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TWO-STAGE FAN
IV. PERFORMANCE DATA FOR STATOR SETTING ANGLE OPTIMIZATION

by
G. D. Burger
M. J. Keenan

PRATT & WHITNEY AIRCRAFT DIVISION
UNITED AIRCRAFT CORPORATION

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Project Manager, R. S. Ruggeri, Fluid System Components Division NASA Lewis Research Center, Cleveland, Ohio 44135

16. Abstract
Stator setting angle optimization tests were conducted on a two-stage fan to improve efficiency at overspeed, stall margin at design speed, and both efficiency and stall margin at partspeed. The fan has a design pressure ratio of 2.8, a flow rate of 184.2 lb/sec (83.55 kg/sec) and a 1st-stage rotor tip speed of 1450 ft/sec (441.96 in/sec). Performance was obtained at 70, 100, and 105 percent of design speed with different combinations of 1st-stage and 2nd-stage stator settings. One combination of settings, other than design, was common to all three speeds. At design speed, a 2.0 percentage point increase in stall margin was obtained at the expense of a 1.3 percentage point efficiency decrease. At 105 percent speed, efficiency was improved by 1.8 percentage points but stall margin decreased 4.7 percentage points. At 70 percent speed, no change in stall margin or operating line efficiency was obtained with stator resets although considerable speed-flow regulation occurred.

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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 to determine the optimum stator stagger angle. During this effort Mr. R. S. Ruggeri was the NASA Project Manager and Mr. H. V. Marman was the P&WA Program Manager. This report was prepared by G. Burger and M. J. Keenan, with contributions from B. Gray, T. Hodges, A. Merrow, J. Rawlins, A. Finke, and other Pratt & Whitney Aircraft personnel.

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TWO-STAGE FAN
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G. D. Burger and M. J. Keenan
Pratt & Whitney Aircraft

SUMMARY

Stator setting angle optimization tests were conducted on a two-stage fan designed for a tip speed of 1450 ft/sec [441.96 m/sec], an overall pressure ratio of 2.8, and a corrected flow of 184.2 lbm/sec [83.55 kg/sec]. The tests were conducted to determine the effects of changes in stator settings on fan performance in terms of overall fan efficiency and stall margin and to help define which blade elements were critical in setting the fan stall line. Detailed aerodynamic performance of the fan was obtained at 70 percent, 100 percent, and 105 percent of design speed with four to six different combinations of stator settings at each speed. Earlier tests had documented the performance of the fan with stators in their design positions. One combination of stator settings, besides design, was common to all three speeds to permit investigation of speed effects on performance.

At design speed the objective of the stator angle optimization was to improve stall margin with a minimum penalty in efficiency. Tests with design stator-settings showed that at design speed and pressure ratio all blade elements were sufficiently close to minimum loss to make gains in efficiency improbable. Stall margin was improved at the expense of operating line efficiency by closing the 2nd-stage stator (reset in a direction to reduce incidence). The optimum configuration tested at design speed was with the 1st-stage stator set at its design stagger angle and the 2nd-stage stator closed 5 degrees. This combination of stator settings gave an operating line overall fan efficiency of 83.7% with a corresponding 14.0% stall margin, representing a 2.0% increase in stall margin and a 1.3 percentage point decrease in operating line efficiency compared to design settings. Overall fan pressure ratio at stall with this stator setting combination was lower than with the design setting configuration, but the increased flow range provided an increase in stall margin.

The objective of the stator angle optimization at 105 percent speed was to increase efficiency with a minimum stall margin penalty. The optimum configuration tested at this speed was with the 1st-stage stator closed 2.5 degrees and the 2nd-stage stator opened 2.5 degrees. A gain of 1.8 percentage points in efficiency was obtained while stall margin decreased 4.7 percentage points. Most of the efficiency benefit was gained by the improved 2nd-stage stator recovery at the 2.5-degree open setting.

The objective of the stator angle optimization at 70 percent speed was to improve both efficiency and stall margin. During testing, overall fan pressure ratio was increased by opening the 1st-stage stator, due to increased work input from the 2nd-stage rotor; however, changes in stall margin and efficiency were small. Considerable flow regulation occurred with variations of both stator settings. The tip region of the first stage was the most highly loaded area regardless of stator setting and was probably the cause of stall at 70 percent speed.

The configuration with the 5-degree closed 1st-stage stator and the 2.5-degree opened 2nd-stage stator was common to all three speeds. The overall fan pressure ratio was reduced at all speeds due to the closed 1st-stage stator which reduced the work input from the 2nd-stage rotor. Operating line overall efficiency of the fan was unchanged at 70 percent and 100 percent speeds but was improved by 1.5 percentage points at 105 percent speed. The speed-flow modulation obtained at 70 percent speed was small at design speed and not evident at 105 percent speed. At 105 percent speed, the 1st-stage pressure ratios were higher along a very steep speedline with this stator reset, and efficiency was increased by two percentage points. First-stage pressure ratios and efficiencies were essentially unchanged at 70 percent and 100 percent speeds.

Studies were made of possible benefits of using a variable flap inlet-guide-vane in conjunction with the existing variable stators at 70 percent and 110 percent of design speed. These studies showed a probable benefit in stall margin of approximately nine percentage points at 70 percent speed with the inlet-guide-vane flap in a position to reduce the incidence and loadings of the 1st-stage rotor. A small reduction in overall fan efficiency could occur due to the inlet-guide-vane losses. No stall margin or efficiency benefit was predicted for 110 percent speed. With the inlet-guide-vane flap positioned to increase the work input and loading of the 1st-stage rotor, radial distributions of flow cause loading limits to be encountered at the hub of the 1st- and 2nd-stage rotors and the 2nd-stage stator at approximately the same flow where the loading limits of the 2nd-stage hub were predicted without an inlet-guide-vane.

INTRODUCTION

An extensive program has been conducted by NASA on high speed, high-loading, single-stage fans. Based on demonstrations of good performance at high speeds and loadings in single stages, a two-stage, highly-loaded, high speed fan was designed, fabricated, and tested. The objectives of the two-stage fan program were 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 was 1450 ft/sec [441.96 m/sec]; design pressure ratio was 2.8; tip diameter was 31.0 inches [0.787 m] at the inlet of the 1st-stage rotor; design corrected flow was 184.2 lbm/sec [83.55 kg/sec]; and the hub-tip ratio was 0.4. Details of the aerodynamic and mechanical designs are given in Reference 1.

Good aerodynamic performance was documented during the first test of this two-stage fan. At design speed and pressure ratio, the measured flow closely matched the design value; the efficiency was 85.7%, exceeding the design goal of 83.9%; and the stall margin was 10%. Measured rotor losses were about equal to the design values, but stator losses were less than the design values. The first test was abbreviated due to flutter on the 2nd-stage rotor blades and cracking of the root leading edges of some stator vanes. Failure of one 1st-stage stator vane root leading edge has been attributed to a locally thin section, and failure of one 2nd-stage vane has been attributed to a stress concentration resulting from a brazed-on leading edge sensor. Results of the first test are reported in detail in Reference 2.

The blades for the 2nd-stage rotor were redesigned with partspan shrouds to eliminate flutter, and the fan was rebuilt with these redesigned rotor blades. In addition, a sufficient number of 1st-stage stator vanes were fabricated to insure that all vanes in the rebuild would meet design thickness specifications. Stator leading edge pressure sensors were not used in the rebuild in order to avoid stress concentrations and because the data from the first build showed that the stator discharge instrumentation provides the same information with good accuracy. Design details of the 2nd-stage rotor with the partspan shroud are given in Reference 3.

Tests of the modified two-stage fan were run with uniform inlet flow, tip-radial, hub-radial, and circumferential inlet distortion to document performance with stators in the design positions relative to the aii stream. Results of these tests are reported in detail in Reference 3.

This report presents the results of a stator optimization program to obtain increased overall fan efficiency or stall margin. Each stator was capable of being reset in 2.5-degree increments. The 2nd-stage stator was capable of being reset from 10 degrees open to 10 degrees closed. The 1st-stage stator was capable of being reset 10 degrees closed, but axial spacing limited opening this stator to 5 degrees from the design position. Tests were conducted at 70, 100, and 105 percent of design speed with four to six different combinations of stator settings at each speed. Results of these tests are presented separately for each speed to clarify the effects of the stator positions. One stator reset configuration common to all three speeds (1st-stage stator closed 5 degrees, 2nd-stage stator open 2.5 degrees) is analyzed for speed effects on performance. The baseline performance data with design stator-settings presented in this report were taken during the uniform inlet flow test portion of the program reported in Reference 3. In addition to the test results, an analytical study of the effects of adding an inlet guide to the compressor is presented.

The symbols used in this report and performance parameters are defined in Appendix A.

APPARATUS

AERODYNAMIC DESIGN

The two-stage fan test arrangement is shown schematically in Figure 1, and a detailed description of the aerodynamic and mechanical design of the fan is given in Reference 1. A detailed description of the redesigned 2nd-stage rotor used in this test is given in Reference 3.

Design performance parameters at the design point are summarized in Table 1.

TABLE I – DESIGN OVERALL PERFORMANCE PARAMETERS

Corrected Speed: $N/\sqrt{\theta}$ = 10720 rpm - Corrected Flow: $W\sqrt{\theta}/\delta$ = 184.20 lbm/sec [83.55 kg/sec]

	PRESSURE RATIO		ADIABATIC EFFICIENCY (%)	
	Local	Cumulative	Local	Cumulative
Rotor 1	1.786	1.786	89.4	89.4
Stator 1	.976	1.742	–	85.3
Rotor 2	1.655	2.884	89.9	86.5
Stator 2	.971	2.80	–	83.7

The fan was designed without inlet-guide-vanes (IGV) but with the provision for adding a variable camber IGV at a later date. Stators were designed with the ability for resetting at different stagger angles without requiring removal of the fan from the test stand. Both stators were designed to turn the flow to the axial direction (design position). The tip diameter of the 1st-stage rotor inlet was selected as 31 inches [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 [441.96 m/sec], the design speed corrected to standard inlet conditions was 10,720 rpm. The inlet inner case diameter was held at a minimum of 10 inches [0.254 m] to provide clearance for the front bearing compartment. The specific flow at the inlet to the 1st-stage rotor was set at 42.0 lbm/sec-ft^2 [205 kg/sec-m^2], consistent with advanced fan technology. This, with the specified hub-tip ratio of 0.4 and the chosen tip diameter, yielded a design inlet corrected flow of 184.2 lbm/sec [83.55 kg/sec].

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 has been obtained, as explained in Reference 1.

Blockages were included in the aerodynamic design to account for boundary layer growth on the casing walls and for presence of the rotor partspan shrouds. Boundary layer displacement thickness at the 1st-stage rotor inlet was assumed equal to that measured downstream of inlet bellmouths used in research programs at Pratt & Whitney Aircraft. Growth of the wall displacement thickness through the blade rows of the two-stage fan was estimated using a correlation developed by W. T. Hanley (ref. 4) wherein growth along the casing walls is chiefly a function of wall static pressure gradient. To account for the presence of partspan shrouds, a blockage equal to the percent of total annulus area occupied by the shroud was applied at the exit of each rotor and the inlet of the following stator, and half this amount was used at the inlet of each rotor. No allowance for shroud blockage was applied at the 1st-stage or 2nd-stage stator exits. Total blockage inputs to the streamline analysis calculation at various axial locations were computed as the sum of end-wall blockages and shroud blockages and were applied equally to all stream tubes.

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

Coordinates of blade edges at the hub and tip are given in Figure 2. The differences between the coordinates of the original and redesigned 2nd-stage rotor are due to changes in blade edge location. Flowpath walls were not changed.

Rotor and stator blade sections for both stages of the fan were multiple-circular-arc (MCA) airfoils designed on conical surfaces which approximate stream surfaces of revolution. Blade setting angles were determined from design flow angles and incidence and deviation angle criteria described in Reference 1. 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. A partspan shroud was located at 61 percent span on the 1st-stage rotor and at 60 percent span on the redesigned 2nd-stage rotor. A view of a rotor and stator for each blade row of the two-stage fan is shown in Figure 3.

Design details of the 1st-stage rotor, the 1st-stage stator, the original 2nd-stage rotor, and the 2nd-stage stator, including manufacturing sections defined on planes normal to the stacking line, are given in Reference 1. Details of the redesigned 2nd-stage rotor are given in Reference 3. A summary of important design parameters of blades and vanes is given in Table II. Stator velocity vectors calculated for the negatively sloped total pressure profile of the redesigned 2nd-stage rotor showed that both stators would be satisfactory for tests with the redesigned rotor.

TABLE II – BLADE AND VANE GEOMETRIC PARAMETERS

	FIRST-STAGE		SECOND-STAGE	
	Rotor	Stator	Rotor (Redesign)	Stator
Number of airfoils	28	46	60	59
Aspect ratio[1]	2.48	2.75	2.63	2.20
Hub chord, inch [meter]	3.62 [0.092]	2.75 [0.070]	2.10 [0.053]	2.22 [0.056]
Tip chord, inch [meter]	4.55 [0.116]	3.10 [0.079]	1.89 [0.048]	2.45 [0.062]
Hub solidity	2.38	2.52	2.24	2.25
Tip solidity	1.33	1.55	1.27	1.66

[1] Average length/axially-projected hub chord

MECHANICAL DESIGN

Predicted rotor and stator stresses due to static and dynamic loads are well within the capabilities of the materials selected. Rotor blades were fabricated from AMS 4928 (titanium alloy); stator vanes were fabricated from AMS 5613 (stainless steel); and disks, spacers, and hubs were fabricated from AMS 6415 (low alloy steel). The 1st-stage rotor blades have partspan shrouds at 61 percent span from the hub to avoid resonances, and the redesigned 2nd-stage rotor blades, used in the test described herein, have partspan shrouds at 60 percent span from the hub to avoid flutter. An oil damped front bearing was incorporated as a result of the initial tests which revealed incipient critical speed problems. Mechanical design of the original fan configuration is described in detail in Reference 1, and details of the rotor redesign and oil damped bearing design are given in Reference 3.

TEST FACILITY

The test program was carried out in a sea-level compressor test stand (Figure 4) that 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. 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. The stack contained a 6 ft [1.83 m] diameter valve to provide back pressure, or throttling, for the test compressor. Two smaller valves, a 24 in. [0.61 m] and a 12 in. [0.305 m], located in the bypass lines provided fine adjustment of back pressure.

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

INSTRUMENTATION AND CALIBRATION

Airflow to the compressor was measured by means of a calibrated nozzle designed to the standards of the ISO (International Organization for Standards). Airflow measurements were within one percent accuracy.

The compressor speed was measured by means of an impulse type pickup. The pickup was an electromagnetic device which counted the number of gear teeth that passed within an interval of time and converted the count to RPM. Between 4,000 rpm and 12,000 rpm, accuracy was within 0.2%.

All temperatures were measured using 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 found in Reference 5. The thermocouple leads were calibrated for each temperature element. Overall rms temperature accuracy was estimated to be ±1.0°F [±0.56°K].

Wedge probes which measured total pressure, static pressure, and air angle and combination probes which measured total pressure, total temperature, static pressure, and air angle were calibrated for Mach number as a function of indicated static-to-total pressure ratio, 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.

All pressures from probes, fixed rakes, and static taps were measured with transducers and recorded in millivolts by an automatic data acquisition system. The accuracy of the pressure was ±0.1 of the full scale value. All pressures from instrument locations upstream of the 1st-stage rotor 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 the 1st-stage rotor and from all downstream locations were measured using 50 lbf/in.^{2} [3.445×10^5 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 5, and the axial and circumferential positions of the instrumentation are shown in Figures 6 and 7, respectively. Instrumentation for measuring overall and blade element performance data is listed in Table III.

The eleven radial positions at each axial station were defined by the intersection of the axial station and the redesign streamlines that 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. The radial locations at which these streamlines passed the leading and trailing edges of each blade row are given in Appendix C, Table XII.

The parameters that were recorded continually during excursions into stall or surge are listed in Table IV.

TABLE III – PERFORMANCE AND BLADE ELEMENT INSTRUMENTATION

Instrument Plane Location	Parameter	Type and Quantity
Sta. 0 - - Inlet Plenum Chamber	1) P	6 pressure taps on plenum wall
	2) T	6 bare wire chromel-alumel thermo-couples
Sta. 6 - - Rotor 1 Inlet (approx. ½ rotor-chord upstream of rotor 1)	1) p	6 O.D. and I.D. wall static taps
	2) (1)P, p, & air angle	2 wedge radial traverse probe spaced 180° apart circumferentially.
Sta. 8 - - Rotor 1 Exit (approx. halfway between rotor 1 T. E. and stator 1 L.E.)	1)(2) p	4 O.D. wall static taps approximately equally spaced circumferentially.
Sta. 11 - - Stator 1 Exit half-way between T. E. of stator 1 and L. E. of rotor 2)	1) (2) p	4 O. D. and 4 I. D. wall static taps, approximately equally spaced circumferentially.
	2)(1) T, P, p, & air angle	Two NASA combination probes - one with circumferential traverse of one vane gap, plus radial traverse. Second probe with radial traverse at midgap.
Sta. 14 - - Rotor 2 Exit	1)(2) p	4 O. D. and I. D. wall static taps, approximately equally spaced circumferentially.
Sta. 16 - - Fan Discharge (within ½	1) (2) p	4 O. D. and 4 I. D. wall static taps approximately equally spaced circumferentially.
	2)(1)P, p, &	2 wedge probes, radial traversed. Approximately 180° apart and located at vane midchannel.
	3) (1)T	2 wake rakes located approximately 180° apart, radially traversed. 10 elements across gap.
	4) (1) p	2 wake rakes located approximately 180° apart, radially traversed, 13 elements across gap.
Sta. 17 - -Rig Exit	1) P	One circumferential P rake, 5 sensors located at 50% span (used for setting points).

(1) 11 radial locations for uniform inlet flow tests (5, 10, 15, 30, 50, 60, 65, 70, 85, 90,and 95% of passage blade height); 5 radial locations for distorted inlet flow tests (10, 30, 50, 70,and 90% of passage height)

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

TABLE IV – STALL TRANSIENT INSTRUMENTATION

Instrument Plane Location	Parameter	
Inlet Nozzle	p	1 static tap downstream and 1 static tap upstream of inlet nozzle.
	p	A Δ_p 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. 8, 11 - Rotor 1, Stator 1, and Sta. 14 Rotor 2 Exit	P	One O. D. static tap
Sta. 16 - Fan Discharge	P	One O. D. static tap
Sta. 17 - Fan Discharge	P	One circumferential pressure rake at 50 percent span
Gearbox	N	Impulse pickup

PROCEDURES

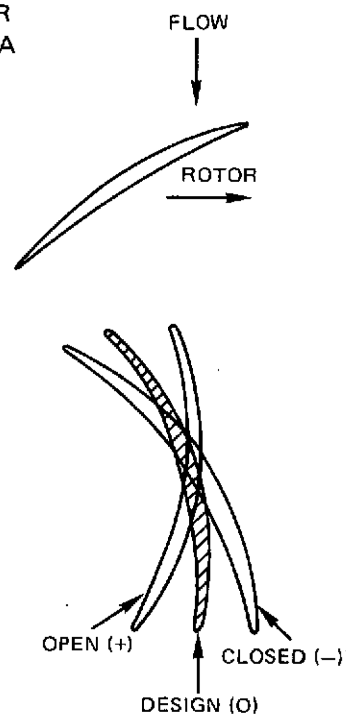
TEST PROCEDURE

The mechanical integrity of the compressor had been established during the shakedown tests of Reference 3 where no flutter limits or vibration problems were encountered. As a result, no detailed surveys were conducted with hot-film probes or with strain gages during the stator optimization tests.

Stator setting optimization tests were conducted at 70 percent, 100 percent, and 105 percent of design speed with uniform inlet flow to examine the effects of various stator stagger angles on first-stage and fan overall performance. At design speed, six different combinations of 1st-stage and 2nd-stage stator stagger angles were tested for comparison with the design configuration tested previously (ref. 3). At 70 percent and 105 percent of design speed, four different configurations were tested for comparison with the design setting. These configurations are listed in Table V.

TABLE V – STATOR OPTIMIZATION CONFIGURATIONS

Speed	Setting Angle from Design: Stator 1	Setting Angle from Design: Stator 2	Number of Data Points
100%	0	0	6[1]
	-5	+2.5	4
	+2.5	0	4
	0	+5	3
	0	-5	4
	0	-10	2
	+2.5	-5.0	4
105%	0	0	3[1]
	-5	+2.5	4
	-7.5	+2.5	4
	-2.5	+2.5	4
	+2.5	-2.5	4
70%	0	0	4[1]
	-5	+2.5	4
	+5	0	4
	+5	+7.5	4
	+5	-5	1



[1]Data Obtained in a Previous Test (ref. 3)

The stators could be reset on the test stand but could not be remotely controlled from the test stand control room. Each subsequent stator setting was determined by observing the effects on overall performance of the settings tested up to that point. For each configuration tested, stall flow and stall pressure ratio were determined with the stall transient instrumentation shown in Table IV. Stall flow was assumed to be the value measured by the flow nozzle at the instant when wall statics and the Δ P transducer showed abrupt changes as the rig was throttled continuously towards stall. The pressure ratio at stall flow was determined from the measurement made with the total pressure rake at the fan discharge, 50 percent span location which had been correlated to the fullspan average total pressure during performance testing. Steady-state performance was recorded for at least three points distributed along a speedline from wide open to near stall throttle settings.

Optimum stator settings for each operating condition were determined in two steps. First-stage stator variations were investigated first with adjustments to the 2nd-stage stator made only to avoid high losses. These 2nd-stage adjustments were made using an analytical prediction of optimum 2nd-stage stator inlet angles as a result of 1st-stage stator setting. This schedule of 2nd-stage stator setting as a function of 1st-stage stator setting is plotted in Figure 8. In the second step, after the 1st-stage stator optimization testing, the 1st-stage stator was set at its optimum angle, and the 2nd-stage stator optimization tests were run. If at the end of the 2nd-stage stator optimization testing, it appeared that some untested combination of stator settings would give further improvements, this combination was also tested. Overall performance data were obtained for a total of 55 stator optimization data points. First-stage data were obtained for 50 of these points. All complete data points were reduced by the streamline analysis program to obtain overall and blade element performance. These data points were in addition to the 13 design stator-setting data points taken at 70 percent, 100 percent, and 105 percent speeds during the uniform inlet flow portion of the Reference 3 test.

DATA REDUCTION TECHNIQUES

All steady-state performance data were automatically recorded in millivolts on computer cards and then converted to engineering units, corrected, and used to calculate overall and blade element parameters as described in the following sections.

Data Correction and Averaging

The data obtained from impact tube type total pressure probes (fixed radial rakes and traversing wake rakes) located in supersonic flow were corrected for shock loss.

Wedge probes were used to measure total pressure, air angle, and static pressure. Mach number was determined from calibrations of measured total and static pressure. 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 air-property tables 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 as follows.

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 correction given in Reference 5.

The circumferential total pressure distributions obtained at the exits of the 1st-stage and 2nd-stage stators were each mass-flow averaged at each radial position, using the measured distribution of total temperature and a constant circumferential static pressure determined by linearly interpolating the wall or wedge probe static pressure data. The arithmetic average of the three highest values from the circumferential total pressure distribution measured across the passage between adjacent stator vanes at each stator exit 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 measured circumferential distributions of total temperature and pressure and static pressures linearly interpolated between wedge probe or inner and outer wall static tap measurements. Circumferentially mass-flow averaged temperatures from both wake rakes at the 2nd-stage stator exit were arithmetically averaged at each radial location. During tests with the nominal (design) stator settings, one pressure wake rake did not traverse properly for some data points. Comparisons of measurements made when both rakes were properly functioning showed excellent agreement. As a result, only the data from the pressure rake which worked consistently were used in the data analysis of all stator optimization points.

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.

Performance Parameter Calculations

Overall and blade element performance parameters 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 VI.

TABLE VI – INPUT PARAMETERS TO FLOWFIELD PROGRAM

LOCATION	PARAMETER
Compressor Inlet (Station 0, Figure 6)	1) Corrected mass flow 2) Corrected rotor speed
Rotor 1 Inlet Instrument Plane (Station 6)	1) Constant radial blockage factor (to account for estimated wall boundary layer)
Stator 1 Inlet (Station 9)	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. Compressor inlet total pressure was assumed equal to the inlet plenum pressure. Temperatures were ratioed to the inlet plenum temperature.

A 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 pressure for a representative midthrottle operating point at design speed. As shown in Table VII, the flow blockage factors used in the data reduction flowfield calculation were the same as those blockages used in the redesign of the 2nd-stage rotor except at the trailing edge of the 2nd-stage stator where three percent blockage was added to the calculation for data reduction. These values were the same as those that had been used to reduce the data from the design stator-setting test reported in Reference 3 – details of the blockage selection and static pressure comparisons are given in that reference.

TABLE VII – 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-edge stations were input to the flowfield calculation as slanted straight lines that closely approximated the meridional profiles of the manufactured 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 trailing edge of the 1st-stage rotor at 5, 10, 15, 30, 50, 60, 65, 70, 85, 90, and 95 percent of the passage height. Percentage of passage height for other blade edges are given in Appendix C, Table XII. In addition to the blade element parameters, the output of the flowfield analysis program also includes overall performance of the 1st-stage rotor blade row, the first stage, the first stage plus the 2nd-stage rotor, the 2nd-stage rotor, and the complete two stage fan. Blade element performance is tabulated in Appendixes C, D, and E. 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.

DISASSEMBLY INSPECTION

The 1st-stage blade-tip rubstrip (composite material) failed while a post-test check point was being taken following completion of the stator optimization program. Disassembly of the test rig revealed minor damage (nicks) to the leading edge of the 1st- and 2nd-stage vanes with slightly more damage to the leading edge of the 2nd-stage vanes; one of the 2nd-stage blades had a piece approximately ½ in. by 1 in. [0.013m by 0.025m] broken off at the tip leading edge. As a result of this damage, there was a sudden drop in flow, pressure ratio, and efficiency. No deterioration in performance had been observed prior to the final check point nor had routine inspections revealed any indication of rubstrip or blade damage prior to this failure. Zyglo inspection of the 1st-stage and 2nd-stage vanes showed some minute cracks on the stator vanes which progressed from the vane stem and airfoil corners toward the center of the vane. The first stage had seven vanes with crack indications, and the second stage had nine vanes with crack indications. All crack indications were at the hub except on one 2nd-stage vane on which the indication was at the outer casing.

RESULTS AND DISCUSSION

STATOR OPTIMIZATION AT DESIGN SPEED

The purpose of the stator optimization studies at design speed was to gain fan stall margin with a minimum penalty in operating line efficiency. Analysis of the blade element data from the design stator-setting test showed that all elements were sufficiently close to the minimum loss to preclude improving maximum efficiency by changing stator settings.

The following discussion presents the results of these stator optimization studies in terms of overall and blade element performance comparisons. Stator settings are given in degrees from the nominal stagger angle setting (design setting). Negative angles indicate that the stator was closed (set in a direction to reduce incidence). Where the stator settings are given in parenthesis, the first number denotes the 1st-stage stator setting in degrees and the second number denotes the 2nd-stage stator setting. As an example: (−5,0) indicates that the 1st-stage stator was closed 5 degrees and that the 2nd-stage stator was set at nominal. For convenience, the 1st-stage stator is referred to as stator 1 and the 2nd-stage stator as stator 2. A similar abbreviation is used for the first and second stage rotors.

Fan, First-Stage, and Second-Stage Overall Performance

The following seven combinations of stator setting were tested at design speed (see Table V): (0,0); (−5, +2.5); (+2.5, 0); (0, +5); (0, −5); (0, +10); and (+2.5, −5).

Fan Overall Performance

Fan overall pressure ratio is presented in Figure 9 as a function of inlet corrected flow and adiabatic efficiency with different combinations of stator settings. Four configurations had design stator 1 settings with stator 2 settings varying in 5-degree increments from +5 to −10 degrees. These four speedlines gave a consistent trend with stator 2 closing of increasing stall margin at the expense of operating line efficiency, as shown in Figure 10 (stall margin is defined in Appendix A). Stall margin values were calculated for all speeds using the constant throttle operating line shown in Figure 9. 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.

Stator 2 settings changed fan performance by shifting the region of lowest stator 2 loss towards stall as the setting was closed and away from stall as it was opened. This effect is illustrated in Figure 11 which shows stator 2 total pressure recovery versus fan overall pressure ratio for the different stagger angle settings. Other effects on performance of stator 2 setting were caused by radial flow shifts, as discussed under Blade Element Performance.

When stator 1 was opened with the nominal stator 2 setting, stall margin increased and efficiency decreased, similar to the trend obtained when stator 2 was closed while stator 1 was held in its nominal position. Opening of stator 1 was limited to 2.5 degrees because further opening caused rotor 2 blade flutter. With stator 1 at +2.5 degrees, closing stator 2 from 0 to −5 degrees reduced the stall flow but also reduced pressure ratio near stall so that no increase in stall margin occurred. Operating line efficiency decreased when stator 2 was closed as it did in tests with stator 1 at its nominal setting.

The major effects of opening the 1st-stage stator 2.5 degrees can be seen by comparing the overall performance of the (0, 0) and (+2.5, 0) configurations or the (0, −5) and (+2.5, −5) combinations plotted in Figure 9. Opening stator 1 caused the 2nd-stage rotor to do more work and increased the overall fan pressure ratio, but peak efficiency decreased approximately 0.5 percentage points with the (+2.5, 0) setting and 1.0 percentage point with the (+2.5, −5) setting. Stall margin increased by 0.5 percentage points to 12.5 percent for the (+2.5, 0) configuration due to the increased pressure ratio at stall. Stall margin decreased 1.1 percentage points for the (+2.5, −5) configuration compared to (0, −5) due to the higher stall flow although the pressure ratio was higher.

Maximum flow appears to have been limited by rotor 1 with stators at nominal or opened settings. Maximum flow did increase by 0.25% when stator 1 was opened 2.5 degrees, but this change is within measurement accuracy and much smaller than the 4.5% throat area increase of the opened stator 1. When stator 2 was opened 5 degrees, a 0.25% increase in flow also occurred, again within measurement accuracy. Closing stator 1 to −5 degrees decreased the throat area by approximately 10% and gave a maximum flow reduction of about 1.3%. Efficiency remained high at high flow and low pressure ratio, indicating that flow capacity was not set by stator choke which is usually accompanied by high loss. Examination of incidence data, as discussed subsequently under Blade Element Performance, shows that rotor 2 probably limited flow capacity with stator 1 closed to −5 degrees.

Closing stator 2 to −10 degrees decreased its throat area approximately 21% and reduced maximum flow by about 4.5%. This flow decrease appears to have been the result of stator 2 choke, consistent with the low total pressure recovery for stator 2 at this setting (Figure 11).

The optimum configuration seems to have been the (0, −5) combination which improved stall margin by two percentage points with a decrease in overall fan efficiency of 1.3 percentage points from the nominal setting.

Stall margin and overall fan efficiency results are summarized in Table VIII.

TABLE VIII – EFFICIENCY AND STALL MARGIN VALUES FOR STATOR OPTIMIZATION TESTS AT DESIGN SPEED

SPEED	SETTING ANGLE FROM NOMINAL (deg)		STALL MARGIN (%)	EFFICIENCY ON OPERATING LINE (%)
	Stator 1	Stator 1		
100%	0	0	12.0	85.0
	-5	+2.5	8.5	85.2
	+2.5	0	12.5	84.3
	0	+5	7.5	84.8
	0	-5	14.0	83.7
	0	-10	16.2	77.0
	+2.5	-5	12.9	82.1

First-Stage Performance

The 1st-stage rotor pressure ratio is shown in Figure 12 as a function of inlet corrected flow and adiabatic efficiency. The corresponding first-stage performance is presented in Figure 13, showing that with stator 1 nominal settings the various stator 2 settings had a negligible effect on first-stage pressure ratio. Efficiency was relatively unchanged by stator settings. The increased efficiencies shown for the (0, +5) and (0, -5) configurations appear inconsistent with results of the other stator settings although no errors were found in the data. Comparison of data from stator 2 reset tests in which stator 1 was set at +2.5 degrees shows no change in pressure ratio or efficiency with stator 2 variation. Stator 1 total pressure recovery was affected very little by any stagger angle changes. Pressure coefficient and adiabatic efficiency versus flow coefficient for the 1st-stage rotor and first-stage are presented in Figures 14 and 15.

Second-Stage Performance

Performance of the 2nd-stage rotor and the second stage is represented by the pressure coefficient and adiabatic efficiency versus flow coefficient curves of Figures 16 and 17. Figure 16 shows that stator 1 stagger angle variations had a significant influence on the performance characteristics of rotor 2. With stator 2 at a nominal setting, opening stator 1 by 2.5 degrees did not change the flow or pressure coefficients but reduced rotor efficiency. With stator 2 closed 5 degrees, the same 2.5 degree opening of stator 1 (+2.5,-5), increased pressure and flow coefficients but did not affect efficiency, compared to the (0,-5) combination. Stator 2 stagger angle settings had minor effects on rotor 2 performance except for the 10-degree closed stator 2 setting. In this position, stator 2 choking reduced the flow capacity of the second stage approximately 10% and decreased the rotor 2 pressure coefficient at the choke point.

Stator 2 losses had a strong effect on performance of the second stage. At open throttle points, where stator 2 was choked, the adiabatic efficiency average of the second stage was about 13 percentage points lower than the efficiency of rotor 2. At points where stator 2 operated with low loss (near peak efficiency), the efficiency of the second stage was approximately four percentage points lower than rotor 2 efficiency.

Blade Element Performance

Spanwise Comparison of Performance Parameters

Spanwise profiles of performance parameters from near stall data points for each configuration were compared in an attempt to determine which blade row stalled first. Figure 18 shows near stall diffusion factors versus span for each blade row for the various stator 2 settings with nominal stator 1 settings. At the nominal stator 2 setting, the rotor 2 hub was highly loaded and probably caused stall (Figure 18a). Closing stator 2 to -5° (Figure 18b) evened the radial loading distributions for all blade rows, and the improved balance reduced the local rotor 2 hub value. Closing stator 2 by 10 degrees once again caused the rotor 2 hub loading to increase to a critical level (Figure 18c). Opening stator 2 by five degrees caused stator 2 hub diffusion factors to approach critical values while rotor 2 values were relatively low (Figure 18d). The only effect of opening stator 1 was to increase rotor 2 hub loadings slightly as shown in Figure 18e.

Spanwise profiles of exit meridional velocity (Figure 19) indicate that closing stator 2 from -5 to -10 degrees caused blockage which forced flow away from the hub of rotor 2 and stator 2. These calculated flow velocities were caused by the radial profiles of total pressure ratio shown in Figure 20. Calculations also showed that a large increase in rotor 2 hub loss caused the reduced pressure ratio (Figure 21). One explanation for the high loss is that the free-stream pressures used to calculate rotor loss were lower than the actual rotor exit total pressures. Figure 22 shows total pressures measured by the stator 2 exit wake rake at 10 percent span for points near operating line conditions with stator 2 at 0, -5, and -10 degrees. As can be seen, the wake covers the entire span for the -10-degree stator setting so that no free-stream region is apparent. The value of rotor exit pressure, calculated in the manner described under Data Reduction Techniques, was probably lower than the true rotor exit pressure. This resulted in values of rotor 2 loss and loading that are probably higher than the true values, in which case the total pressure recovery of stator 2 for the (0, -10) stator setting is even lower than that shown in Figure 11. Another probable result would be that the corresponding rotor 2 pressure coefficient and efficiency values shown in Figure 16 are too low.

Variations with Incidence Angle

Blade element performance in terms of loss coefficient, diffusion factor, and deviation angle versus incidence angle is presented in Figure 23 through 26 for rotor 1, stator 1, rotor 2, and stator 2, at five of the 11 radial positions where performance parameters were calculated. Tabulations of the data at all eleven radial positions are given in Appendix C.

Rotor 1

Design speed blade element data for rotor 1 (Figure 23) shows that for any given stator setting the rotor operates within a small range of incidence angles, due to the flow regulation of the stators. Loss levels are relatively constant for all configurations except at the hub region and are insensitive to incidence changes at all spans. The losses for the open 5-degree and closed 5-degree stator 2 settings with nominal stator 1 seem to be lower than the rest, especially in the lower portion of the span.

Negative hub losses, noted from 5 percent to 30 percent of span (Appendix C and Figures 23a and 23b), can be attributed to incorrect matching of temperatures and pressures in regions of steep radial gradients since the pressure and temperature probe elements were offset radially by approximately one percent of span. Distributions of losses between rotors and stators are not believed to be the source of the problem since stator losses appear reasonable for these points. These low losses gave the questionably high level of rotor 1 efficiency shown in the performance map of Figure 12. Diffusion factors followed the same increasing trend with incidence for all stator configurations, reaching a maximum value of 0.63 from 15 percent to 60 percent of span for the closed 10-degree stator 2 setting (Appendix C). The flow limit imposed by this setting caused rotor 1 to operate at 1.5 to 2.0 degrees higher incidence than nominal, with the increased back pressure causing the high loadings and probable stall initiation.

Stator 1

Blade element data for stator 1 (Figure 24) indicate that the losses were low for the entire range of incidences encountered due to stagger angle or flow regulations. A unique curve of diffusion factor versus incidence was obtained for each stator 2 setting. Each curve showed loading increasing with incidence at approximately the same rate but each having a different loading level for a given incidence angle. The curves shifted to higher incidence for opened stator 1 settings. Diffusion factors between 0.62 and 0.64 were attained near stall for the stator 1 nominal position with stator 2 closed 10 degrees. Apparently, the flow reduction caused by stator 2 is the reason stator 1 operated at higher incidence and loading.

Rotor 2

Rotor 2 loss coefficients versus incidence angle (Figure 25) for all stator configurations show a rotor 2 choking tendency characterized by sharp increases in loss with decreasing incidence, particularly in the wake region caused by the partspan shroud (45 percent to 66 percent of span). Very low incidence angles are evident for tests with stator 1 closed to -5 degrees. These angles probably reached the minimum possible incidence (ref. 6) for the portion of the blade having relative supersonic flow (from 37 percent to 100 percent of span), limiting fan flow capacity for this stator setting. Diffusion factors are quite high near the hub, reaching 0.72 at eight percent of span due to high back pressure with stator 2 closed to −10 degrees. Rotor 2 deviations are low for points where stage 1 efficiency appears to be unusually high (Figure 13), indicating that the temperature rise attributed to rotor 2 was greater than for similar data points with other stator settings.

The high value of rotor 2 loss shown at eight percent span for the (0, -10) data point at 4.5 degrees incidence is questionable since it was difficult to determine the free-stream pressure corresponding to rotor 2 pressure.

Stator 2

Blade element data for stator 2 (Figure 26) show evidence of hub choking, as indicated by the rapid increase in losses with decreasing incidence. From 42 percent span to the tip there is little variation of loss with incidence for any stagger angle setting. Each stator 2 stagger angle setting increased loading (diffusion factor) with incidence, each shifted in incidence according to the stagger angle. Maximum diffusion factor was 0.62 at the hub for the 10-degree closed stator 2.

Deviation angles are not considered reliable at very low incidence angles where the stator was near choke and stator wakes became large enough to influence angle measurements.

STATOR OPTIMIZATION AT 105 PERCENT OF DESIGN SPEED

The purpose of the stator optimization tests at 105 percent speed was to increase overall fan efficiency with a minimum stall margin penalty. The following five combinations of stator settings were tested (see Table V): (0, 0); (-5, +2.5); (-7.5, +2.5); (-2.5, +2.5); and (+2.5, -2.5). Overall and blade element performance comparisons are discussed in the following sections.

Fan, First-Stage, and Second-Stage Overall Performance

Fan Overall Performance

The fan overall pressure ratio with different combinations of stator settings is presented in Figure 27 as a function of inlet corrected flow and adiabatic efficiency. The three configurations with stator 2 opened 2.5 degrees all had improved operating line efficiencies of about 1.5 percentage points compared to that with nominal settings. This seems to have been due to a significant improvement in stator 2 recovery near the operating line pressure ratio (Figure 28). Closing stator 1 with this open stator 2 setting decreased overall fan pressure ratio due to the decreased rotor 2 work input. This reduced the stall margin from 15.7% with the nominal settings to 11% and 7.4% for stator 1 positions of -2.5 and -7.5 degrees, respectively. Opening stator 1 to +2.5 degrees caused a slight decrease in rotor 2 pressure coefficient near stall which resulted in a decreased overall fan pressure ratio. The one percentage point decrease in operating line efficiency with the 2.5 degree open stator 1 (Figure 27) was due to the decrease in stator 2 recovery in its 2.5 degree closed position, as shown in Figure 28.

The optimum configuration tested was, therefore, the closed 2.5 degree stator 1 with the opened 2.5 degree stator 2 which obtained an adiabatic efficiency of 82.5% on the operating line, an improvement of 1.5 percentage points relative to the efficiency obtained with nominal settings. Simultaneously, stall margin dropped 4.7 percentage points to a value of 11% However, the data indicate that most of the improvement in efficiency could have been obtained without a loss in stall margin by setting stator 1 at nominal and stator 2 at +2.5 degrees. At the operating line pressure ratio of 2.88, the change in stator 2 total pressure recovery was 0.01 (Figure 28). This change in recovery is equivalent to an efficiency change of 1.1 percentage points. In its nominal setting, stator 1 would have maintained the high level of rotor 2 work input and the stator 2 opened setting would have given stator 2 lower loss on the operating line. The relationship between the improvement in efficiency and stator 2 setting was not obvious during testing because of a time lag between testing and blade element analysis. Time was alloted at the end of the main test program to test the optimum configurations at each speed after detailed analysis of the data, but the rotor rub strip failure prevented these tests (see Disassembly Inspection).

Fan flow capacity was not affected significantly by opening either stator, indicating that rotor 1 determined the maximum flow capacity of the fan. Closing stator 1 to −7.5 degrees reduced maximum flow by approximately 1.2%. This lower flow is believed to have resulted from the minimum possible incidence limit on the supersonic portion of rotor 2 similar to the flow limit observed at design speed; however stator 1 losses indicate that this stator was near choke which may have contributed to the flow decrease. Stall margin and efficiency results for 105 percent speed test points are summarized in Table IX.

TABLE IX – EFFICIENCY AND STALL MARGIN VALUES FOR STATOR OPTIMIZATION TESTS AT 105% SPEED

SPEED	SETTING ANGLE FROM NOMINAL (deg)		STALL MARGIN (%)	EFFICIENCY ON OPERATING LINE (%)
	Stator 1	Stator 2		
105%	0	0	15.7	81.0
	-5	+2.5	8.5	82.5
	-7.5	+2.5	7.4	82.8
	-2.5	+2.5	11.0	82.5
	+2.5	−2.5	14.7	80.0

First-Stage Performance

The 1st-stage rotor pressure ratio is shown in Figure 29 as a function of inlet corrected flow and adiabatic efficiency. The corresponding first-stage performance is shown in Figure 30. The first-stage and rotor 1 pressure ratios did not change significantly with any stator variation. The first-stage and rotor 1 efficiencies seem to have varied inconsistently with stator setting with both the opened and closed configurations yielding efficiencies higher than those for the nominal settings. At wide open throttle, stator 1 recovery did not fall off as it did for stator 2 (Figure 28), indicating that stator 1 was not choked at any setting tested. Pressure coefficient and adiabatic efficiency versus flow coefficient curves for rotor 1 and the first-stage are presented in Figures 31 and 32.

Second-Stage Performance

The performance of rotor 2 and the second stage is shown in Figures 33 and 34 as pressure coefficient and efficiency versus flow coefficient. Closing stator 1 decreased flow capacity and pressure coefficient, and opening stator 1 increased flow but decreased the peak pressure coefficient slightly. Actual work input increased when stator 1 was opened, but a large drop in efficiency of approximately five percentage points reduced the ideal work (used to calculate pressure coefficient) below the level obtained at the design stator setting.

Blade Element Performance

Spanwise Comparisons of Performance Parameters

Diffusion factor is presented versus span in Figure 35 for each blade row for the near stall data points of each stator configuration. These points are also close to peak efficiency. The nominal and closed 2.5-degree stator 1 configurations had high loadings on the tip of rotor 2 which could have caused stall. Closing stator 1 to −7.5 degrees reduced the rotor 2 loading so that the 2.5-degree open stator 2 hub became critical. Stator 1 loadings changed very little with stagger angle changes.

Variations with Incidence Angle

Blade element performance in terms of loss coefficient, diffusion factor, and deviation angle versus incidence angle is presented in Figures 36 through 39 for rotor 1, stator 1, rotor 2, and stator 2, at five of the eleven radial positions where performance parameters were calculated. Tabulations of the data at all eleven radial locations are given in Appendix D.

Rotor 1

The rotor 1 blade element data (Figure 36) show that the small range of incidence angle near the hub was extended somewhat by closing stator 1 which reduced maximum flow and permitted lower flow before stall. These lower flows somewhat relieved the rotor 1 choking, as shown by the lower losses at higher incidences for the blade elements, particularly in the regions affected by the partspan shroud and the tip. The lower rotor 1 losses account for the remainder of the overall fan efficiency gained with stator 2 opened 2.5 degrees. Levels and trends in loss data are consistent with those found in the nominal position stator tests. For all closed stator 1 configurations, diffusion factors leveled out to a maximum of about 0.55 to 0.60 in the lower 50 percent of span for incidence angles corresponding to near-stall data points (Figure 35).

Stator 1

Blade element data (Figure 37) for stator 1 closed to -7.5 degrees from nominal indicate choking at the hub with sharp increases in loss with decreasing incidence angle. Opening the stator 2.5 degrees defined the stall side of the loss curve from 85 percent to 95 percents of span (tabulated in Appendix D, also shown in Figure 37e). For each stator setting, diffusion factors increased with incidence at the same slope but each curve shifted to higher incidence as the stator was opened. The maximum value of diffusion factor was 0.61 at the hub for the 2.5-degree open stator. Deviation levels increased with the closing of the stator.

Rotor 2

Loss versus incidence angle curves from rotor 2 blade element data (Figure 38) shifted to higher incidence with the closing of stator 1 out to 25 percent span and then shifted to lower incidence, suggesting a flow shift from hub to tip. Without a flow shift at the same flow and wheel speed, the rotor would be expected to operate at a lower incidence with the closed stator 1 due to increased preswirl. Meridional velocity profiles (Figure 40) show a reduction in hub flow with no change in tip flow. The negative incidence angles for the outboard portion of the blade, where relative Mach numbers exceeded 1.0, probably define the minimum possible incidence angle for the relative flow. High hub diffusion factors were gradually reduced with closing stator 1. At 82 percent and 88 percent spans, the rotor deviations were negative for the 7.5 degree closed stator 1. These negative deviations occurred for data points that had unusually high efficiency on the first stage, indicating that the portion of the fan temperature rise attributed to rotor 2 was greater than for other data points.

Stator 2

Stator 2 blade element data (Figure 39) indicate choking near the hub and tip for the nominal and closed 2.5 degree positions as shown by the rapid increase of loss with decreasing incidence angle. Opening stator 2 by 2.5 degrees relieved this choke trend somewhat and showed the beginning of stall loss increase at positive incidence from the hub to 23 percent span. The reduced losses near the hub for the +2.5-degree settings resulted in the improved stator 2 average total pressure recovery responsible for the increase in overall fan efficiency.

The rise in loss levels at low incidence angles (high flows) was accompanied by a sharp decrease in deviation angles, which may be the result of large stator wakes influencing the angle measurement of the probe at its gapwise location for a given stagger angle. Hub diffusion factors increased rapidly with increasing incidence angles, reaching levels of about 0.65 when stator 2 was open 2.5 degrees. These high values of loading in the hub region are the probable cause of stall for this stator 2 setting. Loading levels remained above 0.6 out to 11 percent span and also approached these values near the area of the partspan shroud wakes.

STATOR OPTIMIZATION AT 70 PERCENT OF DESIGN SPEED

The objective of the stator optimization at 70 percent of design speed was to improve both stall margin and efficiency. The following five combinations of stator settings were tested (see Table V): (0,0); (-5, +2.5); (+5, 0); (+5, +7.5); and (+5, −5). Overall and blade element performance are discussed in detail in the following sections.

Fan, First-Stage, and Second-Stage Overall Performance

Fan Overall Performance

Overall fan pressure ratio and adiabatic efficiency as functions of corrected inlet flow are presented in Figure 41. Pressure ratio of the fan was increased by opening stator 1 due primarily to increased rotor 2 work input. Higher fan pressure ratio characteristic curves crossed the operating line at higher flows. In this way, flow could be regulated between 113.6 lbm/sec [51.53 kg/sec] and 119.6 lbm/sec [54.18 kg/sec] at 70 percent speed. Similarly, opening stator 2 increased its recovery at open throttle points, raising fan pressure ratio to overcome system resistance at higher flows. Peak efficiency occurred near the operating line for all of the configurations tested with peak values falling between 84% and 84.5%. Stall margins also were nearly the same for all configurations, varying between 16.7% and 17.7%. Closing stator 1 allowed the fan to run at a lower flow before stall; nominal and opened stator 1 settings gave approximately the same flow at stall. Stator 2 total pressure recovery versus flow curves show that recovery varied slightly with setting angle changes except near wide open throttle (Figure 42). Stall flow was not affected by changes in stator 2 setting when stator 1 was fixed. Stall flows and operating line efficiencies for 70 percent speed are summarized in Table X.

TABLE X – EFFICIENCY AND STALL MARGIN VALUES FOR STATOR OPTIMIZATION TESTS AT 70% SPEED

SPEED	SETTING ANGLE FROM NOMINAL (deg)		STALL MARGIN (%)	EFFICIENCY ON OPERATING LINE (%)
	Stator 1	Stator 2		
70%	0	0	17.0	84.4
	-5	+2.5	17.7	84.0
	+5	0	16.7	84.4
	+5	+7.5	17.7	84.2
	+5	-5	–	–

First-Stage Performance

Pressure ratio and adiabatic efficiency as functions of corrected inlet flow for rotor 1 and the first stage are shown in Figures 43 and 44, respectively. Rotor 1 pressure ratio was essentially unchanged by stator variations. Stator 1 recovery stayed highest over the operating range for nominal and closed settings while losing recovery near stall for opened settings. These changes (Figure 42) did not affect stage pressure ratios to any great extent, as shown by Figure 44. Efficiencies show a lot of scatter due to the sensitivity of pressure and temperature measurements at low speeds and show no consistent trends with stator setting. The shape of the efficiency versus flow curves for all configurations suggests that rotor 1 was operating on the stall side of optimum incidence as expected for this speed. Plots of pressure coefficient and adiabatic efficiency versus flow coefficient for rotor 1 and the first stage are presented in

Figures 45 and 46. Pressure coefficient increased with decreasing flow coefficient for the rotor and for the stage, but increasing stator loss near stall reduced the rate of rise for the stage.

Second-Stage Performance

Plots of pressure coefficient and adiabatic efficiency versus flow coefficient for rotor 2 and the second stage are presented in Figures 47 and 48. These data show that opening stator 1 increased the flow capacity and work input of rotor 2. Stator 2 setting had a strong effect on flow and stage 2 efficiency at open throttle operation with stator 1 fixed at 5 degrees open but had practically no effect near stall. Efficiency was higher for closed stator 1 settings, but this was offset by lower first-stage efficiency at the low flow rates obtained with stator 1 closed.

Blade Element Performance

Spanwise Comparison of Performance Parameters

Spanwise variations of diffusion factors at near-stall conditions for each blade row are compared in Figure 49 for each 1st-stage stator setting. The near-stall points for the various combinations of stator 2 setting with stator 1 fixed at 5 degrees open were nearly the same and, therefore, are not presented. The tip region of the first stage was apparently the most highly loaded area regardless of stator setting and was the probable cause of stall. Both rotor 1 and stator 1 loadings were sufficiently high to cause stall. Closing stator 1 reduced its loadings, and a lower stall flow was obtained, indicating the possibility of stator 1 controlling stall. Opening stator 1 increased its loadings; however, stall flow was the same as for the nominal settings. The blade row which actually initiated stall was not determined. Rotor 2 loadings increased significantly with stator 1 opened 5 degrees, but the loadings were still much lower than the rotor 1 values. Closing stator 2 lowered its loading distributions, as was expected.

Variations with Incidence Angle

Loss coefficient, diffusion factor, and deviation angle are presented versus incidence angle in Figures 50 through 53 for each blade row at five of the eleven radial positions where performance parameters were calculated. Tabulations of the data at all eleven radial locations are given in Appendix E.

Rotor 1

Blade element data for rotor 1 (Figure 50) indicate the probability of a tip stall as evidenced by increasing diffusion factors and loss coefficients with increasing (stall) incidence angles. Values of diffusion factor betwen 0.62 and 0.63 occurred at the highest incidence at 90 percent of span and reached 0.65 at 95 percent span. Deviations angles also increased rapidly with incidence angle at 90 percent and 95 percent of span.

Stator 1

Stator 1 blade element data (Figure 51) show that the losses were relatively constant over a wide incidence range and increased slightly at the higher incidence angles. The diffusion factor versus incidence curves for each stator setting angle have the same positive slope but shift with respect to incidence according to stator setting. Levels of diffusion factor reached 0.62 near the tip for the 5-degree open stator setting, about the same as for the rotor 1 tip.

Rotor 2

Blade element data for rotor 2 (Figure 52) show that the rotor was operating at higher incidence angles with stator 1 opened to +5 degrees, consistent with less preswirl at the stator 1 exit. Mach numbers increased approximately 9% for the same wheel speed and meridional velocity when stator 1 was opened from nominal to +5 degrees. At higher incidence angles, losses tended to be higher for the +5 degree stator 1 setting than for the nominal setting at all spans. Loading levels (diffusion factors) never exceeded 0.55 at any spanwise location.

Stator 2

Curves of loss versus incidence angles for stator 2 (Figure 53) indicate choking at both the hub and tip with a rapid increase in loss with decreasing incidence. Opening the stator 7.5 degrees relieved this choking and allowed the stator to operate near the minimum loss region across the span. Wide open throttle data points show this choking trend at all spans, but the majority of data is near minimum loss, resulting in little overall recovery difference in the operating range. Loading levels were quite low for all setting angles, never exceeding a diffusion factor of 0.5. The shifting of the diffusion factor versus incidence curves with stagger angle setting is similar to that which occurred for stator 1.

SPEED EFFECTS ON STATOR OPTIMIZATION

Fan Overall Performance

The only combination of reset stators common to all three speeds was the (-5, +2.5) configuration. Fan overall pressure ratio and efficiency versus corrected inlet flow is presented in Figure 54 for the (-5, +2.5) and nominal configurations. As can be seen, closing stator 1 reduced the pressure ratio due to less rotor 2 work input.

Operating line efficiency of the fan was unchanged at 70 percent and at 100 percent of design speed but improved by 1.5 percentage points at 105 percent speed. Flow regulation due to changes in stator settings was less at design speed than at 70 percent speed in terms of percent change in flow. The flow change at 105 percent speed was within the accuracy of flow measurement.

First-Stage Performance

Pressure ratio and efficiency versus corrected inlet flow are shown in Figure 55 for rotor 1 and in Figure 56 for the first stage. First-stage pressure ratios and efficiencies were essentially the same for both stator settings at 70 percent and 100 percent speeds. At 105 percent speed with the stator reset, the first-stage pressure ratios were higher along a very steep speedline and efficiency was increased by 2%. Curves of pressure coefficient versus flow coefficient (Figure 57) show that little change in first-stage performance occurred when the stator was reset.

Second-Stage Performance

Plots of pressure coefficient and adiabatic efficiency versus flow coefficient for the second stage are presented in Figure 58 for the nominal and reset stator positions. Closing stator 1 caused a drop in pressure coefficient at all speeds due to reduced rotor 2 work input. Flow coefficient was reduced at 100 percent and 105 percent speeds due to minimum incidence being reached on the supersonic relative flow portion of rotor 2. At 70 percent speed, the flow was less with the closed setting because of the reduction in stator 1 throat area.

ESTIMATE OF INLET GUIDE VANE BENEFITS FOR OFF-DESIGN OPERATION

Studies were made of the possible benefits in stall margin or overall fan efficiency at 70 percent and 110 percent of design speed with the addition of a variable flap IGV (inlet-guide-vane) used in conjunction with the existing variable stator vanes. Estimates of efficiency and loading at operating conditions other than design were made with the streamline analysis program incorporating an off-design cascade system for rotors. Stator loss coefficients and deviation angles were held constant. The cascade system calculated incremental changes from the input design values of rotor loss and deviation angles due to incidence and Mach number effects. At each speed, baseline performance was calculated for several flows without an IGV and with nominal stator positions. The system gave somewhat different pressure ratio versus corrected flow characteristics from the actual test data. Comparisons of calculated efficiency and loading distributions with various combinations of IGV and stator 1 stagger angles were made with the baseline values rather than test data to obtain incremental differences in stall margin or efficiency. Results of the study at 70 percent and 110 percent of design speed are presented separately in the following sections.

70 PERCENT SPEED IGV STUDY

Test results at 70 percent speed showed that rotor 1 was highly loaded and probably instigated stall, with stator 1 hub loadings almost as high as those for rotor 1. Second-stage blade rows were lightly loaded. The baseline prediction with the off-design system gave the same general loading trends as the test data for operating line conditions although the spanwise distribution was somewhat different at the same fan pressure ratio, as shown in Figure 59. Adding an IGV to reduce the incidence to the 1st-stage rotor (closing the IGV flap) reduced the rotor work input and loading. In order to obtain the same overall fan pressure ratio as the baseline configuration at the operating line, it was necessary to run at slightly higher speeds or to open stator 1 to provide more rotor 2 work input. Figure 60 shows overall fan pressure ratio and efficiency versus corrected inlet flow at 70 percent speed for the test data and baseline prediction. Two other speedlines with an IGV closed 15 degrees are shown at slightly higher speeds, one with the nominal stator 1 and the other with stator 1 opened 5 degrees. Probable stall flows are shown for each case based on a plot of maximum diffusion factor (maximum occurring between 10 percent and 90 percent spans) versus corrected inlet flow for each blade row (Figure 61). Diffusion factor values of 0.65 were considered the limit for any blade row based on past experience. Closing the IGV by 15 degrees resulted in an increase in stall margin of approximately 9.5 percentage points (19.0% compared to 9.5%) for either the nominal or opened stator 1 settings. Peak overall fan efficiency decreased slightly with the addition of the IGV but was within one percentage point of the baseline and test data peak efficiency of 84.8%. Both configurations with the 15-degree closed IGV showed significant reductions in rotor 1 loadings so that rotor 2 and stator 1 loadings became the dominant factors. Stator 1 in its nominal position (IGV at −15°) reached the 0.65 diffusion factor limit before any other blade row. When stator 1 was opened 5 degrees (IGV at -15°), fan speed was reduced to obtain the proper operating line pressure ratio. Rotor 2 reached the 0.65 limit first, but incidences reached 6.5 degrees at the outer portion of stator 1 which may produce large losses. For this reason it appears as if the 15 degree closed IGV with stator 1 in its nominal position will give the most stall margin benefit with the least loss penalty. Spanwise loading distributions for each blade row are shown in Figure 62 for this configuration at a flow close to the predicted stall value. Reducing the rotor 1 loadings with the IGV may improve the tolerance to tip radial distortion (ref. 7) which should gain stall margin with the distortion, especially at 85 percent speed where a large penalty occurred (ref. 3).

110 PERCENT SPEED IGV STUDY

Test results at 110 percent speed showed the 2nd-stage blade rows to be highly loaded with rotor 2 probably initiating stall. The baseline prediction with the off-design loss system (no IGV and nominal stator1) gave the same general trend of blade loadings as the test data although the spanwise distribution was different. Two configurations were examined with an IGV opened 5 degrees to increase the incidence angle and resulting work input and loading of the 1st-stage rotor. One configuration had stator 1 in its nominal position and the other had stator 1 closed 5 degrees to reduce the work input from the second stage. In both cases a slight reduction in speed was necessary to obtain the operating line pressure ratio of the baseline case. Figure 63 shows maximum diffusion factors (maximum occurring between 10 percent and 90 percent of span) for each blade row versus percent operating line flow for the test data, including results of the baseline prediction and the two inlet configurations with the IGV opened. Both test data and the baseline prediction showed rotor 2 and stator 2 maximum loadings increasing at a steeper rate with flow than the 1st-stage blade rows. Opening the IGV 5 degrees increased rotor 1 maximum loadings significantly. Rotor 2 loadings were generally lower across the span for the opened IGV configurations with both stator 1 settings, but each configuration reached the stall diffusion factor value of 0.65 on the rotor 2 hub at approximately the same flow as the baseline case. In fact, rotor 1, rotor 2, and stator 2 reached the stall limit at the same flow for the open IGV setting with nominal stator 1. Closing stator 1 by 5 degrees with the opened IGV increased rotor 1 loadings even higher than with the nominal stator 1 so that the stall limiting diffusion factor of 0.65 was encountered at a higher flow than with the baseline configuration.

A spanwise comparison of blade row loadings for the baseline prediction and the five-degree open IGV with closed stator 1 is presented in Figure 64 for a predicted stall flow. This figure shows that rotor 2 loadings were generally lower across the span but peaked to the same value as the baseline prediction at 10 percent of span.

A plot of overall fan pressure ratio and adiabatic efficiency versus percent of operating line flow for the test data, baseline prediction, and the two configurations with the IGV opened (Figure 65) shows little change in efficiency or stall margin due to the addition of an IGV. The indicated stall points are based on the diffusion factor limits (0.65) shown in Figure 63. It was concluded that the addition of an inlet guide vane would give no significant benefit at 110 percent of design speed.

SUMMARY OF RESULTS

Stator optimization at design speed resulted in stall margin improvement at the expense of operating line efficiency by closing the 2nd-stage stator (resetting in a direction to reduce incidence). Improved blade loading distribution, especially on the 2nd-stage rotor, is the probable reason for the improvement in stall margin. However, closing the 2nd-stage stator decreased the pressure ratio and increased the hub losses of the 2nd-stage rotors. The optimum configuration tested gave a 2.0 percentage point increase in stall margin (14.0% compared to 12.0%) and 1.3 percentage point decrease in adiabatic efficiency (from 85% to 83.7%) compared to the operating line point with nominal stator settings.

At 105 percent speed, operating line adiabatic efficiency was improved by 1.5 percentage points (from 81% to 82.5%) with a 4.7 percentage point drop in stall margin (from 15.7% to 11.0%) with the 1st-stage stator closed 2.5 degrees and the 2nd-stage stator opened 2.5 degrees. The efficiency benefit came from the improved 2nd-stage stator recovery at a 2.5-degree open setting. Stall margin was reduced because of the decrease in 2nd-stage rotor work input with the closed 1st-stage stator setting. The increase in efficiency could probably have been obtained without a stall margin penalty if the 1st-stage stator had been left in its design position.

At 70 percent speed, stator setting variations had no effect on stall margin or overall fan operating line efficiency. The tip region of the first stage was the most highly loaded area and the probable cause of stall. Considerable speed-flow regulation occurred with variations of both stators but maximum recoveries changed very little.

The inlet-guide-vane study concluded that a significant stall margin benefit is probable at 70 percent speed with little or no efficiency penalty with the inlet-guide-vane in a position to reduce incidence to the 1st-stage rotor. No benefit was predicted for 110 percent speed.

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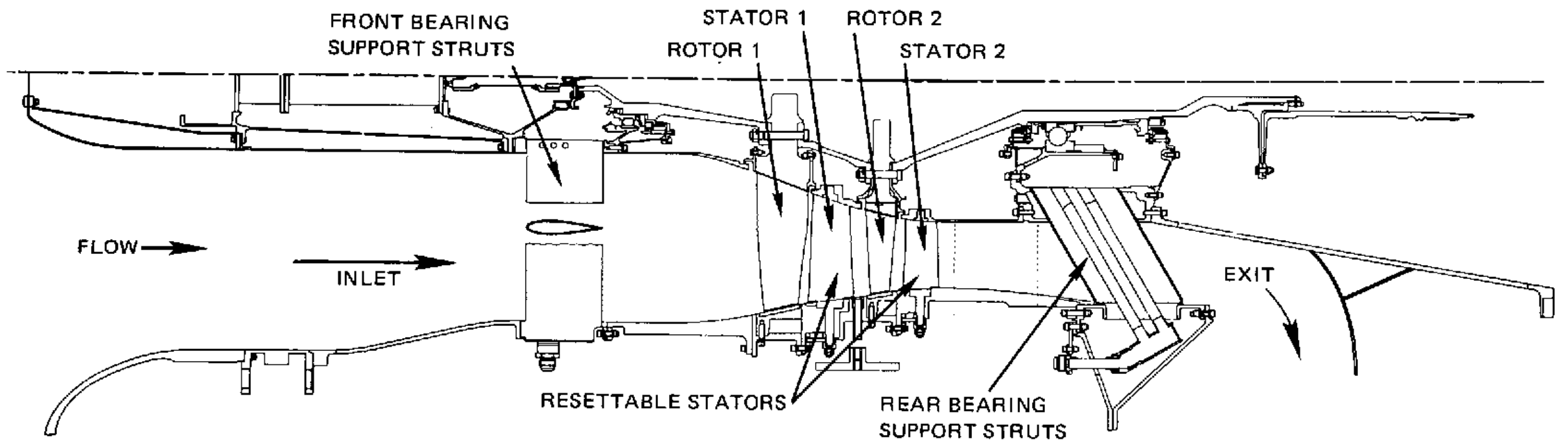


Figure 1 Schematic of Two-Stage Fan Test Arrangement

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

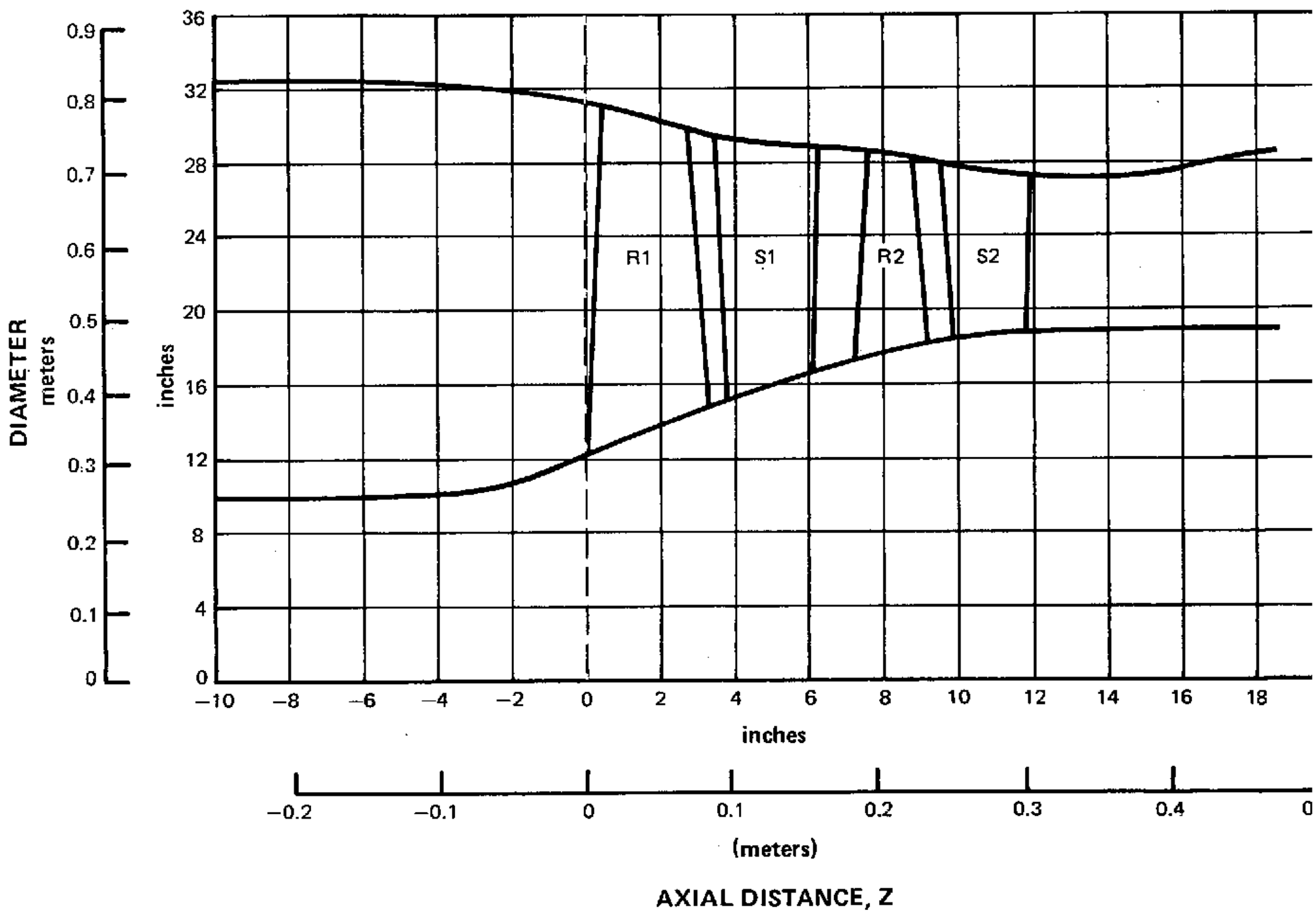
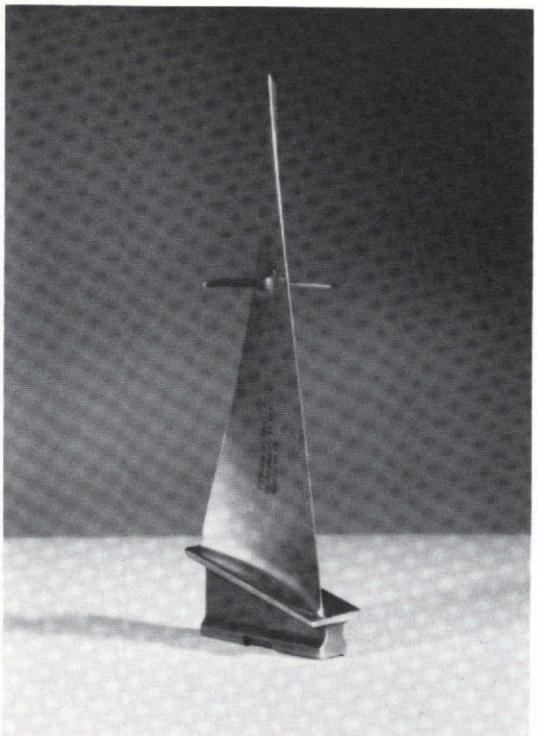
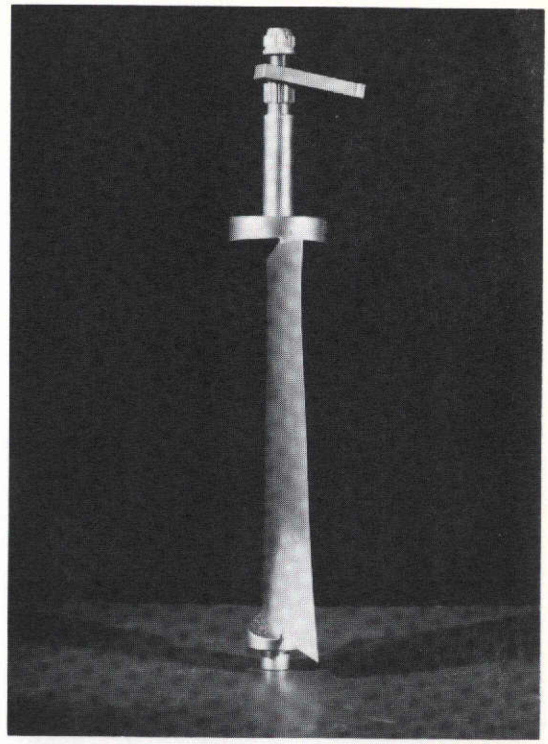


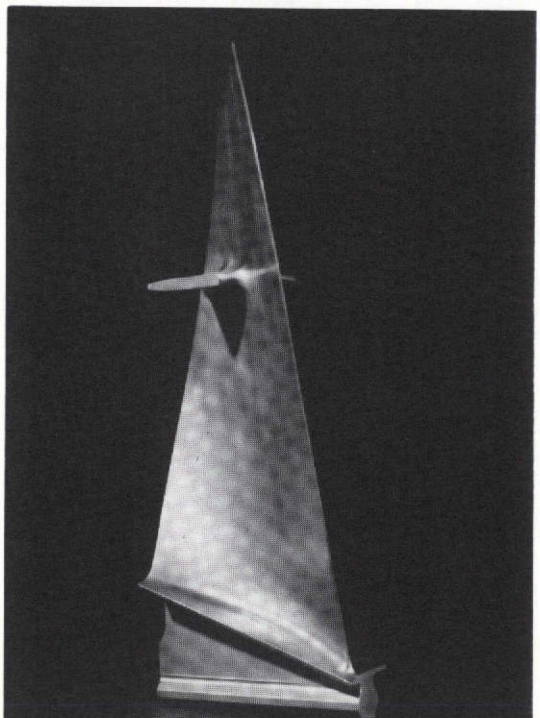
Figure 2 Fan Flowpath



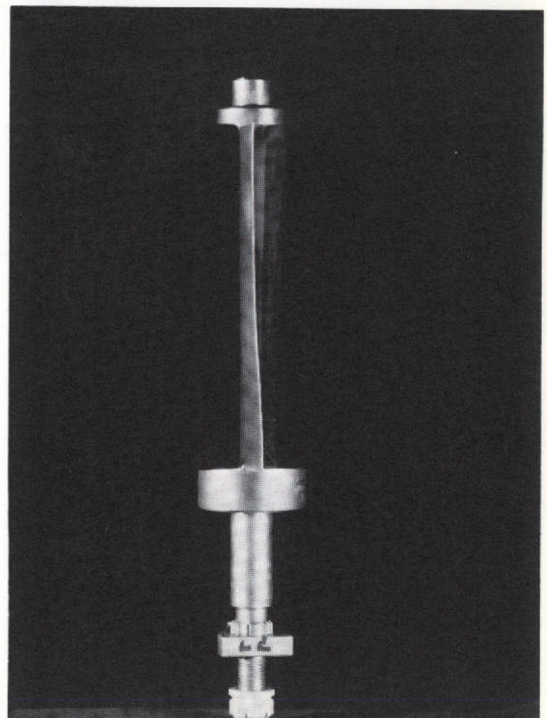
First-Stage Blade



First-Stage Vane



Second-Stage Redesigned Blade



Second-Stage Vane

Figure 3 Blades and Vanes Employed in Two-Stage Fan

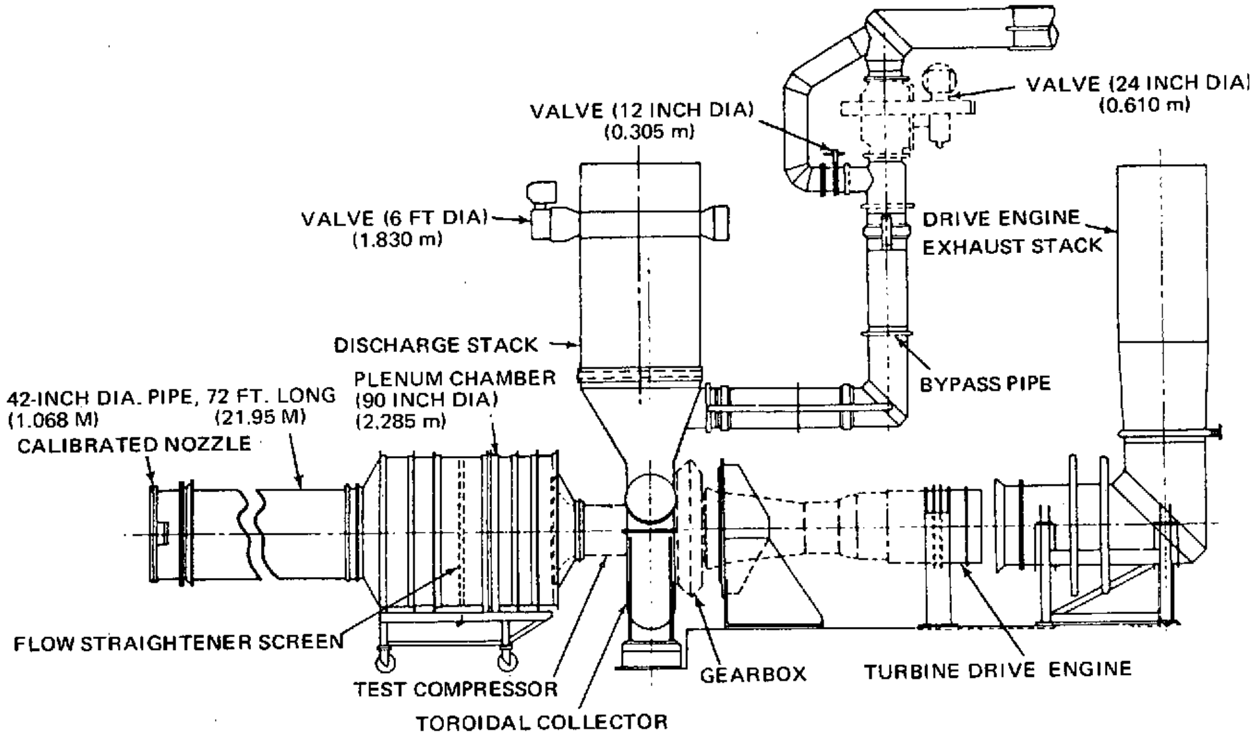
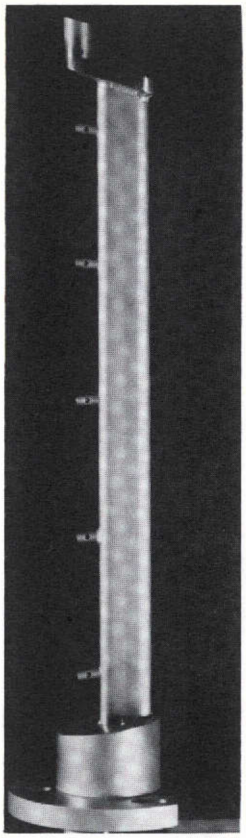
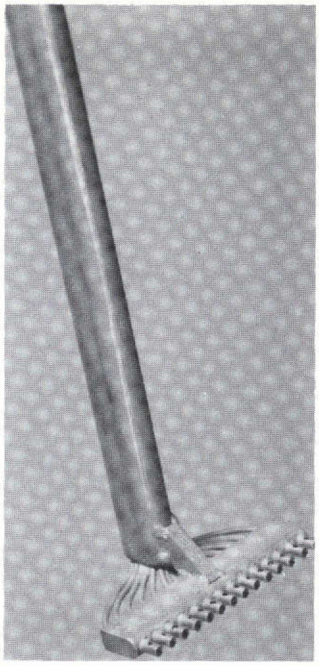


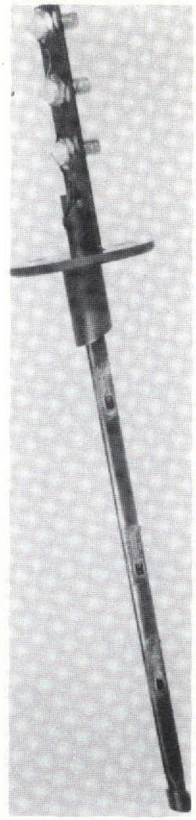
Figure 4 Schematic of Compressor Test Facility



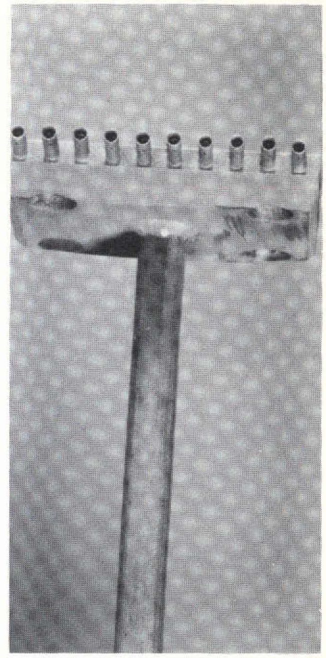
A. Fan Inlet
Total Pressure
Rake Probe



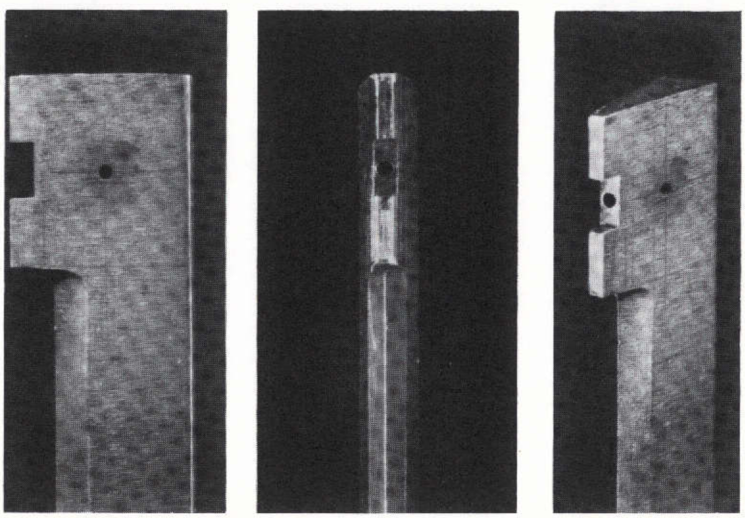
B. Stator 2 Exit Total Pressure
Wake Probe



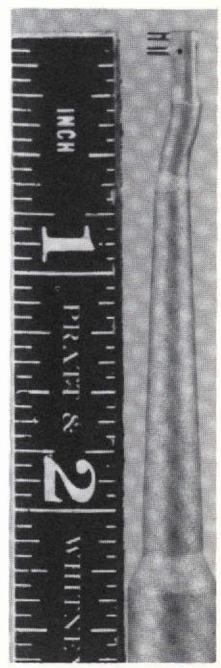
C. Fan Inlet
Hot Film
Probe



D. Stator 2 Exit Total Tempera-
ture Wake Rake



E. Fan Inlet & Static Exit Traverse Wedge Probes



F. Stator 1 Exit
NASA Combination Probe

Figure 5 Typical Instrumentation Employed in Two-Stage Fan

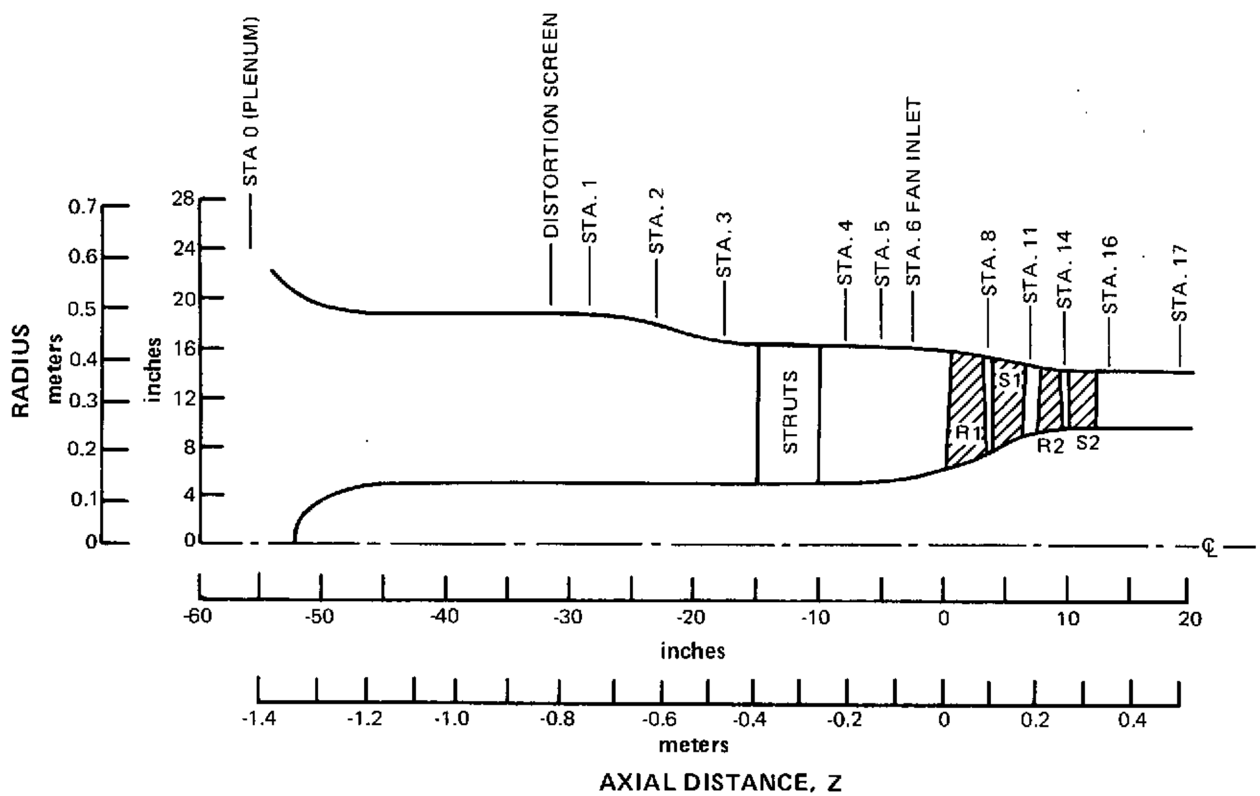


Figure 6 Axial Locations of Instrumentation

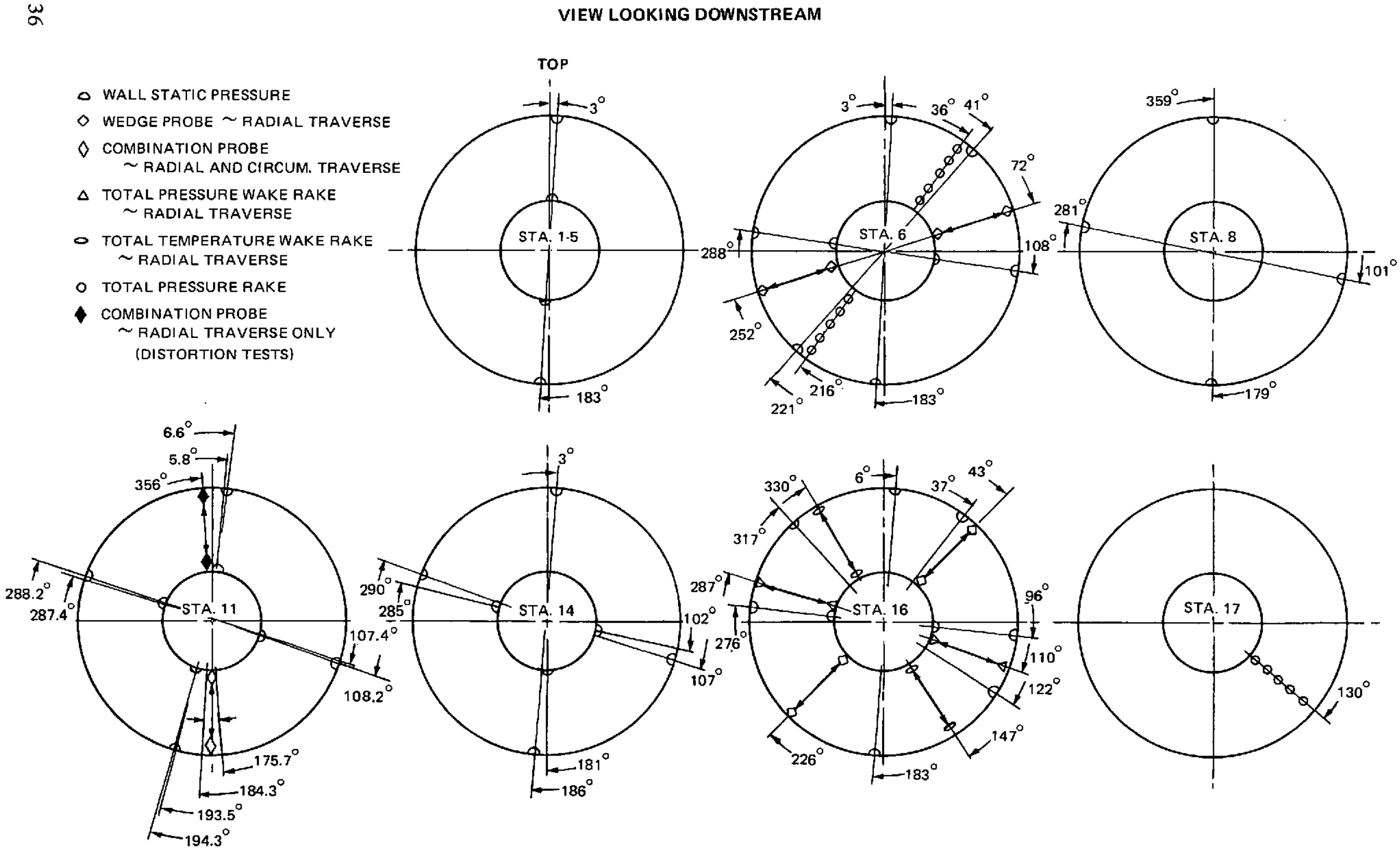


Figure 7 Circumferential Locations of Instrumentation

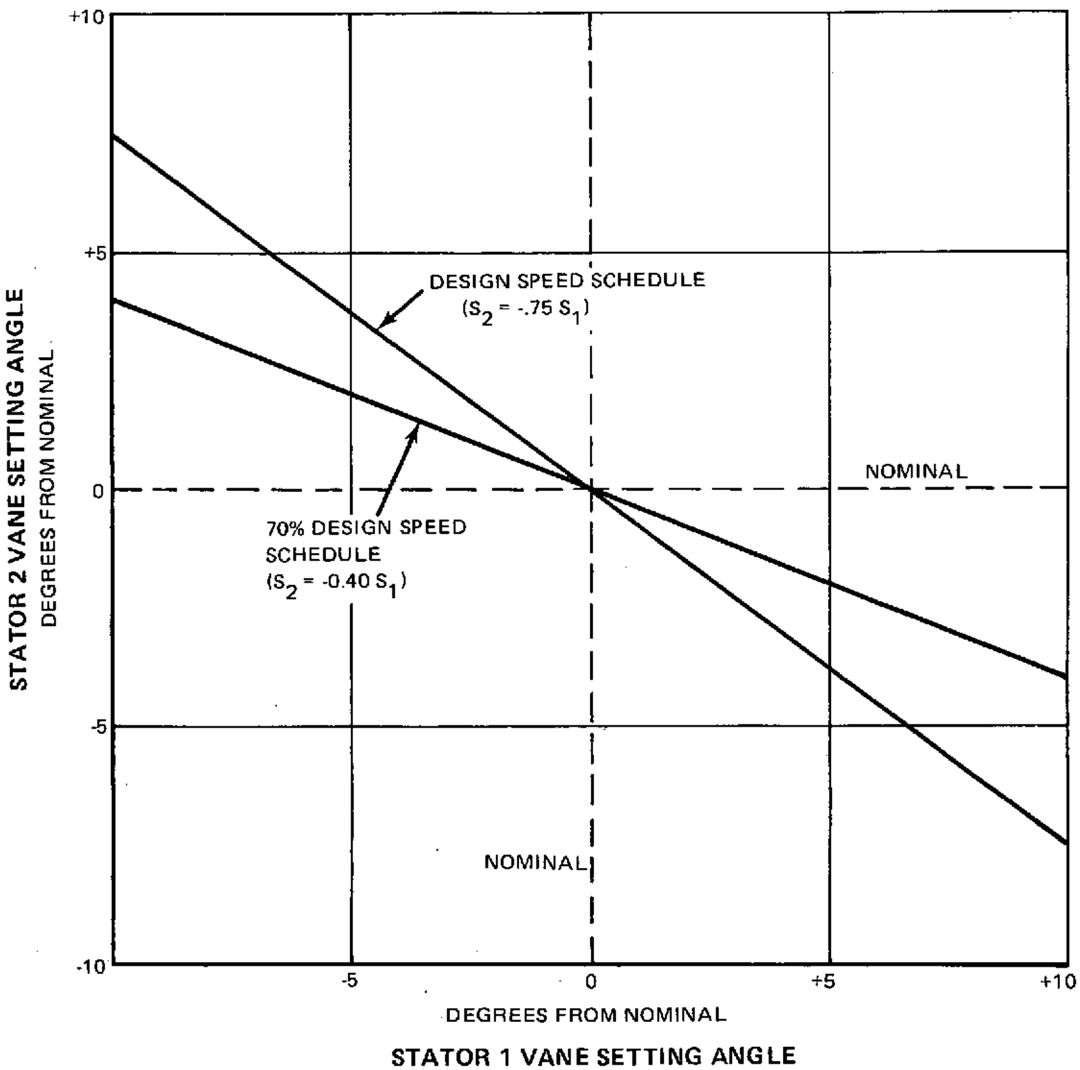


Figure 8 Analytical Schedule of Stator 2 Setting Versus Stator 1 Setting Angle

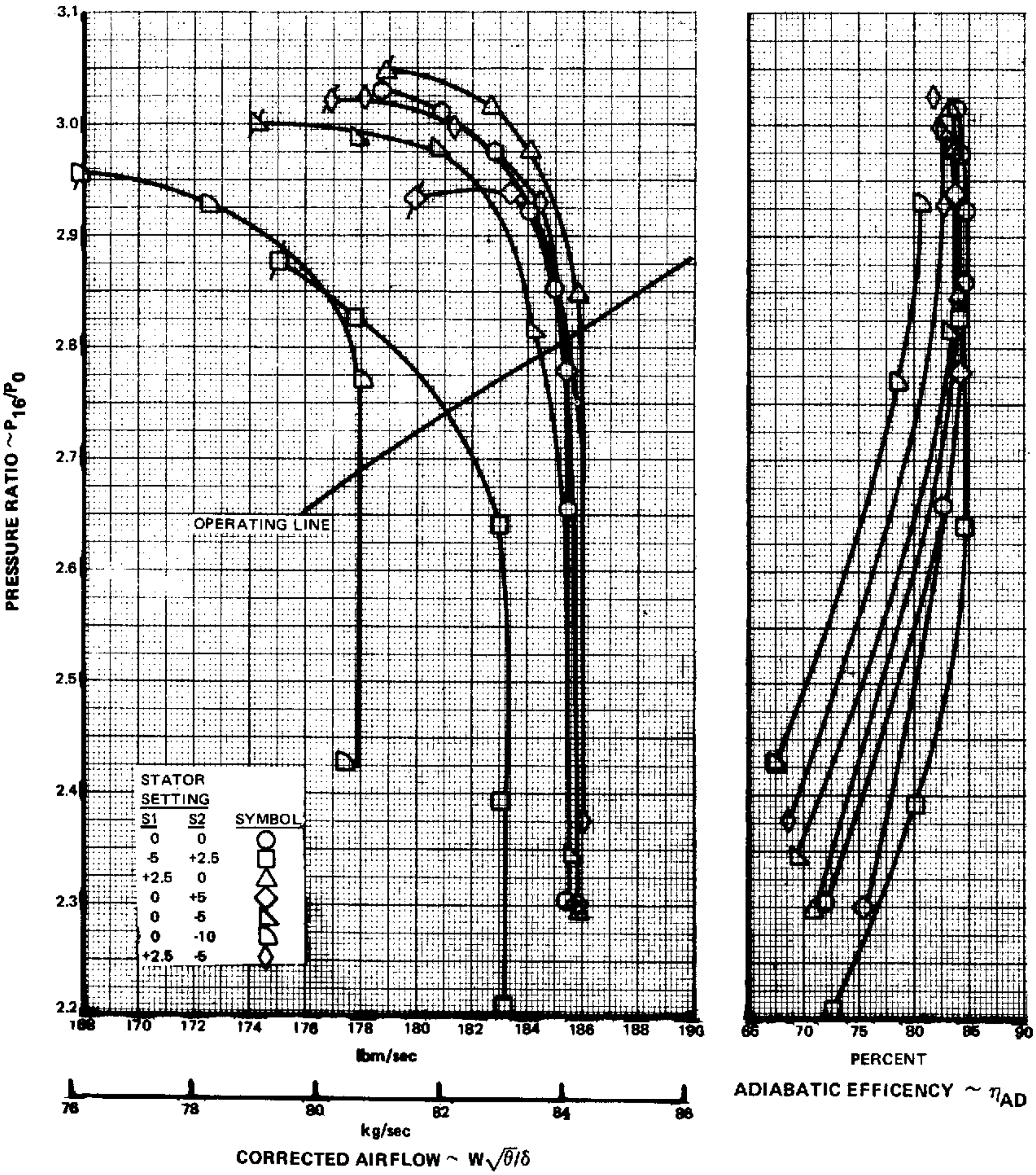


Figure 9 Fan Overall Performance at Design Speed

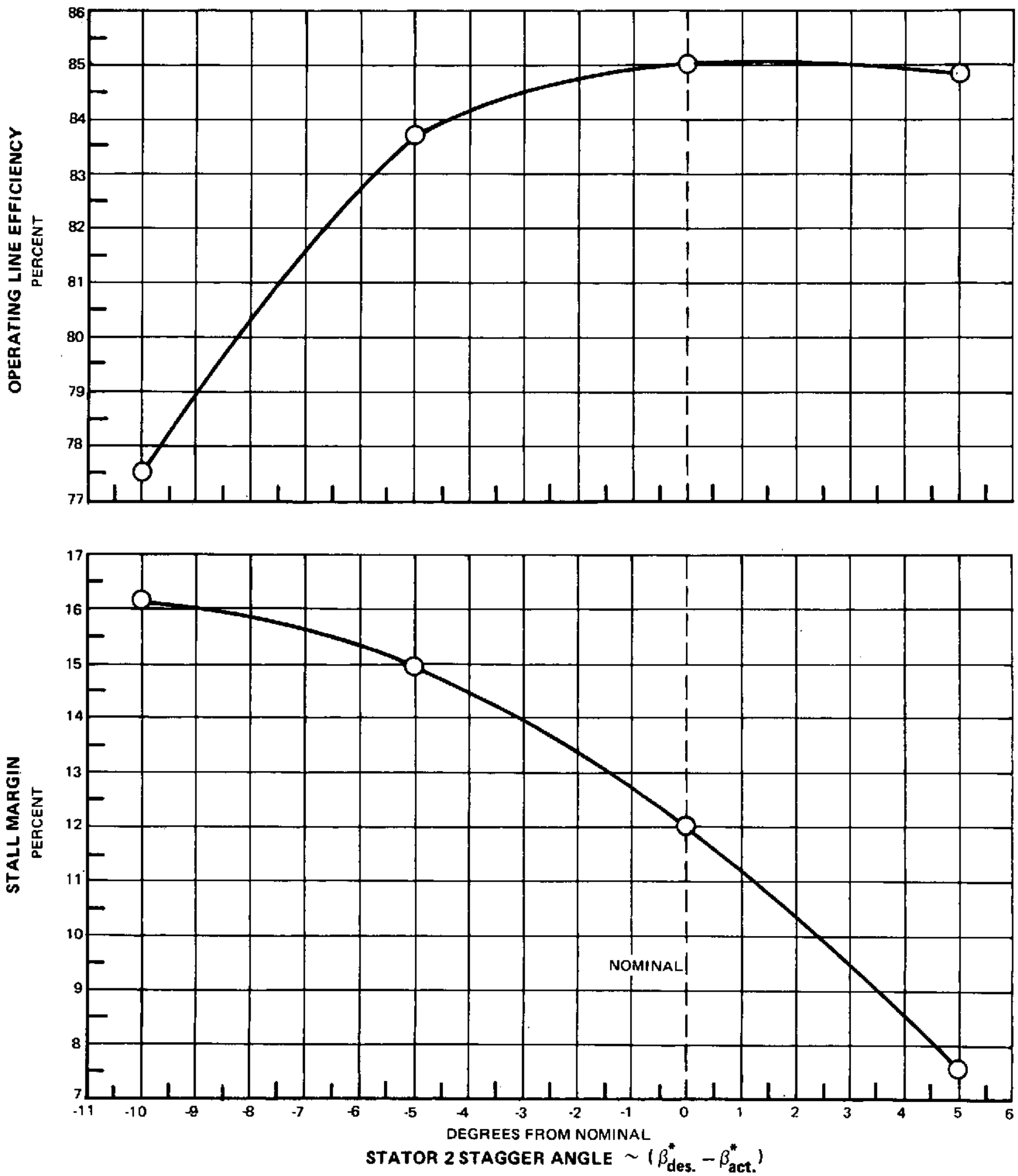


Figure 10 Stall Margin and Operating Line Efficiency Versus Stator 2 Stagger Angle at Design Speed, Nominal Stator 1 Setting

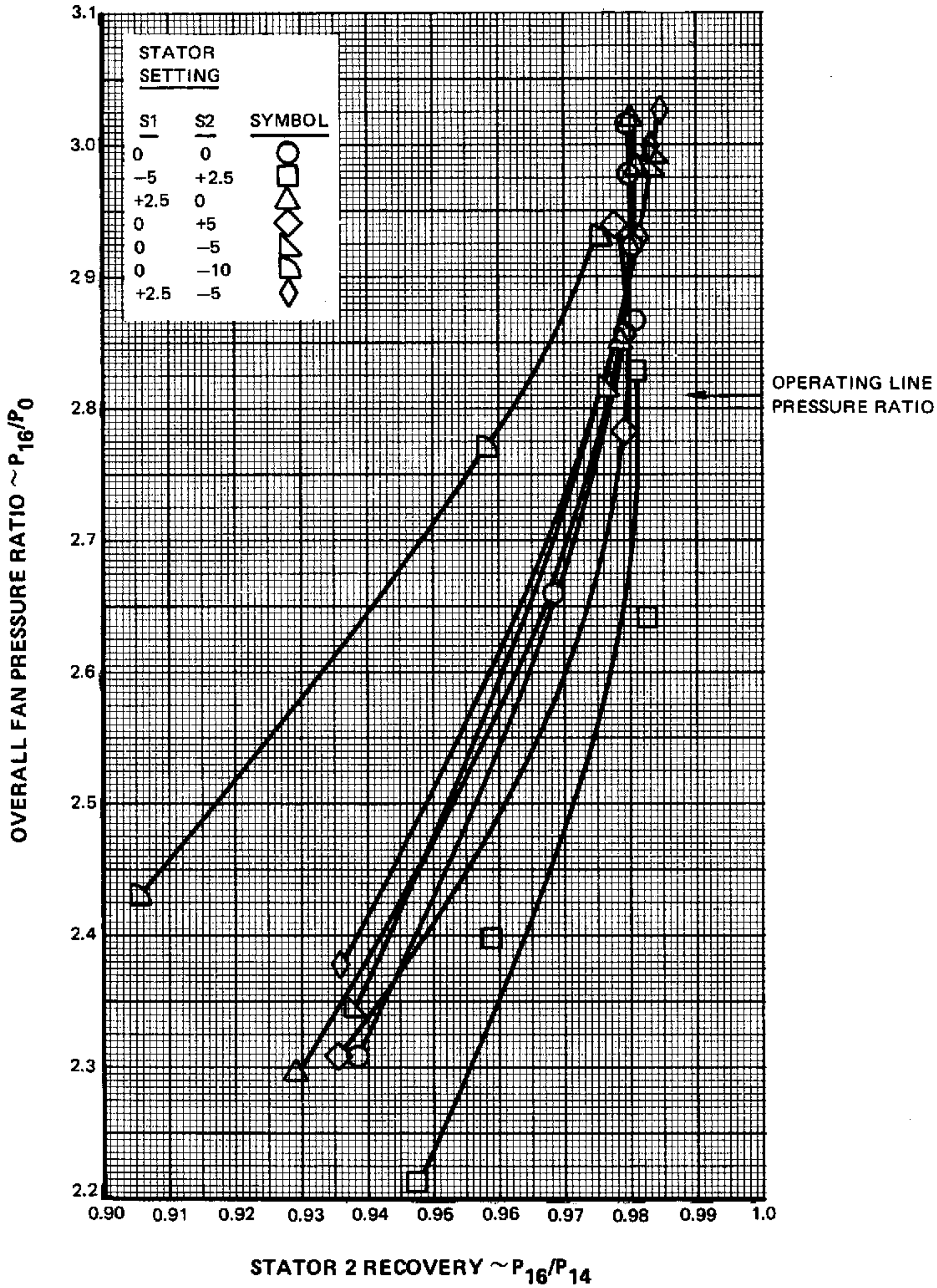


Figure 11 Stator 2 Total Pressure Recovery Versus Overall Fan Pressure Ratio at Design Speed

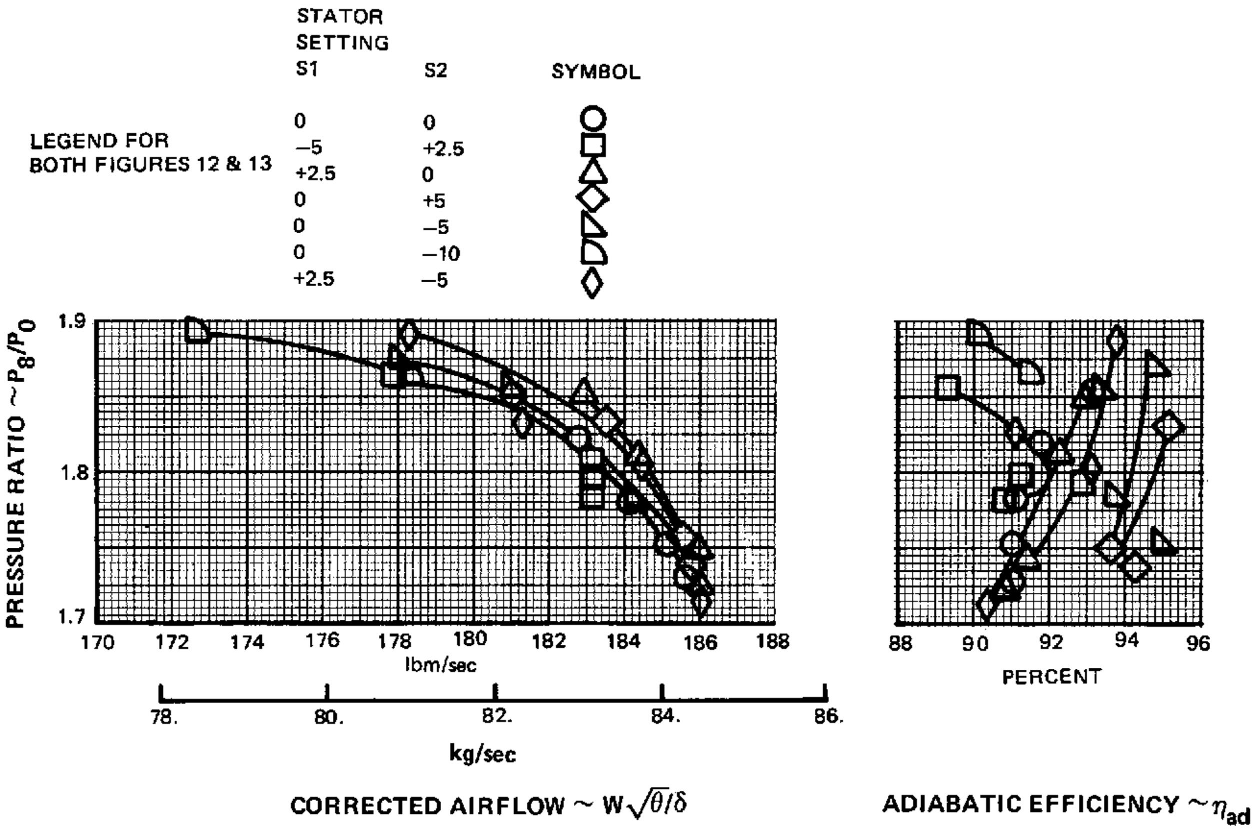


Figure 12 Rotor 1 Performance at Design Speed

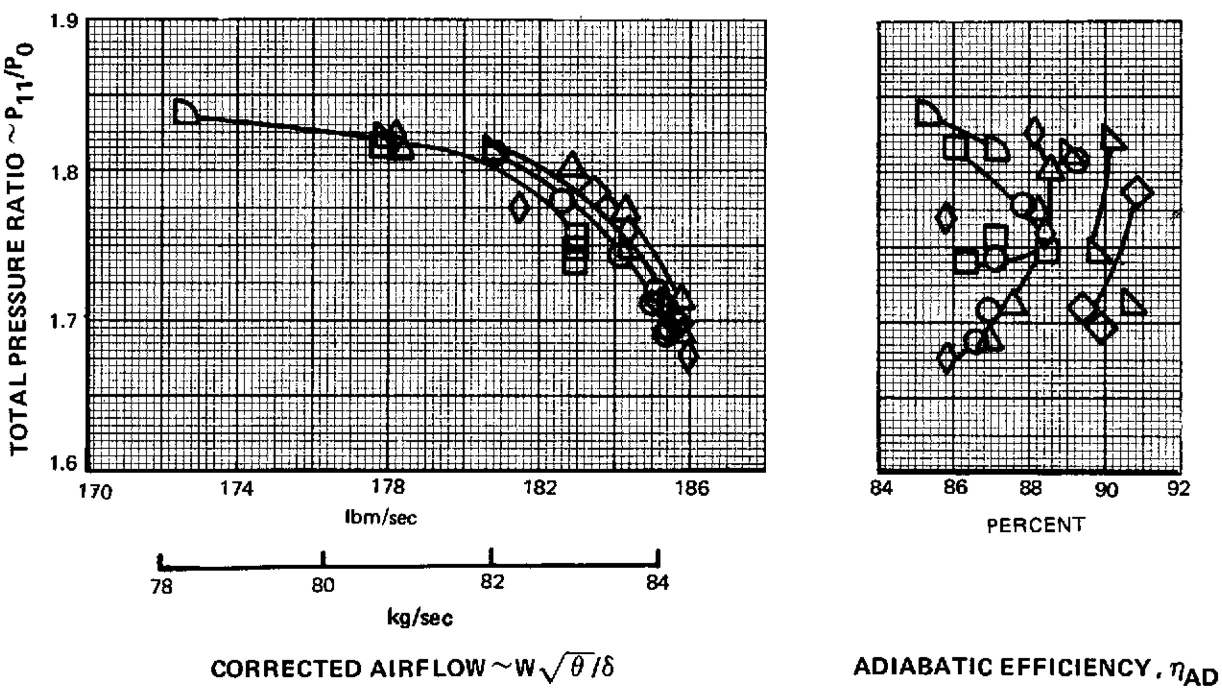


Figure 13 First-Stage Performance at Design Speed

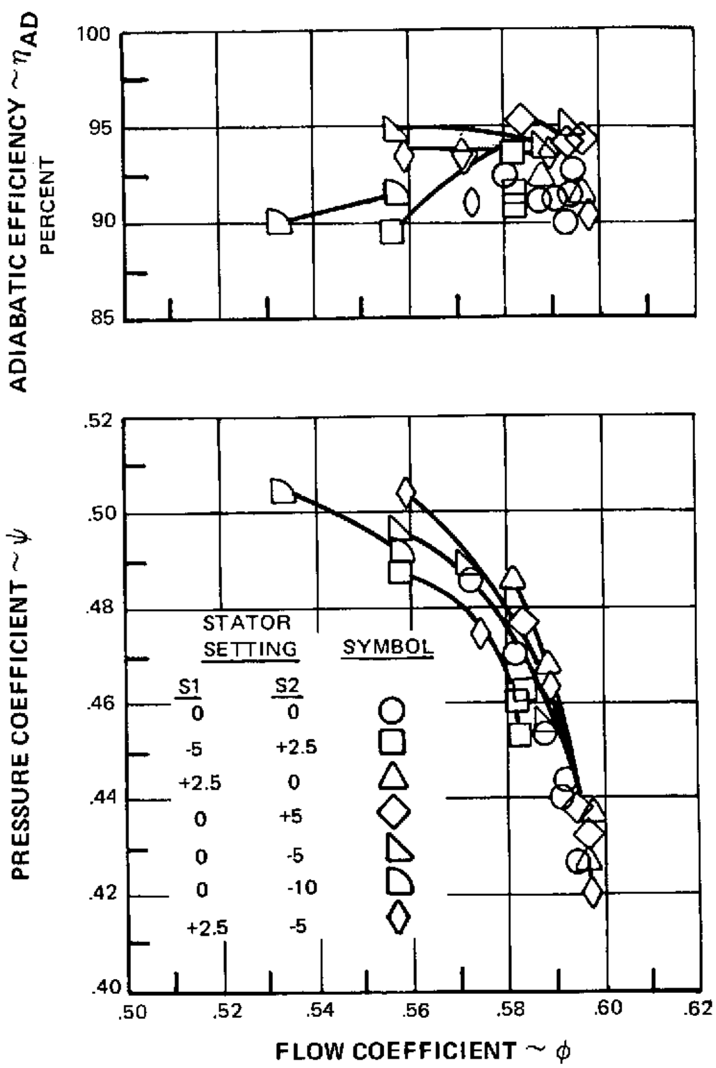


Figure 14 Pressure Coefficient and Adiabatic Efficiency Versus Flow Coefficient for Rotor 1 at Design Speed

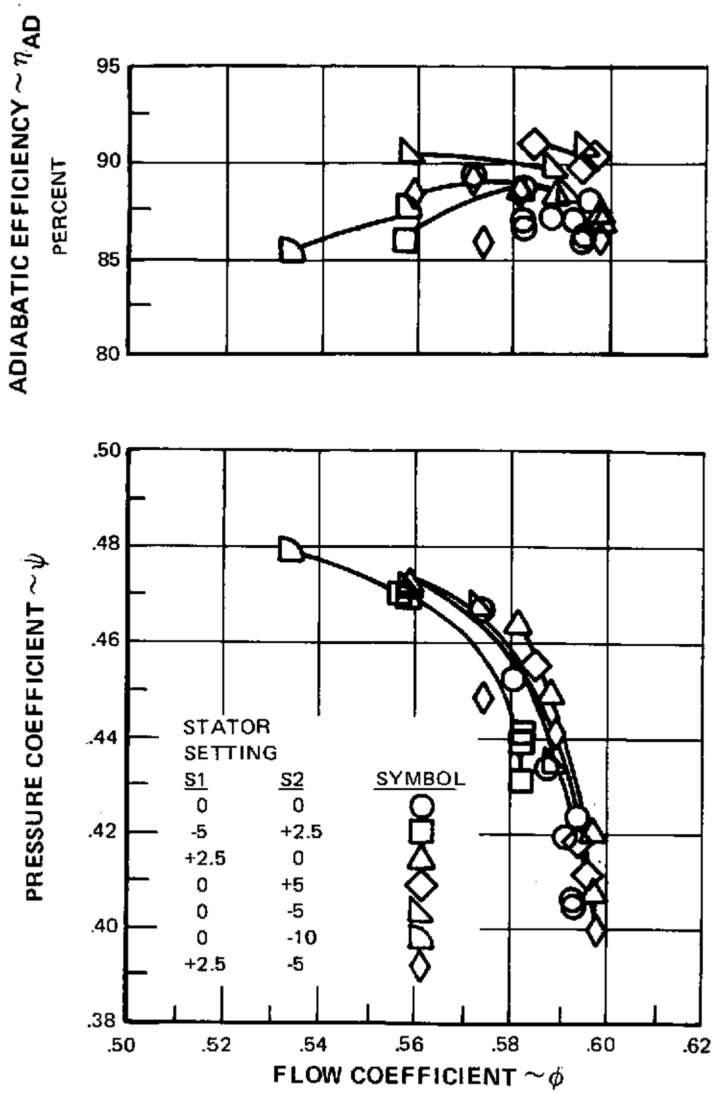


Figure 15 Pressure Coefficient and Adiabatic Efficiency Versus Flow Coefficient for First Stage at Design Speed

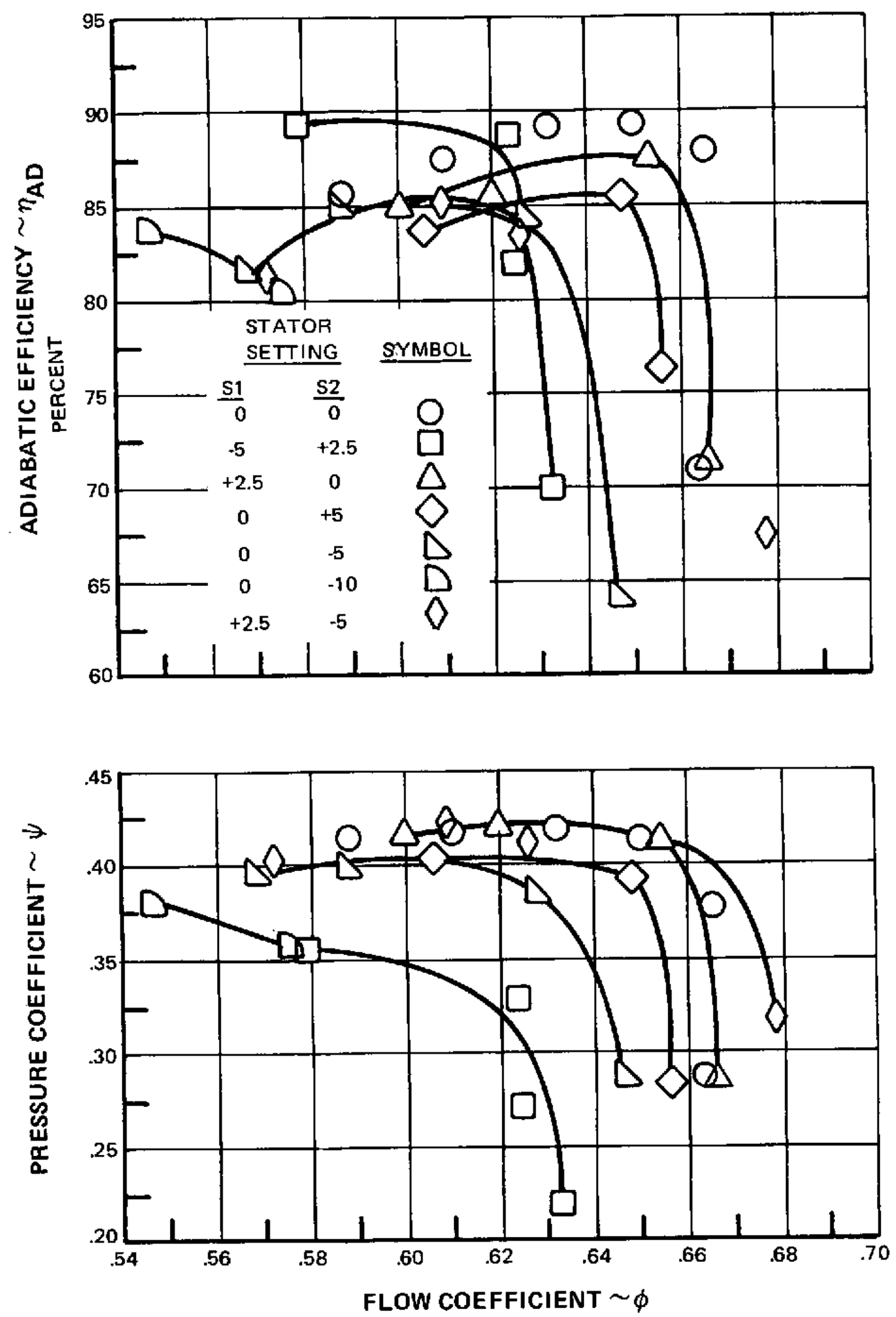


Figure 16 Pressure Coefficient and Adiabatic Efficiency Versus Flow Coefficient for Second-Rotor at Design Speed

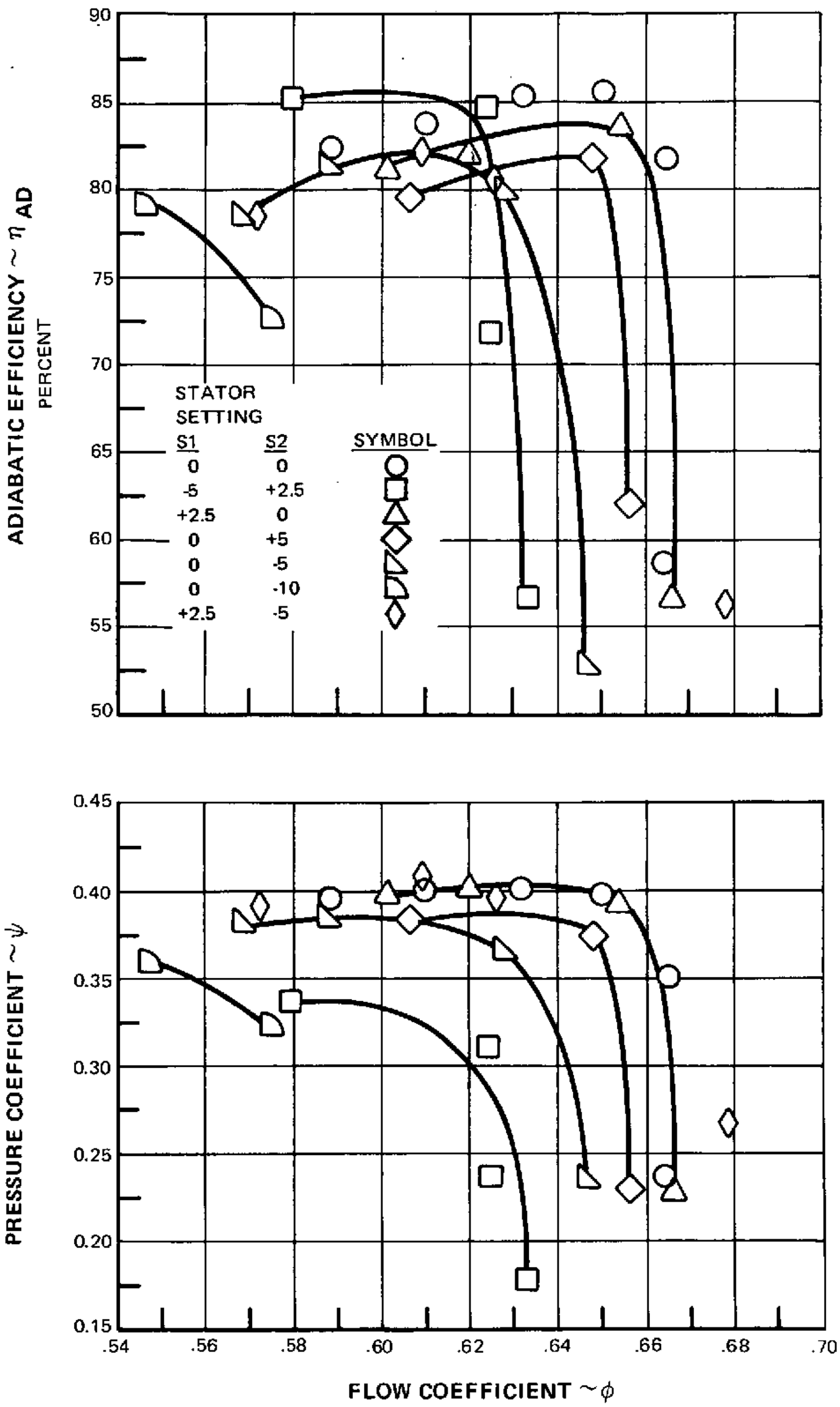


Figure 17 Pressure Coefficient and Adiabatic Efficiency Versus Flow Coefficient for Stage 2 at Design Speed

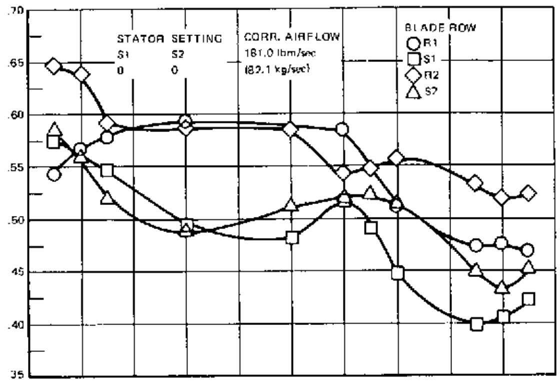


Figure 18A

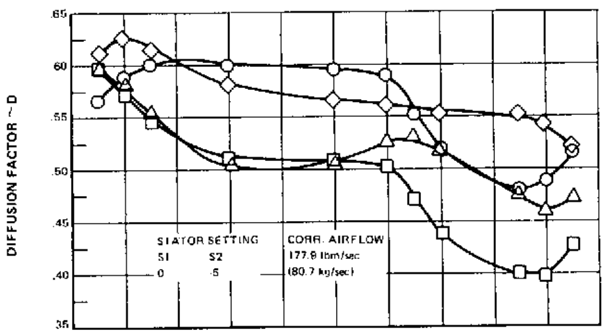


Figure 18B

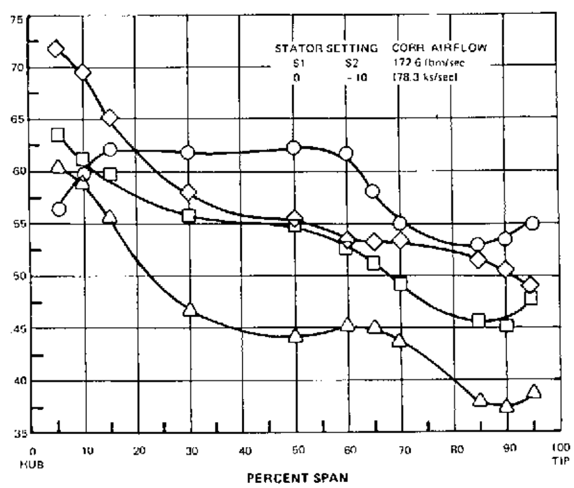


Figure 18C

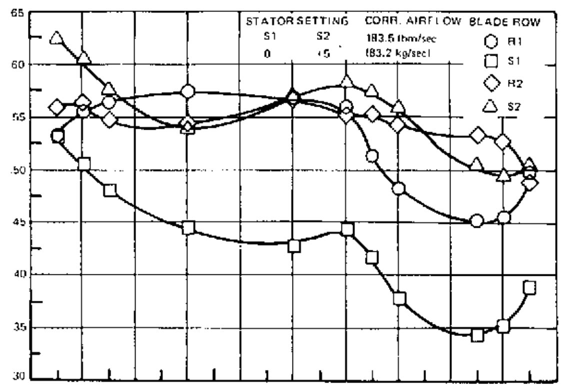


Figure 18D

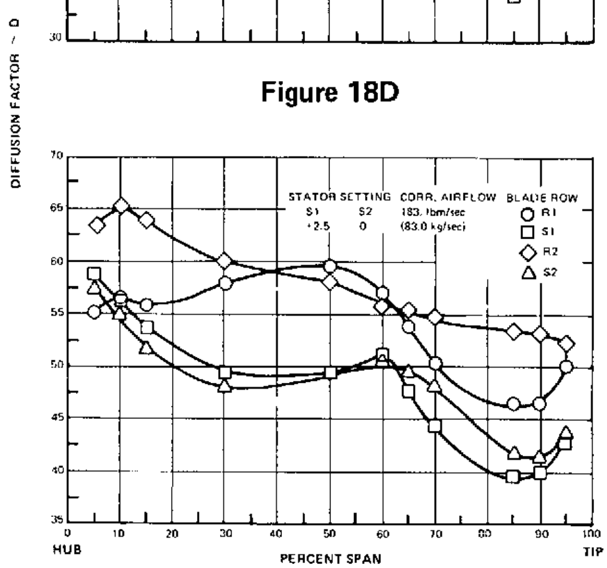


Figure 18E

Figure 18 Diffusion Factor Versus Span for Each Blade Row, Showing Effects of Varying Stator 2 Setting – Near-Stall Data at Design Speed

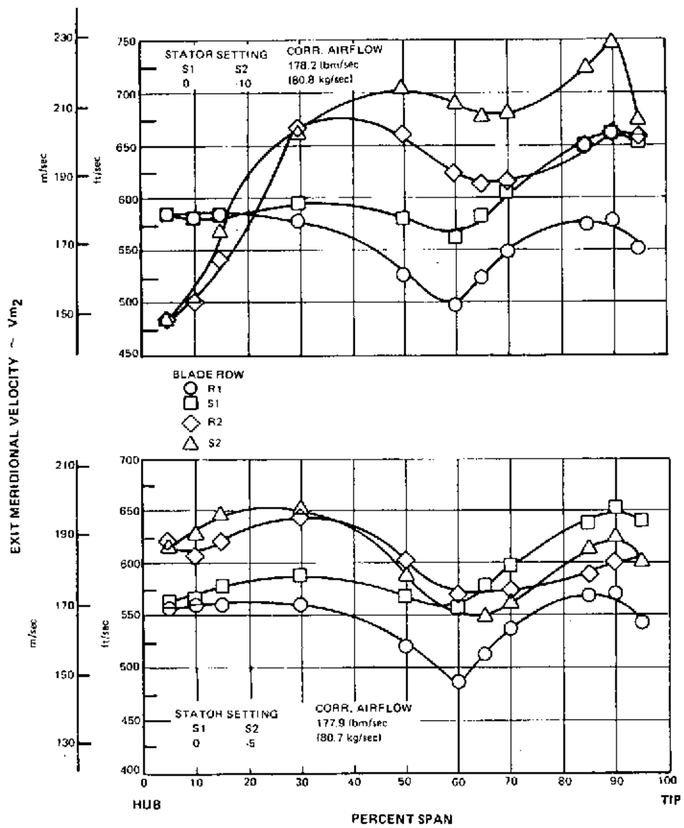


Figure 19 Exit Meridional Velocity Versus Span for All Blade Rows at Design Speed Showing Effects of Varying Stator 2 Setting – Design Speed

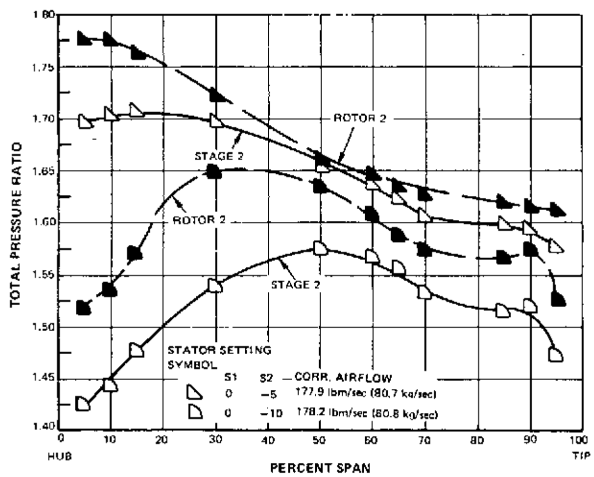


Figure 20 Second-Stage and Rotor 2 Pressure Ratio Versus Span Showing Effects of Varying Stator 2 Setting – Design Speed

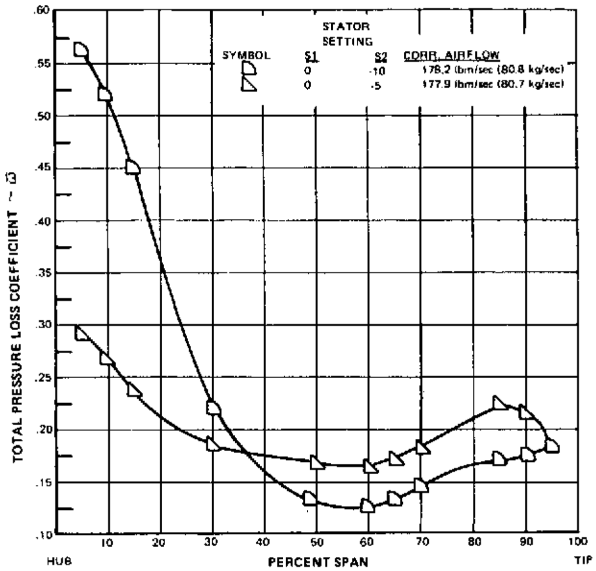


Figure 21 Rotor 2 Total Pressure Loss Coefficient Versus Span at Design Speed for Stator Settings (0, - 5) and (0, -10)

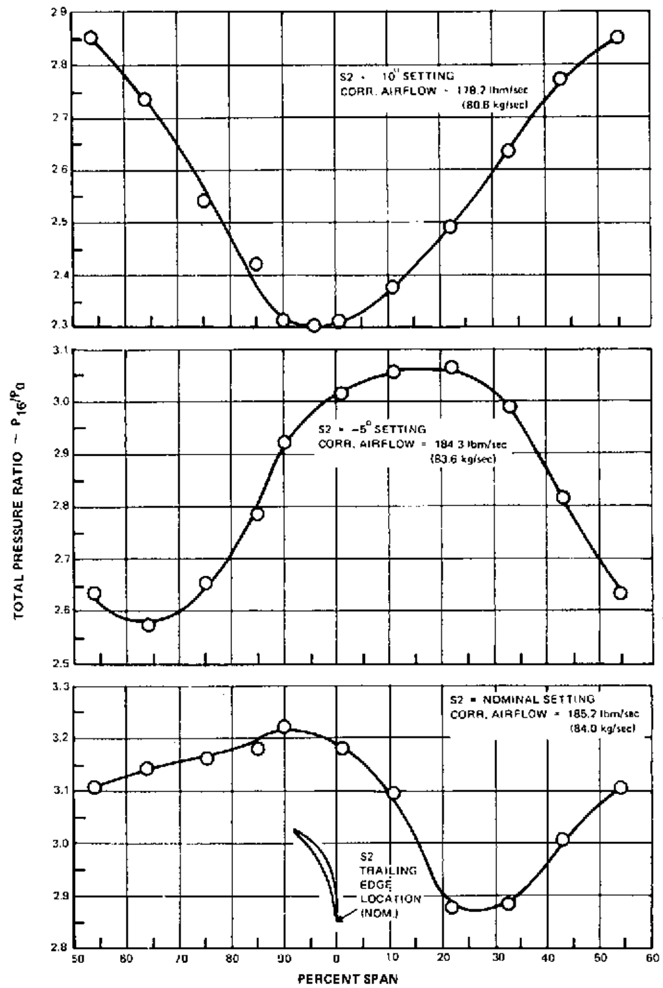


Figure 22 Stator 2 Exit Total Pressure Wakes for 10 Percent Span From the Hub at Design Speed

