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SINGLE-STAGE EVALUATION OF HIGHLY-LOADED HIGH-MACH-NUMBER COMPRESSOR STAGES
II. DATA AND PERFORMANCE MULTIPLE-CIRCULAR-ARC ROTOR

by

D. H. Sulam, M. J. Keenan, and J. T. Flynn

Pratt & Whitney Aircraft Division
United Aircraft Corporation

prepared for
National Aeronautics and Space Administration

NASA Lewis Research Center
Contract NAS3-10482
L. Reid, Program Manager
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FOREWORD

The work described herein was done under NASA Contract NAS-3-10482 by Pratt & Whitney Aircraft Division of United Aircraft Corporation, East Hartford, Connecticut. Mr. L. Reid, NASA - Lewis Research Center, Fluid System Components Division, was Project Manager.

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ABSTRACT

Data and Performance Report,
Single Stage Evaluation of Highly–Loaded–High–Mach–Number Compressor Stages, Multiple Circular Arc Rotor

Tests were conducted on a 0.5 hub/tip ratio single-stage compressor designed to produce a pressure ratio of 1.936 at an efficiency of 84.2 percent with a rotor-tip speed of 1600 feet per second and a flow rate of 187.1 pounds per second. Design pressure ratio was obtained at design speed with an efficiency of 84.5 percent and a flow of 181.3 pounds per second. For tests with radial inlet-flow distortion, the peak stage efficiency obtained at design speed was 78.4 at a pressure ratio of 1.774 and flow of 177.2 pounds per second. The peak stage efficiency with circumferentially-distorted inlet flow was 77.7 percent at a flow of 173.1 pounds per second and a pressure ratio of 1.747.

1. SUMMARY

A compressor stage with a rotor tip speed of 1600 ft/sec, supersonic relative rotor-inlet Mach numbers over nearly the entire span, and a diffusion factor of 0.5 at 10% span from the tip was tested with uniform inlet flow and with radially and circumferentially-distorted inlet flow. Design stator inlet Mach numbers were subsonic, with a maximum value of 0.89 occurring at the hub where the diffusion factor was 0.6. Both the rotor and stator blades had multiple-circular-arc airfoil sections with the chord held constant from root to tip. The stage was designed without inlet guide vanes and the stator exit flow was axial.

Over-all performance at design speed with uniform inlet flow for near-design and near-surge aerodynamic conditions are compared with design values in the following table.

Parameter	Design Value	Near-Design Data Point	Near-Stall Data Point
Corrected Weight Flow, lb/sec	187.1	180.4	173.7
Rotor Pressure Ratio	2.000	2.010	2.037
Rotor Efficiency, Percent	88.7	89.0	86.7
Stage Pressure Ratio	1.936	1.946	1.959
Stage Efficiency, Percent	84.2	84.5	81.4

Over-all stage performance characteristics at design speed for uniform inlet flow and for radially and circumferentially distorted inlet flow are shown in the following table.

Parameter	Uniform Inlet Flow	Radially-Distorted Inlet Flow	Circumferentially Distorted Inlet Flow
Flow range, lb/sec $\frac{W\sqrt{\theta}}{\delta}\max - \frac{W\sqrt{\theta}}{\delta}\min$	184.3 - 171.0	179.6 - 176.0	178.2 - 157.5
Maximum stage pressure ratio	1.959	1.814	1.780
Maximum stage efficiency, percent	84.5	78.4	77.7
$\frac{Pmax - Pmin}{Pmax}$	0	0.16 (outer 0.4 of span)	0.2 (90° arc)

Rotor incidence angles were more positive than design values across the entire span as a result of the inability to attain design flow. Rotor deviations, diffusion factors, and losses were close to design estimates. Stator blade incidence angle, loss, diffusion factor, and deviation were also in general agreement with design values.

Static pressure patterns relative to rotor blade tips show regions of supersonic expansion and compression and shock locations. The shock was usually detached from the blade, oblique to the direction of the mean flow, and tended to move upstream as the rotor pressure ratio was increased.

Measured levels of continuous stress due to centrifugal and untwist loads agreed with the design prediction. Vibratory stresses with uniform inlet flow did not exceed 5,000 psi except at stall, where the blade vibratory stresses were approximately 20,000 psi. Indications of blade resonance with two excitations per revolution limited test speeds to 105 percent of design. With radially and circumferentially distorted inlet flows, minimum flow was limited by a 15,000 psi vibratory stress boundary. Rotating stall patterns were present at the blade tip and midspan during the surge cycle with uniform and distorted inlet flow.

II. INTRODUCTION

Design of the single-stage compressor was based on the technology generated by two previous programs:

(1) High-tip-speed, highly-loaded rotors were tested under Contract NAS3-7617, and the results were reported in CR-54623 (Reference 1). Rotor efficiencies exceeding 0.88 were demonstrated, with a tip speed of 1400 feet per second and D factors greater than 0.5 over the entire span.

(2) Transonic highly-loaded stators were tested under Contract NAS3-7614, and the results were reported in References 2, 3, and 4. Moderate stator losses were measured with high subsonic Mach numbers and with D factors greater than 0.5.

Multiple-circular-arc airfoil sections were selected for the rotor and the stator in order to obtain low losses at high Mach numbers. Blade elements were designed for efficient alignment of supersonic flow to the suction surfaces in the entrance region. Blade design also included a stream-tube analysis to obtain the desired values of critical area ratio (a/a^*) in channels between blades.

In addition to the multiple-circular-arc rotor, a slotted rotor and a tandem rotor were designed in order to evaluate advanced concepts. The slotted rotor was designed to reduce over-all blade shock losses. It provides an oblique shock, caused by the slot discharge flow, which lowers the Mach number upstream of the normal shock and decreases normal shock losses. The combination of an oblique shock and a normal shock results in a greater efficiency than a strong normal shock. The tandem rotor was designed with a supersonic forward blade and a subsonic rear blade so that the shock impinges on the forward blade and is isolated from the subsonic suction surface by a stream of high-energy air. Design details of the three rotors and the stator are given in Reference 5.

The purpose of this program is to extend the scope of available design information. Experimental evaluations include over-all performance with uniform inlet flow and with radial and circumferential distortions, and blade-element performance with uniform and radially-distorted inlet flow.

This report presents the test results for the multiple-circular-arc rotor and stator.

III. APPARATUS AND PROCEDURES

A. Test Facility

The test program was carried out in a sea-level compressor test facility (Figure 1). The stand is equipped with a gas-turbine-drive engine which uses a 2.1:1 gearbox to provide optimum speed-range capability.

Air enters through a calibrated nozzle for flow measurements. A 72-foot straight section of 42-inch-diameter pipe runs from the nozzle to a 90-inch-diameter inlet plenum. Wire-mesh screen and an "egg-crate" structure, located midway through the plenum, provide a uniform pressure profile to the compressor.

The compressor airflow is exhausted into a toroidal collector and then into a 6-foot-diameter discharge stack, which contains a six-foot-diameter valve to provide back-pressure, or throttling, for the test compressor. Two smaller valves in the by-pass lines, one 24-inch and one 12-inch, provide vernier control of back-pressure.

Inlet distortion patterns are generated by screens of varied porosity which are attached to the 1 x 1-inch-mesh support screen. Twelve struts, thirty-three inches upstream of the rotor leading edge, are used to support the radial and circumferential screens for distortion tests. The method of attaching the distortion screens is shown in Figures 2 and 3. The distortion-screen support is removed for uniform-inlet testing as shown in Figure 4. Strain-gage and static-pressure instrumentation is routed through the nonrotating nose fairing. Ten struts, fourteen inches upstream of the rotor leading edge, support the forward bearing and strain-gage slip-ring assembly. Eight struts, eleven inches downstream of the stator trailing edge, support the rear bearing.

B. Test Compressor

Design of the stage flowpath was guided by the aerodynamic objectives outlined in detail in the design report (Reference 5). The rotor inlet flow per unit of annulus area was set at 42 lb/sec/ft^2. The test compressor (Figure 5) is a single-stage, axial-flow design with no inlet guide vanes, thirty rotor blades and forty-four stator blades, each of constant chord length.

The stator-blade leading edge is 1.2 inches behind the rotor trailing edge at the hub. Running tip-clearance was 0.050 inch at 100 percent of design speed. Rotor and stator designs are summarized as follows; complete descriptions are given in Reference 5.

Rotor

The rotor was designed to operate at a tip speed of 1600 ft/sec with a constant spanwise pressure ratio of 2.0 and an over-all adiabatic efficiency of 88.7 percent. The thirty multiple-circular-arc blades have a constant 4.4-inch chord, an aspect ratio of 1.663 and a hub-to-tip ratio at the rotor inlet of 0.5. Relative Mach numbers at the rotor inlet are 1.6 at the blade tip and are supersonic over nearly the entire span. Photographs of the rotor blade and the blade disk assembly are shown in Figures 6 and 7. A summary of the rotor blade metal angles for 9 streamlines passing through 5, 10, 15, 30, 50, 70, 85, 90 and 95 percent span of the rotor blade trailing-edge passage height from the hub is given in Table 1.

TABLE 1

Rotor Design Parameters
Stations 8 and 9

% Span	Dia - 1	Dia - 2	β^*_8	β^*_9	β^*_{8ss}	β^*sh	σ
5(hub)	17.47	19.77	48.97	1.87	55.40	45.74	2.276
10	18.47	20.41	49.59	9.63	56.02	46.76	2.173
15	19.47	21.05	50.44	16.51	56.59	47.76	2.080
30	22.31	22 96	53.77	29.73	57.87	50.53	1.855
50	25.79	25.52	56.40	42.30	59.30	54.68	1.638
70	28.95	28.08	59.08	50.53	61.07	59.17	1.476
85	31.29	29.99	61.63	54.11	62.96	63.01	1.379
90	31.88	30.63	62.53	55.10	63.65	64.18	1.355
95(tip)	32.50	31.27	63.21	55.84	64.14	64.96	1.332

NOTE: Symbol definitions appear in Appendix 2.

Stator

The 44 multiple-circular-arc stator blades have a constant chord of 3.0 inches and an aspect ratio of 1.721. Photographs of the stator blade and the stator assembly are shown in Figures 8 and 9. Stator inlet Mach numbers are subsonic with a maximum value of 0.89 occurring at the hub, where the diffusion factor is 0.6. Design incidence to the stator suction surface was set at zero degrees. Stator exit flow is axial. A summary of the stator blade metal angles for 9 streamlines passing through 5, 10, 15, 30, 50, 70, 85, 90 and 95 percent of the rotor-blade trailing-edge passage height from the hub is given in Table 2.

TABLE 2

Stator Design Parameters

Stations 10 and 11

% Span	Dia-1	Dia-2	β^* 10	β^* 11	β^* 10ss	β^* sh	Solidity
5 (hub)	20.41	21.49	43.23	-12.41	46.15	38.47	2.010
10	21.01	21.96	42.27	-11.44	45.21	36.62	1.959

TABLE 2 (CONT'D)

Stator Design Parameters

Stations 10 and 11

% Span	Dia-1	Dia-2	β* 10	β* 11	β* 10ss	β* sh	Solidity
15	21.59	22.43	41.42	-10.89	44.36	34.94	1.911
30	23.31	23.90	39.44	-11.22	42.44	31.18	1.781
50	25.60	25.89	37.60	-12.04	40.72	28.01	1.632
70	27.82	27.90	36.45	-13.48	39.68	26.38	1.508
85	29.41	29.38	36.12	-15.91	39.44	26.82	1.430
90	29.91	29.86	36.15	-17.40	39.48	27.36	1.407
95 (tip)	30.38	30.29	36.33	-19.69	39.69	28.40	1.387

C. Instrumentation and Calibration

Airflow was measured within 1 percent, using a flow nozzle designed to ISA specification (Reference 6). Compressor speed was measured with an electromagnetic pickup that counts the number of gear teeth passing in an interval of time and converts the count into revolutions per minute. Measurement accuracy is better than 0.2 percent of indicated speed between 4,000 rpm and 13,000 rpm.

All temperatures were measured using chromel-alumel Type K thermocouples and recorded in millivolts by the automatic data-acquisition system. Temperature elements were calibrated over their full operating-temperature range for Mach-number and total-pressure effects. The thermocouple leads were calibrated for each temperature element. Overall RMS temperature accuracy was estimated to be ±1.0°F.

Disk probes 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. The measurement accuracy of the air-angle probe was within 1.0 degree.

All pressures from probes, fixed rakes, and static taps were measured with transducers and recorded in millivolts by the automatic data-acquisition system. The accuracy of the pressure readings was ±0.2 percent of the full-scale value.

Ten quartz-crystal, high frequency-response pressure transducers were installed in the case over the rotor tip to measure instantaneous static-pressure fluctuations. Ten wall static-pressure taps were installed over the rotor-blade tip in axial locations corresponding to the pressure transducers to measure the average static-pressure level.

Three proximity detectors, circumferentially positioned an integral number of blade gaps from the pressure transducers, generated an electrical pulse for each blade passing. Signals from both the pressure transducers and the proximity detectors were recorded by a multichannel tape recorder on the same time reference.

Figure 10 shows the rotor-blade tip-shock pressure instrumentation in relation to the blades. Photographs of typical instrumentation are shown on Figure 11. The axial and circumferential positions of the instrumentation are shown in Figures 12 and 13.

Pressure measured by the fixed radial total-pressure rakes at the rotor leading edge (Station 7 in Figure 12) were in place only during the distortion testing. Instrumentation for measuring over-all and blade-element performance data is listed in Table 3.

TABLE 3

Performance and Blade Element Instrumentation

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

Instrument Plane	Location	Parameter	Type and Quantity
Station 0	plenum chamber	P	6 pressure taps on plenum wall (2 read on manometers)
		T	6 bare-wire thermocouples (2 read on self-balancing precision potentiometers)
Station 1.1	bellmouth instrumentation ring	$\Delta P = P - p$	6 pitot-static probes at mid-channel and evenly spaced about the instrument ring. ΔP water and acetylene tetrabromide manometers. (After initial check point the bellmouth pitot-static probes were removed.)

TABLE 3 (CONT'D)

Instrument Plane Location	Parameter	Type and Quantity
	p	4 O.D. wall static taps
Station 5.1 inlet duct 5.2 6.1 6.2 7.1	p	2 O.D. and 2 I.D. wall static taps, 180 degrees apart
Station 7 rotor inlet (within 1/2 chord)	P, p, β	2 disk traverse probes, 9 radial positions
	p	4 O.D. and 4 I.D. wall static taps
	P	2 fixed rakes, 180° apart, each with sensors at nine radial positions
Station 8.5 rotor shroud	p	10 rapid response pressure transducers mounted in axial line over rotor tip. Recorded on magnetic tape.
	p,	10 O.D. wall static taps in axial line over rotor tip
	Blade Passing	Three proximity detectors positioned apart from the pressure transducers and in a line at the rotor-blade tip-chord angle. Recorded on magnetic tape.
Station 10 stator leading edge	p	4 O.D. and 4 I.D. wall static taps equally spaced and located on extension of mid-channel lines
	p	4 O.D. and 4 I.D. wall static taps spaced across one vane gap

TABLE 3 (CONT'D)

Instrument Plane Location	Parameter	Type and Quantity
	P	2 sets of impact tubes at 9 radial locations
Station 12 stator exit	P	2 circumferential wake rakes (15-element) traversable to each of nine radial locations. Each wake rake spans at least one vane gap at O.D.
Station 12 stator exit	T	7 fixed radial rakes, each with temperature sensors at 9 radial positions. 6 probes spaced circumferentially to obtain readings evenly distributed across a vane gap. The 7th rake is a duplicate mid-gap rake, and spaced 180 degrees from the other mid-gap rake.
	P, p, β	2 disk traverse probes, 9 radial positions. Probes spaced 180 degrees apart. One traverse mechanism capable of tangential probing across a vane gap
	p	4 O.D. and 4 I.D. wall static taps
	p	4 O.D. and 4 I.D. wall static taps spaced across vane gap
Station 13.1 rig exit	P	1 fixed five-element radial rake

Note: The nine radial positions of each axial station are defined by the intersection of the axial station and the design streamlines which pass through 5, 10, 15, 30, 50, 70, 85, 90, and 95 percent of the passage height at the rotor trailing edge.

Table 4 shows the parameters that were continuously recorded during excursions into stall to detect and evaluate rotating stall. Three rapid-response pressure transducers, located at the rotor exit at 25, 50, and 85 percent of blade height from the hub and at unequal circumferential locations, were used to record pressure pulses continuously on a multi-channel tape recorder when operating near or within the stall region.

TABLE 4

Stall Transient Instrumentation

Instrument Plane Location	Parameter	Type and Quantity
Inlet orifice	p	1 static tap downstream of inlet orifice
Station 7 rotor inlet	p	1 O.D. wall static tap
Station 9 rotor exit	P frequency	3 rapid-response pressure transducers at unequal circumferential spacing. Sensors located at 25, 50 and 85% of blade height from hub
	p	1 O.D. wall static tap
Station 10 stator leading edge	P	3 impact tubes at 5, 50, and 95% of passage height from hub
Station 12 stator exit	p	1 O.D. wall static tap
Station 13.1 rig discharge	P	1 element of fixed radial rake
gearbox	N	impulse pick-up

Critical stationary and rotating parts were instrumented with strain gages to determine the levels of continuous stress due to centrifugal and blade untwist loads and vibratory stress over the operating range of the compressor.

D. Test Procedure

1. Shakedown Test

Before taking performance data, shakedown tests were conducted to establish the mechanical integrity of the compressor and to locate critical stress boundaries which might limit the operating range over which the tests could be conducted.

Accelerations were made to 50, 70, 90, 100, and 115 percent of design speed, with open discharge throttle and uniform inlet flow. Continuous and vibratory stresses of the rotor and stator were recorded. A rotor blade resonance with two excitations per revolution was detected at 12,600 RPM, and maximum speed for performance testing was set at 105 percent of design speed in order to avoid it. Continuous stress due to centrifugal and untwist loads was slightly lower than predicted and did not limit test speeds.

Stress and rotating-stall surveys were made with uniform, radially-distorted, and circumferentially-distorted inlet flow. Vibratory stresses were recorded simultaneously with transient readings of the parameters shown in Table 4 in order to correlate blade stress with stall. In all surveys, vibratory stress at stall increased with speed and closely approached the maximum allowable transient stress at design-speed. Stress boundaries for steady-state operation were defined with radially and circumferentially distorted flows. Rotor blade vibratory stress increased as the compressor was throttled, which prevented steady-state operation near stall. The range of operation was severely limited by high stresses with radial distortion, making it necessary to increase screen porosity. A satisfactory operating range was obtained by reducing the distortion parameter (P_{max}-P_{min}/P_{max}) from 0.20 to 0.16. Beyond the boundary for steady-state operation, only transient data were recorded.

Rotating stall was detected by measuring pressure fluctuations with rapid-response transducers at 25, 50, and 85 percent of passage height. Continuous recordings were made as the throttle was closed until the compressor stalled and as the throttle was opened to recover from stall. Several surge pulses were recorded before the throttle could be opened enough to get the compressor out of stall.

Five over-all and blade-element performance data points, over a range of flows between wide-open throttle and stall at design speed, were taken during the shakedown test. A disk probe was traversed tangentially across a stator-blade gap at the stator exit to measure total pressure, static pressure and flow angle at each of nine radial positions for each of the five performance points. Gapwise distributions of static pressure and air angle, determined by tangential traversing, were compared to mid-gap values measured by a radial traverse probe. Averaged circumferential values were close to mid-gap values, and remaining tests were made without tangential traversing. Simultaneous immersion of all traverse probes was possible without causing data inaccuracies due to probe blockage effects.

2. Uniform-Inlet-Flow Performance Test

Six performance points, ranging in flow from open-throttle to near-surge, were obtained at 50, 70, 90, 100, and 105 percent of design speed, and stall flows were measured at 50, 70, 90, and 100 percent of design speed. The periodic static pressure fluctuations over the rotor tip were recorded at three points at 70 percent speed, four points at 90 percent speed, five points at 100 percent speed, and three points at 105 percent speed, ranging in flow from choke to near-stall. These data were obtained to show the static-pressure-field relative to the rotor blade tip, indicating shock position and strength.

3. Distorted-Inlet-Flow Performance Test

The rotatable distortion-screen support was added to the flow path 33 inches upstream of the rotor leading edge. Open-throttle, part-throttle, and near-stall performance points at 70, 90, and 100 percent of design speed, with the distortion support but with no distortion screens attached, showed that the support screen did not affect uniform inlet performance. A radial screen covering one-fifth of the inlet area (Figure 2) was required to create a radial-distortion pattern covering two-fifths of the rotor inlet area. A 120-degree, full-span screen (Figure 3) was required to produce a 90-degree circumferential pattern with a distortion parameter of 0.20 at the rotor inlet, with the throttle wide-open at 100 percent of design speed.

Performance data with both radial and circumferential inlet-flow distortion were taken at 70, 90, and 100 percent of design speed, with the discharge throttle at three positions (wide-open, part-throttle, and near-surge), except where high stresses prevented taking near-stall data points. Each circumferential-distortion data point was taken with the screen in six different positions with respect to the compressor instrumentation.

E. Calculation Procedure

Data reduction was accomplished in three steps:

1. Raw data were converted from electrical values to engineering units and thermocouple-wire corrections were applied.

2. Aerodynamic corrections and averaging techniques were used to obtain radial distributions of circumferentially-mass-flow-averaged pressures, temperatures, and angles

3. Blade-element data were calculated for uniform and radial distortion tests, using a flow-field calculation procedure.

Aerodynamic corrections and averaging techniques were:

1. Total-pressure probes located in supersonic flow were corrected for shock losses. Total pressures from the two wake rakes were circumferentially mass-flow-averaged at each radial position, using a constant static pressure obtained by a linear interpolation between wall static pressures. Free-stream values of total pressure downstream of the stator (peak wake rake values) were selected at each radial position. A wake blockage factor was also calculated at each radial location, as defined in Appendix 1, and used in a flow-field calculation program to improve the accuracy

of the static pressure and velocity calculations at the stator exit. Free-stream and circumferentially mass-flow-averaged pressures and wake blockage factors were each arithmetically averaged from the two rakes at each radial location to be used in the flow-field calculation.

2. Temperature probes were corrected for Mach number recovery, including the pressure-level effect. Six radial rakes were approximately equally-spaced about the annulus at the stator exit, and located at different circumferential positions relative to a stator gap. A circumferential mass-flow average was calculated at each radial position and used in the flow-field calculation. Circumferential wake-rake total-pressure distributions were used for the circumferential mass-flow-averaging of the stator exit temperatures.

3. Over-all performance calculations were based on the inlet plenum pressure as a reference for uniform inlet flow, and on an arithmetical average of radially mass-averaged pressures from the two radial rakes at the rotor inlet for radially-distorted inlet flow. The reference pressure for circumferentially-distorted inlet flow was the arithmetical average of twelve radially-mass-averaged pressures obtained from the two radial rakes at the rotor inlet for each of the six screen positions. The relationship between plenum and rotor inlet total pressure was correlated as a function of corrected flow (Figure 14). Calculations of corrected flow, pressure ratio, and efficiency were based on pertinent reference stage inlet pressures. All averaging techniques were the same for both uniform and radially-distorted inlet flow. For circumferential distortion tests, a different technique for stator-exit pressure and temperature averaging was used. Radially mass-flow-averaged values of pressure from the two wake rakes at each screen position were arithmetically averaged. This pressure was used for over-all pressure ratio and efficiency calculations. Data from each of the six individual temperature rakes were radially mass-averaged for each screen position, and the 36 resulting values were arithmetically averaged. This temperature was used for overall efficiency calculations. Circumferential distributions of static and total pressure (Appendix 5) are ratioed to the inlet plenum.

4. Velocity vectors were calculated from disk probe traverse data for nine radial locations at the instrumentation planes upstream of the rotor and downstream of the stator. Measurements at each probe position were used to determine corrected total pressure and calculated static pressure, Mach number, and air angle. Calibrations of individual probes were used to correct the raw data. Each probe was first calibrated for Mach number under controlled wind-tunnel conditions, and test Mach number was then determined from the ratio of measured static to measured total pressure. Total pressure and yaw angle corrections were made by using calibrations versus Mach number. Static pressure was calculated by using the corrected total pressure and the calibrated Mach number. An arithmetical average of the two stator-exit-probe-angle readings for each radial position was used in the flow-field calculation.

Blade-element performance for uniform-inlet and radial-inlet-distortion test points was calculated by a flow-field analysis computer program. All parameters were corrected to standard-day conditions. The inputs were:

Compressor Inlet	1)	corrected weight flow
	2)	corrected rotor speed
Rotor Inlet Instrument Plane	1)	total pressure versus radius
	2)	blockage factor versus radius (to account for estimated wall boundary layers)
Stator Inlet	1)	total pressure versus radius
	2)	blockage factor versus radius (to account for estimated wall boundary layers)
Stator Exit Instrument Plane	1)	total temperature versus radius
	2)	total pressure versus radius
	3)	blockage factor versus radius (to account for stator wake blockage and wall boundary angle)
	4)	absolute air angle versus radius

All pressures and temperatures are expressed as ratios to mass-averaged values at the rotor inlet.

All static-pressure distributions and air angles behind the rotor were calculated by assuming axisymmetric flow and consideration of mass-flow continuity, radial equilibrium, and energy equations. Curvature, enthalpy, and entropy gradient terms were used in the equilibrium calculations. Blade-element performance parameters at the blade edges were calculated by translating the measured data from the instrument plane along streamlines which passed through the rotor trailing edge at 5, 10, 15, 30, 50, 70, 85, 90, and 95 percent of the passage height. Blade-element parameters were calculated at airfoil sections lying on conical surfaces defined by the intersections of these streamlines and the blade edges. Pertinent performance parameters are defined in Appendix 3.

Static pressure contours over the rotor blade tips were obtained by using continuously-recorded pressure fluctuations, which were measured by high-frequency-response transducers. Ten transducers were distributed axially over the blade tip (Figure 10), and ten wall static pressure taps were located at the same axial positions to measure average static pressure. Records of fluctuating pressures versus time indicated that the transducers were not in agreement in terms of known blade location, and the signals were oriented by positioning the pressure drop caused by the passing of the suction surface in relation to the actual position of the blade. A computer program converted electrical signals from the transducers to pressure fluctuations for one blade-passing time period, with each transducer referenced to the same point in time. The program then added average pressure to the pressure fluctuations at each axial position. The full range of pressure variation for a given point was broken into ten equal increments and a code number assigned for each increment of pressure range (see page 100 for the static pressure code), e.g., a code of 5 means that the pressure in the region lies in the range of 5 to 6 psia. Regions of constant pressure were outlined by displaying the code numbers relative to the blade tips across two blade gaps.

IV. RESULTS AND DISCUSSION

The results of the multiple-circular-arc rotor test were discussed under the headings of shakedown tests, uniform-inlet-flow performance, distorted-inlet-flow performance, and rotor-blade-tip static pressure contours.

Shakedown test results include stress and rotating stall data for uniform and distorted inlet flows and an evaluation of traversing methods. Over-all performance of the rotor and stage are presented for uniform and distorted inlet flows in terms of pressure ratio and efficiency versus corrected weight flow ($W\sqrt{\theta}/\delta$) with corrected speed ($N/\sqrt{\theta}$) as a parameter. Rotor and stator blade-element performance curves are presented for uniform-inlet-flow and for radially-distorted-inlet-flow tests. Loss coefficient, diffusion factor, and deviation are presented as functions of incidence at radial locations on streamlines passing through 5, 10, 15, 30, 50, 70, 85, 90, and 95 percent of the rotor-blade exit passage height from the hub. For circumferentially-distorted-inlet-flow tests, circumferential distributions of pressure, velocity, and air angle are included to describe the extent of distortion on the rotor inlet and stator exit.

Rapid-response static-pressure data over the rotor blade tips are presented as contours outlining regions of constant static pressure and are shown with respect to the rotor-tip blade gap. The blade-tip shock was located by the instantaneous pressure rise in the blade passage.

A. Shakedown Tests

Continuous stresses due to centrifugal and untwist loads were measured near blade root leading and trailing edges and were slightly lower than design predictions. Using the design prediction of stress distribution, the maximum blade stress was 60,000 psi on the pressure surface at 10 percent span from the hub. Predicted stress at this location was 61,000 psi.

Vibratory stress with uniform inlet flow was not high except at stall, but a resonance with two excitations per revolution appeared at 12,600 RPM, which is 109 percent of design speed when corrected for 100°F ambient temperatures. This resonance limited performance testing to 105 percent of design speed. During stall at design speed, the blade tip vibratory stresses were approximately 20,000 psi. The mode of this tip vibration was shown in laboratory tests with stress-coated blades (Figure 15). Since stall stress levels increased rapidly with speed, a stall point was not run at 105 percent of design speed.

The maximum allowable vibratory stress of 15,000 psi for steady-state operation limited the range of operation with radially and circumferentially distorted inlet flows. Stress boundaries for radially-distorted inlet flow are discussed in Section IVC1, Radially-Distorted Inlet Flow, Overall Performance. Stress boundaries for circumferentially-distorted inlet flow will be found in Section IVD1, Circumferentially-Distorted Inlet Flow, Over-all Performance. With both types of distortion, the maximum stress during stall was 23,000 psi at design speed and was increasing rapidly with increasing speed.

Stall surveys with rapid-response instrumentation showed that stalls were abrupt, originating near the tip and progressing to mid-span and the root. An oscillograph trace at 90 percent speed with uniform inlet flow (Figure 16) shows the general pattern for all stalls. All stalls appeared as surge cycles with a frequency of approximately 3 cps, each cycle consisting of a surge pulse lasting approximately 0.17 seconds and a stall recovery lasting approximately 0.14 seconds. At the start of each surge pulse, pressure fluctuations with a period of about one rotor revolution occurred at the tip and mid-span, indicating the presence of rotating stall cells (Figure 17). Pressure dropped sharply after this initial phase and then rose toward the pre-stall level. The stall-recovery portion of the cycle began with a strong pressure rise, followed by a gradual pressure reduction. Similar stall patterns were observed with radially and circumferentially distorted inlet flows.

Tangential traverses of stator exit total pressure, static pressure, and air angle were taken at five points with uniform-inlet flow design speed. Circumferential distributions across a stator blade gap for open-throttle, part-throttle, and near-stall settings at 10, 50, and 90 percent span from the hub are presented in Figures 18, 19, and 20. Variations of air angle and static pressure across the stator gap are small except when the discharge throttle is wide open. Total pressure distributions from the tangentailly-traversed disk probe and from the two radially-traversed wake rakes are compared in Figure 21 at the near-stall throttle setting.

Stator exit total pressure, static pressure, and air angle versus percent span for the near-stall point at design speed are shown in Figure 22. Mass-averaged total pressures across a stator gap, calculated from the tangentially-traversed disk probe and from the wake-rake measurements, were in good agreement. Static-pressure and air-angle measurements from a radially-traversed disk probe in the center of the stator-blade gap were compared to the mass-averaged static pressure and average air angle, calculated from the tangentially-traversed probe. Since these results also showed good agreement, it was concluded that tangential traverse would have almost no effect on over-all and blade-element performance parameters.

B. Uniform-Inlet-Flow

1. Overall Performance

Over-all performance of the rotor only and the stage is presented in Figures 23 and 24. Tabulated results are presented in Appendix 3. The stall line was established by extrapolating the characteristic speed lines to measured stall airflows, shown as slashed symbols. Stalled operation above 100 percent of design speed was avoided because of high rotor-blade tip stresses. A maximum stage efficiency of 84.5 percent (Figure 24) at a pressure ratio of 1.946 and a corrected weight flow of 180.4 lb/sec was achieved at design speed, compared with a design stage efficiency of 84.2 at a pressure ratio of 1.936 and a corrected weight flow of 187.1 lb/sec. The rotor efficiency for the same data point (Figure 23) was 89.0 percent for a pressure ratio of 2.01, compared with a design rotor efficiency of 88.7 percent and pressure ratio of 2.00. The inability to achieve design flow was probably caused by local choking at the rotor blade root, as suggested by the high losses in this region with the discharge throttle wide open.

Maximum rotor and stage efficiencies, as shown by Figures 23 and 24 are essentially constant over the range of compressor operation between 50 and 100 percent of design speed but decrease 3 percent at 105 percent of design speed. Although a stall point was not obtained at 105 percent speed because of stress limitations, the peak efficiency performance point was identified. The abrupt decrease in peak efficiency above design speed was the result of increased rotor-blade losses from 50 percent span to the blade tip. Stator losses at 105 percent of design speed are no higher than at design speed. The fact that rotor efficiency at part speed did not rise significantly above the level obtained at design speed may be attributed to a rotor design characteristic: Channel areas between blades were designed to decelerate high Mach-number flow; and the converging channels between blades, optimized for design speed, were too small at part speed, forcing the rotor to operate at high incidence angles.

2. Blade - Element Data

Blade-element performance for a data point at design speed and near design pressure ratio agreed closely with design values. Figure 25 shows the rotor and stage adiabatic efficiency versus percent span from the hub, compared to the design. Total-pressure-loss coefficient, diffusion factor, incidence, and deviation are presented versus percent span from the hub for the rotor and stator in Figures 26 and 27. Blade-element performance parameters were calculated at stations corresponding to the actual leading and trailing edge of the blades (Stations 8 and 9 of Figure 12). Rotor and stator blade-element plots for the entire uniform-inlet performance test are presented in Figures 28 and 29, with data tabulated in Appendix 3.

Rotor incidence at design speed (Figure 26) was more positive than designed over the entire span because of the inability to attain design flow. Incidence at part speed was generally higher than at design speed because critical area ratios in channels between blades were sized for design relative Mach numbers, and they result in a lack of flow capacity at part speed. Maximum rotor diffusion factors were equal to, or exceeded, design values over nearly the entire span except at the blade hub, where they were lower than design. Rotor diffusion factor increased with increasing speed but levelled off at 100 and 105 percent of design speed. A maximum diffusion factor of almost 0.6 was achieved at 30 percent span from the hub, as compared to the design value of 0.55 at this span. Rotor deviations were greater than design, particularly at the blade tip, where a maximum difference of 5 degrees occurred. Minimum rotor losses (Figure 28) were equal to, or less than, design predictions, except at 105 percent of design speed. Stator deviations were in general agreement with design except at the end walls, and the diffusion factor exceeded design values except at 5 percent span. Stator losses and incidence agreed reasonably well with design values.

Loss coefficients at the rotor hub (Figure 26) were unrealistically low, and in some cases were slightly negative, while stator loss coefficients at corresponding spanwise locations (Figure 27) were greater than expected. The distribution of losses between the rotor and stator depends on rotor trailing-edge total pressure, which is used in the calculation of both loss coefficients (Appendix 1). In the data-reduction procedure used for these tests, the stator inlet total pressure is equal to the peak total pressure as measured by the stator trailing-edge wake rake at equivalent percentages of span. The gapwise distributions of total pressure at the stator exit for various percents of span (Figure 21) show that, at 10 percent span, the peak pressure occurs near the stator blade suction surface. The peak wake rake total pressure at this percent of span may not be an accurate approximation of the average total pressure at the stator inlet. Because of the tendency of the low-pressure rotor wake flow to migrate toward the stator pressure surface (Reference 7), the peak value of total pressure downstream of the stator may be above the level of the average stator inlet pressure.

Peak wake-rake readings were used because they generally produce more reasonable blade-element data than either the stator leading-edge traverse probes (which strongly affect rotor operation due to their blockage) or stator leading-edge impact tubes, whose recovery varies with stator incidence and which are difficult to maintain in good working order. The stator trailing-edge wake-rake impact tubes operate with a much smaller air-angle variation than those at the stator leading edge.

An alternate method for evaluating rotor exit pressure was also investigated. Plots of pressure and temperature across the stator gap reveal that areas of high total pressure are also areas of high total temperature, so that the local efficiency does not exceed 1.0. The gapwise distribution of total pressure ratio, total temperature ratio, and local adiabatic efficiency at the stator exit at 15 percent span for the maximum efficiency point at design speed (Figure 30), shows that the free-stream region of the efficiency plot appears to give a direct measure of rotor efficiency at a spanwise location. Using this efficiency with the corresponding spanwise-mass-averaged temperature rise to calculate rotor exit total pressure profiles provides a more reasonable distribution of losses between the rotor and the stator. Figures 26 and 27 show spanwise distributions of rotor and stator blade-element performance for the two methods of determining rotor exit total pressure. The free-stream-efficiency method eliminates the problem of unrealistic efficiency and loss near the hub without affecting the other spanwise locations. Rotor deviations and stator incidences changed significantly when calculated with the free-stream-efficiency method.

Blade-element data for design-speed performance points are presented in Figure 28 and 29 for both methods of data reduction. Blade-element performance of the rotor and stator for the alternate method is tabulated in Tables 10.7 to 10.12 in Appendix 3.

3. Distortion Support Screen Effects

Open-throttle, part-throttle, and near-stall performance points were taken at 70, 90, and 100 percent of design speed with the distortion-screen support but without distortion screens. Since performance was not affected by the support screen (Figures 31 and 32), the uniform-inlet-flow performance provides a valid basis for determining effects of inlet-flow distortion.

C. Radially-Distorted Inlet Flow

A radial-distortion pattern which covered two-fifths of the rotor inlet area provided a distortion parameter of 0.16 with the discharge throttle wide open at 100 percent of design speed. Figure 33 shows the total pressure and meridional velocity at the rotor inlet versus percent span with radially-distorted inlet flow for wide-open and near-stall throttle conditions at 100 percent of design speed.

1. Over-all Performance

Over-all rotor and stage performance with radially-distorted inlet flow is presented in Figures 31 and 32. A 15,000 psi vibratory stress boundary prevented steady-state operation at a near-stall throttle setting at 70 and 90 percent of design speed. The stall line with radially-distorted inlet flow was lower than with uniform-inlet-flow. Maximum stage efficiency at design speed of 78.4 percent occurred at a pressure ratio of 1.774 and a corrected weight flow of 177.2 lb/sec, which was 6 percent lower than the maximum stage efficiency with uniform inlet flow. Maximum corrected weight flow at design speed was 4.5 lb/sec. lower than with uniform inlet flow.

2. Blade-Element Data

Rotor and stator blade-element performance for radially-distorted inlet tests is shown in Figures 34 and 35. Blade-element performance with radially-distorted inlet flow is compared with uniform inlet flow at 10, 50 and 90 percent span from the hub for the rotor and stator. The rotor-blade tip, with radially-distorted inlet flow, operated at increased positive incidence due to low axial velocity in the distorted region. The levels of loss, diffusion factor, and deviation at the rotor blade tip for design speed were essentially unaffected by the distortion. Rotor mid-span and root incidences were negative and losses increased. Stator-blade-tip incidences were slightly more positive than with uniform inlet flow and became negative at the root. Tabulations of the blade-element and over-all performance data for radially-distorted inlet flow are presented in Appendix 4.

D. <u>Circumferentially-Distorted-Inlet-Flow</u>

A circumferential distortion parameter of 0.20 covering a 90-degree arc was achieved at the rotor inlet with the throttle wide open at design speed using a 120-degree full span screen.

1. Over-all Performance

Over-all performance with circumferential inlet distortion is compared with uniform-inlet-flow performance in Figure 36. The maximum stage efficiency at design speed obtained with circumferentially-distorted inlet flow was 77.7 percent at a corrected weight flow of 173.1 lb/sec and a pressure ratio of 1.747. Flow range with circumferential distortion was higher than with radial distortion. This greater flow range gave a higher stall line even though stall pressure ratio was lower than with radial distortion. Stall flow at 100 percent of design speed occurred 15 lb/sec lower than with uniform inlet flow, but with an accompanying decrease in pressure ratio. Stall at 70 and 90 percent speed occurred at approximately the same flow as with uniform inlet flow, with a smaller decrease in pressure ratio than at design speed. High vibratory rotor-blade-tip stresses limited the range of steady-state operation at 90 and 100 percent of design speed. Because of the limited operating range, only two performance points were taken at 90 percent speed. Tabulations of circumferential distributions and over-all stage performance are presented in Appendix 5.

2. Circumferential Distributions of Velocity Vector Parameters

Rotor inlet circumferential distributions of total pressure, absolute and relative flow angle, absolute velocity, meridional velocity, and absolute Mach number are shown in Figures 37, 38, and 39 at 10, 50 and 90 percent span from the hub. Measurements from radially-traversed disk probes at the rotor inlet at twelve locations relative to the distortion screen were used to construct these plots. Stator discharge circumferential patterns, measured by disk probes at stator mid-gap, are shown in Figures 40, 41, and 42. Circumferential distributions of static pressure at the rotor inlet on both the inner case and outer case are presented in Figures 43 and 44.

