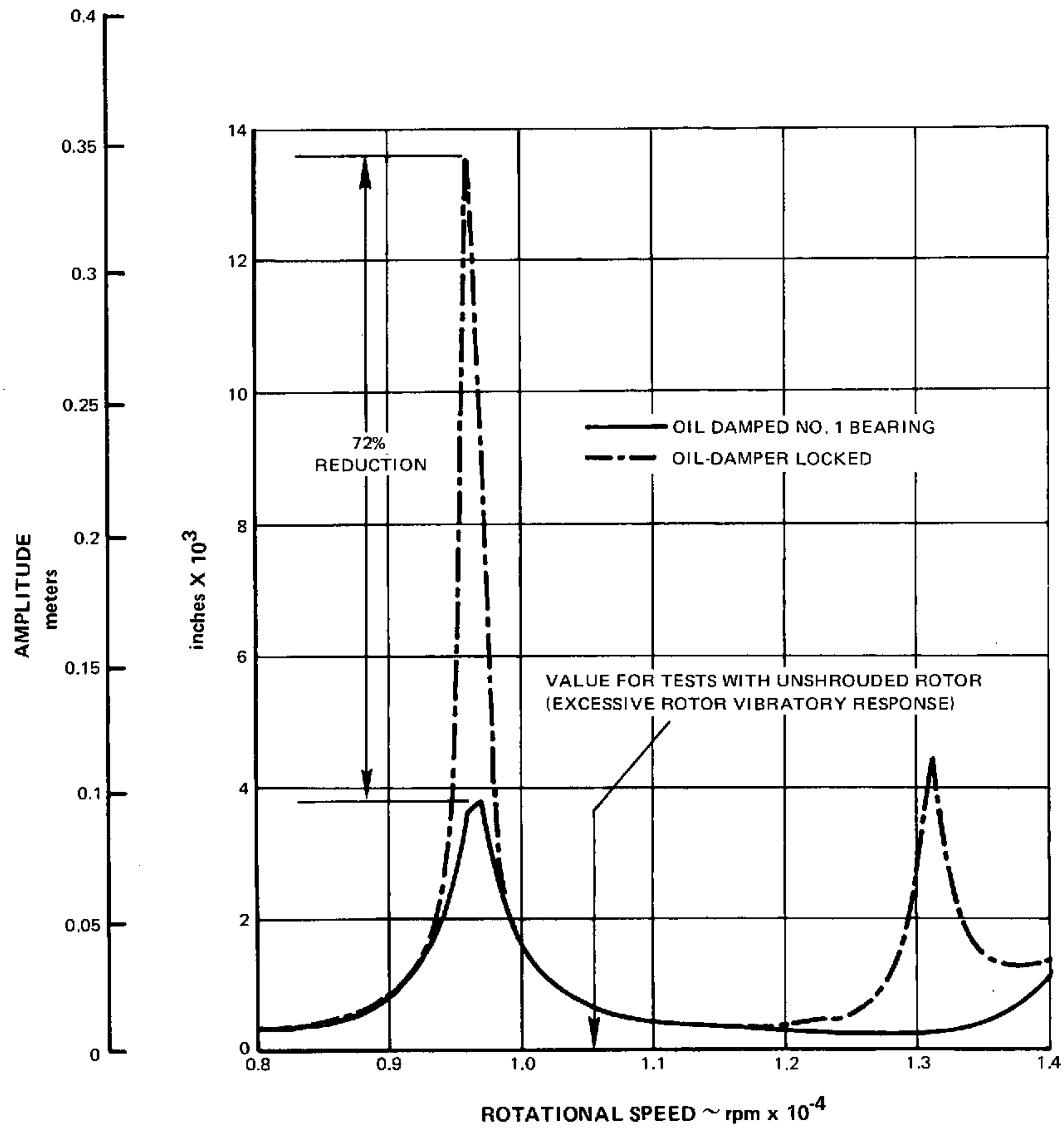


Figure 30 Vibrational Amplitude at No. 1 Bearing Showing Benefit of Oil-Damped Bearing

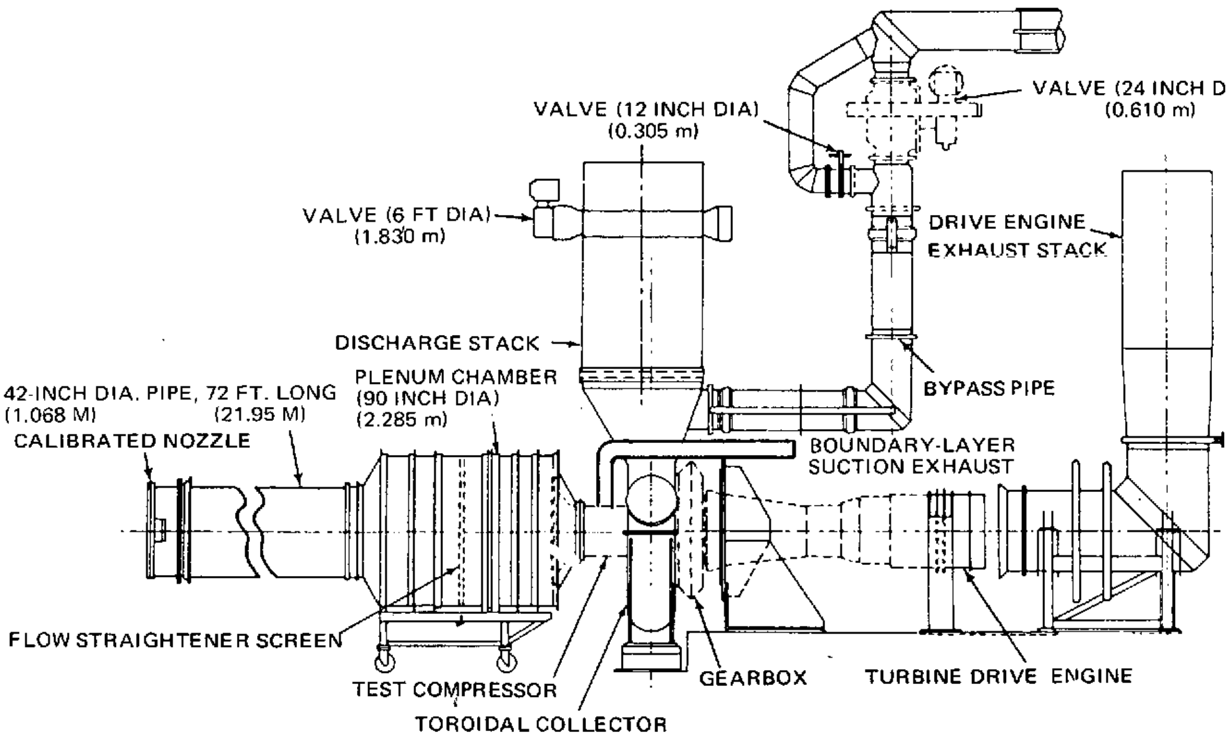


Figure 31 Schematic of Compressor Test Facility

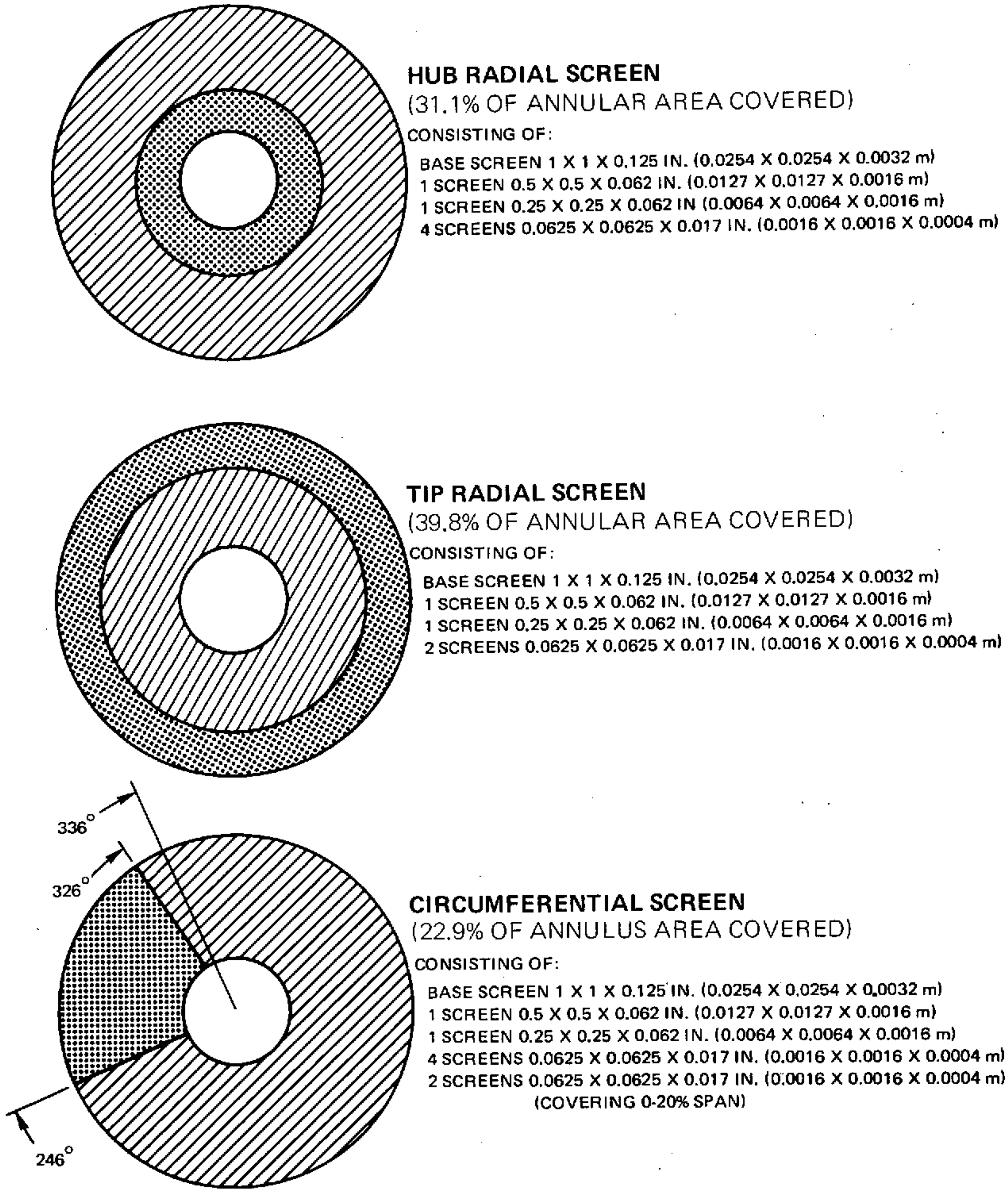
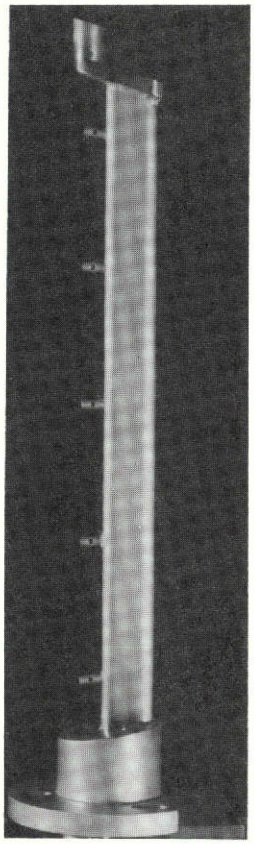
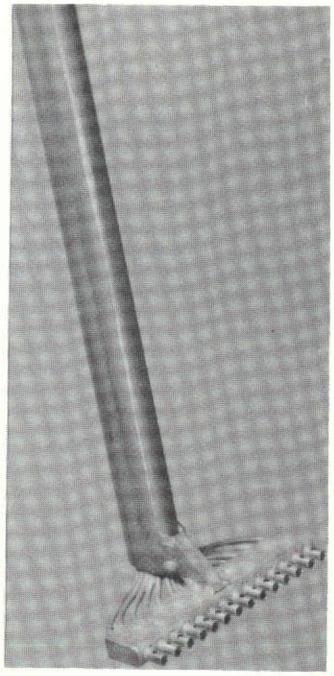


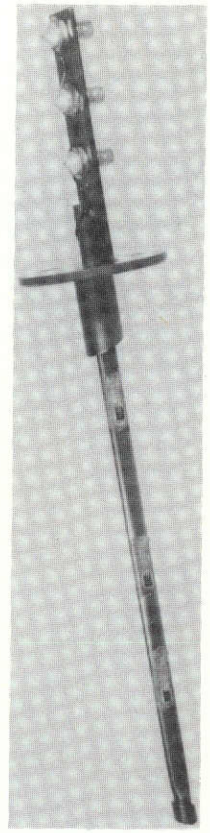
Figure 32 Sketch of Distortion Screens



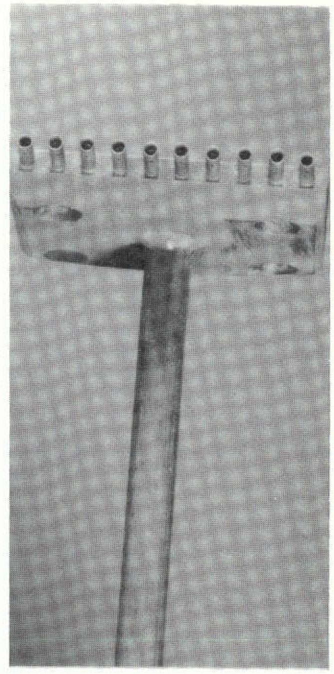
A. Fan Inlet
Total Pressure
Rake Probe



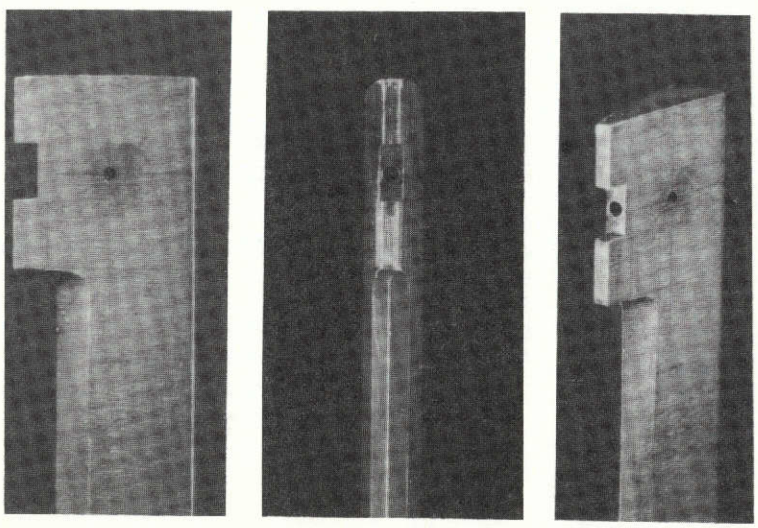
B. Stator 2 Exit Total Pressure
Wake Probe



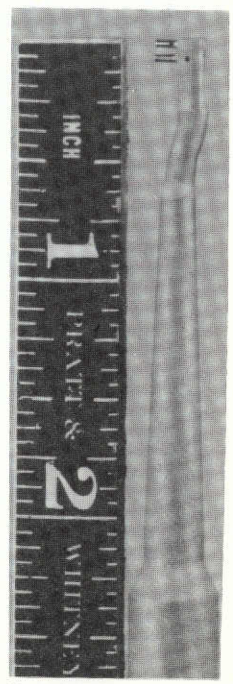
C. Fan Inlet
Hot Film
Probe



D. Stator 2 Exit Total Temperature Wake Rake



E. Fan Inlet & Static Exit Traverse Wedge Probes



F. Stator 1 Exit
NASA Combination Probe

Figure 33 Photographs of Typical Instrumentation

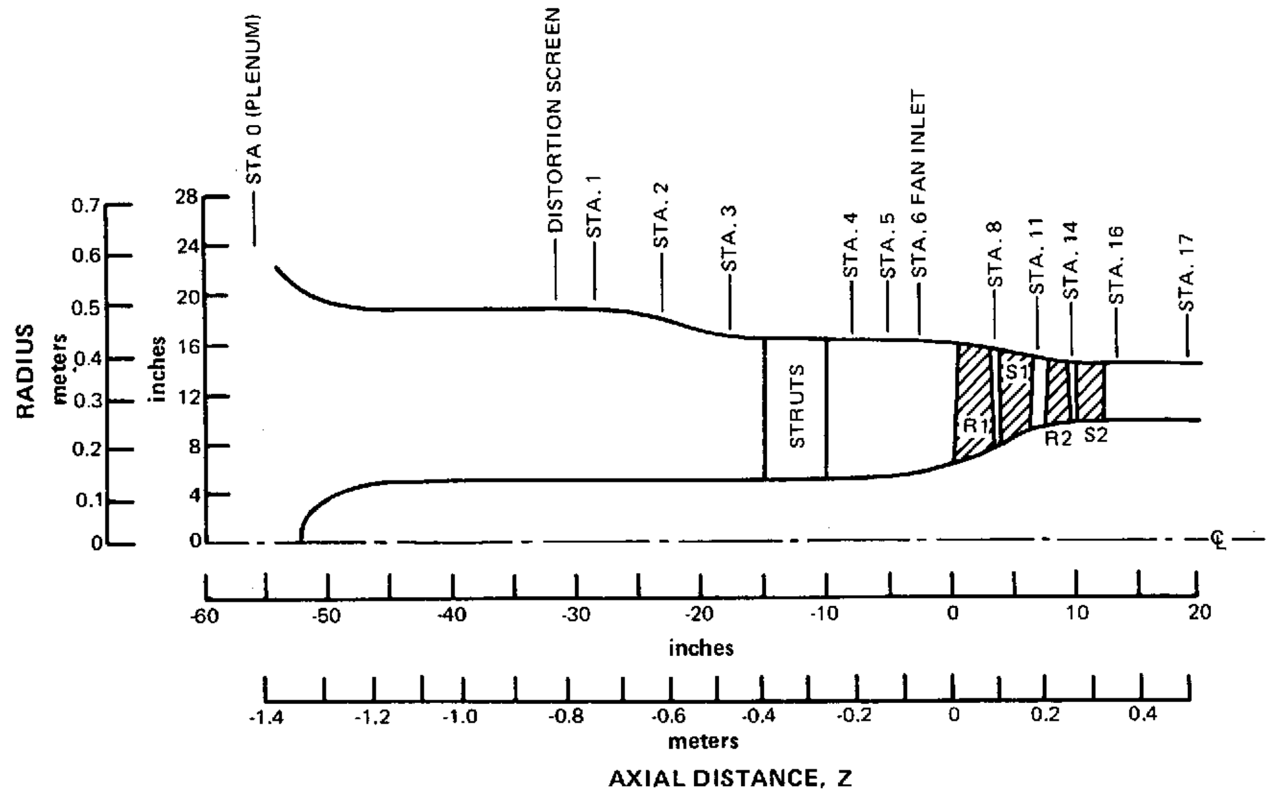


Figure 34 Axial Locations of Instrumentation

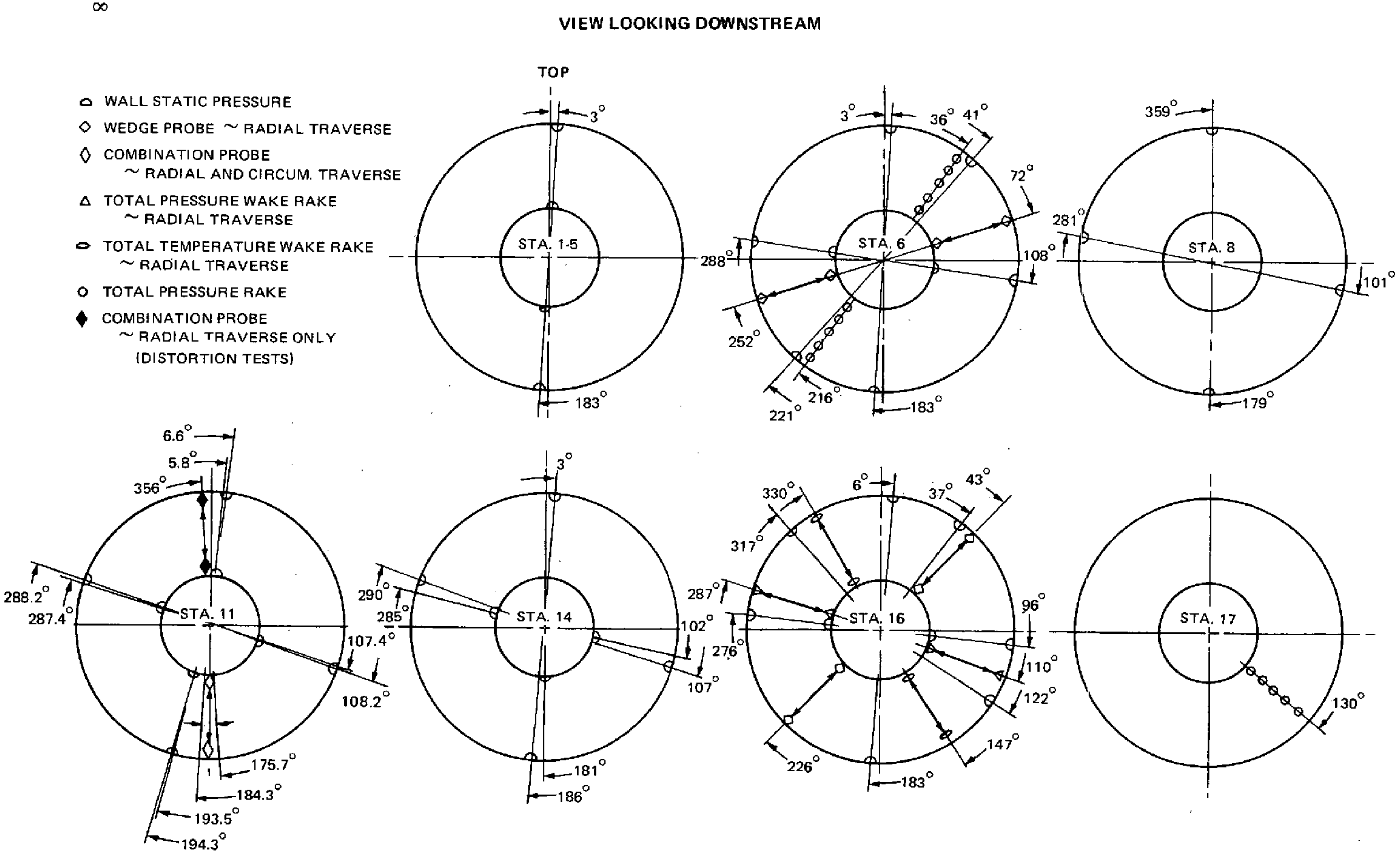


Figure 35 Circumferential Locations of Instrumentation

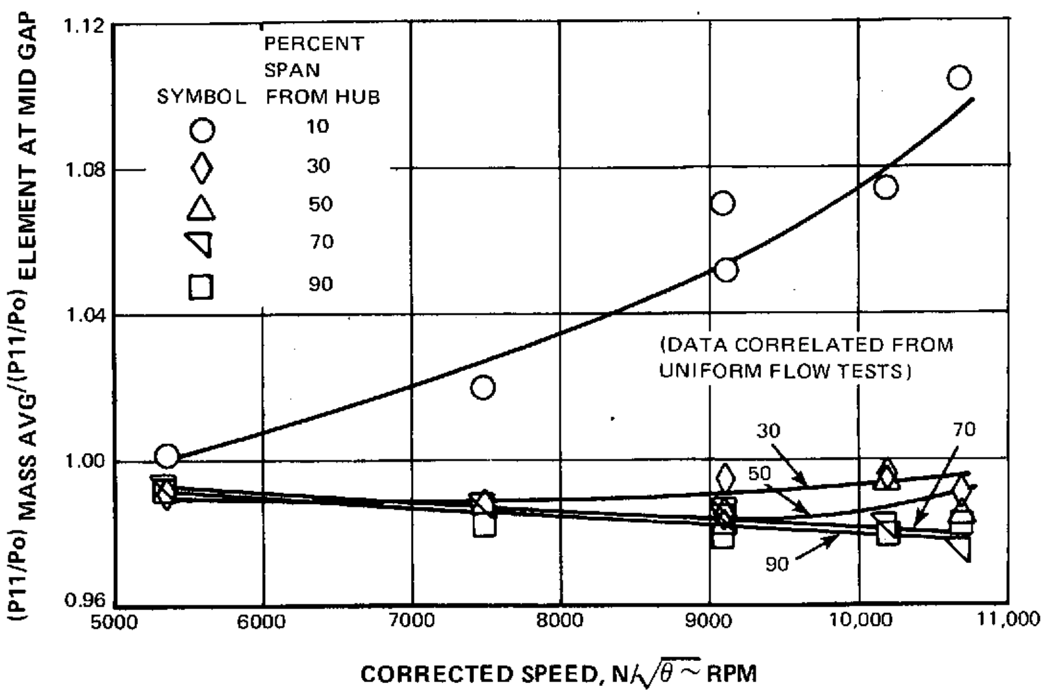


Figure 36 First Stage Pressure Correlation Used for Radial Distortion Streamline Analysis Flowfield Calculation

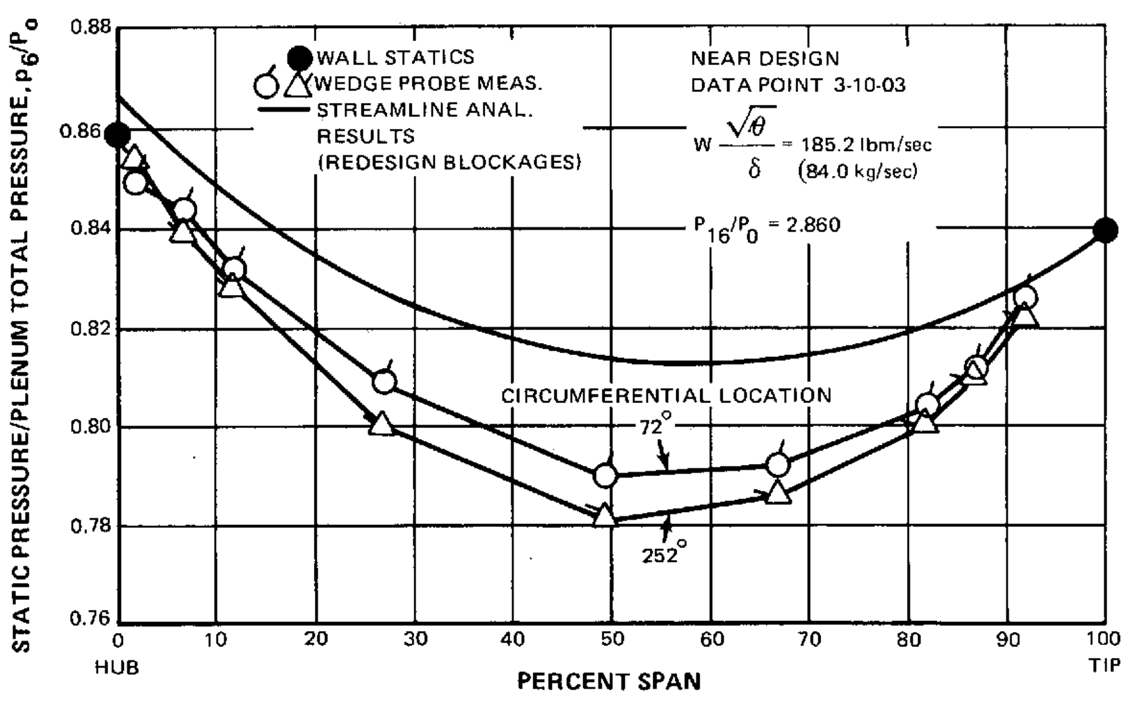


Figure 37 Comparison of Measured and Calculated Static Pressure Versus Span at Rotor 1 Inlet

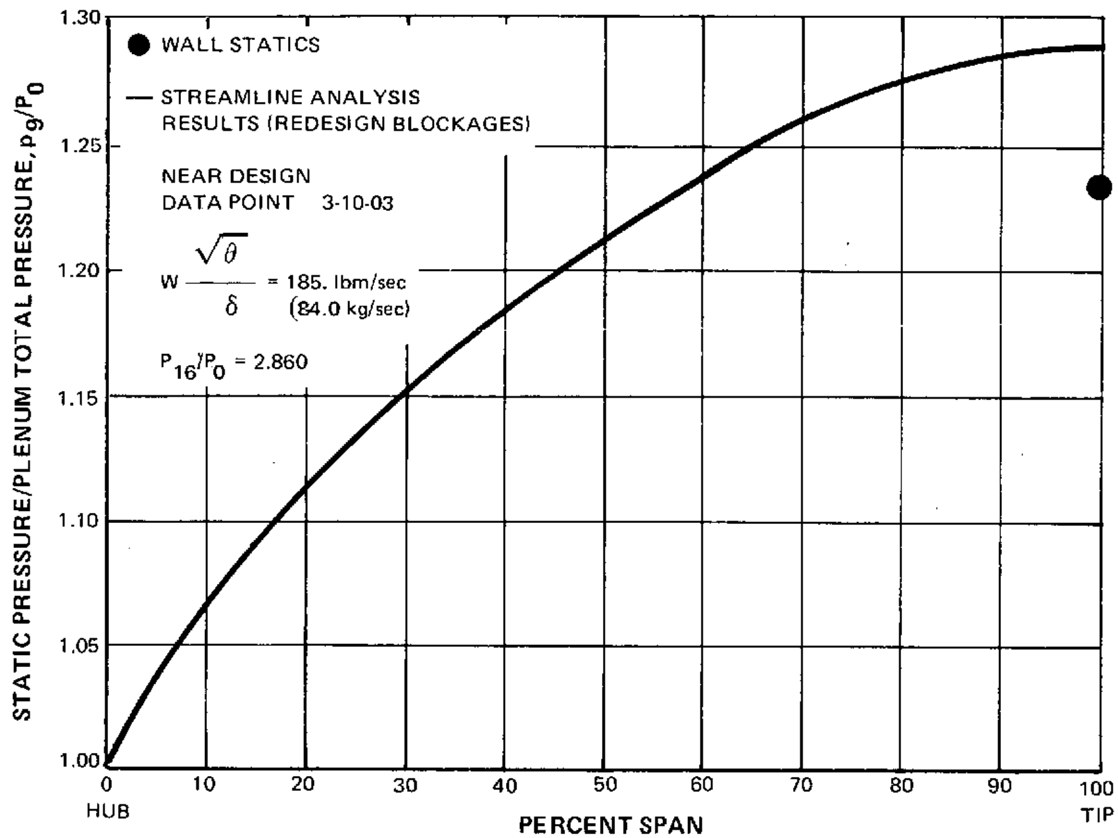


Figure 38 Calculated Static Pressure Versus Span at Stator 1 Inlet and Measured Static at Outer Wall

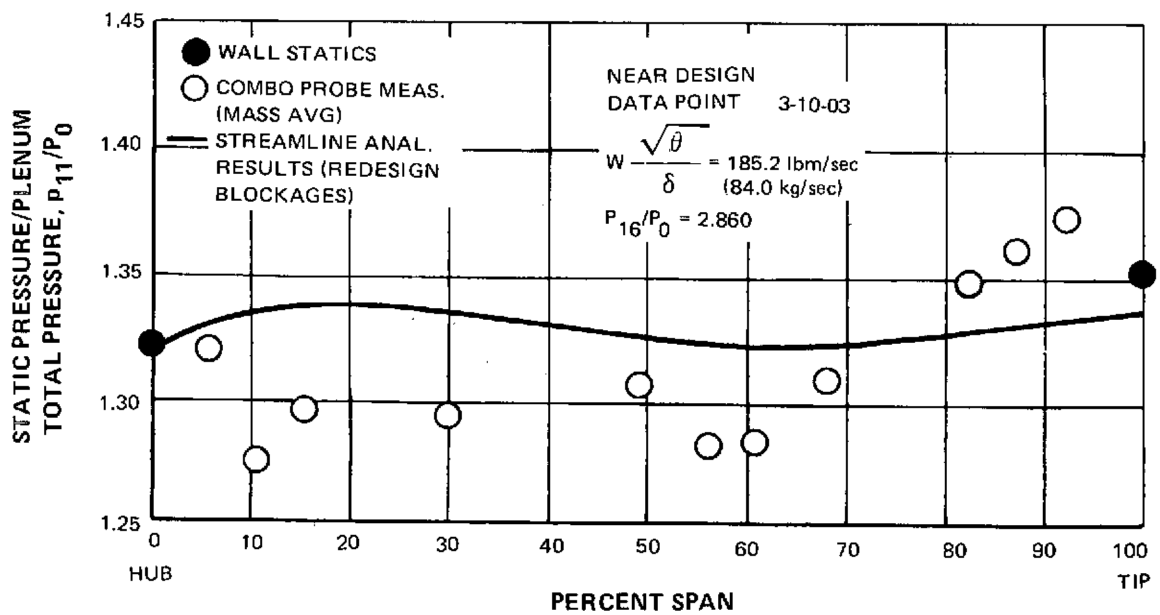


Figure 39 Measured and Calculated Static Pressure Versus Span at Stator 1 Exit

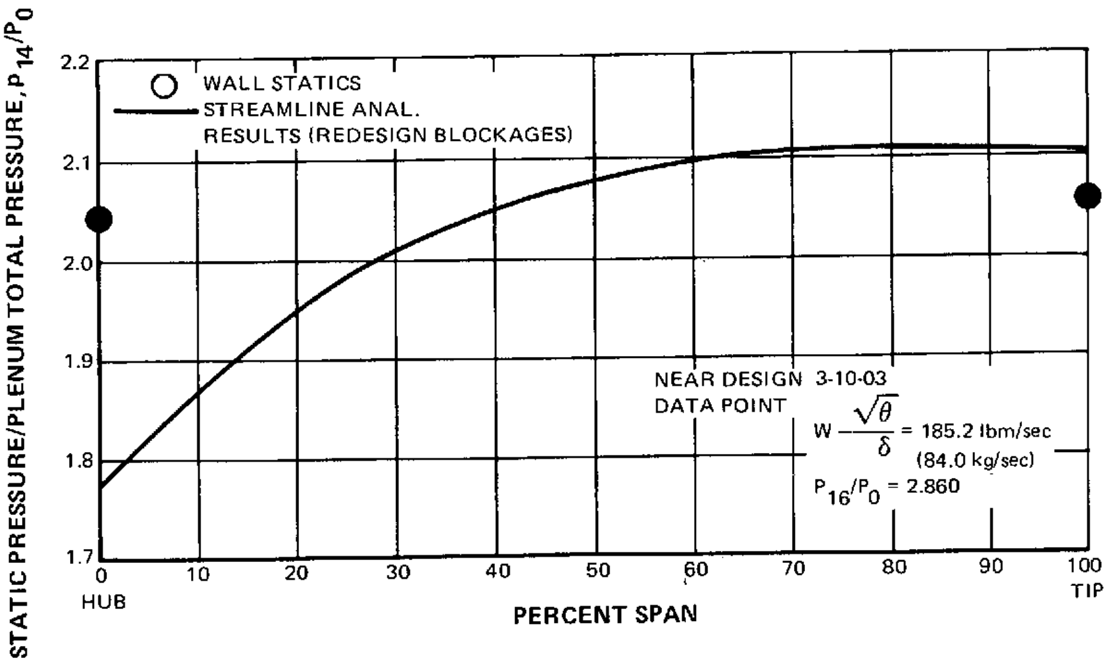


Figure 40 Calculated Static Pressure Versus Span at Stator 2 Inlet and Measured Wall Static Pressures

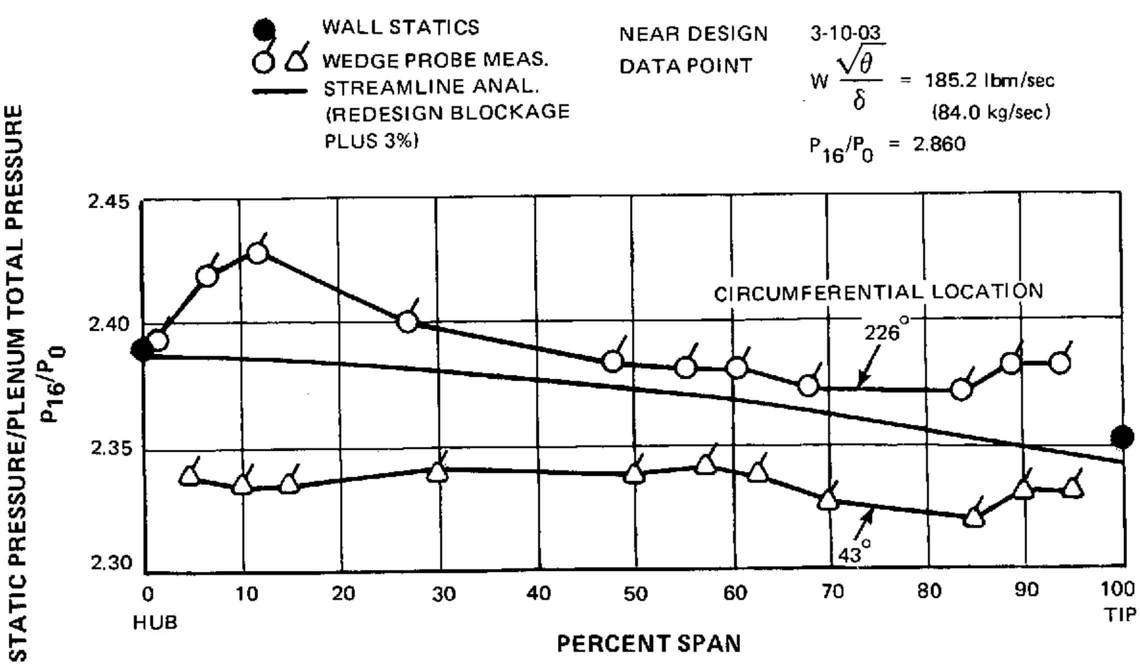


Figure 41 Measured and Calculated Static Pressure Versus Span at Stator 2 Exit

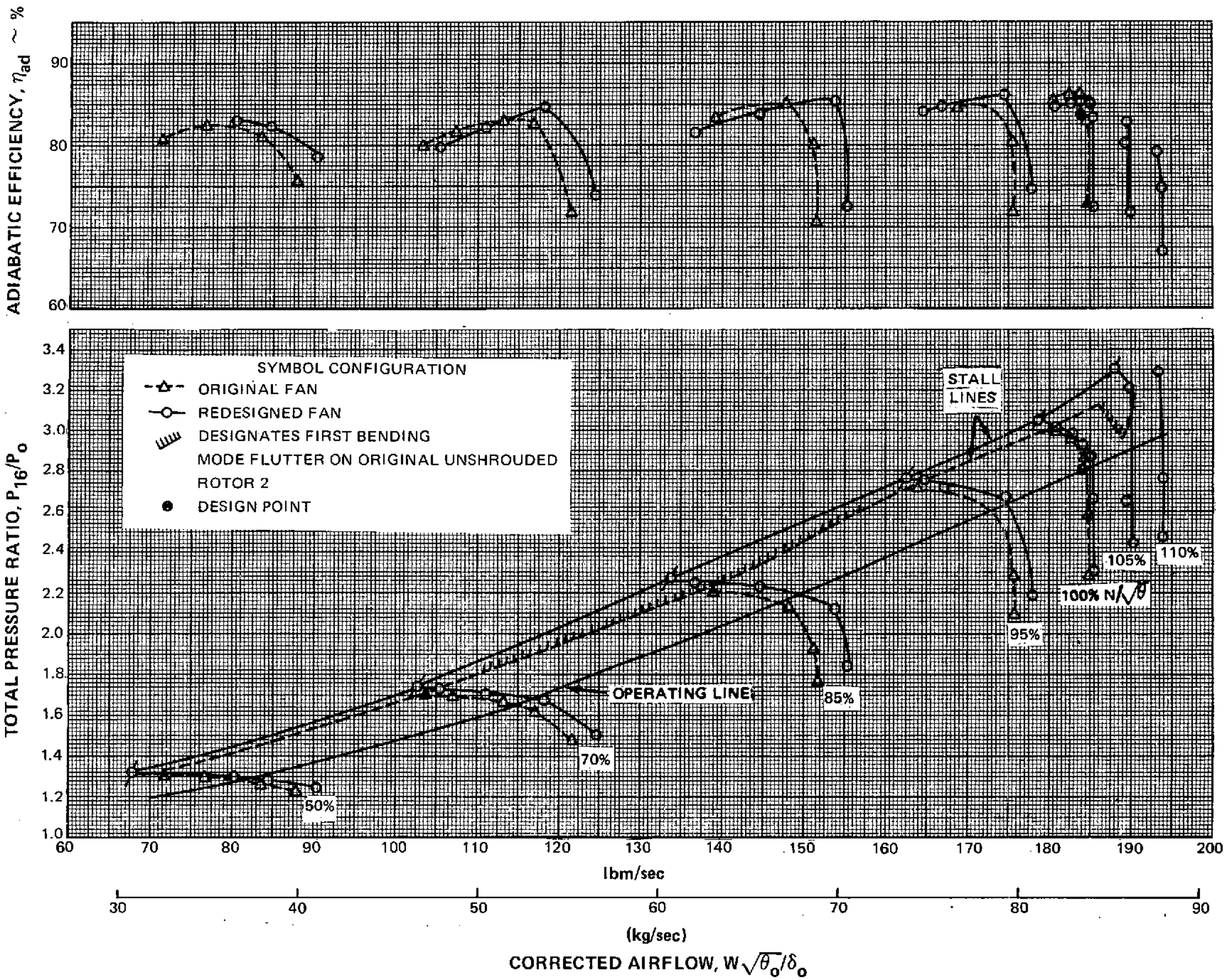


Figure 42 Fan Overall Performance with Uniform Inlet Flow

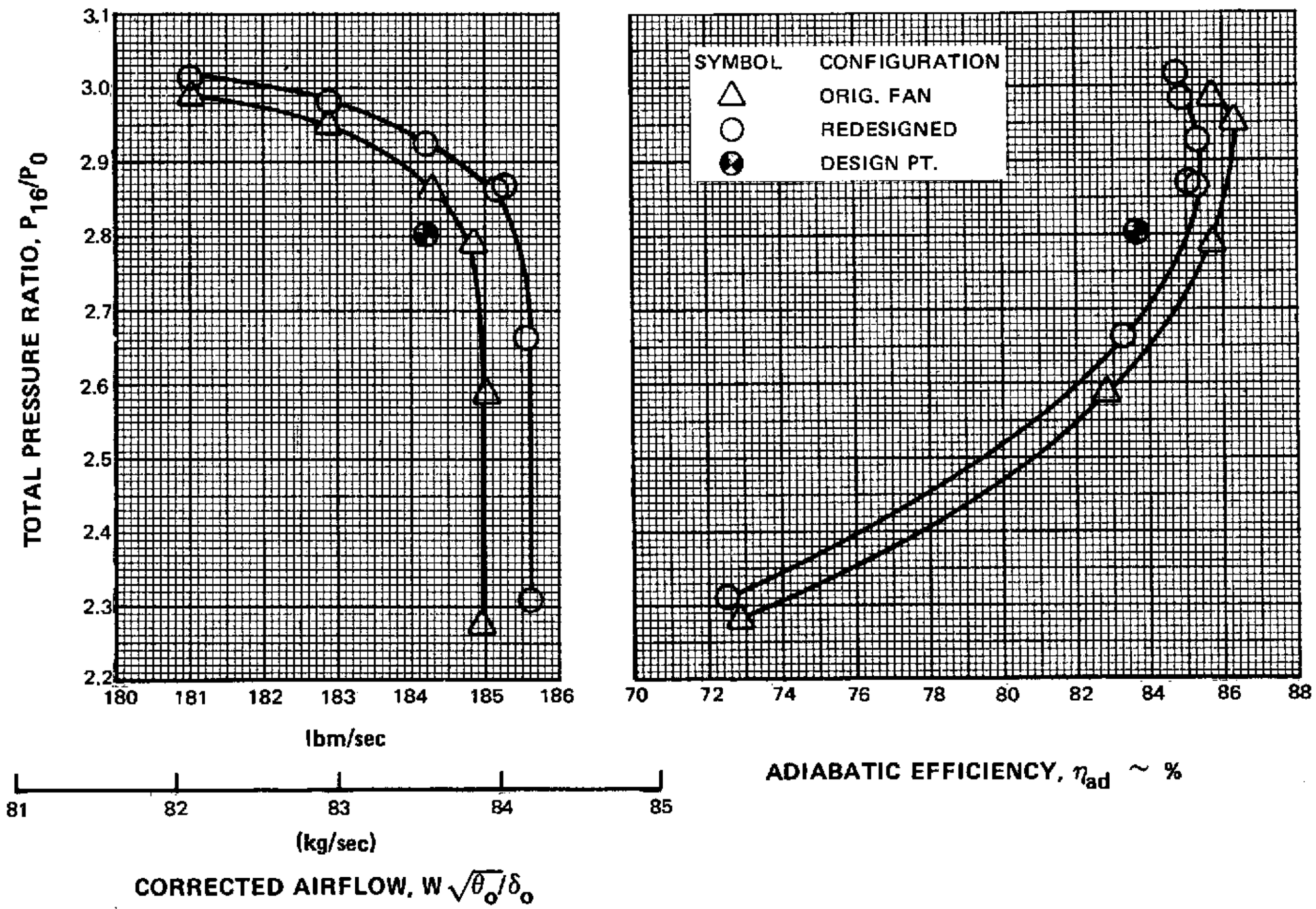


Figure 43 Fan Overall Performance at Design Speed with Uniform Inlet Flow

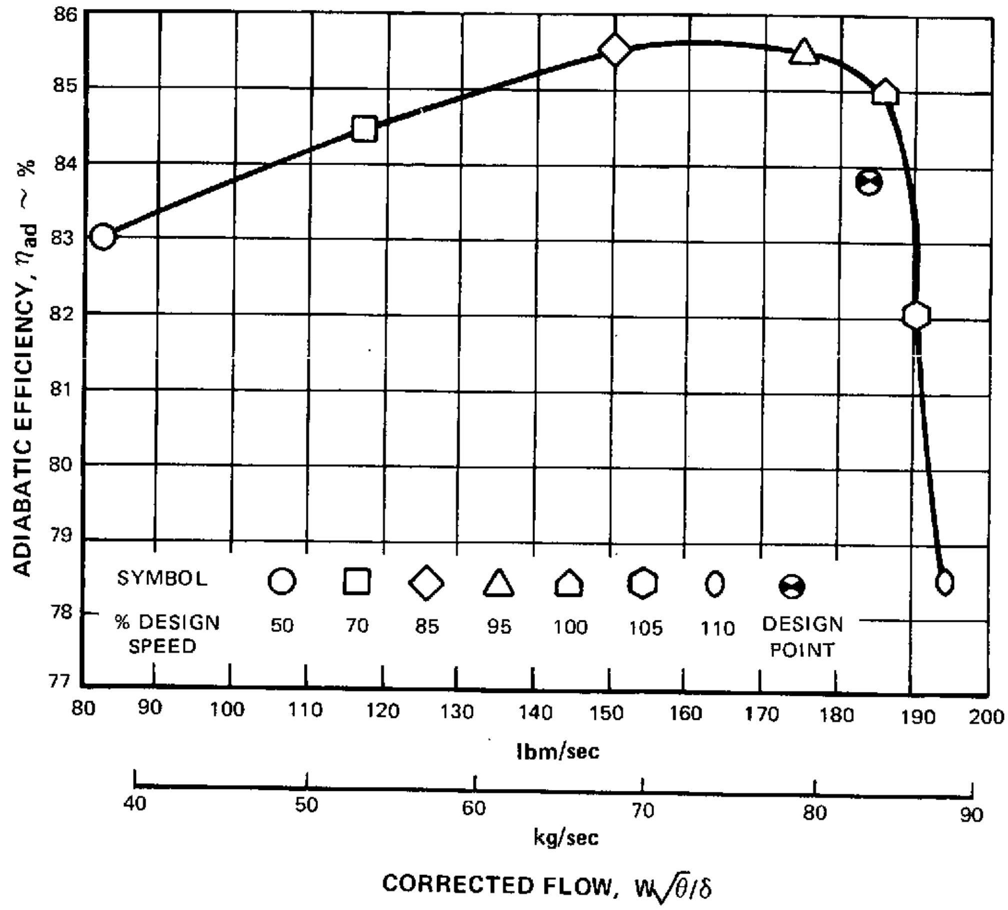


Figure 44 Operating Line Efficiency Versus Corrected Flow

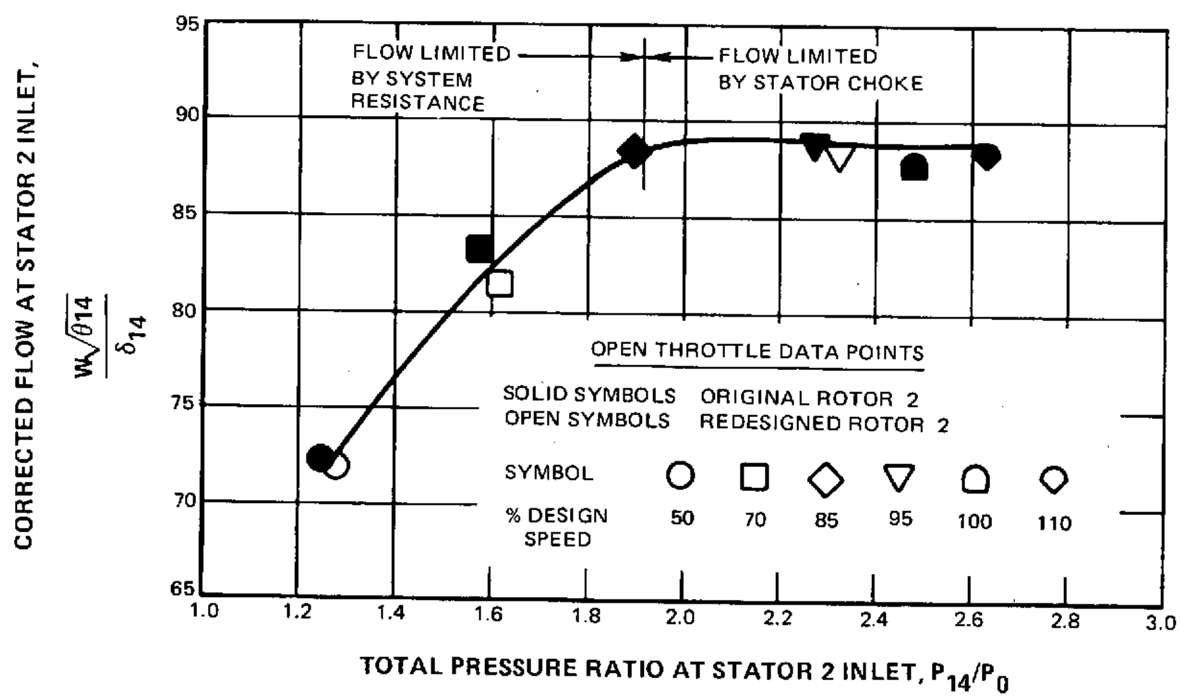


Figure 45 Maximum Corrected Flow at Stator 2 Inlet Versus Pressure Ratio at Stator 2 Inlet

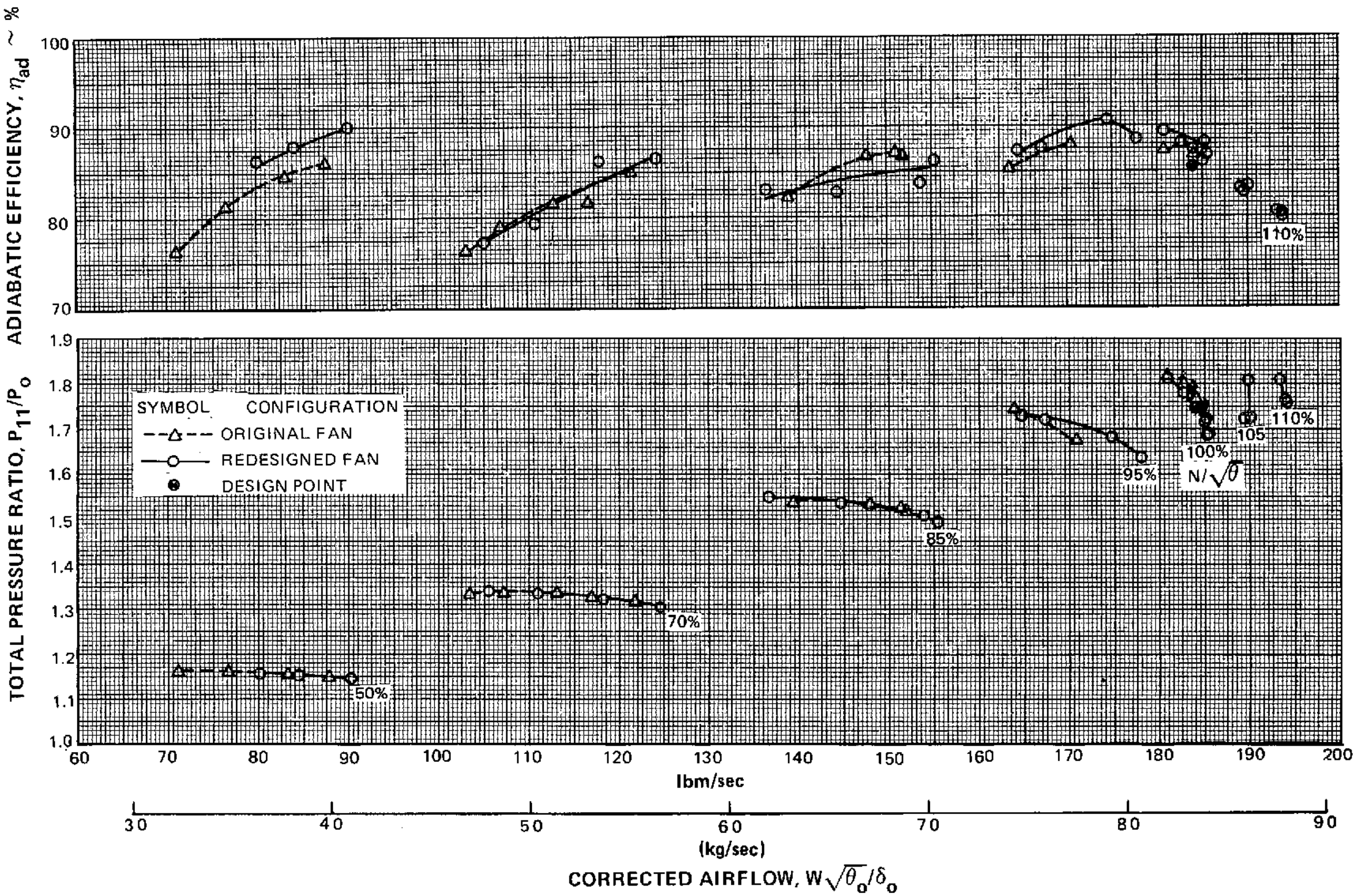


Figure 46 First Stage Performance With Uniform Inlet Flow

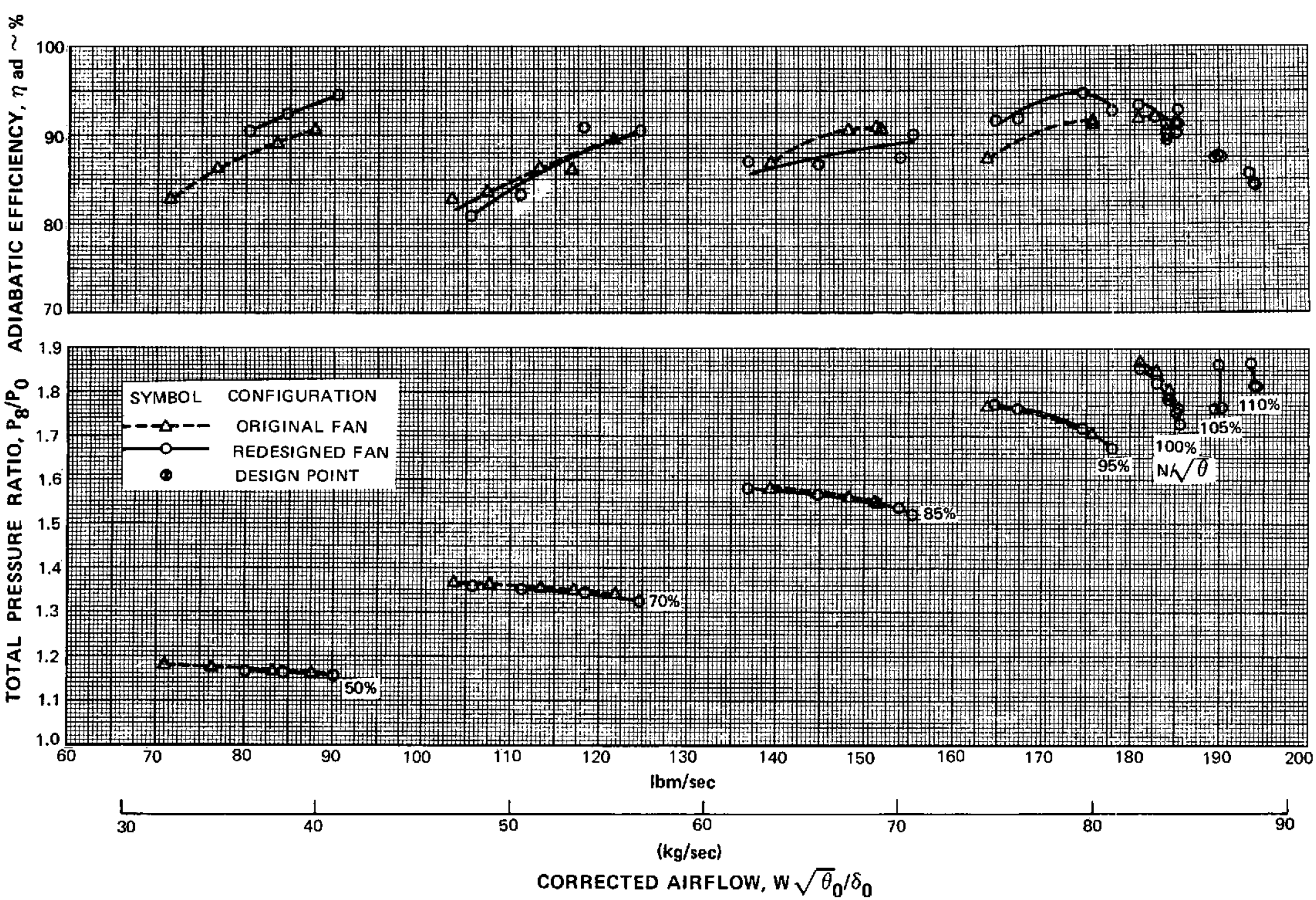


Figure 47 First Rotor Performance With Uniform Inlet Flow

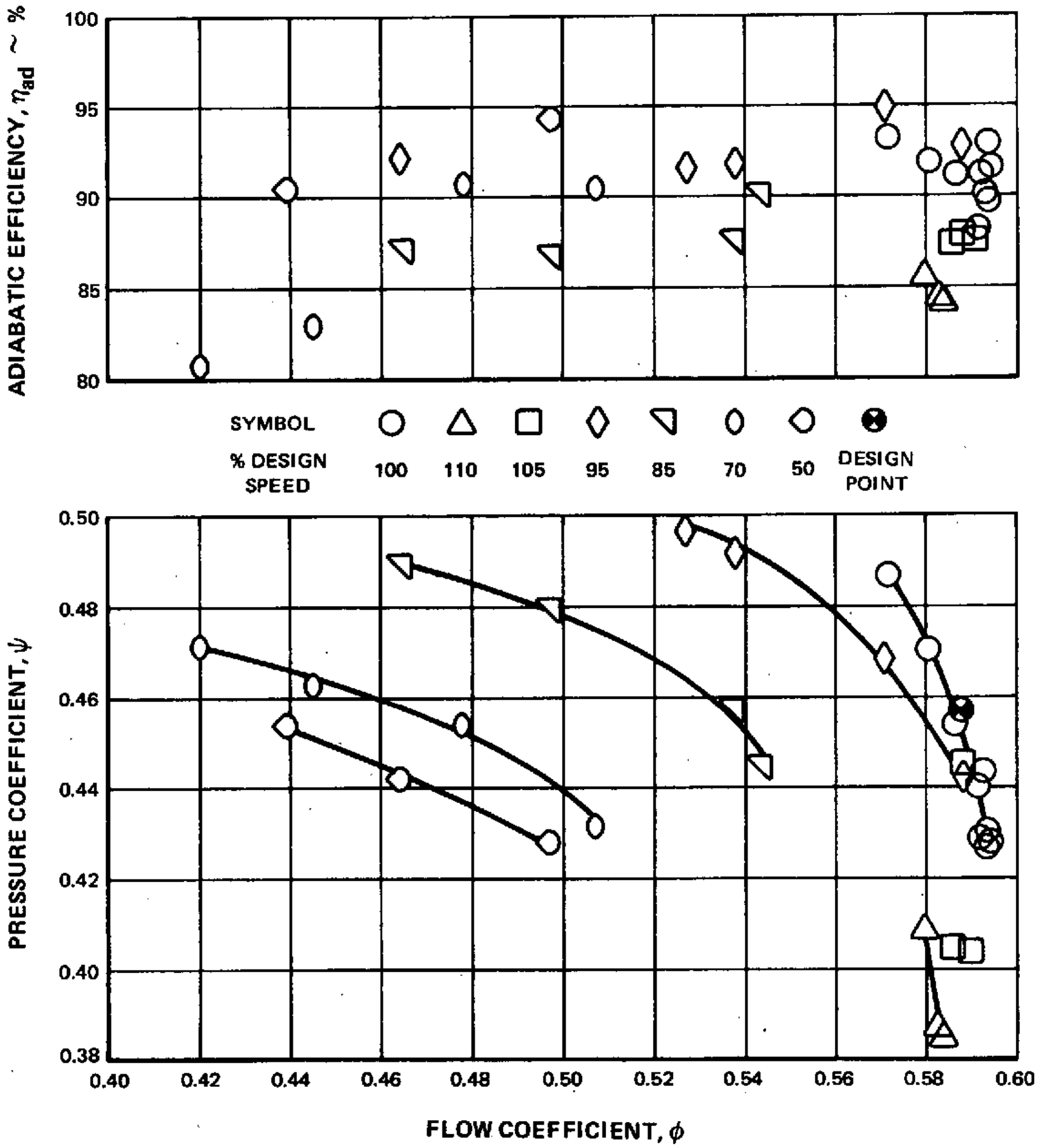


Figure 48 Pressure Coefficient and Adiabatic Efficiency Versus Flow Coefficient For Uniform Inlet Flow Rotor 1

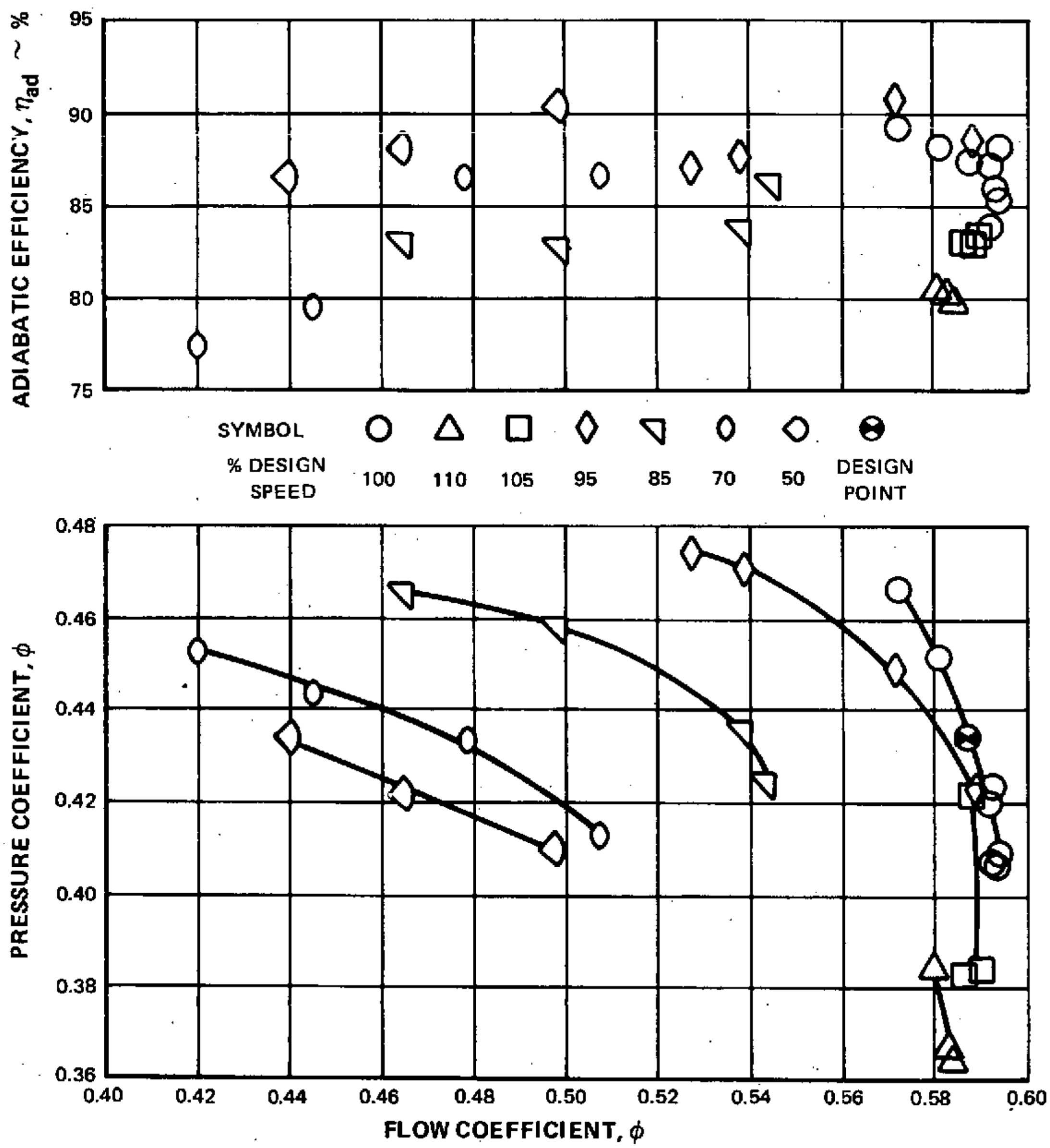


Figure 49 Pressure Coefficient and Adiabatic Efficiency Versus Flow Coefficient For Uniform Inlet Flow Stage 1

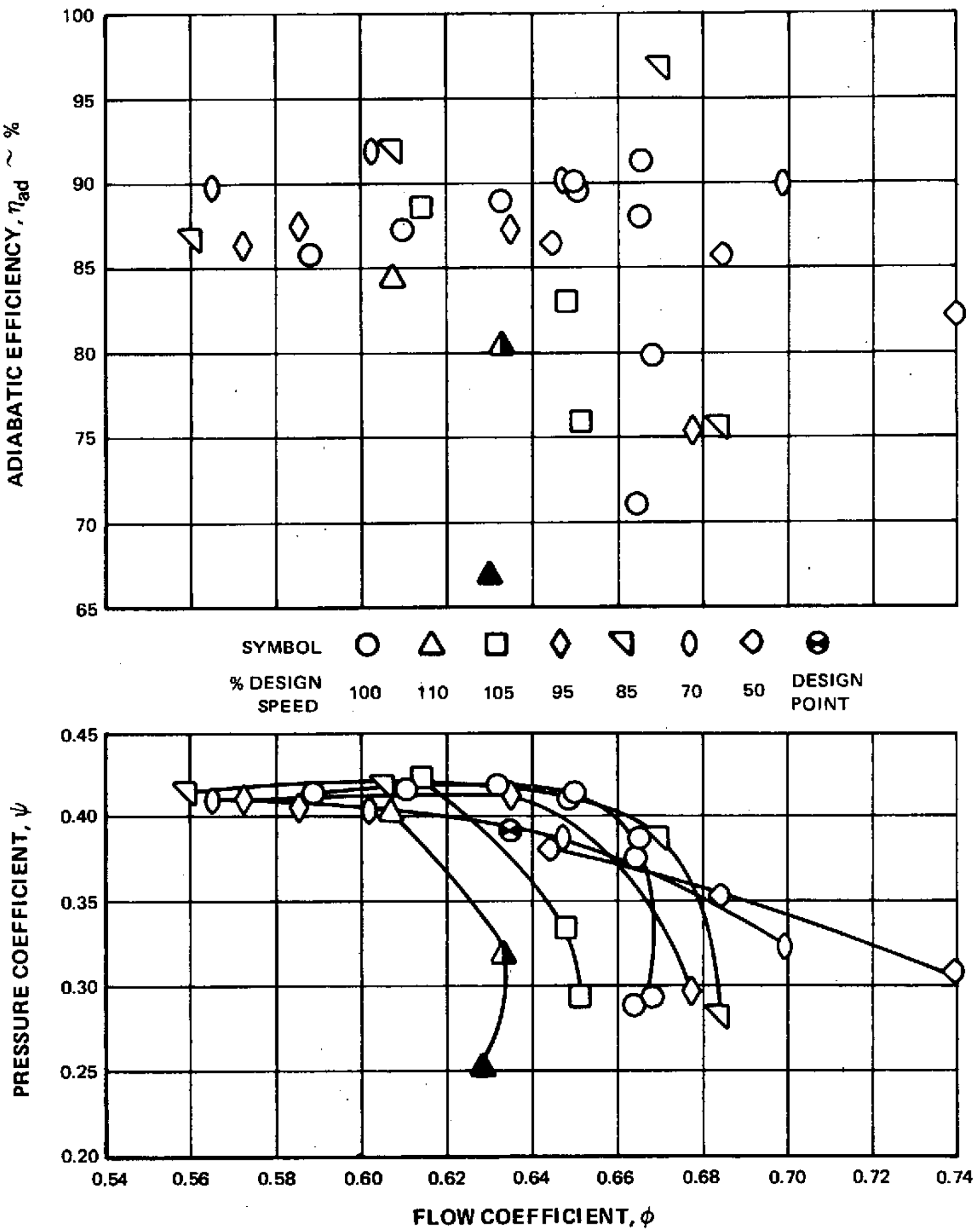


Figure 50 Pressure Coefficient and Adiabatic Efficiency Versus Flow Coefficient for Uniform Inlet Flow, Rotor 2

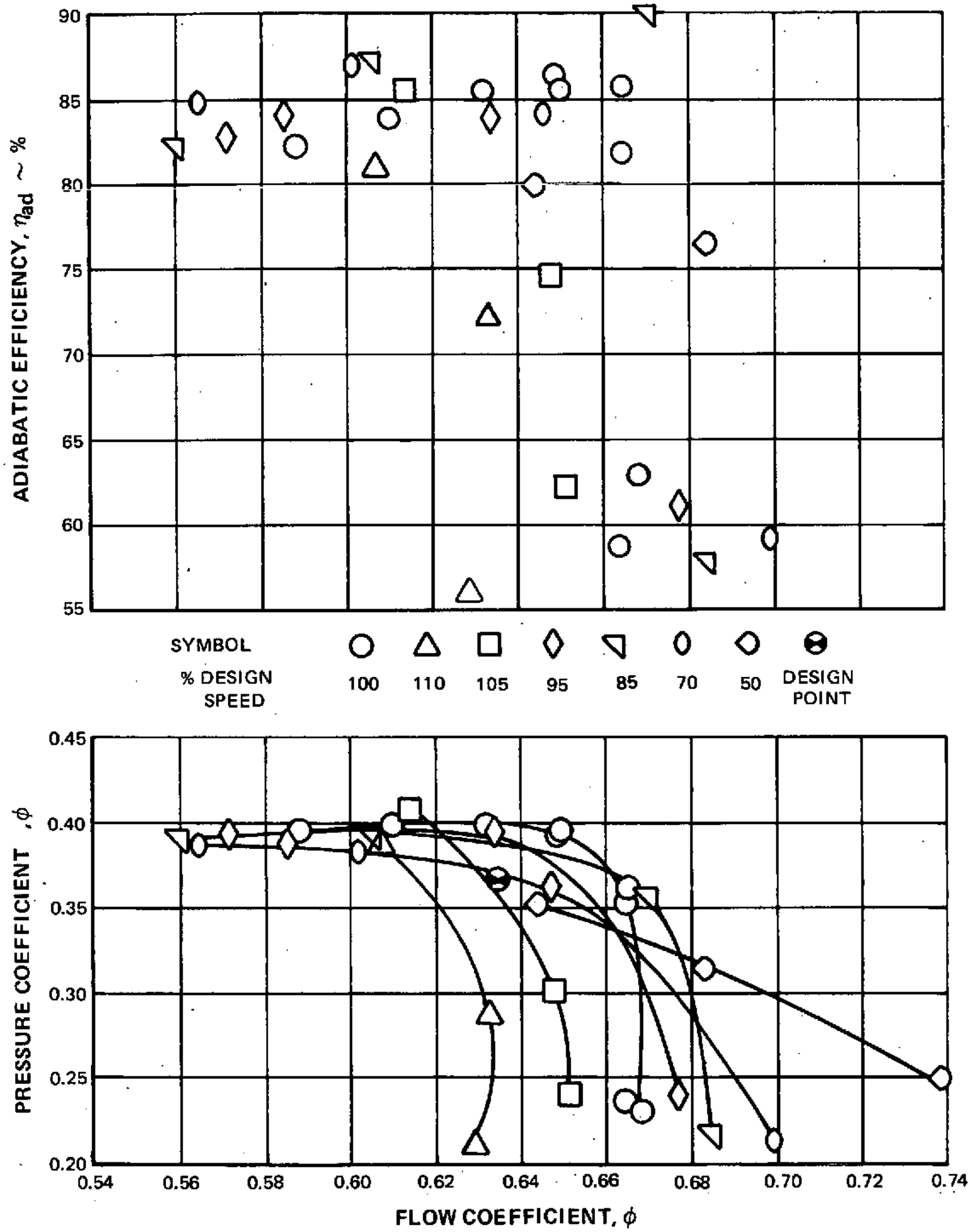


Figure 51 Pressure Coefficient and Adiabatic Efficiency Versus Flow Coefficient for Uniform Inlet Flow, Stage 2

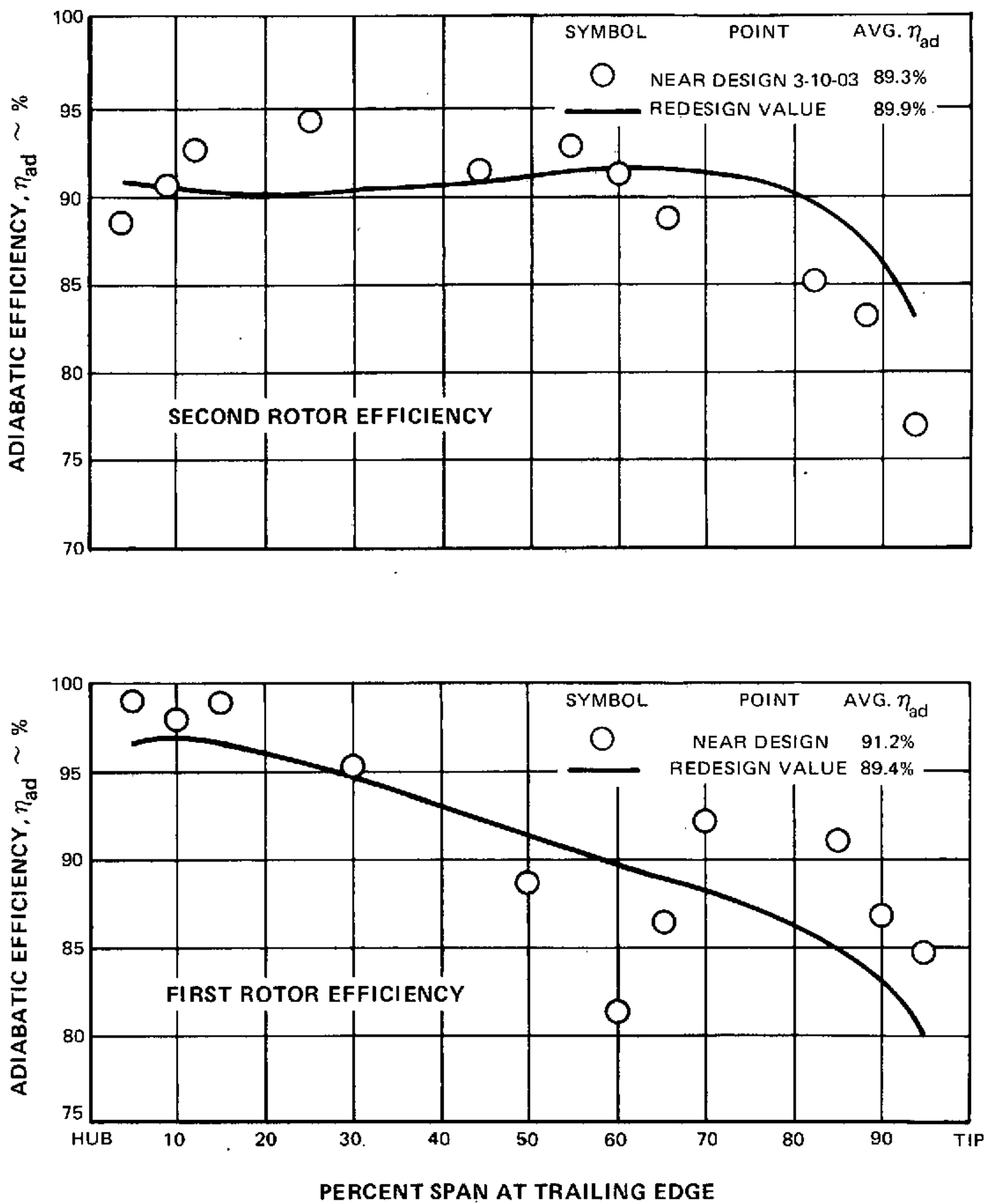


Figure 52 Rotor Adiabatic Efficiency Versus Span for Near Design Data Point

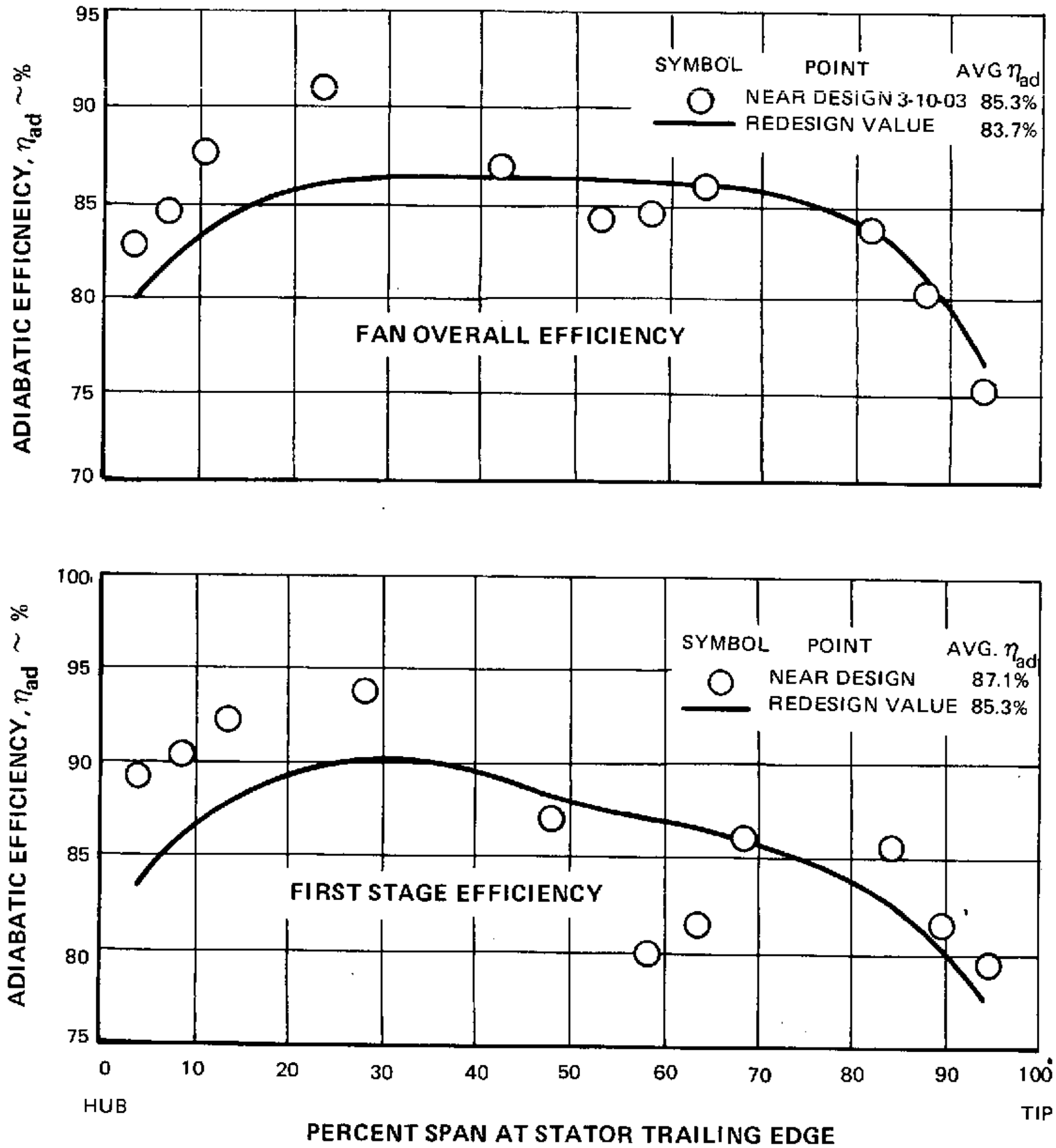


Figure 53 First Stage and Fan Overall Efficiency Versus Span for Near Design Data Point

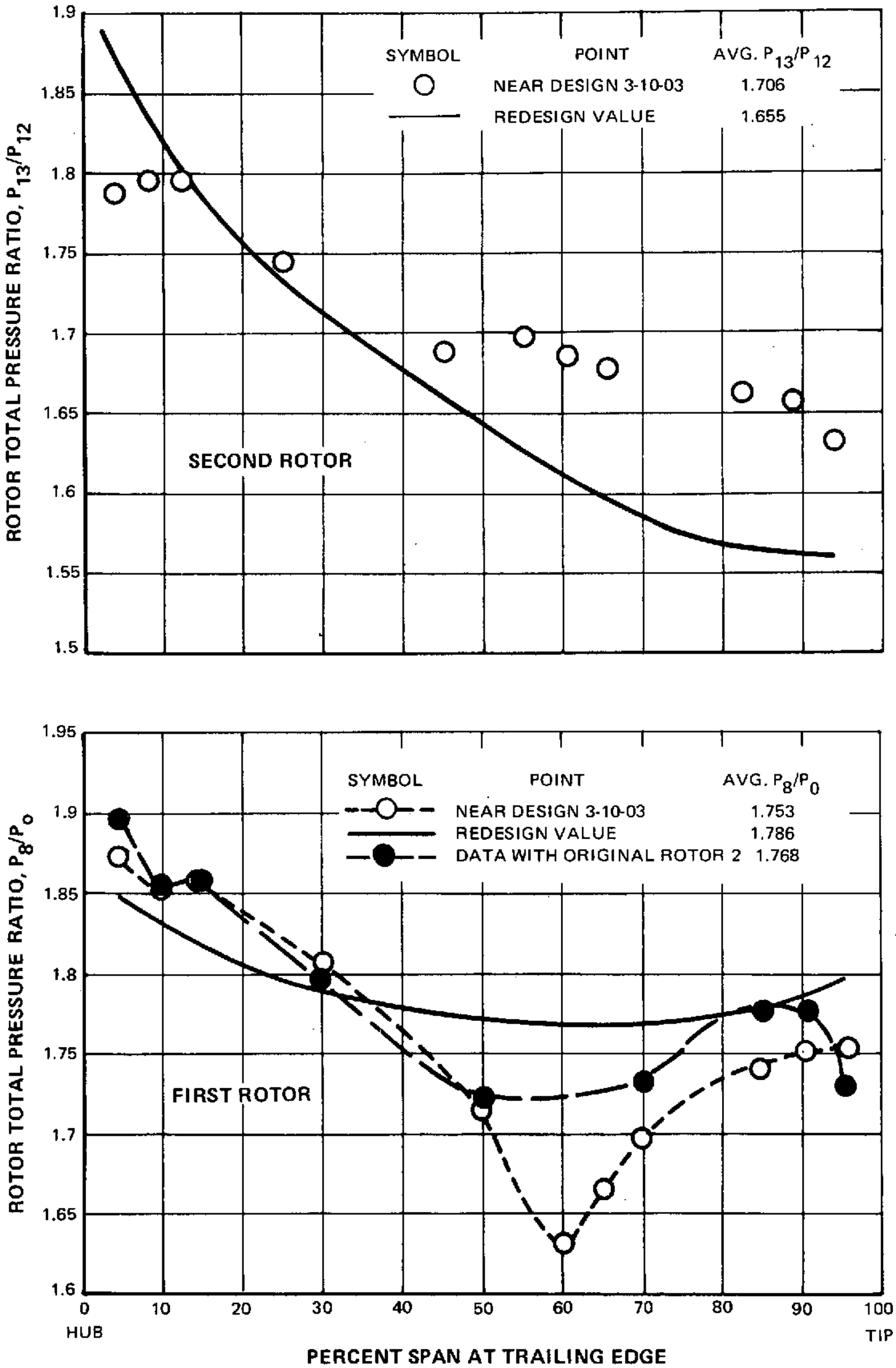


Figure 54 Rotor Total Pressure Ratio Versus Span For Near Design Data Points

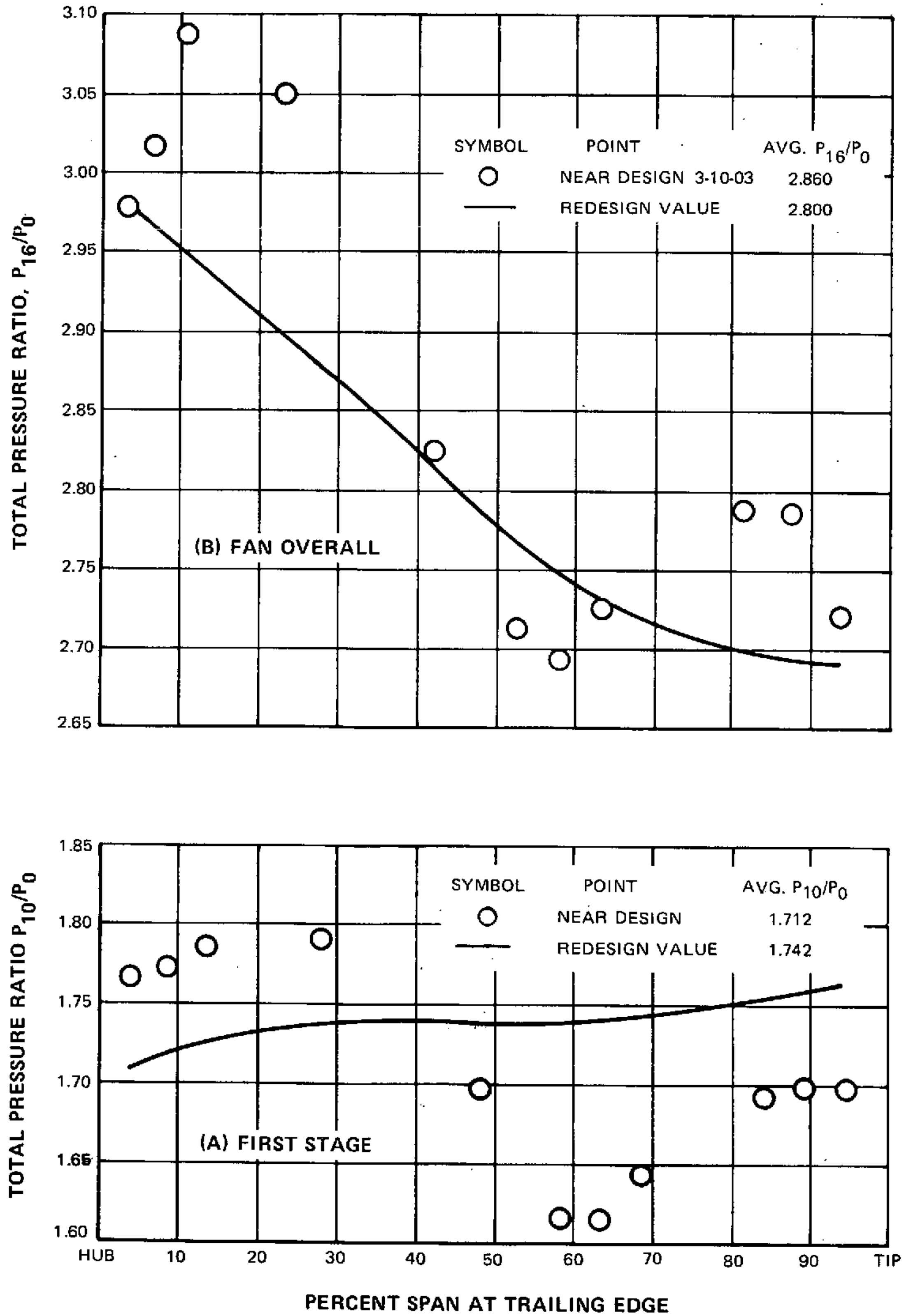


Figure 55 First Stage and Fan Overall Total Pressure Ratio Versus Span For Near Design Data Point

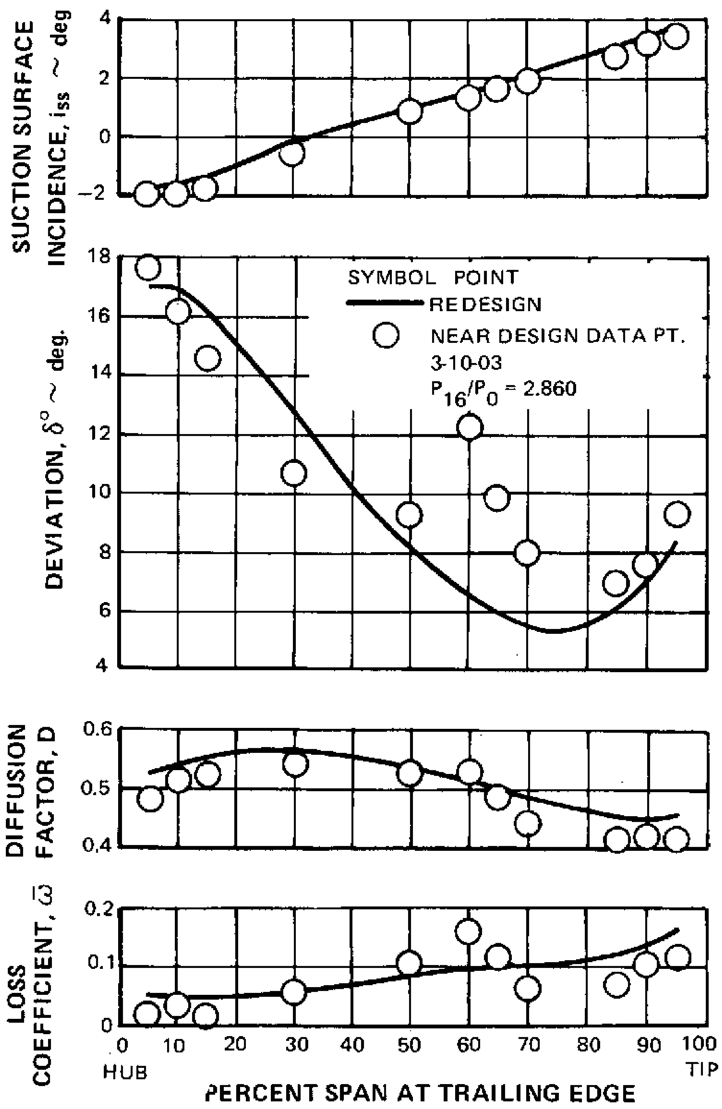


Figure 56 Loss Coefficient,Diffusion Factor ,Deviation Angle, and Incidence Angle For Near Design Data Point-Rotor 1

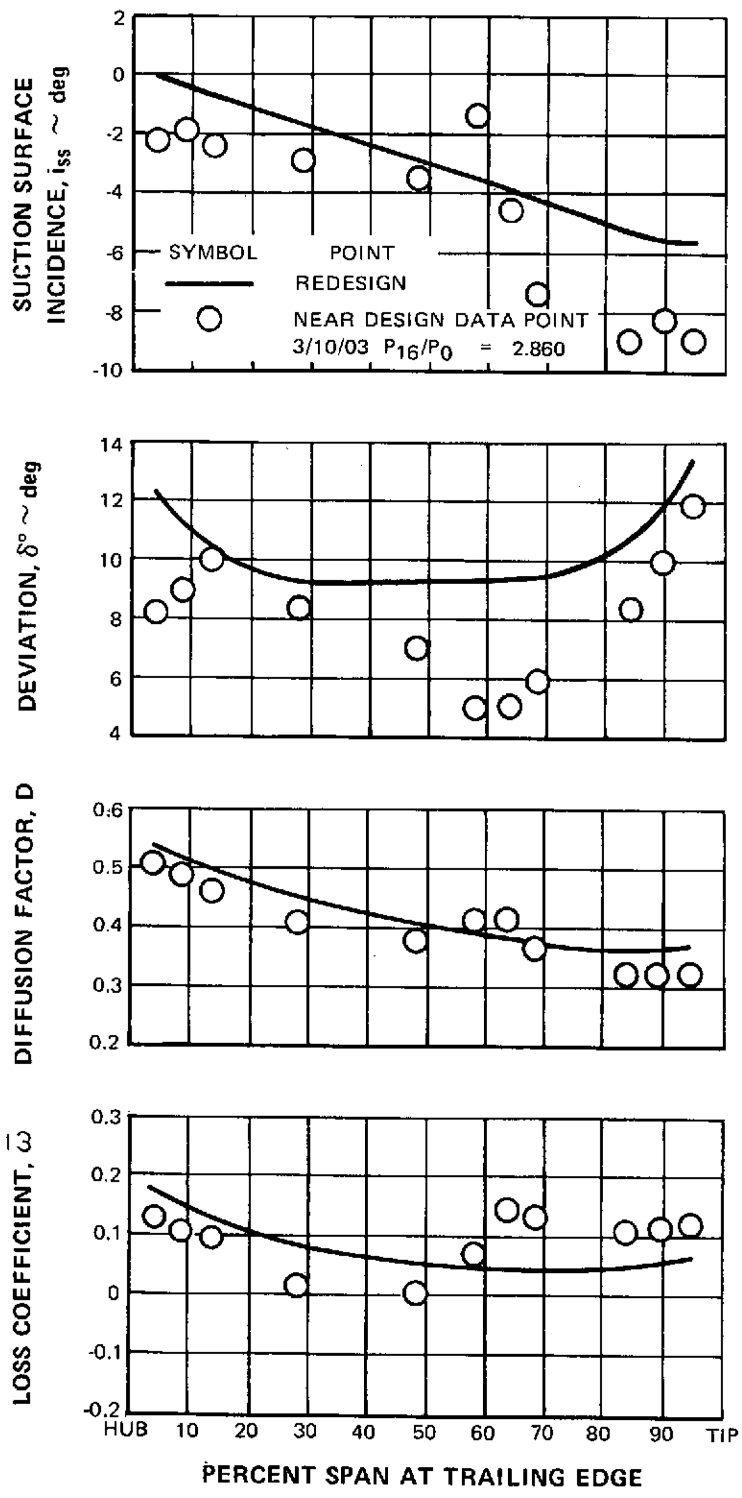


Figure 57 Loss Coefficient, Diffusion Factor, Deviation Angle and Incidence Angle For Near Design Data Point – Stator 1

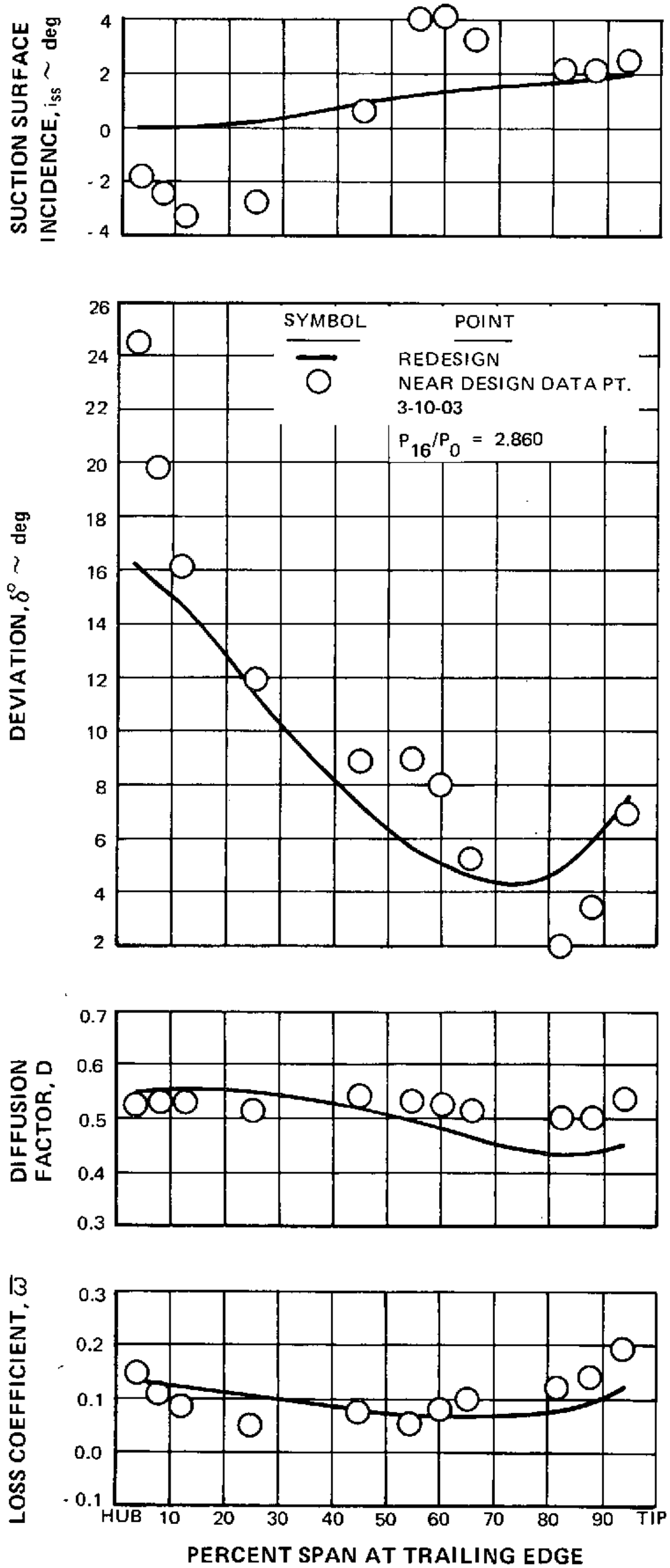


Figure 58 Loss Coefficient, Diffusion Factor, Deviation Angle and Incidence Angle for Near Design Data Point – Rotor 2

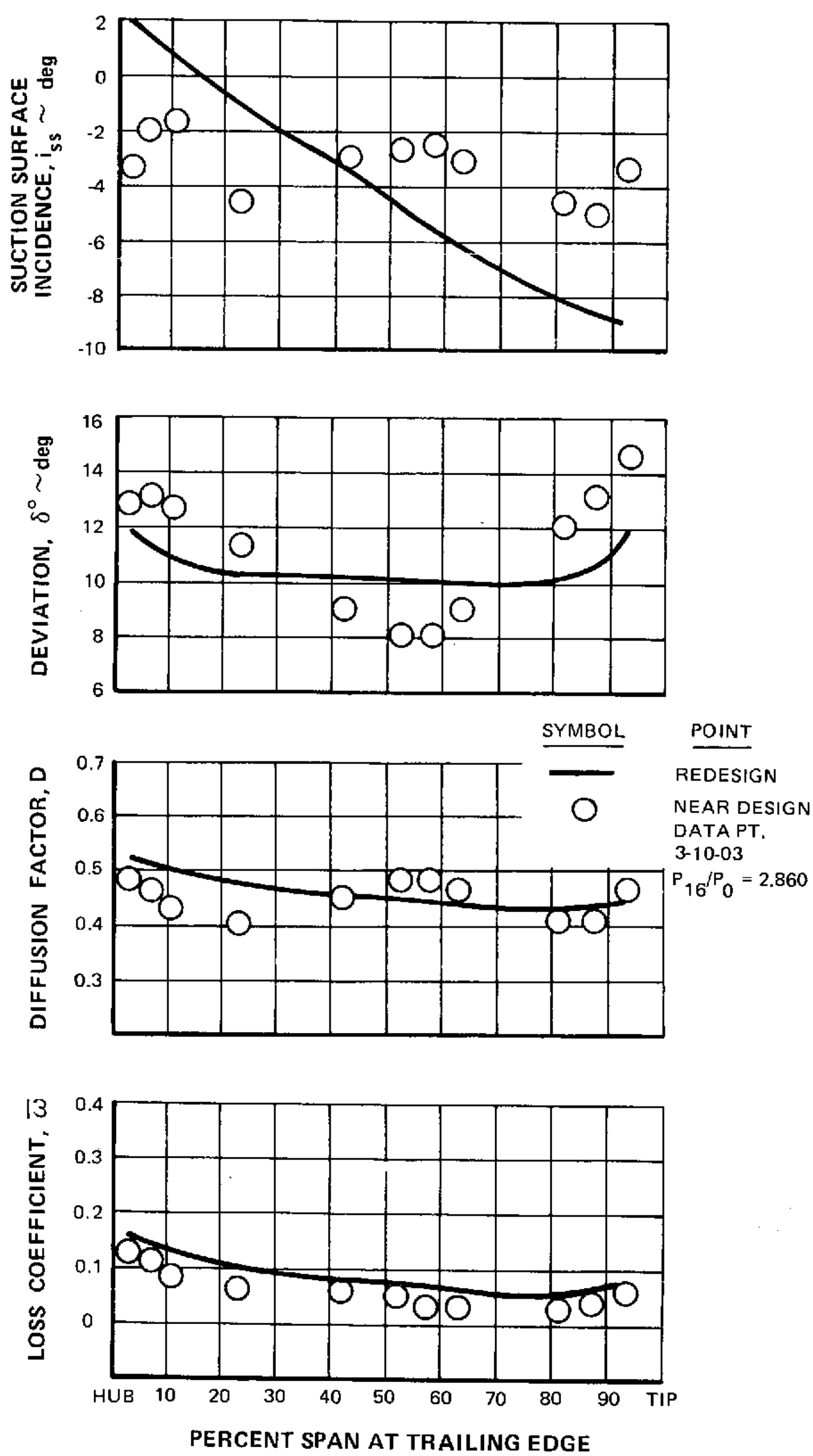


Figure 59 Loss Coefficient, Diffusion Factor, Deviation Angle, and Incidence Angle for Near Design Data Point – Stator 2