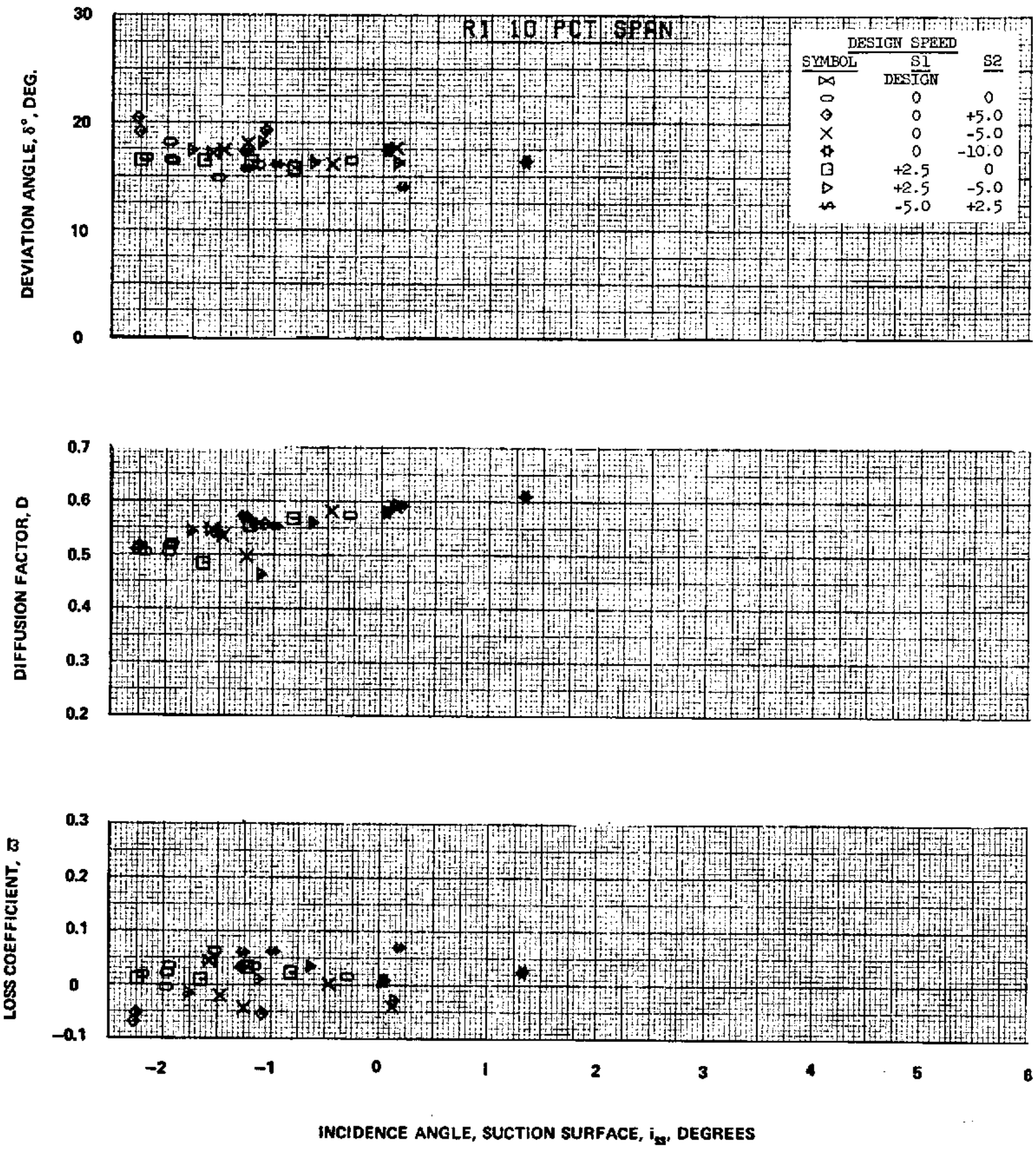


Figure 23A

Figure 23 Blade-Element Performance for Rotor 1 at Design Speed

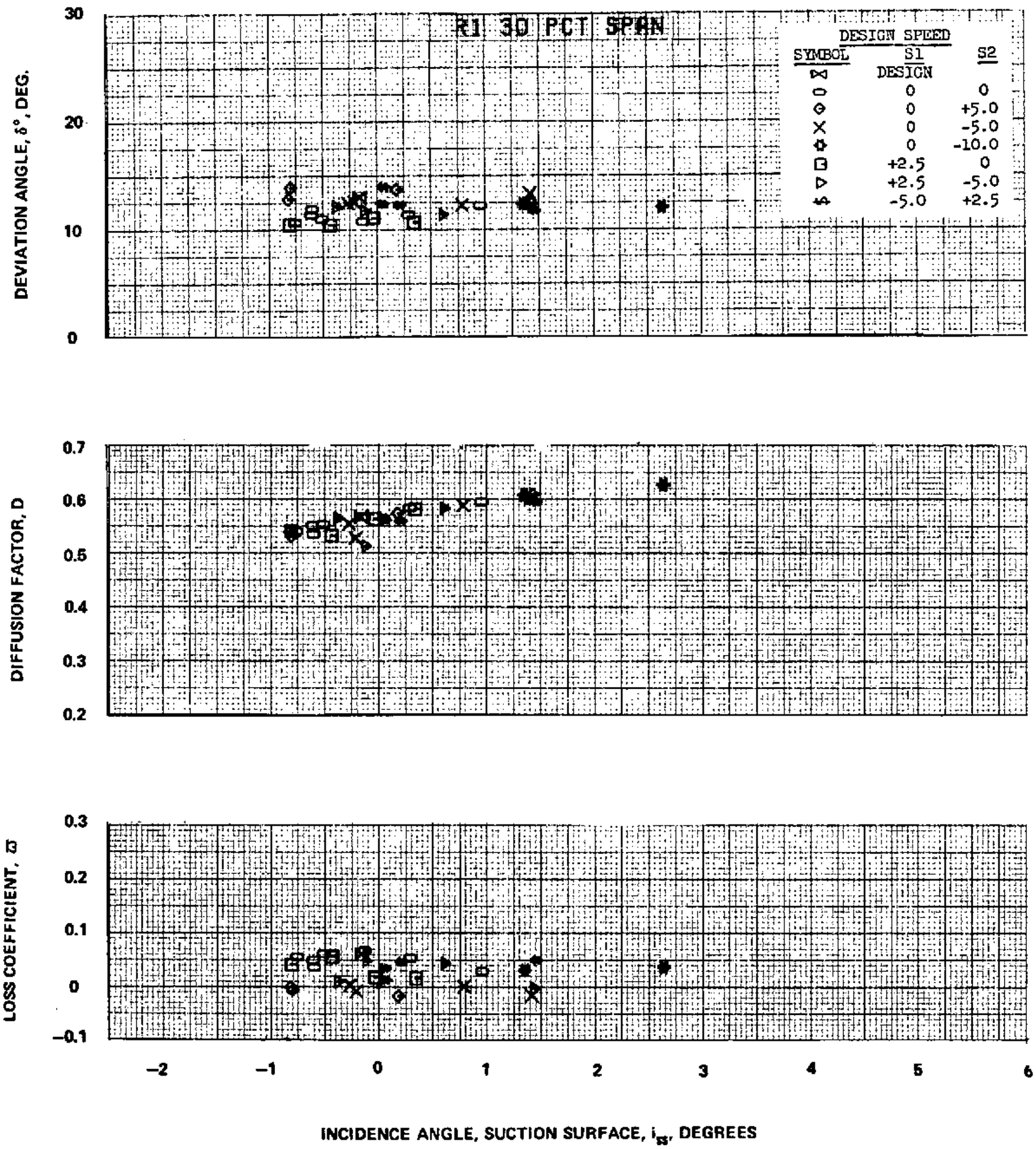


Figure 23B

Figure 23 (Cont'd) Blade-Element Performance for Rotor 1 at Design Speed

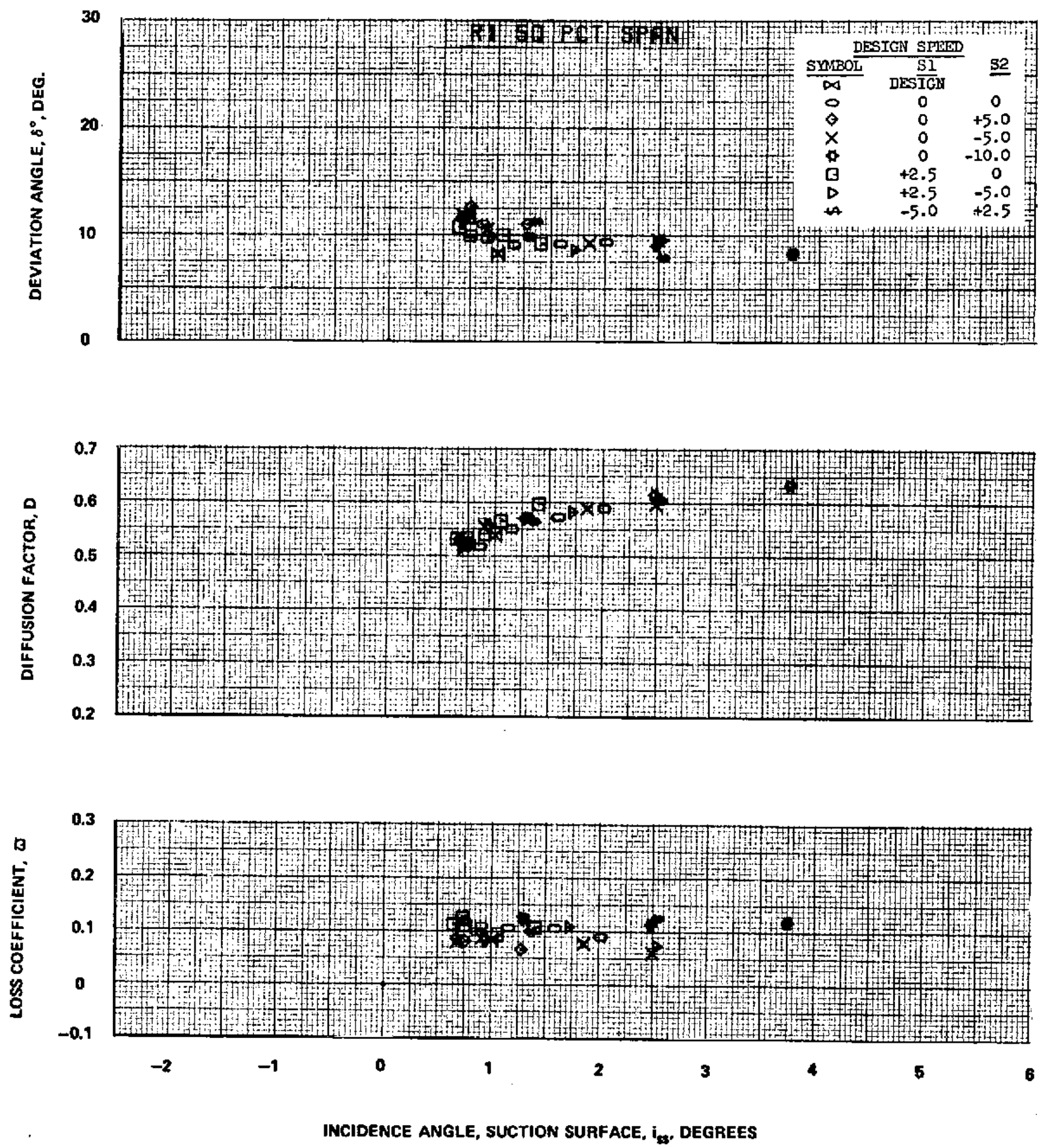


Figure 23C

Figure 23 (Cont'd) Blade-Element Performance for Rotor 1 at Design Speed

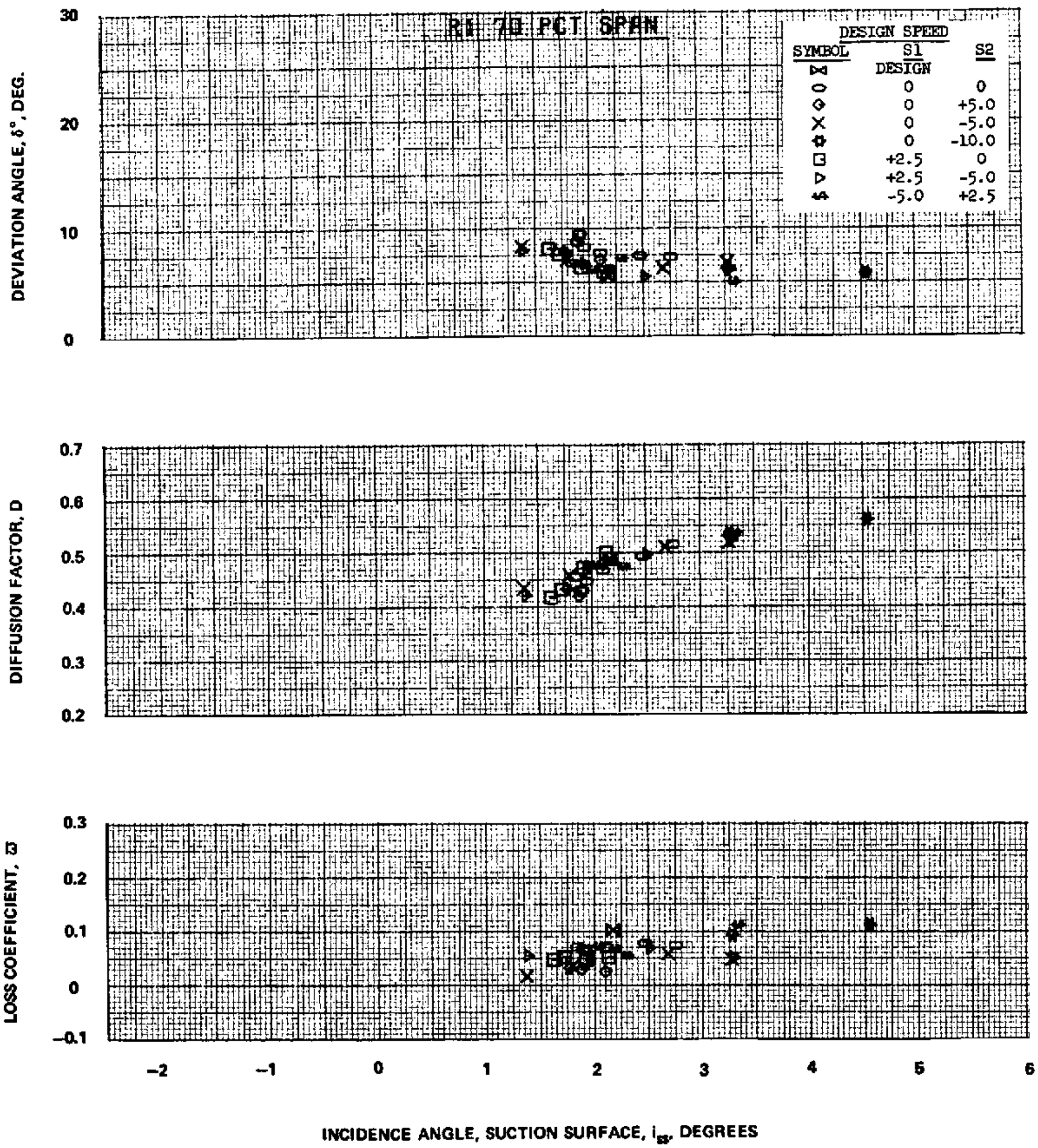


Figure 23D

Figure 23 (Cont'd) Blade-Element Performance for Rotor 1 at Design Speed

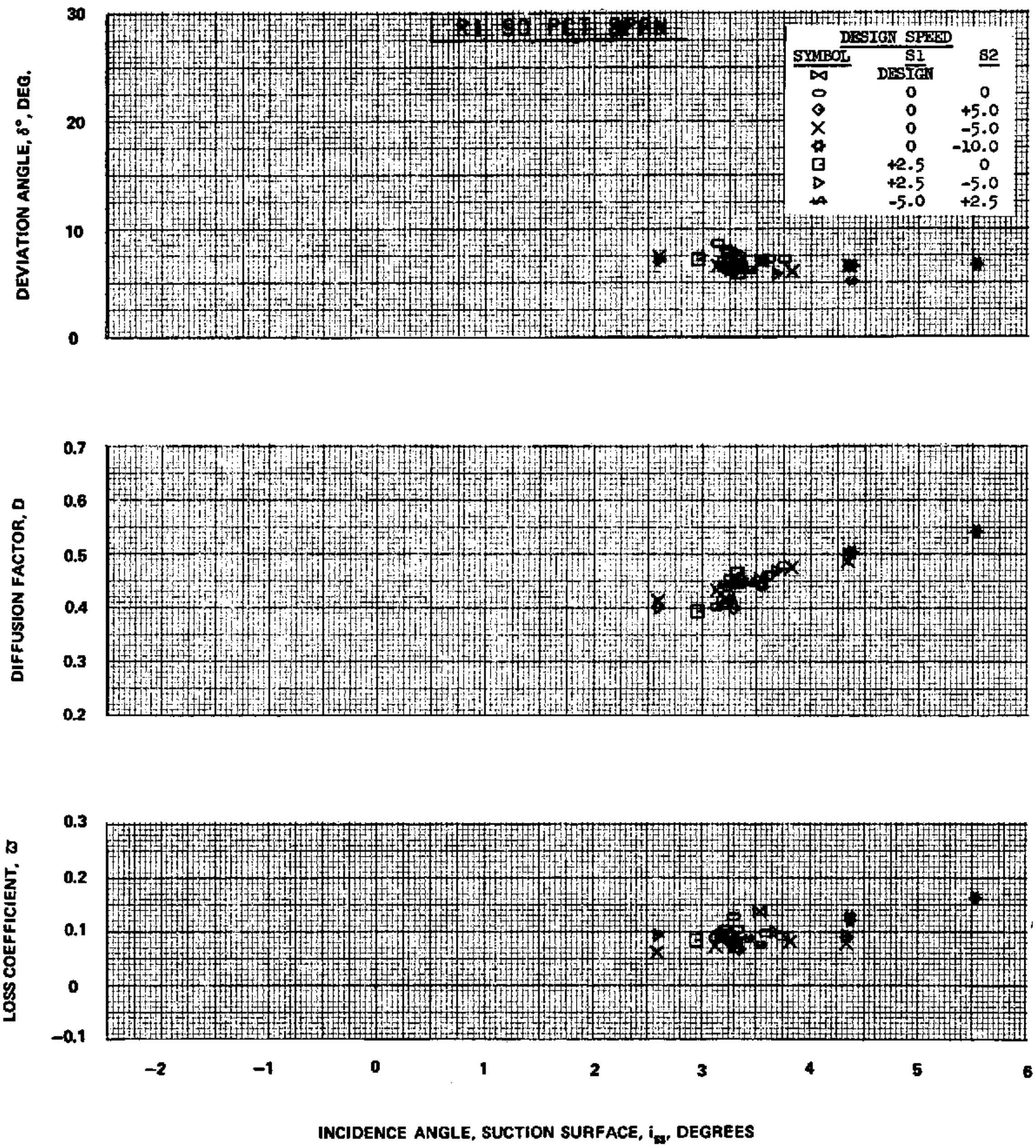


Figure 23E

Figure 23 (Cont'd) Blade-Element Performance for Rotor 1 at Design Speed

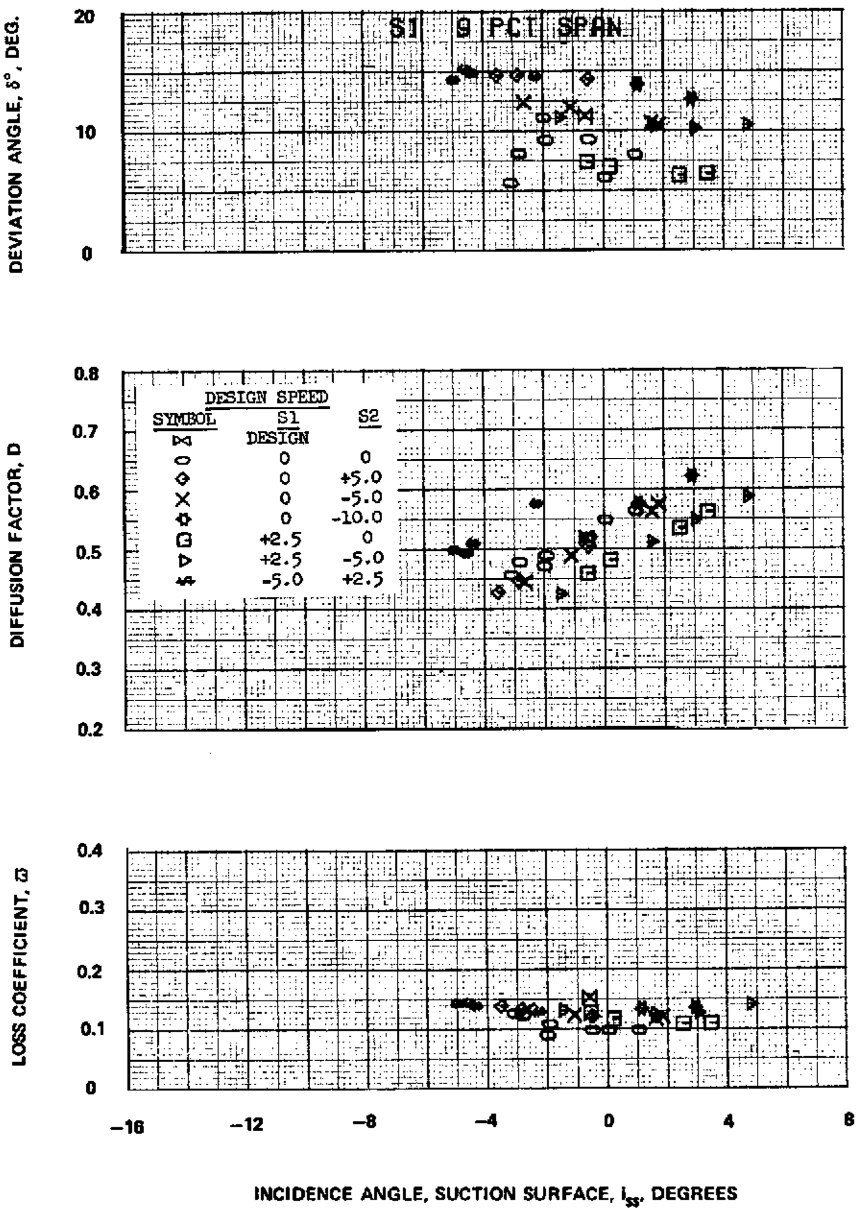


Figure 24A

Figure 24 Blade-Element Performance for Stator 1 at Design Speed

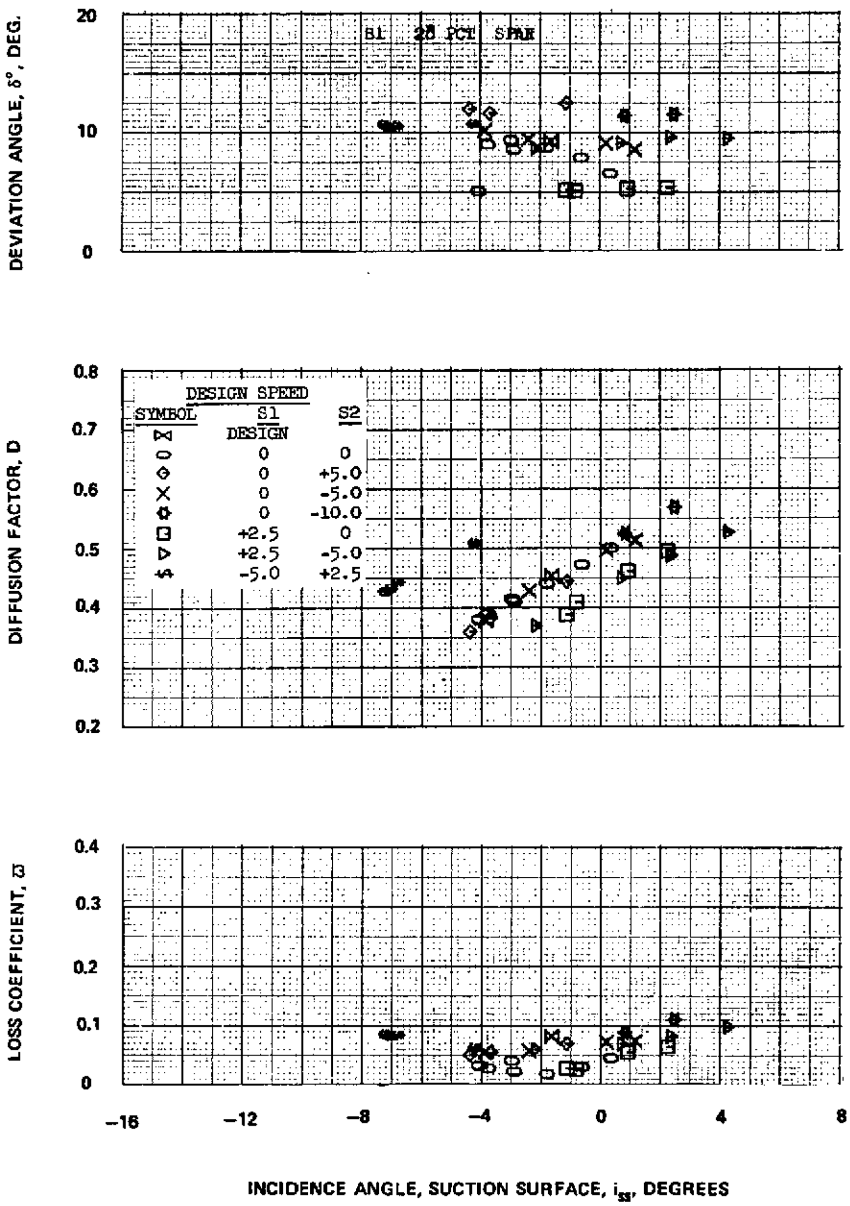


Figure 24B

Figure 24 (Cont'd) Blade-Element Performance for Stator 1 at Design Speed

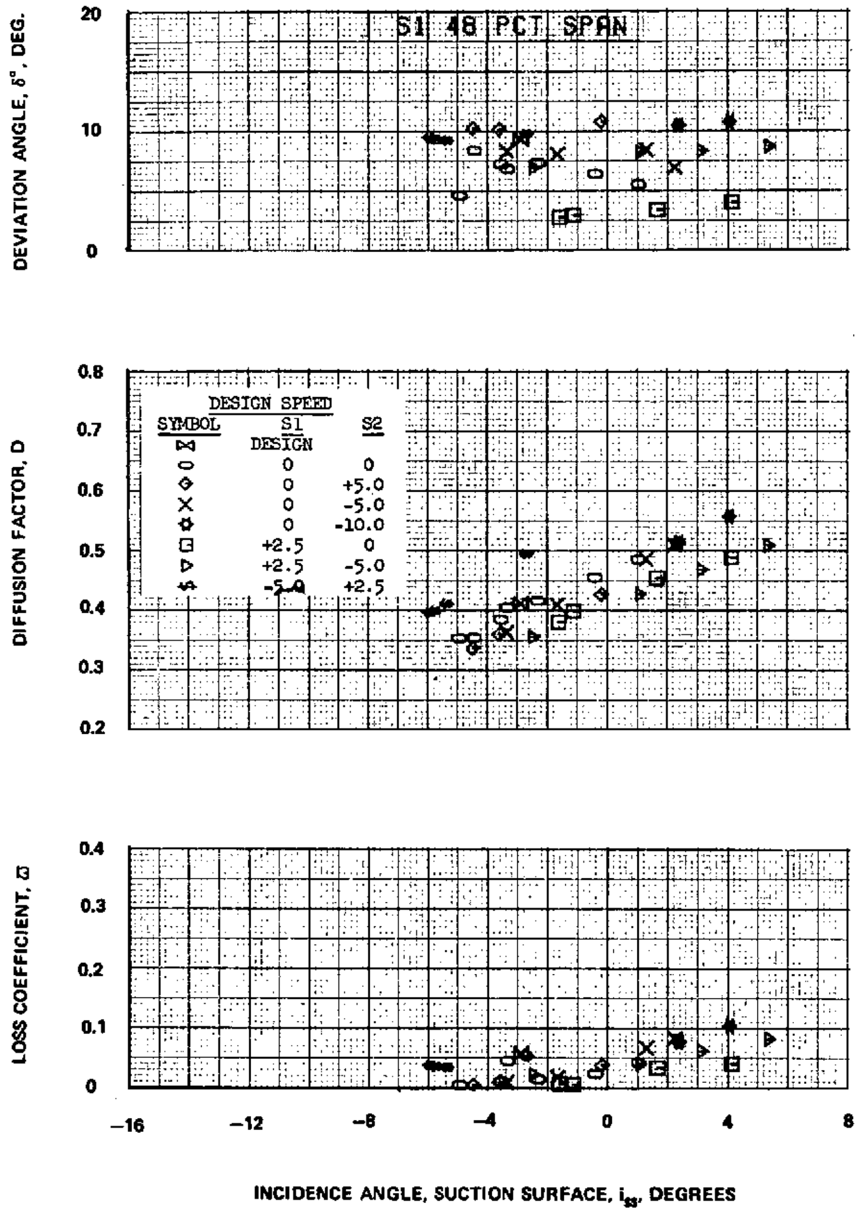


Figure 24C

Figure 24 (Cont'd) Blade-Element Performance for Stator 1 at Design Speed

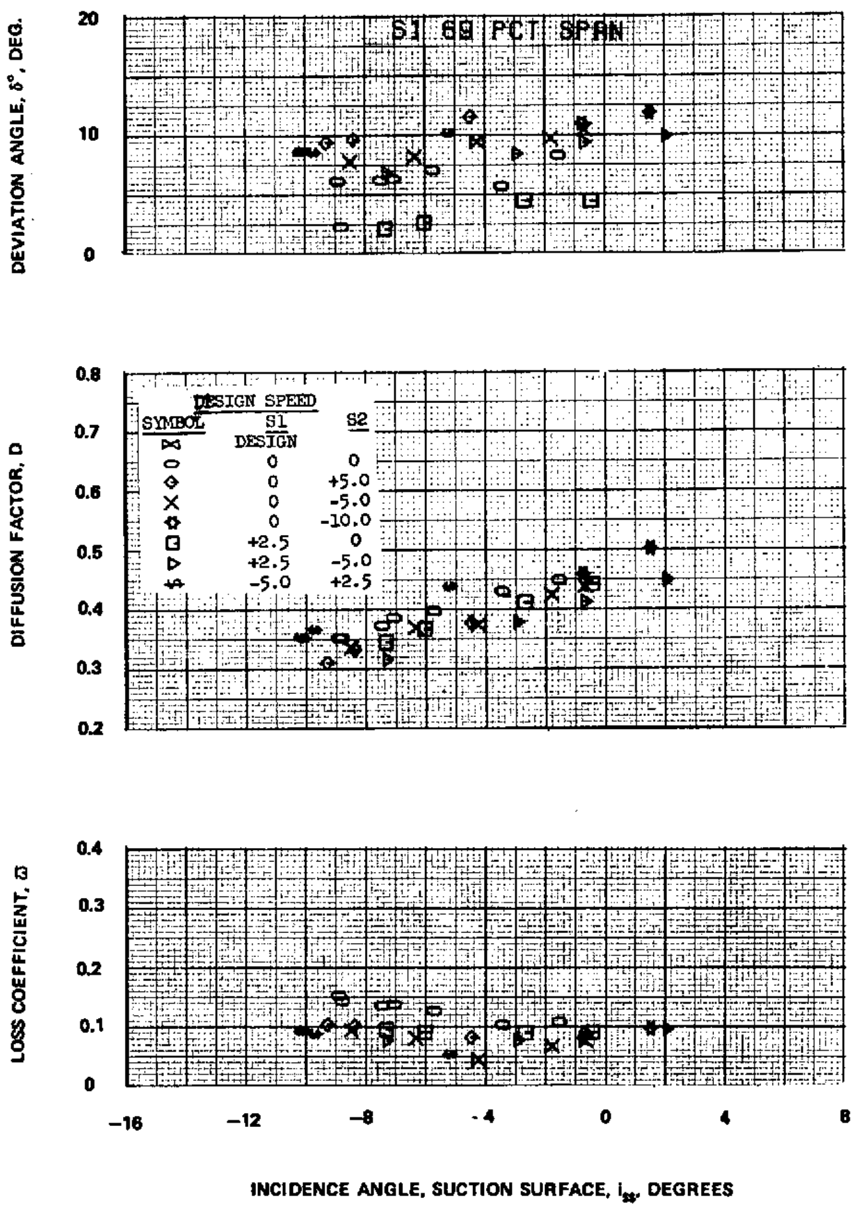


Figure 24D

Figure 24 (Cont'd) Blade-Element Performance for Stator 1 at Design Speed

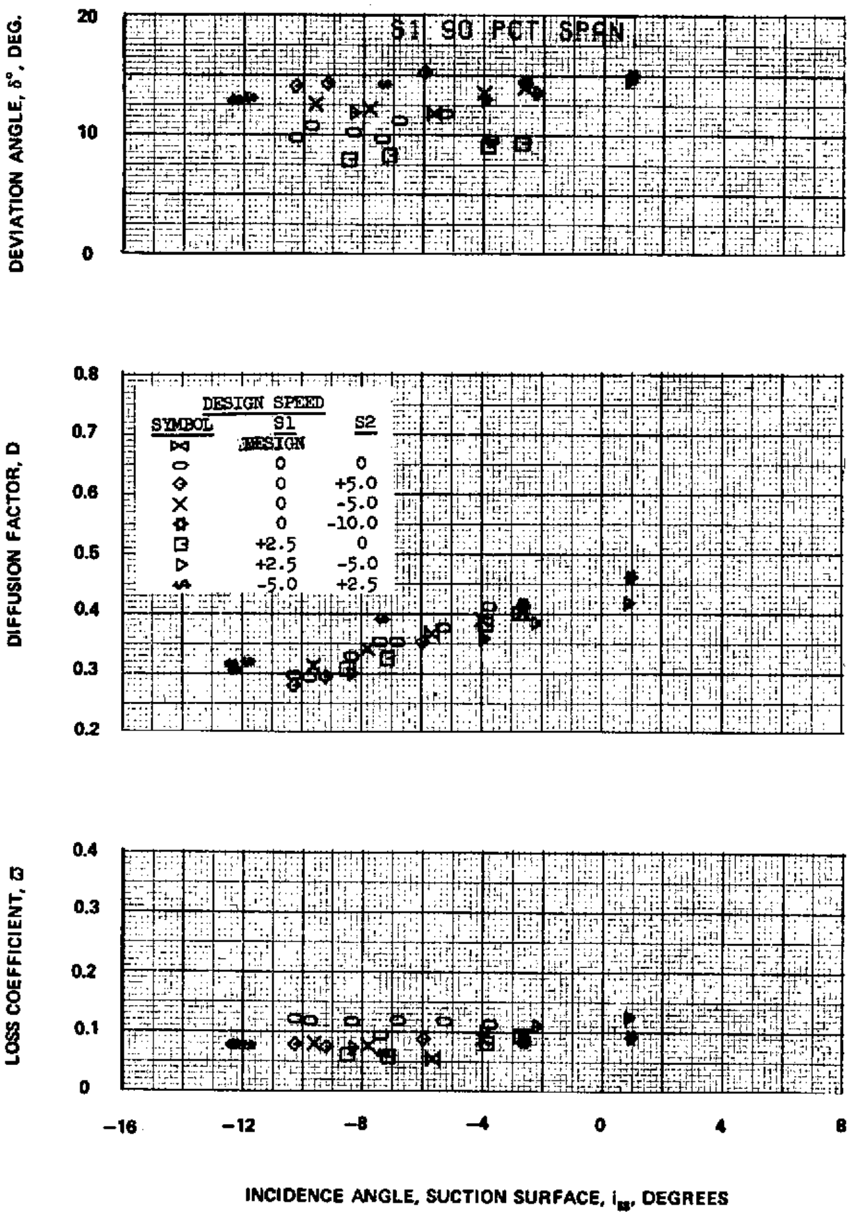


Figure 24E

Figure 24 (Cont'd) Blade-Element Performance for Stator 1 at Design Speed

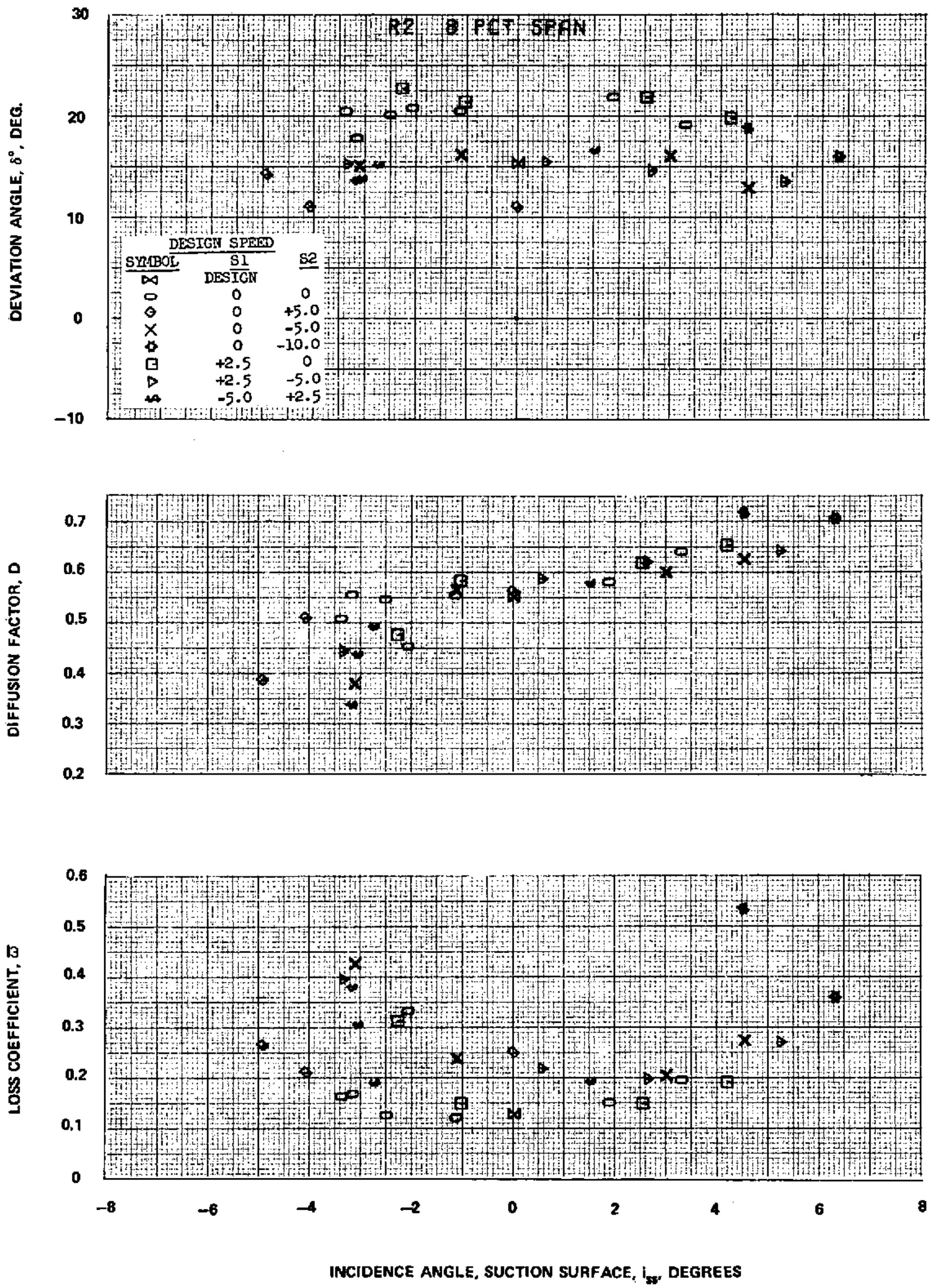


Figure 25A

Figure 25 Blade-Element Performance for Rotor 2 at Design Speed

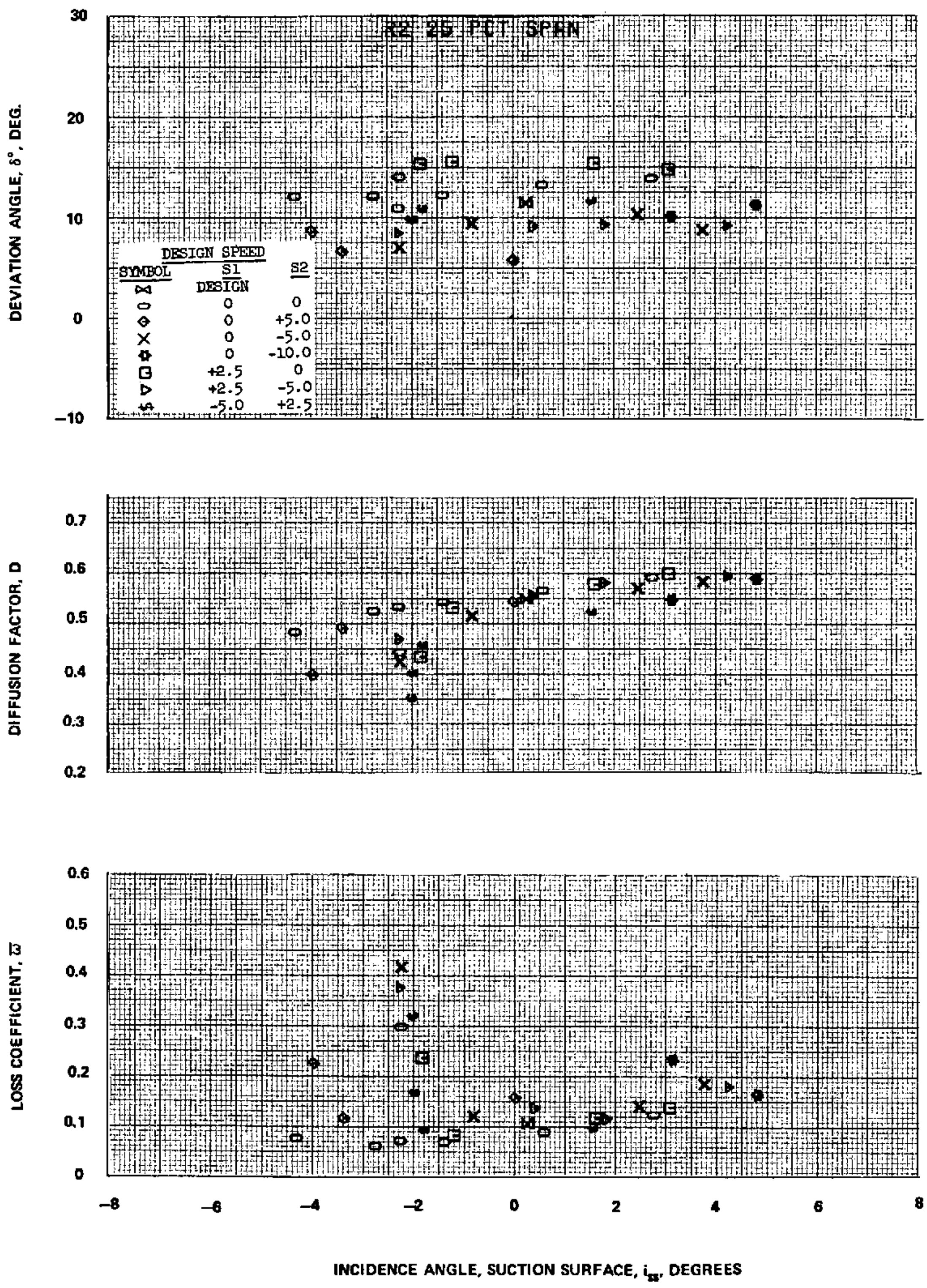


Figure 25B

Figure 25 (Cont'd) Blade-Element Performance for Rotor 2 at Design Speed

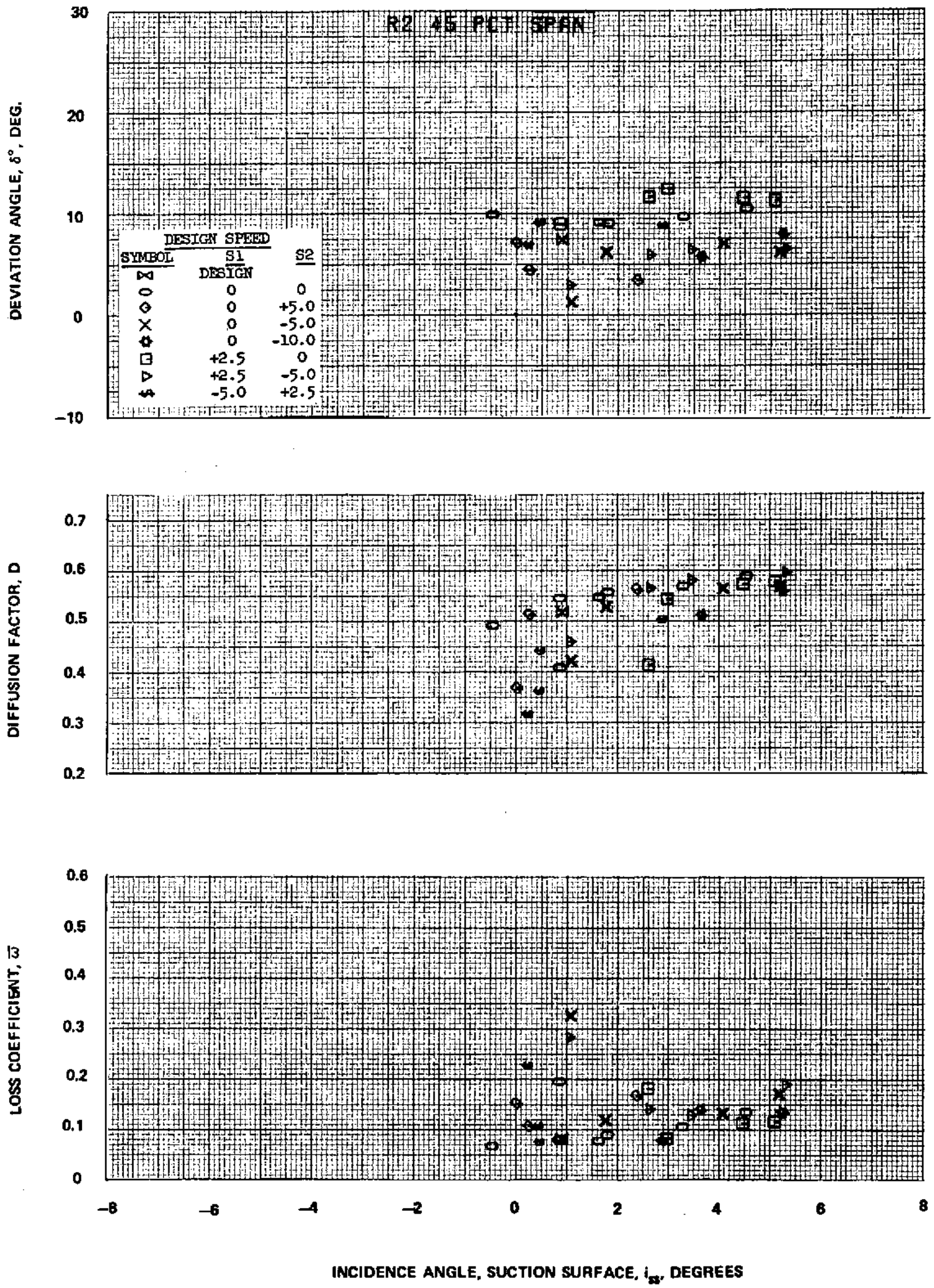


Figure 25C

Figure 25 (Cont'd) Blade-Element Performance for Rotor 2 at Design Speed

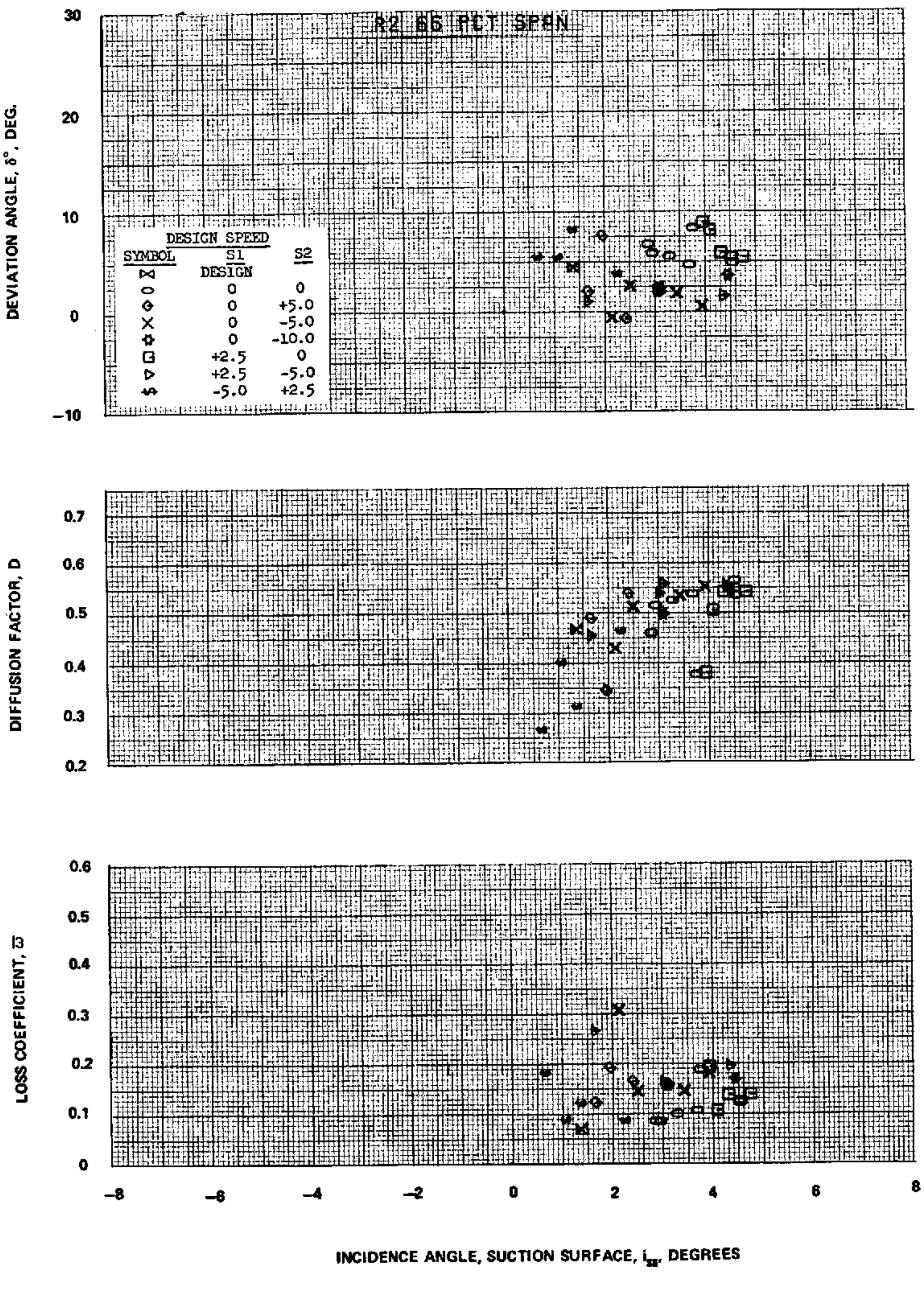


Figure 25D

Figure 25 (Cont'd) Blade-Element Performance for Rotor 2 at Design Speed

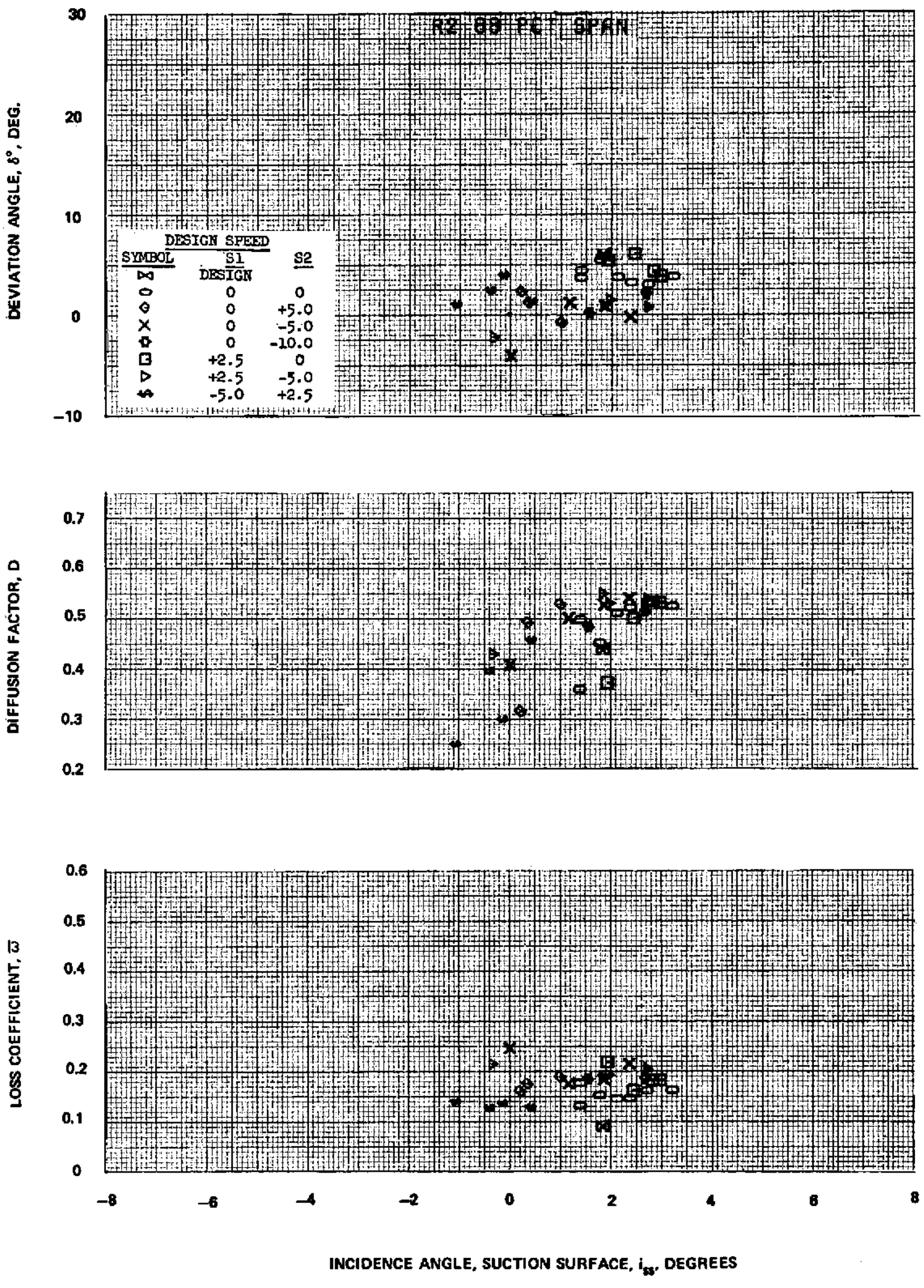


Figure 25E

Figure 25 (Cont'd) Blade-Element Performance for Rotor 2 at Design Speed

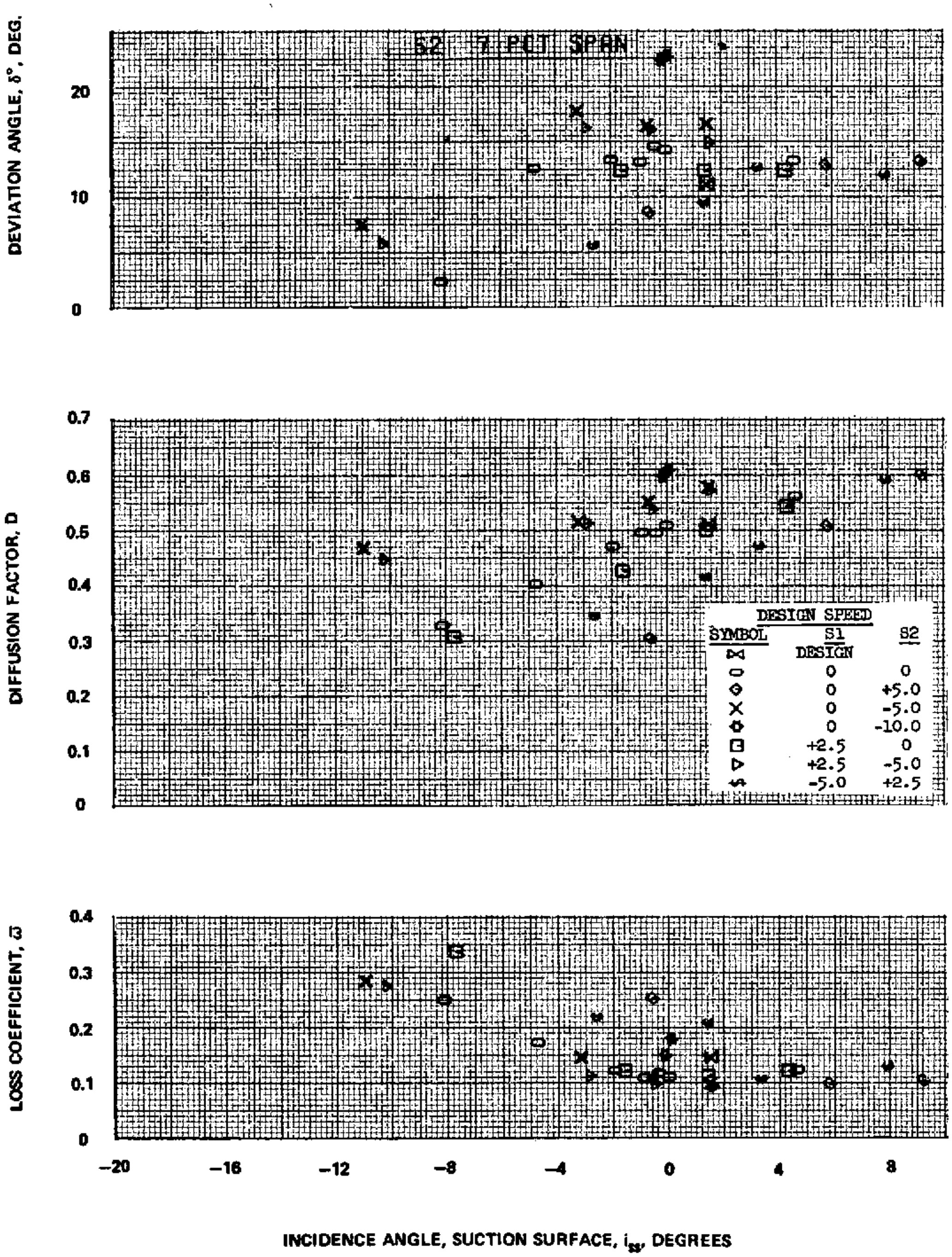


Figure 26A

Figure 26 Blade-Element Performance for Stator 2 at Design Speed

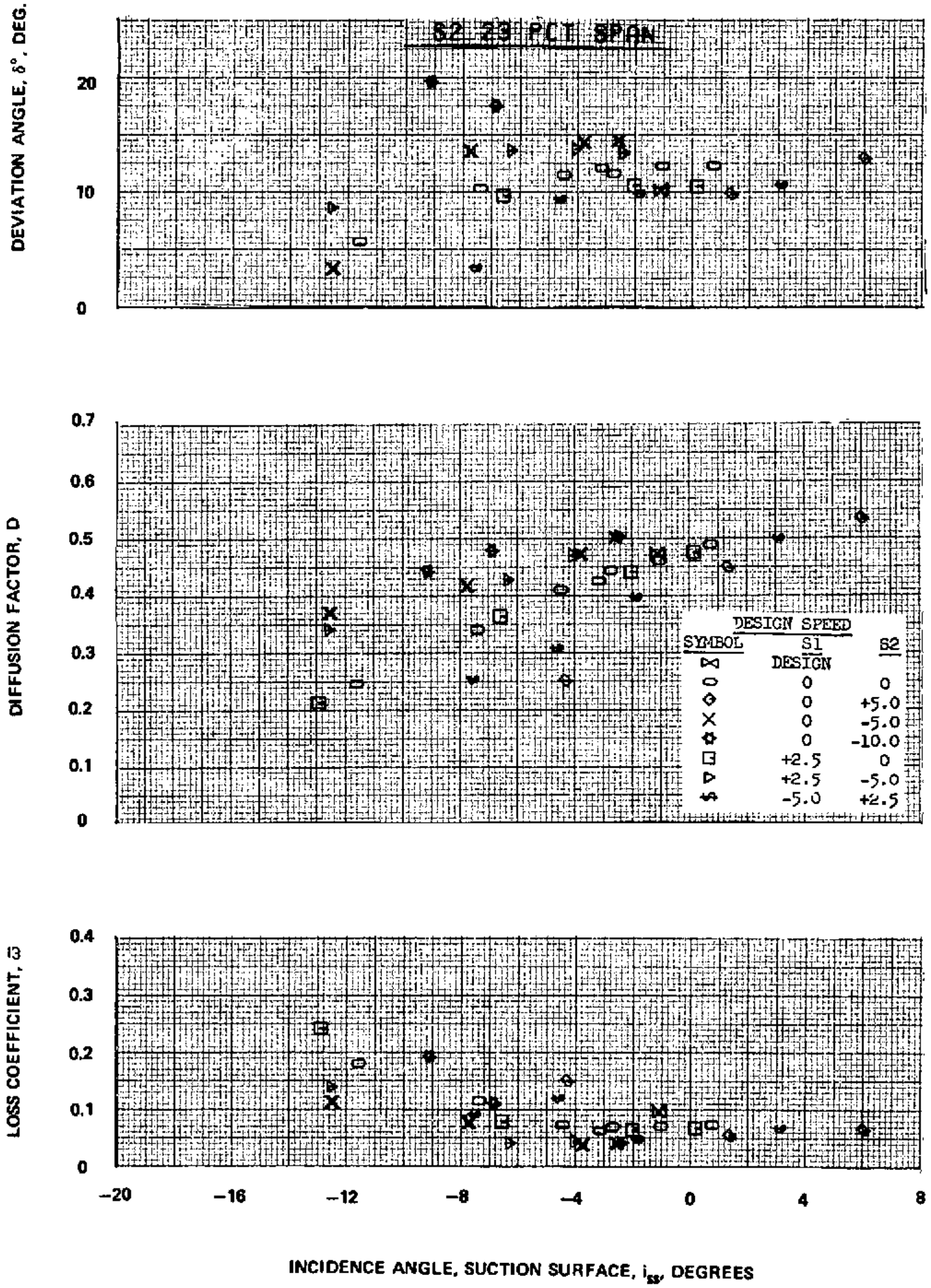


Figure 26B

Figure 26 (Cont'd) Blade-Element Performance for Stator 2 at Design Speed

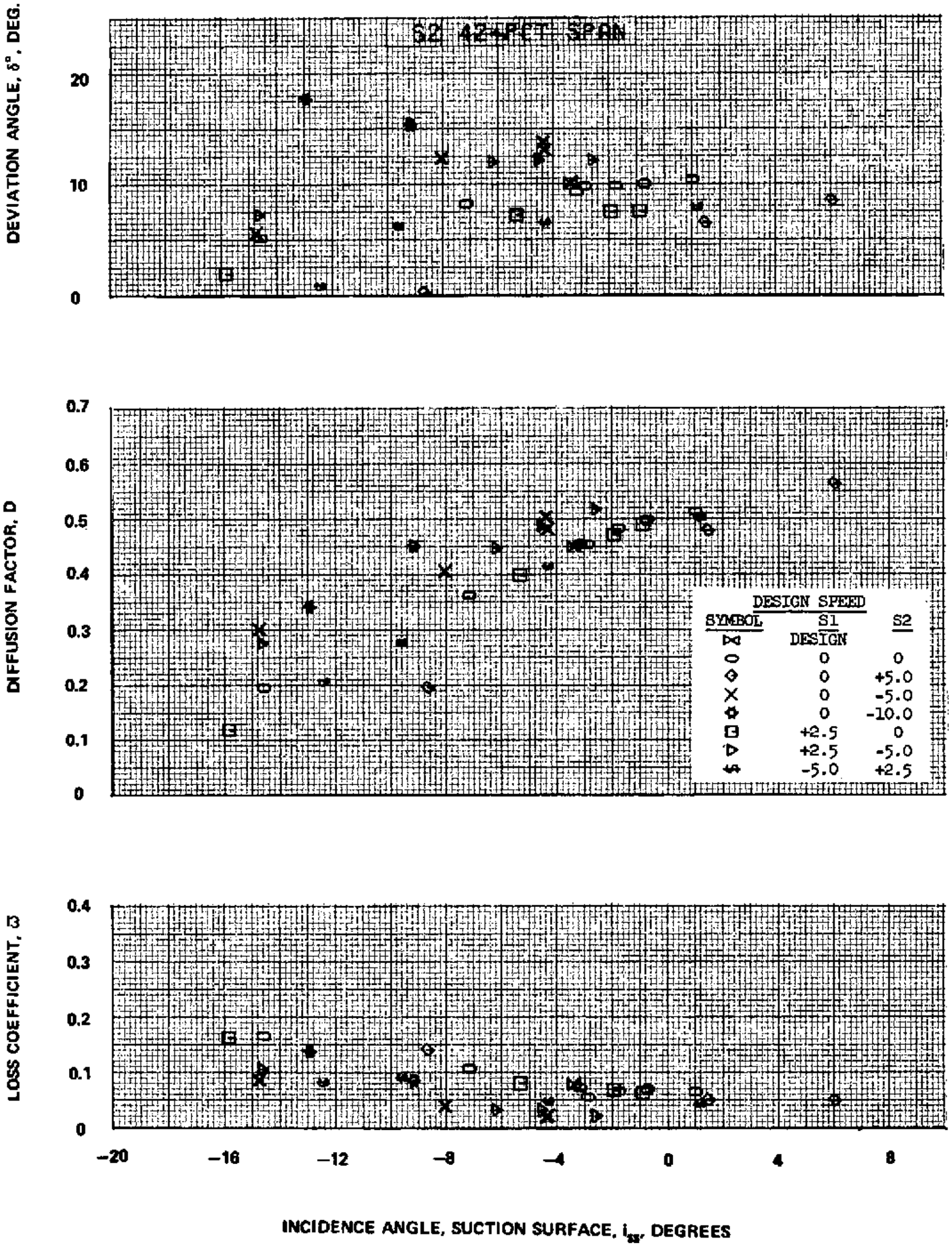


Figure 26C

Figure 26 (Cont'd) Blade-Element Performance for Stator 2 at Design Speed

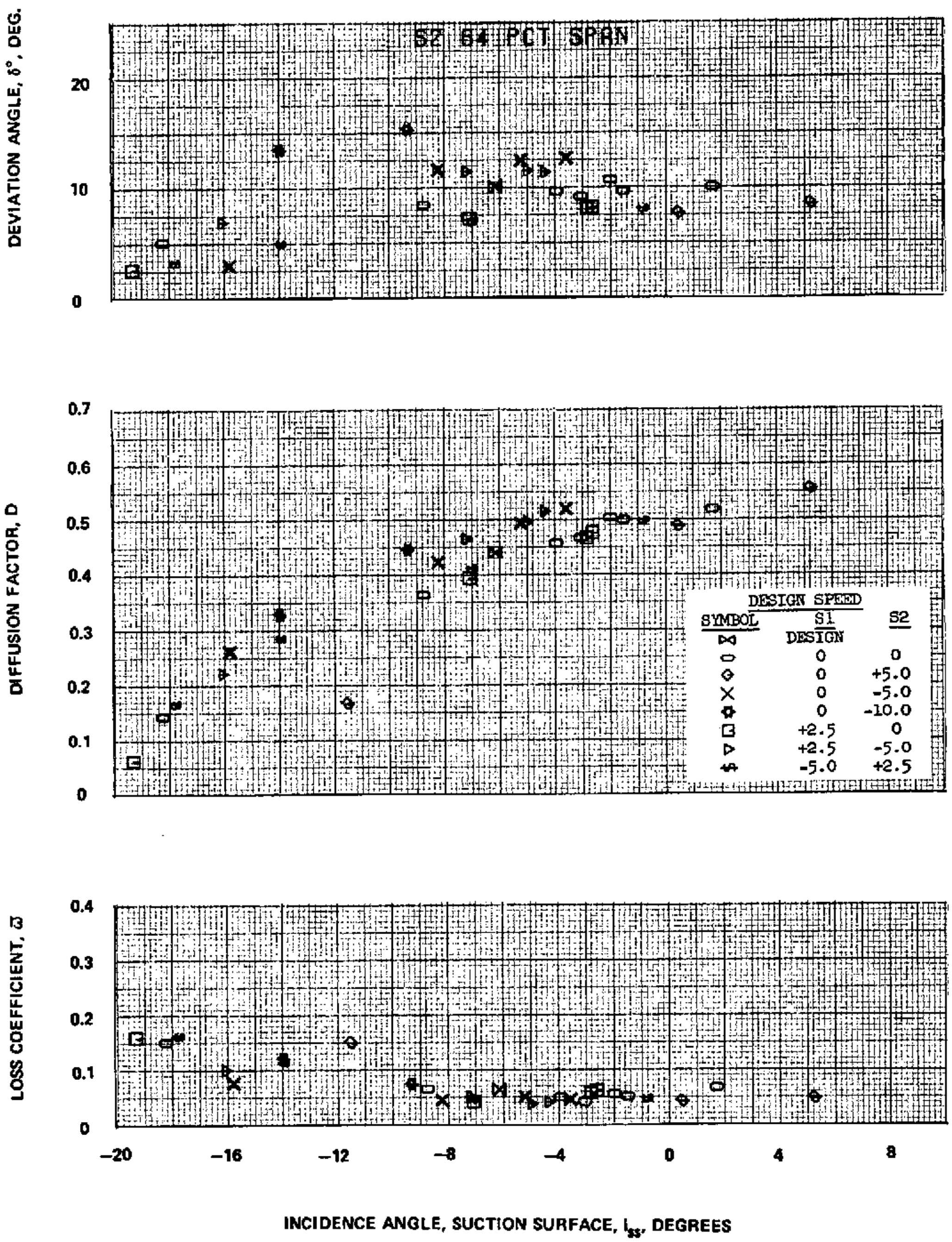


Figure 26D

Figure 26 (Cont'd) Blade-Element Performance for Stator 2 at Design Speed

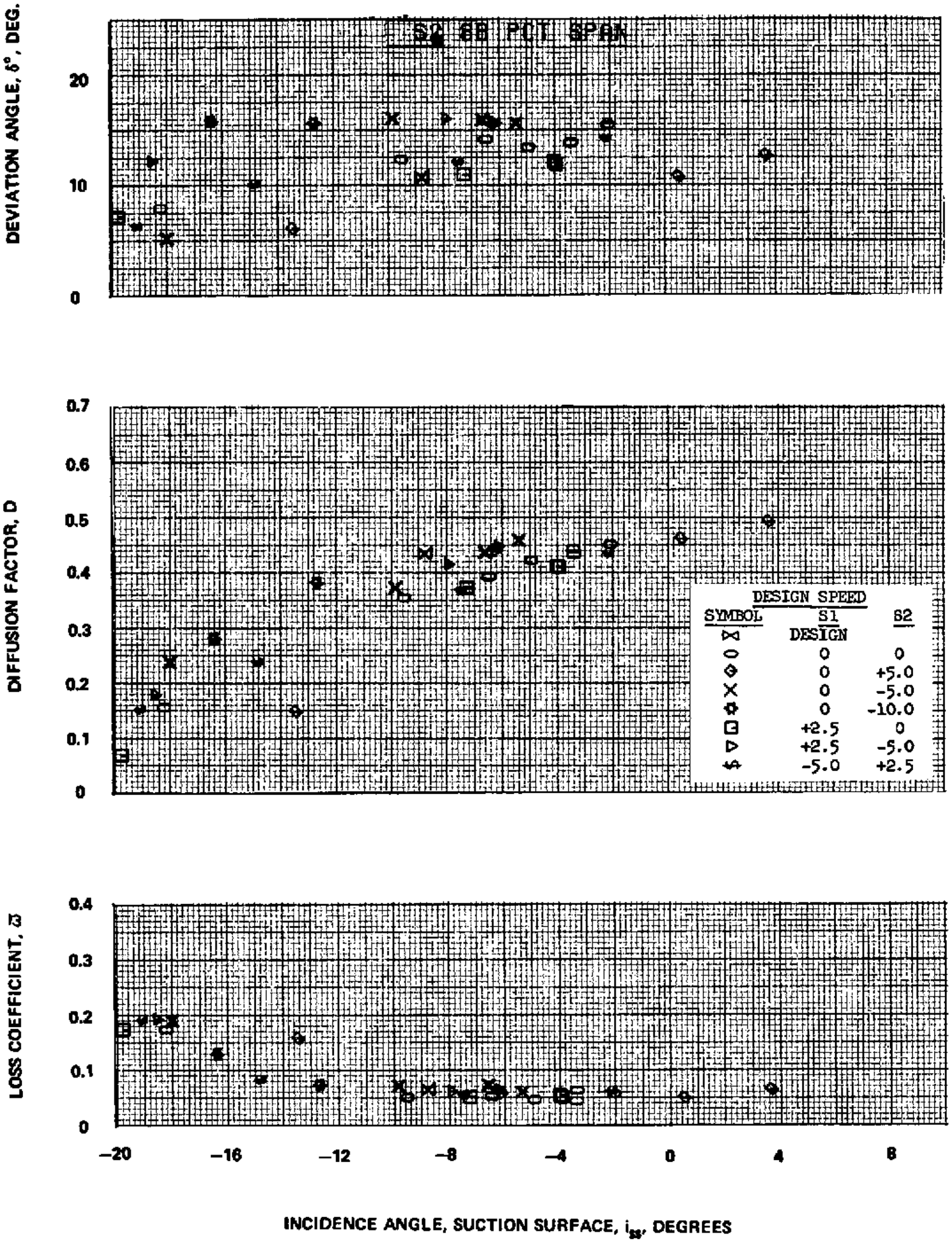


Figure 26E

Figure 26 (Cont'd) Blade-Element Performance for Stator 2 at Design Speed

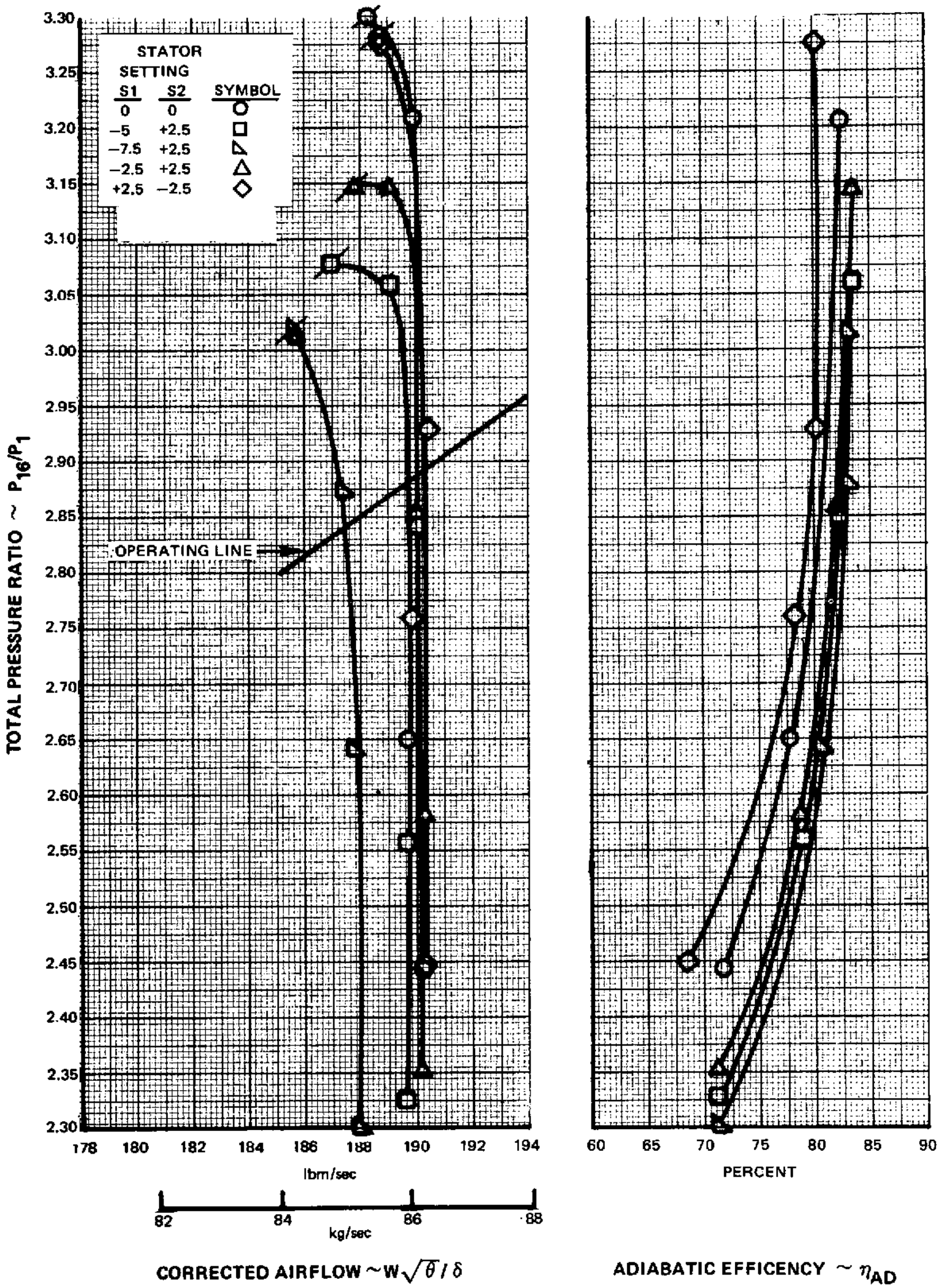


Figure 27 Fan Overall Performance at 105 Percent of Design Speed

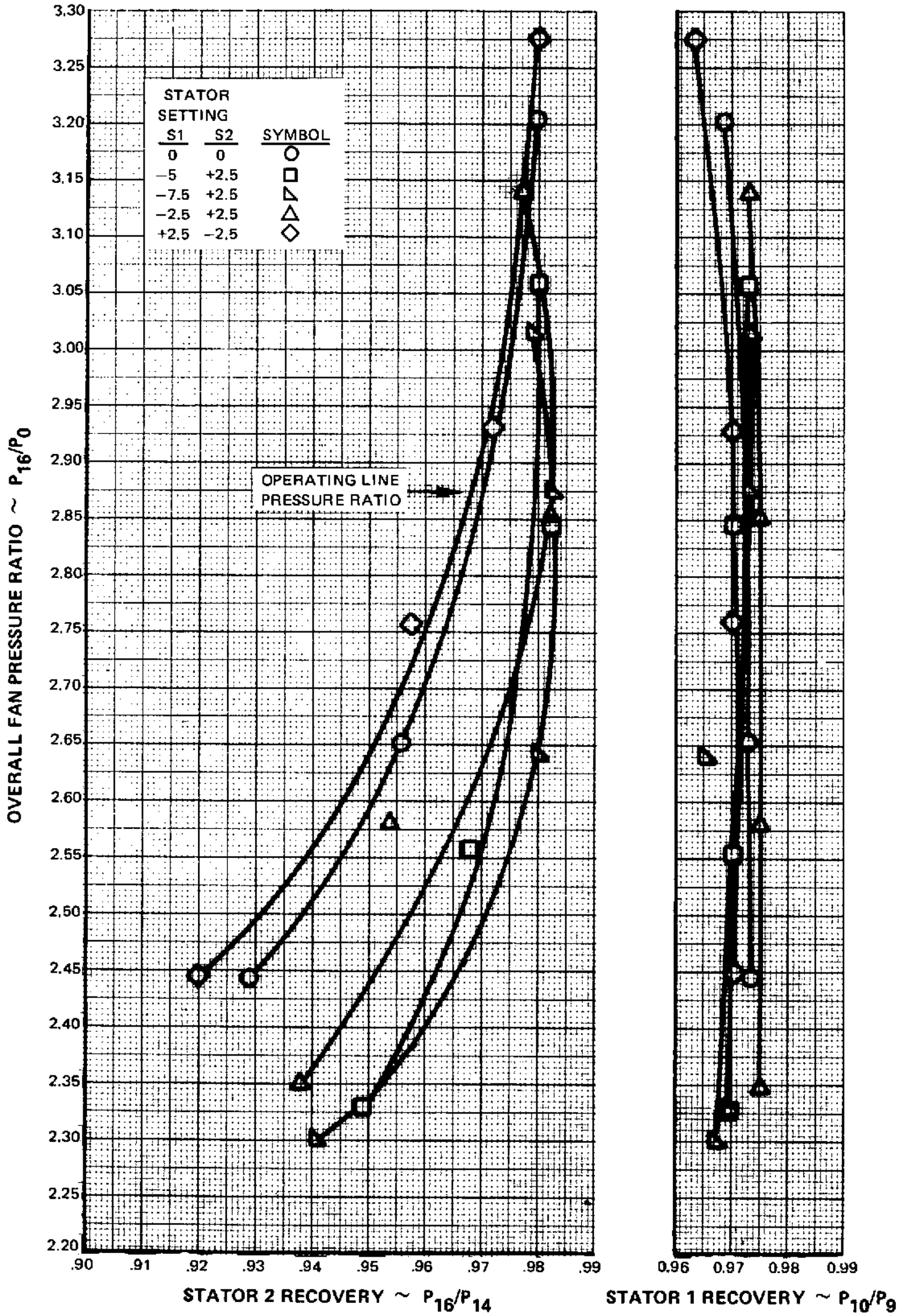


Figure 28 Stator Total Pressure Recovery Versus Fan Pressure Ratio at 105 Percent of Design Speed

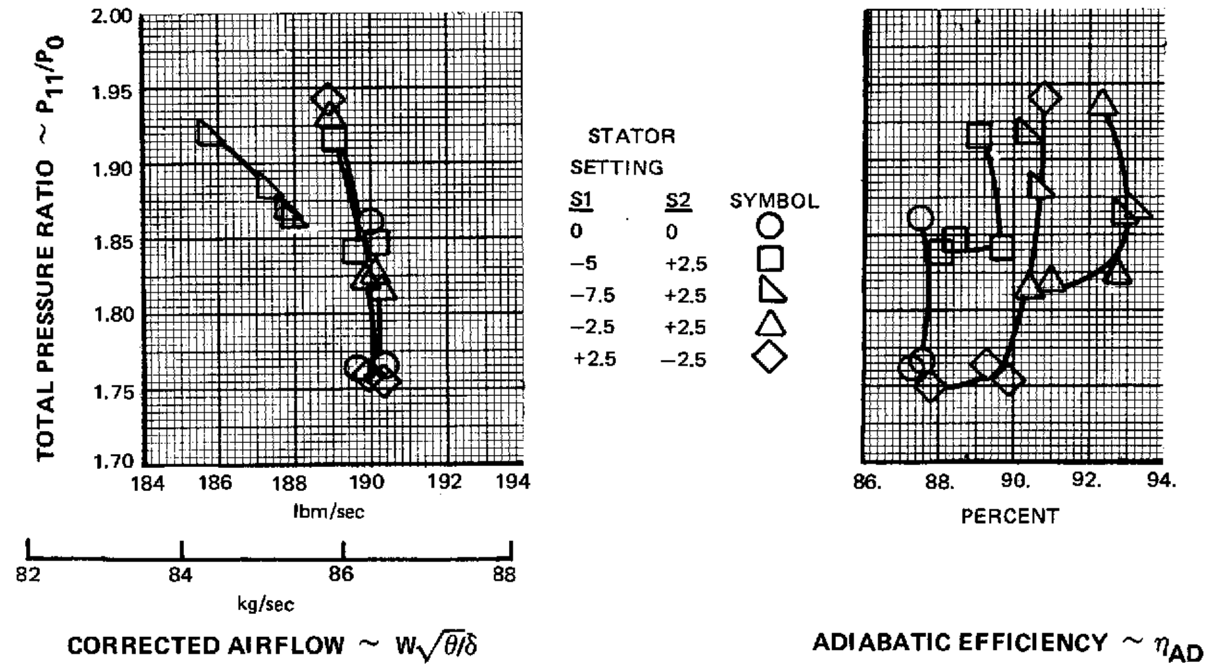


Figure 29 Rotor 1 Performance at 105 Percent of Design Speed

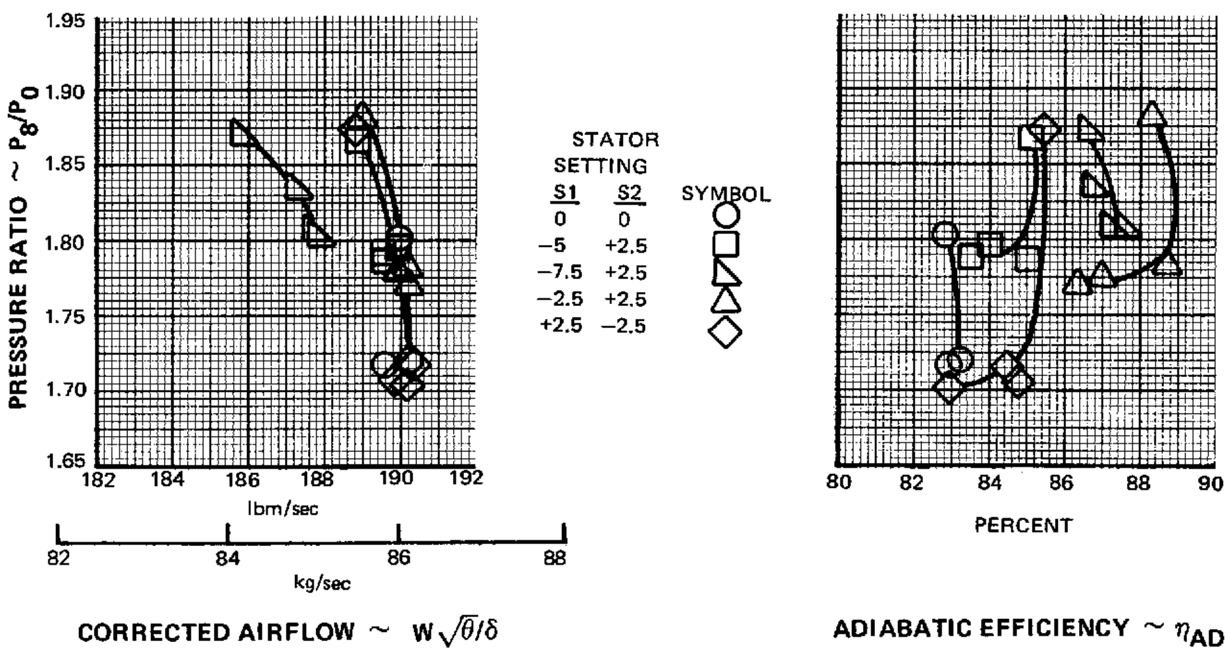


Figure 30 First-Stage Performance at 105 Percent of Design Speed

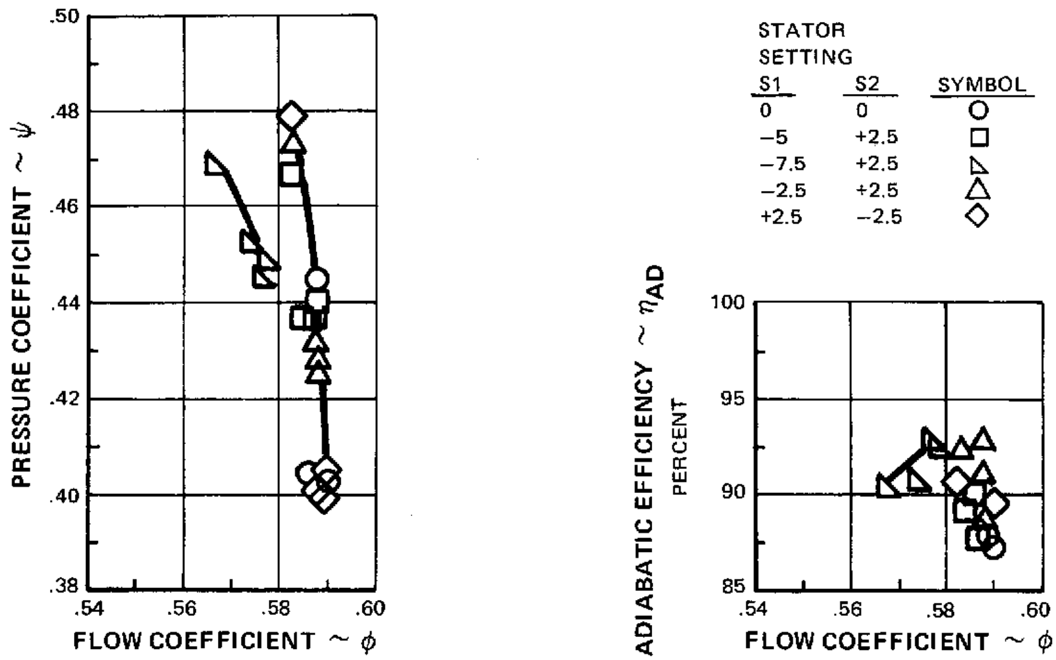


Figure 31 Pressure Coefficient and Adiabatic Efficiency Versus Flow Coefficient for Rotor 1 at 105 Percent of Design Speed

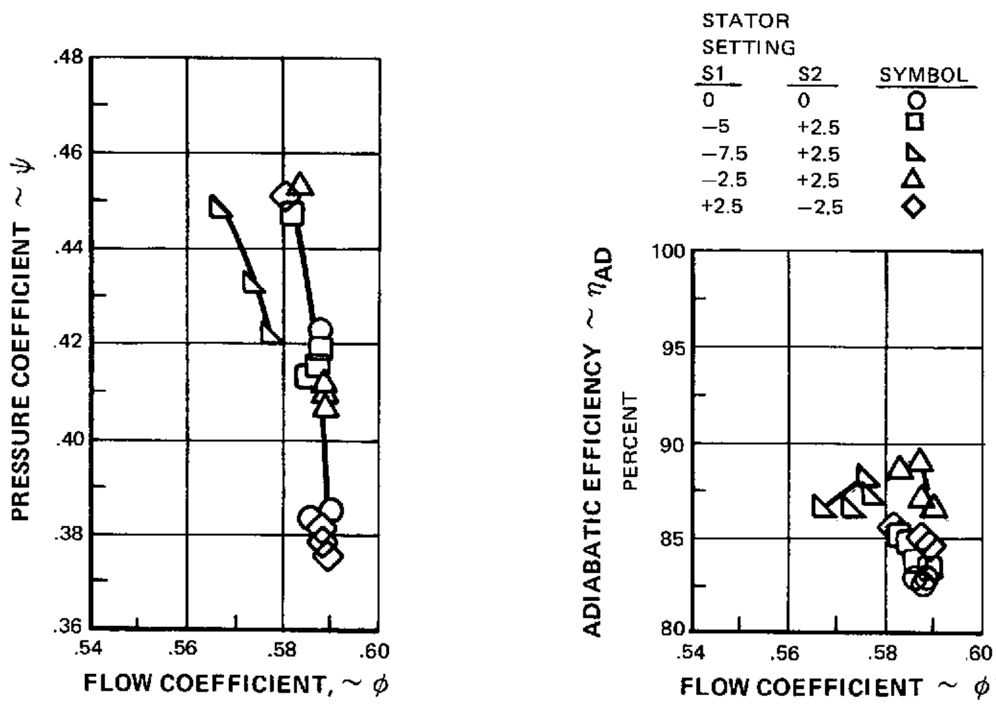


Figure 32 Pressure Coefficient and Adiabatic Efficiency Versus Flow Coefficient for the First Stage at 105 Percent of Design Speed

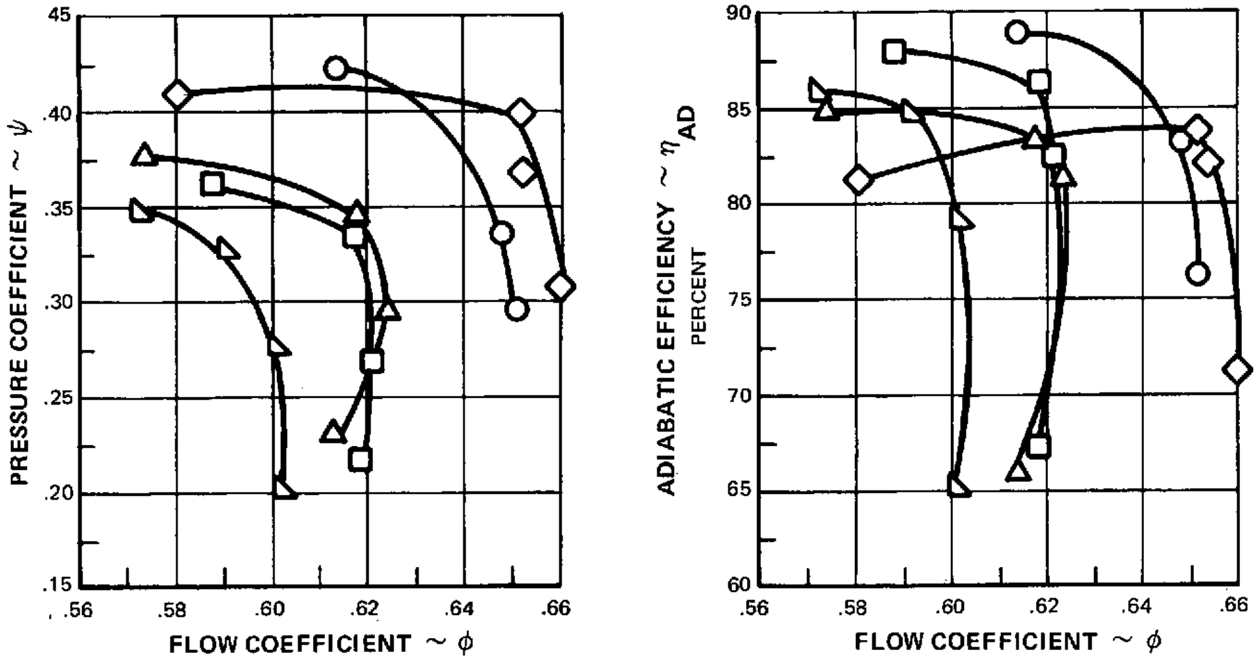


Figure 33 Pressure Coefficient and Adiabatic Efficiency Versus Flow Coefficient for Rotor 2 at 105 Percent of Design Speed

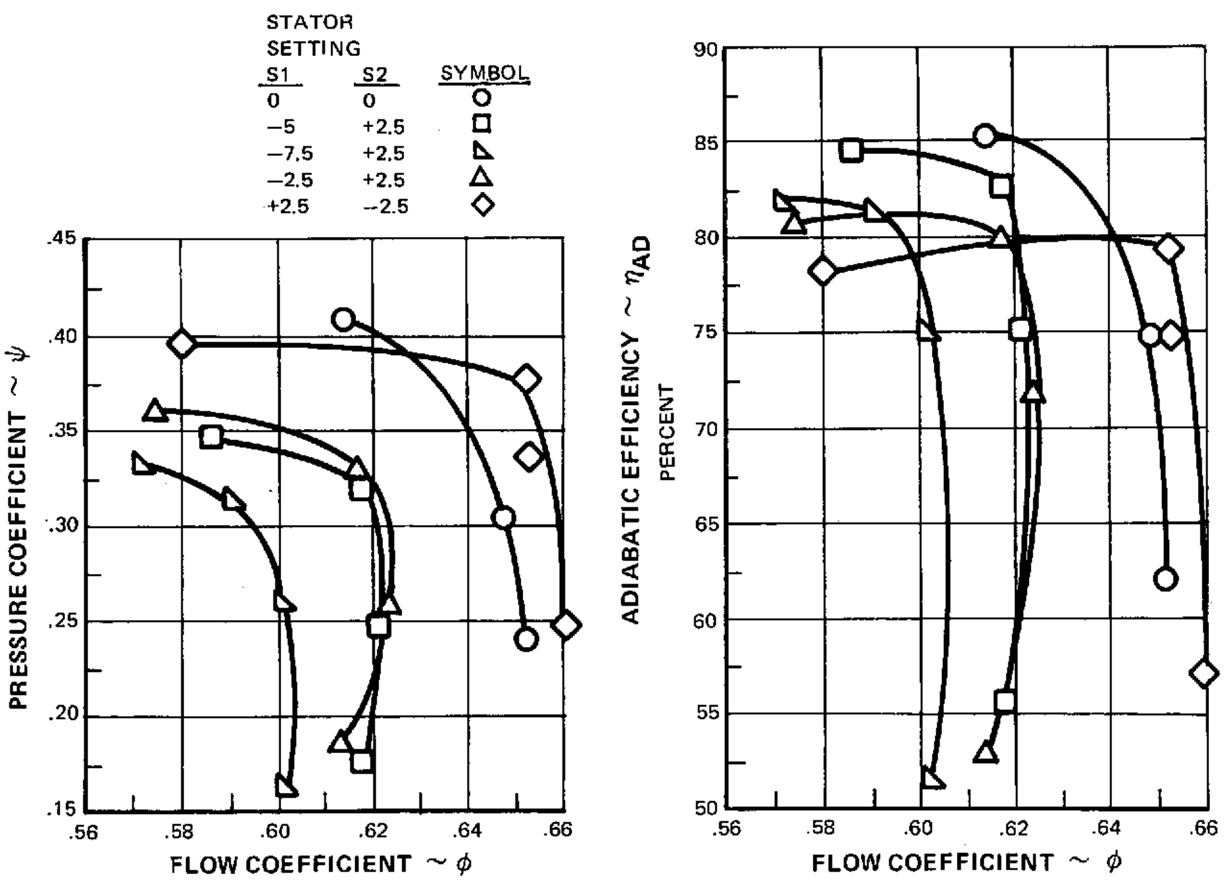


Figure 34 Pressure Coefficient and Adiabatic Efficiency Versus Flow Coefficient for the Second Stage at 105 Percent of Design Speed

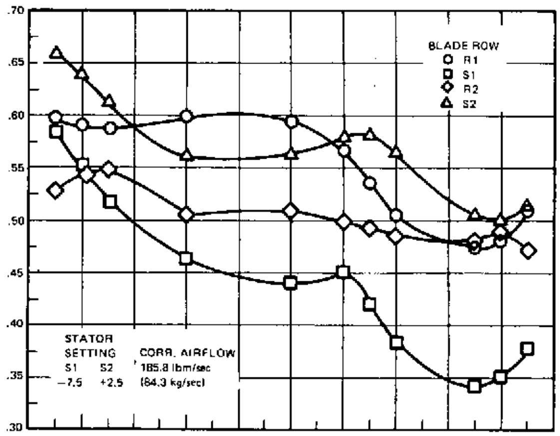


Figure 35A

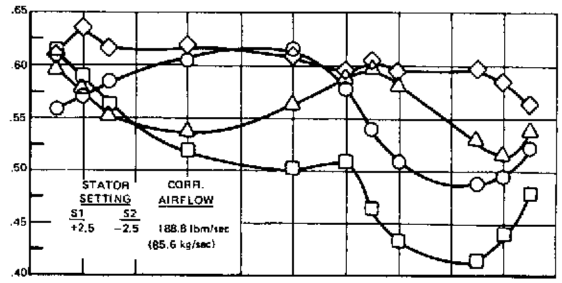


Figure 35D

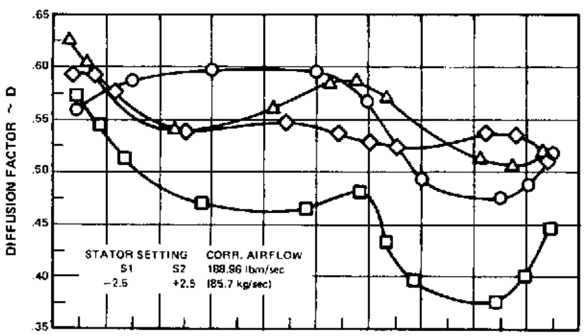


Figure 35B

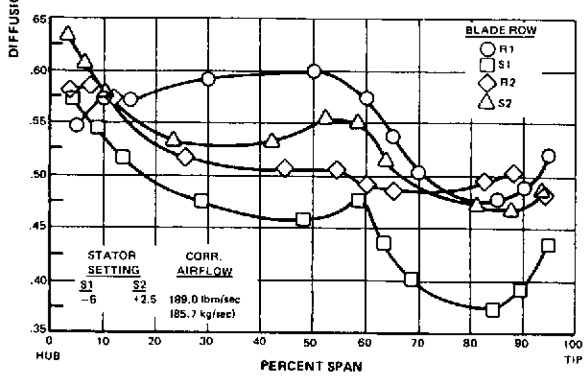


Figure 35E

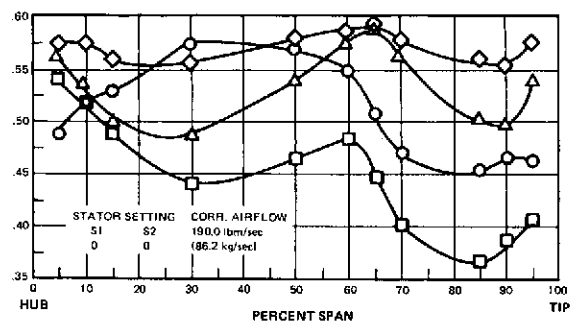


Figure 35C

Figure 35 Near-Stall Diffusion Factors Versus Span for Each Blade Row, Showing Effects of Varying Stator Settings at 105 Percent of Design Speed

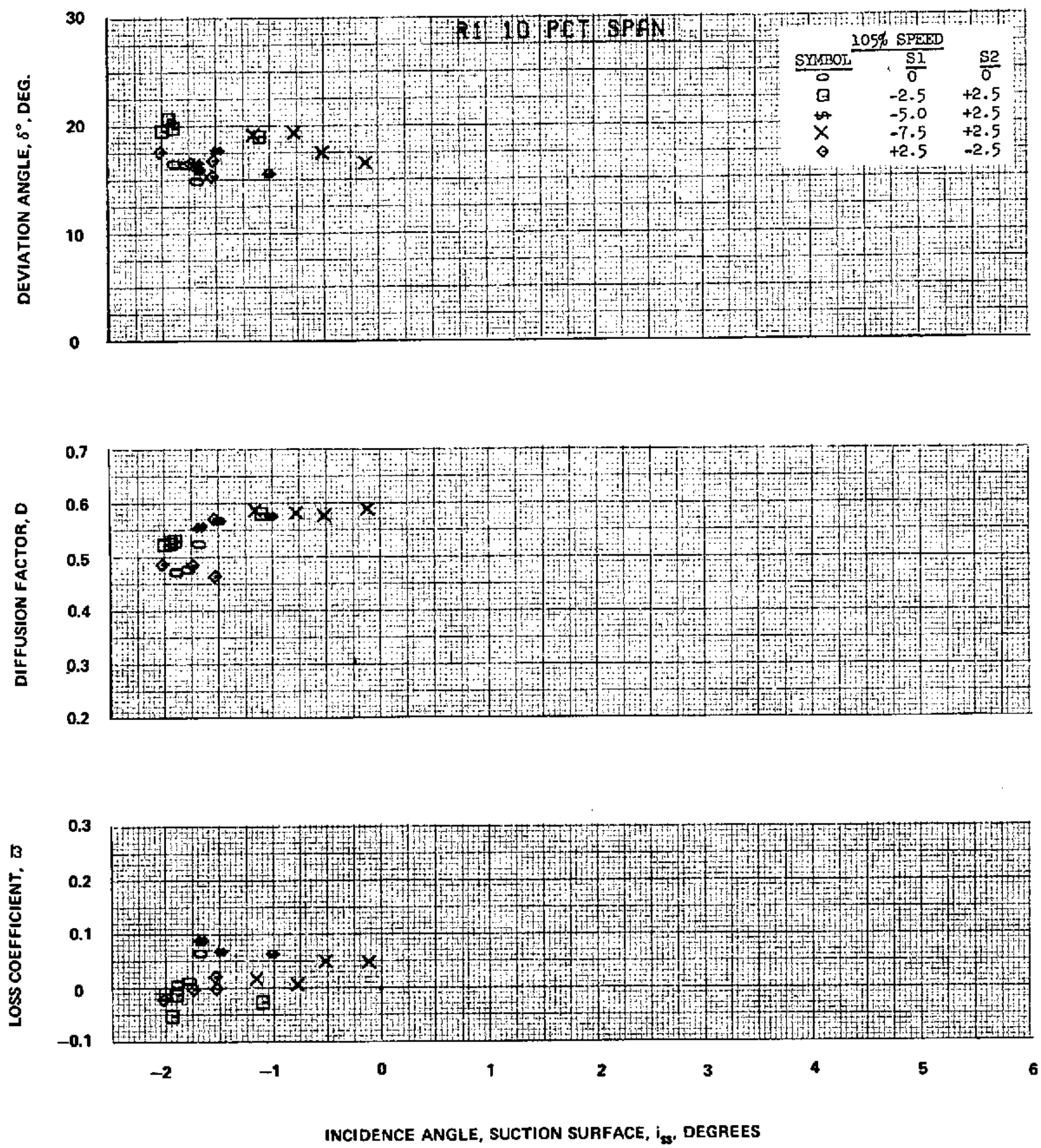


Figure 36A

Figure 36 Blade-Element Performance for Rotor 1 at 105 Percent of Design Speed

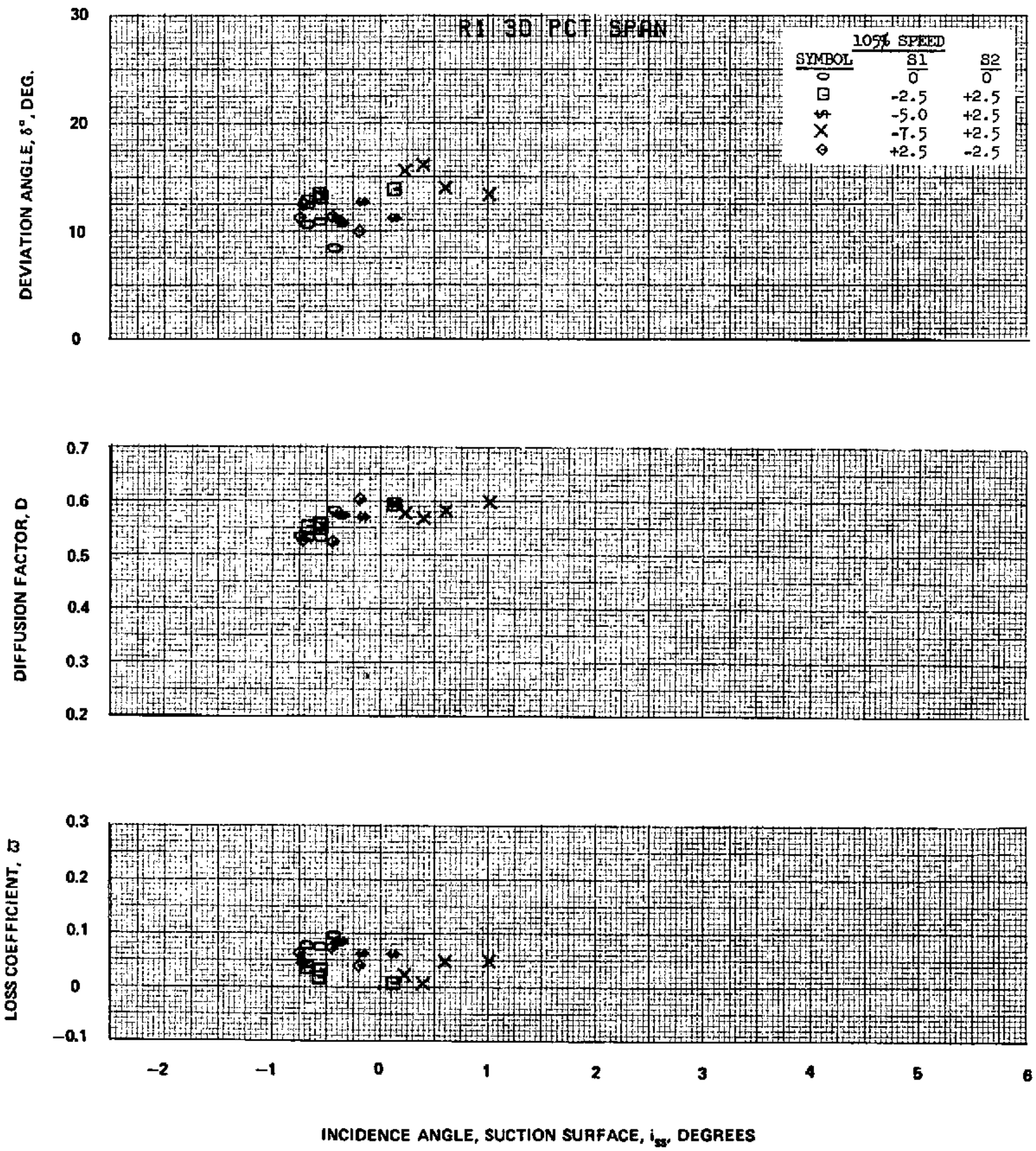


Figure 36B

Figure 36 (Cont'd) Blade-Element Performance for Rotor 1 at 105 Percent of Design Speed

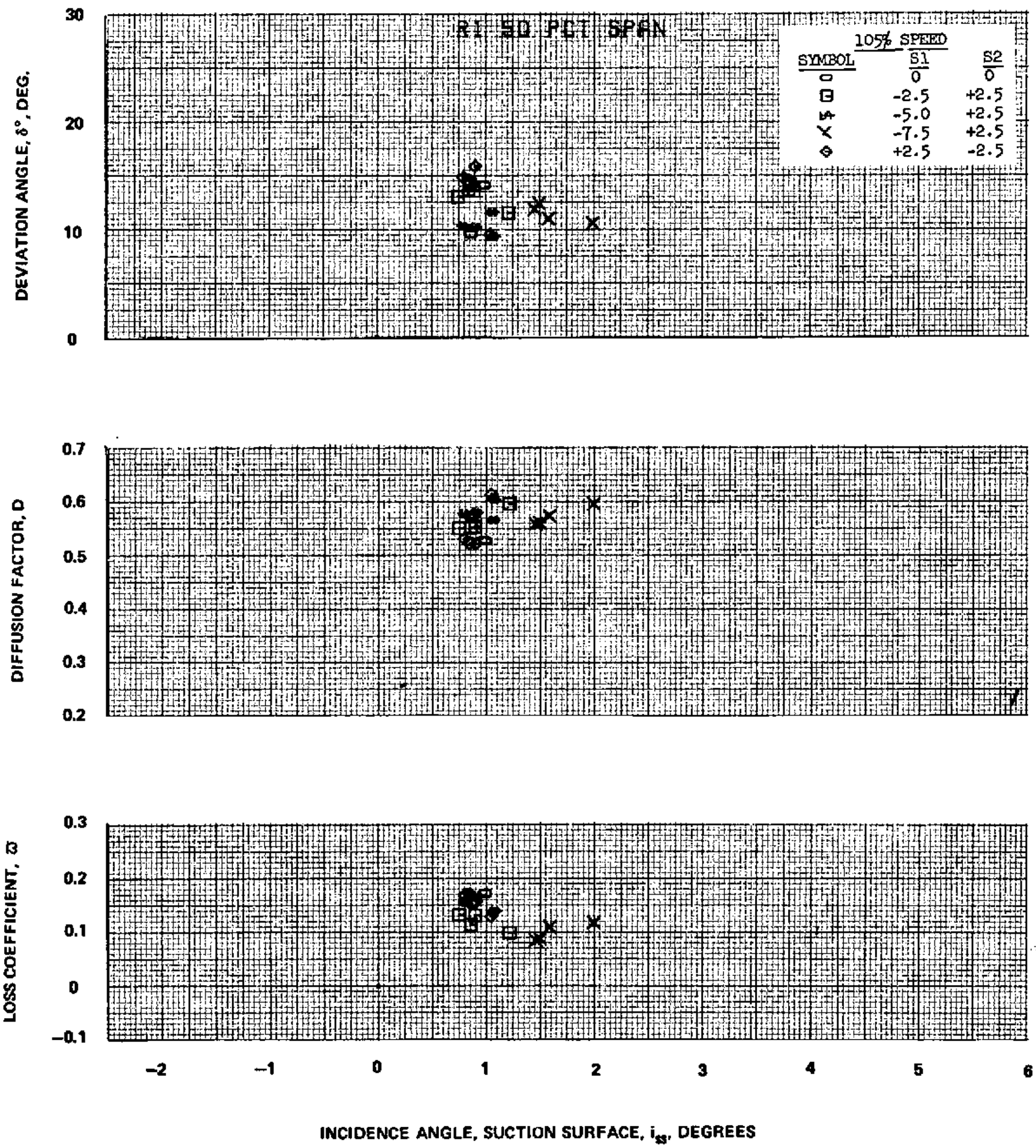


Figure 36C

Figure 36 (Cont'd) Blade-Element Performance for Rotor 1 at 105 Percent of Design Speed

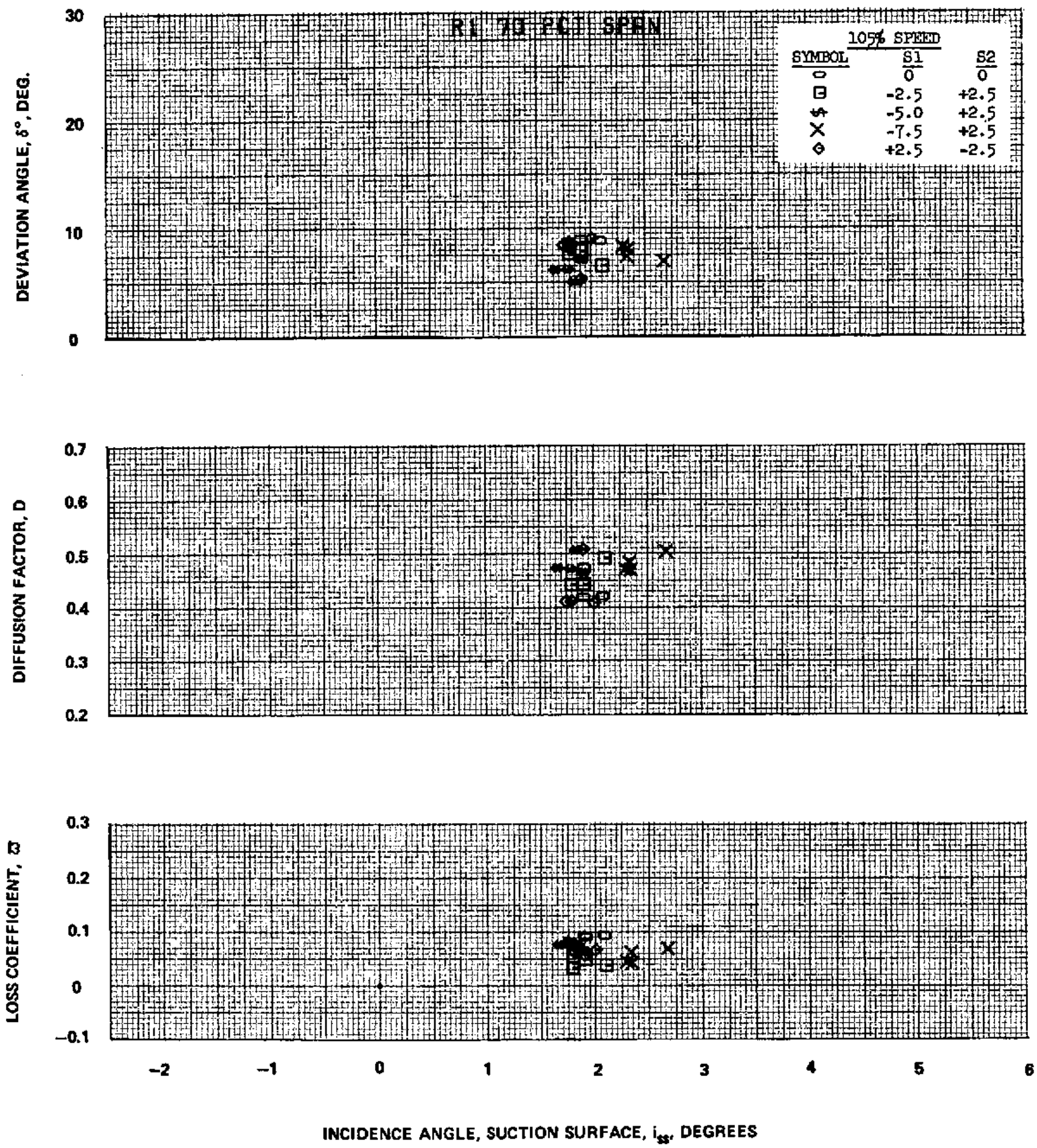


Figure 36D

Figure 36 (Cont'd) Blade-Element Performance for Rotor 1 at 105 Percent of Design Speed

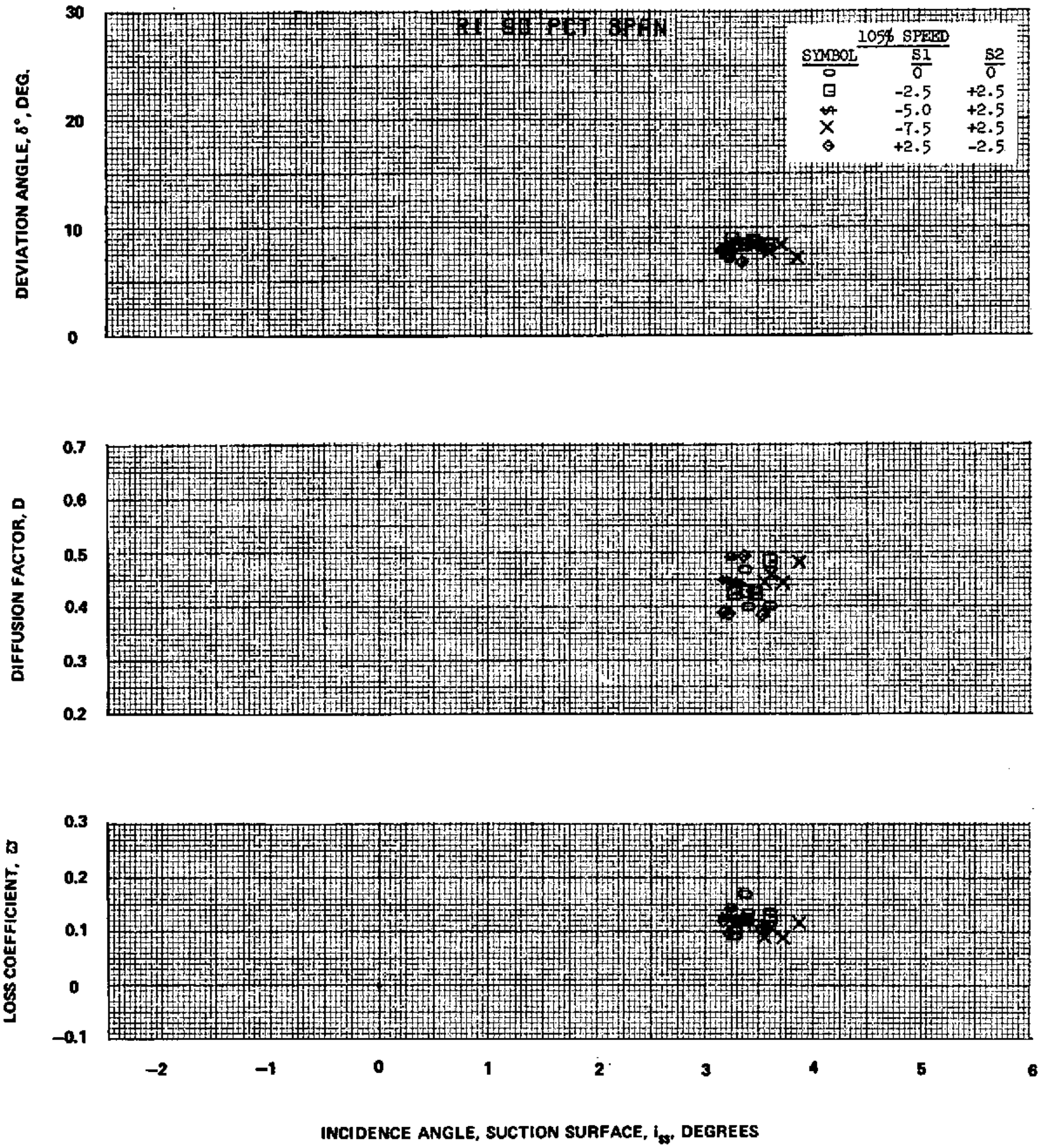


Figure 36E

Figure 36 (Cont'd) Blade-Element Performance for Rotor 1 at 105 Percent of Design Speed

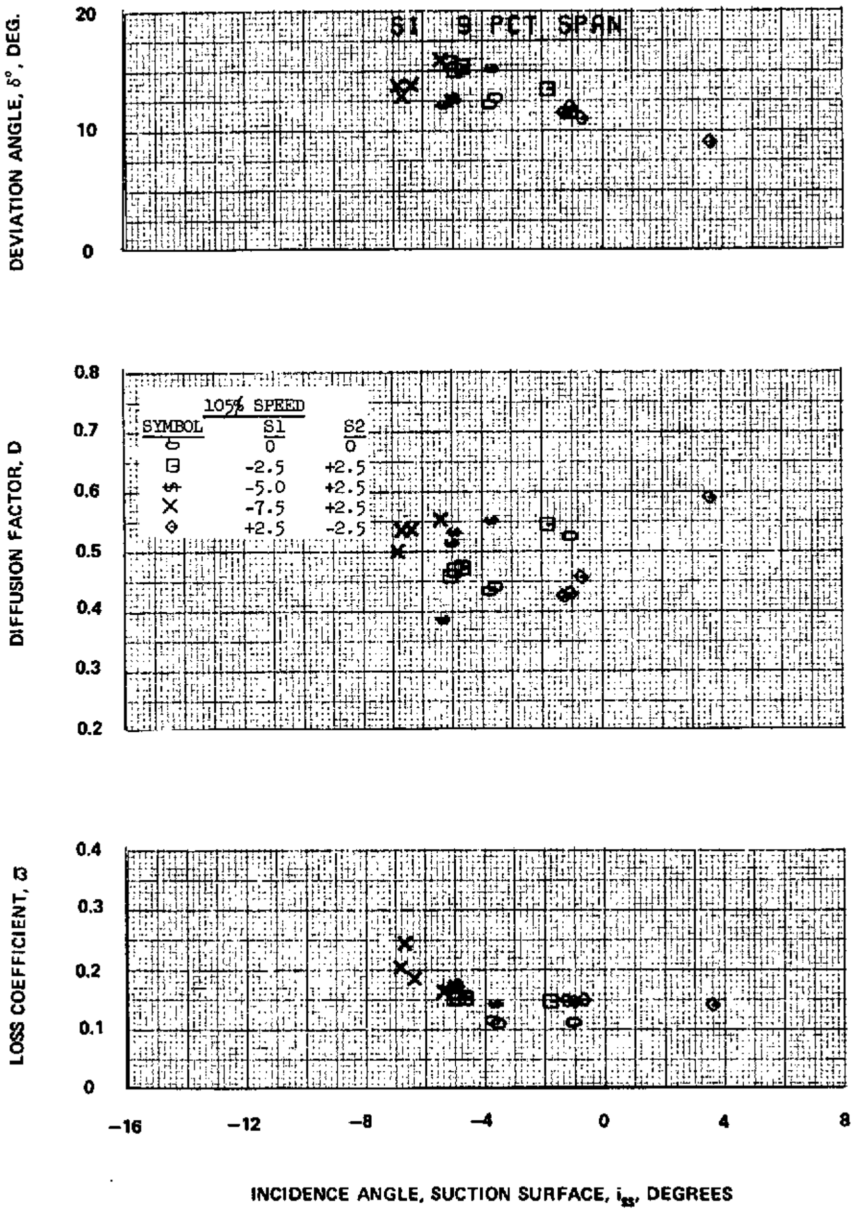


Figure 37A

Figure 37 Blade-Element Performance for Stator 1 at 105 Percent of Design Speed

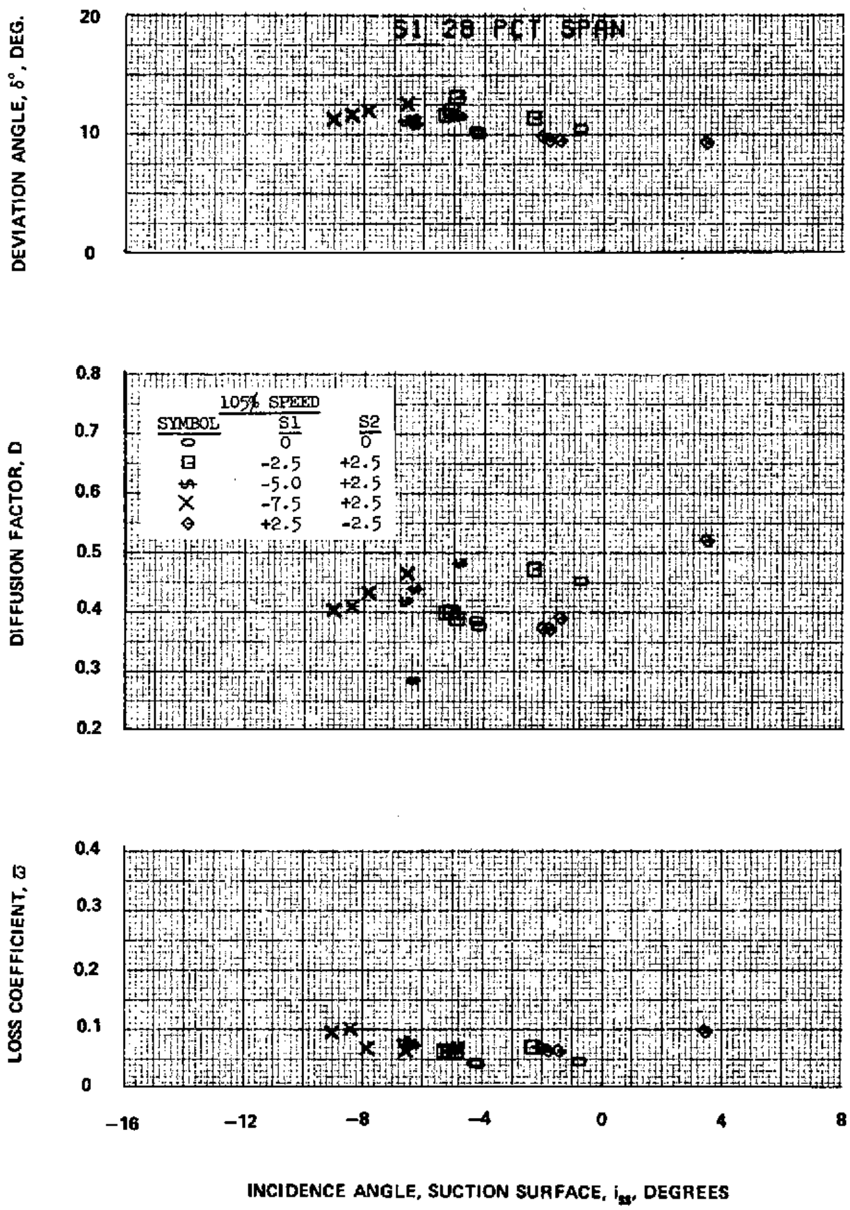


Figure 37B

Figure 37 (Cont'd) Blade-Element Performance for Stator 1 at 105 Percent of Design Speed

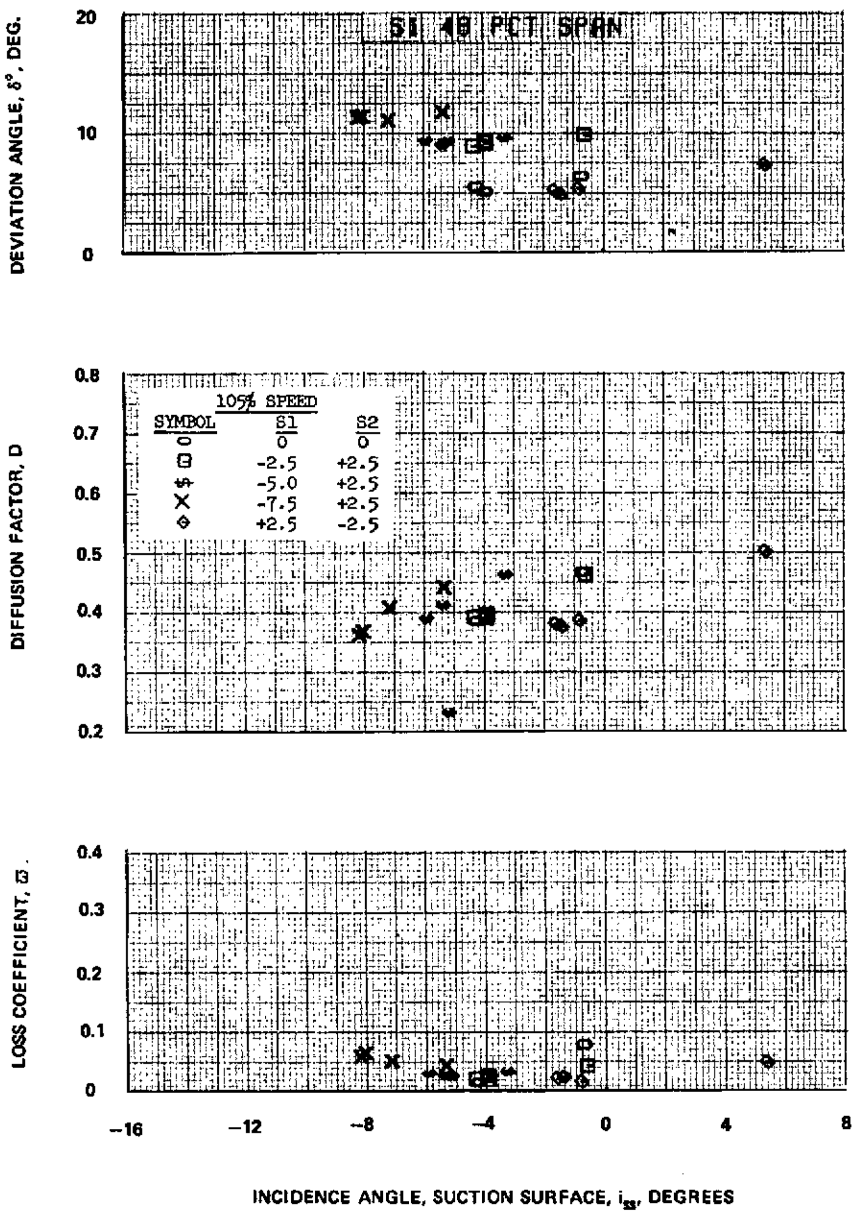


Figure 37C

Figure 37 (Cont'd) Blade-Element Performance for Stator 1 at 105 Percent of Design Speed

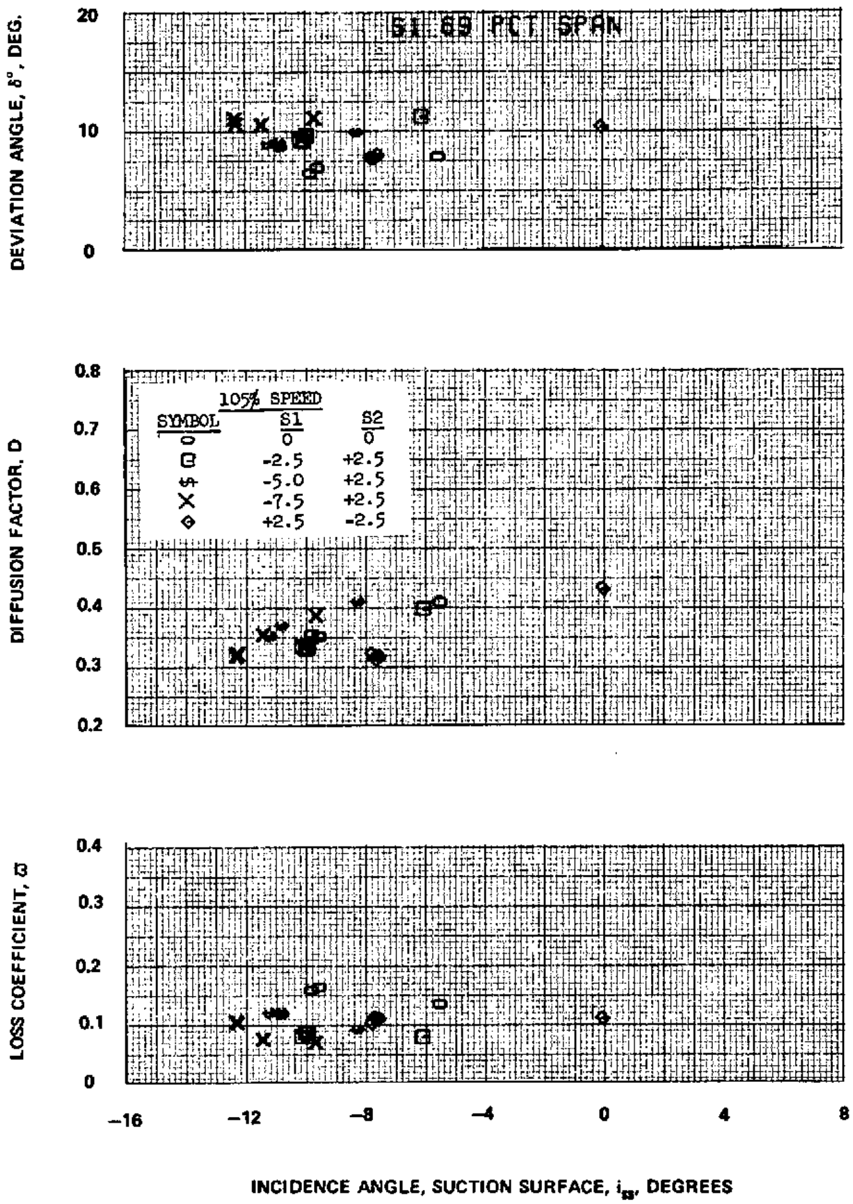


Figure 37D

Figure 37 (Cont'd) Blade-Element Performance for Stator 1 at 105 Percent of Design Speed

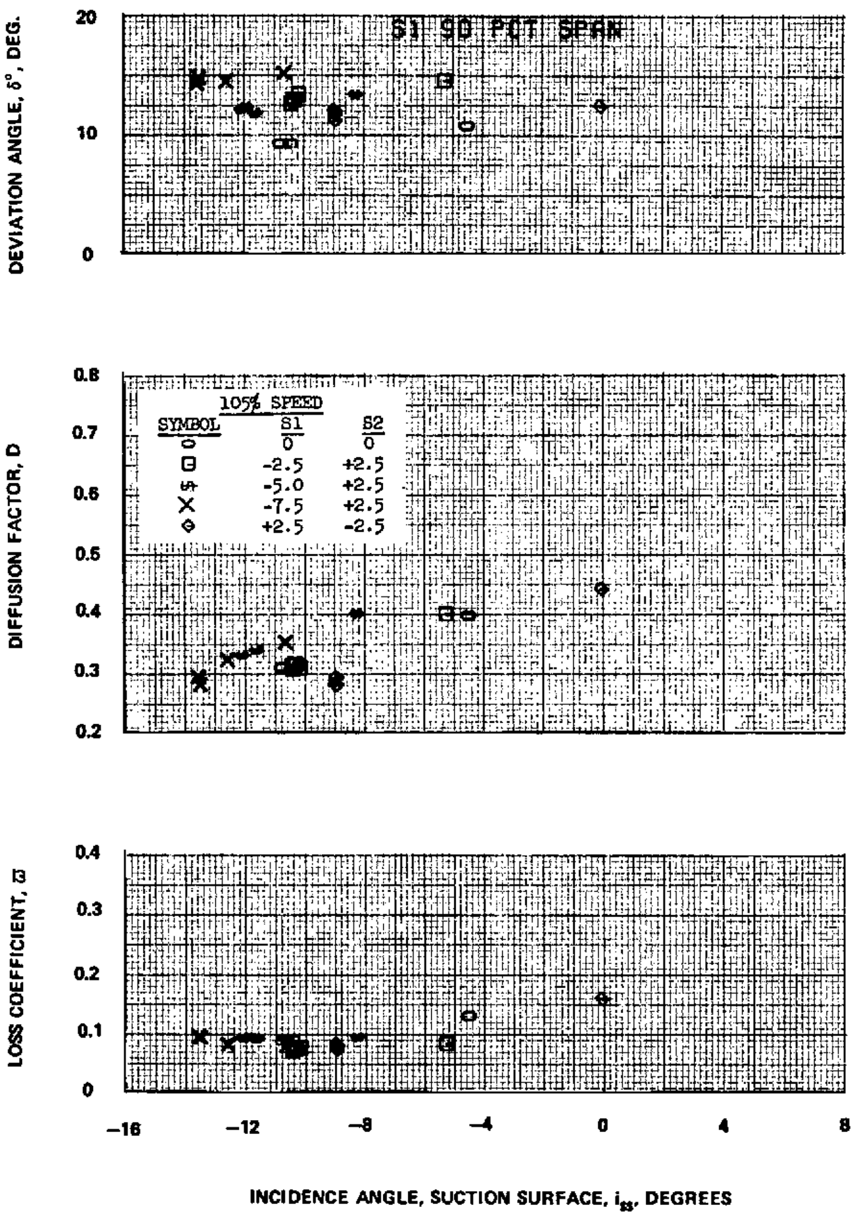


Figure 37E

Figure 37 (Cont'd) Blade-Element Performance for Stator 1 at 105 Percent of Design Speed

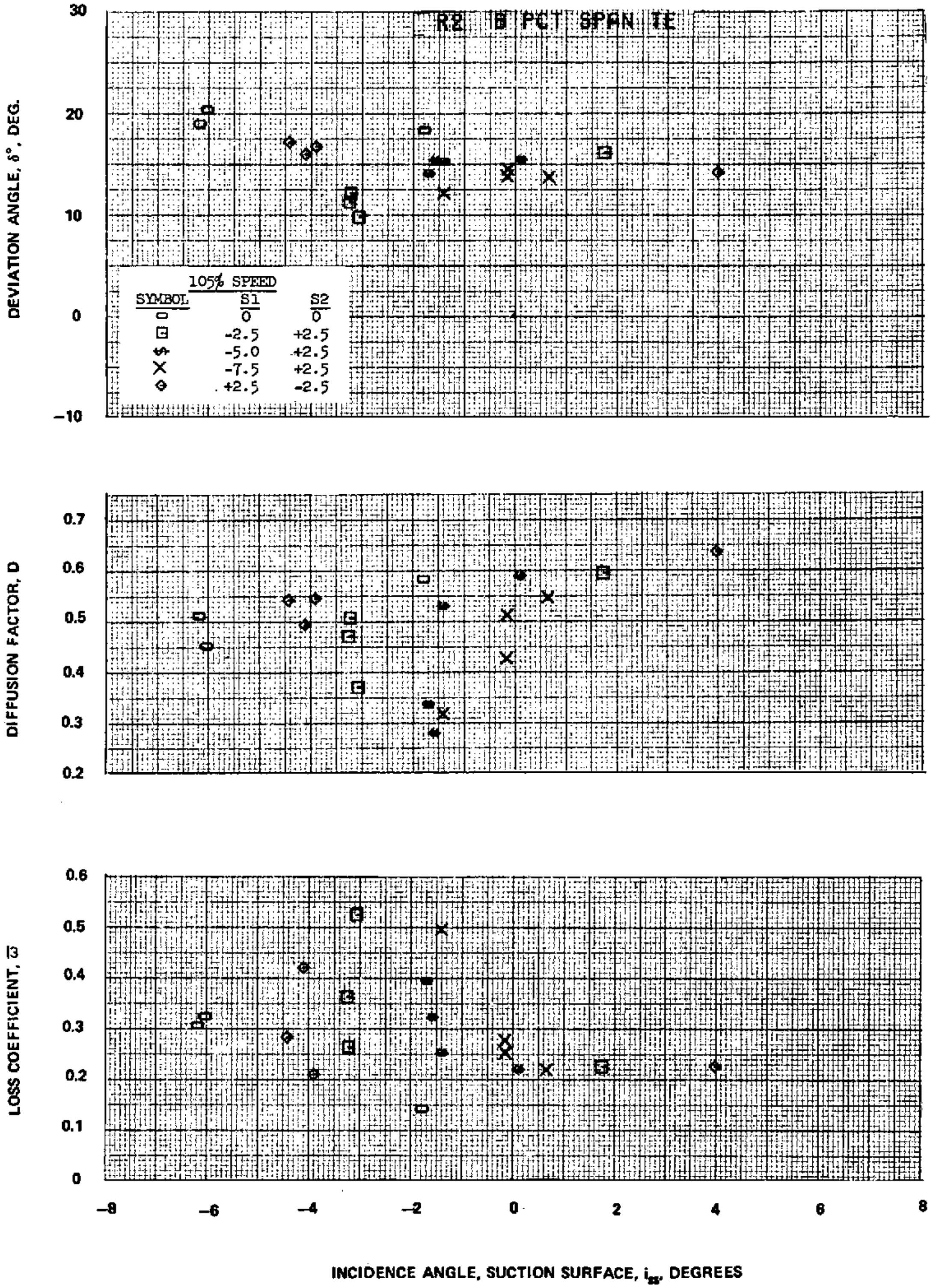


Figure 38A

Figure 38 Blade-Element Performance for Rotor 2 at 105 Percent of Design Speed

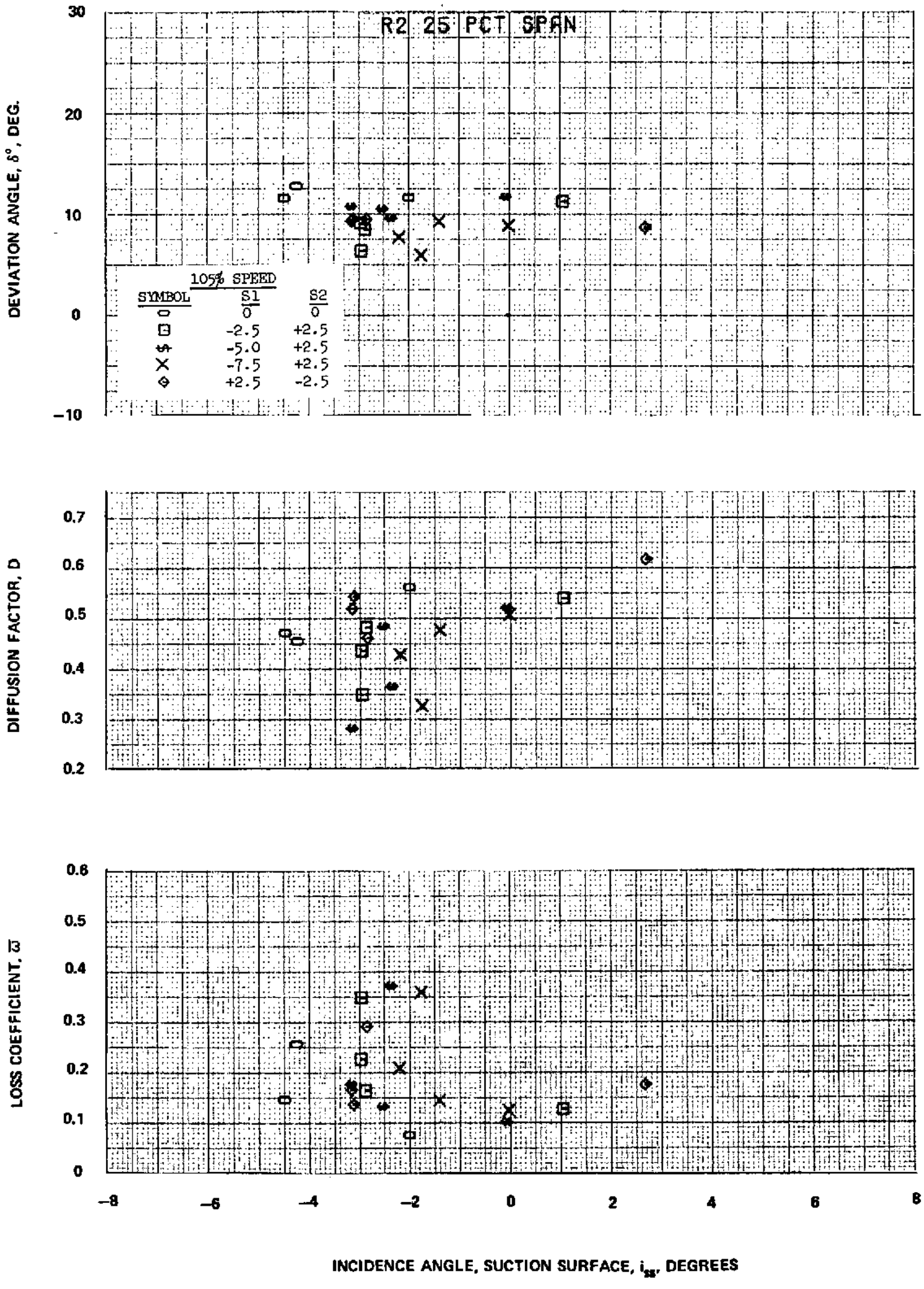


Figure 38B

Figure 38 (Cont'd) Blade-Element Performance for Rotor 2 at 105 Percent of Design Speed

C-2

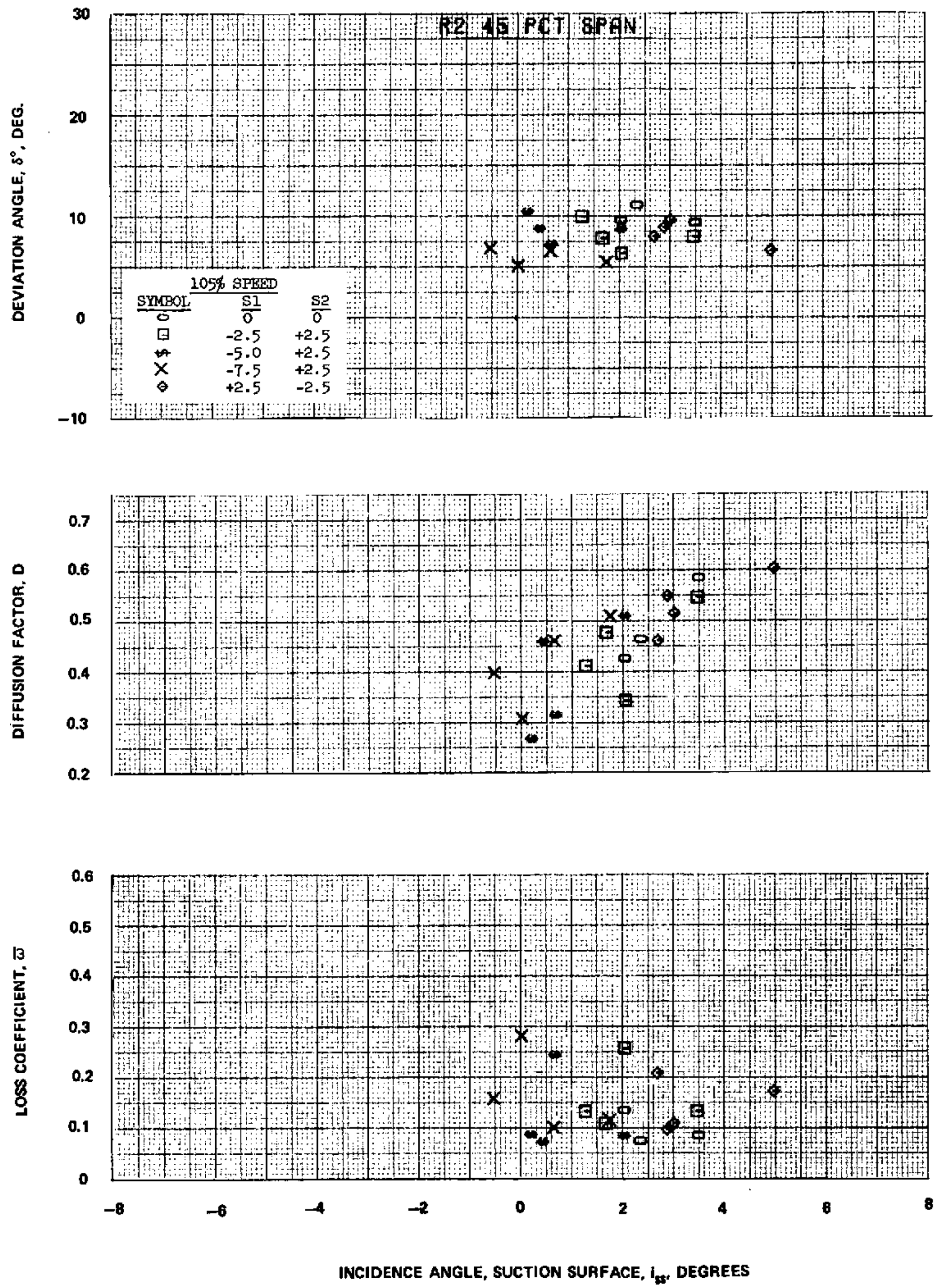


Figure 38C

Figure 38 (Cont'd) Blade-Element Performance for Rotor 2 at 105 Percent of Design Speed

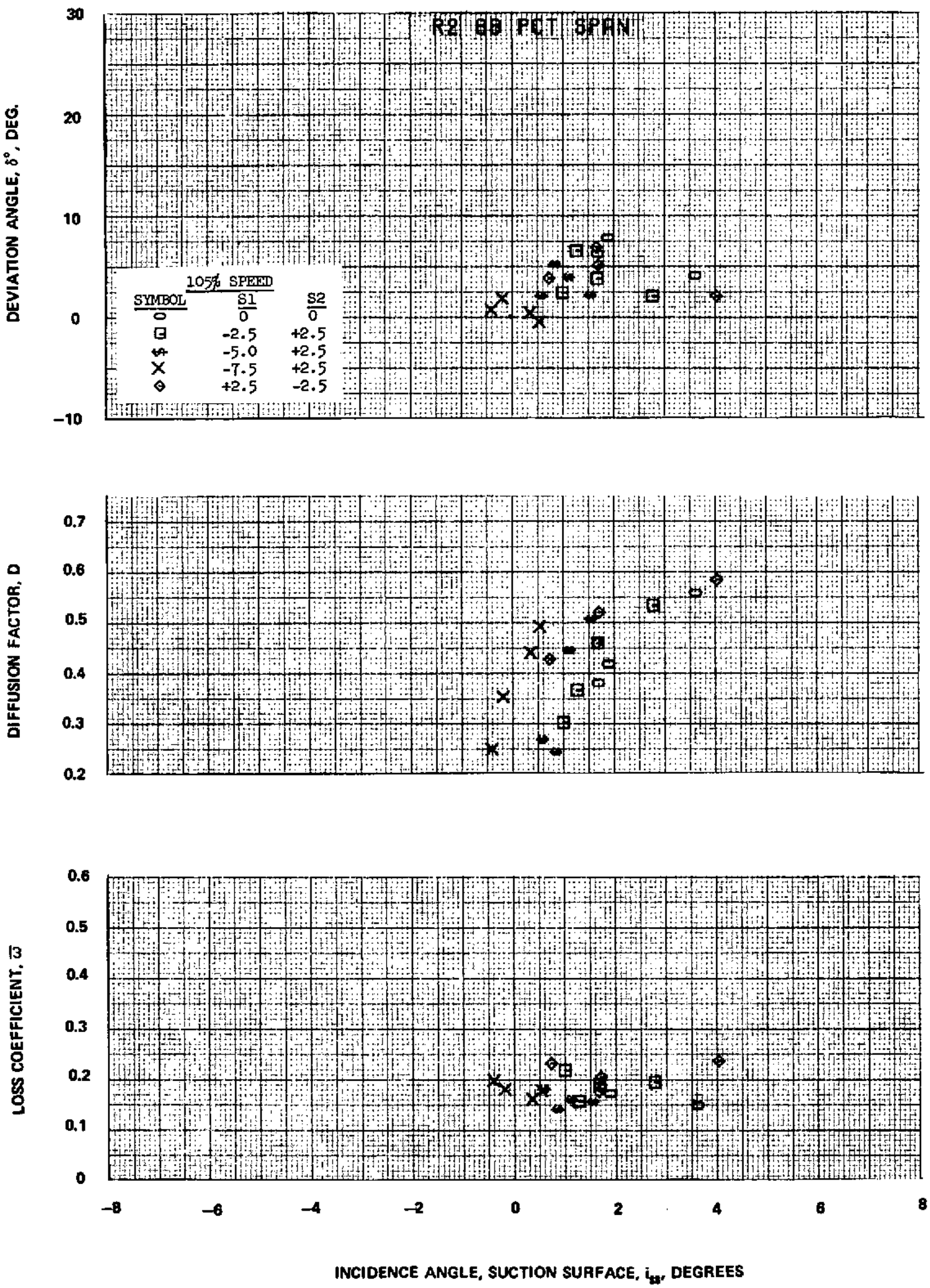


Figure 38D

Figure 38 (Cont'd) Blade-Element Performance for Rotor 2 at 105 Percent of Design Speed

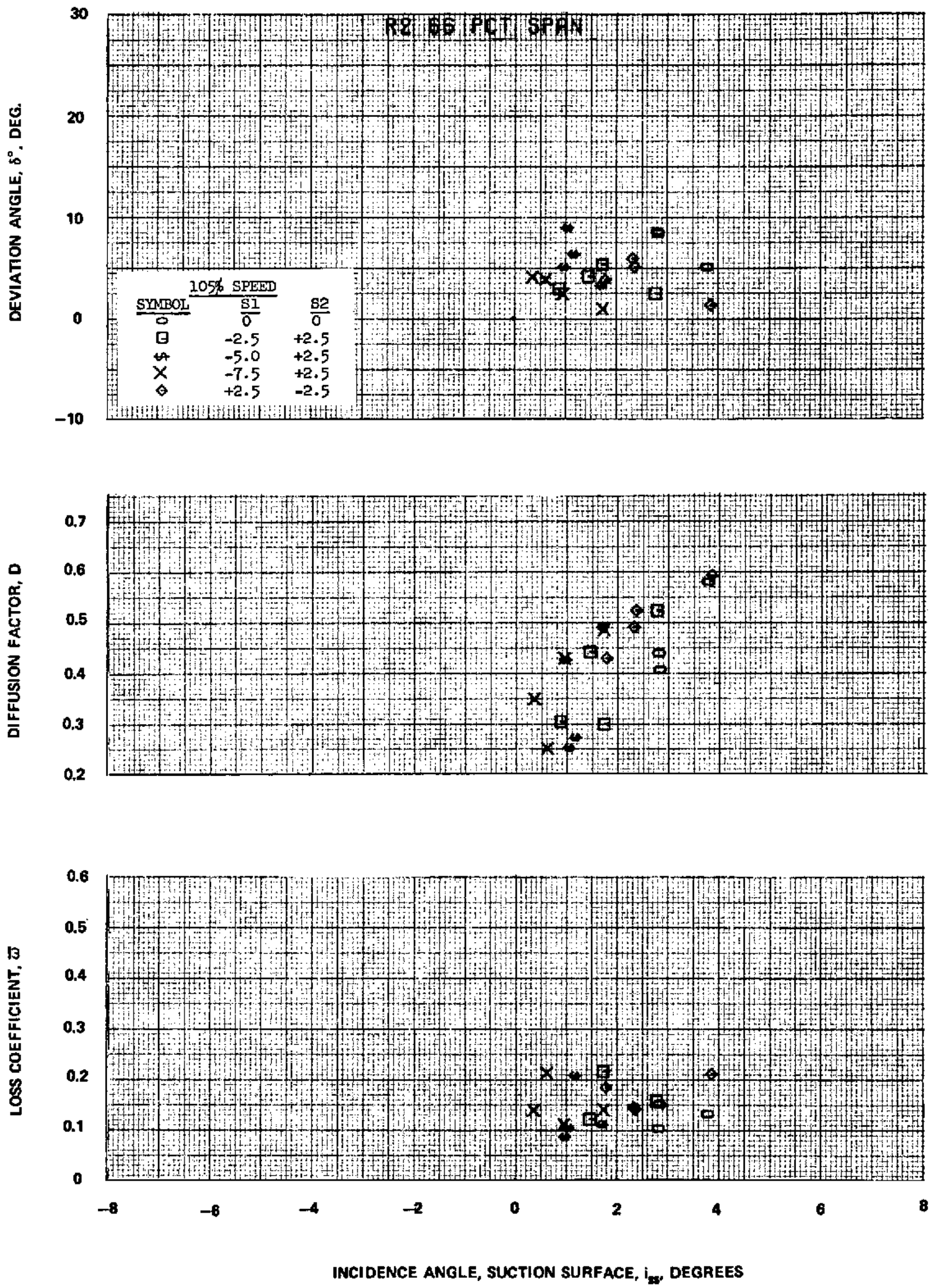


Figure 38E

Figure 38 (Cont'd) Blade-Element Performance for Rotor 2 at 105 Percent of Design Speed

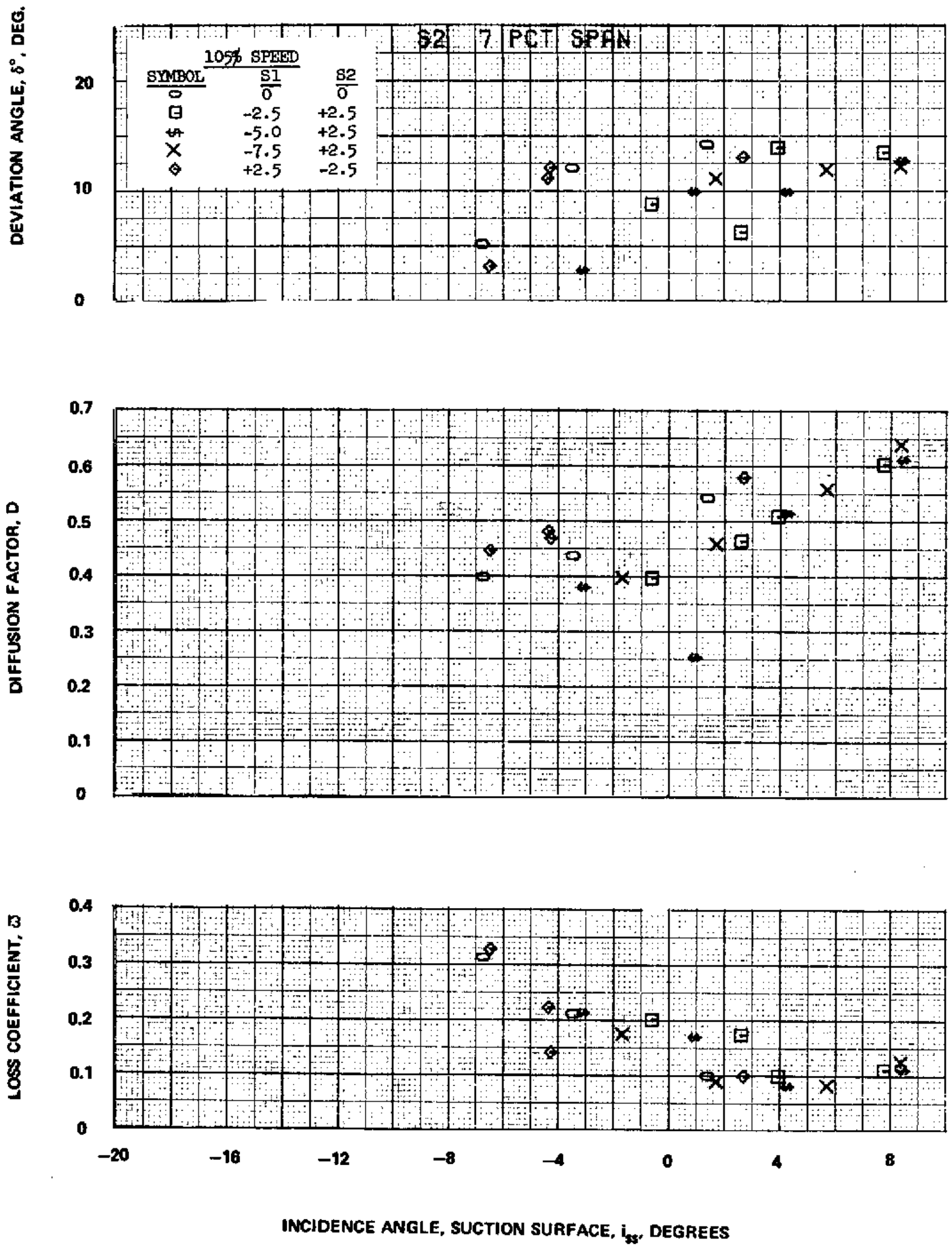


Figure 39A

Figure 39 Blade-Element Performance for Stator 2 at 105 Percent of Design Speed

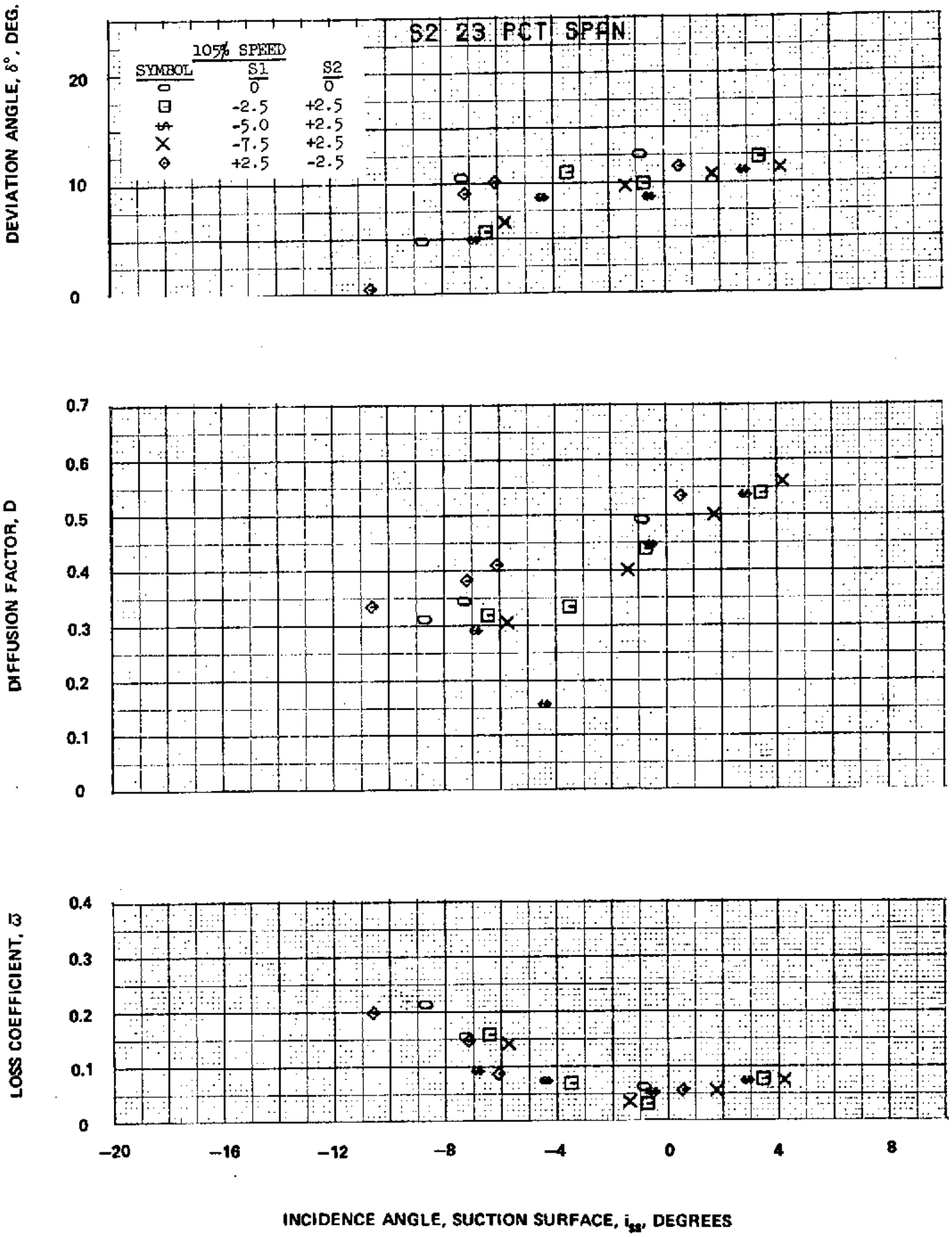


Figure 39B

Figure 39 (Cont'd) Blade-Element Performance for Stator 2 at 105 Percent of Design Speed

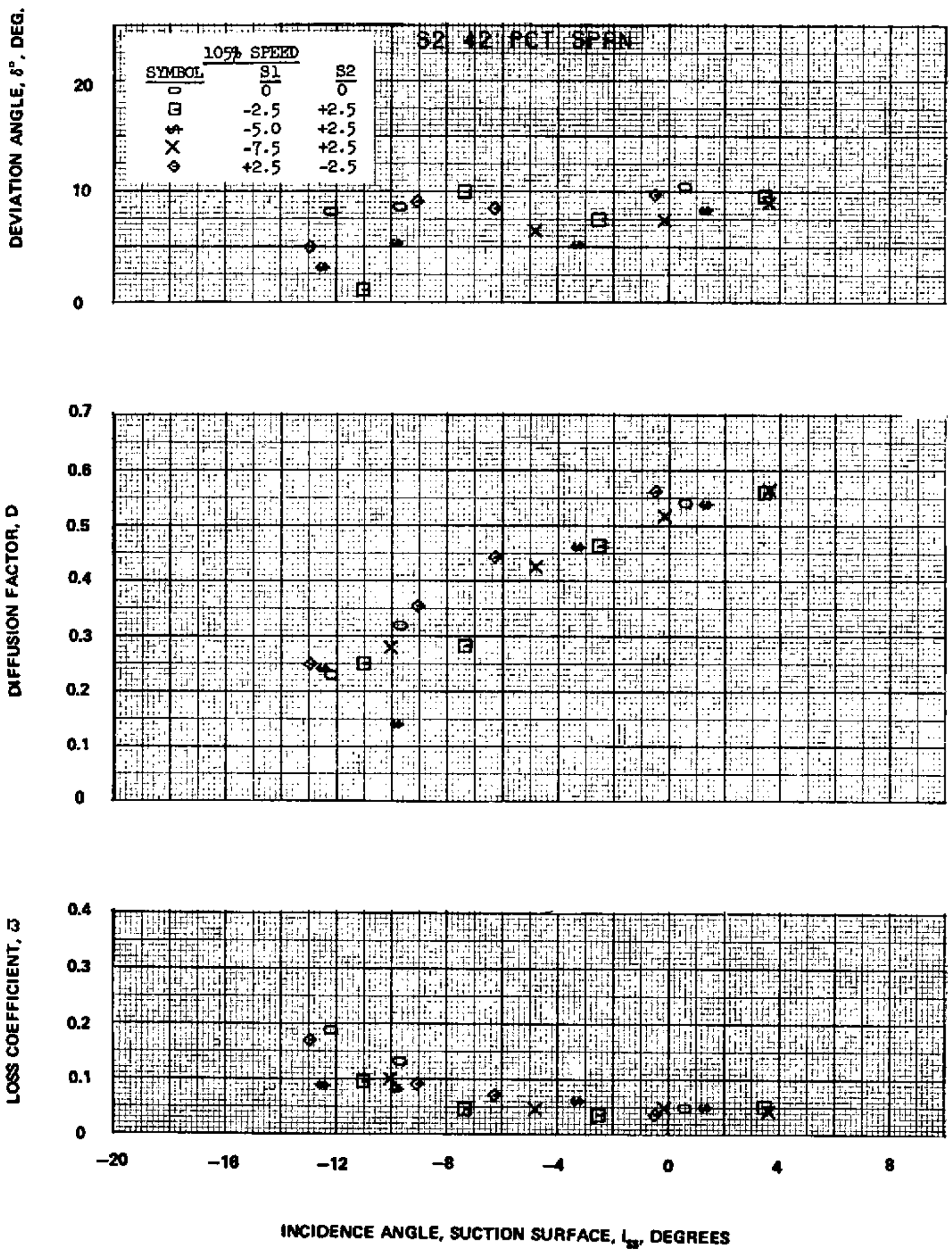


Figure 39C

Figure 39 (Cont'd) Blade-Element Performance for Stator 2 at 105 Percent of Design Speed

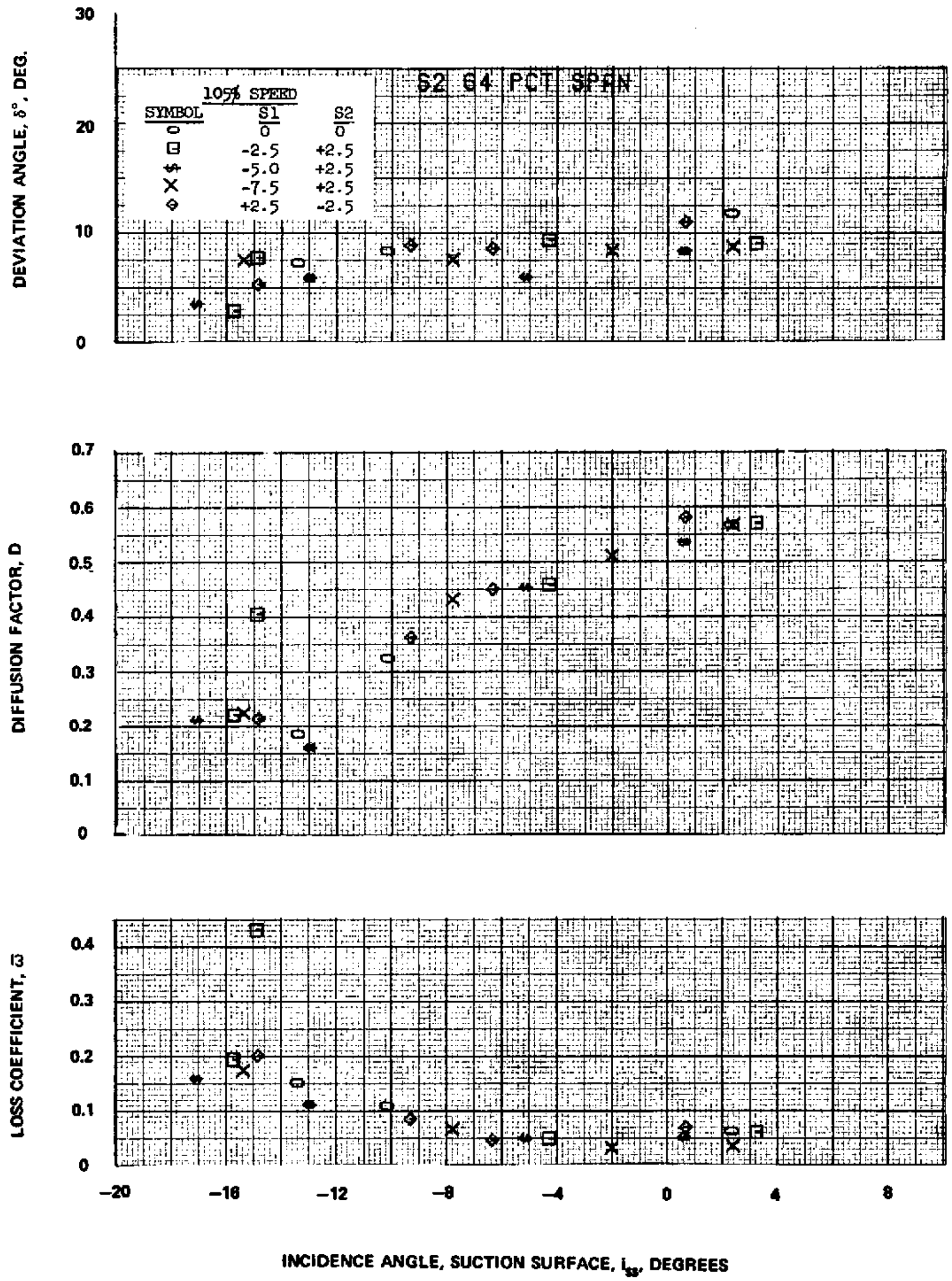


Figure 39D

Figure 39 (Cont'd) Blade-Element Performance for Stator 2 at 105 Percent of Design Speed

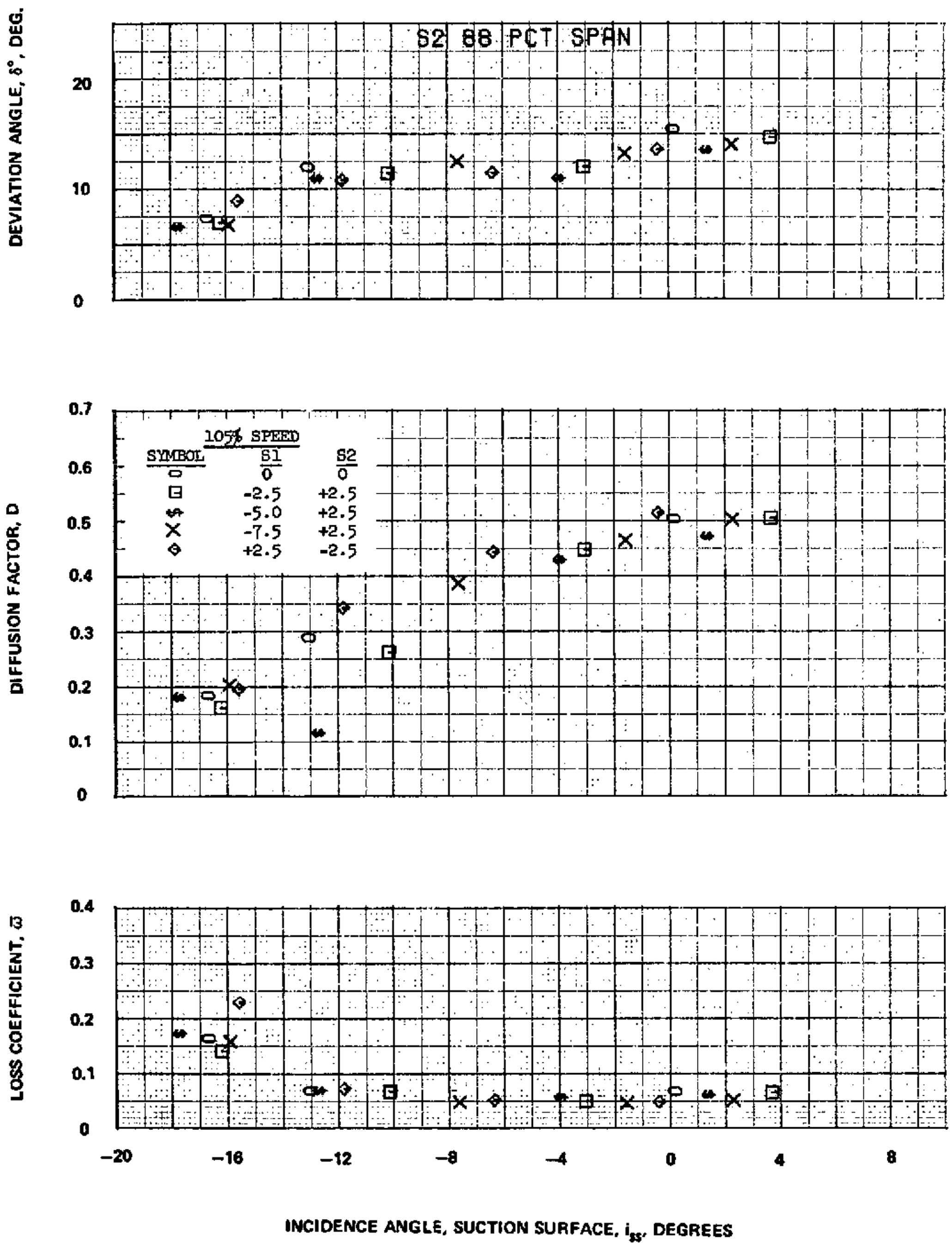


Figure 39E

Figure 39 (Cont'd) Blade-Element Performance for Stator 2 at 105 Percent of Design Speed

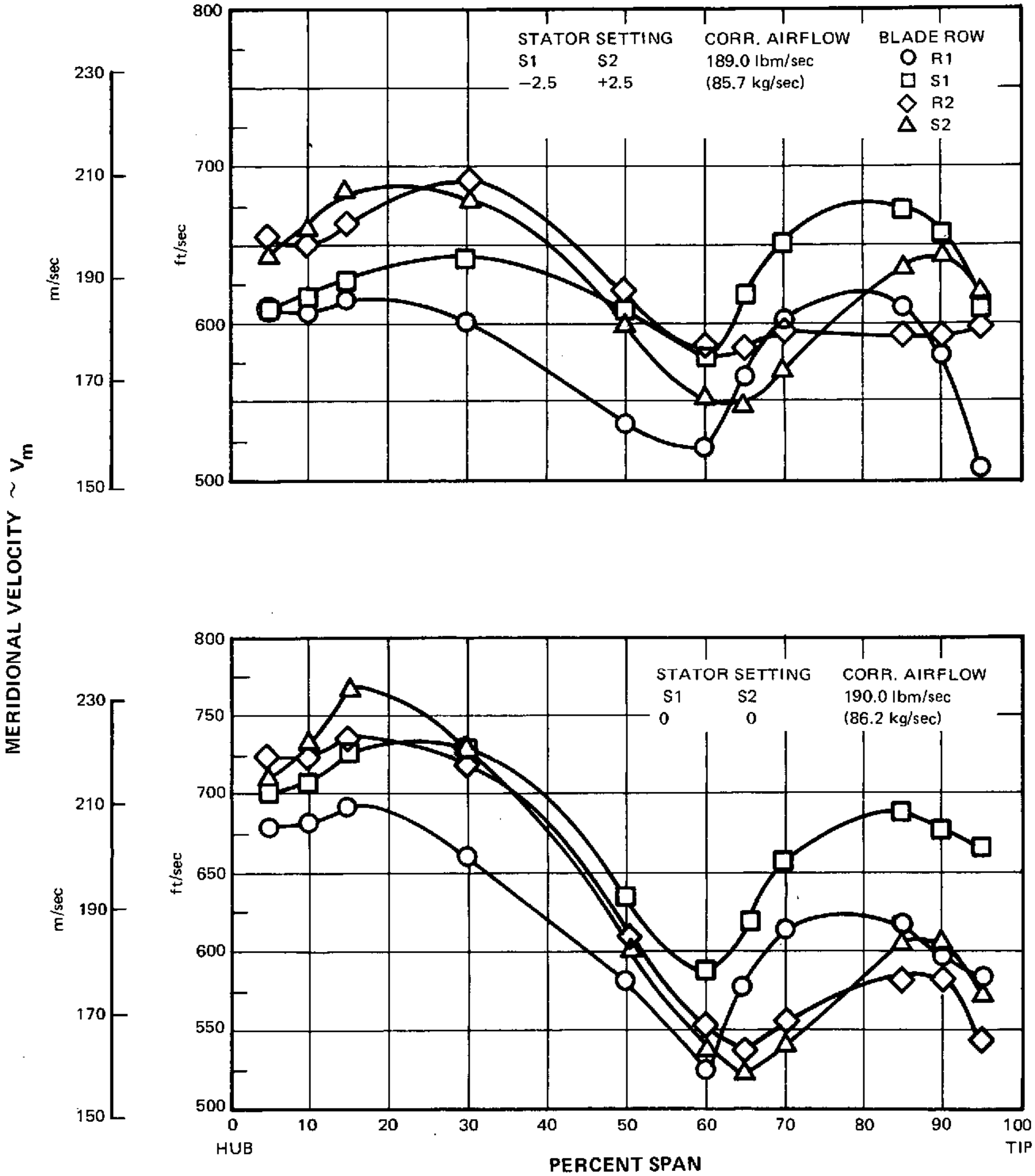


Figure 40 Meridional Velocity Versus Span for 105 Percent of Design Speed Showing Effects of Closing Stator 1 – Near-Stall Data

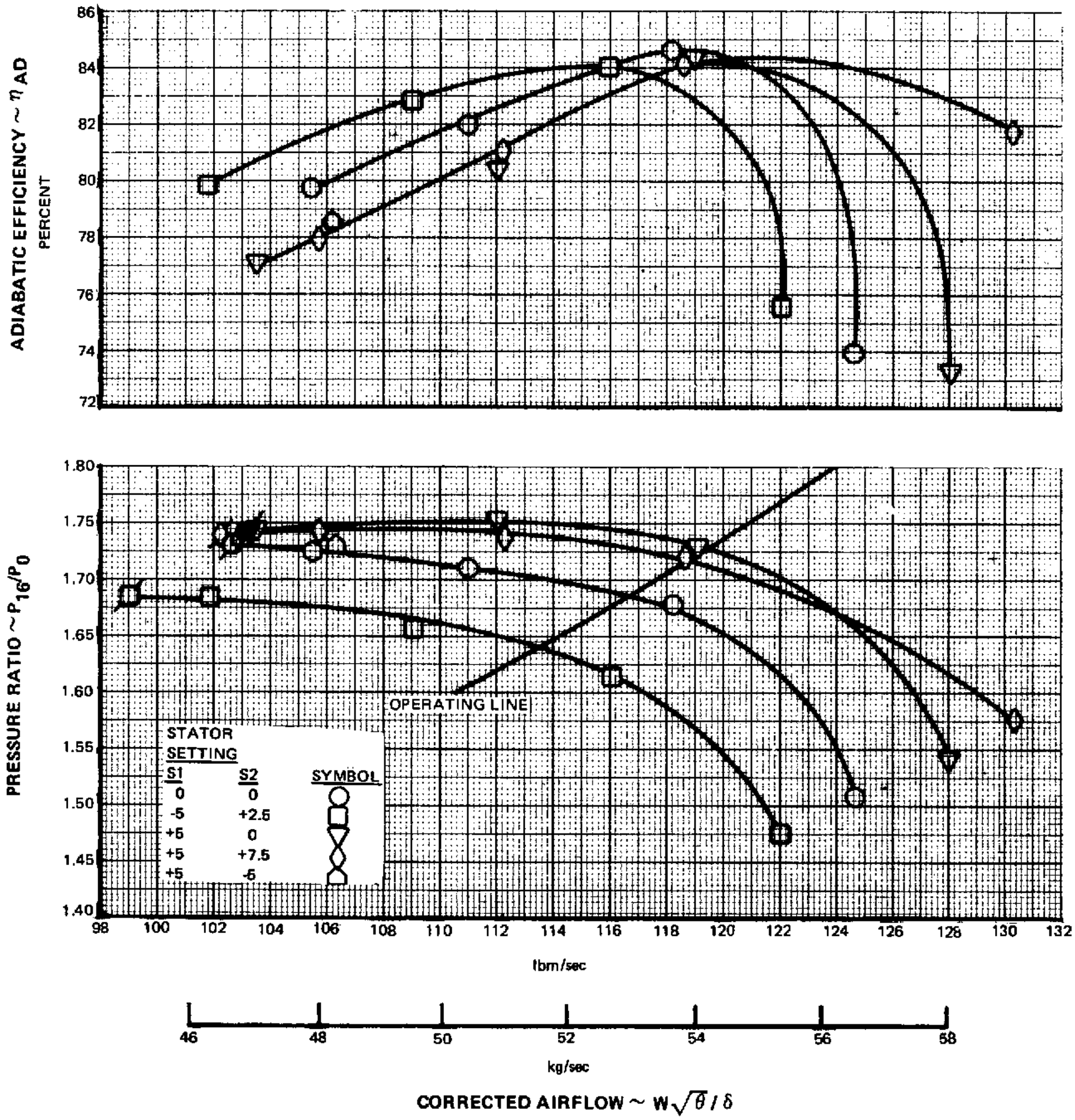


Figure 41 Fan Overall Performance at 70 Percent of Design Speed

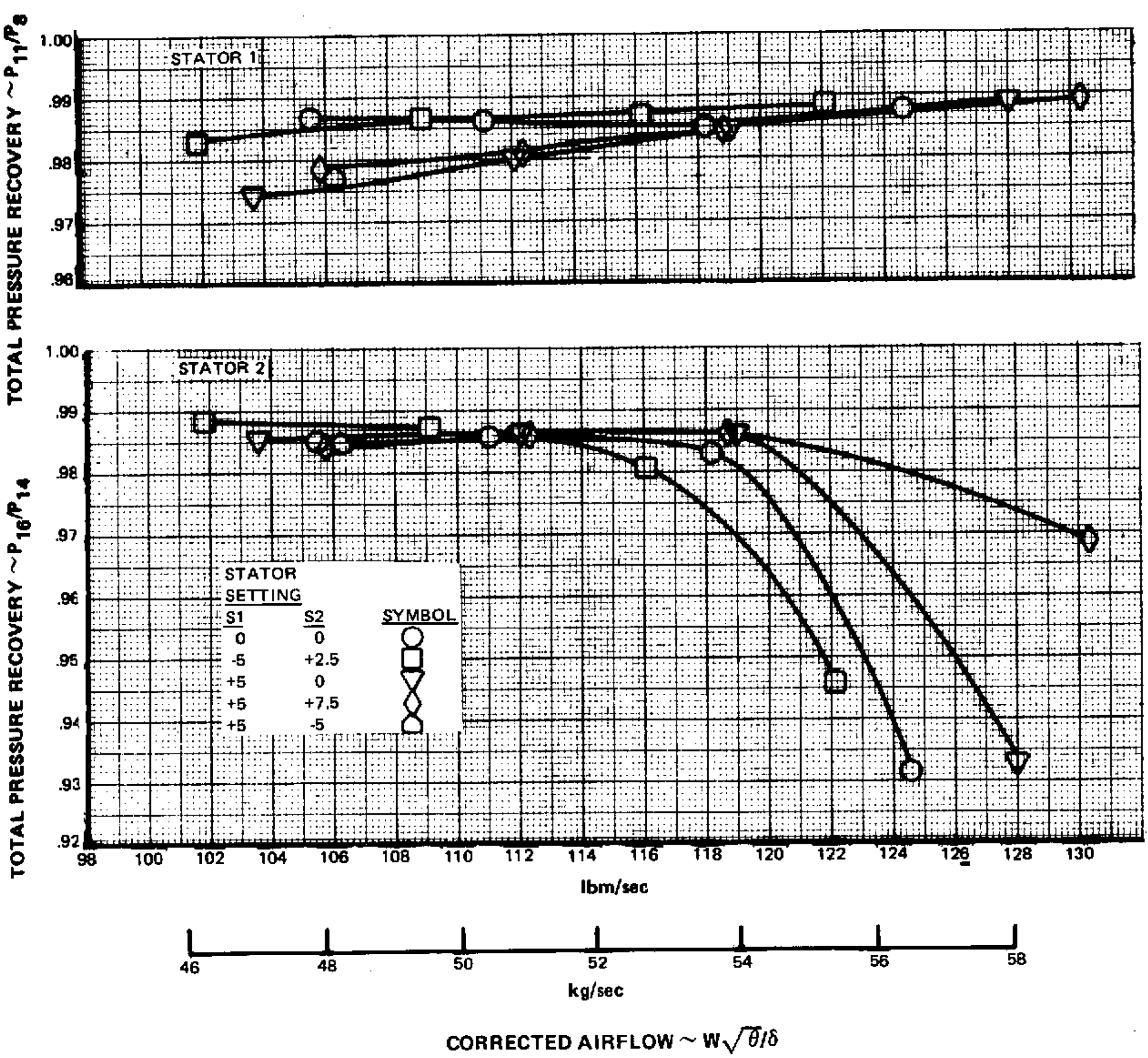


Figure 42 Stator 1 and Stator 2 Total Pressure Recovery Versus Flow at 70 Percent of Design Speed

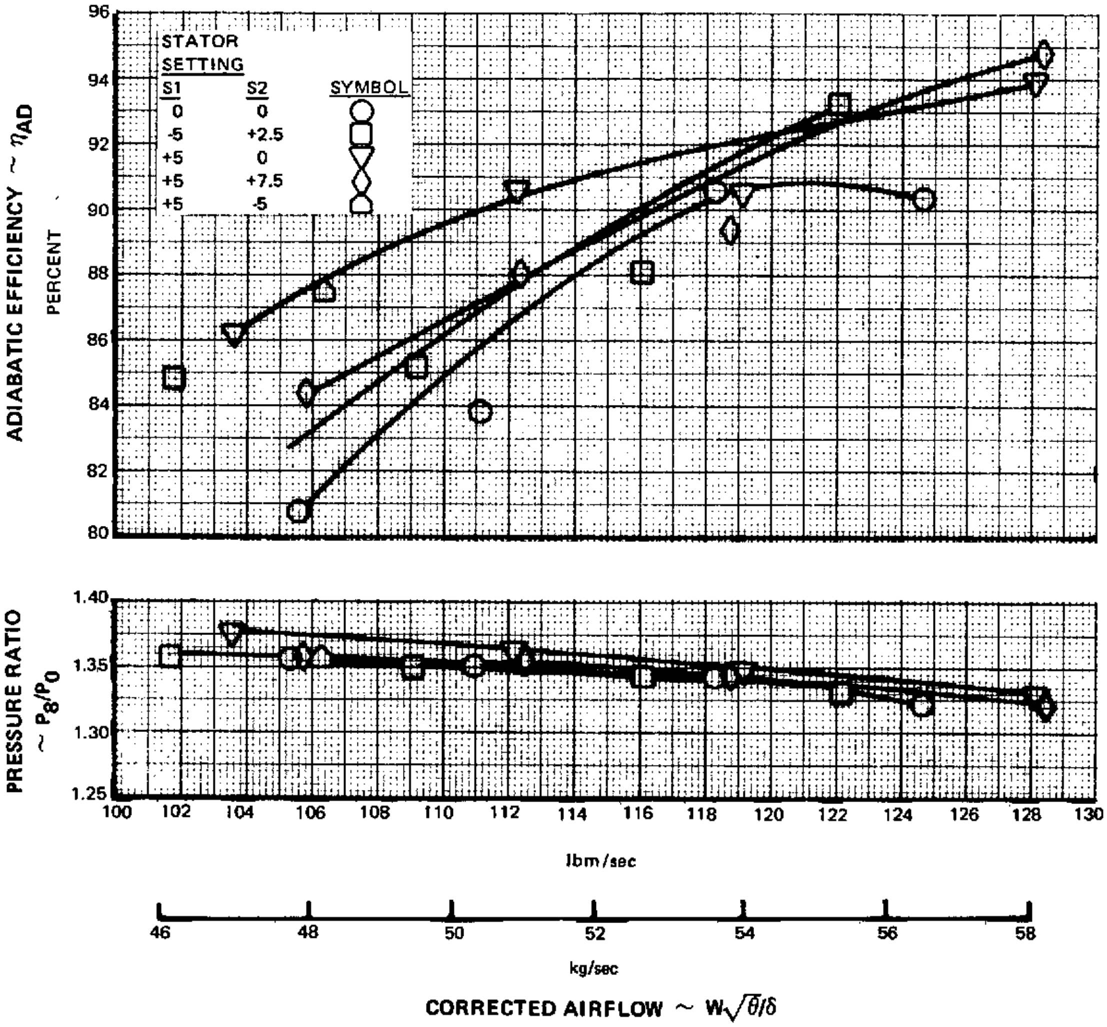


Figure 43 Rotor Performance at 70 Percent of Design Speed

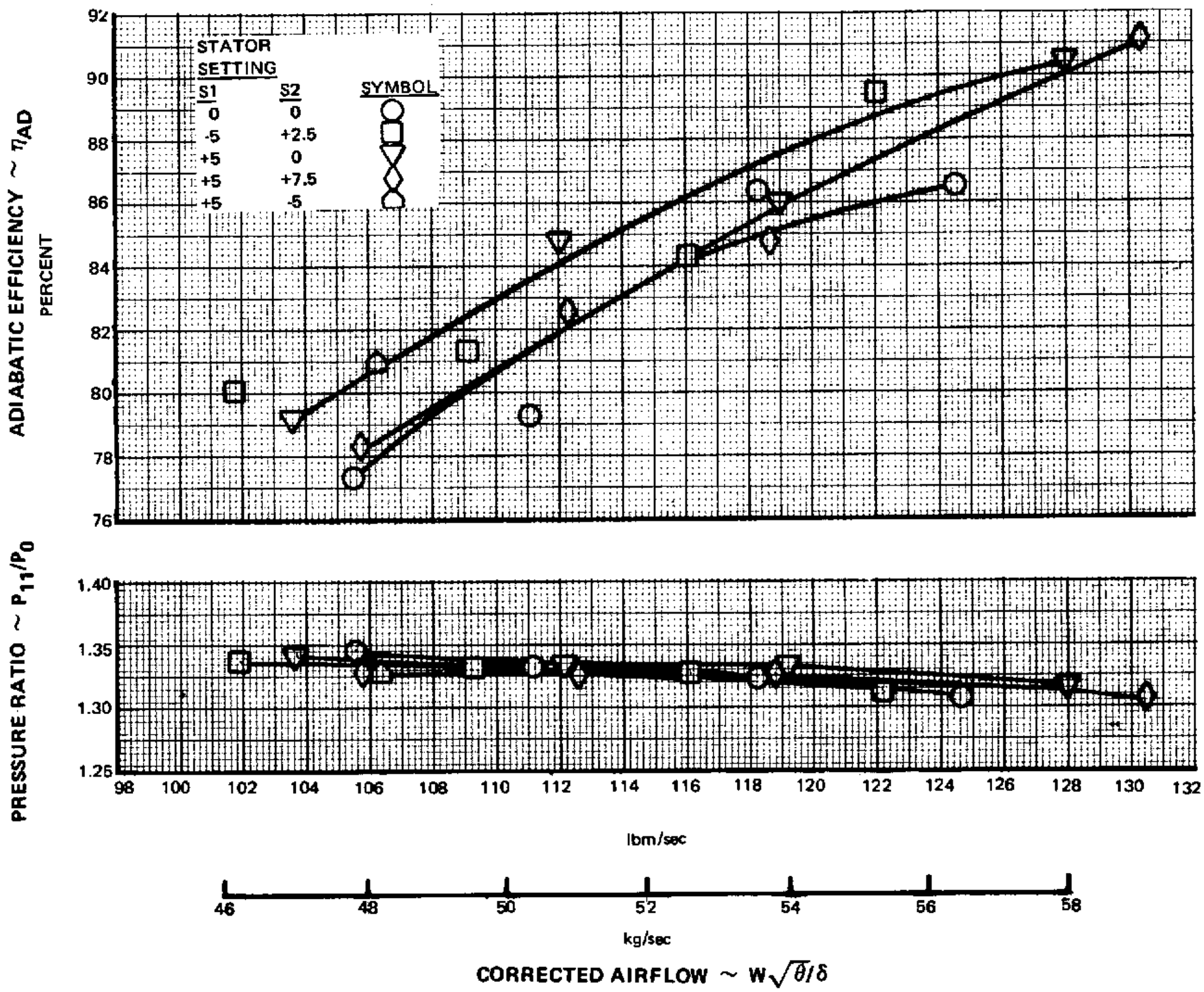


Figure 44 First-Stage Performance at 70 Percent of Design Speed

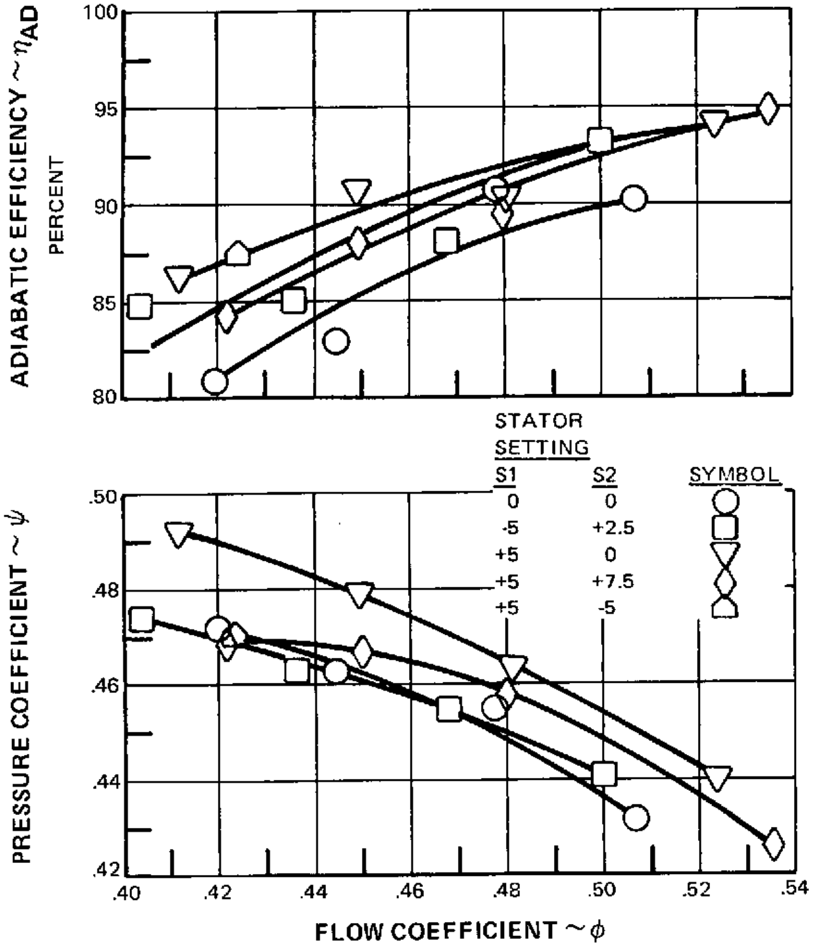


Figure 45 Pressure Coefficient and Adiabatic Efficiency Versus Flow Coefficient for Rotor 1 at 70 Percent of Design Speed

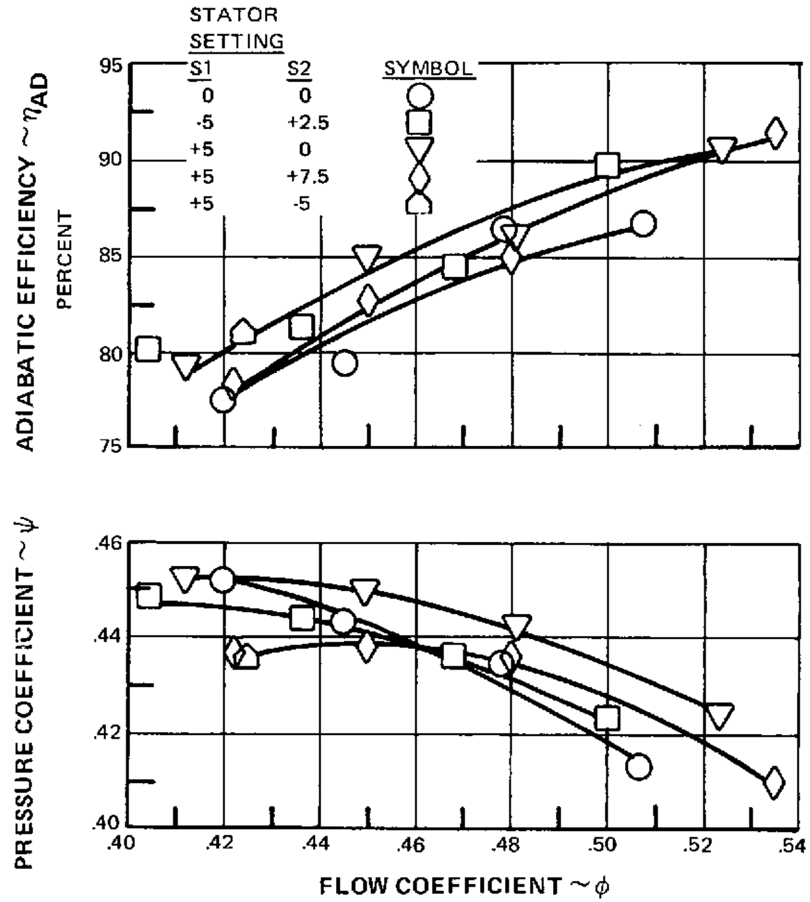


Figure 46 Pressure Coefficient and Adiabatic Efficiency Versus Flow Coefficient for the First Stage at 70 Percent of Design Speed

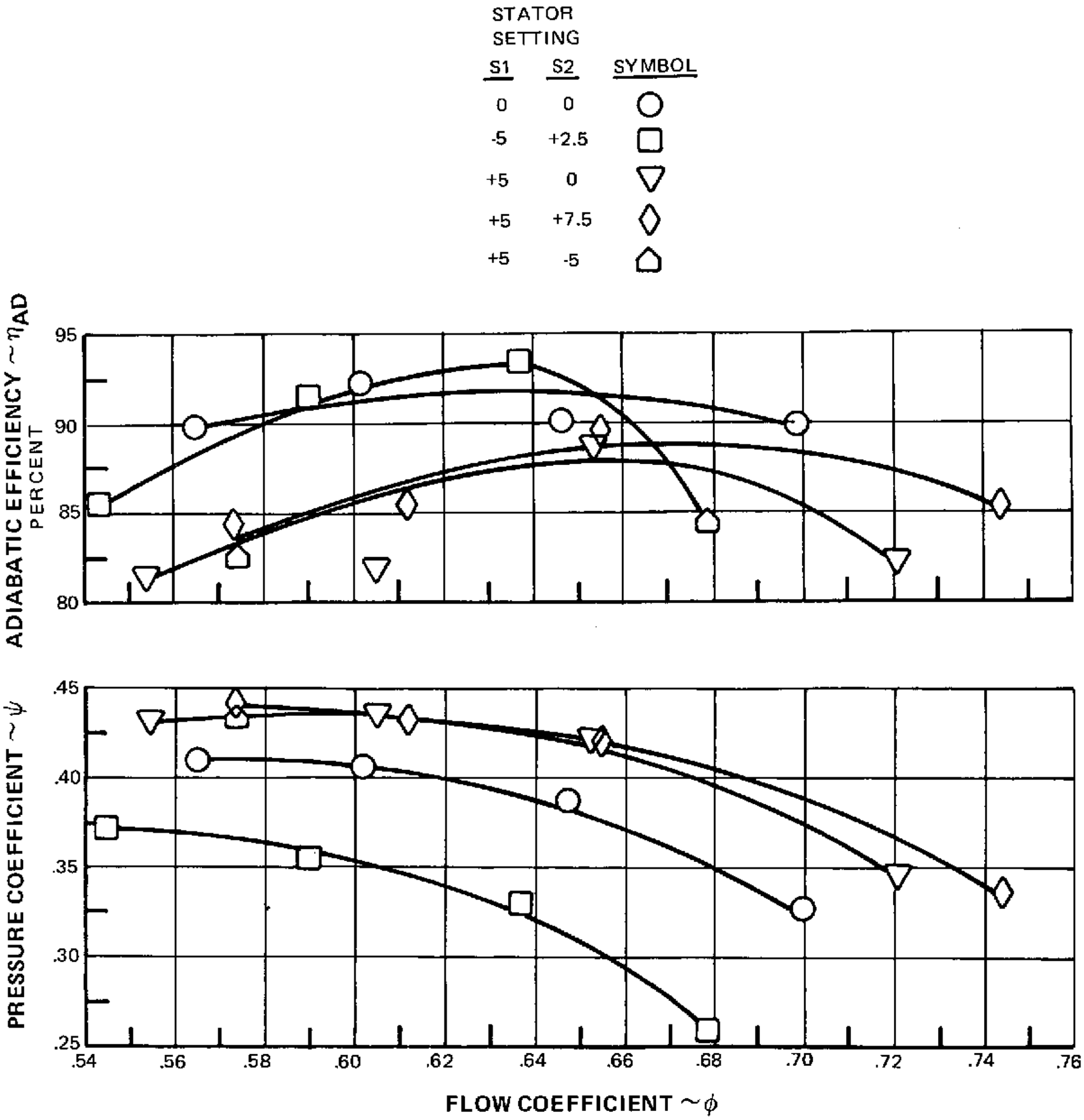


Figure 47 Pressure Coefficient and Adiabatic Efficiency Versus Flow Coefficient for Rotor 2 at 70 Percent of Design Speed

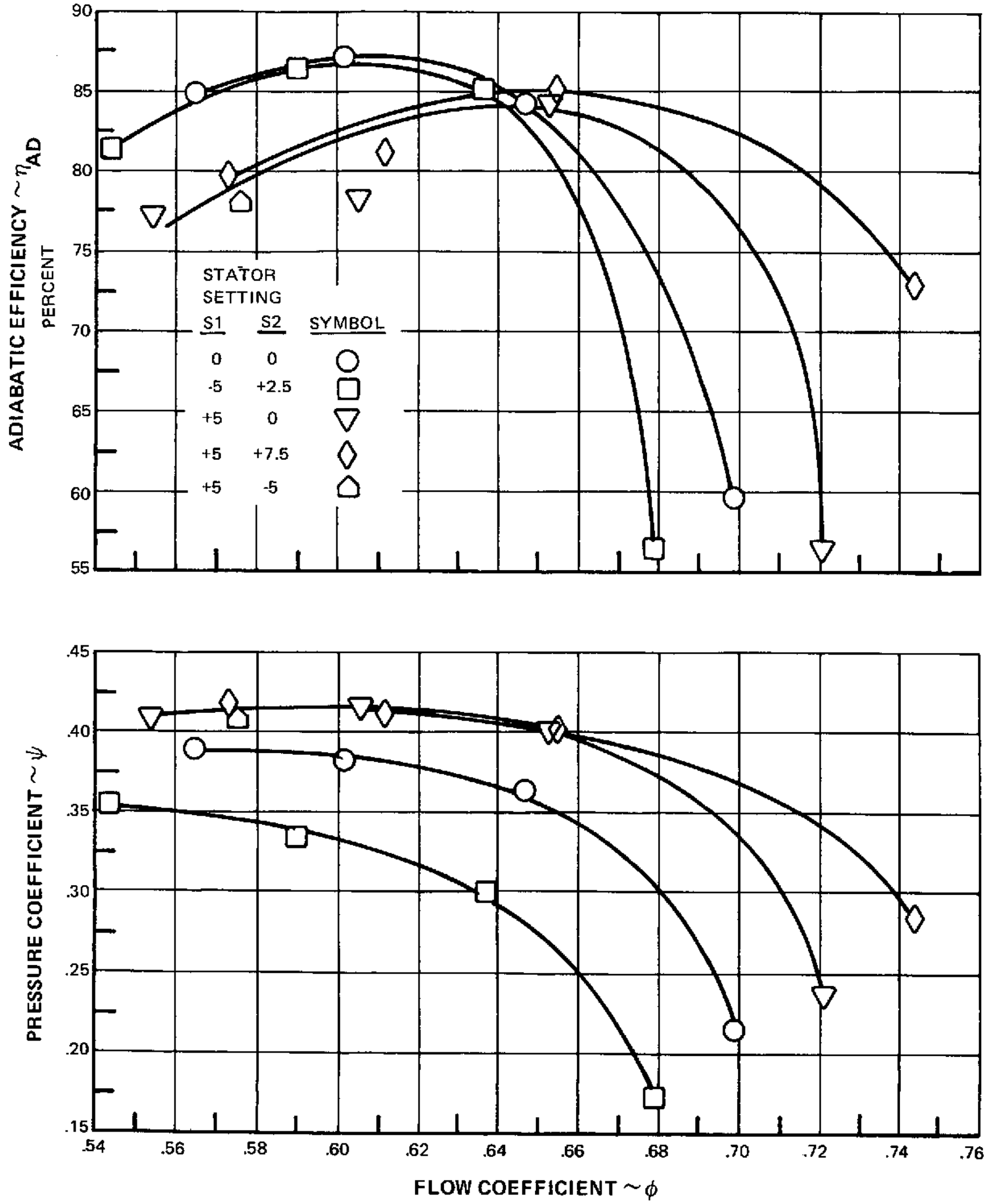


Figure 48 Pressure Coefficient and Adiabatic Efficiency Versus Flow Coefficient for the Second Stage at 70 Percent of Design Speed