E. Rotor Blade Tip Static Pressure Contours

Static pressures over rotor blade tips were measured by ten high-frequency-response pressure transducers. Data were obtained over a range of compressor operating conditions at 70, 90, 100, and 105 percent of design speed with uniform inlet flow. Figure 45 shows four typical oscillograph traces of static pressure versus time. At the rotor leading edge, the static pressure rise caused by the shock occurs near the pressure surface and moves toward the suction surface at measurement locations downstream of the leading edge.

Shock position with respect to the blade tip is shown in Figures 46 through 60 as a series of points, each representing the location where the instantaneous static pressure rise was observed on the oscillograph traces. Contours outlining static pressure regions over the rotor blade tip are shown in Figures 49 through 54 and 58 through 60. A rotor performance characteristic and the axial distribution of wall static pressure over the blade tip are also included in the figures. Figures 49 through 52 show the rotor tip static pressure contours over a range of flows for 90 percent of design speed. Both expansion and compression fields are indicated by the contours ahead of the passage shock. The expansion (Figure 49) along the suction surface during flow alignment is followed by a compression field ahead of the passage shock. This precompression results from the blade shape at the entrance region, which was designed for precompression to reduce the passage shock loss. The static pressure rise in this shock is about equal to the rise in the precompression region. With open throttle, shocks are nearly attached and are oblique. As back pressure is increased, the shocks become stronger and farther detached. Normal shocks were never seen, even at near-stall operating points.

These data are considered qualitative due to the difficulties in obtaining highly accurate quantitative measurements of pressure fluctuations. In view of the inherent inaccuracies, no attempt was made to construct fields of relative Mach numbers or to calculate shock strengths.

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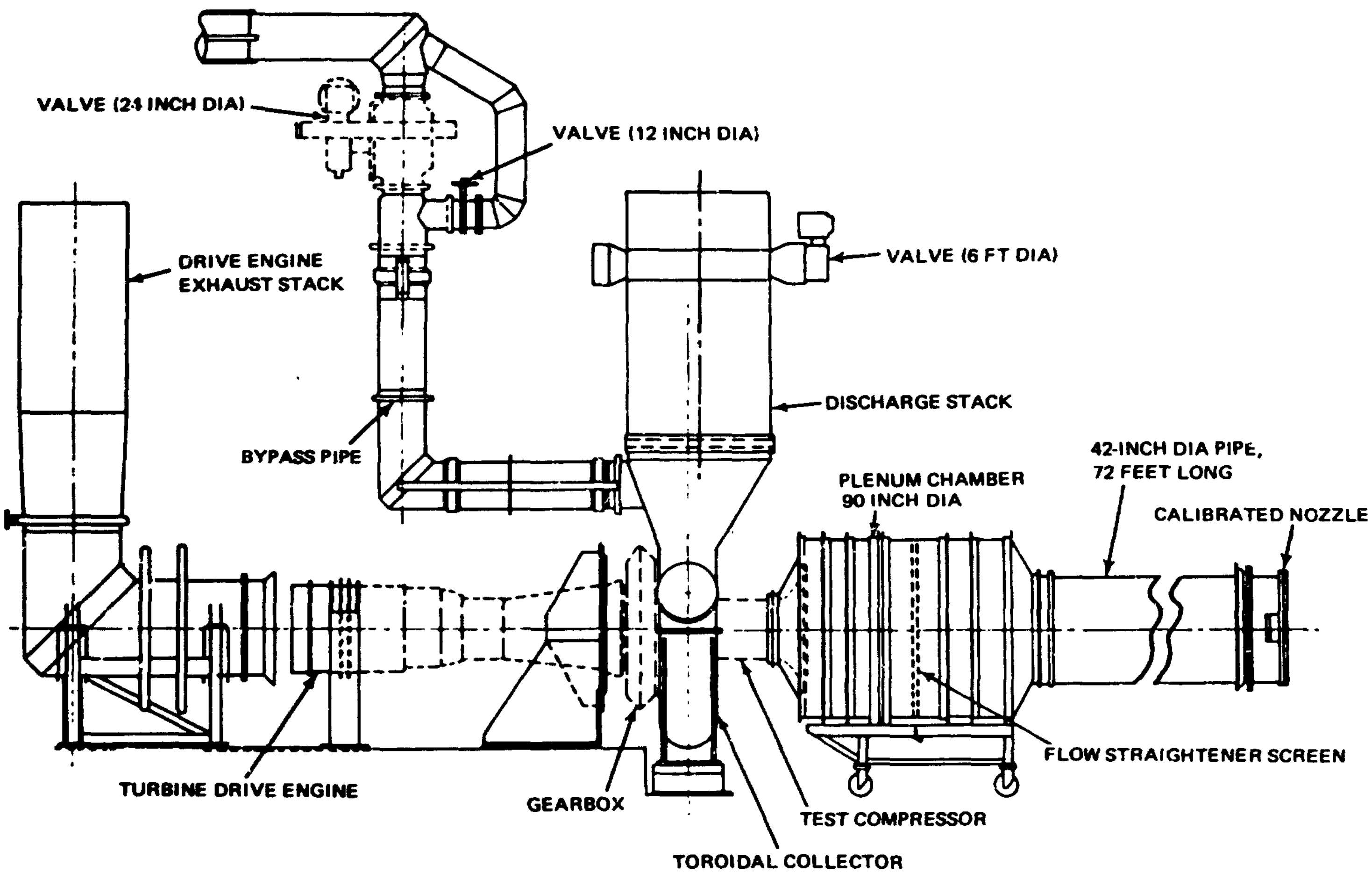


Figure 1 Schematic of Compressor Test Facility

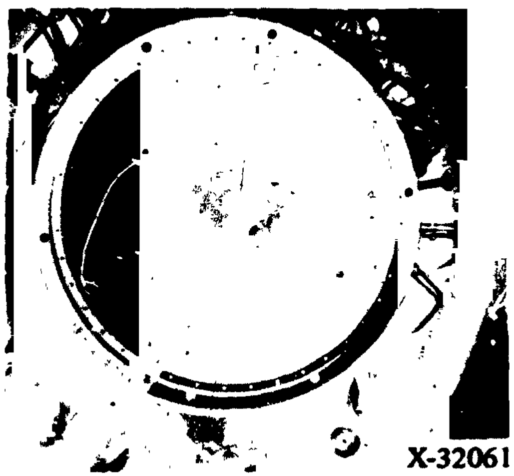


Figure 2 Radial Distortion Screen

Figure 3 Circumferential Distortion Screen

Figure 4 Compressor Inlet Configuration for Undistorted Testing

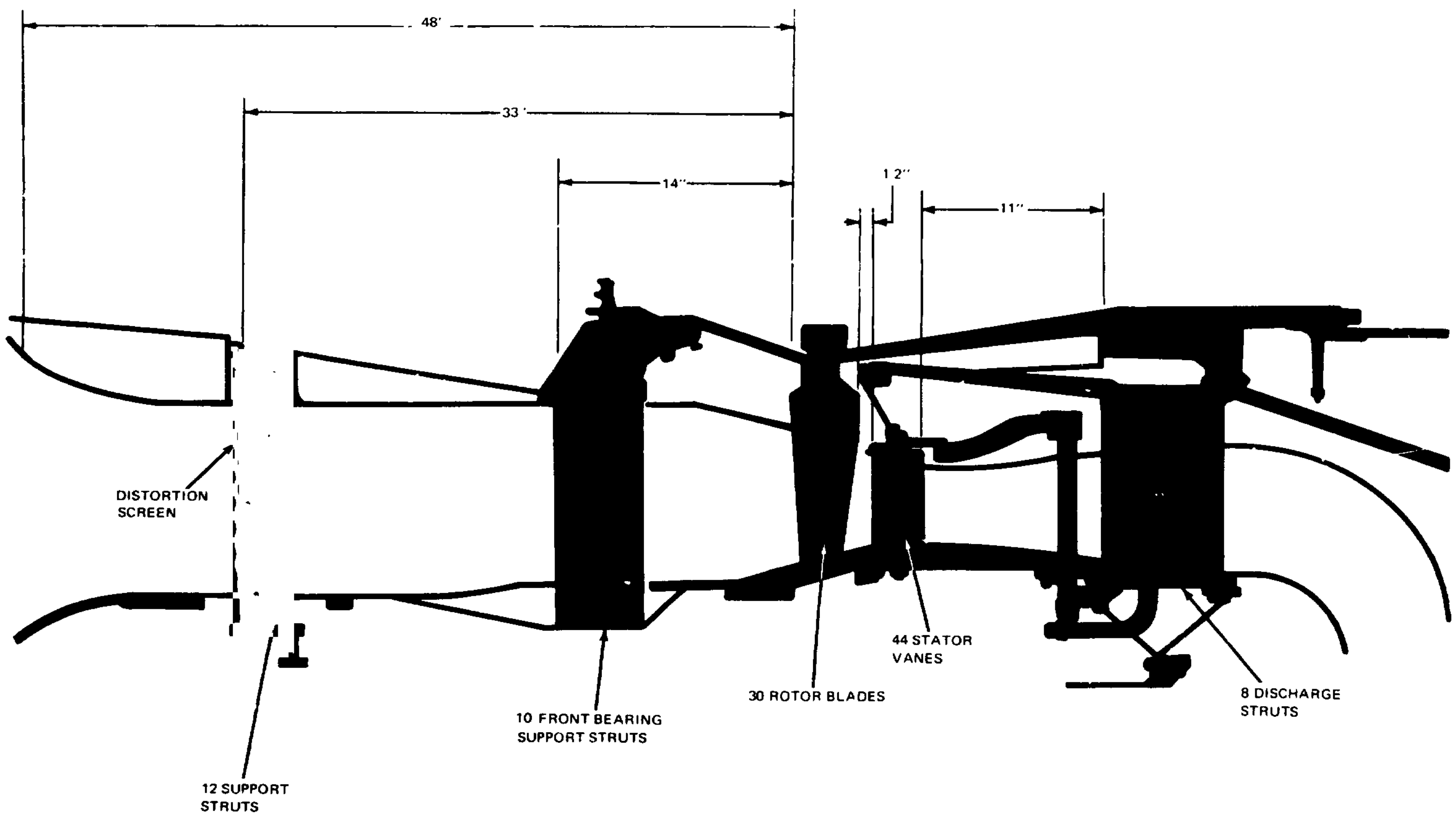
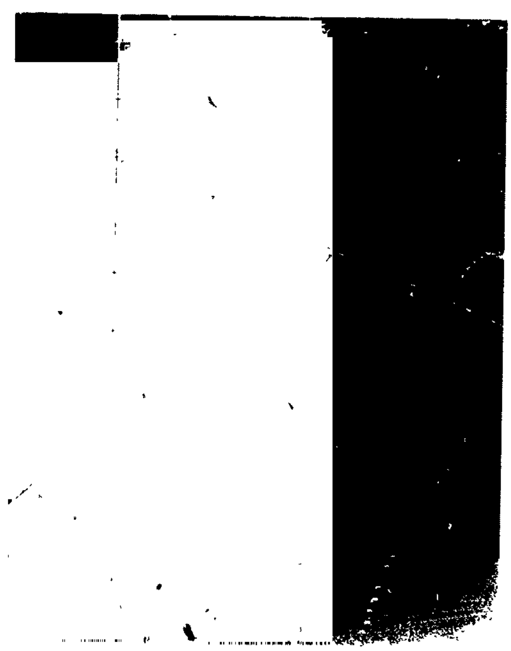


Figure 5 Cross-Section of Test Compressor

Convex Surface

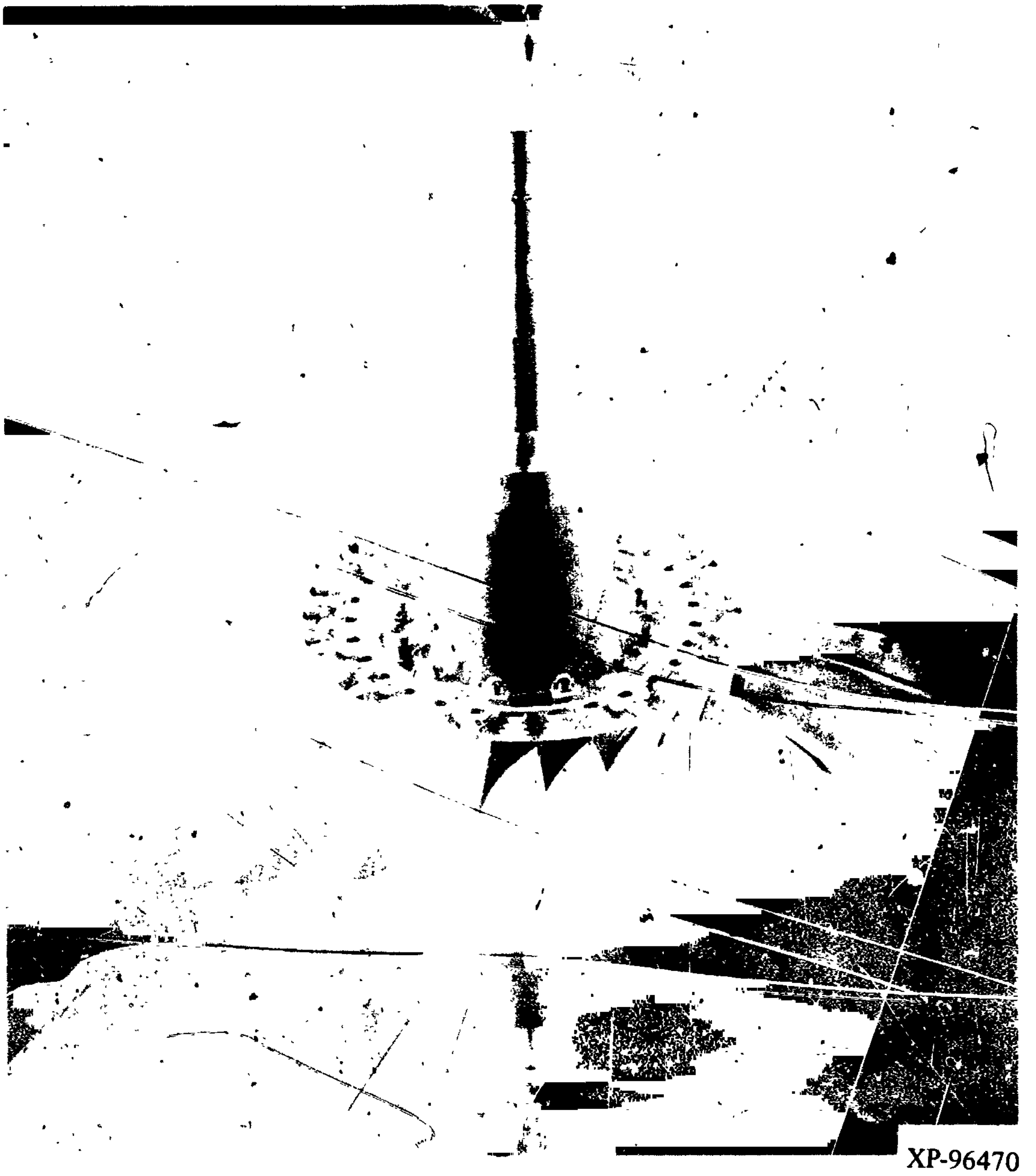
Concave Surface

Leading Edge



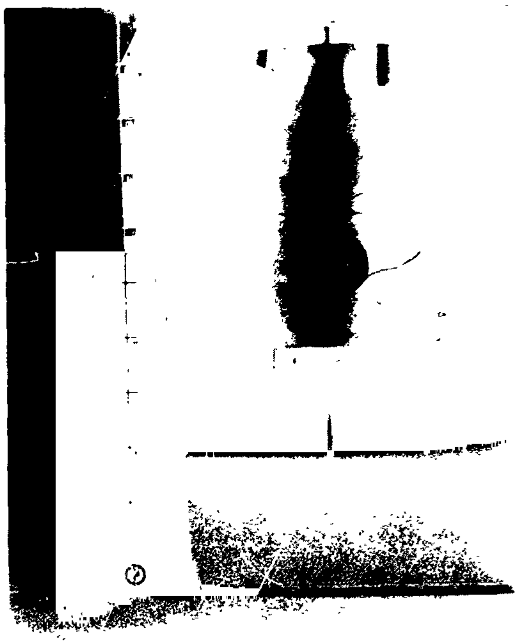
Trailing Edge

Figure 6 Multiple-Circular-Arc Rotor Blade

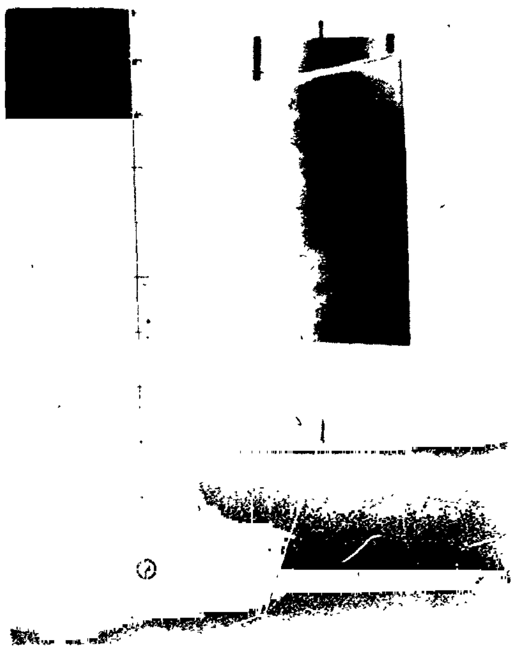


XP-96470

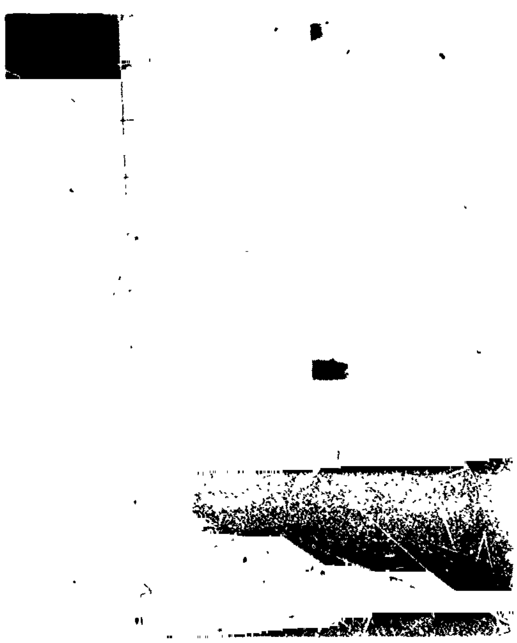
Figure 7 Assembled MCA Rotor



Convex Surface



Concave Surface



Leading Edge

Trailing Edge

Figure 8 Multiple Circular-Arc Stator Blade

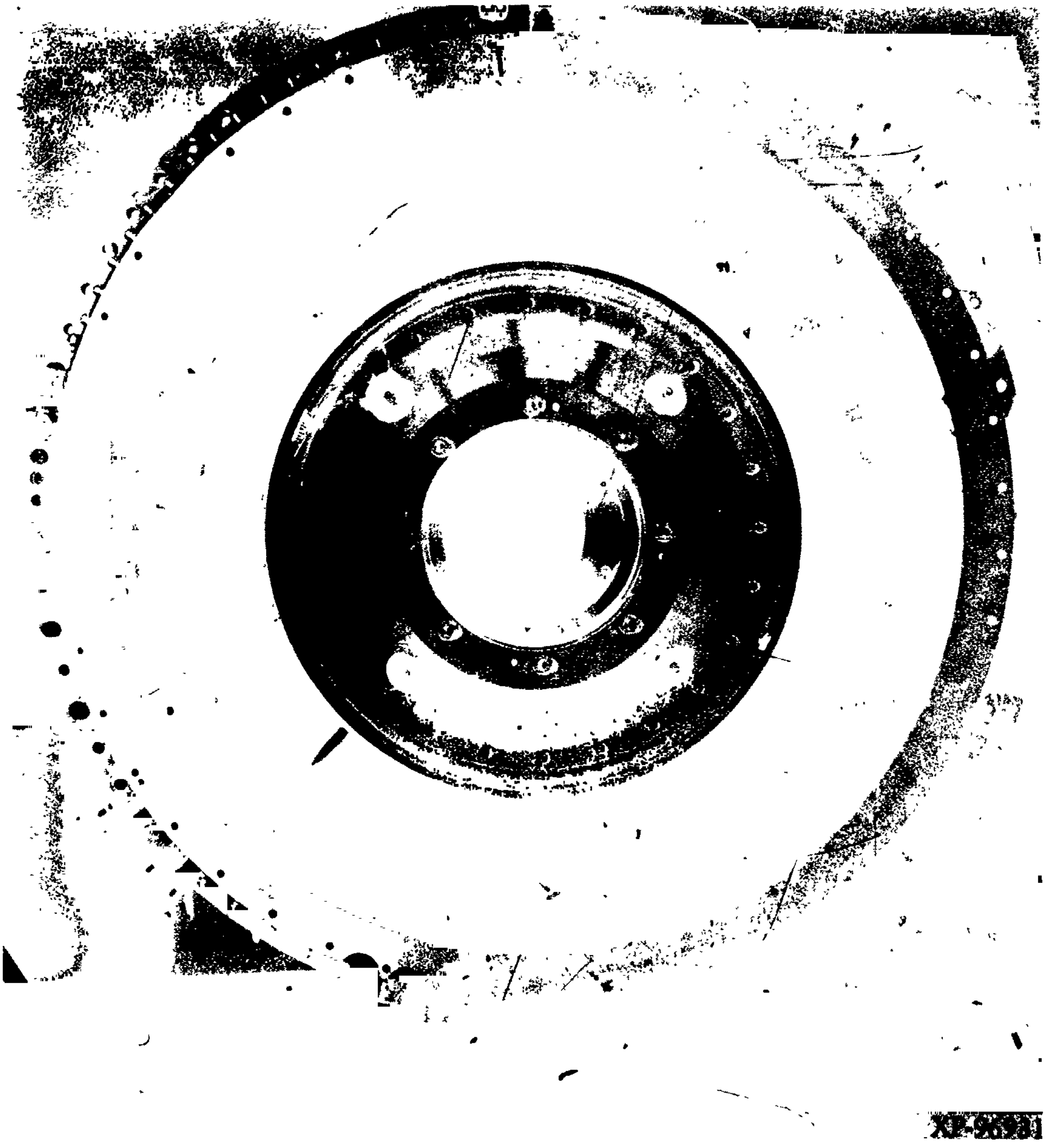


Figure 9 Assembled MCA Stator

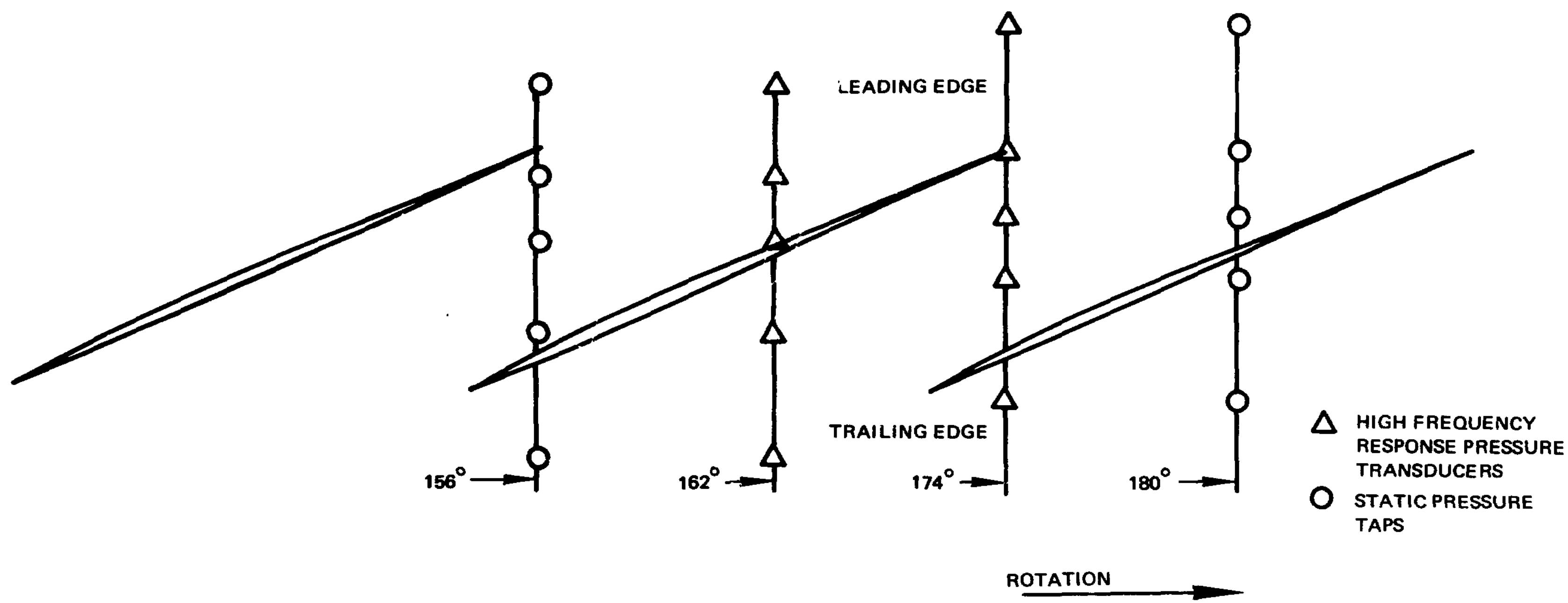
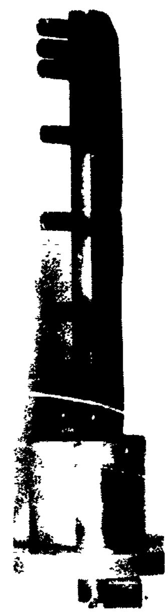
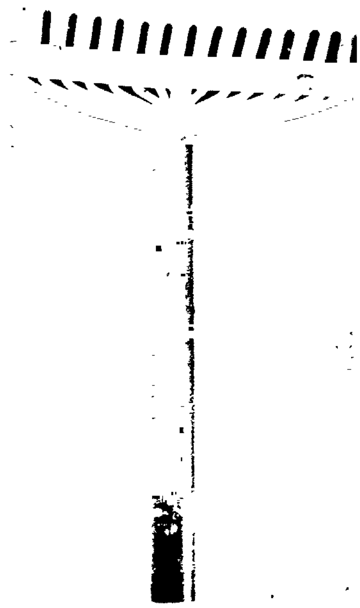