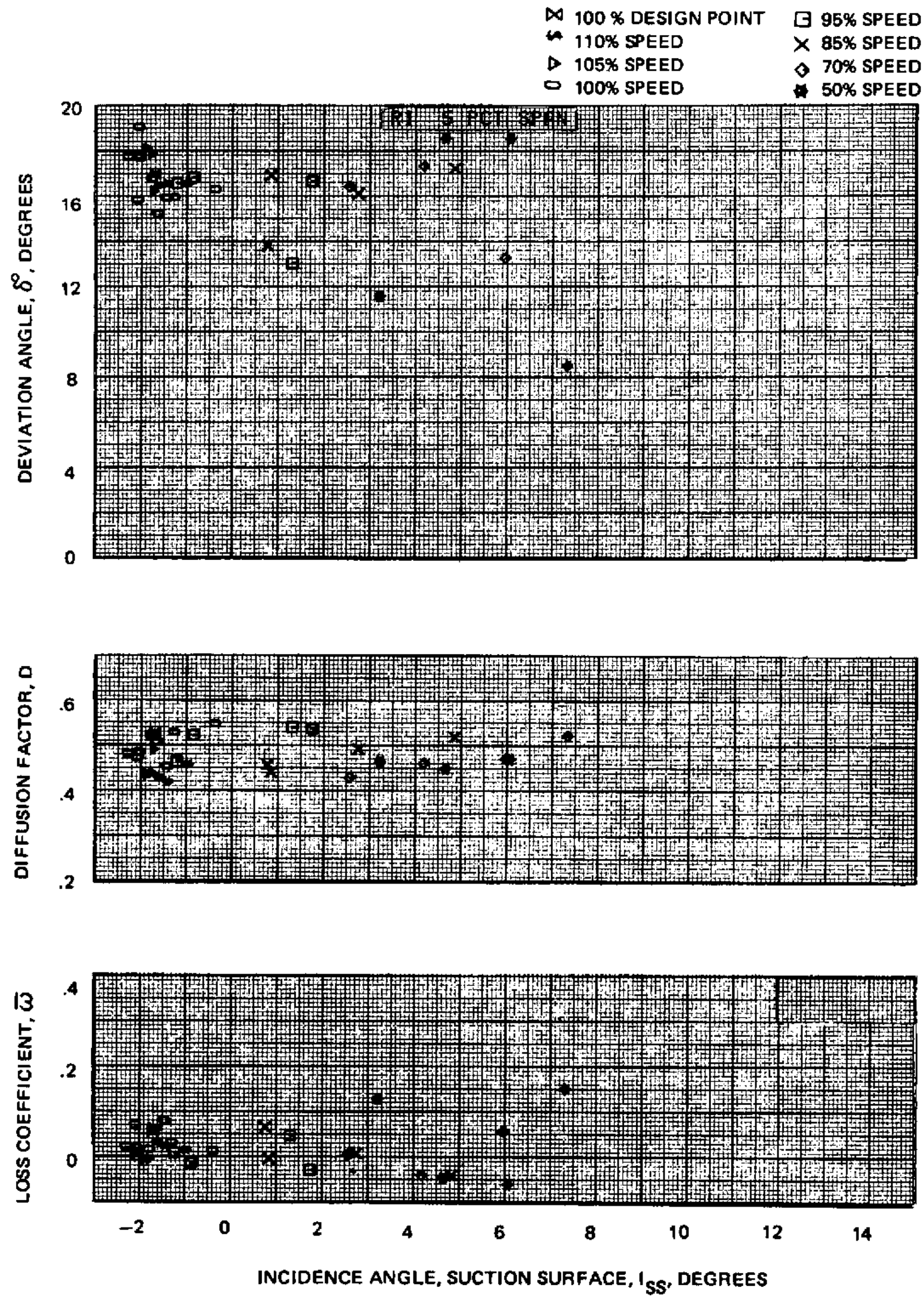


Figure 60a Blade Element Performance with Uniform Inlet Flow – Rotor 1
5% Span

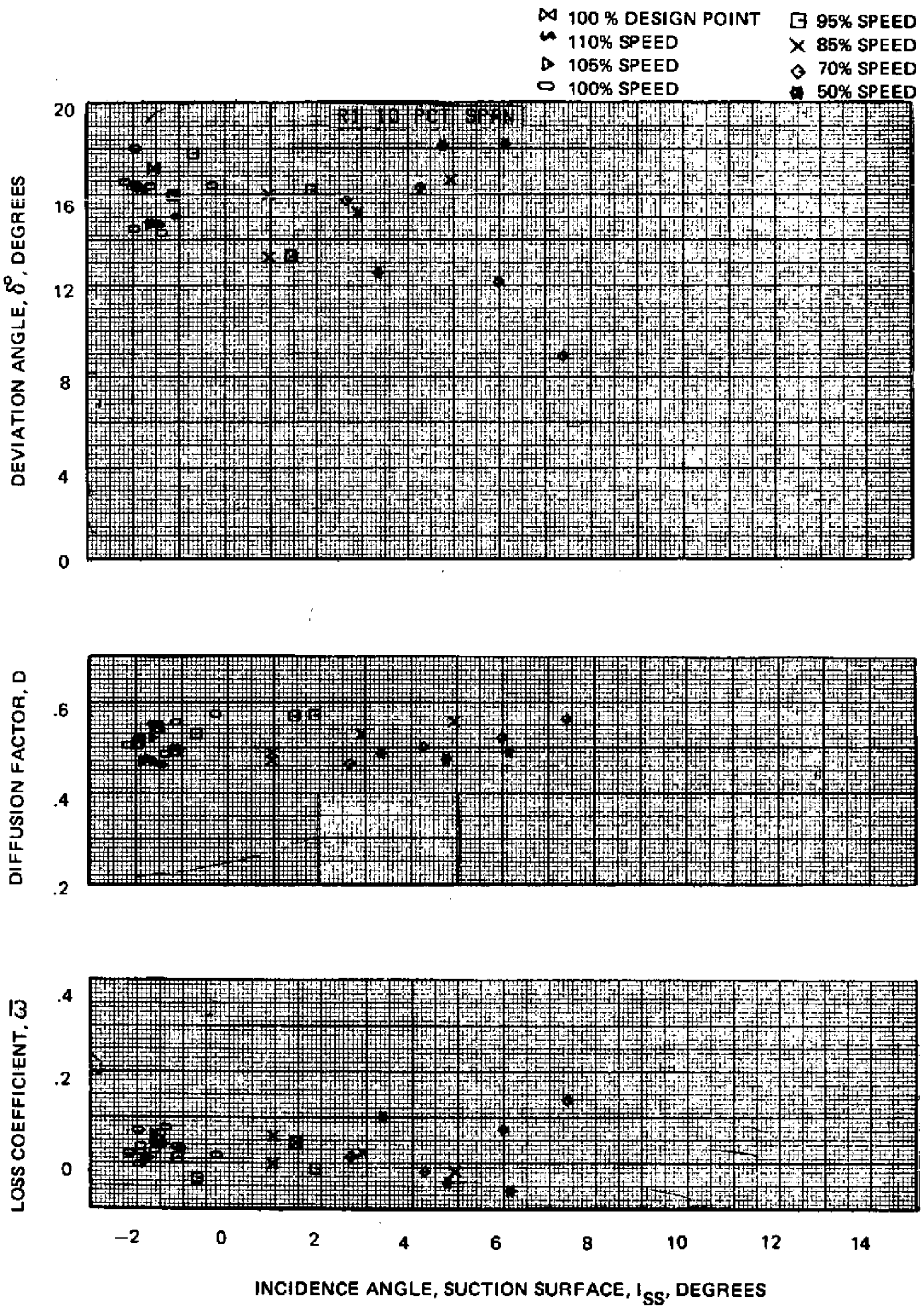


Figure 60b Blade Element Performance with Uniform Inlet Flow – Rotor 1
10% Span

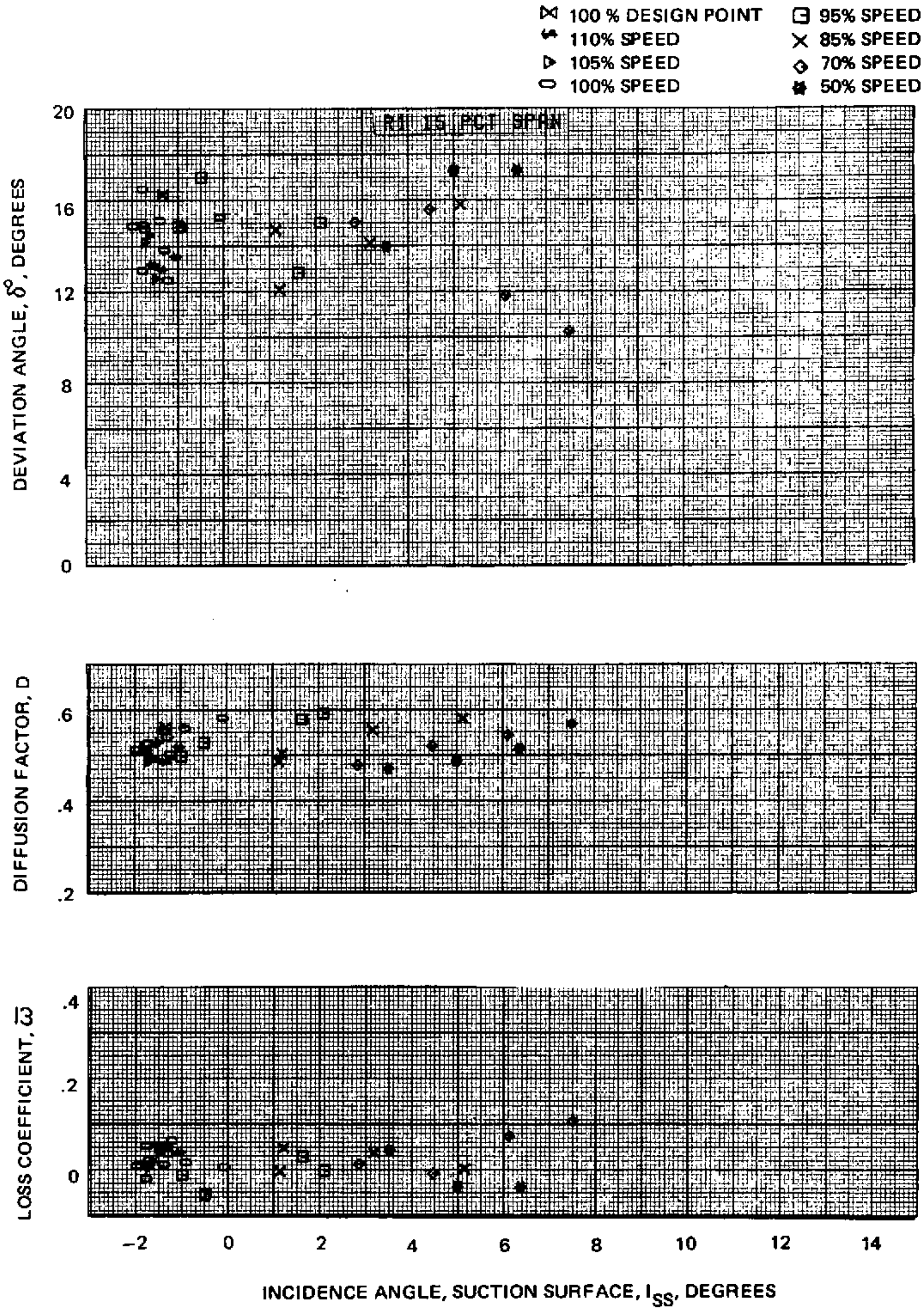


Figure 60c Blade Element Performance with Uniform Inlet Flow – Rotor 1
15% Span

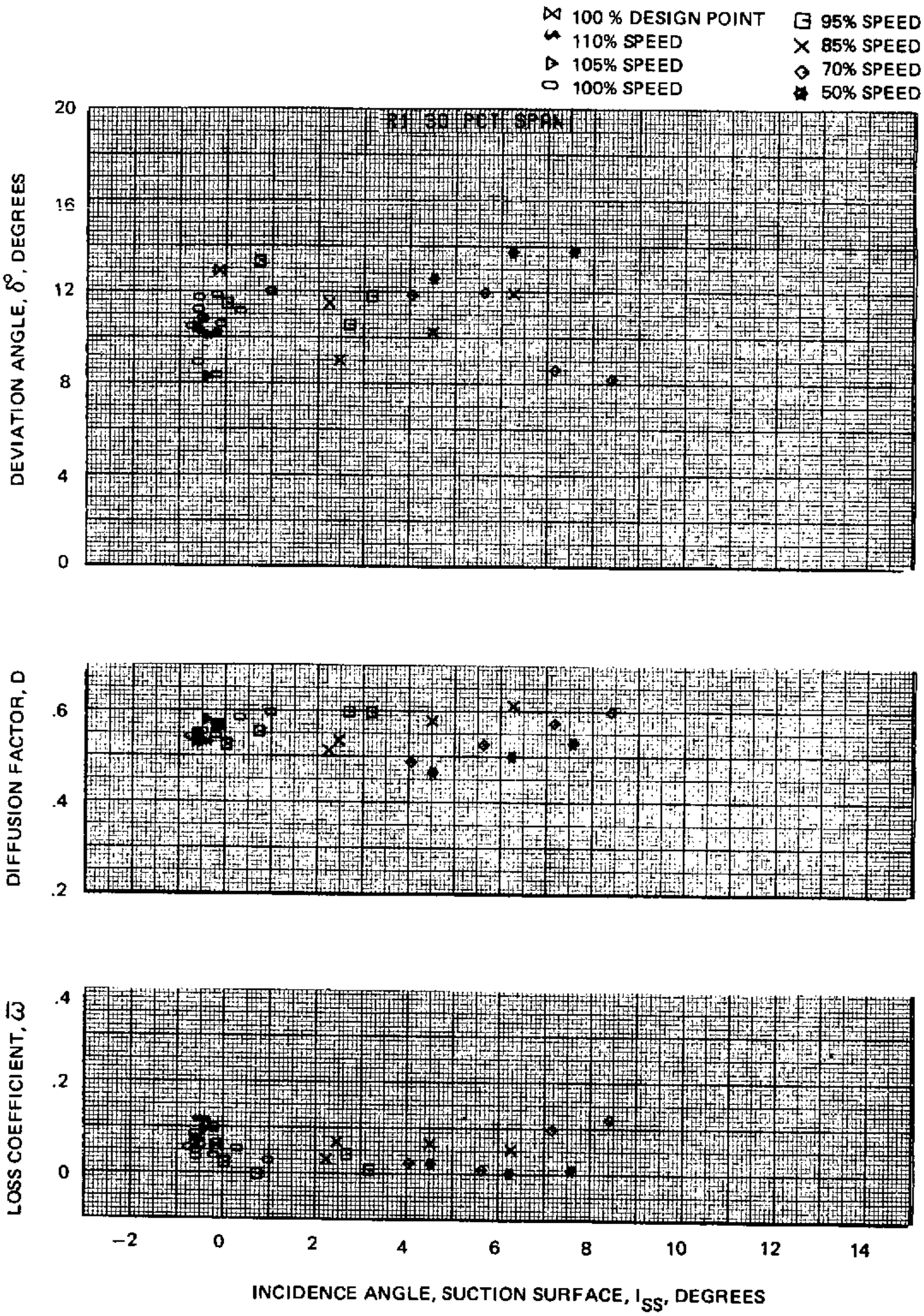


Figure 60d Blade Element Performance with Uniform Inlet Flow – Rotor 1
30% Span

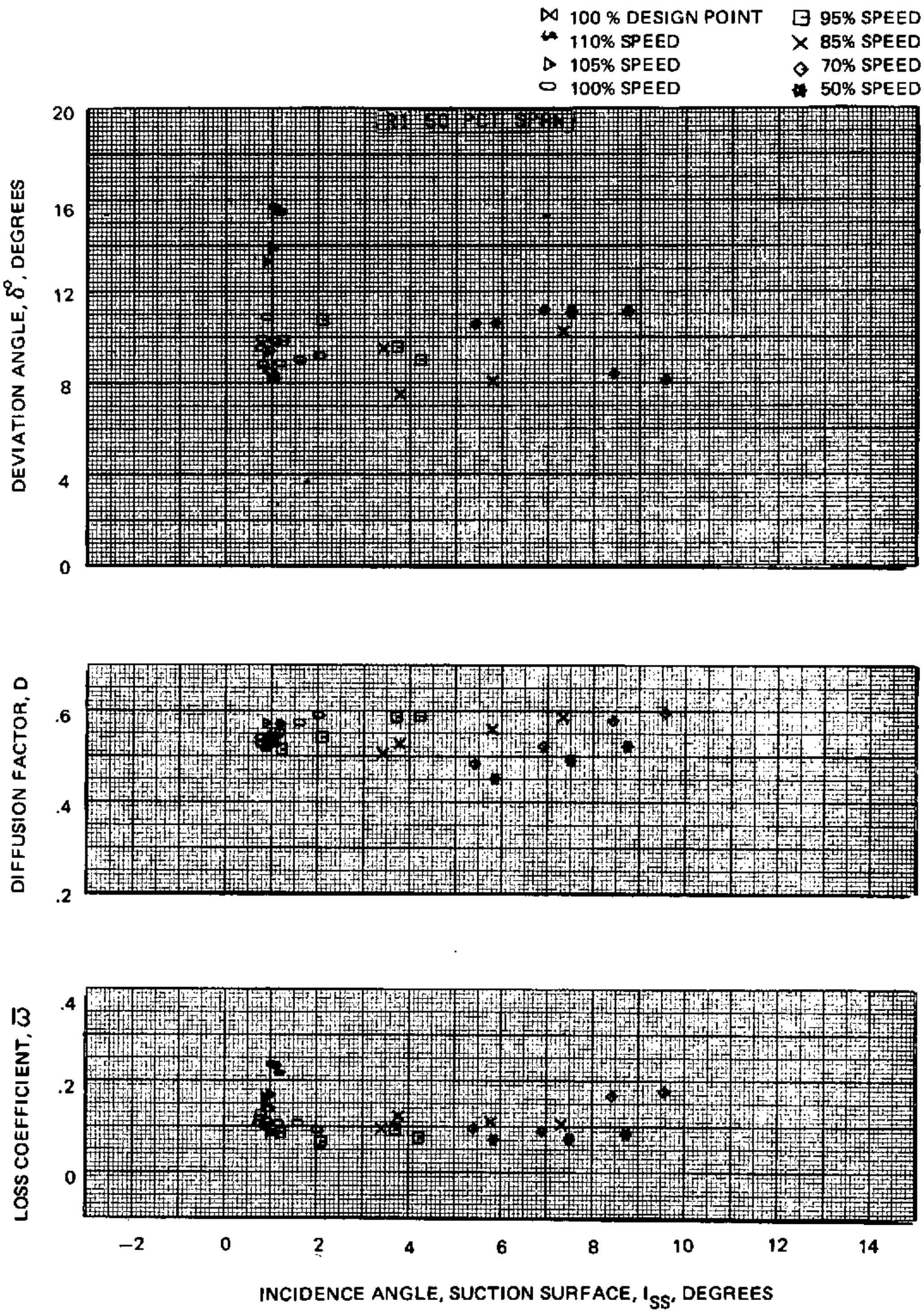


Figure 60e Blade Element Performance with Uniform Inlet Flow – Rotor 1
50% Span

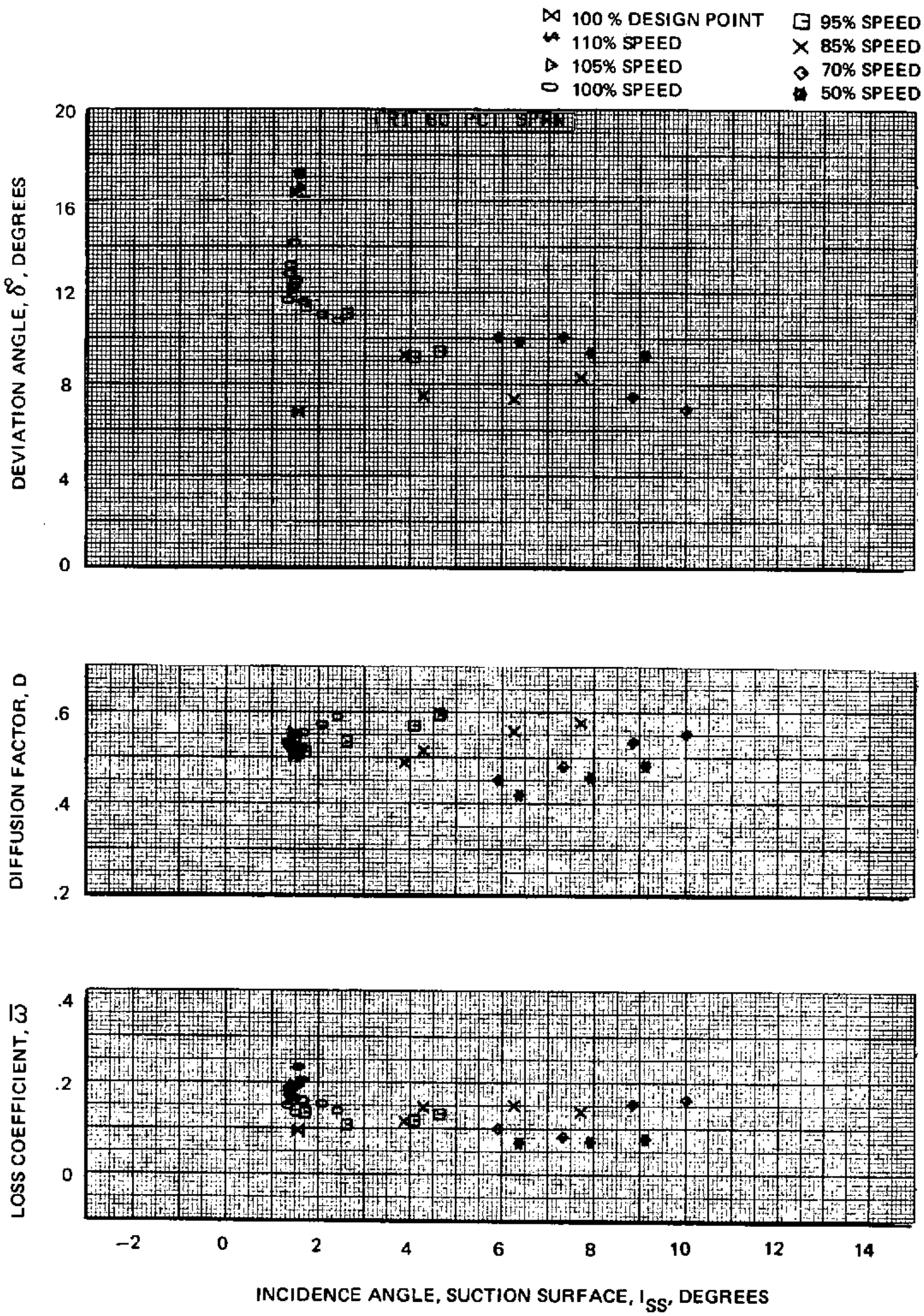


Figure 60f Blade Element Performance with Uniform Inlet Flow – Rotor 1
60% Span

C-2

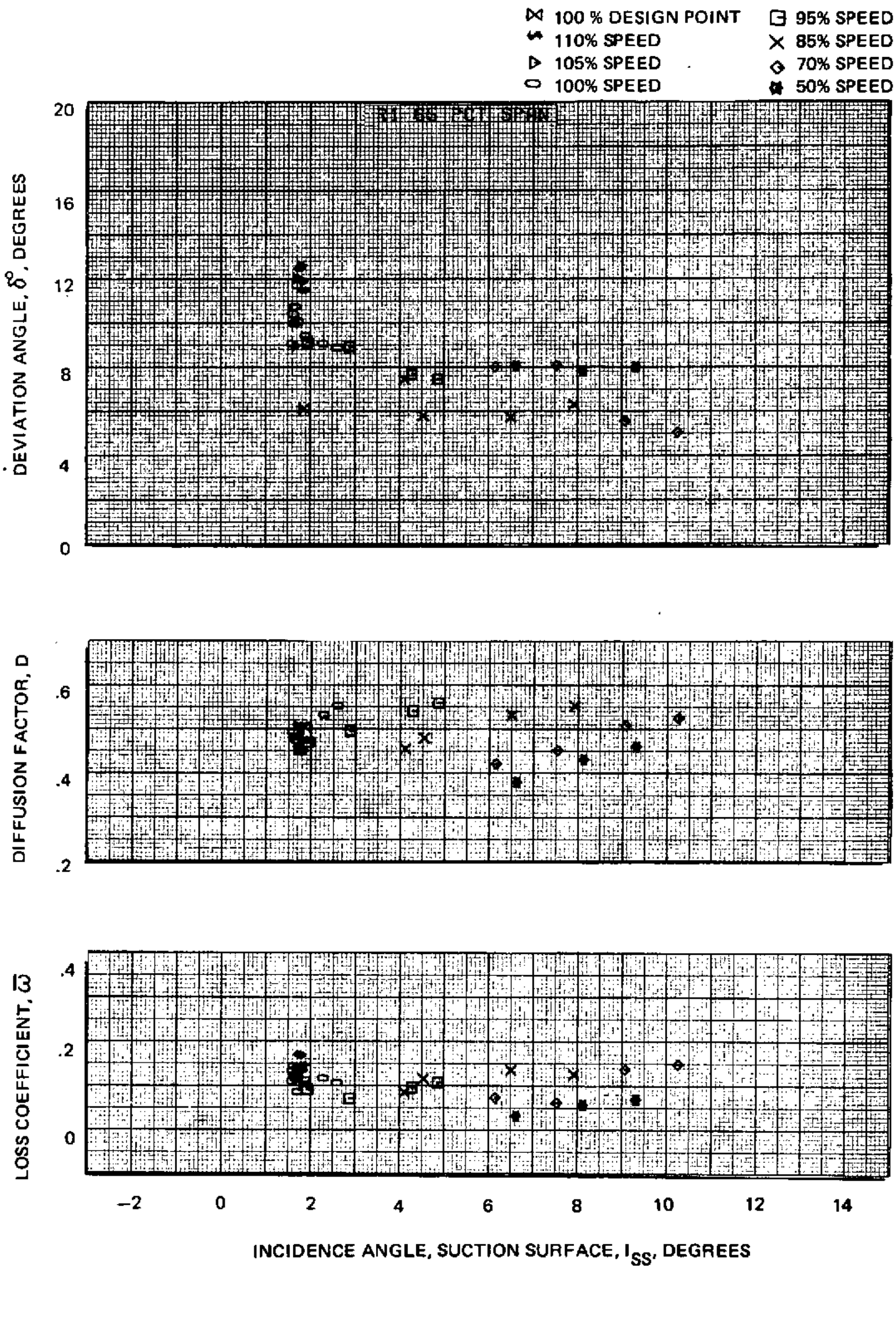


Figure 60g Blade Element Performance with Uniform Inlet Flow – Rotor 1
65% Span

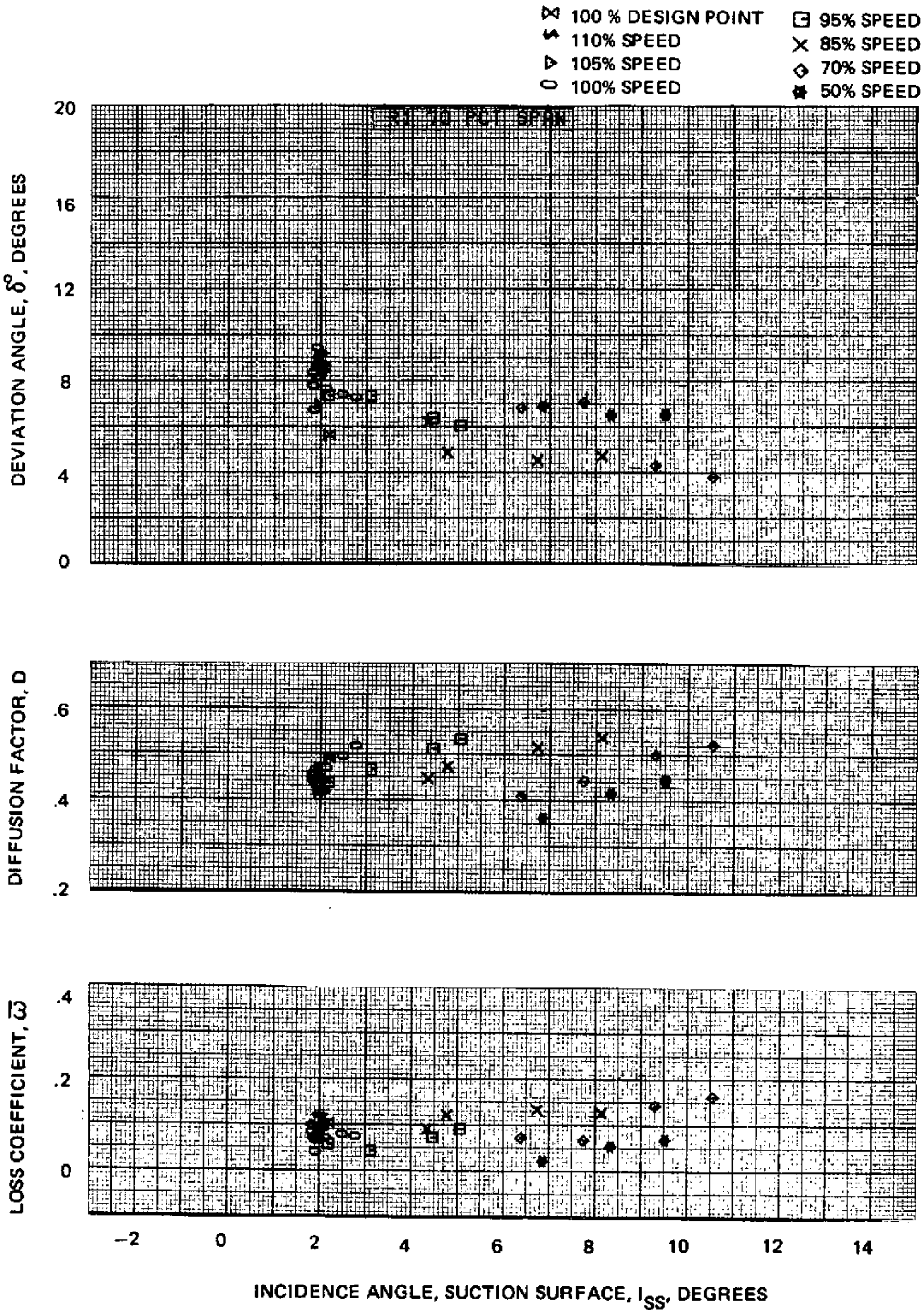


Figure 60h Blade Element Performance with Uniform Inlet Flow – Rotor 1
70% Span

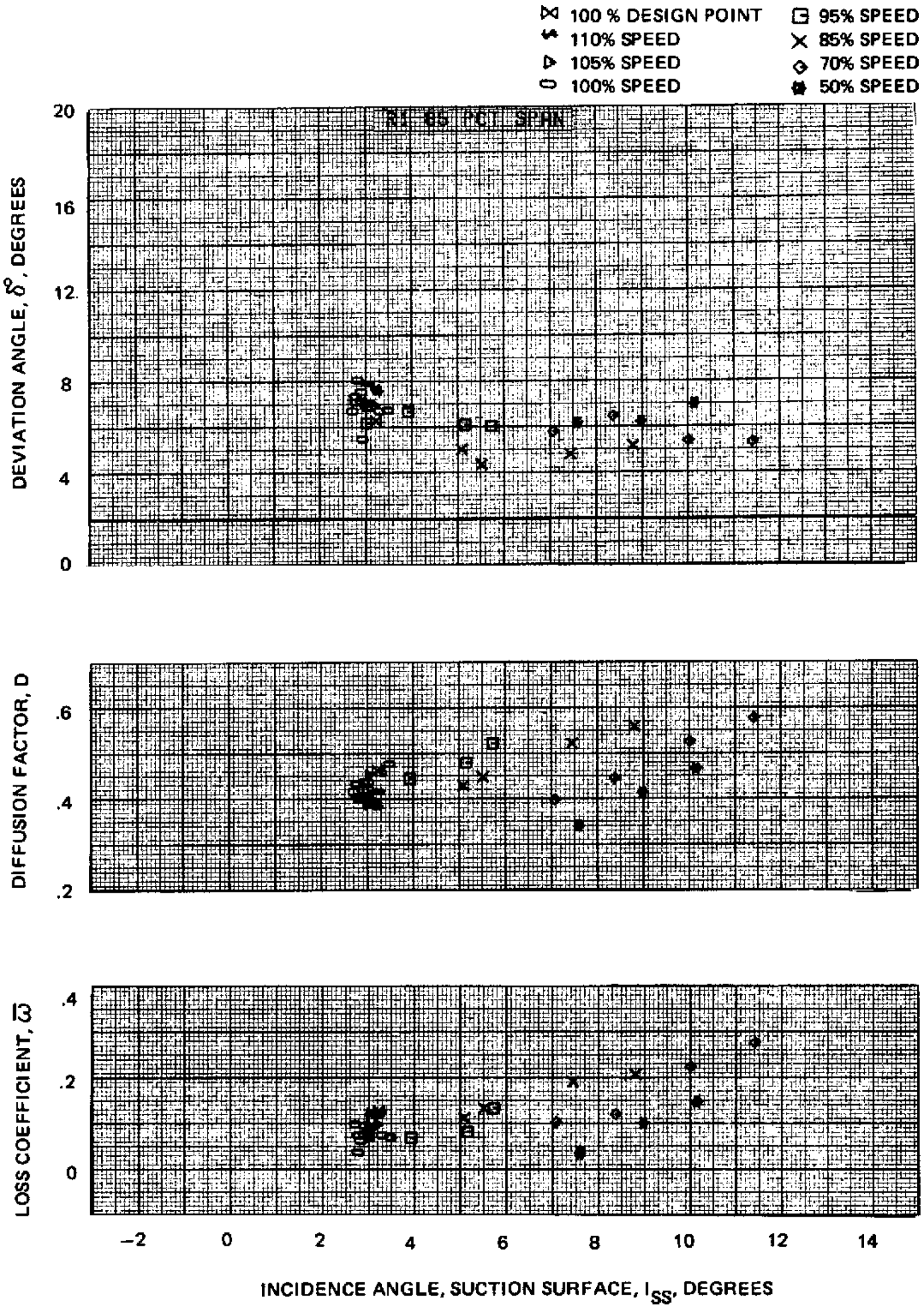


Figure 60i Blade Element Performance with Uniform Inlet Flow – Rotor 1
85% Span

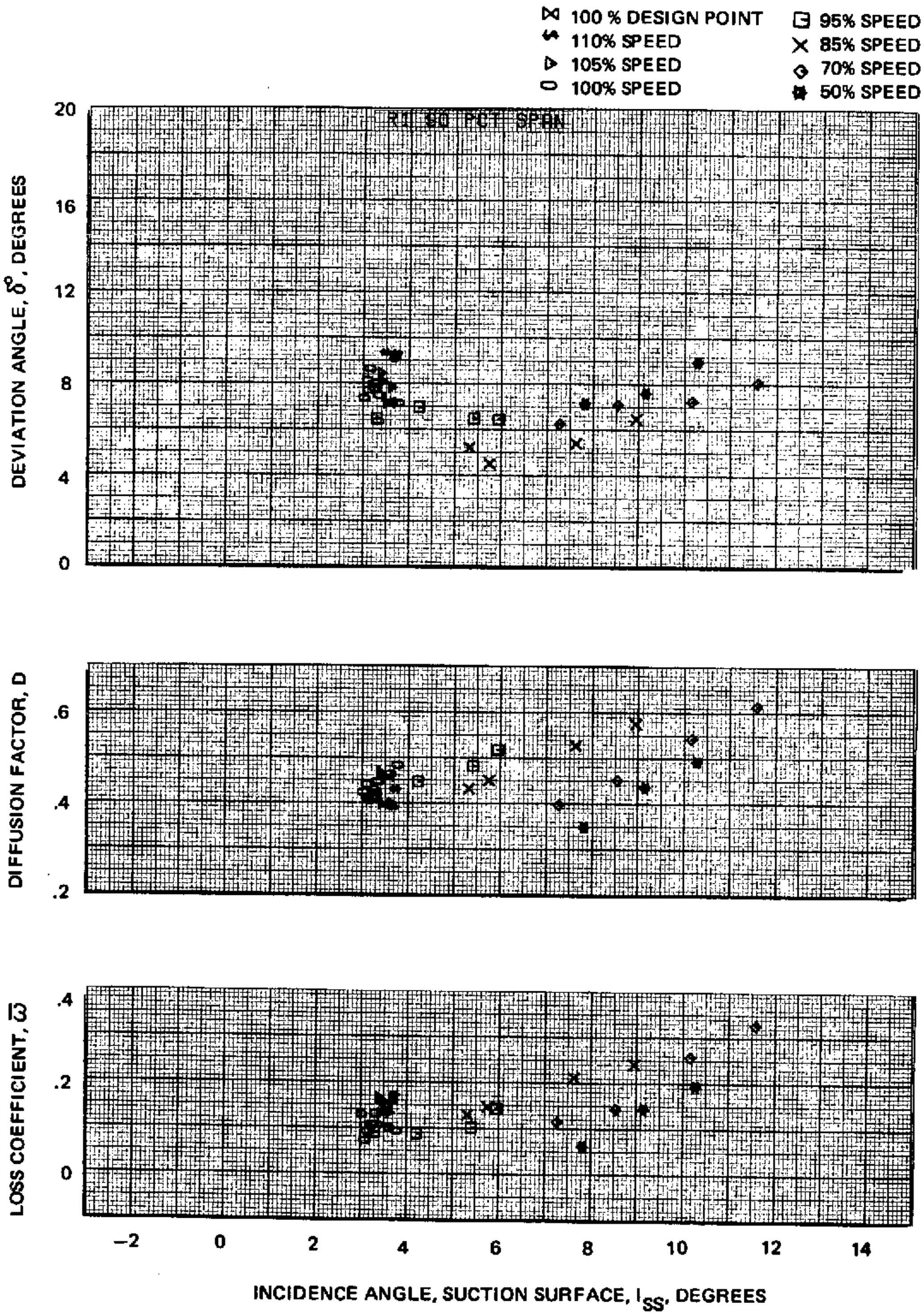


Figure 60j Blade Element Performance with Uniform Inlet Flow – Rotor 1
90% Span

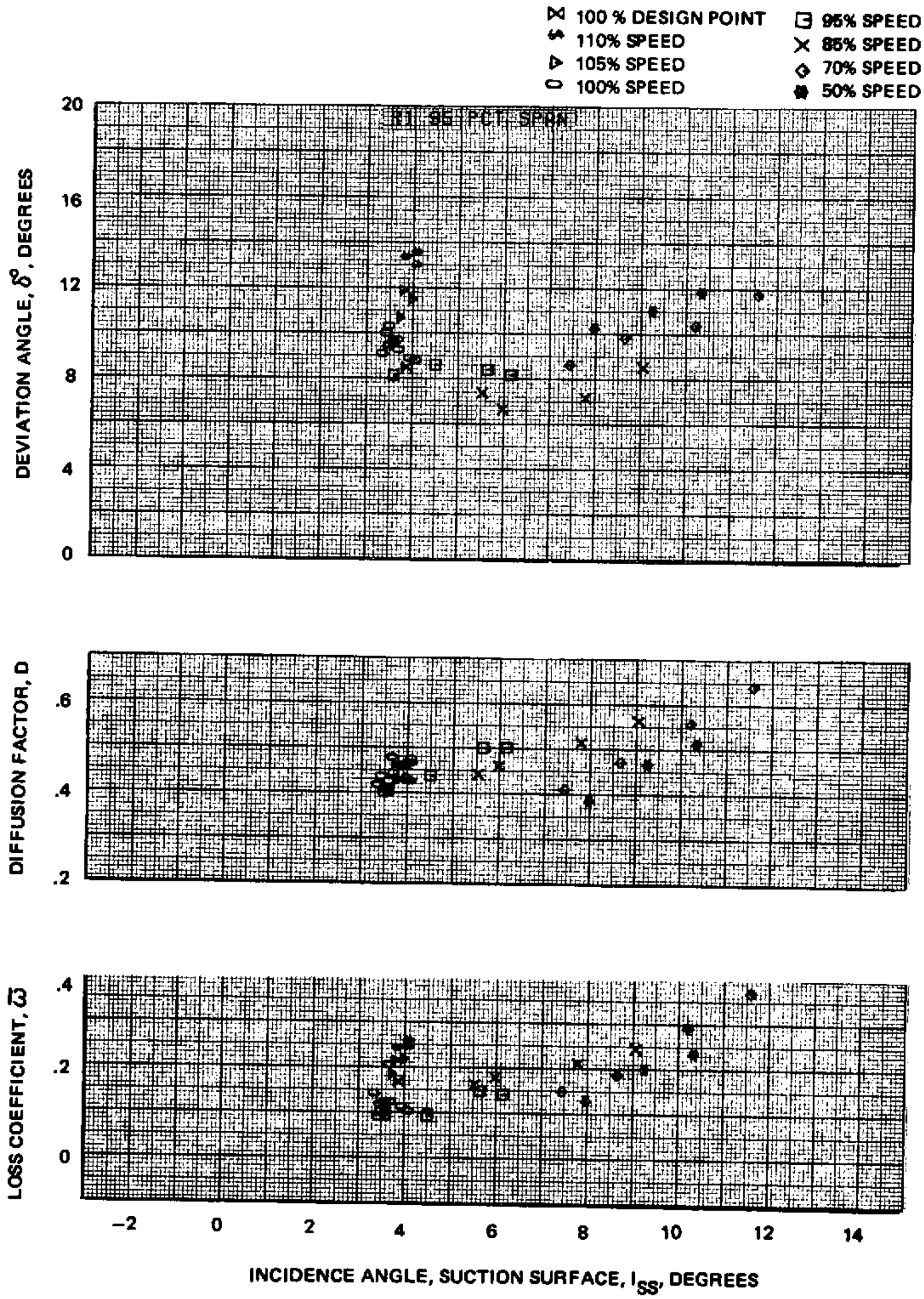


Figure 60k Blade Element Performance with Uniform Inlet Flow – Rotor 1
95% Span

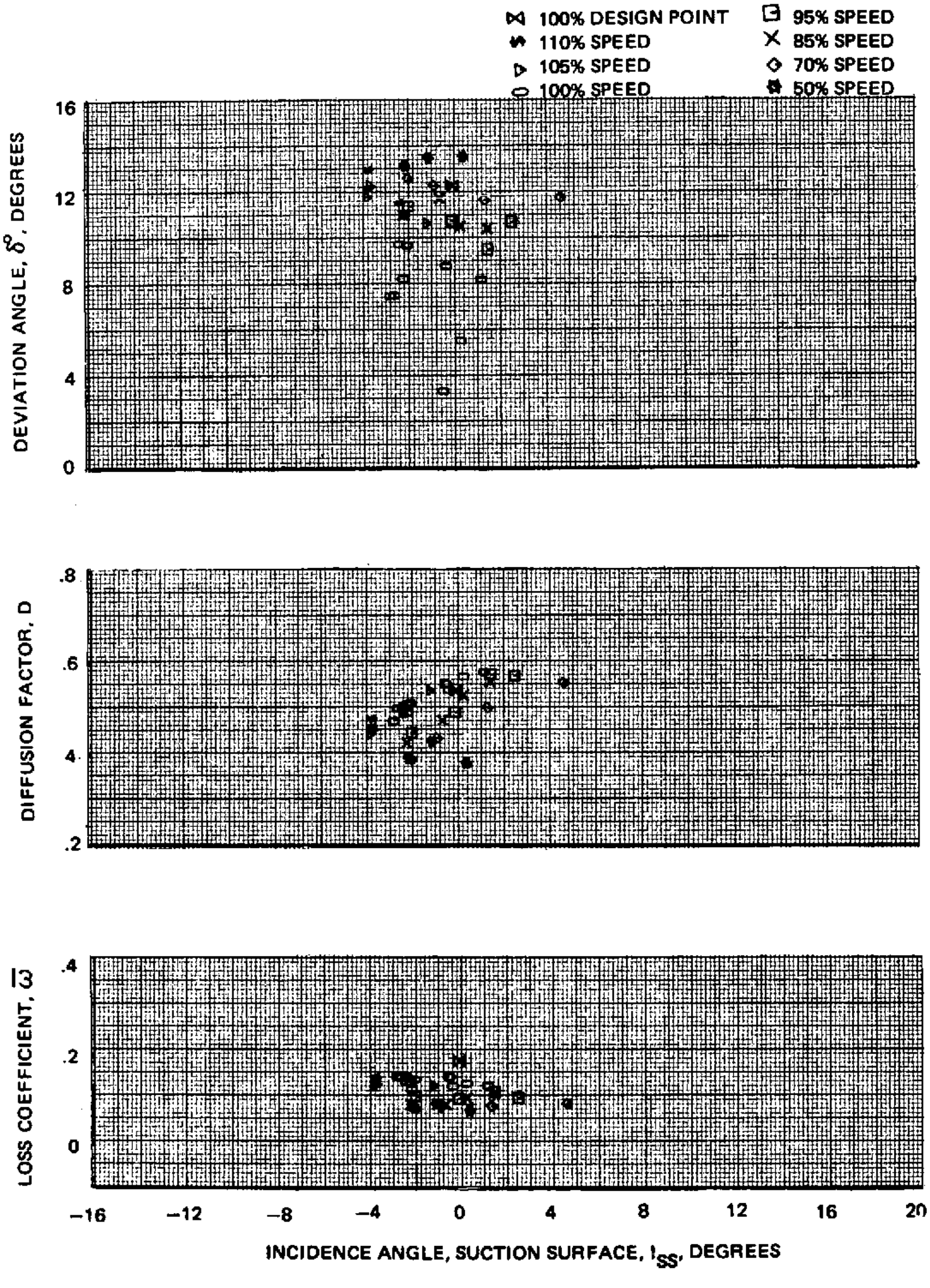


Figure 61a Blade Element Performance with Uniform Inlet Flow – Stator 1

4% Span

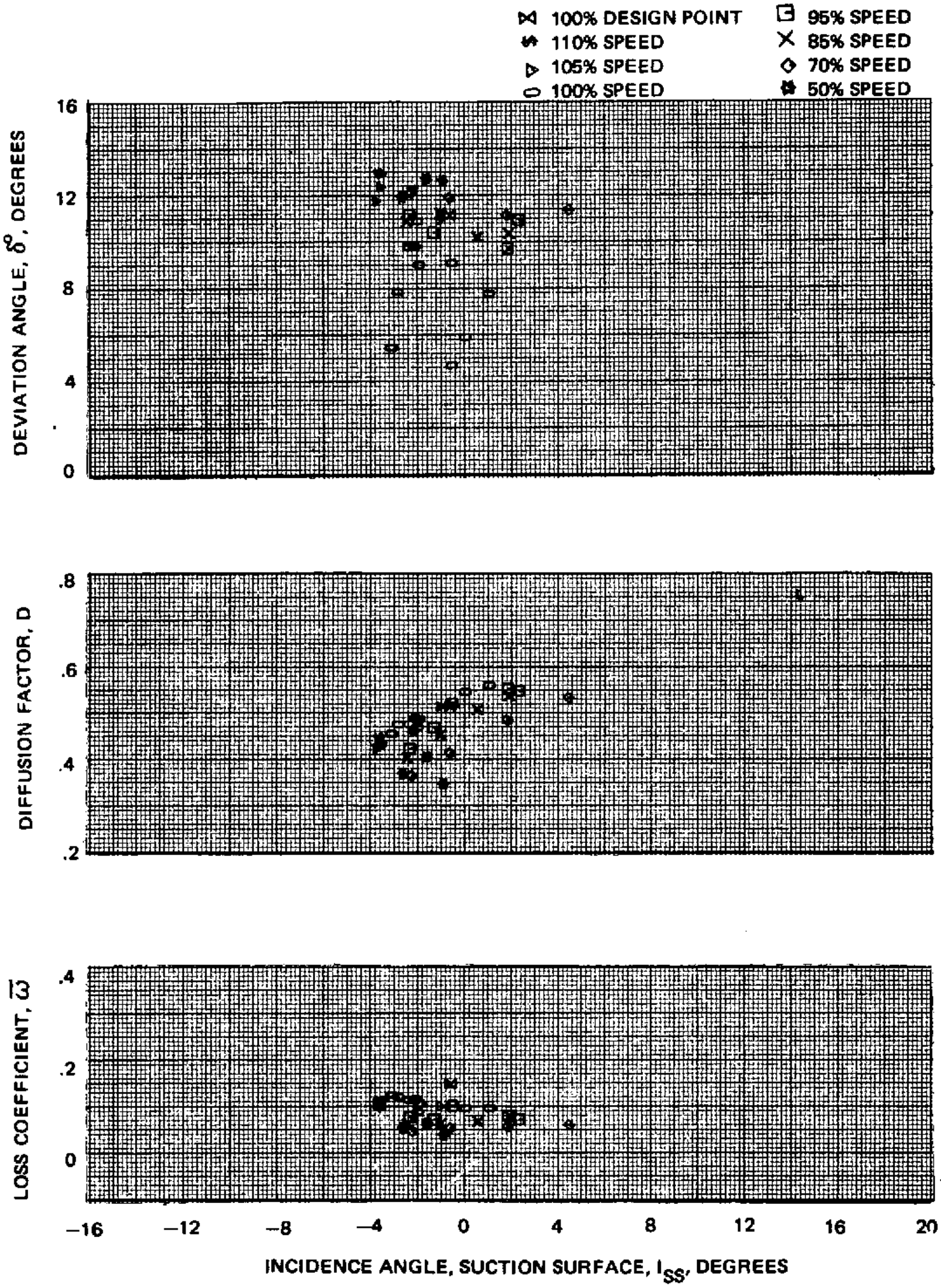


Figure 61b Blade Element Performance with Uniform Inlet Flow – Stator 1
9% Span

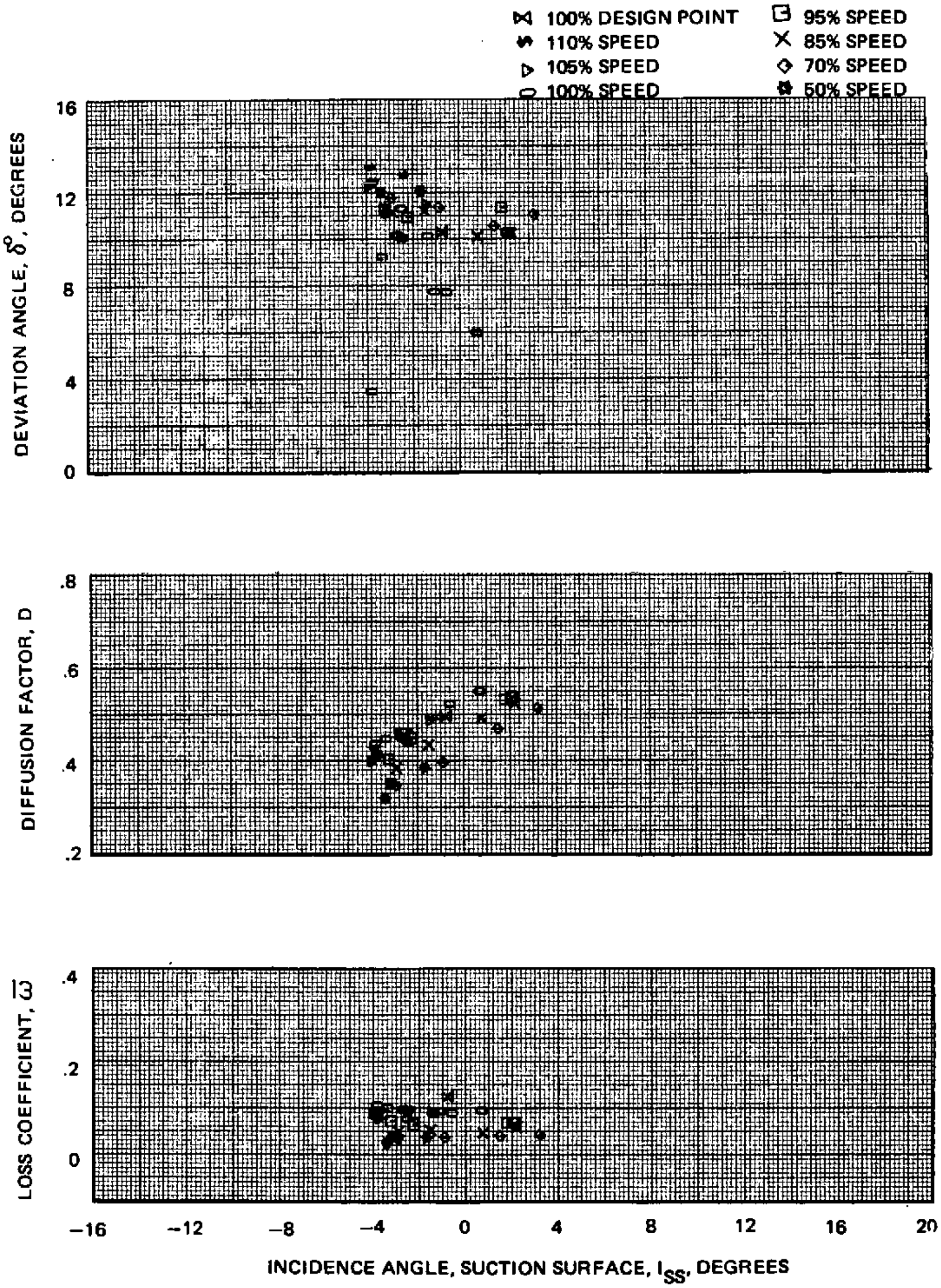


Figure 61c Blade Element Performance with Uniform Inlet Flow – Stator 1
14% Span

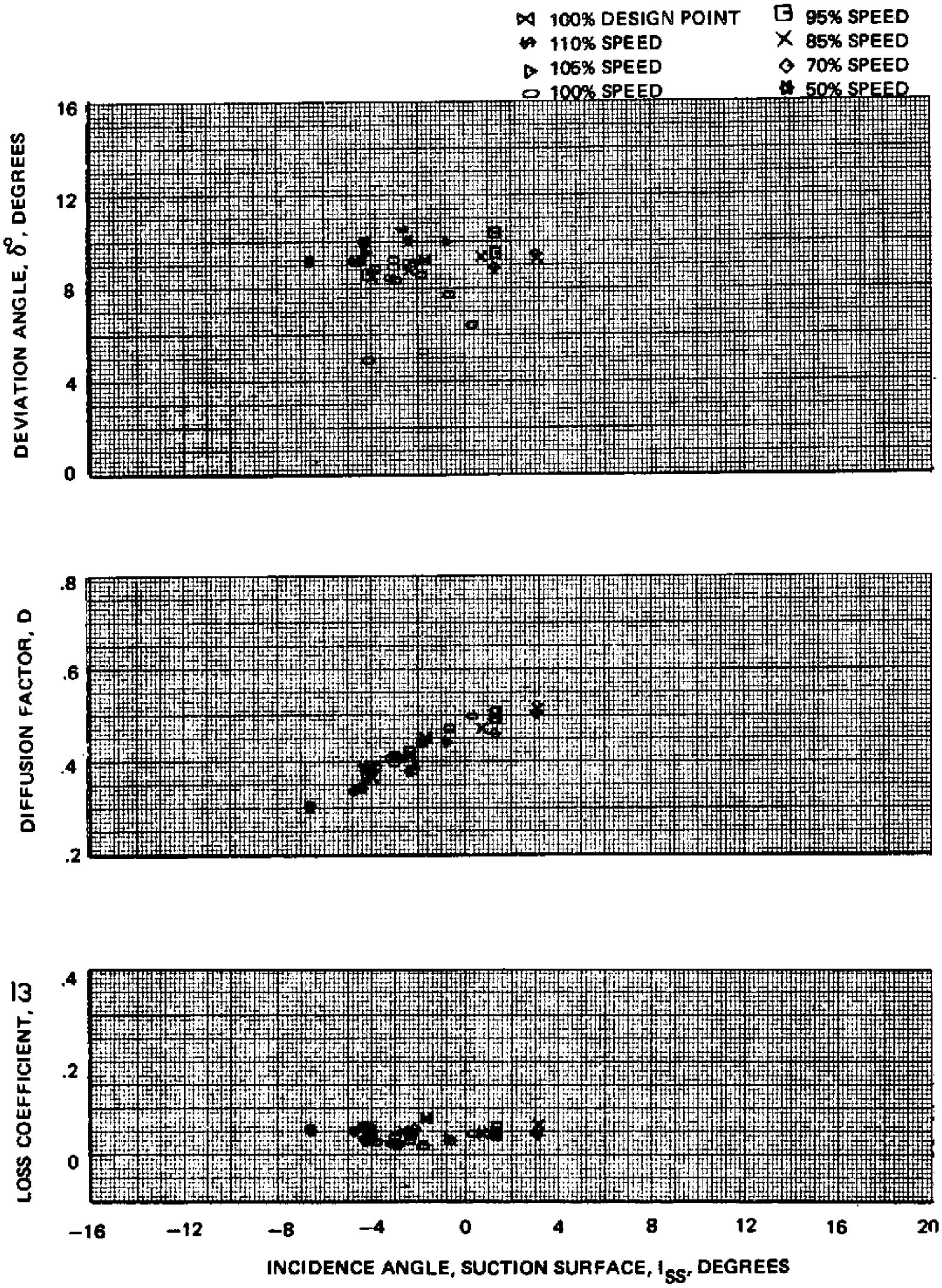


Figure 61d Blade Element Performance with Uniform Inlet Flow – Stator 1
28% Span

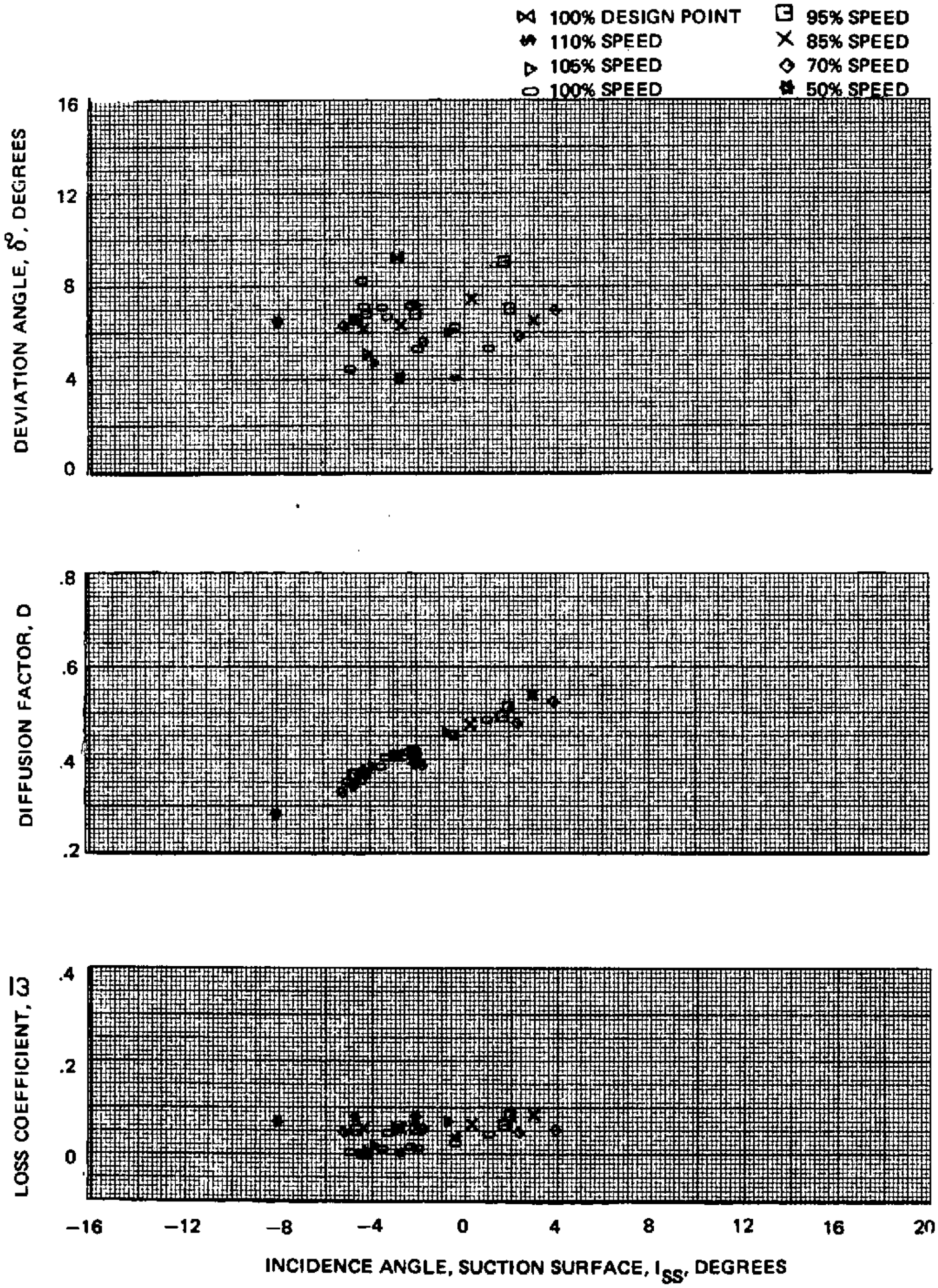


Figure 61e Blade Element Performance with Uniform Inlet Flow – Stator 1
48% Span

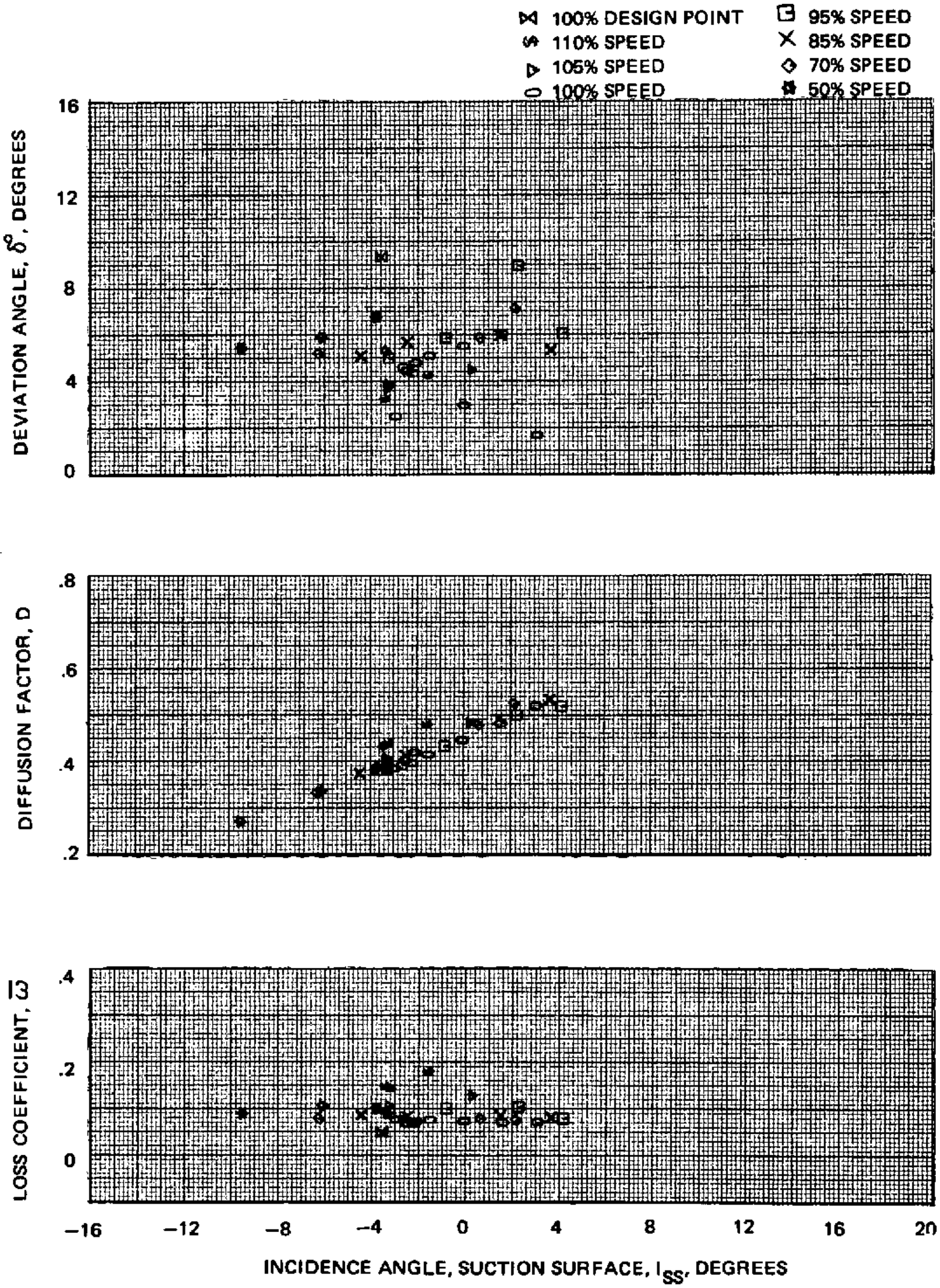


Figure 61f Blade Element Performance with Uniform Inlet Flow — Stator 1
58% Span

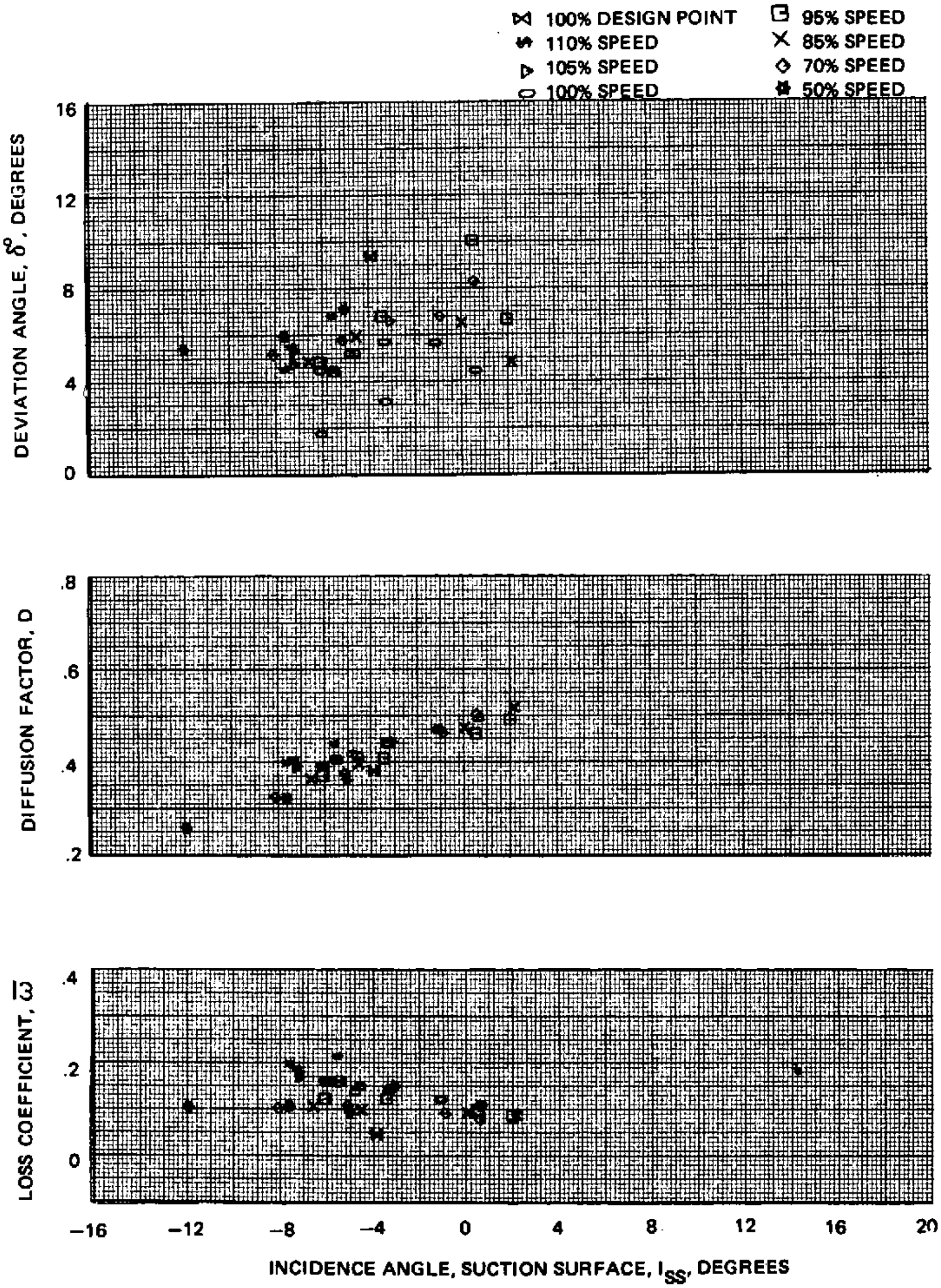


Figure 61g Blade Element Performance with Uniform Inlet Flow – Stator 1
64% Span

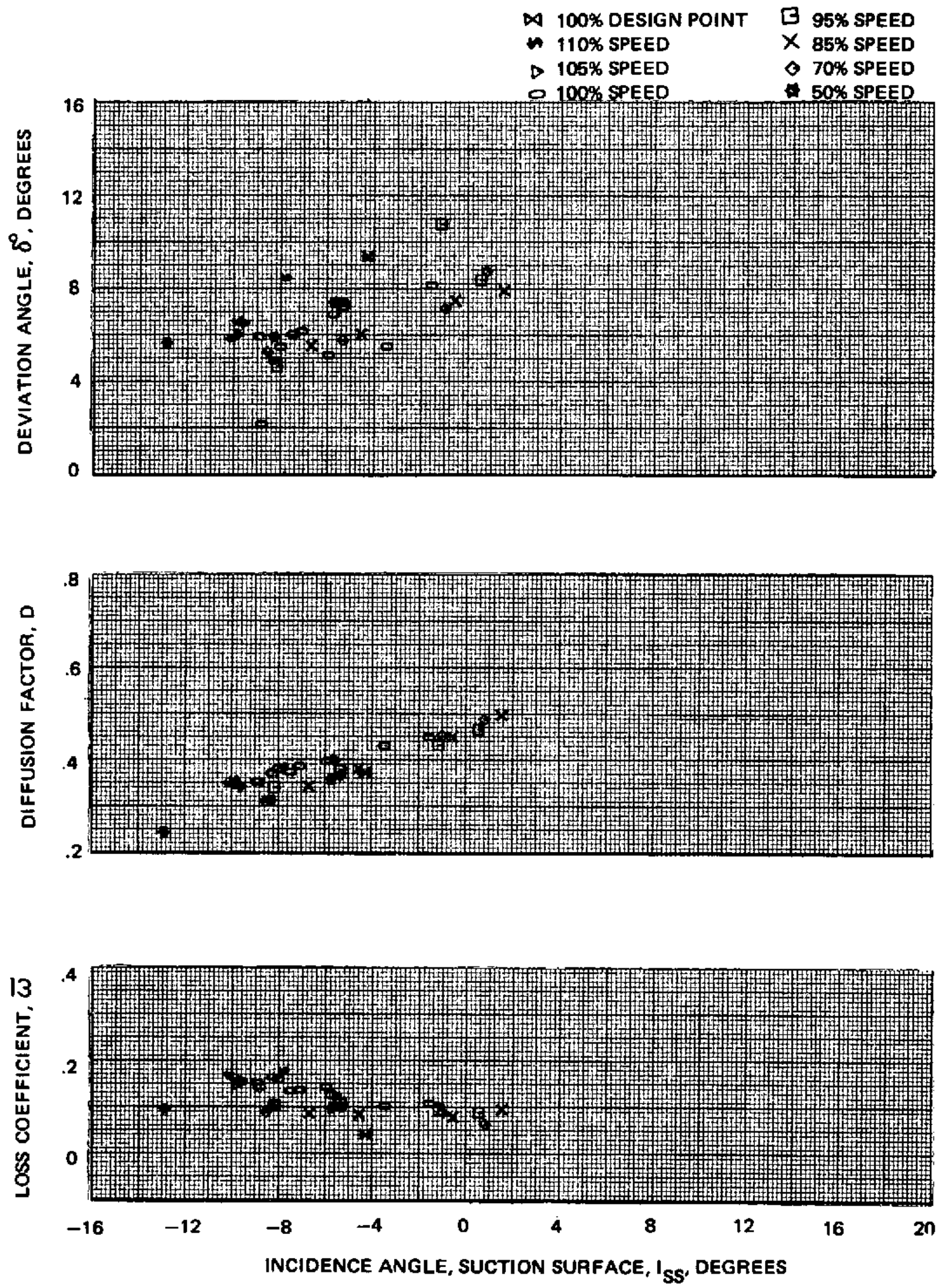


Figure 61h Blade Element Performance with Uniform Inlet Flow – Stator 1
69% Span

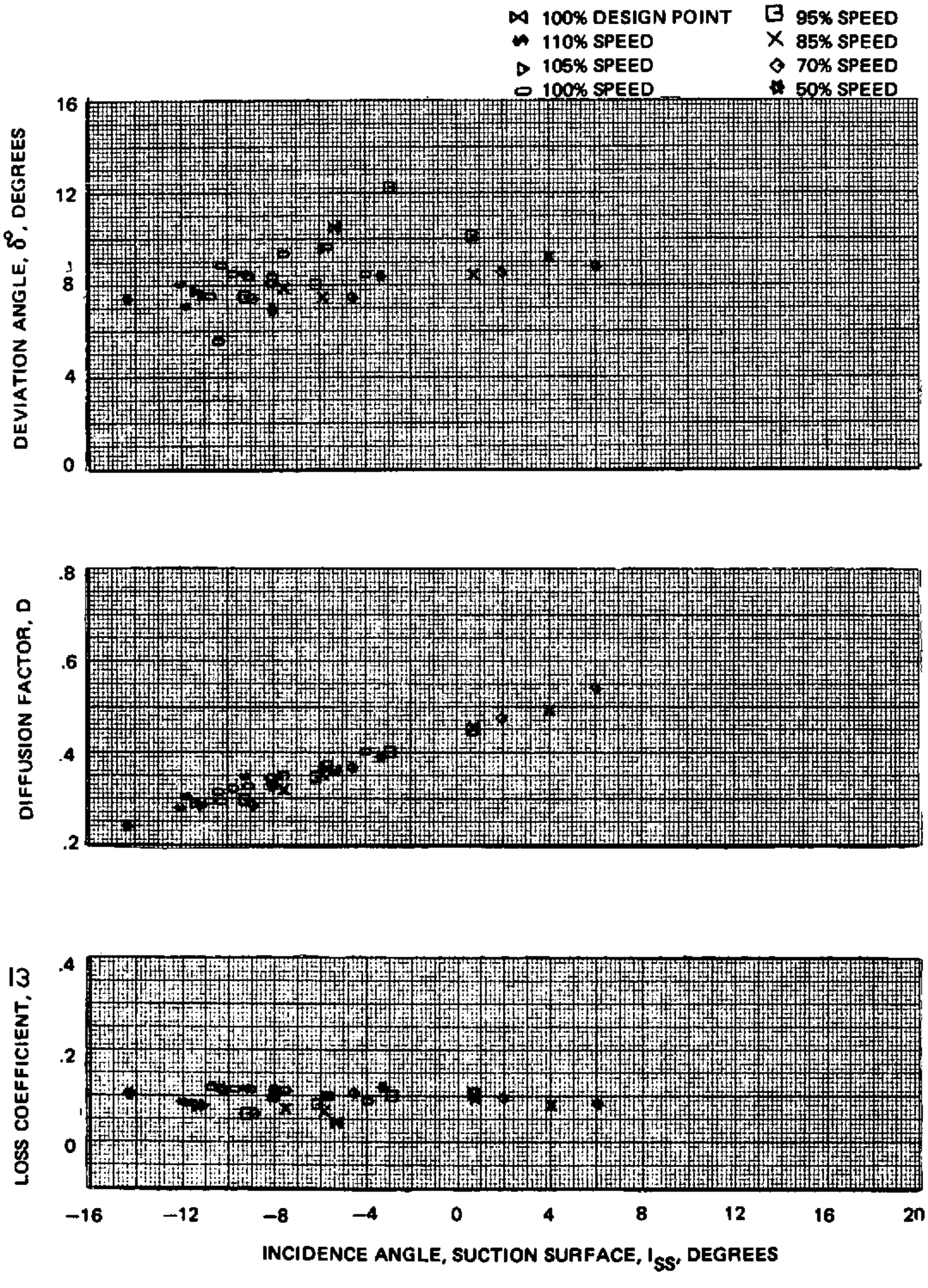


Figure 61i Blade Element Performance with Uniform Inlet Flow – Stator 1
84% Span

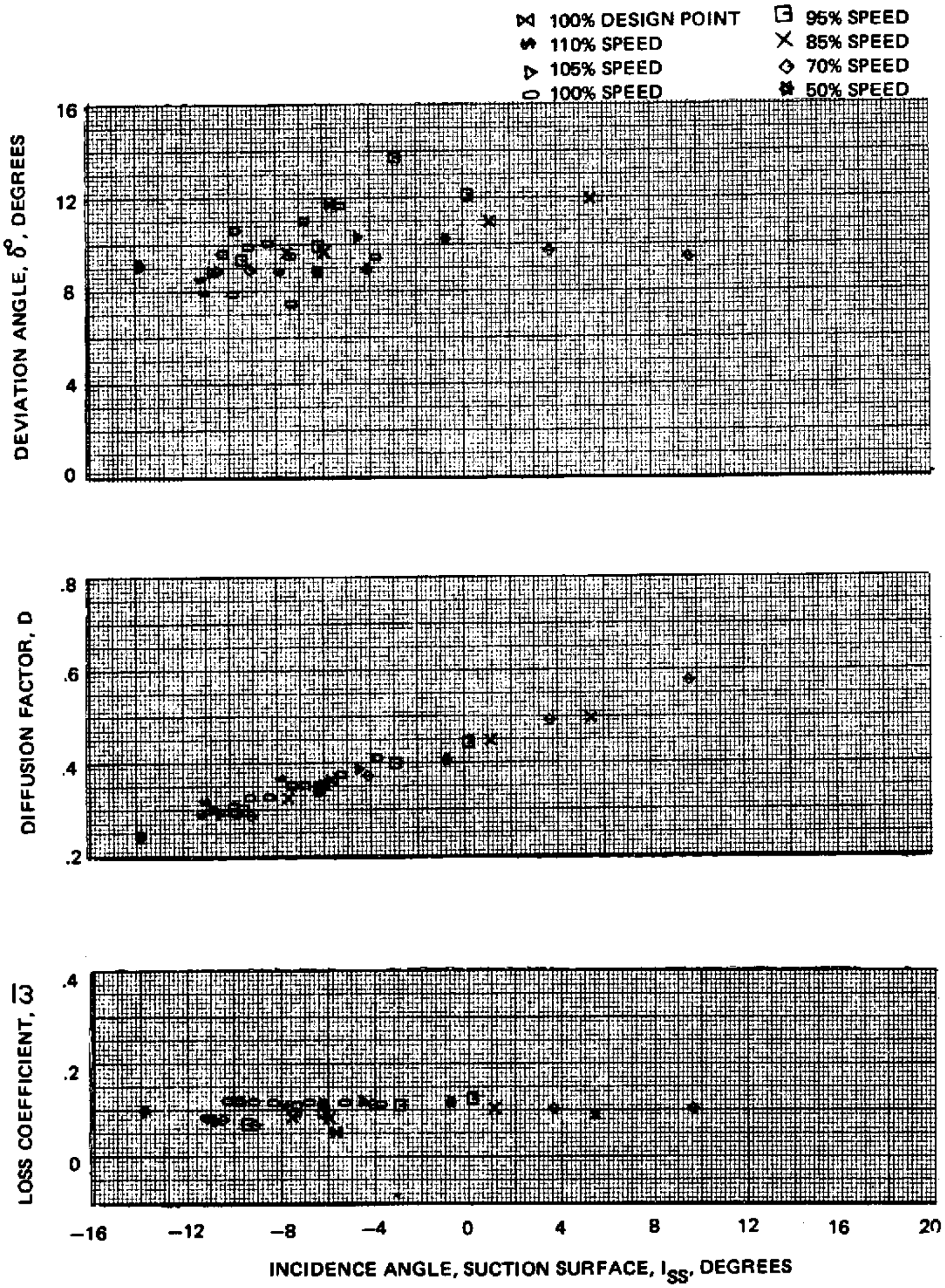


Figure 61j Blade Element Performance with Uniform Inlet Flow – Stator 1
90% Span

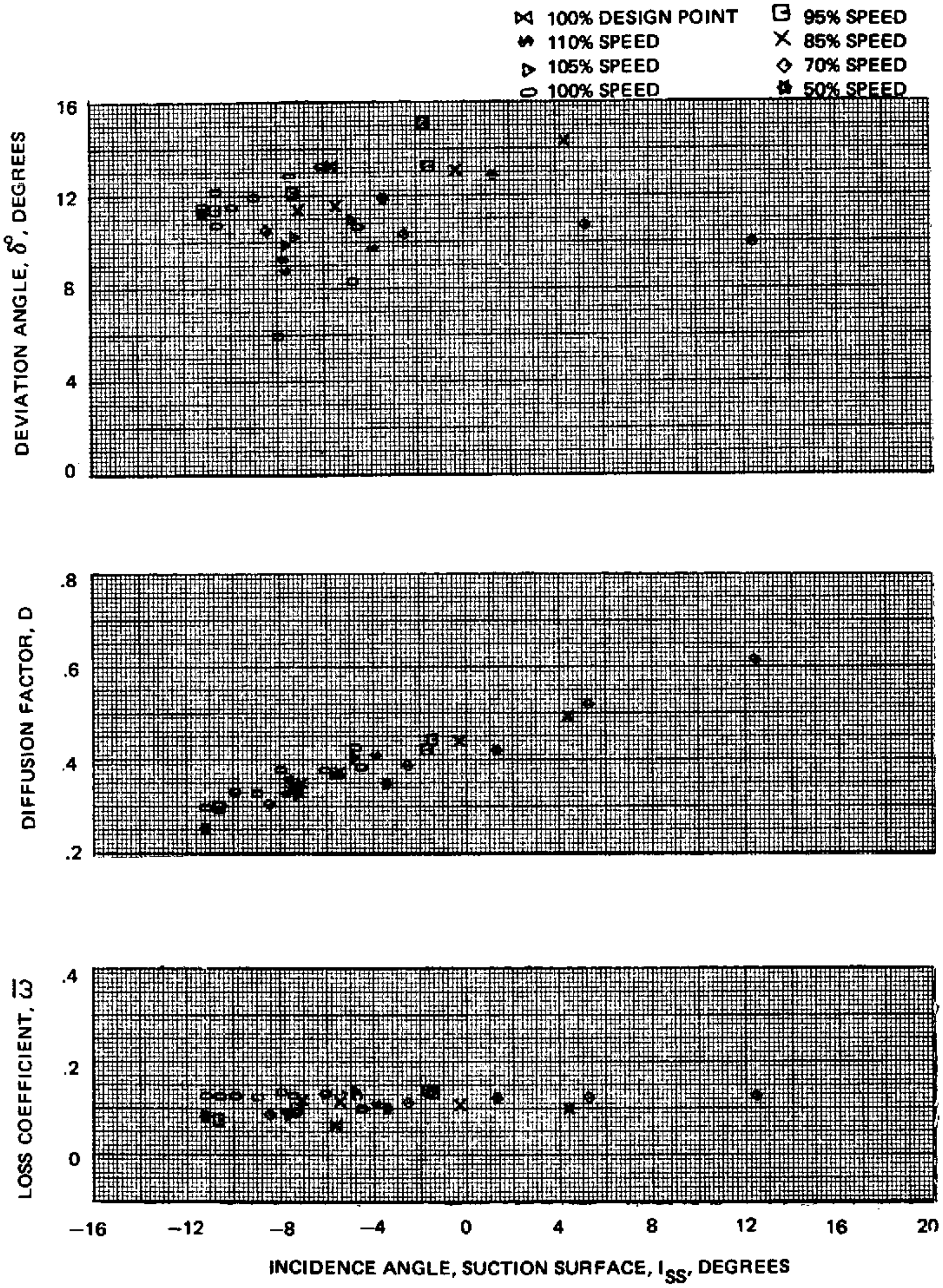


Figure 61k Blade Element Performance with Uniform Inlet Flow – Stator 1
95% Span

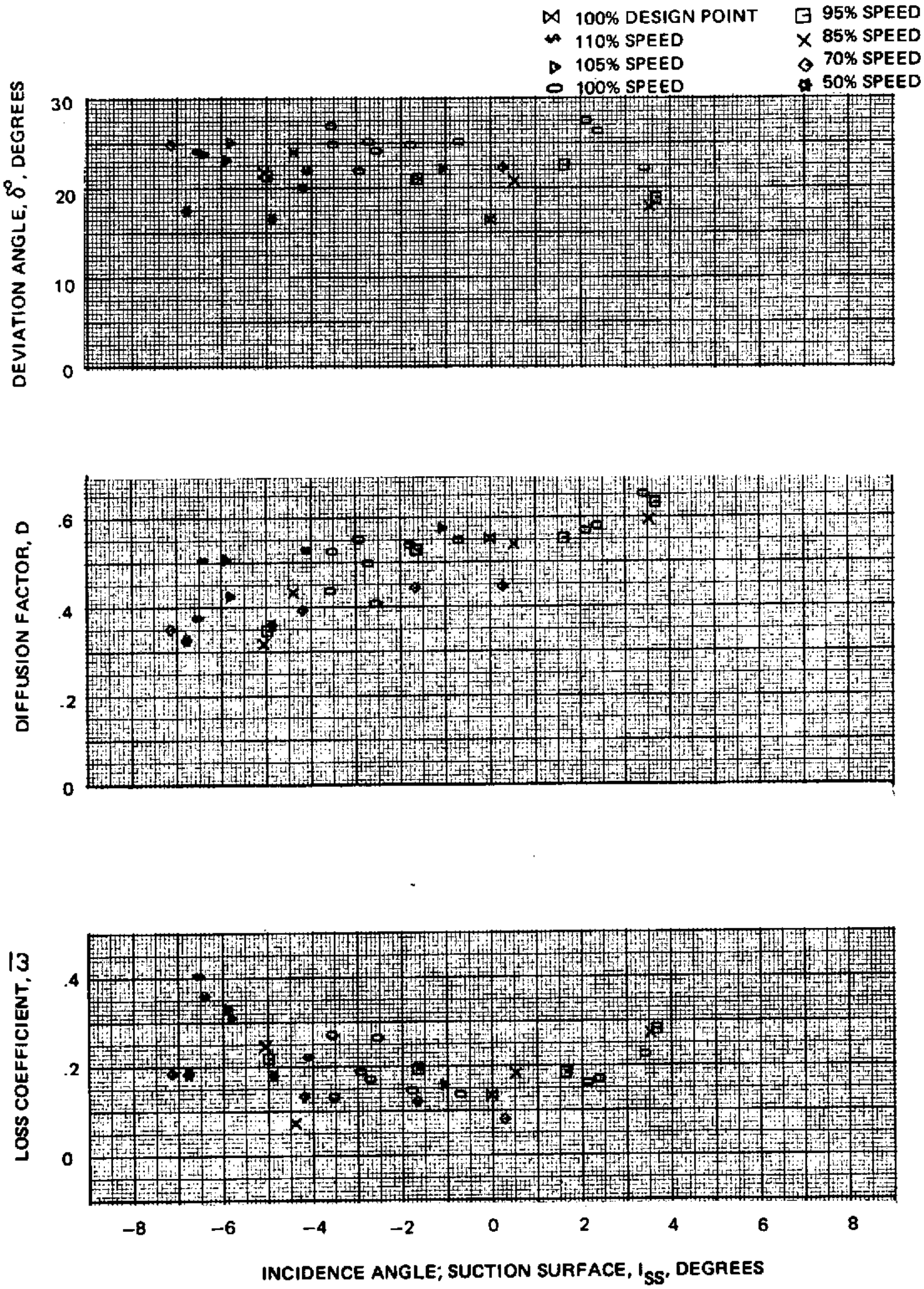


Figure 62a Blade Element Performance With Uniform Inlet Flow – Rotor 2
4% Span

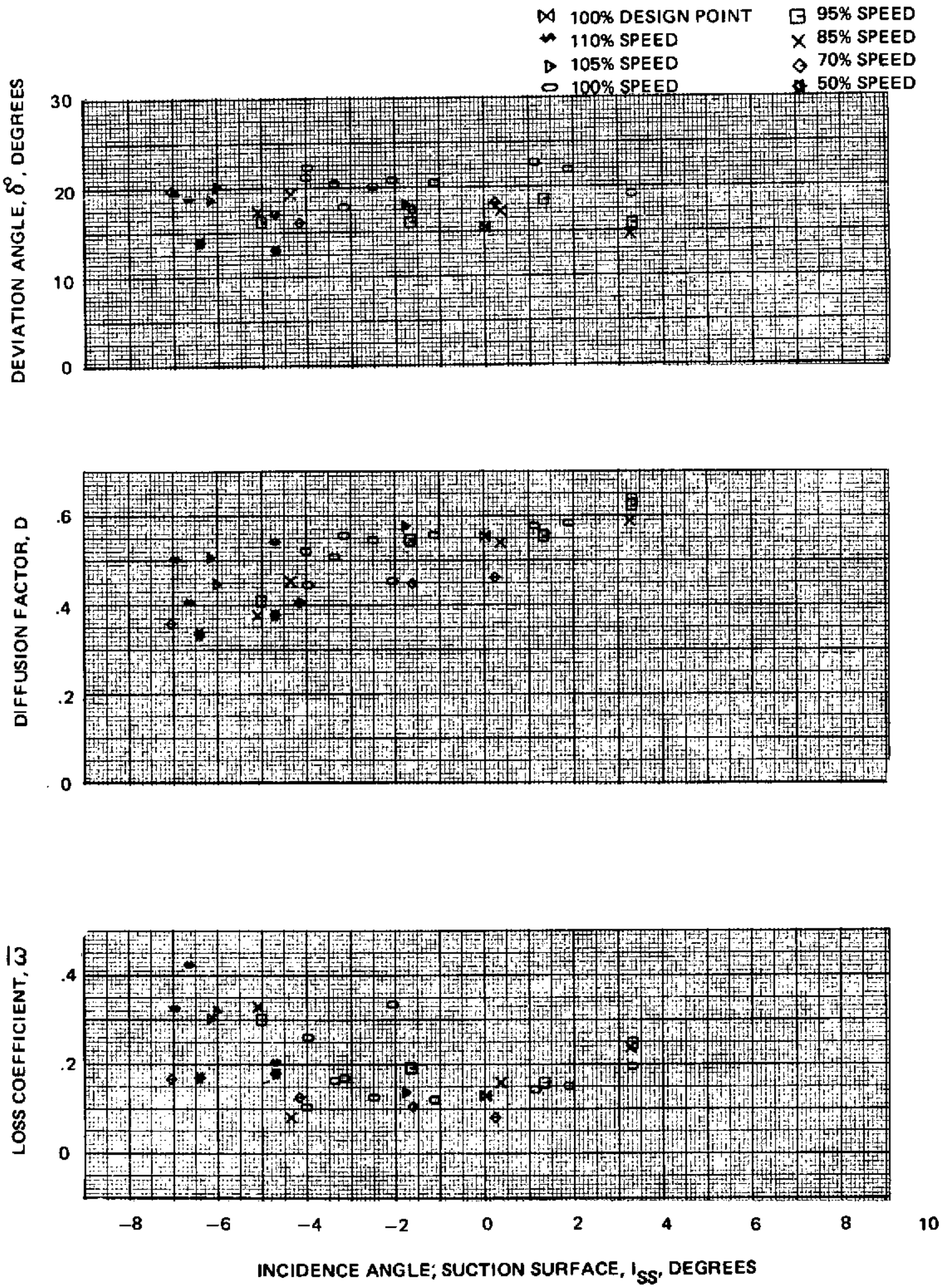


Figure 62b Blade Element Performance With Uniform Inlet Flow – Rotor 2 8% Span

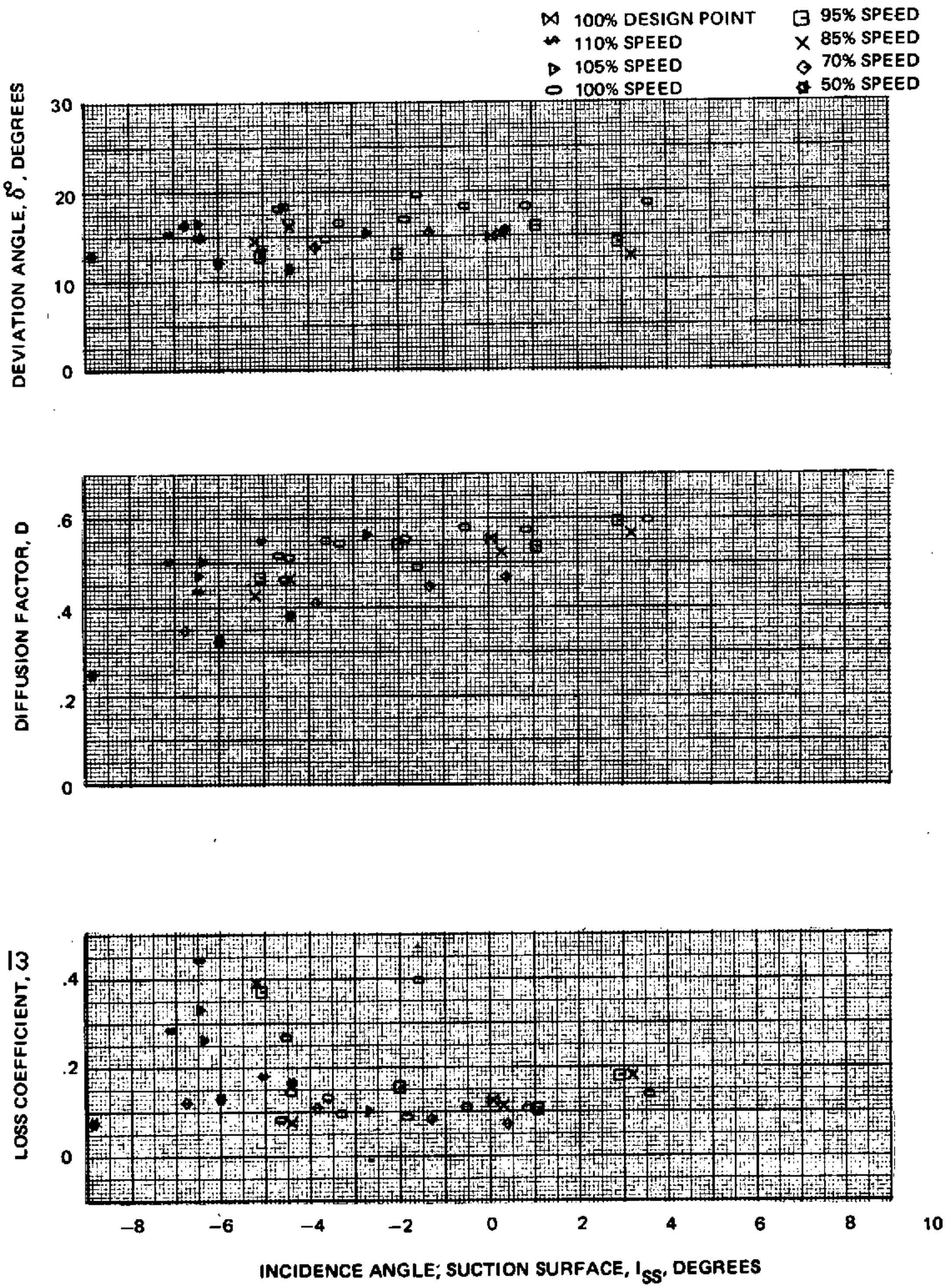


Figure 62c Blade Element Performance With Uniform Inlet Flow – Rotor 2
12% Span

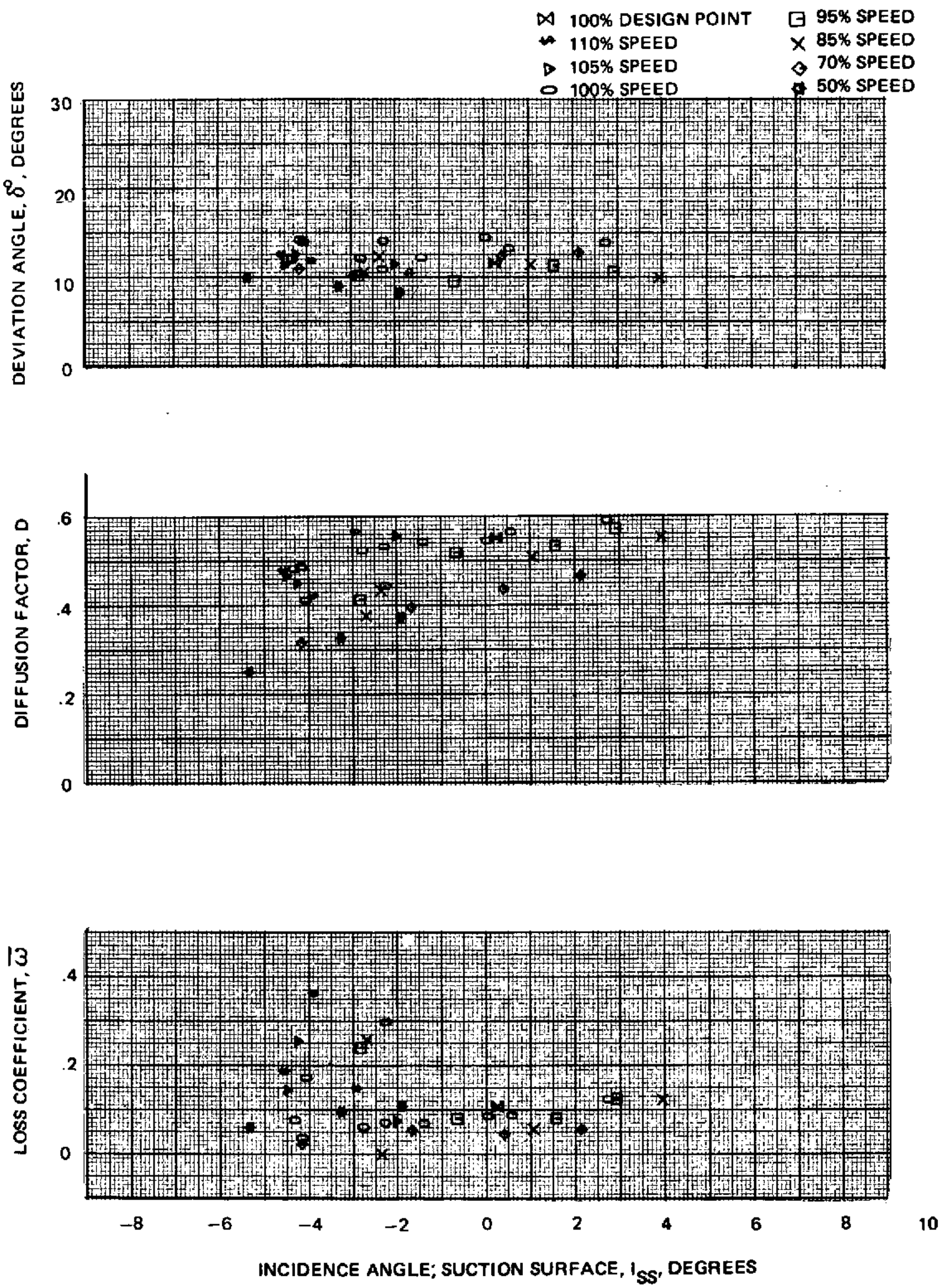


Figure 62d Blade Element Performance With Uniform Inlet Flow – Rotor 2
25% Span

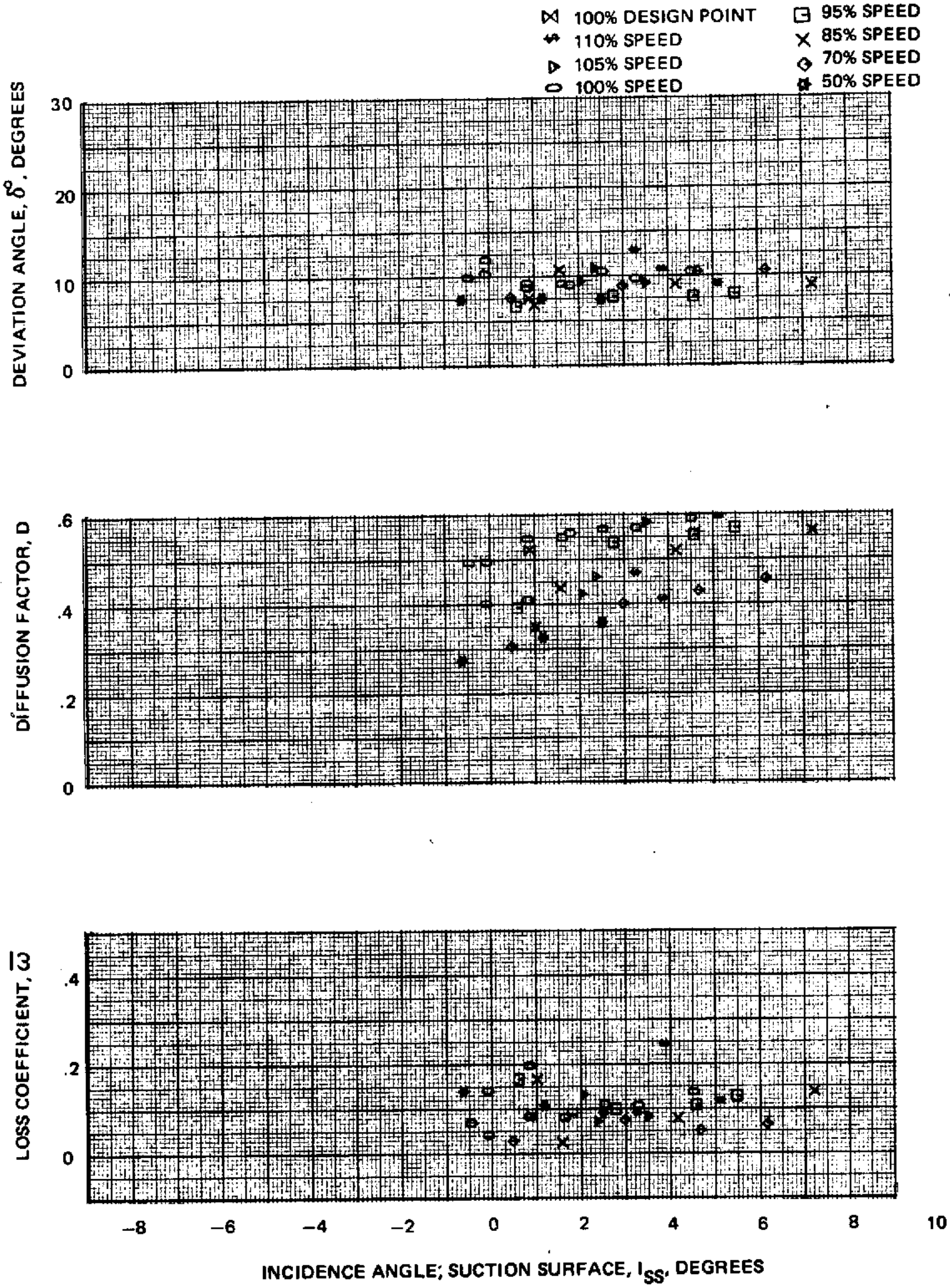


Figure 62e Blade Element Performance With Uniform Inlet Flow – Rotor 2
45% Span

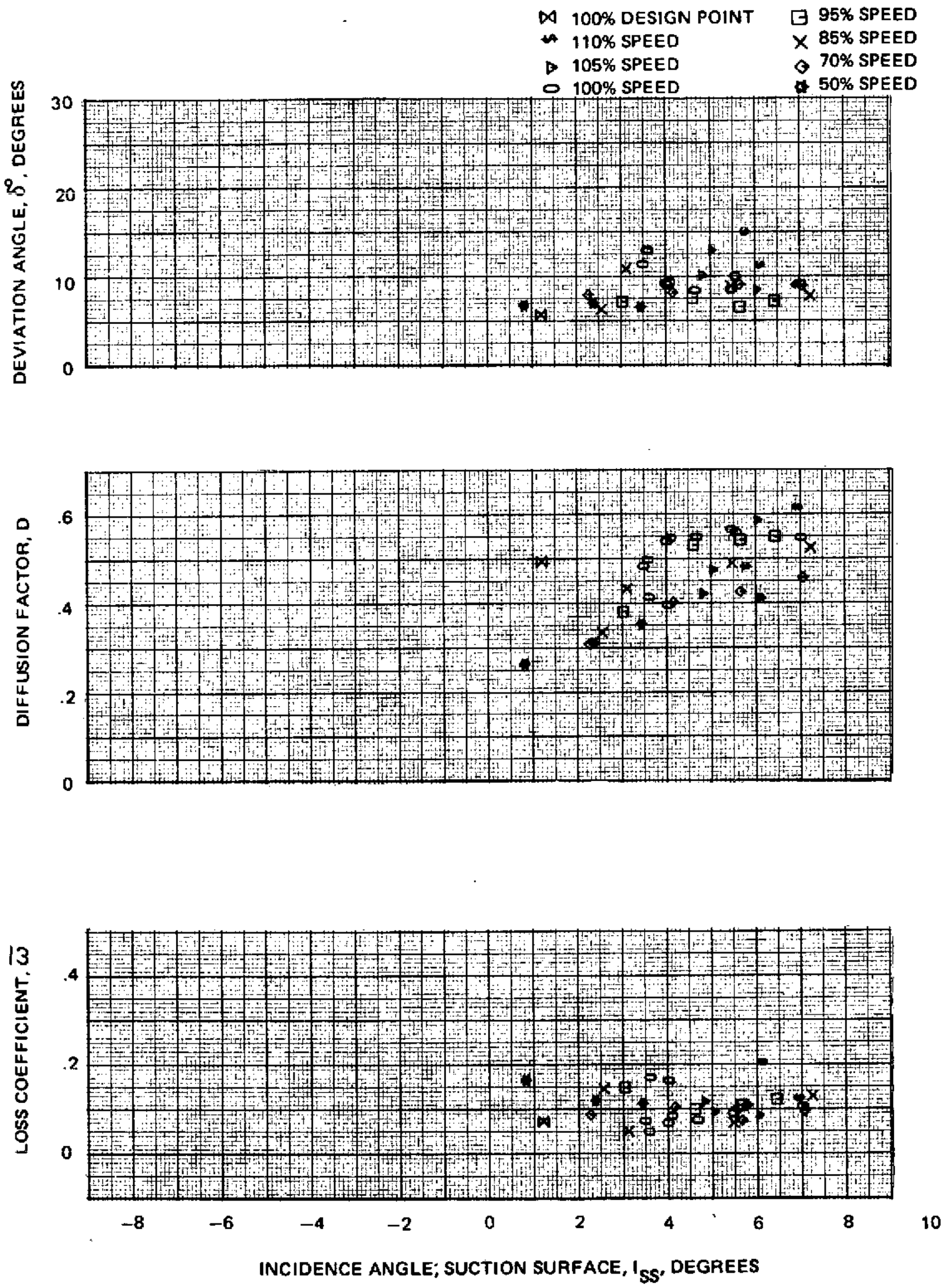


Figure 62f Blade Element Performance With Uniform Inlet Flow – Rotor 2
55% Span

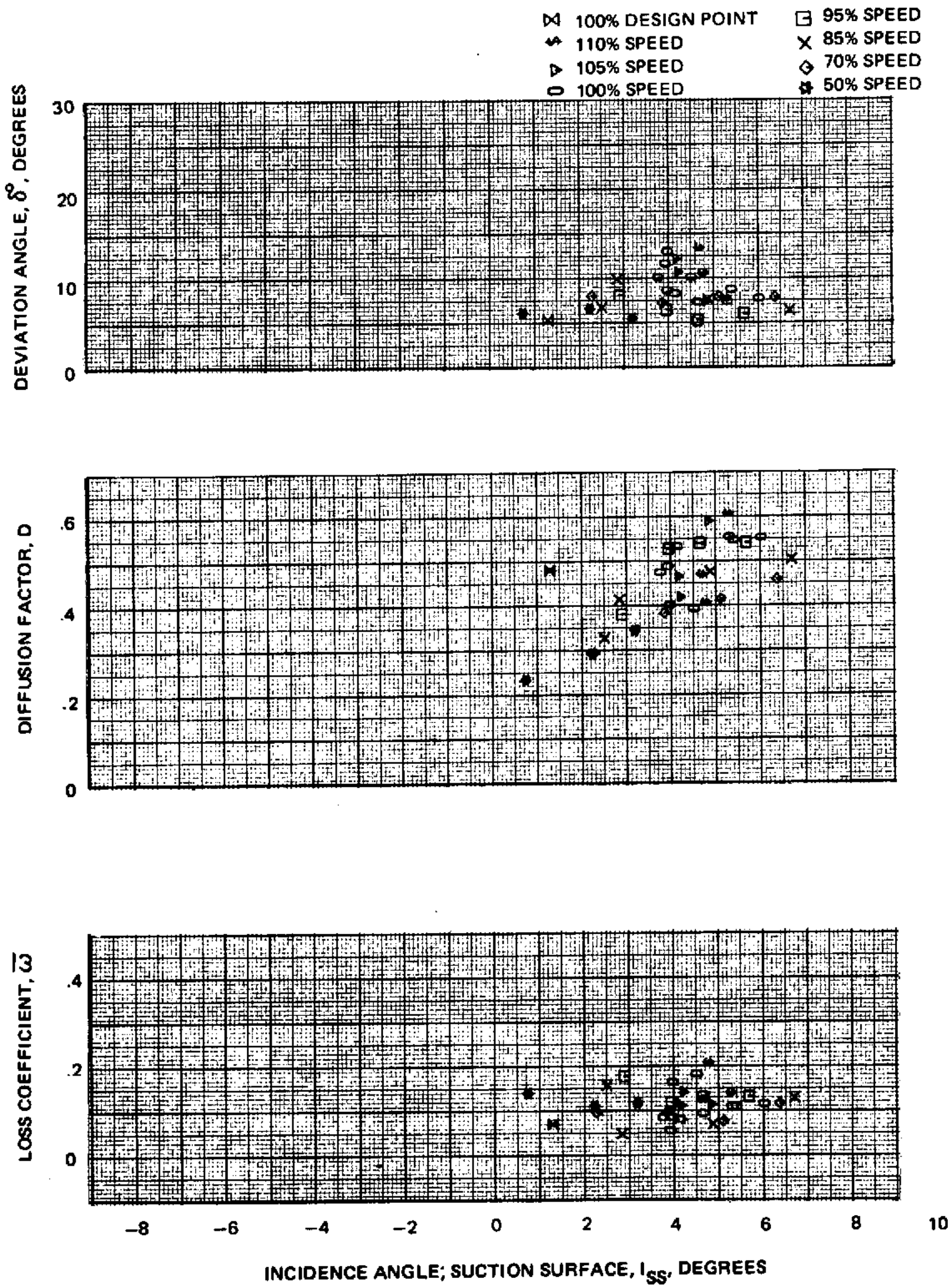


Figure 62g Blade Element Performance With Uniform Inlet Flow – Rotor 2
60% Span

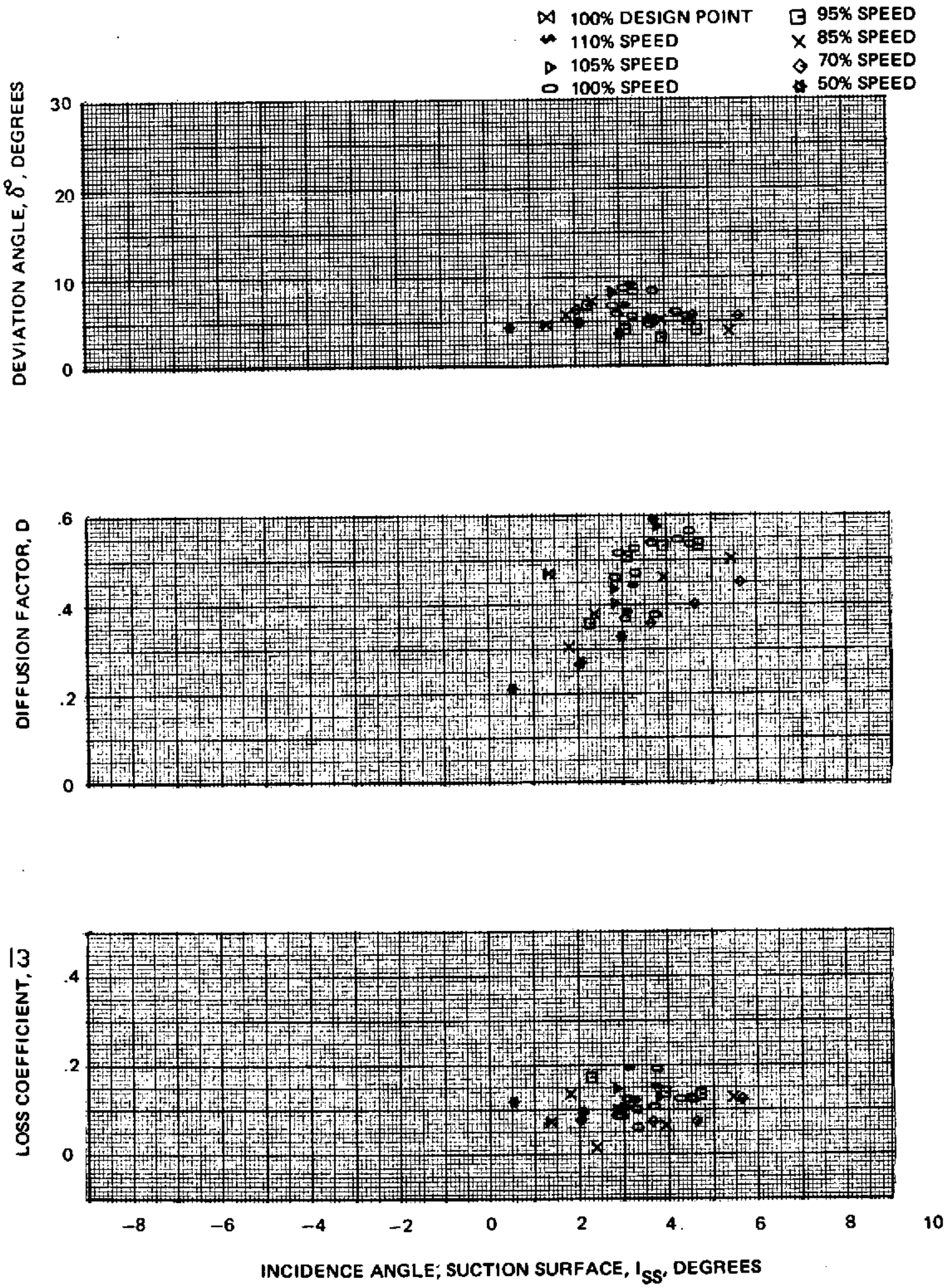


Figure 62h Blade Element Performance With Uniform Inlet Flow – Rotor 2 66% Span

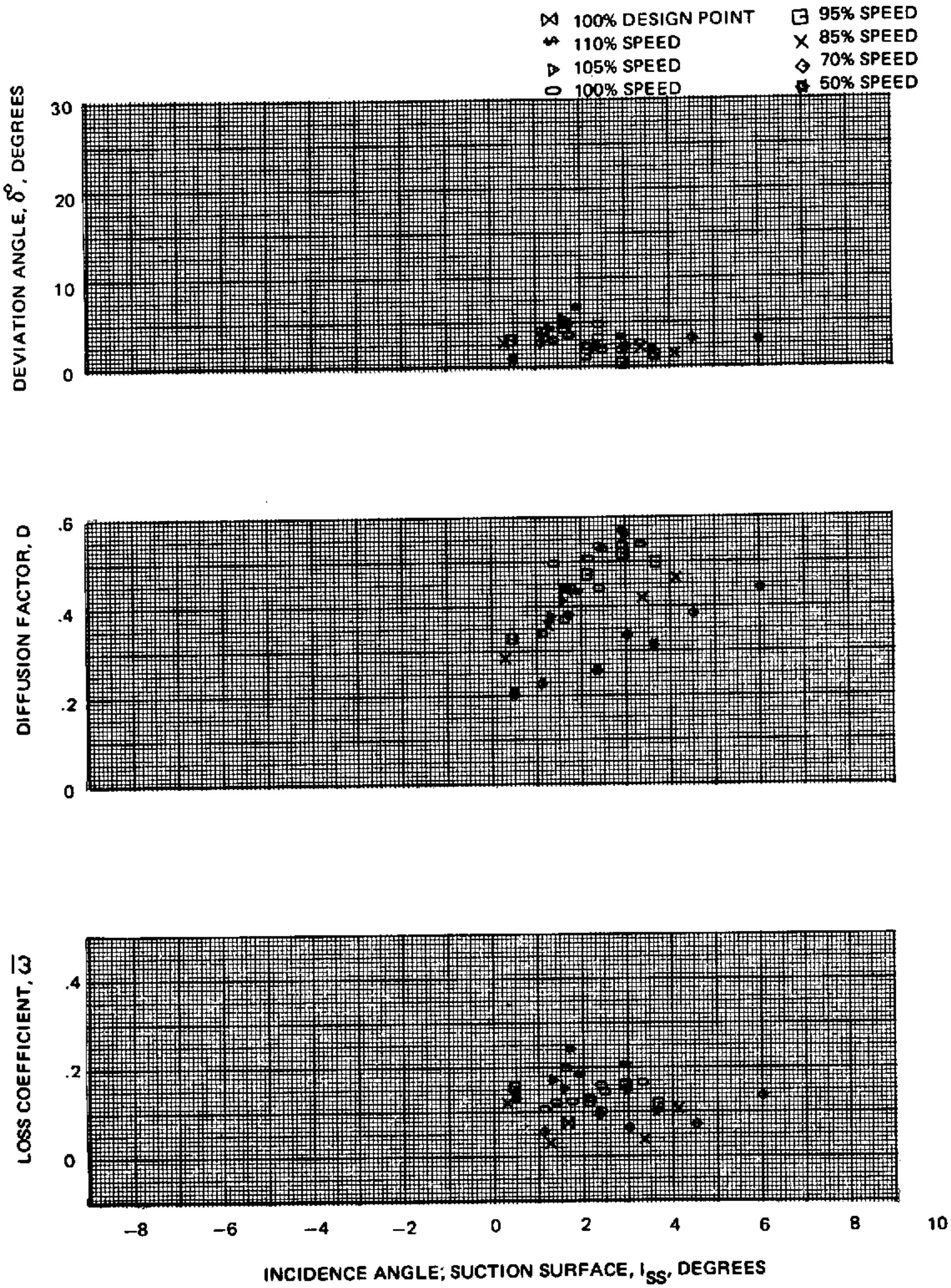


Figure 62i Blade Element Performance With Uniform Inlet Flow – Rotor 2
'82% Span

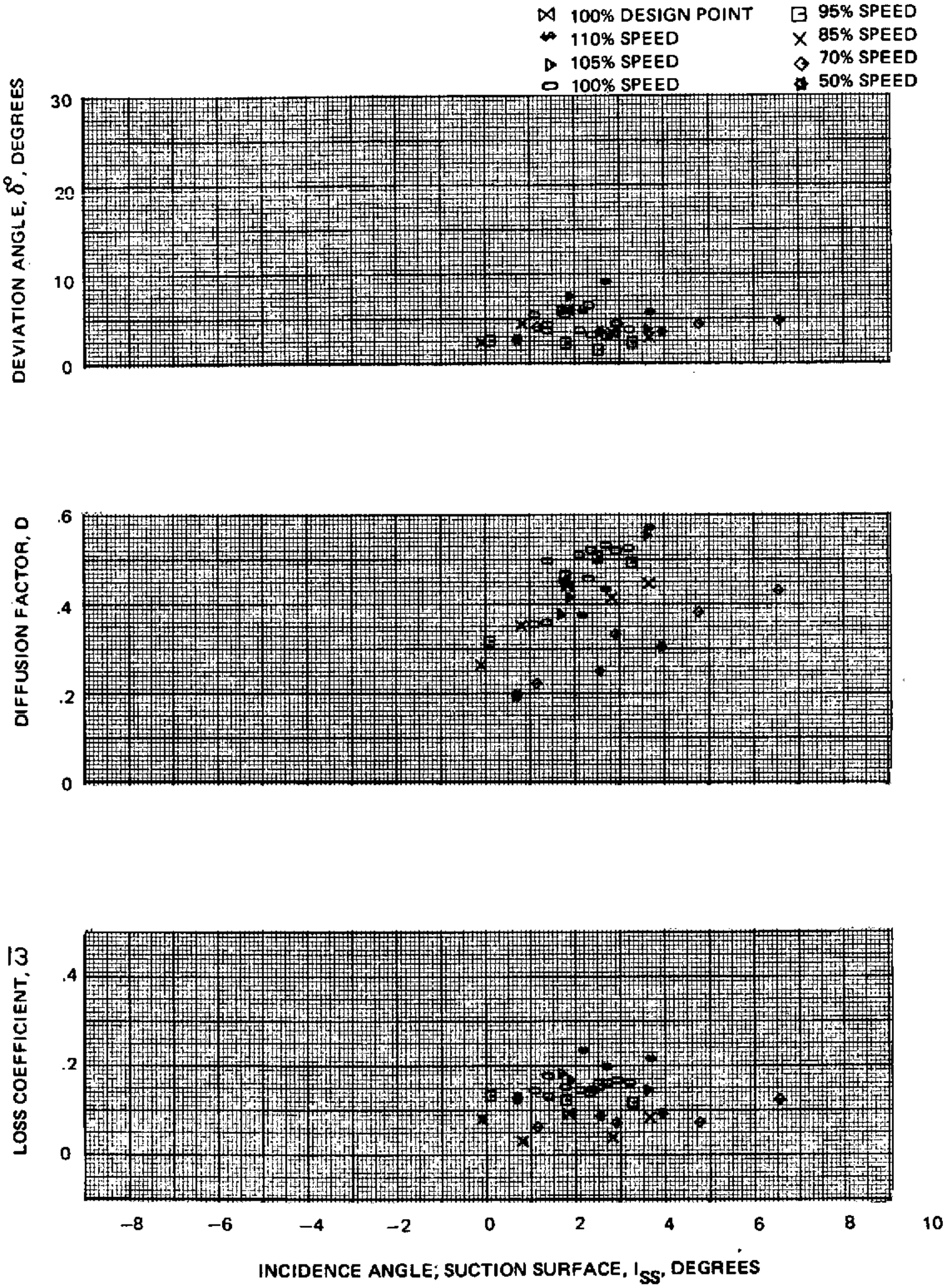


Figure 62j Blade Element Performance With Uniform Inlet Flow – Rotor 2
88% Span

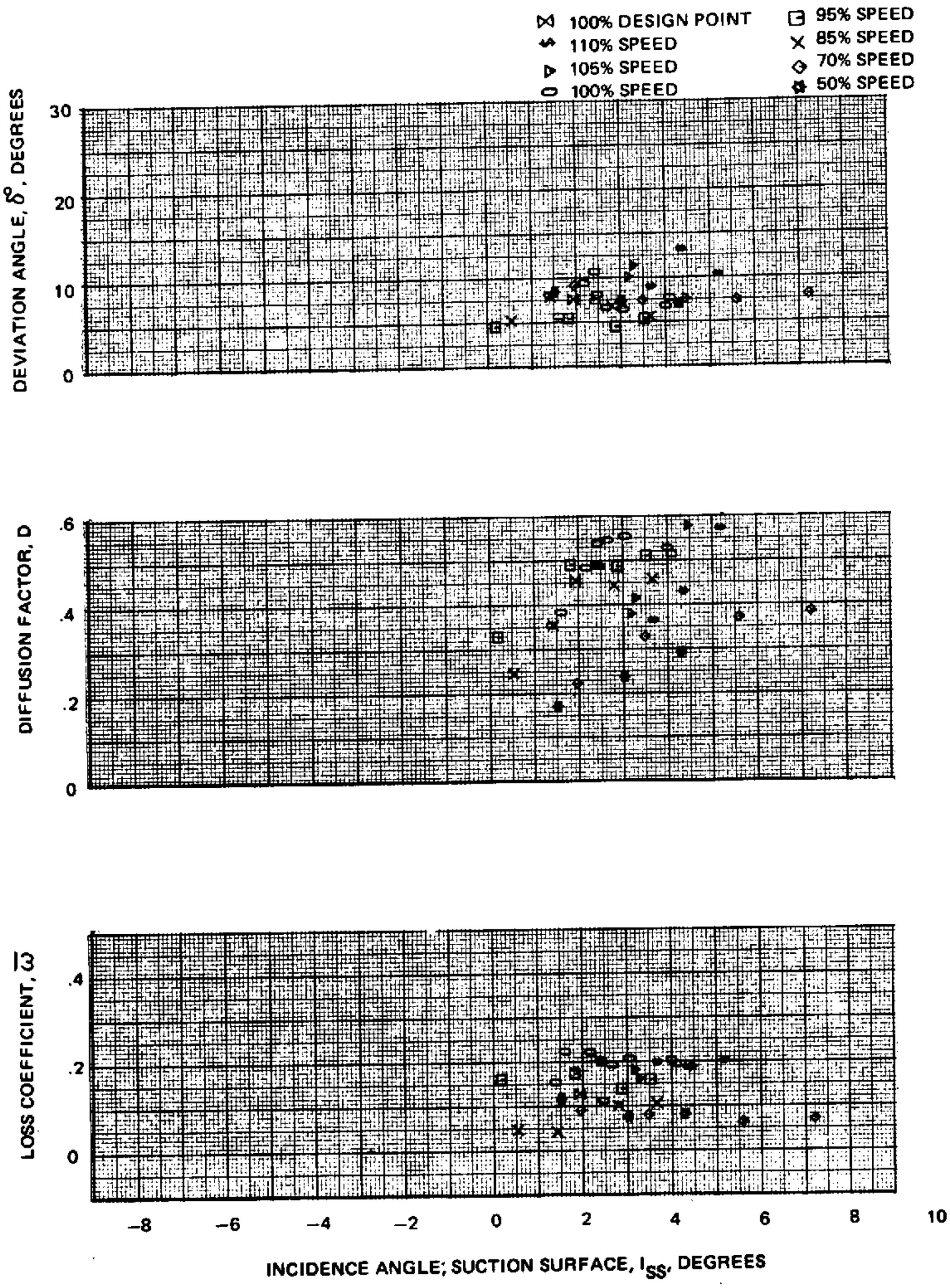


Figure 62k Blade Element Performance With Uniform Inlet Flow – Rotor 2
94% Span

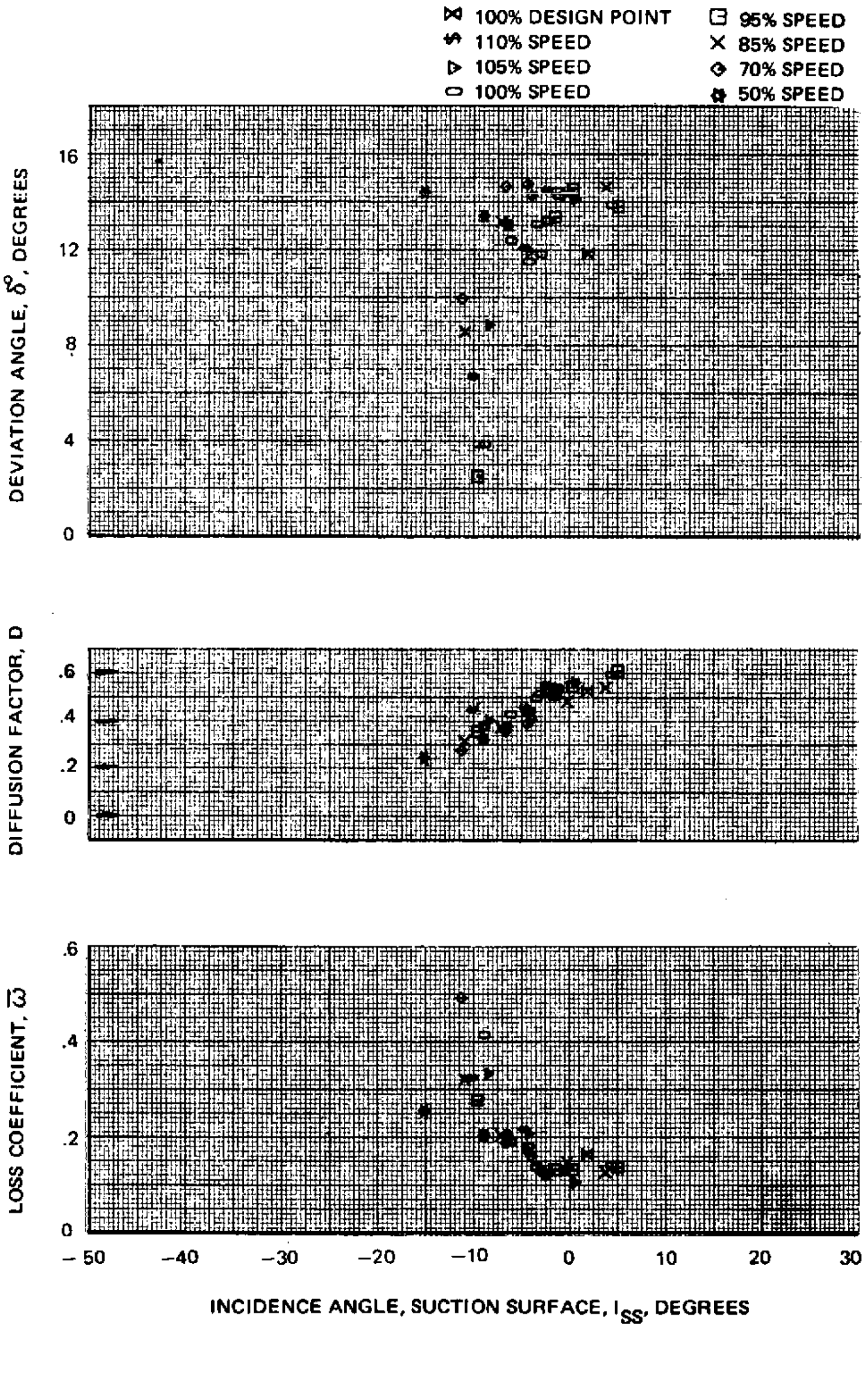


Figure 63a Blade Element Performance With Uniform Inlet Flows – Stator 2
3% Span

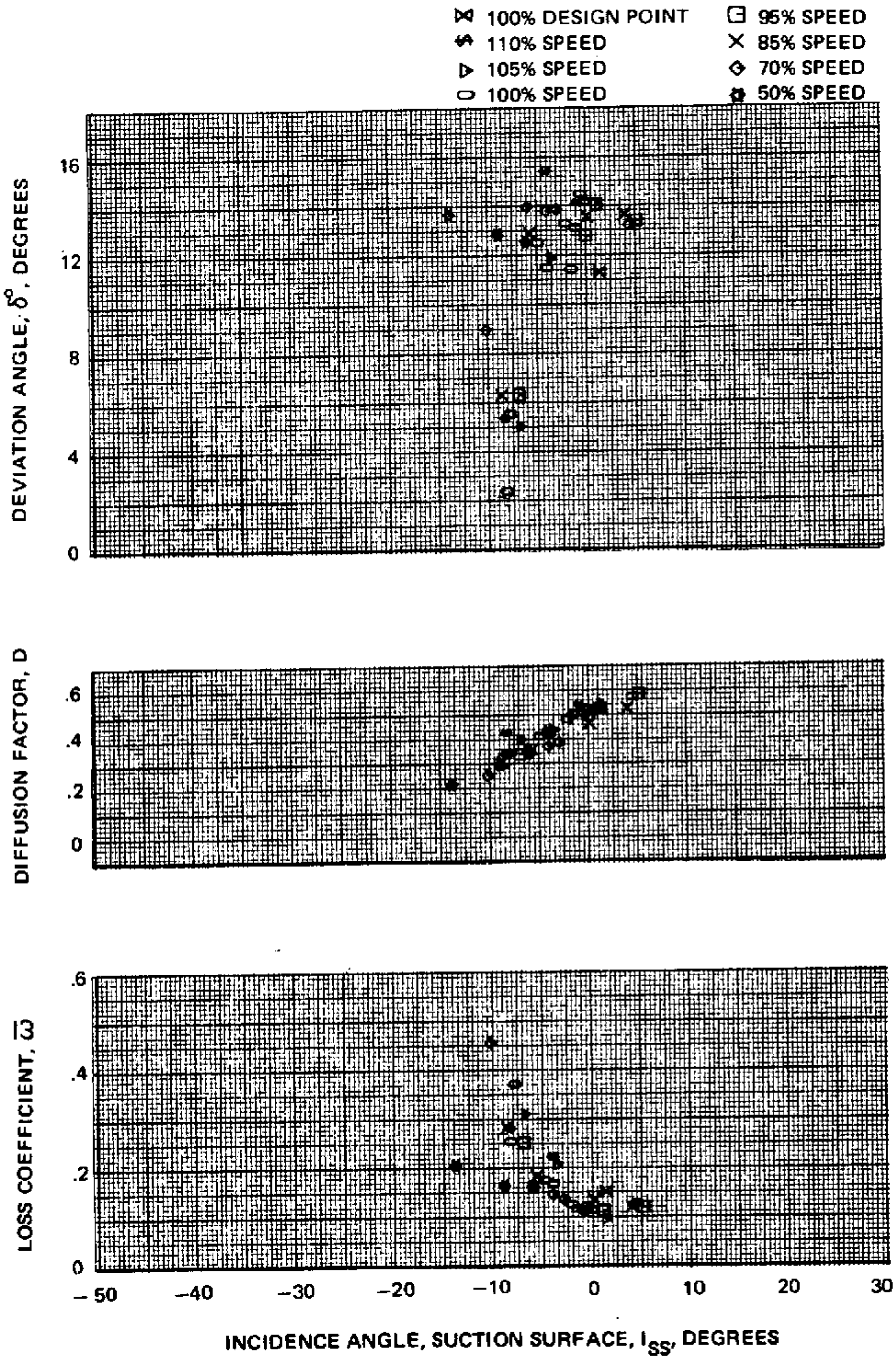


Figure 63b Blade Element Performance With Uniform Inlet Flows – Stator 2
7% Span

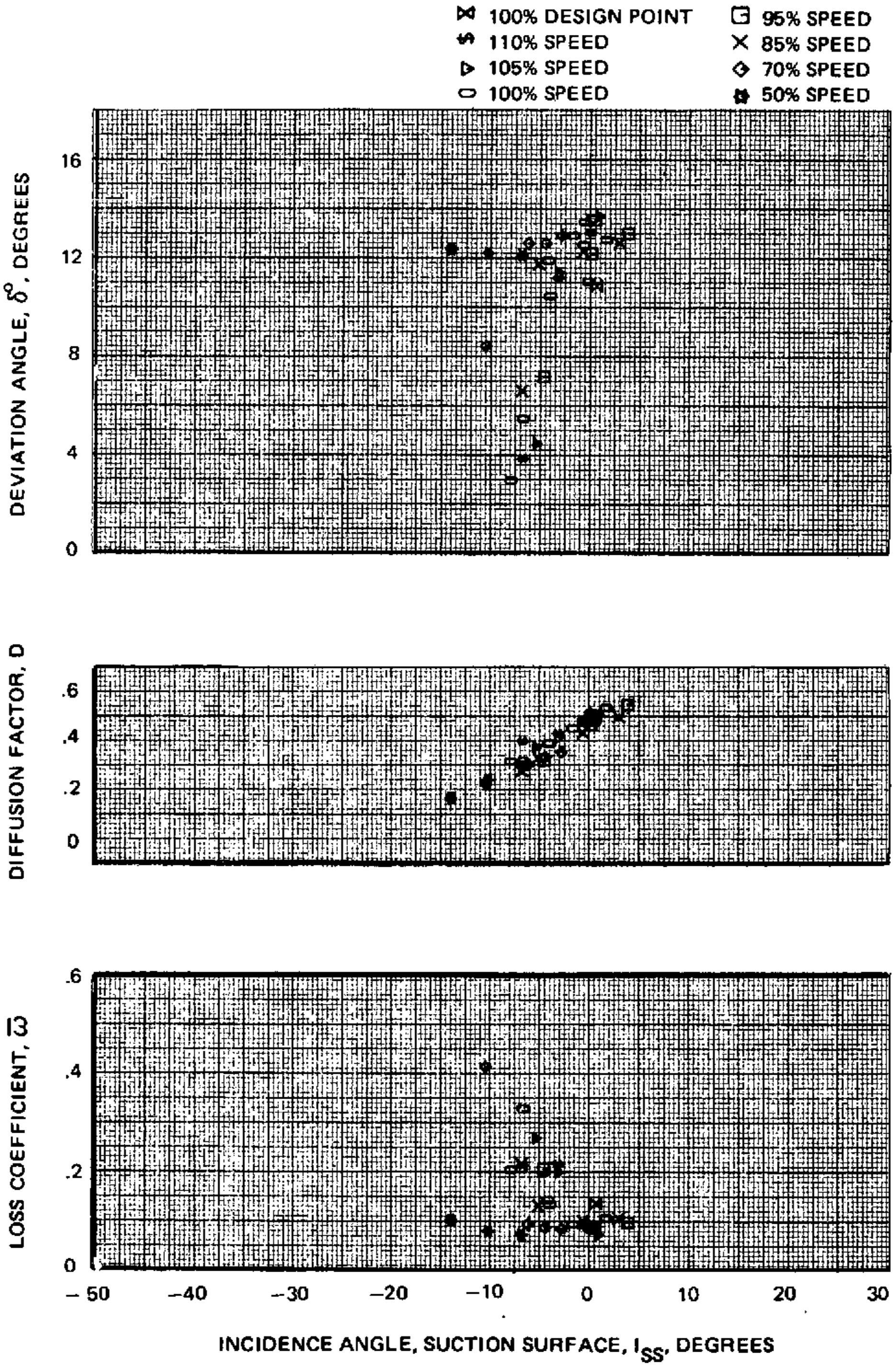


Figure 63c Blade Element Performance With Uniform Inlet Flows – Stator 2
11% Span

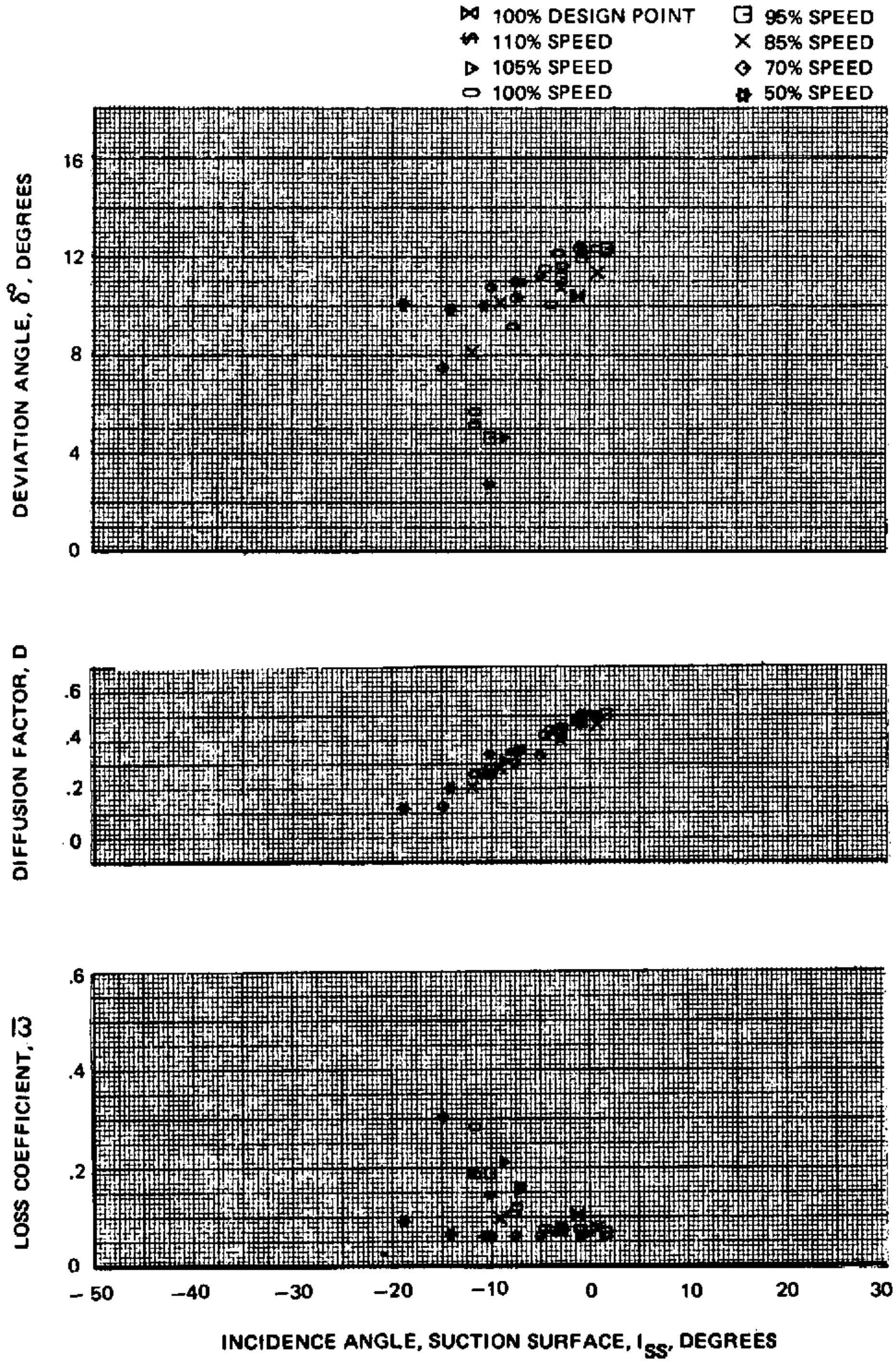


Figure 63d Blade Element Performance With Uniform Inlet Flows – Stator 2
23% Span

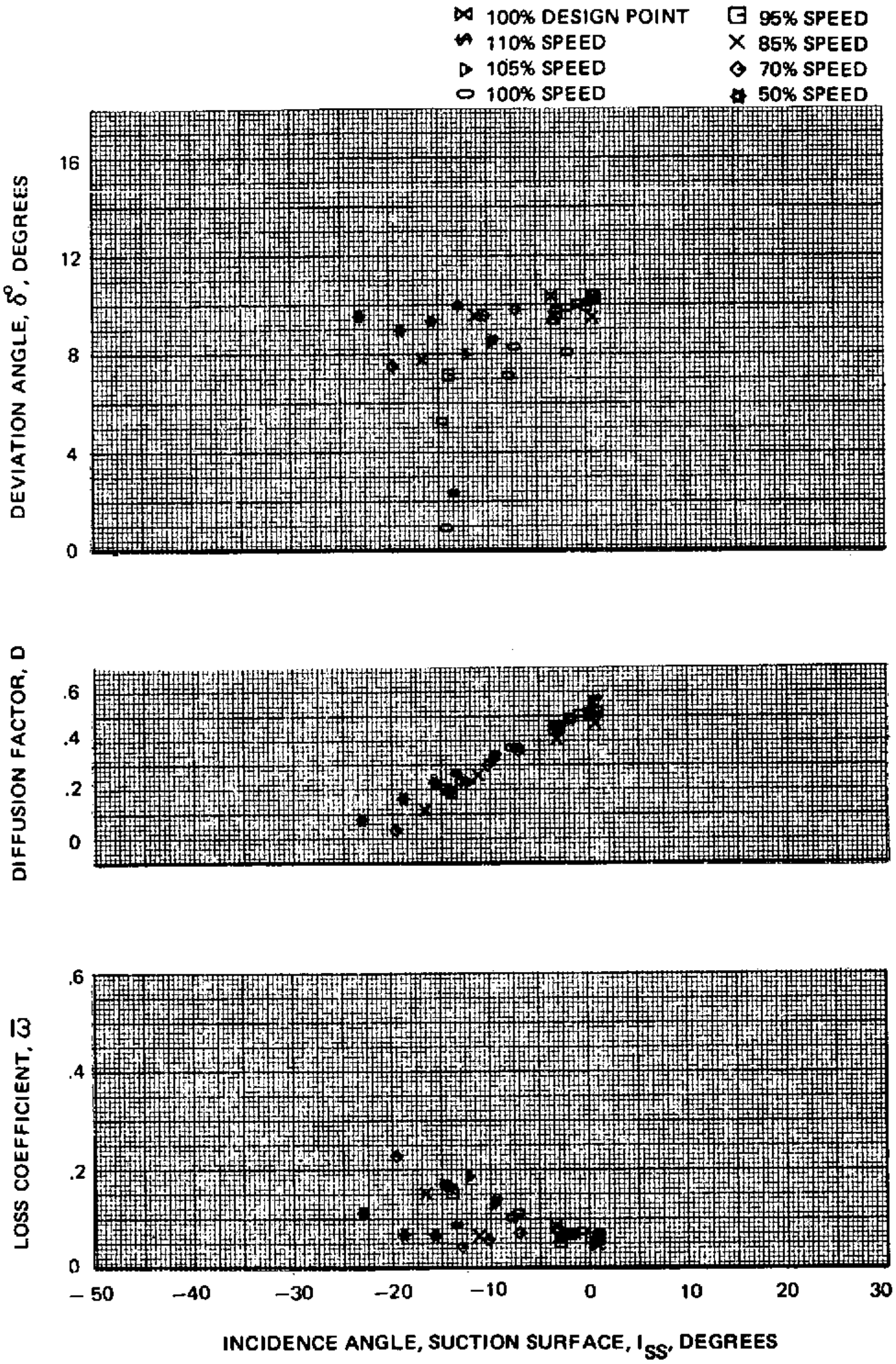


Figure 63e Blade Element Performance With Uniform Inlet Flows – Stator 2
42% Span

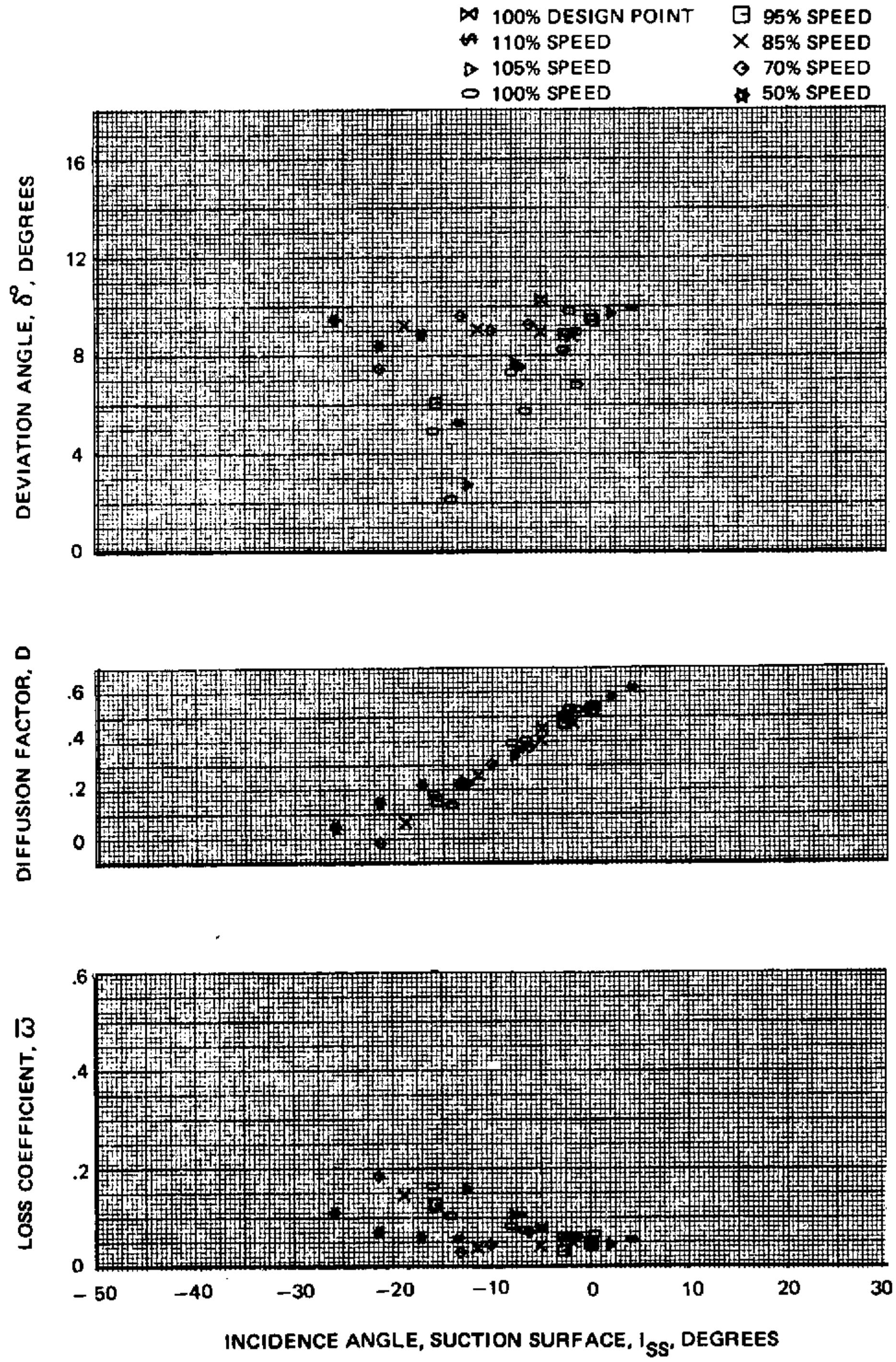


Figure 63f Blade Element Performance With Uniform Inlet Flows – Stator 2 53% Span

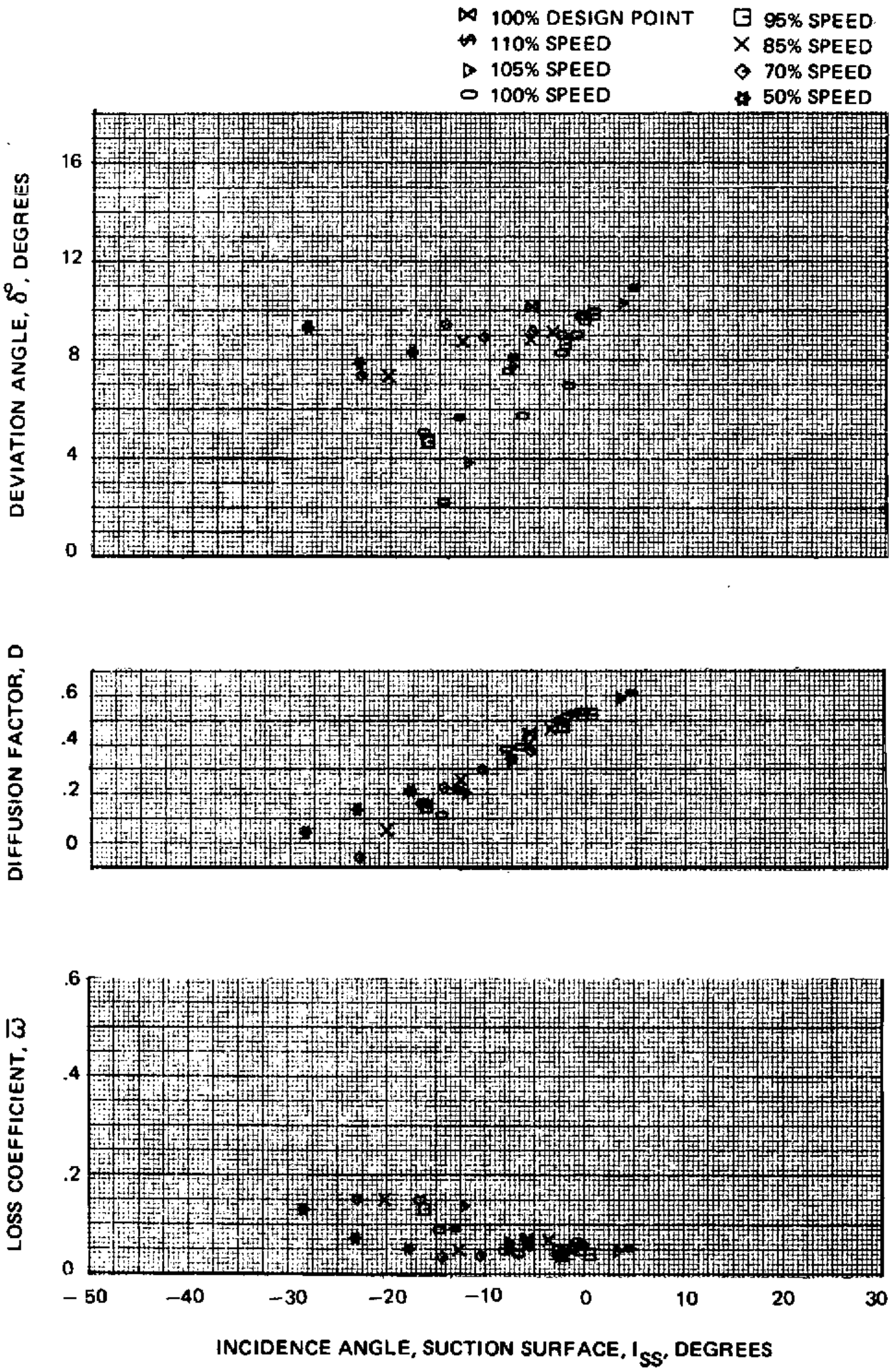


Figure 63g Blade Element Performance With Uniform Inlet Flows – Stator 2
58% Span

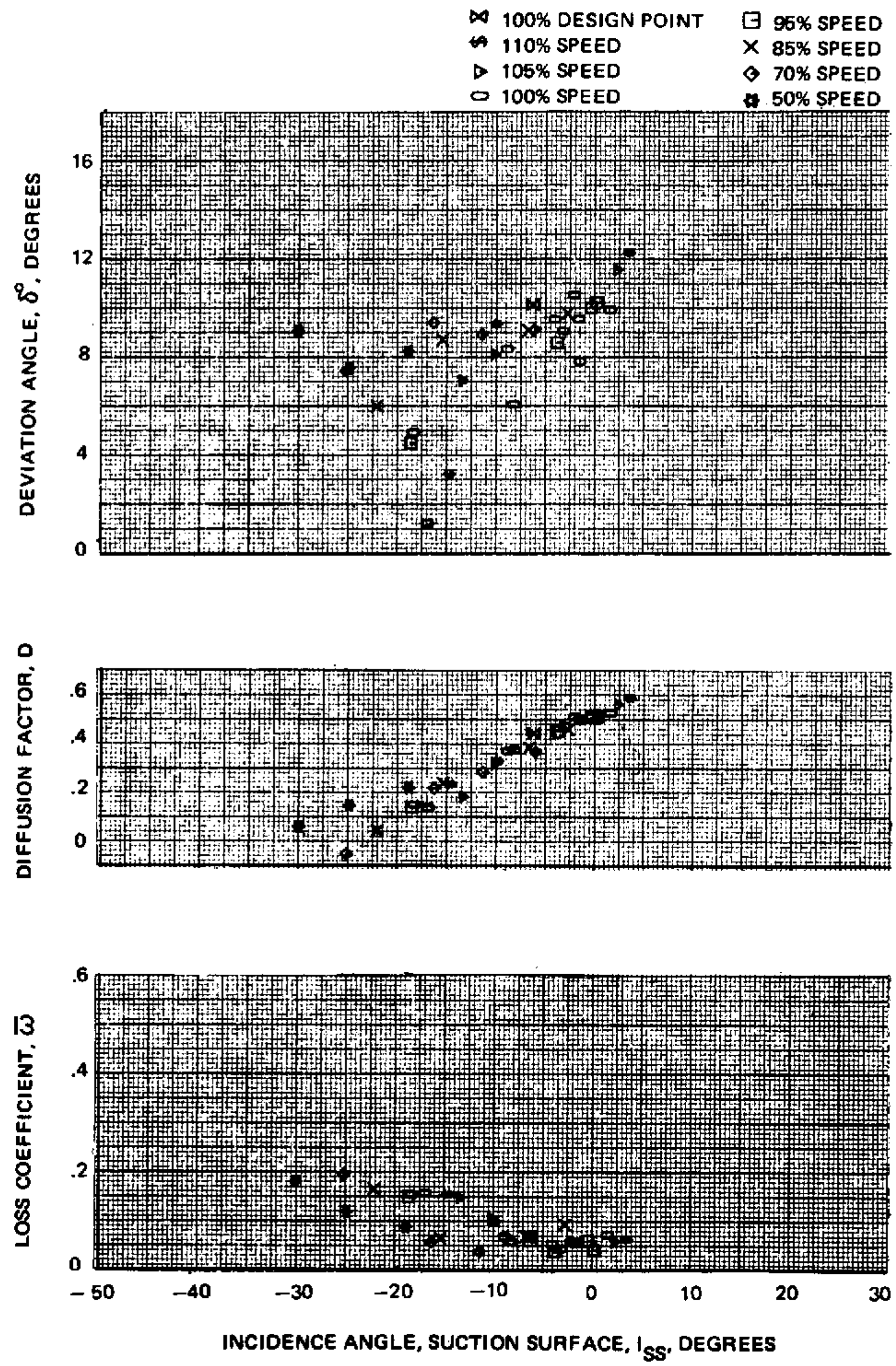


Figure 63h Blade Element Performance With Uniform Inlet Flows – Stator 2
64% Span

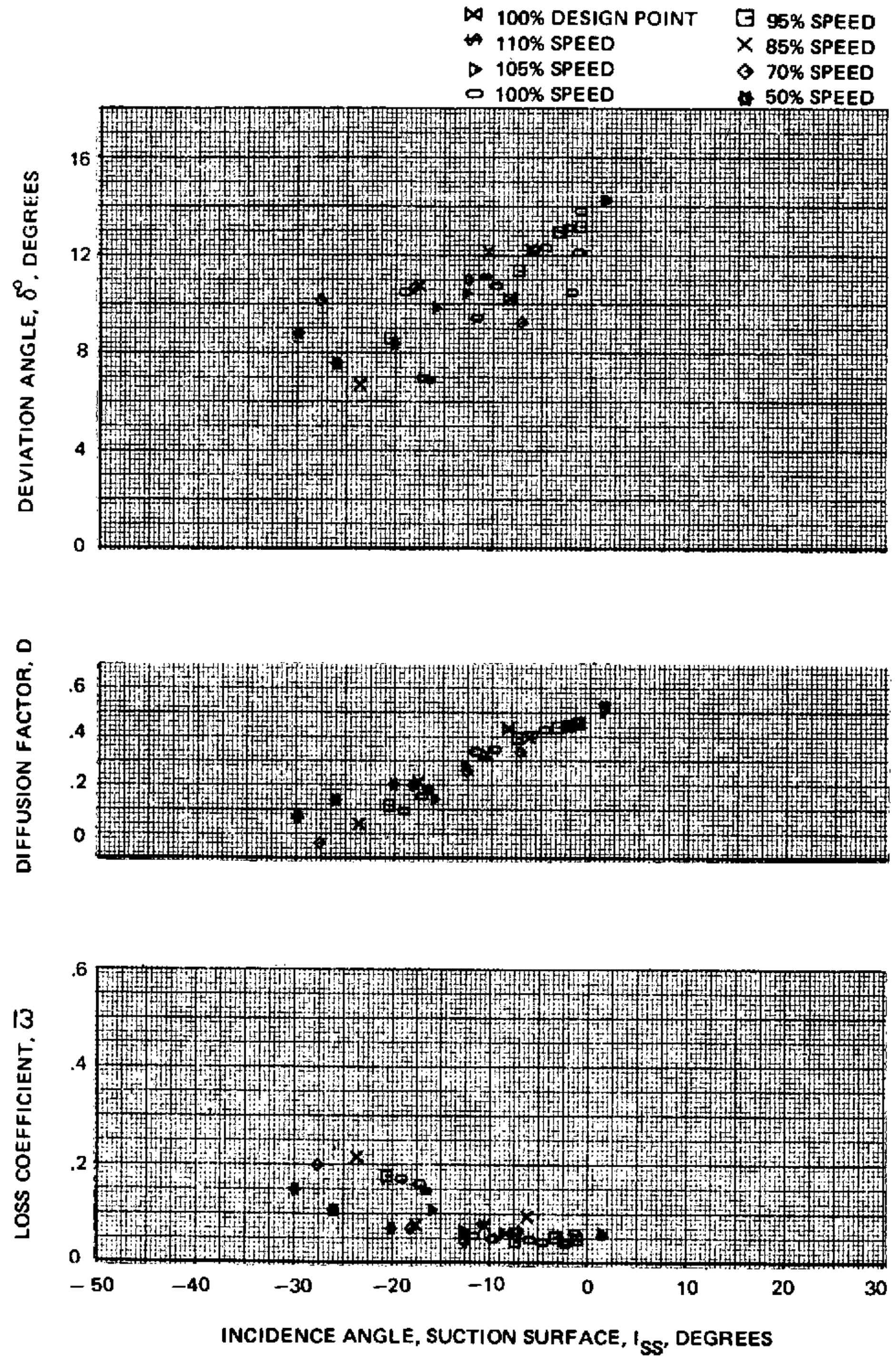


Figure 63i Blade Element Performance With Uniform Inlet Flows – Stator 2

82% Span

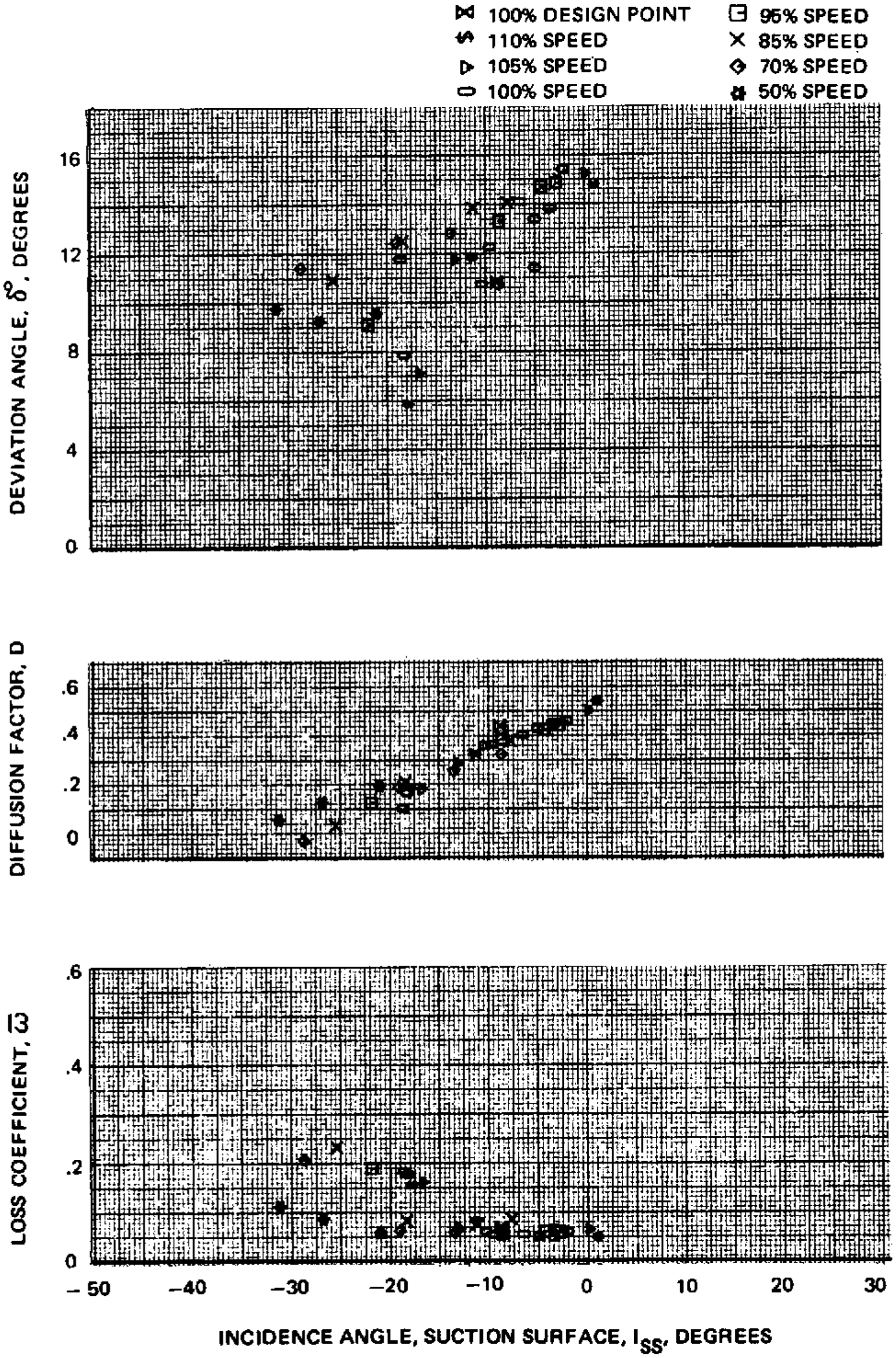


Figure 63j Blade Element Performance With Uniform Inlet Flows – Stator 2
88% Span

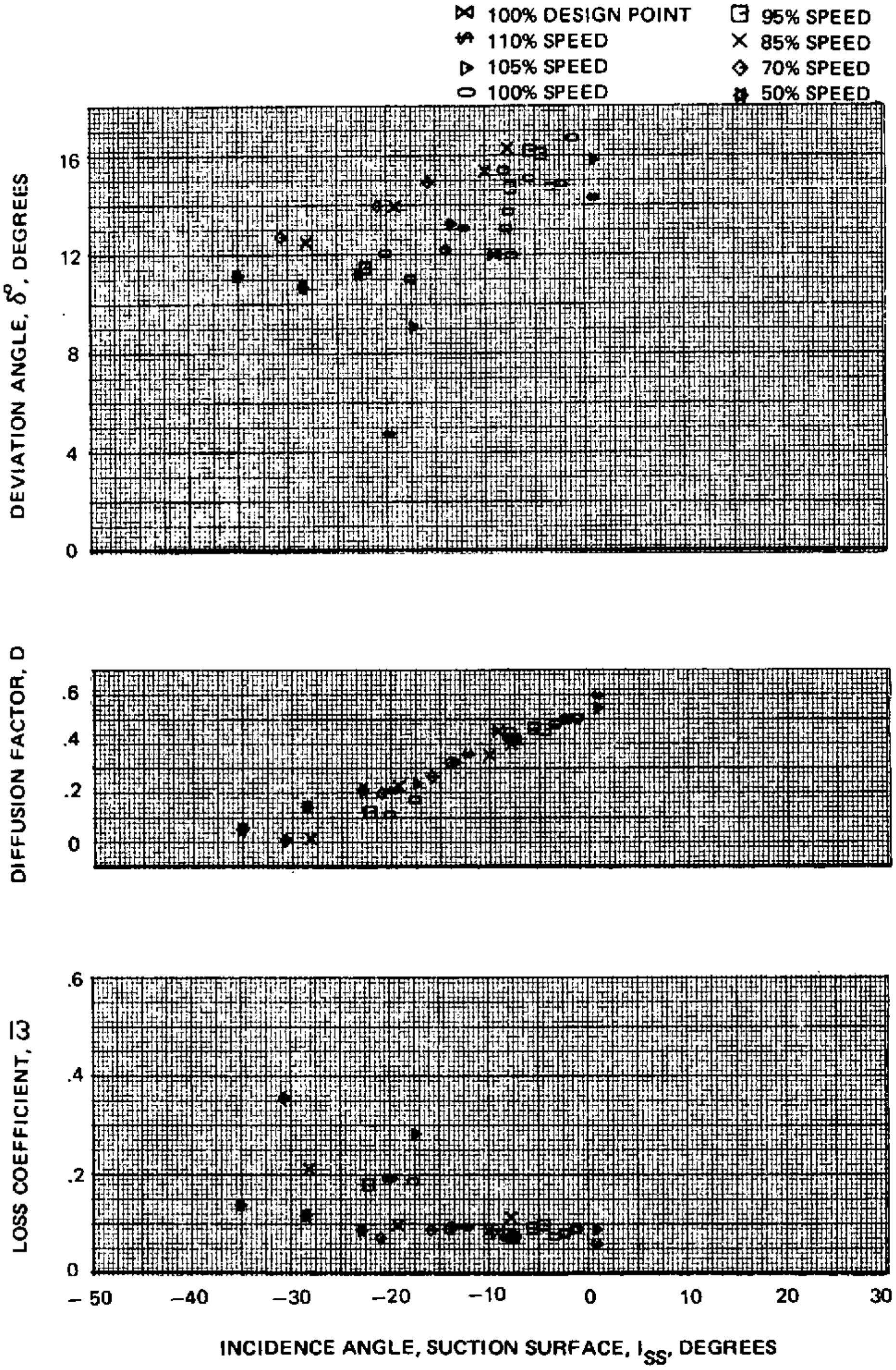


Figure 63k Blade Element Performance With Uniform Inlet Flows – Stator 2
94% Span

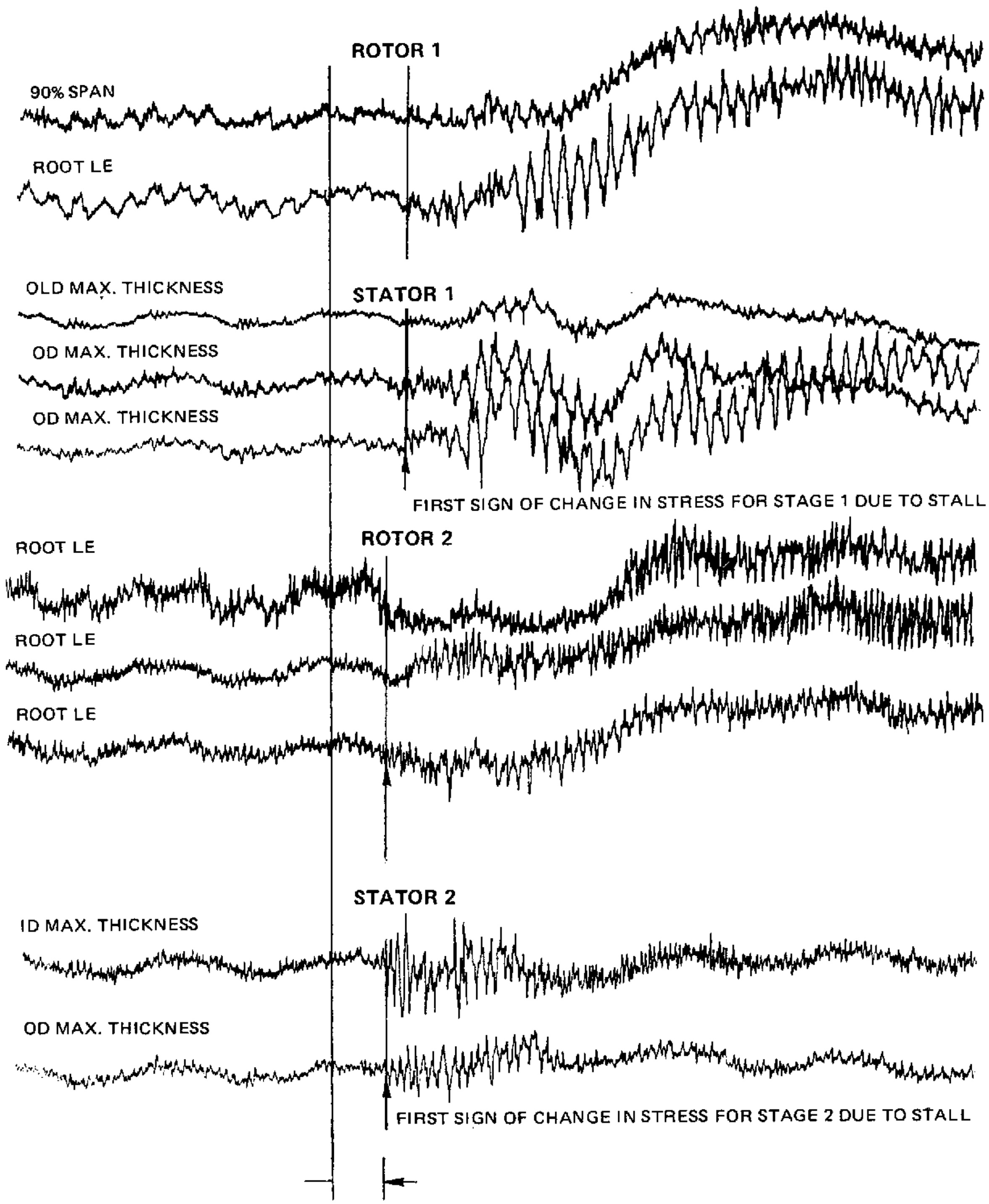


Figure 64 Oscillograph Trace During Surge at Design Speed for Uniform Inlet Flow

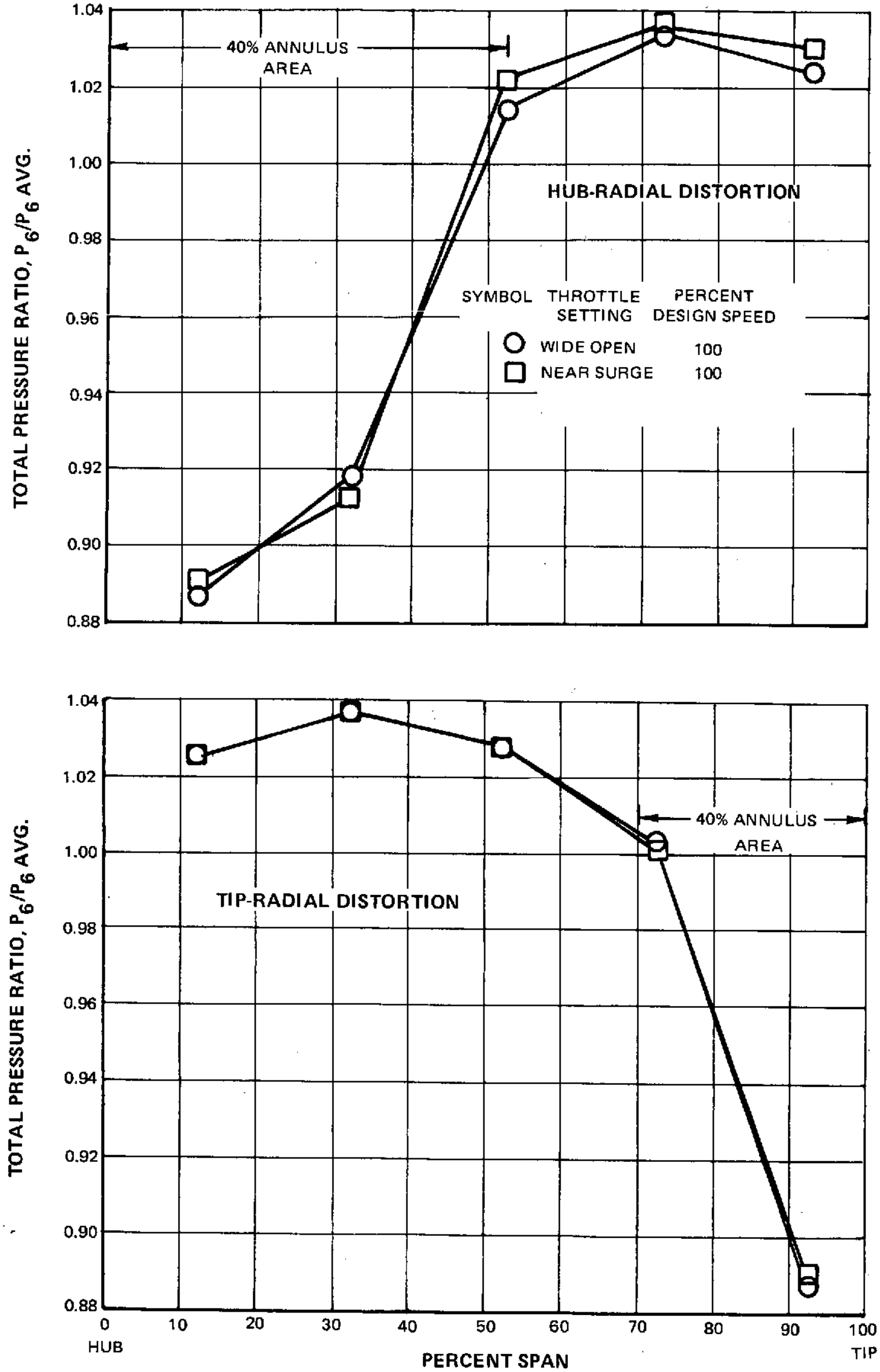


 Figure 65 First Rotor Inlet Total Pressure Ratio Versus Span for Radially Distorted Inlet Flow

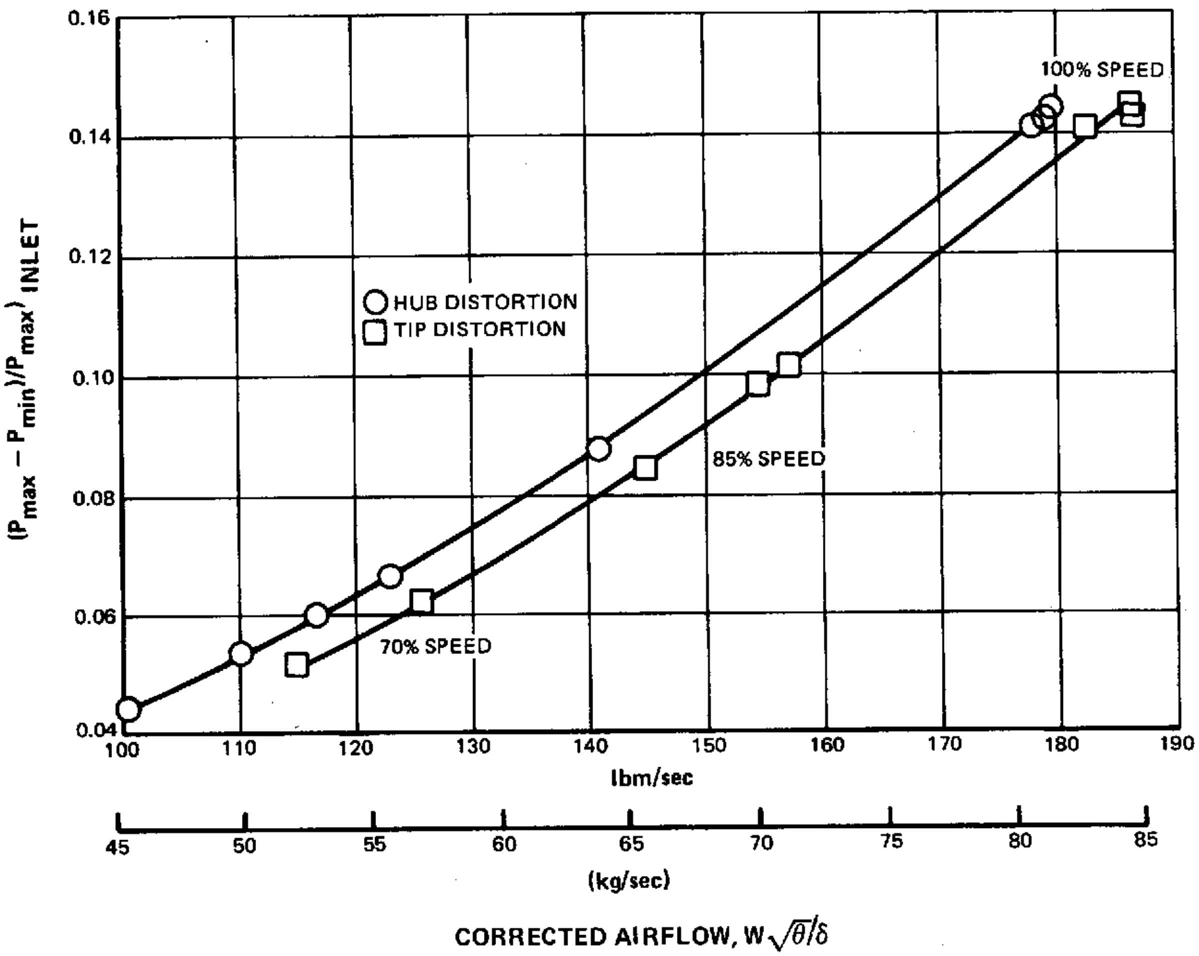


Figure 66 Inlet Total Pressure Distortion Parameter Versus Inlet Corrected Flow for Radial Distortions

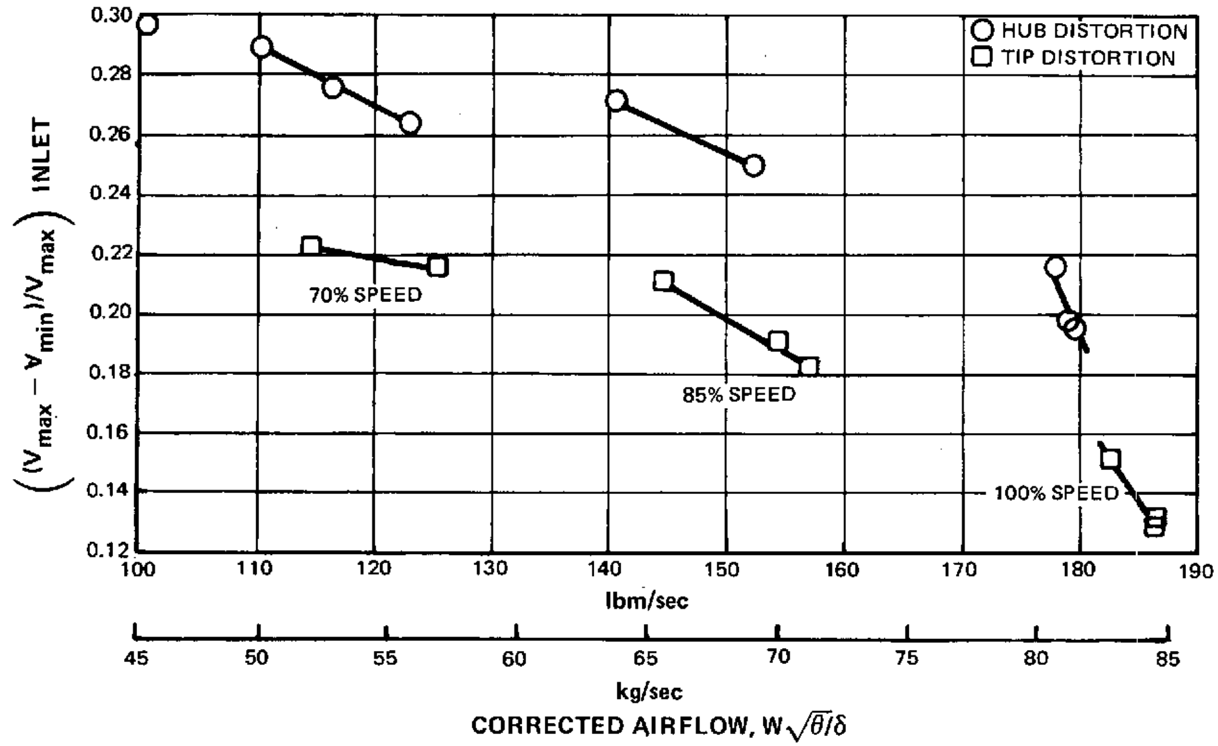


Figure 67 Inlet Meridional Velocity Distortion Parameter Versus Inlet Corrected Flow for Radial Distortions

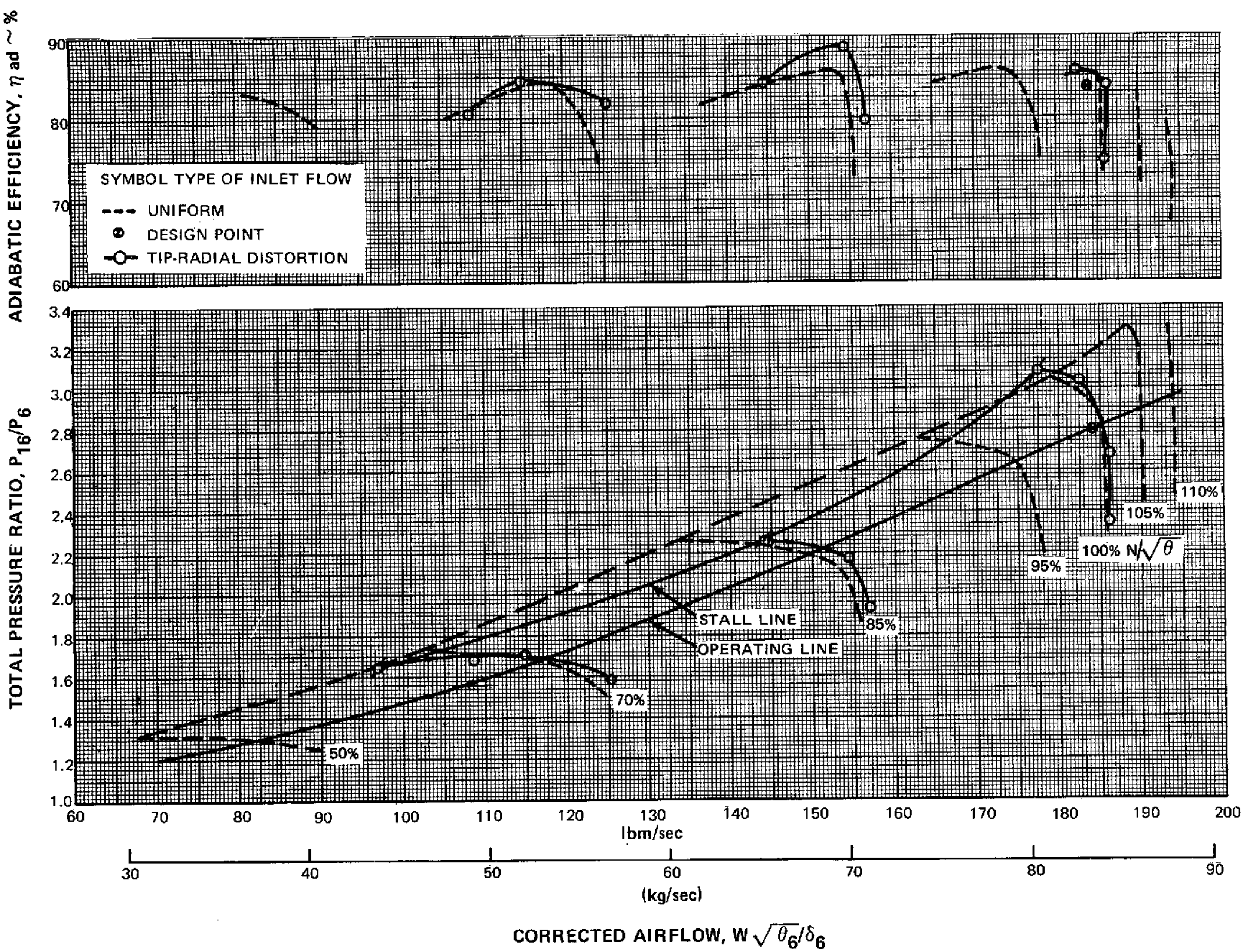


Figure 68 Fan Overall Performance with Tip Radially Distorted Inlet Flow

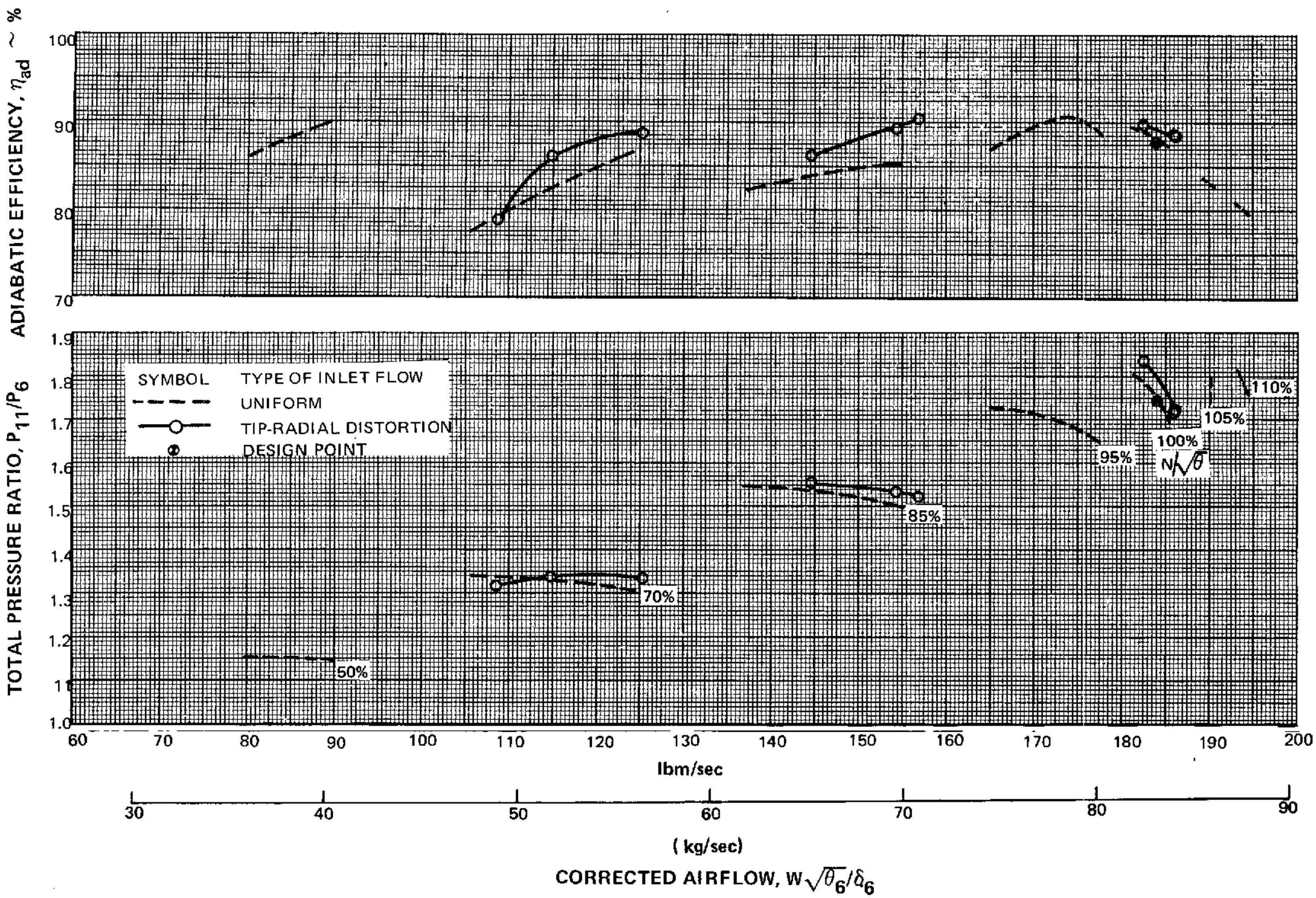


Figure 69 First Stage Performance with Tip Radially Distorted Inlet Flow

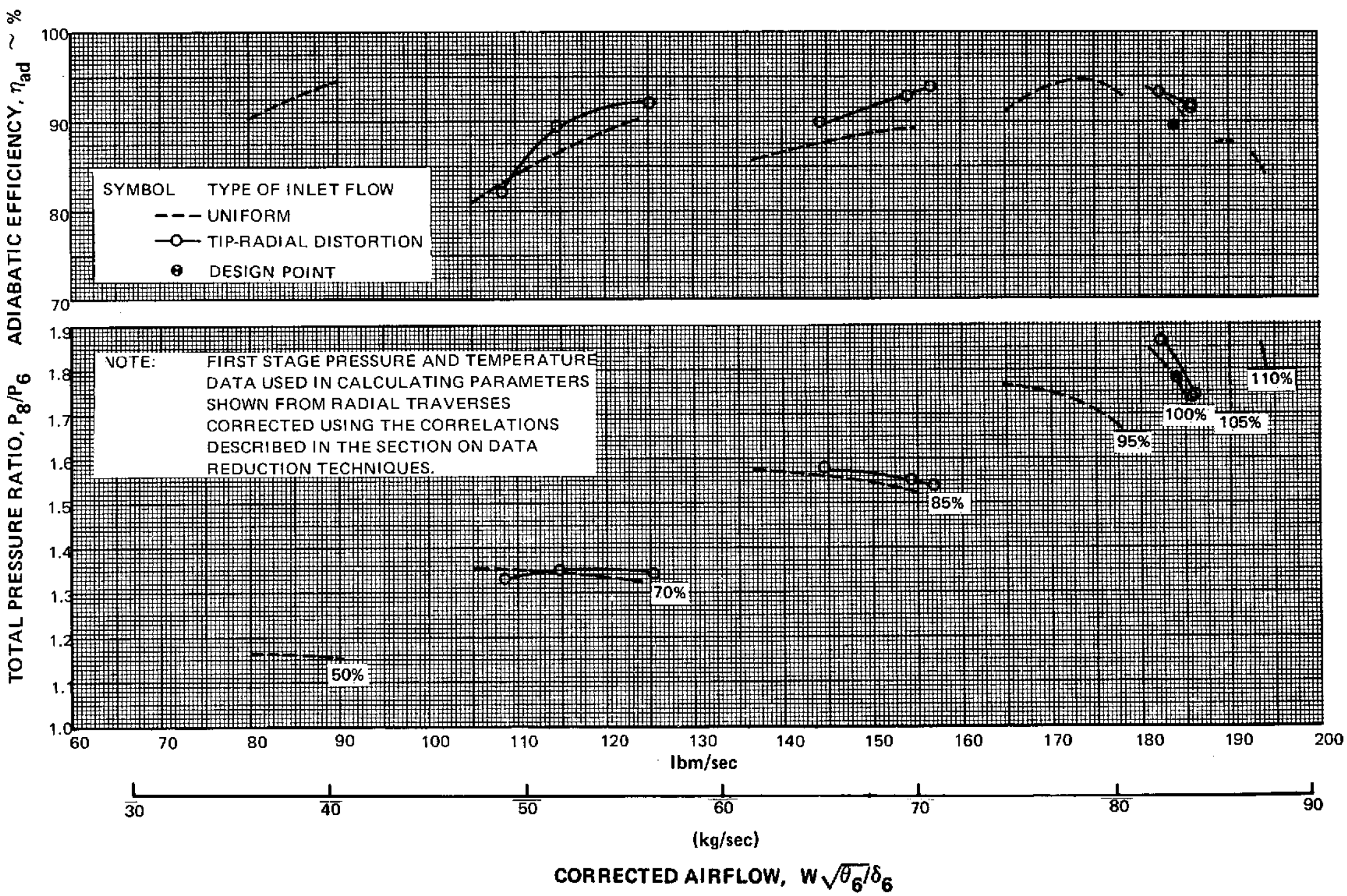


Figure 70 First Rotor Performance with Tip Radially Distorted Inlet Flow

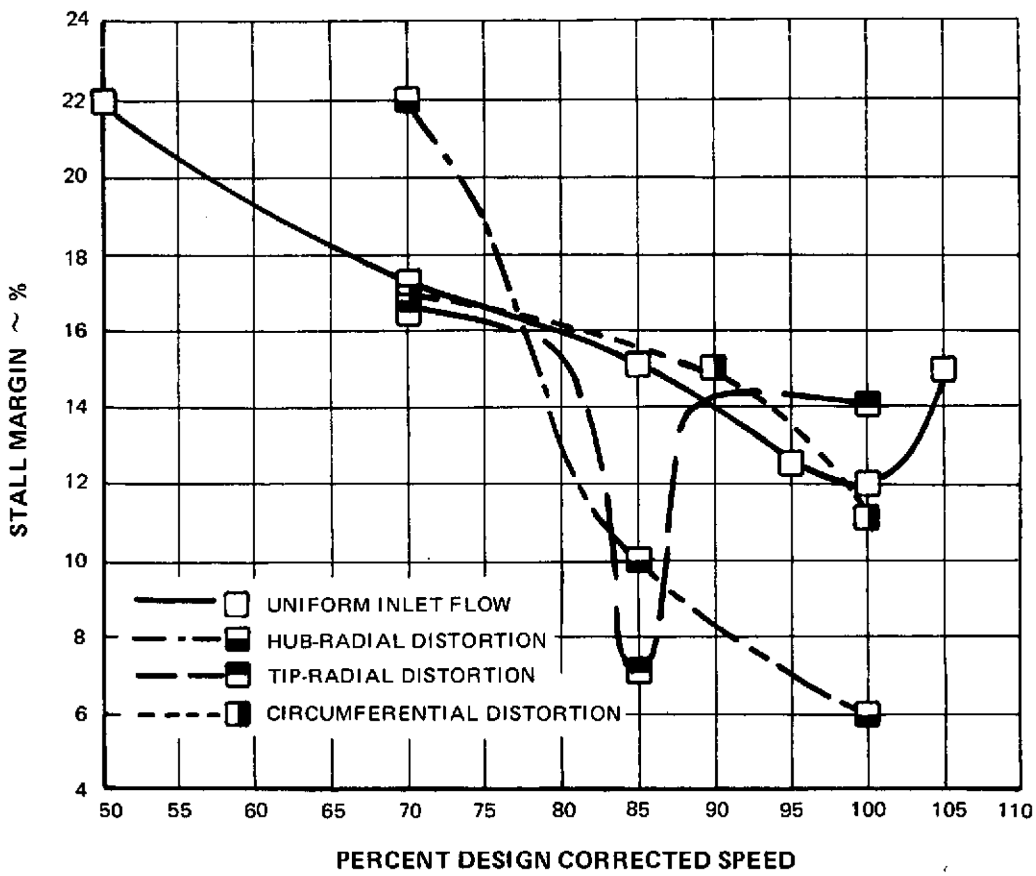


Figure 71 Stall Margin Versus Corrected Speed for Uniform and Distorted Inlet Flows

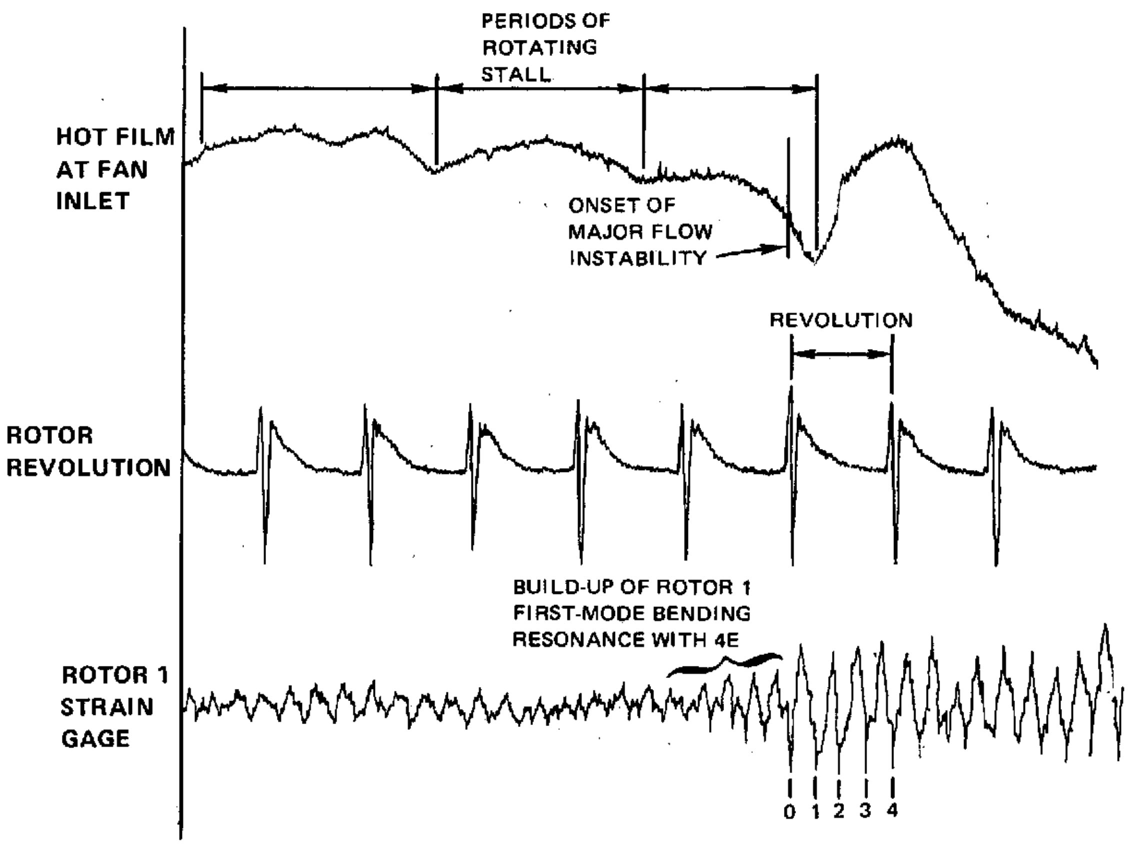


Figure 72 Hot Film and Strain Gage Records at Stall, with Tip Radially Distorted Flow at 85 Percent Speed

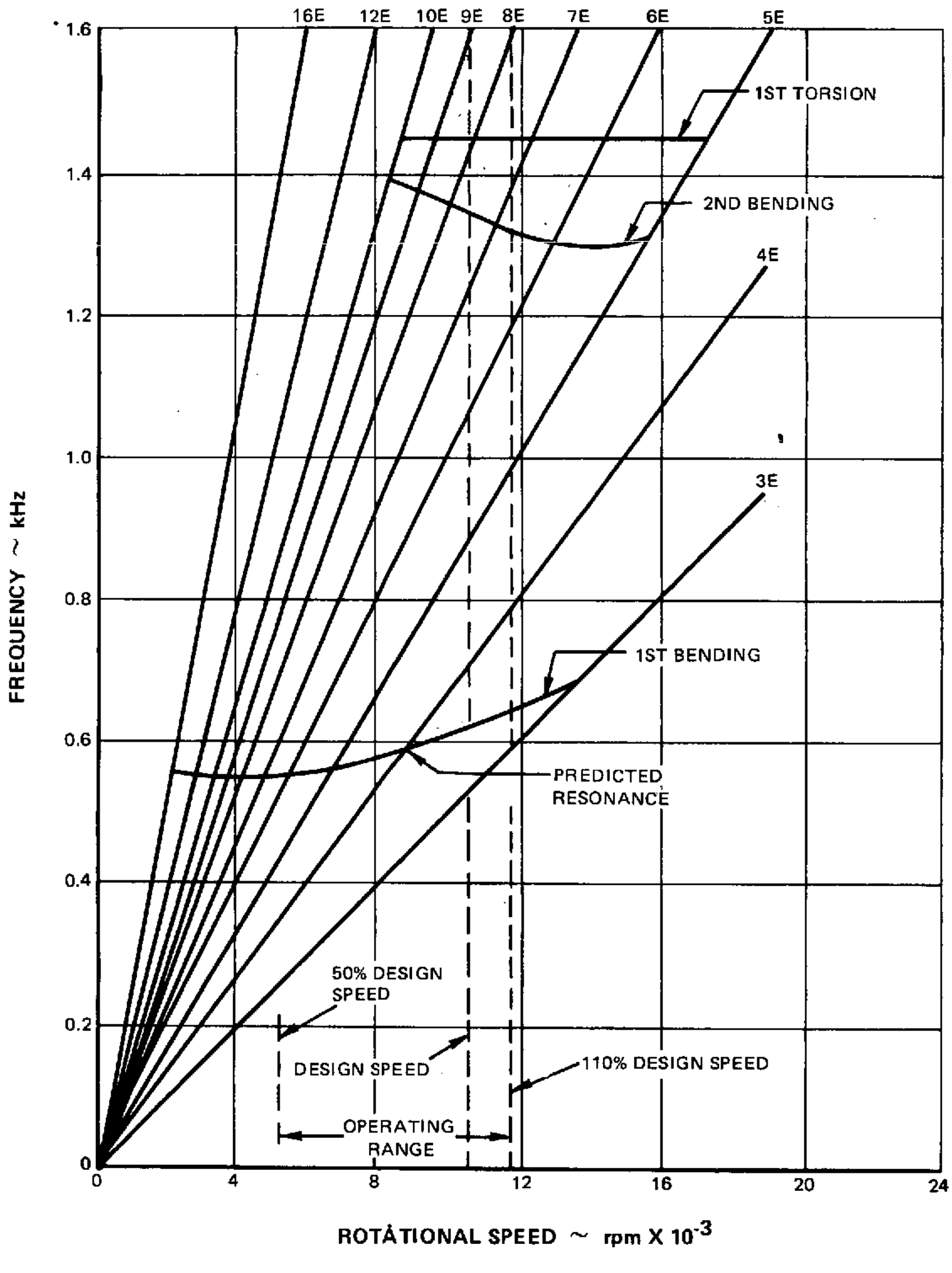


Figure 73 Resonance Diagram for Rotor 1

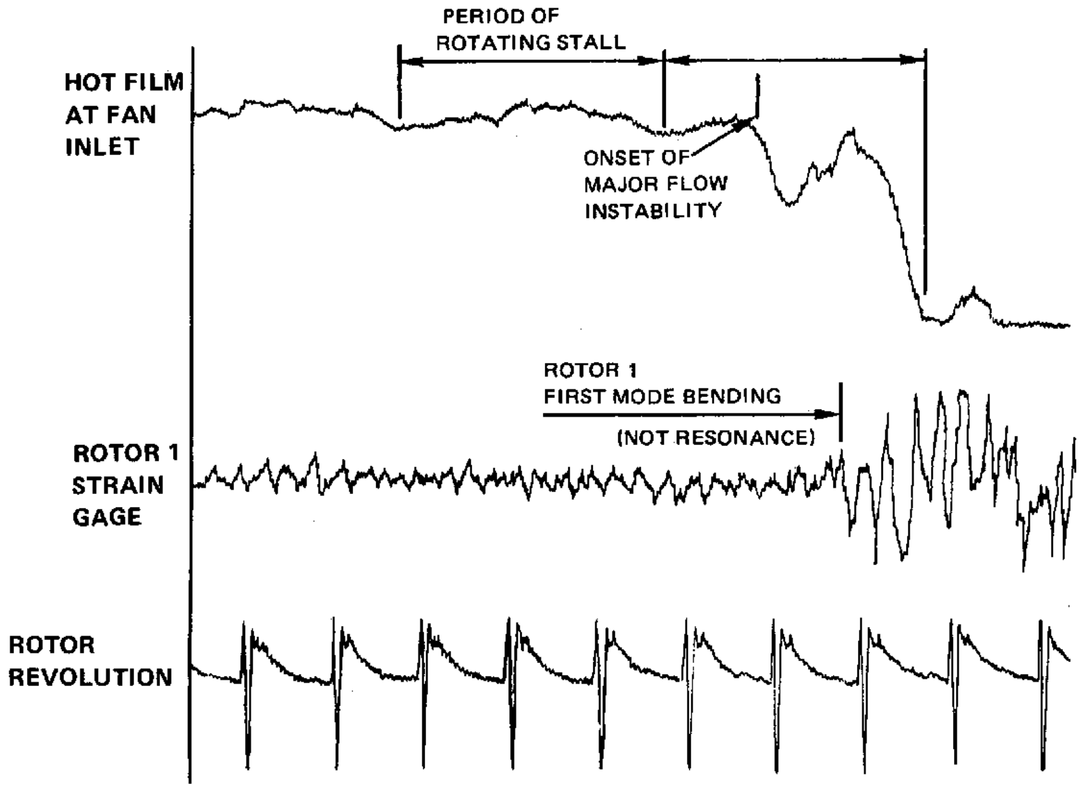


Figure 74 Hot Film and Strain Gage Records at Stall with Tip Radially Distorted Flow at Design Speed

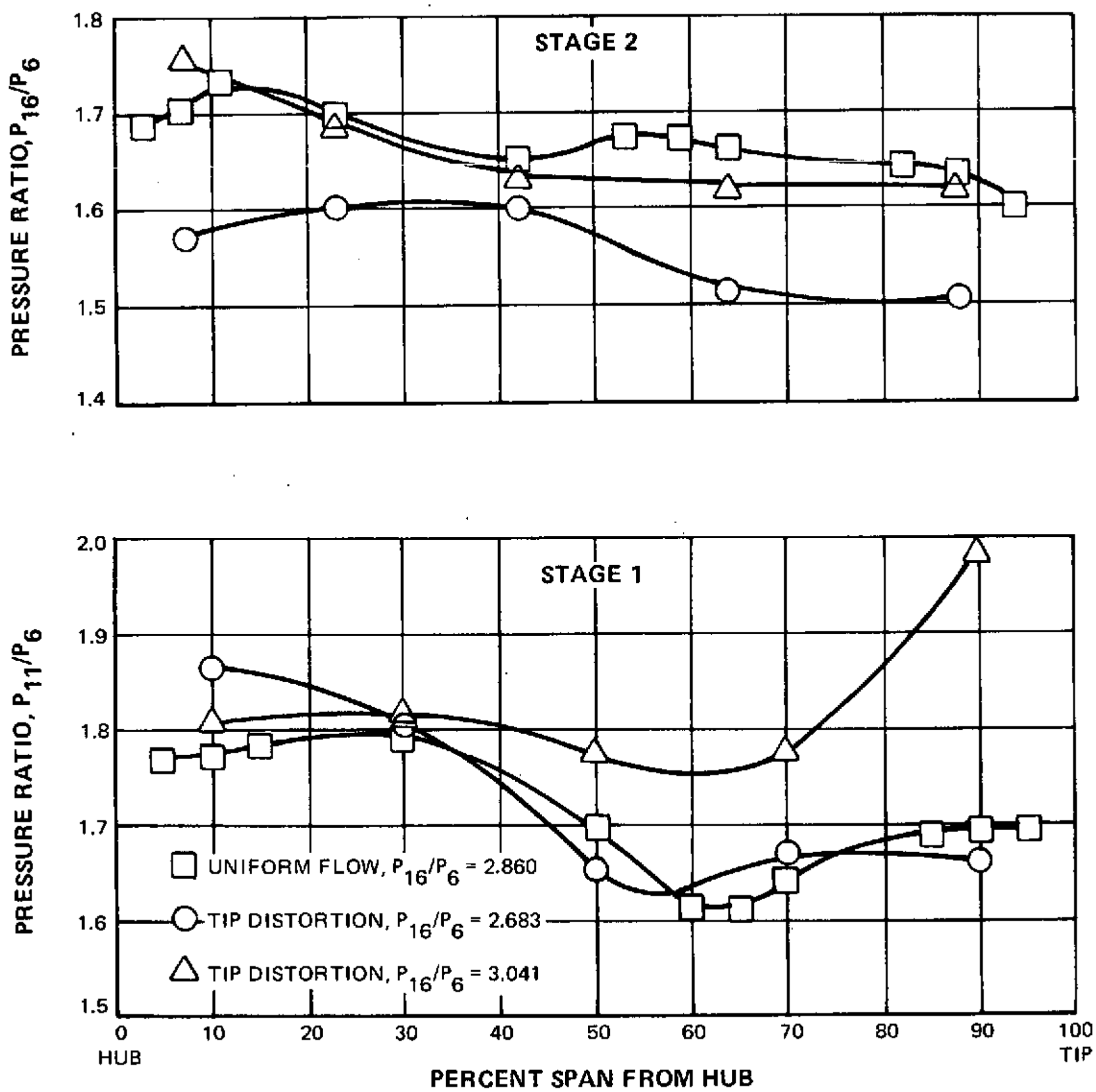


Figure 75 Spanwise Profiles of Stage 1 and Stage 2 Pressure Ratio for Uniform and Tip Radially Distorted Inlet Flows at Design Speed

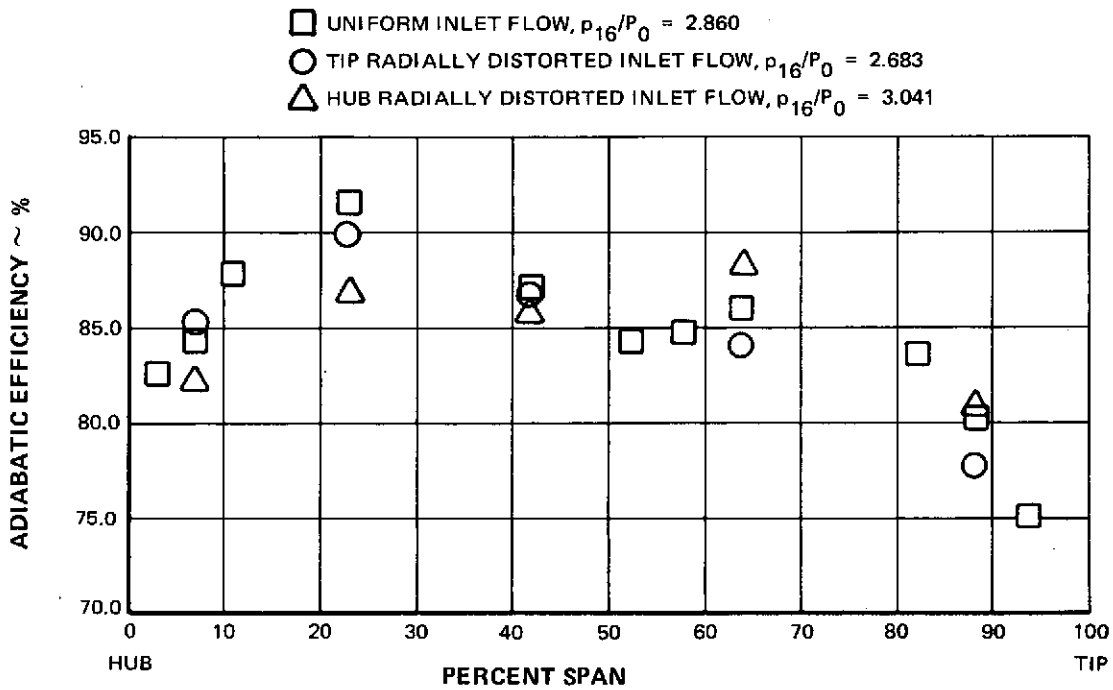


Figure 76 Spanwise Profiles of Fan Efficiency for Uniform and Radially Distorted Inlet Flows at Design Speed

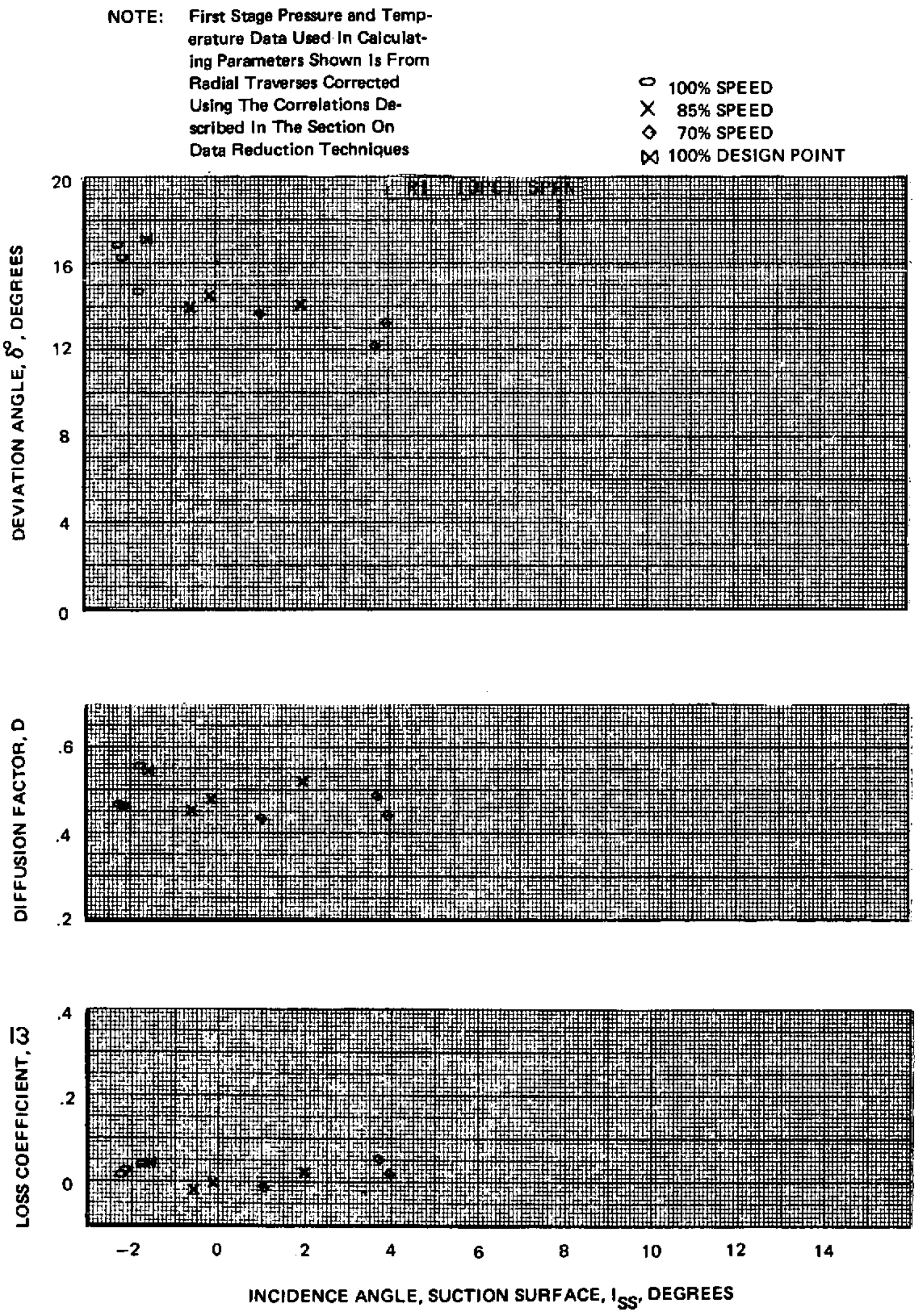


Figure 77a Blade Element Performance With Tip Radial Distortion – Rotor 1 10% Span

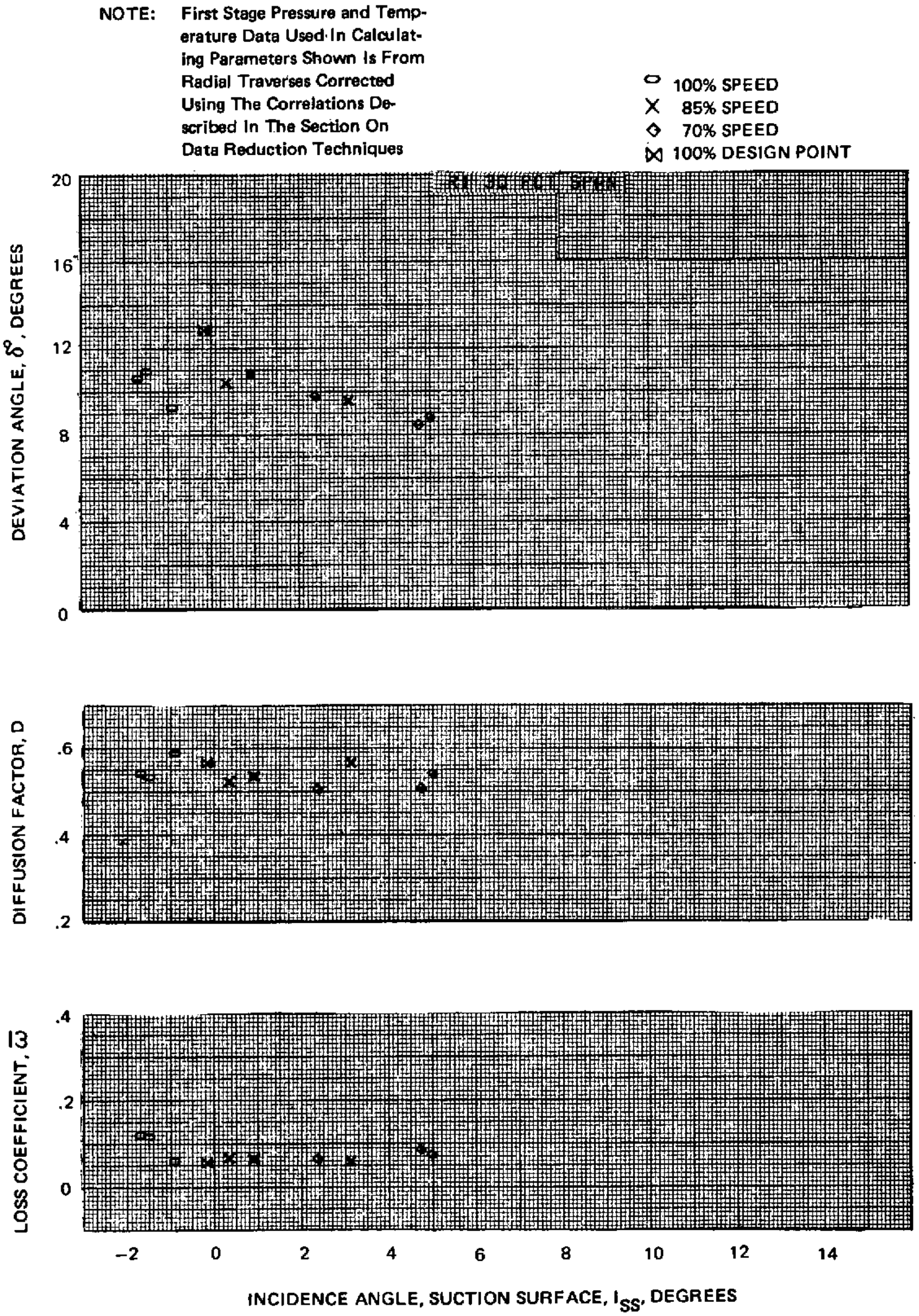


Figure 77b Blade Element Performance With Tip Radial Distortion – Rotor 1 30% Span

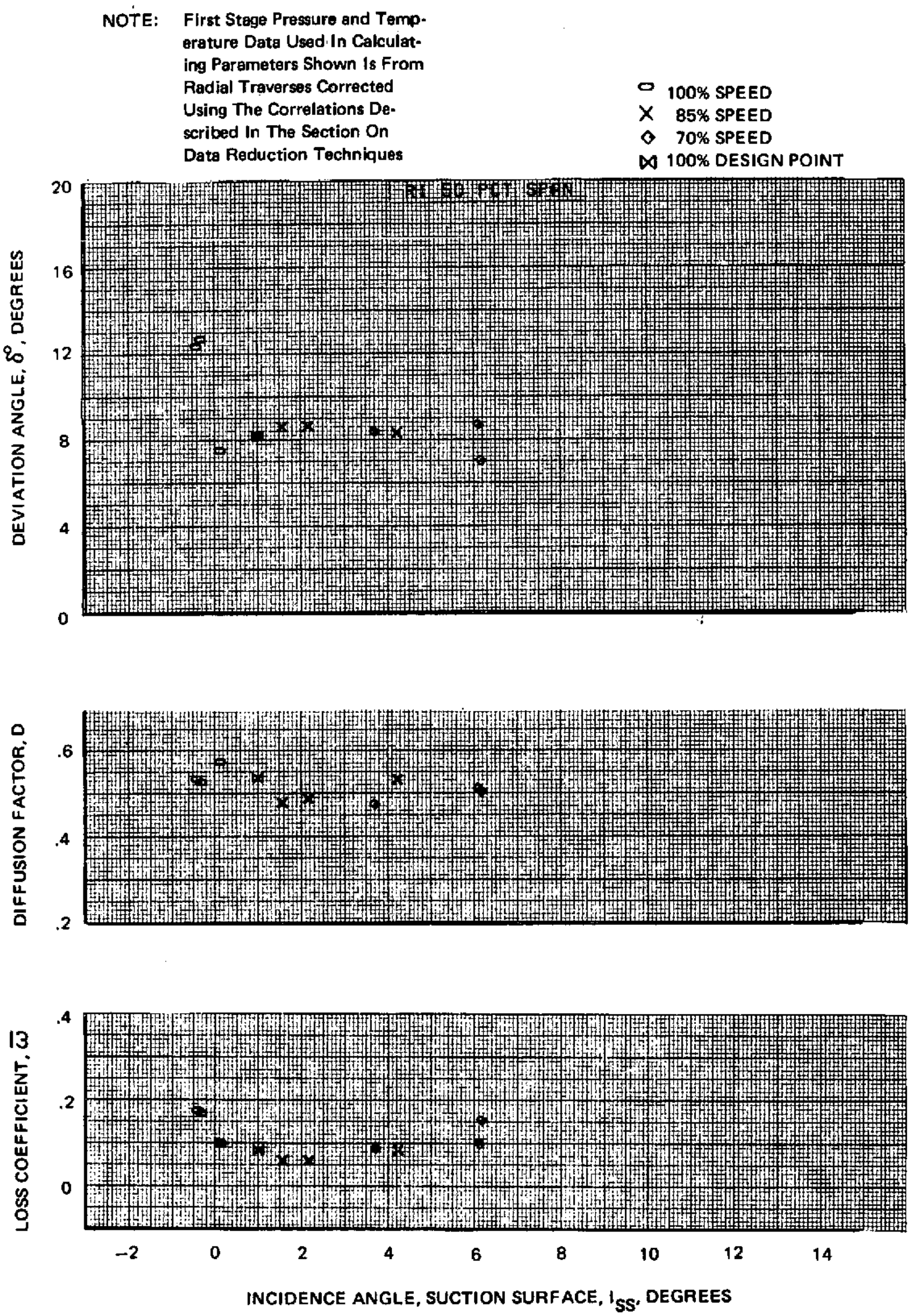


Figure 77c Blade Element Performance With Tip Radial Distortion – Rotor 1 50% Span

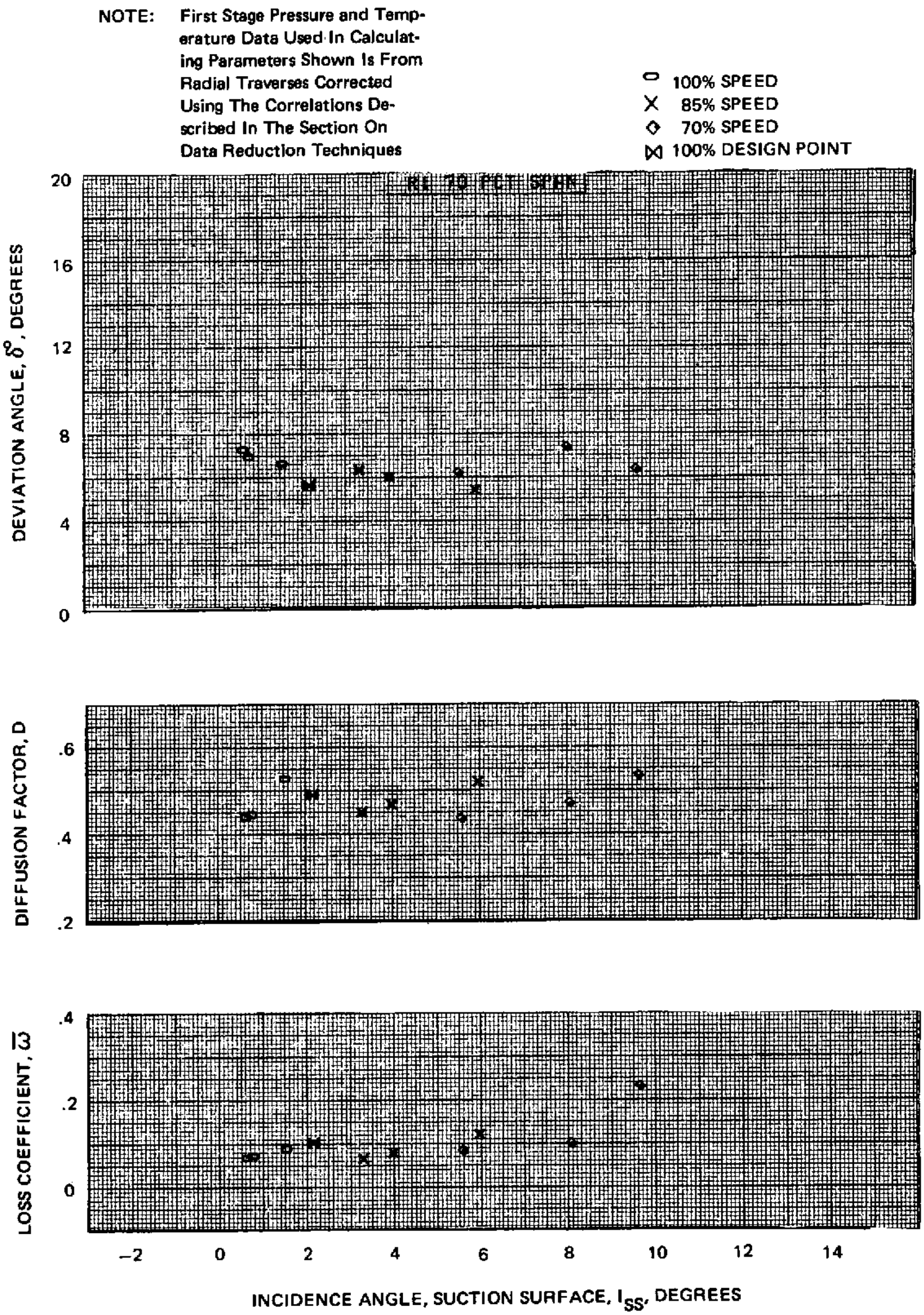


Figure 77d Blade Element Performance With Tip Radial Distortion – Rotor 1 70% Span

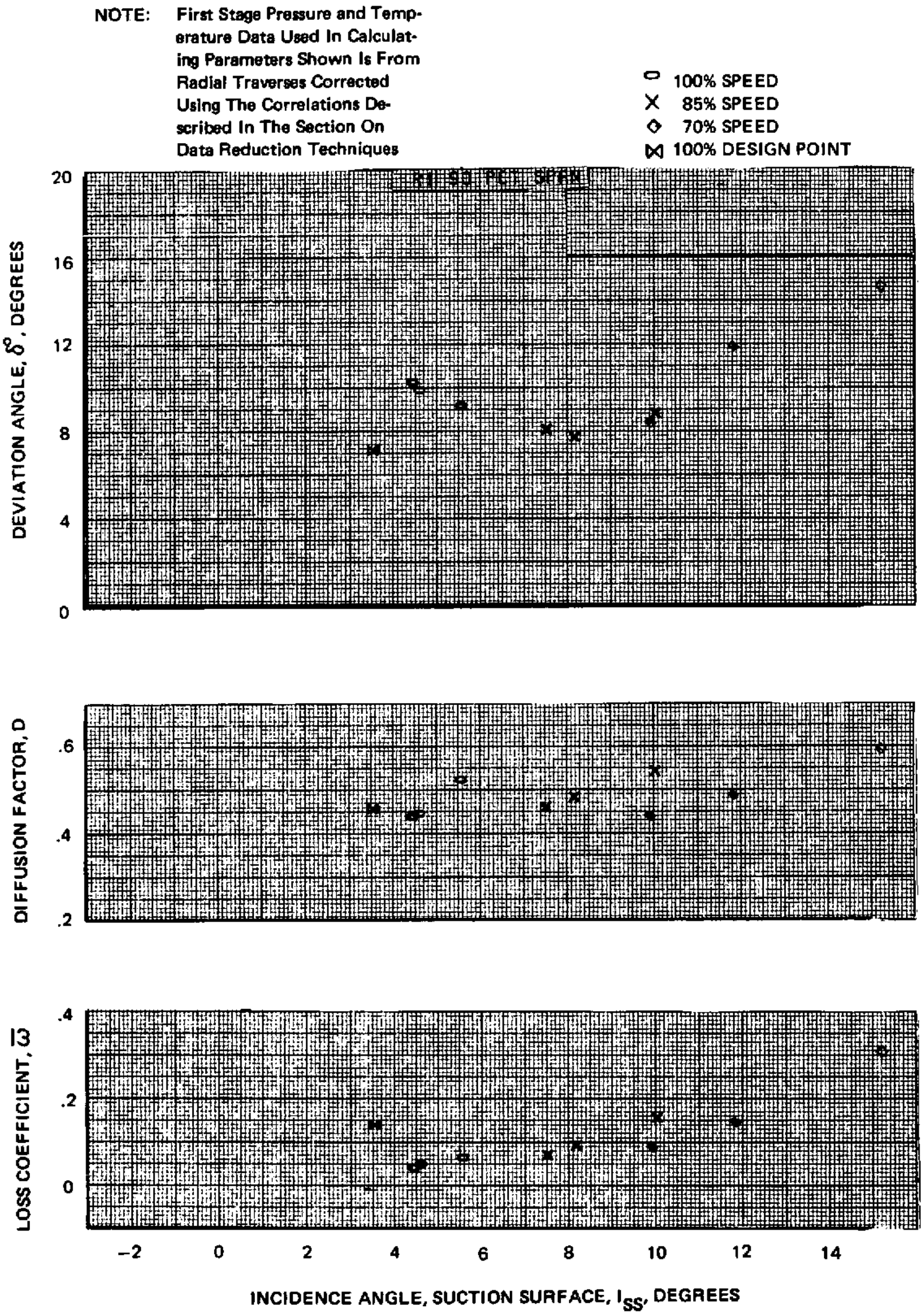


Figure 77e Blade Element Performance With Tip Radial Distortion – Rotor 1 90% Span

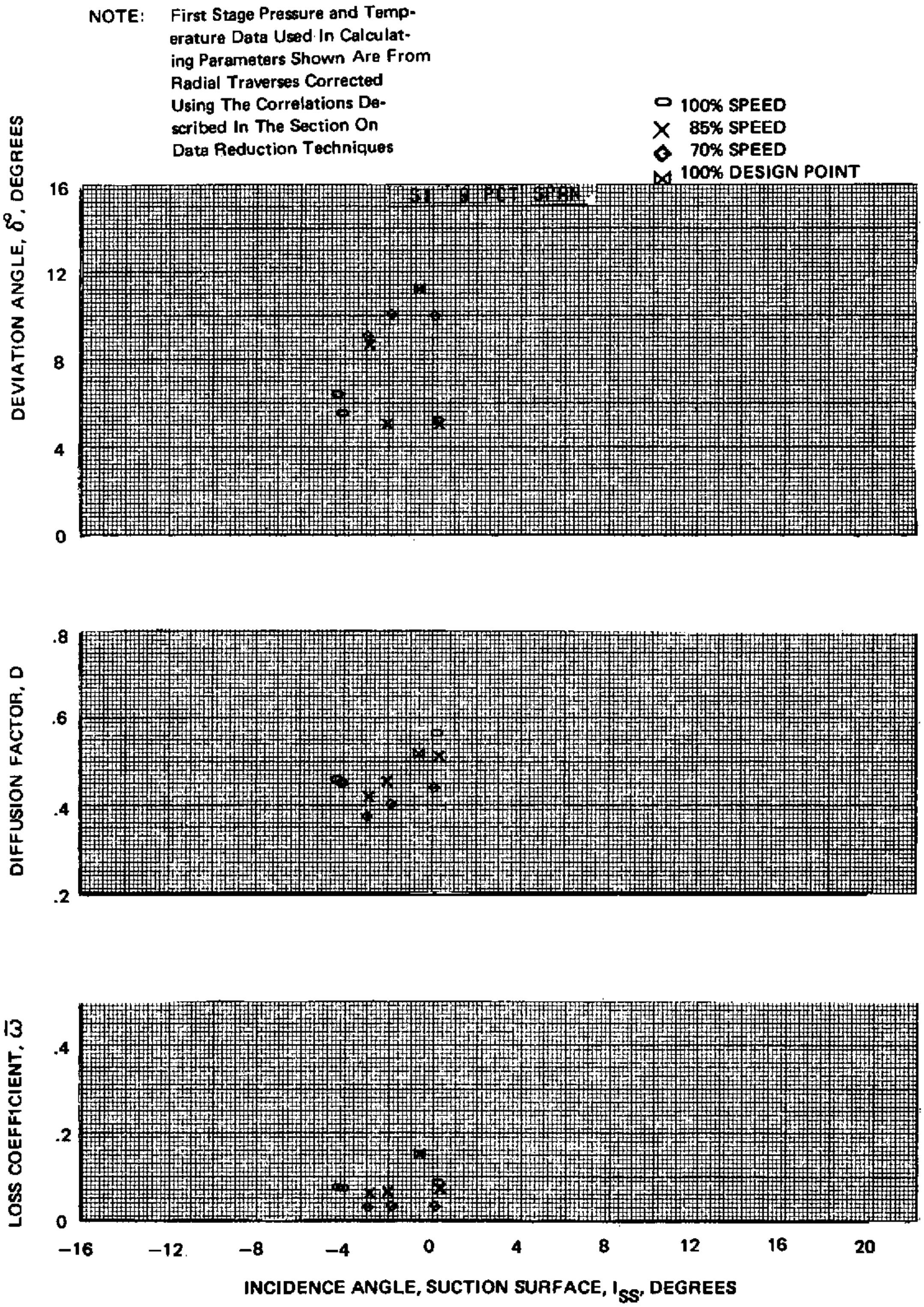


Figure 78a Blade Element Performance With Tip Radial Distortion – Stator 1
9% Span

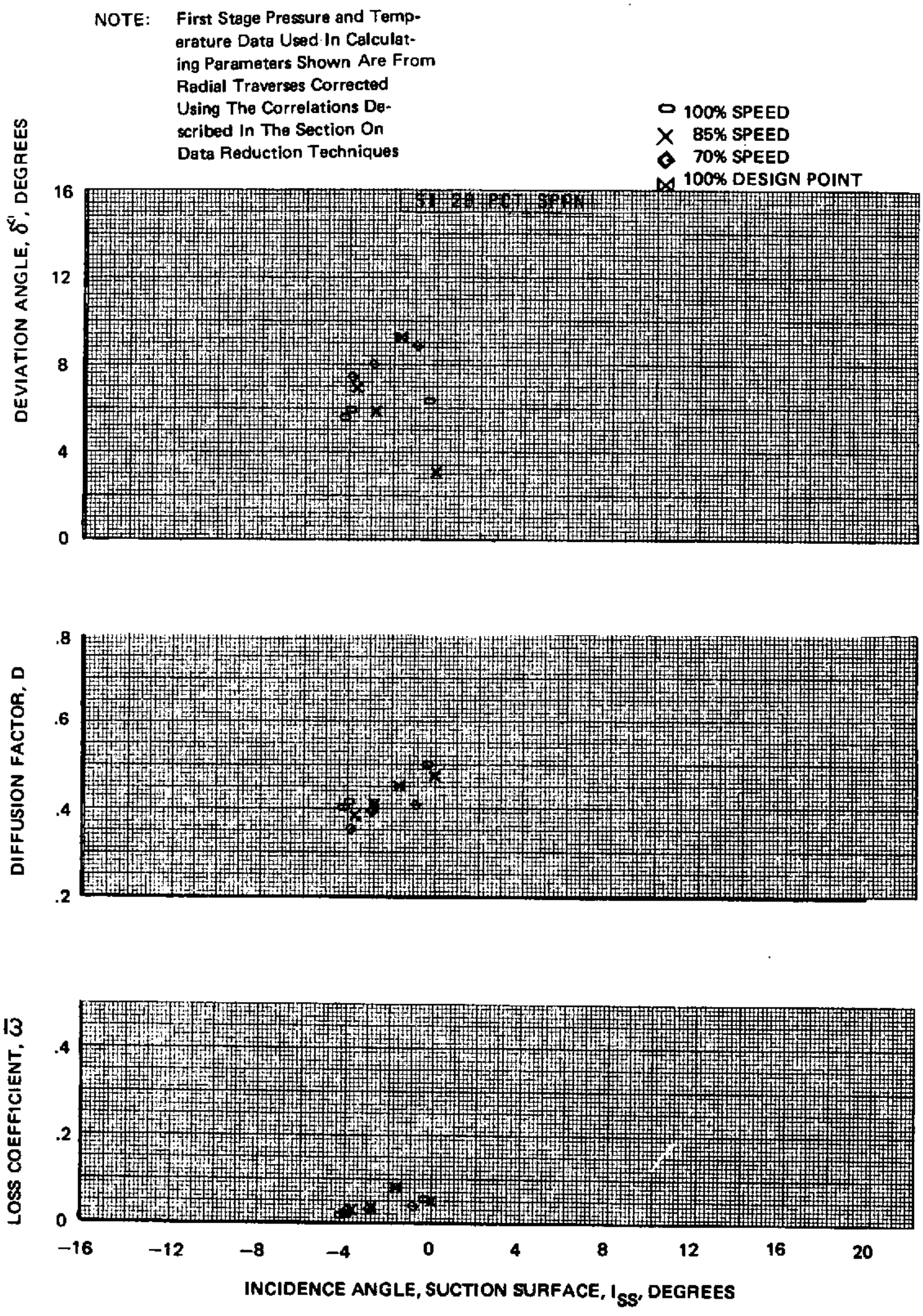


Figure 78b Blade Element Performance With Tip Radial Distortion – Stator 1 28% Span

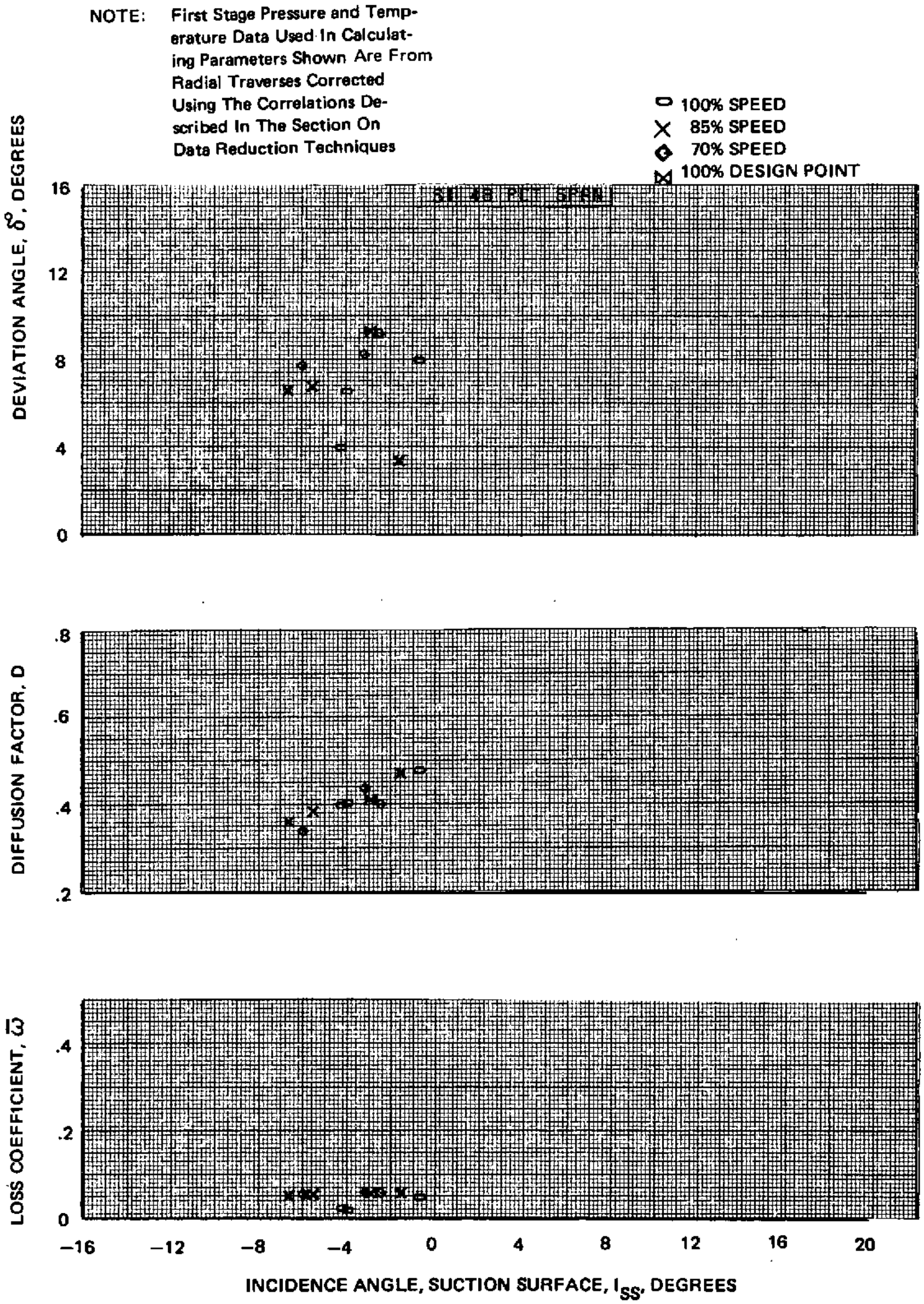


Figure 78c Blade Element Performance With Tip Radial Distortion – Stator 1
48% Span

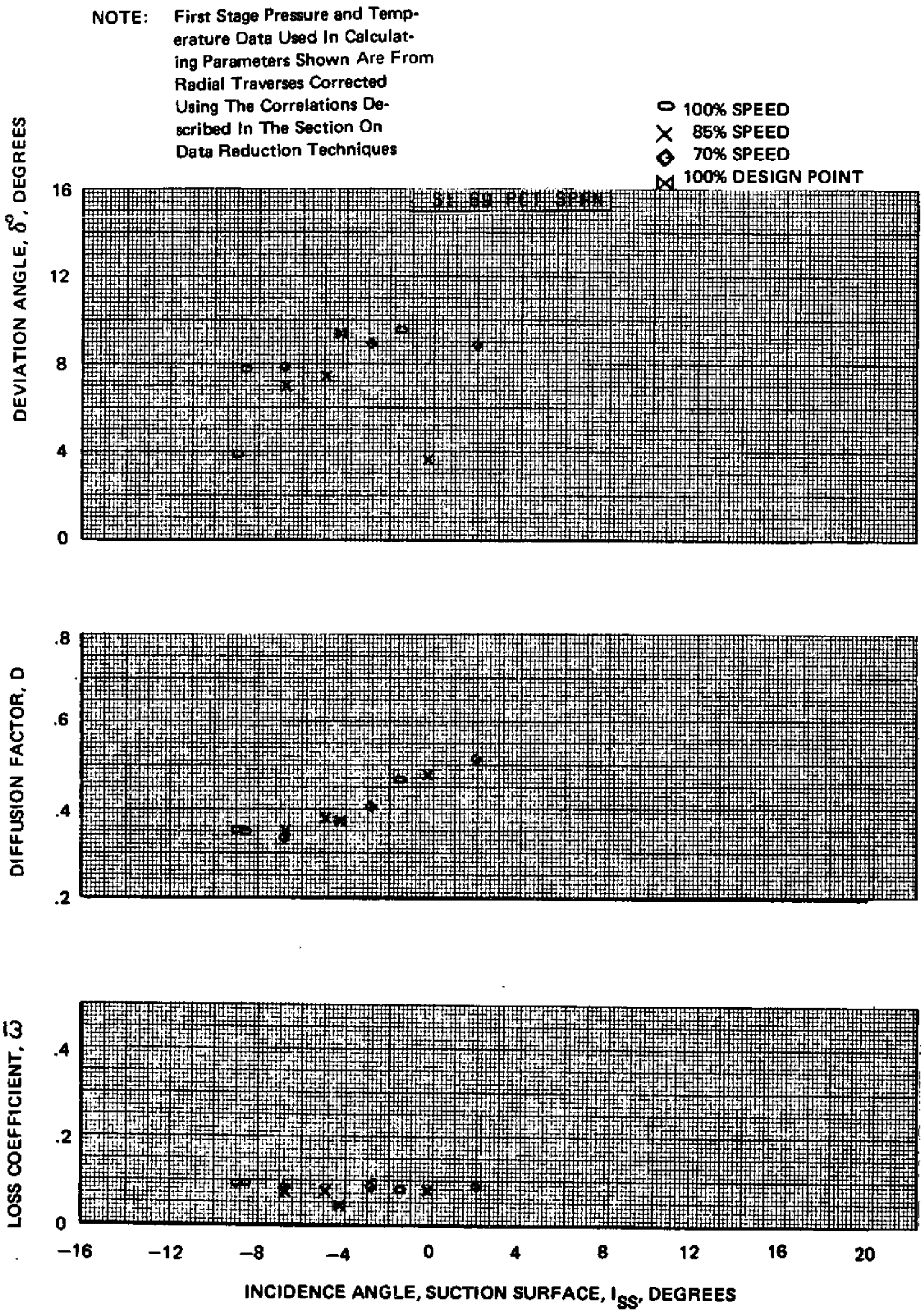


Figure 78d Blade Element Performance With Tip Radial Distortion – Stator 1 69% Span

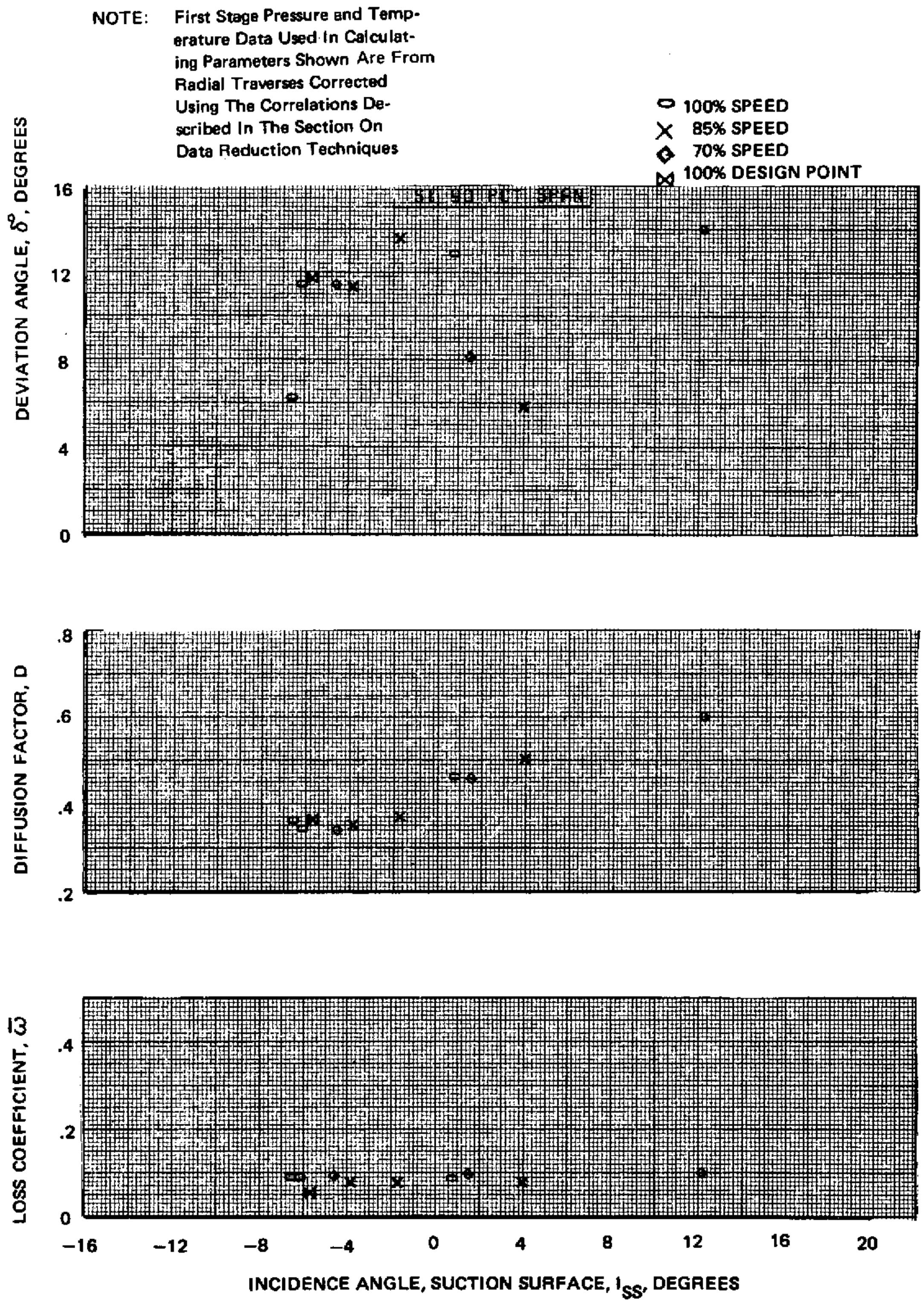


Figure 78e Blade Element Performance With Tip Radial Distortion – Stator 1 90% Span

NOTE: First Stage Pressure and Temperature Data Used In Calculating Parameters Shown Is From Radial Traverses Corrected Using The Correlations Described In The Section On Data Reduction Techniques

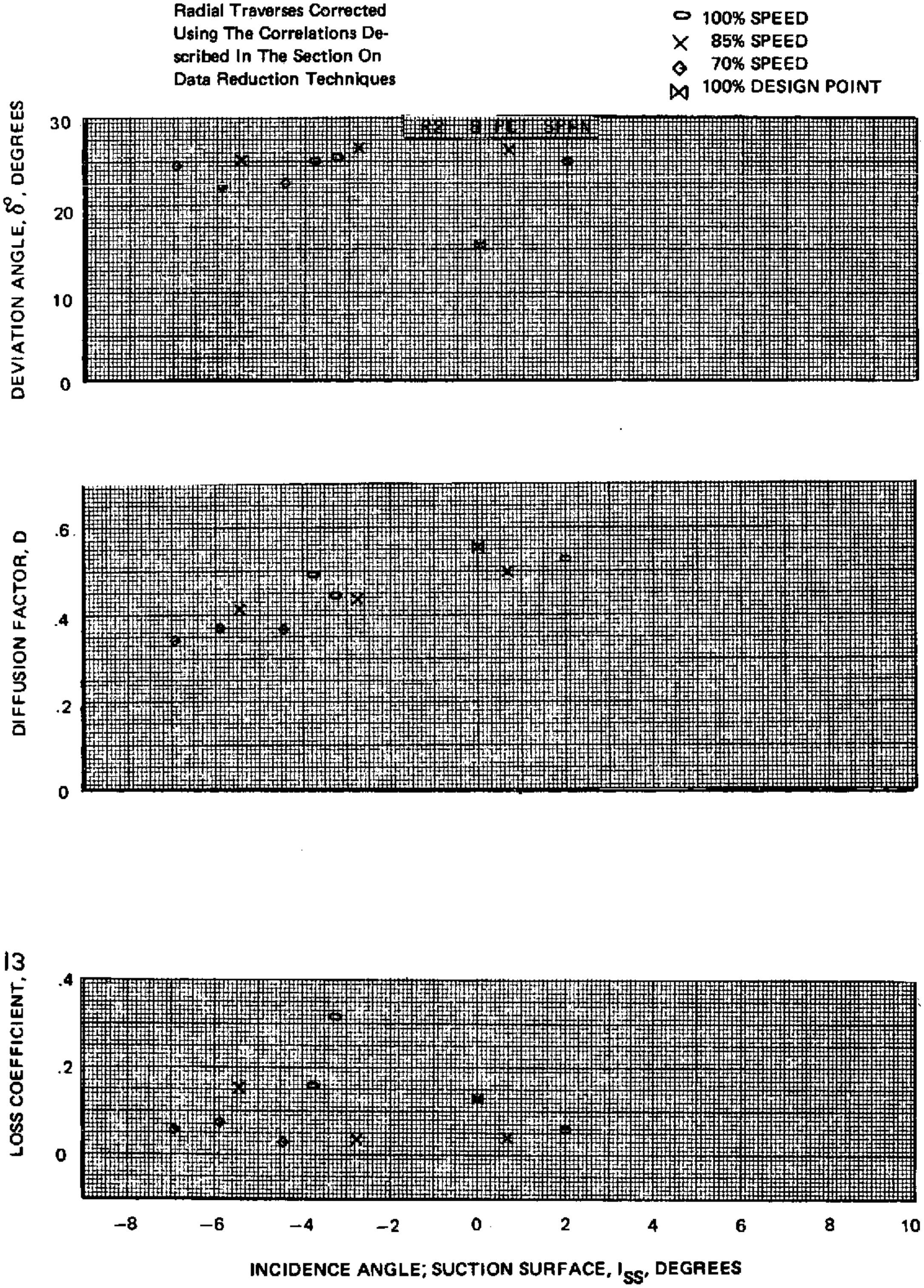


Figure 79a Blade Element Performance With Tip Radial Distortion- Rotor 2 8% Span

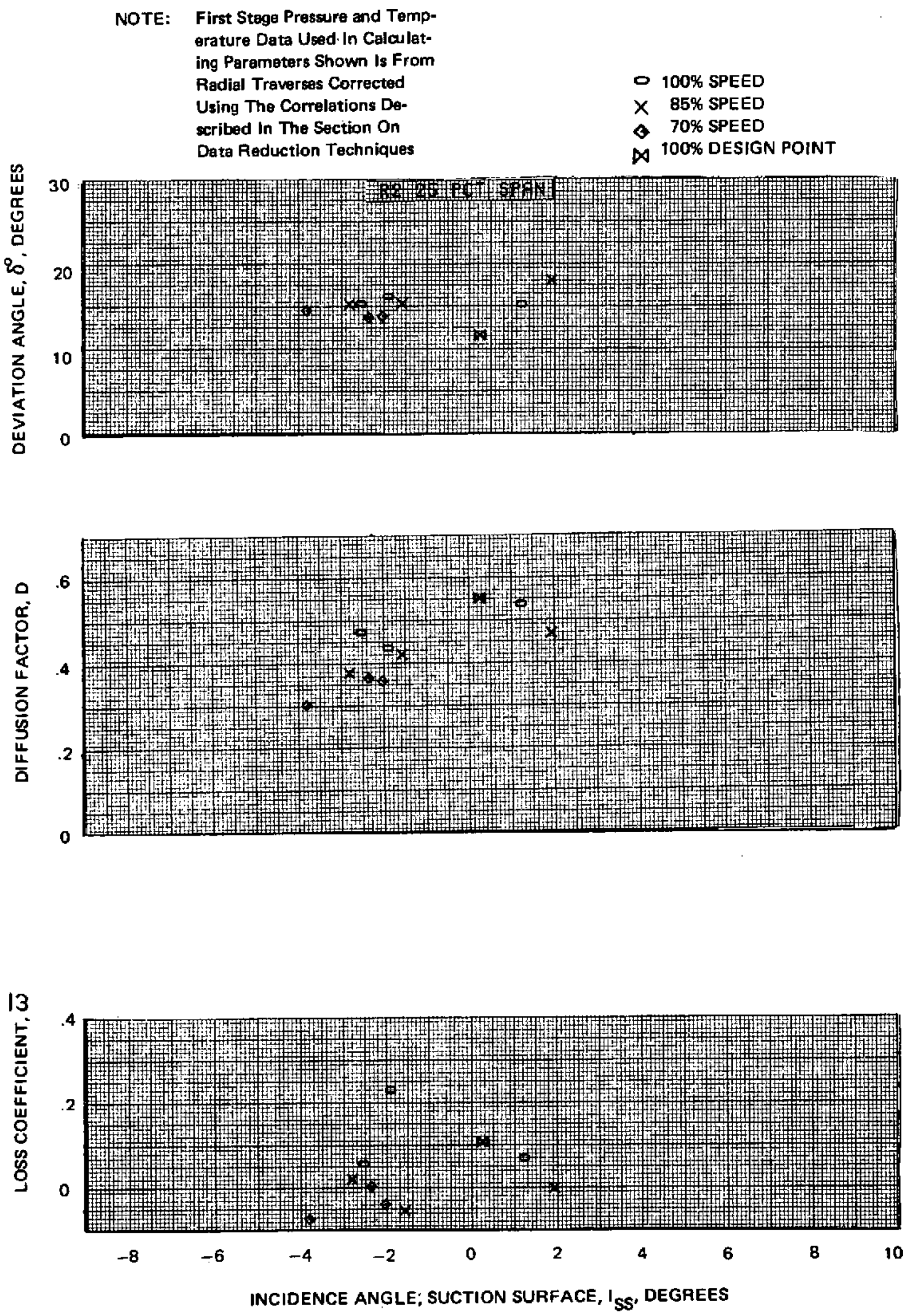


Figure 79b Blade Element Performance With Tip Radial Distortion Rotor 2 25% Span

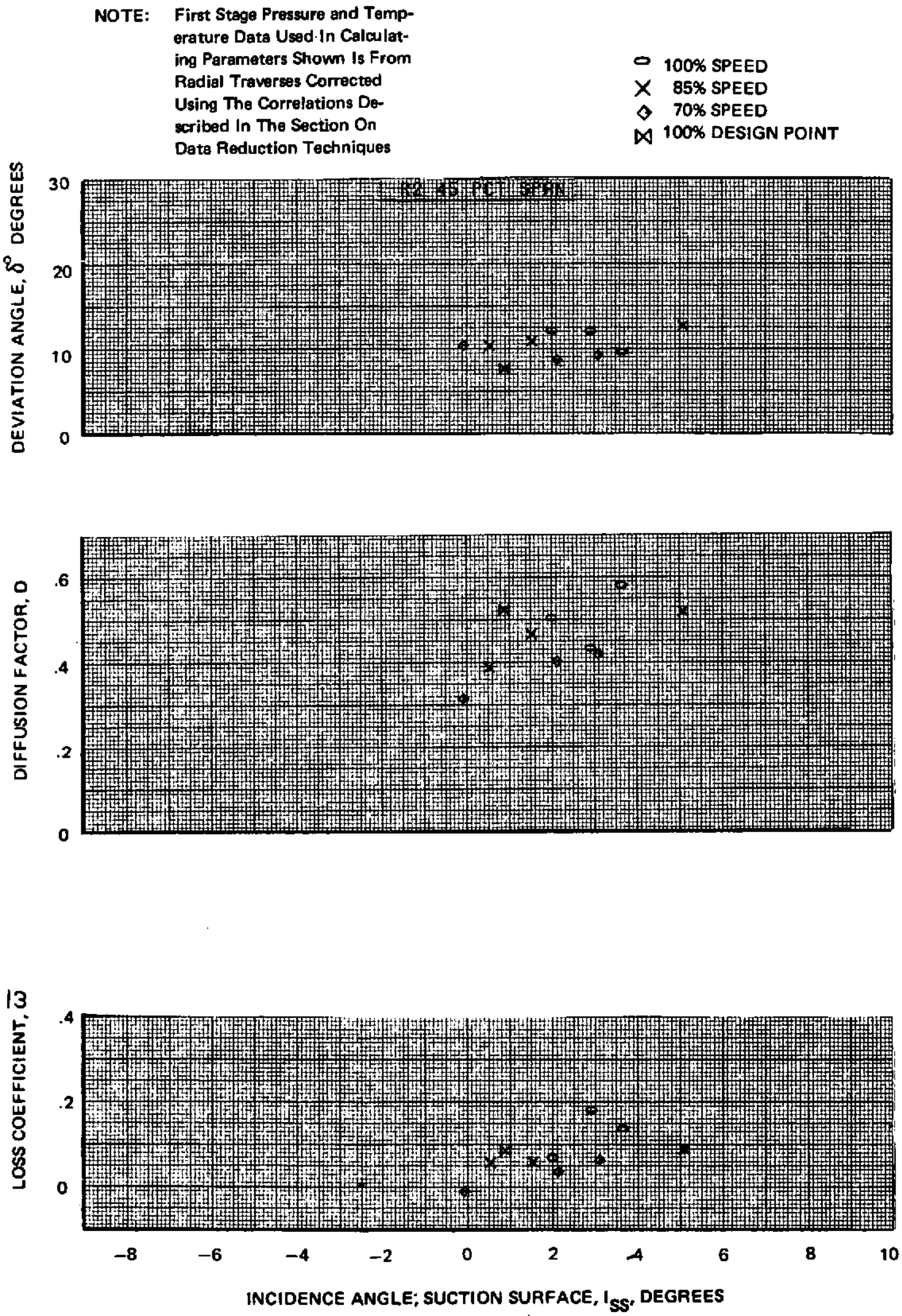


Figure 79c Blade Element Performance With Tip Radial Distortion- Rotor 2 45% Span

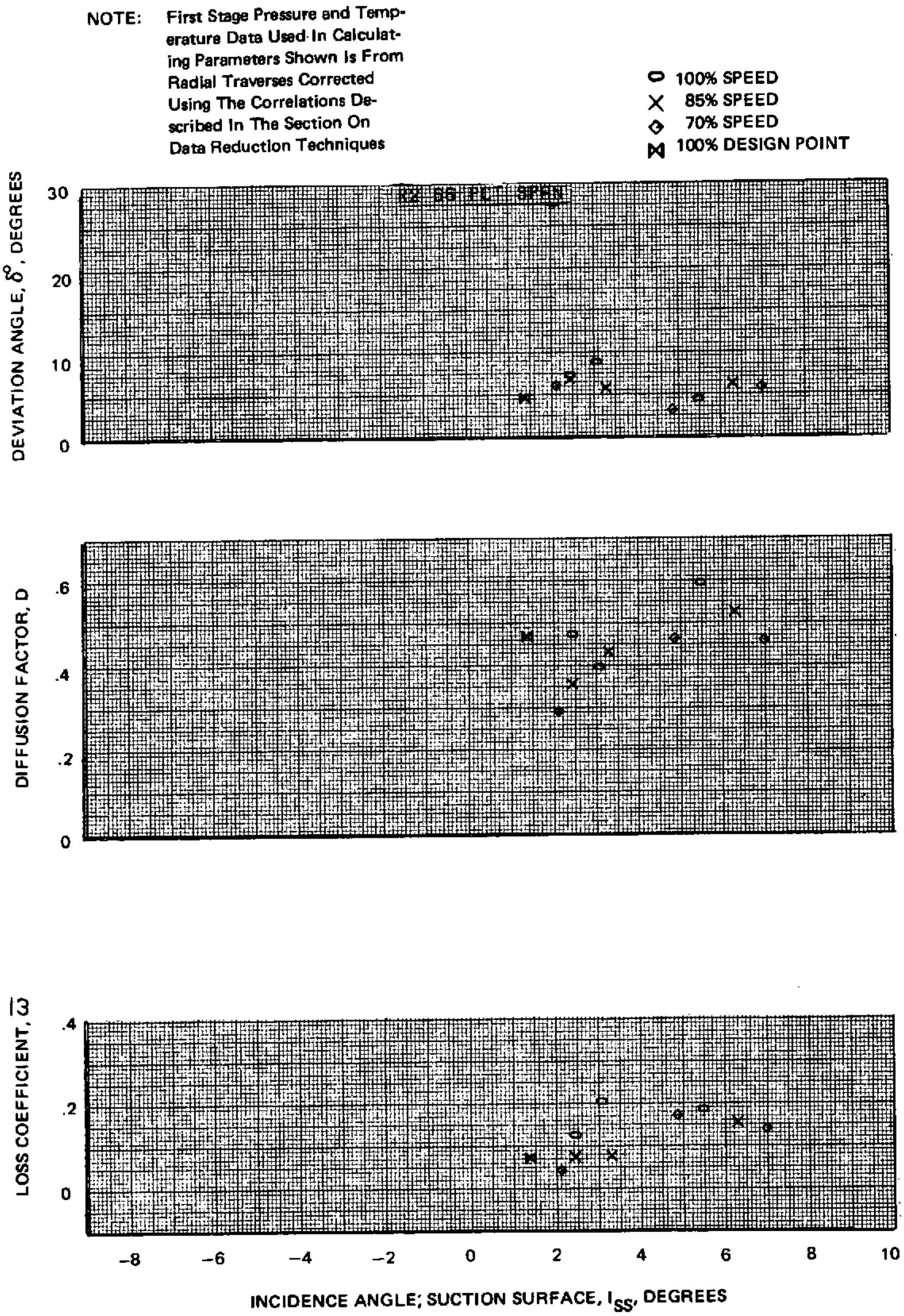


Figure 79d Blade Element Performance With Uniform Inlet Flow – Rotor 2 66% Span

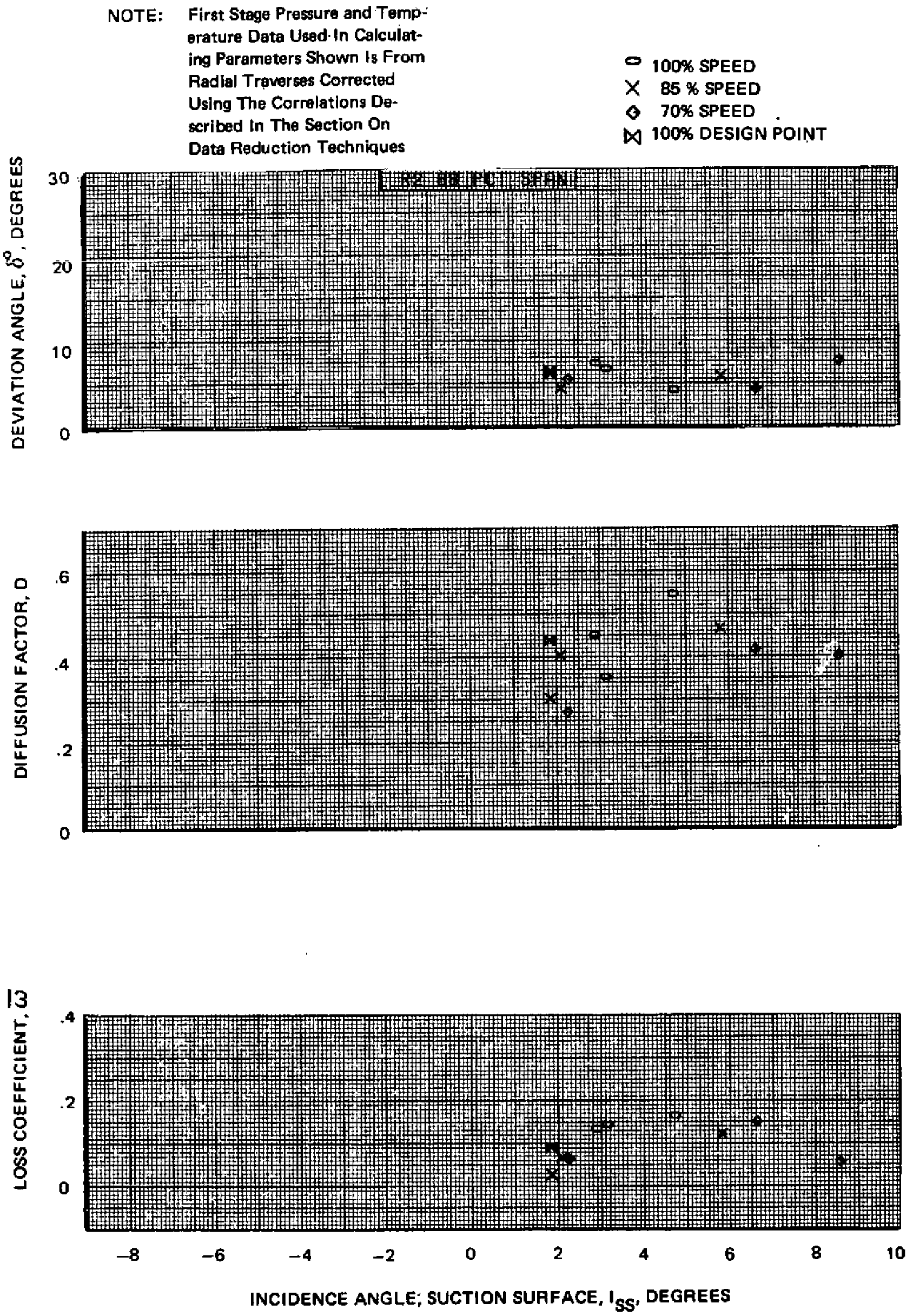


Figure 79e Blade Element Performance With Tip Radial Distortion- Rotor 2 88% Span

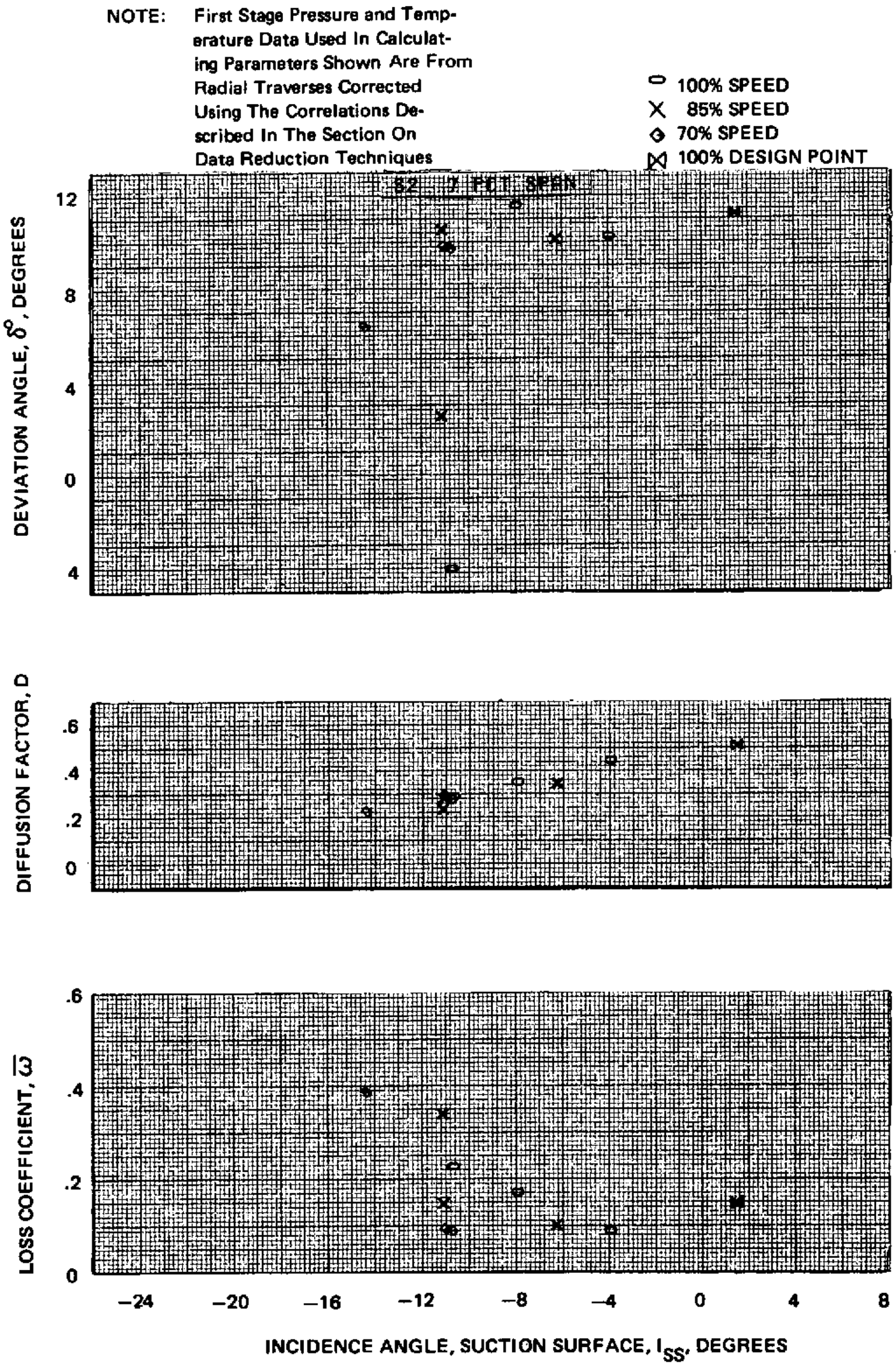


Figure 80a Blade Element Performance With Tip Radial Distortion – Stator 2 7% Span

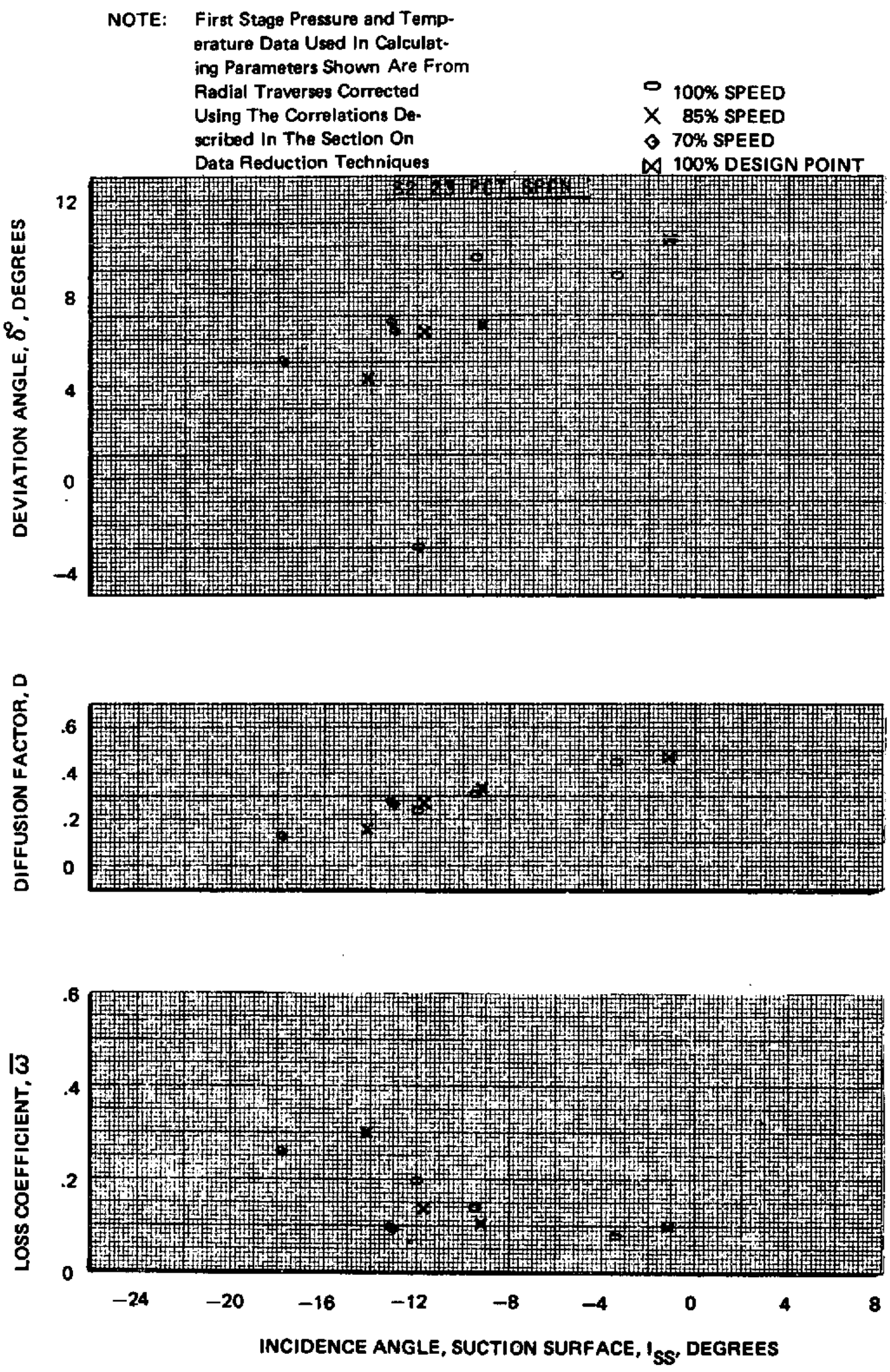


Figure 80b Blade Element Performance With Tip Radial Distortion – Stator 2 23% Span

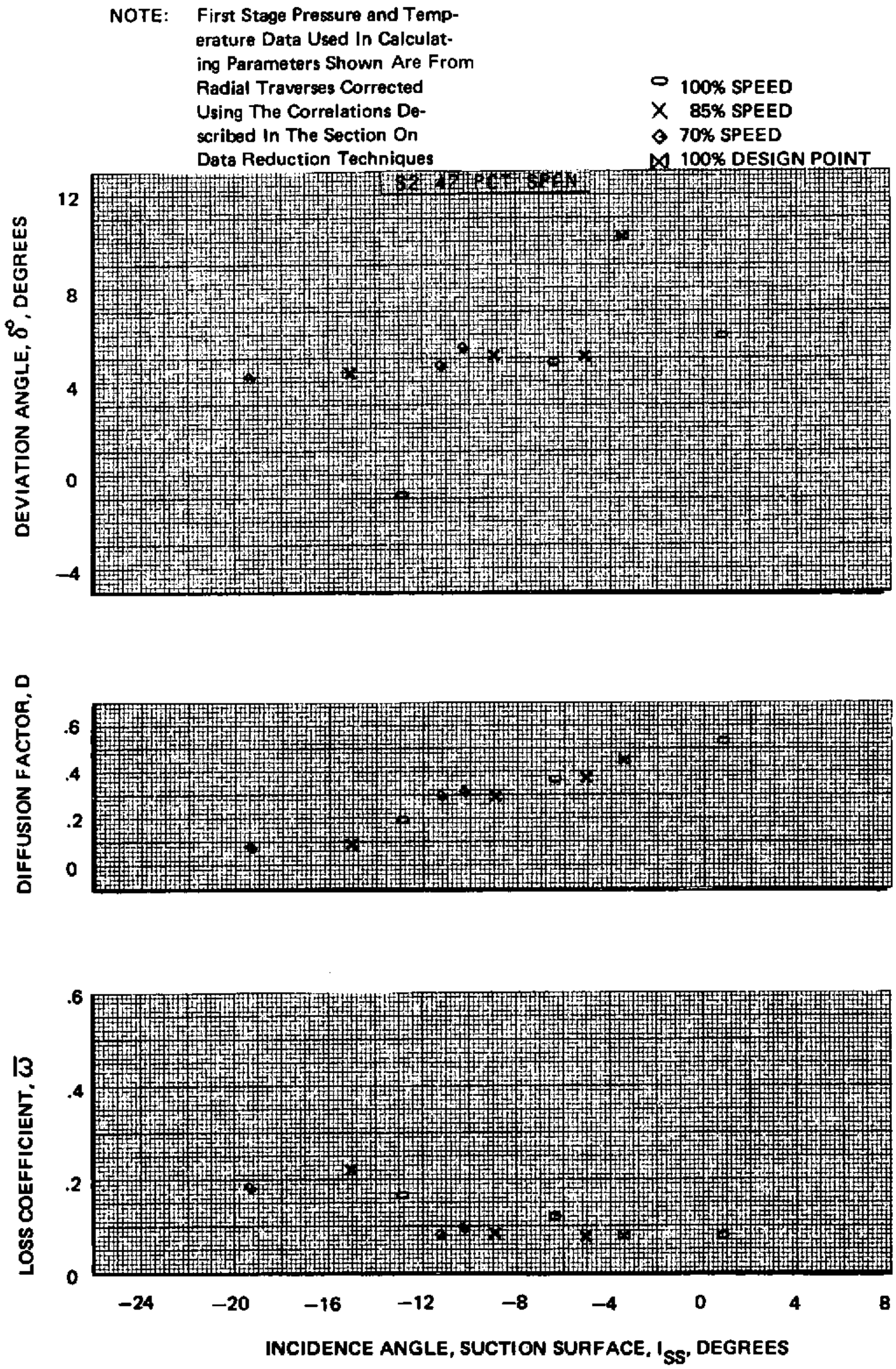


Figure 80c Blade Element Performance With Tip Radial Distortion – Stator 2
42% Span