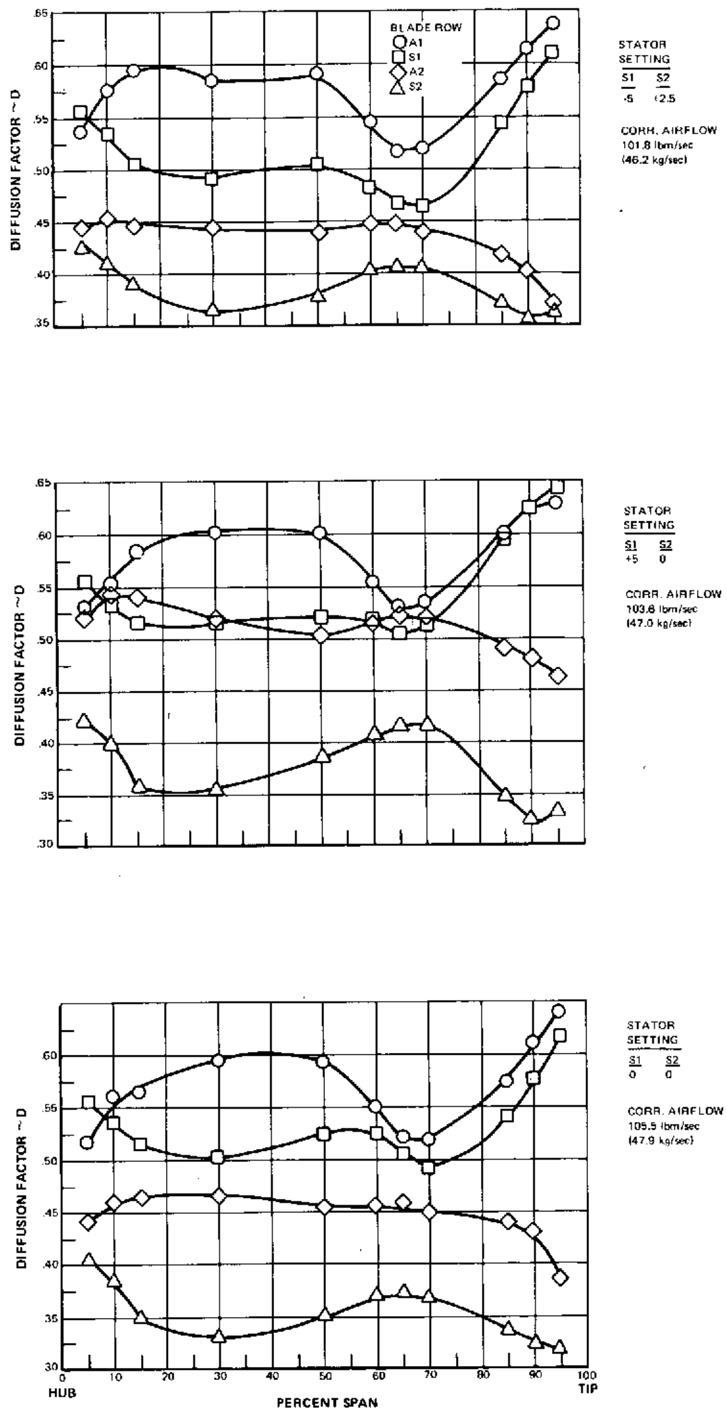


Figure 49 Near-Stall Diffusion Factors Versus Span for Each Blade Row, Showing Effects of Varying Stator Settings at 70 Percent of Design Speed

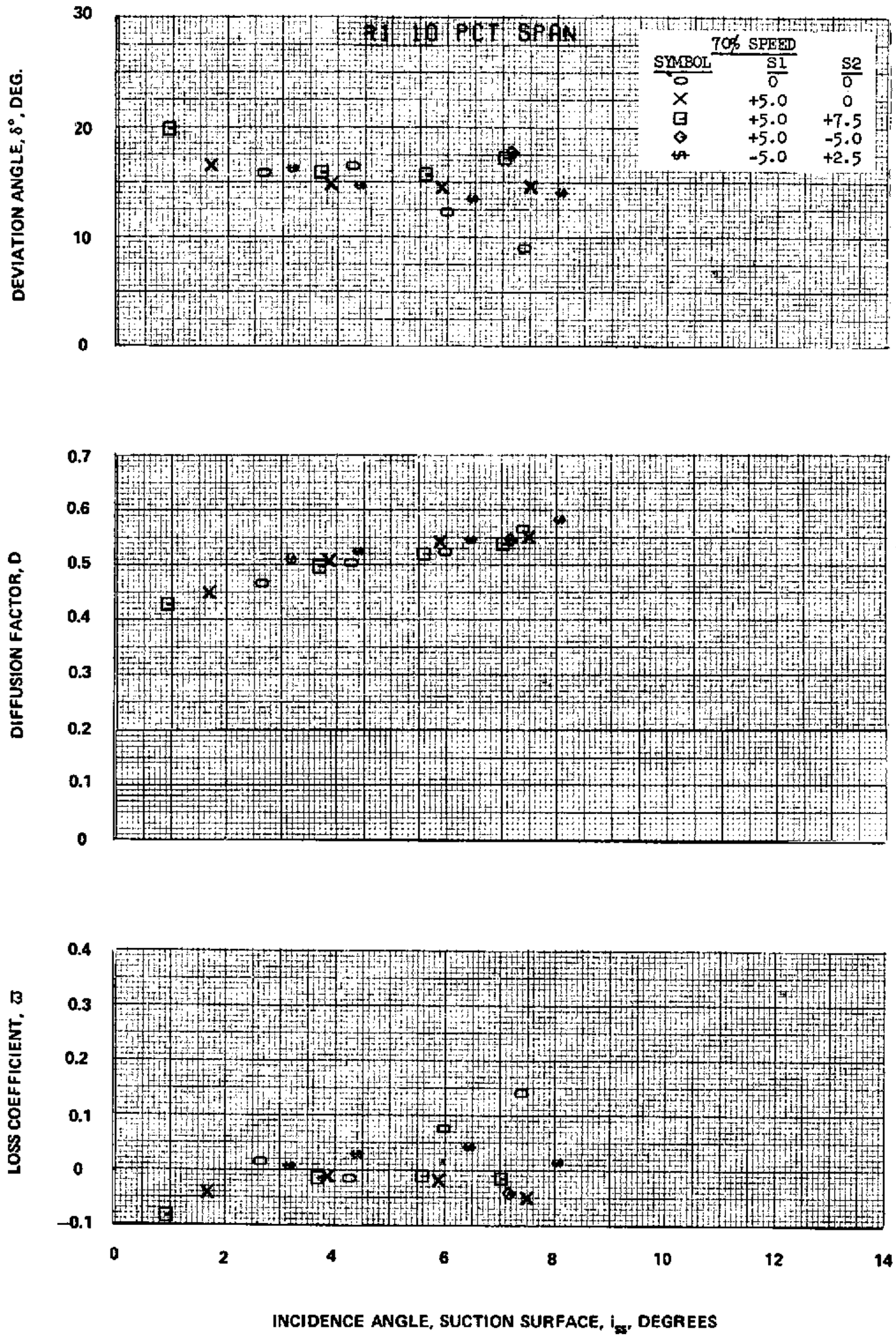


Figure 50A

Figure 50 Blade-Element Performance for Rotor 1 at 70 Percent of Design Speed

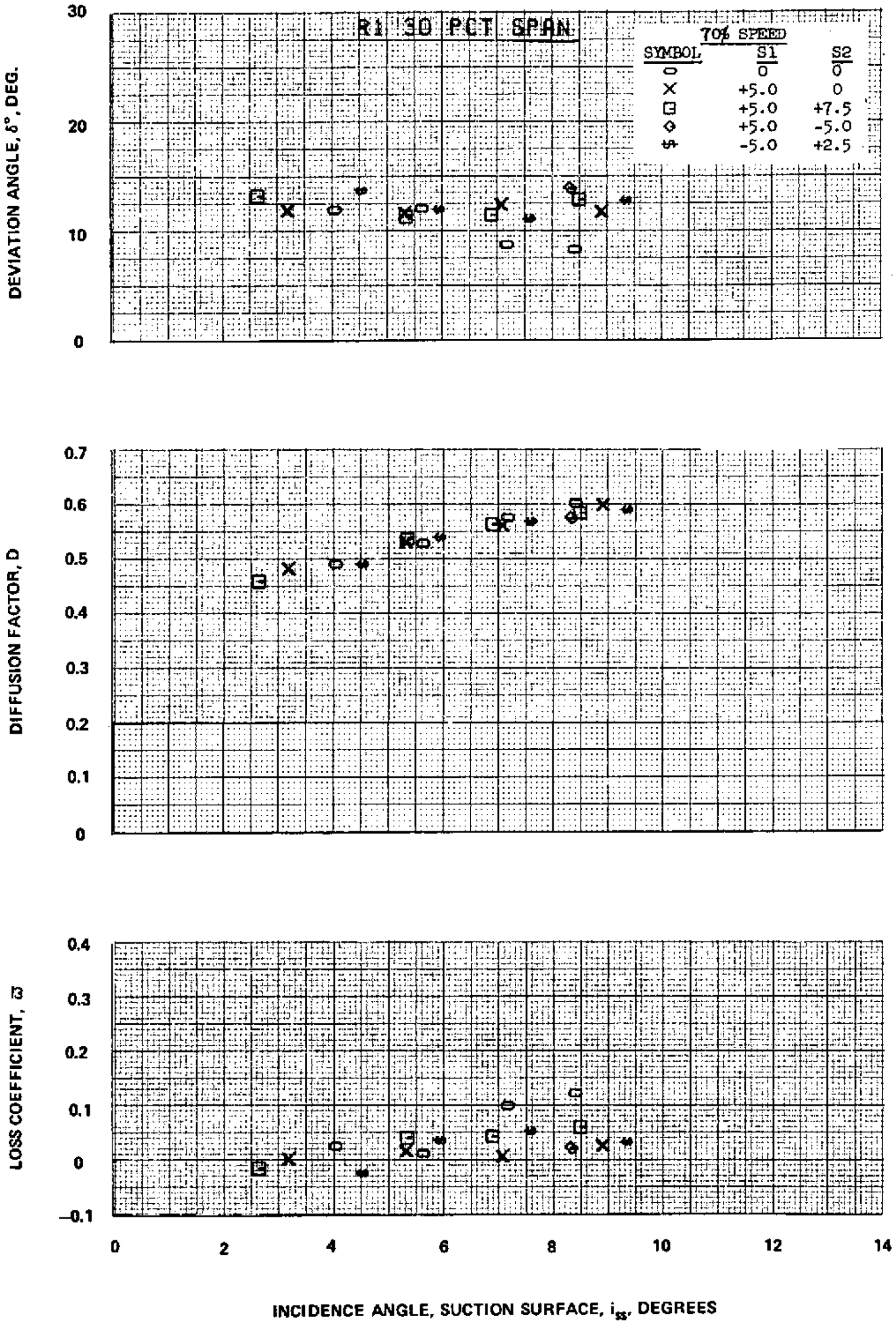


Figure 50B

Figure 50 (Cont'd) Blade-Element Performance for Rotor 1 at 70 Percent of Design Speed

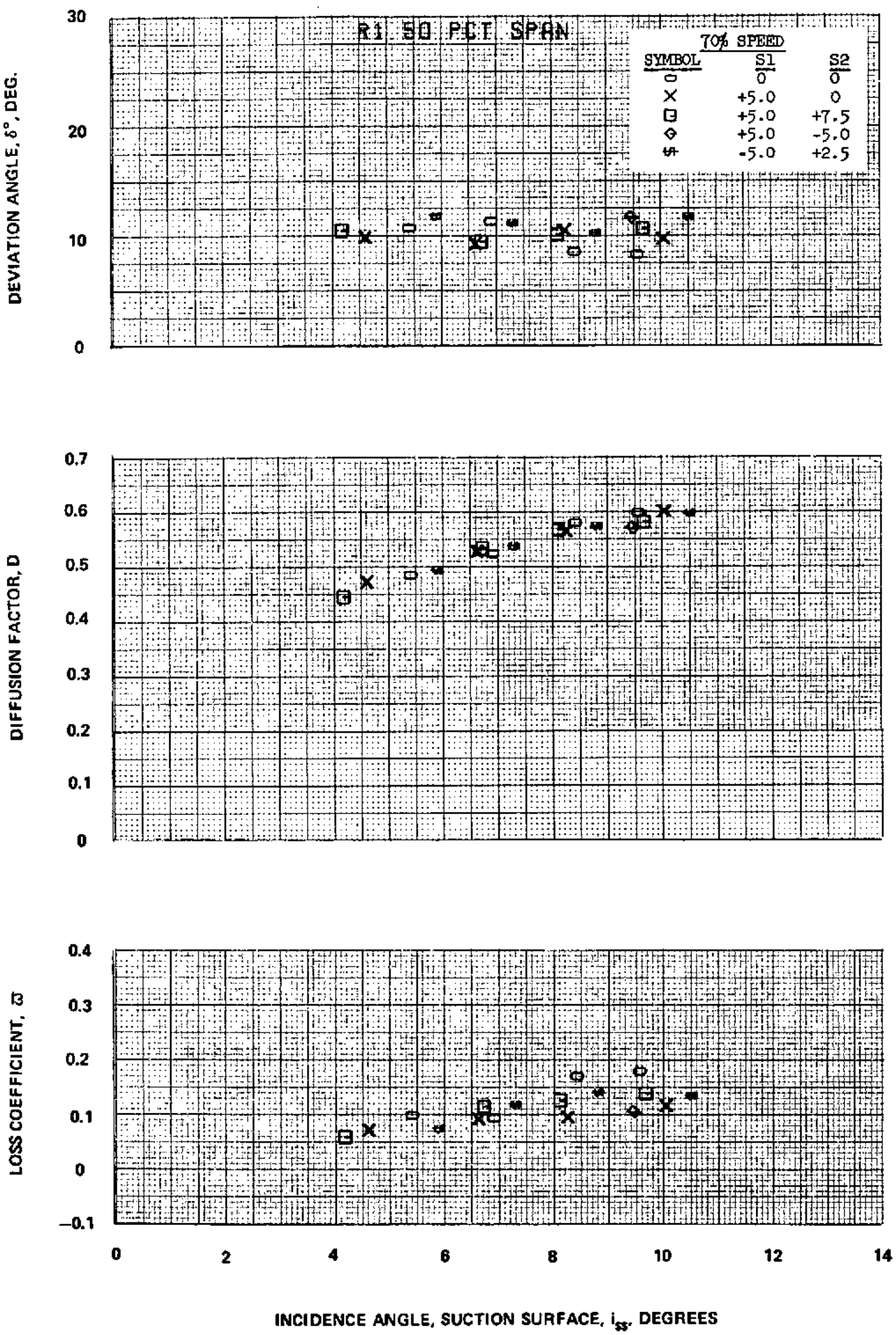


Figure 50C

Figure 50 (Cont'd) Blade-Element Performance for Rotor 1 at 70 Percent of Design Speed

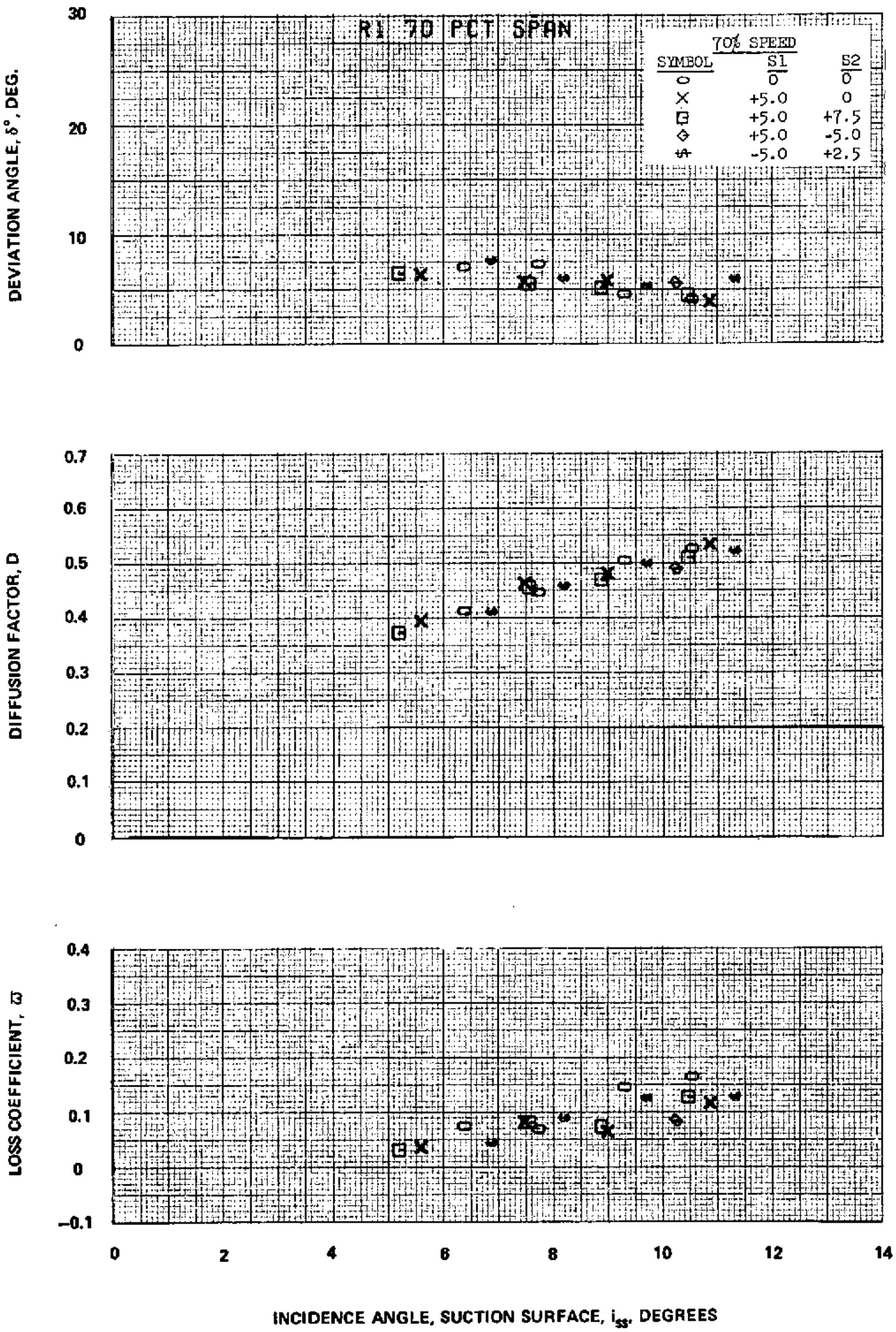


Figure 50D

Figure 50 (Cont'd) Blade-Element Performance for Rotor 1 at 70 Percent of Design Speed

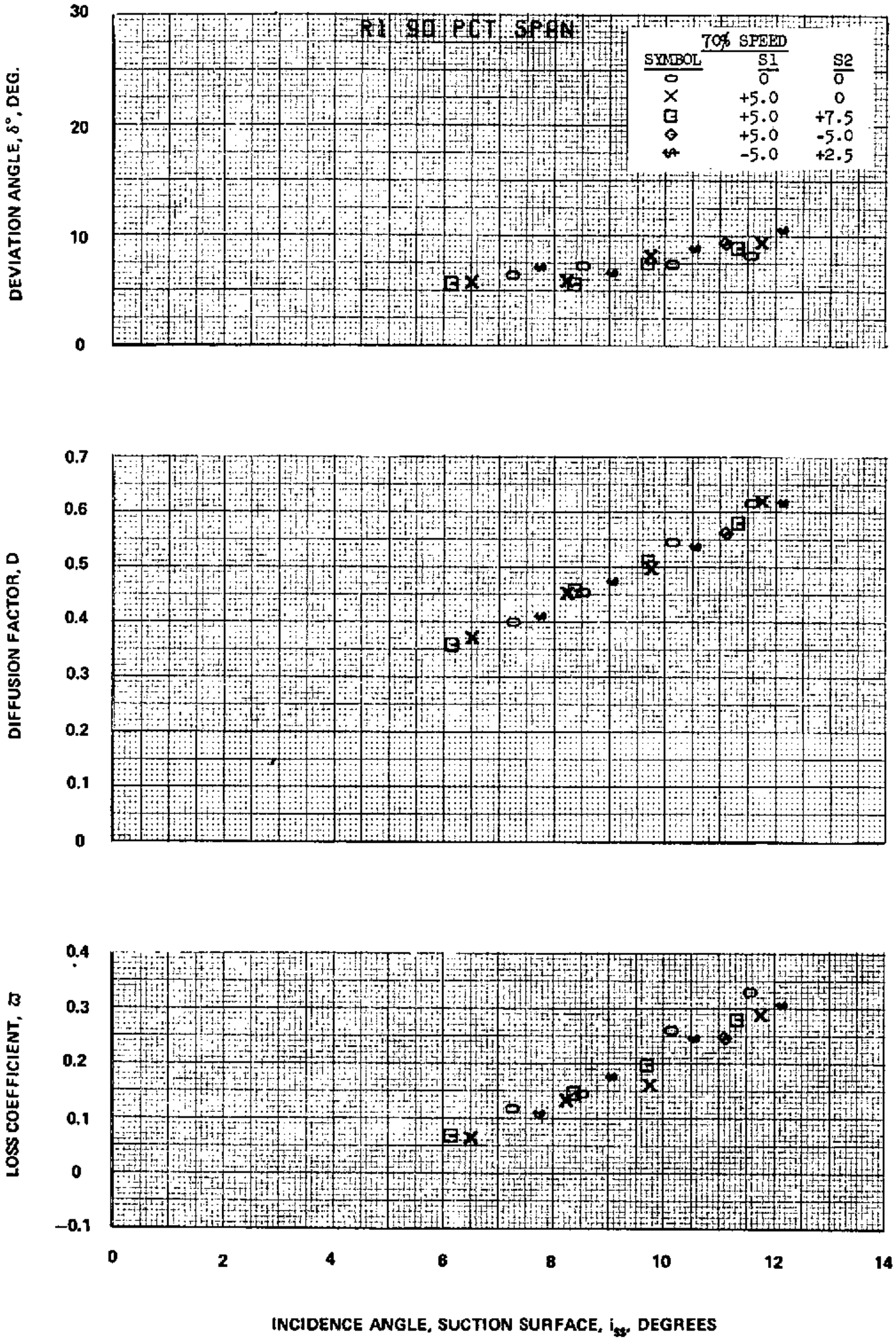


Figure 50E

Figure 50 (Cont'd) Blade-Element Performance for Rotor 1 at 70 Percent of Design Speed

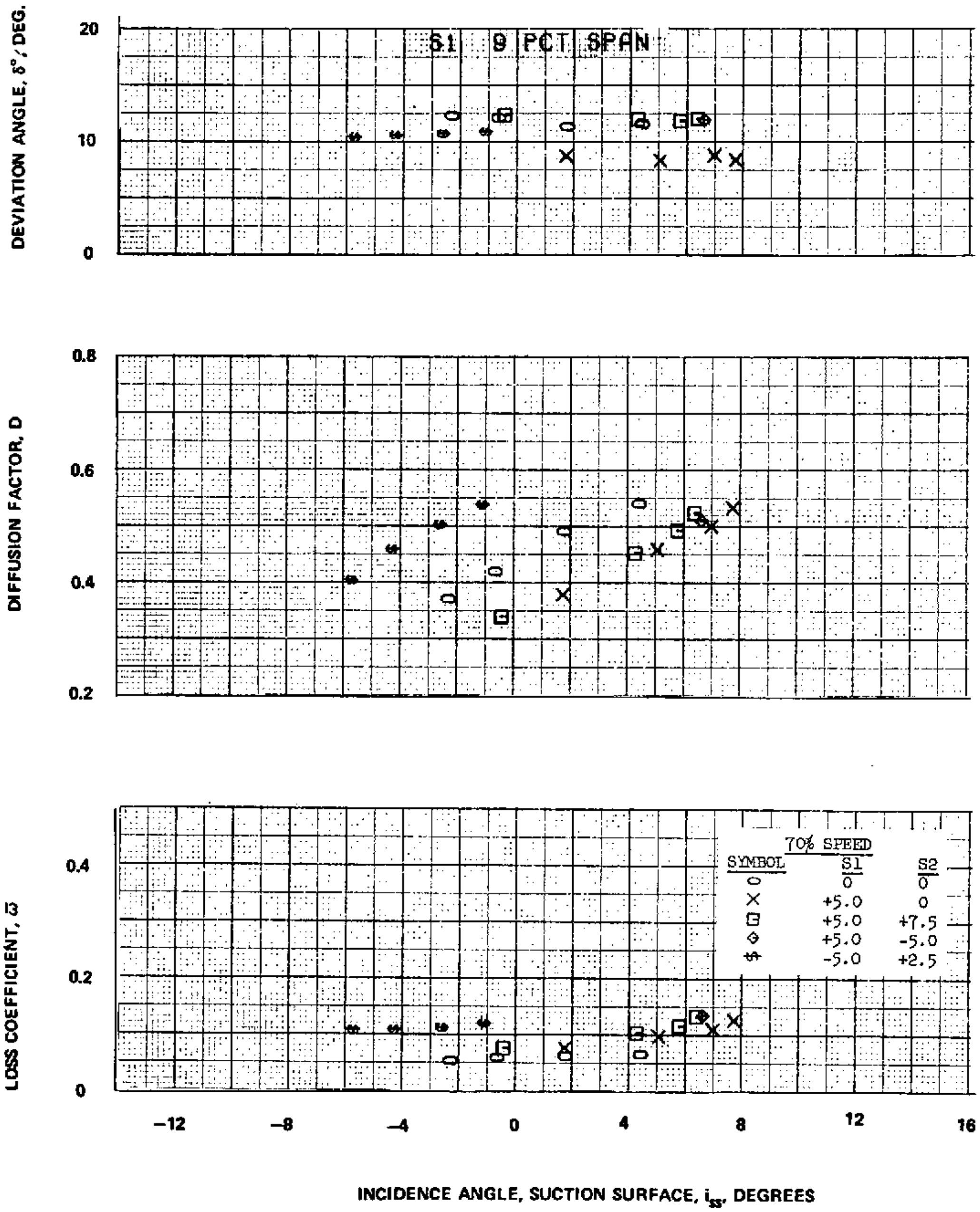


Figure 51A

Figure 51 Blade-Element Performance for Stator 1 at 70 Percent of Design Speed

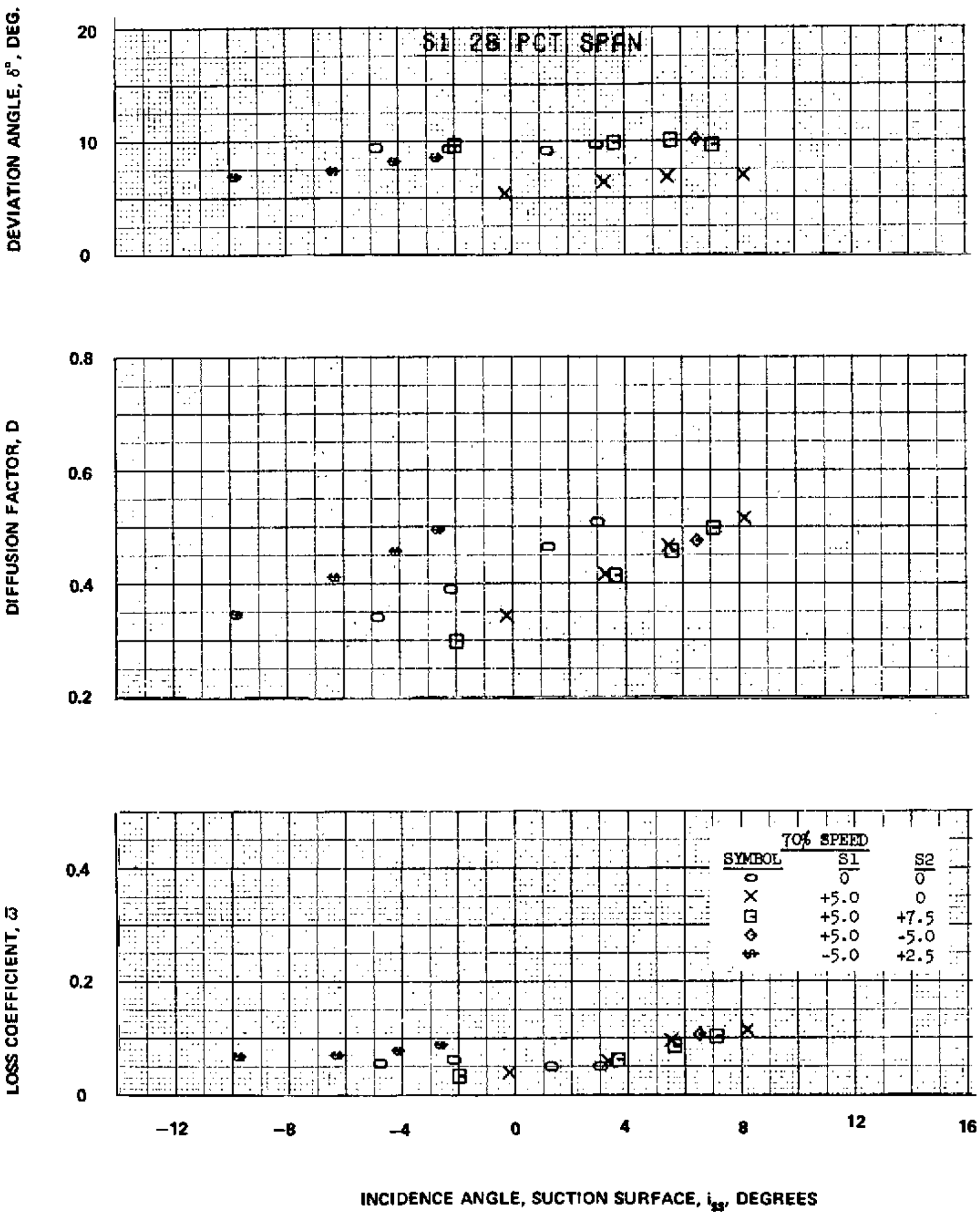


Figure 51B

Figure 51 (Cont'd) Blade-Element Performance for Stator 1 at 70 Percent of Design Speed

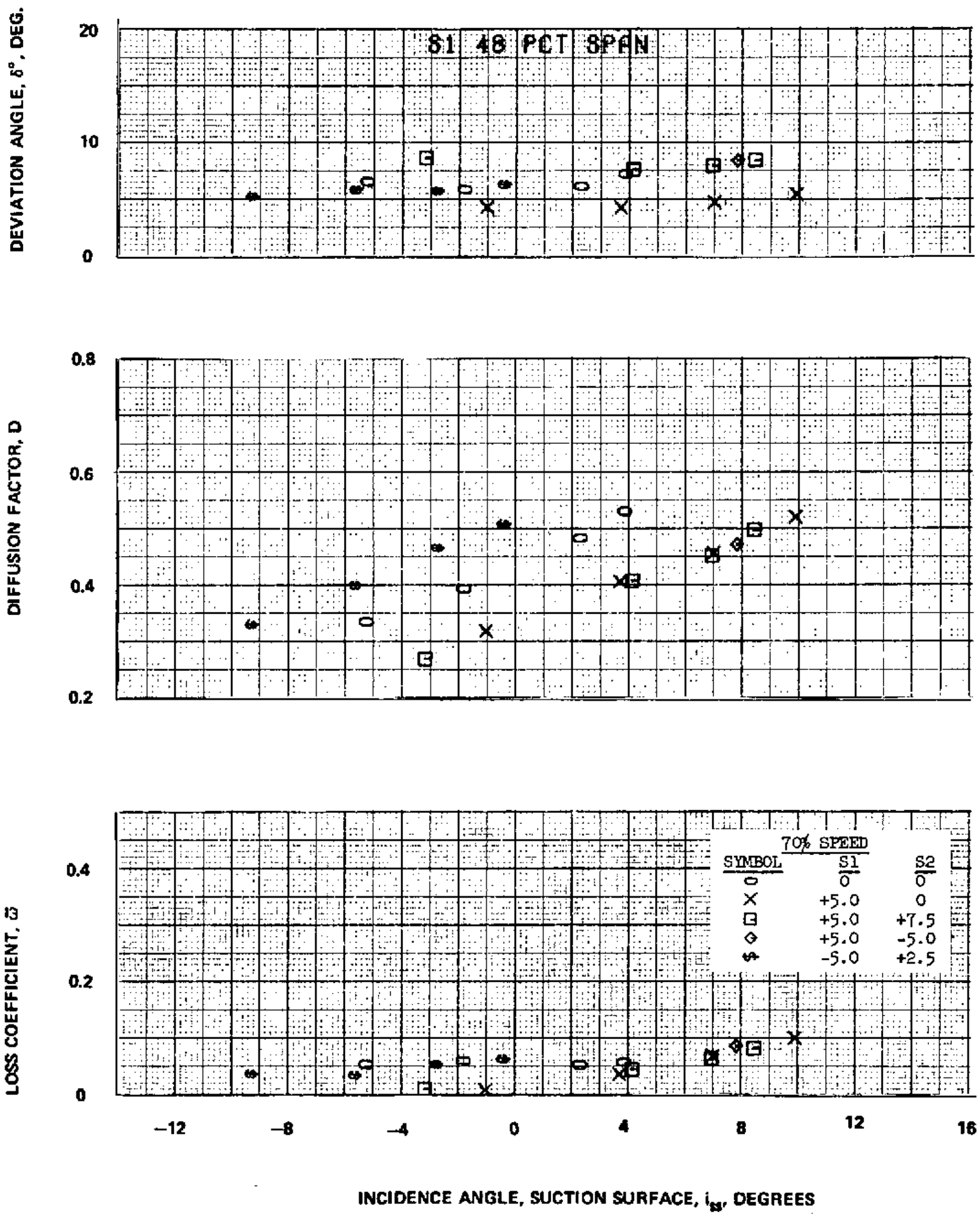


Figure 51C

Figure 51 (Cont'd) Blade-Element Performance for Stator 1 at 70 Percent of Design Speed

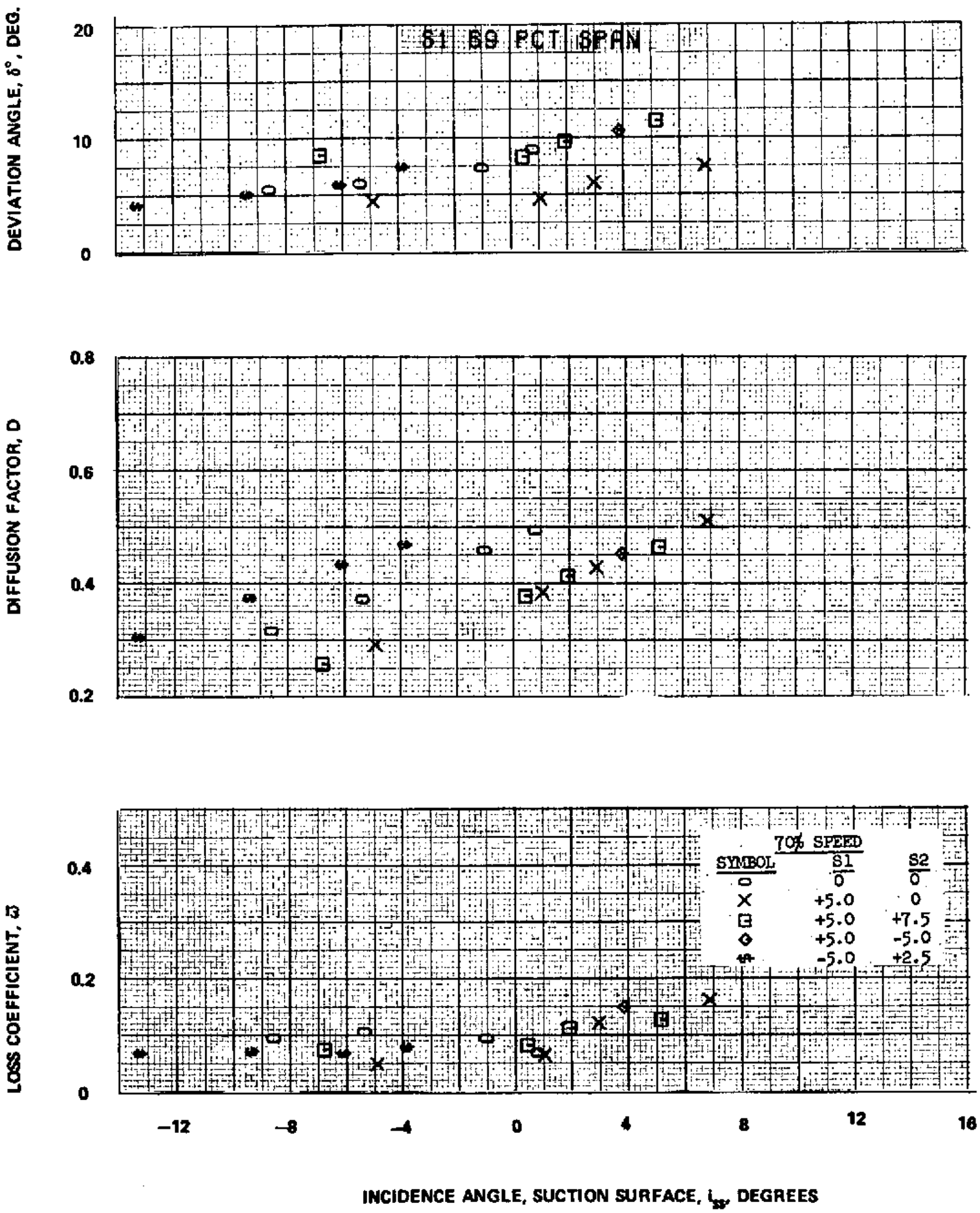


Figure 51D

Figure 51 (Cont'd) Blade-Element Performance for Stator 1 at 70 Percent of Design Speed

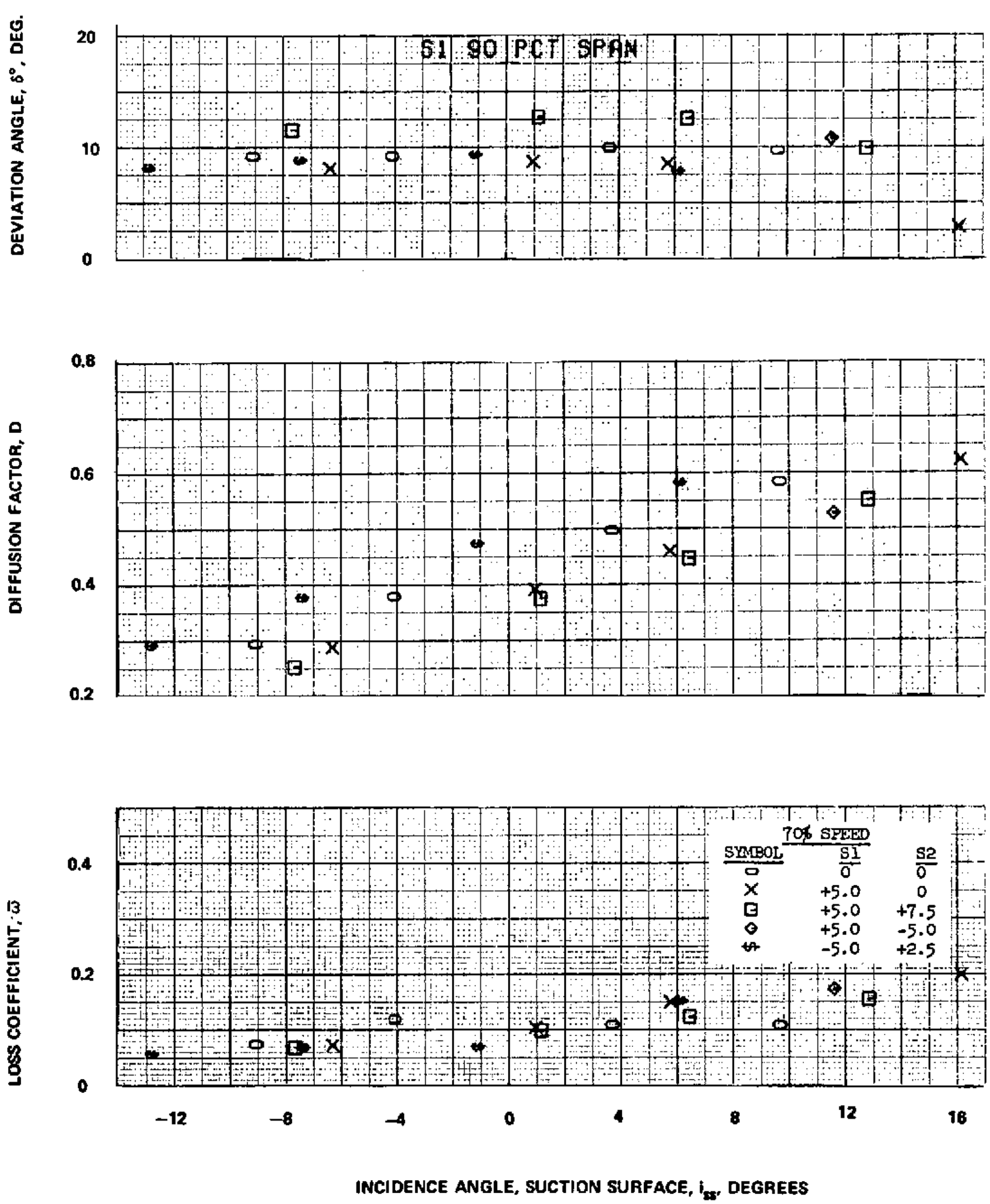


Figure 51E

Figure 51 (Cont'd) Blade-Element Performance for Stator 1 at 70 Percent of Design Speed

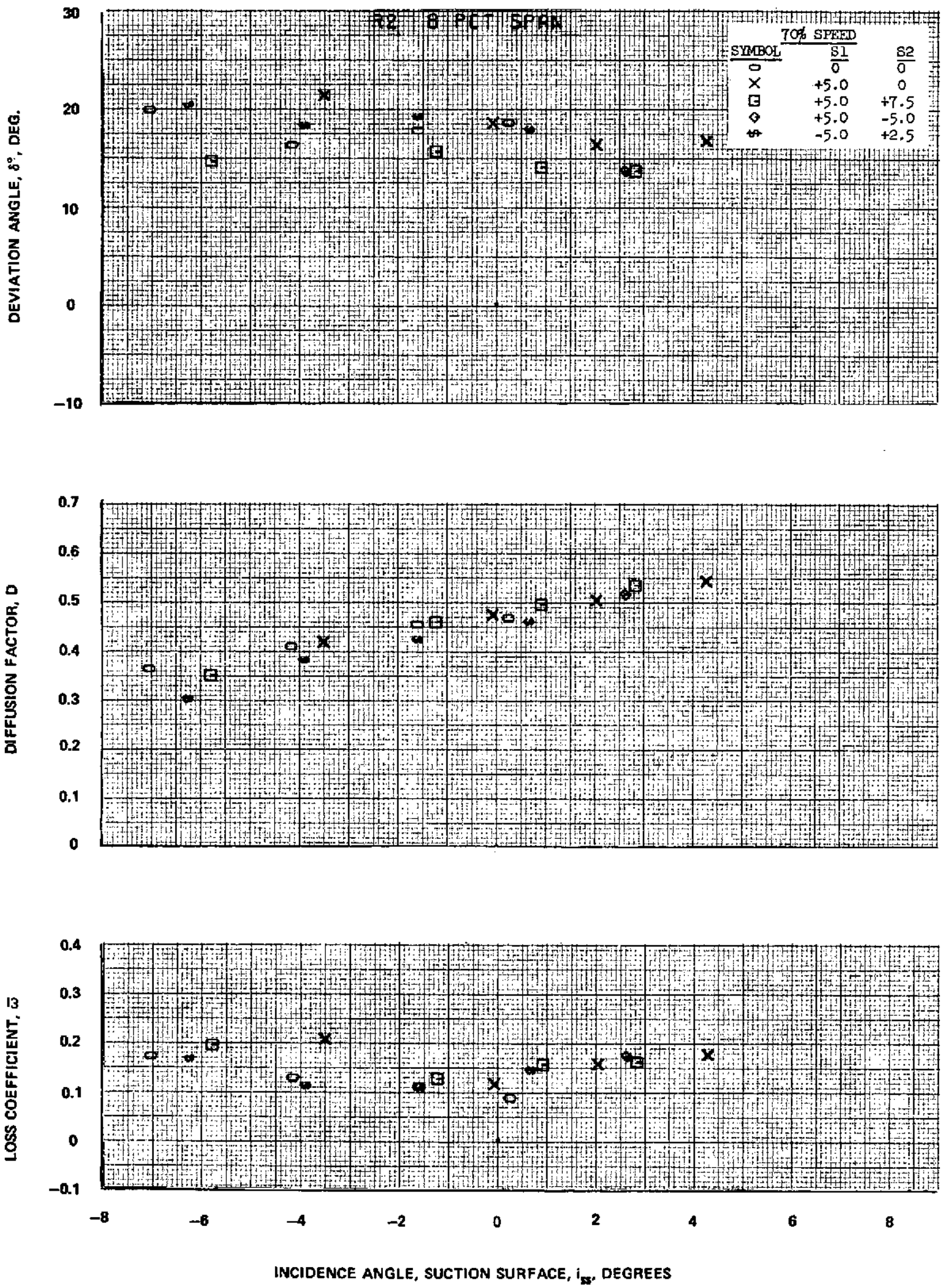


Figure 52A

Figure 52 Blade-Element Performance for Rotor 2 at 70 Percent of Design Speed

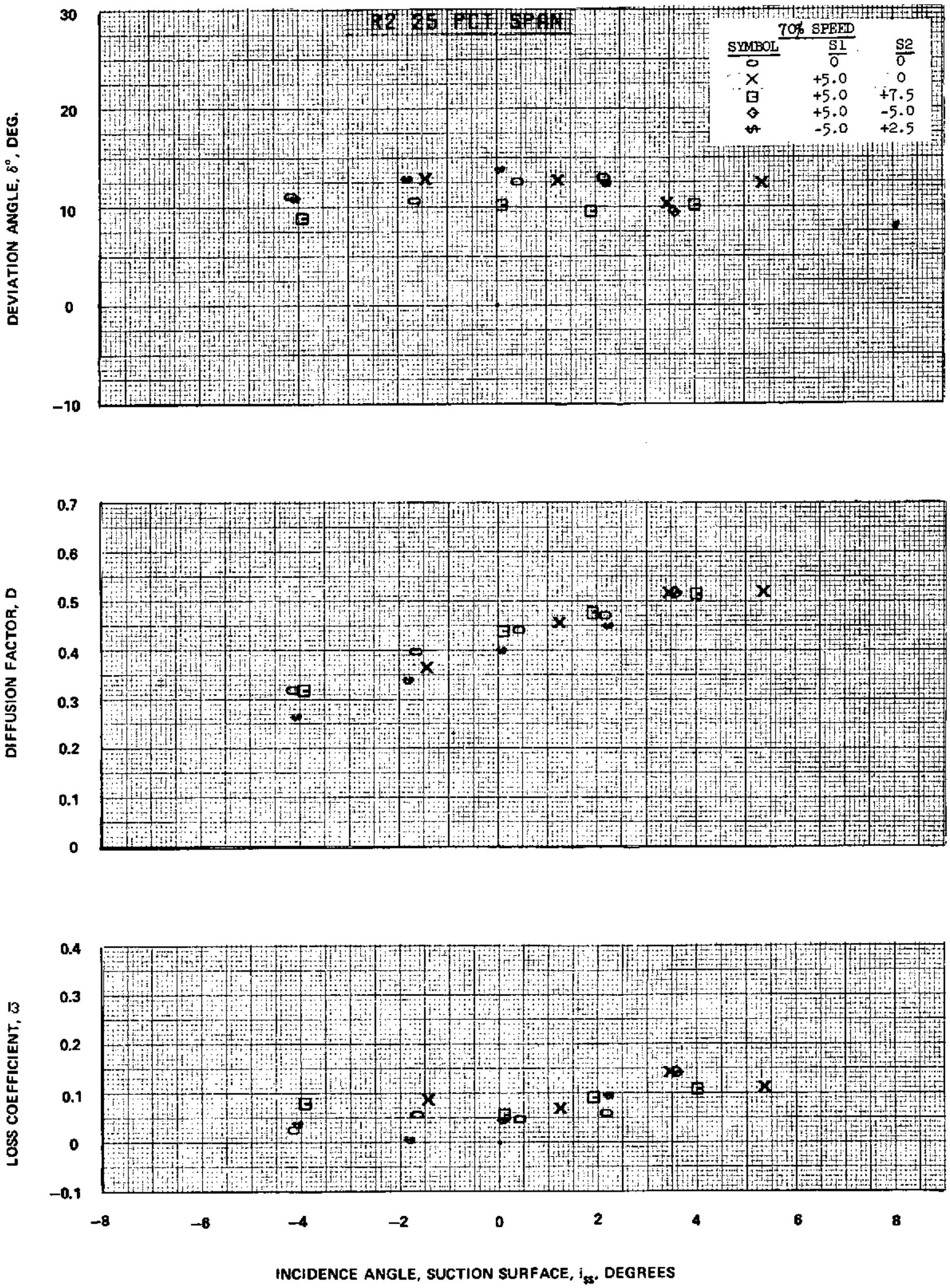


Figure 52B

Figure 52 (Cont'd) Blade-Element Performance for Rotor 2 at 70 Percent of Design Speed

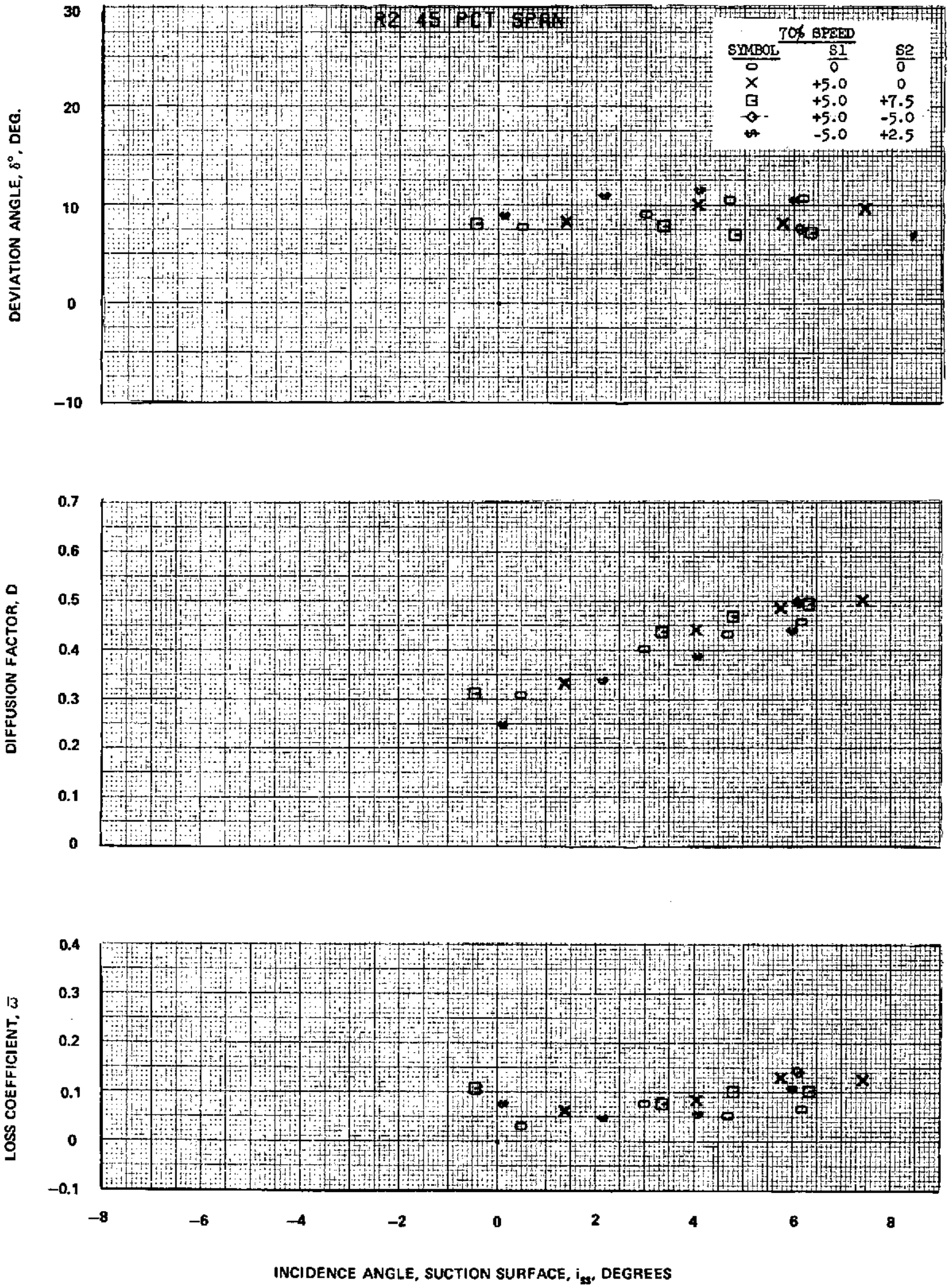


Figure 52C

Figure 52 (Cont'd) Blade-Element Performance for Rotor 2 at 70 Percent of Design Speed

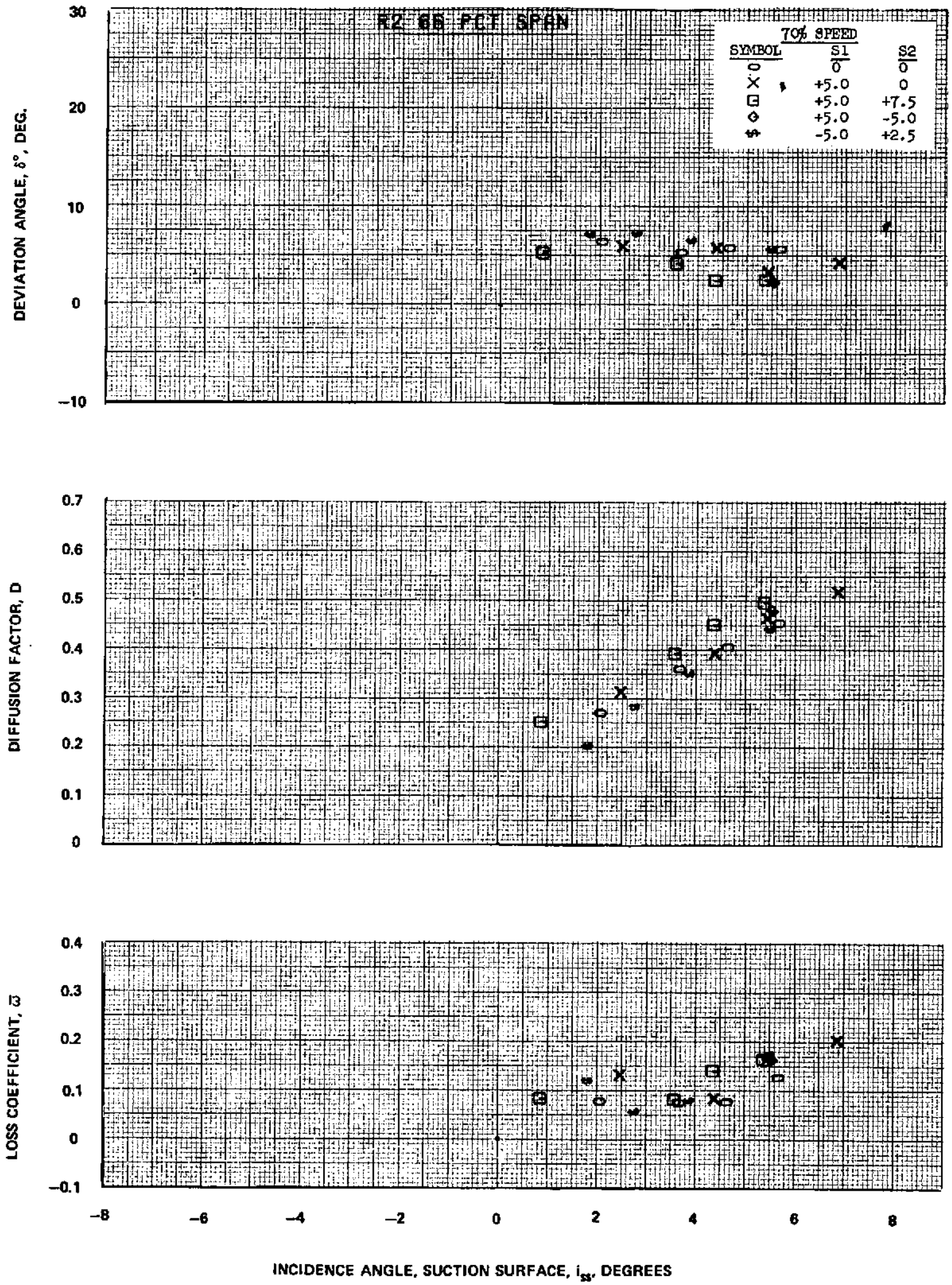


Figure 52D

Figure 52 (Cont'd) Blade-Element Performance for Rotor 2 at 70 Percent of Design Speed

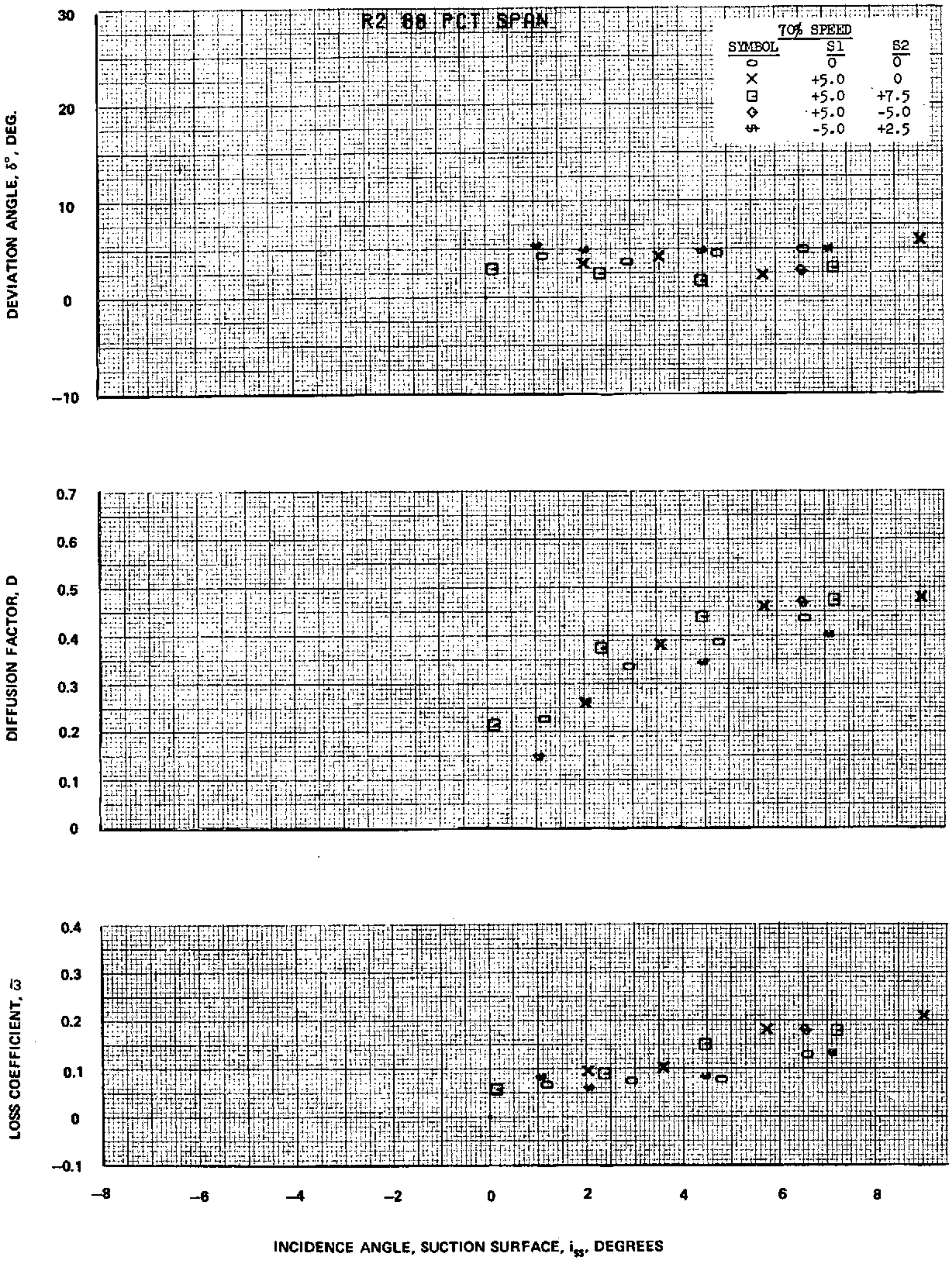


Figure 52E

Figure 52 (Cont'd) Blade-Element Performance for Rotor 2 at 70 Percent of Design Speed

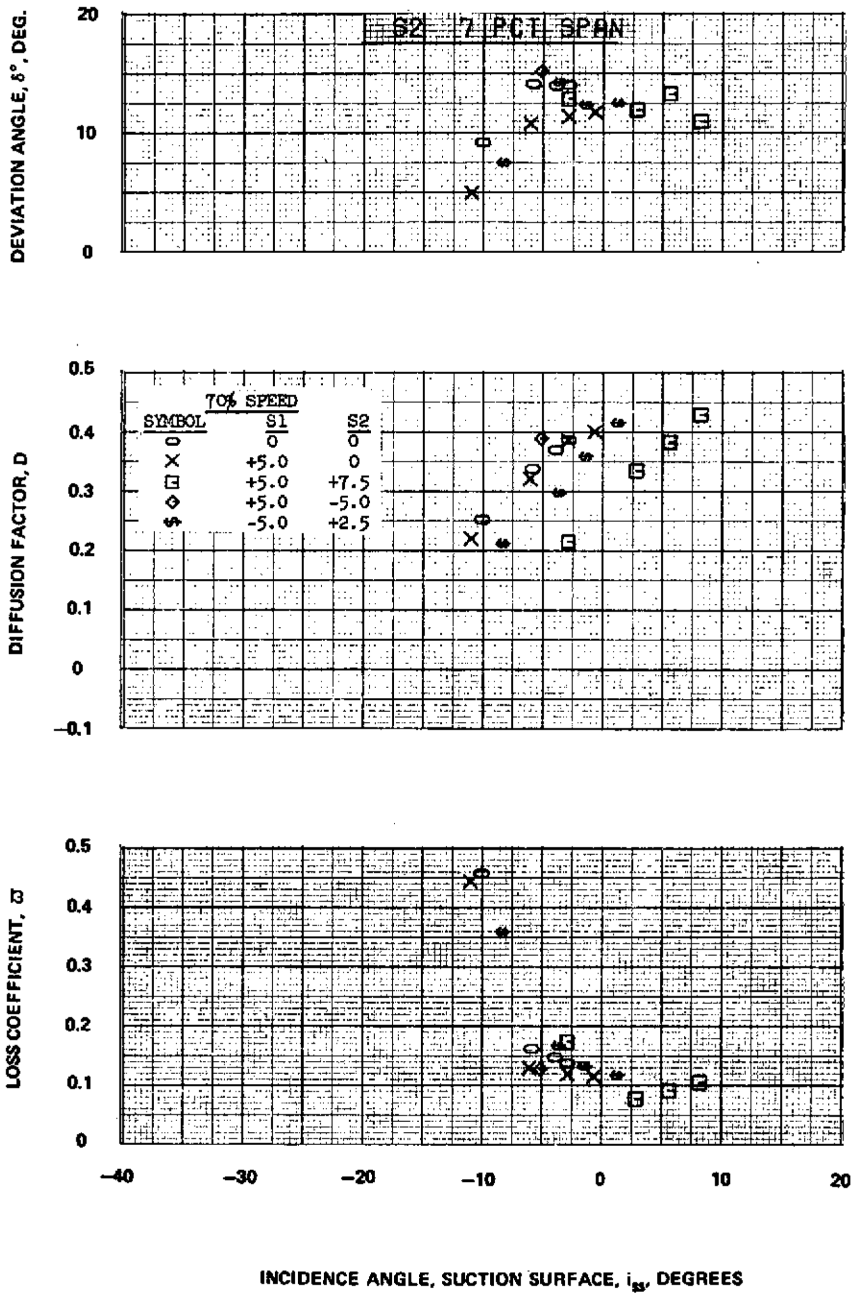


Figure 53A

Figure 53 Blade-Element Performance for Stator 2 at 70 Percent of Design Speed

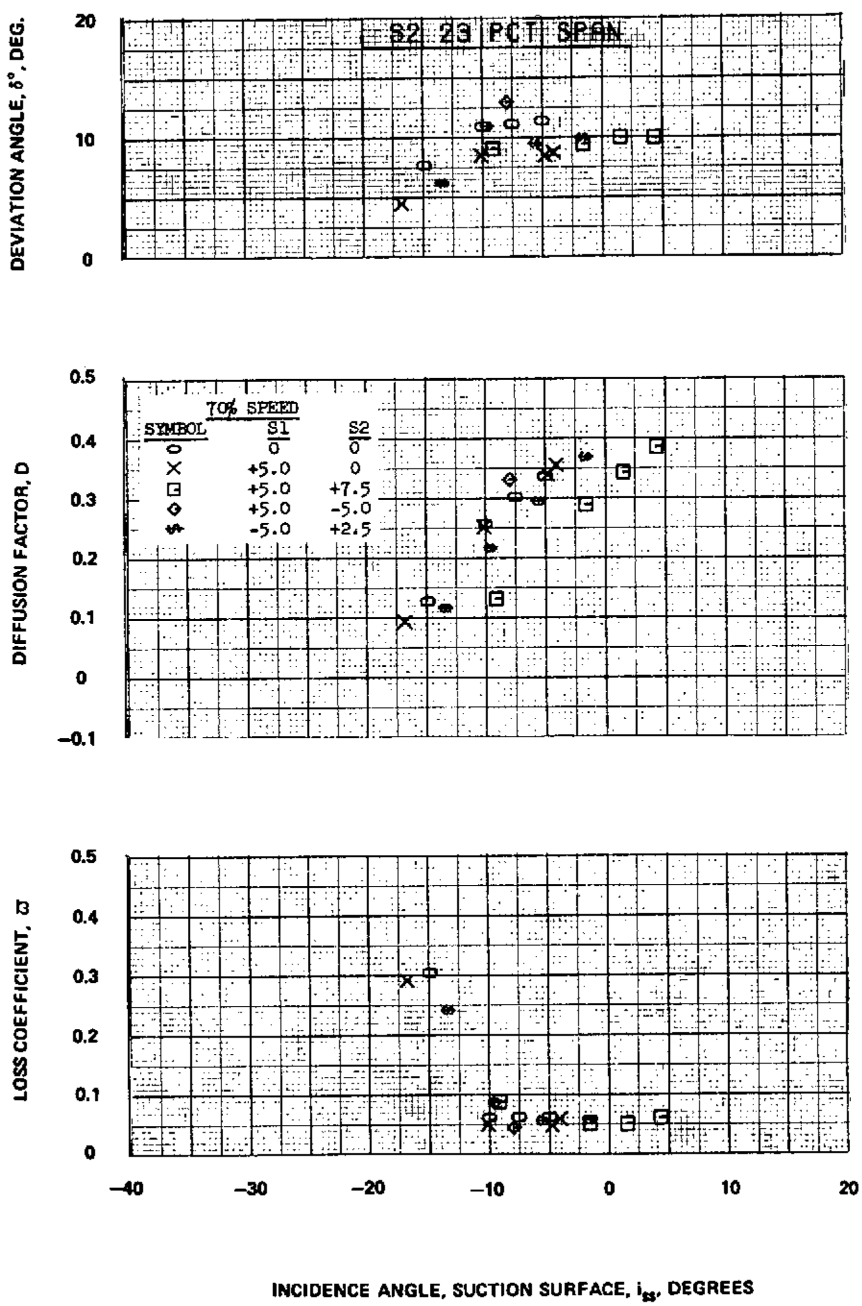


Figure 53B

Figure 53 (Cont'd) Blade-Element Performance for Stator 2 at 70 Percent of Design Speed

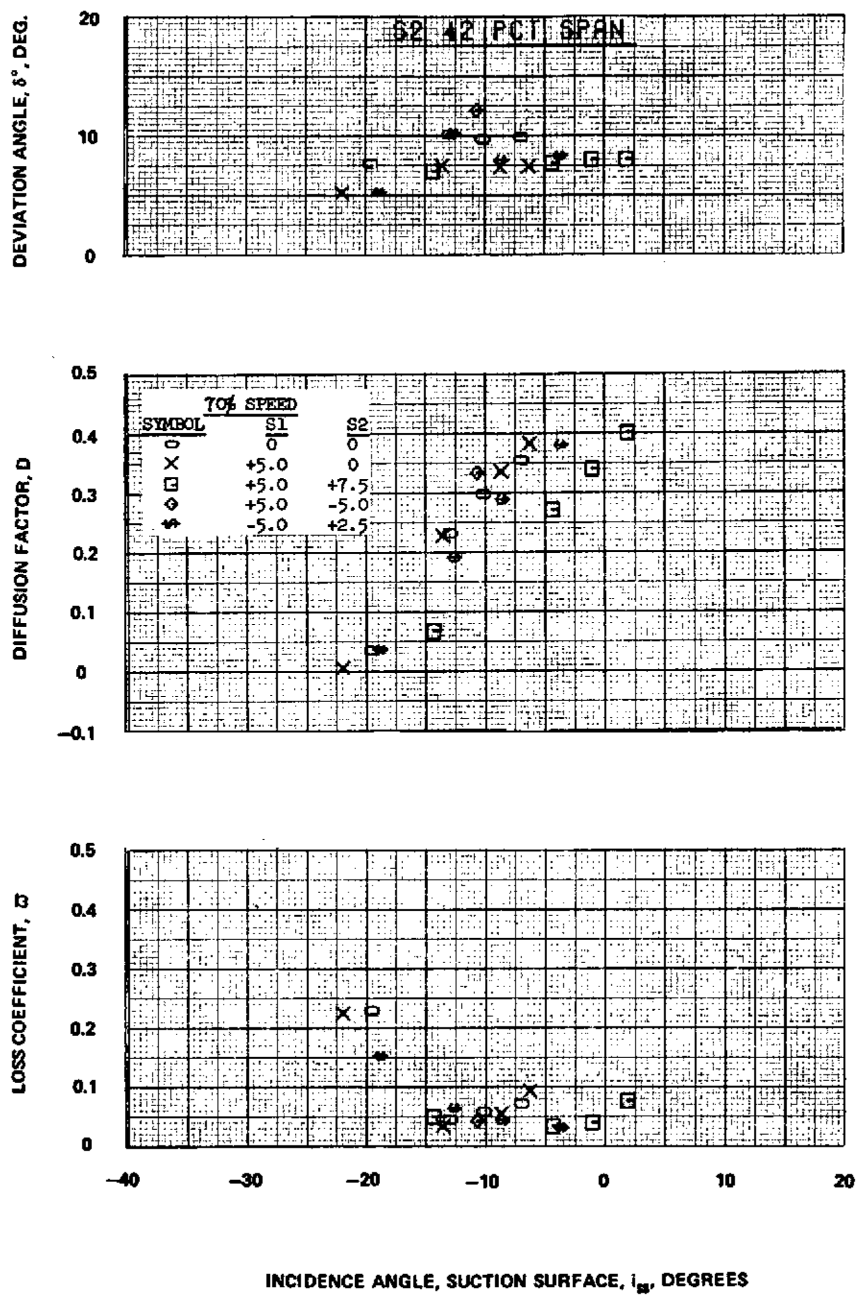


Figure 53C

Figure 53 (Cont'd) Blade-Element Performance for Stator 2 at 70 Percent of Design Speed

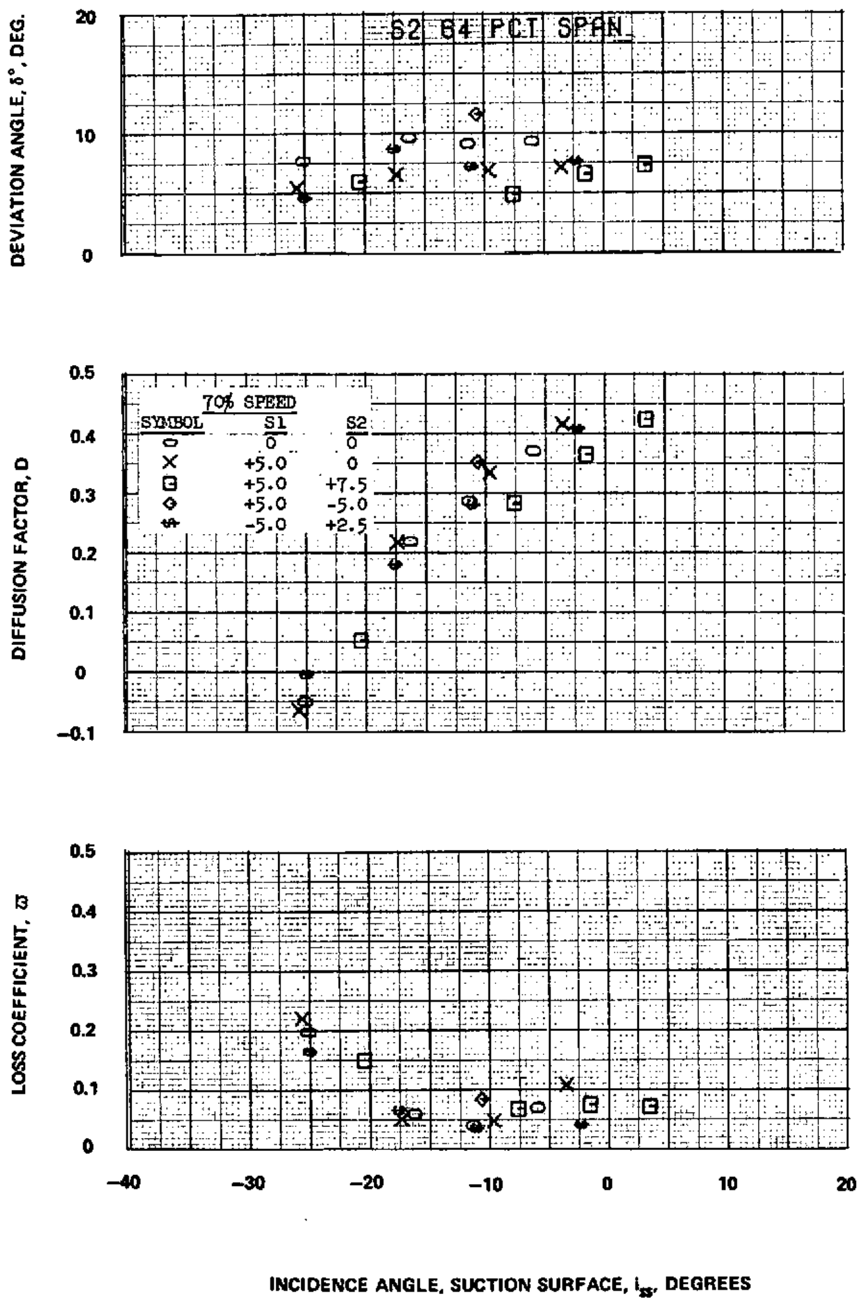


Figure 53D

Figure 53 (Cont'd) Blade-Element Performance for Stator 2 at 70 Percent of Design Speed

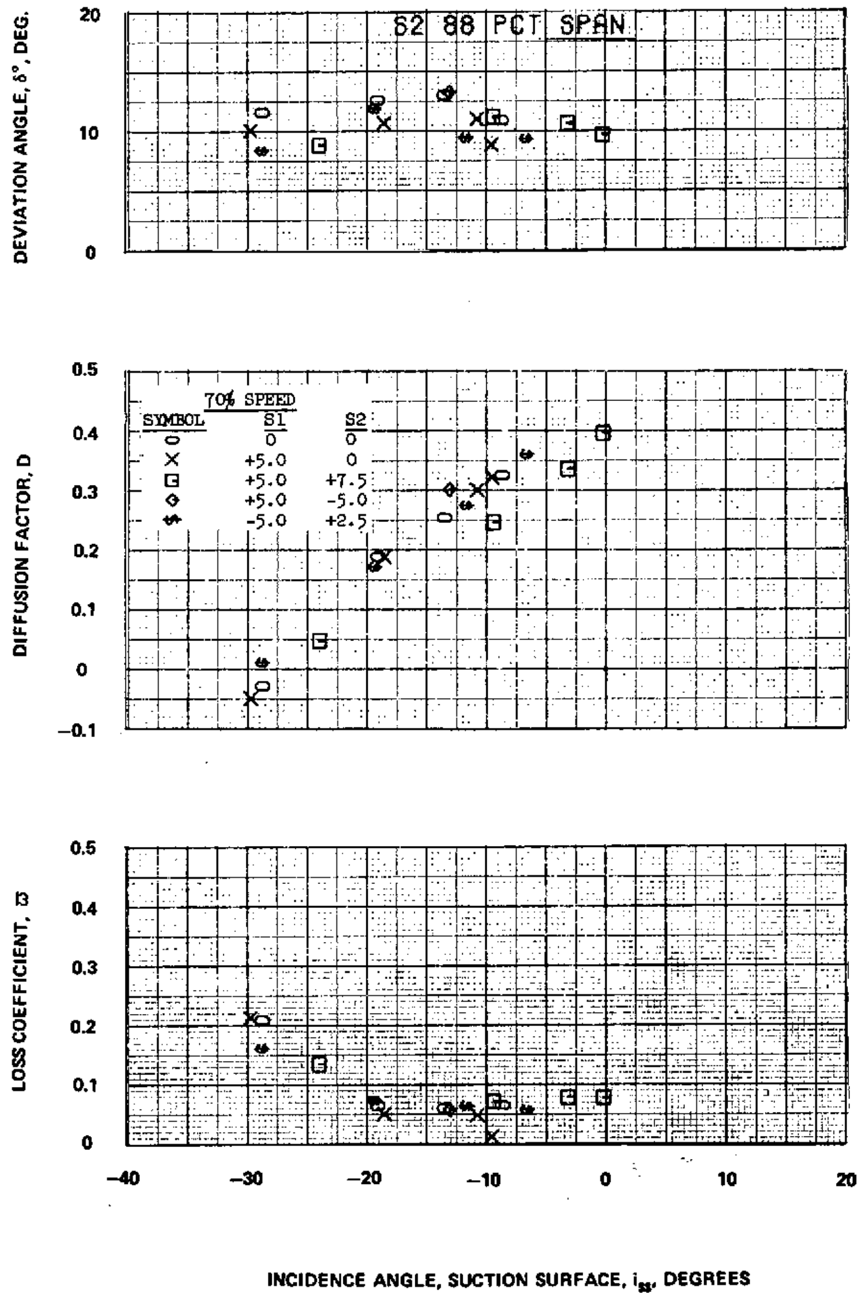


Figure 53E

Figure 53 (Cont'd) Blade-Element Performance for Stator 2 at 70 Percent of Design Speed

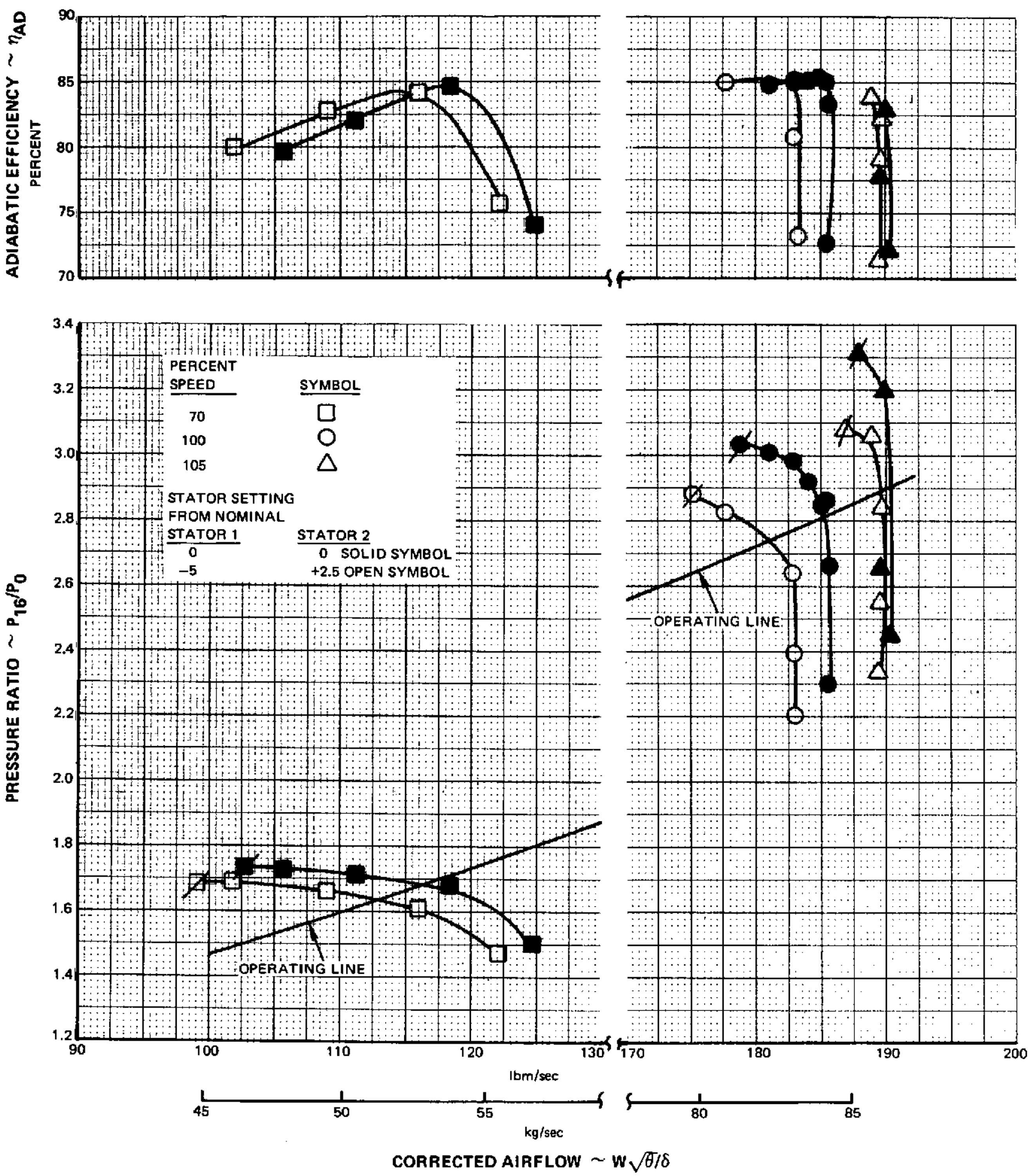


Figure 54 Fan Overall Performance for the (0, 0) and (-5, +2.5) Stator Configurations

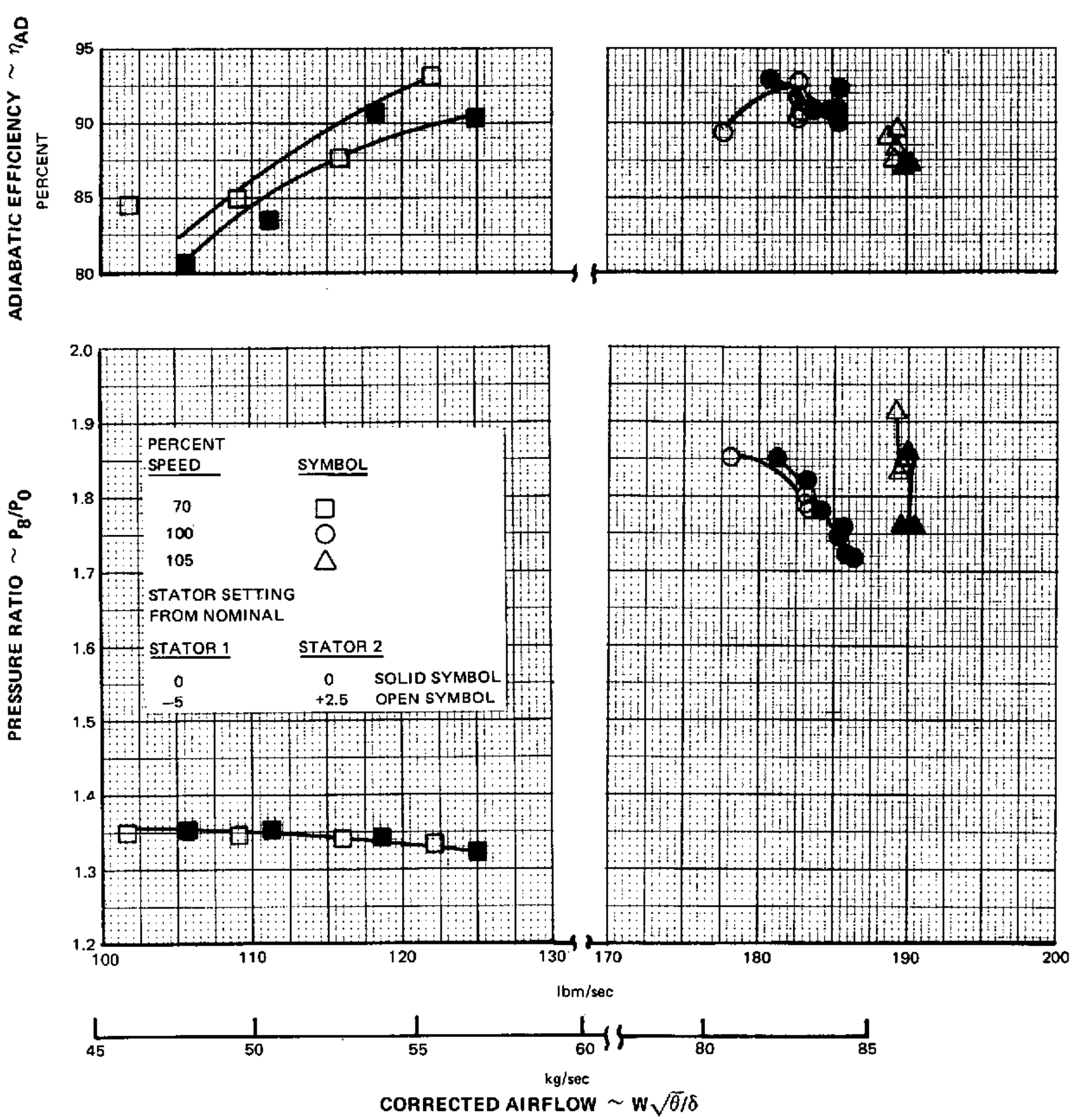


Figure 55 Rotor 1 Performance for the (0, 0) and (-5, +2.5) Stator Configurations

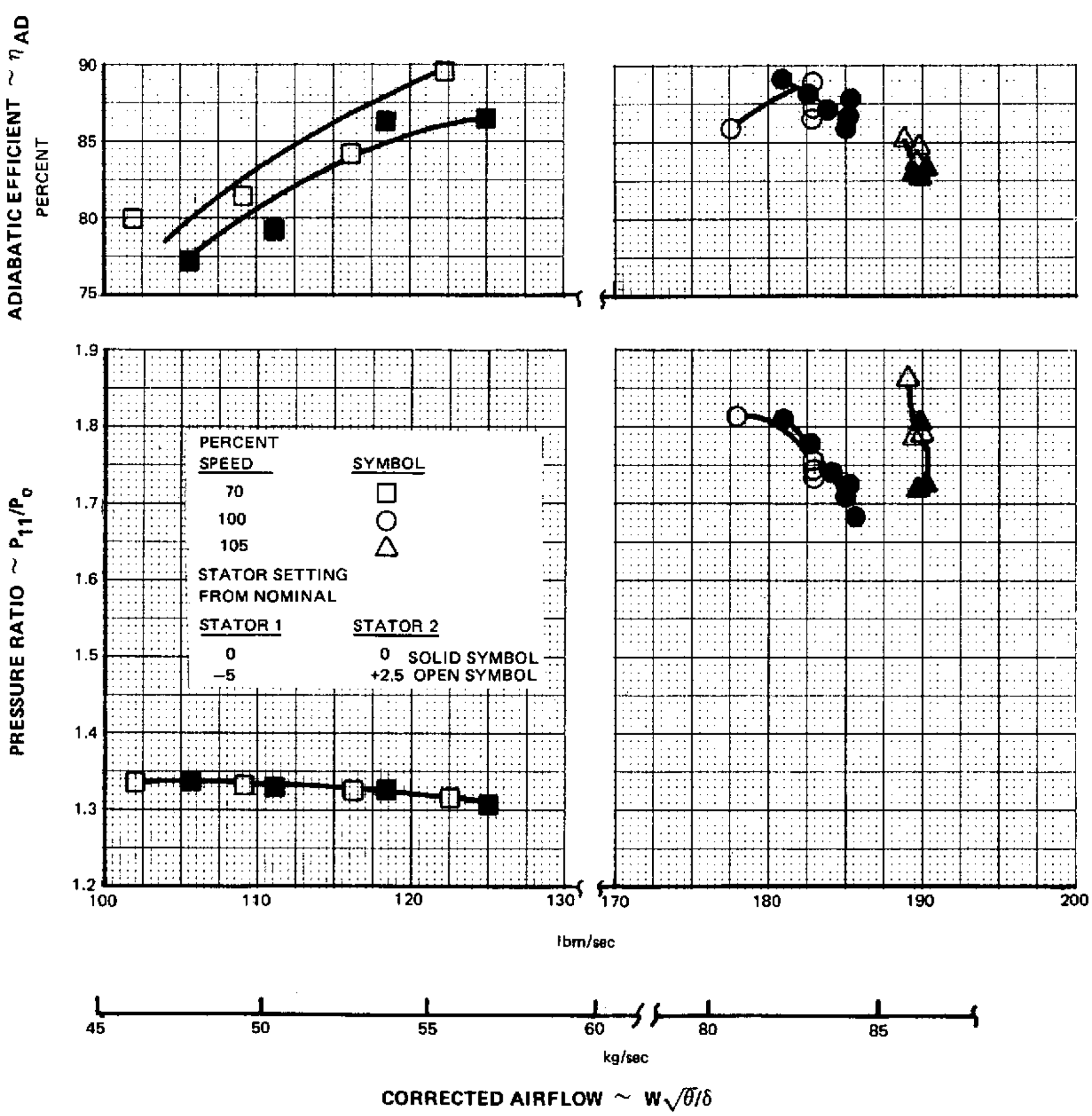


Figure 56 First-Stage Performance for the (0, 0) and (-5, +2.5) Stator Configurations

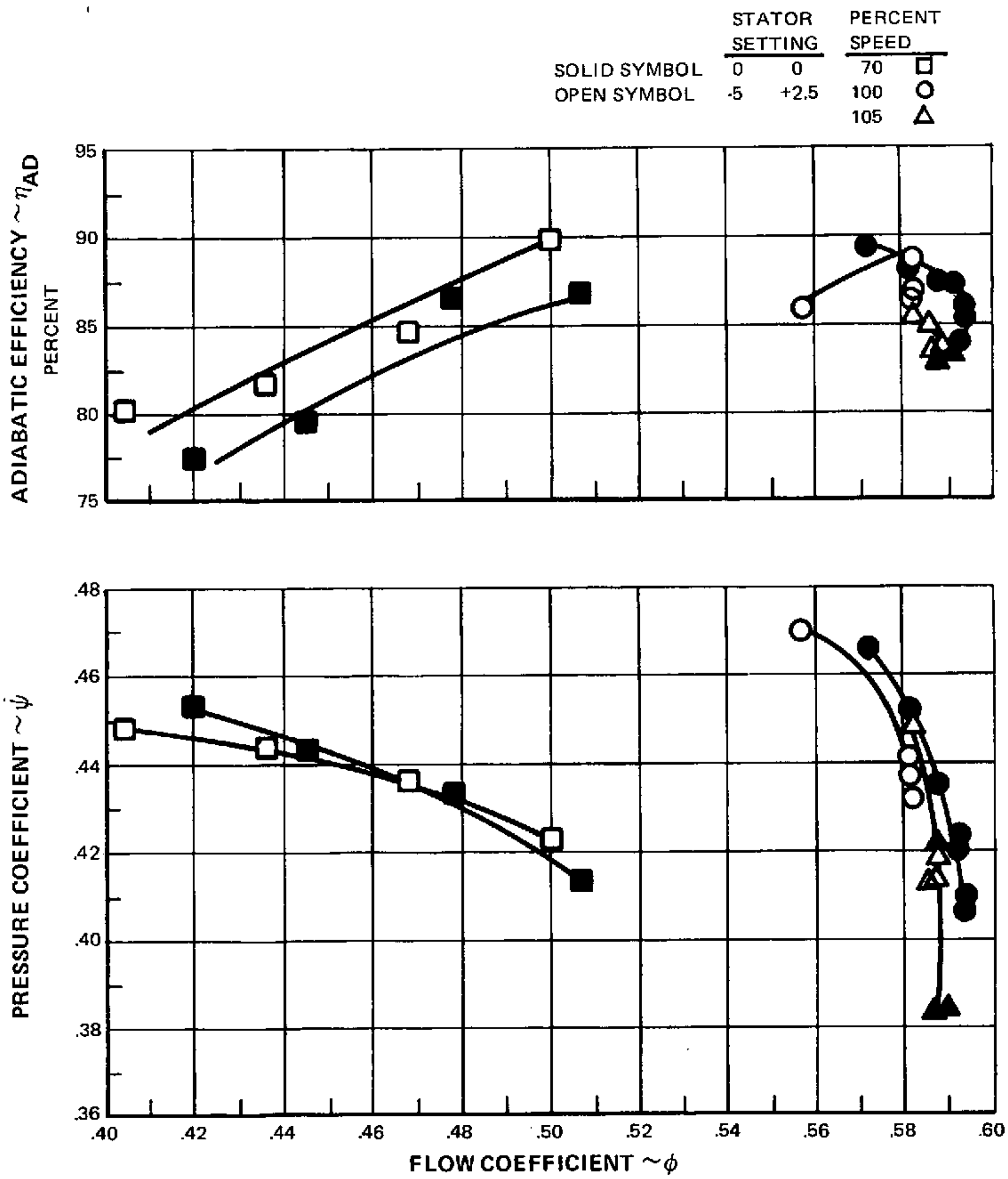


Figure 57 Pressure Coefficient and Adiabatic Efficiency Versus Flow Coefficient for the First-Stage (0, 0) and (-5, +2.5) Stator Configurations

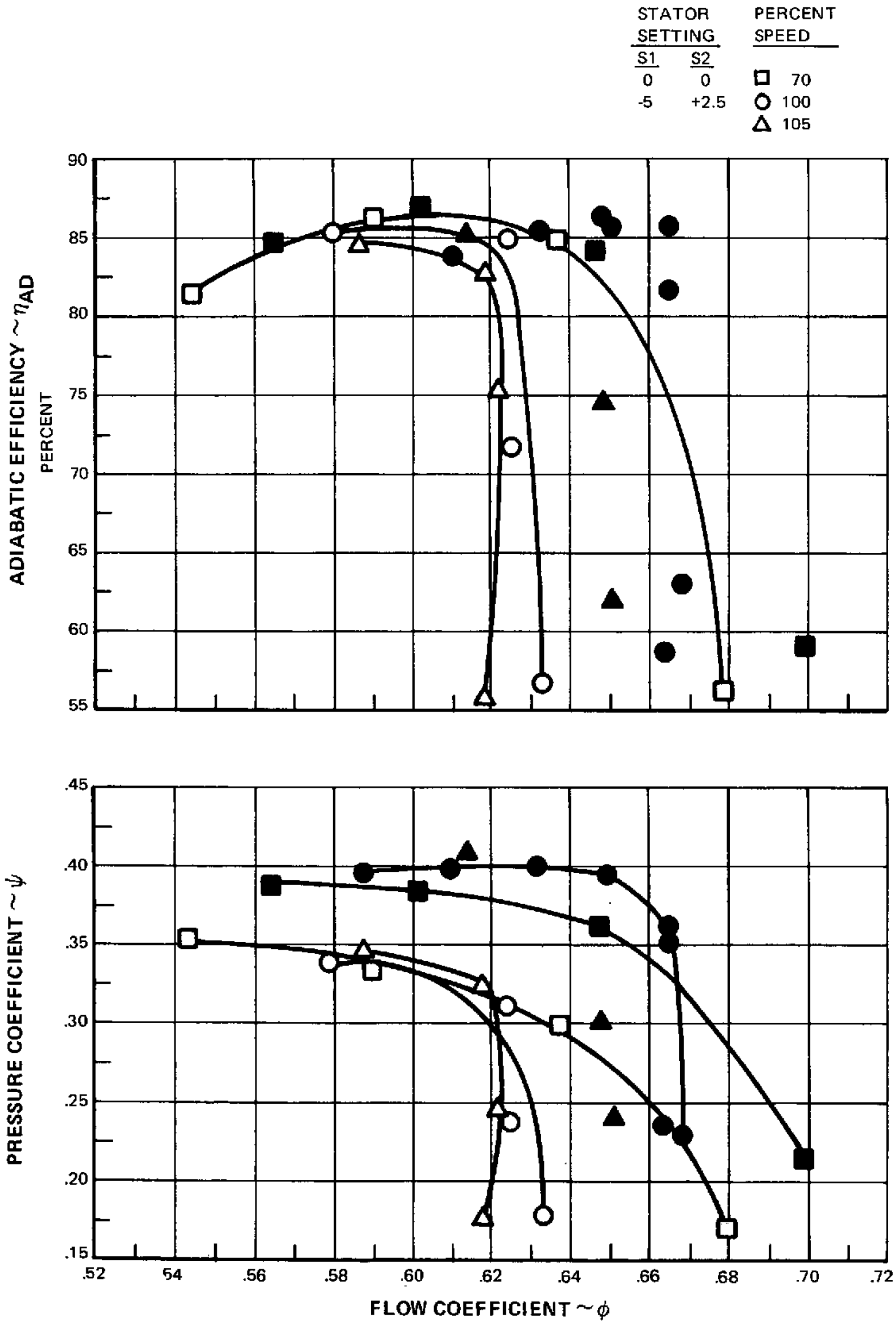


Figure 58 Pressure Coefficient and Adiabatic Efficiency Versus Flow Coefficient for the Second-Stage (0, 0) and (-5, +2.5) Stator Configurations

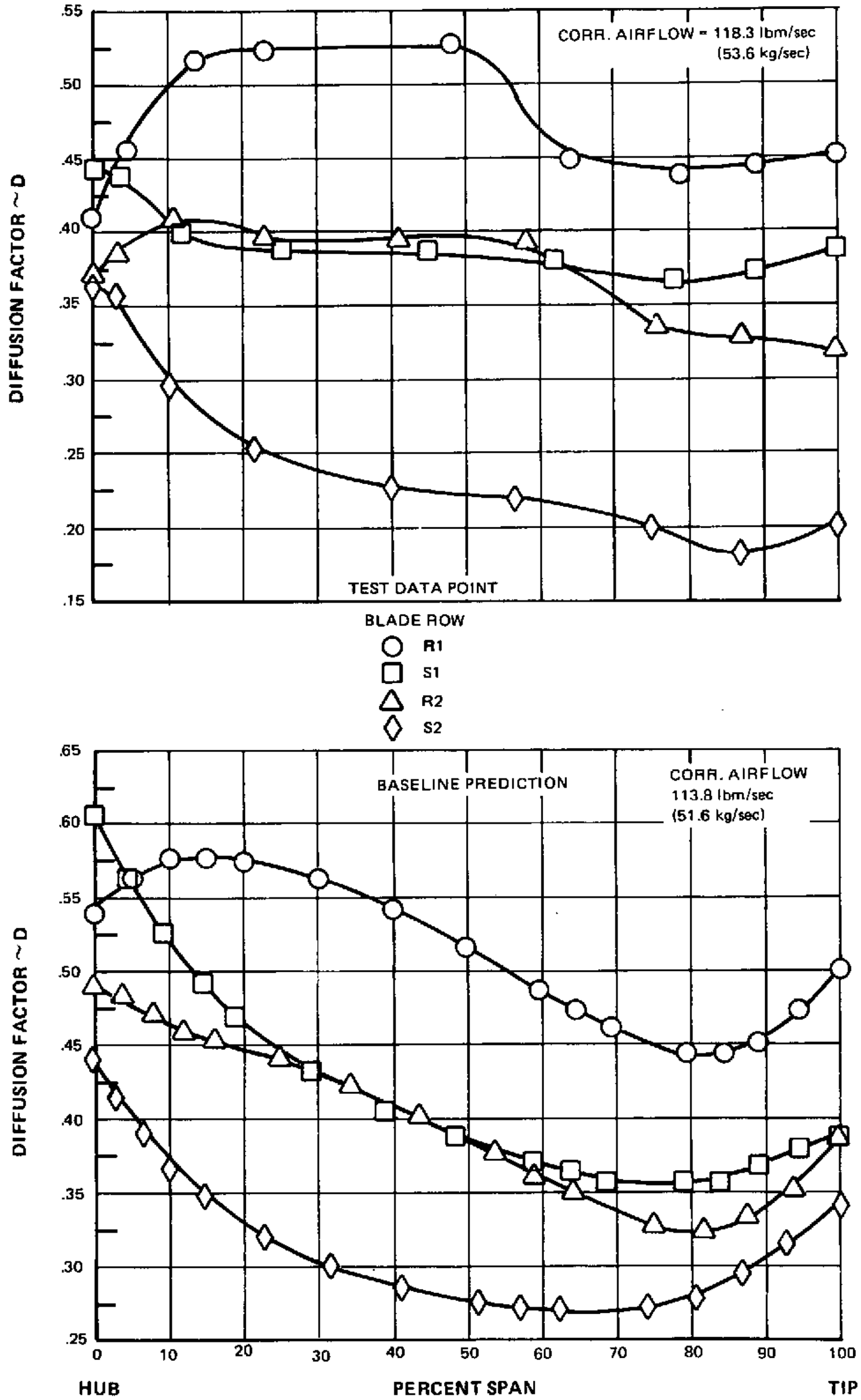


Figure 59 Diffusion Factors Versus Span for Each Blade Row at 70 Percent of Design Speed for Predicted and Test Operating Points

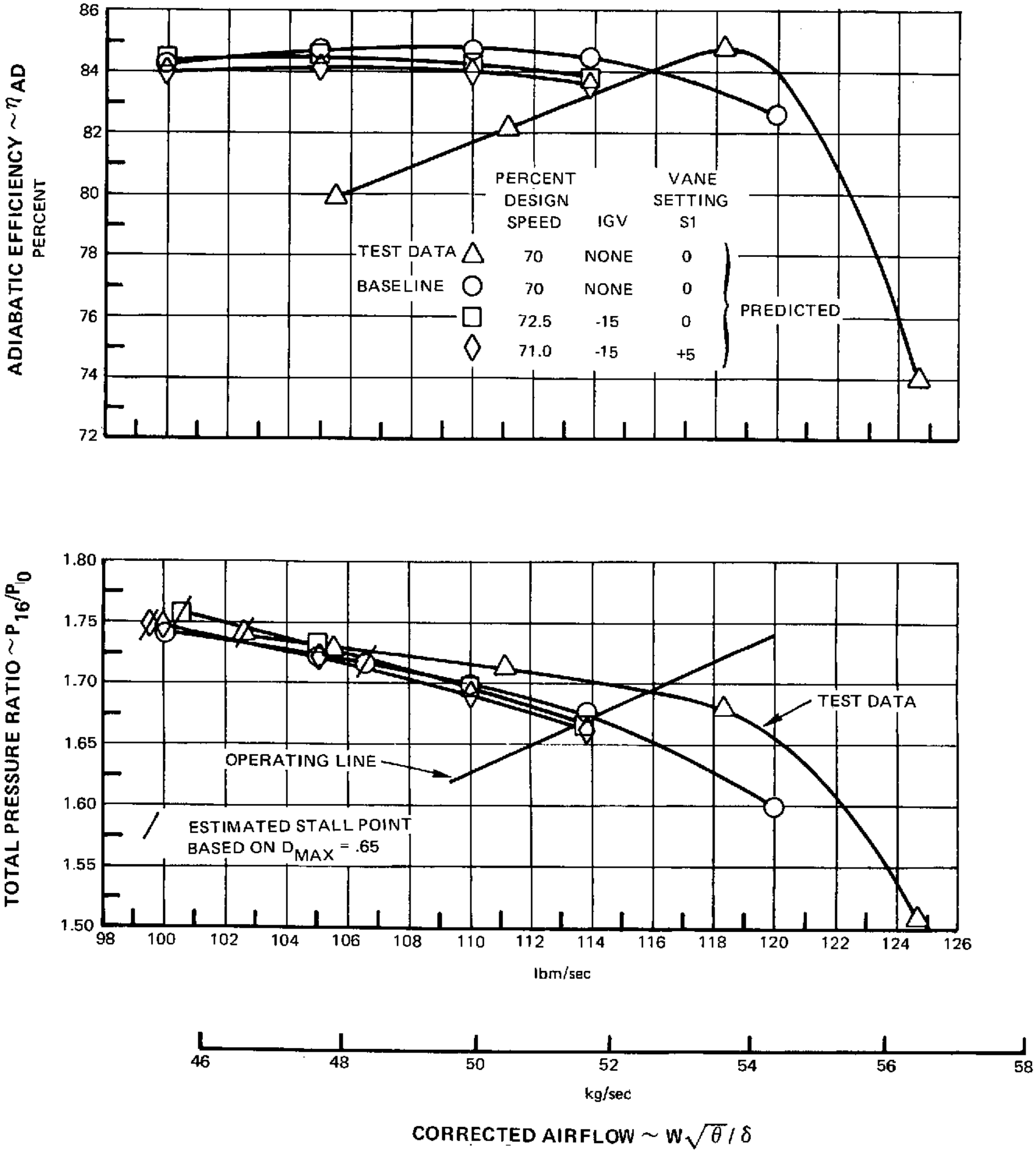


Figure 60 Estimated Overall Fan Performance at 70 Percent of Design Speed with an Inlet-Guide-Vane

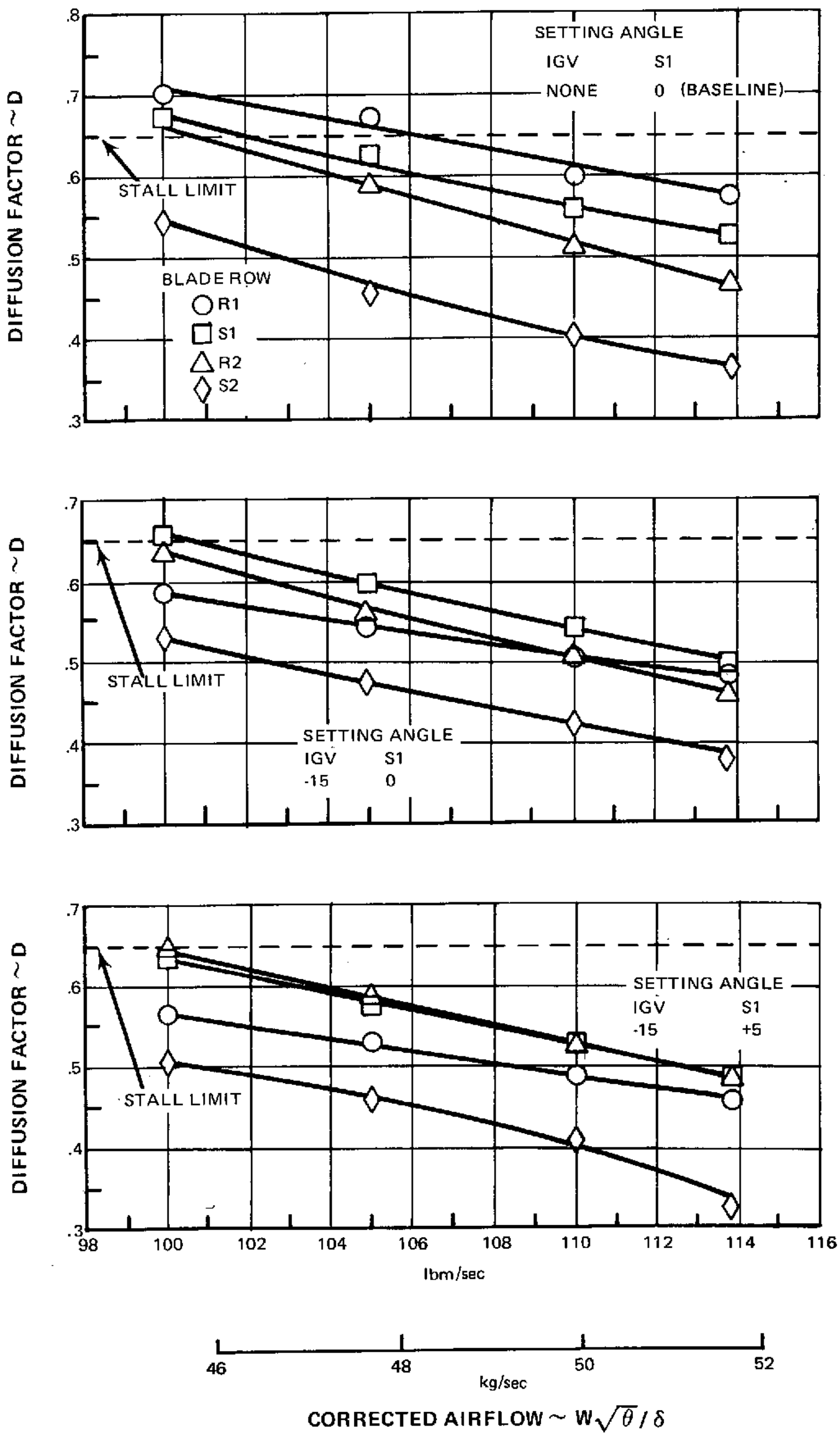


Figure 61 Maximum Diffusion Factors Versus Flow for Each Blade Row at 70 Percent of Design Speed

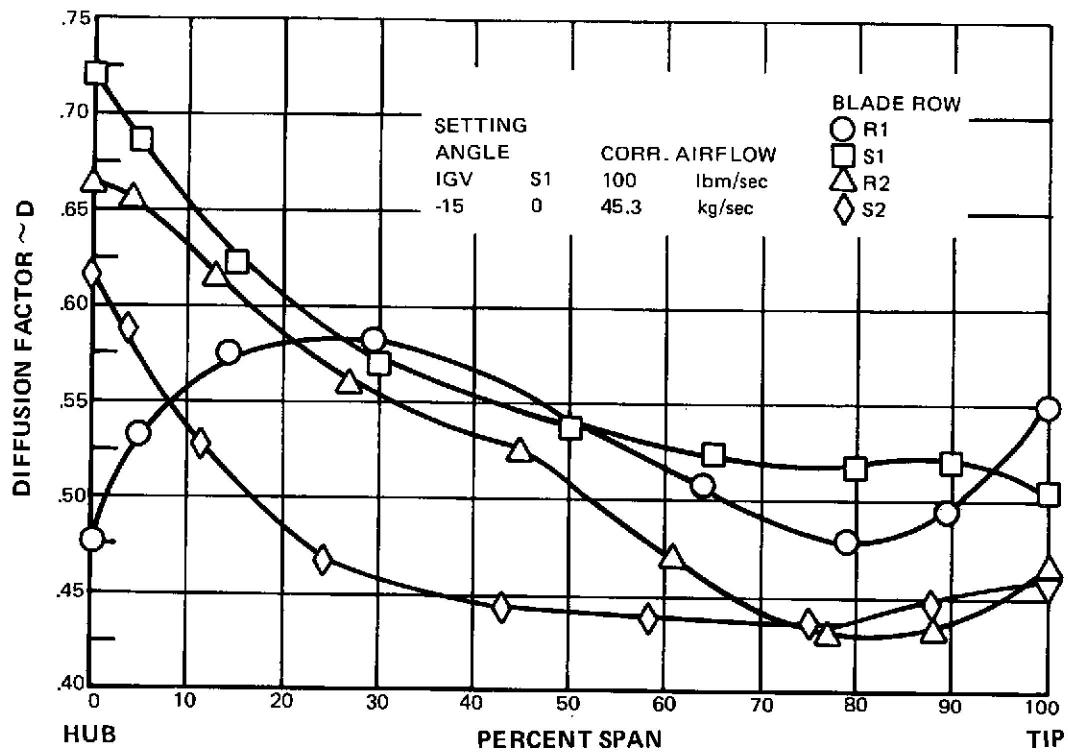


Figure 62 Diffusion Factors Versus Span for Each Blade Row for a Predicted Stall Flow at 70 Percent of Design Speed

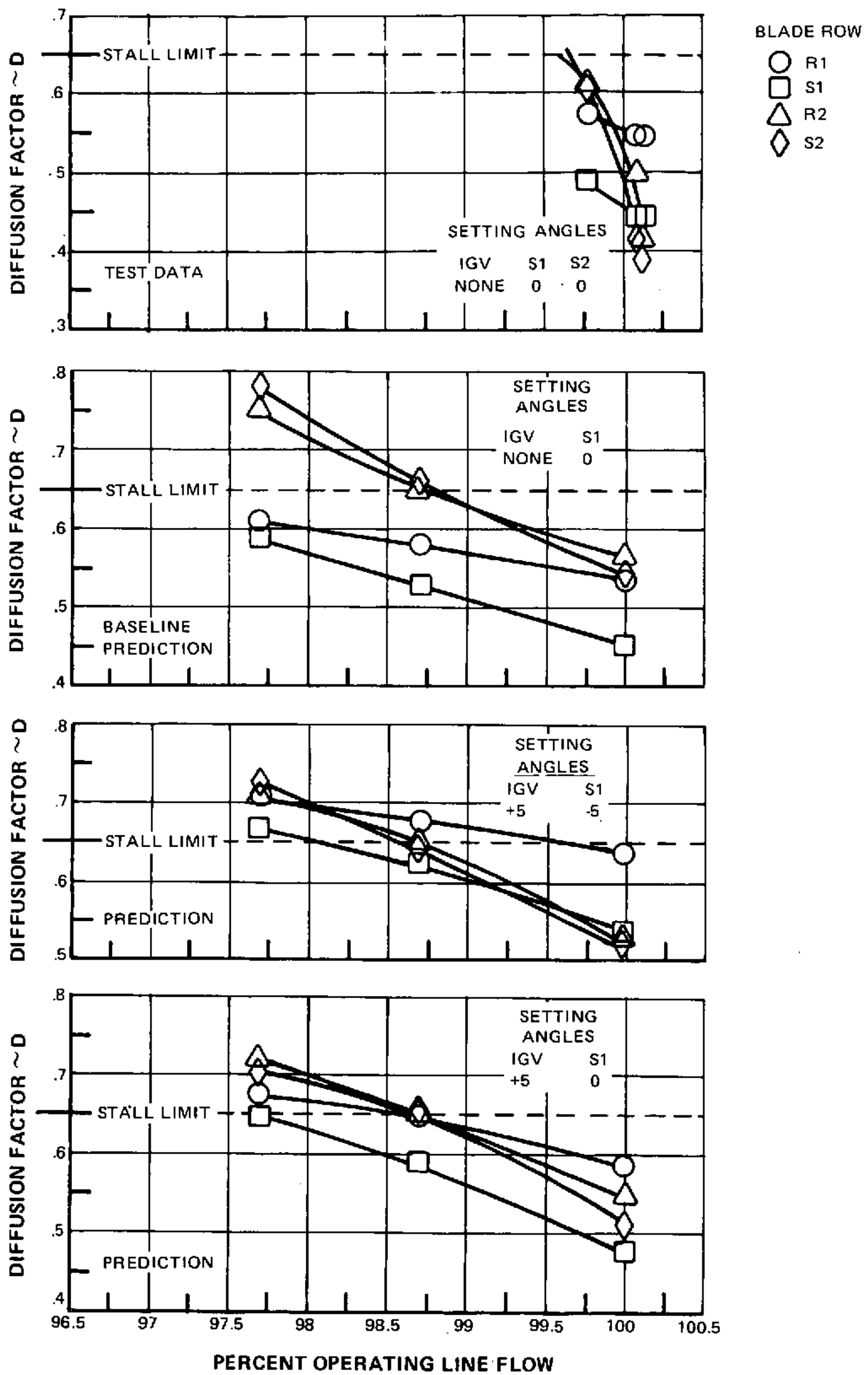


Figure 63 Maximum Diffusion Factors Versus Flow for Each Blade Row at 110 Percent of Design Speed

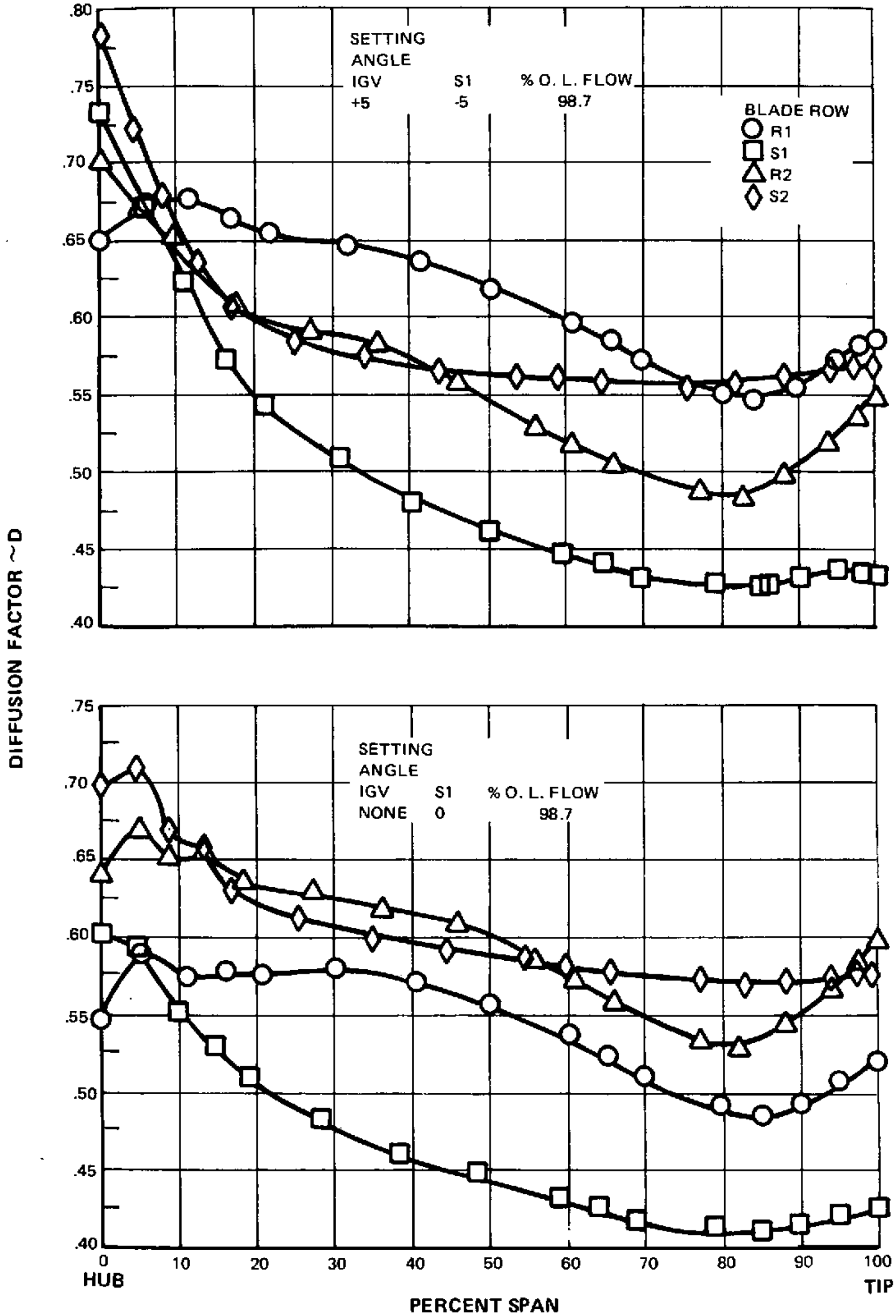


Figure 64 Diffusion Factors Versus Span for Each Blade Row at a Predicted Stall Flow at 110 Percent of Design Speed

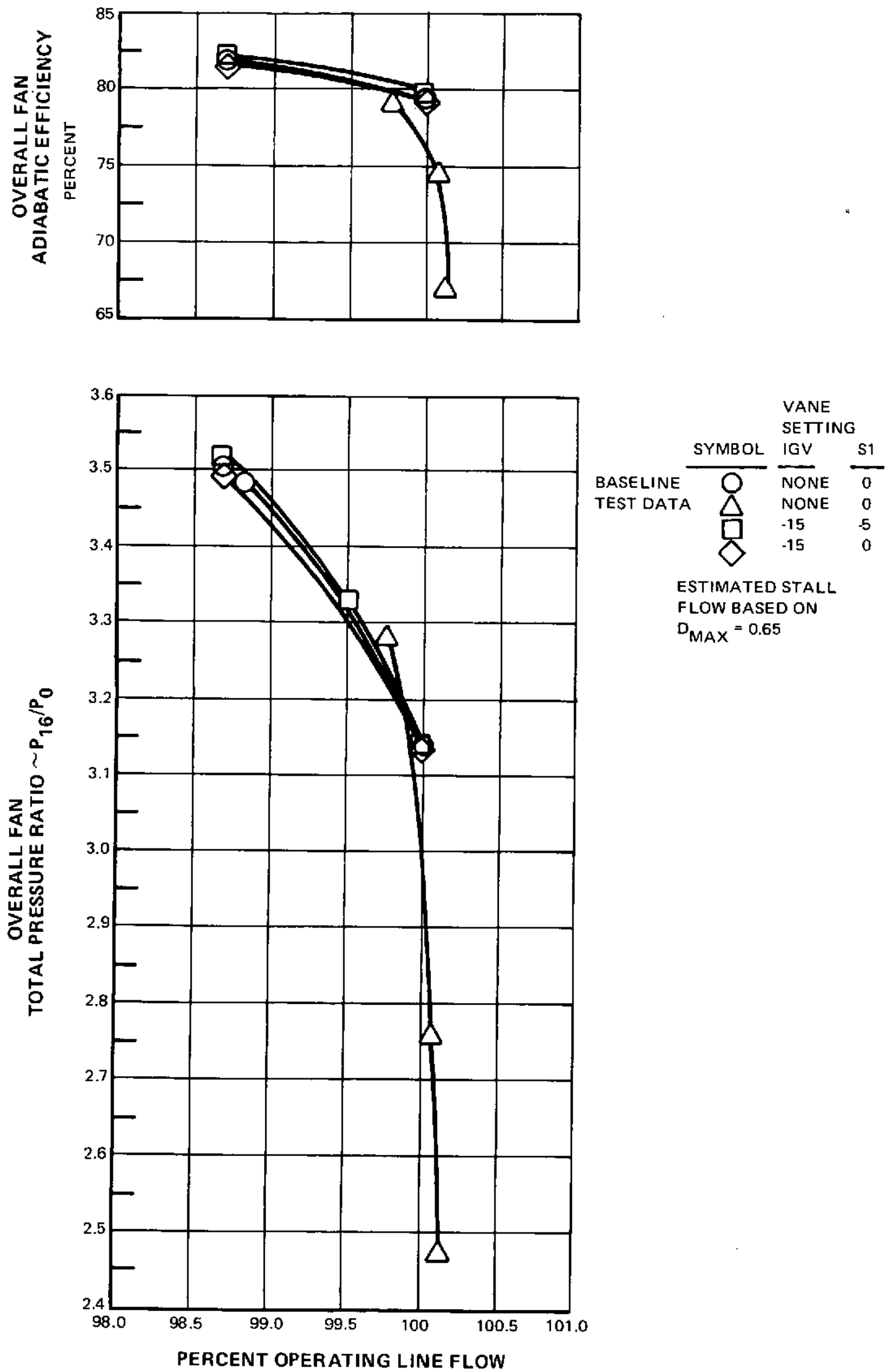


Figure 65 Estimated Overall Fan Performance at 110 Percent of Design Speed with an Inlet-Guide-Vane

APPENDIX A

SYMBOLS, PERFORMANCE PARAMETERS, AND COLUMN HEADING IDENTIFICATION

SYMBOLS

A	–	area, inches^2 [meters^2]
C_p	–	ratio of specific heats, Btu/lbm-°R [joule/kg-°k]
D	–	diffusion factor
g_c	–	conversion factor, 32.17 lbm ft/lbf sec^2
i_m	–	incidence angle, angle between inlet air direction and line tangent to blade mean camber line at leading edge, degrees (labelled INCM, Table XI)
i_{ss}	–	incidence angle, angle between inlet air direction and line tangent to blade suction surface at leading edge, degrees (labelled INCS, Table XI)
J	–	conversion factor, 778 ft-lbf/Btu [1.00m-kg/joule]
N	–	rotor speed, rpm
P	–	total pressure, lbf/ft^2 or n/m^2
p	–	static pressure, lbf/ft^2 or n/m^2
R	–	gas constant for air
r	–	radius measured from rig centerline - inches [meters]
SL	–	streamline number
T	–	total temperature, °R [°K]
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]

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Vm	–	meridional velocity $(Vr^2 + Vz^2)^{1/2}$, ft/sec [m/sec] (labelled VM, Table XI)
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 XI)
β'	–	relative air angle, $\cot^{-1}(Vm/V\theta')$, degrees (labelled B', Table XI)
$\Delta\beta$	–	air turning angle, degrees [radians]
γ	–	ratio of specific heats for air
δ	–	ratio of total pressure to standard pressure of 2116 lbf/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] (labelled DEV, Table XI)
ϵ	–	angle between tangent to streamline projected on meridional plane and axial direction - degrees [radians] (labelled EPSI, Table XI)
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	–	flow coefficient
ψ	–	pressure coefficient
ω	–	angular velocity of rotor, radians/sec
$\overline{\omega}$	–	total press loss coefficient

Superscripts

'	–	relative to rotor
*	–	blade metal angle

Subscripts

ad	–	adiabatic
act.	–	actual angle E
des.	–	design
f	–	front
Ef	–	refers to front camber definitions which include epse angle E
in	–	inlet
m	–	meridional direction (in δ - γ plane)
n	–	selected operating point
p	–	polytropic or profile
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 camber
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

PERFORMANCE PARAMETERS

a) Relative total temperature

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

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

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

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

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

h) Adiabatic efficiency

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

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

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 $\phi = \dfrac{V_z}{U_{\text{mean flow}}}$

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

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

TABLE XI – 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	$\Delta\beta$	$\rho_7 V_{m7}$	$\rho_8 V m_8$	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	$\bar{\omega}$	$\frac{\bar{\omega}\cos\beta_{10}}{2\sigma}$	$\frac{P_{10}}{P_9}$	$\eta_{p\text{-}st}$	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		$\frac{T_{10}}{T_7}$	$\frac{P_{10}}{P_9}$	$\eta_{ad\text{-}st}$					

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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	PO2/PO1	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 XII
SUBSCRIPTS REFER TO CALCULATION STATIONS

APPENDIX B

DESIGN VALUES OF OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

This appendix provides the design values of overall performance and blade-element data for rotor 1, stator 1, rotor 2, and stator 2. Spans and diameters for design and test blade-element-data are given in Table XII, and design values of overall performance and blade-element data are given in Table XIII. The column headings for Table XIII are identified in Table XI of Appendix A.

TABLE XII – SPANS AND DIAMETERS FOR DESIGN AND TEST BLADE-ELEMENT-DATA

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 XIII – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA (Design Values)

U. S. CUSTOMARY UNITS

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'-2	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

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
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

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	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	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	V0'-1 FT/SEC	V0'-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	T02/T01	P02/P01	EFF-AD ROTOR %	EFF-P ROTOR %
1.4071	2.8838	86.46	88.30	41.44	1.1712	1.6553	89.86	90.55

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	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

APPENDIX C

OVERALL PERFORMANCE AND BLADE-ELEMENT DATA AT DESIGN SPEED

This appendix provides test overall performance and blade-element data at design speed for rotor 1, stator 1, rotor 2, and stator 2. The data is presented for seven combinations of stator settings at various flows and pressure ratios. An overall-performance and stall data summary is given in Table XIV, and the complete overall performance and blade-element data is given in Table XV through Table XXI. The column headings for Tables XV through XXI are identified in Table XI of Appendix A.

TABLE XIV – OVERALL PERFORMANCE AND STALL DATA SUMMARY FOR DESIGN SPEED

PERFORMANCE

REF. TABLE (1)	STATOR SETTING (2) S1	STATOR SETTING (2) S2	CORRECTED (3) FLOW lbm/sec	P_{11}/P_0	$\eta_{ad,11}$ %	P_{16}/P_0	$\eta_{ad,16}$ %
XV(a)	0°	0°	185.6	1.684	88.09	2.306	72.53
XV(b)	0°	0°	185.3	1.722	85.94	2.868	85.16
XV(c)	0°	0°	185.2	1.712	87.07	2.860	85.30
XV(d)	0°	0°	184.2	1.743	87.28	2.926	85.37
XV(e)	0°	0°	182.9	1.779	88.07	2.980	84.95
XV(f)	0°	0°	181.0	1.809	89.22	3.016	84.72
XVI(a)	-5°	+2.5°	183.2	1.739	86.61	2.212	73.24
XVI(b)	-5°	+2.5°	183.2	1.750	88.68	2.398	80.63
XVI(c)	-5°	+2.5°	183.1	1.755	87.23	2.644	85.19
XVI(d)	-5°	+2.5°	177.9	1.817	86.11	2.830	84.76
XVII(a)	+2.5°	0°	186.1	1.691	87.17	2.295	71.33
XVII(b)	+2.5°	0°	186.0	1.713	87.79	2.851	84.65
XVII(c)	+2.5°	0°	184.4	1.772	88.43	2.985	84.26
XVII(d)	+2.5°	0°	183.0	1.804	88.66	3.021	83.99
XVIII(a)	0°	+5°	185.9	1.698	90.18	2.307	75.91
XVIII(b)	0°	+5°	185.5	1.712	89.61	2.784	84.65
XVIII(c)	0°	+5°	183.5	1.786	91.05	2.941	84.28
XIX(a)	0°	-5°	185.5	1.714	90.73	2.346	69.98
XIX(b)	0°	-5°	184.3	1.746	89.86	2.817	83.98
XIX(c)	0°	-5°	180.8	1.811	89.15	2.983	84.45
XIX(d)	0°	-5°	177.9	1.824	90.33	2.992	83.46
XX(a)	0°	-10°	178.2	1.817	87.37	2.774	79.15
XX(b)	0°	-10°	172.6	1.837	85.43	2.934	81.26
XXI(a)	+2.5°	-5°	186.2	1.672	86.06	2.377	69.08
XXI(b)	+2.5°	-5°	184.5	1.757	88.67	2.932	83.32
XXI(c)	+2.5°	-5°	181.5	1.772	85.94	3.001	82.95
XXI(d)	+2.5°	-5°	178.3	1.827	88.36	3.027	82.27

STALL POINT DATA

STATOR SETTING (2) S1	STATOR SETTING (2) S2	CORRECTED (3) FLOW lbm/sec	P_{16}/P_0	STALL MARGIN %
0°	0°	178.8	3.035	12.0
-5°	+2.5°	175.1	2.880	8.5
2.5°	0°	179.0	3.050	12.5
0°	+5°	180.1	2.936	7.5
0°	-5°	174.3	3.005	14.0
0°	-10°	167.8	2.960	16.2
+2.5°	-5°	176.9	3.024	13.1

NOTES: (1) Refers to remaining Appendix C tables.
(2) Stator Setting = $\beta^*_{des.} - \beta^*_{act.}$
(3) Corrected Flow = $W\sqrt{\theta}/\delta$

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TABLE XV (a) — OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

DESIGN SPEED

STATOR 1 $(\beta^*_{des.} - \beta^*_{act.}) = 0^o$

STATOR 2 $(\beta^*_{des.} - \beta^*_{act.}) = 0^o$

(Data from reference 3)

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'-1	V'-1 FT/SEC	V'-2 FT/SEC
1	16.615	18.289	639.5	1061.8	639.5	658.3	0.0	833.1	0.0	51.7	0.5924	0.9446	645.8	729.1	0.8314	0.5929	897.5	666.5
2	14.179	13.899	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	0.5892	942.7	665.2
3	14.334	13.687	667.9	1004.4	667.9	677.9	0.0	741.8	0.0	47.6	0.6207	0.8676	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	0.8064	860.1	905.5	1.0389	0.6153	1113.7	704.4
5	-0.833	1.356	717.1	794.9	717.1	588.5	0.0	534.2	0.0	42.1	0.6703	0.6859	1039.1	1046.5	1.1802	0.6753	1262.5	780.2
6	-2.284	-1.546	718.7	700.3	718.7	503.4	0.0	486.9	0.0	44.0	0.6720	0.5993	1122.3	1117.1	1.2461	0.6902	1332.7	806.5
7	-2.661	-2.839	719.4	711.5	719.4	542.4	0.0	460.5	0.0	40.3	0.6727	0.6107	1163.4	1152.3	1.2790	0.7546	1367.8	879.1
8	-3.636	-4.072	719.5	728.4	719.5	561.3	0.0	439.0	0.0	37.1	0.6728	0.6272	1204.4	1167.6	1.3119	0.8162	1402.9	947.6
9	-7.792	-7.665	708.9	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	1076.2
11	-10.824	-10.237	691.7	750.4	691.7	610.0	0.0	437.0	0.0	35.5	0.6446	0.6407	1406.7	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	-2.08	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	-1.37	2.33	17.92	47.53	41.87	53.99	0.4991	-0.0695	-0.0022	1.8578	100.58	100.65	45.85	-1.68	-679.1	19.5	1.8578
3	-1.79	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	-0.60	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	89.93	89.20	55.38	41.03	-1039.1	-512.3	1.6823
6	1.44	3.72	14.05	5.99	44.28	43.80	0.5119	0.1532	0.0303	1.5895	82.28	81.11	57.38	51.39	-1122.3	-630.2	1.5895
7	1.69	3.79	11.80	6.36	44.30	47.67	0.4660	0.1064	0.0213	1.6169	87.27	86.41	58.27	51.91	-1163.4	-691.9	1.6169
8	1.92	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	2.81	4.24	7.53	7.14	45.94	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	8.56	7.28	45.67	54.98	0.3999	0.0663	0.0177	1.7064	89.14	88.32	62.82	55.54	-1367.9	-869.6	1.7089
11	3.47	4.62	10.21	7.25	43.33	55.01	0.3736	0.0973	0.0198	1.7109	87.63	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	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.1822	1.7271	92.69	93.22	42.14	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	TO2/TO1
1	18.131	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	15.799	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	13.715	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	8.221	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	1.783	1.466	819.5	683.6	622.2	681.1	533.4	-58.8	40.6	-4.9	0.7093	0.5830	1.6644	1.1786	1.6644	1.1786
6	-1.834	-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	0.6687	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	-3.09	-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	-4.73	0.12	4.38	45.91	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	2.68	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	-3.80	-2.86	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	0.0392	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 %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
10715.	185.55	1.1822	1.6841	88.09	88.91	1.1822	0.9751	88.09

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	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	11.440	11.272	839.7	1245.6	637.3	936.1	-62.9	819.4	-4.3	41.0	0.7232	1.0224	955.5	876.3	1.0577	0.7715	1228.1	[illegible]
2	10.543	10.172	845.6	1190.9	642.3	892.4	-74.4	788.5	-5.0	41.4	0.7297	0.9701	859.1	894.6	1.0851	0.7321	1257.3	896.7
3	9.640	9.141	857.9	1123.9	653.1	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	[illegible]	0.7466	1338.9	923.5
5	1.992	2.325	807.6	917.0	805.5	780.5	-58.1	461.4	-4.1	31.7	0.6961	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	991.3
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	[illegible]
10	-7.702	-7.155	795.1	825.0	794.6	729.0	-27.7	366.2	-2.0	27.9	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	1.3277	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	VB'-1 FT/SEC	VB'-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	1.6671	79.27	77.71	46.92	3.46	-898.4	-56.9	2.7606
2	-2.03	2.40	20.58	41.14	73.95	87.49	0.4479	0.3287	0.0763	1.6106	72.14	70.25	47.90	6.76	-933.5	-106.1	2.6397
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	46.78	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	0.86	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	-561.2	2.4746
6	4.06	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	61.30	70.22	0.3861	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	8.19	8.65	63.97	71.44	0.3725	0.1858	0.0370	1.3897	72.79	71.52	59.15	50.51	-1253.1	-810.6	2.2221
9	1.63	4.31	3.82	7.53	67.74	74.36	0.3637	0.1939	0.0427	1.3814	70.59	69.23	58.44	50.91	-1289.5	-859.1	2.2606
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 %
1.3767	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	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	8.931	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	1242.9	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	36.8	-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	462.5	-85.7	30.1	-5.2	0.7815	0.7669	2.3682	1.3656	1.3913	1.1568
6	0.023	-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	-1.015	-0.739	797.7	807.1	717.9	803.7	347.8	-74.2	25.8	-5.3	0.6458	0.6538	2.1400	1.3285	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	-5.665	-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	66.00	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	0.9445	-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	-16.56	-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	-18.24	-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	6.62	30.04	78.29	84.08	0.1423	0.1541	0.0451	0.9591	1694.00	73.39	76.09	60.16	61.69
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	84.83	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 XV (b) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

DESIGN SPEED

STATOR 1 ($\beta^*_{des.} - \beta^*_{act.}$) = 0°

STATOR 2 ($\beta^*_{des.} - \beta^*_{act.}$) = 0°

(Data from reference 3)

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	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/SE
1	16.678	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	0.5957	895.6	669.
2	14.206	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	11.896	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	0.5865	985.4	665.
4	5.803	7.530	695.4	920.5	695.4	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	705.5	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	696.6	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	VO'-1 FT/SEC	VO'-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	44.35	-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	98.53	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	88.58	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	9.55	44.34	54.33	0.4522	0.0666	0.0144	1.7235	92.42	91.84	59.06	49.47	-1202.1	-723.6	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	88.61	61.56	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	84.38	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	63.98	55.95	-1406.0	-841.5	1.7384

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 %
1.1952	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	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	18.154	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	1.7750	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	-7.698	-8.191	798.1	674.8	602.1	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	10.56	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	0.4047	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	-6.07	-1.19	8.00	39.65	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	80.38	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

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	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	11.617	11.184	804.1	1131.1	803.9	735.9	-17.0	858.9	-1.2	49.3	0.6886	0.9115	833.9	834.6	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	0.8	48.1	0.7048	0.8914	881.8	911.9	1.0279	0.5590	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	0.6219	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	-6.517	-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	VO'1 FT/SEC	VO'-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	-3.63	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	3.1186
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	2.6328
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	86.78	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	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	8.516	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	765.5	785.9	764.4	837.5	41.5	47.0	3.1	0.9293	0.5919	3.0127	1.4392	1.6822	1.2032
3	6.237	0.380	1134.5	796.9	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	883.4	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	596.4	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	611.0	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	0.6240	0.4695	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	42.41	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	3.40	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	-6.46	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	-6.11	-1.01	15.25	34.31	78.14	79.60	0.4126	0.0657	0.0196	0.9848	86.16	75.41	78.57	83.65	84.71

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 %
10654.	185.30	1.4107	2.8676	85.16	87.16	1.1803	0.9806	86.44

TABLE XV (c) — OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

DESIGN SPEED
STATOR 1 ($\beta^*_{des.} - \beta^*_{act.}$) = 0^o
STATOR 2 ($\beta^*_{des.} - \beta^*_{act.}$) = 0^o
(Data from reference 3)

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	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	20.682	18.288	638.8	1071.5	638.8	656.1	0.0	847.0	0.0	52.3	0.5917	0.9533	629.2	728.5	0.8305	0.5932	896.7	666.6
2	14.218	15.880	652.7	1034.1	652.7	651.9	0.0	802.8	0.0	50.9	0.6055	0.9149	678.5	765.7	0.8734	0.5776	941.5	653.0
3	11.933	13.636	666.2	1011.2	666.2	663.6	0.0	762.9	0.0	49.0	0.6190	0.8919	720.9	799.0	0.9161	0.5862	981.0	664.6
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	805.4	904.6	1.0306	0.5965	1065.6	666.4
5	-0.173	1.173	715.2	811.5	715.2	537.7	0.0	559.6	0.0	43.6	0.6684	0.6935	1038.2	1045.7	1.1783	0.6569	1260.7	724.7
6	-1.679	-1.667	717.3	725.2	717.3	508.9	0.0	516.8	0.0	45.3	0.6705	0.6192	1121.4	1116.2	1.2444	0.6713	1331.2	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	1162.4	1151.4	1.2773	0.7360	1366.2	859.5
8	-3.384	-4.140	717.7	748.3	717.7	580.5	0.0	464.7	0.0	38.4	0.6709	0.6429	1203.5	1186.7	1.3099	0.7992	1401.2	930.4
9	-7.737	-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	0.8964	1502.1	1037.9
10	-9.237	-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	1051.9
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	1364.9	1.4593	0.9176	1566.7	1073.0

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	-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	1.6545	96.19	96.04	45.88	-3.42	-678.5	39.0	1.6545
3	-1.73	2.38	14.44	44.17	42.36	54.54	0.5216	0.0143	0.0034	1.8586	99.08	99.00	47.28	3.11	-720.9	-36.0	1.8586
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	-805.4	-239.2	1.8068
5	0.31	3.59	9.32	15.84	44.16	51.36	0.5304	0.1058	0.0245	1.7144	89.43	88.62	55.43	39.59	-1033.2	-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	82.22	57.40	49.88	-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	1.98	3.91	8.06	8.26	44.24	52.97	0.4443	0.0641	0.0134	1.6956	92.36	92.00	59.18	50.92	-1203.5	-722.0	1.6956
9	2.39	4.32	7.04	8.10	43.84	55.91	0.4141	0.0680	0.0142	1.7415	91.60	91.15	61.94	53.84	-1325.9	-838.3	1.7415
10	3.24	4.53	7.68	8.24	43.55	55.19	0.4231	0.1026	0.0215	1.7504	87.80	86.82	62.92	54.68	-1360.8	-858.9	1.7504
11	3.58	4.73	9.44	8.12	43.19	54.93	0.4192	0.1183	0.0245	1.7520	85.81	84.67	63.91	55.79	-1407.6	-895.8	1.7520

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A 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	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	18.140	14.752	1080.5	707.2	692.7	705.3	829.2	-52.0	50.3	-4.2	0.9628	0.5993	1.7066	1.1979	1.7066	1.1979
2	15.773	12.849	1047.6	707.0	669.7	706.5	788.5	-28.1	46.9	-2.3	0.9289	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	1.1873	1.6977	1.1873
6	-1.634	-2.445	750.9	605.3	544.6	605.6	517.0	-46.1	43.5	-4.4	0.6430	0.5113	1.6159	1.1836	1.6159	1.1836
7	-3.208	-3.735	761.7	607.0	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	-36.3	37.1	-3.5	0.6656	0.5424	1.6437	1.1769	1.6437	1.1769
9	-6.580	-7.273	787.7	686.9	641.6	686.4	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	695.1	472.2	-21.7	36.6	-1.8	0.6785	0.5860	1.6984	1.2003	1.6984	1.2003
11	-8.285	-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	85.54	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	-2.93	0.82	8.34	45.04	57.08	69.03	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	-1.47	4.12	4.99	47.90	47.07	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	-7.46	-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	0.1161	0.0343	0.9709	61.21	85.69	86.69	85.69	86.69
10	-8.32	-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	-8.36	-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

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	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	11.457	11.138	804.6	1117.7	803.0	759.1	-50.4	820.3	-3.6	47.1	0.6891	0.8996	834.8	875.6	1.0236	0.6126	1195.2	764.4
2	10.542	9.916	811.8	1105.5	811.4	747.4	-27.1	814.6	-1.9	47.4	0.6963	0.8897	858.4	893.9	1.0301	0.6048	1201.0	751.6
3	8.513	8.750	826.0	1094.1	826.0	747.4	-4.9	798.9	-0.3	46.8	0.7101	0.8815	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	780.5	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	1.1835	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	VΘ'-1 FT/SEC	VΘ'-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	-685.3	-55.3	3.1599
2	-2.49	1.96	19.66	41.42	72.94	87.64	0.5411	0.1203	0.0280	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	1.7966	92.97	92.36	47.06	8.66	-887.7	-114.0	3.2097
4	-2.70	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	0.5346	0.0637	0.0133	1.6560	93.44	92.93	58.41	45.23	-1161.6	-573.0	2.7391
7	4.17	8.25	8.08	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	84.87	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	2.40	4.15	7.13	7.18	67.19	68.71	0.5351	0.1940	0.0443	1.6305	78.35	76.82	59.97	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 %
1.4688	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	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/PC STAGE	TO2/TO1
1	8.645	0.818	1151.2	769.7	816.0	769.6	812.1	15.2	45.1	1.1	0.9311	0.5950	2.9790	1.4406	1.6867	1.2017
2	7.589	0.716	1137.1	785.0	800.7	764.5	807.5	26.0	45.5	1.9	0.9193	0.6084	3.0176	1.4375	1.7042	1.2011
3	6.533	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	41.1	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	1.1753
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	2.7288	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	2.7066	1.4058	1.6485	1.1827
10	-4.185	-1.048	839.7	638.5	647.8	637.9	534.3	27.7	34.5	2.5	0.6577	0.4916	2.7660	1.4219	1.6404	1.1840
11	-5.273	-1.093	822.6	599.3	606.0	598.7	554.1	27.9	42.4	2.7	0.6394	0.4574	2.7229	1.4306	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	87.84	89.36	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	92.40	89.71	90.45
5	-3.16	2.14	9.19	42.66	82.05	88.87	0.4520	0.0693	0.0185	0.9801	87.31	86.97	88.70	87.09	88.53
6	-2.71	3.08	8.09	43.82	74.59	77.49	0.4859	0.0540	0.0149	0.9869	90.42	84.14	86.17	90.63	91.29
7	-2.02	3.37	8.17	43.60	73.58	75.54	0.4860	0.0352	0.0099	0.9919	93.53	84.40	86.44	90.65	91.30
8	-3.07	3.14	8.95	42.14	75.65	79.32	0.4641	0.0382	0.0109	0.9909	92.65	85.95	87.76	87.65	88.50
9	-4.32	2.18	12.17	37.28	80.26	85.53	0.4168	0.0351	0.0103	0.9912	92.47	83.58	85.74	83.47	84.58
10	-4.92	1.96	13.25	37.06	79.56	84.54	0.4194	0.0453	0.0128	0.9851	90.87	80.30	82.68	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	75.01

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 %
107062	185.16	1.4086	2.8595	85.30	87.27	1.1832	0.9790	85.52

TABLE XV (d) — OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

DESIGN SPEED
STATOR 1 $(\beta^*_{des.} - \beta^*_{act.}) = 0^{\circ}$
STATOR 2 $(\beta^*_{des.} - \beta^*_{act.}) = 0^{\circ}$
(Data from reference 3)

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	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	18.803	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	0.6297	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	643.0
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	-7.604	-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	VØ'-1 FT/SEC	VØ'-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	2.15	-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	3.03	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 %
1.1570	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	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	18.049	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	676.4	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	0.5485	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	1.1656	1.6887	1.1656
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	1.2094	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	0.4981	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	1.1570	1.7431	87.28	88.22	1.1970	0.9772	87.28

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	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	11.455	11.114	766.5	1056.7	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	9.671	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	5.802	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	655.3	781.5	654.1	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	VO'-1 FT/SEC	VO'-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	48.83	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	4.63	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	12.36	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	68.35	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	68.35	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	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	8.633	0.839	1126.8	728.4	783.0	728.2	810.3	16.5	46.3	1.3	0.9070	0.5604	3.0194	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	0.569	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	1.1760
6	0.143	-0.656	815.2	557.4	556.3	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	-0.959	848.2	631.3	639.7	630.4	556.9	32.1	41.1	2.9	0.6616	0.4835	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	87.83
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 XV (e) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

DESIGN SPEED
STATOR 1 ($\beta^*_{des.} - \beta^*_{act.}$) = 0°
STATOR 2 ($\beta^*_{des.} - \beta^*_{act.}$) = 0°
(Data from reference 3)

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	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	16.789	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	905.7	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	-2.616	-3.800	704.1	762.5	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	-8.966	-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	B'-1 DEGREE	B'-2 DEGREE	VØ'-1 FT/SEC	VØ'-2 FT/SEC	PO/PC 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	89.76	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	3.29	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	1.8206	91.92	92.56	41.54	1.2029	1.8206	91.92	92.56

STATOR 1

RUN NO 3, SPEED CODE 10, POINT NO 5

L	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	16.100	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	1.2007	1.7009	1.2007
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	0.5654	0.1225	0.0249	0.9468	85.23	89.28	90.10	89.28	90.10
2	0.05	2.45	5.83	56.30	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	87.78	88.68	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	87.59	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	35.70	58.25	65.12	0.3736	0.1268	0.0406	0.9658	64.78	81.78	83.20	81.78	83.20

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 %
10731.	182.90	1.2029	1.7789	88.07	88.98	1.2029	0.9771	88.07

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	0.9577	0.5635	1173.3	705.2
4	5.606	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	-4.611	-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	-7.672	-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	-9.226	-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	21.61	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	40.75	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	15.36	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	59.76	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	3.08	4.77	6.20	8.73	69.30	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	0.680	1091.8	688.5	743.1	688.0	799.9	28.1	47.4	2.3	0.8730	0.5272	3.0385	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	3.0616	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	545.0	575.9	546.9	574.4	-10.0	44.9	-1.0	0.6371	0.4210	2.8692	1.4169	1.6853	1.1738
7	-0.629	-0.565	803.4	542.6	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	2.8636	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	1.1896
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	48.1	44.6	4.6	0.6480	0.4489	2.9055	1.4645	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	44.29	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	42.45	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	4.59	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	89.63
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	-2.00	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	37.88	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	39.95	75.75	81.34	0.4868	0.0826	0.0246	0.9797	85.30	76.27	75.48	73.62	75.33

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 %
10731.	182.90	1.4252	2.9805	84.95	87.04	1.1881	0.9798	83.85

TABLE XV (f) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

DESIGN SPEED

STATOR 1 $(\beta^*_{des.} - \beta^*_{act.}) = 0^\circ$

STATOR 2 $(\beta^*_{des.} - \beta^*_{act.}) = 0^\circ$

(Data from reference 3)

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	16.431	603.5	1034.7	603.5	568.3	0.0	851.1	0.0	55.4	0.5566	0.9145	625.7	729.0	0.8048	0.5311	872.2	600.8
2	14.400	16.155	617.1	992.4	617.1	589.3	0.0	798.5	0.0	53.6	0.5702	0.8727	679.0	764.3	0.6478	0.5191	917.5	590.3
3	12.213	14.040	630.5	966.0	630.5	597.4	0.0	761.7	0.0	51.9	0.5934	0.8463	727.4	779.5	0.6908	0.5246	962.6	598.6
4	5.520	8.282	603.3	893.2	663.3	586.7	0.0	673.5	0.0	49.0	0.6160	0.7744	666.0	905.4	1.0131	0.5469	1090.8	630.8
5	0.754	1.954	666.5	805.9	666.5	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	-0.838	692.0	754.8	692.0	466.5	0.0	577.1	0.0	49.9	0.6449	0.6403	1122.2	1117.0	1.2186	0.6165	1318.4	726.8
7	-1.764	-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	0.6718	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	1.2905	0.7240	1390.6	851.4
9	-7.393	-7.307	686.7	772.9	686.7	575.8	0.0	515.6	0.0	41.6	0.6416	0.6546	1326.9	1293.3	1.3926	0.8199	1495.0	967.7
10	-8.003	-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	1528.5	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	1.6845	99.66	99.64	46.01	-11.75	-629.7	122.1	1.6845
2	-0.29	4.01	16.27	50.86	40.31	49.27	0.5691	0.0109	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	5.63	-727.4	-37.8	1.8667
4	0.95	4.42	11.90	30.88	42.25	52.30	0.5906	0.0227	0.0056	1.8560	98.30	96.16	52.46	21.56	-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	35.36	-1039.0	-443.4	1.8146
6	2.40	4.68	10.63	10.38	43.34	44.76	0.5854	0.1339	0.0264	1.7759	87.24	86.19	58.34	47.97	-1122.2	-539.9	1.7759
7	2.58	4.66	8.75	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	9.97	43.46	51.69	0.5125	0.0697	0.0149	1.8300	92.99	92.39	59.97	50.01	-1204.3	-652.5	1.8300
9	3.47	4.90	6.62	9.10	43.22	55.65	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	55.83	0.4763	0.0885	0.0168	1.9070	90.71	89.94	63.44	54.04	-1367.7	-800.0	1.9070
11	4.05	5.21	8.70	9.35	42.65	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	16.212	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	13.931	13.182	996.4	609.4	617.6	608.2	784.4	-37.4	51.9	-3.5	0.8787	0.5122	1.7948	1.1958	1.7948	1.1958
3	13.051	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	828.5	604.2	569.9	602.7	602.0	-42.8	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	-7.349	-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	0.6672	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	1.15	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	0.0263	0.9649	87.97	93.82	94.29	93.82	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	67.81	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	60.08	85.44	86.53	85.44	86.53
8	-1.34	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

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	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	11.668	11.103	664.8	1048.9	663.3	600.3	-44.0	860.1	-3.8	53.0	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	839.0	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	787.5	-3.9	50.0	0.5749	0.8177	883.4	915.6	0.9737	0.5346	1150.8	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	1.263	1.288	692.0	854.7	690.7	567.3	-42.3	612.3	-3.5	47.2	0.5843	0.6534	1063.2	1062.5	1.1006	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	0.6243	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	1158.3	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	0.6156	0.6216	1252.0	1235.0	1.2359	0.6809	1470.3	807.1
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	1531.9	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	956.5

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	VØ'-1 FT/SEC	VØ'-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	18.69	48.21	65.06	75.47	0.6376	0.1904	0.0445	1.7942	87.45	86.38	53.26	5.07	-895.4	-54.3	3.2190
3	3.53	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	-929.9	-126.1	3.2500
4	2.76	7.56	13.66	31.29	69.33	83.29	0.5856	0.1165	0.0280	1.7419	90.37	89.39	54.51	23.22	-990.6	-273.5	3.1775
5	4.54	5.11	10.22	19.57	66.74	75.17	0.5855	0.1320	0.0293	1.6868	87.63	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	2.9507
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	46.73	-1193.5	-582.7	2.9625
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	-581.6	2.9506
9	3.35	6.03	2.34	16.72	70.51	77.37	0.5340	0.1611	0.0366	1.6624	82.55	81.65	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	81.62	60.44	50.19	-1307.6	-714.0	3.0752
11	4.04	5.74	6.56	9.34	70.62	77.63	0.5259	0.1970	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	39.31	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	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	3.383	0.805	1070.3	631.1	646.4	630.7	851.0	21.6	53.0	2.0	0.8523	0.4866	3.0170	1.4513	1.6900	1.2105
2	7.335	0.691	1059.1	653.8	654.0	653.5	833.0	20.9	52.1	1.8	0.8436	0.4956	3.0093	1.4456	1.7111	1.2091
3	3.064	0.522	1047.1	682.9	696.9	682.3	781.5	21.3	46.4	1.8	0.8557	0.5244	3.1255	1.4369	1.7359	1.2037
4	3.778	0.035	966.2	668.1	662.2	667.8	697.9	21.5	46.3	1.8	0.7676	0.5153	3.1144	1.4241	1.7085	1.1912
5	0.657	-0.605	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	1.1642
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	2.9260	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	0.6250	0.4112	2.9189	1.4235	1.6048	1.1809
8	-1.034	-0.604	806.1	552.1	562.1	552.1	577.8	-2.9	45.6	-0.3	0.6295	0.4226	2.9368	1.4227	1.6548	1.1616
9	-4.203	-0.567	831.2	616.1	611.8	617.6	562.7	19.5	42.6	1.6	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	-5.873	-1.144	827.4	605.1	632.9	604.3	533.0	31.6	40.2	3.0	0.6357	0.4566	2.9782	1.4479	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	4.03	6.65	13.00	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	0.9832	86.03	87.29	89.13	83.20	84.44
4	0.75	4.62	12.16	44.47	86.34	98.12	0.4866	0.0702	0.0174	0.9770	89.60	90.03	91.47	85.68	86.90
5	1.01	6.32	10.26	45.76	78.22	85.25	0.5108	0.0625	0.0167	0.9835	89.60	86.39	88.29	84.21	85.29
6	-2.09	3.70	9.67	42.86	77.95	78.53	0.5179	0.0557	0.0154	0.9868	90.88	84.23	86.35	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	88.92	84.92	86.99	84.59	85.64
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	79.54	80.91
10	-3.38	3.50	13.69	38.16	83.39	89.59	0.4308	0.0598	0.0177	0.9853	87.70	81.28	83.91	79.24	80.62
11	-5.34	1.56	14.92	37.21	82.38	94.42	0.4507	0.0696	0.0267	0.9787	82.86	77.16	80.32	73.22	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

ORIGINAL PAGE IS OF POOR QUALITY

TABLE XVI (a) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

DESIGN SPEED

STATOR 1 ($\beta^*_{des.} - \beta^*_{act.}$) = -5°

STATOR 2 ($\beta^*_{des.} - \beta^*_{act.}$) = +2.5°

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 13, SPEED CODE 10, 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	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	16.865	18.394	615.0	1053.3	615.0	600.5	0.0	865.4	0.0	55.3	0.5681	0.9329	625.9	724.6	0.8107	0.5463	877.5	616.8
2	14.533	16.104	628.8	1005.8	628.8	610.5	0.0	799.3	0.0	52.7	0.5817	0.8867	674.9	759.7	0.8535	0.5394	922.4	611.8
3	12.339	13.985	642.6	972.9	642.6	622.9	0.0	747.3	0.0	50.2	0.5955	0.8552	723.0	794.7	0.8964	0.5491	967.4	624.7
4	6.509	8.353	677.2	900.9	677.2	619.7	0.0	653.9	0.0	46.6	0.6300	0.7844	860.8	900.0	1.0189	0.5805	1095.3	666.7
5	0.860	2.047	701.3	800.2	701.3	551.7	0.0	579.6	0.0	46.4	0.6543	0.6863	1032.7	1040.2	1.1647	0.6164	1248.4	718.7
6	-0.879	-0.724	707.5	755.7	707.5	527.8	0.0	540.9	0.0	45.7	0.6606	0.6452	1115.5	1110.3	1.2333	0.6628	1320.9	776.4
7	-1.870	-2.038	709.9	765.0	709.9	557.8	0.0	523.5	0.0	43.2	0.6630	0.6538	1156.3	1145.3	1.2673	0.7140	1356.8	835.4
8	-3.198	-3.330	711.2	776.0	711.2	588.6	0.0	505.7	0.0	40.6	0.6643	0.6643	1197.1	1180.4	1.3007	0.7666	1392.4	895.4
9	-7.865	-7.289	703.0	785.4	703.0	616.0	0.0	487.3	0.0	38.3	0.6560	0.6702	1318.9	1285.6	1.3947	0.8604	1494.6	1008.3
10	-9.557	-8.695	695.6	791.7	695.6	616.7	0.0	496.4	0.0	38.7	0.6485	0.6732	1359.5	1320.7	1.4238	0.8753	1527.1	1029.4
11	-11.065	-10.147	686.2	777.6	686.2	578.0	0.0	520.1	0.0	41.9	0.6391	0.6555	1400.1	1355.7	1.4521	0.8565	1559.2	1016.0

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	-1.07	3.53	14.74	58.52	40.22	47.51	0.5301	0.0712	0.0153	1.8560	96.33	96.01	45.31	-13.21	-625.9	140.8	1.8560
2	-0.98	3.32	15.89	50.55	40.82	49.55	0.5479	0.0577	0.0133	1.8270	96.67	96.39	46.84	-3.71	-674.9	39.6	1.8270
3	-0.80	3.30	15.89	43.85	41.41	51.69	0.5479	0.0349	0.0083	1.8173	97.79	97.61	48.20	4.36	-723.0	-47.4	1.8173
4	0.21	3.68	11.99	30.04	42.79	53.61	0.5546	0.0404	0.0100	1.7978	96.82	96.57	51.71	21.67	-860.8	-246.0	1.7978
5	1.30	3.98	9.59	15.95	43.68	48.77	0.5643	0.1238	0.0285	1.7278	88.30	87.39	55.81	39.86	-1032.7	-460.6	1.7278
6	1.68	3.96	9.83	10.44	43.89	47.21	0.5399	0.1338	0.0288	1.7039	86.36	85.32	57.61	47.17	-1115.5	-569.4	1.7039
7	1.86	3.96	7.78	10.34	43.98	50.52	0.5070	0.1025	0.0222	1.7339	89.31	88.47	58.44	48.10	-1156.3	-621.8	1.7339
8	2.05	4.00	6.03	10.38	44.02	54.00	0.4748	0.0684	0.0149	1.7661	92.68	92.09	59.27	48.88	-1197.1	-674.7	1.7661
9	2.87	4.30	5.49	9.64	43.73	57.41	0.4387	0.0629	0.0136	1.8147	92.91	92.31	61.92	52.28	-1318.9	-798.3	1.8147
10	3.21	4.50	6.11	9.78	43.47	57.34	0.4417	0.0870	0.0189	1.8281	90.23	89.38	62.89	53.11	-1359.5	-824.2	1.8281
11	3.53	4.68	8.87	8.65	43.13	53.04	0.4695	0.1540	0.0324	1.8082	82.91	81.46	63.87	55.22	-1400.1	-835.5	1.8082

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 %
1.1976	1.7844	90.97	91.66	41.61	1.1976	1.7844	90.97	91.66

STATOR 1

RUN NO 13, SPEED CODE 10, 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	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	18.155	14.888	1057.3	651.0	632.6	644.8	847.2	89.5	53.4	7.8	0.9369	0.5479	1.7140	1.2011	1.7140	1.2011
2	15.851	13.139	1014.2	653.2	641.9	647.0	785.2	89.7	50.9	7.8	0.8952	0.5514	1.7248	1.1947	1.7248	1.1947
3	13.784	11.508	984.5	663.6	653.7	657.7	736.2	88.7	48.5	7.6	0.8669	0.5618	1.7425	1.1905	1.7425	1.1905
4	8.498	7.071	918.5	664.4	650.3	660.9	648.6	67.8	44.9	5.8	0.8016	0.5629	1.7490	1.1888	1.7490	1.1888
5	2.297	1.561	821.7	638.3	583.4	636.0	578.6	53.8	44.7	4.8	0.7066	0.5384	1.7113	1.1934	1.7113	1.1934
6	-0.779	-1.074	778.7	603.1	559.8	601.9	541.3	37.8	44.0	3.6	0.6665	0.5073	1.6700	1.1926	1.6700	1.1926
7	-2.135	-2.193	788.0	634.5	588.1	633.0	524.5	43.9	41.7	4.0	0.6753	0.5353	1.7014	1.1923	1.7014	1.1923
8	-3.271	-3.171	799.4	656.5	617.8	654.9	507.2	45.7	39.4	4.0	0.6862	0.5552	1.7265	1.1914	1.7265	1.1914
9	-6.105	-6.091	812.6	697.1	648.1	694.4	490.1	61.1	37.2	5.0	0.6956	0.5893	1.7812	1.2011	1.7812	1.2011
10	-6.988	-7.066	820.6	703.6	650.9	700.0	499.7	70.7	37.6	5.8	0.7001	0.5927	1.7909	1.2104	1.7909	1.2104
11	-8.014	-8.095	809.5	688.6	617.0	684.0	524.0	79.4	40.5	6.6	0.6849	0.5752	1.7717	1.2262	1.7717	1.2262

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	-4.11	-2.00	15.15	45.62	49.89	60.83	0.5227	0.1767	0.0358	0.9237	77.98	82.72	83.96	82.72	83.96
2	-4.99	-2.59	14.06	43.02	51.76	61.63	0.4943	0.1377	0.0290	0.9442	81.60	86.50	87.48	86.50	87.48
3	-6.05	-3.26	13.02	40.84	53.77	63.17	0.4648	0.1061	0.0232	0.9589	84.69	90.21	90.92	90.21	90.92
4	-7.06	-3.34	10.11	39.10	55.59	63.77	0.4269	0.0778	0.0189	0.9732	86.80	91.66	92.27	91.66	92.27
5	-5.75	-0.71	9.14	39.92	50.92	60.58	0.3950	0.0320	0.0087	0.9910	93.02	85.74	86.76	85.74	86.76
6	-5.98	-0.36	7.95	40.45	49.43	56.85	0.4083	0.0744	0.0213	0.9810	83.81	81.88	83.12	81.88	83.12
7	-8.05	-2.18	8.36	37.78	52.57	60.09	0.3746	0.0803	0.0234	0.9788	80.63	85.22	86.26	85.22	86.26
8	-10.19	-4.04	8.42	35.42	55.92	62.49	0.3515	0.0890	0.0264	0.9759	76.89	88.17	89.02	88.17	89.02
9	-12.45	-5.57	10.59	32.13	59.45	66.58	0.3089	0.0678	0.0211	0.9813	78.38	89.12	89.95	89.12	89.95
10	-12.34	-5.29	12.56	31.82	59.51	66.84	0.3105	0.0733	0.0231	0.9795	76.73	86.02	87.10	86.02	87.10
11	-10.17	-3.02	14.96	33.81	55.61	64.39	0.3279	0.0747	0.0238	0.9799	77.00	78.40	80.04	78.40	80.04

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 %	EFF-P TOT-STG %
10650.	183.20	1.1976	1.7391	86.61	87.59	1.1976	0.9746	86.61	207.28

ROTOR 2

RUN NO 13, SPEED CODE 10, 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	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	11.552	11.224	716.2	1296.4	710.9	913.6	87.0	919.7	7.0	45.1	0.6066	1.0766	830.4	871.0	0.8712	0.7598	1028.7	914.9
2	10.715	10.062	724.1	1265.0	718.8	894.2	87.5	894.8	6.9	44.9	0.6155	1.0487	853.9	889.2	0.8931	0.7413	1050.7	894.2
3	9.770	8.946	739.1	1223.1	733.9	884.6	86.8	844.6	6.7	43.6	0.6304	1.0127	878.1	908.2	0.9206	0.7343	1079.3	886.9
4	6.540	5.780	754.9	1092.2	751.9	864.3	67.0	667.8	5.1	37.7	0.6456	0.8997	953.2	968.6	0.9939	0.7539	1162.2	915.2
5	1.460	1.483	738.7	942.3	736.7	801.9	53.9	494.8	4.2	31.7	0.6293	0.7710	1056.8	1056.1	1.0601	0.8009	1244.4	978.8
6	-1.090	-0.680	705.5	824.3	704.5	714.0	38.0	412.0	3.1	30.0	0.5992	0.6702	1109.6	1102.7	1.0891	0.8077	1282.4	993.4
7	-2.154	-1.663	730.6	796.5	729.3	703.1	44.0	374.3	3.4	28.0	0.6221	0.6490	1136.2	1126.7	1.1184	0.8391	1313.3	1029.8
8	-3.109	-2.636	751.0	808.0	749.6	728.9	45.9	348.6	3.5	25.5	0.6412	0.6615	1163.0	1151.3	1.1486	0.8877	1345.3	1084.3
9	-6.144	-5.820	796.0	861.1	793.6	786.2	61.6	351.3	4.4	24.0	0.6801	0.7058	1244.5	1227.6	1.2171	0.9650	1424.5	1177.3
10	-7.232	-7.033	804.1	887.7	801.0	807.5	71.3	368.7	5.1	24.4	0.6848	0.7256	1271.9	1253.7	1.2291	0.9793	1443.3	1198.1
11	-8.341	-8.379	792.5	861.2	788.4	781.4	80.3	362.0	5.8	24.8	0.6692	0.6985	1299.4	1280.3	1.2260	0.9779	1451.8	1205.8

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	-3.28	1.04	17.36	49.24	64.96	79.90	0.3003	0.3606	0.0821	1.6113	76.48	74.87	46.20	-3.04	-743.5	48.8	2.7617
2	-3.14	1.31	13.46	47.17	66.11	79.77	0.3324	0.3762	0.0879	1.5850	74.23	72.52	46.81	-0.36	-766.4	5.6	2.7330
3	-3.18	1.40	11.63	43.07	67.85	80.52	0.3489	0.3772	0.0901	1.5376	71.88	70.14	47.17	4.10	-791.3	-63.5	2.6781
4	-2.00	2.79	9.64	30.55	69.26	82.47	0.3449	0.3154	0.0767	1.4269	69.45	67.89	49.75	19.20	-886.2	-300.8	2.4967
5	0.24	4.81	6.78	18.71	66.80	79.19	0.3126	0.2252	0.0523	1.3394	70.73	69.51	53.71	35.00	-1002.9	-561.3	2.2952
6	2.28	6.62	7.81	12.63	63.45	70.48	0.3097	0.2329	0.0497	1.2678	64.41	63.21	56.65	44.02	-1071.6	-690.8	2.1208
7	1.35	5.43	7.63	9.34	66.02	70.02	0.2901	0.2183	0.0455	1.2327	62.36	61.25	56.23	46.89	-1092.3	-752.5	2.0909
8	0.69	4.50	5.36	8.40	68.16	73.60	0.2616	0.1787	0.0377	1.2324	66.54	65.56	56.07	47.68	-1117.1	-802.7	2.1224
9	-0.79	1.89	0.86	8.07	72.13	80.65	0.2421	0.1423	0.0333	1.2571	71.85	70.94	56.02	47.96	-1182.9	-876.3	2.2357
10	-1.04	1.14	0.79	8.69	72.43	82.75	0.2431	0.1348	0.0331	1.2776	74.01	73.11	56.16	47.47	-1200.6	-885.0	2.2864
11	-0.53	1.17	3.82	7.51	70.31	79.15	0.2417	0.1289	0.0316	1.2634	74.01	73.14	56.99	49.47	-1219.0	-918.3	2.2402

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 %
1.3467	2.3343	78.83	81.16	41.23	1.1244	1.3422	70.11	71.32