Figure 10   Rotor Blade Tip Shroud Instrumentation



XP-99889

Radial Temperature Rake

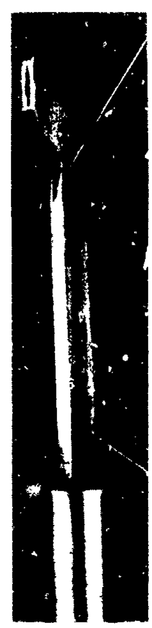


XPN-1815

Traversable Total Pressure Wake Rake

XP-99886

Total Pressure Rake



XP-99893

Traversable Disk Probe

Figure 11 Typical Instrumentation

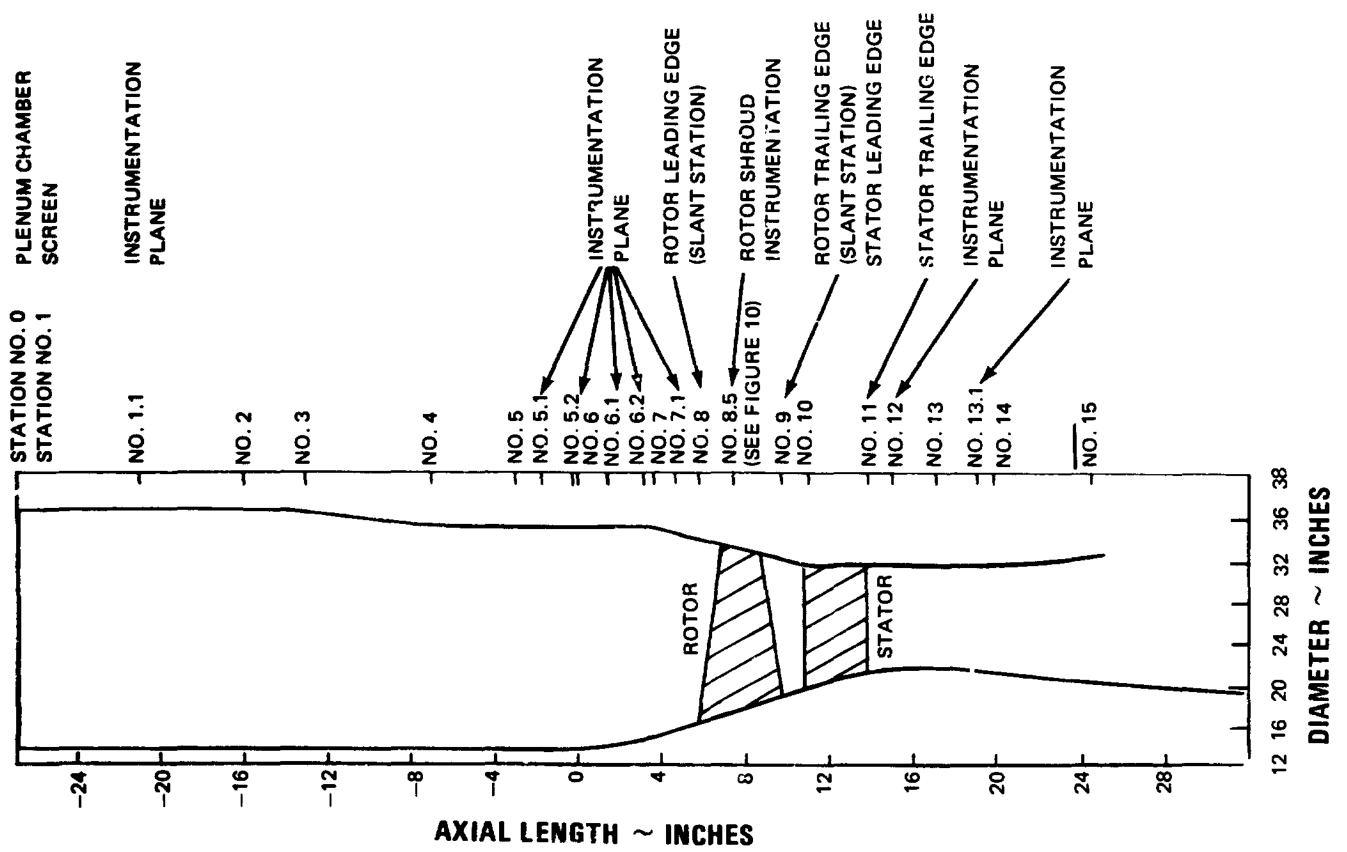


Figure 12 Axial Station Number Designation and Location of Instrumentation

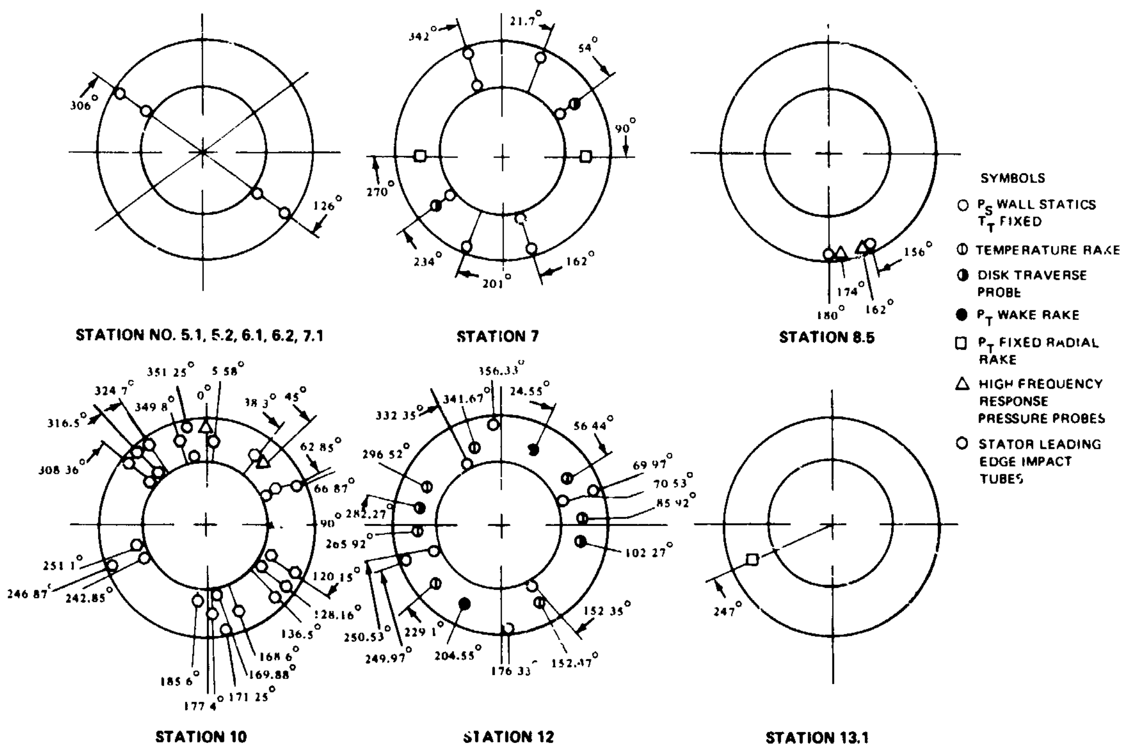


Figure 13 Circumferential Location of Instrumentation, Viewed from Rear

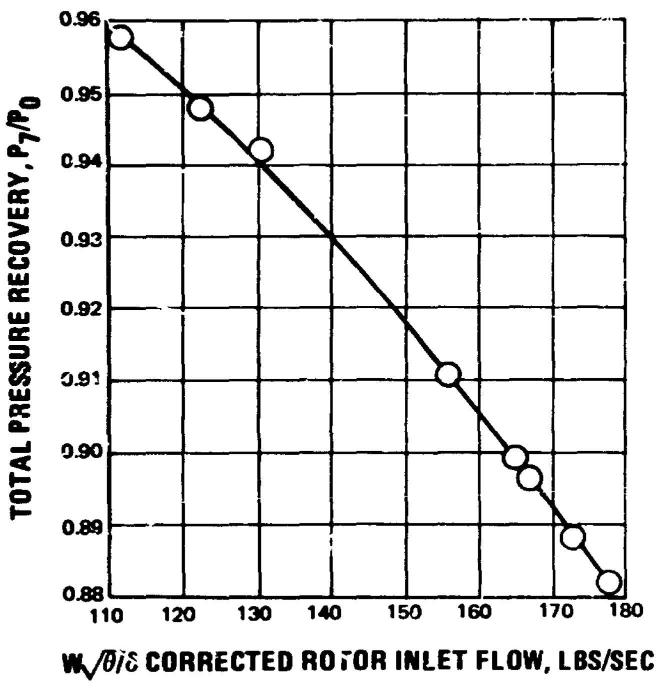


Figure 14 Circumferential Screen Pressure Recovery

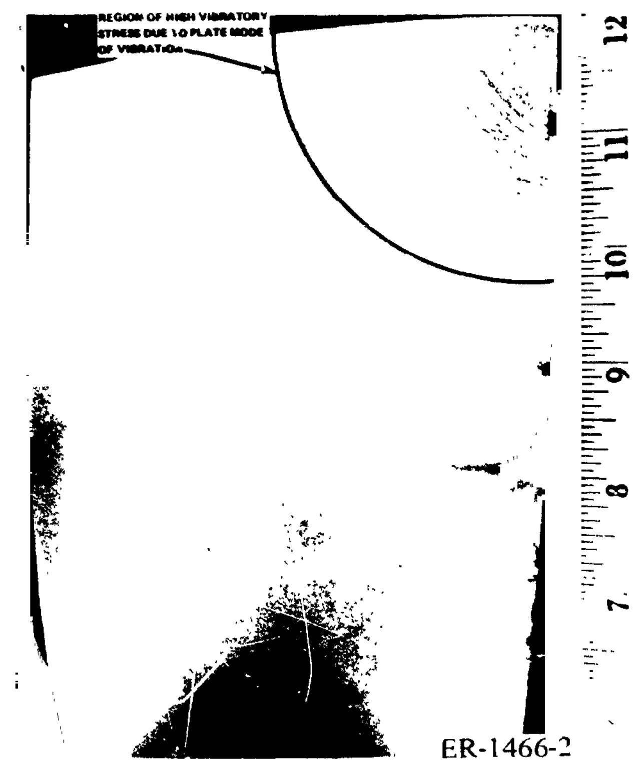


Figure 15 Plate Mode Vibration at Rotor Tip

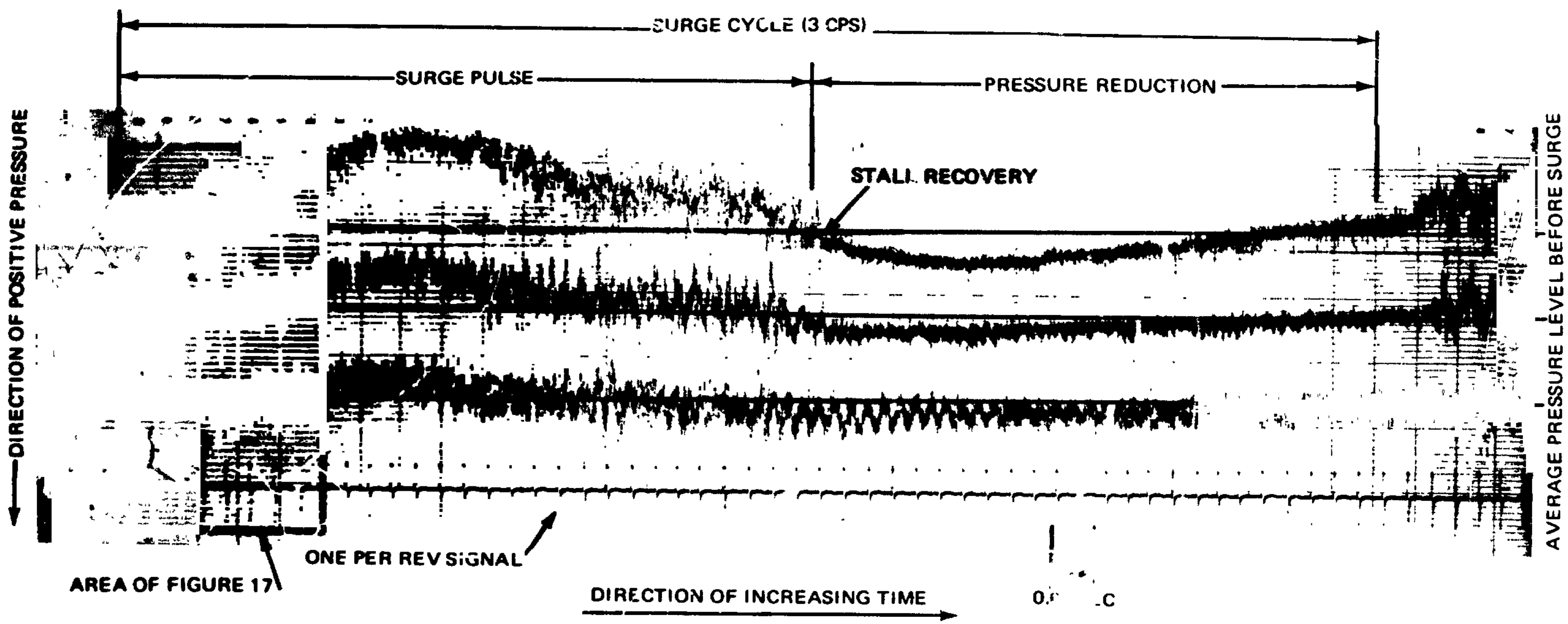


Figure 16 Oscillograph Trace of Typical Surge Cycle

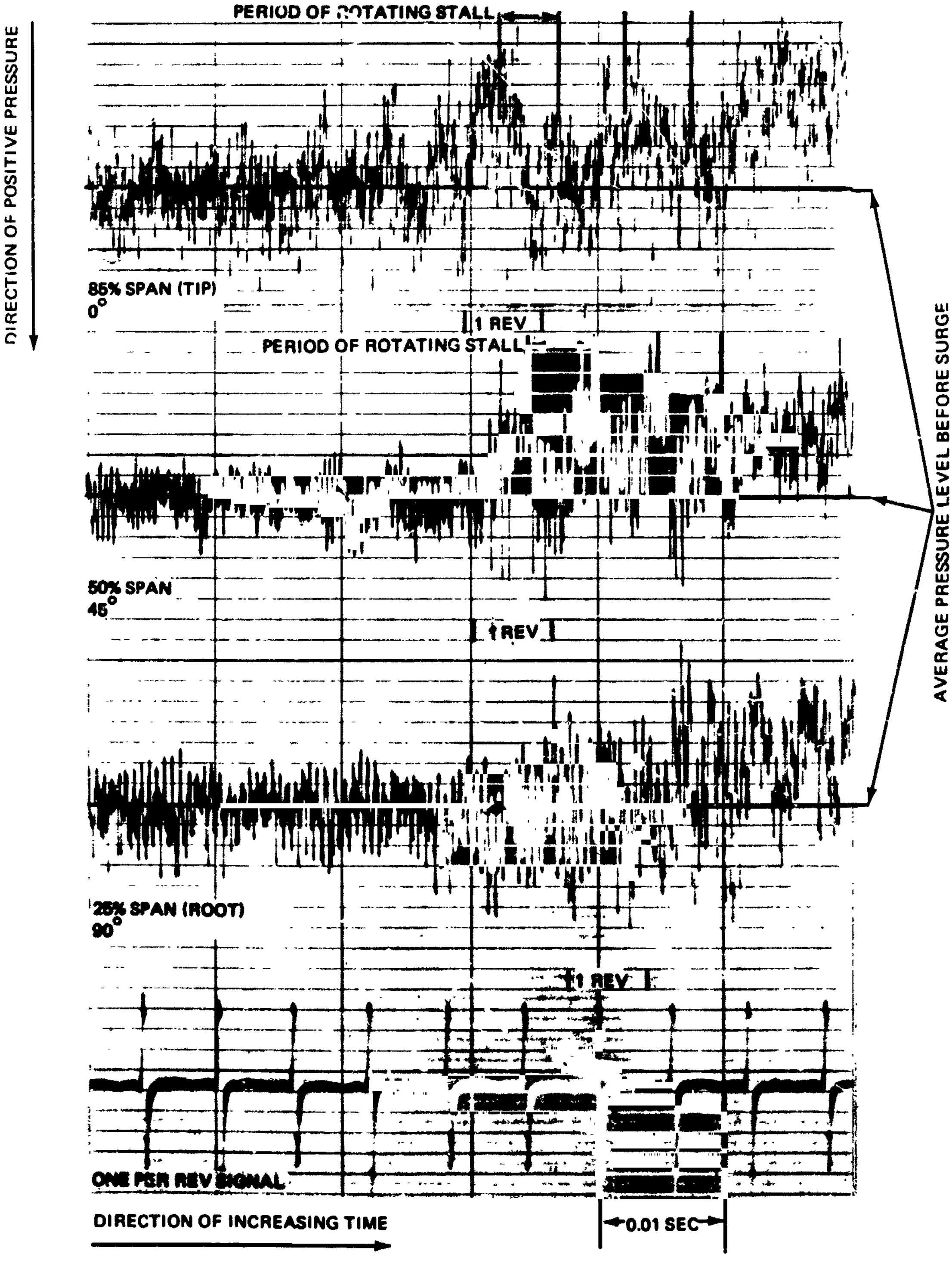


Figure 17 Oscillograph Trace of Typical Rotating Stall Pattern

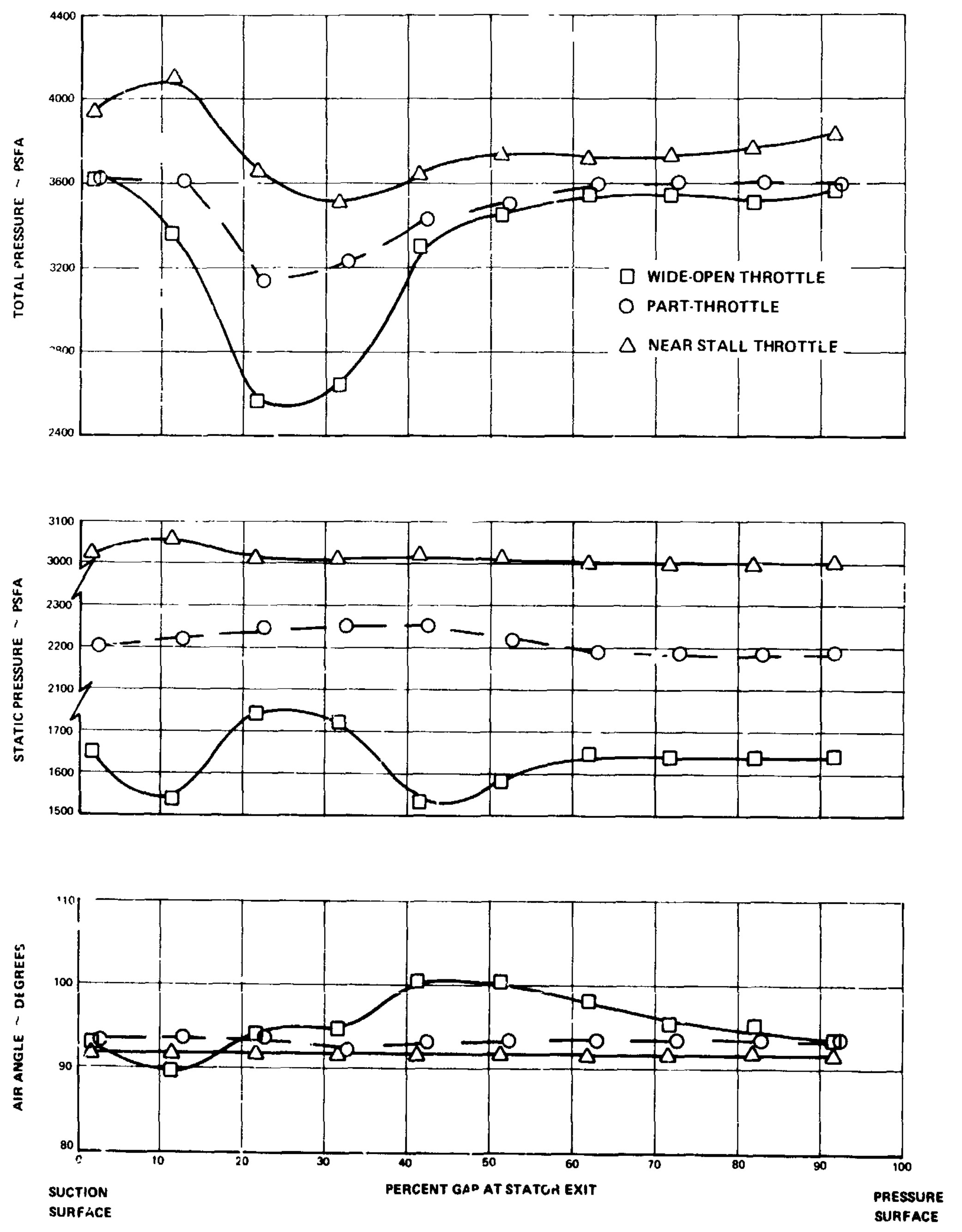


Figure 18 Circumferential Variation in Stator Exit Total Pressure, Static Pressure, and Air Angle from Tangential Traverses at Station 12, 100% Design Speed, 10% Span

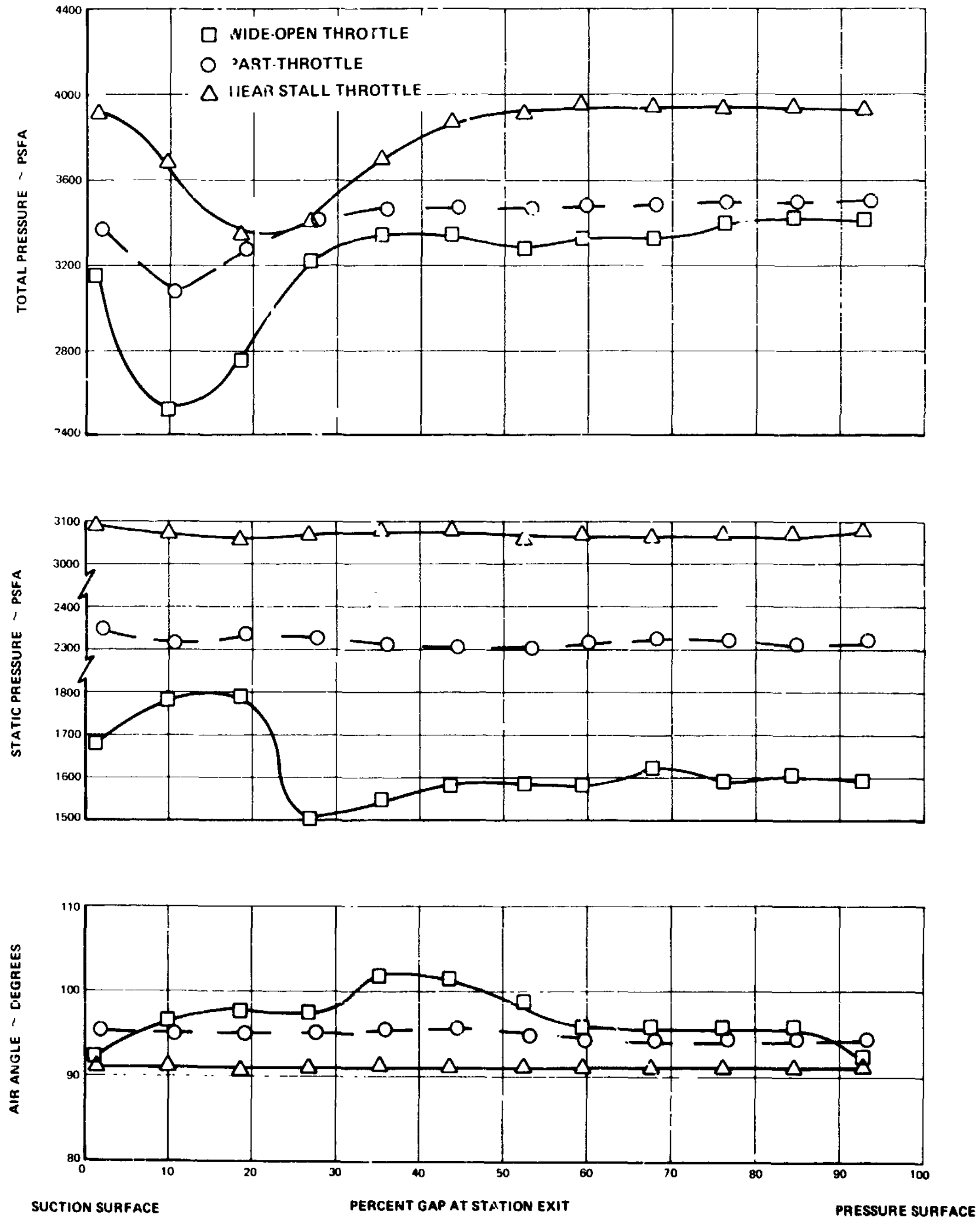


Figure 19 Circumferential Variation ir. Stator Exit Total Pressure, Static Pressure and Air Air Angle from Tangential Traverses at Station 12, 100% Design Speed, 50% Span

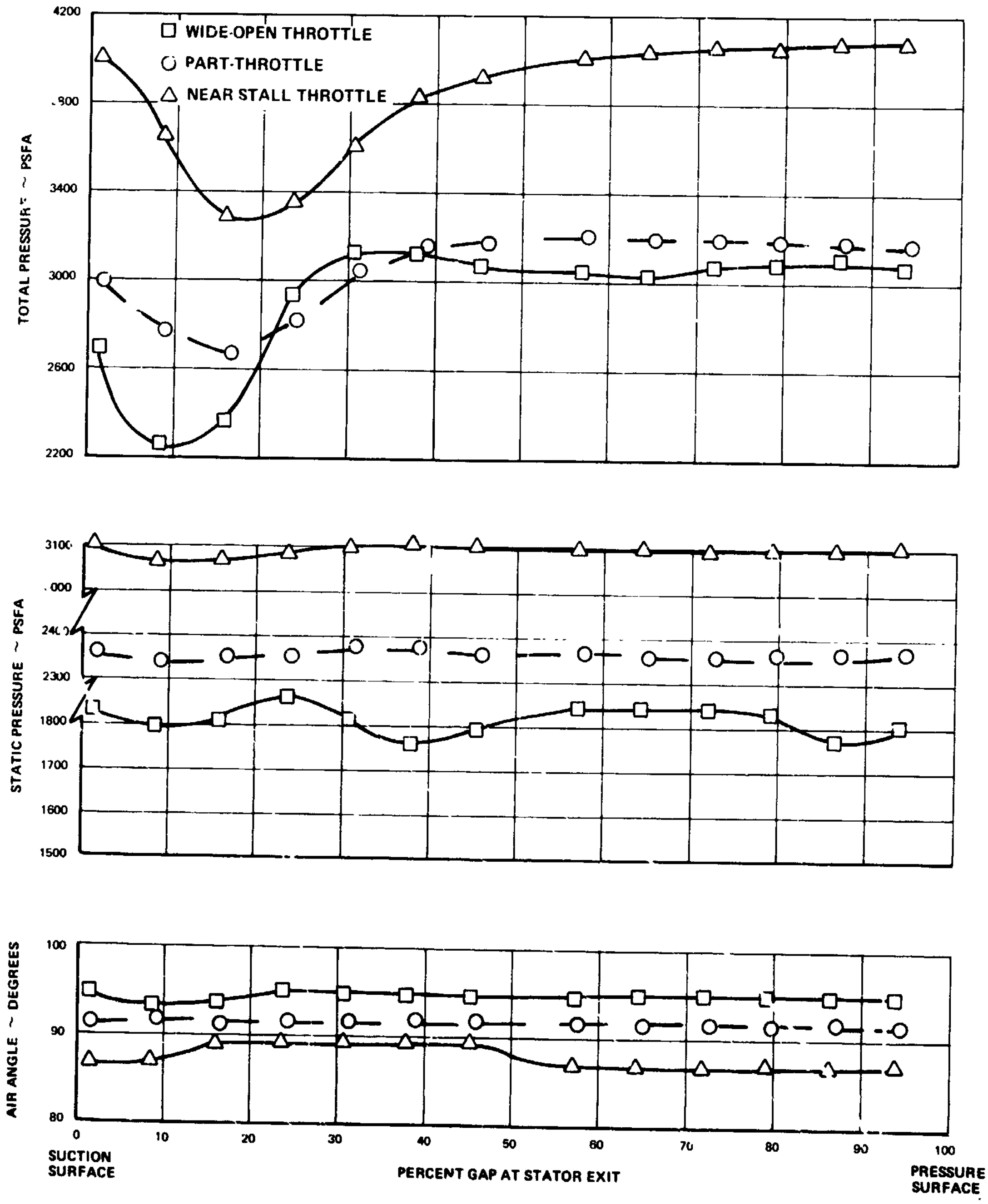


Figure 20 Circumferential Variation in Stator Exit Total Pressure, Static Pressure, and Air Air Angle from Tangential Traverses at Station 12, 100% Design Speed, 90% Span

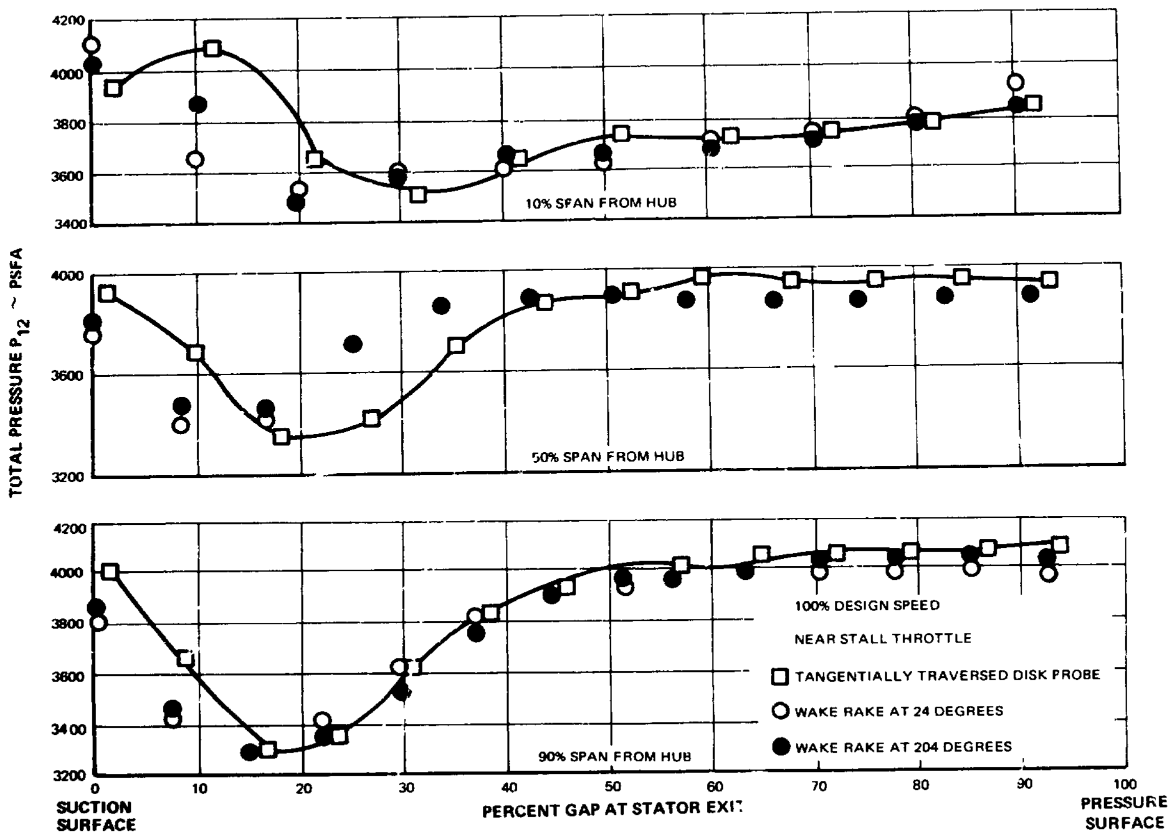


Figure 21 Comparison of Circumferential Variation in Stator Exit Total Pressure from Tangential and Wake Rake Traverses at Station 12, 100% Design Speed, 10%, 50%, and 90% Spans

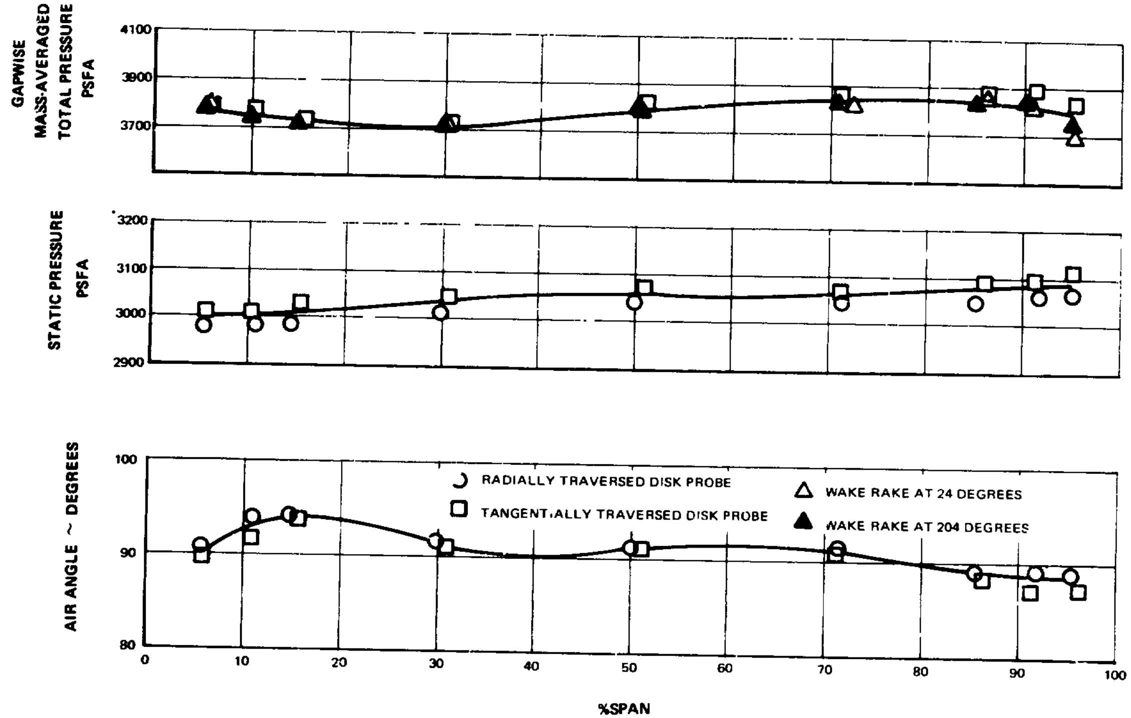


Figure 22 Comparison of Spanwise Variations in Total Pressure, Static Pressure, and Air Angle from a Tangentially Traversed Disk Probe, a Radially Traversed Disk Probe, and a Total Pressure Wake Rake, 100% Design Speed.

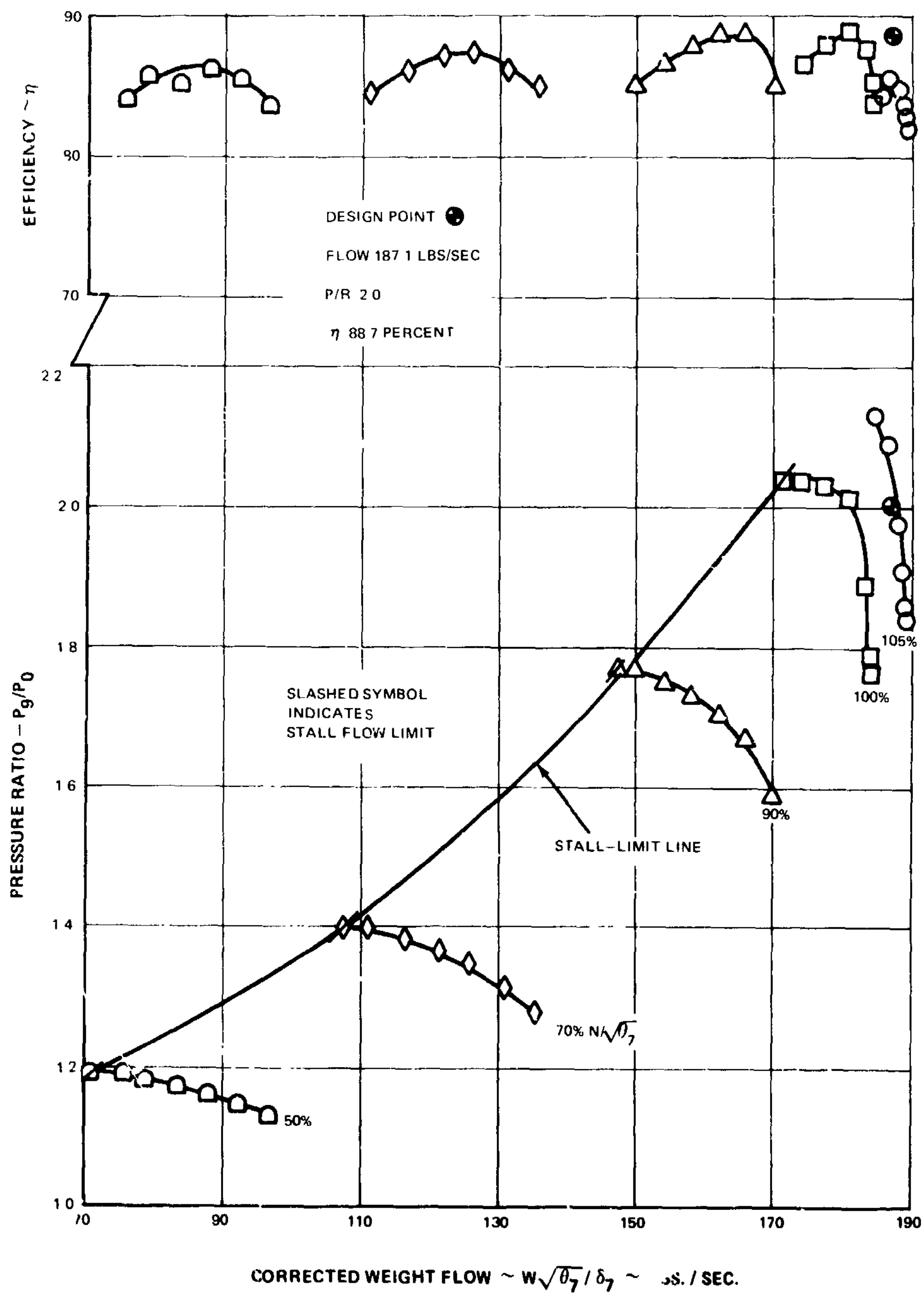


Figure 23   Rotor Over-all Performance with Uniform Inlet Flow

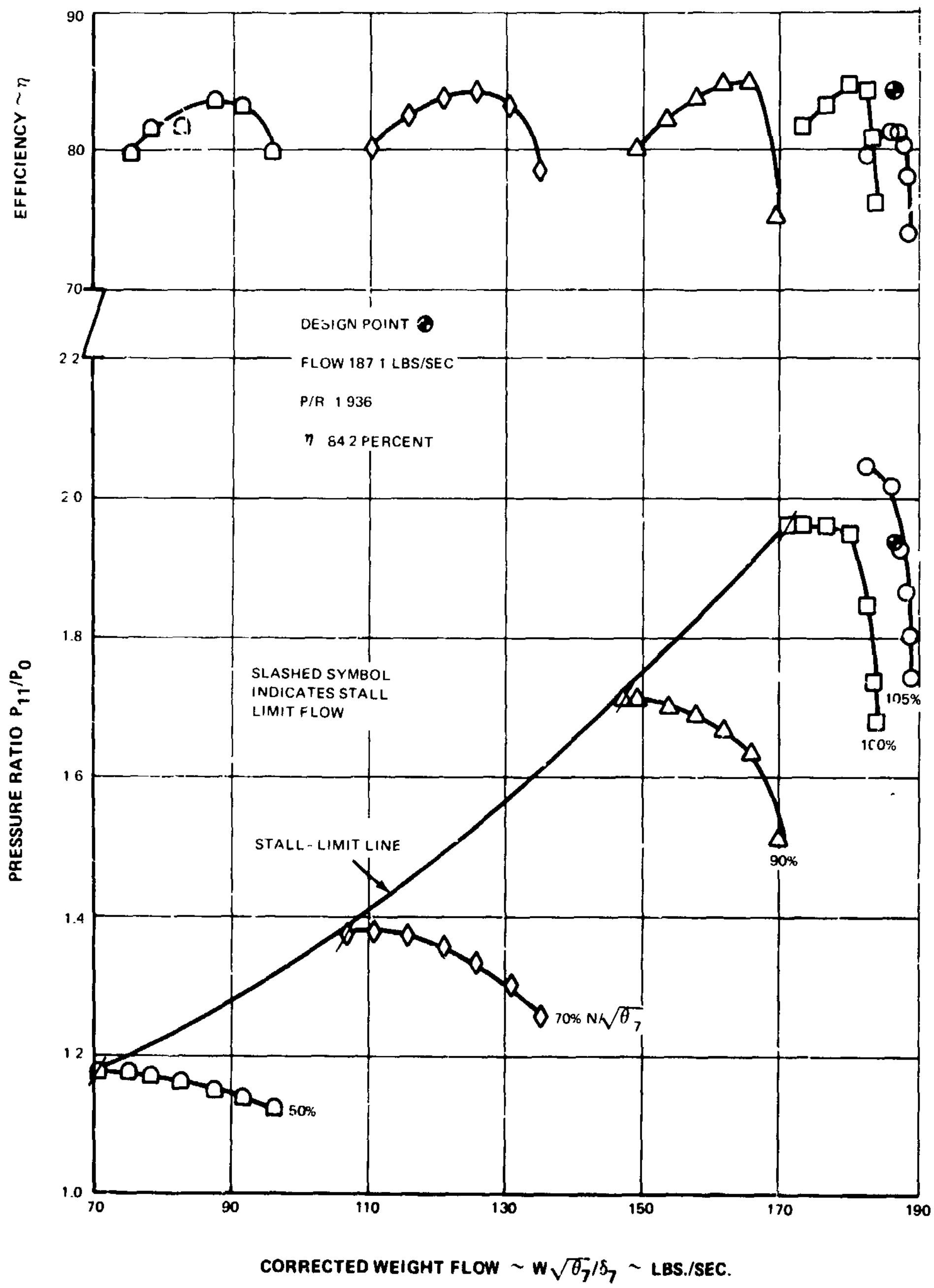


Figure 24 Stage Over-all Performance with Uniform Inlet Flow

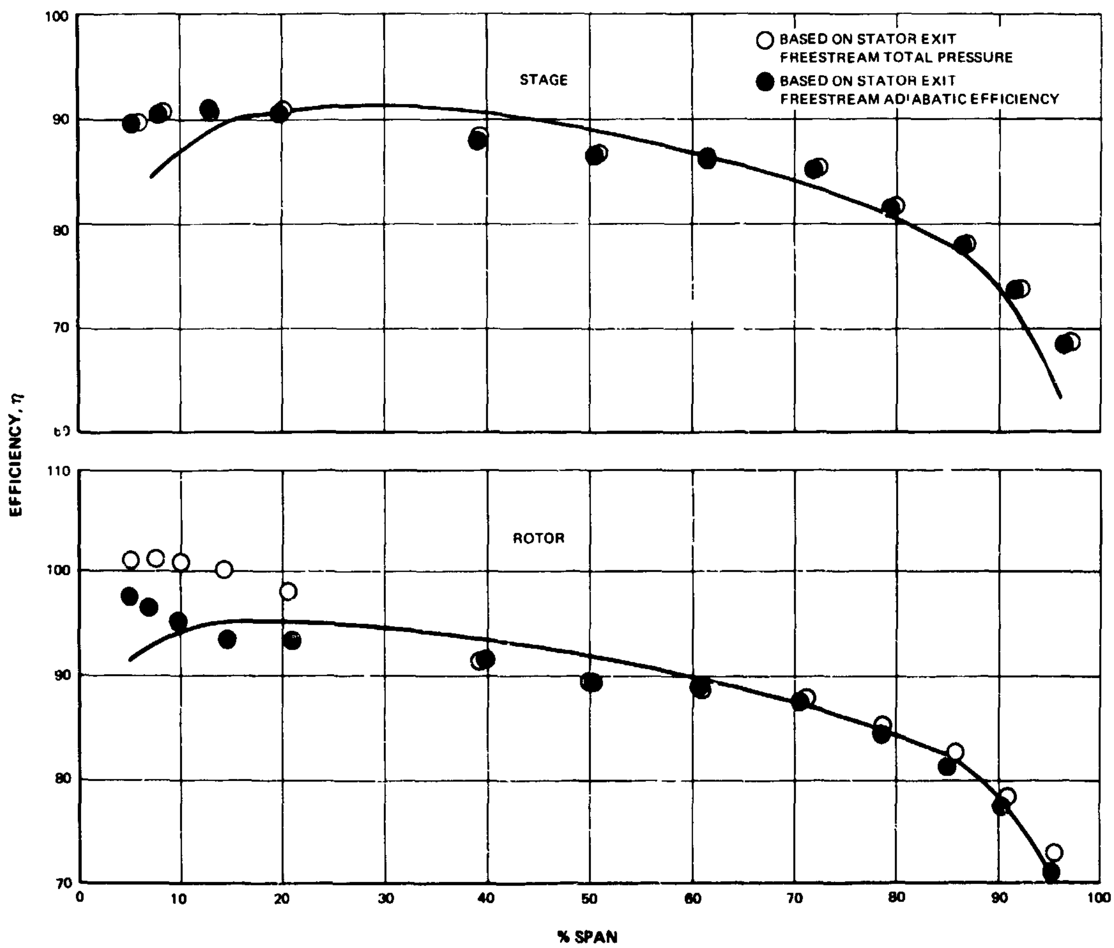


Figure 25 Rotor and Stage Spanwise Efficiency

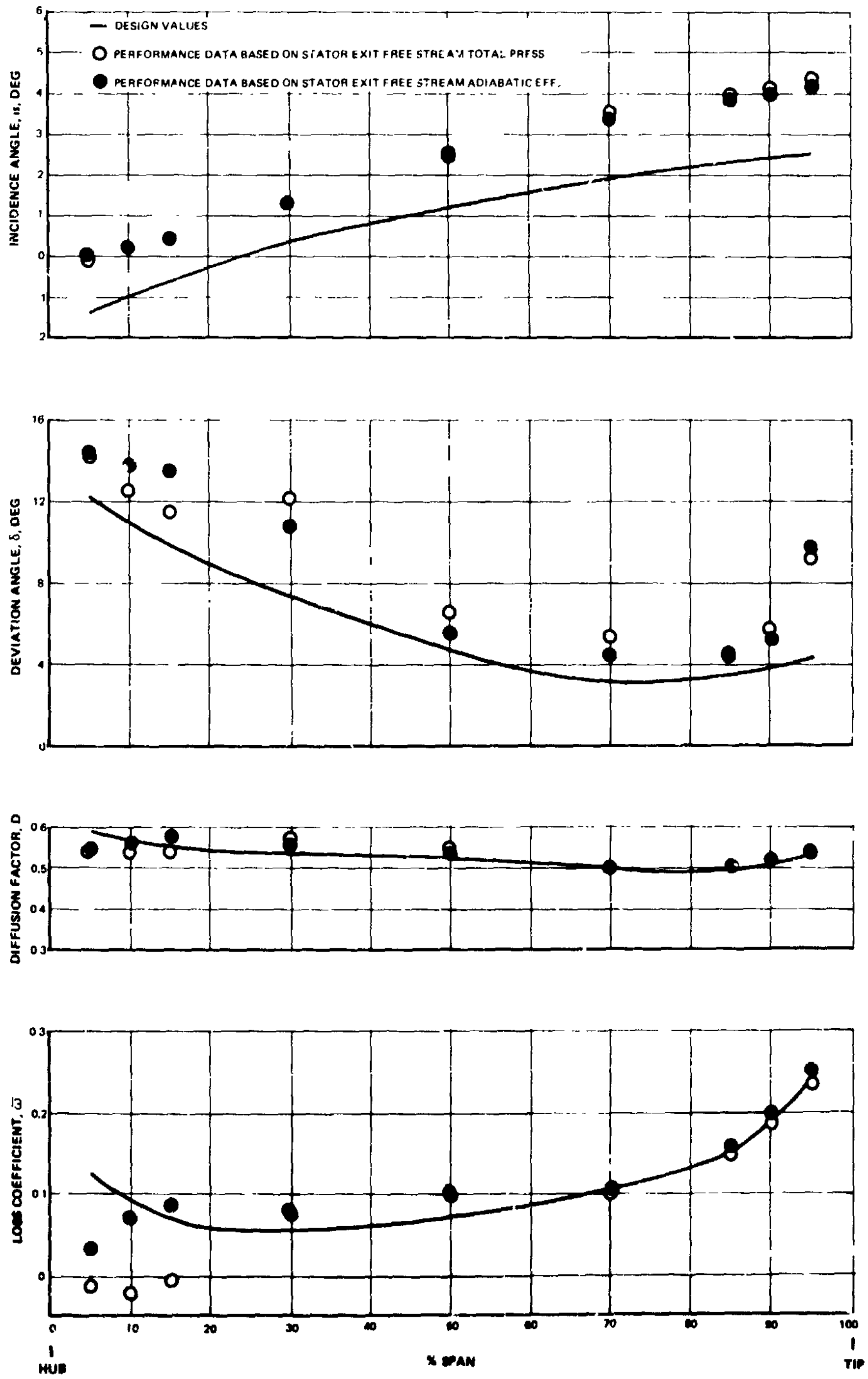
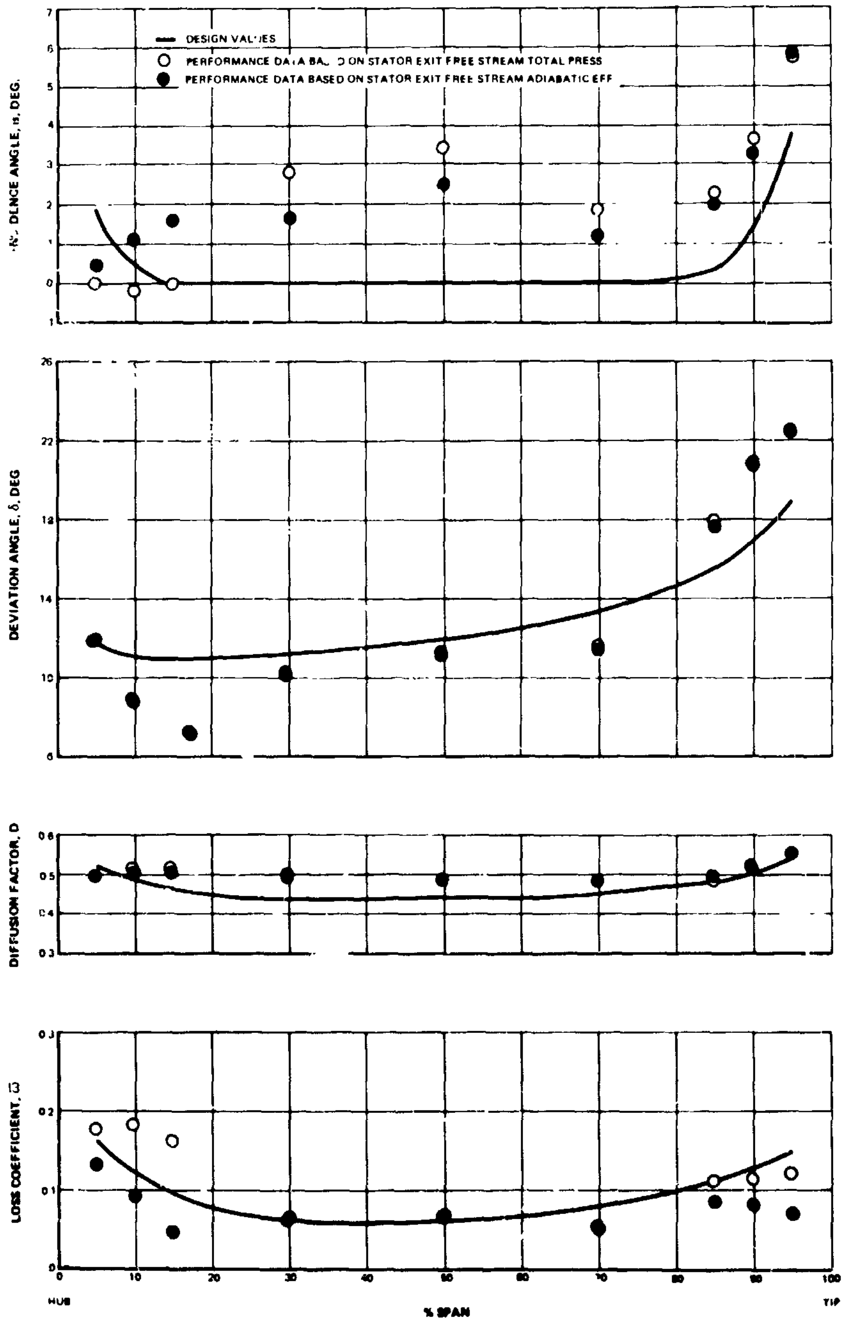