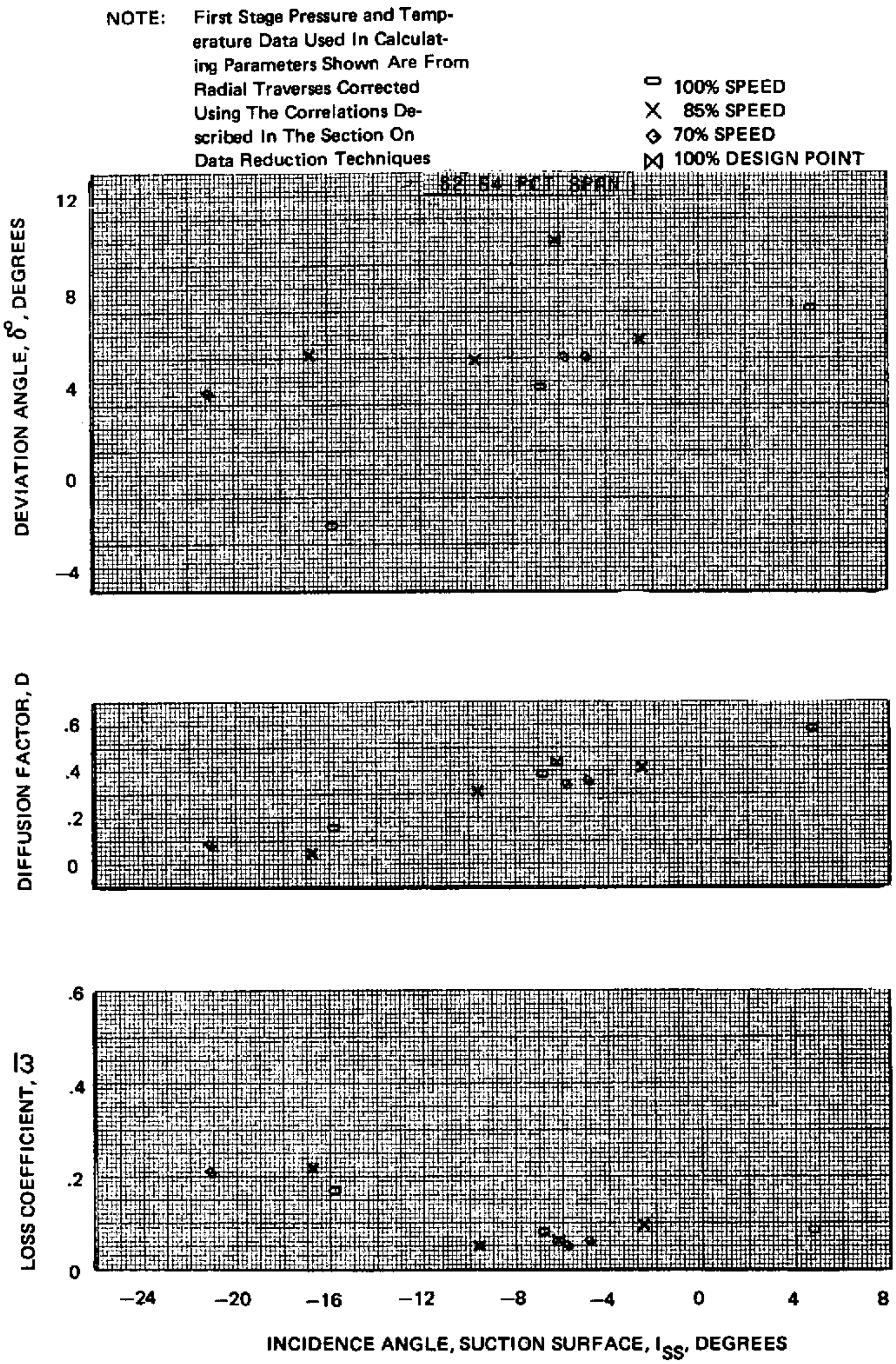


Figure 80d Blade Element Performance With Tip Radial Distortion – Stator 2 64% Span

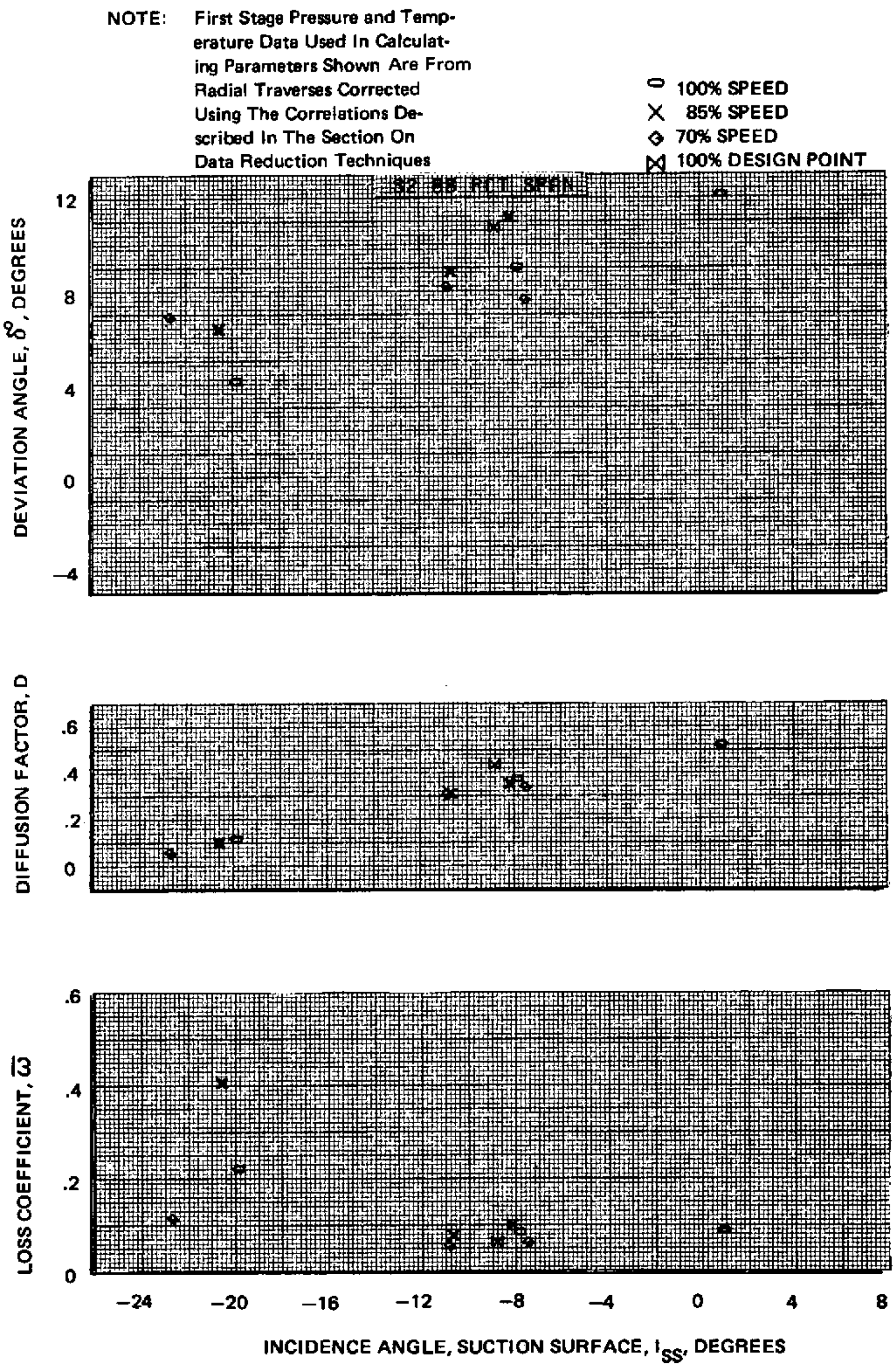


Figure 80e Blade Element Performance With Tip Radial Distortion – Stator 2
88% Span

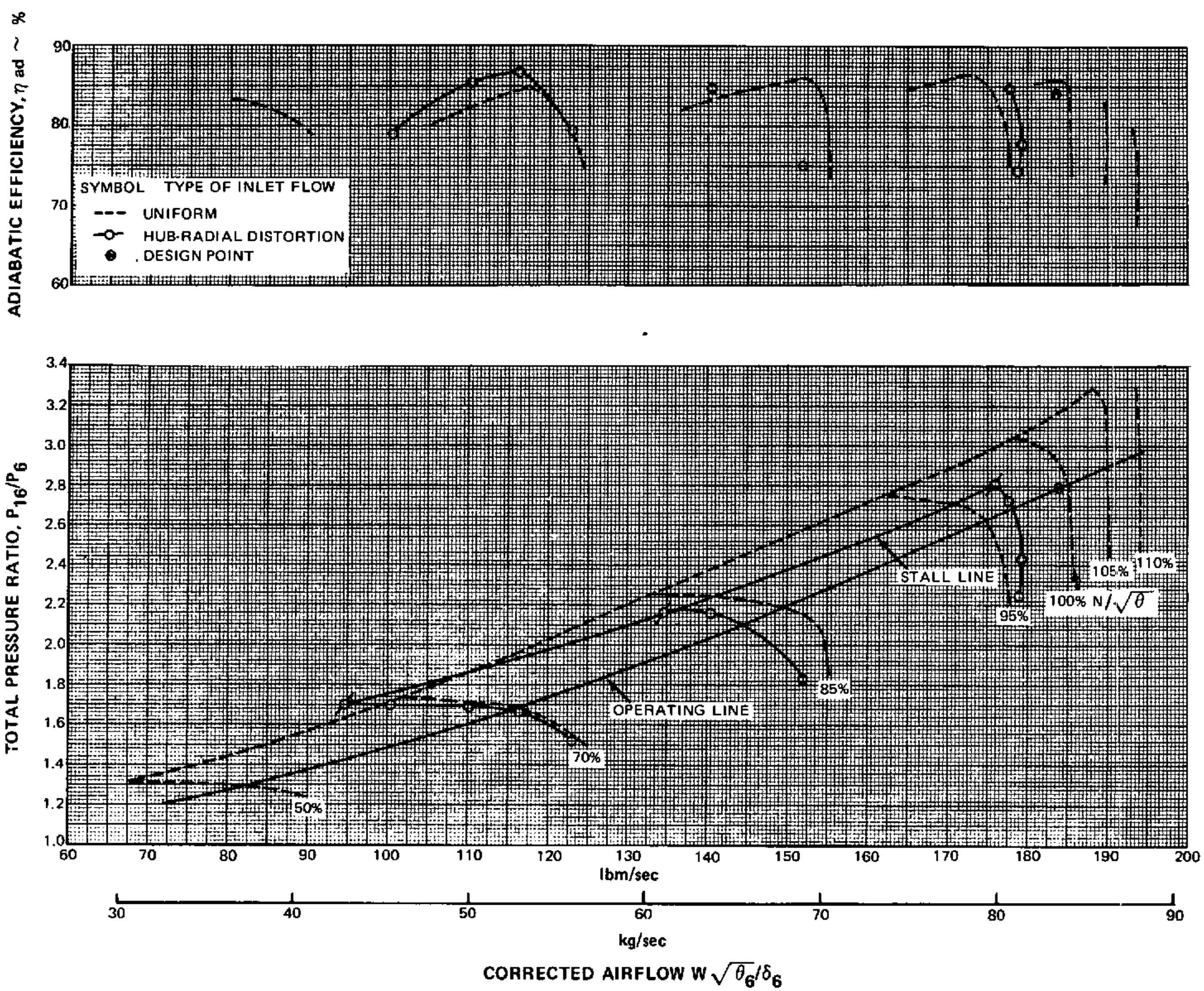


Figure 81 Fan Overall Performance with Hub Radially Distorted Inlet Flow

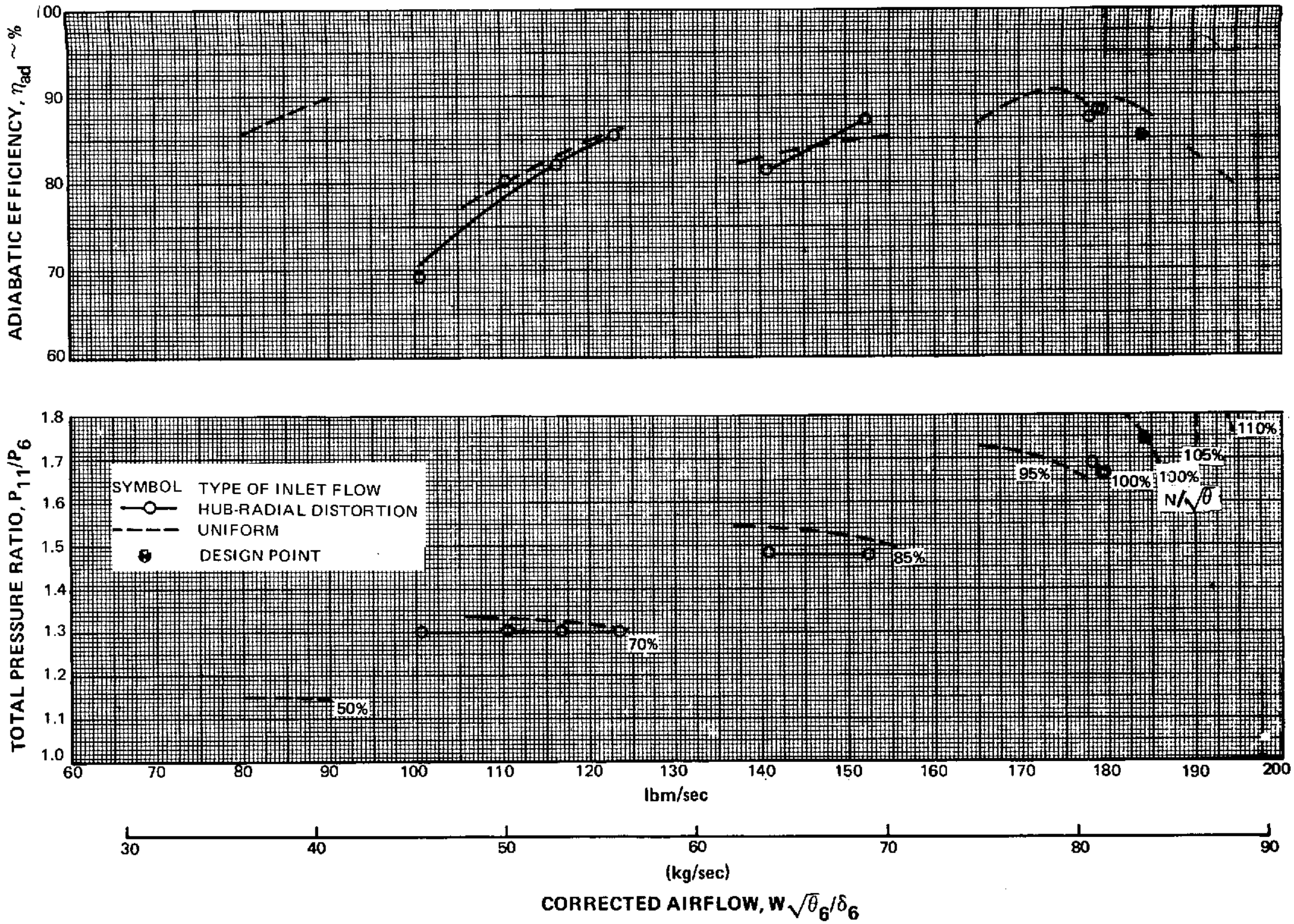


Figure 82 First Stage Performance with Hub Radially Distorted Inlet Flow

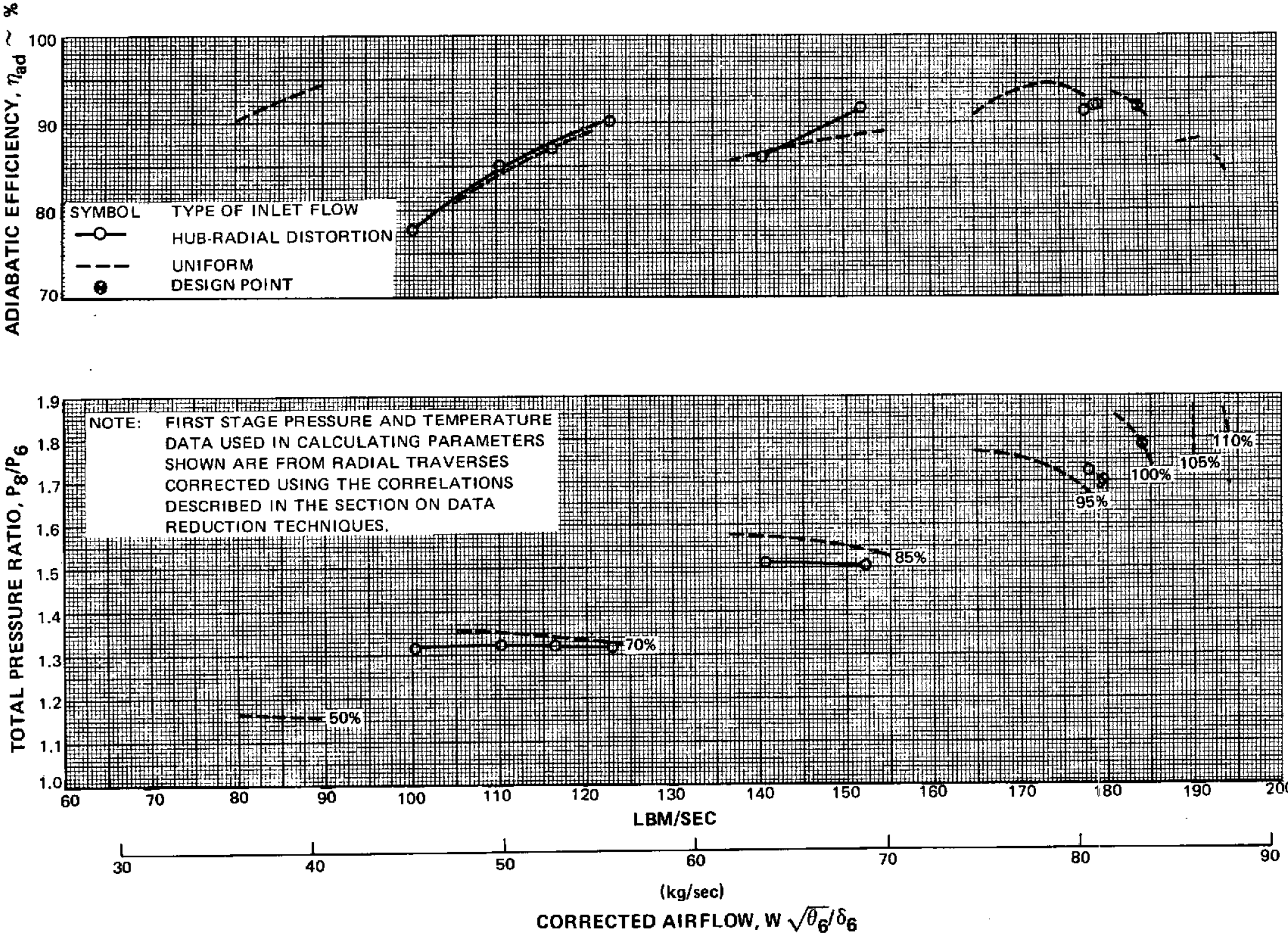


Figure 83 First Rotor Performance with Hub Radially Distorted Inlet Flow

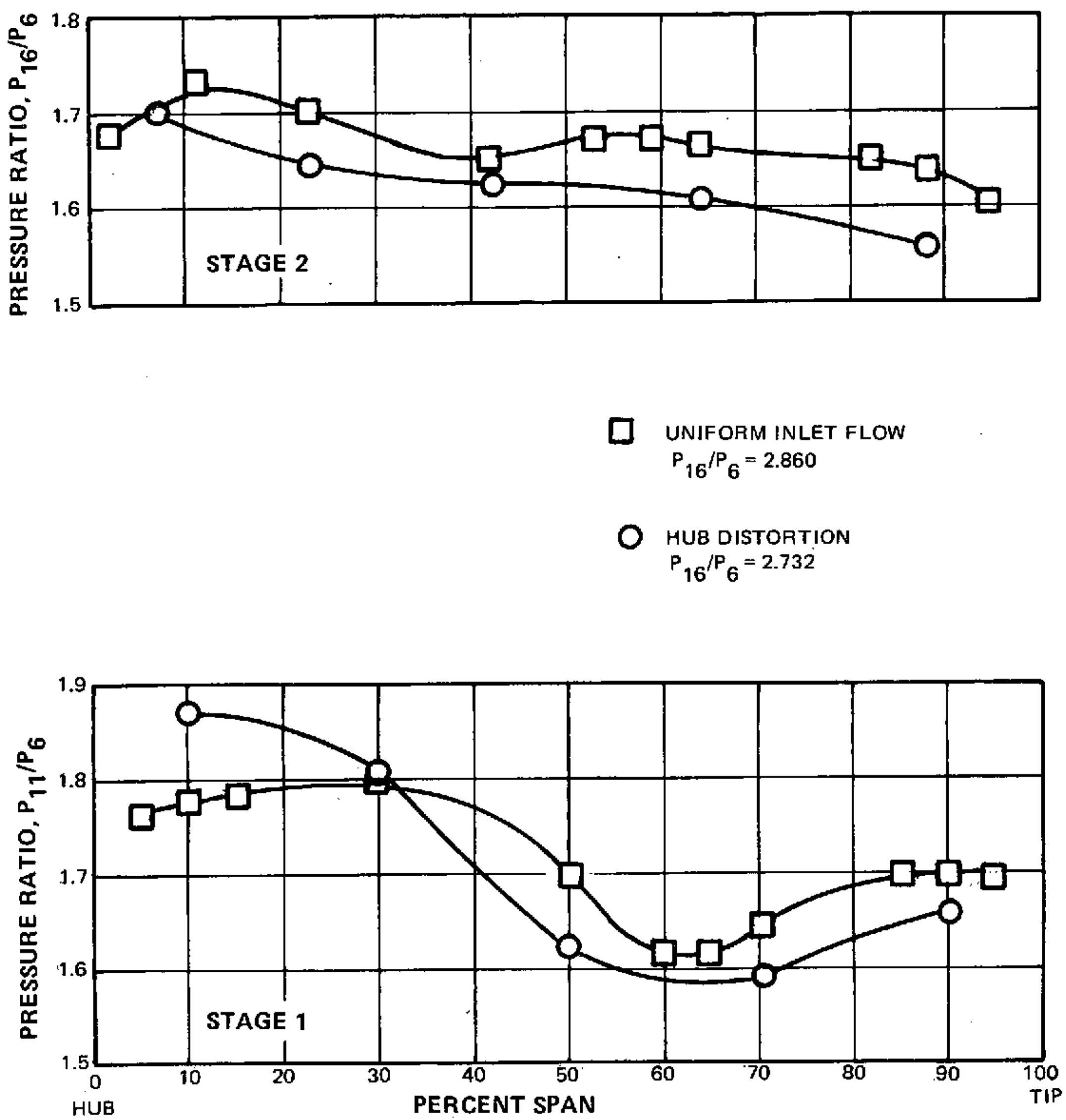


Figure 84 Spanwise Profiles of Stage 1 and Stage 2 Pressure Ratio for Uniform and Hub-Radially Distorted Inlet Flows at Design Speed

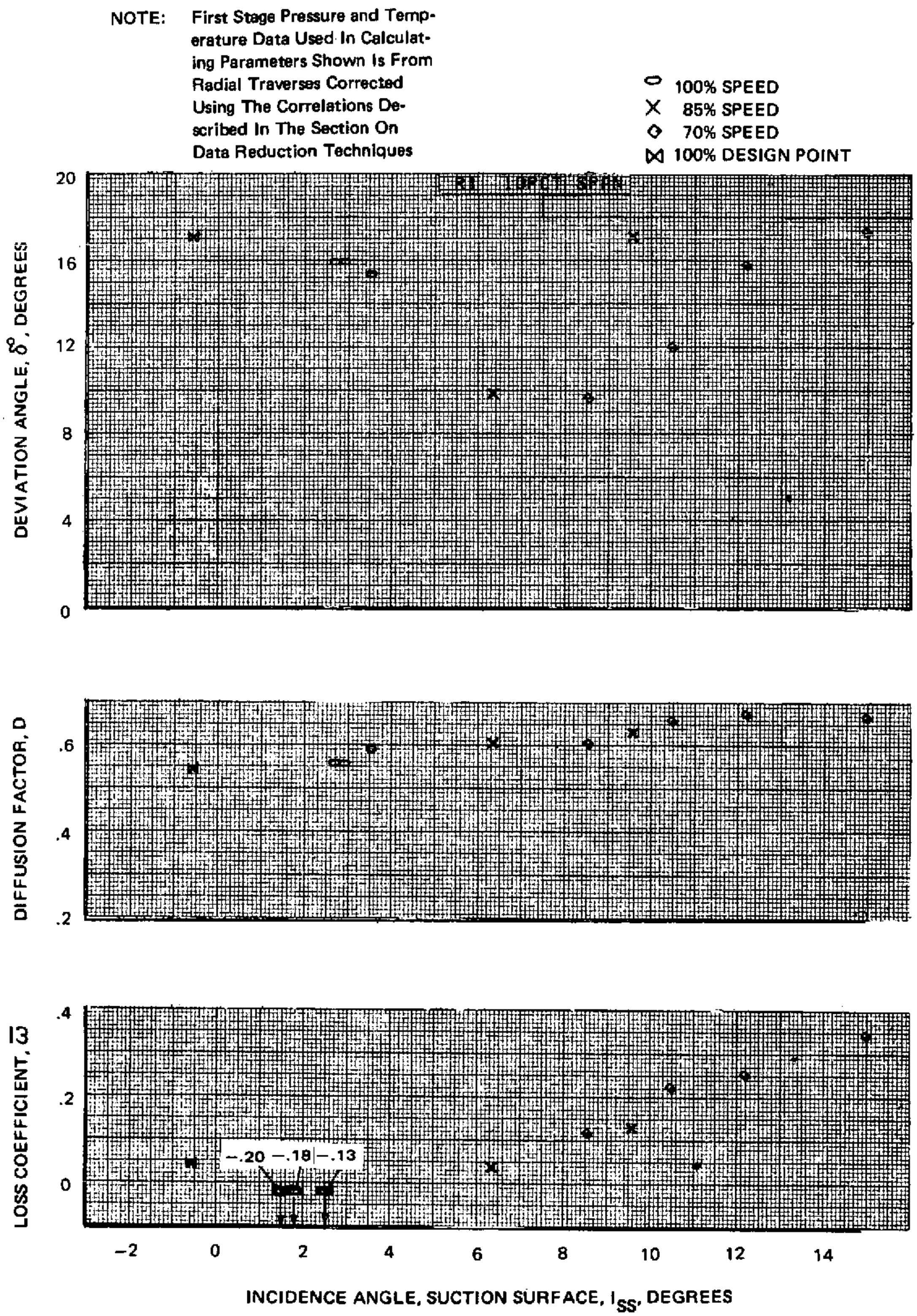


Figure 85a Blade Element Performance With Hub Radial Distortion – Rotor 1 10% Span

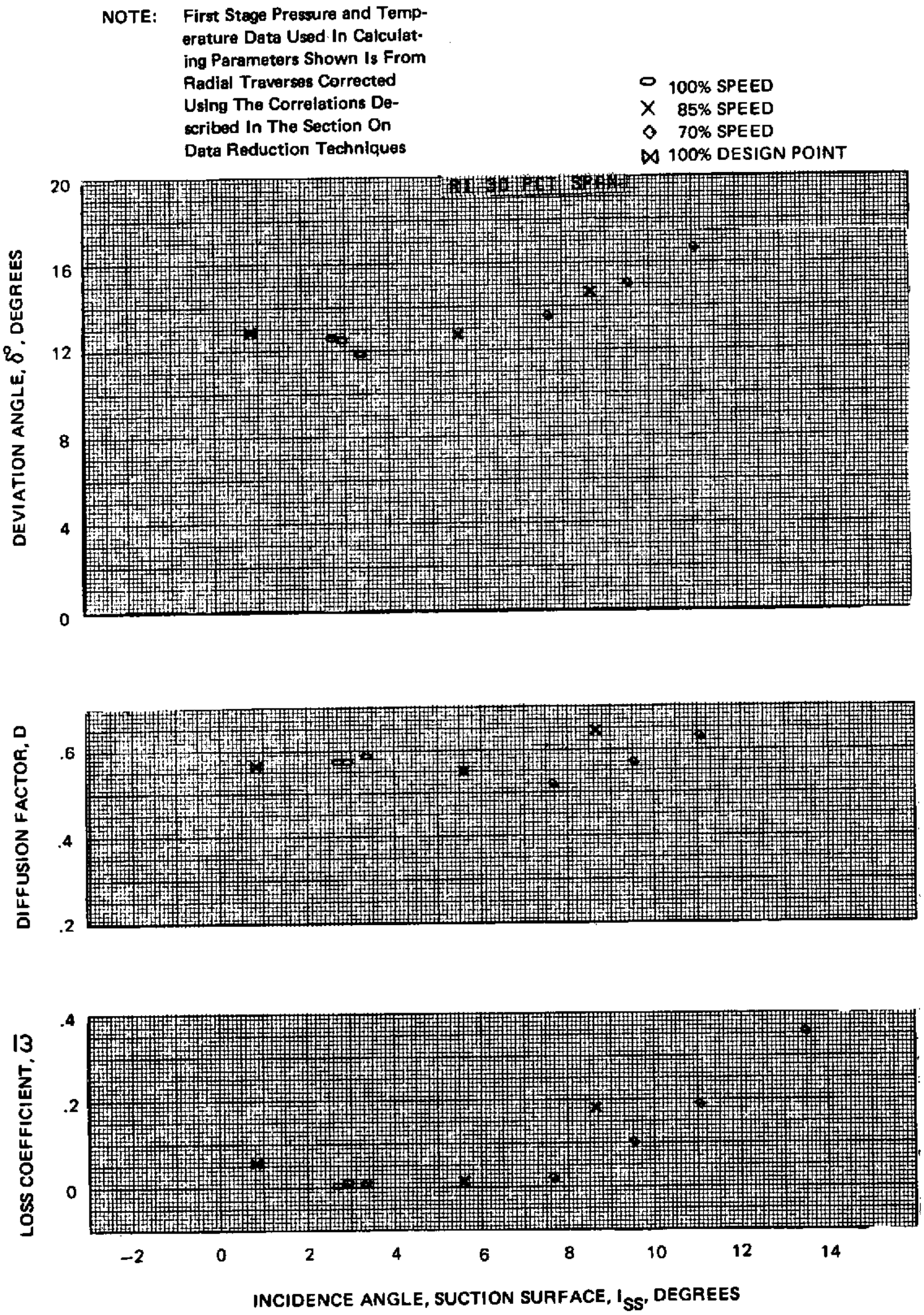


Figure 85b Blade Element Performance With Hub Radial Distortion – Rotor 1 30% Span

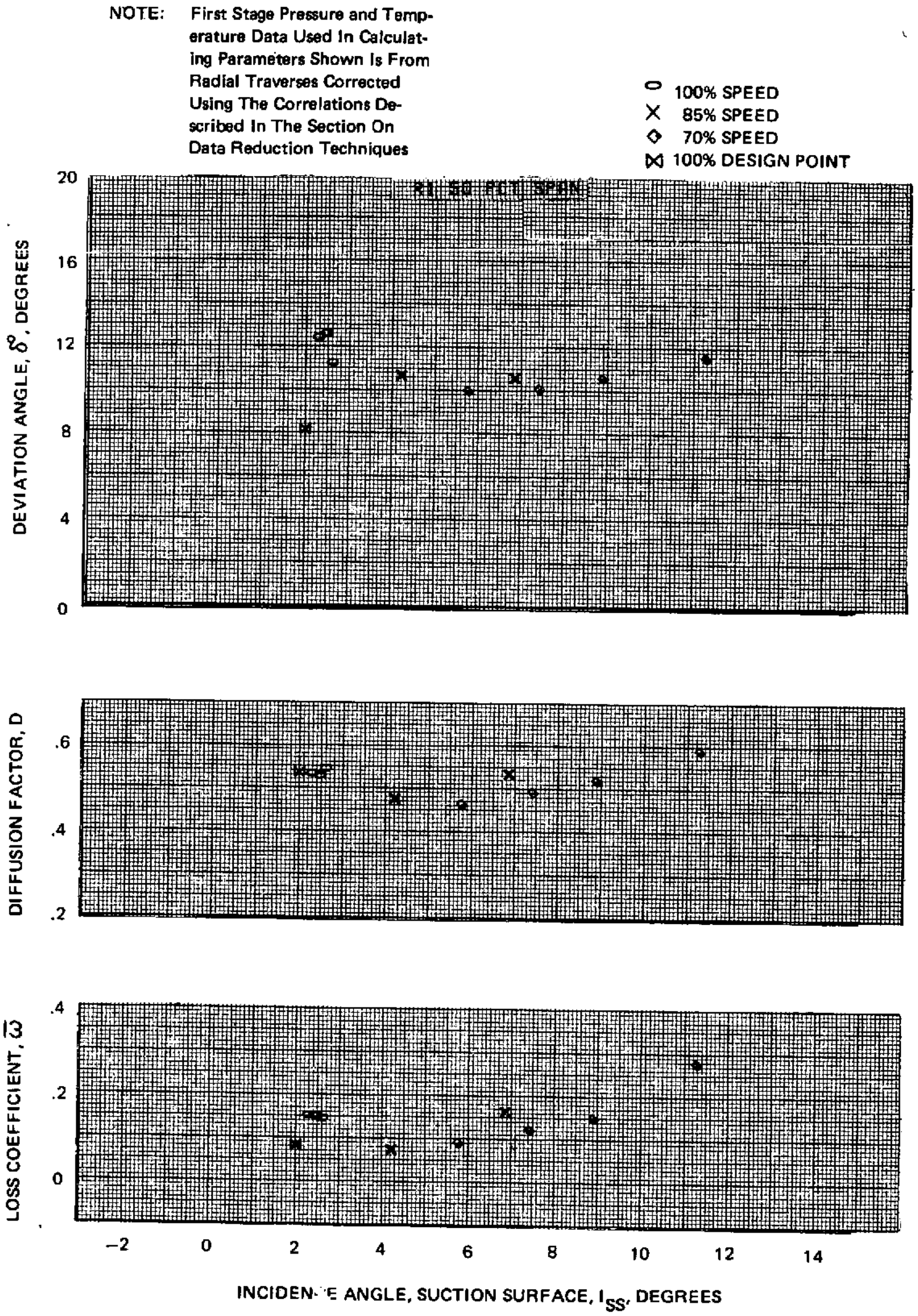


Figure 85c Blade Element Performance With Hub Radial Distortion – Rotor 1
50% Span

NOTE: First Stage Pressure and Temperature Data Used In Calculating Parameters Shown Is From Radial Traverses Corrected Using The Correlations Described In The Section On Data Reduction Techniques

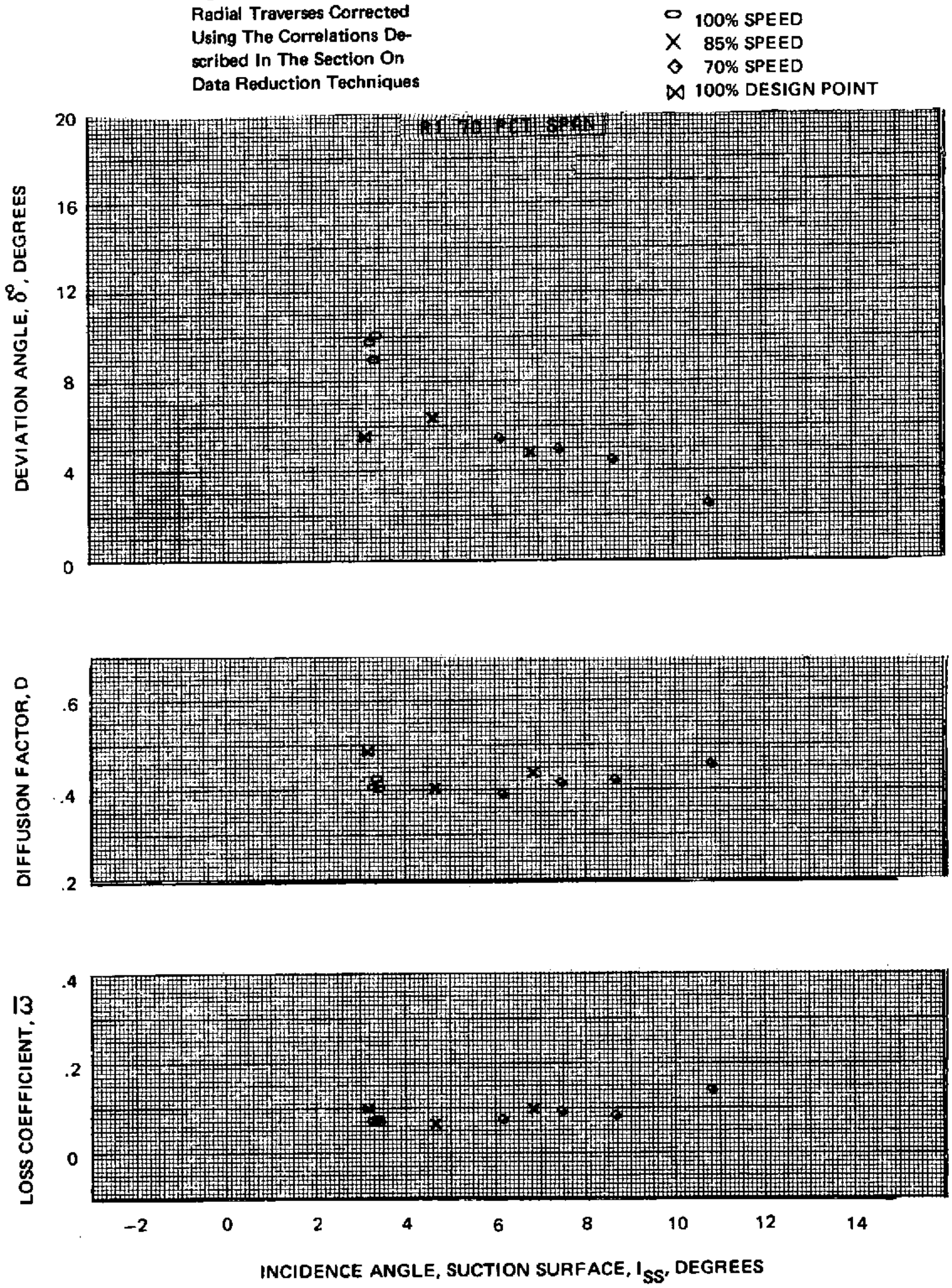


Figure 85d Blade Element Performance With Hub Radial Distortion – Rotor 1 70% Span

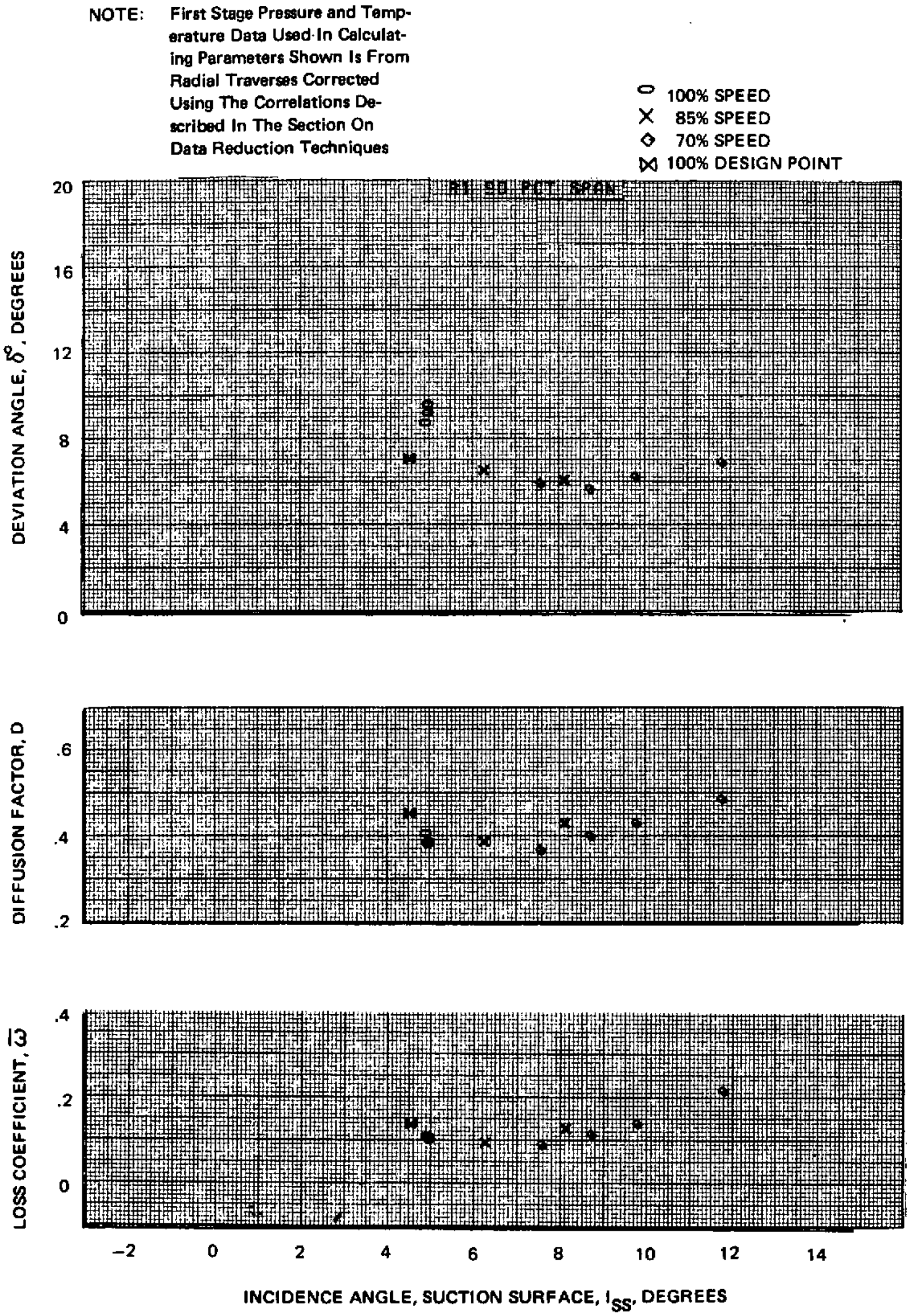


Figure 85e Blade Element Performance With Hub Radial Distortion – Rotor 1 90% Span

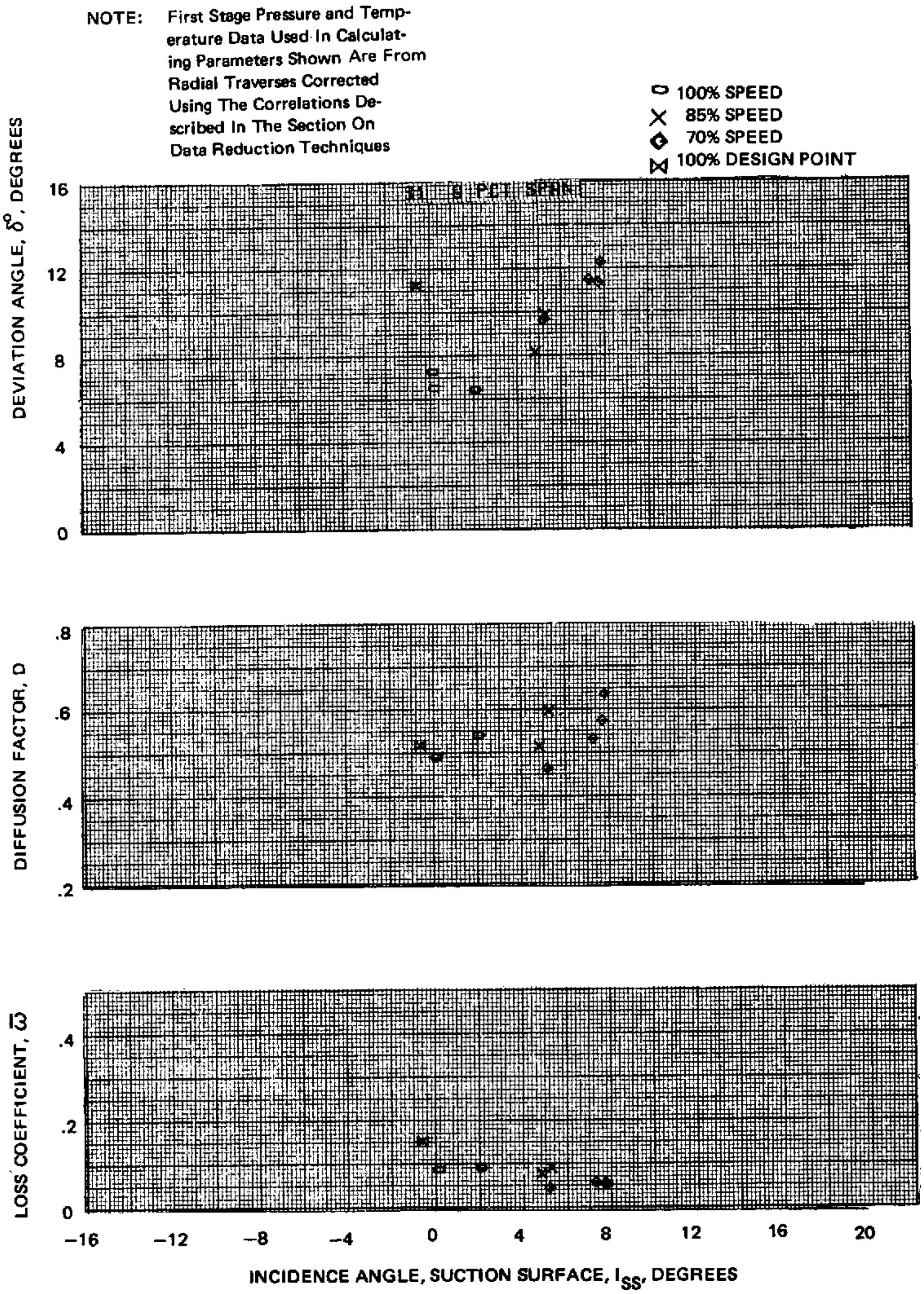


Figure 86a Blade Element Performance With Hub Radial Distortion – Stator 1
9% Span

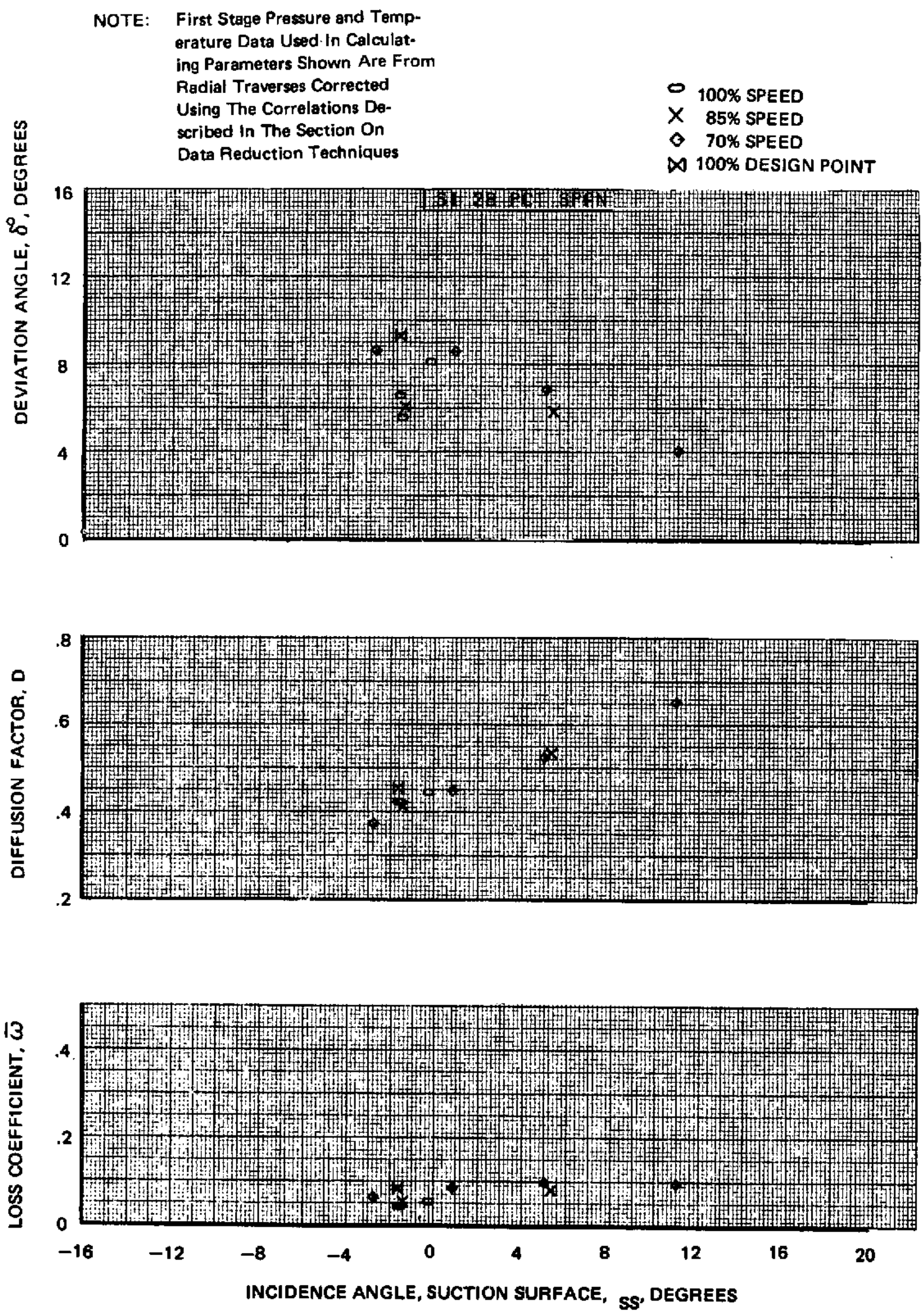


Figure 86b Blade Element Performance With Hub Radial Distortion – Stator 1
28% Span

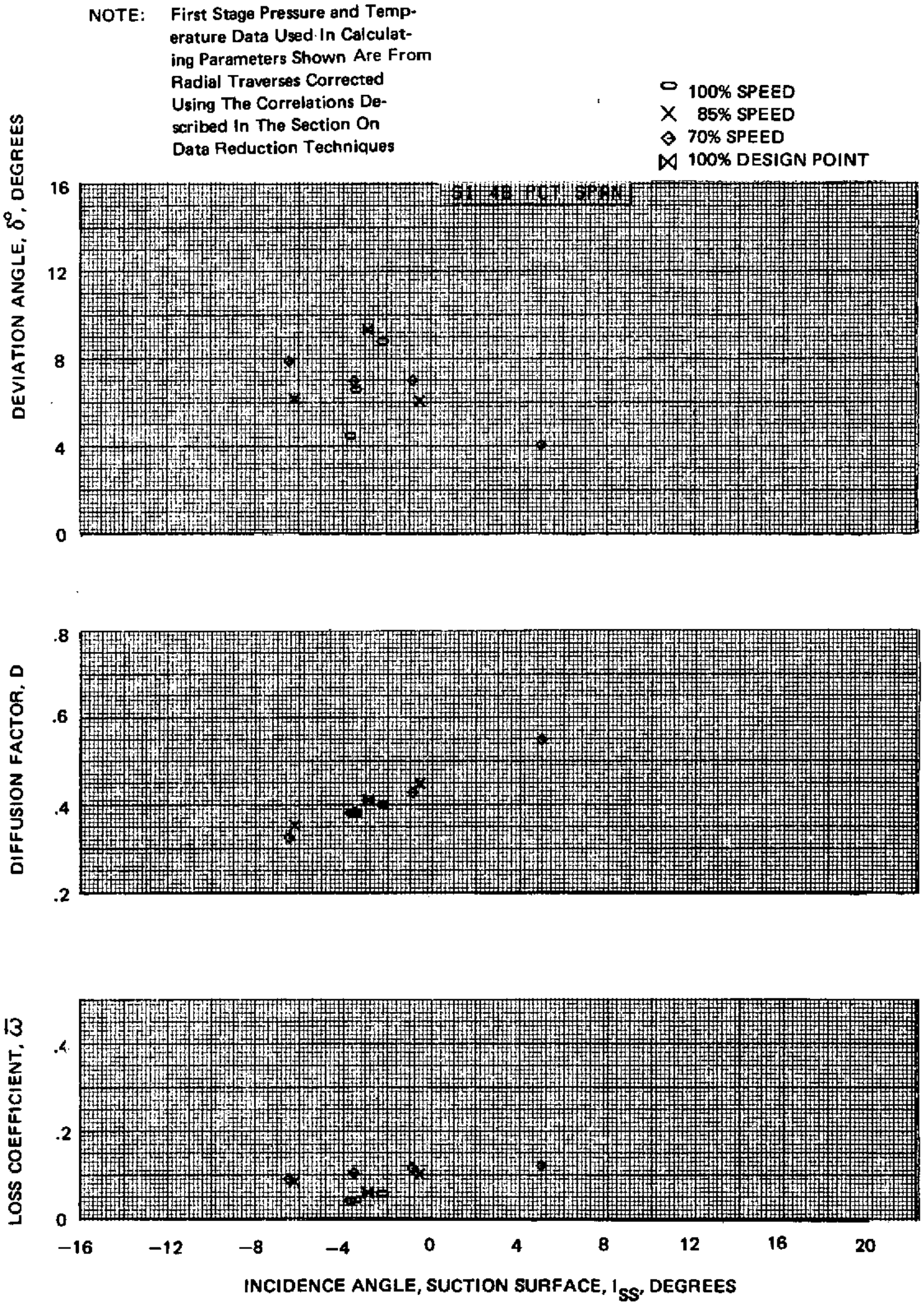


Figure 86c Blade Element Performance With Hub Radial Distortion – Stator 1 48% Span

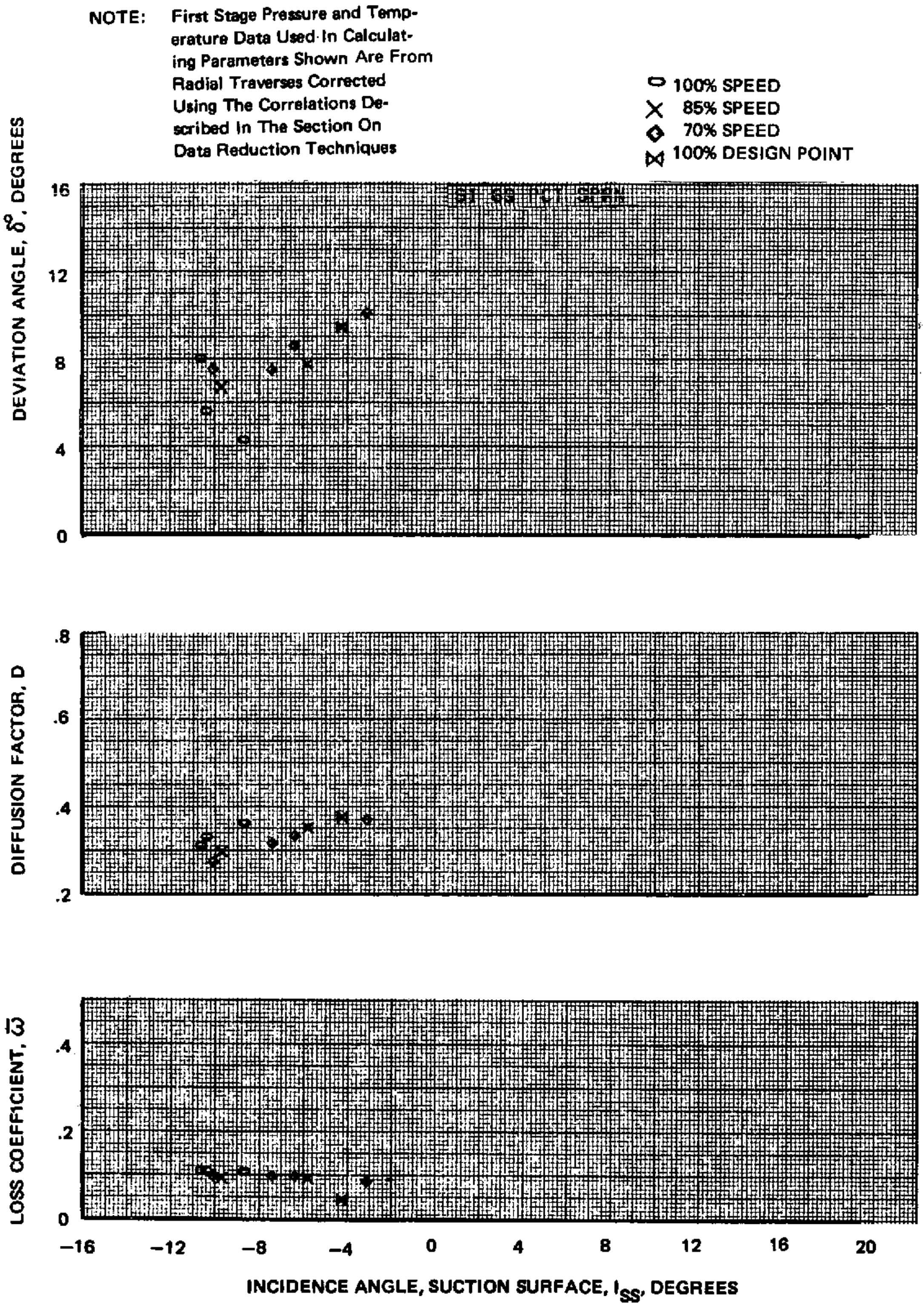


Figure 86d Blade Element Performance With Hub Radial Distortion – Stator 1
69% Span

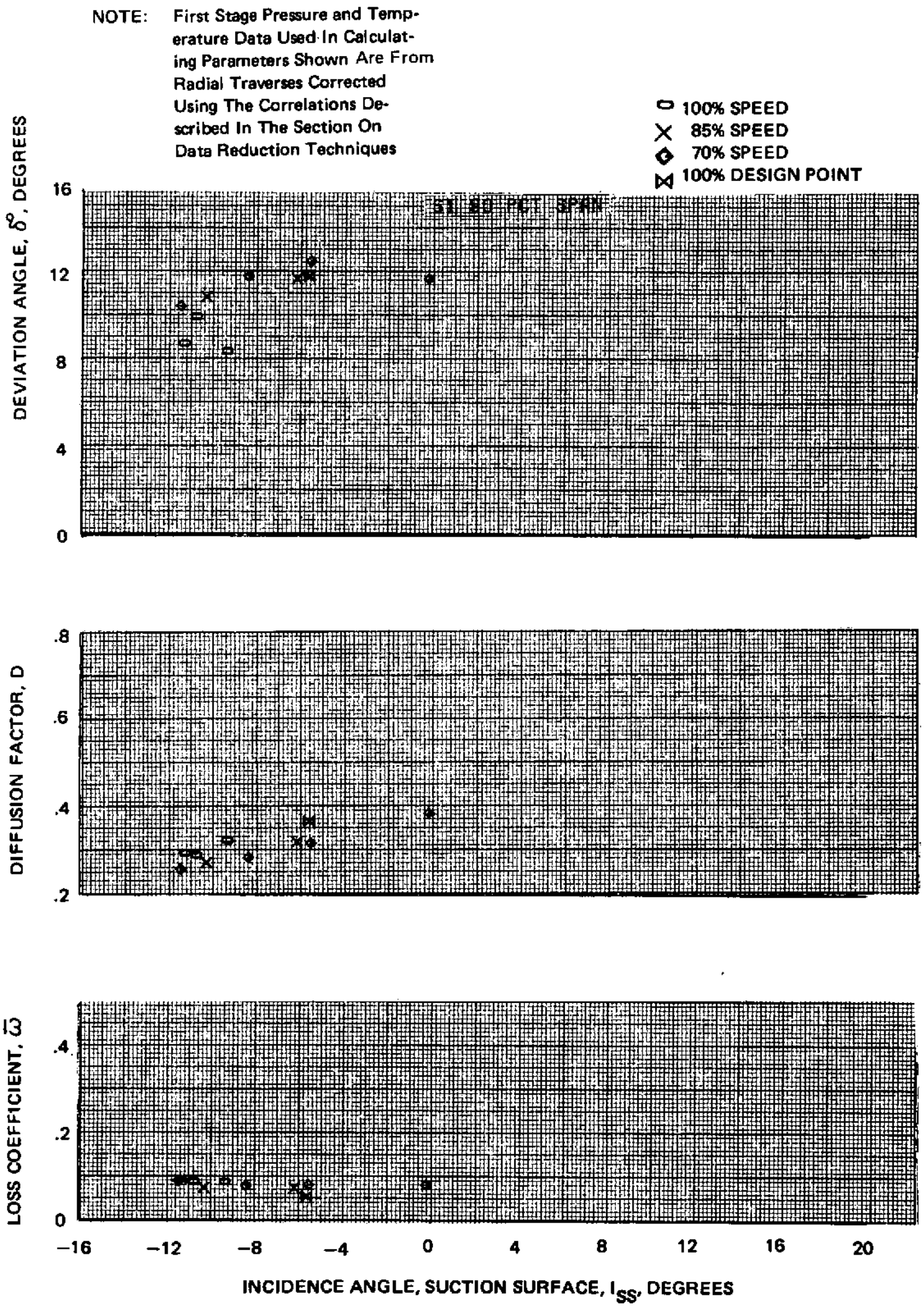


Figure 86e Blade Element Performance With Hub Radial Distortion – Stator 1 90% Span

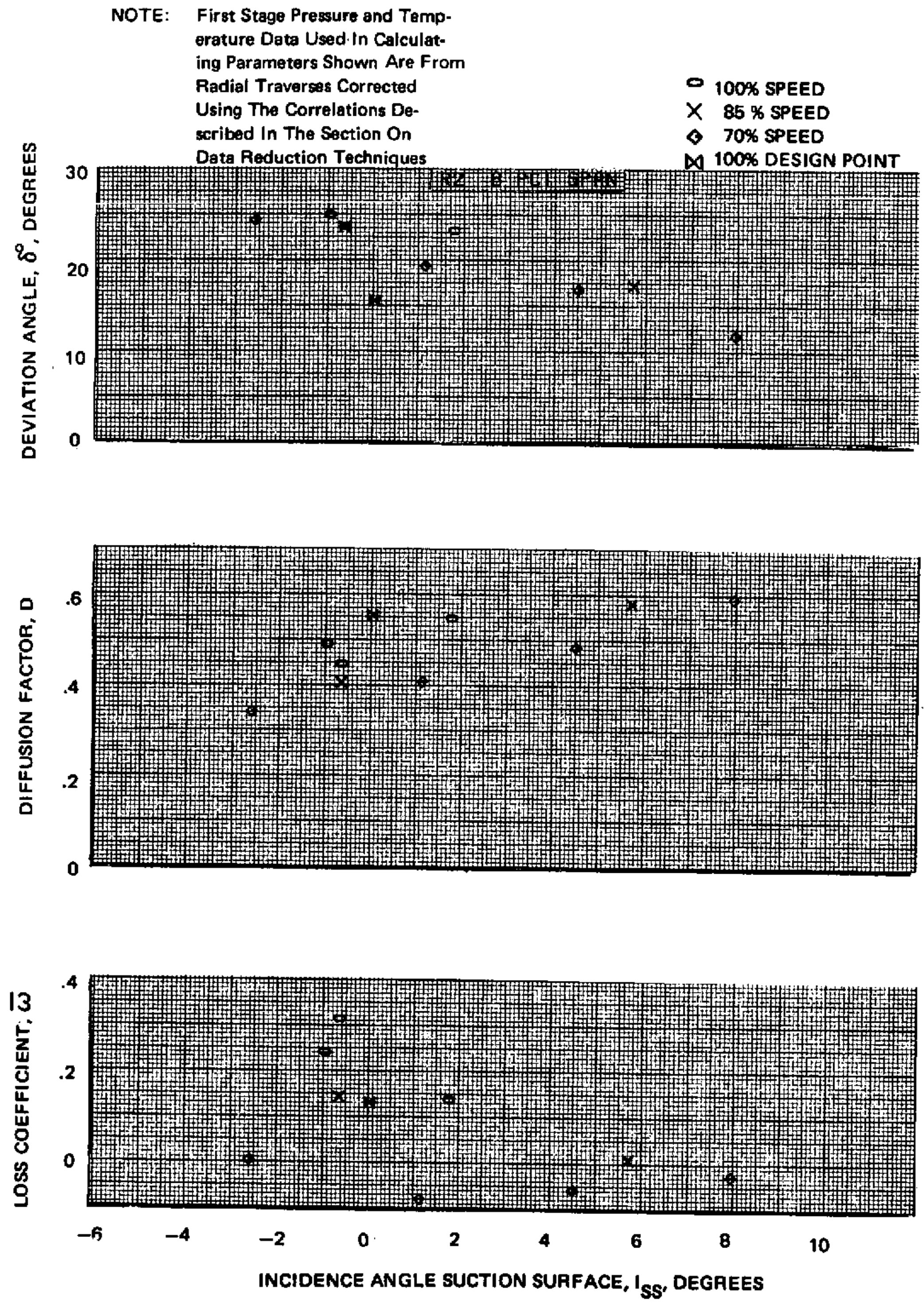


Figure 87a Blade Element Performance With Hub Radial Distortion – Rotor 2
8% Span

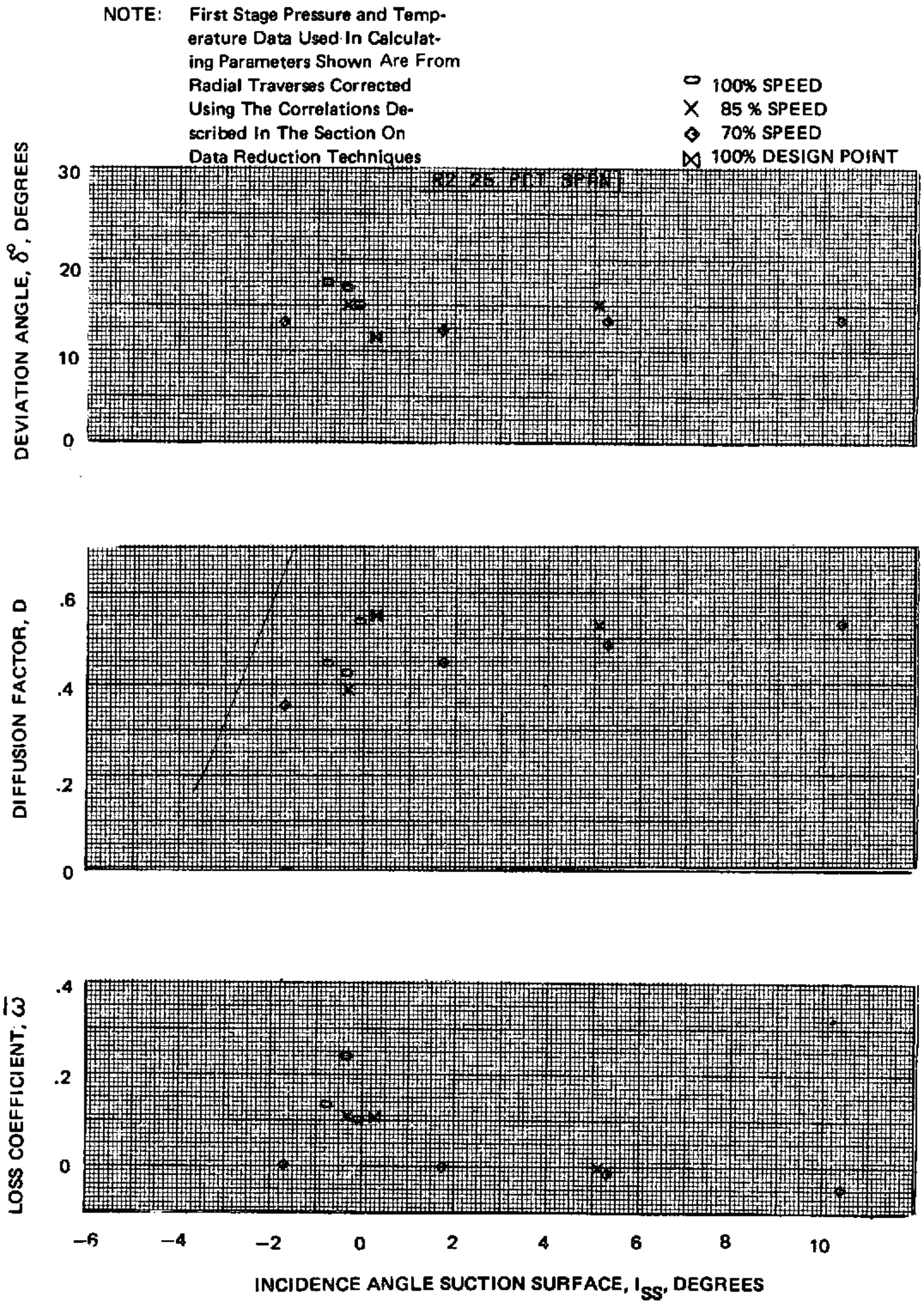


Figure 87b Blade Element Performance With Hub Radial Distortion – Rotor 2 25% Span

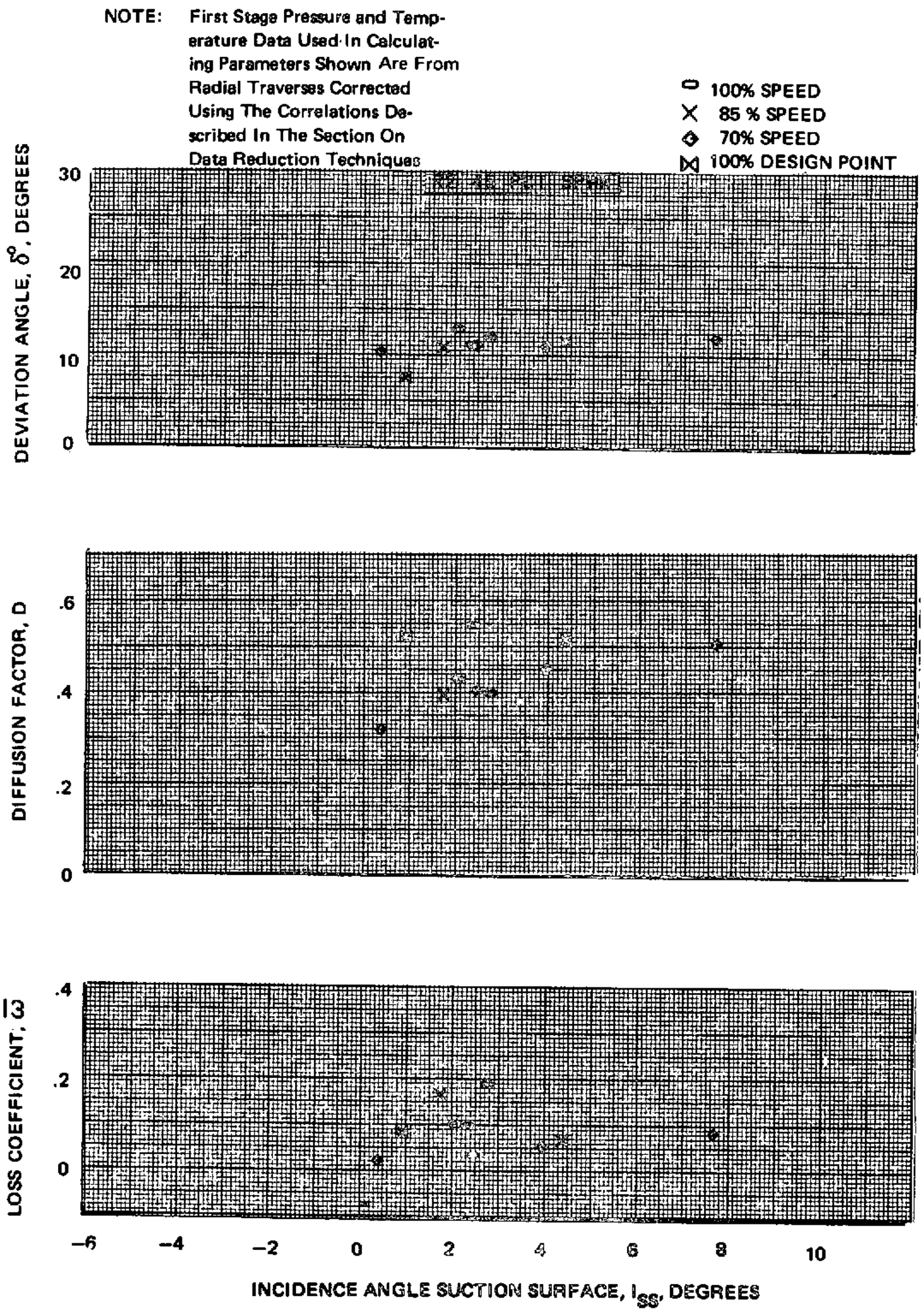


Figure 87c Blade Element Performance With Hub Radial Distortion – Rotor 2
45% Span

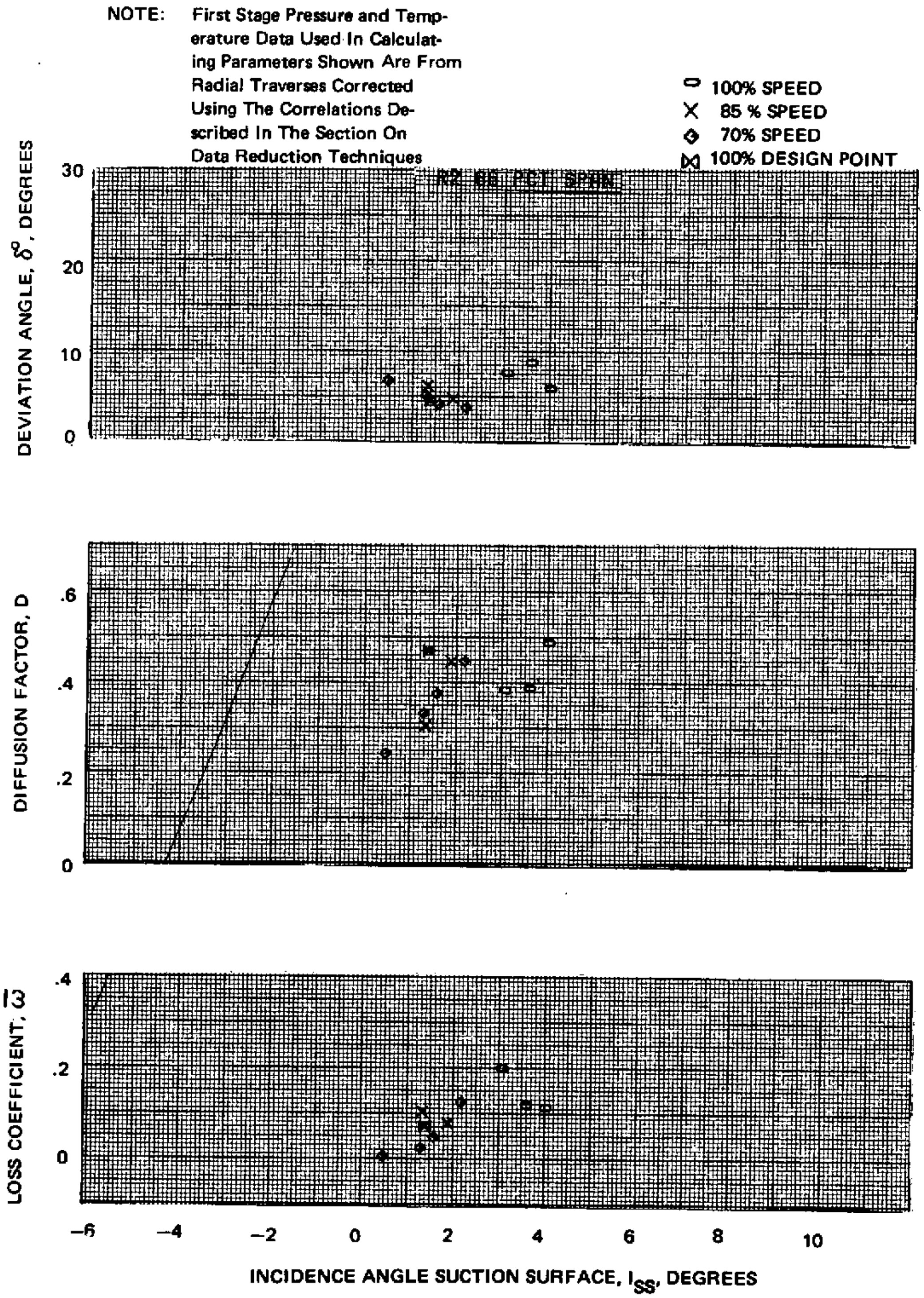


Figure 87d Blade Element Performance With Hub Radial Distortion – Rotor 2
66% Span

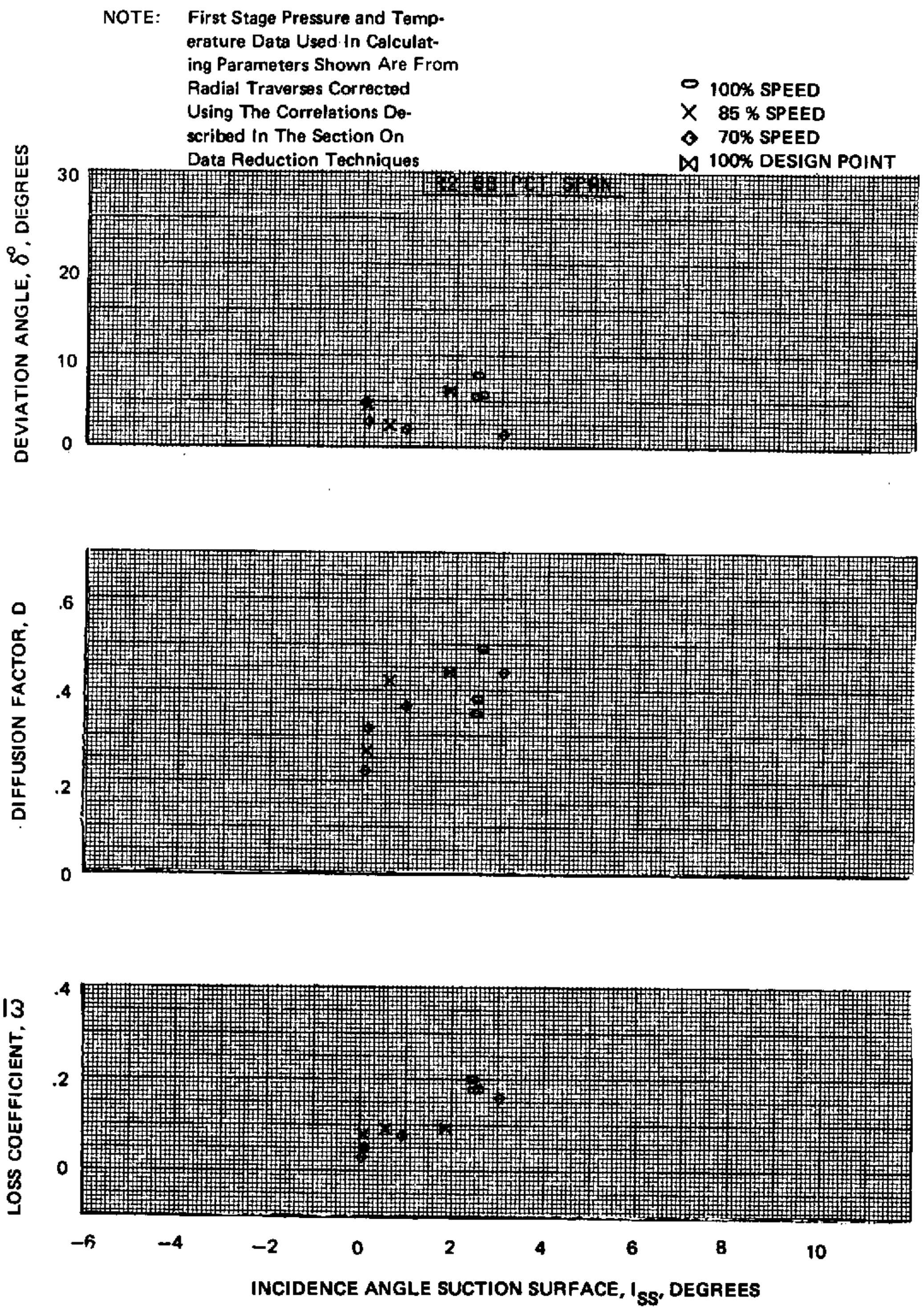


Figure 87e Blade Element Performance With Hub Radial Distortion – Rotor 2 88% Span

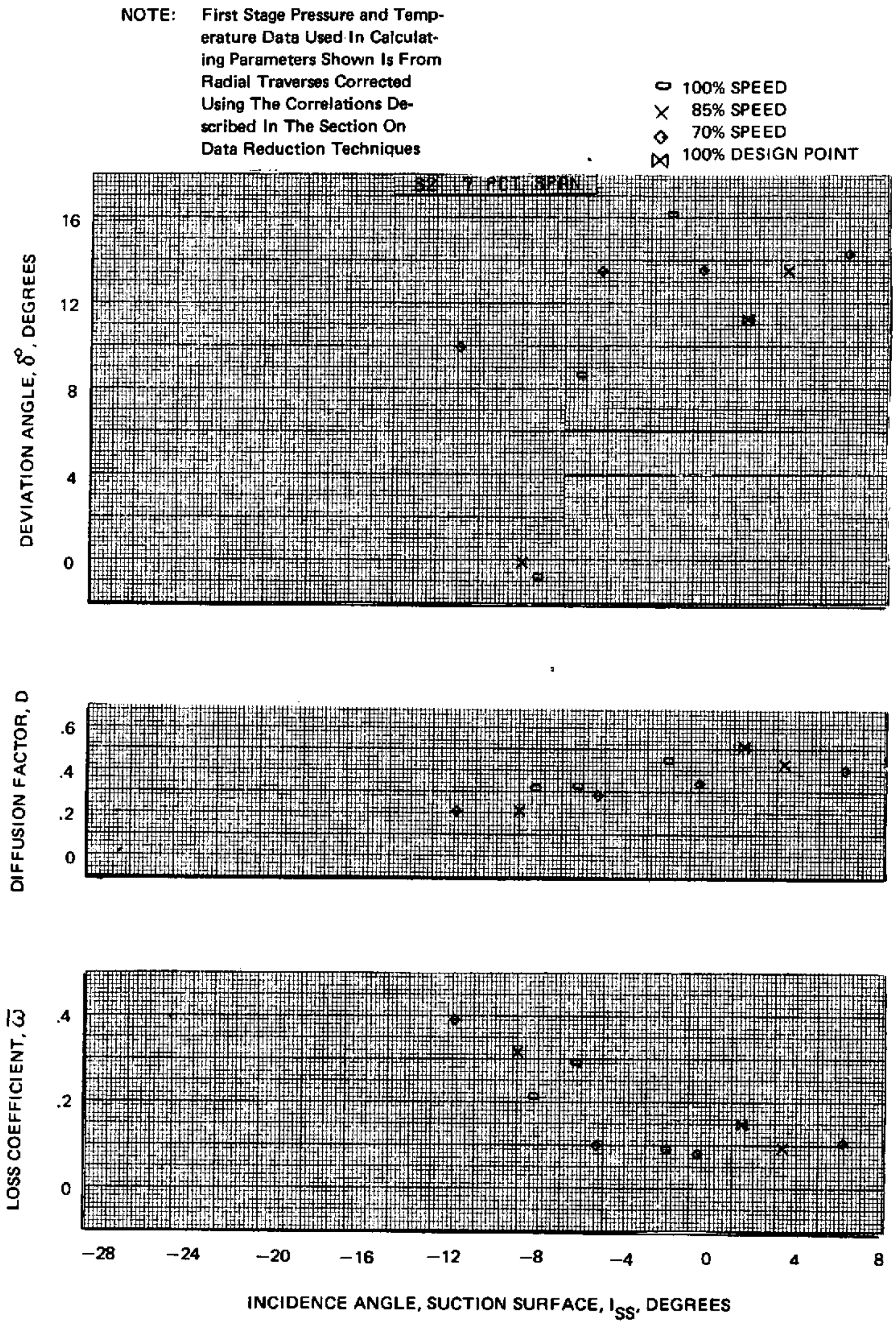


Figure 88a Blade Element Performance With Hub Radial Distortion – Stator 2 7% Span

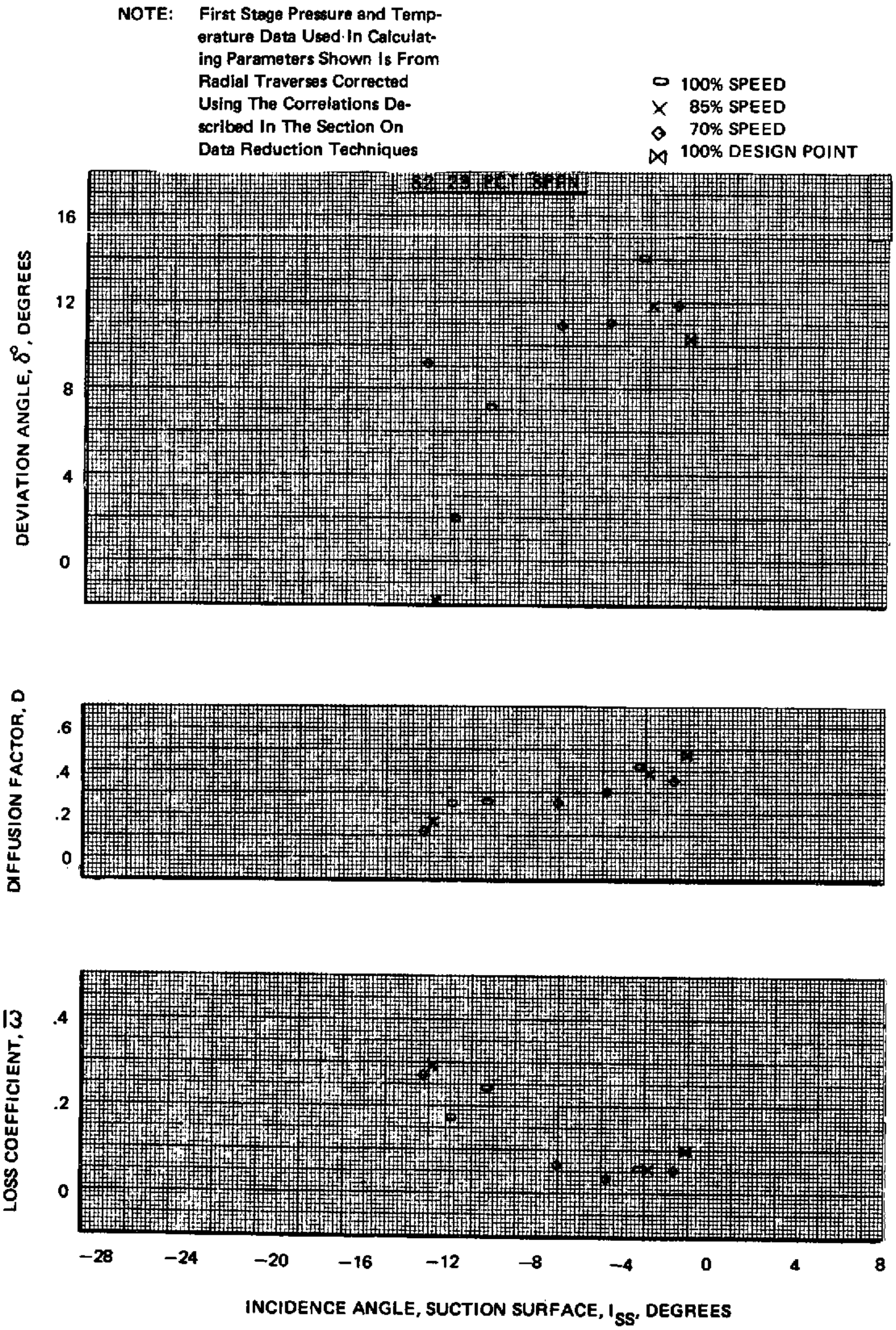


Figure 88b Blade Element Performance With Hub Radial Distortion – Stator 2 23% Span

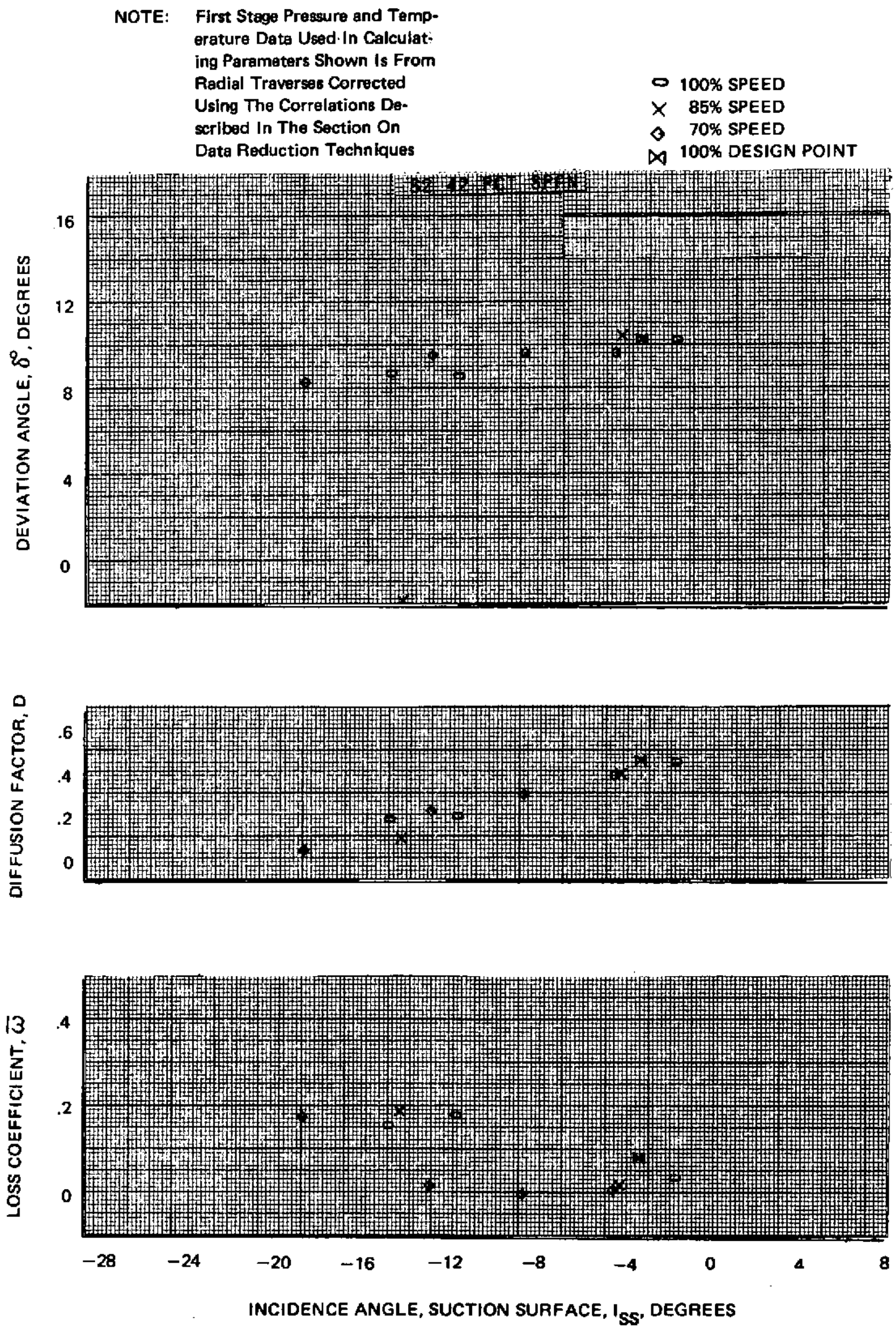


Figure 88c Blade Element Performance With Hub Radial Distortion – Stator 2 42% Span

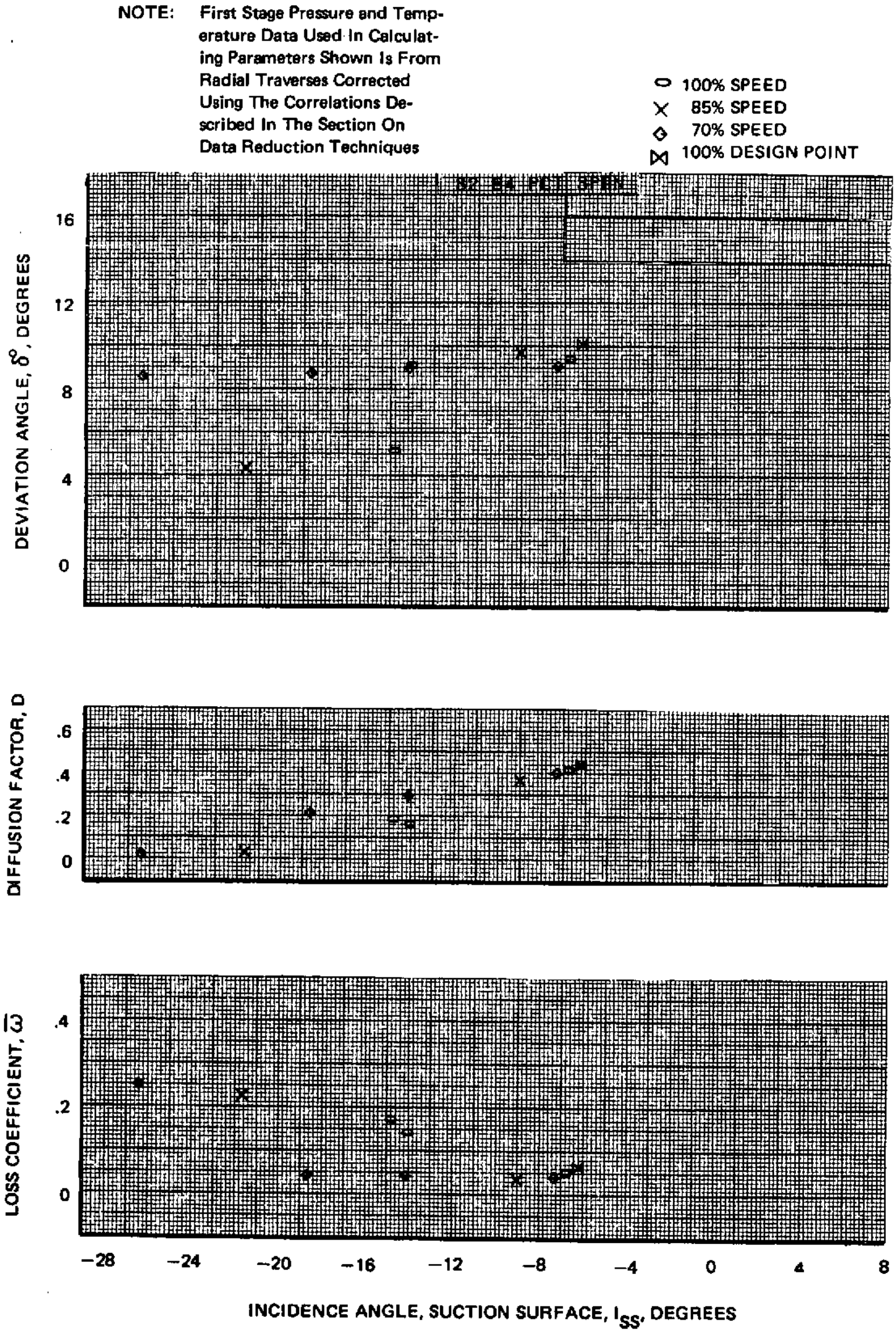


Figure 88d Blade Element Performance With Hub Radial Distortion – Stator 2 64% Span

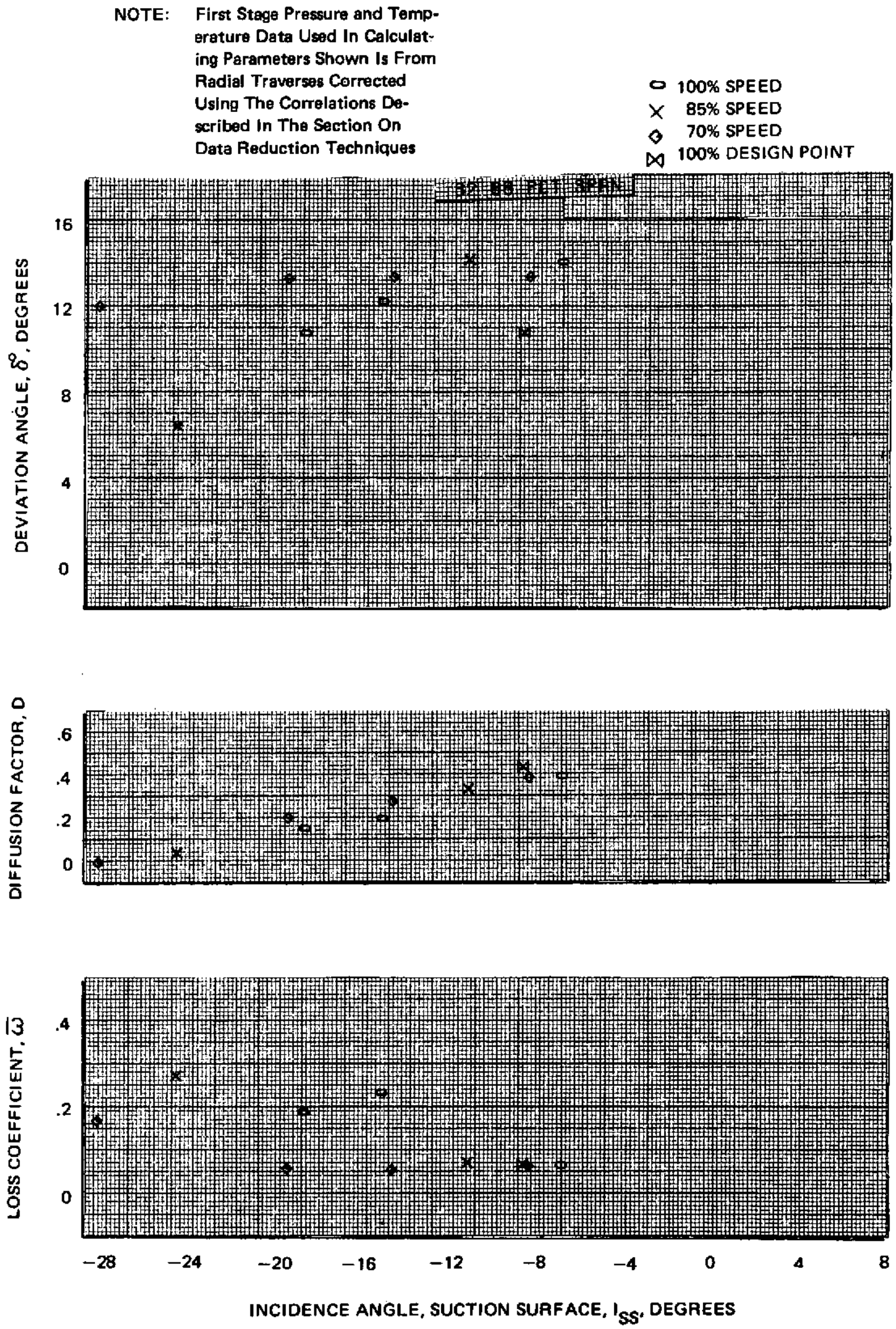


Figure 88e Blade Element Performance With Hub Radial Distortion – Stator 2 88% Span

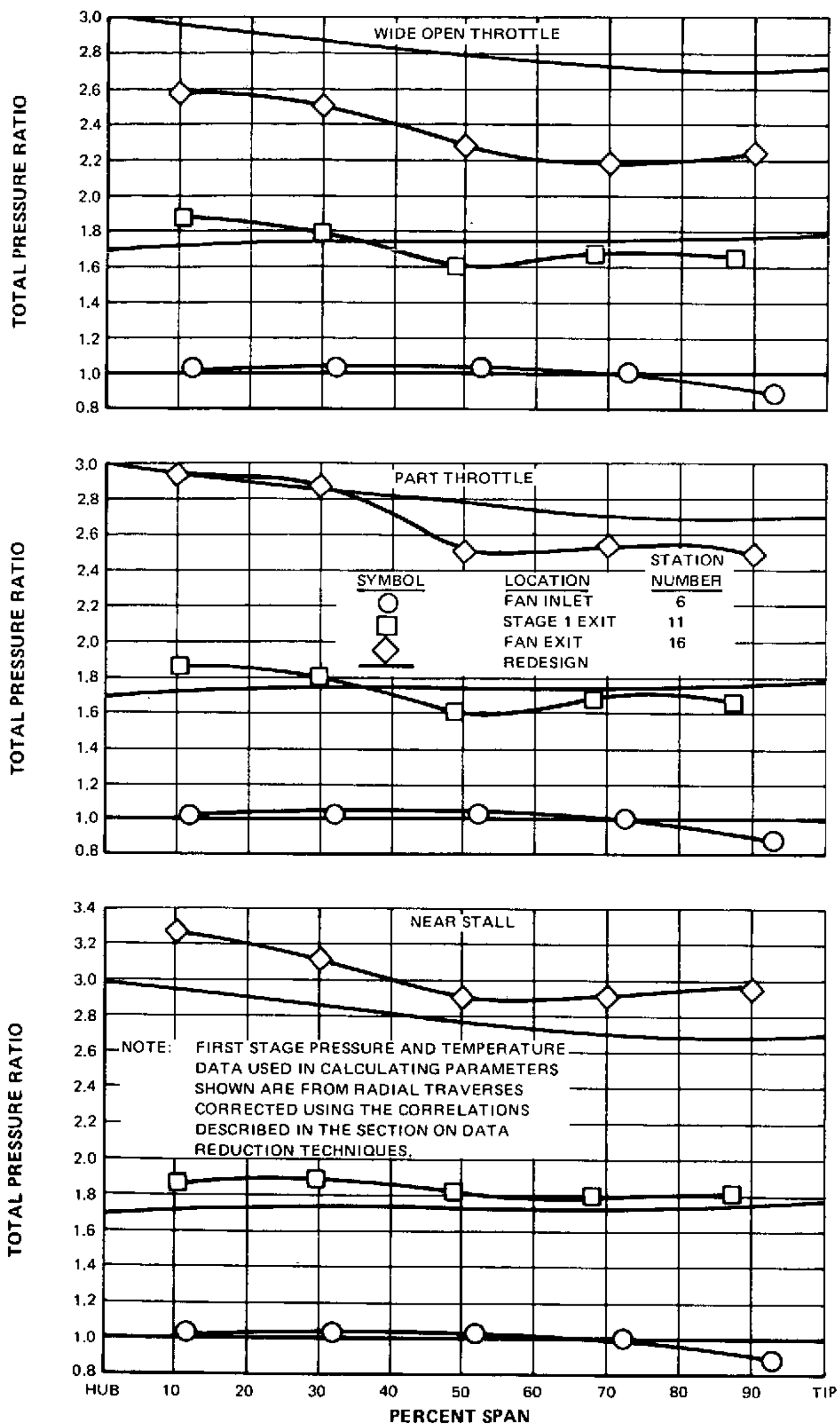


Figure 89 Total Pressure Ratio versus Span at Fan Inlet, First Stage Exit, and Fan Exit for Tip Radially Distorted Inlet Flow

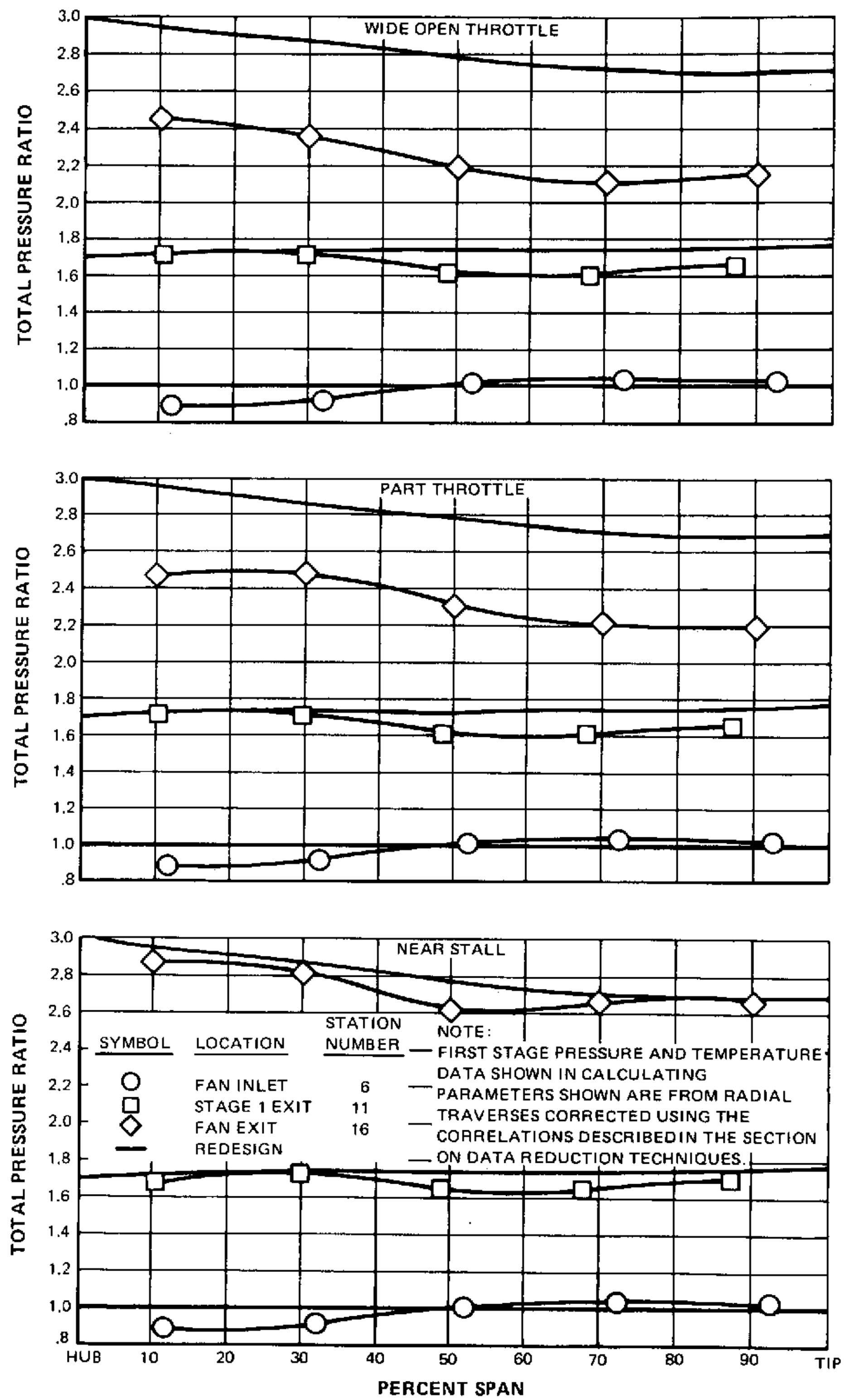


Figure 90 Total Pressure Ratio versus Span at Fan Inlet, First Stage Exit, and Fan Exit for Hub Radially Distorted Inlet Flow

C-3

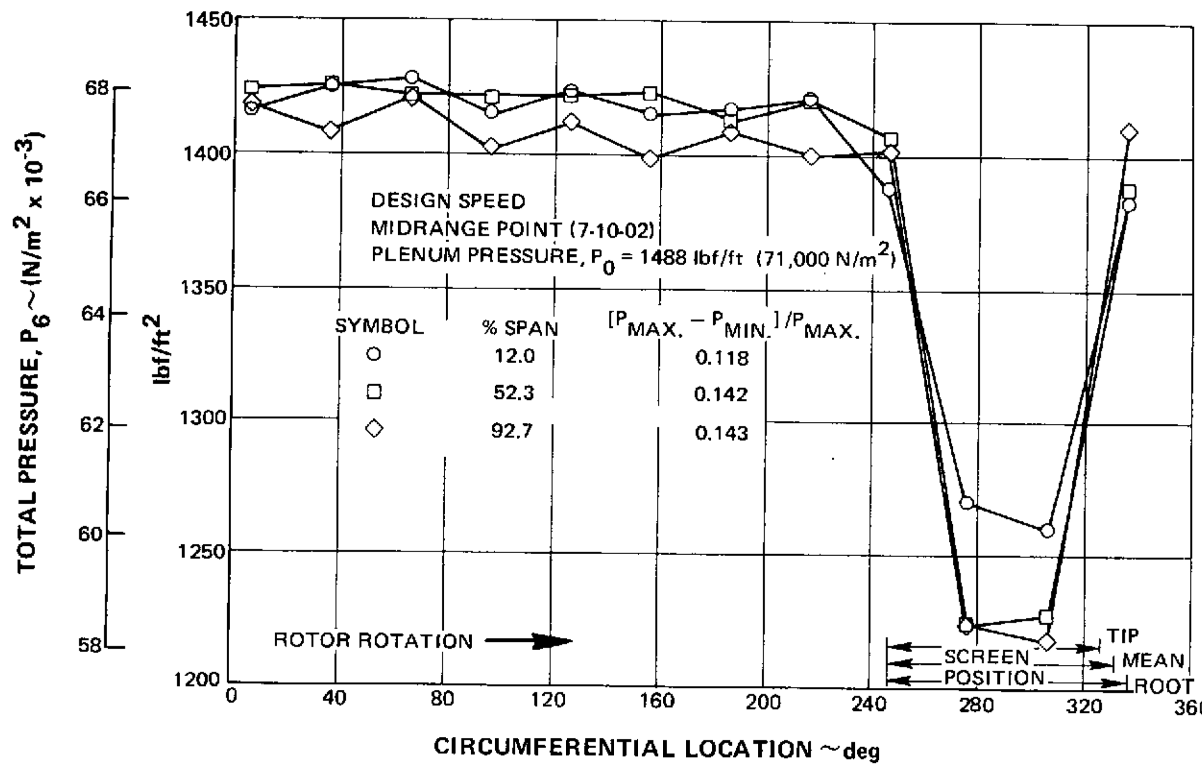


Figure 91 Circumferential Distributions of Total Pressure at Fan Inlet for Circumferentially Distorted Inlet Flow

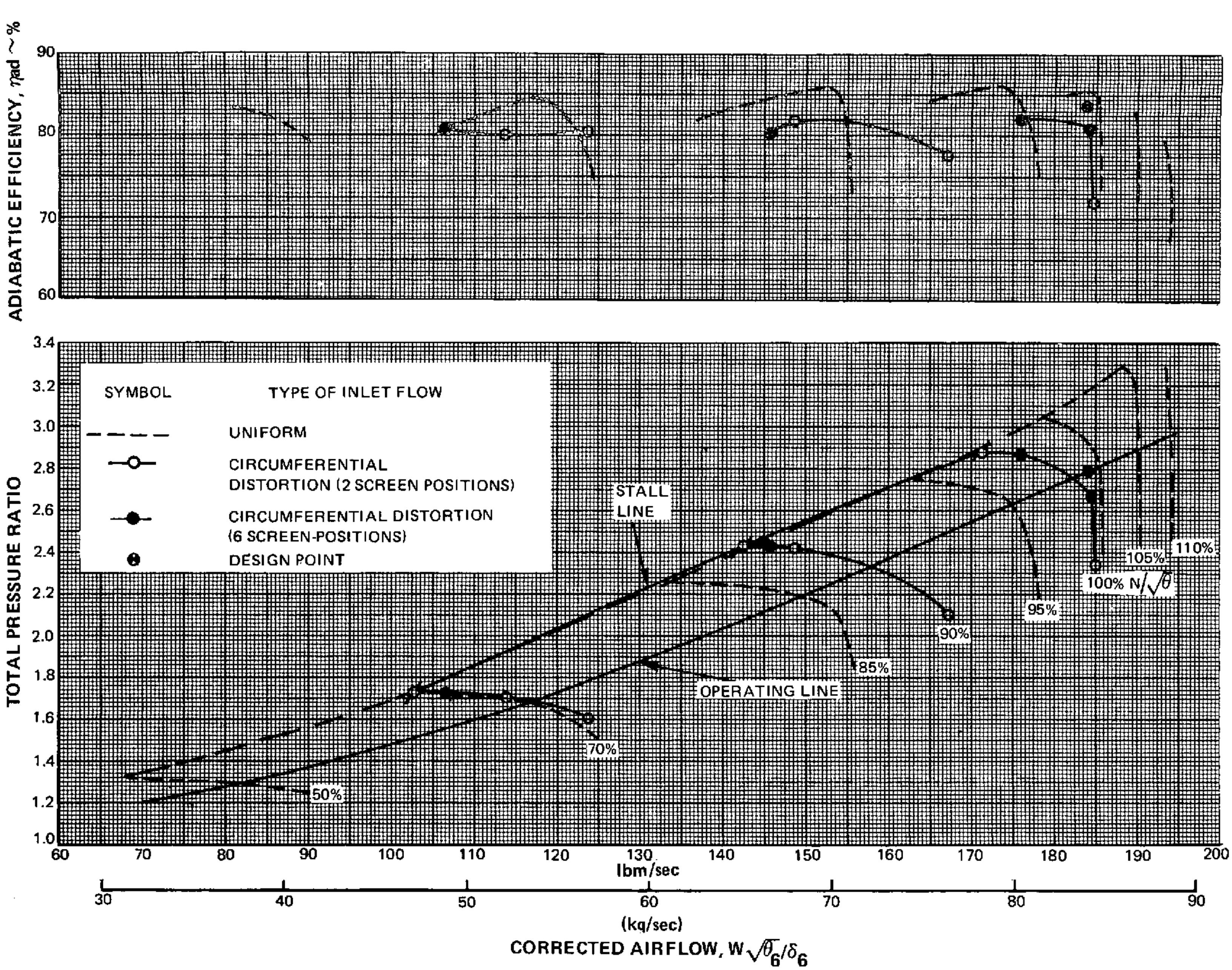


Figure 92 Fan Overall Performance with Circumferentially Distorted Inlet Flow

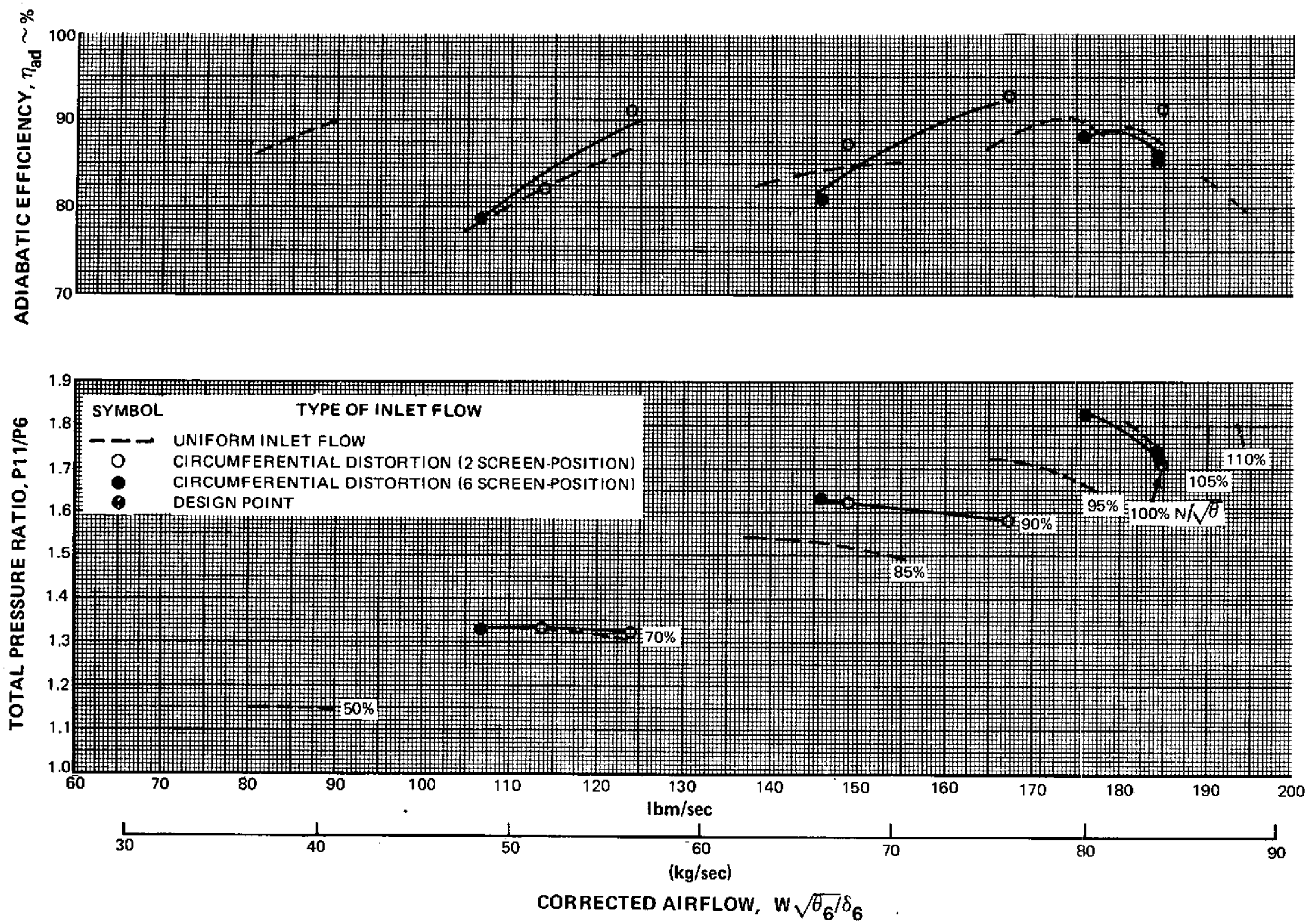


Figure 93 First Stage Performance with Circumferentially Distorted Inlet Flow

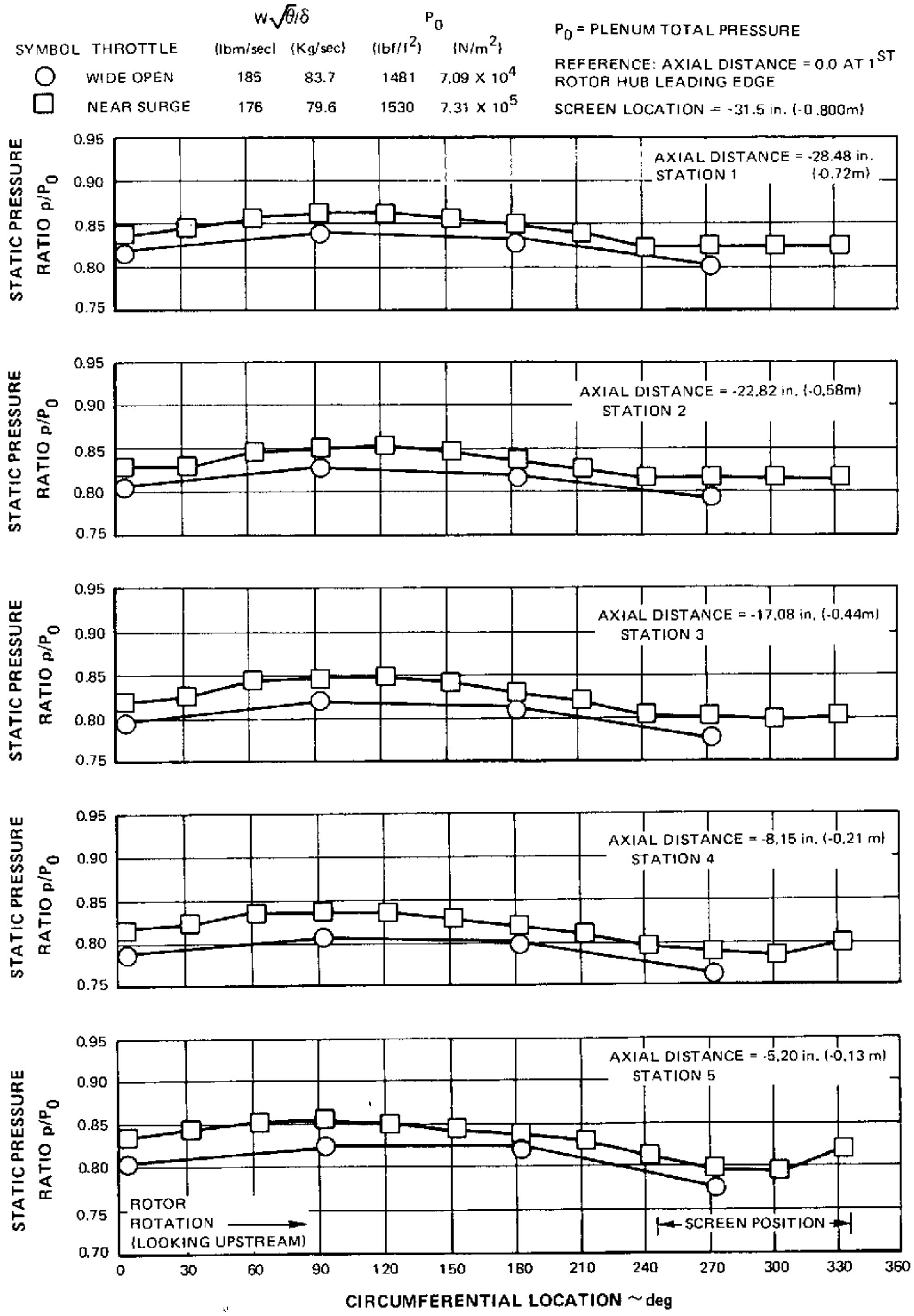


Figure 94 Circumferential Distributions of Fan Inlet Static Pressure at the Hub for Tests with Circumferentially Distorted Inlet Flow at Design Speed

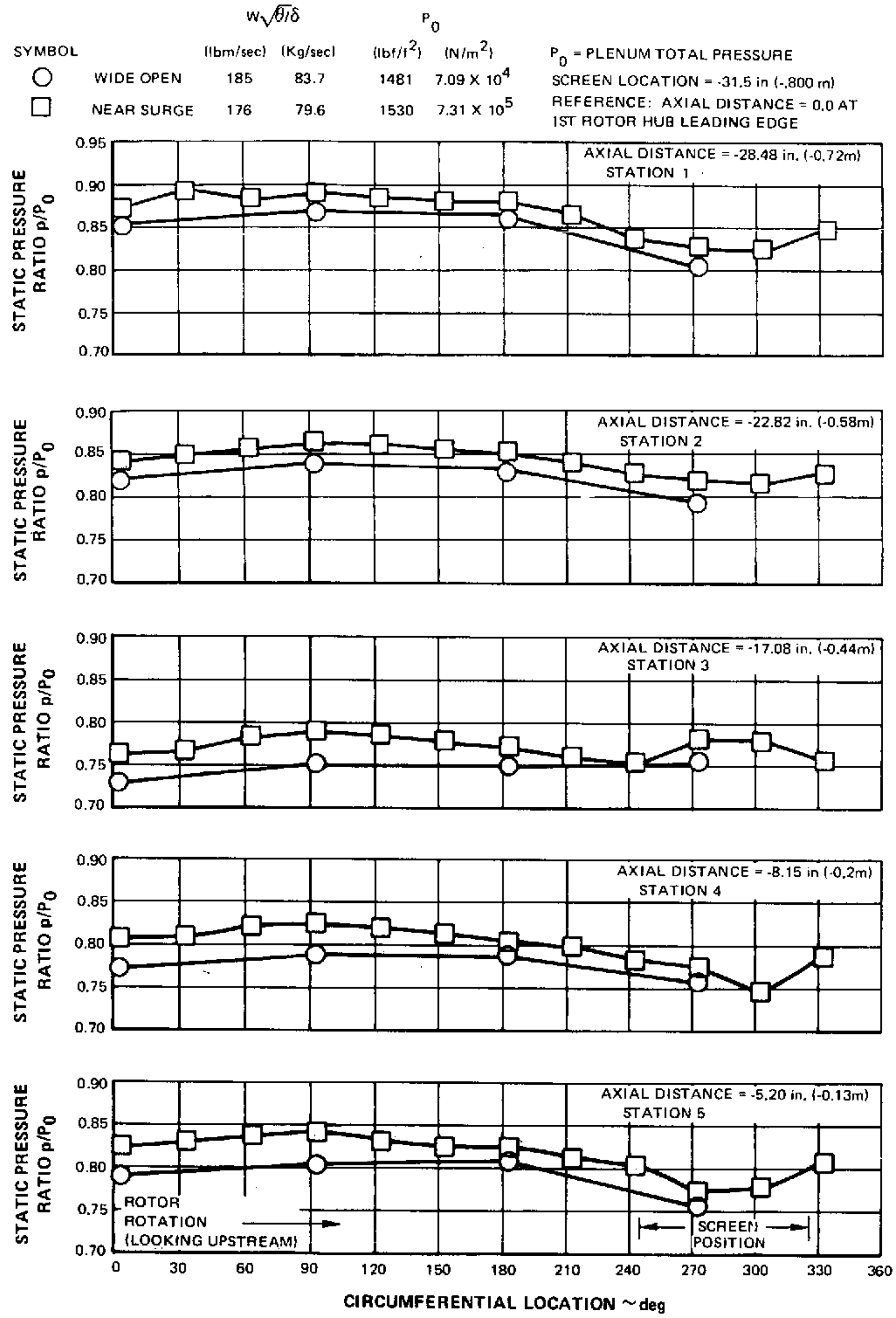


Figure 95 Circumferential Distributions of Fan Inlet Static Pressure at the Tip for Tests with Circumferentially Distorted Inlet Flow at Design Speed

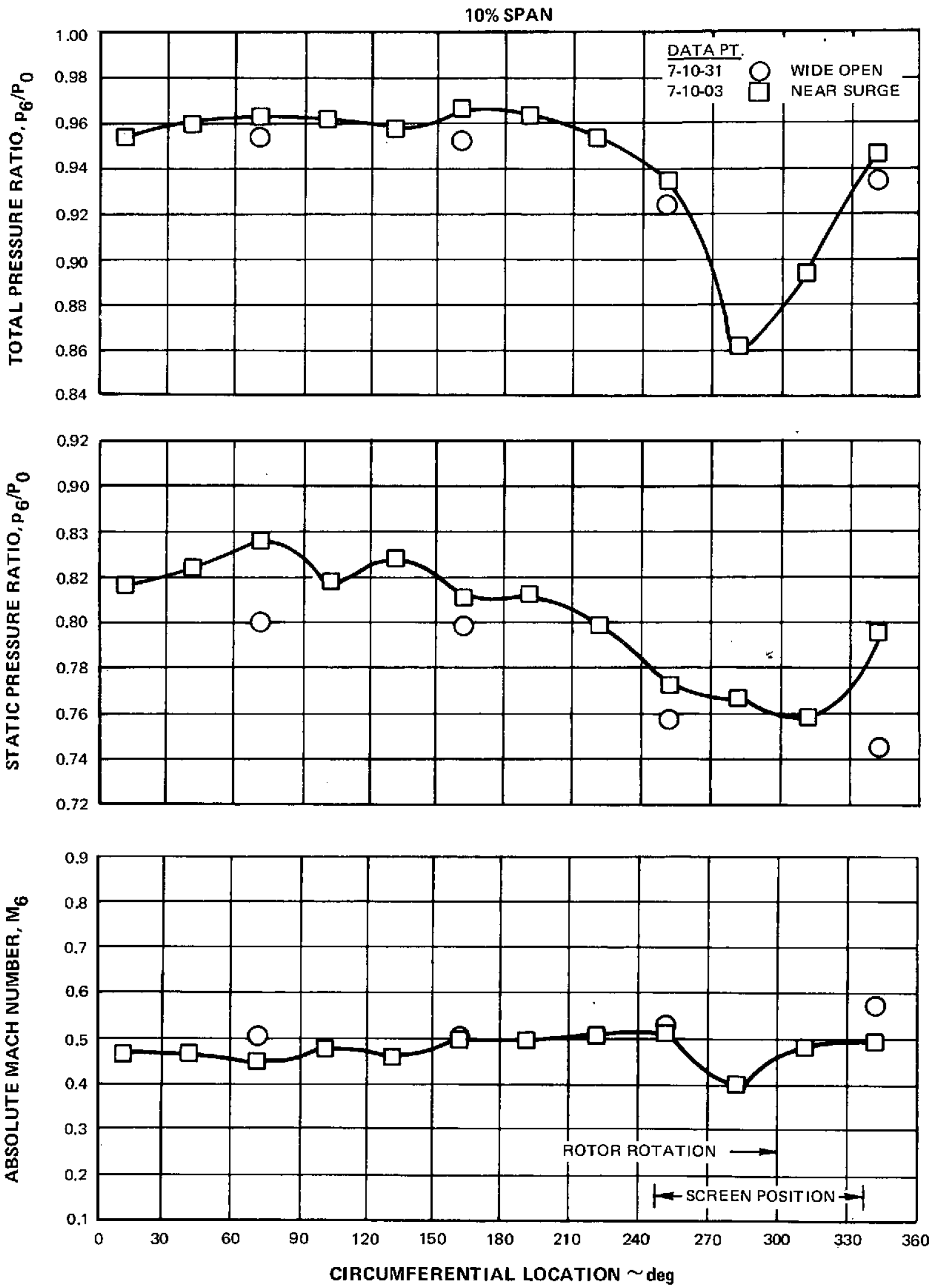


Figure 96a Circumferential Distributions of Fan Inlet Total Pressure, Static Pressure, Absolute Mach Number, Relative Flow Angle, Absolute Flow Angle, and Meridional Velocity with Circumferential Inlet Flow Distortion

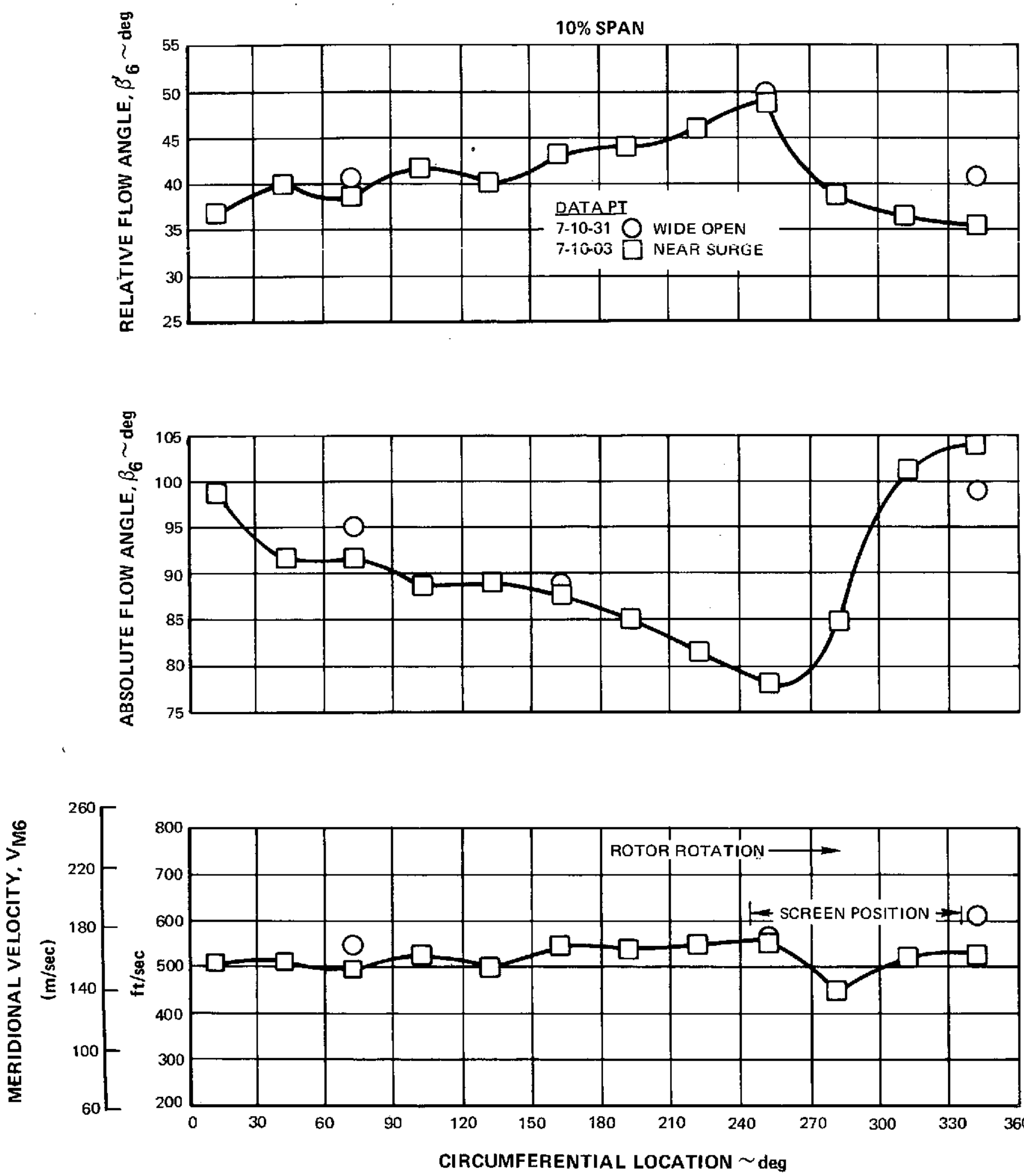


Figure 96 b Circumferential Distributions of Fan Inlet Total Pressure, Static Pressure, Absolute Mach Number, Relative Flow Angle, Absolute Flow Angle, and Meridional Velocity with Circumferential Inlet Flow Distortion

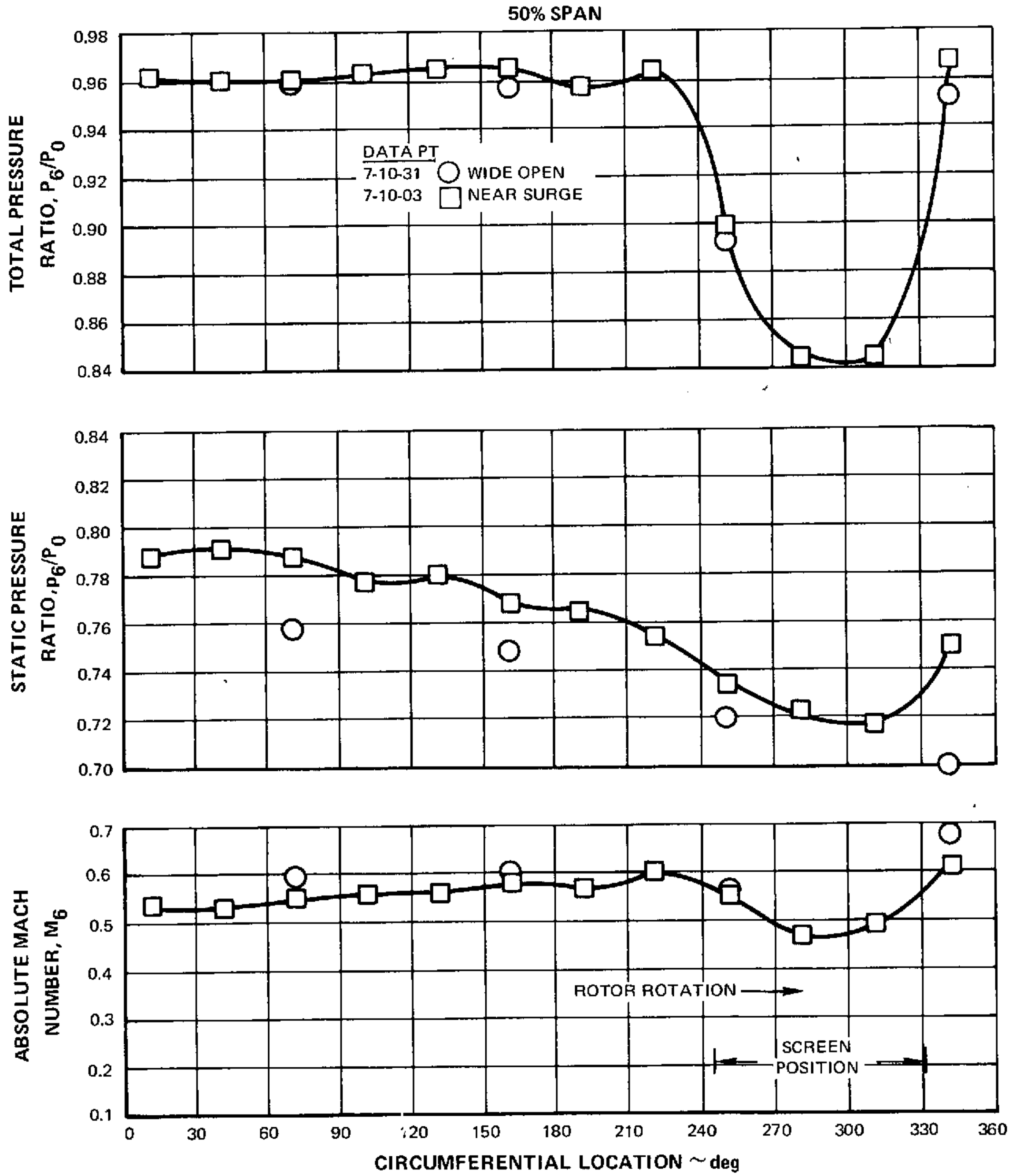


Figure 96 c Circumferential Distributions of Fan Inlet Total Pressure, Static Pressure, Absolute Mach Number, Relative Flow Angle, Absolute Flow Angle, and Meriodional Velocity with Circumferential Inlet Flow Distortion

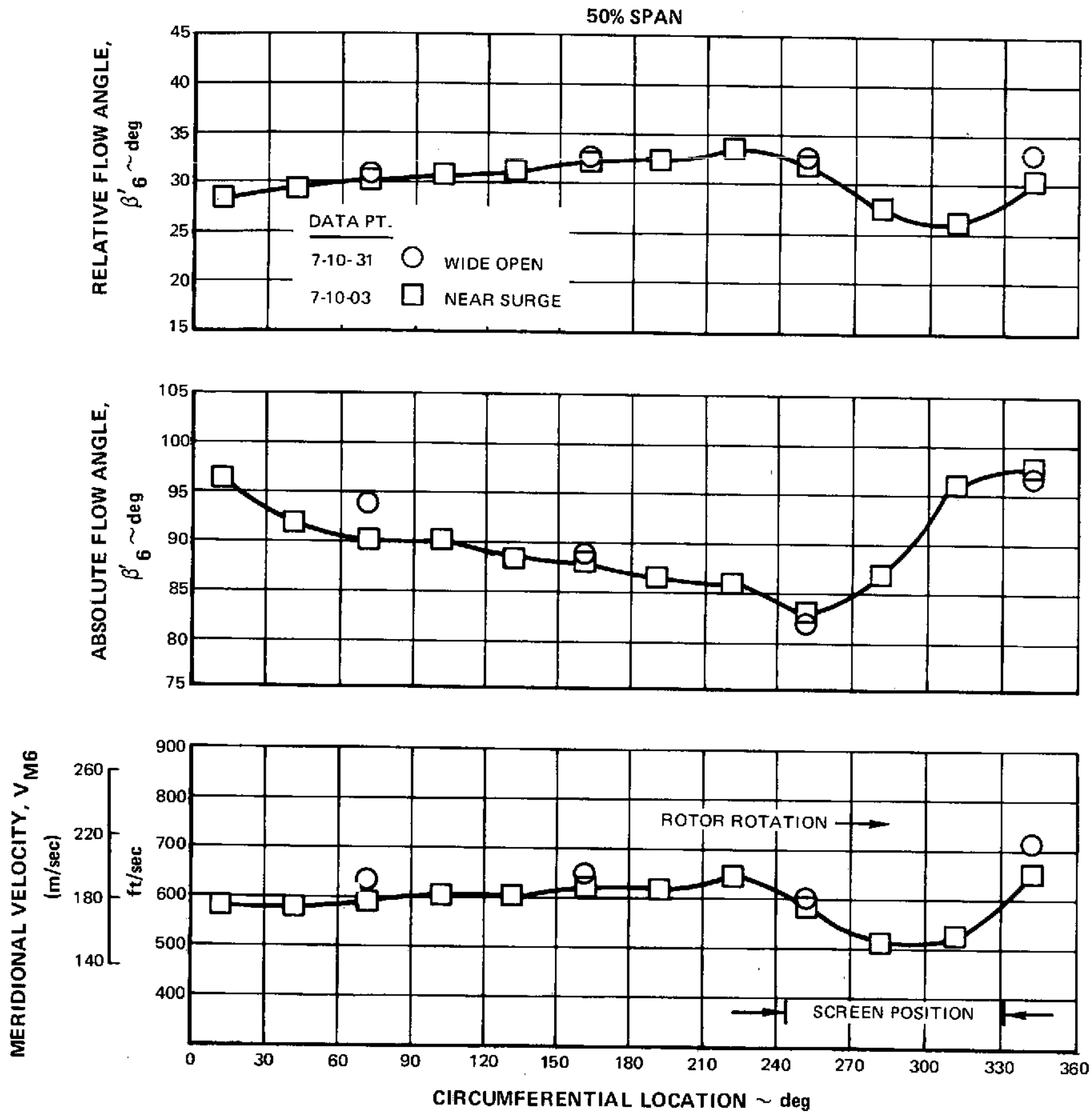


Figure 96 d Circumferential Distributions of Fan Inlet Total Pressure, Static Pressure, Absolute Mach Number, Relative Flow Angle, Absolute Flow Angle, and Meriodional Velocity with Circumferential Inlet Flow Distortion

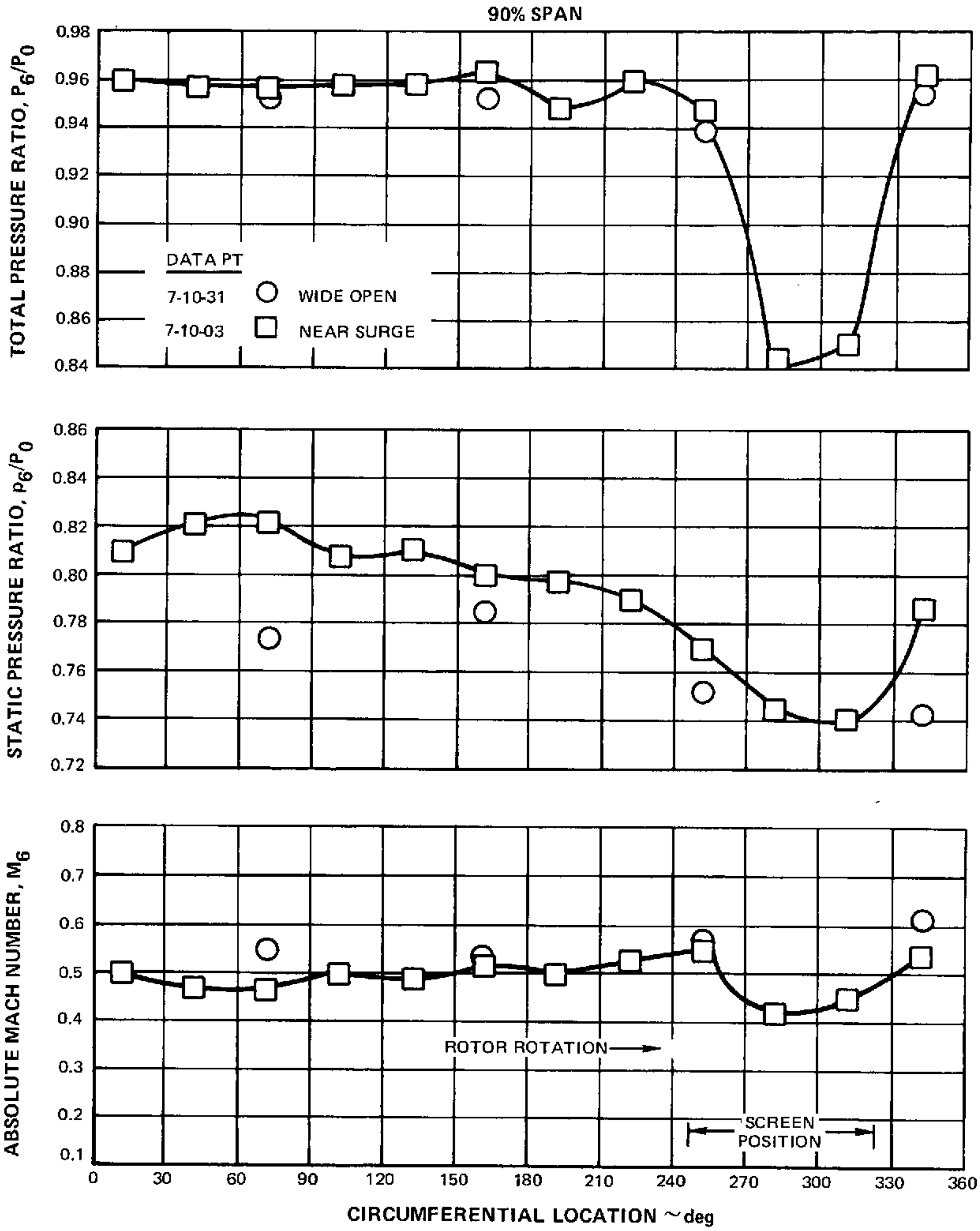


Figure 96 e Circumferential Distributions of Fan Inlet Total Pressure, Static Pressure, Absolute Mach Number, Relative Flow Angle, Absolute Flow Angle, and Meriodional Velocity with Circumferential Inlet Flow Distortion

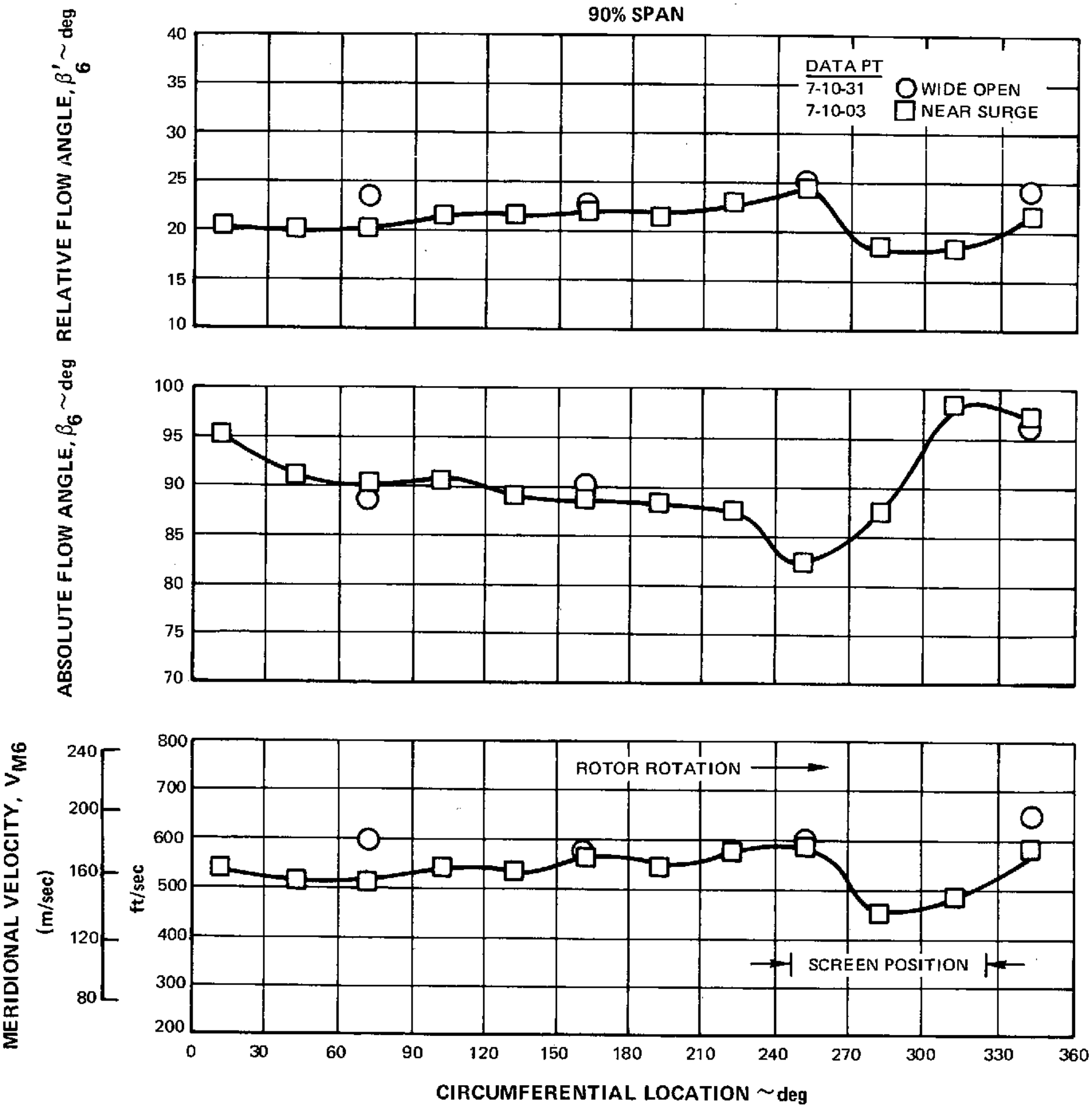


Figure 96f Circumferential Distributions of Fan Inlet Total Pressure, Static Pressure, Absolute Mach Number, Relative Flow Angle, Absolute Flow Angle, and Meridional Velocity with Circumferential Inlet Flow Distortion

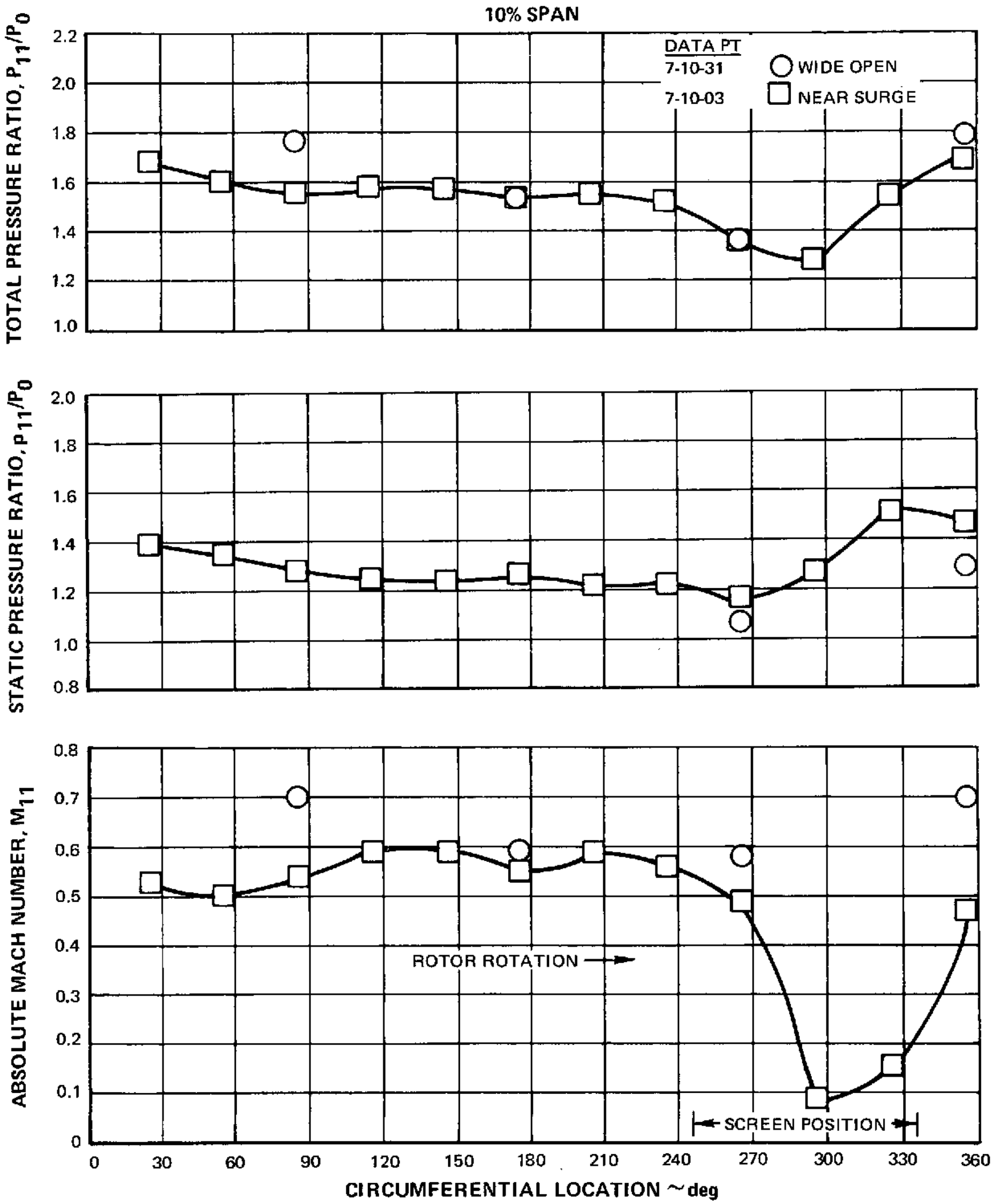


Figure 97a Circumferential Distributions of First Stator Exit Total Pressure, Static Pressure, Absolute Mach Number, Total Temperature, Absolute Mach Number, Total Temperature, Absolute Flow Angle, and Meridional Velocity with Circumferential Inlet Flow Distortion

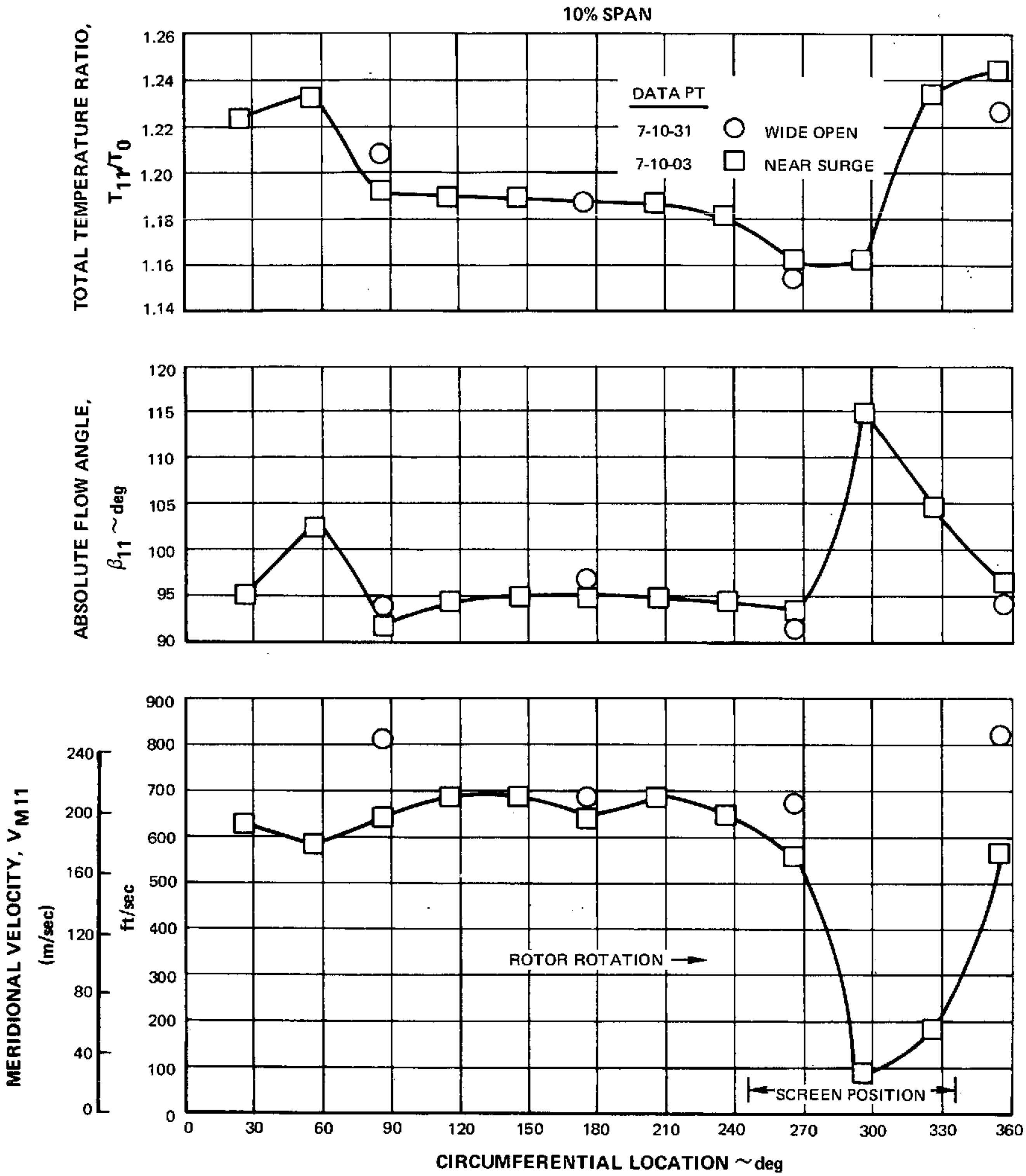


Figure 97b Circumferential Distributions of First Stator Exit Total Pressure, Static Pressure, Absolute Mach Number, Total Temperature, Absolute Mach Number, Total Temperature, Absolute Flow Angle, and Meridional Velocity with Circumferential Inlet Flow Distortion

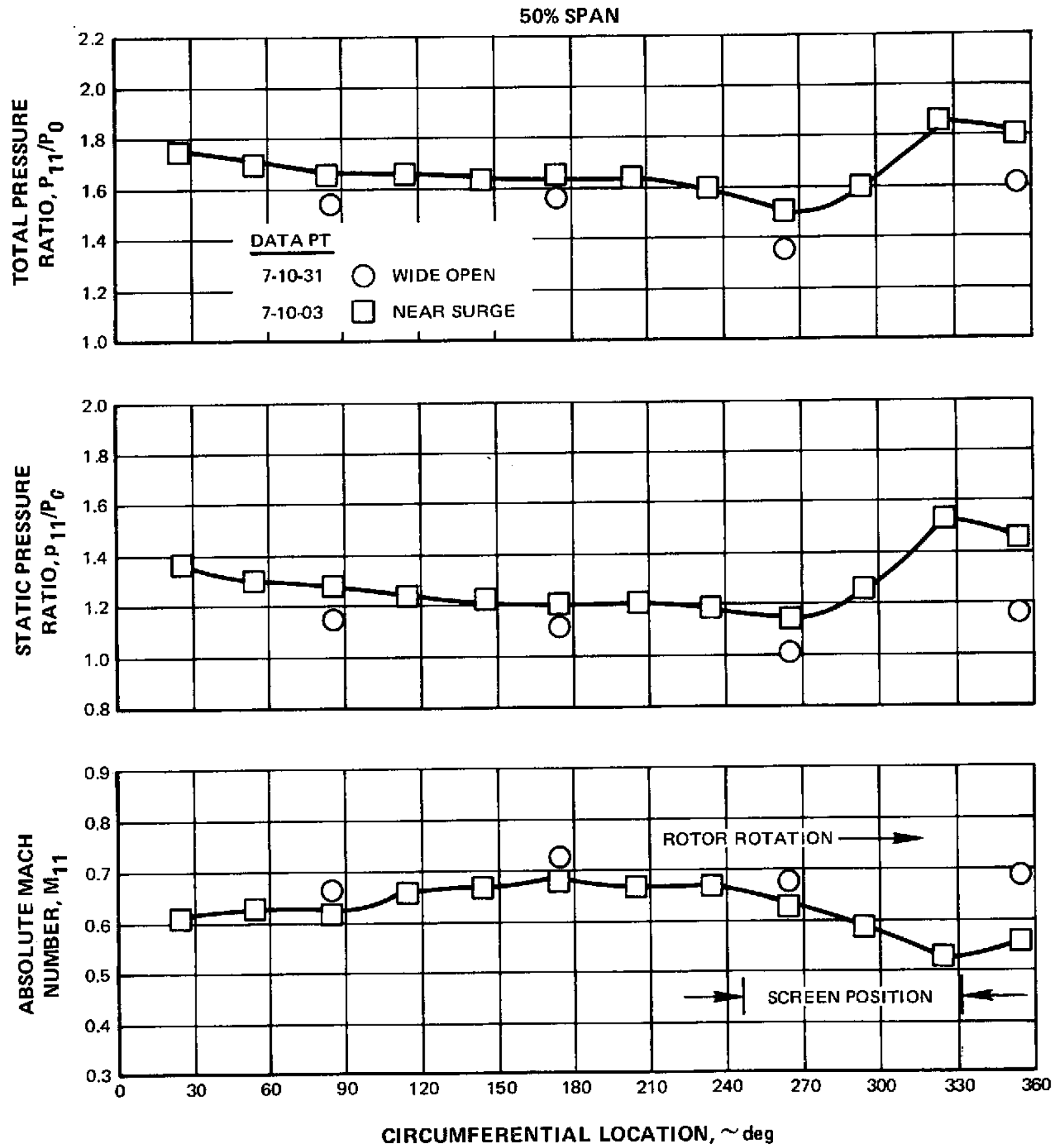


Figure 97c Circumferential Distributions of First Stator Exit Total Pressure, Static Pressure, Absolute Mach Number, Total Temperature, Absolute Mach Number, Total Temperature, Absolute Flow Angle, and Meridional Velocity with Circumferential Inlet Flow Distortion

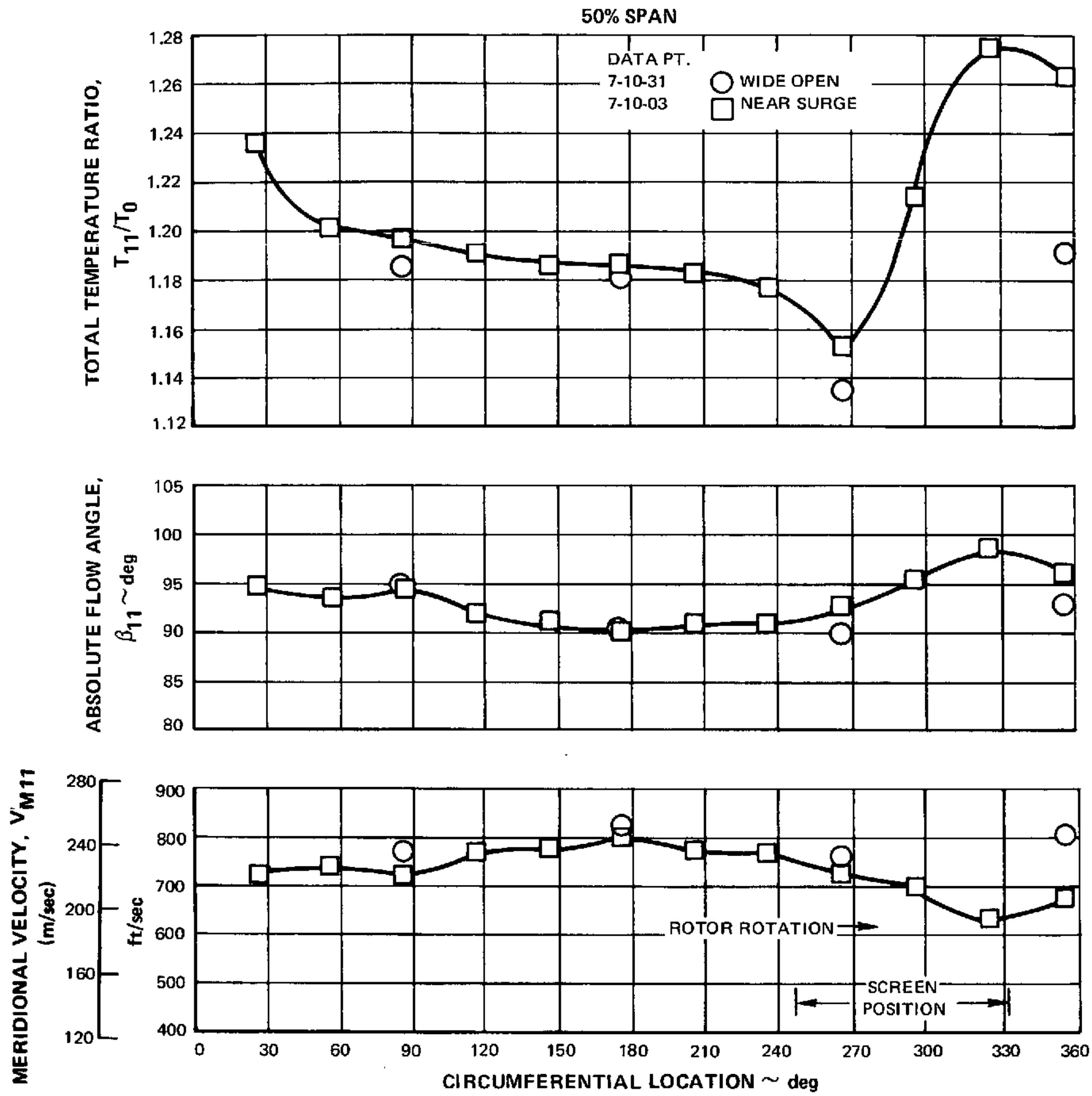


Figure 97d Circumferential Distributions of First Stator Exit Total Pressure, Static Pressure, Absolute Mach Number, Total Temperature, Absolute Mach Number, Total Temperature, Absolute Flow Angle, and Meridional Velocity with Circumferential Inlet Flow Distortion

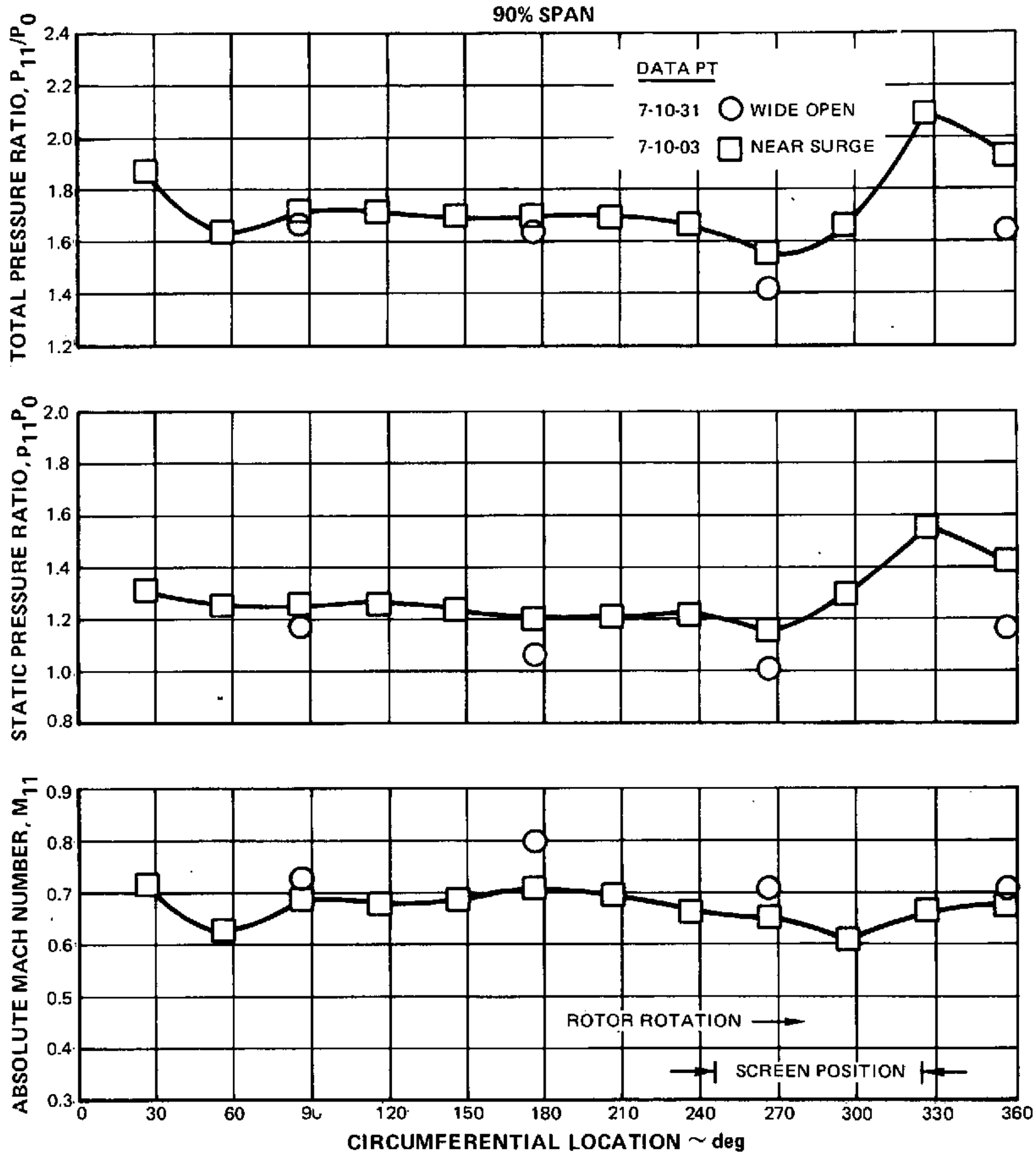


Figure 97e Circumferential Distributions of First Stator Exit Total Pressure, Static Pressure, Absolute Mach Number, Total Temperature, Absolute Mach Number, Total Temperature, Absolute Flow Angle, and Meridional Velocity with Circumferential Inlet Flow Distortion

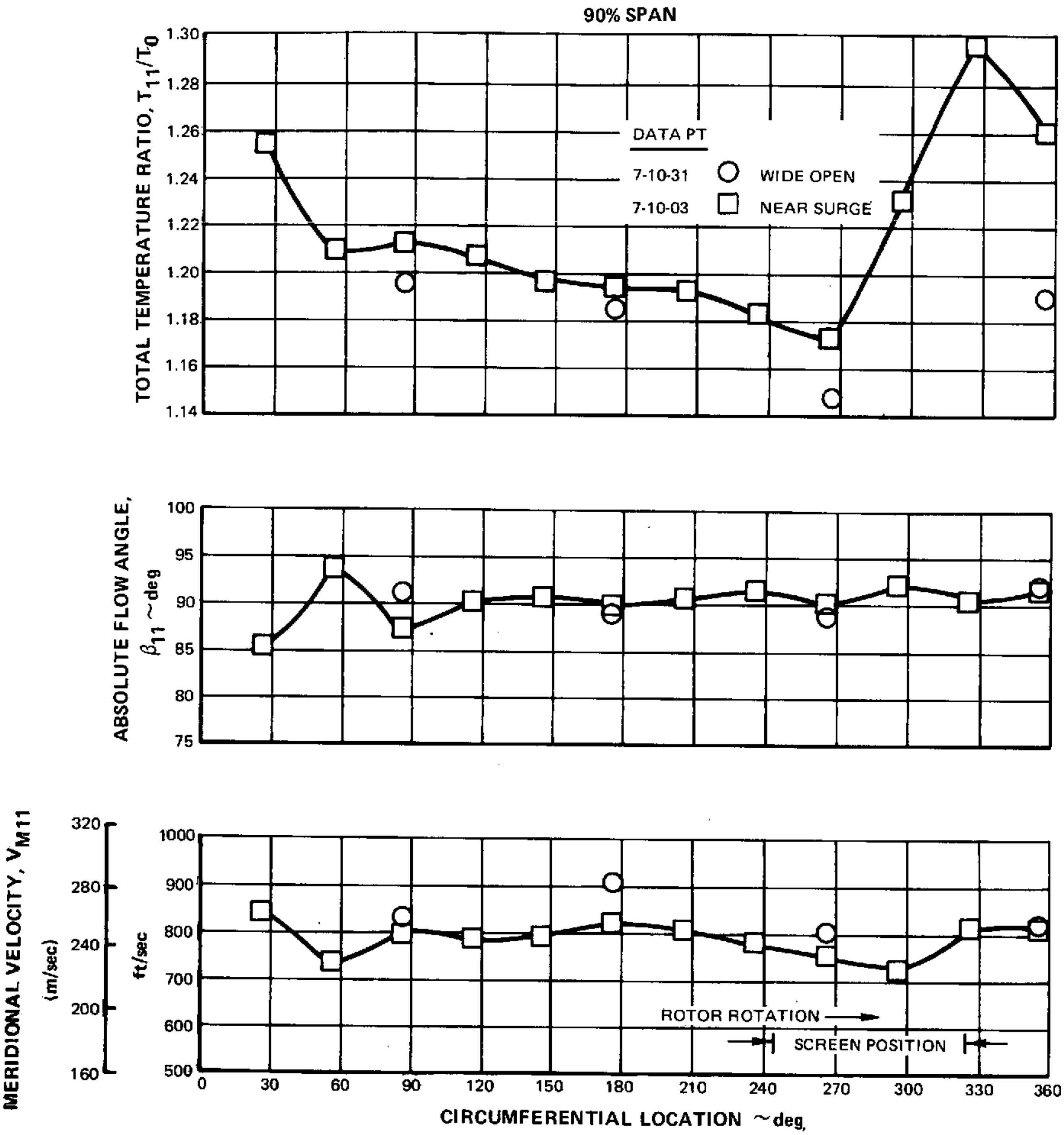


Figure 97f Circumferential Distributions of First Stator Exit Total Pressure, Static Pressure, Absolute Mach Number, Total Temperature, Absolute Flow Angle and Meridional Velocity with Circumferential Inlet Flow Distortion

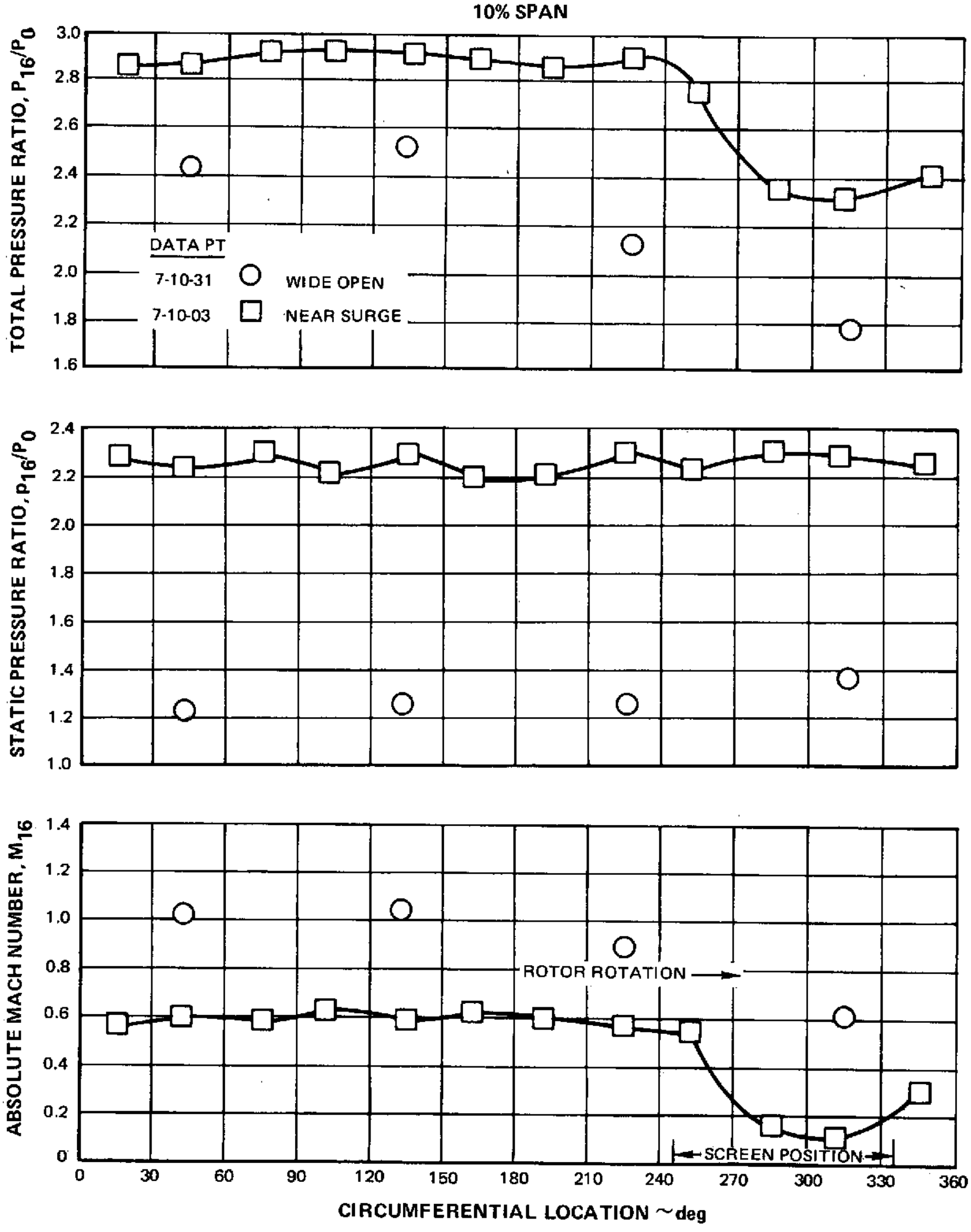


Figure 98a Circumferential Distributions of Fan Inlet Total Pressure, Static Pressure, Absolute Mach Number, Relative Flow Angle, Absolute Flow Angle, and Meridional Velocity with Circumferential Inlet Flow Distortion

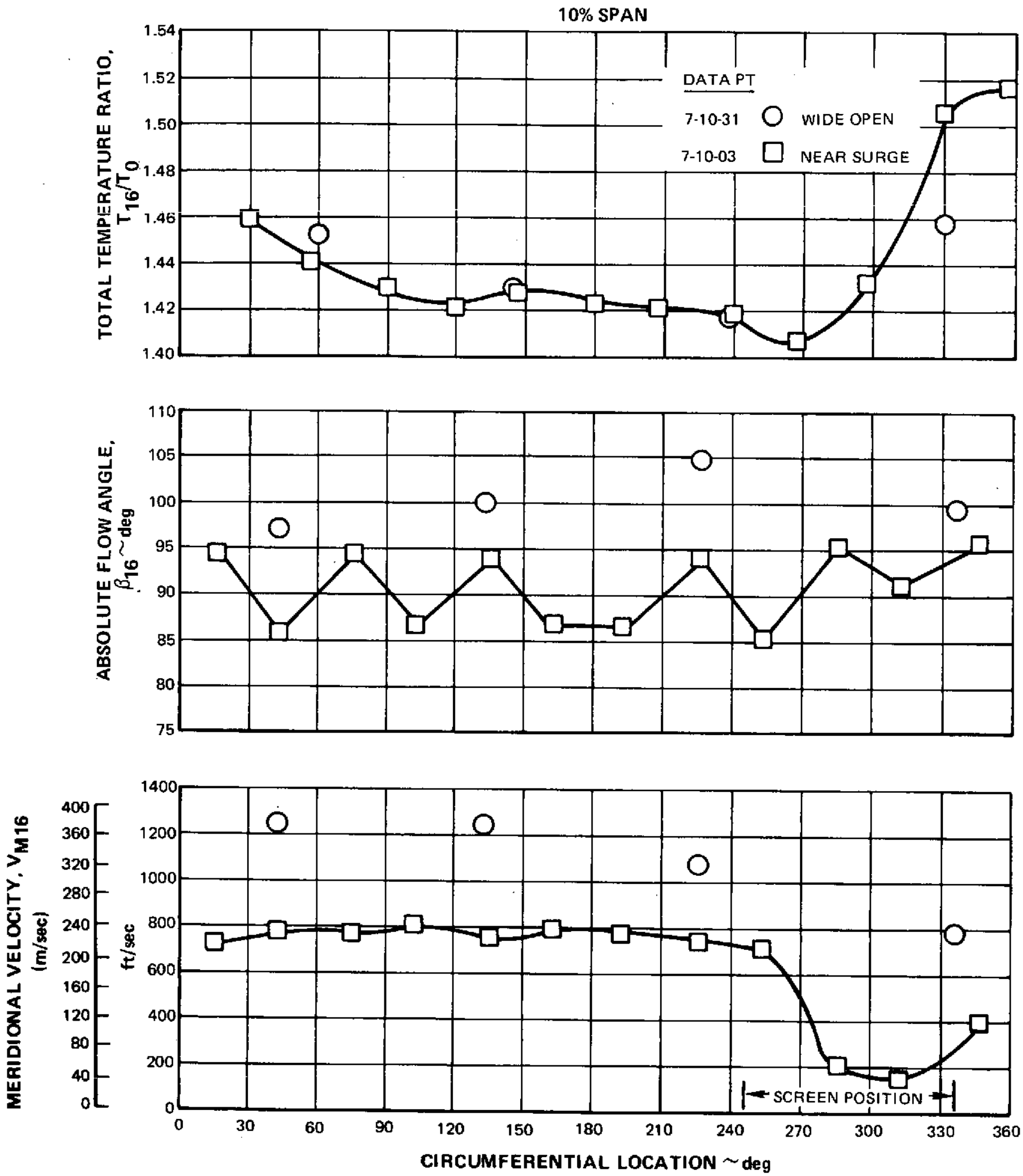


Figure 98b Circumferential Distributions of Fan Exit Total Pressure, Static Pressure, Absolute Mach Number, Total Temperature, Absolute Flow Angle, and Meridional Velocity with Circumferential Inlet Flow Distortion

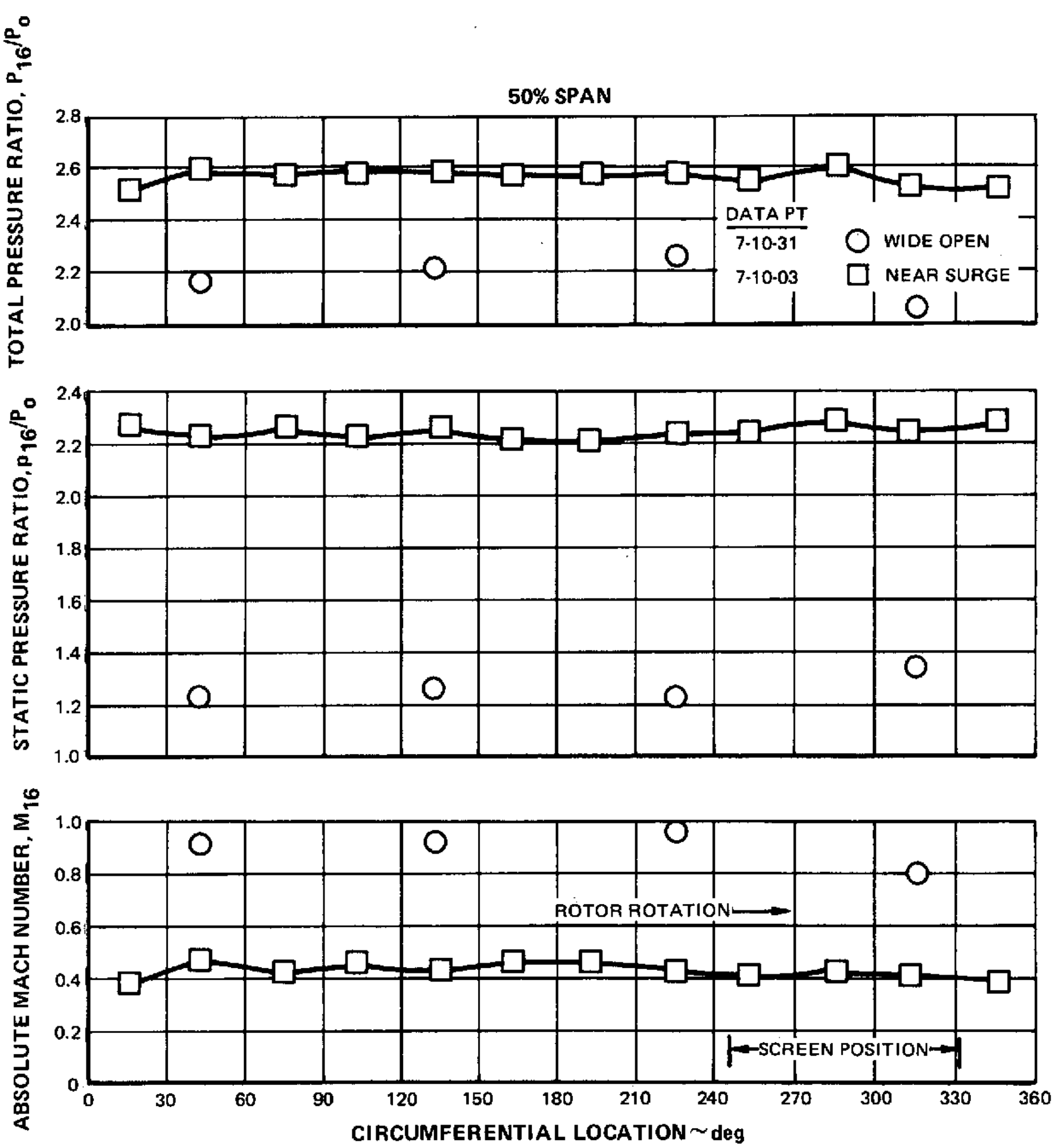


Figure 98c Circumferential Distributions of Fan Exit Total Pressure, Static Pressure, Absolute Mach Number, Total Temperature, Absolute Flow Angle, and Meridional Velocity with Circumferential Inlet Flow Distortion

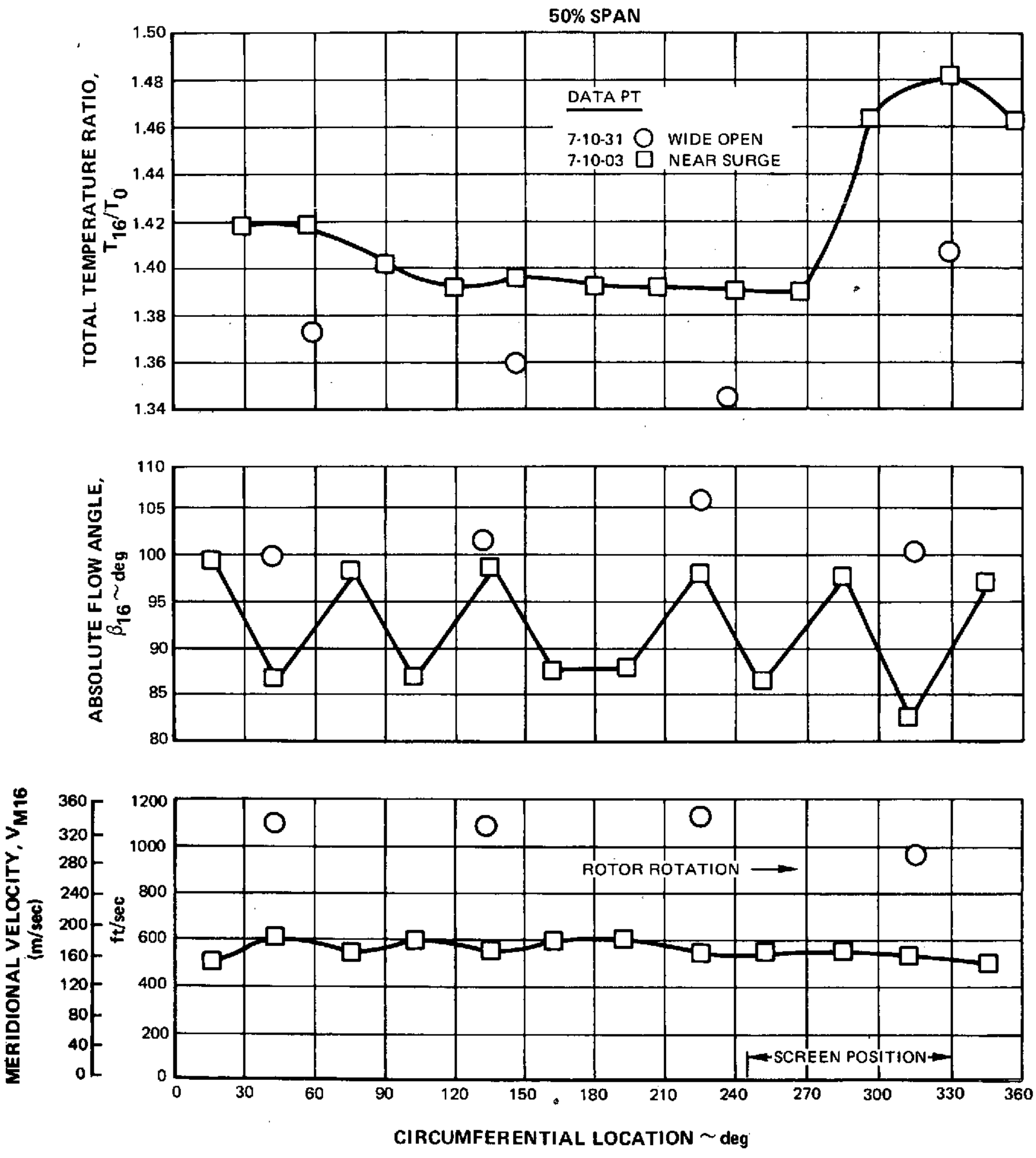


Figure 98d Circumferential Distributions of Fan Exit Total Pressure, Static Pressure, Absolute Mach Number, Total Temperature, Absolute Flow Angle, and Meridional Velocity with Circumferential Inlet Flow Distortion

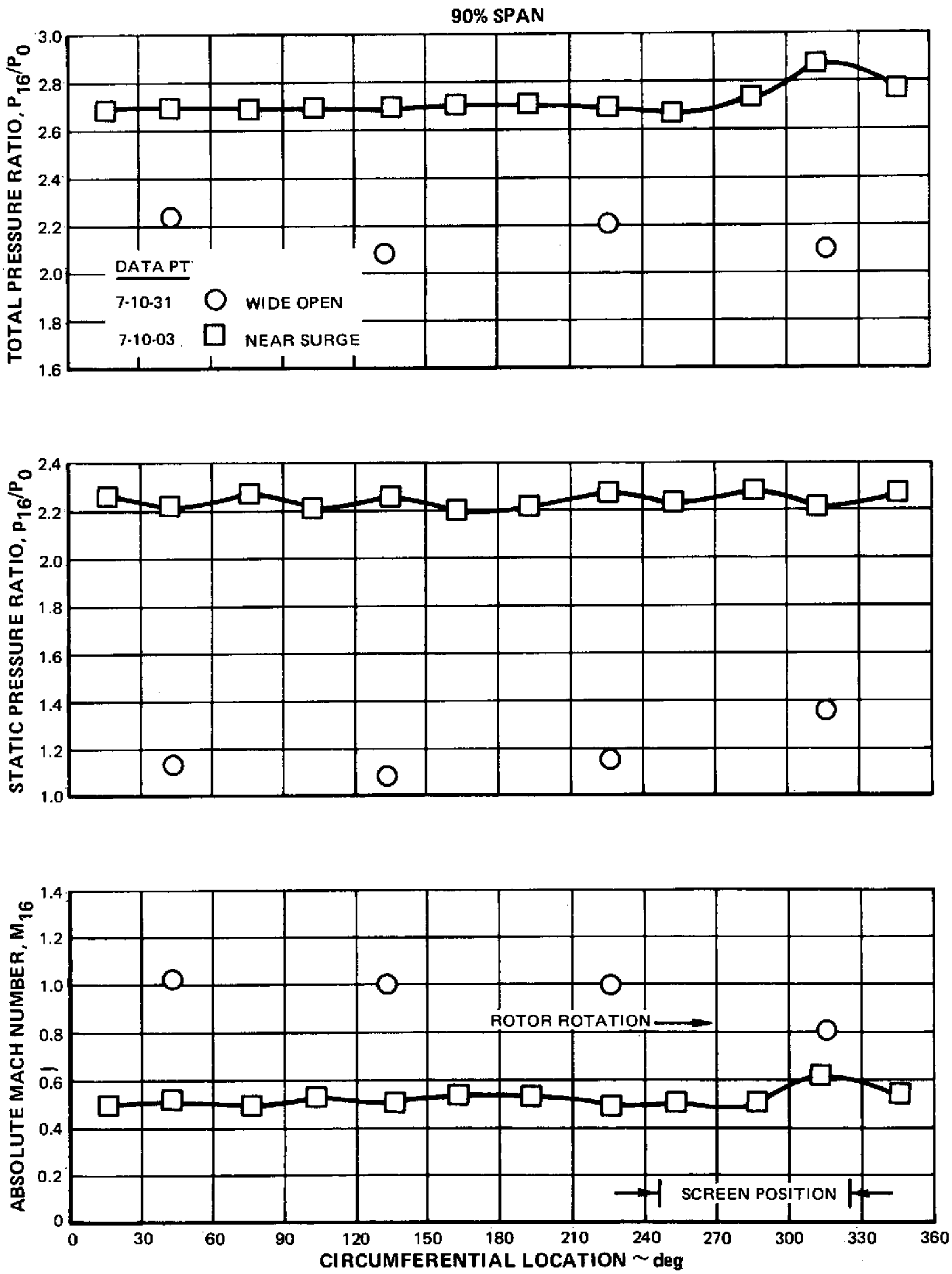


Figure 98e Circumferential Distributions of Fan Exit Total Pressure, Static Pressure, Absolute Mach Number, Total Temperature, Absolute Flow Angle, and Meridional Velocity with Circumferential Inlet Flow Distortion

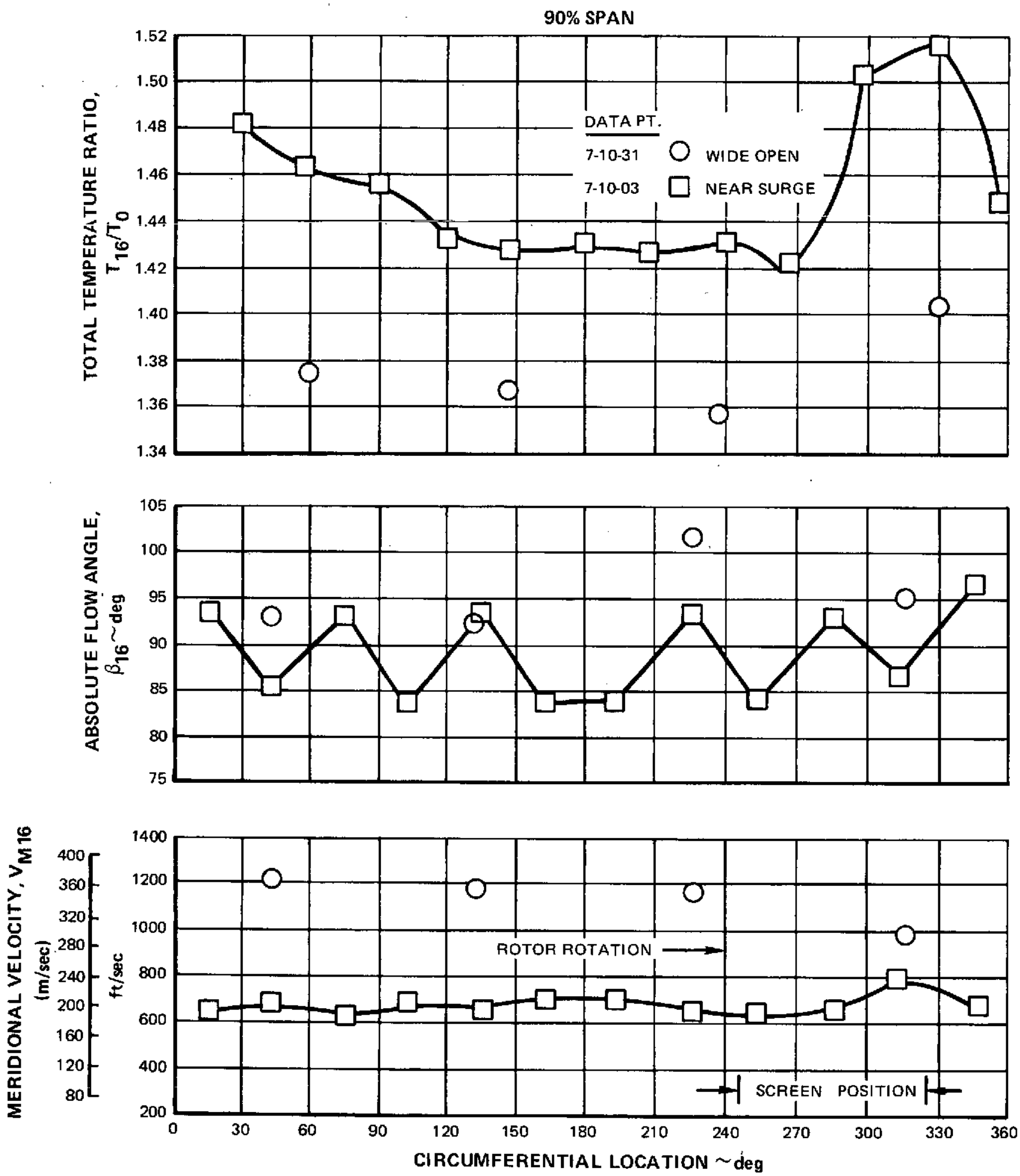


Figure 98f Circumferential Distributions of Fan Exit Total Pressure, Static Pressure, Absolute Mach Number, Total Temperature, Absolute Flow Angle, and Meridional Velocity with Circumferential Inlet Flow Distortion

APPENDIX A

SYMBOLS

A	–	area - inches^2 [meters^2]
A_c	–	attenuation parameter for circumferentially distorted inlet flow
A/A^*	–	ratio of actual area to critical area (where local Mach number is 1.0)
A_r	–	attenuation parameter for radially distorted inlet flow
a	–	distance along chord from leading edge of airfoil to point of maximum elevation of airfoil above chord line - inches (meters)
a'	–	a point on the suction surface of a blade halfway between the leading edge and the point from which a Mach wave emanates that meets the leading edge of the following blade
C	–	damper coefficient – lb-sec/in [N-sec/m]
c	–	chord (aerodynamic on flow surface) - inches [meters]
c_p	–	ratio of specific heats – BTU/lbm-°R [joule/kg-°k]
D	–	diffusion factor
d	–	amplitude of vibrational displacement in the direction normal to the minimum moment of inertia axis - inches [meters]
E	–	epse, the angle between rays drawn to a conical design surface, one ray to the leading edge of an airfoil section, the second to some other point on the airfoil - degrees (radians)
	–	excitations per rotor revolution
g_c	–	conversion factor, 32.17 lb_m ft/lb sec^2
ID	–	inside diameter inches [meters]
i_m	–	incidence angle, angle between inlet air direction and line tangent to blade mean camber line at leading edge, degrees (labelled INCM, Table XVI)
i_{ss}	–	incidence angle, angle between inlet air direction and line tangent to blade suction surface at leading edge, degrees (labelled INCS, Table XVI)

J	–	Conversion Factor – 778 Ft - lbf/Btu [1.00m-kg/Joule]
$\bar{K}$	–	blockage factor = Effective area/total area
K	–	linear spring constants - lb/in [N/m]
M	–	Mach number
MCA	–	Multiple-circular-arc
N	–	rotor speed, rpm ($N/\sqrt{\theta}$ labelled NCORR, table XVI)
OD	–	outside diameter, inches or meters
P	–	total pressure lbs/ft^2 or n/m^2
p	–	static pressure, lbs/ft^2 or n/m^2
R	–	distance from apex of design conical surface to point on blade - inches [meters]
	–	gas constant for air
r	–	radius measured from rig centerline - inches [meters]
r, θ, z	–	cylindrical coordinate system, with z axis as rig centerline
s	–	blade spacing – inches [meters]
SL	–	streamline number
T	–	total temperature - °R [°K]
	–	torsional spring constant – in-lb/degree [m-N/radian]
t	–	static temperature, °R or °K
	–	blade maximum thickness - inches [meters]
U	–	rotor speed - ft/sec [meters/sec]
V	–	air velocity - ft/sec [meters/sec]
Vm	–	meriodional velocity $(Vr^2 + Vz^2)^{1/2}$, ft/sec [m/sec] (labelled VM, Table XVI)
W	–	mass flow rate - lbm/sec [kg/sec]

z	–	axial distance - inches [meters]
β	–	absolute air angle, $\cot^{-1}(Vm/V\theta)$, degrees (labelled B, Table XVI)
β'	–	relative air angle, $\cot^{-1}(Vm/V\theta')$, degrees (labelled B′, Table XVI)
$\Delta\beta$	–	air turning angle - degrees [radians]
γ	–	blade chord angle, angle between a chord line and axial direction (measured in a plane parallel to z-axis) - degrees [radians];
	–	ratio of specific heats for air
δ	–	ratio of total pressure to standard pressure of 2116 lbs/ft^2 [1.0125×10^5 N/m^2]
$\delta°$	–	deviation angle, exit air angle minus tangent to blade mean camber line at trailing edge - degrees [radians]
ϵ	–	angle between tangent to streamline projected on meridional plane and axial direction - degrees [radians]
η	–	efficiency (percent)
θ	–	ratio of total temperature to standard temperature of 518.7°R [288.16°K]
ρ	–	mass density - lbm/ft^3 [$kg/meters^3$]
σ	–	solidity, ratio of aerodynamic chord to gap between blades
ϕ	–	blade camber angle, difference between blade angles at leading and trailing edges on conical surface, $\beta_1'{*} - \beta_2'{*}$ for rotors and $\beta_2{*} - \beta_3{*}$ for stators – degrees [radians],
ϕ_E	–	blade camber angle on plane of "unwrapped" conical surface $\beta_1'{*} - \beta_2'{*} - E_{TE}$ for rotors and $\beta_2{*} - \beta_3{*} - E_{TE}$ for stators-degrees [radians]
ψ	–	amplitude of torsional vibration, radians
ω	–	angular velocity of rotor, radians/sec
ω_b	–	bending vibrational frequency (cycles/sec)
ω_t	–	torsional vibrational frequency (radians/sec)
$\overline{\omega}$	–	total press loss coefficient

Subscripts

ad	–	adiabatic
E	–	refers to camber definitions which include epse angle E
f	–	front
Ef	–	refers to front camber definitions which include epse angle E
in	–	inlet
m	–	meridional (velocity); mean camber line (angle)
n	–	selected operating point
p	–	profile (loss; polytropic (efficiency)
r	–	radial direction
	–	ratio (e.g. P_r = total pressure ratio)
ss	–	suction surface
sh	–	shock
t	–	transition
z	–	axial component
θ	–	tangential component
o	–	plenum chamber
6	–	instrument plane upstream of rotor 1
7	–	station at rotor 1 leading edge
8	–	station at rotor 1 trailing edge
9	–	station at stator 1 leading edge
10	–	station at stator 1 trailing edge
11	–	instrument plane downstream stator 1

12	–	station at rotor 2 leading edge
13	–	station at rotor 2 trailing edge
14	–	station at stator 2 leading edge
15	–	station at stator 2 trailing edge
16	–	instrument plane downstream stator 2

Superscripts

	–	relative to rotor
*	–	blade metal (angle);
	–	critical, at Mach number unity (area)

PERFORMANCE PARAMETERS

a) Relative total temperature

$$T'_7 = t_7 \left[1 + \frac{\gamma - 1}{2} (M'_7)^2 \right] \qquad \text{(rotor 1) IN}$$

$$T'_8 = T'_7 + \left[\frac{(\omega r_8)^2 - (\omega r_7)^2}{\frac{2\gamma}{\gamma - 1} R g_c} \right] \qquad \text{(rotor 1) OUT}$$

b) Incidence angle based on mean camber line

$$i_m = \beta'_7 - \beta'^*_7 \qquad \text{(rotor 1)}$$

$$i_m = \beta_9 - \beta^*_9 \qquad \text{(stator 1)}$$

Incidence angle based on suction surface metal angle

$$i_{ss} = \beta'_7 - \beta^*_{ss7} \qquad \text{(rotor 1)}$$

$$i_{ss} = \beta_9 - \beta^*_{ss9} \qquad \text{(stator 1)}$$

c) Deviation angle

$$\delta^\circ = \beta'_8 - \beta'^*_8 \qquad \text{(rotor 1)}$$

$$\delta^\circ = \beta_{10} - \beta^*_{10} \qquad \text{(stator 1)}$$

d) Diffusion factor

$$D = 1 - \frac{V'_8}{V'_7} + \frac{r_8 V_{\theta 8} - r_7 V_{\theta 7}}{(r_8 + r_7)\,\sigma\, V'_7} \qquad \text{(rotor 1)}$$

$$D = 1 \quad \frac{V_{10}}{V_9} + \frac{r_9 V_{\theta 9} - r_{10} V_{\theta 10}}{(r_9 + r_{10})\,\sigma\, V_9} \qquad \text{(stator 1)}$$

e) Loss coefficient

$$\bar{\omega} = \frac{P'_7 \left[\frac{T'_8}{T'_7}\right]^{\frac{\gamma}{\gamma - 1}} - P'_8}{P'_7 - p_7} \qquad \text{(rotor 1)}$$

$$\bar{\omega} = \frac{P_9 - P_{10}}{P_9 - p_9} \qquad \text{(stator 1)}$$

f) Loss parameter

$$\frac{\bar{\omega} \cos \beta'_8}{2\sigma} \qquad \text{(rotor 1)}$$

$$\frac{\bar{\omega} \cos \beta_{10}}{2\sigma} \qquad \text{(stator 1)}$$

g) Polytropic efficiency

1) $$\eta_p = \frac{\frac{\gamma-1}{\gamma} \ln \left[\frac{P_8}{P_7}\right]}{\ln \left[\frac{T_8}{T_0}\right]} \qquad \text{(rotor 1)}$$

$$2)\ \eta_p = \frac{\dfrac{\gamma - 1}{\gamma} \ln \left[\dfrac{p_{10}}{p_9}\right]}{\ln \left[\dfrac{t_{10}}{t_9}\right]} \qquad \text{(stator 1)}$$

h) Adiabatic efficiency

$$\eta_{ad} = \frac{\left[\dfrac{P_8}{P_7}\right]^{\frac{\gamma - 1}{\gamma}} - 1}{\left[\dfrac{T_{10}}{T_0}\right] - 1} \qquad \text{(rotor 1)}$$

$$\eta_{ad} = \frac{\left[\dfrac{P_{10}}{P_6}\right]^{\frac{\gamma - 1}{\gamma}} - 1}{\left[\dfrac{T_{10}}{T_0}\right] - 1} \qquad \text{(stage 1)}$$

i) Stall margin

$$SM = \left[\left(\frac{P_{16}/P_6}{W\sqrt{\theta_6}/\delta_6} \right)_{\text{Stall}} \left(\frac{W\sqrt{\theta_6}/\delta_6}{P_{16}/P_6} \right)_{\substack{\text{Reference} \\ \text{Point or} \\ \text{Operating Point}}} - 1 \right] 100$$

j) Flow coefficient $\phi = \dfrac{V_z}{U_{mean\ flow}}$

k) Pressure coefficient $\psi = \dfrac{\Delta Hid}{Um^2}$

$$= \frac{\eta_{ad}\, \Delta T_{actual}\, c_p\, J g_c}{U^2_{mean\ flow}}$$

APPENDIX B

AIRFOIL GEOMETRY ON CONICAL SURFACES

The airfoil geometry on conical surfaces for rotor 1, stator 1, rotor 2 (unshrouded), rotor 2 (redesign), and stator 2 is presented in Tables XI to XV in this appendix. The information is provided in U. S. customary units and in S. I. units.