STATOR 2

RUN NO 13, SPEED CODE 10, 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	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	8.734	0.716	1356.4	1092.3	1005.3	1073.2	910.7	-203.3	42.5	-10.7	1.1389	0.8780	2.3512	1.4338	1.3719	1.1936
2	7.726	0.509	1323.8	1110.6	982.5	1099.3	887.2	-158.0	42.3	-8.2	1.1089	0.8978	2.4148	1.4264	1.4019	1.1928
3	6.688	0.224	1281.2	1128.3	968.1	1113.9	839.1	-179.2	41.1	-9.1	1.0712	0.9193	2.4835	1.4136	1.4283	1.1865
4	3.864	-0.599	1147.9	1073.4	934.8	1058.6	666.2	-177.8	35.5	-9.5	0.9535	0.8809	2.4041	1.3768	1.3738	1.1582
5	0.823	-1.350	995.9	983.3	864.3	961.6	494.8	-205.8	29.8	-12.1	0.8205	0.8085	2.2355	1.3428	1.3034	1.1255
6	-0.800	-1.580	882.4	907.8	780.0	887.3	412.4	-191.8	27.8	-12.2	0.7221	0.7449	2.0981	1.3249	1.2528	1.1109
7	-1.758	-1.644	854.6	868.2	768.1	852.9	374.6	-162.3	26.0	-10.8	0.7007	0.7128	2.0328	1.3122	1.1996	1.1005
8	-2.698	-1.593	865.1	864.1	791.5	852.1	349.1	-143.5	23.8	-9.5	0.7128	0.7117	2.0245	1.3031	1.1760	1.0936
9	-4.769	-1.315	923.8	933.4	853.6	924.7	353.4	-126.6	22.5	-7.8	0.7629	0.7717	2.1142	1.3142	1.1889	1.0947
10	-5.337	-1.237	956.6	958.7	881.5	951.5	371.4	-117.8	22.9	-7.0	0.7884	0.7905	2.1423	1.3284	1.1970	1.0986
11	-5.962	-1.151	942.2	954.1	868.8	947.1	364.6	-114.7	22.8	-6.9	0.7715	0.7823	2.1145	1.3401	1.1925	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-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-3.50	-1.94	3.61	53.16	83.18	94.02	0.3803	0.2681	0.0595	0.8513	47.64	63.52	67.53	48.49	50.69
2	-2.61	-0.59	5.58	50.49	83.16	97.92	0.3444	0.2185	0.0498	0.8821	50.17	66.93	70.67	52.20	54.39
3	-3.05	-0.54	4.21	50.23	83.83	101.26	0.3095	0.1460	0.0338	0.9241	57.38	71.51	74.84	57.14	59.21
4	-7.52	-3.65	3.28	45.07	85.51	98.54	0.2525	0.0908	0.0222	0.9593	51.42	75.36	78.15	59.74	61.48
5	-12.43	-7.13	0.73	41.85	82.45	90.02	0.2051	0.0806	0.0211	0.9712	-99.50	75.15	77.75	62.30	63.66
6	-14.06	-8.27	0.53	40.02	74.53	82.56	0.1654	0.0469	0.0127	0.9858	124.64	72.37	75.04	59.64	60.88
7	-15.75	-9.76	1.90	36.74	74.08	79.31	0.1621	0.1015	0.0279	0.9718	514.04	71.81	74.42	52.60	53.76
8	-17.76	-11.56	3.06	33.33	77.43	79.52	0.1628	0.1585	0.0444	0.9544	-971.71	73.51	75.95	50.41	51.51
9	-18.78	-12.08	4.88	30.31	84.33	85.86	0.1418	0.1699	0.0494	0.9458	727.81	75.75	78.12	53.23	54.34
10	-19.06	-12.19	6.23	29.94	86.58	87.41	0.1487	0.1876	0.0551	0.9370	4233.20	73.88	76.48	53.19	54.34
11	-20.40	-13.30	7.54	29.73	83.81	85.62	0.1398	0.1721	0.0510	0.9440	908.95	69.97	72.90	54.67	55.76

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 %	EFF-P TOT-STG %
10650.	183.20	1.3467	2.2118	73.24	76.00	1.1244	0.9475	56.83	-392.45

TABLE XVI (b) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

DESIGN SPEED
STATOR 1 ($\beta^*_{des.} - \beta^*_{act.}$) = -5°
STATOR 2 ($\beta^*_{des.} - \beta^*_{act.}$) = $+2.5^{\circ}$

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 13, 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	16.921	18.275	625.1	1036.9	625.1	584.1	0.0	856.7	0.0	55.7	0.5782	0.9163	628.7	727.8	0.8199	0.5286	886.6	598.2
2	14.648	15.885	638.4	987.2	638.4	592.8	0.0	789.4	0.0	53.1	0.5913	0.8685	677.9	763.0	0.8624	0.5221	931.2	593.4
3	12.478	13.695	651.7	953.9	651.7	610.6	0.0	732.9	0.0	50.2	0.6045	0.8372	726.2	798.2	0.9051	0.5389	975.8	614.0
4	6.597	7.935	684.0	884.3	684.0	609.5	0.0	640.6	0.0	46.4	0.6368	0.7693	864.6	903.9	1.0264	0.5776	1102.4	664.0
5	1.017	1.512	702.5	786.1	702.5	543.6	0.0	567.8	0.0	46.2	0.6555	0.6741	1037.3	1044.7	1.1690	0.6202	1252.8	723.2
6	-0.586	-1.239	705.6	742.6	705.6	519.7	0.0	530.4	0.0	45.6	0.6586	0.6339	1120.3	1115.2	1.2359	0.6678	1324.0	782.4
7	-1.528	-2.496	706.6	751.1	706.6	547.2	0.0	514.5	0.0	43.2	0.6596	0.6417	1161.4	1150.3	1.2691	0.7167	1359.4	838.9
8	-2.858	-3.707	706.7	762.8	706.7	577.7	0.0	498.1	0.0	40.8	0.6598	0.6527	1202.3	1185.6	1.3021	0.7683	1394.7	897.9
9	-7.656	-7.458	696.0	775.8	696.0	607.5	0.0	482.5	0.0	38.4	0.6490	0.6617	1324.7	1291.2	1.3952	0.8626	1496.4	1011.5
10	-9.422	-8.813	687.9	782.1	687.9	609.4	0.0	490.2	0.0	38.7	0.6408	0.6649	1365.5	1326.4	1.4242	0.8796	1529.0	1034.7
11	-10.997	-10.208	678.1	770.8	678.1	573.2	0.0	515.4	0.0	41.9	0.6309	0.6496	1406.2	1361.6	1.4525	0.8614	1561.2	1022.1

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	-1.41	3.20	15.50	57.43	40.66	47.24	0.5534	0.0370	0.0080	1.8707	98.06	97.90	44.97	-12.46	-628.7	128.9	1.8707
2	-1.27	3.02	17.06	49.09	41.23	49.15	0.5686	0.0279	0.0064	1.8380	98.37	98.24	46.55	-2.54	-677.9	26.3	1.8380
3	-1.06	3.04	17.64	41.84	41.78	51.78	0.5584	-0.0026	-0.0006	1.8284	100.17	100.20	47.94	6.10	-726.2	-65.3	1.8284
4	0.06	3.53	13.68	28.20	43.04	53.81	0.5566	0.0064	0.0016	1.8108	99.49	99.45	51.56	23.36	-864.6	-263.3	1.8108
5	1.37	4.05	10.99	14.63	43.72	48.91	0.5590	0.0961	0.0217	1.7406	90.83	90.10	55.89	41.26	-1037.3	-476.9	1.7406
6	1.86	4.14	11.03	9.42	43.83	47.24	0.5335	0.1099	0.0231	1.7159	88.73	87.86	57.79	48.37	-1120.3	-584.8	1.7159
7	2.08	4.19	8.97	9.39	43.86	50.30	0.5027	0.0835	0.0177	1.7434	91.26	90.57	58.67	49.28	-1161.4	-635.8	1.7434
8	2.31	4.26	7.09	9.57	43.87	53.73	0.4714	0.0521	0.0111	1.7750	94.42	93.97	59.52	49.95	-1202.3	-687.4	1.7750
9	3.20	4.62	6.23	9.22	43.48	57.31	0.4358	0.0504	0.0107	1.8258	94.32	93.84	62.25	53.03	-1324.7	-808.7	1.8258
10	3.56	4.85	6.84	9.40	43.19	57.37	0.4372	0.0730	0.0156	1.8388	91.78	91.07	63.24	53.84	-1365.5	-836.2	1.8388
11	3.89	5.05	9.44	8.44	42.82	53.24	0.4650	0.1411	0.0293	1.8221	84.36	83.01	64.23	55.79	-1406.2	-846.2	1.8221

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 %
1.1954	1.7962	93.13	93.66	41.61	1.1954	1.7962	93.13	93.66

STATOR 1

RUN NO 13, 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	T02/ T01
1	17.999	14.826	1040.4	642.6	615.7	636.9	838.6	85.6	53.9	7.6	0.9199	0.5407	1.7258	1.1999	1.7258	1.1999
2	15.573	13.020	995.3	644.5	624.2	636.9	775.3	98.9	51.2	8.8	0.8767	0.5440	1.7363	1.1930	1.7363	1.1930
3	13.442	11.327	965.4	653.7	641.1	645.9	721.8	100.8	48.4	8.8	0.8488	0.5536	1.7533	1.1875	1.7533	1.1875
4	8.161	6.632	902.0	654.8	640.2	650.9	635.4	70.9	44.8	6.2	0.7865	0.5550	1.7610	1.1858	1.7610	1.1858
5	1.931	0.616	807.5	629.1	575.0	626.8	566.9	54.7	44.6	5.0	0.6942	0.5310	1.7233	1.1903	1.7233	1.1903
6	-1.143	-2.232	765.2	594.5	551.1	593.3	530.8	37.1	43.9	3.6	0.6548	0.5003	1.6816	1.1897	1.6816	1.1697
7	-2.467	-3.401	774.1	623.7	577.4	622.2	515.6	43.4	41.8	4.0	0.6631	0.5262	1.7097	1.1899	1.7097	1.1899
8	-3.547	-4.344	785.6	647.3	606.3	645.7	499.6	45.5	39.5	4.0	0.6740	0.5474	1.7350	1.1894	1.7350	1.1894
9	-6.221	-6.863	801.2	694.2	637.4	691.7	485.4	58.7	37.4	4.9	0.6853	0.5870	1.7929	1.1999	1.7929	1.1999
10	-7.060	-7.631	808.8	701.3	640.7	697.6	493.6	71.9	37.7	5.9	0.6896	0.5911	1.8016	1.2086	1.8016	1.2086
11	-8.046	-8.398	799.9	688.4	608.4	683.3	519.3	84.1	40.6	7.0	0.6763	0.5753	1.7829	1.2251	1.7829	1.2251

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	-3.68	-1.57	14.90	46.30	49.65	60.77	0.5221	0.1836	0.0372	0.9227	76.80	84.33	85.47	84.33	85.47
2	-4.60	-2.20	14.98	42.49	51.42	61.39	0.4890	0.1396	0.0293	0.9452	81.00	88.43	89.27	88.43	89.27
3	-6.10	-3.31	14.20	39.62	53.91	62.85	0.4583	0.1090	0.0238	0.9591	84.00	92.75	93.29	92.75	93.29
4	-7.23	-3.51	10.46	38.59	55.84	63.66	0.4230	0.0812	0.0197	0.9728	86.01	94.39	94.80	94.39	94.80
5	-5.93	-0.89	9.29	39.59	51.09	60.50	0.3920	0.0342	0.0093	0.9906	92.49	88.34	89.18	88.34	89.18
6	-6.09	-0.47	7.94	40.35	49.47	56.76	0.4061	0.0774	0.0221	0.9808	82.96	84.34	85.42	84.34	85.42
7	-8.02	-2.14	8.39	37.79	52.42	59.74	0.3739	0.0836	0.0243	0.9786	79.60	87.14	88.05	87.14	88.05
8	-10.07	-3.93	8.47	35.49	55.68	62.27	0.3489	0.0908	0.0269	0.9761	75.92	89.96	90.69	89.96	90.69
9	-12.25	-5.37	10.42	32.50	59.26	66.91	0.3015	0.0673	0.0209	0.9819	77.17	90.73	91.45	90.73	91.45
10	-12.24	-5.19	12.69	31.79	59.40	67.16	0.3001	0.0743	0.0234	0.9798	74.72	87.74	88.70	87.74	88.70
11	-10.03	-2.88	15.36	33.55	55.60	64.78	0.3164	0.0814	0.0259	0.9785	73.23	79.73	81.28	79.73	81.28

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 %	EFF-P TOT-STG %
10696.	183.20	1.1954	1.7503	88.68	89.52	1.1954	0.9744	88.68	205.32

ROTOR 2

RUN NO 13, 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'-I	V'-1 FT/SEC	V'-2 FT/SEC
1	11.580	11.128	709.4	1200.3	704.5	798.5	83.2	896.2	6.7	48.2	0.6007	0.9831	834.1	874.8	0.8719	0.6542	1029.6	798.8
2	10.772	9.887	717.7	1188.9	711.2	781.4	96.5	896.1	7.7	48.8	0.6102	0.9743	857.6	893.1	0.8856	0.6403	1041.7	781.4
3	9.828	8.700	733.2	1174.9	726.5	792.2	98.6	867.7	7.7	47.5	0.6259	0.9646	881.9	912.1	0.9120	0.6514	1068.4	793.4
4	6.170	5.289	754.9	1069.2	751.7	816.2	70.0	690.8	5.3	40.2	0.6465	0.8763	957.4	972.8	0.9959	0.7077	1163.0	863.5
5	0.108	0.589	735.5	892.3	733.5	738.0	54.3	501.5	4.2	34.2	0.6272	0.7257	1061.4	1060.7	1.0625	0.7531	1245.9	925.9
6	-2.838	-1.726	696.3	776.4	695.3	652.8	36.8	420.4	3.0	32.8	0.5915	0.6279	1114.5	1107.5	1.0895	0.7665	1282.5	947.8
7	-3.933	-2.698	719.0	730.8	717.6	619.6	44.1	387.5	3.5	32.0	0.6122	0.5910	1141.2	1131.7	1.1162	0.7831	1310.9	966.3
8	-4.726	-3.559	736.2	749.4	734.7	654.7	45.9	364.7	3.6	29.1	0.6281	0.6089	1168.1	1156.4	1.1444	0.8346	1341.3	1027.3
9	-7.306	-6.560	776.0	810.9	773.8	718.4	59.5	376.2	4.4	27.6	0.6618	0.6582	1250.0	1233.0	1.2109	0.9076	1419.8	1116.1
10	-8.128	-7.637	780.9	815.9	777.5	716.0	73.0	391.3	5.3	28.6	0.6637	0.6595	1277.5	1259.2	1.2185	0.9094	1433.6	1125.1
11	-8.824	-8.714	767.9	787.2	763.2	688.3	85.2	381.9	6.3	28.9	0.6470	0.6318	1305.1	1285.9	1.2123	0.9119	1438.9	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	-2.73	1.58	18.87	48.28	65.10	77.37	0.4093	0.3078	0.0701	1.6312	79.80	78.37	46.75	-1.53	-750.9	21.4	2.8150
2	-3.03	1.42	13.60	47.15	66.15	77.46	0.4335	0.3002	0.0701	1.6410	80.01	78.58	46.93	-0.22	-761.1	3.0	2.8483
3	-3.17	1.40	10.73	43.98	67.94	80.62	0.4321	0.2654	0.0635	1.6442	81.41	80.07	47.18	3.20	-783.4	-44.5	2.8809
4	-1.97	2.82	9.50	30.71	69.84	87.79	0.3957	0.1615	0.0393	1.5744	85.41	84.46	49.78	19.06	-887.4	-282.0	2.7728
5	0.46	5.04	8.93	16.78	67.17	81.30	0.3594	0.1036	0.0234	1.4452	87.03	86.35	53.93	37.15	-1007.1	-559.2	2.4856
6	2.80	7.14	10.24	10.72	63.42	71.48	0.3513	0.1268	0.0259	1.3623	81.45	80.63	57.17	46.45	-1077.7	-687.2	2.2942
7	1.94	6.02	10.93	6.63	65.89	67.91	0.3425	0.1501	0.0293	1.2998	75.32	74.40	56.81	50.18	-1097.1	-744.1	2.2295
8	1.39	5.20	8.03	6.42	67.84	72.46	0.3090	0.1164	0.0233	1.3019	79.53	78.77	56.77	50.35	-1122.2	-791.6	2.2621
9	0.11	2.79	2.82	7.01	71.68	79.47	0.2896	0.1172	0.0264	1.3151	78.89	78.06	56.92	49.92	-1190.5	-856.8	2.3584
10	-0.11	2.07	3.69	6.72	71.76	78.55	0.2950	0.1306	0.0303	1.3108	76.59	75.68	57.09	50.37	-1204.5	-867.9	2.3616
11	0.37	2.06	6.95	5.27	69.47	74.50	0.2873	0.1181	0.0271	1.2950	77.70	76.88	57.88	52.61	-1219.8	-904.0	2.3090

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 %
1.3511	2.5008	85.02	86.80	40.93	1.1302	1.4288	81.97	82.85

STATOR 2

RUN NO 13, 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	8.492	0.653	1245.3	933.8	873.7	928.8	887.3	-97.2	45.7	-6.0	1.0275	0.7374	2.5303	1.4281	1.4662	1.1901
2	7.269	0.393	1232.0	944.7	853.7	941.8	888.3	-74.0	46.3	-4.5	1.0167	0.7484	2.5648	1.4229	1.4782	1.1920
3	6.096	0.080	1216.3	962.7	858.8	958.7	861.2	-88.6	45.2	-5.3	1.0052	0.7673	2.6180	1.4133	1.4948	1.1895
4	3.438	-0.828	1107.9	955.8	868.1	954.0	688.3	-58.8	38.5	-3.5	0.9130	0.7715	2.6388	1.3793	1.4981	1.1632
5	0.950	-1.712	930.1	835.7	783.2	830.0	501.7	-97.5	32.6	-6.7	0.7598	0.6753	2.4170	1.3423	1.4052	1.1277
6	-0.401	-1.824	815.8	729.7	698.8	720.8	421.0	-113.7	31.0	-9.0	0.6623	0.5874	2.2459	1.3251	1.3336	1.1138
7	-1.281	-1.778	770.5	685.4	665.6	676.9	388.1	-107.7	30.2	-9.0	0.6255	0.5521	2.1854	1.3137	1.2740	1.1040
8	-2.189	-1.632	787.5	697.4	697.6	690.8	365.4	-95.6	27.6	-7.9	0.6423	0.5638	2.2019	1.3070	1.2672	1.0989
9	-4.196	-1.317	853.1	774.2	764.7	772.1	378.2	-57.3	26.3	-4.2	0.6956	0.6261	2.2973	1.3243	1.2813	1.1037
10	-4.889	-1.288	863.4	789.4	768.4	788.1	393.8	-45.2	27.2	-3.3	0.7014	0.6363	2.3104	1.3363	1.2824	1.1056
11	-5.747	-1.220	843.4	751.6	750.6	750.6	384.6	-38.5	27.2	-2.9	0.6808	0.6011	2.2397	1.3465	1.2563	1.0990

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	1.31	8.35	51.67	81.57	97.21	0.4282	0.2069	0.0465	0.8989	65.48	70.67	74.16	60.36	62.41
2	1.41	3.43	9.26	50.83	81.70	99.54	0.4124	0.2050	0.0470	0.9012	63.55	72.73	76.03	61.12	63.18
3	1.08	3.59	8.07	50.51	84.52	102.80	0.3916	0.1910	0.0446	0.9093	62.59	76.29	79.21	63.81	65.77
4	-4.60	-0.73	9.29	41.99	90.79	105.35	0.3053	0.1173	0.0291	0.9511	65.65	83.94	85.94	74.55	75.94
5	-9.58	-4.28	6.11	39.32	84.40	91.83	0.2737	0.0878	0.0233	0.9721	62.82	83.51	85.39	79.42	80.38
6	-10.86	-5.07	3.76	39.99	74.99	79.05	0.2866	0.0830	0.0227	0.9789	64.44	79.79	81.92	74.85	75.83
7	-11.51	-5.52	3.63	39.25	71.54	74.27	0.2914	0.0857	0.0237	0.9801	64.45	79.60	81.68	68.53	69.58
8	-13.93	-7.72	4.74	35.49	75.74	76.29	0.2812	0.1100	0.0310	0.9734	56.06	82.22	84.05	70.44	71.39
9	-14.96	-8.27	8.43	30.57	82.65	84.80	0.2423	0.0933	0.0273	0.9743	55.44	82.50	84.40	70.42	71.43
10	-14.79	-7.91	10.00	30.45	82.12	85.77	0.2366	0.0776	0.0229	0.9783	60.50	80.16	82.32	69.33	70.38
11	-16.03	-8.93	11.50	30.14	78.85	80.20	0.2590	0.1115	0.0332	0.9703	54.03	74.56	77.23	67.63	68.65

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 %	EFF-P TOT-STG %
10696.	183.20	1.3511	2.3981	80.63	82.83	1.1302	0.9589	71.90	1476.16

TABLE XVI (c) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

DESIGN SPEED
STATOR 1 ($\beta^*_{des.} - \beta^*_{act.}$) = −5°
STATOR 2 ($\beta^*_{des.} - \beta^*_{act.}$) = +2.5°

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 13, 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'-I	V'-1 FT/SEC	V'-2 FT/SEC
1	16.979	18.291	623.1	1051.0	623.1	584.5	0.0	873.4	0.0	56.2	0.5761	0.9295	626.5	725.3	0.8170	0.5333	863.6	603.0
2	14.737	15.922	636.2	1002.0	636.2	599.1	0.0	803.3	0.0	53.3	0.5891	0.8824	675.6	760.4	0.8593	0.5289	928.0	600.6
3	12.575	13.749	649.6	968.9	649.6	616.5	0.0	747.5	0.0	50.5	0.6024	0.8511	723.7	795.5	0.9018	0.5432	972.5	618.4
4	6.727	8.026	682.2	898.7	682.2	615.0	0.0	655.3	0.0	46.8	0.6350	0.7820	861.6	900.8	1.0229	0.5762	1099.0	662.2
5	1.155	1.672	701.8	801.5	701.8	546.6	0.0	584.3	0.0	46.8	0.6548	0.6871	1033.7	1041.1	1.1658	0.6119	1249.4	713.9
6	−0.503	−1.075	705.7	758.7	705.7	527.4	0.0	545.5	0.0	46.0	0.6588	0.6474	1116.5	1111.3	1.2330	0.6600	1320.8	773.5
7	−1.483	−2.348	707.1	765.4	707.1	553.5	0.0	528.7	0.0	43.7	0.6602	0.6536	1157.4	1146.4	1.2663	0.7083	1356.3	829.4
8	−2.840	−3.583	707.5	776.3	707.5	584.3	0.0	511.0	0.0	41.2	0.6605	0.6639	1198.2	1181.5	1.2992	0.7607	1391.5	889.4
9	−7.687	−7.408	696.9	788.0	696.9	611.8	0.0	496.6	0.0	39.0	0.6498	0.6714	1320.1	1286.8	1.3920	0.8515	1492.8	999.4
10	−9.460	−8.765	688.8	794.6	688.8	614.8	0.0	503.5	0.0	39.2	0.6416	0.6750	1360.8	1321.9	1.4208	0.8695	1525.2	1023.6
11	−11.030	−10.199	678.9	780.2	678.9	574.0	0.0	528.4	0.0	42.5	0.6317	0.6568	1401.4	1356.9	1.4489	0.8466	1557.2	1008.0

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	−1.41	3.20	13.72	59.22	40.58	46.46	0.5506	0.0772	0.0165	1.8630	96.01	95.66	44.98	−14.24	−626.5	148.2	1.6630
2	−1.26	3.03	15.51	50.65	41.14	48.92	0.5625	0.0560	0.0129	1.8341	96.78	96.50	46.55	−4.09	−675.6	42.9	1.8341
3	−1.06	3.05	15.98	43.50	41.70	51.55	0.5558	0.0242	0.0058	1.8260	98.47	98.35	47.95	4.45	−723.7	−48.0	1.8260
4	0.05	3.51	12.08	29.79	42.97	53.67	0.5603	0.0285	0.0071	1.8111	97.77	97.59	51.55	21.76	−861.6	−245.5	1.8111
5	1.31	3.99	9.51	16.04	43.69	48.91	0.5689	0.1154	0.0266	1.7458	89.23	88.37	55.82	39.78	−1033.7	−456.8	1.7458
6	1.77	4.05	9.67	10.69	43.83	47.58	0.5426	0.1248	0.0269	1.7238	87.48	86.51	57.70	47.01	−1116.5	−565.8	1.7238
7	1.98	4.08	7.82	10.43	43.88	50.53	0.5118	0.0979	0.0212	1.7505	89.96	89.16	58.56	48.13	−1157.4	−617.7	1.7505
8	2.20	4.15	6.06	10.50	43.89	54.02	0.4794	0.0645	0.0141	1.7826	93.22	92.66	59.41	48.92	−1198.2	−670.5	1.7826
9	3.09	4.51	5.40	9.95	43.52	57.38	0.4459	0.0650	0.0141	1.8336	92.82	92.20	62.14	52.19	−1320.1	−790.2	1.8336
10	3.45	4.74	6.01	10.12	43.22	57.56	0.4462	0.0853	0.0186	1.8477	90.58	89.74	63.13	53.01	−1360.8	−818.4	1.8477
11	3.79	4.95	8.64	6.94	42.85	53.00	0.4758	0.1552	0.0327	1.8263	83.06	81.59	64.13	55.18	−1401.4	−828.6	1.8263

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT
1.1997	1.8001	91.49	92.15	41.59

TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.1997	1.8001	91.49	92.15

STATOR 1

RUN NO 13, 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	17.979	14.806	1053.8	637.2	616.0	630.9	855.0	89.4	54.4	8.0	0.9324	0.5351	1.7241	1.2032	1.7241	1.2032
2	15.559	12.997	1009.5	639.1	629.9	632.1	788.9	94.0	51.5	8.4	0.8901	0.5386	1.7345	1.1956	1.7345	1.1956
3	13.447	11.311	979.9	648.3	646.7	641.4	736.2	94.0	48.7	8.3	0.8621	0.5480	1.7509	1.1905	1.7509	1.1905
4	8.204	6.672	916.0	652.1	645.3	648.4	650.0	69.1	45.2	6.1	0.7989	0.5518	1.7610	1.1894	1.7610	1.1894
5	1.999	0.827	822.7	631.6	580.1	629.4	583.4	51.9	45.1	4.7	0.7070	0.5320	1.7295	1.1952	1.7295	1.1952
6	−1.053	−1.940	781.4	595.5	559.1	594.4	546.0	36.4	44.3	3.5	0.6685	0.5002	1.6880	1.1944	1.6880	1.1944
7	−2.371	−3.118	788.7	624.3	584.3	622.8	529.7	42.1	42.2	3.9	0.6753	0.5257	1.7167	1.1944	1.7167	1.1944
8	−3.452	−4.113	799.6	648.9	613.8	647.3	512.5	44.4	39.9	3.9	0.6857	0.5478	1.7443	1.1936	1.7443	1.1936
9	−6.138	−6.803	814.2	694.6	643.0	691.9	499.6	60.8	37.9	5.0	0.6959	0.5860	1.8011	1.2050	1.8011	1.2050
10	−6.985	−7.606	622.0	702.6	647.1	698.7	506.9	73.8	38.2	6.1	0.7005	0.5910	1.8105	1.2134	1.8105	1.2134
11	−7.997	−8.394	810.0	689.3	610.5	684.8	532.4	78.4	41.2	6.6	0.6842	0.5750	1.7909	1.2298	1.7909	1.2298

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	−3.17	−1.06	15.31	46.41	48.86	60.15	0.5357	0.1737	0.0352	0.9255	78.73	82.82	84.06	82.82	84.06
2	−4.37	−1.97	14.61	43.09	51.14	60.91	0.5052	0.1337	0.0281	0.9463	82.46	87.05	88.00	87.05	88.00
3	−5.78	−3.00	13.68	40.46	53.63	62.35	0.4764	0.1068	0.0233	0.9590	84.97	91.04	91.70	91.04	91.70
4	−6.80	−3.08	10.33	39.14	55.65	63.33	0.4391	0.0801	0.0194	0.9725	86.83	92.59	93.14	92.59	93.14
5	−5.36	−0.32	9.02	40.43	51.06	60.69	0.4068	0.0311	0.0085	0.9912	93.47	86.72	87.68	86.72	87.68
6	−5.70	−0.08	7.86	40.82	49.80	56.85	0.4232	0.0786	0.0225	0.9798	83.73	82.93	84.12	82.93	84.12
7	−7.58	−1.71	8.26	38.34	52.66	59.84	0.3903	0.0802	0.0234	0.9788	81.69	85.82	86.83	85.82	86.83
8	−9.70	−3.55	8.36	35.97	55.99	62.53	0.3635	0.0839	0.0248	0.9773	79.16	88.93	89.74	88.93	89.74
9	−11.70	−4.82	10.59	32.88	59.38	66.99	0.3168	0.0643	0.0200	0.9822	80.04	89.23	90.07	89.23	90.07
10	−11.78	−4.73	12.83	32.10	59.63	67.34	0.3141	0.0718	0.0226	0.9799	77.52	86.55	87.60	86.55	87.60
11	−9.43	−2.28	14.88	34.64	55.43	64.98	0.3311	0.0724	0.0230	0.9805	77.66	78.73	80.38	78.73	80.38

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
10659.	183.10	1.1997	1.7551	87.23	88.18

TO2/TO1	PO2/PO1	EFF-AD STAGE %	EFF-P TOT-STG %
1.1997	0.9750	87.23	204.74

ROTOR 2

RUN NO 13, 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'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	11.574	11.069	702.8	1147.6	697.4	736.1	86.9	880.4	7.1	50.0	0.5939	0.9335	831.2	871.8	0.8619	0.5988	1020.0	736.2
2	10.762	9.785	710.8	1132.6	704.9	718.1	91.7	875.9	7.4	50.5	0.6032	0.9212	854.7	890.0	0.8814	0.5842	1038.8	718.2
3	9.816	8.569	725.9	1116.8	720.0	731.3	92.0	844.1	7.3	49.0	0.6183	0.9099	878.9	909.0	0.9086	0.5982	1066.6	734.2
4	6.159	5.123	748.5	1019.9	745.4	746.8	68.2	694.6	5.2	42.9	0.6395	0.8286	954.1	969.5	0.9891	0.6465	1157.8	795.8
5	0.409	0.634	734.1	866.0	732.3	668.6	51.7	550.3	4.0	39.5	0.6245	0.6961	1057.8	1057.1	1.0587	0.6743	1244.4	838.9
6	-2.296	-1.486	697.6	778.8	696.7	601.3	36.2	494.9	3.0	39.4	0.5915	0.6222	1110.6	1103.7	1.0857	0.6836	1280.6	855.7
7	-3.421	-2.434	722.2	766.1	721.0	602.4	42.7	473.3	3.4	38.1	0.6139	0.6129	1137.3	1127.8	1.1141	0.7117	1310.7	889.6
8	-4.413	-3.373	742.4	781.2	741.1	632.2	44.8	458.8	3.5	35.9	0.6327	0.6268	1164.1	1152.4	1.1440	0.7530	1342.4	938.4
9	-7.416	-6.603	780.8	823.9	778.3	676.9	61.7	469.7	4.5	34.7	0.6647	0.6590	1245.7	1228.7	1.2063	0.8134	1416.9	1017.0
10	-8.301	-7.739	784.9	826.8	781.4	668.0	74.9	487.3	5.5	36.0	0.6660	0.6580	1273.1	1254.8	1.2138	0.8097	1430.5	1017.5
11	-8.965	-8.810	770.4	787.4	766.3	631.5	79.5	470.3	5.9	36.6	0.6479	0.6214	1300.6	1281.5	1.2124	0.8113	1441.6	1028.0

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	-2.69	1.62	19.73	47.46	64.45	77.38	0.4607	0.1738	0.0396	1.6981	88.78	87.92	46.79	-0.67	-744.3	8.6	2.9277
2	-2.71	1.74	14.95	46.12	65.61	77.01	0.4890	0.1856	0.0434	1.6994	87.72	86.77	47.25	1.13	-763.0	-14.2	2.9470
3	-2.79	1.79	12.59	42.50	67.36	80.33	0.4831	0.1578	0.0376	1.6979	88.97	88.12	47.56	5.06	-786.9	-64.9	2.9711
4	-1.78	3.01	10.64	29.76	69.34	86.16	0.4531	0.0872	0.0211	1.6354	92.35	91.80	49.97	20.20	-885.9	-274.9	2.8801
5	0.48	5.06	8.94	16.79	67.14	78.75	0.4400	0.0719	0.0163	1.5329	91.96	91.46	53.95	37.16	-1006.1	-506.8	2.6478
6	2.66	7.00	9.12	11.70	63.55	70.69	0.4384	0.0892	0.0186	1.4905	89.22	88.60	57.03	45.33	-1074.5	-608.8	2.5123
7	1.74	5.82	8.08	9.28	66.14	71.29	0.4214	0.0962	0.0199	1.4554	87.43	86.75	56.61	47.33	-1094.6	-654.5	2.5027
8	1.09	4.90	5.27	8.88	68.36	75.47	0.3972	0.0834	0.0176	1.4543	88.63	88.02	56.47	47.59	-1119.3	-693.5	2.5387
9	-0.18	2.50	1.07	8.46	72.00	80.79	0.3820	0.1008	0.0235	1.4562	85.74	84.97	56.63	48.17	-1184.0	-759.0	2.6236
10	-0.37	1.81	2.19	7.97	72.09	79.05	0.3924	0.1219	0.0291	1.4498	82.88	81.96	56.83	48.86	-1198.2	-767.6	2.6252
11	0.30	2.00	6.35	5.81	69.75	73.61	0.3883	0.1200	0.0279	1.4245	82.43	81.54	57.81	52.01	-1221.1	-811.2	2.5508

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 %
1.3747	2.6916	86.97	88.63	40.86	1.1458	1.5336	88.55	89.22

STATOR 2

RUN NO 13, 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	8.421	0.610	1183.5	811.7	800.5	811.2	871.7	-27.8	47.7	-2.0	0.9680	0.6335	2.7793	1.4251	1.6120	1.1844
2	7.128	0.297	1167.1	823.0	779.9	822.8	868.3	-18.8	48.3	-1.3	0.9543	0.6443	2.8104	1.4199	1.6209	1.1671
3	5.895	-0.087	1150.0	845.3	787.9	844.8	837.7	-29.1	46.9	-2.0	0.9416	0.6659	2.8669	1.4098	1.6381	1.1840
4	3.078	-1.180	1050.3	815.5	790.4	814.3	691.6	-44.0	41.2	-3.1	0.8569	0.6471	2.8265	1.3830	1.6055	1.1626
5	0.492	-1.807	894.6	692.1	705.7	687.8	549.9	-77.1	37.9	-6.4	0.7214	0.5470	2.6089	1.3636	1.5113	1.1409
6	-0.843	-1.775	808.2	615.8	638.7	610.3	495.2	-82.3	37.8	-7.7	0.6475	0.4851	2.4960	1.3561	1.4801	1.1354
7	-1.580	-1.658	795.2	601.3	638.6	596.8	473.8	-73.0	36.5	-7.0	0.6380	0.4744	2.4767	1.3493	1.4402	1.1297
8	-2.248	-1.503	810.0	628.2	666.9	625.0	459.8	-63.6	34.6	-5.8	0.6518	0.4973	2.5113	1.3460	1.4392	1.1277
9	-3.985	-1.285	858.4	692.0	716.9	691.4	472.1	-28.5	33.4	-2.4	0.6890	0.5467	2.5869	1.3645	1.4364	1.1324
10	-4.676	-1.275	866.1	699.2	714.0	699.1	490.2	-15.3	34.5	-1.3	0.6921	0.5499	2.5881	1.3781	1.4294	1.1356
11	-5.597	-1.215	834.6	657.6	687.2	657.5	473.7	-9.9	34.7	-0.9	0.6618	0.5131	2.5174	1.3894	1.4058	1.1296

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	1.74	3.30	12.36	49.65	81.84	99.75	0.4850	0.1122	0.0253	0.9493	84.10	79.46	82.14	78.69	80.06
2	3.34	5.36	12.44	49.57	81.47	102.02	0.4691	0.1043	0.0240	0.9538	84.37	81.47	83.92	78.51	79.91
3	2.75	5.25	11.37	48.87	84.40	106.23	0.4410	0.0810	0.0190	0.9648	86.71	85.34	87.31	81.75	82.97
4	-1.83	2.04	9.73	44.32	89.32	104.08	0.3947	0.0447	0.0111	0.9831	91.00	89.93	91.27	88.50	89.24
5	-4.30	1.00	6.41	44.30	81.79	87.00	0.4125	0.0456	0.0121	0.9867	90.24	86.40	88.08	88.34	88.99
6	-4.14	1.65	5.05	45.42	73.98	76.57	0.4359	0.0263	0.0072	0.9936	94.32	83.62	85.55	87.05	87.74
7	-5.19	0.80	5.69	43.51	74.48	75.04	0.4374	0.0434	0.0121	0.9896	90.99	84.43	86.25	84.21	84.99
8	-6.99	-0.79	6.80	40.36	78.46	79.03	0.4084	0.0420	0.0119	0.9896	90.69	86.74	88.32	85.39	86.12
9	-7.92	-1.22	10.31	35.73	83.99	86.69	0.3649	0.0501	0.0147	0.9864	87.64	85.32	87.12	81.83	82.73
10	-7.45	-0.57	12.02	35.76	82.73	86.69	0.3660	0.0517	0.0153	0.9859	87.21	82.30	84.47	78.72	79.76
11	-8.58	-1.48	13.57	35.51	78.21	80.13	0.3859	0.0514	0.0154	0.9869	88.07	77.25	79.96	78.35	79.36

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 %	EFF-P TOT-STG %
10659.	183.10	1.3747	2.6444	85.19	87.04	1.1458	0.9825	84.67	404.24

APPENDIX C

TABLE XVI (d) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

DESIGN SPEED
STATOR 1 $(\beta^*_{des.} - \beta^*_{act.}) = -5^{\circ}$
STATOR 2 $(\beta^*_{des.} - \beta^*_{act.}) = +2.5^{\circ}$

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 13, SPEED CODE 10, POINT NO 14

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	16.869	18.403	591.3	1041.4	591.3	568.3	0.0	872.7	0.0	57.0	0.5449	0.9197	626.1	724.8	0.7937	0.5186	861.2	587.2
2	14.583	16.124	603.9	996.4	603.9	569.4	0.0	817.6	0.0	55.2	0.5573	0.8752	675.1	759.9	0.8359	0.5028	905.8	572.3
3	12.462	14.016	616.5	961.0	616.5	580.0	0.0	766.2	0.0	52.9	0.5696	0.8412	723.3	795.0	0.8781	0.5084	950.3	580.7
4	6.810	8.421	647.8	891.9	647.8	582.6	0.0	675.3	0.0	49.2	0.6007	0.7733	861.1	900.3	0.9991	0.5415	1077.6	624.5
5	1.153	2.145	669.0	822.3	669.0	535.6	0.0	624.0	0.0	49.4	0.6217	0.7025	1033.1	1040.5	1.1439	0.5796	1230.7	678.5
6	-0.703	-0.644	673.3	786.7	673.3	510.4	0.0	601.3	0.0	49.7	0.6261	0.6693	1115.8	1110.6	1.2118	0.6120	1303.2	721.1
7	-1.691	-1.971	674.7	790.2	674.7	531.1	0.0	585.0	0.0	47.8	0.6275	0.6704	1156.6	1145.7	1.2454	0.6553	1339.1	772.3
8	-2.976	-3.273	675.2	795.1	675.2	555.0	0.0	569.3	0.0	45.7	0.6280	0.6748	1197.5	1180.8	1.2786	0.7008	1374.7	825.7
9	-7.517	-7.250	667.0	806.1	667.0	582.4	0.0	557.2	0.0	43.7	0.6198	0.6806	1319.3	1286.0	1.3737	0.7877	1478.3	932.9
10	-9.220	-8.666	660.3	817.1	660.3	589.0	0.0	566.4	0.0	43.8	0.6130	0.6878	1360.0	1321.1	1.4036	0.8058	1511.8	957.3
11	-10.844	-10.127	651.5	816.7	651.5	566.8	0.0	588.1	0.0	45.9	0.6043	0.6827	1400.5	1356.1	1.4328	0.7979	1544.7	954.5

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	%EFF-P TOT	%EFF-A TOT	B'-1 DEGREE	B'-2 DEGREE	VΘ'-1 FT/SEC	VΘ'-2 FT/SEC	PO/PO INLET
1	0.06	4.67	13.34	61.05	39.14	45.72	0.5575	0.0652	0.0139	1.8707	96.78	96.49	46.44	-14.61	-626.1	147.9	1.8707
2	0.19	4.49	13.81	53.80	39.72	46.97	0.5874	0.0655	0.0150	1.8476	96.42	96.11	48.01	-5.79	-675.1	57.7	1.8476
3	0.40	4.50	14.38	46.56	40.29	48.94	0.5901	0.0465	0.0111	1.8363	97.21	96.98	49.40	2.85	-723.3	-28.8	1.8363
4	1.46	4.93	11.45	31.83	41.62	51.42	0.5908	0.0438	0.0109	1.8293	96.78	96.51	52.97	21.14	-861.1	-225.0	1.8293
5	2.55	5.23	7.61	19.19	42.47	48.49	0.6005	0.1217	0.0288	1.8101	89.54	88.65	57.07	37.88	-1033.1	-416.5	1.8101
6	2.95	5.23	7.59	13.95	42.64	46.67	0.5903	0.1497	0.0335	1.7993	86.40	85.25	58.89	44.94	-1115.8	-509.4	1.7993
7	3.15	5.25	6.23	13.19	42.69	49.08	0.5622	0.1307	0.0292	1.8209	87.84	86.80	59.73	46.54	-1156.6	-560.6	1.8209
8	3.34	5.29	4.89	12.80	42.71	51.84	0.5337	0.1084	0.0242	1.8467	89.66	88.75	60.56	47.75	-1197.5	-611.4	1.8467
9	4.09	5.52	4.50	11.84	42.39	55.29	0.4996	0.1111	0.0246	1.9051	88.92	87.89	63.14	51.30	-1319.3	-728.7	1.9051
10	4.38	5.68	4.94	12.13	42.13	55.94	0.4996	0.1279	0.0285	1.9302	87.26	86.05	64.07	51.94	-1360.0	-754.7	1.9302
11	4.68	5.83	7.12	11.55	41.77	53.41	0.5199	0.1758	0.0386	1.9337	82.64	80.99	65.01	53.46	-1400.5	-768.0	1.9337

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 %
1.2158	1.8560	89.47	90.33	40.41	1.2158	1.8560	89.47	90.33

STATOR 1

RUN NO 13, SPEED CODE 10, POINT NO 14

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	18.199	15.023	1040.4	565.5	593.8	565.0	854.3	71.4	55.4	7.1	0.9187	0.4757	1.7445	1.2029	1.7445	1.2029
2	15.925	13.389	999.7	575.1	595.2	569.3	803.2	81.5	53.6	8.1	0.8786	0.4812	1.7573	1.1994	1.7573	1.1994
3	13.874	11.823	967.6	581.6	605.5	575.6	754.8	83.1	51.4	8.2	0.8479	0.4878	1.7702	1.1956	1.7702	1.1956
4	8.703	7.431	905.1	593.7	608.7	590.1	669.8	64.9	47.8	6.3	0.7862	0.4985	1.7934	1.1950	1.7934	1.1950
5	2.741	1.790	640.3	582.9	564.2	580.5	622.8	53.5	47.8	5.3	0.7194	0.4864	1.7842	1.2078	1.7842	1.2078
6	-0.241	-0.957	808.9	571.3	540.6	569.0	601.7	50.7	48.1	5.1	0.6881	0.4749	1.7732	1.2139	1.7732	1.2139
7	-1.646	-2.207	810.9	590.6	560.3	568.0	586.2	55.7	46.3	5.4	0.6897	0.4915	1.7941	1.2149	1.7941	1.2149
8	-2.886	-3.312	816.5	613.3	583.6	610.4	571.1	59.3	44.4	5.6	0.6947	0.5112	1.8203	1.2156	1.8203	1.2156
9	-6.027	-6.387	830.9	656.2	613.3	652.3	560.5	71.4	42.5	6.3	0.7036	0.5458	1.8755	1.2296	1.8755	1.2296
10	-6.995	-7.324	843.2	673.2	621.2	667.9	570.2	84.5	42.6	7.2	0.7119	0.5584	1.8966	1.2395	1.8966	1.2395
11	-8.044	-8.250	844.9	672.1	602.2	666.3	592.5	88.0	44.7	7.6	0.7085	0.5537	1.8936	1.2555	1.8936	1.2555

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/ P01	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-2.16	-0.05	14.46	48.25	47.61	56.10	0.5988	0.1603	0.0325	0.9325	82.10	84.86	85.98	84.86	85.98
2	-2.25	0.15	14.32	45.50	48.97	56.96	0.5716	0.1243	0.0261	0.9508	85.33	87.58	88.51	87.56	88.51
3	-3.17	-0.39	13.56	43.18	50.83	56.03	0.5468	0.0962	0.0210	0.9638	88.00	90.57	91.28	90.57	91.28
4	-4.24	-0.52	10.53	41.50	53.24	59.99	0.5044	0.0586	0.0142	0.9803	91.59	93.08	93.61	93.08	93.61
5	-2.68	2.37	9.57	42.56	50.53	58.42	0.4907	0.0500	0.0136	0.9854	91.81	86.49	87.52	86.49	87.52
6	-1.96	3.66	9.45	42.97	48.66	56.92	0.4890	0.0542	0.0155	0.9853	90.66	83.05	84.33	83.05	84.33
7	-3.50	2.38	9.81	40.88	51.16	59.00	0.4629	0.0506	0.0147	0.9862	90.68	84.48	85.68	84.48	85.66
8	-5.20	0.94	9.99	38.84	53.84	61.54	0.4357	0.0494	0.0146	0.9864	90.25	86.51	87.57	86.51	87.57
9	-7.12	-0.24	11.81	36.24	57.38	65.84	0.3955	0.0540	0.0167	0.9848	87.74	85.63	86.83	85.63	86.83
10	-7.30	-0.25	14.01	35.40	58.09	67.18	0.3857	0.0593	0.0186	0.9830	86.10	83.67	85.05	83.67	85.05
11	-5.98	1.17	15.87	37.10	55.84	66.23	0.3984	0.0727	0.0231	0.9793	83.17	78.24	80.08	78.24	80.08

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 %	EFF-P TOT-STG %
10653.	177.90	1.2158	1.8167	86.11	87.21	1.2158	0.9789	86.11	187.70

ROTOR 2

RUN NO 13, SPEED CODE 10, POINT NO 14

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	11.742	11.035	609.4	1066.3	605.5	599.5	69.4	881.9	6.5	55.7	0.5106	0.8558	830.7	871.2	0.8150	0.4812	972.7	599.6
2	11.054	9.744	621.6	1054.1	616.5	607.0	79.3	861.6	7.3	54.7	0.5222	0.8468	854.1	889.5	0.8318	0.4881	990.2	607.6
3	10.166	8.522	635.2	1040.4	630.0	628.9	81.2	828.6	7.4	52.7	0.5351	0.8374	876.4	908.4	0.8560	0.5103	1016.0	633.9
4	6.581	5.110	666.8	970.8	663.7	654.3	64.2	717.2	5.5	47.6	0.5635	0.7797	953.5	968.9	0.9379	0.5630	1109.7	701.1
5	1.082	0.837	670.1	855.1	666.0	606.5	53.4	602.7	4.6	44.8	0.5634	0.6787	1057.1	1056.4	1.0136	0.6012	1205.7	757.5
6	-1.592	-1.245	662.1	801.7	660.1	573.9	50.8	559.8	4.4	44.3	0.5547	0.6328	1109.9	1103.1	1.0455	0.6236	1248.0	790.2
7	-2.621	-2.262	679.6	795.3	677.3	576.9	56.0	547.5	4.7	43.5	0.5701	0.6277	1136.6	1127.1	1.0697	0.6455	1275.3	817.8
8	-3.941	-3.263	700.4	801.3	697.9	593.9	59.7	537.9	4.9	42.1	0.5885	0.6329	1163.4	1151.7	1.0972	0.6746	1305.8	854.1
9	-7.113	-6.491	740.3	833.5	736.8	630.4	72.2	544.8	5.6	40.7	0.6207	0.6544	1244.9	1227.9	1.1613	0.7300	1385.0	929.6
10	-8.040	-7.612	754.3	841.3	749.4	629.8	85.5	557.8	6.5	41.4	0.6306	0.6579	1272.3	1254.1	1.1735	0.7341	1403.6	936.8
11	-8.788	-8.709	752.0	819.3	746.7	611.0	89.2	545.8	6.8	41.7	0.6243	0.6360	1299.8	1280.7	1.1806	0.7420	1422.4	955.8

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	1.97	6.26	19.39	52.46	59.13	67.50	0.5769	0.2214	0.0505	1.6987	87.05	86.05	51.45	-1.01	-761.3	10.6	2.9633
2	1.55	6.00	16.42	46.90	60.48	69.72	0.5748	0.1901	0.0444	1.7024	88.46	87.56	51.50	2.60	-774.9	-27.7	2.9891
3	1.38	5.96	14.73	44.53	62.05	73.84	0.5543	0.1468	0.0349	1.7048	90.59	89.85	51.73	7.20	-797.1	-79.7	3.0147
4	1.56	6.36	11.47	32.30	65.29	80.28	0.5192	0.0922	0.0221	1.6665	92.75	92.21	53.33	21.03	-889.3	-251.7	2.9670
5	2.89	7.47	8.58	19.56	64.70	75.91	0.5002	0.0759	0.0172	1.5930	92.62	92.11	56.36	36.80	-1003.8	-453.7	2.6426
6	3.67	8.01	7.19	14.64	63.51	71.99	0.4869	0.0751	0.0162	1.5627	92.07	91.56	58.05	43.40	-1059.1	-543.2	2.7713
7	3.02	7.10	5.83	12.80	65.34	72.75	0.4753	0.0798	0.0172	1.5470	91.19	90.63	57.89	45.09	-1080.6	-579.6	2.7742
8	2.27	6.08	3.56	11.76	67.60	75.37	0.4597	0.0817	0.0178	1.5385	90.62	90.03	57.65	45.88	-1103.7	-613.8	2.7992
9	0.99	3.67	0.09	10.61	71.38	80.00	0.4468	0.1075	0.0255	1.5370	87.08	86.28	57.80	47.19	-1172.8	-683.1	2.8622
10	0.45	2.63	1.08	9.90	72.41	79.50	0.4521	0.1226	0.0299	1.5296	85.15	84.23	57.65	47.75	-1186.8	-696.2	2.9006
11	0.73	2.43	4.50	6.09	71.40	76.29	0.4480	0.1239	0.0300	1.5093	84.50	83.57	58.24	50.16	-1210.6	-735.0	2.8582

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 %
1.4068	2.8857	86.59	88.41	38.61	1.1571	1.5884	89.32	90.00

STATOR 2

RUN NO 13, SPEED CODE 10, POINT NO 14

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	8.356	0.792	1087.1	620.2	647.6	619.9	873.1	-20.4	53.7	-1.9	0.8749	0.4755	2.7982	1.4297	1.6040	1.1865
2	7.074	0.656	1074.3	642.5	651.4	642.1	854.3	-22.0	52.9	-2.0	0.8654	0.4945	2.8370	1.4240	1.6170	1.1864
3	5.911	0.447	1060.1	670.7	669.0	670.3	822.4	-23.6	51.0	-2.0	0.8556	0.5191	2.8878	1.4150	1.6344	1.1825
4	3.257	-0.308	990.2	683.9	686.1	683.4	714.0	-27.4	46.2	-2.3	0.7971	0.5333	2.9216	1.3976	1.6309	1.1697
5	0.586	-1.009	675.8	616.4	636.0	614.1	602.1	-53.4	43.4	-5.0	0.6967	0.4790	2.8162	1.3929	1.5777	1.1539
6	-0.692	-1.067	824.1	572.4	604.5	569.5	560.1	-57.9	42.8	-5.8	0.6520	0.4434	2.7522	1.3930	1.5511	1.1480
7	-1.358	-1.033	818.5	567.3	607.8	564.6	548.2	-54.9	42.0	-5.6	0.6475	0.4394	2.7437	1.3920	1.5344	1.1458
8	-2.031	-0.973	825.4	583.1	625.1	581.1	539.0	-48.5	40.7	-4.6	0.6535	0.4524	2.7633	1.3912	1.5221	1.1446
9	-3.997	-1.017	864.4	645.9	668.8	645.7	547.7	-16.4	39.3	-1.4	0.6811	0.4992	2.8379	1.4132	1.5149	1.1499
10	-4.767	-1.093	876.8	661.9	673.6	661.8	561.3	9.6	39.9	0.8	0.6881	0.5096	2.8535	1.4271	1.5058	1.1520
11	-5.693	-1.120	861.2	636.2	663.0	636.2	549.6	-0.1	39.7	-0.0	0.6714	0.4864	2.8053	1.4409	1.4813	1.1482

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	7.73	9.28	12.43	55.56	71.88	83.06	0.6145	0.1418	0.0320	0.9443	83.17	79.20	81.94	76.11	77.63
2	7.93	9.95	11.79	54.82	73.80	86.81	0.5894	0.1289	0.0297	0.9501	83.94	81.53	83.99	78.39	79.80
3	6.86	9.36	11.33	53.02	77.52	91.73	0.5551	0.1080	0.0253	0.9589	85.65	84.95	86.99	82.01	83.21
4	3.13	7.00	10.52	48.48	83.14	95.13	0.4975	0.0658	0.0163	0.9773	89.77	89.80	91.20	87.82	88.63
5	1.20	6.51	7.83	48.38	78.71	84.85	0.5002	0.0408	0.0109	0.9886	93.00	87.29	88.97	89.80	90.43
6	0.89	6.67	6.92	48.58	74.98	78.12	0.5166	0.0353	0.0097	0.9911	93.90	85.04	86.98	89.66	90.28
7	0.28	6.28	7.11	47.56	75.76	77.41	0.5140	0.0402	0.0112	0.9901	93.01	84.96	86.91	88.64	89.31
8	-0.81	5.40	7.84	45.51	78.36	79.84	0.4957	0.0449	0.0127	0.9888	91.96	85.83	87.68	87.60	88.31
9	-1.97	4.73	11.22	40.78	83.49	87.80	0.4433	0.0539	0.0158	0.9857	89.23	83.70	85.87	83.42	84.37
10	-2.11	4.77	14.10	39.02	83.44	89.16	0.4313	0.0587	0.0174	0.9841	88.04	81.45	83.93	80.98	82.04
11	-3.49	3.61	14.42	39.76	81.02	84.38	0.4530	0.0720	0.0215	0.9812	86.07	77.40	80.37	79.51	80.62

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 %	EFF-P TOT-STG %
10653.	177.90	1.4068	2.8302	84.76	86.79	1.1571	0.9808	85.33	265.04

TABLE XVII (a) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

DESIGN SPEED

STATOR 1 ($\beta^*_{des.} - \beta^*_{act.}$) = +2.5°

STATOR 2 ($\beta_{des.} - \beta^*_{act.}$) = 0°

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 15, 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'-[	V'-1 FT/SEC	V'-2 FT/SEC
1	16.629	18.509	632.6	1088.3	632.6	684.6	0.0	845.9	0.0	51.1	0.5855	0.9709	630.6	730.1	0.8268	0.6195	893.2	694.4
2	14.081	16.309	647.1	1053.4	647.1	681.9	0.0	802.8	0.0	49.7	0.6000	0.9347	680.0	765.4	0.8703	0.6060	938.7	682.9
3	11.724	14.231	661.4	1029.7	661.4	686.9	0.0	767.1	0.0	48.2	0.6142	0.9102	728.5	800.7	0.9137	0.6079	984.0	687.7
4	5.534	8.598	696.8	938.4	656.8	661.9	0.0	665.2	0.0	45.2	0.6497	0.8196	867.3	906.8	1.0374	0.6154	1112.5	704.7
5	-0.491	2.113	721.6	782.7	721.6	570.8	0.0	535.6	0.0	43.2	0.6749	0.6742	1040.5	1048.0	1.1843	0.6607	1266.2	767.1
6	-2.110	-0.857	727.2	707.0	727.2	518.1	0.0	481.0	0.0	42.9	0.6806	0.6059	1123.9	1118.7	1.2529	0.7042	1338.6	821.7
7	-2.883	-2.298	728.9	730.8	728.9	570.6	0.0	456.6	0.0	38.7	0.6824	0.6289	1165.0	1154.0	1.2866	0.7754	1374.3	901.0
8	-4.065	-3.662	729.3	748.1	729.3	606.0	0.0	438.6	0.0	35.9	0.6828	0.6455	1206.1	1189.3	1.3196	0.8326	1409.5	964.8
9	-8.414	-7.562	717.5	773.6	717.5	637.5	0.0	438.2	0.0	34.5	0.6707	0.6649	1328.9	1295.3	1.4118	0.9181	1510.2	1068.2
10	-9.979	-8.898	709.0	775.4	709.0	635.5	0.0	444.4	0.0	34.9	0.6621	0.6643	1369.8	1330.6	1.4404	0.9343	1542.4	1090.5
11	-11.320	-10.250	699.1	746.9	699.1	585.5	0.0	463.8	0.0	38.3	0.6520	0.6340	1410.7	1365.9	1.4685	0.9129	1574.4	1075.5

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	-1.70	2.90	18.33	54.31	40.99	53.53	0.4478	-0.0051	-0.0011	1.8867	100.27	100.30	44.68	-9.63	-630.6	115.8	1.8867
2	-1.65	2.65	16.46	49.32	41.59	54.50	0.4832	0.0096	0.0022	1.8715	99.44	99.40	46.17	-3.15	-680.0	37.4	1.8715
3	-1.48	2.63	14.34	44.72	42.17	56.00	0.4992	0.0068	0.0016	1.8724	99.56	99.53	47.53	2.81	-728.5	-33.6	1.8724
4	-0.43	3.04	10.40	31.00	43.51	55.94	0.5325	0.0539	0.0135	1.8088	95.62	95.26	51.08	20.08	-867.3	-241.6	1.8088
5	0.73	3.42	11.65	13.33	44.37	49.20	0.5241	0.1259	0.0281	1.6543	86.76	85.81	55.25	41.92	-1040.5	-512.4	1.6543
6	1.17	3.45	13.56	6.20	44.56	44.98	0.5009	0.1448	0.0289	1.5893	83.07	81.96	57.11	50.90	-1123.9	-637.7	1.5893
7	1.39	3.49	10.39	7.27	44.62	50.32	0.4518	0.0877	0.0180	1.6310	89.43	88.70	57.97	50.70	-1165.0	-697.3	1.6310
8	1.63	3.58	8.22	7.77	44.63	54.11	0.4181	0.0478	0.0100	1.6650	94.08	93.65	58.84	51.08	-1206.1	-750.7	1.6650
9	2.60	4.02	6.51	8.33	44.24	57.28	0.3947	0.0618	0.0131	1.7166	92.23	91.63	61.64	53.31	-1328.9	-857.1	1.7166
10	2.96	4.26	7.29	8.36	43.95	56.86	0.3963	0.0864	0.0182	1.7199	89.16	88.32	62.65	54.29	-1369.8	-886.2	1.7199
11	3.30	4.45	10.58	6.72	43.60	51.53	0.4243	0.1604	0.0323	1.6800	80.06	78.57	63.63	56.92	-1410.7	-902.1	1.6800

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 %
1.1857	1.7273	90.97	91.62	42.27	1.1857	1.7273	90.97	91.62

STATOR 1

RUN NO 15, 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	18.385	15.033	1098.3	754.4	721.4	748.7	828.1	-93.1	49.2	-7.0	0.9816	0.6424	1.7546	1.1981	1.7546	1.1981
2	16.237	13.365	1067.6	756.8	719.6	752.1	788.6	-84.5	47.8	-6.4	0.9496	0.6449	1.7669	1.1971	1.7669	1.1971
3	14.219	11.785	1047.1	769.5	724.8	765.8	755.6	-74.8	46.3	-5.5	0.9282	0.6566	1.7899	1.1970	1.7899	1.1970
4	8.789	7.407	961.9	764.0	699.8	758.9	660.0	-87.7	43.4	-6.6	0.8429	0.6527	1.7832	1.1930	1.7832	1.1930
5	2.317	1.742	808.7	666.7	606.5	658.4	534.9	-104.5	41.4	-9.0	0.6986	0.5675	1.6412	1.1790	1.6412	1.1790
6	-0.671	-1.149	732.7	617.2	552.3	606.3	481.5	-115.5	41.1	-10.8	0.6297	0.5246	1.5767	1.1716	1.5767	1.1716
7	-2.266	-2.393	755.0	634.4	600.6	623.4	457.5	-117.8	37.3	-10.7	0.6515	0.5409	1.5908	1.1686	1.5908	1.1686
8	-3.352	-3.351	771.6	670.6	633.9	660.9	439.9	-113.8	34.8	-9.8	0.6676	0.5738	1.6274	1.1681	1.6274	1.1681
9	-6.134	-6.195	798.9	726.3	666.3	720.9	440.7	-88.9	33.6	-7.0	0.6887	0.6209	1.6917	1.1827	1.6917	1.1827
10	-7.022	-7.128	802.2	723.7	666.0	719.3	447.2	-79.8	34.0	-6.4	0.6895	0.6163	1.6888	1.1905	1.6888	1.1905
11	-8.031	-8.115	776.4	686.5	619.9	681.3	467.4	-84.1	37.1	-7.1	0.6612	0.5791	1.6435	1.2032	1.6435	1.2032

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	-0.88	1.23	7.81	56.19	55.92	68.77	0.4785	0.1519	0.0308	0.9301	78.59	87.91	88.81	87.91	88.81
2	-0.54	1.86	7.36	54.16	56.83	69.52	0.4591	0.1271	0.0268	0.9441	80.78	89.53	90.32	89.53	90.32
3	-0.70	2.09	7.34	51.88	58.26	71.21	0.4346	0.1027	0.0226	0.9562	83.15	91.77	92.40	91.77	92.40
4	-1.14	2.58	5.19	49.94	58.17	70.70	0.3881	0.0283	0.0069	0.9893	94.12	93.00	93.54	93.00	93.54
5	-1.60	3.44	2.80	50.41	51.50	59.93	0.3804	0.0076	0.0020	0.9982	97.64	84.81	85.80	84.81	85.80
6	-1.44	4.18	1.07	51.87	47.28	54.57	0.3950	0.0636	0.0179	0.9845	82.27	80.97	82.13	80.97	82.13
7	-4.98	0.89	1.17	48.03	52.27	56.28	0.3852	0.1194	0.0342	0.9701	66.01	84.10	85.08	84.10	85.08
8	-7.31	-1.16	2.14	44.58	55.85	60.02	0.3465	0.0957	0.0280	0.9752	67.32	88.75	89.48	88.75	89.48
9	-8.56	-1.68	6.00	40.60	58.99	65.49	0.2996	0.0542	0.0168	0.9853	73.87	88.68	89.47	88.68	89.47
10	-8.47	-1.42	7.92	40.32	58.69	64.97	0.3067	0.0622	0.0196	0.9832	71.55	84.81	85.86	84.81	85.86
11	-6.00	1.15	8.74	44.20	53.68	60.50	0.3448	0.0849	0.0270	0.9784	66.75	75.01	76.66	75.01	76.66

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 %	EFF-P TOT-STG %
10730.	186.10	1.1857	1.6910	87.17	88.06	1.1857	0.9790	87.17	236.99

ROTOR 2

RUN NO 15, 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'-1	V'-1 FT/SEC	V'-2 FT/SEC
1	11.553	11.248	852.2	1154.6	847.4	861.6	-90.6	768.6	-6.1	41.6	0.7340	0.9354	836.7	877.5	1.0819	0.7036	1256.1	868.5
2	10.762	10.121	861.2	1145.9	857.3	857.1	-82.6	760.6	-5.5	41.5	0.7430	0.9272	860.3	895.9	1.0993	0.7021	1274.3	867.7
3	9.872	9.045	878.6	1125.0	875.6	851.4	-73.2	735.3	-4.8	40.8	0.7597	0.9093	884.7	915.0	1.1222	0.7033	1297.8	870.2
4	6.896	6.026	887.5	1033.4	883.3	857.0	-86.2	577.4	-5.6	34.0	0.7696	0.8357	960.4	975.9	1.1877	0.7643	1369.5	945.1
5	2.032	1.813	793.1	865.5	786.3	746.7	-103.6	437.7	-7.5	30.4	0.6841	0.6958	1064.8	1064.1	1.2148	0.7835	1408.3	974.6
6	-0.740	-0.363	733.7	745.2	724.6	644.2	-115.3	374.5	-9.0	30.1	0.6308	0.5958	1118.0	1111.0	1.2298	0.7823	1430.4	978.5
7	-2.075	-1.405	741.0	707.6	731.5	617.1	-118.3	346.3	-9.2	29.2	0.6386	0.5656	1144.8	1135.2	1.2578	0.8006	1459.6	1001.6
8	-3.248	-2.457	768.9	740.6	760.3	663.3	-114.6	329.4	-8.6	26.3	0.6649	0.5950	1171.8	1160.0	1.2921	0.8539	1494.3	1062.9
9	-6.422	-5.911	815.9	788.5	810.9	715.3	-90.0	331.9	-6.3	24.8	0.7046	0.6322	1253.9	1236.8	1.3556	0.9249	1569.6	1153.5
10	-7.352	-7.065	813.6	788.3	809.6	705.3	-80.6	352.1	-5.7	26.4	0.7000	0.6284	1281.5	1263.1	1.3633	0.9184	1584.5	1152.1
11	-8.302	-8.325	779.8	767.7	775.1	689.2	-85.2	338.2	-6.2	26.0	0.6643	0.6075	1309.2	1290.0	1.3590	0.9298	1595.3	1175.1

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	-1.98	2.33	27.58	40.32	73.48	85.54	0.4672	0.3209	0.0726	1.5925	72.47	70.63	47.50	7.18	-927.3	-108.9	2.7935
2	-2.25	2.20	22.77	38.76	74.45	86.35	0.4755	0.3151	0.0727	1.5957	72.50	70.65	47.70	8.95	-942.9	-135.3	2.8159
3	-2.75	1.82	19.43	35.70	76.16	87.04	0.4791	0.3120	0.0731	1.5721	71.50	69.65	47.60	11.90	-957.9	-179.7	2.8082
4	-1.83	2.96	15.40	24.96	76.35	91.49	0.4331	0.2374	0.0554	1.5141	74.11	72.57	49.92	24.97	-1046.6	-398.5	2.7102
5	2.01	7.18	11.78	16.07	66.99	81.26	0.4153	0.1847	0.0401	1.4809	77.18	75.90	56.08	40.01	-1168.3	-626.3	2.4475
6	5.17	9.50	12.58	10.75	61.56	69.72	0.4155	0.1950	0.0381	1.4352	74.25	72.92	59.54	48.79	-1233.3	-736.5	2.2616
7	5.01	9.09	12.65	7.97	62.54	66.83	0.4088	0.2126	0.0400	1.3966	70.33	68.92	59.88	51.91	-1263.1	-788.9	2.2127
8	3.97	7.78	8.98	8.05	65.52	72.64	0.3801	0.1954	0.0383	1.3950	71.44	70.09	59.36	51.30	-1286.4	-830.6	2.2646
9	1.98	4.66	4.45	7.25	70.01	78.25	0.3580	0.1965	0.0427	1.3836	69.57	68.16	58.79	51.54	-1343.9	-904.9	2.3398
10	1.96	4.14	5.43	7.05	69.58	76.36	0.3711	0.2200	0.0491	1.3789	66.51	64.98	59.16	52.11	-1362.1	-911.0	2.3352
11	3.30	5.00	8.30	6.85	65.55	73.61	0.3627	0.1967	0.0437	1.3975	70.06	68.62	60.81	53.96	-1394.3	-951.8	2.2994

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 %
1.3144	2.4708	78.51	81.02	42.85	1.1592	1.4611	71.46	72.93

STATOR 2

RUN NO 15, 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	8.815	0.964	1197.5	1021.1	924.7	995.6	760.9	-226.7	39.7	-12.8	0.9765	0.8118	2.3032	1.4376	1.3133	1.1998
2	7.922	1.030	1186.3	1049.0	915.7	1019.8	754.2	-245.9	39.7	-13.5	0.9657	0.8371	2.3773	1.4377	1.3501	1.2007
3	7.021	1.040	1164.3	1067.7	906.4	1036.9	730.7	-254.7	39.1	-13.8	0.9464	0.8551	2.4358	1.4349	1.3705	1.1987
4	4.602	0.940	1069.9	1050.2	901.6	1029.0	576.1	-210.1	32.7	-11.5	0.8694	0.8488	2.4581	1.4063	1.3685	1.1769
5	2.063	0.503	907.8	983.4	794.9	973.2	438.3	-140.6	28.9	-8.2	0.7331	0.7998	2.3736	1.3692	1.4114	1.1577
6	0.684	0.068	793.6	900.0	699.0	891.8	375.6	-121.0	28.2	-7.7	0.6374	0.7299	2.2302	1.3512	1.4011	1.1505
7	-0.200	-0.196	756.0	859.4	671.6	851.6	347.1	-115.7	27.3	-7.7	0.6069	0.6964	2.1651	1.3419	1.3721	1.1464
8	-1.353	-0.422	787.9	853.8	715.5	846.5	330.1	-110.8	24.7	-7.4	0.6359	0.6933	2.1595	1.3348	1.3435	1.1428
9	-3.964	-0.801	842.7	906.9	773.9	903.2	333.5	-81.8	23.3	-5.2	0.6795	0.7371	2.2359	1.3478	1.3247	1.1415
10	-4.809	-0.917	848.9	910.4	771.5	908.7	354.3	-56.0	24.7	-3.5	0.6810	0.7359	2.2263	1.3623	1.3148	1.1465
11	-5.754	-1.003	838.0	893.5	765.6	892.1	340.6	-49.2	24.0	-3.2	0.6677	0.7164	2.1787	1.3772	1.3223	1.1454

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	-8.72	-7.16	-0.99	52.54	88.79	89.50	0.3346	0.3820	0.0842	0.8248	-6.68	61.27	65.42	40.25	42.46
2	-7.71	-5.69	-2.29	53.26	89.43	92.87	0.3111	0.3405	0.0762	0.8459	-17.74	63.86	67.87	44.29	46.55
3	-7.57	-5.07	-2.95	52.87	90.02	95.68	0.2879	0.3039	0.0692	0.8652	-35.02	66.34	70.18	47.11	49.37
4	-12.90	-9.03	-1.22	44.20	93.90	98.21	0.2168	0.2456	0.0598	0.9023	-285.81	71.90	75.15	52.82	54.82
5	-15.84	-10.53	2.08	37.08	84.59	95.45	0.1217	0.1655	0.0438	0.9472	269.06	75.62	78.35	65.27	66.90
6	-16.17	-10.38	2.51	35.93	73.94	87.33	0.0773	0.1364	0.0374	0.9650	162.16	73.09	75.89	66.89	68.41
7	-16.93	-10.94	2.44	35.02	71.03	83.36	0.0567	0.1299	0.0361	0.9705	145.11	72.04	74.85	64.24	65.77
8	-19.32	-13.11	2.66	32.18	76.52	83.25	0.0625	0.1607	0.0453	0.9626	167.07	73.31	75.99	61.31	62.87
9	-20.47	-13.78	5.00	28.49	82.28	88.53	0.0664	0.1664	0.0486	0.9559	184.97	74.10	76.81	58.79	60.37
10	-19.76	-12.88	7.26	28.22	80.91	87.82	0.0692	0.1758	0.0519	0.9531	195.75	70.73	73.77	55.22	56.89
11	-21.68	-14.59	8.78	27.20	78.91	84.53	0.0739	0.2058	0.0613	0.9468	227.38	65.87	69.31	56.80	58.45

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 %	EFF-P TOT-STG %
10730.	186.10	1.3144	2.2953	71.33	74.42	1.1592	0.9290	56.97	222.86

TABLE XVII (b) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

DESIGN SPEED

STATOR 1 ($\beta^*_{des.} - \beta^*_{act.}$) = +2.5°

STATOR 2 ($\beta_{des.} - \beta^*_{act.}$) = 0°

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 15, 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'-1	V'-1 FT/SEC	V'-2 FT/SEC
1	16.631	18.286	644.9	1074.5	644.9	666.0	0.0	843.2	0.0	51.7	0.5978	0.9569	629.2	728.4	0.8351	0.6019	901.0	675.9
2	14.121	15.889	659,3	1036.0	659.3	658.8	0.0	799.6	0.0	50.5	0.6120	0.9173	678.5	763.7	0.8783	0.5841	946.0	659.8
3	11.811	13.664	673.0	1014.2	673.0	666.9	0.0	764.1	0.0	48.9	0.6257	0.8948	726.8	798.9	0.9210	0.5892	990.5	667.8
4	5.669	7.752	705.0	932.4	705.0	653.4	0.0	665.2	0.0	45.5	0.6580	0.8138	865.3	904.7	1.0418	0.6074	1116.2	695.9
5	-0.241	1.193	722.3	792.5	722.3	573.7	0.0	546.8	0.0	43.6	0.6756	0.6823	1038.2	1045.7	1.1830	0.6546	1264.7	760.3
6	-1.616	-1.665	724.4	718.3	724.4	519.3	0.0	496.2	0.0	43.7	0.6778	0.6149	1121.3	1116.1	1.2491	0.6923	1334.9	808.7
7	-2.330	-2.932	724.8	738.3	724.8	566.1	0.0	474.0	0.0	39.9	0.6782	0.6342	1162.4	1151.4	1.2818	0.7583	1369.9	882.8
8	-3.553	-4.140	724.1	755.1	724.1	601.0	0.0	457.2	0.0	37.3	0.6775	0.6501	1203.4	1186.6	1.3141	0.8137	1404.5	945.1
9	-8.265	-7.781	709.7	781.4	769.7	637.2	0.0	452.3	0.0	35.3	0.6628	0.6706	1325.9	1292.3	1.4045	0.9048	1503.9	1054.4
10	-9.993	-9.071	700.4	781.4	700.4	629.2	0.0	463.4	0.0	36.3	0.6534	0.6676	1366.7	1327.6	1.4326	0.9133	1535.7	1069.0
11	-11.376	-10.357	689.9	751.0	689.9	573.5	0.0	484.8	0.0	40.1	0.6428	0.6352	1407.5	1362.8	1.4604	0.8871	1567.5	1048.7

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	-2.32	2.29	18.17	53.85	41.50	52.72	0.4722	-0.0141	-0.0031	1.8866	100.76	100.84	44.06	-9.76	-629.2	114.7	1.8866
2	-2.24	2.06	16.48	48.70	42.09	53.20	0.5104	0.0117	0.0027	1.8631	99.30	99.25	45.58	-3.12	-678.5	35.9	1.8631
3	-2.03	2.08	14.52	43.99	42.62	54.92	0.5212	0.0049	0.0012	1.8672	99.68	99.66	46.98	2.99	-726.8	-34.9	1.8672
4	-0.81	2.66	10.44	30.57	43.80	55.80	0.5416	0.0399	0.0100	1.8191	96.76	96.49	50.69	20.12	-865.3	-239.5	1.8191
5	0.65	3.33	10.73	14.16	44.40	49.95	0.5310	0.1140	0.0258	1.6839	88.31	87.45	55.16	41.00	-1038.2	-498.9	1.6839
6	1.21	3.49	12.71	7.09	44.47	45.50	0.5118	0.1408	0.0286	1.6192	84.13	83.04	57.14	50.05	-1121.3	-619.9	1.6192
7	1.47	3.57	9.81	7.93	44.48	50.36	0.4664	0.0904	0.0188	1.6586	89.55	88.80	58.05	50.12	-1162.4	-677.4	1.6586
8	1.73	3.69	7.67	8.43	44.46	54.11	0.4334	0.0530	0.0112	1.6935	93.73	93.27	58.95	50.52	-1203.4	-729.4	1.6935
9	2.79	4.22	5.99	9.06	43.97	57.88	0.4043	0.0586	0.0126	1.7493	92.89	92.33	61.84	52.79	-1325.9	-840.0	1.7493
10	3.20	4.49	6.89	9.00	43.64	56.77	0.4120	0.0942	0.0201	1.7488	88.63	87.73	62.88	53.88	-1366.7	-864.2	1.7488
11	3.55	4.71	10.42	7.13	43.26	50.81	0.4437	0.1736	0.0351	1.7047	79.21	77.62	63.89	56.76	-1407.5	-878.0	1.7047

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 %
1.1893	1.7477	91.32	91.96	42.25	1.1893	1.7477	91.32	91.96

STATOR 1

RUN NO 15, 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	T02/ T01
1	18.212	14.815	1083.9	716.5	702.6	710.5	825.4	-55.6	49.6	-7.6	0.9669	0.6083	1.7541	1.1970	1.7541	1.1970
2	15.899	12.958	1049.8	723.7	696.5	718.6	785.4	-85.8	48.6	-6.7	0.9315	0.6148	1.7708	1.1959	1.7708	1.1959
3	13.745	11.196	1031.1	737.8	704.8	733.8	752.7	-77.3	47.0	-6.0	0.9122	0.6278	1.7942	1.1958	1.7942	1.1958
4	8.101	6.403	954.9	740.4	690.3	735.4	659.8	-86.0	43.7	-6.6	0.8361	0.6310	1.7951	1.1927	1.7951	1.1927
5	1.502	0.530	816.7	660.8	607.6	652.9	545.8	-101.8	41.9	-8.9	0.7052	0.5612	1.6716	1.1826	1.6716	1.1826
6	-1.679	-2.381	744.3	612.4	554.5	601.9	496.5	-112.9	41.8	-10.6	0.6390	0.5191	1.6087	1.1769	1.6087	1.1769
7	-2.936	-3.622	763.4	626.9	557.9	616.9	474.7	-111.7	38.5	-10.3	0.6576	0.5327	1.6211	1.1747	1.6211	1.1747
8	-3.860	-4.587	779.6	662.4	630.5	653.7	458.6	-106.6	36.1	-9.3	0.6731	0.5647	1.6578	1.1744	1.6578	1.1744
9	-6.228	-7.073	807.1	719.8	666.5	715.1	455.1	-82.3	34.4	-6.6	0.6947	0.6134	1.7234	1.1881	1.7234	1.1881
10	-7.008	-7.781	808.3	718.5	660.1	714.6	466.5	-74.8	35.3	-6.0	0.6927	0.6096	1.7192	1.1978	1.7192	1.1978
11	-8.001	-8.481	780.2	679.7	608.3	675.7	488.6	-74.0	38.9	-6.3	0.6621	0.5709	1.6692	1.2119	1.6692	1.2119

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	1.86	7.25	57.38	55.17	66.60	0.5064	0.1553	0.0315	0.9299	79.22	88.35	89.21	88.35	89.21
2	0.22	2.62	6.98	55.31	55.62	67.82	0.4814	0.1157	0.0244	0.9504	83.26	90.47	91.19	90.47	91.19
3	-0.07	2.71	6.92	52.92	57.27	69.65	0.4568	0.0934	0.0205	0.9611	85.39	92.76	93.32	92.76	93.32
4	-0.81	2.91	5.13	50.34	58.00	69.88	0.4088	0.0270	0.0066	0.9899	94.76	94.34	94.77	94.34	94.77
5	-1.10	3.95	2.95	50.76	52.13	60.55	0.3982	0.0063	0.0017	0.9985	98.17	86.49	87.41	86.49	87.41
6	-0.67	4.94	1.23	52.48	47.94	55.18	0.4147	0.0555	0.0156	0.9863	85.75	82.23	83.36	82.23	83.36
7	-3.82	2.06	1.60	48.77	52.48	56.70	0.4058	0.1108	0.0318	0.9718	71.38	84.67	85.65	84.67	85.65
8	-6.02	0.12	2.64	45.37	56.02	60.46	0.3678	0.0912	0.0267	0.9760	72.52	89.02	89.75	89.02	89.75
9	-7.71	-0.83	6.45	41.00	59.63	66.16	0.3176	0.0539	0.0167	0.9851	77.95	89.42	90.18	89.42	90.18
10	-7.10	-0.05	8.27	41.34	58.63	65.56	0.3244	0.0591	0.0186	0.9839	76.19	84.66	85.76	84.66	85.76
11	-4.25	2.90	9.53	45.17	53.04	60.77	0.3614	0.0814	0.0259	0.9793	71.12	74.33	76.08	74.33	76.08

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 %	EFF-P TOT-STG %
10706.	186.00	1.1893	1.7132	87.79	88.66	1.1893	0.9802	87.79	230.40

ROTOR 2

RUN NO 15, 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'-1	V'-1 FT/SEC	V'-2 FT/SEC
1	11.539	11.111	809.5	1087.0	804.5	713.8	-92.9	819.8	-6.6	48.8	0.6943	0.8676	834.8	875.6	1.0527	0.5715	1228.0	716.0
2	10.698	9.875	824.5	1076.2	820.2	721.7	-83.6	798.4	-5.8	47.8	0.7084	0.8592	858.4	893.9	1.0732	0.5812	1249.0	728.0
3	9.715	8.706	845.6	1062.0	842.2	742.4	-75.6	759.5	-5.1	45.6	0.7285	0.8490	882.7	912.5	1.0992	0.6060	1275.6	758.1
4	6.153	5.386	863.7	969.1	859.5	738.3	-85.0	627.8	-5.7	40.4	0.7469	0.7730	958.3	973.7	1.1689	0.6503	1351.7	815.3
5	0.592	1.034	778.6	813.0	772.0	614.6	-101.7	532.3	-7.5	40.9	0.6696	0.6415	1062.4	1061.7	1.2011	0.6400	1396.7	811.1
6	-2.313	-1.124	723.5	732.1	714.5	544.7	-113.2	489.2	-9.0	41.9	0.6199	0.5747	1115.4	1108.5	1.2179	0.6475	1421.3	824.7
7	-3.631	-2.173	732.5	718.4	723.8	544.6	-112.1	468.5	-8.8	40.7	0.6289	0.5644	1142.2	1132.7	1.2433	0.6748	1448.2	858.9
8	-4.761	-3.229	759.3	735.9	751.7	577.3	-106.9	456.3	-8.1	38.3	0.6538	0.5794	1169.2	1157.4	1.2753	0.7151	1481.0	908.2
9	-7.739	-6.637	801.0	766.2	796.7	610.8	-83.0	462.6	-5.9	37.0	0.6887	0.6002	1251.1	1234.0	1.3360	0.7708	1553.9	984.0
10	-8.490	-7.748	794.6	761.0	790.9	592.9	-75.7	477.1	-5.5	38.7	0.6796	0.5920	1278.6	1260.3	1.3415	0.7641	1568.3	982.3
11	-9.045	-8.803	755.9	726.2	752.2	548.8	-75.0	475.6	-5.7	40.8	0.6398	0.5596	1306.2	1287.1	1.3311	0.7548	1572.8	979.6

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	-0.49	3.82	24.85	44.54	71.63	84.19	0.5894	0.1638	0.0372	1.8118	87.70	86.63	48.99	4.45	-927.7	-55.8	3.1776
2	-1.02	3.43	21.33	41.42	73.13	86.62	0.5844	0.1483	0.0343	1.8104	88.50	87.50	48.93	7.51	-942.0	-95.5	3.2040
3	-1.65	2.93	19.18	37.05	75.10	90.87	0.5638	0.1196	0.0280	1.7983	90.20	89.36	48.70	11.65	-958.4	-153.5	3.2248
4	-1.19	3.60	15.54	25.45	75.94	93.86	0.5326	0.0815	0.0190	1.7367	92.17	91.54	50.56	25.11	-1043.2	-345.9	3.1187
5	2.98	7.56	12.52	15.70	67.28	78.83	0.5471	0.0834	0.0179	1.7129	91.44	90.77	56.45	40.75	-1164.0	-529.4	2.8597
6	5.44	9.78	12.43	11.17	62.09	69.71	0.5458	0.0942	0.0185	1.6970	90.05	89.28	59.81	48.64	-1228.7	-619.3	2.7310
7	5.13	9.21	11.35	9.40	63.24	70.00	0.5295	0.1032	0.0200	1.6722	88.65	87.81	60.00	50.60	-1254.3	-664.1	2.7174
8	4.11	7.92	8.15	9.02	66.14	74.68	0.5061	0.1056	0.0211	1.6585	87.95	87.07	59.49	50.47	-1276.1	-701.1	2.7532
9	2.31	4.99	4.44	7.55	70.44	78.44	0.4890	0.1407	0.0306	1.6282	83.17	81.99	59.12	51.53	-1334.1	-771.4	2.8061
10	2.47	4.65	6.10	6.89	69.55	75.13	0.5010	0.1615	0.0355	1.6258	80.92	79.57	59.67	52.77	-1354.3	-783.2	2.7906
11	3.85	5.54	10.18	5.52	65.08	68.33	0.5088	0.1608	0.0341	1.6336	81.24	79.91	61.36	55.84	-1381.2	-811.5	2.7260

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 %
1.4106	2.9139	86.70	88.52	42.34	1.1861	1.7009	87.47	88.38

STATOR 2

RUN NO 15, 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	8.457	0.712	1119.9	795.1	771.6	795.1	811.6	8.9	46.7	0.6	0.8979	0.6137	3.0032	1.4510	1.7131	1.2121
2	7.270	0.518	1107.5	810.5	774.6	810.3	791.6	18.1	45.8	1.3	0.8879	0.6274	3.0433	1.4473	1.7217	1.2102
3	6.205	0.266	1091.7	837.9	789.5	837.8	754.0	9.7	43.8	0.7	0.8763	0.6523	3.1123	1.4393	1.7370	1.2036
4	3.824	-0.425	995.7	791.5	774.7	791.4	625.6	-5.8	39.0	-0.4	0.7968	0.6191	3.0394	1.4148	1.6902	1.1859
5	1.434	-0.839	838.5	659.4	648.0	658.5	532.1	-33.3	39.4	-2.9	0.6632	0.5131	2.8141	1.3982	1.6765	1.1818
6	0.049	-0.938	757.6	582.1	577.9	580.8	489.8	-38.5	40.2	-3.8	0.5961	0.4514	2.7031	1.3916	1.6810	1.1821
7	-0.752	-0.955	742.7	567.6	575.7	566.8	469.2	-35.0	39.1	-3.5	0.5847	0.4409	2.6854	1.3857	1.6602	1.1795
8	-1.519	-0.949	759.8	596.8	606.8	596.0	457.2	-29.9	37.0	-2.9	0.5996	0.4649	2.7234	1.3826	1.6449	1.1776
9	-3.489	-1.050	794.6	643.5	644.7	643.4	464.5	-5.4	35.8	-0.5	0.6242	0.4993	2.7774	1.4021	1.6116	1.1805
10	-4.301	-1.119	794.0	639.0	632.6	639.0	479.8	3.4	37.2	0.3	0.6196	0.4923	2.7617	1.4201	1.6056	1.1858
11	-5.378	-1.135	765.3	590.6	596.9	590.5	479.0	4.9	38.8	0.5	0.5917	0.4504	2.6858	1.4384	1.6090	1.1869

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	-1.74	-0.18	12.46	46.07	88.91	104.94	0.4513	0.1338	0.0302	0.9455	79.03	81.48	84.06	77.79	79.40
2	-1.60	0.42	12.53	44.55	90.95	107.81	0.4290	0.1233	0.0284	0.9505	79.36	83.31	85.67	79.29	80.81
3	-2.81	-0.30	11.51	43.18	94.68	112.95	0.3941	0.0893	0.0209	0.9648	83.22	86.83	88.73	83.30	84.54
4	-6.57	-2.71	9.90	39.40	96.89	108.08	0.3662	0.0807	0.0200	0.9723	82.57	89.75	91.20	86.44	87.40
5	-5.33	-0.03	7.40	42.27	82.12	89.11	0.4019	0.0821	0.0220	0.9785	82.00	86.03	87.88	86.93	87.84
6	-4.14	1.64	6.43	44.04	73.13	78.08	0.4301	0.0611	0.0169	0.9867	86.90	83.60	85.70	87.28	88.17
7	-5.09	0.91	6.64	42.67	73.17	76.35	0.4247	0.0434	0.0121	0.9911	90.39	84.25	86.25	86.30	87.24
8	-7.09	-0.89	7.24	39.82	77.63	80.77	0.3956	0.0437	0.0124	0.9906	89.64	86.32	88.08	85.54	86.51
9	-8.03	-1.33	9.69	34.25	81.69	86.30	0.3634	0.0457	0.0134	0.9895	88.17	83.97	86.07	80.42	81.68
10	-7.26	-0.38	11.08	36.90	78.97	84.41	0.3751	0.0528	0.0156	0.9879	86.79	79.86	82.47	77.42	78.86
11	-6.92	0.18	12.41	38.34	73.04	76.34	0.4145	0.0715	0.0213	0.9849	84.07	74.08	77.35	77.29	78.75

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 %	EFF-P TOT-STG %
10706.	186.00	1.4106	2.8508	84.65	86.71	1.1861	0.9783	83.60	185.50

TABLE XVII (c) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

DESIGN SPEED

STATOR 1 ($\beta^*_{des.} - \beta^*_{act.}$) = +2.5°

STATOR 2 ($\beta_{des.} - \beta^*_{act.}$) = 0°

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 15, 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	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	16.784	18.397	623.5	1045.7	623.5	611.0	0.0	848.7	0.0	54.3	0.5765	0.9262	629.8	728.8	0.8193	0.5515	886.0	622.6
2	14.425	16.097	637.5	1003.3	637.5	608.4	0.0	797.8	0.0	52.7	0.5904	0.8839	678.9	764.1	0.8624	0.5368	931.3	609.3
3	12.244	13.953	651.4	982.3	651.4	619.9	0.0	761.9	0.0	50.9	0.6042	0.8626	727.2	799.4	0.9056	0.5454	976.4	621.0
4	6.384	8.248	686.9	914.8	686.9	623.0	0.0	669.8	0.0	47.1	0.6397	0.7958	865.8	905.2	1.0293	0.5794	1105.2	666.0
5	0.506	1.825	711.7	800.3	711.7	552.4	0.0	579.1	0.0	46.4	0.6648	0.6862	1038.8	1046.2	1.1763	0.6202	1259.2	723.4
6	-1.231	-1.003	717.0	748.4	717.0	515.3	0.0	542.8	0.0	46.5	0.6703	0.6379	1121.5	1116.8	1.2447	0.6575	1331.5	771.4
7	-2.162	-2.325	718.1	760.4	718.7	552.6	0.0	522.2	0.0	43.4	0.6719	0.6494	1163.0	1152.0	1.2783	0.7156	1367.2	837.9
8	-3.516	-3.613	719.0	774.2	719.0	587.5	0.0	504.2	0.0	40.6	0.6723	0.6625	1204.1	1187.3	1.3113	0.7710	1402.4	901.0
9	-8.288	-7.510	707.2	790.1	707.2	617.2	0.0	493.3	0.0	38.6	0.6603	0.6735	1326.6	1293.1	1.4036	0.8611	1503.4	1010.2
10	-9.990	-8.887	698.7	792.8	698.7	609.2	0.0	507.3	0.0	39.7	0.6516	0.6725	1367.5	1328.3	1.4322	0.8672	1535.6	1022.4
11	-11.366	-10.259	688.8	767.1	688.8	549.6	0.0	535.2	0.0	44.1	0.6416	0.6437	1408.3	1363.6	1.4604	0.8342	1567.7	994.2

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	β'-1 DEGREE	β'-2 DEGREE	Vθ'-1 FT/SEC	Vθ'-2 FT/SEC	PO/PO INLET
1	-1.31	3.29	16.84	56.19	40.59	49.09	0.5239	0.0233	0.0050	1.8706	98.77	98.67	45.07	-11.12	-629.6	119.9	1.8706
2	-1.22	3.08	16.43	49.77	41.19	49.99	0.5549	0.0335	0.0077	1.8469	98.05	97.89	46.60	-3.17	-678.9	33.7	1.8469
3	-1.04	3.07	14.99	44.51	41.77	52.06	0.5598	0.0155	0.0037	1.8572	99.03	98.95	47.97	3.46	-727.2	-37.4	1.8572
4	-0.03	3.44	11.03	30.76	43.15	54.74	0.5635	0.0158	0.0039	1.8495	98.77	98.67	51.47	20.71	-865.8	-235.4	1.8495
5	1.06	3.74	9.95	15.35	44.04	49.74	0.5647	0.0951	0.0218	1.7613	90.98	90.25	55.57	40.22	-1038.8	-467.1	1.7613
6	1.48	3.76	10.74	9.34	44.22	46.81	0.5485	0.1207	0.0255	1.7257	87.67	86.70	57.42	48.08	-1121.9	-574.0	1.7257
7	1.70	3.80	8.41	9.55	44.28	50.89	0.5093	0.0825	0.0177	1.7591	91.37	90.67	58.28	48.73	-1163.0	-629.8	1.7591
8	1.93	3.88	6.44	9.85	44.29	54.79	0.4748	0.0466	0.0101	1.7941	95.00	94.59	59.14	49.29	-1204.1	-683.1	1.7941
9	2.89	4.31	5.49	5.65	43.88	58.19	0.4429	0.0544	0.0118	1.8450	93.92	93.39	61.94	52.29	-1326.6	-799.7	1.8450
10	3.27	4.56	6.35	9.60	43.58	57.08	0.4525	0.0922	0.0199	1.8501	89.77	88.87	62.95	53.35	-1367.5	-821.0	1.8501
11	3.60	4.76	10.00	7.60	43.22	50.57	0.4902	0.1767	0.0361	1.8116	80.64	78.99	63.94	56.34	-1408.3	-828.4	1.8116

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 %
1.2008	1.8140	92.31	92.91	41.88	1.2008	1.8140	92.31	92.91

STATOR 1

RUN NO 15, 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	β-1 DEGREE	β-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	18.223	14.844	1050.3	647.6	642.5	638.6	830.8	-107.2	52.5	-9.4	0.9309	0.5455	1.7561	1.1984	1.7561	1.1984
2	15.932	13.029	1012.1	649.8	640.5	644.1	783.7	-85.3	50.9	-7.5	0.8928	0.5481	1.7663	1.1956	1.7663	1.1956
3	13.808	11.327	994.3	665.9	652.1	662.5	750.6	-67.6	49.1	-5.8	0.8748	0.5627	1.7900	1.1954	1.7900	1.1954
4	8.319	6.733	932.8	679.9	654.7	675.5	664.4	-77.1	45.4	-6.5	0.8135	0.5755	1.8111	1.1945	1.8111	1.1945
5	2.073	1.105	821.8	628.4	584.0	621.6	578.1	-92.1	44.7	-8.4	0.7064	0.5254	1.7415	1.1944	1.7415	1.1944
6	-0.931	-1.638	771.3	588.4	547.5	578.9	543.3	-104.9	44.8	-10.3	0.6590	0.4940	1.6954	1.1943	1.6954	1.1943
7	-2.227	-2.805	783.1	614.6	582.7	607.8	523.3	-91.2	41.9	-8.5	0.6705	0.5174	1.7213	1.1928	1.7213	1.1928
8	-3.289	-3.754	796.9	644.0	615.9	638.6	505.7	-83.6	39.4	-7.5	0.6837	0.5439	1.7539	1.1919	1.7539	1.1919
9	-5.957	-6.474	815.2	690.3	646.8	686.6	496.2	-70.9	37.6	-5.9	0.6969	0.5822	1.8109	1.2047	1.8109	1.2047
10	-6.818	-7.329	819.4	688.6	641.0	685.8	510.4	-62.3	38.6	-5.2	0.6973	0.5778	1.8083	1.2160	1.8083	1.2160
11	-7.693	-8.226	796.3	658.5	585.8	654.9	539.3	-68.9	42.7	-6.0	0.6704	0.5468	1.7704	1.2340	1.7704	1.2340

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	2.43	4.54	5.40	61.91	51.43	61.93	0.5599	0.1428	0.0288	0.9388	82.26	87.91	88.81	87.91	88.81
2	2.53	4.93	6.25	58.35	52.27	62.89	0.5347	0.1081	0.0228	0.9563	85.68	90.18	90.92	90.18	90.92
3	2.07	4.85	7.11	54.88	54.27	65.06	0.5067	0.0923	0.0203	0.9638	86.89	92.56	93.13	92.56	93.13
4	0.92	4.64	5.29	51.91	56.81	66.72	0.4607	0.0559	0.0136	0.9803	90.37	95.01	95.40	95.01	95.40
5	1.69	6.74	3.39	53.11	51.92	60.47	0.4546	0.0351	0.0095	0.9903	92.65	88.29	89.15	88.29	89.15
6	2.26	7.88	1.58	55.06	49.11	55.79	0.4769	0.0738	0.0208	0.9813	84.64	83.73	84.87	83.73	84.87
7	-0.36	5.52	3.34	50.49	52.98	58.87	0.4457	0.0934	0.0270	0.9756	79.31	87.01	87.95	87.01	87.95
8	-2.68	3.47	4.46	46.89	56.70	62.24	0.4127	0.0906	0.0267	0.9756	77.92	90.66	91.35	90.66	91.35
9	-4.56	2.32	7.13	43.48	60.08	66.99	0.3718	0.0670	0.0208	0.9814	80.05	90.24	91.00	90.24	91.00
10	-3.83	3.22	9.06	43.82	59.15	66.35	0.3826	0.0819	0.0258	0.9773	76.44	85.31	86.46	85.31	86.46
11	-0.39	6.76	9.78	48.78	53.04	62.14	0.4197	0.0876	0.0279	0.9772	76.23	75.67	77.52	75.67	77.52

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 %	EFF-P TOT-STG %
10712.	184.40	1.2008	1.7725	88.43	89.30	1.2008	0.9771	88.43	207.52

ROTOR 2

RUN NO 15, 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	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	11.496	11.071	717.3	1046.8	709.6	668.2	-104.2	805.9	-8.3	50.2	0.6083	0.8309	835.3	876.1	0.9984	0.5333	1177.3	671.9
2	10.611	9.801	726.3	1035.0	721.6	654.9	-83.1	801.5	-6.6	50.6	0.6173	0.8217	858.9	894.4	1.0085	0.5251	1186.5	661.5
3	9.612	8.609	747.6	1023.6	744.6	667.4	-66.2	776.0	-5.1	49.2	0.6369	0.8136	883.2	913.4	1.0279	0.5416	1206.6	681.4
4	6.151	5.329	774.3	941.5	770.6	666.4	-76.1	665.1	-5.6	44.9	0.6619	0.7454	958.8	974.2	1.1029	0.5816	1290.2	734.6
5	1.059	1.230	729.1	821.4	723.3	588.6	-91.8	572.9	-7.2	44.2	0.6202	0.6432	1063.C	1062.3	1.1591	0.5994	1362.6	765.5
6	-1.680	-0.927	691.4	767.1	683.4	553.9	-105.0	530.7	-8.7	43.7	0.5859	0.5975	1116.1	1109.1	1.1857	0.6238	1399.2	800.9
7	-2.983	-2.024	711.9	760.8	706.0	546.9	-91.4	528.8	-7.4	44.0	0.6049	0.5927	1142.8	1133.3	1.2083	0.6351	1421.9	815.2
8	-4.113	-3.070	736.1	771.6	731.3	567.7	-83.9	522.6	-6.5	42.6	0.6273	0.6019	1169.8	1158.0	1.2369	0.6647	1451.4	852.1
9	-6.954	-6.233	774.7	792.3	771.4	589.6	-71.6	529.2	-5.3	41.8	0.6591	0.6135	1251.8	1234.7	1.3033	0.7119	1531.8	919.4
10	-7.743	-7.286	773.0	793.5	770.5	587.7	-63.0	533.1	-4.7	42.1	0.6544	0.6114	1279.3	1261.0	1.3101	0.7208	1547.7	935.5
11	-8.547	-8.463	746.4	759.1	743.1	568.9	-69.8	502.6	-5.3	41.3	0.6250	0.5801	1306.9	1287.8	1.3100	0.7410	1564.5	969.6

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	3.37	7.69	26.37	46.88	66.52	81.59	0.6088	0.1565	0.0355	1.8237	89.01	88.05	52.85	5.97	-939.4	-70.2	3.2026
2	2.56	7.01	21.86	44.47	67.85	81.24	0.6195	0.1490	0.0345	1.8245	89.36	88.42	52.52	8.04	-941.9	-92.9	3.2222
3	1.54	6.12	19.13	40.29	70.17	84.29	0.6044	0.1242	0.0291	1.8140	90.71	89.90	51.90	11.60	-949.4	-137.4	3.2460
4	1.62	6.41	15.33	28.48	72.42	86.94	0.5787	0.1161	0.0271	1.7460	89.86	89.03	53.37	24.89	-1034.9	-309.2	3.1635
5	4.47	9.05	11.52	18.20	67.01	77.80	0.5759	0.1161	0.0253	1.7173	88.87	87.99	57.94	39.74	-1154.8	-489.3	2.9936
6	6.38	10.71	10.00	14.54	62.85	73.24	0.5619	0.1098	0.0225	1.7213	89.16	88.30	60.75	46.21	-1221.0	-578.5	2.9170
7	5.33	9.41	8.55	12.39	65.33	72.67	0.5590	0.1287	0.0264	1.6960	86.88	85.88	60.20	47.81	-1234.3	-604.5	2.9188
8	4.33	8.14	5.83	11.56	68.12	75.92	0.5430	0.1369	0.0286	1.6831	85.61	84.53	59.71	48.15	-1253.8	-635.4	2.9509
9	2.88	5.56	2.90	9.70	71.99	78.43	0.5357	0.1825	0.0410	1.6608	80.09	78.62	59.69	49.99	-1323.4	-705.5	3.0067
10	2.85	5.03	4.27	9.11	71.36	77.66	0.5344	0.1817	0.0416	1.6640	80.11	78.64	60.05	50.95	-1342.4	-727.8	3.0115
11	4.03	5.72	8.30	7.59	67.56	74.20	0.5174	0.1538	0.0342	1.6648	82.78	81.50	61.54	53.96	-1376.8	-785.2	2.9487

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 %
1.4333	3.0442	86.03	88.01	40.77	1.1937	1.7174	85.63	86.68

STATOR 2

RUN NO 15, 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	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	8.600	0.835	1072.2	686.6	716.4	686.5	797.8	9.5	48.3	0.8	0.8539	0.5250	3.0402	1.4515	1.7315	1.2111
2	7.500	0.741	1059.1	705.2	700.2	705.1	794.6	14.6	48.8	1.2	0.8434	0.5408	3.0801	1.4479	1.7462	1.2107
3	6.424	0.552	1046.6	731.2	708.4	731.1	770.5	15.5	47.6	1.2	0.8343	0.5632	3.1364	1.4416	1.7573	1.2060
4	3.810	-0.088	962.8	704.1	698.8	704.1	662.4	4.3	43.5	0.3	0.7642	0.5444	3.1043	1.4253	1.7122	1.1932
5	1.094	-0.577	842.6	608.2	618.2	607.5	572.5	-27.6	42.8	-2.6	0.6612	0.4677	2.9511	1.4195	1.6863	1.1885
6	-0.163	-0.644	789.1	561.2	584.0	560.2	530.8	-33.8	42.2	-3.4	0.6159	0.4302	2.8841	1.4199	1.6973	1.1887
7	-0.830	-0.650	783.4	557.9	577.4	557.2	529.4	-27.0	42.5	-2.8	0.6116	0.4278	2.8790	1.4182	1.6806	1.1885
8	-1.571	-0.662	794.4	576.0	597.4	575.6	523.7	-19.1	41.2	-1.9	0.6211	0.4424	2.9028	1.4168	1.6642	1.1884
9	-3.884	-0.950	820.9	635.9	625.4	635.9	531.8	2.9	40.4	0.3	0.6374	0.4864	2.9754	1.4402	1.6455	1.1963
10	-4.780	-1.100	825.8	640.8	627.9	640.7	536.3	13.5	40.5	1.2	0.6382	0.4878	2.9737	1.4544	1.6431	1.1975
11	-5.738	-1.150	797.9	594.2	616.8	594.0	506.2	15.3	39.5	1.5	0.6119	0.4485	2.8967	1.4690	1.6352	1.1907

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	12.61	47.55	85.99	96.15	0.5254	0.1332	0.0301	0.9495	81.94	82.44	84.92	79.83	81.32
2	1.41	3.43	12.43	47.65	85.48	99.50	0.5035	0.1154	0.0266	0.9570	83.43	84.24	86.49	81.33	82.73
3	0.93	3.43	12.06	46.36	88.11	104.28	0.4717	0.0887	0.0208	0.9674	86.20	87.07	88.95	84.25	85.44
4	-2.03	1.84	10.66	43.19	90.03	101.54	0.4435	0.0671	0.0167	0.9783	88.26	89.47	90.99	85.36	86.42
5	-1.93	3.38	7.70	45.38	80.86	86.78	0.4749	0.0699	0.0187	0.9820	87.50	86.02	87.95	84.84	85.91
6	-2.16	3.62	6.77	45.68	76.41	79.45	0.4926	0.0629	0.0174	0.9856	88.79	83.82	86.01	85.85	86.86
7	-1.75	4.24	7.39	45.25	75.91	79.07	0.4881	0.0602	0.0168	0.9866	89.07	84.00	86.16	84.23	85.33
8	-2.85	3.35	8.21	43.09	79.03	81.93	0.4677	0.0586	0.0166	0.9867	88.82	85.04	87.08	82.56	83.76
9	-3.41	3.29	10.42	40.13	82.04	89.50	0.4140	0.0409	0.0120	0.9902	90.75	82.67	85.08	77.32	78.84
10	-3.91	2.96	11.98	39.34	81.70	89.18	0.4120	0.0520	0.0154	0.9876	88.31	80.02	82.79	76.56	78.13
11	-6.27	0.82	13.41	37.98	79.03	81.16	0.4401	0.0797	0.0238	0.9822	83.92	75.34	78.67	78.42	79.85

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 %	EFF-P TOT-STG %
10712.	184.40	1.4333	2.9847	84.26	86.45	1.1937	0.9805	82.27	170.08

TABLE XVII (d) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

DESIGN SPEED

STATOR 1 ($\beta^*_{des.} - \beta^*_{act.}$) = +2.5°

STATOR 2 ($\beta_{des.} - \beta^*_{act.}$) = 0°

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 15, SPEED CODE 10, POINT NO 14

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	16.904	18.420	613.4	1035.5	613.4	579.9	0.0	862.7	0.0	56.1	0.5666	0.9185	627.7	726.7	0.8107	0.5263	877.7	595.6
2	14.595	16.154	627.2	997.2	627.2	593.2	0.0	801.6	0.0	53.5	0.5802	0.8775	676.9	761.9	0.8537	0.5232	922.8	594.6
3	12.384	14.046	641.2	979.1	641.2	615.8	0.0	761.2	0.0	51.1	0.5941	0.8597	725.1	797.0	0.8968	0.5416	968.0	616.8
4	6.476	8.423	675.9	905.5	675.9	605.0	0.0	679.1	0.0	48.3	0.6287	0.7899	863.3	902.6	1.0198	0.5601	1096.4	644.9
5	0.895	2.100	700.3	806.1	700.3	530.9	0.0	606.7	0.0	48.8	0.6533	0.6889	1035.7	1043.2	1.1663	0.5874	1250.3	687.3
6	-0.755	-0.720	706.8	765.3	706.8	508.8	0.0	571.7	0.0	48.3	0.6599	0.6507	1118.7	1113.5	1.2354	0.6320	1323.3	743.3
7	-1.735	-2.056	709.2	770.9	709.2	538.9	0.0	551.2	0.0	45.6	0.6624	0.6561	1159.6	1148.6	1.2695	0.6848	1359.3	804.6
8	-3.074	-3.363	710.5	776.7	710.5	570.2	0.0	530.3	0.0	42.9	0.6636	0.6639	1200.5	1183.8	1.3030	0.7394	1395.0	867.3
9	-7.844	-7.329	701.6	792.1	701.6	602.3	0.0	514.3	0.0	40.4	0.6546	0.6728	1322.7	1289.3	1.3970	0.8338	1497.3	981.5
10	-9.588	-8.731	693.8	797.3	693.8	602.3	0.0	522.3	0.0	40.8	0.6468	0.6749	1363.5	1324.5	1.4260	0.8491	1529.9	1003.1
11	-11.105	-10.170	684.3	782.7	684.3	555.0	0.0	551.9	0.0	44.7	0.6371	0.6560	1404.2	1359.6	1.4543	0.8214	1562.0	980.0

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	-0.91	3.69	14.74	58.69	40.15	46.85	0.5535	0.0425	0.0091	1.8737	97.82	97.63	45.47	-13.22	-627.7	136.0	1.8737
2	-0.82	3.48	15.77	50.83	40.76	49.21	0.5672	0.0235	0.0054	1.8558	98.66	98.55	47.00	-3.83	-676.9	39.7	1.8558
3	-0.65	3.45	14.87	45.02	41.35	52.35	0.5598	-0.0140	-0.0034	1.8743	100.86	100.95	48.35	3.34	-725.1	-35.9	1.8743
4	0.34	3.81	10.61	31.56	42.74	53.66	0.5812	0.0144	0.0036	1.8625	98.90	98.81	51.85	20.29	-863.3	-223.5	1.8625
5	1.41	4.09	9.16	16.49	43.64	48.27	0.5964	0.1076	0.0249	1.7945	90.31	89.50	55.93	39.44	-1035.7	-436.5	1.7945
6	1.78	4.06	9.45	10.92	43.87	46.89	0.5730	0.1203	0.0261	1.7781	88.42	87.47	57.71	46.79	-1118.7	-541.8	1.7781
7	1.95	4.06	7.63	10.60	43.95	50.32	0.5371	0.0883	0.0192	1.8062	91.28	90.55	58.54	47.94	-1159.6	-597.4	1.8062
8	2.14	4.10	6.02	10.49	44.00	53.97	0.5016	0.0531	0.0116	1.8368	94.61	94.14	59.36	48.88	-1200.5	-653.5	1.8368
9	2.99	4.41	5.29	9.55	43.68	57.96	0.4640	0.0504	0.0110	1.8951	94.63	94.13	62.03	52.08	-1322.7	-775.0	1.8951
10	3.33	4.63	6.01	10.00	43.41	57.85	0.4659	0.0745	0.0162	1.9084	92.05	91.31	63.01	53.01	-1363.5	-802.1	1.9084
11	3.66	4.82	9.06	8.60	43.05	52.50	0.5009	0.1522	0.0319	1.8867	84.02	82.55	64.00	55.40	-1404.1	-807.7	1.8867

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 %
1.2069	1.8518	92.94	93.51	41.56	1.2069	1.8518	92.94	93.51

STATOR 1

RUN NO 15, SPEED CODE 10, POINT NO 14

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	18.165	14.882	1041.3	615.8	609.2	606.6	844.5	-106.0	54.4	-9.8	0.9204	0.5167	1.7653	1.2010	1.7653	1.2010
2	15.879	13.141	1003.4	618.0	621.9	612.9	787.5	-79.4	51.8	-7.3	0.8838	0.5198	1.7756	1.1959	1.7756	1.1959
3	13.841	11.531	988.3	632.4	643.9	629.2	749.8	-63.8	49.4	-5.8	0.8690	0.5329	1.7968	1.1946	1.7968	1.1946
4	8.582	7.102	924.9	646.5	633.8	642.5	673.6	-72.0	46.8	-6.4	0.8049	0.5450	1.8200	1.1967	1.8200	1.1967
5	2.266	1.486	825.8	608.3	561.5	602.7	605.6	-82.4	47.2	-7.8	0.7074	0.5096	1.7725	1.2031	1.7725	1.2031
6	-0.825	-1.288	786.7	573.2	539.9	564.8	572.2	-97.9	46.7	-9.8	0.6704	0.4786	1.7345	1.2043	1.7345	1.2043
7	-2.171	-2.480	792.5	604.2	568.3	597.7	552.3	-88.6	44.2	-8.4	0.6762	0.5061	1.7661	1.2029	1.7661	1.2029
8	-3.294	-3.503	800.7	629.0	598.5	623.6	531.9	-82.0	41.7	-7.5	0.6844	0.5284	1.7942	1.2012	1.7942	1.2012
9	-6.081	-6.395	817.1	676.8	632.5	673.7	517.4	-64.2	39.4	-5.5	0.6962	0.5681	1.8535	1.2128	1.8535	1.2128
10	-6.941	-7.299	823.7	680.6	634.1	678.0	525.8	-58.7	39.8	-5.0	0.6994	0.5692	1.8583	1.2219	1.8583	1.2219
11	-7.974	-8.220	811.8	661.4	551.5	658.7	556.1	-60.2	43.3	-5.2	0.6827	0.5478	1.8324	1.2406	1.8324	1.2406

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	4.33	6.44	5.01	44.15	49.14	59.87	0.5888	0.1370	0.0276	0.9422	83.66	87.63	88.56	87.63	88.56
2	3.48	5.88	6.40	59.15	51.34	61.01	0.5617	0.1088	0.0229	0.9567	86.25	90.94	91.63	90.94	91.63
3	2.40	5.19	7.14	55.18	54.35	63.03	0.5368	0.1064	0.0234	0.9587	85.78	93.59	94.08	93.59	94.08
4	2.26	5.98	5.40	53.14	55.63	64.69	0.4944	0.0650	0.0158	0.9774	89.70	94.81	95.22	94.81	95.22
5	4.15	9.20	4.03	54.93	50.46	59.83	0.4888	0.0418	0.0113	0.9882	92.12	87.42	88.37	87.42	88.37
6	4.14	9.76	2.02	56.50	49.15	55.62	0.5135	0.0927	0.0261	0.9760	82.80	83.36	84.58	83.36	84.58
7	1.90	7.77	3.45	52.64	52.43	59.22	0.4746	0.0925	0.0267	0.9755	81.10	86.89	87.88	86.89	87.88
8	-0.44	5.70	4.42	49.17	55.94	62.18	0.4429	0.0914	0.0269	0.9754	79.68	90.27	91.02	90.27	91.02
9	-2.76	4.12	7.59	44.82	59.98	67.34	0.3955	0.0802	0.0249	0.9778	78.40	90.53	91.30	90.53	91.30
10	-2.69	4.36	9.31	44.72	59.97	67.40	0.4003	0.0942	0.0297	0.9737	74.88	87.20	88.24	87.20	88.24
11	0.22	7.37	10.57	48.59	55.05	64.31	0.4305	0.1074	0.0343	0.9712	72.67	78.42	80.15	78.42	80.15

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 %	EFF-P TOT-STG %
10680.	183.00	1.2069	1.8040	88.66	89.55	1.2069	0.9742	88.66	200.11

ROTOR 2

RUN NO 15, SPEED CODE 10, PCINT NO 14

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	11.568	11.050	670.3	1040.1	662.3	632.9	-103.2	825.4	-8.8	52.4	0.5652	0.8226	832.8	873.5	0.9668	0.5020	1146.6	634.7
2	10.754	9.775	678.5	1027.1	674.0	608.7	-77.5	827.3	-6.6	53.6	0.5738	0.8128	856.3	891.8	0.9741	0.4844	1151.7	612.2
3	9.830	8.595	698.1	1014.2	655.3	624.4	-62.4	799.1	-5.1	51.9	0.5919	0.8038	880.6	910.8	0.9934	0.5028	1171.6	634.4
4	6.473	5.345	728.3	934.3	724.8	635.8	-71.0	684.6	-5.6	47.1	0.6188	0.7375	556.0	971.4	1.0681	0.5506	1257.0	697.5
5	1.441	1.338	702.8	821.2	658.1	578.6	-82.0	582.8	-6.7	45.2	0.5940	0.6411	1059.5	1059.2	1.1310	0.5851	1338.3	749.5
6	-1.297	-0.799	672.7	770.5	665.5	553.1	-98.1	536.4	-8.4	44.1	0.5665	0.5985	1112.8	1105.9	1.1636	0.6167	1381.7	793.9
7	-2.615	-1.896	698.9	767.3	693.3	554.7	-88.9	530.2	-7.3	43.7	0.5905	0.5961	1139.5	1130.0	1.1917	0.6346	1410.5	816.9
8	-3.800	-2.972	720.3	775.4	715.5	569.0	-82.5	526.8	-6.6	42.7	0.6103	0.6030	1166.4	1154.6	1.2195	0.6588	1439.3	847.3
9	-6.902	-6.244	761.8	796.2	759.0	591.8	-64.9	532.7	-4.9	41.9	0.6450	0.6154	1248.1	1231.1	1.2840	0.7075	1516.6	915.4
10	-7.777	-7.349	764.4	799.2	762.1	592.8	-59.5	536.0	-4.4	42.0	0.6448	0.6150	1275.6	1257.3	1.2966	0.7184	1537.2	933.6
11	-8.606	-8.531	747.1	771.0	744.6	573.1	-61.0	515.8	-4.7	41.9	0.6239	0.5883	1303.1	1284.0	1.2977	0.7314	1554.1	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	VB'-1 FT/SEC	VB'-2 FT/SEC	PO/PO INLET
1	5.16	9.48	24.73	50.32	63.76	77.38	0.6345	0.1937	0.0440	1.8147	87.06	85.93	54.64	4.33	-936.0	-48.1	3.2033
2	4.21	8.66	19.84	48.14	65.25	75.70	0.6552	0.1926	0.0447	1.8153	86.99	85.86	54.16	6.02	-933.9	-64.4	3.2222
3	3.27	7.85	17.64	43.51	67.51	79.14	0.6367	0.1641	0.0387	1.8073	88.41	87.41	53.62	10.11	-943.0	-111.7	3.2444
4	3.09	7.89	14.72	30.57	70.11	83.38	0.5998	0.1386	0.0325	1.7442	88.49	87.55	54.84	24.28	-1026.9	-286.8	3.1756
5	5.10	9.67	11.25	19.09	66.34	77.18	0.5797	0.1182	0.0259	1.7090	88.92	88.05	58.57	39.47	-1141.8	-476.4	3.0336
6	6.81	11.15	9.59	15.38	62.74	73.96	0.5603	0.1096	0.0227	1.7096	89.30	88.46	61.18	45.80	-1210.9	-569.5	2.9688
7	5.66	9.73	7.93	13.34	65.77	74.56	0.5536	0.1267	0.0263	1.6889	87.18	86.20	60.53	47.18	-1228.4	-599.8	2.9778
8	4.77	8.58	5.42	12.41	68.30	76.97	0.5429	0.1388	0.0292	1.6780	85.59	84.50	60.15	47.74	-1248.9	-627.8	3.0073
9	3.08	5.76	2.51	10.29	72.65	79.96	0.5329	0.1762	0.0399	1.6574	80.87	79.47	59.89	49.60	-1313.0	-698.4	3.0704
10	2.99	5.17	3.78	9.74	72.59	79.65	0.5322	0.1821	0.0421	1.6574	80.13	78.67	60.19	50.45	-1335.0	-721.3	3.0796
11	3.76	5.46	7.51	8.11	69.74	75.99	0.5224	0.1668	0.0378	1.6506	81.41	80.06	61.27	53.16	-1364.1	-768.2	3.0262

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 %
1.4404	3.0834	85.79	87.82	39.85	1.1934	1.7092	84.91	86.00

STATOR 2

RUN NO 15, SPEED CODE 10, PCINT NO 14

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	8.569	0.858	1061.1	637.0	676.9	637.0	817.2	5.5	50.6	0.5	0.8415	0.4841	3.0297	1.4585	1.7163	1.2143
2	7.412	0.772	1047.3	658.1	651.4	658.0	820.1	13.6	51.7	1.2	0.8309	0.5017	3.0702	1.4538	1.7314	1.2146
3	6.263	0.572	1033.6	684.8	662.8	684.6	793.1	16.2	50.3	1.4	0.8212	0.5246	3.1230	1.4462	1.7436	1.2103
4	3.560	-0.096	953.0	670.2	666.0	670.2	681.7	3.0	45.7	0.3	0.7539	0.5157	3.1118	1.4310	1.7101	1.1961
5	0.765	-0.649	840.6	593.7	606.4	593.1	582.2	-26.7	43.8	-2.6	0.6576	0.4549	2.9920	1.4271	1.6818	1.1869
6	-0.475	-0.717	791.5	556.8	581.6	555.8	536.8	-33.8	42.7	-3.5	0.6160	0.4255	2.9379	1.4279	1.6867	1.1859
7	-1.117	-0.712	788.8	554.6	583.3	553.9	530.9	-28.4	42.3	-2.9	0.6140	0.4238	2.9335	1.4272	1.6728	1.1859
8	-1.792	-0.697	797.7	571.3	598.0	571.0	528.0	-18.8	41.4	-1.9	0.6216	0.4372	2.9549	1.4264	1.6555	1.1869
9	-3.929	-0.922	825.0	634.0	627.6	634.0	535.4	6.0	40.5	0.5	0.6394	0.4838	3.0328	1.4463	1.6394	1.1934
10	-4.772	-1.060	831.8	642.9	633.3	642.7	539.3	17.0	40.5	1.5	0.6420	0.4886	3.0379	1.4596	1.6352	1.1957
11	-5.711	-1.116	810.0	607.3	621.5	607.1	519.4	17.8	40.0	1.7	0.6203	0.4577	2.9744	1.4760	1.6219	1.1907

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	2.18	3.74	12.31	50.14	81.62	90.24	0.5723	0.1458	0.0330	0.9458	81.55	80.88	83.57	77.27	78.92
2	4.32	6.34	12.43	50.56	79.94	93.97	0.5483	0.1265	0.0291	0.9538	83.10	82.86	85.30	78.52	80.10
3	3.63	6.13	12.20	48.91	82.95	98.87	0.5148	0.1007	0.0236	0.9639	85.55	85.79	87.84	81.26	82.66
4	0.17	4.03	10.57	45.47	86.39	97.90	0.4782	0.0709	0.0176	0.9775	88.47	88.51	90.16	83.85	85.02
5	-0.89	4.41	7.73	46.39	80.10	85.91	0.4931	0.0653	0.0175	0.9834	88.75	85.72	87.71	85.07	86.12
6	-1.73	4.06	6.74	46.15	77.01	80.00	0.5020	0.0579	0.0160	0.9867	89.88	83.92	86.13	86.03	87.02
7	-1.96	4.03	7.23	45.20	77.63	79.70	0.4957	0.0598	0.0167	0.9866	89.34	83.92	86.12	84.54	85.62
8	-2.64	3.56	8.22	43.30	80.04	82.35	0.4771	0.0642	0.0182	0.9854	88.10	84.74	86.84	82.30	83.51
9	-3.32	3.38	10.71	39.94	83.64	90.67	0.4191	0.0479	0.0141	0.9885	89.50	83.20	85.57	77.84	79.32
10	-4.00	2.88	12.29	38.94	83.76	91.03	0.4132	0.0554	0.0164	0.9866	87.72	80.92	83.61	76.47	78.03
11	-5.76	1.34	13.61	38.29	80.94	84.43	0.4365	0.0764	0.0228	0.9826	84.38	76.40	79.65	77.03	78.53

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 %	EFF-P TOT-STG %
10680.	183.00	1.4404	3.0214	83.99	86.24	1.1934	0.9799	81.45	166.19

TABLE XVIII (a) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

DESIGN SPEED
STATOR 1 $(\beta^*_{des.} - \beta^*_{act.}) = 0^\circ$
STATOR 2 $(\beta^*_{des.} - \beta^*_{act.}) = +5^\circ$

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 17, 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'-I	V'-1 FT/SEC	V'-2 FT/SEC
1	16.613	18.268	646.4	1029.0	646.4	646.9	0.0	800.3	0.0	51.1	0.5992	0.9138	630.4	729.8	0.8370	0.5779	902.9	650.7
2	14.046	15.868	660.9	997.9	660.9	651.5	0.0	755.8	0.0	49.2	0.6137	0.8826	679.8	765.1	0.8803	0.5763	948.1	651.6
3	11.661	13.640	674.7	973.4	674.7	655.2	0.0	720.0	0.0	47.7	0.6275	0.8580	728.2	800.4	0.9232	0.5818	992.7	660.1
4	5.421	7.149	705.8	856.6	705.8	640.8	0.0	627.1	0.0	44.4	0.6588	0.7826	866.9	906.4	1.0435	0.6101	1117.9	699.0
5	-0.568	1.228	720.5	769.4	720.5	565.4	0.0	521.9	0.0	42.7	0.6738	0.6631	1040.1	1047.6	1.1833	0.6654	1265.3	772.0
6	-1.913	-1.610	721.4	659.4	721.4	511.7	0.0	476.8	0.0	43.0	0.6747	0.5994	1123.4	1118.2	1.2487	0.7032	1335.1	820.5
7	-2.577	-2.846	721.7	719.7	721.7	557.6	0.0	455.0	0.0	39.2	0.6750	0.6188	1164.5	1153.5	1.2815	0.7685	1370.0	893.6
8	-3.747	-4.045	721.1	735.8	721.1	591.7	0.0	437.4	0.0	36.5	0.6744	0.6342	1205.6	1188.8	1.3139	0.8244	1404.8	956.4
9	-8.333	-7.688	707.7	760.9	707.7	626.1	0.0	432.3	0.0	34.6	0.6608	0.6538	1328.3	1294.7	1.4054	0.9158	1505.1	1065.7
10	-10.022	-8.999	698.8	764.8	698.8	620.6	0.0	446.9	0.0	35.7	0.6518	0.6542	1369.2	1330.1	1.4338	0.9233	1537.3	1079.4
11	-11.383	-10.317	688.6	737.6	688.6	568.5	0.0	469.9	0.0	39.5	0.6415	0.6247	1410.1	1365.4	1.4618	0.8984	1569.3	1060.7

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	-2.34	2.27	21.73	50.27	41.56	53.04	0.4901	-0.0770	-0.0169	1.8734	104.37	104.78	44.05	-6.22	-630.4	70.5	1.8734
2	-2.27	2.03	20.42	44.74	42.15	54.49	0.5093	-0.0691	-0.0159	1.8622	104.31	104.71	45.55	0.82	-679.8	-9.3	1.8622
3	-2.06	2.04	18.53	39.95	42.69	55.67	0.5196	-0.0606	-0.0144	1.8561	104.09	104.47	46.94	7.00	-728.2	-80.4	1.8561
4	-0.80	2.67	13.85	27.17	43.83	55.98	0.5311	-0.0074	-0.0018	1.8042	100.56	100.62	50.70	23.53	-866.9	-279.3	1.8042
5	0.76	3.45	12.64	12.37	44.34	49.92	0.5166	0.0821	0.0181	1.6764	91.24	90.61	55.28	42.91	-1040.1	-525.7	1.6764
6	1.37	3.65	14.08	5.88	44.37	45.32	0.4990	0.1162	0.0229	1.6135	86.51	85.60	57.30	51.42	-1123.4	-641.4	1.6135
7	1.63	3.73	11.10	6.81	44.38	50.08	0.4544	0.0678	0.0137	1.6503	91.92	91.35	58.21	51.41	-1164.5	-698.5	1.6503
8	1.89	3.85	8.93	7.32	44.36	53.77	0.4212	0.0304	0.0062	1.6825	96.29	96.02	59.11	51.79	-1205.6	-751.4	1.6825
9	2.91	4.33	7.19	7.97	43.90	57.33	0.3927	0.0386	0.0080	1.7340	95.16	94.78	61.96	53.98	-1328.3	-862.4	1.7340
10	3.50	4.59	7.84	8.14	43.59	56.42	0.4021	0.0769	0.0160	1.7382	90.48	89.73	62.98	54.84	-1369.2	-883.2	1.7382
11	3.64	4.79	11.15	6.48	43.22	50.77	0.4333	0.1566	0.0310	1.6991	80.85	79.40	63.97	57.50	-1410.1	-895.4	1.6991

TO/TO INLET	PO/PC INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.18C9	1.7374	94.43	94.83	42.22	1.1809	1.7374	94.43	94.83

STATOR 1

RUN NO 17, 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	18.209	14.861	1039.6	716.4	683.5	715.8	783.4	29.5	49.1	2.3	0.9248	0.6106	1.7428	1.1873	1.7428	1.1873
2	15.943	13.080	1012.3	721.6	688.2	720.4	742.4	43.3	47.3	3.4	0.8974	0.6158	1.7568	1.1855	1.7568	1.1855
3	13.655	11.412	99C.7	733.5	691.7	731.5	709.2	54.0	45.8	4.2	0.8755	0.6269	1.7768	1.1849	1.7768	1.1849
4	8.359	6.855	918.7	726.8	676.0	726.0	622.1	34.5	42.6	2.7	0.8043	0.6215	1.7685	1.1822	1.7685	1.1822
5	1.881	1.087	793.4	659.5	598.4	659.4	521.0	11.2	41.0	1.0	0.6857	0.5620	1.6670	1.1750	1.6670	1.1750
6	-1.415	-1.797	724.9	613.7	545.8	613.6	477.1	-6.8	41.2	-0.6	0.6229	0.5218	1.6057	1.1703	1.6057	1.1703
7	-2.766	-3.021	744.C	624.7	588.1	624.7	455.7	-7.8	37.8	-0.7	0.6414	0.5323	1.6130	1.1680	1.6130	1.1680
8	-3.753	-3.970	759.5	654.6	620.0	654.6	438.7	0.0	35.3	0.0	0.6564	0.5595	1.6422	1.1673	1.6422	1.1673
9	-6.187	-6.509	786.5	703.3	655.3	703.0	435.0	22.3	33.7	1.8	0.6778	0.6005	1.6984	1.1802	1.6984	1.1802
10	-6.973	-7.329	792.1	705.5	651.9	704.9	449.8	28.5	34.7	2.3	0.6796	0.5995	1.7008	1.1910	1.7008	1.1910
11	-7.977	-6.216	767.6	676.2	6C4.0	675.6	473.6	28.4	38.2	2.4	0.6522	0.5692	1.6649	1.2058	1.6649	1.2058

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	-3.45	-1.34	14.66	46.76	55.56	67.13	0.4523	0.1642	0.0335	0.9303	75.97	91.75	92.35	91.75	92.35
2	-3.54	-1.13	14.64	43.9C	56.9C	68.00	0.4275	0.1388	0.0294	0.9435	78.17	94.11	94.54	94.11	94.54
3	-3.72	-0.94	14.59	41.61	58.0C	69.43	0.3997	0.1081	0.0238	0.9575	81.43	96.49	96.75	96.49	96.75
4	-4.38	-0.66	11.99	39.91	58.17	68.95	0.3595	0.0516	0.0126	0.9820	89.01	97.02	97.24	97.02	97.24
5	-4.48	0.57	10.28	40.C5	52.1C	61.36	0.3365	0.0053	0.0014	0.9987	98.28	89.75	90.44	89.75	90.44
6	-3.66	1.76	8.73	41.8C	47.72	56.39	0.3477	0.0449	0.0128	0.9893	87.18	85.03	85.97	85.03	85.97
7	-7.00	-1.12	8.67	38.92	52.19	57.47	0.3449	0.1121	0.0327	0.9727	67.83	87.10	87.91	87.10	87.91
8	-9.26	-3.13	9.43	35.33	55.62	60.50	0.3120	0.1045	0.0310	0.9737	65.67	90.97	91.56	90.97	91.56
9	-10.97	-4.09	12.37	31.83	59.13	65.00	0.2718	0.0783	0.0244	0.9792	67.12	90.65	91.30	90.65	91.30
10	-10.25	-3.20	14.10	32.37	58.36	64.71	0.2794	0.0791	0.0250	0.9790	67.47	85.78	86.78	85.78	86.78
11	-7.42	-0.27	15.74	35.79	53.07	60.97	0.3069	0.0807	0.0258	0.9800	69.11	76.13	77.75	76.13	77.75

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PC INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %	EFF-P TOT-STG %
10726.	185.90	1.1EC9	1.6977	90.18	90.86	1.1809	0.9771	90.18	23C.51

ROTOR 2

RUN NO 17, 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	11.474	11.292	805.5	1303.9	805.0	942.8	28.7	900.7	2.0	43.6	0.6933	1.0852	836.3	877.2	0.9814	0.7849	1140.3	943.1
2	10.589	10.194	816.7	1271.1	815.6	909.8	42.2	887.7	3.0	44.2	0.7045	1.0537	860.0	895.5	0.9962	0.7542	1155.0	909.9
3	9.660	9.144	833.1	1224.5	831.4	875.9	52.9	855.6	3.6	44.3	0.7202	1.0104	884.4	914.6	1.0165	0.7245	1175.8	877.9
4	6.540	6.137	842.5	1113.7	841.8	875.9	34.2	687.8	2.3	38.2	0.7302	0.9160	960.0	975.5	1.0844	0.7583	1251.3	921.9
5	1.043	1.662	779.5	934.2	779.4	785.7	11.5	505.4	0.8	32.8	0.6727	0.7635	1064.3	1063.6	1.1305	0.7876	1310.0	963.8
6	-1.945	-0.743	725.4	800.6	725.4	683.0	-6.8	417.7	-0.5	31.4	0.6235	0.6501	1117.5	1110.6	1.1501	0.7900	1338.0	972.9
7	-3.169	-1.831	727.9	744.7	727.9	637.0	-7.7	385.9	-0.6	31.2	0.6265	0.6038	1144.3	1134.8	1.1730	0.7971	1362.7	983.1
8	-4.026	-2.809	749.2	756.6	749.2	658.3	0.2	372.8	0.0	29.5	0.6466	0.6154	1171.3	1159.5	1.1998	0.8345	1390.3	1025.8
9	-6.587	-5.879	793.9	836.9	793.5	738.9	22.5	393.1	1.6	27.9	0.6845	0.6808	1253.4	1236.3	1.2628	0.9121	1464.5	1121.2
10	-7.534	-7.069	797.2	847.9	796.6	750.7	28.8	394.2	2.1	27.6	0.6843	0.6875	1281.0	1262.6	1.2739	0.9307	1484.1	1147.9
11	-8.495	-8.390	771.5	809.0	771.0	714.6	28.8	379.1	2.1	27.8	0.6559	0.6497	1308.6	1289.4	1.2701	0.9295	1494.1	1157.3

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	-4.47	-0.16	18.97	46.43	71.83	89.49	0.3518	0.2357	0.0537	1.7305	83.14	81.80	45.01	-1.42	-807.7	23.5	3.0161
2	-4.91	-0.46	14.31	44.55	72.96	87.63	0.3870	0.2666	0.0623	1.6902	80.14	78.63	45.04	0.49	-817.8	-7.8	2.9695
3	-5.34	-0.76	11.38	41.16	74.45	85.45	0.4191	0.3015	0.0721	1.6231	76.00	74.32	45.01	3.85	-831.5	-59.0	2.8830
4	-3.97	0.83	8.64	29.58	74.77	89.78	0.3969	0.2258	0.0552	1.5469	78.05	76.67	47.79	18.21	-925.8	-287.6	2.7398
5	0.02	4.60	7.18	18.09	68.10	82.83	0.3696	0.1547	0.0358	1.4638	81.05	80.02	53.49	35.41	-1052.9	-558.2	2.4436
6	2.78	7.12	9.17	11.78	63.11	71.47	0.3664	0.1748	0.0364	1.3806	75.42	74.31	57.15	45.38	-1124.3	-692.8	2.2167
7	2.62	6.90	10.31	8.13	63.65	66.48	0.3665	0.2056	0.0406	1.3221	68.83	67.59	57.69	49.56	-1152.0	-748.9	2.1335
8	1.97	5.78	7.68	7.35	65.95	69.22	0.3454	0.1936	0.0390	1.3125	69.06	67.67	57.35	50.00	-1171.1	-786.7	2.1548
9	0.29	2.57	1.54	8.46	69.80	78.08	0.3212	0.1718	0.0396	1.3471	72.29	71.12	57.10	48.63	-1230.9	-843.3	2.2869
10	0.23	2.41	2.33	8.42	65.57	78.99	0.3148	0.1613	0.0384	1.3532	73.64	72.50	57.43	49.01	-1252.2	-868.4	2.3057
11	1.31	3.01	6.08	7.08	66.24	73.95	0.3129	0.1534	0.0359	1.3431	74.23	73.14	58.82	51.74	-1275.8	-910.3	2.2373

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 %
1.3544	2.4667	82.79	84.80	42.55	1.1469	1.4530	76.28	77.48

STATOR 2

RUN NO 17, 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	8.877	0.689	1360.4	1153.7	1027.5	1147.6	891.6	-119.1	41.2	-5.9	1.1441	0.9364	2.5372	1.4321	1.4567	1.2063
2	7.997	0.486	1326.6	1159.0	992.5	1149.1	880.3	-151.5	41.8	-7.5	1.1106	0.9428	2.5696	1.4288	1.4654	1.2051
3	7.028	0.222	1279.6	1169.6	955.9	1143.9	850.7	-244.1	41.9	-12.0	1.0657	0.9558	2.6217	1.4218	1.4782	1.1999
4	4.352	-0.468	1163.9	1121.4	939.6	1077.0	686.8	-312.4	36.2	-16.2	0.9645	0.9222	2.5555	1.3888	1.4421	1.1741
5	1.962	-0.940	983.7	1008.0	842.9	974.1	507.1	-259.3	31.0	-14.9	0.8087	0.8304	2.3493	1.3462	1.3977	1.1450
6	0.619	-1.088	854.5	907.1	744.4	861.0	419.6	-285.4	29.4	-18.3	0.6978	0.7443	2.1678	1.3245	1.3502	1.1311
7	-0.337	-1.123	796.7	843.3	696.6	788.3	386.7	-299.6	29.0	-20.8	0.6493	0.6902	2.0669	1.3125	1.2866	1.1234
8	-1.509	-1.108	806.9	839.4	715.3	807.4	373.4	-229.3	27.5	-15.8	0.6598	0.6888	2.0658	1.3055	1.2622	1.1168
9	-4.217	-1.190	889.3	920.4	796.7	900.4	395.1	-190.6	26.4	-11.9	0.7277	0.7562	2.1842	1.3252	1.2874	1.1240
10	-4.940	-1.235	905.4	933.9	813.9	920.7	396.5	-156.4	26.0	-9.6	0.7389	0.7649	2.1943	1.3368	1.2879	1.1238
11	-5.762	-1.203	877.8	885.8	790.4	871.1	381.8	-161.1	25.9	-10.5	0.7103	0.7175	2.0911	1.3499	1.2554	1.1195

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	-2.21	-0.65	10.90	47.16	92.55	103.79	0.3202	0.2863	0.0643	0.8402	30.79	70.24	73.75	54.70	57.00
2	-0.60	1.42	8.75	49.32	91.02	104.96	0.3081	0.2563	0.0585	0.8613	27.70	71.86	75.28	55.87	58.15
3	0.22	2.73	3.81	53.91	89.05	106.02	0.2919	0.1877	0.0430	0.9031	26.57	74.87	77.97	58.71	60.89
4	-4.31	-0.45	-0.86	52.42	92.72	102.49	0.2556	0.1534	0.0366	0.9305	-36.09	78.96	81.50	62.94	64.78
5	-8.68	-3.38	0.41	45.92	86.32	94.08	0.1990	0.1445	0.0374	0.9482	818.79	79.58	81.84	68.88	70.30
6	-10.02	-4.23	-3.10	47.65	75.84	82.85	0.1867	0.1308	0.0343	0.9623	236.21	76.03	78.45	67.95	69.26
7	-10.23	-4.24	-5.62	49.78	70.78	75.60	0.1822	0.1187	0.0311	0.9709	179.84	73.60	76.11	60.25	61.61
8	-11.52	-5.31	-0.72	43.36	73.24	77.88	0.1681	0.1510	0.0413	0.9621	238.62	75.23	77.58	57.64	58.98
9	-12.41	-5.71	3.24	38.32	81.70	86.57	0.1566	0.1484	0.0426	0.9561	260.43	76.73	79.10	60.08	61.46
10	-13.44	-6.56	6.15	35.64	82.83	87.64	0.1493	0.1584	0.0462	0.9519	297.83	74.56	77.16	60.22	61.00
11	-14.66	-7.78	6.47	36.32	78.77	80.77	0.1758	0.2286	0.0671	0.9347	1009.98	66.87	70.06	55.86	57.24

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 %	EFF-P TOT-STG %
10726.	185.90	1.3544	2.3070	75.91	78.52	1.1469	0.9353	62.02	1374.69

APPENDIX C

TABLE XVIII (b) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

DESIGN SPEED
STATOR 1 $(\beta^*_{des.} - \beta^*_{act.}) = 0^\circ$
STATOR 2 $(\beta^*_{des.} - \beta^*_{act.}) = +5^\circ$

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 17, 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	β-1 DEGREE	β-2 DEGREE	M-1	M-2	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-T	V'-1 FT/SEC	V'-2 FT/SEC
1	16.649	16.295	642.7	1034.7	642.7	641.5	0.0	811.8	0.0	51.7	0.5955	0.9190	626.8	725.6	0.8318	0.5749	897.7	647.3
2	14.121	15.520	657.0	1001.7	657.0	645.7	0.0	765.8	0.0	49.9	0.6098	0.8859	675.8	760.7	0.8748	0.5711	942.6	645.7
3	11.776	13.711	670.8	975.6	670.8	648.5	0.0	728.9	0.0	48.3	0.6236	0.8567	724.0	795.8	0.9175	0.5745	987.0	652.0
4	5.635	7.847	702.4	901.4	702.4	637.0	0.0	637.9	0.0	45.0	0.6554	0.7866	862.0	901.2	1.0375	0.6014	1111.9	689.2
5	-0.275	1.317	718.7	777.5	718.7	563.1	0.0	536.1	0.0	43.6	0.6719	0.6695	1034.1	1041.6	1.1774	0.6516	1259.3	756.6
6	-1.705	-1.518	720.4	712.9	720.4	515.5	0.0	492.4	0.0	43.7	0.6737	0.6105	1116.9	1111.8	1.2430	0.6901	1329.1	805.8
7	-2.456	-2.783	720.7	732.0	720.7	560.2	0.0	471.2	0.0	40.1	0.6740	0.6288	1157.8	1146.9	1.2755	0.7540	1363.8	877.7
8	-3.690	-4.011	720.0	748.2	720.0	594.4	0.0	454.4	0.0	37.4	0.6733	0.6442	1198.7	1182.0	1.3077	0.8089	1398.3	939.5
9	-8.390	-7.735	705.5	772.1	705.5	627.0	0.0	450.5	0.0	35.7	0.6586	0.6623	1320.7	1287.3	1.3977	0.8970	1497.3	1045.6
10	-10.104	-9.054	696.1	774.5	696.1	620.0	0.0	464.2	0.0	36.8	0.6490	0.6613	1361.4	1322.4	1.4256	0.9040	1529.0	1058.7
11	-11.453	-10.357	685.6	745.3	685.6	561.7	0.0	489.9	0.0	41.0	0.6384	0.6297	1402.0	1357.5	1.4533	0.8732	1560.6	1033.5

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	-2.33	2.28	20.29	51.72	41.41	52.25	0.4937	-0.0595	-0.0130	1.8709	103.33	103.64	44.05	-7.66	-626.8	86.2	1.8709
2	-2.25	2.05	19.15	46.02	42.00	53.69	0.5147	-0.0530	-0.0122	1.8583	103.26	103.57	45.57	-0.45	-675.8	5.1	1.8583
3	-2.05	2.06	17.42	41.07	42.54	54.84	0.5267	-0.0459	-0.0109	1.8515	103.06	103.34	46.56	5.49	-724.0	-66.9	1.8515
4	-0.82	2.65	12.77	28.23	43.71	55.60	0.5393	-0.0020	-0.0005	1.8104	100.11	100.14	50.68	22.45	-862.0	-263.3	1.8104
5	0.68	3.36	11.64	13.28	44.28	49.83	0.5294	0.0860	0.0192	1.6920	91.10	90.44	55.19	41.91	-1034.1	-505.5	1.6920
6	1.25	3.53	12.89	6.95	44.34	45.85	0.5111	0.1162	0.0235	1.6366	86.93	86.01	57.19	50.23	-1116.9	-619.3	1.6366
7	1.52	3.62	10.03	7.76	44.35	50.52	0.4673	0.0693	0.0144	1.6740	92.01	91.43	58.10	50.34	-1157.8	-675.7	1.6740
8	1.78	3.14	7.90	8.24	44.32	54.23	0.4344	0.0333	0.0070	1.7073	96.07	95.78	59.00	50.76	-1198.7	-727.6	1.7073
9	2.85	4.27	6.32	8.78	43.82	57.57	0.4073	0.0468	0.0100	1.7572	94.33	93.88	61.90	53.12	-1320.7	-836.8	1.7572
10	3.26	4.55	7.10	8.84	43.49	56.49	0.4165	0.0854	0.0181	1.7590	89.75	88.93	62.94	54.10	-1361.4	-858.2	1.7590
11	3.61	4.77	10.65	6.56	43.10	50.19	0.4523	0.1715	0.0345	1.7158	79.69	78.12	63.95	56.99	-1402.0	-867.6	1.7158

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 %
1.1651	1.7513	93.73	94.19	42.13	1.1851	1.7513	93.73	94.19

STATOR 1

RUN NO 17, 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	β-1 DEGREE	β-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	15.201	14.913	1043.5	700.4	676.2	700.0	794.7	25.3	49.8	2.0	0.9281	0.5955	1.7433	1.1890	1.7433	1.1890
2	15.925	13.173	1014.5	704.6	680.7	703.3	752.2	42.6	48.0	3.4	0.8990	0.5999	1.7569	1.1869	1.7569	1.1869
3	15.832	11.518	991.5	715.2	683.7	713.2	718.0	54.2	46.5	4.3	0.8758	0.6098	1.7761	1.1861	1.7761	1.1861
4	8.345	6.911	922.6	711.6	671.4	711.0	632.7	30.0	43.3	2.4	0.8074	0.6070	1.7730	1.1843	1.7730	1.1843
5	1.674	1.115	801.0	651.0	595.9	651.0	535.2	9.7	41.9	0.9	0.6916	0.5534	1.6817	1.1788	1.6817	1.1788
6	-1.341	-1.616	738.0	606.7	549.4	606.7	492.8	-5.2	41.9	-0.5	0.6337	0.5145	1.6248	1.1751	1.6248	1.1751
7	-2.651	-3.058	756.4	620.7	591.0	620.7	472.0	-4.6	38.6	-0.4	0.6515	0.5275	1.6361	1.1731	1.6361	1.1731
8	-3.625	-4.142	772.0	650.4	623.2	650.4	455.7	2.6	36.2	0.2	0.6665	0.5543	1.6658	1.1726	1.6658	1.1726
9	-6.047	-6.819	797.3	701.8	655.9	701.4	453.2	24.0	34.7	2.0	0.6859	0.5975	1.7217	1.1863	1.7217	1.1863
10	-6.847	-7.566	800.9	705.2	650.5	704.5	467.2	31.2	35.8	2.5	0.6859	0.5977	1.7236	1.1968	1.7236	1.1968
11	-7.697	-8.361	774.1	677.1	596.2	676.6	493.7	26.6	39.7	2.3	0.6561	0.5682	1.6869	1.2133	1.6869	1.2133

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	-2.75	-0.64	14.38	47.76	54.68	66.13	0.4726	0.1597	0.0326	0.9319	77.67	91.03	91.68	91.03	91.68
2	-2.85	-0.45	14.66	44.56	56.03	66.92	0.4476	0.1336	0.0283	0.9455	80.02	93.43	93.91	93.43	93.91
3	-3.04	-0.26	14.71	42.17	57.12	68.26	0.4204	0.1032	0.0227	0.9594	83.27	95.79	96.10	95.79	96.10
4	-3.76	0.02	11.68	40.85	57.76	68.14	0.3829	0.0547	0.0133	0.9806	89.23	96.38	96.65	96.38	96.65
5	-3.60	1.45	10.16	41.05	52.02	61.19	0.3602	0.0109	0.0030	0.9972	97.00	89.46	90.18	89.46	90.18
6	-3.13	2.49	8.87	42.38	48.23	56.39	0.3736	0.0512	0.0147	0.9876	86.66	84.92	85.90	84.92	85.90
7	-6.16	-0.29	8.56	39.06	52.62	57.81	0.3658	0.1071	0.0313	0.9732	72.16	87.22	88.05	87.22	88.05
8	-8.38	-2.24	9.66	35.99	56.12	60.86	0.3338	0.1022	0.0303	0.9736	70.20	90.88	91.50	90.88	91.50
9	-9.90	-3.02	12.52	32.15	59.35	65.52	0.2894	0.0751	0.0234	0.9797	71.91	90.10	90.81	90.10	90.81
10	-9.17	-2.13	14.32	33.22	58.39	65.29	0.2939	0.0750	0.0237	0.9797	71.88	85.52	86.56	85.52	86.56
11	-5.69	1.26	15.58	37.47	52.45	61.52	0.3209	0.0672	0.0215	0.9831	75.47	75.48	77.19	75.48	77.19

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 %	EFF-P TOT-STG %
10664.	185.50	1.1651	1.7117	89.61	90.35	1.1851	0.9774	89.61	226.23

ROTOR 2

RUN NO 17, 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	11.633	11.165	778.0	1216.9	777.6	775.6	24.5	937.7	1.8	50.3	0.6670	0.9930	831.5	872.1	0.9608	0.6352	1120.7	778.4
2	10.900	10.006	789.5	1201.5	788.4	764.0	41.4	927.3	3.0	50.4	0.6784	0.9797	855.0	890.4	0.9735	0.6237	1133.0	764.9
3	10.036	8.885	807.4	1182.9	805.7	772.4	53.1	896.0	3.8	49.2	0.6955	0.9652	879.3	905.4	0.9940	0.6303	1154.0	772.5
4	6.668	5.673	824.4	1078.5	823.9	781.6	29.8	743.2	2.1	43.6	0.7121	0.8757	954.5	969.9	1.0698	0.6607	1238.5	813.8
5	1.185	1.371	769.5	919.1	769.4	674.6	9.9	624.2	0.7	42.8	0.6621	0.7367	1058.2	1057.5	1.1190	0.6426	1300.4	801.7
6	-1.751	-0.856	722.2	835.3	722.2	610.2	-5.2	570.4	-0.4	43.0	0.6193	0.6654	1111.1	1104.2	1.1400	0.6458	1329.6	810.7
7	-3.138	-1.975	730.2	813.5	730.2	600.5	-4.4	548.9	-0.3	42.4	0.6272	0.6480	1137.7	1128.2	1.1644	0.6647	1355.6	834.5
8	-4.345	-3.084	752.0	825.5	752.0	622.6	2.9	541.9	0.2	41.0	0.6476	0.6586	1164.6	1152.9	1.1917	0.6960	1383.5	872.3
9	-7.455	-6.500	788.3	849.4	787.9	643.1	24.4	554.9	1.8	40.7	0.6773	0.6732	1246.2	1229.2	1.2492	0.7386	1453.8	931.8
10	-8.212	-7.578	787.7	840.3	787.1	626.7	31.6	559.8	2.3	41.7	0.6736	0.6618	1273.6	1255.4	1.2574	0.7374	1470.4	936.3
11	-8.633	-8.655	760.5	810.5	760.1	601.0	27.0	543.7	2.0	42.0	0.6436	0.6325	1301.1	1282.0	1.2554	0.7430	1483.6	952.0

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	-3.49	0.83	15.58	50.81	70.46	81.59	0.4958	0.2260	0.0513	1.7875	84.94	83.66	45.99	-4.61	-807.0	65.6	3.1152
2	-4.06	0.39	11.06	48.65	71.01	82.12	0.5112	0.2120	0.0495	1.7890	85.55	84.33	45.90	-2.76	-813.6	36.9	3.1394
3	-4.59	-0.01	8.52	44.77	73.23	85.12	0.5066	0.1768	0.0423	1.7820	87.38	86.31	45.76	0.99	-826.2	-13.4	3.1618
4	-3.38	1.41	6.62	32.19	74.10	90.83	0.4907	0.1158	0.0286	1.7194	90.01	89.22	48.37	16.18	-924.7	-226.6	3.0525
5	0.26	4.83	4.50	21.01	68.04	80.56	0.5163	0.1090	0.0260	1.6646	89.32	88.53	53.73	32.72	-1048.4	-433.3	2.8033
6	2.71	7.05	4.54	15.93	63.49	73.07	0.5182	0.1127	0.0252	1.6423	88.41	87.58	57.08	41.15	-1116.3	-533.8	2.6664
7	2.51	6.59	4.67	13.46	64.47	72.28	0.5084	0.1236	0.0271	1.6147	86.71	85.79	57.39	43.92	-1142.1	-579.4	2.6432
8	1.66	5.49	2.07	12.67	66.81	75.53	0.4912	0.1240	0.0278	1.6072	86.21	85.26	57.06	44.38	-1161.7	-610.9	2.6763
9	0.33	3.01	-0.85	10.89	70.21	77.71	0.4856	0.1598	0.0366	1.5900	81.54	80.30	57.14	46.25	-1221.8	-674.3	2.7377
10	0.37	2.55	1.19	9.71	69.75	74.98	0.4927	0.1757	0.0428	1.5780	79.59	78.24	57.57	47.86	-1242.1	-695.6	2.7169
11	1.58	3.28	5.09	8.35	66.23	70.83	0.4888	0.1656	0.0396	1.5774	80.59	79.31	59.10	50.74	-1274.1	-738.3	2.6611

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 %
1.3599	2.8436	86.69	88.47	42.19	1.1812	1.6613	85.58	86.57

STATOR 2

RUN NO 17, 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	8.443	0.594	1253.6	813.7	842.4	812.4	928.4	-45.7	48.0	-3.2	1.0291	0.6338	2.9514	1.4438	1.6938	1.2142
2	7.186	0.276	1236.8	826.5	827.4	825.1	919.4	-47.3	48.2	-3.3	1.0142	0.6425	2.9863	1.4396	1.7022	1.2130
3	5.985	-0.107	1216.5	851.6	830.4	849.5	889.5	-60.2	47.1	-4.1	0.9982	0.6659	3.0508	1.4309	1.7194	1.2064
4	3.318	-1.070	1109.3	808.1	826.1	804.7	740.4	-74.4	41.9	-5.3	0.9045	0.6354	2.9785	1.4051	1.6781	1.1863
5	0.795	-1.628	947.4	685.3	713.0	677.6	624.0	-102.8	41.2	-8.6	0.7619	0.5367	2.7573	1.3864	1.6364	1.1760
6	-0.433	-1.612	863.5	608.2	647.8	599.2	571.0	-104.2	41.4	-9.9	0.6899	0.4748	2.6405	1.3786	1.6255	1.1730
7	-1.083	-1.510	841.1	585.4	636.8	578.1	549.5	-92.2	40.8	-9.1	0.6718	0.4573	2.6101	1.3727	1.5968	1.1701
8	-1.741	-1.371	852.8	612.2	657.6	607.1	542.9	-79.2	39.5	-7.4	0.6824	0.4795	2.6447	1.3708	1.5869	1.1692
9	-3.700	-1.290	882.1	662.5	683.7	659.7	557.4	-61.3	39.2	-5.3	0.7016	0.5164	2.7015	1.3933	1.5692	1.1752
10	-4.555	-1.319	877.5	655.6	673.0	653.1	563.2	-56.4	40.0	-4.9	0.6939	0.5079	2.6824	1.4083	1.5562	1.1768
11	-5.590	-1.253	854.1	610.6	655.4	608.3	547.6	-51.9	40.0	-4.9	0.6695	0.4686	2.6102	1.4245	1.5473	1.1741

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	4.59	6.14	13.60	51.25	85.97	104.87	0.5256	0.1071	0.0242	0.9476	86.48	81.28	83.66	75.30	77.05
2	5.79	7.81	12.98	51.48	86.41	107.33	0.5111	0.1011	0.0232	0.9514	86.58	83.07	85.42	76.51	78.19
3	5.46	7.97	11.79	51.16	89.06	111.98	0.4825	0.0746	0.0175	0.9649	89.21	86.72	88.60	80.57	81.96
4	1.36	5.23	10.03	47.20	93.92	107.40	0.4528	0.0577	0.0143	0.9763	90.42	89.96	91.36	85.00	86.05
5	1.46	6.77	6.68	45.75	83.77	89.54	0.4829	0.0533	0.0141	0.9829	90.59	86.65	88.35	85.33	86.31
6	1.96	7.75	5.36	51.21	76.42	78.60	0.5133	0.0417	0.0114	0.9886	92.71	84.16	86.14	85.55	86.49
7	1.53	7.52	6.11	49.81	75.53	75.87	0.5182	0.0440	0.0122	0.9885	92.40	84.33	86.27	83.62	84.66
8	0.46	6.66	7.69	46.93	78.61	80.04	0.4893	0.0437	0.0123	0.9883	92.02	86.11	87.85	83.11	84.16
9	0.40	7.09	5.66	44.50	81.16	85.86	0.4555	0.0485	0.0142	0.9864	90.31	83.08	85.24	77.93	79.28
10	0.50	7.38	10.84	44.89	78.95	83.88	0.4631	0.0504	0.0148	0.9862	90.00	79.48	82.07	75.68	77.13
11	-0.77	6.32	12.07	44.82	75.55	76.55	0.4955	0.0736	0.0219	0.9809	86.69	73.99	77.16	75.74	77.18

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 %	EFF-P TOT-STG %
10664.	185.50	1.3999	2.7837	84.65	86.67	1.1812	0.9789	81.73	281.53

APPENDIX C

TABLE XVIII (c) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

DESIGN SPEED

STATOR 1 ($\beta^*_{des.} - \beta^*_{act.}$) = 0°

STATOR 2 ($\beta^*_{des.} - \beta^*_{act.}$) = $+5^\circ$

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 17, 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'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	16.722	18.499	618.7	1005.1	618.7	598.1	0.0	813.5	0.0	53.7	0.5718	0.8929	628.1	727.1	0.8148	0.5344	881.6	604.3
2	14.281	16.283	632.5	971.9	632.5	598.3	0.0	766.0	0.0	52.1	0.5854	0.8555	677.3	762.3	0.8577	0.5266	926.7	598.3
3	12.031	14.196	646.1	951.8	646.1	606.8	0.0	733.3	0.0	50.4	0.5989	0.8352	725.5	797.5	0.9006	0.5354	971.5	610.2
4	6.159	8.611	679.8	878.6	679.8	594.0	0.0	647.3	0.0	47.5	0.6326	0.7631	863.8	903.1	1.0229	0.5618	1099.2	646.8
5	0.362	2.232	704.0	785.4	704.0	536.0	0.0	574.1	0.0	47.0	0.6570	0.6729	1036.3	1043.8	1.1692	0.6106	1252.8	712.7
6	-1.466	-0.621	709.8	736.8	709.8	497.6	0.0	543.4	0.0	47.5	0.6629	0.6273	1119.3	1114.1	1.2378	0.6446	1325.4	757.1
7	-2.431	-2.012	711.7	749.2	711.7	539.0	0.0	520.3	0.0	44.0	0.6648	0.6394	1160.3	1149.3	1.2716	0.7069	1361.2	828.3
8	-3.728	-3.369	712.4	761.1	712.4	571.5	0.0	502.7	0.0	41.3	0.6656	0.6507	1201.2	1184.5	1.3048	0.7606	1396.6	889.7
9	-8.267	-7.388	702.1	778.2	702.1	600.1	0.0	495.4	0.0	39.5	0.6551	0.6623	1323.5	1290.0	1.3979	0.8475	1498.2	995.8
10	-9.895	-6.787	694.1	782.8	694.1	597.9	0.0	505.3	0.0	40.1	0.6471	0.6637	1364.2	1325.2	1.4269	0.8604	1530.7	1014.8
11	-11.286	-10.200	684.6	764.7	684.6	544.0	0.0	537.4	0.0	44.5	0.6374	0.6414	1405.0	1360.4	1.4552	0.8275	1562.9	986.6

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	-1.17	3.44	19.72	53.45	40.38	49.88	0.5330	-0.0663	-0.0145	1.8782	103.57	103.91	45.22	-8.23	-628.1	86.4	1.8782
2	-1.08	3.22	19.25	47.09	40.98	50.95	0.5566	-0.0546	-0.0126	1.8606	103.24	103.55	46.74	-0.35	-677.3	3.6	1.8606
3	-0.89	3.22	17.58	42.07	41.55	52.68	0.5619	-0.0600	-0.0143	1.8689	103.84	104.20	48.12	6.05	-725.5	-64.2	1.8689
4	0.18	3.65	13.64	28.36	42.88	53.49	0.5734	-0.0191	-0.0047	1.8420	101.47	101.61	51.69	23.33	-863.8	-255.8	1.8420
5	1.28	3.57	10.96	14.56	43.77	49.29	0.5700	0.0666	0.0150	1.7808	93.70	93.18	55.80	41.24	-1036.3	-469.7	1.7808
6	1.69	3.57	11.57	8.71	43.97	46.07	0.5578	0.1009	0.0210	1.7477	89.79	88.98	57.62	48.91	-1119.3	-570.7	1.7477
7	1.89	4.00	9.08	9.08	44.04	50.62	0.5140	0.0582	0.0123	1.7815	93.54	93.45	58.47	49.40	-1160.3	-629.0	1.7815
8	2.11	4.06	7.15	9.31	44.06	54.31	0.4808	0.0261	0.0056	1.8135	97.22	96.95	59.32	50.01	-1201.2	-681.8	1.8135
9	3.01	4.43	6.08	9.17	43.70	57.62	0.4511	0.0402	0.0086	1.8668	95.56	95.17	62.05	52.88	-1323.5	-794.6	1.8668
10	3.30	4.65	6.82	9.22	43.42	57.20	0.4551	0.0692	0.0148	1.8769	92.39	91.70	63.04	53.82	-1364.2	-819.9	1.8769
11	3.68	4.83	10.09	7.56	43.06	51.15	0.4939	0.1547	0.0316	1.8493	83.30	81.82	64.01	56.43	-1405.0	-823.0	1.8493

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 %
1.1978	1.8307	95.26	95.63	41.68	1.1978	1.8307	95.26	95.63

STATOR 1

RUN NO 17, 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	18.364	15.069	1013.8	630.6	627.4	630.5	796.4	7.3	52.0	0.7	0.8971	0.5324	1.7627	1.1898	1.7627	1.1898
2	16.197	13.454	979.8	632.6	627.7	631.6	752.4	34.0	50.3	3.1	0.8635	0.5348	1.7734	1.1873	1.7734	1.1873
3	14.182	11.912	962.7	644.1	636.4	641.9	722.3	53.0	48.7	4.7	0.8461	0.5450	1.7925	1.1876	1.7925	1.1876
4	6.896	7.579	895.3	642.5	624.0	641.5	642.0	36.4	45.9	3.2	0.7794	0.5436	1.7994	1.1875	1.7994	1.1875
5	2.668	2.129	805.8	612.1	566.6	611.9	573.0	16.1	45.3	1.5	0.6921	0.5154	1.7609	1.1923	1.7609	1.1923
6	-0.432	-0.574	758.9	578.2	525.2	578.2	543.9	-0.0	45.8	-0.0	0.6476	0.4851	1.7225	1.1941	1.7225	1.1941
7	-1.846	-1.764	770.7	599.2	567.6	599.1	521.4	13.6	42.6	1.3	0.6593	0.5041	1.7432	1.1916	1.7432	1.1916
8	-3.020	-2.798	782.9	630.0	598.9	629.6	504.2	23.6	40.1	2.1	0.6709	0.5316	1.7766	1.1910	1.7766	1.1910
9	-5.955	-5.892	802.9	673.1	629.6	671.9	498.3	38.9	38.4	3.3	0.6853	0.5667	1.8295	1.2051	1.8295	1.2051
10	-6.860	-6.918	809.3	674.1	629.7	672.9	508.3	40.9	39.0	3.5	0.6882	0.5652	1.8319	1.2148	1.8319	1.2148
11	-7.931	-8.004	793.7	650.4	580.3	649.6	541.6	33.1	43.1	2.9	0.6679	0.5395	1.8022	1.2344	1.8022	1.2344

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	-0.56	1.55	12.99	51.33	52.15	62.24	0.5304	0.1512	0.0309	0.9384	80.68	92.58	93.13	92.58	93.13
2	-0.51	1.89	14.29	47.27	53.13	62.78	0.5038	0.1214	0.0257	0.9532	83.54	94.88	95.26	94.88	95.26
3	-0.78	2.00	15.09	44.04	54.81	64.14	0.4787	0.1093	0.0240	0.9591	84.28	96.66	96.91	96.66	96.91
4	-1.14	2.57	12.51	42.62	55.57	64.39	0.4438	0.0698	0.0170	0.9769	88.24	97.39	97.58	97.39	97.58
5	-0.18	4.86	10.81	43.82	51.49	60.72	0.4270	0.0392	0.0107	0.9894	92.00	91.20	91.86	91.20	91.86
6	0.78	6.38	9.36	45.78	48.43	56.86	0.4426	0.0622	0.0178	0.9847	87.05	86.55	87.52	86.55	87.52
7	-2.22	3.66	10.66	41.28	52.66	59.21	0.4160	0.0922	0.0269	0.9766	80.02	89.76	90.51	89.76	90.51
8	-4.48	1.66	11.58	37.98	56.21	62.60	0.3788	0.0829	0.0246	0.9784	79.96	93.39	93.89	93.39	93.89
9	-6.19	0.66	13.87	35.10	59.60	66.77	0.3422	0.0747	0.0233	0.9798	78.67	91.76	92.41	91.76	92.41
10	-5.95	1.10	15.27	35.50	59.35	66.46	0.3519	0.0882	0.0279	0.9761	75.50	87.84	88.81	87.84	88.81
11	-2.49	4.66	16.24	40.21	53.69	62.96	0.3882	0.0984	0.0315	0.9746	74.24	78.10	79.81	78.10	79.81

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 %	EFF-P TOT-STG %
10686.	183.50	1.1978	1.7861	91.05	91.73	1.1978	0.9756	91.05	204.49

ROTOR 2

RUN NO 17, 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'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	11.064	11.162	684.3	1155.0	684.3	687.7	6.8	928.0	0.6	53.3	0.5807	0.9323	833.3	874.0	0.9105	0.5568	1073.0	685.8
2	10.946	9.966	693.2	1149.6	692.4	682.4	32.7	925.1	2.7	53.5	0.5894	0.9288	856.8	892.3	0.9152	0.5520	1076.4	683.2
3	10.072	8.821	711.2	1141.2	709.3	701.8	52.0	899.9	4.2	52.0	0.6057	0.9237	881.1	911.3	0.9293	0.5682	1091.1	701.9
4	6.827	5.552	728.0	1045.4	727.1	701.6	36.1	780.4	2.9	48.1	0.6211	0.8442	956.5	971.9	1.0007	0.5851	1172.9	727.3
5	1.952	1.560	708.6	919.4	708.4	623.6	16.6	675.6	1.3	47.3	0.6021	0.7288	1060.5	1059.8	1.0719	0.5806	1261.6	732.4
6	-0.644	-0.556	676.7	870.0	676.7	601.9	-0.7	628.3	-0.1	46.2	0.5727	0.6856	1113.4	1106.5	1.1031	0.6057	1303.6	766.7
7	-1.964	-1.651	693.1	861.7	693.0	592.2	13.1	625.9	1.1	46.5	0.5881	0.6789	1140.2	1130.6	1.1227	0.6130	1323.1	778.1
8	-3.169	-2.711	718.6	863.1	718.2	600.5	23.3	619.9	1.9	45.8	0.6115	0.6807	1167.1	1155.3	1.1493	0.6345	1350.5	804.5
9	-6.223	-5.851	758.7	873.3	757.7	616.2	39.2	618.9	2.9	45.0	0.6444	0.6841	1248.6	1231.8	1.2123	0.6808	1427.4	869.1
10	-7.124	-6.928	762.1	872.8	760.9	616.6	41.6	617.8	3.1	44.9	0.6448	0.6805	1276.3	1258.0	1.2271	0.6930	1450.4	886.9
11	-8.162	-8.213	743.0	843.3	742.2	625.3	33.6	565.7	2.6	42.0	0.6218	0.6540	1303.9	1284.7	1.2313	0.7390	1471.2	952.9

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	0.83	5.15	15.93	54.18	65.85	75.54	0.5576	0.2691	0.0657	1.7612	82.07	80.60	50.31	-4.47	-826.5	54.0	3.1037
2	0.01	4.46	11.07	52.71	66.65	76.70	0.5634	0.2521	0.0588	1.7823	84.27	82.94	49.96	-2.75	-824.1	32.9	3.1573
3	-0.65	3.72	8.46	48.57	68.57	80.88	0.5452	0.1933	0.0463	1.7923	87.49	86.43	49.50	0.93	-829.1	-11.4	3.2076
4	0.02	4.82	5.71	36.50	69.98	84.64	0.5426	0.1572	0.0390	1.7340	87.96	86.99	51.77	15.28	-920.4	-191.5	3.1226
5	2.38	6.96	3.42	24.21	67.22	77.16	0.5656	0.1696	0.0409	1.6692	84.97	83.85	55.85	31.64	-1043.9	-384.2	2.9465
6	4.33	8.66	2.23	20.26	63.64	74.98	0.5513	0.1521	0.0353	1.6747	85.93	84.88	58.70	38.44	-1114.2	-478.3	2.8881
7	3.50	7.58	1.13	17.99	65.55	74.35	0.5519	0.1614	0.0375	1.6641	84.68	83.55	58.37	40.38	-1127.1	-504.7	2.8936
8	2.43	6.24	-0.68	16.17	68.36	76.10	0.5410	0.1663	0.0389	1.6492	83.62	82.43	57.81	41.64	-1143.7	-535.4	2.9196
9	1.01	3.69	-2.39	13.12	72.06	78.60	0.5306	0.1869	0.0464	1.6351	80.51	79.13	57.82	44.70	-1209.6	-612.9	2.9878
10	1.02	3.20	-0.76	12.30	71.93	78.44	0.5293	0.1889	0.0477	1.6363	80.11	78.69	58.22	45.92	-1234.7	-640.2	2.9982
11	2.06	3.76	3.19	10.73	68.80	79.19	0.4870	0.1283	0.0319	1.6342	85.72	84.70	59.57	48.84	-1270.3	-719.0	2.9494

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 %
1.4265	3.0083	86.35	88.26	40.21	1.1909	1.6843	83.54	84.70

STATOR 2

RUN NO 17, 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	8.536	0.794	1179.5	658.5	739.7	657.7	918.8	-34.1	51.4	-3.0	0.9556	0.5033	2.9517	1.4471	1.6749	1.2162
2	7.375	0.669	1172.8	683.1	731.2	682.2	917.0	-35.1	51.6	-2.9	0.9509	0.5237	2.9984	1.4433	1.6940	1.2151
3	6.258	0.469	1163.5	713.7	745.6	712.5	893.2	-40.5	50.3	-3.3	0.9449	0.5499	3.0593	1.4365	1.7128	1.2097
4	3.550	-0.199	1070.9	699.0	736.7	698.5	777.2	-26.9	46.6	-2.2	0.8639	0.5414	3.0483	1.4195	1.6923	1.1954
5	0.680	-0.802	941.9	611.4	657.0	607.4	675.0	-70.4	45.8	-6.6	0.7486	0.4712	2.9079	1.4146	1.6447	1.1871
6	-0.581	-0.860	894.3	575.7	636.0	569.8	628.7	-82.1	44.6	-8.2	0.7065	0.4424	2.8541	1.4157	1.6456	1.1858
7	-1.233	-0.853	886.8	574.8	627.4	569.7	626.7	-76.8	44.9	-7.7	0.7005	0.4418	2.8516	1.4146	1.6452	1.1860
8	-1.959	-0.850	889.3	590.3	636.3	586.4	621.3	-68.4	44.3	-6.6	0.7033	0.4547	2.8720	1.4122	1.6302	1.1855
9	-4.320	-1.053	906.5	645.8	659.4	644.2	622.1	-45.3	43.4	-4.0	0.7126	0.4959	2.9378	1.4312	1.6092	1.1890
10	-5.193	-1.156	910.1	654.5	664.8	654.0	621.6	-34.4	43.1	-3.0	0.7124	0.5009	2.9419	1.4438	1.6057	1.1905
11	-6.022	-1.164	887.3	624.9	680.5	623.8	569.4	-36.9	40.0	-3.4	0.6912	0.4758	2.8883	1.4505	1.6006	1.1763

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	7.97	9.53	13.85	54.39	79.75	90.66	0.6237	0.1101	0.0249	0.9510	87.71	80.69	83.35	72.91	74.79
2	9.21	11.23	13.31	54.58	80.74	94.82	0.6034	0.1080	0.0248	0.9524	87.44	82.76	85.16	75.02	76.79
3	8.65	11.16	12.59	53.55	84.49	100.18	0.5751	0.0992	0.0232	0.9566	87.82	85.87	87.87	78.72	80.25
4	6.03	9.90	13.11	48.80	87.59	99.47	0.5381	0.0689	0.0171	0.9731	90.54	89.01	90.57	82.43	83.68
5	6.04	11.35	8.69	52.36	80.24	85.63	0.5677	0.0534	0.0142	0.9832	92.19	85.66	87.61	81.06	82.34
6	5.23	11.02	7.03	52.82	78.20	79.81	0.5806	0.0502	0.0137	0.9856	92.54	83.72	85.90	82.16	83.37
7	5.70	11.70	7.50	52.60	77.70	79.79	0.5745	0.0482	0.0134	0.9865	92.66	83.84	86.00	81.62	82.85
8	5.23	11.44	8.46	50.92	79.50	82.40	0.5566	0.0495	0.0140	0.9861	92.17	85.00	87.02	80.22	81.53
9	4.56	11.26	11.15	47.38	82.60	89.69	0.5037	0.0559	0.0164	0.9840	90.07	83.26	85.56	76.47	77.98
10	3.68	10.56	12.77	46.14	82.87	90.16	0.4945	0.0652	0.0193	0.9813	88.22	81.01	83.62	75.48	77.05
11	-0.71	6.39	13.55	43.41	84.20	85.04	0.5007	0.0752	0.0224	0.9795	86.91	78.23	81.16	80.94	82.16