Figure 26   Comparison of Spanwise Rotor Blade Element Performance



Fiɐure 27 Comparison of Spanwise Stator Blade Element Performance

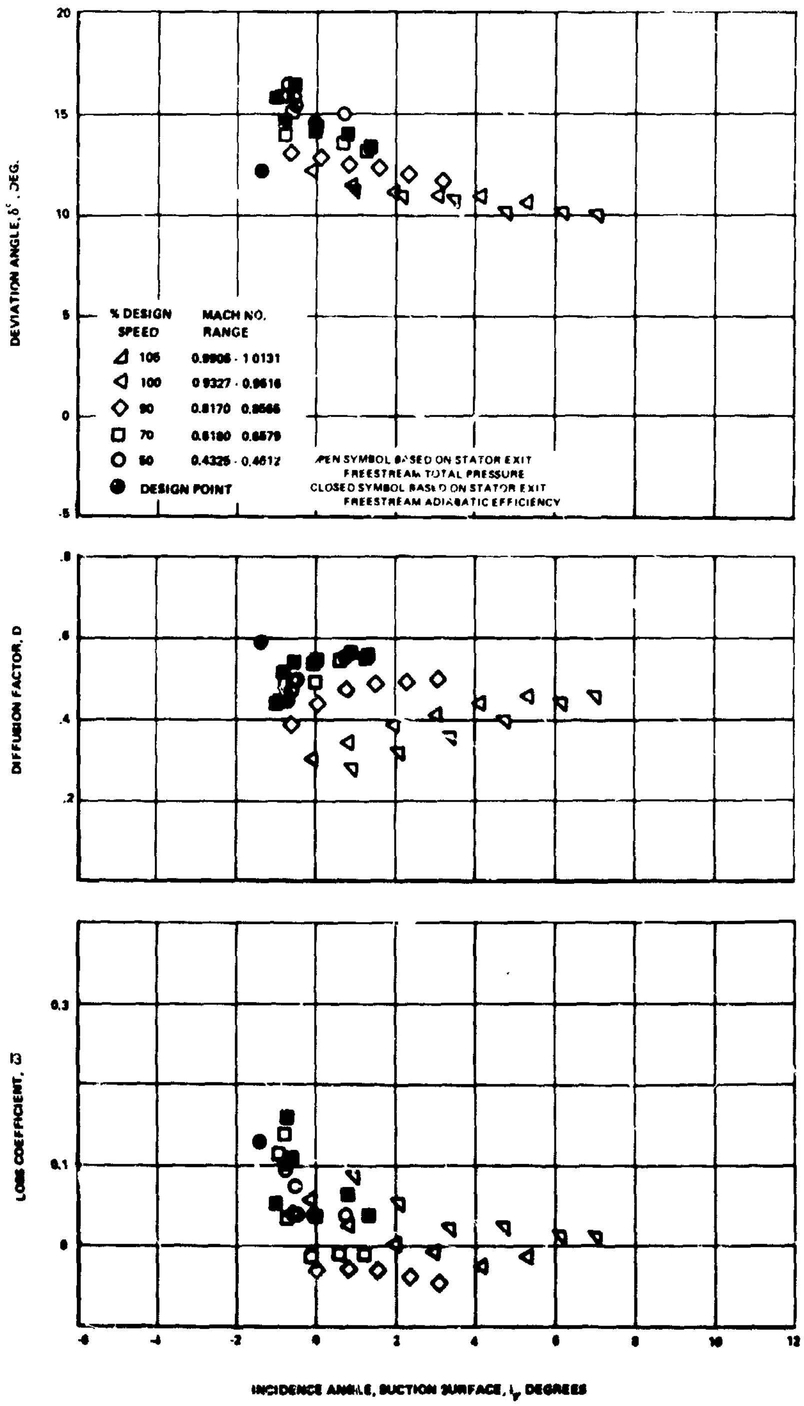


Figure 28a Rotor Blade Element Performance with Uniform Inlet Flow, 5% Span

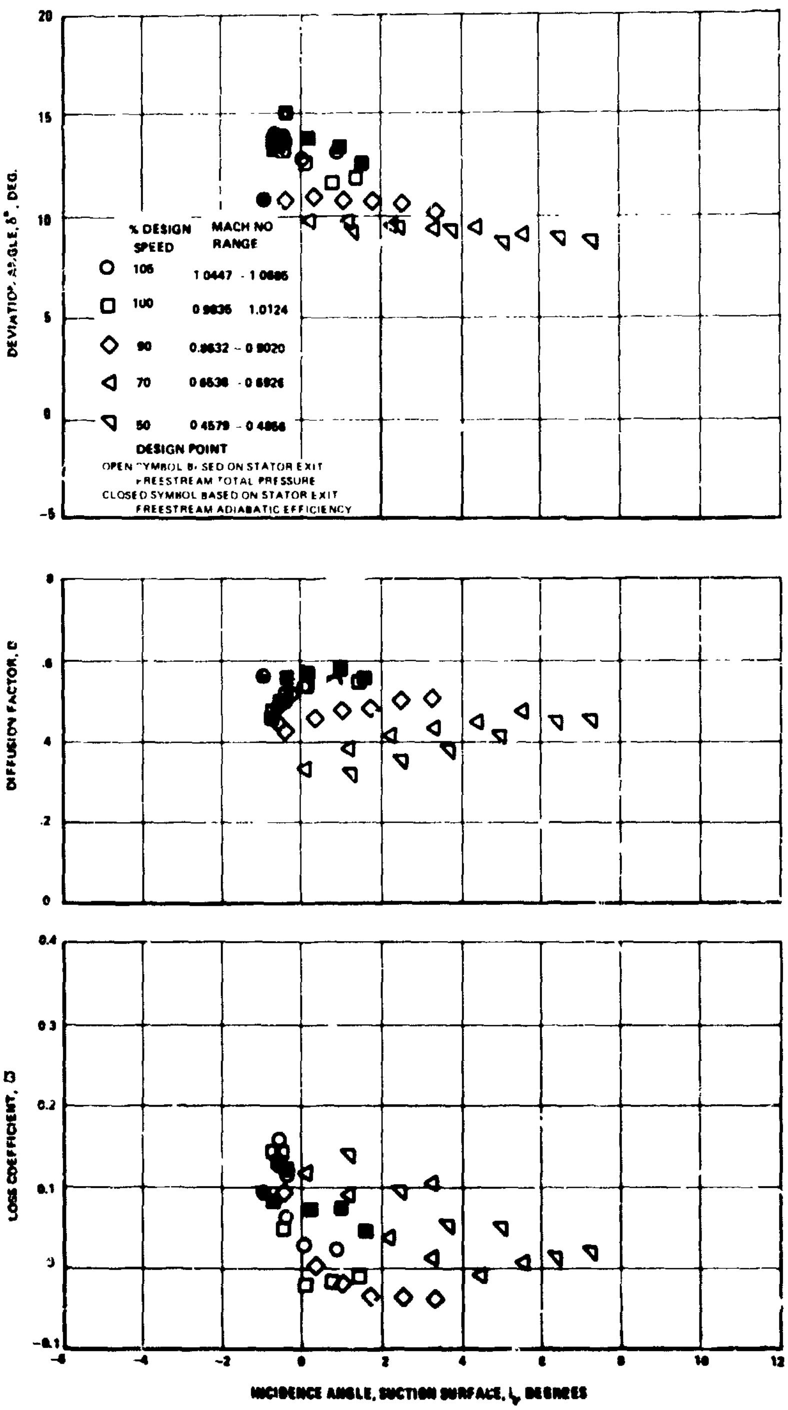


Figure 28b Rotor Blade Element Performance with Uniform Inlet Flow, 10% Span

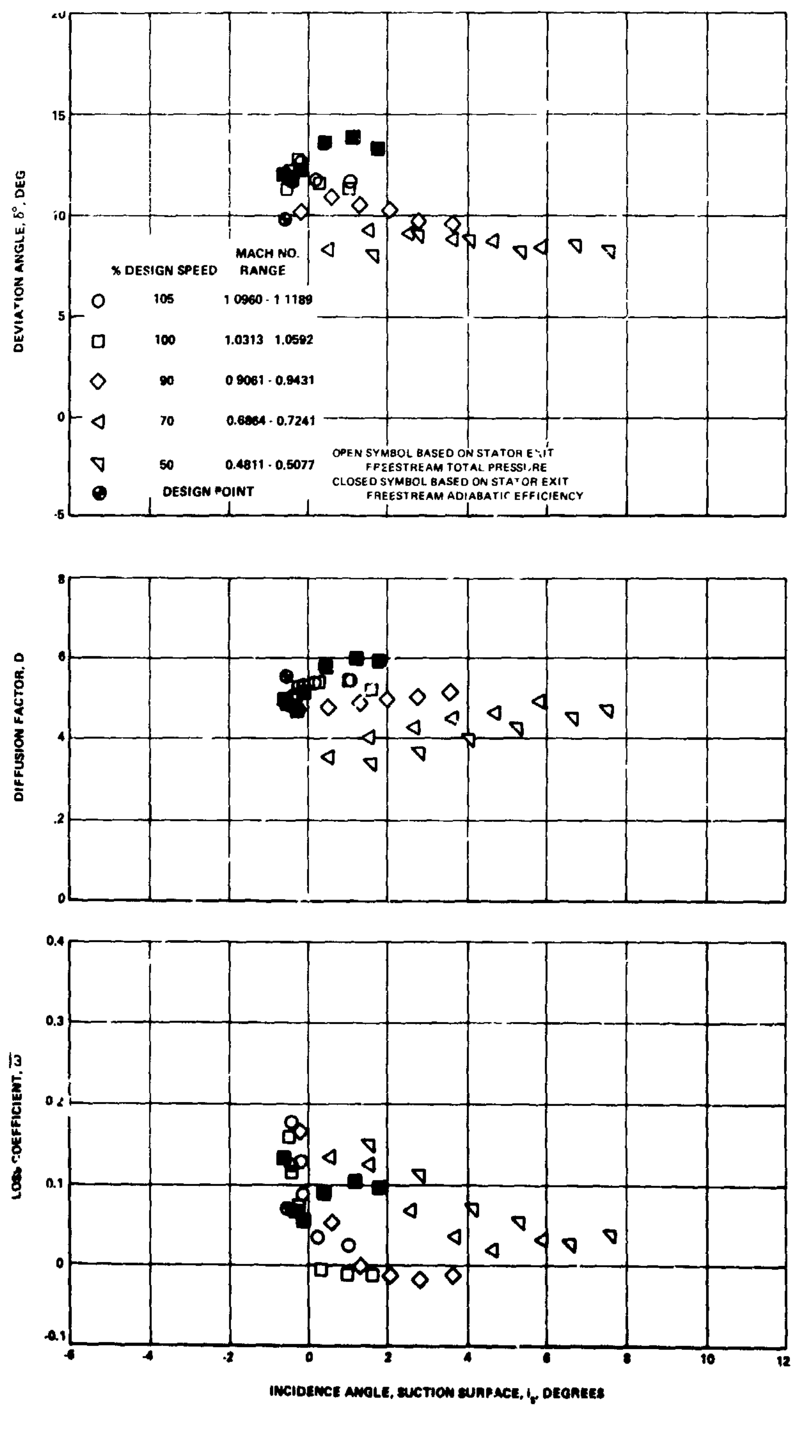


Figure 28c Rotor Blade Element Performance with Uniform Inlet Flow, 15% Span

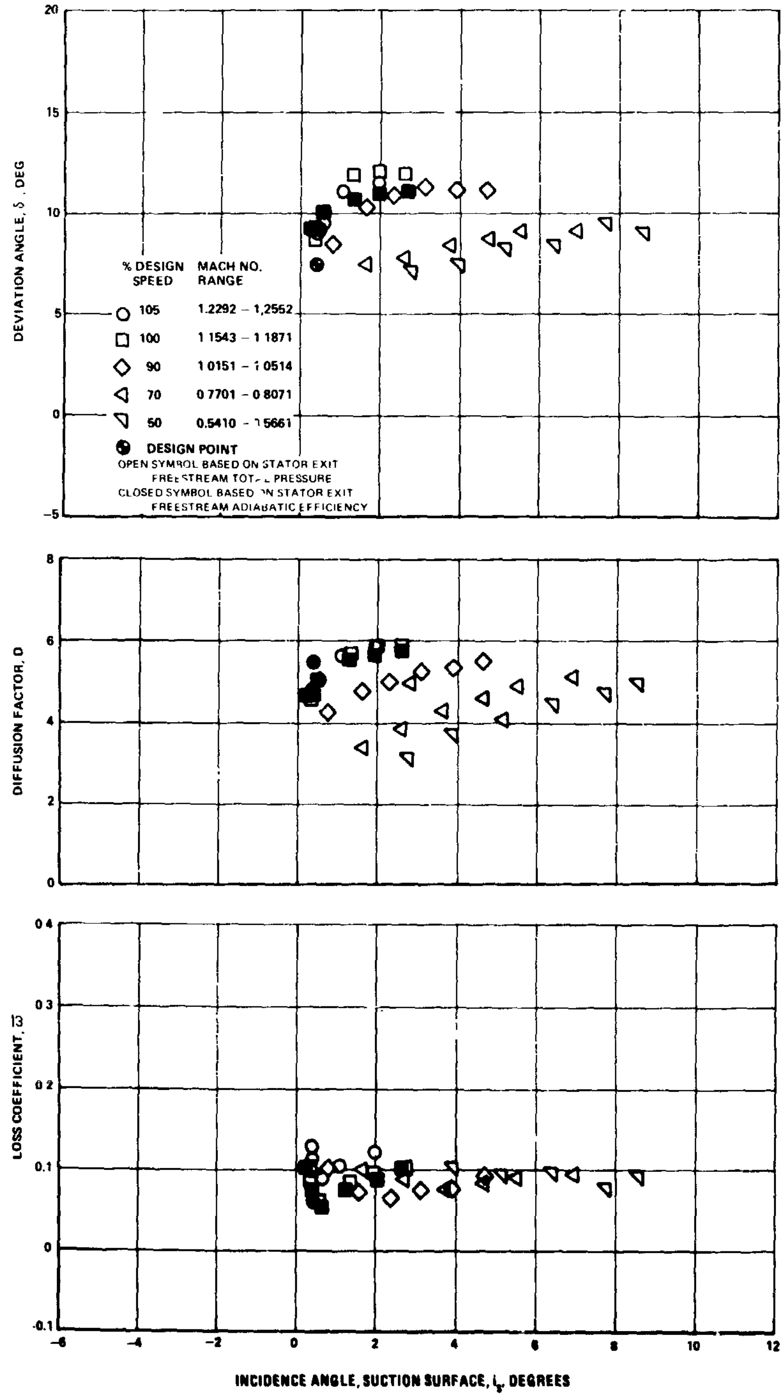


Figure 28 d Rotor Blade Element Performance with Uniform Inlet Flow, 30% Span

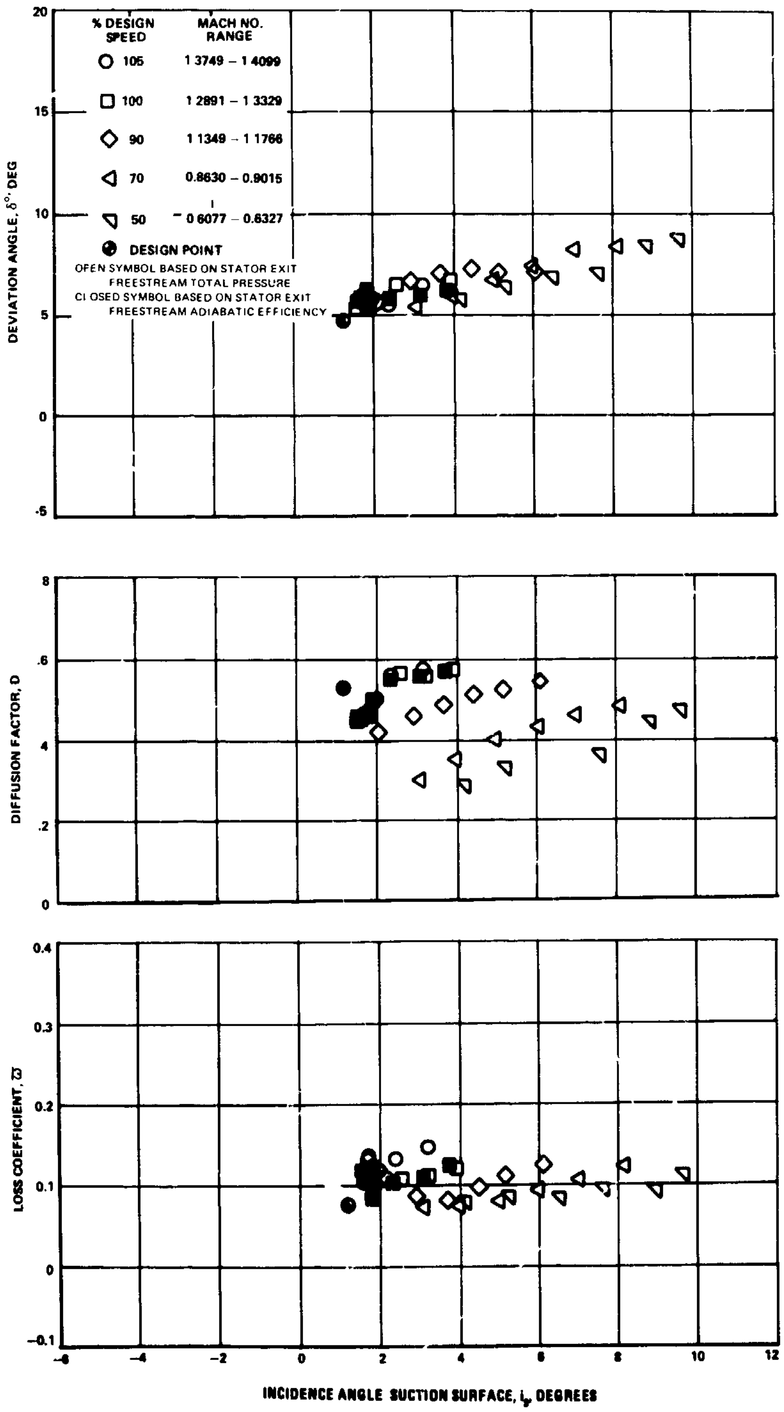


Figure 28 e Rotor Blade Element Performance with Uniform Inlet Flow, 50% Span

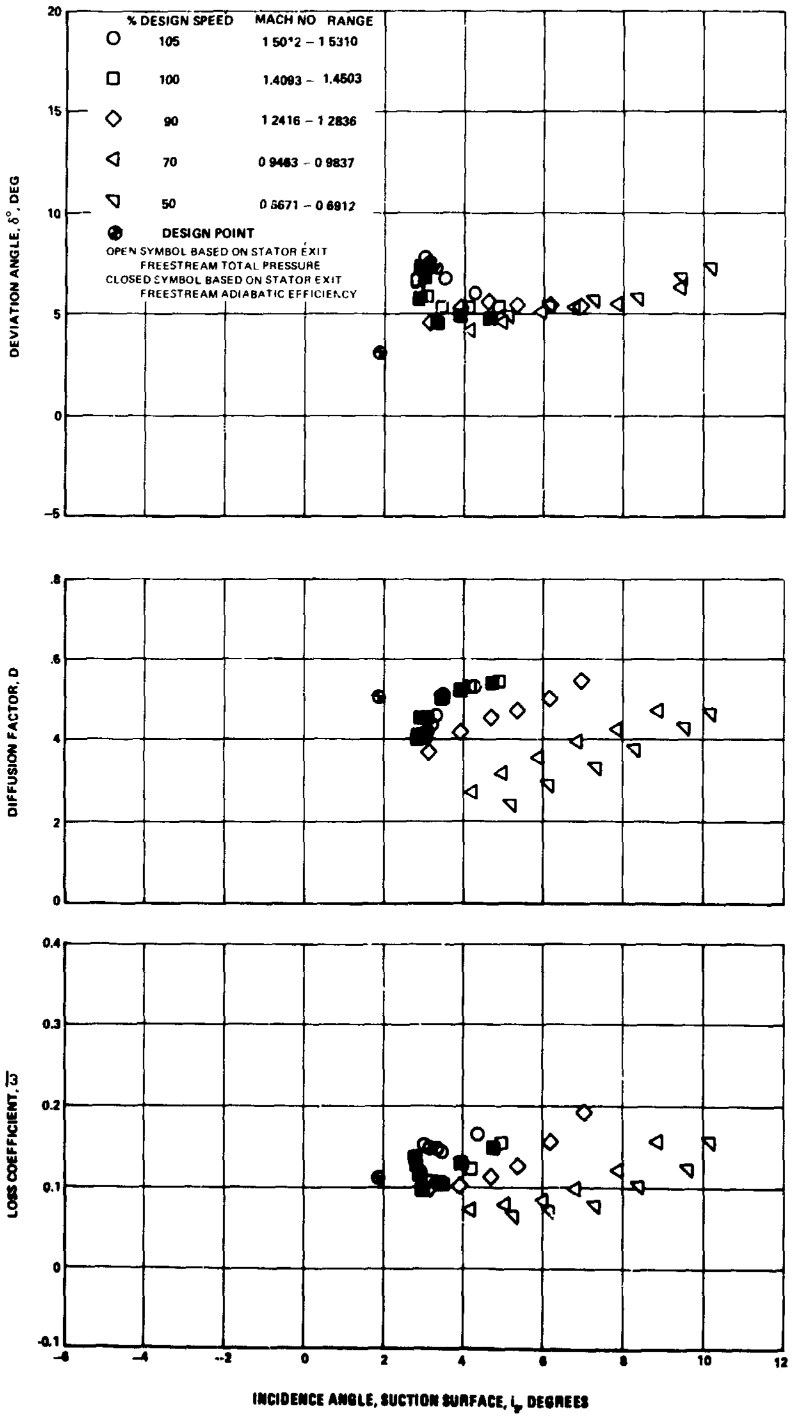


Figure 28 f Rotor Blade Element Performance with Uniform Inlet Flow, 70% Span

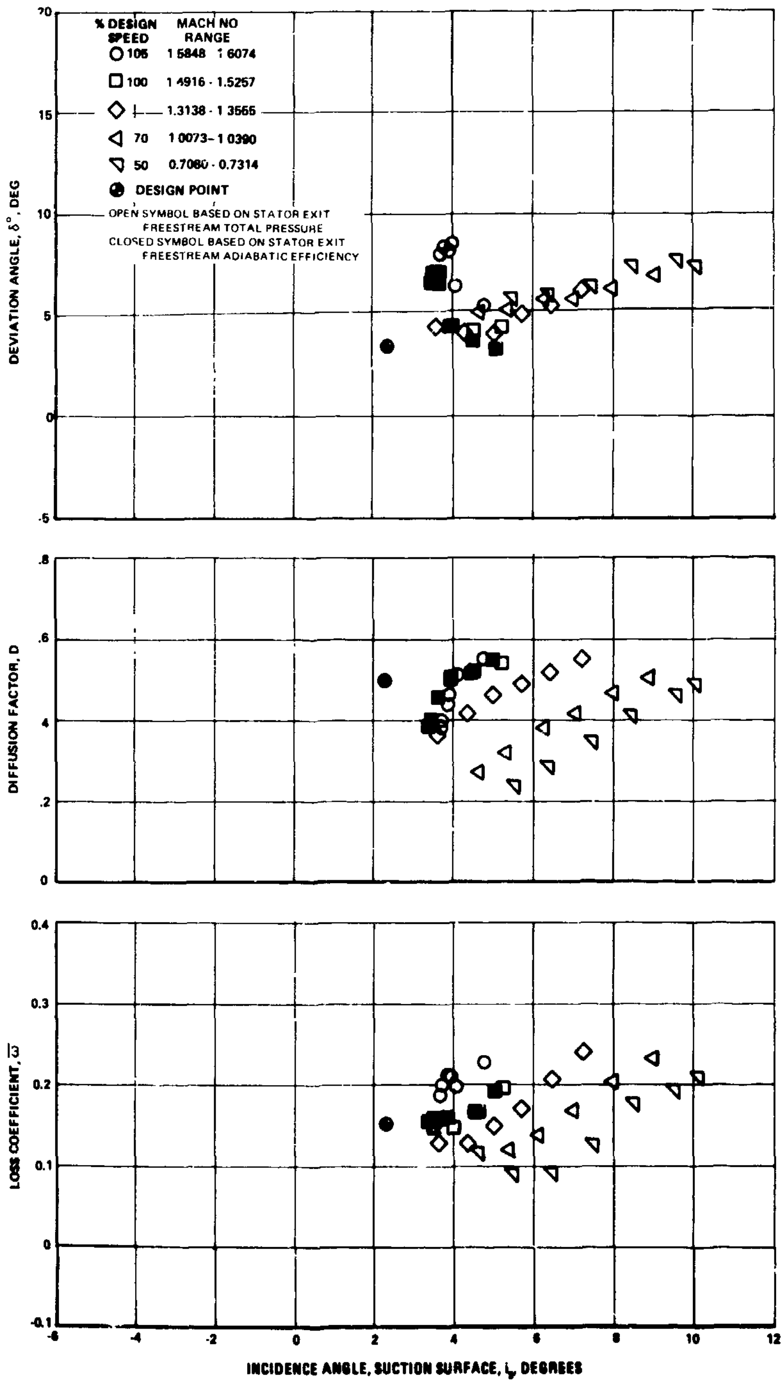


Figure 28 g Rotor Blade Element Performance with Uniform Inlet Flow, 85% Span

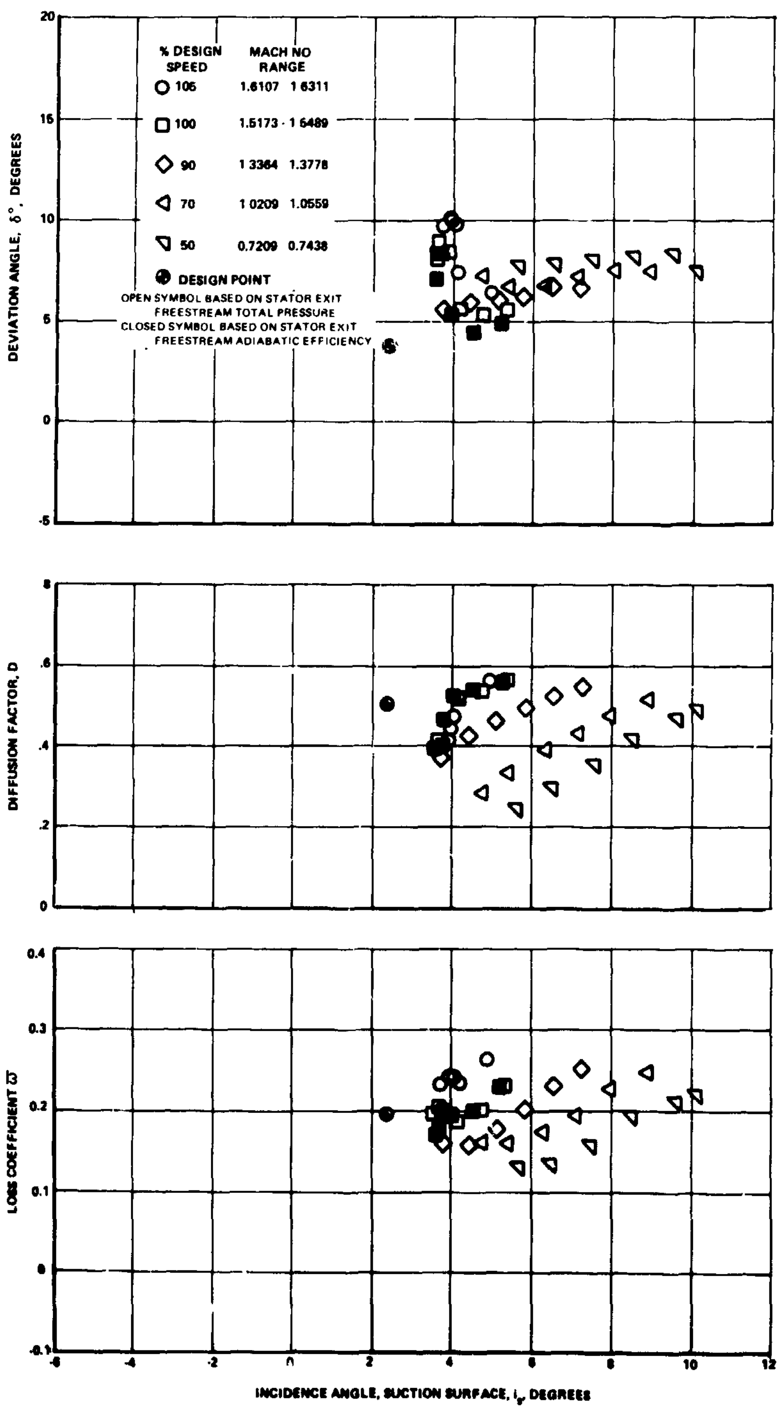


Figure 28h Rotor Blade Element Performance with Uniform Inlet Flow, 90% Span

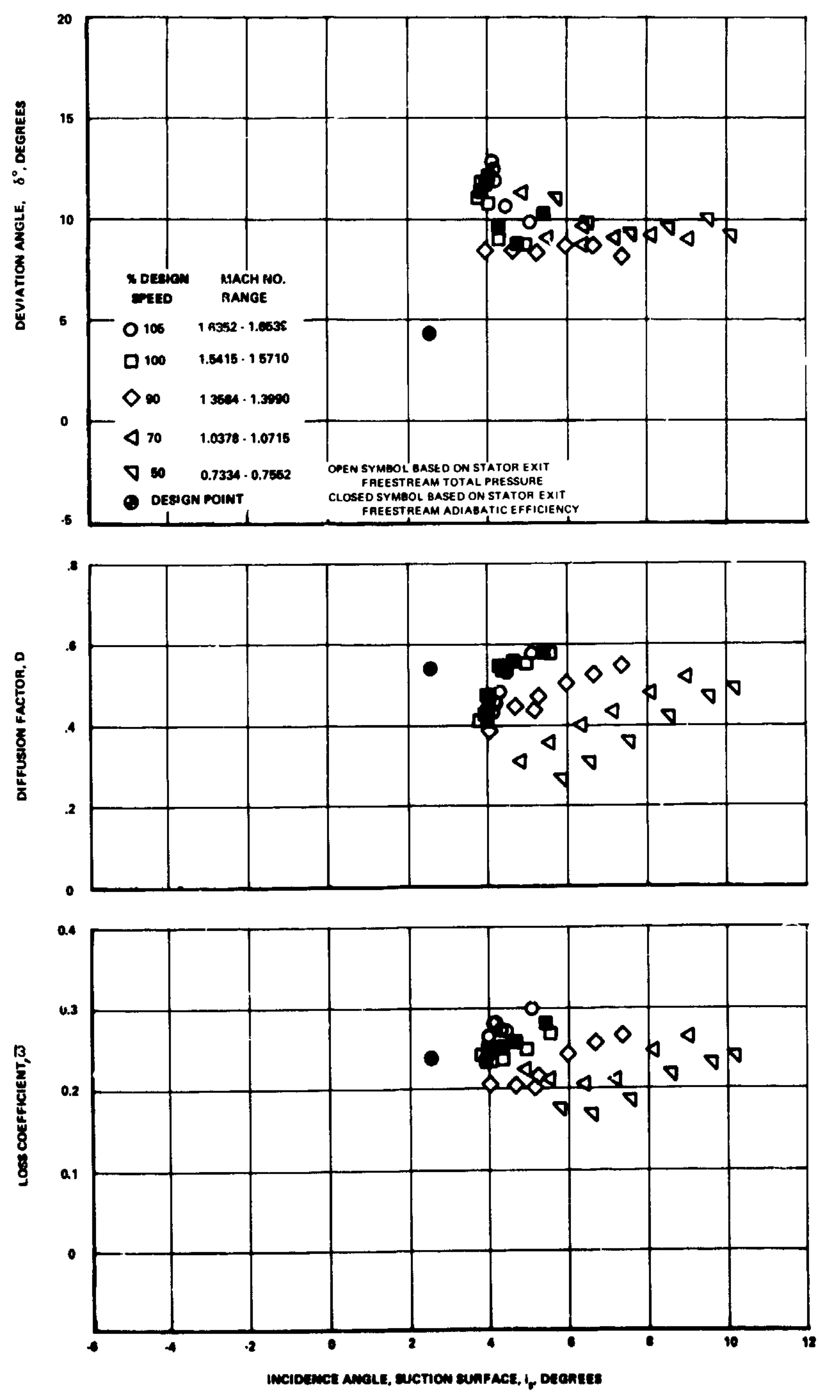


Figure 28 i Rotor Blade Element Performance with Uniform Inlet Flow, 95% Span

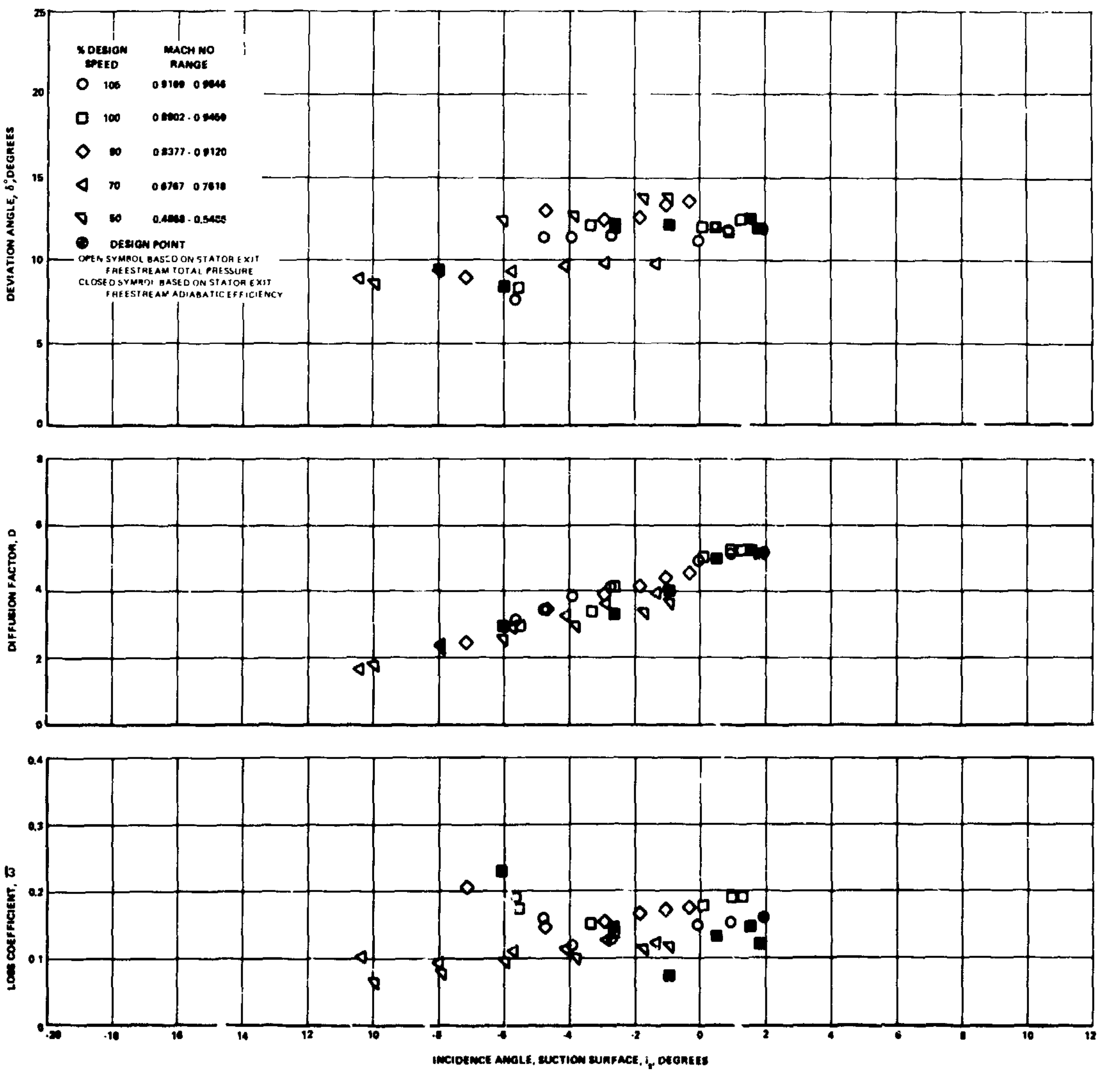


Figure 29 a Stator Blade Element Performance with Uniform Inlet Flow, 5% Span

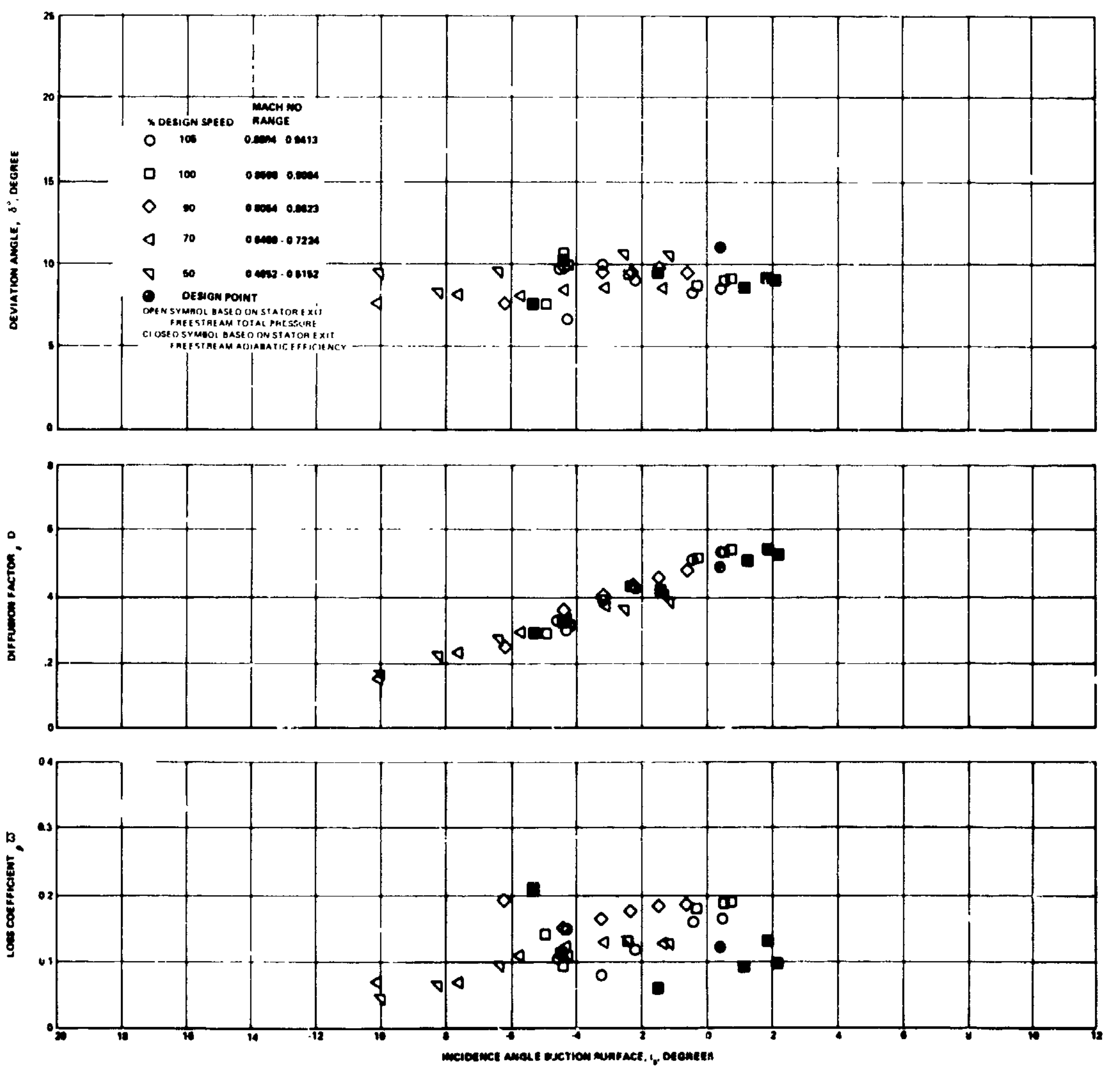


Figure 29b Stator Blade Element Performance with Uniform Inlet Flow, 10% Span

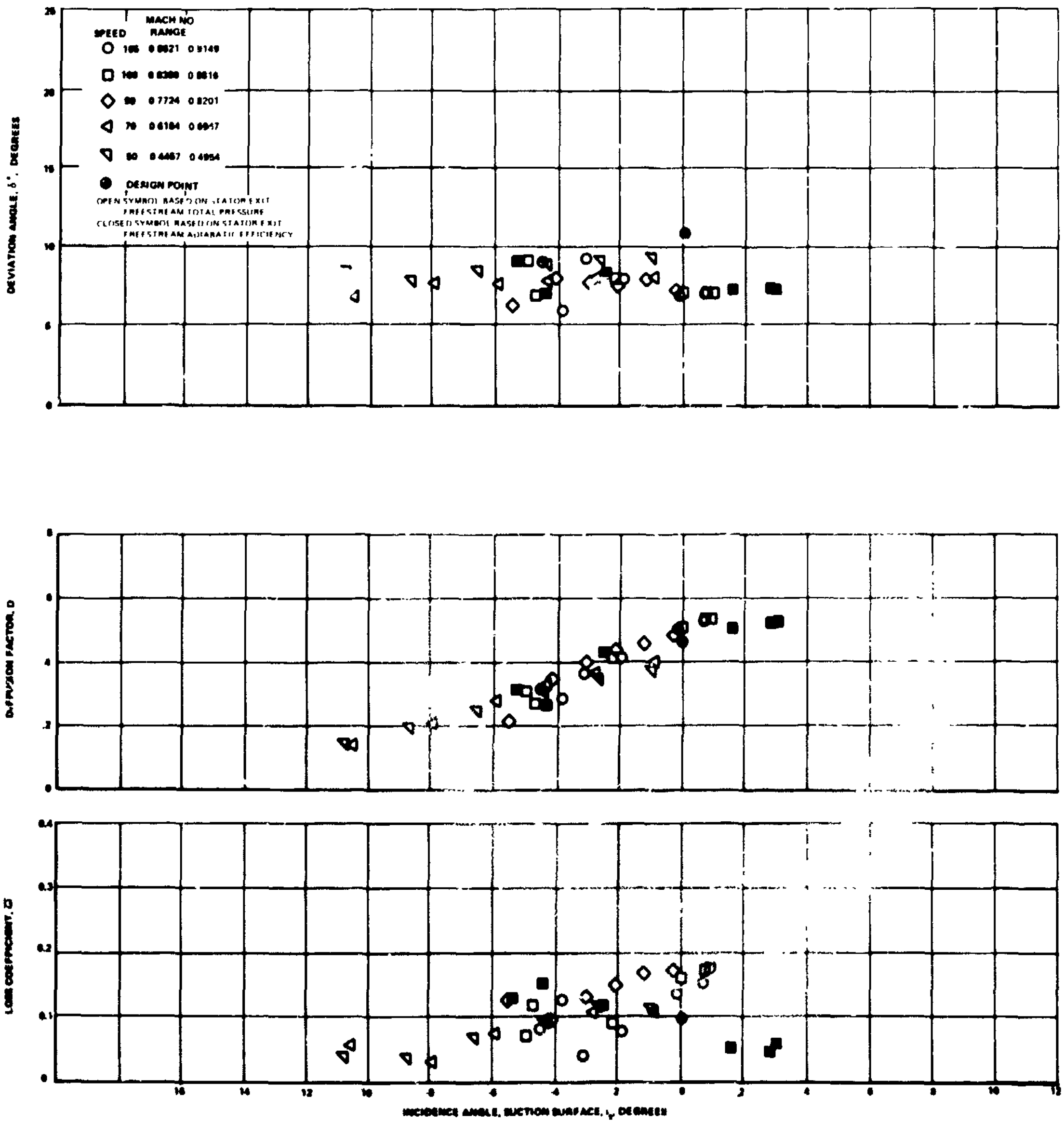