TABLE XI – AIRFOIL GEOMETRY ON CONICAL SURFACES – ROTOR 1

Inlet Root Diameter = 12.40 Inches (.315 Meters) Inlet Tip Diameter = 31.00 Inches (.787 Meters)
Exit Root Diameter = 14.91 Inches (.378 Meters) Exit Tip Diameter = 29.94 Inches (.761 Meters)
Axial Tilt = 0 Degrees (0 Radians) Tangential Tilt = 0 Inches (0 Meters)

Multiple - Circular - Arc Airfoils, 28 Blades

	Hub													Tip
Percent Flow	0	3.15	6.70	10.40	22.70	31.65	41.45	51.85	62.90	74.60	80.70	87.00	93.40	100.0
% Span at Leading Edge	0.0	5.7	11.2	16.6	32.4	42.4	52.4	62.1	71.7	81.2	85.9	90.7	95.3	100.0
Average % Span	0.0	5.35	10.6	15.8	31.2	41.2	51.2	61.05	70.85	80.6	85.45	90.35	95.15	100.0
% Span at Trailing Edge	0.0	5.0	10.0	15.0	30.0	40.0	50.0	60.0	70.0	80.0	85.0	90.0	95.0	100.0

U. S. Customary Units, inches and degrees

c	3.62	3.70	3.76	3.83	4.00	4.08	4.17	4.25	4.32	4.40	4.45	4.48	4.51	4.55
σ	0.85	0.92	1.00	1.08	1.29	1.49	1.65	1.83	1.98	2.14	2.21	2.30	2.40	2.50
t/c	0.0798	0.0770	0.0740	0.0710	0.0630	0.0570	0.0520	0.0460	0.0410	0.0353	0.0330	0.0300	0.0275	0.0250
% c to max t	52.8	53.0	53.5	54.0	55.5	56.5	57.6	59.0	60.5	62.0	62.6	63.5	64.3	64.8
a/c	0.518	0.520	0.522	0.525	0.535	0.540	0.544	0.550	0.570	0.600	0.615	0.634	0.649	0.665
RLE	0.0140	0.0139	0.0138	0.0135	0.0129	0.0120	0.0112	0.0106	0.0100	0.0092	0.0088	0.0083	0.0078	0.0073
RTE	0.0140	0.0139	0.0138	0.0135	0.0129	0.0120	0.0112	0.0106	0.0100	0.0092	0.0088	0.0083	0.0078	0.0073
β''_{ss_1}	44.6	46.4	47.8	48.9	51.4	52.9	54.4	55.9	57.2	58.4	59.0	59.7	60.4	61.0
β''_1	39.8	41.8	43.5	44.8	47.9	49.9	51.8	53.6	55.3	56.8	57.6	58.4	59.2	59.9
ϕ	75.5	69.7	63.2	56.3	38.2	29.1	21.4	16.1	12.4	11.0	10.8	11.4	12.9	14.8
ϕ_F	74.0	66.9	59.0	52.5	35.5	27.3	21.0	16.5	13.5	13.0	13.3	14.0	16.0	18.5
ϕ_r	8.5	8.4	8.2	8.0	6.9	6.0	4.8	3.6	2.5	0.8	-0.4	-1.5	-2.8	-4.0
ϕ_{Fr}	6.9	6.88	6.7	6.6	6.0	5.5	4.7	3.9	2.8	1.6	0.8	-0.2	-1.2	-2.3
ξ	20.3	18.3	16.2	14.3	8.9	5.5	2.3	-0.8	-3.9	-6.9	-8.4	-9.9	-11.4	-12.9
ϵ	2.38	2.27	2.17	2.09	1.88	1.77	1.67	1.58	1.51	1.44	1.41	1.38	1.36	1.33

S. I. Units, meters and radians

c	0.0919	0.0940	0.0955	0.0976	0.1016	0.1038	0.1059	0.1080	0.1097	0.1118	0.1130	0.1138	0.1146	0.1156
σ	0.0216	0.0234	0.0254	0.0274	0.0328	0.0376	0.0419	0.0465	0.0503	0.0544	0.0561	0.0584	0.0609	0.0635
t/c	0.0798	0.0770	0.0740	0.0710	0.0630	0.0570	0.0520	0.0460	0.0410	0.0353	0.0330	0.0300	0.0275	0.0250
% c to max. t	52.8	53.0	53.5	54.0	55.5	56.5	57.6	59.0	60.5	62.0	62.6	63.5	64.3	64.8
a/c	0.518	0.520	0.522	0.525	0.535	0.540	0.544	0.550	0.570	0.600	0.615	0.634	0.649	0.665
RLE	0.000356	0.000353	0.000351	0.000343	0.000328	0.000305	0.000284	0.000269	0.000254	0.000234	0.000224	0.000211	0.000198	0.000185
RTE	0.000356	0.000353	0.000351	0.000343	0.000328	0.000305	0.000284	0.000269	0.000254	0.000234	0.000224	0.000211	0.000198	0.000185
β''_{ss_1}	0.779	0.811	0.834	0.853	0.899	0.925	0.949	0.977	0.999	1.019	1.029	1.042	1.053	1.064
β''_1	0.695	0.731	0.761	0.783	0.837	0.871	0.905	0.936	0.966	0.992	1.003	1.019	1.032	1.045
ϕ	1.316	1.217	1.102	0.984	0.667	0.508	0.374	0.281	0.216	-.192	0.188	0.199	0.225	0.258
ϕ_F	1.291	1.167	1.030	0.916	0.620	0.476	0.366	0.288	0.236	0.227	0.232	0.244	0.279	0.323
ϕ_r	0.148	0.147	0.143	0.140	0.120	0.105	0.084	0.063	0.044	0.014	-0.007	-0.026	-0.049	-0.070
ϕ_{Fr}	0.120	0.120	0.117	0.115	0.106	0.096	0.082	0.068	0.050	0.028	0.014	-0.004	-.020	-0.040
ξ	0.354	0.320	0.283	0.250	0.155	0.096	0.040	-0.014	-0.068	-0.1203	-0.147	-0.1728	-0.199	-0.225
ϵ	2.38	2.27	2.17	2.09	1.88	1.77	1.67	1.58	1.51	1.44	1.41	1.38	1.36	1.33

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TABLE XII – AIRFOIL GEOMETRY ON CONICAL SURFACES – STATOR 1

Inlet Root Diameter = 15.22 Inches (.387 Meters) Inlet Tip Diameter = 29.67 (.754 Meters)
Exit Root Diameter = 16.85 Inches (.428 Meters) Exit Tip Diameter = 28.93 (.735 Meters)

Multiple - Circular - Arc Airfoils, 46 Vanes

	Hub													Tip
Percent Flow	0	3.15	6.70	10.40	22.70	31.65	41.45	51.85	62.90	74.60	80.70	87.00	93.40	100.0
% Span at Leading Edge	0.0	4.9	9.8	14.7	29.7	39.6	49.7	59.8	69.8	79.9	84.9	90.0	95.0	100.0
Average % Span	0.0	4.75	9.5	14.3	29.05	38.9	49.0	59.15	69.3	79.5	84.6	89.75	94.85	100.0
% Span at Trailing Edge	0.0	4.6	9.2	13.9	28.4	38.2	48.3	58.5	68.8	79.1	84.3	89.5	94.7	100.0

U. S. Customary Units, inches and degrees

c	2.75	2.78	2.78	2.77	2.78	2.79	2.82	2.86	2.90	2.95	2.98	3.01	3.05	3.11
c_r	0.89	0.89	0.90	0.91	0.96	1.03	1.09	1.18	1.35	1.35	1.40	1.46	1.54	1.60
t/c	0.0400	0.0410	0.0430	0.0500	0.0500	0.0539	0.0579	0.0610	0.0645	0.0689	0.0700	0.0715	0.0730	0.0750
% c to max. t	56.0	55.6	55.2	54.9	53.7	53.0	52.3	51.6	51.1	50.6	50.4	50.2	50.1	50.0
a/c	0.538	0.537	0.536	0.536	0.536	0.535	0.534	0.531	0.522	0.509	0.508	0.513	0.520	0.532
RLE	0.0050	0.0050	0.0052	0.0054	0.0058	0.0060	0.0065	0.0066	0.0070	0.0072	0.0074	0.0075	0.0078	0.0080
RTE	0.0050	0.0050	0.0052	0.0054	0.0058	0.0060	0.0065	0.0066	0.0070	0.0072	0.0074	0.0075	0.0078	0.0080
$\beta^*_{ss_1}$	54.7	52.5	50.9	49.6	47.0	46.2	45.5	45.0	44.6	44.5	44.6	44.9	45.6	47.1
β^*_2	52.8	50.5	48.4	46.8	43.3	41.8	40.5	39.4	38.5	37.8	37.7	37.9	38.5	39.6
ϕ	66.4	62.7	59.6	57.1	52.6	51.1	49.8	48.7	47.9	47.7	48.3	49.7	51.7	54.6
ϕ_c	63.5	59.8	57.3	55.3	51.5	50.5	49.5	48.5	47.8	48.0	48.8	50.0	52.0	55.0
ϕ_r	8.8	8.5	8.4	8.5	9.3	10.6	12.3	14.5	17.3	20.0	21.3	22.2	22.9	23.3
ϕ_{tr}	7.5	6.3	6.4	7.0	9.3	10.6	12.5	14.8	17.8	20.8	22.0	22.5	23.0	23.5
γ	19.1	17.3	15.4	13.7	8.8	5.9	3.2	0.8	-1.3	-3.6	-4.4	-5.3	-6.2	-7.1
r	2.51	2.39	2.35	2.26	2.04	1.93	1.83	1.75	1.69	1.63	1.60	1.58	1.56	1.55

S. I. Units, meters and radians

c	0.0699	0.0706	0.0706	0.0703	0.0706	0.0709	0.0716	0.0727	0.0737	0.0749	0.0757	0.0764	0.0775	0.0790
c_r	0.0226	0.0226	0.0229	0.0231	0.0244	0.0262	0.0277	0.0299	0.0320	0.0343	0.0356	0.0371	0.0391	0.0406
t/c	0.0400	0.0410	0.0430	0.0450	0.0500	0.0539	0.0579	0.0610	0.0645	0.0689	0.0700	0.0715	0.0730	0.0750
% c to max. t	56.0	55.6	55.2	54.9	53.7	53.0	52.3	51.6	51.1	50.6	50.4	50.2	50.1	50.0
a/c	0.538	0.537	0.536	0.536	0.536	0.535	0.534	0.531	0.522	0.509	0.508	0.513	0.520	0.532
RLE	0.000127	0.000127	0.000132	0.000137	0.000147	0.000152	0.000165	0.000168	0.000178	0.000183	0.000188	0.000191	0.000198	0.000203
RTE	0.000127	0.000127	0.000132	0.000137	0.000147	0.000152	0.000165	0.000168	0.000178	0.000183	0.000188	0.000191	0.000198	0.000203
$\beta^*_{ss_1}$	0.946	0.917	0.890	0.866	0.820	0.807	0.795	0.790	0.778	0.778	0.779	0.785	0.796	0.822
β^*_2	0.922	0.881	0.846	0.817	0.756	0.730	0.707	0.689	0.672	0.660	0.659	0.662	0.672	0.692
ϕ	1.159	1.094	1.041	0.998	0.919	0.892	0.870	0.851	0.838	0.834	0.844	0.869	0.903	0.953
ϕ_c	1.108	1.044	1.000	0.965	0.899	0.881	0.864	0.846	0.834	0.839	0.852	0.872	0.907	0.960
ϕ_r	0.154	0.148	0.147	0.148	0.162	0.185	0.215	0.253	0.302	0.349	0.372	0.387	0.400	0.407
ϕ_{tr}	0.131	0.110	0.112	0.122	0.162	0.185	0.218	0.258	0.311	0.363	0.384	0.393	0.401	0.410
γ	0.334	0.309	0.269	0.239	0.153	0.103	0.056	0.0140	-0.027	-0.063	-0.077	-0.095	-0.108	-0.124
r	2.51	2.39	2.35	2.26	2.04	1.93	1.83	1.75	1.69	1.63	1.60	1.58	1.56	1.55

TABLE XIII – AIRFOIL GEOMETRY ON CONICAL SURFACES – ROTOR 2 (UNSHROUDED)

Inlet Root Diameter = 17.39 Inches (.442 Meters) Inlet Tip Diameter = 28.58 Inches (.726 Meters)
Exit Root Diameter = 18.34 Inches (.466 Meters) Exit Tip Diameter = 28.13 Inches (.714 Meters)
Axial Tilt = 0 Degrees (0 Radians) Tangential Tilt = 0 Inches (0 Meters)

Multiple - Circular - Arc Airfoils, 60 Blades

	Hub													Tip
Percent Flow	0	3.15	6.70	10.40	22.70	31.65	41.45	51.85	62.90	74.60	80.70	87.00	93.40	100.0
% Span at Leading Edge	0.0	4.5	9.0	13.6	28.0	37.7	47.8	58.0	68.4	78.9	84.1	89.4	94.7	100.0
Average % Span	0.0	4.4	8.85	13.3	27.5	37.15	47.25	57.5	67.95	78.45	83.8	89.2	94.6	100.0
% Span at Trailing Edge	0.0	4.3	8.7	13.0	27.0	36.6	46.7	57.0	67.5	78.1	83.5	89.0	94.5	100.0

U. S. Customary Units, inches and degrees

c	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
c_r	0.60	0.60	0.63	0.65	0.70	0.75	0.79	0.84	0.90	0.94	0.95	0.98	1.00	1.05
t/c	0.0950	0.0920	0.0890	0.0860	0.0760	0.0690	0.0620	0.0545	0.0475	0.0400	0.0369	0.0330	0.0290	0.0250
% c to max. t	53.8	54.0	54.0	54.5	55.3	55.8	56.6	57.6	58.5	59.8	60.3	61.0	61.4	62.0
a/c	0.518	0.519	0.518	0.520	0.520	0.525	0.526	0.530	0.543	0.565	0.580	0.595	0.613	0.625
RLE	0.0100	0.0099	0.0095	0.0093	0.0085	0.0079	0.0074	0.0070	0.0065	0.0060	0.0058	0.0055	0.0052	0.0050
RTE	0.0100	0.0099	0.0095	0.0093	0.0085	0.0079	0.0074	0.0070	0.0065	0.0060	0.0058	0.0055	0.0052	0.0050
$\beta^*_{ss_1}$	50.5	50.6	50.8	50.9	51.6	52.4	53.8	55.0	55.9	56.7	57.0	57.3	57.6	58.0
β^*_1	45.0	45.3	45.7	46.0	47.4	48.7	50.6	52.2	53.6	54.8	55.1	55.9	56.4	56.9
ϕ	61.4	54.6	48.7	43.6	30.8	24.7	19.8	15.5	12.2	10.5	10.4	10.9	11.9	13.5
ϕ_c	60.0	54.0	48.0	42.5	29.5	24.0	19.8	15.5	12.5	11.0	11.0	11.5	13.0	14.9
ϕ_r	9.5	9.0	8.8	8.3	7.2	6.4	5.4	4.2	3.3	2.0	1.3	0.5	-0.5	-1.3
ϕ_{tr}	8.9	8.6	8.3	7.9	6.8	6.0	5.3	4.4	3.4	2.4	1.7	1.0	0.2	-0.7
γ	13.7	12.7	11.7	10.6	7.3	5.1	2.7	0.2	-2.3	-4.9	-6.3	-7.6	-9.0	-10.4
r	2.26	2.20	2.15	2.10	1.94	1.85	1.77	1.69	1.62	1.55	1.52	1.48	1.46	1.43

S. I. Units, meters and radians

c	0.0533	0.0533	0.0533	0.0533	0.0533	0.0533	0.0533	0.0533	0.0533	0.0533	0.0533	0.0533	0.0533	0.0533
c_r	0.0152	0.0152	0.0160	0.0165	0.0178	0.0191	0.0201	0.0213	0.0229	0.0239	0.0241	0.0249	0.0254	0.0267
t/c	0.0950	0.0920	0.0890	0.0860	0.0760	0.0690	0.0620	0.0545	0.0475	0.0400	0.0369	0.0330	0.0290	0.0250
% c to max. t	53.8	54.0	54.0	54.5	55.3	55.8	56.6	57.6	58.5	59.8	60.3	61.0	61.4	62.0
a/c	0.518	0.519	0.518	0.520	0.520	0.525	0.526	0.530	0.543	0.565	0.580	0.595	0.613	0.625
RLE	0.000254	0.000251	0.000241	0.000236	0.000216	0.000201	0.000188	0.000178	0.000165	0.000152	0.000147	0.000140	0.000132	0.000127
RTE	0.000254	0.000251	0.000241	0.000236	0.000216	0.000201	0.000188	0.000178	0.000165	0.000152	0.000147	0.000140	0.000132	0.000127
$\beta^*_{ss_1}$	0.881	0.883	0.8865	0.890	0.890	0.914	0.940	0.961	0.976	0.991	0.995	1.001	1.005	1.012
β^*_1	0.785	0.790	0.798	0.803	0.829	0.851	0.884	0.912	0.936	0.956	0.961	0.976	0.984	0.994
ϕ	1.071	0.953	0.851	0.761	0.538	0.431	0.346	0.270	0.213	0.183	0.182	0.190	0.208	0.236
ϕ_c	1.047	0.942	0.838	0.742	0.515	0.419	0.346	0.270	0.218	0.192	0.192	0.201	0.227	0.260
ϕ_r	0.166	0.157	0.154	0.145	0.126	0.112	0.094	0.073	0.058	0.035	0.023	0.009	-0.009	-0.023
ϕ_{tr}	0.155	0.150	0.145	0.138	0.120	0.106	0.092	0.077	0.059	0.041	0.030	0.017	0.004	-0.012
γ	0.239	0.218	0.204	0.185	0.127	0.089	0.047	0.003	-0.040	-0.086	-0.110	-0.133	-0.157	-0.182
r	2.26	2.20	2.15	2.10	1.94	1.85	1.78	1.69	1.62	1.55	1.52	1.48	1.46	1.43

TABLE XIV – AIRFOIL GEOMETRY ON CONICAL SURFACES – ROTOR 2 (REDESIGN)

		HUB		TIP	
		INCHES	METERS	INCHES	METERS
INLET	DIAMETER =	17.39	.442	28.55	.725
EXIT	DIAMETER =	18.37	.467	28.14	.715

MULTIPLE – CIRCULAR – ARC AIRFOILS, 60 BLADES

	HUB													TIP
PERCENT FLOW	.00	3.15	6.70	10.40	22.70	31.65	41.45	51.65	62.90	74.60	80.70	87.00	93.40	100.00
PERCENT SPAN (LE)	.00	4.42	9.18	13.91	28.46	38.20	48.25	58.37	68.59	78.93	84.15	89.42	94.69	100.00
PERCENT SPAN (AV)	.00	4.17	8.66	13.15	27.11	36.62	46.57	56.74	67.16	77.83	83.25	88.76	94.31	100.00
PERCENT SPAN (TE)	.00	3.92	8.15	12.39	25.76	35.03	44.90	55.10	65.72	76.72	82.35	88.10	93.93	100.00

U. S. Customary Units, inches and degrees

c	2.1000	2.1000	2.1000	2.1000	2.1000	2.1000	2.1000	2.1000	2.0800	2.0250	1.9950	1.9600	1.9250	1.8900
c_f	.5900	.6120	.6300	.6520	.7180	.7580	.8000	.8480	.8810	.9010	.9100	.9150	.9170	.9250
t/c	.0950	.0923	.0895	.0865	.0775	.0710	.0645	.0580	.0510	.0442	.0415	.0373	.0335	.0300
% c to max t	55.000	55.000	55.000	55.000	55.000	55.000	55.000	55.000	55.500	56.900	57.900	59.100	60.500	62.000
a/c	.5212	.5220	.5220	.5221	.5205	.5208	.5209	.5225	.5334	.5593	.5799	.5973	.6088	.6188
RLE	.0100	.0099	.0095	.0093	.0085	.0079	.0074	.0070	.0065	.0060	.0058	.0055	.0052	.0050
RTE	.0100	.0099	.0095	.0093	.0085	.0079	.0074	.0070	.0065	.0060	.0058	.0055	.0052	.0050
β^{1*}	44.962	45.163	45.525	45.799	47.004	47.869	48.929	50.061	51.601	53.255	54.124	55.022	55.811	56.534
$\beta^{1*'}_{ss_1}$	49.079	49.482	49.985	50.388	51.794	52.598	53.500	54.402	55.404	56.304	56.805	57.205	57.505	57.805
ϕ	71.762	65.663	59.025	52.899	36.904	28.269	20.429	13.462	9.201	6.955	7.024	8.322	10.111	12.133
ϕ_E	71.029	64.879	58.222	52.125	36.384	28.009	20.469	14.010	9.832	7.821	7.991	9.372	11.222	13.261
ϕ_f	10.576	10.530	10.375	10.218	9.240	7.814	6.183	4.450	2.822	1.506	.849	.298	-.144	-.471
ϕ_{Ef}	10.000	10.000	9.900	9.800	9.000	7.700	6.200	4.600	3.100	1.900	1.300	.800	.400	.100
ϵ	13.506	12.250	10.841	9.402	5.107	2.359	-.337	-2.857	-5.133	-7.224	-8.238	-9.191	-10.045	-10.557
σ	2.2447	2.1906	2.1349	2.0825	1.9350	1.8464	1.7618	1.6832	1.5941	1.4857	1.4323	1.3774	1.3247	1.2734
s/c	.4455	.4565	.4684	.4802	.5168	.5416	.5674	.5941	.6273	.6731	.6982	.7260	.7549	.7853

S. I. Units, meters and radians

c	.0533	.0533	.0533	.0533	.0533	.0533	.0533	.0533	.0528	.0514	.0507	.0498	.0489	.0480
c_f	.0150	.0155	.0160	.0166	.0182	.0193	.0203	.0215	.0224	.0229	.0231	.0232	.0233	.0235
t/c	.0950	.0923	.0895	.0865	.0775	.0710	.0645	.0580	.0510	.0442	.0415	.0373	.0335	.0300
% c to max t	55.000	55.000	55.000	55.000	55.000	55.000	55.000	55.000	55.500	56.900	57.900	59.100	60.500	62.000
a/c	.5212	.5220	.5220	.5221	.5205	.5208	.5209	.5225	.5334	.5593	.5799	.5973	.6088	.6188
RLE ($\times 10^2$)	.0254	.0251	.0241	.0236	.0216	.0201	.0188	.0178	.0165	.0152	.0147	.0140	.0132	.0127
RTE ($\times 10^2$)	.0254	.0251	.0241	.0236	.0216	.0201	.0188	.0178	.0165	.0152	.0147	.0140	.0132	.0127
β^{1*}	.7847	.7882	.7946	.7993	.8204	.8355	.8540	.8737	.9006	.9295	.9446	.9603	.9741	.9867
$\beta^{1*'}_{ss_1}$	.8566	.8636	.8724	.8794	.9040	.9180	.9338	.9495	.9670	.9827	.9914	.9984	1.0037	1.0089
ϕ	1.2525	1.1460	1.0302	.9233	.6441	.4934	.3566	.2384	.1606	.1214	.1226	.1452	.1765	.2118
ϕ_E	1.2397	1.1324	1.0162	.9098	.6350	.4888	.3573	.2445	.1716	.1365	.1395	.1636	.1959	.2314
ϕ_f	.1846	.1838	.1811	.1783	.1613	.1364	.1079	.0777	.0493	.0263	.0148	.0052	-.0025	-.0082
ϕ_{Ef}	.1745	.1745	.1728	.1710	.1571	.1344	.1082	.0803	.0541	.0332	.0227	.0140	.0070	.0017
ϵ	.2357	.2138	.1892	.1641	.0891	.0412	-.0059	-.0499	-.0896	-.1261	-.1438	-.1604	-.1753	-.1843
σ	2.2447	2.1906	2.1349	2.0825	1.9350	1.8464	1.7618	1.6832	1.5941	1.4857	1.4323	1.3774	1.3247	1.2734
s/c	.4455	.4565	.4684	.4802	.5168	.5416	.5676	.5941	.6273	.6731	.6982	.7260	.7549	.7853

TABLE XV – AIRFOIL GEOMETRY ON CONICAL SURFACES – STATOR 2

Inlet Root Diameter = 18.56 Inches (.472 Meters) Inlet Tip Diameter = 27.90 Inches (.709 Meters)
Exit Root Diameter = 18.90 Inches (.480 Meters) Exit Tip Diameter = 27.60 Inches (.701 Meters)

Multiple - Circular - Arc Airfoils, 59 Vanes

	Hub													Tip
Percent Flow	0	3.15	6.70	10.40	22.70	31.65	41.45	51.35	62.90	74.60	80.70	87.00	93.40	100.0
% Span at Leading Edge	0.0	4.3	8.6	12.9	26.8	36.4	46.5	56.8	67.3	78.0	83.5	89.0	94.4	100.0
Average % Span	0.0	4.3	8.55	12.85	26.7	36.3	46.4	56.7	67.25	77.95	83.45	88.95	94.4	100.0
% Span at Trailing Edge	0.0	4.3	8.5	12.8	26.6	36.2	46.3	56.6	67.2	77.9	83.4	88.9	94.4	100.0

U. S. Customary Units, inches and degrees

c	2.25	2.24	2.24	2.24	2.24	2.25	2.26	2.28	2.31	2.35	2.38	2.40	2.43	2.46
c_f	0.75	0.76	0.76	0.77	0.79	0.85	0.93	1.03	1.13	1.20	1.20	1.23	1.25	1.25
t/c	0.0400	0.0420	0.0432	0.0449	0.0498	0.0530	0.0560	0.0600	0.0640	0.0675	0.0695	0.0710	0.0730	0.0750
% c to max. t	58.1	57.1	56.2	55.3	52.9	51.6	50.7	50.1	50.0	50.0	50.0	50.0	50.0	50.0
a/c	0.538	0.539	0.540	0.540	0.542	0.545	0.549	0.550	0.542	0.520	0.512	0.505	0.510	0.523
RLE	0.0050	0.0050	0.0052	0.0054	0.0058	0.0060	0.0065	0.0066	0.0070	0.0072	0.0074	0.0075	0.0078	0.0080
RTE	0.0050	0.0050	0.0052	0.0054	0.0058	0.0060	0.0065	0.0066	0.0070	0.0072	0.0074	0.0075	0.0078	0.0080
$\beta^*_{ss_1}$	49.8	48.3	47.2	46.5	45.5	45.1	44.7	44.4	44.0	43.7	43.8	44.5	45.8	48.4
β^*_2	48.7	46.7	45.1	43.9	41.5	40.3	39.2	38.5	37.7	37.1	37.1	37.6	38.7	41.0
ϕ	61.4	58.3	56.2	54.5	51.8	50.6	49.5	48.7	47.8	47.1	47.4	48.5	50.7	55.0
ϕ_E	61.0	58.5	56.0	54.3	51.6	50.8	49.6	48.8	47.8	47.3	47.5	48.5	51.3	55.5
ϕ_f	8.6	8.0	7.5	7.4	8.3	9.5	11.2	14.0	17.5	21.3	22.8	23.9	24.5	24.7
ϕ_{Ef}	8.3	7.6	7.3	7.0	8.3	9.5	11.3	14.0	18.0	21.4	22.3	24.0	24.6	25.0
ϵ	4.5	4.0	3.6	3.1	1.9	1.0	0.2	-0.2	-1.4	-2.2	-2.6	-2.9	-3.3	-3.7
σ	2.25	2.21	2.16	2.12	1.99	1.91	1.85	1.80	1.75	1.70	1.69	1.68	1.67	1.66

S. I. Units, meters and radians

c	0.0572	0.0569	0.0569	0.0569	0.0569	0.0572	0.0574	0.0579	0.0587	0.0597	0.0604	0.0609	0.0617	0.0625
c_f	0.0191	0.0193	0.0193	0.0196	0.0201	0.0216	0.0236	0.0262	0.0287	0.0305	0.0305	0.0312	0.0318	0.0318
t/c	0.0400	0.0420	0.0432	0.0449	0.0498	0.0530	0.0560	0.0600	0.0640	0.0675	0.0695	0.0710	0.0730	0.0750
% c to max. t	58.1	57.1	56.2	55.3	52.9	51.6	50.7	50.1	50.0	50.0	50.0	50.0	50.0	50.0
a/c	0.538	0.539	0.540	0.540	0.542	0.545	0.549	0.550	0.542	0.520	0.512	0.505	0.510	0.523
RLE	0.000127	0.000127	0.000132	0.000137	0.000147	0.000152	0.000165	0.000168	0.000178	0.000183	0.000188	0.000191	0.000198	0.000203
RTE	0.000127	0.000127	0.000132	0.000137	0.000147	0.000152	0.000165	0.000168	0.000178	0.000183	0.000188	0.000191	0.000198	0.000203
$\beta^*_{ss_1}$	0.870	0.844	0.824	0.811	0.794	0.788	0.781	0.776	0.769	0.764	0.765	0.776	0.800	0.846
β^*_2	0.851	0.816	0.787	0.768	0.725	0.704	0.685	0.673	0.659	0.648	0.648	0.656	0.676	0.716
ϕ	1.071	1.018	0.982	0.952	0.904	0.882	0.864	0.851	0.835	0.823	0.827	0.846	0.886	0.960
ϕ_E	1.064	1.021	0.977	0.948	0.900	0.886	0.866	0.852	0.834	0.825	0.823	0.846	0.895	0.968
ϕ_f	0.150	0.140	0.131	0.129	0.145	0.166	0.195	0.244	0.305	0.372	0.398	0.417	0.428	0.431
ϕ_{Ef}	0.145	0.133	0.127	0.122	0.145	0.166	0.197	0.244	0.314	0.373	0.398	0.419	0.429	0.436
ϵ	0.079	0.070	0.063	0.054	0.033	0.017	0.003	-0.003	-0.025	-0.038	-0.045	-0.051	-0.058	-0.065
σ	2.25	2.21	2.16	2.12	1.99	1.91	1.85	1.80	1.75	1.70	1.69	1.68	1.67	1.66

APPENDIX C

DESIGN VALUES OF OVERALL PERFORMANCE AND BLADE-ELEMENT PARAMETERS FOR THE REDESIGNED STAGE

This appendix provides the design values of overall performance and blade-element parameters for the redesigned stage. Spans and diameters for the blade-element data are given in Table XVI, and the column headings in the data table are identified in Table XVII. Finally, the overall performance and blade-element parameters are presented in Table XVIII for rotor 1, stator 1, rotor 2, and stator 2. The information is given in U. S. customary units and in S.I. units.

TABLE XVI – SPANS AND DIAMETERS FOR BLADE-ELEMENT DATA (Design Values)

SL	Rotor 1 Inlet Diameter (inches)	Rotor 1 Inlet Span (%)	Rotor 1 Exit Diameter (inches)	Rotor 1 Exit Span (%)	Stator 1 Inlet Diameter (inches)	Stator 1 Inlet Span (%)	Stator 1 Exit Diameter (inches)	Stator 1 Exit Span (%)
1	13.47	5.8	15.59	5.0	15.93	4.9	17.38	4.3
2	14.52	11.4	16.35	10.0	16.64	9.9	17.93	8.9
3	15.56	17.0	17.10	15.0	17.36	14.8	18.49	13.6
4	18.52	32.9	19.37	30.0	19.53	29.8	20.26	28.1
5	22.22	52.8	22.38	50.0	22.42	49.8	22.69	48.2
6	24.00	62.4	23.89	60.0	23.87	59.9	23.93	58.4
7	24.88	67.1	24.65	65.0	24.60	64.9	24.55	63.6
8	25.76	71.8	25.40	70.0	25.33	69.9	25.18	68.8
9	28.38	85.9	27.67	85.0	27.50	85.0	27.07	84.4
10	29.26	90.6	28.42	90.0	28.23	90.0	27.70	89.6
11	30.13	95.3	29.18	95.0	28.95	95.0	28.34	94.8

SL	Rotor 2 Inlet Diameter (inches)	Rotor 2 Inlet Span (%)	Rotor 2 Exit Diameter (inches)	Rotor 2 Exit Span (%)	Stator 2 Inlet Diameter (inches)	Stator 2 Inlet Span (%)	Stator 2 Exit Diameter (inches)	Stator 2 Exit Span (%)
1	17.87	4.3	18.74	3.8	18.93	3.8	19.18	3.2
2	18.38	8.8	19.14	7.8	19.30	7.8	19.49	6.8
3	18.90	13.5	19.54	12.0	19.69	11.9	19.82	10.6
4	20.51	28.0	20.84	25.3	20.94	25.3	20.91	23.2
5	22.74	48.0	22.73	44.6	22.75	44.8	22.58	42.2
6	23.88	58.1	23.73	54.9	23.72	55.1	23.49	52.8
7	24.45	63.3	24.25	60.2	24.22	60.5	23.97	58.2
8	25.03	68.4	24.78	65.6	24.72	65.9	24.46	63.9
9	26.78	84.2	26.42	82.4	26.29	82.7	26.00	81.7
10	27.37	89.4	26.98	88.1	26.82	88.4	26.53	87.8
11	27.96	94.7	27.55	94.0	27.36	94.2	27.07	93.9

TABLE XVII – IDENTIFICATION OF OVERALL PERFORMANCE AND BLADE-ELEMENT DATA TABLE COLUMN HEADINGS

ROTOR 1

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-I	V'-1 FT/SEC	V'-2 FT/SEC
*	ϵ_7	ϵ_8	V_7	V_8	V_{m7}	V_{m8}	$V_{\theta 7}$	$V_{\theta 8}$	β_7	β_8	M_7	M_8	U_7	U_8	M'_7	M'_8	V'_7	V'_8
SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	Vθ'-1 FT/SEC	Vθ'-2 FT/SEC	PO/PO INLET	
*	i_{s_7}	i_{m7}	δ^o_8	$\Delta\beta$	$\rho_7 V_{m7}$	$\rho_8 Vm_8$	D	$\bar{\omega}$	$\frac{\bar{\omega}\cos\beta'_8}{2\sigma}$	$\frac{P_8}{P_7}$	η_p	η_{ad}	β'_7	β'_8	$V'_{\theta 7}$	$V'_{\theta 8}$	$\frac{P_8}{P_o}$	
				TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT		TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %					
				$\frac{T_8}{T_o}$	$\frac{P_8}{P_o}$	η_{ad}	η_p	$\frac{W\sqrt{\theta_7}}{\delta_7 A_7}$		$\frac{T_8}{T_7}$	$\frac{P_8}{P_7}$	η_{ad_8}	η_{p8}					

STATOR 1

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
*	ϵ_9	ϵ_{10}	V_9	V_{10}	V_{m9}	V_{m10}	$V_{\theta 9}$	$V_{\theta 10}$	β_9	β_{10}	M_9	M_{10}	$\frac{P_{10}}{P_o}$	$\frac{T_{10}}{T_o}$	$\frac{P_{10}}{P_7}$	$\frac{T_{10}}{T_7}$
SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG	
*	i_{s_9}	i_{m9}	δ^o_{10}	$\Delta\beta$	$\rho_9 V_{m9}$	$\rho_{10} V_{m10}$	D	$\bar{\omega}$	$\frac{\bar{\omega}\cos\beta_{10}}{2\sigma}$	$\frac{P_{10}}{P_9}$	$\eta_{ps\text{-}st}$	η_{ad}	η_p	$\eta_{ad\text{-}st}$	$\eta_{p\text{-}st}$	
		NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %		TO2/TO1	PO2/PO1	EFF-AD STAGE %					
		$\frac{N}{\sqrt{\theta_7}}$	$\frac{W\sqrt{\theta_7}}{\delta_7}$	$\frac{T_{10}}{T_o}$	$\frac{P_{10}}{P_o}$	η_{ad}	η_p		$\frac{T_{10}}{T_7}$	$\frac{P_{10}}{P_9}$	$\eta_{ad\text{-}st}$					

* SEE TABLE XVI
SUBSCRIPTS REFER TO CALCULATION STATIONS

TABLE XVII (Cont'd) – IDENTIFICATION OF OVERALL PERFORMANCE AND BLADE-ELEMENT DATA TABLE COLUMN HEADINGS

ROTOR 2

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-I	V'-1 FT/SEC	V'-2 FT/SEC
*	ϵ_{12}	ϵ_{13}	V_{12}	V_{13}	V_{m12}	V_{m13}	$V_{\theta 12}$	$V_{\theta 13}$	β_{12}	β_{13}	M_{12}	M_{13}	U_{12}	U_{13}	M'_{12}	M'_{13}	V'_{12}	V'_{13}
SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	Vθ'-1 FT/SEC	Vθ'-2 FT/SEC	PO/PO INLET.	
*	i_{s12}	i_{m12}	δ^{o}_{13}	$\Delta\beta$	$\rho_{12}V_{m12}$	$\rho_{13}V_{m13}$	D	$\bar{\omega}$	$\frac{\bar{\omega}\cos\beta'_{13}}{2\sigma}$	$\frac{P_{13}}{P_{12}}$	η_p	η_{ad}	β'_{12}	β'_{13}	$V'_{\theta 12}$	$V'_{\theta 13}$	$\frac{P_{13}}{P_o}$	
				TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT		TO2/TO1	P02/P01	EFF-AD ROTOR %	EFF-P ROTOR %					
				$\frac{T_{13}}{T_o}$	$\frac{P_{13}}{P_o}$	η_{ad}	η_p	$\frac{W\sqrt{\theta_{12}}}{\delta_{12}A_{12}}$		$\frac{T_{13}}{T_{12}}$	$\frac{P_{13}}{P_{12}}$	$\eta_{ad_{13}}$	η_{p13}					

STATOR 2

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
*	ϵ_{14}	ϵ_{15}	V_{14}	V_{15}	V_{m14}	V_{m15}	$V_{\theta 14}$	$V_{\theta 15}$	β_{14}	β_{15}	M_{14}	M_{15}	$\frac{P_{15}}{P_o}$	$\frac{T_{15}}{T_o}$	$\frac{P_{15}}{P_{12}}$	$\frac{T_{15}}{T_{12}}$
SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG	
*	i_{s14}	i_{m14}	δ_{15}	$\Delta\beta$	$\rho_{14}V_{m14}$	$\rho_{15}V_{m15}$	D	$\bar{\omega}$	$\frac{\bar{\omega}\cos\beta_{15}}{2\sigma}$	$\frac{P_{15}}{P_{14}}$	$\eta_{ps\text{-}st}$	η_{ad}	η_p	$\eta_{ad\text{-}st}$	$\eta_{p\text{-}st}$	
		NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %		TO2/TO1	PO2/PO1	EFF-AD STAGE %					
		$\frac{N}{\sqrt{\theta_{12}}}$	$\frac{W\sqrt{\theta_{12}}}{\delta_{12}}$	$\frac{T_{16}}{T_o}$	$\frac{P_{16}}{P_o}$	η_{ad}	η_p		$\frac{T_{15}}{T_{12}}$	$\frac{P_{15}}{P_{14}}$	$\eta_{ad\text{-}st}$					

* SEE TABLE XVI
SUBSCRIPTS REFER TO CALCULATION STATIONS

TABLE XVIII – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA (ROTOR 1)
(Design Values)

U. S. CUSTOMARY UNITS

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-I	V'-1 FT/SEC	V'-2 FT/SEC
1	16.856	18.313	632.5	1044.9	632.5	610.9	0.0	847.7	0.0	54.3	0.5854	0.9254	630.1	729.4	0.8263	0.5511	892.7	622.3
2	14.504	15.979	646.0	1004.5	646.0	618.5	0.0	791.5	0.0	52.0	0.5989	0.8856	679.4	764.7	0.8691	0.5458	937.5	619.1
3	12.344	13.810	659.3	970.8	659.3	617.3	0.0	749.3	0.0	50.5	0.6120	0.8523	727.8	800.0	0.9116	0.5437	982.0	619.4
4	6.811	8.058	691.3	892.4	691.3	607.9	0.0	653.3	0.0	47.1	0.6442	0.7756	866.5	905.9	1.0329	0.5722	1108.5	658.3
5	0.897	1.660	713.4	826.7	713.4	592.6	0.0	576.4	0.0	44.2	0.6666	0.7112	1039.6	1047.1	1.1781	0.6511	1260.8	756.7
6	-1.707	-1.161	715.9	803.7	715.9	588.1	0.0	547.8	0.0	43.0	0.6692	0.6887	1122.8	1117.6	1.2447	0.7017	1331.6	818.9
7	-2.975	-2.499	715.1	795.0	715.1	587.4	0.0	535.7	0.0	42.4	0.6683	0.6800	1163.9	1152.9	1.2767	0.7288	1366.1	852.0
8	-4.261	-3.792	713.0	787.9	713.0	588.0	0.0	524.5	0.0	41.7	0.6662	0.6729	1205.0	1188.2	1.3082	0.7572	1400.2	886.7
9	-8.237	-7.636	698.1	778.8	698.1	591.7	0.0	506.3	0.0	40.5	0.6510	0.6613	1327.7	1294.1	1.3989	0.8366	1500.0	985.3
10	-9.620	-8.941	690.0	780.8	690.0	593.5	0.0	507.3	0.0	40.5	0.6428	0.6613	1368.5	1329.4	1.4279	0.8588	1532.6	1013.9
11	-11.014	-10.280	680.3	789.2	680.3	593.3	0.0	520.4	0.0	41.2	0.6331	0.6657	1409.4	1364.7	1.4564	0.8704	1565.0	1031.9

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VΘ'-1 FT/SEC	VΘ'-2 FT/SEC	PO/PO INLET
1	-1.69	2.92	16.98	55.67	40.98	48.60	0.5274	0.0535	0.0116	1.8509	97.13	96.89	44.69	-10.97	-630.1	118.3	1.8509
2	-1.57	2.73	17.12	48.73	41.55	50.40	0.5455	0.0439	0.0101	1.8321	97.40	97.19	46.25	-2.48	-679.4	26.8	1.8321
3	-1.34	2.76	16.22	42.97	42.08	51.27	0.5605	0.0465	0.0111	1.8178	97.00	96.75	47.66	4.69	-727.8	-50.7	1.8178
4	-0.16	3.31	12.88	28.77	43.31	52.56	0.5668	0.0586	0.0144	1.7873	95.37	94.99	51.34	22.57	-866.5	-252.6	1.7873
5	1.02	3.70	8.19	17.07	44.09	52.78	0.5375	0.0843	0.0198	1.7693	92.04	91.39	55.53	38.46	-1039.6	-470.6	1.7693
6	1.55	3.83	6.76	13.39	44.18	52.89	0.5150	0.0946	0.0215	1.7651	90.46	89.69	57.48	44.10	-1122.8	-569.8	1.7651
7	1.86	3.96	6.10	12.03	44.15	53.04	0.5029	0.0992	0.0222	1.7650	89.73	88.89	58.44	46.42	-1163.9	-617.2	1.7650
8	2.18	4.13	5.60	10.94	44.08	53.28	0.4903	0.1029	0.0227	1.7660	89.08	88.19	59.40	48.46	-1205.0	-663.7	1.7660
9	3.22	4.64	6.25	9.22	43.55	53.85	0.4613	0.1258	0.0268	1.7760	85.95	84.79	62.26	53.05	-1327.7	-787.8	1.7760
10	3.55	4.84	7.11	9.13	43.26	53.95	0.4565	0.1398	0.0297	1.7830	84.30	82.99	63.23	54.11	-1368.5	-822.1	1.7830
11	3.87	5.02	8.46	9.40	42.90	53.68	0.4613	0.1668	0.0355	1.7962	81.45	79.89	64.21	54.80	-1409.4	-844.2	1.7962

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.2014	1.7856	89.35	90.17	41.84	1.2014	1.7856	89.35	90.17

S. I. UNITS

SL	EPSI-1 RADIAN	EPSI-2 RADIAN	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VΘ-1 M/SEC	VΘ-2 M/SEC	β-1 RADIAN	B-2 RADIAN	M-1	M-2	U-1 M/SEC	U-2 M/SEC	M'-1	M'-I	V'-1 M/SEC	V'-2 M/SEC
1	0.2942	0.3196	192.8	318.5	192.8	186.2	0.0	258.4	0.0000	0.9469	0.5854	0.9254	192.0	222.3	0.8263	0.5511	272.1	189.7
2	0.2532	0.2789	196.9	306.2	196.9	188.5	0.0	241.2	0.0000	0.9077	0.5989	0.8856	207.1	233.1	0.8691	0.5458	285.7	188.7
3	0.2154	0.2410	200.9	295.9	200.9	188.1	0.0	228.4	0.0000	0.8818	0.6120	0.8523	221.8	243.8	0.9116	0.5437	299.3	188.8
4	0.1189	0.1406	210.7	272.0	210.7	185.3	0.0	199.1	0.0000	0.8215	0.6442	0.7756	264.1	276.1	1.0329	0.5722	337.8	200.6
5	0.0157	0.0290	217.4	252.0	217.4	180.6	0.0	175.7	0.0000	0.7716	0.6666	0.7112	316.8	319.1	1.1781	0.6511	384.3	230.6
6	-0.0298	-0.0203	218.2	245.0	218.2	179.2	0.0	167.0	0.0000	0.7500	0.6692	0.6887	342.2	340.6	1.2447	0.7017	405.9	249.6
7	-0.0519	-0.0436	218.0	242.3	218.0	179.0	0.0	163.3	0.0000	0.7394	0.6683	0.6800	354.8	351.4	1.2767	0.7288	416.4	259.7
8	-0.0744	-0.0662	217.3	240.2	217.3	179.2	0.0	159.9	0.0000	0.7283	0.6662	0.6729	367.3	362.2	1.3082	0.7572	426.7	270.3
9	-0.1438	-0.1333	212.8	237.4	212.8	180.3	0.0	154.3	0.0000	0.7070	0.6510	0.6613	404.6	394.4	1.3989	0.8366	457.2	300.3
10	-0.1679	-0.1560	210.3	238.0	210.3	180.9	0.0	154.6	0.0000	0.7060	0.6428	0.6613	417.1	405.2	1.4279	0.8588	467.1	309.0
11	-0.1922	-0.1794	207.4	240.5	207.4	180.8	0.0	158.6	0.0000	0.7182	0.6331	0.6657	429.6	415.9	1.4564	0.8704	477.0	314.5

SL	INCS RADIAN	INCM RADIAN	DEV RADIAN	TURN RADIAN	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 RADIAN	B'-2 RADIAN	VΘ'-1 M/SEC	VΘ'-2 M/SEC	PO/PO INLET
1	-0.0295	0.0509	0.2964	0.9716	40.98	48.60	0.5274	0.0535	0.0116	1.8509	97.13	96.89	0.7800	-0.1915	-192.0	36.1	1.8509
2	-0.0274	0.0476	0.2988	0.8505	41.55	50.40	0.5455	0.0439	0.0101	1.8321	97.40	97.19	0.8072	-0.0433	-207.1	8.2	1.8321
3	-0.0234	0.0482	0.2832	0.7500	42.08	51.27	0.5605	0.0465	0.0111	1.8178	97.00	96.75	0.8319	0.0819	-221.8	-15.4	1.8178
4	-0.0028	0.0577	0.2249	0.5022	43.31	52.56	0.5668	0.0586	0.0144	1.7873	95.37	94.99	0.8961	0.3939	-264.1	-77.0	1.7873
5	0.0177	0.0645	0.1429	0.2980	44.09	52.78	0.5375	0.0843	0.0198	1.7693	92.04	91.39	0.9692	0.6712	-316.8	-143.4	1.7693
6	0.0270	0.0669	0.1179	0.2336	44.18	52.89	0.5150	0.0946	0.0215	1.7651	90.46	89.69	1.0033	0.7696	-342.2	-173.7	1.7651
7	0.0325	0.0692	0.1065	0.2099	44.15	53.04	0.5029	0.0992	0.0222	1.7650	89.73	88.89	1.0200	0.8101	-354.8	-188.1	1.7650
8	0.0380	0.0721	0.0977	0.1910	44.08	53.28	0.4903	0.1029	0.0227	1.7660	89.08	88.19	1.0367	0.[illegible]57	-367.3	-202.3	1.7660
9	0.0561	0.0810	0.1091	0.1609	43.55	53.85	0.4613	0.1258	0.0268	1.7760	85.95	84.79	1.0867	0.9258	-404.6	-240.1	1.7760
10	0.0620	0.0845	0.1240	0.1593	43.26	53.95	0.4565	0.1398	0.0297	1.7830	84.30	82.99	1.1036	0.9443	-417.1	-250.6	1.7830
11	0.0676	0.0877	0.1476	0.1641	42.90	53.68	0.4613	0.1668	0.0355	1.7962	81.45	79.89	1.1206	0.9565	-429.6	-257.3	1.7962

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 KG/SEC SQM	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.2014	1.7856	89.35	90.17	204.16	1.2014	1.7856	89.35	90.17

TABLE XVIII (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA (STATOR 1) (Design Values)

U. S. CUSTOMARY UNITS

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	V0-1 FT/SEC	V0-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	18.108	14.872	1048.9	645.2	641.6	645.2	829.8	0.0	52.5	0.0	0.9295	0.5434	1.7097	1.1983	1.7097	1.1983
2	15.799	13.107	1012.9	646.9	649.1	646.9	777.5	0.0	50.3	0.0	0.8941	0.5459	1.7191	1.1942	1.7191	1.1942
3	13.695	11.432	982.5	650.1	648.5	650.1	738.1	0.0	48.8	0.0	0.8641	0.5492	1.7277	1.1923	1.7277	1.1923
4	8.225	6.821	910.7	653.3	639.8	653.3	648.0	0.0	45.4	0.0	0.7935	0.5527	1.7376	1.1899	1.7376	1.1899
5	2.216	1.292	849.3	656.9	624.6	656.9	575.4	0.0	42.6	0.0	0.7327	0.5550	1.7386	1.1936	1.7386	1.1936
6	-0.394	-1.234	827.6	659.9	619.9	659.9	548.3	0.0	41.5	0.0	0.7112	0.5570	1.7398	1.1964	1.7398	1.1964
7	-1.619	-2.410	819.4	662.2	619.1	662.2	536.8	0.0	40.9	0.0	0.7029	0.5586	1.7417	1.1981	1.7417	1.1981
8	-2.782	-3.519	812.8	665.0	619.5	665.0	526.1	0.0	40.4	0.0	0.6961	0.5607	1.7445	1.1999	1.7445	1.1999
9	-6.018	-6.557	805.2	674.0	623.6	674.0	509.3	0.0	39.3	0.0	0.6857	0.5662	1.7547	1.2101	1.7547	1.2101
10	-7.049	-7.465	808.0	675.8	626.1	675.8	510.8	0.0	39.3	0.0	0.6865	0.5663	1.7566	1.2163	1.7566	1.2163
11	-8.088	-8.333	817.6	683.4	627.1	683.4	524.5	0.0	40.0	0.0	0.6918	0.5702	1.7640	1.2278	1.7640	1.2278

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-0.08	2.03	12.33	52.47	50.87	60.99	0.5396	0.1784	0.0365	0.9237	77.70	83.43	84.62	83.43	84.62
2	-0.59	1.82	11.23	50.26	52.56	61.61	0.5183	0.1523	0.0323	0.9383	79.81	86.17	87.16	86.17	87.16
3	-0.76	2.03	10.39	48.77	53.38	62.22	0.4989	0.1285	0.0284	0.9504	81.90	87.87	88.75	87.87	88.75
4	-1.64	2.08	9.27	45.36	54.63	62.90	0.4531	0.0819	0.0200	0.9722	86.28	90.00	90.73	90.00	90.73
5	-2.86	2.18	9.31	42.64	54.86	63.01	0.4106	0.0579	0.0158	0.9826	87.95	88.36	89.21	88.36	89.21
6	-3.53	2.08	9.36	41.49	54.96	63.13	0.3921	0.0501	0.0143	0.9857	88.37	87.23	88.16	87.23	88.16
7	-3.86	2.01	9.39	40.94	55.10	63.27	0.3833	0.0469	0.0137	0.9868	88.50	86.65	87.63	86.65	87.63
8	-4.24	1.90	9.43	40.36	55.33	63.48	0.3745	0.0440	0.0131	0.9878	88.65	86.14	87.16	86.14	87.16
9	-5.31	1.57	10.55	39.31	55.90	63.98	0.3618	0.0445	0.0139	0.9880	87.27	82.87	84.14	82.87	84.14
10	-5.64	1.41	11.77	39.30	56.03	63.89	0.3656	0.0548	0.0174	0.9852	84.43	80.68	82.12	80.68	82.12
11	-5.60	1.55	13.31	40.03	55.82	64.14	0.3719	0.0655	0.0210	0.9821	81.50	77.22	78.93	77.22	78.93

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
10720.	184.20	1.2014	1.7422	85.26	86.34	1.2014	0.9757	85.26

S. I. UNITS

SL	EPSI-1 RADIAN	EPSI-2 RADIAN	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	V0-1 M/SEC	V0-2 M/SEC	B-1 RADIAN	B-2 RADIAN	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	0.3160	0.2596	319.7	196.7	195.5	196.7	252.9	0.0	0.9158	0.0000	0.9295	0.5434	1.7097	1.1983	1.7097	1.1983
2	0.2757	0.2288	308.7	197.2	197.8	197.2	237.0	0.0	0.8771	0.0000	0.8941	0.5459	1.7191	1.1942	1.7191	1.1942
3	0.2390	0.1995	299.5	198.1	197.6	198.1	225.0	0.0	0.8511	0.0000	0.8641	0.5492	1.7277	1.1923	1.7277	1.1923
4	0.1435	0.1190	277.6	199.1	195.0	199.1	197.5	0.0	0.7917	0.0000	0.7935	0.5527	1.7376	1.1899	1.7376	1.1899
5	0.0387	0.0225	258.8	200.2	190.4	200.2	175.4	0.0	0.7442	0.0000	0.7327	0.5550	1.7386	1.1936	1.7386	1.1936
6	-0.0069	-0.0215	252.2	201.1	188.9	201.1	167.1	0.0	0.7241	0.0000	0.7112	0.5570	1.7398	1.1964	1.7398	1.1964
7	-0.0283	-0.0421	249.7	201.8	188.7	201.8	163.6	0.0	0.7145	0.0000	0.7029	0.5586	1.7417	1.1981	1.7417	1.1981
8	-0.0486	-0.0614	247.7	202.7	188.8	202.7	160.3	0.0	0.7044	0.0000	0.6961	0.5607	1.7445	1.1999	1.7445	1.1999
9	-0.1050	-0.1144	245.4	205.4	190.1	205.4	155.2	0.0	0.6861	0.0000	0.6857	0.5662	1.7547	1.2101	1.7547	1.2101
10	-0.1230	-0.1303	246.3	206.0	190.8	206.0	155.7	0.0	0.6860	0.0000	0.6865	0.5663	1.7566	1.2163	1.7566	1.2163
11	-0.1412	-0.1454	249.2	208.3	191.1	208.3	159.9	0.0	0.6986	0.0000	0.6918	0.5702	1.7640	1.2278	1.7640	1.2278

SL	INCS RADIAN	INCM RADIAN	DEV RADIAN	TURN RADIAN	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-0.0014	0.0354	0.2152	0.9158	50.87	60.99	0.5396	0.1784	0.0365	0.9237	77.70	83.43	84.62	83.43	84.62
2	-0.0102	0.0317	0.1960	0.8771	52.56	61.61	0.5183	0.1523	0.0323	0.9383	79.81	86.17	87.16	86.17	87.16
3	-0.0132	0.0354	0.1814	0.8511	53.38	62.22	0.4989	0.1285	0.0284	0.9504	81.90	87.87	88.75	87.87	88.75
4	-0.0287	0.0362	0.1618	0.7917	54.63	62.90	0.4531	0.0819	0.0200	0.9722	86.28	90.00	90.73	90.00	90.73
5	-0.0500	0.0381	0.1625	0.7442	54.86	63.01	0.4106	0.0579	0.0158	0.9826	87.95	88.36	89.21	88.36	89.21
6	-0.0616	0.0364	0.1633	0.7241	54.96	63.13	0.3921	0.0501	0.0143	0.9857	88.37	87.23	88.16	87.23	88.16
7	-0.0674	0.0351	0.1638	0.7145	55.10	63.27	0.3833	0.0469	0.0137	0.9868	88.50	86.65	87.63	86.65	87.63
8	-0.0741	0.0332	0.1646	0.7044	55.33	63.48	0.3745	0.0440	0.0131	0.9878	88.65	86.14	87.16	86.14	87.16
9	-0.0927	0.0274	0.1841	0.6861	55.90	63.98	0.3618	0.0445	0.0139	0.9880	87.27	82.87	84.14	82.87	84.14
10	-0.0984	0.0247	0.2055	0.6860	56.03	63.89	0.3656	0.0548	0.0174	0.9852	84.43	80.68	82.12	80.68	82.12
11	-0.0978	0.0270	0.2324	0.6986	55.82	64.14	0.3719	0.0655	0.0210	0.9821	81.50	77.22	78.93	77.22	78.93

NCORR INLET RAD/SEC	WCORR INLET KG/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
1122.60	83.537	1.2014	1.7422	85.26	86.34	1.2014	0.9757	85.26

TABLE XVIII (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA (ROTOR 2) (Design Values)

U. S. CUSTOMARY UNITS

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-I	V'-1 FT/SEC	V'-2 FT/SEC
1	11.563	11.020	712.7	1165.6	712.7	707.2	0.0	926.5	0.0	52.5	0.6041	0.9383	835.9	876.7	0.9311	0.5707	1098.5	709.0
2	10.701	9.701	721.1	1126.1	721.1	709.0	0.0	874.9	0.0	50.9	0.6129	0.9061	859.5	895.1	0.9536	0.5707	1122.0	709.3
3	9.687	8.437	730.8	1085.7	730.8	707.7	0.0	823.3	0.0	49.2	0.6224	0.8727	883.9	914.2	0.9767	0.5735	1146.9	713.6
4	6.086	4.970	750.2	986.8	750.2	684.0	0.0	711.3	0.0	46.1	0.6409	0.7895	959.5	975.0	1.0405	0.5865	1218.0	733.0
5	0.851	0.805	762.2	880.6	762.2	646.2	0.0	598.2	0.0	42.8	0.6509	0.6998	1063.8	1063.1	1.1175	0.6326	1308.7	796.0
6	-1.694	-1.214	764.2	833.3	764.2	630.0	0.0	545.5	0.0	40.9	0.6519	0.6607	1116.9	1110.0	1.1545	0.6707	1353.3	846.0
7	-2.906	-2.219	764.9	811.3	764.9	621.7	0.0	521.3	0.0	39.9	0.6521	0.6425	1143.7	1134.2	1.1729	0.6914	1376.0	873.0
8	-4.053	-3.227	765.6	793.1	765.6	614.1	0.0	501.9	0.0	39.2	0.6522	0.6273	1170.7	1158.9	1.1916	0.7113	1398.8	899.4
9	-7.190	-6.449	766.3	761.9	766.3	608.3	0.0	458.9	0.0	36.9	0.6498	0.5995	1252.8	1235.7	1.2453	0.7763	1468.6	986.7
10	-8.106	-7.603	764.8	763.0	764.8	606.8	0.0	462.5	0.0	37.2	0.6467	0.5978	1280.3	1262.0	1.2610	0.7864	1491.4	1003.7
11	-8.885	-8.767	768.5	770.6	768.5	602.3	0.0	480.6	0.0	38.5	0.6468	0.5990	1308.0	1288.8	1.2767	0.7834	1517.0	1007.9

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VΘ'-1 FT/SEC	VΘ'-2 FT/SEC	PO/PO INLET
1	-0.01	4.31	16.39	53.48	65.20	79.63	0.5515	0.1335	0.0303	1.8831	91.73	90.95	49.47	-4.01	-835.9	49.8	3.2197
2	0.03	4.48	15.44	48.36	66.23	81.37	0.5537	0.1296	0.0303	1.8443	91.42	90.65	49.98	1.62	-859.5	-20.2	3.1705
3	0.07	4.65	14.82	43.13	67.20	82.59	0.5527	0.1234	0.0293	1.8039	91.24	90.48	50.43	7.29	-883.9	-90.9	3.1166
4	0.27	5.06	11.51	30.94	68.77	82.98	0.5497	0.1066	0.0256	1.7287	91.08	90.36	52.02	21.08	-959.5	-263.7	3.0038
5	0.91	5.49	7.51	18.65	69.27	80.80	0.5213	0.0844	0.0194	1.6595	91.55	90.92	54.38	35.73	-1063.8	-464.9	2.8852
6	1.23	5.57	5.63	13.76	69.30	79.50	0.4941	0.0725	0.0160	1.6251	92.06	91.49	55.60	41.84	-1116.9	-564.6	2.8274
7	1.32	5.40	5.29	11.65	69.33	78.67	0.4805	0.0696	0.0151	1.6068	92.04	91.49	56.20	44.54	-1143.7	-612.9	2.7986
8	1.40	5.21	4.55	9.91	69.40	77.81	0.4689	0.0709	0.0152	1.5907	91.59	91.01	56.78	46.87	-1170.7	-657.0	2.7749
9	1.67	4.35	4.74	6.66	69.38	76.87	0.4365	0.0741	0.0160	1.5587	90.40	89.78	58.48	51.83	-1252.8	-776.8	2.7350
10	1.87	4.05	6.01	6.39	69.10	76.17	0.4388	0.0908	0.0200	1.5576	88.26	87.51	59.08	52.69	-1280.3	-799.5	2.7360
11	1.97	3.66	7.55	6.28	69.07	74.56	0.4544	0.1264	0.0286	1.5556	84.00	82.97	59.48	53.20	-1308.0	-808.2	2.7440

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.4071	2.8838	86.46	88.30	41.44	1.1712	1.6553	89.86	90.55

S. I. UNITS

SL	EPSI-1 RADIAN	EPSI-2 RADIAN	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	VΘ-1 M/SEC	VΘ-2 M/SEC	B-1 RADIAN	B-2 RADIAN	M-1	M-2	U-1 M/SEC	U-2 M/SEC	M'-1	M'-I	V'-1 M/SEC	V'-2 M/SEC
1	0.2018	0.1923	217.2	355.3	217.2	215.6	0.0	282.4	0.0000	0.9166	0.6041	0.9383	254.8	267.2	0.9311	0.5707	334.8	216.1
2	0.1868	0.1693	219.8	343.2	219.8	216.1	0.0	266.7	0.0000	0.8878	0.6129	0.9061	262.0	272.8	0.9536	0.5707	342.0	216.2
3	0.1691	0.1473	222.8	330.9	222.8	215.7	0.0	250.9	0.0000	0.8592	0.6224	0.8727	269.4	278.6	0.9767	0.5735	349.6	217.5
4	0.1062	0.0867	228.7	300.8	228.7	208.5	0.0	216.8	0.0000	0.8047	0.6409	0.7895	292.5	297.2	1.0405	0.5865	371.2	223.4
5	0.0149	0.0140	232.3	268.4	232.3	196.9	0.0	182.3	0.0000	0.7469	0.6509	0.6998	324.2	324.0	1.1175	0.6326	398.9	242.6
6	-0.0296	-0.0212	232.9	254.0	232.9	192.0	0.0	166.2	0.0000	0.7131	0.6519	0.6607	340.4	338.3	1.1545	0.6707	412.5	257.8
7	-0.0507	-0.0387	233.1	247.3	233.1	189.5	0.0	158.9	0.0000	0.6969	0.6521	0.6425	348.6	345.7	1.1729	0.6914	419.4	266.1
8	-0.0707	-0.0563	233.3	241.7	233.3	187.2	0.0	153.0	0.0000	0.6840	0.6522	0.6273	356.8	353.2	1.1916	0.7113	426.3	274.1
9	-0.1255	-0.1126	233.6	232.2	233.6	185.4	0.0	139.9	0.0000	0.6444	0.6498	0.5995	381.8	376.6	1.2453	0.7763	447.6	300.7
10	-0.1415	-0.1327	233.1	232.5	233.1	185.0	0.0	141.0	0.0000	0.6493	0.6467	0.5978	390.2	384.6	1.2610	0.7864	454.5	305.9
11	-0.1551	-0.1530	234.2	234.9	234.2	183.6	0.0	146.5	0.0000	0.6718	0.6468	0.5990	398.6	392.8	1.2767	0.7834	462.4	307.2

SL	INCS RADIAN	INCM RADIAN	DEV RADIAN	TURN RADIAN	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 RADIAN	B'-2 RADIAN	VΘ'-1 M/SEC	VΘ'-2 M/SEC	PO/PO INLET
1	-0.0001	0.0752	0.2861	0.9334	65.20	79.63	0.5515	0.1335	0.0303	1.8831	91.73	90.95	0.8634	-0.0699	-254.8	15.2	3.2197
2	0.0005	0.0781	0.2695	0.8440	66.23	81.37	0.5537	0.1296	0.0303	1.8443	91.42	90.65	0.8723	0.0283	-262.0	-6.1	3.1705
3	0.0013	0.0812	0.2587	0.7528	67.20	82.59	0.5527	0.1234	0.0293	1.8039	91.24	90.48	0.8801	0.1273	-269.4	-27.7	3.1166
4	0.0047	0.0883	0.2009	0.5401	68.77	82.98	0.5497	0.1066	0.0256	1.7287	91.08	90.36	0.9079	0.3678	-292.5	-80.4	3.0038
5	0.0159	0.0958	0.1311	0.3255	69.27	80.80	0.5213	0.0844	0.0194	1.6595	91.55	90.92	0.9491	0.6237	-324.2	-141.7	2.8852
6	0.0215	0.0972	0.0982	0.2402	69.30	79.50	0.4941	0.0725	0.0160	1.6251	92.06	91.49	0.9704	0.7302	-340.4	-172.1	2.8274
7	0.0231	0.0943	0.0923	0.2033	69.33	78.67	0.4805	0.0696	0.0151	1.6068	92.04	91.49	0.9808	0.7774	-348.6	-186.8	2.7986
8	0.0244	0.0909	0.0794	0.1730	69.40	77.81	0.4689	0.0709	0.0152	1.5907	91.59	91.01	0.9910	0.8180	-356.8	-200.3	2.7749
9	0.0292	0.0760	0.0826	0.1162	69.38	76.87	0.4365	0.0741	0.0160	1.5587	90.40	89.78	1.0207	0.9046	-381.8	-236.8	2.7350
10	0.0327	0.0708	0.1049	0.1115	69.10	76.17	0.4388	0.0908	0.0200	1.5576	88.26	87.51	1.0311	0.9196	-390.2	-243.7	2.7360
11	0.0343	0.0639	0.1317	0.1095	69.07	74.56	0.4544	0.1264	0.0286	1.5556	84.00	82.97	1.0381	0.9286	-398.6	-246.3	2.7440

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 KG/SEC SQM	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.4071	2.8838	86.46	88.30	202.24	1.1712	1.6553	89.86	90.55

TABLE XVIII (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA (STATOR 2) (Design Values)

U. S. CUSTOMARY UNITS

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	V0-1 FT/SEC	V0-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	8.365	0.533	1194.0	772.3	764.4	772.3	917.3	0.0	50.4	0.0	0.9654	0.5934	2.9829	1.4575	1.7447	1.2162
2	7.134	0.220	1153.8	757.4	760.8	757.4	867.4	0.0	48.9	0.0	0.9322	0.5841	2.9674	1.4440	1.7261	1.2092
3	6.016	-0.065	1112.5	740.7	755.1	740.7	817.1	0.0	47.4	0.0	0.8976	0.5728	2.9465	1.4325	1.7054	1.2014
4	3.203	-0.805	1011.9	704.5	722.8	704.5	708.1	0.0	44.5	0.0	0.8122	0.5474	2.8977	1.4113	1.6677	1.1861
5	0.286	-1.497	904.6	653.6	679.1	653.6	597.6	0.0	41.3	0.0	0.7208	0.5085	2.8156	1.3967	1.6195	1.1701
6	-0.948	-1.664	857.5	625.2	661.5	625.2	545.7	0.0	39.5	0.0	0.6816	0.4867	2.7698	1.3897	1.5920	1.1616
7	-1.540	-1.691	836.0	611.5	653.0	611.5	521.9	0.0	38.6	0.0	0.6637	0.4760	2.7478	1.3869	1.5777	1.1576
8	-2.137	-1.681	818.5	600.9	645.7	600.9	503.0	0.0	37.9	0.0	0.6489	0.4677	2.7301	1.3857	1.5650	1.1548
9	-4.039	-1.461	793.3	586.6	645.6	586.6	461.1	0.0	35.6	0.0	0.6261	0.4551	2.6985	1.3912	1.5379	1.1496
10	-4.769	-1.333	798.4	588.4	648.8	588.4	465.3	0.0	35.7	0.0	0.6276	0.4546	2.6939	1.4026	1.5336	1.1532
11	-5.645	-1.191	811.4	594.8	651.2	594.8	484.1	0.0	36.7	0.0	0.6331	0.4559	2.6919	1.4254	1.5260	1.1610

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	1.99	3.55	11.82	50.44	84.20	101.95	0.5257	0.1635	0.0369	0.9265	78.54	79.74	82.55	79.10	80.66
2	1.51	3.53	11.25	48.94	85.56	100.90	0.5157	0.1494	0.0344	0.9359	79.69	81.71	84.24	80.07	81.53
3	0.76	3.26	10.85	47.40	86.45	99.38	0.5059	0.1342	0.0315	0.9454	81.08	83.28	85.58	81.21	82.56
4	-1.10	2.76	10.32	44.46	86.29	95.62	0.4777	0.1005	0.0250	0.9647	84.09	86.03	87.93	83.99	85.09
5	-3.38	1.92	10.30	41.32	83.77	88.81	0.4550	0.0826	0.0221	0.9759	85.27	86.43	88.23	86.23	87.13
6	-4.90	0.89	10.22	39.49	82.40	84.87	0.4476	0.0763	0.0211	0.9796	85.84	86.38	88.16	87.35	88.15
7	-5.63	0.37	10.16	38.60	81.58	82.92	0.4444	0.0711	0.0199	0.9818	86.61	86.23	88.01	87.72	88.49
8	-6.16	0.04	10.11	37.89	80.77	81.34	0.4413	0.0656	0.0186	0.9839	87.43	85.87	87.70	87.62	88.37
9	-8.25	-1.55	10.17	35.55	80.36	78.61	0.4321	0.0576	0.0169	0.9866	88.60	83.54	85.63	86.89	87.66
10	-8.77	-1.90	10.77	35.68	80.06	78.09	0.4364	0.0662	0.0196	0.9846	87.03	80.99	83.41	84.25	85.17
11	-9.03	-1.93	11.93	36.71	79.05	77.58	0.4460	0.0805	0.0240	0.9810	84.49	76.56	79.53	79.14	80.34

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
10720.	184.20	1.4071	2.8003	83.70	85.85	1.1712	0.9710	84.26

S. I. UNITS

SL	EPSI-1 RADIAN	EPSI-2 RADIAN	V-1 M/SEC	V-2 M/SEC	VM-1 M/SEC	VM-2 M/SEC	V0-1 M/SEC	V0-2 M/SEC	B-1 RADIAN	B-2 RADIAN	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	0.1460	0.0093	363.9	235.4	233.0	235.4	279.6	0.0	0.8804	0.0000	0.9654	0.5934	2.9829	1.4575	1.7447	1.2162
2	0.1245	0.0038	351.6	230.8	231.9	230.8	264.4	0.0	0.8541	0.0000	0.9322	0.5841	2.9674	1.4440	1.7261	1.2092
3	0.1050	-0.0011	339.1	225.7	230.1	225.7	249.0	0.0	0.8273	0.0000	0.8976	0.5728	2.9465	1.4325	1.7054	1.2014
4	0.0559	-0.0141	308.4	214.7	220.3	214.7	215.8	0.0	0.7759	0.0000	0.8122	0.5474	2.8977	1.4113	1.6677	1.1861
5	0.0050	-0.0261	275.7	199.2	207.0	199.2	182.1	0.0	0.7212	0.0000	0.7208	0.5085	2.8156	1.3967	1.6195	1.1701
6	-0.0166	-0.0291	261.4	190.6	201.6	190.6	166.3	0.0	0.6892	0.0000	0.6816	0.4867	2.7698	1.3897	1.5920	1.1616
7	-0.0269	-0.0295	254.8	186.4	199.0	186.4	159.1	0.0	0.6737	0.0000	0.6637	0.4760	2.7478	1.3869	1.5777	1.1576
8	-0.0373	-0.0293	249.5	183.2	196.8	183.2	153.3	0.0	0.6613	0.0000	0.6489	0.4677	2.7301	1.3857	1.5650	1.1548
9	-0.0705	-0.0255	241.8	178.8	196.8	178.8	140.5	0.0	0.6205	0.0000	0.6261	0.4551	2.6985	1.3912	1.5379	1.1496
10	-0.0832	-0.0233	243.3	179.3	197.8	179.3	141.8	0.0	0.6228	0.0000	0.6276	0.4546	2.6939	1.4026	1.5336	1.1532
11	-0.0985	-0.0208	247.3	181.3	198.5	181.3	147.5	0.0	0.6406	0.0000	0.6331	0.4559	2.6919	1.4254	1.5260	1.1610

SL	INCS RADIAN	INCM RADIAN	DEV RADIAN	TURN RADIAN	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	0.0348	0.0620	0.2062	0.8804	84.20	101.95	0.5257	0.1635	0.0369	0.9265	78.54	79.74	82.55	79.10	80.66
2	0.0264	0.0617	0.1964	0.8541	85.56	100.90	0.5157	0.1494	0.0344	0.9359	79.69	81.71	84.24	80.07	81.53
3	0.0132	0.0569	0.1893	0.8273	86.45	99.38	0.5059	0.1342	0.0315	0.9454	81.08	83.28	85.58	81.21	82.56
4	-0.0192	0.0483	0.1801	0.7759	86.29	95.62	0.4777	0.1005	0.0250	0.9647	84.09	86.03	87.93	83.99	85.09
5	-0.0591	0.0336	0.1798	0.7212	83.77	88.81	0.4550	0.0826	0.0221	0.9759	85.27	86.43	88.23	86.23	87.13
6	-0.0856	0.0154	0.1784	0.6892	82.40	84.87	0.4476	0.0763	0.0211	0.9796	85.84	86.38	88.16	87.35	88.15
7	-0.0982	0.0064	0.1774	0.6737	81.58	82.92	0.4444	0.0711	0.0199	0.9818	86.61	86.23	88.01	87.72	88.49
8	-0.1076	0.0007	0.1764	0.6613	80.77	81.34	0.4413	0.0656	0.0186	0.9839	87.43	85.87	87.70	87.62	88.37
9	-0.1440	-0.0271	0.1774	0.6205	80.36	78.61	0.4321	0.0576	0.0169	0.9866	88.60	83.54	85.63	86.89	87.66
10	-0.1531	-0.0331	0.1880	0.6228	80.06	78.09	0.4364	0.0662	0.0196	0.9846	87.03	80.99	83.41	84.25	85.17
11	-0.1575	-0.0337	0.2083	0.6406	79.05	77.58	0.4460	0.0805	0.0240	0.9810	84.49	76.56	79.53	79.14	80.34

NCORR INLET RAD/SEC	WCORR INLET KG/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
1122.60	83.537	1.4071	2.8003	83.70	85.85	1.1712	0.9710	84.26

APPENDIX D

AIRFOIL COORDINATES FOR MANUFACTURING SURFACES FOR THE REDESIGNED ROTOR 2

In this appendix the airfoil coordinates on manufacturing surfaces for the redesigned rotor 2 are presented in Table XIX. The information is presented in inches (U.S. customary units) and in meters (S.I. units).

TABLE XIX - AIRFOIL COORDINATES ON MANUFACTURING SURFACES (Redesigned Rotor 2)

INCHES			METERS		
ZC	YP	YS	ZC	YP	YS
-.0000	-.0113	.0134	.0000	-.0003	.0003
.0072	-.0057	.0209	.0002	-.0001	.0005
.0647	.0387	.0806	.0016	.0010	.0020
.1294	.0859	.1443	.0033	.0022	.0037
.1940	.1299	.2053	.0049	.0033	.0052
.2587	.1709	.2635	.0066	.0043	.0067
.3234	.2089	.3193	.0082	.0053	.0081
.3881	.2438	.3739	.0099	.0062	.0095
.4528	.2763	.4245	.0115	.0070	.0108
.5174	.3060	.4691	.0131	.0078	.0119
.5821	.3320	.5070	.0148	.0084	.0129
.6468	.3546	.5393	.0164	.0090	.0137
.7115	.3739	.5660	.0181	.0095	.0144
.7762	.3899	.5879	.0197	.0099	.0149
.8408	.4027	.6055	.0214	.0102	.0154
.9055	.4122	.6186	.0230	.0105	.0157
.9702	.4184	.6273	.0246	.0106	.0159
1.0349	.4212	.6316	.0263	.0107	.0160
1.0996	.4208	.6317	.0279	.0107	.0160
1.1642	.4171	.6274	.0296	.0106	.0159
1.2289	.4099	.6186	.0312	.0104	.0157
1.2936	.3991	.6050	.0329	.0101	.0154
1.3583	.3843	.5866	.0345	.0098	.0149
1.4230	.3657	.5634	.0361	.0093	.0143
1.4876	.3433	.5344	.0378	.0087	.0136
1.5523	.3167	.4994	.0394	.0080	.0127
1.6170	.2857	.4581	.0411	.0073	.0116
1.6817	.2499	.4095	.0427	.0063	.0104
1.7464	.2093	.3529	.0444	.0053	.0090
1.8110	.1633	.2871	.0460	.0041	.0073
1.8757	.1115	.2108	.0476	.0028	.0054
1.9404	.0536	.1210	.0493	.0014	.0031
2.0002	-.0050	.0244	.0508	-.0001	.0006
2.0051	-.0097	.0166	.0509	-.0002	.0004

RADIUS (INCHES) =	8.400	RADIUS (METERS) =	.2134
CHORD (INCHES) =	2.005	CHORD (METERS) =	.0509
ZCSL (INCHES) =	1.0560	ZCSL (METERS) =	.0268
YCSL (INCHES) =	.4130	YCSL (METERS) =	.0105
RLE (INCHES) =	.0098	RLE (METERS) =	.000250
RTE (INCHES) =	.0089	RTE (METERS) =	.000226
X-AREA (SQ. IN.) =	.3110	X-AREA (SQ. METERS) =	.000201
GAMMA-CHORD (DEG.) =	4.24	GAMMA-CHORD (RAD.) =	.0739

TABLE XIX (Cont'd) - AIRFOIL COORDINATES ON MANUFACTURING SURFACES (Redesigned Rotor 2)

INCHES			METERS		
ZC	YP	YS	ZC	YP	YS
-.0000	-.0105	.0122	.0000	-.0003	.0003
.0076	-.0055	.0190	.0002	-.0001	.0005
.0646	.0316	.0700	.0016	.0008	.0018
.1291	.0718	.1256	.0033	.0018	.0032
.1937	.1094	.1789	.0049	.0028	.0045
.2583	.1446	.2298	.0066	.0037	.0058
.3229	.1774	.2786	.0082	.0045	.0071
.3874	.2078	.3261	.0098	.0053	.0083
.4520	.2361	.3706	.0115	.0060	.0094
.5166	.2620	.4116	.0131	.0067	.0105
.5812	.2852	.4475	.0148	.0072	.0114
.6457	.3056	.4784	.0164	.0078	.0122
.7103	.3232	.5045	.0180	.0082	.0128
.7749	.3380	.5262	.0197	.0086	.0134
.8395	.3499	.5438	.0213	.0089	.0138
.9040	.3591	.5573	.0230	.0091	.0142
.9686	.3654	.5669	.0246	.0093	.0144
1.0332	.3688	.5724	.0262	.0094	.0145
1.0978	.3692	.5739	.0279	.0094	.0146
1.1623	.3668	.5715	.0295	.0093	.0145
1.2269	.3613	.5648	.0312	.0092	.0143
1.2915	.3525	.5539	.0328	.0090	.0141
1.3561	.3404	.5384	.0344	.0086	.0137
1.4206	.3247	.5183	.0361	.0082	.0132
1.4852	.3055	.4931	.0377	.0078	.0125
1.5498	.2826	.4622	.0394	.0072	.0117
1.6144	.2555	.4264	.0410	.0065	.0108
1.6790	.2241	.3818	.0426	.0057	.0097
1.7435	.1881	.3304	.0443	.0048	.0084
1.8081	.1471	.2703	.0459	.0037	.0069
1.8727	.1005	.1996	.0476	.0026	.0051
1.9373	.0481	.1156	.0492	.0012	.0029
1.9964	-.0049	.0243	.0507	-.0001	.0006
2.0018	-.0098	.0159	.0508	-.0002	.0004

RADIUS (INCHES) = 8.695
CHORD (INCHES) = 2.002
ZCSL (INCHES) = 1.0668
YCSL (INCHES) = .3698
RLE (INCHES) = .0097
RTE (INCHES) = .0092
X-AREA (SQ. IN.) = .2982
GAMMA-CHORD(DEG.) = 8.18

RADIUS (METERS) = .2209
CHORD (METERS) = .0508
ZCSL (METERS) = .0271
YCSL (METERS) = .0094
RLE (METERS) = .000246
RTE (METERS) = .000233
X-AREA(SQ.METERS) = .000192
GAMMA-CHORD(RAD.) = .1428

INCHES			METERS		
ZC	YP	YS	ZC	YP	YS
-.0000	-.0101	.0117	.0000	-.0003	.0003
.0079	-.0056	.0180	.0002	-.0001	.0005
.0647	.0268	.0634	.0016	.0007	.0016
.1295	.0620	.1132	.0033	.0016	.0029
.1942	.0949	.1609	.0049	.0024	.0041
.2590	.1259	.2064	.0066	.0032	.0052
.3237	.1547	.2500	.0082	.0039	.0064
.3885	.1815	.2920	.0099	.0046	.0074
.4532	.2064	.3320	.0115	.0052	.0084
.5180	.2294	.3696	.0132	.0058	.0094
.5827	.2501	.4034	.0148	.0064	.0102
.6475	.2685	.4326	.0164	.0068	.0110
.7122	.2845	.4575	.0181	.0072	.0116
.7770	.2979	.4785	.0197	.0076	.0122
.8417	.3089	.4955	.0214	.0078	.0126
.9065	.3173	.5088	.0230	.0081	.0129
.9712	.3233	.5183	.0247	.0082	.0132
1.0360	.3266	.5241	.0263	.0083	.0133
1.1007	.3274	.5262	.0280	.0083	.0134
1.1655	.3255	.5246	.0296	.0083	.0133
1.2302	.3209	.5190	.0312	.0082	.0132
1.2950	.3134	.5095	.0329	.0080	.0129
1.3597	.3029	.4958	.0345	.0077	.0126
1.4245	.2893	.4777	.0362	.0073	.0121
1.4892	.2725	.4549	.0378	.0069	.0116
1.5540	.2522	.4269	.0395	.0064	.0108
1.6187	.2263	.3933	.0411	.0059	.0100
1.6835	.2004	.3535	.0428	.0051	.0090
1.7482	.1683	.3064	.0444	.0043	.0078
1.8130	.1316	.2512	.0460	.0033	.0064
1.8777	.0899	.1859	.0477	.0023	.0047
1.9425	.0427	.1061	.0493	.0011	.0027
2.0012	-.0044	.0237	.0506	-.0001	.0006
2.0072	-.0097	.0150	.0510	-.0002	.0004

RADIUS (INCHES) = 8.935
CHORD (INCHES) = 2.007
ZCSL (INCHES) = 1.0748
YCSL (INCHES) = .3346
RLE (INCHES) = .0097
RTE (INCHES) = .0094
X-AREA (SQ. IN.) = .2879
GAMMA-CHORD(DEG.) = 11.68

RADIUS (METERS) = .2269
CHORD (METERS) = .0510
ZCSL (METERS) = .0273
YCSL (METERS) = .0085
RLE (METERS) = .000247
RTE (METERS) = .000239
X-AREA(SQ.METERS) = .000186
GAMMA-CHORD(RAD.) = .2039

INCHES			METERS		
ZC	YP	YS	ZC	YP	YS
-.0000	-.0092	.0104	.0000	-.0002	.0003
.0081	-.0056	.0158	.0002	-.0001	.0004
.1310	.0482	.0956	.0033	.0012	.0024
.1964	.0746	.1355	.0050	.0019	.0034
.2619	.0993	.1737	.0067	.0025	.0044
.3274	.1223	.2102	.0083	.0031	.0053
.3929	.1437	.2450	.0100	.0037	.0062
.4584	.1635	.2781	.0116	.0042	.0071
.5239	.1817	.3101	.0133	.0046	.0079
.5893	.1962	.3395	.0150	.0050	.0086
.6548	.2130	.3653	.0166	.0054	.0093
.7203	.2258	.3877	.0183	.0057	.0098
.7858	.2367	.4066	.0200	.0060	.0103
.8513	.2457	.4220	.0216	.0062	.0107
.9168	.2527	.4340	.0233	.0064	.0110
.9822	.2576	.4427	.0249	.0065	.0112
1.0477	.2605	.4482	.0266	.0066	.0114
1.1132	.2612	.4503	.0283	.0066	.0114
1.1787	.2598	.4489	.0299	.0066	.0114
1.2442	.2562	.4442	.0316	.0065	.0113
1.3097	.2502	.4359	.0333	.0064	.0111
1.3751	.2418	.4239	.0349	.0061	.0108
1.4406	.2310	.4081	.0366	.0059	.0104
1.5061	.2174	.3881	.0383	.0055	.0099
1.5716	.2011	.3637	.0399	.0051	.0092
1.6371	.1818	.3344	.0416	.0046	.0085
1.7026	.1593	.2996	.0432	.0040	.0076
1.7681	.1334	.2591	.0449	.0034	.0066
1.8335	.1038	.2116	.0466	.0026	.0054
1.8990	.0704	.1560	.0482	.0018	.0040
1.9645	.0326	.0905	.0499	.0008	.0023
2.0230	-.0048	.0214	.0514	-.0001	.0005
2.0300	-.0093	.0131	.0516	-.0002	.0003

RADIUS (INCHES) = 9.317
CHORD (INCHES) = 2.030
ZCSL (INCHES) = 1.0859
YCSL (INCHES) = .2789
RLE (INCHES) = .0093
RTE (INCHES) = .0096
X-AREA (SQ. IN.) = .2715
GAMMA-CHORD(DEG.) = 17.13

RADIUS (METERS) = .2367
CHORD (METERS) = .0516
ZCSL (METERS) = .0276
YCSL (METERS) = .0071
RLE (METERS) = .000236
RTE (METERS) = .000244
X-AREA(SQ.METERS) = .000175
GAMMA-CHORD(RAD.) = .2989

INCHES			METERS		
ZC	YP	YS	ZC	YP	YS
-.0000	-.0082	.0090	.0000	-.0002	.0002
.0081	-.0059	.0128	.0002	-.0001	.0003
.0668	.0107	.0407	.0017	.0003	.0010
.1336	.0207	.0714	.0034	.0007	.0018
.2004	.0454	.1005	.0051	.0012	.0026
.2673	.0609	.1262	.0068	.0015	.0033
.3341	.0753	.1543	.0085	.0019	.0039
.4009	.0885	.1790	.0102	.0022	.0045
.4677	.1004	.2024	.0119	.0026	.0051
.5345	.1112	.2245	.0136	.0028	.0057
.6014	.1208	.2450	.0153	.0031	.0062
.6682	.1291	.2638	.0170	.0033	.0067
.7350	.1362	.2806	.0187	.0035	.0071
.8018	.1421	.2946	.0204	.0036	.0075
.8686	.1469	.3060	.0221	.0037	.0078
.9355	.1504	.3146	.0238	.0038	.0080
1.0023	.1526	.3207	.0255	.0039	.0081
1.0691	.1536	.3242	.0272	.0039	.0082
1.1359	.1532	.3250	.0289	.0039	.0083
1.2027	.1516	.3232	.0305	.0039	.0082
1.2695	.1486	.3187	.0322	.0038	.0081
1.3364	.1442	.3115	.0339	.0037	.0079
1.4032	.1384	.3015	.0356	.0035	.0077
1.4700	.1311	.2866	.0373	.0033	.0073
1.5368	.1225	.2725	.0390	.0031	.0069
1.6036	.1122	.2534	.0407	.0029	.0064
1.6705	.1003	.2310	.0424	.0025	.0059
1.7373	.0868	.2050	.0441	.0022	.0052
1.8041	.0716	.1751	.0458	.0018	.0044
1.8709	.0546	.1412	.0475	.0014	.0036
1.9377	.0356	.1027	.0492	.0009	.0026
2.0045	.0145	.0590	.0509	.0004	.0015
2.0632	-.0054	.0160	.0524	-.0001	.0004
2.0719	-.0081	.0100	.0526	-.0002	.0003

RADIUS (INCHES) = 10.000
CHORD (INCHES) = 2.071
ZCSL (INCHES) = 1.0971
YCSL (INCHES) = .1875
RLE (INCHES) = .0087
RTE (INCHES) = .0093
X-AREA (SQ. IN.) = .2448
GAMMA-CHORD(DEG.) = 26.18

RADIUS (METERS) = .2540
CHORD (METERS) = .0526
ZCSL (METERS) = .0279
YCSL (METERS) = .0048
RLE (METERS) = .000221
RTE (METERS) = .000236
X-AREA(SQ.METERS) = .000158
GAMMA-CHORD(RAD.) = .4570

TABLE XIX (Cont'd) - AIRFOIL COORDINATES ON MANUFACTURING SURFACES (Redesigned Rotor 2)

INCHES ZC	INCHES YP	INCHES YS	METERS ZC	METERS YP	METERS YS
-.0000	-.0071	.0075	.0000	-.0002	.0002
.0076	-.0061	.0097	.0002	-.0002	.0002
.0676	.0013	.0275	.0017	.0000	.0007
.1353	.0093	.0468	.0034	.0002	.0012
.2029	.0167	.0650	.0052	.0004	.0017
.2706	.0233	.0821	.0069	.0006	.0021
.3382	.0293	.0982	.0086	.0007	.0025
.4058	.0347	.1133	.0103	.0009	.0029
.4735	.0395	.1273	.0120	.0010	.0032
.5411	.0436	.1403	.0137	.0011	.0036
.6087	.0471	.1524	.0155	.0012	.0039
.6764	.0499	.1635	.0172	.0013	.0042
.7440	.0521	.1735	.0189	.0013	.0044
.8117	.0537	.1823	.0206	.0014	.0046
.8793	.0548	.1893	.0223	.0014	.0048
.9469	.0554	.1945	.0241	.0014	.0049
1.0146	.0555	.1980	.0258	.0014	.0050
1.0822	.0551	.1998	.0275	.0014	.0051
1.1499	.0543	.1997	.0292	.0014	.0051
1.2175	.0530	.1979	.0309	.0013	.0050
1.2851	.0512	.1944	.0326	.0013	.0049
1.3528	.0489	.1890	.0344	.0012	.0048
1.4204	.0462	.1819	.0361	.0012	.0046
1.4881	.0430	.1730	.0378	.0011	.0044
1.5557	.0393	.1624	.0395	.0010	.0041
1.6233	.0352	.1498	.0412	.0009	.0038
1.6910	.0305	.1354	.0430	.0008	.0034
1.7586	.0254	.1191	.0447	.0006	.0030
1.8263	.0199	.1008	.0464	.0005	.0026
1.8939	.0138	.0806	.0481	.0004	.0020
1.9615	.0073	.0583	.0498	.0002	.0015
2.0297	.0004	.0338	.0515	.0000	.0009
2.0892	-.0059	.0105	.0531	-.0002	.0003
2.0968	-.0066	.0075	.0533	-.0002	.0002

RADIUS (INCHES) = 11.000 RADIUS (METERS) = .2794
CHORD (INCHES) = 2.097 CHORD (METERS) = .0533
ZCSL (INCHES) = 1.0965 ZCSL (METERS) = .0279
YCSL (INCHES) = .0994 YCSL (METERS) = .0025
RLE (INCHES) = .0077 RLE (METERS) = .000197
RTE (INCHES) = .0079 RTE (METERS) = .000201
X-AREA (SQ. IN.) = .2069 X-AREA(SQ.METERS)= .000133
GAMMA-CHORD(DEG.)= 36.62 GAMMA-CHORD(RAD.)= .6392

INCHES ZC	INCHES YP	INCHES YS	METERS ZC	METERS YP	METERS YS
-.0000	-.0065	.0067	.0000	-.0002	.0002
.0070	-.0062	.0080	.0002	-.0002	.0002
.0676	-.0041	.0196	.0017	-.0001	.0005
.1355	-.0020	.0318	.0034	-.0000	.0008
.2033	-.0001	.0433	.0052	-.0000	.0011
.2710	.0015	.0541	.0069	.0000	.0014
.3388	.0028	.0642	.0086	.0001	.0016
.4065	.0039	.0736	.0103	.0001	.0019
.4743	.0047	.0823	.0120	.0001	.0021
.5420	.0053	.0902	.0138	.0001	.0023
.6098	.0056	.0975	.0155	.0001	.0025
.6775	.0057	.1041	.0172	.0001	.0026
.7453	.0055	.1100	.0189	.0001	.0028
.8131	.0051	.1153	.0207	.0001	.0029
.8808	.0045	.1196	.0224	.0001	.0030
.9486	.0039	.1229	.0241	.0001	.0031
1.0163	.0032	.1251	.0258	.0001	.0032
1.0841	.0024	.1260	.0275	.0001	.0032
1.1518	.0017	.1258	.0293	.0000	.0032
1.2196	.0009	.1245	.0310	.0000	.0032
1.2873	.0002	.1220	.0327	.0000	.0031
1.3551	-.0006	.1184	.0344	-.0000	.0030
1.4229	-.0013	.1137	.0361	-.0000	.0029
1.4906	-.0020	.1079	.0379	-.0001	.0027
1.5584	-.0027	.1010	.0396	-.0001	.0026
1.6261	-.0034	.0929	.0413	-.0001	.0024
1.6939	-.0041	.0838	.0430	-.0001	.0021
1.7616	-.0047	.0736	.0447	-.0001	.0019
1.8294	-.0051	.0623	.0465	-.0001	.0016
1.8971	-.0055	.0500	.0482	-.0001	.0013
1.9649	-.0059	.0365	.0499	-.0001	.0009
2.0326	-.0061	.0219	.0516	-.0002	.0006
2.0934	-.0062	.0081	.0532	-.0002	.0002
2.1004	-.0063	.0065	.0534	-.0002	.0002

RADIUS (INCHES) = 11.827 RADIUS (METERS) = .3004
CHORD (INCHES) = 2.100 CHORD (METERS) = .0534
ZCSL (INCHES) = 1.0890 ZCSL (METERS) = .0277
YCSL (INCHES) = .0498 YCSL (METERS) = .0013
RLE (INCHES) = .0070 RLE (METERS) = .000179
RTE (INCHES) = .0071 RTE (METERS) = .000180
X-AREA (SQ. IN.) = .1776 X-AREA(SQ.METERS)= .000115
GAMMA-CHORD(DEG.)= 43.59 GAMMA-CHORD(RAD.)= .7609

INCHES ZC	INCHES YP	INCHES YS	METERS ZC	METERS YP	METERS YS
-.0000	-.0064	.0066	.0000	-.0002	.0002
.0069	-.0063	.0077	.0002	-.0002	.0002
.0677	-.0050	.0181	.0017	-.0001	.0005
.1353	-.0037	.0291	.0034	-.0001	.0007
.2030	-.0026	.0395	.0052	-.0001	.0010
.2706	-.0018	.0492	.0069	-.0000	.0012
.3383	-.0012	.0583	.0086	-.0000	.0015
.4060	-.0007	.0667	.0103	-.0000	.0017
.4736	-.0004	.0745	.0120	-.0000	.0019
.5413	-.0003	.0816	.0137	-.0000	.0021
.6090	-.0004	.0882	.0155	-.0000	.0022
.6766	-.0007	.0941	.0172	-.0000	.0024
.7443	-.0012	.0994	.0189	-.0000	.0025
.8119	-.0018	.1041	.0206	-.0000	.0026
.8796	-.0025	.1080	.0223	-.0001	.0027
.9473	-.0033	.1111	.0241	-.0001	.0028
1.0149	-.0041	.1130	.0258	-.0001	.0029
1.0826	-.0048	.1139	.0275	-.0001	.0029
1.1503	-.0055	.1137	.0292	-.0001	.0029
1.2179	-.0062	.1125	.0309	-.0002	.0029
1.2856	-.0067	.1103	.0327	-.0002	.0028
1.3532	-.0073	.1070	.0344	-.0002	.0027
1.4209	-.0077	.1027	.0361	-.0002	.0026
1.4886	-.0081	.0975	.0378	-.0002	.0025
1.5562	-.0083	.0913	.0395	-.0002	.0023
1.6239	-.0085	.0840	.0412	-.0002	.0021
1.6916	-.0086	.0757	.0430	-.0002	.0019
1.7592	-.0086	.0664	.0447	-.0002	.0017
1.8269	-.0084	.0564	.0464	-.0002	.0014
1.8945	-.0080	.0453	.0481	-.0002	.0012
1.9622	-.0075	.0332	.0498	-.0002	.0008
2.0299	-.0069	.0200	.0516	-.0002	.0005
2.0907	-.0062	.0077	.0531	-.0002	.0002
2.0975	-.0061	.0063	.0533	-.0002	.0002

RADIUS (INCHES) = 12.000 RADIUS (METERS) = .3048
CHORD (INCHES) = 2.097 CHORD (METERS) = .0533
ZCSL (INCHES) = 1.0862 ZCSL (METERS) = .0276
YCSL (INCHES) = .0422 YCSL (METERS) = .0011
RLE (INCHES) = .0069 RLE (METERS) = .000177
RTE (INCHES) = .0069 RTE (METERS) = .000175
X-AREA (SQ. IN.) = .1706 X-AREA(SQ.METERS)= .000110
GAMMA-CHORD(DEG.)= 44.90 GAMMA-CHORD(RAD.)= .7837

INCHES ZC	INCHES YP	INCHES YS	METERS ZC	METERS YP	METERS YS
-.0000	-.0063	.0065	.0000	-.0002	.0002
.0069	-.0062	.0076	.0002	-.0002	.0002
.0676	-.0053	.0174	.0017	-.0001	.0004
.1352	-.0043	.0279	.0034	-.0001	.0007
.2027	-.0036	.0378	.0051	-.0001	.0010
.2703	-.0031	.0471	.0069	-.0001	.0012
.3379	-.0027	.0557	.0086	-.0001	.0014
.4055	-.0024	.0638	.0103	-.0001	.0016
.4731	-.0024	.0712	.0120	-.0001	.0018
.5407	-.0024	.0780	.0137	-.0001	.0020
.6083	-.0027	.0842	.0154	-.0001	.0021
.6758	-.0031	.0899	.0172	-.0001	.0023
.7434	-.0037	.0949	.0189	-.0001	.0024
.8110	-.0044	.0994	.0206	-.0001	.0025
.8786	-.0052	.1032	.0223	-.0001	.0026
.9462	-.0060	.1062	.0240	-.0002	.0027
1.0138	-.0068	.1080	.0257	-.0002	.0027
1.0814	-.0075	.1089	.0275	-.0002	.0028
1.1489	-.0081	.1088	.0292	-.0002	.0028
1.2165	-.0087	.1077	.0309	-.0002	.0027
1.2841	-.0092	.1056	.0326	-.0002	.0027
1.3517	-.0097	.1024	.0343	-.0002	.0026
1.4193	-.0100	.0983	.0360	-.0003	.0025
1.4869	-.0102	.0933	.0378	-.0003	.0024
1.5544	-.0103	.0874	.0395	-.0003	.0022
1.6220	-.0103	.0805	.0412	-.0003	.0020
1.6896	-.0102	.0726	.0429	-.0003	.0018
1.7572	-.0099	.0638	.0446	-.0003	.0016
1.8248	-.0095	.0541	.0463	-.0002	.0014
1.8924	-.0088	.0435	.0481	-.0002	.0011
1.9600	-.0081	.0319	.0498	-.0002	.0008
2.0275	-.0071	.0193	.0515	-.0002	.0005
2.0884	-.0061	.0076	.0530	-.0002	.0002
2.0951	-.0063	.0063	.0532	-.0002	.0002

RADIUS (INCHES) = 12.080 RADIUS (METERS) = .3068
CHORD (INCHES) = 2.095 CHORD (METERS) = .0532
ZCSL (INCHES) = 1.0849 ZCSL (METERS) = .0276
YCSL (INCHES) = .0392 YCSL (METERS) = .0010
RLE (INCHES) = .0069 RLE (METERS) = .000175
RTE (INCHES) = .0068 RTE (METERS) = .000172
X-AREA (SQ. IN.) = .1672 X-AREA(SQ.METERS)= .000108
GAMMA-CHORD(DEG.)= 45.49 GAMMA-CHORD(RAD.)= .7939

TABLE XIX (Cont'd) - AIRFOIL COORDINATES ON MANUFACTURING SURFACES (Redesigned Rotor 2)

INCHES ZC	INCHES YP	INCHES YS	METERS ZC	METERS YP	METERS YS
-.0000	-.0062	.0064	.0000	-.0002	.0002
.0067	-.0062	.0074	.0002	-.0002	.0002
.0674	-.0057	.0165	.0017	-.0001	.0004
.1348	-.0053	.0261	.0034	-.0001	.0007
.2022	-.0050	.0352	.0051	-.0001	.0009
.2696	-.0048	.0438	.0068	-.0001	.0011
.3370	-.0048	.0518	.0086	-.0001	.0013
.4044	-.0049	.0593	.0103	-.0001	.0015
.4718	-.0051	.0661	.0120	-.0001	.0017
.5392	-.0054	.0724	.0137	-.0001	.0018
.6066	-.0059	.0782	.0154	-.0001	.0020
.6740	-.0065	.0835	.0171	-.0002	.0021
.7415	-.0072	.0882	.0188	-.0002	.0022
.8089	-.0080	.0923	.0205	-.0002	.0023
.8763	-.0088	.0959	.0223	-.0002	.0024
.9437	-.0096	.0987	.0240	-.0002	.0025
1.0111	-.0104	.1006	.0257	-.0003	.0026
1.0785	-.0111	.1015	.0274	-.0003	.0026
1.1459	-.0117	.1014	.0291	-.0003	.0026
1.2133	-.0122	.1004	.0308	-.0003	.0026
1.2807	-.0126	.0985	.0325	-.0003	.0025
1.3481	-.0128	.0957	.0342	-.0003	.0024
1.4155	-.0130	.0919	.0360	-.0003	.0023
1.4829	-.0130	.0872	.0377	-.0003	.0022
1.5503	-.0128	.0817	.0394	-.0003	.0021
1.6177	-.0126	.0753	.0411	-.0003	.0019
1.6851	-.0122	.0679	.0428	-.0003	.0017
1.7525	-.0116	.0598	.0445	-.0003	.0015
1.8199	-.0108	.0508	.0462	-.0003	.0013
1.8873	-.0099	.0409	.0479	-.0003	.0010
1.9547	-.0088	.0301	.0497	-.0002	.0008
2.0221	-.0074	.0184	.0514	-.0002	.0005
2.0829	-.0061	.0073	.0529	-.0002	.0002
2.0896	-.0059	.0061	.0531	-.0002	.0002

RADIUS (INCHES) = 12.212 — RADIUS (METERS) = .3102
CHORD (INCHES) = 2.090 — CHORD (METERS) = .0531
ZCSL (INCHES) = 1.0820 — ZCSL (METERS) = .0275
YCSL (INCHES) = .0349 — YCSL (METERS) = .0009
RLE (INCHES) = .0068 — RLE (METERS) = .000172
RTE (INCHES) = .0067 — RTE (METERS) = .000169
X-AREA (SQ. IN.) = .1614 — X-AREA(SQ.METERS)= .000104
GAMMA-CHORD(DEG.)= 46.46 — GAMMA-CHORD(RAD.)= .8109

INCHES ZC	INCHES YP	INCHES YS	METERS ZC	METERS YP	METERS YS
-.0000	-.0062	.0063	.0000	-.0002	.0002
.0066	-.0061	.0072	.0002	-.0002	.0002
.0672	-.0060	.0156	.0017	-.0002	.0004
.1343	-.0060	.0245	.0034	-.0002	.0006
.2015	-.0061	.0330	.0051	-.0002	.0008
.2686	-.0062	.0409	.0068	-.0002	.0010
.3358	-.0065	.0483	.0085	-.0002	.0012
.4030	-.0068	.0551	.0102	-.0002	.0014
.4701	-.0072	.0615	.0119	-.0002	.0016
.5373	-.0078	.0674	.0136	-.0002	.0017
.6045	-.0084	.0728	.0154	-.0002	.0018
.6716	-.0091	.0777	.0171	-.0002	.0020
.7388	-.0098	.0621	.0188	-.0007	.0021
.8059	-.0107	.0860	.0205	-.0003	.0022
.8731	-.0115	.0894	.0222	-.0003	.0023
.9403	-.0124	.0921	.0239	-.0003	.0023
1.0074	-.0131	.0940	.0256	-.0003	.0024
1.0746	-.0137	.0949	.0273	-.0003	.0024
1.1417	-.0143	.0949	.0290	-.0004	.0024
1.2089	-.0147	.0941	.0307	-.0004	.0024
1.2761	-.0150	.0924	.0324	-.0004	.0023
1.3432	-.0151	.0896	.0341	-.0004	.0023
1.4104	-.0152	.0863	.0358	-.0004	.0022
1.4776	-.0150	.0619	.0375	-.0004	.0021
1.5447	-.0147	.0768	.0392	-.0004	.0020
1.6119	-.0142	.0709	.0409	-.0004	.0018
1.6790	-.0136	.0640	.0426	-.0003	.0016
1.7462	-.0128	.0564	.0444	-.0003	.0014
1.8134	-.0118	.0479	.0461	-.0003	.0012
1.8805	-.0106	.0386	.0478	-.0003	.0010
1.9477	-.0092	.0285	.0495	-.0002	.0007
2.0148	-.0076	.0177	.0512	-.0002	.0004
2.0755	-.0060	.0072	.0527	-.0002	.0002
2.0820	-.0058	.0061	.0529	-.0001	.0002

RADIUS (INCHES) = 12.343 — RADIUS (METERS) = .3135
CHORD (INCHES) = 2.082 — CHORD (METERS) = .0529
ZCSL (INCHES) = 1.0785 — ZCSL (METERS) = .0274
YCSL (INCHES) = .0313 — YCSL (METERS) = .0008
RLE (INCHES) = .0067 — RLE (METERS) = .000169
RTE (INCHES) = .0066 — RTE (METERS) = .000167
X-AREA (SQ. IN.) = .1555 — X-AREA(SQ.METERS)= .000100
GAMMA-CHORD(DEG.)= 47.38 — GAMMA-CHORD(RAD.)= .8269

INCHES ZC	INCHES YP	INCHES YS	METERS ZC	METERS YP	METERS YS
-.0000	-.0057	.0059	.0000	-.0001	.0001
.0061	-.0058	.0064	.0002	-.0001	.0002
.0650	-.0066	.0119	.0017	-.0002	.0003
.1301	-.0075	.0178	.0033	-.0002	.0005
.1951	-.0083	.0235	.0050	-.0002	.0006
.2601	-.0091	.0288	.0066	-.0002	.0007
.3252	-.0100	.0338	.0083	-.0003	.0009
.3902	-.0108	.0386	.0099	-.0003	.0010
.4553	-.0116	.0431	.0116	-.0003	.0011
.5203	-.0124	.0474	.0132	-.0003	.0012
.5853	-.0131	.0513	.0149	-.0003	.0013
.6504	-.0138	.0550	.0165	-.0004	.0014
.7154	-.0146	.0585	.0182	-.0004	.0015
.7804	-.0153	.0617	.0198	-.0004	.0016
.8455	-.0159	.0647	.0215	-.0004	.0016
.9105	-.0165	.0674	.0231	-.0004	.0017
.9755	-.0169	.0696	.0248	-.0004	.0018
1.0406	-.0172	.0710	.0264	-.0004	.0018
1.1056	-.0174	.0717	.0281	-.0004	.0018
1.1707	-.0175	.0717	.0297	-.0004	.0018
1.2357	-.0174	.0709	.0314	-.0004	.0018
1.3007	-.0172	.0695	.0330	-.0004	.0018
1.3658	-.0169	.0673	.0347	-.0004	.0017
1.4308	-.0164	.0644	.0363	-.0004	.0016
1.4958	-.0157	.0608	.0380	-.0004	.0015
1.5609	-.0149	.0569	.0396	-.0004	.0014
1.6259	-.0140	.0519	.0413	-.0004	.0013
1.6909	-.0129	.0456	.0430	-.0003	.0012
1.7560	-.0116	.0390	.0446	-.0003	.0010
1.8210	-.0102	.0318	.0463	-.0003	.0008
1.8861	-.0087	.0238	.0479	-.0002	.0006
1.9511	-.0071	.0160	.0496	-.0002	.0004
2.0102	-.0055	.0064	.0511	-.0001	.0002
2.0161	-.0053	.0056	.0512	-.0001	.0001

RADIUS (INCHES) = 13.000 — RADIUS (METERS) = .3302
CHORD (INCHES) = 2.016 — CHORD (METERS) = .0512
ZCSL (INCHES) = 1.0533 — ZCSL (METERS) = .0268
YCSL (INCHES) = .0206 — YCSL (METERS) = .0005
RLE (INCHES) = .0061 — RLE (METERS) = .000155
RTE (INCHES) = .0059 — RTE (METERS) = .000151
X-AREA (SQ. IN.) = .1232 — X-AREA(SQ.METERS)= .000080
GAMMA-CHORD(DEG.)= 51.37 — GAMMA-CHORD(RAD.)= .8966

INCHES ZC	INCHES YP	INCHES YS	METERS ZC	METERS YP	METERS YS
-.0000	-.0055	.0055	.0000	-.0001	.0001
.0058	-.0056	.0060	.0001	-.0001	.0002
.0634	-.0060	.0106	.0016	-.0002	.0003
.1268	-.0064	.0156	.0032	-.0002	.0004
.1902	-.0069	.0204	.0048	-.0002	.0005
.2536	-.0072	.0250	.0064	-.0002	.0006
.3170	-.0076	.0295	.0081	-.0002	.0008
.3804	-.0079	.0339	.0097	-.0002	.0009
.4438	-.0081	.0381	.0113	-.0002	.0010
.5072	-.0082	.0421	.0129	-.0002	.0011
.5706	-.0083	.0461	.0145	-.0002	.0012
.6341	-.0082	.0499	.0161	-.0002	.0013
.6975	-.0081	.0536	.0177	-.0002	.0014
.7609	-.0080	.0572	.0193	-.0002	.0015
.8243	-.0077	.0607	.0209	-.0002	.0015
.8877	-.0073	.0641	.0225	-.0002	.0016
.9511	-.0069	.0673	.0242	-.0002	.0017
1.0145	-.0064	.0696	.0258	-.0002	.0018
1.0779	-.0060	.0712	.0274	-.0002	.0018
1.1413	-.0055	.0720	.0290	-.0001	.0018
1.2047	-.0051	.0720	.0306	-.0001	.0018
1.2681	-.0047	.0712	.0322	-.0001	.0018
1.3315	-.0044	.0696	.0338	-.0001	.0018
1.3949	-.0040	.0677	.0354	-.0001	.0017
1.4583	-.0037	.0638	.0370	-.0001	.0016
1.5217	-.0035	.0597	.0387	-.0001	.0015
1.5851	-.0034	.0547	.0403	-.0001	.0014
1.6485	-.0033	.0488	.0419	-.0001	.0012
1.7119	-.0034	.0419	.0435	-.0001	.0011
1.7754	-.0036	.0342	.0451	-.0001	.0009
1.8388	-.0039	.0255	.0467	-.0001	.0006
1.9022	-.0044	.0158	.0483	-.0001	.0004
1.9601	-.0050	.0061	.0498	-.0001	.0002
1.9656	-.0051	.0052	.0499	-.0001	.0001

RADIUS (INCHES) = 13.420 — RADIUS (METERS) = .3409
CHORD (INCHES) = 1.966 — CHORD (METERS) = .0499
ZCSL (INCHES) = 1.0351 — ZCSL (METERS) = .0263
YCSL (INCHES) = .0244 — YCSL (METERS) = .0006
RLE (INCHES) = .0058 — RLE (METERS) = .000147
RTE (INCHES) = .0055 — RTE (METERS) = .000141
X-AREA (SQ. IN.) = .1041 — X-AREA(SQ.METERS)= .000047
GAMMA-CHORD(DEG.)= 53.20 — GAMMA-CHORD(RAD.)= .9285

TABLE XIV (Cont'd) - AIRFOIL COORDINATES ON MANUFACTURING SURFACES (Redesigned Rotor 2)

INCHES			METERS		
ZC	YP	YS	ZC	YP	YS
-.0000	-.0049	.0050	.0000	-.0001	.0001
.0050	-.0046	.0053	.0001	-.0001	.0001
.0607	-.0036	.0094	.0015	-.0001	.0002
.1215	-.0024	.0138	.0031	-.0001	.0004
.1822	-.0011	.0182	.0046	-.0000	.0005
.2429	.0003	.0226	.0062	.0000	.0006
.3036	.0017	.0270	.0077	.0000	.0007
.3644	.0032	.0315	.0093	.0001	.0008
.4251	.0048	.0360	.0108	.0001	.0009
.4858	.0064	.0404	.0123	.0002	.0010
.5466	.0080	.0449	.0139	.0002	.0011
.6073	.0097	.0493	.0154	.0002	.0013
.6680	.0115	.0538	.0170	.0003	.0014
.7287	.0134	.0584	.0185	.0003	.0015
.7895	.0153	.0630	.0201	.0004	.0016
.8502	.0173	.0677	.0216	.0004	.0017
.9109	.0193	.0725	.0231	.0005	.0018
.9717	.0212	.0766	.0247	.0005	.0019
1.0324	.0227	.0798	.0262	.0006	.0020
1.0931	.0239	.0819	.0278	.0006	.0021
1.1539	.0246	.0830	.0293	.0006	.0021
1.2146	.0250	.0830	.0309	.0006	.0021
1.2753	.0249	.0819	.0324	.0006	.0021
1.3360	.0243	.0796	.0339	.0006	.0020
1.3968	.0233	.0762	.0355	.0006	.0019
1.4575	.0217	.0717	.0370	.0006	.0018
1.5182	.0197	.0660	.0386	.0005	.0017
1.5790	.0171	.0590	.0401	.0004	.0015
1.6397	.0139	.0508	.0416	.0004	.0013
1.7004	.0102	.0413	.0432	.0003	.0010
1.7612	.0058	.0304	.0447	.0001	.0008
1.8219	.0008	.0182	.0463	.0000	.0005
1.8777	-.0042	.0060	.0477	-.0001	.0002
1.8826	-.0046	.0049	.0478	-.0001	.0001

RADIUS (INCHES) =	14.065	RADIUS (METERS) =	.3573
CHORD (INCHES) =	1.883	CHORD (METERS) =	.0478
ZCSL (INCHES) =	1.0170	ZCSL (METERS) =	.0258
YCSL (INCHES) =	.0382	YCSL (METERS) =	.0010
RLE (INCHES) =	.0050	RLE (METERS) =	.000128
RTE (INCHES) =	.0050	RTE (METERS) =	.000127
X-AREA (SQ. IN.) =	.0738	X-AREA(SQ.METERS)=	.000048
GAMMA-CHORD(DEG.)=	54.76	GAMMA-CHORD(RAD.)=	.9558

INCHES			METERS		
ZC	YP	YS	ZC	YP	YS
-.0000	-.0048	.0049	.0000	-.0001	.0001
.0050	-.0047	.0052	.0001	-.0001	.0001
.0603	-.0033	.0092	.0015	-.0001	.0002
.1206	-.0018	.0136	.0031	-.0000	.0003
.1810	-.0002	.0179	.0046	-.0000	.0005
.2413	.0014	.0223	.0061	.0000	.0006
.3016	.0031	.0268	.0077	.0001	.0007
.3619	.0048	.0312	.0092	.0001	.0008
.4223	.0066	.0357	.0107	.0002	.0009
.4826	.0084	.0402	.0123	.0002	.0010
.5429	.0102	.0447	.0138	.0003	.0011
.6032	.0122	.0492	.0153	.0003	.0013
.6636	.0142	.0539	.0169	.0004	.0014
.7239	.0162	.0585	.0184	.0004	.0015
.7842	.0183	.0633	.0199	.0005	.0016
.8445	.0205	.0681	.0215	.0005	.0017
.9048	.0228	.0730	.0230	.0006	.0019
.9652	.0250	.0773	.0245	.0006	.0020
1.0255	.0267	.0808	.0260	.0007	.0021
1.0858	.0280	.0832	.0276	.0007	.0021
1.1461	.0288	.0844	.0291	.0007	.0021
1.2065	.0291	.0845	.0306	.0007	.0021
1.2668	.0290	.0835	.0322	.0007	.0021
1.3271	.0283	.0812	.0337	.0007	.0021
1.3874	.0271	.0778	.0352	.0007	.0020
1.4476	.0252	.0732	.0368	.0006	.0019
1.5081	.0229	.0674	.0383	.0006	.0017
1.5684	.0200	.0603	.0398	.0005	.0015
1.6287	.0165	.0519	.0414	.0004	.0013
1.6891	.0123	.0421	.0429	.0003	.0011
1.7494	.0074	.0310	.0444	.0002	.0008
1.8097	.0017	.0185	.0460	.0000	.0005
1.8653	-.0040	.0058	.0474	-.0001	.0001
1.8700	-.0044	.0047	.0475	-.0001	.0001

RADIUS (INCHES) =	14.173	RADIUS (METERS) =	.3600
CHORD (INCHES) =	1.870	CHORD (METERS) =	.0475
ZCSL (INCHES) =	1.0138	ZCSL (METERS) =	.0258
YCSL (INCHES) =	.0402	YCSL (METERS) =	.0010
RLE (INCHES) =	.0050	RLE (METERS) =	.000126
RTE (INCHES) =	.0048	RTE (METERS) =	.000122
X-AREA (SQ. IN.) =	.0696	X-AREA(SQ.METERS)=	.000045
GAMMA-CHORD(DEG.)=	54.95	GAMMA-CHORD(RAD.)=	.9590

INCHES			METERS		
ZC	YP	YS	ZC	YP	YS
-.0000	-.0048	.0048	.0000	-.0001	.0001
.0049	-.0046	.0052	.0001	-.0001	.0001
.0599	-.0031	.0091	.0015	-.0001	.0002
.1198	-.0013	.0133	.0030	-.0000	.0003
.1798	.0005	.0176	.0046	.0000	.0004
.2397	.0024	.0220	.0061	.0001	.0006
.2996	.0043	.0264	.0076	.0001	.0007
.3596	.0062	.0309	.0091	.0002	.0008
.4195	.0082	.0353	.0107	.0002	.0009
.4794	.0102	.0398	.0122	.0003	.0010
.5393	.0122	.0444	.0137	.0003	.0011
.5993	.0144	.0490	.0152	.0004	.0012
.6592	.0166	.0537	.0167	.0004	.0014
.7191	.0186	.0585	.0183	.0005	.0015
.7790	.0211	.0633	.0198	.0005	.0016
.8390	.0236	.0682	.0213	.0006	.0017
.8989	.0261	.0733	.0228	.0007	.0019
.9588	.0284	.0779	.0244	.0007	.0020
1.0187	.0304	.0815	.0259	.0008	.0021
1.0787	.0318	.0841	.0274	.0008	.0021
1.1386	.0327	.0856	.0289	.0008	.0022
1.1985	.0331	.0859	.0304	.0008	.0022
1.2584	.0330	.0849	.0320	.0008	.0022
1.3184	.0322	.0827	.0335	.0008	.0021
1.3783	.0308	.0792	.0350	.0008	.0020
1.4362	.0286	.0746	.0365	.0007	.0019
1.4981	.0262	.0688	.0381	.0007	.0017
1.5581	.0230	.0615	.0396	.0006	.0016
1.6180	.0191	.0530	.0411	.0005	.0013
1.6779	.0144	.0430	.0426	.0004	.0011
1.7379	.0090	.0316	.0441	.0002	.0008
1.7978	.0027	.0188	.0457	.0001	.0005
1.8533	-.0037	.0056	.0471	-.0001	.0001
1.8577	-.0042	.0045	.0472	-.0001	.0001

RADIUS (INCHES) =	14.280	RADIUS (METERS) =	.3627
CHORD (INCHES) =	1.858	CHORD (METERS) =	.0472
ZCSL (INCHES) =	1.0101	ZCSL (METERS) =	.0257
YCSL (INCHES) =	.0419	YCSL (METERS) =	.0011
RLE (INCHES) =	.0049	RLE (METERS) =	.000124
RTE (INCHES) =	.0045	RTE (METERS) =	.000115
X-AREA (SQ. IN.) =	.0656	X-AREA(SQ.METERS)=	.000042
GAMMA-CHORD(DEG.)=	55.13	GAMMA-CHORD(RAD.)=	.9622

INCHES			METERS		
ZC	YP	YS	ZC	YP	YS
-.0000	-.0044	.0045	.0000	-.0001	.0001
.0045	-.0043	.0048	.0001	-.0001	.0001
.0591	-.0023	.0085	.0015	-.0001	.0002
.1182	-.0000	.0127	.0030	.0000	.0003
.1773	.0023	.0168	.0045	.0001	.0004
.2364	.0045	.0212	.0060	.0001	.0005
.2955	.0068	.0256	.0075	.0002	.0006
.3546	.0091	.0300	.0090	.0002	.0008
.4137	.0115	.0344	.0105	.0003	.0009
.4728	.0138	.0390	.0120	.0004	.0010
.5319	.0163	.0436	.0135	.0004	.0011
.5910	.0188	.0483	.0150	.0005	.0012
.6502	.0214	.0532	.0165	.0005	.0014
.7093	.0240	.0582	.0180	.0006	.0015
.7684	.0267	.0633	.0195	.0007	.0016
.8275	.0295	.0684	.0210	.0007	.0017
.8866	.0324	.0738	.0225	.0008	.0019
.9457	.0352	.0787	.0240	.0009	.0020
1.0048	.0376	.0828	.0255	.0010	.0021
1.0639	.0393	.0858	.0270	.0010	.0022
1.1230	.0404	.0876	.0285	.0010	.0022
1.1821	.0409	.0882	.0300	.0010	.0022
1.2412	.0408	.0875	.0315	.0010	.0022
1.3003	.0400	.0853	.0330	.0010	.0022
1.3594	.0384	.0819	.0345	.0010	.0021
1.4185	.0360	.0772	.0360	.0009	.0020
1.4776	.0329	.0713	.0375	.0008	.0018
1.5367	.0291	.0638	.0390	.0007	.0016
1.5958	.0246	.0549	.0405	.0006	.0014
1.6549	.0189	.0445	.0420	.0005	.0011
1.7141	.0124	.0325	.0435	.0003	.0008
1.7732	.0050	.0190	.0450	.0001	.0005
1.8266	-.0029	.0047	.0464	-.0001	.0001
1.8323	-.0034	.0038	.0465	-.0001	.0001

RADIUS (INCHES) =	14.500	RADIUS (METERS) =	.3683
CHORD (INCHES) =	1.832	CHORD (METERS) =	.0465
ZCSL (INCHES) =	1.0038	ZCSL (METERS) =	.0255
YCSL (INCHES) =	.0455	YCSL (METERS) =	.0012
RLE (INCHES) =	.0045	RLE (METERS) =	.000115
RTE (INCHES) =	.0037	RTE (METERS) =	.000095
X-AREA (SQ. IN.) =	.0568	X-AREA(SQ.METERS)=	.00003
GAMMA-CHORD(DEG.)=	55.50	GAMMA-CHORD(RAD.)=	.9687

APPENDIX E

OVERALL PERFORMANCE AND BLADE-ELEMENT DATA WITH UNIFORM INLET FLOW

This appendix provides overall performance and blade-element data with uniform inlet flow. The information is presented for the redesigned fan. Fan overall performance is given in Table XX, and the overall performance and blade-element data for rotor 1, stator 1, rotor 2, and stator 2 are given in Table XXI. The column headings for Table XXI are identified in Table XVII of Appendix C. The information is present in U. S. customary units.

TABLE XX – FAN OVERALL PERFORMANCE (Uniform Inlet Flow)

Run Number	Speed Code	Point Number	$\frac{W\sqrt{\theta_0}}{\delta_0}$ LBM/SEC	KG/SEC	P_{11}/P_0	$\eta_{ad\ 11}$	P_{16}/P_0	$\eta_{ad\ 16}$
003	11	1	194.1	(88.0)	1.764	80.11	2.476	67.05
003	11	2	194.2	(88.1)	1.758	79.71	2.759	74.47
003	11	4	193.5	(87.8)	1.805	80.49	3.285	79.24
003	15	31	190.3	(86.3)	1.721	83.21	2.442	71.79
003	15	2	189.6	(86.0)	1.719	82.92	2.651	77.68
003	15	4	190.0	(86.2)	1.805	82.80	3.207	82.72
003	10	1	185.6	(84.2)	1.684	88.09	2.306	72.53
003	10	2	185.6	(84.2)	1.687	86.72	2.660	83.25
003	10	3	185.2	(84.0)	1.712	87.07	2.860	85.30
003	10	4	184.2	(83.5)	1.743	84.28	2.926	85.37
003	10	5	182.9	(82.9)	1.779	88.07	2.980	84.95
003	10	6	181.0	(82.1)	1.809	89.22	3.016	84.72
003	10	13	185.3	(84.0)	1.722	85.94	2.868	85.16
002	10	2	185.1	(83.9)	1.687	83.75	2.295	73.10
002	10	3	185.6	(84.2)	1.692	85.38	2.710	84.55
002	10	4	184.8	(83.8)	1.754	90.19	2.936	85.96
003	95	1	178.1	(80.8)	1.635	88.50	2.181	74.53
003	95	12	174.8	(79.3)	1.682	90.56	2.673	86.27
003	95	13	167.4	(75.9)	1.720	87.55	2.717	84.78
003	95	4	164.9	(74.8)	1.729	87.18	2.747	84.00
003	85	31	155.5	(70.5)	1.494	86.10	1.845	72.52
003	85	2	154.0	(69.8)	1.510	83.60	2.126	85.55
003	85	3	144.8	(65.7)	1.539	82.84	2.240	84.01
003	85	4	136.8	(62.0)	1.550	83.08	2.252	81.67
003	70	31	124.7	(56.6)	1.310	86.62	1.510	74.00
003	70	2	118.3	(53.7)	1.326	86.48	1.681	84.88
003	70	13	111.1	(50.4)	1.334	79.47	1.713	82.19
003	70	4	105.5	(47.8)	1.342	77.45	1.729	79.91
003	50	1	90.3	(41.0)	1.149	90.20	1.249	78.74
003	50	2	84.5	(38.3)	1.154	87.99	1.284	82.36
003	50	3	80.3	(36.4)	1.158	86.51	1.306	83.01
003	15	STALL	188.2	(85.4)			3.300	
003	10	STALL	178.8	(81.1)			3.035	
003	95	STALL	162.6	(76.9)			2.759	
003	85	STALL	133.8	(60.7)			2.269	
003	70	STALL	102.6	(46.5)			1.735	
003	50	STALL	67.6	(30.7)			1.319	

Speed Code	% Design Speed
50	50
70	70
85	85
90	90
95	95
10	100
15	105
11	110

TABLE XXI – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA
(Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 3, SPEED CODE 50, POINT NO 1

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-1	V'-1 FT/SEC	V'-2 FT/SEC
1	18.800	18.024	266.0	563.5	266.0	322.1	0.0	462.4	0.0	55.1	0.2396	0.5038	316.2	366.1	0.3721	0.3006	413.2	336.2
2	14.467	15.349	271.6	539.4	271.6	330.5	0.0	426.3	0.0	52.1	0.2446	0.4617	341.0	383.8	0.3927	0.2976	435.9	333.2
3	12.233	12.900	277.3	520.1	277.3	346.2	0.0	388.2	0.0	48.2	0.2498	0.4642	385.3	401.5	0.4132	0.3092	458.6	346.4
4	5.761	6.690	290.4	467.3	290.4	345.9	0.0	314.3	0.0	42.2	0.2619	0.4163	434.9	454.7	0.4715	0.3325	522.9	373.3
5	-0.341	0.252	295.3	405.1	295.3	314.9	0.0	255.0	0.0	39.0	0.2663	0.3598	521.7	525.5	0.5406	0.3687	599.5	415.1
6	-2.251	-2.290	294.6	385.1	294.6	307.8	0.0	231.5	0.0	37.0	0.2657	0.3419	563.5	560.9	0.5734	0.4001	635.9	450.8
7	-3.278	-3.432	293.9	390.1	293.9	323.3	0.0	218.3	0.0	34.0	0.2650	0.3466	584.1	578.6	0.5897	0.4301	653.9	484.1
8	-4.540	-4.546	292.8	391.1	292.8	329.0	0.0	211.5	0.0	32.8	0.2640	0.3475	604.8	596.3	0.6059	0.4498	671.9	506.2
9	-8.708	-7.999	286.6	395.4	286.6	338.5	0.0	204.3	0.0	31.1	0.2564	0.3510	666.3	649.4	0.6538	0.4964	725.3	559.2
10	-10.210	-9.248	283.4	393.6	283.4	334.0	0.0	208.3	0.0	31.9	0.2554	0.3491	686.8	667.2	0.6696	0.5033	743.0	567.6
11	-11.445	-10.469	279.9	379.0	279.9	308.8	0.0	219.8	0.0	35.4	0.2523	0.3352	707.3	684.9	0.6855	0.4937	760.7	556.2

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VΘ'-1 FT/SEC	VΘ'-2 FT/SEC	PO/PO INLET
1	3.34	7.95	11.32	66.36	19.77	24.58	0.4517	0.1153	0.0243	1.1909	94.37	94.28	49.72	-10.64	-316.2	96.3	1.1909
2	3.45	7.75	12.29	58.59	20.16	25.42	0.4753	0.0882	0.0201	1.1856	95.07	95.00	51.27	-7.32	-341.0	42.6	1.1856
3	3.62	7.72	13.73	50.43	20.56	26.82	0.4569	0.0302	0.0072	1.1823	98.06	98.07	52.62	2.20	-365.3	-13.3	1.1823
4	4.63	8.10	12.35	34.11	21.47	27.13	0.4536	0.0106	0.0026	1.1681	99.00	99.03	56.14	22.03	-434.9	-140.4	1.1681
5	5.96	8.65	10.38	19.82	21.80	24.81	0.4364	0.0605	0.0138	1.1460	92.48	92.40	60.48	40.66	-521.7	-270.5	1.1460
6	6.46	8.76	9.62	15.45	21.75	24.32	0.4070	0.0579	0.0125	1.1403	91.87	91.78	62.41	46.96	-563.5	-329.4	1.1403
7	6.72	8.83	7.81	15.18	21.71	25.63	0.3676	0.0192	0.0042	1.1445	97.09	97.09	63.31	48.12	-584.1	-360.3	1.1445
8	6.96	8.92	6.64	14.69	21.63	26.11	0.3504	0.0097	0.0021	1.1465	98.45	98.48	64.18	49.49	-604.8	-384.8	1.1465
9	7.70	9.12	5.94	14.02	21.20	26.88	0.3282	0.0225	0.0048	1.1506	96.12	96.11	66.75	52.73	-666.3	-445.1	1.1506
10	7.92	9.22	6.91	13.70	20.98	26.46	0.3368	0.0502	0.0107	1.1494	91.29	91.18	67.61	53.91	-686.8	-458.9	1.1494
11	8.08	9.23	10.00	12.07	20.74	24.32	0.3717	0.1168	0.0239	1.1416	80.22	79.90	68.41	56.34	-707.3	-465.1	1.1416

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.0449	1.1560	94.33	94.39	20.51	1.0449	1.1560	94.33	94.39

STATOR 1

RUN NO 3, SPEED CODE 50, POINT NO 1

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	17.698	14.390	566.3	441.7	340.6	441.6	452.5	8.1	53.1	1.0	0.5065	0.3911	1.1792	1.0541	1.1792	1.0541
2	14.891	12.241	544.8	440.4	348.9	440.3	418.4	9.7	50.2	1.3	0.4867	0.3904	1.1796	1.0520	1.1796	1.0520
3	12.444	10.304	527.3	437.8	363.5	437.6	382.0	11.5	46.3	1.5	0.4709	0.3885	1.1784	1.0495	1.1784	1.0495
4	6.743	5.255	477.3	408.6	361.6	408.6	311.5	-2.0	40.6	-0.3	0.4255	0.3625	1.1601	1.0456	1.1601	1.0456
5	0.722	-0.606	415.9	374.8	329.1	374.3	254.4	-19.6	37.7	-3.0	0.3697	0.3323	1.1389	1.0429	1.1389	1.0429
6	-1.948	-3.103	396.5	367.8	322.0	366.8	231.5	-26.5	35.7	-4.1	0.3522	0.3262	1.1340	1.0414	1.1340	1.0414
7	-3.045	-4.121	400.9	373.0	336.0	372.0	218.7	-27.0	33.1	-4.2	0.3564	0.3310	1.1360	1.0405	1.1360	1.0405
8	-3.961	-4.997	401.7	378.9	341.1	378.0	212.3	-26.0	32.0	-3.9	0.3572	0.3364	1.1385	1.0406	1.1385	1.0406
9	-6.351	-7.258	406.0	384.3	350.0	383.6	205.7	-22.0	30.5	-3.3	0.3606	0.3409	1.1411	1.0427	1.1411	1.0427
10	-7.115	-7.917	404.5	383.1	345.8	382.6	209.6	-19.1	31.3	-2.9	0.3589	0.3395	1.1406	1.0447	1.1406	1.0447
11	-8.062	-8.567	390.5	371.6	321.7	371.3	221.5	-14.4	34.7	-2.2	0.3456	0.3285	1.1350	1.0483	1.1350	1.0483

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	0.59	2.70	13.37	52.11	25.96	35.03	0.3702	0.0581	0.0119	0.9907	86.42	89.18	89.38	89.18	89.38
2	-0.68	1.73	12.48	48.92	26.77	35.03	0.3368	0.0300	0.0064	0.9955	91.96	93.14	93.25	93.14	93.25
3	-3.18	-0.40	11.88	44.86	28.08	34.89	0.3120	0.0166	0.0037	0.9977	94.84	97.24	97.25	97.24	97.25
4	-6.36	-2.64	9.00	40.91	26.25	32.49	0.2937	0.0461	0.0113	0.9947	82.76	95.19	95.23	95.19	95.23
5	-7.83	-2.79	6.32	40.66	25.84	29.60	0.2724	0.0600	0.0164	0.9947	67.26	88.49	88.64	88.49	88.64
6	-9.27	-3.68	5.23	39.86	25.35	28.98	0.2595	0.0785	0.0224	0.9935	48.43	88.61	88.75	88.61	88.75
7	-11.71	-5.83	5.22	37.26	26.55	29.42	0.2488	0.0940	0.0274	0.9921	33.50	91.64	91.73	91.64	91.73
8	-12.65	-6.51	5.49	35.90	26.98	29.90	0.2340	0.0861	0.0255	0.9927	26.18	93.03	93.10	93.03	93.10
9	-14.10	-7.22	7.25	33.82	27.70	30.31	0.2298	0.0957	0.0298	0.9918	12.69	90.09	90.22	90.09	90.22
10	-13.60	-6.55	8.91	34.20	27.30	30.17	0.2334	0.0880	0.0278	0.9925	18.39	85.89	86.10	85.89	86.10
11	-10.96	-3.81	11.09	36.89	25.25	29.14	0.2438	0.0726	0.0232	0.9942	26.88	76.34	76.71	76.34	76.71

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
5380.	90.30	1.0449	1.1488	90.20	90.33	1.0449	0.9938	90.20

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

(Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 2

RUN NO 3, SPEED CODE 50, POINT NO 1

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	11.397	11.021	486.3	744.4	486.3	605.1	7.9	433.5	0.9	35.5	0.4321	0.6584	419.5	440.0	0.5660	0.5353	637.1	605.2
2	10.362	9.719	487.5	734.0	487.4	595.2	9.6	429.5	1.1	35.7	0.4336	0.6490	431.4	449.2	0.5733	0.5266	644.6	595.5
3	9.180	8.490	486.2	720.3	486.1	592.1	11.2	410.2	1.3	34.6	0.4330	0.6373	443.6	458.8	0.5793	0.5256	650.6	594.1
4	4.920	4.909	458.4	629.2	458.4	553.4	-2.3	299.6	-0.3	28.4	0.4082	0.5556	481.6	489.3	0.5935	0.5165	666.6	585.0
5	-0.939	0.303	418.4	513.5	418.0	471.8	-20.0	202.5	-2.7	23.2	0.3720	0.4513	533.9	533.5	0.6169	0.5066	693.9	576.4
6	-2.363	-1.759	407.5	464.4	406.6	436.4	-26.8	158.9	-3.8	20.0	0.3623	0.4079	560.6	557.1	0.6351	0.5189	714.3	590.7
7	-4.316	-2.661	410.4	457.3	409.5	436.9	-27.1	134.9	-3.8	17.1	0.3650	0.4022	574.0	569.2	0.6470	0.5419	727.3	616.0
8	-5.195	-3.577	414.1	459.5	413.2	443.3	-26.1	121.1	-3.6	15.3	0.3684	0.4047	587.5	581.6	0.6582	0.5629	739.8	639.2
9	-7.839	-6.631	416.0	471.7	415.4	455.3	-22.2	123.2	-3.0	15.1	0.3698	0.4150	628.7	620.2	0.6863	0.5930	772.2	674.0
10	-8.704	-7.821	412.7	465.4	412.3	450.7	-19.1	116.3	-2.7	14.4	0.3664	0.4092	642.5	633.3	0.6921	0.6030	779.6	665.9
11	-9.343	-8.967	399.8	421.7	399.6	412.5	-14.5	87.6	-2.1	12.0	0.3541	0.3701	656.4	646.8	0.6915	0.6099	780.9	694.9

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VΘ'-1 FT/SEC	VΘ'-2 FT/SEC	PO/PO INLET
1	-9.33	-5.01	21.02	39.54	37.96	47.66	0.2065	0.0701	0.0160	1.1979	92.96	92.82	40.15	0.62	-411.6	-6.6	1.4126
2	-9.14	-4.69	15.71	38.92	38.12	47.19	0.2319	0.0824	0.0192	1.1967	91.58	91.41	40.82	1.89	-421.8	-19.7	1.4116
3	-8.73	-4.15	12.21	36.94	38.07	47.32	0.2363	0.0624	0.0149	1.1951	93.41	93.28	41.62	4.68	-432.4	-48.6	1.4077
4	-5.22	-0.43	9.35	27.62	35.82	44.64	0.2389	0.0473	0.0115	1.1568	93.34	93.27	46.53	18.91	-483.9	-189.7	1.3404
5	-0.53	4.07	6.83	17.92	32.59	37.85	0.2612	0.1270	0.0295	1.1016	76.23	75.99	52.97	35.05	-553.9	-331.0	1.2534
6	0.95	5.29	6.14	12.97	31.74	34.91	0.2523	0.1544	0.0338	1.0752	65.68	65.41	55.32	42.35	-587.3	-398.1	1.2197
7	0.87	4.95	5.53	10.96	32.02	35.01	0.2226	0.1282	0.0277	1.0684	67.51	67.29	55.75	44.79	-601.1	-434.3	1.2144
8	0.67	4.48	3.71	10.01	32.33	35.55	0.1995	0.1053	0.0229	1.0664	70.35	70.18	56.05	46.03	-613.6	-460.5	1.2143
9	0.62	3.30	0.31	10.02	32.50	36.27	0.1930	0.1192	0.0282	1.0649	65.62	65.41	57.43	47.40	-650.9	-497.0	1.2152
10	0.84	3.02	2.15	9.22	32.21	35.76	0.1826	0.1147	0.0274	1.0607	64.48	64.28	58.04	48.82	-661.7	-517.0	1.2094
11	1.66	3.36	7.85	5.67	31.10	32.58	0.1594	0.1049	0.0236	1.0417	58.04	57.92	59.17	53.50	-670.9	-559.2	1.1621

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.0833	1.2749	86.34	86.77	28.73	1.0367	1.1097	82.24	82.43

STATOR 2

RUN NO 3, SPEED CODE 50, POINT NO 1

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/TO1
1	8.739	0.975	774.0	694.2	644.2	693.6	429.1	28.6	33.9	2.4	0.6871	0.6105	1.3192	1.1144	1.1188	1.0569
2	7.803	1.000	761.6	710.3	631.5	709.8	425.7	27.2	34.2	2.2	0.6757	0.6262	1.3398	1.1130	1.1359	1.0576
3	6.843	0.839	746.4	740.4	625.3	740.2	407.6	16.3	33.3	1.3	0.6623	0.6560	1.3772	1.1097	1.1679	1.0570
4	4.391	0.090	653.6	678.7	581.1	678.6	299.3	-6.4	27.3	-0.5	0.5784	0.6017	1.3267	1.0943	1.1432	1.0465
5	1.423	-0.643	535.4	570.7	495.6	570.6	202.7	-10.4	22.2	-1.0	0.4714	0.5038	1.2398	1.0815	1.0888	1.0371
6	-0.243	-0.995	485.7	525.1	458.9	525.0	159.3	-9.3	19.1	-1.0	0.4273	0.4632	1.2073	1.0751	1.0645	1.0325
7	-1.084	-1.132	477.8	510.6	458.2	510.5	135.2	-9.6	16.4	-1.1	0.4209	0.4509	1.1978	1.0705	1.0541	1.0288
8	-1.813	-1.168	479.7	500.7	464.1	500.6	121.4	-11.1	14.6	-1.3	0.4230	0.4423	1.1907	1.0683	1.0458	1.0265
9	-3.706	-1.170	494.2	513.2	478.4	512.9	123.7	-14.8	14.5	-1.6	0.4355	0.4529	1.1952	1.0718	1.0474	1.0278
10	-4.421	-1.213	491.6	515.8	477.4	515.7	117.3	-11.4	13.8	-1.3	0.4330	0.4552	1.1957	1.0727	1.0486	1.0266
11	-5.382	-1.208	453.8	471.8	445.2	471.8	88.3	-8.7	11.2	-1.1	0.3992	0.4156	1.1669	1.0696	1.0283	1.0203

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-14.52	-12.96	14.17	31.57	49.85	52.46	0.2207	0.2433	0.0549	0.9338	-4.56	72.06	73.11	57.27	57.90
2	-13.22	-11.20	13.44	32.01	49.26	54.10	0.1902	0.1925	0.0443	0.9489	-26.66	77.19	78.08	64.41	64.99
3	-13.37	-10.87	12.10	32.01	49.23	57.15	0.1382	0.0892	0.0209	0.9770	-416.61	87.38	87.91	79.63	80.03
4	-18.24	-14.37	9.78	27.88	46.33	52.81	0.0937	0.0772	0.0192	0.9840	244.30	89.14	89.53	83.57	83.81
5	-22.48	-17.17	9.25	23.28	39.41	44.18	0.0524	0.0998	0.0267	0.9857	181.56	77.69	78.32	66.12	66.44
6	-25.27	-19.48	9.21	20.14	36.42	40.59	0.0224	0.0968	0.0267	0.9884	159.01	73.79	74.44	55.40	55.71
7	-27.81	-21.82	9.09	17.50	36.45	39.54	0.0180	0.1193	0.0334	0.9863	192.45	75.12	75.71	52.51	52.76
8	-29.41	-23.20	8.84	15.91	36.94	38.77	0.0346	0.1672	0.0475	0.9806	282.41	75.00	75.57	48.70	48.93
9	-29.30	-22.60	8.52	14.15	37.79	39.56	0.0435	0.1353	0.0397	0.9835	260.46	72.91	73.54	48.03	48.28
10	-30.64	-23.76	9.51	15.09	37.54	39.71	0.0305	0.0986	0.0292	0.9881	193.72	72.11	72.77	51.13	51.36
11	-34.49	-27.39	10.87	12.30	34.79	36.15	0.0240	0.1251	0.0373	0.9871	312.95	64.85	65.57	39.34	39.45

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
5380.	90.30	1.0833	1.2488	78.74	79.36	1.0367	0.9795	65.69

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA (Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 1

AIRFOIL AERODYNAMIC SUMMARY PRINT

RUN NO 3, SPEED CODE 50, POINT NO 2

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	16.400	18.178	250.7	527.7	250.7	321.6	0.0	418.4	0.0	52.5	0.2256	0.4716	314.3	363.9	0.3619	0.2915	402.1	326.2
2	13.698	15.674	255.7	508.7	255.7	325.2	0.0	391.3	0.0	50.2	0.2302	0.4542	339.0	381.5	0.3822	0.2904	424.6	325.3
3	11.240	13.343	260.2	491.9	260.2	327.0	0.0	367.5	0.0	46.3	0.2343	0.4388	363.1	399.1	0.4022	0.2930	446.7	328.6
4	5.079	7.226	270.0	449.2	270.0	321.0	0.0	314.3	0.0	44.3	0.2432	0.3997	432.3	452.0	0.4591	0.3107	509.7	349.3
5	-0.708	0.704	274.2	396.0	274.2	292.8	0.0	266.6	0.0	42.3	0.2471	0.3512	518.6	522.4	0.5286	0.3449	586.7	388.8
6	-2.747	-1.984	274.0	384.4	274.0	293.3	0.0	248.5	0.0	40.3	0.2468	0.3407	560.2	557.6	0.5618	0.3777	623.6	426.1
7	-3.854	-3.210	273.4	384.4	273.4	303.2	0.0	239.9	0.0	38.4	0.2463	0.3428	580.7	575.2	0.5782	0.4008	641.9	452.1
8	-5.126	-4.419	272.4	388.8	272.4	309.0	0.0	236.0	0.0	37.4	0.2454	0.3446	601.2	592.8	0.5946	0.4184	660.0	472.0
9	-9.321	-8.078	266.7	390.4	266.7	309.7	0.0	237.8	0.0	37.5	0.2402	0.3454	662.4	645.6	0.6431	0.4530	714.1	512.1
10	-10.704	-9.324	263.6	387.0	263.6	297.7	0.0	247.3	0.0	39.7	0.2374	0.3417	682.8	663.2	0.6591	0.4516	731.9	511.5
11	-11.728	-10.517	260.5	375.0	260.5	272.8	0.0	257.4	0.0	43.3	0.2345	0.3303	703.1	680.8	0.6751	0.4437	749.8	505.7

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VθB'-1 FT/SEC	VθB'-2 FT/SEC	PO/PO INLET
1	4.78	9.39	18.33	60.79	18.69	24.97	0.4371	-0.0584	-0.0127	1.1876	103.00	103.13	51.17	-9.62	-314.3	54.5	1.1876
2	4.87	9.16	17.89	54.40	19.05	25.40	0.4622	-0.0545	-0.0125	1.1841	103.19	103.33	52.68	-1.71	-339.0	9.7	1.1841
3	5.10	9.20	17.05	48.59	19.37	25.66	0.4754	-0.0485	-0.0115	1.1807	103.18	103.32	54.10	5.51	-363.1	-31.6	1.1807
4	6.35	9.82	13.50	34.68	20.05	25.39	0.4879	-0.0097	-0.0024	1.1703	100.77	100.85	57.86	23.18	-432.3	-137.7	1.1703
5	7.61	10.29	10.86	20.99	20.34	23.24	0.4784	0.0626	0.0141	1.1525	92.74	92.65	62.12	41.13	-518.6	-255.8	1.1525
6	8.03	10.31	9.17	17.45	20.33	23.33	0.4454	0.0615	0.0134	1.1505	92.09	91.98	63.96	46.51	-560.2	-309.1	1.1505
7	8.23	10.33	7.58	16.92	20.29	24.16	0.4187	0.0446	0.0097	1.1531	93.94	93.87	64.81	47.90	-580.7	-335.3	1.1531
8	8.44	10.39	6.27	16.53	20.22	24.63	0.4050	0.0431	0.0094	1.1552	93.90	93.84	65.66	49.13	-601.2	-356.8	1.1552
9	9.08	10.50	5.98	15.35	19.62	24.62	0.4016	0.0882	0.0189	1.1573	86.87	86.65	68.12	52.76	-662.4	-407.8	1.1573
10	9.26	10.55	7.37	14.57	19.60	23.59	0.4233	0.1323	0.0279	1.1555	80.64	80.29	68.94	54.37	-682.8	-415.9	1.1555
11	9.36	10.51	10.79	12.56	19.38	21.51	0.4540	0.1882	0.0377	1.1498	72.86	72.39	69.70	57.14	-703.1	-423.5	1.1498

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.0474	1.1614	92.30	92.40	19.19	1.0474	1.1614	92.30	92.40

STATOR 1

RUN NO 3, SPEED CODE 50, POINT NO 2

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	18.099	14.789	531.4	407.7	338.6	407.7	409.6	4.5	50.6	0.6	0.4751	0.3611	1.1761	1.0489	1.1761	1.0489
2	15.682	12.946	514.4	405.4	341.9	405.4	384.3	3.7	48.4	0.5	0.4594	0.3592	1.1766	1.0479	1.1766	1.0479
3	13.453	11.206	498.9	402.6	343.3	402.6	362.0	4.3	46.6	0.6	0.4452	0.3568	1.1760	1.0470	1.1760	1.0470
4	7.762	6.468	458.0	378.0	335.6	378.0	311.7	-1.5	42.8	-0.2	0.4078	0.3348	1.1630	1.0456	1.1630	1.0456
5	1.595	0.798	405.4	347.0	305.8	346.6	266.1	-17.6	41.0	-2.9	0.3598	0.3069	1.1453	1.0447	1.1453	1.0447
6	-1.070	-1.699	393.8	343.0	305.4	342.3	248.7	-22.1	39.2	-3.7	0.3493	0.3033	1.1421	1.0444	1.1421	1.0444
7	-2.177	-2.751	395.8	349.1	314.5	348.4	240.4	-22.2	37.4	-3.6	0.3511	0.3089	1.1443	1.0444	1.1443	1.0444
8	-3.157	-3.692	397.9	354.6	319.8	353.8	236.8	-22.8	36.6	-3.7	0.3529	0.3137	1.1465	1.0450	1.1465	1.0450
9	-5.816	-6.328	399.9	355.5	320.4	354.8	239.2	-23.4	36.8	-3.8	0.3559	0.3139	1.1474	1.0493	1.1474	1.0493
10	-6.741	-7.210	396.8	351.3	308.9	350.7	248.9	-19.1	38.9	-3.1	0.3505	0.3096	1.1458	1.0525	1.1458	1.0525
11	-7.871	-8.158	385.3	341.4	284.9	341.3	259.4	-9.7	42.4	-1.6	0.3395	0.3002	1.1419	1.0563	1.1419	1.0563

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-1.95	0.16	12.96	49.97	26.25	32.78	0.3810	0.0672	0.0138	0.9904	84.91	97.20	97.21	97.20	97.21
2	-2.40	-0.00	11.75	47.91	26.64	32.66	0.3613	0.0454	0.0096	0.9939	88.92	99.50	99.46	99.50	99.46
3	-2.97	-0.19	10.99	45.95	26.86	32.47	0.3437	0.0287	0.0063	0.9964	92.27	100.91	100.83	100.91	100.83
4	-4.15	-0.44	9.04	43.08	26.46	30.42	0.3351	0.0518	0.0126	0.9945	84.27	96.88	96.89	96.88	96.89
5	-4.50	0.55	6.41	43.91	24.20	27.73	0.3324	0.0711	0.0194	0.9940	74.16	88.50	88.66	88.50	88.66
6	-5.80	-0.25	5.67	42.85	24.22	27.35	0.3260	0.0948	0.0271	0.9923	62.58	87.18	87.36	87.18	87.36
7	-7.39	-1.51	5.74	41.06	24.98	27.85	0.3124	0.0963	0.0281	0.9921	58.73	88.63	88.79	88.63	88.79
8	-8.05	-1.91	5.74	40.24	25.42	28.27	0.3036	0.0928	0.0275	0.9923	57.05	88.58	88.74	88.58	88.74
9	-7.81	-0.93	6.76	40.60	25.41	28.25	0.3169	0.1037	0.0323	0.9914	52.83	81.50	81.81	81.50	81.81
10	-6.00	1.05	8.64	42.07	24.41	27.85	0.3306	0.1052	0.0332	0.9914	53.99	75.71	76.12	75.71	76.12
11	-3.20	3.95	11.68	44.06	22.40	26.98	0.3400	0.0899	0.0288	0.9931	59.99	68.77	69.30	68.77	69.30

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
5348.	84.50	1.0474	1.1535	87.99	86.17	1.0474	0.9932	87.99

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA
(Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 2

RUN NO 3, SPEED CODE 50, POINT NO 2

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VØ-1 FT/SEC	VØ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	11.651	11.065	444.3	704.3	444.3	524.4	4.4	470.2	0.6	41.8	0.3945	0.6202	417.0	437.4	0.5384	0.4627	606.4	525.5
2	10.852	9.796	445.3	691.7	445.3	524.2	3.7	451.4	0.5	40.6	0.3957	0.6089	428.8	446.6	0.5470	0.4614	615.7	524.2
3	9.864	8.588	445.2	675.8	445.2	529.2	4.1	420.3	0.5	36.4	0.3957	0.5950	441.0	456.1	0.5544	0.4670	623.7	530.4
4	6.093	5.151	424.0	594.3	424.0	497.1	-1.5	326.7	-0.2	33.2	0.3765	0.5220	478.7	486.4	0.5689	0.4588	640.6	522.4
5	0.521	0.784	387.5	488.5	387.1	433.3	-17.6	225.6	-2.6	27.5	0.3435	0.4274	530.7	530.4	0.5950	0.4635	671.2	529.7
6	-2.040	-1.276	378.4	441.3	377.8	401.2	-22.1	183.8	-3.3	24.6	0.3353	0.3857	557.2	553.8	0.6129	0.4771	691.7	545.8
7	-3.092	-2.199	381.9	429.8	381.2	396.9	-22.3	164.9	-3.3	22.5	0.3384	0.3759	570.6	565.9	0.6246	0.4934	704.9	564.2
8	-4.029	-4.103	385.4	431.0	384.7	403.4	-22.9	151.8	-3.4	20.6	0.3415	0.3771	584.1	578.2	0.6369	0.5136	718.7	586.9
9	-5.829	-6.096	384.9	436.7	384.2	412.4	-23.7	143.7	-3.5	19.1	0.3404	0.3814	625.0	616.5	0.6668	0.5479	753.9	627.4
10	-7.798	-7.281	380.7	434.8	380.2	410.8	-19.5	142.4	-2.9	19.0	0.3360	0.3792	638.8	629.6	0.6710	0.5558	760.1	637.3
11	-8.690	-8.539	370.8	412.1	370.7	389.8	-9.9	133.8	-1.5	18.9	0.3266	0.3587	652.6	643.0	0.6685	0.5582	759.1	641.2

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VØ'-1 FT/SEC	VØ'-2 FT/SEC	PO/PO INLET
1	-6.66	-2.35	16.84	46.37	35.29	42.14	0.3126	0.1722	0.0392	1.1982	85.36	85.02	42.82	-3.56	-412.6	32.8	1.4091
2	-6.23	-1.84	13.29	44.19	35.40	42.42	0.3214	0.1569	0.0367	1.1962	86.06	85.75	43.66	-0.53	-425.2	4.8	1.4073
3	-5.87	-1.29	11.39	40.63	35.40	43.16	0.3116	0.1172	0.0280	1.1924	88.87	88.64	44.49	3.86	-436.8	-35.8	1.4023
4	-3.15	1.64	8.35	30.69	33.63	41.02	0.3153	0.0833	0.0204	1.1624	90.08	89.92	48.60	17.91	-480.2	-160.7	1.3519
5	1.31	5.89	6.91	19.65	30.61	35.83	0.3128	0.0954	0.0221	1.1225	84.73	84.54	54.78	35.13	-548.3	-304.8	1.2854
6	2.51	6.85	6.45	14.22	29.68	33.16	0.2994	0.1083	0.0236	1.1008	79.52	79.31	56.88	42.66	-579.4	-370.0	1.2573
7	2.36	6.44	5.99	12.00	30.18	32.84	0.2806	0.0994	0.0213	1.0931	79.32	79.14	57.24	45.24	-592.9	-400.9	1.2509
8	2.22	6.03	4.20	11.06	30.47	33.40	0.2591	0.0808	0.0174	1.0915	81.75	81.60	57.60	46.52	-607.0	-426.4	1.2514
9	2.48	5.16	1.68	10.51	30.34	33.98	0.2447	0.0812	0.0187	1.0918	80.53	80.36	59.29	48.77	-648.7	-472.8	1.2528
10	2.70	4.88	3.05	10.18	29.93	33.73	0.2386	0.0759	0.0178	1.0914	81.32	81.17	59.90	49.73	-658.2	-487.2	1.2508
11	3.16	4.86	6.80	8.22	29.07	31.87	0.2262	0.0638	0.0147	1.0836	82.72	82.61	60.68	52.45	-662.4	-509.2	1.2374

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.0898	1.2997	86.62	87.08	26.81	1.0405	1.1267	85.63	85.80

STATOR 2

RUN NO 3, SPEED CODE 50, POINT NO 2

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VØ-1 FT/SEC	VØ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	8.592	0.861	726.5	610.7	557.7	610.5	465.5	14.5	40.1	1.4	0.6412	0.5326	1.3436	1.1145	1.1425	1.0624
2	7.510	0.790	712.7	623.5	554.5	623.3	447.7	14.4	39.1	1.3	0.6287	0.5449	1.3580	1.1127	1.1543	1.0617
3	6.493	0.610	695.7	646.3	556.6	646.2	417.4	12.5	37.0	1.1	0.6139	0.5671	1.3828	1.1090	1.1752	1.0591
4	3.954	-0.068	613.2	594.2	520.1	594.1	324.8	-7.9	32.0	-0.8	0.5395	0.5216	1.3435	1.0974	1.1541	1.0495
5	1.035	-0.846	506.8	506.6	453.8	506.4	225.6	-14.4	26.4	-1.6	0.4441	0.4437	1.2793	1.0866	1.1167	1.0401
6	-0.443	-1.140	459.8	464.0	421.4	463.7	184.0	-16.9	23.6	-2.1	0.4024	0.4062	1.2511	1.0815	1.0956	1.0354
7	-1.227	-1.241	448.1	451.4	416.6	451.0	165.2	-20.0	21.6	-2.5	0.3924	0.3953	1.2431	1.0786	1.0866	1.0328
8	-1.982	-1.280	449.2	443.7	422.7	443.2	152.1	-21.6	19.8	-2.8	0.3935	0.3886	1.2379	1.0774	1.0798	1.0311
9	-4.030	-1.252	457.9	455.0	434.5	454.4	144.4	-23.0	18.4	-2.9	0.4005	0.3979	1.2407	1.0822	1.0812	1.0317
10	-4.764	-1.256	458.8	459.2	435.9	459.0	143.3	-14.4	18.2	-1.8	0.4008	0.4011	1.2416	1.0852	1.0833	1.0313
11	-5.652	-1.212	441.2	433.4	420.1	433.2	134.7	-11.4	17.8	-1.5	0.3847	0.3777	1.2249	1.0860	1.0726	1.0281

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-8.33	-6.77	13.17	38.77	44.26	49.03	0.3003	0.1922	0.0434	0.9534	43.56	76.95	77.86	62.15	62.81
2	-8.29	-6.27	12.58	37.80	44.36	50.36	0.2682	0.1506	0.0347	0.9645	45.91	81.09	81.86	67.86	68.46
3	-9.61	-7.11	11.95	35.93	44.92	52.72	0.2135	0.0668	0.0157	0.9848	60.80	89.05	89.52	79.98	80.39
4	-13.51	-9.64	9.56	32.81	42.55	48.71	0.1765	0.0517	0.0128	0.9905	41.25	90.37	90.73	84.39	84.65
5	-18.29	-12.98	8.67	28.05	37.28	41.39	0.1366	0.0542	0.0145	0.9930	-604.22	84.22	84.73	79.89	80.13
6	-20.83	-15.04	6.13	25.66	34.61	37.82	0.1179	0.0565	0.0156	0.9939	*******	81.21	81.76	74.66	74.91
7	-22.62	-16.63	7.63	24.14	34.25	36.80	0.1101	0.0609	0.0171	0.9939	92.90	81.69	82.20	73.18	73.41
8	-24.27	-18.07	7.32	22.56	34.78	36.15	0.1222	0.1062	0.0301	0.9892	-326.94	81.30	81.82	71.43	71.66
9	-25.41	-18.71	7.28	21.28	35.55	36.85	0.1138	0.0933	0.0273	0.9902	-313.35	77.42	78.06	71.28	71.52
10	-26.24	-19.36	8.98	20.02	35.50	37.10	0.1020	0.0724	0.0214	0.9924	1731.02	74.96	75.68	74.00	74.21
11	-27.90	-20.80	10.42	19.34	34.03	34.83	0.1169	0.1039	0.0310	0.9899	-198.50	69.49	70.32	72.07	72.26

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
5348.	84.50	1.0898	1.2835	82.36	82.94	1.0405	0.9676	76.55

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA
(Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 3, SPEED CODE 50, POINT NO 3

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	V0-1 FT/SEC	V0-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-1	V'-1 FT/SEC	V'-2 FT/SEC
1	16.357	18.177	238.3	518.6	238.3	308.9	0.0	416.6	0.0	53.5	0.2144	0.4632	314.5	364.1	0.3550	0.2798	394.6	313.3
2	13.593	15.680	243.1	501.2	243.1	314.0	0.0	390.7	0.0	51.2	0.2187	0.4472	339.1	381.7	0.3754	0.2802	417.3	314.1
3	11.073	13.363	247.3	483.2	247.3	312.0	0.0	369.0	0.0	49.7	0.2226	0.4307	363.3	399.3	0.3955	0.2794	439.5	313.5
4	4.892	7.304	256.3	443.1	256.3	305.6	0.0	320.8	0.0	46.3	0.2307	0.3938	432.5	452.2	0.4526	0.2957	502.7	332.6
5	-0.965	0.773	260.1	394.3	260.1	279.1	0.0	278.5	0.0	44.9	0.2342	0.3493	518.9	522.6	0.5226	0.3285	580.4	370.8
6	-3.137	-1.968	259.7	384.9	259.7	283.5	0.0	260.3	0.0	42.6	0.2339	0.3408	560.5	557.9	0.5562	0.3639	617.7	411.0
7	-4.317	-3.229	259.1	384.6	259.1	290.6	0.0	251.9	0.0	40.9	0.2333	0.3406	581.0	575.5	0.5727	0.3851	636.1	434.9
8	-5.653	-4.477	258.0	388.1	258.0	297.5	0.0	249.1	0.0	40.0	0.2322	0.3435	601.5	593.1	0.5892	0.4026	654.5	454.8
9	-9.904	-8.221	251.6	385.7	251.6	285.2	0.0	259.8	0.0	42.3	0.2264	0.3404	662.7	645.9	0.6380	0.4236	708.8	480.0
10	-11.091	-9.431	248.6	380.4	248.6	267.7	0.0	270.3	0.0	45.2	0.2238	0.3349	683.1	663.6	0.6542	0.4189	726.9	475.7
11	-11.856	-10.569	245.7	375.4	245.7	251.0	0.0	279.2	0.0	48.0	0.2211	0.3299	703.5	681.2	0.6705	0.4164	745.1	473.9

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	V0'-1 FT/SEC	V0'-2 FT/SEC	PO/PO INLET
1	6.20	10.80	18.31	62.23	17.81	24.09	0.4581	-0.0725	-0.0157	1.1881	103.61	103.76	52.58	-9.65	-314.5	52.5	1.1881
2	6.25	10.55	17.97	55.71	18.15	24.63	0.4796	-0.0720	-0.0166	1.1856	104.07	104.23	54.07	-1.63	-339.1	9.0	1.1856
3	6.47	10.57	17.07	49.94	18.45	24.57	0.5022	-0.0495	-0.0118	1.1815	103.13	103.26	55.48	5.54	-363.3	-30.3	1.1815
4	7.69	11.16	13.55	35.96	19.09	24.26	0.5175	-0.0029	-0.0007	1.1729	100.17	100.23	59.19	23.23	-432.5	-131.4	1.1729
5	8.65	11.54	10.89	22.21	19.36	22.24	0.5105	0.0729	0.0165	1.1584	92.05	91.94	63.37	41.16	-518.9	-244.1	1.1584
6	9.23	11.51	9.05	18.77	19.33	22.64	0.4714	0.0668	0.0146	1.1578	91.89	91.77	65.16	46.39	-560.4	-297.5	1.1578
7	9.42	11.53	7.77	17.92	19.28	23.24	0.4477	0.0566	0.0123	1.1591	92.75	92.66	66.00	48.09	-581.0	-323.5	1.1591
8	9.62	11.57	6.30	17.68	19.20	23.81	0.4338	0.0563	0.0122	1.1617	92.52	92.41	66.84	49.16	-601.5	-344.0	1.1617
9	10.25	11.68	6.76	15.75	18.75	22.70	0.4539	0.1342	0.0283	1.1617	81.74	81.40	69.30	53.55	-662.7	-386.2	1.1617
10	10.39	11.69	8.73	14.34	18.55	21.23	0.4803	0.1825	0.0372	1.1593	75.56	75.09	70.08	55.73	-683.1	-393.3	1.1593
11	10.45	11.60	11.61	12.83	18.34	19.84	0.5014	0.2229	0.0436	1.1574	70.51	69.94	70.78	57.55	-703.5	-401.9	1.1574

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.0496	1.1661	90.53	90.68	18.24	1.0496	1.1661	90.53	90.68

STATOR 1

RUN NO 3, SPEED CODE 50, POINT NO 3

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	V0-1 FT/SEC	V0-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	18.157	14.867	521.4	382.5	324.9	382.4	407.8	6.7	51.6	1.0	0.4657	0.3383	1.1761	1.0487	1.1761	1.0487
2	15.818	13.105	505.7	380.7	329.4	380.6	383.7	8.9	49.5	1.3	0.4514	0.3368	1.1769	1.0479	1.1769	1.0479
3	13.651	11.439	489.1	379.1	327.2	378.9	363.5	10.4	48.1	1.6	0.4360	0.3354	1.1771	1.0473	1.1771	1.0473
4	7.994	6.842	450.8	358.8	319.3	358.8	318.2	3.9	44.9	0.6	0.4009	0.3172	1.1674	1.0466	1.1674	1.0466
5	1.836	1.266	402.8	328.0	291.5	327.8	278.0	-13.0	43.6	-2.3	0.3571	0.2895	1.1513	1.0467	1.1513	1.0467
6	-0.771	-1.202	393.4	326.1	294.7	325.7	260.5	-16.0	41.5	-2.8	0.3485	0.2878	1.1494	1.0466	1.1494	1.0466
7	-1.855	-2.251	393.1	332.3	301.3	332.0	252.5	-14.3	40.0	-2.5	0.3482	0.2934	1.1517	1.0466	1.1517	1.0466
8	-2.816	-3.205	396.4	336.9	307.6	336.3	250.0	-12.9	39.1	-2.2	0.3511	0.2971	1.1534	1.0475	1.1534	1.0475
9	-5.516	-5.962	394.3	330.3	295.4	330.1	261.2	-13.4	41.5	-2.3	0.3481	0.2906	1.1519	1.0536	1.1515	1.0536
10	-6.573	-6.953	389.2	324.7	278.4	324.5	272.0	-9.8	44.4	-1.7	0.3429	0.2851	1.1496	1.0573	1.1496	1.0573
11	-7.834	-8.031	384.4	318.7	261.9	318.7	281.4	-3.7	47.2	-0.1	0.3380	0.2792	1.1476	1.0611	1.1476	1.0611

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-0.91	1.20	13.33	50.65	25.31	30.99	0.4165	0.0727	0.0149	0.9900	85.43	97.56	97.56	97.56	97.56
2	-1.37	1.03	12.56	48.15	25.79	30.90	0.3975	0.0550	0.0117	0.9928	88.26	99.67	99.62	99.67	99.62
3	-1.45	1.33	11.95	46.52	25.71	30.81	0.3773	0.0282	0.0062	0.9965	93.42	100.92	100.85	100.92	100.85
4	-2.12	1.59	9.89	44.26	25.28	29.12	0.3690	0.0414	0.0101	0.9957	89.23	97.21	97.22	97.21	97.22
5	-1.88	3.17	7.04	45.89	23.16	26.45	0.3812	0.0725	0.0198	0.9939	79.28	88.02	88.20	88.02	88.20
6	-3.54	2.07	6.54	44.30	23.48	26.25	0.3715	0.0898	0.0257	0.9928	72.52	87.22	87.41	87.22	87.41
7	-4.82	1.05	6.91	42.45	24.03	26.77	0.3534	0.0819	0.0239	0.9934	72.57	88.49	88.66	88.49	88.66
8	-5.49	0.66	7.22	41.32	24.55	27.10	0.3487	0.0882	0.0262	0.9928	69.81	87.79	87.98	87.79	87.98
9	-3.08	3.80	8.22	43.87	23.45	26.45	0.3808	0.1105	0.0344	0.9911	64.75	76.88	77.29	76.88	77.29
10	-0.53	6.52	10.04	46.14	22.02	25.92	0.3967	0.1081	0.0342	0.9915	66.17	71.12	71.64	71.12	71.64
11	1.53	8.68	12.65	47.83	20.65	25.36	0.4111	0.1115	0.0357	0.9915	65.81	65.80	66.41	65.80	66.41

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
5351.	80.30	1.0496	1.1583	86.51	86.73	1.0496	0.9933	86.51

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

(Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 2

RUN NO 3, SPEED CODE 50, POINT NO 3

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	V0-1 FT/SEC	V0-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-1	V'-1 FT/SEC	V'-2 FT/SEC
1	11.685	11.052	413.8	682.1	413.7	488.5	6.5	476.1	0.9	44.1	0.3667	0.5990	417.2	437.6	0.5166	0.4303	583.0	490.0
2	10.929	9.780	415.1	665.8	415.0	482.4	8.6	456.8	1.2	43.5	0.3680	0.5843	429.0	446.8	0.5238	0.4236	590.7	482.6
3	10.006	8.592	416.1	644.4	415.9	479.7	10.2	430.3	1.4	41.8	0.3690	0.5653	441.2	456.3	0.5313	0.4214	599.0	480.4
4	6.482	5.291	399.9	575.5	399.9	461.7	3.9	343.6	0.6	36.7	0.3545	0.5039	478.9	486.6	0.5504	0.4232	620.9	483.3
5	0.958	0.950	365.9	476.8	365.7	409.9	-12.9	243.5	-2.0	30.7	0.3236	0.4160	531.0	530.6	0.5797	0.4366	655.4	500.5
6	-1.644	-1.123	359.1	433.3	358.8	378.9	-16.1	210.1	-2.6	29.0	0.3175	0.3775	557.5	554.1	0.5982	0.4459	676.6	511.8
7	-2.711	-2.047	362.8	425.6	362.5	375.2	-14.4	200.7	-2.3	28.1	0.3208	0.3708	570.9	566.1	0.6088	0.4564	688.4	523.8
8	-3.667	-2.946	365.6	426.7	365.3	380.9	-13.0	192.3	-2.0	26.7	0.3232	0.3718	584.4	578.5	0.6191	0.4727	700.2	542.4
9	-6.551	-5.928	359.3	424.3	359.1	383.3	-13.6	181.8	-2.2	25.3	0.3167	0.3685	625.3	616.8	0.6459	0.5036	732.9	579.8
10	-7.586	-7.139	354.2	421.0	354.1	381.1	-10.1	178.9	-1.6	25.0	0.3115	0.3651	639.1	629.9	0.6503	0.5120	739.4	590.4
11	-8.571	-8.453	348.4	403.9	348.3	366.5	-3.8	169.8	-0.6	24.8	0.3057	0.3496	652.9	643.3	0.6523	0.5183	743.3	598.8

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	V0'-1 FT/SEC	V0'-2 FT/SEC	PO/PO INLET
1	-4.75	-0.44	15.92	49.21	33.20	39.89	0.3475	0.1685	0.0383	1.2038	86.81	86.50	44.73	-4.48	-410.7	38.4	1.4158
2	-4.58	-0.13	12.39	46.79	33.34	39.64	0.3644	0.1670	0.0390	1.1982	86.33	86.02	45.37	-1.42	-420.4	12.0	1.4101
3	-4.29	0.28	10.62	42.96	33.43	39.66	0.3680	0.1522	0.0364	1.1892	86.64	86.36	46.06	3.09	-431.0	-26.0	1.3998
4	-1.78	3.01	7.65	32.75	32.06	38.67	0.3616	0.0965	0.0237	1.1678	89.65	89.47	49.97	17.21	-475.0	-143.0	1.3637
5	2.62	7.19	6.79	21.07	29.21	34.50	0.3461	0.0785	0.0182	1.1353	88.60	88.46	56.09	35.02	-543.9	-287.1	1.3072
6	3.58	7.92	5.99	15.75	28.66	31.88	0.3424	0.1024	0.0225	1.1160	83.06	82.86	57.95	42.20	-573.6	-344.0	1.2827
7	3.32	7.40	4.93	14.01	28.99	31.59	0.3339	0.1052	0.0230	1.1106	81.66	81.45	58.20	44.19	-585.3	-365.4	1.2789
8	3.12	6.93	3.00	13.18	29.21	32.08	0.3164	0.0912	0.0201	1.1098	83.20	83.02	58.50	45.32	-597.4	-386.2	1.2800
9	3.76	6.44	1.38	12.10	28.56	32.09	0.3012	0.0893	0.0207	1.1101	82.49	82.30	60.57	48.47	-638.9	-434.9	1.2784
10	4.09	6.27	2.58	11.63	28.07	31.80	0.2936	0.0807	0.0190	1.1100	83.74	83.57	61.29	49.66	-649.1	-451.0	1.2763
11	4.44	6.14	6.48	9.82	27.51	30.47	0.2818	0.0699	0.0162	1.1038	84.85	84.71	61.96	52.14	-656.6	-473.5	1.2667

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.0955	1.3187	86.19	86.69	25.40	1.0437	1.1385	86.46	86.65

STATOR 2

RUN NO 3, SPEED CODE 50, POINT NO 3

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	V0-1 FT/SEC	V0-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	8.610	0.871	700.1	556.2	517.7	556.1	471.4	9.4	42.6	1.0	0.6161	0.4827	1.3545	1.1149	1.1517	1.0630
2	7.527	0.804	683.0	567.0	509.4	566.9	455.0	10.4	42.0	1.0	0.6006	0.4929	1.3657	1.1132	1.1607	1.0622
3	6.465	0.609	661.1	586.4	504.4	586.3	427.3	10.4	40.4	1.0	0.5809	0.5114	1.3848	1.1096	1.1761	1.0595
4	3.749	-0.152	591.4	543.8	482.1	543.8	342.5	-5.7	35.4	-0.6	0.5185	0.4747	1.3595	1.1002	1.1599	1.0512
5	0.972	-0.820	492.6	465.1	428.2	465.0	243.5	-10.1	29.6	-1.2	0.4303	0.4053	1.3015	1.0908	1.1300	1.0421
6	-0.389	-1.024	449.4	426.7	397.2	426.5	210.3	-12.1	27.9	-1.6	0.3920	0.3716	1.2777	1.0871	1.1120	1.0386
7	-1.136	-1.102	441.6	420.5	393.2	420.2	201.0	-15.4	27.0	-2.1	0.3852	0.3663	1.2738	1.0858	1.1065	1.0376
8	-1.878	-1.146	442.9	415.9	398.7	415.6	192.7	-15.3	25.8	-2.1	0.3863	0.3622	1.2766	1.0893	1.1017	1.0364
9	-3.999	-1.203	443.8	423.7	404.5	423.4	182.7	-15.3	24.3	-2.1	0.3860	0.3681	1.2714	1.0918	1.1038	1.0368
10	-4.771	-1.231	443.3	425.7	405.1	425.6	180.0	-11.0	24.0	-1.5	0.3850	0.3693	1.2710	1.0952	1.1054	1.0363
11	-5.673	-1.198	430.5	405.0	395.1	405.0	171.0	-7.1	23.5	-1.0	0.3733	0.3506	1.2582	1.0969	1.0963	1.0338