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 %	EFF-P TOT-STG %
10686.	183.50	1.4265	2.9407	84.28	86.44	1.1909	0.9775	79.64	228.66

APPENDIX C

TABLE XIX (a) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

DESIGN SPEED

STATOR 1 ($\beta^*_{des.} - \beta^*_{act.}$) = 0°

STATOR 2 ($\beta^*_{des.} - \beta^*_{act.}$) = -5°

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 18, 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	16.679	18.610	618.4	1047.7	618.4	649.5	0.0	822.1	0.0	51.8	0.5715	0.9317	625.1	723.6	0.8126	0.5842	879.3	656.9
2	14.177	16.473	633.0	1015.8	633.0	655.8	0.0	775.8	0.0	49.9	0.5859	0.8996	674.0	758.7	0.8559	0.5810	924.6	656.0
3	11.856	14.449	647.6	985.8	647.6	662.7	0.0	735.2	0.0	48.1	0.6004	0.8736	722.0	793.6	0.8993	0.5872	969.9	665.2
4	5.767	8.968	685.6	905.6	685.6	643.7	0.0	637.0	0.0	44.8	0.6384	0.7909	859.6	898.7	1.0239	0.6069	1099.5	694.8
5	-0.412	2.742	716.5	772.7	716.5	556.6	0.0	535.9	0.0	43.9	0.6698	0.6652	1031.3	1038.7	1.1738	0.6458	1255.8	750.1
6	-2.466	-0.048	725.5	704.9	725.5	507.5	0.0	489.2	0.0	43.9	0.6789	0.6036	1113.9	1108.8	1.2440	0.6859	1329.3	800.9
7	-3.376	-1.558	728.7	724.0	728.7	553.1	0.0	467.1	0.0	40.2	0.6822	0.6219	1154.7	1143.8	1.2783	0.7508	1365.4	874.0
8	-4.542	-3.062	730.4	737.6	730.4	586.5	0.0	447.2	0.0	37.3	0.6840	0.6352	1195.4	1178.8	1.3118	0.8075	1400.9	937.6
9	-6.685	-7.315	721.6	760.3	721.8	618.4	0.0	442.3	0.0	35.5	0.6752	0.6525	1317.1	1283.8	1.4049	0.8962	1501.9	1044.2
10	-10.146	-8.766	714.1	763.4	714.1	613.0	0.0	454.9	0.0	36.5	0.6673	0.6523	1357.7	1318.8	1.4335	0.9052	1534.0	1059.4
11	-11.406	-10.191	704.6	731.7	704.6	550.7	0.0	481.8	0.0	41.1	0.6577	0.6184	1398.2	1353.8	1.4614	0.8717	1565.7	1031.4

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	-1.30	3.31	19.31	53.73	40.37	52.20	0.4745	-0.0394	-0.0086	1.8677	102.12	102.32	45.08	-8.65	-625.1	98.5	1.8677
2	-1.25	3.04	18.10	48.07	41.00	53.96	0.4961	-0.0433	-0.0100	1.8614	102.56	102.81	46.56	-1.50	-674.0	17.1	1.8614
3	-1.11	2.99	16.58	42.64	41.61	55.63	0.5055	-0.0497	-0.0119	1.8593	103.19	103.45	47.89	5.05	-722.0	-58.4	1.8593
4	-0.21	3.26	12.50	29.12	43.10	56.13	0.5278	-0.0099	-0.0025	1.8131	100.74	100.82	51.30	22.18	-859.6	-261.8	1.8131
5	0.68	3.37	11.84	13.09	44.20	49.53	0.5330	0.0800	0.0178	1.6958	91.75	91.13	55.20	42.11	-1031.3	-502.8	1.6958
6	1.01	3.29	13.33	6.27	44.51	45.48	0.5149	0.1047	0.0210	1.6406	88.12	87.28	56.94	50.67	-1113.9	-619.6	1.6406
7	1.18	3.28	10.41	7.05	44.61	50.29	0.4709	0.0564	0.0116	1.6778	93.40	92.92	57.76	50.72	-1154.7	-676.7	1.6778
8	1.38	3.33	8.40	7.34	44.67	53.98	0.4363	0.0178	0.0037	1.7083	97.85	97.70	58.59	51.25	-1195.4	-731.5	1.7083
9	2.26	3.68	6.83	7.68	44.38	57.40	0.4085	0.0286	0.0060	1.7602	96.46	96.19	61.30	53.63	-1317.1	-841.5	1.7602
10	2.60	3.89	7.56	7.72	44.12	56.58	0.4158	0.0635	0.0133	1.7654	92.24	91.62	62.28	54.56	-1357.7	-864.0	1.7654
11	2.92	4.08	11.28	5.63	43.75	49.87	0.4534	0.1530	0.0302	1.7214	81.62	80.18	63.26	57.62	-1398.2	-872.0	1.7214

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 %
1.1834	1.7541	94.90	95.27	42.13	1.1834	1.7541	94.90	95.27

STATOR 1

RUN NO 18, 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	18.405	15.204	1052.9	718.5	678.9	718.5	804.8	-2.4	50.1	-0.2	0.9371	0.6115	1.7443	1.1908	1.7443	1.1908
2	16.249	13.709	1025.3	721.9	685.8	721.8	762.2	14.3	48.2	1.1	0.9093	0.6152	1.7586	1.1888	1.7586	1.1888
3	14.238	12.284	1002.5	731.4	693.1	730.9	724.3	27.1	46.4	2.1	0.8866	0.6244	1.7783	1.1871	1.7783	1.1871
4	8.924	8.298	925.1	720.9	675.6	720.8	632.0	11.6	43.1	0.9	0.8101	0.6157	1.7744	1.1836	1.7744	1.1836
5	2.807	3.167	757.3	651.1	551.0	651.0	535.3	-11.5	42.2	-1.0	0.6884	0.5536	1.6860	1.1782	1.6860	1.1782
6	-0.115	0.523	729.4	602.4	540.5	601.5	489.9	-31.4	42.2	-3.0	0.6262	0.5110	1.6285	1.1735	1.6285	1.1735
7	-1.592	-0.709	747.8	616.8	583.1	616.1	468.2	-29.9	38.8	-2.8	0.6440	0.5245	1.6412	1.1709	1.6412	1.1709
8	-2.844	-1.842	761.3	645.1	615.2	644.8	448.4	-18.5	36.1	-1.6	0.6574	0.5502	1.6704	1.1697	1.6704	1.1697
9	-5.930	-5.252	786.9	688.3	649.3	688.3	444.7	3.6	34.5	0.3	0.6775	0.5861	1.7242	1.1828	1.7242	1.1828
10	-6.899	-6.453	792.3	688.1	646.9	688.0	457.5	9.4	35.4	0.8	0.6793	0.5832	1.7262	1.1930	1.7262	1.1930
11	-7.958	-7.757	763.9	656.0	589.8	657.9	485.5	7.9	39.6	0.7	0.6479	0.5521	1.6917	1.2092	1.6917	1.2092

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	-2.47	-0.36	12.14	50.27	54.33	67.20	0.4676	0.1528	0.0313	0.9339	78.17	90.22	90.94	90.22	90.94
2	-2.64	-0.24	12.36	47.07	56.00	68.04	0.4444	0.1331	0.0282	0.9448	79.68	92.66	93.20	92.66	93.20
3	-3.13	-0.34	12.51	44.28	57.62	69.40	0.4178	0.1084	0.0239	0.9566	82.04	95.47	95.80	95.47	95.80
4	-3.87	-0.15	10.20	42.21	58.15	68.84	0.3786	0.0565	0.0138	0.9801	88.49	96.93	97.16	96.93	97.16
5	-3.34	1.71	8.30	43.18	51.87	61.37	0.3633	0.0103	0.0028	0.9974	97.14	90.23	90.90	90.23	90.90
6	-2.83	2.78	6.37	45.18	47.78	56.21	0.3815	0.0502	0.0144	0.9880	86.77	86.16	87.05	86.16	87.05
7	-6.03	-0.15	6.60	41.55	52.30	57.75	0.3716	0.1031	0.0301	0.9747	72.55	88.93	89.66	88.93	89.66
8	-8.49	-2.35	7.79	37.76	55.87	60.79	0.3370	0.0942	0.0280	0.9762	71.63	92.97	93.44	92.97	93.44
9	-10.15	-3.27	10.85	34.17	59.36	64.99	0.3027	0.0782	0.0244	0.9793	71.94	92.10	92.67	92.10	92.67
10	-9.59	-2.54	12.56	34.57	58.76	64.57	0.3121	0.0805	0.0255	0.9786	71.94	87.47	88.37	87.47	88.37
11	-6.06	1.09	14.00	38.88	52.49	60.71	0.3410	0.0700	0.0224	0.9828	76.60	77.41	79.00	77.41	79.00

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 %	EFF-P TOT-STG %
10635.	185.50	1.1834	1.7144	90.73	91.39	1.1834	0.9774	90.73	229.63

ROTOR 2

RUN NO 18, 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	11.594	11.244	777.2	1256.2	777.2	953.9	-2.7	877.6	-0.2	42.5	0.6656	1.0756	829.3	869.8	0.9751	0.7916	1138.5	953.9
2	10.873	10.119	786.3	1261.6	786.1	916.1	13.4	867.3	1.0	43.4	0.6747	1.0423	852.7	888.0	0.9869	0.7571	1150.0	916.4
3	10.092	9.066	800.1	1215.7	795.7	874.7	26.7	844.3	1.9	43.9	0.6882	0.9998	876.5	906.9	1.0039	0.7212	1167.2	876.9
4	7.608	6.158	805.9	1112.8	805.8	853.5	12.0	713.7	0.9	39.9	0.6948	0.9095	951.9	967.2	1.0674	0.7278	1238.1	890.3
5	3.699	2.369	755.7	1001.3	759.6	800.9	-9.7	600.9	-0.7	36.9	0.6530	0.8115	1055.4	1054.7	1.1245	0.7461	1308.2	920.5
6	1.314	0.269	713.6	926.5	713.0	748.4	-31.1	546.3	-2.5	36.1	0.6117	0.7460	1108.1	1101.2	1.1518	0.7502	1343.8	931.7
7	-0.026	-0.840	722.5	893.6	721.8	728.2	-31.7	518.0	-2.5	35.4	0.6206	0.7187	1134.7	1125.2	1.1782	0.7625	1371.6	948.1
8	-1.368	-1.922	748.6	876.4	748.3	712.3	-19.6	510.6	-1.5	35.5	0.6454	0.7045	1161.4	1149.7	1.2055	0.7693	1398.2	957.0
9	-5.012	-5.183	799.7	915.6	759.7	759.5	3.1	511.5	0.2	33.8	0.6895	0.7353	1242.8	1225.5	1.2719	0.8373	1475.3	1042.7
10	-6.336	-6.472	806.2	945.2	806.1	785.6	9.6	525.6	0.7	33.6	0.6924	0.7567	1270.2	1252.0	1.2851	0.8566	1496.3	1069.9
11	-7.755	-8.001	783.4	924.5	783.3	773.7	8.1	506.0	0.6	33.0	0.6658	0.7343	1297.6	1278.6	1.2824	0.8684	1508.8	1093.4

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	-2.61	1.71	19.93	47.34	70.39	83.94	0.3424	0.3938	0.0898	1.5945	70.92	68.97	46.87	-0.46	-831.9	7.8	2.7799
2	-3.09	1.36	15.11	45.58	71.49	81.67	0.3798	0.4272	0.0998	1.5542	67.40	65.34	46.87	1.29	-839.4	-20.7	2.7289
3	-3.56	1.02	11.62	42.71	73.03	78.95	0.4171	0.4638	0.1108	1.4938	62.63	60.49	46.80	4.09	-850.2	-62.6	2.6521
4	-2.23	2.57	7.01	32.95	73.43	80.92	0.4233	0.4170	0.1029	1.4306	60.64	58.63	49.52	16.57	-939.9	-253.5	2.5467
5	1.09	5.66	1.33	25.01	67.92	80.14	0.4238	0.3280	0.0809	1.4461	65.61	63.80	54.56	29.55	-1065.0	-453.7	2.4674
6	3.56	7.90	0.32	21.41	63.11	76.02	0.4284	0.3011	0.0718	1.4558	67.32	65.56	57.93	36.52	-1139.1	-554.9	2.3820
7	3.31	7.39	0.50	18.43	64.08	74.66	0.4256	0.2960	0.0694	1.4399	66.42	64.67	58.19	39.76	-1166.3	-607.2	2.3492
8	2.14	5.97	-0.51	15.74	66.83	73.74	0.4305	0.3085	0.0720	1.4144	63.49	61.69	57.55	41.81	-1181.0	-639.2	2.3433
9	0.20	2.88	-4.02	13.93	71.07	80.85	0.4100	0.2660	0.0678	1.4443	66.82	65.08	57.01	43.07	-1239.7	-714.4	2.4839
10	0.03	2.21	-4.10	14.65	71.09	83.99	0.4076	0.2467	0.0660	1.4815	69.65	67.95	57.23	42.57	-1260.6	-726.4	2.5606
11	1.06	2.75	-0.66	13.77	67.79	82.20	0.3981	0.2143	0.0575	1.4922	73.09	71.55	58.57	44.80	-1289.5	-772.6	2.5313

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 %
1.3528	2.5013	75.77	78.80	42.09	1.1769	1.4590	64.02	65.86

STATOR 2

RUN NO 18, 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	8.845	0.990	1340.9	824.4	1021.5	823.8	868.7	31.0	40.7	2.1	1.1218	0.6416	2.2071	1.4355	1.2661	1.2053
2	7.903	1.023	1305.3	888.0	982.2	887.7	859.8	20.3	41.4	1.3	1.0867	0.6964	2.3252	1.4329	1.3273	1.2045
3	6.843	0.958	1259.3	936.8	940.0	936.6	838.1	23.0	41.9	1.4	1.0432	0.7403	2.4258	1.4273	1.3724	1.2013
4	3.712	0.486	1154.9	918.5	910.1	917.9	710.9	-30.5	38.1	-1.9	0.9501	0.7309	2.4224	1.4039	1.3595	1.1850
5	0.223	-0.185	1046.3	896.2	857.0	896.2	600.2	6.5	35.0	0.4	0.8531	0.7167	2.3903	1.3848	1.3927	1.1737
6	-1.291	-0.520	976.9	864.9	809.9	863.3	546.3	52.3	34.0	3.5	0.7915	0.6912	2.3278	1.3780	1.4123	1.1720
7	-2.051	-0.683	947.2	848.2	792.8	848.0	518.3	17.8	33.2	1.2	0.7666	0.6782	2.2979	1.3724	1.4102	1.1699
8	-2.900	-0.823	933.2	844.9	780.2	844.3	512.0	-31.3	33.3	-2.1	0.7552	0.6767	2.2857	1.3667	1.3857	1.1678
9	-5.291	-1.108	981.5	900.2	835.9	900.0	514.4	-13.9	31.7	-0.9	0.7944	0.7216	2.3468	1.3800	1.3650	1.1691
10	-5.871	-1.173	1016.7	933.8	867.8	933.8	529.7	-8.6	31.5	-0.5	0.8211	0.7466	2.3874	1.3967	1.3813	1.1739
11	-6.346	-1.172	1007.2	881.6	868.9	881.4	509.3	18.7	30.5	1.2	0.8080	0.6968	2.2688	1.4108	1.3383	1.1680

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	-12.79	-11.23	8.56	38.52	86.30	79.47	0.5268	0.3778	0.0853	0.7936	54.91	58.05	62.33	33.74	35.86
2	-10.98	-8.96	7.56	40.13	84.28	87.28	0.4707	0.2876	0.0662	0.8470	61.73	62.70	66.73	40.89	43.13
3	-9.73	-7.23	7.25	40.51	81.83	93.82	0.4154	0.1870	0.0438	0.9044	71.23	67.18	70.91	46.72	49.00
4	-12.51	-8.64	3.41	39.56	83.57	93.96	0.3735	0.1166	0.0290	0.9474	77.47	70.99	74.29	49.32	51.42
5	-14.73	-9.42	5.72	34.57	83.19	92.61	0.3035	0.0893	0.0239	0.9657	75.08	73.21	76.22	56.83	58.77
6	-15.42	-9.63	8.68	30.51	79.72	88.74	0.2655	0.0835	0.0230	0.9710	71.55	71.99	75.05	59.93	61.80
7	-16.08	-10.08	6.36	31.99	78.71	87.06	0.2601	0.0767	0.0215	0.9749	70.23	71.84	74.88	60.40	62.25
8	-15.79	-9.58	2.99	35.38	78.12	86.72	0.2617	0.0771	0.0219	0.9757	65.71	72.42	75.38	57.88	59.74
9	-17.13	-10.44	4.29	32.55	85.52	91.36	0.2401	0.1602	0.0470	0.9456	17.56	72.40	75.44	54.65	56.56
10	-17.98	-11.10	5.25	32.01	88.74	93.71	0.2383	0.1903	0.0563	0.9320	2.67	70.91	74.18	55.26	57.22
11	-20.25	-13.15	8.15	29.27	87.69	85.95	0.2707	0.2962	0.0884	0.8968	-3.87	63.97	67.77	51.33	53.26

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 %	EFF-P TOT-STG %
10835.	185.50	1.3528	2.3457	69.98	73.28	1.1769	0.9378	52.65	382.62

TABLE XIX (b) — OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

DESIGN SPEED
STATOR 1 ($\beta^*_{des.} - \beta^*_{act.}$) = 0^o
STATOR 2 ($\beta^*_{des.} - \beta^*_{act.}$) = -5^o

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 18, 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'-I	V'-1 FT/SEC	V'-2 FT/SEC
1	16.707	18.431	623.0	1036.0	623.0	622.6	0.0	828.0	0.0	53.1	0.5761	0.9189	624.7	723.2	0.8158	0.5600	882.3	631.4
2	14.254	16.152	637.6	999.9	637.6	623.1	0.0	782.0	0.0	51.5	0.5904	0.8826	673.6	758.2	0.8590	0.5504	927.5	623.5
3	11.981	14.010	651.9	977.4	651.9	632.7	0.0	744.9	0.0	49.7	0.6047	0.8601	721.6	793.2	0.9021	0.5584	972.5	634.6
4	5.996	8.283	687.0	896.1	687.0	619.8	0.0	647.1	0.0	46.3	0.6398	0.7805	859.1	898.2	1.0245	0.5826	1100.0	668.8
5	0.174	1.835	710.1	788.4	710.1	552.3	0.0	562.5	0.0	45.5	0.6632	0.6772	1030.7	1038.2	1.1690	0.6261	1251.7	728.9
6	-1.511	-0.964	715.0	732.1	715.0	511.6	0.0	523.6	0.0	45.7	0.6682	0.6252	1113.3	1108.1	1.2365	0.6634	1323.1	776.8
7	-2.406	-2.281	716.7	745.6	716.7	552.8	0.0	500.4	0.0	42.1	0.6699	0.6385	1154.1	1143.1	1.2699	0.7260	1358.5	847.8
8	-3.681	-3.576	717.1	756.5	717.1	584.1	0.0	480.9	0.0	39.5	0.6704	0.6491	1194.8	1178.1	1.3026	0.7804	1393.5	909.6
9	-8.322	-7.515	705.8	778.7	705.8	619.0	0.0	472.4	0.0	37.3	0.6589	0.6659	1316.4	1283.1	1.3943	0.8722	1493.7	1019.9
10	-10.010	-8.908	697.3	780.4	697.3	612.6	0.0	483.5	0.0	38.2	0.6502	0.6645	1356.9	1318.1	1.4226	0.8816	1525.6	1035.3
11	-11.379	-10.279	687.4	753.0	687.4	552.1	0.0	512.1	0.0	42.7	0.6403	0.6342	1397.4	1353.1	1.4505	0.8473	1557.3	1006.0

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	-1.53	3.08	18.38	54.43	40.57	50.51	0.5068	-0.0287	-0.0062	1.8682	101.54	101.69	44.86	-9.57	-624.7	104.8	1.8682
2	-1.47	2.83	17.42	48.54	41.20	51.67	0.5342	-0.0203	-0.0047	1.8539	101.21	101.33	46.35	-2.19	-673.6	23.8	1.8539
3	-1.31	2.60	15.90	43.34	41.79	53.55	0.5406	-0.0311	-0.0074	1.8591	101.99	102.18	47.70	4.37	-721.6	-48.2	1.8591
4	-0.27	3.20	12.39	29.16	43.15	54.49	0.5541	0.0014	0.0004	1.8185	99.85	99.85	51.23	22.07	-859.1	-251.2	1.8185
5	0.91	3.59	10.46	14.69	43.98	49.51	0.5543	0.0875	0.0199	1.7333	91.45	90.78	55.43	40.74	-1030.7	-475.6	1.7333
6	1.36	3.64	11.46	8.49	44.15	46.20	0.5376	0.1153	0.0240	1.6905	87.81	86.90	57.29	48.80	-1113.3	-584.5	1.6905
7	1.57	3.68	8.98	8.86	44.21	50.62	0.4940	0.0706	0.0149	1.7242	92.32	91.73	58.16	49.30	-1154.1	-642.7	1.7242
8	1.80	3.75	7.18	8.98	44.23	54.13	0.4601	0.0356	0.0076	1.7534	96.01	95.70	59.02	50.04	-1194.8	-697.3	1.7534
9	2.76	4.18	5.79	9.22	43.83	57.96	0.4280	0.0414	0.0089	1.8087	95.21	94.80	61.80	52.59	-1316.4	-810.6	1.8087
10	3.14	4.43	6.65	9.16	43.53	57.03	0.4349	0.0757	0.0162	1.8120	91.27	90.53	62.82	53.65	-1356.9	-834.6	1.8120
11	3.47	4.62	10.28	7.19	43.17	50.43	0.4738	0.1646	0.0334	1.7714	81.32	79.78	63.81	56.62	-1397.4	-841.0	1.7714

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 %
1.1919	1.7853	93.76	94.24	41.86	1.1919	1.7853	93.76	94.24

STATOR 1

RUN NO 18, 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	18.264	14.995	1040.7	667.5	652.7	667.4	810.6	-12.7	51.4	-1.1	0.9238	0.5649	1.7497	1.1921	1.7497	1.1921
2	16.010	13.324	1008.7	670.6	653.8	670.5	768.1	8.6	49.7	0.7	0.8916	0.5682	1.7618	1.1902	1.7618	1.1902
3	13.928	11.741	989.4	681.4	663.7	681.0	733.8	23.8	48.0	2.0	0.8723	0.5781	1.7809	1.1895	1.7809	1.1895
4	8.526	7.291	914.3	675.2	651.2	675.2	641.9	2.2	44.6	0.2	0.7984	0.5733	1.7809	1.1865	1.7809	1.1865
5	2.224	1.593	810.3	632.6	584.1	632.4	561.6	-13.8	43.9	-1.2	0.6978	0.5348	1.7219	1.1873	1.7219	1.1873
6	-0.852	-1.239	755.3	591.8	544.0	591.1	524.1	-29.2	43.9	-2.8	0.6467	0.4989	1.6732	1.1857	1.6732	1.1857
7	-2.176	-2.484	768.4	611.9	582.3	611.5	501.3	-22.6	40.7	-2.1	0.6597	0.5173	1.6919	1.1831	1.6919	1.1831
8	-3.256	-3.511	779.2	638.2	612.0	638.1	482.3	-13.3	38.3	-1.2	0.6703	0.5411	1.7192	1.1817	1.7192	1.1817
9	-5.968	-6.358	803.4	683.7	647.8	683.7	475.2	1.9	36.3	0.2	0.6891	0.5789	1.7716	1.1947	1.7716	1.1947
10	-6.829	-7.247	806.8	686.1	643.6	686.1	486.5	5.1	37.2	0.4	0.6891	0.5785	1.7742	1.2043	1.7742	1.2043
11	-7.899	-8.182	782.1	659.8	587.7	659.8	516.1	2.2	41.4	0.2	0.6608	0.5506	1.7409	1.2222	1.7409	1.2222

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	-1.18	0.93	11.25	52.45	52.75	64.17	0.5135	0.1496	0.0306	0.9366	80.40	90.17	90.90	90.17	90.90
2	-1.10	1.30	11.96	49.01	53.84	64.91	0.4888	0.1233	0.0262	0.9503	82.78	92.28	92.86	92.28	92.86
3	-1.56	1.23	12.39	45.98	55.66	66.32	0.4638	0.1073	0.0237	0.9581	84.00	94.52	94.93	94.52	94.93
4	-2.40	1.32	9.46	44.41	56.54	66.10	0.4278	0.0577	0.0141	0.9802	89.73	96.08	96.37	96.08	96.37
5	-1.65	3.40	8.06	45.10	51.69	61.03	0.4093	0.0183	0.0050	0.9951	95.83	89.63	90.38	89.63	90.38
6	-1.09	4.53	6.53	46.76	48.50	56.49	0.4265	0.0526	0.0150	0.9870	88.16	85.27	86.27	85.27	86.27
7	-4.06	1.82	7.27	42.86	52.66	58.70	0.4041	0.0852	0.0249	0.9783	80.13	88.47	89.27	88.47	89.27
8	-6.33	-0.18	8.23	39.47	56.00	61.57	0.3711	0.0816	0.0242	0.9787	78.94	92.10	92.67	92.10	92.67
9	-8.29	-1.41	10.71	36.16	59.80	65.93	0.3346	0.0755	0.0236	0.9795	76.87	91.12	91.79	91.12	91.79
10	-7.78	-0.73	12.20	36.74	59.04	65.73	0.3404	0.0770	0.0244	0.9790	76.45	87.08	88.06	87.08	88.06
11	-4.23	2.92	13.51	41.20	52.83	62.03	0.3691	0.0679	0.0218	0.9828	79.73	77.17	78.85	77.17	78.85

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 %	EFF-P TOT-STG %
10629.	184.30	1.1919	1.7459	89.86	90.60	1.1919	0.9779	89.86	216.02

ROTOR 2

RUN NO 18, 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	11.679	11.173	726.9	1106.9	726.8	691.1	-12.5	864.6	-1.0	51.2	0.6188	0.8913	828.8	869.3	0.9465	0.5565	1111.8	691.1
2	10.987	9.999	737.3	1100.9	737.3	689.0	6.1	858.6	0.6	51.2	0.6289	0.8869	852.2	887.5	0.9540	0.5556	1120.8	689.6
3	10.156	8.867	755.4	1094.8	755.1	702.8	23.5	839.5	1.8	50.0	0.6458	0.8834	876.4	906.4	0.9738	0.5697	1139.1	706.0
4	6.904	5.736	772.2	1024.3	772.2	733.6	2.4	714.8	0.2	44.3	0.6622	0.8252	951.4	966.7	1.0494	0.6249	1223.5	775.6
5	1.557	1.510	741.4	890.0	741.3	648.5	-13.4	609.6	-1.0	43.2	0.6335	0.7081	1054.8	1054.1	1.1109	0.6255	1300.1	786.2
6	-1.234	-0.644	700.9	818.2	700.3	596.9	-29.3	559.6	-2.4	43.1	0.5967	0.6468	1107.4	1100.6	1.1368	0.6369	1335.1	805.6
7	-2.551	-1.732	714.9	803.8	714.5	583.9	-22.7	552.5	-1.8	43.4	0.6103	0.6353	1134.0	1124.6	1.1606	0.6460	1359.6	817.4
8	-3.708	-2.781	735.4	813.0	735.2	599.6	-13.4	549.0	-1.0	42.4	0.6295	0.6436	1160.8	1149.1	1.1860	0.6715	1385.4	848.3
9	-6.759	-6.063	773.2	833.2	773.2	625.7	1.9	550.2	0.1	41.2	0.6608	0.6558	1242.1	1225.2	1.2490	0.7244	1461.5	920.4
10	-7.652	-7.200	775.1	837.4	775.1	627.9	5.2	554.1	0.4	41.3	0.6597	0.6559	1269.4	1251.3	1.2622	0.7349	1482.9	938.3
11	-8.533	-8.443	751.7	802.7	751.7	603.5	2.2	529.2	0.2	41.1	0.6331	0.6231	1296.8	1277.8	1.2607	0.7465	1497.0	961.6

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	5.95	20.79	48.73	67.83	75.99	0.5623	0.2669	0.0608	1.7064	81.64	80.21	49.11	0.39	-841.3	-4.7	2.9847
2	-1.09	3.36	16.21	46.47	68.98	77.29	0.5655	0.2389	0.0558	1.7207	82.34	82.03	48.87	2.39	-844.1	-28.9	3.0272
3	-1.82	2.76	12.96	43.10	70.74	80.61	0.5530	0.1973	0.0470	1.7296	85.77	84.64	48.53	5.43	-852.9	-66.9	3.0746
4	-0.80	3.99	9.40	31.98	71.85	86.49	0.5149	0.1199	0.0292	1.7113	89.86	89.07	50.95	18.96	-949.0	-251.9	3.0524
5	1.78	6.36	6.21	20.81	67.82	79.96	0.5299	0.1208	0.0283	1.6564	88.30	87.44	55.25	34.44	-1068.1	-444.5	2.8602
6	3.97	8.31	5.94	16.19	63.61	73.70	0.5265	0.1205	0.0265	1.6454	87.83	86.95	58.34	42.15	-1136.8	-541.0	2.7499
7	3.39	7.47	5.10	13.90	65.28	72.44	0.5267	0.1424	0.0310	1.6208	85.12	84.08	58.26	44.36	-1156.7	-572.0	2.7386
8	2.52	6.33	2.62	12.96	67.60	75.00	0.5136	0.1456	0.0323	1.6137	84.32	83.24	57.90	44.94	-1174.2	-600.1	2.7710
9	1.16	3.84	-0.06	10.94	71.13	78.37	0.4997	0.1691	0.0402	1.6014	80.93	79.63	57.97	47.04	-1240.2	-675.0	2.8359
10	1.19	3.37	1.17	10.54	70.90	78.21	0.5003	0.1755	0.0428	1.6039	80.14	78.78	58.39	47.65	-1264.3	-697.2	2.8480
11	2.24	3.94	5.34	8.75	67.53	74.15	0.4894	0.1541	0.0366	1.5979	82.13	80.91	59.75	51.00	-1294.6	-748.6	2.7831

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 %
1.4084	2.8857	86.25	88.11	41.21	1.1816	1.6529	84.45	85.51

STATOR 2

RUN NO 18, 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	8.531	0.876	1134.8	692.0	744.9	676.7	856.0	144.6	49.2	12.0	0.9174	0.5324	2.8019	1.4356	1.6019	1.2042
2	7.383	0.846	1127.4	705.6	739.4	691.3	851.1	141.6	49.2	11.6	0.9118	0.5440	2.8310	1.4328	1.6111	1.2033
3	6.288	0.752	1120.3	730.7	749.0	717.5	833.2	138.1	48.2	10.9	0.9073	0.5656	2.8818	1.4277	1.6255	1.1999
4	3.696	0.196	1048.7	765.0	769.9	756.9	712.0	111.2	42.8	8.4	0.8476	0.5983	2.9657	1.4082	1.6615	1.1864
5	1.097	-0.597	916.1	689.9	684.1	684.4	609.2	86.6	41.7	7.2	0.7310	0.5384	2.8404	1.3969	1.6390	1.1765
6	-0.214	-0.854	845.6	624.5	633.8	620.1	559.8	74.5	41.4	6.8	0.6703	0.4854	2.7387	1.3938	1.6330	1.1749
7	-0.930	-0.933	831.8	609.4	621.3	605.4	553.1	70.4	41.6	6.6	0.6593	0.4736	2.7162	1.3910	1.6120	1.1748
8	-1.722	-0.982	840.9	621.2	636.0	617.2	550.1	70.3	40.8	6.5	0.6676	0.4836	2.7319	1.3888	1.5964	1.1749
9	-4.024	-1.178	866.7	670.4	667.5	660.9	552.8	112.6	39.7	9.7	0.6845	0.5202	2.7895	1.4079	1.5764	1.1793
10	-4.848	-1.247	874.9	678.5	674.4	667.4	557.4	121.8	39.6	10.3	0.6879	0.5240	2.7921	1.4221	1.5726	1.1821
11	-5.748	-1.220	847.5	632.0	658.9	621.6	533.0	113.9	39.1	10.4	0.6609	0.4837	2.7130	1.4369	1.5579	1.1757

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	-4.22	-2.66	18.86	37.19	80.26	88.00	0.5314	0.1456	0.0322	0.9388	81.93	78.24	81.10	70.08	71.98
2	-3.20	-1.18	17.81	37.66	81.35	90.46	0.5181	0.1489	0.0336	0.9380	80.85	79.67	82.37	71.32	73.16
3	-3.44	-0.94	16.73	37.31	84.33	94.83	0.4935	0.1426	0.0328	0.9410	80.64	82.22	84.62	73.97	75.67
4	-7.74	-3.87	13.68	34.46	91.36	102.53	0.4191	0.0800	0.0197	0.9695	86.75	88.89	90.44	83.21	84.36
5	-8.04	-2.73	12.50	34.46	83.15	92.42	0.4077	0.0425	0.0113	0.9871	91.86	87.23	88.94	85.34	86.32
6	-7.96	-2.19	12.06	34.57	77.15	83.03	0.4279	0.0335	0.0092	0.9911	93.59	84.39	86.41	85.45	86.41
7	-7.59	-1.60	11.79	35.01	75.99	81.00	0.4330	0.0361	0.0101	0.9908	93.08	84.21	86.24	83.07	84.16
8	-8.23	-2.02	11.60	34.33	78.40	82.81	0.4226	0.0452	0.0128	0.9884	91.15	85.25	87.15	81.24	82.43
9	-9.15	-2.45	14.82	29.99	82.13	87.77	0.3758	0.0592	0.0171	0.9841	87.15	83.17	85.38	76.92	78.34
10	-9.84	-2.96	16.10	29.30	82.36	87.68	0.3728	0.0720	0.0210	0.9805	84.35	80.45	83.02	75.30	76.82
11	-11.67	-4.58	17.30	28.69	79.17	80.06	0.4030	0.0986	0.0290	0.9750	80.51	75.21	78.37	76.28	77.70

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 %	EFF-P TOT-STG %
10629.	184.30	1.4084	2.8167	83.98	86.10	1.1816	0.9761	80.09	222.58

TABLE XIX (c) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

DESIGN SPEED

STATOR 1 ($\beta^*_{des.} - \beta^*_{act.}$) = 0°

STATOR 2 ($\beta^*_{des.} - \beta^*_{act.}$) = -5°

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 18, 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'-I	V'-1 FT/SEC	V'-2 FT/SEC
1	16.798	18.422	604.4	1023.2	604.4	578.1	0.0	844.3	0.0	55.6	0.5578	0.9038	626.6	725.4	0.8034	0.5213	870.6	590.2
2	14.445	16.150	617.8	982.2	617.8	576.2	0.0	795.4	0.0	54.1	0.5709	0.8631	675.7	760.5	0.8461	0.5073	915.5	577.3
3	12.295	14.029	631.0	958.6	631.0	583.5	0.0	760.6	0.0	52.5	0.5839	0.8394	723.8	795.6	0.8886	0.5118	960.2	584.5
4	6.619	8.359	664.1	886.5	664.1	584.6	0.0	666.4	0.0	48.8	0.6168	0.7690	861.7	900.9	1.0105	0.5464	1087.9	629.9
5	0.869	1.996	687.3	804.8	687.3	534.4	0.0	601.7	0.0	48.4	0.6401	0.6883	1033.8	1041.3	1.1563	0.5918	1241.4	692.0
6	-0.975	-0.803	692.1	761.9	692.1	502.5	0.0	572.7	0.0	48.7	0.6450	0.6476	1116.6	1111.5	1.2243	0.6262	1313.7	736.8
7	-1.964	-2.124	693.5	767.1	693.5	530.8	0.0	553.8	0.0	46.2	0.6465	0.6525	1157.5	1146.5	1.2578	0.6768	1349.4	795.7
8	-3.259	-3.418	694.0	772.8	694.0	554.9	0.0	537.9	0.0	44.1	0.6470	0.6577	1198.4	1181.7	1.2909	0.7233	1384.8	850.0
9	-7.825	-7.350	684.9	785.1	684.9	565.9	0.0	522.6	0.0	41.7	0.6378	0.6655	1320.3	1286.9	1.3850	0.8164	1487.4	963.1
10	-9.522	-8.744	677.7	795.5	677.7	589.8	0.0	533.7	0.0	42.1	0.6305	0.6719	1361.0	1322.1	1.4145	0.8316	1520.4	984.6
11	-11.045	-10.174	668.6	790.4	668.6	550.9	0.0	566.7	0.0	45.7	0.6214	0.6613	1401.6	1357.1	1.4432	0.8061	1552.9	963.5

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	-0.56	4.05	16.31	57.47	39.75	47.57	0.5514	-0.0086	-0.0019	1.8796	100.44	100.49	45.82	-11.64	-626.6	118.9	1.8796
2	-0.46	3.84	16.14	50.83	40.35	48.51	0.5813	0.0017	0.0004	1.8600	99.90	99.91	47.36	-3.46	-675.7	34.8	1.8600
3	-0.26	3.85	14.97	45.31	40.92	50.16	0.5898	-0.0068	-0.0016	1.8664	100.42	100.47	48.75	3.44	-723.8	-35.0	1.8664
4	0.79	4.26	12.19	30.42	42.28	52.56	0.5882	-0.0009	-0.0002	1.8540	100.06	100.08	52.29	21.88	-861.7	-234.5	1.8540
5	1.86	4.54	9.17	16.94	43.16	49.30	0.5886	0.0778	0.0180	1.8167	93.06	92.47	56.38	39.44	-1033.8	-439.5	1.8167
6	2.27	4.55	9.65	11.22	43.34	46.77	0.5753	0.1004	0.0234	1.7927	89.68	88.82	58.21	46.99	-1116.6	-538.8	1.7927
7	2.48	4.58	7.83	10.92	43.39	49.99	0.5412	0.0813	0.0176	1.8185	92.08	91.40	59.06	48.15	-1157.5	-592.7	1.8185
8	2.69	4.64	6.37	10.68	43.41	52.81	0.5126	0.0589	0.0128	1.8436	94.11	93.60	59.90	49.22	-1198.4	-643.8	1.8436
9	3.51	4.93	5.67	10.09	43.08	56.61	0.4747	0.0600	0.0130	1.8988	93.71	93.13	62.56	52.47	-1320.3	-764.4	1.8988
10	3.83	5.12	6.11	10.40	42.80	56.89	0.4774	0.0838	0.0182	1.9199	91.26	90.43	63.51	53.11	-1361.0	-788.3	1.9199
11	4.14	5.29	8.68	9.46	42.45	52.41	0.5120	0.1572	0.0332	1.9125	83.94	82.44	64.47	55.02	-1401.6	-790.4	1.9125

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 %
1.2073	1.8593	93.43	93.96	41.06	1.2073	1.8593	93.43	93.96

STATOR 1

RUN NO 18, 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	18.257	14.938	1024.1	588.8	604.7	588.1	826.5	-28.3	54.0	-2.7	0.9047	0.4939	1.7646	1.1965	1.7646	1.1965
2	16.004	13.221	987.1	593.1	603.3	593.1	781.3	-6.0	52.5	-0.6	0.8680	0.4982	1.7758	1.1940	1.7758	1.1940
3	13.912	11.597	966.7	607.5	610.8	607.4	749.2	12.3	50.9	1.2	0.8474	0.5109	1.7958	1.1941	1.7958	1.1941
4	8.507	7.119	900.9	612.2	612.2	612.2	660.9	-1.7	47.2	-0.2	0.7830	0.5154	1.8089	1.1926	1.8089	1.1926
5	2.473	1.519	823.5	589.1	563.3	589.1	600.6	-9.0	46.8	-0.9	0.7058	0.4932	1.7818	1.2010	1.7818	1.2010
6	-0.507	-1.197	782.5	565.0	532.7	564.7	573.2	-17.4	47.1	-1.8	0.6666	0.4714	1.7565	1.2042	1.7565	1.2042
7	-1.881	-2.383	788.0	593.0	559.4	593.0	554.9	-5.6	44.8	-0.5	0.6718	0.4961	1.7853	1.2037	1.7853	1.2037
8	-3.073	-3.419	794.1	616.3	582.7	616.3	539.5	3.0	42.8	0.3	0.6774	0.5165	1.8110	1.2039	1.8110	1.2039
9	-6.078	-6.324	809.2	656.3	615.3	656.1	525.7	17.9	40.6	1.6	0.6879	0.5492	1.8605	1.2157	1.8605	1.2157
10	-6.985	-7.228	820.9	666.4	620.6	666.1	537.3	20.3	41.0	1.7	0.6954	0.5555	1.8730	1.2262	1.8730	1.2262
11	-8.020	-8.174	818.2	649.5	586.0	649.3	571.0	13.5	44.4	1.2	0.6867	0.5359	1.8507	1.2466	1.8507	1.2466

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	1.46	3.57	9.60	56.74	49.73	58.88	0.5890	0.1489	0.0304	0.9386	82.56	89.59	90.37	89.59	90.37
2	1.62	4.02	10.66	53.04	50.60	59.76	0.5624	0.1165	0.0247	0.9548	85.56	91.82	92.44	91.82	92.44
3	1.38	4.16	11.54	49.75	52.20	61.50	0.5344	0.1009	0.0223	0.9622	86.70	93.73	94.21	93.73	94.21
4	0.20	3.92	9.12	47.36	54.51	62.39	0.4966	0.0731	0.0178	0.9757	88.86	95.74	96.07	95.74	96.07
5	1.32	6.37	8.44	47.70	51.39	59.35	0.4857	0.0680	0.0186	0.9808	88.11	89.21	90.04	89.21	90.04
6	2.07	7.69	7.59	48.86	49.02	56.50	0.4935	0.0779	0.0223	0.9800	85.88	85.45	86.53	85.45	86.53
7	-0.02	5.86	8.65	45.32	52.07	59.64	0.4556	0.0720	0.0210	0.9812	85.70	88.36	89.25	88.36	89.25
8	-1.78	4.37	9.71	42.54	54.79	62.26	0.4253	0.0681	0.0202	0.9820	85.28	90.63	91.36	90.63	91.36
9	-4.03	2.84	12.12	39.02	56.62	66.32	0.3865	0.0747	0.0233	0.9797	81.40	89.89	90.71	89.89	90.71
10	-3.97	3.08	13.52	39.22	58.99	66.98	0.3897	0.0884	0.0280	0.9756	77.99	86.71	87.81	86.71	87.81
11	-1.26	5.89	14.51	43.18	54.89	64.11	0.4270	0.1195	0.0383	0.9677	72.35	77.86	79.67	77.86	79.67

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 %	EFF-P TOT-STG %
10661.	180.80	1.2073	1.8113	89.15	90.00	1.2073	0.9742	89.15	194.82

ROTOR 2

RUN NO 18, 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'-I	V'-1 FT/SEC	V'-2 FT/SEC
1	11.592	11.052	638.1	1089.3	637.5	648.3	-27.6	875.3	-2.5	53.3	0.5375	0.8709	831.3	871.9	0.9010	0.5184	1069.7	648.3
2	10.776	9.768	648.7	1074.3	648.6	637.1	-5.9	865.0	-0.5	52.5	0.5475	0.8592	854.8	890.1	0.9097	0.5099	1077.8	637.6
3	9.830	8.566	668.4	1057.3	668.3	644.2	12.0	838.4	1.0	52.4	0.5652	0.8461	879.0	909.1	0.9257	0.5185	1094.7	648.0
4	6.404	5.282	690.0	982.7	690.0	654.6	-1.6	732.9	-0.1	48.2	0.5851	0.7833	954.2	969.6	0.9996	0.5549	1178.8	696.1
5	1.072	1.034	678.4	870.1	678.3	595.1	-8.9	634.8	-0.8	46.9	0.5725	0.6851	1057.9	1057.2	1.0669	0.5746	1264.3	729.8
6	-1.606	-1.100	657.6	819.4	657.4	568.1	-17.5	590.5	-1.5	46.1	0.5531	0.6417	1110.8	1103.9	1.0982	0.5997	1305.8	765.7
7	-2.854	-2.166	681.5	818.3	681.5	569.1	-5.5	588.0	-0.5	45.9	0.5746	0.6409	1137.4	1127.9	1.1219	0.6145	1330.7	784.5
8	-3.966	-3.198	701.3	825.1	701.3	580.6	3.1	586.3	0.3	45.2	0.5924	0.6465	1164.3	1152.5	1.1458	0.6355	1356.5	811.0
9	-6.738	-6.190	737.0	836.1	736.8	585.4	18.1	596.9	1.4	45.4	0.6215	0.6500	1245.9	1228.9	1.2076	0.6697	1431.9	861.4
10	-7.503	-7.178	747.1	845.7	746.8	602.6	20.5	593.3	1.6	44.4	0.6278	0.6550	1273.3	1255.0	1.2256	0.6932	1458.5	895.0
11	-8.388	-8.368	733.9	851.2	733.8	605.3	13.7	569.7	1.1	43.1	0.6105	0.6388	1300.8	1281.7	1.2323	0.7181	1481.5	934.5

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	VR'-1 FT/SEC	VR'-2 FT/SEC	PO/PO INLET
1	3.87	8.16	20.10	53.64	62.48	75.71	0.5905	0.2222	0.0506	1.7831	86.23	85.07	53.34	-0.30	-858.9	3.4	3.1462
2	3.03	7.48	16.07	50.73	63.77	75.75	0.6010	0.2047	0.0478	1.7817	87.02	85.92	52.98	2.25	-860.7	-25.1	3.1631
3	2.05	6.62	13.78	46.16	65.83	78.05	0.5918	0.1744	0.0415	1.7698	88.40	87.43	52.40	6.25	-867.1	-70.7	3.1757
4	2.48	7.27	10.32	34.35	67.82	87.52	0.5699	0.1403	0.0340	1.7281	89.07	88.20	54.23	19.88	-955.8	-236.7	3.1263
5	4.09	8.66	7.15	22.18	65.67	76.47	0.5666	0.1342	0.0310	1.6731	87.87	86.96	57.56	35.37	-1066.9	-422.5	2.9821
6	5.38	9.72	5.87	17.67	63.21	73.26	0.5509	0.1275	0.0281	1.6594	87.81	86.91	59.75	42.08	-1128.2	-513.4	2.9154
7	4.29	8.37	4.19	15.72	65.88	73.85	0.5456	0.1402	0.0310	1.6425	86.13	85.13	59.16	43.45	-1142.9	-540.0	2.9306
8	3.45	7.26	1.90	14.61	66.10	75.81	0.5360	0.1467	0.0329	1.6354	85.10	84.04	58.83	44.22	-1161.2	-566.3	2.9603
9	2.14	4.82	-0.03	11.89	71.59	76.38	0.5380	0.1895	0.0451	1.6209	80.04	78.64	58.95	47.06	-1227.8	-631.9	3.0139
10	1.89	4.07	0.86	11.56	72.16	78.47	0.5272	0.1840	0.0451	1.6255	80.34	78.95	59.09	47.53	-1252.8	-661.7	3.0428
11	2.68	4.38	3.84	10.70	69.62	77.98	0.5093	0.1587	0.0389	1.6290	82.64	81.41	60.20	49.50	-1287.0	-712.0	3.0175

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 %
1.4322	3.0359	86.02	87.99	39.22	1.1863	1.6761	84.73	85.80

STATOR 2

RUN NO 18, 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	8.559	0.844	1110.6	647.4	694.6	634.9	866.6	126.5	51.5	11.3	0.8906	0.4943	2.9947	1.4473	1.6972	1.2096
2	7.430	0.769	1094.8	658.4	660.7	647.9	857.5	117.2	51.8	10.2	0.8780	0.5040	3.0196	1.4427	1.7027	1.2077
3	6.331	0.615	1077.2	677.1	684.1	666.6	832.2	117.8	50.7	10.0	0.8643	0.5204	3.0585	1.4359	1.7064	1.2025
4	3.571	-0.083	1002.1	683.8	686.6	675.0	729.8	109.0	46.8	9.2	0.8007	0.5287	3.0863	1.4207	1.7062	1.1911
5	0.789	-0.802	890.4	610.0	625.1	604.1	634.1	84.9	45.4	8.0	0.7076	0.4696	2.9704	1.4177	1.6648	1.1811
6	-0.522	-0.934	841.1	564.4	596.6	559.5	590.8	73.8	44.6	7.5	0.6601	0.4329	2.9035	1.4183	1.6500	1.1782
7	-1.198	-0.937	840.4	559.5	599.7	554.9	588.7	71.7	44.4	7.3	0.6597	0.4292	2.8955	1.4177	1.6294	1.1776
8	-1.902	-0.919	848.1	575.4	611.6	570.7	587.5	73.3	43.8	7.3	0.6661	0.4418	2.9156	1.4182	1.6150	1.1781
9	-4.244	-1.106	865.2	624.8	623.3	616.5	600.1	101.1	43.9	9.3	0.6745	0.4772	2.9714	1.4416	1.5990	1.1664
10	-5.138	-1.194	878.2	638.1	644.1	628.0	596.9	113.4	42.9	10.2	0.6824	0.4857	2.9830	1.4543	1.5937	1.1871
11	-5.966	-1.179	869.5	617.1	653.4	606.8	573.7	117.7	41.4	10.5	0.6707	0.4660	2.9409	1.4723	1.5880	1.1821

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	-1.90	-0.34	18.07	40.30	79.90	89.16	0.5672	0.1194	0.0265	0.9518	85.69	81.91	84.43	77.25	78.87
2	-0.66	1.36	16.50	41.52	79.79	91.61	0.5541	0.1124	0.0255	0.9555	86.04	83.50	85.82	78.50	80.03
3	-0.91	1.60	15.86	40.72	81.76	95.19	0.5282	0.0932	0.0215	0.9639	87.80	85.96	87.96	81.08	82.44
4	-3.76	0.11	14.49	37.63	85.50	97.88	0.4754	0.0411	0.0101	0.9857	93.72	89.91	91.36	85.68	86.71
5	-4.32	0.99	13.29	37.40	79.44	86.88	0.4847	0.0243	0.0064	0.9931	95.91	86.99	88.80	85.93	86.90
6	-4.81	0.98	12.72	37.09	76.35	79.88	0.5038	0.0253	0.0069	0.9935	95.77	84.76	86.83	85.72	86.69
7	-4.80	1.20	12.51	37.08	76.96	79.18	0.5066	0.0408	0.0113	0.9897	93.38	84.63	86.72	83.66	84.74
8	-5.23	0.97	12.42	36.51	78.92	81.53	0.4933	0.0510	0.0144	0.9869	91.56	85.16	87.19	81.81	82.99
9	-4.86	1.83	14.46	34.64	80.10	86.94	0.4476	0.0525	0.0152	0.9862	90.26	82.30	84.75	76.42	77.92
10	-6.58	0.30	16.00	32.66	82.47	87.78	0.4373	0.0729	0.0212	0.9805	86.45	80.30	83.04	75.53	77.07
11	-9.35	-2.25	17.44	30.88	82.55	83.33	0.4496	0.0970	0.0285	0.9748	82.80	76.06	79.33	76.91	78.36

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 %	EFF-P TOT-STG %
10661.	180.80	1.4322	2.9833	84.45	86.61	1.1863	0.9827	81.66	200.00

APPENDIX C

TABLE XIX (d) — OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

DESIGN SPEED
STATOR 1 $(\beta'_{des.} - \beta'_{act.}) = 0^{o}$
STATOR 2 $(\beta'_{des.} - \beta'_{act.}) = -5^{o}$

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 18, 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	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	16.767	18.421	590.3	997.5	590.3	559.6	0.0	825.7	0.0	55.9	0.5439	0.8796	624.6	723.1	0.7920	0.5017	859.4	568.9
2	14.386	16.153	603.2	957.7	603.2	560.1	0.0	776.9	0.0	54.2	0.5566	0.8406	673.6	758.2	0.8343	0.4919	904.2	560.4
3	12.217	14.037	615.8	933.8	615.8	562.1	0.0	745.6	0.0	53.0	0.5690	0.8164	721.6	793.1	0.8765	0.4932	948.6	564.1
4	6.612	8.373	647.1	866.7	647.1	560.9	0.0	660.7	0.0	49.7	0.5999	0.7506	859.1	898.2	0.9971	0.5275	1075.5	609.1
5	0.933	2.011	668.8	797.6	668.8	520.3	0.0	604.6	0.0	49.3	0.6216	0.6815	1030.6	1038.1	1.1419	0.5786	1228.6	677.2
6	-0.891	-0.769	673.3	758.5	673.3	485.2	0.0	583.0	0.0	50.2	0.6260	0.6435	1113.2	1108.0	1.2097	0.6065	1301.0	714.9
7	-1.862	-2.081	674.7	761.4	674.7	512.9	0.0	562.7	0.0	47.6	0.6275	0.6465	1154.0	1143.0	1.2432	0.6575	1336.7	774.5
8	-3.155	-3.377	675.3	764.4	675.3	538.3	0.0	542.6	0.0	45.2	0.6281	0.6495	1194.7	1178.0	1.2764	0.7077	1372.3	832.8
9	-7.712	-7.333	666.9	775.1	666.9	567.7	0.0	527.7	0.0	42.8	0.6197	0.6559	1316.3	1283.0	1.3711	0.7995	1475.6	944.9
10	-9.393	-8.732	660.1	786.5	660.1	570.3	0.0	541.6	0.0	43.4	0.6129	0.6629	1356.8	1318.0	1.4009	0.8119	1508.9	963.3
11	-10.948	-10.165	651.5	786.3	651.5	542.1	0.0	569.5	0.0	46.3	0.6043	0.6574	1397.3	1352.9	1.4300	0.7966	1541.7	952.7

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	β'-1 DEGREE	β'-2 DEGREE	VΘ'-1 FT/SEC	VΘ'-2 FT/SEC	PO/PO INLET
1	0.03	4.63	17.55	56.81	39.10	47.05	0.5652	-0.0509	-0.0110	1.8773	102.60	102.85	46.41	-10.40	-624.6	102.5	1.8773
2	0.13	4.43	17.69	49.86	39.69	48.13	0.5898	-0.0410	-0.0094	1.8594	102.31	102.54	47.95	-1.92	-673.6	18.7	1.8594
3	0.34	4.44	16.37	44.51	40.26	49.22	0.6024	-0.0368	-0.0088	1.8628	102.24	102.46	49.34	4.84	-721.6	-47.5	1.8628
4	1.42	4.89	13.28	29.96	41.59	51.20	0.6013	-0.0176	-0.0043	1.8558	101.30	101.43	52.92	22.97	-859.1	-237.5	1.8558
5	2.90	5.18	9.53	17.21	42.46	48.74	0.5968	0.0610	0.0141	1.8374	94.68	94.22	57.01	39.80	-1030.6	-433.5	1.8374
6	2.90	5.18	9.91	11.58	42.63	45.79	0.5903	0.1017	0.0219	1.8178	90.60	89.80	58.83	47.25	-1113.2	-525.0	1.8178
7	3.09	5.19	8.21	11.15	42.69	48.97	0.5548	0.0751	0.0161	1.8411	92.89	97.27	59.67	48.52	-1154.0	-580.3	1.8411
8	3.28	5.24	6.85	10.79	42.71	51.98	0.5216	0.0486	0.0104	1.8634	95.25	94.83	60.50	49.71	-1194.7	-635.4	1.8634
9	4.05	5.47	6.21	10.09	42.39	55.64	0.4839	0.0531	0.0113	1.9172	94.54	94.04	63.10	53.01	-1316.3	-755.3	1.9172
10	4.35	5.64	6.62	10.41	42.12	55.77	0.4891	0.0808	0.0173	1.9401	91.76	90.97	64.03	53.62	-1356.8	-776.4	1.9401
11	4.64	5.79	8.87	9.76	41.77	52.47	0.5160	0.1417	0.0298	1.9420	85.78	84.42	64.97	55.21	-1397.3	-783.4	1.9420

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 %
1.2072	1.8742	94.79	95.22	40.41	1.2072	1.8742	94.79	95.22

STATOR 1

RUN NO 18, 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	β-1 DEGREE	β-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	18.291	15.009	997.2	564.8	584.0	564.1	808.3	-28.2	54.4	-2.8	0.8793	0.4739	1.7673	1.1916	1.7673	1.1916
2	16.083	13.359	961.3	566.8	584.6	566.7	763.1	-7.4	52.7	-0.7	0.8441	0.4762	1.7762	1.1890	1.7762	1.1890
3	14.031	11.780	940.3	579.3	587.1	579.3	734.5	6.1	51.5	0.6	0.8229	0.4870	1.7938	1.1897	1.7938	1.1897
4	8.638	7.336	879.5	587.4	586.7	587.3	655.3	-6.9	48.2	-0.7	0.7630	0.4940	1.8118	1.1903	1.8118	1.1903
5	2.615	1.658	815.0	569.8	547.7	569.3	603.5	-23.6	47.8	-2.4	0.6978	0.4763	1.7946	1.2011	1.7946	1.2011
6	-0.386	-1.118	777.9	555.8	514.5	555.7	583.5	-9.9	48.6	-1.0	0.6614	0.4628	1.7804	1.2071	1.7804	1.2071
7	-1.790	-2.347	781.2	577.6	540.7	577.6	563.8	2.1	46.2	0.2	0.6647	0.4820	1.8029	1.2063	1.8029	1.2063
8	-3.006	-3.413	784.7	598.9	565.2	598.8	544.3	10.4	43.9	1.0	0.6683	0.5009	1.8266	1.2050	1.8266	1.2050
9	-6.069	-6.358	798.3	638.9	596.2	638.5	530.8	19.8	41.8	1.8	0.6773	0.5334	1.8753	1.2171	1.8753	1.2171
10	-7.011	-7.268	810.9	651.8	600.2	651.4	545.2	25.0	42.3	2.2	0.6854	0.5421	1.8907	1.2287	1.8907	1.2287
11	-8.052	-8.201	812.8	641.9	575.6	641.4	573.9	25.7	45.0	2.3	0.6816	0.5292	1.8773	1.2470	1.8773	1.2470

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	1.81	3.92	9.49	57.20	49.11	57.32	0.5937	0.1485	0.0303	0.9412	82.66	92.15	92.74	92.15	92.74
2	1.85	4.26	10.48	53.44	50.11	57.95	0.5749	0.1201	0.0255	0.9551	85.24	94.32	94.75	94.32	94.75
3	1.94	4.73	10.99	50.87	51.17	59.48	0.5498	0.1029	0.0227	0.9630	86.62	95.73	96.05	95.73	96.05
4	1.18	4.90	8.60	48.85	53.11	60.69	0.5131	0.0743	0.0181	0.9762	88.91	97.19	97.41	97.19	97.41
5	2.26	7.31	6.94	50.14	50.79	58.22	0.5104	0.0845	0.0231	0.9765	85.91	90.35	91.09	90.35	91.09
6	3.57	9.19	8.34	49.61	48.04	56.43	0.5038	0.0814	0.0233	0.9793	85.56	86.44	87.47	86.44	87.47
7	1.41	7.29	9.59	46.01	51.06	58.93	0.4710	0.0804	0.0235	0.9794	84.61	88.82	89.69	88.82	89.69
8	-0.65	5.49	10.42	42.96	53.96	61.41	0.4396	0.0762	0.0226	0.9803	84.24	91.52	92.20	91.52	92.20
9	-2.87	4.01	12.33	39.97	57.67	65.52	0.4011	0.0823	0.0257	0.9782	80.36	90.57	91.35	90.57	91.35
10	-2.60	4.45	13.98	40.13	57.89	66.45	0.4011	0.0937	0.0296	0.9747	77.36	87.18	88.25	87.18	88.25
11	-0.59	6.56	15.62	42.73	54.89	64.43	0.4289	0.1247	0.0399	0.9667	71.59	79.72	81.41	79.72	81.41

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 %	EFF-P TOT-STG %
10628.	177.90	1.2072	1.8240	90.33	91.10	1.2072	0.9732	90.33	189.86

ROTOR 2

RUN NO 18, 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'-1	V'-1 FT/SEC	V'-2 FT/SEC
1	11.661	11.059	604.1	1101.1	603.4	620.5	-27.4	909.6	-2.6	55.6	0.5084	0.8805	828.7	869.2	0.8816	0.4973	1047.5	621.9
2	10.909	9.783	612.8	1084.4	612.8	609.5	-7.5	896.8	-0.7	55.7	0.5168	0.8670	852.2	887.4	0.8902	0.4874	1055.7	609.6
3	10.004	8.588	631.5	1065.4	631.5	623.1	5.7	864.2	0.5	54.1	0.5332	0.8521	876.3	906.3	0.9082	0.4995	1075.5	624.5
4	6.551	5.301	659.3	991.6	659.3	645.4	-6.7	752.8	-0.6	49.4	0.5580	0.7899	951.3	966.6	0.9842	0.5416	1162.9	679.9
5	1.026	0.966	656.7	879.7	656.3	603.6	-23.5	640.0	-2.1	46.7	0.5530	0.6918	1054.7	1054.0	1.0629	0.5755	1262.2	731.9
6	-1.746	-1.233	645.4	838.1	645.3	570.3	-9.9	614.1	-0.9	47.1	0.5415	0.6556	1107.3	1100.5	1.0825	0.5863	1290.2	749.5
7	-3.018	-2.311	663.6	835.8	663.6	569.2	2.2	612.0	0.2	47.0	0.5579	0.6540	1133.9	1124.5	1.1030	0.5993	1312.0	765.9
8	-4.135	-3.334	681.2	841.1	681.1	574.5	10.5	614.3	0.9	46.9	0.5739	0.6581	1160.7	1149.0	1.1263	0.6141	1336.7	784.8
9	-6.907	-6.320	715.9	856.6	715.6	589.2	20.0	621.7	1.6	46.4	0.6021	0.6649	1242.0	1225.1	1.1910	0.6546	1416.2	843.4
10	-7.685	-7.321	728.1	860.9	727.7	600.7	25.3	616.6	2.0	45.6	0.6100	0.6655	1269.3	1251.2	1.2074	0.6755	1441.2	873.8
11	-8.507	-8.467	720.3	845.2	719.8	601.6	26.0	593.8	2.1	44.5	0.5982	0.6493	1296.7	1277.7	1.2129	0.6997	1460.4	910.9

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	5.28	9.60	16.69	58.47	60.34	71.57	0.6146	0.2940	0.0669	1.7760	82.72	81.27	54.76	-3.71	-856.2	40.4	3.1387
2	4.56	9.01	12.94	55.40	61.46	71.62	0.6267	0.2747	0.0642	1.7757	83.48	82.10	54.51	-0.88	-859.6	9.4	3.1527
3	3.73	8.31	11.39	50.22	63.40	74.62	0.6131	0.2383	0.0569	1.7649	84.94	83.69	54.08	3.86	-870.6	-42.2	3.1623
4	3.77	8.57	8.77	37.20	65.98	80.63	0.5829	0.1858	0.0454	1.7240	86.11	85.01	55.53	18.33	-958.0	-213.8	3.1229
5	5.20	9.78	6.23	24.22	64.65	76.93	0.5685	0.1730	0.0405	1.6623	84.64	83.51	58.67	34.45	-1078.2	-414.0	2.9837
6	5.60	9.94	4.22	19.54	63.12	72.99	0.5620	0.1614	0.0364	1.6480	84.97	83.88	59.97	40.43	-1117.2	-486.4	2.9342
7	4.71	8.79	2.69	17.64	65.23	73.33	0.5573	0.1702	0.0386	1.6340	83.67	82.51	59.59	41.95	-1131.7	-512.4	2.9476
8	3.95	7.76	0.56	16.45	67.31	74.42	0.5538	0.1833	0.0421	1.6285	82.06	80.79	59.33	42.88	-1150.2	-534.7	2.9744
9	2.76	5.44	-1.53	14.01	70.79	76.31	0.5513	0.2206	0.0539	1.6211	77.59	76.03	59.57	45.56	-1222.0	-603.4	3.0389
10	2.38	4.56	-0.24	13.15	71.56	77.59	0.5411	0.2159	0.0540	1.6177	77.62	76.06	59.58	46.43	-1244.0	-634.5	3.0570
11	2.85	4.55	2.89	11.82	69.73	77.11	0.5216	0.1893	0.0474	1.6141	79.77	78.37	60.37	48.54	-1270.7	-684.0	3.0315

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 %
1.4386	3.0426	84.94	87.07	38.32	1.1917	1.6681	81.50	82.78

STATOR 2

RUN NO 18, 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	T02/ T01
1	8.482	0.794	1120.1	628.6	666.1	616.1	900.6	124.3	53.8	11.4	0.8981	0.4786	2.9978	1.4511	1.6963	1.2178
2	7.279	0.667	1102.8	639.9	652.6	629.2	889.1	116.5	53.9	10.5	0.8841	0.4885	3.0218	1.4463	1.7031	1.2158
3	6.130	0.467	1083.5	658.3	662.1	648.5	857.6	113.2	52.5	9.9	0.8687	0.5045	3.0583	1.4394	1.7093	1.2101
4	3.374	-0.248	1009.5	662.1	676.2	653.3	749.6	107.8	48.0	9.4	0.8059	0.5103	3.0776	1.4250	1.6994	1.1972
5	0.813	-0.785	898.7	594.1	631.6	587.3	639.4	89.5	45.3	8.7	0.7082	0.4558	2.9728	1.4237	1.6551	1.1861
6	-0.360	-0.823	858.6	556.7	599.7	551.3	614.4	77.5	45.7	8.0	0.6731	0.4257	2.9191	1.4260	1.6379	1.1821
7	-1.010	-0.807	856.9	553.5	599.0	548.5	612.8	74.2	45.6	7.7	0.6719	0.4232	2.9140	1.4255	1.6226	1.1815
8	-1.720	-0.793	863.2	567.3	605.0	562.3	615.7	74.8	45.5	7.6	0.6769	0.4341	2.9314	1.4260	1.6095	1.1831
9	-4.122	-1.024	884.9	620.5	626.5	612.8	624.9	97.0	44.9	9.0	0.6888	0.4722	2.9935	1.4509	1.5981	1.1927
10	-5.024	-1.138	892.7	634.1	642.0	624.7	620.3	109.2	44.1	9.9	0.6924	0.4809	3.0059	1.4634	1.5910	1.1921
11	-5.900	-1.154	882.7	610.9	649.3	601.2	597.9	108.6	42.7	10.2	0.6805	0.4603	2.9627	1.4771	1.5776	1.1853

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	1.87	18.20	42.38	75.79	87.03	0.5947	0.1100	0.0244	0.9551	87.32	81.30	83.91	74.28	76.10
2	1.49	3.51	16.73	43.44	75.69	89.47	0.5807	0.1024	0.0232	0.9591	87.76	82.89	85.29	75.56	77.31
3	0.83	3.33	15.75	42.58	78.32	93.06	0.5546	0.0832	0.0192	0.9675	89.53	85.27	87.36	78.23	79.80
4	-2.56	1.30	14.69	38.63	83.52	95.03	0.5047	0.0440	0.0108	0.9846	93.64	88.73	90.35	82.37	83.63
5	-4.38	0.93	13.96	36.67	79.68	84.69	0.5075	0.0227	0.0060	0.9934	96.35	85.84	87.80	82.60	83.79
6	-3.74	2.05	13.21	37.67	75.95	78.94	0.5282	0.0269	0.0074	0.9929	95.75	83.70	85.93	82.54	83.70
7	-3.62	2.38	12.86	37.92	76.32	78.52	0.5302	0.0370	0.0103	0.9904	94.23	83.64	85.87	81.20	82.43
8	-3.58	2.62	12.67	37.90	77.47	80.59	0.5199	0.0466	0.0131	0.9877	92.64	84.09	86.27	79.00	80.35
9	-3.85	2.85	14.15	35.97	79.93	86.70	0.4740	0.0527	0.0153	0.9857	90.79	81.23	83.84	73.79	75.45
10	-5.38	1.49	15.67	34.18	81.54	87.63	0.4602	0.0604	0.0176	0.9835	89.25	79.36	82.24	73.24	74.92
11	-7.99	-0.90	17.16	32.52	81.65	83.11	0.4747	0.0850	0.0250	0.9774	85.64	75.88	79.20	74.40	75.98

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 %	EFF-P TOT-STG %
10628.	177.90	1.4386	2.9921	83.46	85.76	1.1917	0.9834	78.64	191.41

TABLE XX (a) — OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

DESIGN SPEED
STATOR 1 ($\beta^*_{des.} - \beta^*_{act.}$) = 0^o
STATOR 2 ($\beta^*_{des.} - \beta^*_{act.}$) = -10^o

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 22, 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	16.736	18.601	593.2	1020.2	553.2	585.9	0.0	835.2	0.0	55.0	0.5468	0.9016	627.2	726.1	0.7958	0.5266	863.3	595.9
2	14.321	16.481	606.0	981.4	606.0	583.7	0.0	789.0	0.0	53.6	0.5593	0.8628	676.3	761.3	0.8382	0.5137	908.1	584.3
3	12.110	14.476	618.6	957.5	618.6	584.9	0.0	758.2	0.0	52.4	0.5718	0.8385	724.5	796.4	0.8805	0.5132	952.7	586.1
4	6.342	8.558	645.7	888.9	645.7	578.1	0.0	675.3	0.0	49.5	0.6025	0.7704	862.6	901.9	1.0014	0.5381	1079.9	620.9
5	0.666	2.620	670.5	814.2	670.5	526.7	0.0	621.0	0.0	49.7	0.6233	0.6951	1034.9	1042.3	1.1463	0.5758	1233.1	674.5
6	-1.017	-0.293	674.7	774.1	674.7	496.4	0.0	594.8	0.0	50.2	0.6275	0.6570	1117.8	1112.6	1.2143	0.6083	1305.6	717.3
7	-1.917	-1.685	676.0	778.0	676.0	523.7	0.0	575.3	0.0	47.7	0.6288	0.6602	1158.7	1147.7	1.2478	0.6583	1341.5	775.8
8	-3.177	-3.047	676.4	781.7	676.4	548.7	0.0	556.7	0.0	45.4	0.6292	0.6637	1199.6	1182.9	1.2811	0.7069	1377.2	832.6
9	-7.728	-7.165	667.2	790.2	667.2	574.1	0.0	542.9	0.0	43.3	0.6200	0.6676	1321.7	1288.2	1.3758	0.7949	1480.5	940.8
10	-9.417	-8.617	660.1	799.5	660.1	576.7	0.0	553.8	0.0	43.7	0.6128	0.6731	1362.4	1323.4	1.4055	0.8096	1513.8	961.7
11	-10.964	-10.108	651.1	799.8	651.1	550.2	0.0	580.5	0.0	46.4	0.6039	0.6681	1403.0	1358.5	1.4346	0.7960	1546.7	952.9

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	-0.00	4.61	17.37	56.96	39.23	48.16	0.5389	-0.0123	-0.0027	1.8713	100.63	100.70	46.38	-10.58	-627.2	109.1	1.8713
2	0.11	4.40	16.88	50.65	39.82	49.08	0.5691	-0.0030	-0.0007	1.8557	100.17	100.20	47.93	-2.72	-676.3	27.7	1.8557
3	0.31	4.42	15.28	45.57	40.38	50.18	0.5851	-0.0021	-0.0005	1.8607	100.13	100.15	49.32	3.75	-724.5	-38.2	1.8607
4	1.41	4.88	11.77	31.46	41.70	51.76	0.5965	0.0183	0.0045	1.8526	98.64	98.53	52.91	21.45	-862.6	-226.5	1.8526
5	2.54	5.22	8.41	18.37	42.53	48.34	0.6051	0.1034	0.0242	1.8252	91.04	90.27	57.05	38.68	-1034.9	-421.4	1.8252
6	2.95	5.23	8.86	12.68	42.69	45.98	0.5932	0.1342	0.0294	1.8062	87.67	86.62	58.88	46.20	-1117.8	-517.8	1.8062
7	3.15	5.25	7.21	12.21	42.74	49.09	0.5586	0.1080	0.0237	1.8305	89.83	88.95	59.73	47.52	-1158.7	-572.4	1.8305
8	3.34	5.30	5.89	11.82	42.76	52.00	0.5270	0.0830	0.0182	1.8540	91.56	91.25	60.56	48.75	-1199.6	-626.2	1.8540
9	4.14	5.56	5.53	10.66	42.40	55.19	0.4920	0.0896	0.0194	1.9052	90.91	90.06	63.18	52.32	-1321.7	-745.3	1.9052
10	4.44	5.74	6.06	11.06	42.12	55.37	0.4948	0.1126	0.0245	1.9258	88.60	87.52	64.12	53.06	-1362.4	-769.6	1.9258
11	4.74	5.89	8.28	10.46	41.76	52.31	0.5200	0.1690	0.0361	1.9286	83.14	81.54	65.07	54.62	-1403.0	-778.0	1.9286

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 %
1.2127	1.8652	91.54	92.24	40.47	1.2127	1.8652	91.54	92.24

STATOR 1

RUN NO 22, 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	18.408	15.501	1017.7	584.6	605.9	584.6	817.7	-1.6	53.7	-0.2	0.8990	0.4907	1.7604	1.1946	1.7604	1.1946
2	16.309	14.308	982.5	581.9	604.7	581.5	774.9	21.1	52.2	2.1	0.8644	0.4886	1.7679	1.1927	1.7679	1.1927
3	14.371	13.091	962.6	587.6	607.3	586.6	746.8	33.7	51.0	3.3	0.8435	0.4935	1.7819	1.1936	1.7819	1.1936
4	9.283	9.204	901.3	555.2	603.5	595.0	669.5	16.9	48.0	1.6	0.7824	0.4999	1.8050	1.1952	1.8050	1.1952
5	3.241	3.395	832.3	580.6	555.7	580.5	619.6	6.1	48.1	0.6	0.7121	0.4844	1.7910	1.2072	1.7910	1.2072
6	0.094	0.248	795.2	563.4	527.4	563.4	595.2	-1.0	48.5	-0.1	0.6760	0.4684	1.7727	1.2121	1.7727	1.2121
7	-1.374	-1.229	798.6	583.3	552.6	583.3	576.5	4.1	46.2	0.4	0.6792	0.4858	1.7929	1.2118	1.7929	1.2118
8	-2.632	-2.541	802.9	605.8	577.0	605.7	558.4	10.2	44.1	1.0	0.6834	0.5056	1.8176	1.2112	1.8176	1.2112
9	-5.827	-6.053	814.5	649.4	604.4	649.3	546.0	13.8	42.2	1.2	0.6901	0.5411	1.8702	1.2241	1.8702	1.2241
10	-6.833	-7.116	825.0	663.0	608.3	662.6	557.3	22.9	42.6	2.0	0.6966	0.5506	1.8858	1.2346	1.8858	1.2346
11	-7.957	-8.157	827.1	652.6	564.9	652.1	584.8	26.1	45.1	2.3	0.6930	0.5373	1.8704	1.2526	1.8704	1.2526

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	1.14	3.25	12.17	53.84	49.91	58.58	0.5833	0.1456	0.0298	0.9406	82.95	90.06	90.80	90.06	90.80
2	1.37	3.78	13.29	50.15	50.79	58.66	0.5649	0.1725	0.0260	0.9527	85.02	91.70	92.32	91.70	92.32
3	1.50	4.29	13.68	47.74	51.91	59.46	0.5478	0.1134	0.0250	0.9577	85.53	92.61	93.17	92.61	93.17
4	1.04	4.76	10.90	46.41	53.59	60.83	0.5136	0.0778	0.0190	0.9740	88.71	94.12	94.57	94.12	94.57
5	2.62	7.66	9.91	47.51	50.46	58.73	0.5032	0.0667	0.0182	0.9808	89.00	87.35	88.33	87.35	88.33
6	3.44	9.05	9.25	48.56	48.29	56.59	0.5064	0.0716	0.0205	0.9811	87.58	83.72	84.95	83.72	84.95
7	1.42	7.29	9.79	45.82	51.18	58.80	0.4792	0.0742	0.0217	0.9803	86.25	85.62	86.73	85.62	86.73
8	-0.52	5.62	10.39	43.12	54.02	61.36	0.4491	0.0713	0.0212	0.9809	85.78	88.05	88.99	88.05	88.99
9	-2.46	4.42	11.77	40.54	57.29	65.90	0.4080	0.0661	0.0206	0.9820	84.47	87.31	88.36	87.31	88.36
10	-2.36	4.69	13.76	40.59	57.54	66.81	0.4031	0.0737	0.0233	0.9796	82.25	84.60	85.90	84.60	85.90
11	-0.52	6.63	15.61	42.81	54.75	64.71	0.4298	0.1101	0.0352	0.9698	75.12	77.45	79.32	77.45	79.32

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 %	EFF-P TOT-STG %
10672.	178.20	1.2127	1.8170	87.37	88.37	1.2127	0.9742	87.37	187.66

ROTOR 2

RUN NO 22, 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 DEGREF	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	12.505	11.267	590.8	993.9	590.8	484.5	-1.6	867.8	-0.2	60.7	0.4961	0.7880	832.1	872.8	0.8580	0.3842	1021.9	484.5
2	12.543	10.252	598.6	988.1	598.3	500.3	18.6	852.1	1.8	59.5	0.5033	0.7838	855.7	891.0	0.8651	0.3981	1028.9	501.8
3	12.192	9.302	616.3	955.9	615.5	541.5	31.5	835.8	3.0	57.0	0.5189	0.7923	879.9	910.0	0.8824	0.4348	1048.2	546.5
4	9.262	6.467	662.4	956.7	662.2	668.8	17.7	738.9	1.5	47.9	0.5596	0.7968	955.2	970.6	0.9697	0.5659	1147.8	707.8
5	3.322	2.153	678.4	907.7	678.4	660.7	6.4	622.3	0.5	43.3	0.5711	0.7190	1059.0	1058.3	1.0541	0.6270	1252.3	791.6
6	0.033	-0.181	668.2	849.0	668.2	623.9	-0.7	575.8	-0.1	42.7	0.5607	0.6680	1111.9	1105.0	1.0889	0.6437	1297.8	818.1
7	-1.531	-1.358	683.2	829.7	683.1	612.9	3.6	559.2	0.3	42.3	0.5740	0.6518	1138.6	1129.1	1.1131	0.6574	1324.7	836.9
8	-2.932	-2.494	703.3	828.0	703.2	615.9	9.9	553.4	0.8	41.9	0.5922	0.6506	1165.5	1153.7	1.1391	0.6758	1352.7	860.1
9	-6.634	-6.008	742.5	850.6	742.4	648.1	14.0	551.0	1.1	40.2	0.6243	0.6642	1247.1	1230.1	1.2102	0.7330	1439.4	938.7
10	-7.814	-7.327	752.9	867.8	752.5	663.4	23.0	559.4	1.7	40.0	0.6308	0.6751	1274.6	1256.3	1.2235	0.7485	1460.4	962.2
11	-8.793	-8.644	741.8	813.2	741.4	609.3	26.4	538.6	2.0	41.4	0.6160	0.6262	1302.1	1283.0	1.2252	0.7408	1475.5	962.0

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	5.22	9.53	20.99	54.11	59.05	51.47	0.7230	0.5651	0.1288	1.5194	64.32	62.19	54.70	0.59	-833.7	-5.0	2.6747
2	4.65	9.10	18.27	50.15	59.91	54.12	0.7066	0.5230	0.1218	1.5367	66.59	64.54	54.60	4.45	-837.1	-39.0	2.7106
3	3.93	8.50	15.33	46.48	61.58	60.01	0.6634	0.4469	0.1060	1.5721	71.11	69.24	54.28	7.80	-848.4	-74.2	2.7854
4	3.26	8.05	9.58	35.87	65.67	79.49	0.5361	0.2235	0.0544	1.6514	83.50	82.30	55.01	19.14	-937.5	-231.6	2.9723
5	3.77	8.35	5.21	23.81	65.77	82.08	0.5027	0.1314	0.0311	1.6375	88.01	87.15	57.24	33.44	-1052.6	-436.0	2.9374
6	4.61	8.95	4.06	18.71	64.21	77.92	0.4981	0.1277	0.0289	1.6110	87.35	86.47	58.98	40.27	-1112.6	-529.2	2.8613
7	4.03	8.11	3.60	16.05	65.81	76.86	0.4938	0.1348	0.0301	1.5915	86.05	85.11	58.51	42.86	-1135.0	-569.9	2.8413
8	3.23	7.04	1.86	14.43	68.06	77.73	0.4881	0.1469	0.0330	1.5751	84.22	83.18	58.61	44.18	-1155.6	-600.4	2.8549
9	2.05	4.73	-0.89	12.65	71.89	81.91	0.4764	0.1745	0.0422	1.5672	80.24	78.96	58.86	46.21	-1233.2	-679.2	2.9286
10	1.69	3.87	-0.40	12.62	72.59	83.55	0.4733	0.1743	0.0438	1.5743	80.16	78.86	58.89	46.28	-1251.6	-696.9	2.9676
11	2.24	3.93	4.93	9.16	70.53	75.45	0.4780	0.1868	0.0448	1.5281	77.75	76.39	59.75	50.59	-1275.7	744.4	2.8588

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 %
1.4257	2.8948	83.00	85.30	38.62	1.1756	1.5931	80.43	81.67

STATOR 2

RUN NO 22, 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	8.054	0.953	1005.8	520.5	522.9	481.9	859.2	196.6	58.9	22.2	0.7986	0.3954	2.5102	1.4367	1.4259	1.2027
2	6.507	0.948	1000.9	546.2	536.8	509.5	844.8	196.7	57.7	21.1	0.7953	0.4160	2.5437	1.4344	1.4428	1.2014
3	5.128	0.854	1009.7	602.7	575.9	568.7	829.4	199.4	55.3	19.3	0.8047	0.4615	2.6138	1.4296	1.4772	1.1986
4	2.766	0.503	1011.5	701.2	694.5	663.4	735.4	227.1	46.7	18.9	0.8102	0.5433	2.7662	1.4186	1.5386	1.1874
5	0.827	0.026	928.9	736.5	690.1	704.0	621.8	216.2	42.0	17.1	0.7376	0.5735	2.8306	1.4131	1.5759	1.1739
6	-0.234	-0.306	874.7	713.5	658.1	689.8	576.3	182.1	41.2	14.8	0.6901	0.5543	2.7925	1.4140	1.5685	1.1684
7	-0.860	-0.482	856.9	695.7	648.6	677.2	559.9	159.3	40.8	13.2	0.6750	0.5396	2.7618	1.4141	1.5567	1.1663
8	-1.588	-0.639	856.6	657.5	653.0	680.1	554.4	154.8	40.3	12.8	0.6751	0.5417	2.7652	1.4114	1.5322	1.1650
9	-3.824	-1.060	886.8	744.0	692.8	723.6	553.6	173.0	38.6	13.4	0.6951	0.5754	2.8270	1.4330	1.5147	1.1717
10	-4.573	-1.194	908.1	771.0	712.9	746.2	562.5	194.2	38.3	14.6	0.7095	0.5945	2.8645	1.4479	1.5204	1.1740
11	-5.504	-1.219	863.2	713.3	671.3	674.1	542.6	233.2	39.0	19.1	0.6680	0.5446	2.7564	1.4614	1.4732	1.1672

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	0.43	1.99	23.98	36.71	55.14	59.61	0.6306	0.1786	0.0374	0.9386	79.59	68.58	72.29	52.27	54.56
2	0.29	2.30	22.34	36.62	57.65	63.42	0.6018	0.1718	0.0369	0.9416	79.49	70.09	73.66	54.46	56.71
3	-1.32	1.18	20.16	36.00	63.35	71.63	0.5471	0.1582	0.0350	0.9455	79.48	73.22	76.51	58.96	61.13
4	-8.89	-5.02	19.22	27.77	81.78	85.66	0.4354	0.1846	0.0434	0.9350	70.94	80.29	82.85	69.49	71.26
5	-12.71	-7.40	17.36	24.94	84.70	91.96	0.3338	0.1296	0.0332	0.9597	72.09	83.46	85.66	79.27	80.55
6	-13.22	-7.44	14.99	26.40	81.09	89.72	0.3199	0.1075	0.0287	0.9700	74.00	92.03	84.39	80.89	82.06
7	-13.47	-7.47	13.38	27.54	80.20	87.79	0.3222	0.1042	0.0284	0.9725	74.00	81.00	83.47	80.47	81.64
8	-13.76	-7.55	12.91	27.49	81.19	88.35	0.3172	0.1106	0.0306	0.9710	71.56	81.65	84.04	78.02	79.30
9	-15.16	-8.47	13.59	25.22	85.85	92.99	0.2865	0.1222	0.0349	0.9664	64.62	79.51	82.22	72.79	74.33
10	-16.15	-9.27	15.34	23.75	87.84	95.16	0.2709	0.1191	0.0341	0.9662	63.70	77.97	80.92	72.49	74.06
11	-16.71	-9.62	20.99	19.96	81.11	84.16	0.2822	0.1409	0.0398	0.9636	61.68	72.49	76.04	69.38	70.99

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 %	EFF-P TOT-STG %
10672.	178.20	1.4257	2.7736	79.15	81.87	1.1756	0.9581	72.60	194.30

APPENDIX C

TABLE XX (b) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

DESIGN SPEED

STATOR 1 ($\beta^*_{des.} - \beta^*_{act.}$) = 0°

STATOR 2 ($\beta^*_{des.} - \beta^*_{act.}$) = -10°

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 22, 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'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	16.723	18.479	567.5	1008.7	567.5	556.1	0.0	841.6	0.0	56.6	0.5218	0.8892	627.7	726.6	0.7780	0.5005	846.2	567.8
2	14.318	16.268	579.7	969.9	579.7	551.4	0.0	798.0	0.0	55.4	0.5336	0.8504	676.8	761.8	0.8203	0.4844	891.1	552.6
3	12.162	14.197	591.4	944.1	591.4	547.6	0.0	769.0	0.0	54.6	0.5450	0.8239	725.1	797.0	0.8623	0.4786	935.7	548.4
4	6.530	8.622	620.3	884.9	620.3	556.3	0.0	688.2	0.0	51.1	0.5734	0.7651	863.2	902.5	0.9826	0.5154	1063.0	596.2
5	0.703	2.277	638.8	822.9	638.8	514.9	0.0	641.8	0.0	51.3	0.5917	0.7009	1035.6	1043.1	1.1271	0.5561	1216.8	652.8
6	-1.187	-0.540	641.9	787.5	641.9	483.0	0.0	622.1	0.0	52.2	0.5947	0.6659	1118.6	1113.4	1.1949	0.5825	1289.6	689.0
7	-2.168	-1.894	642.7	790.5	642.7	510.6	0.0	603.5	0.0	49.8	0.5955	0.6686	1159.5	1148.5	1.2285	0.6316	1325.7	746.8
8	-3.472	-3.234	642.7	793.3	642.7	534.8	0.0	585.8	0.0	47.6	0.5955	0.6711	1200.4	1183.7	1.2618	0.6786	1361.6	802.2
9	-7.903	-7.282	633.5	756.8	633.5	546.2	0.0	580.2	0.0	46.7	0.5864	0.6692	1322.6	1289.2	1.3575	0.7516	1466.5	894.9
10	-9.466	-8.692	627.0	805.6	627.0	545.0	0.0	593.3	0.0	47.3	0.5800	0.6737	1363.3	1324.3	1.3882	0.7625	1500.6	911.8
11	-10.944	-10.137	619.2	811.5	619.2	530.4	0.0	614.1	0.0	49.1	0.5773	0.6744	1404.0	1359.5	1.4183	0.7602	1534.5	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	VΘ'-1 FT/SEC	VΘ'-2 FT/SEC	PO/PO INLET
1	1.28	5.89	16.25	55.37	38.01	46.12	0.5642	0.0004	0.0001	1.8726	99.58	99.99	47.67	-11.71	-627.7	115.0	1.8726
2	1.39	5.69	15.85	52.56	38.60	46.76	0.5985	0.0142	0.0033	1.8575	99.23	99.17	49.21	-3.76	-676.8	36.1	1.8575
3	1.61	5.71	14.46	47.65	39.15	47.33	0.6200	0.0235	0.0056	1.8591	98.64	98.52	50.62	2.93	-725.1	-28.0	1.8591
4	2.70	6.17	11.41	33.11	40.46	50.29	0.6158	0.0237	0.0059	1.8697	98.33	98.18	54.21	21.10	-863.2	-214.3	1.8697
5	3.81	6.49	7.67	20.39	41.25	47.72	0.6224	0.1082	0.0256	1.8606	91.11	90.32	58.32	37.94	-1035.6	-401.3	1.8606
6	4.22	6.50	8.15	14.67	41.38	45.10	0.6168	0.1475	0.0327	1.8455	87.19	86.06	60.15	45.49	-1118.6	-491.3	1.8455
7	4.41	6.52	6.54	14.14	41.41	48.21	0.5823	0.1238	0.0275	1.8698	88.97	87.98	61.00	46.86	-1159.5	-545.0	1.8698
8	4.61	6.56	5.31	13.66	41.41	51.03	0.5513	0.1021	0.0226	1.8923	90.64	89.78	61.83	48.16	-1200.4	-597.9	1.8923
9	5.34	6.76	5.53	12.06	41.02	52.65	0.5276	0.1281	0.0278	1.9366	87.72	86.55	64.39	52.32	-1322.6	-709.0	1.9366
10	5.60	6.89	6.21	12.07	40.75	52.45	0.5330	0.1538	0.0333	1.9577	85.30	83.87	65.28	53.21	-1363.3	731.0	1.9577
11	5.84	6.99	8.11	11.72	40.40	50.77	0.5489	0.1932	0.0414	1.9724	81.70	79.90	66.17	54.45	-1404.0	-745.3	1.9724

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 %
1.2219	1.8926	90.00	90.84	39.20	1.2219	1.8926	90.00	90.84

STATOR 1

RUN NO 22, 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	18.384	15.276	1005.7	532.3	576.7	532.0	823.9	-17.6	55.2	-1.9	0.8860	0.4446	1.7592	1.1962	1.7592	1.1962
2	16.258	13.857	970.7	537.0	572.7	536.9	783.7	7.8	54.0	0.8	0.8511	0.4489	1.7709	1.1950	1.7709	1.1950
3	14.269	12.444	948.0	541.3	570.0	541.0	757.5	19.2	53.2	2.0	0.8278	0.4524	1.7808	1.1964	1.7808	1.1964
4	9.152	8.267	895.5	556.5	579.9	556.2	682.3	17.1	49.7	1.8	0.7754	0.4651	1.8079	1.1990	1.8079	1.1990
5	3.332	2.607	838.6	552.1	541.4	552.0	640.4	8.8	49.8	0.9	0.7157	0.4583	1.8101	1.2138	1.8101	1.2138
6	0.233	-0.244	805.6	560.0	511.5	559.9	622.4	5.6	50.6	0.6	0.6826	0.4636	1.8196	1.2215	1.8196	1.2215
7	-1.239	-1.574	808.9	567.6	537.2	567.5	604.8	9.8	48.4	1.0	0.6855	0.4700	1.8286	1.2223	1.8286	1.2223
8	-2.488	-2.749	812.3	581.9	560.9	581.5	587.6	19.2	46.3	1.9	0.6887	0.4824	1.8452	1.2224	1.8452	1.2224
9	-5.759	-5.989	819.3	622.1	575.1	621.7	583.5	22.3	45.5	2.1	0.6898	0.5138	1.8949	1.2393	1.8949	1.2393
10	-6.845	-7.026	829.3	636.5	575.4	636.3	597.2	29.0	46.1	2.6	0.6953	0.5240	1.9127	1.2512	1.9127	1.2512
11	-8.000	-8.084	836.7	628.3	563.1	627.7	618.8	26.6	47.8	2.4	0.6973	0.5131	1.9026	1.2673	1.9026	1.2673

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	2.67	4.78	10.45	57.10	47.95	54.30	0.6353	0.1516	0.0310	0.9392	83.29	89.20	90.01	89.20	90.01
2	3.17	5.57	12.06	53.19	48.54	55.12	0.6111	0.1242	0.0264	0.9529	85.68	90.88	91.56	90.88	91.56
3	3.65	6.43	12.42	51.14	49.12	55.70	0.5959	0.1155	0.0255	0.9580	86.14	91.19	91.86	91.19	91.86
4	2.70	6.42	11.03	47.94	52.06	57.69	0.5576	0.0994	0.0242	0.9672	86.67	92.56	93.14	92.56	93.14
5	4.30	9.35	10.22	48.85	49.70	56.30	0.5470	0.0943	0.0258	0.9725	85.91	86.37	87.44	86.37	87.44
6	5.57	11.18	9.93	50.02	47.27	57.41	0.5247	0.0541	0.0155	0.9853	91.04	84.14	85.40	84.14	85.40
7	3.59	9.47	10.38	47.40	50.19	58.27	0.5131	0.0742	0.0217	0.9800	87.34	84.56	85.79	84.56	85.79
8	1.75	7.89	11.32	44.46	52.93	59.91	0.4922	0.0869	0.0258	0.9764	84.63	85.92	87.06	85.92	87.06
9	0.86	7.74	12.61	43.42	54.72	63.92	0.4557	0.0768	0.0239	0.9791	84.41	83.62	85.01	83.62	85.01
10	1.21	9.26	14.39	43.53	54.63	65.08	0.4502	0.0810	0.0256	0.9777	83.07	80.94	82.57	80.94	82.57
11	2.18	9.33	15.75	45.37	53.13	63.39	0.4782	0.1272	0.0407	0.9647	75.03	75.36	77.45	75.36	77.45

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 %	EFF-P TOT-STG %
10679.	172.60	1.2219	1.8372	85.43	86.61	1.2219	0.9707	85.43	175.56

ROTOR 2

RUN NO 22, 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' 2	V' 1 FT/SEC	F
1	12.041	11.101	553.3	1022.7	553.0	497.6	-17.1	893.5	-1.8	60.8	0.4629	0.8098	832.7	873.4	0.8482	0.3943	1013.9	4
2	11.603	9.891	565.9	1019.5	565.9	519.3	6.5	877.3	0.7	59.3	0.4741	0.8085	856.3	891.7	0.8554	0.4120	1021.0	5
3	10.881	8.728	579.7	1017.1	579.4	557.9	18.2	850.4	1.8	56.7	0.4859	0.8093	880.5	910.7	0.8709	0.4459	1038.9	5
4	7.401	5.387	620.0	967.0	619.7	619.1	16.9	742.8	1.6	50.2	0.5209	0.7682	955.9	971.3	0.9452	0.5242	1125.1	6
5	1.618	0.998	635.6	868.1	635.6	591.2	8.9	635.7	0.8	47.1	0.5314	0.6816	1059.8	1059.1	1.0267	0.5710	1228.1	7
6	-1.199	-1.168	644.4	824.5	644.4	572.0	5.7	593.8	0.5	46.0	0.5373	0.6436	1112.7	1105.8	1.0680	0.5992	1280.9	7
7	-2.496	-2.221	650.8	810.4	650.8	561.2	9.6	584.7	0.8	46.1	0.5427	0.6314	1139.4	1129.9	1.0872	0.6096	1303.8	7
8	-3.637	-3.209	662.7	809.3	662.5	557.1	19.0	587.1	1.6	46.4	0.5533	0.6300	1166.7	1154.5	1.1059	0.6190	1324.8	7
9	-6.597	-6.160	702.0	825.6	701.7	589.7	22.5	577.8	1.8	44.3	0.5840	0.6378	1248.0	1231.0	1.1747	0.6798	1412.1	8
10	-7.523	-7.231	716.7	835.1	716.1	603.8	29.2	576.9	2.3	43.6	0.5940	0.6426	1275.5	1257.2	1.1913	0.6999	1437.3	9
11	-8.456	-8.434	710.5	814.3	710.0	598.6	27.0	552.1	2.2	42.6	0.5845	0.6228	1303.0	1283.9	1.2012	0.7231	1460.2	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	7.44	11.76	18.10	59.22	56.00	57.05	0.7174	0.4030	0.0918	1.6816	76.72	74.98	56.92	-2.30	-849.9	20.1	2.9583
2	6.45	10.90	15.40	54.82	57.43	60.78	0.6951	0.3473	0.0811	1.7013	79.58	78.02	56.40	1.58	-849.8	-14.3	3.0077
3	5.86	10.44	13.68	50.06	58.75	66.76	0.6536	0.2721	0.0648	1.7226	83.50	82.20	56.21	6.15	-862.4	-60.3	3.0618
4	4.93	9.73	10.69	36.43	62.59	77.85	0.5775	0.1519	0.0367	1.7157	89.05	88.19	56.69	20.26	-939.0	-228.4	3.0963
5	5.37	9.95	7.39	23.23	63.20	76.13	0.5511	0.1251	0.0288	1.6557	88.92	88.11	59.84	35.61	-1050.9	-423.4	2.9973
6	5.40	9.74	5.59	17.97	63.80	73.86	0.5360	0.1343	0.0297	1.6185	87.04	86.13	59.77	41.80	-1107.0	-511.9	2.9441
7	5.15	9.23	4.87	15.90	64.51	72.63	0.5334	0.1457	0.0319	1.6037	85.52	84.53	60.02	44.13	-1129.8	-545.2	2.9313
8	4.57	9.38	3.14	14.49	65.89	72.35	0.5333	0.1587	0.0349	1.5965	83.95	82.86	59.95	45.46	-1147.3	-567.5	2.9434
9	3.31	5.99	0.71	12.22	69.56	76.55	0.5123	0.1775	0.0416	1.5881	80.96	79.69	60.12	47.80	-1225.5	-653.2	3.0067
10	2.81	4.99	1.60	11.74	70.59	79.15	0.5040	0.1746	0.0422	1.5872	80.93	79.65	60.01	48.27	-1246.2	-680.3	3.0334
11	3.29	4.98	4.94	10.21	69.11	76.90	0.4868	0.1569	0.0374	1.5756	82.30	81.13	60.80	50.60	-1276.7	-731.8	2.9989

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 %
1.4410	3.0082	83.47	85.79	37.14	1.1793	1.6374	83.71	84.80

STATOR 2

RUN NO 22, 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	8.170	0.812	1036.0	562.0	539.2	525.0	884.6	200.7	58.9	20.9	0.8217	0.4262	2.8245	1.4497	1.6056	1.2119
2	6.788	0.731	1033.2	577.3	557.7	540.3	869.8	203.4	57.5	20.6	0.8208	0.4390	2.8497	1.4454	1.6132	1.2091
3	5.607	0.622	1030.8	604.8	552.2	568.9	843.7	205.3	55.1	19.8	0.8206	0.4617	2.8930	1.4395	1.6288	1.2040
4	3.152	0.144	981.6	660.5	645.6	632.4	739.4	190.6	48.9	16.8	0.7817	0.5090	2.9910	1.4250	1.6594	1.1889
5	0.754	-0.541	886.2	626.2	618.2	605.8	635.0	158.7	45.7	14.7	0.6972	0.4815	2.9422	1.4242	1.6250	1.1751
6	-0.409	-0.684	845.0	593.3	600.8	575.7	594.2	143.4	44.6	14.0	0.6609	0.4544	2.8928	1.4281	1.5917	1.1706
7	-1.045	-0.716	832.2	584.5	591.4	567.5	585.4	140.1	44.7	13.8	0.6497	0.4472	2.8799	1.4295	1.5780	1.1694
8	-1.791	-0.751	832.4	593.5	588.8	574.1	588.4	150.4	44.9	14.7	0.6495	0.4541	2.8917	1.4311	1.5724	1.1708
9	-4.244	-1.056	855.2	649.3	627.7	624.9	580.8	176.2	42.8	15.7	0.6625	0.4944	2.9613	1.4556	1.5652	1.1756
10	-5.083	-1.170	868.3	668.7	645.8	647.8	580.4	166.2	42.0	14.4	0.6703	0.5074	2.9834	1.4693	1.5614	1.1756
11	-5.916	-1.190	853.5	637.0	647.6	613.2	555.9	172.4	40.7	15.7	0.6552	0.4802	2.9264	1.4810	1.5377	1.1693

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	0.40	1.96	22.70	37.56	61.29	71.54	0.6056	0.1262	0.0267	0.9548	85.28	76.45	79.57	67.84	69.89
2	0.07	2.09	21.86	36.88	64.72	74.11	0.5885	0.1409	0.0304	0.9497	83.10	77.96	80.90	69.53	71.49
3	-1.59	0.91	20.68	35.21	70.27	78.75	0.5587	0.1484	0.0327	0.9470	81.42	80.33	82.99	72.83	74.61
4	-6.64	-2.78	17.09	32.14	80.47	89.45	0.4696	0.1014	0.0241	0.9659	84.91	86.14	88.09	81.89	83.13
5	-8.96	-3.65	14.97	31.08	78.83	85.43	0.4429	0.0760	0.0197	0.9787	87.13	84.79	86.88	84.36	85.39
6	-9.75	-3.96	14.19	30.67	76.78	80.59	0.4507	0.0766	0.0205	0.9803	86.91	82.48	84.85	82.62	83.72
7	-9.56	-3.57	14.01	30.82	75.71	79.26	0.4497	0.0729	0.0198	0.9819	87.36	81.81	84.26	81.56	82.70
8	-9.11	-2.90	14.76	30.29	75.60	80.19	0.4355	0.0642	0.0176	0.9842	88.39	81.87	84.32	80.22	81.44
9	-11.00	-4.31	15.89	27.08	80.29	86.29	0.3800	0.0571	0.0161	0.9855	88.02	79.46	82.29	77.12	78.51
10	-12.45	-5.57	15.14	27.64	82.20	88.71	0.3719	0.0627	0.0180	0.9837	86.39	77.74	80.83	76.63	78.05
11	-14.99	-7.90	17.61	25.06	81.61	82.78	0.3889	0.0959	0.0275	0.9761	80.94	74.28	77.78	76.56	77.93

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 %	EFF-P TOT-STG %
10679.	172.60	1.4410	2.9335	81.26	83.83	1.1793	0.9752	79.15	188.02

TABLE XXI (a) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

DESIGN SPEED

STATOR 1 $(\beta^*_{des.} - \beta^*_{act.}) = +2.5^{\circ}$

STATOR 2 $(\beta_{des.} - \beta^*_{act.}) = -5^{\circ}$

U. S. CUSTOMARY UNITS

RUN NO 24, 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'-1	V'-1 FT/SEC	V'-2 FT/SEC
1	16.650	18.651	620.1	1078.3	620.1	688.4	0.0	829.9	0.0	50.4	0.5732	0.9622	630.0	729.4	0.8172	0.6209	884.0	695.7
2	14.110	16.575	634.9	1043.7	634.9	691.1	0.0	782.1	0.0	48.6	0.5878	0.9271	679.4	764.7	0.8609	0.6141	929.9	691.3
3	11.767	14.619	649.7	1014.9	649.7	687.3	0.0	746.1	0.0	47.5	0.6025	0.8970	727.8	800.0	0.9047	0.6096	975.6	689.4
4	5.682	9.265	688.8	928.5	688.8	668.2	0.0	644.7	0.0	44.1	0.6416	0.8121	866.5	905.9	1.0311	0.6276	1106.9	717.5
5	-0.530	2.980	721.7	784.2	721.7	579.6	0.0	528.3	0.0	42.4	0.6750	0.6764	1039.5	1047.0	1.1837	0.6709	1265.5	777.8
6	-2.552	0.029	731.0	714.6	731.0	528.8	0.0	480.5	0.0	42.3	0.6846	0.6130	1122.8	1117.6	1.2547	0.7103	1339.8	828.0
7	-3.445	-1.542	734.3	736.5	734.3	576.8	0.0	457.9	0.0	38.4	0.6879	0.6341	1163.9	1152.9	1.2893	0.7776	1376.2	903.1
8	-4.597	-3.063	736.0	748.8	736.0	605.2	0.0	441.0	0.0	36.1	0.6896	0.6460	1205.0	1188.2	1.3231	0.8295	1411.9	961.6
9	-8.693	-7.278	727.4	772.4	727.4	636.9	0.0	436.9	0.0	34.4	0.6808	0.6640	1327.6	1294.0	1.4170	0.9180	1513.8	1067.9
10	-10.142	-8.703	719.8	774.7	719.8	631.7	0.0	448.5	0.0	35.3	0.6731	0.6632	1368.5	1329.3	1.4459	0.9279	1546.2	1084.0
11	-11.397	-10.138	710.4	745.1	710.4	575.9	0.0	472.7	0.0	39.3	0.6636	0.6313	1409.3	1364.6	1.4741	0.8995	1570.3	1061.7

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	-1.16	3.45	19.62	53.56	40.45	53.48	0.4358	0.0104	0.0023	1.8555	99.44	99.40	45.23	-8.33	-630.0	100.5	1.8555
2	-1.12	3.18	18.16	48.15	41.08	54.94	0.4631	0.0106	0.0024	1.8421	99.36	99.32	46.70	-1.45	-679.4	17.4	1.8421
3	-0.99	3.12	16.02	43.52	41.70	55.64	0.4869	0.0211	0.0050	1.8317	98.63	98.52	48.02	4.49	-727.8	-53.8	1.8317
4	-0.12	3.35	11.73	29.56	43.22	56.28	0.5127	0.0466	0.0116	1.7835	96.17	95.87	51.38	21.42	-866.5	-261.2	1.7835
5	0.70	3.39	11.58	13.37	44.38	49.87	0.5132	0.1182	0.0264	1.6497	87.46	86.57	55.22	41.85	-1039.5	-518.7	1.6497
6	1.02	3.30	12.96	6.66	44.69	45.80	0.4968	0.1411	0.0285	1.5914	83.46	82.37	56.95	50.30	-1122.8	-637.1	1.5914
7	1.19	3.30	9.98	7.48	44.75	50.70	0.4519	0.0887	0.0184	1.6310	89.28	88.54	57.77	50.29	-1163.9	-694.9	1.6310
8	1.39	3.34	8.11	7.64	44.85	53.79	0.4225	0.0563	0.0118	1.6588	93.00	92.50	58.61	50.97	-1205.0	-747.2	1.6588
9	2.26	3.69	6.52	7.99	44.57	57.08	0.3963	0.0637	0.0135	1.7102	91.92	91.31	61.31	53.32	-1327.6	-857.1	1.7102
10	2.60	3.89	7.27	8.01	44.31	56.30	0.4031	0.0959	0.0203	1.7143	87.97	87.05	62.28	54.27	-1368.5	-880.9	1.7143
11	2.92	4.07	10.70	6.21	43.99	50.42	0.4365	0.1768	0.0355	1.6735	78.16	76.55	63.25	57.04	-1409.3	-891.9	1.6735

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 %
1.1838	1.7133	90.41	91.09	42.29	1.1838	1.7133	90.41	91.09

STATOR 1

RUN NO 24, 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	18.458	15.252	1086.4	773.8	721.2	772.1	812.5	-51.1	48.6	-3.8	0.9708	0.6615	1.7278	1.1942	1.7278	1.1942
2	16.369	13.787	1056.2	772.0	724.8	771.2	768.3	-35.5	46.9	-2.6	0.9401	0.6605	1.7373	1.1919	1.7373	1.1919
3	14.413	12.373	1030.4	776.4	722.1	775.9	735.0	-27.7	45.7	-2.0	0.9134	0.6647	1.7512	1.1915	1.7512	1.1915
4	9.157	8.375	951.6	760.1	704.4	759.0	639.8	-40.9	42.3	-3.1	0.8350	0.6508	1.7403	1.1871	1.7403	1.1871
5	3.026	3.218	812.1	676.4	617.2	673.9	527.7	-57.5	40.5	-4.9	0.7027	0.5768	1.6330	1.1770	1.6330	1.1770
6	-0.013	0.554	741.6	632.5	564.2	628.0	481.3	-75.3	40.5	-6.8	0.6380	0.5384	1.5795	1.1717	1.5795	1.1717
7	-1.540	-0.694	762.6	650.9	609.0	647.0	458.9	-71.0	37.0	-6.3	0.6585	0.5556	1.5968	1.1691	1.5968	1.1691
8	-2.825	-1.821	774.8	680.3	636.3	677.6	442.1	-59.9	34.8	-5.1	0.6704	0.5825	1.6280	1.1688	1.6280	1.1688
9	-5.961	-5.245	801.0	723.5	669.9	722.7	439.2	-35.0	33.3	-2.8	0.6909	0.6185	1.6827	1.1822	1.6827	1.1822
10	-6.930	-6.441	805.6	717.9	667.5	717.3	451.0	-30.3	34.1	-2.4	0.6922	0.6106	1.6776	1.1922	1.6776	1.1922
11	-7.983	-7.743	779.3	675.4	616.7	674.2	476.4	-39.5	37.8	-3.4	0.6627	0.5682	1.6281	1.2069	1.6281	1.2069

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	-1.40	0.71	11.07	52.41	55.64	69.26	0.4440	0.1517	0.0310	0.9312	77.03	87.04	87.97	87.04	87.97
2	-1.47	0.93	11.10	49.49	57.03	69.74	0.4246	0.1308	0.0277	0.9432	78.82	89.04	89.84	89.04	89.84
3	-1.36	1.42	10.65	47.70	57.73	70.57	0.4040	0.1048	0.0231	0.9563	81.55	90.61	91.30	90.61	91.30
4	-2.19	1.53	8.69	45.35	58.40	69.43	0.3694	0.0605	0.0147	0.9778	86.75	91.61	92.22	91.61	92.22
5	-2.47	2.58	6.93	45.41	52.28	60.84	0.3556	0.0230	0.0063	0.9937	93.25	84.90	85.88	84.90	85.88
6	-2.06	3.56	5.03	47.30	48.11	56.23	0.3654	0.0516	0.0147	0.9873	84.43	81.26	82.41	81.26	82.41
7	-5.29	0.58	5.62	43.27	52.74	58.17	0.3514	0.0960	0.0279	0.9756	70.35	84.58	85.54	84.58	85.54
8	-7.29	-1.14	6.87	35.87	55.71	61.25	0.3168	0.0778	0.0230	0.9797	71.61	88.50	89.24	88.50	89.24
9	-8.80	-1.92	10.28	36.09	59.04	65.42	0.2839	0.0600	0.0187	0.9836	72.87	87.97	88.80	87.97	88.80
10	-8.31	-1.26	11.85	36.55	58.46	64.47	0.2990	0.0736	0.0233	0.9800	69.53	82.93	84.10	82.93	84.10
11	-5.33	1.82	12.45	41.16	52.99	59.48	0.3469	0.1057	0.0338	0.9730	63.59	72.17	73.98	72.17	73.98

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 %	EFF-P TOT-STG %
10720.	186.20	1.1838	1.6724	86.06	87.01	1.1838	0.9761	86.06	239.47

ROTOR 2

RUN NO 24, 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'-1	V'-1 FT/SEC	V'-2 FT/SEC
1	11.537	11.254	840.0	1264.5	838.5	939.4	-50.0	876.7	-3.4	42.9	0.7237	1.0563	835.9	876.7	1.0509	0.7723	1219.8	939.4
2	10.786	10.134	845.7	1250.6	844.9	897.8	-35.1	870.6	-2.4	44.0	0.7299	1.0232	859.5	895.0	1.0620	0.7349	1230.5	898.2
3	9.998	9.078	855.9	1202.3	855.5	856.3	-26.5	843.9	-1.8	44.5	0.7398	0.9784	883.9	914.1	1.0798	0.6991	1249.3	859.1
4	7.548	6.155	858.9	1095.7	857.9	843.2	-39.9	699.8	-2.7	39.7	0.7441	0.8873	959.5	974.9	1.1411	0.7182	1317.2	886.9
5	3.712	2.327	801.1	979.1	799.1	783.8	-55.4	586.8	-4.0	36.8	0.6923	0.7876	1063.8	1063.1	1.1884	0.7378	1375.2	917.1
6	1.319	0.211	758.9	908.1	755.2	737.7	-75.3	529.5	-5.7	35.6	0.6542	0.7267	1116.9	1110.0	1.2166	0.7512	1411.3	936.7
7	-0.035	-0.896	771.0	815.8	767.5	716.2	-72.6	504.1	-5.4	35.1	0.6664	0.7002	1143.7	1134.2	1.2432	0.7626	1438.3	953.9
8	-1.382	-1.954	757.8	856.4	755.5	700.1	-61.2	493.3	-4.4	35.1	0.6921	0.6845	1170.7	1158.9	1.2721	0.7720	1466.4	965.9
9	-4.973	-5.180	847.7	892.5	846.9	747.3	-35.8	487.9	-2.4	33.0	0.7354	0.7127	1252.7	1235.7	1.3376	0.8442	1541.9	1057.1
10	-6.287	-6.463	849.4	918.9	848.9	769.7	-30.0	501.9	-2.0	32.9	0.7337	0.7314	1280.3	1261.9	1.3485	0.8610	1561.2	1081.7
11	-7.747	-7.990	815.4	892.0	814.4	750.4	-39.8	482.4	-2.8	32.6	0.6963	0.7033	1307.9	1288.7	1.3447	0.8685	1574.7	1101.5

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	-2.99	1.33	20.40	46.49	72.31	84.71	0.4066	0.3642	0.0830	1.6418	71.75	69.73	46.49	0.00	-885.9	-0.1	2.8357
2	-3.33	1.12	15.38	45.06	73.10	81.95	0.4447	0.3977	0.0929	1.6054	68.40	66.26	46.62	1.56	-894.6	-24.5	2.7855
3	-3.54	1.04	12.21	42.14	74.14	78.99	0.4791	0.4308	0.1029	1.5444	64.02	61.79	46.82	4.68	-910.4	-70.2	2.7008
4	-2.27	2.53	8.54	31.38	74.04	81.77	0.4685	0.3781	0.0925	1.4827	63.33	61.27	49.48	18.10	-999.4	-275.1	2.5920
5	1.06	5.63	3.08	23.22	67.62	80.35	0.4613	0.2863	0.0694	1.5143	69.91	68.12	54.53	31.31	-1115.2	-476.2	2.5060
6	3.26	7.59	1.96	19.46	63.31	76.86	0.4569	0.2527	0.0589	1.5330	72.63	70.95	57.63	38.16	-1192.2	-580.5	2.4293
7	2.81	6.89	2.02	16.41	64.60	75.30	0.4544	0.2532	0.0580	1.5131	71.40	69.71	57.69	41.27	-1216.3	-630.1	2.3974
8	1.67	5.48	1.14	13.60	67.33	74.28	0.4561	0.2682	0.0610	1.4795	68.26	66.48	57.05	43.46	-1231.9	-665.6	2.3872
9	-0.30	2.38	-2.25	11.67	71.36	81.36	0.4301	0.2319	0.0574	1.4986	70.88	69.20	56.51	44.84	-1288.5	-747.7	2.5161
10	-0.32	1.86	-2.22	12.43	70.94	84.01	0.4285	0.2166	0.0561	1.5344	73.22	71.58	56.88	44.45	-1310.3	-760.1	2.5029
11	1.19	2.88	1.24	11.80	66.70	81.05	0.4238	0.1906	0.0492	1.5534	76.32	74.62	58.70	46.90	-1347.7	-806.4	2.5393

TO/TO INLET	PO/PC INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.4049	2.5394	75.07	78.06	43.32	1.1867	1.5184	67.44	65.28

STATOR 2

RUN NO 24, 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	8.784	0.948	1326.1	861.6	1002.8	861.3	867.8	23.9	41.2	1.6	1.0981	0.6687	2.2988	1.4531	1.3311	1.2166
2	7.793	0.566	1290.8	909.8	959.7	909.8	863.2	-4.6	42.2	-0.3	1.0633	0.7102	2.3949	1.4513	1.3822	1.2169
3	6.698	0.883	1242.1	945.2	917.0	945.1	837.8	-9.1	42.6	-0.5	1.0172	0.7420	2.4727	1.4468	1.4180	1.2141
4	3.542	0.458	1133.4	911.5	893.8	909.8	696.9	55.5	38.0	3.5	0.9227	0.7198	2.4384	1.4218	1.3931	1.1958
5	0.138	-0.112	1019.2	892.0	833.8	891.3	586.1	33.6	35.1	2.2	0.8241	0.7056	2.4140	1.3969	1.4477	1.1840
6	-1.339	-0.449	953.4	867.6	792.9	859.7	529.4	116.5	33.7	7.7	0.7671	0.6909	2.3692	1.3883	1.4837	1.1822
7	-2.078	-0.619	924.4	847.4	774.6	844.9	504.4	64.9	33.0	4.4	0.7432	0.6752	2.3317	1.3822	1.4786	1.1801
8	-2.898	-0.767	908.4	838.7	762.0	838.3	494.5	27.3	33.0	1.9	0.7303	0.6691	2.3146	1.3761	1.4419	1.1774
9	-5.226	-1.038	954.1	889.6	818.3	888.9	490.7	34.5	31.0	2.2	0.7674	0.7103	2.3666	1.3871	1.4103	1.1760
10	-5.792	-1.102	986.3	929.2	846.8	919.2	505.7	105.5	30.9	6.5	0.7913	0.7371	2.4130	1.4033	1.4335	1.1805
11	-6.291	-1.119	971.1	882.7	841.0	882.6	485.5	-12.4	30.1	-0.8	0.7726	0.6953	2.3114	1.4201	1.4145	1.1779

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	-12.30	-10.74	8.40	39.57	87.19	84.11	0.4945	0.3563	0.0805	0.8103	54.25	59.00	63.38	39.03	41.39
2	-10.22	-8.20	5.56	42.49	84.65	90.21	0.4525	0.2801	0.0645	0.8551	59.89	62.51	66.70	44.31	46.74
3	-9.05	-6.54	5.30	43.15	81.95	95.11	0.4067	0.1912	0.0448	0.9054	68.44	65.79	69.75	48.68	51.09
4	-12.56	-8.69	8.81	34.51	84.32	93.24	0.3457	0.1442	0.0357	0.9379	70.29	68.53	72.13	50.45	52.67
5	-14.63	-9.32	7.46	32.92	83.28	92.65	0.2795	0.1097	0.0294	0.9597	65.39	71.89	75.08	60.21	62.20
6	-15.69	-9.90	12.93	26.00	80.37	89.23	0.2195	0.0914	0.0250	0.9698	60.61	71.73	74.88	65.11	66.97
7	-16.18	-10.19	9.55	28.66	79.17	87.61	0.2205	0.0912	0.0255	0.9716	54.56	71.60	74.72	65.24	67.08
8	-16.08	-9.87	6.97	31.11	78.51	86.89	0.2229	0.1025	0.0291	0.9693	42.60	71.81	74.88	61.75	63.65
9	-17.79	-11.10	7.38	28.75	85.96	91.18	0.2063	0.1809	0.0531	0.9418	-16.73	71.85	74.98	58.31	60.25
10	-18.53	-11.65	12.31	24.39	88.76	93.34	0.1809	0.1942	0.0571	0.9345	-34.64	70.71	74.03	59.64	61.61
11	-20.63	-13.53	6.13	30.90	86.69	87.16	0.2442	0.2748	0.0820	0.9105	-31.81	64.15	68.01	58.14	60.11

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PC INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %	EFF-P TOT-STG %
10720.	186.20	1.4049	2.3772	69.08	72.53	1.1867	0.9361	56.25	253.09

APPENDIX C

TABLE XXI (b) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

DESIGN SPEED

STATOR 1 ($\beta^*_{des.} - \beta^*_{act.}$) = +2.5°

STATOR 2 ($\beta_{des.} - \beta^*_{act.}$) = −5°

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 24, 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	16.767	18.354	633.3	1033.5	633.3	612.8	0.0	832.3	0.0	53.7	0.5863	0.9156	627.2	726.1	0.8251	0.5510	891.3	621.9
2	14.358	16.012	647.2	1000.0	647.2	619.4	0.0	785.1	0.0	51.7	0.6000	0.8821	676.3	761.2	0.8678	0.5468	936.1	619.9
3	12.111	13.824	660.7	978.6	660.7	626.7	0.0	751.6	0.0	50.2	0.6134	0.8603	724.5	796.3	0.9104	0.5523	980.5	628.3
4	6.718	8.020	692.8	899.3	692.8	614.7	0.0	656.4	0.0	46.9	0.6457	0.7824	862.5	901.8	1.0311	0.5759	1106.3	661.9
5	0.414	1.559	711.9	799.5	711.9	558.1	0.0	572.4	0.0	45.7	0.6650	0.6863	1034.8	1042.2	1.1734	0.6262	1256.0	729.5
6	-1.231	-1.222	714.7	745.3	714.7	514.5	0.0	539.3	0.0	46.3	0.6679	0.6356	1117.7	1112.5	1.2398	0.6569	1326.7	770.3
7	-2.131	-2.500	715.6	756.9	715.6	555.5	0.0	514.1	0.0	42.8	0.6688	0.6473	1158.6	1147.6	1.2727	0.7205	1361.8	842.5
8	-3.451	-3.743	715.3	765.1	715.3	582.6	0.0	495.8	0.0	40.4	0.6686	0.6552	1199.5	1182.8	1.3053	0.7713	1396.6	900.7
9	-8.199	-7.542	702.7	780.4	702.7	610.6	0.0	486.1	0.0	38.5	0.6557	0.6656	1321.6	1288.1	1.3967	0.8597	1496.8	1008.0
10	-9.908	-8.897	694.0	783.6	694.0	603.3	0.0	500.1	0.0	39.6	0.6469	0.6652	1362.3	1323.3	1.4251	0.8663	1528.9	1020.5
11	-11.303	-10.260	684.1	764.0	684.1	553.9	0.0	526.2	0.0	43.4	0.6369	0.6422	1402.9	1358.4	1.4532	0.8404	1560.8	999.7

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	-1.88	2.73	18.11	54.35	41.02	49.73	0.5233	-0.0107	-0.0023	1.8668	100.58	100.64	44.51	-9.85	-627.2	106.2	1.8668
2	-1.77	2.53	17.40	48.25	41.60	51.46	0.5429	-0.0153	-0.0035	1.8588	100.91	101.00	46.05	-2.21	-676.3	23.9	1.8588
3	-1.56	2.55	15.61	43.37	42.14	53.12	0.5522	-0.0217	-0.0052	1.8659	101.39	101.52	47.45	4.08	-724.5	-44.7	1.8659
4	-0.38	3.08	12.08	29.36	43.37	54.19	0.5648	0.0082	0.0020	1.8311	99.33	99.29	51.12	21.76	-862.5	-245.4	1.8311
5	0.95	3.63	9.82	15.37	44.04	50.30	0.5573	0.0829	0.0190	1.7590	92.06	91.42	55.46	40.09	-1034.8	-469.8	1.7590
6	1.47	3.75	10.75	9.31	44.14	46.68	0.5469	0.1190	0.0251	1.7181	87.79	86.84	57.40	48.09	-1117.7	-573.2	1.7181
7	1.71	3.61	8.44	9.54	44.17	51.14	0.5020	0.0731	0.0156	1.7512	92.28	91.67	58.29	48.75	-1158.6	-633.5	1.7512
8	1.96	3.91	6.83	9.49	44.16	54.25	0.4708	0.0434	0.0093	1.7777	95.28	94.90	59.18	49.69	-1199.5	-686.9	1.7777
9	2.95	4.37	5.88	9.32	43.72	57.47	0.4401	0.0528	0.0113	1.8274	94.04	93.53	62.00	52.67	-1321.6	-802.1	1.8274
10	3.33	4.62	6.69	9.32	43.41	56.45	0.4495	0.0898	0.0192	1.8338	89.93	89.06	63.01	53.69	-1362.3	-823.1	1.8338
11	3.66	4.82	9.92	7.74	43.05	51.01	0.4822	0.1660	0.0340	1.8049	81.66	80.10	64.00	56.26	-1402.9	-832.2	1.8049

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	1.8048	93.22	93.75	41.91	1.1970	1.8048	93.22	93.75

STATOR 1

RUN NO 24, 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	18.162	14.873	1038.5	656.0	644.0	653.7	814.7	-55.0	51.9	-4.8	0.9207	0.5541	1.7557	1.1938	1.7557	1.1938
2	15.848	13.108	1009.2	658.3	651.0	657.3	771.1	-35.6	49.9	-3.1	0.8915	0.5567	1.7658	1.1917	1.7658	1.1917
3	13.736	11.445	991.0	668.3	658.6	668.0	740.4	-19.5	48.4	-1.7	0.8728	0.5656	1.7823	1.1920	1.7823	1.1920
4	8.263	6.833	917.7	668.0	646.7	667.3	651.1	-30.7	45.2	-2.6	0.8004	0.5659	1.7861	1.1899	1.7861	1.1899
5	1.992	1.101	821.1	634.8	589.5	633.6	571.5	-39.7	44.1	-3.6	0.7067	0.5358	1.7360	1.1915	1.7360	1.1915
6	-1.099	-1.704	768.4	600.4	546.9	597.8	539.8	-56.4	44.6	-5.4	0.6570	0.5050	1.6934	1.1922	1.6934	1.1922
7	-2.413	-2.937	780.1	622.9	565.9	620.9	515.0	-50.0	41.3	-4.6	0.6688	0.5257	1.7156	1.1888	1.7156	1.1888
8	-3.460	-3.948	788.1	649.5	611.3	648.3	497.3	-39.5	39.2	-3.5	0.6766	0.5497	1.7441	1.1880	1.7441	1.1880
9	-6.119	-6.620	805.3	689.5	639.8	689.2	489.0	-19.4	37.5	-1.6	0.6888	0.5823	1.7890	1.2013	1.7890	1.2013
10	-6.969	-7.419	809.8	686.1	634.4	685.9	503.4	-15.6	38.5	-1.3	0.6895	0.5764	1.7830	1.2128	1.7830	1.2128
11	-8.001	-8.264	792.5	650.6	588.9	650.3	530.3	-20.9	42.1	-1.9	0.6682	0.5409	1.7390	1.2292	1.7390	1.2292

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	1.81	3.92	10.06	56.63	52.06	63.33	0.5330	0.1410	0.0287	0.9405	81.88	89.96	90.70	89.96	90.70
2	1.61	4.01	10.65	53.02	53.70	64.08	0.5115	0.1243	0.0264	0.9499	83.11	91.95	92.55	91.95	92.55
3	1.39	4.18	11.23	50.08	55.31	65.41	0.4893	0.1143	0.0252	0.9553	83.53	93.44	93.93	93.44	93.93
4	0.69	4.41	9.14	47.82	56.29	65.59	0.4493	0.0694	0.0169	0.9761	88.03	94.85	95.24	94.85	95.24
5	1.09	6.13	8.22	47.67	52.46	61.39	0.4270	0.0415	0.0113	0.9884	91.11	89.09	89.89	89.09	89.89
6	2.10	7.72	6.47	50.01	48.99	57.34	0.4399	0.0617	0.0176	0.9845	86.23	84.47	85.56	84.47	85.56
7	-0.96	4.92	7.28	45.95	53.26	59.89	0.4142	0.0900	0.0262	0.9766	78.94	88.26	89.10	88.26	89.10
8	-2.93	3.21	8.43	42.66	56.20	62.85	0.3790	0.0777	0.0230	0.9794	79.46	91.55	92.17	91.55	92.17
9	-4.66	2.22	11.43	39.08	59.36	66.61	0.3429	0.0783	0.0244	0.9787	75.24	89.73	90.52	89.73	90.52
10	-3.92	3.13	12.96	39.83	58.49	65.65	0.3576	0.1002	0.0317	0.9728	69.86	84.40	85.59	84.40	85.59
11	-1.01	6.14	13.96	43.97	53.40	61.03	0.4038	0.1410	0.0451	0.9636	62.76	74.65	76.51	74.65	76.51

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 %	EFF-P TOT-STG %
10671.	184.50	1.1970	1.7573	88.67	89.52	1.1970	0.9737	88.67	209.06

ROTOR 2

RUN NO 24, SPEED CODE 10, POINT NO 3

SL	EPSI-I 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'-I FT/SEC	V'-2 FT/SEC
1	11.626	11.095	724.2	1123.2	722.2	689.2	-53.6	886.9	-4.2	52.0	0.6159	0.8995	832.1	872.7	0.9718	0.5520	1142.8	689.3
2	10.855	9.846	733.6	1109.9	732.8	689.4	-34.8	869.8	-2.7	51.5	0.6251	0.8894	855.6	891.0	0.9825	0.5527	1152.1	689.8
3	9.926	8.666	750.2	1097.5	750.1	709.7	-19.1	837.2	-1.5	49.6	0.6404	0.8809	879.8	910.0	0.9992	0.5726	1170.8	713.4
4	6.382	5.328	767.7	1018.9	767.1	710.7	-30.3	730.1	-2.3	45.8	0.6571	0.8142	955.1	970.5	1.0689	0.5995	1248.8	750.3
5	0.928	1.080	738.9	890.4	737.9	628.8	-39.6	630.4	-3.1	45.1	0.6301	0.7027	1058.9	1058.2	1.1283	0.6002	1323.3	760.6
6	-1.860	-1.075	704.4	826.3	702.1	591.6	-56.4	576.8	-4.6	44.2	0.5982	0.6482	1111.8	1104.9	1.1576	0.6221	1262.9	793.0
7	-3.152	-2.156	720.5	814.3	718.8	580.9	-49.9	570.6	-4.0	44.4	0.6139	0.6388	1138.5	1129.0	1.1833	0.6321	1388.9	805.8
8	-4.256	-3.185	740.8	822.0	739.7	597.6	-39.6	564.4	-3.1	43.3	0.6327	0.6457	1165.4	1153.6	1.2076	0.6593	1413.9	839.3
9	-6.953	-6.199	770.6	833.5	770.4	604.6	-19.6	573.6	-1.5	43.4	0.6564	0.6498	1247.0	1230.0	1.2628	0.6956	1482.5	892.3
10	-7.694	-7.202	766.9	836.2	766.7	609.1	-15.8	572.9	-1.2	43.1	0.6496	0.6487	1274.4	1256.2	1.2714	0.7101	1500.8	915.3
11	-8.501	-8.397	734.6	804.6	734.3	587.7	-21.2	549.6	-1.6	43.0	0.6157	0.6189	1302.0	1282.9	1.2682	0.7227	1513.3	939.7

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	1.25	5.57	19.22	51.91	67.65	78.16	0.5883	0.2484	0.0566	1.7893	83.40	81.99	50.73	-1.18	-885.6	14.2	3.1407
2	0.58	5.03	15.57	48.78	68.79	79.80	0.5884	0.2204	0.0515	1.7944	84.92	83.64	50.52	1.75	-890.4	-21.2	3.1664
3	-0.16	4.41	13.37	44.35	70.42	83.99	0.5675	0.1714	0.0408	1.7956	87.75	86.70	50.19	5.84	-898.9	-72.8	3.1980
4	0.40	5.20	9.13	33.47	71.59	87.69	0.5562	0.1377	0.0336	1.7571	88.66	87.73	52.16	18.69	-985.4	-240.4	3.1397
5	2.64	7.22	6.01	21.88	67.92	79.12	0.5683	0.1431	0.0335	1.7005	86.68	85.65	56.11	34.23	-1058.5	-427.8	2.9530
6	4.61	8.94	5.51	17.25	64.18	74.58	0.5557	0.1403	0.0311	1.6857	86.28	85.24	58.98	41.72	-1168.2	-528.1	2.8553
7	3.94	8.02	4.56	14.99	66.17	73.62	0.5556	0.1649	0.0363	1.6593	83.36	82.14	58.81	43.82	-1188.4	-556.4	2.8481
8	3.04	6.85	2.21	13.89	68.51	76.31	0.5396	0.1656	0.0370	1.6498	82.76	81.53	56.42	44.53	-1204.9	-589.3	2.8780
9	1.81	4.49	0.13	11.40	71.35	76.96	0.5367	0.1994	0.0473	1.6340	78.56	77.03	58.62	47.22	-1266.7	-656.2	2.9223
10	1.98	4.16	1.47	11.04	70.41	77.10	0.5313	0.1931	0.0468	1.6425	79.15	77.65	59.18	48.14	-1290.2	-683.3	2.9330
11	3.35	5.05	5.50	9.71	66.19	73.43	0.5203	0.1667	0.0395	1.6519	81.82	80.49	60.87	51.16	-1323.2	-733.2	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 %
1.4300	2.9870	84.98	67.08	41.08	1.1947	1.6997	83.44	84.62

STATOR 2

RUN NO 24, SPEED CODE 10, POINT NO 3

SL	EPSI-1 DEGREE	EPSI-2 DEGREE	V-1 FT/SEC	V-2 FT/SEC	VM-I 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	8.467	0.817	1151.1	703.2	744.2	689.8	878.1	136.4	50.0	11.2	0.9255	0.5377	2.9726	1.4552	1.6925	1.2189
2	7.276	0.717	1136.7	718.1	740.6	706.8	862.3	127.2	49.5	10.2	0.9143	0.5508	3.0069	1.4498	1.7054	1.2162
3	6.181	0.534	1123.2	744.7	755.8	734.9	830.9	120.2	47.9	9.3	0.9048	0.5742	3.0649	1.4419	1.7235	1.2097
4	3.597	-0.255	1045.3	749.8	748.3	741.7	727.1	110.2	44.2	8.5	0.8363	0.5818	3.0934	1.4259	1.7301	1.1983
5	0.842	-1.080	914.8	653.8	663.3	649.1	630.0	78.6	43.5	6.9	0.7239	0.5048	2.9288	1.4178	1.6834	1.1901
6	-0.481	-1.213	851.2	589.8	625.7	586.2	577.1	65.7	42.6	6.4	0.6694	0.4536	2.8317	1.4159	1.6738	1.1874
7	-1.147	-1.187	839.3	578.1	614.9	574.5	571.3	64.5	42.9	6.4	0.6600	0.4447	2.8150	1.4129	1.6433	1.1882
8	-1.827	-1.136	847.1	593.8	630.7	590.0	565.5	66.4	41.8	6.4	0.6672	0.4576	2.8352	1.4108	1.6287	1.1874
9	-4.013	-1.213	863.9	639.9	643.3	632.3	576.6	98.4	41.9	8.8	0.6755	0.4908	2.8863	1.4334	1.6139	1.1959
10	-4.878	-1.274	870.0	644.6	651.7	633.9	576.3	116.7	41.5	10.4	0.6773	0.4920	2.8842	1.4475	1.6148	1.1947
11	-5.776	-1.224	845.0	605.9	638.4	594.3	553.6	117.9	41.0	11.2	0.6524	0.4587	2.8194	1.4628	1.6206	1.1900

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	OMEGA-P 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	-3.48	-1.92	17.98	38.81	82.70	93.63	0.5341	0.1258	0.0279	0.9465	84.44	79.85	82.63	73.65	75.51
2	-2.88	-0.66	16.44	39.35	84.08	96.74	0.5170	0.1176	0.0266	0.9508	84.79	81.81	84.35	75.64	77.38
3	-3.78	-1.28	15.13	38.58	87.81	101.82	0.4862	0.0970	0.0225	0.9600	86.58	84.98	87.11	79.69	81.18
4	-6.33	-2.46	13.77	35.78	90.86	104.45	0.4315	0.0452	0.0111	0.9833	92.51	89.03	90.60	84.91	86.03
5	-6.20	-0.90	12.20	36.60	82.35	90.54	0.4504	0.0355	0.0094	0.9895	93.73	85.65	87.62	83.82	84.96
6	-6.75	-0.96	11.61	36.26	77.87	81.04	0.4752	0.0344	0.0095	0.9910	94.05	82.93	65.20	84.03	85.14
7	-6.27	-0.38	11.56	36.45	76.93	79.44	0.4817	0.0446	0.0124	0.9887	92.41	87.99	85.24	80.46	81.77
8	-7.21	-1.00	11.52	35.43	79.50	81.83	0.4667	0.0527	0.0149	0.9865	90.80	84.08	86.20	79.24	80.61
9	-6.92	-0.22	13.99	33.06	80.61	86.57	0.4224	0.0473	0.0137	0.9876	90.68	81.27	83.80	75.05	76.66
10	-7.92	-1.04	16.18	31.13	81.08	85.63	0.4169	0.0635	0.0185	0.9832	87.62	78.62	81.51	74.80	76.43
11	-9.71	-2.62	18.14	29.81	78.21	79.02	0.4379	0.0766	0.0224	0.9810	85.95	74.13	77.54	77.20	78.69

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 %	EFF-P TOT-STG %
10671.	164.50	1.4300	2.9323	83.32	85.60	1.1947	0.9817	80.32	198.11

APPENDIX C

TABLE XXI (c) — OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

DESIGN SPEED

STATOR 1 ($\beta^*_{des.} - \beta^*_{act.}$) = +2.5°

STATOR 2 ($\beta_{des.} - \beta^*_{act.}$) = -5°

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 24, 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	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'-1	V'-1 FT/SEC	V'-2 FT/SEC
1	16.816	18.423	608.2	1030.6	608.2	590.3	0.0	844.8	0.0	55.1	0.5615	0.9114	626.6	725.4	0.8062	0.5326	873.2	602.3
2	14.457	16.146	621.8	994.3	621.8	597.3	0.0	794.9	0.0	53.1	0.5749	0.8754	675.6	760.5	0.8489	0.5267	918.2	598.3
3	12.250	14.014	635.3	976.4	635.3	610.8	0.0	761.7	0.0	51.3	0.5882	0.8571	723.8	795.6	0.8917	0.5370	963.0	611.7
4	6.511	8.308	668.3	898.3	668.3	595.6	0.0	672.4	0.0	48.5	0.6211	0.7798	861.7	900.9	1.0134	0.5538	1090.5	637.9
5	0.903	1.921	691.1	812.6	691.1	546.2	0.0	601.7	0.0	47.8	0.6440	0.6956	1033.8	1041.3	1.1587	0.6002	1243.5	701.1
6	-0.913	-0.874	696.2	771.7	696.2	515.9	0.0	574.0	0.0	48.0	0.6492	0.6565	1116.6	1111.5	1.2270	0.6337	1315.9	745.0
7	-1.925	-2.190	698.0	777.4	698.0	546.9	0.0	552.5	0.0	45.3	0.6510	0.6622	1157.5	1146.5	1.2606	0.6877	1351.7	807.4
8	-3.269	-3.481	698.7	783.6	698.7	575.8	0.0	531.5	0.0	42.7	0.6516	0.6684	1198.3	1181.6	1.2938	0.7408	1387.1	868.5
9	-7.905	-7.390	689.5	791.6	689.5	597.0	0.0	519.8	0.0	41.0	0.6424	0.6719	1320.3	1286.9	1.3877	0.8250	1489.5	972.1
10	-9.569	-8.764	682.1	798.3	682.1	598.4	0.0	528.3	0.0	41.4	0.6350	0.6752	1361.0	1322.0	1.4171	0.8408	1522.4	994.0
11	-11.062	-10.179	673.2	790.9	673.2	561.8	0.0	556.7	0.0	44.6	0.6259	0.6630	1401.6	1357.1	1.4458	0.8198	1554.8	977.9

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	VB'-1 FT/SEC	VB'-2 FT/SEC	PO/PO INLET
1	-0.74	3.87	16.50	57.10	39.92	47.47	0.5389	0.0446	0.0096	1.8478	97.68	97.48	45.65	-11.45	-626.6	119.4	1.8478
2	-0.64	3.66	16.30	50.48	40.52	49.22	0.5596	0.0350	0.0080	1.8375	98.00	97.83	47.18	-3.30	-675.6	34.4	1.8375
3	-0.46	3.65	14.71	45.38	41.10	51.46	0.5631	0.0132	0.0031	1.8537	99.19	99.13	48.55	3.17	-723.8	-33.8	1.8537
4	0.61	4.08	11.32	31.11	42.44	52.27	0.5835	0.0422	0.0105	1.8260	96.80	96.53	52.11	21.00	-861.7	-228.5	1.8260
5	1.72	4.40	8.56	17.40	43.30	49.21	0.5819	0.1097	0.0256	1.7826	90.11	89.25	56.23	38.83	-1033.8	-439.6	1.7826
6	2.12	4.40	8.83	11.88	43.49	46.93	0.5700	0.1368	0.0300	1.7620	86.86	85.79	58.05	46.17	-1116.6	-537.5	1.7620
7	2.32	4.42	7.04	11.54	43.56	50.40	0.5329	0.1034	0.0227	1.7895	89.80	88.95	58.90	47.36	-1157.5	-594.0	1.7895
8	2.52	4.47	5.60	11.28	43.58	53.75	0.4985	0.0702	0.0155	1.8166	92.86	92.25	55.74	48.46	-1198.3	-650.2	1.8166
9	3.36	4.78	5.25	10.36	43.25	56.47	0.4689	0.0801	0.0175	1.8644	91.48	90.71	62.40	52.05	-1320.3	-767.1	1.8644
10	3.68	4.97	5.90	10.46	42.97	56.52	0.4706	0.1022	0.0223	1.8800	89.14	88.15	63.36	52.90	-1361.0	-793.7	1.8800
11	3.99	5.14	8.45	5.45	42.63	52.39	0.5010	0.1690	0.0359	1.8700	82.33	80.74	64.32	54.83	-1401.6	-800.4	1.8700

TO/TO INLET	PO/PC INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PC2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.2065	1.8286	91.04	91.75	41.22	1.2065	1.8286	91.04	91.75

STATOR 1

RUN NO 24, 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	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	18.224	14.914	1033.2	617.3	619.3	614.2	827.0	-61.5	53.4	-5.7	0.9140	0.5190	1.7349	1.1966	1.7349	1.1966
2	15.964	13.178	1000.9	620.1	626.3	618.9	780.8	-38.7	51.4	-3.5	0.8821	0.5221	1.7453	1.1939	1.7453	1.1939
3	13.909	11.544	986.2	631.0	639.9	630.7	750.3	-20.6	49.6	-1.9	0.8669	0.5317	1.7622	1.1944	1.7622	1.1944
4	8.545	6.978	914.3	635.1	625.5	634.7	666.9	-24.0	46.9	-2.2	0.7955	0.5354	1.7748	1.1943	1.7748	1.1943
5	2.314	1.258	832.8	615.8	576.8	614.7	600.6	-37.5	46.1	-3.5	0.7146	0.5167	1.7499	1.2010	1.7499	1.2010
6	-0.740	-1.459	793.6	593.4	547.6	591.2	574.5	-51.2	46.4	-5.0	0.6768	0.4962	1.7237	1.2048	1.7237	1.2048
7	-2.107	-2.625	795.5	619.5	576.8	618.2	553.6	-39.3	43.8	-3.6	0.6827	0.5195	1.7506	1.2030	1.7506	1.2030
8	-3.254	-3.628	805.9	640.1	604.4	639.5	533.1	-28.9	41.4	-2.6	0.6892	0.5382	1.7738	1.2013	1.7738	1.2013
9	-6.153	-6.437	816.7	677.3	627.4	677.2	522.9	-12.3	39.9	-1.0	0.6952	0.5681	1.8179	1.2147	1.8179	1.2147
10	-7.058	-7.317	824.6	681.2	630.1	681.1	531.9	-8.7	40.3	-0.7	0.6996	0.5691	1.8223	1.2243	1.8223	1.2243
11	-6.071	-8.224	819.6	655.6	557.6	655.4	560.9	-15.4	43.3	-1.4	0.6893	0.5422	1.7898	1.2423	1.7898	1.2423

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	5.43	9.17	59.03	49.70	59.73	0.5719	0.1463	0.0298	0.9389	82.30	86.67	87.64	86.67	87.64
2	3.06	5.46	10.18	54.95	51.34	60.58	0.5485	0.1263	0.0268	0.9498	83.88	88.88	89.70	88.88	89.70
3	2.61	5.39	11.03	51.49	53.52	62.02	0.5275	0.1275	0.0281	0.9506	82.91	90.32	91.05	90.32	91.05
4	2.35	6.07	9.61	49.02	54.29	62.74	0.4866	0.0823	0.0201	0.9719	87.04	91.59	92.23	91.59	92.23
5	3.14	8.19	8.32	45.43	51.34	60.13	0.4684	0.0629	0.0172	0.9819	88.20	86.17	87.19	86.17	87.19
6	3.85	9.47	6.91	51.33	49.19	57.36	0.4768	0.0807	0.0230	0.9788	84.15	82.14	83.43	82.14	83.43
7	1.54	7.41	8.25	47.48	52.50	60.32	0.4424	0.0872	0.0254	0.9766	81.39	85.40	86.48	85.40	86.48
8	-0.66	5.49	9.34	44.03	55.70	62.72	0.4135	0.0906	0.0269	0.9753	79.14	88.31	89.20	88.31	89.20
9	-2.23	4.65	12.00	40.93	58.48	66.28	0.3770	0.0916	0.0286	0.9747	75.18	86.63	87.68	86.63	87.68
10	-2.18	4.87	13.54	41.00	58.60	66.27	0.3838	0.1106	0.0350	0.9692	70.56	83.29	84.62	83.29	84.62
11	0.18	7.33	14.46	44.66	54.83	62.60	0.4276	0.1575	0.0505	0.9571	62.56	74.59	76.55	74.59	76.55

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 %	EFF-P TOT-STG %
10661.	181.50	1.2065	1.7724	85.94	87.01	1.2065	0.9693	85.54	195.25

ROTOR 2

RUN NO 24, 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	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	11.569	11.069	673.3	1105.4	670.6	655.8	-59.9	889.8	-5.1	53.5	0.5689	0.8814	831.3	871.9	0.9425	0.5231	1115.3	656.1
2	10.748	9.797	682.8	1090.3	681.8	642.4	-37.8	880.9	-3.2	53.8	0.5783	0.8693	854.8	890.1	0.9512	0.5122	1123.2	642.4
3	9.791	8.596	700.2	1073.1	699.9	657.6	-20.2	848.0	-1.7	52.1	0.5939	0.8565	879.0	909.1	0.9664	0.5271	1139.5	660.5
4	6.238	5.211	723.5	997.0	723.1	667.5	-23.7	740.6	-1.9	48.0	0.6151	0.7928	954.2	969.6	1.0340	0.5611	1216.2	705.6
5	0.865	0.938	714.3	877.7	713.3	602.7	-37.4	638.1	-3.0	46.6	0.6049	0.6888	1057.9	1057.2	1.1069	0.5761	1307.1	734.1
6	-1.784	-1.173	693.3	821.9	691.3	576.3	-51.4	586.1	-4.2	45.5	0.5848	0.6412	1110.8	1103.9	1.1408	0.6044	1352.2	774.8
7	-2.998	-2.210	714.2	816.6	713.1	569.4	-39.2	585.4	-3.1	45.7	0.6042	0.6370	1137.4	1127.9	1.1641	0.6135	1375.9	786.5
8	-4.048	-3.191	730.3	823.1	729.7	576.3	-28.9	587.6	-2.3	45.5	0.6194	0.6424	1164.2	1152.5	1.1862	0.6299	1398.6	807.9
9	-6.750	-6.156	761.6	841.4	761.5	594.2	-12.4	595.7	-0.9	44.9	0.6442	0.6518	1245.8	1228.9	1.2441	0.6727	1470.7	868.3
10	-7.534	-7.172	765.4	844.8	765.3	597.6	-8.8	597.1	-0.7	44.8	0.6449	0.6515	1273.2	1255.0	1.2582	0.6855	1493.1	888.8
11	-8.401	-8.364	742.3	820.1	743.1	593.1	-15.6	566.4	-1.2	43.5	0.6200	0.6280	1300.7	1281.7	1.2608	0.7115	1511.6	929.2

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	3.49	7.80	18.84	54.52	63.56	76.24	0.6099	0.2118	0.0483	1.8359	86.63	85.44	52.97	-1.56	-891.2	17.9	3.1850
2	2.65	7.10	14.64	51.79	64.83	76.06	0.6227	0.1977	0.0462	1.8357	87.27	86.14	52.61	0.82	-892.6	-9.2	3.2028
3	1.77	6.35	12.82	46.83	66.59	79.46	0.6054	0.1569	0.0374	1.8276	89.42	88.49	52.12	5.25	-899.2	-61.1	3.2184
4	1.82	6.61	9.37	34.63	68.47	84.03	0.5822	0.1148	0.0279	1.7840	91.00	90.24	53.57	18.94	-977.9	-229.0	3.1667
5	3.46	8.03	6.59	22.11	66.61	77.21	0.5847	0.1302	0.0303	1.7159	88.21	87.28	56.93	34.82	-1095.3	-419.1	3.0030
6	4.86	9.20	5.70	17.32	64.10	73.97	0.5664	0.1283	0.0283	1.6960	87.68	86.74	59.23	41.91	-1162.2	-517.8	2.9234
7	3.88	7.96	4.31	15.19	66.55	73.49	0.5661	0.1493	0.0330	1.6734	85.22	84.11	58.76	43.57	-1176.6	-542.6	2.9294
8	3.13	6.94	2.04	14.15	68.50	74.85	0.5603	0.1599	0.0358	1.6679	83.90	82.70	58.51	44.36	-1193.2	-564.9	2.9578
9	1.92	4.60	-0.40	12.04	71.39	77.16	0.5526	0.1862	0.0446	1.6651	80.65	79.22	58.73	46.69	-1258.3	-633.2	3.0254
10	1.86	4.04	0.93	11.45	71.35	77.30	0.5505	0.1890	0.0463	1.6684	80.24	78.78	59.06	47.61	-1282.0	-657.9	3.0402
11	2.93	4.63	4.55	10.24	68.04	76.00	0.5293	0.1564	0.0378	1.6727	83.24	81.95	60.44	50.20	-1316.3	-715.3	2.9968

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 %
1.4425	3.0518	84.46	86.66	40.23	1.1956	1.7218	85.21	86.30

STATOR 2

RUN NO 24, 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	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	8.567	0.780	1128.8	674.5	705.7	662.6	881.0	126.1	51.6	10.8	0.9030	0.5137	3.0484	1.4600	1.7572	1.2201
2	7.327	0.646	1112.8	682.5	689.7	672.5	873.3	118.7	51.9	10.0	0.8900	0.5213	3.0699	1.4554	1.7610	1.2186
3	6.202	0.449	1094.9	658.9	700.3	690.2	841.7	110.2	50.4	9.1	0.8765	0.5358	3.1062	1.4476	1.7664	1.2121
4	3.524	-0.245	1017.7	656.3	701.3	688.5	737.4	104.2	46.5	8.6	0.8113	0.5369	3.1179	1.4312	1.7568	1.1984
5	0.774	-0.917	899.1	612.1	633.9	607.4	637.5	75.7	45.1	7.1	0.7072	0.4693	2.9823	1.4286	1.7026	1.1899
6	-0.492	-0.994	844.5	582.1	607.7	558.1	586.5	67.1	43.9	6.8	0.6603	0.4294	2.9096	1.4293	1.6854	1.1868
7	-1.145	-0.973	839.6	558.2	601.1	554.5	586.1	64.5	44.2	6.6	0.6564	0.4265	2.9032	1.4283	1.6641	1.1869
8	-1.855	-0.953	846.6	573.3	608.3	569.6	588.9	64.8	44.0	6.5	0.6624	0.4385	2.9221	1.4282	1.6518	1.1885
9	-4.175	-1.118	870.5	625.7	631.9	618.2	598.8	96.5	43.5	8.9	0.6764	0.4762	2.9818	1.4521	1.6420	1.1961
10	-5.044	-1.205	877.5	635.1	639.7	625.2	600.7	111.4	43.3	10.1	0.6790	0.4813	2.9870	1.4658	1.6393	1.1982
11	-5.908	-1.192	858.9	603.6	642.2	593.8	570.4	108.4	41.7	10.3	0.6601	0.4542	2.9322	1.4793	1.6372	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	-1.89	-0.33	17.57	40.81	80.68	93.03	0.5529	0.1043	0.0232	0.9571	87.27	81.14	83.80	78.78	80.38
2	-0.52	1.50	16.25	41.90	80.38	95.03	0.5420	0.1011	0.0229	0.9593	87.23	82.57	85.05	79.67	81.21
3	-1.25	1.25	14.91	41.33	83.35	98.50	0.5193	0.0865	0.0200	0.9659	88.50	85.06	87.21	82.63	83.96
4	-4.07	-0.20	13.92	37.88	87.14	99.70	0.4733	0.0473	0.0116	0.9833	92.76	88.64	90.28	87.42	88.37
5	-4.57	0.74	12.40	38.05	80.28	87.04	0.4908	0.0339	0.0090	0.9903	94.46	85.12	87.19	85.84	86.86
6	-5.45	0.34	12.06	37.10	77.12	79.34	0.5095	0.0287	0.0079	0.9926	95.30	82.76	85.10	85.48	86.51
7	-4.99	1.00	11.79	37.41	76.69	78.82	0.5100	0.0332	0.0093	0.9917	94.55	82.76	85.10	83.20	84.35
8	-5.01	1.19	11.58	37.56	78.06	81.10	0.4981	0.0397	0.0112	0.9899	93.35	83.36	85.64	81.19	82.46
9	-5.32	1.37	14.02	34.62	80.84	86.89	0.4509	0.0528	0.0153	0.9861	90.28	80.67	83.35	77.02	78.56
10	-6.20	0.68	15.86	33.18	81.36	87.00	0.4424	0.0657	0.0191	0.9826	87.84	78.42	81.42	75.88	77.49
11	-9.02	-1.93	17.26	31.38	80.72	81.35	0.4588	0.0842	0.0247	0.9787	85.23	74.70	78.15	78.36	79.81

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 %	EFF-P TOT-STG %
10661.	181.50	1.4425	3.0001	82.95	85.33	1.1956	0.9831	82.33	192.15

APPENDIX C

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

DESIGN SPEED
STATOR 1 ($\beta^*_{des.} - \beta^*_{act.}$) = +2.5°
STATOR 2 ($\beta_{des.} - \beta^*_{act.}$) = -5°

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 24, 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	16.613	18.418	592.8	1008.4	552.8	555.6	0.0	841.6	0.0	56.6	0.5464	0.8889	627.4	726.3	0.7956	0.5002	863.1	567.5
2	14.453	16.147	605.7	973.3	605.7	562.5	0.0	794.2	0.0	54.7	0.5591	0.8541	676.5	761.5	0.8381	0.4945	908.1	563.5
3	12.264	14.027	618.5	952.1	618.5	570.6	0.0	762.2	0.0	53.2	0.5716	0.8326	724.7	796.6	0.8605	0.4999	952.7	571.6
4	6.594	8.371	649.4	878.3	649.4	561.8	0.0	675.1	0.0	50.3	0.6022	0.7601	862.8	902.1	1.0014	0.5243	1079.9	605.9
5	1.023	2.048	670.6	801.8	670.6	516.2	0.0	613.5	0.0	49.9	0.6234	0.6842	1035.2	1042.6	1.1465	0.5728	1233.4	671.2
6	-0.819	-0.736	675.5	770.3	675.5	492.8	0.0	592.0	0.0	50.2	0.6283	0.6532	1118.1	1112.9	1.2150	0.6081	1306.3	717.1
7	-1.862	-2.061	677.3	773.8	677.3	521.7	0.0	571.5	0.0	47.6	0.6301	0.6566	1159.0	1148.0	1.2488	0.6598	1342.4	777.5
8	-3.212	-3.363	677.9	776.9	677.9	545.3	0.0	553.4	0.0	45.4	0.6307	0.6597	1199.9	1183.2	1.2822	0.7073	1378.2	833.0
9	-7.767	-7.308	669.9	781.6	669.9	562.7	0.0	542.4	0.0	43.9	0.6227	0.6598	1322.0	1288.6	1.3776	0.7890	1482.1	934.6
10	-9.431	-8.693	663.2	791.5	663.2	564.1	0.0	555.2	0.0	44.5	0.6160	0.6655	1362.7	1323.7	1.4076	0.8016	1515.6	953.4
11	-10.933	-10.131	654.9	794.9	654.9	543.2	0.0	580.3	0.0	46.8	0.6077	0.6636	1403.4	1358.9	1.4370	0.7925	1548.7	949.3

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	0.04	4.64	16.22	58.16	39.21	46.44	0.5730	-0.0239	-0.0052	1.8866	101.21	101.33	46.42	-11.74	-627.4	115.3	1.8866
2	0.14	4.44	16.77	51.30	39.81	48.17	0.5927	-0.0283	-0.0065	1.8792	101.57	101.72	47.96	-3.33	-676.5	32.7	1.8792
3	0.34	4.45	14.99	45.89	40.37	49.88	0.6005	-0.0351	-0.0084	1.8897	102.10	102.30	49.35	3.46	-724.7	-34.4	1.8897
4	1.44	4.91	12.33	30.93	41.69	51.19	0.6095	-0.0045	-0.0011	1.8722	100.32	100.37	52.95	22.02	-862.8	-226.9	1.8722
5	2.34	5.22	9.47	17.31	42.53	48.29	0.6052	0.0740	0.0171	1.8442	93.61	93.05	57.06	39.74	-1035.2	-429.1	1.8442
6	2.92	5.20	9.24	12.27	42.72	46.57	0.5924	0.1036	0.0225	1.8371	90.56	89.73	58.86	46.58	-1118.1	-520.9	1.8371
7	3.11	5.21	7.54	11.84	42.79	49.92	0.5565	0.0751	0.0164	1.8628	92.98	92.35	59.69	47.85	-1159.0	-576.6	1.8628
8	3.33	5.25	6.24	11.42	42.81	52.76	0.5261	0.0517	0.0113	1.8863	95.02	94.57	60.51	49.09	-1199.9	-629.8	1.8863
9	4.05	5.47	6.12	10.18	42.51	55.18	0.4966	0.0685	0.0147	1.9340	93.08	92.42	63.10	52.92	-1322.0	-746.2	1.9340
10	4.34	5.63	6.64	10.38	42.24	55.24	0.5011	0.0946	0.0203	1.9563	90.50	89.58	64.02	53.64	-1362.7	-768.6	1.9563
11	4.62	5.77	8.64	9.96	41.91	52.77	0.5228	0.1462	0.0309	1.9654	85.53	84.12	64.95	54.99	-1403.4	-778.5	1.9654

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 %
1.2124	1.8919	93.99	94.49	40.50	1.2124	1.8919	93.99	94.49

STATOR 1

RUN NO 24, 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	18.269	14.984	1007.8	563.6	580.5	561.1	823.8	-53.2	55.0	-5.4	0.8883	0.4719	1.7649	1.1961	1.7649	1.1961
2	16.054	13.318	976.6	570.4	587.5	569.5	780.1	-33.0	53.2	-3.3	0.8574	0.4783	1.7784	1.1941	1.7784	1.1941
3	14.027	11.732	958.5	581.6	595.8	581.2	750.8	-23.8	51.7	-2.3	0.8390	0.4880	1.7948	1.1947	1.7948	1.1947
4	6.746	7.271	890.9	589.2	587.7	588.7	669.6	-23.1	48.8	-2.2	0.7723	0.4945	1.8125	1.1953	1.8125	1.1953
5	2.600	1.644	818.9	577.2	543.6	576.3	612.4	-31.3	48.4	-3.1	0.7002	0.4819	1.8016	1.2050	1.8016	1.2050
6	-0.473	-1.041	789.4	565.6	521.6	568.2	592.5	-40.1	48.6	-4.0	0.6708	0.4740	1.7936	1.2113	1.7936	1.2113
7	-1.873	-2.230	793.3	591.5	549.1	590.6	572.6	-32.5	46.2	-3.2	0.6747	0.4933	1.8171	1.2104	1.8171	1.2104
8	-3.066	-3.278	797.1	610.0	572.1	609.6	555.1	-21.6	44.2	-2.0	0.6784	0.5096	1.8382	1.2100	1.8382	1.2100
9	-6.141	-6.246	804.8	644.7	591.7	644.7	545.6	-4.0	42.8	-0.4	0.6812	0.5369	1.8804	1.2243	1.8804	1.2243
10	-7.109	-7.192	815.9	653.4	594.5	653.4	558.9	3.2	43.3	0.3	0.6880	0.5418	1.8902	1.2360	1.8902	1.2360
11	-8.131	-8.161	821.1	628.3	576.5	628.2	584.7	-9.9	45.5	-0.9	0.6876	0.5161	1.8596	1.2532	1.8596	1.2532

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	4.93	7.09	9.46	60.40	48.55	56.78	0.6123	0.1608	0.0327	0.9354	81.46	89.80	90.57	89.80	90.57
2	4.82	7.22	10.44	56.45	50.18	50.00	0.5871	0.1405	0.0298	0.9463	82.96	92.07	92.67	92.07	92.67
3	4.65	7.43	10.56	54.01	51.85	59.43	0.5666	0.1352	0.0298	0.9500	82.78	93.34	93.85	93.34	93.85
4	4.26	7.97	9.53	51.00	53.11	60.59	0.5260	0.0985	0.0240	0.9678	85.58	94.77	95.17	94.77	95.17
5	5.39	10.44	8.70	51.51	50.35	58.82	0.5093	0.0833	0.0227	0.9767	85.91	89.27	90.11	89.27	90.11
6	6.12	11.73	7.82	52.68	48.77	57.64	0.5075	0.0908	0.0259	0.9764	83.60	85.91	87.00	85.91	87.00
7	3.91	9.79	8.73	49.37	51.96	60.21	0.4775	0.0943	0.0275	0.9752	81.72	88.37	89.28	88.37	89.28
8	2.07	8.21	9.90	46.20	54.72	62.40	0.4503	0.0970	0.0288	0.9743	79.88	90.38	91.15	90.38	91.15
9	0.64	7.52	12.70	43.11	57.26	65.82	0.4139	0.1045	0.0326	0.9721	75.03	88.07	89.06	88.07	89.06
10	0.89	7.94	14.56	43.05	57.41	66.26	0.4174	0.1255	0.0397	0.9659	70.15	84.45	85.76	84.45	85.76
11	2.40	9.55	14.91	46.43	55.18	62.61	0.4696	0.1989	0.0637	0.9461	58.60	76.48	78.41	76.48	78.41

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 %	EFF-P TOT-STG %
10675.	179.30	1.2124	1.3267	88.36	89.29	1.2124	0.9655	88.36	185.65

ROTOR 2

RUN NO 24, 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'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	11.645	11.032	604.3	1055.9	602.0	611.4	-51.8	909.5	-4.9	56.0	0.5076	0.8716	832.4	873.0	0.8985	0.4871	1069.6	612.5
2	10.675	9.738	617.6	1075.6	616.7	604.9	-32.3	894.2	-3.0	55.8	0.5198	0.8586	855.9	891.3	0.9102	0.4811	1081.3	604.9
3	9.936	8.519	635.4	1060.9	635.0	630.8	-23.4	853.0	-2.1	53.4	0.5355	0.8445	880.2	910.3	0.9308	0.5042	1104.4	633.4
4	6.311	5.083	661.6	998.6	661.4	641.2	-22.9	752.5	-2.0	49.6	0.5590	0.7839	955.5	970.8	0.9975	0.5371	1180.9	677.4
5	1.030	0.903	661.6	874.4	660.8	578.7	-31.2	655.5	-2.7	48.6	0.5564	0.6839	1059.3	1058.6	1.0724	0.5516	1275.1	705.2
6	-1.498	-1.129	656.6	829.2	655.4	568.0	-40.2	604.1	-3.5	46.7	0.5505	0.6452	1112.2	1105.3	1.1114	0.5894	1325.8	757.5
7	-2.695	-2.158	675.7	826.3	674.9	570.9	-32.7	597.4	-2.8	46.2	0.5677	0.6429	1138.9	1129.4	1.1359	0.6071	1352.0	780.4
8	-3.778	-3.151	691.9	830.9	691.5	576.3	-21.7	598.6	-1.8	46.0	0.5823	0.6465	1165.8	1154.0	1.1565	0.6228	1374.2	800.4
9	-6.567	-6.079	724.7	844.7	724.1	587.5	-4.1	606.9	-0.3	45.8	0.6076	0.6520	1247.5	1230.5	1.2132	0.6614	1445.9	856.8
10	-7.395	-7.098	732.9	848.4	732.9	600.3	3.1	599.6	0.2	44.8	0.6124	0.6527	1274.9	1256.6	1.2265	0.6847	1467.8	890.0
11	-8.335	-8.320	711.9	823.2	711.8	594.7	-9.9	569.3	-0.8	43.6	0.5892	0.6284	1302.4	1283.3	1.2356	0.7094	1492.9	929.2

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	6.20	10.52	17.00	59.08	59.91	71.30	0.6365	0.2907	0.0662	1.8008	82.82	81.35	55.68	-3.40	-884.1	36.5	3.1783
2	5.26	9.71	13.54	55.50	61.58	71.84	0.6445	0.2727	0.0637	1.7966	83.41	81.99	55.22	-0.28	-888.2	3.0	3.1935
3	4.58	9.16	12.70	49.76	63.45	76.43	0.6188	0.2282	0.0544	1.7873	85.33	84.09	54.93	5.17	-903.6	-57.3	3.2051
4	4.24	9.03	9.24	37.19	65.91	80.87	0.5960	0.1816	0.0443	1.7458	86.39	85.28	55.99	18.80	-978.3	-218.3	3.1638
5	5.32	5.89	6.64	23.92	65.02	74.28	0.5989	0.1937	0.0451	1.6742	83.07	81.80	58.79	34.86	-1090.5	-403.1	3.0166
6	5.98	10.32	5.19	18.95	64.07	73.25	0.5719	0.1831	0.0408	1.6519	82.83	81.58	60.35	41.40	-1152.4	-501.2	2.9634
7	5.15	9.23	3.67	17.09	66.28	74.10	0.5640	0.1912	0.0427	1.6394	81.50	80.18	60.02	42.93	-1171.5	-532.0	2.9763
8	4.36	8.17	1.56	15.86	68.18	75.25	0.5582	0.1971	0.0445	1.6347	80.55	79.17	59.74	43.88	-1187.5	-555.5	3.0029
9	3.04	5.72	-0.52	13.28	71.18	76.78	0.5534	0.2189	0.0525	1.6324	77.64	76.05	59.85	46.57	-1251.5	-623.6	3.0674
10	2.75	4.91	0.76	12.50	71.54	78.35	0.5396	0.2054	0.0505	1.6337	78.59	77.06	59.94	47.44	-1271.8	-657.0	3.0864
11	3.90	5.59	4.42	11.33	68.31	76.33	0.5222	0.1837	0.0445	1.6334	80.36	78.96	61.41	50.08	-1312.3	-714.0	3.0414

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WCL/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.4503	3.0741	83.62	85.96	38.44	1.1962	1.6829	81.07	82.40

STATOR 2

RUN NO 24, 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	8.445	0.773	1115.4	630.1	658.1	620.7	900.5	108.7	54.1	9.9	0.8895	0.4779	3.0415	1.4631	1.7233	1.2232
2	7.214	0.622	1098.6	644.2	648.8	636.7	886.5	97.9	54.0	8.7	0.8760	0.4899	3.0700	1.4582	1.7286	1.2208
3	6.076	0.409	1079.5	664.1	669.8	657.1	846.5	95.9	51.8	8.3	0.8614	0.5072	3.1096	1.4503	1.7360	1.2141
4	3.460	-0.262	1006.6	660.3	672.2	653.5	749.2	94.7	48.2	8.2	0.7999	0.5068	3.1166	1.4359	1.7204	1.2013
5	0.607	-0.940	893.5	585.9	607.9	582.4	654.8	72.2	47.1	7.1	0.7002	0.4480	3.0034	1.4364	1.6662	1.1926
6	-0.729	-1.023	849.6	545.3	557.0	545.4	604.4	65.1	45.3	6.8	0.6624	0.4180	2.9489	1.4382	1.6432	1.1880
7	-1.374	-0.995	847.4	548.2	600.2	544.7	598.2	61.9	44.9	6.5	0.6607	0.4172	2.9457	1.4379	1.6273	1.1876
8	-2.040	-0.955	852.9	564.3	606.2	560.8	600.0	62.4	44.7	6.3	0.6651	0.4298	2.9653	1.4384	1.6173	1.1887
9	-4.316	-1.139	872.8	620.5	624.2	614.6	610.1	98.5	44.4	8.2	0.6757	0.4706	3.0298	1.4629	1.6131	1.1957
10	-5.165	-1.233	880.0	631.6	640.8	622.0	603.2	109.7	43.3	10.0	0.6792	0.4772	3.0378	1.4738	1.6080	1.1937
11	-5.972	-1.209	860.9	595.8	642.4	590.1	573.2	107.6	41.8	10.3	0.6596	0.4498	2.9817	1.4887	1.6020	1.1888

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	0.63	2.19	16.73	44.17	75.71	68.25	0.5947	0.1070	0.0238	0.9570	87.55	80.40	83.16	74.78	76.62
2	1.57	3.59	14.99	45.26	76.06	91.17	0.5784	0.0967	0.0220	0.9619	88.28	82.06	84.61	76.06	77.81
3	0.15	2.65	14.15	43.49	80.14	95.04	0.5490	0.0762	0.0177	0.9706	90.24	84.64	86.85	79.17	80.71
4	-2.41	1.46	13.56	39.90	83.84	95.70	0.5079	0.0460	0.0113	0.9841	93.33	87.65	89.43	82.70	83.96
5	-2.60	2.70	12.36	40.04	77.23	84.39	0.5216	0.0237	0.0063	0.9933	96.22	84.27	86.43	80.91	82.23
6	-4.08	1.71	12.02	38.52	76.21	78.47	0.5330	0.0249	0.0068	0.9936	96.03	82.26	84.70	80.47	81.78
7	-4.36	1.63	11.64	38.39	77.08	78.33	0.5307	0.0348	0.0097	0.9912	94.51	82.21	84.66	78.97	80.35
8	-4.36	1.83	11.44	38.33	78.28	80.75	0.5171	0.0424	0.0120	0.9891	93.18	82.70	85.09	77.42	78.89
9	-4.43	2.27	13.35	36.19	80.41	87.34	0.4644	0.0450	0.0131	0.9882	91.82	80.12	82.91	74.18	75.85
10	-6.13	0.75	15.76	33.34	82.30	87.70	0.4495	0.0593	0.0173	0.9843	89.16	78.47	81.50	74.40	76.04
11	-6.89	-1.79	17.25	31.53	81.45	81.84	0.4657	0.0762	0.0224	0.9808	86.79	74.58	78.09	75.66	77.21

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 %	EFF-P TOT-STG %
10675.	178.30	1.4503	3.0267	82.27	84.77	1.1962	0.9846	78.47	179.19

APPENDIX D

OVERALL PERFORMANCE AND BLADE-ELEMENT DATA AT 105 PERCENT OF DESIGN SPEED

This appendix provides test overall performance and blade-element data at 105 percent of design speed for rotor 1, stator 1, rotor 2, and stator 2. The data is presented for five combinations of stator settings at various flows and pressure ratios. An overall-performance and stall data summary is given in Table XXII, and the complete overall and blade-element data is given in Table XXIII to Table XXVII. The column headings for Tables XXIII through XXVII are identified in Table XI of Appendix A.