Figure 29c Stator Blade Element Performance with Uniform Inlet Flow, 15% Span

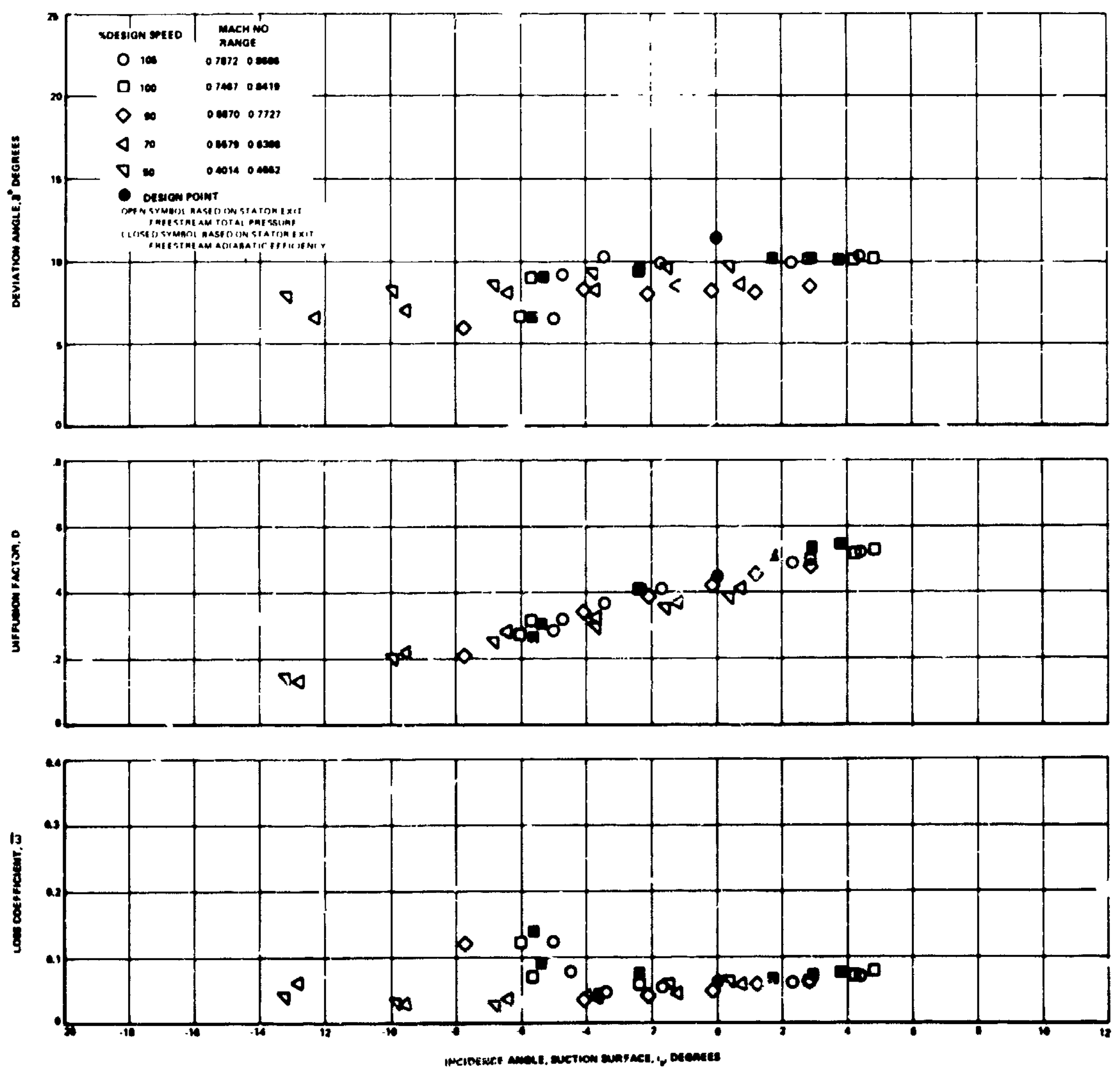


Figure 29 d Stator Blade Element Performance with Uniform Inlet Flow, 30% Span

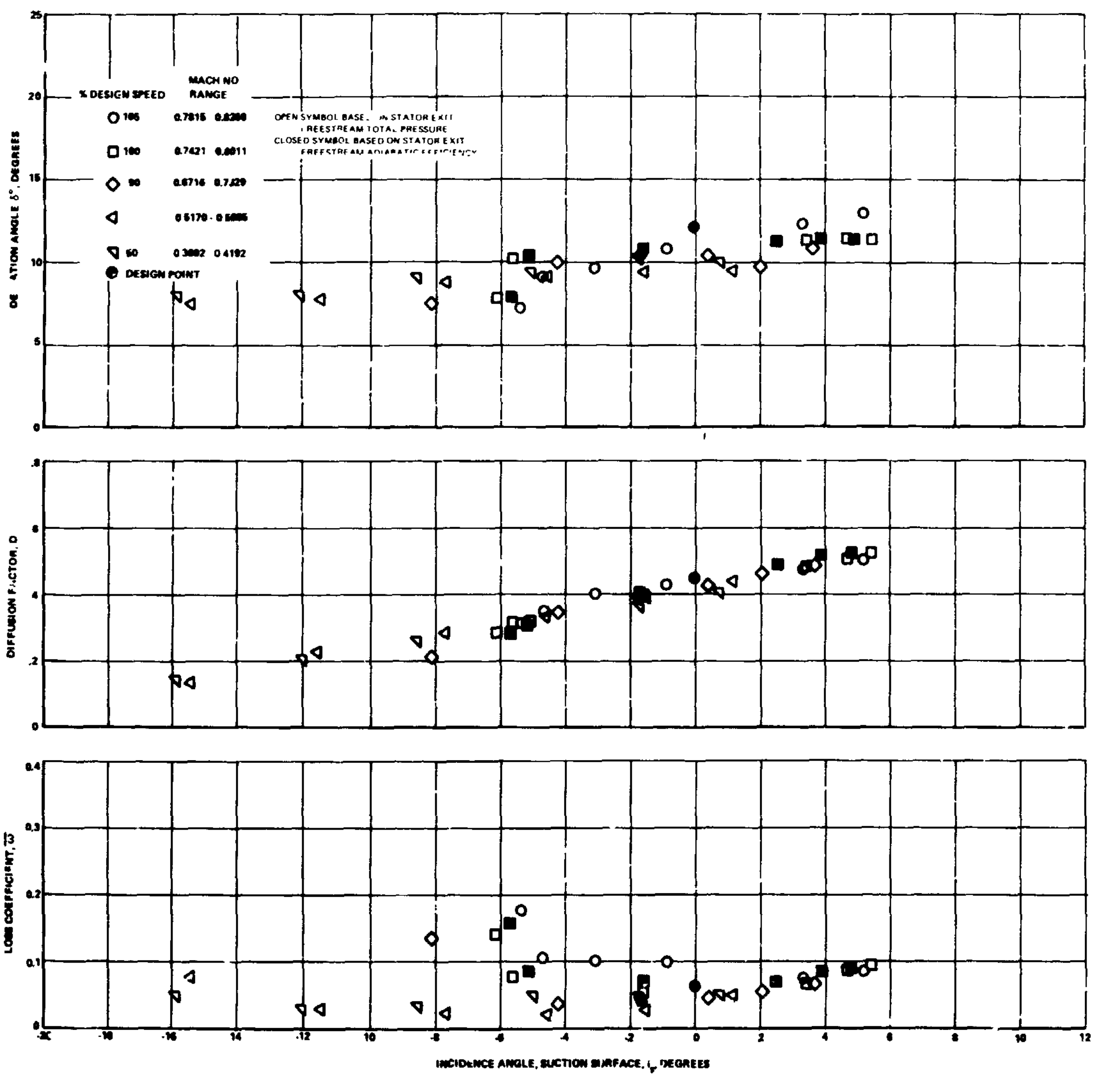


Figure 29 e Stator Blade Element Performance with Uniform Inlet Flow, 50% Span

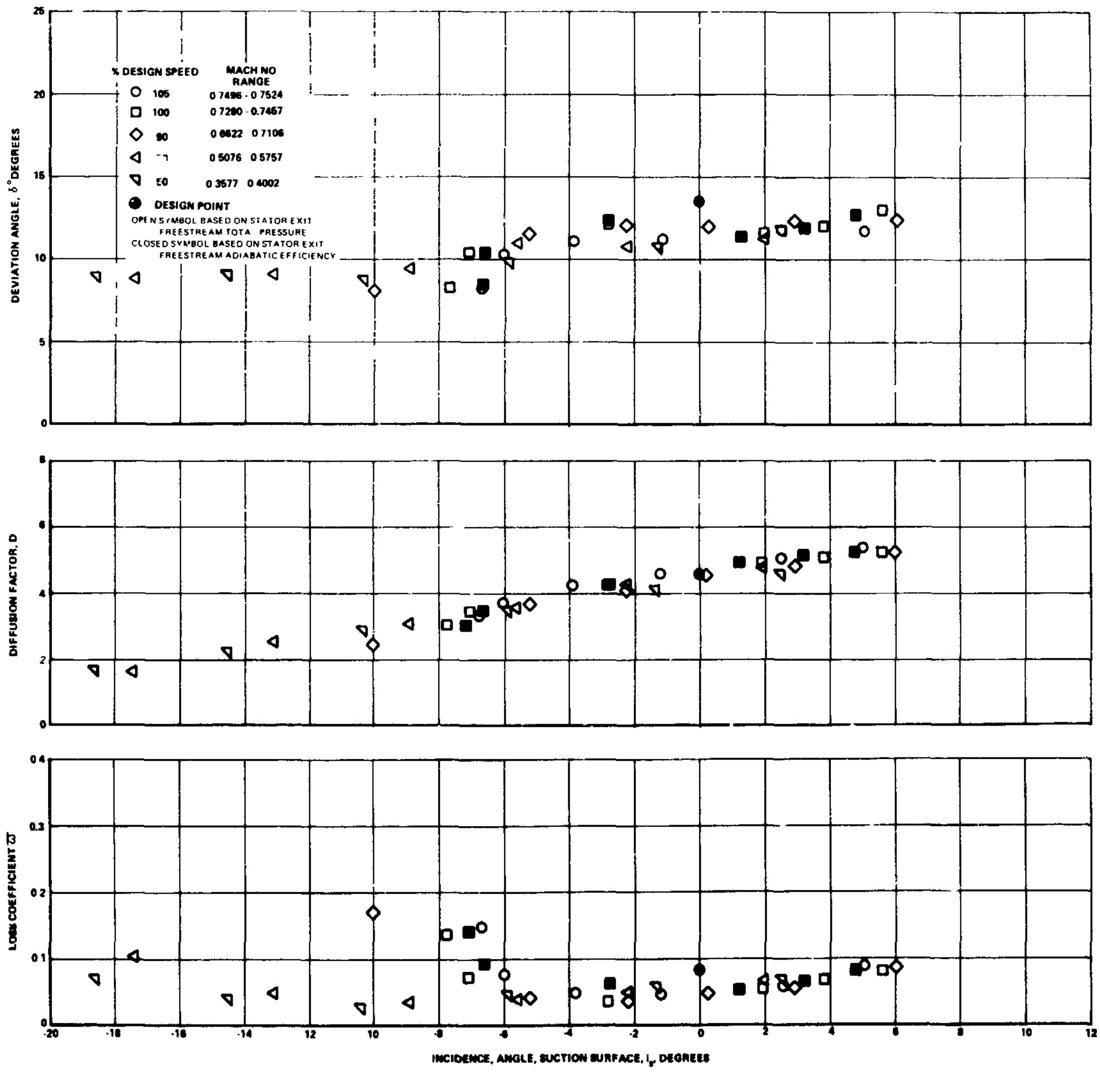


Figure 29 f Stator Blade Element Performance with Uniform Inlet Flow, 70% Span

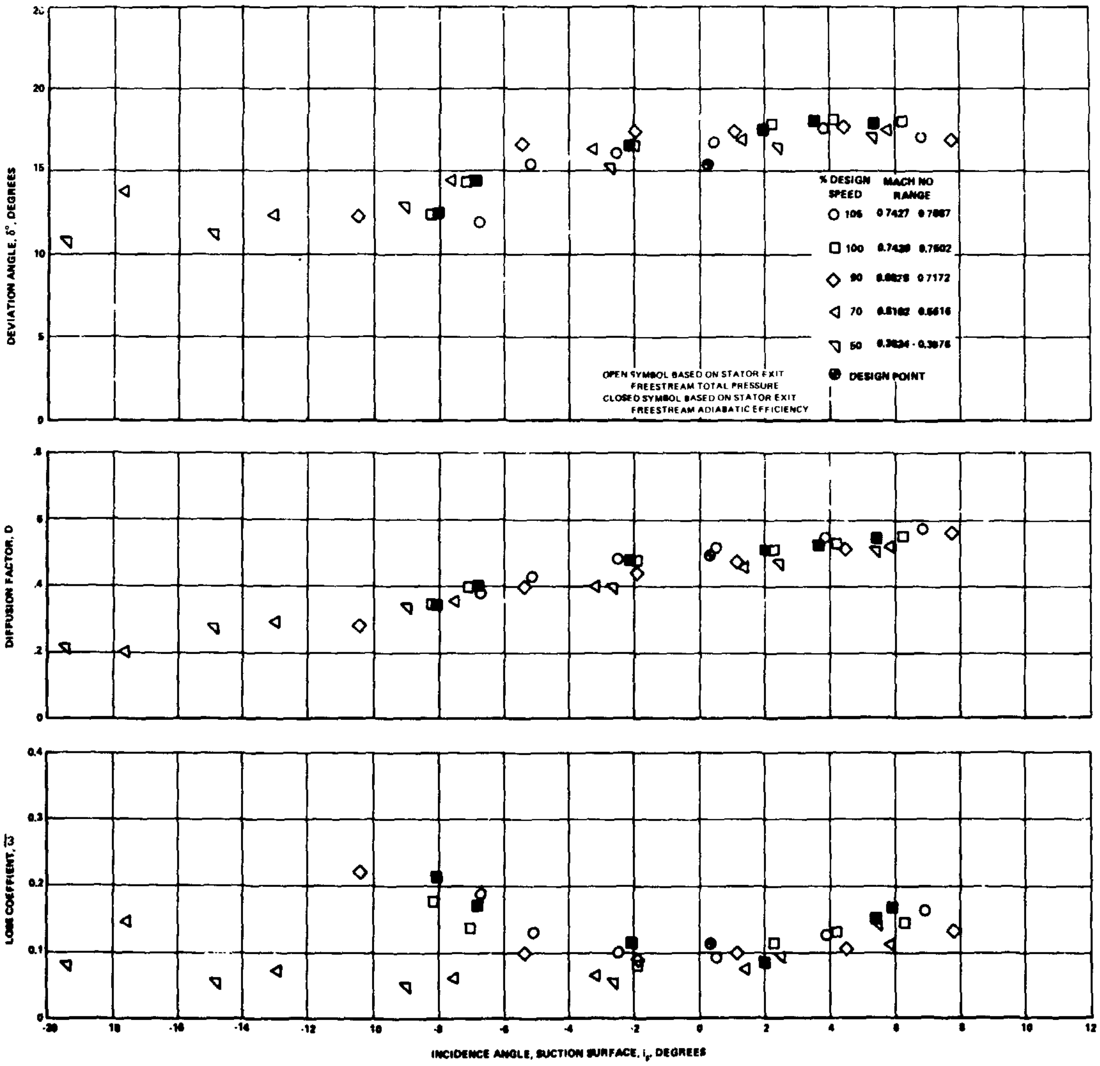


Figure 29 g Stator Blade Element Performance with Uniform Inlet Flow, 85% Span

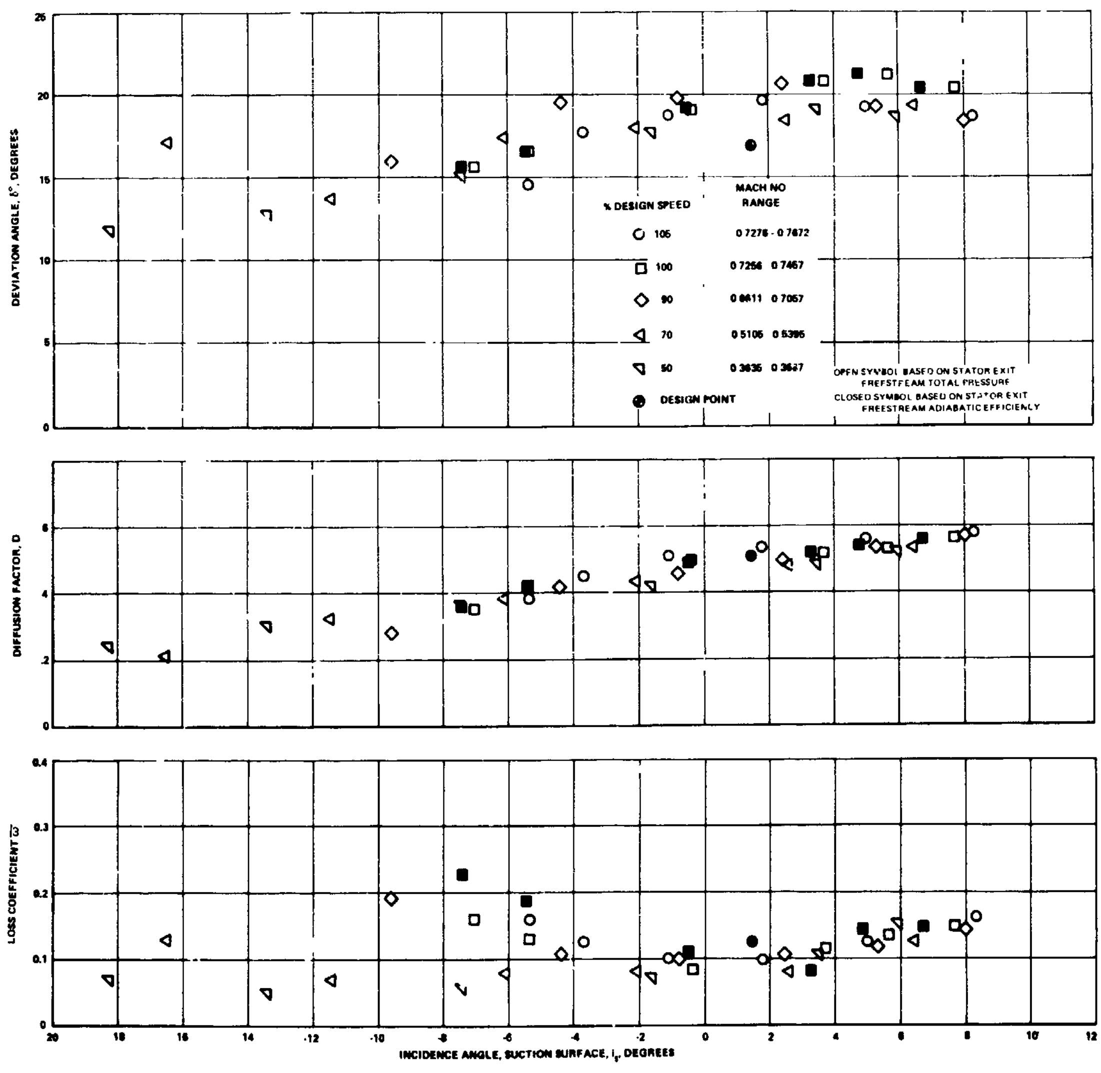


Figure 29 h Stator Blade Element Performance with Uniform Inlet Flow, 90% Span

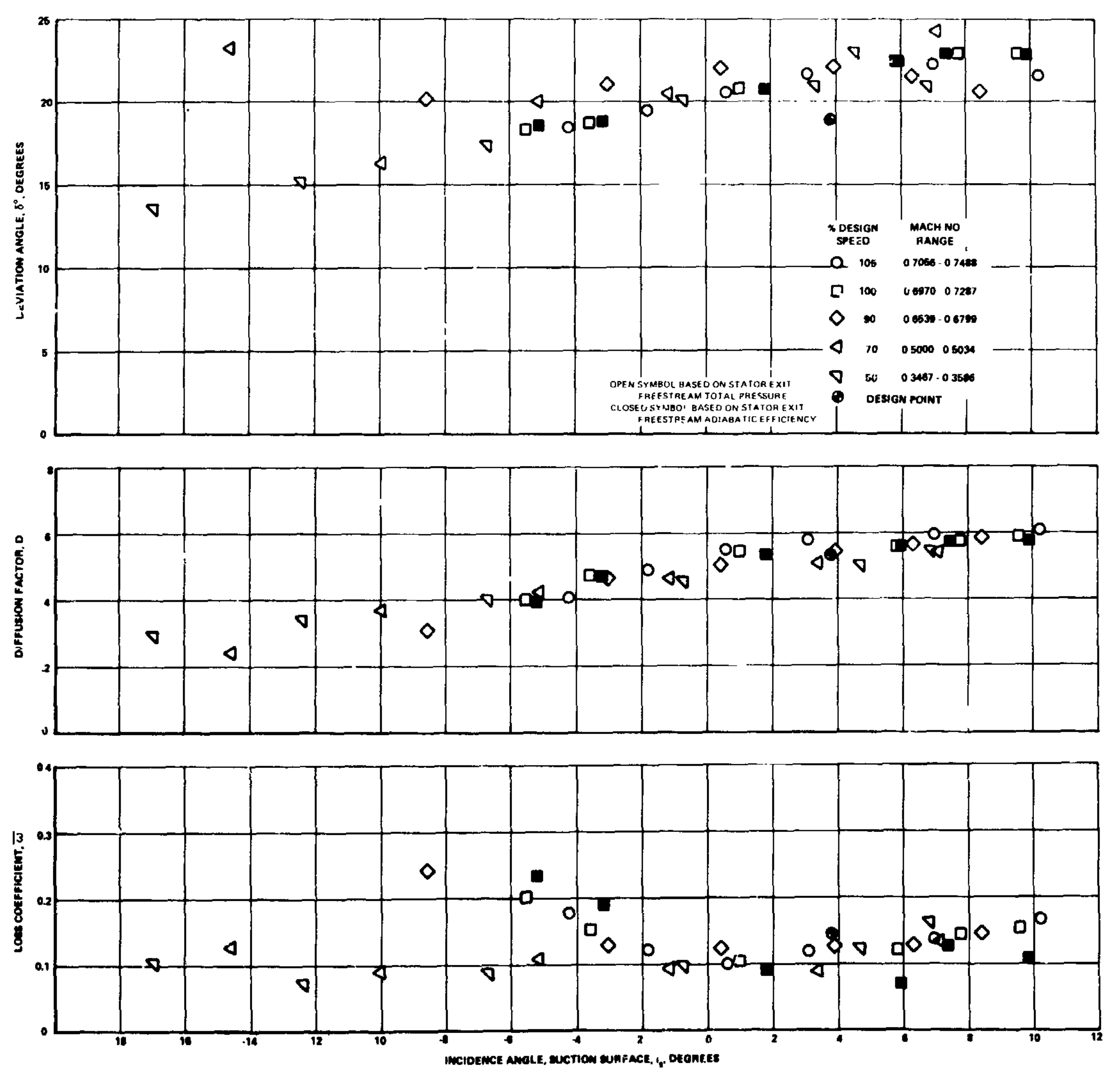


Figure 29 i Stator Blade Element Performance with Uniform Inlet Flow, 95% Span

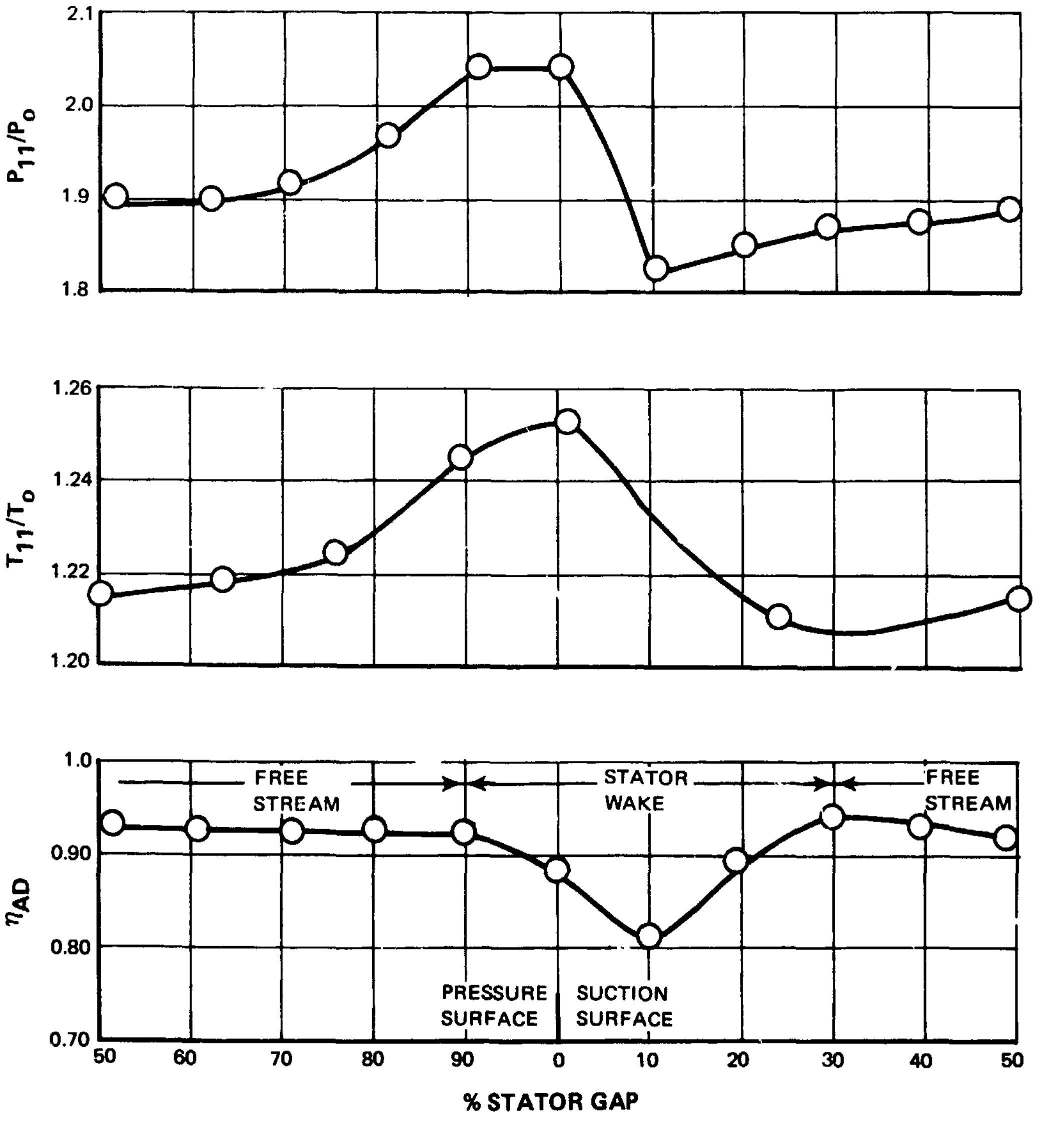


Figure 30 Pressure Ratio, Temperature Ratio, and Adiabatic Efficiency vs. Stator Exit Gapwise Location at 15% Span, Near Design Data Point

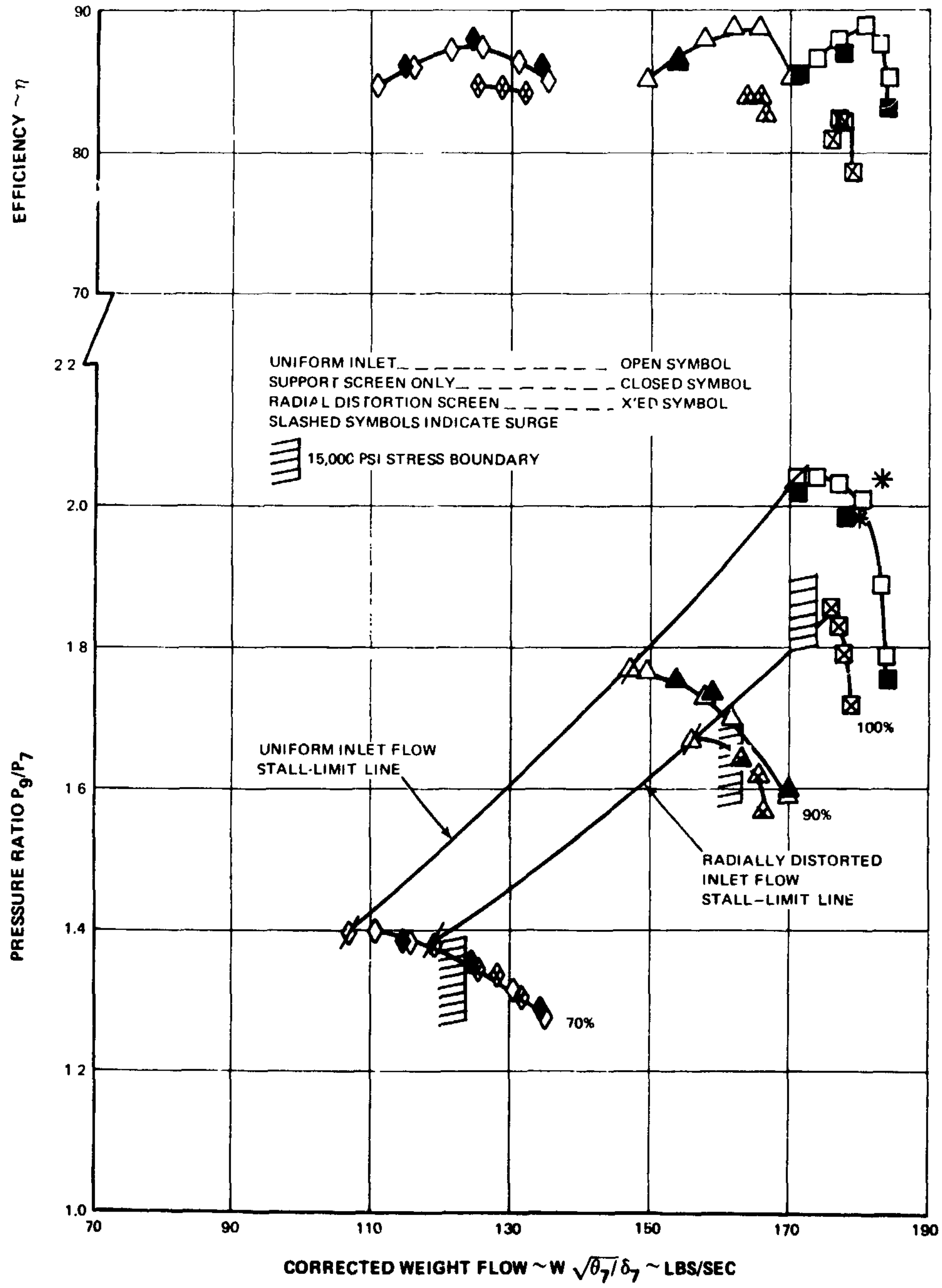


Figure 31 Comparison of Rotor Over-all Performance with the Distortion Screen Support, Radially Distorted Inlet Flow and Uniform Inlet Flow

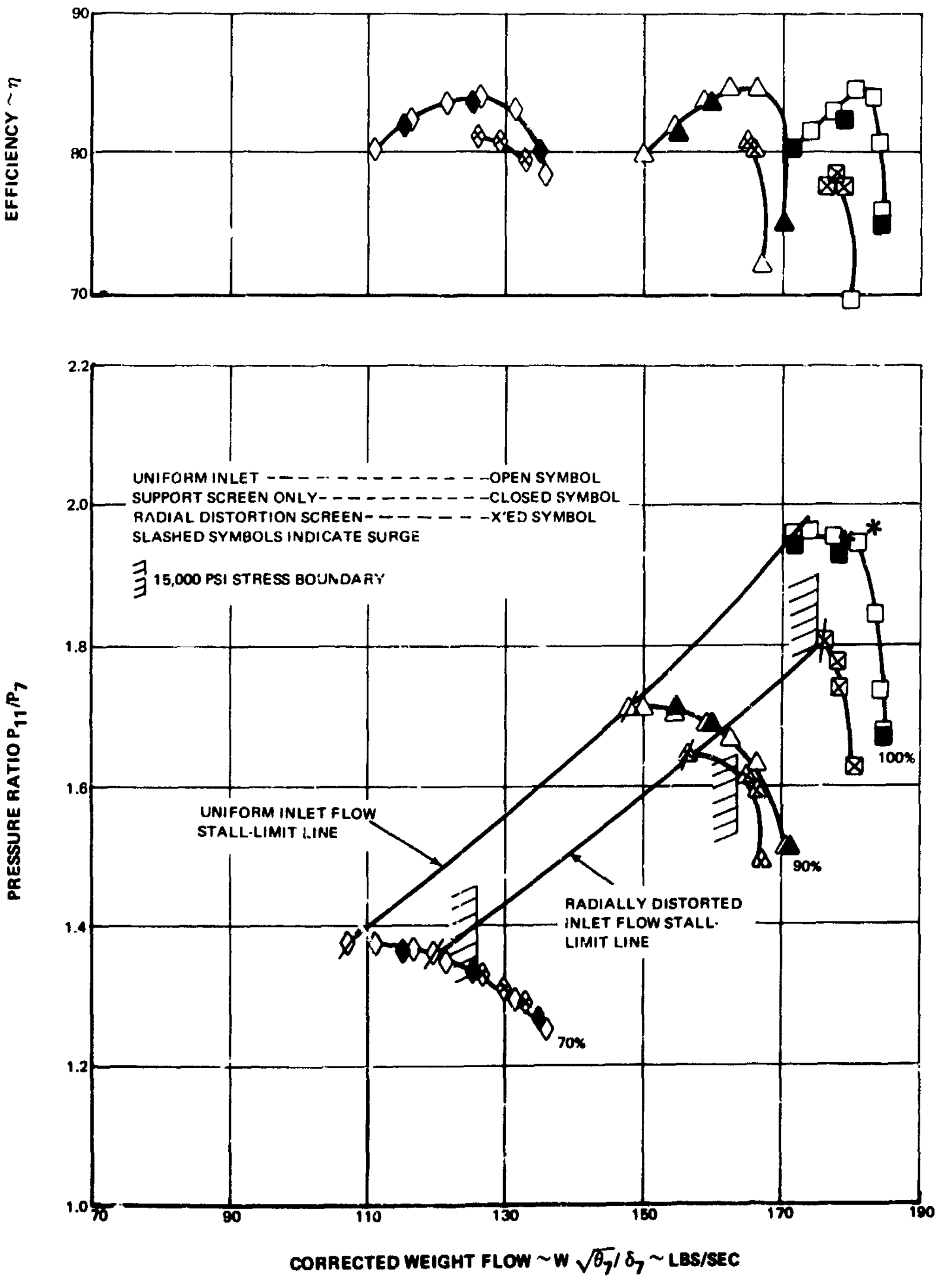


Figure 32 Comparison of Stage Over-all Performance with the Distortion Screen Support, Radially Distorted Inlet Flow and Uniform Inlet Flow

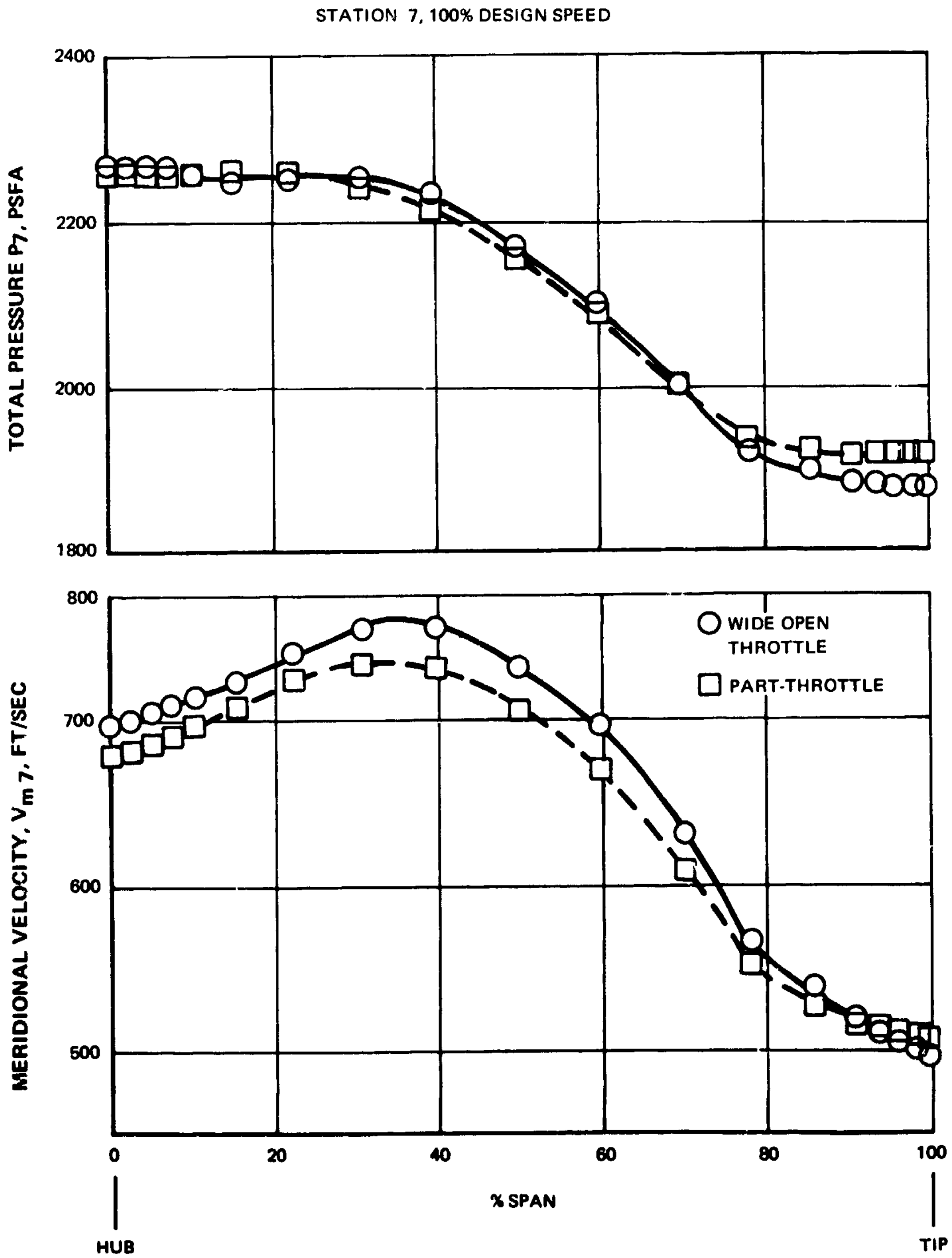


Figure 33 Spanwise Variation in Rotor Inlet Total Pressure and Meridional Velocity with Radially Distorted Inlet Flow