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-5.86	-4.30	12.79	41.62	41.88	46.11	0.3554	0.1923	0.0434	0.9564	54.44	78.85	79.71	65.38	66.02
2	-5.43	-3.41	12.30	40.94	41.49	47.24	0.3238	0.1498	0.0345	0.9672	58.75	82.34	83.07	69.99	70.57
3	-6.21	-3.70	11.86	39.42	41.35	49.26	0.2674	0.0601	0.0141	0.9875	76.56	88.96	89.43	79.80	80.22
4	-10.11	-6.24	9.72	36.04	40.10	45.88	0.2341	0.0465	0.0116	0.9921	74.87	90.65	91.02	84.61	84.88
5	-15.10	-9.80	9.05	30.85	35.84	39.13	0.2025	0.0529	0.0142	0.9936	60.35	86.16	86.63	84.43	84.63
6	-16.53	-10.74	8.59	29.49	33.24	35.81	0.1920	0.0471	0.0130	0.9952	59.22	83.37	83.90	79.81	80.04
7	-17.18	-11.19	8.08	29.14	32.92	35.29	0.1860	0.0387	0.0108	0.9962	62.33	83.48	84.00	78.14	78.38
8	-18.28	-12.08	8.00	27.87	33.41	34.87	0.1950	0.0752	0.0213	0.9926	40.09	83.10	83.63	77.07	77.32
9	-19.48	-12.78	8.10	26.39	33.65	35.27	0.1768	0.0569	0.0167	0.9944	39.45	77.41	78.13	77.77	78.01
10	-20.47	-13.59	9.30	25.46	33.56	35.31	0.1684	0.0446	0.0132	0.9957	46.98	74.57	75.38	80.01	80.22
11	-22.27	-15.17	10.93	24.47	32.58	33.43	0.1832	0.0734	0.0219	0.9933	39.53	70.04	70.97	78.83	79.04

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
5351.	80.30	1.0955	1.3058	83.01	83.61	1.0437	0.9902	79.79

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

(Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 3, SPEED CODE 70, POINT NO 31

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	V0-1 FT/SEC	V0-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	16.490	18.174	380.2	765.1	380.2	467.7	0.0	605.5	0.0	52.3	0.3444	0.6835	440.6	510.1	0.5272	0.4265	581.9	477.4
2	13.871	15.658	388.4	735.2	388.4	468.5	0.0	566.6	0.0	50.4	0.3521	0.6550	475.1	534.7	0.5563	0.4184	613.6	469.5
3	11.485	13.316	396.2	709.7	396.2	471.4	0.0	530.6	0.0	48.3	0.3593	0.6311	508.9	559.4	0.5849	0.4199	645.0	472.2
4	5.239	7.186	413.5	647.8	413.5	467.0	0.0	448.9	0.0	43.8	0.3754	0.5734	605.9	633.5	0.6660	0.4444	733.5	502.1
5	-0.649	0.610	420.7	558.6	420.7	416.7	0.0	372.1	0.0	41.8	0.3822	0.4912	726.9	732.2	0.7630	0.4843	839.9	550.7
6	-2.331	-2.105	420.4	529.8	420.4	404.9	0.0	341.7	0.0	40.2	0.3819	0.4652	785.2	781.5	0.8091	0.5248	890.6	597.8
7	-3.235	-3.327	419.8	537.7	419.8	424.9	0.0	329.6	0.0	37.8	0.3814	0.4725	813.9	806.2	0.8319	0.5610	915.8	638.5
8	-4.368	-4.499	418.6	539.0	418.6	430.2	0.0	324.8	0.0	37.1	0.3802	0.4734	842.6	830.9	0.8546	0.5833	940.9	664.2
9	-8.209	-7.941	411.0	549.8	411.0	441.4	0.0	327.7	0.0	36.6	0.3731	0.4813	928.4	904.9	0.9217	0.6361	1015.3	726.6
10	-9.659	-9.139	407.0	555.6	407.0	445.8	0.0	331.6	0.0	36.6	0.3694	0.4858	957.0	929.6	0.9438	0.6521	1039.9	745.9
11	-11.055	-10.370	402.4	547.7	402.4	431.2	0.0	337.8	0.0	38.0	0.3651	0.4775	985.5	954.3	0.9658	0.6559	1064.5	752.3

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	V0'-1 FT/SEC	V0'-2 FT/SEC	PO/PO INLET
1	2.58	7.18	16.42	60.50	27.42	36.21	0.4277	0.0040	0.0009	1.3911	99.79	99.81	48.96	-11.54	-440.6	95.5	1.3911
2	2.65	6.94	15.72	54.35	27.94	36.68	0.4630	0.0132	0.0030	1.3804	99.24	99.23	50.47	-3.89	-475.1	31.9	1.3804
3	2.84	6.95	15.02	48.36	28.43	37.27	0.4779	0.0110	0.0026	1.3720	99.29	99.29	51.85	3.49	-508.9	-28.8	1.3720
4	4.04	7.51	11.84	34.01	29.50	37.66	0.4868	0.0219	0.0054	1.3497	98.07	98.02	55.54	21.53	-605.9	-184.6	1.3497
5	5.41	8.10	10.56	19.10	29.94	33.83	0.4813	0.0955	0.0217	1.2994	89.25	88.88	59.93	40.83	-726.9	-360.1	1.2994
6	5.91	8.19	10.04	14.47	29.92	33.00	0.4516	0.0999	0.0214	1.2866	87.55	87.13	61.85	47.38	-785.2	-439.8	1.2866
7	6.15	8.25	7.99	14.43	29.88	34.79	0.4197	0.0721	0.0156	1.2963	90.60	90.28	62.73	48.30	-813.9	-476.6	1.2963
8	6.38	8.33	6.80	13.94	29.81	35.28	0.4082	0.0721	0.0155	1.3004	90.34	90.01	63.59	49.66	-842.6	-506.1	1.3004
9	7.07	8.49	5.77	13.55	29.35	36.17	0.3972	0.1016	0.0219	1.3144	85.91	85.38	66.12	52.57	-928.4	-577.2	1.3144
10	7.27	8.56	6.24	13.71	29.10	36.49	0.3965	0.1147	0.0248	1.3198	84.03	83.42	66.95	53.24	-957.0	-598.0	1.3198
11	7.44	8.59	8.60	12.83	28.81	35.12	0.4085	0.1487	0.0315	1.3140	79.24	78.49	67.77	54.94	-985.5	-616.5	1.3140

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WCI/AI LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.0925	1.3247	90.47	90.82	28.32	1.0925	1.3247	90.47	90.82

STATOR 1

RUN NO 3, SPEED CODE 70, POINT NO 31

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	V0-1 FT/SEC	V0-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	18.018	14.751	769.7	585.0	491.1	585.0	592.7	3.2	50.5	0.3	0.6880	0.5128	1.3626	1.0990	1.3626	1.0990
2	15.512	12.897	742.8	579.6	492.0	579.5	556.5	9.7	48.6	0.9	0.6624	0.5082	1.3618	1.0970	1.3618	1.0970
3	13.209	11.163	719.6	573.2	494.7	573.0	522.6	14.8	46.6	1.5	0.6406	0.5029	1.3585	1.0950	1.3585	1.0950
4	7.512	6.416	661.3	541.7	489.0	541.7	445.2	-0.4	42.3	-0.0	0.5862	0.4748	1.3324	1.0910	1.3324	1.0910
5	1.356	0.339	573.8	489.1	437.4	488.4	371.3	-25.2	40.3	-3.0	0.5052	0.4277	1.2876	1.0873	1.2876	1.0873
6	-1.456	-2.502	545.9	473.1	425.5	471.8	342.0	-34.4	38.8	-4.2	0.4799	0.4136	1.2737	1.0856	1.2737	1.0856
7	-2.608	-3.686	553.2	479.9	443.7	478.6	330.4	-35.1	36.7	-4.2	0.4867	0.4198	1.2772	1.0855	1.2772	1.0855
8	-3.592	-4.690	554.5	489.7	448.5	488.4	326.1	-35.0	36.1	-4.1	0.4876	0.4283	1.2831	1.0870	1.2831	1.0870
9	-6.367	-7.241	565.8	516.2	459.7	515.4	329.8	-27.6	35.7	-3.1	0.4959	0.4506	1.3017	1.0954	1.3017	1.0954
10	-7.252	-7.962	571.8	521.1	464.1	520.4	334.0	-25.5	35.8	-2.8	0.5006	0.4542	1.3051	1.0991	1.3051	1.0991
11	-8.188	-8.618	564.8	509.8	450.7	509.2	340.4	-24.6	37.2	-2.8	0.4931	0.4431	1.2964	1.1035	1.2964	1.1035

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-2.02	0.09	12.64	50.22	37.91	48.60	0.3883	0.0737	0.0151	0.9800	85.19	93.39	93.64	93.39	93.64
2	-2.25	0.15	12.17	47.65	38.35	48.50	0.3672	0.0498	0.0106	0.9873	89.05	95.15	95.32	95.15	95.32
3	-2.94	-0.16	11.86	45.12	38.90	48.06	0.3504	0.0372	0.0082	0.9911	91.07	96.33	96.46	96.33	96.46
4	-4.74	-1.02	9.23	42.30	39.15	45.30	0.3373	0.0522	0.0127	0.9893	85.58	93.90	94.11	93.90	94.11
5	-5.20	-0.16	6.35	43.25	35.28	40.43	0.3313	0.0490	0.0134	0.9923	83.08	85.87	86.33	85.87	86.33
6	-6.23	-0.61	5.19	42.96	34.46	38.92	0.3321	0.0789	0.0225	0.9884	71.47	83.67	84.18	83.67	84.18
7	-8.10	-2.22	5.18	40.91	34.10	39.49	0.3259	0.1021	0.0297	0.9847	62.28	84.73	85.21	84.73	85.21
8	-8.54	-2.40	5.31	40.18	36.54	40.29	0.3115	0.0911	0.0270	0.9863	62.33	84.96	85.45	84.96	85.45
9	-8.87	-1.99	7.47	38.82	37.42	42.41	0.2864	0.0633	0.0197	0.9902	65.78	82.12	82.74	82.12	82.74
10	-9.09	-2.04	8.95	38.67	37.71	42.71	0.2894	0.0699	0.0221	0.9890	62.50	79.83	80.54	79.83	80.54
11	-8.44	-1.29	10.53	39.97	36.45	41.55	0.3062	0.0869	0.0278	0.9867	57.24	74.45	75.34	74.45	75.34

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
7496.	124.70	1.0925	1.3095	86.62	87.09	1.0925	0.9885	86.62

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA (Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 2

RUN NO 3, SPEED CODE 70, POINT NO 31

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-1	V'-1 FT/SEC	V'-2 FT/SEC
1	11.631	11.202	634.3	887.5	636.3	688.9	3.1	559.5	0.3	39.0	0.5604	0.7642	584.5	613.1	0.7592	0.5950	862.0	691.0
2	10.652	10.065	636.2	882.6	636.1	685.7	9.4	555.8	0.8	38.9	0.5608	0.7601	601.0	625.9	0.7658	0.5935	868.7	689.2
3	9.907	8.980	634.7	872.3	634.6	689.4	14.4	534.3	1.3	37.7	0.5600	0.7520	618.1	639.3	0.7727	0.6012	875.8	697.4
4	6.149	5.775	614.0	807.4	614.0	685.8	-0.4	426.2	-0.0	31.9	0.5417	0.6961	671.0	681.8	0.8027	0.6310	909.8	731.9
5	-0.138	1.017	560.3	682.2	559.7	611.9	-25.5	301.6	-2.6	26.2	0.4928	0.5853	743.9	743.4	0.8369	0.6475	951.4	754.8
6	-3.132	-1.392	537.9	599.0	536.8	546.0	-34.6	246.2	-3.7	24.3	0.4726	0.5121	781.0	776.2	0.8578	0.6505	976.4	760.9
7	-4.261	-2.416	540.2	573.7	539.1	530.4	-35.4	218.7	-3.8	22.4	0.4747	0.4905	799.8	793.1	0.8735	0.6685	994.0	781.9
8	-5.184	-3.398	546.5	574.5	545.4	539.9	-35.2	196.2	-3.7	19.9	0.4801	0.4918	818.7	810.4	0.8901	0.7002	1013.1	817.8
9	-7.950	-6.649	566.4	604.8	565.7	578.2	-27.8	177.5	-2.8	17.0	0.4965	0.5180	876.0	864.1	0.9346	0.7687	1066.3	897.6
10	-8.848	-7.883	567.3	603.0	566.7	577.6	-25.8	173.1	-2.6	16.6	0.4964	0.5156	895.3	882.5	0.9463	0.7822	1081.4	914.8
11	-9.450	-9.019	553.1	548.6	552.5	526.8	-24.9	153.3	-2.6	16.2	0.4824	0.4672	914.6	901.2	0.9507	0.7789	1090.0	914.8

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VO'-1 FT/SEC	VO'-2 FT/SEC	PO/PO INLET
1	-7.13	-2.81	24.83	37.92	51.81	59.25	0.3489	0.1844	0.0419	1.3147	82.20	81.53	42.35	4.43	-581.4	-53.6	1.7915
2	-7.04	-2.59	19.64	37.09	51.84	59.63	0.3565	0.1645	0.0382	1.3247	84.04	83.42	42.92	5.82	-591.6	-70.1	1.8042
3	-6.75	-2.18	16.17	34.96	51.71	60.75	0.3470	0.1196	0.0283	1.3318	88.02	87.55	43.60	8.64	-603.6	-104.9	1.8103
4	-4.15	0.64	10.90	27.14	49.72	61.96	0.3155	0.0217	0.0052	1.3227	97.51	97.43	47.60	20.46	-671.4	-255.6	1.7638
5	0.49	5.07	7.61	18.13	45.00	55.21	0.3039	0.0271	0.0062	1.2627	95.62	95.52	53.96	35.83	-769.4	-441.8	1.6242
6	2.29	6.63	7.91	12.54	43.18	48.73	0.3073	0.0872	0.0186	1.2031	84.14	83.76	56.66	44.12	-815.6	-530.0	1.5331
7	2.30	6.38	7.98	9.93	43.45	47.22	0.2932	0.0959	0.0199	1.1786	81.04	80.63	57.17	47.24	-835.2	-574.4	1.5067
8	2.06	5.87	6.30	8.81	43.99	48.08	0.2658	0.0747	0.0155	1.1713	83.81	83.49	57.44	48.62	-853.8	-614.2	1.5041
9	1.13	3.81	2.70	8.14	45.59	51.10	0.2258	0.0546	0.0123	1.1659	86.44	86.19	57.94	49.80	-903.8	-686.6	1.5183
10	1.18	3.36	4.07	7.63	45.61	50.74	0.2207	0.0614	0.0141	1.1592	84.10	83.81	58.38	50.75	-921.1	-709.4	1.5118
11	1.99	3.68	9.11	4.74	44.30	45.76	0.2225	0.0901	0.0196	1.1265	74.32	73.94	59.50	54.76	-939.5	-747.9	1.4601

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	T02/T01	P02/P01	EFF-AD ROTOR %	EFF-P ROTOR %
1.1687	1.6207	87.65	88.45	35.60	1.0697	1.2377	89.95	90.22

STATOR 2

RUN NO 3, SPEED CODE 70, POINT NO 31

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	T02/ T01
1	8.811	1.164	920.5	800.6	735.3	800.2	553.8	-26.3	37.3	-1.9	0.7962	0.6820	1.4850	1.2086	1.0927	1.0994
2	7.929	1.403	913.4	822.3	728.5	821.6	551.0	-33.1	37.3	-2.3	0.7897	0.7024	1.5223	1.2080	1.1174	1.1002
3	7.083	1.536	902.0	846.0	729.0	845.2	531.2	-36.3	36.3	-2.5	0.7806	0.7259	1.5613	1.2047	1.1471	1.0991
4	5.003	1.463	835.5	865.0	719.1	863.9	425.5	-43.9	30.7	-2.9	0.7227	0.7498	1.6142	1.1877	1.2043	1.0877
5	2.697	0.750	712.7	808.9	645.2	807.9	302.7	-40.3	25.1	-2.9	0.6132	0.7026	1.5653	1.1684	1.2110	1.0741
6	1.133	0.168	632.0	751.0	581.5	750.1	247.5	-36.8	23.0	-2.8	0.5418	0.6510	1.5035	1.1583	1.1811	1.0668
7	0.081	-0.199	605.3	719.6	564.0	718.7	219.9	-35.4	21.3	-2.8	0.5189	0.6233	1.4714	1.1525	1.1531	1.0619
8	-0.968	-0.539	605.5	702.2	572.6	701.4	196.8	-32.9	18.9	-2.7	0.5198	0.6084	1.4542	1.1475	1.1339	1.0560
9	-3.530	-1.117	638.4	716.5	613.0	716.5	178.3	-0.9	16.2	-0.1	0.5484	0.6204	1.4630	1.1524	1.1238	1.0520
10	-4.330	-1.252	641.3	713.0	617.1	712.9	174.4	7.4	15.8	0.6	0.5502	0.6161	1.4559	1.1560	1.1161	1.0514
11	-5.352	-1.255	594.9	636.2	574.5	636.1	154.4	8.2	15.1	0.7	0.5084	0.5456	1.3767	1.1551	1.0622	1.0467

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-11.19	-9.63	9.94	39.14	61.84	60.36	0.2734	0.4907	0.1108	0.8317	-69.66	57.72	59.98	25.77	26.66
2	-10.08	-8.06	8.95	39.65	62.05	62.57	0.2480	0.4545	0.1046	0.8460	-101.40	61.29	63.47	32.08	33.09
3	-10.37	-7.87	8.39	38.73	62.99	65.20	0.2174	0.4112	0.0963	0.8621	-164.70	66.28	68.29	40.34	41.45
4	-14.85	-10.98	7.41	33.62	63.89	68.78	0.1229	0.3011	0.0747	0.9090	442.93	78.10	79.49	62.24	63.18
5	-19.57	-14.26	7.45	27.99	57.40	65.41	0.0311	0.2256	0.0603	0.9465	192.92	81.08	82.21	75.73	76.35
6	-21.37	-15.58	7.41	25.83	51.21	60.75	-0.0240	0.1825	0.0504	0.9648	150.32	78.05	79.25	72.84	73.43
7	-22.95	-16.96	7.35	24.09	49.54	58.20	-0.0615	0.1511	0.0423	0.9745	133.36	76.48	77.70	66.99	67.61
8	-25.11	-18.90	7.43	21.62	50.31	56.86	-0.0548	0.1929	0.0547	0.9678	148.72	76.54	77.72	65.23	65.80
9	-27.58	-20.88	10.10	16.29	53.39	57.79	-0.0409	0.1965	0.0577	0.9637	165.98	75.35	76.61	65.19	65.71
10	-28.67	-21.79	11.37	15.20	53.36	57.16	-0.0336	0.2052	0.0607	0.9623	182.18	72.60	73.97	61.65	62.18
11	-30.65	-23.55	12.67	14.35	48.97	50.16	0.0030	0.3536	0.1056	0.9432	363.36	61.67	63.32	37.11	37.58

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	T02/T01	P02/P01	EFF-AD STAGE %
7496.	124.70	1.1687	1.5096	74.00	75.44	1.0697	0.9314	59.40

APPENDIX E

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

(Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 3, SPEED CODE 70, POINT NO 2

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	V0-1 FT/SEC	V0-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-1	V'-1 FT/SEC	V'-2 FT/SEC
1	16.443	18.152	359.0	738.8	359.0	440.7	0.0	592.9	0.0	53.4	0.3249	0.6586	440.7	510.2	0.5144	0.3997	568.4	448.4
2	13.792	15.626	366.7	711.2	366.7	437.9	0.0	560.4	0.0	52.0	0.3319	0.6322	475.2	534.9	0.5434	0.3900	600.3	438.7
3	11.418	13.278	373.7	686.1	373.7	437.3	0.0	528.7	0.0	50.3	0.3385	0.6086	509.1	559.6	0.5720	0.3889	631.6	438.4
4	5.205	7.182	389.3	634.5	389.3	437.3	0.0	459.7	0.0	46.4	0.3529	0.5603	606.1	633.7	0.6531	0.4156	720.4	470.7
5	-0.655	0.754	395.8	549.9	395.8	387.9	0.0	389.9	0.0	45.1	0.3590	0.4823	727.2	732.4	0.7509	0.4538	827.9	517.5
6	-2.476	-1.880	395.9	529.1	395.9	367.6	0.0	360.2	0.0	42.9	0.3590	0.4635	785.4	781.8	0.7977	0.5016	879.5	572.6
7	-3.546	-3.096	395.4	536.1	395.4	406.4	0.0	349.6	0.0	40.7	0.3586	0.4698	814.2	806.5	0.8208	0.5359	905.1	611.4
8	-4.819	-4.291	394.3	535.4	394.3	408.6	0.0	346.0	0.0	40.3	0.3576	0.4688	842.9	831.2	0.8439	0.5554	930.6	634.3
9	-8.772	-7.894	386.8	542.9	386.8	409.7	0.0	356.2	0.0	41.0	0.3506	0.4731	928.7	905.2	0.9119	0.5970	1006.0	685.0
10	-10.149	-9.146	382.9	547.7	382.9	408.7	0.0	364.7	0.0	41.7	0.3470	0.4763	957.3	929.9	0.9343	0.6065	1031.0	697.4
11	-11.357	-10.398	378.5	539.1	378.5	367.0	0.0	375.4	0.0	44.0	0.3429	0.4672	985.8	954.6	0.9567	0.6036	1056.0	696.6

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	V0'-1 FT/SEC	V0'-2 FT/SEC	PO/PO INLET
1	4.20	8.80	17.32	61.21	26.06	34.74	0.4599	-0.0411	-0.0089	1.3923	102.03	102.15	50.58	-10.63	-440.7	82.7	1.3923
2	4.26	8.55	16.28	55.39	26.55	34.88	0.4999	-0.0191	-0.0044	1.3839	101.06	101.13	52.07	-3.32	-475.2	25.4	1.3839
3	4.46	8.56	15.57	49.43	27.01	35.15	0.5193	-0.0085	-0.0020	1.3760	100.53	100.58	53.47	4.04	-509.1	-30.9	1.3760
4	5.63	9.10	11.97	35.48	28.00	35.82	0.5247	0.0084	0.0021	1.3642	99.25	99.25	57.14	21.66	-606.1	-174.0	1.3642
5	6.91	9.59	11.17	19.99	28.41	32.02	0.5204	0.0897	0.0202	1.3206	90.62	90.27	61.43	41.44	-727.2	-342.6	1.3206
6	7.33	9.61	10.07	15.85	28.41	32.18	0.4802	0.0824	0.0176	1.3152	90.47	90.12	63.27	47.41	-785.4	-421.6	1.3152
7	7.53	9.64	8.04	15.76	28.38	33.89	0.4505	0.0599	0.0129	1.3248	92.76	92.50	64.12	48.36	-814.2	-456.8	1.3248
8	7.74	9.69	7.05	15.05	28.31	34.11	0.4422	0.0666	0.0143	1.3276	91.73	91.43	64.96	49.91	-842.9	-485.1	1.3276
9	8.37	9.79	6.45	14.17	27.84	34.09	0.4439	0.1191	0.0253	1.3395	84.84	84.23	67.41	53.24	-928.7	-549.0	1.3395
10	8.54	9.83	7.08	14.14	27.59	33.91	0.4505	0.1431	0.0304	1.3444	81.86	81.11	68.22	54.08	-957.3	-565.2	1.3444
11	8.66	9.81	9.82	12.83	27.31	31.93	0.4699	0.1861	0.0382	1.3386	76.54	75.59	69.00	56.16	-985.8	-579.2	1.3386

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.0972	1.3443	90.79	91.14	26.87	1.0972	1.3443	90.79	91.14

STATOR 1

RUN NO 3, SPEED CODE 70, POINT NO 2

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	V0-1 FT/SEC	V0-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	16.069	14.755	741.9	532.5	462.1	532.5	580.4	0.1	51.7	0.0	0.6616	0.4651	1.3644	1.0971	1.3644	1.0971
2	15.642	12.894	717.1	528.8	459.6	528.7	550.4	6.7	50.2	0.7	0.6379	0.4619	1.3647	1.0961	1.3647	1.0961
3	13.358	11.145	694.1	524.4	458.9	524.4	520.7	9.7	48.6	1.1	0.6162	0.4583	1.3632	1.0948	1.3632	1.0948
4	7.710	6.460	645.6	503.3	457.1	503.3	456.0	-1.3	44.9	-0.1	0.5707	0.4393	1.3466	1.0935	1.3466	1.0935
5	1.545	0.794	562.7	455.7	406.5	454.8	389.1	-29.0	43.7	-3.6	0.4940	0.3968	1.3086	1.0915	1.3086	1.0915
6	-1.180	-1.714	542.5	445.1	405.3	444.0	360.5	-31.4	41.7	-4.0	0.4757	0.3875	1.2996	1.0904	1.2996	1.0904
7	-2.262	-2.754	549.1	453.0	422.8	452.1	350.4	-28.4	39.7	-3.6	0.4818	0.3945	1.3039	1.0907	1.3039	1.0907
8	-3.203	-3.696	548.8	459.4	424.9	458.5	347.2	-29.0	39.3	-3.6	0.4810	0.3999	1.3080	1.0926	1.3080	1.0926
9	-5.978	-6.416	557.3	472.2	426.9	471.6	358.3	-24.9	40.1	-3.0	0.4863	0.4093	1.3177	1.1034	1.3177	1.1034
10	-6.924	-7.307	562.6	476.6	426.3	476.1	367.2	-23.4	40.8	-2.8	0.4899	0.4123	1.3211	1.1087	1.3211	1.1087
11	-8.000	-8.220	554.9	468.9	405.9	468.3	378.3	-24.1	43.1	-3.0	0.4814	0.4042	1.3165	1.1150	1.3165	1.1150

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-0.90	1.21	12.34	51.64	36.36	45.56	0.4347	0.0776	0.0159	0.9802	86.23	95.68	95.84	95.68	95.84
2	-0.61	1.79	11.95	45.51	36.48	45.35	0.4158	0.0558	0.0118	0.9866	89.39	96.70	96.81	96.70	96.81
3	-0.89	1.90	11.45	47.58	36.72	45.05	0.3994	0.0395	0.0087	0.9911	91.86	97.65	97.72	97.65	97.72
4	-2.12	1.60	9.13	45.03	37.23	43.11	0.3871	0.0586	0.0143	0.9884	86.51	95.01	95.18	95.01	95.18
5	-1.78	3.27	5.67	47.37	33.37	38.59	0.3897	0.0561	0.0153	0.9915	84.80	87.32	87.76	87.32	87.76
6	-3.36	2.25	5.31	45.70	33.47	37.58	0.3875	0.0916	0.0261	0.9868	74.42	86.07	86.55	86.07	86.55
7	-5.13	0.75	5.79	43.27	35.07	38.28	0.3767	0.1089	0.0317	0.9640	68.62	86.90	87.35	86.90	87.35
8	-5.32	0.83	5.81	42.91	35.27	38.80	0.3674	0.1026	0.0304	0.9850	68.51	86.19	86.67	86.19	86.67
9	-4.54	2.34	7.52	43.11	35.30	39.66	0.3684	0.1091	0.0340	0.9837	64.47	79.34	80.10	79.34	80.10
10	-4.11	2.94	8.95	43.66	35.15	39.90	0.3745	0.1147	0.0363	0.9826	62.78	76.24	77.13	76.24	77.13
11	-2.53	4.62	10.35	46.06	33.28	39.02	0.3895	0.1130	0.0362	0.9834	63.61	71.09	72.16	71.09	72.16

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
7499.	118.30	1.0972	1.3263	86.48	86.98	1.0972	0.9866	86.48

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

(Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 2

RUN NO 3, SPEED CODE 70, POINT NO 2

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	11.590	11.091	577.0	893.6	577.0	645.1	0.1	618.4	0.0	43.7	0.5059	0.7666	584.7	613.3	0.7202	0.5535	821.4	645.2
2	10.753	9.842	578.0	875.3	577.9	635.9	6.5	601.4	0.6	43.3	0.5070	0.7501	601.2	626.1	0.7274	0.5454	829.3	636.4
3	9.761	8.660	577.6	850.5	577.5	629.5	9.5	571.9	0.9	42.2	0.5070	0.7285	618.3	639.5	0.7365	0.5423	839.1	633.1
4	6.053	5.311	563.3	784.4	563.3	610.5	-1.3	460.0	-0.1	37.0	0.4941	0.6528	671.2	682.0	0.7694	0.5548	877.2	649.6
5	0.424	0.854	513.1	630.8	512.3	528.3	-29.0	344.7	-3.2	33.1	0.4487	0.5348	744.1	743.6	0.8109	0.5612	927.5	662.0
6	-2.050	-1.214	497.6	569.2	496.6	478.9	-31.4	307.7	-3.6	32.7	0.4348	0.4812	781.3	776.4	0.8321	0.5666	952.4	670.1
7	-3.011	-2.114	502.9	558.4	502.1	477.3	-28.5	289.8	-3.2	31.2	0.4396	0.4723	800.0	793.4	0.8468	0.5869	968.8	693.8
8	-3.926	-3.010	508.6	561.6	507.8	491.2	-29.1	272.3	-3.3	28.9	0.4443	0.4753	818.9	810.7	0.8635	0.6168	988.4	728.7
9	-6.923	-6.146	522.6	577.9	522.0	515.3	-25.2	261.6	-2.8	26.8	0.4547	0.4872	876.3	864.4	0.9063	0.6686	1041.7	793.1
10	-7.914	-7.358	526.5	578.9	526.0	517.4	-23.7	259.6	-2.6	26.5	0.4571	0.4868	895.6	882.8	0.9195	0.6810	1059.1	809.9
11	-8.729	-8.568	518.8	549.3	518.2	492.3	-24.5	243.7	-2.7	26.2	0.4488	0.4601	914.9	901.5	0.9281	0.6881	1072.8	821.6

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VΘ'-1 FT/SEC	VΘ'-2 FT/SEC	PO/PO INLET
1	-4.18	0.14	19.95	45.75	48.44	58.19	0.3902	0.1319	0.0301	1.3908	89.52	89.04	45.30	-0.45	-584.6	5.1	1.8976
2	-4.15	0.30	16.04	43.58	48.54	57.93	0.4034	0.1238	0.0289	1.3853	89.84	89.38	45.80	2.22	-594.7	-24.7	1.8905
3	-3.83	0.75	13.64	40.42	48.51	57.94	0.4078	0.1079	0.0257	1.3750	90.70	90.30	46.53	6.11	-608.8	-67.5	1.8745
4	-1.66	3.13	10.42	30.10	47.08	57.44	0.3945	0.0527	0.0127	1.3394	94.54	94.33	50.09	19.98	-672.4	-222.0	1.8040
5	3.00	7.57	8.84	19.40	42.55	49.93	0.3995	0.0734	0.0166	1.2827	90.38	90.07	56.47	37.07	-773.1	-399.0	1.6781
6	4.19	8.53	8.15	14.20	41.25	45.19	0.4019	0.1043	0.0221	1.2492	85.08	84.63	58.56	44.36	-812.6	-468.8	1.6236
7	3.88	7.96	7.23	12.28	41.76	45.15	0.3835	0.0949	0.0199	1.2398	85.61	85.20	58.76	46.48	-828.6	-503.6	1.6167
8	3.67	7.48	5.23	11.50	42.19	46.57	0.3575	0.0716	0.0151	1.2398	88.45	88.12	59.05	47.55	-848.1	-538.4	1.6215
9	3.04	5.72	2.25	10.51	43.08	48.59	0.3337	0.0633	0.0144	1.2430	89.07	88.76	59.85	49.35	-901.5	-602.8	1.6375
10	2.34	5.12	3.49	9.97	43.27	48.54	0.3315	0.0710	0.0165	1.2392	87.49	87.14	60.14	50.17	-919.3	-623.1	1.6374
11	3.52	5.21	7.42	7.95	42.39	45.82	0.3278	0.0792	0.0180	1.2229	85.28	84.89	61.03	53.08	-939.4	-657.8	1.6100

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.1884	1.7088	87.75	88.62	33.41	1.0831	1.2884	90.20	90.52

STATOR 2

RUN NO 3, SPEED CODE 70, POINT NO 2

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	8.625	0.837	922.1	723.0	689.5	722.1	612.3	35.5	41.9	2.8	0.7941	0.6080	1.7768	1.2189	1.3023	1.1109
2	7.556	0.748	902.4	731.9	677.3	731.1	596.3	34.2	41.6	2.7	0.7761	0.6166	1.7937	1.2165	1.3143	1.1095
3	6.498	0.534	876.8	750.1	667.9	749.7	568.1	22.6	40.6	1.7	0.7534	0.6346	1.8242	1.2113	1.3373	1.1062
4	3.830	-0.299	788.7	706.6	641.6	706.6	458.6	4.5	35.6	0.4	0.6753	0.5995	1.7810	1.1951	1.3211	1.0929
5	1.037	-0.969	654.1	603.0	556.0	603.0	344.5	-4.1	31.8	-0.4	0.5557	0.5099	1.6700	1.1811	1.2754	1.0819
6	-0.578	-1.229	592.6	548.5	500.3	548.4	307.9	-6.2	31.3	-0.6	0.5019	0.4628	1.6180	1.1752	1.2453	1.0778
7	-1.461	-1.326	581.5	537.6	504.0	537.6	290.2	-6.9	29.9	-0.7	0.4928	0.4540	1.6080	1.1719	1.2335	1.0745
8	-2.251	-1.368	584.6	538.6	517.0	538.6	272.9	-6.7	27.8	-0.7	0.4958	0.4551	1.6073	1.1707	1.2291	1.0718
9	-4.180	-1.347	604.7	563.2	544.6	563.2	262.8	4.3	25.8	0.4	0.5110	0.4743	1.6196	1.1827	1.2294	1.0721
10	-4.852	-1.323	609.1	569.3	550.3	569.0	261.2	16.2	25.4	1.6	0.5135	0.4783	1.6212	1.1886	1.2270	1.0724
11	-5.715	-1.232	585.9	540.8	532.0	540.5	245.4	18.8	24.8	2.0	0.4921	0.4527	1.5928	1.1926	1.2099	1.0696

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-6.58	-5.02	14.63	39.06	61.02	67.35	0.3576	0.1674	0.0423	0.9360	60.57	81.47	82.88	70.53	71.58
2	-5.84	-3.82	13.93	38.90	60.61	68.63	0.3348	0.1582	0.0364	0.9476	62.93	83.85	85.10	74.01	74.97
3	-8.09	-3.59	12.57	38.83	60.46	71.14	0.2959	0.0917	0.0215	0.9709	73.21	88.59	89.50	81.42	82.14
4	-9.95	-6.08	10.68	35.25	59.57	67.69	0.2528	0.0570	0.0142	0.9849	76.77	91.81	92.43	89.01	89.41
5	-12.94	-7.64	9.91	32.16	52.01	57.42	0.2281	0.0466	0.0109	0.9921	78.11	87.07	87.95	87.66	88.04
6	-13.12	-7.33	9.57	31.92	47.32	51.99	0.2244	0.0271	0.0075	0.9957	83.33	84.08	85.10	83.03	83.52
7	-14.33	-8.34	9.43	30.63	47.23	50.99	0.2200	0.0337	0.0094	0.9948	78.99	84.53	85.51	82.82	83.29
8	-16.25	-10.04	9.39	28.52	48.56	51.09	0.2150	0.0556	0.0158	0.9914	66.39	85.03	85.98	84.45	84.87
9	-18.02	-11.32	10.61	25.34	50.77	52.84	0.1946	0.0669	0.0196	0.9891	54.34	80.84	82.07	84.18	84.60
10	-19.03	-12.15	12.40	23.80	50.97	53.06	0.1851	0.0598	0.0177	0.9902	57.31	78.38	79.77	82.99	83.45
11	-20.90	-13.80	13.92	22.84	48.80	49.93	0.1932	0.0697	0.0208	0.9894	57.17	73.82	75.45	80.26	80.75

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
7499.	118.30	1.1884	1.6812	84.88	85.93	1.0831	0.9839	84.22

REPRODUCIBILITY OF THE ORIGINAL PAGE IS POOR

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

(Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 3, SPEED CODE 70, POINT NO 13

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-1	V'-1 FT/SEC	V'-2 FT/SEC
1	16.449	18.101	336.2	754.4	336.2	427.4	0.0	621.7	0.0	55.5	0.3038	0.6722	440.0	509.4	0.5004	0.3938	553.7	441.9
2	13.781	15.544	343.9	725.7	343.9	423.1	0.0	589.6	0.0	54.3	0.3109	0.6447	474.4	534.0	0.5298	0.3791	586.0	426.7
3	11.383	13.184	351.1	700.0	351.1	424.3	0.0	556.7	0.0	52.6	0.3175	0.6204	508.3	558.7	0.5587	0.3760	617.7	424.3
4	4.862	7.135	366.0	647.3	366.0	417.8	0.0	494.4	0.0	49.7	0.3313	0.5704	605.1	632.6	0.6402	0.3977	707.2	440.0
5	-1.169	0.757	370.6	571.4	370.6	373.3	0.0	432.5	0.0	49.2	0.3356	0.4996	726.0	731.2	0.7381	0.4191	815.1	478.1
6	-3.187	-1.695	369.7	554.1	369.7	379.2	0.0	404.1	0.0	46.8	0.3348	0.4839	784.1	780.5	0.7849	0.4665	866.9	534.2
7	-4.402	-3.147	368.6	561.0	368.6	397.5	0.0	395.8	0.0	44.9	0.3337	0.4899	812.8	805.1	0.8080	0.4982	892.5	570.5
8	-5.877	-4.401	366.7	564.8	366.7	402.7	0.0	396.1	0.0	44.5	0.3320	0.4927	841.5	829.8	0.8310	0.5162	917.9	591.8
9	-10.096	-8.174	356.6	562.2	356.6	379.6	0.0	414.7	0.0	47.5	0.3226	0.4869	927.1	903.7	0.8987	0.5361	993.4	619.1
10	-11.207	-9.397	352.4	558.4	352.4	361.9	0.0	425.2	0.0	49.6	0.3188	0.4820	955.7	928.3	0.9213	0.5350	1018.6	619.8
11	-11.926	-10.554	348.3	551.2	348.3	339.9	0.0	433.8	0.0	51.8	0.3150	0.4741	984.2	953.0	0.9441	0.5338	1044.0	620.6

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VΘ'-1 FT/SEC	VΘ'-2 FT/SEC	PO/PO INLET
1	5.98	10.59	13.24	67.09	24.56	33.24	0.4699	0.0557	0.0119	1.3912	97.44	97.35	52.37	-14.72	-440.0	112.3	1.3912
2	5.98	10.27	12.13	61.26	25.07	33.28	0.5205	0.0729	0.0166	1.3831	96.24	96.09	53.79	-7.47	-474.4	55.6	1.3831
3	6.11	10.21	11.79	54.85	25.54	33.71	0.5432	0.0735	0.0176	1.3757	95.77	95.60	55.11	0.26	-508.3	-1.9	1.3757
4	7.17	10.64	8.59	40.40	26.51	33.83	0.5726	0.0966	0.0244	1.3644	92.79	92.50	58.67	18.27	-605.1	-138.2	1.3644
5	8.43	11.12	8.38	24.30	26.81	30.52	0.5772	0.1668	0.0391	1.3304	84.35	83.74	62.95	38.65	-726.0	-298.7	1.3304
6	8.85	11.13	7.46	19.99	26.75	31.20	0.5339	0.1532	0.0344	1.3286	84.17	83.56	64.78	44.80	-784.1	-376.4	1.3286
7	9.07	11.17	5.54	19.80	26.68	32.82	0.5067	0.1353	0.0306	1.3384	85.51	84.93	65.65	45.85	-812.8	-409.3	1.3384
8	9.30	11.25	4.28	19.38	26.55	33.27	0.5002	0.1426	0.0322	1.3445	84.40	83.76	66.52	47.14	-841.5	-433.7	1.3445
9	10.01	11.44	5.37	16.89	25.90	31.11	0.5255	0.2224	0.0484	1.3478	75.12	74.08	69.06	52.17	-927.1	-489.0	1.3478
10	10.16	11.45	7.24	15.60	25.63	29.52	0.5423	0.2575	0.0544	1.3464	71.29	70.09	69.84	54.24	-955.7	-503.1	1.3464
11	10.21	11.37	10.37	15.04	25.36	27.62	0.5576	0.2907	0.0588	1.3431	67.63	66.28	70.55	56.71	-984.2	-519.2	1.3431

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.1080	1.3511	83.19	83.86	25.23	1.1080	1.3511	83.19	83.86

STATOR 1

RUN NO 3, SPEED CODE 70, POINT NO 13

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	16.125	14.830	755.3	495.6	447.4	495.5	608.5	-5.6	53.9	-0.6	0.6731	0.4307	1.3622	1.1016	1.3622	1.1016
2	15.724	13.037	729.4	491.9	443.4	491.9	579.1	-0.3	52.7	-0.0	0.6482	0.4275	1.3626	1.1010	1.3626	1.1010
3	13.505	11.350	705.8	488.1	444.3	488.1	548.4	2.1	51.0	0.2	0.6259	0.4243	1.3619	1.0998	1.3619	1.0998
4	8.045	6.800	656.5	470.8	436.4	470.8	490.5	-2.6	48.3	-0.3	0.5790	0.4087	1.3506	1.1005	1.3506	1.1005
5	1.907	1.290	582.3	426.6	390.6	425.9	431.8	-25.3	47.8	-3.4	0.5096	0.3690	1.3196	1.1015	1.3196	1.1015
6	-0.679	-1.118	565.5	417.6	395.2	416.8	404.5	-25.5	45.7	-3.5	0.4943	0.3610	1.3131	1.1013	1.3131	1.1013
7	-1.696	-2.100	572.2	428.0	412.3	427.6	396.7	-19.2	43.9	-2.6	0.5002	0.3701	1.3190	1.1023	1.3190	1.1023
8	-2.574	-2.982	576.1	437.6	417.1	437.3	397.4	-17.1	43.6	-2.2	0.5030	0.3781	1.3251	1.1053	1.3251	1.1053
9	-5.371	-5.678	574.4	436.5	395.0	436.3	417.0	-14.9	46.6	-2.0	0.4980	0.3747	1.3272	1.1196	1.3272	1.1196
10	-6.514	-6.713	571.0	430.8	378.0	430.6	428.0	-15.2	48.6	-2.0	0.4934	0.3686	1.3250	1.1260	1.3250	1.1260
11	-7.820	-7.883	564.2	417.7	356.7	417.3	437.2	-18.7	50.9	-2.6	0.4859	0.3560	1.3183	1.1327	1.3183	1.1327

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	1.30	3.41	11.69	54.49	34.78	42.78	0.5029	0.0791	0.0162	0.9793	88.08	90.88	91.24	90.88	91.24
2	1.82	4.22	11.20	52.69	34.81	42.56	0.4872	0.0588	0.0125	0.9855	90.65	91.54	91.88	91.54	91.88
3	1.50	4.29	10.64	50.79	35.19	42.31	0.4727	0.0423	0.0093	0.9902	92.88	92.54	92.84	92.54	92.84
4	1.32	5.03	8.95	48.64	35.17	40.70	0.4619	0.0471	0.0115	0.9904	91.31	89.31	89.73	89.31	89.73
5	2.34	7.39	5.91	51.24	31.78	36.48	0.4799	0.0489	0.0134	0.9921	90.29	81.28	81.96	81.28	81.96
6	0.65	6.26	5.86	49.16	32.36	35.64	0.4795	0.0789	0.0225	0.9878	84.05	79.95	80.68	79.95	80.68
7	-0.90	4.98	6.81	46.48	33.89	36.57	0.4644	0.0925	0.0270	0.9855	80.71	80.49	81.21	80.49	81.21
8	-0.97	5.17	7.19	45.86	34.29	37.36	0.4544	0.0906	0.0269	0.9856	80.34	79.62	80.39	79.62	80.39
9	1.77	8.85	8.59	48.55	32.20	36.91	0.4753	0.0982	0.0306	0.9847	78.64	70.52	71.64	70.52	71.64
10	3.68	10.72	9.74	50.65	30.67	36.23	0.4929	0.1094	0.0334	0.9838	77.54	66.50	67.78	66.50	67.78
11	5.27	12.42	10.74	53.47	28.82	34.89	0.5213	0.1241	0.0397	0.9815	74.62	61.94	63.36	61.94	63.36

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
7486.	111.10	1.1080	1.3337	79.47	80.26	1.1080	0.9872	79.47

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

(Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 2

RUN NO 3, SPEED CODE 70, POINT NO 13

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-I	V'-1 FT/SEC	V'-2 FT/SEC
1	11.634	11.053	532.7	844.2	532.6	586.8	-5.4	606.9	-0.6	45.8	0.4642	0.7187	583.7	612.3	0.6922	0.4996	794.3	586.9
2	10.821	9.772	533.7	827.9	533.7	583.0	-0.3	587.8	-0.0	45.1	0.4653	0.7044	600.2	625.1	0.7005	0.4970	803.4	584.2
3	9.824	8.560	533.9	806.7	533.9	581.4	2.1	559.3	0.2	43.8	0.4658	0.6862	617.3	638.4	0.7106	0.4991	814.5	586.8
4	6.118	5.186	523.2	719.2	523.2	555.5	-2.6	456.9	-0.3	39.4	0.4559	0.6095	670.1	680.9	0.7425	0.5076	852.1	598.9
5	0.664	0.850	477.7	601.9	477.0	488.0	-25.2	352.4	-3.0	35.8	0.4146	0.5066	742.9	742.4	0.7848	0.5258	904.2	624.7
6	-1.834	-1.249	464.2	551.8	463.5	447.9	-25.5	322.3	-3.2	35.7	0.4026	0.4633	780.0	775.2	0.8060	0.5347	929.4	636.9
7	-2.795	-2.158	471.9	542.6	471.5	443.6	-19.4	312.4	-2.3	35.1	0.4093	0.4554	798.7	792.0	0.8189	0.5484	944.2	653.3
8	-3.631	-3.007	480.7	546.0	480.4	452.6	-17.1	305.3	-2.0	33.9	0.4166	0.4580	817.6	809.3	0.8346	0.5682	963.0	677.4
9	-6.275	-5.785	484.4	554.3	484.2	466.8	-15.1	298.8	-1.8	32.5	0.4172	0.4618	874.8	862.9	0.8725	0.6101	1013.1	732.2
10	-7.261	-6.903	481.4	555.7	481.2	469.1	-15.3	297.8	-1.8	32.3	0.4133	0.4615	894.1	881.3	0.8832	0.6218	1028.8	748.7
11	-8.305	-8.229	470.3	541.1	470.0	460.8	-18.9	283.5	-2.3	31.5	0.4022	0.4476	913.4	900.0	0.8928	0.6368	1044.1	769.7

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VΘ'-1 FT/SEC	VΘ'-2 FT/SEC	PO/PO INLET
1	-1.66	2.65	20.92	47.30	45.32	54.44	0.4409	0.1199	0.0273	1.3911	90.95	90.54	47.82	0.52	-589.2	-5.4	1.8949
2	-1.60	2.85	17.46	44.72	45.43	54.59	0.4471	0.1038	0.0242	1.3877	91.89	91.52	48.36	3.64	-600.5	-37.2	1.8909
3	-1.27	3.29	15.26	41.34	45.47	54.99	0.4456	0.0819	0.0194	1.3807	93.26	92.97	49.07	7.73	-615.1	-79.1	1.8804
4	0.42	5.21	12.39	30.21	44.35	53.48	0.4358	0.0441	0.0105	1.3395	95.62	95.45	52.17	21.96	-672.6	-224.0	1.8094
5	4.69	9.27	10.41	19.52	40.16	47.19	0.4268	0.0501	0.0111	1.2945	93.78	93.58	58.16	38.64	-768.1	-390.0	1.7080
6	3.67	10.03	9.08	14.78	39.02	43.28	0.4256	0.0746	0.0156	1.2695	90.03	89.71	60.07	45.29	-805.5	-452.8	1.6670
7	5.14	9.22	7.93	12.83	39.73	42.91	0.4146	0.0758	0.0157	1.2598	89.38	89.05	60.01	47.18	-818.1	-479.6	1.6614
8	4.63	8.46	5.68	12.03	40.44	43.79	0.4005	0.0720	0.0151	1.2576	89.53	89.21	60.03	48.00	-834.7	-504.0	1.6663
9	4.54	7.22	3.15	11.10	40.31	44.74	0.3836	0.0716	0.0160	1.2633	89.12	88.78	61.35	50.25	-889.9	-564.1	1.6770
10	4.80	6.98	4.37	10.96	39.83	44.73	0.3809	0.0718	0.0164	1.2662	89.00	88.65	62.00	51.05	-909.4	-583.5	1.6789
11	5.63	7.32	7.43	10.05	38.63	43.66	0.3708	0.0628	0.0142	1.2642	90.05	89.74	63.14	53.09	-932.3	-616.5	1.6670

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.2021	1.7371	84.50	85.64	31.36	1.0850	1.3024	92.13	92.40

STATOR 2

RUN NO 3, SPEED CODE 70, POINT NO 13

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	8.575	0.822	867.2	658.3	625.3	657.4	600.9	33.5	44.1	2.9	0.7404	0.5494	1.7963	1.2219	1.3188	1.1092
2	7.400	0.717	849.8	667.2	618.4	666.6	582.9	29.4	43.5	2.5	0.7249	0.5579	1.8112	1.2196	1.3293	1.1075
3	6.429	0.492	827.8	684.7	613.9	684.4	555.3	20.5	42.3	1.7	0.7059	0.5747	1.8373	1.2147	1.3485	1.1043
4	3.796	-0.310	739.0	634.5	582.1	634.5	455.3	6.4	38.1	0.6	0.6276	0.5332	1.7887	1.2013	1.3234	1.0917
5	1.020	-0.817	621.0	539.0	511.4	538.9	352.2	-7.6	34.5	-0.8	0.5235	0.4513	1.6962	1.1917	1.2845	1.0818
6	-0.427	-0.947	571.1	495.2	471.3	495.1	322.5	-10.9	34.3	-1.3	0.4802	0.4139	1.6587	1.1882	1.2640	1.0790
7	-1.245	-1.000	562.0	487.2	466.9	487.1	312.8	-10.7	33.8	-1.3	0.4724	0.4074	1.6519	1.1863	1.2538	1.0766
8	-2.053	-1.052	565.7	495.6	475.8	495.4	306.0	-10.4	32.7	-1.2	0.4752	0.4143	1.6571	1.1880	1.2510	1.0757
9	-4.273	-1.226	577.9	517.9	493.8	517.9	300.3	7.1	31.3	0.8	0.4824	0.4305	1.6668	1.2052	1.2557	1.0776
10	-5.039	-1.270	582.3	520.6	499.4	520.3	299.5	18.3	31.0	2.0	0.4846	0.4312	1.6651	1.2133	1.2558	1.0785
11	-5.856	-1.216	572.8	502.1	496.6	501.4	285.5	25.7	30.0	2.9	0.4750	0.4142	1.6464	1.2198	1.2486	1.0770

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-4.32	-2.76	14.73	41.22	57.18	63.83	0.3890	0.1705	0.0385	0.9478	66.51	81.99	83.39	75.20	76.13
2	-3.90	-1.88	13.77	41.00	57.15	65.09	0.3666	0.1440	0.0331	0.9572	68.98	84.14	85.39	78.66	79.47
3	-4.35	-1.84	12.56	40.58	57.35	67.46	0.3286	0.0855	0.0200	0.9756	77.94	88.33	89.26	85.35	85.94
4	-7.47	-3.60	10.90	37.51	55.48	62.90	0.2978	0.0582	0.0145	0.9864	81.50	89.70	90.49	90.70	91.04
5	-10.18	-4.87	9.50	35.34	49.06	53.08	0.2940	0.0546	0.0146	0.9905	80.97	84.94	86.00	90.43	90.74
6	-10.05	-4.26	8.96	35.60	45.20	48.58	0.2987	0.0421	0.0116	0.9938	84.78	82.61	83.78	87.51	87.89
7	-10.44	-4.45	8.91	35.04	44.82	47.80	0.2948	0.0368	0.0103	0.9948	86.19	82.71	83.87	86.96	87.34
8	-11.34	-5.13	8.90	33.92	45.67	48.57	0.2830	0.0361	0.0102	0.9948	85.37	82.54	83.71	87.11	87.48
9	-12.47	-5.78	10.95	30.54	46.88	50.01	0.2532	0.0406	0.0119	0.9940	80.89	76.56	78.15	86.44	86.84
10	-13.45	-6.58	12.79	28.99	47.11	49.83	0.2499	0.0557	0.0165	0.9917	74.60	73.45	75.26	85.43	85.87
11	-15.75	-8.66	14.87	27.05	46.48	47.57	0.2597	0.0860	0.0256	0.9877	65.76	69.59	71.61	84.85	85.29

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
7486.	111.10	1.2021	1.7128	82.19	83.46	1.0850	0.9860	87.05

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

(Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 3, SPEED CODE 70, POINT NO 4

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-1	V'-1 FT/SEC	V'-2 FT/SEC
1	16.667	18.021	320.9	758.1	320.9	391.9	0.0	649.0	0.0	58.9	0.2897	0.6743	440.8	510.3	0.4923	0.3697	545.2	415.7
2	14.182	15.389	327.5	726.8	327.5	395.2	0.0	609.9	0.0	57.0	0.2958	0.6446	475.3	535.0	0.5214	0.3568	577.2	402.3
3	11.833	12.994	334.3	699.6	334.3	407.2	0.0	568.9	0.0	54.3	0.3021	0.6194	509.1	559.6	0.5504	0.3606	609.1	407.3
4	4.989	6.960	349.1	644.1	349.1	400.7	0.0	504.3	0.0	51.5	0.3157	0.5668	606.2	633.7	0.6326	0.3705	699.5	421.1
5	-1.500	0.622	353.3	574.1	353.3	363.7	0.0	444.2	0.0	50.7	0.3196	0.5015	727.2	732.5	0.7313	0.4053	808.5	464.1
6	-3.860	-2.048	351.3	560.7	351.3	373.4	0.0	418.3	0.0	48.3	0.3177	0.4890	785.5	781.8	0.7782	0.4546	860.5	521.2
7	-5.292	-3.336	349.4	567.3	349.4	392.1	0.0	409.9	0.0	46.3	0.3160	0.4948	814.2	806.5	0.8013	0.4864	886.0	557.7
8	-6.949	-4.644	346.3	571.7	346.3	395.3	0.0	413.0	0.0	46.3	0.3132	0.4979	843.0	831.2	0.8240	0.5012	911.3	575.5
9	-11.529	-8.579	333.0	572.6	333.0	355.8	0.0	448.6	0.0	51.6	0.3008	0.4940	928.8	905.3	0.8915	0.4995	986.6	578.9
10	-12.522	-9.164	327.8	569.4	327.8	321.3	0.0	470.1	0.0	55.6	0.2961	0.4889	957.4	930.0	0.9140	0.4817	1011.9	561.0
11	-12.732	-10.796	323.4	566.8	323.4	291.1	0.0	486.4	0.0	59.1	0.2920	0.4846	985.9	954.6	0.9370	0.4714	1037.6	551.4

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VΘ'-1 FT/SEC	VΘ'-2 FT/SEC	PO/PO INLET
1	7.35	11.95	8.47	73.21	23.54	30.34	0.5202	0.1493	0.0310	1.3924	93.65	93.37	53.73	-19.48	-440.8	138.7	1.3924
2	7.39	11.69	8.89	65.92	23.98	31.03	0.5625	0.1376	0.0311	1.3847	93.37	93.09	55.21	-10.71	-475.3	75.0	1.3847
3	7.50	11.61	10.23	57.81	24.44	32.36	0.5682	0.1062	0.0254	1.3783	94.21	93.97	56.51	-1.30	-509.1	9.3	1.3783
4	8.41	11.88	8.19	42.04	25.41	32.51	0.5982	0.1187	0.0301	1.3672	91.51	91.16	59.91	17.87	-606.2	-129.5	1.3672
5	9.57	12.25	8.12	25.76	25.68	29.64	0.5955	0.1761	0.0419	1.3397	84.11	83.47	64.09	38.39	-727.2	-288.3	1.3397
6	10.01	12.29	6.91	21.70	25.56	30.81	0.5515	0.1634	0.0370	1.3402	83.81	83.16	65.95	44.25	-785.5	-363.6	1.3402
7	10.25	12.36	5.03	21.50	25.43	32.45	0.5239	0.1475	0.0336	1.3490	84.81	84.18	66.84	45.34	-814.2	-396.6	1.3490
8	10.55	12.50	3.78	21.13	25.23	32.68	0.5217	0.1619	0.0369	1.3542	83.02	82.30	67.76	46.64	-843.0	-418.2	1.3542
9	11.41	12.83	5.30	18.36	24.35	28.98	0.5763	0.2749	0.0599	1.3564	71.15	69.92	70.46	52.10	-928.8	-456.7	1.3564
10	11.58	12.88	8.06	16.21	24.00	25.98	0.6134	0.3276	0.0679	1.3555	66.33	64.89	71.27	55.06	-957.4	-459.9	1.3555
11	11.59	12.75	21.74	13.84	23.70	23.42	0.6404	0.3688	0.0719	1.3560	62.62	61.01	71.93	58.08	-985.9	-468.3	1.3560

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	T02/T01	P02/P01	EFF-AD ROTOR %	EFF-P ROTOR %
1.1131	1.3584	80.87	81.65	23.96	1.1131	1.3584	80.87	81.65

STATOR 1

RUN NO 3, SPEED CODE 70, POINT NO 4

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	T02/ T01
1	17.932	14.704	757.2	459.9	412.2	459.8	635.2	-4.3	57.2	-0.5	0.6734	0.3978	1.3613	1.1062	1.3613	1.1062
2	13.392	12.827	728.9	458.4	415.4	458.4	599.0	1.7	55.3	0.2	0.6466	0.3968	1.3628	1.1045	1.3628	1.1045
3	10.167	11.112	704.0	457.1	426.4	457.1	560.3	6.0	52.7	0.7	0.6236	0.3961	1.3635	1.1020	1.3635	1.1020
4	7.946	6.614	652.1	441.6	418.3	441.6	500.2	1.8	50.1	0.2	0.5743	0.3822	1.3538	1.1026	1.3538	1.1026
5	2.111	1.309	583.8	401.1	379.7	400.7	443.5	-16.1	49.4	-2.3	0.5104	0.3459	1.3279	1.1045	1.3279	1.1045
6	-0.248	-0.924	570.7	393.9	387.8	393.6	418.6	-15.3	47.2	-2.2	0.4982	0.3395	1.3236	1.1050	1.3236	1.1050
7	-1.126	-1.792	577.0	406.5	405.2	406.4	410.8	-7.8	45.4	-1.1	0.5037	0.3505	1.3310	1.1058	1.3310	1.1058
8	-1.925	-2.545	581.4	419.7	408.0	419.7	414.2	-4.5	45.4	-0.6	0.5067	0.3616	1.3394	1.1089	1.3394	1.1089
9	-4.643	-4.999	583.0	409.6	369.6	409.4	450.8	-12.1	50.7	-1.7	0.5034	0.3496	1.3383	1.1280	1.3383	1.1280
10	-5.944	-6.124	580.2	397.4	336.3	397.0	472.8	-15.9	54.6	-2.3	0.4987	0.3375	1.3332	1.1373	1.3332	1.1373
11	-7.523	-7.529	577.9	387.1	306.2	386.5	490.1	-22.4	58.1	-3.3	0.4945	0.3269	1.3290	1.1488	1.3290	1.1488

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	4.61	4.72	11.80	57.70	31.93	40.03	0.5574	0.0843	0.0172	0.9779	88.48	86.77	87.31	86.77	87.31
2	4.47	6.87	11.43	55.11	32.57	40.03	0.5371	0.0628	0.0133	0.9846	90.95	88.52	88.98	88.52	88.98
3	3.21	5.99	11.13	51.99	33.80	40.03	0.5173	0.0455	0.0100	0.9895	93.08	90.87	91.23	90.87	91.23
4	3.07	6.79	9.50	49.84	33.80	38.58	0.5056	0.0471	0.0115	0.9906	92.18	88.15	88.61	88.15	88.61
5	3.91	8.96	7.02	51.70	31.02	34.73	0.5272	0.0539	0.0147	0.9913	90.62	80.86	81.58	80.86	81.58
6	2.17	7.78	7.14	49.41	31.87	34.06	0.5270	0.0758	0.0217	0.9882	86.62	79.50	80.27	79.50	80.27
7	0.53	6.47	8.29	46.49	33.39	35.21	0.5062	0.0788	0.0230	0.9875	85.60	80.49	81.23	80.49	81.23
8	0.83	6.98	8.82	46.04	33.58	36.34	0.4901	0.0655	0.0194	0.9895	87.42	80.07	80.85	80.07	80.85
9	6.04	12.92	8.85	52.36	29.98	34.97	0.5436	0.0857	0.0267	0.9863	84.48	67.94	69.20	67.94	69.20
10	9.67	14.72	9.47	56.91	27.07	33.64	0.5799	0.1049	0.0332	0.9835	81.85	62.52	63.97	62.52	63.97
11	12.46	19.61	9.99	61.41	24.52	32.43	0.6172	0.1272	0.0407	0.9804	78.64	56.91	58.57	56.91	58.57

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	T02/T01	P02/P01	EFF-AD STAGE %
7499.	105.50	1.1131	1.3416	77.45	78.34	1.1131	0.9876	77.45

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA
(Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 2

RUN NO 3, SPEED CODE 70, POINT NO 4

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	V0-1 FT/SEC	V0-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	11.536	10.986	496.9	823.0	496.8	568.5	-4.2	595.2	-0.5	46.2	0.4309	0.6983	584.8	613.3	0.6683	0.4826	770.5	568.8
2	10.625	9.648	499.0	807.3	499.0	558.1	1.7	583.2	0.2	46.1	0.4332	0.6845	601.3	626.2	0.6772	0.4747	780.1	559.8
3	9.559	8.391	500.2	788.4	500.1	552.9	5.8	561.9	0.7	45.4	0.4348	0.6685	618.3	639.5	0.6873	0.4735	790.8	558.4
4	5.749	4.919	488.4	700.2	488.4	520.8	1.7	468.0	0.2	41.9	0.4240	0.5912	671.2	682.0	0.7195	0.4754	828.7	563.0
5	0.309	0.497	445.3	593.6	445.0	461.4	-16.0	373.5	-2.1	39.0	0.3851	0.4980	744.2	743.7	0.7618	0.4962	880.9	591.5
6	-2.247	-1.715	433.3	549.5	433.0	423.4	-15.3	350.3	-2.0	39.6	0.3743	0.4597	781.4	776.5	0.7834	0.5025	906.8	600.7
7	-3.158	-2.616	442.6	560.4	442.5	413.1	-7.9	348.5	-1.0	40.1	0.3824	0.4516	800.1	793.4	0.7961	0.5073	921.2	607.1
8	-3.818	-3.379	454.5	544.1	454.5	420.2	-4.4	345.6	-0.6	39.4	0.3926	0.4541	819.0	810.7	0.8123	0.5232	940.5	626.9
9	-5.852	-5.670	453.5	552.7	453.3	434.1	-12.1	342.0	-1.5	38.1	0.3883	0.4568	876.4	864.4	0.8540	0.5614	997.4	679.2
10	-6.799	-6.651	446.2	548.3	446.0	435.8	-15.7	332.8	-2.0	37.2	0.3803	0.4514	895.6	882.8	0.8647	0.5777	1014.6	701.8
11	-8.003	-8.007	440.0	533.3	439.4	445.6	-22.5	293.0	-2.9	33.2	0.3728	0.4373	915.0	901.6	0.8772	0.6185	1035.4	754.3

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	V0'-1 FT/SEC	V0'-2 FT/SEC	PO/PO INLET
1	0.29	4.61	22.22	47.95	42.68	53.54	0.4435	0.0795	0.0181	1.3970	94.23	93.97	49.77	1.82	-589.0	-18.2	1.9018
2	0.25	4.70	18.20	45.82	42.94	53.03	0.4602	0.0801	0.0187	1.3924	94.00	93.73	50.20	4.38	-599.6	-42.9	1.8977
3	0.41	4.99	15.49	42.81	43.13	53.05	0.4657	0.0705	0.0167	1.3861	94.49	94.25	50.77	7.96	-612.5	-77.6	1.8897
4	2.16	6.95	12.77	31.58	41.98	50.68	0.4659	0.0554	0.0132	1.3419	94.75	94.55	53.91	22.33	-669.5	-214.0	1.8161
5	6.19	10.76	10.52	20.92	38.03	45.05	0.4539	0.0637	0.0141	1.3003	92.67	92.42	59.66	38.74	-760.2	-370.2	1.7262
6	7.09	11.43	8.96	16.30	37.02	41.27	0.4572	0.0960	0.0201	1.2766	88.14	87.75	61.46	45.17	-796.7	-426.2	1.6904
7	6.40	10.48	7.83	14.18	37.89	40.24	0.4590	0.1166	0.0242	1.2650	85.16	84.69	61.27	47.09	-808.0	-445.0	1.6843
8	5.68	9.49	5.52	13.22	38.92	40.91	0.4497	0.1222	0.0297	1.2615	84.01	83.50	61.06	47.84	-823.4	-465.1	1.6896
9	6.04	8.72	3.08	12.73	38.22	41.67	0.4406	0.1362	0.0305	1.2706	81.81	81.21	62.85	50.12	-868.4	-522.4	1.7016
10	6.53	8.77	4.76	12.36	37.26	41.59	0.4300	0.1240	0.0281	1.2742	83.11	82.54	63.79	51.44	-911.4	-550.0	1.7001
11	7.25	8.95	7.98	11.13	36.30	42.29	0.3844	0.0699	0.0157	1.2709	89.51	89.18	64.76	53.64	-937.5	-608.6	1.6893

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.2117	1.7947	82.26	83.58	29.67	1.0885	1.3079	89.84	90.20

STATOR 2

RUN NO 3, SPEED CODE 70, POINT NO 4

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	V0-1 FT/SEC	V0-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	4.647	0.836	843.6	629.4	603.7	628.8	589.2	26.7	44.6	2.4	0.7174	0.5235	1.8137	1.2241	1.3324	1.1064
2	7.602	0.733	826.7	637.2	590.0	636.6	578.2	28.6	44.6	2.6	0.7025	0.5309	1.8267	1.2218	1.3406	1.1059
3	6.566	0.494	806.9	652.5	582.9	652.0	557.9	23.1	43.9	2.0	0.6857	0.5455	1.8490	1.2168	1.3559	1.1040
4	3.911	-0.349	717.6	596.2	545.4	596.2	466.4	8.8	40.6	0.8	0.6070	0.4986	1.7966	1.2051	1.3268	1.0930
5	1.077	-0.874	610.0	500.0	482.5	500.0	373.2	-4.9	37.7	-0.6	0.5124	0.4164	1.7097	1.1976	1.2873	1.0843
6	-0.262	-0.920	566.2	457.8	444.8	457.8	350.5	-6.0	38.2	-1.0	0.4742	0.3805	1.6762	1.1958	1.2668	1.0822
7	-1.085	-0.940	557.3	449.8	434.6	449.8	348.9	-7.9	38.7	-1.0	0.4663	0.3736	1.6699	1.1962	1.2558	1.0819
8	-1.964	-0.984	561.4	455.9	441.8	455.8	346.4	-8.0	38.1	-1.0	0.4692	0.3784	1.6733	1.1986	1.2497	1.0818
9	-4.475	-1.212	573.7	484.8	459.4	484.7	343.7	-8.2	36.8	-1.0	0.4749	0.3988	1.6866	1.2240	1.2592	1.0870
10	-5.316	-1.308	572.2	487.6	464.2	487.6	334.5	-0.7	35.8	-0.1	0.4718	0.3997	1.6850	1.2331	1.2631	1.0864
11	-6.069	-1.284	562.0	471.0	478.4	471.0	295.0	1.7	31.8	0.2	0.4618	0.3846	1.6690	1.2396	1.2557	1.0792

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-3.87	-2.31	14.24	42.15	56.15	62.35	0.4046	0.1596	0.0360	0.9535	69.69	82.66	84.03	80.09	80.85
2	-2.81	-0.80	13.82	42.04	55.49	63.46	0.3836	0.1244	0.0309	0.9620	72.35	84.63	85.86	82.33	83.02
3	-2.72	-0.22	12.88	41.89	55.33	65.58	0.3499	0.0823	0.0193	0.9776	80.22	88.48	89.41	87.24	87.76
4	-4.96	-1.09	11.16	39.75	52.62	60.18	0.3325	0.0579	0.0144	0.9871	84.04	88.74	89.61	90.30	90.66
5	-7.00	-1.65	9.73	38.27	46.79	50.12	0.3513	0.0685	0.0183	0.9887	81.42	83.79	84.90	88.54	88.91
6	-6.19	-0.41	9.21	39.20	43.07	45.69	0.3700	0.0683	0.0189	0.9901	82.10	81.16	82.46	84.84	85.31
7	-5.51	0.49	9.16	39.73	42.06	44.82	0.3725	0.0583	0.0163	0.9919	84.36	80.37	81.72	81.91	82.45
8	-5.99	0.22	9.10	39.07	42.72	45.34	0.3670	0.0657	0.0187	0.9908	82.02	79.74	81.13	80.20	80.79
9	-6.96	-0.27	9.20	37.81	43.73	47.23	0.3361	0.0624	0.0183	0.9911	79.76	71.85	73.81	78.04	78.72
10	-8.62	-1.74	10.49	35.93	43.89	47.10	0.3214	0.0615	0.0182	0.9913	79.12	68.90	71.06	79.65	80.29
11	-13.98	-6.86	12.13	31.55	44.91	45.09	0.3182	0.0878	0.0262	0.9801	72.52	65.71	68.05	84.64	85.10

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
7499.	105.50	1.2117	1.7288	79.91	81.38	1.0885	0.9853	84.69

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

(Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 3, SPEED CODE 85, POINT NO 31

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	16.598	18.405	489.8	924.8	489.8	568.8	0.0	729.2	0.0	52.1	0.4473	0.8253	534.1	618.4	0.6618	0.5171	724.7	579.5
2	14.036	16.108	500.6	891.9	500.6	571.7	0.0	684.7	0.0	50.2	0.4576	0.7931	576.0	648.3	0.6975	0.5093	763.1	572.8
3	11.672	13.951	511.1	865.7	511.1	575.7	0.0	646.5	0.0	48.3	0.4676	0.7676	617.0	678.2	0.7330	0.5113	801.2	576.6
4	5.567	8.151	536.2	785.1	536.2	558.3	0.0	552.0	0.0	44.7	0.4916	0.6905	734.6	768.0	0.8338	0.5265	909.5	598.6
5	-0.433	1.646	552.1	688.5	552.1	506.6	0.0	466.2	0.0	42.6	0.5069	0.5999	861.3	887.7	0.9548	0.5741	1040.0	658.9
6	-2.402	-1.189	554.3	651.2	554.3	483.6	0.0	436.1	0.0	42.0	0.5090	0.5653	951.9	947.5	1.0116	0.6110	1101.5	703.8
7	-3.359	-2.512	554.4	658.0	554.4	507.9	0.0	418.3	0.0	39.5	0.5092	0.5720	986.8	977.4	1.0395	0.6566	1131.9	755.3
8	-4.484	-3.798	553.8	660.9	553.8	512.7	0.0	416.9	0.0	39.1	0.5086	0.5737	1021.6	1007.3	1.0671	0.6788	1162.0	782.0
9	-6.254	-7.573	546.0	678.0	546.0	533.1	0.0	419.0	0.0	38.1	0.5010	0.5860	1125.6	1097.1	1.1480	0.7456	1251.0	862.5
10	-9.670	-8.877	541.1	689.8	541.1	540.0	0.0	429.3	0.0	38.4	0.4963	0.5948	1160.2	1127.0	1.1742	0.7608	1280.2	882.3
11	-11.053	-10.227	534.9	684.5	534.9	526.3	0.0	437.7	0.0	39.6	0.4904	0.5880	1194.8	1156.9	1.2601	0.7655	1309.1	891.2

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VO'-1 FT/SEC	VO'-2 FT/SEC	PO/PO INLET
1	0.80	5.47	16.91	58.29	33.96	44.37	0.4398	-0.0048	-0.0010	1.6070	100.25	100.28	47.24	-11.05	-534.1	110.9	1.6070
2	0.93	5.23	15.96	52.40	34.55	45.37	0.4707	-0.0015	-0.0003	1.5947	100.09	100.11	48.75	-3.64	-576.0	36.4	1.5947
3	1.12	5.23	14.69	46.97	35.12	46.37	0.4858	-0.0046	-0.0011	1.5876	100.29	100.32	50.13	3.16	-617.0	-31.7	1.5876
4	2.23	5.70	11.48	32.57	36.44	46.24	0.5109	0.0300	0.0074	1.5456	97.49	97.35	53.73	21.17	-734.6	-216.1	1.5456
5	3.41	6.09	9.49	18.17	37.25	42.58	0.5046	0.0942	0.0217	1.4818	90.07	89.53	57.93	39.76	-881.3	-421.4	1.4818
6	3.87	6.15	9.26	13.21	37.36	40.84	0.4882	0.1149	0.0250	1.4603	86.85	86.16	59.80	46.60	-951.9	-511.4	1.4603
7	4.10	6.21	7.43	12.94	37.37	43.22	0.4933	0.0836	0.0182	1.4749	90.04	89.50	60.69	47.75	-986.8	-559.1	1.4749
8	4.34	6.29	6.17	12.53	37.34	43.72	0.4463	0.0900	0.0196	1.4837	89.13	88.54	61.55	49.02	-1021.6	-590.4	1.4837
9	5.08	6.50	4.99	12.34	36.94	45.60	0.4279	0.1108	0.0243	1.5155	86.30	85.56	64.12	51.78	-1125.6	-678.1	1.5155
10	5.31	6.60	5.19	12.80	36.69	46.11	0.4306	0.1288	0.0286	1.5305	84.23	83.28	64.99	52.19	-1160.2	-697.7	1.5305
11	5.53	6.68	7.36	12.16	36.37	44.72	0.4407	0.1616	0.0353	1.5266	80.23	79.05	65.86	53.70	-1194.8	-719.2	1.5266

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.1411	1.5210	90.19	90.73	35.32	1.1411	1.5210	90.19	90.73

STATOR 1

RUN NO 3, SPEED CODE 85, POINT NO 31

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	16.220	14.936	930.4	677.2	596.6	677.1	713.9	-15.3	50.3	-1.3	0.8309	0.5862	1.5586	1.1446	1.5586	1.1446
2	15.938	13.236	901.0	672.0	599.5	672.0	672.6	-3.3	48.4	-0.3	0.8022	0.5819	1.5584	1.1423	1.5584	1.1423
3	13.825	11.661	877.2	669.8	603.2	669.8	636.9	10.2	46.6	0.9	0.7790	0.5804	1.5590	1.1406	1.5590	1.1406
4	8.302	7.399	801.3	636.5	585.0	636.4	547.5	-7.8	43.1	-0.7	0.7061	0.5510	1.5240	1.1358	1.5240	1.1358
5	2.173	2.082	707.1	579.2	532.3	578.4	465.5	-31.3	41.2	-3.1	0.6173	0.4995	1.4603	1.1328	1.4603	1.1328
6	-0.647	-0.535	670.6	556.7	509.1	555.2	436.6	-41.4	40.6	-4.3	0.5833	0.4793	1.4365	1.1323	1.4365	1.1323
7	-1.898	-1.721	677.3	565.8	532.0	564.1	419.1	-44.7	38.2	-4.5	0.5899	0.4876	1.4431	1.1317	1.4431	1.1317
8	-3.019	-2.801	680.5	582.8	536.9	581.5	418.2	-39.1	37.9	-3.8	0.5919	0.5021	1.4569	1.1352	1.4569	1.1352
9	-6.189	-5.906	699.9	617.7	558.7	617.1	421.5	-28.1	37.1	-2.6	0.6063	0.5308	1.4915	1.1480	1.4915	1.1480
10	-7.171	-6.930	712.8	625.1	566.8	624.7	432.2	-22.6	37.4	-2.1	0.6161	0.5356	1.5002	1.1556	1.5002	1.1556
11	-8.167	-8.020	709.3	608.7	555.5	608.4	441.2	-20.0	38.6	-1.9	0.6109	0.5192	1.4863	1.1625	1.4863	1.1625

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-2.23	-0.12	11.05	51.60	46.35	59.71	0.4248	0.0819	0.0167	0.9702	86.17	93.47	93.85	93.47	93.85
2	-2.42	-0.02	10.95	48.70	47.28	59.51	0.4059	0.0650	0.0138	0.9776	88.19	94.98	95.26	94.98	95.26
3	-2.83	-0.10	11.26	45.77	48.21	59.48	0.3864	0.0522	0.0115	0.9828	89.79	96.22	96.43	96.22	96.43
4	-3.90	-0.18	8.57	43.81	47.98	56.35	0.3677	0.0426	0.0104	0.9881	90.07	94.18	94.49	94.18	94.49
5	-4.35	0.70	6.21	44.25	44.31	50.47	0.3682	0.0579	0.0158	0.9871	84.20	86.00	86.71	86.00	86.71
6	-6.41	1.21	5.09	44.88	42.57	48.14	0.3744	0.0873	0.0249	0.9819	75.36	82.42	83.27	82.42	83.27
7	-6.56	-0.48	4.86	42.78	44.83	48.97	0.3656	0.1067	0.0311	0.9776	68.93	83.89	84.67	83.89	84.67
8	-6.66	-0.51	5.58	41.79	45.32	50.46	0.3448	0.0891	0.0264	0.9812	70.71	83.94	84.75	83.94	84.75
9	-7.51	-0.63	7.93	39.72	47.26	53.46	0.3205	0.0744	0.0232	0.9836	70.80	81.79	82.76	81.79	82.76
10	-7.51	-0.46	9.69	39.51	47.82	53.94	0.3269	0.0874	0.0277	0.9803	67.03	78.96	80.10	78.96	80.10
11	-7.05	0.10	11.42	40.47	46.60	52.17	0.3520	0.1184	0.0379	0.9736	60.65	73.77	75.16	73.77	75.16

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
9048.	155.50	1.1411	1.4939	86.10	86.85	1.1411	0.9822	86.10

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

(Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 2

RUN NO 3, SPEED CODE 85, POINT NO 31

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-I	V'-1 FT/SEC	V'-2 FT/SEC
1	11.552	11.276	736.4	1138.5	736.3	878.8	-15.0	723.9	-1.2	39.4	0.6414	0.9672	708.7	743.3	0.8991	0.7467	1032.4	879.0
2	10.779	10.195	735.4	1082.0	735.4	817.1	-3.6	709.3	-0.3	40.9	0.6412	0.9129	728.7	758.8	0.9048	0.6907	1037.8	818.6
3	10.002	9.191	736.0	1021.1	736.0	758.1	9.8	684.0	0.8	42.0	0.6423	0.8565	749.4	775.0	0.9104	0.6405	1043.5	763.6
4	7.236	6.315	714.4	943.9	714.4	770.0	-7.3	546.0	-0.6	35.4	0.6233	0.7924	813.5	826.6	0.9493	0.6860	1088.1	819.5
5	4.295	2.175	666.6	817.5	665.9	710.5	-30.8	404.3	-2.7	29.7	0.5795	0.6828	901.9	901.3	0.9563	0.7242	1146.0	867.1
6	-0.466	-0.094	643.1	739.8	641.8	658.2	-41.1	337.7	-3.7	27.1	0.5579	0.6157	946.9	941.0	1.0220	0.7432	1178.1	892.9
7	-1.775	-1.219	649.1	703.4	647.6	634.1	-45.1	304.5	-4.0	25.6	0.5637	0.5853	969.6	961.5	1.0453	0.7598	1203.8	913.1
8	-2.908	-2.293	664.1	692.0	663.0	634.6	-39.5	276.0	-3.4	23.4	0.5766	0.5764	992.5	982.5	1.0650	0.7910	1226.6	949.7
9	-5.835	-5.452	702.1	711.9	701.5	662.1	-28.6	261.6	-2.3	21.4	0.6083	0.5914	1062.1	1047.6	1.1236	0.8538	1296.8	1027.7
10	-6.894	-6.664	712.6	746.6	712.2	700.2	-23.0	259.1	-1.8	20.2	0.6159	0.6206	1085.4	1069.9	1.1387	0.8905	1317.5	1071.3
11	-8.121	-8.132	699.8	731.1	699.5	691.2	-20.3	238.3	-1.7	18.9	0.6021	0.6064	1108.9	1092.6	1.1427	0.9115	1328.3	1098.9

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VO'-1 FT/SEC	VO'-2 FT/SEC	PO/PO INLET
1	-5.05	-0.74	21.66	43.17	62.91	76.94	0.3154	0.2456	0.0560	1.4894	79.42	78.25	44.43	1.26	-723.7	-19.4	2.3213
2	-5.07	-0.64	17.28	41.40	62.97	71.73	0.3749	0.3278	0.0764	1.4255	71.39	69.95	44.86	3.46	-732.3	-49.6	2.2215
3	-3.18	-0.60	14.37	38.34	63.10	66.83	0.4245	0.3890	0.0925	1.3623	64.28	62.72	45.18	6.84	-739.5	-91.0	2.1236
4	-2.64	2.11	10.49	29.01	60.83	71.02	0.3752	0.2570	0.0621	1.3586	72.33	71.12	49.07	20.06	-820.7	-280.6	2.0787
5	1.03	5.60	6.77	19.51	55.83	67.55	0.3481	0.1650	0.0383	1.3337	78.28	77.40	54.50	34.99	-932.7	-497.0	1.9547
6	2.59	6.93	6.27	14.48	53.52	62.79	0.3337	0.1459	0.0319	1.3007	78.26	77.46	56.96	42.48	-988.0	-603.4	1.8669
7	2.33	6.61	6.70	11.45	54.11	60.83	0.3275	0.1567	0.0332	1.2698	74.59	73.74	57.40	45.96	-1014.7	-657.1	1.8282
8	1.83	5.64	5.66	9.23	55.38	60.94	0.3039	0.1341	0.0281	1.2518	75.98	75.23	57.21	47.98	-1032.0	-706.5	1.8200
9	0.31	2.99	2.64	7.39	58.31	63.68	0.2828	0.1199	0.0271	1.2446	76.31	75.58	57.12	49.73	-1090.7	-786.0	1.8535
10	-0.07	2.11	2.34	8.12	58.92	67.62	0.2626	0.0796	0.0190	1.2685	83.97	83.45	57.13	49.01	-1108.4	-810.6	1.9024
11	0.57	2.27	5.22	7.21	57.42	66.66	0.2491	0.0460	0.0110	1.2680	90.07	89.75	58.09	50.88	-1129.1	-854.3	1.8863

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PC2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.2633	1.5655	80.77	82.48	39.76	1.1070	1.3157	75.93	76.82

STATOR 2

RUN NO 3, SPEED CODE 85, POINT NO 31

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	8.911	0.882	1182.4	988.5	940.7	986.9	716.7	-56.4	37.6	-3.3	1.0121	0.8209	1.9713	1.3206	1.2648	1.1535
2	8.036	0.865	1126.3	977.6	879.6	973.9	703.4	-85.0	38.9	-5.0	0.9567	0.8118	1.9632	1.3173	1.2598	1.1525
3	7.015	0.758	1063.9	964.1	818.3	961.4	679.8	-71.8	39.9	-4.3	0.8979	0.8013	1.9519	1.3109	1.2523	1.1486
4	4.106	0.251	983.7	941.0	819.2	940.3	544.7	-37.3	33.7	-2.3	0.8302	0.7884	1.9439	1.2855	1.2657	1.1307
5	1.199	-0.352	857.8	893.0	756.3	892.1	404.7	-40.3	28.1	-2.6	0.7197	0.7519	1.8814	1.2600	1.2777	1.1120
6	-0.223	-0.716	782.8	847.1	705.8	847.0	338.5	-15.4	25.6	-1.0	0.6545	0.7129	1.8123	1.2486	1.2587	1.1021
7	-1.025	-0.896	748.2	820.4	683.1	819.4	305.3	-40.8	24.1	-2.8	0.6253	0.6905	1.7743	1.2411	1.2335	1.0969
8	-1.943	-1.036	737.2	806.9	683.3	804.8	276.7	-58.1	22.0	-4.1	0.6167	0.6798	1.7542	1.2351	1.2091	1.0895
9	-4.632	-1.178	762.3	824.7	715.5	823.2	263.0	-50.9	20.2	-3.5	0.6365	0.6935	1.7586	1.2441	1.1814	1.0850
10	-5.376	-1.150	800.5	852.1	756.9	852.1	260.6	1.6	19.0	0.1	0.6693	0.7167	1.7880	1.2510	1.1924	1.0840
11	-6.023	-1.103	794.1	856.8	757.0	856.8	239.8	7.7	17.6	0.5	0.6630	0.7206	1.7856	1.2526	1.2002	1.0780

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-10.87	-9.31	8.55	40.85	79.42	82.13	0.3143	0.3198	0.0721	0.8457	22.55	66.60	69.57	45.05	46.81
2	-8.53	-6.51	6.27	43.88	74.69	81.44	0.3024	0.2819	0.0647	0.8718	20.37	66.84	69.78	44.55	46.30
3	-6.73	-4.23	6.58	44.18	69.88	80.93	0.2705	0.2151	0.0503	0.9099	18.68	67.59	70.44	44.51	46.21
4	-11.87	-8.00	8.05	35.96	73.56	81.12	0.2026	0.1866	0.0463	0.9308	-44.85	73.15	75.50	53.20	54.70
5	-16.57	-11.26	7.71	30.72	70.27	77.92	0.1133	0.1496	0.0400	0.9553	-8.22	76.01	78.01	64.56	65.74
6	-18.80	-13.01	9.18	26.43	65.85	73.79	0.0598	0.1437	0.0397	0.9631	195.03	74.37	76.39	66.36	67.41
7	-20.17	-14.18	7.32	26.90	63.87	71.32	0.0478	0.1497	0.0419	0.9646	173.15	73.72	75.72	63.52	64.55
8	-22.02	-15.82	5.99	26.15	64.16	70.08	0.0397	0.1633	0.0463	0.9629	173.02	74.02	75.96	62.09	63.07
9	-23.60	-16.90	6.64	23.14	67.08	70.73	0.0381	0.2131	0.0624	0.9492	205.05	71.62	73.75	57.19	58.16
10	-25.41	-18.54	10.88	18.94	71.04	72.92	0.0298	0.2301	0.0681	0.9405	241.90	71.65	74.02	61.19	62.11
11	-28.09	-21.00	12.45	17.12	70.41	72.96	0.0090	0.2092	0.0624	0.9465	208.17	71.24	73.45	68.46	69.23

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
9088.	155.50	1.2633	1.8449	72.92	74.75	1.1070	0.9386	57.87

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

(Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 3, SPEED CODE 85, POINT NO 2

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	18.642	18.231	491.9	942.7	491.9	557.8	0.0	759.9	0.0	53.7	0.4493	0.8409	534.8	619.1	0.6636	0.5132	726.6	575.3
2	14.133	15.778	501.3	907.7	501.3	562.8	0.0	712.2	0.0	51.7	0.4582	0.8066	576.7	649.1	0.6984	0.5032	704.1	566.3
3	11.799	13.501	510.6	881.4	510.6	568.4	0.0	673.6	0.0	49.8	0.4671	0.7809	617.8	679.0	0.7331	0.5036	801.5	568.5
4	5.785	7.511	532.6	803.3	532.6	554.3	0.0	581.4	0.0	46.3	0.4881	0.7056	735.5	769.0	0.8323	0.5140	908.1	585.2
5	-0.103	1.025	544.7	709.5	544.7	508.1	0.0	495.2	0.0	44.3	0.4998	0.6172	882.4	888.7	0.9515	0.5590	1037.0	642.7
6	-1.978	-1.682	545.7	673.2	545.7	484.0	0.0	468.0	0.0	44.0	0.5007	0.5830	953.1	948.6	1.0077	0.5907	1098.2	682.1
7	-2.923	-2.913	545.3	679.3	545.3	508.8	0.0	450.0	0.0	41.5	0.5004	0.5889	988.0	978.0	1.0355	0.6361	1128.5	733.7
8	-4.060	-4.103	544.3	679.3	544.3	510.8	0.0	447.7	0.0	41.2	0.4994	0.5879	1022.8	1008.6	1.0631	0.6566	1158.6	758.6
9	-7.940	-7.658	535.8	688.8	535.8	529.0	0.0	441.2	0.0	39.8	0.4912	0.5939	1126.9	1098.4	1.1439	0.7274	1247.8	843.7
10	-9.449	-8.918	530.5	701.7	530.5	537.4	0.0	451.2	0.0	39.9	0.4861	0.6036	1161.6	1128.4	1.1702	0.7436	1277.0	864.5
11	-11.938	-10.239	523.9	697.7	523.9	524.2	0.0	460.5	0.0	41.2	0.4798	0.5978	1196.3	1158.3	1.1960	0.7477	1306.0	872.8

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VO'-1 FT/SEC	VO'-2 FT/SEC	PO/PO INLET
1	0.78	5.39	13.78	61.34	34.07	42.88	0.4564	0.0643	0.0137	1.6104	96.78	96.58	47.16	-14.18	-534.8	140.8	1.6104
2	0.94	5.24	13.21	55.15	34.59	44.09	0.4878	0.0587	0.0134	1.5976	96.73	96.53	48.76	-6.39	-576.7	63.1	1.5976
3	1.20	5.30	12.07	49.66	35.09	45.28	0.5035	0.0476	0.0114	1.5928	97.07	96.89	50.20	0.54	-617.8	-5.4	1.5928
4	2.46	5.93	8.99	35.29	36.25	45.58	0.5327	0.0685	0.0173	1.5592	94.63	94.30	53.96	18.67	-735.5	-187.5	1.5592
5	3.78	6.47	7.48	20.55	36.88	42.56	0.5261	0.1219	0.0289	1.5019	87.94	87.25	58.30	37.75	-882.4	-393.5	1.5019
6	4.28	6.56	7.47	15.41	34.92	40.74	0.5142	0.1461	0.0328	1.4823	84.41	83.54	60.22	44.81	-953.1	-480.7	1.4823
7	4.53	6.63	5.79	15.01	36.91	43.19	0.4785	0.1141	0.0257	1.4982	87.36	86.64	61.11	46.10	-988.0	-528.6	1.4982
8	4.76	6.72	4.82	14.30	36.86	43.46	0.4724	0.1212	0.0271	1.5055	86.36	85.57	61.98	47.68	-1022.8	-560.8	1.5055
9	5.51	6.93	4.33	13.43	36.42	45.30	0.4470	0.1312	0.0292	1.5343	84.59	83.65	64.55	51.13	-1126.9	-657.2	1.5343
10	5.75	7.04	4.49	13.94	36.14	45.98	0.4487	0.1465	0.0330	1.5517	82.91	81.85	65.43	51.49	-1161.6	-677.1	1.5517
11	5.38	7.14	6.64	13.33	35.80	44.63	0.4595	0.1785	0.0396	1.5497	79.18	77.88	66.32	52.98	-1196.3	-697.8	1.5497

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.1494	1.5379	87.58	88.29	34.98	1.1494	1.5379	87.58	88.29

STATOR 1

RUN NO 3, SPEED CODE 85, POINT NO 2

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	18.012	14.686	947.5	643.9	586.9	643.8	743.9	-6.3	51.9	-0.6	0.8458	0.5539	1.5600	1.1508	1.5600	1.1508
2	15.551	12.773	916.4	640.2	592.0	640.2	699.6	0.8	49.8	0.1	0.8153	0.5512	1.5606	1.1482	1.5606	1.1482
3	13.328	11.000	892.8	639.7	597.4	639.6	663.6	10.1	48.0	0.9	0.7923	0.5511	1.5621	1.1467	1.5621	1.1467
4	7.667	6.219	819.5	616.3	582.2	616.3	576.7	-4.5	44.7	-0.4	0.7213	0.5306	1.5353	1.1433	1.5353	1.1433
5	1.610	0.523	727.5	570.5	533.7	569.8	494.4	-29.1	42.8	-2.9	0.6340	0.4897	1.4800	1.1414	1.4800	1.1414
6	-1.142	-1.998	692.2	550.9	509.7	549.8	468.3	-35.3	42.6	-3.7	0.6006	0.4719	1.4581	1.1423	1.4581	1.1423
7	-2.334	-3.067	697.9	561.4	532.5	560.4	451.1	-33.7	40.3	-3.4	0.6062	0.4814	1.4662	1.1418	1.4662	1.1418
8	-3.380	-4.025	698.3	575.2	534.7	574.2	449.2	-33.5	40.1	-3.3	0.6056	0.4930	1.4778	1.1452	1.4778	1.1452
9	-6.339	-6.721	709.9	608.7	554.0	607.9	443.9	-32.0	38.8	-3.0	0.6133	0.5208	1.5110	1.1557	1.5110	1.1557
10	-7.251	-7.553	723.5	619.8	563.0	619.4	454.4	-22.3	39.0	-2.1	0.6237	0.5288	1.5214	1.1637	1.5214	1.1637
11	-8.196	-8.365	720.9	606.7	551.7	606.4	464.1	-18.2	40.2	-1.7	0.6191	0.5153	1.5088	1.1712	1.5088	1.1712

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-0.66	1.45	11.78	52.45	44.95	57.51	0.4744	0.0825	0.0169	0.9692	87.84	89.82	90.42	89.82	90.42
2	-1.00	1.40	11.30	49.77	46.09	57.42	0.4556	0.0647	0.0137	0.9772	89.84	91.52	92.01	91.52	92.01
3	-1.50	1.29	11.29	47.13	47.20	57.50	0.4375	0.0550	0.0121	0.9814	90.80	92.61	93.04	92.61	93.04
4	-2.32	1.40	8.85	45.10	47.39	55.18	0.4144	0.0463	0.0113	0.9866	90.93	90.94	91.45	90.94	91.45
5	-2.72	2.33	6.39	45.70	44.26	50.25	0.4089	0.0567	0.0155	0.9868	86.94	83.85	84.69	83.85	84.69
6	-2.44	3.18	5.68	46.26	42.49	48.13	0.4126	0.0831	0.0237	0.9820	80.06	79.97	80.99	79.97	80.99
7	-4.52	1.36	5.94	43.74	44.77	49.14	0.3989	0.0998	0.0291	0.9781	75.13	81.50	82.45	81.50	82.45
8	-4.53	1.62	6.08	43.42	45.05	50.32	0.3827	0.0866	0.0257	0.9810	76.40	81.28	82.25	81.28	82.25
9	-5.83	1.05	7.53	41.81	46.92	53.26	0.3536	0.0692	0.0216	0.9845	77.22	80.37	81.45	80.37	81.45
10	-5.92	1.12	9.71	41.08	47.62	54.05	0.3542	0.0854	0.0270	0.9803	72.14	77.81	79.05	77.81	79.05
11	-5.43	1.72	11.59	41.93	46.41	52.49	0.3749	0.1156	0.0370	0.9737	65.36	72.83	74.33	72.83	74.33

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
9099.	154.00	1.1494	1.5098	83.60	84.50	1.1494	0.9817	83.60

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

(Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 2

RUN NO 3, SPEED CODE 85, POINT NO 2

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-1	V'-1 FT/SEC	V'-2 FT/SEC
1	11.503	11.126	711.3	1016.1	711.3	737.8	-6.1	698.7	-0.5	43.3	0.6161	0.8479	709.5	744.2	0.8739	0.6168	1009.0	739.2
2	10.615	9.898	712.7	998.1	712.7	720.1	0.9	691.2	0.1	43.7	0.6181	0.8318	729.6	759.7	0.8840	0.6028	1019.3	723.4
3	9.621	8.732	716.3	974.3	716.2	707.0	9.9	670.4	0.8	43.4	0.6219	0.8111	750.3	775.9	0.8944	0.5951	1030.1	714.8
4	5.979	5.388	702.5	888.7	702.4	700.0	-4.5	547.6	-0.4	38.0	0.6100	0.7386	814.5	827.6	0.9369	0.6266	1079.0	753.9
5	0.176	0.754	651.7	730.7	651.1	598.0	-29.2	419.8	-2.6	35.1	0.5635	0.6014	502.9	902.4	0.9831	0.6325	1137.0	768.4
6	-2.286	-1.307	626.9	648.3	625.9	533.0	-35.4	368.9	-3.2	34.7	0.5405	0.5310	948.1	942.2	1.0051	0.6412	1165.7	782.8
7	-3.228	-2.205	634.6	635.0	633.6	531.3	-33.9	347.8	-3.1	33.2	0.5476	0.5206	970.8	962.7	1.0251	0.6662	1187.8	612.7
8	-4.116	-3.103	647.3	648.0	646.4	561.0	-33.7	324.3	-3.0	30.0	0.5564	0.5322	953.7	983.7	1.0471	0.7110	1213.9	865.8
9	-7.069	-6.253	681.2	676.4	680.4	599.8	-32.1	312.7	-2.7	27.4	0.5867	0.5538	1063.3	1048.9	1.1108	0.7774	1289.6	949.6
10	-8.015	-7.443	690.2	684.1	689.8	607.4	-22.5	314.7	-1.9	27.3	0.5929	0.5586	1086.7	1071.2	1.1221	0.7923	1306.2	970.2
11	-8.804	-8.640	676.8	654.2	676.5	576.2	-18.4	309.7	-1.6	28.2	0.5786	0.5313	1110.2	1093.9	1.1249	0.7903	1315.8	973.2

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	Vθ'-1 FT/SEC	Vθ'-2 FT/SEC	PO/PO INLET
1	-4.39	-0.07	23.91	41.57	61.41	74.86	0.4304	0.0712	0.0162	1.5691	94.22	93.84	45.09	3.52	-715.6	-45.5	2.4479
2	-4.35	0.10	19.24	40.18	61.63	73.91	0.4517	0.0795	0.0185	1.5650	93.43	93.00	45.60	5.42	-728.7	-68.6	2.4424
3	-4.40	0.18	16.00	37.49	61.93	73.45	0.4618	0.0738	0.0175	1.5931	93.68	93.28	45.95	8.47	-740.4	-105.5	2.4260
4	-2.34	2.46	12.24	27.61	60.28	75.11	0.4330	-0.0017	-0.0004	1.5272	100.25	100.27	49.42	21.81	-819.0	-280.0	2.3451
5	1.59	6.17	10.68	16.16	55.33	64.45	0.4354	0.0229	0.0051	1.4444	97.10	96.96	55.06	38.90	-932.1	-482.6	2.1356
6	3.14	7.48	10.85	10.46	53.02	57.16	0.4317	0.0501	0.0101	1.3939	93.18	92.86	57.52	47.06	-983.4	-573.3	2.0334
7	2.87	6.95	9.87	8.62	53.80	57.16	0.4136	0.0473	0.0094	1.3788	93.26	92.96	57.74	49.12	-1004.7	-614.9	2.0223
8	2.41	6.22	7.22	8.25	54.84	60.66	0.3783	0.0135	0.0027	1.3816	97.93	97.85	57.79	49.54	-1027.4	-659.4	2.0416
9	1.28	3.96	3.61	7.38	57.60	64.66	0.3562	0.0296	0.0066	1.3769	95.16	94.95	58.09	50.71	-1095.5	-736.2	2.0801
10	0.84	3.02	4.44	6.93	58.19	65.18	0.3503	0.0296	0.0067	1.3726	95.06	94.85	58.05	51.11	-1109.2	-756.5	2.0885
11	1.46	3.16	7.93	5.39	56.68	61.18	0.3539	0.0416	0.0093	1.3575	92.91	92.61	58.97	53.59	-1128.6	-784.2	2.0484

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.2807	2.1821	88.80	89.95	39.11	1.1142	1.4453	96.78	96.93

STATOR 2

RUN NO 3, SPEED CODE 85, POINT NO 2

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	8.689	0.838	1051.0	810.9	791.4	810.7	691.6	19.1	41.4	1.3	0.8815	0.6598	2.2512	1.3187	1.4431	1.1456
2	7.663	0.756	1031.4	819.2	770.8	818.9	685.2	23.1	41.9	1.6	0.8635	0.6676	2.2731	1.3168	1.4567	1.1465
3	6.612	0.561	1006.4	837.4	754.7	837.3	665.8	13.1	41.6	0.9	0.8415	0.6851	2.3142	1.3123	1.4818	1.1443
4	3.915	-0.268	918.1	804.5	738.1	804.5	546.0	-3.4	36.6	-0.2	0.7657	0.6617	2.2797	1.2908	1.4822	1.1288
5	1.251	-0.960	759.5	688.2	632.9	688.1	419.8	-9.6	33.5	-0.8	0.6269	0.5640	2.1140	1.2719	1.4275	1.1144
6	-0.486	-1.251	677.4	614.7	567.9	614.5	369.2	-12.8	33.0	-1.2	0.5563	0.5020	2.0217	1.2647	1.3866	1.1072
7	-1.477	-1.351	663.9	598.7	565.3	598.5	348.2	-14.8	31.6	-1.4	0.5456	0.4893	2.0031	1.2598	1.3664	1.1034
8	-2.346	-1.385	676.1	612.5	592.9	612.3	325.0	-15.0	28.7	-1.4	0.5566	0.5015	2.0166	1.2579	1.3651	1.0985
9	-4.273	-1.356	708.7	651.6	635.3	651.6	314.3	6.2	26.3	0.5	0.5819	0.5323	2.0484	1.2716	1.3559	1.1004
10	-4.911	-1.324	720.2	660.9	646.9	660.6	316.5	19.6	26.1	1.7	0.5901	0.5384	2.0531	1.2793	1.3494	1.0994
11	-5.719	-1.230	697.9	630.2	624.3	629.8	311.9	21.8	26.6	2.0	0.5690	0.5108	2.0096	1.2861	1.3319	1.0981

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-7.02	-5.46	13.16	40.08	78.29	85.90	0.3731	0.2023	0.0457	0.9195	60.96	81.67	83.61	75.54	76.76
2	-5.56	-3.94	12.87	40.25	77.29	87.32	0.3553	0.1813	0.0417	0.9298	61.89	83.26	85.05	77.10	78.27
3	-5.05	-2.55	11.74	40.70	76.70	90.23	0.3247	0.1297	0.0304	0.9514	67.86	86.54	88.02	82.06	83.02
4	-9.00	-5.14	10.07	36.80	77.78	88.08	0.2780	0.0943	0.0234	0.9694	68.39	91.10	92.06	92.04	92.46
5	-11.17	-5.86	9.50	34.34	67.27	74.93	0.2542	0.0627	0.0168	0.9849	72.91	87.53	88.75	93.21	93.53
6	-11.40	-5.61	9.02	34.19	60.12	66.43	0.2520	0.0360	0.0100	0.9932	82.27	84.01	85.49	90.99	91.39
7	-12.63	-6.63	8.75	33.02	60.05	64.74	0.2521	0.0483	0.0135	0.9912	76.61	84.39	85.81	89.93	90.35
8	-15.34	-9.14	8.70	30.11	63.31	66.39	0.2373	0.0635	0.0180	0.9880	68.32	85.89	87.19	94.03	94.27
9	-17.46	-10.76	10.71	25.80	67.46	69.94	0.2087	0.0745	0.0219	0.9848	57.53	83.58	85.13	90.20	90.60
10	-18.35	-11.47	12.47	24.42	68.24	70.41	0.2050	0.0799	0.0236	0.9832	55.56	81.54	83.28	89.55	89.97
11	-19.11	-12.02	13.91	24.64	65.00	66.27	0.2217	0.0957	0.0286	0.9812	53.98	76.98	79.09	86.58	87.10

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
9099.	154.00	1.2807	2.1265	85.55	86.98	1.1142	0.9745	89.67

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

(Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 3, SPEED CODE 85, POINT NO 3

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VØ-1 FT/SEC	VØ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	16.507	18.268	459.3	897.0	459.3	521.6	0.0	729.7	0.0	54.5	0.4185	0.7970	535.7	620.1	0.6428	0.4737	705.6	533.0
2	13.896	15.866	468.0	863.6	468.0	519.0	0.0	690.3	0.0	53.1	0.4267	0.7643	577.6	650.2	0.6777	0.4607	743.4	520.5
3	11.551	13.637	476.1	834.2	476.1	514.1	0.0	656.9	0.0	51.9	0.4343	0.7356	618.8	680.1	0.7122	0.4538	780.7	514.6
4	5.669	7.770	494.4	774.4	494.4	504.8	0.0	587.3	0.0	49.3	0.4516	0.6773	736.7	770.2	0.8105	0.4696	887.2	536.9
5	-0.277	1.399	503.8	700.5	503.8	476.2	0.0	513.7	0.0	47.2	0.4606	0.6071	883.8	890.2	0.9301	0.5262	1017.3	607.1
6	-2.350	-1.340	503.7	676.2	503.7	453.7	0.0	501.5	0.0	47.9	0.4605	0.5830	954.6	950.2	0.9868	0.5501	1079.3	638.1
7	-3.361	-2.618	502.8	681.0	502.8	472.7	0.0	490.2	0.0	46.0	0.4597	0.5870	989.6	980.2	1.0147	0.5809	1110.0	660.8
8	-4.581	-3.676	501.2	685.0	501.2	482.9	0.0	485.9	0.0	45.2	0.4581	0.5898	1024.5	1010.2	1.0425	0.6137	1140.5	712.8
9	-6.361	-7.657	491.3	690.0	491.3	475.0	0.0	500.5	0.0	46.5	0.4487	0.5892	1128.8	1100.2	1.1243	0.6533	1231.0	765.0
10	-9.600	-8.936	486.3	698.5	486.3	474.9	0.0	512.2	0.0	47.1	0.4439	0.5945	1163.5	1130.2	1.1512	0.6634	1261.0	779.4
11	-10.926	-10.249	480.4	699.2	480.4	482.1	0.0	506.4	0.0	46.3	0.4384	0.5944	1198.2	1160.2	1.1780	0.6906	1290.9	812.3

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VØ'-1 FT/SEC	VØ'-2 FT/SEC	PO/PO INLET
1	2.76	7.36	16.09	61.01	32.23	41.46	0.4905	0.0062	0.0013	1.6052	99.69	99.69	49.14	-11.87	-535.7	109.5	1.6052
2	2.90	7.20	15.18	55.14	32.73	41.91	0.5283	0.0214	0.0049	1.5929	98.82	98.76	50.72	-4.42	-577.6	40.1	1.5929
3	3.17	7.28	14.11	49.60	33.19	42.07	0.5541	0.0371	0.0089	1.5819	97.77	97.64	52.18	2.58	-618.8	-23.2	1.5819
4	4.50	7.97	10.22	36.10	34.21	42.51	0.5776	0.0649	0.0163	1.5709	95.16	94.87	56.01	19.91	-736.7	-182.5	1.5709
5	5.79	8.47	8.05	21.98	34.73	40.89	0.5573	0.1100	0.0259	1.5381	89.84	89.22	60.31	38.33	-883.8	-376.5	1.5381
6	6.26	8.54	7.35	17.51	34.72	39.07	0.5567	0.1499	0.0337	1.5303	85.39	84.52	62.20	44.69	-954.6	-448.7	1.5303
7	6.50	8.60	5.72	17.05	34.67	40.95	0.5298	0.1339	0.0302	1.5444	86.57	85.75	63.08	46.03	-989.6	-490.0	1.5444
8	6.73	8.68	4.50	16.60	34.58	41.97	0.5160	0.1331	0.0300	1.5564	86.38	85.53	63.95	47.35	-1024.5	-524.3	1.5564
9	7.44	8.86	4.78	14.91	34.04	41.21	0.5210	0.1900	0.0419	1.5788	80.16	78.87	66.48	51.58	-1128.8	-599.7	1.5788
10	7.63	8.92	5.39	14.92	33.76	41.13	0.5267	0.2116	0.0467	1.5929	78.02	76.57	67.31	52.39	-1163.5	-618.0	1.5929
11	7.79	8.94	7.15	14.63	33.43	41.84	0.5130	0.2105	0.0462	1.6000	77.70	76.21	68.12	53.50	-1198.2	-653.8	1.6000

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.1581	1.5682	86.73	87.53	32.89	1.1581	1.5682	86.73	87.53

STATOR 1

RUN NO 3, SPEED CODE 85, POINT NO 3

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VØ-1 FT/SEC	VØ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	16.212	14.918	899.0	566.7	545.9	566.4	714.3	-17.7	52.6	-1.8	0.7991	0.4854	1.5520	1.1452	1.5520	1.1452
2	15.925	13.196	869.0	565.5	543.4	565.4	678.1	-9.6	51.4	-1.0	0.7696	0.4846	1.5560	1.1440	1.5560	1.1440
3	13.790	11.550	842.0	563.8	538.7	563.8	647.1	-2.0	50.3	-0.2	0.7433	0.4832	1.5578	1.1434	1.5578	1.1434
4	6.254	7.012	786.6	553.5	528.6	553.5	582.6	1.3	47.8	0.1	0.6890	0.4736	1.5499	1.1452	1.5499	1.1452
5	2.354	1.673	714.8	517.7	498.0	517.4	512.8	-16.3	45.8	-1.8	0.6205	0.4414	1.5148	1.1468	1.5148	1.1468
6	-0.296	-0.794	691.5	503.4	475.7	502.5	501.9	-29.7	46.5	-3.4	0.5971	0.4276	1.5019	1.1529	1.5019	1.1529
7	-1.518	-1.941	696.5	516.6	493.9	516.0	491.2	-25.7	44.9	-2.9	0.6013	0.4390	1.5128	1.1540	1.5128	1.1540
8	-2.605	-3.001	701.0	534.5	503.8	534.2	487.4	-17.6	44.1	-1.9	0.6045	0.4542	1.5284	1.1571	1.5284	1.1571
9	-5.849	-6.199	708.1	549.1	498.0	548.7	503.4	-19.7	45.4	-2.1	0.6058	0.4632	1.5444	1.1761	1.5444	1.1761
10	-6.987	-7.261	717.3	561.0	498.5	561.0	515.8	-7.6	46.1	-0.8	0.6117	0.4718	1.5548	1.1854	1.5548	1.1854
11	-8.109	-8.252	716.8	567.2	506.1	567.2	510.4	-2.0	45.4	-0.2	0.6123	0.4766	1.5612	1.1885	1.5612	1.1885

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	0.25	2.36	10.56	54.58	43.33	52.32	0.5293	0.0963	0.0197	0.9669	87.00	92.14	92.60	92.14	92.60
2	0.58	2.98	10.27	52.38	43.73	52.43	0.5110	0.0710	0.0151	0.9769	89.87	93.48	93.85	93.48	93.85
3	0.78	3.56	10.19	50.58	43.86	52.40	0.4948	0.0495	0.0109	0.9848	92.51	94.15	94.48	94.15	94.48
4	0.77	4.49	9.41	47.64	44.19	51.33	0.4728	0.0480	0.0117	0.9870	91.85	91.86	92.32	91.86	92.32
5	0.32	5.37	7.51	47.63	42.43	47.50	0.4769	0.0663	0.0181	0.9849	87.73	85.83	86.62	85.83	86.62
6	1.54	7.13	5.98	49.92	40.64	45.76	0.4919	0.0856	0.0245	0.9817	83.82	80.60	81.65	80.60	81.65
7	0.05	5.93	6.53	47.71	42.44	47.06	0.4749	0.0929	0.0271	0.9799	81.69	81.50	82.52	81.50	82.52
8	-0.53	5.61	7.54	45.96	43.43	48.77	0.4515	0.0810	0.0240	0.9823	82.87	81.99	83.02	81.99	83.02
9	0.76	7.64	8.49	47.44	42.81	49.61	0.4559	0.0971	0.0303	0.9787	78.42	75.06	76.51	75.06	76.51
10	1.13	8.17	11.00	46.84	42.76	50.46	0.4505	0.1057	0.0335	0.9764	75.92	72.45	74.08	72.45	74.08
11	-0.27	6.88	13.11	45.56	43.49	50.99	0.4416	0.1081	0.0346	0.9758	74.74	71.99	73.66	71.99	73.66

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
9114.	144.80	1.1581	1.5386	82.84	83.83	1.1581	0.9812	82.84

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA
(Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 2

RUN NO 3, SPEED CODE 85, POINT NO 3

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	V0-1 FT/SEC	V0-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	11.710	11.074	609.3	963.8	609.1	614.9	-17.3	742.2	-1.6	50.2	0.5238	0.7961	710.7	745.4	0.8160	0.5079	949.2	614.9
2	10.992	9.809	614.2	951.1	614.1	616.9	-9.5	723.9	-0.9	49.5	0.5286	0.7854	730.8	761.0	0.8277	0.5104	961.8	618.0
3	10.073	8.607	618.4	936.1	618.4	628.5	-1.9	693.7	-0.2	47.8	0.5326	0.7736	751.5	777.2	0.8394	0.5240	974.7	634.0
4	6.447	5.192	618.9	853.6	618.9	612.6	1.4	594.4	0.1	44.1	0.5325	0.7026	815.8	828.9	0.8802	0.5399	1022.9	655.9
5	1.172	0.989	583.2	729.6	583.0	532.9	-16.0	498.3	-1.6	43.1	0.4999	0.5945	904.4	903.8	0.9339	0.5456	1089.6	669.6
6	-1.253	-0.966	568.7	667.6	567.9	504.4	-29.8	437.2	-3.0	40.9	0.4855	0.5411	949.6	943.7	0.9665	0.5794	1132.1	714.8
7	-2.358	-1.900	581.2	660.0	580.6	506.1	-26.0	423.5	-2.6	39.9	0.4964	0.5349	972.4	964.3	0.9865	0.6003	1154.9	740.7
8	-3.378	-2.800	599.4	667.3	599.1	520.2	-17.7	418.0	-1.7	38.7	0.5121	0.5408	995.3	985.3	1.0055	0.6238	1177.0	769.7
9	-6.880	-6.149	619.8	688.2	619.5	566.0	-19.9	391.5	-1.8	34.6	0.5259	0.5543	1065.1	1050.6	1.0602	0.6997	1249.4	868.7
10	-8.132	-7.566	629.6	690.2	629.6	567.5	-7.7	392.8	-0.7	34.6	0.5325	0.5541	1088.5	1072.9	1.0692	0.7110	1264.2	885.8
11	-8.994	-8.813	632.3	666.7	632.3	527.1	-2.0	408.2	-0.2	37.7	0.5342	0.5321	1112.0	1095.7	1.0822	0.6914	1281.0	866.3

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	V0'-1 FT/SEC	V0'-2 FT/SEC	PO/PO INLET
1	0.54	4.86	20.70	49.72	55.23	64.08	0.5386	0.1817	0.0414	1.5695	87.42	86.60	50.02	0.30	-726.0	-3.2	2.4356
2	0.37	4.82	17.25	46.89	55.76	65.21	0.5388	0.1577	0.0368	1.5721	88.75	88.01	50.32	3.43	-740.2	-37.1	2.4457
3	0.31	4.89	15.08	43.12	56.13	67.51	0.5226	0.1117	0.0265	1.5744	91.68	91.13	50.66	7.55	-753.4	-83.5	2.4531
4	1.08	5.87	11.38	31.88	55.81	67.75	0.5083	0.0553	0.0133	1.5377	95.17	94.87	52.83	20.94	-814.4	-234.5	2.3842
5	4.19	8.76	9.05	20.38	52.14	59.63	0.5185	0.0773	0.0174	1.4839	92.12	91.68	57.65	37.27	-920.5	-405.5	2.2486
6	5.50	9.84	8.88	14.78	50.41	56.42	0.4900	0.0693	0.0145	1.4537	92.17	91.76	59.87	45.09	-979.4	-506.5	2.1820
7	4.91	8.99	7.59	12.94	51.60	56.82	0.4760	0.0692	0.0144	1.4430	91.82	91.39	59.78	46.84	-998.4	-540.8	2.1810
8	3.96	7.77	5.09	11.94	53.25	58.61	0.4606	0.0630	0.0134	1.4401	92.28	91.88	59.35	47.40	-1013.1	-567.4	2.1963
9	3.39	6.07	2.12	10.99	54.37	63.53	0.4185	0.0380	0.0087	1.4499	94.96	94.70	60.20	49.21	-1085.0	-659.0	2.2388
10	2.86	5.04	3.36	10.02	55.01	63.36	0.4136	0.0380	0.0089	1.4417	94.83	94.56	60.06	50.04	-1096.2	-680.1	2.2416
11	2.84	4.53	6.77	7.93	55.29	58.26	0.4439	0.0998	0.0230	1.4152	86.50	85.83	60.35	52.42	-1114.0	-687.5	2.2095

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.3077	2.2843	86.32	87.79	36.22	1.1291	1.4846	92.15	92.57

STATOR 2

RUN NO 3, SPEED CODE 85, POINT NO 3

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	V0-1 FT/SEC	V0-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/TO1
1	8.441	0.763	987.3	671.5	659.4	670.9	734.8	29.2	48.4	2.5	0.8180	0.5375	2.3086	1.3263	1.4878	1.1560
2	7.228	0.607	973.6	684.4	657.9	683.8	717.6	27.3	47.7	2.3	0.8063	0.5491	2.3320	1.3231	1.4993	1.1564
3	6.120	0.367	957.7	706.5	665.6	706.2	688.5	17.2	46.1	1.4	0.7937	0.5693	2.3706	1.3170	1.5213	1.1519
4	3.499	-0.463	874.1	674.6	643.1	674.6	592.0	4.2	42.7	0.4	0.7212	0.5452	2.3350	1.3028	1.5053	1.1377
5	0.554	-1.213	750.0	586.5	560.8	586.4	497.9	-9.1	41.6	-0.9	0.6123	0.4721	2.2213	1.2953	1.4653	1.1300
6	-1.001	-1.425	688.8	539.7	532.1	539.6	437.4	-12.4	39.4	-1.3	0.5594	0.4332	2.1663	1.2940	1.4433	1.1226
7	-1.743	-1.438	681.4	532.7	533.4	532.6	424.0	-12.5	38.5	-1.3	0.5553	0.4276	2.1572	1.2928	1.4277	1.1205
8	-2.431	-1.421	689.1	547.0	547.1	546.9	418.9	-0.9	37.4	-1.0	0.5595	0.4392	2.1693	1.2943	1.4217	1.1191
9	-4.106	-1.349	715.3	591.8	597.3	591.4	393.5	19.9	33.4	1.9	0.5775	0.4730	2.2049	1.3138	1.4282	1.1177
10	-4.650	-1.301	721.5	599.5	603.6	598.6	395.1	31.7	33.2	3.0	0.5808	0.4777	2.2085	1.3227	1.4205	1.1160
11	-5.524	-1.210	704.5	573.6	572.1	572.6	411.1	34.0	35.8	3.4	0.5641	0.4546	2.1735	1.3321	1.3921	1.1209

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-0.10	1.46	14.30	45.87	67.65	77.60	0.4808	0.1461	0.0330	0.9480	77.98	82.54	84.44	75.72	77.02
2	0.26	2.28	13.54	45.40	68.52	79.62	0.4605	0.1321	0.0304	0.9539	78.83	84.49	86.19	78.10	79.30
3	-0.53	1.98	12.24	44.72	70.50	83.08	0.4281	0.0989	0.0232	0.9663	82.50	88.00	89.35	83.50	84.44
4	-2.88	0.99	10.67	42.33	70.29	80.02	0.3979	0.0747	0.0186	0.9780	84.68	90.34	91.41	89.66	90.23
5	-3.13	2.18	9.41	42.47	62.13	68.96	0.4022	0.0593	0.0159	0.9866	86.65	86.53	87.94	88.39	88.99
6	-5.00	0.79	8.91	40.70	58.95	63.00	0.3989	0.0396	0.0109	0.9924	90.70	83.90	85.53	89.80	90.31
7	-5.77	0.22	8.82	39.79	59.31	62.12	0.3990	0.0583	0.0163	0.9891	86.43	83.73	85.37	88.53	89.08
8	-6.63	-0.43	9.07	38.45	61.05	63.76	0.3835	0.0672	0.0191	0.9871	83.54	83.97	85.59	88.44	88.99
9	-10.41	-3.71	12.09	31.46	66.22	68.03	0.3266	0.0741	0.0217	0.9850	78.98	80.58	82.58	90.62	91.08
10	-11.21	-4.34	13.80	30.22	66.44	68.36	0.3189	0.0728	0.0215	0.9852	78.99	78.54	80.75	90.50	90.96
11	-9.96	-2.86	15.32	32.38	62.20	64.56	0.3466	0.0846	0.0252	0.9836	77.41	74.58	77.15	81.59	82.42

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
9114.	144.80	1.3077	2.2396	84.01	85.69	1.1291	0.9804	87.29

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

(Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 3, SPEED CODE 85, POINT NO 4

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	16.460	18.370	424.4	862.6	424.4	489.0	0.0	710.6	0.0	55.5	0.3857	0.7645	533.7	617.9	0.6196	0.4411	681.9	497.7
2	13.797	16.055	433.4	829.6	433.4	484.8	0.0	673.2	0.0	54.3	0.3940	0.7323	575.5	647.8	0.6550	0.4285	720.4	485.4
3	11.405	13.894	441.6	801.4	441.6	479.8	0.0	642.0	0.0	53.2	0.4018	0.7051	616.5	677.7	0.6900	0.4233	758.4	481.1
4	5.477	8.137	460.4	745.6	460.4	463.4	0.0	584.1	0.0	51.6	0.4194	0.6503	734.0	767.4	0.7894	0.4347	866.5	498.3
5	-0.323	1.711	471.1	674.5	471.1	435.1	0.0	515.4	0.0	49.8	0.4295	0.5831	880.6	887.0	0.9106	0.4946	998.7	572.1
6	-2.550	-1.079	471.6	665.1	471.6	427.7	0.0	509.3	0.0	50.0	0.4300	0.5722	951.2	946.8	0.9681	0.5264	1061.7	611.8
7	-3.675	-2.398	470.8	673.3	470.8	449.4	0.0	501.4	0.0	48.1	0.4293	0.5791	986.0	976.6	0.9962	0.5626	1092.6	654.0
8	-5.013	-3.738	469.3	681.8	469.3	462.8	0.0	500.6	0.0	47.2	0.4278	0.5857	1020.8	1006.6	1.0243	0.5890	1123.5	685.7
9	-9.067	-7.697	459.0	689.8	459.0	444.9	0.0	527.1	0.0	49.8	0.4181	0.5867	1124.7	1096.2	1.1066	0.6144	1214.7	722.4
10	-10.216	-8.998	454.1	693.5	454.1	430.7	0.0	543.6	0.0	51.5	0.4136	0.5872	1159.3	1126.1	1.1338	0.6134	1245.1	724.5
11	-11.266	-10.306	449.0	691.0	449.0	433.0	0.0	538.5	0.0	51.1	0.4087	0.5841	1193.9	1156.0	1.1611	0.6374	1275.5	754.1

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	Vθ'-1 FT/SEC	Vθ'-2 FT/SEC	PO/PO INLET
1	4.87	9.48	17.21	62.00	30.16	39.80	0.5179	-0.0417	-0.0090	1.6009	101.96	102.11	51.26	-10.74	-533.7	92.7	1.6009
2	4.93	9.23	16.61	55.75	30.70	40.05	0.5562	-0.0190	-0.0044	1.5890	100.99	101.07	52.75	-3.00	-575.5	25.4	1.5890
3	5.13	9.23	15.79	49.87	31.19	40.12	0.5804	0.0009	0.0002	1.5797	99.94	99.95	54.13	4.26	-616.5	-35.7	1.5797
4	6.27	9.73	11.91	36.18	32.29	39.75	0.6109	0.0526	0.0130	1.5723	96.18	95.95	57.77	21.59	-734.0	-183.3	1.5723
5	7.33	10.01	10.22	21.35	32.90	38.00	0.5847	0.1047	0.0239	1.5438	90.62	90.05	61.85	40.50	-880.6	-371.5	1.5438
6	7.71	9.99	8.31	18.00	32.93	37.49	0.5766	0.1371	0.0303	1.5511	87.14	86.34	63.64	45.65	-951.2	-437.5	1.5511
7	7.92	10.02	6.29	17.90	32.89	39.59	0.5507	0.1244	0.0277	1.5681	88.03	87.27	64.50	46.60	-986.0	-475.2	1.5681
8	8.13	10.08	4.69	17.80	32.80	40.87	0.5378	0.1263	0.0283	1.5838	87.65	86.84	65.34	47.54	-1020.8	-505.9	1.5838
9	8.80	10.22	5.15	15.90	32.21	39.03	0.5582	0.2059	0.0450	1.6064	79.60	78.22	67.84	51.95	-1124.7	-569.1	1.6064
10	8.95	10.24	6.46	15.17	31.93	37.63	0.5746	0.2411	0.0519	1.6148	76.30	74.68	68.63	53.46	-1159.3	-582.6	1.6148
11	9.05	10.20	8.52	14.52	31.63	37.89	0.5623	0.2443	0.0519	1.6190	75.54	73.66	69.38	54.87	-1193.9	-617.5	1.6190

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.1606	1.5812	87.08	87.87	31.07	1.1606	1.5812	87.08	87.87

STATOR 1

RUN NO 3, SPEED CODE 85, POINT NO 4

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/TO1
1	18.383	15.135	862.5	520.3	510.0	520.1	695.6	-17.2	54.0	-1.9	0.7644	0.4450	1.5459	1.1409	1.5459	1.1409
2	16.239	13.584	832.5	518.9	505.8	518.9	661.3	-7.3	52.8	-0.8	0.7352	0.4439	1.5500	1.1400	1.5500	1.1400
3	14.229	12.078	806.6	516.7	500.7	516.7	632.3	-0.7	51.8	-0.1	0.7101	0.4420	1.5520	1.1396	1.5520	1.1396
4	8.907	7.805	755.1	504.1	484.3	504.1	579.3	0.7	50.2	0.1	0.6593	0.4299	1.5464	1.1438	1.5464	1.1436
5	3.047	2.522	686.7	460.6	455.0	460.1	514.3	-21.9	48.5	-2.7	0.5944	0.3913	1.5148	1.1461	1.5148	1.1461
6	0.434	0.022	678.2	469.8	447.5	468.7	509.6	-32.9	48.7	-4.0	0.5844	0.3979	1.5224	1.1543	1.5224	1.1543
7	-0.787	-1.133	686.8	486.3	468.6	484.7	502.2	-38.6	47.0	-4.5	0.5916	0.4119	1.5361	1.1565	1.5361	1.1565
8	-1.907	-2.212	695.9	499.7	482.2	499.6	501.8	-12.6	46.1	-1.4	0.5988	0.4229	1.5484	1.1604	1.5484	1.1604
9	-5.247	-5.556	706.3	525.5	467.1	525.4	529.8	-11.7	48.6	-1.3	0.6018	0.4411	1.5758	1.1833	1.5758	1.1833
10	-6.530	-6.739	711.0	530.8	453.9	530.8	547.2	1.7	50.4	0.2	0.6031	0.4433	1.5815	1.1956	1.5815	1.1956
11	-7.882	-7.950	709.2	530.8	456.5	530.8	542.7	9.8	50.0	1.1	0.6005	0.4426	1.5838	1.1997	1.5838	1.1997

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	1.42	3.53	10.45	55.85	41.51	48.90	0.5593	0.1074	0.0220	0.9654	86.00	94.04	94.37	94.04	94.37
2	1.94	4.32	10.42	53.57	41.71	48.98	0.5416	0.0821	0.0174	0.9751	88.77	95.28	95.54	95.28	95.54
3	2.23	5.02	10.31	51.83	41.74	48.89	0.5276	0.0616	0.0136	0.9824	91.16	95.87	96.10	95.87	96.10
4	3.15	6.87	9.35	50.07	41.33	47.59	0.5168	0.0663	0.0162	0.9832	89.65	92.22	92.67	92.22	92.67
5	3.00	8.05	6.58	51.23	39.50	43.12	0.5413	0.0871	0.0238	0.9814	85.92	86.22	86.98	86.22	86.98
6	3.69	9.30	5.34	52.73	38.97	43.73	0.5349	0.0815	0.0233	0.9832	85.91	82.69	83.67	82.69	83.67
7	2.18	8.06	4.84	51.54	41.00	45.30	0.5203	0.0872	0.0254	0.9817	84.32	83.39	84.34	83.39	84.34
8	1.55	7.69	7.98	47.60	42.28	46.69	0.4998	0.0974	0.0289	0.9791	82.03	82.94	83.94	82.94	83.94
9	4.02	10.90	9.27	49.92	40.64	48.63	0.4942	0.0833	0.0260	0.9819	83.36	75.65	77.13	75.65	77.13
10	5.45	12.50	11.96	50.20	39.31	48.76	0.4979	0.0926	0.0293	0.9798	81.40	71.49	73.24	71.49	73.24
11	4.41	11.56	14.37	48.98	39.58	48.68	0.4951	0.1004	0.0321	0.9783	79.70	70.28	72.11	70.28	72.11

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
9081.	136.80	1.1606	1.5502	83.08	84.07	1.1606	0.9804	83.08

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

(Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 2

RUN NO 3, SPEED CODE 85, POINT NO 4

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-1	V'-1 FT/SEC	V'-2 FT/SEC
1	11.811	11.114	545.1	944.9	544.8	551.4	-16.9	767.3	-1.8	54.2	0.4670	0.7782	708.1	742.7	0.7770	0.4546	906.9	552.0
2	11.185	9.892	550.1	935.6	550.1	558.7	-7.4	750.4	-0.8	53.2	0.4717	0.7707	728.1	758.2	0.7876	0.4603	918.5	556.8
3	10.342	8.720	554.3	925.6	554.3	578.4	-0.6	722.6	-0.1	51.3	0.4756	0.7632	748.8	774.4	0.7997	0.4788	932.1	580.7
4	6.910	5.317	555.1	843.4	555.1	566.2	1.0	625.1	0.1	47.8	0.4753	0.6916	812.8	825.9	0.8421	0.4927	983.4	600.8
5	1.692	1.151	518.2	722.6	517.7	493.1	-21.4	528.2	-2.4	47.0	0.4420	0.5863	901.2	900.6	0.9025	0.5013	1057.9	617.8
6	-0.844	-0.855	528.9	675.9	527.9	485.5	-32.7	470.2	-3.5	44.1	0.4499	0.5459	946.2	940.3	0.9459	0.5458	1112.1	675.8
7	-2.056	-1.880	544.9	672.2	543.5	499.2	-38.4	450.2	-4.0	42.0	0.4636	0.5424	968.9	960.8	0.9737	0.5762	1144.5	714.0
8	-3.182	-2.880	559.7	679.2	559.5	499.0	-14.1	460.8	-1.4	42.6	0.4759	0.5476	991.7	981.8	0.9787	0.5816	1151.0	721.4
9	-5.400	-6.021	593.6	692.2	593.5	537.4	-11.9	436.3	-1.1	38.9	0.5010	0.5537	1061.2	1046.8	1.0351	0.6506	1226.4	813.3
10	-7.532	-7.252	600.7	691.3	600.7	543.0	1.4	427.8	0.1	38.1	0.5046	0.5511	1084.6	1069.0	1.0404	0.6699	1238.6	840.3
11	-8.540	-8.521	601.1	682.5	601.0	524.0	9.8	437.3	0.9	39.7	0.5040	0.5419	1108.0	1091.8	1.0496	0.6658	1251.9	838.4

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VΘ'-1 FT/SEC	VΘ'-2 FT/SEC	PO/PO INLET
1	3.55	7.86	17.86	55.57	50.73	57.29	0.5928	0.2722	0.0620	1.5528	82.81	81.73	53.03	-2.54	-725.0	24.6	2.4000
2	3.28	7.73	14.62	52.43	51.29	58.94	0.5078	0.2369	0.0553	1.5605	84.64	83.66	53.23	0.80	-735.6	-7.8	2.4180
3	3.22	7.80	12.63	48.47	51.69	62.05	0.5648	0.1804	0.0430	1.5698	87.85	87.06	53.58	5.10	-749.4	-51.8	2.4367
4	3.97	8.76	9.97	36.19	51.40	62.48	0.5526	0.1219	0.0296	1.5332	90.36	89.77	55.72	19.53	-811.8	-200.8	2.3729
5	7.24	11.82	8.84	23.65	47.55	55.17	0.5620	0.1372	0.0310	1.4871	87.31	86.59	60.71	37.06	-922.6	-372.3	2.2532
6	7.27	11.60	7.83	17.59	46.22	54.47	0.5246	0.1299	0.0277	1.4539	86.49	85.77	61.64	44.04	-978.8	-470.1	2.2125
7	6.73	10.81	6.34	16.01	49.68	56.16	0.5041	0.1288	0.0275	1.4456	85.92	85.18	61.61	45.59	-1007.3	-510.6	2.2171
8	5.48	9.28	3.84	14.70	51.10	56.29	0.5027	0.1258	0.0273	1.4454	86.05	85.31	60.86	46.15	-1005.8	-520.9	2.2351
9	4.15	6.83	1.41	12.45	53.48	60.36	0.4627	0.1067	0.0247	1.4421	87.05	86.37	60.96	46.51	-1073.2	-610.5	2.2708
10	3.69	5.87	2.93	11.28	53.68	60.76	0.4456	0.0831	0.0196	1.4379	89.51	88.96	60.89	49.61	-1083.2	-641.3	2.2732
11	3.70	5.39	5.54	10.01	53.61	58.34	0.4581	0.1050	0.0249	1.4300	86.70	86.02	61.21	51.20	-1098.2	-654.5	2.2647

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	T02/T01	P02/P01	EFF-AD ROTOR %	EFF-P ROTOR %
1.3188	2.2977	83.95	85.69	34.00	1.1363	1.4822	86.88	87.58

STATOR 2

RUN NO 3, SPEED CODE 85, POINT NO 4

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	T02/ T01
1	8.407	0.734	962.7	667.6	591.3	606.8	759.7	29.7	52.4	2.8	0.7947	0.4837	2.2972	1.3272	1.4863	1.1632
2	7.166	0.554	952.7	622.4	595.2	621.8	743.9	25.7	51.5	2.4	0.7865	0.4966	2.3199	1.3244	1.4976	1.1615
3	6.045	0.322	942.1	642.7	611.0	642.4	717.2	19.6	49.7	1.7	0.7785	0.5147	2.3511	1.3193	1.5149	1.1577
4	3.421	-0.399	859.6	619.3	592.9	619.2	622.4	10.5	46.4	1.0	0.7062	0.4970	2.3277	1.3088	1.5037	1.1446
5	0.382	-1.285	739.7	540.5	518.4	540.4	527.7	-8.3	45.5	-0.9	0.6012	0.4321	2.2339	1.3039	1.4736	1.1381
6	-1.108	-1.512	693.9	504.4	510.2	504.2	470.4	-13.0	42.6	-1.5	0.5614	0.4022	2.1933	1.3047	1.4415	1.1312
7	-1.795	-1.503	690.7	501.1	523.3	501.1	450.7	-9.1	40.7	-1.0	0.5582	0.3993	2.1877	1.3061	1.4271	1.1298
8	-2.453	-1.440	698.5	510.9	523.7	510.9	462.2	-3.1	41.4	-0.3	0.5640	0.4068	2.1944	1.3097	1.4197	1.1295
9	-4.433	-1.330	717.0	556.9	567.3	556.6	438.5	19.5	37.7	2.0	0.5747	0.4409	2.2288	1.3321	1.4155	1.1271
10	-5.070	-1.288	719.9	567.7	577.1	566.8	430.3	32.2	36.8	3.2	0.5754	0.4483	2.2352	1.3404	1.4138	1.1223
11	-5.836	-1.202	716.7	553.7	565.3	552.1	440.5	41.7	38.0	4.3	0.5708	0.4354	2.2148	1.3487	1.3985	1.1244

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	3.90	5.46	14.61	49.56	60.73	71.64	0.5396	0.1256	0.0284	0.9572	82.85	81.77	83.74	73.13	74.57
2	4.10	6.12	13.62	49.16	62.09	73.85	0.5199	0.1187	0.0273	0.9602	82.97	83.59	85.38	75.39	76.73
3	3.07	5.58	12.59	47.97	64.85	76.94	0.4919	0.1038	0.0243	0.9657	84.07	86.44	87.95	79.55	80.70
4	0.88	4.75	11.29	45.47	64.83	74.64	0.4597	0.0729	0.0181	0.9791	87.27	88.20	89.50	85.14	85.96
5	0.78	6.09	9.42	46.37	57.53	64.59	0.4661	0.0442	0.0118	0.9904	91.56	84.75	86.35	84.45	85.27
6	-1.75	4.04	8.74	44.12	56.77	59.86	0.4681	0.0472	0.0130	0.9909	90.90	82.39	84.19	83.58	84.39
7	-3.52	2.47	9.13	41.74	58.40	59.34	0.4622	0.0683	0.0191	0.9870	86.87	81.72	83.59	82.02	82.89
8	-2.64	3.56	9.76	41.75	58.57	60.34	0.4574	0.0914	0.0260	0.9823	82.15	81.12	83.05	80.94	81.85
9	-6.07	0.63	12.18	35.72	63.01	64.74	0.3956	0.0921	0.0270	0.9816	79.10	77.28	79.66	81.74	82.61
10	-7.69	-0.82	14.02	33.52	63.76	65.49	0.3761	0.0834	0.0246	0.9833	80.16	75.69	78.23	84.61	85.34
11	-7.71	-0.62	16.24	33.71	61.99	63.17	0.3946	0.1111	0.0331	0.9780	75.18	72.95	75.74	80.39	81.29

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	T02/T01	P02/P01	EFF-AD STAGE %
9081.	136.80	1.3188	2.2517	81.67	83.61	1.1363	0.9800	82.18

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

(Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 3, SPEED CODE 95, POINT NO 1

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	β-1 DEGREE	β-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-1	V'-1 FT/SEC	V'-2 FT/SEC
1	16.705	18.429	588.6	1032.7	588.6	630.8	0.0	817.6	0.0	52.4	0.5423	0.9204	596.7	690.8	0.7722	0.5735	838.1	643.4
2	14.218	16.144	602.2	993.0	602.2	633.6	0.0	764.6	0.0	50.4	0.5556	0.8810	643.4	724.2	0.8131	0.5633	881.2	634.9
3	11.925	14.003	615.8	967.9	615.8	646.7	0.0	720.2	0.0	48.1	0.5690	0.8565	689.3	757.6	0.8540	0.5732	924.3	647.8
4	5.821	8.247	649.3	877.8	649.3	625.1	0.0	616.3	0.0	44.6	0.6021	0.7688	820.6	657.9	0.9703	0.5870	1046.4	670.1
5	-0.225	1.717	670.8	765.2	670.8	564.8	0.0	516.3	0.0	42.4	0.6236	0.6625	984.5	991.6	1.1074	0.6391	1191.3	738.1
6	-1.929	-1.163	674.3	699.0	674.3	506.9	0.0	481.3	0.0	43.5	0.6270	0.6011	1063.3	1058.4	1.1709	0.6605	1259.1	768.1
7	-2.668	-2.499	675.1	710.3	675.1	543.2	0.0	457.7	0.0	40.1	0.6279	0.6124	1102.3	1091.8	1.2022	0.7199	1292.6	835.0
8	-5.761	-3.784	675.1	721.1	675.1	570.9	0.0	440.6	0.0	37.7	0.6279	0.6228	1141.2	1125.3	1.2332	0.7700	1325.9	891.5
9	-7.737	-7.532	666.4	737.5	666.4	593.1	0.0	438.4	0.0	36.4	0.6192	0.6342	1257.3	1225.5	1.3222	0.8475	1423.0	985.6
10	-9.223	-8.831	660.1	748.1	660.1	600.5	0.0	446.1	0.0	36.5	0.6129	0.6417	1296.0	1258.9	1.3504	0.8669	1454.4	1010.6
11	-10.776	-10.196	651.9	749.8	651.9	605.6	0.0	442.1	0.0	36.0	0.6047	0.6424	1334.7	1292.3	1.3778	0.8944	1485.4	1043.9

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	β'-1 DEGREE	β'-2 DEGREE	VΘ'-1 FT/SEC	VΘ'-2 FT/SEC	PO/PO INLET
1	-1.21	3.40	16.56	56.57	39.02	49.36	0.4637	0.0074	0.0016	1.7878	99.61	99.59	45.17	-11.39	-596.7	126.9	1.7878
2	-1.15	3.15	15.95	50.32	39.65	50.69	0.4926	0.0095	0.0022	1.7675	99.45	99.42	46.67	-3.65	-643.4	40.4	1.7675
3	-1.00	3.11	14.85	44.70	40.26	52.83	0.4965	-0.0133	-0.0032	1.7679	100.85	100.94	48.01	3.31	-689.3	-37.4	1.7679
4	0.02	3.48	11.47	30.37	41.68	52.92	0.5229	0.0231	0.0057	1.7129	98.07	97.93	51.52	21.15	-820.6	-241.7	1.7129
5	1.21	3.89	9.81	15.64	42.54	48.79	0.5131	0.0859	0.0197	1.6239	91.02	90.41	55.72	40.09	-984.5	-475.3	1.6239
6	1.70	3.98	11.37	8.92	42.67	43.88	0.5115	0.1339	0.0280	1.5679	84.84	83.87	57.63	48.71	-1063.3	-577.1	1.5679
7	1.93	4.04	9.10	9.10	42.71	47.61	0.4682	0.0898	0.0189	1.5935	89.47	88.78	58.52	49.42	-1102.3	-634.1	1.5935
8	2.17	4.12	7.32	9.21	42.71	50.55	0.4367	0.0576	0.0123	1.6177	93.05	92.58	59.39	50.17	-1141.2	-684.7	1.6177
9	3.00	4.42	6.16	9.09	42.37	52.90	0.4144	0.0735	0.0157	1.6593	90.93	90.28	62.04	52.95	-1257.3	-787.1	1.6593
10	3.29	4.58	6.47	9.50	42.12	53.53	0.4139	0.0893	0.0192	1.6765	89.06	88.25	62.97	53.47	-1296.0	-812.8	1.6765
11	3.59	4.74	8.09	9.49	41.79	54.02	0.4048	0.0942	0.0202	1.6828	88.29	87.42	63.92	54.43	-1334.7	-850.3	1.6828

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.1703	1.6707	92.69	93.18	40.45	1.1703	1.6707	92.69	93.18

STATOR 1

RUN NO 3, SPEED CODE 95, POINT NO 1

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	β-1 DEGREE	β-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	18.173	14.882	1039.8	732.7	663.7	732.6	800.4	-11.6	50.5	-0.9	0.9278	0.6273	1.7110	1.1810	1.7110	1.1810
2	15.834	13.128	1004.4	728.6	666.8	728.6	751.1	0.2	48.5	0.0	0.8927	0.6245	1.7120	1.1774	1.7120	1.1774
3	13.713	11.511	982.4	728.7	679.5	728.6	709.5	12.7	46.3	1.0	0.8713	0.6253	1.7149	1.1748	1.7149	1.1748
4	8.257	7.134	857.7	699.3	657.3	699.3	611.4	-7.3	42.9	-0.6	0.7884	0.5998	1.6756	1.1693	1.6756	1.1693
5	4.090	1.657	787.6	641.8	595.5	641.1	515.4	-30.2	40.9	-2.7	0.6837	0.5487	1.5947	1.1642	1.5947	1.1642
6	-0.942	-1.117	722.7	596.1	538.8	594.3	481.7	-45.3	41.8	-4.4	0.6230	0.5078	1.5405	1.1628	1.5405	1.1628
7	-2.317	-2.363	733.6	609.7	572.6	607.8	458.6	-48.0	38.7	-4.5	0.6340	0.5206	1.5515	1.1600	1.5515	1.1600
8	-3.431	-3.410	744.3	638.1	599.0	635.9	441.9	-52.8	36.5	-4.8	0.6445	0.5465	1.5788	1.1593	1.5788	1.1593
9	-6.421	-6.313	763.5	687.0	623.2	686.0	441.0	-35.7	35.4	-3.0	0.6584	0.5875	1.6341	1.1728	1.6341	1.1728
10	-7.363	-7.254	775.5	696.4	632.1	695.8	449.3	-29.2	35.5	-2.4	0.6673	0.5940	1.6466	1.1807	1.6466	1.1807
11	-8.281	-8.210	779.1	696.6	639.2	696.3	445.6	-22.6	35.0	-1.9	0.6697	0.5935	1.6502	1.1834	1.6502	1.1834

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-2.02	0.09	11.43	51.42	51.64	67.16	0.4471	0.0992	0.0203	0.9578	85.04	91.59	92.19	91.59	92.19
2	-2.32	0.08	11.25	48.50	52.87	67.15	0.4259	0.0783	0.0166	0.9685	87.24	93.58	94.03	93.58	94.03
3	-3.22	-0.43	11.38	45.31	54.91	67.37	0.4069	0.0744	0.0164	0.9711	87.07	95.26	95.59	95.26	95.59
4	-4.08	-0.36	8.68	43.51	54.92	64.41	0.3817	0.0574	0.0140	0.9808	87.95	93.80	94.22	93.80	94.22
5	-4.65	0.40	6.61	43.55	50.79	58.00	0.3674	0.0537	0.0147	0.9860	85.81	86.82	87.63	86.82	87.63
6	-3.22	2.39	5.00	46.16	46.06	53.10	0.3850	0.0902	0.0257	0.9790	75.75	80.73	81.85	80.73	81.85
7	-6.09	-0.21	4.87	43.23	49.57	54.47	0.3719	0.1231	0.0358	0.9707	65.87	83.52	84.48	83.52	84.48
8	-8.15	-2.00	4.68	41.21	52.37	57.28	0.3415	0.1051	0.0311	0.9743	66.13	87.44	88.20	87.44	88.20
9	-9.24	-2.36	7.56	38.36	54.79	61.87	0.2973	0.0629	0.0196	0.9841	72.05	87.17	88.00	87.17	88.00
10	-9.43	-2.38	9.37	37.92	55.48	62.57	0.3000	0.0713	0.0226	0.9816	68.98	84.73	85.74	84.73	85.74
11	-10.62	-3.47	11.45	36.88	56.08	62.63	0.3004	0.0750	0.0240	0.9805	68.32	83.85	84.93	83.85	84.93

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
10152.	178.10	1.1703	1.6349	88.50	89.25	1.1703	0.9786	88.50

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA (Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 2

RUN NO 3, SPEED CODE 95, POINT NO 1

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-1	V'-1 FT/SEC	V'-2 FT/SEC
1	11.461	11.307	814.6	1245.5	814.6	941.5	-11.3	815.4	-0.8	40.8	0.7039	1.0401	791.6	830.3	0.9684	0.7863	1143.8	941.6
2	10.648	10.242	814.7	1195.8	814.7	674.9	0.0	812.2	0.0	42.8	0.7052	0.9895	814.0	847.7	0.9968	0.7258	1151.7	875.7
3	9.828	9.240	817.3	1131.7	817.2	807.3	12.3	793.1	0.9	44.5	0.7085	0.9313	837.1	865.7	1.0064	0.6670	1161.0	810.5
4	7.010	6.313	800.6	1038.2	800.5	826.2	-6.8	628.7	-0.5	37.3	0.6944	0.8551	908.7	923.3	1.0548	0.7225	1216.2	877.2
5	1.698	1.999	752.0	896.2	751.4	756.5	-29.6	480.4	-2.3	32.4	0.6501	0.7335	1007.4	1006.8	1.1072	0.7543	1280.6	921.6
6	-1.000	-0.356	705.4	795.4	704.0	684.9	-45.3	404.5	-3.7	30.5	0.6072	0.6473	1057.8	1051.2	1.1263	0.7665	1308.6	941.9
7	-2.373	-1.925	713.0	749.4	711.4	645.5	-48.0	372.8	-3.9	30.0	0.6150	0.6059	1083.1	1074.1	1.1526	0.7747	1336.3	953.1
8	-3.486	-2.606	735.5	738.1	733.6	656.2	-53.2	337.9	-4.1	27.2	0.6362	0.6015	1108.7	1097.5	1.1885	0.8181	1374.1	1003.8
9	-6.348	-5.814	783.1	775.1	782.3	703.6	-36.1	325.1	-2.6	24.7	0.6768	0.6311	1186.4	1170.2	1.2543	0.8954	1451.4	1099.6
10	-7.376	-7.042	793.7	812.5	793.1	741.8	-29.6	331.6	-2.1	24.0	0.6842	0.6613	1212.5	1195.1	1.2705	0.9266	1473.7	1138.4
11	-8.441	-8.410	793.9	805.2	793.5	727.5	-22.9	345.0	-1.6	25.3	0.6835	0.6525	1238.7	1220.5	1.2833	0.9224	1490.4	1136.3

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VΘ'-1 FT/SEC	VΘ'-2 FT/SEC	PO/PO INLET
1	-4.98	-0.66	21.30	43.60	71.26	88.50	0.3453	0.2172	0.0495	1.6418	82.75	81.52	44.50	0.90	-803.0	-14.9	2.8092
2	-5.01	-0.56	16.14	42.63	71.47	82.61	0.4076	0.2994	0.0699	1.5771	75.50	73.91	44.94	2.32	-814.0	-35.5	2.6997
3	-5.07	-0.49	12.66	40.15	71.81	76.57	0.4647	0.3694	0.0881	1.5015	68.40	66.56	45.29	5.13	-824.7	-72.6	2.5746
4	-2.82	1.97	10.10	29.27	69.72	82.71	0.4112	0.2389	0.0579	1.4860	75.97	74.60	48.93	19.66	-915.5	-294.6	2.4989
5	0.62	5.19	6.62	19.24	64.31	78.29	0.3912	0.1655	0.0385	1.4476	80.04	78.98	54.09	34.84	-1037.0	-526.4	2.3212
6	3.06	7.39	7.11	14.11	59.69	70.80	0.3802	0.1487	0.0321	1.4118	80.23	79.26	57.43	43.32	-1103.1	-646.7	2.1732
7	2.92	7.00	8.06	10.48	60.61	66.76	0.3804	0.1764	0.0364	1.3608	74.67	73.57	57.80	47.32	-1131.2	-701.3	2.1066
8	2.30	6.11	6.78	8.58	62.88	66.35	0.3568	0.1716	0.0352	1.3345	73.21	72.11	57.68	49.10	-1161.9	-759.6	2.1032
9	0.47	3.15	2.98	7.20	66.95	73.58	0.3273	0.1553	0.0348	1.3275	73.62	72.56	57.28	50.08	-1222.5	-845.1	2.1662
10	0.12	2.30	2.51	8.13	67.63	77.72	0.3150	0.1321	0.0314	1.3538	77.64	76.68	57.32	49.19	-1242.0	-863.5	2.2274
11	0.23	1.90	4.49	7.57	67.68	75.75	0.3289	0.1603	0.0388	1.3434	73.17	72.04	57.72	50.15	-1261.6	-875.5	2.2166

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.3341	2.3268	81.46	83.50	42.15	1.1399	1.4232	75.45	76.62

STATOR 2

RUN NO 3, SPEED CODE 95, POINT NO 1

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/TO1
1	8.924	0.809	1294.1	1055.8	1011.7	1041.8	807.0	-171.4	38.9	-9.3	1.0901	0.8560	2.4080	1.4003	1.4074	1.1653
2	8.053	0.712	1242.5	1040.5	946.5	1036.6	805.0	-90.2	40.6	-5.0	1.0382	0.8425	2.3881	1.3985	1.3955	1.1870
3	7.020	0.533	1179.3	1017.4	877.0	1015.3	788.4	-65.5	42.2	-3.7	0.9775	0.8228	2.3508	1.3936	1.3716	1.1854
4	4.070	0.001	1081.5	980.0	881.0	975.1	627.3	-98.2	35.5	-5.7	0.8961	0.7995	2.3152	1.3606	1.3722	1.1624
5	1.371	-0.548	939.1	922.2	806.5	920.7	481.0	-51.9	30.8	-3.2	0.7726	0.7564	2.2266	1.3299	1.3803	1.1419
6	0.010	-0.874	841.9	859.8	737.8	857.5	405.5	-63.0	28.8	-4.2	0.6884	0.7038	2.1199	1.3169	1.3718	1.1317
7	-0.800	-1.036	792.9	816.3	699.2	812.5	373.9	-78.3	28.1	-5.5	0.6476	0.6677	2.0522	1.3072	1.3283	1.1260
8	-1.797	-1.130	785.8	799.9	708.9	796.0	338.9	-78.4	25.5	-5.6	0.6434	0.6555	2.0281	1.2982	1.2915	1.1199
9	-4.499	-1.159	827.4	836.7	760.1	836.3	326.9	-24.0	23.3	-1.6	0.6774	0.6859	2.0651	1.3072	1.2665	1.1156
10	-5.218	-1.131	869.0	869.7	802.3	869.3	333.8	-26.0	22.6	-1.7	0.7117	0.7125	2.1064	1.3179	1.2806	1.1173
11	-5.916	-1.096	870.5	876.7	798.1	876.7	347.7	-7.9	23.6	-0.5	0.7105	0.7160	2.1042	1.3270	1.2753	1.1215

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-9.58	-8.02	2.49	48.20	91.13	97.32	0.3566	0.2762	0.0616	0.8540	42.35	71.05	74.32	55.01	57.09
2	-6.79	-4.77	6.28	45.60	85.93	97.11	0.3340	0.2502	0.0574	0.8742	42.44	70.60	73.90	53.10	55.22
3	-4.49	-1.99	7.15	45.84	80.16	95.34	0.3147	0.2037	0.0477	0.9050	45.12	70.04	73.35	50.65	52.76
4	-10.04	-6.17	4.57	41.27	85.52	93.92	0.2696	0.1866	0.0461	0.9232	25.97	74.99	77.71	58.03	59.83
5	-13.91	-8.60	7.07	34.02	81.39	89.90	0.1840	0.1499	0.0400	0.9500	-98.94	77.69	80.01	67.64	69.06
6	-15.03	-9.84	6.02	32.96	74.43	83.33	0.1494	0.1238	0.0341	0.9653	590.59	75.37	77.78	71.49	72.72
7	-16.13	-10.14	4.67	33.59	70.58	78.78	0.1447	0.1308	0.0365	0.9672	471.54	74.06	76.50	66.71	67.99
8	-18.53	-12.32	4.49	31.14	72.08	77.38	0.1369	0.1481	0.0419	0.9640	488.28	74.93	77.26	62.98	64.27
9	-20.51	-13.81	8.53	24.93	77.31	80.69	0.1122	0.1744	0.0512	0.9540	672.92	74.78	77.18	60.14	61.42
10	-21.83	-14.95	9.06	24.34	81.47	83.43	0.1199	0.1872	0.0554	0.9466	3816.02	74.45	76.94	62.14	63.42
11	-22.12	-15.02	11.42	24.13	80.14	83.28	0.1154	0.1777	0.0530	0.9492	1319.51	72.26	74.95	58.93	60.30

WCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
10152.	178.10	1.3341	2.1814	74.53	77.12	1.1399	0.9375	61.08

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA
(Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 3, SPEED CODE 95, POINT NO 12

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M' 1	M' 2	V' 1 FT/SEC	V' 2 FT/SEC
1	16.807	18.306	583.2	993.9	583.2	580.0	0.0	807.1	0.0	54.3	0.5371	0.8811	598.7	693.1	0.7697	0.5240	835.8	591.1
2	14.399	15.930	595.5	954.2	595.5	595.6	0.0	745.5	0.0	51.4	0.5490	0.8432	645.6	726.7	0.8098	0.5266	878.3	595.9
3	12.092	13.726	607.6	929.4	607.6	609.3	0.0	701.8	0.0	49.0	0.5609	0.8193	691.6	760.2	0.8499	0.5396	920.6	612.1
4	6.092	7.886	635.6	846.9	635.6	584.5	0.0	612.8	0.0	46.3	0.5885	0.7389	823.4	860.9	0.9631	0.5540	1040.2	635.0
5	0.368	1.414	651.0	752.7	651.0	532.6	0.0	531.8	0.0	45.0	0.6038	0.6491	987.9	995.0	1.0973	0.6088	1183.1	705.9
6	-1.278	-1.355	652.7	707.3	652.7	492.8	0.0	507.4	0.0	45.8	0.6055	0.6061	1067.0	1062.1	1.1604	0.6398	1250.8	742.0
7	-2.120	-2.619	652.9	716.1	652.9	525.8	0.0	486.2	0.0	42.8	0.6057	0.6148	1106.1	1095.6	1.1915	0.6910	1284.4	804.8
8	-3.330	-3.844	652.3	723.1	652.3	549.7	0.0	469.7	0.0	40.5	0.6051	0.6214	1145.1	1129.1	1.2225	0.7378	1317.8	858.5
9	-7.519	-7.519	642.5	732.3	642.5	564.1	0.0	466.9	0.0	39.6	0.5954	0.6260	1261.6	1229.7	1.3119	0.8110	1415.8	948.7
10	-9.066	-8.813	636.1	743.6	636.1	570.6	0.0	476.8	0.0	39.8	0.5890	0.6338	1300.5	1263.3	1.3405	0.8282	1447.7	971.7
11	-10.691	-10.179	627.9	745.7	627.9	575.8	0.0	473.9	0.0	39.3	0.5809	0.6346	1339.3	1296.8	1.3684	0.8547	1479.2	1004.3

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VΘ' 1 FT/SEC	VΘ' 2 FT/SEC	PO/PO INLET
1	-0.84	3.77	16.83	56.67	38.77	46.94	0.5215	-0.0145	-0.0031	1.7906	100.77	100.84	45.55	-11.13	-598.7	113.9	1.7906
2	-0.71	3.59	17.79	48.92	39.34	49.35	0.5293	-0.0351	-0.0081	1.7734	102.07	102.26	47.11	-1.81	-645.6	18.8	1.7734
3	-0.50	3.61	17.00	43.04	39.89	51.50	0.5276	-0.0554	-0.0132	1.7738	103.57	103.88	48.51	5.47	-691.6	-58.4	1.7738
4	0.72	4.19	13.31	29.23	41.11	51.06	0.5522	-0.0028	-0.0007	1.7311	100.20	100.23	52.22	22.99	-823.4	248.1	1.7311
5	2.09	4.77	10.74	15.60	41.75	47.53	0.5400	0.0657	0.0149	1.6712	93.52	93.06	56.61	41.01	-987.9	-463.2	1.6712
6	2.61	4.89	11.05	10.16	41.82	44.19	0.5344	0.1067	0.0224	1.6421	88.81	88.03	58.54	48.39	-1067.0	-554.7	1.6421
7	2.86	4.96	8.90	10.23	41.83	47.72	0.4945	0.0691	0.0147	1.6675	92.54	92.00	59.44	49.21	-1106.1	609.4	1.6675
8	3.10	5.05	7.32	10.14	41.80	50.38	0.4647	0.0427	0.0091	1.6891	95.25	94.91	60.32	50.18	-1145.1	659.4	1.6891
9	3.92	5.35	6.67	9.50	41.40	52.10	0.4441	0.0674	0.0142	1.7270	92.27	91.67	62.97	53.46	-1261.6	-762.8	1.7270
10	4.21	5.50	6.96	9.93	41.13	52.65	0.4453	0.0867	0.0185	1.7465	90.13	85.34	63.89	53.96	-1300.5	786.5	1.7465
11	4.50	5.65	8.57	9.92	40.78	53.17	0.4367	0.0935	0.0198	1.7547	89.21	88.34	64.83	54.91	-1339.3	-822.9	1.7547

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.1768	1.7185	94.60	94.98	39.70	1.1768	1.7185	94.60	94.98

STATOR 1

RUN NO 3, SPEED CODE 95, POINT NO 12

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	18.009	14.787	998.9	663.9	611.2	663.6	790.0	-18.5	52.4	-1.6	0.8862	0.5649	1.7222	1.1791	1.7222	1.1791
2	15.592	12.970	963.5	659.8	626.2	659.7	732.3	-9.0	49.6	-0.8	0.8525	0.5626	1.7243	1.1735	1.7243	1.1735
3	13.470	11.289	941.6	660.8	639.2	660.7	691.4	7.3	47.3	0.6	0.8315	0.5641	1.7289	1.1711	1.7289	1.1711
4	7.989	6.657	864.3	644.4	614.5	644.4	607.9	-2.1	44.7	-0.2	0.7558	0.5498	1.7081	1.1693	1.7081	1.1693
5	1.746	0.979	772.4	599.4	561.1	598.8	530.9	-25.7	43.4	-2.5	0.6676	0.5091	1.6444	1.1701	1.6444	1.1701
6	-1.214	-1.727	728.2	567.4	521.8	566.4	507.9	-34.5	44.2	-3.5	0.6254	0.4801	1.6067	1.1727	1.6067	1.1727
7	-2.493	-2.918	737.4	585.6	553.7	585.0	487.1	-26.2	41.4	-2.6	0.6345	0.4967	1.6227	1.1706	1.6227	1.1706
8	-3.546	-3.909	744.5	610.6	576.5	610.2	471.1	-22.1	39.3	-2.1	0.6414	0.5192	1.6475	1.1701	1.6475	1.1701
9	-6.422	-6.711	756.6	650.5	593.1	649.9	469.8	-27.9	38.5	-2.5	0.6484	0.5515	1.6916	1.1845	1.6916	1.1845
10	-7.351	-7.577	768.9	662.6	600.6	662.3	480.2	-21.0	38.8	-1.8	0.6572	0.5601	1.7047	1.1936	1.7047	1.1936
11	8.269	-8.397	772.4	666.6	607.1	666.5	477.6	-13.3	38.3	-1.2	0.6593	0.5628	1.7101	1.1972	1.7101	1.1972

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF A TOT-STG	%EFF P TOT-STG
1	-0.11	2.00	10.75	54.02	49.27	63.50	0.4927	0.0942	0.0193	0.9624	86.85	93.77	94.21	93.77	94.21
2	-1.29	1.11	10.45	50.33	51.52	63.58	0.4712	0.0736	0.0156	0.9722	89.03	97.02	97.23	97.02	97.23
3	-2.24	0.54	11.02	46.65	53.56	63.93	0.4514	0.0675	0.0149	0.9755	89.38	98.89	98.96	98.89	98.96
4	-2.34	1.38	9.09	44.85	53.07	62.16	0.4209	0.0378	0.0092	0.9882	92.87	97.61	97.77	97.61	97.77
5	-2.11	2.94	6.86	45.85	49.51	56.71	0.4171	0.0569	0.0155	0.9856	87.48	89.77	90.44	89.77	90.44
6	-0.79	4.82	5.87	47.71	46.27	53.02	0.4337	0.0997	0.0285	0.9769	77.78	83.99	85.00	83.99	85.00
7	-3.44	2.44	6.82	43.93	49.69	54.98	0.4102	0.1233	0.0360	0.9706	71.12	86.91	87.75	86.91	87.75
8	-5.31	0.84	7.35	41.38	52.23	57.62	0.3775	0.1077	0.0320	0.9739	71.61	90.10	90.75	90.10	90.75
9	-6.14	0.74	8.08	40.94	54.05	61.24	0.3474	0.0853	0.0266	0.9790	71.92	87.79	88.64	87.79	88.64
10	-6.18	0.87	9.95	40.58	54.65	62.12	0.3471	0.0970	0.0307	0.9756	67.77	84.97	86.04	84.97	86.04
11	-7.30	-0.15	12.16	39.48	55.25	62.44	0.3428	0.1008	0.0323	0.9745	66.18	83.94	85.09	83.94	85.09

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
10187.	174.80	1.1768	1.6819	90.56	91.21	1.1768	0.9787	90.56

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA (Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 2

RUN NO 3, SPEED CODE 95, POINT NO 12

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VØ-1 FT/SEC	VØ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	11.605	11.159	733.9	1093.3	733.7	715.9	-18.0	826.4	-1.4	49.0	0.6289	0.8900	794.3	833.1	0.9380	0.5828	1094.6	715.9
2	10.833	9.964	735.4	1081.0	735.3	701.0	-8.9	823.0	-0.7	49.5	0.6319	0.8799	816.8	850.6	0.9500	0.5710	1105.6	701.5
3	9.930	8.825	741.5	1067.2	741.4	703.0	7.1	803.0	0.5	48.7	0.6383	0.8697	839.9	868.7	0.9599	0.5753	1115.1	706.0
4	6.438	5.531	738.5	980.3	738.5	702.1	-2.0	684.1	-0.2	44.3	0.6361	0.7962	911.8	926.5	1.0119	0.6032	1174.9	742.7
5	0.868	1.109	692.7	832.8	692.3	604.8	-25.6	572.5	-2.1	43.4	0.5935	0.6672	1010.9	1010.2	1.0679	0.5982	1246.4	746.6
6	-1.841	-1.034	658.7	762.4	657.8	553.1	-34.4	524.7	-3.0	43.5	0.5618	0.6069	1061.4	1054.8	1.0901	0.6098	1278.1	766.1
7	-3.028	-2.058	672.4	752.2	671.9	543.7	-26.2	519.9	-2.2	43.7	0.5748	0.5988	1086.9	1077.8	1.1114	0.6201	1300.1	779.0
8	-4.039	-3.014	693.9	759.1	693.6	564.8	-22.2	507.2	-1.8	41.9	0.5946	0.6052	1112.9	1101.3	1.1395	0.6535	1329.8	819.7
9	-7.112	-6.275	732.0	779.0	731.5	614.6	-28.2	478.7	-2.2	37.8	0.6256	0.6179	1190.5	1174.2	1.2147	0.7361	1421.3	928.2
10	-8.160	-7.566	741.6	788.0	741.3	626.1	-21.2	478.4	-1.6	37.3	0.6318	0.6230	1216.6	1199.2	1.2293	0.7548	1442.8	954.8
11	-8.956	-8.775	741.8	768.4	741.7	585.9	-13.5	497.2	-1.0	40.2	0.6310	0.6036	1242.9	1224.7	1.2411	0.7337	1459.0	934.1

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VØ'-1 FT/SEC	VØ'-2 FT/SEC	PO/PO INLET
1	-1.64	2.68	20.94	47.30	67.74	78.90	0.5257	0.1928	0.0440	1.6972	86.22	85.16	47.84	0.54	-812.4	6.8	2.9229
2	-1.65	2.80	16.07	46.05	68.18	78.64	0.5447	0.1907	0.0445	1.7077	86.26	85.19	48.30	2.25	-825.7	27.6	2.9440
3	-2.00	2.58	12.86	43.03	68.82	80.51	0.5403	0.1537	0.0367	1.7160	88.64	87.75	48.36	5.33	-832.9	-65.7	2.9661
4	-0.64	4.16	9.49	32.06	67.93	83.90	0.5178	0.0791	0.0192	1.6906	93.26	92.75	51.11	19.05	-913.8	242.4	2.8907
5	2.79	7.37	7.68	20.37	62.75	73.25	0.5363	0.0985	0.0226	1.6251	90.35	89.67	56.26	35.90	-1036.5	437.7	2.6730
6	4.64	8.97	7.55	15.25	59.15	66.90	0.5300	0.0999	0.0214	1.6006	89.65	88.95	59.01	43.75	-1095.8	-530.1	2.5719
7	3.98	8.06	6.43	13.17	60.72	66.07	0.5281	0.1172	0.0250	1.5823	87.50	86.67	58.86	45.69	-1113.0	-557.9	2.5676
8	3.15	6.96	4.06	12.15	62.98	69.14	0.5072	0.1157	0.0250	1.5737	87.17	86.33	58.53	46.38	-1134.7	594.1	2.5917
9	2.15	4.83	1.32	10.55	66.17	75.24	0.4703	0.1230	0.0285	1.5641	85.30	84.35	58.96	48.41	-1218.7	-695.5	2.6454
10	1.82	4.00	2.23	10.11	66.81	76.35	0.4631	0.1223	0.0292	1.5620	85.14	84.18	59.02	48.91	-1237.8	720.8	2.6628
11	1.86	3.55	5.40	8.31	66.89	70.71	0.4911	0.1732	0.0411	1.5370	79.11	77.81	59.37	51.06	-1256.4	727.5	2.6286

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.3147	2.7250	88.24	89.76	40.32	1.1682	1.6206	87.43	88.26

STATOR 2

RUN NO 3, SPEED CODE 95, POINT NO 12

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VØ-1 FT/SEC	VØ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	8.557	0.792	1123.1	728.5	769.4	728.2	818.1	19.8	47.0	1.6	0.9182	0.5687	2.7610	1.4040	1.6033	1.1902
2	7.405	0.653	1109.3	745.6	751.7	745.4	815.8	19.6	47.6	1.5	0.9066	0.5838	2.7983	1.4007	1.6237	1.1927
3	6.274	0.403	1094.4	773.3	749.7	773.1	797.2	17.8	46.9	1.3	0.8952	0.6086	2.8580	1.3938	1.6540	1.1899
4	3.577	-0.477	1005.3	744.7	739.1	744.6	681.5	9.6	42.7	0.7	0.8191	0.5893	2.8231	1.3727	1.6494	1.1740
5	0.940	-1.097	857.2	633.3	638.3	633.2	572.2	-8.0	41.9	-0.7	0.6886	0.4982	2.6440	1.3632	1.6044	1.1653
6	-0.494	-1.222	787.1	568.9	586.6	568.7	524.9	-14.2	41.8	-1.4	0.6281	0.4457	2.5551	1.3616	1.5923	1.1608
7	-1.291	-1.230	777.0	562.3	576.9	562.1	520.5	-14.9	42.0	-1.5	0.6200	0.4408	2.5458	1.3591	1.5711	1.1608
8	-2.107	-1.228	783.9	580.4	556.8	580.2	508.2	-15.6	40.4	-1.5	0.6265	0.4559	2.5670	1.3568	1.5612	1.1595
9	-4.135	-1.245	809.2	629.6	650.6	629.5	481.1	12.7	36.5	1.2	0.6437	0.4931	2.6174	1.3743	1.5482	1.1606
10	-4.764	-1.234	822.1	641.6	666.5	641.0	481.3	27.9	35.9	2.5	0.6522	0.5010	2.6267	1.3849	1.5412	1.1604
11	-5.611	-1.177	809.3	616.8	635.8	616.1	500.7	29.3	38.3	2.7	0.6382	0.4785	2.5842	1.3969	1.5112	1.1668

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-1.43	0.13	13.37	45.47	82.97	93.62	0.5114	0.1309	0.0296	0.9449	82.52	83.01	85.22	75.42	76.98
2	0.13	2.15	12.76	46.05	82.60	96.56	0.6929	0.1171	0.0269	0.9516	83.48	84.97	86.95	76.59	78.12
3	0.27	2.77	12.16	45.60	84.20	101.38	0.4616	0.0883	0.0207	0.9641	86.42	88.52	90.06	80.93	82.22
4	-2.82	1.04	11.06	42.00	86.90	99.00	0.4280	0.0705	0.0175	0.9748	87.55	92.29	93.32	87.84	88.66
5	-2.86	2.45	9.58	42.57	76.32	83.20	0.4468	0.0502	0.0134	0.9862	90.55	87.87	89.39	86.97	87.80
6	-2.61	3.18	8.79	43.22	70.09	74.04	0.4681	0.0292	0.0081	0.9932	94.42	84.74	86.59	87.89	88.66
7	-2.21	3.79	8.65	43.54	69.27	73.20	0.4709	0.0365	0.0102	0.9917	93.05	84.96	86.77	85.21	86.11
8	-3.66	2.54	8.57	41.92	72.19	75.81	0.4500	0.0368	0.0105	0.9915	92.62	86.37	88.03	84.63	85.56
9	-7.30	-0.60	11.32	35.35	78.46	81.41	0.3923	0.0423	0.0124	0.9897	90.43	84.26	86.21	82.35	83.39
10	-8.59	-1.71	13.27	33.38	79.89	82.26	0.3833	0.0538	0.0159	0.9866	87.85	82.28	84.48	81.48	82.57
11	-7.43	-0.33	14.65	35.58	75.21	77.93	0.4127	0.0708	0.0211	0.9831	85.06	78.22	80.88	74.58	76.00

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
10187.	174.80	1.3147	2.6731	86.27	88.01	1.1682	0.9806	83.66

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

(Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 3, SPEED CODE 95, POINT NO 13

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	V0-1 FT/SEC	V0-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-1	V'-1 FT/SEC	V'-2 FT/SEC
1	15.795	18.389	539.7	1003.0	539.7	550.5	0.0	838.4	0.0	56.8	0.4949	0.8876	597.4	691.6	0.7183	0.5042	805.1	569.7
2	14.428	16.075	551.3	961.9	551.3	553.6	0.0	786.6	0.0	54.9	0.5061	0.8471	644.2	725.1	0.7784	0.4906	847.9	557.0
3	12.238	13.905	562.8	934.0	562.8	562.1	0.0	746.0	0.0	53.0	0.5173	0.8198	690.1	758.6	0.8185	0.4935	890.5	562.2
4	6.551	8.109	591.0	856.9	591.0	551.4	0.0	655.9	0.0	50.0	0.5447	0.7445	821.6	859.0	0.9328	0.5106	1012.1	567.6
5	0.942	1.684	610.4	762.7	610.4	502.9	0.0	573.4	0.0	48.7	0.5637	0.6546	985.8	992.9	1.0707	0.5621	1159.5	654.9
6	-0.977	-1.089	614.4	732.5	614.4	482.4	0.0	551.3	0.0	48.8	0.5676	0.6252	1064.7	1059.8	1.1356	0.5983	1229.2	700.9
7	-2.004	-2.379	615.4	734.2	615.4	503.8	0.0	534.1	0.0	46.7	0.5686	0.6269	1103.7	1093.2	1.1675	0.6426	1263.7	752.6
8	-3.287	-3.836	615.6	737.6	615.6	524.6	0.0	518.5	0.0	44.7	0.5688	0.6300	1142.6	1126.7	1.1992	0.6860	1297.9	803.2
9	-7.700	-7.447	607.9	743.4	607.9	545.4	0.0	505.1	0.0	42.7	0.5612	0.6320	1258.9	1227.1	1.2907	0.7693	1398.0	904.8
10	-9.318	-8.794	602.1	753.8	602.1	550.2	0.0	515.3	0.0	43.0	0.5556	0.6389	1297.7	1260.6	1.3199	0.7651	1430.6	926.4
11	-10.876	-10.188	594.8	757.1	594.8	533.6	0.0	537.1	0.0	45.1	0.5484	0.6378	1336.4	1294.0	1.3486	0.7801	1462.8	926.1

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	V0'-1 FT/SEC	V0'-2 FT/SEC	PO/PO INLET
1	1.32	5.93	13.00	62.66	36.62	44.16	0.5387	0.0464	0.0099	1.7937	97.77	97.59	47.70	-14.95	-597.4	146.8	1.7937
2	1.43	5.73	13.27	55.58	37.21	45.47	0.5695	0.0438	0.0100	1.7768	97.66	97.48	49.25	-6.34	-644.2	61.4	1.7768
3	1.62	5.73	12.81	49.35	37.78	47.16	0.5790	0.0277	0.0066	1.7769	98.38	98.26	50.63	1.28	-690.1	-12.6	1.7769
4	2.68	6.15	10.54	33.96	39.13	48.29	0.5966	0.0409	0.0102	1.7589	97.02	96.79	54.18	20.23	-821.6	-203.1	1.7589
5	3.71	6.39	9.56	18.40	40.02	45.38	0.5842	0.0932	0.0215	1.7139	91.69	91.06	58.23	39.63	-985.8	-419.4	1.7139
6	4.08	6.36	9.17	13.50	40.19	43.96	0.5701	0.1163	0.0253	1.7081	88.99	88.15	60.01	46.51	-1064.7	-508.5	1.7081
7	4.27	6.37	7.66	12.87	40.24	46.38	0.5394	0.0938	0.0204	1.7271	90.86	90.15	60.85	47.98	-1103.7	-559.1	1.7271
8	4.45	6.41	6.35	12.46	40.25	48.76	0.5113	0.0726	0.0158	1.7470	92.72	92.14	61.67	49.21	-1142.6	-608.2	1.7470
9	5.15	6.57	6.08	11.32	39.90	51.34	0.4783	0.0803	0.0172	1.7884	91.51	90.81	64.19	52.88	-1258.9	-722.0	1.7884
10	5.40	6.69	6.48	11.59	39.64	51.76	0.4803	0.1008	0.0217	1.8086	89.38	88.48	65.08	53.48	-1297.7	-745.3	1.8086
11	5.64	6.79	8.37	11.24	39.31	49.85	0.4999	0.1477	0.0315	1.8163	84.65	83.33	65.97	54.71	-1336.4	-756.9	1.8163

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.1913	1.7622	91.79	92.40	38.02	1.1913	1.7622	91.79	92.40

STATOR 1

RUN NO 3, SPEED CODE 95, POINT NO 13

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	V0-1 FT/SEC	V0-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	18.125	14.803	1003.6	592.6	577.6	592.4	820.8	-16.7	55.0	-1.6	0.8882	0.4996	1.7240	1.1859	1.7240	1.1859
2	15.761	12.955	966.6	590.5	580.9	590.5	772.6	-2.5	53.2	-0.2	0.8519	0.4983	1.7274	1.1829	1.7274	1.1829
3	13.613	11.210	941.9	590.9	589.2	590.8	734.9	10.9	51.3	1.1	0.8277	0.4990	1.7311	1.1815	1.7311	1.1815
4	8.087	6.439	870.5	590.1	578.4	589.9	650.6	12.0	48.3	1.2	0.7577	0.4984	1.7317	1.1808	1.7317	1.1808
5	1.895	0.690	779.7	549.6	529.4	549.6	572.4	-1.7	47.2	-0.2	0.6705	0.4623	1.6844	1.1830	1.6844	1.1830
6	-0.934	-1.923	750.7	532.2	508.9	532.2	551.8	-3.6	47.3	-0.4	0.6420	0.4461	1.6648	1.1877	1.6648	1.1877
7	-2.213	-2.998	752.8	559.0	529.5	559.0	535.2	6.6	45.3	0.7	0.6440	0.4696	1.6884	1.1873	1.6884	1.1873
8	-3.336	-3.927	756.5	578.7	549.4	578.5	520.1	14.2	43.5	1.4	0.6474	0.4869	1.7073	1.1874	1.7073	1.1874
9	-6.264	-6.574	764.9	610.8	571.8	610.5	508.2	18.5	41.7	1.7	0.6519	0.5127	1.7426	1.1990	1.7426	1.1990
10	-7.180	-7.411	776.6	624.3	577.8	623.9	518.8	21.6	42.0	2.0	0.6598	0.5225	1.7576	1.2086	1.7576	1.2086
11	-8.157	-8.275	781.7	619.9	563.9	619.6	541.3	19.6	44.0	1.8	0.6602	0.5153	1.7521	1.2232	1.7521	1.2232

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	2.49	4.60	10.73	56.64	46.31	58.30	0.5724	0.0962	0.0197	0.9615	88.43	90.50	91.19	90.50	91.19
2	2.33	4.73	10.98	53.41	47.54	58.41	0.5523	0.0739	0.0157	0.9722	90.61	92.37	92.92	92.37	92.92
3	1.81	4.59	11.44	50.28	49.16	58.62	0.5356	0.0708	0.0156	0.9745	90.59	93.46	93.93	93.46	93.93
4	1.34	5.06	10.43	47.19	50.21	58.61	0.4962	0.0467	0.0114	0.9853	92.76	93.89	94.33	93.89	94.33
5	1.71	6.76	9.13	47.39	47.30	53.90	0.4941	0.0655	0.0179	0.9831	88.65	87.77	88.61	87.77	88.61
6	2.29	7.91	8.97	47.71	45.93	51.74	0.5017	0.1045	0.0299	0.9748	81.51	83.46	84.58	83.46	84.58
7	0.52	6.40	10.07	44.65	48.26	54.57	0.4630	0.0979	0.0286	0.9761	80.99	86.15	87.11	86.15	87.11
8	-1.14	5.01	10.84	42.06	50.55	56.65	0.4345	0.0963	0.0286	0.9763	79.85	88.05	88.90	88.05	88.90
9	-2.90	3.98	12.29	39.98	53.20	59.70	0.4032	0.1041	0.0325	0.9741	75.13	86.36	87.37	86.36	87.37
10	-2.92	4.13	13.77	40.03	53.68	60.75	0.4013	0.1123	0.0355	0.9715	72.61	83.76	84.98	83.76	84.98
11	-1.67	5.47	15.13	42.14	51.97	59.63	0.4236	0.1397	0.0447	0.9646	67.42	77.79	79.45	77.79	79.45

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
10165.	167.40	1.1913	1.7199	87.55	88.45	1.1913	0.9760	87.55

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

(Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 2

RUN NO 3, SPEED CODE 95, POINT NO 13

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	V0-1 FT/SEC	V0-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	11.528	11.112	650.4	1040.6	650.2	656.7	-16.2	807.1	-1.4	50.7	0.5510	0.8407	792.6	831.4	0.8793	0.5310	1037.8	657.2
2	10.651	9.871	654.1	1029.2	654.1	654.3	-2.4	794.4	-0.2	50.4	0.5552	0.8320	815.0	846.7	0.8685	0.5308	1046.9	656.5
3	9.609	8.672	660.0	1017.2	659.9	668.0	10.7	767.1	0.9	48.9	0.5608	0.8237	838.1	866.8	0.8993	0.5469	1058.3	675.4
4	5.825	5.215	669.0	938.1	668.9	649.2	11.8	677.2	1.0	46.2	0.5692	0.7563	909.9	924.5	0.9526	0.5601	1119.8	694.7
5	0.370	0.864	630.0	824.5	630.0	568.8	-1.7	596.9	-0.2	46.4	0.5335	0.6567	1008.7	1008.1	1.0083	0.5590	1190.8	701.8
6	-2.277	-1.317	611.6	773.0	611.6	534.3	-3.2	558.6	-0.3	46.2	0.5160	0.6124	1059.1	1052.6	1.0342	0.5764	1225.9	727.6
7	-3.423	-2.350	632.9	766.1	632.9	527.6	7.1	555.5	0.6	46.4	0.5351	0.6067	1084.5	1075.5	1.0564	0.5866	1249.6	740.6
8	-4.358	-3.295	648.8	770.3	648.6	535.4	14.6	553.8	1.3	45.9	0.5493	0.6100	1110.1	1098.9	1.0778	0.6050	1273.2	764.1
9	-6.844	-6.180	679.4	791.2	679.1	565.7	18.7	553.1	1.6	44.2	0.5738	0.6225	1187.9	1171.7	1.1421	0.6595	1352.2	838.3
10	-7.658	-7.232	693.0	796.7	692.6	579.6	21.9	546.6	1.8	43.2	0.5836	0.6246	1214.0	1196.7	1.1612	0.6830	1378.8	870.9
11	-8.504	-8.429	689.9	782.4	689.6	580.9	19.8	524.1	1.	41.9	0.5772	0.6103	1240.3	1222.1	1.1727	0.7064	1401.8	908.1

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	V0'-1 FT/SEC	V0'-2 FT/SEC	PO/PO INLET
1	1.65	5.96	22.50	49.02	62.37	74.65	0.5517	0.1839	0.0419	1.6854	87.69	86.76	51.13	2.10	-608.9	-24.2	2.9055
2	1.35	5.80	18.55	46.57	62.90	75.66	0.5542	0.1575	0.0367	1.6942	89.25	88.43	51.30	4.73	-817.4	-54.3	2.9263
3	1.08	5.66	16.00	42.96	63.48	78.74	0.5355	0.1044	0.0247	1.7029	92.62	92.04	51.43	8.47	-827.4	-99.7	2.9478
4	1.53	6.39	11.29	32.50	64.12	78.97	0.5334	0.0802	0.0193	1.6592	93.42	92.93	53.34	20.85	-898.1	-247.3	2.8731
5	4.59	9.16	7.64	22.19	59.72	69.88	0.5531	0.1065	0.0245	1.6148	90.17	89.49	58.06	35.86	-1010.4	-411.1	2.7189
6	5.69	10.03	6.51	17.34	57.61	65.64	0.5423	0.1090	0.0237	1.5898	89.29	88.57	60.06	42.72	-1062.4	-493.9	2.6496
7	4.66	8.76	5.28	15.02	59.92	65.06	0.5406	0.1300	0.0282	1.5677	86.76	85.90	59.55	44.54	-1077.5	-520.0	2.6493
8	3.36	7.77	3.13	13.96	61.63	66.29	0.5318	0.1377	0.0303	1.5618	85.64	84.71	59.35	45.45	-1095.6	-545.1	2.6674
9	2.96	5.64	0.34	12.34	64.36	70.03	0.5163	0.1602	0.0378	1.5663	82.63	81.50	59.77	47.43	-1169.3	-618.6	2.7286
10	2.55	4.73	1.46	11.61	65.33	71.61	0.5048	0.1565	0.0379	1.5633	82.62	81.49	59.75	48.14	-1192.1	-650.0	2.7460
11	2.91	4.61	4.45	10.32	64.29	71.32	0.4865	0.1377	0.0334	1.5557	84.13	83.11	60.43	50.10	-1220.4	-698.0	2.7262

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	T02/T01	P02/P01	EFF-AD ROTOR %	EFF-P ROTOR %
1.3884	2.7688	86.63	88.38	37.99	1.1655	1.6099	87.49	88.30

STATOR 2

RUN NO 3, SPEED CODE 95, POINT NO 13

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	V0-1 FT/SEC	V0-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	T02/ T01
1	8.602	0.870	1064.9	658.0	703.8	657.2	799.1	31.3	48.9	2.7	0.8632	0.5106	2.7580	1.4046	1.6000	1.1842
2	7.525	0.812	1052.2	679.9	697.6	679.1	787.6	33.0	48.7	2.8	0.8532	0.5294	2.7992	1.4002	1.6213	1.1832
3	6.510	0.662	1039.0	706.5	706.8	705.7	761.6	32.9	47.3	2.7	0.8438	0.5529	2.8515	1.3929	1.6479	1.1786
4	4.054	0.087	958.5	677.9	680.9	677.6	674.5	19.1	44.8	1.6	0.7746	0.5322	2.8205	1.3762	1.6274	1.1672
5	1.347	-0.462	844.8	565.1	596.2	585.1	596.5	-3.9	44.9	-0.4	0.6742	0.4560	2.6889	1.3757	1.5934	1.1633
6	-0.014	-0.589	794.0	539.1	564.1	539.0	558.8	-7.7	44.7	-0.8	0.6303	0.4192	2.6308	1.3765	1.5781	1.1594
7	-0.770	-0.622	787.5	534.5	557.6	534.5	556.1	-2.9	44.9	-0.3	0.6249	0.4156	2.6248	1.3758	1.5596	1.1587
8	-1.617	-0.665	792.4	546.2	565.6	546.2	555.0	0.9	44.4	0.1	0.6268	0.4250	2.6381	1.3764	1.5490	1.1592
9	-4.230	-0.995	818.4	600.9	600.6	600.1	556.0	31.1	42.8	3.0	0.6456	0.4655	2.6957	1.3978	1.5483	1.1664
10	-5.100	-1.125	827.3	614.6	618.0	613.1	549.9	43.6	41.7	4.1	0.6507	0.4748	2.7071	1.4081	1.5415	1.1660
11	-5.937	-1.149	818.4	590.7	625.5	589.1	527.8	43.5	40.3	4.2	0.6406	0.4537	2.6671	1.4190	1.5220	1.1607

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	0.44	2.00	14.54	46.17	78.67	86.91	0.5447	0.1309	0.0296	0.9495	83.10	82.79	85.02	77.50	78.93
2	1.26	3.28	14.03	45.91	79.41	90.58	0.5191	0.1108	0.0255	0.9579	84.85	85.11	87.07	80.31	81.60
3	0.66	3.17	13.51	44.64	82.09	95.23	0.4863	0.0842	0.0197	0.9685	87.58	88.51	90.05	85.36	86.34
4	-0.76	3.11	11.93	43.19	81.82	92.39	0.4679	0.0662	0.0164	0.9780	89.24	90.85	92.07	86.74	89.49
5	0.19	5.50	9.91	45.29	72.73	78.96	0.5037	0.0574	0.0154	0.9847	90.53	86.63	88.33	86.66	87.50
6	0.29	6.08	9.40	45.51	68.59	72.26	0.5237	0.0428	0.0118	0.9898	92.91	84.27	86.23	86.79	87.61
7	0.65	6.65	9.45	45.19	68.04	71.63	0.5217	0.0398	0.0112	0.9908	93.31	84.19	86.16	84.80	85.71
8	0.37	6.58	10.20	44.33	69.27	73.26	0.5088	0.0395	0.0112	0.9908	93.14	84.56	86.49	83.16	84.16
9	-0.98	5.71	13.13	39.86	73.34	79.59	0.4539	0.0463	0.0136	0.9847	90.94	82.05	84.33	79.43	80.65
10	-2.74	4.14	14.84	37.66	75.20	80.73	0.4391	0.0567	0.0167	0.9860	88.73	80.35	82.86	78.75	80.00
11	-5.48	1.62	18.15	36.04	75.45	76.54	0.4560	0.0896	0.0267	0.9784	83.43	76.91	79.81	78.78	79.99

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	T02/T01	P02/P01	EFF-AD STAGE %
10165.	167.40	1.3884	2.7168	84.70	86.73	1.1655	0.9812	83.77

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

(Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 3, SPEED CODE 95, POINT NO 4

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-1	V'-1 FT/SEC	V'-2 FT/SEC
1	16.687	16.484	530.7	971.4	530.7	549.8	0.0	800.9	0.0	55.6	0.4863	0.8590	597.0	691.2	0.7320	0.4957	798.8	560.6
2	14.230	16.258	541.9	933.2	541.9	545.2	0.0	757.4	0.0	54.3	0.4970	0.8212	643.8	724.6	0.7719	0.4806	841.5	546.2
3	12.008	14.166	552.6	905.6	552.6	542.4	0.0	725.2	0.0	53.3	0.5074	0.7936	689.7	758.0	0.8115	0.4762	883.8	543.4
4	6.240	8.544	579.6	843.5	579.6	543.7	0.0	644.9	0.0	49.9	0.5336	0.7327	821.1	858.4	0.9252	0.5074	1005.0	584.1
5	0.171	2.094	597.9	768.6	597.9	505.2	0.0	579.3	0.0	48.9	0.5514	0.6596	985.1	992.2	1.0627	0.5599	1152.3	652.4
6	-1.918	-0.752	600.5	731.9	600.5	463.1	0.0	566.7	0.0	50.7	0.5539	0.6232	1064.0	1059.0	1.1270	0.5756	1221.7	675.9
7	-2.879	-2.120	600.8	738.2	600.8	492.8	0.0	549.7	0.0	48.1	0.5543	0.6291	1102.5	1092.5	1.1586	0.6247	1255.9	733.2
8	-4.071	-3.469	600.4	743.5	600.4	512.9	0.0	536.3	0.0	46.4	0.5539	0.6334	1141.8	1125.5	1.1901	0.6645	1290.1	780.0
9	-7.965	-7.428	592.2	750.2	592.2	516.5	0.0	544.1	0.0	46.4	0.5458	0.6340	1258.1	1226.2	1.2816	0.7231	1390.5	855.6
10	-9.340	-8.783	586.9	760.2	586.9	525.4	0.0	549.4	0.0	46.2	0.5406	0.6409	1296.8	1259.7	1.3113	0.7448	1423.4	883.5
11	-10.818	-10.162	579.9	760.5	579.9	534.8	0.0	540.7	0.0	45.2	0.5339	0.6405	1335.5	1293.1	1.3404	0.7774	1456.0	923.1

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VΘ'-1 FT/SEC	VΘ'-2 FT/SEC	PO/PO INLET
1	1.76	6.37	16.65	59.46	36.16	45.24	0.5357	-0.0304	-0.0066	1.7879	101.49	101.63	48.15	-11.31	-597.0	109.7	1.7879
2	1.87	6.17	16.16	53.14	36.73	45.77	0.5712	-0.0127	-0.0029	1.7717	100.69	100.76	49.69	-3.45	-643.8	32.8	1.7717
3	2.09	6.19	15.01	47.62	37.28	46.33	0.5917	-0.0026	-0.0006	1.7678	100.15	100.18	51.10	3.47	-689.7	-32.9	1.7678
4	3.17	6.64	11.79	33.20	38.59	48.34	0.5949	0.0075	0.0019	1.7670	99.43	99.40	54.68	21.47	-821.1	-213.6	1.7670
5	4.22	6.50	8.99	19.47	39.45	46.04	0.5864	0.0753	0.0175	1.7389	93.36	92.84	58.73	39.27	-985.1	412.9	1.7389
6	4.63	6.92	9.41	13.82	39.57	42.34	0.5937	0.1310	0.0284	1.7191	87.24	86.90	60.57	46.75	-1064.0	-492.3	1.7191
7	4.85	6.95	7.44	13.67	39.58	45.52	0.5575	0.1048	0.0229	1.7426	90.00	89.21	61.43	47.75	-1102.9	-542.8	1.7426
8	5.05	7.00	6.01	13.40	39.56	47.74	0.5328	0.0909	0.0199	1.7632	91.12	90.41	62.27	48.87	-1141.8	587.6	1.7632
9	5.73	7.15	6.02	11.96	39.19	48.34	0.5212	0.1323	0.0284	1.8026	86.74	85.62	64.78	52.81	-1258.1	-682.2	1.8026
10	5.94	7.23	6.43	12.20	38.94	49.26	0.5165	0.1432	0.0309	1.8248	85.63	84.39	65.62	53.43	-1296.8	-710.3	1.8248
11	6.15	7.31	8.14	12.00	38.61	50.33	0.5005	0.1406	0.0301	1.8347	85.60	84.34	66.49	54.49	-1335.5	-752.4	1.8347