TABLE XXII – OVERALL PERFORMANCE AND STALL DATA SUMMARY FOR 105 PERCENT OF DESIGN SPEED

PERFORMANCE

REF. TABLE(1)	STATOR SETTING(2) S1	STATOR SETTING(2) S2	CORRECTED(3) FLOW lbm/sec	P_{11}/P_0	$\eta_{ad,11}$ %	P_{16}/P_0	$\eta_{ad,16}$ %
XXIII(a)	0°	0°	190.3	1.721	83.21	2.442	71.79
XXIII(b)	0°	0°	190.0	1.805	82.80	3.207	82.72
XXIII(c)	0°	0°	189.6	1.719	82.92	2.651	72.68
XXIV(a)	-5°	+2.5°	190.0	1.798	83.96	2.847	82.30
XXIV(b)	-5°	+2.5°	189.6	1.790	83.53	2.558	78.87
XXIV(c)	-5°	+2.5°	189.5	1.789	84.95	2.328	71.22
XXIV(d)	-5°	+2.5°	189.0	1.868	85.19	3.062	83.73
XXV(a)	-7.5°	+2.5°	187.8	1.808	87.64	2.300	71.09
XXV(b)	-7.5°	+2.5°	187.8	1.808	87.21	2.643	80.80
XXV(c)	-7.5°	+2.5°	187.3	1.834	86.68	2.878	83.16
XXV(d)	-7.5°	+2.5°	185.8	1.874	86.62	3.018	83.34
XXVI(a)	-2.5°	+2.5°	190.2	1.771	86.28	2.581	78.63
XXVI(b)	-2.5°	+2.5°	190.1	1.784	88.73	2.349	71.11
XXVI(c)	-2.5°	+2.5°	189.9	1.778	86.96	2.855	82.41
XXVI(d)	-2.5°	+2.5°	189.0	1.883	88.33	3.145	83.62
XXVII(a)	+2.5°	-2.5°	190.3	1.717	84.43	2.930	80.43
XXVII(b)	+2.5°	-2.5°	190.2	1.704	82.93	2.446	68.33
XXVII(c)	+2.5°	-2.5°	189.8	1.708	84.73	2.760	78.32
XXVII(d)	+2.5°	-2.5°	188.8	1.875	85.41	3.278	80.37

STALL POINT DATA

STATOR SETTING(2) S1	STATOR SETTING(2) S2	CORRECTED(3) FLOW lbm/sec	P_{16}/P_0	STALL MARGIN %
0°	0°	188.2	3.300	15.7
-5°	+2.5°	186.9	3.078	8.5
-7.5°	+2.5°	185.6	3.020	7.4
-2.5°	+2.5°	187.8	3.145	11.0
+2.5°	-2.5°	188.7	3.282	14.7

NOTES: (1) Refers to remaining Appendix D tables.

(2) Stator Setting = $\beta^*_{des.} - \beta^*_{act.}$

(3) Corrected Flow = $W\sqrt{\theta}/\delta$

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TABLE XXIII (a) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

105% OF DESIGN SPEED

STATOR 1 ($\beta^{*}_{des.} - \beta^{*}_{act.}$) = 0^{o}

STATOR 2 ($\beta^{*}_{des.} - \beta^{*}_{act.}$) = 0^{o}

(Data from reference 3)

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'-1	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	13.875	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	13.644	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	797.4	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	1137.8	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	774.9	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	1.5077	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	-1.68	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	-1.88	2.42	16.27	49.27	43.01	58.40	0.4678	0.0039	0.0009	1.9890	99.78	99.76	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	99.81	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	1.60	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	-1292.7	-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	4.53	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	13.678	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	-1.608	-1.370	729.9	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	695.9	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

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	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	11.628	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	9.457	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	2.803	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	750.3	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	B'-1 DEGREE	B'-2 DEGREE	VO'-1 FT/SEC	VO'-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	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	8.905	0.919	1305.6	981.1	1003.5	979.8	835.2	-51.2	40.1	-3.0	1.0702	0.7671	2.5250	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	2.3035	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	-1.294	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	46.58	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	34.53	89.23	98.17	0.2246	0.1839	0.0492	0.9366	-9.49	75.52	78.43	70.91	72.46
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	3.82	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	-9.16	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	-9.80	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	-68.95	61.50	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 XXIII (b) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

105% OF DESIGN SPEED
STATOR 1 $(\beta^{*}_{des.} - \beta^{*}_{act.}) = 0^{\circ}$
STATOR 2 $(\beta^{*}_{des.} - \beta^{*}_{act.}) = 0^{\circ}$
(Data from reference 3)

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	15.717	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	0.6325	0.9704	712.9	602.4	0.9164	0.6042	984.9	663.9
3	11.874	13.759	694.6	1061.2	694.6	696.7	0.0	826.9	0.0	49.9	0.6475	0.9521	763.7	639.5	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	1.0922	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	1090.6	1098.7	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	570.6	0.0	541.0	0.0	43.2	0.7107	0.6724	1221.4	1209.8	1.3498	0.7510	1436.6	885.1
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	-6.445	-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	-9.883	-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	0.4894	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	0.0358	0.0086	1.9913	97.80	97.59	47.50	1.04	-763.7	-12.6	1.9913
4	-0.42	3.05	8.27	33.13	44.67	56.65	0.5783	0.0930	0.0236	1.9346	92.99	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	80.26	57.32	49.39	-1178.2	-609.2	1.7339
7	1.04	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	1.32	3.87	6.95	9.32	45.45	56.56	0.4700	0.0873	0.0187	1.8218	90.62	89.62	59.13	49.81	-1264.5	-726.9	1.8216
9	3.00	4.43	6.97	8.29	44.96	57.07	0.4521	0.1206	0.0253	1.8468	86.58	85.39	62.05	53.77	-1393.1	-843.2	1.8468
10	3.38	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	16.147	14.745	1139.9	700.3	715.3	700.0	887.6	-20.1	51.3	-1.6	1.0141	0.5666	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	49.6	-0.2	0.9026	0.5940	1.8763	1.2216	1.8763	1.2216
3	13.701	11.106	1096.3	727.1	733.8	727.0	814.5	15.5	48.1	1.2	0.9678	0.6207	1.9044	1.2227	1.9044	1.2227
4	8.028	6.383	1010.7	729.5	698.6	729.5	730.3	10.3	46.1	0.8	0.8792	0.6125	1.8965	1.2241	1.8965	1.2241
5	1.401	0.655	871.6	638.0	618.5	636.9	614.3	-36.1	44.8	-3.2	0.7464	0.5529	1.7557	1.2160	1.7557	1.2160
6	-1.548	-2.200	793.4	587.0	558.0	584.9	565.9	-49.4	45.3	-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	1.2086	1.7588	1.2086
9	-6.214	-6.829	829.1	690.2	647.4	690.1	517.9	-11.1	38.7	-3.4	0.7037	0.5770	1.7929	1.2251	1.7929	1.2251
10	-7.136	-7.628	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	-8.153	-8.421	816.1	665.3	618.5	664.8	532.3	-26.5	40.8	-2.3	0.6860	0.5507	1.7610	1.2425	1.7610	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 STATO-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-1.23	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	86.95	88.72	89.66	88.72	89.66
3	-1.47	1.31	11.60	46.84	59.49	72.33	0.4911	0.0956	0.0211	0.9566	87.13	90.62	91.42	90.62	91.42
4	-0.75	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	-0.75	4.32	6.07	48.02	53.92	61.20	0.4018	0.0726	0.0196	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	0.0309	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	-5.52	0.62	7.46	41.05	58.45	63.10	0.4019	0.1275	0.0378	0.9638	70.84	83.65	85.06	83.65	85.06
9	-5.88	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	-6.51	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	-6.77	2.36	11.02	43.13	55.64	62.19	0.4060	0.1397	0.0447	0.9623	64.38	72.26	74.36	72.26	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	1.2218	1.8053	82.80	84.15	1.2216	0.9693	82.80

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'-2	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	0.9444	877.1	920.0	1.0130	0.5732	1197.4	722.9
2	10.688	9.930	806.2	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	1214.8	724.6
3	9.723	8.787	831.9	1133.3	831.8	738.7	15.2	859.5	1.0	49.3	0.7066	0.8996	927.5	959.3	1.0490	0.5916	1234.6	745.4
4	8.321	5.608	845.3	1037.3	845.2	718.5	10.3	746.2	0.7	46.2	0.7189	0.8182	1006.9	1023.1	1.1114	0.6008	1306.8	769.2
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	777.6
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	782.3
8	-4.524	-3.063	746.0	829.9	745.6	556.3	-22.5	615.8	-1.7	47.8	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	-8.682	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	VB'-1 FT/SEC	VB'-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	2.66	18.08	43.92	75.85	89.23	0.5767	0.1362	0.0317	1.8744	90.41	89.53	46.28	4.26	-904.2	-54.0	3.5143
3	-2.69	1.68	15.21	39.58	78.08	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	-2.03	2.79	11.39	28.80	78.39	94.22	0.5563	0.0724	0.0174	1.8104	93.63	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	0.5617	0.0812	0.0183	1.8156	92.70	92.06	56.59	37.43	-1152.2	-466.3	3.1924
6	6.06	10.40	8.46	15.75	62.65	73.05	0.5863	0.0855	0.0180	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	3.83	7.61	4.79	12.08	66.50	75.05	0.5750	0.1268	0.0270	1.7795	87.71	86.68	59.16	47.11	-1251.0	-600.4	3.1316
9	3.03	5.68	2.07	10.65	70.35	78.24	0.5604	0.1495	0.0341	1.7857	85.12	83.80	59.81	49.16	-1325.9	-676.6	3.2018
10	3.64	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	0.1661	0.0420	1.7923	81.46	79.69	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	89.45

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	6.534	0.778	1161.0	712.9	776.6	712.4	869.8	28.5	49.1	2.3	0.9403	0.5386	3.3180	1.4916	1.7655	1.2202
2	7.397	0.633	1169.2	735.9	772.5	733.1	877.7	35.0	48.9	2.7	0.9306	0.5561	3.3663	1.4865	1.7987	1.2164
3	6.335	0.391	1158.4	769.8	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	3.625	-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	1.1966
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	-0.530	-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	1.7628	1.2044
8	-1.234	-0.693	850.7	543.4	565.9	543.2	616.8	13.6	46.4	1.4	0.6589	0.4110	3.0782	1.4546	1.7547	1.2044
9	-3.004	-0.886	876.2	605.4	616.1	605.8	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	1.93	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	14.28	41.20	81.74	88.65	0.5039	0.0580	0.0170	0.9848	90.09	79.88	82.80	81.41	82.61
10	0.23	7.06	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	0.93	8.05	15.79	42.82	76.53	81.32	0.5390	0.0864	0.0257	0.9785	86.06	72.45	76.36	76.73	78.48

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 XXIII (c) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

105% OF DESIGN SPEED

STATOR 1 $(\beta^*_{des.} - \beta^*_{act.}) = 0^\circ$

STATOR 2 $(\beta^*_{des.} - \beta^*_{act.}) = 0^\circ$

(Data from reference 3)

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'-2	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	934.3	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	0.6444	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	696.4	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	-6.964	-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	0.0093	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	0.0523	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

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	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	11.772	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	0.6703	1269.7	833.
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.
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.
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.
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.
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.
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.
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.
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.
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.
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.

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	-5.89	-1.58	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	0.0195	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	84.77	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	2.5591
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	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	8.564	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	2.8469	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	1.5357	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	78.03	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	0.3149	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	84.16
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 XXIV (a) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

105% OF DESIGN SPEED

STATOR 1 $(\beta^{*}_{des.} - \beta^{*}_{act.}) = -5^{\circ}$

STATOR 2 $(\beta^{*}_{des.} - \beta^{*}_{act.}) = +2.5^{\circ}$

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 13, SPEED CODE 15, 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	16.873	18.313	662.5	1168.8	662.5	633.9	0.0	909.8	0.0	55.2	0.6152	0.9811	658.4	762.2	0.8674	0.5758	934.0	650.8
2	14.545	15.965	677.2	1059.4	677.2	641.8	0.0	842.9	0.0	52.7	0.6299	0.9324	710.0	799.1	0.9127	0.5662	981.1	643.3
3	12.341	13.813	691.8	1021.8	691.8	654.0	0.0	785.1	0.0	50.2	0.6446	0.8963	760.6	836.0	0.9581	0.5754	1028.1	655.9
4	6.438	8.130	727.6	955.9	727.6	647.0	0.0	703.7	0.0	47.4	0.6811	0.8290	905.5	946.7	1.0873	0.5994	1161.6	691.1
5	0.849	1.754	751.6	834.7	751.6	570.0	0.0	609.8	0.0	46.9	0.7058	0.7123	1086.3	1094.2	1.2404	0.6383	1321.0	748.0
6	-0.848	-1.029	757.4	782.8	757.4	550.3	0.0	556.7	0.0	45.3	0.7117	0.6656	1173.4	1167.9	1.3124	0.6993	1396.6	822.5
7	-1.911	-2.326	759.3	798.6	759.3	587.8	0.0	540.6	0.0	42.6	0.7137	0.6801	1216.3	1204.8	1.3478	0.7553	1433.9	887.0
8	-3.395	-3.603	759.6	817.7	759.6	626.4	0.0	525.7	0.0	40.0	0.7140	0.6978	1259.2	1241.7	1.3824	0.8118	1470.6	951.3
9	-8.522	-7.545	744.2	817.1	744.2	640.4	0.0	507.4	0.0	38.3	0.6981	0.6938	1387.4	1352.3	1.4769	0.9002	1574.4	1060.2
10	-10.246	-8.937	733.7	805.2	733.7	620.8	0.0	512.7	0.0	39.5	0.6873	0.6802	1430.1	1389.2	1.5057	0.9074	1607.4	1074.1
11	-11.542	-10.299	722.3	771.5	722.3	558.8	0.0	532.0	0.0	43.5	0.6757	0.6451	1472.8	1426.1	1.5344	0.6816	1640.4	1054.4

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	-1.76	2.85	14.83	57.75	42.21	49.84	0.5334	0.0957	0.0205	1.9517	95.03	94.55	44.63	-13.12	-658.4	147.6	1.9517
2	-1.65	2.65	15.70	50.07	42.78	51.86	0.5537	0.0855	0.0196	1.9184	95.06	94.60	46.17	-3.90	-710.0	43.8	1.9184
3	-1.46	2.65	15.98	43.10	43.33	54.10	0.5535	0.0638	0.0152	1.9007	95.95	95.58	47.55	4.45	-760.6	-50.9	1.9007
4	-0.38	3.08	10.91	30.53	44.57	55.89	0.5708	0.0788	0.0197	1.8917	93.96	93.41	51.12	20.59	-905.5	-243.0	1.8917
5	0.80	3.48	10.08	14.96	45.33	50.54	0.5729	0.1514	0.0346	1.7922	85.87	84.69	55.31	40.36	-1086.3	-484.4	1.7922
6	1.22	3.50	10.66	9.16	45.51	49.60	0.5354	0.1447	0.0306	1.7612	85.29	84.09	57.15	48.00	-1173.4	-611.2	1.7612
7	1.43	3.53	8.17	9.53	45.56	53.73	0.5013	0.1096	0.0236	1.8029	88.67	87.72	58.01	48.49	-1216.3	-664.2	1.8029
8	1.67	3.62	5.95	10.08	45.57	58.06	0.4694	0.0730	0.0160	1.8493	92.31	91.64	58.88	48.81	-1259.2	-716.0	1.8493
9	2.76	4.18	5.99	9.02	45.10	59.92	0.4398	0.0858	0.0184	1.8783	90.45	89.58	61.81	52.79	-1387.4	-844.9	1.8783
10	3.19	4.48	7.62	8.25	44.77	57.66	0.4463	0.1225	0.0257	1.8617	86.24	85.02	62.87	54.62	-1430.1	-876.5	1.8617
11	3.55	4.71	11.56	5.99	44.40	50.98	0.4756	0.1975	0.0387	1.8114	77.86	75.96	63.89	57.90	-1472.8	-894.1	1.8114

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 %
1.2172	1.8514	88.50	89.44	43.15	1.2172	1.8514	88.50	89.44

STATOR 1

RUN NO 13, SPEED CODE 15, 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	18.121	14.907	1112.9	651.7	667.3	648.1	890.6	68.8	53.3	6.0	0.9853	0.5435	1.7598	1.2224	1.7598	1.2224
2	15.604	13.173	1068.2	662.2	674.9	658.6	828.0	69.0	50.9	5.9	0.9415	0.5543	1.7813	1.2161	1.7813	1.2161
3	13.732	11.527	1034.2	674.7	686.5	671.1	773.4	69.9	48.5	5.9	0.9089	0.5668	1.8040	1.2105	1.8040	1.2105
4	6.309	6.950	975.1	702.6	680.9	698.6	698.0	74.9	45.7	6.1	0.8475	0.5910	1.8458	1.2137	1.8458	1.2137
5	1.652	1.073	858.4	658.1	605.2	656.2	608.7	49.6	45.1	4.3	0.7346	0.5512	1.7791	1.2136	1.7791	1.2136
6	-1.186	-1.800	807.8	614.4	584.9	613.5	557.1	32.6	43.6	3.0	0.6887	0.5138	1.7238	1.2082	1.7238	1.2082
7	-2.409	-3.013	823.5	648.6	620.3	647.4	541.7	40.9	41.2	3.6	0.7034	0.5439	1.7577	1.2090	1.7577	1.2090
8	-3.368	-4.002	842.3	681.3	656.8	679.8	527.3	45.8	38.8	3.9	0.7209	0.5730	1.7944	1.2094	1.7944	1.2094
9	-5.837	-6.683	843.7	718.9	671.9	716.9	510.3	54.4	37.3	4.4	0.7188	0.6040	1.8388	1.2202	1.8388	1.2202
10	-6.704	-7.491	833.5	703.6	654.6	701.3	515.9	57.2	38.3	4.7	0.7065	0.5882	1.8174	1.2283	1.8174	1.2283
11	-7.622	-8.318	802.0	668.1	596.5	665.1	536.1	63.2	42.1	5.5	0.6729	0.5530	1.7712	1.2432	1.7712	1.2432

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	-4.21	-2.10	13.33	47.34	52.28	61.81	0.5578	0.2125	0.0432	0.9017	75.32	78.73	80.32	78.73	80.32
2	-4.91	-2.51	12.16	44.99	54.14	63.56	0.5245	0.1644	0.0347	0.9284	79.47	82.91	84.22	82.91	84.22
3	-6.05	-3.26	11.30	42.57	56.24	65.45	0.4921	0.1228	0.0269	0.9491	83.46	87.14	88.14	87.14	88.14
4	-6.29	-2.57	10.37	39.62	58.00	68.63	0.4315	0.0639	0.0155	0.9760	89.56	89.49	90.34	89.49	90.34
5	-5.36	-0.31	8.63	40.83	52.88	63.47	0.4070	0.0205	0.0056	0.9940	95.64	83.69	84.94	83.69	84.94
6	-6.41	-0.79	7.40	40.57	51.95	58.86	0.4230	0.0785	0.0225	0.9787	83.90	80.79	82.18	80.79	82.18
7	-8.65	-2.77	8.01	37.53	55.89	62.34	0.3927	0.1043	0.0304	0.9704	77.07	83.58	84.81	83.58	84.81
8	-10.81	-4.66	8.25	34.93	59.99	65.79	0.3629	0.1103	0.0327	0.9676	73.49	86.75	87.78	86.75	87.78
9	-12.34	-5.46	9.90	32.92	61.87	69.28	0.3182	0.0718	0.0224	0.9791	78.05	86.25	87.35	86.25	87.35
10	-11.62	-4.58	11.46	33.63	59.82	67.12	0.3321	0.0844	0.0266	0.9761	75.26	81.46	82.92	81.46	82.92
11	-8.58	-1.43	13.77	36.60	53.52	62.46	0.3584	0.0850	0.0271	0.9778	76.20	72.85	74.91	72.85	74.91

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 %	EFF-P TOT-STG %
11202.	190.00	1.2172	1.7983	83.96	85.21	1.2172	0.9713	83.96	197.76

ROTOR 2

RUN NO 13, SPEED CODE 15, 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	11.626	11.081	716.8	1190.0	715.6	735.1	66.9	935.8	5.3	51.7	0.6032	0.9540	873.5	916.2	0.9050	0.5895	1078.3	735.3
2	10.872	9.822	736.0	1174.7	732.9	729.5	67.3	920.7	5.2	51.5	0.6205	0.9415	898.2	935.4	0.9341	0.5848	1108.0	729.7
3	9.992	8.641	755.9	1158.1	752.8	742.0	68.4	889.1	5.2	50.1	0.6402	0.9296	923.7	955.3	0.9650	0.5980	1139.4	745.0
4	6.643	5.399	806.1	1065.4	802.7	763.3	74.0	743.3	5.3	44.2	0.6856	0.8544	1002.7	1018.8	1.0441	0.6507	1227.6	811.5
5	1.144	1.144	775.3	912.0	773.7	694.3	49.6	591.4	3.7	40.4	0.6572	0.7248	1111.7	1110.9	1.1137	0.6891	1314.0	867.1
6	-1.796	-1.053	731.9	824.8	731.2	621.9	32.8	541.8	2.6	41.0	0.6189	0.6516	1167.2	1160.0	1.1413	0.6927	1349.6	876.8
7	-3.086	-2.089	757.8	807.1	756.7	617.8	41.3	519.3	3.1	40.0	0.6423	0.6382	1155.2	1185.2	1.1697	0.7183	1379.9	908.4
8	-4.206	-3.115	783.5	826.2	782.1	652.8	46.2	506.4	3.4	37.7	0.6659	0.6552	1223.4	1211.1	1.2012	0.7618	1413.3	960.6
9	-7.269	-6.425	806.9	850.1	805.1	666.3	55.0	528.1	3.9	38.3	0.6844	0.6687	1309.1	1291.3	1.2639	0.7969	1490.3	1013.1
10	-8.089	-7.527	789.3	840.0	787.2	645.4	57.8	537.7	4.2	39.7	0.6657	0.6563	1337.9	1318.8	1.2674	0.7916	1502.8	1013.2
11	-8.808	-8.657	754.2	808.4	751.5	603.7	64.0	537.7	4.8	41.6	0.6295	0.6257	1366.8	1346.8	1.2554	0.7814	1504.0	1009.5

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	VE'-1 FT/SEC	VE'-2 FT/SEC	PO/PO INLET
1	-1.13	3.19	18.88	49.88	66.10	77.70	0.5066	0.2407	0.0548	1.7629	84.92	83.67	48.35	-1.52	-806.7	19.6	3.1023
2	-1.38	3.07	14.96	47.43	68.20	78.78	0.5246	0.2471	0.0577	1.7567	83.85	82.53	46.58	1.14	-830.9	-14.6	3.1263
3	-1.67	2.91	12.61	43.60	70.45	82.18	0.5205	0.2255	0.0538	1.7513	84.44	83.17	48.68	5.08	-855.3	-66.2	3.1547
4	-2.52	2.28	10.29	29.38	74.58	89.76	0.4790	0.1292	0.0313	1.6772	88.82	87.97	49.23	15.85	-928.7	-275.5	3.0955
5	0.46	5.04	8.59	17.12	70.52	84.62	0.4564	0.0685	0.0159	1.6158	92.73	92.22	53.93	36.81	-1062.0	-519.5	2.8770
6	2.81	7.14	8.59	12.38	66.35	75.97	0.4618	0.0854	0.0180	1.5865	90.42	89.77	57.18	44.80	-1134.4	-618.1	2.7357
7	1.85	5.93	7.84	9.63	69.03	75.97	0.4467	0.0933	0.0194	1.5458	88.74	88.03	56.72	47.09	-1153.9	-665.9	2.7183
8	0.99	4.80	4.80	9.25	71.80	81.06	0.4215	0.0820	0.0175	1.5420	89.66	89.01	56.37	47.12	-1177.2	-704.7	2.7678
9	0.44	3.12	1.68	8.48	74.16	82.00	0.4301	0.1409	0.0324	1.5344	82.12	81.01	57.25	48.77	-1254.2	-763.3	2.8211
10	1.14	5.32	3.64	8.02	72.04	78.54	0.4407	0.1557	0.0361	1.5395	80.57	79.36	58.34	50.32	-1280.1	-781.1	2.7979
11	2.42	4.12	7.51	6.77	67.66	72.31	0.4467	0.1500	0.0340	1.5441	81.44	80.27	59.94	53.17	-1302.8	-809.1	2.7351

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 %
1.4216	2.8983	83.94	86.12	41.69	1.1679	1.6117	86.38	87.27

STATOR 2

RUN NO 13, SPEED CODE 15, 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	8.324	0.536	1225.0	805.1	801.4	802.7	926.6	-61.8	49.4	-4.4	0.9874	0.6161	2.9919	1.4771	1.7001	1.2084
2	6.966	0.167	1208.6	814.3	792.1	812.3	912.8	-57.9	49.2	-4.1	0.9737	0.6249	3.0191	1.4718	1.6959	1.2099
3	5.699	-0.240	1190.7	832.5	799.5	830.4	882.3	-59.1	47.9	-4.1	0.9604	0.6424	3.0669	1.4612	1.7011	1.2068
4	2.793	-1.307	1094.9	805.8	807.0	803.4	740.0	-61.3	42.6	-4.4	0.8816	0.6275	3.0305	1.4302	1.6418	1.1784
5	0.357	-1.817	939.6	693.3	730.5	686.9	590.9	-94.6	39.0	-7.8	0.7491	0.5395	2.8233	1.4055	1.5869	1.1581
6	-0.745	-1.715	852.9	618.7	658.3	610.6	542.2	-99.4	39.4	-9.2	0.6757	0.4801	2.7066	1.3967	1.5701	1.1560
7	-1.361	-1.579	834.9	603.8	653.2	597.3	520.0	-88.3	38.5	-8.4	0.6621	0.4692	2.6858	1.3901	1.5288	1.1498
8	-1.947	-1.419	853.5	636.7	686.2	632.2	507.5	-76.1	36.5	-6.9	0.6788	0.4965	2.7313	1.3874	1.5242	1.1472
9	-3.686	-1.288	883.6	685.1	706.7	683.8	530.4	-42.6	36.9	-3.6	0.6975	0.5310	2.7858	1.4139	1.5143	1.1591
10	-4.481	-1.301	878.6	675.6	692.4	674.9	540.8	-29.9	38.0	-2.5	0.6892	0.5202	2.7609	1.4292	1.5177	1.1641
11	-5.498	-1.237	853.8	625.9	660.2	625.4	541.4	-24.2	39.4	-2.2	0.6638	0.4772	2.6785	1.4462	1.5121	1.1633

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	3.44	5.00	9.92	53.79	82.43	103.55	0.5241	0.0768	0.0173	0.9644	89.86	76.68	79.92	77.91	79.49
2	4.31	6.33	9.68	53.30	83.35	105.58	0.5102	0.0759	0.0174	0.9655	89.51	78.30	81.34	76.95	78.59
3	3.80	6.30	9.28	52.02	86.39	109.30	0.4851	0.0638	0.0149	0.9715	90.55	81.44	84.07	78.61	80.14
4	-0.51	3.36	8.45	46.92	92.97	107.71	0.4423	0.0486	0.0120	0.9868	91.52	86.27	88.21	84.68	85.71
5	-3.26	2.05	4.96	46.79	87.63	91.58	0.4562	0.0562	0.0149	0.9826	89.49	84.80	86.81	88.55	89.28
6	-2.45	3.34	3.48	48.68	79.25	80.84	0.4833	0.0408	0.0111	0.9853	92.37	82.64	84.86	87.56	88.33
7	-3.24	2.75	4.26	46.88	79.18	79.23	0.4824	0.0475	0.0132	0.9879	91.19	83.30	85.42	85.49	86.33
8	-5.10	1.11	5.75	43.31	83.98	84.37	0.4482	0.0446	0.0126	0.9882	91.11	85.53	87.40	86.35	87.14
9	-4.41	2.29	9.11	40.45	85.45	89.82	0.4156	0.0467	0.0137	0.9871	89.81	81.84	84.22	78.54	79.76
10	-3.94	2.94	10.74	40.56	82.61	87.38	0.4246	0.0515	0.0152	0.9860	89.01	78.11	80.95	76.58	77.91
11	-3.80	3.30	12.22	41.65	77.30	79.24	0.4657	0.0811	0.0242	0.9793	84.55	72.54	75.99	76.17	77.52

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 %	EFF-P TOT-STG %
11202.	190.00	1.4216	2.8466	82.30	84.46	1.1679	0.9822	82.91	303.21

TABLE XXIV (b) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

105% OF DESIGN SPEED

STATOR 1 ($\beta^*_{des.} - \beta^*_{act.}$) = -5°

STATOR 2 ($\beta^*_{des.} - \beta^*_{act.}$) = $+2.5^\circ$

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 13, SPEED CODE 15, 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	VO-1 FT/SEC	VO-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	M-1	M-2
1	16.861	18.276	662.3	1102.4	662.3	633.7	0.0	902.1	0.0	54.9	0.6150	0.9753
2	14.518	15.903	676.8	1053.9	676.8	643.3	0.0	834.8	0.0	52.4	0.6296	0.9277
3	12.300	13.732	691.1	1020.7	691.1	655.2	0.0	782.7	0.0	50.1	0.6440	0.8956
4	6.372	8.002	725.8	959.2	725.8	649.6	0.0	705.9	0.0	47.4	0.6793	0.8321
5	0.824	1.597	747.7	835.1	747.7	567.9	0.0	612.3	0.0	47.2	0.7018	0.7124
6	-0.799	-1.157	752.9	780.4	752.9	548.7	0.0	554.9	0.0	45.3	0.7071	0.6636
7	-1.840	-2.424	754.7	796.2	754.7	586.3	0.0	538.8	0.0	42.6	0.7089	0.6782
8	-3.313	-3.668	755.0	816.0	755.0	625.4	0.0	524.1	0.0	40.0	0.7092	0.6964
9	-8.436	-7.537	740.4	815.2	740.4	641.6	0.0	502.9	0.0	38.0	0.6942	0.6928
10	-10.172	-6.915	730.4	803.8	730.4	622.5	0.0	508.6	0.0	39.2	0.6839	0.6796
11	-11.491	-10.282	719.3	771.5	719.3	562.2	0.0	528.3	0.0	43.1	0.6726	0.6456

SL	U-1 FT/SEC	U-2 FT/SEC	M'-1	M'-1	V'-1 FT/SEC	V'-2 FT/SEC
1	657.7	761.4	0.8668	0.5743	933.4	649.1
2	709.2	798.3	0.9119	0.5672	980.3	644.3
3	759.8	835.1	0.9571	0.5767	1027.2	657.3
4	904.5	945.7	1.0854	0.6006	1159.6	692.4
5	1085.2	1093.0	1.2366	0.6347	1317.9	744.1
6	1172.1	1166.7	1.3083	0.6966	1393.1	822.8
7	1215.1	1203.5	1.3436	0.7549	1430.3	886.4
8	1257.9	1240.4	1.3782	0.8115	1467.1	950.9
9	1365.9	1350.9	1.4733	0.9037	1572.3	1063.4
10	1428.6	1387.6	1.5024	0.9106	1604.5	1077.2
11	1471.3	1424.6	1.5313	0.8654	1637.7	1056.0

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	-1.78	2.83	15.43	57.13	42.21	49.83	0.5329	0.0966	0.0208	1.9392	94.94	94.46	44.61	-12.52	-657.7	140.6	1.9392
2	-1.67	2.63	16.35	49.40	42.77	51.95	0.5504	0.0843	0.0194	1.9067	95.09	94.64	46.15	-3.25	-709.2	36.5	1.9067
3	-1.47	2.64	16.11	42.96	43.31	54.13	0.5512	0.0641	0.0153	1.8957	95.92	95.55	47.54	4.57	-759.6	-52.4	1.8957
4	-0.35	3.12	10.58	30.89	44.52	55.94	0.5696	0.0818	0.0205	1.8912	93.75	93.18	51.15	20.27	-904.5	-239.6	1.8912
5	0.91	3.59	9.97	15.18	45.21	50.09	0.5755	0.1617	0.0370	1.7839	84.95	83.70	55.42	40.25	-1085.2	-480.7	1.7839
6	1.35	3.63	10.77	9.17	45.37	49.21	0.5343	0.1511	0.0319	1.7494	84.60	83.37	57.28	48.11	-1172.1	-611.8	1.7494
7	1.56	3.66	8.27	9.56	45.42	53.33	0.5000	0.1157	0.0248	1.7908	88.00	87.00	56.14	48.59	-1215.0	-664.8	1.7908
8	1.79	3.75	6.01	10.14	45.43	57.69	0.4679	0.0786	0.0172	1.8378	91.71	90.98	59.01	48.87	-1257.9	-716.3	1.8378
9	2.85	4.27	6.04	9.06	44.99	59.87	0.4355	0.0845	0.0181	1.8688	90.54	89.69	61.90	52.84	-1385.9	-848.0	1.8688
10	3.27	4.56	7.63	8.32	44.67	57.68	0.4423	0.1210	0.0253	1.8536	86.35	85.14	62.95	54.63	-1428.6	-879.2	1.8536
11	3.62	4.77	11.47	6.15	44.30	51.19	0.4717	0.1955	0.0384	1.8056	77.99	76.12	63.96	57.81	-1471.3	-896.2	1.8056

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 %
1.2164	1.8438	88.19	89.15	43.06	1.2164	1.8438	88.19	89.15

STATOR 1

RUN NO 13, SPEED CODE 15, 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	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	18.124	14.860	1107.6	647.5	668.6	643.8	883.0	69.2	53.0	6.1	0.9807	0.5402	1.7464	1.2203	1.7464	1.2203
2	15.812	13.075	1063.7	662.5	677.6	659.3	820.0	64.6	50.5	5.6	0.9379	0.5550	1.7728	1.2139	1.7728	1.2139
3	13.738	11.376	1034.1	678.1	689.1	675.0	771.0	65.2	48.3	5.5	0.9092	0.5701	1.7989	1.2097	1.7989	1.2097
4	8.370	6.671	979.0	707.7	684.3	702.6	700.1	83.0	45.7	6.7	0.8517	0.5955	1.8423	1.2141	1.8423	1.2141
5	1.765	0.688	858.9	661.4	603.4	659.2	611.2	53.7	45.3	4.7	0.7348	0.5541	1.7711	1.2141	1.7711	1.2141
6	-1.312	-2.152	805.0	616.2	582.9	615.3	555.3	34.8	43.6	3.2	0.6865	0.5157	1.7126	1.2072	1.7126	1.2072
7	-2.537	-3.290	820.9	650.8	618.4	649.3	539.9	44.5	41.1	3.9	0.7012	0.5460	1.7453	1.2081	1.7453	1.2081
8	-3.494	-4.173	840.1	684.4	655.3	682.5	525.7	50.2	38.8	4.2	0.7191	0.5759	1.7823	1.2086	1.7823	1.2086
9	-5.938	-6.620	841.7	721.5	672.8	718.9	505.6	61.6	37.0	4.9	0.7175	0.6069	1.8289	1.2181	1.8289	1.2181
10	-6.786	-7.405	832.2	705.6	656.3	702.6	511.8	63.5	38.0	5.2	0.7060	0.5904	1.8083	1.2265	1.8083	1.2265
11	-7.873	-8.255	802.4	668.3	600.3	664.9	532.5	67.1	41.7	5.6	0.6738	0.5536	1.7613	1.2413	1.7613	1.2413

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	-4.50	-2.39	13.40	46.98	52.34	61.14	0.4157	0.2162	0.0440	0.9005	74.87	78.32	79.92	78.32	79.92
2	-5.29	-2.89	11.78	45.00	54.28	63.41	0.3778	0.1627	0.0344	0.9294	79.57	83.02	84.31	83.02	84.31
3	-6.24	-3.46	10.87	42.80	56.34	65.58	0.3446	0.1232	0.0271	0.9489	83.31	87.04	88.05	87.04	88.05
4	-6.34	-2.62	10.98	38.95	58.09	68.71	0.2768	0.0681	0.0165	0.9742	88.78	89.00	89.89	89.00	89.89
5	-5.16	-0.11	8.96	40.69	52.44	63.36	0.2262	0.0194	0.0053	0.9944	95.81	82.78	84.08	82.78	84.08
6	-6.40	-0.79	7.59	40.38	51.54	58.63	0.2325	0.0787	0.0225	0.9788	83.57	80.13	81.55	80.13	81.55
7	-8.65	-2.78	8.32	37.22	55.47	62.06	0.2109	0.1075	0.0313	0.9697	75.89	82.80	84.07	82.80	84.07
8	-10.82	-4.68	8.65	34.56	59.59	65.55	0.1876	0.1139	0.0337	0.9667	71.94	66.00	67.07	66.00	67.07
9	-12.62	-5.74	10.48	32.07	61.79	69.10	0.1425	0.0729	0.0226	0.9789	77.02	86.23	87.33	86.23	87.33
10	-11.92	-4.87	11.96	32.83	59.83	66.94	0.1517	0.0857	0.0270	0.9758	74.28	81.38	82.84	81.38	82.84
11	-8.95	-1.80	14.10	35.89	53.73	62.17	0.1670	0.0935	0.0298	0.9755	73.84	72.65	74.71	72.65	74.71

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 %	EFF-P TOT-STG %
11191.	189.60	1.2164	1.7896	83.53	84.80	1.2164	0.9706	83.53	197.74

ROTOR 2

RUN NO 13, SPEED CODE 15, 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	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	11.561	11.087	721.2	1234.7	718.1	804.7	67.3	936.4	5.3	49.2	0.6059	0.9975	872.6	915.2	0.9066	0.6504	1079.0	805.0
2	10.734	9.824	742.9	1221.5	740.3	808.4	63.0	915.8	4.9	48.5	0.6274	0.9872	897.3	934.4	0.9419	0.6535	1115.3	808.6
3	9.777	8.637	766.1	1204.3	763.4	827.4	63.9	875.1	4.8	46.5	0.6498	0.9751	922.7	954.3	0.9747	0.6730	1149.1	831.2
4	6.258	5.336	816.6	1096.9	812.5	833.1	82.0	713.6	5.8	40.6	0.6953	0.8876	1001.7	1017.8	1.0448	0.7177	1227.2	886.9
5	0.591	0.908	778.6	911.0	776.6	755.2	53.5	509.6	3.9	34.0	0.6600	0.7326	1110.5	1109.8	1.1119	0.7756	1311.7	964.7
6	-2.385	-1.396	729.2	789.1	728.4	657.7	35.2	436.0	2.8	33.5	0.6168	0.6313	1166.0	1158.8	1.1376	0.7818	1345.1	977.2
7	-3.523	-2.383	752.6	745.2	751.2	624.9	45.0	406.0	3.4	33.0	0.6378	0.5961	1194.0	1184.0	1.1634	0.7983	1372.7	997.9
8	-4.323	-3.263	777.9	769.8	776.2	665.7	50.7	386.6	3.7	30.1	0.6609	0.6189	1222.1	1209.8	1.1940	0.8511	1405.2	1058.7
9	-6.843	-6.200	807.1	824.5	804.7	713.0	62.5	414.0	4.4	30.0	0.6851	0.6602	1307.8	1290.0	1.2586	0.9043	1482.6	1129.5
10	-7.657	-7.262	792.3	822.1	789.7	705.2	64.3	422.5	4.6	30.8	0.6691	0.6545	1336.5	1317.4	1.2644	0.9071	1497.5	1139.4
11	-8.513	-8.458	758.2	793.1	755.2	673.5	68.0	418.8	5.1	31.8	0.6337	0.6257	1365.4	1345.4	1.2546	0.9036	1501.2	1145.5

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	-1.28	3.04	18.90	49.70	65.83	78.79	0.2537	0.3188	0.0726	1.7024	79.62	78.05	48.20	-1.50	-805.4	22.2	2.9730
2	-1.56	2.89	15.13	47.08	68.42	81.01	0.2739	0.3171	0.0741	1.6960	78.64	77.01	48.40	1.31	-834.2	-18.6	3.0052
3	-1.97	2.61	12.99	42.93	70.90	85.17	0.2753	0.2821	0.0673	1.6872	79.69	78.15	48.39	5.46	-858.9	-79.2	3.0327
4	-3.16	1.63	10.50	28.53	74.86	91.04	0.2765	0.1732	0.0419	1.5876	83.89	82.81	48.59	20.06	-919.7	-304.2	2.9255
5	0.22	4.80	10.26	15.21	70.30	85.34	0.2643	0.0830	0.0184	1.4841	89.54	88.95	53.69	38.48	-1057.0	-600.2	2.6254
6	2.83	7.17	11.46	9.53	65.82	74.15	0.2747	0.1091	0.0218	1.4103	84.40	83.64	57.20	47.67	-1130.8	-722.8	2.4210
7	1.93	6.01	11.93	5.62	68.31	70.58	0.2742	0.1296	0.0248	1.3481	79.45	78.57	56.81	51.19	-1148.9	-776.0	2.3560
8	1.06	4.87	8.65	5.47	71.04	76.03	0.2466	0.0987	0.0195	1.3478	83.24	82.53	56.44	50.97	-1171.4	-823.2	2.4038
9	0.24	2.92	3.64	6.32	73.82	81.09	0.2378	0.1285	0.0284	1.3644	78.70	77.75	57.05	50.73	-1245.3	-875.9	2.4966
10	0.87	3.05	4.95	6.44	71.88	79.41	0.2391	0.1362	0.0307	1.3739	77.90	76.90	58.07	51.63	-1272.3	-894.9	2.4884
11	2.18	3.87	8.21	5.82	67.56	74.62	0.2366	0.1217	0.0271	1.3814	80.26	79.34	59.69	53.87	-1297.4	-926.6	2.4342

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 %
1.3889	2.6425	81.98	84.23	41.79	1.1419	1.4766	82.46	83.40

STATOR 2

RUN NO 13, SPEED CODE 15, 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	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	8.399	0.566	1283.4	942.9	887.5	940.1	927.1	-72.3	46.5	-4.4	1.0452	0.7323	2.7282	1.4748	1.5622	1.2086
2	7.132	0.244	1268.5	952.5	885.9	950.1	907.9	-67.3	45.9	-4.0	1.0330	0.7421	2.7615	1.4690	1.5588	1.2098
3	5.981	-0.106	1249.3	973.6	898.1	971.1	868.5	-68.7	44.2	-4.0	1.0190	0.7638	2.6251	1.4574	1.5715	1.2046
4	3.239	-1.185	1138.5	961.3	889.3	958.6	711.0	-73.0	38.7	-4.4	0.9269	0.7645	2.8349	1.4187	1.5390	1.1685
5	0.686	-1.981	950.4	817.0	802.2	809.5	509.6	-110.0	32.4	-7.7	0.7678	0.6504	2.5540	1.3750	1.4453	1.1350
6	-0.534	-1.943	829.7	699.9	705.6	691.0	436.6	-111.8	31.7	-9.2	0.6665	0.5554	2.3638	1.3549	1.3764	1.1222
7	-1.322	-1.806	785.8	657.3	672.4	649.9	406.6	-97.9	31.1	-8.6	0.6311	0.5218	2.3054	1.3444	1.3179	1.1127
8	-2.151	-1.581	808.5	682.5	709.6	677.4	387.5	-82.6	28.6	-6.9	0.6525	0.5443	2.3394	1.3383	1.3122	1.1073
9	-4.111	-1.246	867.5	765.5	761.2	764.0	416.1	-48.1	28.7	-3.6	0.6978	0.6095	2.4435	1.3616	1.3357	1.1183
10	-4.848	-1.234	870.6	774.4	759.9	773.6	425.0	-34.5	29.3	-2.5	0.6967	0.6137	2.4455	1.3755	1.3494	1.1227
11	-5.727	-1.186	850.7	738.8	738.8	736.3	421.8	-28.5	29.6	-2.2	0.6752	0.5800	2.3756	1.3915	1.3461	1.1210

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	0.55	2.11	9.92	50.90	83.46	103.08	0.2655	0.1650	0.0372	0.9177	74.17	69.61	73.48	64.64	66.76
2	0.97	2.99	9.70	49.95	85.43	105.17	0.2492	0.1647	0.0378	0.9190	72.66	71.46	75.15	63.92	66.08
3	0.04	2.54	9.30	48.23	89.14	109.24	0.2207	0.1418	0.0332	0.9315	73.90	75.18	78.46	66.86	68.88
4	-4.37	-0.51	8.46	43.04	94.27	111.09	0.1529	0.0694	0.0172	0.9705	81.71	82.49	84.82	77.27	78.61
5	-9.80	-4.50	5.06	40.14	88.60	93.76	0.1361	0.0778	0.0206	0.9752	75.00	81.60	83.82	82.83	83.70
6	-10.18	-4.39	3.54	40.90	77.93	79.35	0.1545	0.0896	0.0244	0.9771	73.04	78.26	80.66	77.57	78.55
7	-10.60	-4.61	4.11	39.66	74.44	74.64	0.1639	0.0951	0.0264	0.9776	72.42	78.04	80.42	72.39	73.43
8	-12.94	-6.73	5.66	35.56	79.46	78.42	0.1552	0.1062	0.0300	0.9736	67.98	81.03	83.13	74.81	75.75
9	-12.62	-5.93	9.07	32.28	84.56	87.64	0.1169	0.0757	0.0222	0.9790	71.04	80.17	82.46	72.44	73.53
10	-12.70	-5.82	10.73	31.81	83.35	87.71	0.1110	0.0638	0.0189	0.9823	74.33	77.27	79.89	72.35	73.49
11	-13.44	-6.34	12.23	32.00	79.47	81.90	0.1316	0.0916	0.0273	0.9759	68.21	71.38	74.58	73.11	74.21

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 %	EFF-P TOT-STG %
11191.	189.60	1.3889	2.5583	78.87	81.43	1.1419	0.9681	75.26	716.57

TABLE XXIV (c) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

105% OF DESIGN SPEED

STATOR 1 $(\beta^*_{des.} - \beta^*_{act.}) = -5^\circ$

STATOR 2 $(\beta^*_{des.} - \beta^*_{act.}) = +2.5^\circ$

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 13, SPEED CODE 15, 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	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	16.830	18.286	660.6	1087.0	660.6	627.9	0.0	887.2	0.0	54.7	0.6134	0.5604	660.3	764.5	0.8673	0.5653	934.1	635.8
2	14.486	15.919	675.0	1036.5	675.0	628.6	0.0	824.2	0.0	52.7	0.6278	0.5107	712.1	801.5	0.9125	0.5526	981.1	629.0
3	12.278	13.759	689.2	1001.1	689.2	645.2	0.0	765.4	0.0	49.9	0.6420	0.6773	762.6	838.5	0.9577	0.5690	1028.0	649.4
4	6.296	8.118	723.7	939.4	723.7	640.4	0.0	687.2	0.0	47.0	0.6770	0.6144	908.2	949.5	1.0864	0.6000	1161.2	692.1
5	0.585	1.862	746.1	820.6	746.1	567.1	0.0	593.1	0.0	46.3	0.7000	0.7006	1089.5	1097.4	1.2390	0.6479	1320.5	758.8
6	-1.060	-0.850	751.8	765.8	751.8	537.9	0.0	545.1	0.0	45.4	0.7059	0.6510	1176.8	1171.4	1.3113	0.7018	1396.4	825.6
7	-2.063	-2.116	754.0	783.5	754.0	579.7	0.0	527.1	0.0	42.3	0.7083	0.6675	1219.9	1208.3	1.3471	0.7620	1434.1	894.5
8	-3.522	-3.381	754.8	803.9	754.8	619.7	0.0	512.1	0.0	39.6	0.7091	0.6864	1262.9	1245.3	1.3821	0.8197	1471.3	960.0
9	-8.608	-7.352	741.6	803.9	741.6	632.6	0.0	496.0	0.0	38.0	0.6955	0.6829	1391.5	1356.3	1.4786	0.9071	1576.8	1067.9
10	-10.317	-8.779	731.9	791.0	731.9	613.0	0.0	499.9	0.0	39.1	0.6855	0.6687	1434.3	1393.3	1.5082	0.9159	1610.3	1083.4
11	-11.587	-10.205	721.3	757.4	721.3	551.1	0.0	519.6	0.0	43.2	0.6746	0.6337	1477.1	1430.3	1.5374	0.8907	1643.8	1064.5

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHCVM-1	RHCVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/P01	%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	16.88	55.86	42.14	50.36	0.5397	0.0603	0.0130	1.9498	96.82	96.52	44.79	-11.07	-660.3	122.8	1.9498
2	-1.48	2.82	17.53	48.41	42.70	51.65	0.5639	0.0646	0.0149	1.9113	96.22	95.87	46.34	-2.07	-712.1	22.7	1.9113
3	-1.28	2.83	17.59	41.27	43.24	54.25	0.5553	0.0376	0.0089	1.8962	97.58	97.36	47.73	6.46	-762.8	-73.0	1.8962
4	-0.16	3.31	12.59	29.07	44.44	55.97	0.5664	0.0593	0.0146	1.8870	95.38	94.96	51.35	22.28	-908.2	-262.3	1.8870
5	1.07	3.75	11.38	13.94	45.16	50.68	0.5613	0.1339	0.0300	1.7854	87.26	86.20	55.59	41.65	-1089.5	-504.3	1.7854
6	1.49	3.77	12.00	8.09	45.34	48.69	0.5309	0.1397	0.0288	1.7480	85.55	84.40	57.43	49.34	-1176.8	-626.3	1.7480
7	1.69	3.79	9.28	8.68	45.41	53.26	0.4934	0.0997	0.0210	1.7913	89.50	88.63	58.27	49.59	-1219.9	-681.2	1.7913
8	1.91	3.86	6.92	9.34	45.43	57.74	0.4609	0.0617	0.0132	1.8384	93.38	92.81	59.12	49.78	-1262.9	-733.2	1.8384
9	2.92	4.34	6.81	8.35	45.03	59.51	0.4334	0.0763	0.0160	1.8690	91.37	90.59	61.96	53.61	-1391.5	-860.3	1.8690
10	3.32	4.61	8.47	7.54	44.72	57.29	0.4387	0.1111	0.0228	1.8524	87.31	86.19	63.00	55.47	-1434.3	-893.4	1.8524
11	3.66	4.81	12.38	5.27	44.36	50.61	0.4679	0.1865	0.0357	1.8037	78.75	76.94	63.99	58.72	-1477.1	-910.7	1.8037

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 %
1.2126	1.8439	89.79	90.61	43.04	1.2126	1.8439	89.79	90.61

STATOR 1

RUN NO 13, SPEED CODE 15, 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	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	18.159	14.870	1091.8	655.6	661.6	650.4	868.5	82.7	52.9	7.2	0.9655	0.5480	1.7528	1.2176	1.7528	1.2176
2	15.853	13.106	1045.9	665.6	662.1	661.5	809.6	74.3	50.8	6.4	0.9203	0.5583	1.7728	1.2120	1.7728	1.2120
3	13.789	11.461	1013.6	677.1	677.5	673.6	754.0	68.6	48.1	5.8	0.8900	0.5701	1.7934	1.2059	1.7934	1.2059
4	8.536	7.085	957.7	706.9	672.8	702.4	681.6	79.6	45.4	6.5	0.8325	0.5960	1.8360	1.2093	1.8360	1.2093
5	2.101	1.605	843.1	661.9	600.2	659.6	592.1	55.3	44.6	4.8	0.7219	0.5558	1.7705	1.2085	1.7705	1.2085
6	-0.994	-1.037	785.8	618.1	571.1	616.9	545.6	38.7	43.7	3.6	0.6731	0.5179	1.7149	1.2046	1.7149	1.2046
7	-2.264	-2.155	807.2	651.0	610.5	649.6	528.2	42.5	40.9	3.8	0.6896	0.5472	1.7478	1.2043	1.7478	1.2043
8	-3.254	-3.085	827.5	682.4	648.8	680.6	513.7	49.8	38.4	4.2	0.7085	0.5752	1.7840	1.2046	1.7840	1.2046
9	-5.781	-5.830	831.3	715.0	665.1	712.7	498.7	58.3	36.9	4.7	0.7085	0.6016	1.8296	1.2159	1.8296	1.2159
10	-6.669	-6.799	820.9	696.4	648.8	693.8	502.8	60.7	37.8	5.0	0.6964	0.5829	1.8080	1.2235	1.8080	1.2235
11	-7.802	-7.915	789.9	656.7	591.4	653.3	523.6	67.3	41.6	5.9	0.6632	0.5442	1.7605	1.2383	1.7605	1.2383

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHCVM-1	RHCVM-2	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	P02/P01	%EFF-P STATC-ST	%EFF-A TOT-INLET	%EFF-P TOT-INLET	%EFF-A TOT-STG	%EFF-P TOT-STG
1	-4.66	-2.55	14.50	45.71	52.85	61.88	0.5394	0.2247	0.0456	0.8987	72.92	79.85	81.35	79.85	81.35
2	-5.00	-2.60	12.58	44.49	54.00	63.61	0.5067	0.1722	0.0363	0.9273	77.54	83.76	84.99	83.76	84.99
3	-6.39	-3.60	11.17	42.36	56.41	65.45	0.4759	0.1348	0.0296	0.9457	81.00	88.15	89.07	88.15	89.07
4	-6.61	-2.89	10.72	38.94	58.03	68.69	0.4118	0.0740	0.0180	0.9729	87.12	90.51	91.27	90.51	91.27
5	-5.91	-0.86	9.10	39.81	52.91	63.60	0.3849	0.0247	0.0067	0.9930	94.40	84.94	86.08	84.94	86.08
6	-6.33	-0.71	7.95	40.10	51.00	58.93	0.3996	0.0755	0.0216	0.9803	83.13	81.38	82.72	81.38	82.72
7	-8.92	-3.04	8.14	37.14	55.33	62.34	0.3722	0.1047	0.0305	0.9712	75.01	84.62	85.76	84.62	85.76
8	-11.20	-5.05	8.62	34.22	59.61	65.67	0.3442	0.1138	0.0337	0.9674	70.45	87.83	88.76	87.83	88.76
9	-12.69	-5.81	10.23	32.24	61.57	68.86	0.3067	0.0735	0.0229	0.9791	76.26	87.16	88.19	87.16	88.19
10	-12.09	-5.04	11.79	32.83	59.64	66.51	0.3240	0.0863	0.0272	0.9762	73.90	82.46	83.83	82.46	83.83
11	-9.01	-1.86	14.22	35.72	53.36	61.51	0.3560	0.0935	0.0298	0.9761	73.93	73.53	75.51	73.53	75.51

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 %	EFF-P TOT-STG %
11235.	189.50	1.2126	1.7887	84.95	86.11	1.2126	0.9701	84.95	196.50

ROTOR 2

RUN NO 13, SPEED CODE 15, 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	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	11.491	11.229	726.1	1373.5	721.6	965.6	80.4	976.8	6.3	45.2	0.6111	1.1337	876.1	918.9	0.9041	0.7984	1074.2	967.4
2	10.578	10.068	741.5	1335.5	737.9	950.0	72.5	938.6	5.6	44.6	0.6266	1.0990	900.9	938.1	0.9375	0.7818	1109.4	950.0
3	9.594	8.963	757.4	1278.2	754.4	919.3	67.1	888.1	5.1	44.0	0.6429	1.0476	926.4	958.1	0.9766	0.7557	1143.4	922.0
4	6.574	5.925	806.1	1145.6	796.3	895.0	78.7	715.0	5.7	38.7	0.6814	0.9346	1065.7	1021.8	1.0407	0.7719	1222.0	946.1
5	1.669	1.797	767.5	986.1	765.5	840.8	55.5	519.0	4.2	31.7	0.6514	0.8028	1114.9	1114.2	1.1094	0.8369	1307.1	1030.2
6	-0.959	-0.417	722.3	851.1	721.2	731.9	38.6	434.4	3.1	30.7	0.6112	0.6863	1170.6	1163.4	1.1358	0.8330	1342.2	1033.0
7	-1.994	-1.410	748.4	816.8	747.2	716.1	42.5	392.8	3.3	28.7	0.6351	0.6599	1198.7	1188.7	1.1682	0.8650	1376.6	1070.6
8	-2.869	-2.358	776.4	834.4	774.8	747.9	49.8	370.0	3.7	26.3	0.6608	0.6778	1227.0	1214.7	1.1995	0.9164	1409.3	1128.2
9	-5.691	-5.417	816.6	886.6	814.5	802.9	58.7	376.0	4.1	25.0	0.6948	0.7194	1313.0	1295.1	1.2724	0.9903	1495.5	1220.4
10	-6.772	-6.617	804.1	906.0	801.8	814.2	61.1	397.2	4.3	25.9	0.6810	0.7316	1341.9	1322.7	1.2797	0.9955	1511.1	1232.7
11	-8.031	-8.082	770.7	875.1	767.7	781.9	68.1	392.8	5.0	26.6	0.6458	0.7062	1370.8	1350.7	1.2671	0.9894	1512.2	1236.5

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	-1.77	2.55	16.98	51.13	66.35	84.38	0.2957	0.3596	0.0818	1.7106	77.62	75.88	47.71	-3.42	-795.7	57.9	2.9993
2	-1.68	2.77	13.79	48.30	68.33	84.58	0.3312	0.3888	0.0908	1.6597	73.90	71.99	48.27	-0.03	-828.4	0.5	2.9439
3	-1.63	2.95	11.88	44.37	70.35	83.10	0.3692	0.4318	0.1031	1.5776	68.26	66.18	48.72	4.35	-859.3	-70.0	2.8298
4	-2.35	2.45	9.38	30.46	74.05	85.13	0.3596	0.3679	0.0896	1.4362	64.73	62.91	49.41	18.94	-927.0	-306.8	2.6370
5	0.69	5.27	7.08	18.65	70.01	83.84	0.3111	0.2408	0.0557	1.3654	69.33	67.97	54.16	35.31	-1059.4	-595.2	2.4249
6	3.10	7.44	8.64	12.62	65.53	72.92	0.3157	0.2567	0.0540	1.2864	62.17	60.83	57.47	44.85	-1132.0	-729.0	2.2065
7	2.21	6.29	8.71	9.12	68.27	71.99	0.2969	0.2455	0.0501	1.2442	59.11	57.85	57.08	47.96	-1156.2	-795.9	2.1668
8	1.19	5.00	6.07	8.15	71.13	76.37	0.2675	0.2035	0.0423	1.2453	63.35	62.21	56.58	48.39	-1177.2	-844.6	2.2118
9	0.05	2.73	1.60	8.16	74.49	83.19	0.2549	0.1758	0.0405	1.2756	67.45	66.32	56.86	48.70	-1254.3	-919.1	2.3329
10	0.60	2.78	1.81	9.32	72.72	84.05	0.2634	0.1758	0.0423	1.3076	69.26	68.09	57.80	48.48	-1280.8	-925.5	2.3730
11	1.84	3.54	4.97	8.73	68.34	79.68	0.2623	0.1557	0.0373	1.3144	72.48	71.40	59.35	50.63	-1302.8	-557.9	2.3192

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 %
1.3821	2.4525	76.20	78.96	41.72	1.1398	1.3711	67.05	68.47

STATOR 2

RUN NO 13, SPEED CODE 15, 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	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	6.829	0.647	1440.7	1131.0	1067.6	1103.5	967.5	-247.8	42.5	-12.6	1.2045	0.8972	2.5490	1.4814	1.4542	1.2167
2	7.921	0.385	1402.5	1142.1	1048.5	1120.5	931.5	-221.5	41.9	-11.2	1.1684	0.9103	2.6008	1.4733	1.4687	1.2150
3	6.938	0.047	1345.4	1150.2	1015.7	1126.2	882.6	-233.6	41.2	-11.7	1.1159	0.9228	2.6509	1.4595	1.4802	1.2096
4	3.875	-0.948	1209.2	1079.0	976.1	1068.0	713.7	-153.4	36.2	-8.2	0.9962	0.8713	2.5310	1.4183	1.3794	1.1731
5	0.886	-1.660	1047.2	986.4	909.3	971.7	519.5	-169.7	29.7	-5.9	0.8574	0.8009	2.3520	1.3741	1.3233	1.1366
6	-0.744	-1.843	914.5	904.0	804.3	889.3	435.2	-162.0	28.4	-10.3	0.7421	0.7332	2.1969	1.3519	1.2802	1.1221
7	-1.769	-1.868	879.2	851.9	786.2	840.0	393.4	-141.7	26.6	-5.6	0.7152	0.6909	2.1095	1.3374	1.2112	1.1105
8	-2.712	-1.750	894.3	853.9	813.9	842.6	370.7	-138.6	24.5	-9.3	0.7314	0.6951	2.1099	1.3292	1.1677	1.1035
9	-4.714	-1.337	950.6	934.2	872.1	925.5	378.1	-127.6	23.5	-7.8	0.7772	0.7624	2.2153	1.3459	1.2114	1.1079
10	-5.289	-1.241	976.2	957.5	890.6	950.4	399.8	-116.2	24.2	-7.0	0.7951	0.7781	2.2372	1.3630	1.2327	1.1161
11	-5.939	-1.150	958.4	950.1	873.0	944.0	395.7	-107.6	24.5	-6.5	0.7744	0.7669	2.2016	1.3773	1.2477	1.1130

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	-3.48	-1.92	1.68	55.11	87.43	99.97	0.4055	0.2548	0.0562	0.8495	56.04	63.36	67.73	51.69	54.14
2	-3.66	-1.04	2.58	53.03	87.77	103.07	0.3766	0.2085	0.0471	0.8805	59.42	66.04	70.17	53.57	55.98
3	-2.96	-0.46	1.63	52.90	86.59	105.55	0.3430	0.1258	0.0289	0.9313	70.03	69.60	73.38	56.15	58.47
4	-6.83	-2.96	4.64	44.41	88.32	102.35	0.2870	0.0877	0.0216	0.9588	69.92	72.37	75.66	55.24	57.20
5	-12.48	-7.18	2.90	39.63	87.17	94.05	0.2359	0.0834	0.0220	0.9682	44.81	73.76	76.66	60.61	62.12
6	-13.50	-7.72	2.40	38.71	77.31	85.59	0.1929	0.0176	0.0048	0.9943	40.27	71.44	74.36	59.54	60.91
7	-15.17	-9.18	3.10	36.12	76.34	80.65	0.2018	0.0922	0.0255	0.9736	-17.40	70.26	73.15	50.42	51.71
8	-17.08	-10.87	3.27	33.80	80.33	81.22	0.2074	0.1543	0.0432	0.9537	-42.36	72.08	74.80	48.44	49.66
9	-17.63	-11.14	4.83	31.30	86.92	88.48	0.1731	0.1530	0.0445	0.9497	-274.96	73.57	76.30	51.89	53.15
10	-17.73	-10.85	6.31	31.19	88.03	89.63	0.1754	0.1676	0.0492	0.9429	-261.03	71.06	74.08	52.70	54.06
11	-18.78	-11.68	7.94	30.95	84.67	87.38	0.1661	0.1551	0.0460	0.9493	-425.35	66.84	70.23	57.37	58.66

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 %	EFF-P TOT-STG %
11235.	189.50	1.3821	2.3277	71.22	74.36	1.1398	0.9491	55.54	-599.04

TABLE XXIV (d) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

105% OF DESIGN SPEED

STATOR 1 ($\beta^{*}_{des.} - \beta^{*}_{act.}$) = –5°

STATOR 2 ($\beta^{*}_{des.} - \beta^{*}_{act.}$) = +2.5°

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 13, SPEED CODE 15, POINT NO 14

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'-1	V'-1 FT/SEC	V'-2 FT/SEC
1	16.830	18.497	647.1	1096.6	647.1	616.6	0.0	906.8	0.0	55.8	0.5959	0.9685	658.6	762.5	0.8560	0.5553	923.3	633.3
2	14.471	16.292	661.8	1048.3	661.8	619.5	0.0	845.7	0.0	53.8	0.6146	0.9207	716.2	799.4	0.9015	0.5456	970.8	621.2
3	12.265	14.231	676.7	1013.3	676.7	633.9	0.0	750.6	0.0	51.3	0.6295	0.8870	760.8	836.3	0.9472	0.5563	1018.2	635.5
4	6.416	8.706	714.7	946.0	714.7	623.5	0.0	711.4	0.0	48.8	0.6679	0.8183	905.8	947.0	1.0782	0.5766	1153.8	666.6
5	0.626	2.426	744.0	846.5	744.0	556.5	0.0	637.9	0.0	48.9	0.6979	0.7201	1086.7	1094.6	1.2354	0.6125	1317.0	719.9
6	-1.362	-0.441	751.9	803.0	751.9	534.9	0.0	598.9	0.0	48.2	0.7061	0.6795	1173.8	1168.3	1.3089	0.6610	1394.0	781.2
7	-2.489	-1.847	754.4	821.0	754.4	578.0	0.0	583.0	0.0	45.2	0.7087	0.6959	1216.8	1205.2	1.3448	0.7198	1431.7	849.3
8	-3.937	-3.229	755.2	835.7	755.2	616.0	0.0	564.8	0.0	42.5	0.7095	0.7097	1259.7	1242.1	1.3798	0.7775	1468.7	915.6
9	-8.791	-7.337	741.9	835.5	741.9	625.8	0.0	553.5	0.0	41.4	0.6957	0.7047	1387.9	1352.8	1.4758	0.8562	1573.7	1015.1
10	-10.392	-8.760	732.4	823.1	732.4	601.4	0.0	561.9	0.0	43.0	0.6860	0.6901	1430.6	1389.7	1.5053	0.8579	1607.2	1023.2
11	-11.614	-10.177	721.8	790.0	721.8	534.1	0.0	582.1	0.0	47.3	0.6752	0.6554	1473.3	1426.6	1.5346	0.8289	1640.6	999.2

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	-1.08	3.53	14.75	58.51	41.59	49.55	0.5462	0.0613	0.0131	1.9737	96.88	96.58	45.31	-13.20	-658.6	144.3	1.9737
2	-1.00	3.30	15.32	51.10	42.19	51.15	0.5724	0.0598	0.0137	1.9435	96.64	96.32	46.82	-4.28	-710.2	46.3	1.9435
3	-0.83	3.27	15.67	44.04	42.77	53.64	0.5704	0.0356	0.0085	1.9327	97.80	97.59	48.18	4.13	-760.8	-45.7	1.9327
4	0.15	3.59	11.05	30.89	44.14	55.16	0.5909	0.0580	0.0145	1.9264	95.66	95.26	51.63	20.74	-905.8	-235.7	1.9264
5	1.08	3.76	9.11	16.21	45.10	50.64	0.5996	0.1356	0.0315	1.8639	87.95	86.87	55.59	39.39	-1086.7	-456.7	1.8639
6	1.42	3.70	9.44	10.57	45.34	49.35	0.5745	0.1454	0.0315	1.8424	86.13	84.91	57.36	46.78	-1173.8	-569.4	1.8424
7	1.62	3.72	6.78	11.11	45.42	54.12	0.5374	0.1091	0.0241	1.8906	89.43	88.46	58.20	47.09	-1216.8	-622.2	1.8906
8	1.84	3.79	4.84	11.36	45.44	58.50	0.5028	0.0732	0.0164	1.9338	92.75	92.06	59.06	47.70	-1259.7	-677.4	1.9338
9	2.86	4.28	5.08	10.03	45.03	59.93	0.4788	0.0989	0.0217	1.9676	89.75	88.75	61.91	51.88	-1387.9	-799.3	1.9676
10	3.25	4.54	6.92	9.01	44.73	57.17	0.4888	0.1399	0.0298	1.9516	85.42	84.01	62.93	53.92	-1430.6	-827.8	1.9516
11	3.58	4.74	11.24	6.33	44.38	49.94	0.5204	0.2138	0.0423	1.9023	77.72	75.65	63.92	57.58	-1473.3	-844.4	1.9023

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 %
1.2291	1.9183	89.18	90.11	42.93	1.2291	1.9183	89.18	90.11

STATOR 1

RUN NO 13, SPEED CODE 15, POINT NO 14

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	18.308	15.084	1097.9	624.4	646.0	618.3	887.8	86.9	54.2	7.9	0.9699	0.5196	1.8163	1.2218	1.8163	1.2218
2	16.116	13.497	1054.1	629.2	648.6	622.0	830.9	94.9	52.2	8.6	0.9266	0.5249	1.8313	1.2169	1.8313	1.2169
3	14.120	11.986	1022.4	638.4	662.5	630.6	778.8	99.2	49.7	8.9	0.8963	0.5342	1.8503	1.2121	1.8503	1.2121
4	8.921	7.741	961.9	655.2	653.9	650.6	705.5	77.5	47.2	6.8	0.8340	0.5481	1.8825	1.2160	1.8825	1.2160
5	2.694	2.232	867.5	627.6	589.2	625.3	636.8	54.1	47.2	4.9	0.7399	0.5220	1.8483	1.2239	1.8483	1.2239
6	-0.336	-0.442	825.7	594.0	567.8	592.9	599.5	35.6	46.6	3.4	0.7005	0.4925	1.8087	1.2245	1.8087	1.2245
7	-1.687	-1.585	843.0	633.0	607.8	631.1	584.2	48.9	43.9	4.4	0.7164	0.5263	1.8498	1.2254	1.8498	1.2254
8	-2.809	-2.613	857.9	664.5	644.3	661.9	566.5	58.5	41.3	5.1	0.7305	0.5542	1.8874	1.2249	1.8874	1.2249
9	-5.617	-5.718	861.1	690.5	657.1	686.1	556.4	78.2	40.3	6.5	0.7285	0.5735	1.9219	1.2401	1.9219	1.2401
10	-6.568	-6.766	850.9	674.8	636.2	670.8	565.1	72.8	41.7	6.2	0.7158	0.5572	1.9028	1.2502	1.9028	1.2502
11	-7.736	-7.914	820.2	634.0	573.2	631.2	586.7	59.7	45.8	5.4	0.6827	0.5182	1.8543	1.2662	1.8543	1.2662

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	-3.38	-1.27	15.25	46.25	51.86	61.63	0.5728	0.1764	0.0357	0.9206	60.09	83.73	85.02	83.73	85.02
2	-3.66	-1.26	14.85	43.56	53.31	62.60	0.5446	0.1357	0.0285	0.9422	83.72	86.91	87.95	86.91	87.95
3	-4.79	-2.01	14.29	40.83	55.66	64.08	0.5165	0.1050	0.0229	0.9573	86.61	90.56	91.32	90.56	91.32
4	-4.79	-1.07	11.05	40.44	57.21	66.57	0.4747	0.0627	0.0152	0.9770	90.66	91.62	92.32	91.62	92.32
5	-3.29	1.76	9.26	42.27	52.92	63.24	0.4578	0.0268	0.0073	0.9915	95.15	85.59	86.76	85.59	86.76
6	-3.47	2.15	7.80	43.11	51.70	59.49	0.4752	0.0676	0.0191	0.9813	88.07	82.11	83.52	82.11	83.52
7	-5.93	-0.05	8.81	39.45	56.15	63.66	0.4362	0.0819	0.0239	0.9762	84.21	85.14	86.35	85.14	86.35
8	-8.26	-2.11	9.45	36.29	60.34	67.19	0.4025	0.0846	0.0250	0.9747	82.35	88.37	89.35	88.37	89.35
9	-9.31	-2.43	12.06	33.79	61.97	69.33	0.3732	0.0781	0.0242	0.9768	81.63	85.36	86.62	85.36	86.62
10	-8.26	-1.21	12.99	35.47	59.53	67.15	0.3925	0.0875	0.0275	0.9747	80.09	80.58	82.23	80.58	82.23
11	-4.86	2.29	13.74	40.34	52.70	62.02	0.4354	0.0944	0.0301	0.9747	79.80	72.37	74.63	72.37	74.63

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 %	EFF-P TOT-STG %
11206.	189.00	1.2291	1.8677	85.19	86.41	1.2291	0.9736	85.19	189.29

ROTOR 2

RUN NO 13, SPEED CODE 15, POINT NO 14

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	11.744	11.143	665.1	1134.8	663.7	632.7	84.3	942.1	7.2	56.0	0.5590	0.9037	873.8	916.5	0.8617	0.5042	1031.5	633.2
2	11.096	9.946	681.1	1118.0	674.8	634.6	92.4	920.5	7.8	55.3	0.5708	0.8908	898.5	935.7	0.8811	0.5057	1051.3	634.7
3	10.284	8.814	697.8	1100.4	691.0	648.5	97.2	889.0	8.0	53.8	0.5871	0.8783	924.0	955.6	0.9066	0.5203	1077.6	651.9
4	7.689	5.646	738.4	1023.3	734.4	693.4	76.7	752.6	6.0	47.4	0.6228	0.8150	1003.1	1019.2	0.5970	0.5917	1182.1	742.5
5	2.027	1.500	728.6	900.4	726.5	637.2	54.6	636.1	4.3	45.0	0.6117	0.7682	1112.1	1111.3	1.0771	0.6252	1283.0	794.9
6	-0.588	-0.572	696.8	835.8	695.9	591.6	35.6	590.4	2.9	44.9	0.5830	0.6530	1167.6	1160.4	1.1119	0.6418	1326.8	821.5
7	-1.849	-1.618	727.3	835.1	725.7	599.8	48.3	581.1	3.8	44.0	0.6102	0.6528	1195.6	1185.7	1.1389	0.6657	1357.6	851.7
8	-3.013	-2.662	753.9	851.1	751.7	615.2	58.3	588.1	4.4	43.6	0.6344	0.6657	1223.8	1211.5	1.1670	0.6850	1386.9	875.8
9	-6.044	-5.772	778.1	871.6	774.1	619.2	79.2	613.4	5.8	44.6	0.6522	0.6758	1309.6	1291.8	1.2184	0.7122	1453.7	918.5
10	-6.970	-6.850	765.9	872.4	762.3	613.1	74.2	620.6	5.5	45.2	0.6384	0.6720	1338.4	1319.2	1.2305	0.7160	1476.2	929.6
11	-8.059	-8.156	730.3	850.3	727.7	610.8	60.6	591.6	4.7	43.9	0.6021	0.6499	1367.3	1347.3	1.2333	0.7426	1495.7	971.7

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	VE'-1 FT/SEC	VE'-2 FT/SEC	PO/PO INLET
1	0.41	4.72	18.10	52.19	64.83	72.23	0.5806	0.2338	0.0532	1.7689	86.30	85.16	49.89	-2.30	-789.5	25.5	3.2123
2	0.13	4.58	15.19	48.71	66.29	74.01	0.5838	0.2142	0.0500	1.7677	86.97	85.88	50.08	1.37	-806.2	-15.2	3.2328
3	-0.18	4.40	13.38	44.32	68.27	77.47	0.5726	0.1836	0.0438	1.7436	88.23	87.25	50.18	5.85	-826.8	-66.6	3.2559
4	-0.06	4.73	11.48	30.64	72.15	87.24	0.5157	0.0984	0.0236	1.7161	92.21	91.59	51.69	21.05	-926.3	-266.6	3.2270
5	2.06	6.63	8.50	18.80	70.11	82.43	0.5065	0.0811	0.0184	1.6579	92.23	91.66	55.53	36.72	-1057.4	-475.2	3.0714
6	4.02	8.36	7.69	14.49	66.67	76.76	0.5031	0.0886	0.0189	1.6427	91.05	90.40	58.39	43.90	-1132.1	-570.0	2.9765
7	2.76	6.84	5.91	12.47	69.92	78.45	0.4904	0.0908	0.0195	1.6276	90.43	89.74	57.64	45.17	-1147.3	-604.6	2.9956
8	1.73	5.54	2.98	11.62	72.91	81.06	0.4861	0.1063	0.0234	1.6215	88.53	87.72	57.11	45.30	-1165.5	-623.4	3.0474
9	0.89	3.57	0.37	10.24	74.86	81.64	0.4944	0.1408	0.0332	1.6282	84.58	83.49	57.70	47.46	-1230.4	-678.4	3.1295
10	1.57	3.75	1.89	10.20	73.07	80.26	0.5022	0.1508	0.0362	1.6446	83.71	82.53	58.77	48.57	-1264.2	-698.7	3.1384
11	3.24	4.94	5.25	9.85	68.43	79.19	0.4823	0.1121	0.0267	1.6676	87.75	86.83	60.75	50.91	-1306.7	-755.7	3.0990

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 %
1.4479	3.1237	85.47	87.57	40.12	1.1780	1.6725	88.19	89.02

STATOR 2

RUN NO 13, SPEED CODE 15, POINT NO 14

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	8.408	0.740	1156.3	642.5	683.4	641.7	932.7	-32.3	54.0	-2.9	0.9236	0.4858	3.0537	1.4737	1.6816	1.2061
2	7.147	0.570	1138.9	659.7	681.5	659.5	912.5	-14.5	53.4	-1.3	0.9101	0.5006	3.0881	1.4672	1.6901	1.2044
3	5.961	0.349	1120.8	681.8	691.3	681.7	882.3	-11.7	52.1	-1.0	0.8971	0.5201	3.1328	1.4572	1.6991	1.2007
4	3.177	-0.283	1043.0	683.3	725.5	682.9	749.3	-23.6	46.0	-2.0	0.8328	0.5253	3.1484	1.4360	1.6759	1.1819
5	0.667	-0.679	921.8	618.7	667.7	616.6	635.5	-50.9	43.6	-4.7	0.7267	0.4745	3.0418	1.4292	1.6388	1.1686
6	-0.494	-0.693	859.7	568.4	624.6	565.7	590.8	-55.8	43.4	-5.6	0.6733	0.4345	2.9664	1.4292	1.6310	1.1674
7	-1.122	-0.652	859.7	562.8	633.0	560.2	581.8	-53.4	42.5	-5.4	0.6737	0.4302	2.9570	1.4281	1.6186	1.1659
8	-1.803	-0.597	876.8	588.8	649.1	587.0	589.5	-46.1	42.2	-4.5	0.6876	0.4507	2.9921	1.4289	1.6026	1.1663
9	-4.067	-0.815	905.0	660.5	662.6	660.5	616.5	-7.2	43.0	-0.6	0.7042	0.5031	3.0842	1.4568	1.6058	1.1769
10	-4.970	-0.967	910.3	670.2	662.4	670.2	624.4	0.2	43.4	0.0	0.7040	0.5075	3.0879	1.4749	1.6167	1.1828
11	-5.886	-1.056	895.0	646.3	668.0	646.0	595.7	-22.0	41.8	-1.9	0.6871	0.4857	3.0379	1.4918	1.6334	1.1796

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	8.06	9.62	11.43	56.96	76.81	90.60	0.6322	0.1164	0.0263	0.9506	86.82	78.92	81.90	77.03	78.64
2	8.51	10.53	12.50	54.69	78.31	93.92	0.6079	0.1058	0.0243	0.9560	87.51	80.97	83.68	78.50	80.02
3	7.91	10.42	12.36	53.04	81.39	98.23	0.5794	0.0905	0.0212	0.9631	88.73	84.00	86.31	80.86	82.22
4	2.91	6.77	10.84	47.95	90.12	100.10	0.5324	0.0689	0.0171	0.9746	90.30	88.54	90.21	86.74	87.67
5	1.35	6.66	8.09	48.27	85.34	89.87	0.5339	0.0455	0.0121	0.9862	92.94	86.80	88.67	89.19	89.92
6	1.47	7.26	7.09	48.99	80.06	81.82	0.5540	0.0313	0.0086	0.9915	95.02	84.52	86.66	88.94	89.68
7	0.82	6.81	7.22	47.99	81.74	81.00	0.5516	0.0342	0.0095	0.9911	94.51	84.45	86.60	88.20	88.98
8	0.66	6.86	8.12	46.69	84.37	85.07	0.5297	0.0456	0.0129	0.9878	92.50	85.36	87.40	86.11	87.00
9	1.65	8.35	12.04	43.58	85.81	94.51	0.4715	0.0477	0.0140	0.9866	90.98	82.72	85.19	81.25	82.45
10	1.40	8.28	13.29	43.34	84.99	94.63	0.4669	0.0564	0.0167	0.9841	89.19	79.65	82.55	79.78	81.10
11	-1.41	5.69	12.48	43.77	84.64	89.63	0.4855	0.0744	0.0222	0.9799	86.35	75.58	79.01	82.99	84.13

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 %	EFF-P TOT-STG %
11206.	189.00	1.4479	3.0622	83.73	86.04	1.1780	0.9803	84.54	243.53

TABLE XXV (a) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

105% OF DESIGN SPEED

STATOR 1 ($\beta^*_{des.} - \beta^*_{act.}$) = −7.5°

STATOR 2 ($\beta^*_{des.} - \beta^*_{act.}$) = +2.5°

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 16, 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	16.890	18.351	643.6	1041.8	643.6	580.9	0.0	864.8	0.0	56.1	0.5964	0.9161	660.1	764.2	0.8544	0.5184	922.0	589.5
2	14.559	16.030	658.4	1002.5	658.4	599.6	0.0	803.4	0.0	53.3	0.6111	0.8784	711.8	801.2	0.9000	0.5253	969.6	599.6
3	12.354	13.891	673.0	960.5	673.0	608.5	0.0	743.1	0.0	50.7	0.6258	0.8390	762.9	838.2	0.9457	0.5379	1017.1	615.9
4	6.512	8.266	709.3	893.0	709.3	608.2	0.0	653.9	0.0	47.1	0.6624	0.7730	907.9	949.2	1.0759	0.5851	1152.1	676.0
5	0.680	1.970	734.0	806.2	734.0	554.4	0.0	585.4	0.0	46.6	0.6876	0.6881	1089.2	1097.0	1.2304	0.6438	1313.4	754.4
6	-1.055	-0.800	739.6	746.4	739.6	510.7	0.0	544.3	0.0	46.8	0.6934	0.6332	1176.4	1171.0	1.3028	0.6858	1389.6	808.4
7	-2.005	-2.110	741.8	760.6	741.8	549.0	0.0	526.3	0.0	43.8	0.6957	0.6464	1219.5	1207.9	1.3386	0.7438	1427.4	875.2
8	-3.365	-3.399	742.8	780.0	742.8	588.6	0.0	511.8	0.0	41.0	0.6967	0.6642	1262.5	1244.9	1.3739	0.8006	1464.8	940.2
9	-8.229	-7.352	732.0	793.0	732.0	617.3	0.0	497.8	0.0	38.8	0.6856	0.6726	1391.0	1355.8	1.4722	0.8965	1571.9	1057.0
10	-9.933	-8.761	723.3	789.9	723.3	604.1	0.0	508.9	0.0	40.0	0.6767	0.6665	1433.8	1392.8	1.5024	0.9034	1606.0	1070.6
11	-11.314	-10.187	713.1	762.0	713.1	551.0	0.0	526.4	0.0	43.6	0.6663	0.6370	1476.6	1429.8	1.5321	0.8847	1639.8	1058.2

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	-0.85	3.76	18.11	55.38	41.45	48.17	0.5821	0.0349	0.0076	1.9372	98.17	98.00	45.53	-9.84	-660.1	100.6	1.9372
2	-0.77	3.53	19.39	47.26	42.05	51.08	0.5834	0.0078	0.0018	1.9244	99.55	99.52	47.05	-0.21	-711.8	2.2	1.9244
3	-0.60	3.50	20.41	39.52	42.63	52.95	0.5775	-0.0060	-0.0014	1.8976	100.39	100.44	48.40	8.88	-762.5	-95.0	1.8976
4	0.40	3.87	16.22	26.00	43.96	55.02	0.5684	0.0081	0.0019	1.8812	99.35	99.30	51.91	25.91	-907.9	-295.2	1.8812
5	1.50	4.18	12.43	13.31	44.78	51.18	0.5602	0.0880	0.0194	1.8256	91.73	91.01	56.02	42.71	-1089.2	-511.6	1.8256
6	1.91	4.19	13.48	7.02	44.96	47.52	0.5405	0.1151	0.0230	1.7775	88.26	87.29	57.84	50.82	-1176.4	-626.6	1.7775
7	2.09	4.20	10.83	7.54	45.03	51.75	0.5042	0.0808	0.0164	1.8142	91.60	90.89	58.68	51.14	-1219.5	-681.6	1.8142
8	2.30	4.25	8.37	8.29	45.06	56.21	0.4717	0.0461	0.0096	1.8584	95.12	94.65	59.51	51.22	-1262.5	-733.1	1.8584
9	3.20	4.62	7.41	8.04	44.72	59.70	0.4383	0.0517	0.0107	1.9102	94.27	93.74	62.24	54.21	-1391.0	-858.0	1.9102
10	3.56	4.85	8.57	7.67	44.43	58.05	0.4467	0.0901	0.0184	1.9081	90.02	89.10	63.24	55.57	-1433.8	-883.9	1.9081
11	3.88	5.04	12.18	5.70	44.09	52.17	0.4716	0.1583	0.0305	1.8681	82.49	80.91	64.22	58.52	-1476.6	-903.4	1.8681

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 %
1.2102	1.8689	92.96	93.54	42.65	1.2102	1.8689	92.96	93.54

STATOR 1

RUN NO 16, 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	18.147	14.941	1044.9	636.8	612.4	625.5	846.6	119.7	54.3	10.7	0.9192	0.5328	1.7522	1.2120	1.7522	1.2120
2	15.864	13.246	1009.9	643.8	630.1	633.9	789.2	112.7	51.5	10.0	0.8859	0.5402	1.7690	1.2066	1.7690	1.2066
3	13.837	11.645	971.1	649.4	638.1	640.5	732.1	107.3	49.0	9.5	0.8496	0.5468	1.7834	1.1999	1.7834	1.1999
4	8.638	7.227	909.7	673.7	637.9	664.8	648.6	109.5	45.5	9.3	0.7892	0.5688	1.8235	1.1990	1.8235	1.1990
5	2.471	1.658	824.8	651.5	584.8	642.4	584.5	108.2	45.0	9.6	0.7074	0.5472	1.7921	1.2060	1.7921	1.2060
6	-0.656	-1.012	768.8	608.3	542.4	602.3	544.8	85.1	45.1	8.0	0.6538	0.5093	1.7413	1.2044	1.7413	1.2044
7	-2.058	-2.145	782.8	637.6	578.4	630.9	527.4	92.6	42.4	8.4	0.6669	0.5354	1.7724	1.2039	1.7724	1.2039
8	-3.193	-3.127	802.3	669.7	616.5	662.2	513.4	99.8	39.8	8.6	0.6849	0.5638	1.8104	1.2044	1.8104	1.2044
9	-5.932	-6.053	818.5	710.4	647.4	700.8	500.7	116.8	37.8	9.5	0.6962	0.5973	1.8670	1.2165	1.8670	1.2165
10	-6.807	-7.025	817.5	704.6	637.2	694.2	512.1	120.7	38.9	9.9	0.6920	0.5892	1.8598	1.2273	1.8598	1.2273
11	-7.900	-8.064	792.1	673.6	588.2	662.3	530.5	122.5	42.2	10.5	0.6644	0.5583	1.8211	1.2413	1.8211	1.2413

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	-5.75	-3.64	15.58	43.57	50.66	60.24	0.5247	0.2269	0.0456	0.9045	71.54	81.91	83.26	81.91	83.26
2	-6.82	-4.42	13.73	41.52	53.38	61.67	0.4981	0.2022	0.0423	0.9191	72.95	85.61	86.70	85.61	86.70
3	-8.02	-5.23	12.35	39.55	55.09	62.96	0.4679	0.1604	0.0349	0.9396	76.83	89.83	90.61	89.83	90.61
4	-9.00	-5.28	11.10	36.17	57.07	66.09	0.4009	0.0920	0.0222	0.9689	83.50	94.01	94.48	94.01	94.48
5	-8.03	-2.98	11.36	35.42	53.34	63.13	0.3676	0.0642	0.0173	0.9818	85.66	87.98	88.91	87.98	88.91
6	-7.39	-1.78	9.91	37.08	49.86	58.68	0.3779	0.0779	0.0221	0.9807	81.80	83.95	85.13	83.95	85.13
7	-9.93	-4.05	10.24	34.02	53.86	61.78	0.3494	0.0968	0.0280	0.9749	75.52	87.06	88.04	87.06	88.04
8	-12.29	-6.14	10.51	31.24	58.13	65.25	0.3202	0.1016	0.0298	0.9725	71.76	90.32	91.08	90.32	91.08
9	-14.33	-7.46	12.54	28.29	61.69	69.23	0.2804	0.0822	0.0253	0.9773	71.98	90.09	90.91	90.09	90.91
10	-13.57	-6.52	14.17	28.97	60.29	68.01	0.2919	0.0926	0.0289	0.9747	69.56	85.25	86.46	85.25	86.46
11	-10.98	-3.83	16.34	31.43	54.79	63.88	0.3174	0.0981	0.0309	0.9749	69.61	77.32	79.12	77.32	79.12

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 %	EFF-P TOT-STG %
11232.	187.80	1.2102	1.8083	87.64	88.61	1.2102	0.9675	87.64	190.03

ROTOR 2

RUN NO 16, 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	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	11.638	11.259	692.9	1349.6	683.0	917.8	116.4	989.4	9.6	47.0	0.5826	1.1145	875.8	918.6	0.8589	0.7602	1021.4	920.6
2	10.665	10.120	706.3	1336.2	697.7	923.5	109.9	965.7	9.0	46.2	0.5961	1.1033	900.6	937.8	0.8900	0.7629	1054.5	924.0
3	9.948	9.010	718.9	1308.9	711.2	920.0	105.0	931.0	8.4	45.3	0.6093	1.0801	926.1	957.8	0.9207	0.7595	1086.2	920.4
4	6.590	5.840	762.4	1199.6	754.7	923.6	108.1	765.5	8.2	39.7	0.6495	0.9883	1005.3	1021.5	0.9589	0.7896	1172.5	958.4
5	1.369	1.518	752.5	1004.9	744.6	829.7	108.3	566.9	8.3	34.4	0.6383	0.8197	1114.6	1113.8	1.0619	0.8106	1251.8	993.7
6	-1.096	-0.616	712.1	867.0	706.9	731.7	85.5	465.1	6.9	32.4	0.6019	0.7023	1170.2	1163.0	1.0945	0.8190	1294.7	1011.2
7	-2.144	-1.608	735.3	845.5	729.4	728.0	92.8	429.9	7.2	30.5	0.6232	0.6867	1198.3	1188.3	1.1226	0.8539	1324.5	1051.3
8	-3.126	-2.615	764.2	872.3	757.6	769.1	100.2	411.6	7.5	28.1	0.6496	0.7127	1226.6	1214.2	1.1539	0.9082	1357.5	1111.7
9	-6.240	-5.881	806.2	923.9	797.6	819.3	117.8	427.1	8.4	27.4	0.6849	0.7538	1312.6	1294.7	1.2203	0.9736	1436.5	1193.3
10	-7.249	-7.045	803.0	922.7	793.7	813.9	122.0	434.8	8.7	28.0	0.6787	0.7484	1341.4	1322.2	1.2297	0.9766	1455.0	1204.1
11	-8.290	-8.339	775.9	896.1	765.9	787.8	124.1	427.1	9.2	28.3	0.6496	0.7207	1370.4	1350.3	1.2248	0.9761	1462.8	1213.7

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	V0'-1 FT/SEC	V0'-2 FT/SEC	PO/PO INLET
1	-1.52	2.80	16.00	52.36	64.08	76.37	0.2991	0.5255	0.1194	1.5893	68.24	66.13	47.96	-4.40	-759.4	70.8	2.7847
2	-1.39	3.06	12.09	50.29	65.88	78.92	0.3167	0.4948	0.1155	1.5961	68.65	66.54	48.56	-1.73	-790.6	27.9	2.8217
3	-1.22	3.36	9.19	47.47	67.57	80.70	0.3367	0.4769	0.1142	1.5813	67.90	65.79	49.13	1.66	-821.0	-26.8	2.8179
4	-1.75	3.04	5.94	34.49	71.68	86.83	0.3260	0.3605	0.0894	1.4915	68.78	66.99	50.00	15.51	-897.3	-256.0	2.7166
5	0.04	4.61	5.18	20.10	69.60	81.20	0.3091	0.2827	0.0669	1.3389	65.29	63.85	53.51	33.40	-1006.2	-546.9	2.4020
6	2.51	6.85	7.40	13.27	65.64	71.62	0.3036	0.2883	0.0619	1.2496	57.24	55.90	56.88	43.61	-1084.7	-697.9	2.1802
7	1.67	5.75	6.86	10.43	68.08	72.04	0.2816	0.2643	0.0559	1.2220	56.28	55.04	56.54	46.11	-1105.6	-758.5	2.1596
8	0.63	4.44	3.82	9.87	71.08	77.40	0.2501	0.2136	0.0464	1.2321	62.02	60.91	56.01	46.14	-1126.4	-802.7	2.2224
9	-0.65	2.03	-0.60	9.66	74.80	83.52	0.2421	0.1905	0.0458	1.2570	65.12	63.98	56.16	46.50	-1194.7	-867.6	2.3441
10	-0.39	1.79	0.65	9.49	73.86	82.38	0.2487	0.1976	0.0486	1.2587	64.07	62.89	56.81	47.32	-1219.4	-887.4	2.3431
11	0.79	2.49	3.73	8.91	70.18	78.76	0.2472	0.1868	0.0459	1.2579	65.41	64.28	58.30	49.39	-1246.3	-923.2	2.2939

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 %
1.3748	2.4453	77.00	79.65	40.86	1.1376	1.3523	65.03	66.47

STATOR 2

RUN NO 16, 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	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	8.571	0.515	1417.4	1120.1	1024.4	1104.1	979.6	-189.0	44.0	-9.7	1.1857	0.8914	2.4993	1.4693	1.4264	1.2123
2	7.467	0.193	1402.0	1128.9	1024.2	1093.0	957.5	-280.9	43.3	-14.4	1.1719	0.9009	2.5380	1.4644	1.4363	1.2130
3	6.416	-0.128	1373.5	1135.0	1015.9	1111.3	924.4	-231.2	42.5	-11.7	1.1467	0.9105	2.5757	1.4546	1.4460	1.2112
4	3.731	-0.976	1259.8	1093.8	1002.1	1087.2	763.4	-120.5	37.4	-6.3	1.0482	0.8864	2.5249	1.4148	1.3868	1.1801
5	0.944	-1.648	1064.3	985.5	900.5	956.2	567.3	-238.6	32.2	-14.0	0.8751	0.8016	2.3142	1.3698	1.2892	1.1361
6	-0.689	-1.742	931.1	888.3	806.1	861.7	466.0	-216.1	30.0	-14.1	0.7598	0.7210	2.1400	1.3457	1.2256	1.1172
7	-1.656	-1.720	908.3	850.1	799.9	838.7	430.4	-138.5	28.3	-9.4	0.7431	0.6907	2.0793	1.3327	1.1774	1.1069
8	-2.564	-1.599	933.0	861.5	836.9	858.1	412.4	-76.7	26.2	-5.1	0.7679	0.7029	2.0949	1.3255	1.1622	1.1006
9	-4.505	-1.328	991.3	950.8	893.4	948.5	429.5	-66.0	25.7	-4.0	0.8156	0.7784	2.2187	1.3433	1.1900	1.1049
10	-5.157	-1.283	997.7	958.2	896.6	951.9	437.5	-110.0	26.1	-6.6	0.8168	0.7806	2.2127	1.3574	1.1887	1.1074
11	-5.906	-1.190	983.3	941.6	884.3	927.6	430.1	-161.5	26.0	-9.9	0.7993	0.7614	2.1620	1.3706	1.1858	1.1047

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	-1.97	-0.41	4.62	53.68	79.89	99.31	0.3953	0.1767	0.0394	0.8975	69.13	63.45	67.72	49.91	52.31
2	-1.64	0.38	-0.64	57.68	82.24	99.42	0.3978	0.1746	0.0389	0.9001	67.29	65.35	69.47	50.76	53.17
3	-1.68	0.82	1.60	54.21	83.96	102.50	0.3707	0.1541	0.0354	0.9139	67.88	67.99	71.85	52.23	54.61
4	-5.70	-1.83	6.49	43.69	89.57	102.99	0.3066	0.1418	0.0350	0.9288	60.04	72.77	76.01	54.05	56.10
5	-10.01	-4.71	-1.20	46.20	84.66	91.26	0.2788	0.1003	0.0260	0.9605	47.78	73.01	75.94	54.94	56.50
6	-11.89	-6.10	-1.35	44.07	76.01	81.77	0.2511	0.0652	0.0175	0.9789	44.74	70.00	72.97	50.69	52.06
7	-13.47	-7.48	3.30	37.63	76.30	79.63	0.2398	0.1215	0.0336	0.9628	21.50	69.75	72.65	44.27	45.51
8	-15.34	-9.13	7.51	31.31	81.23	81.91	0.2247	0.1738	0.0492	0.9438	2.20	72.12	74.81	43.42	44.58
9	-15.60	-8.90	8.69	25.67	87.22	90.00	0.1873	0.1506	0.0441	0.9467	-50.63	74.29	76.96	48.33	49.57
10	-15.90	-5.02	6.69	32.64	86.51	89.00	0.2022	0.1568	0.0461	0.9444	-59.41	71.08	74.06	46.87	48.13
11	-17.22	-10.12	4.57	35.88	83.78	85.06	0.2224	0.1670	0.0491	0.9427	-59.97	66.31	69.68	47.35	48.59

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 %	EFF-P TOT-STG %
11232.	187.80	1.3188	2.3004	71.09	74.21	1.1376	0.9407	51.41	-297.43

TABLE XXV (b) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

105% OF DESIGN SPEED

STATOR 1 $(\beta^{*}_{des.} - \beta^{*}_{act.}) = -7.5^{\circ}$

STATOR 2 $(\beta^{*}_{des.} - \beta^{*}_{act.}) = +2.5^{\circ}$

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 16, 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	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'-1	V'-1 FT/SEC	V'-2 FT/SEC
1	17.076	18.210	653.9	1035.0	653.9	558.9	0.0	871.1	0.0	57.3	0.6067	0.9085	659.8	763.8	0.8619	0.4996	928.9	569.1
2	14.842	15.789	667.7	1001.9	667.7	596.2	0.0	805.2	0.0	53.5	0.6204	0.8777	711.5	800.8	0.9067	0.5223	975.7	596.2
3	12.667	13.576	681.5	959.2	681.5	603.6	0.0	745.5	0.0	51.0	0.6343	0.8375	762.2	837.8	0.9516	0.5331	1022.4	610.6
4	6.958	7.878	714.1	896.0	714.1	602.2	0.0	663.4	0.0	47.8	0.6673	0.7748	907.4	948.7	1.0790	0.5763	1154.7	666.4
5	1.254	1.593	734.9	813.6	734.9	560.9	0.0	589.3	0.0	46.4	0.6885	0.6946	1088.7	1096.5	1.2306	0.6456	1313.5	756.2
6	-0.511	-1.145	738.9	755.1	738.9	521.8	0.0	545.9	0.0	46.3	0.6927	0.6411	1175.8	1170.4	1.3018	0.6909	1388.7	813.8
7	-1.505	-2.410	740.3	764.9	740.3	552.3	0.0	529.1	0.0	43.8	0.6941	0.6501	1218.9	1207.3	1.3371	0.7434	1426.1	874.7
8	-2.950	-3.640	740.6	783.7	740.6	591.7	0.0	513.9	0.0	41.0	0.6944	0.6674	1261.9	1244.3	1.3719	0.8005	1463.2	940.0
9	-6.099	-7.485	727.2	795.1	727.2	619.1	0.0	499.0	0.0	38.8	0.6807	0.6744	1390.3	1355.2	1.4686	0.8962	1569.0	1056.6
10	-9.890	-8.867	717.6	791.6	717.6	605.5	0.0	509.9	0.0	40.0	0.6709	0.6679	1433.2	1392.2	1.4984	0.9029	1602.8	1070.1
11	-11.310	-10.252	706.8	763.1	706.8	550.8	0.0	528.1	0.0	43.7	0.6599	0.6378	1475.9	1429.1	1.5278	0.8826	1634.4	1056.0

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	VØ'-1 FT/SEC	VØ'-2 FT/SEC	PO/PO INLET
1	-1.29	3.32	17.09	55.56	41.87	46.06	0.6079	0.0766	0.0166	1.9160	95.95	95.57	45.09	-10.87	-659.8	107.2	1.9160
2	-1.15	3.15	19.19	47.09	42.42	50.66	0.5881	0.0179	0.0041	1.9191	98.98	98.90	46.67	-0.42	-711.5	4.3	1.9191
3	-0.94	3.17	20.21	39.39	42.95	52.37	0.5838	0.0060	0.0014	1.8913	99.62	99.59	48.07	8.68	-762.2	-92.2	1.8913
4	0.23	3.70	15.66	26.39	44.12	54.30	0.5786	0.0241	0.0058	1.8815	98.13	97.96	51.73	25.34	-907.4	-285.3	1.8815
5	1.46	4.14	11.85	13.85	44.81	51.82	0.5584	0.0851	0.0190	1.8364	92.11	91.42	55.98	42.12	-1088.7	-507.2	1.8364
6	1.92	4.20	12.78	7.73	44.94	48.66	0.5356	0.1070	0.0217	1.7909	89.21	88.31	57.85	50.12	-1175.8	-624.5	1.7909
7	2.13	4.23	10.53	7.87	44.98	52.13	0.5038	0.0792	0.0162	1.8220	91.86	91.17	58.71	50.04	-1218.9	-678.3	1.8220
8	2.35	4.30	8.12	8.59	44.99	56.59	0.4708	0.0437	0.0091	1.8660	95.43	95.02	59.57	50.98	-1261.9	-730.4	1.8660
9	3.33	4.75	7.28	8.30	44.56	59.93	0.4375	0.0501	0.0104	1.9151	94.48	93.97	62.38	54.08	-1390.3	-856.2	1.9151
10	3.73	5.02	8.47	7.94	44.24	58.22	0.4461	0.0893	0.0183	1.9114	90.15	89.24	63.41	55.47	-1433.2	-882.3	1.9114
11	4.07	5.22	12.13	5.54	43.87	52.14	0.4722	0.1600	0.0309	1.8696	82.37	80.78	64.41	58.47	-1475.9	-900.9	1.8696

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 %
1.2113	1.8720	92.75	93.34	42.65	1.2113	1.8720	92.75	93.34

STATOR 1

RUN NO 16, 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	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	17.918	14.779	1037.9	617.5	591.7	608.2	852.7	107.0	55.4	9.9	0.9114	0.5154	1.7315	1.2134	1.7315	1.2134
2	15.566	12.947	1009.2	611.1	627.1	603.3	790.7	97.4	51.7	9.1	0.8851	0.5112	1.7327	1.2070	1.7327	1.2070
3	13.567	11.227	969.7	622.1	633.5	614.9	734.2	94.7	49.3	8.7	0.8480	0.5223	1.7514	1.2008	1.7514	1.2008
4	8.318	6.471	912.8	671.6	632.7	661.9	658.0	113.8	46.1	9.7	0.7912	0.5662	1.8193	1.2018	1.8193	1.2018
5	2.033	0.590	834.3	662.5	591.6	653.5	588.3	108.6	44.8	9.4	0.7140	0.5567	1.8055	1.2073	1.8055	1.2073
6	-1.039	-2.161	777.5	616.6	553.2	610.3	546.3	87.9	44.6	8.2	0.6617	0.5165	1.7511	1.2049	1.7511	1.2049
7	-2.380	-3.328	787.9	643.2	582.8	636.0	530.1	95.8	42.3	8.6	0.6713	0.5400	1.7790	1.2049	1.7790	1.2049
8	-3.442	-4.281	806.4	674.6	620.1	666.3	515.5	105.9	39.8	9.1	0.6886	0.5681	1.8159	1.2051	1.8159	1.2051
9	-5.967	-6.826	815.8	716.6	648.2	706.5	501.9	119.9	37.8	9.7	0.6974	0.6028	1.8704	1.2168	1.8704	1.2166
10	-6.799	-7.593	817.8	713.3	636.8	701.7	513.2	128.0	38.9	10.4	0.6922	0.5970	1.8646	1.2274	1.8646	1.2274
11	-7.887	-8.376	791.5	682.0	585.9	668.6	532.3	134.2	42.4	11.4	0.6637	0.5655	1.8229	1.2420	1.8229	1.2420

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	-4.66	-2.55	14.70	45.52	48.65	58.31	0.5439	0.2315	0.0466	0.9037	71.56	79.51	81.01	79.51	81.01
2	-6.68	-4.28	12.82	42.57	52.99	58.31	0.5341	0.2429	0.0509	0.9029	69.20	82.10	83.40	82.10	83.40
3	-7.76	-4.98	11.59	40.57	54.54	60.05	0.4998	0.1981	0.0432	0.9251	72.95	86.45	87.45	86.45	87.45
4	-8.38	-4.66	11.48	36.41	56.40	65.60	0.4069	0.0974	0.0234	0.9669	82.90	92.35	92.95	92.35	92.95
5	-8.18	-3.13	11.23	35.40	53.97	64.31	0.3618	0.0582	0.0157	0.9832	86.74	88.65	89.54	88.65	89.54
6	-7.88	-2.26	10.06	36.45	50.95	59.55	0.3744	0.0846	0.0240	0.9786	80.23	84.66	85.80	84.66	85.80
7	-9.99	-4.11	10.46	33.14	54.33	62.31	0.3461	0.0971	0.0280	0.9746	75.19	87.23	88.21	87.23	88.21
8	-12.33	-6.18	10.99	30.72	58.56	65.65	0.3158	0.1036	0.0304	0.9718	70.86	90.51	91.25	90.51	91.25
9	-14.30	-7.42	12.72	28.15	61.86	69.69	0.2732	0.0840	0.0258	0.9767	70.07	90.25	91.05	90.25	91.05
10	-13.50	-6.45	14.66	28.55	60.33	68.63	0.2794	0.0908	0.0283	0.9751	68.08	85.60	86.79	85.60	86.79
11	-10.77	-3.62	17.22	30.55	54.61	64.27	0.3025	0.0977	0.0307	0.9750	67.53	77.24	79.05	77.24	79.05

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 %	EFF-P TOT-STG %
11226.	187.80	1.2113	1.8085	87.21	86.21	1.2113	0.9661	87.20	188.75

ROTOR 2

RUN NO 16, 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	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'-I	V'-1 FT/SEC	V'-2 FT/SEC
1	11.464	11.029	684.4	1260.6	676.5	818.6	104.0	958.6	8.7	49.4	0.5747	1.0269	875.4	918.1	0.8615	0.6677	1026.0	819.6
2	10.503	9.675	685.7	1238.8	679.1	808.3	94.9	938.7	7.9	49.2	0.5775	1.0076	900.1	937.3	0.8872	0.6575	1053.4	808.3
3	9.393	8.368	703.5	1215.6	697.4	810.9	92.7	905.5	7.6	48.1	0.5952	0.9894	925.6	957.3	0.9191	0.6614	1086.3	812.6
4	5.573	4.848	769.1	1114.9	760.8	806.0	112.7	770.4	8.4	43.7	0.6548	0.9057	1004.8	1021.0	0.9984	0.6857	1172.5	844.0
5	0.116	0.519	766.7	946.3	759.0	734.0	108.3	597.2	8.1	39.1	0.6511	0.7624	1114.0	1113.3	1.0699	0.7229	1260.0	897.3
6	-2.549	-1.608	721.1	843.8	715.8	662.3	87.6	522.9	7.0	38.3	0.6101	0.6759	1169.7	1162.4	1.0975	0.7375	1297.4	920.6
7	-3.677	-2.583	743.7	823.5	737.4	654.7	96.9	499.6	7.5	37.3	0.6306	0.6607	1197.7	1187.8	1.1235	0.7620	1325.0	949.8
8	-4.634	-3.528	768.9	845.0	761.4	689.9	107.2	488.0	8.0	35.2	0.6537	0.6808	1226.0	1213.7	1.1506	0.8067	1353.3	1001.2
9	-7.378	-6.608	799.9	880.8	790.7	720.0	121.3	507.3	8.7	35.1	0.6789	0.7057	1311.5	1294.0	1.2130	0.8545	1429.3	1066.5
10	-8.142	-7.640	794.1	878.3	783.4	709.5	129.6	517.6	9.4	36.0	0.6703	0.6994	1340.8	1321.6	1.2176	0.8539	1442.4	1072.3
11	-8.815	-8.706	763.9	850.9	751.7	671.4	136.0	522.8	10.2	37.8	0.6386	0.6711	1369.7	1349.6	1.2077	0.8401	1444.7	1065.1

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	VB'-1 FT/SEC	VB'-2 FT/SEC	PO/PO INLET
1	-0.82	3.50	17.58	51.48	62.91	80.15	0.3970	0.2699	0.0615	1.7484	84.08	82.79	48.66	-2.82	-771.4	40.5	3.0273
2	-0.14	4.31	13.72	49.91	63.45	80.75	0.4254	0.2765	0.0646	1.7476	83.02	81.65	45.81	-0.09	-805.2	1.3	3.0282
3	-0.31	4.27	11.17	46.41	65.58	82.99	0.4363	0.2679	0.0640	1.7295	82.40	81.00	50.05	3.64	-832.9	-51.8	3.0331
4	-2.19	2.60	7.70	32.30	71.72	87.22	0.4274	0.2102	0.0517	1.6084	82.14	80.91	49.56	17.26	-892.2	-250.6	2.9311
5	-0.51	4.06	6.89	17.85	70.81	82.00	0.3990	0.1590	0.0369	1.4750	81.91	80.89	52.96	35.11	-1005.7	-516.1	2.6578
6	2.14	6.48	7.77	12.53	66.43	74.02	0.3908	0.1628	0.0347	1.4211	79.35	78.31	56.51	43.98	-1082.0	-639.5	2.4848
7	1.30	5.38	7.13	9.79	68.83	73.68	0.3761	0.1663	0.0350	1.3798	76.95	75.88	56.18	46.35	-1100.8	-688.2	2.4619
8	0.37	4.17	4.07	9.36	71.54	78.54	0.3483	0.1389	0.0300	1.3811	79.71	78.77	55.75	46.39	-1118.8	-725.6	2.5128
9	-0.45	2.23	0.34	8.93	74.56	81.58	0.3472	0.1701	0.0402	1.3814	74.83	73.66	56.36	47.43	-1190.6	-786.8	2.5845
10	-0.17	2.01	1.78	8.57	73.38	79.56	0.3531	0.1799	0.0433	1.3811	73.58	72.36	57.03	48.46	-1211.2	-804.0	2.5746
11	1.05	2.74	5.16	7.14	69.35	74.01	0.3625	0.1852	0.0442	1.3809	73.14	71.89	58.56	50.82	-1233.7	-826.9	2.5175

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 %
1.3947	2.6960	82.70	84.90	40.87	1.1513	1.4507	79.30	80.43

STATOR 2

RUN NO 16, 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	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	6.468	0.476	1306.8	512.2	898.2	911.2	949.1	-42.6	46.8	-2.7	1.0729	0.7087	2.8715	1.4650	1.6584	1.2073
2	7.250	0.053	1283.4	516.6	883.8	915.8	930.6	-42.0	46.7	-2.6	1.0517	0.7140	2.8932	1.4597	1.6694	1.2101
3	6.094	-0.405	1258.5	529.2	881.0	926.4	898.8	-40.0	45.7	-2.5	1.0316	0.7279	2.9366	1.4483	1.6726	1.2071
4	3.193	-1.672	1154.0	887.3	661.9	886.0	767.3	-48.4	41.7	-3.1	0.9428	0.7009	2.8736	1.4143	1.5769	1.1764
5	0.336	-2.408	981.3	738.8	778.9	734.3	596.9	-81.9	37.4	-6.4	0.7940	0.5827	2.5986	1.3798	1.4466	1.1432
6	-0.965	-2.250	878.7	641.6	706.0	636.0	523.2	-84.6	36.5	-7.6	0.7066	0.5047	2.4491	1.3649	1.3968	1.1329
7	-1.650	-2.025	858.0	619.9	657.1	615.6	500.2	-72.9	35.6	-6.7	0.6909	0.4884	2.4200	1.3564	1.3537	1.1257
8	-2.260	-1.746	878.5	655.8	729.8	653.3	489.0	-57.7	33.8	-5.0	0.7104	0.5191	2.4671	1.3520	1.3550	1.1218
9	-3.964	-1.358	920.4	722.8	766.3	722.5	509.8	-17.8	33.6	-1.4	0.7408	0.5702	2.5465	1.3754	1.3614	1.1303
10	-4.702	-1.316	923.2	724.8	762.4	724.7	520.7	-10.3	34.4	-0.8	0.7390	0.5686	2.5385	1.3902	1.3615	1.1327
11	-5.631	-1.226	904.1	687.1	734.9	687.1	526.5	-8.1	35.7	-0.7	0.7171	0.5338	2.4697	1.4077	1.3548	1.1334

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	0.89	2.45	11.64	49.51	84.54	107.51	0.4723	0.0999	0.0225	0.9485	86.19	75.28	78.59	74.38	76.13
2	1.75	3.77	11.13	49.30	85.04	108.89	0.4589	0.0888	0.0204	0.9554	87.00	76.78	79.92	74.44	76.21
3	1.56	4.08	10.88	48.19	87.02	111.90	0.4347	0.0648	0.0152	0.9682	89.66	80.03	62.77	75.88	77.55
4	-1.34	2.53	9.69	44.85	90.59	108.89	0.4005	0.0358	0.0089	0.9845	93.11	84.64	86.71	78.28	79.63
5	-4.77	0.54	6.44	43.81	85.16	89.66	0.4251	0.0465	0.0124	0.9844	90.78	82.28	84.46	77.18	78.33
6	-5.38	0.40	5.14	44.09	77.40	77.07	0.4592	0.0465	0.0127	0.9869	91.30	79.69	82.04	74.86	76.01
7	-6.10	-0.11	5.92	42.37	77.00	74.75	0.4657	0.0657	0.0183	0.9820	88.11	80.36	82.60	71.51	72.69
8	-7.75	-1.54	7.57	38.84	81.56	79.95	0.4314	0.0661	0.0187	0.9811	87.24	83.38	85.32	74.01	75.09
9	-7.65	-0.96	11.26	35.06	84.85	87.39	0.3834	0.0478	0.0	0.9854	89.39	81.27	83.53	70.28	71.54
10	-7.59	-0.71	12.46	35.18	83.31	86.52	0.3861	0.0468	0.0	0.9858	89.59	77.88	80.53	69.01	70.32
11	-7.54	-0.44	13.76	36.37	78.69	80.25	0.4174	0.0652	0.0	0.9811	86.72	72.03	75.28	67.45	68.60

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 %	EFF-P TOT-STG %
11226.	187.80	1.3947	2.6429	80.80	83.20	1.1513	0.9803	75.14	775.27

TABLE XXV (c) — OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

105% OF DESIGN SPEED

STATOR 1 $(\beta^*_{des.} - \beta^*_{act.}) = -7.5^\circ$

STATOR 2 $(\beta^*_{des.} - \beta^*_{act.}) = +2.5^\circ$

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 16, SPEED CODE 15, 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'-1	V'-1 FT/SEC	V'-2 FT/SEC
1	17.026	18.367	636.4	1052.3	638.4	568.2	0.0	885.7	0.0	57.4	0.5913	0.9246	699.9	764.0	0.8504	0.5106	918.2	581.1
2	14.758	16.072	652.8	1022.5	652.8	606.2	0.0	823.3	0.0	53.7	0.6056	0.8966	711.6	800.9	0.8958	0.5319	965.7	606.6
3	12.567	13.956	667.5	979.0	667.5	613.5	0.0	763.0	0.0	51.2	0.6203	0.8554	762.3	837.9	0.9415	0.5400	1013.2	618.0
4	6.831	8.362	704.2	913.3	704.2	608.3	0.0	681.2	0.0	48.3	0.6573	0.7896	907.5	948.8	1.0721	0.5746	1148.7	664.5
5	1.128	2.051	731.4	824.8	731.4	557.6	0.0	607.8	0.0	47.5	0.6850	0.7030	1088.8	1096.6	1.2284	0.6321	1311.7	741.6
6	-0.714	-0.773	738.1	770.0	738.1	522.7	0.0	565.4	0.0	47.2	0.6918	0.6527	1176.0	1170.6	1.3014	0.6778	1388.4	799.6
7	-1.749	-2.111	740.3	779.3	740.3	554.6	0.0	547.4	0.0	44.6	0.6941	0.6613	1219.1	1207.5	1.3372	0.7316	1426.2	862.1
8	-3.160	-3.420	741.2	795.7	741.2	592.0	0.0	531.7	0.0	41.9	0.6950	0.6764	1262.1	1244.5	1.3724	0.7876	1463.6	926.6
9	-8.103	-7.389	729.8	809.5	729.8	620.7	0.0	519.6	0.0	39.9	0.6833	0.6850	1390.5	1355.4	1.4704	0.8810	1570.4	1041.1
10	-9.820	-8.788	720.9	806.0	720.9	607.5	0.0	529.7	0.0	41.0	0.6742	0.6786	1433.4	1392.3	1.5005	0.8882	1604.4	1055.1
11	-11.237	-10.205	710.5	780.7	710.5	557.2	0.0	546.9	0.0	44.4	0.6636	0.6514	1476.1	1429.3	1.5302	0.8707	1638.2	1043.6

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	-0.61	4.00	15.85	57.89	41.23	45.95	0.5943	0.1156	0.0249	1.9100	94.64	93.49	45.78	-12.11	-659.9	121.7	1.9100
2	-0.51	3.79	17.49	49.43	41.83	50.63	0.5783	0.0511	0.0117	1.9210	97.12	96.86	47.31	-2.12	-711.6	22.4	1.9210
3	-0.36	3.75	18.49	41.69	42.41	52.39	0.5777	0.0367	0.0087	1.8935	97.70	97.50	48.65	6.96	-762.3	-74.9	1.8935
4	0.61	4.08	14.08	28.35	43.78	54.21	0.5829	0.0492	0.0120	1.8877	96.26	95.92	52.11	23.77	-907.5	-267.6	1.8877
5	1.54	4.27	10.98	14.85	44.70	51.13	0.5735	0.1101	0.0248	1.8421	90.01	85.13	56.10	41.25	-1088.8	-480.9	1.8421
6	1.95	4.23	11.84	8.31	44.91	48.47	0.5506	0.1274	0.0264	1.8038	87.46	86.40	57.88	49.18	-1176.0	-605.2	1.8038
7	2.14	4.24	9.64	8.76	44.96	52.09	0.5173	0.0977	0.0204	1.8360	90.18	89.33	58.72	49.95	-1219.1	-660.1	1.8360
8	2.34	4.29	7.42	9.28	45.01	56.34	0.4846	0.0638	0.0135	1.8780	93.46	92.87	59.96	50.28	-1262.1	-712.8	1.8780
9	3.25	4.68	6.55	8.56	44.65	59.83	0.4525	0.0708	0.0150	1.9335	92.41	91.69	62.30	53.34	-1390.5	-835.8	1.9335
10	3.62	4.91	7.77	8.54	44.35	58.22	0.4604	0.1073	0.0224	1.9315	88.48	87.39	63.30	54.77	-1433.3	-862.6	1.9315
11	3.95	5.10	11.29	6.66	44.00	52.66	0.4844	0.1720	0.0340	1.8948	81.53	79.83	64.29	57.63	-1476.1	-882.4	1.8948

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 %
1.2182	1.8829	90.74	91.51	42.54	1.2182	1.8829	90.74	91.51

STATOR 1

RUN NO 16, SPEED CODE 15, 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	18.105	14.855	1053.5	599.9	558.4	591.3	867.0	101.5	55.6	9.6	0.9259	0.4992	1.7467	1.2170	1.7467	1.2170
2	15.831	13.190	1028.1	620.1	634.7	610.5	808.8	108.6	52.0	10.0	0.9023	0.5181	1.7760	1.2117	1.7760	1.2117
3	13.816	11.592	988.2	636.5	641.4	626.8	751.7	110.8	49.6	10.3	0.8645	0.5341	1.8022	1.2053	1.8022	1.2053
4	8.531	7.116	929.1	662.8	637.7	652.6	675.7	116.2	46.7	10.1	0.8050	0.5570	1.8451	1.2073	1.8451	1.2073
5	2.312	1.388	845.5	637.4	588.9	629.2	606.7	102.0	45.8	9.2	0.7225	0.5329	1.8144	1.2138	1.8144	1.2138
6	-0.703	-1.358	792.8	595.6	555.2	589.8	565.9	83.3	45.5	8.0	0.6737	0.4965	1.7682	1.2122	1.7682	1.2122
7	-2.048	-2.587	802.2	623.5	585.4	616.7	548.5	92.4	43.2	8.5	0.6825	0.5211	1.7978	1.2120	1.7978	1.2120
8	-3.168	-3.590	818.8	660.4	621.3	653.1	533.3	97.8	40.7	8.5	0.6979	0.5537	1.8410	1.2122	1.8410	1.2122
9	-5.437	-6.468	835.1	710.2	651.4	700.4	522.6	117.6	38.8	9.6	0.7088	0.5946	1.9056	1.2258	1.9056	1.2258
10	-6.817	-7.366	833.4	698.1	640.5	687.4	533.1	121.8	39.8	10.1	0.7039	0.5812	1.8886	1.2364	1.8886	1.2364
11	-7.906	-8.269	810.3	675.7	594.0	663.7	551.2	126.5	43.0	10.8	0.6783	0.5579	1.8590	1.2506	1.8590	1.2506

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	-4.49	-2.38	14.48	45.91	48.36	57.47	0.5711	0.2010	0.0405	0.9145	76.65	79.54	81.05	79.54	81.05
2	-6.35	-3.95	13.74	41.98	52.78	60.04	0.5349	0.1834	0.0383	0.9247	77.29	84.20	85.40	84.20	85.40
3	-7.42	-4.63	12.86	39.64	54.40	62.39	0.4938	0.1258	0.0273	0.9512	83.05	89.21	90.05	89.21	90.05
4	-7.63	-4.11	11.84	36.60	56.22	65.61	0.4300	0.0649	0.0156	0.9774	89.33	92.19	92.82	92.19	92.82
5	-7.16	-2.12	11.01	36.64	53.32	62.65	0.4074	0.0507	0.0137	0.9852	90.06	86.71	87.76	86.71	87.76
6	-6.97	-1.36	9.90	37.51	50.83	58.33	0.4215	0.0731	0.0207	0.9809	85.45	83.26	84.53	83.26	84.53
7	-9.15	-3.27	10.42	34.62	54.27	61.28	0.3900	0.0826	0.0238	0.9778	82.18	85.98	87.07	85.98	87.07
8	-11.43	-5.28	10.46	32.14	58.34	65.36	0.3527	0.0741	0.0218	0.9794	82.09	89.68	90.51	89.68	90.51
9	-13.31	-6.43	12.61	25.24	61.84	70.18	0.3029	0.0507	0.0156	0.9856	84.56	89.47	90.37	89.47	90.37
10	-12.59	-5.54	14.36	29.76	60.43	68.20	0.3209	0.0792	0.0247	0.9777	77.61	84.19	85.52	84.19	85.52
11	-10.16	-3.01	16.65	32.13	55.23	64.88	0.3369	0.0713	0.0224	0.9811	79.56	77.23	79.10	77.23	79.10

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 %	EFF-P TOT-STG %
11228.	187.30	1.2182	1.8345	86.68	87.75	1.2182	0.9743	86.68	188.22

ROTOR 2

RUN NO 16, SPEED CODE 15, 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	11.571	11.052	653.3	1185.5	645.8	715.8	96.7	944.5	8.7	52.7	0.5462	0.9539	875.5	918.3	0.8445	0.5764	1010.2	716.3
2	10.752	9.776	678.6	1166.8	670.3	705.1	105.9	929.7	9.0	52.7	0.5699	0.9388	900.2	937.5	0.8729	0.5673	1039.3	705.1
3	9.026	8.591	701.1	1147.6	692.7	709.8	108.4	901.3	8.9	51.7	0.5916	0.9245	925.8	957.5	0.9043	0.5736	1071.4	712.0
4	6.431	5.358	748.0	1064.0	739.1	733.3	114.6	771.9	8.8	46.4	0.6339	0.8504	1005.0	1021.1	0.9807	0.6236	1157.2	774.3
5	1.117	1.125	736.9	932.7	731.8	676.1	101.8	642.5	7.9	43.5	0.6238	0.7430	1114.2	1113.4	1.0546	0.6364	1249.2	824.0
6	-1.653	-1.039	702.2	860.4	657.2	624.9	83.4	591.4	6.8	43.4	0.5910	0.6812	1169.8	1162.6	1.0865	0.6703	1290.9	846.6
7	-2.594	-2.109	725.4	851.5	719.4	625.8	93.0	577.5	7.4	42.6	0.6120	0.6749	1197.9	1187.9	1.1123	0.6929	1318.4	874.2
8	-4.113	-3.176	756.2	864.0	749.7	652.1	98.5	566.8	7.5	40.9	0.6400	0.6863	1226.2	1213.8	1.1461	0.7297	1354.2	916.7
9	-7.113	-5.421	794.3	898.2	785.4	667.0	118.9	601.6	8.6	41.9	0.6711	0.7075	1312.1	1294.2	1.2068	0.7575	1428.5	961.6
10	-7.577	-7.524	781.1	898.9	771.3	665.7	123.2	604.0	9.0	42.1	0.6556	0.7044	1341.0	1321.8	1.2104	0.7671	1441.5	978.9
11	-8.770	-8.681	758.5	869.4	747.6	621.5	126.1	607.9	9.7	44.3	0.6314	0.6745	1365.9	1349.8	1.2066	0.7509	1449.5	967.8

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	0.70	5.02	18.27	52.31	61.33	75.68	0.4674	0.2381	0.0542	1.7629	86.33	85.20	50.18	-2.12	-778.8	26.7	3.0793
2	-0.13	4.32	14.45	49.20	64.19	76.13	0.5110	0.2520	0.0569	1.7422	84.68	83.44	49.82	0.63	-794.3	7.8	3.0527
3	-0.61	3.97	12.00	45.27	66.86	78.50	0.5156	0.2427	0.0560	1.7273	84.29	83.04	49.74	4.47	-817.4	-55.7	3.1101
4	-1.39	3.40	9.20	31.52	71.20	85.87	0.4763	0.1458	0.0355	1.6636	88.27	87.39	50.36	18.84	-890.3	-250.2	3.0066
5	0.67	5.25	6.64	19.28	69.37	81.81	0.4624	0.1014	0.0236	1.5924	89.87	89.18	54.14	34.86	-1012.4	-471.0	2.8905
6	2.92	7.26	6.19	14.89	65.68	75.86	0.4600	0.1063	0.0233	1.5698	88.67	87.93	57.29	42.40	-1086.4	-571.2	2.7767
7	2.03	6.11	4.98	12.66	68.14	76.57	0.4481	0.1103	0.0241	1.5449	87.97	86.78	56.90	44.24	-1104.9	-610.5	2.7766
8	0.97	4.78	2.39	11.64	71.53	80.53	0.4290	0.1108	0.0247	1.5312	86.86	86.05	56.35	44.71	-1127.7	-647.1	2.8183
9	0.23	2.45	-1.13	10.61	75.26	81.95	0.4435	0.1698	0.0412	1.5247	79.67	78.43	56.58	45.97	-1193.2	-692.7	2.9051
10	0.37	3.55	0.36	10.54	73.32	81.25	0.4407	0.1608	0.0398	1.5394	80.84	79.65	57.57	47.03	-1217.8	-717.7	2.9081
11	1.35	3.04	4.26	8.92	70.16	74.68	0.4559	0.1753	0.0426	1.5302	79.21	77.93	58.86	49.94	-1241.8	-741.9	2.9448

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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 %
1.4220	2.9271	84.74	86.83	40.30	1.1674	1.5555	84.70	85.67

STATOR 2

RUN NO 16, SPEED CODE 15, 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	8.464	0.648	1214.7	734.3	774.7	734.0	935.6	-19.0	50.6	-1.5	0.9818	0.5606	2.9501	1.4661	1.6890	1.2047
2	7.233	0.389	1195.0	745.0	760.7	744.6	921.7	-24.0	50.7	-1.8	0.9655	0.5707	2.9778	1.4593	1.6752	1.2044
3	6.044	0.080	1174.9	760.0	761.1	759.8	895.0	-16.6	49.8	-1.2	0.9503	0.5850	3.0149	1.4457	1.6756	1.2021
4	3.196	-0.768	1089.2	742.0	772.7	741.5	767.7	-26.9	44.9	-2.1	0.8797	0.5761	2.9957	1.4220	1.6277	1.1761
5	0.640	-1.234	957.3	653.4	710.3	650.5	641.9	-61.5	42.1	-5.4	0.7648	0.5067	2.8505	1.4059	1.5692	1.1565
6	-0.490	-1.172	886.6	595.8	660.2	592.0	591.9	-67.0	41.6	-6.4	0.7040	0.4609	2.7647	1.4010	1.5596	1.1555
7	-1.091	-1.081	877.9	587.9	660.6	585.2	578.2	-56.8	41.2	-5.5	0.6978	0.4553	2.7531	1.3965	1.5377	1.1522
8	-1.714	-0.971	890.8	610.0	686.3	608.3	567.9	-44.9	39.6	-4.2	0.7096	0.4736	2.7835	1.3937	1.5198	1.1497
9	-3.699	-0.974	932.4	677.2	710.0	677.2	604.4	-6.7	40.4	-0.6	0.7373	0.5230	2.8628	1.4224	1.5071	1.1611
10	-4.522	-1.060	937.8	683.2	714.3	683.2	607.5	-1.0	40.4	-0.1	0.7381	0.5250	2.8679	1.4369	1.5166	1.1633
11	-5.512	-1.098	915.9	645.7	681.2	645.7	612.2	-7.6	42.0	-0.7	0.7141	0.4914	2.7992	1.4555	1.5048	1.1644

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	4.68	6.24	12.83	52.11	80.06	96.98	0.5723	0.0911	0.0206	0.9580	89.13	77.33	80.44	78.27	79.81
2	5.74	7.76	11.90	52.51	80.38	99.20	0.5583	0.0819	0.0188	0.9631	89.60	79.18	82.07	77.48	79.05
3	5.62	8.12	12.10	51.02	82.46	102.39	0.5350	0.0688	0.0161	0.9697	90.95	82.06	84.57	78.03	79.56
4	1.80	5.67	10.74	46.94	88.90	101.85	0.5006	0.0556	0.0138	0.9780	91.76	87.01	88.63	83.27	84.36
5	-0.12	5.18	7.41	47.48	84.69	88.97	0.5168	0.0488	0.0130	0.9843	92.29	85.62	87.55	86.04	86.90
6	-0.05	5.73	6.27	48.29	79.02	80.50	0.5380	0.0264	0.0072	0.9924	95.66	83.76	85.88	86.45	87.27
7	-0.57	5.42	7.13	46.65	79.68	79.69	0.5344	0.0286	0.0080	0.9921	95.30	84.31	86.35	85.33	86.19
8	-1.97	4.23	8.39	43.79	83.49	83.24	0.5099	0.0314	0.0089	0.9911	94.68	85.99	87.82	84.27	85.17
9	-0.89	5.81	12.11	40.57	85.55	91.40	0.4645	0.0388	0.0114	0.9883	92.79	82.83	85.14	76.65	77.95
10	-1.54	5.33	13.19	40.50	85.30	91.19	0.4640	0.0453	0.0134	0.9862	91.57	80.06	82.74	76.80	78.12
11	-1.21	5.89	13.76	42.70	79.84	84.39	0.4983	0.0583	0.0174	0.9832	89.84	74.72	78.03	74.71	76.12

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 %	EFF-P TOT-STG %
11228.	187.30	1.4220	2.8768	83.16	85.43	1.1674	0.9826	81.35	337.57

TABLE XXV (d) — OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

105% OF DESIGN SPEED

STATOR 1 $(\beta^*_{des.} - \beta^*_{act.}) = -7.5^\circ$

STATOR 2 $(\beta^*_{des.} - \beta^*_{act.}) = +2.5^\circ$

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 16, SPEED CODE 15, POINT NO 14

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	17.007	18.402	629.2	1056.4	629.2	562.4	0.0	894.3	0.0	57.9	0.5822	0.9280	655.6	763.6	0.8434	0.5072	911.5	577.4
2	14.736	16.133	643.3	1022.0	643.3	593.2	0.0	832.3	0.0	54.5	0.5961	0.8952	711.2	800.6	0.8887	0.5203	959.0	594.0
3	12.543	14.034	657.7	985.9	657.7	607.7	0.0	776.4	0.0	52.0	0.6105	0.8609	761.9	837.5	0.9343	0.5333	1006.5	610.7
4	6.790	8.475	693.4	914.3	693.4	594.5	0.0	694.7	0.0	49.5	0.6463	0.7892	907.1	948.4	1.0643	0.5579	1141.8	646.4
5	1.240	2.218	719.9	829.5	719.9	541.2	0.0	628.6	0.0	49.3	0.6732	0.7052	1088.3	1096.1	1.2202	0.6080	1304.8	715.2
6	-0.600	-0.587	727.0	784.7	727.0	516.9	0.0	590.3	0.0	48.8	0.6804	0.6634	1175.5	1170.0	1.2936	0.6567	1382.1	776.7
7	-1.663	-1.928	729.5	750.8	729.5	546.0	0.0	572.1	0.0	46.3	0.6830	0.6691	1218.5	1206.9	1.3297	0.7084	1420.2	837.3
8	-3.090	-3.252	730.7	803.8	730.7	581.3	0.0	555.2	0.0	43.7	0.6843	0.6811	1261.5	1243.9	1.3652	0.7636	1457.8	901.2
9	-6.007	-7.285	720.6	817.0	720.6	606.4	0.0	547.5	0.0	42.0	0.6740	0.6883	1389.9	1354.7	1.4642	0.8506	1565.6	1009.6
10	-9.725	-8.707	712.3	818.1	712.3	598.4	0.0	558.8	0.0	43.0	0.6655	0.6864	1432.7	1391.7	1.4948	0.8598	1600.0	1025.6
11	-11.181	-10.160	702.3	801.2	702.3	550.4	0.0	582.2	0.0	46.5	0.6553	0.6654	1475.4	1428.6	1.5247	0.8385	1634.1	1009.6

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	-0.21	4.40	14.85	59.28	40.84	45.82	0.5977	0.1006	0.0216	1.9323	94.93	94.45	46.18	-13.10	-659.6	130.7	1.9323
2	-0.11	4.19	16.54	50.77	41.44	49.86	0.5908	0.0494	0.0114	1.9348	97.27	97.02	47.71	-3.06	-711.2	31.7	1.9348
3	0.05	4.15	17.28	43.30	42.02	52.33	0.5855	0.0245	0.0058	1.9226	98.51	98.38	49.06	5.75	-761.9	-61.1	1.9226
4	1.02	4.49	13.45	29.39	43.39	53.43	0.5995	0.0500	0.0123	1.9093	96.30	95.96	52.53	23.14	-907.1	-253.7	1.9093
5	2.00	4.68	10.56	15.88	44.32	50.08	0.5960	0.1179	0.0268	1.8727	89.68	88.75	56.51	40.83	-1088.3	-467.5	1.8727
6	2.35	4.61	10.93	9.99	44.55	48.48	0.5707	0.1302	0.0274	1.8503	87.77	86.69	58.26	48.27	-1175.4	-579.7	1.8503
7	2.49	4.60	8.98	9.75	44.64	51.87	0.5383	0.1031	0.0216	1.8806	90.10	89.20	59.08	49.29	-1218.5	-634.8	1.8806
8	2.66	4.63	6.56	10.08	44.68	55.97	0.5052	0.0706	0.0151	1.9202	93.07	92.42	59.90	49.82	-1261.5	-688.7	1.9202
9	3.53	4.55	6.22	5.56	44.34	59.16	0.4770	0.0843	0.0180	1.9804	91.38	90.53	62.58	53.02	-1389.9	-807.2	1.9804
10	3.86	5.17	7.22	9.34	44.06	58.14	0.4836	0.1165	0.0246	1.9882	88.09	86.90	63.56	54.22	-1432.7	-832.9	1.9882
11	4.23	5.35	10.52	7.67	43.71	52.76	0.5116	0.1830	0.0369	1.9627	81.39	79.57	64.53	56.86	-1475.4	-846.4	1.9627

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 %
1.2266	1.9220	90.48	91.30	42.20	1.2266	1.9220	90.48	91.30

STATOR 1

RUN NO 16, SPEED CODE 15, POINT NO 14

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	16.140	14.956	1055.8	585.6	550.2	573.4	675.4	118.7	56.2	11.6	0.9273	0.4863	1.7846	1.2190	1.7846	1.2190
2	15.690	13.303	1025.7	599.5	619.4	585.9	817.6	126.8	53.0	12.1	0.8989	0.4995	1.8073	1.2139	1.8073	1.2139
3	13.908	11.756	993.0	615.0	633.2	600.9	764.9	130.9	50.5	12.2	0.8680	0.5143	1.8320	1.2088	1.8320	1.2088
4	8.716	7.383	928.2	635.3	622.0	624.3	689.0	117.8	48.0	10.7	0.8027	0.5317	1.8690	1.2112	1.8690	1.2112
5	2.475	1.692	848.7	619.3	571.5	606.1	627.5	105.6	47.7	9.9	0.7231	0.5118	1.8489	1.2210	1.8489	1.2210
6	-0.543	-1.069	806.0	584.8	548.2	578.7	590.8	84.0	47.1	8.3	0.6831	0.4851	1.8167	1.2215	1.8167	1.2215
7	-1.904	-2.265	812.4	610.8	575.7	603.8	573.3	92.3	44.9	8.7	0.6891	0.5078	1.8449	1.2214	1.8449	1.2214
8	-3.650	-3.294	825.6	644.0	609.7	636.0	556.9	101.5	42.4	9.1	0.7015	0.5370	1.8841	1.2215	1.8841	1.2215
9	-5.695	-6.231	842.2	667.8	637.2	676.9	550.7	122.1	40.9	10.3	0.7116	0.5718	1.9425	1.2378	1.9425	1.2378
10	-6.603	-7.165	845.4	688.8	631.3	676.8	562.3	128.1	41.8	10.8	0.7110	0.5698	1.9442	1.2491	1.9442	1.2491
11	-7.909	-8.138	830.5	666.3	587.8	653.8	586.7	128.4	45.1	11.2	0.6920	0.5461	1.9150	1.2666	1.9150	1.2666

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	-3.66	-1.75	16.41	44.61	48.11	57.19	0.5838	0.1793	0.0359	0.9236	79.75	82.10	83.47	82.10	83.47
2	-5.37	-2.96	15.85	40.85	51.92	59.06	0.5518	0.1612	0.0335	0.9341	80.74	86.07	87.16	86.07	87.16
3	-6.56	-3.77	15.12	38.24	54.24	61.22	0.5161	0.1219	0.0263	0.9525	84.39	90.36	91.12	90.36	91.12
4	-6.55	-2.83	12.43	37.30	55.38	64.21	0.4625	0.0612	0.0147	0.9788	90.68	92.55	93.16	92.55	93.16
5	-5.34	-0.29	11.68	37.19	52.27	61.78	0.4417	0.0434	0.0117	0.9873	92.23	86.79	87.87	86.79	87.87
6	-5.35	0.24	10.12	38.88	50.60	58.67	0.4537	0.0674	0.0191	0.9820	87.70	83.88	85.15	83.88	85.15
7	-7.41	-1.53	10.59	36.19	54.01	61.49	0.4219	0.0725	0.0209	0.9803	85.73	86.26	87.37	86.26	87.37
8	-9.67	-3.52	11.01	33.26	57.96	65.20	0.3850	0.0688	0.0202	0.9807	85.10	89.48	90.36	89.48	90.36
9	-11.22	-4.34	13.31	30.64	61.25	69.34	0.3440	0.0664	0.0204	0.9810	83.17	87.75	88.82	87.75	88.82
10	-10.66	-3.61	15.03	31.02	60.39	68.83	0.3502	0.0772	0.0240	0.9779	80.61	83.87	85.29	83.87	85.29
11	-8.07	-0.92	16.97	33.90	55.42	65.40	0.3775	0.0889	0.0280	0.9756	78.70	76.39	78.41	76.39	78.41

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 %	EFF-P TOT-STG %
11222.	185.80	1.2266	1.8736	86.62	87.73	1.2266	0.9748	86.62	182.79

ROTOR 2

RUN NO 16, SPEED CODE 15, POINT NO 14

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	11.623	11.048	629.2	1157.8	618.5	657.9	115.4	952.7	10.5	55.2	0.5244	0.9280	875.1	917.8	0.8165	0.5281	979.6	656.6
2	10.645	9.770	648.6	1142.3	636.7	651.0	123.6	938.7	11.0	55.2	0.5427	0.9156	899.8	937.0	0.8401	0.5219	1003.9	651.0
3	9.543	8.584	670.1	1124.8	657.8	656.6	128.0	913.2	11.0	54.2	0.5631	0.9027	925.3	957.0	0.8686	0.5261	1033.6	658.1
4	6.551	5.350	711.5	1051.6	702.0	694.0	116.3	790.1	9.4	46.7	0.5997	0.8420	1004.5	1020.7	0.9542	0.5855	1132.1	731.3
5	1.253	1.170	707.8	937.0	700.0	635.4	105.3	688.7	8.6	47.3	0.5938	0.7405	1113.7	1112.9	1.0297	0.6037	1227.4	764.0
6	-1.463	-0.980	681.6	882.6	676.6	610.5	84.3	637.5	7.1	46.2	0.5704	0.6937	1169.3	1162.0	1.0697	0.6323	1278.7	804.9
7	-2.748	-2.067	703.4	675.3	657.3	606.7	92.7	631.0	7.6	46.1	0.5897	0.6676	1197.3	1187.3	1.0551	0.6466	1306.3	825.1
8	-3.670	-3.103	731.7	882.7	724.6	616.8	102.1	629.5	8.0	45.4	0.6152	0.6939	1275.6	1213.3	1.1240	0.6687	1336.9	850.7
9	-6.747	-6.196	770.3	911.1	760.3	639.4	123.3	649.1	9.2	45.3	0.6456	0.7106	1311.5	1293.6	1.1873	0.7082	1410.6	907.6
10	-7.563	-7.233	771.4	914.1	760.5	632.9	129.5	659.5	9.6	46.0	0.6435	0.7088	1340.3	1321.1	1.1928	0.7103	1429.8	915.6
11	-6.417	-8.404	752.2	857.5	740.9	630.0	130.1	639.3	9.9	45.3	0.6215	0.6914	1369.3	1349.2	1.1929	0.7311	1443.7	949.1

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	1.33	5.61	17.38	53.80	60.57	72.95	0.5280	0.2180	0.0496	1.7720	88.05	87.05	56.78	-3.02	-759.7	34.8	3.1623
2	0.60	5.13	13.67	50.78	62.82	73.72	0.5457	0.2178	0.0509	1.7637	87.48	86.45	56.63	-0.15	-776.[illegible]	1.7	3.1052
3	0.16	4.73	11.33	46.71	65.36	76.06	0.5481	0.2051	0.0450	1.7521	87.48	86.45	50.51	3.66	-797.3	43.8	3.2054
4	-0.01	4.79	8.82	33.36	69.62	84.63	0.5064	0.1255	0.0307	1.7032	90.54	89.80	51.74	16.38	-888.7	-230.6	3.1503
5	1.77	6.34	5.51	21.50	68.37	79.52	0.5111	0.1159	0.0273	1.6391	89.45	88.69	55.24	33.74	-1008.3	-424.2	3.0320
6	3.00	8.00	4.43	17.39	65.73	76.85	0.4975	0.1134	0.0255	1.6256	88.97	88.19	58.03	40.64	-1085.0	-524.5	2.9551
7	2.03	6.91	3.22	15.23	68.07	75.82	0.4943	0.1283	0.0286	1.6055	87.00	86.10	57.71	42.47	-1104.6	-556.3	2.9585
8	1.76	5.57	0.94	13.88	71.21	78.95	0.4861	0.1402	0.0320	1.5906	85.26	84.26	57.14	43.26	-1123.5	-583.7	2.9932
9	0.49	3.17	-1.99	12.20	74.69	81.70	0.4846	0.1678	0.0413	1.5918	81.78	80.56	57.30	45.10	-1188.1	-644.5	3.0903
10	0.36	2.74	-0.55	11.63	74.20	80.38	0.4924	0.1778	0.0447	1.5962	80.76	79.45	57.76	46.13	-1210.8	-661.6	3.1032
11	1.33	3.15	2.63	10.73	71.13	79.46	0.4741	0.1426	0.0359	1.6041	84.20	83.11	55.01	48.26	-1235.[illegible]	-709.9	3.0746

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 %
1.4432	3.0826	85.22	87.33	39.28	1.1766	1.6453	85.07	86.82

STATOR 2

RUN NO 16, SPEED CODE 15, POINT NO 14

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	8.525	0.830	1178.7	620.3	706.9	620.1	943.2	-16.1	53.4	-1.5	0.9477	0.4656	2.9784	1.4656	1.6689	1.2023
2	7.360	0.738	1162.7	636.6	657.0	636.6	930.6	-17.2	53.4	-1.5	0.9349	0.4836	3.0097	1.4605	1.6706	1.2020
3	6.232	0.570	1144.7	660.2	659.1	660.0	906.4	-17.7	52.5	-1.5	0.9212	0.5027	3.0540	1.4522	1.6734	1.2000
4	3.516	-0.064	1071.2	674.0	726.9	673.8	786.8	-17.8	47.3	-1.5	0.8599	0.5186	3.0920	1.4321	1.6579	1.1830
5	0.953	-0.565	958.2	617.1	667.0	615.7	688.0	-41.2	45.9	-3.8	0.7591	0.4739	3.0031	1.4274	1.6214	1.1701
6	-0.248	-0.666	905.8	574.5	643.0	572.3	637.9	-50.3	44.7	-5.0	0.7137	0.4397	2.9405	1.4265	1.6129	1.1679
7	-0.878	-0.577	899.3	566.3	640.0	564.3	631.7	-48.2	44.6	-4.9	0.7082	0.4334	2.9283	1.4256	1.5996	1.1671
8	-1.570	-0.537	907.8	582.8	652.7	581.5	630.8	-39.3	44.0	-3.9	0.7156	0.4465	2.9505	1.4253	1.5783	1.1669
9	-3.664	-0.764	943.7	655.5	681.9	655.9	652.4	1.1	43.7	0.1	0.7389	0.5004	3.0460	1.4514	1.5714	1.1741
10	-4.766	-0.928	951.1	667.7	681.4	667.7	663.5	8.3	44.3	0.7	0.7405	0.5067	3.0542	1.4689	1.5710	1.1780
11	-5.771	-1.036	940.8	646.1	685.9	648.1	643.9	5.9	43.3	0.5	0.7281	0.4886	3.0126	1.4632	1.5708	1.1725

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	7.45	9.01	12.83	54.85	77.16	86.51	0.6571	0.1322	0.0299	0.9418	85.75	78.21	81.23	77.26	78.85
2	6.44	10.46	12.20	54.51	77.75	69.48	0.6396	0.1248	0.0287	0.9461	86.11	75.98	82.76	77.49	79.05
3	6.36	10.87	11.81	54.04	79.81	93.77	0.6133	0.1088	0.0255	0.9539	87.30	82.71	85.16	78.64	80.12
4	4.26	8.13	11.31	48.83	87.48	97.59	0.5607	0.0746	0.0185	0.9712	90.17	87.70	89.47	84.34	85.41
5	3.66	8.57	8.58	45.65	82.46	88.75	0.5644	0.0423	0.0113	0.9863	93.85	86.00	87.96	86.41	87.30
6	2.84	9.63	7.70	45.75	79.93	82.03	0.5816	0.0302	0.0083	0.9911	95.48	84.26	86.42	86.51	87.39
7	2.86	8.85	7.78	49.47	79.98	80.83	0.5621	0.0299	0.0084	0.9915	95.47	84.07	86.25	85.50	86.23
8	2.43	8.64	8.75	47.84	82.13	83.47	0.5663	0.0348	0.0099	0.9900	94.64	84.81	86.90	82.61	83.67
9	2.44	9.14	12.77	43.64	85.55	93.16	0.5060	0.0416	0.0122	0.9874	92.87	82.63	85.06	78.53	79.85
10	2.32	9.20	13.59	43.57	84.75	93.67	0.5018	0.0507	0.0150	0.9845	91.24	79.76	82.62	76.73	78.16
11	0.04	7.14	14.95	42.76	84.45	89.58	0.5150	0.0693	0.0207	0.9794	88.53	76.27	79.58	75.09	80.36

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 %	EFF-P TOT-STG %
11222.	185.60	1.4432	3.0175	83.34	85.68	1.1760	0.9790	81.96	282.39

TABLE XXVI (a) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

105% OF DESIGN SPEED

STATOR 1 $(\beta^{*}_{des.} - \beta^{*}_{act.}) = -2.5^{\circ}$

STATOR 2 $(\beta^{*}_{des.} - \beta^{*}_{act.}) = +2.5^{\circ}$

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 19, 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	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	16.680	16.332	668.8	1076.8	668.8	656.5	0.0	853.6	0.0	52.5	0.6216	0.9538	656.8	762.7	0.8725	0.5870	938.8	662.7
2	14.159	15.986	684.3	1040.6	684.3	665.3	0.0	800.1	0.0	50.3	0.6372	0.9178	710.4	799.6	0.9184	0.5868	986.4	665.3
3	11.789	13.624	699.4	1011.6	699.4	670.0	0.0	757.9	0.0	48.5	0.6523	0.8889	761.0	836.5	0.9640	0.5926	1033.5	674.6
4	5.525	6.079	734.2	941.4	734.2	654.8	0.0	676.4	0.0	45.9	0.6678	0.8179	906.0	947.2	1.0925	0.6156	1166.1	708.6
5	-0.176	1.559	753.3	797.1	753.3	559.0	0.0	568.2	0.0	45.5	0.7075	0.6816	1087.0	1094.8	1.2421	0.6567	1322.5	768.0
6	-1.517	-1.344	756.5	743.6	756.5	532.5	0.0	519.3	0.0	44.3	0.7108	0.6336	1174.0	1168.6	1.3123	0.7153	1396.6	839.7
7	-2.416	-2.664	757.3	772.9	757.3	586.3	0.0	503.7	0.0	40.7	0.7116	0.6605	1217.0	1205.5	1.3469	0.7814	1433.4	914.4
8	-3.806	-3.934	756.5	789.5	756.5	620.9	0.0	487.6	0.0	38.1	0.7106	0.6761	1259.9	1242.4	1.3808	0.8370	1469.6	977.4
9	-6.731	-7.763	738.7	797.2	738.7	639.2	0.0	476.4	0.0	36.7	0.6925	0.6794	1388.2	1353.1	1.4740	0.9267	1572.5	1084.9
10	-10.402	-9.077	727.9	789.2	727.9	619.0	0.0	489.7	0.0	38.3	0.6814	0.6686	1430.9	1390.0	1.5026	0.9255	1605.4	1092.6
11	-11.632	-10.369	716.6	757.4	716.6	560.6	0.0	509.1	0.0	42.1	0.6699	0.6352	1473.6	1426.9	1.5317	0.9020	1638.6	1075.5

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	VØ'-1 FT/SEC	VØ'-2 FT/SEC	PO/PO INLET
1	-2.04	2.57	20.06	52.24	42.40	53.16	0.5098	-0.0027	-0.0006	1.9452	100.15	100.17	44.34	-7.90	-658.8	90.9	1.9452
2	-1.95	2.31	19.56	45.68	43.06	55.20	0.5248	-0.0095	-0.0022	1.9302	100.57	100.64	45.83	-0.04	-710.4	0.5	1.9302
3	-1.82	2.29	18.22	40.50	43.61	56.64	0.5333	-0.0093	-0.0022	1.9202	100.61	100.68	47.19	6.69	-761.0	-78.5	1.9202
4	-0.67	2.80	12.79	28.36	44.79	57.22	0.5532	0.0375	0.0092	1.8866	96.93	96.66	50.84	22.48	-906.0	-270.9	1.8866
5	0.75	3.43	13.02	11.96	45.38	49.58	0.5507	0.1327	0.0290	1.7377	86.09	85.04	55.26	43.29	-1086.9	-526.6	1.7377
6	1.27	3.55	13.30	6.56	45.48	47.77	0.5160	0.1364	0.0274	1.6997	85.14	84.01	57.21	50.64	-1174.0	-649.3	1.6997
7	1.52	3.63	9.81	7.98	45.50	53.38	0.4747	0.0697	0.0186	1.7556	90.12	89.32	58.10	50.13	-1217.0	-701.6	1.7536
8	1.80	3.75	7.70	8.46	45.46	57.25	0.4436	0.0558	0.0116	1.7912	93.71	93.19	59.01	50.56	-1259.9	-754.6	1.7912
9	2.56	4.39	7.07	8.14	44.93	59.14	0.4169	0.0763	0.0160	1.8207	91.04	90.26	62.01	53.87	-1388.2	-876.7	1.8207
10	3.40	4.65	8.44	7.65	44.59	56.67	0.4252	0.1230	0.0252	1.8073	85.61	84.39	63.08	55.43	-1430.9	-900.3	1.8073
11	3.75	4.90	12.15	5.60	44.21	50.42	0.4572	0.1971	0.0380	1.7599	77.03	75.17	64.09	58.49	-1473.6	-917.6	1.7599

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.2054	1.8163	90.42	91.18	43.20	1.2054	1.8163	90.43	91.18

STATOR 1

RUN NO 19, 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	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	16.209	15.064	1084.4	703.7	691.1	699.7	835.6	74.7	50.6	6.0	0.9617	0.5932	1.7924	1.2086	1.7924	1.2086
2	15.970	13.362	1052.4	705.8	699.9	701.0	785.9	76.8	48.5	6.2	0.9300	0.5961	1.8052	1.2052	1.8052	1.2052
3	13.951	11.803	1026.5	716.6	704.5	712.6	746.0	73.4	46.6	5.6	0.9042	0.6063	1.8265	1.2033	1.8265	1.2033
4	6.610	7.422	962.0	725.7	689.4	722.2	670.9	60.1	44.2	4.7	0.8382	0.6141	1.6421	1.2054	1.6421	1.2054
5	1.963	1.592	821.1	644.2	593.6	643.6	567.3	22.9	43.7	2.0	0.7041	0.5424	1.7250	1.1991	1.7250	1.1991
6	-1.253	-1.468	769.5	605.5	567.5	605.4	519.6	10.8	42.5	1.0	0.6574	0.5090	1.6759	1.1947	1.6759	1.1947
7	-2.467	-2.625	797.9	642.0	616.0	641.8	504.7	17.2	39.5	1.5	0.6636	0.5415	1.7120	1.1947	1.7120	1.1947
8	-3.428	-3.965	814.0	681.3	650.7	680.6	483.0	26.4	37.0	2.2	0.6950	0.5766	1.7551	1.1945	1.7551	1.1945
9	-5.919	-6.049	822.1	721.8	608.0	720.7	479.2	41.1	35.7	3.3	0.7027	0.6101	1.7935	1.2071	1.7935	1.2071
10	-6.783	-7.604	815.2	707.4	649.5	705.7	492.8	46.6	37.3	4.0	0.6927	0.5940	1.7702	1.2186	1.7702	1.2186
11	-7.275	-8.364	765.1	663.1	594.3	661.1	513.0	51.6	40.9	4.5	0.6604	0.5510	1.7135	1.2329	1.7135	1.2329

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	-4.44	-2.33	15.86	44.57	55.65	66.95	0.4671	0.1753	0.0357	0.9215	76.98	86.62	87.84	86.62	87.84
2	-4.89	-2.49	14.93	42.25	57.52	67.65	0.4659	0.1512	0.0319	0.9355	78.94	89.53	90.34	89.53	90.34
3	-5.27	-2.46	13.74	40.91	58.87	65.29	0.4409	0.1184	0.0260	0.9513	82.23	92.29	92.90	92.29	92.90
4	-5.26	-1.54	11.51	39.50	59.58	70.46	0.3957	0.0602	0.0146	0.9776	89.01	92.74	93.32	92.74	93.32
5	-4.32	0.72	6.65	41.64	51.91	61.38	0.3915	0.0202	0.0055	0.9947	95.39	84.56	85.69	84.56	85.69
6	-5.03	0.59	7.62	41.47	50.20	57.25	0.4065	0.0794	0.0227	0.9797	82.32	81.60	82.66	81.60	82.66
7	-8.04	-2.16	8.42	37.71	55.50	60.79	0.3762	0.1632	0.0301	0.9721	75.46	85.21	86.27	85.21	86.27
8	-10.14	-3.99	9.15	34.74	59.13	65.12	0.3330	0.0774	0.0230	0.9784	78.34	89.56	90.33	89.56	90.33
9	-11.40	-4.52	11.32	32.44	60.91	66.42	0.2900	0.0523	0.0164	0.9852	80.68	87.64	88.60	87.64	88.60
10	-10.17	-3.12	15.23	33.31	58.60	66.10	0.3067	0.0733	0.0242	0.9799	74.66	82.10	82.52	82.10	82.52
11	-7.22	-0.07	15.30	36.47	52.64	60.63	0.3459	0.1035	0.0331	0.9738	68.95	71.34	73.39	71.34	73.39

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 %	EFF-P TOT-STG %
11209.	190.20	1.2054	1.7710	86.26	87.22	1.2054	0.9750	86.28	206.77

ROTOR 2

RUN NO [illegible], SPEED CODE [illegible], POINT NO [illegible]

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	11.771	11.226	770.2	1290.7	766.8	614.0	74.6	1001.7	5.4	50.6	0.6538	1.1496	674.0	916.7	0.9410	0.6655	1109.2	[illegible]
2	11.165	10.085	760.0	1267.8	776.4	812.4	74.9	975.5	5.5	50.1	0.6855	1.0295	690.7	935.9	0.9635	0.6607	1132.0	[illegible]
3	10.407	8.996	798.5	1235.1	795.3	827.8	72.1	916.7	5.2	47.9	0.6687	1.0055	924.2	955.8	0.9951	0.6735	1165.0	628.7
4	7.430	6.030	831.9	1115.1	829.7	836.5	59.7	737.5	4.1	41.6	0.7125	0.9024	1005.3	1019.4	1.0759	0.7142	1256.5	882.5
5	2.090	2.020	770.1	905.5	769.7	727.9	25.3	526.7	1.7	36.5	0.6565	0.7259	1112.3	1111.6	1.1269	0.7425	1335.5	926.2
6	-0.822	0.138	735.6	757.7	735.5	600.6	10.7	461.7	0.6	37.5	0.6260	0.6025	1167.0	1160.6	1.2605	0.7521	1371.7	962.7
7	-2.479	-1.146	767.6	876.2	767.4	764.4	17.3	426.4	1.3	29.2	0.6550	0.7060	1135.9	1185.5	1.2011	0.6705	1460.4	1076.1
8	-4.302	-2.969	796.6	890.9	796.2	789.0	26.6	413.7	1.9	27.6	0.6845	0.7259	1224.1	1221.8	1.2255	0.7219	1455.6	1122.3
9	-7.042	-6.633	809.4	791.0	808.4	661.6	41.6	433.2	2.9	33.1	0.6907	0.6295	1309.9	1292.6	1.2054	0.6625	1504.0	1064.1
10	-8.177	-7.577	790.0	790.1	788.5	656.7	45.1	439.5	3.6	33.7	0.6692	0.6254	1336.7	1319.5	1.2604	0.6095	1521.5	1095.2
11	-8.773	-8.640	745.9	761.3	744.0	625.1	52.3	434.5	4.0	34.7	0.6246	0.5976	1367.6	1347.5	1.2656	0.6006	1511.2	1100.3

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	-3.27	1.05	14.46	52.15	70.62	78.74	0.4577	0.3007	0.0665	1.7214	75.75	73.65	46.21	-5.94	-602.5	85.0	3.0843
2	-3.23	1.22	11.19	49.35	71.98	80.53	0.4694	0.3621	0.0645	1.7164	76.05	74.17	46.72	-2.63	-625.6	37.4	3.0532
3	-3.30	1.26	10.23	44.35	73.85	84.30	0.4020	0.3275	0.0784	1.6905	76.69	74.92	47.05	2.70	-652.2	-39.2	3.0755
4	-2.96	1.83	9.09	30.14	76.19	90.90	0.4346	0.2272	0.0554	1.5998	79.45	78.09	48.75	18.65	-943.5	-281.9	2.9561
5	1.29	5.67	10.00	16.54	68.92	82.02	0.4125	0.1333	0.0297	1.5258	64.72	63.77	54.76	38.24	-1089.0	-572.9	2.6444
6	3.16	7.50	13.06	6.24	65.31	68.50	0.4226	0.1521	0.0294	1.4505	60.90	79.46	57.53	49.29	-1157.1	-696.9	2.4420
7	2.02	6.10	5.42	12.21	66.44	90.77	0.3226	-0.0229	-0.0050	1.5010	103.11	103.31	56.89	44.68	-1176.5	-757.5	2.6657
8	0.40	4.71	2.93	11.03	71.65	94.95	0.3038	-0.0545	-0.0077	1.5472	104.98	105.32	56.28	45.25	-1197.4	-796.2	2.7160
9	0.64	3.32	5.19	5.17	73.12	76.21	0.3095	0.1022	0.0246	1.3920	75.01	73.63	57.45	52.26	-1260.5	-858.8	2.4592
10	1.27	3.47	6.46	5.32	70.69	74.71	0.3665	0.1502	0.0340	1.4038	76.27	73.12	58.19	55.16	-1269.0	-860.2	2.4036
11	2.90	4.60	9.84	4.92	65.54	69.96	0.3624	0.1276	0.0294	1.4175	79.26	76.22	60.42	55.50	-1315.3	-912.6	2.4594

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 %
1.3942	2.7038	85.07	85.23	42.17	1.1506	1.5267	81.50	82.57

STATOR 2

RUN NO [illegible], SPEED CODE [illegible], POINT NO [illegible]

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	8.336	0.501	1335.2	942.1	894.0	936.6	991.8	-101.7	48.2	-6.2	1.0942	0.7290	2.7843	1.4616	1.5540	1.2255
2	7.000	0.119	1311.2	950.8	887.6	942.6	964.9	-124.5	47.6	-7.5	1.0750	0.7391	2.8160	1.4740	1.5623	1.2131
3	5.768	-0.284	1277.3	968.8	896.5	959.4	909.9	-134.3	45.6	-8.0	1.0450	0.7587	2.8737	1.4606	1.5763	1.2136
4	2.856	-1.443	1153.7	950.9	889.4	950.4	734.8	-31.0	35.6	-1.9	0.9369	0.7536	2.8595	1.4242	1.5493	1.1814
5	0.113	-2.501	941.2	816.5	771.7	815.5	538.6	-40.1	34.9	-2.6	0.7575	0.6400	2.5831	1.3801	1.4960	1.1509
6	-1.440	-2.789	791.4	699.9	642.3	697.4	462.5	-59.1	35.7	-4.8	0.6315	0.5544	2.3626	1.3596	1.4202	1.1350
7	-1.627	-2.426	901.7	660.1	792.9	657.3	429.4	-60.1	28.4	-5.2	0.7315	0.5230	2.3423	1.3499	1.3556	1.1299
8	-1.552	-1.727	921.2	663.3	822.7	660.8	414.3	-56.2	26.7	-4.9	0.7512	0.5437	2.3535	1.3441	1.3413	1.1273
9	-2.936	-1.040	833.7	757.4	711.3	756.7	434.8	-30.6	31.4	-2.3	0.6605	0.6004	2.4541	1.3604	1.3068	1.1351
10	-4.077	-1.098	837.6	759.1	711.6	756.6	441.6	-25.2	32.2	-1.9	0.6662	0.5994	2.4460	1.3620	1.3762	1.1340
11	-5.325	-1.114	815.7	718.9	688.4	716.7	437.6	-20.2	32.5	-1.6	0.6457	0.5623	2.3755	1.3969	1.3651	1.1330

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	2.27	3.63	8.13	54.41	83.18	104.50	0.4784	0.1843	0.0414	0.9027	74.06	70.22	74.09	59.04	61.47
2	2.65	4.60	6.24	55.08	64.79	106.11	0.4051	0.1741	0.0397	0.9103	75.66	72.16	75.64	60.45	62.82
3	1.41	3.91	5.36	53.52	88.14	109.92	0.4315	0.1339	0.0311	0.9333	77.50	76.06	79.27	64.90	66.62
4	-3.46	0.40	10.95	41.46	93.94	111.49	0.3351	0.0692	0.0172	0.9701	85.71	82.17	84.50	72.97	74.17
5	-7.31	-2.00	9.96	37.72	66.07	95.20	0.2825	0.0459	0.0123	0.9556	82.96	81.59	85.83	66.27	67.55
6	-6.17	-0.36	7.86	40.57	71.96	80.46	0.3160	0.1263	0.0340	0.9632	72.27	78.04	80.51	75.76	76.93
7	-13.31	-7.32	7.44	33.64	92.57	75.74	0.4240	0.4349	0.1214	0.8683	19.06	77.02	80.67	69.52	70.75
8	-14.65	-6.65	7.73	31.56	97.37	78.96	0.4055	0.4316	0.1221	0.8844	17.29	80.29	82.46	69.49	70.71
9	-9.66	-3.16	10.34	33.75	80.15	67.26	0.2542	0.0643	0.0169	0.9635	68.29	79.56	81.93	69.75	71.09
10	-10.11	-3.25	11.36	33.74	79.07	66.45	0.2614	0.0657	0.0194	0.9830	69.55	76.26	79.00	70.76	72.09
11	-10.73	-3.65	12.83	34.11	75.04	60.16	0.2674	0.0937	0.0279	0.9772	63.96	70.42	75.72	72.02	74.02

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 %	EFF-P TOT-STG %
11209.	190.20	1.3942	2.5806	78.65	81.23	1.1506	0.9544	72.03	427.56

TABLE XXVI (b) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

105% OF DESIGN SPEED

STATOR 1 ($\beta^*_{des.} - \beta^*_{act.}$) = -2.5°

STATOR 2 ($\beta^*_{des.} - \beta^*_{act.}$) = +2.5°

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 19, SPEED CODE 15, 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	16.024	16.361	667.1	1060.2	667.1	653.8	0.0	834.6	0.0	52.0	0.6199	0.9387	658.6	742.5	0.8710	0.5824	937.4	657.8
2	14.654	16.046	682.5	1026.9	682.5	660.0	0.0	766.7	0.0	50.0	0.6353	0.9053	710.2	799.4	0.9169	0.5820	985.0	660.1
3	11.653	13.899	697.2	999.4	697.2	661.9	0.0	748.8	0.0	48.5	0.6502	0.8776	760.8	836.2	0.9623	0.5863	1032.0	667.6
4	5.365	8.209	731.1	929.7	731.1	643.0	0.0	671.5	0.0	46.3	0.6846	0.8070	905.8	947.0	1.0901	0.6072	1164.0	699.5
5	-0.261	1.811	750.1	780.5	750.1	544.0	0.0	559.7	0.0	45.8	0.7041	0.6670	1086.7	1094.5	1.2396	0.6520	1320.4	762.9
6	-1.461	-1.020	754.2	726.0	754.2	518.5	0.0	508.2	0.0	44.4	0.7085	0.6184	1173.7	1168.3	1.3105	0.7150	1395.2	839.4
7	-2.343	-2.319	755.9	756.1	755.9	572.8	0.0	493.5	0.0	40.7	0.7102	0.6460	1216.7	1205.2	1.3457	0.7806	1432.4	913.5
8	-3.726	-3.576	756.1	776.4	756.1	610.4	0.0	479.9	0.0	38.2	0.7103	0.6648	1259.6	1242.1	1.3803	0.8361	1469.1	976.4
9	-6.763	-7.463	741.4	788.3	741.4	631.1	0.0	472.3	0.0	36.8	0.6952	0.6717	1387.8	1352.7	1.4754	0.9230	1573.4	1083.2
10	-10.402	-6.852	731.4	777.6	731.4	610.8	0.0	481.3	0.0	38.2	0.6849	0.6590	1430.6	1389.6	1.5046	0.9276	1606.7	1094.6
11	-11.644	-10.241	720.5	742.9	720.5	549.6	0.0	499.8	0.0	42.2	0.6738	0.6232	1473.3	1426.5	1.5337	0.9039	1640.0	1077.4

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	-1.96	2.62	21.65	50.71	42.40	54.08	0.5100	-0.0537	-0.0118	1.9545	102.98	103.28	44.40	-6.31	-658.6	72.2	1.9545
2	-1.93	2.37	20.71	44.79	42.99	55.81	0.5266	-0.0516	-0.0119	1.9424	103.14	103.46	45.89	1.10	-710.2	-12.7	1.9424
3	-1.75	2.36	19.06	39.73	43.53	56.94	0.5377	-0.0422	-0.0100	1.9331	102.79	103.07	47.26	7.53	-760.8	-87.4	1.9331
4	-0.56	2.90	13.52	27.73	44.69	57.02	0.5593	0.0182	0.0045	1.8973	98.47	98.34	50.94	23.21	-905.8	-275.5	1.8973
5	0.86	3.54	14.24	10.86	45.29	48.96	0.5521	0.1148	0.0246	1.7430	88.40	87.48	55.38	44.52	-1086.7	-534.8	1.7430
6	1.34	3.62	14.51	5.43	45.41	47.22	0.5132	0.1148	0.0224	1.7048	87.36	86.39	57.28	51.85	-1173.7	-660.1	1.7048
7	1.56	3.67	10.85	6.98	45.46	52.96	0.4726	0.0665	0.0139	1.7596	92.37	91.76	58.15	51.17	-1216.7	-711.6	1.7596
8	1.60	3.76	8.44	7.72	45.47	57.14	0.4422	0.0345	0.0072	1.8022	96.10	95.78	59.02	51.30	-1259.6	-762.1	1.8022
9	2.67	4.29	7.52	7.60	45.02	59.45	0.4174	0.0550	0.0114	1.8420	93.53	92.97	61.92	54.31	-1387.8	-880.4	1.8420
10	3.26	4.58	9.01	6.96	44.70	57.04	0.4266	0.0972	0.0197	1.8269	88.56	87.57	62.97	56.01	-1430.6	-908.3	1.8269
11	3.63	4.78	12.89	4.73	44.34	50.42	0.4545	0.1731	0.0327	1.7771	79.69	78.01	63.96	59.23	-1473.3	-926.7	1.7771

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	1.8288	92.87	93.43	43.18	1.2025	1.8288	92.87	93.43

STATOR 1

AIRFOIL AERODYNAMIC SUMMARY PRINT

NASA ENGLISH

RUN NO 19, SPEED CODE 15, 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	16.286	15.056	1067.4	699.5	686.8	696.6	817.1	68.6	50.2	5.6	0.9461	0.5911	1.8060	1.2041	1.8060	1.2041
2	16.109	13.471	1037.9	703.4	652.9	698.2	772.8	85.1	48.3	6.9	0.9166	0.5946	1.8203	1.2017	1.8203	1.2017
3	14.117	11.974	1013.3	715.0	694.8	709.2	737.6	91.3	46.8	7.3	0.8918	0.6056	1.8428	1.2009	1.8428	1.2009
4	6.795	7.744	948.9	720.9	675.9	716.6	666.1	78.7	44.6	6.3	0.8259	0.6101	1.8551	1.2039	1.8551	1.2039
5	2.149	2.121	802.9	630.3	576.5	629.7	558.8	27.0	44.1	2.5	0.6860	0.5307	1.7285	1.1959	1.7285	1.1959
6	-1.076	-0.772	745.3	590.1	550.3	590.0	506.6	8.6	42.7	0.8	0.6399	0.4963	1.6776	1.1905	1.6776	1.1905
7	-2.329	-1.993	778.9	631.9	601.8	631.6	494.5	17.4	39.4	1.6	0.6673	0.5333	1.7175	1.1909	1.7175	1.1909
8	-3.294	-3.003	799.2	673.5	638.3	673.0	481.4	25.6	37.1	2.2	0.6861	0.5705	1.7641	1.1915	1.7641	1.1915
9	-5.619	-5.888	814.1	712.5	661.2	711.4	474.9	38.1	35.7	3.1	0.6958	0.6021	1.8136	1.2053	1.8136	1.2053
10	-6.697	-6.856	805.6	696.2	643.9	695.1	484.1	39.1	37.0	3.2	0.6850	0.5850	1.7930	1.2148	1.7930	1.2148
11	-7.623	-7.945	773.2	648.9	586.7	647.8	503.7	38.6	40.7	3.4	0.6508	0.5355	1.7363	1.2286	1.7363	1.2286