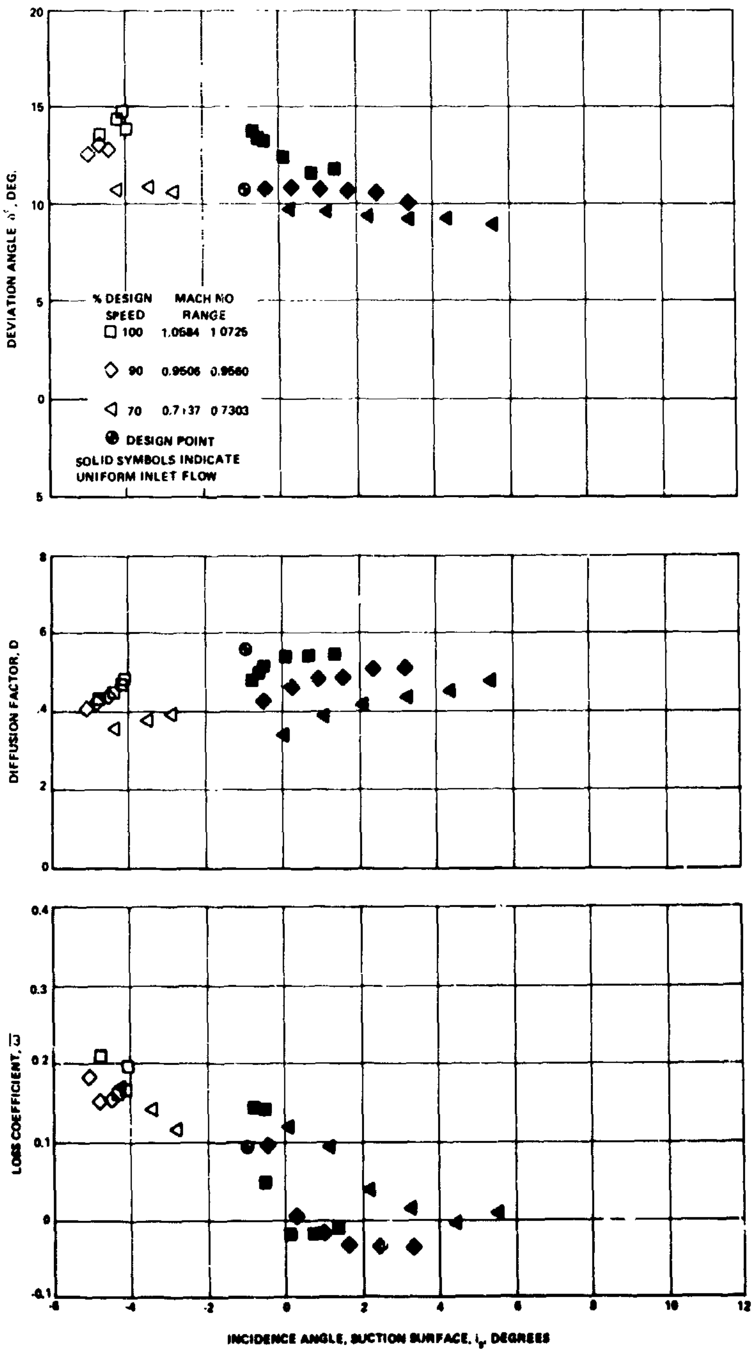


Figure 34 a Rotor Blade Element Performance with Radially Distorted Inlet Flow, 10% Span

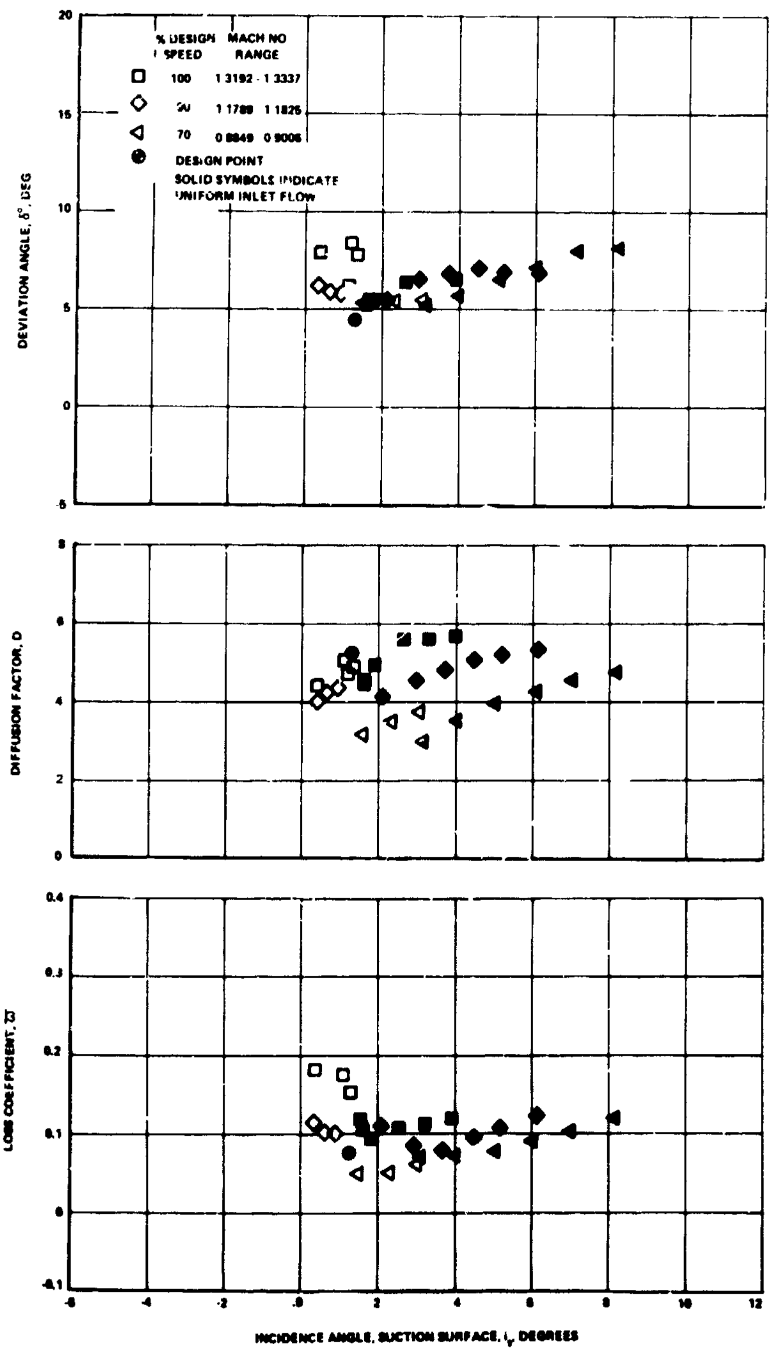


Figure 34 b Rotor Blade Element Performance with Radially Distorted Inlet Flow, 50% Span

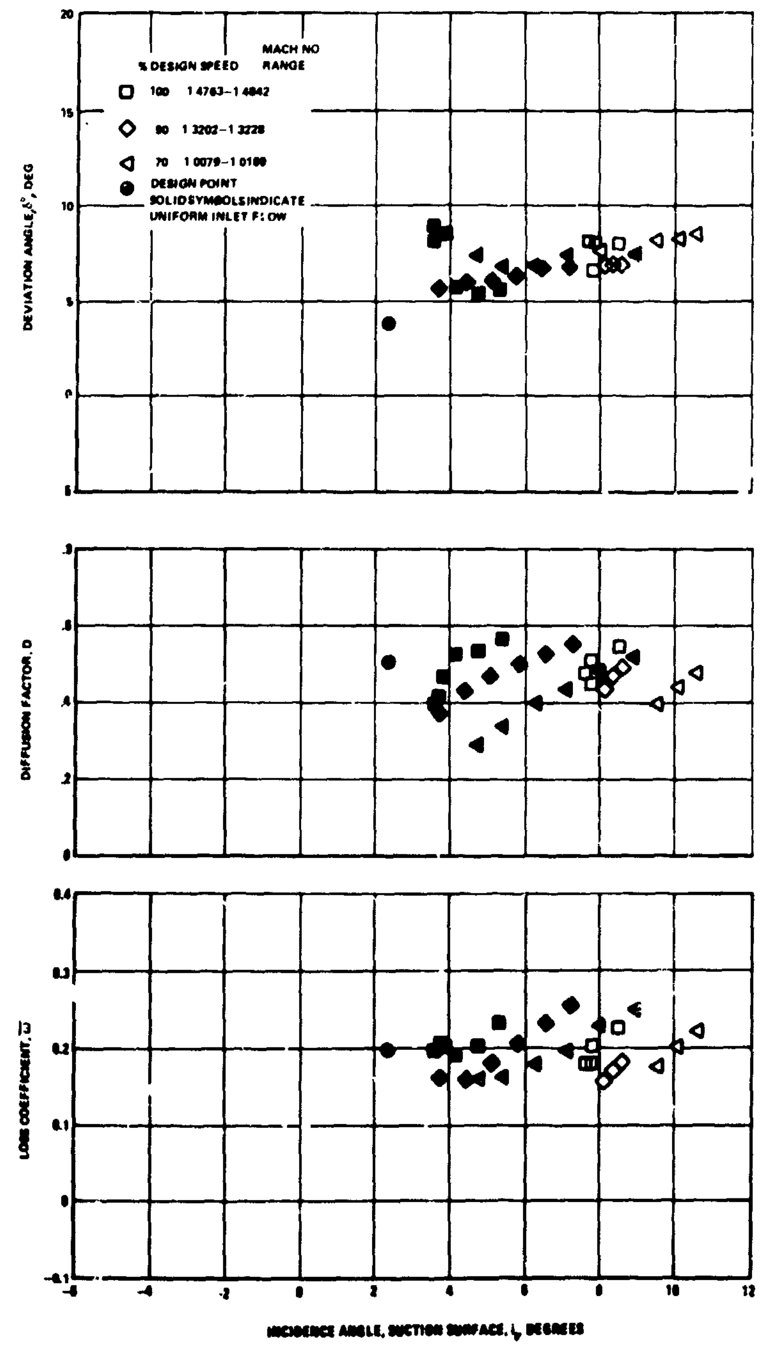


Figure 34 c Rotor Blade Element Performance with Radially Distorted Inlet Flow, 90% Span

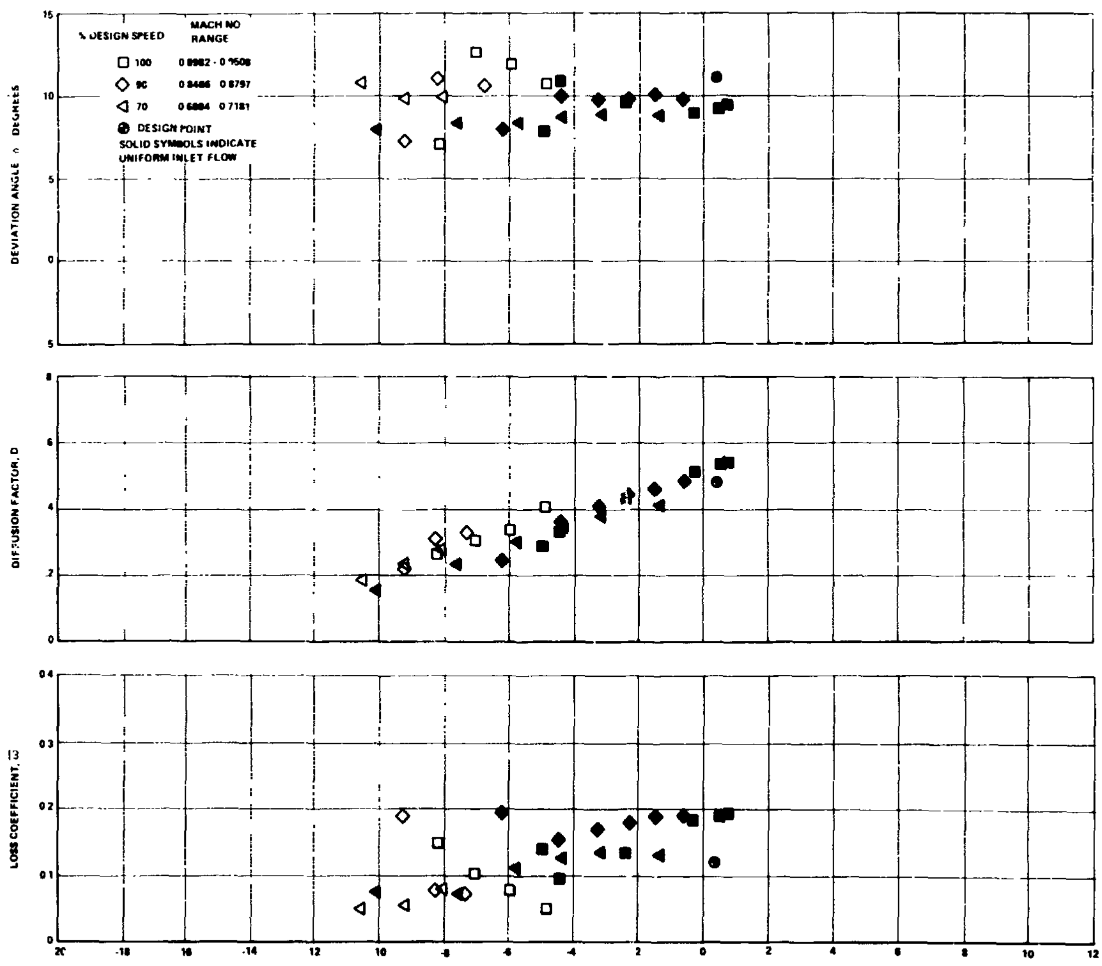


Figure 35 a Stator Blade Element Performance with Radially Distorted Inlet Flow, 10% Span

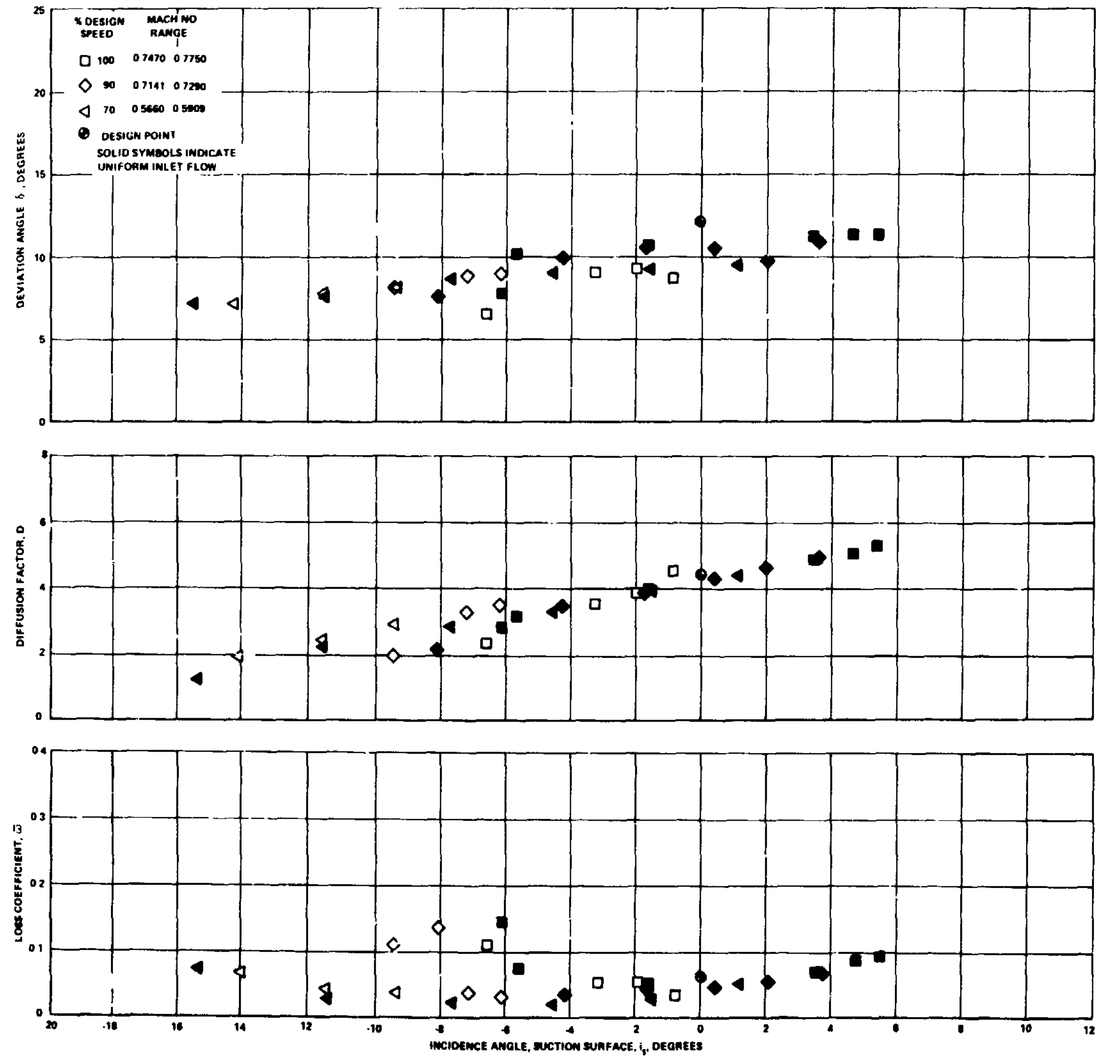


Figure 35 b Stator Blade Element Performance with Radially Distorted Inlet Flow, 50% Span

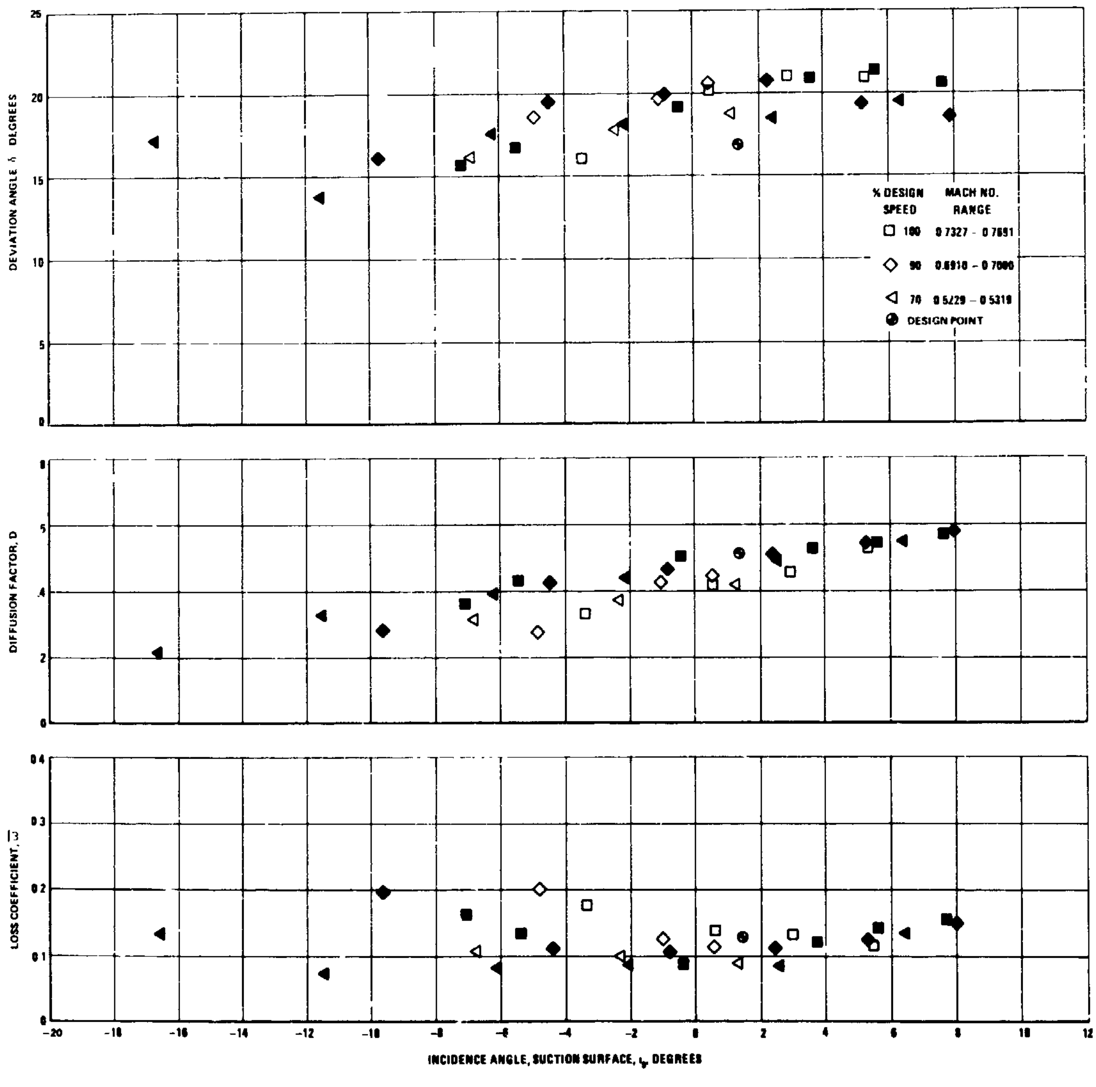


Figure 35c Stator Blade Element Performance with Radially Distorted Inlet Flow, 90% Span

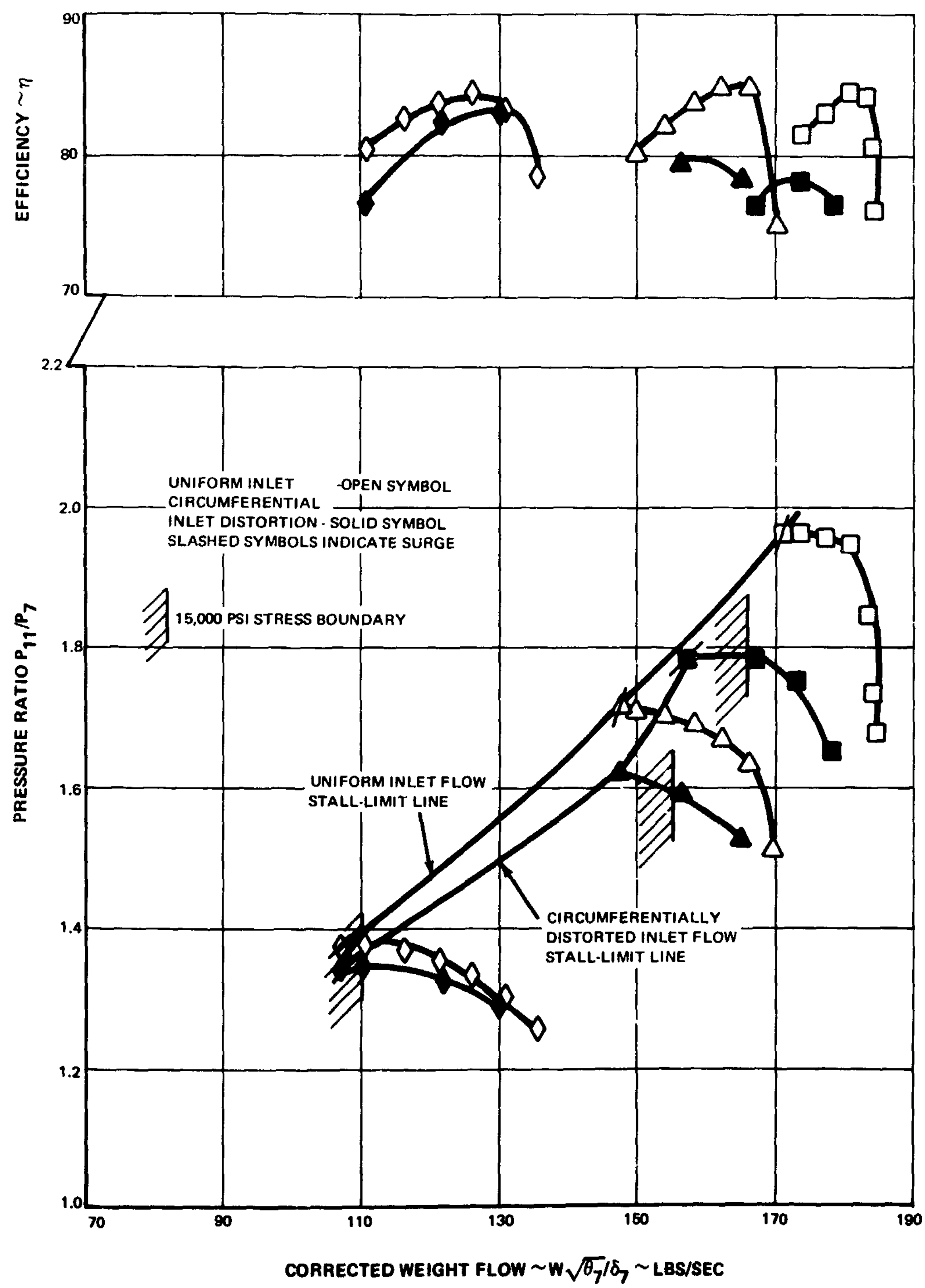


Figure 36 Comparison of Stage Over-all Performance With Circumferentially Distorted Inlet Flow and Uniform Inlet Flow

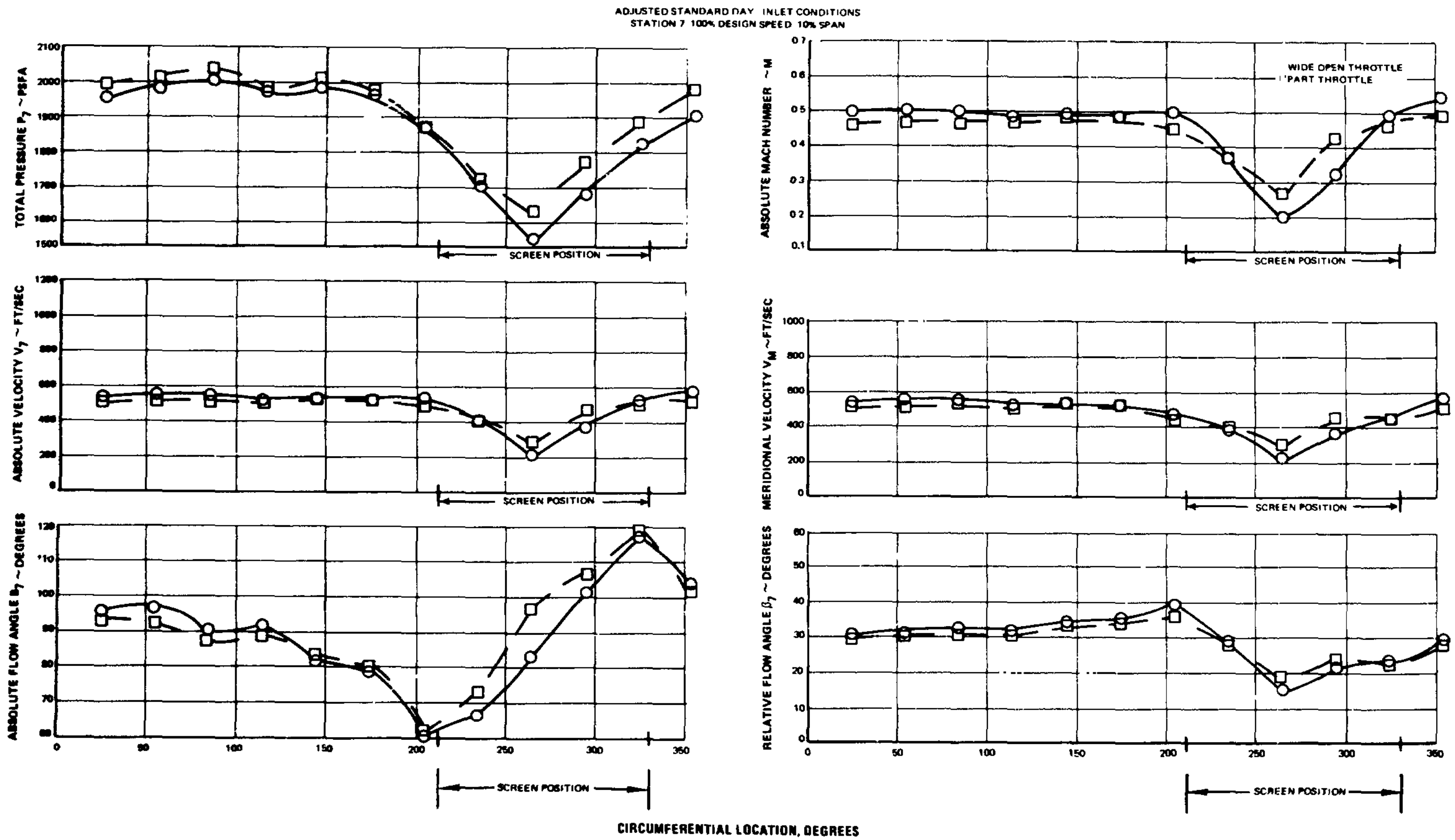


Figure 37 Circumferential Distributions of Rotor Inlet Total Pressure, Absolute Velocity, Meridional Velocity, Absolute Mach Number, and Absolute and Relative Flow Angle, 10% Span

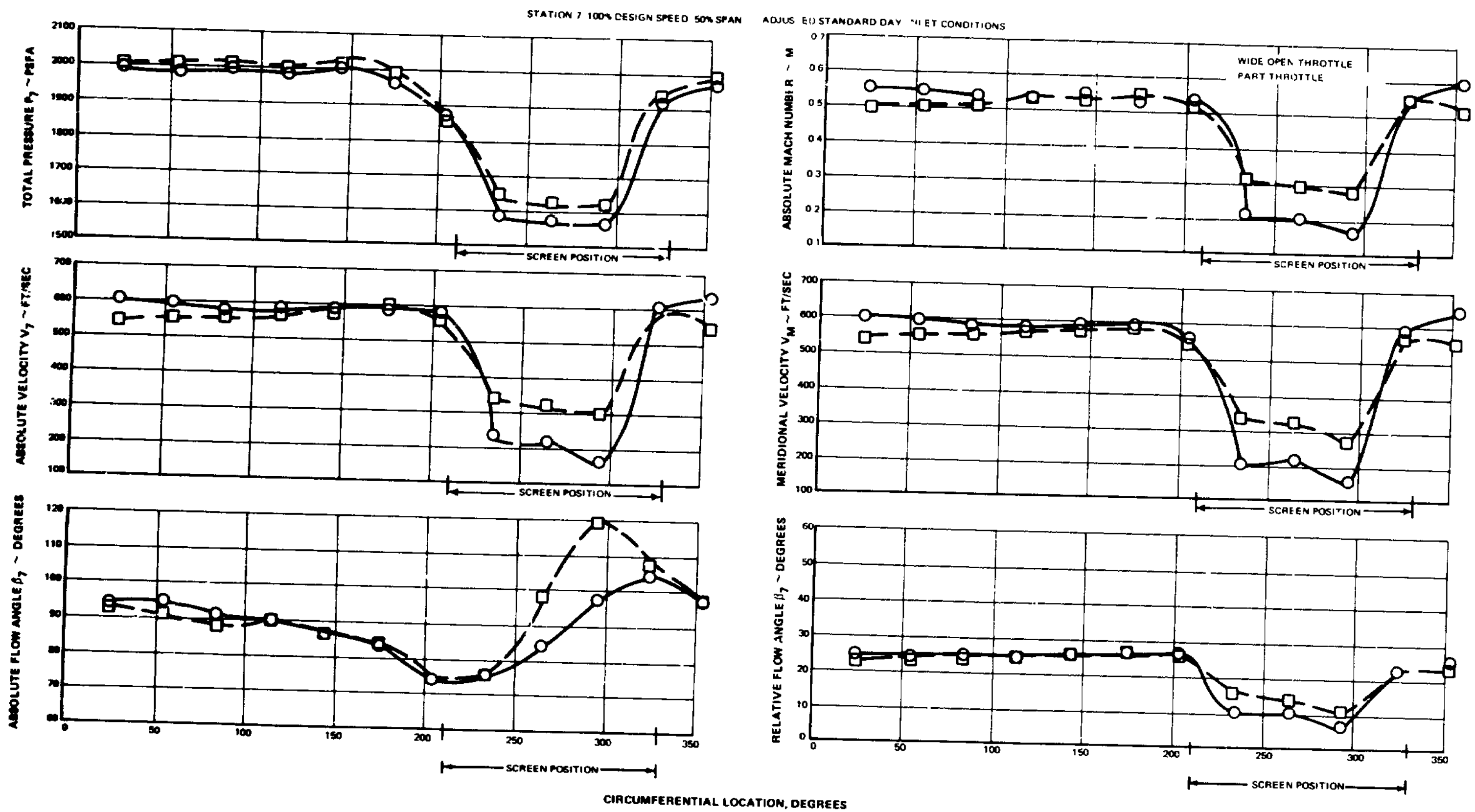


Figure 38 Circumferential Distributions of Rotor Inlet Total Pressure, Absolute Velocity, Meridional Velocity, Absolute Mach Number, and Absolute and Relative Flow Angle, 50% Span

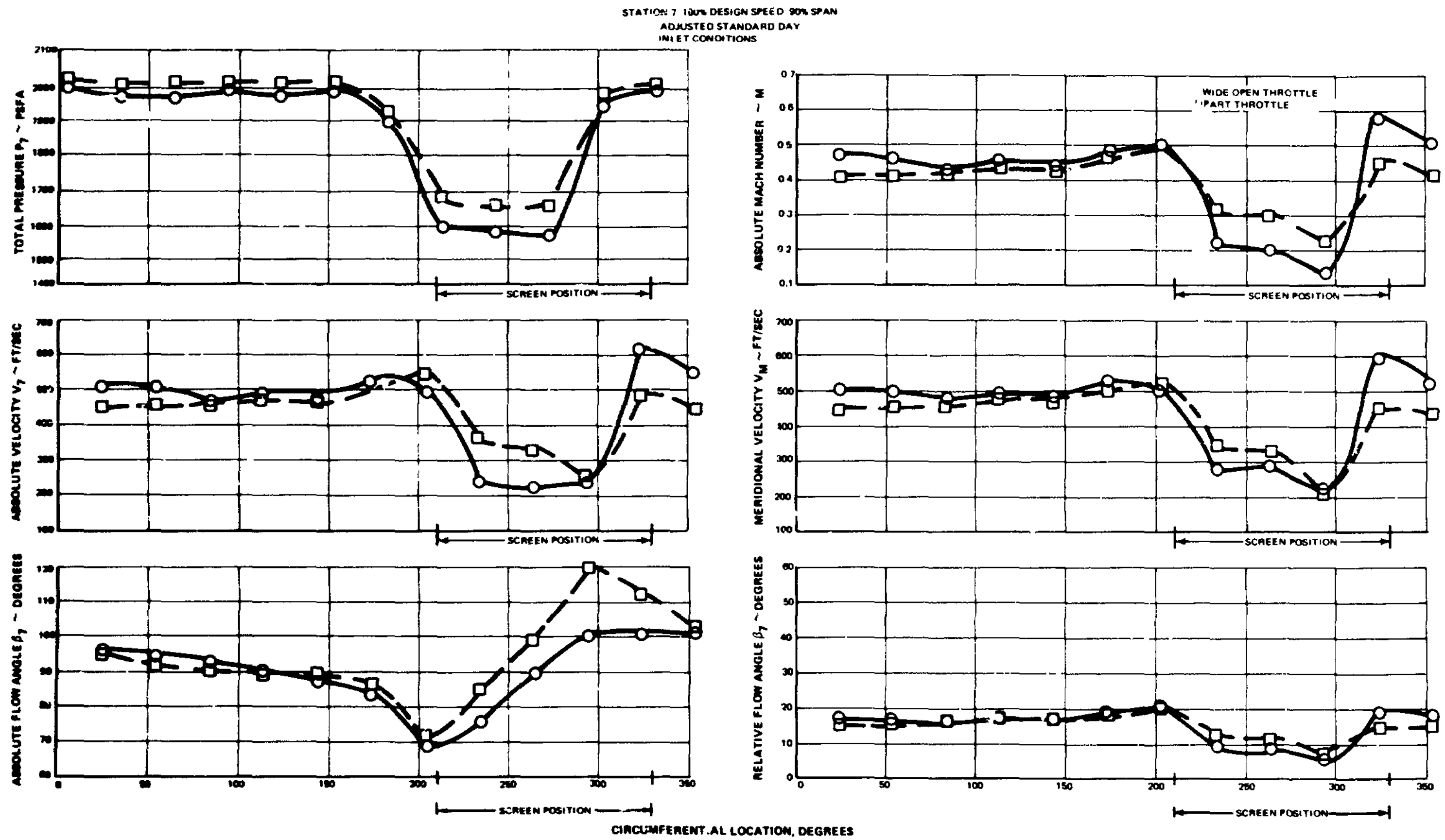


Figure 39 Circumferential Distributions of Rotor Inlet Total Pressure, Absolute Velocity, Meridional Velocity, Absolute Mach Number, and Absolute and Relative Flow Angle, 90% Span

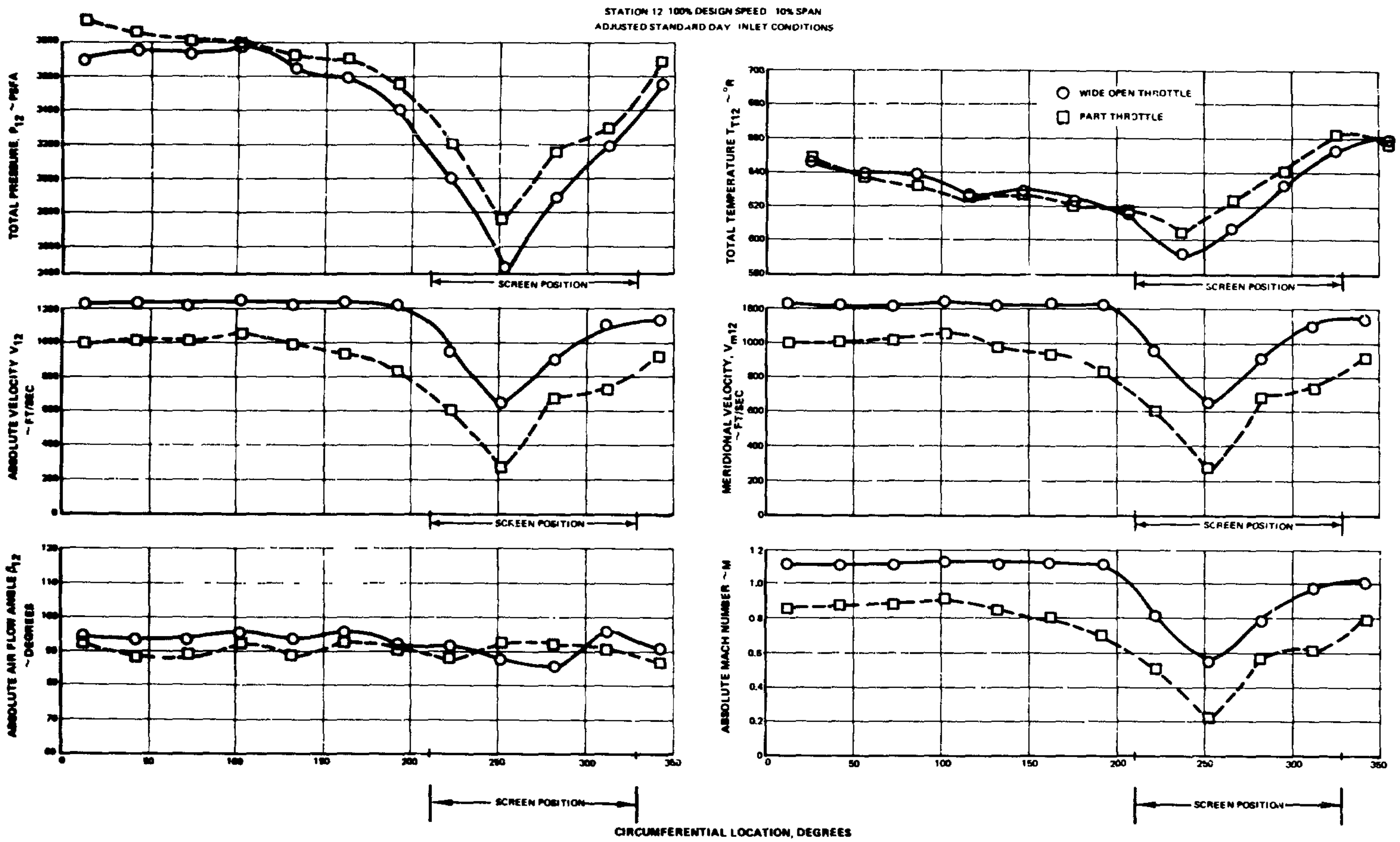


Figure 40 Circumferential Distribution of Stator Discharge Total Pressure, Total Temperature, Absolute Velocity, Meridional Velocity, Absolute Mach Number, and Absolute Air Flow Angle, 10% Span