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	T02/T01	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.1941	1.7736	91.58	92.21	37.45	1.1941	1.7736	91.58	92.21

STATOR 1

RUN NO 3, SPEED CODE 95, POINT NO 4

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	T02/ T01
1	18.355	15.086	971.9	571.2	574.3	570.5	784.0	-28.0	54.0	-2.8	0.8595	0.4825	1.7135	1.1776	1.7135	1.1776
2	16.171	13.480	937.4	570.2	570.3	570.0	744.0	-14.7	52.7	-1.5	0.8254	0.4819	1.7192	1.1761	1.7192	1.1761
3	14.121	11.925	912.7	571.6	568.1	571.6	714.3	-0.9	51.6	-0.1	0.8006	0.4830	1.7252	1.1764	1.7252	1.1764
4	8.782	7.593	856.1	574.4	569.1	574.4	639.6	2.9	48.4	0.3	0.7449	0.4852	1.7335	1.1776	1.7335	1.1776
5	2.856	2.274	784.6	542.0	530.6	541.6	578.1	-21.2	47.5	-2.2	0.6746	0.4554	1.6997	1.1843	1.6997	1.1843
6	-0.007	-0.341	749.0	529.7	489.2	528.8	567.2	-30.7	49.2	-3.3	0.6390	0.4430	1.6866	1.1925	1.6866	1.1925
7	-1.436	-1.532	755.7	551.0	517.4	550.4	550.7	-26.2	46.8	-2.7	0.6451	0.4616	1.7061	1.1926	1.7061	1.1926
8	-2.698	-2.625	761.5	569.2	537.0	569.1	539.9	-10.2	45.2	-1.0	0.6500	0.4771	1.7241	1.1944	1.7241	1.1944
9	-6.097	-5.930	771.0	596.9	543.1	596.9	547.3	-4.1	45.3	-0.4	0.6530	0.4972	1.7540	1.2141	1.7540	1.2141
10	-7.190	-7.016	782.0	608.6	552.7	608.6	553.2	3.9	45.1	0.4	0.6608	0.5097	1.7668	1.2221	1.7668	1.2221
11	-8.214	-8.097	783.7	611.4	563.2	611.4	545.0	-0.5	44.2	-0.0	0.6617	0.5077	1.7718	1.2243	1.7718	1.2243

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	1.44	3.55	9.55	56.78	47.25	56.66	0.5764	0.1089	0.0223	0.9583	86.78	93.60	94.06	93.60	94.06
2	1.85	4.25	9.76	54.16	47.74	56.89	0.5574	0.0822	0.0174	0.9704	89.50	95.05	95.39	95.05	95.39
3	2.10	4.88	10.31	51.71	48.28	57.19	0.5411	0.0701	0.0155	0.9759	90.62	95.55	95.86	95.55	95.86
4	1.37	5.09	9.56	48.08	50.20	57.63	0.5070	0.0615	0.0150	0.9811	90.63	95.78	96.08	95.78	96.08
5	1.95	7.00	7.07	45.65	47.92	53.70	0.5167	0.0860	0.0235	0.9774	85.79	88.74	89.53	88.74	89.53
6	4.20	9.82	6.04	52.54	44.31	51.94	0.5211	0.0783	0.0224	0.9812	86.26	83.61	84.75	83.61	84.75
7	1.99	7.87	6.66	49.52	47.33	54.24	0.4940	0.0860	0.0251	0.9790	83.99	85.55	86.57	85.55	86.57
8	0.57	6.72	8.41	46.20	49.49	56.20	0.4676	0.0898	0.0267	0.9778	82.29	86.55	87.52	86.55	87.52
9	0.68	7.56	10.16	45.65	50.26	58.45	0.4509	0.1087	0.0339	0.9729	76.44	81.28	82.68	81.28	82.68
10	0.19	7.24	12.14	44.76	51.20	59.40	0.4465	0.1260	0.0399	0.9680	72.36	79.42	80.98	79.42	80.98
11	-1.44	5.71	13.27	44.24	52.33	59.68	0.4452	0.1350	0.0433	0.9656	70.13	79.08	80.67	79.08	80.67

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	T02/T01	PO2/PO1	EFF-AD STAGE %
10158.	164.90	1.1941	1.7290	87.18	88.11	1.1941	0.9749	87.18

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA (Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 2

RUN NO 3, SPEED CODE 95, POINT NO 4

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	11.743	11.142	613.0	1026.9	612.4	580.2	-27.4	847.3	-2.6	55.5	0.5195	0.8265	752.1	830.8	0.8671	0.4672	1023.0	580.4
2	11.081	9.940	618.8	1015.5	618.7	588.7	-14.7	827.5	-1.4	54.5	0.5251	0.8178	814.5	848.2	C.8779	0.4743	1034.5	589.1
3	10.224	8.782	626.9	1005.4	626.9	616.1	-1.0	794.5	-0.1	52.2	0.5323	0.8111	837.6	866.2	C.8890	0.5004	1047.0	620.2
4	6.886	5.471	643.7	930.9	643.7	614.5	3.1	698.7	0.3	48.7	0.5471	0.7479	909.2	923.9	C.9447	0.5260	1111.5	654.4
5	1.874	1.367	619.3	819.3	619.0	558.0	-20.8	599.9	-1.9	47.1	0.5237	0.6504	1008.0	1007.4	1.0153	0.5485	1200.7	690.9
6	-0.733	-0.707	607.7	763.6	606.9	530.7	-30.7	549.1	-2.9	45.9	0.5114	0.6021	1058.4	1051.8	1.0493	0.5764	1246.8	731.0
7	-1.975	-1.737	625.4	755.9	624.8	530.2	-26.5	538.8	-2.4	45.4	0.5271	0.5954	1083.8	1074.7	1.0738	0.5938	1274.0	753.8
8	-3.098	-2.732	642.1	758.2	642.0	532.9	-10.9	539.4	-1.0	45.3	0.5415	0.5972	1109.3	1098.2	1.0890	0.6081	1291.2	772.2
9	-6.424	-6.009	671.2	775.9	671.1	575.1	-4.3	520.9	-0.4	42.0	0.5628	0.6071	1187.1	1176.5	1.1465	0.6790	1367.4	867.9
10	-7.571	-7.271	681.5	782.9	681.5	583.1	3.8	522.4	0.3	41.7	0.5700	0.6106	1213.2	1195.8	1.1610	0.6948	1388.2	890.8
11	-8.571	-8.545	682.5	769.7	682.5	559.1	-0.4	529.0	-0.0	43.3	0.5703	0.5971	1239.4	1221.2	1.1826	0.6904	1415.3	889.9

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VΘ'-1 FT/SEC	VΘ'-2 FT/SEC	PO/PO INLET
1	3.69	8.01	18.78	54.79	59.74	65.91	0.6316	0.2814	0.0641	1.6836	82.33	81.06	53.17	-1.62	-819.5	16.5	2.8843
2	3.33	7.78	15.82	51.28	60.47	68.07	0.6243	0.2460	0.0574	1.6920	84.17	82.96	53.28	2.00	-829.2	-20.6	2.9073
3	2.92	7.50	14.15	46.65	61.25	72.71	0.5919	0.1789	0.0426	1.7033	88.05	87.12	53.27	6.62	-838.6	-71.7	2.9369
4	2.94	7.73	10.57	34.56	62.68	75.34	0.5718	0.1242	0.0300	1.6665	90.33	85.61	54.69	20.13	-906.1	-225.1	2.8902
5	5.51	10.09	7.92	22.83	59.47	69.63	0.5693	0.1268	0.0290	1.6250	88.59	87.79	58.98	36.15	-1028.8	-407.5	2.7652
6	6.47	10.81	7.21	17.43	57.77	66.27	0.5497	0.1223	0.0263	1.5988	88.13	87.32	60.85	43.42	-1089.1	-502.7	2.6975
7	5.71	9.79	6.00	15.33	59.68	66.47	0.5417	0.1319	0.0283	1.5854	86.72	85.84	60.59	45.25	-1110.3	-535.9	2.6988
8	4.74	8.55	3.96	13.85	61.43	67.16	0.5346	0.1331	0.0288	1.5793	86.27	85.36	60.12	46.28	-1120.3	-558.8	2.7173
9	3.70	6.38	1.27	12.14	63.60	72.57	0.4978	0.1168	0.0271	1.5856	87.12	86.26	60.51	48.37	-1191.4	-650.0	2.7788
10	3.30	5.48	2.30	11.52	64.37	73.44	0.4926	0.1165	0.0278	1.5849	86.95	86.07	60.50	48.98	-1209.4	-673.4	2.7984
11	3.56	5.25	5.30	10.11	64.53	69.96	0.5110	0.1590	0.0378	1.5694	82.16	80.99	61.07	50.96	-1239.8	-692.3	2.7804

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.3570	2.6007	85.85	87.72	37.27	1.1699	1.6198	86.38	87.28

STATOR 2

RUN NO 3, SPEED CODE 95, POINT NO 4

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	8.464	0.823	1045.5	594.1	624.0	593.8	838.8	20.6	53.6	2.0	0.8435	0.4581	2.7390	1.4095	1.5988	1.1968
2	7.264	0.729	1033.5	618.4	628.6	618.0	820.4	22.7	52.7	2.1	0.8342	0.4784	2.7780	1.4054	1.6176	1.1946
3	6.157	0.565	1022.7	649.4	651.2	648.9	788.6	24.1	50.6	2.1	0.8269	0.5048	2.8301	1.3984	1.6425	1.1889
4	3.533	-0.052	947.2	646.7	642.8	646.3	695.7	21.9	47.3	1.9	0.7629	0.5055	2.8376	1.3833	1.6370	1.1750
5	0.667	-0.749	837.4	573.8	584.9	573.8	599.3	-0.6	45.7	-0.1	0.6660	0.4463	2.7329	1.3826	1.6034	1.1685
6	-0.650	-0.912	783.6	533.1	558.8	533.1	549.4	-6.2	44.5	-0.7	0.6190	0.4130	2.6782	1.3860	1.5857	1.1639
7	-1.341	-0.936	776.6	525.6	558.7	525.6	539.5	-4.7	44.0	-0.5	0.6130	0.4068	2.6672	1.3868	1.5711	1.1629
8	-2.091	-0.926	780.0	535.8	562.2	535.8	540.7	-1.1	43.9	-0.1	0.6156	0.4149	2.6774	1.3877	1.5596	1.1625
9	-4.263	-1.034	804.2	598.6	610.4	597.9	523.6	28.4	40.6	2.7	0.6309	0.4618	2.7433	1.4086	1.5665	1.1621
10	-4.987	-1.109	815.2	614.9	623.0	613.4	525.7	41.9	40.2	3.9	0.6378	0.4731	2.7586	1.4189	1.5630	1.1622
11	-5.797	-1.123	807.9	591.0	607.3	589.5	532.8	42.2	41.4	4.1	0.6290	0.4522	2.7187	1.4302	1.5347	1.1683

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	5.15	6.71	13.80	51.62	70.01	79.62	0.6080	0.1351	0.0305	0.9496	83.84	81.15	83.58	72.42	74.16
2	5.31	7.33	13.35	50.63	71.83	83.52	0.5792	0.1176	0.0271	0.9568	85.19	83.30	85.48	75.20	76.80
3	3.95	6.46	12.97	48.47	75.99	88.68	0.5414	0.0950	0.0223	0.9656	87.19	86.56	88.35	80.17	81.50
4	1.70	5.63	12.26	45.37	78.02	89.50	0.4985	0.0638	0.0158	0.9793	90.22	90.23	91.54	85.88	86.82
5	0.97	6.27	10.24	45.73	72.36	78.65	0.5120	0.0561	0.0150	0.9854	90.85	86.67	88.35	85.17	86.12
6	0.08	5.87	9.56	45.14	69.11	72.43	0.5219	0.0437	0.0121	0.9898	92.74	83.93	85.96	85.35	86.27
7	-0.26	5.73	9.65	44.48	69.36	71.25	0.5209	0.0491	0.0137	0.9890	91.80	83.34	85.44	84.06	85.03
8	-0.20	6.01	9.99	43.97	70.12	72.64	0.5097	0.0580	0.0165	0.9870	90.07	83.53	85.61	82.79	83.82
9	-3.16	3.54	12.89	37.92	75.99	80.21	0.4363	0.0511	0.0150	0.9880	89.67	81.49	83.88	83.83	84.82
10	-4.25	2.63	14.67	36.31	77.24	81.74	0.4217	0.0579	0.0171	0.9862	87.99	79.96	82.56	83.31	84.33
11	-4.38	2.72	16.02	37.27	74.61	77.52	0.4509	0.0954	0.0284	0.9777	81.78	76.58	79.57	76.70	78.13

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
10158.	164.90	1.3570	2.7472	84.00	86.08	1.1699	0.9809	82.70

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

(Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 3, SPEED CODE 10, POINT NO 1

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	16.615	18.289	639.5	1061.8	639.5	656.3	0.0	833.1	0.0	51.7	0.5924	0.9446	629.8	729.1	0.8314	0.5929	897.5	664.5
2	14.279	15.899	653.9	1027.9	653.9	664.9	0.0	783.9	0.0	49.7	0.6067	0.9105	679.1	764.3	0.8747	0.5692	942.7	665.2
3	11.304	13.687	667.9	1004.9	667.9	677.9	0.0	741.8	0.0	47.6	0.6207	0.8878	727.5	799.6	0.9177	0.6011	987.6	680.4
4	5.476	7.826	700.1	923.2	700.1	656.2	0.0	649.4	0.0	44.7	0.6531	0.8004	866.1	905.5	1.0389	0.6153	1113.7	704.4
5	-0.830	1.356	717.1	794.9	717.1	588.5	0.0	534.2	0.0	42.2	0.6703	0.6859	1039.1	1046.5	1.1602	0.6733	1262.5	780.2
6	-2.204	-1.546	718.7	700.3	715.7	503.4	0.0	466.9	0.0	44.0	0.6720	0.5993	1122.3	1117.1	1.2461	0.5902	1332.7	806.5
7	-2.681	-2.839	713.4	711.5	719.4	542.4	0.0	460.5	0.0	40.3	0.6727	0.6107	1165.4	1152.3	1.2790	0.7546	1367.8	879.1
8	-3.634	-4.072	719.5	728.4	719.5	581.3	0.0	439.0	0.0	37.1	0.6728	0.6272	1204.4	1187.6	1.3119	0.8162	1402.7	947.8
9	-7.792	-7.605	706.9	746.3	708.9	611.7	0.0	427.4	0.0	34.9	0.6620	0.6409	1327.0	1293.4	1.4050	0.9106	1504.5	1060.2
10	-9.315	-8.920	701.2	750.7	701.2	609.0	0.0	439.0	0.0	35.7	0.6542	0.6422	1367.9	1328.7	1.4341	0.9223	1537.1	1078.2
11	-10.829	-10.237	691.7	750.4	691.7	610.0	0.0	437.0	0.0	33.5	0.6446	0.6407	1408.7	1364.0	1.4624	0.9474	1569.3	1109.7

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VΘ'-1 FT/SEC	VΘ'-2 FT/SEC	PO/PO INLET
1	-2.05	2.56	18.96	53.33	41.28	52.26	0.4779	-0.0072	-0.0016	1.8702	100.39	100.44	44.34	-8.99	-629.7	104.1	1.8702
2	-1.97	2.33	17.92	47.53	41.87	53.99	0.4591	-0.0095	-0.0022	1.8578	100.58	100.65	45.85	-1.68	-679.1	19.5	1.8578
3	-1.77	2.32	16.40	42.35	42.43	56.16	0.5021	-0.0252	-0.0060	1.8593	101.65	101.81	47.22	4.87	-727.5	-57.8	1.8593
4	-0.69	2.07	11.63	29.59	43.63	56.08	0.5301	0.0304	0.0076	1.8040	97.46	97.26	50.90	21.31	-866.1	-256.1	1.8040
5	0.87	3.55	10.76	14.35	44.22	51.21	0.5119	0.0952	0.0216	1.6823	89.53	89.20	55.36	41.03	-1039.1	-512.3	1.6823
6	1.44	3.72	14.05	5.99	44.26	43.80	0.5119	0.1532	0.0363	1.5895	82.28	81.11	57.38	51.39	-1122.3	-630.2	1.5895
7	1.69	3.79	11.60	6.36	44.30	47.87	0.4660	0.1064	0.0213	1.6169	87.27	86.41	58.27	51.91	-1163.4	-691.9	1.6169
8	1.72	3.88	9.32	6.96	44.30	52.04	0.4269	0.0597	0.0122	1.6517	92.65	92.13	59.14	52.18	-1204.4	-748.7	1.6517
9	2.01	4.24	7.93	7.14	43.94	55.45	0.3940	0.0566	0.0116	1.7001	92.80	92.16	61.86	54.72	-1327.0	-866.0	1.7001
10	3.14	4.44	8.54	7.28	43.67	54.98	0.3999	0.0663	0.0177	1.7084	89.14	88.32	62.82	55.54	-1367.9	-889.6	1.7084
11	3.47	4.62	10.21	7.25	43.33	55.01	0.3936	0.0973	0.0198	1.7109	87.65	86.68	63.81	56.55	-1408.7	-927.0	1.7109

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	T02/T01	P02/P01	EFF-AD ROTOR %	EFF-P ROTOR %
1.1822	1.7271	92.69	93.22	[illegible]	1.1822	1.7271	92.69	93.22

STATOR 1

RUN NO 3, SPEED CODE 10, POINT NO 1

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	T02/ T01
1	16.131	14.823	1071.9	743.9	695.5	741.1	815.6	-64.7	49.7	-4.9	0.9551	0.6337	1.7548	1.1947	1.7548	1.1947
2	15.797	13.024	1042.2	744.6	702.3	740.6	770.0	-76.3	47.7	-5.8	0.9253	0.6350	1.7625	1.1921	1.7625	1.1921
3	13.716	11.368	1022.1	753.6	714.7	747.9	730.7	-92.3	45.7	-7.0	0.9054	0.6439	1.7787	1.1902	1.7787	1.1902
4	6.221	6.949	945.7	756.4	692.4	754.1	644.2	-58.6	42.9	-4.4	0.8287	0.6471	1.7801	1.1883	1.7801	1.1883
5	1.753	1.466	819.5	683.6	622.2	681.1	533.4	-58.8	40.6	-4.9	0.7093	0.5630	1.6644	1.1786	1.6644	1.1786
6	-1.034	-1.465	727.0	612.7	539.6	608.2	487.1	-74.7	42.1	-7.0	0.6239	0.5204	1.5731	1.1728	1.5731	1.1728
7	-3.117	-2.844	737.2	614.1	575.1	608.5	461.2	-82.7	38.8	-7.7	0.6345	0.5225	1.5701	1.1691	1.5701	1.1691
8	-4.132	-3.950	753.4	647.1	611.5	641.8	440.1	-82.6	35.8	-7.3	0.6506	0.5526	1.6004	1.1677	1.6004	1.1677
9	-6.619	-6.697	773.2	696.8	642.5	695.9	430.1	-37.0	33.9	-3.1	0.6659	0.5951	1.6513	1.1784	1.6513	1.1784
10	-7.445	-7.529	779.2	702.6	641.6	702.0	442.1	-27.4	34.7	-2.2	0.6686	0.5978	1.6570	1.1877	1.6570	1.1877
11	-8.303	-8.357	780.6	701.0	644.5	700.6	440.4	-22.7	34.5	-1.9	0.6667	0.5954	1.6567	1.1913	1.6567	1.1913

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-2.82	-0.71	7.39	54.60	54.75	68.62	0.4672	0.1386	0.0282	0.9386	79.86	89.44	90.22	89.44	90.22
2	-3.39	-0.69	5.39	53.58	56.36	68.98	0.4520	0.1212	0.0256	0.9486	81.16	91.46	92.10	91.46	92.10
3	-3.82	-1.03	3.40	52.69	58.40	70.04	0.4347	0.1039	0.0228	0.9572	82.58	93.97	94.42	93.97	94.42
4	-4.08	-0.36	4.84	47.35	58.23	70.65	0.3748	0.0282	0.0069	0.9896	93.91	95.05	95.42	95.05	95.42
5	-4.33	0.12	4.38	45.51	53.35	62.33	0.3485	0.0008	0.0002	0.9957	99.64	87.56	88.38	87.56	88.38
6	-2.94	2.66	2.36	49.08	46.31	54.67	0.3793	0.0712	0.0202	0.9831	81.66	79.92	81.14	79.92	81.14
7	-6.04	-0.16	1.64	46.51	50.10	54.70	0.3858	0.1517	0.0439	0.9635	58.16	81.33	82.45	81.33	82.45
8	-3.30	-2.66	2.09	43.15	54.04	57.99	0.3496	0.1396	0.0411	0.9653	54.73	85.72	86.61	85.72	86.61
9	-10.72	-3.84	7.49	36.95	57.37	62.85	0.2900	0.1144	0.0356	0.9705	48.60	86.35	87.26	86.35	87.26
10	-10.25	-3.21	9.53	36.93	57.00	63.03	0.2914	0.1169	0.0370	0.9697	47.04	82.65	83.82	82.65	83.82
11	-11.16	-4.01	11.45	36.34	57.15	62.78	0.2939	0.1225	0.0352	0.9663	46.20	81.06	82.33	81.06	82.33

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	T02/T01	P02/P01	EFF-AD STAGE %
10715.	185.55	1.1822	1.6841	88.09	88.91	1.1822	0.9751	88.09

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

(Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 2

RUN NO 3, SPEED CODE 10, POINT NO 1

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	11.440	11.272	839.7	1245.6	837.3	936.1	-62.9	819.4	-4.3	41.0	0.7232	1.0224	835.5	876.3	1.0577	0.7715	1228.1	939.2
2	10.543	10.172	845.6	1190.9	842.3	892.4	-74.4	788.5	-5.0	41.4	0.7297	0.9701	859.1	894.6	1.0851	0.7321	1257.3	898.7
3	9.646	9.141	857.9	1123.9	853.1	848.7	-90.3	736.8	-6.0	40.9	0.7421	0.9090	883.5	913.7	1.1199	0.7012	1294.6	866.9
4	6.794	6.296	872.7	1044.1	870.7	848.1	-58.1	609.0	-3.8	35.7	0.7570	0.8466	959.1	974.5	1.1615	0.7466	1338.9	923.5
5	1.932	2.325	807.6	917.0	805.5	780.5	-58.1	481.4	-4.1	31.7	0.6981	0.7420	1063.3	1062.6	1.1935	0.7874	1380.7	973.1
6	-1.006	-0.028	734.6	810.6	730.8	700.4	-74.4	408.0	-5.8	30.2	0.6313	0.6528	1116.4	1109.5	1.2008	0.7963	1397.2	991.5
7	-2.521	-1.271	728.4	755.8	723.6	658.2	-83.0	371.5	-6.5	29.4	0.6266	0.6077	1143.2	1133.6	1.2249	0.8097	1423.8	1007.0
8	-3.808	-2.471	751.6	751.5	747.0	666.3	-82.9	347.5	-6.3	27.5	0.6468	0.6055	1170.2	1156.4	1.2592	0.8457	1458.9	1049.5
9	-6.764	-5.911	790.3	789.7	789.4	694.5	-37.3	376.0	-2.7	28.3	0.6817	0.6353	1252.2	1235.1	1.3042	0.8687	1511.9	1104.7
10	-7.702	-7.155	795.1	825.0	794.6	729.0	-27.7	366.2	-2.0	27.8	0.6833	0.6625	1279.7	1261.4	1.3148	0.9148	1529.9	1139.0
11	-8.039	-8.505	791.6	812.8	791.4	705.6	-23.0	411.4	-1.7	30.1	0.6791	0.6513	1307.3	1288.2	1.3177	0.8974	1548.0	1125.4

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	Vθ'-1 FT/SEC	Vθ'-2 FT/SEC	PO/PO INLET
1	-2.55	1.76	23.86	43.47	73.34	91.68	0.4020	0.2594	0.0590	1.6871	79.27	77.71	46.92	3.46	-898.4	-56.9	2.9006
2	-2.05	2.40	20.58	41.14	73.55	87.49	0.4479	0.3287	0.0763	1.6106	72.14	70.25	47.90	6.76	-955.5	-106.1	2.8397
3	-1.57	3.01	19.29	37.02	75.08	83.39	0.4843	0.3908	0.0916	1.5158	64.21	62.08	48.78	11.76	-973.7	-176.9	2.6948
4	-2.24	2.56	13.79	26.16	76.07	87.49	0.4384	0.2924	0.0691	1.4764	68.76	67.02	49.51	23.35	-1017.1	-365.5	2.6341
5	3.05	5.43	8.47	17.63	69.00	83.45	0.4046	0.1923	0.0437	1.4737	76.61	75.31	54.33	36.69	-1121.4	-581.2	2.4746
6	4.36	8.40	8.80	13.43	61.90	74.83	0.3909	0.1589	0.0333	1.4615	79.40	78.29	58.43	45.01	-1190.8	-701.5	2.3056
7	4.54	8.62	9.87	10.29	61.50	70.22	0.3881	0.1770	0.0353	1.4201	75.64	74.42	59.42	49.13	-1226.2	-762.2	2.2245
8	3.77	7.58	6.19	8.65	63.57	71.44	0.3725	0.1858	0.0370	1.3897	72.79	71.52	59.15	50.51	-1253.1	-810.8	2.2221
9	1.63	4.31	3.82	7.53	67.74	74.36	0.3637	0.1939	0.0427	1.3014	70.59	69.23	58.44	50.91	-1289.5	-859.1	2.2806
10	1.41	3.59	3.39	8.55	67.62	77.91	0.3526	0.1721	0.0401	1.4100	74.15	72.88	58.61	50.07	-1307.4	-875.2	2.3363
11	1.64	3.34	5.40	8.10	67.51	74.49	0.3780	0.2182	0.0518	1.3996	68.26	66.73	59.15	51.06	-1330.4	-876.7	2.3188

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.3707	2.4585	78.80	81.27	42.84	1.1595	1.4599	71.17	72.66

STATOR 2

RUN NO 3, SPEED CODE 10, POINT NO 1

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/TO1
1	8.931	0.796	1297.4	1082.9	1012.3	1072.1	811.5	-152.5	39.0	-8.1	1.0744	0.8669	2.5480	1.4409	1.4525	1.2058
2	8.098	0.710	1241.9	1066.6	965.3	1053.4	782.9	-166.8	39.3	-9.0	1.0209	0.8527	2.5245	1.4389	1.4348	1.2065
3	7.159	0.583	1174.8	1038.9	917.9	1028.8	733.2	-144.6	38.8	-8.0	0.9572	0.8294	2.4776	1.4334	1.3973	1.2039
4	4.546	0.243	1089.2	1003.2	904.1	999.7	607.4	-83.8	34.0	-4.8	0.8885	0.8075	2.4494	1.4009	1.3699	1.1780
5	1.895	-0.260	960.9	946.0	830.9	942.1	482.5	-85.7	30.1	-5.2	0.7815	0.7069	2.3682	1.3656	1.3913	1.1568
6	0.029	-0.510	858.6	874.7	754.4	870.8	410.0	-82.8	28.5	-5.4	0.6948	0.7080	2.2443	1.3486	1.4097	1.1474
7	-0.145	-0.643	802.8	820.2	710.9	816.6	373.0	-74.8	27.7	-5.2	0.6484	0.6629	2.1577	1.3377	1.3828	1.1426
8	-1.095	-0.739	797.7	807.1	717.9	803.7	347.8	-74.2	25.8	-5.3	0.6458	0.6538	2.1400	1.3265	1.3457	1.1379
9	-3.886	-0.935	840.9	844.6	751.3	843.2	377.7	-49.4	26.7	-3.3	0.6801	0.6837	2.1853	1.3402	1.3255	1.1387
10	-4.746	-0.993	879.5	871.8	789.1	870.5	388.5	-46.7	26.2	-3.1	0.7106	0.7041	2.2186	1.3533	1.3394	1.1406
11	-5.645	-1.033	880.2	871.6	776.5	671.4	414.4	-16.0	28.2	-1.0	0.7066	0.6993	2.2016	1.3696	1.3289	1.1498

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-9.44	-7.88	3.74	47.05	94.68	102.14	0.3354	0.2752	0.0616	0.8570	36.55	69.19	72.87	54.31	56.61
2	-8.13	-6.11	2.26	48.29	90.91	100.65	0.3259	0.2482	0.0564	0.8777	35.69	68.73	72.44	52.25	54.58
3	-7.82	-5.32	2.85	46.82	86.84	98.52	0.3008	0.1974	0.0458	0.9105	38.36	68.00	71.72	48.84	51.16
4	-11.58	-7.71	5.53	38.77	90.38	98.37	0.2448	0.1783	0.0441	0.9276	17.72	72.51	75.68	52.59	54.61
5	-14.57	-9.26	5.11	35.33	86.63	94.60	0.1922	0.1650	0.0434	0.9443	-98.15	76.16	78.82	62.75	64.43
6	-15.90	-10.12	4.79	33.92	78.72	87.25	0.1672	0.1562	0.0430	0.9549	-710.93	74.32	77.01	69.57	70.99
7	-16.58	-10.58	4.94	32.87	74.05	81.61	0.1488	0.1446	0.0404	0.9636	484.87	72.57	75.32	67.69	69.12
8	-16.24	-12.03	4.64	31.08	75.19	80.64	0.1390	0.1470	0.0416	0.9642	593.64	73.73	76.34	63.87	65.33
9	-17.10	-10.40	6.82	30.04	78.29	84.08	0.1423	0.1541	0.0451	0.9591	1094.00	73.39	76.09	60.16	61.09
10	-18.21	-11.34	7.71	29.31	81.83	86.16	0.1519	0.1700	0.0502	0.9517	-862.59	72.16	75.05	61.60	63.13
11	-17.58	-10.48	10.88	29.20	79.20	84.85	0.1559	0.1796	0.0536	0.9491	-679.56	68.24	71.49	56.18	57.88

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
10715.	185.55	1.3707	2.3065	72.53	75.50	1.1595	0.9382	58.43

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

(Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 3, SPEED CODE 10, POINT NO 2

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	16.683	18.247	643.7	1076.4	643.7	662.6	0.0	848.2	0.0	52.0	0.5965	0.9584	628.8	728.0	0.8339	0.5996	894.9	673.4
2	14.183	15.814	658.0	1042.6	658.0	668.5	0.0	800.0	0.0	50.1	0.6108	0.9241	678.1	763.2	0.8771	0.5934	944.9	669.5
3	11.827	13.562	671.9	1019.2	671.9	679.1	0.0	760.0	0.0	48.2	0.6247	0.9005	726.4	798.4	0.9199	0.6009	989.5	680.2
4	5.598	7.581	703.3	935.4	703.3	659.5	0.0	663.3	0.0	45.1	0.6563	0.8170	864.8	904.2	1.0402	0.6132	1114.7	702.1
5	-0.592	0.983	718.8	805.5	718.8	591.4	0.0	547.0	0.0	42.8	0.6721	0.6947	1037.5	1045.0	1.1802	0.6667	1262.2	773.1
6	-1.955	-1.932	719.6	713.4	719.6	509.6	0.0	499.1	0.0	44.4	0.6729	0.6101	1120.6	1115.5	1.2453	0.6840	1331.8	799.7
7	-2.436	-3.198	719.7	725.2	719.7	553.3	0.0	468.9	0.0	40.3	0.6730	0.6226	1161.7	1150.7	1.2779	0.7538	1366.5	878.1
8	-3.491	-4.409	719.0	740.5	719.0	592.0	0.0	444.9	0.0	36.9	0.6722	0.6379	1202.7	1185.9	1.3101	0.8170	1401.2	948.4
9	-7.713	-7.921	705.9	754.7	705.9	615.7	0.0	436.4	0.0	35.3	0.6589	0.6477	1325.1	1291.5	1.4015	0.9044	1501.4	1053.8
10	-9.241	-9.112	697.6	762.0	697.6	615.3	0.0	449.6	0.0	36.1	0.6506	0.6514	1365.9	1326.8	1.4303	0.9159	1533.7	1071.4
11	-10.784	-10.343	687.6	763.6	687.6	617.8	0.0	448.8	0.0	35.9	0.6404	0.6515	1406.6	1362.0	1.4583	0.9406	1565.7	1102.6

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	Vθ'-1 FT/SEC	Vθ'-2 FT/SEC	PO/PO INLET
1	-2.26	2.33	17.66	54.40	41.45	51.94	0.4754	0.0171	0.0037	1.8723	99.07	98.99	44.11	-10.29	-628.8	120.3	1.8723
2	-2.19	2.10	16.45	48.77	42.04	53.63	0.4995	0.0148	0.0034	1.8609	99.12	95.05	45.63	-3.15	-678.1	36.8	1.8609
3	-2.00	2.11	14.77	43.77	42.58	55.59	0.5074	0.0028	0.0007	1.8623	99.81	99.81	47.01	3.24	-726.4	-38.4	1.8623
4	-0.76	2.70	10.36	30.70	43.75	55.84	0.5354	0.0494	0.0124	1.8070	95.97	95.64	50.74	20.04	-864.8	-240.8	1.8070
5	0.76	3.44	9.82	15.18	44.28	51.07	0.5200	0.1131	0.0260	1.6841	88.32	87.47	55.28	40.10	-1037.5	-498.0	1.6841
6	1.37	3.65	13.08	6.88	44.31	44.06	0.5188	0.1671	0.0337	1.5947	81.09	79.84	57.30	50.42	-1120.6	-616.3	1.5947
7	1.64	3.74	10.64	7.26	44.31	48.62	0.4678	0.1123	0.0230	1.6246	86.81	85.90	58.22	50.96	-1161.7	-681.8	1.6246
8	1.90	3.85	8.54	7.72	44.29	52.79	0.4269	0.0630	0.0131	1.6583	92.35	91.81	59.12	51.39	-1202.7	-741.0	1.6583
9	2.66	4.30	7.43	7.70	43.84	55.41	0.3990	0.0708	0.0147	1.6997	91.13	90.46	61.92	54.22	-1325.1	-855.2	1.6997
10	3.23	4.52	7.90	8.01	43.54	55.11	0.4054	0.1009	0.0210	1.7107	87.55	86.59	62.91	54.90	-1365.9	-877.2	1.7107
11	3.57	4.72	9.49	8.08	43.18	55.26	0.3994	0.1124	0.0233	1.7149	86.00	84.92	63.90	55.83	-1406.6	-913.2	1.7149

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/AL LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.1858	1.7298	91.16	91.80	42.15	1.1858	1.7298	91.16	91.80

STATOR 1

RUN NO 3, SPEED CODE 10, POINT NO 2

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/TO1
1	18.161	14.716	1088.2	724.7	703.4	722.0	830.3	-62.6	49.9	-4.9	0.9709	0.6152	1.7561	1.1980	1.7561	1.1980
2	15.736	12.768	1058.9	727.2	709.8	725.9	785.8	-43.6	48.0	-3.4	0.9411	0.6181	1.7658	1.1958	1.7658	1.1958
3	13.600	10.982	1038.6	739.1	719.9	739.0	748.6	-15.1	46.2	-1.2	0.9205	0.6293	1.7847	1.1946	1.7847	1.1946
4	7.948	6.094	960.1	745.6	699.2	745.6	657.9	-6.2	43.2	-0.5	0.8415	0.6360	1.7848	1.1920	1.7848	1.1920
5	1.351	0.172	830.6	681.0	625.9	680.9	546.0	-13.6	41.1	-1.1	0.7184	0.5756	1.6651	1.1826	1.6691	1.1826
6	-2.046	-2.838	740.3	613.8	546.8	611.5	499.1	-52.0	42.4	-4.9	0.6350	0.5205	1.5786	1.1763	1.5786	1.1763
7	-3.432	-4.199	750.9	613.2	586.3	610.8	469.2	-53.5	38.7	-5.0	0.6466	0.5211	1.5734	1.1716	1.5734	1.1716
8	-4.349	-5.237	765.3	644.4	622.0	643.2	445.9	-39.5	35.7	-3.5	0.6612	0.5457	1.6012	1.1697	1.6012	1.1697
9	-6.717	-7.704	779.9	700.1	644.5	699.8	439.2	-21.1	34.4	-1.7	0.6712	0.5972	1.6528	1.1818	1.6528	1.1818
10	-7.516	-8.335	787.9	711.0	644.6	710.8	453.0	-15.3	35.2	-1.2	0.6754	0.6043	1.6599	1.1920	1.6599	1.1920
11	-8.343	-8.835	790.3	713.9	648.1	713.7	452.4	-14.9	35.0	-1.2	0.6763	0.6058	1.6557	1.1962	1.6597	1.1962

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-2.64	-0.53	7.43	54.82	54.58	67.44	0.4952	0.1365	0.0278	0.9381	81.64	88.09	88.97	88.09	88.97
2	-2.82	-0.42	7.82	51.43	56.18	68.19	0.4734	0.1179	0.0250	0.9488	83.12	90.04	90.79	90.04	90.79
3	-3.35	-0.56	9.23	47.34	58.02	69.77	0.4444	0.0977	0.0216	0.9588	84.95	92.41	92.99	92.41	92.99
4	-3.77	-0.05	8.80	43.71	58.16	70.28	0.3849	0.0238	0.0058	0.9910	95.40	93.67	94.15	93.67	94.15
5	-4.43	0.61	8.17	42.21	53.21	62.39	0.3493	-0.0050	-0.0014	1.0015	101.13	86.18	87.10	86.18	87.10
6	-2.61	3.00	4.49	47.27	46.63	55.00	0.3845	0.0722	0.0206	0.9823	82.46	78.99	80.27	78.99	80.27
7	-6.08	-0.20	4.37	43.74	50.84	54.95	0.3892	0.1574	0.0458	0.9610	59.92	80.56	81.73	80.56	81.73
8	-8.90	-2.75	5.90	39.23	54.75	58.14	0.3484	0.1482	0.0439	0.9622	56.58	84.82	85.77	84.82	85.77
9	-10.24	-3.36	8.81	36.12	57.18	63.00	0.2892	0.1088	0.0339	0.9716	52.84	84.90	85.91	84.90	85.91
10	-9.72	-2.67	10.53	36.46	56.90	63.46	0.2882	0.1141	0.0361	0.9699	48.19	81.08	82.36	81.08	82.36
11	-10.58	-3.43	12.11	36.25	57.09	63.44	0.2881	0.1222	0.0391	0.9678	43.80	79.34	80.73	79.34	80.73

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
10699.	185.60	1.1858	1.6874	86.72	87.64	1.1858	0.9755	86.72

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

(Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 2

RUN NO 3, SPEED CODE 10, POINT NO 2

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VØ-1 FT/SEC	VØ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-I	V'-1 FT/SEC	V'-2 FT/SEC
1	11.424	11.164	841.4	1155.1	839.2	823.5	-60.8	810.0	-4.1	44.4	0.7237	0.9348	834.3	875.0	1.0554	0.6686	1226.9	826.1
2	10.460	9.961	850.9	1141.0	849.9	811.0	-42.1	802.6	-2.8	44.6	0.7336	0.9231	857.9	893.3	1.0671	0.6603	1237.8	816.1
3	9.455	8.813	868.1	1124.8	868.0	802.6	-14.4	788.0	-1.0	44.4	0.7505	0.9107	882.2	912.4	1.0788	0.6576	1247.9	812.2
4	5.950	5.556	886.2	1036.7	886.2	798.2	-6.1	661.5	-0.4	39.7	0.7689	0.8389	957.7	973.1	1.1359	0.6934	1309.3	856.9
5	0.515	1.255	810.2	855.6	810.1	667.5	-13.9	541.7	-1.0	39.1	0.6993	0.6886	1061.7	1061.0	1.1623	0.6775	1346.5	845.7
6	-2.419	-0.942	734.3	752.6	732.4	591.7	-52.8	465.0	-4.1	38.1	0.6302	0.5990	1114.8	1107.8	1.1828	0.6954	1378.3	873.7
7	-3.688	-2.087	728.9	741.9	727.0	585.9	-52.5	455.2	-4.1	37.8	0.6265	0.5911	1141.5	1132.0	1.2016	0.7132	1398.0	895.2
8	-5.214	-3.273	748.3	763.1	747.3	611.5	-39.2	456.5	-3.0	36.7	0.6450	0.6094	1168.4	1156.7	1.2241	0.7423	1420.2	929.6
9	-8.602	-7.102	777.9	787.7	777.7	640.2	-20.9	458.9	-1.5	35.6	0.6689	0.6257	1250.3	1233.3	1.2813	0.7981	1490.3	1004.8
10	-9.469	-8.347	777.9	776.7	777.7	622.7	-15.5	464.2	-1.1	36.6	0.6658	0.6132	1277.8	1259.5	1.2918	0.7975	1509.1	1010.1
11	-9.337	-9.310	770.6	742.6	770.4	565.8	-15.1	481.0	-1.1	40.3	0.6579	0.5812	1305.4	1286.3	1.3052	0.7703	1528.8	984.1

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VØ'-1 FT/SEC	VØ'-2 FT/SEC	PO/PO INLET
1	-2.72	1.59	24.90	42.26	73.33	90.23	0.4918	0.1660	0.0377	1.7580	86.92	85.84	46.75	4.50	-895.1	-65.0	3.0874
2	-3.36	1.09	20.18	40.23	74.34	90.39	0.5030	0.1577	0.0366	1.7561	87.30	86.26	46.59	6.36	-899.9	-90.7	3.1020
3	-4.43	0.14	16.32	37.13	75.95	91.18	0.5055	0.1378	0.0326	1.7447	88.50	87.56	45.92	8.75	-896.6	-124.4	3.1146
4	-4.31	0.48	11.77	26.10	76.73	94.69	0.4771	0.0705	0.0169	1.6917	93.11	92.58	47.44	21.33	-963.8	-311.6	3.0191
5	-0.45	4.12	9.67	15.12	69.13	80.09	0.4881	0.0635	0.0142	1.6238	92.97	92.47	53.02	37.85	-1075.6	-519.4	2.7037
6	3.52	7.86	11.13	10.55	62.05	70.54	0.4778	0.0685	0.0138	1.6007	92.00	91.46	57.89	47.34	-1167.6	-642.9	2.5212
7	3.79	7.87	9.81	9.59	61.96	70.08	0.4705	0.0795	0.0159	1.5892	90.52	89.89	58.66	49.07	-1194.0	-676.8	2.5085
8	2.88	6.69	6.48	9.45	64.11	73.54	0.4556	0.0799	0.0165	1.5868	90.24	89.59	58.26	48.80	-1207.7	-700.2	2.5461
9	1.76	4.44	3.25	8.23	67.11	76.03	0.4385	0.1178	0.0262	1.5560	84.88	83.91	58.57	50.34	-1271.3	-774.3	2.5743
10	1.80	3.98	5.20	7.12	66.96	72.93	0.4463	0.1468	0.0329	1.5335	81.05	79.89	59.00	51.88	-1293.3	-795.3	2.5454
11	2.21	3.91	9.20	4.87	66.43	65.07	0.4788	0.2159	0.0470	1.4941	72.45	70.87	59.73	54.85	-1320.5	-805.3	2.4797

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.3861	2.7479	86.42	88.18	42.83	1.1689	1.6284	87.97	88.76

STATOR 2

RUN NO 3, SPEED CODE 10, POINT NO 2

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VØ-1 FT/SEC	VØ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	8.723	0.804	1195.6	874.7	886.9	874.6	801.8	7.2	42.4	0.5	0.9737	0.6830	2.8270	1.4406	1.6105	1.2023
2	7.746	0.700	1179.2	866.6	870.4	886.4	795.5	17.7	42.7	1.1	0.9594	0.6941	2.8641	1.4373	1.6246	1.2017
3	6.770	0.503	1161.0	909.4	857.7	909.3	782.5	14.9	42.6	0.9	0.9450	0.7157	2.9288	1.4302	1.6442	1.1971
4	4.311	-0.243	1069.0	878.2	841.2	878.2	659.6	-2.7	38.2	-0.2	0.8687	0.6965	2.8977	1.4016	1.6203	1.1754
5	1.842	-0.845	890.6	733.2	706.0	732.7	542.9	-27.8	37.6	-2.2	0.7158	0.5796	2.6438	1.3727	1.5751	1.1604
6	0.530	-0.941	784.2	634.1	630.7	633.2	466.0	-33.6	36.4	-3.0	0.6260	0.4993	2.4950	1.3609	1.5774	1.1563
7	-0.201	-0.923	769.4	616.8	620.3	616.1	455.2	-29.4	36.2	-2.7	0.6145	0.4860	2.4731	1.3554	1.5743	1.1566
8	-0.929	-0.906	790.4	639.6	644.8	639.3	457.2	-21.0	35.3	-1.9	0.6329	0.5055	2.5045	1.3526	1.5650	1.1565
9	-2.964	-1.076	819.9	677.8	678.1	677.8	460.9	5.2	34.2	0.4	0.6535	0.5335	2.5493	1.3712	1.5419	1.1595
10	-3.804	-1.140	814.2	663.3	667.5	663.1	466.2	15.7	34.9	1.4	0.6453	0.5188	2.5222	1.3844	1.5195	1.1610
11	-5.014	-1.137	786.0	612.4	619.0	612.2	484.3	17.7	38.1	1.7	0.6177	0.4744	2.4462	1.3999	1.4739	1.1703

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-6.06	-4.50	12.29	41.52	94.17	105.01	0.4183	0.1841	0.0416	0.9161	70.31	78.12	81.02	71.57	73.39
2	-4.76	-2.74	12.39	41.52	94.20	107.32	0.4003	0.1693	0.0390	0.9243	70.84	79.86	82.56	73.19	74.94
3	-4.09	-1.58	11.78	41.62	94.81	111.58	0.3843	0.1362	0.0319	0.9402	73.87	83.18	85.49	76.89	78.44
4	-7.38	-3.51	10.14	38.36	97.65	110.14	0.3376	0.1118	0.0278	0.9561	74.00	88.12	89.74	83.77	84.83
5	-7.16	-1.85	8.13	39.73	83.41	91.63	0.3596	0.1040	0.0278	0.9692	74.32	85.57	87.37	85.92	86.79
6	-7.97	-2.18	7.18	39.46	74.15	78.59	0.3774	0.0750	0.0207	0.9818	82.06	82.46	84.53	88.50	89.21
7	-8.00	-2.01	7.44	38.99	73.15	76.58	0.3708	0.0416	0.0117	0.9907	89.30	82.83	84.84	87.91	88.66
8	-8.76	-2.55	8.22	37.17	76.48	79.91	0.3612	0.0623	0.0177	0.9854	83.99	84.82	86.62	86.75	87.56
9	-9.61	-2.92	10.61	33.74	79.25	83.91	0.3369	0.0421	0.0124	0.9895	88.31	82.32	84.45	82.08	83.13
10	-9.52	-2.64	12.13	33.59	76.81	81.02	0.3513	0.0473	0.0140	0.9884	87.77	78.46	81.03	78.46	79.68
11	-7.64	-0.54	13.59	36.44	69.78	73.28	0.3994	0.0623	0.0186	0.9859	85.85	72.56	75.72	68.38	70.04

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
10699.	105.60	1.3861	2.6604	83.25	85.36	1.1689	0.9682	81.75

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA
(Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 2, SPEED CODE 10, POINT NO 2

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-1	V'-1 FT/SEC	V'-2 FT/SEC
1	16.696	18.419	625.7	1109.8	625.7	682.8	0.0	874.8	0.0	52.1	0.5787	0.9506	625.2	728.5	0.8207	0.6235	887.4	698.3
2	14.209	16.124	640.4	1075.1	640.4	685.2	0.0	828.5	0.0	50.4	0.5933	0.9548	678.5	763.7	0.8643	0.6112	933.3	688.2
3	11.886	13.975	655.0	1049.4	655.0	692.6	0.0	788.4	0.0	48.7	0.6078	0.9283	726.5	799.0	0.9075	0.6128	978.4	692.6
4	5.774	8.156	690.5	955.6	690.5	668.4	0.0	688.5	0.0	45.9	0.6434	0.8381	865.4	904.8	1.0316	0.6135	1107.1	702.5
5	-0.513	1.690	714.5	825.6	714.5	605.4	0.0	561.3	0.0	42.8	0.6677	0.7121	1038.2	1045.7	1.1778	0.6687	1260.3	775.3
6	-2.210	-1.213	719.2	727.5	719.2	519.2	0.0	509.6	0.0	44.5	0.6725	0.6220	1121.4	1116.2	1.2457	0.6827	1332.2	798.4
7	-2.603	-2.545	720.9	737.5	720.9	557.9	0.0	482.2	0.0	40.8	0.6742	0.6325	1162.4	1151.4	1.2793	0.7472	1367.8	871.3
8	-3.830	-3.848	721.6	754.4	721.6	595.7	0.0	462.9	0.0	37.8	0.6750	0.6488	1203.4	1186.7	1.3125	0.8062	1403.2	937.4
9	-7.960	-7.610	712.3	770.1	712.3	623.2	0.0	452.3	0.0	35.9	0.6655	0.6600	1325.9	1292.4	1.4062	0.8965	1505.1	1046.0
10	-9.441	-8.900	704.9	774.6	704.9	619.1	0.0	465.5	0.0	36.9	0.6580	0.6609	1366.8	1327.7	1.4354	0.9057	1537.8	1061.4
11	-10.896	-10.238	695.6	774.1	695.6	618.8	0.0	465.1	0.0	36.8	0.6485	0.6550	1407.5	1362.5	1.4638	0.9283	1570.0	1090.4

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VO'-1 FT/SEC	VO'-2 FT/SEC	PO/PO INLET
1	-1.44	3.16	15.84	57.06	40.69	51.80	0.4471	0.0746	0.0161	1.8706	96.11	95.77	44.94	-12.12	-629.2	146.4	1.8706
2	-1.39	2.90	14.19	51.83	41.32	53.30	0.4806	0.0720	0.0165	1.8603	95.88	95.52	46.43	-5.41	-678.5	64.8	1.8603
3	-1.24	2.86	12.41	46.65	41.91	55.08	0.4963	0.0590	0.0141	1.8607	96.32	96.00	47.76	0.88	-726.5	-10.6	1.8607
4	-0.22	3.24	8.25	33.35	43.28	55.35	0.5378	0.0952	0.0241	1.8056	92.57	91.95	51.28	17.93	-865.4	-216.2	1.8056
5	0.94	3.62	8.39	16.75	44.14	51.59	0.5211	0.1332	0.0312	1.6875	86.52	85.92	55.45	36.67	-1038.2	-484.4	1.6875
6	1.41	3.69	12.10	7.90	44.29	44.34	0.5230	0.1860	0.0383	1.5914	79.15	77.77	57.34	49.44	-1121.4	-606.6	1.5914
7	1.62	3.72	9.67	8.02	44.35	48.39	0.4771	0.1380	0.0287	1.6196	83.98	82.86	58.20	50.18	-1162.4	-669.2	1.6196
8	1.83	3.78	7.68	8.51	44.38	52.40	0.4405	0.0946	0.0200	1.6561	88.74	87.53	59.05	50.54	-1203.4	-723.8	1.6561
9	2.69	4.11	6.59	8.35	44.06	55.51	0.4099	0.0931	0.0197	1.7044	88.57	87.71	61.74	53.39	-1325.9	-840.1	1.7044
10	3.01	4.30	7.25	8.44	43.80	54.89	0.4175	0.1240	0.0262	1.7130	84.56	83.80	62.69	54.25	-1366.8	-862.2	1.7130
11	3.35	4.48	8.98	8.34	43.47	54.79	0.4128	0.1370	0.0287	1.7156	83.26	81.96	63.66	55.32	-1407.5	-897.8	1.7156

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.1923	1.7255	88.06	88.93	42.04	1.1923	1.7295	88.06	88.93

STATOR 1

RUN NO 2, SPEED CODE 10, POINT NO 2

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	16.230	14.865	1118.8	743.5	720.0	742.7	856.4	-34.8	50.1	-2.7	1.0005	0.6306	1.7595	1.2044	1.7595	1.2044
2	15.954	13.068	1088.8	743.9	723.3	743.7	813.9	-19.7	48.5	-1.5	0.9692	0.6314	1.7671	1.2029	1.7671	1.2029
3	13.867	11.383	1066.5	753.1	730.5	753.0	776.6	-3.5	46.8	-0.3	0.9461	0.6400	1.7834	1.2020	1.7834	1.2020
4	6.284	6.817	982.9	756.6	706.8	756.6	683.1	-5.4	44.0	-0.4	0.8615	0.6441	1.7845	1.1993	1.7845	1.1993
5	1.833	1.313	851.1	688.5	640.5	688.4	560.4	-27.0	41.2	-2.2	0.7364	0.5856	1.6718	1.1873	1.6718	1.1873
6	-1.423	-1.449	754.2	617.0	555.7	614.6	510.0	-54.1	42.6	-5.0	0.6468	0.5223	1.5775	1.1807	1.5775	1.1807
7	-2.870	-2.703	763.2	614.0	590.8	611.7	483.1	-53.2	39.3	-5.0	0.6564	0.5205	1.5703	1.1774	1.5703	1.1774
8	-3.903	-3.722	775.5	640.2	626.2	638.7	464.2	-44.8	36.6	-4.0	0.6723	0.5441	1.5940	1.1769	1.5940	1.1769
9	-6.492	-6.507	797.7	657.1	655.2	696.6	455.1	-25.7	34.9	-2.1	0.6859	0.5926	1.6547	1.1887	1.6547	1.1887
10	-7.363	-7.402	803.8	702.4	652.9	702.0	468.8	-23.8	35.8	-1.9	0.6882	0.5947	1.6597	1.1988	1.6597	1.1988
11	-8.272	-8.287	805.1	700.8	654.6	700.4	468.7	-22.6	35.7	-1.9	0.6879	0.5920	1.6590	1.2034	1.6590	1.2034

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-2.40	-0.29	9.67	52.81	54.19	68.52	0.4914	0.1256	0.0257	0.9408	83.47	85.66	86.73	85.66	86.73
2	-2.33	0.07	9.73	50.01	55.61	68.96	0.4727	0.1110	0.0236	0.9498	84.49	87.00	87.98	87.00	87.98
3	-2.70	0.09	10.13	47.05	57.31	70.17	0.4486	0.0935	0.0206	0.9591	86.00	88.91	89.75	88.91	89.75
4	-2.98	0.73	8.86	44.43	57.54	70.53	0.3930	0.0210	0.0051	0.9918	96.05	90.21	90.96	90.21	90.96
5	-4.34	0.71	7.07	43.40	53.74	62.73	0.3628	-0.0079	-0.0022	1.0022	101.91	84.29	85.34	84.29	85.34
6	-2.47	3.14	4.33	47.58	46.76	54.98	0.3965	0.0628	0.0179	0.9842	85.75	76.95	78.35	76.95	78.35
7	-5.50	0.38	4.41	44.28	50.53	54.67	0.4044	0.1512	0.0440	0.9614	63.85	77.55	78.90	77.55	78.90
8	-8.00	-1.86	5.41	40.62	54.32	57.28	0.3752	0.1563	0.0463	0.9590	59.22	80.50	81.71	80.50	81.71
9	-9.74	-2.86	8.43	37.00	57.44	62.58	0.3171	0.1107	0.0345	0.9701	60.69	81.99	83.20	81.99	83.20
10	-9.15	-2.10	9.83	37.73	56.93	62.65	0.3224	0.1153	0.0365	0.9687	58.86	78.28	79.75	78.28	79.75
11	-9.90	-2.75	11.45	37.59	56.94	62.34	0.3270	0.1218	0.0390	0.9670	57.49	76.45	78.04	76.45	78.04

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
10706.	185.10	1.1923	1.6869	83.75	84.88	1.1923	0.9754	83.75

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

(Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 2

RUN NO 2, SPEED CODE 10, POINT NO 2

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE
1	11.491	11.264	839.6	1170.1	838.9	872.7	-33.9	779.4	-2.3	41.7
2	10.632	10.158	846.9	1155.7	846.7	862.5	-19.2	769.2	-1.3	41.7
3	9.705	9.111	861.3	1131.7	861.3	841.6	-3.4	756.5	-0.2	41.9
4	6.617	6.152	878.9	1048.7	878.9	854.9	-5.3	607.4	-0.3	35.4
5	1.712	2.050	809.2	884.8	808.8	749.8	-26.0	469.7	-1.8	32.1
6	-0.771	0.052	731.5	736.2	729.5	621.5	-54.0	394.5	-4.2	32.4
7	-1.927	-0.865	722.8	700.0	720.9	595.2	-53.5	368.5	-4.2	31.7
8	-3.056	-1.930	744.0	741.5	742.7	648.9	-45.1	358.8	-3.5	28.9
9	-6.617	-5.803	796.8	795.5	796.4	712.8	-26.0	353.2	-1.9	26.2
10	-7.685	-7.143	801.1	788.1	800.7	698.0	-24.0	366.1	-1.7	27.6
11	-8.585	-8.455	797.6	771.8	797.3	683.2	-22.9	359.1	-1.6	27.6

SL	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	0.7199	0.9526	834.8	875.6	1.0355	0.7148	1207.6	878.0
2	0.7274	0.9400	858.4	893.9	1.0473	0.7089	1219.5	871.5
3	0.7414	0.9190	882.8	913.0	1.0637	0.6951	1235.8	856.0
4	0.7592	0.8531	958.3	973.7	1.1265	0.7567	1304.2	930.1
5	0.6968	0.7154	1062.4	1061.7	1.1677	0.7725	1356.0	955.3
6	0.6262	0.5695	1115.5	1108.6	1.1799	0.7580	1378.4	946.7
7	0.6192	0.5606	1142.3	1132.7	1.1560	0.7758	1396.3	968.7
8	0.6389	0.5973	1169.2	1157.4	1.2223	0.8289	1423.4	1029.0
9	0.6847	0.6414	1251.1	1234.1	1.2533	0.9136	1505.1	1133.2
10	0.6855	0.6303	1278.7	1260.3	1.3064	0.9072	1529.1	1134.4
11	0.6808	0.6151	1306.3	1287.1	1.3230	0.9184	1550.0	1152.4

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL
1	-3.56	0.75	26.67	39.65	73.24	86.71	0.4297	0.2652	0.0601
2	-3.96	0.49	22.03	37.79	73.97	87.03	0.4392	0.2551	0.0590
3	-4.53	0.05	18.05	35.31	75.29	86.07	0.4555	0.2617	0.0616
4	-4.05	0.75	13.66	24.48	76.14	91.58	0.4066	0.1659	0.0392
5	-0.07	4.50	10.09	15.09	65.11	81.77	0.3961	0.1351	0.0301
6	3.64	7.98	12.72	9.05	61.74	66.83	0.4081	0.1665	0.0325
7	4.00	8.08	12.77	6.85	61.10	64.14	0.3963	0.1582	0.0297
8	3.10	6.91	8.49	7.67	63.20	70.90	0.3633	0.1189	0.0235
9	1.15	3.83	3.78	7.09	67.76	78.54	0.3334	0.1012	0.0223
10	1.12	3.30	5.21	6.44	67.72	75.77	0.3496	0.1384	0.0310
11	1.43	3.12	7.86	5.42	67.34	73.74	0.3486	0.1489	0.0334

SL	PO2/PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	Vθ'-1 FT/SEC	Vθ'-2 FT/SEC	PO/PO INLET
1	1.6041	77.70	76.18	45.92	6.27	-868.7	-96.2	2.8220
2	1.6028	78.08	76.55	46.00	6.21	-877.6	-124.7	2.8308
3	1.5790	76.66	75.12	45.83	10.52	-886.1	-156.4	2.8128
4	1.5302	82.10	81.00	47.70	23.23	-963.6	-366.3	2.7364
5	1.4674	82.71	81.76	53.40	38.31	-1088.4	-592.0	2.4718
6	1.4082	77.21	76.10	58.02	48.93	-1169.5	-714.0	2.2300
7	1.3966	77.51	76.44	58.87	52.03	-1195.8	-764.2	2.1859
8	1.4168	82.50	81.62	58.49	50.81	-1214.3	-798.6	2.2518
9	1.4199	83.89	83.08	57.96	50.88	-1277.1	-880.9	2.3464
10	1.4038	78.18	77.12	58.33	51.89	-1302.7	-894.3	2.3300
11	1.3890	76.03	74.91	58.94	53.52	-1325.2	-928.0	2.3044

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.3654	2.4817	80.91	83.15	42.85	1.1452	1.4712	79.85	80.91

STATOR 2

RUN NO 2, SPEED CODE 10, POINT NO 2

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE
1	8.891	1.027	1215.7	972.4	939.4	962.7	771.6	-136.6	39.7	-8.1
2	8.062	1.129	1196.6	1001.8	925.1	996.6	762.3	-102.0	39.7	-5.8
3	7.190	1.136	1173.7	1024.0	901.2	1019.3	752.0	-98.3	40.1	-5.5
4	4.648	0.960	1087.0	1010.5	902.3	1006.1	606.2	-93.6	34.0	-5.3
5	2.459	0.560	928.3	969.5	795.9	956.5	471.1	-160.8	30.5	-9.5
6	0.899	0.078	784.7	866.3	677.4	857.4	396.0	-124.0	30.3	-8.2
7	-0.166	-0.224	745.4	817.2	647.6	809.1	369.1	-114.7	29.6	-8.1
8	-1.416	-0.459	785.2	811.7	658.1	801.7	359.5	-127.0	27.2	-9.0
9	-3.664	-0.830	845.3	877.2	767.1	877.2	354.9	2.6	24.8	0.2
10	-4.657	-0.947	845.0	875.5	760.6	875.4	368.2	13.2	25.9	0.9
11	-5.637	-1.019	837.3	865.5	755.1	865.5	361.6	-0.6	25.7	-0.0

SL	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/TO1
1	0.9968	0.7702	2.2771	1.4317	1.2946	1.1866
2	0.9815	0.7972	2.3506	1.4252	1.3332	1.1876
3	0.9590	0.8182	2.4119	1.4260	1.3592	1.1859
4	0.8888	0.8154	2.4372	1.3972	1.3598	1.1636
5	0.7543	0.7904	2.4122	1.3602	1.4071	1.1428
6	0.6311	0.7016	2.2319	1.3456	1.3876	1.1365
7	0.5994	0.6608	2.1543	1.3354	1.3726	1.1322
8	0.6352	0.6580	2.1482	1.3281	1.3597	1.1286
9	0.6851	0.7139	2.2429	1.3362	1.3591	1.1260
10	0.6798	0.7073	2.2225	1.3536	1.3396	1.1306
11	0.6717	0.6965	2.1940	1.3603	1.3224	1.1307

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL
1	-8.77	-7.21	3.75	47.75	90.01	88.46	0.3700	0.4091	0.0915
2	-7.66	-5.66	5.41	45.58	90.26	92.89	0.3323	0.3651	0.0836
3	-6.59	-4.09	5.34	45.56	89.31	96.28	0.3039	0.3227	0.0753
4	-11.57	-7.70	5.00	39.31	94.11	98.22	0.2445	0.2764	0.0683
5	-14.21	-8.90	0.76	40.04	85.31	96.63	0.1761	0.1571	0.0415
6	-14.11	-6.32	2.00	38.50	71.24	85.93	0.1225	0.0963	0.0263
7	-14.59	-8.60	2.11	37.70	68.24	80.94	0.1016	0.0839	0.0233
8	-16.84	-10.63	1.12	36.20	74.61	80.57	0.1270	0.1507	0.0423
9	-18.97	-12.27	10.34	24.66	82.31	88.33	0.0826	0.1644	0.0482
10	-16.60	-11.72	11.64	25.00	80.14	86.60	0.0883	0.1767	0.0523
11	-20.08	-12.98	11.89	25.70	78.81	84.68	0.0966	0.1856	0.0554

SL	PO2/PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	0.8071	12.71	61.15	65.27	40.31	42.40
2	0.8308	8.64	64.19	68.12	45.33	47.46
3	0.8539	2.52	66.88	70.62	48.95	51.08
4	0.8870	-38.47	72.77	75.90	55.88	57.72
5	0.9468	496.30	79.15	81.56	71.37	72.70
6	0.9750	217.29	74.39	77.05	71.49	72.76
7	0.9815	142.90	72.90	75.61	71.26	72.51
8	0.9649	247.76	74.25	76.82	70.99	72.20
9	0.9559	270.23	77.02	79.43	72.34	73.50
10	0.9530	302.07	72.31	75.18	66.35	67.69
11	0.9516	329.89	65.65	72.75	63.25	64.65

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
10706.	185.10	1.3654	2.2951	73.10	76.00	1.1452	0.9248	62.58

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA (Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 3, SPEED CODE 10, POINT NO 3

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VØ-1 FT/SEC	VØ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	16.682	18.288	638.8	1071.5	638.8	656.1	0.0	847.0	0.0	52.3	0.5917	0.9555	625.2	720.5	0.8305	0.5932	896.7	866.6
2	14.218	13.880	652.7	1034.1	652.7	651.9	0.0	802.8	0.0	50.9	0.6055	0.9149	678.5	763.7	0.8734	0.5778	941.5	833.0
3	11.733	13.636	666.2	1011.2	666.2	663.6	0.0	762.9	0.0	49.0	0.6190	0.8919	726.9	799.0	0.9161	0.5862	986.0	864.6
4	5.879	7.707	697.7	925.7	697.7	643.4	0.0	665.5	0.0	45.9	0.6506	0.8071	865.4	904.6	1.0366	0.5985	1111.6	866.4
5	-0.170	1.173	715.2	811.5	715.2	537.7	0.0	559.6	0.0	43.6	0.6684	0.6989	1036.2	1045.7	1.1783	0.6569	1250.7	762.7
6	-1.679	-1.667	717.3	725.2	717.3	508.5	0.0	516.8	0.0	45.5	0.6705	0.6194	1121.4	1126.2	1.2444	0.6713	1332.2	786.2
7	-2.271	-2.933	717.9	736.8	717.9	549.7	0.0	490.7	0.0	41.8	0.6711	0.6310	1164.4	1151.4	1.2773	0.7360	1366.2	859.5
8	-3.334	-4.140	717.7	748.3	717.7	586.5	0.0	464.7	0.0	38.4	0.6709	0.6429	1202.5	1186.7	1.3099	0.7992	1402.2	930.2
9	-7.739	-7.741	705.8	761.9	705.8	611.9	0.0	454.1	0.0	36.5	0.6589	0.6522	1325.9	1292.4	1.4022	0.8864	1502.1	1037.3
10	-9.297	-8.589	697.8	767.0	697.8	607.1	0.0	468.8	0.0	37.6	0.6508	0.6536	1360.8	1327.7	1.4312	0.8962	1534.6	1051.3
11	-10.824	-10.280	688.0	766.0	688.0	605.6	0.0	469.1	0.0	37.7	0.6408	0.6510	1407.6	1362.9	1.4593	0.9176	1566.7	1072.2

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VØ'-1 FT/SEC	VØ'-2 FT/SEC	PO/PO INLET
1	-2.04	2.57	17.70	54.60	41.25	51.67	0.4806	0.0149	0.0052	1.6729	99.19	99.13	44.35	-10.25	-629.2	118.6	1.6729
2	-1.94	2.36	16.18	49.31	41.82	52.45	0.5157	0.0307	0.0071	1.6543	98.19	98.04	45.83	-3.42	-678.5	39.0	1.6543
3	-1.73	2.38	14.64	44.17	42.36	54.54	0.5216	0.0143	0.0034	1.6586	99.00	99.00	47.28	3.11	-726.9	-36.0	1.6586
4	-0.51	2.96	10.70	30.62	43.54	54.84	0.5480	0.0548	0.0137	1.8068	95.61	95.25	51.00	20.38	-865.4	-239.2	1.8068
5	0.31	3.55	9.32	15.64	44.16	51.36	0.5304	0.1058	0.0245	1.7144	89.43	88.62	55.43	39.59	-1036.2	-486.1	1.7144
6	1.47	3.75	12.34	7.72	44.23	44.57	0.5324	0.1610	0.0330	1.6329	82.45	81.22	57.40	49.68	-1121.4	-599.4	1.6329
7	1.71	3.82	9.94	8.05	44.25	46.89	0.4862	0.1130	0.0234	1.6643	87.32	86.40	58.30	50.25	-1162.4	-660.7	1.6643
8	1.96	3.91	8.06	8.26	44.24	52.97	0.4443	0.0641	0.0134	1.6956	92.56	92.00	59.18	50.92	-1203.5	-722.0	1.6956
9	2.49	4.32	7.04	8.10	43.64	55.91	0.4141	0.0680	0.0142	1.7415	91.60	91.15	61.54	53.84	-1325.9	-838.3	1.7413
10	3.24	4.53	7.68	6.24	43.55	55.19	0.4231	0.1626	0.0215	1.7504	87.80	86.32	62.92	54.68	-1360.8	-858.9	1.7504
11	3.58	4.73	9.44	6.12	43.19	54.93	0.4192	0.1183	0.0245	1.7520	85.81	84.67	63.91	55.79	-1407.6	-893.8	1.7520

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.1907	1.7534	91.22	91.87	42.06	1.1907	1.7534	91.22	91.87

STATOR 1

RUN NO 3, SPEED CODE 10, POINT NO 3

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VØ-1 FT/SEC	VØ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/TO1
1	18.140	14.752	1080.5	707.2	692.7	705.3	829.2	-52.0	50.3	-4.2	0.9628	0.5993	1.7666	1.1979	1.7066	1.1979
2	15.770	12.849	1047.6	707.0	669.7	706.5	788.5	-28.1	48.9	-2.3	0.9469	0.5995	1.7727	1.1966	1.7727	1.1966
3	13.606	11.057	1027.8	715.1	701.2	715.1	751.5	-5.0	47.0	-0.4	0.9090	0.6071	1.7867	1.1955	1.7867	1.1955
4	7.945	6.179	948.0	721.2	680.4	721.1	660.2	-11.8	44.1	-0.9	0.8292	0.6134	1.7903	1.1929	1.7903	1.1929
5	1.398	0.404	835.0	668.1	620.7	667.6	558.6	-27.0	42.0	-2.3	0.7212	0.5667	1.6977	1.1673	1.6977	1.1673
6	-1.854	-2.445	750.9	605.3	544.6	603.6	517.0	-46.1	43.5	-4.4	0.6430	0.5113	1.6159	1.1836	1.6159	1.1836
7	-3.206	-3.735	761.7	667.0	582.0	605.3	491.4	-45.2	40.2	-4.3	0.6541	0.5137	1.6141	1.1798	1.6141	1.1798
8	-4.166	-4.729	772.5	638.3	616.3	637.2	465.8	-38.3	37.1	-3.5	0.6656	0.5424	1.6437	1.1769	1.6437	1.1769
9	-6.586	-7.273	787.7	686.9	641.6	666.4	457.0	-26.5	35.6	-2.2	0.6762	0.5831	1.6920	1.1891	1.6920	1.1891
10	-7.408	-7.985	793.9	695.4	636.2	675.1	472.2	-21.7	36.6	-1.8	0.6785	0.5860	1.6984	1.2003	1.6984	1.2003
11	-8.283	-8.626	794.1	695.5	638.0	695.3	472.8	-17.7	36.7	-1.5	0.6770	0.5868	1.6969	1.2052	1.6969	1.2052

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-2.24	-0.13	8.16	54.48	54.14	66.88	0.5054	0.1260	0.0257	0.9435	83.43	89.15	89.96	89.15	89.96
2	-1.91	0.49	8.97	51.20	54.89	67.28	0.4843	0.1036	0.0220	0.9558	85.52	90.33	91.06	90.33	91.06
3	-2.48	0.30	10.00	47.44	56.07	68.42	0.4604	0.0922	0.0203	0.9619	86.30	92.21	92.81	92.21	92.81
4	-2.90	0.82	8.34	45.04	57.08	69.05	0.4057	0.0183	0.0045	0.9933	96.57	93.77	94.24	93.77	94.24
5	-3.54	1.50	7.00	44.27	53.45	62.42	0.3800	0.0067	0.0018	0.9984	98.15	87.04	87.94	87.04	87.94
6	-1.49	4.12	4.99	47.90	47.67	55.47	0.4096	0.0705	0.0201	0.9825	83.59	79.99	81.27	79.99	81.27
7	-4.53	1.29	5.11	44.50	51.10	55.68	0.4100	0.1447	0.0421	0.9635	66.19	81.51	82.69	81.51	82.69
8	-7.40	-1.32	5.98	40.59	54.95	58.98	0.3693	0.1317	0.0390	0.9660	64.69	86.18	87.09	86.18	87.09
9	-9.05	-2.18	8.33	37.78	57.78	63.36	0.3222	0.1101	0.0343	0.9709	61.21	85.69	86.69	85.69	86.69
10	-8.82	-1.28	9.98	38.41	57.13	63.64	0.3234	0.1129	0.0357	0.9701	58.92	81.50	82.81	81.50	82.81
11	-8.96	-1.81	11.85	38.14	56.97	63.38	0.3240	0.1190	0.0381	0.9685	56.58	79.42	80.87	79.42	80.87

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
10706.	185.16	1.1907	1.7124	87.07	87.99	1.1907	0.9766	87.07

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA
(Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 2

RUN NO 3, SPEED CODE 10, POINT NO 3

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	V0-1 FT/SEC	V0-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-1	V'-1 FT/SEC	V'-2 FT/SEC
1	11.457	11.138	804.6	1117.7	803.0	759.1	-50.4	820.3	-3.6	47.1	0.6891	0.6996	834.8	875.6	1.0236	0.6126	1195.2	761.1
2	10.542	9.916	811.8	1105.5	811.4	747.4	-27.1	814.6	-1.9	47.4	0.6963	0.8857	858.4	893.9	1.0301	0.6048	1201.0	751.6
3	9.519	8.750	826.0	1094.1	826.0	747.4	-4.9	798.9	-0.3	46.8	0.7101	0.6815	882.8	913.0	1.0423	0.6092	1212.6	756.1
4	5.911	5.449	844.4	1009.6	844.3	743.8	-11.7	682.7	-0.8	42.6	0.7283	0.8110	958.3	973.7	1.1092	0.6416	1286.0	798.7
5	0.635	1.271	782.7	858.2	782.2	626.9	-27.1	586.0	-2.0	43.1	0.6719	0.6809	1062.4	1061.7	1.1515	0.6244	1341.2	787.0
6	-2.097	-0.836	715.4	786.5	714.0	567.8	-46.3	535.6	-3.7	43.3	0.6107	0.6157	1115.5	1108.6	1.1640	0.6363	1363.6	806.7
7	-3.471	-1.951	713.3	766.9	711.6	558.9	-45.0	525.2	-3.6	43.2	0.6098	0.6050	1142.3	1132.7	1.1635	0.6512	1384.3	825.5
8	-4.695	-3.072	735.1	779.5	734.1	574.9	-38.3	526.4	-3.0	42.4	0.6306	0.6156	1169.2	1157.4	1.2123	0.6742	1413.2	853.7
9	-7.838	-6.627	768.1	805.6	767.6	610.2	-26.6	525.9	-2.0	40.7	0.6575	0.6324	1251.2	1234.1	1.2760	0.7339	1490.6	934.8
10	-8.765	-7.900	770.3	806.5	770.0	606.6	-21.9	531.6	-1.6	41.1	0.6564	0.6296	1278.7	1260.4	1.2878	0.7401	1511.4	948.2
11	-9.345	-9.006	764.2	783.6	764.0	558.0	-18.0	550.2	-1.3	44.5	0.6493	0.6068	1306.3	1287.1	1.2990	0.7158	1528.8	924.4

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	V0'-1 FT/SEC	V0'-2 FT/SEC	PO/PO INLET
1	-1.78	2.54	24.55	43.55	72.18	87.50	0.5328	0.1403	0.0319	1.7887	89.46	88.57	47.70	4.15	-885.3	-55.3	3.1599
2	-2.49	1.96	19.86	41.42	72.94	87.64	0.5411	0.1203	0.0260	1.7946	90.83	90.04	47.46	6.04	-885.5	-79.3	3.1813
3	-3.30	1.28	16.19	38.40	74.26	89.40	0.5374	0.0896	0.0212	1.7566	92.97	92.36	47.06	8.66	-887.7	-114.0	3.2097
4	-2.73	2.04	11.82	27.62	75.30	92.51	0.5182	0.0548	0.0131	1.7440	94.98	94.57	49.00	21.38	-970.0	-291.1	3.1224
5	0.85	5.43	8.97	17.13	68.82	78.82	0.5419	0.0764	0.0173	1.6896	92.29	91.70	54.33	37.20	-1089.5	-475.7	2.8658
6	4.04	8.38	9.02	13.18	62.25	71.29	0.5348	0.0637	0.0133	1.6560	93.44	92.93	56.41	45.23	-1161.8	-573.0	2.7391
7	4.17	8.25	8.06	11.70	62.32	70.44	0.5290	0.0754	0.0156	1.6862	92.05	91.45	59.04	47.34	-1187.3	-607.6	2.7257
8	3.31	7.12	5.28	11.09	64.78	72.86	0.5210	0.0945	0.0200	1.6762	89.83	89.06	58.69	47.60	-1207.5	-631.1	2.7574
9	2.17	4.85	2.06	9.83	67.87	76.94	0.5019	0.1253	0.0286	1.6626	85.91	84.67	58.98	49.15	-1277.8	-708.2	2.8142
10	2.14	4.32	3.46	9.21	67.76	75.72	0.5050	0.1401	0.0326	1.6560	84.20	83.04	59.34	50.14	-1300.5	-728.8	2.8123
11	2.90	4.15	7.13	7.18	67.19	68.71	0.5351	0.1940	0.0443	1.6305	78.35	76.82	59.57	52.79	-1324.2	-736.9	2.7668

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.4088	2.9207	87.29	89.03	42.19	1.1832	1.7056	89.33	90.10

STATOR 2

RUN NO 3, SPEED CODE 10, POINT NO 3

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	V0-1 FT/SEC	V0-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	8.643	0.818	1151.2	769.7	816.0	769.6	812.1	15.2	45.1	1.1	0.9311	0.5950	2.9750	1.4408	1.6867	1.2017
2	7.589	0.716	1137.1	765.0	800.7	764.5	807.5	26.0	45.5	1.9	0.9193	0.6064	3.0176	1.4375	1.7042	1.2011
3	6.553	0.503	1124.1	815.0	796.3	814.6	793.4	27.7	45.1	1.9	0.9095	0.6350	3.0900	1.4311	1.7323	1.1970
4	4.061	-0.285	1036.6	784.0	782.1	783.9	680.3	14.0	42.1	1.0	0.8356	0.6135	3.0516	1.4099	1.7020	1.1817
5	1.510	-0.788	883.4	651.0	661.0	650.8	586.0	-12.7	41.5	-1.1	0.7027	0.5067	2.8257	1.3958	1.6545	1.1755
6	0.193	-0.816	805.5	572.5	601.2	572.1	536.1	-21.3	41.7	-2.1	0.6369	0.4438	2.7133	1.3906	1.6759	1.1745
7	-0.507	-0.773	790.6	557.4	590.7	557.1	525.4	-19.4	41.6	-2.0	0.6250	0.4324	2.6946	1.3863	1.6757	1.1742
8	-1.238	-0.742	803.3	582.6	606.0	582.5	527.3	-11.7	41.0	-1.2	0.6359	0.4530	2.7268	1.3846	1.6619	1.1771
9	-3.386	-0.949	834.3	634.8	645.8	634.5	528.3	22.2	39.3	2.0	0.6570	0.4916	2.7865	1.4058	1.6485	1.1827
10	-4.185	-1.048	839.7	638.5	647.8	637.9	534.3	27.7	39.5	2.5	0.6577	0.4916	2.7860	1.4219	1.6404	1.1840
11	-5.275	-1.093	822.6	599.3	606.0	598.7	554.1	27.9	42.4	2.7	0.6394	0.4574	2.7229	1.4366	1.6046	1.1936

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-3.32	-1.76	12.95	44.00	91.75	102.55	0.4872	0.1323	0.0299	0.9432	81.62	82.66	85.07	78.89	80.36
2	-1.96	0.06	13.15	43.57	91.74	105.34	0.4677	0.1165	0.0273	0.9500	82.61	84.43	86.62	81.20	82.55
3	-1.58	0.93	12.79	43.12	93.19	110.78	0.4366	0.0875	0.0205	0.9636	85.50	87.64	89.56	85.67	86.73
4	-4.47	-0.00	11.34	40.07	95.60	108.17	0.4075	0.0697	0.0173	0.9742	87.21	91.21	92.46	89.71	90.45
5	-3.16	2.14	9.19	42.66	82.05	88.87	0.4520	0.0693	0.0185	0.9601	87.21	86.97	88.70	87.09	88.53
6	-2.71	3.08	8.09	43.82	74.59	77.49	0.4659	0.0540	0.0149	0.9869	90.42	84.14	86.17	90.63	91.29
7	-2.62	3.37	8.17	43.60	73.58	75.54	0.4860	0.0352	0.0099	0.9919	93.53	84.46	86.44	90.65	91.30
8	-3.07	3.14	8.95	42.14	75.85	79.32	0.4641	0.0382	0.0109	0.9909	92.65	85.95	87.76	87.65	88.50
9	-4.52	2.18	12.17	37.28	80.26	85.53	0.4168	0.0351	0.0103	0.9512	92.47	83.58	85.74	83.47	84.58
10	-4.92	1.96	13.25	37.02	79.56	84.94	0.4194	0.0433	0.0128	0.9851	90.87	80.30	82.88	81.72	82.94
11	-3.32	3.78	14.60	39.74	73.47	78.21	0.4638	0.0677	0.0202	0.9837	87.11	75.23	78.40	74.16	75.81

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
10706.	185.16	1.4086	2.8595	85.30	87.27	1.1832	0.9790	85.52

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA
(Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 3, SPEED CODE 10, POINT NO 13

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VTH-1 FT/SEC	VTH-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'- FT/SE
1	16.078	18.348	638.1	1073.4	638.1	658.4	0.0	847.8	0.0	52.2	0.5909	0.9554	628.5	727.6	0.8295	0.5557	895.6	669.
2	14.200	15.993	652.3	1034.4	652.3	655.1	0.0	800.5	0.0	50.7	0.6051	0.9156	677.8	762.9	0.8726	0.5808	940.7	656.
3	11.096	13.754	666.2	1009.1	666.2	664.1	0.0	759.7	0.0	48.8	0.6190	0.8902	726.1	798.0	0.9155	0.5869	985.4	665.
4	5.803	7.930	699.4	920.5	655.4	642.4	0.0	659.8	0.0	45.8	0.6523	0.8031	864.4	903.7	1.0371	0.5993	1111.[illegible]	687.
5	-0.272	1.416	718.6	809.0	718.6	584.3	0.0	559.5	0.0	43.8	0.6719	0.6966	1037.0	1044.5	1.1796	0.6539	1261.7	759.
6	-1.923	-1.401	720.7	734.6	720.7	522.6	0.0	516.3	0.0	44.7	0.6740	0.6280	1120.1	1114.5	1.2457	0.6793	1331.9	794.
7	-2.659	-2.663	721.2	750.7	721.2	563.1	0.0	496.4	0.0	41.4	0.6745	0.6433	1161.1	1150.1	1.2784	0.7394	1366.8	862.
8	-3.870	-3.905	720.5	770.7	720.5	601.7	0.0	461.6	0.0	38.7	0.6738	0.6619	1202.1	1185.3	1.3106	0.7952	1401.5	925.
9	-8.502	-7.674	705.9	791.4	705.9	627.2	0.0	482.7	0.0	37.5	0.6590	0.6761	1324.4	1290.9	1.4010	0.8740	1500.8	1023.
10	-10.154	-9.001	696.6	793.1	656.6	618.9	0.0	495.9	0.0	38.6	0.6496	0.6743	1365.2	1326.2	1.4291	0.8804	1532.7	1035.
11	-11.465	-10.322	686.4	769.0	686.4	566.6	0.0	519.9	0.0	42.4	0.6393	0.6474	1406.0	1361.3	1.4571	0.8541	1564.6	1014.

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VTH'-1 FT/SEC	VTH'-2 FT/SEC	PO/PO INLET
1	-2.04	2.57	17.60	54.70	41.22	51.98	0.4775	0.0024	0.0005	1.8807	99.67	95.86	44.25	-10.36	-628.5	120.2	1.8807
2	-1.96	2.34	16.31	45.15	41.81	52.87	0.5115	0.0169	0.0039	1.8597	99.00	98.93	45.86	-3.29	-677.8	37.7	1.8597
3	-1.70	2.35	14.84	43.94	42.36	54.75	0.5201	0.0046	0.0011	1.8601	99.70	99.68	47.25	3.31	-726.0	-38.4	1.8601
4	-0.61	2.86	11.10	30.11	43.61	55.00	0.5464	0.0433	0.0108	1.8069	96.49	96.20	50.89	20.79	-864.4	-243.9	1.8069
5	0.75	3.44	9.42	15.58	44.27	51.22	0.5336	0.1023	0.0236	1.7166	89.76	88.98	55.27	35.69	-1037.0	-485.0	1.7166
6	1.32	3.60	11.54	8.37	44.35	45.99	0.5266	0.1450	0.0302	1.6482	84.19	83.07	57.25	48.88	-1120.1	-598.7	1.6482
7	1.58	3.68	8.95	8.90	44.36	50.22	0.4858	0.1040	0.0220	1.6834	88.41	87.55	58.16	49.26	-1161.1	-653.7	1.6834
8	1.85	3.80	6.61	9.59	44.34	54.33	0.4522	0.0668	0.0144	1.7235	92.42	91.84	59.06	49.47	-1202.1	-703.8	1.7235
9	2.91	4.33	5.35	9.81	43.84	56.92	0.4314	0.0893	0.0194	1.7722	89.66	88.81	61.96	52.15	-1324.4	-808.3	1.7722
10	3.31	4.60	6.24	5.76	43.51	55.78	0.4405	0.1256	0.0272	1.7743	85.56	84.36	62.99	53.24	-1365.2	-830.2	1.7743
11	3.65	4.80	9.61	8.03	43.13	50.20	0.4728	0.2010	0.0415	1.7384	77.15	75.34	63.58	55.95	-1406.0	-841.5	1.7384

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WO1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.1952	1.7635	90.08	90.82	42.09	1.1952	1.7635	90.08	90.82

STATOR 1

RUN NO 3, SPEED CODE 10, POINT NO 13

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VTH-1 FT/SEC	VTH-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/TO1
1	16.154	14.832	1080.7	720.2	692.1	720.0	829.9	-17.5	50.4	-1.4	0.9630	0.6111	1.7876	1.1978	1.7876	1.1978
2	15.796	13.021	1046.1	718.9	650.0	718.9	786.4	-5.0	48.9	-0.4	0.9277	0.6105	1.7929	1.1958	1.7929	1.1958
3	13.639	11.320	1024.0	723.3	699.0	723.2	748.4	11.3	47.0	0.9	0.9055	0.6149	1.8023	1.1944	1.8023	1.1944
4	8.058	6.711	941.5	709.3	676.8	709.3	654.5	-1.4	44.0	-0.1	0.8235	0.6030	1.7790	1.1911	1.7790	1.1911
5	1.780	1.172	831.3	652.4	615.7	651.7	558.5	-30.9	42.2	-2.7	0.7177	0.5526	1.6867	1.1871	1.6867	1.1871
6	-1.270	-1.531	758.5	608.2	555.3	606.2	516.7	-49.5	42.9	-4.7	0.6501	0.5137	1.6294	1.1843	1.6294	1.1843
7	-2.565	-2.748	774.0	615.2	593.0	613.5	497.4	-45.9	40.0	-4.3	0.6649	0.5202	1.6340	1.1831	1.6340	1.1831
8	-3.515	-3.752	793.7	646.1	629.7	645.1	483.0	-37.3	37.5	-3.3	0.6834	0.5478	1.6650	1.1838	1.6650	1.1838
9	-5.974	-6.442	816.6	700.7	656.7	700.1	485.5	-31.1	36.5	-2.5	0.6997	0.5928	1.7276	1.2001	1.7276	1.2001
10	-6.824	-7.289	815.9	703.1	650.5	702.5	499.1	-28.7	37.6	-2.4	0.6993	0.5921	1.7301	1.2109	1.7301	1.2109
11	-7.098	-8.191	798.1	674.8	662.1	674.1	523.9	-32.2	41.1	-2.7	0.6741	0.5628	1.6953	1.2270	1.6953	1.2270

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	2.19	-0.08	10.96	51.74	54.31	68.63	0.4866	0.1093	0.0224	0.9510	85.28	91.20	91.88	91.20	91.88
2	-1.99	0.41	10.84	49.24	55.16	68.87	0.4664	0.0847	0.0180	0.9640	87.81	92.66	93.22	92.66	93.22
3	-2.51	0.27	11.28	46.12	56.94	69.55	0.4455	0.0741	0.0164	0.9695	88.64	94.22	94.67	94.22	94.67
4	-2.98	0.74	9.16	44.13	57.11	67.97	0.4097	0.0362	0.0088	0.9870	93.21	93.56	94.04	93.56	94.04
5	-3.32	1.73	6.60	44.90	53.24	61.03	0.4003	0.0415	0.0113	0.9881	90.50	86.02	86.98	86.02	86.98
6	-2.08	3.53	4.69	47.61	48.24	56.09	0.4141	0.0671	0.0191	0.9830	84.37	81.20	82.43	81.20	82.43
7	-4.79	1.09	5.10	44.30	52.22	56.78	0.4133	0.1336	0.0389	0.9654	69.28	82.20	83.36	82.20	83.36
8	-7.07	-0.93	6.11	40.85	56.13	59.97	0.3827	0.1341	0.0397	0.9639	66.39	85.27	86.27	85.27	86.27
9	-8.07	-1.19	8.00	39.05	58.72	65.03	0.3410	0.0907	0.0283	0.9747	71.13	84.43	85.56	84.43	85.56
10	-7.37	-0.32	9.42	39.92	57.73	64.79	0.3481	0.0896	0.0284	0.9750	71.50	80.36	81.81	80.38	81.81
11	-4.49	2.66	10.56	43.89	52.49	61.09	0.3798	0.0944	0.0302	0.9752	71.73	71.66	73.65	71.66	73.65

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
10694.	185.30	1.1952	1.7215	85.94	86.96	1.1952	0.9761	85.54

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

(Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 2

RUN NO 3, SPEED CODE 10, POINT NO 13

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-1	V'-1 FT/SEC	V'-2 FT/SEC
1	11.617	11.184	804.1	1131.1	803.9	735.9	-17.0	858.9	-1.2	49.3	0.6886	0.9115	833.9	874.6	1.0025	0.5932	1170.6	736.1
2	10.863	10.012	809.6	1117.9	809.6	732.2	-4.9	844.8	-0.3	49.0	0.6944	0.9006	857.4	892.9	1.0146	0.5911	1182.8	733.7
3	9.975	8.892	820.1	1105.3	820.0	737.5	11.0	823.3	0.6	48.1	0.7048	0.8914	881.8	911.9	1.0279	0.5990	1196.1	742.8
4	6.612	5.682	820.8	1014.5	820.8	730.2	-1.1	704.3	-0.1	44.0	0.7066	0.8151	957.2	972.6	1.0862	0.6250	1261.8	777.9
5	1.331	1.447	762.0	857.8	761.4	623.0	-30.4	589.6	-2.3	43.4	0.6527	0.6601	1061.2	1060.5	1.1399	0.6191	1330.9	780.9
6	-1.340	-0.643	714.1	778.3	712.4	561.5	-49.6	539.0	-4.0	43.8	0.6092	0.6131	1114.2	1107.3	1.1642	0.6293	1364.6	798.9
7	-2.623	-1.706	717.2	762.1	715.8	554.2	-46.1	523.1	-3.7	43.3	0.6124	0.6001	1141.0	1131.4	1.1836	0.6481	1386.1	823.0
8	-3.783	-2.776	742.7	773.8	741.7	578.2	-37.5	514.2	-2.9	41.6	0.6357	0.6105	1167.9	1156.1	1.2114	0.6816	1415.3	863.9
9	-6.808	-6.053	791.8	793.3	791.2	612.4	-31.4	504.2	-2.3	39.3	0.6764	0.6215	1245.7	1232.7	1.2863	0.7456	1505.8	951.7
10	-7.673	-7.181	794.3	793.6	793.7	611.2	-29.0	506.2	-2.1	39.5	0.6755	0.6184	1277.2	1258.9	1.2999	0.7555	1528.5	969.7
11	-8.517	-8.408	769.5	764.4	768.8	588.9	-32.6	487.3	-2.4	39.5	0.6479	0.5905	1304.8	1285.7	1.2588	0.7664	1542.6	992.0

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VΘ'1 FT/SEC	VΘ'-2 FT/SEC	PO/PO INLET
1	-2.93	1.39	21.62	45.34	73.15	83.69	0.5455	0.1827	0.0416	1.7625	86.63	85.53	46.55	1.22	-850.9	-15.7	3.1503
2	-3.15	1.30	17.57	43.05	73.73	84.79	0.5508	0.1636	0.0381	1.7707	87.81	86.79	46.80	3.75	-862.4	-48.1	3.1729
3	-3.60	0.98	14.37	39.91	74.67	87.27	0.5435	0.1258	0.0299	1.7785	90.36	89.54	46.76	6.84	-870.6	-88.7	3.2031
4	-2.26	2.53	10.63	29.30	73.92	90.37	0.5266	0.0651	0.0157	1.7501	94.28	93.81	49.49	20.19	-958.4	-268.4	3.1166
5	1.64	6.22	8.87	18.02	67.45	78.50	0.5437	0.0746	0.0169	1.6996	92.64	92.07	55.11	37.09	-1091.6	-470.9	2.8735
6	4.13	8.47	9.10	13.19	62.67	70.79	0.5417	0.0797	0.0166	1.6887	91.86	91.24	58.51	45.31	-1163.8	-568.3	2.7522
7	4.00	8.08	8.36	11.27	63.09	70.21	0.5304	0.0795	0.0163	1.6787	91.63	91.00	58.88	47.61	-1187.0	-608.4	2.7386
8	2.97	6.78	5.59	10.44	65.70	73.87	0.5103	0.0788	0.0165	1.6678	91.39	90.74	58.35	47.91	-1205.4	-641.9	2.7740
9	1.41	4.09	2.72	8.40	69.97	78.03	0.4909	0.1154	0.0260	1.6388	86.54	85.58	58.22	49.82	-1281.1	-728.5	2.8306
10	1.42	3.60	4.11	7.83	69.73	77.29	0.4916	0.1254	0.0288	1.6351	85.28	84.23	58.62	50.78	-1306.2	-752.8	2.8328
11	2.49	4.19	7.81	6.54	66.42	73.44	0.4831	0.1059	0.0238	1.6390	87.41	86.51	60.00	53.46	-1337.4	-798.3	2.7803

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.4107	2.9244	87.00	88.78	42.08	1.1803	1.6988	90.02	90.74

STATOR 2

RUN NO 3, SPEED CODE 10, POINT NO 13

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	8.516	0.772	1163.1	747.5	793.6	746.7	850.4	33.1	47.2	2.5	0.9418	0.5763	2.9709	1.4424	1.6623	1.2040
2	7.351	0.626	1148.5	765.9	785.9	764.4	837.5	41.5	47.0	3.1	0.9253	0.5919	3.0127	1.4392	1.6822	1.2032
3	6.237	0.380	1134.5	756.9	786.9	796.1	817.3	34.4	46.2	2.5	0.9187	0.6195	3.0845	1.4326	1.7138	1.1992
4	3.567	-0.523	1041.3	772.3	769.4	772.0	701.6	22.4	42.4	1.7	0.8355	0.6039	3.0550	1.4106	1.7124	1.1840
5	0.869	-1.207	887.4	648.4	658.1	648.3	589.4	-7.3	41.8	-0.6	0.7023	0.5043	2.8391	1.3971	1.6748	1.1766
6	-0.550	-1.307	804.2	572.6	556.4	572.4	539.4	-14.8	42.1	-1.5	0.6350	0.4435	2.7274	1.3932	1.6730	1.1761
7	-1.304	-1.278	787.7	556.4	588.4	556.2	523.7	-12.3	41.6	-1.3	0.6218	0.4311	2.7054	1.3895	1.6625	1.1744
8	-2.044	-1.219	759.3	584.3	411.0	584.3	515.3	-7.0	40.1	-0.7	0.6322	0.4540	2.7400	1.3872	1.6509	1.1724
9	-4.119	-1.255	823.7	640.6	649.4	640.2	506.7	21.3	38.0	1.9	0.6472	0.4955	2.8016	1.4099	1.6229	1.1758
10	-4.691	-1.289	828.0	646.4	652.9	645.4	509.2	36.0	38.0	3.2	0.6473	0.4975	2.8001	1.4247	1.6159	1.1778
11	-5.774	-1.231	805.6	609.9	638.8	608.9	490.8	35.4	37.6	3.3	0.6248	0.4659	2.7379	1.4403	1.6143	1.1739

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-1.21	0.35	14.35	44.71	88.10	100.15	0.5156	0.1300	0.0294	0.9434	83.05	82.12	84.60	76.03	77.67
2	-0.39	1.63	14.35	43.93	88.98	103.30	0.4929	0.1154	0.0265	0.9506	84.10	83.96	86.21	78.27	79.79
3	-0.40	2.10	13.32	43.77	91.14	108.96	0.4604	0.0857	0.0201	0.9639	87.09	87.39	89.19	82.95	84.19
4	-3.14	0.72	11.98	40.75	93.58	107.20	0.4231	0.0602	0.0150	0.9776	89.42	91.16	92.42	89.65	90.40
5	-2.88	2.42	9.66	42.47	81.82	88.97	0.4512	0.0527	0.0141	0.9850	90.28	87.13	88.85	89.32	90.06
6	-2.31	3.48	8.74	43.57	74.25	77.81	0.4811	0.0421	0.0116	0.9900	92.35	84.13	86.17	89.38	90.12
7	-2.59	2.40	8.50	42.90	73.61	75.60	0.4845	0.0457	0.0128	0.9896	91.72	84.14	86.17	89.05	89.80
8	-3.94	2.27	9.42	40.80	77.09	79.77	0.4547	0.0465	0.0132	0.9891	91.01	85.90	87.72	88.74	89.51
9	-5.82	0.88	12.07	36.08	81.50	86.30	0.3958	0.0408	0.0120	0.9900	90.73	83.18	85.39	83.84	84.90
10	-6.40	0.42	13.96	34.81	81.17	85.96	0.3897	0.0479	0.0142	0.9882	89.07	80.21	82.81	82.04	83.21
11	-8.11	-1.01	15.25	34.31	78.14	79.60	0.4126	0.0657	0.0196	0.9840	86.16	75.41	78.57	83.65	84.71

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
10694.	185.30	1.4107	2.[illegible]76	85.16	87.16	1.1803	0.9806	86.44

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

(Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 2, SPEED CODE 10, POINT NO 3

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	16.723	16.277	639.7	1101.0	639.7	670.1	0.0	873.6	0.0	52.5	0.5526	0.9616	629.2	726.5	0.8312	0.6113	897.3	685.7
2	14.271	13.860	654.0	1064.5	654.0	672.3	0.0	825.3	0.0	50.8	0.6008	0.9440	678.5	763.7	0.8744	0.5987	942.4	675.1
3	11.971	13.609	667.9	1039.5	667.9	685.5	0.0	763.4	0.0	48.7	0.6206	0.9167	726.9	799.0	0.9173	0.6041	987.1	685.5
4	5.654	7.652	700.4	952.0	700.4	665.5	0.0	682.7	0.0	45.5	0.6534	0.8313	865.4	904.8	1.0386	0.6109	1113.5	699.7
5	-0.314	1.069	718.5	821.0	718.5	601.1	0.0	559.3	0.0	42.9	0.6717	0.7680	1036.2	1045.7	1.1805	0.6667	1202.6	775.2
6	-1.740	-1.826	720.4	719.7	720.4	510.3	0.0	507.5	0.0	44.8	0.6736	0.6151	1121.4	1116.2	1.2465	0.6789	1332.9	794.4
7	-2.225	-3.095	721.2	731.3	721.2	552.7	0.0	478.8	0.0	40.9	0.6745	0.6271	1162.4	1151.4	1.2794	0.7466	1368.0	870.5
8	-3.203	-4.291	721.1	745.7	721.1	590.7	0.0	455.1	0.0	37.6	0.6744	0.6415	1203.5	1186.7	1.3122	0.8090	1403.0	940.3
9	-7.002	-7.829	709.5	763.4	709.5	623.8	0.0	440.1	0.0	35.2	0.6626	0.6553	1325.9	1292.4	1.4045	0.9066	1503.8	1056.2
10	-9.191	-9.050	701.4	768.0	701.4	620.5	0.0	452.6	0.0	36.0	0.6544	0.6565	1366.8	1327.7	1.4333	0.9170	1536.2	1072.8
11	-10.708	-10.312	691.3	767.4	691.3	620.1	0.0	452.1	0.0	36.0	0.6442	0.6545	1407.6	1362.9	1.4613	0.9398	1568.2	1101.9

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VO'-1 FT/SEC	VO'-2 FT/SEC	PO/PO INLET
1	-2.06	2.53	15.73	56.54	41.29	51.34	0.4608	0.0651	0.0140	1.8743	96.55	96.24	44.31	-12.23	-629.2	145.1	1.8743
2	-1.99	2.31	14.37	51.06	41.88	52.79	0.4984	0.0651	0.0149	1.8602	96.22	95.88	45.63	-5.23	-678.5	61.6	1.8602
3	-1.79	2.32	12.64	45.91	42.43	54.87	0.5082	0.0471	0.0113	1.8623	97.02	96.76	47.22	1.31	-726.9	-15.6	1.8623
4	-0.82	2.65	8.60	32.40	43.64	55.42	0.5411	0.0806	0.0204	1.8096	93.64	93.11	50.89	18.49	-865.4	-222.0	1.8096
5	0.79	3.47	8.70	16.33	44.27	51.58	0.5227	0.1244	0.0290	1.6938	87.43	86.49	55.31	38.98	-1036.2	-486.4	1.6938
6	1.35	3.23	12.65	7.25	44.34	43.88	0.5248	0.1807	0.0367	1.5945	79.79	78.44	57.29	50.03	-1121.4	-608.7	1.5945
7	1.60	3.70	10.29	7.58	44.36	48.31	0.4739	0.1280	0.0264	1.6257	85.19	84.17	58.18	50.60	-1162.4	-672.6	1.6257
8	1.83	3.79	8.24	7.96	44.36	52.44	0.4354	0.0791	0.0165	1.6600	90.57	89.89	59.05	51.10	-1203.5	-731.6	1.6600
9	2.75	4.19	6.97	6.04	43.96	56.20	0.3991	0.0679	0.0142	1.7118	91.57	90.92	61.81	53.77	-1325.9	-852.3	1.7118
10	3.11	4.40	7.60	8.19	43.68	55.65	0.4060	0.0969	0.0207	1.7201	87.66	86.91	62.79	54.60	-1366.8	-875.1	1.7201
11	3.45	4.61	9.32	6.14	43.31	55.51	0.4016	0.1131	0.0235	1.7217	85.99	84.90	63.80	55.66	-1407.6	-910.6	1.7217

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.1697	1.7345	89.78	90.52	42.15	1.1897	1.7345	89.78	90.52

STATOR 1

RUN NO 2, SPEED CODE 10, POINT NO 3

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	18.086	14.697	1111.5	722.2	720.0	721.4	855.1	-34.6	50.5	-2.7	0.9927	0.6112	1.7586	1.2040	1.7586	1.2040
2	15.693	12.746	1079.8	723.7	715.3	723.5	810.7	-19.0	48.8	-1.5	0.9601	0.6132	1.7669	1.2021	1.7669	1.2021
3	13.521	10.912	1056.2	734.9	724.1	734.9	771.7	-3.3	46.9	-0.3	0.9381	0.6237	1.7845	1.2007	1.7845	1.2007
4	7.815	5.951	976.5	744.9	703.6	744.9	677.2	-11.5	43.9	-0.9	0.8557	0.6338	1.7864	1.1976	1.7884	1.1976
5	1.226	0.062	846.0	685.5	635.6	684.8	558.2	-30.9	41.3	-2.6	0.7317	0.5826	1.6768	1.1864	1.6768	1.1864
6	-2.132	-2.681	746.8	616.6	547.9	614.1	507.5	-54.9	42.8	-3.1	0.6402	0.5223	1.5832	1.1795	1.5832	1.1795
7	-3.553	-4.200	757.2	612.8	580.2	610.3	479.3	-54.6	39.3	-5.1	0.6512	0.5199	1.5742	1.1753	1.5742	1.1753
8	-4.478	-5.204	770.8	640.5	621.3	638.5	456.1	-51.3	36.4	-4.6	0.6650	0.5453	1.5985	1.1733	1.5985	1.1733
9	-6.740	-7.651	789.4	704.6	653.4	701.9	443.0	-61.5	34.2	-5.0	0.6796	0.6006	1.6614	1.1834	1.6614	1.1834
10	-7.506	-8.302	794.9	713.9	651.1	712.1	456.0	-49.4	35.1	-4.0	0.6815	0.6065	1.6670	1.1935	1.6670	1.1935
11	-8.321	-8.821	795.4	716.5	651.9	715.7	455.7	-33.0	35.1	-2.7	0.6805	0.6077	1.6664	1.1976	1.6664	1.1978

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATO-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-2.37	0.04	9.61	53.19	53.90	67.30	0.5069	0.1314	0.0268	0.9387	83.16	85.73	86.60	85.73	86.60
2	-2.03	0.32	9.74	50.25	55.29	67.84	0.4863	0.1127	0.0239	0.9497	84.24	87.33	88.29	87.33	88.29
3	-2.66	0.13	10.14	47.12	57.26	69.25	0.4605	0.0950	0.0210	0.9589	86.15	89.06	90.35	89.06	90.35
4	-3.13	0.58	8.39	44.75	57.72	70.12	0.4012	0.0207	0.0051	0.9920	96.20	91.35	92.01	91.35	92.01
5	-4.29	0.60	6.73	43.64	55.69	62.74	0.3629	-0.0081	-0.0022	1.0023	102.01	85.19	86.19	85.19	86.19
6	-6.23	3.42	4.29	47.94	46.46	55.19	0.3906	0.0633	0.0181	0.9642	85.30	78.10	79.45	78.10	79.45
7	-3.48	0.40	4.26	44.45	50.56	54.80	0.3791	0.1593	0.0403	0.9600	60.86	78.95	80.22	78.95	80.22
8	-6.24	-2.10	4.81	40.97	54.43	57.57	0.3669	0.1615	0.0478	0.9583	55.65	82.69	83.77	82.69	83.77
9	-10.33	-3.50	5.51	39.27	58.01	63.31	0.3094	0.1141	0.0355	0.9696	52.91	85.08	86.09	85.06	86.07
10	-9.42	-2.77	7.79	39.11	57.50	63.70	0.3055	0.1164	0.0368	0.9665	49.33	81.20	82.48	81.20	82.48
11	-10.59	-3.39	10.66	37.74	57.43	63.72	0.2979	0.1205	0.0386	0.9679	45.58	79.36	80.77	79.36	80.77

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
10706.	185.60	1.1897	1.6915	85.38	86.40	1.1897	0.9752	85.38

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA
(Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 2

RUN NO 2, SPEED CODE 10, POINT NO 3

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-1	V'-1 FT/SEC	V'-2 FT/SEC
1	11.458	11.151	837.8	1129.1	837.2	777.5	-33.5	818.7	-2.3	46.4	0.7184	0.9098	834.8	875.6	1.0342	0.6282	1206.2	779.6
2	10.534	9.934	847.0	1114.1	846.8	779.0	-18.2	796.5	-1.2	45.5	0.7277	0.8984	858.4	893.9	1.0472	0.6331	1218.8	785.0
3	9.498	8.760	864.2	1098.1	864.2	781.4	-3.2	771.5	-0.2	44.6	0.7447	0.8864	882.8	913.0	1.0664	0.6410	1237.7	794.1
4	5.908	5.453	886.2	1004.3	886.2	777.4	-11.4	635.5	-0.7	39.3	0.7669	0.8095	956.3	973.7	1.1367	0.6832	1313.6	847.6
5	0.476	1.152	812.5	832.3	811.9	651.9	-31.1	517.4	-2.2	38.4	0.7003	0.6644	1062.4	1061.7	1.1739	0.6780	1362.0	849.5
6	-2.538	-3.945	733.9	725.5	731.8	561.9	-55.2	465.3	-4.3	39.6	0.6286	0.5785	1115.5	1108.6	1.1830	0.6775	1380.6	854.2
7	-3.097	-1.991	725.7	717.5	723.6	555.5	-54.5	454.1	-4.3	39.2	0.6225	0.5693	1142.3	1132.7	1.1996	0.6958	1398.6	877.0
8	-4.954	-3.102	743.8	737.3	742.0	586.3	-52.1	447.0	-4.0	37.2	0.6397	0.5862	1169.2	1157.4	1.2291	0.7324	1429.0	921.2
9	-6.470	-7.011	784.5	768.1	782.1	640.5	-61.4	424.0	-4.5	33.4	0.6745	0.6082	1251.2	1234.1	1.3137	0.6177	1527.9	1032.7
10	-9.403	-8.351	783.3	758.2	781.7	614.6	-49.2	444.0	-3.6	35.8	0.6704	0.5962	1278.7	1260.4	1.3189	0.8035	1540.9	1021.9
11	-9.683	-9.339	775.4	721.9	774.7	547.4	-33.5	470.7	-2.5	40.6	0.6618	0.5630	1306.3	1287.1	1.3210	0.7665	1547.6	983.0

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VO'-1 FT/SEC	VO'-2 FT/SEC	PO/PO INLET
1	-3.32	0.60	24.57	41.79	73.16	87.70	0.5182	0.1258	0.0286	1.7745	90.24	89.42	45.96	4.17	-868.4	-56.9	3.1193
2	-4.00	0.45	20.92	38.85	74.02	89.58	0.5150	0.0979	0.0247	1.7750	92.17	91.51	45.55	7.10	-876.6	-97.4	3.1362
3	-4.05	-0.07	17.77	35.47	75.53	91.01	0.5102	0.0755	0.0176	1.7657	93.68	93.15	45.71	10.24	-886.0	-141.5	3.1506
4	-4.14	0.65	13.93	24.11	76.63	94.88	0.4818	0.0301	0.0071	1.6996	97.00	96.76	47.61	23.50	-969.7	-337.8	3.0392
5	-0.05	4.52	11.64	13.55	69.33	80.39	0.4896	0.0349	0.0076	1.6382	96.06	95.77	53.41	39.86	-1093.5	-544.3	2.7396
6	3.61	7.95	12.62	9.15	62.05	68.80	0.4929	0.0442	0.0086	1.6254	94.90	94.53	57.98	48.83	-1170.7	-643.3	2.5680
7	3.96	8.04	11.39	8.19	61.58	66.24	0.4841	0.0502	0.0097	1.6197	94.10	93.68	58.83	50.65	-1196.8	-678.6	2.5548
8	3.33	7.14	8.68	8.32	63.56	72.42	0.4656	0.0535	0.0107	1.6183	93.52	93.07	58.71	50.40	-1221.3	-710.5	2.5914
9	2.42	5.10	4.50	7.64	67.52	78.41	0.4349	0.0970	0.0210	1.5844	87.46	86.63	59.23	51.59	-1312.6	-810.1	2.6341
10	2.34	4.52	6.29	6.57	67.32	74.09	0.4521	0.1334	0.0292	1.5638	82.90	81.80	59.54	52.97	-1327.9	-816.4	2.6068
11	2.44	4.14	10.45	3.85	66.81	64.85	0.4879	0.1569	0.0419	1.5233	74.83	73.31	59.95	56.11	-1339.7	-816.4	2.5385

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.3884	2.7886	87.33	89.00	42.80	1.1671	1.6465	91.31	91.91

STATOR 1

RUN NO 2, SPEED CODE 10, POINT NO 3

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	6.562	0.755	1167.1	854.2	839.7	854.2	816.6	-6.1	44.5	-0.4	0.9457	0.6632	2.8800	1.4423	1.6379	1.1577
2	7.516	0.614	1150.0	865.1	836.1	865.1	789.7	1.8	43.6	0.1	0.9323	0.6762	2.9156	1.4355	1.6524	1.1959
3	6.513	0.397	1132.2	889.9	833.6	889.9	766.2	-8.1	42.6	-0.5	0.9164	0.6995	2.9836	1.4476	1.6749	1.1690
4	4.133	-0.335	1034.7	853.9	817.8	853.7	633.9	-19.8	37.9	-1.5	0.8372	0.6757	2.9376	1.4004	1.6401	1.1609
5	1.715	-0.862	861.3	711.4	688.2	710.2	517.8	-41.3	36.5	-3.3	0.6896	0.5612	2.6899	1.3736	1.5960	1.1573
6	0.307	-0.561	758.8	614.4	596.9	612.4	465.6	-49.5	37.8	-4.6	0.6032	0.4823	2.5450	1.3650	1.6040	1.1567
7	-0.450	-0.580	743.6	599.3	586.5	597.4	454.5	-47.4	37.6	-4.5	0.5914	0.4709	2.5261	1.3597	1.6070	1.1566
8	-1.240	-1.063	762.9	623.2	617.6	621.5	448.0	-45.0	35.9	-4.1	0.6080	0.4909	2.5576	1.3579	1.6013	1.1574
9	-3.104	-1.138	798.1	664.9	675.3	664.8	425.4	-10.3	32.2	-0.9	0.6336	0.5221	2.6058	1.3747	1.5680	1.1609
10	-3.614	-1.161	754.1	652.3	657.3	652.3	445.6	-2.0	34.1	-0.2	0.6266	0.5086	2.5605	1.3906	1.5479	1.1649
11	-4.963	-1.145	763.8	600.5	596.9	600.5	474.1	-1.3	38.4	-0.1	0.5976	0.4639	2.5038	1.4052	1.5025	1.173.

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATL-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-4.19	-2.63	11.41	44.67	92.05	105.51	0.4259	0.1742	0.0394	0.9257	71.49	79.43	82.20	76.00	77.60
2	-3.34	-1.82	11.37	43.46	95.61	107.96	0.4058	0.1617	0.0372	0.9505	71.74	81.77	84.25	78.98	80.40
3	-3.07	-1.39	10.33	43.28	95.33	112.59	0.3767	0.1265	0.0297	0.9466	75.12	85.34	87.38	83.40	84.56
4	-7.71	-3.84	8.95	39.16	97.88	110.05	0.3364	0.0968	0.0245	0.9633	76.18	89.70	91.12	89.29	90.01
5	-7.75	-2.45	6.46	40.27	83.69	91.21	0.3583	0.0939	0.0251	0.9737	76.20	87.12	88.75	90.32	90.94
6	-6.55	-0.77	5.60	42.45	72.41	77.92	0.3864	0.0664	0.0163	0.9849	83.76	83.55	85.53	91.72	92.25
7	-6.54	-0.60	5.63	42.17	71.38	76.15	0.3807	0.0360	0.0100	0.9925	90.46	84.01	85.93	92.16	92.67
8	-5.13	-1.93	5.97	40.05	75.34	79.58	0.3662	0.0516	0.0147	0.9686	86.03	85.72	87.45	90.55	91.53
9	-11.50	-4.90	9.28	33.05	81.49	84.39	0.3269	0.0480	0.0141	0.9886	86.16	83.74	85.75	84.74	85.67
10	-10.31	-3.44	10.60	34.32	77.94	81.57	0.3475	0.0540	0.0160	0.9674	85.54	79.33	81.85	80.17	81.34
11	-7.32	-0.22	11.81	36.94	69.63	73.64	0.4011	0.0671	0.0200	0.9856	84.10	73.72	76.82	70.77	72.39

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
10706.	165.60	1.3884	2.7103	84.55	86.53	1.1671	0.9719	83.76

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA
(Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 3, SPEED CODE 10, POINT NO 4

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-I	V'-1 FT/SEC	V'-2 FT/SEC
1	10.803	18.295	630.5	1077.8	630.5	632.7	0.0	872.6	0.0	54.1	0.5835	0.9572	625.4	728.6	0.8244	0.5762	890.9	648.9
2	14.435	15.897	644.0	1035.8	644.0	634.0	0.0	819.1	0.0	52.3	0.5969	0.9149	678.7	763.9	0.8671	0.5621	935.6	636.4
3	12.205	13.666	657.4	1010.6	657.4	649.6	0.0	774.2	0.0	50.0	0.6102	0.8901	727.0	799.1	0.9097	0.5725	980.2	650.0
4	6.301	7.784	689.1	921.7	689.1	628.6	0.0	674.1	0.0	47.0	0.6420	0.8022	865.6	904.9	1.0307	0.5828	1106.4	669.6
5	0.355	1.317	708.8	817.2	708.8	579.8	0.0	575.8	0.0	44.8	0.6619	0.7025	1038.4	1045.9	1.1741	0.6416	1257.3	746.4
6	-1.233	-1.469	712.1	738.9	712.1	506.3	0.0	538.2	0.0	46.8	0.6653	0.6257	1121.6	1116.4	1.2412	0.6549	1328.6	768.6
7	-1.946	-2.734	713.2	747.1	713.2	546.3	0.0	509.7	0.0	43.0	0.6664	0.6385	1162.7	1151.6	1.2744	0.7204	1364.0	843.0
8	-3.136	-3.954	713.4	756.8	713.4	578.7	0.0	487.7	0.0	40.1	0.6665	0.6482	1203.7	1186.9	1.3074	0.7775	1399.2	907.7
9	-7.609	-7.619	702.6	768.0	702.6	604.0	0.0	474.4	0.0	38.1	0.6556	0.6554	1326.2	1292.7	1.4004	0.8678	1500.8	1017.0
10	-9.209	-8.901	694.7	774.0	694.7	599.4	0.0	469.7	0.0	39.2	0.6477	0.6574	1367.0	1327.9	1.4295	0.8752	1533.4	1030.5
11	-10.780	-10.231	685.0	773.2	685.0	597.8	0.0	490.4	0.0	39.3	0.6378	0.6549	1407.8	1363.2	1.4578	0.8960	1565.6	1057.9

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	Vθ'-1 FT/SEC	Vθ'-2 FT/SEC	PO/PO INLET
1	-1.64	2.97	15.12	57.58	40.90	49.60	0.5035	0.0564	0.0121	1.8795	97.05	96.79	44.74	-12.84	-629.4	144.0	1.8795
2	-1.52	2.78	14.62	51.28	41.47	50.94	0.5339	0.0579	0.0133	1.8579	96.67	96.38	46.30	-4.98	-678.7	55.3	1.8579
3	-1.31	2.80	13.72	45.51	42.01	53.45	0.5357	0.0305	0.0073	1.8628	98.09	97.92	47.70	2.19	-727.0	-24.9	1.8628
4	-0.13	3.34	10.47	31.22	43.23	53.92	0.5623	0.0609	0.0152	1.8155	95.26	94.86	51.37	20.15	-865.6	-230.8	1.8155
5	1.16	3.84	8.76	16.64	43.94	51.30	0.5453	0.1026	0.0239	1.7470	90.16	89.38	55.67	39.03	-1038.4	-470.1	1.7470
6	1.65	3.93	11.46	8.79	44.05	45.00	0.5487	0.1554	0.0324	1.6779	83.82	82.63	57.59	48.80	-1121.6	-578.2	1.6779
7	1.88	3.99	9.30	8.86	44.09	49.35	0.5014	0.1062	0.0223	1.7080	88.60	87.74	58.46	49.61	-1162.7	-642.0	1.7080
8	2.11	4.06	7.53	8.94	44.10	53.02	0.4645	0.0661	0.0140	1.7383	92.68	92.11	59.33	50.39	-1203.7	-699.2	1.7383
9	3.00	4.43	6.73	8.53	43.72	56.12	0.4320	0.0670	0.0141	1.7868	92.26	91.62	62.05	53.52	-1326.2	-818.2	1.7868
10	3.34	4.63	7.36	8.66	43.44	55.45	0.4412	0.1013	0.0214	1.7985	88.45	87.48	63.02	54.36	-1367.0	-838.3	1.7985
11	3.68	4.83	9.15	8.52	43.08	55.22	0.4376	0.1173	0.0245	1.8019	86.52	85.38	64.01	55.49	-1407.8	-872.8	1.8019

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.1970	1.7838	91.21	91.88	41.84	1.1970	1.7838	91.21	91.88

STATOR 1

RUN NO 3, SPEED CODE 10, POINT NO 4

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	18.049	14.707	1083.8	678.1	667.0	676.7	854.2	-43.2	52.2	-3.6	0.9634	0.5715	1.7799	1.2038	1.7799	1.2038
2	15.622	12.781	1046.5	676.6	669.1	676.1	804.6	-26.1	50.3	-2.2	0.9259	0.5710	1.7846	1.2005	1.7846	1.2005
3	13.444	10.983	1024.6	682.6	684.2	682.6	762.7	-3.6	48.1	-0.3	0.9044	0.5769	1.7954	1.1983	1.7954	1.1983
4	7.812	6.099	941.8	691.0	663.2	690.9	668.7	-9.0	45.2	-0.7	0.8220	0.5852	1.8028	1.1955	1.8028	1.1955
5	1.348	0.366	839.2	650.0	611.4	649.5	574.9	-25.0	43.2	-2.2	0.7233	0.5489	1.7309	1.1931	1.7309	1.1931
6	-1.807	-2.428	762.3	591.3	539.4	589.9	538.7	-40.7	45.0	-4.0	0.6512	0.4972	1.6569	1.1913	1.6569	1.1913
7	-3.110	-3.680	771.0	596.2	577.9	594.8	510.3	-39.6	41.5	-3.8	0.6607	0.5024	1.6590	1.1872	1.6590	1.1872
8	-4.081	-4.678	780.2	627.4	608.0	626.7	489.0	-28.6	38.9	-2.6	0.6701	0.5305	1.6887	1.1856	1.6887	1.1856
9	-6.546	-7.205	793.4	674.5	633.7	674.4	477.4	-14.5	37.1	-1.2	0.6790	0.5699	1.7366	1.1973	1.7366	1.1973
10	-7.381	-7.921	800.5	683.9	630.5	683.8	493.2	-9.8	38.1	-0.8	0.6819	0.5753	1.7442	1.2054	1.7442	1.2094
11	-8.270	-8.580	801.2	683.6	630.5	683.6	494.3	-6.5	38.2	-0.5	0.6807	0.5737	1.7430	1.2146	1.7430	1.2146

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-0.37	1.74	8.71	55.80	52.02	65.32	0.5363	0.1171	0.0239	0.9475	85.51	87.81	88.74	87.81	88.74
2	-0.50	1.90	9.03	52.54	53.30	65.63	0.5152	0.0936	0.0199	0.9603	87.69	89.67	90.46	89.67	90.46
3	-1.38	1.40	10.09	48.44	55.68	66.57	0.4921	0.0865	0.0191	0.9645	88.00	91.69	92.33	91.69	92.33
4	-1.80	1.91	8.52	45.95	56.08	67.51	0.4357	0.0144	0.0035	0.9948	97.46	93.71	94.20	93.71	94.20
5	-2.30	2.75	7.11	45.41	53.35	62.21	0.4117	0.0111	0.0030	0.9971	97.39	87.79	88.66	87.79	88.66
6	-0.05	5.57	5.41	48.93	47.31	55.61	0.4410	0.0675	0.0193	0.9830	85.55	81.08	82.35	81.08	82.35
7	-3.32	2.56	5.57	45.31	51.56	56.20	0.4363	0.1350	0.0393	0.9655	71.32	83.10	84.24	83.10	84.24
8	-5.73	0.41	6.81	41.45	55.00	59.53	0.3944	0.1229	0.0364	0.9679	70.40	86.96	87.87	86.96	87.87
9	-7.53	-0.65	9.31	38.33	58.04	63.91	0.3457	0.1090	0.0340	0.9710	66.70	86.49	87.48	86.49	87.48
10	-6.79	0.26	10.95	38.97	57.45	64.25	0.3474	0.1143	0.0362	0.9694	64.15	82.21	83.52	82.21	83.52
11	-7.41	-0.26	12.77	38.77	57.32	63.96	0.3492	0.1228	0.0393	0.9673	61.58	80.10	81.57	80.10	81.57

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
10708.	184.20	1.1970	1.7431	87.28	88.22	1.1970	0.9772	87.28

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA
(Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 2

RUN NO 3, SPEED CODE 10, POINT NO 4

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VB-1 FT/SEC	VB-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	11.455	11.114	766.5	1096.7	765.8	729.9	-41.9	818.5	-3.1	48.2	0.6523	0.8790	835.0	875.8	0.9902	0.5868	1164.2	732.1
2	10.522	9.871	772.1	1086.2	771.7	720.6	-25.1	812.8	-1.9	48.3	0.6580	0.8708	858.6	894.1	0.9999	0.5813	1173.2	725.1
3	9.467	8.683	783.6	1076.2	783.6	721.6	-3.4	798.4	-0.2	47.8	0.6693	0.8641	882.5	913.2	1.0106	0.5867	1183.0	730.6
4	5.602	5.357	802.1	993.5	802.0	711.0	-9.0	693.9	-0.6	44.3	0.6875	0.7948	958.5	973.9	1.0772	0.6113	1256.7	764.1
5	0.580	1.229	754.3	857.7	753.9	612.6	-25.2	600.4	-1.9	44.4	0.6438	0.6778	1062.6	1061.9	1.1296	0.6061	1323.5	767.0
6	-2.133	-0.894	654.2	792.4	653.0	565.0	-40.9	555.7	-3.4	44.5	0.5892	0.6227	1115.7	1108.8	1.1445	0.6213	1348.3	790.7
7	-3.513	-2.037	695.3	781.5	694.1	555.7	-39.1	549.4	-3.2	44.6	0.5913	0.6140	1142.5	1133.0	1.1655	0.6331	1370.4	805.8
8	-4.721	-3.171	717.7	793.1	717.1	570.4	-28.5	551.0	-2.3	43.9	0.6121	0.6238	1169.4	1157.7	1.1908	0.6549	1396.2	832.7
9	-7.716	-6.578	750.7	813.2	750.5	593.2	-14.5	556.2	-1.1	43.1	0.6390	0.6353	1251.4	1234.3	1.2527	0.7038	1471.6	901.0
10	-8.562	-7.787	755.0	816.3	755.0	599.6	-9.8	553.9	-0.7	42.6	0.6397	0.6347	1278.9	1260.6	1.2654	0.7206	1493.6	926.8
11	-9.192	-8.905	750.1	798.0	750.0	558.2	-6.5	570.2	-0.5	45.5	0.6337	0.6159	1306.5	1287.4	1.2776	0.7014	1512.2	908.8

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VB'-1 FT/SEC	VB'-2 FT/SEC	PO/PO INLET
1	-0.70	3.62	24.87	44.32	70.60	85.74	0.5433	0.1314	0.0299	1.7847	90.45	89.64	48.78	4.47	-876.9	-57.3	3.1767
2	-1.12	3.33	20.24	42.41	71.28	86.13	0.5520	0.1156	0.0268	1.7946	91.48	90.74	48.63	6.42	-883.7	-81.3	3.2028
3	-1.64	2.74	16.54	39.50	72.45	87.99	0.5472	0.0821	0.0194	1.8015	93.79	93.25	48.51	9.02	-886.3	-114.8	3.2346
4	-1.38	3.41	11.94	28.87	73.78	89.91	0.5364	0.0637	0.0153	1.7474	94.39	93.93	50.37	21.50	-967.5	-280.0	3.1499
5	1.81	6.38	8.78	18.27	68.46	78.40	0.5538	0.0866	0.0196	1.6949	91.56	90.91	55.28	37.00	-1087.8	-461.6	2.9315
6	4.69	9.03	8.15	14.70	62.32	72.29	0.5446	0.0702	0.0149	1.7073	93.02	92.47	59.06	44.36	-1156.6	-553.1	2.8286
7	4.68	8.76	7.09	13.21	62.72	71.38	0.5426	0.0880	0.0185	1.6976	91.07	90.38	59.55	46.35	-1181.6	-583.5	2.8205
8	3.70	7.51	4.38	12.38	65.23	73.68	0.5334	0.1010	0.0217	1.6880	89.50	88.70	59.08	46.70	-1198.0	-606.7	2.8528
9	2.50	5.18	1.62	10.59	68.39	76.25	0.5225	0.1403	0.0323	1.6720	84.84	83.71	59.31	48.72	-1265.9	-678.1	2.9045
10	2.40	4.58	2.91	10.01	68.39	76.53	0.5158	0.1408	0.0332	1.6686	84.58	83.43	59.60	49.59	-1288.7	-706.7	2.9102
11	2.69	4.39	6.36	8.19	67.85	70.41	0.5423	0.1875	0.0436	1.6491	79.65	78.17	60.21	52.02	-1313.1	-717.2	2.8744

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.4188	2.9852	87.21	88.99	41.35	1.1854	1.7126	85.01	85.81

STATOR 2

RUN NO 3, SPEED CODE 10, POINT NO 4

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VB-1 FT/SEC	VB-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	8.633	0.839	1126.8	728.4	783.0	728.2	810.3	16.5	46.3	1.3	0.9070	0.5604	3.0154	1.4439	1.6966	1.1993
2	7.578	0.758	1114.5	744.4	770.1	744.1	805.7	22.4	46.5	1.7	0.8970	0.5743	3.0574	1.4404	1.7146	1.1993
3	6.553	0.565	1103.0	772.0	767.0	771.7	792.7	21.3	46.1	1.6	0.8889	0.5985	3.1211	1.4337	1.7405	1.1961
4	4.026	-0.170	1017.9	741.8	747.1	741.7	691.3	14.7	42.8	1.1	0.8168	0.5776	3.0842	1.4150	1.7088	1.1834
5	1.408	-0.656	880.6	625.8	644.5	625.7	600.2	-6.5	42.9	-0.6	0.6976	0.4844	2.8935	1.4055	1.6620	1.1780
6	0.143	-0.658	815.2	557.4	596.3	557.3	555.9	-13.7	42.9	-1.4	0.6420	0.4298	2.7972	1.4032	1.6671	1.1767
7	-0.502	-0.600	803.6	545.9	586.1	545.8	549.8	-11.9	43.1	-1.3	0.6328	0.4210	2.7826	1.4004	1.6826	1.1790
8	-1.194	-0.569	815.7	569.0	600.6	568.9	551.9	-6.6	42.5	-0.7	0.6430	0.4397	2.8124	1.3992	1.6706	1.1802
9	-3.470	-0.855	841.2	624.3	628.7	623.5	558.9	30.8	41.6	2.8	0.6590	0.4803	2.8791	1.4212	1.6591	1.1875
10	-4.322	-0.999	848.2	631.3	639.7	630.4	556.9	32.1	41.1	2.9	0.6616	0.4635	2.8821	1.4350	1.6526	1.1869
11	-5.385	-1.072	835.4	595.5	606.7	594.8	574.3	28.6	43.5	2.7	0.6471	0.4523	2.8229	1.4514	1.6195	1.1949

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-2.19	-0.64	13.11	44.56	90.01	100.00	0.5122	0.1185	0.0268	0.9510	84.15	83.26	85.61	81.20	82.54
2	-0.91	1.11	12.97	44.80	90.20	102.95	0.4936	0.1072	0.0247	0.9563	84.91	85.04	87.16	82.94	84.18
3	-0.53	1.97	12.43	44.53	91.77	108.06	0.4655	0.0845	0.0198	0.9660	87.14	88.23	89.93	86.85	87.63
4	-2.71	1.16	11.45	41.71	93.04	105.18	0.4406	0.0671	0.0167	0.9760	88.59	91.09	92.37	89.56	90.32
5	-1.76	3.54	9.71	43.54	81.51	87.83	0.4804	0.0637	0.0171	0.9820	89.09	87.12	88.87	87.19	88.07
6	-1.44	4.34	8.82	44.35	75.46	77.58	0.5129	0.0549	0.0152	0.9866	90.89	84.40	86.46	90.59	91.26
7	-1.10	4.89	8.91	44.37	74.45	76.01	0.5154	0.0453	0.0127	0.9894	92.36	84.50	86.53	88.94	89.72
8	-1.51	4.69	9.44	43.21	76.71	79.54	0.4952	0.0479	0.0136	0.9885	91.58	85.78	87.66	87.07	87.97
9	-2.17	4.53	12.99	38.81	79.68	86.29	0.4419	0.0322	0.0094	0.9919	93.47	83.40	85.64	82.43	83.63
10	-3.39	3.49	13.68	38.16	80.36	86.38	0.4397	0.0411	0.0122	0.9895	91.72	80.84	83.42	81.97	83.20
11	-2.24	4.86	14.68	40.75	75.15	80.03	0.4835	0.0741	0.0221	0.9818	86.56	76.12	79.27	75.16	76.78

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
10708.	184.20	1.4188	2.9263	85.37	87.37	1.1854	0.9803	85.47

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA
(Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 2, SPEED CODE 10, POINT NO 4

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	16.781	16.292	632.7	1054.7	632.7	621.9	0.0	651.8	0.0	53.9	0.5856	0.9353	626.9	728.0	0.8257	0.5625	892.1	634.1
2	14.908	15.902	646.1	1012.0	646.1	620.4	0.0	799.6	0.0	52.2	0.5990	0.8926	678.1	763.3	0.8683	0.5481	930.7	621.4
3	12.203	13.685	659.2	988.4	659.2	631.9	0.0	760.0	0.0	50.2	0.6120	0.8690	726.4	796.5	0.9107	0.5566	961.0	633.1
4	6.915	7.841	690.6	905.0	690.6	617.0	0.0	662.1	0.0	47.0	0.6435	0.7872	864.5	904.2	1.0313	0.5765	1106.8	662.6
5	0.600	1.427	711.2	803.6	711.2	567.5	0.0	569.0	0.0	45.1	0.6643	0.6904	1037.6	1045.1	1.1751	0.6364	1257.9	740.7
6	-0.873	-1.314	715.6	725.4	715.6	497.1	0.0	528.3	0.0	46.7	0.6688	0.6165	1120.7	1115.5	1.2428	0.6556	1329.7	769.4
7	-1.612	-2.560	717.5	736.1	717.5	537.8	0.0	502.5	0.0	43.1	0.6708	0.6251	1161.7	1150.7	1.2765	0.7199	1365.5	842.5
8	-2.858	-3.771	718.5	748.0	716.5	573.9	0.0	479.6	0.0	39.9	0.6717	0.6410	1202.7	1186.0	1.3099	0.7796	1401.0	910.0
9	-7.527	-7.470	709.4	758.4	709.4	600.2	0.0	463.6	0.0	37.6	0.6625	0.6478	1325.2	1291.6	1.4037	0.8736	1503.1	1022.7
10	-9.173	-8.781	701.9	760.7	701.9	593.2	0.0	476.2	0.0	38.7	0.6549	0.6468	1366.0	1326.9	1.4329	0.8818	1535.7	1037.0
11	-10.769	-10.162	692.3	758.3	692.3	590.0	0.0	476.3	0.0	38.8	0.6452	0.6431	1406.7	1362.1	1.4612	0.9025	1567.6	1064.3

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VO'-1 FT/SEC	VO'-2 FT/SEC	PO/PO INLET
1	-1.77	2.84	16.69	55.89	40.99	49.87	0.5152	0.0104	0.0022	1.6814	99.45	99.40	44.62	-11.27	-628.9	123.6	1.8814
2	-1.04	2.66	16.25	49.53	41.55	50.68	0.5452	0.0213	0.0049	1.8562	98.75	96.65	46.18	-3.35	-678.1	36.3	1.8562
3	-1.41	2.65	15.02	44.11	42.08	52.94	0.5496	0.0053	0.0013	1.8607	99.66	99.64	47.60	3.48	-726.4	-38.5	1.8607
4	-0.21	3.26	11.74	29.87	43.29	53.63	0.5654	0.0325	0.0081	1.8215	97.45	97.24	51.29	21.42	-864.9	-242.1	1.8215
5	1.35	3.73	9.72	15.57	44.02	51.00	0.5481	0.0813	0.0187	1.7572	92.18	91.56	55.56	39.99	-1037.6	-476.1	1.7572
6	1.50	3.78	12.41	7.69	44.17	44.95	0.5453	0.1280	0.0262	1.6908	86.58	85.57	57.44	49.75	-1120.7	-587.2	1.6908
7	1.70	3.81	10.00	7.97	44.24	49.42	0.5001	0.0801	0.0166	1.7240	91.39	90.73	58.26	50.32	-1161.7	-648.2	1.7240
8	1.90	3.85	8.04	6.22	44.27	53.55	0.4611	0.0354	0.0074	1.7581	96.08	95.77	59.12	56.69	-1202.7	-706.2	1.7581
9	2.75	4.17	7.22	7.78	43.56	56.92	0.4263	0.0520	0.0067	1.6084	96.27	95.56	61.60	54.01	-1325.2	-828.1	1.8084
10	3.06	4.37	8.04	7.73	43.70	56.03	0.4345	0.0665	0.0138	1.6162	92.32	91.66	62.76	55.03	-1366.0	-850.7	1.8162
11	3.42	4.57	9.88	7.52	43.35	55.67	0.4310	0.0835	0.0171	1.8179	90.25	89.41	63.75	56.23	-1406.7	-885.8	1.8175

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.1930	1.7559	94.30	94.73	41.97	1.1930	1.7959	94.30	94.73

STATOR 1

RUN NO 2, SPEED CODE 10, POINT NO 4

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/TO1
1	18.127	14.725	1060.2	663.1	654.7	654.7	633.8	-108.7	52.0	-9.1	0.9410	0.5593	1.7690	1.1989	1.7690	1.1989
2	13.763	12.605	1022.0	664.2	653.9	659.7	785.4	-76.9	50.3	-6.6	0.9028	0.5610	1.7774	1.1957	1.7774	1.1957
3	11.535	11.009	1001.4	674.6	665.1	673.9	748.6	-31.9	48.4	-2.7	0.8823	0.5707	1.7942	1.1946	1.7942	1.1946
4	7.900	6.132	924.1	686.7	650.2	685.0	656.7	-48.9	45.3	-4.1	0.8060	0.5823	1.8055	1.1920	1.8095	1.1920
5	1.384	0.393	824.9	648.7	598.2	647.0	568.0	-46.1	43.5	-4.1	0.7105	0.5464	1.7433	1.1905	1.7433	1.1905
6	-1.862	-2.346	748.1	568.1	529.2	564.3	528.7	-66.6	45.0	-6.5	0.6392	0.4951	1.6677	1.1881	1.6677	1.1881
7	-3.138	-3.537	759.5	598.2	568.8	594.6	503.3	-66.3	41.5	-6.4	0.6508	0.5049	1.6750	1.1844	1.6750	1.1844
8	-4.109	-4.476	770.9	626.4	602.4	624.6	461.1	-47.5	38.7	-4.4	0.6623	0.5305	1.7024	1.1821	1.7024	1.1821
9	-6.546	-6.883	783.9	681.6	630.0	681.1	466.4	-26.4	36.6	-2.2	0.6715	0.5775	1.7635	1.1926	1.7635	1.1926
10	-7.314	-7.627	787.8	684.6	625.0	682.6	479.6	-52.5	37.6	-4.4	0.6719	0.5774	1.7662	1.2036	1.7662	1.2036
11	-8.285	-8.392	787.3	675.2	624.0	669.6	480.1	-87.0	37.7	-7.4	0.6698	0.5678	1.7567	1.2083	1.7567	1.2083

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-0.31	1.60	3.26	61.12	52.27	63.47	0.5494	0.1370	0.0277	0.9404	82.81	88.94	89.77	88.94	89.77
2	-0.31	1.89	4.63	56.92	53.21	64.37	0.5234	0.1036	0.0218	0.9575	86.13	91.18	91.85	91.18	91.85
3	-1.09	1.70	7.71	51.12	55.17	66.10	0.4925	0.0893	0.0157	0.9646	87.27	93.33	93.84	93.33	93.84
4	-1.75	1.97	5.21	49.32	55.98	67.49	0.4379	0.0150	0.0037	0.9947	97.25	96.11	96.41	96.11	96.41
5	-2.02	3.03	5.24	47.56	53.06	62.58	0.4079	0.0091	0.0025	0.9978	97.74	90.24	90.95	90.24	90.95
6	-0.03	5.58	2.85	51.50	47.26	55.65	0.4400	0.0684	0.0195	0.9834	84.50	83.62	84.74	83.62	84.74
7	-3.26	2.62	3.01	47.92	51.64	56.78	0.4337	0.1423	0.0413	0.9643	68.14	86.09	87.05	86.09	87.05
8	-3.93	0.22	5.07	43.04	55.52	59.99	0.3925	0.1397	0.0414	0.9642	69.00	90.13	90.82	90.13	90.82
9	-8.01	-1.13	8.32	38.84	58.90	65.53	0.3289	0.0985	0.0306	0.9744	65.88	91.28	91.93	91.28	91.93
10	-7.33	-0.28	7.36	42.03	58.15	65.19	0.3474	0.1065	0.0336	0.9722	63.03	86.63	87.64	86.63	87.64
11	-7.93	-0.78	5.87	45.15	57.93	63.68	0.3749	0.1299	0.0413	0.9663	58.01	83.78	85.00	83.78	85.00

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
10700.	184.80	1.1930	1.7541	90.19	90.92	1.1930	0.9767	90.19

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA
(Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 2

RUN NO 2, SPEED CODE 10, POINT NO 4

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VØ-1 FT/SEC	VØ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	11.410	11.055	746.6	1068.2	739.6	721.3	-102.5	786.0	-7.9	47.4	0.6350	0.8521	834.3	875.1	1.0152	0.5795	1193.6	726.5
2	10.424	9.762	754.6	1057.4	750.9	708.0	-74.1	765.3	-5.6	47.9	0.6432	0.8444	857.9	893.4	1.0203	0.5719	1196.9	716.2
3	9.351	8.553	770.4	1047.1	769.8	694.9	-30.6	783.3	-2.3	48.3	0.6562	0.8378	882.2	912.4	1.0202	0.5655	1194.1	706.8
4	5.744	3.226	793.7	968.1	792.2	706.5	-48.4	661.8	-3.5	43.1	0.6807	0.7725	957.7	973.1	1.0983	0.6161	1280.6	772.1
5	4.522	1.034	748.4	837.6	747.0	597.4	-46.3	587.1	-3.5	44.5	0.6391	0.6606	1061.8	1061.1	1.1412	0.6015	1336.3	762.6
6	-2.035	-1.016	686.1	769.6	682.9	546.9	-66.9	541.5	-5.6	44.7	0.5828	0.6033	1114.8	1107.9	1.1593	0.6172	1364.9	787.4
7	-3.323	-2.128	691.3	761.0	688.1	547.5	-65.6	528.6	-5.4	43.9	0.5884	0.5970	1141.6	1132.1	1.1826	0.6392	1389.6	814.8
8	-4.437	-3.214	712.2	772.3	710.6	553.3	-47.4	538.9	-3.8	44.2	0.6081	0.6066	1168.5	1156.8	1.2025	0.6514	1408.3	829.4
9	-6.935	-6.130	759.0	791.1	758.5	573.7	-27.1	544.6	-2.0	43.4	0.6481	0.6180	1250.4	1233.4	1.2687	0.7002	1485.7	896.4
10	-7.678	-7.154	762.7	792.9	760.8	597.3	-53.5	521.6	-4.0	41.0	0.6484	0.6158	1277.9	1259.0	1.3037	0.7374	1533.5	949.4
11	-8.537	-8.400	754.2	770.9	749.1	593.8	-66.2	491.7	-6.7	39.5	0.6393	0.5947	1305.5	1286.4	1.3411	0.7653	1582.3	992.0

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHCVM-1	RHCVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VØ'-1 FT/SEC	VØ'-2 FT/SEC	PO/PO INLET
1	2.14	6.46	27.26	44.77	68.74	86.27	0.5644	0.1567	0.0355	1.7943	88.50	87.51	51.62	6.86	-936.9	-87.1	3.1746
2	1.14	5.59	22.46	42.45	69.98	86.19	0.5718	0.1373	0.0317	1.7962	89.77	88.89	51.09	8.65	-932.1	-108.1	3.1960
3	-0.51	4.07	18.03	39.34	71.84	86.24	0.5738	0.1037	0.0244	1.7572	92.10	91.42	49.84	10.50	-912.9	-129.2	3.2259
4	3.05	4.85	14.22	26.03	73.68	90.85	0.5405	0.0808	0.0190	1.7409	92.76	92.17	51.81	23.78	-1006.1	-311.3	3.1495
5	2.55	7.12	10.21	17.58	68.66	77.54	0.5631	0.1039	0.0231	1.6855	89.81	89.03	56.02	38.43	-1108.1	-474.0	2.9417
6	3.39	9.93	9.77	13.99	62.21	70.88	0.5551	0.0962	0.0196	1.6996	90.41	89.67	59.97	45.98	-1181.8	-566.5	2.8349
7	3.43	9.50	8.48	12.56	63.01	71.36	0.5435	0.1045	0.0214	1.6898	89.30	88.48	60.30	47.73	-1207.2	-603.5	2.8328
8	4.29	8.10	5.77	11.58	65.51	72.56	0.5410	0.1180	0.0247	1.6821	87.73	86.80	59.67	48.09	-1215.9	-617.9	2.8651
9	2.42	5.10	2.98	9.15	70.10	75.30	0.5294	0.1550	0.0347	1.6591	83.10	81.86	59.23	50.08	-1277.5	-688.7	2.9246
10	2.95	5.14	4.20	9.28	69.77	77.77	0.5146	0.1626	0.0373	1.6594	81.95	80.63	60.16	50.88	-1331.4	-738.0	2.9308
11	4.13	5.83	7.45	8.54	68.43	76.57	0.5098	0.1849	0.0428	1.6465	78.69	77.15	61.64	53.11	-1393.7	-794.7	2.8930

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.4176	2.9531	87.73	89.44	41.15	1.1883	1.7064	87.01	87.94

STATOR 2

RUN NO 2, SPEED CODE 10, POINT NO 4

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VØ-1 FT/SEC	VØ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/TO1
1	8.605	0.865	1097.6	719.7	772.2	719.7	780.0	-1.4	45.6	-0.1	0.8791	0.5528	3.0176	1.4464	1.7061	1.2064
2	7.652	0.811	1084.9	735.2	755.8	735.2	778.3	0.5	46.1	0.0	0.8696	0.5666	3.0551	1.4409	1.7405	1.2047
3	6.616	0.636	1073.3	760.6	740.0	760.6	777.4	1.0	46.6	0.1	0.8617	0.5893	3.1148	1.4329	1.7386	1.1993
4	3.758	-0.139	992.1	734.8	741.4	734.8	659.2	-5.4	41.7	-0.4	0.7941	0.5722	3.0877	1.4132	1.7048	1.1655
5	1.357	-0.018	860.9	627.3	629.9	626.7	586.8	-26.2	43.0	-2.4	0.6806	0.4856	2.9119	1.4052	1.6614	1.1802
6	-0.116	-0.710	793.1	549.4	579.1	548.3	541.9	-34.1	43.1	-3.6	0.6230	0.4232	2.8021	1.4045	1.6814	1.1813
7	-1.848	-0.675	784.5	545.6	579.3	544.7	529.0	-31.6	42.4	-3.3	0.6167	0.4208	2.7977	1.3999	1.6738	1.1813
8	-1.033	-0.658	796.2	565.6	585.1	565.1	540.0	-23.6	42.7	-2.4	0.6207	0.4370	2.8231	1.3987	1.6657	1.1829
9	-4.217	-1.042	819.7	628.3	610.2	628.3	547.4	1.9	41.9	0.2	0.6421	0.4843	2.8982	1.4169	1.6454	1.1866
10	-3.122	-1.205	824.9	637.0	636.6	636.9	524.5	5.4	39.5	0.5	0.6426	0.4864	2.9003	1.4335	1.6421	1.1917
11	-5.935	-1.209	808.8	602.9	639.6	602.8	495.1	10.2	37.8	1.0	0.6262	0.4589	2.8411	1.4464	1.6172	1.1971

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHCVM-1	RHCVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-2.89	-1.33	11.71	45.67	90.50	98.99	0.5049	0.1238	0.0280	0.9510	82.87	82.73	85.16	79.30	80.79
2	-1.36	0.66	11.29	46.02	90.27	102.02	0.4870	0.1104	0.0254	0.9570	83.90	84.87	87.02	81.32	82.08
3	-0.05	2.45	10.92	46.52	90.20	106.90	0.4618	0.0866	0.0203	0.9666	86.35	88.21	89.91	85.28	86.38
4	-1.05	0.02	9.89	42.13	93.95	104.76	0.4300	0.0657	0.0163	0.9775	88.30	91.60	92.81	88.14	88.99
5	-1.70	3.55	7.91	45.34	80.81	88.49	0.4692	0.0571	0.0153	0.9845	89.67	87.78	89.45	86.04	87.00
6	-1.34	4.45	6.66	46.61	74.21	76.61	0.5113	0.0537	0.0148	0.9876	90.79	84.30	86.37	87.69	88.55
7	-1.07	4.12	6.85	45.68	74.65	76.31	0.5045	0.0480	0.0134	0.9892	91.59	85.13	87.09	86.89	87.81
8	-1.39	4.82	7.71	45.05	75.65	79.41	0.4884	0.0524	0.0149	0.9879	90.43	86.25	85.08	85.03	86.06
9	-1.66	4.02	10.34	41.75	78.96	87.63	0.4292	0.0356	0.0105	0.9514	92.18	84.87	86.93	80.51	81.82
10	-4.31	1.96	11.26	39.06	81.61	87.71	0.4151	0.0430	0.0127	0.9856	90.42	81.67	84.16	78.85	80.26
11	-7.39	-0.80	12.90	36.87	81.01	81.67	0.4342	0.0758	0.0226	0.9824	84.73	77.52	80.51	74.13	75.60

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
10700.	184.80	1.4176	2.9365	85.96	87.89	1.1883	0.9811	83.66

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA
(Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 3, SPEED CODE 10, POINT NO 5

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	β-1 DEGREE	β-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-1	V'-1 FT/SEC	V'-2 FT/SEC
1	16.789	18.297	623.8	1056.9	623.8	612.5	0.0	861.3	0.0	54.6	0.5768	0.9363	630.7	730.2	0.8203	0.5549	887.1	626.4
2	14.411	15.912	637.0	1013.7	637.0	614.4	0.0	806.3	0.0	52.7	0.5899	0.8934	680.1	765.5	0.8629	0.5427	931.9	615.8
3	12.183	13.701	650.0	989.9	650.0	627.2	0.0	765.9	0.0	50.7	0.6028	0.8658	728.6	800.8	0.9054	0.5519	976.4	628.1
4	6.367	7.867	680.3	909.7	680.3	607.9	0.0	676.7	0.0	48.1	0.6331	0.7900	867.4	906.9	1.0259	0.5645	1102.3	650.0
5	0.647	1.446	699.0	814.6	699.0	559.1	0.0	592.4	0.0	46.7	0.6520	0.6981	1040.6	1048.1	1.1693	0.6182	1253.6	721.3
6	-0.676	-1.315	702.4	750.0	702.4	498.9	0.0	560.0	0.0	48.3	0.6554	0.6375	1124.0	1118.8	1.2367	0.6367	1325.4	749.1
7	-1.621	-2.580	703.6	755.5	703.6	532.4	0.0	536.0	0.0	45.2	0.6566	0.6433	1165.1	1154.1	1.2703	0.6946	1361.1	815.7
8	-2.816	-3.800	704.1	762.9	704.1	563.3	0.0	514.5	0.0	42.4	0.6571	0.6508	1206.3	1189.4	1.3035	0.7499	1396.7	879.1
9	-7.304	-7.491	695.0	773.1	695.0	591.9	0.0	497.2	0.0	40.0	0.6479	0.6571	1329.0	1295.4	1.3982	0.8446	1499.8	993.7
10	-6.968	-8.796	687.7	782.5	687.7	592.8	0.0	510.7	0.0	40.7	0.6406	0.6624	1370.0	1330.8	1.4278	0.8566	1532.9	1011.9
11	-10.651	-10.171	678.3	783.2	678.3	594.1	0.0	510.5	0.0	40.6	0.6311	0.6615	1410.8	1366.1	1.4565	0.8797	1565.4	1041.6

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	β'-1 DEGREE	β'-2 DEGREE	Vθ'-1 FT/SEC	Vθ'-2 FT/SEC	PO/PO INLET
1	-1.27	3.33	15.86	57.21	40.61	49.10	0.5236	0.0269	0.0058	1.8865	98.60	98.48	45.11	-12.10	-630.7	131.1	1.8865
2	-1.15	3.15	15.81	50.47	41.17	50.44	0.5506	0.0301	0.0069	1.8623	98.27	98.12	46.67	-3.80	-680.1	40.8	1.8623
3	-0.95	3.18	14.71	44.90	41.71	52.63	0.5540	0.0110	0.0026	1.8680	99.31	99.26	48.08	3.18	-728.6	-34.9	1.8680
4	0.29	3.76	11.05	31.06	42.90	53.09	0.5787	0.0475	0.0118	1.8342	96.36	96.05	51.79	20.73	-867.4	-230.2	1.8342
5	1.59	4.27	8.91	16.92	43.59	50.27	0.5675	0.1026	0.0239	1.7791	90.54	85.76	56.10	35.18	-1040.6	-455.7	1.7791
6	2.06	4.34	10.90	9.75	43.71	45.15	0.5667	0.1486	0.0313	1.7282	85.27	84.12	58.00	48.24	-1124.0	-558.8	1.7282
7	2.27	4.38	8.95	9.60	43.76	48.87	0.5260	0.1106	0.0234	1.7557	88.76	87.86	58.86	49.26	-1165.1	-618.1	1.7557
8	2.46	4.44	7.29	9.55	43.77	52.43	0.4898	0.0741	0.0158	1.7846	92.24	91.60	59.70	50.15	-1206.3	-674.9	1.7846
9	3.24	4.72	6.59	8.95	43.45	56.07	0.4519	0.0679	0.0144	1.8385	92.55	91.90	62.34	53.39	-1329.0	-798.2	1.8385
10	3.61	4.90	7.06	9.23	43.18	56.04	0.4576	0.0949	0.0202	1.8579	89.67	88.75	63.29	54.06	-1370.0	-820.0	1.8579
11	3.93	5.09	8.78	9.15	42.83	56.16	0.4523	0.1075	0.0227	1.8656	88.18	87.12	64.27	55.12	-1410.8	-855.6	1.8656

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.2025	1.8266	91.92	92.56	41.54	1.2029	1.8266	91.92	92.56

STATOR 1

RUN NO 3, SPEED CODE 10, POINT NO 5

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	β-1 DEGREE	β-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/TO1
1	18.100	14.749	1061.0	642.3	644.0	637.6	843.1	-77.8	52.8	-6.9	0.9405	0.5401	1.7857	1.2017	1.7857	1.2017
2	15.734	12.857	1022.1	641.1	646.2	638.2	792.0	-60.9	50.4	-5.4	0.9020	0.5399	1.7914	1.1979	1.7914	1.1979
3	13.604	11.083	1001.5	647.5	658.5	646.7	754.5	-31.0	48.9	-2.7	0.8814	0.5458	1.8028	1.1968	1.8028	1.1968
4	8.040	6.248	926.9	657.9	639.3	657.6	671.2	-18.6	46.4	-1.6	0.8069	0.5551	1.8159	1.1969	1.8159	1.1969
5	1.599	0.446	834.5	625.4	588.7	624.5	591.4	-34.2	45.1	-3.1	0.7168	0.5256	1.7638	1.1994	1.7638	1.1994
6	-1.543	-2.364	771.3	572.0	529.8	571.0	560.6	-34.3	46.6	-3.4	0.6572	0.4783	1.7009	1.2067	1.7009	1.2067
7	-2.882	-3.621	777.5	584.5	562.4	583.2	536.9	-39.1	43.7	-3.8	0.6637	0.4899	1.7114	1.1977	1.7114	1.1977
8	-3.939	-4.621	784.8	616.5	591.3	615.0	516.0	-42.8	41.2	-4.0	0.6711	0.5185	1.7435	1.1960	1.7435	1.1960
9	-6.582	-7.228	797.1	663.2	620.5	663.2	500.4	-11.1	39.0	-1.0	0.6794	0.5574	1.7930	1.2071	1.7930	1.2071
10	-7.429	-7.946	807.7	673.9	622.7	673.9	514.4	-2.4	39.7	-0.2	0.6857	0.5640	1.8023	1.2188	1.8023	1.2188
11	-8.299	-8.595	809.9	674.5	625.6	674.5	514.5	-1.6	39.6	-0.1	0.6861	0.5633	1.8020	1.2238	1.8020	1.2238

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	0.25	-2.36	5.45	59.69	51.45	62.88	0.5694	0.1225	0.0249	0.9468	85.23	89.28	90.10	89.28	90.10
2	0.05	2.45	5.83	56.36	52.69	63.34	0.5439	0.0934	0.0197	0.9618	88.07	91.49	92.15	91.49	92.15
3	-0.58	2.20	7.67	51.67	54.78	64.47	0.5208	0.0875	0.0193	0.9653	88.24	93.13	93.66	93.13	93.66
4	-0.63	3.09	7.66	47.99	55.16	65.70	0.4674	0.0263	0.0064	0.9908	95.66	94.31	94.75	94.31	94.75
5	-0.40	4.65	6.18	48.24	52.29	61.38	0.4503	0.0198	0.0054	0.9945	95.98	88.21	89.09	88.21	89.09
6	1.60	7.22	5.92	50.07	47.37	55.31	0.4769	0.0648	0.0185	0.9837	87.35	81.60	82.90	81.60	82.90
7	-1.09	4.78	5.54	47.55	51.03	56.68	0.4657	0.1163	0.0339	0.9701	77.10	83.87	85.02	83.87	85.02
8	-3.44	2.71	5.44	45.16	54.39	60.15	0.4268	0.0991	0.0293	0.9741	77.91	67.78	88.66	87.78	88.68
9	-5.64	1.24	9.59	39.94	57.99	64.79	0.3705	0.0965	0.0301	0.9743	73.36	87.59	88.54	67.59	88.54
10	-5.26	1.79	11.57	35.88	58.02	65.32	0.3712	0.1132	0.0359	0.9694	68.41	83.71	84.98	83.71	84.98
11	-6.06	1.09	13.18	35.76	58.25	65.12	0.3736	0.1268	0.0406	0.9658	64.78	81.78	83.20	81.78	83.20

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
10731.	182.90	1.2029	1.7789	88.07	88.98	1.2029	0.9771	88.07

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA
(Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 2

RUN NO 3, SPEED CODE 10, POINT NO 5

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	11.462	11.060	717.9	1065.4	713.9	694.4	-75.6	808.0	-6.0	49.2	0.6080	0.8489	836.8	877.7	0.9811	0.5561	1158.5	697.9
2	10.515	9.770	723.4	1056.9	721.0	690.2	-59.0	800.5	-4.7	49.1	0.6141	0.8429	860.4	896.0	0.9918	0.5556	1168.4	696.7
3	9.427	8.542	735.4	1049.0	734.8	693.4	-30.0	787.1	-2.3	48.5	0.6253	0.8383	884.8	915.1	0.9977	0.5635	1173.3	705.2
4	5.668	5.162	756.3	968.8	756.1	673.6	-18.4	696.2	-1.4	45.9	0.6445	0.7710	960.5	976.0	1.0541	0.5805	1237.0	729.4
5	0.408	1.019	721.2	848.6	720.4	595.4	-34.1	604.6	-2.7	45.4	0.6116	0.6671	1064.9	1064.2	1.1144	0.5913	1314.1	752.2
6	-2.288	-1.075	670.0	792.5	669.1	546.4	-34.7	574.0	-3.0	46.4	0.5650	0.6194	1118.1	1111.2	1.1241	0.5989	1332.9	766.2
7	-3.606	-2.178	679.0	782.5	677.8	548.2	-39.6	558.5	-3.3	45.5	0.5739	0.6116	1144.9	1135.4	1.1534	0.6219	1364.7	795.8
8	-4.811	-3.302	704.1	791.9	702.8	575.3	-42.9	544.2	-3.5	43.3	0.5970	0.6196	1171.9	1160.1	1.1900	0.6595	1403.5	842.8
9	-7.872	-6.743	736.8	817.2	736.7	584.3	-10.7	571.3	-0.8	44.3	0.6236	0.6352	1254.1	1237.0	1.2389	0.6886	1463.7	885.8
10	-8.682	-7.898	741.9	822.3	741.9	591.1	-2.2	571.7	-0.2	43.9	0.6251	0.6364	1281.6	1263.3	1.2492	0.7041	1482.8	909.8
11	-9.228	-8.952	737.3	804.3	737.3	552.0	-1.6	585.0	-0.1	46.6	0.6195	0.6181	1309.3	1290.1	1.2638	0.6881	1504.0	895.5

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VΘ'-1 FT/SEC	VΘ'-2 FT/SEC	PO/PO INLET
1	2.39	6.71	26.10	46.17	67.88	83.60	0.5749	0.1651	0.0375	1.7874	88.35	87.36	51.87	5.70	-912.3	-69.6	3.1920
2	1.90	6.35	21.67	44.01	68.75	84.55	0.5785	0.1458	0.0337	1.7986	89.55	88.65	51.85	7.85	-919.4	-95.5	3.2226
3	0.85	5.44	17.96	40.79	70.13	86.65	0.5683	0.1020	0.0240	1.8068	92.50	91.85	51.22	10.43	-914.8	-128.0	3.2580
4	0.59	5.38	12.99	29.79	71.85	86.95	0.5600	0.0827	0.0197	1.7486	92.99	92.42	52.34	22.55	-979.0	-279.7	3.1744
5	3.29	7.86	9.45	19.09	67.58	77.62	0.5650	0.1022	0.0229	1.6971	90.30	89.55	56.76	37.67	-1099.0	-459.6	2.9893
6	5.49	9.83	8.27	15.38	62.12	71.21	0.5607	0.0857	0.0181	1.7069	91.72	91.07	59.86	44.48	-1152.8	-537.1	2.9048
7	5.34	9.42	7.16	13.79	63.24	71.74	0.5505	0.1044	0.0219	1.6910	89.58	88.79	60.21	46.42	-1184.5	-576.9	2.8994
8	4.56	8.37	4.57	13.05	66.02	75.74	0.5302	0.1168	0.0250	1.6772	87.89	86.98	59.94	46.89	-1214.9	-616.0	2.9282
9	2.95	5.63	1.54	11.13	69.41	76.55	0.5330	0.1575	0.0363	1.6663	83.28	82.04	55.76	48.63	-1264.7	-665.7	2.9898
10	2.74	4.92	2.71	10.55	69.51	76.94	0.5263	0.1560	0.0369	1.6643	83.24	82.00	59.94	49.39	-1283.8	-691.6	3.0002
11	3.06	4.77	6.20	8.73	69.90	71.05	0.5511	0.2019	0.0471	1.6453	78.46	76.91	60.59	51.86	-1310.9	-705.1	2.9648

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.4292	3.0419	86.80	88.67	40.33	1.1881	1.7100	87.42	88.33

STATOR 2

RUN NO 3, SPEED CODE 10, POINT NO 5

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	6.038	0.880	1091.2	688.5	743.1	688.0	799.9	28.1	47.4	2.3	0.8730	0.5272	3.0369	1.4482	1.7020	1.2050
2	7.604	0.834	1081.7	708.3	735.1	707.5	793.5	34.6	47.4	2.8	0.8655	0.5441	3.0816	1.4440	1.7215	1.2049
3	6.611	0.676	1072.4	737.0	734.6	736.2	781.3	34.1	46.9	2.6	0.8596	0.5690	3.1445	1.4367	1.7462	1.2004
4	4.064	-0.040	990.5	707.8	707.2	707.5	693.6	23.0	44.5	1.9	0.7904	0.5485	3.1107	1.4203	1.7117	1.1867
5	1.370	-0.540	869.3	605.2	625.2	605.2	604.0	-4.6	44.0	-0.4	0.6649	0.4659	2.9473	1.4163	1.6643	1.1811
6	0.050	-0.581	813.4	549.0	575.9	548.9	574.4	-10.0	44.9	-1.0	0.6371	0.4210	2.8692	1.4169	1.6853	1.1738
7	-0.629	-0.569	803.4	542.8	576.8	542.7	559.3	-4.7	44.1	-0.5	0.6291	0.4163	2.8609	1.4150	1.6740	1.1809
8	-1.266	-0.544	813.1	560.3	603.3	560.3	545.0	3.1	42.1	0.3	0.6375	0.4305	2.8836	1.4134	1.6595	1.1815
9	-3.399	-0.772	844.2	616.9	619.0	615.7	573.9	37.6	42.8	3.5	0.6580	0.4720	2.9528	1.4354	1.6481	1.1696
10	-4.283	-0.934	853.0	626.4	630.2	624.5	574.9	49.4	42.4	4.5	0.6622	0.4772	2.9603	1.4491	1.6427	1.1893
11	-5.360	-1.036	840.4	593.9	599.2	592.0	589.2	46.1	44.6	4.6	0.6480	0.4489	2.9055	1.4649	1.6124	1.1970

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-1.07	0.49	14.15	45.05	87.84	96.43	0.5286	0.1211	0.0273	0.9525	84.04	83.02	85.41	79.42	80.90
2	-0.01	2.01	14.05	44.61	88.53	99.99	0.5063	0.1079	0.0248	0.9583	85.01	85.03	87.17	81.30	82.67
3	0.33	2.80	13.49	44.25	90.34	105.32	0.4771	0.0869	0.0204	0.9667	87.01	88.28	89.98	85.52	86.61
4	-1.04	2.82	12.18	42.65	90.09	102.38	0.4581	0.0683	0.0170	0.9767	88.71	90.74	92.08	88.27	89.12
5	-0.72	4.55	9.86	44.43	80.66	86.59	0.4964	0.0665	0.0178	0.9819	88.97	86.56	88.41	85.42	86.89
6	0.49	6.28	9.17	45.93	74.31	77.91	0.5277	0.0590	0.0163	0.9858	90.39	83.95	86.11	88.64	89.03
7	-0.16	5.84	9.67	44.57	74.71	77.06	0.5233	0.0540	0.0151	0.9874	91.08	84.07	86.21	87.08	87.98
8	-2.03	4.21	10.42	41.73	78.61	79.81	0.4998	0.0530	0.0151	0.9874	90.88	85.13	87.14	85.19	86.20
9	-0.97	5.73	13.67	39.33	80.00	86.85	0.4545	0.0451	0.0132	0.9687	91.27	82.90	85.26	80.34	81.66
10	-2.05	4.81	15.29	37.68	80.79	87.27	0.4485	0.0532	0.0157	0.9865	89.70	80.59	83.27	79.86	81.71
11	-1.14	5.95	16.57	39.55	75.75	81.34	0.4868	0.0828	0.0246	0.9797	85.30	76.27	79.48	73.62	75.33

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
10731.	182.90	1.4292	2.9805	84.95	87.04	1.1881	0.9798	83.65

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA (Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 3, SPEED CODE 10, POINT NO 6

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	16.781	18.431	603.5	1034.7	603.5	568.3	0.0	851.1	0.0	55.4	0.5568	0.9145	629.7	729.0	0.8048	0.5311	872.2	600.6
2	14.405	16.155	617.1	992.4	617.1	589.3	0.0	796.5	0.0	53.6	0.5702	0.8727	679.0	764.3	0.8478	0.5191	917.5	590.3
3	12.213	14.016	630.5	966.0	630.5	597.4	0.0	761.7	0.0	51.9	0.5834	0.8463	727.4	799.5	0.8908	0.5246	962.6	598.6
4	3.520	8.262	663.3	893.2	663.3	586.7	0.0	673.5	0.0	49.0	0.6160	0.7744	866.0	905.4	1.0131	0.5469	1090.8	630.6
5	0.734	1.934	686.5	809.9	686.5	540.7	0.0	603.0	0.0	46.1	0.6394	0.6927	1039.0	1046.4	1.1598	0.5960	1245.3	699.1
6	-0.926	-0.638	692.0	754.8	692.0	466.5	0.0	577.1	0.0	49.9	0.6449	0.6403	1122.2	1117.0	1.2286	0.6165	1318.4	726.8
7	-1.753	-2.145	694.1	759.1	694.1	518.2	0.0	554.7	0.0	46.9	0.6470	0.6447	1163.3	1152.2	1.2627	0.6716	1354.6	790.9
8	-2.979	-3.429	695.3	765.2	695.3	547.1	0.0	535.1	0.0	44.3	0.6483	0.6507	1204.3	1187.5	1.2965	0.7240	1390.6	851.4
9	-7.333	-7.307	688.7	772.9	688.7	575.8	0.0	515.6	0.0	41.3	0.6416	0.6548	1326.5	1293.3	1.3926	0.8199	1495.0	967.7
10	-9.003	-8.076	682.3	783.6	682.3	578.5	0.0	528.6	0.0	42.3	0.6351	0.6614	1367.7	1328.6	1.4228	0.8332	1526.5	987.2
11	-10.665	-10.113	673.6	785.7	673.6	562.6	0.0	527.1	0.0	42.0	0.6263	0.6617	1408.5	1363.9	1.4518	0.8587	1561.3	1019.6

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VΘ'-1 FT/SEC	VΘ'-2 FT/SEC	PO/PO INLET
1	-0.37	4.23	16.20	57.76	39.70	48.03	0.5419	0.0067	0.0014	1.8845	99.66	99.64	46.01	-11.75	-629.7	122.1	1.8845
2	-0.29	4.01	16.27	50.86	40.31	49.27	0.5691	0.0105	0.0025	1.8635	99.39	99.34	47.53	-3.33	-679.0	34.3	1.8635
3	-0.10	4.00	15.16	45.28	40.69	51.03	0.5767	-0.0004	-0.0001	1.8687	100.02	100.04	48.90	3.65	-727.4	-37.8	1.8687
4	0.95	4.42	11.90	30.88	42.25	52.30	0.5906	0.0227	0.0056	1.8500	98.30	98.16	52.46	21.58	-866.0	-231.9	1.8500
5	2.02	4.70	9.09	17.17	43.14	49.62	0.5846	0.0865	0.0201	1.8146	92.27	91.62	56.53	39.36	-1039.0	-443.4	1.8146
6	2.40	4.68	10.83	10.36	43.34	44.96	0.5854	0.1339	0.0264	1.7759	87.24	86.19	58.34	47.97	-1122.2	-539.9	1.7759
7	2.53	4.66	6.75	10.10	43.42	48.53	0.5466	0.1006	0.0214	1.8023	90.17	89.34	59.16	49.06	-1163.3	-597.5	1.8023
8	2.76	4.71	7.15	5.97	43.40	51.69	0.5125	0.0697	0.0149	1.8300	92.59	92.39	59.97	50.01	-1204.3	-652.5	1.8300
9	3.47	4.90	6.62	9.10	43.22	55.63	0.4719	0.0636	0.0134	1.8838	93.27	92.65	62.52	53.42	-1326.9	-777.7	1.8838
10	3.76	5.05	7.04	9.39	42.98	55.63	0.4763	0.0685	0.0168	1.9070	90.71	89.84	63.44	54.04	-1367.7	-800.0	1.9070
11	4.06	5.21	8.70	9.35	42.05	56.31	0.4689	0.0977	0.0207	1.9164	89.62	88.64	64.39	55.04	-1408.5	-836.7	1.9164

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.2067	1.8538	93.23	93.78	41.11	1.2067	1.8538	93.23	93.78

STATOR 1

RUN NO 3, SPEED CODE 10, POINT NO 6

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	18.212	14.926	1036.4	613.0	616.3	611.3	833.2	-45.2	53.7	-4.2	0.9163	0.5147	1.7912	1.1990	1.7912	1.1990
2	15.931	13.182	996.4	609.4	617.6	608.2	784.4	-37.4	51.9	-3.5	0.8787	0.5122	1.7948	1.1956	1.7948	1.1958
3	13.651	11.511	977.2	612.3	626.0	610.4	750.3	-47.7	50.2	-4.4	0.8575	0.5149	1.8030	1.1954	1.8030	1.1954
4	8.407	6.886	908.5	626.0	615.7	625.2	668.0	-32.0	47.3	-2.9	0.7893	0.5269	1.8239	1.1957	1.8239	1.1957
5	2.173	1.315	826.5	604.2	569.9	602.7	602.0	-42.6	46.6	-4.0	0.7105	0.5061	1.7924	1.2026	1.7924	1.2026
6	-0.901	-1.451	775.8	560.4	517.9	555.2	577.6	-76.1	48.1	-7.8	0.6596	0.4669	1.7440	1.2070	1.7440	1.2070
7	-2.287	-2.670	780.3	575.7	547.7	573.5	555.8	-50.6	45.4	-5.0	0.6643	0.4807	1.7584	1.2046	1.7584	1.2046
8	-3.455	-3.680	786.7	600.0	575.2	599.8	536.7	-14.1	43.1	-1.3	0.6705	0.5022	1.7832	1.2037	1.7832	1.2037
9	-6.412	-6.512	797.4	650.5	605.7	650.1	518.7	-24.1	40.7	-2.1	0.6775	0.5444	1.8416	1.2142	1.8416	1.2142
10	-7.344	-7.401	809.6	659.9	610.0	659.3	532.3	-27.7	41.2	-2.4	0.6853	0.5459	1.8521	1.2259	1.8521	1.2259
11	-8.273	-9.287	813.4	660.9	616.0	658.3	531.2	-58.5	40.9	-5.1	0.6872	0.5457	1.8551	1.2307	1.8551	1.2307

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	1.13	3.26	8.14	57.89	50.25	61.39	0.5749	0.1179	0.0240	0.9506	85.97	91.00	91.69	91.00	91.69
2	1.07	3.47	7.74	55.40	51.40	61.43	0.5583	0.0936	0.0198	0.9631	88.29	92.84	93.39	92.84	93.39
3	0.72	3.51	5.95	54.68	53.11	61.88	0.5483	0.0922	0.0203	0.9649	87.97	93.62	94.29	93.62	94.29
4	0.34	4.06	6.35	50.27	54.32	63.71	0.4954	0.0414	0.0101	0.9861	93.53	95.65	95.99	95.65	95.99
5	1.05	6.10	5.27	50.57	51.71	60.62	0.4806	0.0391	0.0107	0.9889	92.77	89.46	90.27	89.46	90.27
6	3.10	6.71	1.55	55.93	47.30	55.14	0.5165	0.0661	0.0188	0.9634	87.81	83.12	84.37	83.12	84.37
7	0.64	6.52	4.34	50.49	50.70	57.18	0.4899	0.1053	0.0306	0.9729	80.08	85.44	86.53	85.44	86.53
8	-1.54	4.60	8.08	44.41	53.91	60.08	0.4460	0.1046	0.0310	0.9727	78.49	88.14	89.05	88.14	89.05
9	-3.93	2.93	8.41	42.80	57.71	65.29	0.3987	0.0868	0.0271	0.9770	77.84	88.89	89.79	88.89	89.79
10	-3.72	3.33	9.36	43.64	56.01	65.77	0.4068	0.1091	0.0345	0.9705	72.39	85.16	86.37	85.16	86.37
11	-4.72	2.43	8.21	46.01	56.61	65.53	0.4219	0.1225	0.0391	0.9666	69.27	83.61	84.95	83.61	84.95

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
10714.	181.00	1.2067	1.8090	89.22	90.06	1.2067	0.9758	89.22

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TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA
(Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 2

RUN NO 3, SPEED CODE 10, POINT NO 6

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	11.668	11.103	664.8	1048.9	663.3	600.3	-44.0	860.1	-3.8	55.0	0.5607	0.8328	835.4	876.2	0.9291	0.4768	1101.5	600.5
2	10.925	9.866	668.9	1038.3	667.9	610.0	-36.4	840.3	-3.1	53.9	0.5652	0.8251	859.0	894.6	0.9440	0.4866	1117.1	612.4
3	9.950	8.666	679.5	1027.2	677.9	659.5	-46.5	767.5	-3.9	50.0	0.5749	0.8177	883.4	913.6	0.9737	0.5346	1150.6	671.5
4	6.206	5.174	708.1	947.4	707.4	637.4	-31.6	700.9	-2.6	47.7	0.6007	0.7510	959.0	974.4	1.0327	0.5496	1217.3	693.6
5	1.260	1.288	692.0	834.7	690.7	567.3	-42.3	612.3	-3.5	47.2	0.5843	0.6534	1063.2	1062.5	1.1008	0.5669	1303.5	724.2
6	-1.414	-0.865	653.4	781.6	648.9	564.9	-76.2	540.1	-6.7	43.7	0.5486	0.6604	1116.3	1109.4	1.1399	0.6245	1357.6	802.0
7	-2.816	-2.062	664.9	776.7	663.0	547.7	-50.5	550.8	-4.3	45.1	0.5595	0.6048	1143.1	1133.5	1.1483	0.6427	1365.3	799.7
8	-3.962	-3.096	684.6	783.4	684.5	530.3	-13.7	576.6	-1.1	47.3	0.5774	0.6104	1170.0	1150.3	1.1532	0.6133	1367.4	787.1
9	-6.759	-6.136	730.3	802.7	729.9	575.3	-24.3	559.8	-1.9	44.1	0.6158	0.6216	1232.0	1235.0	1.2359	0.6809	1470.3	887.1
10	-7.683	-7.263	739.4	806.3	738.9	592.2	-28.1	547.2	-2.2	42.6	0.6209	0.6218	1279.6	1261.2	1.2613	0.7153	1501.9	927.7
11	-8.573	-8.495	739.6	789.4	737.2	585.7	-59.2	529.2	-4.6	42.0	0.6196	0.6043	1307.2	1288.0	1.3011	0.7338	1552.6	958.5

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VΘ'-1 FT/SEC	VΘ'-2 FT/SEC	PO/PO INLET
1	3.43	7.75	21.93	51.38	65.06	72.91	0.6456	0.2208	0.0503	1.7809	85.77	84.57	52.91	1.53	-879.4	-16.1	3.1897
2	3.32	7.77	18.89	48.21	65.66	75.47	0.6376	0.1904	0.0443	1.7942	87.45	86.38	53.26	5.07	-895.4	-54.3	3.2190
3	3.59	8.16	18.33	43.14	66.63	83.29	0.5906	0.1328	0.0315	1.8037	90.73	89.93	53.94	10.80	-929.5	-126.1	3.2500
4	2.70	7.56	13.66	31.25	69.33	83.29	0.5858	0.1165	0.0280	1.7419	90.37	89.59	54.51	23.22	-990.6	-273.5	3.1775
5	4.54	9.11	10.22	19.57	66.74	75.17	0.5855	0.1320	0.0293	1.6868	87.83	86.91	58.01	38.44	-1105.4	-450.1	3.0282
6	7.35	11.39	8.98	16.24	61.95	74.97	0.5427	0.1017	0.0213	1.6939	90.07	89.31	61.42	45.19	-1192.4	-569.2	2.9567
7	6.05	10.13	7.47	14.19	63.59	73.10	0.5482	0.1105	0.0231	1.6855	89.04	88.21	60.92	46.75	-1193.5	-582.7	2.9629
8	4.54	8.35	5.25	12.35	66.00	71.23	0.5594	0.1212	0.0256	1.6782	87.91	87.00	59.92	47.57	-1183.7	-561.6	2.9906
9	3.35	6.03	2.34	10.72	70.51	77.37	0.5340	0.1611	0.0366	1.6624	82.55	81.69	60.16	49.44	-1276.4	-675.2	3.0594
10	3.24	5.42	3.52	10.25	70.90	79.32	0.5197	0.1563	0.0363	1.6599	83.06	81.82	60.44	50.19	-1307.6	-714.0	3.0732
11	4.04	5.74	6.56	9.34	70.62	77.63	0.5239	0.1973	0.0456	1.6404	78.35	76.60	61.55	52.22	-1366.4	-758.6	3.0431

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.4357	3.0801	86.61	88.52	35.31	1.1898	1.7027	85.85	86.87

STATOR 2

RUN NO 3, SPEED CODE 10, POINT NO 6

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/TO1
1	8.383	0.805	1070.3	631.1	648.4	630.7	851.6	21.6	53.0	2.0	0.8523	0.4806	3.0270	1.4513	1.6900	1.2103
2	7.135	0.691	1059.1	653.8	654.0	653.5	833.0	20.9	52.1	1.8	0.8436	0.4996	3.0693	1.4406	1.7111	1.2091
3	5.069	0.522	1047.1	682.9	696.9	682.5	781.5	21.3	46.4	1.8	0.8357	0.5244	3.1255	1.4369	1.7359	1.2037
4	3.778	0.035	966.2	668.1	668.2	667.6	697.9	21.5	46.3	1.8	0.7676	0.5153	3.1144	1.4241	1.7065	1.1912
5	0.657	-0.005	854.3	586.4	596.2	586.4	611.8	-0.4	45.7	-0.0	0.6701	0.4497	2.9681	1.4232	1.6620	1.1842
6	-0.364	-0.650	802.6	544.1	593.2	544.1	540.6	-5.2	42.3	-0.6	0.6260	0.4159	2.9180	1.4247	1.6705	1.1811
7	-0.923	-0.608	798.5	537.9	577.6	537.8	551.4	-4.7	43.6	-0.5	0.6230	0.4111	2.9189	1.4235	1.6648	1.1809
8	-1.634	-0.604	806.1	552.1	562.1	552.1	577.8	-2.9	45.8	-0.3	0.6295	0.4226	2.9566	1.4227	1.6546	1.1810
9	-4.203	-0.567	831.2	616.1	611.8	617.6	562.7	19.5	42.6	1.8	0.6454	0.4716	3.0163	1.4433	1.6407	1.1696
10	-5.038	-1.107	838.5	631.4	632.5	630.6	550.4	32.2	41.1	2.9	0.6485	0.4801	3.0276	1.4560	1.6356	1.1689
11	-5.875	-1.144	827.4	665.1	653.9	604.3	533.0	31.6	40.2	3.0	0.6357	0.4566	2.9782	1.4729	1.6055	1.1962

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	4.51	6.07	13.77	51.00	77.62	69.86	0.5850	0.1348	0.0305	0.9490	83.34	82.10	84.62	76.32	77.99
2	4.63	6.65	13.08	50.22	79.62	73.66	0.5589	0.1216	0.0280	0.9547	84.17	84.20	86.45	78.75	80.29
3	1.78	4.28	12.63	46.63	86.87	99.15	0.5198	0.1001	0.0235	0.9632	86.03	87.29	89.13	83.20	84.44
4	0.75	4.62	12.16	44.47	90.34	98.12	0.4866	0.0702	0.0174	0.9770	89.60	90.03	91.47	85.88	85.90
5	1.01	6.32	10.26	45.76	78.22	85.25	0.5108	0.0625	0.0167	0.9835	89.80	86.39	88.29	84.21	85.29
6	-2.03	3.70	9.67	42.86	77.95	78.53	0.5179	0.0557	0.0154	0.9868	90.88	84.25	86.39	86.55	87.49
7	-0.60	5.40	9.66	44.13	76.29	77.61	0.5206	0.0605	0.0170	0.9861	90.04	84.19	86.35	86.04	87.01
8	1.70	7.91	9.61	46.06	74.67	79.83	0.5154	0.0653	0.0165	0.9848	88.91	84.91	86.99	84.59	85.04
9	-1.17	5.53	11.97	40.63	81.13	88.55	0.4479	0.0548	0.0161	0.9867	89.02	83.29	85.64	75.54	80.91
10	-3.38	3.50	13.69	38.16	85.39	89.59	0.4308	0.0598	0.0177	0.9853	87.70	81.28	83.91	79.24	80.62
11	-5.54	1.56	14.92	37.21	82.38	84.42	0.4507	0.0696	0.0267	0.9787	82.88	77.16	80.32	75.22	74.93

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
10714.	181.00	1.4357	3.0158	84.72	86.66	1.1898	0.9791	82.20

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA (Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 3, SPEED CODE 15, POINT NO 31

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	16.540	18.366	666.7	1154.5	666.7	732.8	0.0	892.2	0.0	50.6	0.6194	1.0317	660.5	765.1	0.8722	0.6646	938.8	743.7
2	15.875	16.033	683.1	1119.3	683.1	734.1	0.0	844.9	0.0	49.0	0.6359	0.9946	712.7	802.2	0.9190	0.6534	987.2	735.3
3	11.362	13.844	699.0	1093.6	699.0	740.0	0.0	805.3	0.0	47.4	0.6520	0.9678	763.5	839.2	0.9655	0.6555	1035.2	740.8
4	4.619	8.029	735.7	986.3	735.7	702.0	0.0	692.9	0.0	44.6	0.6893	0.8604	908.9	950.3	1.0957	0.6522	1169.3	747.7
5	-1.665	1.386	753.3	757.4	753.3	582.4	0.0	544.6	0.0	43.1	0.7075	0.6844	1090.5	1098.3	1.2448	0.6898	1325.4	803.6
6	-2.451	-1.682	755.1	700.9	755.1	505.9	0.0	485.1	0.0	43.8	0.7094	0.5977	1177.8	1172.4	1.3144	0.7277	1399.1	853.4
7	-2.755	-2.970	756.0	739.6	756.0	573.8	0.0	466.6	0.0	39.1	0.7103	0.6336	1221.0	1209.4	1.3492	0.8042	1436.1	938.7
8	-3.854	-4.194	755.7	774.5	755.7	627.5	0.0	454.6	0.0	35.9	0.7100	0.6662	1264.0	1246.4	1.3836	0.8687	1472.7	1010.3
9	-6.569	-7.833	740.0	800.7	740.0	662.4	0.0	449.8	0.0	34.2	0.6937	0.6861	1392.7	1357.5	1.4786	0.9628	1577.1	1123.6
10	-10.291	-9.112	729.6	797.7	729.6	651.3	0.0	460.6	0.0	35.2	0.6831	0.6801	1435.6	1394.5	1.5677	0.9708	1610.3	1138.6
11	-11.604	-10.384	718.2	759.7	718.2	586.8	0.0	482.4	0.0	39.3	0.6715	0.6405	1478.4	1431.5	1.5367	0.9408	1643.6	1115.9

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VΘ'-1 FT/SEC	VΘ'-2 FT/SEC	PO/PO INLET
1	-1.66	2.73	18.10	54.36	42.38	56.89	0.4348	-0.0054	-0.0012	2.0050	100.28	100.32	44.51	-9.85	-660.9	127.1	2.0050
2	-1.66	2.42	16.27	49.27	43.01	58.40	0.4678	0.0039	0.0009	1.9890	99.78	95.76	45.94	-3.33	-712.7	42.7	1.9890
3	-1.75	2.35	14.16	44.63	43.59	60.12	0.4848	0.0027	0.0006	1.9858	99.82	95.81	47.25	2.63	-763.5	-33.9	1.9858
4	-0.67	2.80	10.46	30.69	44.84	58.91	0.5276	0.0740	0.0185	1.8792	93.90	93.36	50.83	20.14	-908.9	-257.4	1.8792
5	0.85	3.53	13.28	11.81	45.39	49.49	0.5207	0.1635	0.0356	1.6602	82.27	81.01	55.36	43.55	-1090.5	-553.7	1.6602
6	1.42	3.70	16.31	3.70	45.44	43.15	0.5018	0.1951	0.0366	1.5681	76.63	75.14	57.35	53.65	-1177.8	-687.3	1.5681
7	1.66	3.76	12.01	5.91	45.47	49.82	0.4516	0.1366	0.0271	1.6265	83.47	82.33	58.24	52.32	-1221.0	-742.8	1.6265
8	1.91	3.86	8.76	7.51	45.46	55.31	0.4156	0.0888	0.0183	1.6849	89.18	88.37	59.12	51.61	-1264.0	-791.8	1.6849
9	2.99	4.41	7.05	8.19	44.97	58.82	0.3881	0.0940	0.0197	1.7388	88.29	87.36	62.04	53.85	-1392.7	-907.6	1.7388
10	3.41	4.71	8.06	8.04	44.64	57.34	0.3959	0.1303	0.0270	1.7326	83.83	82.56	63.10	55.06	-1435.6	-933.9	1.7326
11	3.77	4.93	11.84	5.92	44.26	50.57	0.4285	0.2133	0.0415	1.6764	73.70	71.76	64.11	58.19	-1478.4	-949.1	1.6764

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.2015	1.7667	87.55	88.49	43.22	1.2015	1.7667	87.55	88.49

STATOR 1

RUN NO 3, SPEED CODE 15, POINT NO. 31

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	18.226	14.923	1166.1	818.4	772.7	818.3	873.4	-6.9	48.7	-0.5	1.0442	0.6954	1.8814	1.2188	1.8814	1.2188
2	15.956	13.226	1135.4	817.5	774.8	817.5	829.9	8.9	47.1	0.6	1.0118	0.6951	1.8866	1.2172	1.8866	1.2172
3	13.878	11.667	1113.0	825.1	780.7	824.6	793.2	28.1	45.5	1.9	0.9682	0.7024	1.9000	1.2168	1.9000	1.2168
4	8.436	7.480	1011.3	793.5	741.7	793.5	687.5	4.5	42.8	0.3	0.8854	0.6750	1.8384	1.2102	1.8384	1.2102
5	1.764	1.834	824.3	656.5	619.5	654.8	543.8	-47.8	41.3	-4.2	0.7097	0.5557	1.6318	1.1898	1.6318	1.1898
6	-1.808	-1.370	729.5	598.2	545.0	595.3	485.4	-59.0	41.7	-5.7	0.6243	0.5054	1.5556	1.1818	1.5556	1.1818
7	-3.159	-2.814	766.7	622.3	607.6	620.3	467.5	-49.9	37.6	-4.6	0.6588	0.5270	1.5746	1.1813	1.5746	1.1813
8	-3.994	-3.932	800.6	670.6	658.0	669.5	456.2	-39.1	34.8	-3.3	0.6904	0.5701	1.6206	1.1828	1.6206	1.1828
9	-6.169	-6.608	828.4	741.2	693.9	740.4	452.6	-35.4	33.2	-2.7	0.7122	0.6307	1.6988	1.1965	1.6988	1.1965
10	-6.920	-7.412	827.1	737.0	685.0	736.0	463.6	-37.6	34.2	-2.9	0.7077	0.6240	1.6515	1.2066	1.6915	1.2066
11	-7.920	-8.267	791.9	695.5	625.1	694.2	486.2	-41.0	38.0	-3.4	0.6700	0.5825	1.6384	1.2215	1.6384	1.2215

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-3.84	-1.73	11.85	49.18	59.35	76.69	0.4451	0.1227	0.0251	0.9389	82.72	90.34	91.15	90.34	91.15
2	-3.74	-1.34	11.85	46.48	60.76	76.93	0.4263	0.1079	0.0229	0.9485	83.74	91.44	92.15	91.44	92.15
3	-3.98	-1.19	12.34	43.60	62.38	77.83	0.4029	0.0913	0.0201	0.9577	85.16	92.74	93.36	92.74	93.36
4	-4.16	-0.45	9.60	42.51	61.10	74.11	0.3682	0.0335	0.0082	0.9864	93.29	90.30	91.07	90.30	91.07
5	-4.25	0.80	5.14	45.42	51.82	59.03	0.3796	0.0087	0.0024	0.9972	97.77	78.88	80.23	78.88	80.23
6	-3.32	2.30	3.70	47.36	45.82	52.90	0.4047	0.0906	0.0258	0.9771	79.69	73.97	75.51	73.97	75.51
7	-7.19	-1.31	4.78	42.22	52.01	55.21	0.3948	0.1701	0.0495	0.9560	59.12	76.34	77.77	76.34	77.77
8	-9.82	-3.67	6.08	38.13	57.16	59.91	0.3491	0.1511	0.0448	0.9587	57.76	80.83	82.06	80.83	82.06
9	-11.43	-4.55	7.80	35.94	60.59	66.38	0.2909	0.0800	0.0249	0.9770	66.74	83.14	84.33	83.14	84.33
10	-10.77	-3.72	8.84	37.10	59.28	65.40	0.3019	0.0797	0.0252	0.9774	67.34	78.49	79.99	78.49	79.99
11	-7.65	-0.50	9.92	41.37	52.92	60.43	0.3366	0.0865	0.0277	0.9775	67.76	68.34	70.42	68.34	70.42

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
11245.	190.30	1.2015	1.7210	83.21	84.42	1.2015	0.9742	83.21

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA
(Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 2

RUN NO 3, SPEED CODE 15, POINT NO 31

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	β-1 DEGREE	β-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	11.628	11.400	923.5	1257.3	923.5	932.2	-6.8	843.8	-0.4	42.1	0.7953	1.0223	876.9	919.7	1.1007	0.7604	1278.2	935.2
2	10.937	10.421	927.5	1234.6	927.5	905.8	8.1	838.8	0.5	42.8	0.7998	1.0006	901.6	938.9	1.1105	0.7386	1287.9	911.3
3	10.225	9.497	937.7	1198.3	937.3	871.0	27.1	823.0	1.7	43.4	0.8099	0.9681	927.2	958.9	1.1224	0.7122	1299.5	881.5
4	7.795	6.932	921.5	1088.3	921.5	850.9	5.6	678.4	0.4	38.7	0.7965	0.8760	1006.5	1022.7	1.1759	0.7389	1360.5	918.0
5	2.580	2.003	800.0	930.9	798.6	770.7	-46.4	522.2	-3.3	34.1	0.6872	0.7452	1115.9	1115.2	1.2115	0.7784	1410.2	972.4
6	-1.030	0.139	735.0	816.1	732.6	677.3	-59.2	455.3	-4.6	33.9	0.6291	0.6500	1171.6	1164.4	1.2260	0.7810	1432.4	980.6
7	-2.735	-1.196	748.3	769.5	746.7	637.2	-50.1	431.4	-3.8	34.0	0.6417	0.6121	1199.8	1189.7	1.2484	0.7879	1455.9	990.5
8	-4.062	-2.431	784.4	778.0	783.4	656.3	-39.3	417.8	-2.9	32.4	0.6748	0.6204	1228.1	1215.7	1.2818	0.8240	1489.9	1033.1
9	-7.122	-6.033	837.5	818.1	836.8	712.1	-35.8	402.7	-2.4	29.4	0.7206	0.6505	1314.1	1296.2	1.3664	0.9085	1588.2	1142.5
10	-7.984	-7.251	830.9	808.6	830.0	704.0	-38.0	397.9	-2.6	29.4	0.7111	0.6393	1343.0	1323.8	1.3789	0.9195	1611.3	1163.2
11	-8.754	-8.513	791.4	760.4	790.3	654.9	-41.5	386.5	-3.0	30.4	0.6696	0.5947	1372.0	1351.9	1.3702	0.9123	1619.5	1166.5

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P TOT	%EFF-A TOT	β'-1 DEGREE	β'-2 DEGREE	Vθ'-1 FT/SEC	Vθ'-2 FT/SEC	PO/PO INLET
1	-5.81	-1.50	25.04	39.03	80.93	92.13	0.4234	0.3092	0.0703	1.6219	73.64	71.80	43.67	4.64	-883.7	-75.9	3.0511
2	-6.02	-1.57	20.11	37.64	81.34	90.82	0.4464	0.3182	0.0739	1.6108	72.46	70.57	43.93	6.30	-893.6	-100.1	3.0366
3	-6.46	-1.88	16.40	35.03	82.21	88.57	0.4693	0.3299	0.0781	1.5754	70.41	68.48	43.90	8.87	-900.1	-135.9	2.9862
4	-4.24	0.55	12.53	25.42	79.53	90.92	0.4489	0.2529	0.0603	1.5386	73.97	72.36	47.51	22.09	-1000.9	-344.3	2.8562
5	2.06	6.64	9.39	17.92	66.94	85.85	0.4222	0.1313	0.0295	1.5971	85.35	84.36	55.53	37.61	-1162.3	-593.0	2.6434
6	4.84	9.18	10.07	12.94	60.95	75.56	0.4203	0.1167	0.0239	1.5782	86.15	85.24	59.21	46.28	-1230.9	-709.1	2.4564
7	4.24	8.32	10.64	9.22	62.42	71.08	0.4195	0.1403	0.0275	1.5192	82.20	81.13	59.11	49.90	-1249.9	-758.3	2.3852
8	2.86	6.67	8.16	7.76	66.02	73.68	0.4018	0.1458	0.0291	1.4851	80.27	79.15	58.24	50.48	-1267.3	-797.9	2.4045
9	1.33	4.01	4.22	6.83	70.97	79.58	0.3762	0.1718	0.0375	1.4526	74.99	73.65	58.14	51.32	-1349.9	-893.5	2.4677
10	1.71	3.89	5.94	6.29	69.95	77.77	0.3756	0.1814	0.0400	1.4444	73.38	71.98	58.91	52.62	-1381.0	-925.9	2.4455
11	3.19	4.88	10.08	4.97	65.42	70.83	0.3789	0.1808	0.0385	1.4398	73.38	71.95	60.70	55.74	-1413.5	-965.4	2.3600

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.4034	2.6292	78.56	81.22	43.34	1.1680	1.5277	76.09	77.46

STATOR 2

RUN NO 3, SPEED CODE 15, POINT NO 31

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	β-1 DEGREE	β-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/TO1
1	8.905	0.919	1305.6	981.1	1003.5	979.8	835.2	-51.2	40.1	-3.0	1.0702	0.7671	2.5290	1.4685	1.3446	1.2046
2	8.070	0.945	1281.0	994.7	974.7	988.8	831.2	-108.7	40.7	-6.3	1.0461	0.7792	2.5706	1.4679	1.3649	1.2054
3	7.152	0.884	1244.4	1010.6	937.6	1004.3	818.1	-112.8	41.3	-6.4	1.0125	0.7944	2.6201	1.4641	1.3859	1.2032
4	4.447	0.423	1130.5	988.2	905.2	983.3	677.2	-98.9	36.9	-5.7	0.9152	0.7835	2.6159	1.4346	1.3991	1.1823
5	1.955	-0.117	972.8	925.3	820.1	924.4	523.2	-38.8	32.5	-2.4	0.7825	0.7387	2.5152	1.3978	1.4919	1.1697
6	0.824	-0.444	862.3	856.8	731.5	849.3	456.8	-112.7	32.0	-7.5	0.6899	0.6839	2.3958	1.3785	1.5333	1.1652
7	0.050	-0.639	812.7	802.3	688.2	797.3	432.3	-88.8	32.1	-6.3	0.6491	0.6395	2.3075	1.3679	1.4856	1.1581
8	-0.940	-0.814	819.9	801.1	704.9	800.0	418.7	-43.0	30.7	-3.1	0.6566	0.6404	2.3087	1.3604	1.4372	1.1512
9	-3.599	-1.262	863.3	864.1	762.7	864.0	404.6	-5.7	27.9	-0.4	0.6898	0.6908	2.3979	1.3769	1.4116	1.1518
10	-4.467	-1.362	859.7	841.8	760.8	840.0	400.3	-54.4	27.8	-3.7	0.6833	0.6679	2.3449	1.3901	1.3836	1.1530
11	-5.482	-1.254	820.7	758.5	722.5	757.5	389.2	-38.7	28.4	-2.9	0.6456	0.5931	2.1986	1.4064	1.3415	1.1514

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-8.39	-6.83	8.83	43.05	95.19	97.69	0.4024	0.3322	0.0750	0.8286	44.05	64.45	68.70	42.81	45.10
2	-6.71	-4.69	4.98	46.98	94.07	99.40	0.3946	0.3088	0.0707	0.8444	43.56	65.87	69.97	44.90	47.22
3	-5.33	-2.83	4.44	47.72	92.00	102.10	0.3706	0.2667	0.0622	0.8699	44.72	67.95	71.89	47.71	50.02
4	-8.68	-4.81	4.58	42.62	93.87	102.63	0.3077	0.2087	0.0516	0.9112	37.51	72.46	75.85	54.86	56.92
5	-12.18	-6.87	7.50	34.93	89.23	98.17	0.2246	0.1839	0.0492	0.9366	-9.49	75.52	78.43	70.91	72.48
6	-12.44	-6.66	2.67	39.50	79.83	90.25	0.2164	0.1563	0.0428	0.9551	-84.23	74.66	77.52	78.18	79.44
7	-12.13	-6.14	3.62	38.44	75.07	84.50	0.1986	0.1374	0.0383	0.9658	-236.54	73.13	76.04	75.28	76.61
8	-13.38	-7.18	7.03	33.74	77.43	85.24	0.1803	0.1464	0.0415	0.9635	-239.49	74.71	77.45	71.79	73.18
9	-15.85	-5.16	9.79	28.32	83.23	91.62	0.1392	0.1057	0.0310	0.9712	3572.96	75.08	77.89	67.79	69.30
10	-16.68	-5.80	7.07	31.48	81.91	87.48	0.1787	0.1582	0.0467	0.9578	-248.98	70.46	73.71	63.13	64.76
11	-17.35	-10.26	9.02	31.29	75.91	76.40	0.2317	0.2802	0.0835	0.9317	-68.99	61.90	65.77	57.43	59.14

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
11245.	190.30	1.4034	2.4425	71.79	75.03	1.1680	0.9290	62.20

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA
(Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 3, SPEED CODE 15, POINT NO 2

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-I	V'-1 FT/SEC	V'-2 FT/SEC
1	16.519	18.362	663.7	1153.3	663.7	728.6	0.0	894.0	0.0	50.9	0.6164	1.0302	660.4	764.5	0.8696	0.6611	936.3	740.
2	13.843	16.020	680.0	1114.6	680.0	726.7	0.0	845.1	0.0	49.3	0.6328	0.9897	712.1	801.5	0.9163	0.6464	984.7	728.
3	11.345	13.819	695.9	1082.1	695.9	727.3	0.0	801.2	0.0	47.8	0.6488	0.9563	762.9	838.5	0.9627	0.6435	1032.6	728.
4	4.671	7.948	732.0	981.2	732.0	698.2	0.0	689.4	0.0	44.6	0.6856	0.8557	908.2	949.5	1.0925	0.6498	1166.5	745.
5	-1.488	1.219	748.6	788.0	748.6	572.1	0.0	541.9	0.0	43.4	0.7026	0.6760	1089.6	1097.5	1.2408	0.6841	1322.0	797.
6	-2.126	-1.898	749.9	697.2	749.9	502.8	0.0	483.0	0.0	43.9	0.7039	0.5946	1176.9	1171.4	1.3100	0.7270	1395.5	852.
7	-2.497	-3.176	750.3	741.2	750.3	575.7	0.0	466.8	0.0	39.0	0.7044	0.6351	1220.0	1208.4	1.3446	0.8045	1432.2	938.
8	-3.657	-4.375	749.5	775.9	749.5	626.5	0.0	457.8	0.0	36.2	0.7036	0.6669	1263.0	1245.4	1.3787	0.8650	1468.7	1006.
9	-8.441	-7.932	733.0	802.7	733.0	662.2	0.0	453.7	0.0	34.4	0.6866	0.6875	1391.6	1356.4	1.4732	0.9588	1572.8	1119.
10	-10.185	-9.185	722.5	802.0	722.5	653.1	0.0	465.6	0.0	35.4	0.6758	0.6835	1434.4	1393.4	1.5024	0.9670	1606.1	1134.
11	-11.538	-10.424	711.1	766.7	711.1	590.1	0.0	489.5	0.0	39.6	0.6643	0.6460	1477.2	1430.4	1.5314	0.9358	1639.5	1110.