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	-4.69	-2.78	15.40	44.59	56.47	67.48	0.4604	0.1733	0.0353	0.9240	76.74	90.06	90.83	90.06	90.83
2	-5.06	-2.66	15.63	41.38	58.08	68.17	0.4565	0.1498	0.0316	0.9371	78.65	92.46	93.05	92.46	93.05
3	-5.15	-2.41	15.15	39.53	59.13	69.72	0.4293	0.1157	0.0253	0.9533	82.19	94.93	95.33	94.93	95.33
4	-4.86	-1.17	13.03	38.37	59.15	70.56	0.3663	0.0580	0.0141	0.9789	89.14	94.61	95.04	94.61	95.04
5	-3.91	1.13	9.26	41.64	51.22	60.67	0.3904	0.0249	0.0068	0.9937	94.32	86.28	87.28	86.28	87.28
6	-4.77	0.84	7.69	41.92	49.50	56.37	0.4076	0.0898	0.0257	0.9780	79.85	83.57	84.70	83.57	84.70
7	-7.67	-1.99	8.46	37.86	54.95	60.66	0.3712	0.1094	0.0319	0.9715	73.15	87.50	88.39	87.50	88.39
8	-10.03	-3.89	9.11	34.90	58.94	65.09	0.3286	0.0856	0.0254	0.9768	75.24	91.89	92.50	91.89	92.50
9	-11.37	-4.49	11.12	32.68	61.36	68.72	0.2939	0.0556	0.0172	0.9648	80.18	90.28	91.04	90.28	91.04
10	-10.43	-3.38	12.51	33.78	59.22	66.48	0.3125	0.0676	0.0214	0.9819	77.29	84.54	85.73	84.54	85.73
11	-7.38	-0.23	14.24	37.22	52.96	60.77	0.3555	0.0924	0.0295	0.9771	72.59	74.60	76.47	74.60	76.47

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 %	EFF-P TOT-STG %
11206.	190.10	1.2025	1.7839	88.73	89.59	1.2025	0.9755	88.73	207.30

ROTOR 2

RUN NO 19, SPEED CODE 15, 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'-I	V'-1 FT/SEC	V'-2 FT/SEC
1	11.786	11.356	757.8	1360.0	754.9	939.9	66.4	1010.4	5.0	47.0	0.6438	1.1403	873.8	916.5	0.9390	0.7806	1105.4	944.6
2	11.217	10.389	768.2	1361.4	763.7	921.2	82.6	1002.4	6.2	47.4	0.6540	1.1226	898.5	935.7	0.9515	0.7616	1117.5	923.6
3	10.551	9.405	786.8	1326.0	781.7	905.4	89.9	968.8	6.6	46.9	0.6716	1.0903	924.0	955.6	0.9757	0.7445	1143.1	905.5
4	7.620	6.618	817.5	1201.2	813.7	935.2	78.2	753.8	5.5	38.9	0.6992	0.9858	1003.0	1019.2	1.0537	0.7978	1231.8	972.1
5	2.544	2.427	745.1	989.1	744.5	827.2	28.0	542.2	2.2	33.3	0.6343	0.8020	1112.0	1111.3	1.1196	0.8142	1315.0	1004.1
6	-0.461	0.033	700.1	845.8	700.0	713.3	8.0	454.5	0.7	32.5	0.5948	0.6803	1167.6	1160.3	1.1507	0.8072	1354.5	1003.5
7	-1.095	-1.068	734.1	815.0	733.9	700.7	17.1	416.2	1.3	30.7	0.6258	0.6570	1195.6	1185.6	1.1835	0.8389	1388.3	1040.7
8	-2.743	-2.117	772.1	843.4	771.7	746.8	25.5	391.9	1.9	27.6	0.6608	0.6845	1223.8	1211.5	1.2198	0.8999	1425.3	1108.8
9	-5.956	-5.519	813.5	892.4	812.6	798.4	38.4	398.6	2.7	26.4	0.6952	0.7226	1305.6	1291.7	1.2893	0.9701	1508.7	1198.0
10	-6.981	-6.720	801.3	885.0	800.3	783.4	39.6	411.6	2.8	27.6	0.6810	0.7113	1338.4	1319.2	1.2965	0.9636	1525.6	1198.9
11	-6.097	-6.104	759.6	849.8	758.6	752.3	39.1	395.3	2.9	27.6	0.6384	0.6771	1367.2	1347.2	1.2855	0.9667	1529.5	1213.3

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	-2.61	1.71	14.71	52.56	70.94	79.07	0.3450	0.5371	0.1218	1.6092	65.16	62.79	46.87	-5.69	-807.4	93.9	2.9050
2	-3.04	1.41	5.68	51.06	72.02	79.50	0.3693	0.5240	0.1221	1.6109	65.40	63.03	46.92	-4.14	-815.5	66.8	2.9267
3	-3.41	1.17	6.70	47.78	73.85	80.11	0.3914	0.5151	0.1234	1.5781	64.06	61.71	46.95	-0.83	-834.1	13.2	2.8991
4	-2.95	1.84	6.31	32.52	76.00	89.73	0.3481	0.3496	0.0865	1.4968	68.33	66.50	48.80	15.88	-924.8	-265.3	2.7863
5	2.07	6.65	6.33	20.55	67.91	83.52	0.3442	0.2580	0.0602	1.4158	69.55	68.45	55.54	34.55	-1084.0	-569.1	2.4638
6	4.46	8.82	8.46	14.18	63.49	72.13	0.3539	0.2749	0.0580	1.3393	63.66	62.15	58.85	44.67	-1159.5	-705.9	2.2386
7	3.17	7.24	8.35	10.43	66.55	71.60	0.3348	0.2645	0.0544	1.2928	60.75	59.33	58.04	47.61	-1178.5	-769.4	2.2069
8	1.76	5.57	5.25	9.58	70.85	77.79	0.2989	0.2157	0.0456	1.2965	65.38	64.11	57.15	47.57	-1198.3	-819.6	2.2734
9	0.47	3.15	0.95	9.24	74.29	84.09	0.2870	0.1968	0.0459	1.3165	67.11	65.82	57.28	48.04	-1271.1	-893.1	2.3881
10	1.02	3.20	2.35	5.15	72.51	81.62	0.3014	0.2174	0.0518	1.3178	64.54	63.15	58.22	49.03	-1258.8	-907.5	2.3736
11	2.62	4.32	5.88	6.60	67.42	77.33	0.2934	0.1884	0.0443	1.3288	68.79	67.52	60.14	51.54	-1328.1	-951.9	2.3120

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 %
1.3812	2.5048	77.20	79.89	41.79	1.1536	1.4041	65.86	67.44

STATOR 2

RUN NO 19, SPEED CODE 15, 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	8.585	0.524	1445.8	1099.6	1043.9	1087.4	1000.4	-163.3	44.1	-8.5	1.2101	0.8685	2.5438	1.4613	1.4092	1.2300
2	7.415	0.146	1426.3	1110.4	1023.4	1106.2	993.5	-96.7	44.4	-5.0	1.1907	0.8794	2.5835	1.4782	1.4224	1.2297
3	6.216	-0.249	1390.6	1120.4	1004.3	1099.1	961.8	-217.3	43.9	-11.2	1.1570	0.8516	2.6271	1.4697	1.4301	1.2239
4	3.457	-1.032	1260.8	1077.3	1011.9	1066.8	752.1	-135.0	36.7	-7.2	1.0449	0.8676	2.5671	1.4243	1.3791	1.1830
5	0.935	-1.658	1047.6	987.6	855.8	967.1	543.1	-200.3	31.2	-11.7	0.8559	0.8003	2.3829	1.3794	1.3664	1.1521
6	-0.611	-1.836	907.7	896.7	785.0	869.0	455.7	-221.0	30.1	-14.3	0.7351	0.7252	2.2113	1.3570	1.3214	1.1396
7	-1.606	-1.846	875.2	848.2	769.4	830.7	417.2	-171.8	28.4	-11.7	0.7101	0.6862	2.1309	1.3430	1.2492	1.1279
8	-2.497	-1.715	900.0	853.7	809.8	841.4	392.7	-144.8	25.9	-9.8	0.7351	0.6936	2.1361	1.3338	1.2202	1.1198
9	-4.324	-1.338	954.3	944.6	866.2	939.6	400.5	-97.3	24.8	-5.9	0.7786	0.7699	2.2668	1.3520	1.2499	1.1232
10	-5.607	-1.304	954.5	955.2	860.1	949.3	414.1	-105.8	25.7	-6.3	0.7736	0.7743	2.2654	1.3687	1.2575	1.1290
11	-5.835	-1.224	931.5	916.6	842.2	910.9	398.1	-102.3	25.4	-6.4	0.7491	0.7358	2.1741	1.3812	1.2496	1.1245

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	-1.90	-0.34	5.79	52.56	82.35	100.49	0.4207	0.2097	0.0469	0.8757	67.38	63.21	67.59	44.41	46.98
2	-0.56	1.46	8.76	45.35	82.98	103.17	0.3967	0.2006	0.0461	0.8830	66.34	64.83	69.08	45.75	48.32
3	-0.23	2.28	2.17	55.10	83.71	103.81	0.3918	0.1665	0.0383	0.9061	68.42	67.34	71.36	47.71	50.23
4	-6.39	-2.52	5.62	43.67	92.38	103.71	0.3201	0.1582	0.0390	0.9210	58.78	72.58	75.90	52.27	54.35
5	-11.00	-5.69	1.10	42.51	87.14	94.50	0.2496	0.0961	0.0252	0.9633	36.43	73.96	76.88	60.96	62.62
6	-11.79	-6.00	-1.54	44.37	76.72	84.31	0.2202	0.0490	0.0131	0.9850	-60.13	71.06	74.04	59.01	60.57
7	-13.29	-7.30	0.99	40.11	76.05	80.46	0.2201	0.1225	0.0336	0.9652	-65.51	76.15	73.09	50.88	52.36
8	-15.70	-9.49	2.85	35.61	81.64	81.96	0.2209	0.1937	0.0542	0.9414	-62.83	72.47	75.15	46.59	49.99
9	-16.46	-5.76	6.76	30.74	87.85	91.03	0.1630	0.1532	0.0447	0.9495	-619.63	74.62	77.31	53.10	54.54
10	-16.21	-9.33	6.92	32.10	85.96	90.53	0.1609	0.1400	0.0412	0.9543	4072.34	71.18	74.24	52.14	53.64
11	-17.86	-10.76	8.03	31.77	82.63	84.79	0.1767	0.1918	0.0569	0.9405	-308.25	64.96	68.49	52.49	53.55

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 %	EFF-P TOT-STG %
11206.	150.10	1.3812	2.3487	71.11	74.30	1.1536	0.9377	52.89	-2292.57

TABLE XXVI (c) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

105% OF DESIGN SPEED

STATOR 1 $(\beta^*_{des.} - \beta^*_{act.}) = -2.5^\circ$

STATOR 2 $(\beta^*_{des.} - \beta^*_{act.}) = +2.5^\circ$

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 19, SPEED CODE 15, 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	16.680	16.305	667.9	1070.5	667.9	649.9	0.0	850.6	0.0	52.7	0.6206	0.9474	659.5	763.9	0.8725	0.5603	938.9	655.7
2	14.166	15.937	683.2	1034.5	683.2	656.1	0.0	798.7	0.0	50.5	0.6360	0.9120	711.6	800.9	0.9183	0.5799	986.5	658.1
3	11.807	15.751	696.0	1006.3	696.0	664.6	0.0	757.2	0.0	48.8	0.6509	0.8835	762.3	837.9	0.9639	0.5862	1033.6	667.7
4	5.577	7.972	732.1	936.2	732.1	649.2	0.0	674.4	0.0	46.1	0.6857	0.8128	907.5	948.8	1.0921	0.6120	1166.0	704.8
5	-0.021	1.456	750.4	791.1	750.4	550.6	0.0	568.0	0.0	45.9	0.7045	0.6759	1088.6	1096.6	1.2414	0.6522	1322.3	763.3
6	-1.321	-1.403	753.5	742.6	753.5	550.1	0.0	520.3	0.0	44.5	0.7077	0.6325	1176.0	1170.6	1.3118	0.7143	1396.7	838.9
7	-2.231	-2.691	754.5	769.2	754.5	579.8	0.0	505.5	0.0	41.1	0.7087	0.6567	1219.1	1207.5	1.3467	0.7774	1433.6	910.5
8	-3.640	-3.528	753.9	787.1	753.9	617.6	0.0	487.9	0.0	38.3	0.7081	0.6737	1262.1	1244.5	1.3808	0.8359	1470.1	976.6
9	-6.653	-7.720	737.1	793.6	737.1	636.5	0.0	474.0	0.0	36.6	0.6908	0.6763	1350.5	1355.3	1.4750	0.9265	1573.8	1087.2
10	-10.353	-9.048	726.6	764.1	726.6	616.1	0.0	485.0	0.0	38.2	0.6800	0.6643	1433.3	1392.3	1.5040	0.9292	1607.0	1096.7
11	-11.608	-10.354	715.4	751.4	715.4	556.1	0.0	505.3	0.0	42.2	0.6686	0.6301	1476.1	1429.3	1.5331	0.9044	1640.3	1078.4

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	-1.95	2.66	20.35	52.04	42.43	52.97	0.5166	-0.0072	-0.0016	1.9462	100.40	100.45	44.43	-7.60	-659.9	86.7	1.9462
2	-1.89	2.41	19.80	45.73	43.01	54.91	0.5317	-0.0123	-0.0026	1.9322	100.74	100.83	45.93	0.20	-711.6	-2.3	1.9322
3	-1.71	2.40	16.47	40.36	43.55	56.35	0.5396	-0.0116	-0.0028	1.9230	100.77	100.85	47.30	6.94	-762.3	-80.7	1.9230
4	-0.54	2.93	13.22	28.06	44.72	57.66	0.5557	0.0330	0.0061	1.8899	97.30	97.06	50.96	22.91	-907.5	-274.4	1.8899
5	0.90	3.58	13.56	11.58	45.30	49.09	0.5539	0.1316	0.0285	1.7406	86.66	85.81	55.41	43.83	-1088.8	-526.7	1.7406
6	1.42	3.70	13.47	6.54	45.39	47.84	0.5165	0.1312	0.0262	1.7100	85.62	84.73	57.35	50.81	-1176.0	-650.2	1.7100
7	1.66	3.76	10.14	7.79	45.42	53.08	0.4776	0.0884	0.0183	1.7609	90.33	89.55	58.24	50.45	-1219.1	-702.0	1.7609
8	1.92	3.88	7.91	6.37	45.40	57.29	0.4441	0.0503	0.0106	1.8011	94.38	93.91	59.14	50.77	-1262.1	-756.5	1.8011
9	3.05	4.47	7.33	7.97	44.66	59.40	0.4153	0.0661	0.0137	1.8318	92.24	91.57	62.10	54.13	-1390.5	-881.4	1.8318
10	3.48	4.77	8.77	7.39	44.54	56.94	0.4261	0.1108	0.0226	1.8170	87.00	85.89	63.16	55.77	-1433.3	-907.3	1.8170
11	3.83	4.98	12.55	5.29	44.17	50.45	0.4552	0.1875	0.0357	1.7687	78.12	76.32	64.16	58.87	-1476.1	-924.0	1.7687

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 %
1.2052	1.8227	91.09	91.79	43.13	1.2052	1.8227	91.06	91.79

STATOR 1

RUN NO 19, SPEED CODE 15, 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	16.192	14.940	1078.0	694.2	684.6	691.8	832.7	60.4	50.8	4.9	0.9552	0.5846	1.7947	1.2064	1.7947	1.2064
2	15.936	13.236	1046.6	697.9	692.7	693.4	784.5	78.9	48.7	6.4	0.9240	0.5890	1.8067	1.2052	1.8067	1.2052
3	13.899	11.622	1021.0	709.7	697.3	704.4	745.9	86.6	47.0	7.0	0.8985	0.6001	1.8306	1.2035	1.8306	1.2035
4	8.529	7.107	956.2	719.6	683.3	716.8	669.0	62.7	44.4	5.0	0.8326	0.6086	1.8488	1.2052	1.8488	1.2052
5	1.833	1.189	614.4	637.0	584.5	636.6	567.0	25.0	44.1	2.2	0.6977	0.5359	1.7295	1.1994	1.7295	1.1994
6	-1.369	-1.656	766.8	595.6	562.9	599.4	520.7	15.0	42.6	1.4	0.6546	0.5036	1.6815	1.1954	1.6815	1.1954
7	-2.590	-3.115	793.2	639.5	610.4	639.0	506.5	23.6	39.7	2.1	0.6791	0.5389	1.7195	1.1956	1.7195	1.1956
8	-3.528	-4.124	810.5	679.2	646.1	678.5	489.4	30.2	37.2	2.6	0.6957	0.5748	1.7635	1.1949	1.7635	1.1949
9	-5.954	-6.778	818.3	715.2	665.1	714.0	476.7	41.2	35.7	3.3	0.6994	0.6045	1.8027	1.2064	1.8027	1.2064
10	-6.796	-7.551	810.1	700.7	646.6	699.5	488.1	42.2	37.1	3.5	0.6865	0.5885	1.7811	1.2168	1.7811	1.2168
11	-7.877	-8.354	779.4	657.0	590.1	655.8	509.2	40.1	40.9	3.5	0.6556	0.5460	1.7256	1.2316	1.7256	1.2316

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	-4.28	-2.17	14.77	45.62	55.45	66.57	0.4952	0.1754	0.0357	0.9221	77.14	87.19	88.18	87.19	88.18
2	-4.65	-2.25	15.17	42.25	57.26	67.30	0.4096	0.1507	0.0318	0.9361	79.12	89.84	90.64	89.84	90.64
3	-5.00	-2.22	14.86	40.05	58.60	68.60	0.4415	0.1177	0.0258	0.9520	82.41	92.59	93.18	92.59	93.18
4	-5.09	-1.37	11.76	39.43	59.20	70.26	0.3974	0.0567	0.0143	0.9784	85.34	93.27	93.81	93.27	93.81
5	-3.90	1.15	9.06	41.86	51.40	61.03	0.3949	0.0184	0.0050	0.9953	95.65	84.50	86.00	84.90	86.00
6	-4.74	0.87	8.29	41.34	50.13	56.96	0.4101	0.0665	0.0248	0.9781	81.01	81.84	83.09	81.04	83.09
7	-7.59	-1.71	9.00	37.60	55.16	61.02	0.3745	0.1050	0.0306	0.9719	74.86	85.51	86.55	85.51	86.55
8	-9.92	-3.78	9.49	34.63	59.14	65.26	0.3317	0.0826	0.0245	0.9771	76.79	90.23	90.96	90.23	90.96
9	-11.42	-4.54	11.36	32.39	61.18	66.41	0.2936	0.0565	0.0175	0.9643	75.91	88.79	89.66	88.79	89.66
10	-10.31	-3.27	12.74	33.66	58.69	66.21	0.3112	0.0714	0.0226	0.9807	75.94	82.69	84.01	82.69	84.01
11	-7.23	-0.08	14.33	37.38	52.73	60.80	0.3520	0.0568	0.0320	0.9757	74.15	72.76	74.74	72.70	74.74

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 %	EFF-P TOT-STG %
11226.	189.90	1.2052	1.7776	86.96	87.56	1.2052	0.9755	86.96	205.00

ROTOR 2

RUN NO 19, SPEED CODE 15, 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	11.659	11.168	767.4	1246.6	765.1	708.2	58.6	966.0	4.4	50.7	0.6513	1.0092	875.5	916.3	0.9500	0.6392	1119.2	789.7
2	10.955	9.969	778.2	1231.1	774.4	709.5	76.8	961.0	5.7	51.2	0.6623	0.9957	900.2	937.5	0.9620	0.6227	1130.4	769.9
3	10.122	8.834	797.1	1212.6	792.6	777.1	85.0	930.8	6.1	50.1	0.6804	0.9813	925.8	957.5	0.9862	0.6293	1155.5	777.6
4	6.899	5.661	827.9	1099.0	825.6	789.1	62.2	765.0	4.3	44.1	0.7087	0.8845	1005.0	1021.1	1.0726	0.6677	1253.1	829.7
5	1.387	1.414	758.6	924.3	758.4	652.7	25.1	608.9	1.9	41.3	0.6461	0.7335	1114.2	1113.4	1.1299	0.6816	1327.1	857.0
6	-1.799	-0.934	719.7	834.4	719.5	623.1	15.2	554.9	1.2	41.7	0.6113	0.6601	1169.8	1162.6	1.1556	0.6886	1360.5	870.4
7	-3.205	-2.062	749.9	819.2	749.6	620.3	23.9	535.0	1.8	40.7	0.6390	0.6486	1197.9	1187.9	1.1868	0.7131	1392.9	900.6
8	-4.364	-3.145	780.2	838.4	779.0	654.4	30.6	524.0	2.2	38.0	0.6672	0.6660	1226.1	1213.8	1.2206	0.7553	1427.3	950.8
9	-7.372	-6.462	799.8	854.5	798.7	658.5	41.6	544.5	3.0	39.5	0.6820	0.6726	1312.1	1294.2	1.2796	0.7854	1500.7	997.8
10	-8.131	-7.531	782.3	840.6	781.1	637.1	42.7	546.6	3.1	40.6	0.6626	0.6569	1340.9	1321.7	1.2834	0.7827	1515.1	1001.8
11	-8.802	-6.640	739.3	806.8	738.2	594.6	40.6	545.3	3.1	42.4	0.6192	0.6238	1369.9	1349.8	1.2735	0.7735	1520.5	1000.3

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	-2.67	1.64	16.95	50.26	70.69	82.32	0.4842	0.2730	0.0621	1.7856	82.44	80.96	46.81	-3.45	-816.9	47.8	3.2035
2	-3.20	1.25	12.07	46.50	72.01	82.20	0.5054	0.2630	0.0614	1.7884	82.79	81.33	46.76	-1.74	-823.4	23.5	3.2306
3	-3.61	0.96	9.49	44.76	73.87	85.20	0.5032	0.2306	0.0553	1.7616	84.14	82.81	46.74	1.96	-840.6	-26.6	3.2570
4	-2.87	1.92	8.43	30.66	70.16	91.54	0.4815	0.1653	0.0405	1.6918	85.80	84.71	48.88	18.00	-942.8	-256.2	3.1305
5	1.69	6.26	7.85	19.06	68.46	83.13	0.4777	0.1096	0.0251	1.6481	88.97	88.17	55.15	36.08	-1089.0	-504.6	2.8558
6	3.66	8.02	8.04	13.60	64.64	75.26	0.4776	0.1127	0.0240	1.6153	87.87	87.03	58.05	44.25	-1154.6	-607.7	2.7165
7	2.55	6.63	7.16	11.01	67.79	75.44	0.4650	0.1266	0.0266	1.5711	85.43	84.47	57.42	46.41	-1174.0	-652.9	2.7046
8	1.48	5.29	4.12	10.43	71.11	80.44	0.4417	0.1216	0.0263	1.5619	85.36	84.41	56.87	46.44	-1195.6	-689.8	2.7555
9	0.98	3.66	1.50	9.20	73.07	80.08	0.4513	0.1779	0.0411	1.5497	78.37	77.00	57.79	48.60	-1270.5	-749.7	2.7929
10	1.70	3.88	3.71	8.51	70.85	76.51	0.4590	0.1693	0.0436	1.5512	77.19	75.75	58.90	50.39	-1298.3	-773.1	2.7624
11	3.36	5.05	7.77	7.45	65.76	70.13	0.4664	0.1864	0.0420	1.5614	77.87	76.45	60.87	53.43	-1329.3	-804.5	2.6949

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 %
1.4223	2.5667	84.04	66.21	41.94	1.1801	1.6351	85.14	84.26

STATOR 2

RUN NO 19, SPEED CODE 15, 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	6.418	0.504	1264.7	823.3	857.8	823.2	956.4	-7.0	48.4	-0.5	1.0464	0.6315	3.0321	1.4755	1.6901	1.2207
2	7.117	0.205	1267.6	836.9	836.5	836.9	952.6	2.1	46.9	0.1	1.0315	0.6455	3.0756	1.4710	1.7026	1.2203
3	5.847	-0.239	1247.9	669.6	838.9	669.6	923.0	1.5	47.9	0.1	1.0156	0.6755	3.1522	1.4017	1.7237	1.2246
4	2.953	-1.429	1131.3	828.2	836.3	827.1	701.9	-42.6	42.4	-3.0	0.9146	0.6457	3.0800	1.4330	1.6667	1.1890
5	0.339	-2.081	951.6	688.2	731.7	685.2	606.5	-63.6	39.7	-5.3	0.7594	0.5551	2.6104	1.4064	1.6265	1.1726
6	-0.772	-1.997	863.3	604.2	661.6	601.3	555.5	-59.2	40.0	-5.6	0.6650	0.4586	2.6861	1.3954	1.5957	1.1673
7	-1.355	-1.834	847.3	590.7	656.4	588.5	535.7	-50.2	39.4	-4.9	0.6728	0.4587	2.6673	1.3895	1.5492	1.1620
8	-1.919	-1.631	865.8	628.7	688.4	627.6	525.0	-36.0	37.3	-3.3	0.6698	0.4902	2.7160	1.3855	1.5412	1.1595
9	-3.646	-1.409	867.5	666.4	698.9	666.1	547.0	-17.3	35.0	-1.5	0.7011	0.5174	2.7575	1.4134	1.5294	1.1718
10	-4.460	-1.386	878.8	654.4	683.9	654.2	551.8	-14.4	38.9	-1.3	0.6695	0.5050	2.7271	1.4297	1.5506	1.1752
11	-5.493	-1.280	851.4	604.8	650.2	604.6	549.2	-13.1	40.2	-1.2	0.6612	0.4600	2.6479	1.4486	1.5245	1.1762

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	2.41	3.97	13.83	48.85	86.60	106.66	0.5276	0.1069	0.0242	0.9466	86.24	78.07	81.15	72.71	74.63
2	3.96	6.00	13.89	48.76	86.71	109.74	0.5100	0.0989	0.0226	0.9515	67.16	79.92	82.78	73.64	75.71
3	3.75	6.25	13.43	47.81	89.38	115.41	0.4750	0.0670	0.0157	0.9678	90.44	85.66	86.05	77.82	79.44
4	-0.69	3.18	9.87	45.32	94.79	111.26	0.4401	0.0319	0.0079	0.9868	94.49	87.15	88.99	82.50	85.77
5	-2.48	2.82	7.48	45.04	86.43	91.25	0.4633	0.0354	0.0094	0.9889	93.54	84.37	86.44	86.02	86.95
6	-1.89	3.89	7.10	45.62	76.62	79.49	0.4967	0.0404	0.0111	0.9892	92.95	82.19	84.45	84.76	85.74
7	-2.55	3.45	7.79	44.06	78.65	77.93	0.4978	0.0533	0.0149	0.9861	90.87	82.76	84.95	81.69	82.77
8	-4.25	1.95	9.32	40.58	83.37	63.70	0.4586	0.0451	0.0139	0.9867	90.92	85.36	87.26	81.76	82.85
9	-3.25	3.44	11.16	39.53	83.52	67.49	0.4344	0.0469	0.0137	0.9869	90.54	81.00	83.47	74.61	76.06
10	-3.03	3.85	12.01	40.19	80.55	64.34	0.4472	0.0487	0.0144	0.9868	90.37	76.95	79.90	73.30	74.65
11	-2.99	4.11	13.19	41.49	75.07	76.19	0.4677	0.0686	0.0205	0.9826	87.66	71.19	74.77	73.25	74.60

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 %	EFF-P TOT-STG %
11228.	189.90	1.4223	2.6550	82.41	64.77	1.1801	0.9822	79.90	84.46

TABLE XXVI (d) — OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

105% OF DESIGN SPEED

STATOR 1 ($\beta^*_{des.} - \beta^*_{act.}$) =−2.5°

STATOR 2 ($\beta^*_{des.} - \beta^*_{act.}$) = +2.5°

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 19, 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	16.724	18.459	652.8	1051.9	652.8	609.1	0.0	857.6	0.0	54.7	0.6056	0.9269	662.9	767.5	0.8631	0.5426	930.4	615.8
2	14.286	16.216	667.8	1012.7	667.8	606.8	0.0	810.8	0.0	53.2	0.6205	0.8876	714.9	804.6	0.9090	0.5318	978.3	606.8
3	12.034	14.112	682.5	988.1	682.5	618.0	0.0	771.0	0.0	51.3	0.6354	0.8633	765.8	841.7	0.9549	0.5434	1025.8	622.0
4	8.117	6.515	718.8	916.5	718.8	604.1	0.0	689.7	0.0	48.8	0.6721	0.7915	911.7	953.2	1.0856	0.5693	1161.0	659.1
5	0.356	2.171	744.8	821.3	744.8	538.2	0.0	620.4	0.0	49.1	0.6987	0.6981	1093.8	1101.7	1.2415	0.6137	1323.3	722.1
6	-1.628	-0.664	750.0	781.9	750.0	521.1	0.0	583.0	0.0	48.2	0.7050	0.6614	1181.4	1176.0	1.3143	0.6677	1399.8	789.4
7	-2.759	-2.046	752.5	800.8	752.5	568.3	0.0	564.2	0.0	44.8	0.7067	0.6789	1224.7	1213.1	1.3499	0.7312	1437.4	862.5
8	-4.207	-3.406	752.3	813.2	752.3	603.1	0.0	545.5	0.0	42.1	0.7065	0.6907	1267.9	1250.2	1.3845	0.7878	1474.3	927.6
9	-9.003	-7.501	736.5	819.7	736.5	614.8	0.0	542.2	0.0	41.4	0.6902	0.6912	1397.0	1361.6	1.4799	0.8638	1579.2	1024.5
10	-10.652	-8.893	726.4	803.0	726.4	582.7	0.0	552.5	0.0	43.4	0.6799	0.6725	1440.0	1398.8	1.5094	0.8605	1612.8	1027.4
11	-11.801	-10.254	715.7	765.4	715.7	509.5	0.0	571.2	0.0	48.2	0.6689	0.6342	1482.9	1435.9	1.5390	0.8316	1646.6	1003.7

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	-1.16	3.45	19.53	53.65	41.83	51.31	0.5563	-0.0386	-0.0084	1.9832	102.04	102.25	45.22	-8.43	-662.9	90.1	1.9832
2	-1.09	3.21	19.02	47.31	42.42	52.29	0.5822	-0.0249	-0.0057	1.9647	101.45	101.61	46.73	-0.58	-714.9	6.2	1.9647
3	-0.92	3.19	18.07	41.55	42.95	54.40	0.5826	-0.0354	-0.0064	1.9685	102.23	102.46	48.09	6.54	-765.8	-70.7	1.9685
4	0.13	3.60	13.91	28.04	44.28	55.26	0.5952	0.0081	0.0020	1.9465	99.36	99.30	51.63	23.59	-911.7	-263.5	1.9465
5	1.22	3.90	11.54	13.92	45.12	50.33	0.5963	0.0995	0.0223	1.8813	91.01	90.19	55.74	41.82	-1093.8	-481.4	1.8813
6	1.63	3.91	11.35	8.88	45.31	49.33	0.5673	0.1108	0.0232	1.8622	89.28	88.33	57.57	48.69	-1181.4	-593.0	1.8622
7	1.65	3.56	8.47	9.66	45.36	54.57	0.5262	0.0710	0.0152	1.9091	93.00	92.35	58.44	48.78	-1224.7	-648.9	1.9091
8	2.11	4.06	6.57	9.90	45.35	58.63	0.4927	0.0393	0.0085	1.9456	96.03	95.65	59.33	49.43	-1267.9	-704.7	1.9456
9	3.20	4.63	6.27	9.18	44.86	59.93	0.4726	0.0784	0.0167	1.9804	91.79	90.98	62.25	53.07	-1397.0	-819.5	1.9804
10	3.61	4.90	8.38	7.51	44.54	56.23	0.4862	0.1280	0.0263	1.9561	86.53	85.22	63.29	55.38	-1440.0	-846.2	1.9561
11	3.54	5.09	13.06	4.67	44.18	48.32	0.5175	0.2041	0.0383	1.9005	78.47	76.48	64.27	59.40	-1482.9	-864.7	1.9005

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 %
1.2241	1.9340	92.44	93.09	42.93	1.2241	1.9340	92.44	93.09

STATOR 1

RUN NO 19, 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	16.366	15.073	1054.8	610.8	638.6	610.3	839.5	23.4	53.0	2.2	0.9299	0.5100	1.8335	1.2112	1.8335	1.2112
2	16.209	13.460	1019.6	617.7	636.6	615.7	796.5	50.6	51.5	4.7	0.8946	0.5166	1.8497	1.2093	1.8497	1.2093
3	14.208	11.918	998.1	632.6	647.6	628.5	759.5	72.2	49.7	6.5	0.8733	0.5300	1.8739	1.2081	1.8739	1.2081
4	8.969	7.553	933.0	645.6	634.6	643.7	684.0	50.2	47.2	4.5	0.8076	0.5409	1.9015	1.2108	1.9015	1.2108
5	2.696	1.957	841.6	610.2	565.8	609.3	619.3	31.6	47.4	3.0	0.7170	0.5077	1.8580	1.2192	1.8580	1.2192
6	-0.278	-0.727	803.5	579.5	552.4	579.1	583.5	19.5	46.6	1.9	0.6813	0.4808	1.8227	1.2199	1.8227	1.2199
7	-1.594	-1.646	821.6	615.9	596.2	618.3	565.3	39.3	43.5	3.6	0.6982	0.5158	1.8648	1.2195	1.8648	1.2195
8	-2.091	-2.836	834.1	652.2	629.6	650.4	547.2	48.1	41.0	4.2	0.7102	0.5448	1.9035	1.2188	1.9035	1.2188
9	-5.500	-5.818	843.2	677.3	643.4	673.5	545.0	71.6	40.3	6.1	0.7130	0.5628	1.9362	1.2364	1.9362	1.2364
10	-6.461	-6.817	828.8	656.7	614.9	656.1	555.7	58.9	42.2	5.1	0.6962	0.5439	1.9142	1.2472	1.9142	1.2472
11	-7.659	-7.933	793.2	613.5	545.7	612.2	575.6	40.0	46.6	3.8	0.6592	0.5013	1.8621	1.2629	1.8621	1.2629

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	-2.09	0.02	12.01	50.78	53.67	62.24	0.5724	0.1768	0.0361	0.9242	79.32	89.48	90.32	89.48	90.32
2	-1.80	0.60	13.39	46.87	54.56	63.23	0.5434	0.1440	0.0305	0.9416	82.16	91.69	92.36	91.69	92.36
3	-2.35	0.44	14.41	43.16	56.58	65.03	0.5128	0.1227	0.0269	0.9519	83.84	94.33	94.80	94.33	94.80
4	-2.31	1.41	11.22	42.75	57.42	67.06	0.4708	0.0671	0.0163	0.9765	89.61	95.54	95.91	95.54	95.91
5	-0.63	4.42	9.78	44.40	52.65	62.62	0.4641	0.0426	0.0116	0.9877	92.32	88.25	89.21	88.25	89.21
6	-0.98	4.46	8.79	44.63	51.66	59.10	0.4798	0.0837	0.0240	0.9776	84.98	85.02	86.21	85.02	86.21
7	-3.81	2.06	10.92	39.85	56.55	63.51	0.4338	0.0873	0.0255	0.9757	82.81	88.70	89.63	88.70	89.63
8	-6.09	0.06	11.16	36.79	60.43	67.25	0.3966	0.0768	0.0227	0.9780	83.30	92.19	92.85	92.19	92.85
9	-6.81	0.07	14.13	34.23	61.87	69.17	0.3737	0.0785	0.0244	0.9774	81.33	87.78	88.84	87.78	88.84
10	-5.27	1.78	14.42	37.02	58.92	66.69	0.3977	0.0812	0.0256	0.9775	81.26	82.40	83.91	82.40	83.91
11	-1.51	5.64	14.57	42.86	51.00	61.06	0.4457	0.0807	0.0258	0.9796	82.51	73.83	75.98	73.83	75.98

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 %	EFF-P TOT-STG %
11280.	189.00	1.2241	1.8829	88.33	89.31	1.2241	0.9735	88.33	168.07

ROTOR 2

RUN NO 19, 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	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	11.647	11.123	662.4	1135.5	662.0	652.5	22.5	929.5	1.9	54.8	0.5556	0.9027	879.5	922.5	0.9084	0.5187	1083.0	652.5
2	10.896	9.857	676.4	1123.3	674.6	650.0	49.0	916.1	4.1	54.6	0.5686	0.8940	904.4	941.8	0.9158	0.5177	1089.4	650.5
3	9.555	8.734	698.1	1109.3	694.5	684.6	70.7	889.2	5.8	53.1	0.5884	0.8849	930.0	961.9	0.9313	0.5334	1104.9	668.6
4	6.627	5.464	731.5	1029.7	729.8	690.7	49.7	763.6	3.9	47.9	0.6179	0.8178	1005.6	1025.9	1.0186	0.5868	1205.8	738.6
5	1.495	1.279	708.4	908.2	707.7	617.7	31.9	665.8	2.6	47.2	0.5948	0.7107	1119.3	1119.6	1.0893	0.5994	1297.4	765.9
6	-1.171	-0.853	676.6	854.3	676.4	584.1	18.9	623.4	1.6	46.8	0.5662	0.6647	1175.2	1168.0	1.1210	0.6214	1339.7	796.6
7	-2.441	-1.920	708.3	853.1	707.2	583.8	39.0	622.0	3.1	46.8	0.5946	0.6644	1203.4	1193.4	1.1437	0.6363	1362.4	816.9
8	-3.547	-2.945	734.7	865.0	733.2	597.4	46.0	625.6	3.7	46.2	0.6187	0.6742	1231.8	1219.4	1.1725	0.6565	1392.5	842.4
9	-6.233	-5.880	755.7	883.1	752.2	592.2	72.8	655.1	5.5	47.7	0.6329	0.6812	1318.2	1300.2	1.2185	0.6755	1454.9	875.7
10	-7.026	-6.867	741.4	879.1	739.0	592.7	60.4	649.2	4.6	47.4	0.6172	0.6737	1347.2	1327.5	1.2352	0.6905	1483.9	901.0
11	-8.053	-8.137	702.3	858.9	701.1	597.4	40.7	617.1	3.3	45.8	0.5763	0.6528	1376.2	1356.1	1.2421	0.7222	1498.4	950.2

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	2.77	7.08	19.61	52.84	65.97	76.73	0.5930	0.2603	0.0593	1.8093	84.36	83.01	52.25	-0.59	-857.0	6.8	3.3167
2	1.70	6.23	16.07	49.48	67.45	78.14	0.5932	0.2242	0.0523	1.8135	86.21	85.01	51.74	2.25	-855.4	-25.7	3.3510
3	0.74	5.32	13.85	44.76	69.67	81.86	0.5750	0.1746	0.0418	1.8092	88.75	87.77	51.05	6.32	-859.4	-73.7	3.3648
4	1.07	5.86	11.22	32.03	72.93	88.93	0.5391	0.1278	0.0307	1.7503	89.99	89.17	52.82	20.80	-959.9	-262.2	3.3288
5	3.49	8.06	8.03	20.71	69.55	81.00	0.5472	0.1337	0.0306	1.6938	87.91	86.97	56.56	36.25	-1087.5	-452.8	3.1520
6	5.20	9.82	6.75	16.69	66.11	76.89	0.5365	0.1308	0.0284	1.6872	87.62	86.67	59.65	42.96	-1156.4	-544.6	3.0742
7	3.82	7.90	5.08	14.38	69.67	77.50	0.5299	0.1411	0.0308	1.6628	86.08	85.05	58.69	44.33	-1164.5	-571.4	3.0927
8	2.80	6.61	2.43	13.42	72.78	79.87	0.5235	0.1570	0.0349	1.6516	84.11	82.95	58.18	44.75	-1183.8	-593.9	3.1371
9	1.95	4.63	0.21	11.45	74.34	78.94	0.5358	0.1915	0.0453	1.6584	80.43	79.00	58.76	47.31	-1245.4	-645.1	3.2126
10	2.80	4.58	2.03	11.29	72.36	78.49	0.5340	0.1936	0.0464	1.6727	80.24	78.77	60.00	48.71	-1286.7	-678.6	3.2125
11	4.06	6.36	5.24	11.26	67.26	78.32	0.5122	0.1565	0.0373	1.7023	83.92	82.68	62.17	50.90	-1335.6	-738.9	3.1765

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 %
1.4605	3.2175	85.58	87.71	39.72	1.1935	1.7008	84.80	85.90

STATOR 2

RUN NO 19, 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	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	6.527	0.798	1157.1	641.8	701.7	641.8	920.1	-2.5	52.9	-0.2	0.9228	0.4845	3.1511	1.4783	1.7190	1.2205
2	7.366	0.682	1144.0	662.2	695.7	662.2	908.2	-3.4	52.7	-0.3	0.9132	0.5017	3.1919	1.4723	1.7297	1.2170
3	6.258	0.497	1129.2	686.9	705.7	686.9	881.5	-4.0	51.5	-0.3	0.9033	0.5233	3.2427	1.4624	1.7379	1.2101
4	3.650	-0.059	1048.6	677.3	721.9	677.3	760.5	-6.3	46.5	-0.5	0.8349	0.5188	3.2419	1.4449	1.7081	1.1939
5	1.078	-0.481	928.5	601.4	647.9	600.9	665.1	-33.6	45.7	-3.2	0.7282	0.4583	3.1194	1.4444	1.6717	1.1856
6	-0.098	-0.526	876.5	555.0	615.7	553.6	623.6	-39.6	45.3	-4.1	0.6836	0.4215	3.0518	1.4450	1.6584	1.1847
7	-0.731	-0.503	875.7	549.1	615.7	547.3	622.6	-44.5	45.3	-4.6	0.6836	0.4171	3.0433	1.4431	1.6503	1.1832
8	-1.444	-0.469	888.5	567.8	629.7	566.7	626.0	-35.7	44.0	-3.6	0.6942	0.4319	3.0691	1.4428	1.6281	1.1835
9	-3.933	-0.752	913.7	636.3	633.5	636.2	658.4	9.5	46.1	0.9	0.7071	0.4810	3.1557	1.4736	1.6301	1.1943
10	-4.936	-0.938	913.7	642.4	638.9	642.2	653.1	16.0	45.7	1.4	0.7027	0.4828	3.1547	1.4911	1.6410	1.1968
11	-5.697	-1.042	899.7	620.2	650.6	620.2	621.5	-1.9	43.8	-0.2	0.6866	0.4624	3.1087	1.5097	1.6646	1.1967

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	6.97	9.93	14.09	53.15	81.24	93.28	0.6249	0.1178	0.0266	0.9501	86.65	80.73	83.52	75.28	77.08
2	7.82	9.84	13.46	53.04	82.39	97.09	0.6042	0.1098	0.0253	0.9541	87.07	82.85	85.36	77.46	79.12
3	7.33	9.83	13.01	51.80	85.70	101.96	0.5764	0.0969	0.0227	0.9601	87.97	86.02	88.10	80.78	82.21
4	3.49	7.36	12.29	47.08	91.82	101.92	0.5401	0.0766	0.0190	0.9716	89.49	89.36	90.95	84.37	85.50
5	3.52	8.83	9.40	48.54	84.01	89.46	0.5597	0.0512	0.0137	0.9845	92.48	86.03	88.04	84.52	85.60
6	3.44	9.23	8.63	49.43	80.13	81.93	0.5824	0.0433	0.0119	0.9881	93.81	83.59	86.26	84.60	85.67
7	3.55	9.54	8.03	49.91	80.76	81.02	0.5859	0.0496	0.0136	0.9867	92.69	84.10	86.35	83.30	84.44
8	3.28	9.48	9.01	48.42	83.13	84.10	0.5695	0.0601	0.0170	0.9836	90.98	84.90	87.05	80.79	82.06
9	4.81	11.51	13.52	45.26	83.08	93.05	0.5109	0.0586	0.0172	0.9834	89.98	81.66	84.33	76.46	78.02
10	3.72	10.60	14.70	44.25	83.08	92.72	0.5043	0.0643	0.0190	0.9820	88.80	78.71	81.80	75.79	77.41
11	0.55	7.65	14.26	43.56	83.53	87.45	0.5191	0.0802	0.0239	0.9783	86.49	74.67	78.29	78.90	80.36

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 %	EFF-P TOT-STG %
11280.	189.00	1.4605	3.1447	83.62	86.00	1.1935	0.9774	80.51	209.53

TABLE XXVII (a) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

105% OF DESIGN SPEED
STATOR 1 ($\beta^*_{des.} - \beta^*_{act.}$) = +2.5°
STATOR 2 ($\beta^*_{des.} - \beta^*_{act.}$) = −2.5°

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 23, SPEED CODE 15, 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'-1	V'-1 FT/SEC	V'-2 FT/SEC
1	16.530	18.190	657.1	1135.1	657.1	711.5	0.0	884.5	0.0	51.2	0.6099	1.0121	658.2	762.0	0.8632	0.6437	930.0	722.0
2	13.874	15.720	676.9	1097.8	676.9	710.4	0.0	836.9	0.0	49.6	0.6297	0.9732	709.7	798.8	0.9123	0.6307	980.7	711.4
3	11.369	13.436	695.3	1069.7	695.3	713.1	0.0	797.3	0.0	48.1	0.6482	0.9441	760.3	835.7	0.9605	0.6303	1030.2	714.2
4	4.772	7.496	734.6	967.4	734.6	684.9	0.0	683.2	0.0	44.9	0.6883	0.8430	905.2	946.4	1.0922	0.6394	1165.8	733.8
5	-0.740	0.919	751.2	772.4	751.2	554.3	0.0	537.9	0.0	44.1	0.7054	0.6619	1086.0	1093.8	1.2398	0.6727	1320.5	785.0
6	-1.249	-1.971	753.9	708.9	753.9	520.6	0.0	481.0	0.0	42.7	0.7082	0.6056	1172.9	1167.5	1.3097	0.7361	1394.3	861.7
7	-1.859	-3.193	755.2	745.9	755.2	564.2	0.0	463.8	0.0	38.5	0.7095	0.6400	1215.9	1204.3	1.3447	0.8093	1431.3	943.2
8	-3.174	-4.325	755.3	772.0	755.3	626.6	0.0	450.7	0.0	35.7	0.7096	0.6643	1258.8	1241.2	1.3791	0.8681	1468.0	1008.9
9	-8.307	-7.624	741.5	795.4	741.5	663.0	0.0	439.4	0.0	33.5	0.6954	0.6827	1386.9	1351.6	1.4748	0.9661	1572.7	1127.8
10	-10.172	-9.124	731.9	791.6	731.9	652.6	0.0	448.0	0.0	34.4	0.6855	0.6764	1429.6	1388.7	1.5042	0.9763	1606.1	1144.9
11	-11.566	-10.403	721.5	751.2	721.5	562.2	0.0	474.6	0.0	39.2	0.6748	0.6340	1472.3	1425.5	1.5335	0.9409	1639.5	1114.9

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	-1.56	3.02	18.16	54.56	42.00	56.12	0.4506	-0.0195	-0.0043	1.9991	101.03	101.15	44.80	-9.77	-658.2	122.5	1.9991
2	-1.73	2.56	16.54	49.15	42.77	57.31	0.4861	-0.0023	-0.0005	1.9770	100.13	100.15	46.08	-3.07	-709.7	38.1	1.9770
3	-1.71	2.39	14.61	44.21	43.46	58.63	0.5052	0.0047	0.0011	1.9668	99.69	99.67	47.29	3.08	-760.3	-38.4	1.9668
4	-0.74	2.72	11.31	29.76	44.60	56.09	0.5346	0.0644	0.0160	1.8690	94.65	94.19	50.76	21.00	-905.2	-263.2	1.8690
5	0.80	3.48	14.80	10.25	45.32	47.42	0.5311	0.1695	0.0359	1.6415	81.62	80.53	55.32	45.07	-1086.0	-555.9	1.6415
6	1.33	3.61	15.46	4.44	45.40	45.07	0.4503	0.1667	0.0319	1.5943	80.39	79.08	57.27	52.83	-1172.9	-686.5	1.5943
7	1.56	3.66	11.43	6.39	45.44	51.46	0.4456	0.1075	0.0217	1.6544	87.28	86.27	58.14	51.75	-1215.9	-740.5	1.6544
8	1.80	3.75	6.75	7.41	45.44	55.99	0.4119	0.0663	0.0137	1.7022	92.01	91.40	59.01	51.60	-1258.8	-790.6	1.7022
9	2.82	4.25	7.17	7.90	45.02	59.84	0.3807	0.0626	0.0131	1.7558	92.15	91.52	61.87	53.97	-1386.9	-912.4	1.7558
10	3.23	4.53	8.20	7.72	44.72	56.43	0.3673	0.0976	0.0202	1.7487	87.76	86.79	62.92	55.20	-1429.6	-940.7	1.7487
11	3.58	4.73	12.10	5.47	44.37	50.65	0.4259	0.1930	0.0373	1.6880	76.06	74.27	63.91	58.44	-1472.3	-950.8	1.6880

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 %
1.1978	1.7689	89.43	90.23	45.22	1.1978	1.7689	89.43	90.23

STATOR 1

RUN NO 23, SPEED CODE 15, 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	18.127	14.770	1147.0	781.4	752.3	779.5	865.6	-53.6	49.2	-3.9	1.0249	0.6620	1.8302	1.2161	1.8302	1.2161
2	15.790	12.912	1114.2	783.6	752.1	782.7	822.1	-36.6	47.7	-2.6	0.9906	0.6646	1.8404	1.2144	1.8404	1.2144
3	13.652	11.176	1089.4	793.3	755.0	792.6	785.4	-28.4	46.2	-2.0	0.9647	0.6737	1.8572	1.2137	1.8572	1.2137
4	6.144	6.497	992.2	771.4	724.7	770.7	677.7	-32.5	43.1	-2.4	0.8677	0.6556	1.8128	1.2066	1.8128	1.2066
5	1.221	0.235	799.0	649.3	591.9	645.1	536.8	-73.9	42.2	-6.5	0.6868	0.5498	1.6280	1.1872	1.6280	1.1872
6	-2.243	-3.048	737.2	610.9	558.4	606.2	481.2	-75.9	40.8	-7.1	0.6316	0.5172	1.5748	1.1798	1.5748	1.1798
7	-3.428	-4.382	773.5	650.3	618.4	647.4	464.7	-61.4	37.0	-5.4	0.6658	0.5526	1.6103	1.1792	1.6103	1.1792
8	-4.234	-5.351	796.1	696.4	657.7	694.7	452.1	-48.7	34.6	-4.0	0.6888	0.5943	1.6585	1.1798	1.6585	1.1798
9	-6.236	-7.499	822.0	749.3	692.9	748.9	442.2	-23.5	32.6	-1.8	0.7078	0.6397	1.7177	1.1910	1.7177	1.1910
10	-6.924	-8.032	819.4	744.4	684.1	743.6	451.0	-30.4	33.5	-2.4	0.7025	0.6326	1.7060	1.2000	1.7080	1.2000
11	-7.912	-6.582	781.9	700.2	618.4	698.6	470.5	-46.7	37.8	-3.6	0.6621	0.5879	1.6486	1.2171	1.6486	1.2171

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	-0.65	1.26	10.93	53.10	58.71	72.72	0.4760	0.1728	0.0353	0.9159	76.38	87.16	88.18	87.16	88.18
2	-0.66	1.72	10.92	50.47	59.81	73.41	0.4544	0.1479	0.0314	0.9312	76.33	88.73	89.64	88.73	89.64
3	-0.83	1.95	10.85	48.23	61.05	74.66	0.4304	0.1223	0.0270	0.9451	80.56	90.46	91.24	90.46	91.24
4	-1.44	2.28	9.36	45.47	60.35	72.04	0.3880	0.0602	0.0147	0.9763	88.21	89.58	90.39	89.58	90.39
5	-0.83	4.22	5.26	48.70	49.85	56.37	0.3863	0.0156	0.0042	0.9967	95.93	79.65	80.97	79.65	80.97
6	-1.75	3.87	4.71	47.92	47.65	54.30	0.3966	0.1007	0.0286	0.9753	73.68	77.02	78.41	77.02	78.41
7	-5.33	0.54	6.45	42.40	53.73	58.28	0.3638	0.1366	0.0398	0.9643	61.76	81.33	82.52	81.33	82.52
8	-7.54	-1.39	7.91	38.59	57.92	62.96	0.3168	0.1095	0.0224	0.9701	62.22	86.44	87.35	86.44	87.35
9	-9.50	-2.62	11.24	34.45	61.55	67.85	0.2668	0.0764	0.0238	0.9783	62.50	87.45	88.35	87.45	88.35
10	-8.96	-1.91	11.92	35.63	60.27	66.76	0.2790	0.0802	0.0254	0.9776	61.41	82.69	83.92	82.69	83.92
11	-5.29	1.66	11.97	41.66	53.16	61.23	0.3213	0.0912	0.0292	0.9768	60.73	70.68	72.63	70.68	72.63

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 %	EFF-P TOT-STG %
11198.	190.30	1.1978	1.7173	84.43	85.54	1.1978	0.9708	84.43	226.18

ROTOR 2

RUN NO 23, SPEED CODE 15, 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	11.572	11.208	892.3	1223.0	890.7	816.8	-52.3	908.4	-3.3	47.9	0.7661	0.9781	873.2	915.9	1.1029	0.6549	1284.5	818.9
2	10.793	10.047	902.0	1208.4	901.2	812.6	-37.8	894.4	-2.4	47.7	0.7761	0.9656	897.9	935.0	1.1177	0.6502	1299.3	[illegible]
3	9.911	6.933	918.1	1192.0	917.7	819.1	-27.8	866.1	-1.7	46.5	0.7920	0.9529	925.3	955.0	1.1401	0.6566	1321.7	823.7
4	6.605	5.732	913.4	1084.9	912.8	786.0	-31.9	747.8	-2.0	43.6	0.7899	0.8627	1002.3	1018.5	1.1930	0.6646	1379.5	[illegible]
5	0.455	0.987	791.4	899.5	788.0	662.2	-73.8	608.8	-5.4	42.6	0.6801	0.7076	1111.3	1110.5	1.2230	0.6552	1423.1	850.6
6	-3.122	-1.639	745.0	810.6	741.3	580.3	-74.9	565.9	-5.6	44.3	0.6390	0.6346	1166.8	1159.5	1.2404	0.6502	1446.1	650.2
7	-4.534	-2.773	772.2	802.6	769.9	581.0	-60.3	553.7	-4.5	43.6	0.6645	0.6293	1194.8	1184.8	1.2671	0.6725	1472.4	657.6
8	-5.574	-3.815	803.8	819.2	802.3	611.4	-46.1	545.3	-3.4	41.7	0.6939	0.6437	1225.0	1210.6	1.2977	0.7100	1503.1	903.6
9	-8.102	-6.913	834.5	631.6	634.1	616.1	-24.1	556.6	-1.7	41.5	0.7194	0.6489	1306.7	1290.8	1.3554	0.7486	1572.3	959.8
10	-6.587	-7.816	824.0	617.0	623.4	604.0	-31.3	550.1	-2.2	42.2	0.7065	0.6529	1337.4	1316.5	1.3695	0.7570	1597.3	977.2
11	-9.012	-8.771	782.0	781.6	780.6	574.6	-47.4	530.6	-3.5	42.6	0.6622	0.5995	1360.3	1346.5	1.3675	0.7647	[illegible]	997.4

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	-3.46	0.85	20.92	45.50	77.68	90.64	0.5365	0.2229	0.0508	1.8376	83.26	[illegible]	46.02	0.52	-925.5	-7.4	[illegible]
2	-3.89	0.56	16.67	43.21	78.59	91.96	0.5442	0.2084	0.0466	1.8413	84.05	82.63	46.06	2.85	-935.6	-40.6	[illegible]
3	-4.30	0.28	13.71	39.87	79.92	94.74	0.5397	0.1831	0.0436	1.8379	85.44	84.15	46.05	6.16	-951.1	-66.9	3.4107
4	-3.11	1.66	9.45	29.62	76.19	95.13	0.5425	0.1375	0.0335	1.8011	87.74	86.66	48.64	19.02	-1034.3	-270.7	3.2714
5	2.91	7.49	8.93	19.22	66.16	81.98	0.5510	0.0972	0.0220	1.8111	90.78	89.98	56.38	37.16	-1185.1	-501.6	2.9410
6	4.60	9.14	9.42	13.54	62.28	71.94	0.5578	0.1214	0.0252	1.7603	87.61	86.61	59.17	45.63	-1241.7	-593.7	2.7666
7	3.62	7.70	6.06	11.16	65.27	72.41	0.5457	0.1404	0.0290	1.7137	85.26	84.10	56.49	47.33	-1255.1	-631.2	2.7624
8	2.38	6.19	5.05	10.39	68.62	76.72	0.5233	0.1413	0.0300	1.6902	84.55	83.41	57.70	47.37	-1271.1	-665.4	2.6216
9	1.14	3.82	2.73	8.13	71.86	76.86	0.5187	0.1906	0.0429	1.6595	76.51	76.94	57.95	49.82	-1332.8	-734.2	2.8496
10	1.73	3.91	5.05	7.21	70.53	74.20	0.5200	0.2043	0.0460	1.6546	76.95	75.27	56.93	51.72	-1368.7	-766.2	2.6161
11	3.51	5.21	9.12	6.25	65.52	69.22	0.5168	0.1953	0.0426	1.6680	78.11	76.46	61.02	54.77	-1413.7	-815.7	2.7466

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 %
1.4450	3.0136	82.66	85.28	43.37	1.2064	1.7546	83.80	85.02

STATOR 2

RUN NO 23, SPEED CODE 15, 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	8.567	0.704	1260.0	839.4	882.5	839.0	899.4	27.0	45.8	1.6	1.0136	0.6401	3.1213	1.4961	1.7061	1.2301
2	7.455	0.502	1243.6	852.3	871.9	850.9	886.7	50.2	45.7	3.4	0.9993	0.6516	3.1592	1.4928	1.7191	1.2291
3	6.399	0.211	1225.6	879.2	873.1	876.6	860.1	32.0	44.7	2.1	0.9847	0.6756	3.2372	1.4856	1.7426	1.2242
4	3.847	-0.730	1115.4	835.9	829.8	835.2	745.4	33.4	42.0	2.3	0.8905	0.6455	3.1610	1.4607	1.7362	1.2099
5	1.319	-1.336	927.7	660.9	700.1	660.9	606.6	8.0	41.0	0.7	0.7321	0.5247	2.8652	1.4296	1.7744	1.2041
6	-0.011	-1.334	838.2	595.2	618.1	595.2	566.1	2.6	42.5	0.2	0.6562	0.4576	2.7571	1.4167	1.7455	1.2009
7	-0.830	-1.290	828.7	594.2	615.9	594.2	554.4	7.5	42.0	0.7	0.6514	0.4579	2.7566	1.4114	1.7023	1.1969
8	-1.605	-1.267	845.0	617.5	644.6	617.4	546.3	10.2	40.2	0.9	0.6656	0.4770	2.7861	1.4095	1.6771	1.1941
9	-3.714	-1.375	861.6	646.9	655.4	646.0	559.2	33.1	40.5	2.9	0.6742	0.4967	2.8160	1.4316	1.6390	1.2009
10	-4.631	-1.421	850.6	627.2	645.9	626.2	553.4	34.9	40.6	3.2	0.6612	0.4762	2.7796	1.4472	1.6339	1.2046
11	-5.648	-1.326	821.0	569.4	623.3	566.8	534.3	25.7	40.7	2.6	0.6318	0.4295	2.6950	1.4656	1.6354	1.2044

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	-5.14	-3.58	11.15	43.97	95.05	109.92	0.4855	0.1467	0.0336	0.9286	80.24	77.05	80.55	71.05	73.13
2	-4.23	-2.21	12.13	42.32	95.96	112.31	0.4692	0.1407	0.0323	0.9336	80.34	78.54	81.65	72.44	74.49
3	-4.41	-1.91	10.43	42.65	98.40	117.43	0.4419	0.1137	0.0266	0.9473	82.69	81.51	84.24	76.05	77.63
4	-6.06	-2.19	10.11	39.71	98.37	113.12	0.4104	0.0671	0.0216	0.9649	84.60	84.10	86.42	80.90	82.32
5	-6.23	-0.92	8.48	40.31	85.41	91.61	0.4431	0.0718	0.0192	0.9783	86.89	81.94	84.36	80.40	67.45
6	-4.44	1.35	7.97	42.21	75.56	79.94	0.4761	0.0487	0.0154	0.9875	91.37	80.34	82.89	63.43	66.32
7	-4.78	1.22	8.38	41.23	75.75	80.06	0.4683	0.0316	0.0089	0.9921	94.02	81.37	83.78	62.62	64.05
8	-6.30	-0.10	8.55	39.30	79.81	83.56	0.4496	0.0457	0.0130	0.9883	91.30	82.81	85.06	61.50	62.79
9	-5.82	0.87	10.60	37.55	80.27	86.15	0.4294	0.0454	0.0133	0.9881	90.77	79.43	82.15	75.01	76.67
10	-6.33	0.55	11.46	37.45	78.04	82.21	0.4434	0.0507	0.0150	0.9873	90.11	75.56	78.74	73.26	75.05
11	-7.55	-0.45	12.01	38.11	73.79	72.96	0.4922	0.0841	0.0251	0.9803	85.46	69.90	73.70	73.24	75.02

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 %	EFF-P TOT-STG %
11198.	190.30	1.4450	2.9302	80.43	83.11	1.2064	0.9723	79.29	202.95

TABLE XXVII (b) — OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

105% OF DESIGN SPEED
STATOR 1 ($\beta'_{des.} - \beta'_{act.}$) = +2.5°
STATOR 2 ($\beta'_{des.} - \beta'_{act.}$) = −2.5°

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 23, SPEED CODE 15, 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	16.515	18.480	656.1	1146.6	656.1	733.0	0.0	884.2	0.0	50.4	0.6089	1.0264	659.3	763.3	0.8632	0.6640	930.2	742.9
2	15.635	16.251	672.9	1109.6	672.9	730.2	0.0	835.7	0.0	48.9	0.6257	0.9859	711.0	800.3	0.9102	0.6494	978.9	731.1
3	11.340	14.158	689.3	1079.9	689.3	730.1	0.0	795.7	0.0	47.5	0.6422	0.9545	761.6	837.2	0.9570	0.6466	1027.3	731.3
4	4.762	8.520	728.1	971.7	728.1	693.9	0.0	680.3	0.0	44.5	0.6816	0.8475	906.8	948.0	1.0886	0.6487	1162.9	743.8
5	-1.175	1.960	751.2	777.2	751.2	565.6	0.0	533.0	0.0	43.3	0.7053	0.6668	1087.9	1095.7	1.2413	0.6845	1322.0	797.8
6	-2.142	-1.056	756.2	709.4	756.2	521.7	0.0	480.7	0.0	42.7	0.7105	0.6060	1175.0	1165.6	1.3129	0.7382	1397.3	864.1
7	-2.754	-2.465	758.2	750.8	758.2	591.1	0.0	462.9	0.0	38.1	0.7125	0.6446	1218.0	1206.5	1.3484	0.8155	1434.7	949.9
8	-3.962	-3.791	758.6	777.7	758.6	633.2	0.0	451.5	0.0	35.5	0.7130	0.6694	1261.0	1243.5	1.3831	0.8727	1471.6	1013.9
9	-8.616	-7.617	745.1	801.3	745.1	667.6	0.0	443.2	0.0	33.5	0.6990	0.6677	1389.4	1354.2	1.4791	0.9693	1576.5	1129.4
10	-10.295	-8.952	735.4	798.0	735.4	656.6	0.0	453.7	0.0	34.6	0.6890	0.6816	1432.1	1391.2	1.5084	0.9775	1609.9	1144.6
11	-11.553	-10.286	724.6	758.1	724.6	588.6	0.0	477.7	0.0	39.0	0.6780	0.6398	1474.9	1428.1	1.5376	0.9435	1643.2	1117.9

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	-1.49	3.12	18.57	54.26	41.96	57.15	0.4283	-0.0194	-0.0042	2.0006	101.00	101.11	44.85	-9.39	-659.3	120.9	2.0006
2	-1.52	2.78	16.82	49.08	42.62	58.25	0.4652	-0.0002	-0.0000	1.9757	100.00	100.01	46.30	-2.78	-711.0	35.5	1.9757
3	-1.42	2.68	14.78	44.33	43.24	59.37	0.4872	0.0098	0.0024	1.9623	99.36	95.30	47.58	3.25	-761.6	-41.4	1.9623
4	-0.44	3.03	11.44	29.53	44.59	58.26	0.5247	0.0748	0.0186	1.8557	93.78	93.24	51.06	21.13	-906.8	-267.8	1.8557
5	0.65	3.53	14.55	10.51	45.32	47.97	0.5217	0.1716	0.0365	1.6307	81.24	79.93	55.37	44.86	-1087.9	-562.7	1.6307
6	1.31	3.59	15.52	4.38	45.47	44.58	0.4917	0.1616	0.0347	1.5753	78.24	76.84	57.25	52.87	-1175.0	-688.9	1.5753
7	1.52	3.62	11.20	6.59	45.53	51.42	0.4422	0.1201	0.0243	1.6376	85.44	84.42	58.10	51.51	-1218.0	-743.6	1.6376
8	1.75	3.71	8.50	7.62	45.54	55.78	0.4121	0.0821	0.0170	1.6848	89.93	85.18	58.97	51.35	-1261.0	-791.9	1.6848
9	2.77	4.19	6.93	8.10	45.13	59.27	0.3828	0.0842	0.0177	1.7354	89.38	88.55	61.82	53.72	-1389.4	-911.0	1.7354
10	3.16	4.47	7.92	7.93	44.63	57.81	0.3905	0.1205	0.0250	1.7292	84.87	83.65	62.66	54.93	-1432.1	-937.5	1.7292
11	3.52	4.67	11.79	5.72	44.47	50.68	0.4261	0.2090	0.0407	1.6704	74.00	72.05	63.85	58.13	-1474.9	-950.4	1.6704

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 %
1.1982	1.7543	87.83	88.73	43.20	1.1982	1.7543	87.83	88.73

STATOR 1

RUN NO 23, SPEED CODE 15, 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	16.382	15.125	1159.0	824.6	770.7	822.4	865.6	-60.3	48.5	-4.2	1.0377	0.7020	1.8297	1.2164	1.8297	1.2164
2	16.240	13.583	1124.7	823.5	768.7	822.7	821.0	-34.0	47.1	-2.4	1.0017	0.7016	1.8387	1.2144	1.8387	1.2144
3	14.246	12.130	1098.1	828.3	769.0	828.1	783.9	-20.0	45.7	-1.4	0.9739	0.7064	1.8526	1.2136	1.8526	1.2136
4	8.963	6.041	996.4	791.5	732.8	791.3	675.2	-32.9	42.7	-2.4	0.8722	0.6748	1.8004	1.2061	1.8004	1.2061
5	2.348	2.343	805.2	657.0	604.2	652.5	532.3	-76.6	41.4	-6.7	0.6931	0.5569	1.6125	1.1863	1.6125	1.1863
6	-1.693	-0.801	738.0	616.6	559.7	611.1	481.1	-81.9	40.7	-7.6	0.6324	0.5222	1.5602	1.1800	1.5602	1.1800
7	-2.460	-2.165	777.8	653.9	624.3	650.6	463.9	-65.7	36.6	-5.8	0.6697	0.5558	1.5949	1.1794	1.5949	1.1794
8	-3.471	-3.238	804.2	698.3	664.5	696.3	452.9	-52.5	34.3	-4.3	0.6943	0.5958	1.6417	1.1808	1.6417	1.1808
9	-6.039	-6.202	829.9	751.0	700.0	750.1	445.8	-37.0	32.6	-2.8	0.7147	0.6407	1.7035	1.1932	1.7035	1.1932
10	-6.834	-7.113	828.5	743.5	691.5	742.7	456.4	-33.9	33.5	-2.6	0.7102	0.6310	1.6919	1.2031	1.6919	1.2031
11	-7.878	-8.098	791.5	656.9	628.3	695.4	481.4	-45.7	37.6	-3.8	0.6705	0.5845	1.6322	1.2188	1.6322	1.2188

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	-1.50	0.61	10.68	52.70	59.52	74.79	0.4453	0.1721	0.0351	0.9149	74.77	86.98	88.02	86.98	88.02
2	-1.28	1.12	11.37	49.42	60.53	75.33	0.4227	0.1462	0.0310	0.9310	76.89	88.55	89.48	88.55	89.48
3	-1.34	1.44	11.51	47.06	61.55	76.20	0.4007	0.1211	0.0267	0.9450	79.19	90.09	90.89	90.09	90.89
4	-1.60	1.92	9.39	45.08	60.46	72.62	0.3692	0.0613	0.0150	0.9758	87.02	88.65	89.53	88.65	89.53
5	-1.03	3.42	5.12	48.06	50.43	58.30	0.3802	0.0217	0.0059	0.9947	94.07	78.36	79.73	78.36	79.73
6	-1.63	3.78	4.22	48.32	47.11	54.09	0.3922	0.0843	0.0239	0.9790	77.48	75.25	76.72	75.25	76.72
7	-5.67	0.21	6.12	42.41	53.50	57.89	0.3636	0.1259	0.0366	0.9669	64.77	79.47	80.74	79.47	80.74
8	-7.79	-1.64	7.61	38.63	57.65	62.36	0.3206	0.1006	0.0298	0.9722	66.14	84.11	85.16	84.11	85.16
9	-9.57	-2.69	10.22	35.36	61.09	67.24	0.2783	0.0637	0.0199	0.9816	70.92	85.07	86.13	85.07	86.13
10	-8.94	-1.89	11.65	36.13	59.82	65.94	0.2909	0.0714	0.0226	0.9797	68.99	79.89	81.29	79.89	81.29
11	-5.56	1.59	12.03	41.35	53.10	60.37	0.3344	0.0871	0.0278	0.9774	66.98	68.61	70.66	68.61	70.66

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 %	EFF-P TOT-STG %
11218.	190.20	1.1982	1.7039	82.93	84.14	1.1982	0.9713	82.93	227.42

ROTOR 2

RUN NO 23, SPEED CODE 15, 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	11.684	11.347	901.8	1268.4	899.9	922.2	-59.0	899.7	-3.7	44.2	0.7752	1.0410	874.8	917.5	1.1147	0.7453	1296.8	922.4
2	11.074	10.349	907.0	1263.8	906.3	883.6	-34.3	903.6	-2.2	45.6	0.7809	1.0174	899.5	936.7	1.1204	0.7118	1301.3	884.2
3	10.447	9.439	917.7	1225.5	917.5	843.3	-18.5	889.2	-1.2	46.5	0.7916	0.9831	925.0	956.7	1.1352	0.6787	1316.1	846.0
4	8.045	6.852	908.8	1136.8	908.3	882.0	-31.6	717.2	-2.0	39.2	0.7855	0.9136	1004.1	1020.3	1.1907	0.7495	1377.6	932.6
5	3.074	2.748	800.7	942.2	757.2	761.7	-75.1	554.6	-5.4	36.1	0.6890	0.7501	1113.2	1112.5	1.2313	0.7516	1431.0	944.1
6	-0.113	0.395	756.9	831.0	752.3	672.5	-83.1	488.2	-6.3	35.9	0.6499	0.6576	1168.5	1161.6	1.2542	0.7531	1460.6	951.7
7	-1.678	-0.802	785.9	821.4	783.0	666.0	-66.5	480.8	-4.8	35.8	0.6773	0.6509	1196.9	1186.9	1.2810	0.7691	1486.4	970.6
8	-3.046	-2.017	823.6	854.1	821.9	712.4	-52.9	471.2	-3.7	33.4	0.7126	0.6803	1225.1	1212.8	1.3147	0.8191	1519.5	1028.4
9	-6.630	-5.853	865.6	862.3	864.8	731.3	-37.5	456.9	-2.5	31.9	0.7486	0.6839	1311.0	1293.1	1.3855	0.8810	1602.0	1110.9
10	-7.566	-7.061	857.1	842.6	856.4	702.3	-33.9	465.5	-2.3	33.4	0.7372	0.6630	1339.8	1320.6	1.3924	0.8707	1618.8	1106.6
11	-8.426	-8.326	814.3	804.8	813.0	670.2	-46.2	445.6	-3.2	33.5	0.6916	0.6264	1368.8	1348.7	1.3860	0.8753	1631.9	1124.6

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	-3.48	0.83	21.50	44.90	77.93	86.49	0.4609	0.4036	0.0920	1.6391	67.62	65.33	46.00	1.10	-933.8	-17.8	2.9980
2	-4.09	0.36	15.96	43.72	78.67	84.12	0.4926	0.4197	0.0980	1.6237	66.03	63.67	45.87	2.14	-933.8	-33.1	2.9809
3	-4.47	0.10	12.10	41.31	79.70	81.57	0.5203	0.4323	0.1032	1.5853	63.92	61.54	45.88	4.57	-943.5	-67.5	2.9306
4	-2.84	1.96	9.46	29.90	77.64	91.49	0.4602	0.2925	0.0712	1.5902	71.99	70.12	48.91	19.02	-1035.8	-303.1	2.8959
5	2.71	7.29	8.03	19.93	66.19	82.69	0.4619	0.2093	0.0479	1.6005	77.90	76.40	56.18	36.25	-1188.4	-557.9	2.6156
6	4.60	8.94	8.80	13.56	62.01	73.35	0.4628	0.1984	0.0416	1.5784	77.90	76.45	58.97	45.01	-1252.0	-673.4	2.4467
7	3.29	7.37	7.35	11.55	64.92	73.26	0.4567	0.2046	0.0429	1.5477	76.07	74.57	58.16	46.61	-1263.4	-706.1	2.4470
8	1.81	5.62	3.74	11.13	68.59	79.58	0.4289	0.1845	0.0401	1.5425	77.31	75.90	57.19	46.06	-1278.1	-741.6	2.5223
9	0.42	3.10	1.59	8.55	72.41	81.83	0.4132	0.2045	0.0471	1.5002	72.76	71.18	57.23	48.69	-1348.5	-836.2	2.5561
10	0.75	2.93	3.78	7.50	71.26	77.51	0.4273	0.2313	0.0535	1.4822	69.22	67.49	57.95	50.46	-1373.7	-855.1	2.5158
11	2.50	4.19	7.63	6.72	66.29	72.53	0.4236	0.2158	0.0487	1.4963	71.38	69.72	60.01	53.29	-1414.9	-903.1	2.4453

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 %
1.4244	2.6576	75.60	78.65	43.70	1.1888	1.5557	71.22	72.95

STATOR 2

RUN NO 23, SPEED CODE 15, 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	8.893	1.063	1333.1	880.9	992.2	879.7	890.4	-45.8	42.2	-3.0	1.0854	0.6741	2.3385	1.4966	1.2787	1.2300
2	7.966	1.141	1307.5	952.6	952.6	948.1	895.6	-92.3	43.5	-5.6	1.0601	0.7349	2.4837	1.4961	1.3548	1.2310
3	6.856	1.022	1269.0	1011.5	910.4	1004.2	884.1	-121.1	44.4	-6.9	1.0250	0.7869	2.6162	1.4918	1.4191	1.2287
4	3.923	0.372	1176.7	1000.1	934.5	991.9	715.2	-127.6	37.5	-7.3	0.9512	0.7874	2.6356	1.4567	1.4406	1.2041
5	1.380	-0.272	985.2	921.1	814.0	920.0	555.1	-45.5	34.3	-2.8	0.7883	0.7333	2.5002	1.4144	1.5071	1.1879
6	0.027	-0.692	876.0	852.0	727.2	847.3	488.3	-69.8	33.8	-6.0	0.6964	0.6750	2.3767	1.3971	1.5271	1.1822
7	-0.798	-0.909	866.3	832.0	720.3	831.0	481.4	-40.1	33.7	-2.8	0.6896	0.6595	2.3425	1.3900	1.4913	1.1784
8	-1.671	-1.053	896.5	842.8	762.1	842.2	472.1	-33.5	31.7	-2.3	0.7174	0.6702	2.3592	1.3849	1.4549	1.1737
9	-3.746	-1.279	913.0	888.4	789.3	888.3	458.8	18.0	30.2	1.2	0.7282	0.7069	2.4177	1.3958	1.4198	1.1713
10	-4.584	-1.343	900.1	862.2	768.7	862.2	466.4	9.4	31.4	0.6	0.7127	0.6800	2.3531	1.4112	1.3841	1.1752
11	-5.611	-1.267	871.6	798.1	747.2	796.1	448.8	57.0	31.1	4.1	0.6830	0.6208	2.2317	1.4305	1.3655	1.1737

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	-8.76	-7.20	6.34	45.17	89.54	84.56	0.4985	0.4191	0.0946	0.7798	43.53	55.04	59.92	31.37	33.65
2	-6.44	-4.42	3.20	49.04	87.47	92.97	0.4467	0.3282	0.0752	0.8312	48.86	59.49	64.16	38.81	41.29
3	-4.79	-2.29	1.47	51.23	85.07	100.54	0.3946	0.2283	0.0532	0.8865	56.49	63.99	68.38	45.62	48.18
4	-10.57	-6.70	0.49	44.82	94.07	102.46	0.3359	0.1989	0.0490	0.9114	48.20	69.59	73.34	53.55	55.84
5	-12.93	-7.62	4.97	37.11	86.20	96.48	0.2487	0.1703	0.0455	0.9403	16.78	71.92	75.22	65.74	67.64
6	-13.05	-7.26	1.68	39.89	77.42	88.59	0.2273	0.1355	0.0372	0.9610	-33.48	70.40	73.70	69.55	71.28
7	-13.01	-7.02	4.91	36.47	77.34	86.91	0.2105	0.1553	0.0435	0.9576	-58.91	70.38	73.63	67.37	69.13
8	-14.81	-8.60	5.33	34.02	83.09	88.47	0.2146	0.2008	0.0570	0.9424	-64.74	71.98	75.08	64.67	66.47
9	-16.12	-9.43	8.83	29.02	85.88	92.72	0.1695	0.1847	0.0542	0.9451	-185.14	72.24	75.40	61.12	62.97
10	-15.57	-8.69	8.90	30.77	82.27	88.13	0.1948	0.2289	0.0677	0.9342	-127.64	67.12	70.74	55.18	57.16
11	-17.17	-10.07	13.52	26.98	78.16	78.88	0.2194	0.3263	0.0972	0.9126	-74.70	59.65	63.83	53.20	55.18

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 %	EFF-P TOT-STG %
11218.	190.20	1.4244	2.4457	68.33	71.96	1.1888	0.9202	57.21	217.05

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OF POOR QUALITY

TABLE XXVII (c) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

105% OF DESIGN SPEED
STATOR 1 ($\beta^*_{des.} - \beta^*_{act.}$) = +2.5°
STATOR 2 ($\beta^*_{des.} - \beta^*_{act.}$) = -2.5°

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 23, 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'-1	V'-1 FT/SEC	V'-2 FT/SEC
1	16.512	16.334	667.7	1124.0	667.7	710.7	0.0	870.8	0.0	50.8	0.6205	1.0017	658.9	762.8	0.8717	0.6406	938.1	718.8
2	13.834	15.975	684.0	1087.8	684.0	709.5	0.0	824.5	0.0	49.3	0.6369	0.9641	710.5	799.7	0.9182	0.6292	986.2	709.9
3	11.330	13.765	699.6	1059.5	699.6	712.3	0.0	784.3	0.0	47.8	0.6525	0.9351	761.1	836.6	0.9643	0.6304	1033.8	714.3
4	4.664	7.905	734.3	555.8	734.3	684.4	0.0	667.2	0.0	44.3	0.6880	0.8333	906.1	947.4	1.0927	0.6447	1166.3	739.5
5	-1.096	1.208	749.0	759.2	749.0	550.4	0.0	522.9	0.0	43.5	0.7031	0.6511	1087.1	1095.0	1.2392	0.6808	1320.2	793.8
6	-1.714	-1.823	750.3	656.5	750.3	514.8	0.0	469.2	0.0	42.4	0.7044	0.5954	1174.2	1168.8	1.3082	0.7425	1393.5	868.6
7	-2.314	-3.094	750.7	739.9	750.7	582.8	0.0	455.8	0.0	38.0	0.7048	0.6353	1217.2	1205.6	1.3427	0.8154	1430.1	949.7
8	-3.571	-4.276	749.9	767.0	749.9	624.1	0.0	445.9	0.0	35.6	0.7040	0.6601	1260.1	1242.6	1.3766	0.8709	1466.4	1012.0
9	-8.449	-7.853	733.7	792.6	733.7	661.9	0.0	436.1	0.0	33.4	0.6873	0.6805	1388.4	1353.3	1.4710	0.9711	1570.3	1131.0
10	-10.224	-9.133	723.2	788.4	723.2	649.7	0.0	446.6	0.0	34.5	0.6766	0.6736	1431.1	1390.2	1.5001	0.9788	1603.5	1145.6
11	-11.570	-10.396	711.9	748.4	711.9	581.7	0.0	470.8	0.0	38.9	0.6651	0.6319	1473.8	1427.1	1.5291	0.9450	1636.8	1119.3

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	-2.02	2.59	19.30	53.02	42.42	56.56	0.4553	-0.0378	-0.0082	1.9944	102.02	102.24	44.37	-8.65	-658.9	108.0	1.9944
2	-2.01	2.29	17.60	47.81	43.04	57.73	0.4876	-0.0204	-0.0047	1.9744	101.21	101.34	45.81	-2.00	-710.5	24.8	1.9744
3	-1.87	2.24	15.73	42.55	43.61	59.06	0.5040	-0.0135	-0.0032	1.9639	100.86	100.95	47.14	4.19	-761.1	-52.2	1.9639
4	-0.71	2.76	12.57	28.54	44.79	58.48	0.5268	0.0458	0.0113	1.8625	96.08	95.74	50.80	22.26	-906.1	-280.1	1.8625
5	0.91	3.59	15.83	9.33	45.25	47.27	0.5217	0.1567	0.0326	1.6304	82.73	81.53	55.43	46.10	-1087.1	-572.0	1.6304
6	1.49	3.77	16.32	3.77	45.25	44.60	0.4836	0.1596	0.0299	1.5815	80.75	79.50	57.43	53.66	-1174.2	-699.6	1.5815
7	1.75	3.85	11.84	6.17	45.31	51.33	0.4381	0.1030	0.0205	1.6452	87.53	86.64	58.33	52.16	-1217.2	-749.8	1.6452
8	2.01	3.57	9.08	7.29	45.28	55.62	0.4092	0.0677	0.0139	1.6916	91.72	91.11	59.23	51.94	-1260.1	-796.7	1.6916
9	3.11	4.53	7.36	8.00	44.77	59.47	0.3774	0.0667	0.0138	1.7439	91.57	90.91	62.16	54.16	-1388.4	-917.1	1.7439
10	3.54	4.83	8.40	7.82	44.43	57.86	0.3857	0.1053	0.0216	1.7356	86.74	85.70	63.22	55.40	-1431.1	-943.6	1.7356
11	3.90	5.05	12.26	5.63	44.05	50.63	0.4214	0.1959	0.0376	1.6764	75.56	73.75	64.23	58.60	-1473.8	-956.2	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 %
1.1948	1.7556	89.87	90.63	43.11	1.1948	1.7556	89.87	90.63

STATOR 1

RUN NO 23, 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	18.250	14.962	1135.9	800.1	750.8	799.3	852.4	-34.2	48.8	-2.4	1.0145	0.6802	1.8318	1.2130	1.8318	1.2130
2	15.997	13.266	1104.2	801.7	750.5	801.3	809.9	-25.5	47.3	-1.8	0.9814	0.6822	1.8428	1.2114	1.8428	1.2114
3	13.913	11.669	1079.2	808.1	753.4	808.0	772.7	-12.6	45.8	-0.9	0.9555	0.6885	1.8567	1.2104	1.8567	1.2104
4	8.531	7.257	980.6	777.1	723.4	776.6	662.0	-28.4	42.5	-2.1	0.8580	0.6623	1.8038	1.2020	1.8038	1.2020
5	1.702	1.116	785.9	646.9	587.5	642.1	522.0	-78.6	41.6	-7.0	0.6761	0.5488	1.6133	1.1824	1.6133	1.1824
6	-1.810	-2.223	725.1	609.0	552.5	603.8	469.6	-79.7	40.4	-7.5	0.6217	0.5164	1.5616	1.1761	1.5616	1.1761
7	-3.057	-3.576	766.7	649.9	615.8	646.6	456.8	-65.8	36.6	-5.8	0.6603	0.5529	1.5982	1.1767	1.5982	1.1767
8	-3.945	-4.562	792.5	696.4	654.1	694.5	447.4	-51.8	34.4	-4.3	0.6840	0.5947	1.6461	1.1783	1.6461	1.1783
9	-6.192	-7.011	818.8	749.9	691.3	748.8	438.8	-40.6	32.5	-3.1	0.7052	0.6406	1.7060	1.1899	1.7060	1.1899
10	-6.930	-7.688	816.1	744.4	681.0	743.3	449.6	-40.9	33.5	-3.2	0.6995	0.6328	1.6962	1.1996	1.6962	1.1996
11	-7.926	-8.406	778.8	699.9	617.6	698.1	474.5	-50.1	37.6	-4.1	0.6598	0.5880	1.6378	1.2155	1.6378	1.2155

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	0.90	12.40	51.26	59.11	73.99	0.4484	0.1691	0.0345	0.9188	75.38	88.56	89.48	88.56	89.48
2	-1.02	1.39	11.92	49.14	60.21	74.62	0.4280	0.1445	0.0307	0.9336	77.32	90.19	90.98	90.19	90.98
3	-1.21	1.58	12.00	46.71	61.45	75.58	0.4051	0.1212	0.0268	0.9463	79.31	91.84	92.51	91.84	92.51
4	-2.02	1.70	9.68	44.57	60.72	72.21	0.3697	0.0658	0.0160	0.9746	86.17	90.79	91.50	90.79	91.50
5	-1.41	3.64	4.84	46.56	49.70	57.84	0.3759	0.0237	0.0064	0.9946	93.43	80.12	81.38	80.12	81.38
6	-2.14	3.47	4.33	47.90	47.21	53.83	0.3873	0.1035	0.0294	0.9751	71.53	77.10	78.47	77.10	78.47
7	-5.70	0.18	6.06	42.43	53.50	57.88	0.3570	0.1407	0.0409	0.9639	58.83	81.09	82.27	81.09	82.27
8	-7.68	-1.54	7.65	38.70	57.49	62.54	0.3108	0.1108	0.0328	0.9701	59.63	85.77	86.71	85.77	86.71
9	-9.64	-2.76	9.93	35.00	61.15	67.41	0.2684	0.0767	0.0239	0.9784	60.53	86.80	87.73	86.80	87.73
10	-8.93	-1.88	11.11	36.67	59.68	66.27	0.2793	0.0786	0.0248	0.9782	60.49	81.69	82.97	81.69	82.97
11	-5.49	1.66	11.69	41.77	52.87	60.86	0.3187	0.0905	0.0289	0.9771	59.83	70.18	72.15	70.18	72.15

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 %	EFF-P TOT-STG %
11210.	185.80	1.1948	1.7075	84.73	85.81	1.1948	0.9704	84.73	225.79

ROTOR 2

RUN NO 23, 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'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	11.735	11.292	856.7	1206.3	858.1	803.2	-33.3	900.0	-2.1	48.1	0.7735	0.9662	874.2	916.9	1.0988	0.6435	1276.8	803.4
2	11.114	10.219	907.4	1202.5	907.1	809.8	-25.2	888.9	-1.6	47.6	0.7824	0.9629	898.9	936.0	1.1164	0.6496	1294.8	811.2
3	10.359	9.188	921.0	1155.1	920.9	825.5	-12.7	869.7	-0.8	46.5	0.7960	0.9615	924.3	956.0	1.1355	0.6655	1313.9	830.0
4	7.364	6.199	912.5	1100.7	912.1	812.1	-27.1	743.0	-1.7	42.5	0.7907	0.8796	1003.4	1019.6	1.1925	0.6856	1376.2	857.9
5	1.471	1.656	791.5	857.9	788.1	689.5	-78.1	575.2	-5.7	39.8	0.6820	0.7102	1112.5	1111.7	1.2296	0.6910	1427.7	873.7
6	-2.148	-0.931	745.6	798.5	741.5	602.6	-79.5	524.0	-6.1	41.0	0.6408	0.6285	1168.0	1160.8	1.2470	0.6900	1451.3	876.7
7	-3.700	-2.135	774.3	788.4	771.6	598.1	-65.3	513.7	-4.8	40.6	0.6673	0.6208	1196.1	1186.1	1.2742	0.7086	1478.6	899.9
8	-4.854	-3.250	807.4	808.2	805.8	629.1	-51.9	507.3	-3.7	38.8	0.6979	0.6376	1224.3	1212.0	1.3046	0.7455	1509.3	944.7
9	-7.520	-6.453	840.8	810.8	839.8	640.2	-41.0	497.5	-2.8	37.7	0.7258	0.6358	1310.1	1292.2	1.3733	0.8002	1590.8	1020.6
10	-6.151	-7.454	831.9	783.0	830.9	626.7	-41.4	469.4	-2.8	36.7	0.7142	0.6118	1338.9	1319.7	1.3831	0.8253	1611.1	1056.3
11	-6.769	-8.555	790.2	723.0	788.5	593.5	-50.7	412.9	-3.7	34.7	0.6702	0.5618	1367.8	1347.7	1.3766	0.8604	1623.0	1107.3

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	-4.24	0.07	21.60	44.04	78.19	85.03	0.5406	0.3055	0.0696	1.7236	76.18	74.30	45.24	1.20	-907.5	-16.9	3.1558
2	-4.41	0.04	17.14	42.22	79.04	87.56	0.5409	0.2820	0.0658	1.7464	77.78	75.98	45.55	3.32	-924.0	-47.2	3.2127
3	-4.79	-0.21	13.45	39.60	80.16	91.52	0.5306	0.2430	0.0579	1.7685	80.43	78.81	45.57	5.56	-937.1	-86.3	3.2799
4	-3.15	1.65	9.28	29.77	78.04	95.11	0.5185	0.1668	0.0406	1.7573	84.98	83.75	48.60	18.84	-1030.6	-276.6	3.1900
5	3.04	7.61	9.68	18.61	65.85	83.08	0.5161	0.1098	0.0246	1.7533	89.14	88.25	56.51	37.50	-1190.5	-536.6	2.8382
6	4.89	9.23	10.34	12.71	61.84	72.68	0.5193	0.1214	0.0248	1.7076	87.22	86.24	59.26	46.55	-1247.6	-636.8	2.6704
7	3.66	7.34	9.04	10.24	64.84	72.42	0.5111	0.1429	0.0290	1.6592	84.21	83.05	58.54	48.30	-1261.3	-672.4	2.6622
8	2.34	6.15	5.86	9.55	68.27	76.70	0.4905	0.1445	0.0302	1.6406	83.37	82.18	57.72	48.18	-1276.2	-704.7	2.7050
9	1.28	3.96	3.94	7.06	71.66	77.43	0.4762	0.1894	0.0416	1.5907	76.94	75.39	58.09	51.04	-1351.1	-794.7	2.7136
10	1.69	3.87	6.81	5.40	70.43	75.34	0.4587	0.1756	0.0379	1.5721	77.82	76.38	58.89	53.49	-1380.3	-850.3	2.6657
11	3.33	5.03	11.83	3.26	65.53	70.65	0.4249	0.1207	0.0245	1.5672	83.83	82.77	60.84	57.48	-1418.5	-934.8	2.5675

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 %
1.4275	2.8825	82.20	84.60	43.45	1.1951	1.6881	82.14	83.40

STATOR 2

RUN NO 23, 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	8.565	0.842	1243.6	817.5	867.6	816.7	891.0	36.9	46.0	2.6	1.0019	0.6244	2.8235	1.4856	1.5424	1.2245
2	7.464	0.751	1237.8	835.5	869.3	834.8	881.2	34.9	45.6	2.4	0.9966	0.6393	2.8655	1.4850	1.5594	1.2254
3	6.448	0.673	1232.7	868.2	879.9	868.0	863.2	18.8	44.6	1.2	0.9935	0.6675	2.9409	1.4813	1.5883	1.2234
4	3.932	-0.020	1132.5	886.3	856.6	886.0	740.8	20.1	40.9	1.3	0.9090	0.6892	3.0093	1.4555	1.6494	1.2084
5	1.506	-0.678	930.6	760.0	731.4	759.8	575.4	16.8	38.2	1.3	0.7386	0.5923	2.7814	1.4168	1.7062	1.1965
6	0.240	-1.161	831.4	664.3	645.3	664.2	524.3	12.1	39.1	1.0	0.6565	0.5166	2.6295	1.4007	1.6891	1.1911
7	-0.572	-1.255	819.2	650.2	637.7	650.1	514.3	11.8	38.8	1.0	0.6470	0.5058	2.6094	1.3964	1.6353	1.1868
8	-1.436	-1.313	838.5	675.2	666.9	675.0	508.2	14.5	37.3	1.2	0.6638	0.5267	2.6451	1.3947	1.6071	1.1836
9	-3.636	-1.560	844.9	697.1	681.0	696.7	500.1	24.5	36.3	2.0	0.6648	0.5410	2.6608	1.4127	1.5598	1.1867
10	-4.747	-1.585	821.3	668.8	671.7	668.2	472.6	29.2	35.2	2.5	0.6441	0.5175	2.6135	1.4152	1.5447	1.1786
11	-5.723	-1.434	768.1	592.4	645.7	591.7	415.9	29.2	32.9	2.8	0.5992	0.4557	2.5048	1.4152	1.5307	1.1642

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	-4.92	-3.36	11.90	43.45	89.17	98.38	0.4974	0.2211	0.0499	0.8953	70.66	70.73	74.59	58.21	60.65
2	-4.32	-2.30	11.14	43.21	91.35	101.20	0.4818	0.2230	0.0513	0.8953	69.06	71.98	75.72	59.56	61.97
3	-4.53	-2.02	9.59	43.38	95.00	106.44	0.4568	0.2132	0.0500	0.9002	68.27	74.63	78.09	62.75	65.06
4	-7.14	-3.27	9.12	39.62	98.13	111.65	0.3831	0.1476	0.0366	0.9380	71.68	80.83	83.51	73.20	75.00
5	-9.03	-3.72	9.07	36.51	86.63	96.23	0.3542	0.0912	0.0244	0.9716	78.36	81.11	83.58	83.37	84.57
6	-7.84	-2.05	8.76	28.01	76.55	83.72	0.3758	0.0733	0.0203	0.9814	82.74	79.09	81.69	83.98	85.11
7	-7.89	-1.89	8.70	37.80	75.99	81.99	0.3768	0.0675	0.0189	0.9835	83.78	79.23	81.79	80.23	81.54
8	-9.28	-3.08	8.84	36.04	80.05	85.53	0.3623	0.0844	0.0240	0.9785	79.19	80.87	83.26	78.55	79.93
9	-10.00	-3.30	9.68	34.29	80.95	87.03	0.3406	0.0751	0.0220	0.9808	79.60	77.86	80.64	72.04	73.72
10	-11.79	-4.91	10.77	32.67	79.28	82.78	0.3424	0.0721	0.0213	0.9828	81.02	75.77	78.75	73.65	75.21
11	-15.37	-8.27	12.25	30.05	75.33	72.33	0.3784	0.1093	0.0326	0.9766	75.88	71.97	75.27	78.18	79.44

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 %	EFF-P TOT-STG %
11210.	189.80	1.4219	2.7599	78.32	81.13	1.1951	0.9575	74.85	206.77

TABLE XXVII (d) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

105% OF DESIGN SPEED
STATOR 1 ($\beta^{*}_{des.} - \beta^{*}_{act.}$) = +2.5°
STATOR 2 ($\beta^{*}_{des.} - \beta^{*}_{act.}$) = -2.5°

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 23, SPEED CODE 15, POINT NO 14

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	16.859	18.331	657.3	1084.0	657.3	608.4	0.0	897.2	0.0	55.9	0.6100	0.9569	656.0	759.4	0.8619	0.5506	928.6	623.8
2	14.509	15.993	671.7	1046.9	671.7	621.0	0.0	842.9	0.0	53.6	0.6245	0.9199	707.3	796.2	0.9069	0.5472	975.5	622.7
3	12.295	13.826	685.9	1027.3	685.9	627.4	0.0	813.4	0.0	52.4	0.6388	0.8990	757.7	832.9	0.9518	0.5493	1022.1	627.1
4	6.498	8.094	720.0	949.4	720.0	615.8	0.0	722.6	0.0	49.6	0.6733	0.8207	902.1	943.2	1.0793	0.5654	1154.2	654.1
5	1.125	1.728	741.9	837.8	741.9	537.7	0.0	642.5	0.0	50.1	0.6957	0.7118	1082.3	1090.1	1.2305	0.5943	1312.2	699.6
6	-0.611	-1.013	747.4	808.9	747.4	536.5	0.0	605.4	0.0	48.5	0.7014	0.6845	1169.0	1163.6	1.3021	0.6551	1387.5	774.2
7	-1.796	-2.291	749.2	817.9	749.2	573.0	0.0	583.6	0.0	45.5	0.7033	0.6932	1211.8	1200.3	1.3373	0.7135	1424.7	841.8
8	-3.352	-3.550	749.5	825.4	749.5	601.5	0.0	565.2	0.0	43.2	0.7036	0.7003	1254.5	1237.1	1.3718	0.7651	1461.4	901.8
9	-8.470	-7.453	735.1	824.7	735.1	608.2	0.0	557.1	0.0	42.4	0.6887	0.6946	1382.2	1347.3	1.4668	0.8398	1565.5	997.1
10	-10.194	-8.853	725.2	822.3	725.2	595.4	0.0	567.2	0.0	43.5	0.6787	0.6890	1424.8	1384.0	1.4960	0.8469	1598.7	1010.8
11	-11.512	-10.248	714.4	785.8	714.4	533.0	0.0	582.8	0.0	47.4	0.6676	0.6554	1467.3	1420.7	1.5250	0.8242	1632.0	993.1

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	CMEGA-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	-1.64	2.57	15.18	57.52	42.01	49.42	0.5565	0.0392	0.0084	1.9707	97.97	97.78	44.75	-12.78	-656.0	137.8	1.9707
2	-1.53	2.77	15.30	50.59	42.58	51.88	0.5722	0.0223	0.0051	1.9627	98.73	98.62	46.29	-4.31	-707.3	46.7	1.9627
3	-1.33	2.78	13.31	45.50	43.11	53.64	0.5854	0.0148	0.0035	1.9793	99.10	99.02	47.68	1.78	-757.7	-19.4	1.9793
4	-0.19	3.28	10.03	31.60	44.32	55.16	0.6043	0.0409	0.0103	1.9578	96.99	96.71	51.31	19.71	-902.1	-220.5	1.9578
5	1.05	3.73	9.50	15.79	45.03	49.50	0.6138	0.1294	0.0298	1.8769	88.67	87.65	55.56	39.78	-1082.3	-447.5	1.8769
6	1.47	3.15	8.79	11.27	45.20	50.30	0.5780	0.1242	0.0272	1.8805	88.48	87.43	57.40	46.13	-1169.0	-558.1	1.8805
7	1.08	3.78	6.78	11.16	45.26	54.56	0.5394	0.0870	0.0192	1.9183	91.74	90.97	58.26	47.10	-1211.8	-616.7	1.9183
8	1.91	3.86	5.29	10.58	45.27	58.02	0.5088	0.0584	0.0129	1.9514	94.30	93.76	59.13	48.15	-1254.5	-671.8	1.9514
9	2.96	4.38	5.57	9.65	44.82	59.19	0.4878	0.0890	0.0193	1.9879	90.92	90.02	62.01	52.36	-1382.2	-790.2	1.9879
10	3.37	4.66	6.84	9.21	44.50	57.64	0.4948	0.1236	0.0264	1.9882	87.36	86.11	63.05	53.84	-1424.8	-816.9	1.9882
11	3.72	4.87	11.10	6.61	44.13	50.86	0.5216	0.1915	0.0380	1.9402	80.32	78.43	64.05	57.44	-1467.3	-838.0	1.9402

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 %
1.2301	1.9446	90.85	91.65	42.88	1.2301	1.9446	90.85	91.65

STATOR 1

RUN NO 23, SPEED CODE 15, POINT NO 14

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	18.143	14.800	1086.1	609.7	638.9	604.5	878.3	-79.7	54.1	-7.4	0.9590	0.5075	1.8347	1.2165	1.8347	1.2165
2	15.661	12.979	1053.3	614.7	651.1	612.5	828.0	-51.8	51.9	-4.8	0.9265	0.5125	1.8473	1.2153	1.8473	1.2153
3	13.799	11.276	1036.9	630.9	658.1	630.0	801.3	-33.1	50.7	-3.0	0.9087	0.5264	1.8699	1.2172	1.8699	1.2172
4	8.404	6.580	965.2	643.6	646.4	642.9	716.8	-30.0	48.0	-2.7	0.8362	0.5373	1.8904	1.2186	1.8904	1.2186
5	1.933	0.737	857.8	614.1	565.5	612.1	641.5	-48.7	48.4	-4.5	0.7305	0.5099	1.8492	1.2247	1.8492	1.2247
6	-1.104	-1.993	830.2	597.3	567.4	594.3	606.0	-59.8	46.9	-5.7	0.7042	0.4950	1.8267	1.2260	1.8267	1.2260
7	-2.330	-3.101	839.3	633.2	602.2	632.2	584.7	-36.3	44.2	-3.3	0.7132	0.5268	1.8650	1.2244	1.8650	1.2244
8	-3.305	-4.029	846.9	657.0	629.1	656.7	566.9	-19.3	42.1	-1.7	0.7204	0.5478	1.8919	1.2242	1.8919	1.2242
9	-5.833	-6.502	848.6	674.9	637.5	674.9	560.2	-1.6	41.4	-0.1	0.7167	0.5596	1.9118	1.2408	1.9118	1.2408
10	-6.688	-7.282	847.5	664.5	627.1	664.1	570.7	-22.5	42.4	-1.9	0.7126	0.5479	1.8991	1.2515	1.8991	1.2515
11	-7.801	-8.165	817.7	637.5	569.0	634.9	587.3	-57.3	46.0	-5.2	0.6807	0.5214	1.8675	1.2654	1.8675	1.2654

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	CMEGA-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	4.10	6.21	7.40	61.58	51.81	61.39	0.6125	0.1547	0.0314	0.9310	82.72	86.56	87.64	86.56	87.64
2	3.08	6.00	8.94	56.73	54.12	62.64	0.5881	0.1382	0.0292	0.9411	83.79	88.95	89.84	88.95	89.84
3	3.66	6.44	9.90	53.67	55.84	64.68	0.5641	0.1331	0.0293	0.9448	83.53	90.04	90.86	90.04	90.86
4	3.46	7.18	9.11	50.62	57.25	66.29	0.5188	0.0936	0.0228	0.9656	86.51	91.20	91.94	91.20	91.94
5	5.38	10.43	7.27	52.92	51.80	62.27	0.5019	0.0479	0.0130	0.9858	91.61	85.35	86.54	85.35	86.54
6	4.36	5.98	6.11	52.63	52.54	60.08	0.5089	0.1025	0.0292	0.9712	81.78	83.03	84.39	83.03	84.39
7	1.88	7.75	8.60	47.47	56.62	64.33	0.4627	0.1063	0.0310	0.9693	79.22	86.76	87.85	86.76	87.85
8	-0.04	6.10	10.24	43.75	59.91	67.09	0.4306	0.1091	0.0324	0.9681	76.94	89.02	89.94	89.02	89.94
9	-0.75	6.13	12.92	41.50	61.17	68.32	0.4131	0.1322	0.0413	0.9617	69.63	84.36	85.70	84.36	85.70
10	-0.06	6.99	12.33	44.32	59.83	66.61	0.4397	0.1567	0.0496	0.9550	65.54	79.87	81.58	79.87	81.58
11	2.88	10.03	10.63	51.19	53.46	62.77	0.4752	0.1408	.0.0449	0.9625	69.09	73.50	75.69	73.50	75.69

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PC INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %	EFF-P TOT-STG %
11161.	188.80	1.2301	1.8750	85.41	86.63	1.2301	0.9642	85.41	106.81

ROTOR 2

RUN NO 23, SPEED CODE 15, POINT NO 14

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	11.463	10.984	677.4	1156.6	672.9	688.7	-77.5	929.2	-6.5	53.3	0.5672	0.9111	870.3	912.8	0.9733	0.5427	1162.4	688.9
2	10.535	9.637	688.5	1138.6	686.6	659.5	-50.2	928.2	-4.2	54.5	0.5779	0.8964	894.9	931.9	C.9806	0.5192	1168.2	659.5
3	9.498	8.384	71C.0	112C.6	7C9.3	679.0	-32.3	891.5	-2.6	52.6	0.5967	0.8827	920.2	951.7	C.9981	0.5370	1187.6	681.7
4	5.752	4.913	736.0	1C36.9	735.4	664.5	-29.7	796.0	-2.3	50.1	0.6198	0.8114	995.C	1015.0	1.0649	0.5475	1264.5	699.7
5	0.329	0.679	711.0	915.C	7C9.3	610.3	-48.8	681.7	-3.9	48.2	0.5957	0.7066	1107.5	1106.8	1.1365	0.5744	1356.5	743.8
6	-2.473	-1.558	690.5	868.0	687.9	584.9	-60.2	641.4	-5.0	47.6	0.5770	0.6668	1162.8	1155.6	1.1726	0.5983	1403.2	778.8
7	-3.650	-2.599	719.2	865.7	718.3	565.6	-35.3	655.4	-2.8	49.2	0.6032	0.6648	1190.7	1180.8	1.1917	0.5929	1421.0	772.0
8	-4.551	-3.513	735.7	874.C	735.5	577.0	-18.9	656.6	-1.5	48.6	0.6181	0.6718	1218.8	1206.6	1.2C95	0.6127	1439.7	797.1
9	-6.690	-6.089	747.6	882.3	747.6	572.1	-1.5	671.7	-0.1	49.4	0.6243	0.6709	1304.3	1286.5	1.2565	0.6386	1504.7	839.8
10	-7.322	-6.956	740.2	871.3	739.8	580.2	-22.3	650.0	-1.7	48.1	0.6148	0.6584	1332.9	1313.9	1.2825	0.6662	1544.1	881.6
11	-8.221	-8.160	718.0	846.4	715.6	590.8	-58.0	606.0	-4.6	45.6	0.5915	0.6341	1361.7	1341.8	1.3C98	0.7069	1589.9	943.6

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	CMEGA-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	5.06	5.38	19.04	55.5C	66.30	83.71	0.6086	0.2248	0.0512	1.9203	86.20	84.89	54.54	-1.36	-947.8	16.4	3.5241
2	4.01	8.46	14.14	53.64	67.91	81.60	0.6347	0.2248	0.0525	1.9126	85.96	84.62	53.96	0.32	-945.1	-3.7	3.5353
3	2.97	7.55	12.59	48.27	7C.17	85.71	0.6155	0.1863	0.0445	1.8977	87.74	86.59	53.32	5.06	-992.5	-60.3	3.5500
4	2.71	7.50	8.67	36.23	72.50	86.91	0.6162	0.1765	0.0431	1.8324	86.64	85.45	54.46	18.23	-1028.7	-219.0	3.4630
5	5.00	5.58	6.64	23.61	68.99	81.31	0.6047	0.1736	0.0404	1.7735	85.00	83.75	58.47	34.86	-1156.3	-425.1	3.2776
6	6.27	10.61	5.C9	19.34	66.69	78.19	0.5930	0.1822	0.0406	1.7545	83.47	82.12	60.64	41.30	-1223.1	-514.3	3.2095
7	4.75	8.83	3.60	16.77	70.27	76.01	0.6044	0.2120	0.0474	1.7241	80.31	78.75	59.62	42.85	-1226.1	-525.4	3.2227
8	3.88	7.69	1.25	15.65	72.34	78.10	0.5927	0.2109	0.0479	1.7216	80.07	78.50	59.26	43.57	-1237.7	-550.0	3.2601
9	3.31	5.99	-0.17	13.20	73.01	77.11	0.5962	0.2343	0.0559	1.7334	77.64	75.86	60.12	46.93	-1305.8	-614.8	3.3144
10	4.06	6.24	2.C2	12.56	71.57	77.71	0.5841	0.2356	0.0565	1.7353	77.18	75.36	61.26	48.69	-1355.3	-663.8	3.3000
11	5.62	7.32	5.43	12.04	68.21	78.27	0.5620	0.2256	0.0535	1.7406	77.67	75.88	63.13	51.09	-1419.7	-735.7	3.2538

TO/TO INLET	PO/PC INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PC2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.4557	3.3449	81.98	84.72	39.94	1.2192	1.7835	81.28	82.74

STATOR 2

RUN NO 23, SPEED CODE 15, POINT NO 14

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	8.572	0.781	1179.4	673.8	738.2	672.3	919.9	45.2	51.5	3.8	0.9321	0.5044	3.3552	1.5100	1.8287	1.2392
2	7.419	0.623	1160.6	687.4	7C7.2	685.5	920.3	51.6	52.7	4.3	0.9165	0.5159	3.3873	1.5057	1.8345	1.2387
3	6.292	0.364	1141.8	7C8.8	721.7	706.7	884.9	54.4	51.0	4.4	0.9020	0.5342	3.4361	1.4981	1.8392	1.2309
4	3.675	-C.409	1057.0	679.9	699.2	678.5	792.6	43.5	48.6	3.7	0.8291	0.5134	3.3970	1.4859	1.7967	1.2194
5	0.838	-1.014	934.6	588.6	640.0	588.3	681.0	19.6	46.8	1.9	0.7233	0.4422	3.2468	1.4826	1.7554	1.2105
6	-0.290	-0.928	688.1	539.9	614.2	539.6	641.4	19.4	46.2	2.1	0.6836	0.4042	3.1759	1.4837	1.7380	1.2102
7	-0.891	-0.822	886.2	534.6	555.7	534.1	656.1	22.7	47.7	2.4	0.6820	0.4001	3.1679	1.4838	1.7023	1.2117
8	-1.594	-0.748	895.1	552.4	6C6.8	551.4	657.9	32.7	47.3	3.4	0.6894	0.4139	3.1912	1.4838	1.6901	1.2120
9	-4.153	-1.033	908.7	611.9	6C8.3	609.5	675.1	54.5	48.0	5.1	0.6928	0.4553	3.2616	1.5147	1.7059	1.2218
10	-5.176	-1.234	90C.9	615.9	615.8	613.2	653.8	56.9	46.6	5.3	0.6828	0.4559	3.2576	1.5303	1.7131	1.2241
11	-6.058	-1.250	881.7	574.5	636.4	571.9	610.2	53.9	43.9	5.4	0.6628	0.4216	3.1866	1.5485	1.7059	1.2237

SL	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	RHOVM-1	RHOVM-2	D-FAC	CMEGA-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	0.57	2.12	13.16	47.68	88.24	100.90	0.5955	0.1113	0.0251	0.9522	87.17	80.56	83.52	77.97	79.74
2	2.74	4.76	13.05	48.36	86.14	103.59	0.5796	0.0987	0.0227	0.9586	88.15	82.01	84.77	78.58	80.32
3	1.81	4.31	12.74	46.56	89.74	107.89	0.5506	0.0773	0.0181	0.9683	90.16	84.42	86.84	81.64	83.13
4	0.58	4.45	11.48	44.98	90.30	104.31	0.5347	0.0563	0.0140	0.9795	92.15	85.60	87.82	82.32	83.72
5	-0.45	4.86	9.71	44.84	84.36	89.51	0.5620	0.0364	0.0097	0.9892	94.64	82.46	85.C7	82.12	83.48
6	-0.69	5.10	9.77	44.15	81.26	81.50	0.5876	0.0421	0.0116	0.9887	93.98	80.47	83.31	80.68	82.11
7	1.00	6.99	10.10	45.29	19.20	80.60	0.5966	0.0596	0.0167	0.9841	91.66	8C.24	83.12	76.88	78.54
8	0.72	6.93	10.99	43.89	81.24	83.36	0.5805	0.0688	0.0195	0.9814	90.16	8C.83	83.64	75.63	77.36
9	1.70	8.40	12.77	42.90	80.87	90.67	0.5277	0.0570	0.0167	0.9844	90.70	77.63	80.95	73.63	75.52
10	-0.37	6.51	13.56	41.3C	81.78	90.16	C.5137	0.0478	0.0141	0.9872	91.82	75.23	78.90	73.46	75.38
11	-4.33	2.77	14.81	38.53	82.86	82.48	0.5372	0.0789	0.0235	0.9799	87.60	71.12	75.32	72.91	74.85

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PC INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %	EFF-P TOT-STG %
11161.	188.80	1.4557	3.2783	80.37	83.31	1.2192	C.9801	78.23	171.49

APPENDIX E

OVERALL PERFORMANCE AND BLADE-ELEMENT DATA AT 70 PERCENT OF DESIGN SPEED

This appendix provides test overall performance and blade data at 70 percent of design speed for rotor 1, stator 1, rotor 2, and stator 2. The data is presented for five combinations of stator settings at various flows and pressure ratios. An overall-performance and stall data summary is given in Table XXVIII, and the complete overall performance and blade-element data is given in Table XXIX to Table XXXIII. The column headings for Tables XXIX to XXXIII are identified in Table XI of Appendix A.

TABLE XXVIII – OVERALL PERFORMANCE AND STALL DATA SUMMARY FOR 70 PERCENT OF DESIGN SPEED

PERFORMANCE

REF. TABLE(1)	STATOR SETTING(2) S1	S2	CORRECTED(3) FLOW lbm/sec	P_{11}/P_0	$\eta_{ad, 11}$ %	P_{16}/P_0	$\eta_{ad, 16}$ %
XXIX (a)	0°	0°	124.7	1.310	86.62	1.510	74.00
XXIX (b)	0°	0°	118.3	1.326	86.48	1.681	84.88
XXIX (c)	0°	0°	111.1	1.334	79.47	1.713	82.19
XXIX (d)	0°	0°	105.5	1.342	77.45	1.729	79.91
XXX (a)	-5°	+2.5°	122.3	1.318	89.67	1.478	75.72
XXX (b)	-5°	+2.5°	116.2	1.328	84.47	1.618	84.25
XXX (c)	-5°	+2.5°	109.1	1.334	81.49	1.662	82.95
XXX (d)	-5°	+2.5°	101.8	1.338	80.18	1.688	80.04
XXXI (a)	+5°	0°	128.2	1.318	90.61	1.541	73.44
XXXI (b)	+5°	0°	119.2	1.333	86.08	1.731	84.53
XXXI (c)	+5°	0°	112.1	1.339	84.85	1.755	80.69
XXXI (d)	+5°	0°	103.6	3.341	79.22	1.750	77.28
XXXII (a)	+5°	+7.5°	130.5	1.307	91.26	1.577	81.98
XXXII (b)	+5°	+7.5°	118.8	1.327	84.84	1.723	84.33
XXXII (c)	+5°	+7.5°	112.4	1.330	82.68	1.737	81.24
XXXII (d)	+5°	+7.5°	105.8	1.329	78.39	1.745	78.15
XXXIII	+5°	-5°	106.3	1.327	81.01	1.732	78.77

STALL POINT DATA

STATOR SETTING (2) S1	S2	CORRECTED(3) FLOW lbm/sec	P_{16}/P_0	STALL MARGIN %
0°	0°	102.6	1.735	17.1
-5°	+2.5°	99.0	1.688	17.9
+5°	0°	103.4	1.747	16.9
+5°	+7.5°	102.3	1.743	17.9
+5°	-5°	103.1	1.736	---

NOTES: (1) Refers to remaining Appendix E tables.
(2) Stator Setting = $\beta^*_{des.} - \beta^*_{act.}$
(3) Corrected flow = $W\sqrt{\theta}/\delta$

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TABLE XXIX (a) — OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

70% OF DESIGN SPEED
STATOR 1 ($\beta^*_{des.} - \beta^*_{act.}$) = 0^o
STATOR 2 ($\beta^*_{des.} - \beta^*_{act.}$) = 0^o
(Data from reference 3)

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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	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	16.490	18.174	380.2	765.1	380.2	467.7	0.0	605.5	0.0	52.3	0.3444	0.6839	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	406.9	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	VΘ'-1 FT/SEC	VΘ'-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	13.11	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	78.45	67.77	54.94	-985.5	-616.5	1.3140

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 %
1.0925	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	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	18.018	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	549.9	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	48.80	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	47.69	38.39	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	0.3904	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	0.9864	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

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	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	11.631	11.202	636.3	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	10.045	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	VΘ'-1 FT/SEC	VΘ'-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	83.61	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	PO2/PO1	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, SPEEC 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	8.811	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	868.9	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	1.463C	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 TCT-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	53.35	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	53.30	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 %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
7496.	124.70	1.1687	1.5096	74.00	75.44	1.0697	0.9314	59.40

TABLE XXIX (b) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

70% OF DESIGN SPEED
STATOR 1 ($\beta^*_{des.} - \beta^*_{act.}$) = 0^o
STATOR 2 ($\beta^*_{des.} - \beta^*_{act.}$) = 0^o
(Data from reference 3)

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'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	16.463	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	387.6	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	-0.0069	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	4.40	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	18.069	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	91.88	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

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	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	11.590	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	764.4	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	0.5346	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	550.4	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	0.4672	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	0.6610	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	VO'-1 FT/SEC	VO'-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	-1.00	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	2.94	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	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	8.625	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	0.6344	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	506.3	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	1.1888	1.2270	1.0724
11	-5.713	-1.232	585.9	540.8	532.0	540.5	245.4	18.8	24.8	2.0	0.4921	0.4827	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	39.08	61.02	67.35	0.3576	0.1874	0.0423	0.9360	60.57	81.47	82.88	70.53	71.58
2	-5.84	-3.82	13.93	34.90	60.61	68.63	0.3348	0.1582	0.0364	0.9476	62.93	83.85	85.10	74.01	74.97
3	-6.07	-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	0.0406	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

TABLE XXIX (c) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

70% OF DESIGN SPEED

STATOR 1 $(\beta^*_{des.} - \beta^*_{act.}) = 0^0$

STATOR 2 $(\beta^*_{des.} - \beta^*_{act.}) = 0^0$

(Data from reference 3)

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	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	16.449	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	0.3877	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	0.4181	815.1	478.1
6	-3.187	-1.895	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	V0'-1 FT/SEC	V0'-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	13.84	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	T02/T01	P02/P01	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	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	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	-0.639	-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	-1.636	-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	1.97	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	0.1054	0.0334	0.9830	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 %	T02/T01	P02/P01	EFF-AD STAGE %
7486.	111.10	1.1080	1.3337	79.47	80.26	1.1080	0.9872	79.47

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	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	11.634	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	VO'-1 FT/SEC	VO'-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	47.62	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	-1.29	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	5.69	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	4.65	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	5.65	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	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	8.575	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	7.480	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	20.9	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	6.0200	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	46.58	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	85.57	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

APPENDIX E

TABLE XXIX (d) —OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

70% OF DESIGN SPEED
STATOR 1 ($\beta^*_{des.} - \beta^*_{act.}$) = 0^o
STATOR 2 ($\beta^*_{des.} - \beta^*_{act.}$) = 0^o
(Data from reference 3)

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'-2	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	14.162	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	11.839	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	-6.969	-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	-9.764	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	57.61	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	25.70	25.68	29.84	0.5955	0.1761	0.0414	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	10.23	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	1.74	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	TO2/TO1	PO2/PO1	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	TO2/TO1
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	15.392	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	13.167	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	416.3	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	-1.248	-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	-2.126	-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	-2.925	-2.545	581.4	419.7	408.0	419.7	414.2	-4.5	45.4	-0.6	0.5067	0.3616	1.3394	1.1069	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	6.72	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	0.63	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	52.38	29.98	34.97	0.5436	0.0857	0.0247	0.9863	84.48	67.94	69.20	67.94	69.20
10	9.67	16.72	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 %	TO2/TO1	PO2/PO1	EFF-AD STAGE %
7499.	105.50	1.1131	1.3416	77.45	78.34	1.1131	0.9876	77.45

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	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'-1	V'-1 FT/SEC	V'-2 FT/SEC
1	11.536	10.986	496.9	823.0	496.8	566.5	-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	556.1	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	540.4	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	VØ'-1 FT/SEC	VØ'-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	8.19	10.76	10.52	20.92	38.03	45.05	0.4559	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	0.0257	1.2615	84.01	83.50	61.06	47.84	[illegible]	-465.1	1.6896
9	6.04	8.72	3.03	12.73	38.22	41.67	0.4406	0.1362	0.0305	1.2706	81.81	81.21	62.85	50.12	[illegible]	-522.4	1.7018
10	6.59	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	T02/T01	P02/P01	EFF-AD ROTOR %	EFF-P ROTOR %
1.2117	1.7547	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	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	T02/ T01
1	8.647	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	590.8	636.6	578.2	28.6	44.6	2.4	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	4.911	-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	-8.0	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	-8.069	-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	42.13	56.15	62.38	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	0.1344	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	-4.90	-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	-1.69	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	0.3723	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	10.69	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	-6.88	12.13	31.55	44.91	45.09	0.3182	0.0878	0.0262	0.9881	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 %	T02/T01	P02/P01	EFF-AD STAGE %
7499.	105.90	1.2117	1.7288	79.91	81.38	1.0885	0.9853	84.69

ORIGINAL PAGE IS
OF POOR QUALITY

TABLE XXX (a) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

70% OF DESIGN SPEED

STATOR 1 ($\beta^*_{des.} - \beta^*_{act.}$) = -5^o

STATOR 2 ($\beta_{des.} - \beta^*_{act.}$) = $+2.5^o$

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 13, SPEED CODE 70, 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	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	16.686	18.082	373.5	738.8	373.5	426.2	0.0	603.5	0.0	54.8	0.3383	0.6581	440.2	509.6	0.5228	0.3887	577.3	436.4
2	14.244	15.484	381.3	710.7	381.3	436.8	0.0	560.7	0.0	52.0	0.3455	0.6318	474.7	534.3	0.5517	0.3890	608.9	437.6
3	11.934	13.105	388.9	687.3	388.9	450.0	0.0	519.4	0.0	49.0	0.3525	0.6102	508.5	558.9	0.5803	0.4011	640.1	451.8
4	5.615	6.987	405.8	630.1	405.8	454.6	0.0	436.3	0.0	43.8	0.3682	0.5574	605.4	632.9	0.6614	0.4382	728.8	495.3
5	-0.214	0.431	411.9	545.8	411.9	400.9	0.0	370.4	0.0	42.7	0.3740	0.4795	726.3	731.5	0.7580	0.4740	835.0	539.5
6	-2.000	-2.227	411.2	527.2	411.2	401.8	0.0	341.4	0.0	40.4	0.3733	0.4628	784.5	780.8	0.8041	0.5227	885.7	595.4
7	-3.055	-3.424	410.4	531.1	410.4	420.1	0.0	325.0	0.0	37.8	0.3726	0.4667	813.2	805.5	0.8269	0.5608	910.9	638.2
8	-4.288	-4.579	409.1	531.3	409.1	422.6	0.0	322.0	0.0	37.3	0.3713	0.4664	841.9	830.1	0.8496	0.5803	936.0	660.9
9	-8.313	-8.009	401.0	542.8	401.0	431.5	0.0	328.7	0.0	37.3	0.3638	0.4748	927.5	904.1	0.9168	0.6294	1010.5	719.5
10	-9.769	-9.202	396.9	546.0	396.9	430.8	0.0	335.4	0.0	37.9	0.3600	0.4767	956.1	928.8	0.9389	0.6402	1035.2	733.2
11	-11.119	-10.410	392.2	534.0	392.2	414.6	0.0	336.5	0.0	39.0	0.3556	0.4651	984.6	953.4	0.9610	0.6474	1059.9	743.2

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	3.08	7.69	15.52	61.90	26.99	33.37	0.4917	0.0238	0.0051	1.3848	98.81	98.78	49.47	-12.43	-440.2	94.0	1.3848
2	3.18	7.48	16.15	54.46	27.49	34.65	0.5067	0.0041	0.0009	1.3779	99.78	99.80	51.00	-3.45	-474.7	26.4	1.3779
3	3.38	7.49	16.53	47.39	27.97	36.11	0.4991	-0.0258	-0.0061	1.3729	101.65	101.76	52.39	5.00	-508.5	-39.5	1.3729
4	4.53	8.00	13.66	32.70	29.02	37.22	0.4865	-0.0277	-0.0068	1.3554	102.30	102.43	56.04	23.34	-605.4	-196.6	1.3554
5	5.91	8.60	11.73	18.43	29.40	32.97	0.4899	0.0721	0.0161	1.3082	92.04	91.76	60.43	42.00	-726.3	-361.1	1.3082
6	6.41	8.69	10.24	14.76	29.36	33.20	0.4499	0.0648	0.0138	1.3028	92.07	91.81	62.35	47.58	-784.4	-439.5	1.3028
7	6.65	8.75	8.54	14.37	29.31	34.88	0.4145	0.0347	0.0074	1.3095	95.50	95.36	63.23	48.86	-813.2	-480.4	1.3095
8	6.88	8.83	7.42	13.82	29.23	35.11	0.4071	0.0423	0.0090	1.3123	94.37	94.18	64.09	50.28	-841.9	-508.2	1.3123
9	7.57	9.00	6.29	13.54	28.73	35.81	0.4019	0.0841	0.0179	1.3260	88.49	88.05	66.62	53.09	-927.5	-575.4	1.3260
10	7.77	9.07	6.97	13.49	28.47	35.62	0.4074	0.1078	0.0229	1.3289	85.26	84.68	67.45	53.97	-956.1	-593.3	1.3289
11	7.93	9.08	9.67	12.25	28.18	34.14	0.4141	0.1368	0.0282	1.3203	81.00	80.27	68.27	56.01	-984.6	-616.9	1.3203

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 %
1.0915	1.3321	93.32	93.56	27.78	1.0915	1.3321	93.32	93.56

STATOR 1

RUN NO 13, SPEED CODE 70, 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	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	17.835	14.651	742.3	532.9	449.6	531.9	590.7	33.0	52.9	3.5	0.6615	0.4651	1.3397	1.0986	1.3397	1.0986
2	15.214	12.705	717.3	532.9	459.9	531.5	550.5	37.9	50.2	4.0	0.6382	0.4657	1.3431	1.0959	1.3431	1.0959
3	12.916	10.898	696.2	537.3	472.4	535.9	511.4	38.8	47.2	4.1	0.6188	0.4704	1.3489	1.0929	1.3489	1.0929
4	7.426	5.955	642.9	519.5	475.4	519.0	432.7	22.0	42.2	2.4	0.5694	0.4551	1.3365	1.0886	1.3365	1.0886
5	1.330	-0.365	560.5	475.7	421.3	475.7	369.7	5.9	41.2	0.7	0.4931	0.4157	1.3014	1.0869	1.3014	1.0869
6	-1.461	-3.135	542.0	467.9	421.0	467.9	341.4	-0.4	39.0	-0.0	0.4764	0.4090	1.2938	1.0854	1.2938	1.0854
7	-2.581	-4.202	545.5	475.1	437.4	475.1	325.9	-1.5	36.7	-0.2	0.4799	0.4156	1.2977	1.0842	1.2977	1.0842
8	-3.549	-5.085	545.7	479.9	439.6	479.9	323.3	-3.8	36.4	-0.5	0.4797	0.4196	1.3004	1.0860	1.3004	1.0860
9	-6.271	-7.355	557.7	502.6	448.9	502.6	330.9	3.3	36.5	0.4	0.4885	0.4383	1.3169	1.0954	1.3169	1.0954
10	-7.163	-8.012	561.1	505.0	448.0	504.9	337.8	9.7	37.1	1.1	0.4905	0.4395	1.3185	1.1000	1.3185	1.1000
11	-8.137	-8.624	549.9	495.1	432.9	494.9	339.1	14.1	38.2	1.6	0.4796	0.4299	1.3116	1.1030	1.3116	1.1030

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	-4.69	-2.58	10.84	49.35	35.13	44.62	0.4272	0.1272	0.0260	0.9677	77.27	88.45	88.89	88.45	88.89
2	-5.68	-3.28	10.26	46.13	36.35	44.80	0.4004	0.1041	0.0221	0.9751	79.71	91.81	92.11	91.81	92.11
3	-7.28	-4.49	9.50	43.14	37.72	45.39	0.3700	0.0750	0.0165	0.9830	83.73	96.16	96.29	96.16	96.29
4	-9.76	-6.04	6.69	39.83	38.67	44.03	0.3421	0.0644	0.0157	0.9873	83.30	97.62	97.68	97.62	97.68
5	-9.26	-4.22	5.02	40.53	34.43	40.01	0.3262	0.0319	0.0087	0.9952	89.38	90.01	90.34	90.01	90.34
6	-10.97	-5.36	4.31	39.10	34.58	39.29	0.3172	0.0528	0.0151	0.9924	80.97	89.56	89.90	89.56	89.90
7	-13.09	-7.21	4.21	36.89	36.11	39.94	0.3046	0.0637	0.0186	0.9907	75.80	91.82	92.09	91.82	92.09
8	-13.23	-7.09	3.58	36.82	36.31	40.30	0.2995	0.0638	0.0189	0.9907	74.26	90.70	91.00	90.70	91.00
9	-13.14	-6.26	5.93	36.10	36.98	42.05	0.2832	0.0456	0.0142	0.9931	77.75	85.81	86.32	85.81	86.32
10	-12.82	-5.77	7.89	36.00	36.80	42.09	0.2871	0.0518	0.0164	0.9921	75.20	82.25	82.90	82.25	82.90
11	-12.43	-5.28	9.96	36.55	35.41	41.10	0.2913	0.0452	0.0145	0.9934	78.16	78.28	79.07	78.28	79.07

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 %	EFF-P TOT-STG %
7489.	122.30	1.0915	1.3178	89.67	90.04	1.0915	0.9893	89.67	233.01

ROTOR 2

RUN NO 13, SPEED CODE 70, 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	11.506	11.080	584.8	885.0	584.0	687.5	32.2	557.3	3.1	38.9	0.5127	0.7641	584.0	612.5	0.7044	0.5955	803.5	689.7
2	10.579	9.816	589.8	881.9	588.6	690.6	37.0	548.5	3.6	38.4	0.5180	0.7623	600.5	625.3	0.7157	0.6007	814.9	694.9
3	9.484	8.613	598.4	876.3	597.2	701.1	37.9	525.8	3.6	36.8	0.5267	0.7590	617.5	638.7	0.7326	0.6150	832.3	710.1
4	5.346	5.117	591.0	821.9	590.6	705.8	21.5	421.2	2.1	30.8	0.5209	0.7126	670.4	681.2	0.7733	0.6521	877.4	752.1
5	-1.391	0.058	544.1	675.7	544.1	615.2	5.5	279.5	0.6	24.4	0.4780	0.5828	743.2	742.7	0.8053	0.6642	916.6	770.1
6	-4.191	-2.182	526.8	576.4	526.8	531.4	-0.5	223.2	-0.1	22.8	0.4625	0.4953	780.3	775.5	0.8270	0.6585	941.9	766.4
7	-5.038	-3.033	528.0	562.2	528.0	527.0	-1.8	195.8	-0.2	20.4	0.4637	0.4836	799.1	792.4	0.8425	0.6847	959.2	796.0
8	-5.727	-3.893	530.1	573.3	530.1	547.0	-3.6	171.5	-0.4	17.4	0.4653	0.4943	817.9	809.7	0.8582	0.7247	977.7	840.5
9	-8.166	-6.924	547.5	600.3	547.5	582.1	3.8	146.8	0.4	14.1	0.4791	0.5180	875.2	863.3	0.9005	0.7966	1029.2	923.2
10	-8.934	-8.044	546.7	595.4	546.6	577.7	10.1	144.0	1.1	14.0	0.4773	0.5129	894.5	881.7	0.9078	0.8072	1039.7	937.0
11	-9.422	-9.065	534.5	552.4	534.3	535.6	14.3	135.4	1.5	14.1	0.4656	0.4742	913.8	900.4	0.9113	0.8016	1046.2	933.9

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	-6.18	-1.87	24.98	38.72	47.91	57.73	0.2945	0.1910	0.0434	1.2983	82.75	82.13	43.30	4.58	-551.8	-55.3	1.7394
2	-6.24	-1.79	20.15	37.38	48.42	58.75	0.2972	0.1609	0.0374	1.3068	85.10	84.55	43.71	6.33	-563.5	-76.9	1.7554
3	-6.21	-1.64	16.65	35.02	49.26	60.50	0.2897	0.1224	0.0290	1.3107	88.00	87.56	44.14	9.12	-579.7	-112.9	1.7682
4	-4.06	0.74	10.65	27.48	48.58	62.38	0.2615	0.0337	0.0081	1.2969	96.10	95.98	47.69	20.21	-648.8	-259.9	1.7318
5	0.13	4.71	8.76	16.62	44.53	53.77	0.2460	0.0727	0.0165	1.1966	86.40	86.13	53.60	36.98	-737.7	-463.2	1.5547
6	1.66	6.00	9.88	9.95	43.27	45.72	0.2602	0.1715	0.0353	1.1166	62.38	61.87	56.03	46.09	-780.8	-552.2	1.4467
7	1.77	5.85	9.26	8.13	43.50	45.27	0.2368	0.1613	0.0326	1.1013	61.00	60.52	56.64	48.52	-800.9	-596.6	1.4300
8	1.81	5.62	7.03	7.85	43.67	47.05	0.1991	0.1167	0.0238	1.1024	68.20	67.82	57.20	49.35	-821.6	-638.2	1.4351
9	1.05	3.73	3.73	7.03	44.98	49.65	0.1518	0.0769	0.0170	1.0957	73.85	73.57	57.86	50.83	-871.5	-716.5	1.4432
10	1.07	3.25	5.18	6.41	44.81	48.94	0.1453	0.0796	0.0179	1.0879	71.07	70.80	58.27	51.85	-884.4	-737.7	1.4335
11	1.73	3.43	9.27	4.32	43.69	44.91	0.1511	0.1133	0.0246	1.0620	55.13	54.83	59.25	54.93	-899.5	-765.0	1.3928

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 %
1.1560	1.5622	87.13	87.89	34.67	1.0590	1.1855	84.28	84.62

STATOR 2

RUN NO 13, SPEED CODE 70, 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	8.703	1.005	922.0	859.1	738.8	853.4	551.7	-99.4	37.0	-6.6	0.8001	0.7392	1.5101	1.2022	1.1274	1.0941
2	7.746	1.097	916.4	873.8	737.6	868.2	543.8	-98.7	36.6	-6.5	0.7958	0.7540	1.5379	1.1998	1.1461	1.0941
3	6.880	1.114	909.0	891.8	743.9	886.1	522.4	-101.2	35.3	-6.5	0.7906	0.7731	1.5731	1.1951	1.1677	1.0927
4	4.891	0.930	851.7	899.2	740.7	892.8	420.6	-107.1	29.7	-6.8	0.7412	0.7863	1.6127	1.1788	1.2038	1.0826
5	2.704	0.192	707.7	813.9	649.7	806.4	280.7	-110.0	23.4	-7.8	0.6123	0.7118	1.5273	1.1553	1.1732	1.0629
6	0.935	-0.352	610.4	734.4	567.7	726.8	224.1	-105.3	21.5	-8.2	0.5259	0.6401	1.4429	1.1425	1.1149	1.0528
7	-0.246	-0.676	593.5	701.8	560.0	694.3	196.7	-102.4	19.3	-8.4	0.5119	0.6113	1.4110	1.1364	1.0871	1.0479
8	-1.300	-0.912	603.8	685.7	578.8	678.5	172.0	-98.9	16.5	-8.3	0.5219	0.5974	1.3956	1.1323	1.0727	1.0423
9	-3.625	-1.119	633.4	689.4	616.0	685.9	147.5	-68.7	13.5	-5.7	0.5482	0.6000	1.3940	1.1353	1.0585	1.0360
10	-4.395	-1.163	633.0	691.4	616.2	688.6	144.9	-61.5	13.2	-5.1	0.5472	0.6011	1.3933	1.1381	1.0572	1.0344
11	-5.411	-1.162	597.5	642.1	581.8	639.8	136.4	-53.7	13.2	-4.8	0.5149	0.5555	1.3433	1.1379	1.0243	1.0316

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	-8.93	-7.37	7.68	43.65	60.49	63.25	0.2281	0.3802	0.0853	0.8689	-134.93	61.78	63.89	36.98	38.00
2	-8.30	-6.28	7.27	43.10	61.29	65.01	0.2085	0.3554	0.0813	0.8785	-220.14	65.47	67.46	42.16	43.22
3	-8.89	-6.38	6.83	41.77	62.80	67.25	0.1853	0.3234	0.0754	0.8899	-499.82	70.79	72.56	48.80	49.88
4	-13.38	-9.51	5.98	36.52	64.27	69.79	0.1121	0.2381	0.0587	0.9259	284.72	81.80	82.96	65.79	66.64
5	-18.84	-13.53	5.04	31.13	55.96	64.02	0.0323	0.1487	0.0394	0.9645	152.98	82.75	83.72	73.95	74.48
6	-20.38	-14.59	4.48	29.75	48.18	57.64	-0.0241	0.0825	0.0226	0.9848	120.14	77.50	78.60	59.56	60.12
7	-22.40	-16.41	4.29	27.71	47.46	55.05	-0.0414	0.0742	0.0206	0.9878	118.38	75.79	76.91	50.29	50.82
8	-25.02	-18.81	4.32	24.81	49.12	53.82	-0.0092	0.1601	0.0450	0.9729	150.85	75.51	76.61	47.79	48.24
9	-27.84	-21.14	6.96	19.17	51.75	54.13	0.0115	0.1854	0.0541	0.9658	188.30	73.59	74.77	45.45	45.82
10	-28.72	-21.84	8.18	18.33	51.33	54.14	0.0060	0.1572	0.0463	0.9711	173.82	71.99	73.24	46.36	46.70
11	-30.01	-22.91	9.64	18.02	47.86	49.73	0.0205	0.2152	0.0640	0.9645	230.31	63.83	65.27	21.78	21.97

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 %	EFF-P TOT-STG %
7489.	122.30	1.1560	1.4782	75.72	77.00	1.0590	0.9462	56.46	-161.25

TABLE XXX (b) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

70% OF DESIGN SPEED

STATOR 1 $(\beta^*_{des.} - \beta^*_{act.}) = -5^{o}$

STATOR 2 $(\beta_{des.} - \beta^*_{act.}) = +2.5^{o}$

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 13, 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	16.554	18.095	357.6	739.1	357.6	418.2	0.0	609.4	0.0	55.5	0.3236	0.6580	439.8	509.2	0.5129	0.3829	566.9	430.1
2	13.973	15.537	364.3	712.3	364.3	424.9	0.0	571.7	0.0	53.3	0.3298	0.6327	474.3	533.8	0.5413	0.3790	598.1	426.6
3	11.610	13.186	370.7	686.9	370.7	426.4	0.0	538.5	0.0	51.6	0.3356	0.6089	508.1	558.5	0.5695	0.3784	628.9	426.9
4	5.429	7.124	384.2	630.8	384.2	428.1	0.0	463.3	0.0	47.2	0.3482	0.5566	604.9	632.4	0.6494	0.4062	716.6	460.3
5	-0.237	0.719	388.6	549.6	388.6	379.5	0.0	397.5	0.0	46.3	0.3523	0.4816	725.7	730.9	0.7463	0.4426	823.2	505.2
6	-2.178	-1.886	387.9	540.8	387.9	393.3	0.0	371.2	0.0	43.4	0.3516	0.4736	783.8	780.2	0.7928	0.4969	874.6	567.4
7	-3.429	-3.116	387.0	549.0	387.0	414.1	0.0	360.4	0.0	41.0	0.3508	0.4810	812.5	804.8	0.8158	0.5323	900.0	607.5
8	-4.850	-4.329	385.4	548.6	385.4	413.0	0.0	361.1	0.0	41.2	0.3493	0.4799	841.2	829.5	0.8386	0.5464	925.3	624.5
9	-8.921	-7.959	376.2	553.3	376.2	405.0	0.0	377.0	0.0	42.9	0.3408	0.4812	926.8	903.4	0.9061	0.5777	1000.3	664.2
10	-10.270	-9.203	372.0	555.9	372.0	404.0	0.0	381.9	0.0	43.3	0.3368	0.4826	955.4	928.0	0.9284	0.5898	1025.2	679.3
11	-11.431	-10.435	367.3	545.6	367.3	379.3	0.0	392.1	0.0	45.9	0.3325	0.4719	983.9	952.7	0.9507	0.5855	1050.2	676.8

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	4.27	8.87	14.49	64.12	25.97	32.76	0.4966	0.0350	0.0075	1.3864	98.32	98.27	50.65	-13.47	-439.8	100.2	1.3864
2	4.40	8.70	14.53	57.29	26.40	33.70	0.5215	0.0257	0.0059	1.3806	98.60	98.56	52.22	-5.08	-474.3	37.8	1.3806
3	4.65	8.75	14.21	50.58	26.81	34.14	0.5380	0.0277	0.0066	1.3731	98.32	98.28	53.65	2.68	-508.1	-20.0	1.3731
4	5.94	9.40	11.83	35.92	27.67	34.97	0.5366	0.0330	0.0082	1.3583	97.35	97.26	57.44	21.52	-604.9	-169.1	1.3583
5	7.31	9.99	11.01	20.53	27.95	31.22	0.5340	0.1151	0.0260	1.3175	88.34	87.91	61.82	41.29	-725.7	-333.4	1.3175
6	7.75	10.03	8.79	17.55	27.91	32.57	0.4859	0.0945	0.0207	1.3210	89.48	89.09	63.68	46.13	-783.8	-409.0	1.3210
7	7.97	10.07	6.72	17.51	27.85	34.45	0.4547	0.0697	0.0154	1.3315	91.90	91.59	64.55	47.04	-812.5	-444.5	1.3315
8	8.20	10.15	5.76	16.80	27.75	34.34	0.4544	0.0867	0.0190	1.3340	89.73	89.34	65.41	48.61	-841.2	-468.4	1.3340
9	8.89	10.32	5.61	15.53	27.17	33.48	0.4689	0.1553	0.0336	1.3431	81.26	80.49	67.94	52.41	-926.8	-526.4	1.3431
10	9.07	10.37	6.46	15.29	26.89	33.33	0.4710	0.1735	0.0374	1.3466	78.94	78.07	68.76	53.46	-955.4	-546.1	1.3466
11	9.20	10.35	9.49	13.70	26.59	31.12	0.4916	0.2167	0.0449	1.3396	73.77	72.70	69.53	55.83	-983.9	-560.6	1.3396

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 %
1.1001	1.3441	88.15	88.61	26.39	1.1001	1.3441	88.15	88.61

STATOR 1

RUN NO 13, 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	18.006	14.744	741.4	455.0	440.3	494.1	596.5	30.6	53.7	3.5	0.6603	0.4306	1.3413	1.0996	1.3413	1.0996
2	15.555	12.874	717.4	456.4	446.5	495.1	561.5	36.8	51.6	4.2	0.6376	0.4322	1.3455	1.0979	1.3455	1.0979
3	13.326	11.106	694.0	498.6	447.6	497.2	530.4	37.3	49.9	4.3	0.6157	0.4345	1.3493	1.0965	1.3493	1.0965
4	7.796	6.218	641.4	483.1	447.4	482.4	459.5	24.7	45.7	2.9	0.5666	0.4209	1.3399	1.0940	1.3399	1.0940
5	1.676	0.249	561.9	444.4	357.8	444.3	396.9	10.2	44.9	1.3	0.4929	0.3863	1.3116	1.0933	1.3116	1.0933
6	-0.990	-2.247	553.3	443.1	410.0	443.0	371.5	3.1	42.2	0.4	0.4850	0.3652	1.3093	1.0930	1.3093	1.0930
7	-2.015	-3.201	561.0	456.0	429.2	456.0	361.3	4.5	40.1	0.6	0.4921	0.3967	1.3172	1.0931	1.3172	1.0931
8	-2.929	-4.037	560.9	460.2	428.1	460.1	362.4	3.8	40.3	0.5	0.4912	0.3999	1.3201	1.0960	1.3201	1.0960
9	-5.793	-6.533	566.6	471.2	421.0	471.1	379.3	11.3	42.1	1.4	0.4934	0.4074	1.3298	1.1090	1.3298	1.1090
10	-6.803	-7.373	569.6	475.5	420.2	475.3	384.5	15.0	42.5	1.8	0.4951	0.4104	1.3337	1.1133	1.3337	1.1133
11	-7.939	-8.248	560.1	465.1	396.9	464.6	395.2	20.1	45.0	2.5	0.4850	0.3999	1.3273	1.1199	1.3273	1.1199

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	-3.82	-1.71	10.84	50.22	34.44	42.08	0.4807	0.1279	0.0261	0.9675	79.98	87.93	88.39	87.93	88.39
2	-4.25	-1.85	10.44	47.38	35.31	42.33	0.4561	0.1092	0.0223	0.9748	82.41	90.42	90.79	90.42	90.79
3	-4.67	-1.88	9.65	45.60	35.70	42.65	0.4319	0.0761	0.0167	0.9828	86.19	92.67	92.94	92.67	92.94
4	-6.28	-2.56	7.19	42.81	36.35	41.42	0.4081	0.0666	0.0162	0.9869	86.22	92.77	93.03	92.77	93.03
5	-5.60	-0.55	5.62	43.60	32.56	37.87	0.3959	0.0294	0.0080	0.9955	92.71	86.45	86.93	86.45	86.93
6	-7.84	-2.22	4.76	41.78	33.78	37.72	0.3900	0.0622	0.0178	0.9907	84.07	86.14	86.63	86.14	86.63
7	-9.70	-3.82	4.95	39.54	35.52	38.89	0.3730	0.0702	0.0205	0.9893	81.05	88.00	88.43	88.00	88.43
8	-9.33	-3.18	4.91	39.80	35.41	39.18	0.3695	0.0676	0.0201	0.9897	81.04	86.11	86.62	86.11	86.62
9	-7.54	-0.66	6.93	40.69	34.61	39.81	0.3716	0.0627	0.0196	0.9904	81.26	77.90	78.74	77.90	78.74
10	-7.40	-0.35	8.59	40.72	34.47	40.08	0.3726	0.0643	0.0203	0.9901	80.67	75.74	76.67	75.74	76.67
11	-5.64	1.51	10.80	42.50	32.36	38.93	0.3870	0.0623	0.0199	0.9907	81.60	70.31	71.44	70.31	71.44

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 %	EFF-P TOT-STG %
7484.	116.20	1.1001	1.3283	84.47	85.05	1.1001	0.9882	84.47	197.32

ROTOR 2

RUN NO 13, 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	11.531	10.588	538.0	861.3	537.2	625.5	29.8	592.1	3.2	43.3	0.4695	0.7387	583.5	612.1	0.6733	0.5367	771.5	625.8
2	10.633	9.645	544.2	847.4	543.0	617.8	35.9	580.0	3.8	43.1	0.4756	0.7265	600.0	624.9	0.6843	0.5310	783.0	619.4
3	9.571	8.380	550.4	825.6	549.2	624.4	36.4	546.2	3.8	41.1	0.4816	0.7116	617.0	638.2	0.6993	0.5414	799.3	631.1
4	5.455	4.744	543.6	751.5	543.0	617.2	24.3	429.4	2.6	34.8	0.4759	0.6446	669.9	680.6	0.7385	0.5714	843.6	666.4
5	-0.748	-0.049	501.2	614.1	501.1	527.0	9.9	315.1	1.1	30.9	0.4375	0.5232	742.6	742.1	0.7748	0.5780	887.7	678.3
6	-3.181	-2.079	492.9	547.3	492.9	476.0	3.3	270.1	0.4	29.6	0.4300	0.4651	779.7	774.9	0.8023	0.5897	919.7	693.9
7	-3.956	-2.874	501.5	537.7	501.5	476.0	4.4	250.1	0.5	27.7	0.4377	0.4573	798.4	791.8	0.8197	0.6132	939.1	721.1
8	-4.674	-3.661	504.9	545.4	504.9	494.1	4.0	230.9	0.4	25.0	0.4402	0.4642	817.3	809.1	0.8346	0.6473	957.3	760.5
9	-7.287	-6.516	517.6	566.0	517.5	520.1	11.5	223.4	1.3	23.2	0.4490	0.4799	874.6	862.6	0.8729	0.6988	1006.3	824.1
10	-6.136	-7.597	521.3	567.1	521.1	519.1	15.2	228.4	1.7	23.7	0.4515	0.4796	893.8	881.0	0.8846	0.7052	1021.5	833.8
11	-6.637	-8.690	511.1	546.2	510.7	499.8	20.3	220.1	2.3	23.7	0.4409	0.4603	913.1	899.7	0.8873	0.7110	1028.5	843.6

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	-3.69	0.63	22.22	43.57	44.98	55.69	0.3595	0.1069	0.0244	1.3607	91.68	91.33	45.79	1.82	-553.8	-20.0	1.8253
2	-3.89	0.56	17.95	41.93	45.56	55.57	0.3752	0.1047	0.0244	1.3559	91.54	91.19	46.06	4.13	-564.1	-44.8	1.8247
3	-3.76	0.82	15.88	38.24	46.15	56.82	0.3665	0.0737	0.0175	1.3487	93.65	93.40	46.59	8.35	-580.6	-91.9	1.8197
4	-1.81	2.98	12.57	27.80	45.52	57.47	0.3352	0.0005	0.0001	1.3136	100.04	100.07	49.94	22.14	-645.5	-251.3	1.7588
5	2.17	6.74	10.79	16.62	41.85	48.98	0.3351	0.0425	0.0094	1.2361	93.35	93.20	55.63	39.02	-732.8	-427.0	1.6205
6	3.23	7.57	10.46	10.94	41.25	44.01	0.3341	0.0956	0.0195	1.1878	83.40	83.04	57.60	46.67	-776.5	-504.8	1.5578
7	2.85	6.93	9.41	9.06	42.06	44.04	0.3135	0.0882	0.0178	1.1761	83.56	83.22	57.72	48.66	-794.0	-541.7	1.5498
8	2.77	6.58	7.11	8.72	42.28	45.79	0.2804	0.0513	0.0105	1.1783	89.57	89.37	58.15	49.43	-813.3	-578.1	1.5559
9	2.19	4.87	3.67	8.23	42.99	47.77	0.2540	0.0370	0.0082	1.1801	91.85	91.69	59.00	50.76	-863.0	-639.3	1.5695
10	2.06	4.24	4.71	7.87	43.20	47.40	0.2588	0.0552	0.0125	1.1759	87.81	87.57	59.26	51.39	-878.6	-652.6	1.5682
11	2.63	4.33	7.90	6.56	42.08	45.31	0.2525	0.0529	0.0119	1.1665	87.68	87.45	60.14	53.56	-892.8	-679.6	1.5484

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 %
1.1749	1.6489	87.79	88.60	32.81	1.0680	1.2414	93.58	93.74

STATOR 2

RUN NO 13, 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	8.564	0.791	890.8	741.0	670.7	740.9	586.2	5.0	41.4	0.4	0.7669	0.6266	1.7135	1.2103	1.2777	1.1006
2	7.434	0.650	875.4	750.5	660.0	750.4	575.1	4.1	41.3	0.3	0.7531	0.6360	1.7312	1.2077	1.2670	1.0999
3	6.354	0.397	856.4	770.5	662.8	770.5	542.4	-0.3	39.5	-0.0	0.7371	0.6560	1.7644	1.2021	1.3076	1.0962
4	3.904	-0.393	776.5	727.9	647.9	727.4	428.0	-26.5	33.5	-2.1	0.6675	0.6222	1.7241	1.1832	1.2870	1.0815
5	1.260	-1.025	637.9	615.2	554.6	614.5	315.1	-30.0	29.6	-2.8	0.5446	0.5241	1.6066	1.1666	1.2253	1.0671
6	-0.463	-1.296	571.1	555.1	503.1	554.2	270.2	-32.4	28.2	-3.3	0.4863	0.4720	1.5513	1.1594	1.1833	1.0608
7	-1.427	-1.391	561.2	544.4	502.3	543.1	250.3	-38.7	26.5	-4.1	0.4782	0.4632	1.5419	1.1561	1.1701	1.0571
8	-2.266	-1.425	568.5	545.7	519.3	544.3	231.4	-39.6	24.0	-4.2	0.4848	0.4645	1.5417	1.1553	1.1675	1.0537
9	-4.212	-1.364	592.6	567.2	548.4	566.7	224.5	-24.1	22.3	-2.4	0.5036	0.4810	1.5514	1.1677	1.1665	1.0528
10	-4.897	-1.326	597.1	570.4	551.2	570.2	229.7	-16.1	22.7	-1.6	0.5063	0.4825	1.5505	1.1735	1.1627	1.0540
11	-5.745	-1.232	582.1	546.5	538.2	546.4	221.7	-11.8	22.5	-1.2	0.4920	0.4607	1.5266	1.1774	1.1502	1.0514

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	-4.53	-2.97	14.70	41.03	58.59	66.41	0.3155	0.1896	0.0428	0.9387	49.65	75.04	80.55	71.99	72.91
2	-3.64	-1.62	14.07	40.97	58.32	67.72	0.2942	0.1634	0.0376	0.9486	50.03	81.66	82.99	74.70	75.55
3	-4.69	-2.19	13.32	39.48	59.32	70.35	0.2526	0.1023	0.0240	0.9688	57.51	87.12	88.09	82.67	83.29
4	-9.55	-5.68	10.73	35.60	59.51	67.25	0.2123	0.0830	0.0206	0.9785	45.59	91.85	92.44	91.60	91.86
5	-12.62	-7.31	10.01	32.38	51.00	56.59	0.1870	0.0602	0.0161	0.9886	36.12	87.01	87.82	88.81	89.08
6	-13.68	-7.90	9.38	31.55	46.06	50.85	0.1769	0.0318	0.0088	0.9952	51.22	83.86	84.81	80.90	81.31
7	-15.27	-9.28	8.59	30.53	46.05	49.87	0.1751	0.0346	0.0097	0.9950	48.91	84.38	85.28	80.36	80.75
8	-17.55	-11.35	8.45	28.15	47.68	49.97	0.1759	0.0617	0.0175	0.9908	28.40	84.80	85.67	84.24	84.54
9	-19.02	-12.32	10.24	24.70	49.82	51.42	0.1665	0.0724	0.0212	0.9885	22.12	79.72	80.91	85.10	85.38
10	-19.30	-12.42	11.66	24.27	49.71	51.41	0.1667	0.0689	0.0204	0.9890	28.24	76.90	78.26	81.43	81.78
11	-20.78	-13.68	13.19	23.69	48.09	48.83	0.1813	0.0915	0.0273	0.9861	29.57	72.38	73.95	79.26	79.63

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 %	EFF-P TOT-STG %
7484.	116.20	1.1749	1.6180	84.25	85.26	1.0680	0.9813	85.1829277.27	

ORIGINAL PAGE IS
OF POOR QUALITY

TABLE XXX (c) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

70% OF DESIGN SPEED

STATOR 1 ($\beta^*_{des.} - \beta^*_{act.}$) = -5^o

STATOR 2 ($\beta_{des.} - \beta^*_{act.}$) = $+2.5^o$

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 13, 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	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	16.517	18.081	330.3	732.5	330.3	405.4	0.0	610.1	0.0	56.4	0.2984	0.6517	439.4	508.7	0.4966	0.3718	549.7	417.9
2	13.896	15.521	337.7	706.0	337.7	405.8	0.0	577.7	0.0	54.9	0.3052	0.6264	473.5	533.4	0.5259	0.3622	581.9	408.2
3	11.553	13.164	344.7	679.2	344.7	401.6	0.0	547.7	0.0	53.7	0.3117	0.6011	507.6	558.0	0.5548	0.3556	613.6	401.8
4	5.229	7.123	359.8	628.9	359.8	409.7	0.0	477.1	0.0	49.3	0.3255	0.5541	604.3	631.8	0.6364	0.3859	703.3	438.0
5	-1.012	0.758	364.0	556.3	364.0	364.0	0.0	420.6	0.0	49.1	0.3295	0.4865	725.1	730.3	0.7343	0.4179	811.3	477.9
6	-3.126	-1.887	362.5	545.0	362.5	375.5	0.0	395.0	0.0	46.5	0.3281	0.4761	783.1	779.5	0.7810	0.4695	863.0	537.4
7	-4.460	-3.158	361.2	556.0	361.2	396.3	0.0	390.0	0.0	44.6	0.3269	0.4858	811.8	804.1	0.8041	0.5007	888.5	573.1
8	-6.032	-4.440	359.0	556.5	359.0	397.3	0.0	389.6	0.0	44.5	0.3249	0.4855	840.4	828.7	0.8270	0.5166	913.9	592.2
9	-10.167	-8.233	348.4	545.8	348.4	363.9	0.0	406.8	0.0	48.2	0.3151	0.4725	926.0	902.6	0.8947	0.5325	989.4	615.0
10	-11.155	-9.435	344.2	541.7	344.2	349.6	0.0	413.8	0.0	49.8	0.3112	0.4678	954.5	927.2	0.9173	0.5363	1014.6	621.1
11	-11.831	-10.571	340.2	538.9	340.2	333.3	0.0	423.5	0.0	51.7	0.3075	0.4639	983.0	951.8	0.9402	0.5376	1040.2	624.6

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	VB'-1 FT/SEC	VB'-2 FT/SEC	PO/PO INLET
1	6.45	11.05	13.92	66.87	24.17	31.91	0.5040	0.0318	0.0068	1.3876	98.54	98.51	52.83	-14.04	-439.4	101.4	1.3876
2	6.45	10.74	13.38	60.49	24.66	32.30	0.5431	0.0388	0.0089	1.3819	97.98	97.92	54.26	-6.23	-473.5	44.4	1.3819
3	6.58	10.68	12.99	54.13	25.13	32.26	0.5718	0.0547	0.0131	1.3733	96.85	96.73	55.58	1.46	-507.6	-10.2	1.3733
4	7.59	11.06	10.97	38.44	26.11	33.59	0.5655	0.0494	0.0123	1.3649	96.24	96.10	59.09	20.66	-604.3	-154.8	1.3649
5	8.82	11.50	10.10	22.96	26.38	30.05	0.5706	0.1377	0.0315	1.3312	86.94	86.43	63.33	40.38	-725.1	-309.7	1.3312
6	9.25	11.53	8.34	19.50	26.29	31.17	0.5243	0.1244	0.0275	1.3327	87.05	86.54	65.19	45.68	-783.1	-384.5	1.3327
7	9.48	11.58	5.96	19.79	26.20	32.99	0.4993	0.1095	0.0246	1.3448	88.24	87.77	66.06	46.27	-811.8	-414.0	1.3448
8	9.72	11.67	5.02	19.06	26.06	33.06	0.4952	0.1227	0.0273	1.3475	86.49	85.94	66.94	47.88	-840.4	-439.1	1.3475
9	10.43	11.86	6.93	15.76	25.37	29.98	0.5250	0.2148	0.0451	1.3432	75.71	74.71	69.48	53.72	-926.0	-495.8	1.3432
10	10.57	11.86	8.71	14.54	25.09	28.70	0.5351	0.2436	0.0497	1.3419	72.39	71.26	70.25	55.71	-954.5	-513.4	1.3419
11	10.60	11.76	11.34	13.26	24.83	27.25	0.5484	0.2744	0.0541	1.3419	69.05	67.77	70.94	57.68	-983.0	-528.3	1.3419

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 %
1.1053	1.3507	85.22	85.80	24.78	1.1053	1.3507	85.22	85.80

STATOR 1

RUN NO 13, 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	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	T02/ T01
1	18.124	14.852	732.9	463.1	424.8	462.4	597.2	25.1	54.8	3.1	0.6521	0.4019	1.3433	1.0996	1.3433	1.0996
2	15.764	13.073	708.9	463.5	425.0	462.1	567.4	35.5	53.3	4.4	0.6292	0.4024	1.3466	1.0989	1.3466	1.0989
3	13.556	11.374	684.3	465.3	420.9	463.3	539.5	42.5	52.1	5.2	0.6060	0.4041	1.3499	1.0981	1.3499	1.0981
4	8.087	6.767	637.6	454.7	427.3	453.7	473.2	29.6	47.9	3.7	0.5623	0.3949	1.3452	1.0968	1.3452	1.0968
5	2.207	1.307	566.9	417.0	380.9	416.9	419.9	8.6	47.8	1.2	0.4963	0.3609	1.3212	1.0986	1.3212	1.0986
6	-0.409	-1.091	556.2	416.0	391.1	416.0	395.4	3.4	45.3	0.5	0.4863	0.3601	1.3206	1.0988	1.3206	1.0988
7	-1.415	-2.057	566.9	429.6	410.6	429.6	390.9	8.8	43.6	1.2	0.4957	0.3719	1.3288	1.1005	1.3288	1.1005
8	-2.317	-2.929	567.4	437.1	411.4	437.0	390.8	9.8	43.5	1.3	0.4955	0.3781	1.3342	1.1030	1.3342	1.1030
9	-5.312	-5.707	557.6	426.3	378.9	426.2	409.1	10.8	47.2	1.5	0.4833	0.3661	1.3312	1.1171	1.3312	1.1171
10	-6.526	-6.781	553.9	420.8	365.1	420.4	416.5	17.1	48.8	2.3	0.4787	0.3604	1.3291	1.1223	1.3291	1.1223
11	-7.857	-7.941	551.3	412.7	348.9	412.3	426.8	17.7	50.8	2.5	0.4750	0.3521	1.3252	1.1294	1.3252	1.1294

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	-2.79	-0.68	10.41	51.67	33.42	39.90	0.5205	0.1282	0.0262	0.9681	81.41	88.35	88.80	88.35	88.80
2	-2.56	-0.16	10.58	48.92	33.77	39.99	0.4990	0.1086	0.0230	0.9745	83.40	89.77	90.16	89.77	90.16
3	-2.44	0.35	10.60	46.88	33.72	40.19	0.4744	0.0771	0.0169	0.9830	87.37	91.29	91.62	91.29	91.62
4	-4.10	-0.38	7.99	44.19	34.88	39.41	0.4535	0.0745	0.0181	0.9856	86.43	91.41	91.73	91.41	91.73
5	-2.73	2.31	5.50	46.58	31.30	35.95	0.4622	0.0489	0.0134	0.9924	90.21	84.05	84.63	84.05	84.63
6	-4.71	0.91	4.83	44.85	32.32	35.87	0.4525	0.0559	0.0160	0.9916	88.22	83.79	84.38	83.79	84.38
7	-6.21	-0.33	5.56	42.42	34.03	37.05	0.4385	0.0746	0.0218	0.9885	83.86	84.26	84.85	84.26	84.85
8	-6.06	0.09	5.71	42.26	34.07	37.67	0.4290	0.0641	0.0190	0.9901	85.51	83.43	84.06	83.43	84.06
9	-2.39	4.49	7.00	45.77	31.07	36.35	0.4595	0.0620	0.0193	0.9908	86.25	72.77	73.82	72.77	73.82
10	-1.11	5.94	9.11	46.49	29.82	35.71	0.4696	0.0654	0.0207	0.9905	85.70	69.33	70.51	69.33	70.51
11	0.21	7.36	10.79	48.36	28.39	34.80	0.4922	0.0866	0.0277	0.9876	81.74	64.78	66.12	64.78	66.12

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 %	EFF-P TOT-STG %
7477.	109.10	1.1053	1.3338	81.49	82.20	1.1053	0.9874	81.49	176.79

ROTOR 2

RUN NO 13, 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	11.590	10.973	497.9	821.3	497.3	575.4	24.4	586.1	2.8	45.4	0.4332	0.7010	583.0	611.5	0.6507	0.4916	747.9	575.9
2	10.734	9.620	502.9	807.0	501.7	567.7	34.6	573.6	3.9	45.2	0.4378	0.6886	599.5	624.3	0.6578	0.4863	755.5	570.0
3	9.699	8.346	508.6	790.4	506.9	572.4	41.6	545.0	4.7	43.5	0.4431	0.6748	616.5	637.6	0.6678	0.4951	766.4	579.9
4	5.602	4.801	504.6	707.6	503.7	550.9	29.2	444.1	3.3	38.8	0.4398	0.6025	669.2	680.0	0.7099	0.5103	814.5	599.3
5	0.265	0.413	466.1	592.3	466.1	485.7	8.6	339.0	1.1	34.9	0.4048	0.5012	741.9	741.5	0.7546	0.5338	868.9	630.8
6	-2.153	-1.608	461.0	544.2	461.0	451.0	3.4	304.5	0.4	34.0	0.4001	0.4594	779.0	774.2	0.7832	0.5497	902.2	651.1
7	-3.032	-2.441	471.9	535.6	471.8	449.2	8.8	291.6	1.1	32.9	0.4096	0.4521	797.7	791.0	0.7979	0.5671	919.2	671.8
8	-3.800	-3.218	479.1	539.9	479.0	459.6	9.9	283.4	1.2	31.6	0.4156	0.4557	816.5	808.3	0.8138	0.5888	938.1	697.7
9	-6.519	-5.995	474.1	552.4	474.0	476.1	10.6	280.1	1.3	30.3	0.4085	0.4630	873.7	861.8	0.8483	0.6302	984.7	751.8
10	-7.551	-7.165	470.2	551.9	469.8	469.5	17.3	290.1	2.1	31.6	0.4040	0.4611	893.0	880.2	0.8539	0.6300	993.7	754.0
11	-8.512	-8.427	462.9	538.4	462.6	457.8	18.0	283.3	2.2	31.6	0.3962	0.4480	912.2	898.9	0.8618	0.6383	1006.8	767.1

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	-1.23	3.08	22.92	45.73	42.37	52.54	0.4056	0.1136	0.0259	1.3593	91.62	91.27	48.25	2.52	-558.6	-25.4	1.8262
2	-1.59	2.86	18.90	43.29	42.79	52.33	0.4160	0.1002	0.0233	1.3548	92.34	92.03	48.37	5.08	-564.9	-50.7	1.8246
3	-1.75	2.83	16.69	39.45	43.27	53.35	0.4042	0.0615	0.0145	1.3489	95.03	94.84	48.61	9.16	-574.8	-92.6	1.8209
4	0.07	4.86	13.61	28.65	42.97	52.26	0.3965	0.0409	0.0097	1.3057	95.79	95.66	51.82	23.17	-640.0	-235.9	1.7557
5	4.09	8.67	11.42	17.92	39.54	46.19	0.3826	0.0521	0.0114	1.2532	93.02	92.83	57.56	39.65	-733.4	-402.5	1.6555
6	4.89	9.23	9.93	13.13	39.16	42.83	0.3778	0.0851	0.0175	1.2230	87.42	87.09	59.26	46.14	-775.6	-469.6	1.6160
7	4.22	8.30	8.73	11.10	40.12	42.70	0.3629	0.0834	0.0170	1.2118	86.83	86.50	59.09	47.99	-788.9	-499.5	1.6104
8	3.88	7.69	6.41	10.53	40.70	43.69	0.3470	0.0753	0.0156	1.2108	87.60	87.29	59.26	48.73	-806.7	-524.9	1.6154
9	4.32	7.00	3.48	10.56	39.80	44.78	0.3311	0.0678	0.0150	1.2222	88.54	88.24	61.13	50.57	-863.1	-581.8	1.6273
10	4.48	6.66	4.68	10.33	39.28	43.92	0.3396	0.0794	0.0180	1.2236	86.76	86.41	61.68	51.35	-875.7	-590.1	1.6268
11	5.04	6.73	7.58	9.31	38.42	42.51	0.3363	0.0801	0.0181	1.2188	86.24	85.88	62.55	53.24	-894.2	-615.6	1.6153

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 %
1.1882	1.6829	85.15	86.18	30.75	1.0750	1.2618	91.42	91.67

STATOR 2

RUN NO 13, 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	8.560	0.775	844.7	664.0	613.9	663.7	580.2	-17.3	43.7	-1.5	0.7230	0.5573	1.7459	1.2100	1.2998	1.1004
2	7.432	0.617	829.2	670.4	603.5	670.1	568.7	-18.7	43.5	-1.6	0.7094	0.5636	1.7577	1.2075	1.3056	1.0988
3	6.358	0.359	811.7	684.7	605.0	684.1	541.1	-28.9	42.0	-2.4	0.6947	0.5779	1.7797	1.2020	1.3184	1.0946
4	3.800	-0.434	727.6	638.8	577.5	637.6	442.5	-39.9	37.5	-3.6	0.6208	0.5402	1.7377	1.1878	1.2918	1.0830
5	0.916	-1.059	611.4	543.2	509.0	541.1	338.8	-47.4	33.6	-5.0	0.5182	0.4578	1.6469	1.1775	1.2465	1.0718
6	-0.574	-1.192	563.5	498.9	474.0	496.5	304.7	-48.7	32.7	-5.6	0.4765	0.4197	1.6092	1.1737	1.2186	1.0682
7	-1.384	-1.220	555.0	493.5	472.0	491.0	291.9	-48.9	31.7	-5.7	0.4692	0.4153	1.6044	1.1721	1.2078	1.0652
8	-2.158	-1.235	559.5	499.7	482.0	497.2	284.0	-49.3	30.5	-5.7	0.4729	0.4205	1.6080	1.1733	1.2052	1.0642
9	-4.182	-1.285	575.9	520.8	502.5	518.9	281.4	-44.3	29.3	-4.9	0.4837	0.4356	1.6166	1.1910	1.2142	1.0667
10	-4.903	-1.295	578.7	519.9	499.8	518.6	291.8	-36.7	30.3	-4.0	0.4846	0.4334	1.6123	1.1985	1.2127	1.0686
11	-5.766	-1.228	570.2	499.3	493.7	498.2	285.3	-32.9	30.1	-3.8	0.4756	0.4143	1.5925	1.2057	1.2016	1.0676

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	-2.30	-0.74	12.83	45.14	55.26	62.99	0.3736	0.1494	0.0337	0.9560	67.34	82.11	83.43	77.38	78.18
2	-1.41	0.61	12.15	45.11	54.90	63.95	0.3557	0.1287	0.0296	0.9631	69.12	84.19	85.37	80.01	80.72
3	-2.17	0.33	10.93	44.39	55.69	65.90	0.3236	0.0829	0.0194	0.9770	76.23	88.57	89.44	86.75	87.24
4	-5.54	-1.67	9.24	41.10	54.23	61.89	0.2904	0.0517	0.0128	0.9881	81.08	90.97	91.63	91.24	91.52
5	-8.58	-3.27	7.79	38.64	48.01	52.22	0.2849	0.0394	0.0105	0.9933	83.67	86.27	87.18	90.36	90.62
6	-9.19	-3.40	7.13	38.30	44.67	47.74	0.2906	0.0332	0.0091	0.9952	86.16	83.80	84.82	85.07	85.45
7	-10.02	-4.03	6.98	37.38	44.52	47.22	0.2834	0.0246	0.0068	0.9966	89.03	83.98	84.99	84.84	85.20
8	-11.07	-4.86	6.95	36.14	45.48	47.77	0.2762	0.0308	0.0087	0.9956	85.84	83.84	84.86	85.21	85.56
9	-12.03	-5.33	7.80	34.13	46.83	49.08	0.2620	0.0443	0.0130	0.9935	77.71	76.99	78.47	85.32	85.68
10	-11.63	-4.75	9.23	34.37	46.25	48.66	0.2703	0.0601	0.0177	0.9911	71.56	73.64	75.32	82.47	82.91
11	-13.13	-6.03	10.66	33.88	45.29	46.25	0.2917	0.0980	0.0292	0.9859	61.34	69.08	71.01	79.56	80.05