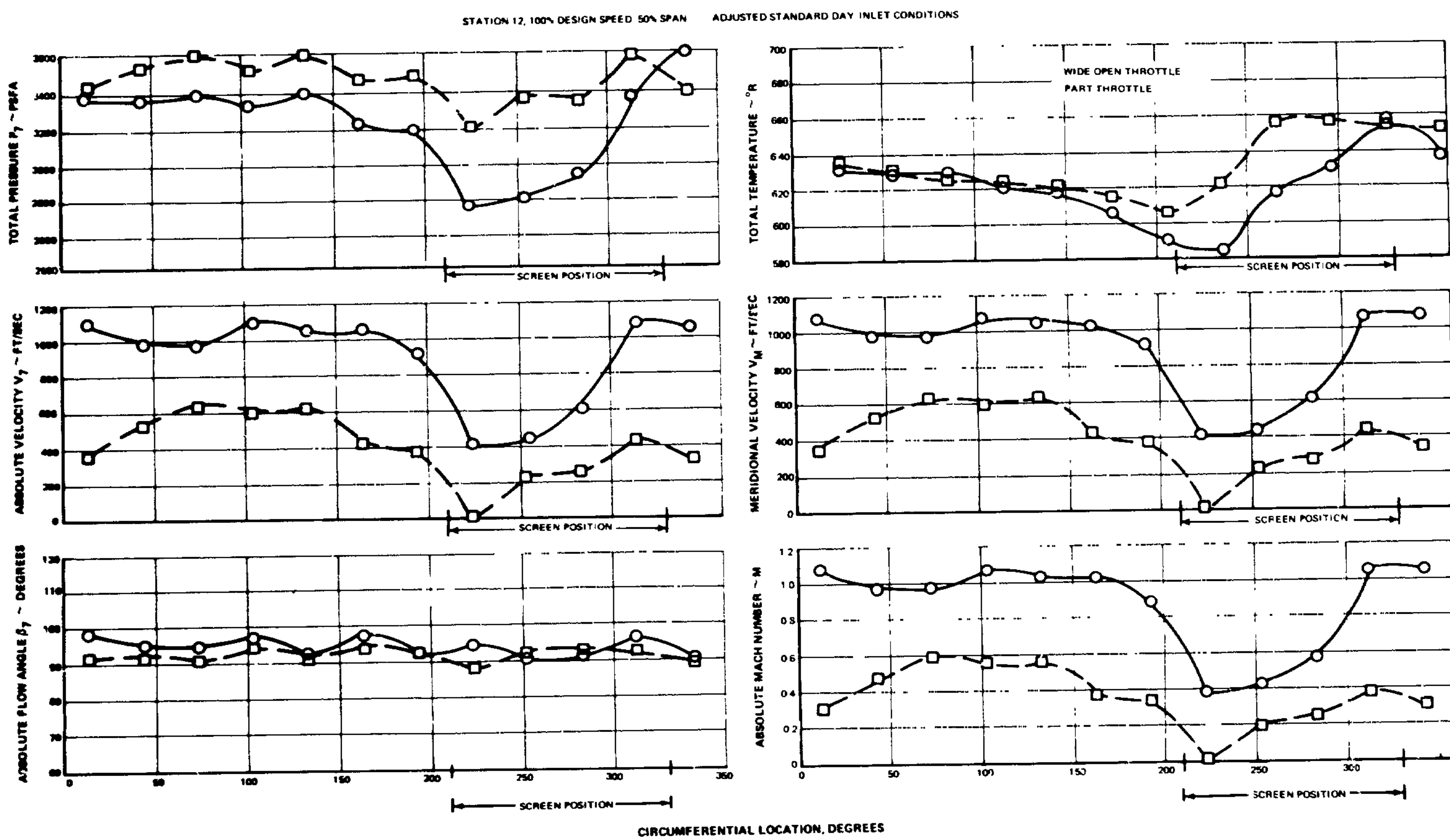


Figure 41 Circumferential Distribution of Stator Discharge Total Pressure, Total Temperature, Absolute Velocity, Meridional Velocity, Absolute Mach Number and Absolute Air Flow Angle, 50% Span

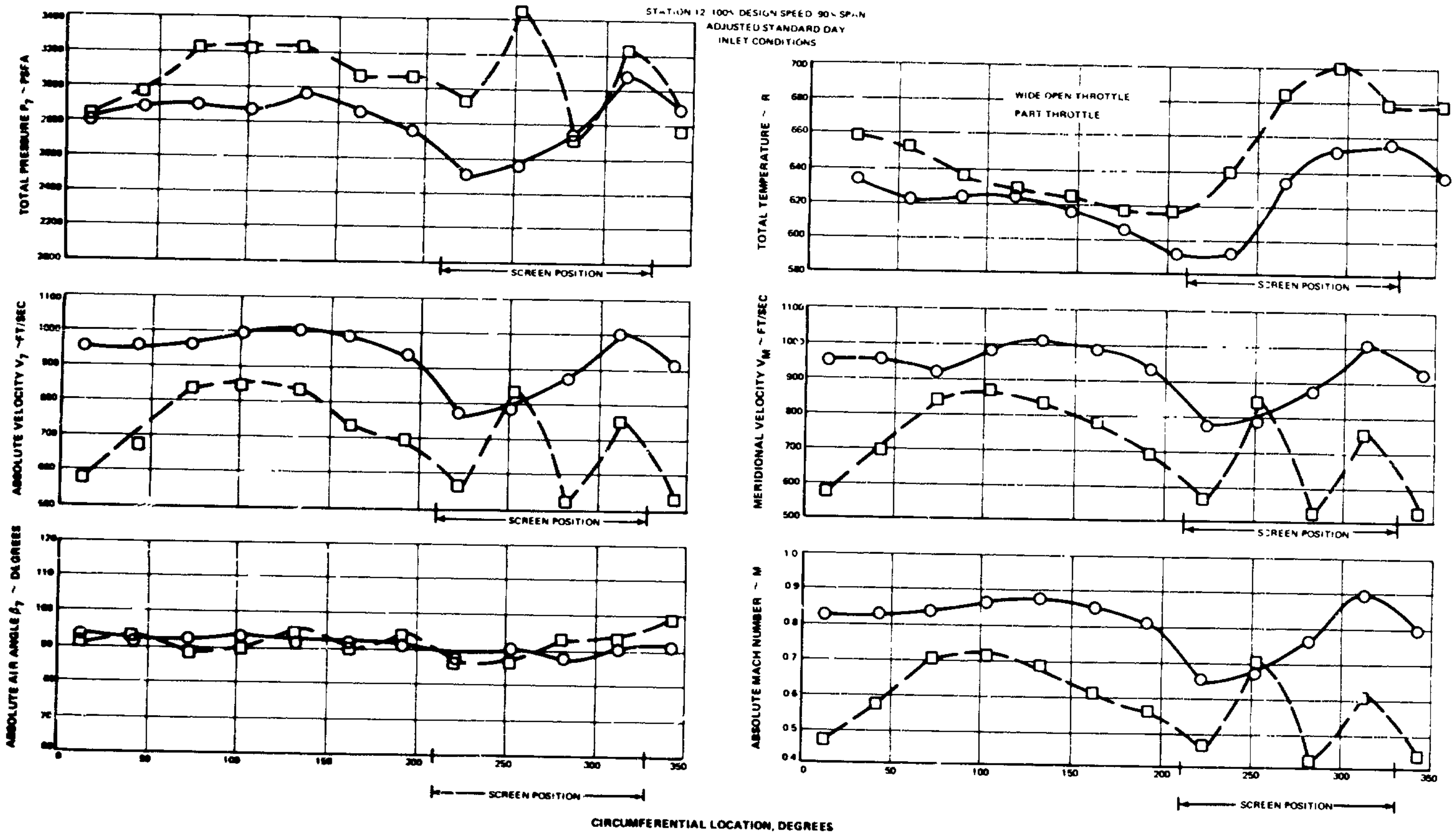


Figure 42 Circumferential Distribution of Stator Discharge Total Pressure, Total Temperature, Absolute Velocity, Meridional Velocity, Absolute Mach Number, and Absolute Air Flow Angle, 90% Span

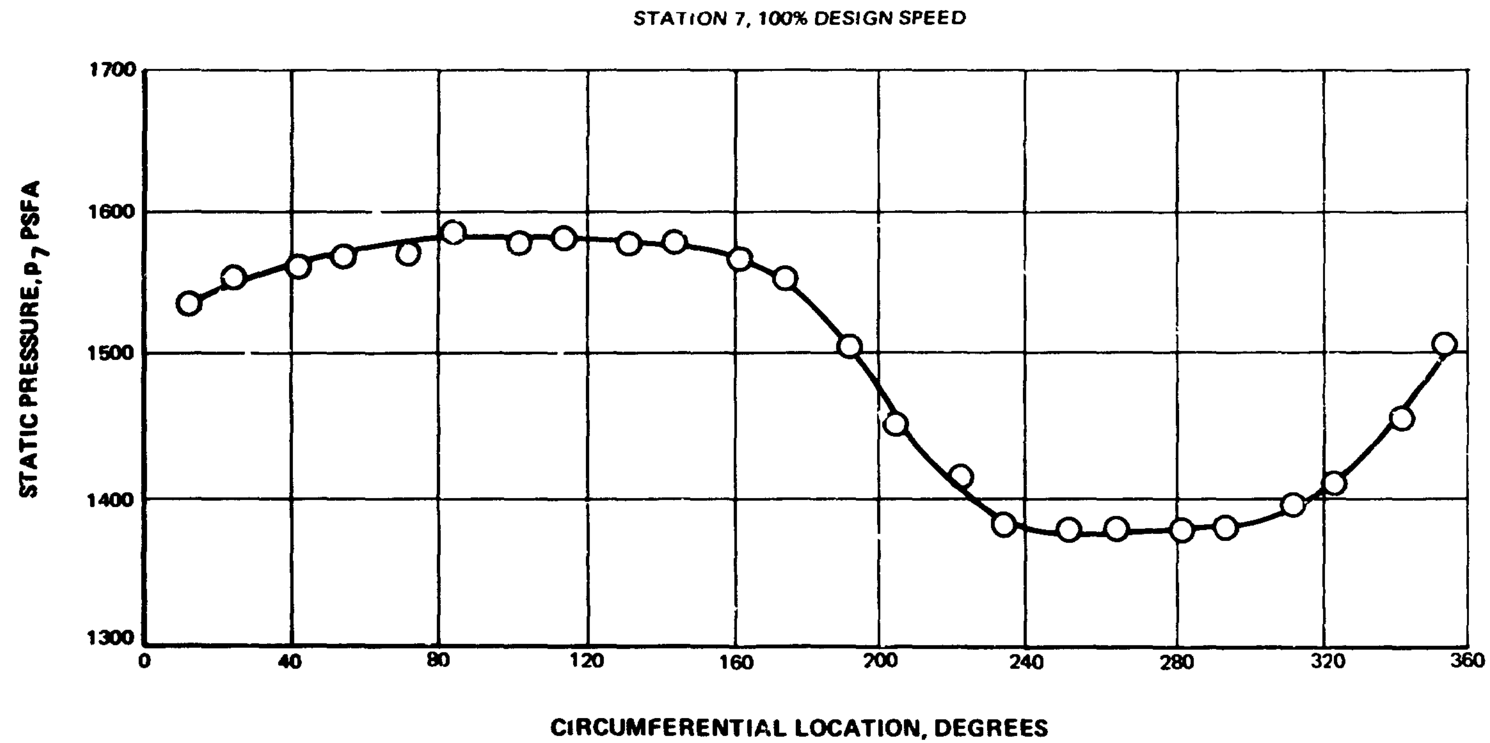


Figure 43 Circumferential Distribution of Rotor Inlet Hub Static Pressure

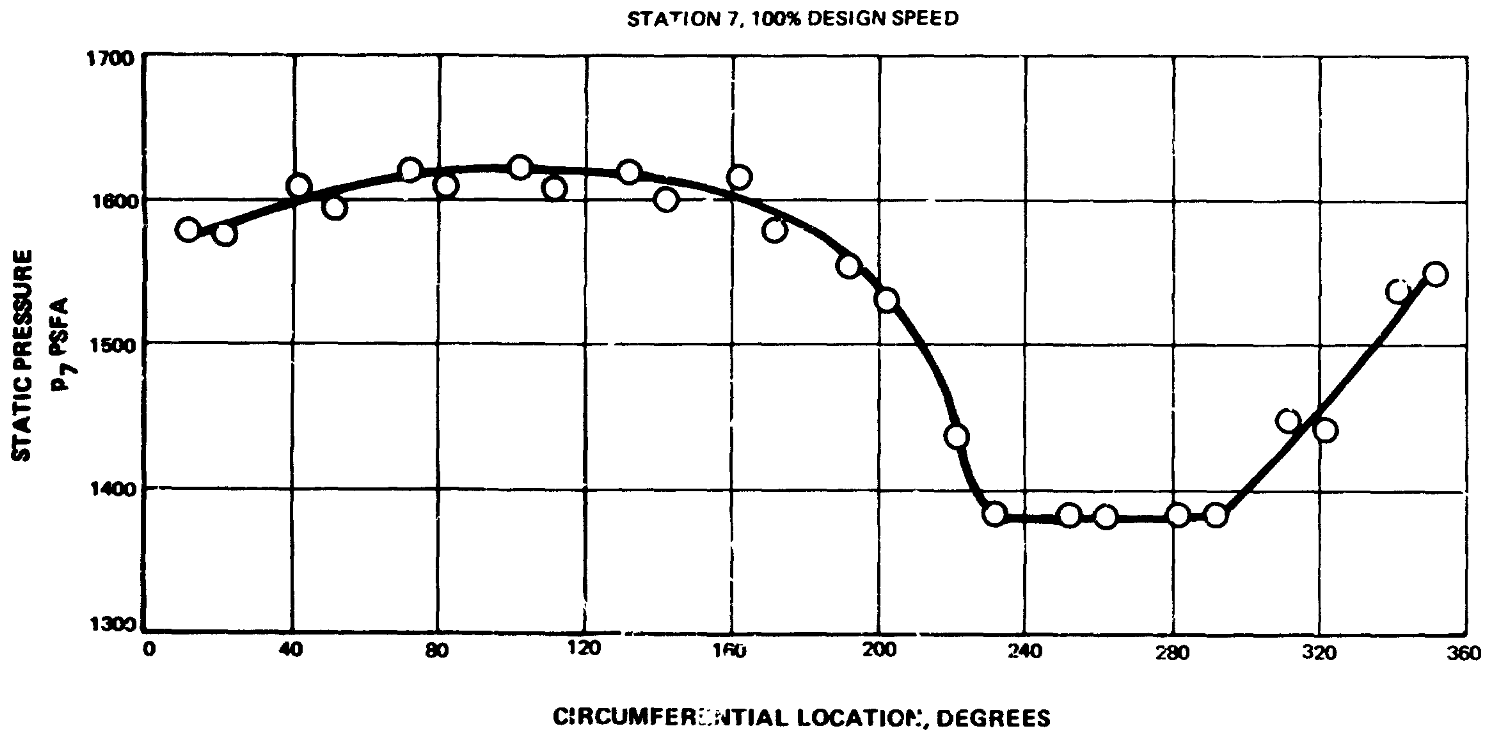


Figure 44 Circumferential Distribution of Rotor inlet Tip Static Pressure

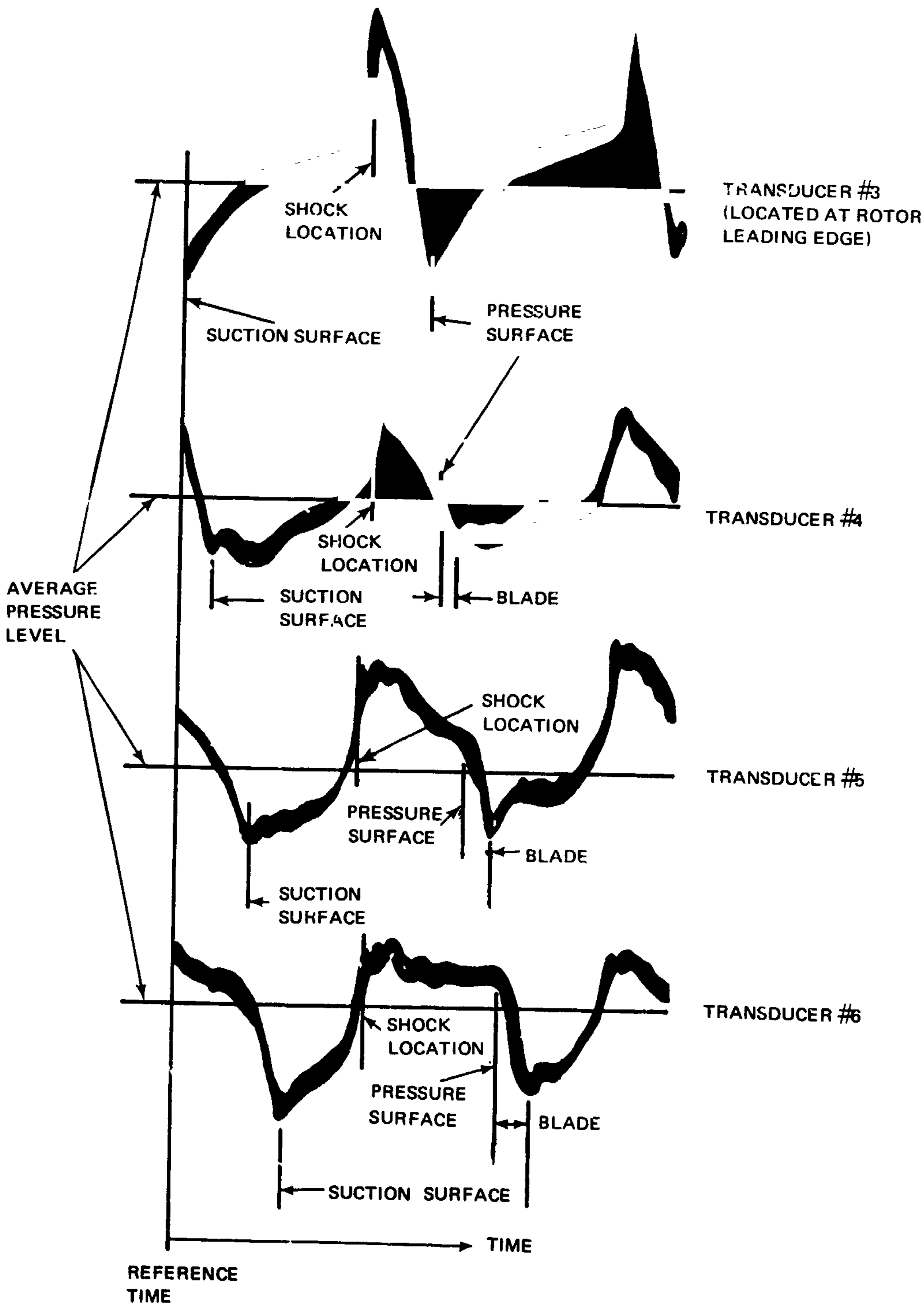


Figure 45 Typical Oscillograph Traces Showing Presence of Shock over Blade Tip

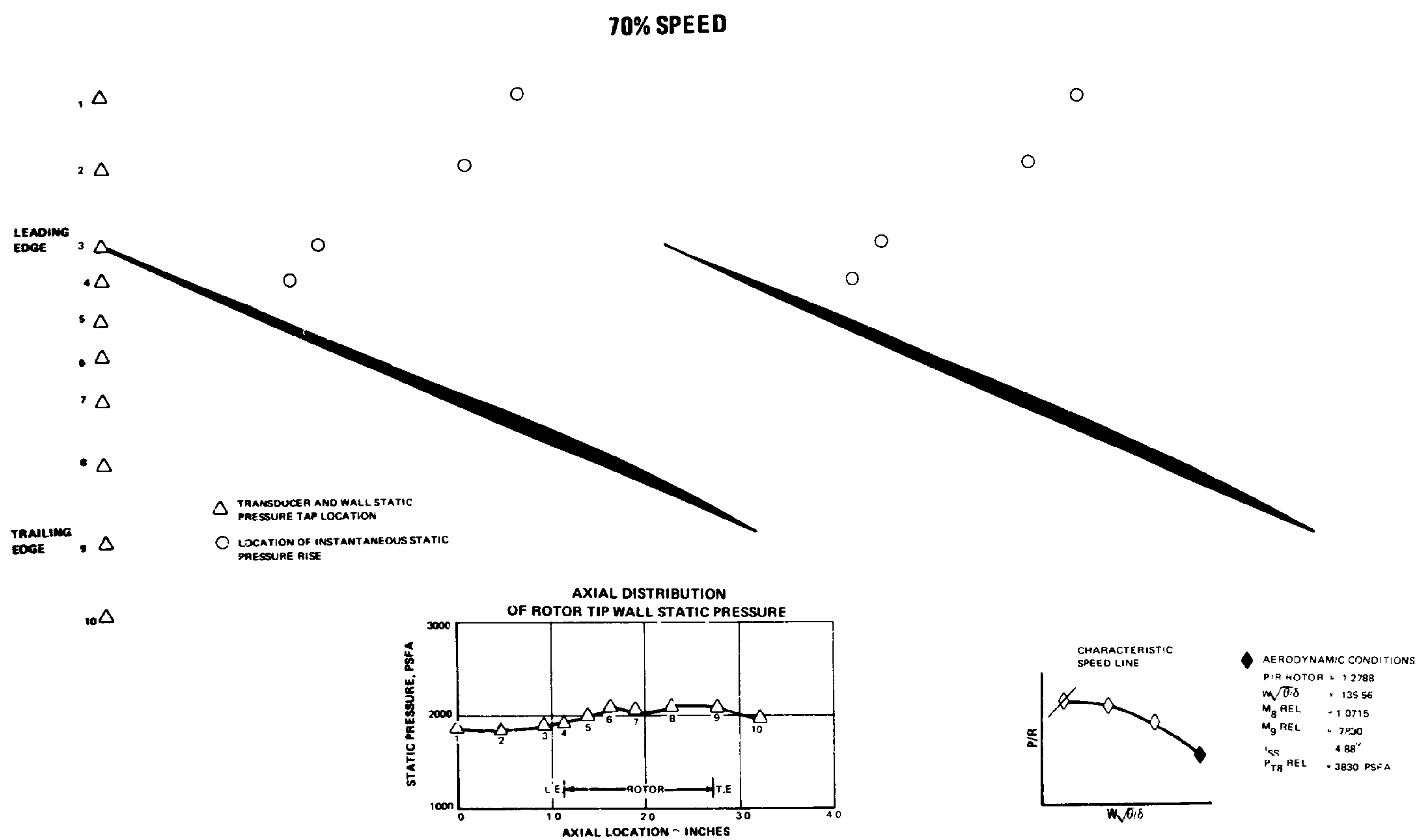


Figure 46 Rotor Blade Tip Shock Location, $\frac{W\sqrt{\theta}}{\delta} = 135.56$

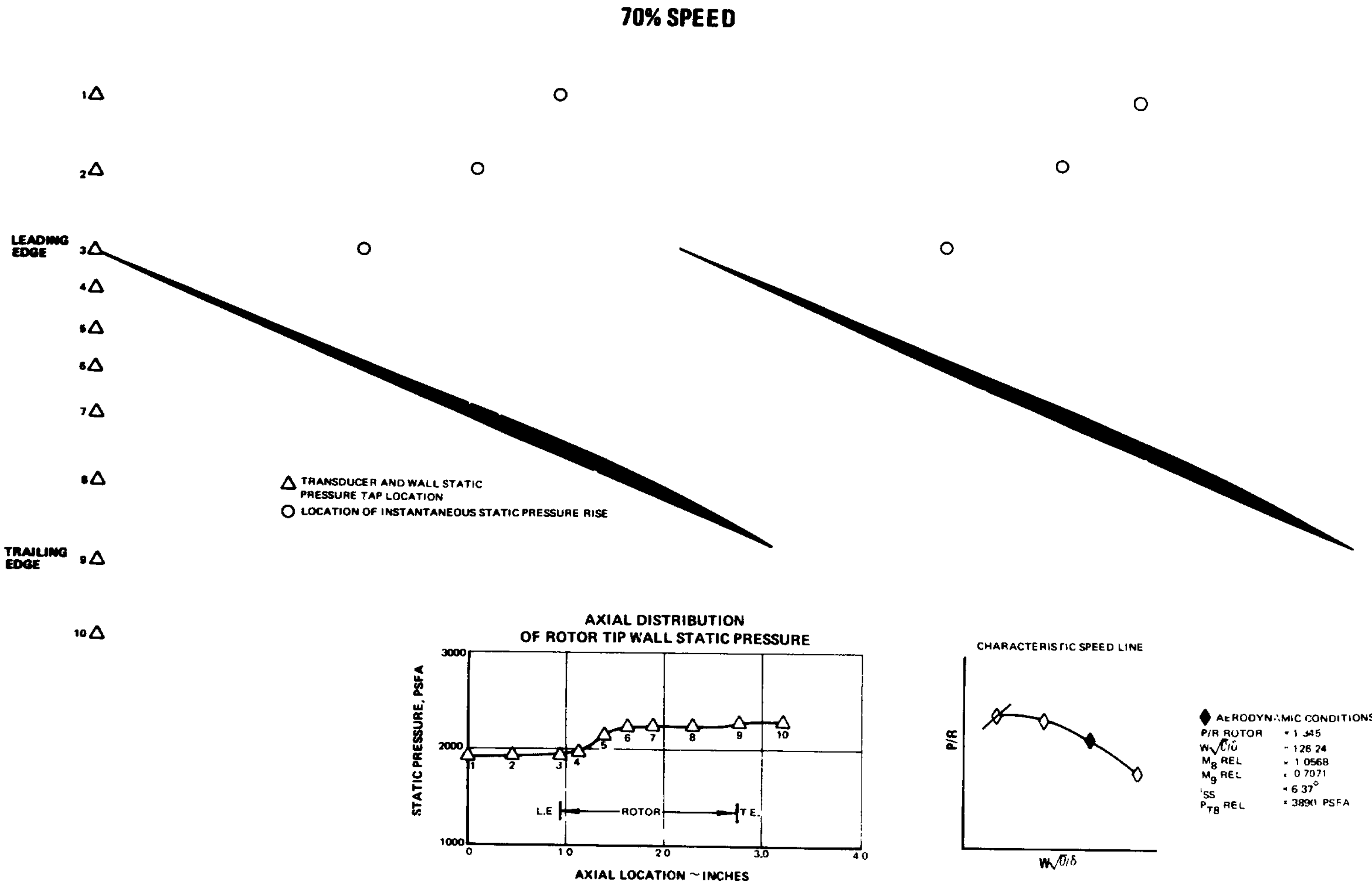


Figure 47 Rotor Blade Tip Shock Location, $\frac{W\sqrt{\theta}}{\delta} = 126.24$

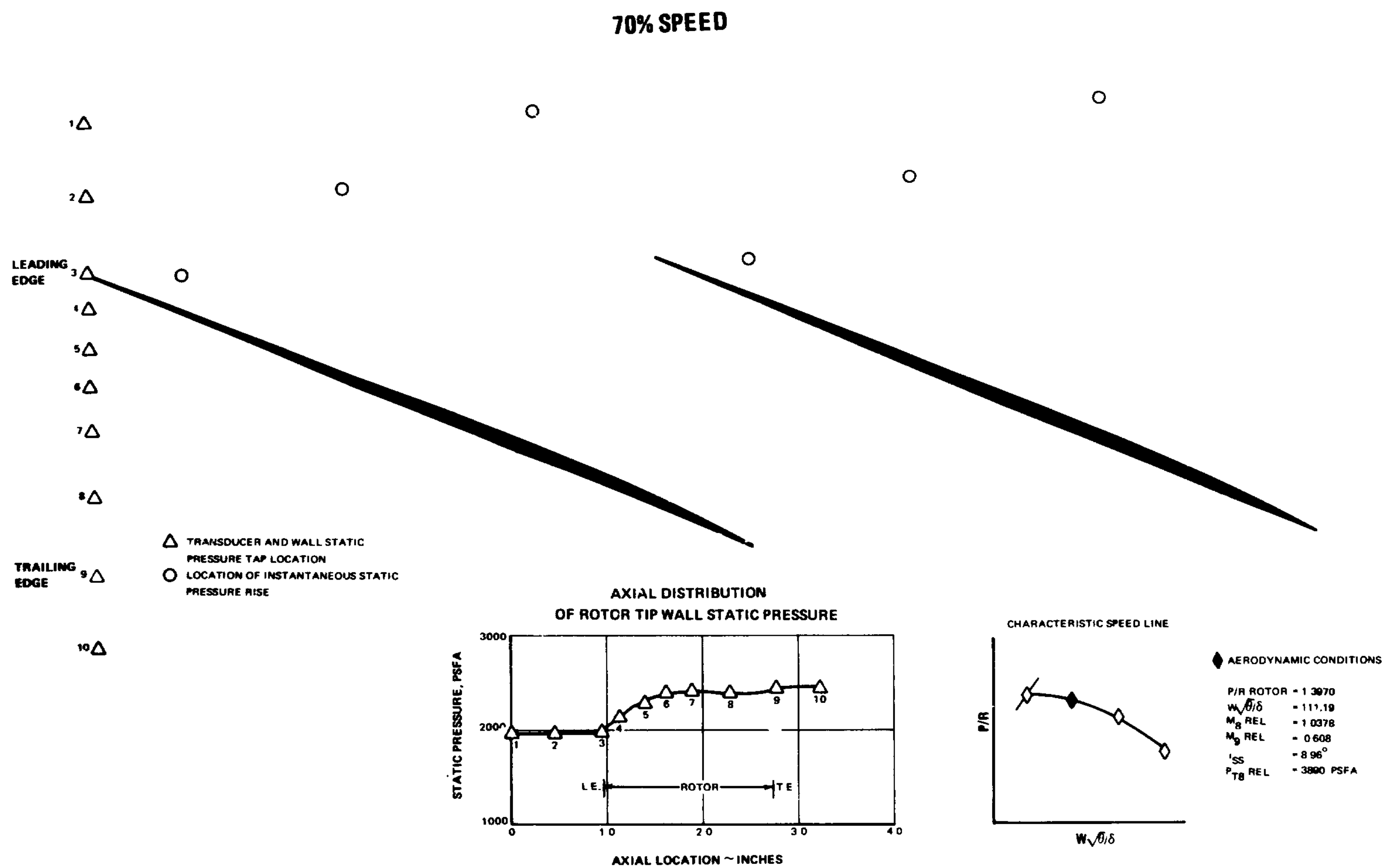


Figure 48 Rotor Blade Tip Shock Location, $\frac{W\sqrt{\theta}}{\delta} = 111.19$

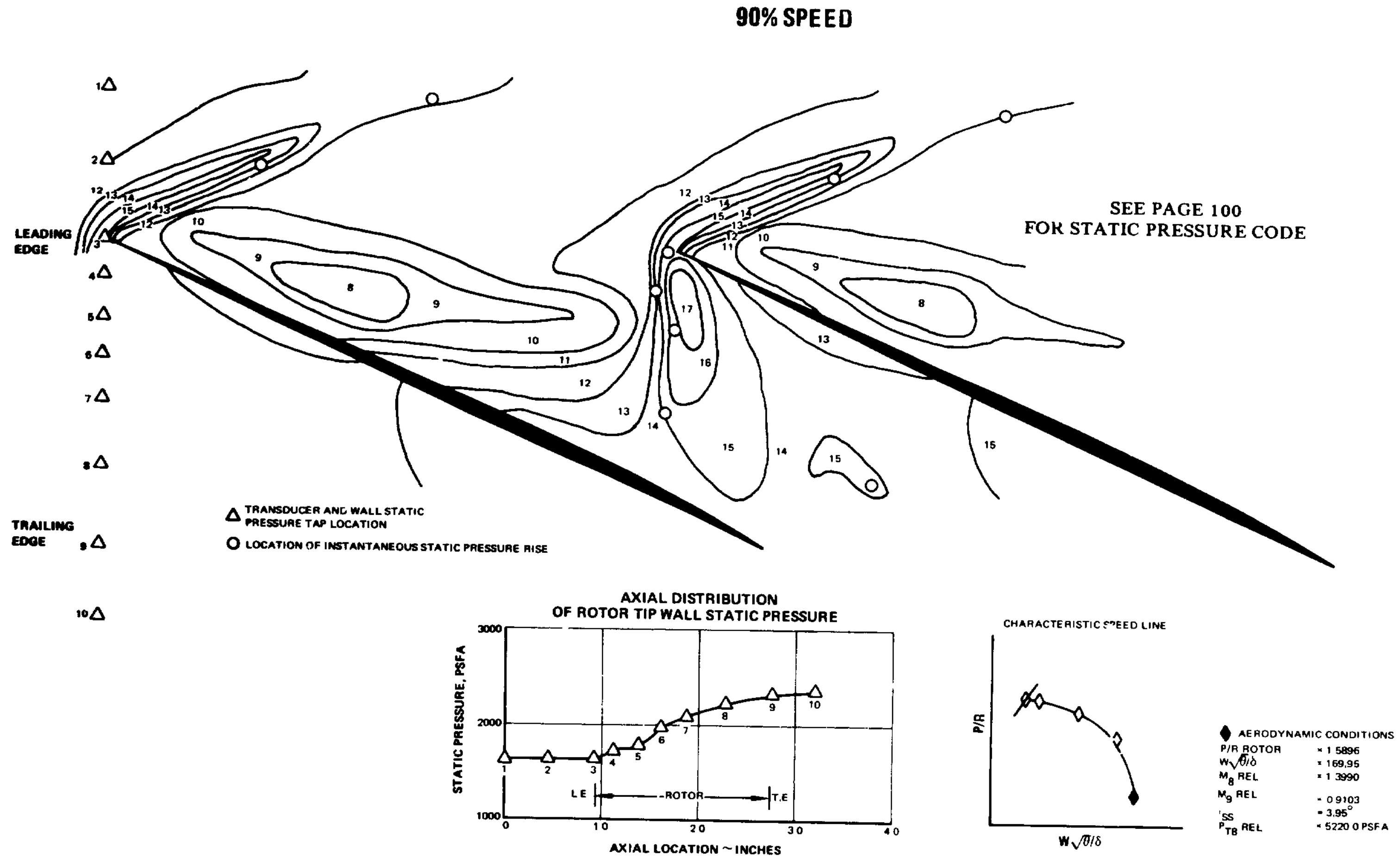


Figure 49 Rotor Blade Tip Static Pressure Contours, $\frac{W\sqrt{\theta}}{\delta} = 169.95$

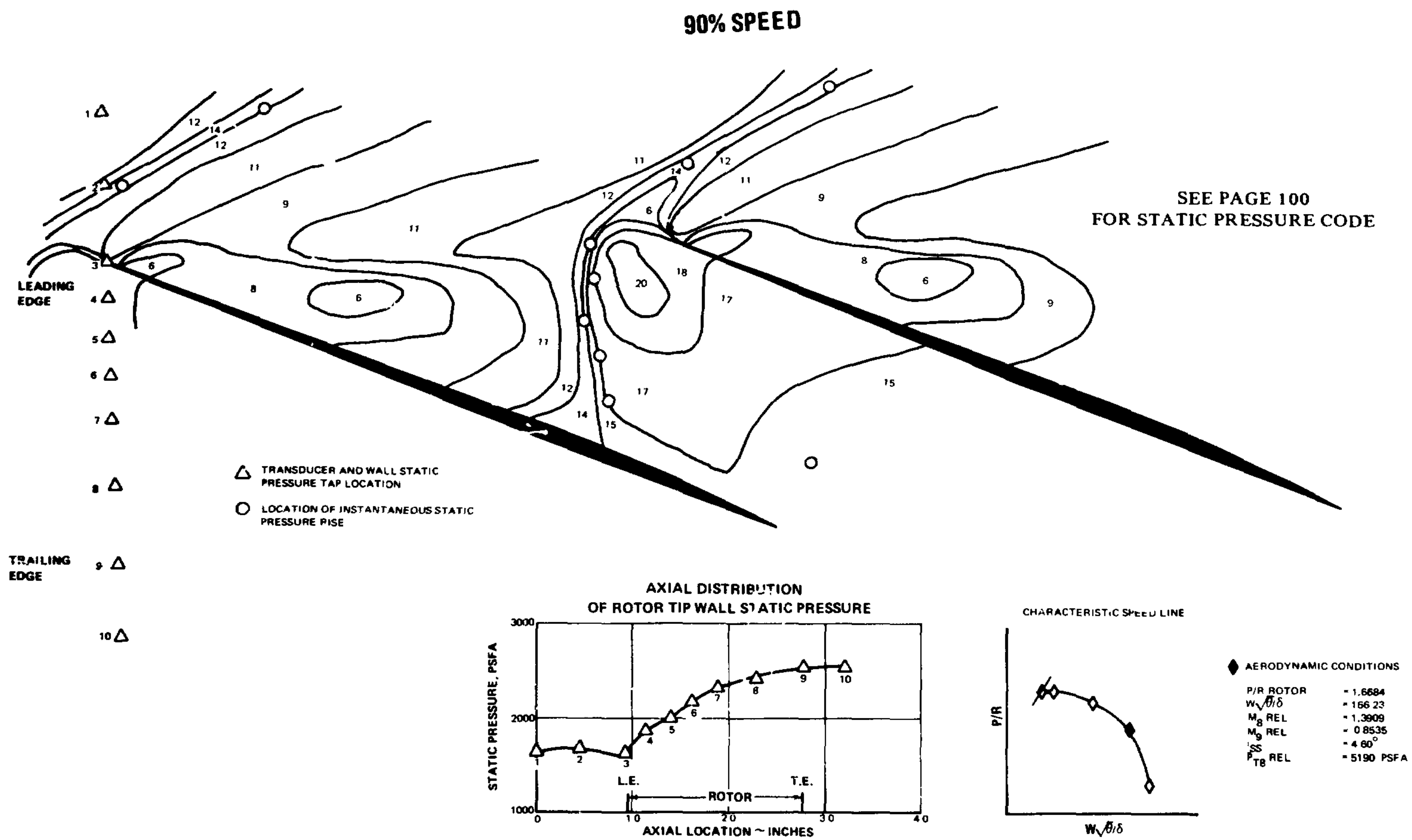


Figure 50 Rotor Blade Tip Static Pressure Contours, $\frac{W\sqrt{\theta}}{\delta} = 166.23$