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VΘ'-1 FT/SEC	VΘ'-2 FT/SEC	PO/PO INLET
1	-1.77	2.83	17.86	54.70	42.26	56.69	0.4376	-0.0067	-0.0015	2.0075	100.34	100.39	44.61	-10.09	-660.4	129.5	2.0075
2	-1.77	2.52	16.17	49.48	42.89	57.90	0.4737	0.0092	0.0021	1.9841	99.46	99.42	46.04	-3.44	-712.1	43.6	1.9841
3	-1.65	2.46	14.47	44.42	43.48	59.12	0.4942	0.0168	0.0040	1.9666	98.92	98.82	47.36	2.93	-762.9	-37.3	1.9666
4	-0.55	2.92	10.75	30.52	44.72	58.75	0.5275	0.0713	0.0178	1.8756	94.13	93.61	50.95	20.43	-908.2	-260.2	1.8756
5	0.99	3.67	13.88	11.36	45.24	48.68	0.5235	0.1678	0.0361	1.6512	81.86	80.57	55.51	44.15	-1089.6	-555.5	1.6512
6	1.57	3.86	16.53	3.64	45.28	42.99	0.4999	0.1930	0.0360	1.5677	76.95	75.48	57.51	53.87	-1176.9	-688.5	1.5677
7	1.82	3.93	11.88	6.21	45.29	50.11	0.4494	0.1327	0.0264	1.6319	84.07	82.96	58.41	52.19	-1220.0	-741.7	1.6319
8	2.09	4.04	8.66	7.79	45.27	55.29	0.4169	0.0904	0.0187	1.6892	89.10	88.29	59.31	51.52	-1263.0	-787.6	1.6892
9	3.19	4.61	6.92	8.52	44.75	58.83	0.3897	0.0965	0.0203	1.7437	88.11	87.16	62.23	53.71	-1391.6	-902.7	1.7437
10	3.61	4.90	7.81	8.48	44.41	57.53	0.3978	0.1328	0.0277	1.7403	83.73	82.44	63.29	54.81	-1434.4	-927.8	1.7403
11	3.97	5.13	11.48	6.49	44.02	50.87	0.4317	0.2168	0.0426	1.6867	73.65	71.68	64.31	57.82	-1477.2	-940.9	1.6867

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.2017	1.7657	87.37	88.32	43.06	1.2017	1.7657	87.37	88.32

STATOR 1

RUN NO 3, SPEED CODE 15, POINT NO 2

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	18.220	14.918	1166.0	806.6	770.5	806.6	875.2	0.0	48.8	0.0	1.0440	0.6844	1.8795	1.2191	1.8795	1.2191
2	15.933	13.192	1132.2	805.6	769.8	805.4	830.2	17.2	47.3	1.2	1.0084	0.6841	1.8853	1.2170	1.8853	1.2170
3	13.817	11.568	1103.1	808.0	770.6	807.4	789.3	29.8	45.8	2.1	0.9783	0.6869	1.8914	1.2153	1.8914	1.2153
4	8.341	7.113	1007.3	781.2	739.6	781.2	684.0	9.2	42.8	0.7	0.8820	0.6640	1.8332	1.2090	1.8332	1.2090
5	1.593	1.113	814.6	646.6	609.1	644.6	541.0	-51.2	41.6	-4.5	0.7010	0.5471	1.6227	1.1887	1.6227	1.1887
6	-2.001	-2.181	725.9	594.8	541.6	592.1	483.4	-57.2	41.8	-5.5	0.6209	0.5025	1.5513	1.1813	1.5513	1.1813
7	-3.286	-3.584	767.6	624.3	608.6	622.7	467.8	-44.0	37.6	-4.1	0.6597	0.5287	1.5745	1.1816	1.5745	1.1816
8	-4.098	-4.597	801.2	674.9	656.4	674.1	459.3	-33.7	35.0	-2.9	0.6906	0.5737	1.6228	1.1839	1.6228	1.1839
9	-6.229	-7.061	828.9	748.0	691.8	747.1	456.6	-38.1	33.5	-2.9	0.7121	0.6366	1.7036	1.1980	1.7036	1.1980
10	-6.966	-7.757	829.4	746.7	684.3	745.8	468.8	-37.4	34.5	-2.9	0.7092	0.6324	1.6985	1.2085	1.6985	1.2085
11	-7.946	-8.460	796.7	707.5	625.6	706.5	493.3	-37.4	38.4	-3.0	0.6736	0.5925	1.6460	1.2245	1.6460	1.2245

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-3.71	-1.60	12.33	48.84	59.25	76.02	0.4541	0.1266	0.0259	0.9370	82.61	90.08	90.91	90.08	90.91
2	-3.54	-1.14	12.44	46.08	60.39	76.28	0.4330	0.1026	0.0218	0.9512	84.88	91.43	92.14	91.43	92.14
3	-3.76	-0.97	12.49	43.67	61.53	76.70	0.4115	0.0806	0.0178	0.9633	87.17	92.67	93.28	92.67	93.28
4	-4.24	-0.52	9.94	42.09	61.03	73.32	0.3760	0.0356	0.0087	0.9856	93.17	90.35	91.12	90.35	91.12
5	-3.92	1.13	4.77	46.12	51.01	58.10	0.3868	0.0195	0.0053	0.9951	94.89	78.35	79.72	78.35	79.72
6	-3.26	2.36	3.84	47.28	45.68	52.56	0.4059	0.1057	0.0301	0.9737	75.21	73.70	75.25	73.70	75.25
7	-7.21	-1.34	5.33	41.64	52.27	55.36	0.3903	0.1795	0.0923	0.9536	56.31	76.19	77.63	76.19	77.63
8	-9.56	-3.42	6.56	37.91	57.14	60.24	0.3433	0.1564	0.0464	0.9572	55.01	80.62	81.87	80.62	81.87
9	-11.12	-4.24	7.62	36.43	60.51	66.86	0.2855	0.0802	0.0250	0.9770	64.19	83.00	84.21	83.00	84.21
10	-10.44	-3.39	8.89	37.39	59.31	66.12	0.2944	0.0818	0.0259	0.9768	63.87	78.41	79.93	78.41	79.93
11	-7.26	-0.11	10.26	41.41	53.04	61.29	0.3271	0.0917	0.0293	0.9760	63.15	68.08	70.20	68.08	70.20

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
11236.	189.60	1.2017	1.7190	82.92	84.15	1.2017	0.9735	82.92

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA
(Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 2

RUN NO 3, SPEED CODE 15, POINT NO 2

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	11.772	11.362	918.9	1211.3	918.9	832.6	-0.2	879.8	-0.0	46.5	0.7907	0.9741	876.2	919.0	1.0926	0.6705	1269.7	833.[illegible]
2	11.205	10.353	923.9	1202.3	923.7	833.1	16.1	866.9	1.0	46.1	0.7963	0.9670	900.9	938.2	1.1025	0.6725	1279.1	836.[illegible]
3	10.519	9.376	932.6	1191.5	932.2	833.4	29.5	851.5	1.8	45.6	0.8055	0.9595	926.5	958.2	1.1172	0.6766	1293.6	840.[illegible]
4	7.646	6.459	924.4	1095.5	924.3	841.6	9.9	701.4	0.6	39.9	0.7997	0.8810	1005.7	1021.9	1.1755	0.7242	1358.7	900.[illegible]
5	1.759	1.884	792.7	892.5	791.1	716.2	-50.3	532.4	-3.6	36.6	0.6808	0.7104	1115.0	1114.3	1.2096	0.7345	1408.5	922.[illegible]
6	-1.991	-0.725	727.1	761.4	724.8	593.1	-57.2	477.4	-4.5	38.8	0.6220	0.6017	1170.7	1163.5	1.2198	0.7167	1425.9	906.[illegible]
7	-3.610	-1.917	745.2	740.9	743.9	-578.9	-43.6	462.4	-3.4	38.6	0.6387	0.5858	1198.8	1188.8	1.2411	0.7344	1448.1	928.[illegible]
8	-4.827	-3.059	781.6	771.1	780.9	627.6	-34.1	448.0	-2.5	35.5	0.6719	0.6119	1227.1	1214.7	1.2750	0.7863	1483.3	990.[illegible]
9	-7.802	-6.605	831.9	788.4	831.0	664.5	-38.5	424.2	-2.6	32.5	0.7146	0.6221	1313.1	1295.2	1.3630	0.8645	1586.6	1095.[illegible]
10	-8.480	-7.694	824.8	772.7	823.9	647.2	-37.9	422.0	-2.6	33.0	0.7046	0.6056	1342.0	1322.7	1.3729	0.8694	1607.1	1109.[illegible]
11	-9.001	-8.753	785.7	734.8	784.8	606.3	-37.9	415.1	-2.8	34.3	0.6634	0.5705	1370.9	1350.8	1.3617	0.8656	1612.7	1115.[illegible]

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VO'-1 FT/SEC	VO'-2 FT/SEC	PO/PO INLET
1	-5.89	-2.58	23.08	40.91	80.69	85.89	0.5051	0.3300	0.0752	1.6380	72.86	70.93	43.59	2.68	-876.3	-39.1	3.0779
2	-6.16	-1.71	18.70	38.91	81.17	87.86	0.5055	0.3011	0.0701	1.6570	74.99	73.16	43.79	4.88	-884.8	-71.3	3.1205
3	-6.37	-1.79	14.82	36.69	81.77	90.15	0.5018	0.2613	0.0621	1.6743	77.91	76.26	43.98	7.29	-897.0	-106.7	3.1661
4	-4.48	0.31	11.33	26.38	79.42	96.71	0.4656	0.1428	0.0343	1.6762	86.18	85.14	47.27	20.89	-995.9	-320.5	3.0951
5	2.37	6.95	10.88	16.74	66.19	84.69	0.4602	0.0703	0.0155	1.6857	92.48	91.90	55.84	39.10	-1165.3	-581.8	2.7519
6	5.06	9.40	12.91	10.31	60.42	69.74	0.4744	0.0941	0.0183	1.6303	89.21	88.46	59.43	49.12	-1227.9	-686.0	2.5294
7	4.20	8.28	12.14	7.68	62.38	68.25	0.4656	0.1102	0.0210	1.5838	86.77	85.89	59.08	51.40	-1242.4	-726.4	2.5020
8	2.84	6.65	8.31	7.60	66.00	74.63	0.4345	0.0983	0.0195	1.5717	87.51	86.69	58.22	50.63	-1261.1	-766.7	2.5553
9	1.58	4.26	5.46	5.83	70.85	78.08	0.4113	0.1520	0.0323	1.5108	79.05	77.80	58.39	52.56	-1351.6	-871.0	2.5741
10	1.91	4.09	7.52	4.92	69.84	74.98	0.4132	0.1667	0.0354	1.4973	76.86	75.52	59.11	54.20	-1379.9	-900.7	2.5391
11	3.30	4.99	11.31	3.85	65.33	68.89	0.4142	0.1604	0.0331	1.5012	77.82	76.52	60.81	56.96	-1408.9	-935.7	2.4702

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.4118	2.7725	81.81	84.18	43.24	1.1748	1.6129	83.12	84.22

STATOR 2

RUN NO 3, SPEED CODE 15, POINT NO 2

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	8.564	0.769	1253.2	886.6	901.0	886.6	871.1	1.8	44.3	0.1	1.0145	0.6837	2.7718	1.4776	1.4752	1.2117
2	7.445	0.649	1242.0	898.8	896.9	898.7	859.3	9.7	44.0	0.6	1.0051	0.6948	2.8067	1.4745	1.4912	1.2108
3	6.379	0.476	1229.5	921.5	892.3	921.5	845.8	8.6	43.6	0.5	0.9959	0.7158	2.8669	1.4681	1.5168	1.2075
4	3.904	-0.156	1130.2	926.7	887.6	926.7	699.6	-0.6	38.3	-0.0	0.9132	0.7287	2.9112	1.4377	1.5696	1.1869
5	1.741	-0.837	928.0	798.7	759.6	798.3	533.1	-26.7	35.1	-1.9	0.7416	0.6289	2.6734	1.3992	1.6203	1.1745
6	0.610	-1.037	800.0	686.1	641.5	685.5	477.9	-30.8	36.7	-2.6	0.6345	0.5383	2.4931	1.3819	1.6090	1.1697
7	-0.252	-1.117	774.2	655.0	620.4	654.5	463.2	-27.8	36.7	-2.4	0.6140	0.5139	2.4506	1.3750	1.5639	1.1639
8	-1.191	-1.154	803.7	681.1	666.5	680.7	449.1	-23.7	33.9	-2.0	0.6398	0.5363	2.4880	1.3709	1.5397	1.1583
9	-3.428	-1.252	825.2	722.7	706.7	722.7	426.1	2.8	31.1	0.2	0.6536	0.5671	2.5360	1.3893	1.4886	1.1597
10	-4.306	-1.277	814.7	707.3	695.3	707.2	424.5	11.7	31.4	0.9	0.6412	0.5514	2.5035	1.4031	1.4744	1.1609
11	-5.405	-1.220	783.8	655.9	663.0	655.7	418.0	14.3	32.3	1.2	0.6112	0.5059	2.4202	1.4200	1.4706	1.1596

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-4.15	-2.59	11.93	44.18	69.86	101.71	0.4488	0.2056	0.0465	0.9011	69.53	70.45	74.28	55.03	57.39
2	-3.44	-1.42	11.87	43.37	91.62	103.89	0.4336	0.2071	0.0477	0.9016	67.74	71.92	75.60	56.90	59.23
3	-3.02	-0.51	11.38	43.09	93.67	107.81	0.4117	0.1976	0.0463	0.9070	66.72	74.64	78.08	60.44	62.66
4	-7.25	-3.38	10.28	38.34	99.55	111.49	0.3407	0.1506	0.0374	0.9365	66.18	81.22	83.78	73.01	74.66
5	-9.66	-4.35	8.38	36.97	88.19	96.34	0.3145	0.1272	0.0340	0.9600	63.04	80.92	83.32	84.19	85.23
6	-7.74	-1.96	7.65	39.22	74.19	82.13	0.3320	0.1037	0.0286	0.9740	69.59	77.82	80.43	85.21	86.16
7	-7.52	-1.53	7.74	39.13	71.91	78.42	0.3274	0.0630	0.0176	0.9859	79.67	77.58	80.18	82.63	83.68
8	-10.12	-3.91	8.11	35.92	77.97	82.13	0.3193	0.1037	0.0294	0.9752	67.74	79.94	82.30	81.87	82.93
9	-12.71	-6.02	10.39	30.86	81.54	86.32	0.2758	0.0630	0.0185	0.9843	76.75	77.98	80.62	74.91	76.26
10	-13.03	-6.15	11.72	30.48	78.97	83.24	0.2836	0.0632	0.0187	0.9848	77.90	74.13	77.18	72.44	73.89
11	-13.44	-6.34	13.18	31.05	73.67	75.43	0.3178	0.0915	0.0273	0.9797	73.08	68.13	71.75	72.43	73.88

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
11236.	189.60	1.4118	2.6506	77.68	80.47	1.1748	0.9560	74.81

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA (Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 3, SPEED CODE 15, POINT NO 4

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	13.717	18.324	664.1	1132.8	664.1	679.0	0.0	906.7	0.0	55.2	0.6168	1.0064	661.1	765.4	0.8704	0.6162	937.1	693.6
2	14.246	15.958	679.5	1098.4	679.5	681.3	0.0	861.6	0.0	51.7	0.6323	0.9704	712.9	802.4	0.9106	0.6042	984.9	665.9
3	11.877	13.759	694.6	1061.2	694.6	696.7	0.0	826.9	0.0	49.9	0.6475	0.9521	763.7	839.5	0.9623	0.6135	1032.3	696.6
4	5.682	7.891	730.5	989.7	730.5	661.4	0.0	736.3	0.0	48.1	0.6840	0.8583	909.2	950.6	1.0522	0.6029	1166.3	695.2
5	-0.259	1.326	752.6	848.9	752.6	584.8	0.0	615.4	0.0	46.5	0.7067	0.7248	1090.8	1096.7	1.2446	0.6477	1325.3	758.6
6	-1.740	-1.583	755.9	768.5	755.9	522.5	0.0	563.6	0.0	47.2	0.7102	0.6513	1178.2	1172.8	1.3152	0.6802	1399.8	802.6
7	-2.507	-2.873	756.4	790.7	756.4	576.6	0.0	541.0	0.0	43.2	0.7107	0.6724	1221.4	1209.8	1.3498	0.7510	1436.6	863.1
8	-3.819	-4.103	755.6	804.7	755.6	614.1	0.0	520.0	0.0	40.3	0.7099	0.6861	1264.5	1246.8	1.3839	0.8113	1473.0	951.6
9	-8.445	-7.792	739.5	803.6	739.5	617.2	0.0	514.7	0.0	39.8	0.6933	0.6801	1393.1	1357.9	1.4786	0.8843	1577.2	1044.9
10	-9.889	-9.048	730.1	796.5	730.1	595.3	0.0	529.2	0.0	41.6	0.6836	0.6698	1436.0	1395.0	1.5084	0.8835	1611.0	1050.7
11	-11.144	-10.324	719.5	788.0	719.5	584.8	0.0	528.2	0.0	42.0	0.6728	0.6603	1478.9	1432.0	1.5378	0.9021	1644.6	1076.5

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	Vθ'-1 FT/SEC	Vθ'-2 FT/SEC	PO/PO INLET
1	-1.73	2.88	16.19	56.43	42.28	52.92	0.4694	0.0625	0.0135	1.9762	96.74	96.43	44.65	-11.77	-661.1	141.3	1.9762
2	-1.07	2.63	14.64	51.11	42.87	54.54	0.5204	0.0607	0.0139	1.9690	96.55	96.22	46.15	-4.96	-712.9	59.1	1.9690
3	-1.51	2.60	12.57	46.47	43.43	57.21	0.5278	0.0356	0.0086	1.9913	97.80	97.59	47.50	1.04	-763.7	-12.6	1.9913
4	-3.42	3.05	8.27	33.13	44.67	56.65	0.5783	0.0930	0.0236	1.9346	92.97	92.33	51.08	17.95	-909.2	-214.4	1.9346
5	0.87	3.55	9.30	15.82	45.36	51.72	0.5692	0.1480	0.0343	1.8077	86.06	84.88	55.39	39.57	-1090.8	-483.3	1.8077
6	1.39	3.67	12.05	7.94	45.46	46.63	0.5543	0.1776	0.0366	1.7339	81.71	80.16	57.32	49.39	-1178.2	-609.2	1.7339
7	1.64	3.75	8.93	8.99	45.48	52.36	0.5065	0.1270	0.0269	1.7838	86.69	85.58	58.23	49.24	-1221.4	-668.8	1.7838
8	2.32	3.87	6.95	9.32	45.45	56.56	0.4700	0.0875	0.0187	1.8218	90.62	89.62	59.13	49.81	-1264.5	-726.9	1.8218
9	3.00	4.43	6.97	8.29	44.96	57.07	0.4521	0.1208	0.0253	1.8468	86.58	85.39	62.05	53.77	-1393.1	-843.2	1.8468
10	3.39	4.07	8.43	7.63	44.66	54.58	0.4654	0.1650	0.0339	1.8380	81.75	80.15	63.06	55.43	-1436.0	-865.8	1.8380
11	3.71	4.86	10.66	7.03	44.30	53.44	0.4622	0.1644	0.0370	1.8300	79.41	77.62	64.04	57.00	-1478.9	-903.8	1.8300

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.2218	1.8624	87.56	88.59	43.15	1.2218	1.8624	87.56	88.59

STATOR 1

RUN NO 3, SPEED CODE 15, POINT NO 4

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/TO1
1	18.147	14.745	1139.9	700.3	715.3	700.0	887.6	-20.1	51.3	-1.6	1.0141	0.5866	1.8595	1.2225	1.8595	1.2225
2	15.815	12.856	1110.2	708.3	718.0	708.2	846.3	-2.5	49.8	-0.2	0.9820	0.5940	1.8763	1.2216	1.8763	1.2216
3	13.731	11.106	1096.3	727.1	733.8	727.0	814.5	15.5	48.1	1.2	0.9678	0.6107	1.9044	1.2227	1.9044	1.2227
4	8.028	6.383	1010.7	729.5	690.6	729.5	730.3	10.3	46.2	0.6	0.8792	0.6125	1.8985	1.2241	1.8985	1.2241
5	1.401	0.655	871.8	638.0	618.5	636.9	614.3	-36.1	44.8	-3.2	0.7464	0.5329	1.7557	1.2160	1.7557	1.2160
6	-1.548	-2.200	793.4	587.0	558.0	584.9	563.9	-49.4	45.5	-4.6	0.6743	0.4692	1.6697	1.2113	1.6697	1.2113
7	-2.852	-3.394	814.7	619.7	608.3	619.0	541.9	-29.9	41.7	-2.8	0.6948	0.5183	1.7194	1.2094	1.7194	1.2094
8	-3.747	-4.316	828.1	657.9	643.3	657.5	521.5	-22.6	39.1	-2.0	0.7060	0.5522	1.7588	1.2082	1.7588	1.2086
9	-6.214	-6.829	829.1	690.2	647.4	690.1	517.9	-11.1	38.7	-3.9	0.7037	0.5770	1.7929	1.2251	1.7929	1.2251
10	-7.135	-7.626	823.3	678.2	627.6	678.0	532.9	-16.0	40.4	-1.4	0.6945	0.5634	1.7761	1.2370	1.7761	1.2370
11	-8.155	-8.421	816.1	665.3	618.5	664.8	532.3	-26.5	40.8	-2.3	0.6860	0.5507	1.7010	1.2425	1.7010	1.2425

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-2.23	0.88	10.70	52.95	55.39	68.94	0.5414	0.1227	0.0251	0.9411	85.52	87.04	88.11	87.04	88.11
2	-1.06	1.34	11.03	49.98	56.94	70.14	0.5181	0.1041	0.0221	0.9521	66.95	88.72	89.66	88.72	89.66
3	-1.47	1.31	11.60	46.84	59.49	72.33	0.4911	0.0958	0.0211	0.9566	87.13	90.62	91.42	90.62	91.42
4	-0.73	2.96	10.08	45.44	58.91	72.19	0.4439	0.0375	0.0092	0.9852	93.79	89.56	90.45	89.56	90.45
5	-0.73	4.32	6.07	48.02	53.92	61.20	0.4018	0.0726	0.0198	0.9788	86.43	80.64	82.07	80.64	82.07
6	0.27	5.91	4.52	50.15	49.14	55.50	0.4848	0.1295	0.0369	0.9653	75.71	76.46	78.11	76.46	78.11
7	-3.07	2.81	6.62	44.50	54.50	59.03	0.4461	0.1510	0.0440	0.9581	69.77	79.93	81.37	79.93	81.37
8	-3.52	0.62	7.46	41.05	58.45	63.10	0.4019	0.1275	0.0376	0.9638	70.82	83.65	85.06	83.65	85.06
9	-3.88	1.00	9.62	39.66	58.96	65.73	0.3685	0.1027	0.0320	0.9712	71.70	80.58	82.09	80.58	82.09
10	-4.51	2.54	10.36	41.84	56.67	63.62	0.3893	0.1217	0.0385	0.9665	67.79	75.16	77.05	75.16	77.05
11	-4.79	2.36	11.02	43.15	55.64	62.19	0.4060	0.1397	0.0447	0.9623	64.58	72.28	74.36	72.28	74.36

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
11249.	190.00	1.2216	1.8053	82.80	84.15	1.2216	0.9693	82.80

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA
(Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 2

RUN NO 3, SPEED CODE 15, POINT NO 4

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	V0-1 FT/SEC	V0-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-1	V'-1 FT/SEC	V'-2 FT/SEC
1	11.531	11.139	793.9	1153.2	793.6	722.6	-19.5	898.7	-1.4	51.1	0.6716	0.9144	877.1	920.0	1.0130	0.5732	1197.4	722.9
2	10.688	9.930	808.2	1142.7	808.2	722.6	-2.2	885.3	-0.2	50.7	0.6851	0.9061	901.9	939.2	1.0280	0.5746	1212.8	724.6
3	9.721	8.787	831.9	1133.3	831.8	738.7	15.2	859.5	1.0	49.3	0.7068	0.8956	927.5	959.3	1.0490	0.5918	1234.6	745.4
4	6.321	5.608	845.3	1037.3	845.2	716.5	10.3	746.2	0.7	46.2	0.7189	0.8182	1006.9	1023.1	1.1114	0.6068	1306.8	769.5
5	1.014	1.446	749.5	890.5	748.6	609.5	-35.9	649.2	-2.7	46.8	0.6329	0.6919	1116.3	1115.5	1.1603	0.5962	1374.0	767.4
6	-2.084	-0.899	694.0	828.9	692.3	552.8	-48.0	617.6	-4.0	48.1	0.5839	0.6401	1172.0	1164.8	1.1806	0.6006	1403.5	777.5
7	-3.484	-2.039	717.7	820.4	717.1	535.6	-29.6	621.3	-2.4	49.2	0.6057	0.6335	1200.2	1190.1	1.2016	0.6034	1423.6	781.3
8	-4.524	-3.063	746.0	829.9	745.6	556.3	-22.5	615.8	-1.7	47.6	0.6316	0.6414	1228.5	1216.1	1.2331	0.6326	1456.4	818.5
9	-7.180	-6.198	769.6	850.6	769.5	562.2	-11.3	620.0	-0.6	46.7	0.6485	0.6517	1314.6	1296.7	1.2918	0.6839	1533.0	892.0
10	-8.097	-7.422	757.0	846.9	756.8	585.0	-16.9	612.4	-1.3	46.2	0.6337	0.6446	1343.5	1324.2	1.3033	0.7014	1556.7	921.4
11	-8.907	-8.662	742.0	826.3	741.5	544.3	-26.9	621.6	-2.1	48.7	0.6186	0.6235	1372.5	1352.4	1.3206	0.6875	1583.7	911.2

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	V0'-1 FT/SEC	V0'-2 FT/SEC	PO/PO INLET
1	-1.07	3.24	22.06	46.73	74.38	87.51	0.5750	0.1567	0.0357	1.8708	89.25	88.26	48.41	1.68	-895.6	-21.2	3.4781
2	-1.77	2.68	18.08	43.92	75.85	89.23	0.5767	0.1362	0.0317	1.8744	90.41	89.55	48.18	4.26	-904.2	-54.0	3.5143
3	-2.63	1.68	15.21	39.98	78.06	93.25	0.5619	0.1006	0.0239	1.8705	92.59	91.90	47.66	7.68	-912.3	-99.8	3.5592
4	-2.80	2.79	11.39	28.80	78.39	94.22	0.5563	0.0724	0.0174	1.8104	93.83	93.28	49.75	20.95	-996.6	-274.9	3.4413
5	3.52	8.10	9.20	19.57	68.12	81.07	0.5817	0.0812	0.0183	1.6158	92.70	92.06	56.99	37.43	-1152.2	-466.5	3.1924
6	6.06	10.40	8.46	15.75	62.65	73.65	0.5863	0.0655	0.0160	1.8307	92.21	91.52	60.43	44.67	-1220.8	-547.1	3.0950
7	4.87	8.95	7.41	13.07	65.36	71.76	0.5904	0.1126	0.0236	1.7972	89.41	88.50	59.74	46.67	-1229.8	-566.8	3.0953
8	3.80	7.61	4.79	12.08	68.50	75.05	0.5750	0.1268	0.0270	1.7795	87.71	86.68	59.18	47.11	-1251.0	-600.4	3.1310
9	3.09	5.68	2.07	10.65	70.35	78.24	0.5604	0.1495	0.0341	1.7857	85.12	83.86	59.61	49.16	-1325.9	-676.6	3.2018
10	3.04	5.82	3.78	10.38	68.49	77.96	0.5537	0.1437	0.0332	1.8001	85.67	84.44	60.84	50.46	-1360.4	-711.8	3.1973
11	4.49	6.19	7.56	8.79	60.83	71.59	0.5783	0.1881	0.0426	1.7923	81.46	79.89	62.00	53.21	-1399.3	-730.7	3.1562

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.4752	3.2727	84.42	86.75	41.60	1.2074	1.8128	88.58	89.49

STATOR 2

RUN NO 3, SPEED CODE 15, POINT NO 4

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	V0-1 FT/SEC	V0-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/TO1
1	8.534	0.778	1161.0	712.9	776.6	712.4	869.8	28.5	49.1	2.3	0.9403	0.5386	3.3160	1.4918	1.7855	1.2202
2	7.397	0.653	1169.2	735.9	772.5	735.1	877.7	35.0	48.9	2.7	0.9306	0.5561	3.3663	1.4885	1.7987	1.2184
3	6.335	0.591	1158.4	769.6	783.5	768.9	853.3	38.0	47.6	2.8	0.9230	0.5864	3.4492	1.4820	1.8159	1.2124
4	3.825	-0.367	1060.2	726.1	754.1	725.6	745.3	25.6	44.7	2.0	0.8388	0.5543	3.3780	1.4655	1.7735	1.1968
5	1.274	-0.850	911.9	601.9	640.8	601.9	648.9	-1.2	45.3	-0.1	0.7101	0.4562	3.1640	1.4595	1.7879	1.1996
6	0.130	-0.805	850.1	534.6	584.5	534.5	617.2	-5.2	46.5	-0.6	0.6578	0.4034	3.0666	1.4594	1.8213	1.2044
7	-0.550	-0.740	841.0	520.9	566.0	520.9	622.0	1.3	47.7	0.1	0.6507	0.3931	3.0491	1.4570	1.7828	1.2044
8	-1.234	-0.693	850.7	543.4	585.9	543.2	616.8	13.6	46.4	1.4	0.6589	0.4110	3.0782	1.4548	1.7547	1.2044
9	-3.604	-0.886	876.2	605.4	616.1	603.8	623.0	43.5	45.3	4.1	0.6731	0.4551	3.1524	1.4835	1.7567	1.2127
10	-4.430	-1.021	876.6	609.1	623.9	607.3	615.8	47.1	44.7	4.4	0.6693	0.4553	3.1494	1.5006	1.7716	1.2136
11	-5.436	-1.083	861.5	573.7	591.8	572.4	625.0	38.7	46.7	3.9	0.6522	0.4247	3.0891	1.5218	1.7542	1.2248

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	0.70	2.26	14.11	46.86	92.15	105.22	0.5604	0.1046	0.0236	0.9545	87.34	82.66	85.28	81.09	82.56
2	1.43	3.45	13.98	46.12	93.56	109.12	0.5378	0.0945	0.0217	0.9595	87.99	84.41	86.79	82.88	84.23
3	0.96	3.46	13.68	44.77	97.12	115.67	0.5016	0.0709	0.0166	0.9700	90.25	87.58	89.52	86.75	87.61
4	-0.83	3.04	12.34	42.71	97.46	110.17	0.4872	0.0572	0.0142	0.9787	91.38	88.90	90.61	89.61	90.42
5	0.63	5.94	10.19	45.45	84.29	90.09	0.5358	0.0446	0.0119	0.9871	93.15	84.40	86.68	89.75	90.55
6	2.13	7.91	9.66	47.06	77.07	79.28	0.5749	0.0423	0.0117	0.9893	93.68	81.74	84.34	90.66	91.42
7	3.43	9.42	10.30	47.51	75.04	77.25	0.5871	0.0469	0.0131	0.9885	93.06	81.70	84.29	87.19	88.19
8	2.38	8.59	11.54	45.00	78.20	80.88	0.5618	0.0571	0.0162	0.9856	91.32	82.90	85.34	84.61	85.77
9	1.52	8.22	14.26	41.20	81.74	88.65	0.5039	0.0580	0.0170	0.9848	90.09	79.88	82.80	81.41	82.81
10	0.23	7.08	15.20	40.23	81.93	88.06	0.4984	0.0625	0.0184	0.9838	89.23	77.06	80.36	82.33	83.69
11	0.95	8.05	15.79	42.82	76.53	84.32	0.5390	0.0864	0.0257	0.9785	86.06	72.45	76.36	76.73	78.46

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
11249.	190.00	1.4752	3.2070	82.72	85.27	1.2074	0.9799	85.31

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA
(Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 3, SPEED CODE 11, POINT NO 1

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-1	V'-1 FT/SEC	V'-2 FT/SEC
1	16.493	16.418	666.4	1240.3	686.4	785.1	0.0	960.1	0.0	53.8	0.6392	1.1115	691.7	600.7	0.9075	0.7176	974.4	601.1
2	13.759	16.134	704.1	1198.6	704.1	781.9	0.0	908.4	0.0	49.3	0.6571	1.0664	745.9	639.5	0.9573	0.6963	1025.7	784.9
3	11.181	14.004	721.4	1161.4	721.4	781.1	0.0	859.5	0.0	47.6	0.6746	1.0274	799.0	678.2	1.0069	0.6912	1076.5	781.3
4	4.103	8.333	761.9	1040.8	761.9	741.5	0.0	730.4	0.0	44.6	0.7164	0.9062	951.3	994.5	1.1459	0.6853	1216.7	787.1
5	-2.068	1.784	781.5	803.3	781.5	570.5	0.0	565.5	0.0	44.6	0.7366	0.6847	1141.2	1149.5	1.3041	0.6959	1383.2	816.3
6	-2.376	-1.315	786.2	723.1	766.2	521.4	0.0	501.0	0.0	43.9	0.7417	0.6140	1232.6	1227.0	1.3793	0.7589	1462.0	693.8
7	-2.716	-2.630	788.7	767.6	788.7	597.4	0.0	482.0	0.0	38.9	0.7444	0.6553	1277.8	1265.7	1.4172	0.8412	1501.6	985.4
8	-3.304	-3.676	789.7	806.7	789.7	654.0	0.0	472.2	0.0	35.6	0.7454	0.6911	1322.9	1304.4	1.4542	0.9069	1540.7	1058.5
9	-6.842	-7.611	773.9	822.4	773.9	662.9	0.0	458.3	0.0	33.8	0.7289	0.7024	1457.5	1420.6	1.5542	1.0076	1650.2	1180.1
10	-10.587	-8.946	762.6	809.7	762.6	662.5	0.0	465.5	0.0	35.0	0.7171	0.6876	1502.4	1459.4	1.5643	1.0144	1684.8	1194.4
11	-11.034	-10.267	750.6	765.9	750.6	589.9	0.0	488.6	0.0	39.5	0.7047	0.6425	1547.2	1498.1	1.6145	0.9608	1719.7	1169.3

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	Vθ'-1 FT/SEC	Vθ'-2 FT/SEC	PO/PO INLET
1	-1.42	3.19	16.46	56.46	43.13	59.61	0.4138	0.0181	0.0039	2.1494	99.08	98.98	44.97	-11.49	-691.7	159.4	2.1494
2	-1.40	2.84	14.56	51.41	43.77	61.01	0.4558	0.0356	0.0062	2.1201	98.01	97.79	46.36	-5.04	-745.9	68.9	2.1201
3	-1.37	2.73	12.90	46.26	44.37	62.33	0.4811	0.0451	0.0108	2.0929	97.21	96.92	47.63	1.37	-799.0	-18.7	2.0929
4	-0.40	3.07	9.94	31.49	45.04	61.32	0.5243	0.1090	0.0274	1.9539	91.16	90.32	51.11	19.62	-951.3	-264.1	1.9539
5	1.09	3.77	15.40	5.93	46.19	47.51	0.5376	0.2286	0.0479	1.6494	75.31	73.56	55.60	45.67	-1141.2	-584.0	1.6494
6	1.55	3.83	16.98	3.17	46.32	43.96	0.4992	0.2278	0.0421	1.5840	72.94	71.17	57.49	54.32	-1232.6	-725.9	1.5840
7	1.75	3.84	12.37	5.63	46.38	51.43	0.4478	0.1642	0.0323	1.6542	80.39	78.98	56.32	52.68	-1277.8	-783.6	1.6542
8	2.95	3.90	8.96	7.33	46.41	57.27	0.4140	0.1159	0.0238	1.7228	86.12	85.04	59.16	51.64	-1322.9	-832.3	1.7228
9	3.02	4.45	7.80	7.47	45.98	60.43	0.3834	0.1134	0.0233	1.7696	85.91	84.76	62.07	54.60	-1457.5	-962.4	1.7696
10	3.47	4.76	9.25	6.90	45.66	58.04	0.3910	0.1513	0.0304	1.7499	81.12	79.61	63.15	56.25	-1502.4	-993.9	1.7499
11	3.83	4.90	13.27	4.55	45.30	50.47	0.4243	0.2372	0.0442	1.6045	70.56	68.39	64.16	59.61	-1547.2	-1009.6	1.6045

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.2194	1.8135	84.40	85.63	44.09	1.2194	1.8135	84.40	85.63

STATOR 1

RUN NO 3, SPEED CODE 11, POINT NO 1

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/TO1
1	16.273	14.967	1253.3	864.2	829.1	864.1	939.9	9.6	48.8	0.6	1.1259	0.7295	1.9897	1.2464	1.9897	1.2464
2	16.065	13.317	1217.0	864.1	827.4	863.8	892.5	24.9	47.3	1.6	1.0665	0.7301	1.9951	1.2441	1.9951	1.2441
3	14.035	11.798	1183.4	864.0	820.7	863.4	840.8	32.0	45.8	2.1	1.0511	0.7309	1.9948	1.2416	1.9948	1.2416
4	8.766	7.788	1068.0	824.2	784.3	824.1	724.9	11.5	42.8	0.8	0.9359	0.6970	1.9053	1.2314	1.9053	1.2314
5	1.822	2.296	831.7	644.3	610.5	641.6	564.8	-58.0	42.6	-5.2	0.7113	0.5411	1.6308	1.2053	1.6308	1.2053
6	-1.941	-0.817	751.9	594.7	560.3	591.9	501.4	-58.0	41.8	-5.6	0.6404	0.4991	1.5606	1.1964	1.5606	1.1964
7	-3.193	-2.167	794.4	637.5	630.6	[illegible]	483.1	-43.7	37.5	-3.9	0.6802	0.5370	1.5979	1.1965	1.5979	1.1965
8	-3.943	-3.240	832.4	690.5	684.4	689.6	473.7	-34.9	34.7	-2.9	0.7154	0.5840	1.6502	1.1966	1.6502	1.1966
9	-3.984	-5.977	851.4	754.9	715.9	753.5	460.9	-46.1	32.8	-3.5	0.7297	0.6396	1.7254	1.2095	1.7254	1.2095
10	-6.739	-6.880	841.4	740.6	699.1	738.9	468.2	-50.3	33.9	-3.9	0.7174	0.6240	1.7074	1.2166	1.7074	1.2166
11	-7.790	-7.934	860.9	691.8	631.7	689.6	492.3	-55.3	38.0	-4.6	0.6744	0.5760	1.6473	1.2348	1.6473	1.2348

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-3.75	-1.64	12.96	48.17	62.14	81.93	0.4543	0.1344	0.0275	0.9267	82.43	88.05	89.13	88.05	89.13
2	-3.52	-1.12	12.87	45.68	63.44	82.22	0.4325	0.1096	0.0233	0.9429	84.56	89.24	90.22	89.24	90.22
3	-3.73	-0.94	12.50	43.68	64.66	82.31	0.4126	0.0886	0.0195	0.9558	86.45	90.17	91.05	90.17	91.06
4	-4.22	-0.50	10.07	41.96	63.55	77.32	0.3757	0.0252	0.0061	0.9884	95.63	87.24	88.32	87.24	88.32
5	-2.75	2.30	4.14	47.92	50.01	57.45	0.4093	-0.0019	-0.0005	1.0022	100.61	72.72	74.47	72.72	74.47
6	-3.16	2.44	3.76	47.44	46.54	52.26	0.4369	0.1387	0.0395	0.9638	70.95	69.04	70.88	69.04	70.88
7	-7.31	-1.43	5.45	41.43	53.51	56.41	0.4037	0.1837	0.0535	0.9496	56.52	72.64	74.53	72.64	74.53
8	-9.80	-3.72	6.53	37.64	59.04	61.55	0.3546	0.1571	0.0466	0.9545	58.36	77.38	78.69	77.38	78.69
9	-11.76	-4.30	7.04	36.35	62.24	67.53	0.3003	0.0616	0.0255	0.9756	68.30	80.45	81.67	80.45	81.87
10	-11.06	-4.01	7.87	37.76	60.15	65.60	0.3156	0.0777	0.0245	0.9776	70.69	75.57	77.30	75.57	77.30
11	-7.63	-0.45	8.71	42.63	53.03	59.92	0.3564	0.0826	0.0264	0.9783	72.11	65.23	67.55	65.23	67.55

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
11769.	194.10	1.2194	1.7635	80.11	81.61	1.2194	0.9724	80.11

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA
(Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 2

RUN NO 3, SPEED CODE 11, POINT NO 1

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	11.708	11.576	974.3	1377.9	974.3	1044.4	9.1	898.8	0.5	40.6	0.8344	1.1202	917.7	962.5	1.1409	0.8507	1332.2	1046.4
2	11.127	10.755	977.0	1351.9	976.8	1010.8	23.3	897.8	1.4	41.6	0.8379	1.0938	943.6	982.6	1.1509	0.8207	1342.0	1014.3
3	10.538	9.963	979.0	1310.8	978.5	968.2	31.9	883.6	1.9	42.4	0.8408	1.0557	970.4	1003.6	1.1644	0.7857	1355.7	975.6
4	8.485	7.602	948.3	1170.6	948.3	928.2	12.4	713.2	0.8	37.7	0.8146	0.9377	1053.4	1070.3	1.2095	0.7967	1406.1	994.6
5	3.929	3.795	788.3	956.2	786.3	798.4	-56.2	526.2	-4.1	33.4	0.6714	0.7584	1167.8	1167.1	1.2392	0.8120	1454.8	1023.7
6	0.545	1.218	728.6	837.8	726.2	698.1	-59.4	463.1	-4.7	33.5	0.6192	0.6612	1226.2	1218.6	1.2547	0.8119	1476.5	1028.7
7	-1.133	-0.165	760.2	810.9	758.9	675.0	-44.6	449.4	-3.4	33.6	0.6483	0.6404	1255.6	1245.1	1.2838	0.8240	1505.5	1043.4
8	-2.539	-1.513	806.6	846.5	805.9	722.2	-35.0	441.5	-2.5	31.4	0.6908	0.6717	1285.2	1272.3	1.3247	0.8735	1546.7	1100.8
9	-5.683	-5.268	866.9	849.6	865.7	740.5	-46.4	416.4	-3.1	29.2	0.7443	0.6699	1375.3	1356.6	1.4291	0.9437	1664.5	1196.8
10	-5.324	-6.454	857.5	852.3	856.0	747.7	-50.6	409.2	-3.4	28.5	0.7325	0.6697	1405.5	1385.4	1.4428	0.9662	1689.1	1229.7
11	-7.968	-7.925	816.5	825.6	814.6	726.9	-55.9	391.5	-3.9	28.2	0.6886	0.6425	1435.9	1414.8	1.4338	0.9768	1699.7	1255.2

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VΘ'-1 FT/SEC	VΘ'-2 FT/SEC	PO/PO INLET
1	-5.54	-2.23	23.88	39.46	85.85	94.50	0.5701	0.3996	0.0909	1.5825	65.63	63.37	42.94	3.48	-908.6	-63.7	3.1461
2	-6.64	-2.19	16.61	38.52	86.21	92.63	0.4001	0.4182	0.0974	1.5667	63.63	61.29	43.31	4.80	-920.3	-64.9	3.1226
3	-6.45	-1.84	14.60	36.82	80.39	90.34	0.4297	0.4376	0.1040	1.5299	60.88	58.50	43.89	7.07	-938.4	-120.0	3.0568
4	-3.39	0.90	11.57	26.73	82.34	91.95	0.4177	0.3574	0.0858	1.4804	63.18	61.11	47.66	21.13	-1041.0	-357.1	2.8608
5	3.86	8.45	10.59	18.53	65.78	83.21	0.4068	0.2404	0.0531	1.5216	72.96	71.33	57.35	36.81	-1224.0	-640.8	2.5518
6	5.14	10.48	11.02	13.28	60.17	73.57	0.4059	0.2004	0.0404	1.5340	76.65	75.22	60.51	47.23	-1285.6	-755.5	2.3838
7	4.80	8.66	10.37	10.05	63.17	71.71	0.4023	0.2032	0.0401	1.4990	74.91	73.45	59.68	49.62	-1300.2	-795.7	2.3593
8	3.14	6.95	6.58	9.63	67.49	77.97	0.3797	0.1890	0.0369	1.4866	75.20	73.79	58.52	48.90	-1320.2	-830.7	2.4375
9	1.73	4.41	4.51	6.93	72.65	80.07	0.3755	0.2369	0.0514	1.4296	66.14	64.41	58.54	51.61	-1421.7	-940.2	2.4686
10	2.21	4.38	5.70	7.03	71.22	80.56	0.3694	0.2301	0.0510	1.4403	66.99	65.26	59.41	52.37	-1456.1	-976.3	2.4772
11	3.71	5.41	8.60	6.77	66.31	77.12	0.3597	0.1940	0.0426	1.4707	72.18	70.63	61.23	54.46	-1491.8	-1023.3	2.4302

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.4391	2.6345	72.30	75.73	43.47	1.1602	1.4959	66.93	68.73

STATOR 2

RUN NO 3, SPEED CODE 11, POINT NO 1

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/TO1
1	9.016	0.888	1441.0	1031.9	1133.8	1027.6	889.4	-94.2	36.4	-5.2	1.1654	0.7965	2.5660	1.5194	1.2900	1.2167
2	8.241	0.665	1414.9	1060.9	1100.7	1055.0	889.1	-111.4	39.2	-6.0	1.1579	0.8215	2.6442	1.5204	1.3278	1.2206
3	7.323	0.720	1374.6	1091.9	1056.3	1063.5	879.7	-135.2	40.0	-7.1	1.1191	0.8498	2.7348	1.5176	1.3687	1.2207
4	4.540	0.093	1230.8	1052.6	1003.5	1043.0	712.6	-141.5	35.5	-7.7	0.9946	0.8274	2.6968	1.4779	1.3856	1.1958
5	1.506	-0.601	1014.6	954.4	866.8	944.8	527.3	-134.8	31.3	-8.1	0.8103	0.7553	2.5133	1.4240	1.4718	1.1783
6	-0.039	-0.979	896.6	874.4	767.4	870.9	463.6	-77.9	31.1	-5.1	0.7120	0.6920	2.3656	1.4059	1.5171	1.1733
7	-0.906	-1.168	867.1	837.7	741.2	834.9	449.9	-67.4	31.2	-4.6	0.6867	0.6628	2.3016	1.3960	1.4708	1.1673
8	-1.923	-1.248	900.2	849.2	784.0	842.9	442.5	-103.2	29.4	-7.0	0.7186	0.6739	2.3164	1.3916	1.4252	1.1623
9	-4.156	-1.272	910.0	895.7	806.2	894.1	418.4	-53.5	27.4	-3.4	0.7223	0.7100	2.3698	1.4075	1.3736	1.1635
10	-5.003	-1.275	917.5	903.4	820.0	899.8	411.6	-79.9	26.7	-5.1	0.7260	0.7138	2.3679	1.4180	1.3766	1.1671
11	-5.801	-1.204	901.4	877.9	810.6	870.7	394.3	-112.5	26.0	-7.4	0.7070	0.6869	2.3018	1.4364	1.3929	1.1637

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-10.05	-8.49	6.59	43.63	96.69	98.44	0.4385	0.3189	0.0718	0.8140	54.71	59.16	64.04	34.18	36.45
2	-8.23	-6.21	5.23	45.22	95.51	102.21	0.4149	0.2749	0.0629	0.8435	57.30	61.20	65.97	37.84	40.22
3	-6.64	-4.14	3.73	47.12	93.35	106.54	0.3856	0.2070	0.0462	0.6859	63.10	63.39	68.57	42.11	44.36
4	-10.07	-6.23	2.59	43.19	95.01	105.59	0.3287	0.1371	0.0337	0.9345	65.95	66.26	72.26	44.50	51.74
5	-13.41	-8.10	2.19	39.41	87.33	96.96	0.2519	0.0802	0.0212	0.9710	58.29	69.93	73.48	64.99	66.83
6	-13.29	-7.50	5.11	36.21	78.38	89.14	0.2040	0.0516	0.0142	0.9848	42.16	68.45	71.95	72.52	74.07
7	-13.01	-7.01	5.55	35.83	76.35	85.26	0.2052	0.0866	0.0242	0.9764	2.97	67.68	71.16	69.19	70.60
8	-14.64	-8.43	3.14	36.38	82.12	86.39	0.2248	0.1486	0.0419	0.9571	-24.27	69.11	72.47	65.19	66.86
9	-15.41	-9.72	6.75	30.81	84.53	90.53	0.1692	0.1388	0.0407	0.9592	-257.60	68.35	71.67	57.00	56.56
10	-17.76	-10.88	5.71	31.76	85.24	90.15	0.1743	0.1490	0.0439	0.9560	-305.66	66.56	70.27	56.81	58.69
11	-19.71	-12.62	4.58	33.37	82.65	85.16	0.1944	0.1866	0.0553	0.9471	-202.56	61.39	65.53	60.20	62.00

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
11769.	194.10	1.4391	2.4760	67.05	70.88	1.1802	0.9398	56.06

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA
(Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 3, SPEED CODE 11, POINT NO 2

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	V0-1 FT/SEC	V0-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	15.486	18.408	691.6	1236.4	691.6	776.3	0.0	960.7	0.0	51.0	0.6445	1.1067	652.5	801.7	0.9120	0.7110	976.7	794.4
2	13.745	16.112	709.6	1194.6	709.6	776.8	0.0	907.6	0.0	49.5	0.6627	1.0620	746.8	840.6	0.9621	0.6931	1030.2	779.7
3	11.136	13.964	727.2	1157.5	727.2	776.7	0.0	858.2	0.0	47.9	0.6806	1.0232	800.0	879.3	1.0119	0.6868	1081.1	776.9
4	4.159	8.204	767.4	1037.6	767.4	737.3	0.0	730.1	0.0	44.7	0.7221	0.9029	952.4	995.8	1.1509	0.6820	1223.1	783.7
5	-1.894	1.402	784.8	801.4	784.8	568.4	0.0	564.9	0.0	44.8	0.7402	0.6830	1142.7	1150.9	1.3075	0.6957	1386.2	816.4
6	-2.083	-1.856	787.3	720.9	787.3	521.0	0.0	498.2	0.0	43.7	0.7426	0.6122	1234.2	1228.5	1.3813	0.7618	1463.9	897.0
7	-2.447	-3.172	788.3	766.4	788.3	598.9	0.0	478.3	0.0	38.8	0.7439	0.6546	1279.4	1267.2	1.4181	0.8459	1502.7	990.5
8	-3.661	-4.382	787.8	806.4	787.8	656.0	0.0	468.9	0.0	35.6	0.7434	0.6912	1324.5	1306.0	1.4542	0.9117	1541.1	1063.5
9	-8.673	-7.461	768.5	828.3	768.5	691.5	0.0	455.9	0.0	33.4	0.7232	0.7081	1459.3	1422.4	1.5522	1.0160	1649.3	1188.4
10	-10.452	-9.213	756.4	816.6	756.4	671.6	0.0	464.3	0.0	34.6	0.7107	0.6942	1504.2	1461.2	1.5819	1.0219	1683.7	1202.1
11	-11.740	-10.444	743.6	773.9	743.6	600.1	0.0	486.6	0.0	39.1	0.6974	0.6496	1549.1	1500.0	1.6118	0.9872	1718.3	1176.0

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	V0'-1 FT/SEC	V0'-2 FT/SEC	PO/PO INLET
1	-1.60	3.01	16.39	56.35	43.32	59.17	0.4232	0.0274	0.0059	2.1443	98.61	98.46	44.79	-11.56	-692.5	159.0	2.1443
2	-1.65	2.65	14.67	51.11	43.97	60.71	0.4627	0.0405	0.0093	2.1159	97.72	97.48	46.17	-4.94	-746.8	67.0	2.1159
3	-1.57	2.54	13.09	45.80	44.56	62.09	0.4866	0.0483	0.0116	2.0891	97.00	96.69	47.44	1.56	-800.0	-21.1	2.0891
4	-0.56	2.90	10.14	31.12	45.80	61.04	0.5262	0.1120	0.0281	1.9511	90.90	90.04	50.94	19.62	-952.4	-265.7	1.9511
5	1.01	3.69	15.60	9.65	46.28	47.32	0.5361	0.2310	0.0483	1.6467	75.07	73.30	55.52	45.87	-1142.7	-585.0	1.6467
6	1.54	3.82	17.16	2.98	46.34	43.90	0.4963	0.2283	0.0420	1.5800	72.63	71.07	57.48	54.50	-1234.2	-730.2	1.5800
7	1.77	3.88	12.50	5.54	46.37	51.52	0.4434	0.1628	0.0319	1.6504	80.50	79.11	58.36	52.61	-1279.4	-788.9	1.6504
8	2.03	3.98	9.08	7.31	46.36	57.35	0.4097	0.1154	0.0236	1.7184	86.16	85.09	59.25	51.93	-1324.5	-837.1	1.7184
9	3.21	4.03	7.60	7.86	45.83	60.96	0.3772	0.1116	0.0230	1.7685	86.13	85.00	62.25	54.40	-1459.3	-966.5	1.7685
10	3.67	4.96	8.98	7.37	45.48	58.57	0.3856	0.1518	0.0307	1.7481	81.07	79.56	63.35	55.98	-1504.2	-996.9	1.7481
11	4.06	5.21	12.90	9.15	45.09	51.03	0.4199	0.2401	0.0453	1.6816	70.27	68.06	64.39	59.24	-1549.1	-1011.4	1.6816

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.2191	1.8104	84.24	85.48	44.11	1.2191	1.8104	84.24	85.48

STATOR 1

RUN NO 3, SPEED CODE 11, POINT NO 2

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	V0-1 FT/SEC	V0-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	16.251	14.892	1253.9	844.0	829.3	844.0	940.5	-3.2	48.8	-0.2	1.1262	0.7106	1.9824	1.2468	1.9824	1.2468
2	16.009	13.147	1217.7	845.1	829.2	844.7	891.6	26.0	47.2	1.8	1.0872	0.7124	1.9895	1.2441	1.9895	1.2441
3	13.959	11.512	1184.2	846.7	829.1	845.8	845.5	40.0	45.7	2.7	1.0520	0.7147	1.9904	1.2416	1.9904	1.2416
4	6.679	7.048	1068.8	[illegible]	785.7	811.8	724.6	9.9	42.7	0.7	0.9346	0.6855	1.6983	1.2316	1.6983	1.2316
5	1.567	0.787	831.1	648.4	610.4	645.6	564.0	-60.4	42.7	-5.3	0.7107	0.5448	1.6271	1.2051	1.6271	1.2051
6	-2.294	-2.663	751.0	602.0	561.6	598.5	498.5	-65.3	41.6	-6.2	0.6398	0.5058	1.5545	1.1954	1.5545	1.1954
7	-3.501	-4.046	793.7	643.7	632.6	641.3	479.3	-54.9	37.2	-4.9	0.6799	0.5426	1.5887	1.1952	1.5887	1.1952
8	-4.220	-5.026	831.9	699.5	686.0	698.1	470.5	-44.3	34.5	-3.6	0.7152	0.5924	1.6424	1.1974	1.6424	1.1974
9	-6.153	-7.274	853.5	773.8	719.7	773.1	458.7	-34.2	32.6	-2.5	0.7319	0.6573	1.7227	1.2086	1.7227	1.2086
10	-6.859	-7.902	843.2	763.4	701.8	762.1	467.3	-43.9	33.7	-3.3	0.7191	0.6449	1.7042	1.2183	1.7042	1.2183
11	-7.859	-8.543	802.7	718.4	634.0	716.6	492.4	-51.4	37.9	-4.1	0.6760	0.5996	1.6419	1.2351	1.6419	1.2351

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-3.75	-1.64	12.11	49.02	61.96	80.69	0.4729	0.1366	0.0279	0.9295	82.82	87.38	88.52	87.38	88.52
2	-3.62	-1.22	12.98	45.47	63.42	81.11	0.4479	0.1109	0.0235	0.9421	85.01	88.84	89.85	88.84	89.85
3	-3.85	-1.08	13.68	42.97	64.69	81.30	0.4260	0.0892	0.0197	0.9555	86.95	89.84	90.76	89.84	90.76
4	-4.29	-0.57	9.97	42.01	63.51	76.42	0.3683	0.0307	0.0075	0.9861	94.80	86.61	87.74	86.61	87.74
5	-2.79	2.26	3.97	48.05	49.93	57.59	0.4047	0.0030	0.0008	1.0010	99.46	72.41	74.17	72.41	74.17
6	-3.40	2.21	3.13	47.85	46.63	52.53	0.4275	0.1442	0.0410	0.9625	68.40	68.72	70.57	68.72	70.57
7	-7.60	-1.72	4.48	42.10	53.66	56.45	0.3974	0.1946	0.0566	0.9467	54.18	72.35	74.05	72.35	74.05
8	-10.10	-3.95	5.78	38.15	59.13	61.78	0.3457	0.1607	0.0494	0.9517	52.96	77.06	78.58	77.06	78.58
9	-12.03	-5.16	8.00	35.13	62.47	68.45	0.2747	0.0846	0.0264	0.9747	60.72	80.53	81.94	80.53	81.94
10	-11.20	-4.15	8.46	37.05	60.24	66.74	0.2876	0.0816	0.0258	0.9765	61.90	75.44	77.18	75.44	77.18
11	-7.69	-0.54	9.19	42.06	53.06	61.24	0.3135	0.0888	0.0264	0.9766	62.06	64.69	67.02	64.69	67.02

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
11783.	194.20	1.2191	1.7577	79.71	81.23	1.2191	0.9709	79.71

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA (Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 2

RUN NO 3, SPEED CODE 11, POINT NO 2

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	11.821	11.397	985.0	1275.0	985.0	887.9	-3.5	915.1	-0.2	45.6	0.8447	1.0147	916.8	965.7	1.1571	0.7076	1349.3	869.2
2	11.311	10.412	989.3	1265.3	989.0	886.2	23.7	901.1	1.4	45.4	0.8500	1.0078	944.8	965.8	1.1612	0.7105	1351.5	892.0
3	10.870	9.452	995.0	1250.4	994.2	878.6	40.2	889.6	2.3	45.3	0.8566	0.9977	971.6	1004.6	1.1726	0.7071	1362.3	886.2
4	8.096	6.583	972.4	1128.9	972.4	864.6	10.8	726.0	0.6	40.1	0.8381	0.8972	1054.7	1071.7	1.2295	0.7400	1426.6	931.1
5	2.312	2.045	808.7	903.5	806.5	722.0	-59.3	543.1	-4.2	37.0	0.6907	0.7107	1169.3	1168.5	1.2552	0.7514	1469.7	955.2
6	-1.028	-0.599	743.6	767.5	740.7	592.2	-65.3	488.1	-5.0	39.5	0.6332	0.5992	1227.7	1220.1	1.2689	0.7358	1490.1	941.5
7	-3.345	-1.816	771.6	759.6	769.7	593.3	-54.5	474.2	-4.0	38.6	0.6592	0.5943	1257.2	1246.7	1.2992	0.7621	1520.8	974.0
8	-4.676	-3.002	811.3	796.9	810.1	646.2	-44.2	466.4	-3.1	35.6	0.6955	0.6258	1280.8	1273.9	1.3357	0.8121	1558.1	1034.2
9	-7.797	-6.611	857.0	806.2	856.3	662.4	-34.9	459.5	-2.3	34.6	0.7350	0.6291	1377.0	1358.2	1.4161	0.8713	1651.2	1116.5
10	-8.454	-7.679	840.2	781.3	839.0	639.6	-44.5	448.5	-3.0	34.9	0.7160	0.6052	1407.3	1367.1	1.4288	0.8798	1676.6	1135.9
11	-8.979	-8.742	794.6	737.2	792.9	597.1	-52.0	432.5	-3.7	35.8	0.6665	0.5653	1437.7	1416.6	1.4198	0.8827	1687.6	1151.1

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VO'-1 FT/SEC	VO'-2 FT/SEC	PO/PO INLET
1	-6.41	-2.10	23.52	39.94	85.79	91.43	0.4998	0.3545	0.0607	1.6598	70.32	66.15	43.07	3.12	-922.3	-46.6	3.2696
2	-5.90	-2.51	19.13	37.69	86.27	93.81	0.4973	0.3195	0.0743	1.6816	73.01	70.98	43.00	5.31	-921.1	-82.7	3.3408
3	-7.12	-2.54	15.00	35.76	86.57	95.44	0.4968	0.2793	0.0663	1.6575	76.07	74.24	43.23	7.47	-931.3	-115.2	3.3846
4	-4.55	0.24	12.28	25.36	82.65	99.59	0.4735	0.1809	0.0432	1.6864	82.39	81.06	47.20	21.64	-1043.9	-345.7	3.2341
5	3.27	7.84	12.69	15.82	66.35	85.86	0.4642	0.0853	0.0183	1.7264	91.03	90.31	56.74	40.92	-1228.6	-625.4	2.8563
6	5.83	10.14	14.78	9.18	60.74	70.21	0.4774	0.1048	0.0196	1.6758	68.23	67.36	60.17	50.95	-1293.0	-731.9	2.6049
7	4.71	8.78	13.16	7.16	63.61	70.68	0.4656	0.1221	0.0227	1.6312	65.65	64.63	59.58	52.42	-1311.7	-772.4	2.5995
8	3.23	7.09	8.94	7.40	67.52	77.63	0.4393	0.1164	0.0228	1.6204	65.67	64.68	58.66	51.26	-1351.0	-807.4	2.6607
9	1.93	4.61	6.42	5.23	72.19	78.60	0.4286	0.1797	0.0373	1.5527	76.40	74.90	58.74	53.51	-1411.9	-896.8	2.6736
10	2.73	4.91	8.94	4.31	70.25	74.72	0.4289	0.1936	0.0397	1.5417	74.46	72.67	59.93	55.62	-1451.8	-938.5	2.6216
11	4.33	6.09	13.01	3.24	65.08	66.35	0.4258	0.1828	0.0359	1.5466	75.91	74.39	61.90	58.66	-1489.7	-984.1	2.5418

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.4497	2.8955	78.57	81.47	43.63	1.1691	1.6474	80.42	81.75

STATOR 2

RUN NO 3, SPEED CODE 11, POINT NO 2

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/TO1
1	8.608	0.757	1314.9	929.2	953.0	929.2	906.0	2.6	43.8	0.2	1.0532	0.7064	2.9358	1.5297	1.4815	1.2265
2	7.533	0.636	1302.9	938.9	948.8	930.5	892.9	66.5	43.5	4.1	1.0440	0.7158	2.9701	1.5245	1.4962	1.2242
3	6.492	0.464	1286.5	960.6	934.7	960.6	884.0	4.2	43.6	0.2	1.0324	0.7566	3.0356	1.5147	1.5213	1.2190
4	3.776	-0.164	1162.3	944.1	909.0	944.1	724.3	7.9	38.6	0.5	0.9280	0.7320	3.0344	1.4803	1.5737	1.1966
5	1.755	-0.763	938.8	794.6	765.2	794.2	543.8	-25.5	35.4	-1.8	0.7412	0.6173	2.7527	1.4342	1.6525	1.1660
6	0.635	-0.905	806.5	682.1	641.5	681.2	488.8	-35.9	37.3	-2.8	0.6325	0.5286	2.5732	1.4136	1.6599	1.1620
7	-0.187	-0.969	792.5	661.7	634.5	661.2	474.8	-24.7	36.8	-2.1	0.6220	0.5133	2.5463	1.4066	1.6156	1.1772
8	-1.064	-1.020	829.7	698.2	685.7	690.1	467.2	-10.4	34.2	-0.9	0.6537	0.5436	2.5998	1.4046	1.5875	1.1735
9	-3.243	-1.235	844.9	725.5	707.6	725.5	461.7	10.3	33.1	0.8	0.6620	0.5624	2.6285	1.4229	1.5257	1.1773
10	-4.170	-1.271	825.7	698.7	691.4	698.6	451.4	11.3	33.2	0.9	0.6423	0.5576	2.5786	1.4369	1.5134	1.1794
11	-5.322	-1.214	788.6	645.7	657.5	645.6	435.5	11.4	33.6	1.6	0.6075	0.4917	2.4943	1.4542	1.5192	1.1774

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-4.63	-3.07	11.49	43.65	94.95	107.50	0.4480	0.2114	0.0478	0.8934	69.50	67.65	72.02	51.90	54.51
2	-3.94	-1.92	15.31	39.42	97.13	109.31	0.4249	0.2174	0.0499	0.8916	67.02	69.16	73.39	53.90	56.40
3	-3.07	-0.57	11.09	43.32	98.61	113.77	0.4169	0.2401	0.0493	0.8562	65.71	72.14	76.04	57.61	60.01
4	-6.94	-3.08	10.60	38.14	102.29	114.72	0.3483	0.1551	0.0385	0.9330	66.70	77.32	80.50	69.02	70.92
5	-9.32	-4.01	8.46	37.23	89.39	96.92	0.3309	0.1334	0.0357	0.9579	64.42	76.90	79.66	82.34	83.54
6	-7.12	-1.34	7.38	40.11	74.81	82.76	0.3468	0.0991	0.0274	0.9750	73.35	74.66	77.74	84.99	86.01
7	-7.40	-1.47	8.03	38.90	74.29	80.49	0.3341	0.0470	0.0132	0.9892	85.39	75.00	78.00	82.32	83.47
8	-9.82	-3.62	9.25	35.08	81.01	85.58	0.3201	0.0917	0.0260	0.9773	72.36	77.25	80.04	80.77	81.96
9	-10.09	-3.99	10.98	32.30	82.39	87.91	0.2939	0.0724	0.0213	0.9815	70.41	74.92	78.02	71.86	73.47
10	-11.30	-4.42	11.70	32.23	79.12	83.28	0.3138	0.0748	0.0221	0.9819	77.23	70.68	74.40	69.52	71.23
11	-12.15	-5.05	12.94	32.58	73.56	75.25	0.3427	0.0860	0.0257	0.9811	76.60	65.41	69.45	70.94	72.59

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
11783.	194.20	1.4497	2.7590	74.47	77.77	1.1891	0.9529	72.14

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

(Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 3, SPEED CODE 11, POINT NO 4

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	16.504	18.237	675.9	1207.0	675.9	742.3	0.0	951.6	0.0	52.1	0.6287	1.0756	691.8	680.9	0.8996	0.6750	967.2	757.4
2	13.810	15.786	695.1	1165.2	695.1	739.6	0.0	900.5	0.0	50.6	0.6461	1.0313	746.0	739.7	0.9506	0.6568	1019.7	742.2
3	11.275	13.504	713.9	1130.4	713.9	740.9	0.0	853.7	0.0	49.0	0.6671	0.9552	799.1	778.4	1.0013	0.6526	1071.0	741.3
4	4.371	7.539	757.5	1025.1	757.5	710.4	0.0	739.0	0.0	46.1	0.7118	0.8892	951.4	994.7	1.1428	0.6549	1216.1	755.0
5	-1.421	0.830	778.7	804.4	778.7	546.3	0.0	588.6	0.0	47.0	0.7339	0.6831	1141.4	1149.6	1.3022	0.6662	1381.6	784.5
6	-1.732	-2.160	783.6	741.8	783.6	521.0	0.0	526.0	0.0	45.4	0.7390	0.6281	1232.6	1227.1	1.3777	0.7382	1460.8	871.9
7	-2.361	-3.348	785.7	785.7	785.7	596.6	0.0	511.2	0.0	40.6	0.7412	0.6685	1278.0	1265.9	1.4152	0.8165	1500.2	962.0
8	-3.755	-4.484	785.8	818.1	785.8	645.9	0.0	502.2	0.0	37.9	0.7413	0.6979	1323.1	1304.6	1.4517	0.8787	1538.8	1030.1
9	-9.035	-8.042	767.3	830.0	767.3	668.4	0.0	492.0	0.0	36.3	0.7220	0.7046	1457.7	1420.9	1.5501	0.9714	1647.4	1144.4
10	-10.830	-9.302	755.3	813.9	755.3	639.1	0.0	503.9	0.0	38.2	0.7096	0.6861	1502.6	1459.6	1.5799	0.9692	1681.6	1149.6
11	-12.031	-10.513	743.2	772.1	743.2	562.0	0.0	529.5	0.0	43.2	0.6571	0.6426	1547.5	1498.4	1.6101	0.9322	1716.7	1120.1

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	Vθ'-1 FT/SEC	Vθ'-2 FT/SEC	PO/PO INLET
1	-0.97	3.64	16.45	56.92	42.74	58.13	0.4519	0.0085	0.0016	2.1449	99.57	99.53	45.42	-11.50	-691.6	150.9	2.1449
2	-1.08	3.22	14.91	51.44	43.45	59.48	0.4916	0.0257	0.0059	2.1168	98.57	98.42	46.74	-4.70	-746.0	60.8	2.1168
3	-1.06	3.05	13.44	46.04	44.11	60.93	0.5133	0.0323	0.0077	2.0965	98.03	97.82	47.95	1.91	-799.1	-24.7	2.0965
4	-0.22	3.25	10.09	31.51	45.51	60.64	0.5502	0.0891	0.0223	1.9937	92.95	92.26	51.28	19.77	-951.4	-255.7	1.9937
5	1.18	3.86	15.38	10.05	46.11	47.24	0.5645	0.2120	0.0445	1.7150	78.36	76.69	55.09	45.65	-1141.4	-561.1	1.7150
6	1.63	3.91	15.98	4.25	46.25	45.59	0.5180	0.2015	0.0361	1.6715	77.64	76.00	57.56	53.32	-1232.8	-699.1	1.6715
7	1.83	3.93	11.38	6.72	46.30	53.26	0.4681	0.1405	0.0282	1.7462	84.36	83.11	58.41	51.69	-1278.0	-754.7	1.7462
8	2.07	4.02	8.33	8.10	46.30	58.48	0.4376	0.1017	0.0212	1.8060	88.61	87.65	59.29	51.19	-1323.1	-802.4	1.8060
9	3.24	4.66	7.45	8.04	45.80	60.76	0.4113	0.1172	0.0243	1.8436	86.33	85.12	62.29	54.25	-1457.7	-928.9	1.8436
10	3.71	5.00	9.19	7.20	45.45	57.31	0.4247	0.1665	0.0335	1.8158	80.53	78.87	63.39	56.19	-1502.6	-955.8	1.8158
11	4.07	5.22	13.47	4.59	45.07	49.16	0.4608	0.2542	0.0471	1.7496	70.43	68.07	64.40	59.81	-1547.5	-966.9	1.7496

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.2282	1.8689	85.63	86.82	43.95	1.2282	1.8689	85.63	86.82

STATOR 1

RUN NO 3, SPEED CODE 11, POINT NO 4

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/TO1
1	18.115	14.710	1216.5	813.9	782.2	813.6	931.7	-12.1	50.2	-0.8	1.0861	0.6656	1.9690	1.2443	1.9690	1.2443
2	15.743	12.813	1179.9	814.2	780.9	814.1	884.5	14.9	48.7	1.0	1.0471	0.6845	1.9943	1.2421	1.9943	1.2421
3	13.537	11.057	1146.6	817.4	782.3	816.7	841.0	34.0	47.1	2.4	1.0145	0.6660	1.9991	1.2402	1.9991	1.2402
4	8.147	6.447	1047.8	788.7	748.7	788.5	733.1	17.0	44.4	1.2	0.9121	0.6632	1.9314	1.2346	1.9314	1.2346
5	3.944	3.275	828.4	625.7	584.2	623.0	587.4	-57.6	45.1	-5.3	0.7055	0.5225	1.6868	1.2146	1.6868	1.2146
6	-2.527	-2.969	766.7	576.4	556.2	576.0	528.5	-52.4	43.5	-5.2	0.6527	0.4824	1.6265	1.2077	1.6263	1.2077
7	-3.538	-4.216	810.6	620.8	628.4	620.2	512.3	-28.5	39.2	-2.6	0.6519	0.5195	1.6644	1.2084	1.6644	1.2084
8	-4.113	-3.093	842.0	674.8	674.5	674.7	504.0	-12.0	36.6	-1.3	0.7203	0.5667	1.7194	1.2111	1.7194	1.2111
9	-5.909	-7.143	856.0	725.2	698.4	724.7	495.0	-26.4	35.4	-2.1	0.7269	0.6085	1.7603	1.2244	1.7603	1.2244
10	-5.629	-7.759	841.8	709.6	672.0	708.6	507.0	-37.1	37.1	-3.0	0.7120	0.5917	1.7600	1.2355	1.7600	1.2355
11	-7.712	-6.432	802.4	662.9	599.3	661.5	533.6	-42.1	41.8	-3.7	0.6700	0.5459	1.7023	1.2543	1.7023	1.2543

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-2.33	-0.27	11.49	51.01	60.71	79.57	0.4616	0.1374	0.0281	0.9282	82.48	88.75	89.77	88.75	89.77
2	-2.18	0.23	12.26	47.63	61.97	79.69	0.4580	0.1134	0.0241	0.9435	84.47	89.94	90.35	89.94	90.85
3	-2.40	0.38	12.76	44.76	63.31	80.29	0.4352	0.0940	0.0207	0.9551	86.11	90.98	91.60	90.98	91.80
4	-2.52	1.10	10.50	43.16	62.79	76.37	0.4014	0.0486	0.0119	0.9792	91.47	87.98	89.02	87.98	89.02
5	-0.38	4.67	4.03	50.40	49.61	57.90	0.4449	0.0356	0.0098	0.9920	93.60	75.00	76.72	75.00	76.72
6	-1.56	4.06	4.15	48.67	46.22	52.92	0.4754	0.1753	0.0500	0.9539	66.78	71.70	73.54	71.70	73.54
7	-3.55	0.31	6.74	41.88	55.38	57.24	0.4308	0.2101	0.0613	0.9414	57.79	75.08	76.77	75.08	76.77
8	-7.77	-1.63	8.41	37.85	60.25	62.68	0.3825	0.1755	0.0521	0.9487	58.89	79.25	80.74	79.25	80.74
9	-9.23	-2.35	8.46	37.48	62.48	67.39	0.3441	0.1146	0.0357	0.9659	66.18	79.76	81.31	79.76	81.31
10	-7.83	-0.79	8.76	40.12	59.30	65.15	0.3641	0.1088	0.0344	0.9687	66.57	74.48	76.39	74.46	76.39
11	-3.66	3.29	9.65	45.43	51.57	59.40	0.4060	0.1056	0.0338	0.9725	71.43	64.47	66.98	64.47	66.98

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
11770.	193.50	1.2282	1.8054	80.49	82.02	1.2282	0.9660	80.49

TABLE XXI (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA (Uniform Inlet Flow)

U. S. CUSTOMARY UNITS

ROTOR 2

RUN NO 3, SPEED CODE 11, POINT NO 4

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	11.543	11.265	914.8	1267.1	914.7	645.6	-11.8	943.7	-0.7	48.0	0.7779	1.0042	917.8	962.7	1.1090	0.6703	1304.2	645.8
2	10.752	10.196	920.6	1251.6	920.5	826.8	14.5	939.6	0.9	46.0	0.7842	0.9911	943.8	962.6	1.1142	0.6556	1308.0	627.9
3	9.678	9.152	928.3	1229.1	927.7	811.7	33.4	923.0	2.1	46.6	0.7942	0.9732	970.5	1003.7	1.1253	0.6458	1318.6	815.7
4	6.763	6.176	909.0	1106.3	908.9	761.5	17.0	802.5	1.1	46.6	0.7757	0.8679	1053.6	1070.5	1.1763	0.6333	1378.6	807.2
5	3.945	1.787	750.3	935.7	748.1	635.4	-57.5	686.9	-4.4	47.2	0.6341	0.7220	1168.0	1167.3	1.2134	0.6146	1435.8	796.5
6	-2.778	-0.895	700.1	865.6	698.3	550.3	-50.5	668.1	-4.1	50.5	0.5903	0.6641	1226.4	1218.8	1.2271	0.5975	1455.4	778.5
7	-4.266	-2.122	735.4	859.0	734.9	546.3	-26.3	663.6	-2.1	50.5	0.6221	0.6601	1255.8	1245.3	1.2500	0.6129	1477.8	798.1
8	-5.288	-3.209	776.2	866.1	776.1	565.9	-12.3	655.7	-0.9	49.1	0.6586	0.6655	1285.4	1272.5	1.2830	0.6431	1512.1	837.0
9	-7.683	-6.344	817.3	873.5	816.8	596.0	-27.2	636.8	-1.9	46.7	0.6926	0.6645	1375.5	1356.8	1.3755	0.7120	1623.2	935.9
10	-8.269	-7.431	802.1	858.8	801.2	584.0	-37.7	629.7	-2.7	47.0	0.6752	0.6481	1405.8	1385.6	1.3697	0.7209	1650.9	955.3
11	-8.880	-8.585	761.0	820.4	759.8	541.0	-42.7	616.7	-3.2	48.6	0.6327	0.6124	1436.1	1415.1	1.3821	0.7199	1662.6	964.4

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	Vθ'-1 FT/SEC	Vθ'-2 FT/SEC	PO/PO INLET
1	-4.10	0.22	21.68	44.10	84.04	98.96	0.5224	0.2162	0.0493	1.8731	84.09	82.63	45.38	1.28	-929.6	-19.0	3.7253
2	-4.70	-0.25	16.60	42.27	84.56	96.82	0.5365	0.1991	0.0464	1.8823	85.20	83.83	45.25	2.99	-929.3	-43.2	3.7526
3	-5.04	-0.46	13.20	39.64	85.08	99.21	0.5439	0.1742	0.0415	1.8817	86.77	85.54	45.32	5.67	-937.1	-80.8	3.7619
4	-2.42	1.88	9.65	29.42	81.86	97.06	0.5599	0.1429	0.0347	1.8370	87.90	86.82	48.83	19.42	-1036.5	-268.0	3.5614
5	5.13	9.71	8.88	21.50	65.43	82.68	0.5307	0.1124	0.0254	1.9250	90.45	89.53	58.60	37.10	-1225.5	-480.3	3.2567
6	6.45	11.29	8.78	16.34	60.82	71.99	0.6111	0.1206	0.0253	1.9276	89.59	88.59	61.33	44.99	-1276.9	-550.6	3.1416
7	5.31	9.39	7.49	13.44	64.46	72.06	0.6023	0.1347	0.0281	1.8802	87.80	86.66	60.19	46.75	-1282.1	-561.7	3.1505
8	3.75	7.56	5.08	11.73	68.52	75.11	0.5855	0.1469	0.0311	1.8463	86.11	84.67	59.13	47.40	-1297.7	-616.8	3.1827
9	2.94	5.02	3.08	9.58	72.19	78.90	0.5656	0.2015	0.0451	1.8119	79.95	78.22	59.75	50.17	-1402.7	-720.0	3.2244
10	3.71	5.69	5.51	8.72	70.09	76.16	0.5671	0.2108	0.0469	1.8165	79.05	77.23	60.91	52.19	-1443.4	-755.9	3.1944
11	3.22	6.91	10.11	6.96	65.04	69.33	0.5688	0.1976	0.0420	1.8301	80.43	78.71	62.73	55.77	-1478.8	-798.3	3.1154

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.5079	3.3571	80.94	83.84	42.48	1.2277	1.8595	84.35	85.65

STATOR 2

RUN NO 3, SPEED CODE 11, POINT NO 4

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/TO1
1	8.008	3.723	1301.9	797.0	906.7	796.2	934.1	35.9	46.1	2.6	1.0375	0.5969	3.5160	1.5373	1.7661	1.2353
2	7.826	0.525	1284.4	811.8	885.0	810.6	930.6	38.9	46.7	2.7	1.0223	0.6095	3.5567	1.5339	1.7861	1.2344
3	6.505	3.203	1260.8	837.7	865.3	837.1	917.1	30.3	46.6	2.1	1.0030	0.6322	3.6315	1.5258	1.8164	1.2300
4	3.803	-0.775	1134.7	764.2	804.9	763.9	799.7	22.7	44.9	1.7	0.8935	0.5776	3.4895	1.5035	1.7974	1.2167
5	1.282	-1.236	960.4	611.9	672.0	611.9	686.1	-1.6	45.6	-0.2	0.7430	0.4569	3.2143	1.4916	1.8900	1.2271
6	0.140	-1.177	866.7	539.1	586.2	539.0	606.0	-4.0	48.7	-0.4	0.6834	0.4030	3.1065	1.4674	1.9117	1.2316
7	-0.632	-1.122	861.2	537.0	574.1	537.0	604.2	6.2	48.5	0.7	0.6762	0.4021	3.1043	1.4827	1.8651	1.2269
8	-2.394	-1.095	887.7	556.9	596.9	550.5	657.0	19.7	47.7	2.0	0.6835	0.4176	3.1299	1.4619	1.8201	1.2235
9	-3.055	-1.226	898.5	605.8	630.9	604.4	639.8	41.7	45.4	3.9	0.6853	0.4512	3.1837	1.5120	1.7863	1.2341
10	-4.531	-1.298	887.6	595.8	622.1	594.5	633.4	40.4	45.6	3.9	0.6720	0.4405	3.1608	1.5303	1.7964	1.2364
11	-5.518	-1.263	854.7	539.2	587.2	538.8	621.1	21.0	46.7	2.2	0.6401	0.3945	3.0750	1.5515	1.8069	1.2369

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-2.32	-0.76	14.40	43.55	105.17	117.23	0.5429	0.1125	0.0254	0.9443	66.86	79.94	83.09	74.59	76.34
2	-0.75	1.27	13.95	43.93	103.01	120.22	0.5273	0.1037	0.0239	0.9496	67.55	81.39	84.54	76.13	77.90
3	0.17	2.70	12.92	44.77	103.19	125.70	0.5022	0.0758	0.0178	0.9629	96.03	84.22	86.76	80.05	82.65
4	-0.66	3.19	12.62	43.18	100.69	115.30	0.4981	0.0544	0.0135	0.9781	92.14	84.74	87.13	83.35	84.67
5	0.87	6.16	10.15	45.73	80.33	90.86	0.5565	0.0522	0.0140	0.9839	92.43	80.06	83.00	87.04	88.15
6	4.30	10.09	9.79	49.12	75.79	79.46	0.6044	0.0473	0.0131	0.9872	93.29	78.06	81.20	87.05	88.17
7	4.65	10.64	10.83	48.21	75.50	79.39	0.6002	0.0473	0.0133	0.9872	93.16	78.77	81.81	85.24	86.57
8	3.65	9.86	12.13	45.68	76.34	82.50	0.5774	0.0576	0.0164	0.9840	91.55	79.57	82.52	82.60	84.30
9	1.63	8.30	14.11	41.46	82.21	88.14	0.5223	0.0480	0.0141	0.9871	92.05	76.35	79.76	76.47	78.30
10	1.09	7.97	14.65	41.67	80.00	85.34	0.5281	0.0421	0.0124	0.9890	92.90	73.02	76.91	75.66	77.56
11	0.95	8.05	14.16	44.45	74.07	75.63	0.5797	0.0533	0.0159	0.9872	92.70	68.19	72.67	76.90	78.73

WCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
11770.	153.50	1.5079	3.2654	79.24	82.34	1.2277	0.9786	81.16

APPENDIX F

OVERALL PERFORMANCE AND BLADE-ELEMENT DATA WITH TIP RADIALLY DISTORTED INLET FLOW

This appendix provides the overall performance and blade-element data for the redesigned fan stage with tip radially distorted inlet flow. Fan overall performance is presented in Table XXII, and overall performance and blade-element data for rotor 1, stator 1, rotor 2, and stator 2 are provided in Table XXIII. The column headings for Table XXIII are identified in Table XVII of Appendix C. The 1st-stage pressure and temperature data used in calculating the parameters shown are from radial traverses corrected through the use of the correlations described in the section on data reduction techniques. The data is provided in U. S. customary units.

TABLE XXII – FAN OVERALL PERFORMANCE (Tip Radially Distorted Inlet Flow)

Run Number	Speed Code	Point Number	$W\sqrt{\theta_6}/\delta_6$ LBM/SEC	$W\sqrt{\theta_6}/\delta_6$ KG/SEC	P_{11}/P_6	ηad_{11}	P_{16}/P_6	ηad_{16}
006	10	31	186.3	(84.5)	1.71	88.6	2.35	74.6
006	10	32	186.4	(84.5)	1.72	88.2	2.68	83.9
006	10	34	182.5	(82.8)	1.84	89.9	3.04	85.7
006	85	31	157.0	(71.2)	1.52	90.5	1.94	79.8
006	85	32	154.4	(70.0)	1.53	89.4	2.18	88.3
006	85	34	144.7	(65.6)	1.55	86.3	2.26	84.8
006	70	31	125.4	(56.9)	1.33	88.8	1.59	82.0
006	70	32	114.9	(52.1)	1.34	86.2	1.71	84.8
006	70	34	108.6	(49.3)	1.32	78.9	1.69	81.2
006	10	stall	177.7	(80.6)			3.089	
006	85	stall	144.2	(65.4)			2.261	
006	70	stall	96.9	(43.9)			1.650	

Speed Code	% Design Speed
50	50
70	70
85	85
90	90
10	100
15	105
11	110

TABLE XXIII – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA
(Tip Radially Distorted Flow)

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 6, SPEED CODE 70, POINT NO 31

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-I	V'-1 FT/SEC	V'-2 FT/SEC
1	13.872	15.855	410.9	770.0	410.9	498.9	0.0	586.5	0.0	49.6	0.3730	0.6877	475.0	534.6	0.5701	0.4480	628.0	501.6
2	5.901	7.861	440.1	663.3	440.1	471.8	0.0	466.3	0.0	44.7	0.4003	0.5871	605.8	633.4	0.6811	0.4430	748.8	500.5
3	1.471	1.864	450.1	582.1	450.1	441.2	0.0	379.7	0.0	40.7	0.4098	0.5125	726.8	732.0	0.7783	0.4971	854.9	564.6
4	-1.465	-2.867	431.7	544.8	431.7	424.1	0.0	341.9	0.0	38.8	0.3925	0.4776	842.4	830.7	0.8606	0.5674	946.6	647.1
5	-6.924	-8.010	353.0	531.3	353.0	396.3	0.0	353.9	0.0	41.6	0.3193	0.4621	956.8	929.4	0.9225	0.6077	1019.8	698.7

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VΘ'-1 FT/SEC	VΘ'-2 FT/SEC	PO/PO INLET
1	1.05	5.35	13.67	54.80	29.80	39.38	0.4329	-0.0128	-0.0029	1.4022	100.72	100.78	48.87	-5.93	-475.0	51.8	1.4244
2	2.58	5.84	9.81	34.38	31.63	38.26	0.5042	0.0640	0.0161	1.3492	94.48	94.27	53.88	19.50	-605.8	-167.1	1.3721
3	3.71	6.39	8.34	15.61	32.17	36.21	0.4749	0.0870	0.0204	1.3099	90.25	89.90	58.22	38.61	-726.8	-352.3	1.3289
4	5.60	7.56	6.17	13.80	30.59	34.96	0.4341	0.0815	0.0178	1.3143	89.55	89.17	62.82	49.02	-842.4	-488.8	1.3150
5	9.93	11.22	8.32	14.29	24.68	32.54	0.4368	0.0862	0.0177	1.3684	89.27	88.81	69.61	55.32	-956.8	-575.5	1.3182

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.0962	1.3461	92.18	92.47	28.47	1.0962	1.3458	92.09	92.38

STATOR 1

RUN NO 6, SPEED CODE 70, POINT NO 31

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/TO1
1	13.886	12.812	777.8	608.2	522.6	607.7	576.1	-23.5	47.9	-2.2	0.6954	0.5338	1.4115	1.1006	1.3895	1.1006
2	6.171	6.053	676.2	548.9	493.2	548.6	462.5	-17.8	43.2	-1.9	0.5992	0.4806	1.3609	1.0944	1.3382	1.0944
3	2.549	0.119	595.3	498.6	459.0	498.4	379.1	-14.0	39.5	-1.6	0.5247	0.4360	1.3159	1.0892	1.2976	1.0892
4	-1.732	-4.344	558.6	477.6	441.3	477.4	342.4	-12.9	37.8	-1.6	0.4903	0.4165	1.2984	1.0912	1.2976	1.0912
5	-6.542	-7.637	550.7	478.3	419.8	478.3	356.4	-2.6	40.4	-0.3	0.4797	0.4144	1.3003	1.1056	1.3495	1.1056

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P STATC-ST	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-2.93	-0.52	9.04	50.11	41.05	51.89	0.3742	0.0305	0.0065	0.9916	93.38	98.00	98.06
2	-3.85	-0.13	7.42	45.00	39.73	46.59	0.3535	0.0294	0.0072	0.9938	92.13	91.94	92.23
3	-5.95	-0.91	7.71	41.15	37.44	41.95	0.3394	0.0544	0.0149	0.9908	83.13	86.73	87.18
4	-6.73	-0.65	7.88	39.37	36.17	39.89	0.3348	0.0836	0.0248	0.9873	71.47	84.86	85.38
5	-4.55	2.50	11.46	40.71	34.20	39.54	0.3397	0.0931	0.0295	0.9864	65.15	84.71	85.32

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
7495.	125.40	1.0962	1.3324	88.86	89.28	1.0962	0.9898	88.78

ROTOR 2

RUN NO 6, SPEED CODE 70, POINT NO 31

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-I	V'-1 FT/SEC	V'-2 FT/SEC
1	10.618	10.073	667.5	864.0	667.1	711.1	-22.9	490.7	-2.0	34.5	0.5893	0.7434	600.9	625.8	0.8064	0.6228	913.3	723.8
2	5.475	5.644	621.2	780.9	621.0	684.2	-17.6	376.4	-1.6	28.8	0.5476	0.6724	670.8	681.6	0.8172	0.6451	927.1	749.2
3	-0.737	0.999	562.6	640.9	562.4	573.1	-13.9	287.0	-1.4	26.6	0.4945	0.5488	743.7	743.2	0.8293	0.6272	943.6	732.5
4	-5.133	-3.152	529.6	564.0	529.4	514.7	-12.9	230.6	-1.4	24.1	0.4636	0.4809	818.5	810.2	0.8629	0.6609	985.6	775.2
5	-8.132	-7.394	527.7	558.7	527.7	513.8	-2.6	219.5	-0.3	23.0	0.4588	0.4733	895.1	882.3	0.9055	0.7103	1041.3	838.6

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VΘ'-1 FT/SEC	VΘ'-2 FT/SEC	PO/PO INLET
1	-6.91	-2.46	24.54	32.32	55.32	65.79	0.3410	0.0579	0.0133	1.3407	93.61	93.36	43.05	10.72	-623.8	-135.0	1.8925
2	-3.79	1.00	14.49	23.91	51.03	64.98	0.3016	-0.0754	-0.0177	1.3386	110.08	110.53	47.96	24.05	-688.4	-305.2	1.8209
3	-0.05	4.52	10.30	14.89	46.09	53.77	0.3131	-0.0115	-0.0026	1.2558	101.44	101.54	53.42	38.53	-757.7	-456.2	1.6505
4	2.13	5.94	6.01	9.19	43.35	47.37	0.2916	0.0410	0.0085	1.1989	91.87	91.70	57.51	48.32	-831.3	-579.6	1.5566
5	2.28	4.46	5.41	7.40	42.81	46.30	0.2714	0.0642	0.0143	1.1415	86.04	85.74	59.48	52.09	-897.7	-662.7	1.5363

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.1718	1.6777	92.68	93.18	35.24	1.0690	1.2591	98.53	98.55

STATOR 2

RUN NO 6, SPEED CODE 70, POINT NO 31

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/TO1
1	8.109	1.310	897.2	823.8	753.8	820.6	486.7	-78.1	33.1	-4.9	0.7754	0.7051	1.6496	1.2040	1.1683	1.0937
2	5.586	1.756	809.4	833.5	716.8	830.0	376.0	-75.9	27.8	-5.2	0.6991	0.7205	1.7013	1.1851	1.2405	1.0816
3	3.250	1.151	671.1	748.7	606.2	744.4	287.9	-79.6	25.4	-6.1	0.5762	0.6471	1.6216	1.1640	1.2282	1.0684
4	-0.302	0.200	592.3	634.3	545.2	630.1	231.4	-73.1	23.0	-6.6	0.5062	0.5443	1.5083	1.1542	1.1616	1.0590
5	-4.301	-0.582	594.7	639.6	552.2	638.1	220.8	-43.4	21.8	-3.9	0.5052	0.5456	1.5081	1.1681	1.1598	1.0566

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P STATC-ST	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-14.34	-12.32	6.37	37.97	68.24	67.85	0.2286	0.3884	0.0891	0.8716	-97.28	48.39	49.48
2	-17.70	-13.90	5.09	33.02	66.98	71.18	0.1300	0.2598	0.0642	0.9254	1100.02	77.74	78.37
3	-19.29	-13.98	4.20	31.52	56.18	64.84	0.0774	0.1844	0.0491	0.9596	217.24	88.19	88.49
4	-21.03	-14.88	3.50	29.57	49.61	54.52	0.0817	0.2115	0.0597	0.9657	240.87	74.01	74.52
5	-22.64	-15.77	6.89	25.70	49.02	54.52	0.0546	0.1154	0.0341	0.9816	164.33	76.39	76.84

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
7495.	125.40	1.1718	1.5866	82.02	83.13	1.0690	0.9457	74.08

TABLE XXIII (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

(Tip Radially Distorted Flow)

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 6, SPEED CODE 70, POINT NO 32

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-1	V'-1 FT/SEC	V'-2 FT/SEC
1	13.925	15.857	374.4	748.2	374.4	454.0	0.0	594.7	0.0	52.6	0.3391	0.6660	475.4	535.4	0.5482	0.4076	605.3	457.9
2	5.953	7.739	399.6	658.0	399.6	444.1	0.0	485.5	0.0	47.5	0.3625	0.5809	606.6	634.2	0.6590	0.4134	726.4	468.3
3	1.104	1.732	409.4	514.1	409.4	412.0	0.0	399.9	0.0	44.1	0.3716	0.5040	727.8	733.0	0.7580	0.4651	835.0	529.9
4	-2.624	-3.110	387.4	532.9	387.4	391.4	0.0	361.6	0.0	42.7	0.3511	0.4695	843.6	831.9	0.8415	0.5345	928.3	611.8
5	-7.817	-8.283	318.5	501.4	318.5	336.4	0.0	371.8	0.0	47.7	0.2875	0.4340	958.1	930.7	0.9115	0.5646	1009.7	652.3

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VO'-1 FT/SEC	VO'-2 FT/SEC	PO/PO INLET
1	3.72	8.01	12.16	58.98	27.43	35.94	0.4858	0.0538	0.0123	1.3920	97.10	96.99	51.53	-7.45	-475.6	59.4	1.4114
2	5.00	8.47	8.42	38.00	29.06	36.31	0.5402	0.0744	0.0188	1.3643	94.16	93.93	56.51	18.50	-606.6	-148.7	1.3840
3	6.12	8.80	8.69	21.68	29.60	34.14	0.5123	0.0991	0.0231	1.3265	89.79	89.41	60.64	38.96	-727.8	-333.2	1.3421
4	8.09	10.04	7.15	15.10	27.80	32.52	0.4698	0.0978	0.0208	1.3295	88.37	87.92	65.31	50.21	-843.6	-470.2	1.3252
5	11.84	13.13	11.65	12.67	22.63	27.73	0.4849	0.1446	0.0271	1.3569	82.78	82.05	71.52	58.85	-958.1	-558.9	1.3138

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.1004	1.3508	89.35	89.77	26.10	1.1004	1.3511	89.42	89.83

STATOR 1

RUN NO 6, SPEED CODE 70, POINT NO 32

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/TO1
1	15.778	12.688	753.4	542.4	475.7	542.5	584.2	-12.0	51.0	-1.3	0.6710	0.4732	1.3991	1.1022	1.3799	1.1022
2	8.110	5.912	668.0	507.2	462.8	507.2	481.6	-3.5	46.1	-0.4	0.5903	0.4418	1.3705	1.0986	1.3511	1.0986
3	2.660	0.308	584.6	457.3	427.0	457.3	399.2	-0.7	43.1	-0.1	0.5136	0.3978	1.3246	1.0940	1.3139	1.0940
4	-1.438	-3.612	543.8	431.7	405.6	431.7	362.2	-3.6	41.8	-0.5	0.4755	0.3744	1.3087	1.0965	1.3128	1.0965
5	-6.333	-7.086	516.8	407.8	356.2	407.0	374.4	-25.8	46.5	-3.6	0.4478	0.3508	1.2974	1.1111	1.3396	1.1111

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P STATC-ST	%EFF-A TOT-STG	%EFF-P TOT-STG
1	0.11	2.52	9.98	52.21	37.54	47.20	0.4401	0.0322	0.0068	0.9916	94.23	94.35	94.57
2	-0.88	2.84	8.88	46.52	37.65	43.96	0.4101	0.0387	0.0094	0.9919	91.73	91.08	91.43
3	-2.45	2.81	9.22	43.16	35.22	39.29	0.4009	0.0577	0.0158	0.9907	86.25	86.34	86.82
4	-2.84	3.30	8.95	42.24	33.57	36.77	0.4067	0.0870	0.0258	0.9875	78.26	83.95	84.53
5	1.54	8.59	8.13	50.12	29.19	34.20	0.4581	0.0970	0.0307	0.9875	75.99	78.47	79.31

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
7505.	114.90	1.1004	1.3370	86.18	86.70	1.1004	0.9898	86.25

ROTOR 2

RUN NO 6, SPEED CODE 70, POINT NO 32

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-1	V'-1 FT/SEC	V'-2 FT/SEC
1	10.488	9.925	601.4	846.2	601.3	663.8	-11.7	524.7	-1.1	38.2	0.5271	0.7244	601.8	626.6	0.7529	0.5750	859.0	671.6
2	5.318	5.326	572.0	746.7	572.0	621.1	-3.4	414.5	-0.3	33.7	0.5009	0.6317	671.8	682.6	0.7749	0.5778	884.9	676.5
3	-0.493	0.774	510.1	627.9	510.1	515.3	-0.7	358.8	-0.1	34.9	0.4454	0.5324	744.8	744.3	0.7887	0.5457	903.3	643.5
4	-4.353	-2.970	469.8	571.1	469.8	438.3	-3.7	366.1	-0.5	39.8	0.4085	0.4791	819.6	811.4	0.8242	0.5241	948.0	624.8
5	-7.352	-6.817	451.6	556.2	450.8	454.5	-26.1	320.6	-3.3	35.0	0.3895	0.4627	896.3	883.5	0.8855	0.6019	1026.7	723.5

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VO'-1 FT/SEC	VO'-2 FT/SEC	PO/PO INLET
1	-4.42	0.03	22.52	36.83	56.99	62.85	0.3670	0.0293	0.0068	1.3740	97.22	97.11	45.93	8.70	-613.4	-101.9	1.9224
2	-2.02	2.77	13.79	26.38	48.27	60.26	0.3573	-0.0408	-0.0096	1.3411	104.85	105.08	49.73	23.35	-675.2	-268.1	1.8365
3	2.15	6.72	8.58	18.82	42.96	49.68	0.3998	0.0350	0.0080	1.2874	95.38	95.25	55.62	36.80	-745.5	-385.5	1.7082
4	4.88	8.69	3.04	14.89	39.50	41.41	0.4630	0.1705	0.0375	1.2600	78.38	77.69	60.26	45.38	-823.3	-445.2	1.6489
5	6.65	8.83	4.25	12.93	37.36	42.47	0.4160	0.1499	0.0343	1.2650	79.10	78.42	63.85	50.92	-922.5	-562.9	1.6412

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.1960	1.7420	87.62	88.53	32.24	1.0868	1.3029	90.30	90.63

STATOR 2

RUN NO 6, SPEED CODE 70, POINT NO 32

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/TO1
1	7.790	0.740	874.8	751.3	703.3	751.0	520.2	-19.8	36.7	-1.5	0.7516	0.6362	1.8673	1.2058	1.3345	1.0976
2	4.760	0.402	770.2	684.7	649.7	683.1	413.6	-46.9	32.6	-3.9	0.6594	0.5804	1.8024	1.1923	1.3126	1.0850
3	2.503	0.287	649.2	577.2	541.3	574.5	358.6	-56.2	33.5	-5.6	0.5516	0.4872	1.6982	1.1804	1.2755	1.0787
4	-0.930	-0.168	591.2	507.8	463.6	505.9	366.9	-44.5	38.3	-5.0	0.4968	0.4243	1.6377	1.1910	1.2503	1.0874
5	-4.897	-0.921	582.4	505.3	484.9	504.8	322.5	-22.8	33.7	-2.6	0.4855	0.4188	1.6215	1.2092	1.2544	1.0883

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P STATC-ST	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-10.71	-4.69	9.75	38.22	65.40	72.97	0.2844	0.0913	0.0210	0.9713	72.02	87.88	88.34
2	-12.98	-9.12	6.39	36.50	62.25	67.08	0.2714	0.0928	0.0230	0.9760	65.72	95.04	95.20
3	-11.18	-5.87	4.72	39.11	51.73	56.26	0.3006	0.0837	0.0223	0.9835	69.72	91.26	91.52
4	-5.74	0.47	5.09	43.33	43.46	48.69	0.3427	0.0525	0.0149	0.9918	82.09	75.24	75.98
5	-10.79	-3.91	8.20	36.24	44.86	47.67	0.3083	0.0562	0.0166	0.9916	79.02	75.62	76.36

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
7505.	114.90	1.1540	1.7133	84.80	85.89	1.0866	0.9836	84.44

TABLE XXIII (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA (Tip Radially Distorted Flow)

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 6. SPEED CODE 70. POINT NO 34

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-1	V'-1 FT/SEC	V'-2 FT/SEC
1	13.567	15.746	373.9	763.0	373.9	486.0	0.0	588.1	0.0	50.4	0.3386	0.6808	474.5	534.1	0.5471	0.4364	604.1	489.0
2	5.054	7.741	399.6	670.5	399.6	470.1	0.0	478.0	0.0	45.5	0.3625	0.5932	605.2	632.7	0.6579	0.4379	725.2	495.0
3	-0.026	2.004	403.7	588.3	403.7	427.0	0.0	404.7	0.0	43.5	0.3663	0.5168	726.1	731.3	0.7538	0.4722	830.7	537.6
4	-3.709	-2.673	359.5	545.7	359.5	367.4	0.0	403.5	0.0	47.6	0.3253	0.4748	841.6	829.9	0.8282	0.4897	915.2	562.9
5	-7.760	-8.034	256.8	509.7	256.8	264.4	0.0	435.7	0.0	58.6	0.2312	0.4376	955.8	928.5	0.8910	0.4801	989.7	559.2

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VΘ'-1 FT/SEC	VΘ'-2 FT/SEC	PO/PO INLET
1	3.64	7.94	13.26	57.80	27.58	38.52	0.4342	0.0185	0.0042	1.3948	98.97	98.95	51.46	-6.34	-474.5	54.1	1.4241
2	4.90	8.37	8.52	38.20	29.25	38.13	0.5051	0.0877	0.0222	1.3512	92.81	92.53	56.41	18.21	-605.2	-154.7	1.3796
3	6.40	9.08	7.15	23.50	29.35	34.59	0.5066	0.1562	0.0372	1.3040	83.56	82.99	60.91	37.42	-726.1	-326.6	1.3216
4	9.64	11.60	6.35	17.65	25.83	29.27	0.5340	0.2304	0.0500	1.3053	74.68	73.74	66.86	49.21	-841.6	-426.4	1.2682
5	15.20	16.49	14.67	13.22	18.20	20.72	0.5927	0.3088	0.0530	1.3369	67.95	66.64	74.88	61.67	-955.8	-492.7	1.2722

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.1053	1.3360	81.94	82.63	24.67	1.1053	1.3359	81.93	82.62

STATOR 1

RUN NO 6. SPEED CODE 70. POINT NO 34

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	15.962	13.018	769.8	579.2	508.7	579.0	577.7	-11.6	48.8	-1.1	0.6875	0.5070	1.4112	1.1008	1.3822	1.1008
2	8.949	6.964	680.5	526.7	488.1	526.5	474.2	-11.4	44.2	-1.2	0.6027	0.4598	1.3681	1.0969	1.3401	1.0969
3	4.422	2.126	597.0	450.0	439.5	449.9	404.1	-8.3	42.6	-1.1	0.5249	0.3910	1.3065	1.0950	1.2910	1.0950
4	1.151	-1.495	554.0	390.6	380.3	390.6	402.8	-3.6	46.6	-0.5	0.4824	0.3364	1.2757	1.1057	1.2874	1.1057
5	-4.999	-6.042	522.4	345.4	283.5	345.2	438.7	13.5	57.1	2.3	0.4489	0.2936	1.2561	1.1298	1.3169	1.1298

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-2.07	0.33	10.09	49.91	40.15	50.08	0.4031	0.0326	0.0069	0.9912	93.59	96.13	96.28
2	-2.78	0.94	8.04	45.46	39.36	45.28	0.3941	0.0322	0.0079	0.9931	92.81	90.02	90.40
3	-2.86	2.19	8.26	43.70	35.49	38.13	0.4336	0.0597	0.0163	0.9899	87.46	79.73	80.42
4	2.03	8.18	8.91	47.16	30.22	32.53	0.5135	0.0882	0.0262	0.9869	83.88	70.99	71.97
5	12.18	19.22	14.03	54.86	22.12	28.12	0.6003	0.0990	0.0313	0.9871	83.53	63.04	64.42

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
7487.	108.64	1.1053	1.3224	78.93	79.72	1.1053	0.9898	78.92

ROTOR 2

RUN NO 6. SPEED CODE 70. POINT NO 34

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-I	V'-1 FT/SEC	V'-2 FT/SEC
1	10.803	10.120	630.8	856.5	630.7	675.9	-11.3	526.1	-1.0	37.6	0.5548	0.7347	600.3	625.1	0.7727	0.5859	878.6	683.1
2	6.247	5.910	584.8	749.9	584.7	626.1	-11.2	412.8	-1.1	33.4	0.5131	0.6408	670.2	680.9	0.7878	0.5820	897.9	681.1
3	0.904	1.710	496.6	617.0	496.5	500.9	-6.3	360.4	-1.0	35.7	0.4329	0.5220	743.0	742.5	0.7851	0.5329	900.5	630.0
4	-2.883	-1.964	428.4	540.2	428.4	408.8	-3.8	353.1	-0.5	40.7	0.3700	0.4512	817.7	809.4	0.8001	0.5117	926.5	612.7
5	-6.865	-6.438	392.8	513.4	392.6	400.3	13.6	321.5	2.0	38.6	0.3347	0.4244	894.2	861.4	0.8214	0.5690	964.1	688.3

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VΘ'-1 FT/SEC	VΘ'-2 FT/SEC	PO/PO INLET
1	-5.85	-1.40	22.14	35.79	53.25	63.24	0.3678	0.0741	0.0171	1.3538	92.63	92.33	44.10	8.32	-611.6	-99.1	1.9105
2	-2.33	2.46	13.65	26.21	49.06	60.05	0.3629	0.0013	0.0003	1.3277	99.93	99.95	49.42	23.21	-681.4	-268.1	1.8181
3	3.07	7.65	9.13	19.19	41.40	47.64	0.4157	0.0619	0.0140	1.2832	92.24	92.00	56.54	37.35	-751.3	-382.1	1.6806
4	7.01	10.82	5.73	14.35	35.31	38.08	0.4583	0.1378	0.0288	1.2636	82.76	82.21	62.39	48.05	-821.5	-456.3	1.6117
5	8.65	10.63	7.58	11.59	31.58	36.79	0.3996	0.0544	0.0115	1.2716	92.41	92.17	65.85	54.26	-880.6	-559.9	1.5975

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.1987	1.7191	84.19	85.33	30.69	1.0845	1.3000	91.97	92.24

STATOR 2

RUN NO 6. SPEED CODE 70. POINT NO 34

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	7.853	0.768	883.4	746.6	713.1	746.3	521.5	-18.8	36.4	-1.4	0.7604	0.6323	1.8529	1.2084	1.3130	1.0977
2	4.947	0.505	772.0	677.0	652.6	675.7	412.4	-41.9	32.4	-3.5	0.6611	0.5735	1.7844	1.1922	1.2977	1.0863
3	2.830	0.448	637.2	559.4	525.8	557.5	360.0	-46.8	34.4	-4.8	0.5400	0.4709	1.6722	1.1831	1.2676	1.0803
4	-0.514	0.074	559.0	474.6	432.9	472.8	353.7	-41.6	39.2	-5.0	0.4677	0.3950	1.6023	1.1949	1.2528	1.0840
5	-4.569	-0.771	537.8	458.7	429.8	458.0	323.2	-25.1	37.0	-3.1	0.4453	0.3779	1.5844	1.2163	1.2611	1.0766

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-11.01	-8.99	9.81	37.85	65.58	72.20	0.2971	0.0943	0.0217	0.9699	73.54	82.66	83.29
2	-13.17	-9.31	6.77	35.93	61.87	65.94	0.2833	0.0969	0.0240	0.9747	67.65	89.54	89.90
3	-10.30	-4.99	5.50	39.21	49.64	54.02	0.3163	0.0970	0.0259	0.9814	68.59	87.15	87.55
4	-4.85	1.36	5.08	44.23	40.06	44.89	0.3590	0.0627	0.0177	0.9910	80.29	79.04	79.67
5	-7.48	-0.60	7.64	40.11	39.15	42.52	0.3391	0.0646	0.0191	0.9918	77.83	89.26	89.60

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
7487.	108.64	1.1987	1.6884	81.18	82.49	1.0845	0.9822	85.44

TABLE XXIII (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA (Tip Radially Distorted Flow)

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 6, SPEED CODE 85, POINT NO 31

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	14.116	16.041	526.6	926.4	526.6	599.6	0.0	706.2	0.0	49.7	0.4824	0.8261	574.7	646.9	0.7140	0.5373	779.5	602.6
2	6.540	8.267	573.8	793.9	573.8	562.4	0.0	560.4	0.0	44.9	0.5279	0.6985	732.9	766.3	0.8564	0.5269	930.8	598.9
3	1.992	2.363	591.1	702.4	591.1	537.1	0.0	452.9	0.0	40.1	0.5447	0.6143	879.3	885.7	0.9765	0.6031	1059.5	689.8
4	-1.435	-2.505	574.9	657.3	574.9	510.1	0.0	414.5	0.0	39.1	0.5290	0.5706	1019.3	1005.1	1.0768	0.6775	1170.2	780.4
5	-6.972	-7.908	482.7	648.3	482.7	476.6	0.0	439.5	0.0	42.5	0.4405	0.5559	1157.6	1124.5	1.1446	0.7155	1254.2	834.4

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	Vθ'-1 FT/SEC	Vθ'-2 FT/SEC	PO/PO INLET
1	-0.56	3.74	13.95	52.91	36.82	48.29	0.4508	-0.0194	-0.0044	1.6229	101.10	101.20	47.26	-5.66	-574.7	59.3	1.6629
2	0.35	3.82	10.44	31.73	39.46	47.20	0.5223	0.0676	0.0169	1.5314	94.29	93.96	51.85	20.12	-732.9	-205.9	1.5768
3	1.58	4.26	8.60	17.23	40.05	46.16	0.4783	0.0587	0.0137	1.4871	93.61	93.27	56.10	38.87	-879.3	-432.8	1.5218
4	3.31	5.26	6.29	11.38	38.32	44.08	0.4485	0.0638	0.0139	1.4997	92.31	91.88	60.53	49.14	-1019.3	-590.6	1.4998
5	7.53	8.83	8.03	12.18	31.44	40.91	0.4581	0.0691	0.0143	1.6084	92.20	91.68	67.22	55.03	-1157.6	-684.9	1.5109

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.1411	1.5459	93.90	94.25	35.66	1.1411	1.5457	93.88	94.23

STATOR 1

RUN NO 6, SPEED CODE 85, POINT NO 31

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/TO1
1	15.934	12.872	935.4	689.7	627.5	689.0	693.7	-30.9	48.0	-2.5	0.8352	0.5972	1.6241	1.1465	1.5848	1.1465
2	8.292	6.328	809.9	633.8	588.9	633.3	556.0	-26.1	43.4	-2.3	0.7139	0.5481	1.5606	1.1372	1.5161	1.1372
3	2.786	0.698	719.6	589.5	559.7	588.9	452.1	-28.1	38.9	-2.7	0.6303	0.5058	1.5027	1.1287	1.4694	1.1287
4	-1.444	-3.638	675.3	568.4	533.0	567.9	414.7	-23.9	37.9	-2.4	0.5874	0.4896	1.4760	1.1334	1.4750	1.1334
5	-6.407	-7.310	673.6	579.6	507.7	579.6	442.6	-4.3	41.1	-0.4	0.5789	0.4939	1.4867	1.1586	1.5816	1.1586

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P STATC-ST	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-2.84	-0.43	8.68	50.55	50.20	62.83	0.4194	0.0610	0.0129	0.9777	89.39	95.98	96.21
2	-3.65	0.07	6.93	45.70	48.94	57.43	0.3847	0.0283	0.0069	0.9920	93.64	91.98	92.41
3	-6.58	-1.53	4.58	41.65	47.67	52.82	0.3599	0.0510	0.0139	0.9882	86.21	90.34	90.82
4	-6.72	-0.57	7.02	40.30	45.64	50.31	0.3518	0.0758	0.0225	0.9842	76.98	88.13	88.74
5	-3.80	3.24	11.35	41.56	43.05	50.49	0.3515	0.0788	0.0250	0.9840	73.07	88.21	88.93

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
9068.	157.00	1.1411	1.5232	90.52	91.05	1.1411	0.9853	50.50

ROTOR 2

RUN NO 6, SPEED CODE 85, POINT NO 31

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	10.772	10.139	770.1	976.2	769.5	768.3	-30.2	602.3	-2.2	38.0	0.6727	0.8168	727.1	757.1	0.9431	0.6558	1079.6	783.7
2	6.036	5.760	730.4	888.5	730.0	747.7	-25.7	480.1	-2.0	32.7	0.6380	0.7443	811.6	824.7	0.9703	0.6896	1110.9	823.3
3	0.113	1.127	674.2	751.5	673.6	643.2	-28.0	388.6	-2.4	31.1	0.5877	0.6258	899.8	899.2	0.9995	0.6839	1146.6	821.3
4	-4.217	-2.947	637.6	655.4	637.2	574.2	-24.0	316.0	-2.2	28.8	0.5526	0.5426	990.3	980.3	1.0380	0.7270	1197.8	878.1
5	-7.683	-7.138	648.7	652.8	648.7	589.9	-4.3	279.5	-0.4	25.2	0.5563	0.5368	1083.0	1067.5	1.0856	0.8094	1266.1	984.3

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	Vθ'-1 FT/SEC	Vθ'-2 FT/SEC	PO/PO INLET
1	-5.43	-0.98	25.18	33.14	67.13	77.89	0.4128	0.1541	0.0353	1.4506	84.56	83.74	44.52	11.36	-757.2	-154.8	2.3564
2	-2.79	2.00	15.20	24.19	62.99	79.07	0.3762	0.0189	0.0044	1.4638	97.50	97.80	48.96	24.77	-837.4	-344.6	2.2862
3	0.55	5.13	10.23	15.57	58.02	67.94	0.3859	0.0561	0.0124	1.3881	92.27	91.93	54.02	38.45	-927.9	-510.6	2.0848
4	2.45	6.26	6.77	8.74	54.71	59.86	0.3558	0.0732	0.0150	1.3220	88.39	87.94	57.83	49.09	-1014.3	-664.4	1.9512
5	1.88	4.06	6.36	6.04	54.78	60.70	0.3027	0.0270	0.0059	1.3073	94.50	94.12	59.08	53.04	-1087.3	-788.0	1.9436

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.2603	2.1037	90.81	91.70	39.38	1.1044	1.3812	92.24	92.57

STATOR 2

RUN NO 6, SPEED CODE 85, POINT NO 31

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/TO1
1	7.904	1.046	1014.0	947.8	819.5	936.8	597.3	-144.1	36.3	-8.7	0.8529	0.7898	2.0510	1.3000	1.2621	1.1336
2	5.106	1.168	921.1	930.3	786.8	925.2	479.0	-96.9	31.4	-6.0	0.7747	0.7817	2.0710	1.2756	1.3166	1.1198
3	2.662	0.656	785.7	864.2	682.6	859.6	389.1	-89.1	29.7	-5.9	0.6565	0.7278	1.9985	1.2514	1.3248	1.1085
4	-1.291	-0.716	689.9	769.9	612.8	767.0	316.9	-66.5	27.3	-5.0	0.5730	0.6444	1.8677	1.2399	1.2658	1.0957
5	-5.007	-1.267	694.4	725.0	634.9	722.9	281.2	-55.9	23.9	-4.4	0.5732	0.6002	1.7857	1.2596	1.2011	1.0837

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P STATC-ST	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-11.10	-9.08	2.52	45.05	80.91	84.24	0.2368	0.3408	0.0776	0.8701	-103.87	51.28	52.82
2	-14.12	-10.26	4.34	37.41	81.53	86.10	0.1610	0.3004	0.0742	0.8994	*******	68.01	69.21
3	-15.02	-9.71	4.39	35.60	70.91	81.61	0.0938	0.2223	0.0592	0.9410	237.11	76.87	77.75
4	-16.74	-10.53	5.16	32.26	62.89	72.36	0.0470	0.2208	0.0625	0.9558	182.54	72.58	73.45
5	-20.53	-13.66	6.36	28.34	64.10	66.07	0.1001	0.4068	0.1200	0.9188	507.67	64.00	64.89

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
9068.	157.00	1.2603	1.9373	79.78	81.54	1.1044	0.9209	67.50

OF THE
ORIGINAL PAGE IS POOR

TABLE XXIII (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA
(Tip Radially Distorted Flow)

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 6. SPEED CODE 85. POINT NO 32

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	14.179	15.915	519.8	906.0	519.8	575.4	0.0	699.8	0.0	50.6	0.4759	0.8059	576.2	648.6	0.7104	0.5138	776.0	577.6
2	6.785	7.963	564.2	785.8	564.2	547.7	0.0	563.5	0.0	45.8	0.5188	0.6903	734.9	768.3	0.8516	0.5136	926.5	584.7
3	2.197	2.076	579.5	701.8	579.5	528.1	0.0	442.2	0.0	41.2	0.5334	0.6127	881.7	888.0	0.9712	0.5922	1055.0	678.4
4	-1.355	-2.659	560.3	662.9	560.3	501.5	0.0	433.5	0.0	40.8	0.5148	0.5741	1022.0	1007.7	1.0709	0.6602	1165.5	762.4
5	-6.964	-7.947	468.5	658.6	468.5	467.9	0.0	463.6	0.0	44.6	0.4271	0.5629	1160.7	1127.5	1.1410	0.6942	1251.7	812.2

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VΘ'-1 FT/SEC	VΘ'-2 FT/SEC	PO/PO INLET
1	-0.11	4.19	14.32	52.80	36.43	46.68	0.4773	-0.0030	-0.0007	1.6110	100.16	100.19	47.71	-5.09	-576.2	51.2	1.6497
2	0.91	4.37	10.82	31.91	38.93	46.33	0.5353	0.0656	0.0164	1.5385	94.58	94.26	52.41	20.50	-734.9	-204.8	1.5825
3	2.16	4.86	8.61	17.81	39.47	45.70	0.4887	0.0596	0.0139	1.5007	93.71	93.36	56.69	38.89	-881.7	-425.8	1.5350
4	4.00	5.95	5.97	12.39	37.58	43.56	0.4667	0.0776	0.0170	1.5192	91.09	90.57	61.22	48.83	-1022.0	-574.2	1.5190
5	8.19	9.48	7.69	12.18	30.76	40.37	0.4815	0.0913	0.0191	1.6318	90.19	89.51	67.87	54.69	-1160.7	-663.9	1.5365

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.1454	1.5577	92.82	93.23	35.07	1.1454	1.5575	92.80	93.22

STATOR 1

RUN NO 6. SPEED CODE 85. POINT NO 32

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	15.830	12.576	915.0	653.9	603.9	650.0	687.4	-71.3	48.8	-6.2	0.8149	0.5644	1.6106	1.1456	1.5726	1.1456
2	8.115	5.500	801.2	612.0	574.0	610.9	559.0	-36.1	44.2	-3.4	0.7051	0.5279	1.5644	1.1386	1.5213	1.1386
3	2.677	-0.247	717.4	573.1	549.4	573.1	461.4	-25.4	40.0	-2.5	0.6274	0.4947	1.5153	1.1318	1.4819	1.1318
4	-1.461	-4.170	679.3	554.7	522.7	554.4	433.9	-18.9	39.7	-2.0	0.5893	0.4760	1.4938	1.1393	1.4920	1.1393
5	-6.426	-7.507	681.8	572.6	497.0	572.3	466.8	18.1	43.3	1.8	0.5841	0.4857	1.5119	1.1677	1.6039	1.1677

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-2.02	0.28	5.03	55.02	48.68	59.89	0.4547	0.0654	0.0138	0.9769	89.26	94.84	95.14
2	-2.78	0.94	5.86	47.64	48.10	56.05	0.4114	0.0357	0.0087	0.9900	92.62	91.87	92.32
3	-5.48	-0.44	6.77	42.56	47.15	52.07	0.3839	0.0545	0.0149	0.9874	86.69	90.27	90.77
4	-4.91	1.24	7.47	41.45	45.02	49.76	0.3810	0.0773	0.0229	0.9838	79.42	87.00	87.70
5	-1.68	5.37	11.59	41.44	42.40	50.50	0.3710	0.0775	0.0245	0.9840	76.71	86.15	87.02

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
9092.	154.40	1.1454	1.5537	89.37	89.97	1.1454	0.9846	89.35

ROTOR 2

RUN NO 6. SPEED CODE 85. POINT NO 32

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	10.331	9.833	740.8	954.7	737.5	751.5	-69.6	588.7	-5.4	38.0	0.6452	0.7947	729.0	759.1	0.9468	0.6415	1087.0	770.6
2	6.733	4.901	708.5	868.3	707.6	708.1	-35.9	499.0	-2.9	35.2	0.6170	0.7212	813.8	826.9	0.9629	0.6496	1105.7	780.3
3	-1.379	0.131	649.6	721.0	649.1	572.8	-25.4	437.9	-2.2	37.4	0.5641	0.5993	902.2	901.6	0.9831	0.6075	1132.2	737.0
4	-4.973	-3.533	615.3	660.7	615.0	535.0	-18.5	387.7	-1.7	35.9	0.5305	0.5410	992.9	982.9	1.0207	0.6552	1183.7	800.3
5	-8.140	-7.551	632.1	673.1	631.8	548.4	18.3	390.3	1.7	35.3	0.5389	0.5455	1085.8	1070.3	1.0577	0.7081	1240.5	873.6

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VΘ'-1 FT/SEC	VΘ'-2 FT/SEC	PO/PO INLET
1	-2.76	1.71	26.55	34.49	64.92	81.97	0.4353	0.0352	0.0080	1.5559	96.66	96.45	47.22	12.73	-798.6	-170.4	2.5055
2	-1.56	3.23	15.27	25.26	61.85	79.65	0.4194	-0.0552	-0.0129	1.5448	106.02	106.40	50.19	24.83	-849.7	-327.9	2.4102
3	1.55	6.13	10.77	16.03	56.98	63.44	0.4645	0.0574	0.0126	1.4404	92.88	91.54	55.02	38.99	-927.6	-463.7	2.1778
4	3.31	7.12	5.67	10.71	53.76	58.46	0.4319	0.0758	0.0159	1.3979	89.93	89.46	58.69	47.99	-1011.4	-595.2	2.0890
5	2.11	4.29	4.33	8.31	54.32	58.83	0.4037	0.0678	0.0155	1.3884	90.26	89.81	59.31	51.00	-1067.6	-680.0	2.0992

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.2816	2.2403	91.84	92.70	38.53	1.1189	1.4607	95.77	95.98

STATOR 2

RUN NO 6. SPEED CODE 85. POINT NO 32

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	7.906	0.800	990.1	846.9	799.8	846.8	583.5	-10.2	36.3	-0.7	0.8281	0.6956	2.3715	1.3047	1.4721	1.1388
2	5.069	0.495	894.7	794.8	743.5	792.9	497.6	-54.9	33.9	-4.0	0.7473	0.6554	2.3188	1.2623	1.4806	1.1259
3	2.524	0.660	748.3	673.8	606.9	671.1	437.8	-60.5	35.8	-5.1	0.6185	0.5528	2.1619	1.2665	1.4265	1.1190
4	-1.356	-0.286	685.9	596.6	565.2	594.1	388.6	-53.7	34.5	-5.2	0.5629	0.4860	2.0685	1.2670	1.3851	1.1128
5	-4.710	-0.943	706.2	608.0	587.0	607.7	392.6	-20.4	33.8	-1.9	0.5741	0.4902	2.0644	1.2947	1.3667	1.1088

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-11.07	-9.06	10.54	37.04	85.17	93.42	0.2837	0.1470	0.0338	0.9465	57.27	83.82	84.67
2	-11.66	-7.79	6.36	37.86	82.23	89.23	0.2738	0.1362	0.0337	0.9572	50.77	93.95	94.27
3	-8.90	-3.59	9.16	40.96	66.41	75.47	0.2972	0.0858	0.0229	0.9790	67.51	89.35	89.85
4	-9.58	-1.38	4.95	39.62	61.07	66.09	0.3145	0.0511	0.0145	0.9901	81.26	86.17	86.78
5	-10.66	-3.76	8.45	35.74	62.03	65.95	0.3123	0.0779	0.0230	0.9844	73.11	85.46	86.07

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
9092.	194.40	1.2814	2.1791	88.33	89.52	1.1189	0.9727	88.42

TABLE XXIII (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA (Tip Radially Distorted Flow)

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 6, SPEED CODE 85, POINT NO 34

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	V0-1 FT/SEC	V0-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-I	V'-1 FT/SEC	V'-2 FT/SEC
1	14.116	16.047	483.0	879.3	483.0	531.5	0.0	700.5	0.0	52.8	0.4408	0.7791	574.5	648.9	0.6865	0.4131	752.1	533.9
2	6.548	8.201	520.3	784.5	520.3	520.7	0.0	586.7	0.0	48.4	0.4763	0.6871	735.3	768.8	0.8247	0.4832	900.8	551.6
3	1.752	2.293	535.1	699.3	535.1	494.1	0.0	494.9	0.0	45.1	0.4906	0.6016	882.2	888.5	0.9459	0.5489	1031.8	631.7
4	-2.020	-2.640	515.8	672.8	515.8	471.3	0.0	480.1	0.0	45.5	0.4720	0.5791	1022.6	1008.3	1.0482	0.6094	1145.3	707.9
5	-7.291	-8.045	426.0	659.1	426.0	419.1	0.0	508.7	0.0	50.4	0.3812	0.5592	1161.4	1128.1	1.1242	0.6346	1237.0	747.9

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	V0'-1 FT/SEC	V0'-2 FT/SEC	PO/PO INLET
1	1.99	6.28	14.07	55.34	34.28	43.54	0.5184	0.0226	0.0052	1.6013	98.79	98.69	49.81	-5.54	-576.5	51.5	1.6350
2	3.13	6.60	9.60	35.35	36.47	44.64	0.5660	0.0602	0.0151	1.5708	95.41	95.13	54.63	19.28	-735.3	-182.1	1.6085
3	4.24	6.93	8.28	20.20	37.13	43.20	0.5332	0.0844	0.0198	1.5287	91.84	91.36	58.76	38.56	-882.2	-393.6	1.5593
4	5.98	7.93	5.36	14.97	35.33	41.26	0.5193	0.1193	0.0264	1.5569	87.66	86.89	63.19	48.22	-1022.6	-528.2	1.5556
5	10.05	11.34	8.79	13.94	28.66	36.39	0.5412	0.1554	0.0316	1.6498	84.59	83.49	69.73	55.79	-1161.4	-619.4	1.5648

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.1555	1.5801	89.79	90.40	32.87	1.1555	1.5801	89.79	90.40

STATOR 1

RUN NO 6, SPEED CODE 85, POINT NO 34

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	V0-1 FT/SEC	V0-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/TO1
1	15.974	12.856	884.9	585.5	556.5	582.0	688.0	-63.7	51.2	-6.2	0.7848	0.5022	1.5554	1.1459	1.5624	1.1459
2	8.615	6.222	796.2	571.2	543.3	567.9	582.0	-62.0	47.0	-6.2	0.6983	0.4896	1.5892	1.1447	1.5482	1.1447
3	3.352	0.784	711.6	525.3	512.3	522.5	493.9	-54.5	44.0	-5.9	0.6191	0.4493	1.5356	1.1411	1.5086	1.1411
4	-0.795	-3.146	686.5	513.9	490.6	511.3	480.1	-51.8	44.4	-5.8	0.5918	0.4367	1.5288	1.1535	1.5267	1.1535
5	-6.144	-6.960	679.7	518.8	446.9	516.0	512.2	-53.5	48.9	-5.9	0.5779	0.4350	1.5357	1.1841	1.6211	1.1841

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P STATC-ST	%EFF-A TOT-STG	%EFF-P TOT-STG
1	0.33	2.73	5.03	57.36	45.42	54.80	0.5127	0.0723	0.0153	0.9759	89.47	93.21	93.61
2	-0.01	3.71	3.07	53.19	46.25	53.49	0.4759	0.0498	0.0121	0.9861	91.23	91.92	92.39
3	-1.54	3.51	3.37	49.91	44.51	48.81	0.4713	0.0576	0.0157	0.9869	88.83	88.38	89.01
4	-0.23	5.91	3.44	50.16	42.66	47.19	0.4806	0.0798	0.0236	0.9831	83.82	83.80	84.71
5	4.00	11.05	5.84	54.88	38.42	46.76	0.5028	0.0791	0.0249	0.9840	83.04	80.36	81.62

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
9097.	144.70	1.1555	1.5541	86.33	87.13	1.1555	0.9835	86.32

ROTOR 2

RUN NO 6, SPEED CODE 85, POINT NO 34

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	V0-1 FT/SEC	V0-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-I	V'-1 FT/SEC	V'-2 FT/SEC
1	10.463	9.777	650.8	899.6	647.9	658.8	-62.2	612.6	-5.5	42.8	0.5615	0.7423	729.4	739.6	0.8825	0.5570	1022.9	675.0
2	5.249	4.910	646.0	807.9	643.1	640.0	-61.2	493.0	-5.4	37.6	0.5574	0.6648	814.3	827.4	0.9373	0.5941	1086.3	722.0
3	-0.476	0.392	587.3	689.7	584.7	518.9	-54.3	454.4	-5.3	41.2	0.5048	0.5615	902.8	902.2	0.9642	0.5580	1121.6	685.4
4	-4.069	-3.122	564.8	651.0	562.4	475.4	-52.1	444.8	-5.3	43.0	0.4819	0.5236	993.5	983.5	1.0129	0.5778	1187.2	718.4
5	-7.490	-7.081	580.2	650.7	577.7	513.7	-54.1	399.4	-5.3	37.7	0.4889	0.5171	1086.5	1070.9	1.0773	0.6720	1276.6	845.5

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	V0'-1 FT/SEC	V0'-2 FT/SEC	PO/PO INLET
1	0.70	5.15	26.35	38.13	59.20	74.33	0.4972	0.0398	0.0091	1.5728	96.66	96.44	50.66	12.53	-791.6	-147.0	2.5091
2	1.95	8.74	18.01	26.13	58.57	74.25	0.4678	-0.0033	-0.0008	1.5291	100.37	100.40	53.70	27.57	-875.5	-334.3	2.4215
3	5.11	9.68	12.97	17.79	53.29	59.65	0.5173	0.0880	0.0189	1.4688	90.37	89.85	58.58	40.79	-957.1	-447.8	2.2582
4	6.31	10.12	6.18	13.19	50.89	53.75	0.5258	0.1540	0.0320	1.4478	82.74	81.83	61.69	48.50	-1045.6	-538.7	2.2132
5	5.84	8.02	5.77	10.60	51.11	57.28	0.4660	0.1217	0.0269	1.4491	84.83	84.03	63.04	52.44	-1140.6	-671.6	2.2250

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.3088	2.3114	87.43	88.80	35.79	1.1325	1.4872	90.21	90.73

STATOR 2

RUN NO 6, SPEED CODE 85, POINT NO 34

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	V0-1 FT/SEC	V0-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/TO1
1	7.660	0.659	926.3	746.9	699.4	746.8	607.3	-14.7	41.2	-1.1	0.7669	0.6061	2.4273	1.3093	1.5214	1.1426
2	4.551	0.229	829.9	689.3	668.7	687.8	491.5	-44.3	36.4	-3.7	0.6845	0.5601	2.3618	1.2927	1.4886	1.1292
3	2.133	-0.023	710.6	586.5	546.8	584.1	453.8	-53.0	39.7	-5.2	0.5797	0.4736	2.2363	1.2875	1.4533	1.1286
4	-1.646	-0.654	671.4	531.0	502.1	529.6	445.8	-39.5	41.6	-4.3	0.5410	0.4234	2.1736	1.3081	1.4224	1.1361
5	-4.987	-1.020	678.8	557.0	547.1	556.9	401.8	4.1	36.3	0.4	0.5408	0.4396	2.1641	1.3394	1.4186	1.1312

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P STATC-ST	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-6.23	-4.21	10.12	42.32	77.62	88.67	0.3491	0.1013	0.0233	0.9672	76.57	88.94	89.57
2	-9.16	-5.29	6.63	40.09	76.67	82.53	0.3374	0.1044	0.0259	0.9715	72.60	92.83	93.22
3	-5.02	0.29	9.12	44.87	82.30	69.57	0.3773	0.0784	0.0209	0.9834	79.62	87.30	87.94
4	-2.49	3.12	5.84	45.82	56.28	61.61	0.4160	0.0974	0.0276	0.9824	76.41	77.48	78.56
5	-8.12	-1.24	11.20	35.92	66.29	63.17	0.3536	0.1017	0.0301	0.9817	71.74	79.65	80.62

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
9097.	144.70	1.3088	2.2605	84.83	86.44	1.1325	0.9780	84.88

TABLE XXIII (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA (Tip Radially Distorted Flow)

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 6, SPEED CODE 10, POINT NO 31

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	V0-1 FT/SEC	V0-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-I	V'-1 FT/SEC	V'-2 FT/SEC
1	14.034	16.218	658.2	1078.9	658.2	714.6	0.0	808.3	0.0	48.6	0.6110	0.9609	680.0	765.4	0.8784	0.6376	946.4	715.9
2	6.143	8.710	724.5	937.0	724.5	669.6	0.0	655.5	0.0	44.4	0.6779	0.8193	867.2	906.7	1.0574	0.6254	1130.0	715.2
3	2.473	2.891	750.6	770.8	750.6	565.2	0.0	524.2	0.0	42.9	0.7047	0.6642	1040.4	1047.9	1.2045	0.6639	1282.9	770.5
4	-0.560	-2.074	755.8	765.0	755.8	611.5	0.0	459.7	0.0	36.9	0.7101	0.6589	1206.0	1189.2	1.3372	0.8199	1423.3	951.9
5	-6.821	-7.783	658.8	726.5	658.8	554.6	0.0	469.3	0.0	40.1	0.6115	0.6161	1369.7	1330.5	1.4109	0.8686	1519.9	1024.3

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VB'-1 FT/SEC	VB'-2 FT/SEC	PO/PO INLET
1	-2.14	2.16	16.16	49.12	43.39	57.64	0.4550	0.0206	0.0047	1.8705	98.75	98.65	45.68	-3.44	-680.0	42.9	1.9312
2	-1.49	1.57	10.92	29.41	46.38	56.84	0.5273	0.1115	0.0278	1.7394	90.51	89.77	50.01	20.60	-867.2	-251.2	1.8128
3	-0.31	2.37	12.57	11.36	46.80	49.02	0.5233	0.1643	0.0362	1.5961	82.25	81.08	54.20	42.85	-1040.4	-523.8	1.6486
4	0.65	2.60	7.13	7.88	45.67	55.07	0.4355	0.0606	0.0129	1.6905	92.78	92.24	57.86	49.98	-1206.0	-729.5	1.7047
5	4.46	5.75	10.08	7.07	38.27	49.75	0.4349	0.0330	0.0065	1.8510	96.27	95.54	64.14	57.08	-1369.7	-861.2	1.6908

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.1880	1.7451	91.68	92.29	42.30	1.1880	1.7447	91.63	92.25

STATOR 1

RUN NO 6, SPEED CODE 10, POINT NO 31

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	V0-1 FT/SEC	V0-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	16.080	12.953	1092.4	783.5	750.3	779.4	794.0	-79.9	46.8	-5.8	0.9751	0.6693	1.8691	1.1983	1.8097	1.1983
2	8.804	6.759	957.8	737.7	703.1	736.1	650.5	-49.1	42.8	-3.8	0.8400	0.6294	1.7931	1.1899	1.7213	1.1899
3	2.593	1.146	792.8	639.0	595.4	636.1	523.5	-60.7	41.3	-5.4	0.6848	0.5433	1.6452	1.1757	1.5948	1.1757
4	-1.791	-3.235	788.9	671.3	640.8	668.1	460.1	-65.9	35.7	-5.6	0.6815	0.5724	1.6643	1.1760	1.6533	1.1760
5	-6.416	-6.975	761.7	660.8	597.4	657.6	472.6	-64.8	38.4	-5.6	0.6484	0.5568	1.6953	1.2003	1.8129	1.2003

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-4.06	-1.66	5.42	52.58	59.83	75.02	0.4456	0.0683	0.0144	0.9689	89.61	93.04	93.58
2	-4.19	-0.47	5.47	46.61	58.83	70.09	0.3973	0.0115	0.0028	0.9953	97.86	88.32	89.16
3	-4.19	0.86	3.86	46.76	50.98	58.98	0.3929	0.0165	0.0045	0.9957	95.94	81.15	82.33
4	-8.92	-2.77	3.79	41.32	56.94	61.69	0.3475	0.0882	0.0261	0.9765	72.45	87.71	88.53
5	-6.53	0.52	6.13	44.05	52.59	59.67	0.3571	0.0853	0.0269	0.9790	70.24	92.42	93.01

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
10729.	186.30	1.1880	1.7152	88.60	89.42	1.1880	0.9828	88.56

ROTOR 2

RUN NO 6, SPEED CODE 10, POINT NO 31

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	V0-1 FT/SEC	V0-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-I	V'-1 FT/SEC	V'-2 FT/SEC
1	10.822	10.327	886.4	1142.3	883.0	891.0	-77.9	714.8	-5.0	38.7	0.7668	0.9288	860.2	895.8	1.1145	0.7393	1288.4	909.2
2	6.754	6.324	854.2	1011.7	852.8	826.5	-48.5	583.6	-3.3	35.3	0.7387	0.8199	960.3	975.8	1.1424	0.7414	1321.0	914.8
3	1.402	2.013	750.2	851.3	747.8	708.9	-60.4	471.4	-4.6	33.6	0.6450	0.6852	1064.7	1064.0	1.1615	0.7437	1351.0	924.0
4	-3.122	-2.260	760.8	739.2	758.0	639.8	-66.2	370.1	-5.0	30.0	0.6549	0.5928	1171.7	1159.9	1.2494	0.8152	1451.5	1016.4
5	-6.852	-6.487	764.5	768.7	761.6	689.4	-65.6	339.9	-4.9	26.1	0.6510	0.6115	1281.4	1263.0	1.3176	0.9166	1547.4	1152.2

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VB'-1 FT/SEC	VB'-2 FT/SEC	PO/PO INLET
1	-3.23	1.22	25.28	35.26	79.77	92.30	0.4396	0.3120	0.0714	1.5365	70.63	68.82	46.72	11.46	-538.2	-181.0	2.8724
2	-1.88	2.91	15.87	24.44	75.89	89.90	0.4304	0.2246	0.0522	1.5034	75.74	74.32	45.87	25.43	-1008.9	-392.2	2.7071
3	2.93	7.50	11.69	16.49	65.54	78.34	0.4256	0.1750	0.0381	1.4902	79.30	78.12	56.40	39.91	-1125.1	-592.6	2.4555
4	3.08	6.89	8.58	7.56	66.78	71.01	0.3920	0.1998	0.0395	1.3814	71.14	69.81	58.46	50.90	-1237.9	-789.8	2.2992
5	3.17	5.35	6.39	7.30	65.54	76.19	0.3483	0.1396	0.0305	1.4260	78.75	77.66	60.37	53.07	-1347.0	-923.1	2.3607

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.3699	2.5078	80.96	83.22	42.34	1.1531	1.4622	74.45	75.77

STATOR 1

RUN NO 6, SPEED CODE 10, POINT NO 31

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	V0-1 FT/SEC	V0-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	7.994	0.836	1190.9	1080.4	957.0	1041.6	708.8	-286.7	36.8	-15.4	0.9755	0.8703	2.5796	1.4247	1.3794	1.1806
2	4.993	0.672	1054.7	1025.2	875.4	997.3	582.3	-237.6	33.6	-13.4	0.8595	0.8303	2.5287	1.3929	1.3920	1.1682
3	2.112	0.126	894.0	923.6	759.3	905.8	471.9	-180.3	31.9	-11.2	0.7228	0.7403	2.3645	1.3601	1.4280	1.1556
4	-1.677	-0.656	782.9	829.2	685.4	809.7	371.1	-178.6	28.3	-12.4	0.6306	0.6710	2.2113	1.3365	1.3299	1.1390
5	-5.203	-1.013	821.6	863.3	747.1	857.3	342.0	-102.2	24.6	-6.8	0.6571	0.6938	2.2312	1.3634	1.3477	1.1363

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-10.66	-8.64	-4.13	52.14	95.47	101.36	0.2881	0.2234	0.0496	0.8974	10.85	50.68	52.83
2	-11.95	-8.08	-3.08	47.61	93.00	100.23	0.2366	0.1934	0.0467	0.9241	-71.90	58.55	60.41
3	-12.85	-7.55	-0.95	43.10	82.01	92.34	0.1831	0.1643	0.0431	0.9500	678.39	68.51	70.03
4	-15.79	-5.59	-2.31	40.68	74.89	82.57	0.1449	0.1661	0.0461	0.9608	223.49	60.73	62.25
5	-19.81	-12.93	3.99	31.43	80.38	85.26	0.1079	0.2159	0.0634	0.9458	269.82	64.90	66.34

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
10729.	186.30	1.3695	2.3530	74.65	77.45	1.1531	0.9383	61.39

TABLE XXIII (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA (Tip Radially Distorted Flow)

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 6, SPEED CODE 10, POINT NO 32

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-1	V'-1 FT/SEC	V'-2 FT/SEC
1	14.073	15.991	661.1	1070.8	661.1	710.6	0.0	801.1	0.0	48.4	0.6138	0.9532	680.1	765.5	0.8807	0.6333	948.4	711.5
2	6.252	8.185	729.9	938.6	729.9	665.6	0.0	661.8	0.0	44.8	0.6834	0.8202	867.4	906.9	1.0614	0.6198	1133.6	709.3
3	2.792	2.153	753.7	775.1	753.7	564.4	0.0	531.2	0.0	43.3	0.7080	0.6674	1040.7	1048.2	1.2069	0.6590	1285.0	765.4
4	-0.303	-2.691	752.1	770.4	752.1	613.1	0.0	466.5	0.0	37.2	0.7063	0.6632	1206.3	1189.5	1.3349	0.8160	1421.5	947.9
5	-6.792	-8.018	694.5	733.6	694.5	557.3	0.0	477.0	0.0	40.4	0.6073	0.6216	1370.0	1330.6	1.4088	0.8640	1518.3	1019.6

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VΘ'-1 FT/SEC	VΘ'-2 FT/SEC	PO/PO INLET
1	-2.25	2.05	16.74	48.43	43.53	57.74	0.4589	0.0093	0.0021	1.8690	99.42	99.38	45.57	-2.87	-680.1	35.5	1.9307
2	-1.69	1.78	10.54	29.59	46.58	56.65	0.5350	0.1139	0.0285	1.7466	90.37	89.61	45.81	20.22	-867.4	-245.1	1.8215
3	-0.41	2.27	12.22	11.61	46.92	49.00	0.5289	0.1694	0.0375	1.6027	81.95	80.74	54.11	42.49	-1040.7	-516.9	1.6568
4	0.78	2.73	6.81	8.33	45.45	55.20	0.4386	0.0639	0.0137	1.7005	92.53	91.96	58.00	49.67	-1206.3	-723.0	1.7125
5	4.61	5.90	9.74	7.55	38.14	49.91	0.4389	0.0421	0.0084	1.8567	95.31	94.90	64.29	56.74	-1370.0	-853.8	1.6979

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.1899	1.7518	91.41	92.04	42.31	1.1899	1.7509	91.31	91.95

STATOR 1

RUN NO 6, SPEED CODE 10, POINT NO 32

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	15.948	12.666	1086.3	767.0	749.0	764.1	786.9	-66.6	46.6	-4.9	0.9695	0.6545	1.8685	1.1967	1.8083	1.1967
2	6.465	5.744	961.3	728.9	702.2	727.5	656.6	-44.2	43.1	-3.5	0.8428	0.6207	1.8016	1.1920	1.7282	1.1920
3	2.036	-0.632	799.0	632.8	597.6	632.0	530.4	-31.5	41.6	-2.8	0.6899	0.5371	1.6543	1.1782	1.6025	1.1782
4	-2.234	-5.071	794.7	666.2	642.7	665.9	467.5	-20.2	36.0	-1.7	0.6861	0.5672	1.6712	1.1785	1.6617	1.1785
5	-6.587	-7.901	761.1	662.7	558.2	662.7	480.3	-4.7	38.6	-0.4	0.6524	0.5577	1.6622	1.2036	1.8176	1.2036

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-4.29	-1.89	6.30	51.48	60.06	74.29	0.4542	0.0695	0.0147	0.9686	89.73	93.70	94.18
2	-3.91	-0.19	5.81	46.59	58.80	69.84	0.4107	0.0137	0.0033	0.9945	97.56	88.06	88.92
3	-3.93	1.11	6.46	44.42	51.16	58.98	0.3978	0.0135	0.0037	0.9965	96.83	80.92	82.13
4	-8.56	-2.42	7.68	37.79	57.07	61.79	0.3445	0.0887	0.0263	0.9761	74.59	87.42	88.26
5	-6.11	0.94	11.37	39.23	52.61	60.18	0.3380	0.0845	0.0268	0.9790	71.32	91.36	92.03

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
10731.	186.40	1.1899	1.7215	88.33	89.17	1.1899	0.9827	88.24

ROTOR 2

RUN NO 6, SPEED CODE 10, POINT NO 32

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-I	V'-1 FT/SEC	V'-2 FT/SEC
1	10.509	10.031	888.0	1109.1	885.6	831.5	-64.9	734.0	-4.2	41.4	0.7689	0.8973	860.4	896.0	1.1091	0.6854	1280.9	847.1
2	5.462	5.395	867.3	1004.0	866.2	796.2	-43.6	611.5	-2.9	37.5	0.7506	0.8102	960.5	976.0	1.1477	0.7067	1326.1	875.7
3	-1.115	0.391	754.5	827.9	753.9	633.4	-31.2	533.1	-2.4	40.1	0.6484	0.6619	1064.9	1064.2	1.1432	0.6604	1330.4	826.6
4	-5.513	-3.710	750.1	755.4	749.9	588.7	-20.0	473.3	-1.5	38.7	0.6439	0.6006	1172.0	1160.2	1.2088	0.7192	1408.2	904.7
5	-8.388	-7.678	737.5	745.4	737.5	583.9	-4.7	463.4	-0.4	38.3	0.6253	0.5853	1281.7	1263.3	1.2571	0.7776	1482.8	990.4

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VΘ'-1 FT/SEC	VΘ'-2 FT/SEC	PO/PO INLET
1	-3.74	0.71	24.82	35.22	79.97	97.53	0.4868	0.1540	0.0353	1.6987	86.33	85.27	46.22	11.00	-925.4	-162.1	3.1739
2	-2.52	2.27	15.04	24.62	76.61	97.62	0.4673	0.0503	0.0118	1.6951	94.99	94.60	49.23	24.60	-1004.1	-364.5	3.0467
3	2.02	6.59	11.75	15.51	66.10	77.40	0.4977	0.0636	0.0138	1.6398	92.99	92.51	55.49	39.98	-1096.2	-531.1	2.7043
4	2.46	6.27	7.03	8.50	66.59	71.44	0.4684	0.1197	0.0244	1.5405	85.30	84.39	57.84	49.35	-1191.9	-686.9	2.5744
5	2.92	5.10	7.09	6.35	64.53	69.27	0.4461	0.1303	0.0280	1.5339	83.36	82.33	60.12	53.77	-1286.4	-799.9	2.5496

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.3870	2.7865	87.59	89.22	42.24	1.1656	1.6187	88.52	89.28

STATOR 2

RUN NO 6, SPEED CODE 10, POINT NO 32

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	7.810	0.670	1149.2	518.1	889.6	918.1	727.6	3.7	39.5	0.2	0.9353	0.7249	2.9440	1.4244	1.5752	1.1902
2	4.858	0.173	1036.7	877.6	838.4	877.5	609.7	-13.5	36.1	-0.9	0.8400	0.6968	2.9031	1.3985	1.6057	1.1727
3	2.413	-0.406	859.1	725.2	673.6	721.8	533.2	-69.8	38.4	-5.5	0.6886	0.5732	2.6507	1.3714	1.6022	1.1640
4	-1.181	-0.663	782.7	643.9	622.6	640.0	474.4	-71.5	37.3	-6.4	0.6239	0.5072	2.5301	1.3621	1.5139	1.1557
5	-4.599	-0.976	781.1	638.0	626.8	637.6	466.1	-20.5	36.7	-1.8	0.6154	0.4966	2.5036	1.3921	1.5062	1.1566

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-7.91	-5.89	11.48	39.28	101.27	113.02	0.3469	0.1676	0.0386	0.9275	65.22	72.36	74.06
2	-9.44	-5.57	9.44	37.00	100.63	110.48	0.3094	0.1369	0.0340	0.9486	63.53	83.42	84.48
3	-6.34	-1.04	4.78	43.85	81.10	90.82	0.3597	0.1178	0.0314	0.9671	68.38	87.25	88.05
4	-6.79	-0.58	3.74	43.63	74.55	80.19	0.3774	0.0771	0.0218	0.9822	79.17	80.35	81.45
5	-7.79	-0.91	8.93	38.51	73.12	77.75	0.3682	0.0804	0.0238	0.9819	78.62	78.75	79.93

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
10731.	186.40	1.3810	2.6829	83.88	85.92	1.1656	0.9628	81.11

TABLE XXIII (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA (Tip Radially Distorted Flow)

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 6, SPEED CODE 10, POINT NO 34

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	14.599	15.979	649.2	1025.7	649.2	619.5	0.0	817.5	0.0	52.9	0.6020	0.9046	678.0	743.1	0.6705	0.5486	938.7	621.9
2	7.403	8.149	709.1	928.7	709.1	618.6	0.0	692.7	0.0	48.2	0.6622	0.8071	864.7	904.0	1.0443	0.5681	1118.2	653.7
3	2.673	2.279	736.1	832.4	736.1	576.7	0.0	600.3	0.0	46.2	0.6898	0.7143	1037.4	1044.9	1.1920	0.6248	1272.0	728.2
4	-0.902	-2.543	727.6	773.8	727.6	552.9	0.0	541.3	0.0	44.4	0.6810	0.6579	1202.5	1185.7	1.3156	0.7220	1405.5	849.1
5	-6.793	-7.948	624.7	759.9	624.7	514.2	0.0	559.5	0.0	47.3	0.5778	0.6361	1365.7	1326.6	1.3889	0.7730	1501.8	923.5

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	Vθ'-1 FT/SEC	Vθ'-2 FT/SEC	PO/PO INLET
1	-1.76	2.54	14.58	51.08	42.99	52.12	0.5493	0.0356	0.0082	1.8699	97.95	97.77	46.06	-5.02	-678.0	54.4	1.9289
2	-0.90	2.57	9.18	31.74	45.61	55.63	0.5834	0.0546	0.0138	1.8488	95.83	95.47	50.61	18.86	-864.7	-211.3	1.9188
3	0.14	2.82	7.37	17.02	46.28	53.47	0.5689	0.0927	0.0220	1.7991	91.46	90.74	54.66	37.64	-1037.4	-444.6	1.8571
4	1.55	3.50	6.48	9.44	44.64	52.21	0.5212	0.0818	0.0177	1.8241	91.65	90.93	58.77	49.33	-1202.5	-644.4	1.8325
5	5.57	6.86	9.03	9.22	37.04	48.55	0.5166	0.0570	0.0115	2.0285	94.53	93.97	65.25	56.03	-1365.7	-767.1	1.8566

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.2109	1.8731	93.02	93.60	41.49	1.2109	1.8750	93.18	93.75

STATOR 1

RUN NO 6, SPEED CODE 10, POINT NO 34

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	15.767	12.434	1033.7	633.8	650.9	630.1	803.0	-68.4	51.1	-6.1	0.9130	0.5329	1.8647	1.2001	1.8076	1.2001
2	8.346	5.226	944.6	648.5	648.2	647.5	687.1	-34.5	46.7	-3.0	0.8228	0.5457	1.8839	1.2009	1.8153	1.2009
3	2.610	-0.401	845.8	615.6	602.6	615.4	599.2	-15.4	44.8	-1.4	0.7308	0.5165	1.8332	1.2012	1.7766	1.2012
4	-1.541	-4.259	792.7	586.7	578.5	586.7	542.0	0.5	43.1	0.1	0.6756	0.4901	1.7956	1.2053	1.7854	1.2053
5	-6.445	-7.434	787.5	604.0	550.2	603.9	563.4	10.5	45.7	1.0	0.6611	0.4983	1.8176	1.2380	1.9838	1.2380

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-STG	%EFF-P TOT-STG
1	0.24	2.64	5.10	57.21	54.41	65.21	0.5598	0.0799	0.0169	0.9667	90.11	92.01	92.64
2	-0.33	3.39	6.24	49.70	57.65	67.22	0.4960	0.0491	0.0120	0.9824	92.50	92.38	92.97
3	-0.67	4.38	7.88	46.27	55.28	63.07	0.4712	0.0425	0.0116	0.9874	92.36	88.62	89.49
4	-1.47	4.67	9.48	43.06	54.05	59.44	0.4633	0.0757	0.0225	0.9801	85.54	87.66	88.61
5	0.80	7.85	12.77	44.74	51.18	60.07	0.4576	0.0826	0.0262	0.9790	82.55	90.72	91.55

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
10698.	182.50	1.2109	1.8353	89.73	90.55	1.2109	0.9798	89.85

ROTOR 2

RUN NO 6, SPEED CODE 10, POINT NO 34

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	9.986	9.548	723.6	1054.6	720.5	742.3	-66.6	749.1	-5.3	45.1	0.6136	0.8444	857.7	893.2	0.9938	0.6054	1172.0	756.1
2	4.119	4.432	746.3	953.7	745.5	690.9	-33.4	657.5	-2.6	43.5	0.6341	0.7591	957.5	972.9	1.0537	0.6045	1240.1	759.5
3	-1.515	-0.038	695.7	845.5	695.5	575.5	-14.9	619.4	-1.2	47.1	0.5880	0.6646	1061.6	1060.9	1.0832	0.5702	1281.6	725.3
4	-4.850	-3.470	650.3	801.5	650.3	510.9	0.7	617.6	0.1	50.3	0.5461	0.6230	1168.3	1156.5	1.1223	0.5772	1336.4	742.6
5	-7.828	-7.281	673.0	804.9	672.9	548.3	10.6	589.3	0.9	46.9	0.5585	0.6174	1277.6	1259.3	1.1906	0.6641	1434.6	865.8

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	Vθ'-1 FT/SEC	Vθ'-2 FT/SEC	PO/PO INLET
1	2.03	6.48	24.76	41.04	71.40	96.21	0.5215	0.0544	0.0125	1.8159	95.93	95.57	51.98	10.94	-924.4	-144.1	3.3872
2	1.25	6.04	14.95	28.48	73.68	92.13	0.5326	0.0636	0.0149	1.7239	94.38	93.92	53.00	24.52	-991.0	-315.5	3.2420
3	3.67	8.25	9.27	19.65	68.62	76.24	0.5740	0.1314	0.0296	1.6592	87.56	86.65	57.14	37.49	-1076.5	-441.5	3.0329
4	5.49	9.30	4.15	14.41	64.08	67.22	0.5893	0.1803	0.0389	1.6562	82.84	81.58	60.87	46.47	-1167.5	-538.9	2.9747
5	4.75	6.92	3.90	11.37	64.94	71.61	0.5414	0.1605	0.0370	1.6600	83.57	82.36	61.95	50.57	-1267.0	-670.1	3.0172

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.4344	3.1138	87.86	89.61	39.13	1.1846	1.6967	87.67	88.55

STATOR 2

RUN NO 6, SPEED CODE 10, POINT NO 34

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	7.809	0.624	1083.4	778.4	788.8	778.2	742.6	-15.7	43.5	-1.2	0.8709	0.6043	3.2740	1.4318	1.7556	1.1930
2	4.779	0.086	976.9	709.9	724.8	709.6	655.0	-21.1	42.2	-1.7	0.7797	0.5510	3.1726	1.4162	1.6853	1.1793
3	2.215	-0.124	865.5	588.9	605.7	587.2	618.2	-45.2	45.6	-4.4	0.6818	0.4532	2.9502	1.4147	1.6320	1.1777
4	-1.383	-0.310	821.3	532.7	539.9	531.9	618.9	-28.0	48.9	-3.0	0.6396	0.4058	2.9124	1.4317	1.6226	1.1893
5	-4.824	-0.823	832.9	578.5	585.1	578.3	592.8	13.0	45.4	1.3	0.6406	0.4361	2.9532	1.4696	1.6249	1.1873

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-3.91	-1.90	10.10	44.66	100.24	114.09	0.4429	0.0857	0.0197	0.9665	86.12	89.71	90.49
2	-3.35	0.51	8.61	43.91	95.33	104.89	0.4500	0.0752	0.0187	0.9748	87.07	89.09	89.86
3	0.87	6.18	5.90	49.58	79.46	85.78	0.5304	0.0751	0.0200	0.9796	88.07	83.96	85.02
4	4.81	11.01	7.09	51.87	70.36	76.30	0.5767	0.0843	0.0239	0.9797	87.02	77.77	79.23
5	0.96	7.84	12.06	44.14	75.35	80.95	0.5122	0.0871	0.0258	0.9790	84.93	78.76	80.16

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
10698.	182.50	1.4344	3.0405	85.71	87.73	1.1846	0.9765	83.43

APPENDIX G

OVERALL PERFORMANCE AND BLADE-ELEMENT DATA WITH HUB RADIALLY DISTORTED INLET FLOW

This appendix provides overall performance and blade-element data with hub radially distorted inlet flow. The information presented is for the redesigned stage. Fan overall performance is given in Table XXIV, and the overall performance and blade-element data for rotor 1, stator 1, rotor 2, and stator 2 are given in Table XXV for 70 percent, 85 percent, and 100 percent of design speed. The column headings for Table XXV are identified in Table XVIII of Appendix C. The 1st-stage pressure and temperature data used in calculating the parameters shown are from radial traverses corrected using the correlations described in the section on data reduction techniques. The information is presented in U. S. customary units.