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 %	EFF-P TOT-STG %
7477.	109.10	1.1882	1.6620	82.95	84.10	1.0750	0.9876	86.35	474.61

ORIGINAL PAGE IS
OF POOR QUALITY

TABLE XXX (d) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

70% OF DESIGN SPEED

STATOR 1 ($\beta^*_{des.} - \beta^*_{act.}$) = -6°

STATOR 2 ($\beta_{des.} - \beta^*_{act.}$) = $+2.5^{\circ}$

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 13, 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'-1	V'-1 FT/SEC	V'-2 FT/SEC
1	16.364	18.118	311.5	711.9	311.5	380.8	0.0	601.5	0.0	57.7	0.2811	0.6323	439.6	508.9	0.4862	0.3481	538.7	391.9
2	13.646	15.574	317.7	685.2	317.7	378.5	0.0	571.2	0.0	56.4	0.2868	0.6070	474.0	533.5	0.5151	0.3370	576.6	380.4
3	11.202	13.230	323.4	658.4	323.4	379.6	0.0	537.9	0.0	54.7	0.2921	0.5820	507.8	558.1	0.5437	0.3360	602.0	380.1
4	4.766	7.175	334.9	610.8	334.9	386.1	0.0	473.4	0.0	50.7	0.3026	0.5375	604.5	632.0	0.6245	0.3673	691.1	417.4
5	-1.602	0.706	337.6	545.2	337.6	340.3	0.0	425.9	0.0	51.4	0.3051	0.4760	725.3	730.5	0.7230	0.3988	800.0	456.7
6	-3.803	-2.022	335.7	535.1	335.7	353.9	0.0	401.3	0.0	48.6	0.3034	0.4667	783.3	779.7	0.7701	0.4519	852.2	518.1
7	-5.174	-3.309	334.2	546.3	334.2	376.8	0.0	395.6	0.0	46.4	0.3020	0.4765	812.0	804.3	0.7935	0.4849	878.1	555.9
8	-6.811	-4.635	331.8	551.1	331.8	378.7	0.0	400.4	0.0	46.6	0.2998	0.4799	840.7	829.0	0.8166	0.4980	903.8	571.9
9	-11.332	-8.520	320.3	547.1	320.3	324.1	0.0	440.7	0.0	53.7	0.2892	0.4716	926.2	902.8	0.8849	0.4865	980.0	564.4
10	-12.180	-9.659	315.8	548.7	315.8	298.5	0.0	460.5	0.0	57.0	0.2850	0.4710	954.8	927.4	0.9078	0.4757	1005.6	554.2
11	-12.420	-10.701	311.9	551.1	311.9	282.9	0.0	472.9	0.0	59.1	0.2815	0.4715	983.2	952.0	0.9310	0.4761	1031.5	556.4

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	8.04	12.64	14.28	68.10	22.91	30.39	0.5382	-0.0051	-0.0011	1.3892	100.22	100.26	54.42	-13.68	-439.6	92.7	1.3892
2	8.07	12.37	13.93	61.56	23.32	30.54	0.5795	0.0109	0.0025	1.3837	99.44	95.44	55.89	-5.67	-474.0	37.7	1.3837
3	8.24	12.34	14.57	54.21	23.71	30.91	0.5554	0.0169	0.0040	1.3757	99.05	99.03	57.24	3.04	-507.8	-20.2	1.3757
4	9.35	12.82	12.62	38.55	24.48	32.03	0.5869	0.0292	0.0072	1.3685	97.77	97.70	60.86	22.30	-604.5	-158.7	1.3685
5	10.52	13.20	11.55	23.22	24.65	28.38	0.5942	0.1318	0.0295	1.3399	87.84	87.36	65.04	41.82	-725.3	-304.6	1.3399
6	10.91	13.19	9.59	19.92	24.53	29.65	0.5451	0.1215	0.0263	1.3415	87.71	87.22	66.84	46.93	-783.3	-378.4	1.3415
7	11.11	13.21	7.04	20.34	24.43	31.65	0.5169	0.1065	0.0234	1.3530	88.84	88.38	67.69	47.35	-812.0	-408.8	1.3530
8	11.33	13.29	5.70	19.99	24.27	31.76	0.5176	0.1261	0.0277	1.3582	86.59	86.02	68.55	48.56	-840.7	-428.6	1.3582
9	12.04	13.47	8.18	16.12	23.50	26.76	0.5851	0.2588	0.0527	1.3574	72.74	71.57	71.09	54.57	-926.2	-462.1	1.3574
10	12.16	13.45	10.40	14.43	23.19	24.50	0.6146	0.3043	0.0593	1.3608	68.59	67.23	71.84	57.40	-954.8	-467.0	1.3608
11	12.13	13.28	13.04	13.08	22.93	23.16	0.6286	0.3326	0.0625	1.3661	66.02	64.52	72.47	59.38	-983.2	-479.1	1.3661

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 %
1.1084	1.3602	84.83	85.45	23.12	1.1084	1.3602	84.83	85.45

STATOR 1

RUN NO 13, 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	18.182	14.953	711.9	426.2	400.2	425.6	588.9	22.2	56.0	3.0	0.6323	0.3692	1.3446	1.0983	1.3446	1.0983
2	15.847	13.246	687.8	427.6	397.9	426.2	561.0	34.0	54.8	4.5	0.6094	0.3705	1.3480	1.0979	1.3480	1.0979
3	13.686	11.619	662.9	430.9	398.4	428.8	529.9	42.1	53.1	5.6	0.5862	0.3737	1.3520	1.0964	1.3520	1.0964
4	8.461	7.212	618.4	420.2	402.4	419.2	469.5	30.1	49.4	4.1	0.5445	0.3643	1.3477	1.0960	1.3477	1.0960
5	2.703	1.886	554.0	387.4	355.2	387.2	425.2	12.1	50.1	1.8	0.4841	0.3346	1.3285	1.0999	1.3285	1.0999
6	0.052	-0.454	544.1	390.8	367.1	390.7	401.7	10.8	47.6	1.6	0.4749	0.3375	1.3301	1.1003	1.3301	1.1003
7	-0.933	-1.381	555.1	404.5	388.6	404.1	396.3	17.7	45.6	2.5	0.4845	0.3493	1.3378	1.1017	1.3378	1.1017
8	-1.798	-2.202	560.0	411.7	390.4	411.1	401.4	20.7	45.8	2.9	0.4880	0.3551	1.3425	1.1053	1.3425	1.1053
9	-4.689	-4.921	556.7	387.3	337.5	387.1	442.8	9.7	52.7	1.4	0.4803	0.3305	1.3329	1.1253	1.3329	1.1253
10	-6.037	-6.146	558.6	378.9	312.2	378.9	463.2	5.6	56.1	0.9	0.4799	0.3219	1.3299	1.1349	1.3299	1.1349
11	-7.595	-7.581	561.2	373.5	296.3	373.5	476.6	1.1	58.2	0.2	0.4806	0.3158	1.3282	1.1444	1.3282	1.1444

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	-1.56	0.55	10.29	53.03	31.93	37.25	0.5570	0.1360	0.0278	0.9678	81.36	89.88	90.26	89.88	90.26
2	-1.07	1.33	10.75	50.25	32.06	37.40	0.5348	0.1165	0.0247	0.9740	83.22	91.06	91.40	91.06	91.40
3	-1.40	1.38	10.57	47.54	32.37	37.74	0.5069	0.0829	0.0182	0.9827	87.25	93.39	93.64	93.39	93.64
4	-2.59	1.13	8.37	45.31	33.27	36.92	0.4913	0.0844	0.0206	0.9845	85.83	92.76	93.03	92.76	93.03
5	-0.38	4.66	6.10	48.33	29.50	33.84	0.5045	0.0589	0.0161	0.9912	89.42	84.71	85.28	84.71	85.28
6	-2.45	3.17	5.95	45.99	30.64	34.14	0.4856	0.0500	0.0143	0.9928	90.30	84.68	85.25	84.68	85.25
7	-4.24	1.64	6.90	43.05	32.53	35.33	0.4685	0.0682	0.0199	0.9899	86.46	85.31	85.87	85.31	85.87
8	-3.80	2.35	7.31	42.93	32.62	35.88	0.4651	0.0756	0.0224	0.9886	84.85	83.60	84.24	83.60	84.24
9	3.08	9.96	6.98	51.26	27.75	33.22	0.5450	0.1222	0.0381	0.9821	78.05	68.43	69.65	68.43	69.65
10	6.11	13.16	7.63	55.20	25.53	32.25	0.5791	0.1488	0.0471	0.9783	74.31	62.99	64.41	62.99	64.41
11	7.58	14.73	8.48	58.04	24.16	31.55	0.6092	0.1882	0.0603	0.9724	68.54	58.49	60.09	58.49	60.09

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 %	EFF-P TOT-STG %
7479.	101.80	1.1084	1.3383	80.18	80.94	1.1084	0.9839	80.18	162.28

ROTOR 2

RUN NO 13, 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	11.654	10.987	460.5	807.6	460.4	538.0	21.5	602.3	2.7	48.1	0.4002	0.6874	583.2	611.7	0.6306	0.4580	726.3	538.1
2	10.849	9.640	466.0	794.6	464.9	532.7	32.9	589.6	4.1	47.8	0.4049	0.6763	599.7	624.5	0.6368	0.4544	733.0	533.9
3	9.860	8.369	472.4	775.5	470.6	534.1	41.4	567.8	5.0	46.7	0.4108	0.6638	616.7	637.8	0.6464	0.4587	743.2	538.6
4	6.148	4.841	466.7	700.3	465.7	513.9	29.9	475.7	3.7	42.8	0.4058	0.5943	669.4	680.2	0.6879	0.4693	791.1	553.1
5	0.607	0.384	430.6	591.4	430.4	454.1	12.2	378.9	1.6	39.8	0.3728	0.4983	742.2	741.7	0.7337	0.4896	847.4	581.2
6	-1.854	-1.662	426.4	548.1	426.2	415.2	10.6	357.7	1.4	40.7	0.3690	0.4603	779.2	774.4	0.7607	0.4940	878.9	588.2
7	-2.701	-2.465	436.1	540.5	435.7	406.7	17.5	356.0	2.3	41.2	0.3774	0.4535	797.9	791.3	0.7736	0.4997	893.8	595.7
8	-3.317	-3.144	442.7	541.9	442.2	410.7	20.9	353.5	2.7	40.6	0.3827	0.4540	816.8	808.5	0.7871	0.5136	910.4	613.0
9	-5.567	-5.440	428.2	549.4	428.1	430.7	10.1	341.1	1.3	38.2	0.3665	0.4559	874.0	862.1	0.8252	0.5609	964.1	675.9
10	-6.731	-6.602	424.0	545.7	424.0	436.5	6.0	327.5	0.8	36.7	0.3612	0.4509	893.2	880.4	0.8377	0.5821	983.3	704.4
11	-8.039	-8.062	421.5	532.7	421.5	438.6	1.2	302.4	0.2	34.4	0.3574	0.4384	912.5	899.1	0.8514	0.6094	1004.1	740.6

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	1.12	5.43	21.39	49.60	39.84	49.59	0.4461	0.1588	0.0362	1.3620	89.20	88.74	50.59	1.00	-561.7	-9.4	1.8314
2	0.67	5.12	17.54	46.90	40.26	49.58	0.4531	0.1367	0.0319	1.3590	90.37	89.96	50.63	3.72	-566.7	-34.8	1.8321
3	0.39	4.97	14.97	43.31	40.84	50.25	0.4487	0.1077	0.0256	1.3539	91.99	91.67	50.74	7.44	-575.3	-69.9	1.8305
4	2.23	7.02	12.12	32.30	40.39	49.16	0.4470	0.0912	0.0218	1.3147	91.64	91.34	53.98	21.68	-639.6	-204.4	1.7715
5	6.01	10.58	10.40	20.86	37.12	43.54	0.4373	0.1052	0.0233	1.2651	87.80	87.42	59.48	38.62	-730.0	-362.7	1.6806
6	6.60	10.94	8.87	15.90	36.83	39.72	0.4481	0.1545	0.0324	1.2374	80.72	80.16	60.98	45.08	-768.7	-416.7	1.6463
7	5.92	10.00	7.64	13.90	37.71	38.90	0.4486	0.1708	0.0356	1.2277	78.02	77.41	60.79	46.90	-780.4	-435.3	1.6423
8	5.50	9.31	5.54	13.03	38.23	39.25	0.4401	0.1716	0.0361	1.2259	77.38	76.75	60.88	47.86	-795.8	-455.0	1.6460
9	6.70	9.38	3.16	13.26	36.32	40.67	0.4155	0.1489	0.0332	1.2445	79.82	79.21	63.51	50.26	-863.5	-520.9	1.6598
10	7.12	9.30	4.86	12.79	35.65	40.98	0.3991	0.1285	0.0290	1.2472	81.93	81.38	64.33	51.54	-887.2	-552.9	1.6591
11	7.55	9.24	7.88	11.52	35.12	40.92	0.3736	0.1012	0.0227	1.2424	84.70	84.25	65.06	53.54	-911.3	-596.8	1.6503

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	1.7071	81.89	83.18	28.64	1.0840	1.2755	85.56	86.02

STATOR 2

RUN NO 13, 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	8.562	0.770	826.3	612.4	572.1	612.2	596.3	-14.7	46.5	-1.4	0.7050	0.5111	1.7667	1.2124	1.3141	1.1039
2	7.492	0.623	812.4	616.4	564.1	616.2	584.6	-15.6	46.2	-1.4	0.6928	0.5152	1.7747	1.2101	1.3170	1.1020
3	6.458	0.408	796.5	625.2	562.7	624.9	563.8	-21.2	45.2	-1.9	0.6796	0.5241	1.7885	1.2050	1.3230	1.0589
4	3.907	-0.287	716.6	584.3	537.5	583.4	474.0	-31.3	41.5	-3.1	0.6091	0.4905	1.7541	1.1939	1.3012	1.0894
5	1.137	-0.903	607.8	494.1	475.5	492.5	378.6	-40.2	38.5	-4.7	0.5128	0.4132	1.6762	1.1672	1.2617	1.0794
6	-0.297	-1.028	564.9	448.3	437.1	446.5	357.8	-40.7	39.3	-5.2	0.4750	0.3739	1.6410	1.1863	1.2344	1.0782
7	-1.160	-1.070	557.6	441.8	428.8	439.9	356.5	-40.2	39.7	-5.2	0.4684	0.3682	1.6359	1.1871	1.2238	1.0779
8	-2.088	-1.118	559.3	445.1	432.8	443.3	354.3	-40.4	39.3	-5.2	0.4692	0.3706	1.6371	1.1899	1.2191	1.0778
9	-4.629	-1.308	570.5	471.1	456.1	469.6	342.8	-37.7	37.0	-4.6	0.4742	0.3888	1.6474	1.2141	1.2352	1.0812
10	-5.352	-1.343	569.9	474.6	465.0	473.4	329.4	-34.1	35.4	-4.1	0.4718	0.3903	1.6463	1.2233	1.2376	1.0797
11	-6.046	-1.259	561.8	459.5	472.2	458.4	304.5	-32.0	32.9	-4.0	0.4633	0.3763	1.6320	1.2310	1.2287	1.0757

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	0.50	2.06	12.94	47.83	52.15	60.06	0.4257	0.1248	0.0282	0.9647	76.62	83.04	84.32	77.95	78.76
2	1.31	3.33	12.31	47.68	51.96	60.73	0.4120	0.1137	0.0262	0.9687	77.37	64.71	85.88	80.08	80.81
3	1.08	3.58	11.40	47.17	52.43	62.04	0.3897	0.0876	0.0205	0.9766	80.80	88.06	88.98	84.02	84.62
4	-1.58	2.29	9.74	44.55	51.00	58.28	0.3648	0.0528	0.0131	0.9881	86.57	89.76	90.52	87.24	87.68
5	-3.70	1.61	8.14	43.17	45.28	48.88	0.3765	0.0275	0.0073	0.9954	92.69	84.88	85.92	86.27	86.68
6	-2.63	3.16	7.52	44.47	41.54	44.08	0.4034	0.0276	0.0076	0.9960	93.10	81.56	82.78	79.19	79.77
7	-2.03	3.97	7.45	44.91	40.73	43.36	0.4075	0.0259	0.0072	0.9964	93.45	80.65	81.92	76.14	76.78
8	-2.28	3.93	7.41	44.47	41.08	43.58	0.4048	0.0364	0.0103	0.9549	90.67	79.61	80.95	74.71	75.38
9	-4.34	2.36	8.09	41.54	42.72	45.23	0.3708	0.0525	0.0153	0.9925	84.63	71.56	73.46	76.41	77.08
10	-6.58	0.30	9.16	39.49	43.26	45.20	0.3561	0.0536	0.0158	0.9924	83.67	68.48	70.58	78.59	79.20
11	-10.32	-3.23	10.44	36.90	43.58	43.34	0.3614	0.0803	0.0239	0.9890	77.40	64.97	67.26	79.87	80.42

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 %	EFF-P TOT-STG %
7479.	101.80	1.2015	1.6881	80.04	81.43	1.0840	0.9888	81.49	279.77

TABLE XXXI (a) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

70% OF DESIGN SPEED

STATOR 1 ($\beta^*_{des.} - \beta^*_{act.}$) = $+5^o$

STATOR 2 ($\beta^*_{des.} - \beta^*_{act.}$) = 0^o

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 14, SPEED CODE 70, 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'-I	V'-1 FT/SEC	V'-2 FT/SEC
1	16.526	18.201	393.1	763.8	393.1	472.2	0.0	600.3	0.0	51.8	0.3564	0.6825	440.2	509.6	0.5351	0.4297	590.1	480.9
2	13.917	15.725	401.6	735.3	401.6	478.1	0.0	558.7	0.0	49.4	0.3643	0.6556	474.7	534.3	0.5641	0.4268	621.8	478.7
3	11.510	13.427	409.5	710.4	409.5	481.1	0.0	522.7	0.0	47.3	0.3718	0.6323	508.5	558.9	0.5927	0.4294	652.9	482.5
4	5.418	7.359	426.5	647.2	426.5	469.6	0.0	445.3	0.0	43.4	0.3876	0.5730	605.4	632.9	0.6730	0.4478	740.5	505.7
5	-0.192	0.780	434.0	564.5	434.0	425.9	0.0	370.4	0.0	41.0	0.3947	0.4967	726.3	731.5	0.7694	0.4914	846.1	558.4
6	-1.993	-1.953	434.2	540.8	434.2	419.4	0.0	341.4	0.0	39.2	0.3948	0.4752	784.5	780.9	0.8153	0.5338	896.6	607.4
7	-2.983	-3.183	433.7	545.6	433.7	437.5	0.0	325.9	0.0	36.7	0.3944	0.4799	813.2	805.5	0.8380	0.5711	921.6	649.2
8	-4.155	-4.360	432.7	544.2	432.7	441.6	0.0	317.9	0.0	35.8	0.3934	0.4785	841.9	830.2	0.8606	0.5948	946.6	676.3
9	-8.143	-7.853	425.7	555.6	425.7	456.0	0.0	317.3	0.0	34.8	0.3868	0.4873	927.6	904.1	0.9275	0.6519	1020.6	743.2
10	-9.670	-9.087	421.6	560.6	421.6	462.5	0.0	316.8	0.0	34.4	0.3830	0.4914	956.1	928.8	0.9493	0.6724	1045.0	767.1
11	-11.102	-10.349	416.8	544.6	416.8	439.4	0.0	321.7	0.0	36.1	0.3785	0.4758	984.7	953.4	0.9711	0.6723	1069.3	769.5

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	1.61	6.22	17.07	58.88	28.23	36.77	0.4274	-0.0389	-0.0084	1.3973	102.04	102.17	47.99	-10.88	-440.2	90.7	1.3973
2	1.69	5.98	16.68	52.43	28.76	37.66	0.4520	-0.0387	-0.0089	1.3876	102.30	102.44	49.51	-2.92	-474.7	24.4	1.3876
3	1.90	6.00	15.83	46.61	29.26	38.26	0.4653	-0.0362	-0.0086	1.3788	102.39	102.53	50.90	4.30	-508.5	-36.2	1.3788
4	3.19	6.66	12.07	32.94	30.29	37.98	0.4849	0.0042	0.0010	1.3523	99.57	99.59	54.69	21.75	-605.4	-187.7	1.3523
5	4.61	7.29	10.01	18.85	30.74	34.71	0.4747	0.0739	0.0169	1.3066	91.61	91.32	59.13	40.28	-726.3	-361.1	1.3066
6	5.11	7.39	9.01	14.70	30.75	34.33	0.4438	0.0739	0.0161	1.2978	90.73	90.41	61.05	46.35	-784.5	-439.4	1.2978
7	5.35	7.46	7.33	14.29	30.72	36.01	0.4101	0.0431	0.0094	1.3060	94.30	94.11	61.94	47.64	-813.2	-479.6	1.3060
8	5.59	7.54	6.39	13.56	30.66	36.43	0.3962	0.0400	0.0087	1.3086	94.51	94.33	62.81	49.25	-841.9	-512.2	1.3086
9	6.30	7.72	5.32	13.22	30.24	37.66	0.3805	0.0620	0.0135	1.3244	91.13	90.80	65.34	52.12	-927.6	-586.8	1.3244
10	6.52	7.81	5.87	13.33	29.99	38.18	0.3741	0.0678	0.0148	1.3293	90.14	89.77	66.20	52.87	-956.1	-612.0	1.3293
11	6.71	7.86	8.75	11.95	29.70	36.06	0.3896	0.1113	0.0235	1.3167	83.73	83.11	67.04	55.09	-984.7	-631.8	1.3167

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 %
1.0907	1.3314	94.06	94.27	29.12	1.0907	1.3314	94.06	94.27

STATOR 1

RUN NO 14, SPEED CODE 70, 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	18.064	14.815	769.4	593.5	496.6	588.3	587.7	-78.7	50.0	-7.5	0.6880	0.5208	1.3583	1.0981	1.3583	1.0981
2	15.641	13.009	743.8	589.1	502.1	584.1	548.8	-76.6	47.6	-7.4	0.6639	0.5174	1.3592	1.0956	1.3592	1.0956
3	13.437	11.308	721.1	583.8	504.8	578.5	514.9	-78.6	45.6	-7.7	0.6425	0.5130	1.3577	1.0937	1.3577	1.0937
4	7.792	6.522	661.5	558.5	492.5	551.8	441.6	-86.2	41.8	-8.8	0.5866	0.4904	1.3390	1.0903	1.3390	1.0903
5	1.398	0.355	580.7	518.4	447.8	510.4	369.7	-90.3	39.5	-10.0	0.5118	0.4544	1.3038	1.0869	1.3038	1.0869
6	-1.481	-2.480	557.6	506.5	440.7	497.8	341.6	-93.5	37.8	-10.6	0.4907	0.4440	1.2922	1.0853	1.2922	1.0853
7	-2.071	-3.652	561.8	513.1	457.1	504.8	326.6	-92.1	35.6	-10.4	0.4949	0.4502	1.2957	1.0844	1.2957	1.0844
8	-3.700	-4.649	560.5	519.2	460.8	511.4	319.1	-89.6	34.8	-10.0	0.4935	0.4555	1.2994	1.0851	1.2994	1.0851
9	-6.453	-7.207	572.4	534.5	475.1	528.3	319.3	-81.6	34.0	-8.8	0.5028	0.4680	1.3104	1.0923	1.3104	1.0923
10	-7.281	-7.942	577.7	538.1	481.6	532.0	319.0	-81.0	33.6	-8.7	0.5071	0.4707	1.3129	1.0947	1.3129	1.0947
11	-8.179	-6.614	562.8	520.8	460.1	514.7	324.2	-79.5	35.3	-8.8	0.4925	0.4542	1.2995	1.0985	1.2995	1.0985

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	2.43	4.54	9.79	57.52	38.54	48.76	0.3990	0.1017	0.0206	0.9724	78.64	93.26	93.52	93.26	93.52
2	1.79	4.19	8.81	55.05	39.36	48.64	0.3797	0.0780	0.0164	0.9801	82.03	95.89	96.03	95.89	96.03
3	1.08	3.87	7.71	53.25	39.90	48.31	0.3654	0.0605	0.0132	0.9854	84.73	97.54	97.61	97.54	97.61
4	-0.16	3.56	5.42	50.69	39.54	46.08	0.3447	0.0403	0.0097	0.9916	87.54	96.37	96.49	96.37	96.49
5	-0.99	4.06	4.29	49.54	36.23	42.32	0.3199	0.0083	0.0022	0.9987	95.80	90.71	91.02	90.71	91.02
6	-2.23	3.38	3.72	48.43	35.82	41.15	0.3152	0.0381	0.0107	0.9942	80.23	89.18	89.53	89.18	89.53
7	-4.23	1.65	4.03	45.93	37.36	41.77	0.3039	0.0537	0.0154	0.9917	70.37	91.13	91.42	91.13	91.42
8	-4.85	1.29	4.47	44.71	37.74	42.30	0.2918	0.0501	0.0147	0.9923	68.15	91.35	91.63	91.35	91.63
9	-5.63	1.25	6.73	42.81	38.95	43.54	0.2866	0.0689	0.0212	0.9891	51.86	87.03	87.49	87.03	87.49
10	-6.32	0.73	8.07	42.33	39.46	43.78	0.2883	0.0730	0.0229	0.9883	49.13	85.49	86.01	85.49	86.01
11	-5.34	1.81	9.48	44.12	37.46	42.09	0.3056	0.0853	0.0270	0.9870	45.86	78.98	79.71	78.98	79.71

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 %	EFF-P TOT-STG %
7490.	128.20	1.0907	1.3180	90.61	90.94	1.0907	0.9899	90.61	268.35

ROTOR 2

RUN NO 14, SPEED CODE 70, 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'-I	V'-1 FT/SEC	V'-2 FT/SEC
1	11.607	11.172	644.6	877.0	640.0	686.4	-76.5	545.8	-6.8	38.4	0.5684	0.7503	584.0	612.6	0.8110	0.5900	919.7	689.6
2	10.610	10.005	645.8	865.9	641.4	680.7	-74.8	535.1	-6.6	38.1	0.5702	0.7405	600.5	625.4	0.8224	0.5872	931.4	686.7
3	9.860	8.899	646.0	850.9	641.4	683.5	-76.9	506.9	-6.8	36.5	0.5709	0.7280	617.6	638.7	0.8355	0.5955	945.3	696.1
4	6.095	5.652	633.8	795.4	628.1	689.5	-85.2	396.6	-7.7	29.9	0.5605	0.6814	670.4	681.2	0.8686	0.6390	982.5	745.9
5	-0.115	0.984	593.7	686.9	586.7	628.8	-90.3	276.5	-8.8	23.7	0.5238	0.5871	743.2	742.7	0.8994	0.6691	1019.4	782.8
6	-3.049	-1.328	574.3	606.6	566.6	560.9	-93.8	230.9	-9.4	22.4	0.5062	0.5165	780.4	775.5	0.9182	0.6657	1041.7	781.8
7	-4.120	-2.278	575.3	578.2	567.8	537.8	-92.4	212.3	-9.2	21.5	0.5074	0.4920	799.1	792.4	0.9322	0.6731	1057.0	791.1
8	-4.960	-3.182	577.7	581.0	570.6	547.8	-90.1	193.4	-9.0	19.4	0.5093	0.4951	817.9	809.7	0.9456	0.7027	1072.4	824.6
9	-7.716	-6.401	587.1	618.0	581.3	593.9	-82.5	170.6	-8.1	16.0	0.5163	0.5274	875.3	863.3	0.9853	0.7768	1120.4	912.5
10	-8.733	-7.747	586.2	617.3	580.4	594.4	-82.0	166.6	-8.0	15.6	0.5149	0.5262	894.5	881.7	0.9978	0.7926	1136.0	929.9
11	-9.466	-8.995	565.9	550.4	560.1	529.1	-80.6	151.6	-8.2	15.9	0.4953	0.4665	913.8	900.4	0.9989	0.7770	1141.3	916.9

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	-3.65	0.66	25.93	40.30	51.77	60.02	0.4070	0.2089	0.0474	1.3406	79.66	78.82	45.83	5.53	-660.5	-66.7	1.8209
2	-3.50	0.95	21.35	38.93	51.98	60.10	0.4174	0.2061	0.0477	1.3414	79.57	78.73	46.46	7.53	-675.3	-90.2	1.8232
3	-3.05	1.53	18.42	36.41	52.00	61.00	0.4117	0.1837	0.0432	1.3403	81.04	80.27	47.30	10.90	-694.4	-131.8	1.8207
4	-1.44	3.35	12.88	27.87	50.65	63.10	0.3666	0.0873	0.0208	1.3334	89.45	89.03	50.31	22.44	-755.6	-284.6	1.7864
5	1.39	5.96	8.34	18.29	47.08	57.68	0.3339	0.0624	0.0142	1.2783	90.28	89.98	54.86	36.56	-833.6	-466.3	1.6653
6	2.69	7.02	7.92	12.93	45.54	50.81	0.3428	0.1277	0.0272	1.2170	77.70	77.13	57.06	44.13	-874.1	-544.6	1.5735
7	2.64	6.72	7.86	10.39	45.78	48.51	0.3405	0.1530	0.0317	1.1898	71.76	71.09	57.51	47.12	-891.5	-580.1	1.5425
8	2.47	6.28	5.98	9.55	46.04	49.43	0.3148	0.1322	0.0276	1.1861	74.03	73.43	57.85	48.30	-908.0	-616.3	1.5417
9	1.91	4.59	2.18	9.44	46.83	53.35	0.2647	0.0886	0.0202	1.1932	80.68	80.23	58.72	49.28	-957.8	-692.7	1.5639
10	2.04	4.22	3.48	9.08	46.77	53.11	0.2606	0.0957	0.0223	1.1883	78.62	78.14	59.24	50.16	-976.5	-715.1	1.5589
11	3.06	4.75	9.02	5.85	44.95	46.59	0.2736	0.1399	0.0306	1.1499	66.89	66.28	60.57	54.68	-994.4	-748.8	1.4937

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 %
1.1791	1.6530	86.17	87.10	36.33	1.0811	1.2541	82.30	82.83

STATOR 2

RUN NO 14, SPEED CODE 70, 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	8.785	1.104	911.4	831.2	733.9	826.7	540.4	-86.2	36.6	-5.9	0.7833	0.7070	1.5296	1.2198	1.1262	1.1105
2	7.880	1.295	858.3	846.4	724.7	841.3	530.8	-92.6	36.4	-6.3	0.7714	0.7217	1.5566	1.2184	1.1455	1.1111
3	7.007	1.400	882.1	863.2	724.0	858.6	503.9	-89.2	35.0	-5.9	0.7577	0.7388	1.5880	1.2149	1.1682	1.1099
4	4.905	1.342	824.5	881.7	723.2	877.1	396.0	-90.0	28.8	-5.9	0.7086	0.7620	1.6421	1.1988	1.2215	1.0987
5	2.655	0.702	717.8	831.8	662.1	828.6	277.4	-73.5	22.7	-5.1	0.6154	0.7216	1.6024	1.1772	1.2250	1.0828
6	1.223	0.218	640.8	774.7	557.5	771.9	231.5	-65.4	21.2	-4.8	0.5472	0.6703	1.5388	1.1678	1.1919	1.0756
7	0.210	-0.105	610.8	740.7	572.3	738.0	213.4	-63.0	20.4	-4.9	0.5211	0.6396	1.5017	1.1641	1.1598	1.0736
8	-0.862	-0.431	612.7	721.0	581.1	718.6	194.0	-59.1	18.4	-4.7	0.5235	0.6227	1.4818	1.1592	1.1409	1.0686
9	-3.455	-1.050	651.7	745.9	628.8	745.5	171.4	-25.9	15.2	-2.0	0.5580	0.6449	1.5037	1.1625	1.1477	1.0644
10	-4.198	-1.208	656.8	744.0	635.0	744.0	167.9	-8.9	14.8	-0.7	0.5619	0.6423	1.4983	1.1656	1.1415	1.0647
11	-5.192	-1.235	599.2	653.5	579.4	653.4	152.8	-9.2	14.8	-0.8	0.5099	0.5588	1.4002	1.1659	1.0779	1.0614

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	-11.81	-10.25	5.87	42.58	62.74	62.48	0.2447	0.4778	0.1074	0.8401	-135.96	58.70	61.05	31.20	32.31
2	-10.97	-8.95	4.98	42.72	62.65	64.15	0.2211	0.4449	0.1018	0.8540	-223.46	61.65	63.92	35.55	36.74
3	-11.62	-9.12	4.91	40.96	63.35	66.23	0.1883	0.4019	0.0938	0.8710	-593.71	65.65	67.81	41.27	42.51
4	-16.77	-12.90	4.46	34.65	65.07	69.80	0.0937	0.2924	0.0722	0.9147	596.16	76.58	78.12	59.64	60.73
5	-21.97	-16.66	5.23	27.81	59.86	67.32	0.0057	0.2253	0.0601	0.9466	171.54	81.32	82.50	72.01	72.77
6	-23.23	-17.44	5.38	26.00	53.38	62.73	-0.0378	0.2057	0.0567	0.9594	150.73	78.09	79.35	68.00	68.75
7	-23.81	-17.81	5.29	25.30	50.89	59.81	-0.0792	0.1657	0.0463	0.9719	131.57	75.05	76.41	58.70	59.52
8	-25.61	-19.41	5.41	23.13	51.71	58.28	-0.0644	0.2206	0.0624	0.9628	148.89	74.71	76.04	55.88	56.66
9	-28.55	-21.85	8.18	17.24	55.60	60.39	-0.0578	0.1997	0.0586	0.9621	155.54	76.05	77.36	62.32	63.00
10	-29.64	-22.76	10.09	15.50	55.76	59.94	-0.0497	0.2141	0.0633	0.9591	171.06	73.88	75.28	59.35	60.04
11	-30.93	-23.83	11.12	15.61	50.04	51.56	-0.0101	0.3901	0.1164	0.9371	305.01	60.83	62.61	35.22	35.84

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 %	EFF-P TOT-STG %
7490.	128.20	1.1791	1.5414	73.44	74.98	1.0811	0.9325	56.34	1458.48

TABLE XXXI (b) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

70% OF DESIGN SPEED

STATOR 1 ($\beta^*_{des.} - \beta^*_{act.}$) = $+5^o$

STATOR 2 ($\beta^*_{des.} - \beta^*_{act.}$) = 0^o

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 14, 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	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	16.526	18.157	363.2	744.7	363.2	432.3	0.0	606.4	0.0	54.5	0.3287	0.6637	439.2	508.4	0.5158	0.3951	569.9	443.3
2	13.951	15.646	370.7	714.6	370.7	432.7	0.0	568.6	0.0	52.7	0.3357	0.6351	473.6	533.0	0.5446	0.3859	601.4	434.2
3	11.597	13.334	377.8	689.0	377.8	438.5	0.0	531.5	0.0	50.4	0.3422	0.6114	507.3	557.6	0.5730	0.3898	632.5	439.3
4	5.512	7.334	392.8	632.0	392.8	432.1	0.0	461.2	0.0	46.8	0.3562	0.5579	604.0	631.5	0.6533	0.4100	720.5	464.4
5	-0.114	0.930	399.1	563.5	399.1	393.9	0.0	403.0	0.0	45.6	0.3620	0.4941	724.6	729.8	0.7504	0.4488	827.3	511.9
6	-2.189	-1.732	399.2	552.4	399.2	400.6	0.0	380.3	0.0	43.5	0.3621	0.4837	782.1	779.0	0.7970	0.4949	878.6	565.2
7	-3.375	-2.975	398.6	554.5	398.6	413.5	0.0	369.3	0.0	41.8	0.3616	0.4856	811.3	803.6	0.8200	0.5252	904.0	599.7
8	-4.639	-4.184	397.5	548.0	397.5	408.9	0.0	364.9	0.0	41.8	0.3606	0.4792	839.9	828.2	0.8429	0.5404	929.3	618.0
9	-8.542	-7.786	390.6	555.2	390.6	415.3	0.0	368.4	0.0	41.5	0.3541	0.4836	925.4	902.0	0.9107	0.5890	1004.5	676.2
10	-9.973	-9.043	386.9	558.8	386.9	416.5	0.0	372.4	0.0	41.7	0.3507	0.4859	953.9	926.6	0.9330	0.6029	1029.4	693.3
11	-11.265	-10.326	382.7	546.6	382.7	394.6	0.0	378.3	0.0	43.7	0.3468	0.4738	982.4	951.2	0.9554	0.6031	1054.3	695.7

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	β'-1 DEGREE	β'-2 DEGREE	VΘ'-1 FT/SEC	VΘ'-2 FT/SEC	PO/PO INLET
1	3.79	8.39	15.18	62.95	26.33	34.01	0.4751	-0.0221	-0.0047	1.3963	101.07	101.15	50.17	-12.78	-439.2	98.0	1.3963
2	3.87	8.17	14.91	56.39	26.81	34.43	0.5106	-0.0091	-0.0021	1.3862	100.51	100.56	51.69	-4.70	-473.6	35.6	1.3862
3	4.08	8.19	14.94	49.69	27.27	35.24	0.5187	-0.0146	-0.0035	1.3784	100.91	100.98	53.09	3.40	-507.3	-26.1	1.3784
4	5.32	8.79	11.80	35.35	28.21	35.35	0.5330	0.0186	0.0046	1.3606	98.46	98.42	56.83	21.48	-604.0	-170.3	1.3606
5	6.63	9.31	9.40	21.47	28.61	32.50	0.5304	0.0949	0.0219	1.3304	90.41	90.05	61.14	35.68	-724.6	-326.9	1.3304
6	7.05	9.33	7.53	18.12	28.61	33.25	0.4946	0.0879	0.0197	1.3327	90.32	89.96	62.99	44.87	-782.7	-398.7	1.3327
7	7.27	9.37	6.10	17.44	28.58	34.46	0.4694	0.0723	0.0162	1.3391	91.70	91.38	63.85	46.41	-811.3	-434.3	1.3391
8	7.48	9.43	5.73	16.11	28.51	34.09	0.4653	0.0855	0.0188	1.3380	89.88	89.48	64.69	48.58	-839.9	-463.4	1.3380
9	8.09	9.51	5.27	15.06	28.07	34.62	0.4558	0.1208	0.0263	1.3525	85.12	84.50	67.13	52.07	-925.4	-533.6	1.3525
10	8.25	9.54	6.01	14.92	27.84	34.68	0.4561	0.1362	0.0297	1.3573	83.10	82.38	67.93	53.01	-953.9	-554.2	1.3573
11	8.38	9.53	9.01	13.36	27.58	32.71	0.4707	0.1737	0.0364	1.3493	78.32	77.42	68.71	55.35	-982.4	-573.0	1.3493

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 %
1.0995	1.3520	90.51	90.88	27.07	1.0995	1.3520	90.51	90.88

STATOR 1

RUN NO 14, 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	β-1 DEGREE	β-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	18.087	14.797	747.4	519.3	454.1	514.0	593.6	-74.5	52.8	-8.2	0.6663	0.4527	1.3499	1.0990	1.3499	1.0990
2	15.666	12.965	720.1	518.3	454.5	513.4	558.5	-70.9	51.0	-7.8	0.6404	0.4522	1.3528	1.0972	1.3528	1.0972
3	13.464	11.245	696.6	517.2	459.5	512.5	523.5	-69.6	48.8	-7.7	0.6186	0.4516	1.3544	1.0951	1.3544	1.0951
4	7.990	6.556	642.9	500.2	451.7	495.5	457.5	-68.7	45.3	-7.9	0.5681	0.4365	1.3439	1.0935	1.3439	1.0935
5	1.759	0.841	576.4	473.0	412.8	465.8	402.3	-82.4	44.2	-10.0	0.5059	0.4118	1.3225	1.0945	1.3225	1.0945
6	-0.956	-1.634	565.7	469.5	418.4	462.0	380.7	-83.9	42.3	-10.3	0.4959	0.4085	1.3188	1.0951	1.3188	1.0951
7	-2.080	-2.675	567.6	476.4	430.3	469.5	370.1	-80.5	40.7	-9.7	0.4976	0.4146	1.3232	1.0954	1.3232	1.0954
8	-3.123	-3.637	561.7	478.7	426.0	471.8	366.1	-80.6	40.7	-9.7	0.4918	0.4163	1.3249	1.0972	1.3249	1.0972
9	-6.118	-6.396	569.5	487.5	432.8	482.7	370.7	-71.3	40.7	-8.4	0.4970	0.4227	1.3327	1.1068	1.3327	1.1068
10	-7.062	-7.272	574.0	490.2	434.6	485.4	375.0	-68.4	40.9	-8.1	0.4998	0.4240	1.3349	1.1109	1.3349	1.1109
11	-8.085	-8.189	562.9	471.1	414.2	465.4	381.2	-73.0	42.7	-8.9	0.4886	0.4060	1.3228	1.1155	1.3228	1.1155

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	5.21	7.32	9.17	60.92	35.67	43.67	0.4816	0.1284	0.0260	0.9669	78.56	90.51	90.88	90.51	90.88
2	5.12	7.52	8.43	58.76	36.05	43.79	0.4597	0.0991	0.0208	0.9761	82.14	92.81	93.08	92.81	93.08
3	4.24	7.02	7.71	56.44	36.78	43.86	0.4399	0.0755	0.0165	0.9828	85.22	95.31	95.48	95.31	95.48
4	3.34	7.06	6.41	53.21	36.75	42.41	0.4182	0.0602	0.0146	0.9881	86.36	94.30	94.50	94.30	94.50
5	3.74	8.79	4.28	54.27	33.87	39.60	0.4078	0.0376	0.0101	0.9940	89.38	88.06	88.50	88.06	88.50
6	2.28	7.89	4.06	52.59	34.54	39.19	0.4052	0.0710	0.0200	0.9890	79.12	86.55	87.03	86.55	87.03
7	0.92	6.79	4.65	50.46	35.65	39.86	0.3922	0.0759	0.0218	0.9882	76.46	87.36	87.82	87.36	87.82
8	1.11	7.25	4.72	50.42	35.31	40.01	0.3848	0.0656	0.0192	0.9900	78.05	86.18	86.69	86.18	86.69
9	1.03	7.91	7.12	49.08	35.86	40.71	0.3873	0.0951	0.0294	0.9852	67.48	80.11	80.87	80.11	80.87
10	0.95	8.00	8.72	48.94	35.95	40.83	0.3921	0.1047	0.0328	0.9836	64.64	77.63	78.49	77.63	78.49
11	2.12	9.27	9.36	51.70	34.10	38.91	0.4232	0.1305	0.0413	0.9803	59.93	72.07	73.12	72.07	73.12

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 %	EFF-P TOT-STG %
7472.	119.20	1.0995	1.3330	86.08	86.61	1.0995	0.9859	86.08	207.54

ROTOR 2

RUN NO 14, 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	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	11.541	11.016	563.2	858.9	558.5	622.0	-72.4	592.3	-7.4	43.5	0.4927	0.7304	582.7	611.1	0.7532	0.5292	860.9	622.3
2	10.648	9.697	566.8	838.9	562.5	611.7	-69.2	574.1	-7.0	43.1	0.4964	0.7127	599.1	623.9	0.7651	0.5214	873.6	613.8
3	9.610	8.458	569.3	812.4	565.3	604.5	-68.2	542.8	-6.9	41.8	0.4993	0.6898	616.1	637.2	0.7784	0.5195	887.6	611.9
4	5.827	4.586	560.1	732.7	555.9	586.0	-67.9	439.9	-7.0	36.9	0.4911	0.6205	668.8	679.6	0.8093	0.5366	922.9	633.1
5	0.228	0.558	530.6	615.9	524.2	519.6	-82.3	330.6	-8.9	32.5	0.4639	0.5186	741.5	741.0	0.8538	0.5576	976.5	662.1
6	-2.142	-1.406	522.1	562.2	515.3	479.8	-84.0	293.1	-9.3	31.4	0.4560	0.4722	778.6	773.7	0.8776	0.5703	1004.8	679.1
7	-3.061	-2.258	526.4	551.5	520.2	476.9	-80.9	277.0	-8.8	30.1	0.4599	0.4632	797.2	790.6	0.8917	0.5887	1020.6	700.8
8	-3.935	-3.112	528.1	553.8	521.9	489.6	-81.1	258.9	-8.8	27.8	0.4611	0.4655	816.0	807.8	0.9061	0.6182	1037.9	735.6
9	-6.758	-6.090	537.5	569.2	532.7	506.4	-72.0	259.9	-7.7	27.1	0.4675	0.4762	873.2	861.3	0.9437	0.6579	1085.0	786.2
10	-7.613	-7.153	539.6	565.2	535.2	502.5	-69.2	258.6	-7.3	27.1	0.4685	0.4718	892.4	879.7	0.9555	0.6669	1100.5	798.9
11	-8.450	-8.338	521.9	546.3	516.7	492.2	-73.9	237.2	-8.1	25.6	0.4515	0.4550	911.7	898.3	0.9627	0.6864	1112.8	824.3

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	β'-1 DEGREE	β'-2 DEGREE	Vθ'-1 FT/SEC	Vθ'-2 FT/SEC	PO/PO INLET
1	-0.01	4.31	22.12	47.75	46.60	58.05	0.4566	0.1038	0.0236	1.4309	91.67	91.25	49.47	1.72	-655.1	-18.8	1.9317
2	-0.07	4.38	18.46	45.25	47.03	57.59	0.4722	0.1137	0.0265	1.4199	90.51	90.05	49.86	4.64	-668.3	-49.8	1.9209
3	0.09	4.67	16.38	41.55	47.34	57.42	0.4776	0.1148	0.0272	1.4037	89.89	89.41	50.45	8.85	-684.3	-94.4	1.9011
4	1.24	6.03	12.68	30.75	46.44	56.78	0.4560	0.0692	0.0165	1.3675	92.81	92.51	52.99	22.24	-736.7	-239.7	1.8375
5	4.06	8.64	10.08	19.23	43.59	50.51	0.4418	0.0851	0.0189	1.3078	89.01	88.61	57.53	38.31	-823.8	-410.4	1.7291
6	4.76	9.10	8.82	14.11	42.86	46.52	0.4357	0.1116	0.0234	1.2744	84.27	83.75	59.13	45.03	-862.6	-480.6	1.6811
7	4.46	8.54	7.82	12.25	43.32	46.31	0.4200	0.1077	0.0224	1.2647	84.07	83.56	59.33	47.08	-878.1	-513.6	1.6734
8	4.39	8.20	5.88	11.57	43.42	47.64	0.3933	0.0841	0.0175	1.2659	86.93	86.51	59.77	48.20	-897.1	-549.0	1.6771
9	3.71	6.39	2.68	10.74	44.07	48.93	0.3812	0.0916	0.0206	1.2698	85.32	84.84	60.52	49.77	-945.3	-601.5	1.6918
10	3.60	5.78	4.20	9.92	44.18	48.35	0.3812	0.1024	0.0235	1.2636	83.29	82.76	60.80	50.88	-961.6	-621.0	1.6879
11	4.72	6.41	7.55	9.02	42.40	47.15	0.3640	0.0827	0.0187	1.2630	85.95	85.51	62.23	53.21	-985.6	-661.2	1.6712

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 %
1.2006	1.7543	86.79	87.77	33.53	1.0920	1.3161	88.61	89.03

STATOR 2

RUN NO 14, 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	β-1 DEGREE	β-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	8.615	0.788	886.4	716.9	664.7	716.9	586.5	6.8	41.7	0.5	0.7563	0.6000	1.8358	1.2287	1.3601	1.1179
2	7.541	0.654	865.2	721.3	651.5	721.3	569.3	-5.5	41.4	-0.4	0.7373	0.6046	1.8470	1.2260	1.3657	1.1171
3	6.483	0.426	837.8	731.5	641.4	731.4	539.0	-12.6	40.2	-1.0	0.7134	0.6153	1.8668	1.2203	1.3779	1.1142
4	3.779	-0.362	756.1	683.2	616.1	682.9	438.3	-22.1	35.5	-1.9	0.6423	0.5759	1.8180	1.2046	1.3524	1.1016
5	0.926	-1.008	638.3	592.2	546.2	591.5	330.4	-28.7	31.2	-2.8	0.5386	0.4976	1.7218	1.1929	1.3019	1.0900
6	-0.648	-1.243	584.8	544.5	506.0	543.6	293.3	-30.9	30.1	-3.2	0.4920	0.4566	1.6759	1.1890	1.2708	1.0857
7	-1.497	-1.319	574.0	532.7	502.6	531.7	277.3	-32.5	28.9	-3.5	0.4830	0.4468	1.6646	1.1864	1.2581	1.0831
8	-2.278	-1.344	576.3	533.6	514.6	532.5	259.4	-33.4	26.7	-3.6	0.4852	0.4478	1.6640	1.1852	1.2561	1.0804
9	-4.289	-1.340	595.3	557.5	535.0	557.3	261.2	-11.0	26.0	-1.1	0.4992	0.4660	1.6756	1.1984	1.2576	1.0831
10	-5.051	-1.345	594.6	560.0	534.7	560.0	260.1	-0.8	26.0	-0.1	0.4975	0.4673	1.6742	1.2032	1.2535	1.0833
11	-5.897	-1.262	581.3	532.3	529.9	532.3	238.9	0.7	24.3	0.1	0.4854	0.4428	1.6463	1.2053	1.2444	1.0805

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	-6.76	-5.20	12.35	41.15	60.97	68.85	0.3394	0.1582	0.0357	0.9499	62.54	82.80	84.18	77.72	78.64
2	-6.05	-4.04	10.81	41.81	60.34	69.66	0.3219	0.1304	0.0300	0.9602	65.39	84.68	85.93	79.33	80.20
3	-6.43	-3.93	9.86	41.20	60.01	71.29	0.2857	0.0685	0.0161	0.9801	77.02	88.54	89.48	83.83	84.53
4	-10.07	-6.20	8.47	37.34	58.96	67.12	0.2523	0.0506	0.0126	0.9877	77.39	90.96	91.67	88.53	88.98
5	-13.56	-8.25	7.52	33.93	52.58	57.84	0.2286	0.0345	0.0092	0.9937	79.46	86.98	87.91	86.82	87.28
6	-14.33	-8.54	6.97	33.32	48.61	52.91	0.2249	0.0245	0.0068	0.9963	83.72	84.05	85.14	82.53	83.09
7	-15.37	-9.38	6.67	32.35	48.37	51.73	0.2245	0.0347	0.0097	0.9949	77.17	84.03	85.12	81.44	82.00
8	-17.32	-11.11	6.52	30.32	49.63	51.83	0.2185	0.0516	0.0146	0.9923	66.67	84.54	85.59	83.60	84.09
9	-17.76	-11.06	9.03	27.17	51.14	53.58	0.1985	0.0613	0.0180	0.9904	54.94	80.03	81.40	81.32	81.69
10	-18.47	-11.59	10.70	26.06	50.83	53.55	0.1882	0.0510	0.0151	0.9921	59.08	78.02	79.53	79.91	80.52
11	-21.40	-14.30	12.01	24.26	50.08	50.50	0.2071	0.0993	0.0296	0.9852	43.77	74.52	76.21	79.92	80.50

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 %	EFF-P TOT-STG %
7472.	119.20	1.2006	1.7308	84.53	85.66	1.0920	0.9866	84.08	296.49

TABLE XXXI (c) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

70% OF DESIGN SPEED

STATOR 1 ($\beta^*_{des.} - \beta^*_{act.}$) = +5°

STATOR 2 ($\beta^*_{des.} - \beta^*_{act.}$) = 0°

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 14, 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'-1	V'-1 FT/SEC	V'-2 FT/SEC
1	16.567	16.121	337.7	725.0	337.7	401.7	0.0	603.5	0.0	56.4	0.3052	0.6447	439.7	509.1	0.5011	0.3670	554.4	412.7
2	14.007	15.590	345.1	696.3	345.1	405.0	0.0	568.8	0.0	54.5	0.3120	0.6195	474.2	533.7	0.5362	0.3607	586.4	406.5
3	11.683	13.264	352.2	673.8	352.2	405.7	0.0	538.0	0.0	52.9	0.3186	0.5965	507.9	556.3	0.5591	0.3596	616.1	406.2
4	5.510	7.254	367.4	617.7	367.4	404.9	0.0	466.5	0.0	49.0	0.3326	0.5443	604.7	632.3	0.6406	0.3855	707.6	437.6
5	-0.191	0.950	373.1	552.0	373.1	362.3	0.0	416.4	0.0	49.0	0.3379	0.4827	725.5	730.7	0.7588	0.4195	815.8	479.7
6	-2.207	-1.661	373.1	546.5	373.1	375.1	0.0	397.2	0.0	46.6	0.3379	0.4772	783.6	780.0	0.7660	0.4681	867.9	535.9
7	-3.496	-2.904	372.6	549.8	372.6	395.2	0.0	382.2	0.0	44.1	0.3375	0.4805	812.3	804.6	0.8094	0.5055	893.7	576.4
8	-5.009	-4.144	371.2	546.1	371.3	397.2	0.0	377.7	0.0	43.6	0.3362	0.4786	841.0	829.3	0.8324	0.5250	919.3	601.4
9	-9.353	-7.930	362.9	543.2	362.9	384.1	0.0	384.2	0.0	45.0	0.3285	0.4717	926.6	903.1	0.9006	0.5606	995.1	645.7
10	-10.636	-9.202	359.0	539.3	359.0	369.9	0.0	392.4	0.0	46.6	0.3249	0.4669	955.1	927.8	0.9233	0.5634	1020.4	650.8
11	-11.609	-10.437	355.0	528.7	355.0	349.7	0.0	396.5	0.0	48.5	0.3211	0.4564	983.6	952.4	0.9440	0.5670	1045.7	656.8

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	5.86	10.47	14.72	65.48	24.66	31.92	0.5144	-0.0196	-0.0042	1.3940	100.91	100.98	52.25	-13.23	-439.7	94.4	1.3940
2	5.69	10.19	14.66	58.65	25.15	32.57	0.5452	-0.0158	-0.0036	1.3884	100.83	100.90	53.71	-4.95	-474.2	35.1	1.3884
3	6.03	10.14	14.40	52.17	25.62	32.94	0.5632	-0.0066	-0.0021	1.3823	100.50	100.55	55.04	2.87	-507.9	-20.4	1.3823
4	7.08	10.55	12.54	36.36	26.60	33.53	0.5640	0.0092	0.0023	1.3691	99.24	99.24	58.59	22.23	-604.7	-165.8	1.3691
5	8.26	10.94	10.04	21.84	26.97	30.27	0.5678	0.0980	0.0222	1.3441	90.67	90.30	62.78	40.94	-725.5	-314.4	1.3441
6	8.62	10.90	8.25	18.96	26.97	31.56	0.5278	0.0880	0.0195	1.3522	90.95	90.58	64.55	45.59	-783.6	-382.8	1.3522
7	6.79	10.90	6.60	18.47	26.94	33.43	0.4916	0.0601	0.0133	1.3607	93.48	93.22	65.38	46.91	-812.3	-422.4	1.3607
8	6.99	10.95	5.61	17.54	26.85	33.65	0.4824	0.0669	0.0147	1.3636	92.50	92.19	66.21	48.67	-841.0	-451.5	1.3636
9	9.62	11.04	6.68	15.19	26.31	32.41	0.4879	0.1301	0.0274	1.3675	84.73	84.07	68.67	53.47	-926.6	-519.0	1.3675
10	9.77	11.06	6.31	14.14	26.06	31.10	0.5007	0.1644	0.0338	1.3661	80.68	79.84	69.45	55.31	-955.1	-535.4	1.3661
11	9.84	10.99	11.40	12.43	25.79	29.30	0.5104	0.1957	0.0385	1.3601	76.81	75.81	70.17	57.75	-983.6	-555.9	1.3601

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 %
1.1025	1.3648	90.69	91.06	25.46	1.1025	1.3648	90.69	91.06

STATOR 1

RUN NO 14, 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	16.072	14.765	725.4	476.0	421.0	471.3	590.7	-66.3	54.7	-7.9	0.6452	0.4136	1.3498	1.0986	1.3488	1.0986
2	15.661	12.928	701.5	477.2	424.2	473.2	558.7	-61.4	52.9	-7.3	0.6225	0.4149	1.3525	1.0974	1.3525	1.0974
3	13.446	11.212	679.0	478.3	424.6	474.5	529.9	-60.5	51.3	-7.2	0.6015	0.4162	1.3553	1.0964	1.3553	1.0964
4	7.963	6.598	626.6	458.6	422.5	454.7	462.7	-59.2	47.6	-7.4	0.5525	0.3968	1.3438	1.0947	1.3438	1.0947
5	1.840	0.932	563.1	437.5	379.6	431.6	415.7	-72.7	47.6	-9.5	0.4929	0.3797	1.3500	1.0977	1.3300	1.0977
6	-0.926	-1.593	556.0	441.3	391.6	435.3	397.5	-72.8	45.4	-9.5	0.4678	0.3825	1.3315	1.0994	1.3315	1.0994
7	-1.991	-2.622	561.4	448.2	410.4	443.4	383.1	-66.0	43.0	-8.5	0.4911	0.3887	1.3359	1.0988	1.3359	1.0988
8	-2.903	-3.529	559.9	451.8	412.2	447.1	379.0	-65.3	42.6	-8.3	0.4693	0.3916	1.3384	1.1006	1.3384	1.1006
9	-5.665	-6.175	555.9	448.6	399.7	443.5	386.4	-67.1	44.1	-8.6	0.4832	0.3868	1.3384	1.1111	1.3384	1.1111
10	-6.708	-7.104	552.5	444.4	386.3	439.8	395.0	-63.5	45.7	-6.2	0.4789	0.3821	1.3365	1.1166	1.3365	1.1166
11	-7.912	-8.106	542.4	431.2	366.9	426.2	399.6	-65.5	47.6	-8.8	0.4688	0.3697	1.3293	1.1212	1.3293	1.1212

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	7.14	9.25	9.41	62.61	33.45	40.68	0.5227	0.1326	0.0269	0.9676	79.66	90.55	90.91	90.55	90.91
2	7.04	9.45	8.90	60.22	34.05	40.98	0.5015	0.1116	0.0235	0.9743	81.75	92.54	92.82	92.54	92.82
3	6.81	9.59	8.17	58.55	34.37	41.19	0.4820	0.0894	0.0196	0.9806	84.29	94.20	94.42	94.20	94.42
4	5.57	9.29	6.86	54.96	34.64	39.48	0.4683	0.0973	0.0236	0.9818	81.09	93.09	93.34	93.09	93.34
5	7.06	12.11	4.77	57.11	31.56	37.26	0.4584	0.0692	0.0187	0.9894	83.89	86.92	87.41	86.92	87.41
6	5.41	11.03	4.67	54.92	32.79	37.51	0.4503	0.1050	0.0296	0.9842	74.22	85.83	86.36	85.83	86.36
7	3.24	9.12	5.91	51.52	34.55	38.26	0.4352	0.1207	0.0349	0.9817	69.38	87.35	87.83	87.35	87.83
8	3.02	9.17	6.11	50.95	34.74	38.55	0.4292	0.1223	0.0359	0.9815	67.75	86.39	86.91	86.39	86.91
9	4.46	11.34	6.92	52.71	33.56	37.95	0.4465	0.1443	0.0445	0.9787	61.87	78.25	79.10	78.25	79.10
10	5.77	12.62	8.53	53.95	32.31	37.46	0.4604	0.1508	0.0472	0.9781	60.68	74.14	75.15	74.14	75.15
11	6.92	14.07	9.54	56.32	30.56	36.12	0.4820	0.1625	0.0514	0.9773	59.03	69.93	71.08	69.93	71.08

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 %	EFF-P TOT-STG %
7482.	112.10	1.1025	1.3388	84.65	65.43	1.1025	0.9810	84.85	184.98

ROTOR 2

RUN NO 14, 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	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'-T	V'-1 FT/SEC	V'-2 FT/SEC
1	11.53	10.960	513.4	647.3	509.3	583.6	-64.4	614.3	-7.2	46.3	0.4474	0.7187	583.4	611.9	0.7181	0.4950	824.0	583.6
2	10.624	9.605	518.6	629.7	515.1	573.1	-59.9	600.0	-6.6	46.2	0.4524	0.7029	599.9	624.7	0.7302	0.4860	837.1	573.7
3	9.573	8.345	522.9	605.5	519.5	567.7	-59.3	571.4	-6.5	45.1	0.4565	0.6817	616.9	638.0	0.7444	0.4837	852.7	571.6
4	5.806	4.882	509.7	723.2	506.3	535.0	-58.5	466.7	-6.6	42.3	0.4449	0.6097	669.7	680.4	0.7741	0.4797	886.9	569.0
5	0.268	0.526	490.3	622.0	464.9	494.7	-72.6	376.9	-8.5	37.3	0.4267	0.5213	742.4	741.9	0.8253	0.5153	946.3	614.8
6	-2.238	-1.530	469.8	580.8	464.4	469.4	-72.7	342.0	-8.5	36.1	0.4259	0.4856	779.5	774.7	0.8525	0.5338	960.3	638.4
7	-3.201	-2.404	494.1	570.9	489.6	458.9	-66.3	339.6	-7.7	36.5	0.4299	0.4770	798.2	791.6	0.8644	0.5362	993.5	644.1
8	-4.033	-3.219	496.5	570.6	492.1	463.4	-65.7	332.9	-7.6	35.6	0.4317	0.4763	817.1	808.6	0.8786	0.5546	1010.7	664.3
9	-6.759	-6.070	494.9	583.5	490.2	478.3	-67.8	334.2	-7.9	34.8	0.4282	0.4838	874.3	862.4	0.9189	0.5909	1062.1	712.6
10	-7.716	-7.224	491.4	579.4	487.2	473.3	-64.2	334.2	-7.5	35.1	0.4239	0.4789	893.5	880.8	0.9270	0.5976	1074.5	723.0
11	-8.566	-8.453	478.9	560.3	474.2	454.8	-66.3	327.2	-7.9	35.6	0.4119	0.4613	912.8	899.5	0.9357	0.6018	1087.9	731.0

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	VØ'-1 FT/SEC	VØ'-2 FT/SEC	PO/PO INLET
1	2.27	6.52	20.16	51.99	43.35	54.65	0.4834	0.1454	0.0332	1.4288	89.34	88.81	51.75	-0.24	-647.8	2.4	1.9274
2	2.04	6.49	16.28	49.53	43.92	54.11	0.5023	0.1557	0.0363	1.4195	88.16	87.58	51.99	2.46	-659.8	-24.7	1.9203
3	2.11	6.69	14.19	45.80	44.34	54.02	0.5096	0.1578	0.0375	1.4049	87.34	86.74	52.46	6.66	-676.1	-66.6	1.9039
4	3.46	8.25	10.34	35.31	43.14	51.79	0.5173	0.1428	0.0346	1.3683	86.83	86.26	55.21	19.90	-728.1	-193.6	1.8384
5	5.78	10.35	6.20	22.63	41.08	48.28	0.4864	0.1313	0.0300	1.3197	85.05	84.47	59.25	36.42	-815.0	-365.0	1.7553
6	6.01	10.34	6.44	17.73	41.04	45.79	0.4744	0.1476	0.0322	1.2921	81.60	80.95	60.38	42.64	-852.3	-432.7	1.7211
7	5.58	9.66	5.27	15.93	41.57	44.78	0.4761	0.1630	0.0354	1.2830	79.23	78.51	60.45	44.52	-864.5	-452.0	1.7141
8	5.44	9.25	3.38	15.13	41.76	45.19	0.4658	0.1628	0.0356	1.2819	78.80	78.07	60.83	45.70	-882.8	-476.0	1.7157
9	5.62	6.30	0.61	14.73	41.28	46.20	0.4602	0.1777	0.0418	1.2930	76.63	75.80	62.43	47.71	-942.1	-528.2	1.7306
10	5.75	7.93	2.29	13.98	40.83	45.47	0.4607	0.1815	0.0433	1.2919	75.93	75.06	62.95	48.97	-957.8	-546.6	1.7272
11	6.55	6.25	5.74	12.67	39.56	43.41	0.4637	0.1911	0.0450	1.2864	74.35	73.44	64.07	51.40	-979.1	-572.2	1.7102

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 %
1.2159	1.7778	82.70	84.02	31.44	1.1028	1.3279	81.92	82.61

STATOR 2

RUN NO 14, 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	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	8.609	0.789	869.4	652.7	621.2	652.5	608.2	12.3	44.7	1.1	0.7393	0.5423	1.8415	1.2312	1.3655	1.1206
2	7.525	0.641	850.7	659.6	606.1	659.6	594.9	1.6	44.6	0.1	0.7225	0.5488	1.8539	1.2294	1.3709	1.1202
3	6.449	0.371	825.8	672.2	600.0	672.2	567.4	-5.6	43.6	-0.5	0.7005	0.5609	1.8737	1.2256	1.3624	1.1178
4	3.609	-0.535	742.2	617.0	562.0	616.7	484.8	-19.9	40.8	-1.8	0.6269	0.5149	1.8193	1.2137	1.3538	1.1087
5	0.719	-1.076	639.9	534.6	517.3	533.9	376.6	-27.2	36.0	-2.9	0.5372	0.4449	1.7394	1.2049	1.3078	1.0976
6	-0.544	-1.080	598.9	499.5	491.5	498.7	342.2	-28.1	34.8	-3.2	0.5015	0.4151	1.7084	1.2024	1.2832	1.0937
7	-1.249	-1.061	569.2	493.5	481.3	492.7	340.0	-28.1	35.2	-3.3	0.4931	0.4100	1.7028	1.2018	1.2749	1.0936
8	-1.980	-1.056	569.3	494.6	465.8	493.8	333.6	-28.0	34.4	-3.2	0.4927	0.4108	1.7024	1.2034	1.2721	1.0938
9	-4.014	-1.126	606.3	521.4	504.8	521.2	335.8	-11.4	33.6	-1.3	0.5037	0.4304	1.7166	1.2216	1.2825	1.1002
10	-4.769	-1.177	605.5	522.8	503.6	522.8	336.2	2.4	33.8	0.3	0.5015	0.4304	1.7144	1.2287	1.2821	1.1009
11	-5.689	-1.163	591.3	499.6	491.0	499.6	329.6	5.7	33.9	0.7	0.4880	0.4095	1.6921	1.2348	1.2728	1.1013

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	-3.78	-2.22	12.59	43.59	57.38	64.70	0.4041	0.1467	0.0331	0.9552	72.04	82.36	83.79	77.02	77.98
2	-2.84	-0.82	11.39	44.45	56.69	65.71	0.3868	0.1202	0.0277	0.9645	75.12	83.97	85.28	78.30	79.22
3	-3.08	-0.57	10.37	44.04	56.43	67.47	0.3521	0.0622	0.0146	0.9824	84.85	87.00	88.08	82.09	82.87
4	-4.72	-0.65	8.47	42.69	55.67	62.11	0.3398	0.0485	0.0120	0.9887	86.52	87.16	88.17	82.99	83.68
5	-8.67	-3.37	7.39	38.95	50.09	53.48	0.3367	0.0559	0.0149	0.9900	83.50	83.54	84.75	81.43	82.10
6	-9.59	-3.80	7.00	38.03	47.60	49.78	0.3389	0.0509	0.0140	0.9919	84.87	81.63	82.94	78.69	79.40
7	-9.02	-3.03	6.90	38.47	46.61	49.14	0.3387	0.0427	0.0120	0.9935	86.83	81.34	82.66	76.43	77.19
8	-9.60	-3.40	6.86	37.69	47.02	49.17	0.3347	0.0481	0.0136	0.9927	84.95	80.67	82.04	75.74	76.52
9	-10.16	-3.46	8.91	34.90	48.31	51.15	0.3088	0.0515	0.0151	0.9918	81.86	75.28	77.06	73.33	74.23
10	-10.69	-3.82	11.04	33.50	47.88	50.94	0.3011	0.0488	0.0144	0.9923	82.46	72.73	74.69	72.77	73.69
11	-11.78	-4.68	12.59	33.30	46.29	48.21	0.3195	0.0707	0.0211	0.9894	77.23	68.98	71.16	70.23	71.20

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 %	EFF-P TOT-STG %
7482.	112.10	1.2159	1.7550	80.69	82.13	1.1028	0.9872	78.05	214.43

ORIGINAL PAGE IS
OF POOR QUALITY

TABLE XXXI (d) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

70% OF DESIGN SPEED

STATOR 1 ($\beta^*_{des.} - \beta^*_{act.}$) = $+5^{\circ}$

STATOR 2 ($\beta^*_{des.} - \beta^*_{act.}$) = 0°

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 14, 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	16.343	18.067	317.3	715.3	317.3	365.3	0.0	602.7	0.0	57.4	0.2865	0.6356	438.4	507.5	0.4886	0.3527	541.2	396.9
2	13.535	15.516	323.5	688.9	323.5	393.5	0.0	565.4	0.0	55.1	0.2922	0.6108	472.7	532.1	0.5173	0.3501	572.8	394.9
3	10.962	13.182	329.1	664.5	329.1	387.1	0.0	540.1	0.0	54.3	0.2972	0.5877	506.4	556.6	0.5455	0.3427	603.9	387.5
4	4.749	7.102	340.3	612.1	340.3	380.1	0.0	479.8	0.0	51.6	0.3076	0.5384	602.9	630.3	0.6258	0.3596	692.3	408.9
5	-1.171	0.632	343.8	557.2	343.8	345.5	0.0	437.1	0.0	51.7	0.3108	0.4865	723.3	728.5	0.7240	0.3946	800.8	452.0
6	-3.555	-2.077	342.7	557.7	342.7	368.8	0.0	418.3	0.0	48.6	0.3098	0.4864	781.2	777.6	0.7712	0.4491	853.1	514.9
7	-5.068	-3.377	341.3	565.5	341.3	386.8	0.0	412.6	0.0	46.9	0.3085	0.4932	809.8	802.1	0.7544	0.4787	878.8	549.0
8	-6.808	-4.709	338.8	567.8	338.8	384.7	0.0	417.6	0.0	47.4	0.3062	0.4942	838.4	826.7	0.8173	0.4887	904.3	561.6
9	-11.357	-8.592	326.7	560.2	326.7	327.8	0.0	454.3	0.0	54.2	0.2951	0.4824	923.7	900.4	0.8850	0.4769	979.8	553.5
10	-12.145	-9.719	322.1	556.8	322.1	302.3	0.0	467.6	0.0	57.1	0.2909	0.4779	952.2	924.9	0.9077	0.4705	1005.2	548.2
11	-12.324	-10.739	318.1	555.3	318.1	289.1	0.0	474.2	0.0	58.6	0.2872	0.4753	980.6	949.5	0.9301	0.4762	1030.9	556.3

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	7.45	12.06	14.08	67.72	23.30	30.86	0.5315	-0.0454	-0.0097	1.3972	102.04	102.16	53.84	-13.88	-438.4	95.2	1.3972
2	7.50	11.80	14.77	60.15	23.72	31.89	0.5541	-0.0477	-0.0109	1.3915	102.41	102.55	55.32	-4.84	-472.7	33.4	1.3915
3	7.69	11.80	13.96	54.27	24.09	31.63	0.5860	-0.0174	-0.0042	1.3847	100.95	101.03	56.70	2.43	-506.4	-16.5	1.3847
4	8.90	12.37	11.88	38.84	24.83	31.60	0.6019	0.0284	0.0070	1.3734	97.86	97.79	60.40	21.56	-602.9	-150.5	1.3734
5	10.06	12.74	9.86	24.44	25.06	28.95	0.6041	0.1192	0.0273	1.3556	89.33	88.89	64.57	40.13	-723.3	-291.4	1.3556
6	10.42	12.70	6.92	22.09	24.99	31.09	0.5549	0.1042	0.0236	1.3668	89.88	89.46	66.35	44.26	-781.2	-359.3	1.3668
7	10.63	12.73	4.91	21.58	24.90	32.69	0.5309	0.0948	0.0217	1.3766	90.45	90.04	67.21	45.23	-809.8	-389.6	1.3766
8	10.87	12.82	3.93	21.30	24.73	32.44	0.5351	0.1194	0.0272	1.3801	87.76	87.22	68.09	46.79	-838.4	-409.1	1.3801
9	11.64	13.06	6.92	16.58	23.93	27.23	0.6008	0.2517	0.0528	1.3773	74.22	73.06	70.69	53.71	-923.7	-446.1	1.3773
10	11.77	13.06	9.53	14.92	23.62	25.00	0.6229	0.2915	0.0582	1.3771	70.38	69.04	71.45	56.53	-952.2	-457.3	1.3771
11	11.75	12.50	12.29	13.45	23.35	23.87	0.6288	0.3135	0.0602	1.3800	68.16	66.72	72.09	58.64	-980.6	-475.3	1.3800

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WCI/AL LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.1105	1.3752	86.27	86.84	23.53	1.1105	1.3752	86.27	86.84

STATOR 1

RUN NO 14, 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	18.140	14.909	714.8	446.9	403.7	441.8	590.0	-67.0	55.8	-8.5	0.6351	0.3877	1.3473	1.0982	1.3473	1.0982
2	15.664	13.195	690.8	448.8	410.7	444.7	555.4	-60.9	53.6	-7.7	0.6126	0.3897	1.3518	1.0966	1.3518	1.0966
3	13.771	11.540	668.3	450.6	404.3	446.9	532.1	-57.3	52.8	-7.3	0.5912	0.3913	1.3553	1.0965	1.3553	1.0965
4	8.376	6.952	619.0	427.2	395.8	423.8	475.9	-54.0	50.3	-7.2	0.5448	0.3703	1.3445	1.0970	1.3445	1.0970
5	2.405	1.319	565.9	406.2	360.3	401.4	436.4	-62.3	50.4	-8.8	0.4945	0.3508	1.3339	1.1021	1.3339	1.1021
6	-0.129	-1.016	566.7	409.6	381.8	405.4	418.7	-58.4	47.6	-8.2	0.4946	0.3535	1.3366	1.1043	1.3366	1.1043
7	-1.011	-1.904	574.4	417.3	358.7	414.2	413.4	-50.9	46.0	-7.0	0.5012	0.3601	1.3417	1.1058	1.3417	1.1058
8	-1.816	-2.685	576.8	420.1	396.7	417.1	418.8	-49.8	46.6	-6.8	0.5024	0.3619	1.3444	1.1095	1.3444	1.1095
9	-4.710	-5.251	570.3	400.2	341.7	391.2	456.6	-84.5	53.2	-12.2	0.4918	0.3412	1.3379	1.1292	1.3379	1.1292
10	-6.102	-6.395	567.3	391.7	316.7	380.2	470.6	-94.0	56.1	-13.9	0.4873	0.3326	1.3349	1.1372	1.3349	1.1372
11	-7.675	-7.724	566.0	388.1	303.4	374.7	477.9	-101.0	57.7	-15.1	0.4849	0.3284	1.3344	1.1444	1.3344	1.1444

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	8.25	10.36	8.79	64.33	32.35	38.49	0.5569	0.1500	0.0303	0.9642	78.35	90.55	90.91	90.55	90.91
2	7.79	10.19	8.49	61.38	33.26	38.90	0.5348	0.1278	0.0269	0.9713	80.50	93.17	93.42	93.17	93.42
3	8.32	11.10	8.13	60.10	32.97	39.17	0.5161	0.1012	0.0221	0.9786	83.56	94.10	94.32	94.10	94.32
4	8.26	11.57	7.04	57.49	32.79	37.12	0.5168	0.1157	0.0280	0.9788	80.06	91.02	91.36	91.02	91.36
5	9.95	14.99	5.50	59.26	30.07	34.96	0.5222	0.1020	0.0276	0.9843	80.61	84.08	84.69	84.08	84.69
6	7.61	13.23	6.16	55.84	32.07	35.28	0.5170	0.1370	0.0388	0.9789	73.43	82.89	83.55	82.89	83.55
7	6.23	12.11	7.37	53.09	33.57	36.05	0.5081	0.1561	0.0452	0.9754	69.43	82.86	83.53	82.86	83.53
8	6.95	13.10	7.61	53.37	33.32	36.23	0.5115	0.1629	0.0480	0.9742	68.03	80.72	81.49	80.72	81.49
9	13.59	20.47	3.35	65.41	28.27	33.46	0.5934	0.1897	0.0579	0.9709	65.50	67.23	68.52	67.23	68.52
10	16.16	23.21	2.86	70.01	26.08	32.31	0.6241	0.2014	0.0619	0.9697	64.22	62.75	64.21	62.75	64.21
11	17.04	24.19	3.19	72.80	24.94	31.68	0.6445	0.2202	0.0681	0.9672	61.31	59.50	61.08	59.50	61.08

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 %	EFF-P TOT-STG %
7459.	103.60	1.1105	1.3413	79.22	80.04	1.1105	0.9753	79.22	162.49

ROTOR 2

RUN NO 14, 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	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	11.556	10.952	470.3	817.1	465.8	541.8	-65.2	611.7	-7.9	48.3	0.4086	0.6909	581.6	610.0	0.6925	0.4581	797.0	541.8
2	10.677	9.597	476.8	794.5	473.0	526.0	-59.4	595.9	-7.2	48.4	0.4147	0.6713	598.0	622.8	0.7046	0.4448	810.0	526.7
3	9.662	8.353	482.7	767.0	479.4	523.9	-56.0	560.2	-6.7	46.8	0.4201	0.6472	615.0	636.0	0.7177	0.4467	824.6	529.4
4	5.781	4.852	469.6	694.8	466.6	508.8	-53.3	473.2	-6.5	42.9	0.4082	0.5847	667.6	678.3	0.7465	0.4016	858.7	548.6
5	-0.177	0.213	450.5	596.9	446.2	459.4	-62.2	381.2	-7.9	39.7	0.3902	0.4987	740.1	739.7	0.7951	0.4868	918.1	582.7
6	-2.612	-1.826	449.0	558.0	445.2	421.2	-58.5	366.0	-7.5	41.0	0.3885	0.4644	777.1	772.3	0.8191	0.4870	946.8	585.2
7	-3.399	-2.613	454.0	552.8	451.1	411.1	-51.1	369.5	-6.5	41.9	0.3926	0.4592	795.8	789.1	0.8298	0.4880	959.6	587.5
8	-3.960	-3.305	456.7	553.1	454.0	411.8	-49.9	369.2	-6.3	41.8	0.3944	0.4584	814.5	806.3	0.8431	0.4977	976.4	600.5
9	-6.138	-5.712	447.0	544.6	438.9	430.1	-84.8	334.0	-10.9	37.7	0.3823	0.4463	871.6	859.7	0.9000	0.5566	1052.3	679.2
10	-7.200	-6.877	442.0	531.6	431.7	427.7	-94.7	315.6	-12.3	36.3	0.3765	0.4337	890.8	878.0	0.9166	0.5764	1075.9	706.5
11	-6.311	-6.241	440.4	515.8	428.4	423.5	-102.2	294.5	-13.4	34.7	0.3739	0.4191	910.0	896.7	0.9330	0.5981	1099.1	736.1

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	4.69	9.00	20.22	54.35	40.25	51.50	0.5178	0.1557	0.0355	1.4251	89.17	88.63	54.17	-0.18	-646.7	1.7	1.9203
2	4.29	8.74	16.73	51.33	40.98	50.39	0.5419	0.1747	0.0408	1.4104	87.32	86.72	54.24	2.91	-657.5	-26.9	1.9070
3	4.11	8.69	15.74	46.25	41.55	50.58	0.5396	0.1656	0.0393	1.3920	87.16	86.57	54.46	8.21	-671.0	-75.8	1.8864
4	5.36	10.15	12.39	35.16	40.29	50.00	0.5197	0.1126	0.0269	1.3667	89.90	89.46	57.11	21.95	-720.9	-205.2	1.8371
5	7.45	12.03	9.74	22.55	38.32	45.24	0.5029	0.1270	0.0284	1.3164	85.97	85.44	60.92	37.56	-802.3	-358.4	1.7561
6	7.58	11.91	7.73	18.00	38.26	41.30	0.5152	0.1749	0.0373	1.2883	79.60	78.89	61.95	43.94	-835.6	-406.3	1.7231
7	7.07	11.15	6.29	16.40	38.80	40.23	0.5214	0.1949	0.0416	1.2817	77.03	76.23	61.94	45.54	-846.9	-419.6	1.7200
8	6.88	10.69	4.33	15.61	38.97	40.17	0.5193	0.2041	0.0439	1.2810	75.71	74.87	62.26	46.64	-864.4	-437.1	1.7221
9	8.44	11.12	3.47	14.69	37.02	41.26	0.4909	0.2123	0.0471	1.2845	73.31	72.38	65.25	50.56	-956.4	-525.7	1.7193
10	9.04	11.22	5.91	13.65	36.15	40.74	0.4797	0.2098	0.0463	1.2805	72.75	71.80	66.24	52.59	-985.5	-562.4	1.7095
11	9.45	11.14	9.09	12.21	35.66	40.07	0.4653	0.2055	0.0448	1.2724	72.10	71.16	66.96	54.75	-1012.2	-602.1	1.6978

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 %
1.2240	1.7749	79.42	80.99	29.11	1.1022	1.3233	81.30	82.01

STATOR 2

RUN NO 14, 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	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	8.593	0.765	836.8	616.5	577.4	616.3	605.6	15.1	46.6	1.4	0.7092	0.5109	1.8371	1.2300	1.3637	1.1199
2	7.468	0.579	813.8	623.4	559.5	623.3	590.9	5.7	46.8	0.5	0.6888	0.5175	1.8485	1.2274	1.3677	1.1193
3	6.343	0.264	785.4	636.7	554.5	636.7	556.2	-1.2	45.2	-0.1	0.6641	0.5304	1.8679	1.2222	1.3782	1.1146
4	3.598	-0.665	711.7	580.3	533.3	580.1	471.4	-16.3	41.5	-1.6	0.5999	0.4833	1.8143	1.2115	1.3497	1.1043
5	1.119	-0.976	612.5	487.7	479.7	487.1	380.9	-23.9	38.4	-2.8	0.5124	0.4041	1.7312	1.2074	1.2978	1.0955
6	-0.168	-0.928	573.4	448.1	441.4	447.4	366.1	-24.7	39.6	-3.2	0.4777	0.3701	1.7002	1.2090	1.2720	1.0948
7	-0.969	-0.911	568.1	442.2	431.2	441.5	369.9	-24.4	40.6	-3.2	0.4725	0.3647	1.6953	1.2116	1.2639	1.0959
8	-1.833	-0.929	568.8	443.9	432.0	443.3	370.0	-23.2	40.5	-3.0	0.4720	0.3654	1.6953	1.2165	1.2609	1.0974
9	-4.279	-1.141	564.2	473.1	453.5	472.7	335.7	-19.9	36.5	-2.4	0.4630	0.3859	1.7088	1.2426	1.2764	1.1022
10	-5.049	-1.230	554.4	474.8	454.5	474.5	317.5	-15.9	35.0	-1.9	0.4530	0.3859	1.7067	1.2515	1.2784	1.1016
11	-5.877	-1.216	543.2	454.3	455.0	454.2	296.7	-9.2	33.2	-1.2	0.4422	0.3677	1.6888	1.2586	1.2656	1.0998

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	-1.81	-0.25	13.21	45.24	54.25	61.99	0.4226	0.1531	0.0346	0.9562	71.70	82.42	83.84	77.12	78.08
2	-0.65	1.37	11.77	46.25	53.02	63.01	0.4014	0.1162	0.0267	0.9681	76.56	84.29	85.56	78.30	79.22
3	-1.40	1.11	10.74	45.35	53.00	64.90	0.3577	0.0411	0.0096	0.9894	89.89	87.88	88.88	83.55	84.26
4	-4.03	-0.16	8.71	43.14	51.97	59.25	0.3560	0.0599	0.0149	0.9873	84.51	87.62	88.60	85.56	86.13
5	-6.28	-0.97	7.50	41.23	46.94	49.27	0.3845	0.0942	0.0252	0.9844	76.88	81.77	83.10	80.80	81.47
6	-4.76	1.03	7.07	42.78	43.01	44.97	0.4085	0.0963	0.0266	0.9860	77.30	78.28	79.82	74.93	75.74
7	-3.64	2.35	7.01	43.74	41.94	44.24	0.4162	0.0997	0.0279	0.9859	76.52	76.86	78.49	71.99	72.87
8	-3.50	2.70	7.12	43.54	41.89	44.23	0.4168	0.1089	0.0309	0.9846	74.16	75.13	76.88	70.13	71.06
9	-7.27	-0.57	7.77	38.93	43.19	46.19	0.3481	0.0464	0.0136	0.9936	85.46	68.12	70.39	70.49	71.47
10	-9.47	-2.59	8.86	36.90	42.93	45.98	0.3225	0.0125	0.0037	0.9984	95.37	65.54	67.99	71.31	72.27
11	-12.54	-5.45	10.78	34.34	42.65	43.60	0.3324	0.0422	0.0126	0.9947	86.68	62.36	64.98	69.52	70.49

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 %	EFF-P TOT-STG %
7459.	103.60	1.2240	1.7497	77.28	78.97	1.1022	0.9858	77.00	182.09

TABLE XXXII (a) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

70% OF DESIGN SPEED

STATOR 1 ($\beta^*_{des.} - \beta^*_{act.}$) = +6°

STATOR 2 ($\beta^*_{des.} - \beta_{act.}$) = +7.5°

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 20, SPEED CODE 70, 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	16.400	16.160	404.3	749.7	404.3	487.9	0.0	569.2	0.0	49.4	0.3668	0.6704	440.7	510.1	0.5426	0.4395	598.0	491.4
2	13.690	15.647	412.5	723.9	412.5	490.5	0.0	532.5	0.0	47.3	0.3745	0.6460	475.2	534.8	0.5713	0.4377	629.2	490.5
3	11.236	13.309	419.9	700.6	419.9	488.8	0.0	501.8	0.0	45.7	0.3814	0.6239	509.0	559.5	0.5994	0.4384	659.9	492.2
4	5.164	7.150	435.5	644.4	435.5	480.8	0.0	428.9	0.0	41.7	0.3960	0.5713	606.0	633.6	0.6787	0.4633	746.3	522.6
5	-0.508	0.620	442.1	563.2	442.1	439.2	0.0	352.6	0.0	38.8	0.4022	0.4965	727.1	732.3	0.7742	0.5118	850.9	580.5
6	-2.254	-2.040	442.0	535.0	442.0	424.9	0.0	325.1	0.0	37.4	0.4021	0.4708	785.3	781.7	0.8199	0.5489	901.1	623.7
7	-3.156	-3.222	441.6	542.2	441.6	444.0	0.0	311.2	0.0	35.0	0.4018	0.4777	814.1	806.3	0.8426	0.5859	926.1	665.0
8	-4.281	-4.367	440.7	545.6	440.7	453.4	0.0	303.5	0.0	33.8	0.4009	0.4807	842.8	831.0	0.8652	0.6130	951.0	695.7
9	-8.234	-7.832	433.7	557.5	433.7	467.1	0.0	304.3	0.0	33.1	0.3943	0.4899	928.6	905.1	0.9319	0.6688	1024.8	761.0
10	-9.734	-9.065	429.5	564.5	429.5	473.2	0.0	307.7	0.0	33.0	0.3904	0.4955	957.2	929.8	0.9536	0.6862	1049.1	781.7
11	-11.133	-10.335	424.4	549.2	424.4	450.2	0.0	314.6	0.0	34.9	0.3857	0.4805	985.7	954.4	0.9752	0.6845	1073.2	782.4

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	0.82	5.42	21.05	54.11	28.93	38.23	0.4055	-0.0970	-0.0212	1.3895	105.46	105.74	47.20	-6.91	-440.7	59.1	1.3895
2	0.93	5.23	15.88	48.47	29.44	38.80	0.4304	-0.0822	-0.0189	1.3799	105.19	105.47	48.75	0.28	-475.2	-2.4	1.3799
3	1.20	5.30	18.25	43.48	29.89	38.95	0.4490	-0.0608	-0.0145	1.3701	104.26	104.48	50.20	6.72	-509.0	-57.7	1.3701
4	2.64	6.11	13.32	31.13	30.83	38.83	0.4608	-0.0141	-0.0035	1.3449	101.21	101.30	54.14	23.02	-606.0	-204.7	1.3449
5	4.17	6.86	10.56	17.85	31.22	35.61	0.4459	0.0599	0.0136	1.2951	92.78	92.54	58.69	40.84	-727.1	-379.7	1.2951
6	4.71	6.99	9.73	13.57	31.21	34.53	0.4232	0.0734	0.0158	1.2810	90.26	89.95	60.64	47.07	-785.3	-456.6	1.2810
7	4.95	7.06	7.82	13.40	31.19	36.26	0.3909	0.0434	0.0094	1.2901	93.96	93.77	61.53	48.14	-814.1	-495.1	1.2901
8	5.19	7.14	6.48	13.07	31.14	37.13	0.3738	0.0335	0.0073	1.2959	95.16	95.01	62.41	49.34	-842.8	-527.6	1.2959
9	5.92	7.34	5.31	12.86	30.72	38.26	0.3613	0.0585	0.0127	1.3106	91.24	90.93	64.96	52.10	-928.6	-600.8	1.3106
10	6.15	7.44	5.68	13.15	30.47	38.71	0.3597	0.0701	0.0154	1.3165	89.47	89.08	65.83	52.68	-957.2	-622.1	1.3165
11	6.35	7.51	8.43	11.91	30.16	36.58	0.3776	0.1166	0.0248	1.3042	82.48	81.84	66.69	54.78	-985.7	-639.9	1.3042

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 %
1.0871	1.3201	94.86	95.03	29.64	1.0871	1.3201	94.86	95.03

STATOR 1

RUN NO 20, SPEED CODE 70, 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	16.115	14.788	758.3	605.0	514.4	603.5	557.2	-41.8	47.5	-3.9	0.6788	0.5327	1.3525	1.0932	1.3525	1.0932
2	15.732	12.926	735.2	599.9	516.7	598.6	523.0	-40.1	45.5	-3.8	0.6570	0.5285	1.3527	1.0914	1.3527	1.0914
3	13.522	11.142	713.7	595.5	514.9	594.3	494.3	-37.6	43.9	-3.6	0.6366	0.5247	1.3516	1.0901	1.3516	1.0901
4	7.768	6.164	660.2	574.1	504.9	572.2	425.4	-46.5	40.1	-4.6	0.5863	0.5056	1.3335	1.0871	1.3335	1.0871
5	1.414	0.184	579.7	530.7	460.6	528.1	352.0	-52.4	37.4	-5.7	0.5118	0.4666	1.2915	1.0828	1.2915	1.0828
6	-1.473	-2.426	552.0	512.2	446.0	509.0	325.2	-57.7	36.1	-6.5	0.4865	0.4500	1.2741	1.0813	1.2741	1.0813
7	-2.678	-3.494	558.5	516.8	463.4	513.7	311.8	-57.0	34.0	-6.3	0.4928	0.4544	1.2763	1.0806	1.2763	1.0806
8	-3.692	-4.416	561.9	524.7	472.2	522.0	304.6	-53.7	32.9	-5.9	0.4958	0.4614	1.2816	1.0813	1.2816	1.0813
9	-6.401	-6.940	574.8	544.2	486.4	542.0	306.2	-48.9	32.3	-5.2	0.5059	0.4777	1.2969	1.0887	1.2969	1.0887
10	-7.242	-7.710	582.1	549.6	492.8	547.3	309.8	-50.1	32.3	-5.3	0.5119	0.4818	1.3012	1.0921	1.3012	1.0921
11	-8.165	-8.458	568.3	532.0	471.7	530.0	317.0	-46.5	34.0	-5.0	0.4980	0.4648	1.2879	1.0964	1.2879	1.0964

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	-0.06	2.03	13.41	51.39	40.10	49.74	0.3574	0.0994	0.0203	0.9736	76.76	96.76	96.87	96.76	96.87
2	-0.59	2.01	12.42	49.26	40.62	49.53	0.3405	0.0770	0.0163	0.9806	80.29	98.73	98.76	98.73	98.76
3	-0.65	2.14	11.80	47.48	40.72	49.29	0.3242	0.0543	0.0120	0.9870	84.53	99.85	99.83	99.85	99.83
4	-1.93	1.79	9.64	44.70	40.44	47.39	0.2996	0.0343	0.0083	0.9928	87.60	98.46	98.49	98.46	98.49
5	-3.14	1.90	8.65	43.02	37.07	43.30	0.2706	0.0099	0.0027	0.9985	93.68	91.63	91.89	91.63	91.89
6	-3.91	1.70	7.89	42.58	35.99	41.53	0.2717	0.0463	0.0132	0.9930	71.00	88.16	88.53	88.16	88.53
7	-5.83	0.04	8.04	40.32	37.58	41.93	0.2683	0.0755	0.0219	0.9884	52.64	89.61	89.93	89.61	89.93
8	-6.73	-0.59	8.54	36.76	38.40	42.63	0.2572	0.0750	0.0221	0.9884	47.42	90.40	90.70	90.40	90.70
9	-7.34	-0.46	10.37	31.46	39.54	44.17	0.2480	0.0673	0.0209	0.9892	42.17	87.03	87.47	87.03	87.47
10	-7.68	-0.63	11.52	37.51	39.99	44.52	0.2525	0.0683	0.0215	0.9889	42.32	84.95	85.47	84.95	85.47
11	-6.60	0.55	13.27	39.07	38.01	42.83	0.2703	0.0799	0.0255	0.9875	41.25	77.82	78.56	77.82	78.56

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 %	EFF-P TOT-STG %
7458.	130.50	1.0871	1.3068	91.26	91.55	1.0871	0.9899	91.26	292.62

ROTOR 2

RUN NO 20, SPEED CODE 70, 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	11.582	11.182	658.3	961.8	657.0	751.4	-40.6	632.0	-3.5	40.0	0.5827	0.8501	584.6	613.2	0.8029	0.6508	907.0	751.6
2	10.737	9.555	659.9	973.4	658.7	754.2	-39.2	615.3	-3.4	39.1	0.5847	0.8428	601.2	626.0	0.8140	0.6531	918.6	754.3
3	9.694	8.828	661.8	965.2	660.8	768.2	-36.8	584.4	-3.2	37.2	0.5869	0.8368	618.2	639.4	0.8251	0.6677	930.4	770.1
4	5.655	5.353	651.6	861.4	650.0	743.7	-46.1	434.6	-4.1	30.3	0.5781	0.7451	671.1	681.9	0.8587	0.6779	967.9	783.7
5	-0.213	0.812	602.2	685.9	599.9	629.7	-52.6	281.9	-5.0	24.1	0.5328	0.5931	744.0	743.5	0.8823	0.6712	997.2	780.7
6	-2.667	-1.251	577.5	599.9	574.6	559.2	-57.9	217.1	-5.8	21.2	0.5102	0.5142	781.2	776.3	0.8984	0.6780	1017.0	790.9
7	-3.567	-2.141	579.2	585.0	576.4	552.0	-57.1	193.7	-5.7	19.3	0.5119	0.5020	799.5	793.3	0.9129	0.6994	1032.9	815.0
8	-4.397	-3.036	585.6	603.5	583.1	576.9	-54.0	177.2	-5.3	17.0	0.5177	0.5194	818.8	810.6	0.9279	0.7373	1049.7	856.7
9	-7.270	-6.255	604.2	635.1	602.2	615.3	-49.5	157.5	-4.7	14.3	0.5331	0.5470	876.2	864.2	0.9744	0.8071	1104.3	937.1
10	-8.244	-7.519	606.9	636.7	604.8	618.2	-50.6	152.1	-4.8	13.8	0.5348	0.5476	895.5	882.6	0.9894	0.8231	1122.9	957.0
11	-9.016	-8.755	588.4	587.6	586.5	570.9	-47.1	139.0	-4.6	13.6	0.5165	0.5030	914.8	901.4	0.9890	0.8153	1126.6	952.5

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	-5.97	-1.66	18.57	44.93	52.75	62.45	0.3436	0.2196	0.0500	1.3795	80.57	79.69	43.50	-1.42	-625.2	18.8	1.8658
2	-5.76	-1.34	14.63	43.36	52.92	63.56	0.3479	0.1927	0.0450	1.3886	82.59	81.78	44.17	0.81	-640.3	-10.7	1.8784
3	-5.59	-1.01	11.61	40.66	53.04	65.84	0.3340	0.1366	0.0326	1.4007	87.18	86.58	44.76	4.08	-655.0	-55.0	1.8931
4	-3.92	0.88	8.83	29.44	51.86	65.41	0.3178	0.0800	0.0195	1.3398	90.44	90.07	47.83	18.39	-717.2	-247.3	1.7858
5	-0.45	4.12	8.02	16.17	47.64	55.28	0.3112	0.1076	0.0246	1.2286	82.10	81.62	53.02	36.25	-796.6	-461.6	1.5844
6	1.22	5.56	8.77	10.62	45.61	48.74	0.3031	0.1380	0.0290	1.1703	72.75	72.19	55.60	44.98	-839.1	-559.3	1.4912
7	1.19	5.27	8.06	6.79	45.83	48.18	0.2854	0.1287	0.0266	1.1571	72.64	72.12	56.07	47.32	-857.1	-599.6	1.4774
8	0.85	4.66	5.28	8.63	46.39	50.61	0.2528	0.0849	0.0179	1.1653	80.58	80.20	56.23	47.60	-872.8	-633.4	1.4937
9	0.09	2.77	1.74	8.06	47.78	53.91	0.2164	0.0488	0.0112	1.1710	87.43	87.20	56.90	48.84	-925.7	-706.8	1.5187
10	0.15	2.33	2.96	7.71	47.94	53.92	0.2129	0.0558	0.0131	1.1660	85.19	84.92	57.35	49.64	-946.1	-730.5	1.5170
11	1.04	2.74	7.41	5.46	46.26	49.23	0.2168	0.0788	0.0179	1.1397	77.57	77.20	58.55	53.07	-961.9	-762.4	1.4676

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 %
1.1695	1.6276	88.04	88.82	37.24	1.0758	1.2455	85.28	85.70

STATOR 2

RUN NO 20, SPEED CODE 70, 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	8.611	0.743	1027.5	959.2	815.0	949.4	625.7	-136.4	37.8	-8.2	0.8958	0.8276	1.7325	1.2252	1.2809	1.1205
2	7.559	0.589	1016.4	961.0	812.8	955.9	610.2	-99.1	37.1	-5.9	0.8856	0.8303	1.7449	1.2231	1.2899	1.1204
3	6.623	0.409	1005.7	970.5	821.2	964.2	580.6	-109.8	35.4	-6.5	0.8771	0.8414	1.7719	1.2184	1.3103	1.1176
4	4.466	-0.172	899.4	935.7	787.4	924.7	434.5	-142.6	29.0	-8.8	0.7817	0.8163	1.7448	1.1944	1.3067	1.0985
5	1.757	-0.904	727.0	805.3	669.7	791.1	283.0	-150.8	22.9	-10.8	0.6273	0.7006	1.5781	1.1642	1.2213	1.0752
6	-0.023	-1.240	637.3	723.2	558.9	708.4	217.8	-145.4	20.0	-11.6	0.5481	0.6271	1.4834	1.1507	1.1643	1.0642
7	-1.066	-1.370	620.6	657.9	585.5	683.1	194.1	-142.9	18.2	-11.8	0.5343	0.6052	1.4568	1.1450	1.1414	1.0595
8	-2.004	-1.420	637.6	693.5	612.4	679.1	177.6	-140.8	16.2	-11.7	0.5505	0.6021	1.4516	1.1417	1.1327	1.0558
9	-4.017	-1.364	672.2	125.7	653.3	714.5	158.3	-126.8	13.6	-10.0	0.5810	0.6308	1.4771	1.1462	1.1390	1.0528
10	-4.046	-1.325	678.6	727.6	661.1	717.7	153.1	-119.6	13.1	-9.4	0.5860	0.6316	1.4749	1.1457	1.1335	1.0526
11	-5.508	-1.231	636.5	682.0	623.3	673.3	140.0	-108.6	12.7	-9.1	0.5494	0.5890	1.4226	1.1504	1.1047	1.0492

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	-3.17	-1.61	11.16	45.94	65.43	74.48	0.2341	0.1745	0.0390	0.9291	-1.63	75.42	77.22	60.69	62.01
2	-2.81	-0.79	12.84	43.02	66.33	75.51	0.2159	0.1743	0.0399	0.9302	-23.03	77.21	78.89	62.53	63.82
3	-3.71	-1.21	11.85	41.92	68.29	77.01	0.1990	0.1611	0.0375	0.9363	-70.25	81.22	82.64	69.16	69.32
4	-9.10	-5.23	9.05	37.73	67.62	75.55	0.1312	0.0886	0.0217	0.9698	237.64	88.61	89.45	80.56	81.26
5	-14.31	-9.00	7.02	33.68	57.73	64.84	0.0668	0.0499	0.0131	0.9881	121.48	84.61	85.54	77.82	78.39
6	-16.93	-11.15	6.13	31.55	51.35	57.78	0.0317	0.0484	0.0131	0.9909	115.77	79.08	80.19	69.02	69.63
7	-18.52	-12.53	5.86	30.01	50.63	55.69	0.0262	0.0707	0.0194	0.9873	127.75	78.28	79.38	64.62	65.23
8	-20.40	-14.19	5.91	27.69	52.88	55.43	0.0535	0.1455	0.0416	0.9722	171.01	79.33	80.36	64.96	65.53
9	-22.67	-15.98	7.62	23.67	56.21	58.15	0.0446	0.1339	0.0387	0.9726	169.84	80.66	81.67	71.63	72.10
10	-23.91	-17.03	8.83	22.50	56.50	58.11	0.0469	0.1353	0.0395	0.9720	178.36	78.42	79.54	68.98	69.47
11	-25.54	-18.44	10.28	21.84	52.53	53.84	0.0484	0.1657	0.0488	0.9693	205.21	70.45	71.65	58.53	59.06

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 %	EFF-P TOT-STG %
7458.	130.50	1.1695	1.5771	81.98	83.08	1.0758	0.9690	72.73	-373.66

TABLE XXXII (b) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

70% OF DESIGN SPEED

STATOR 1 ($\beta^*_{des.} - \beta^*_{act.}$) = +5°

STATOR 2 ($\beta^*_{des.} - \beta_{act.}$) = +7.5°

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 20, 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'-1	V'-1 FT/SEC	V'-2 FT/SEC
1	16.436	18.134	365.5	739.7	365.5	439.5	0.0	594.9	0.0	53.5	0.3309	0.6595	438.7	507.9	0.5169	0.3995	571.0	448.1
2	13.766	15.621	372.5	711.9	372.5	439.2	0.0	560.3	0.0	51.9	0.3373	0.6331	473.0	532.4	0.5452	0.3913	602.1	440.1
3	11.357	13.308	378.8	687.5	378.8	439.4	0.0	528.7	0.0	50.2	0.3432	0.6100	506.7	557.0	0.5732	0.3908	632.7	440.4
4	5.239	7.327	391.9	632.9	391.9	429.7	0.0	464.7	0.0	47.2	0.3554	0.5586	603.3	630.8	0.6523	0.4066	719.4	460.7
5	-0.183	0.953	397.0	561.5	397.0	389.5	0.0	404.5	0.0	46.1	0.3600	0.4922	723.8	729.0	0.7487	0.4443	825.5	506.9
6	-2.031	-1.667	396.9	546.8	396.9	394.0	0.0	379.1	0.0	43.9	0.3600	0.4786	781.8	778.2	0.7952	0.4909	876.8	560.8
7	-3.145	-2.883	396.5	550.2	396.5	412.2	0.0	364.4	0.0	41.5	0.3596	0.4819	810.4	802.7	0.8183	0.5270	902.2	601.6
8	-4.442	-4.076	395.5	549.9	395.5	414.6	0.0	361.2	0.0	41.1	0.3586	0.4812	839.0	827.3	0.8412	0.5459	927.5	623.8
9	-8.567	-7.722	388.0	558.4	388.0	420.5	0.0	367.5	0.0	41.1	0.3517	0.4866	924.4	901.0	0.9088	0.5920	1002.5	679.3
10	-10.031	-9.007	384.1	562.5	384.1	418.2	0.0	376.3	0.0	41.9	0.3481	0.4891	952.9	925.6	0.9310	0.6003	1027.3	690.4
11	-11.302	-10.311	379.5	548.7	379.5	394.5	0.0	381.3	0.0	43.9	0.3438	0.4755	981.3	950.2	0.9532	0.6000	1052.1	692.3

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	3.56	6.16	16.75	61.15	26.48	34.55	0.4635	-0.0299	-0.0065	1.3893	101.49	101.59	49.94	-11.21	-438.7	87.1	1.3893
2	3.69	7.98	15.98	55.12	26.93	34.89	0.4988	-0.0132	-0.0020	1.3804	100.74	100.80	51.50	-3.62	-473.0	27.8	1.3804
3	3.95	8.06	15.21	49.28	27.33	35.21	0.5168	-0.0026	-0.0006	1.3724	100.15	100.19	52.96	3.68	-506.7	-28.3	1.3724
4	5.34	8.81	11.41	35.75	28.16	34.99	0.5389	0.0416	0.0103	1.3554	96.63	96.51	56.84	21.10	-603.3	-166.1	1.3554
5	6.73	9.41	9.52	21.45	28.48	31.97	0.5356	0.1157	0.0267	1.3227	88.36	87.93	61.25	39.80	-723.8	-324.5	1.3227
6	7.16	9.44	8.03	17.72	28.47	32.55	0.4974	0.1060	0.0236	1.3227	88.33	87.89	63.09	45.37	-781.8	-399.1	1.3227
7	7.36	9.46	6.46	17.17	28.45	34.22	0.4636	0.0784	0.0174	1.3306	90.93	90.58	63.94	46.77	-810.4	-438.3	1.3306
8	7.56	9.51	5.49	16.43	28.38	34.48	0.4560	0.0841	0.0186	1.3345	90.01	89.62	64.78	48.35	-839.0	-466.1	1.3345
9	8.20	9.62	4.92	15.52	27.91	34.94	0.4511	0.1230	0.0270	1.3497	84.84	84.21	67.24	51.72	-924.4	-533.5	1.3497
10	6.38	9.67	5.66	15.40	27.66	34.67	0.4591	0.1477	0.0324	1.3546	81.84	81.08	68.06	52.66	-952.9	-549.3	1.3546
11	8.52	9.67	8.82	13.69	27.38	32.55	0.4740	0.1854	0.0391	1.3452	77.02	76.07	68.85	55.16	-981.3	-568.8	1.3452

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 %
1.0993	1.3466	89.40	89.81	26.98	1.0993	1.3466	89.40	89.81

STATOR 1

RUN NO 20, 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	16.150	14.849	743.1	514.1	461.6	512.3	582.4	-43.1	51.8	-4.8	0.6628	0.4484	1.3429	1.0970	1.3429	1.0970
2	15.806	13.062	717.9	512.7	461.1	511.3	550.3	-37.6	50.2	-4.2	0.6389	0.4474	1.3456	1.0958	1.3456	1.0958
3	13.643	11.362	695.4	512.3	460.9	511.1	520.8	-35.3	48.5	-3.9	0.6177	0.4473	1.3478	1.0945	1.3478	1.0945
4	8.100	6.613	644.0	496.3	449.7	494.8	460.9	-38.3	45.7	-4.4	0.5690	0.4328	1.3382	1.0941	1.3382	1.0941
5	1.760	0.726	574.2	463.8	408.2	460.6	403.8	-54.2	44.7	-6.7	0.5038	0.4034	1.3132	1.0947	1.3132	1.0947
6	-1.025	-1.815	559.9	459.2	411.8	456.1	379.4	-52.5	42.7	-6.6	0.4907	0.3993	1.3085	1.0946	1.3085	1.0946
7	-2.152	-2.855	563.2	468.2	428.6	465.4	365.3	-50.3	40.5	-6.2	0.4939	0.4075	1.3141	1.0941	1.3141	1.0941
8	-3.141	-3.782	563.2	473.4	431.0	470.8	362.5	-49.9	40.1	-6.1	0.4934	0.4118	1.3177	1.0961	1.3177	1.0961
9	-5.980	-6.401	572.8	489.2	427.6	487.6	369.7	-40.0	40.3	-4.7	0.4998	0.4240	1.3301	1.1062	1.3301	1.1062
10	-6.932	-7.256	577.5	493.1	436.0	491.8	378.8	-34.5	41.1	-4.0	0.5028	0.4264	1.3335	1.1117	1.3335	1.1117
11	-6.013	-8.172	564.8	474.0	413.9	472.2	384.3	-40.8	43.0	-5.0	0.4902	0.4085	1.3215	1.1163	1.3215	1.1163

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	4.23	6.34	12.57	56.54	36.22	43.46	0.4741	0.1306	0.0266	0.9666	78.36	90.66	91.01	90.66	91.01
2	4.32	6.72	12.06	54.33	36.50	43.53	0.4541	0.1048	0.0222	0.9748	81.41	92.47	92.75	92.47	92.75
3	4.02	6.61	11.46	52.48	36.77	43.63	0.4347	0.0784	0.0173	0.9822	84.98	94.24	94.45	94.24	94.45
4	3.69	7.41	9.86	50.10	36.41	42.21	0.4154	0.0629	0.0153	0.9876	86.19	92.29	92.57	92.29	92.57
5	4.17	9.21	7.61	51.36	33.32	39.00	0.4087	0.0454	0.0123	0.9928	87.93	85.56	86.07	85.56	86.07
6	2.64	8.25	7.79	49.22	33.83	38.55	0.4007	0.0742	0.0211	0.9887	79.24	84.46	85.01	84.46	85.01
7	0.65	6.53	8.21	46.64	35.39	39.40	0.3844	0.0818	0.0237	0.9874	75.75	86.36	86.85	86.36	86.85
8	0.49	6.64	8.37	46.15	35.64	39.82	0.3775	0.0831	0.0245	0.9873	74.07	85.42	85.95	85.42	85.95
9	0.64	7.52	10.84	44.97	36.14	41.04	0.3703	0.0922	0.0287	0.9855	68.88	79.99	80.75	79.99	80.75
10	1.13	8.18	12.74	45.10	35.91	41.26	0.3747	0.0987	0.0312	0.9843	66.85	76.75	77.64	76.75	77.64
11	2.36	9.51	13.35	47.95	33.92	39.38	0.4039	0.1165	0.0372	0.9824	63.85	71.32	72.40	71.32	72.40

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 %	EFF-P TOT-STG %
7464.	118.80	1.0993	1.3271	84.84	85.40	1.0993	0.9855	84.84	205.02

ROTOR 2

RUN NO 20, 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'-I	V'-1 FT/SEC	V'-2 FT/SEC
1	11.603	11.016	554.4	875.7	552.8	615.8	-41.9	622.6	-4.3	45.2	0.4851	0.7468	582.0	610.4	0.7294	0.5252	833.6	615.9
2	10.767	9.690	558.3	859.5	557.1	611.1	-36.7	604.4	-3.8	44.6	0.4890	0.7326	598.5	623.2	0.7399	0.5211	844.9	611.4
3	9.752	8.432	562.6	836.8	561.6	614.2	-34.6	568.3	-3.5	42.7	0.4933	0.7132	615.4	636.5	0.7531	0.5267	859.0	618.0
4	5.914	4.900	556.3	755.5	555.0	596.0	-37.8	464.3	-3.9	37.9	0.4876	0.6420	668.1	678.8	0.7870	0.5383	898.0	633.4
5	0.059	0.343	522.3	634.9	519.5	525.2	-54.0	356.7	-5.9	34.2	0.4563	0.5357	740.7	740.2	0.8295	0.5487	949.5	650.3
6	-2.390	-1.669	512.3	578.3	509.6	479.6	-52.5	323.1	-5.9	33.9	0.4472	0.4865	777.7	772.9	0.8504	0.5532	974.1	657.5
7	-3.291	-2.514	518.2	566.6	515.7	476.9	-50.6	305.9	-5.6	32.6	0.4527	0.4769	796.3	789.7	0.8663	0.5718	991.6	679.3
8	-4.134	-3.350	522.6	568.0	520.2	491.2	-50.1	285.3	-5.5	30.1	0.4562	0.4785	815.1	806.9	0.8814	0.6035	1009.6	716.5
9	-6.823	-6.196	538.9	585.2	537.4	513.2	-40.4	281.2	-4.3	28.6	0.4689	0.4910	872.3	860.4	0.9216	0.6493	1059.2	773.8
10	-7.657	-7.224	543.0	585.5	541.9	512.6	-34.9	283.0	-3.7	28.8	0.4714	0.4900	891.4	878.7	0.9317	0.6577	1073.2	785.9
11	-8.480	-8.385	525.7	572.7	524.1	503.3	-41.3	273.2	-4.5	28.4	0.4548	0.4775	910.7	897.3	0.9401	0.6685	1086.7	801.7

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	-1.10	3.22	19.27	49.51	46.13	56.30	0.4467	0.1317	0.0300	1.4224	89.94	89.44	48.38	-1.13	-673.9	12.2	1.9101
2	-1.23	3.22	15.58	46.97	46.55	56.46	0.4566	0.1237	0.0289	1.4175	90.22	89.74	48.73	1.76	-635.2	-18.8	1.9074
3	-1.16	3.41	13.85	42.87	46.96	57.40	0.4509	0.1014	0.0241	1.4064	91.45	91.05	49.19	6.32	-650.0	-68.2	1.8955
4	0.10	4.90	10.23	32.07	46.22	56.91	0.4392	0.0569	0.0138	1.3695	94.31	94.07	51.85	19.79	-705.9	-214.6	1.8323
5	3.36	7.93	7.92	20.69	43.03	50.38	0.4377	0.0775	0.0178	1.3105	90.32	89.97	56.83	36.14	-794.7	-383.5	1.7203
6	4.08	8.42	6.93	15.31	42.24	45.92	0.4401	0.1118	0.0242	1.2750	84.84	84.34	58.45	43.14	-830.2	-449.8	1.6693
7	3.77	7.85	6.11	13.27	42.85	45.76	0.4246	0.1106	0.0237	1.2640	84.22	83.72	58.64	45.37	-846.9	-483.8	1.6613
8	3.57	7.38	4.34	12.30	43.18	47.26	0.3940	0.0830	0.0178	1.2634	87.41	87.01	58.95	46.66	-865.2	-521.6	1.6648
9	2.62	5.30	1.24	11.10	44.38	49.13	0.3745	0.0828	0.0192	1.2654	86.77	86.35	59.43	48.33	-912.7	-579.2	1.6828
10	2.37	4.55	2.48	10.42	44.59	48.85	0.3740	0.0898	0.0213	1.2612	85.41	84.95	59.57	49.15	-926.3	-595.7	1.6828
11	3.55	5.25	5.33	10.07	42.87	47.66	0.3705	0.0883	0.0210	1.2639	85.59	85.13	61.06	50.99	-957.0	-624.1	1.6707

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 %
1.1993	1.7456	86.52	87.51	33.57	1.0909	1.3154	89.43	89.81

STATOR 2

RUN NO 20, 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	8.462	0.616	903.4	748.7	660.4	744.2	616.5	-81.7	43.3	-6.3	0.7732	0.6291	1.8572	1.2267	1.3830	1.1182
2	7.258	0.330	886.0	746.9	652.6	741.6	599.2	-88.7	42.8	-6.8	0.7576	0.6283	1.8603	1.2237	1.3826	1.1167
3	6.144	0.020	862.2	744.4	652.0	738.2	564.1	-95.8	41.0	-7.4	0.7371	0.6278	1.8632	1.2174	1.3823	1.1122
4	3.460	-0.761	778.8	693.8	626.6	686.3	462.4	-101.6	36.5	-8.4	0.6635	0.5858	1.8083	1.2034	1.3515	1.0998
5	0.692	-1.369	657.0	602.3	551.9	593.0	356.4	-105.3	32.8	-10.1	0.5555	0.5067	1.7099	1.1923	1.3025	1.0891
6	-0.883	-1.556	600.6	550.2	506.2	539.4	323.2	-108.6	32.5	-11.4	0.5062	0.4619	1.6595	1.1876	1.2675	1.0851
7	-1.730	-1.579	588.9	537.5	503.1	525.0	306.1	-115.6	31.3	-12.4	0.4966	0.4514	1.6478	1.1845	1.2537	1.0825
8	-2.475	-1.533	590.3	537.9	516.5	524.6	285.9	-119.1	29.0	-12.8	0.4981	0.4521	1.6472	1.1830	1.2500	1.0793
9	-4.376	-1.364	611.2	563.6	542.0	558.5	282.7	-75.6	27.6	-7.7	0.5140	0.4721	1.6616	1.1949	1.2494	1.0804
10	-5.086	-1.329	614.8	568.6	545.0	564.3	284.6	-69.9	27.6	-7.1	0.5158	0.4752	1.6622	1.2010	1.2460	1.0805
11	-5.895	-1.233	607.4	551.7	541.5	547.5	275.2	-68.0	27.0	-7.1	0.5080	0.4593	1.6428	1.2069	1.2430	1.0811

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	2.34	3.90	13.06	49.54	59.30	71.22	0.3454	0.0850	0.0191	0.9722	78.10	85.27	86.47	81.96	82.75
2	2.84	4.86	11.94	49.57	59.29	71.30	0.3357	0.0783	0.0179	0.9752	78.12	86.67	87.76	82.94	83.68
3	1.87	4.37	10.96	48.40	59.99	71.47	0.3164	0.0571	0.0133	0.9826	81.78	89.41	90.28	86.16	86.76
4	-1.58	2.28	9.39	44.90	59.08	66.81	0.2895	0.0519	0.0127	0.9867	78.77	90.61	91.34	89.88	90.28
5	-4.38	0.93	7.74	42.89	52.42	57.37	0.2730	0.0346	0.0091	0.9934	81.04	86.08	87.07	87.80	88.22
6	-4.37	1.42	6.35	43.90	48.01	51.92	0.2632	0.0370	0.0100	0.9941	79.24	82.94	84.09	82.21	82.77
7	-5.44	0.55	5.26	43.70	47.84	50.54	0.2886	0.0523	0.0143	0.9919	71.61	83.09	84.22	80.74	81.32
8	-7.60	-1.39	4.84	41.72	49.24	50.53	0.2839	0.0681	0.0189	0.9894	63.43	83.70	84.78	82.92	83.42
9	-8.73	-2.04	9.97	35.27	51.32	53.25	0.2505	0.0765	0.0222	0.9874	53.89	80.07	81.42	81.54	82.09
10	-9.34	-2.46	11.22	34.67	51.30	53.48	0.2462	0.0731	0.0215	0.9879	54.35	77.67	79.18	80.35	80.92
11	-11.22	-4.12	12.37	34.08	50.55	51.39	0.2610	0.1027	0.0304	0.9834	46.80	73.61	75.36	78.86	79.48

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 %	EFF-P TOT-STG %
7464.	118.80	1.1993	1.7230	84.33	85.46	1.0909	0.9870	85.00	366.47

TABLE XXXII (c) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

70% OF DESIGN SPEED

STATOR 1 $(\beta^*_{des.} - \beta^*_{act.}) = +5^o$

STATOR 2 $(\beta^*_{des.} - \beta_{act.}) = +7.5^o$

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 20, SPEED CODE 70, POINT NO 13

SL	EPSI-1	EPSI-2	V-1	V-2	VM-1	VM-2	VΘ-1	VΘ-2	B-1	B-2	M-1	M-2	U-1	U-2	M'-1	M'-2	V'-1	V'-2
	DEGREE	DEGREE	FT/SEC	FT/SEC	FT/SEC	FT/SEC	FT/SEC	FT/SEC	DEGREE	DEGREE			FT/SEC	FT/SEC			FT/SEC	FT/SEC
1	16.493	18.059	340.1	726.5	340.1	413.3	0.0	597.5	0.0	55.3	0.3074	0.6466	438.4	507.5	0.5015	0.3765	554.8	423.0
2	13.836	15.576	347.6	698.4	347.6	417.4	0.0	559.9	0.0	53.3	0.3143	0.6202	472.7	532.1	0.5306	0.3715	586.8	418.3
3	11.436	13.266	354.5	673.7	354.5	412.3	0.0	532.8	0.0	52.2	0.3207	0.5967	506.4	556.6	0.5592	0.3658	618.2	413.0
4	5.323	7.287	368.9	623.2	368.9	407.4	0.0	471.7	0.0	49.1	0.3340	0.5492	602.9	630.3	0.6399	0.3853	706.8	437.2
5	-0.179	0.934	374.3	554.0	374.3	363.9	0.0	417.8	0.0	48.9	0.3390	0.4846	723.3	728.5	0.7376	0.4185	814.4	478.5
6	-2.129	-1.678	374.2	543.3	374.2	378.9	0.0	389.3	0.0	45.8	0.3389	0.4749	781.2	777.6	0.7845	0.4742	866.2	542.5
7	-3.437	-2.919	373.7	550.7	373.7	401.8	0.0	376.7	0.0	43.2	0.3385	0.4817	809.8	802.2	0.8078	0.5119	891.9	585.2
8	-5.007	-4.167	372.3	553.3	372.3	408.0	0.0	373.7	0.0	42.5	0.3372	0.4836	838.4	826.7	0.8307	0.5329	917.4	609.7
9	-9.571	-8.003	363.3	552.8	363.3	390.7	0.0	391.1	0.0	45.0	0.3289	0.4800	923.7	900.4	0.8984	0.5573	992.6	641.8
10	-10.836	-9.270	359.2	547.1	359.2	370.5	0.0	402.5	0.0	47.3	0.3250	0.4733	952.2	925.0	0.9209	0.5542	1017.7	640.5
11	-11.706	-10.477	355.0	538.2	355.0	349.4	0.0	409.4	0.0	49.4	0.3212	0.4642	980.6	949.9	0.9435	0.5548	1042.9	643.2

SL	INCS	INCM	DEV	TURN	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B	LOSS-P	PO2/	%EFF-P	%EFF-A	B'-1	B'-2	VΘ'-1	VΘ'-2	PO/PO
	DEGREE	DEGREE	DEGREE	DEGREE				TOTAL	TOTAL	PO1	TOT	TOT	DEGREE	DEGREE	FT/SEC	FT/SEC	INLET
1	5.57	10.17	15.67	64.24	24.82	32.67	0.4939	-0.0119	-0.0026	1.3867	100.56	100.62	51.95	-12.28	-438.4	90.0	1.3867
2	5.59	9.89	15.79	57.22	25.31	33.36	0.5224	-0.0079	-0.0018	1.3784	100.41	100.46	53.41	-3.81	-472.7	27.9	1.3784
3	5.75	9.86	14.83	51.46	25.77	33.22	0.5511	0.0154	0.0037	1.3706	99.06	99.05	54.76	3.30	-506.4	-23.8	1.3706
4	6.89	10.36	11.56	37.15	26.70	33.41	0.5662	0.0459	0.0114	1.3602	96.44	96.32	58.40	21.25	-602.9	-158.7	1.3602
5	8.12	10.80	10.22	22.14	27.04	30.10	0.5689	0.1274	0.0291	1.3319	87.87	87.40	62.63	40.49	-723.3	-310.7	1.3319
6	8.48	10.76	8.37	18.71	27.04	31.60	0.5161	0.1022	0.0226	1.3361	89.27	88.85	64.42	45.71	-781.2	-388.3	1.3361
7	8.66	10.77	6.34	18.59	27.01	33.68	0.4807	0.0730	0.0163	1.3471	91.96	91.65	65.24	46.65	-809.8	-425.5	1.3471
8	8.87	10.82	5.15	18.08	26.92	34.25	0.4706	0.0763	0.0170	1.3527	91.35	91.00	66.09	48.00	-838.4	-453.1	1.3527
9	9.55	10.57	5.69	16.11	26.34	32.57	0.4932	0.1575	0.0340	1.3580	81.69	80.92	68.60	52.49	-923.7	-509.2	1.3580
10	9.71	11.01	7.62	14.78	26.07	30.72	0.5132	0.1998	0.0419	1.3547	76.87	75.85	69.39	54.62	-952.2	-522.4	1.3547
11	9.78	10.94	10.68	13.10	25.80	28.85	0.5267	0.2338	0.0469	1.3498	72.88	71.74	70.12	57.02	-980.6	-540.1	1.3498

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 %
1.1026	1.3540	88.17	88.64	25.53	1.1026	1.3540	88.17	88.64

STATOR 1

RUN NO 20, SPEED CODE 70, POINT NO 13

SL	EPSI-1	EPSI-2	V-1	V-2	VM-1	VM-2	VΘ-1	VΘ-2	B-1	B-2	M-1	M-2	PO/PO	TO/TO	PO/PO	TO2/
	DEGREE	DEGREE	FT/SEC	FT/SEC	FT/SEC	FT/SEC	FT/SEC	FT/SEC	DEGREE	DEGREE			INLET	INLET	STAGE	TO1
1	18.136	14.866	727.8	476.1	433.2	474.3	584.9	-41.1	53.7	-4.9	0.6479	0.4140	1.3380	1.0974	1.3380	1.0974
2	15.830	13.104	702.3	475.6	436.7	474.3	550.0	-35.9	51.7	-4.3	0.6239	0.4139	1.3411	1.0957	1.3411	1.0957
3	13.699	11.416	675.5	476.6	431.5	475.3	524.9	-34.3	50.6	-4.1	0.6022	0.4148	1.3440	1.0952	1.3440	1.0952
4	8.149	6.671	632.5	463.1	425.6	461.8	467.9	-33.7	47.7	-4.2	0.5579	0.4027	1.3375	1.0955	1.3375	1.0955
5	1.637	0.781	565.4	435.3	381.8	432.6	417.0	-48.0	47.5	-6.3	0.4950	0.3774	1.3185	1.0977	1.3185	1.0977
6	-0.910	-1.770	555.2	434.5	395.5	432.1	389.7	-45.5	44.6	-6.0	0.4858	0.3768	1.3172	1.0972	1.3172	1.0972
7	-1.931	-2.771	562.4	445.7	416.9	443.9	377.5	-39.7	42.2	-5.1	0.4925	0.3868	1.3239	1.0970	1.3239	1.0970
8	-2.789	-3.625	565.1	453.6	422.8	452.1	374.9	-36.8	41.6	-4.7	0.4944	0.3935	1.3251	1.0990	1.3291	1.0990
9	-5.477	-6.121	565.6	455.2	406.5	453.7	393.3	-36.0	44.1	-4.5	0.4917	0.3924	1.3325	1.1123	1.3325	1.1123
10	-6.578	-7.043	560.3	449.6	387.0	448.4	405.2	-32.7	46.4	-4.2	0.4853	0.3863	1.3299	1.1190	1.3299	1.1190
11	-7.862	-8.062	552.0	433.7	366.6	432.2	412.6	-36.0	48.5	-4.8	0.4766	0.3712	1.3210	1.1248	1.3210	1.1248

SL	INCS	INCM	DEV	TURN	RHOVM-1	RHOVM-2	D-FAC	OMEGA-B	LOSS-P	PO2/	%EFF-P	%EFF-A	%EFF-P	%EFF-A	%EFF-P
	DEGREE	DEGREE	DEGREE	DEGREE				TOTAL	TOTAL	PO1	STATC-ST	TOT-INLET	TOT-INLET	TOT-STG	TOT-STG
1	6.11	8.22	12.43	58.56	34.22	40.65	0.5156	0.1427	0.0291	0.9649	78.25	89.15	89.56	89.15	89.56
2	5.83	8.23	11.93	55.56	34.83	40.81	0.4946	0.1174	0.0249	0.9728	80.99	91.49	91.81	91.49	91.81
3	6.12	8.90	11.29	54.74	34.66	40.99	0.4755	0.0891	0.0196	0.9806	84.53	92.65	92.92	92.65	92.92
4	5.69	9.41	10.11	51.86	34.75	39.81	0.4587	0.0874	0.0213	0.9833	83.10	90.82	91.16	90.82	91.16
5	7.00	12.05	7.58	53.84	31.43	37.05	0.4538	0.0656	0.0178	0.9899	85.18	84.20	84.78	84.20	84.78
6	4.56	10.17	8.34	50.60	32.82	36.99	0.4419	0.0975	0.0277	0.9854	76.84	84.33	84.89	84.33	84.89
7	2.38	8.25	9.27	47.29	34.78	38.05	0.4244	0.1130	0.0329	0.9827	72.11	86.07	86.59	86.07	86.59
8	1.98	8.13	9.77	46.25	35.32	38.74	0.4138	0.1130	0.0334	0.9826	70.86	85.61	86.14	85.61	86.14
9	4.48	11.36	11.00	48.65	33.70	38.53	0.4329	0.1242	0.0387	0.9810	67.70	76.16	77.07	76.16	77.07
10	6.44	13.49	12.59	50.56	31.92	37.87	0.4469	0.1247	0.0394	0.9814	67.89	71.40	72.50	71.40	72.50
11	7.86	15.01	13.53	53.27	30.11	36.26	0.4773	0.1482	0.0473	0.9786	64.18	66.38	67.65	66.38	67.65

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 %	EFF-P TOT-STG %
7459.	112.40	1.1026	1.3297	82.68	83.34	1.1026	0.9820	82.68	183.67

ROTOR 2

RUN NO 20, 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'-2	V'-1 FT/SEC	V'-2 FT/SEC
1	11.599	10.568	511.5	860.1	510.0	578.3	-40.0	636.6	-4.5	47.6	0.4460	0.7312	581.6	610.0	0.7010	0.4922	804.0	578.9
2	10.756	9.606	516.0	843.3	514.8	570.0	-35.0	621.5	-3.9	47.4	0.4504	0.7164	598.0	622.8	0.7122	0.4842	816.0	570.0
3	9.732	8.323	521.5	820.2	520.4	577.4	-33.5	582.5	-3.7	45.2	0.4555	0.6967	615.0	636.1	0.7263	0.4926	831.5	579.9
4	5.826	4.750	517.2	738.5	516.2	556.8	-33.3	485.2	-3.7	41.0	0.4516	0.6251	667.6	678.4	0.7600	0.4988	870.5	589.4
5	-0.014	0.234	489.6	632.8	487.3	502.3	-47.9	384.8	-5.6	37.5	0.4261	0.5319	740.2	739.7	0.8064	0.5170	926.6	615.0
6	-2.576	-1.837	483.8	585.6	481.6	463.7	-45.4	357.7	-5.4	37.6	0.4209	0.4910	777.1	772.3	0.8294	0.5215	953.2	622.0
7	-3.497	-2.682	491.3	575.4	489.7	456.4	-39.8	350.4	-4.6	37.5	0.4278	0.4822	795.8	789.1	0.8432	0.5306	968.5	633.1
8	-4.269	-3.468	497.6	577.1	496.2	465.7	-37.0	341.8	-4.3	36.2	0.4330	0.4840	814.6	806.4	0.8576	0.5511	985.6	657.8
9	-6.800	-6.179	501.7	588.5	500.4	486.7	-36.4	330.7	-4.1	34.1	0.4341	0.4900	871.6	855.8	0.8969	0.5986	1036.8	718.9
10	-7.699	-7.268	497.6	584.8	496.5	477.5	-33.0	337.7	-3.8	35.1	0.4290	0.4848	890.8	878.1	0.9043	0.5977	1048.8	721.1
11	-8.548	-8.448	483.1	562.8	481.7	463.7	-36.5	319.0	-4.3	34.4	0.4149	0.4649	910.0	896.7	0.9122	0.6119	1062.0	740.7

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/PC INLET
1	1.08	5.40	17.78	53.16	43.13	53.28	0.4760	0.1520	0.0346	1.4267	89.26	88.72	50.56	-2.62	-621.6	26.6	1.9091
2	0.91	5.36	13.95	50.73	43.63	53.04	0.4928	0.1531	0.0358	1.4207	88.80	88.25	50.86	0.13	-633.1	-1.3	1.9054
3	0.92	5.49	12.81	45.99	44.12	54.32	0.4827	0.1267	0.0302	1.4085	90.08	89.60	51.27	5.28	-648.5	-53.5	1.8931
4	1.91	6.70	9.56	34.54	43.61	53.42	0.4773	0.0922	0.0224	1.3686	91.37	91.00	53.66	19.12	-701.0	-193.2	1.8299
5	4.80	9.38	7.02	23.03	40.94	48.48	0.4690	0.1025	0.0237	1.3190	88.28	87.83	58.27	35.24	-788.1	-354.5	1.7388
6	5.28	9.61	5.57	17.86	40.54	44.72	0.4735	0.1380	0.0305	1.2881	82.98	82.39	59.65	41.78	-822.6	-414.6	1.6981
7	4.74	8.82	4.58	15.78	41.32	44.05	0.4694	0.1499	0.0330	1.2768	80.86	80.22	59.61	43.83	-835.6	-438.8	1.6911
8	4.36	8.17	2.55	14.87	41.85	44.98	0.4528	0.1421	0.0315	1.2756	81.27	80.64	59.74	44.87	-851.6	-464.6	1.6955
9	4.25	6.93	0.16	13.81	41.80	46.64	0.4292	0.1354	0.0321	1.2825	81.34	80.69	61.06	47.26	-908.0	-529.1	1.7091
10	4.46	6.63	1.72	13.26	41.23	45.40	0.4396	0.1511	0.0364	1.2818	79.32	78.60	61.66	48.40	-923.9	-540.4	1.7055
11	5.42	7.12	5.47	11.81	39.75	43.83	0.4278	0.1417	0.0336	1.2762	79.88	79.20	62.93	51.13	-946.5	-577.7	1.6861

TO/TO INLET	PO/PC INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	TO2/TO1	PO2/PO1	EFF-AD ROTOR %	EFF-P ROTOR %
1.2101	1.7604	83.38	84.63	31.74	1.0975	1.3239	85.44	85.99

STATOR 2

RUN NO 20, 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	8.463	0.643	883.0	667.3	618.3	684.4	630.3	-63.0	45.8	-5.3	0.7528	0.5734	1.8453	1.2253	1.3792	1.1202
2	7.243	0.362	865.2	689.1	607.4	686.0	616.2	-65.3	45.6	-5.4	0.7370	0.5757	1.8521	1.2266	1.3811	1.1195
3	6.105	0.031	841.3	692.7	611.2	687.9	578.2	-81.0	43.6	-6.7	0.7164	0.5803	1.8617	1.2207	1.3852	1.1146
4	3.425	-0.771	758.1	639.3	584.2	633.4	483.1	-87.0	39.6	-7.8	0.6429	0.5359	1.8071	1.2082	1.3516	1.1028
5	0.651	-1.338	651.2	558.2	525.7	550.2	384.4	-94.3	36.2	-9.7	0.5483	0.4663	1.7261	1.2003	1.3093	1.0935
6	-0.748	-1.455	604.1	515.7	486.7	506.5	357.9	-97.0	36.3	-10.8	0.5073	0.4301	1.6878	1.1968	1.2805	1.0909
7	-1.533	-1.471	594.0	503.6	479.3	494.3	350.8	-97.1	36.2	-11.1	0.4986	0.4200	1.6773	1.1959	1.2665	1.0900
8	-2.280	-1.443	596.4	503.2	488.2	493.9	342.5	-96.4	35.0	-11.0	0.5004	0.4193	1.6755	1.1971	1.2606	1.0891
9	-4.184	-1.279	611.0	523.8	512.6	517.2	332.4	-82.4	33.0	-9.0	0.5097	0.4340	1.6850	1.2130	1.2644	1.0911
10	-4.885	-1.251	610.6	526.8	507.4	522.2	339.7	-69.8	33.8	-7.6	0.5073	0.4348	1.6838	1.2229	1.2654	1.0933
11	-5.763	-1.191	593.8	508.2	499.3	504.3	321.3	-62.9	32.8	-7.1	0.4917	0.4182	1.6655	1.2270	1.2606	1.0909

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	4.86	6.42	14.06	51.06	56.15	67.01	0.3984	0.1066	0.0240	0.9666	77.75	83.35	84.70	79.87	80.75
2	5.69	7.71	13.32	51.04	55.76	67.48	0.3848	0.0925	0.0212	0.9719	79.21	84.91	86.14	80.73	81.57
3	4.41	6.92	11.63	50.21	56.77	68.17	0.3606	0.0575	0.0134	0.9833	85.21	87.96	88.95	84.99	85.64
4	1.58	5.45	10.00	47.46	55.46	63.00	0.3435	0.0513	0.0126	0.9876	84.69	88.40	89.30	87.21	87.73
5	-1.05	4.25	8.08	45.67	50.31	54.38	0.3409	0.0410	0.0108	0.9924	86.16	84.18	85.33	85.39	85.91
6	-0.60	5.19	6.89	47.12	46.58	49.88	0.3555	0.0385	0.0105	0.9938	87.07	81.89	83.16	80.37	81.01
7	-0.56	5.43	6.56	47.27	45.91	48.62	0.3639	0.0519	0.0143	0.9919	83.12	81.22	82.52	77.44	78.16
8	-1.52	4.69	6.58	46.06	46.79	48.49	0.3658	0.0749	0.0209	0.9882	76.23	80.58	81.91	76.59	77.32
9	-3.32	3.37	8.63	42.01	48.66	50.09	0.3424	0.0871	0.0253	0.9858	70.04	75.42	77.13	75.97	76.73
10	-3.11	3.76	10.68	41.44	47.74	50.11	0.3366	0.0796	0.0233	0.9872	71.66	71.95	73.50	74.38	75.19
11	-5.39	1.71	12.33	35.94	46.63	48.03	0.3379	0.0801	0.0237	0.9878	72.49	69.06	71.16	75.08	75.86

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PC INLET	EFF-AD INLET %	EFF-P INLET %	TO2/TO1	PO2/PO1	EFF-AD STAGE %	EFF-P TOT-STG %
7459.	112.40	1.2101	1.7368	81.24	82.62	1.0975	0.9866	81.19	263.61

TABLE XXXII (d) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

70% OF DESIGN SPEED

STATOR 1 $(\beta^*_{des.} - \beta^*_{act.}) = +5^\circ$

STATOR 2 $(\beta^*_{des.} - \beta_{act.}) = +7.5^\circ$

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 20, 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	16.288	18.167	324.2	7C6.3	324.2	403.0	0.0	580.0	0.0	55.2	0.2928	0.6279	440.3	509.8	0.4939	0.3637	546.8	409.1
2	13.468	15.650	330.7	681.4	330.7	401.7	0.0	550.4	0.0	53.9	0.2987	0.6043	474.8	534.5	0.5227	0.3565	578.6	402.0
3	10.955	13.406	336.5	657.5	336.5	393.3	0.0	526.9	0.0	53.2	0.3041	0.5816	508.7	559.1	0.5511	0.3491	609.9	394.6
4	4.854	7.413	347.6	609.9	347.6	386.9	0.0	471.4	0.0	50.6	0.3143	0.5366	609.6	633.2	0.6314	0.3690	698.3	419.3
5	-0.897	0.921	351.3	552.2	351.3	352.4	0.0	425.1	0.0	50.3	0.3177	0.4825	726.6	731.8	0.7299	0.4082	807.0	467.2
6	-3.143	-1.832	350.0	550.5	350.0	367.6	0.0	409.8	0.0	48.1	0.3165	0.4803	784.7	781.1	0.7771	0.4558	859.3	522.5
7	-4.475	-3.133	348.7	562.9	348.7	383.8	0.0	411.8	0.0	47.0	0.3154	0.4907	813.5	805.8	0.8004	0.4795	885.1	550.0
8	-6.031	-4.450	346.7	564.1	346.7	394.3	0.0	403.4	0.0	45.7	0.3135	0.4916	842.2	830.4	0.8235	0.5065	910.7	581.3
9	-10.621	-8.351	335.5	557.4	335.5	353.6	0.0	430.8	0.0	50.6	0.3032	0.4814	927.9	904.4	0.8916	0.5105	986.7	591.0
10	-11.664	-9.544	331.0	552.5	331.0	326.6	0.0	445.6	0.0	53.7	0.2990	0.4753	956.5	929.1	0.9144	0.5020	1012.1	583.5
11	-12.136	-10.646	326.8	552.7	326.8	305.4	0.0	460.6	0.0	56.4	0.2951	0.4737	985.0	953.8	0.9374	0.4971	1037.8	580.0

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	6.98	11.59	18.C7	63.25	23.76	32.13	0.5049	-0.0323	-0.0070	1.3801	101.52	101.62	53.37	-9.89	-440.3	70.2	1.3801
2	7.03	11.32	17.33	57.12	24.19	32.33	0.5406	-0.0129	-0.0030	1.3742	100.65	100.71	54.84	-2.28	-474.8	16.0	1.3742
3	7.22	11.33	16.20	51.56	24.58	31.88	0.5733	0.0205	0.0049	1.3666	98.77	98.74	56.23	4.67	-508.7	-32.2	1.3666
4	8.49	11.95	12.97	37.33	25.31	31.85	0.5871	0.0613	0.0151	1.3570	95.34	95.17	59.99	22.66	-605.6	-161.7	1.3570
5	9.67	12.36	10.75	23.17	25.55	29.21	0.5834	0.1415	0.0320	1.3356	86.87	86.36	64.19	41.02	-726.6	-306.7	1.3356
6	10.06	12.34	7.55	20.70	25.47	30.60	0.5449	0.1368	0.0304	1.3437	86.32	85.76	65.99	45.29	-784.7	-371.3	1.3437
7	10.26	12.36	5.45	21.C7	25.39	32.00	0.5317	0.1358	0.0307	1.3572	86.23	85.65	66.84	45.76	-813.5	-394.0	1.3572
8	10.47	12.43	4.44	20.39	25.25	32.93	0.5107	0.1294	0.0292	1.3608	86.28	85.70	67.69	47.30	-842.2	-427.0	1.3608
9	11.20	12.62	6.46	16.99	24.52	29.15	0.5569	0.2387	0.0506	1.3585	74.34	73.24	70.24	53.26	-927.9	-473.6	1.3585
10	11.34	12.63	8.54	15.C8	24.21	26.77	0.5825	0.2829	0.0573	1.3563	69.88	68.59	71.02	55.94	-956.5	-483.5	1.3563
11	11.36	12.51	11.82	13.53	23.93	24.93	0.6036	0.3195	0.0622	1.3591	66.44	64.95	71.69	58.17	-985.0	-493.1	1.3591

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 %
1.1C79	1.3563	84.32	84.95	24.03	1.1079	1.3563	84.32	84.95

STATOR 1

RUN NO 20, 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	18.342	15.051	707.7	440.5	422.5	439.0	567.8	-36.9	53.6	-4.8	0.6293	0.3826	1.3285	1.0950	1.3285	1.0950
2	16.177	13.428	685.1	443.9	420.8	442.7	540.7	-32.1	52.3	-4.1	0.6078	0.3856	1.3338	1.0945	1.3338	1.0945
3	14.116	11.841	662.9	446.4	412.4	445.3	519.1	-32.2	51.7	-4.1	0.5867	0.3879	1.3378	1.0945	1.3378	1.0945
4	8.707	7.287	618.3	431.2	404.4	429.8	467.6	-34.5	49.2	-4.6	0.5444	0.3741	1.3315	1.0957	1.3315	1.0957
5	2.626	1.557	562.2	4C8.2	368.7	406.0	424.4	-41.6	49.0	-5.8	0.4916	0.3529	1.3184	1.0998	1.3184	1.0998
6	-0.001	-1.000	560.6	411.1	382.1	409.5	410.2	-36.5	47.0	-5.1	0.4895	0.3552	1.3200	1.1018	1.3200	1.1018
7	-1.076	-2.048	572.8	429.7	397.3	429.0	412.6	-24.2	46.1	-3.2	0.4997	0.3709	1.3306	1.1067	1.3306	1.1067
8	-2.005	-2.961	574.0	432.9	4C7.2	432.3	404.6	-21.4	44.8	-2.8	0.5006	0.3737	1.3332	1.1065	1.3332	1.1065
9	-4.656	-5.621	568.1	426.0	367.6	424.4	433.1	-36.1	49.7	-4.9	0.4911	0.3647	1.3324	1.1235	1.3324	1.1235
10	-6.121	-6.675	563.3	408.9	341.2	406.0	448.3	-48.6	52.8	-6.8	0.4851	0.3486	1.3241	1.1308	1.3241	1.1308
11	-7.622	-7.880	563.8	410.4	319.9	407.0	464.2	-52.7	55.5	-7.4	0.4836	0.3483	1.3258	1.1410	1.3258	1.1410

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	6.01	8.12	12.57	58.32	33.66	37.90	0.5466	0.1598	0.0326	0.9624	77.03	89.08	89.48	89.08	89.48
2	6.43	8.83	12.11	56.39	33.8C	38.34	0.5252	0.1344	0.0285	0.9701	79.59	90.88	91.21	90.88	91.21
3	7.13	9.91	11.28	55.77	33.33	38.65	0.5062	0.1024	0.0225	0.9786	83.39	91.77	92.07	91.77	92.07
4	7.17	10.89	9.69	53.76	33.16	37.28	0.4992	0.1044	0.0254	0.9808	81.71	89.11	89.52	89.11	89.52
5	8.51	13.56	8.46	54.66	30.42	35.00	0.5000	0.0836	0.0227	0.9872	83.75	82.38	83.03	82.38	83.03
6	7.01	12.63	9.26	52.13	31.67	35.25	0.4903	0.1046	0.0298	0.9843	78.82	81.14	81.84	81.14	81.84
7	6.29	12.16	11.16	49.32	32.98	36.86	0.4730	0.1209	0.0352	0.9810	74.59	79.71	80.48	79.71	80.48
8	5.22	11.37	11.59	47.67	33.85	37.18	0.4653	0.1280	0.0380	0.9798	72.75	80.48	81.23	80.48	81.23
9	10.08	16.96	10.68	54.57	30.17	36.05	0.5085	0.1311	0.0408	0.9799	72.64	69.29	70.48	69.29	70.48
10	12.83	19.88	9.53	55.61	27.84	34.24	0.5520	0.1570	0.0494	0.9766	69.27	63.93	65.30	63.93	65.30
11	14.69	22.04	10.91	62.92	25.99	34.06	0.5686	0.1635	0.0519	0.9758	67.75	59.52	61.07	59.52	61.07

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 %	EFF-P TOT-STG %
7492.	105.80	1.1C79	1.3286	78.39	79.21	1.1079	0.9796	78.39	162.98

ROTOR 2

RUN NO 20, 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	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	11.707	10.981	472.8	834.8	471.4	528.9	-35.9	645.8	-4.4	50.5	0.4115	0.7078	584.2	612.8	0.6780	0.4493	779.0	530.0
2	10.957	9.635	480.8	820.5	479.8	528.1	-31.3	628.0	-3.7	49.8	0.4188	0.6951	600.7	625.6	0.6912	0.4474	793.5	528.1
3	10.003	8.372	487.9	800.9	486.9	538.2	-31.3	593.0	-3.7	47.7	0.4252	0.6782	617.8	638.5	0.7071	0.4575	811.4	540.2
4	6.237	4.823	481.7	716.0	480.5	517.2	-34.0	495.2	-4.1	43.7	0.4193	0.6038	670.6	681.4	0.7425	0.4636	852.9	549.8
5	0.388	0.270	458.4	623.7	456.5	475.5	-41.5	403.6	-5.2	40.3	0.3976	0.5226	743.5	743.0	0.7877	0.4895	908.1	584.2
6	-2.380	-1.922	455.4	586.4	453.9	446.2	-36.6	380.5	-4.6	40.4	0.3946	0.4897	780.6	775.8	0.8100	0.4978	934.8	596.1
7	-3.456	-2.848	469.4	575.5	468.8	438.7	-24.3	372.5	-3.0	40.3	0.4062	0.4800	799.4	792.7	0.8201	0.5066	947.7	607.4
8	-4.265	-3.650	470.2	574.1	469.7	430.5	-21.5	379.9	-2.6	41.4	0.4069	0.4780	818.2	810.0	0.8327	0.5066	962.1	608.5
9	-6.478	-6.063	466.8	577.5	465.4	445.0	-35.9	368.2	-4.4	39.5	0.4008	0.4762	835.6	863.6	0.8787	0.5491	1023.4	665.9
10	-7.437	-7.143	452.7	568.8	450.1	446.3	-49.0	352.6	-6.2	38.2	0.3871	0.4669	894.8	882.0	0.8940	0.5684	1045.7	692.4
11	-8.490	-8.449	455.4	553.4	452.2	443.3	-53.4	331.4	-6.7	36.7	0.3875	0.4521	914.1	900.7	0.9089	0.5894	1068.0	721.5

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	3.22	7.53	16.84	56.26	40.24	49.34	0.5235	0.1674	0.0381	1.4320	88.95	88.39	52.70	-3.56	-620.2	33.1	1.9024
2	2.84	7.29	13.56	53.06	41.02	49.74	0.5321	0.1601	0.0374	1.4264	88.96	88.41	52.80	-0.26	-632.0	2.4	1.9025
3	2.80	7.38	12.39	48.30	41.65	51.21	0.5211	0.1358	0.0324	1.4165	89.99	89.50	53.16	4.86	-649.0	-45.9	1.8950
4	4.01	8.80	10.23	35.57	40.96	50.09	0.5159	0.1086	0.0263	1.3741	90.43	90.01	55.76	19.19	-704.7	-186.3	1.8295
5	6.35	10.93	7.29	24.31	38.71	46.36	0.4962	0.1043	0.0241	1.3321	88.64	88.40	59.82	35.52	-785.0	-339.4	1.7561
6	6.57	10.91	5.31	19.42	38.52	43.41	0.4949	0.1317	0.0293	1.3051	84.81	84.25	60.94	41.52	-817.2	-395.3	1.7251
7	5.47	9.54	4.48	16.61	39.74	42.62	0.4869	0.1384	0.0305	1.2897	83.27	82.68	60.34	43.73	-823.7	-420.2	1.7165
8	5.37	9.18	2.60	15.83	39.85	41.73	0.4986	0.1660	0.0368	1.2876	80.02	79.32	60.75	44.92	-839.7	-430.1	1.7167
9	6.05	8.73	0.85	14.52	39.02	42.53	0.4852	0.1840	0.0430	1.2927	77.17	76.35	62.86	47.94	-911.5	-495.5	1.7238
10	7.21	9.39	3.05	14.68	37.45	42.37	0.4756	0.1799	0.0422	1.2969	77.33	76.51	64.41	49.73	-943.8	-529.4	1.7170
11	7.34	5.04	6.32	12.88	37.32	41.74	0.4594	0.1733	0.0403	1.2857	76.97	76.16	64.85	51.98	-967.5	-569.3	1.7043

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 %
1.2204	1.7720	80.50	81.98	29.98	1.1015	1.3331	84.30	84.91

STATOR 2

RUN NO 20, 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	β-1 DEGREE	β-2 DEGREE	M-1	M-2	PO/PO INLET	TO/TO INLET	PO/PO STAGE	TO2/ TO1
1	8.466	0.665	853.0	633.2	564.6	630.4	639.4	-59.0	48.8	-5.3	0.7248	0.5258	1.8328	1.2285	1.3799	1.1220
2	7.273	0.419	838.0	640.2	560.9	634.3	622.6	-86.6	48.2	-7.8	0.7114	0.5324	1.8446	1.2266	1.3832	1.1207
3	6.174	0.121	817.8	652.6	567.7	647.3	588.6	-82.8	46.2	-7.3	0.6939	0.5443	1.8631	1.2224	1.3925	1.1168
4	3.559	-0.652	732.2	592.7	541.2	587.2	493.2	-80.9	42.4	-7.8	0.6185	0.4942	1.8047	1.2114	1.3553	1.1055
5	0.966	-1.073	639.4	514.8	456.3	507.4	403.2	-86.7	39.1	-9.7	0.5365	0.4276	1.7333	1.2059	1.3147	1.0964
6	-0.237	-1.101	602.6	480.1	467.1	472.2	380.8	-86.5	39.1	-10.4	0.5040	0.3979	1.7047	1.2059	1.2911	1.0943
7	-0.932	-1.085	592.0	469.8	459.8	462.0	372.9	-84.8	39.0	-10.4	0.4944	0.3889	1.6964	1.2070	1.2750	1.0905
8	-1.726	-1.085	591.1	472.2	452.2	464.6	380.7	-84.4	40.1	-10.3	0.4927	0.3904	1.6974	1.2102	1.2732	1.0940
9	-4.255	-1.272	598.3	487.3	470.2	481.4	370.0	-75.9	38.2	-8.9	0.4941	0.3993	1.7020	1.2343	1.2762	1.0994
10	-5.043	-1.295	592.6	484.6	414.8	479.1	354.7	-72.7	36.8	-8.6	0.4874	0.3954	1.6965	1.2434	1.2814	1.1004
11	-5.841	-1.223	582.1	467.5	476.9	464.5	333.8	-53.4	35.1	-6.6	0.4765	0.3797	1.6805	1.2522	1.2677	1.0975

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	7.86	9.42	13.98	54.15	52.09	62.87	0.4421	0.1236	0.0278	0.9635	76.92	82.60	84.00	78.82	79.74
2	8.26	10.28	10.99	55.55	52.28	63.55	0.4311	0.1064	0.0243	0.9694	78.62	84.28	85.56	80.29	81.15
3	7.05	9.55	11.06	53.48	53.48	65.33	0.3954	0.0629	0.0146	0.9826	85.46	87.40	88.43	84.76	85.44
4	4.34	8.20	9.98	50.24	51.98	59.37	0.3865	0.0618	0.0152	0.9860	84.43	86.84	87.87	85.81	86.39
5	1.86	7.17	8.10	48.77	48.05	50.98	0.4024	0.0780	0.0206	0.9861	80.15	82.59	83.86	84.16	84.73
6	2.26	8.04	7.35	49.52	45.14	47.22	0.4204	0.0796	0.0216	0.9873	80.24	79.89	81.31	80.14	80.82
7	2.27	8.26	7.28	49.39	44.37	46.10	0.4231	0.0763	0.0210	0.9883	81.05	78.70	80.20	79.24	79.92
8	3.51	5.71	7.33	50.33	43.54	46.23	0.4248	0.0720	0.0201	0.9890	81.65	77.60	79.18	75.85	76.63
9	1.92	6.62	8.72	47.17	44.57	46.93	0.4051	0.0828	0.0240	0.9873	77.31	69.98	72.10	72.41	73.32
10	-0.15	6.73	9.66	45.43	44.65	46.28	0.3962	0.0789	0.0231	0.9882	77.99	66.92	65.24	72.87	73.79
11	-3.16	3.94	12.88	41.63	44.42	44.40	0.3961	0.0966	0.0286	0.9861	74.72	63.31	65.84	71.71	72.62

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 %	EFF-P TOT-STG %
7492.	105.80	1.2204	1.7448	78.15	79.76	1.1015	0.9847	79.60	214.09

TABLE XXXIII (a) – OVERALL PERFORMANCE AND BLADE-ELEMENT DATA

70% OF DESIGN SPEED

STATOR 1 ($\beta^*_{des.} - \beta^*_{act.}$) = +5°

STATOR 2 ($\beta^*_{des.} - \beta^*_{act.}$) = −5°

U. S. CUSTOMARY UNITS

ROTOR 1

RUN NO 21, 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	16.425	18.089	321.0	698.0	321.0	397.4	0.0	573.8	0.0	55.3	0.2899	0.6204	439.1	508.3	0.4911	0.3580	543.9	402.8
2	13.714	15.567	328.3	672.5	328.3	394.4	0.0	544.7	0.0	54.0	0.2966	0.5962	473.5	532.9	0.5205	0.3499	576.2	394.6
3	11.324	13.254	335.0	647.6	335.0	385.2	0.0	520.6	0.0	53.4	0.3027	0.5727	507.2	557.5	0.5493	0.3422	607.9	386.9
4	5.179	7.262	349.0	601.7	349.0	386.5	0.0	461.1	0.0	50.0	0.3156	0.5296	603.9	631.3	0.6307	0.3717	697.5	422.3
5	-0.750	0.931	353.6	541.7	353.6	349.9	0.0	413.5	0.0	49.8	0.3199	0.4735	724.5	729.7	0.7292	0.4123	806.2	471.6
6	-2.976	-1.715	352.8	533.6	352.8	366.0	0.0	388.3	0.0	46.7	0.3191	0.4661	782.5	778.9	0.7764	0.4675	858.3	535.2
7	-4.374	-2.998	351.7	541.4	351.7	384.0	0.0	381.7	0.0	44.8	0.3181	0.4729	811.1	803.5	0.7996	0.4982	884.1	570.3
8	-6.036	-4.316	349.6	549.7	349.6	392.8	0.0	384.6	0.0	44.4	0.3162	0.4797	839.8	828.1	0.8226	0.5169	909.6	592.4
9	-10.640	-8.292	338.6	545.8	338.6	353.2	0.0	416.1	0.0	49.7	0.3060	0.4720	925.2	901.8	0.8905	0.5193	985.2	600.5
10	-11.634	-9.512	334.2	541.5	334.2	329.1	0.0	430.1	0.0	52.6	0.3019	0.4665	953.7	926.4	0.9131	0.5131	1010.6	595.5
11	-12.105	-10.627	330.2	538.0	330.2	310.2	0.0	439.6	0.0	54.7	0.2983	0.4620	982.2	951.0	0.9361	0.5137	1036.2	598.2

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	7.19	11.80	16.60	62.93	23.55	31.89	0.5112	-0.0668	-0.0145	1.3814	103.15	103.33	53.58	-9.35	-439.1	65.5	1.3814
2	7.17	11.46	17.90	56.69	24.04	31.94	0.5489	-0.0396	-0.0091	1.3748	102.08	102.20	54.99	-1.71	-473.5	11.8	1.3748
3	7.30	11.40	16.99	50.85	24.48	31.41	0.5817	-0.0024	-0.0006	1.3664	100.12	100.16	56.30	5.45	-507.2	-36.9	1.3664
4	8.33	11.80	14.05	36.10	25.41	32.04	0.5781	0.0238	0.0058	1.3591	98.13	98.07	59.83	23.73	-603.9	-170.2	1.3591
5	9.46	12.14	11.82	21.88	25.71	29.23	0.5727	0.1083	0.0241	1.3370	89.76	89.36	63.98	42.09	-724.5	-316.2	1.3370
6	9.82	12.10	9.53	18.88	25.65	30.76	0.5214	0.0907	0.0196	1.3413	90.56	90.19	65.76	46.87	-782.5	-390.6	1.3413
7	10.02	12.12	7.38	18.91	25.58	32.38	0.4967	0.0779	0.0170	1.3512	91.60	91.26	66.60	47.69	-811.1	-421.7	1.3512
8	10.25	12.20	5.62	18.98	25.44	33.12	0.4907	0.0876	0.0193	1.3600	90.38	89.98	67.46	48.48	-839.8	-443.5	1.3600
9	10.98	12.40	7.18	16.05	24.72	29.39	0.5414	0.2061	0.0430	1.3598	77.28	76.31	70.03	53.98	-925.2	-485.7	1.3598
10	11.12	12.41	9.44	14.36	24.43	27.23	0.5646	0.2500	0.0500	1.3580	72.71	71.54	70.80	56.44	-953.7	-496.4	1.3580
11	11.13	12.28	12.35	12.77	24.16	25.58	0.5781	0.2813	0.0539	1.3579	69.41	68.10	71.46	58.69	-982.2	-511.4	1.3579

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 %
1.1040	1.3565	87.53	88.03	24.14	1.1040	1.3565	87.53	88.03

STATOR 1

RUN NO 21, 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	18.286	14.956	698.8	444.1	415.7	442.5	561.7	-37.5	53.7	-4.8	0.6211	0.3860	1.3292	1.0937	1.3292	1.0937
2	16.070	13.249	675.6	447.8	412.5	446.6	535.0	-33.1	52.5	-4.2	0.5992	0.3894	1.3347	1.0932	1.3347	1.0932
3	13.931	11.580	652.6	450.9	403.6	449.6	512.9	-33.6	51.9	-4.2	0.5774	0.3922	1.3390	1.0932	1.3390	1.0932
4	8.364	6.932	610.1	437.1	403.6	436.0	457.4	-30.9	48.6	-4.0	0.5374	0.3798	1.3331	1.0934	1.3331	1.0934
5	2.236	1.412	552.0	414.7	366.4	412.6	412.8	-42.2	48.4	-5.8	0.4829	0.3592	1.3198	1.0969	1.3198	1.0969
6	-0.392	-0.985	544.2	412.5	380.9	410.5	388.7	-40.6	45.6	-5.6	0.4758	0.3572	1.3186	1.0971	1.3186	1.0971
7	-1.370	-1.957	552.0	419.8	398.0	418.6	382.5	-32.0	43.9	-4.4	0.4826	0.3635	1.3231	1.0982	1.3231	1.0982
8	-2.201	-2.813	560.3	428.6	406.3	427.7	385.7	-27.9	43.5	-3.7	0.4893	0.3708	1.3288	1.1014	1.3288	1.1014
9	-4.984	-5.482	557.1	421.6	367.9	419.9	418.3	-38.2	48.7	-5.2	0.4822	0.3617	1.3281	1.1189	1.3281	1.1189
10	-6.263	-6.572	553.0	411.8	344.3	409.6	432.6	-42.8	51.5	-6.0	0.4769	0.3518	1.3237	1.1265	1.3237	1.1265
11	-7.726	-7.818	549.8	403.1	325.6	399.6	443.0	-52.8	53.8	-7.5	0.4726	0.3430	1.3199	1.1342	1.3199	1.1342

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	6.15	8.26	12.53	58.50	33.34	38.21	0.5341	0.1652	0.0337	0.9620	75.52	90.48	90.83	90.48	90.83
2	6.67	9.08	12.02	56.72	33.36	38.70	0.5112	0.1365	0.0289	0.9704	78.50	92.32	92.60	92.32	92.60
3	7.37	10.15	11.15	56.14	32.82	39.05	0.4898	0.0997	0.0219	0.9797	83.04	93.41	93.65	93.41	93.65
4	6.57	10.29	10.23	52.62	33.33	37.86	0.4767	0.1078	0.0263	0.9807	79.99	91.68	91.98	91.68	91.98
5	7.89	12.93	8.47	54.23	30.47	35.62	0.4734	0.0868	0.0236	0.9872	81.64	85.22	85.76	85.22	85.76
6	5.55	11.17	8.71	51.22	31.88	35.43	0.4673	0.1156	0.0329	0.9834	74.84	84.78	85.33	84.78	85.33
7	4.07	9.95	10.02	48.24	33.41	36.13	0.4573	0.1361	0.0396	0.9800	69.96	84.85	85.41	84.85	85.41
8	3.92	10.06	10.70	47.25	34.11	36.87	0.4533	0.1503	0.0445	0.9773	66.52	83.56	84.17	83.56	84.17
9	9.07	15.95	10.34	53.90	30.48	35.73	0.4986	0.1605	0.0499	0.9763	65.37	71.12	72.22	71.12	72.22
10	11.60	18.65	10.79	57.53	28.36	34.62	0.5279	0.1746	0.0550	0.9748	63.69	66.00	67.29	66.00	67.29
11	13.15	20.30	10.76	61.33	26.72	33.55	0.5585	0.1967	0.0625	0.9721	60.40	61.54	62.98	61.54	62.98

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 %	EFF-P TOT-STG %
7471.	106.30	1.1040	1.3272	81.01	81.72	1.1040	0.9784	81.01	167.84

ROTOR 2

RUN NO 21, 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'-I	V'-1 FT/SEC	V'-2 FT/SEC
1	11.616	10.931	475.1	844.5	473.7	545.1	-36.5	645.0	-4.4	49.7	0.4138	0.7174	582.5	611.0	0.6789	0.4640	779.5	546.2
2	10.779	9.546	483.7	827.8	482.7	542.4	-32.3	625.3	-3.8	48.9	0.4217	0.7025	599.0	623.8	0.6927	0.4603	794.7	542.4
3	9.744	8.250	491.2	808.6	490.1	553.7	-32.8	589.2	-3.8	46.7	0.4284	0.6860	616.0	637.1	0.7092	0.4715	813.1	555.8
4	5.800	4.665	484.6	719.6	483.6	517.1	-30.5	500.5	-3.6	44.0	0.4224	0.6077	668.7	679.5	0.7411	0.4620	850.2	547.2
5	0.462	0.461	461.8	618.6	459.8	471.8	-42.1	400.2	-5.2	40.3	0.4012	0.5190	741.4	740.9	0.7893	0.4882	908.5	581.9
6	-1.962	-1.549	456.1	582.0	454.3	443.8	-40.7	376.5	-5.1	40.3	0.3961	0.4870	778.4	773.6	0.8134	0.4983	936.6	595.5
7	-2.913	-2.422	461.3	573.9	460.1	436.3	-32.2	372.7	-4.0	40.5	0.4005	0.4799	797.1	790.4	0.8234	0.5051	948.3	604.0
8	-3.728	-3.227	469.2	576.3	468.4	443.3	-28.0	368.2	-3.4	39.6	0.4071	0.4814	815.9	807.7	0.8373	0.5214	965.1	624.2
9	-6.346	-5.917	468.2	579.4	466.6	455.0	-38.4	358.7	-4.7	38.1	0.4029	0.4792	873.0	861.1	0.8811	0.5606	1023.9	677.9
10	-7.338	-7.014	461.0	571.2	459.0	450.3	-42.9	351.4	-5.3	37.8	0.3951	0.4703	892.2	879.5	0.8928	0.5714	1041.7	694.0
11	-8.373	-8.303	454.1	549.4	450.9	444.2	-53.3	323.3	-6.7	35.9	0.3876	0.4504	911.5	898.1	0.9091	0.5956	1065.0	726.5

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	3.03	7.35	16.85	56.06	40.47	50.50	0.5030	0.1737	0.0395	1.4281	88.45	87.88	52.51	-3.55	-619.1	34.0	1.8984
2	2.63	7.08	13.66	52.75	41.29	50.71	0.5146	0.1718	0.0401	1.4190	88.02	87.43	52.58	-0.16	-631.3	1.6	1.8943
3	2.59	7.17	12.45	48.03	41.95	52.29	0.5029	0.1464	0.0349	1.4092	89.07	88.55	52.95	4.92	-648.8	-47.8	1.8868
4	3.60	8.40	9.51	36.28	41.31	49.59	0.5180	0.1436	0.0349	1.3602	87.27	86.73	55.35	19.07	-699.2	-178.9	1.8128
5	6.12	10.70	7.61	23.75	39.09	45.55	0.4977	0.1432	0.0329	1.3114	84.49	83.92	59.59	35.84	-783.5	-340.7	1.7307
6	6.60	10.94	5.59	19.17	38.65	42.88	0.4963	0.1640	0.0363	1.2917	81.03	80.35	60.97	41.80	-819.1	-397.1	1.7034
7	6.07	10.15	4.45	17.24	39.17	42.20	0.4929	0.1691	0.0373	1.2844	79.89	79.20	60.95	43.71	-829.2	-417.7	1.6994
8	5.54	9.35	2.36	16.24	39.84	42.87	0.4811	0.1656	0.0369	1.2830	79.76	79.06	60.92	44.68	-843.8	-439.4	1.7048
9	5.98	8.66	0.60	15.10	39.12	43.41	0.4716	0.1789	0.0420	1.2893	77.44	76.63	62.79	47.69	-911.4	-502.4	1.7132
10	6.55	8.73	2.72	14.36	38.21	42.66	0.4690	0.1803	0.0426	1.2890	76.91	76.09	63.75	49.39	-935.1	-528.1	1.7069
11	7.34	9.03	6.52	12.67	37.27	41.80	0.4500	0.1708	0.0396	1.2796	76.90	76.10	64.85	52.18	-964.8	-574.8	1.6890

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 %
1.2155	1.7576	81.06	82.47	30.10	1.1009	1.3243	82.59	83.24

STATOR 2

RUN NO 21, 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	8.505	0.731	863.6	634.5	581.3	625.0	638.6	109.6	48.0	9.9	0.7353	0.5273	1.8170	1.2268	1.3672	1.1217
2	7.347	0.540	846.0	636.5	575.7	628.7	620.0	99.4	47.3	9.0	0.7196	0.5296	1.8233	1.2248	1.3663	1.1203
3	6.295	0.297	826.2	643.1	563.5	635.9	584.9	95.6	45.2	8.5	0.7024	0.5364	1.8350	1.2205	1.3704	1.1164
4	3.735	-0.454	736.5	598.8	542.1	593.5	498.5	79.4	42.7	7.6	0.6230	0.4999	1.7960	1.2094	1.3473	1.1060
5	0.631	-1.210	634.8	514.0	493.2	510.3	399.7	61.6	39.0	6.9	0.5333	0.4277	1.7183	1.2020	1.3020	1.0958
6	-0.714	-1.276	598.3	474.5	464.8	471.4	376.7	54.3	39.0	6.6	0.5014	0.3940	1.6852	1.2005	1.2781	1.0943
7	-1.438	-1.264	590.5	467.9	457.6	465.0	373.2	52.8	39.2	6.5	0.4944	0.3884	1.6793	1.2007	1.2697	1.0935
8	-2.172	-1.257	593.2	473.8	464.5	470.7	369.0	53.6	38.4	6.5	0.4962	0.3929	1.6823	1.2032	1.2662	1.0931
9	-4.267	-1.340	600.6	501.7	480.4	498.3	360.5	58.0	36.9	6.6	0.4975	0.4126	1.6954	1.2274	1.2759	1.0980
10	-5.048	-1.391	595.4	501.2	479.1	496.9	353.4	65.3	36.5	7.5	0.4911	0.4106	1.6914	1.2367	1.2774	1.0985
11	-5.883	-1.311	578.5	474.4	478.1	468.2	325.6	76.8	34.3	9.3	0.4753	0.3870	1.6678	1.2426	1.2635	1.0956

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	-5.50	-3.94	16.74	38.03	53.22	61.82	0.4032	0.1421	0.0316	0.9570	74.19	81.93	83.36	76.61	77.60
2	-5.09	-3.07	15.23	38.35	53.23	62.45	0.3900	0.1290	0.0293	0.9622	75.14	83.21	84.55	77.35	78.30
3	-6.42	-3.91	14.39	36.68	54.53	63.58	0.3621	0.0988	0.0229	0.9721	78.99	85.82	86.96	80.74	81.56
4	-7.90	-4.03	12.94	35.04	51.55	59.65	0.3316	0.0455	0.0112	0.9893	88.52	86.88	87.90	83.68	84.23
5	-10.70	-5.40	12.18	32.12	47.28	50.99	0.3350	0.0435	0.0115	0.9924	88.64	82.75	83.99	81.57	82.21
6	-10.41	-4.62	11.78	32.42	44.62	46.88	0.3574	0.0696	0.0191	0.9890	82.85	80.15	81.53	76.87	77.63
7	-10.06	-4.07	11.63	32.70	43.95	46.17	0.3604	0.0754	0.0210	0.9884	81.34	79.50	80.92	75.39	76.18
8	-10.61	-4.41	11.59	31.96	44.61	46.65	0.3532	0.0842	0.0238	0.9870	78.59	78.80	80.27	74.79	75.59
9	-11.89	-5.19	11.79	30.29	45.44	48.42	0.3136	0.0668	0.0195	0.9896	79.69	71.54	73.54	73.38	74.26
10	-12.99	-6.11	13.25	29.00	44.96	47.84	0.3010	0.0578	0.0170	0.9912	81.65	68.39	70.60	73.36	74.24
11	-16.39	-9.29	16.24	25.04	44.50	44.63	0.3090	0.0869	0.0256	0.9876	75.35	64.78	67.18	72.06	72.94

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 %	EFF-P TOT-STG %
7471.	106.30	1.2155	1.7319	78.77	80.32	1.1009	0.9854	78.09	216.56

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