TABLE XXIV – FAN OVERALL PERFORMANCE (Hub Radially Distorted Flow)

Run Number	Speed Code	Point Number	$W\sqrt{\theta_6}/\delta_6$ LBM/SEC	KG/SEC	P_{11}/P_6	$\eta_{ad\ 11}$	P_{16}/P_6	$\eta_{ad\ 16}$
005	10	1	179.2	(81.3)	1.66	88.4	2.25	73.9
005	10	4	179.7	(81.5)	1.67	88.4	2.34	77.4
005	10	3	178.1	(80.8)	1.69	87.6	2.73	84.4
005	85	1	152.3	(69.1)	1.48	87.5	1.83	74.9
005	85	4	140.8	(63.9)	1.48	81.8	2.17	84.5
005	70	11	123.2	(55.9)	1.30	85.7	1.53	79.2
005	70	3	116.6	(52.9)	1.30	82.4	1.66	86.6
005	70	13	110.4	(50.1)	1.30	80.6	1.69	85.3
005	70	4	100.5	(45.6)	1.30	73.6	1.70	78.8
005	10	stall	176.2	(79.9)			2.815	
005	85	stall	134.8	(61.1)			2.167	
005	70	stall	94.7	(42.9)			1.701	

Speed Code	% Design Speed
50	50
70	70
85	85
90	90
95	95
10	100
15	105
11	110

TABLE XXV – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA
(Hub Radially Distorted Flow)

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 5, SPEED CODE 70, POINT NO 11

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	13.280	14.517	324.4	702.9	324.4	366.6	0.0	599.7	0.0	58.4	0.2929	0.6222	475.3	535.0	0.5197	0.3295	575.4	372.2
2	5.219	4.862	373.0	620.0	373.0	427.6	0.0	449.0	0.0	46.2	0.3378	0.5473	606.2	633.8	0.6446	0.4112	711.7	465.8
3	-1.860	-1.199	431.9	566.5	431.9	432.1	0.0	366.3	0.0	40.3	0.3927	0.4988	727.3	732.5	0.7690	0.4987	845.9	566.4
4	-4.642	-5.243	441.2	556.4	441.2	454.4	0.0	321.0	0.0	35.3	0.4014	0.4896	843.0	831.3	0.8657	0.6012	951.5	683.3
5	-9.230	-9.144	420.1	560.5	420.1	464.1	0.0	314.3	0.0	34.1	0.3816	0.4914	957.4	930.0	0.9498	0.6760	1045.5	771.0

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VO'-1 FT/SEC	VO'-2 FT/SEC	PO/PO INLET
1	7.55	11.85	9.66	65.31	22.65	27.77	0.6055	0.1171	0.0266	1.3822	94.35	94.11	55.37	-9.94	-475.3	64.7	1.3169
2	6.68	10.15	13.56	34.94	26.18	34.02	0.5202	0.0212	0.0052	1.3511	98.40	98.36	54.19	23.24	-606.2	-184.8	1.3142
3	4.78	7.46	10.00	19.03	30.81	35.15	0.4630	0.0915	0.0210	1.2954	89.48	89.12	59.30	40.27	-727.3	-366.2	1.3046
4	5.18	7.13	5.51	14.03	31.76	37.51	0.3926	0.0772	0.0170	1.2932	89.39	89.03	62.39	48.36	-843.0	-510.3	1.3175
5	6.59	7.88	5.94	13.33	30.35	38.40	0.3689	0.0918	0.0200	1.3122	86.55	86.06	66.27	52.94	-957.4	-615.7	1.3318

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.0910	1.3181	90.25	90.59	27.99	1.0910	1.3183	90.31	90.65

STATOR 1

RUN NO 5, SPEED CODE 70, POINT NO 11

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	13.727	11.807	708.6	500.3	394.3	500.1	589.1	-14.2	56.1	-1.6	0.6279	0.4341	1.3035	1.1030	1.3675	1.1030
2	4.102	4.240	633.0	499.6	451.6	499.6	443.5	-5.9	44.2	-0.7	0.5595	0.4368	1.2982	1.0894	1.3284	1.0894
3	-1.246	-1.450	579.8	492.0	450.1	491.8	365.5	-12.4	39.0	-1.4	0.5111	0.4306	1.2853	1.0859	1.2731	1.0859
4	-4.823	-5.350	565.8	515.7	470.0	515.5	322.2	-17.0	34.5	-1.9	0.5019	0.4523	1.2982	1.0858	1.2739	1.0858
5	-7.723	-7.974	576.2	533.7	481.5	533.5	316.6	-12.7	33.5	-1.4	0.5059	0.4669	1.3126	1.0939	1.2934	1.0939

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-STG	%EFF-P TOT-STG
1	5.22	7.62	9.62	57.67	29.77	41.20	0.4642	0.0441	0.0094	0.9899	92.18	90.87	91.24
2	-2.76	0.96	8.60	44.92	35.72	41.46	0.3719	0.0622	0.0152	0.9883	84.76	94.64	94.82
3	-6.46	-1.41	7.87	40.48	36.40	40.64	0.3246	0.0894	0.0244	0.9856	70.06	83.21	83.74
4	-10.09	-3.95	7.53	36.41	38.58	42.64	0.2723	0.0968	0.0287	0.9847	51.32	83.51	84.03
5	-11.49	-4.44	10.40	34.82	39.57	44.00	0.2564	0.0906	0.0287	0.9855	42.31	81.24	81.88

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
7500.	123.20	1.0910	1.3002	85.62	86.11	1.0910	0.9864	85.68

ROTOR 2

RUN NO 5, SPEED CODE 70, POINT NO 11

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	10.034	9.622	565.1	832.4	564.9	662.7	-13.8	503.7	-1.4	37.1	0.4935	0.7125	601.3	626.2	0.7294	0.5769	835.2	673.9
2	4.269	4.606	566.7	755.4	566.6	629.0	-5.9	418.3	-0.6	33.6	0.4982	0.6481	671.3	682.1	0.7763	0.5853	883.0	682.1
3	-1.633	-0.028	553.4	638.4	553.2	568.9	-12.7	289.7	-1.3	27.0	0.4868	0.5472	744.2	743.7	0.8247	0.6238	937.6	727.9
4	-5.492	-3.825	567.8	573.7	567.6	544.0	-17.2	182.4	-1.7	18.5	0.5001	0.4933	819.0	810.8	0.8901	0.7147	1010.7	831.1
5	-8.176	-7.573	583.1	590.0	583.0	564.4	-12.8	171.7	-1.3	16.9	0.5123	0.5061	895.7	882.9	0.9483	0.7788	1079.5	907.9

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VO'-1 FT/SEC	VO'-2 FT/SEC	PO/PO INLET
1	-2.60	1.85	24.25	36.92	45.33	58.89	0.3416	0.0030	0.0007	1.3696	99.72	99.72	47.35	10.43	-615.2	-122.5	1.7850
2	-1.71	3.08	13.17	27.30	45.75	57.44	0.3539	0.0020	0.0005	1.3313	99.83	99.85	50.04	22.74	-677.1	-263.8	1.7269
3	0.38	4.95	10.37	15.26	44.59	51.91	0.3184	0.0220	0.0049	1.2432	96.27	96.19	53.85	38.55	-757.0	-454.1	1.5985
4	0.47	4.28	6.75	6.78	45.95	49.54	0.2409	0.0062	0.0013	1.1749	98.47	98.49	55.85	49.07	-836.3	-628.4	1.5264
5	0.04	2.22	4.77	5.80	47.07	50.73	0.2204	0.0286	0.0065	1.1629	92.21	92.05	57.24	51.45	-908.5	-711.1	1.5265

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.1620	1.6155	90.64	91.23	35.39	1.0650	1.2425	98.28	98.30

STATOR 2

RUN NO 5, SPEED CODE 70, POINT NO 11

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	7.948	1.131	863.6	801.4	704.7	801.2	499.3	-17.9	35.6	-1.3	0.7421	0.6832	1.5694	1.2067	1.2040	1.0940
2	4.897	1.082	783.0	807.4	662.5	807.2	417.3	-15.8	32.3	-1.1	0.6730	0.6956	1.6106	1.1853	1.2403	1.0874
3	1.959	0.109	666.6	740.4	600.2	739.9	290.0	-25.6	25.8	-2.0	0.5728	0.6404	1.5533	1.1603	1.2086	1.0686
4	-1.557	-0.720	602.2	649.0	573.8	648.8	182.8	-17.0	17.6	-1.5	0.5191	0.5617	1.4631	1.1386	1.1268	1.0486
5	-4.833	-0.912	621.1	676.1	602.8	675.9	172.9	14.6	16.0	1.2	0.5397	0.5847	1.4806	1.1460	1.1281	1.0476

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-11.87	-9.85	9.97	36.83	61.41	63.75	0.2128	0.3925	0.0903	0.8789	-128.41	57.83	58.89
2	-13.26	-9.39	9.20	33.42	59.58	66.58	0.1226	0.2728	0.0677	0.9265	476.97	72.57	73.36
3	-18.92	-13.62	8.32	21.16	54.05	62.19	0.0373	0.1770	0.0473	0.9636	181.04	81.03	81.49
4	-26.40	-20.20	8.60	19.15	51.62	54.71	0.0197	0.2518	0.0715	0.9577	244.19	71.34	71.77
5	-28.43	-21.95	12.01	14.80	53.28	56.60	-0.0046	0.1671	0.0494	0.9700	189.83	73.53	73.93

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
7500.	123.20	1.1420	1.5262	79.24	80.42	1.0650	0.9447	71.96

TABLE XXV (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

(Hub Radially Distorted Flow)

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 5, SPEED CODE 70, POINT NO 3

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	13.960	14.622	301.8	665.4	301.8	327.6	0.0	579.2	0.0	60.4	0.2722	0.5877	475.4	535.1	0.5080	0.2919	563.1	330.5
2	4.092	5.110	346.8	596.0	346.8	383.6	0.0	456.1	0.0	49.8	0.3136	0.5245	606.3	633.9	0.6316	0.3722	698.5	422.3
3	-0.663	-0.814	404.0	561.8	404.0	409.4	0.0	384.7	0.0	43.2	0.3666	0.4934	727.4	732.7	0.7550	0.4719	832.1	537.3
4	-3.954	-4.854	416.8	559.9	416.8	441.8	0.0	343.8	0.0	37.9	0.3785	0.4913	843.2	831.4	0.8542	0.5775	940.6	658.0
5	-9.020	-6.980	397.6	563.1	397.6	448.0	0.0	341.1	0.0	37.2	0.3606	0.4919	957.6	930.2	0.9404	0.6465	1036.9	740.1

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VθP-1 FT/SEC	VθP-2 FT/SEC	PO/PO INLET
1	9.46	13.78	11.99	64.92	21.30	24.83	0.6597	0.2237	0.0510	1.3452	89.35	88.92	57.30	-7.62	-475.4	44.1	1.2861
2	8.54	12.01	15.06	35.30	24.61	30.43	0.5708	0.1040	0.0252	1.3319	92.29	92.00	60.05	24.75	-606.3	-177.8	1.2970
3	6.43	5.11	10.08	20.59	25.06	33.35	0.4920	0.1222	0.0279	1.3027	87.24	86.79	60.95	40.36	-727.4	-348.0	1.3064
4	6.46	6.43	9.00	15.84	30.20	36.66	0.4183	0.0950	0.0212	1.3107	88.07	87.64	63.70	47.85	-843.2	-487.6	1.3327
5	7.73	9.02	9.68	14.73	28.90	37.30	0.4021	0.1158	0.0254	1.3321	84.49	83.87	67.41	52.68	-957.6	-589.1	1.3502

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.0554	1.3218	87.05	87.52	26.49	1.0954	1.3220	87.12	87.58

STATOR 1

RUN NO 5, SPEED CODE 70, POINT NO 3

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	13.792	11.751	668.7	427.3	351.4	427.3	568.9	1.8	58.2	0.2	0.5908	0.3700	1.2728	1.0995	1.3288	1.0995
2	4.197	4.014	606.4	442.0	404.9	442.0	451.3	-5.6	47.9	-0.7	0.5342	0.3844	1.2786	1.0920	1.3093	1.0920
3	-1.110	-1.568	573.5	463.1	426.0	462.7	384.0	-19.0	42.0	-2.3	0.5043	0.4036	1.2880	1.0905	1.2806	1.0905
4	-4.569	-5.271	572.5	500.5	456.6	500.3	345.3	-17.0	37.2	-2.0	0.5029	0.4371	1.3127	1.0920	1.2908	1.0920
5	-7.600	-7.931	578.6	524.7	465.6	524.7	343.5	-0.0	36.5	-0.0	0.5082	0.4569	1.3331	1.1019	1.3154	1.1019

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-STG	%EFF-P TOT-STG
1	7.32	5.72	11.47	57.92	26.59	35.36	0.5316	0.0577	0.0122	0.9880	91.21	85.08	85.64
2	0.87	4.59	8.56	48.59	31.98	36.80	0.4479	0.0840	0.0205	0.9853	83.45	87.06	87.51
3	-3.51	1.54	6.56	44.34	34.54	38.58	0.3827	0.1036	0.0263	0.9835	72.48	81.01	81.63
4	-7.43	-1.28	7.48	39.13	37.68	41.87	0.3145	0.0975	0.0289	0.9845	62.33	82.30	82.89
5	-8.40	-1.35	11.77	36.54	38.51	43.83	0.2829	0.0789	0.0250	0.9873	59.75	80.00	80.73

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
7501.	116.60	1.0554	1.3028	82.36	82.98	1.0954	0.9856	82.43

ROTOR 2

RUN NO 5, SPEED CODE 70, POINT NO 3

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	9.863	9.253	482.1	819.2	482.1	588.9	1.8	569.5	0.2	43.9	0.4189	0.6980	601.4	626.3	0.6686	0.5041	769.4	591.6
2	3.761	3.714	500.4	716.6	500.3	547.6	-5.9	462.2	-0.7	40.1	0.4370	0.6090	671.4	682.2	0.7355	0.5016	842.1	590.2
3	-1.916	-0.920	517.4	604.2	517.0	506.5	-19.7	329.5	-2.2	33.1	0.4527	0.5125	744.4	743.9	0.8073	0.5550	922.5	654.4
4	-5.544	-4.316	550.2	570.3	550.0	510.7	-16.8	253.9	-1.8	26.4	0.4824	0.4846	819.2	810.9	0.8773	0.6424	1000.7	755.7
5	-8.261	-7.756	573.7	593.2	573.7	533.8	0.1	258.6	0.0	25.8	0.5017	0.5024	895.5	883.0	0.9302	0.6958	1063.8	821.5

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VθP-1 FT/SEC	VθP-2 FT/SEC	PO/PO INLET
1	1.15	5.60	19.30	45.62	39.15	54.05	0.4096	-0.0813	-0.0189	1.4431	105.98	106.32	51.11	5.46	-599.7	-56.8	1.6370
2	1.74	6.53	12.29	31.64	40.62	51.47	0.4485	-0.0008	-0.0002	1.3708	100.09	100.11	53.49	21.85	-677.3	-220.1	1.7546
3	2.40	7.04	11.07	16.64	42.25	47.89	0.4035	0.0352	0.0077	1.2795	95.14	95.00	55.93	39.29	-764.0	-414.4	1.6500
4	1.30	5.11	5.14	9.22	45.14	48.51	0.3311	0.0236	0.0050	1.2328	95.71	95.62	56.68	47.46	-836.0	-557.1	1.6203
5	0.10	2.28	2.69	7.93	46.95	50.23	0.3153	0.0484	0.0115	1.2266	90.62	90.38	57.30	49.37	-895.5	-624.5	1.6354

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.1806	1.6846	88.90	89.67	33.50	1.0779	1.2931	97.73	97.78

STATOR 2

RUN NO 5, SPEED CODE 70, POINT NO 3

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	7.476	0.396	844.7	724.7	628.4	724.1	564.5	28.5	42.2	2.3	0.7219	0.6110	1.7833	1.2133	1.4010	1.1036
2	3.520	-0.822	735.2	662.0	578.6	662.0	460.0	7.3	38.5	0.6	0.6297	0.5596	1.7260	1.1934	1.3485	1.0938
3	0.323	-1.568	625.7	576.4	532.3	576.3	328.8	-7.0	31.7	-0.7	0.5318	0.4878	1.6438	1.1737	1.2741	1.0764
4	-2.640	-1.622	591.5	541.1	534.2	540.9	254.0	-12.7	25.4	-1.3	0.5037	0.4589	1.6085	1.1627	1.2236	1.0641
5	-5.161	-1.270	622.1	566.4	564.9	565.8	260.5	24.9	24.8	2.5	0.5282	0.4786	1.6194	1.1753	1.2146	1.0666

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-5.27	-3.25	13.51	39.90	56.78	67.98	0.2880	0.1003	0.0231	0.9705	68.69	97.40	97.50
2	-7.02	-3.15	10.95	37.91	53.73	62.90	0.2555	0.0671	0.0167	0.9842	70.67	94.87	95.06
3	-13.02	-7.72	9.60	32.38	49.86	54.95	0.2211	0.0173	0.0046	0.9970	89.46	93.67	93.86
4	-18.64	-12.43	8.76	26.76	50.30	51.63	0.2137	0.0443	0.0126	0.9930	75.42	92.55	92.73
5	-19.66	-12.18	13.29	22.28	52.45	53.30	0.2026	0.0570	0.0168	0.9501	70.15	85.72	86.07

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
7501.	116.60	1.1806	1.6639	86.64	87.54	1.0779	0.9877	92.87

TABLE XXV (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

(Hub Radially Distorted Flow)

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 5, SPEED CODE 70, POINT NO 13

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	13.088	14.913	281.0	635.8	281.0	311.3	0.0	554.4	0.0	60.6	0.2533	0.5611	474.2	533.7	0.4967	0.2753	551.2	312.0
2	4.622	5.549	325.3	573.8	325.3	337.3	0.0	464.2	0.0	53.9	0.2938	0.5036	604.7	632.3	0.6202	0.3308	686.7	376.8
3	0.546	-0.381	378.7	553.2	378.7	365.0	0.0	397.3	0.0	45.9	0.3431	0.4849	725.5	730.8	0.7414	0.4464	818.4	509.3
4	-3.016	-4.544	393.8	561.1	393.8	438.4	0.0	353.3	0.0	38.9	0.3571	0.4937	841.0	829.3	0.8421	0.5675	928.7	647.2
5	-4.039	-6.924	375.6	551.2	375.6	423.9	0.0	358.5	0.0	40.1	0.3402	0.4836	955.1	927.8	0.9296	0.6183	1026.3	709.8

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VO'-1 FT/SEC	VO'-2 FT/SEC	PO/PO INLET
1	11.20	15.50	15.82	62.81	20.03	23.73	0.6736	0.2534	0.0582	1.3217	87.83	87.37	59.02	-3.78	-474.2	20.7	1.2718
2	11.07	13.54	16.69	35.20	23.30	26.70	0.6316	0.1909	0.0456	1.3129	86.40	85.90	61.57	26.37	-604.7	-168.1	1.2823
3	7.91	10.60	10.61	21.54	27.43	31.40	0.5194	0.1504	0.0341	1.3054	85.46	84.94	62.43	40.69	-725.5	-333.4	1.3085
4	7.68	9.63	4.52	17.52	28.70	36.01	0.4265	0.0856	0.0193	1.3263	89.79	89.40	64.90	47.37	-841.0	-476.0	1.3457
5	8.01	10.10	6.26	15.23	27.45	35.40	0.4316	0.1410	0.0305	1.3385	82.13	81.41	68.49	53.26	-955.1	-569.3	1.3547

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.0977	1.3225	85.14	85.69	25.08	1.0977	1.3227	85.20	85.74

STATOR 1

RUN NO 5, SPEED CODE 70, POINT NO 13

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	14.365	12.013	631.6	382.3	331.6	382.3	544.6	0.7	58.6	0.1	0.5628	0.3308	1.2585	1.0950	1.3076	1.0950
2	4.706	4.044	582.3	391.2	356.4	390.9	460.3	-16.9	52.0	-2.5	0.5115	0.3308	1.2632	1.0942	1.2912	1.0942
3	-1.006	-1.827	564.2	435.6	401.3	435.3	396.6	-17.7	44.6	-2.3	0.4950	0.3785	1.2869	1.0932	1.2828	1.0932
4	-4.261	-5.308	574.8	492.2	452.1	492.1	355.0	-7.2	38.2	-0.8	0.5045	0.4291	1.3249	1.0941	1.3058	1.0941
5	-7.442	-7.894	570.4	504.0	441.6	503.9	361.0	6.0	39.4	0.7	0.4914	0.4372	1.3376	1.1068	1.3216	1.1068

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-STG	%EFF-P TOT-STG
1	7.75	10.15	11.34	58.44	25.26	31.83	0.5736	0.0546	0.0116	0.9865	92.25	83.89	84.46
2	5.05	8.75	6.81	54.50	28.13	32.60	0.5257	0.0972	0.0237	0.9842	83.53	80.51	81.17
3	-0.87	4.18	6.98	46.96	32.60	36.51	0.4278	0.1145	0.0313	0.9823	73.73	79.21	79.90
4	-3.40	-0.25	4.59	39.05	37.56	41.63	0.3314	0.0970	0.0288	0.9845	66.93	84.22	84.77
5	-3.56	1.49	12.44	38.49	36.63	42.41	0.3153	0.0812	0.0257	0.9874	66.26	77.72	78.55

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
7482.	110.40	1.0977	1.3032	80.50	81.19	[illegible]	0.9854	80.56

ROTOR 2

RUN NO 5, SPEED CODE 70, POINT NO 13

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	4.839	9.076	426.4	794.0	426.4	522.4	0.7	598.0	0.1	48.7	0.3699	0.6741	599.9	624.7	0.6380	0.4441	735.4	523.1
2	3.425	3.138	444.7	689.2	444.3	508.8	-17.7	464.9	-2.3	42.3	0.3864	0.5825	669.7	680.5	0.7112	0.4671	818.5	552.6
3	-2.530	-1.369	486.2	590.6	465.9	469.5	-17.5	358.2	-2.1	37.3	0.4239	0.4985	742.4	742.0	0.7864	0.5119	902.0	606.5
4	-5.790	-4.631	536.3	570.7	536.2	489.3	-6.8	293.7	-0.7	31.0	0.4691	0.4830	817.1	808.8	0.8599	0.6015	983.0	710.5
5	-8.348	-7.868	550.7	592.5	550.7	509.5	6.2	302.5	0.6	30.6	0.4795	0.4984	893.6	880.8	0.9093	0.6483	1044.4	770.7

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VO'-1 FT/SEC	VO'-2 FT/SEC	PO/PO INLET
1	6.52	8.97	16.73	51.56	35.03	48.59	0.4849	-0.0594	-0.0139	1.4509	103.87	104.10	54.47	2.91	-599.2	-26.7	1.8361
2	5.81	10.10	13.34	34.15	36.48	48.31	0.4859	-0.0147	-0.0035	1.3883	101.33	101.41	57.06	22.91	-687.4	-215.6	1.7554
3	3.96	8.54	11.05	18.16	40.69	44.92	0.4515	0.0539	0.0118	1.2524	93.13	92.91	57.43	39.27	-759.9	-383.6	1.6701
4	1.59	5.40	4.13	10.52	44.60	47.15	0.3747	0.0477	0.0103	1.2486	92.31	92.09	56.57	46.45	-823.9	-515.1	1.6565
5	0.92	3.10	1.85	9.60	45.48	48.49	0.3644	0.0748	0.0180	1.2505	87.56	87.18	58.12	48.52	-887.4	-576.3	1.6747

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.1895	1.7651	86.85	87.70	31.74	1.0837	1.3084	95.25	95.41

STATOR 2

RUN NO 5, SPEED CODE 70, POINT NO 13

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	7.167	0.171	814.8	684.5	559.1	684.0	592.8	26.7	46.9	2.3	0.6934	0.5567	1.7949	1.2146	1.4262	1.1092
2	3.075	-1.297	708.1	600.9	530.5	600.9	462.2	7.9	40.8	0.8	0.5996	0.5041	1.7373	1.1980	1.3727	1.0958
3	-0.101	-1.968	608.1	521.0	492.1	521.0	357.2	-5.5	36.0	-0.6	0.5141	0.4376	1.6662	1.1814	1.2874	1.0809
4	-2.913	-1.190	588.2	501.0	509.6	500.9	293.8	-9.7	29.9	-1.1	0.4985	0.4218	1.6457	1.1727	1.2396	1.0704
5	-3.172	-1.286	617.4	529.1	536.9	528.5	304.7	24.1	29.6	2.6	0.5204	0.4428	1.6575	1.1907	1.2391	1.0756

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-0.55	1.47	13.55	44.57	51.37	64.56	0.3430	0.0810	0.0186	0.9778	79.53	97.52	97.03
2	-4.77	-0.91	11.07	40.03	50.45	58.83	0.3046	0.0356	0.0089	0.9923	88.27	98.63	98.07
3	-6.76	-3.45	9.69	36.58	46.72	51.15	0.2975	-0.0015	-0.0004	1.0003	100.37	92.39	92.63
4	-10.10	-7.90	9.00	31.06	48.76	49.25	0.2954	0.0436	0.0124	0.9932	85.51	89.78	90.06
5	-10.61	-7.95	13.38	27.03	50.56	51.11	0.2787	0.0544	0.0181	0.9508	81.38	83.25	83.72

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
7482.	110.40	1.1895	1.6900	85.29	86.32	1.0837	0.9912	91.99

TABLE XXV (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

(Hub Radially Distorted Flow)

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 5, SPEED CODE 70, POINT NO 4

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	12.351	15.172	250.6	629.1	250.6	311.0	0.0	546.9	0.0	60.3	0.2255	0.5551	474.5	534.6	0.4833	0.2746	537.0	311.2
2	4.504	5.898	293.3	559.9	293.3	281.1	0.0	484.2	0.0	59.7	0.2645	0.4898	605.7	633.3	0.6069	0.2784	673.0	318.2
3	2.002	-0.207	342.0	546.3	342.0	336.7	0.0	430.2	0.0	51.9	0.3092	0.4768	726.7	732.0	0.7261	0.3946	803.2	452.1
4	-3.207	-4.337	356.6	563.8	356.6	433.8	0.0	390.7	0.0	42.0	0.3226	0.5104	842.4	830.6	0.8276	0.5402	914.7	617.9
5	-9.092	-8.925	338.3	554.1	338.3	387.9	0.0	395.7	0.0	45.5	0.3058	0.4800	956.7	929.3	0.9171	0.5716	1014.7	659.7

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	Vθ'-1 FT/SEC	Vθ'-2 FT/SEC	PO/PO INLET
1	13.99	16.29	17.35	64.07	18.10	23.58	0.6687	0.3449	0.0793	1.3002	83.64	83.05	61.81	-2.26	-474.9	12.3	1.2597
2	12.51	15.98	18.15	36.18	21.28	21.93	0.7179	0.3575	0.0843	1.2840	76.12	75.25	64.01	27.83	-605.7	-149.1	1.2602
3	10.29	12.97	11.98	22.94	25.04	27.07	0.5905	0.2785	0.0623	1.2926	76.14	75.30	64.80	41.86	-726.7	-301.8	1.2941
4	9.82	11.78	2.56	21.63	26.22	35.96	0.4590	0.1427	0.0333	1.3427	84.99	84.38	67.04	45.42	-842.4	-440.0	1.3589
5	10.81	12.10	6.92	16.51	24.94	32.09	0.4874	0.2177	0.0464	1.3403	75.00	73.58	70.49	53.92	-956.7	-533.6	1.3536

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.1057	1.3184	77.79	78.61	22.83	1.1057	1.3185	77.80	78.62

STATOR 1

RUN NO 5, SPEED CODE 70, POINT NO 4

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/TO1
1	15.340	12.732	629.1	337.8	327.3	337.7	537.2	6.2	58.7	1.0	0.5551	0.2917	1.2411	1.0939	1.2873	1.0939
2	5.661	4.449	565.9	315.3	258.5	317.9	480.7	-29.5	58.0	-5.3	0.4953	0.2749	1.2419	1.0984	1.2655	1.0984
3	-1.028	-2.760	556.5	377.9	353.6	376.2	429.7	-34.9	50.5	-5.3	0.4861	0.3259	1.2706	1.1011	1.2692	1.1011
4	-4.056	-6.030	593.5	489.9	445.0	489.9	392.7	5.6	41.5	0.7	0.5193	0.4252	1.3354	1.1036	1.3236	1.1036
5	-7.325	-8.083	567.3	477.9	403.8	477.5	398.4	-1.0	44.7	-0.1	0.4920	0.4113	1.3367	1.1180	1.3235	1.1180

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P STATC-ST	%EFF-A TOT-STG	%EFF-P TOT-STG
1	7.85	10.25	12.28	57.44	24.82	28.23	0.6362	0.0527	0.0112	0.9900	93.29	79.78	80.46
2	11.01	14.73	4.01	63.27	23.23	26.47	0.6528	0.0942	0.0229	0.9855	87.15	70.79	71.71
3	5.01	10.06	4.01	55.81	28.34	31.49	0.5480	0.1202	0.0327	0.9821	79.12	69.77	70.73
4	-3.12	3.03	10.08	40.83	36.72	41.60	0.3691	0.0858	0.0255	0.9855	75.82	80.54	81.27
5	-0.21	6.84	11.66	44.84	33.22	40.18	0.3836	0.0817	0.0259	0.9875	74.37	70.68	71.79

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
7454.	100.50	1.1057	1.2595	73.57	74.50	1.1057	0.9856	73.58

ROTOR 2

RUN NO 5, SPEED CODE 70, POINT NO 4

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	10.285	8.563	372.0	777.3	371.9	438.3	6.1	641.9	0.9	55.5	0.3218	0.6561	600.5	625.7	0.6065	0.3706	701.5	438.6
2	3.188	2.322	370.9	673.6	369.7	472.6	-30.8	480.0	-4.8	45.3	0.3202	0.5654	670.8	681.6	0.6846	0.4312	793.0	513.8
3	-4.382	-3.265	430.8	574.0	429.5	430.7	-33.5	379.5	-4.5	41.4	0.3728	0.4803	743.7	743.2	0.7684	0.4717	888.0	563.7
4	-7.176	-5.782	518.6	565.3	518.6	446.6	5.5	346.5	0.6	37.8	0.4509	0.4737	818.4	810.2	0.8384	0.5395	964.2	643.8
5	-8.687	-6.239	511.5	592.0	511.5	473.3	-1.0	355.6	-0.1	36.9	0.4417	0.4919	895.0	882.2	0.8505	0.5883	1031.8	708.0

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	Vθ'-1 FT/SEC	Vθ'-2 FT/SEC	PO/PO INLET
1	7.97	12.42	11.72	60.03	30.81	41.22	0.5924	-0.0278	-0.0065	1.4813	101.57	101.67	57.92	-2.10	-594.8	16.2	1.8473
2	10.40	15.20	13.47	39.13	30.37	45.27	0.5311	-0.0478	-0.0113	1.4279	103.87	104.08	62.15	23.03	-701.6	-201.6	1.7736
3	7.67	12.25	12.00	20.92	35.49	41.29	0.5064	0.0837	0.0181	1.3081	90.18	89.83	61.14	40.23	-777.2	-363.7	1.6830
4	2.16	5.99	3.79	11.46	43.54	42.87	0.4467	0.1244	0.0270	1.2491	82.32	81.78	57.57	46.10	-812.5	-463.6	1.6735
5	3.04	5.22	1.30	12.23	42.50	44.67	0.4389	0.1579	0.0384	1.2666	78.06	77.34	60.25	47.98	-856.0	-526.6	1.6929

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.2084	1.7209	80.45	81.87	29.08	1.0928	1.3243	89.81	90.18

STATOR 2

RUN NO 5, SPEED CODE 70, POINT NO 4

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/TO1
1	6.738	-0.134	751.5	600.0	471.4	605.1	636.3	32.4	53.6	3.1	0.6702	0.5036	1.7554	1.2214	1.4400	1.1164
2	2.714	-1.809	687.6	546.6	455.6	548.4	476.6	14.9	43.9	1.6	0.5779	0.4556	1.7453	1.2110	1.4024	1.1011
3	0.047	-2.217	587.0	455.7	448.7	459.7	378.5	-4.9	40.1	-0.6	0.4918	0.3817	1.6750	1.1982	1.2966	1.0874
4	-2.898	-1.731	578.5	447.1	463.3	447.0	346.5	-8.0	36.8	-1.0	0.4853	0.3715	1.6641	1.1945	1.2420	1.0795
5	-5.204	-1.246	611.5	476.1	455.3	475.6	358.5	21.8	36.0	2.6	0.5088	0.3922	1.6759	1.2193	1.2538	1.0906

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P STATC-ST	%EFF-A TOT-STG	%EFF-P TOT-STG
1	6.21	8.23	14.31	50.57	43.97	60.11	0.4066	0.1064	0.0245	0.9725	77.71	94.12	94.40
2	-1.65	2.22	11.88	42.35	47.14	54.58	0.3574	0.0550	0.0136	0.9891	85.80	100.03	100.01
3	-4.59	0.72	9.48	40.74	42.77	45.73	0.3862	0.0087	0.0023	0.9987	97.82	87.89	88.30
4	-7.27	-1.06	9.08	37.81	44.25	44.49	0.4024	0.0422	0.0120	0.9937	90.35	80.21	80.78
5	-8.50	-1.62	13.39	33.34	46.37	46.34	0.3859	0.0631	0.0186	0.9898	85.28	73.58	74.38

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
7454.	100.50	1.2084	1.7026	78.75	80.26	1.0928	0.9894	86.27

TABLE XXV (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

(Hub Radially Distorted Flow)

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 5, SPEED CODE 85, POINT NO 1

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VØ-1 FT/SEC	VØ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	13.193	14.676	426.9	856.1	426.9	451.5	0.0	727.4	0.0	58.0	0.3879	0.7542	577.0	649.4	0.6522	0.4036	717.7	458.2
2	3.423	3.262	490.3	754.9	490.3	507.6	0.0	558.8	0.0	47.6	0.4478	0.6611	735.9	769.3	0.8075	0.4813	884.2	549.6
3	-1.531	-0.729	557.4	678.4	557.4	514.6	0.0	442.0	0.0	40.6	0.5120	0.5923	882.8	889.2	0.9591	0.5953	1044.0	681.8
4	-4.543	-4.891	570.1	661.4	570.1	537.0	0.0	386.1	0.0	35.6	0.5244	0.5768	1023.3	1009.1	1.0774	0.7172	1171.4	822.5
5	-9.205	-9.031	542.0	669.8	542.0	545.6	0.0	388.5	0.0	35.4	0.4972	0.5803	1162.2	1128.9	1.1763	0.7968	1282.4	919.7

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VØ'-1 FT/SEC	VØ'-2 FT/SEC	PO/PO INLET
1	5.35	9.65	9.84	62.91	28.07	34.44	0.6066	0.0390	0.0066	1.6238	98.10	97.98	53.17	-9.74	-577.0	78.0	1.5041
2	4.61	8.08	12.73	33.70	32.94	41.46	0.5515	0.0144	0.0035	1.5644	98.87	98.82	56.11	22.42	-735.9	-210.6	1.5001
3	3.22	5.90	10.71	16.15	37.88	43.65	0.4757	0.0748	0.0170	1.4650	91.82	91.39	57.73	40.98	-882.8	-447.2	1.4802
4	3.08	5.63	6.42	11.62	39.26	46.61	0.4058	0.0673	0.0146	1.4573	91.30	90.85	60.90	49.27	-1023.3	-622.9	1.5000
5	3.28	6.57	4.56	11.40	37.53	47.47	0.3900	0.0964	0.0207	1.4951	87.23	86.51	64.96	53.56	-1162.2	-740.4	1.5277

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.1349	1.5039	91.68	92.12	34.61	1.1349	1.5046	91.78	92.22

STATOR 1

RUN NO 5, SPEED CODE 85, POINT NO 1

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VØ-1 FT/SEC	VØ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/TO1
1	13.914	11.948	863.8	569.4	485.3	568.6	714.5	-31.0	55.7	-3.1	0.7616	0.4864	1.4672	1.1516	1.5627	1.1516
2	4.406	4.512	770.9	588.8	537.4	587.8	552.7	-33.7	45.6	-3.3	0.6765	0.5074	1.4787	1.1359	1.5318	1.1359
3	-1.033	-1.000	694.9	574.0	537.5	573.1	440.4	-31.7	39.3	-3.2	0.6079	0.4965	1.4522	1.1250	1.4320	1.1250
4	-4.606	-4.725	678.8	602.4	557.3	601.7	387.6	-28.7	34.9	-2.7	0.5930	0.5223	1.4720	1.1254	1.4695	1.1254
5	-7.623	-7.709	690.9	631.7	569.5	631.6	391.3	-10.4	34.6	-1.0	0.5959	0.5453	1.5032	1.1409	1.4714	1.1409

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P STATC-ST	%EFF-A TOT-STG	%EFF-P TOT-STG
1	4.85	7.25	8.14	58.77	36.83	49.35	0.5149	0.0777	0.0165	0.9755	88.46	92.45	92.91
2	-1.62	2.30	6.01	48.84	43.50	51.61	0.4110	0.0520	0.0127	0.9864	89.02	95.37	95.62
3	-6.21	-1.16	6.15	42.45	45.20	50.16	0.3531	0.0834	0.0228	0.9818	76.18	86.41	87.06
4	-8.71	-3.56	6.69	37.63	47.95	52.70	0.2956	0.0950	0.0276	0.9603	61.61	85.72	86.40
5	-10.34	-3.27	10.82	35.37	49.02	55.08	0.2714	0.0748	0.0237	0.9836	60.23	82.61	83.69

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
9104.	152.30	1.1349	1.4769	87.36	88.03	1.1349	0.9820	87.48

ROTOR 2

RUN NO 5, SPEED CODE 85, POINT NO 1

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VØ-1 FT/SEC	VØ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	13.129	3.689	652.8	875.5	652.1	742.4	-30.3	632.8	-2.7	40.3	0.5618	0.8116	729.9	760.1	0.6620	0.6267	1001.6	753.2
2	4.805	4.715	677.0	879.9	676.2	728.1	-33.5	694.0	-2.8	34.1	0.5884	0.7351	814.9	828.0	0.9429	0.6692	1084.8	801.0
3	-1.060	0.138	650.4	740.7	649.6	629.0	-31.6	391.1	-2.8	31.9	0.5666	0.6265	903.4	902.8	0.9919	0.6749	1138.5	810.6
4	-4.577	-3.394	671.6	684.4	671.0	627.1	-28.8	274.8	-2.5	23.6	0.5862	0.5730	994.2	984.2	1.0078	0.7924	1223.4	946.6
5	-7.870	-7.398	703.4	703.3	703.3	657.1	-10.5	250.5	-0.9	20.8	0.6114	0.5873	1087.3	1071.7	1.1334	0.6783	1303.7	1051.7

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VØ'-1 FT/SEC	VØ'-2 FT/SEC	PO/PO INLET
1	-3.03	3.80	23.51	39.61	54.52	69.44	0.4005	0.1419	0.0327	1.4992	88.02	87.33	49.30	9.69	-760.3	-127.3	2.1959
2	-3.35	4.46	15.06	26.79	56.98	71.53	0.3889	0.1090	0.0255	1.4322	88.10	87.49	51.42	24.62	-848.4	-334.0	2.1166
3	1.74	6.32	10.91	16.08	54.86	61.74	0.3952	0.1658	0.0365	1.3244	77.50	76.61	55.21	39.13	-935.0	-511.7	1.9225
4	1.34	5.15	6.15	8.25	56.86	62.18	0.3036	0.1032	0.0214	1.2409	80.93	80.32	56.72	48.47	-1023.0	-709.4	1.8568
5	0.07	2.25	4.53	6.06	59.17	64.81	0.2650	0.0781	0.0178	1.2474	83.24	82.74	57.27	51.21	-1097.8	-821.2	1.8750

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.2512	1.9705	85.00	86.34	39.29	1.1025	1.3342	85.51	84.15

STATOR 2

RUN NO 5, SPEED CODE 85, POINT NO 1

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VØ-1 FT/SEC	VØ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/TO1
1	7.777	0.814	1013.1	985.9	795.4	966.6	627.4	-193.8	38.5	-11.3	0.8473	0.8212	1.9580	1.3126	1.3209	1.1399
2	4.744	0.597	912.9	945.3	766.7	924.3	496.6	-198.4	32.7	-12.1	0.7657	0.7946	1.9250	1.2792	1.3023	1.1256
3	1.347	0.100	775.6	872.1	669.7	852.6	391.2	-183.2	30.3	-12.1	0.6479	0.7358	1.8503	1.2494	1.2733	1.1103
4	-2.030	-0.976	720.7	802.4	666.1	798.3	275.0	-80.3	22.4	-5.7	0.6093	0.6795	1.7839	1.2224	1.1986	1.0662
5	-5.063	-1.146	750.4	813.0	706.8	810.6	252.2	-61.7	19.7	-4.3	0.6296	0.6868	1.7556	1.2305	1.1681	1.0786

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P STATC-ST	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-5.33	-6.91	-0.08	49.82	72.92	79.55	0.2157	0.3169	0.0715	0.6806	-330.00	58.94	60.50
2	-12.62	-8.95	-1.60	44.84	74.00	79.01	0.1661	0.2939	0.0714	0.9036	-157.11	62.23	63.59
3	-16.62	-9.12	-1.82	42.40	84.57	74.66	0.0944	0.1906	0.0499	0.9510	181.30	64.61	65.77
4	-21.64	-15.43	4.37	28.15	84.89	70.64	0.0292	0.2281	0.0645	0.9500	183.27	61.47	62.46
5	-24.79	-17.91	6.43	24.02	88.05	70.60	0.0403	0.2717	0.0802	0.9364	233.94	57.63	58.53

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
9104.	152.30	1.2512	1.8242	74.86	76.67	1.1025	0.9283	61.31

TABLE XXV (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA (Hub Radially Distorted Flow)

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 5, SPEED CODE 85, POINT NO 4

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-1	V'-1 FT/SEC	V'-2 FT/SEC
1	12.706	15.076	378.5	786.9	378.5	415.1	0.0	668.5	0.0	58.1	0.3429	0.6911	577.9	650.5	0.6258	0.3649	690.8	415.5
2	4.107	6.003	436.8	719.2	436.8	417.2	0.0	560.9	0.0	54.2	0.3972	0.6218	737.1	770.6	0.7792	0.3985	856.8	458.3
3	0.670	0.081	502.5	614.0	502.5	465.1	0.0	487.7	0.0	46.3	0.4594	0.5846	884.3	890.6	0.9258	0.5338	1017.1	615.4
4	-3.154	-4.126	520.3	681.0	520.3	524.7	0.0	434.1	0.0	39.6	0.4763	0.5906	1025.0	1010.7	1.0524	0.6762	1149.5	779.6
5	-6.605	-8.702	497.0	678.9	497.0	522.2	0.0	434.0	0.0	39.6	0.4542	0.5842	1164.1	1130.8	1.1566	0.7493	1265.8	670.6

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VΘ'-1 FT/SEC	VΘ'-2 FT/SEC	PO/PO INLET
1	8.56	12.88	17.13	58.47	25.61	31.89	0.6329	0.1304	0.0300	1.5339	93.55	93.17	58.40	-2.47	-577.9	18.0	1.4364
2	7.66	11.13	14.68	34.01	29.83	33.61	0.6461	0.1830	0.0444	1.5060	87.13	86.39	55.17	24.36	-737.1	-189.7	1.4518
3	5.87	8.55	10.62	19.50	34.94	39.17	0.5348	0.1643	0.0373	1.4727	84.72	83.85	60.38	40.89	-884.3	-402.9	1.4809
4	5.85	7.80	4.65	15.36	36.48	45.83	0.4413	0.1008	0.0225	1.5061	88.60	88.16	63.07	47.71	-1025.0	-576.7	1.5422
5	7.14	8.43	6.07	13.75	34.98	45.97	0.4325	0.1301	0.0283	1.5450	84.71	83.77	66.82	53.07	-1164.1	-696.9	1.5716

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.1457	1.5124	86.09	86.85	31.98	1.1457	1.5126	86.12	86.88

STATOR 1

RUN NO 5, SPEED CODE 85, POINT NO 4

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/TO1
1	14.915	12.557	790.7	455.8	440.5	455.7	656.6	-10.9	56.1	-1.4	0.6948	0.3882	1.4022	1.1396	1.4952	1.1396
2	5.515	4.979	724.4	483.8	442.1	482.9	576.4	-29.5	52.4	-3.5	0.6323	0.4121	1.4252	1.1438	1.4761	1.1438
3	-0.702	-1.088	688.3	520.0	486.8	519.1	486.6	-29.7	45.0	-3.3	0.5979	0.4449	1.4910	1.1392	1.4412	1.1392
4	-4.254	-4.846	697.0	588.6	543.7	588.3	436.0	-17.3	38.8	-1.7	0.6055	0.5061	1.5113	1.1410	1.4758	1.1410
5	-7.452	-7.730	699.9	617.4	544.1	617.4	437.0	-1.3	38.8	-0.1	0.6035	0.5282	1.5460	1.1515	1.5180	1.1575

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P STATC-ST	%EFF-A TOT-STG	%EFF-P TOT-STG
1	5.30	7.10	9.47	57.50	33.77	39.81	0.5966	0.0913	0.0194	0.9748	88.23	87.28	87.96
2	5.35	9.07	5.80	55.83	35.40	42.33	0.5337	0.0796	0.0194	0.9812	87.35	81.67	82.81
3	-0.55	4.50	6.04	48.22	40.73	45.88	0.4486	0.1004	0.0274	0.9784	79.04	79.07	80.10
4	-5.81	0.33	7.74	40.48	47.10	52.60	0.3492	0.0921	0.0273	0.9798	71.86	83.46	84.32
5	-6.19	0.86	11.46	38.47	47.61	55.06	0.3179	0.0746	0.0236	0.9837	70.55	80.41	81.51

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
9119.	140.80	1.1457	1.4826	81.72	82.68	1.1457	0.9803	81.15

ROTOR 2

RUN NO 5, SPEED CODE 85, POINT NO 4

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-1	V'-1 FT/SEC	V'-2 FT/SEC
1	10.238	9.183	505.5	938.8	505.4	591.7	-10.6	728.9	-1.2	52.7	0.4320	0.7523	731.1	761.4	0.7670	0.4549	897.6	552.7
2	4.353	3.551	552.4	804.9	551.4	577.0	-29.9	564.2	-3.1	44.3	0.4730	0.6608	816.2	829.3	0.8647	0.5200	1010.1	635.0
3	-1.603	-1.108	588.1	702.1	587.3	522.5	-29.5	468.9	-2.9	41.9	0.5060	0.5734	904.9	904.3	0.9497	0.5555	1103.7	680.1
4	-5.154	-4.301	651.4	675.5	651.1	544.1	-17.0	400.2	-1.5	36.3	0.5631	0.5525	995.8	985.8	1.0410	0.6539	1204.1	799.4
5	-8.023	-7.649	685.6	708.0	685.6	584.3	-1.2	399.9	-0.1	34.3	0.5903	0.5754	1085.1	1073.5	1.1090	0.7250	1287.9	891.7

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VΘ'-1 FT/SEC	VΘ'-2 FT/SEC	PO/PO INLET
1	5.72	10.17	17.17	52.32	43.39	57.26	0.5816	0.0088	0.0021	1.6698	99.46	99.42	55.67	3.35	-741.8	-32.5	2.3414
2	5.11	9.90	19.07	32.22	47.15	61.92	0.5285	-0.0034	-0.0008	1.5780	100.31	100.33	56.86	24.63	-846.1	-265.2	2.2540
3	4.39	8.96	11.98	18.05	50.55	56.96	0.5148	0.0679	0.0148	1.4737	92.52	92.12	57.86	39.81	-934.4	-435.4	2.1450
4	1.49	5.10	4.75	10.20	56.58	60.09	0.4455	0.0703	0.0167	1.4091	89.55	89.04	57.27	47.67	-1012.8	-585.6	2.1329
5	0.56	2.14	2.27	8.81	59.17	64.16	0.4197	0.0895	0.0213	1.4125	87.39	86.78	57.76	48.95	-1090.3	-673.6	2.1837

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.2419	2.1964	86.10	87.61	36.35	1.1276	1.4815	92.78	93.17

STATOR 2

RUN NO 5, SPEED CODE 85, POINT NO 4

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/TO1
1	6.926	0.078	934.7	686.5	592.9	686.0	722.6	27.2	50.8	2.3	0.7712	0.5917	2.2695	1.3196	1.6185	1.1580
2	2.005	-1.251	826.3	636.1	466.9	635.9	560.7	17.3	42.8	1.6	0.6781	0.5128	2.2144	1.3010	1.5487	1.1369
3	-0.094	-1.740	721.3	562.1	548.9	562.1	468.1	1.8	40.4	0.2	0.5903	0.4540	2.1313	1.2823	1.4628	1.1262
4	-2.967	-1.648	696.5	554.8	569.9	554.7	400.4	-3.7	35.1	-0.4	0.5708	0.4494	2.1179	1.2733	1.3982	1.1147
5	-5.205	-1.279	738.4	601.0	618.8	599.9	402.8	35.7	33.1	3.4	0.6020	0.4842	2.1504	1.2556	1.3909	1.1193

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P STATC-ST	%EFF-A TOT-STG	%EFF-P TOT-STG
1	3.36	5.40	13.52	48.53	60.74	77.83	0.4352	0.0967	0.0218	0.9693	83.00	92.95	93.41
2	-2.79	1.08	11.88	41.21	64.43	72.81	0.3886	0.0578	0.0144	0.9848	87.57	96.82	97.01
3	-4.26	1.03	10.48	40.25	59.26	64.58	0.3915	0.0204	0.0055	0.9957	95.13	90.57	91.05
4	-8.97	-2.77	9.72	35.46	62.34	63.91	0.3691	0.0369	0.0105	0.9927	90.87	87.33	87.91
5	-11.34	-4.46	14.18	29.72	66.98	67.91	0.3344	0.0710	0.0210	0.9846	81.37	82.56	83.35

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
9119.	140.80	1.2919	2.1663	84.50	86.07	1.1276	0.9863	84.35

TABLE XXV (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA
(Hub Radially Distorted Flow)

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 5, SPEED CODE 10, POINT NO 1

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	12.305	14.731	564.4	545.5	564.4	591.2	0.0	600.9	0.0	53.4	0.5188	0.8757	677.1	762.1	0.8102	0.5212	881.5	592.4
2	1.204	5.257	634.2	890.4	634.2	599.9	0.0	657.9	0.0	47.5	0.5872	0.7735	863.6	902.8	0.9915	0.5629	1071.4	648.0
3	-3.158	-0.519	699.6	767.1	659.6	557.1	0.0	527.3	0.0	43.4	0.6526	0.6606	1036.0	1043.5	1.1661	0.6540	1250.1	759.5
4	-5.047	-5.076	704.5	716.1	704.5	587.2	0.0	409.8	0.0	35.0	0.6576	0.6191	1200.9	1184.2	1.2995	0.8402	1392.3	971.8
5	-9.429	-9.108	674.6	730.2	674.6	601.9	0.0	413.5	0.0	34.4	0.6273	0.6284	1363.9	1324.9	1.4151	0.9369	1521.6	1092.1

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VΘ'-1 FT/SEC	VΘ'-2 FT/SEC	PO/PO INLET
1	1.92	6.22	15.81	53.47	33.88	47.08	0.5542	-0.1820	-0.0418	1.9862	109.55	110.52	49.74	-3.73	-677.1	38.8	1.7793
2	1.94	5.41	12.41	31.34	38.65	50.68	0.5710	0.0066	0.0016	1.8355	99.38	99.35	53.44	22.10	-863.6	-244.9	1.7449
3	1.48	4.16	12.53	13.19	44.35	48.52	0.5235	0.1464	0.0322	1.6175	84.40	83.34	56.00	42.81	-1036.0	-516.2	1.6523
4	2.42	4.38	10.01	6.77	45.49	53.36	0.3995	0.0665	0.0133	1.5880	91.29	90.72	59.44	52.87	-1200.9	-774.4	1.6500
5	3.96	5.27	9.51	7.15	44.04	54.79	0.3786	0.0976	0.0195	1.6387	87.10	86.19	63.66	56.51	-1363.5	-911.3	1.6907

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.1766	1.6945	92.03	92.58	40.71	1.1766	1.6951	92.09	92.64

STATOR 1

RUN NO 5, SPEED CODE 10, POINT NO 1

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/TO1
1	14.567	12.503	1010.9	689.8	634.8	687.3	786.7	-58.5	51.1	-4.8	0.8914	0.5840	1.7197	1.1957	1.9163	1.1957
2	5.377	5.619	912.2	692.4	637.7	690.8	652.2	-46.4	45.5	-3.0	0.7940	0.5880	1.7143	1.1894	1.7859	1.1894
3	-1.154	-0.210	787.4	640.9	586.4	638.5	525.4	-55.5	41.8	-5.0	0.6797	0.5454	1.6311	1.1740	1.5897	1.1740
4	-5.082	-4.606	736.5	638.1	611.6	637.9	410.3	-16.5	34.0	-1.5	0.6382	0.5476	1.6112	1.1548	1.5500	1.1548
5	-7.740	-7.645	754.3	681.5	628.9	680.5	416.5	-37.6	33.6	-3.2	0.6488	0.5817	1.6556	1.1761	1.6050	1.1761

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P STATC-ST	%EFF-A TOT-STG	%EFF-P TOT-STG
1	0.21	2.61	6.41	55.87	49.95	64.09	0.4872	0.0824	0.0174	0.9670	87.95	104.27	103.89
2	-1.54	2.18	9.45	49.25	53.04	64.42	0.4167	0.0371	0.0090	0.9875	92.75	95.01	95.38
3	-3.67	1.17	4.35	46.79	50.44	58.71	0.3764	0.0355	0.0097	0.9908	90.27	81.36	82.52
4	-10.65	-4.51	7.94	35.44	54.92	58.84	0.3047	0.1053	0.0312	0.9748	63.36	86.17	86.98
5	-11.30	-4.25	8.60	30.82	56.51	62.19	0.2889	0.0854	0.0270	0.9789	60.32	82.16	83.29

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
10684.	179.20	1.1766	1.6615	88.34	89.13	1.1766	0.9809	88.40

ROTOR 2

RUN NO 5, SPEED CODE 10, POINT NO 1

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	10.506	10.033	786.7	1133.1	784.6	850.2	-57.1	749.1	-4.2	41.3	0.6730	0.9198	856.6	892.0	1.0302	0.6998	1204.3	862.1
2	5.847	5.640	802.4	991.3	801.1	809.6	-45.9	572.1	-3.3	35.3	0.6897	0.8033	956.3	971.7	1.1025	0.7316	1283.0	902.9
3	0.414	1.283	748.1	856.3	746.1	731.2	-55.0	445.6	-4.2	31.4	0.6437	0.6932	1060.2	1059.5	1.1544	0.7729	1341.8	954.8
4	-4.223	-3.011	725.7	752.8	725.5	639.3	-16.9	397.6	-1.3	31.8	0.6282	0.6116	1166.7	1155.0	1.2018	0.8051	1386.3	991.1
5	-7.585	-7.105	767.1	787.6	766.2	700.8	-38.1	359.5	-2.8	27.0	0.6627	0.6348	1276.0	1257.7	1.3100	0.9183	1521.1	1135.3

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VΘ'-1 FT/SEC	VΘ'-2 FT/SEC	PO/PO INLET
1	-0.65	3.80	23.34	39.19	69.48	83.87	0.4431	0.3093	0.0713	1.5799	74.12	72.42	49.30	9.52	-913.7	143.0	2.7169
2	-0.30	4.43	16.72	25.11	70.33	84.06	0.4203	0.2356	0.0544	1.4821	74.87	73.45	51.39	26.28	-1002.2	-399.6	2.5407
3	2.75	7.32	11.80	16.19	64.96	77.70	0.3939	0.1848	0.0461	1.4401	76.84	75.63	56.22	40.02	-1115.2	-613.9	2.3464
4	3.03	6.89	7.44	8.76	64.02	68.89	0.3788	0.1948	0.0394	1.3700	71.93	70.67	58.47	45.76	-1183.7	-757.4	2.2076
5	2.45	4.63	5.22	7.16	66.91	74.79	0.3442	0.1943	0.0435	1.3673	69.16	68.41	59.65	51.50	-1314.0	-898.2	2.2629

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.3522	2.3845	79.78	82.06	41.84	1.1492	1.4352	72.48	73.83

STATOR 2

RUN NO 5, SPEED CODE 10, POINT NO 1

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/TO1
1	7.756	0.852	1179.9	1031.1	916.7	1006.6	742.7	-216.5	39.2	-12.1	0.9644	0.8256	2.4607	1.4245	1.4305	1.1916
2	4.469	0.172	1033.4	969.9	861.4	959.5	570.8	-141.8	33.6	-8.4	0.8419	0.7823	2.3542	1.3693	1.3931	1.1637
3	1.769	-0.305	896.7	877.0	778.3	876.7	445.2	-25.1	29.8	-1.8	0.7291	0.7107	2.2552	1.3465	1.3789	1.1452
4	-1.667	-0.850	795.5	793.8	688.5	793.5	398.6	-14.7	30.0	-1.1	0.6490	0.6470	2.1350	1.3092	1.3255	1.1336
5	-5.139	-1.126	835.5	826.2	750.0	826.2	361.8	-1.6	25.0	-0.1	0.6807	0.6687	2.1515	1.3356	1.3001	1.1359

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P STATC-ST	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-8.18	-6.16	-0.85	51.34	87.26	96.78	0.3145	0.2102	0.0473	0.9051	35.08	55.80	58.02
2	-11.95	-6.08	1.91	42.02	87.02	95.01	0.2460	0.1704	0.0419	0.9356	4.71	60.34	62.13
3	-14.95	-9.64	8.66	31.40	80.85	88.27	0.1729	0.1536	0.0411	0.9534	-93.79	65.65	67.35
4	-14.01	-7.81	9.04	31.10	72.58	80.93	0.1549	0.1399	0.0397	0.9653	-974.05	62.51	63.95
5	-18.89	-12.02	10.67	25.87	78.68	82.16	0.1441	0.1340	0.0544	0.9510	-409.84	57.07	58.61

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
10684.	179.20	1.3522	2.2525	73.93	76.68	1.1492	0.9448	60.56

TABLE XXV (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA
(Hub Radially Distorted Flow)

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 5, SPEED CODE 10, POINT NO 3

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	12.786	14.733	551.6	975.0	551.6	554.3	0.0	802.1	0.0	55.2	0.5064	0.8551	675.4	760.2	0.8006	0.4875	872.0	555.8
2	2.212	5.344	623.3	889.0	623.3	585.3	0.0	669.2	0.0	48.7	0.5764	0.7712	861.4	900.6	0.9832	0.5459	1063.3	629.4
3	-2.253	-0.663	693.8	781.8	693.8	554.5	0.0	551.1	0.0	44.8	0.6468	0.6720	1033.5	1040.9	1.1603	0.6360	1244.8	739.9
4	-4.523	-4.798	703.4	731.5	703.4	584.8	0.0	439.5	0.0	37.0	0.6564	0.6303	1197.9	1181.2	1.2964	0.8139	1389.2	944.6
5	-9.232	-9.033	674.2	745.5	674.2	598.8	0.0	444.0	0.0	36.5	0.6269	0.6369	1360.5	1321.6	1.4120	0.9078	1518.4	1062.4

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VΘ'-1 FT/SEC	VΘ'-2 FT/SEC	PO/PO INLET
1	2.55	6.65	15.31	54.66	33.34	43.93	0.5883	-0.1230	-0.0282	1.9452	106.32	106.95	50.37	-4.29	-675.4	41.9	[illegible]
2	2.36	5.63	11.78	32.40	38.20	49.63	0.5843	0.0055	0.0014	1.8510	99.42	99.39	53.86	21.47	-861.4	-231.4	1.7581
3	1.62	4.30	11.17	14.69	44.14	48.75	0.5409	0.1434	0.0323	1.6591	85.52	84.48	56.13	41.45	-1033.5	-489.8	1.6905
4	2.36	4.33	8.92	7.82	48.44	53.72	0.4237	0.0739	0.0152	1.6334	90.95	90.33	59.60	51.78	-1197.9	-741.8	1.6965
5	3.92	5.21	8.63	7.97	43.99	55.32	0.4037	0.1046	0.0214	1.6918	87.04	86.07	63.60	55.63	-1360.5	-877.6	1.7444

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	T02/T01	P02/P01	EFF-AD ROTOR %	EFF-P ROTOR %
1.1842	1.7237	91.33	91.96	40.47	1.1842	1.7246	91.42	92.04

STATOR 1

RUN NO 5, SPEED CODE 10, POINT NO 3

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	14.448	12.375	986.4	629.0	593.5	626.7	787.9	-54.3	52.9	-4.9	0.8667	0.5296	1.6850	1.1956	1.8785	1.1956
2	5.309	5.377	908.3	669.2	620.2	669.0	663.6	-14.9	46.8	-1.3	0.7900	0.5661	1.7297	1.1931	1.8086	1.1931
3	-1.036	-0.192	800.8	628.5	582.5	628.5	549.5	-6.8	43.3	-0.6	0.6899	0.5322	1.6607	1.1827	1.6209	1.1827
4	-4.905	-4.444	752.7	632.3	610.3	629.7	440.5	-57.8	35.9	-5.3	0.6501	0.5396	1.6565	1.1660	1.5959	1.1660
5	-7.656	-7.816	770.5	682.2	627.5	680.9	447.1	-41.6	35.6	-3.5	0.6602	0.5790	1.7079	1.1885	1.6568	1.1885

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-STG	%EFF-P TOT-STG
1	2.10	4.50	6.33	57.84	46.64	58.92	0.5362	0.0871	0.0184	0.9664	88.34	100.83	100.75
2	-0.25	3.47	8.00	48.03	51.91	63.35	0.4392	0.0472	0.0115	0.9842	91.47	95.46	99.81
3	-2.21	2.84	8.69	43.91	50.62	58.80	0.3954	0.0521	0.0142	0.9861	87.93	80.97	82.20
4	-8.69	-2.54	4.17	41.17	55.43	59.38	0.3560	0.1032	0.0305	0.9745	69.73	85.81	86.69
5	-9.34	-2.29	8.26	39.11	57.17	63.62	0.3171	0.0833	0.0263	0.9789	67.12	82.29	83.48

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	T02/T01	P02/P01	EFF-AD STAGE %
10657.	178.10	1.1842	1.6873	87.48	88.35	1.1842	0.9789	87.56

ROTOR 2

RUN NO 5, SPEED CODE 10, POINT NO 3

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	10.299	9.641	716.1	1053.2	714.1	713.6	-52.9	774.6	-4.2	47.2	0.6079	0.8437	854.5	889.0	0.9803	0.5791	1154.7	722.9
2	5.357	4.865	766.0	950.2	765.9	684.6	-14.5	658.9	-1.1	43.9	0.6546	0.7600	953.9	969.2	1.0550	0.6012	1234.6	751.7
3	0.353	0.796	722.9	824.1	722.9	586.3	-7.5	579.1	-0.6	44.7	0.6179	0.6551	1057.5	1056.8	1.1001	0.6012	1287.2	756.3
4	-3.897	-2.847	723.9	770.6	721.5	601.4	-58.8	481.7	-4.7	38.6	0.6234	0.6130	1163.8	1152.1	1.2226	0.7165	1419.7	900.6
5	-8.217	-7.600	765.2	769.0	764.0	595.7	-42.1	486.3	-3.1	39.1	0.6551	0.6033	1272.8	1254.6	1.3020	0.7627	1520.7	972.1

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VΘ'-1 FT/SEC	VΘ'-2 FT/SEC	PO/PO INLET
1	1.78	6.23	22.95	42.61	64.40	81.47	0.5448	0.1329	0.0307	1.7666	90.25	89.43	51.74	9.13	-907.4	-115.2	2.9778
2	-0.09	4.71	14.81	27.29	68.95	82.16	0.5328	0.0975	0.0229	1.6765	91.19	90.52	51.66	24.37	-968.4	-310.3	2.8899
3	2.36	6.54	10.95	16.66	64.59	71.94	0.5419	0.0937	0.0206	1.6392	90.60	89.93	55.83	39.18	-1065.1	-477.7	2.7218
4	4.03	7.84	5.71	11.39	65.01	75.70	0.4831	0.1087	0.0228	1.6259	87.77	86.91	59.41	48.03	-1222.7	-670.4	2.6931
5	2.58	4.76	5.42	7.68	68.34	73.72	0.4861	0.1728	0.0386	1.5817	79.35	77.99	59.78	52.10	-1314.9	-768.2	2.7016

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	T02/T01	P02/P01	EFF-AD ROTOR %	EFF-P ROTOR %
1.3923	2.7767	86.04	87.87	41.08	1.1758	1.6456	86.47	87.38

STATOR 2

RUN NO 5, SPEED CODE 10, POINT NO 3

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VΘ-1 FT/SEC	VΘ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	7.465	0.495	1082.1	763.7	762.4	761.0	767.9	64.7	45.4	4.9	0.8702	0.5923	2.8777	1.4300	1.7078	1.1961
2	3.720	-0.386	975.5	726.6	721.8	725.1	656.2	46.7	42.3	3.7	0.7826	0.5677	2.8413	1.4019	1.6468	1.1751
3	0.572	-1.154	848.3	632.8	620.4	632.8	578.5	-1.1	43.0	-0.1	0.6761	0.4945	2.7008	1.3807	1.6263	1.1675
4	-2.432	-1.361	795.2	609.7	632.0	609.6	482.5	-8.1	37.3	-0.8	0.6341	0.4785	2.6616	1.3651	1.6070	1.1706
5	-4.729	-1.186	804.9	629.5	639.1	628.5	489.3	35.3	37.5	3.2	0.6337	0.4883	2.6628	1.4000	1.5592	1.1780

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/ PO1	%EFF-P STATC-ST	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-2.00	0.02	16.11	40.57	85.33	98.84	0.4439	0.0867	0.0199	0.9662	86.39	83.68	84.85
2	-3.23	0.64	14.00	38.65	85.29	96.13	0.4129	0.0549	0.0136	0.9817	89.91	86.90	87.78
3	-1.73	3.58	10.20	43.08	75.16	84.00	0.4391	0.0319	0.0085	0.9916	93.64	88.47	89.23
4	-6.71	-0.51	9.35	38.09	78.60	81.27	0.4101	0.0487	0.0138	0.9885	89.53	84.62	85.61
5	-6.98	-0.10	13.98	34.27	77.73	81.37	0.3854	0.0606	0.0179	0.9857	86.13	75.54	77.01

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	T02/T01	P02/P01	EFF-AD STAGE %
10657.	178.10	1.3923	2.7315	84.45	86.46	1.1758	0.9837	83.42

TABLE XXV (Cont'd) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA
(Hub Radially Distorted Flow)

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 5, SPEED CODE 10, POINT NO 4

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	12.244	14.723	568.6	996.0	568.6	592.2	0.0	800.8	0.0	53.4	0.5228	0.8763	676.8	761.8	0.8128	0.5222	884.0	593.5
2	1.118	5.203	639.5	889.5	639.5	600.3	0.0	656.3	0.0	47.4	0.5924	0.7724	863.2	902.5	0.9952	0.5637	1074.3	648.8
3	-1.128	-1.050	704.2	769.0	704.2	556.0	0.0	531.3	0.0	43.7	0.6575	0.6620	1035.6	1043.1	1.1689	0.6505	1252.4	755.6
4	-4.902	-3.247	707.9	720.7	707.9	589.1	0.0	415.2	0.0	35.2	0.6610	0.6226	1200.4	1183.7	1.3015	0.8368	1393.6	968.3
5	-3.324	-4.220	673.9	737.6	673.9	604.5	0.0	422.6	0.0	34.9	0.6267	0.6342	1363.3	1324.3	1.4142	0.9305	1520.6	1085.6

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VO'-1 FT/SEC	VO'-2 FT/SEC	PO/PO INLET
1	1.69	5.99	15.86	53.26	34.02	47.31	0.5543	-0.1970	-0.0452	1.9957	110.36	111.43	45.51	-3.75	-676.8	39.0	1.7855
2	1.70	5.17	12.50	31.02	38.84	50.85	0.5709	-0.0003	-0.0001	1.8387	99.92	99.93	53.20	22.18	-863.2	-246.2	1.7481
3	1.30	3.98	12.35	13.19	44.60	48.48	0.5201	0.1483	0.0328	1.6214	84.27	83.19	55.81	42.62	-1035.6	-511.7	1.6575
4	2.29	4.24	9.72	6.93	49.65	53.52	0.4035	0.0692	0.0140	1.5948	91.04	90.45	59.51	52.58	-1200.4	-768.5	1.6562
5	3.36	5.28	9.12	7.55	43.95	54.99	0.3846	0.1032	0.0208	1.6503	86.62	85.67	63.67	56.12	-1363.3	-901.7	1.7005

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.1783	1.7015	91.95	92.51	40.84	1.1783	1.7024	92.05	92.60

STATOR 1

RUN NO 5, SPEED CODE 10, POINT NO 4

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/TO1
1	14.557	12.519	1011.7	688.9	636.2	687.2	786.6	-49.4	51.0	-4.1	0.8923	0.5833	1.7256	1.1956	1.9252	1.1956
2	5.344	5.515	911.7	688.1	638.7	687.2	650.6	-34.2	45.4	-2.8	0.7945	0.5842	1.7479	1.1890	1.7497	1.1890
3	-1.230	-0.614	789.6	637.4	585.7	636.6	529.5	-31.7	42.1	-2.8	0.6814	0.5419	1.6361	1.1755	1.5933	1.1755
4	-3.138	-5.290	741.3	636.4	613.8	634.9	415.7	-43.3	34.2	-3.9	0.6421	0.5456	1.6189	1.1507	1.5563	1.1507
5	-7.760	-8.154	760.4	687.4	630.1	687.0	425.6	-23.1	34.2	-1.9	0.6533	0.5800	1.6651	1.1799	1.6164	1.1799

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P STATC-ST	%EFF-A TOT-STG	%EFF-P TOT-STG
1	0.14	2.54	7.16	55.05	50.21	64.33	0.4864	0.0823	0.0174	0.9070	88.01	105.14	104.66
2	-1.65	2.07	6.44	48.16	53.27	64.38	0.4177	0.0366	0.0089	0.9876	92.55	95.61	95.93
3	-3.42	1.43	6.47	44.93	50.43	58.75	0.3766	0.0367	0.0100	0.9505	90.36	81.07	82.25
4	-10.34	-4.25	5.51	38.12	55.17	58.80	0.3244	0.1050	0.0311	0.9746	65.44	85.94	86.76
5	-12.77	-3.72	9.84	36.10	56.41	62.80	0.2847	0.0846	0.0268	0.9789	80.56	81.72	82.89

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
10679.	179.70	1.1783	1.6681	88.27	89.07	1.1783	0.9804	88.37

ROTOR 2

RUN NO 5, SPEED CODE 10, POINT NO 4

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	13.545	9.957	786.5	1081.5	785.4	786.0	-48.2	740.6	-3.5	43.1	0.6734	0.6732	856.3	891.7	1.0246	0.6479	1197.9	802.4
2	5.712	5.437	803.6	968.1	802.9	776.0	-33.7	578.9	-2.4	36.7	0.6910	0.7865	955.9	971.3	1.0957	0.7031	1274.3	869.5
3	-0.172	0.891	750.2	828.0	749.5	683.0	-31.9	468.0	-2.4	34.4	0.6452	0.6680	1055.6	1059.1	1.1388	0.7288	1324.2	903.2
4	-5.177	-3.482	728.3	734.6	727.0	631.5	-43.1	375.3	-3.4	30.7	0.6300	0.5947	1166.3	1154.5	1.2207	0.8119	1411.1	1003.0
5	-8.503	-7.830	756.9	735.8	750.6	632.0	-23.3	376.8	-1.6	30.7	0.6519	0.5889	1275.4	1257.2	1.2919	0.8674	1504.1	1063.0

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VO'-1 FT/SEC	VO'-2 FT/SEC	PO/PO INLET
1	-0.97	3.48	24.64	38.17	69.79	83.53	0.4865	0.2365	0.0542	1.6261	80.38	79.00	48.99	10.82	-904.4	-151.0	2.8053
2	-0.74	4.01	17.27	24.14	70.60	86.93	0.4418	0.1296	0.0258	1.5709	86.62	85.74	50.57	26.83	-969.6	-392.4	2.6978
3	2.36	6.63	12.65	14.65	65.31	77.85	0.4253	0.0980	0.0210	1.5183	88.11	87.40	55.53	40.87	-1094.6	-591.0	2.4619
4	3.01	7.42	8.60	8.07	64.30	72.69	0.3829	0.1142	0.0225	1.4457	83.71	82.85	58.99	50.92	-1209.4	-779.2	2.3436
5	2.47	4.65	7.55	5.44	66.77	70.77	0.3758	0.1711	0.0363	1.3543	75.91	74.67	59.67	54.23	-1296.8	-880.4	2.3216

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.3532	2.4954	84.45	86.29	41.02	1.1485	1.4983	82.02	83.01

STATOR 2

RUN NO 5, SPEED CODE 10, POINT NO 4

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VO-1 FT/SEC	VO-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/TO1
1	7.041	0.760	1119.7	940.0	845.3	939.0	734.3	-44.0	41.2	-1.7	0.9090	0.7452	2.4765	1.4199	1.4317	1.1675
2	4.420	0.436	1002.0	918.2	819.0	916.8	577.3	-51.7	35.3	-3.2	0.8136	0.7367	2.4600	1.3832	1.4399	1.1843
3	1.902	-0.147	861.7	843.8	723.5	843.4	468.0	-25.8	32.9	-1.7	0.6977	0.6811	2.3773	1.3471	1.4514	1.1448
4	-11.369	-0.977	768.6	758.7	670.2	755.8	376.2	-66.3	29.3	-5.0	0.6242	0.6157	2.2532	1.3123	1.3918	1.1345
5	-4.847	-1.129	779.3	739.3	680.9	739.1	379.0	17.6	29.1	1.4	0.6263	0.5919	2.1588	1.3407	1.3204	1.1362

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	PO2/PO1	%EFF-P STATC-ST	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-3.21	-4.20	8.57	43.85	87.16	96.02	0.3221	0.2880	0.0662	0.8601	24.68	57.19	59.17
2	-10.33	-6.43	7.09	38.45	89.80	97.15	0.2503	0.2394	0.0594	0.9141	-7.76	67.22	66.05
3	-11.02	-6.51	8.55	34.64	81.02	91.18	0.1876	0.1775	0.0415	0.9496	-119.19	77.15	78.31
4	-11.76	-6.57	5.10	34.26	75.86	82.67	0.1786	0.1703	0.0482	0.9606	-440.36	73.34	74.54
5	-13.32	-6.44	12.14	27.77	74.45	78.26	0.1890	0.2285	0.0676	0.9470	-100.31	60.35	61.86

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
10679.	179.70	1.3532	2.3352	77.40	79.69	1.1485	0.9343	67.58

APPENDIX H

OVERALL PERFORMANCE AND VELOCITY VECTOR PARAMETERS FOR CIRCUMFERENTIALLY DISTORTED INLET FLOW

This appendix provides overall performance and velocity vector parameters for circumferentially distorted inlet flow. The information presented is for the redesigned fan. Fan overall performance is given in Table XXVI. Tables XXVII, XXVIII, and XXIX give velocity vector parameters at rotor 1 inlet, stator 1 exit, and stator 2 exit, respectively. Table XXX gives 1st-stage total temperature ratios, and Table XXXI gives fan total pressure and total temperature ratios. Velocity calculations are based on standard day inlet plenum conditions, and the velocity vector data (i.e. V, V_m, and V_θ) are presented in U.S. customary units (ft/sec). The circumferential reference position is TDC looking forward. The relative position of the circumferential-distortion screen is 246° - 336° (hub) and 246° - 326° (tip). Tip is 100 percent span. $\beta°$ is defined as $\tan^{-1}(\tan\beta/\cos\epsilon)$, where ϵ's are design values.

TABLE XXVI - FAN OVERALL PERFORMANCE (Circumferentially Distorted Inlet Flow)

Run Number	Speed Code	Point Number	Screen Positions	$\frac{W\sqrt{\theta_6}}{\delta_6}$ LBM/SEC	KG/SEC	P_{11}/P_6	$\eta_{ad\ 11}$	P_{16}/P_6	$\eta_{ad\ 16}$
007	10	31	2	185.0	(83.9)	1.717	91.5	2.342	71.8
007	10	02	6	184.6	(83.7)	1.732	86.4	2.678	80.9
007	10	03	6	176.0	(79.8)	1.831	88.3	2.877	81.8
007	90	01	2	167.4	(75.9)	1.587	93.1	2.109	77.6
007	90	02	2	148.8	(67.5)	1.628	87.4	2.430	81.7
007	90	03	6	145.8	(66.1)	1.637	81.2	2.439	80.2
007	70	01	2	123.9	(56.2)	1.327	91.4	1.608	80.9
007	70	02	2	113.8	(51.6)	1.334	82.3	1.712	79.9
007	70	13	6	106.6	(48.3)	1.331	78.9	1.728	80.6
007	10	STALL		171.3	(77.7)			2.883	
007	90	STALL		142.6	(64.7)			2.438	
007	70	STALL		102.6	(46.5)			1.723	

Speed Code	% Design Speed
50	50
70	70
85	85
90	90
95	95
10	100
15	105
11	110

TABLE XXVII - VELOCITY VECTOR PARAMETERS AT ROTOR 1 INLET

(Circumferentially Distorted Inlet Flow)

FIRST ROTOR INLET CIRCUMFERENTIAL DISTRIBUTIONS - WEDGE PROBE STATION 6

	P_6/P_o	p_6/P_o	90- β°	M	V	V_m	V_θ	90- β'
				72°				
10	.983	.928	92.7	.29	318.	317.	-15.	35.8
30	.985	.911	91.5	.34	372.	371.	-10.	33.0
50	.985	.905	91.6	.35	387.	387.	-11.	28.0
70	.984	.930	90.8	.35	383.	383.	-5.	24.5
90	.980	.921	91.4	.30	331.	331.	-8.	18.6
MR	.983	.913	91.4	.33	362.	362.	-9.	
				162°				
10	.980	.927	88.2	.28	312.	312.	10.	36.9
30	.981	.910	88.2	.33	364.	364.	12.	33.5
50	.983	.903	88.2	.35	385.	385.	12.	28.7
70	.981	.905	88.2	.34	379.	379.	12.	24.7
90	.980	.920	89.0	.30	335.	335.	6.	19.1
MR	.981	.911	88.4	.33	360.	360.	10.	
				252°				
10	.972	.931	76.1	.33	366.	355.	88.	46.8
30	.960	.903	77.7	.32	358.	350.	77.	35.8
50	.957	.885	79.9	.34	371.	365.	65.	29.3
70	.964	.837	80.1	.35	383.	378.	66.	26.1
90	.978	.899	80.2	.35	384.	379.	65.	22.7
MR	.967	.893	79.2	.34	375.	369.	70.	
				342°				
10	.974	.896	100.4	.35	382.	376.	-69.	37.3
30	.977	.884	99.1	.38	418.	413.	-66.	33.4
50	.979	.879	97.5	.39	434.	430.	-56.	29.1
70	.981	.882	96.9	.39	432.	429.	-52.	25.8
90	.980	.895	96.8	.36	398.	396.	-47.	21.2
MR	.979	.887	97.7	.38	416.	412.	-56.	

PT. 7-70-01 $W\sqrt{\theta}/\delta$ = 123.9 lbm/sec (56.2 kg/sec)
P_{16}/P_6 = 1.561
P_o = 1754 lbf/ft^2 (83,900 N/m^2)
T_o = 509.4°R (283°K)

P_6/P_o	p_6/P_o	90- β°	M	V	V_m	V_θ	90- β'
			72°				
.983	.941	92.1	.25	281.	281.	-10.	32.8
.985	.926	91.3	.30	332.	332.	-8.	30.2
.985	.917	91.0	.32	356.	356.	-6.	26.2
.984	.920	90.8	.31	346.	346.	-5.	22.4
.982	.935	90.6	.27	297.	297.	-3.	16.9
.984	.925	91.0	.30	327.	327.	-6.	
			162°				
.983	.942	88.7	.25	276.	276.	6.	33.4
.984	.925	88.2	.29	326.	325.	10.	30.6
.986	.917	88.0	.32	356.	356.	12.	26.9
.985	.921	88.1	.31	345.	345.	12.	22.8
.984	.928	88.5	.26	289.	289.	7.	16.7
.985	.928	88.2	.29	324.	324.	10.	
			252°				
.973	.922	76.6	.28	311.	302.	72.	40.6
.960	.914	78.3	.27	294.	288.	60.	29.9
.958	.908	81.0	.28	309.	305.	48.	24.6
.967	.907	81.1	.30	336.	332.	52.	23.0
.980	.915	79.8	.31	346.	341.	62.	20.5
.969	.912	79.7	.29	325.	320.	58.	
			342°				
.979	.921	100.6	.29	326.	321.	-60.	33.6
.980	.904	99.7	.34	376.	371.	-63.	30.8
.983	.904	97.9	.35	385.	382.	-53.	26.4
.985	.907	97.8	.34	381.	377.	-52.	23.1
.984	.922	97.7	.30	337.	334.	-45.	18.2
.983	.912	98.4	.33	364.	360.	-53.	

PT. 7-70-02 $W\sqrt{\theta}/\delta$ = 113.8 lbm/sec (51.6 kg/sec)
P_{16}/P_6 = 1.670
P_o = 1802 lbf/ft^2 (86,100 N/m^2)
T_o = 496.0°R (275°K)

TABLE XXVII (Cont'd) - VELOCITY VECTOR PARAMETERS AT ROTOR 1 INLET (Circumferentially Distorted Inlet Flow)

FIRST ROTOR INLET CIRCUMFERENTAIL DISTRIBUTIONS - WEDGE PROBE STATION 6

Position		P_6/P_o	p_6/P_o	90- β°	M	V	V_m	V_θ	90- β'
12°	10	.983	.944	97.9	.24	265.	263.	-36.	29.6
	30	.986	.929	96.3	.29	326.	324.	-36.	28.4
	50	.985	.926	96.0	.30	329.	327.	-34.	23.5
	70	.986	.933	94.7	.28	312.	311.	-26.	19.8
	90	.984	.946	94.7	.24	263.	262.	-21.	14.7
	MR	.985	.935	95.6	.27	302.	301.	-30.	
42°	10	.987	.949	93.4	.24	263.	262.	-15.	30.6
	30	.987	.932	92.6	.29	318.	318.	-14.	28.9
	50	.987	.930	92.7	.29	325.	325.	-15.	24.0
	70	.987	.934	91.5	.28	313.	313.	-8.	20.8
	90	.986	.945	92.2	.24	262.	261.	-10.	14.9
	MR	.987	.935	92.3	.27	300.	300.	-12.	
72°	10	.985	.949	91.8	.23	256.	256.	-8.	30.6
	30	.987	.937	90.3	.27	304.	304.	-1.	28.3
	50	.987	.930	89.7	.29	323.	323.	2.	24.3
	70	.986	.935	89.6	.28	308.	308.	2.	20.3
	90	.983	.947	89.7	.23	256.	256.	1.	14.8
	MR	.986	.939	90.0	.26	293.	293.	0.	
102°	10	.987	.949	91.4	.24	266.	266.	-7.	31.7
	30	.988	.934	91.8	.28	313.	313.	-10.	28.8
	50	.986	.929	92.4	.29	325.	325.	-13.	24.0
	70	.987	.933	91.6	.28	315.	315.	-9.	20.5
	90	.985	.946	91.7	.24	268.	268.	-8.	15.3
	MR	.987	.937	91.8	.27	301.	301.	-9.	
132°	10	.985	.950	89.2	.23	252.	252.	4.	31.0
	30	.986	.936	88.1	.27	304.	304.	10.	28.9
	50	.988	.931	88.5	.29	324.	324.	9.	24.6
	70	.988	.935	88.4	.28	312.	312.	9.	20.7
	90	.986	.949	88.5	.23	261.	261.	7.	15.2
	MR	.987	.939	88.5	.27	296.	295.	6.	
162°	10	.986	.948	89.7	.24	263.	263.	2.	31.9
	30	.985	.935	90.0	.27	302.	302.	0.	28.3
	50	.987	.927	90.7	.30	332.	332.	-4.	24.8
	70	.986	.931	90.3	.29	319.	319.	-2.	20.9
	90	.985	.944	90.3	.25	274.	274.	-1.	15.8
	MR	.986	.936	90.3	.27	302.	302.	-1.	
192°	10	.985	.947	85.6	.24	265.	264.	20.	33.0
	30	.984	.933	85.5	.28	307.	306.	24.	29.6
	50	.983	.927	86.8	.29	322.	322.	18.	24.7
	70	.986	.932	87.1	.29	317.	317.	16.	21.1
	90	.982	.942	87.5	.24	270.	270.	12.	15.7
	MR	.984	.935	86.7	.27	300.	299.	17.	
222°	10	.985	.944	80.4	.25	274.	270.	46.	35.5
	30	.983	.931	81.1	.28	310.	306.	48.	30.8
	50	.988	.925	84.9	.31	340.	338.	30.	28.3
	70	.987	.929	85.3	.30	329.	328.	27.	22.1
	90	.986	.942	85.6	.26	283.	283.	22.	16.6
	MR	.986	.933	84.0	.28	311.	309.	32.	
252°	10	.976	.934	78.6	.25	278.	272.	55.	35.8
	30	.962	.927	81.2	.23	258.	255.	40.	25.7
	50	.963	.922	83.5	.25	279.	277.	32.	21.8
	70	.972	.921	83.1	.28	307.	305.	37.	20.7
	90	.981	.932	82.1	.27	302.	299.	42.	17.7
	MR	.972	.927	82.0	.26	290.	287.	40.	
282°	10	.948	.930	85.0	.17	187.	186.	16.	24.6
	30	.943	.920	86.6	.19	207.	207.	12.	20.7
	50	.942	.916	87.0	.20	223.	223.	12.	17.6
	70	.943	.918	86.9	.20	218.	218.	12.	14.8
	90	.942	.925	87.0	.16	181.	181.	9.	10.7
	MR	.943	.921	86.7	.18	205.	205.	12.	
312°	10	.960	.928	101.5	.22	244.	239.	-49.	26.8
	30	.949	.921	99.6	.21	230.	227.	-38.	20.7
	50	.943	.920	98.9	.19	209.	207.	-32.	15.5
	70	.942	.923	98.4	.17	188.	186.	-28.	12.2
	90	.951	.930	104.2	.18	201.	194.	-49.	10.8
	MR	.946	.925	100.7	.19	212.	209.	-39.	
342°	10	.980	.937	101.5	.26	285.	279.	-57.	30.1
	30	.982	.923	99.1	.30	332.	329.	-47.	28.4
	50	.987	.920	96.5	.32	351.	349.	-40.	24.8
	70	.986	.929	96.3	.29	323.	321.	-38.	20.3
	90	.984	.944	95.8	.24	271.	270.	-27.	15.1
	MR	.984	.930	97.1	.28	315.	313.	-39.	

PT. 7-70-13 $W\sqrt{\theta}/\delta$ = 106.6 lbm/sec (48.3 kg/sec)
P_{16}/P_6 = 1.692
P_o = 1868 lbf/ft^2 (89,200 N/m^2)
T_o = 512.5°R (284°K)

TABLE XXVII (Cont'd) - VELOCITY VECTOR PARAMETERS AT ROTOR 1 INLET

(Circumferentially Distorted Inlet Flow)

FIRST ROTOR INLET CIRCUMFERENTIAL DISTRIBUTIONS - WEDGE PROBE STATION 6

72°

	P_6/P_o	p_6/P_o	90- β°	M	V	V_m	V_θ	90- β'	P_6/P_o	p_6/P_o	90- β°	M	V	V_m	V_θ	90- β'	P_6/P_o	p_6/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	.965	.840	92.8	.45	491.	491.	-24.	40.9	.971	.872	91.2	.40	435.	435.	-9.	38.3	.954	.801	95.2	.51	552.	549.	-50.	39.8
30	.967	.812	91.3	.51	552.	552.	-13.	37.1	.970	.842	89.4	.45	497.	497.	5.	35.0	.959	.745	88.5	.61	657.	657.	17.	39.9
50	.959	.801	91.4	.53	575.	575.	-14.	31.8	.975	.837	89.8	.47	517.	517.	1.	29.8	.960	.758	93.8	.59	638.	636.	-42.	30.8
70	.966	.807	91.3	.51	559.	559.	-12.	27.5	.970	.841	89.8	.46	498.	498.	2.	25.1	.954	.764	94.4	.57	619.	618.	-47.	26.4
90	.960	.823	91.3	.46	508.	508.	-12.	22.1	.964	.861	90.3	.41	446.	446.	-2.	19.8	.952	.774	88.8	.55	598.	598.	12.	23.5
MR	.965	.815	91.5	.50	541.	541.	-14.		.970	.849	90.0	.44	482.	482.	0.		.956	.766	91.7	.57	618.	618.	-18.	

162°

	P_6/P_o	p_6/P_o	90- β°	M	V	V_m	V_θ	90- β'	P_6/P_o	p_6/P_o	90- β°	M	V	V_m	V_θ	90- β'	P_6/P_o	p_6/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	.961	.848	89.5	.43	468.	468.	4.	40.8	.971	.876	87.4	.38	423.	423.	19.	38.6	.952	.799	89.0	.51	552.	552.	9.	42.7
30	.952	.819	89.4	.49	530.	530.	14.	36.8	.966	.848	86.7	.44	478.	478.	27.	34.4	.952	.764	88.2	.57	615.	615.	20.	38.1
50	.969	.803	89.1	.52	562.	562.	9.	31.6	.973	.840	88.0	.46	505.	505.	17.	29.1	.959	.749	88.9	.60	652.	651.	13.	32.8
70	.963	.812	89.4	.50	545.	545.	6.	27.0	.972	.852	88.6	.44	482.	481.	12.	24.3	.955	.754	88.9	.59	638.	638.	12.	28.4
90	.959	.834	90.4	.45	492.	492.	-4.	21.4	.964	.869	89.2	.39	428.	428.	6.	18.9	.952	.785	90.3	.53	578.	578.	-3.	22.6
MR	.953	.822	89.4	.48	524.	524.	5.		.969	.856	88.2	.43	466.	466.	15.		.954	.768	89.2	.57	612.	612.	9.	

252°

	P_6/P_o	p_6/P_o	90- β°	M	V	V_m	V_θ	90- β'	P_6/P_o	p_6/P_o	90- β°	M	V	V_m	V_θ	90- β'	P_6/P_o	p_6/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	.940	.813	77.8	.46	504.	493.	106.	48.6	.948	.841	79.5	.42	459.	451.	83.	44.6	.924	.758	78.3	.54	585.	573.	118.	49.5
30	.918	.794	79.7	.46	499.	491.	89.	38.1	.917	.817	81.0	.41	449.	443.	70.	34.5	.892	.734	80.6	.54	581.	573.	95.	39.0
50	.915	.781	81.9	.48	526.	521.	74.	31.9	.922	.810	83.2	.43	477.	473.	57.	29.0	.894	.720	82.1	.56	610.	604.	84.	32.7
70	.927	.786	82.1	.49	536.	531.	74.	28.2	.933	.809	83.2	.46	498.	494.	59.	26.2	.904	.718	82.3	.58	629.	623.	84.	29.3
90	.951	.807	82.1	.49	534.	529.	73.	24.4	.957	.831	82.3	.45	497.	492.	66.	22.8	.938	.752	82.3	.57	618.	613.	83.	25.1
MR	.931	.796	81.2	.48	524.	517.	80.		.937	.821	82.1	.44	481.	477.	66.		.912	.736	81.5	.56	609.	603.	90.	

342°

	P_6/P_o	p_6/P_o	90- β°	M	V	V_m	V_θ	90- β'	P_6/P_o	p_6/P_o	90- β°	M	V	V_m	V_θ	90- β'	P_6/P_o	p_6/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	.948	.796	100.1	.51	551.	542.	-97.	40.1	.964	.861	104.4	.41	445.	431.	-111.	33.2	.934	.746	99.3	.58	623.	615.	-100.	41.0
30	.957	.769	97.2	.57	615.	610.	-77.	37.3	.953	.836	102.4	.45	497.	485.	-106.	30.3	.949	.712	98.1	.65	700.	693.	-99.	37.6
50	.961	.750	95.7	.59	635.	632.	-63.	32.7	.973	.830	99.3	.48	526.	520.	-85.	27.3	.952	.701	96.7	.68	722.	717.	-84.	32.9
70	.963	.764	95.5	.58	632.	629.	-60.	29.0	.973	.842	99.2	.46	501.	495.	-80.	23.2	.955	.705	96.4	.67	719.	714.	-80.	29.3
90	.961	.795	96.6	.53	572.	568.	-66.	23.3	.968	.853	99.1	.41	450.	444.	-71.	18.8	.953	.743	96.3	.61	654.	650.	-72.	24.0
MR	.959	.776	96.6	.56	605.	601.	-70.		.969	.845	100.3	.44	487.	479.	-87.		.950	.720	97.1	.64	689.	683.	-85.	

PT. 7-90-01 $W\sqrt{\theta}/\delta$ = 167.4 lbm/sec (75.9 kg/sec)
P_{16}/P_6 = 1.994
P_o = 1575 lbf/ft^2 (75,300 N/m^2)
T_o = 509.2°R (283°K)

PT. 7-90-02 $W\sqrt{\theta}/\delta$ = 148.8 lbm/sec (67.4 kg/sec)
P_{16}/P_6 = 2.324
P_o = 1643 lbf/ft^2 (78,600 N/m^2)
T_o = 509.8°R (283°K)

PT. 7-10-31 $W\sqrt{\theta}/\delta$ = 185.0 lbm/sec (83.8 kg/sec)
P_{16}/P_6 = 2.180
P_o = 1481 lbf/ft^2 (70,800 N/m^2)
T_o = 503.2°R (279°K)

REPRODUCIBILITY OF THE ORIGINAL PAGE IS POOR

TABLE XXVII (Cont'd) - VELOCITY VECTOR PARAMETERS AT ROTOR 1 INLET
(Circumferentially Distorted Inlet Flow)

FIRST ROTOR INLET CIRCUMFERENTIAL DISTRIBUTIONS - WEDGE PROBE STATION 6

12°

	P_6/P_o	p_6/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	.972	.884	97.7	.37	409.	406.	-55.	34.1
30	.978	.871	97.0	.41	450.	447.	-55.	30.0
50	.977	.864	96.0	.42	463.	460.	-48.	25.5
70	.976	.872	95.3	.40	444.	442.	-41.	21.7
90	.972	.885	94.6	.37	404.	403.	-33.	17.5
MR	.975	.875	95.8	.40	435.	433.	-44.	

42°

	P_6/P_o	p_6/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	.978	.891	91.7	.37	406.	406.	-12.	36.3
30	.979	.874	91.9	.41	446.	446.	-15.	31.4
50	.978	.867	92.2	.42	458.	458.	-17.	26.2
70	.977	.876	91.5	.40	437.	436.	-11.	22.1
90	.970	.891	91.1	.35	386.	386.	-8.	17.2
MR	.976	.879	91.6	.39	427.	427.	-12.	

72°

	P_6/P_o	p_6/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	.974	.891	90.0	.36	396.	396.	0.	36.0
30	.975	.870	88.6	.41	447.	446.	11.	32.2
50	.976	.863	89.3	.42	465.	465.	6.	27.0
70	.975	.871	89.3	.40	444.	444.	6.	22.6
90	.960	.884	90.3	.34	380.	380.	-2.	17.0
MR	.971	.875	89.5	.39	429.	429.	4.	

102°

	P_6/P_o	p_6/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	.974	.886	89.6	.37	408.	408.	3.	37.1
30	.978	.868	90.2	.42	456.	456.	-1.	32.4
50	.975	.855	90.2	.44	481.	481.	-1.	27.7
70	.974	.862	90.2	.42	462.	462.	-1.	23.4
90	.965	.877	90.3	.37	409.	409.	-2.	18.2
MR	.973	.868	90.1	.41	446.	446.	-1.	

132°

	P_6/P_o	p_6/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	.973	.889	87.5	.36	399.	399.	17.	37.3
30	.975	.865	86.8	.41	452.	452.	25.	33.2
50	.977	.858	87.7	.43	477.	476.	19.	28.1
70	.976	.867	87.8	.42	456.	455.	18.	23.5
90	.964	.881	87.8	.36	399.	398.	8.	17.9
MR	.973	.871	87.8	.40	440.	439.	17.	

162°

	P_6/P_o	p_6/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	.974	.877	87.3	.39	429.	429.	20.	39.4
30	.967	.854	87.4	.43	467.	466.	21.	33.8
50	.973	.846	88.9	.45	495.	495.	10.	28.6
70	.973	.853	88.4	.44	478.	478.	13.	24.4
90	.967	.871	88.8	.39	427.	427.	9.	19.1
MR	.970	.859	88.3	.42	461.	461.	14.	

192°

	P_6/P_o	p_6/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	.975	.878	84.7	.39	429.	428.	40.	40.3
30	.976	.859	84.9	.43	472.	470.	42.	34.8
50	.973	.849	87.2	.44	486.	486.	24.	28.5
70	.977	.855	87.4	.44	483.	482.	22.	24.7
90	.964	.872	88.0	.38	421.	421.	15.	18.9
MR	.972	.862	86.7	.42	460.	460.	26.	

222°

	P_6/P_o	p_6/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	.973	.872	81.4	.40	439.	434.	65.	42.3
30	.972	.850	81.8	.44	484.	479.	69.	36.5
50	.979	.843	85.4	.47	511.	509.	41.	30.2
70	.978	.851	87.0	.45	493.	493.	26.	25.4
90	.971	.870	87.8	.40	439.	438.	17.	19.7
MR	.975	.856	85.3	.43	476.	474.	39.	

252°

	P_6/P_o	p_6/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	.954	.854	80.0	.40	441.	434.	77.	43.0
30	.928	.835	81.7	.39	430.	426.	62.	33.0
50	.929	.823	83.4	.42	460.	457.	53.	27.9
70	.943	.827	83.4	.44	479.	476.	55.	25.2
90	.959	.846	83.4	.43	469.	466.	54.	21.4
MR	.944	.836	82.7	.42	460.	457.	58.	

282°

	P_6/P_o	p_6/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	.905	.845	86.0	.32	349.	348.	25.	33.8
30	.893	.827	88.5	.33	370.	369.	9.	27.5
50	.892	.813	88.0	.37	403.	403.	14.	24.1
70	.891	.818	88.2	.35	387.	387.	12.	20.1
90	.882	.835	88.7	.28	313.	313.	7.	14.2
MR	.891	.826	88.1	.33	366.	366.	12.	

312°

	P_6/P_o	p_6/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	.933	.845	102.7	.38	417.	407.	-89.	32.9
30	.911	.830	101.8	.37	405.	397.	-83.	26.4
50	.895	.818	99.2	.36	396.	391.	-63.	21.8
70	.893	.823	98.9	.34	377.	373.	-58.	18.4
90	.897	.833	102.0	.33	363.	355.	-76.	15.1
MR	.903	.829	100.8	.35	388.	381.	-73.	

342°

	P_6/P_o	p_6/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	.964	.865	103.7	.40	435.	423.	-103.	33.1
30	.965	.847	100.6	.44	477.	469.	-88.	30.2
50	.974	.844	98.7	.46	499.	493.	-76.	26.4
70	.971	.853	98.7	.43	475.	470.	-72.	22.4
90	.965	.869	98.1	.39	429.	425.	-60.	18.0
MR	.968	.856	99.4	.42	465.	458.	-76.	

PT. 7-90-03 $W\sqrt{\theta}/\delta$ = 145.8 lbm/sec (66.1 kg/sec)
P_{16}/P_6 = 2.338
P_o = 1669 lbf/ft^2 (79,750 N/m^2)
T_o = 508.8°R (282°K)

TABLE XXVII (Cont'd) - VELOCITY VECTOR PARAMETERS AT ROTOR 1 INLET
(Circumferentially Distorted Inlet Flow)

FIRST ROTOR INLET CIRCUMFERENTIAL DISTRIBUTIONS - WEDGE PROBE STATION 6

12°

	P_6/P_o	p_6/P_o	$90-\beta^\circ$	M	V	V_m	V_θ	$90-\beta'$
10	.944	.771	95.2	.55	597.	588.	-63.	41.4
30	.961	.736	95.2	.63	676.	673.	-61.	38.1
50	.956	.725	94.3	.64	687.	686.	-52.	32.6
70	.954	.729	93.3	.63	679.	678.	-39.	28.9
90	.955	.766	93.3	.57	616.	615.	-35.	23.5
MR	.955	.744	94.1	.61	655.	653.	-47.	

42°

	P_6/P_o	p_6/P_o	$90-\beta^\circ$	M	V	V_m	V_θ	$90-\beta'$
	.961	.783	92.5	.55	594.	593.	-26.	43.4
	.961	.750	92.5	.61	654.	653.	-28.	38.4
	.957	.734	92.1	.63	674.	674.	-25.	33.0
	.958	.741	92.1	.62	664.	664.	-24.	28.8
	.956	.775	92.5	.56	602.	601.	-26.	23.2
	.958	.755	92.3	.59	640.	640.	-26.	

72°

	P_6/P_o	p_6/P_o	$90-\beta^\circ$	M	V	V_m	V_θ	$90-\beta'$
	.954	.795	93.1	.52	563.	562.	-30.	41.4
	.960	.761	91.1	.59	633.	633.	-12.	37.9
	.962	.748	91.2	.61	657.	657.	-14.	32.4
	.957	.752	91.0	.60	644.	644.	-11.	28.1
	.952	.786	92.0	.53	577.	577.	-20.	22.3
	.957	.767	91.5	.57	618.	618.	-17.	

102°

	P_6/P_o	p_6/P_o	$90-\beta^\circ$	M	V	V_m	V_θ	$90-\beta'$
10	.950	.790	90.2	.54	581.	581.	-2.	43.8
30	.961	.756	90.1	.59	642.	642.	-1.	38.8
50	.957	.741	90.4	.62	663.	663.	-5.	33.0
70	.958	.749	90.5	.60	651.	651.	-5.	28.6
90	.954	.780	91.5	.55	591.	591.	-16.	22.9
MR	.958	.762	90.6	.58	628.	628.	-7.	

132°

	P_6/P_o	p_6/P_o	$90-\beta^\circ$	M	V	V_m	V_θ	$90-\beta'$
	.954	.802	90.7	.51	550.	550.	-7.	41.8
	.957	.767	89.3	.57	617.	617.	8.	37.8
	.960	.751	89.9	.60	649.	649.	1.	32.3
	.958	.755	89.9	.59	638.	638.	1.	28.1
	.953	.788	90.9	.53	574.	574.	-9.	22.2
	.955	.771	90.1	.56	610.	610.	-1.	

162°

	P_6/P_o	p_6/P_o	$90-\beta^\circ$	M	V	V_m	V_θ	$90-\beta'$
	.947	.791	88.8	.53	574.	574.	12.	44.1
	.951	.762	89.0	.57	619.	619.	11.	38.1
	.960	.742	89.4	.62	665.	665.	7.	33.3
	.958	.749	89.4	.60	650.	650.	7.	28.8
	.955	.782	90.5	.54	589.	589.	-5.	23.0
	.956	.763	89.6	.58	623.	623.	5.	

192°

	P_6/P_o	p_6/P_o	$90-\beta^\circ$	M	V	V_m	V_θ	$90-\beta'$
10	.959	.799	86.9	.52	565.	564.	31.	44.5
30	.952	.767	87.0	.56	611.	610.	32.	38.4
50	.952	.748	87.8	.60	644.	643.	25.	32.9
70	.958	.758	88.7	.59	635.	635.	14.	28.4
90	.944	.786	90.3	.52	563.	563.	-3.	22.1
MR	.952	.770	88.4	.56	606.	606.	17.	

222°

	P_6/P_o	p_6/P_o	$90-\beta^\circ$	M	V	V_m	V_θ	$90-\beta'$
	.953	.758	82.6	.53	573.	568.	74.	47.0
	.947	.757	82.8	.58	622.	617.	78.	40.6
	.960	.740	85.9	.62	669.	667.	48.	34.6
	.962	.750	87.3	.61	653.	653.	31.	29.6
	.955	.780	88.5	.55	592.	592.	15.	23.5
	.956	.762	86.0	.58	626.	625.	43.	

252°

	P_6/P_o	p_6/P_o	$90-\beta^\circ$	M	V	V_m	V_θ	$90-\beta'$
	.923	.759	78.5	.54	583.	571.	116.	49.4
	.894	.735	80.2	.54	582.	574.	99.	39.3
	.895	.721	82.3	.56	611.	606.	82.	32.8
	.906	.724	82.7	.57	622.	617.	79.	29.0
	.939	.753	82.7	.57	617.	612.	78.	25.1
	.914	.738	81.7	.56	607.	601.	87.	

282°

	P_6/P_o	p_6/P_o	$90-\beta^\circ$	M	V	V_m	V_θ	$90-\beta'$
10	.847	.749	83.1	.43	466.	463.	56.	40.2
30	.824	.726	87.0	.43	471.	470.	24.	31.2
50	.826	.707	86.6	.48	520.	519.	31.	27.7
70	.820	.712	87.1	.46	508.	507.	25.	23.6
90	.825	.729	87.8	.42	464.	464.	17.	18.8
MR	.828	.722	86.7	.44	487.	487.	28.	

312°

	P_6/P_o	p_6/P_o	$90-\beta^\circ$	M	V	V_m	V_θ	$90-\beta'$
	.845	.731	96.7	.49	540.	536.	-63.	38.8
	.829	.705	93.8	.49	531.	530.	-35.	32.3
	.821	.692	93.0	.50	545.	544.	-28.	27.3
	.819	.694	93.0	.49	536.	535.	-28.	23.6
	.821	.714	94.2	.45	493.	492.	-37.	19.0
	.827	.706	93.9	.48	526.	525.	-36.	

342°

	P_6/P_o	p_6/P_o	$90-\beta^\circ$	M	V	V_m	V_θ	$90-\beta'$
	.935	.752	97.6	.57	613.	607.	-83.	41.4
	.946	.733	98.3	.62	666.	659.	-96.	36.3
	.957	.688	91.2	.70	749.	748.	-15.	35.8
	.955	.700	90.4	.68	728.	728.	-5.	31.3
	.952	.767	97.9	.56	611.	605.	-84.	22.4
	.951	.727	94.7	.63	679.	677.	-56.	

PT. 7-10-02 $W\sqrt{\theta}/\delta$ = 184.6 lbm/sec (83.7 kg/sec)
P_{16}/P_6 = 2.494
P_o = 1488 lbf/ft^2 (71,000 N/m^2)
T_o = 500.4°R (278°K)

TABLE XXVII (Cont'd) - VELOCITY VECTOR PARAMETERS AT ROTOR 1 INLET
(Circumferentially Distorted Inlet Flow)

FIRST ROTOR INLET CIRCUMFERENTIAL DISTRIBUTIONS - WEDGE PROBE STATION 6

12°

	P_6/P_o	p_6/P_o	$90-\beta°$	M	V	V_m	V_θ	$90-\beta'$
10	.954	.818	98.9	.47	516.	510.	-80.	36.7
30	.963	.792	97.1	.54	582.	577.	-72.	33.6
50	.962	.788	96.4	.54	589.	585.	-65.	28.4
70	.959	.786	95.3	.54	586.	583.	-55.	25.2
90	.960	.810	95.3	.50	544.	542.	-51.	20.7
MR	.964	.798	96.2	.52	567.	564.	-62.	

42°

P_6/P_o	p_6/P_o	$90-\beta°$	M	V	V_m	V_θ	$90-\beta'$
.961	.824	91.7	.47	517.	517.	-15.	40.0
.962	.796	91.8	.53	571.	571.	-18.	35.1
.960	.791	91.9	.53	579.	579.	-19.	29.3
.963	.803	91.3	.51	560.	560.	-12.	25.1
.957	.822	91.3	.47	516.	516.	-11.	20.4
.960	.807	91.6	.50	550.	550.	-15.	

72°

P_6/P_o	p_6/P_o	$90-\beta°$	M	V	V_m	V_θ	$90-\beta'$
.963	.836	91.7	.45	496.	496.	-15.	38.8
.962	.798	89.1	.52	570.	570.	9.	35.9
.965	.787	90.2	.55	594.	594.	-2.	30.3
.964	.800	90.2	.52	569.	569.	-2.	25.6
.957	.822	90.4	.47	515.	515.	-3.	20.5
.962	.807	90.2	.51	553.	553.	-2.	

102°

	P_6/P_o	p_6/P_o	$90-\beta°$	M	V	V_m	V_θ	$90-\beta'$
10	.962	.819	88.7	.48	529.	529.	12.	41.9
30	.967	.792	89.0	.54	584.	584.	11.	36.7
50	.963	.777	90.3	.56	608.	608.	-4.	30.9
70	.964	.781	90.2	.56	602.	602.	-2.	26.9
90	.958	.807	90.9	.50	548.	547.	-8.	21.6
MR	.962	.794	90.0	.53	578.	578.	-0.	

132°

P_6/P_o	p_6/P_o	$90-\beta°$	M	V	V_m	V_θ	$90-\beta'$
.957	.828	89.2	.46	503.	503.	7.	40.2
.959	.795	88.2	.52	570.	570.	17.	36.2
.965	.780	88.5	.56	608.	608.	16.	31.3
.962	.783	88.5	.55	596.	596.	16.	27.1
.958	.811	89.2	.49	538.	538.	8.	21.6
.961	.797	88.7	.52	569.	569.	13.	

162°

P_6/P_o	p_6/P_o	$90-\beta°$	M	V	V_m	V_θ	$90-\beta'$
.966	.812	87.7	.50	550.	549.	22.	43.3
.957	.784	87.3	.54	587.	586.	28.	37.2
.965	.769	88.0	.58	625.	625.	22.	32.0
.963	.772	88.9	.57	617.	617.	12.	27.7
.963	.800	88.9	.52	566.	566.	10.	22.4
.962	.786	88.3	.55	592.	592.	17.	

192°

	P_6/P_o	p_6/P_o	$90-\beta°$	M	V	V_m	V_θ	$90-\beta'$
10	.963	.813	85.2	.50	542.	540.	45.	44.0
30	.957	.778	85.6	.55	598.	596.	46.	38.3
50	.957	.765	86.6	.57	622.	620.	37.	32.3
70	.960	.770	87.9	.57	617.	616.	23.	27.8
90	.948	.798	88.6	.50	547.	547.	12.	21.7
MR	.956	.783	87.1	.54	588.	587.	29.	

222°

P_6/P_o	p_6/P_o	$90-\beta°$	M	V	V_m	V_θ	$90-\beta'$
.954	.799	81.8	.51	555.	550.	79.	46.4
.946	.766	82.0	.56	606.	600.	84.	40.1
.964	.764	86.0	.60	650.	648.	45.	33.7
.965	.759	86.3	.60	643.	641.	41.	29.3
.959	.790	87.8	.53	580.	580.	22.	23.1
.959	.772	85.4	.56	612.	610.	49.	

252°

P_6/P_o	p_6/P_o	$90-\beta°$	M	V	V_m	V_θ	$90-\beta'$
.934	.774	78.4	.52	571.	559.	115.	49.0
.899	.750	81.8	.51	558.	552.	79.	37.7
.899	.734	83.0	.55	591.	587.	73.	31.9
.916	.741	83.1	.56	604.	600.	72.	28.4
.947	.770	82.4	.55	598.	593.	80.	24.6
.921	.754	82.1	.54	589.	583.	81.	

282°

	P_6/P_o	p_6/P_o	$90-\beta°$	M	V	V_m	V_θ	$90-\beta'$
10	.862	.766	85.2	.41	453.	452.	38.	38.7
30	.839	.739	86.0	.43	470.	470.	16.	31.0
50	.843	.723	87.0	.47	516.	516.	27.	27.6
70	.841	.726	87.2	.46	506.	506.	25.	23.5
90	.841	.745	87.7	.42	459.	459.	18.	18.6
MR	.843	.738	87.2	.44	483.	483.	23.	

312°

P_6/P_o	p_6/P_o	$90-\beta°$	M	V	V_m	V_θ	$90-\beta'$
.895	.759	101.4	.49	535.	525.	-106.	36.6
.857	.728	98.0	.49	532.	527.	-74.	31.2
.843	.717	96.1	.49	532.	529.	-56.	26.3
.836	.721	96.1	.46	508.	505.	-54.	22.2
.850	.741	98.6	.45	490.	485.	-74.	18.6
.852	.732	97.8	.47	516.	511.	-70.	

342°

P_6/P_o	p_6/P_o	$90-\beta°$	M	V	V_m	V_θ	$90-\beta'$
.946	.796	104.3	.50	547.	530.	-135.	35.6
.954	.763	99.3	.57	621.	613.	-101.	34.2
.966	.750	97.9	.61	659.	653.	-91.	30.4
.962	.751	96.9	.61	652.	648.	-78.	27.0
.961	.786	97.2	.54	589.	585.	-74.	21.8
.959	.767	98.4	.57	621.	614.	-90.	

PT. 7-10-03 $W\sqrt{\theta}/\delta$ = 176.0 lbm/sec (79.8 kg/sec)
P_{16}/P_6 = 2.701
P_o = 1530 lbf/ft^2 (73,050 N/m^2)
T_o = 509.6°R (283°K)

TABLE XXVIII - VELOCITY VECTOR PARAMETERS AT STATOR 1 EXIT

(Circumferentially Distorted Inlet Flow)

FIRST STATOR EXIT CIRCUMFERENTIAL DISTRIBUTIONS - COMBO PROBE STATION 11

	P_{11}/P_o	p_{11}/P_o	$90-\beta°$	M	V	V_m	V_θ	$90-\beta'$
86°								
10	1.344	1.094	91.6	.55	625.	625.	-18.	45.4
30	1.337	1.079	91.8	.56	637.	637.	-20.	42.6
50	1.296	1.081	94.6	.52	586.	584.	-47.	36.4
70	1.303	1.079	94.0	.53	597.	595.	-42.	34.7
90	1.319	1.113	91.5	.50	567.	567.	-15.	32.0
MR	1.320	1.092	92.6	.53	600.	599.	-27.	
176°								
10	1.315	1.102	91.3	.51	580.	580.	-13.	43.4
30	1.331	1.083	91.3	.54	611.	611.	-14.	41.7
50	1.290	1.084	91.1	.51	574.	573.	-11.	37.2
70	1.289	1.072	90.0	.52	589.	589.	0.	35.8
90	1.303	1.115	89.8	.48	544.	544.	2.	31.5
MR	1.309	1.095	90.6	.51	577.	577.	-6.	
266°								
10	1.223	1.038	90.0	.49	554.	554.	-9.	42.8
30	1.224	1.021	89.3	.52	580.	580.	7.	41.1
50	1.194	1.016	89.1	.49	547.	546.	9.	36.6
70	1.200	1.019	89.6	.50	558.	558.	4.	34.4
90	1.211	1.052	88.8	.45	512.	512.	11.	30.2
MR	1.210	1.030	89.3	.49	547.	547.	7.	
356°								
10	1.402	1.112	91.2	.59	667.	667.	-14.	47.4
30	1.377	1.095	91.6	.58	660.	659.	-18.	43.7
50	1.315	1.095	94.2	.52	590.	588.	-43.	36.7
70	1.313	1.092	94.2	.52	592.	590.	-44.	34.4
90	1.325	1.118	93.3	.50	568.	567.	-33.	31.8
MR	1.345	1.104	92.9	.54	613.	612.	-31.	

PT. 7-70-01 $W\sqrt{\theta}/\delta$ = 123.9 lbm/sec (56.2 kg/sec)
P_{16}/P_6 = 1.561
P_o = 1754 lbf/ft^2 (83,900 N/m^2)
T_o = 509.4°R (283°K)

P_{11}/P_o	p_{11}/P_o	$90-\beta°$	M	V	V_m	V_θ	$90-\beta'$
86°							
1.328	1.137	92.1	.48	547.	547.	-20.	41.5
1.351	1.122	91.1	.52	596.	596.	-11.	41.1
1.308	1.126	94.5	.47	535.	533.	-42.	34.2
1.327	1.124	92.2	.49	564.	564.	-21.	34.0
1.327	1.148	91.5	.46	527.	527.	-13.	30.3
1.329	1.133	92.2	.48	553.	552.	-21.	
176°							
1.297	1.142	91.7	.43	496.	496.	-15.	39.9
1.344	1.126	89.9	.50	576.	576.	1.	40.7
1.309	1.131	91.5	.48	529.	529.	-14.	34.9
1.322	1.124	90.3	.48	550.	550.	3.	33.9
1.322	1.155	89.3	.44	508.	508.	6.	29.9
1.320	1.139	90.4	.46	533.	533.	-4.	
266°							
1.188	1.097	88.1	.34	388.	388.	13.	33.5
1.257	1.089	90.0	.46	520.	520.	-0.	37.8
1.247	1.094	91.2	.44	497.	497.	-10.	33.4
1.263	1.093	89.2	.46	523.	523.	7.	32.9
1.269	1.119	89.9	.43	487.	487.	0.	28.8
1.251	1.101	89.8	.43	493.	493.	2.	
356°							
1.373	1.152	91.6	.51	584.	584.	-15.	43.6
1.370	1.132	90.8	.53	606.	606.	-8.	41.7
1.306	1.135	94.2	.45	520.	519.	-38.	33.5
1.330	1.128	91.5	.49	563.	563.	-14.	34.1
1.314	1.153	91.9	.44	503.	503.	-16.	29.0
1.337	1.141	91.9	.46	554.	554.	-18.	

PT. 7-70-02 $W\sqrt{\theta}/\delta$ = 113.8 lbm/sec (51.6 kg/sec)
P_{16}/P_6 = 1.670
P_o = 1802 lbf/ft^2 (86,100 N/m^2)
T_o = 496.0°R (275°K)

TABLE XXVIII (Cont'd) - VELOCITY VECTOR PARAMETERS AT STATOR 1 EXIT
(Circumferentially Distorted Inlet Flow)

FIRST STATOR EXIT CIRCUMFERENTIAL DISTRIBUTIONS - COMBO PROBE STATION 11

26°

	P_{11}/P_o	ρ_{11}/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	1.330	1.167	91.2	.44	504.	503.	-11.	39.6
30	1.343	1.151	91.7	.47	545.	544.	-16.	38.4
50	1.310	1.149	92.1	.44	503.	503.	-18.	33.8
70	1.327	1.162	92.0	.44	506.	506.	-18.	31.3
90	1.265	1.170	97.8	.37	425.	421.	-57.	24.0
HR	1.317	1.160	93.2	.43	495.	494.	-28.	

56°

	P_{11}/P_o	ρ_{11}/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	1.325	1.162	94.6	.44	503.	502.	-40.	38.2
30	1.353	1.134	90.9	.51	581.	581.	-9.	40.5
50	1.312	1.142	93.8	.45	517.	516.	-35.	33.5
70	1.327	1.139	90.9	.47	543.	543.	-9.	33.3
90	1.286	1.159	99.9	.39	448.	441.	-77.	24.6
HR	1.319	1.147	94.2	.45	519.	517.	-38.	

86°

	P_{11}/P_o	ρ_{11}/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	1.297	1.162	91.5	.40	462.	462.	-12.	37.1
30	1.352	1.149	91.0	.49	559.	559.	-10.	39.4
50	1.322	1.154	92.2	.45	512.	512.	-20.	33.9
70	1.341	1.147	89.0	.48	546.	546.	9.	34.1
90	1.316	1.175	93.1	.40	467.	466.	-26.	27.0
HR	1.327	1.158	91.4	.44	511.	511.	-13.	

116°

	P_{11}/P_o	ρ_{11}/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	1.323	1.152	92.5	.45	516.	516.	-23.	39.6
30	1.350	1.136	91.2	.50	573.	573.	-12.	39.9
50	1.315	1.143	93.6	.45	519.	518.	-33.	33.6
70	1.336	1.140	91.1	.48	550.	550.	-11.	33.5
90	1.318	1.154	95.5	.43	490.	487.	-47.	27.4
HR	1.328	1.148	92.9	.46	528.	528.	-27.	

146°

	P_{11}/P_o	ρ_{11}/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	1.319	1.153	92.4	.44	509.	508.	-21.	39.4
30	1.345	1.137	91.2	.50	566.	566.	-11.	39.7
50	1.318	1.146	93.5	.45	517.	516.	-32.	33.7
70	1.334	1.139	90.9	.48	549.	549.	-9.	33.7
90	1.319	1.165	94.5	.42	488.	486.	-38.	27.7
HR	1.327	1.149	92.6	.46	525.	524.	-24.	

176°

	P_{11}/P_o	ρ_{11}/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	1.284	1.160	92.0	.38	442.	441.	-16.	36.7
30	1.345	1.151	90.9	.48	546.	546.	-9.	38.8
50	1.321	1.151	92.0	.45	513.	513.	-18.	33.9
70	1.337	1.149	89.3	.47	538.	538.	7.	33.6
90	1.325	1.174	91.3	.42	481.	481.	-11.	28.1
HR	1.325	1.158	91.0	.44	507.	507.	-9.	

206°

	P_{11}/P_o	ρ_{11}/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	1.304	1.149	92.1	.43	493.	492.	-18.	38.6
30	1.337	1.133	91.0	.49	561.	561.	-10.	39.5
50	1.318	1.143	93.5	.45	512.	511.	-32.	33.4
70	1.32[illegible]	1.138	91.1	.48	544.	544.	-11.	33.4
90	1.318	1.161	94.4	.43	493.	491.	-37.	28.0
HR	1.320	1.145	92.6	.45	521.	520.	-23.	

236°

	P_{11}/P_o	ρ_{11}/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	1.254	1.148	90.7	.36	412.	412.	-5.	34.4
30	1.322	1.140	91.4	.46	531.	531.	-13.	37.8
50	1.305	1.143	90.9	.44	505.	505.	-8.	33.9
70	1.324	1.139	89.1	.47	536.	536.	9.	33.6
90	1.313	1.166	90.9	.42	477.	477.	-7.	28.1
HR	1.306	1.149	90.5	.43	499.	498.	-5.	

266°

	P_{11}/P_o	ρ_{11}/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	1.186	1.126	95.8	.27	315.	313.	-32.	26.5
30	1.247	1.103	93.0	.42	481.	480.	-25.	34.6
50	1.254	1.114	94.8	.41	474.	473.	-40.	31.1
70	1.249	1.108	93.4	.42	477.	476.	-29.	29.5
90	1.239	1.126	101.1	.37	426.	418.	-82.	23.3
HR	1.240	1.115	96.0	.39	449.	446.	-47.	

296°

	P_{11}/P_o	ρ_{11}/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	1.173	1.146	92.3	.18	212.	212.	-8.	19.2
30	1.262	1.140	95.9	.38	443.	441.	-46.	31.5
50	1.291	1.146	95.8	.42	484.	481.	-49.	31.2
70	1.301	1.155	95.8	.41	479.	477.	-48.	28.8
90	1.259	1.162	97.1	.39	449.	445.	-56.	25.2
HR	1.279	1.140	96.0	.41	473.	471.	-49.	

326°

	P_{11}/P_o	ρ_{11}/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	1.310	1.152	93.2	.39	448.	447.	-25.	35.7
30	1.362	1.171	91.1	.47	543.	543.	-10.	38.6
50	1.337	1.170	91.0	.44	510.	510.	-9.	34.2
70	1.349	1.165	89.1	.46	536.	536.	9.	33.6
90	1.288	1.186	100.5	.34	402.	396.	-73.	22.4
HR	1.330	1.174	93.0	.43	493.	493.	-26.	

356°

	P_{11}/P_o	ρ_{11}/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	1.357	1.189	97.0	.44	506.	502.	-62.	37.2
30	1.355	1.155	92.9	.48	555.	554.	-28.	38.4
50	1.298	1.150	94.1	.42	485.	483.	-35.	31.8
70	1.308	1.143	91.3	.44	510.	510.	-12.	31.6
90	1.257	1.157	101.8	.34	400.	392.	-82.	22.0
HR	1.313	1.159	95.5	.43	493.	491.	-47.	

PT. 7-70-13 $W\sqrt{\theta}/\delta$ = 106.6 lbm/sec (48.3 kg/sec)
P_{16}/P_6 = 1.692
P_o = 1868 lbf/ft^2 (89,200 N/m^2)
T_o = 512.5°R (284°K)

TABLE XXVIII (Cont'd) - VELOCITY VECTOR PARAMETERS AT STATOR 1 EXIT (Circumferentially Distorted Inlet Flow)

FIRST STATOR EXIT CIRCUMFERENTIAL DISTRIBUTIONS - COMBO PROBE STATION 11

	P_{11}/P_o	p_{11}/P_o	90-β°	M	V	V_m	V_θ	90-β'
86°								
10	1.605	1.209	92.1	.65	753.	752.	-27.	43.3
30	1.579	1.178	91.9	.66	761.	760.	-25.	40.5
50	1.539	1.168	92.5	.64	738.	737.	-32.	36.6
70	1.550	1.155	92.5	.66	762.	762.	-34.	35.0
90	1.583	1.204	91.2	.64	737.	736.	-16.	32.4
MR	1.572	1.184	91.9	.65	749.	748.	-25.	
176°								
10	1.505	1.188	94.3	.59	689.	687.	-51.	40.2
30	1.544	1.162	92.8	.65	747.	746.	-36.	39.9
50	1.493	1.134	92.1	.64	734.	733.	-27.	37.0
70	1.501	1.080	90.4	.70	802.	802.	-6.	37.8
90	1.540	1.161	90.6	.65	746.	746.	-8.	33.2
MR	1.520	1.144	91.8	.65	747.	747.	-23.	
266°								
10	1.224	1.060	89.9	.67	658.	658.	1.	40.5
30	1.350	1.031	89.6	.64	726.	726.	5.	40.2
50	1.306	1.000	89.3	.63	712.	712.	9.	36.8
70	1.317	.990	88.5	.65	736.	736.	19.	35.5
90	1.359	1.012	86.2	.66	747.	745.	50.	34.2
MR	1.337	1.016	88.4	.64	723.	722.	21.	
356°								
10	1.683	1.242	92.8	.67	785.	784.	-38.	44.4
30	1.520	1.190	92.9	.68	786.	785.	-40.	41.3
50	1.557	1.168	92.7	.66	756.	755.	-36.	37.5
70	1.538	1.140	93.1	.67	767.	766.	-42.	35.3
90	1.562	1.153	92.2	.64	740.	739.	-28.	32.5
MR	1.589	1.183	92.7	.66	764.	764.	-36.	

PT. 7-90-01 $W\sqrt{\theta}/\delta$ = 167.4 lbm/sec (75.9 kg/sec)
P_{16}/P_6 = 1.994
P_o = 1575 lbf/ft^2 (75,300 N/m^2)
T_o = 509.2^{o}R (283^{o}K)

	P_{11}/P_o	p_{11}/P_o	90-β°	M	V	V_m	V_θ	90-β'
86°								
10	1.463	1.270	92.7	.45	534.	534.	-25.	33.8
30	1.564	1.228	93.5	.60	695.	693.	-42.	37.4
50	1.548	1.240	94.0	.57	666.	665.	-47.	33.4
70	1.584	1.229	90.9	.61	715.	715.	-12.	33.9
90	1.617	1.282	90.9	.59	685.	685.	-10.	30.6
MR	1.555	1.252	92.1	.58	673.	673.	-25.	.0
176°								
10	1.484	1.244	94.8	.51	596.	594.	-50.	36.1
30	1.590	1.240	92.7	.61	702.	701.	-33.	38.3
50	1.554	1.223	92.5	.60	689.	689.	-30.	35.1
70	1.560	1.208	91.4	.62	715.	714.	-18.	34.0
90	1.506	1.256	89.7	.60	701.	701.	4.	31.8
MR	1.568	1.236	91.8	.59	689.	688.	-21.	
266°								
10	1.243	1.154	88.9	.24	285.	285.	5.	20.4
30	1.449	1.174	93.2	.56	643.	642.	-36.	35.5
50	1.447	1.185	93.9	.54	627.	626.	-42.	32.0
70	1.474	1.162	90.7	.59	685.	685.	-8.	32.9
90	1.517	1.227	90.4	.56	648.	647.	-5.	29.3
MR	1.462	1.149	91.6	.60	688.	687.	-19.	
356°								
10	1.610	1.315	93.9	.55	646.	645.	-45.	38.6
30	1.446	1.289	90.8	.60	706.	706.	-10.	39.2
50	1.420	1.292	91.5	.58	680.	680.	-18.	35.1
70	1.557	1.278	89.9	.62	729.	729.	1.	35.0
90	1.681	1.328	90.0	.59	695.	695.	0.	31.5
MR	1.649	1.303	91.0	.59	694.	694.	-12.	

PT. 7-90-02 $W\sqrt{\theta}/\delta$ = 148.8 lbm/sec (67.4 kg/sec)
P_{16}/P_6 = 2.324
P_o = 1643 lbf/ft^2 (78,600 N/m^2)
T_o = 509.8^{o}R (283^{o}K)

	P_{11}/P_o	p_{11}/P_o	90-β°	M	V	V_m	V_θ	90-β
86°								
10	1.769	1.275	93.8	.70	820.	818.	-51.	42.0
30	1.723	1.223	92.3	.72	834.	834.	-34.	40.0
50	1.554	1.157	95.4	.66	774.	770.	-73.	34.1
70	1.622	1.132	92.5	.74	847.	846.	-37.	35.1
90	1.679	1.191	91.4	.73	837.	837.	-21.	32.9
MR	1.672	1.192	92.8	.71	826.	825.	-40.	
176°								
10	1.543	1.225	96.7	.58	686.	682.	-80.	36.0
30	1.673	1.237	94.2	.67	781.	779.	-57.	37.4
50	1.581	1.122	90.6	.72	828.	828.	-9.	37.7
70	1.589	1.126	94.1	.72	828.	826.	-59.	33.9
90	1.645	1.078	89.0	.80	912.	912.	16.	36.0
MR	1.615	1.144	92.3	.72	830.	830.	-33.	
266°								
10	1.369	1.089	92.0	.58	675.	675.	-24.	37.5
30	1.458	1.074	90.3	.68	772.	772.	-4.	38.7
50	1.384	1.021	90.1	.67	768.	768.	-2.	35.8
70	1.375	.953	89.9	.74	839.	839.	1.	35.7
90	1.426	1.018	88.8	.71	808.	808.	17.	32.8
MR	1.407	1.025	90.0	.69	783.	783.	0.	
356°								
10	1.793	1.292	94.7	.70	826.	824.	-67.	41.7
30	1.773	1.250	92.2	.72	844.	843.	-32.	40.3
50	1.620	1.174	92.9	.69	808.	807.	-41.	36.1
70	1.609	1.130	93.6	.73	838.	837.	-53.	34.4
90	1.651	1.178	92.1	.71	821.	820.	-30.	32.2
MR	1.685	1.201	93.0	.71	827.	826.	-43.	

PT. 7-10-31 $W\sqrt{\theta}/\delta$ = 185.0 lbm/sec (83.8 kg/sec)
P_{16}/P_6 = 2.180
P_o = 1481 lbf/ft^2 (70,800 N/m^2)
T_o = 503.2^{o}R (279^{o}K)

TABLE XXVIII (Cont'd) - VELOCITY VECTOR PARAMETERS AT STATOR 1 EXIT (Circumferentially Distorted Inlet Flow)

FIRST STATOR EXIT CIRCUMFERENTIAL DISTRIBUTIONS - COMBO PROBE STATION 11

26°

	P_{11}/P_0	p_{11}/P_0	90- β°	M	V	V_m	V_θ	90- β'
10	1.484	1.335	93.7	.39	467.	466.	-30.	30.4
30	1.539	1.315	97.2	.48	566.	561.	-71.	31.1
50	1.600	1.311	93.6	.54	641.	640.	-40.	32.8
70	1.543	1.306	92.3	.58	690.	689.	-27.	32.8
90	1.651	1.347	94.8	.56	660.	658.	-55.	28.9
MR	1.605	1.325	94.3	.53	630.	628.	-47.	

56°

	P_{11}/P_0	p_{11}/P_0	90- β°	M	V	V_m	V_θ	90- β'
10	1.434	1.291	90.5	.39	463.	463.	-4.	31.1
30	1.496	1.273	96.3	.48	573.	569.	-63.	31.8
50	1.511	1.269	97.5	.51	597.	592.	-78.	30.0
70	1.578	1.275	94.0	.56	662.	661.	-46.	31.3
90	1.576	1.291	98.5	.54	641.	634.	-95.	27.3
MR	1.534	1.280	96.0	.51	608.	605.	-64.	

86°

	P_{11}/P_0	p_{11}/P_0	90- β°	M	V	V_m	V_θ	90- β'
10	1.422	1.291	91.7	.37	445.	445.	-13.	29.7
30	1.549	1.270	95.0	.54	635.	632.	-55.	34.7
50	1.551	1.267	94.6	.54	638.	636.	-51.	32.4
70	1.609	1.256	90.9	.60	705.	704.	-12.	33.7
90	1.635	1.306	91.2	.58	676.	676.	-14.	30.4
MR	1.575	1.280	92.5	.55	649.	648.	-28.	.0

116°

	P_{11}/P_0	p_{11}/P_0	90- β°	M	V	V_m	V_θ	90- β'
10	1.444	1.281	92.6	.42	492.	492.	-22.	31.9
30	1.558	1.249	93.6	.57	666.	665.	-42.	36.4
50	1.554	1.257	94.6	.56	653.	651.	-52.	32.9
70	1.597	1.251	91.7	.60	703.	702.	-21.	33.3
90	1.630	1.295	90.9	.58	683.	683.	-11.	30.7
MR	1.575	1.269	92.4	.56	660.	659.	-28.	

146°

	P_{11}/P_0	p_{11}/P_0	90- β°	M	V	V_m	V_θ	90- β'
10	1.442	1.269	93.6	.43	508.	507.	-32.	32.5
30	1.584	1.235	92.3	.61	704.	703.	-28.	38.5
50	1.570	1.248	92.9	.58	677.	676.	-35.	34.5
70	1.590	1.235	91.0	.61	713.	713.	-13.	34.0
90	1.618	1.285	90.6	.58	682.	682.	-8.	30.8
MR	1.577	1.257	91.8	.58	675.	674.	-21.	

176°

	P_{11}/P_0	p_{11}/P_0	90- β°	M	V	V_m	V_θ	90- β'
10	1.436	1.253	94.5	.43	509.	507.	-40.	32.2
30	1.595	1.257	92.0	.60	691.	690.	-24.	38.0
50	1.570	1.248	92.1	.58	677.	677.	-25.	34.7
70	1.590	1.241	90.8	.61	705.	705.	-10.	33.7
90	1.624	1.291	89.4	.58	680.	680.	7.	31.0
MR	1.580	1.263	91.3	.57	670.	670.	-15.	

206°

	P_{11}/P_0	p_{11}/P_0	90- β°	M	V	V_m	V_θ	90- β'
10	1.444	1.259	94.5	.45	528.	524.	-41.	33.0
30	1.586	1.230	91.2	.61	710.	709.	-15.	39.1
50	1.570	1.241	92.4	.59	684.	684.	-29.	34.9
70	1.580	1.223	91.0	.62	716.	716.	-13.	34.1
90	1.416	1.276	90.3	.59	688.	688.	-3.	31.1
MR	1.575	1.249	91.5	.59	681.	681.	-18.	

236°

	P_{11}/P_0	p_{11}/P_0	90- β°	M	V	V_m	V_θ	90- β'
10	1.403	1.249	92.9	.41	482.	482.	-24.	31.5
30	1.574	1.240	92.0	.59	687.	687.	-24.	38.0
50	1.553	1.233	91.8	.58	677.	676.	-21.	34.9
70	1.566	1.225	90.9	.60	700.	700.	-12.	33.6
90	1.606	1.273	88.4	.59	682.	682.	19.	31.5
MR	1.560	1.247	90.7	.57	668.	668.	-8.	

266°

	P_{11}/P_0	p_{11}/P_0	90- β°	M	V	V_m	V_θ	90- β'
10	1.261	1.198	88.7	.27	321.	320.	7.	22.9
30	1.445	1.171	93.8	.56	642.	641.	-43.	35.4
50	1.455	1.182	94.2	.55	639.	637.	-46.	32.5
70	1.477	1.177	93.8	.58	670.	689.	-45.	31.5
90	1.521	1.216	91.7	.57	666.	666.	-20.	29.9
MR	1.467	1.167	92.8	.58	671.	670.	-33.	

296°

	P_{11}/P_0	p_{11}/P_0	90- β°	M	V	V_m	V_θ	90- β'
10	1.288	1.285	109.7	.06	71.	67.	-24.	4.8
30	1.429	1.273	98.8	.41	488.	482.	-75.	27.3
50	1.549	1.260	95.8	.55	649.	646.	-65.	32.4
70	1.574	1.254	94.2	.57	672.	670.	-49.	31.5
90	1.632	1.309	92.0	.57	674.	674.	-24.	30.1
MR	1.550	1.222	95.3	.59	697.	694.	-64.	

326°

	P_{11}/P_0	p_{11}/P_0	90- β°	M	V	V_m	V_θ	90- β'
10	1.477	1.403	100.2	.27	327.	321.	-58.	21.4
30	1.535	1.415	99.1	.34	414.	409.	-66.	23.9
50	1.633	1.411	97.0	.46	558.	554.	-68.	28.6
70	1.704	1.385	94.2	.55	666.	665.	-48.	31.4
90	1.791	1.433	92.0	.57	690.	689.	-24.	30.8
MR	1.682	1.413	95.0	.50	609.	606.	-53.	

356°

	P_{11}/P_0	p_{11}/P_0	90- β°	M	V	V_m	V_θ	90- β'
10	1.534	1.369	95.5	.41	487.	485.	-47.	30.8
30	1.546	1.376	95.4	.41	494.	492.	-46.	28.5
50	1.598	1.372	95.3	.47	566.	564.	-52.	29.3
70	1.613	1.356	95.2	.50	605.	602.	-55.	28.7
90	1.665	1.373	97.1	.53	638.	633.	-79.	27.5
MR	1.606	1.369	95.9	.48	579.	576.	-60.	

PT. 7-90-03 $W\sqrt{\theta}/\delta$ = 145.8 lbm/sec (66.1 kg/sec)
P_{16}/P_6 = 2.338
P_o = 1669 lbf/ft^2 (79,750 N/m^2)
T_o = 508.8°R (282°K)

TABLE XXVIII (Cont'd) - VELOCITY VECTOR PARAMETERS AT STATOR 1 EXIT
(Circumferentially Distorted Inlet Flow)

FIRST STATOR EXIT CIRCUMFERENTIAL DISTRIBUTIONS - COMBO PROBE STATION 11

26°

	P_{11}/P_o	p_{11}/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	1.775	1.254	94.4	.70	820.	817.	-63.	41.8
30	1.833	1.314	91.9	.71	832.	831.	-28.	40.2
50	1.526	1.172	96.5	.63	732.	728.	-83.	32.5
70	1.625	1.116	92.5	.75	865.	864.	-38.	35.8
90	1.644	1.159	92.1	.72	836.	835.	-30.	32.8
MR	1.680	1.213	93.2	.71	823.	822.	-46.	

56°

	P_{11}/P_o	p_{11}/P_o	90- β°	M	V	V_m	V_θ	90- β'
	1.763	1.285	93.4	.69	808.	806.	-48.	41.7
	1.757	1.243	91.0	.72	841.	841.	-14.	40.7
	1.567	1.174	95.7	.66	768.	764.	-77.	33.8
	1.622	1.144	92.9	.72	836.	835.	-43.	34.5
	1.466	1.194	92.0	.71	817.	817.	-28.	32.1
	1.675	1.206	92.8	.70	817.	816.	-40.	

86°

	P_{11}/P_o	p_{11}/P_o	90- β°	M	V	V_m	V_θ	90- β'
	1.702	1.257	95.5	.67	790.	786.	-78.	40.2
	1.730	1.258	92.9	.69	805.	804.	-41.	38.9
	1.553	1.144	94.3	.68	785.	783.	-59.	35.0
	1.621	1.149	94.1	.72	829.	827.	-59.	34.1
	1.672	1.083	89.0	.81	928.	928.	16.	36.6
	1.659	1.1[illegible]	92.5	.73	843.	842.	-37.	

116°

	P_{11}/P_o	p_{11}/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	1.495	1.249	94.8	.68	794.	791.	-64.	40.8
30	1.717	1.222	92.2	.71	831.	830.	-33.	40.0
50	1.600	1.169	93.6	.69	799.	797.	-60.	35.7
70	1.621	1.141	92.7	.73	838.	837.	-40.	34.8
90	1.672	1.192	91.2	.71	823.	823.	-17.	32.7
MR	1.662	1.193	92.6	.70	819.	818.	-38.	

146°

	P_{11}/P_o	p_{11}/P_o	90- β°	M	V	V_m	V_θ	90- β'
	1.619	1.222	95.1	.65	766.	763.	-68.	39.7
	1.696	1.212	92.5	.71	829.	828.	-37.	39.9
	1.610	1.168	92.3	.69	811.	811.	-32.	36.7
	1.613	1.137	92.7	.72	842.	841.	-40.	35.1
	1.655	1.186	91.5	.71	823.	822.	-21.	32.7
	1.641	1.184	92.6	.70	817.	817.	-37.	

176°

	P_{11}/P_o	p_{11}/P_o	90- β°	M	V	V_m	V_θ	90- β'
	1.556	1.220	95.0	.60	709.	707.	-61.	37.7
	1.674	1.237	94.4	.67	783.	781.	-60.	37.5
	1.589	1.179	93.1	.67	777.	776.	-42.	35.1
	1.592	1.027	90.1	.82	930.	930.	-2.	38.5
	1.649	1.193	92.1	.70	805.	804.	-29.	31.8
	1.618	1.168	92.7	.70	810.	809.	-38.	

206°

	P_{11}/P_o	p_{11}/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	1.574	1.194	94.6	.64	749.	747.	-60.	39.3
30	1.665	1.190	92.2	.71	821.	820.	-32.	39.7
50	1.596	1.156	91.7	.70	804.	803.	-24.	36.6
70	1.590	1.117	93.0	.73	836.	835.	-44.	34.7
90	1.543	1.163	91.1	.72	822.	822.	-16.	32.7
MR	1.618	1.164	92.3	.70	811.	811.	-33.	

236°

	P_{11}/P_o	p_{11}/P_o	90- β°	M	V	V_m	V_θ	90- β'
	1.507	1.185	94.0	.60	700.	698.	-49.	37.6
	1.628	1.143	90.6	.73	840.	840.	-9.	40.9
	1.533	1.082	90.2	.72	833.	833.	-4.	37.9
	1.542	1.080	93.2	.73	839.	838.	-47.	34.6
	1.604	1.047	88.9	.80	913.	913.	17.	36.0
	1.571	1.096	91.0	.74	845.	845.	-14.	

266°

	P_{11}/P_o	p_{11}/P_o	90- β°	M	V	V_m	V_θ	90- β'
	1.399	1.074	93.4	.63	723.	722.	-43.	38.8
	1.467	1.058	90.7	.70	795.	795.	-10.	39.4
	1.405	1.036	91.3	.67	768.	768.	-18.	35.5
	1.388	.999	91.6	.70	796.	796.	-23.	33.9
	1.44[illegible]	1.042	90.1	.70	790.	790.	-1.	31.9
	1.423	1.041	91.2	.68	779.	779.	-16.	

296°

	P_{11}/P_o	p_{11}/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	1.236	1.055	95.8	.48	565.	563.	-57.	31.7
30	1.438	1.064	93.3	.67	779.	778.	-45.	37.9
50	1.382	1.027	93.5	.67	773.	771.	-47.	34.9
70	1.397	.974	92.3	.74	850.	850.	-34.	35.4
90	1.465	.993	89.7	.77	881.	881.	5.	34.9
MR	1.407	1.015	92.2	.70	809.	808.	-31.	

326°

	P_{11}/P_o	p_{11}/P_o	90- β°	M	V	V_m	V_θ	90- β'
	1.631	1.231	98.1	.65	774.	767.	-103.	38.6
	1.660	1.178	93.5	.72	850.	849.	-52.	40.2
	1.580	1.126	92.6	.71	845.	844.	-37.	37.7
	1.615	1.148	94.4	.72	849.	846.	-65.	34.7
	1.711	1.017	91.1	.89	1035.	1034.	-20.	38.9
	1.661	1.119	93.4	.77	903.	901.	-54.	

356°

	P_{11}/P_o	p_{11}/P_o	90- β°	M	V	V_m	V_θ	90- β'
	1.796	1.299	94.2	.70	823.	821.	-60.	41.9
	1.778	1.251	92.0	.72	840.	839.	-30.	40.3
	1.661	1.202	92.0	.70	814.	813.	-28.	36.7
	1.636	1.160	92.9	.72	834.	833.	-43.	34.6
	1.680	1.207	91.5	.71	820.	820.	-21.	32.4
	1.706	1.221	92.4	.71	826.	825.	-34.	

PT. 7-10-02 $W\sqrt{\theta}/\delta$ = 184.6 lbm/sec (83.7 kg/sec)
P_{16}/P_6 = 2.494
P_o = 1488 lbf/ft^2 (71,000 N/m^2)
T_o = 500.4°R (278°K)

TABLE XXVIII (Cont'd) - VELOCITY VECTOR PARAMETERS AT STATOR 1 EXIT
(Circumferentially Distorted Inlet Flow)

FIRST STATOR EXIT CIRCUMFERENTIAL DISTRIBUTIONS - COMBO PROBE STATION 11

26°

	P_{11}/P_o	p_{11}/P_o	$90-\beta^*$	M	V	V_m	V_θ	$90-\beta'$
10	1.686	1.354	95.2	.53	635.	632.	-58.	34.9
30	1.786	1.403	93.1	.60	714.	713.	-38.	35.7
50	1.764	1.376	94.8	.61	727.	724.	-61.	33.0
70	1.827	1.277	86.7	.73	867.	865.	50.	38.0
90	1.870	1.326	85.6	.72	849.	847.	66.	35.3
MR	1.845	1.346	89.9	.66	786.	786.	1.	

56°

	P_{11}/P_o	p_{11}/P_o	$90-\beta^*$	M	V	V_m	V_θ	$90-\beta'$
10	1.603	1.392	102.6	.50	603.	589.	-131.	32.3
30	1.699	1.344	98.4	.59	695.	688.	-102.	34.4
50	1.706	1.307	93.8	.63	742.	740.	-49.	35.2
70	1.632	1.266	95.1	.61	727.	724.	-65.	32.0
90	1.645	1.261	94.0	.63	742.	740.	-52.	32.7
MR	1.791	1.262	88.5	.69	813.	812.	21.	

86°

	P_{11}/P_o	p_{11}/P_o	$90-\beta^*$	M	V	V_m	V_θ	$90-\beta'$
10	1.566	1.281	92.0	.54	644.	644.	-22.	36.3
30	1.733	1.292	92.8	.66	773.	772.	-38.	37.8
50	1.664	1.288	94.6	.62	726.	724.	-58.	32.9
70	1.584	1.174	87.8	.74	857.	857.	33.	37.1
90	1.734	1.265	87.6	.69	804.	803.	33.	33.1
MR	1.689	1.257	90.4	.66	778.	778.	-5.	

116°

	P_{11}/P_o	p_{11}/P_o	$90-\beta^*$	M	V	V_m	V_θ	$90-\beta'$
10	1.584	1.252	94.6	.59	694.	692.	-56.	37.3
30	1.731	1.257	91.1	.69	804.	804.	-16.	39.6
50	1.671	1.248	92.0	.66	771.	770.	-27.	35.3
70	1.671	1.211	91.3	.69	808.	808.	-19.	34.4
90	1.726	1.259	90.6	.68	791.	790.	-8.	31.8
MR	1.686	1.249	91.6	.67	781.	780.	-22.	

146°

	P_{11}/P_o	p_{11}/P_o	$90-\beta^*$	M	V	V_m	V_θ	$90-\beta'$
10	1.574	1.242	94.9	.59	696.	694.	-60.	37.3
30	1.732	1.245	91.6	.70	814.	814.	-23.	39.8
50	1.659	1.230	91.4	.67	779.	779.	-19.	35.9
70	1.654	1.196	92.0	.70	808.	808.	-29.	34.2
90	1.707	1.242	91.0	.69	799.	799.	-13.	32.1
MR	1.674	1.232	91.9	.68	788.	787.	-27.	

176°

	P_{11}/P_o	p_{11}/P_o	$90-\beta^*$	M	V	V_m	V_θ	$90-\beta'$
10	1.545	1.256	95.2	.55	654.	651.	-60.	36.6
30	1.708	1.292	94.5	.64	752.	750.	-59.	36.6
50	1.641	1.192	90.1	.69	803.	803.	-2.	37.3
70	1.644	1.175	92.7	.71	821.	820.	-39.	34.4
90	1.710	1.217	90.2	.71	826.	826.	-3.	33.2
MR	1.653	1.223	92.1	.68	787.	787.	-29.	

206°

	P_{11}/P_o	p_{11}/P_o	$90-\beta^*$	M	V	V_m	V_θ	$90-\beta'$
10	1.552	1.227	94.9	.59	693.	690.	-59.	37.8
30	1.714	1.235	91.4	.70	811.	811.	-20.	39.8
50	1.643	1.216	91.2	.67	779.	779.	-16.	36.0
70	1.651	1.182	92.2	.71	818.	818.	-32.	34.5
90	1.705	1.226	91.0	.70	813.	813.	-14.	32.5
MR	1.664	1.218	91.9	.68	793.	793.	-26.	

236°

	P_{11}/P_o	p_{11}/P_o	$90-\beta^*$	M	V	V_m	V_θ	$90-\beta'$
10	1.520	1.231	94.4	.56	656.	654.	-51.	36.1
30	1.663	1.227	91.1	.67	780.	780.	-15.	38.9
50	1.602	1.192	91.1	.66	771.	770.	-15.	35.8
70	1.608	1.113	90.1	.74	856.	856.	-2.	36.5
90	1.676	1.237	91.6	.67	781.	780.	-22.	31.4
MR	1.626	1.201	91.5	.67	780.	779.	-21.	

266°

	P_{11}/P_o	p_{11}/P_o	$90-\beta^*$	M	V	V_m	V_θ	$90-\beta'$
10	1.376	1.171	93.4	.49	570.	569.	-34.	32.7
30	1.541	1.149	90.9	.66	759.	759.	-12.	38.1
50	1.507	1.152	92.7	.63	729.	728.	-34.	33.6
70	1.500	1.134	93.5	.65	744.	743.	-46.	31.6
90	1.554	1.164	90.2	.66	756.	756.	-3.	30.7
MR	1.511	1.154	91.8	.63	730.	730.	-23.	

296°

	P_{11}/P_o	p_{11}/P_o	$90-\beta^*$	M	V	V_m	V_θ	$90-\beta'$
10	1.283	1.276	114.9	.09	104.	94.	-44.	6.0
30	1.533	1.248	98.6	.55	656.	648.	-98.	31.8
50	1.618	1.274	95.6	.59	707.	703.	-69.	31.9
70	1.506	1.244	94.2	.62	732.	730.	-54.	31.0
90	1.677	1.303	92.4	.61	728.	728.	-31.	29.3
MR	1.599	1.164	96.0	.69	810.	805.	-84.	

326°

	P_{11}/P_o	p_{11}/P_o	$90-\beta^*$	M	V	V_m	V_θ	$90-\beta'$
10	1.551	1.525	104.8	.16	192.	186.	-49.	11.7
30	1.696	1.542	100.5	.37	458.	450.	-84.	23.5
50	1.863	1.544	98.5	.53	644.	637.	-95.	29.0
70	1.949	1.499	93.1	.62	764.	763.	-42.	32.4
90	2.098	1.552	90.6	.67	816.	816.	-9.	32.7
MR	1.940	1.509	94.7	.61	744.	742.	-61.	

356°

	P_{11}/P_o	p_{11}/P_o	$90-\beta^*$	M	V	V_m	V_θ	$90-\beta'$
10	1.712	1.472	96.2	.47	573.	570.	-62.	32.0
30	1.728	1.480	96.4	.48	580.	577.	-65.	29.8
50	1.815	1.468	96.3	.56	681.	677.	-74.	30.9
70	1.929	1.430	92.5	.67	802.	802.	-36.	34.8
90	1.948	1.431	91.9	.68	814.	814.	-27.	34.9
MR	1.975	1.455	90.0	.68	809.	809.	-1.	

PT. 7-10-03 $W\sqrt{\theta}/\delta$ = 176.0 lbm/sec (79.8 kg/sec)
P_{16}/P_6 = 2.701
P_o = 1530 lbf/ft^2 (73,050 N/m^2)
T_o = 509.6°R (283°K)

TABLE XXIX - VELOCITY VECTOR PARAMETERS AT FAN EXIT

(Circumferentially Distorted Inlet Flow)

SECOND STATOR EXIT CIRCUMFERENTIAL DISTRIBUTIONS - WEDGE PROBE STATION 16

	P_{16}/P_o	p_{16}/P_o	$90-\beta°$	M	V	V_m	V_θ	$90-\beta°$
				43°				
10	1.589	1.180	90.0	.67	787.	787.	0.	50.7
30	1.679	1.155	91.1	.75	868.	868.	-17.	50.4
50	1.560	1.170	92.3	.66	761.	761.	-30.	44.0
70	1.525	1.173	93.5	.62	724.	723.	-44.	40.1
90	1.540	1.173	90.3	.64	742.	742.	-3.	40.3
MR	1.579	1.170	91.5	.67	779.	779.	-20.	
				133°				
10	1.622	1.180	89.5	.69	810.	810.	3.	51.8
30	1.662	1.159	90.9	.74	849.	849.	-13.	50.0
50	1.546	1.170	91.6	.64	744.	744.	-19.	43.8
70	1.510	1.171	93.0	.61	709.	708.	-37.	39.8
90	1.526	1.174	90.4	.62	721.	721.	-5.	39.5
MR	1.572	1.171	91.1	.66	769.	768.	-18.	
				226°				
10	1.465	1.250	96.5	.65	774.	769.	-87.	46.8
30	1.672	1.239	98.8	.67	783.	773.	-120.	43.6
50	1.534	1.225	99.6	.58	676.	666.	-113.	37.6
70	1.502	1.221	100.3	.55	646.	636.	-116.	34.5
90	1.511	1.222	96.3	.56	658.	654.	-73.	34.8
MR	1.573	1.230	98.3	.60	708.	701.	-103.	
				316°				
10	1.264	1.247	95.2	.66	776.	772.	-70.	47.7
30	1.658	1.232	97.7	.67	778.	768.	-104.	44.0
50	1.545	1.221	98.6	.59	687.	680.	-103.	38.8
70	1.517	1.217	99.8	.57	662.	653.	-112.	35.3
90	1.538	1.221	94.8	.58	680.	678.	-57.	36.3
MR	1.580	1.226	97.0	.61	715.	709.	-90.	

PT. 7-70-01 $W\sqrt{\theta}/\delta$ = 123.9 lbm/sec (56.2 kg/sec)
P_{16}/P_6 = 1.561
P_o = 1754 lbf/ft^2 (83,900 N/m^2)
T_o = 509.4°R (283°K)

P_{16}/P_o	p_{16}/P_o	$90-\beta°$	M	V	V_m	V_θ	$90-\beta°$
			43°				
1.839	1.406	87.6	.63	751.	751.	32.	50.8
1.725	1.404	90.5	.55	655.	655.	-6.	42.9
1.521	1.403	90.4	.46	551.	551.	-4.	35.9
1.620	1.401	90.9	.46	552.	552.	-9.	33.9
1.620	1.405	88.2	.46	549.	549.	17.	32.8
1.489	1.40[illegible]	89.5	.52	623.	623.	6.	
			133°				
1.831	1.409	87.8	.62	761.	761.	29.	50.4
1.724	1.405	90.4	.55	651.	651.	-5.	42.8
1.624	1.402	90.3	.46	551.	551.	-3.	36.0
1.623	1.401	91.1	.46	552.	552.	-11.	33.8
1.626	1.403	88.1	.46	557.	557.	18.	33.2
1.689	1.404	89.5	.52	620.	620.	5.	
			226°				
1.802	1.445	94.8	.57	684.	682.	-57.	46.6
1.715	1.428	97.4	.52	620.	615.	-80.	38.6
1.625	1.425	98.2	.44	525.	519.	-75.	32.2
1.511	1.423	98.4	.43	511.	506.	-75.	29.8
1.625	1.428	95.9	.43	528.	524.	-54.	29.6
1.671	1.429	97.0	.48	575.	571.	-70.	
			316°				
1.747	1.441	94.5	.53	640.	638.	-50.	43.1
1.684	1.432	97.3	.49	582.	578.	-74.	37.1
1.628	1.431	98.0	.43	518.	513.	-72.	32.0
1.629	1.429	98.0	.44	522.	516.	-73.	30.4
1.548	1.431	95.4	.45	540.	543.	-52.	30.7
1.663	1.432	96.7	.47	560.	556.	-65.	

PT. 7-70-02 $W\sqrt{\theta}/\delta$ = 113.8 lbm/sec (51.6 kg/sec)
P_{16}/P_6 = 1.670
P_o = 1802 lbf/ft^2 (86,100 N/m^2)
T_o = 496.0°R (275°K)

TABLE XXIX (Cont'd) - VELOCITY VECTOR PARAMETERS AT FAN EXIT (Circumferentially Distorted Inlet Flow)

SECOND STATOR EXIT CIRCUMFERENTIAL DISTRIBUTIONS - WEDGE PROBE STATION 16

16°

	P_{16}/P_o	p_{16}/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	1.578	1.494	93.5	.58	691.	690.	-42.	48.7
30	1.726	1.482	96.3	.47	565.	562.	-62.	36.8
50	1.541	1.463	99.1	.38	461.	460.	-73.	29.0
70	1.536	1.482	98.3	.38	457.	452.	-66.	27.8
90	1.539	1.481	95.9	.38	468.	465.	-48.	27.0
MR	1.702	1.484	96.5	.45	538.	534.	-61.	

43°

	P_{16}/P_o	p_{16}/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	1.840	1.482	85.0	.60	716.	713.	63.	50.5
30	1.744	1.464	91.2	.50	602.	602.	-13.	40.2
50	1.642	1.474	91.6	.40	477.	477.	-13.	31.8
70	1.626	1.469	91.0	.38	464.	463.	-8.	29.5
90	1.626	1.464	87.0	.39	474.	473.	25.	29.3
MR	1.704	1.462	89.0	.47	568.	568.	10.	

76°

	P_{16}/P_o	p_{16}/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	1.850	1.502	95.6	.55	664.	661.	-65.	43.5
30	1.728	1.477	95.6	.48	572.	569.	-56.	37.3
50	1.654	1.453	99.3	.40	479.	472.	-77.	29.8
70	1.652	1.480	98.2	.40	482.	477.	-68.	28.6
90	1.656	1.482	95.3	.40	491.	488.	-46.	28.2
MR	1.703	1.464	96.7	.45	541.	537.	-63.	

103°

	P_{16}/P_o	p_{16}/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	1.839	1.445	85.0	.60	712.	709.	61.	50.7
30	1.748	1.474	92.5	.50	596.	596.	-26.	39.4
50	1.647	1.471	90.8	.41	488.	488.	-7.	32.6
70	1.633	1.465	90.1	.40	479.	479.	-1.	30.5
90	1.633	1.464	87.2	.40	482.	482.	24.	29.7
MR	1.706	1.463	89.0	.47	569.	568.	10.	

136°

	P_{16}/P_o	p_{16}/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	1.838	1.494	94.3	.58	661.	659.	-50.	44.0
30	1.728	1.486	98.2	.47	562.	556.	-80.	35.8
50	1.656	1.483	98.7	.40	481.	475.	-79.	30.1
70	1.657	1.482	98.2	.40	488.	480.	-70.	28.7
90	1.563	1.480	95.2	.41	500.	498.	-48.	28.7
MR	1.704	1.485	97.0	.45	539.	535.	-66.	

163°

	P_{16}/P_o	p_{16}/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	1.833	1.465	87.6	.58	684.	683.	28.	47.9
30	1.743	1.462	89.8	.51	603.	603.	2.	40.8
50	1.644	1.467	90.4	.41	487.	487.	-4.	32.6
70	1.639	1.466	90.3	.40	484.	484.	-3.	30.6
90	1.640	1.465	86.7	.41	490.	489.	28.	30.1
MR	1.705	1.465	88.9	.47	563.	563.	11.	

193°

	P_{16}/P_o	p_{16}/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	1.822	1.463	87.0	.57	677.	676.	35.	48.1
30	1.738	1.462	90.1	.50	600.	600.	-1.	40.6
50	1.641	1.468	90.2	.40	483.	483.	-2.	32.6
70	1.636	1.462	89.4	.40	487.	487.	5.	31.1
90	1.638	1.465	86.6	.40	488.	487.	29.	30.4
MR	1.699	1.464	88.6	.47	560.	560.	14.	

226°

	P_{16}/P_o	p_{16}/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	1.817	1.492	94.5	.54	645.	643.	-51.	43.0
30	1.719	1.483	97.4	.46	556.	552.	-72.	35.9
50	1.646	1.483	99.2	.39	468.	462.	-74.	29.3
70	1.651	1.482	98.3	.40	478.	473.	-69.	28.3
90	1.659	1.481	95.2	.41	496.	494.	-45.	28.5
MR	1.694	1.484	96.9	.44	531.	527.	-64.	

251°

	P_{16}/P_o	p_{16}/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	1.777	1.461	86.2	.54	643.	642.	42.	46.9
30	1.704	1.463	87.3	.47	568.	565.	26.	40.0
50	1.618	1.472	89.4	.37	445.	445.	4.	30.7
70	1.602	1.470	89.4	.36	433.	433.	4.	28.2
90	1.616	1.471	86.7	.37	450.	449.	26.	28.1
MR	1.669	1.467	87.7	.43	523.	522.	21.	

286°

	P_{16}/P_o	p_{16}/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	1.721	1.494	94.3	.48	550.	548.	-41.	39.1
30	1.675	1.494	96.8	.41	491.	488.	-59.	33.1
52	1.609	1.488	99.0	.34	408.	400.	-63.	26.1
70	1.630	1.486	97.4	.37	443.	439.	-57.	26.9
90	1.642	1.488	95.0	.38	461.	459.	-40.	26.9
MR	1.653	1.490	96.8	.39	471.	468.	-53.	

313°

	P_{16}/P_o	p_{16}/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	1.733	1.477	89.7	.48	581.	581.	3.	42.3
30	1.714	1.476	90.2	.47	559.	559.	-2.	38.4
50	1.633	1.477	91.7	.38	459.	459.	-13.	30.8
70	1.624	1.468	88.5	.38	462.	462.	12.	30.0
90	1.539	1.469	87.4	.40	483.	483.	22.	29.7
MR	1.470	1.473	89.4	.43	514.	514.	5.	

346°

	P_{16}/P_o	p_{16}/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	1.802	1.492	94.3	.53	630.	628.	-47.	42.6
30	1.713	1.488	97.2	.45	542.	537.	-68.	35.2
50	1.640	1.484	99.2	.38	458.	452.	-73.	28.7
70	1.639	1.483	98.1	.38	459.	454.	-64.	27.4
90	1.653	1.485	95.6	.40	481.	478.	-46.	27.6
MR	1.686	1.486	96.8	.43	516.	512.	-61.	

PT. 7-70-13 $W\sqrt{\theta}/\delta$ = 106.6 lbm/sec (48.3 kg/sec)
P_{16}/P_6 = 1.692
P_o = 1868 lbf/ft^2 (89,200 N/m^2)
T_o = 512.5°R (284°K)

TABLE XXIX (Cont'd) - VELOCITY VECTOR PARAMETERS AT FAN EXIT (Circumferentially Distorted Inlet Flow)

SECOND STATOR EXIT CIRCUMFERENTIAL DISTRIBUTIONS - WEDGE PROBE STATION 16

	P16/Po	p16/Po	90- β°	M	V	Vm	Vθ	90- β°
43°								
10	1.916	1.168	98.6	.87	1087.	1045.	-188.	46.2
30	2.236	1.241	99.3	.96	1131.	1116.	-183.	46.1
50	2.063	1.115	92.3	.98	1147.	1146.	-46.	48.6
70	2.087	1.106	92.9	.97	1130.	1129.	-57.	45.9
90	2.100	1.165	95.2	.96	1121.	1116.	-102.	42.7
MR	2.077	1.159	95.5	.95	1121.	1116.	-108.	
133°								
10	1.881	1.142	99.8	.86	1041.	1026.	-172.	48.7
30	2.224	1.171	97.6	.99	1156.	1145.	-153.	47.4
50	2.054	1.229	97.5	.89	1046.	1037.	-137.	43.0
70	2.021	1.151	92.3	.93	1082.	1081.	-43.	44.7
90	2.078	1.098	89.3	1.00	1151.	1151.	14.	46.1
MR	2.062	1.163	94.7	.94	1104.	1100.	-90.	
226°								
10	1.627	1.268	102.1	.61	768.	749.	-160.	37.7
30	2.163	1.273	102.3	.90	1080.	1055.	-230.	43.6
50	2.017	1.278	101.6	.83	999.	979.	-201.	40.2
70	1.937	1.285	101.5	.79	943.	925.	-187.	37.2
90	1.977	1.300	97.1	.80	959.	952.	-119.	37.9
MR	1.985	1.283	100.6	.81	980.	964.	-181.	
316°								
10	1.560	1.334	96.6	.48	608.	604.	-70.	34.2
30	2.049	1.335	98.3	.81	972.	962.	-140.	43.0
50	1.918	1.342	99.0	.73	884.	873.	-139.	38.3
70	1.906	1.347	99.8	.72	863.	851.	-147.	35.6
90	1.933	1.352	95.8	.73	883.	878.	-90.	36.1
MR	1.918	1.343	98.0	.73	884.	876.	-123.	

PT. 7-90-01 $W\sqrt{\theta}/\delta$ = 167.4 lbm/sec (75.9 kg/sec)
P_{16}/P_6 = 1.994
P_o = 1575 lbf/ft^2 (75,300 N/m^2)
T_o = 509.2°R (283°K)

	P16/Po	p16/Po	90- β°	M	V	Vm	Vθ	90- β°
43°								
	2.532	1.932	87.1	.63	796.	795.	41.	46.8
	2.419	1.932	87.9	.58	723.	722.	28.	39.8
	2.231	1.929	88.7	.46	584.	584.	13.	31.6
	2.264	1.927	88.8	.48	608.	608.	13.	30.7
	2.299	1.923	84.7	.51	650.	645.	60.	31.7
	2.352	1.928	87.3	.54	683.	682.	32.	
133°								
	2.515	1.968	86.9	.60	758.	757.	42.	43.9
	2.443	1.970	87.4	.56	704.	703.	32.	38.9
	2.268	1.974	88.6	.45	568.	568.	14.	30.6
	2.270	1.965	88.4	.46	582.	582.	16.	29.4
	2.325	1.960	85.1	.50	635.	633.	54.	30.7
	2.369	1.966	87.2	.52	659.	658.	32.	
226°								
	2.473	1.966	94.4	.57	721.	719.	-66.	39.8
	2.364	1.969	96.7	.52	654.	649.	-77.	34.1
	2.240	1.961	97.8	.44	559.	554.	-76.	28.2
	2.274	1.966	98.2	.46	586.	580.	-84.	27.5
	2.331	1.963	94.4	.50	642.	640.	-49.	29.0
	2.333	1.966	96.3	.50	634.	630.	-69.	
316°								
	2.114	2.029	96.6	.24	316.	313.	-36.	20.2
	2.284	2.022	95.1	.42	534.	532.	-48.	29.5
	2.259	2.014	97.9	.41	518.	513.	-72.	26.3
	2.356	2.007	96.2	.48	612.	609.	-66.	28.8
	2.433	2.016	94.1	.53	669.	667.	-47.	29.8
	2.330	2.015	95.7	.46	585.	582.	-58.	

PT. 7-90-02 $W\sqrt{\theta}/\delta$ = 148.8 lbm/sec (67.4 kg/sec)
P_{16}/P_6 = 2.324
P_o = 1643 lbf/ft^2 (78,600 N/m^2)
T_o = 509.8°R (283°K)

	P16/Po	p16/Po	90- β°	M	V	Vm	Vθ	90- β°
43°								
	2.445	1.240	97.1	1.03	1263.	1253.	-156.	49.3
	2.456	1.209	93.9	1.06	1270.	1267.	-86.	49.4
	2.170	1.249	99.7	.92	1123.	1107.	-189.	41.0
	2.004	1.227	96.8	.87	1051.	1043.	-124.	39.0
	2.242	1.146	93.1	1.03	1222.	1220.	-66.	43.0
	2.263	1.211	95.9	.99	1193.	1186.	-122.	
133°								
	2.533	1.266	100.0	1.05	1273.	1253.	-221.	47.7
	2.446	1.210	94.5	1.06	1258.	1254.	-99.	48.8
	2.222	1.277	101.5	.93	1113.	1091.	-222.	39.9
	1.932	1.145	96.0	.90	1072.	1066.	-112.	39.9
	2.084	1.093	92.3	1.01	1190.	1189.	-48.	42.6
	2.240	1.194	96.6	.99	1187.	1179.	-137.	
226°								
	2.132	1.287	104.9	.90	1121.	1083.	-288.	42.2
	2.411	1.279	104.3	1.00	1210.	1172.	-299.	42.3
	2.276	1.240	105.8	.97	1174.	1130.	-320.	39.1
	1.969	1.225	106.1	.85	1036.	995.	-287.	34.6
	2.205	1.166	101.7	1.00	1198.	1174.	-243.	38.4
	2.209	1.230	104.3	.95	1158.	1122.	-287.	
316°								
	1.789	1.381	99.5	.62	804.	793.	-133.	37.8
	2.315	1.379	100.0	.89	1096.	1079.	-190.	42.5
	2.072	1.353	100.4	.81	988.	971.	-178.	37.9
	2.108	1.358	99.6	.82	990.	976.	-165.	35.5
	2.108	1.364	95.2	.81	997.	993.	-90.	36.8
	2.116	1.365	98.7	.82	1004.	992.	-152.	

PT. 7-10-31 $W\sqrt{\theta}/\delta$ = 185.0 lbm/sec (83.8 kg/sec)
P_{16}/P_6 = 2.180
P_o = 1481 lbf/ft^2 (70,800 N/m^2)
T_o = 503.2°R (279°K)

TABLE XXIX (Cont'd) - VELOCITY VECTOR PARAMETERS AT FAN EXIT (Circumferentially Distorted Inlet Flow)

SECOND STATOR EXIT CIRCUMFERENTIAL DISTRIBUTIONS - WEDGE PROBE STATION 16

16°

	P_{16}/P_o	p_{16}/P_o	$90-\beta°$	M	V	V_m	V_θ	$90-\beta'$
10	2.447	2.031	94.3	.52	663.	661.	-49.	37.6
30	2.344	2.033	96.0	.46	579.	576.	-61.	31.4
50	2.231	2.030	98.4	.37	474.	469.	-69.	24.6
70	2.251	2.029	97.2	.39	500.	496.	-62.	24.4
90	2.305	2.024	93.7	.44	563.	562.	-37.	26.2
MR	2.314	2.029	95.8	.44	560.	557.	-56.	

43°

	P_{16}/P_o	p_{16}/P_o	$90-\beta°$	M	V	V_m	V_θ	$90-\beta'$
10	2.496	1.999	86.2	.57	725.	724.	48.	43.0
30	2.299	2.007	87.5	.45	568.	567.	25.	33.1
50	2.258	2.007	86.9	.41	529.	529.	28.	29.4
70	2.288	1.999	86.5	.44	569.	568.	35.	29.4
90	2.269	1.996	88.5	.43	557.	557.	15.	26.
MR	2.325	2.001	87.1	.47	599.	598.	30.	

76°

	P_{16}/P_o	p_{16}/P_o	$90-\beta°$	M	V	V_m	V_θ	$90-\beta'$
10	2.512	2.044	94.5	.55	702.	699.	-55.	38.9
30	2.383	2.034	96.2	.48	613.	610.	-66.	32.7
50	2.245	2.029	98.1	.38	491.	486.	-69.	25.3
70	2.277	2.034	97.1	.41	518.	514.	-64.	25.1
90	2.329	2.033	94.0	.45	573.	571.	-40.	26.5
MR	2.347	2.034	95.9	.46	584.	581.	-60.	

103°

	P_{16}/P_o	p_{16}/P_o	$90-\beta°$	M	V	V_m	V_θ	$90-\beta'$
10	2.547	1.987	86.7	.61	764.	762.	45.	44.5
30	2.381	1.997	87.4	.52	649.	649.	29.	37.0
50	2.271	1.992	87.4	.44	555.	554.	25.	30.6
70	2.264	1.987	87.4	.44	557.	557.	26.	28.9
90	2.286	1.983	87.4	.46	583.	583.	26.	28.3
MR	2.355	1.987	87.2	.50	633.	632.	31.	

136°

	P_{16}/P_o	p_{16}/P_o	$90-\beta°$	M	V	V_m	V_θ	$90-\beta'$
10	2.492	2.027	94.4	.55	699.	697.	-54.	38.8
30	2.364	2.017	96.4	.48	610.	606.	-68.	32.5
50	2.256	2.018	98.5	.40	513.	507.	-76.	26.1
70	2.294	2.017	96.9	.43	552.	548.	-67.	26.5
90	2.337	2.016	93.7	.46	597.	595.	-39.	27.4
MR	2.345	2.018	95.9	.47	596.	593.	-61.	

163°

	P_{16}/P_o	p_{16}/P_o	$90-\beta°$	M	V	V_m	V_θ	$90-\beta'$
10	2.504	1.785	87.1	.59	738.	737.	37.	43.1
30	2.438	1.988	87.3	.55	686.	685.	32.	38.4
50	2.280	1.990	88.1	.45	564.	563.	19.	30.7
70	2.270	1.984	88.2	.44	563.	563.	18.	28.8
90	2.326	[illegible]	86.0	.49	620.	618.	44.	30.0
MR	2.368	1.984	87.3	.51	643.	642.	31.	

193°

	P_{16}/P_o	p_{16}/P_o	$90-\beta°$	M	V	V_m	V_θ	$90-\beta'$
10	2.499	1.993	87.0	.58	727.	726.	38.	42.8
30	2.458	1.993	87.5	.56	697.	697.	30.	38.9
50	2.284	1.994	88.2	.45	571.	571.	18.	31.1
70	2.296	1.991	88.2	.46	583.	583.	18.	29.8
90	2.345	1.981	85.1	.50	636.	633.	54.	31.0
MR	2.380	1.990	87.1	.51	650.	650.	33.	

226°

	P_{16}/P_o	p_{16}/P_o	$90-\beta°$	M	V	V_m	V_θ	$90-\beta'$
10	2.484	2.040	94.4	.54	684.	682.	-52.	38.3
30	2.378	2.024	96.3	.49	618.	614.	-68.	32.8
50	2.285	2.023	98.4	.42	539.	533.	-79.	27.2
70	2.316	2.025	96.9	.44	567.	563.	-68.	27.0
90	2.365	2.028	93.5	.48	614.	612.	-38.	28.1
MR	2.362	2.027	95.8	.47	605.	602.	-61.	

253°

	P_{16}/P_o	p_{16}/P_o	$90-\beta°$	M	V	V_m	V_θ	$90-\beta'$
10	2.421	1.999	86.3	.53	676.	675.	43.	40.9
30	2.414	2.005	86.5	.52	662.	661.	40.	37.7
50	2.267	2.004	86.2	.42	541.	540.	35.	30.1
70	2.263	2.001	86.4	.42	541.	540.	34.	28.2
90	2.319	2.003	85.0	.46	591.	589.	51.	29.0
MR	2.339	2.002	86.1	.48	608.	606.	42.	

286°

	P_{16}/P_o	p_{16}/P_o	$90-\beta°$	M	V	V_m	V_θ	$90-\beta'$
10	2.169	2.025	95.9	.31	407.	405.	-42.	25.5
30	2.271	2.035	93.9	.40	509.	508.	-34.	29.0
50	2.256	2.032	97.1	.39	496.	492.	-61.	25.8
70	2.279	2.033	97.1	.41	522.	518.	-65.	25.3
90	2.345	2.035	93.6	.46	586.	584.	-37.	27.1
MR	2.281	2.033	95.3	.41	524.	522.	-49.	

313°

	P_{16}/P_o	p_{16}/P_o	$90-\beta°$	M	V	V_m	V_θ	$90-\beta'$
10	2.062	2.033	85.2	.14	184.	183.	18.	12.8
30	2.252	2.009	84.7	.41	518.	516.	48.	31.3
50	2.314	1.988	85.6	.47	596.	595.	45.	32.8
70	2.296	1.978	88.2	.47	594.	593.	18.	30.1
90	2.395	1.980	85.3	.53	672.	670.	55.	32.3
MR	2.304	1.938	86.0	.50	638.	636.	45.	

346°

	P_{16}/P_o	p_{16}/P_o	$90-\beta°$	M	V	V_m	V_θ	$90-\beta'$
10	2.226	2.018	94.6	.38	482.	480.	-38.	29.5
30	2.248	2.026	97.8	.39	493.	488.	-66.	27.1
50	2.219	2.023	97.8	.37	466.	461.	-63.	24.3
70	2.332	2.020	97.4	.46	580.	575.	-75.	27.4
90	2.367	2.017	94.1	.48	619.	618.	-44.	28.2
MR	2.296	2.021	96.2	.43	549.	546.	-60.	

PT. 7-90-03 $W\sqrt{\theta}/\delta$ = 145.8 lbm/sec (66.1 kg/sec)
P_{16}/P_6 = 2.338
P_o = 1669 lbf/ft^2 (79,750 N/m^2)
T_o = 508.8°R (282°K)

TABLE XXIX (Cont'd) - VELOCITY VECTOR PARAMETERS AT FAN EXIT (Circumferentially Distorted Inlet Flow)

SECOND STATOR EXIT CIRCUMFERENTIAL DISTRIBUTIONS - WEDGE PROBE STATION 16

16°

	P_{16}/P_o	p_{16}/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	2.652	2.010	96.8	.64	832.	827.	-98.	39.7
30	2.675	1.988	97.7	.67	850.	843.	-114.	37.6
50	2.335	1.954	100.6	.51	661.	650.	-122.	28.7
70	2.411	1.963	99.8	.55	707.	698.	-108.	29.1
90	2.402	1.964	94.7	.55	709.	706.	-58.	28.8
MR	2.495	1.974	97.6	.59	759.	752.	-100.	

43°

	P_{16}/P_o	p_{16}/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	2.685	1.912	88.8	.71	916.	916.	19.	45.6
30	2.665	1.900	90.1	.71	905.	905.	-1.	42.1
50	2.327	1.902	90.7	.55	701.	701.	-9.	32.8
70	2.418	1.902	89.8	.60	759.	759.	2.	33.3
90	2.396	1.903	86.6	.58	750.	749.	44.	32.0
MR	2.504	1.904	89.1	.64	817.	817.	12.	

76°

	P_{16}/P_o	p_{16}/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	2.660	2.009	95.2	.65	837.	834.	-75.	40.5
30	2.616	1.990	97.2	.64	813.	806.	-102.	36.6
50	2.328	1.958	100.2	.50	643.	633.	-114.	28.2
70	2.427	1.966	98.8	.56	702.	694.	-108.	28.9
90	2.396	1.964	95.1	.54	693.	690.	-62.	28.1
MR	2.481	1.976	97.3	.58	740.	734.	-94.	

103°

	P_{16}/P_o	p_{16}/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	2.699	1.912	88.5	.72	923.	922.	24.	45.8
30	2.677	1.894	89.7	.72	910.	909.	5.	42.4
50	2.314	1.901	91.0	.54	686.	686.	-12.	32.0
70	2.414	1.897	90.1	.60	752.	752.	-2.	32.8
90	2.392	1.898	86.3	.58	743.	742.	47.	31.7
MR	2.507	1.900	89.0	.64	815.	814.	14.	

136°

	P_{16}/P_o	p_{16}/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	2.651	2.003	95.3	.65	831.	827.	-76.	40.2
30	2.667	1.994	97.3	.66	831.	825.	-106.	37.1
50	2.332	1.953	100.1	.51	648.	638.	-114.	28.3
70	2.420	1.964	98.6	.55	697.	689.	-105.	28.7
90	2.401	1.963	96.0	.55	697.	694.	-61.	28.2
MR	2.494	1.975	97.2	.59	746.	740.	-94.	

163°

	P_{16}/P_o	p_{16}/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	2.684	1.913	88.3	.71	908.	905.	27.	45.6
30	2.671	1.899	89.6	.72	895.	895.	7.	42.1
50	2.304	1.902	91.6	.53	673.	673.	-19.	31.5
70	2.403	1.898	90.0	.59	742.	742.	-1.	32.6
90	2.382	1.902	86.5	.58	738.	737.	45.	31.7
MR	2.497	1.903	89.1	.64	804.	804.	13.	

193°

	P_{16}/P_o	p_{16}/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	2.681	1.922	88.1	.71	907.	906.	30.	45.8
30	2.664	1.898	89.2	.71	905.	905.	13.	42.7
50	2.303	1.906	91.6	.53	680.	680.	-19.	31.9
70	2.402	1.903	90.1	.59	750.	750.	-2.	33.0
90	2.379	1.904	86.1	.57	739.	737.	50.	31.9
MR	2.494	1.906	88.9	.63	809.	809.	15.	

226°

	P_{16}/P_o	p_{16}/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	2.641	2.007	94.5	.64	829.	826.	-66.	40.4
30	2.630	1.997	97.2	.64	821.	814.	-102.	36.8
50	2.308	1.958	100.0	.49	635.	626.	-110.	27.9
70	2.350	1.968	98.8	.53	685.	677.	-105.	28.3
90	2.386	1.968	95.4	.53	691.	688.	-65.	27.9
MR	2.470	1.979	97.1	.57	738.	732.	-92.	

253°

	P_{16}/P_o	p_{16}/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	2.649	1.934	87.4	.69	882.	881.	40.	45.2
30	2.565	1.928	88.7	.65	828.	828.	19.	40.3
50	2.218	1.929	90.3	.45	578.	578.	-3.	28.2
70	2.290	1.923	89.0	.51	640.	640.	11.	29.2
90	2.317	1.923	85.8	.52	661.	659.	48.	29.0
MR	2.421	1.927	88.1	.58	738.	738.	25.	

286°

	P_{16}/P_o	p_{16}/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	2.435	2.005	94.2	.53	699.	697.	-51.	36.0
30	2.443	2.006	95.1	.54	696.	693.	-62.	33.3
50	2.274	1.996	98.6	.44	562.	556.	-84.	25.6
70	2.329	1.989	96.2	.48	612.	609.	-66.	26.4
90	2.366	1.994	94.0	.50	648.	646.	-45.	26.7
MR	2.370	1.998	95.5	.50	646.	643.	-62.	

313°

	P_{16}/P_o	p_{16}/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	2.412	1.950	86.5	.56	725.	724.	39.	39.5
30	2.501	1.938	88.0	.62	780.	780.	28.	38.8
50	2.310	1.929	89.3	.51	653.	653.	8.	31.4
70	2.351	1.930	89.1	.54	678.	678.	10.	30.6
90	2.429	1.931	85.0	.58	736.	733.	64.	32.0
MR	2.405	1.935	87.6	.57	719.	718.	31.	

346°

	P_{16}/P_o	p_{16}/P_o	90- β°	M	V	V_m	V_θ	90- β'
10	2.677	2.027	95.3	.64	829.	826.	-76.	40.2
30	2.641	2.002	97.1	.64	813.	806.	-100.	36.6
50	2.398	1.976	99.2	.53	677.	669.	-108.	29.6
70	2.449	1.981	99.3	.56	705.	696.	-115.	28.8
90	2.477	1.987	95.0	.57	730.	727.	-63.	29.3
MR	2.524	1.993	97.1	.59	752.	746.	-93.	

PT. 7-10-02 $W\sqrt{\theta}/\delta$ = 184.6 lbm/sec (83.7 kg/sec)
P_{16}/P_6 = 2.494
P_o = 1488 lbf/ft^2 (71,000 N/m^2)
T_o = 500.4°R (278°K)

TABLE XXIX (Cont'd) - VELOCITY VECTOR PARAMETERS AT FAN EXIT (Circumferentially Distorted Inlet Flow)

SECOND STATOR EXIT CIRCUMFERENTIAL DISTRIBUTIONS - WEDGE PROBE STATION 16

16°

	P_{16}/P_o	p_{16}/P_o	90-β*	M	V	V_m	V_θ	90-β'
10	2.853	2.292	94.6	.57	736.	733.	-59.	37.5
30	2.706	2.277	96.3	.50	652.	648.	-72.	31.6
50	2.530	2.274	99.5	.39	517.	510.	-85.	23.9
70	2.616	2.272	97.0	.45	594.	590.	-73.	25.8
90	2.690	2.271	93.6	.50	657.	656.	-40.	27.3
MR	2.679	2.276	95.9	.49	639.	635.	-66.	

43°

	P_{16}/P_o	p_{16}/P_o	90-β*	M	V	V_m	V_θ	90-β'
10	2.867	2.240	86.0	.61	790.	788.	56.	42.6
30	2.764	2.245	86.8	.56	720.	719.	40.	37.1
50	2.604	2.242	86.7	.47	613.	612.	35.	30.8
70	2.604	2.230	86.8	.48	624.	623.	35.	29.2
90	2.691	2.234	85.4	.52	687.	685.	55.	30.2
MR	2.709	2.235	86.3	.53	693.	692.	45.	

76°

	P_{16}/P_o	p_{16}/P_o	90-β*	M	V	V_m	V_θ	90-β'
10	2.923	2.310	94.3	.59	774.	772.	-58.	38.9
30	2.776	2.291	95.9	.53	695.	692.	-71.	33.3
50	2.565	2.279	98.3	.43	565.	559.	-82.	26.0
70	2.633	2.278	96.3	.46	598.	594.	-66.	26.1
90	2.691	2.280	93.4	.49	648.	644.	-38.	26.9
MR	2.718	2.287	95.5	.50	658.	655.	-63.	

103°

	P_{16}/P_o	p_{16}/P_o	90-β*	M	V	V_m	V_θ	90-β'
10	2.922	2.228	86.9	.64	815.	818.	45.	43.4
30	2.807	2.230	86.7	.58	748.	747.	43.	38.2
50	2.583	2.230	87.1	.46	601.	600.	30.	30.0
70	2.609	2.215	87.3	.49	636.	635.	30.	29.6
90	2.701	2.220	83.9	.54	699.	696.	74.	31.0
MR	2.731	2.224	86.3	.55	711.	710.	46.	

136°

	P_{16}/P_o	p_{16}/P_o	90-β*	M	V	V_m	V_θ	90-β'
10	2.915	2.301	94.3	.59	765.	763.	-58.	38.6
30	2.795	2.286	95.8	.54	699.	696.	-71.	33.4
50	2.590	2.271	98.7	.44	568.	561.	-86.	25.9
70	2.640	2.265	96.6	.47	613.	609.	-71.	26.5
90	2.702	2.266	93.4	.51	665.	664.	-40.	27.6
MR	2.725	2.277	95.6	.51	666.	663.	-65.	

163°

	P_{16}/P_o	p_{16}/P_o	90-β*	M	V	V_m	V_θ	90-β'
10	2.884	2.217	87.0	.63	801.	800.	42.	42.5
30	2.836	2.225	86.9	.60	760.	759.	40.	38.5
50	2.582	2.225	87.7	.47	602.	601.	24.	29.7
70	2.634	2.218	87.8	.50	646.	646.	25.	29.7
90	2.714	2.219	83.9	.55	706.	702.	75.	31.1
MR	2.736	2.220	86.6	.55	713.	711.	43.	

193°

	P_{16}/P_o	p_{16}/P_o	90-β*	M	V	V_m	V_θ	90-β'
10	2.856	2.226	86.8	.61	782.	781.	44.	42.0
30	2.829	2.234	86.8	.59	759.	757.	42.	38.8
50	2.582	2.229	87.9	.46	605.	605.	22.	29.9
70	2.619	2.215	88.1	.50	647.	647.	22.	29.7
90	2.711	2.221	84.2	.54	707.	704.	71.	31.2
MR	2.725	2.225	86.6	.55	709.	708.	42.	

226°

	P_{16}/P_o	p_{16}/P_o	90-β*	M	V	V_m	V_θ	90-β'
10	2.896	2.312	94.3	.58	757.	755.	-57.	38.3
30	2.779	2.292	95.5	.53	695.	692.	-66.	33.5
50	2.589	2.253	98.2	.43	563.	558.	-81.	26.0
70	2.650	2.282	97.0	.47	613.	609.	-76.	26.5
90	2.705	2.282	93.6	.50	660.	658.	-41.	27.4
MR	2.721	2.289	95.6	.50	661.	658.	-64.	

253°

	P_{16}/P_o	p_{16}/P_o	90-β*	M	V	V_m	V_θ	90-β'
10	2.765	2.249	85.6	.55	726.	724.	55.	40.2
30	2.726	2.259	85.1	.53	688.	685.	59.	36.3
50	2.550	2.258	86.6	.42	552.	551.	32.	27.9
70	2.580	2.250	86.7	.45	581.	580.	34.	27.4
90	2.671	2.245	84.2	.51	655.	652.	66.	29.2
MR	2.663	2.252	85.6	.50	647.	645.	50.	

286°

	P_{16}/P_o	p_{16}/P_o	90-β*	M	V	V_m	V_θ	90-β'
10	2.357	2.315	95.7	.16	215.	214.	-22.	13.1
30	2.464	2.286	94.5	.32	421.	420.	-33.	22.6
50	2.606	2.296	97.8	.43	559.	553.	-76.	25.9
70	2.652	2.293	97.1	.46	600.	596.	-74.	26.1
90	2.741	2.294	93.1	.51	670.	669.	-37.	27.9
MR	2.625	2.294	95.8	.44	580.	578.	-55.	

313°

	P_{16}/P_o	p_{16}/P_o	90-β*	M	V	V_m	V_θ	90-β'
10	2.320	2.296	91.3	.12	160.	160.	-4.	9.9
30	2.330	2.287	83.4	.16	215.	213.	25.	12.4
50	2.541	2.253	82.8	.42	545.	540.	68.	28.1
70	2.730	2.219	87.8	.55	710.	710.	27.	32.1
90	2.880	2.223	86.7	.62	803.	801.	47.	33.9
MR	2.701	2.236	86.2	.53	684.	682.	45.	

346°

	P_{16}/P_o	p_{16}/P_o	90-β*	M	V	V_m	V_θ	90-β'
10	2.414	2.259	96.1	.31	409.	407.	-43.	23.3
30	2.523	2.282	100.1	.38	497.	489.	-87.	24.5
50	2.538	2.287	97.0	.39	506.	502.	-61.	24.0
70	2.729	2.274	96.5	.52	685.	681.	-76.	28.3
90	2.769	2.279	96.8	.54	697.	692.	-82.	27.7
MR	2.645	2.278	97.3	.47	607.	602.	-77.	

PT. 7-10-03 $W\sqrt{\theta}/\delta$ = 176.0 lbm/sec (79.8 kg/sec)
P_{16}/P_6 = 2.701
P_o = 1530 lbf/ft^2 (73,050 N/m^2)
T_o = 509.6°R (283°K)

TABLE XXX - FIRST-STAGE TOTAL TEMPERATURE RATIO (Circumferentially Distorted Inlet Flow)

COMBINATION PROBE - T_{11}/T_o

Circumferential Position - Degrees

% Span	86°	176°	266°	356°
10	1.2081	1.1879	1.1560	1.2263
30	1.1987	1.1850	1.1434	1.2031
50	1.1857	1.1817	1.1359	1.1919
70	1.1770	1.1713	1.1364	1.1744
90	1.1963	1.1856	1.1481	1.1912
MR	1.1934	1.1825	1.1440	1.1916

PT. 7-10-31 $\sqrt{\theta_o}/\delta_o$ ≐ 185. lbm/sec (83.8 kg/sec)
$P_{16}/P_6' = 2.180$; $T_o = 503.2$ °R (279 °K)
$P_o = 1481$ lbf/ft^2 (70,800 N/m^2)

% Span	86°	176°	266°	356°
10	1.1694	1.1624	1.1276	1.1900
30	1.1560	1.1494	1.1123	1.1645
50	1.1543	1.1446	1.1061	1.1586
70	1.1550	1.1496	1.1101	1.1519
90	1.1685	1.1556	1.1201	1.1623
MR	1.1614	1.1524	1.1158	1.1646

PT. 7-90-01 $\sqrt{\theta_o}/\delta_o$ ≐ 167.4 lbm/sec (75.9 kg/sec)
$P_{16}/P_6' = 1.994$; T_o 509.2 °R (283 °K)
$P_o = 1575$ lbf/ft^2 (75,300 N/m^2)

% Span	86°	176°	266°	356°
10	1.1599	1.1589	1.1261	1.1908
30	1.1611	1.1555	1.1390	1.1854
50	1.1603	1.1522	1.1330	1.1845
70	1.1728	1.1616	1.1446	1.1899
90	1.1912	1.1737	1.1538	1.2054
MR	1.1729	1.1624	1.1434	1.1932

PT. 7-90-02 $\sqrt{\theta_o}/\delta_o$ ≐ 14.88 lbm/sec (67.4 kg/sec)
$P_{16}/P_6 = 2.324$; $T_o = 509.8$ °R (283 °K)
$P_o = 1643$ lbf/ft^2 (78,600 N/m^2)

% Span	86°	176°	266°	356°
10	1.1012	1.0982	1.0796	1.1128
30	1.0941	1.0920	1.0681	1.1025
50	1.0897	1.0872	1.0626	1.0958
70	1.0904	1.0880	1.0633	1.0957
90	1.1033	1.0875	1.0693	1.0952
MR	1.0965	1.0901	1.0683	1.1000

PT. 7-70-01 $\sqrt{\theta_o}/\delta_o$ ≐ 123.9 lbm/sec (56.2 kg/sec)
$P_{16}/P_6' = 1.561$; $T_o = 504.4$ °R (283 °K)
$P_o = 1764$ lbf/ft^2 (83,900 N/m^2)

% Span	86°	176°	266°	356°
10	1.1076	1.1033	1.0839	1.1165
30	1.1017	1.0996	1.0836	1.1125
50	1.0988	1.0976	1.0812	1.1071
70	1.0992	1.0982	1.0827	1.1050
90	1.1163	1.1100	1.0919	1.1250
MR	1.1059	1.1026	1.0856	1.1143

PT. 7-70-02 $\sqrt{\theta_o}/\delta_o$ ≐ 113.8 lbm/sec (51.6 kg/sec)
$P_{16}/P_6 = 1.670$; $T_o = 496.0$ °R (275 °K)
$P_o = 1802$ lbf/ft^2 (86,100 N/m^2)

% Span	26°	56°	86°	116°	146°	176°	206°	236°	266°	296°	326°	356°
10	1.2193	1.2139	1.2037	1.2104	1.2198	1.1976	1.1882	1.1838	1.1539	1.1562	1.2456	1.2330
30	1.2251	1.2079	1.1980	1.1971	1.2068	1.1899	1.1791	1.1781	1.1392	1.1812	1.2430	1.2110
50	1.1863	1.1952	1.1844	1.1925	1.2063	1.1843	1.1769	1.1759	1.1380	1.1782	1.2419	1.2036
70	1.1774	1.1818	1.1767	1.1801	1.1955	1.1783	1.1667	1.1669	1.1358	1.1847	1.2442	1.1855
90	1.1858	1.1977	1.1893	1.1971	1.2136	1.1879	1.1850	1.1802	1.1551	1.1999	1.2525	1.2029
MR	1.1971	1.1989	1.1900	1.1952	1.2086	1.1870	1.1796	1.1771	1.1455	1.1854	1.2467	1.2060

PT. 7-10-02 $\sqrt{\theta_o}/\delta_o$ ≐ 184.6 lbm/sec (83.7 kg/sec); $P_{16}/P_6' = 2.494$
$P_o = 1488$ lbf/ft^2 (71,000 N/m^2); $T_o = 500.4$ °R (278 °K)

% Span	26°	56°	86°	116°	146°	176°	206°	236°	266°	296°	326°	356°
10	1.2241	1.2334	1.1926	1.1897	1.1889	1.1865	1.1867	1.1811	1.1614	1.1622	1.2344	1.2436
30	1.2279	1.1965	1.1930	1.1870	1.1820	1.1822	1.1812	1.1748	1.1502	1.2048	1.2572	1.2487
50	1.2363	1.2017	1.1972	1.1917	1.1867	1.1871	1.1837	1.1759	1.1542	1.2140	1.2740	1.2631
70	1.2383	1.2091	1.2037	1.1919	1.1833	1.1827	1.1800	1.1767	1.1558	1.2211	1.2942	1.2608
90	1.2554	1.2100	1.2135	1.2089	1.1977	1.1952	1.1946	1.1842	1.1731	1.2325	1.2978	1.2613
MR	1.2403	1.2129	1.2025	1.1961	1.1890	1.1880	1.1865	1.1792	1.1608	1.2177	1.2847	1.2610

PT. 7-10-03 $\sqrt{\theta_o}/\delta_o$ ≐ 176.0 lbm/[illegible] kg/sec); $P_{16}/P_6' = 2.701$
$P_o = 1530$ lbf/ft^2 (73,050 N/m^2); $T_o = 509.6$ °R (283 °K)

% Span	26°	56°	86°	116°	146°	176°	206°	236°	266°	296°	326°	356°
10	1.1760	1.1650	1.1618	1.1549	1.1531	1.1534	1.1518	1.1489	1.1306	1.1378	1.1860	1.1932
30	1.1848	1.1715	1.1715	1.1651	1.1571	1.1578	1.1531	1.1516	1.1369	1.1677	1.2009	1.1956
50	1.1904	1.1750	1.1664	1.1619	1.1562	1.1567	1.1550	1.1499	1.1346	1.1814	1.2172	1.2066
70	1.2019	1.1873	1.1793	1.1740	1.1692	1.1684	1.1657	1.1614	1.1472	1.1942	1.2391	1.2153
90	1.2186	1.2186	1.2030	1.1983	1.1883	1.1834	1.1873	1.1772	1.1643	1.2143	1.2533	1.2347
MR	1.1998	1.1903	1.1820	1.1763	1.1691	1.1676	1.1668	1.1615	1.1479	1.1923	1.2316	1.2147

PT. 7-90-03 $W\sqrt{\theta_o}/\delta_o$ ≐ 145.8 lbm/sec (66.1 kg/sec); $P_{16}/P_6' = 2.338$
$P_o = 1669$ lbf/ft^2 (79,750 N/m^2); $T_o = 508.8$ °R (282 °K)

% Span	26°	56°	86°	116°	146°	176°	206°	236°	266°	296°	326°	356°
10	1.1113	1.1053	1.1050	1.1169	1.1014	1.0995	1.0982	1.0936	1.0795	1.1007	1.1111	1.1120
30	1.1079	1.1022	1.1029	1.0991	1.0982	1.1004	1.0970	1.0959	1.0831	1.1043	1.1163	1.1089
50	1.1033	1.0999	1.1005	1.0986	1.0965	1.0972	1.0949	1.0939	1.0844	1.1164	1.1156	1.1067
70	1.0987	1.0998	1.1006	1.0977	1.0967	1.0975	1.0953	1.0943	1.0853	1.1096	1.1217	1.1064
90	1.1190	1.1202	1.1156	1.1162	1.1142	1.1105	1.1126	1.1072	1.1003	1.1321	1.1369	1.1300
MR	1.1086	1.1064	1.1059	1.1041	1.1026	1.1021	1.1010	1.0983	1.0885	1.1169	1.1216	1.1135

PT. 7-70-13 $W\sqrt{\theta_o}/\delta_o$ ≐ 106.6 lbm/sec (48.3 kg/sec); $P_{16}/P_6 = 1.692$
$P_o = 1868$ lbf/ft^2 (89)200 N/m^2); $T_o = 512.5$ °R (284 °K)

Table XXXI Circumferential Distribution of Total Pressure Ratio and Total Temperature Ratio at The Second-Stage Stator Exit (Circumferentially Distorted Inlet Flow)

WAKE RAKE DATA

Circumferential Position - Degrees

PT. 7-10-31 $W\sqrt{\theta}/\delta$ = 185.0 lbm/sec (83.8 kg/sec); P'_{16}/P'_{6} = 2.180
P_o = 1481 lbf/ft^2 (70,800 N/m^2); T_o = 503.2°R (279°K)

Pressure Data

% Span	17°	110°	200°	287°
10	2.4088	2.4513	2.4032	2.1165
30	2.3862	2.3635	2.3268	2.1621
50	2.2928	2.2014	2.1679	1.9393
70	2.1776	2.1073	2.0656	1.8967
90	2.1531	2.1106	2.0744	1.9074
MR	2.277	2.240	2.201	2.002

Temperature Data

% Span	60°	147°	237°	330°
10	1.4554	1.4300	1.4186	1.4586
30	1.4044	1.3822	1.3665	1.4285
50	1.3731	1.3609	1.3441	1.4060
70	1.3388	1.3322	1.3199	1.3756
90	1.3749	1.3673	1.3579	1.4041
MR	1.3866	1.3732	1.3600	1.4131

PT. 7-90-01 $W\sqrt{\theta}/\delta$ = 167.4 lbm/sec; P'_{16}/P'_{6} = 1.994
P_o = 1675 lbf/ft^2 (75,300 N/m^2); T_o = 509.2°

Pressure Data

% Span	17°	110°	200°	287°
10	2.2403	2.1811	2.1453	1.8932
30	2.2521	2.1720	2.1509	1.9616
50	2.0822	2.0281	1.9940	1.7631
70	1.9735	1.9137	1.8888	1.7267
90	1.9702	1.9373	1.9232	1.7594
MR	2.098	2.041	2.015	1.819

Temperature Data

% Span	60°	147°	237°	330°
10	1.3582	1.3480	1.3379	1.3637
30	1.3201	1.3054	1.2937	1.3381
50	1.2981	1.2892	1.2735	1.3249
70	1.2723	1.2682	1.2573	1.3102
90	1.2954	1.2912	1.2796	1.3266
MR	1.3072	1.2991	1.2871	1.3318

PT. 7-90-02 $W\sqrt{\theta}/\delta$ = 148.8 lbm/sec (67.4 kg/sec); P'_{16}/P'_{6} = 2.324
P_o = 1643 lbf/ft^2 (78,600 N/m^2); T_o = 509.8°R (283°K)

Pressure Data

% Span	17°	110°	200°	287°
10	2.4936	2.5069	2.4878	2.2214
30	2.3770	2.4199	2.4178	2.2805
50	2.2430	2.2584	2.2804	2.2167
70	2.2833	2.2549	2.2778	2.2326
90	2.3147	2.2926	2.3195	2.2599
MR	2.346	2.349	2.358	2.244

Temperature Data

% Span	60°	147°	237°	330°
10	1.3637	1.3500	1.3461	1.3796
30	1.3395	1.3233	1.3212	1.3626
50	1.3405	1.3191	1.3216	1.3679
70	1.3611	1.3213	1.3249	1.3869
90	1.3949	1.3481	1.3535	1.4161
MR	1.3618	1.3330	1.3341	1.3845

PT. 7-10-01 $W\sqrt{\theta}/\delta$ = 123.9 lbm/sec (56.2 kg/sec); P'_{16}/P'_{6} = 1.561
P_o = 1754 lbf/ft^2 (83,900 N/m^2); T_o = 509.4°R (283°K)

Pressure Data

% Span	17°	110°	200°	287°
10	1.6989	1.6828	1.6782	1.6360
30	1.7081	1.6710	1.6505	1.5786
50	1.5426	1.5282	1.5092	1.4627
70	1.4962	1.4799	1.4671	1.4402
90	1.5214	1.5100	1.4954	1.4615
MR	1.594	1.574	1.561	1.516

Temperature Data

% Span	60°	147°	237°	330°
10	1.2169	1.2138	1.2060	1.2213
30	1.1880	1.1790	1.1692	1.2021
50	1.1664	1.1655	1.1566	1.1856
70	1.1533	1.1533	1.1482	1.1743
90	1.1687	1.1710	1.1650	1.1920
MR	1.1784	1.1762	1.1689	1.1952

PT. 7-70-02 $W\sqrt{\theta}/\delta$ = 113.8 lbm/sec (51.6 kg/sec); P'_{16}/P'_{6} = 1.670
P_o = 1802 lbf/ft^2 (86,100 N/m^2); T_o = 496.0°R (276°K)

Pressure Data

% Span	17°	110°	200°	287°
10	1.8659	1.8193	1.8012	1.7125
30	1.7260	1.7303	1.7243	1.6578
50	1.6247	1.6243	1.6197	1.5875
70	1.6142	1.6151	1.6129	1.5888
90	1.6065	1.6147	1.6131	1.5944
MR	1.694	1.684	1.677	1.629

Temperature Data

% Span	60°	147°	237°	330°
10	1.2265	1.2248	1.2193	1.2279
30	1.2016	1.1980	1.1943	1.2130
50	1.1913	1.1907	1.1865	1.2085
70	1.1883	1.1896	1.1885	1.2129
90	1.2158	1.2129	1.2120	1.2408
MR	1.2057	1.2038	1.2007	1.2212

Table XXXI (Cont'd) Circumferential Distribution of Total Pressure Ratio and Total Temperature Ratio at The Second-Stage Stator Exit (Circumferentially Distorted Inlet Flow)

WAKE RAKE DATA

Circumferential Position - Degrees

PT. 7-10-02 $W\sqrt{\theta}/\delta \doteq$ 184.6 lbm/sec (83.7 kg/sec); P_{16}/P_6 = 2.494 **P_o = 1488 lbf/ft^2 (71,000 N/m^2); T_o = 500.4°R (278°K)**

Pressure Data

% Span	20°	47°	77°	110°	137°	170°	197°	230°	260°	287°	320°	347°
10	2.7982	2.7648	2.7798	2.7695	2.7605	2.7577	2.7408	2.7261	2.5928	2.4782	2.5016	2.7267
30	2.7828	2.7351	2.7009	2.7184	2.6969	2.6768	2.6721	2.6396	2.4616	2.4390	2.5132	2.7328
50	2.3754	2.3997	2.3789	2.3580	2.3719	2.3373	2.3598	2.3178	2.2323	2.2778	2.3387	2.4446
70	2.4115	2.4236	2.4274	2.4042	2.4116	2.3648	2.3987	2.3676	2.2627	2.3134	2.3794	2.4365
90	2.3736	2.3696	2.3610	2.3623	2.3548	2.3529	2.3459	2.3342	2.2542	2.2947	2.4244	2.4397
MR	2.560	2.545	2.536	2.531	2.526	2.511	2.511	2.485	2.368	2.360	2.432	2.557

Temperature Data

% Span	30°	57°	90°	120°	147°	180°	207°	240°	267°	297°	330°	357°
10	1.4714	1.4384	1.4538	1.4641	1.4421	1.4255	1.4347	1.4159	1.4105	1.4403	1.4624	1.4709
30	1.4220	1.3982	1.4066	1.4164	1.4004	1.3834	1.3920	1.3612	1.3631	1.4271	1.4406	1.4161
50	1.3852	1.3732	1.3773	1.3882	1.3762	1.3558	1.3730	1.3503	1.3516	1.4286	1.4353	1.3787
70	1.3612	1.3533	1.3603	1.3744	1.3632	1.3427	1.3611	1.3322	1.3467	1.4281	1.4284	1.3565
90	1.4172	1.4040	1.4126	1.4176	1.4043	1.3915	1.4087	1.3828	1.3893	1.4622	1.4597	1.4010
MR	1.4112	1.3941	1.4024	1.4125	1.3978	1.3804	1.3946	1.3687	1.3728	1.4375	1.4454	1.4028

PT.7-10-03 $W\sqrt{\theta}/\delta \doteq$ 176.0 lbm/xec (79.8 kg/sec); $P_{16}/_6 \doteq$ 2.701 **P_o = 1530 lbf/ft^2 (73,050 N/m^2); T_o = 509.6°R (283°K)**

Pressure Data

% Span	20°	47°	77°	110°	137°	170°	197°	230°	260°	287°	320°	347°
10	2.9448	2.8400	2.9462	2.9424	2.9393	2.9123	2.9046	2.8761	2.6962	2.5387	2.5531	2.6699
30	2.6668	2.7379	2.7815	2.8010	2.8153	2.7958	2.8105	2.7752	2.6540	2.6267	2.6484	2.7033
50	2.5619	2.5910	2.5934	2.6009	2.6047	2.5907	2.5995	2.5835	2.5451	2.6037	2.6733	2.5812
70	2.6631	2.6316	2.6229	2.6272	2.6592	2.6208	2.6486	2.6167	2.5737	2.6325	2.7591	2.7080
90	2.6722	2.6761	2.6399	2.6735	2.6637	2.6690	2.6566	2.6567	2.6041	2.6660	2.8673	2.7410
MR	2.709	2.698	2.722	2.734	2.741	2.722	2.726	2.705	2.615	2.621	2.728	2.688

Temperature Data

% Span	30°	57°	90°	120°	147°	180°	207°	240°	267°	297°	330°	357°
10	1.4593	1.4414	1.4307	1.4225	1.4287	1.4240	1.4219	1.4196	1.4097	1.4335	1.5064	1.5169
30	1.4241	1.4166	1.4011	1.3936	1.3974	1.3920	1.3966	1.3845	1.3840	1.4349	1.4882	1.4952
50	1.4187	1.4193	1.4028	1.3928	1.3960	1.3930	1.3925	1.3901	1.3900	1.4638	1.4814	1.4624
70	1.4533	1.4277	1.4111	1.3935	1.3928	1.3887	1.3898	1.3888	1.3868	1.4777	1.4908	1.4333
90	1.4811	1.4639	1.4568	1.4339	1.4287	1.4319	1.4277	1.4319	1.4232	1.5048	1.5187	1.4509
MR	1.4499	1.4353	1.4221	1.4083	1.4095	1.4067	1.4065	1.4035	1.3995	1.4646	1.4978	1.4651

PT.7-90-03 $W\sqrt{\theta}/\delta \doteq$ 145.8 lbm/sec (66.1 kg/sec); P_{16}/P_6 = 2.338 **P_o = 1669 lbf/ft^2 (79,N/m^2); T_o = 508.8°R (284°K)**

Pressure Data

% Span	20°	47°	77°	110°	137°	170°	197°	230°	260°	287°	320°	347°
10	2.5084	2.4735	2.4992	2.5006	2.4851	2.4901	2.4697	2.4654	2.3520	2.2392	2.2835	2.4053
30	2.3237	2.3709	2.3873	2.3726	2.4006	2.3941	2.3984	2.3939	2.3152	2.3065	2.3251	2.3522
50	2.2187	2.2542	2.2566	2.2810	2.2856	2.2863	2.2797	2.2871	2.2490	2.2797	2.2999	2.2436
70	2.2861	2.2691	2.2727	2.2958	2.3035	2.2886	2.2964	2.2867	2.2590	2.3009	2.3483	2.3029
90	2.3106	2.2997	2.2995	2.3208	2.3160	2.3253	2.3197	2.3201	2.2941	2.3336	2.4012	2.3246
MR	2.335	2.336	2.347	2.356	2.359	2.358	2.353	2.351	2.294	2.297	2.339	2.328

Temperature Data

% Span	30°	57°	90°	120°	147°	180°	207°	240°	267°	297°	330°	357°
10	1.3802	1.3779	1.3583	1.3524	1.3507	1.3455	1.3504	1.3465	1.3378	1.3570	1.3865	1.4039
30	1.3568	1.3607	1.3412	1.3308	1.3320	1.3240	1.3260	1.3185	1.3189	1.3528	1.3848	1.3940
50	1.3576	1.3567	1.3454	1.3326	1.3325	1.3273	1.3282	1.3230	1.3229	1.3711	1.3867	1.3796
70	1.3850	1.3744	1.3633	1.3503	1.3387	1.3407	1.3325	1.3353	1.3298	1.3869	1.4031	1.3742
90	1.4136	1.4002	1.3975	1.3837	1.3656	1.3731	1.3588	1.3648	1.3559	1.4071	1.4332	1.3955
MR	1.3809	1.3756	1.3626	1.3514	1.3447	1.3431	1.3399	1.3387	1.3338	1.3765	1.4015	1.3888

PT.7-10-13 $W\sqrt{\theta}/\delta \doteq$ 106.6 lbm/sec (48.3 kg/sec); P_{16}/P_6 = 1.692 **P_o = 1868 lbf/ft^2 (89,200 N/m^2); T_o = 512.5°R (284°K)**

Pressure Data

% Span	20°	47°	77°	110°	137°	170°	197°	230°	260°	287°	320°	347°
10	1.8557	1.8507	1.8382	1.8259	1.8216	1.8152	1.8088	1.7989	1.7458	1.7300	1.7681	1.8142
30	1.7369	1.7293	1.7297	1.7408	1.7278	1.7409	1.7177	1.7239	1.6707	1.6854	1.7044	1.7160
50	1.6519	1.6406	1.6457	1.6585	1.6495	1.6584	1.6443	1.6446	1.6249	1.6128	1.6504	1.6373
70	1.6374	1.6348	1.6418	1.6456	1.6474	1.6461	1.6438	1.6378	1.6286	1.6184	1.6487	1.6227
90	1.6281	1.6306	1.6340	1.6439	1.6415	1.6454	1.6391	1.6449	1.6262	1.6231	1.6431	1.6276
MR	1.708	1.704	1.702	1.706	1.701	1.704	1.694	1.693	1.660	1.656	1.683	1.688

Temperature Data

% Span	30°	57°	90°	120°	147°	180°	207°	240°	267°	297°	330°	357°
10	1.2234	1.2236	1.2154	1.2126	1.2169	1.2117	1.2146	1.2084	1.2038	1.2093	1.2196	1.2295
30	1.2026	1.2017	1.1958	1.1937	1.1970	1.1925	1.1957	1.1882	1.1872	1.2015	1.2062	1.2079
50	1.1984	1.1954	1.1926	1.1902	1.1902	1.1899	1.1897	1.1869	1.1840	1.2011	1.2084	1.2016
70	1.2155	1.2075	1.2033	1.2002	1.1970	1.1986	1.1964	1.1965	1.1927	1.2107	1.2241	1.2179
90	1.2478	1.2336	1.2343	1.2275	1.2227	1.2260	1.2203	1.2236	1.2200	1.2323	1.2536	1.2507
MR	1.2184	1.2129	1.2089	1.2054	1.2054	1.2043	1.2039	1.2014	1.1981	1.2115	1.2236	1.2222

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