90% SPEED

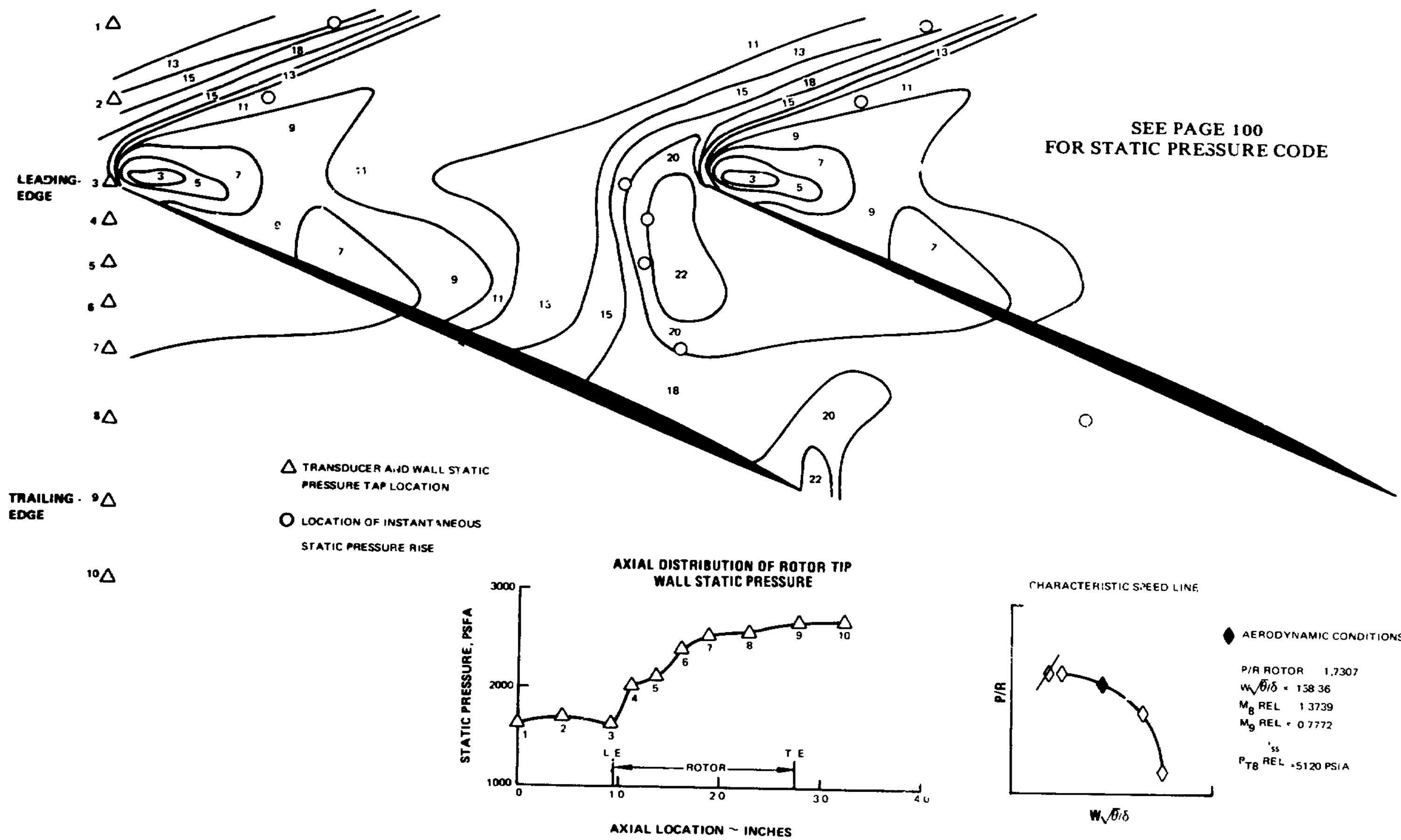


Figure 51 Rotor Blade Tip Static Pressure Contours, $\frac{W\sqrt{\theta}}{\delta} = 158.36$

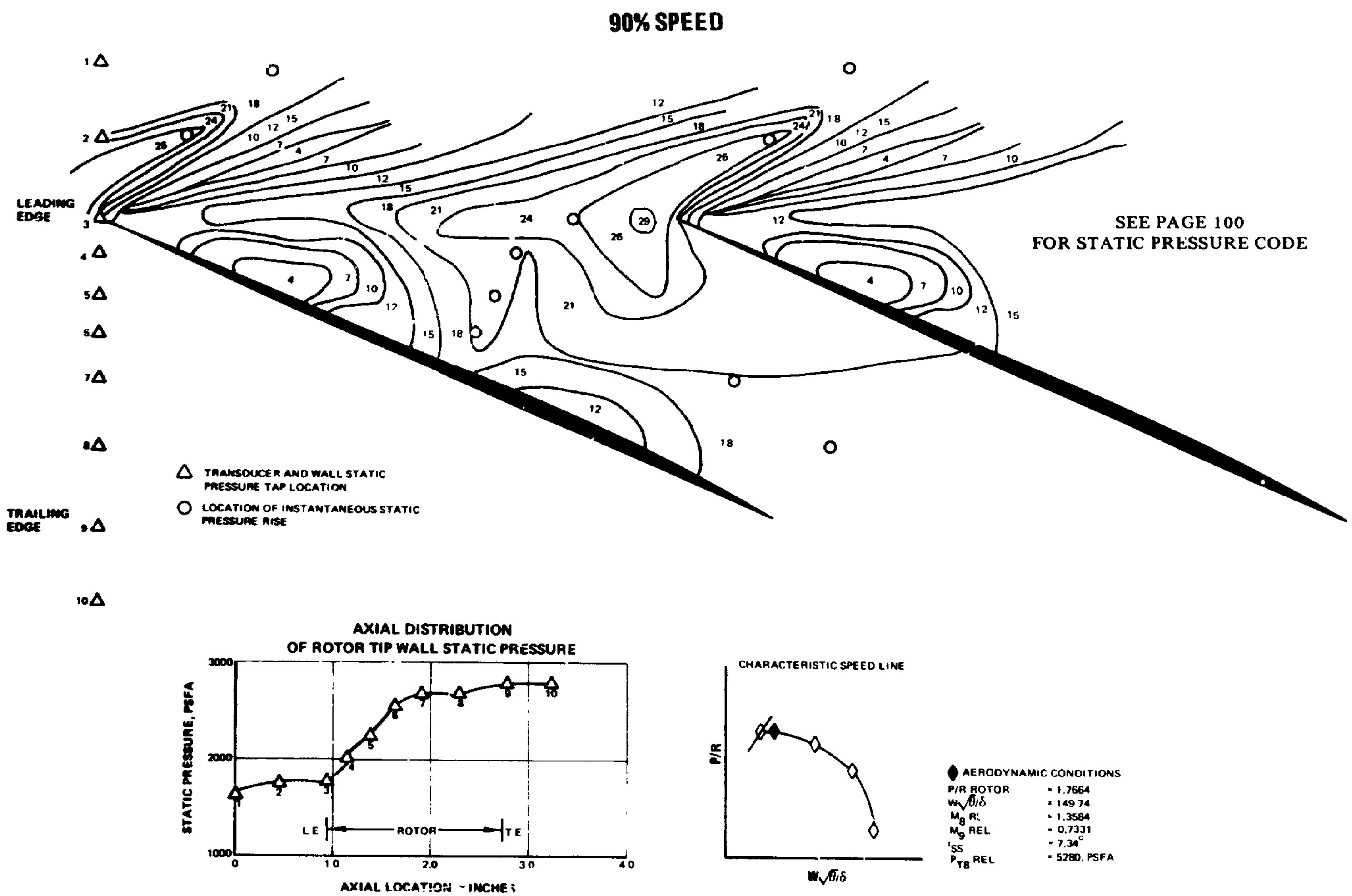


Figure 52 Rotor Blade Tip Static Pressure Contours, $\frac{W\sqrt{\theta}}{\delta} = 149.74$

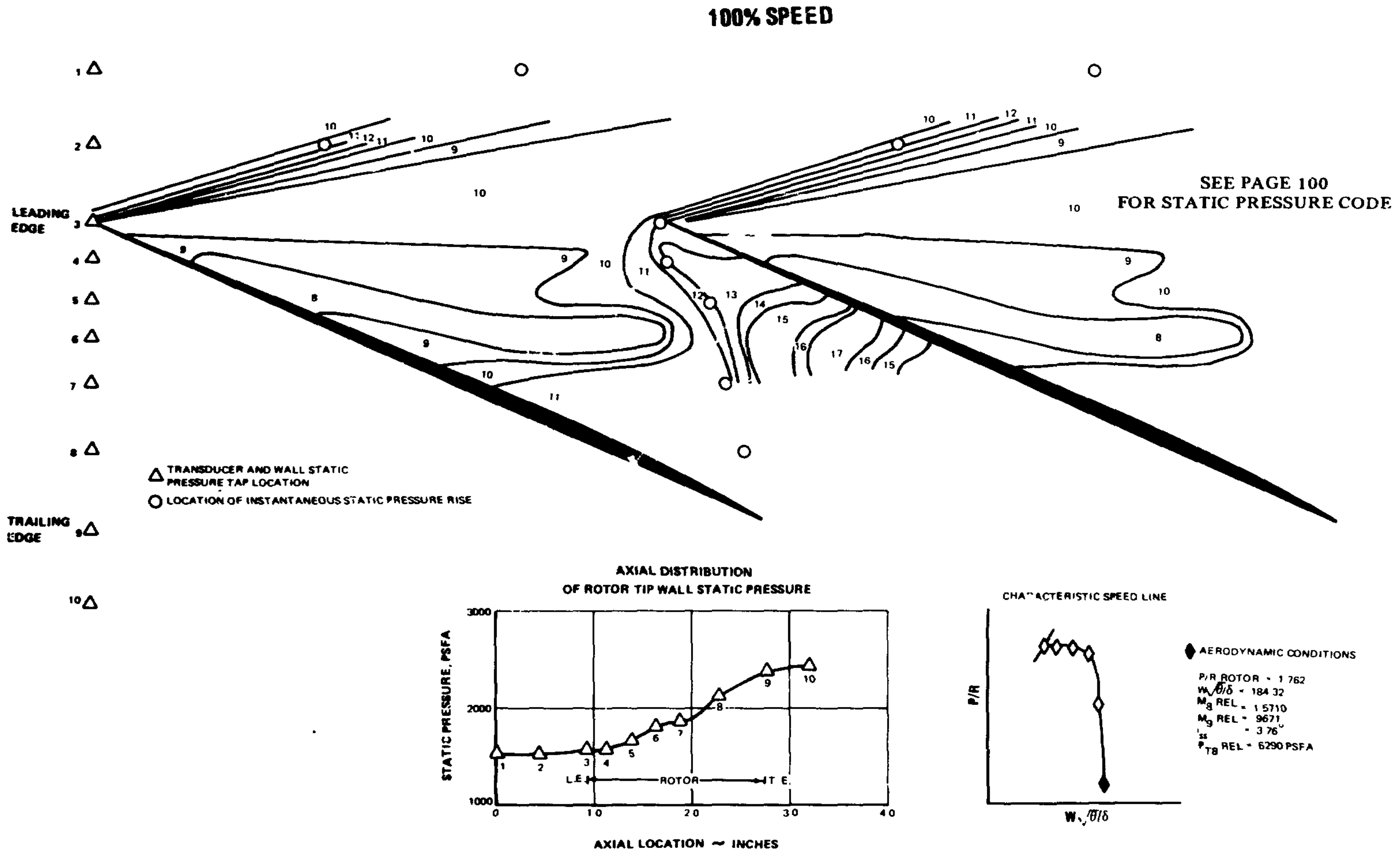


Figure 53 Rotor Blade Tip Static Pressure Contours, $\frac{W\sqrt{\theta}}{\delta} = 184.32$

100% SPEED

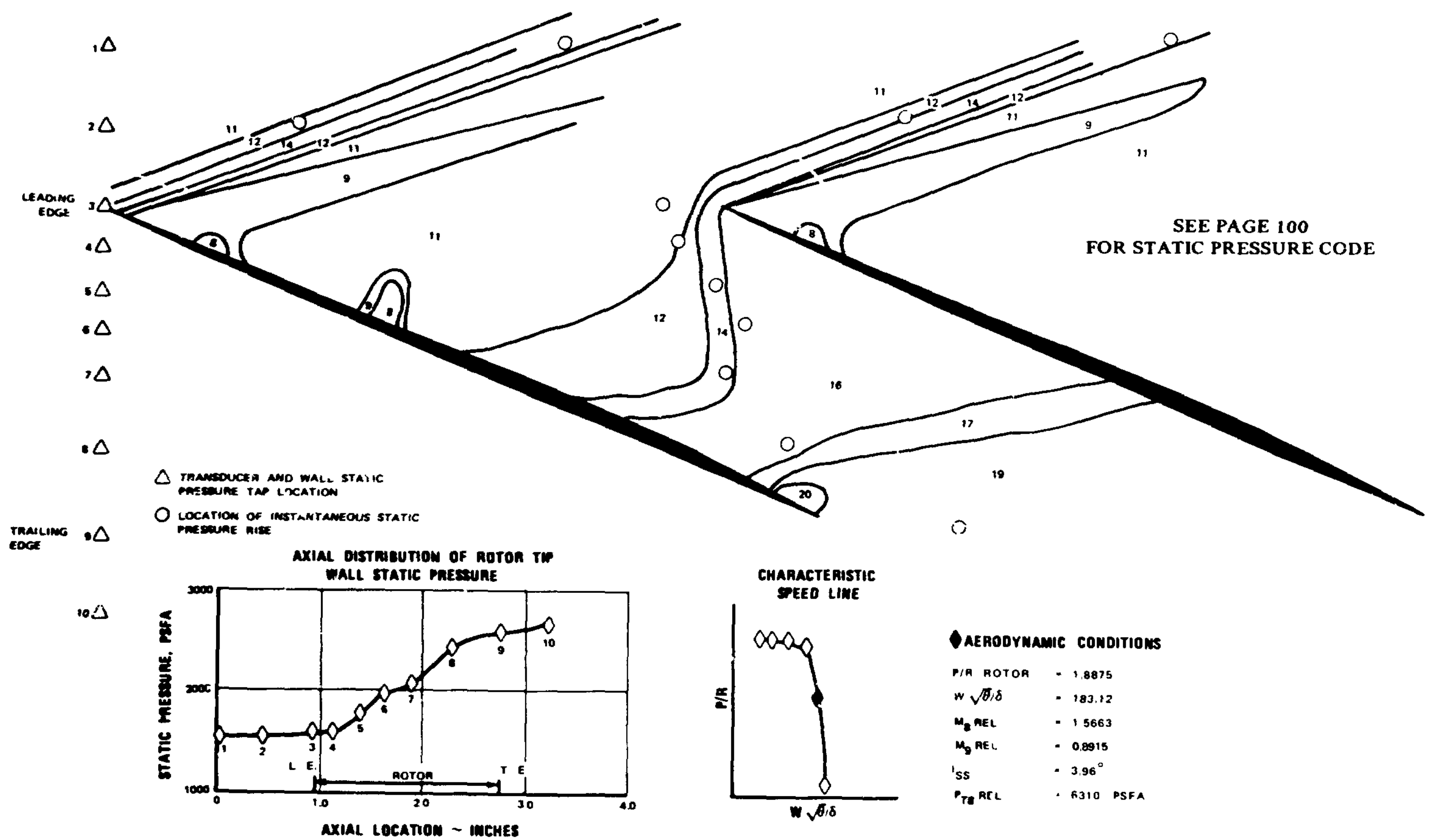


Figure 54 Rotor Blade Tip Static Pressure Contours, $\frac{W\sqrt{\theta}}{\delta} = 183.12$

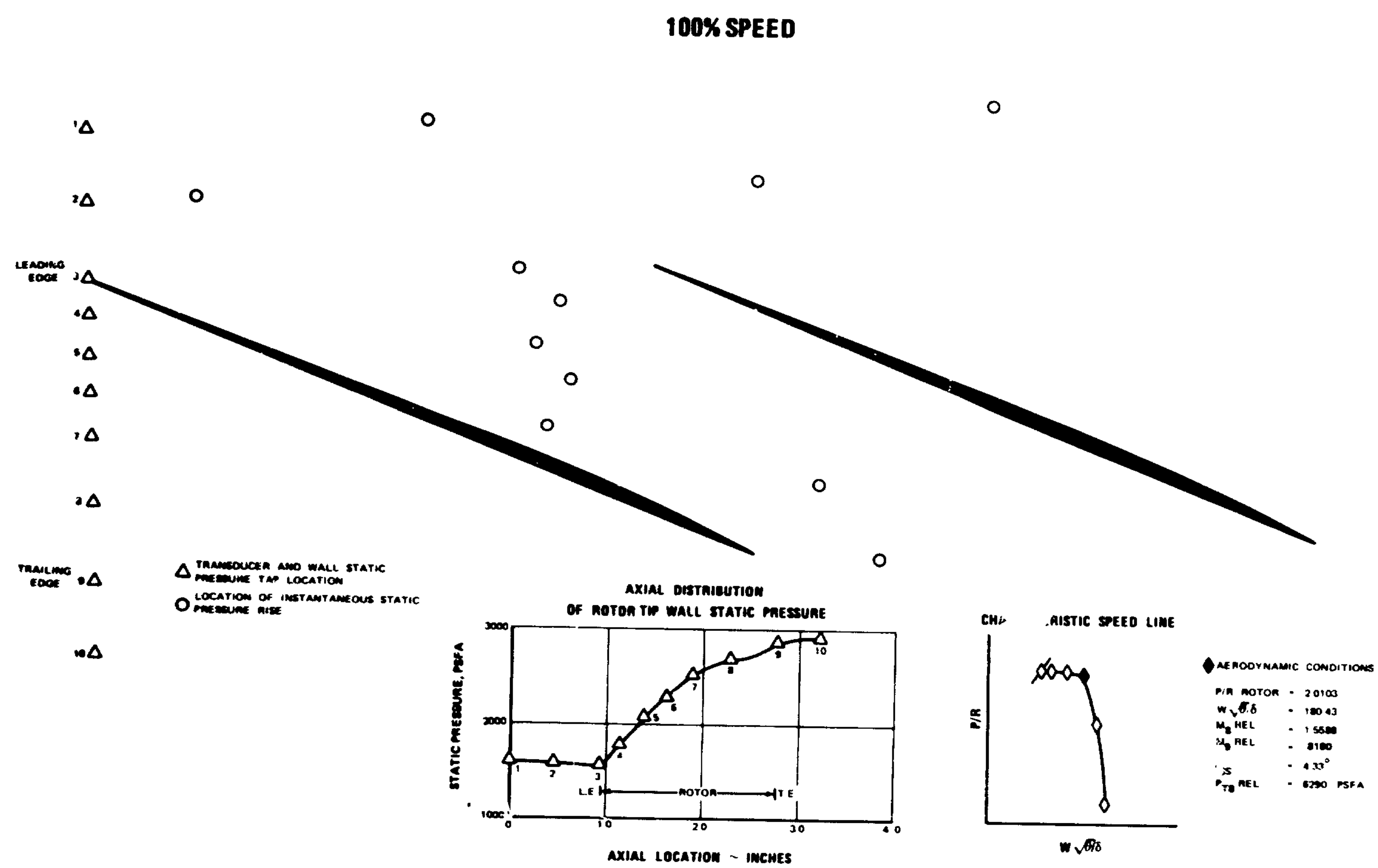


Figure 55 Rotor Blade Tip Shock Location, $\frac{W\sqrt{\theta}}{\delta} = 180.43$

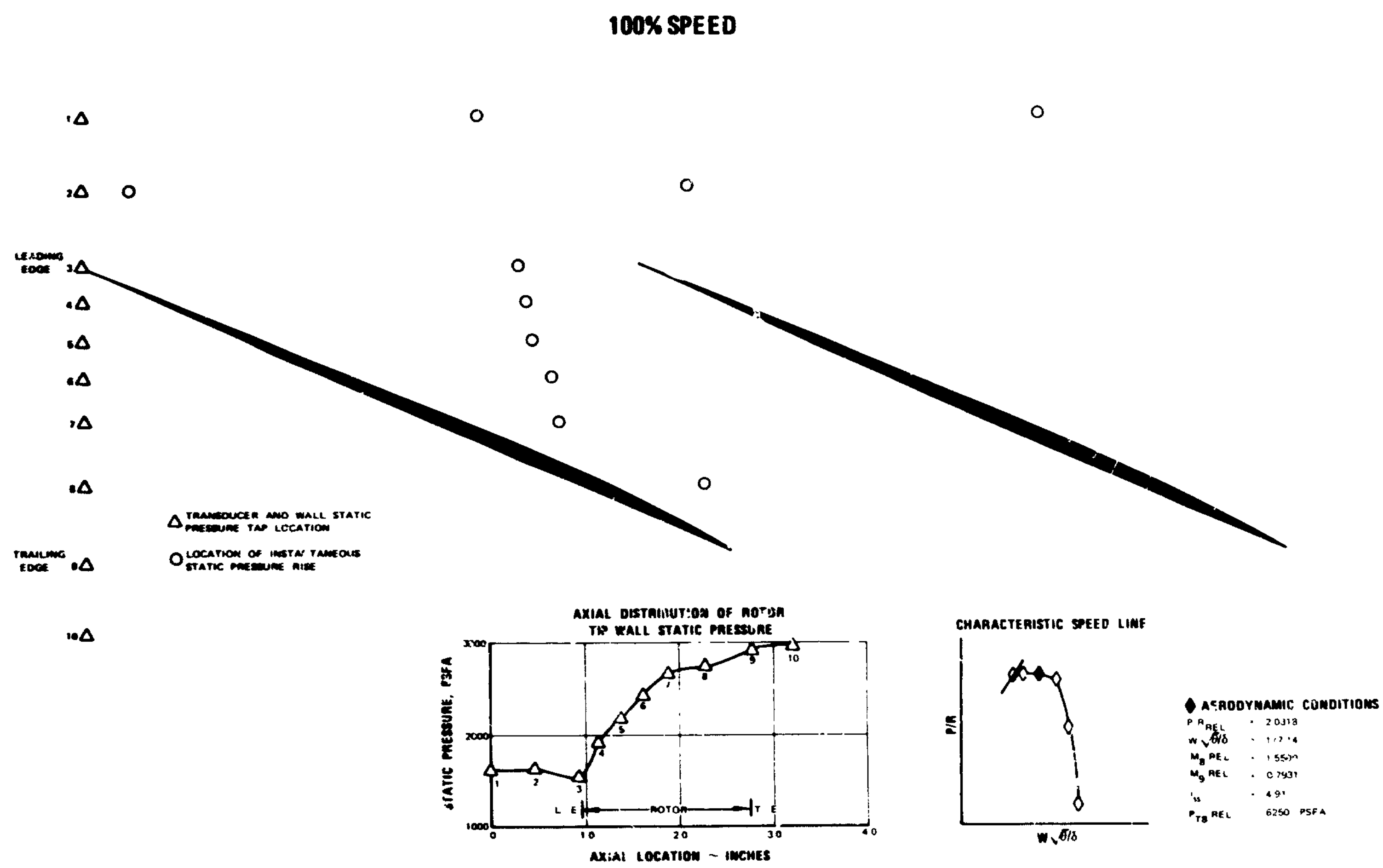


Figure 56 Rotor Blade Tip Shock Location, $\frac{W\sqrt{\theta}}{\delta}$ = 177.14

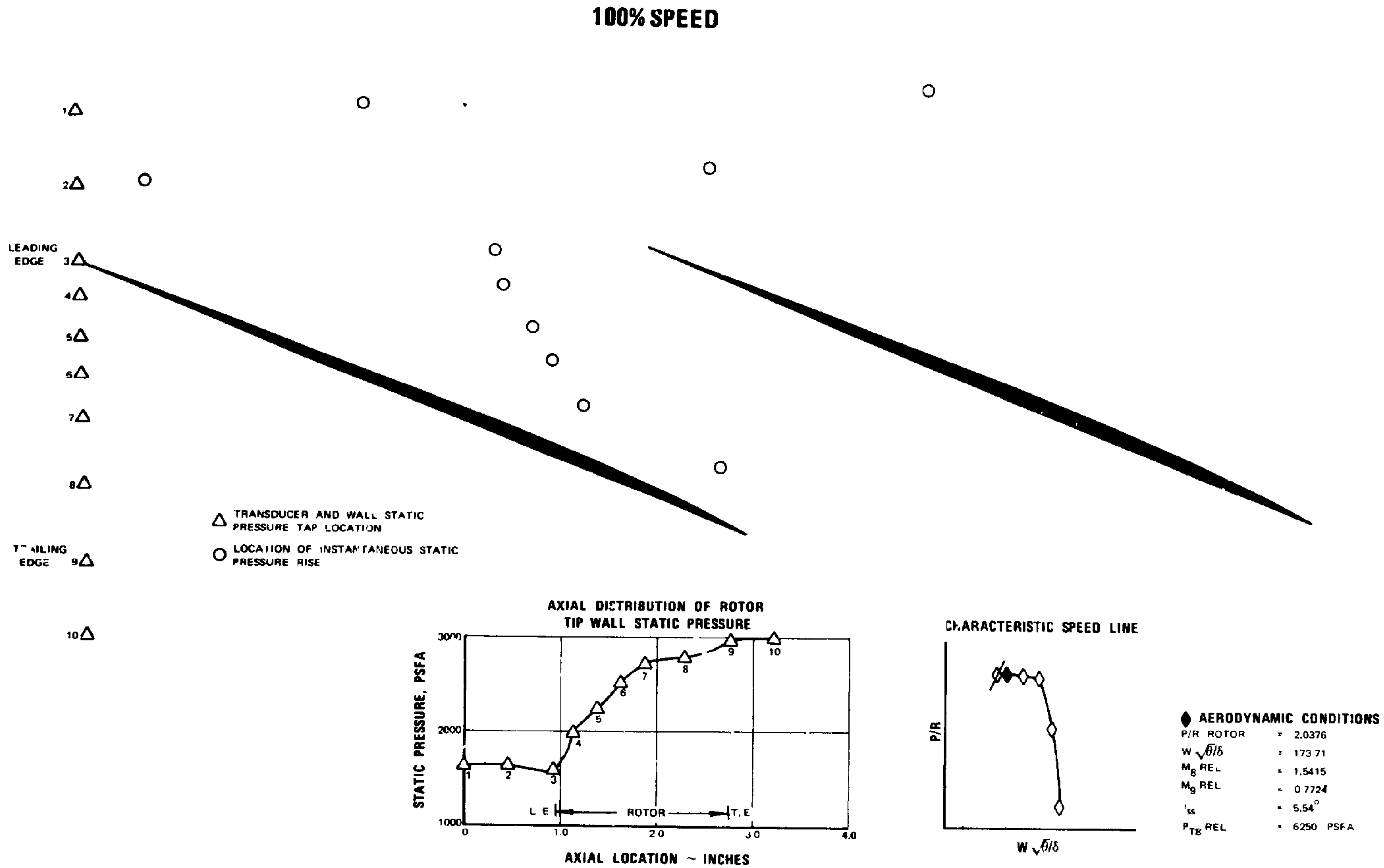


Figure 57 Rotor Blade Tip Shock Location, $\frac{W\sqrt{\theta}}{\delta}$ = 173.71

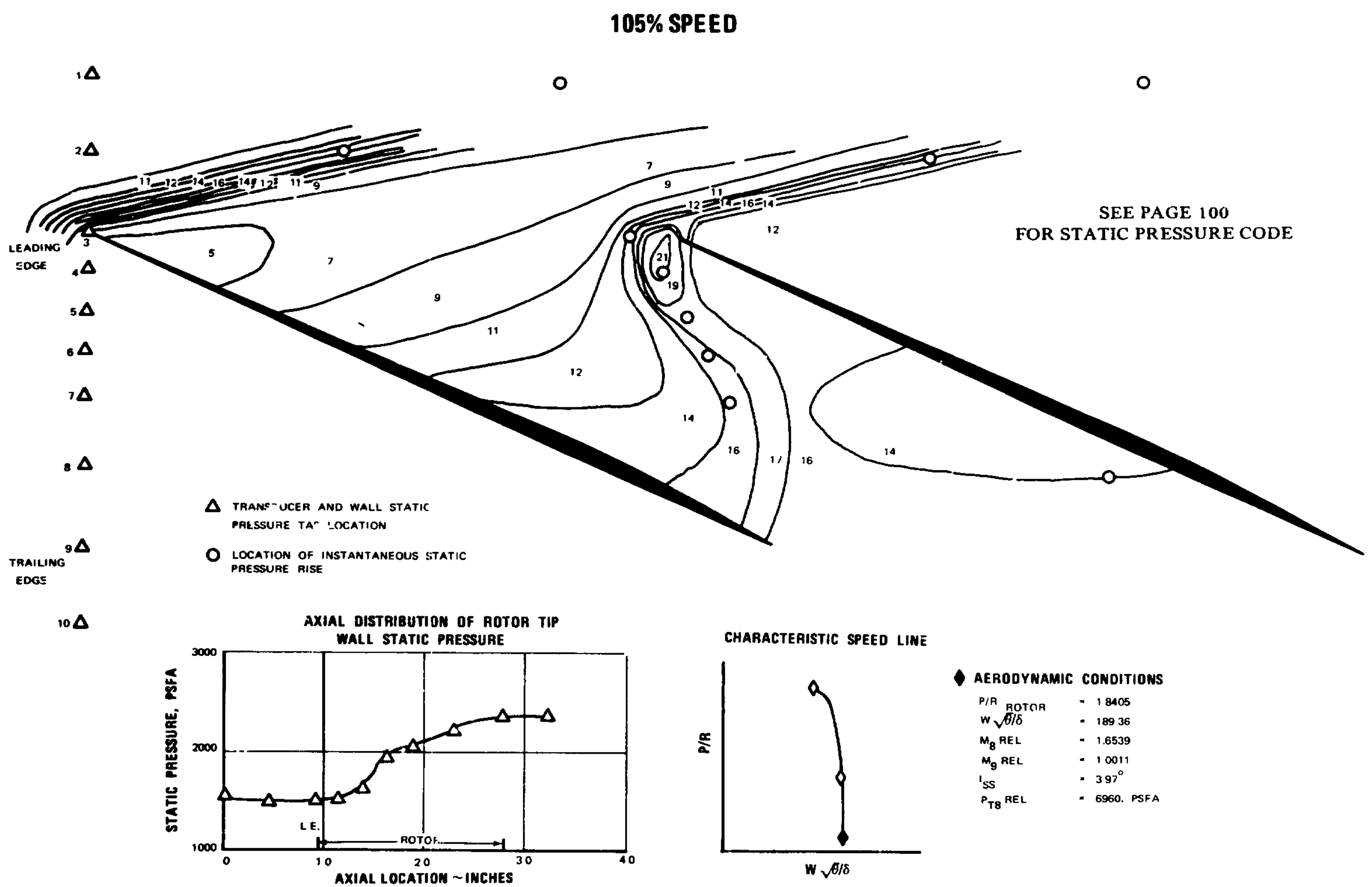


Figure 58 Rotor Blade Tip Static Pressure Contours. $\frac{W\sqrt{\theta}}{\delta} = 189.36$

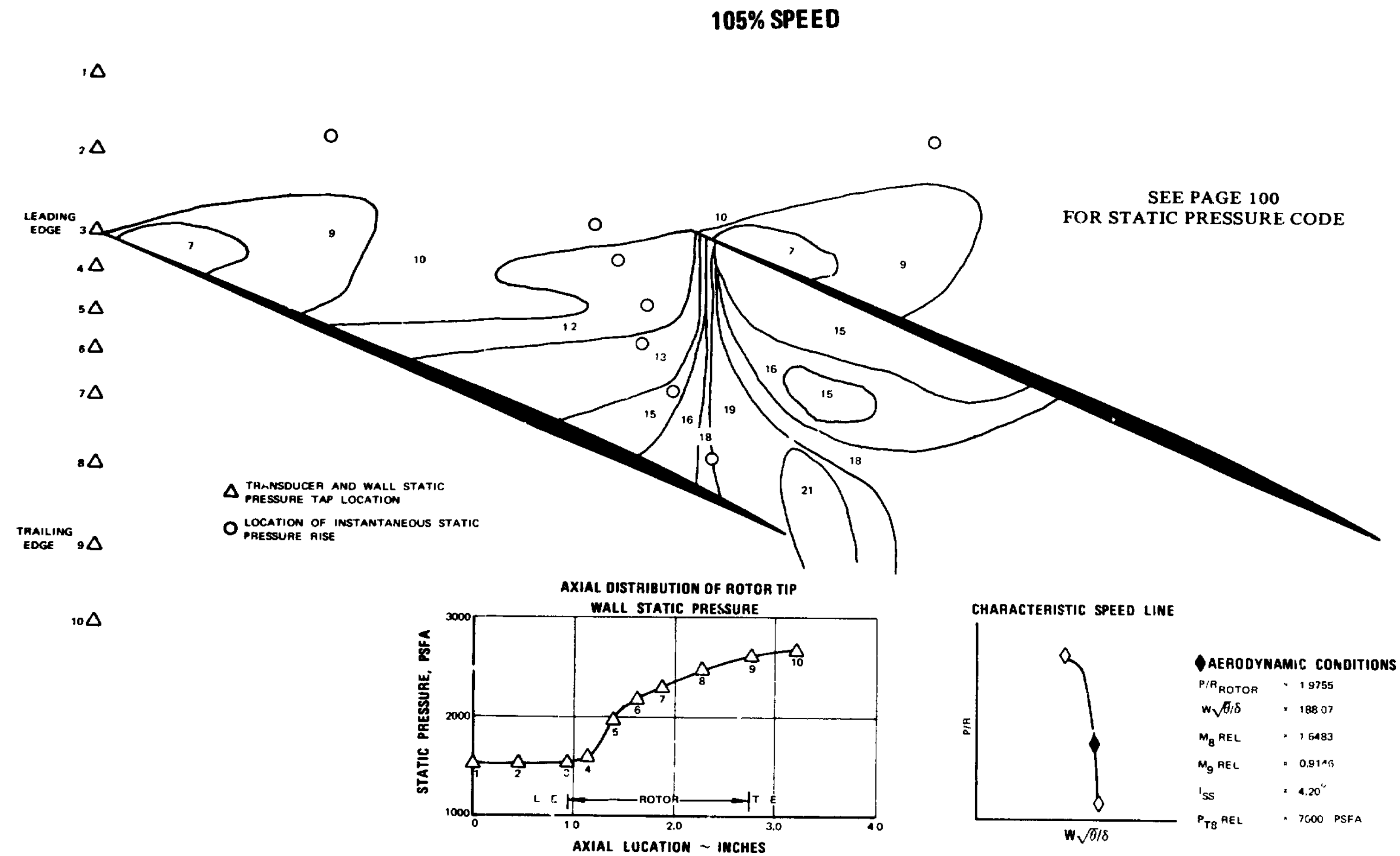


Figure 59 Rotor Blade Tip Static Pressure Contours, $\frac{W\sqrt{\theta}}{\delta} = 188.07$

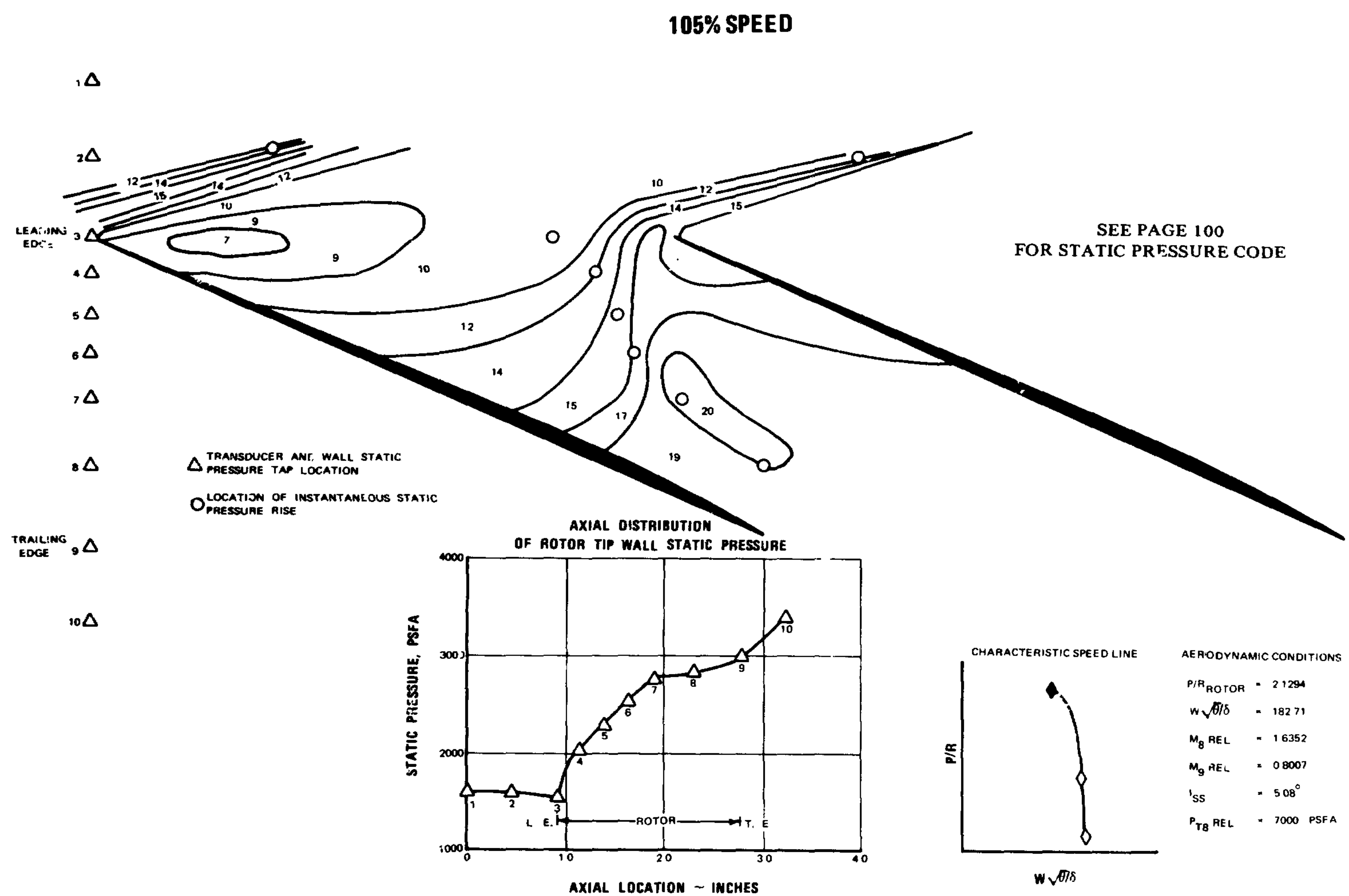


Figure 60 Rotor Blade Tip Static Pressure Contours, $\frac{W\sqrt{\theta}}{\delta} = 182.71$

TABLE 19

ROTOR BLADE TIP STATIC PRESSURE CODE

SYMBOL	ABSOLUTE PRESSURE RANGE (PSIA)	AVERAGE PRESSURE (PSFA)
0	0 - 1	72
1	1 - 2	216
2	2 - 3	360
3	3 - 4	504
4	4 - 5	648
5	5 - 6	792
6	6 - 7	936
7	7 - 8	1080
8	8 - 9	1224
9	9 - 10	1368
10	10 - 11	1512
11	11 - 12	1656
12	12 - 13	1800
13	13 - 14	1944
14	14 - 15	2088
15	15 - 16	2232
16	16 - 17	2376
17	17 - 18	2520
18	18 - 19	2664
19	19 - 20	2808
20	20 - 21	2952
21	21 - 22	3096
22	22 - 23	3240
23	23 - 24	3384
24	24 - 25	3528
25	25 - 26	3672
26	26 - 27	3816
27	27 - 28	3960
28	28 - 29	4104
29	29 - 30	4248
30	30 - 31	4392

APPENDIX 1

Performance Parameters

APPENDIX 1

Performance Parameters

a) Relative total temperature

$$T'_8 = t_8 \left[1 + \frac{\gamma - 1}{2} (M'_8)^2 \right] \qquad \text{(rotor in)}$$

$$T'_9 = T'_8 + \left[\frac{(\omega r_8)^2 - (\omega r_9)^2}{\frac{2\gamma}{\gamma - 1} R g_c} \right] \qquad \text{(rotor out)}$$

b) Incidence angle based on mean camber line

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

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

c) Deviation

$$\delta^\circ = \beta'_9 - \beta'^*_9 \qquad \text{(rotor)}$$

$$\delta^\circ = \beta_{11} - \beta^*_{11} \qquad \text{(stator)}$$

d) Diffusion factor

$$D = 1 - \frac{V'_9}{V'_8} + \frac{r_9 V_{\theta 9} - r_8 V_{\theta 8}}{(r_8 + r_9)\,\sigma V'_8} \qquad \text{(rotor)}$$

$$D = 1 - \frac{V_{11}}{V_{10}} + \frac{r_{10} V_{\theta 10} - r_{11} V_{\theta 11}}{(r_{10} + r_{11})\,\sigma V_{10}} \qquad \text{(stator)}$$

e) Loss coefficient

$$\bar{\omega} = \frac{P'_8 \left[\frac{T'_9}{T'_8} \right]^{\frac{\gamma}{\gamma - 1}} - P'_9}{P'_8 - p_8} \qquad \text{(rotor)}$$

$$\bar{\omega} = \frac{P_{10} - P_{11}}{P_{10} - p_{10}} \qquad \text{(stator)}$$

f) Loss parameter

$$\frac{\bar{\omega} \cos \beta'_9}{2\sigma} \qquad \text{(rotor)}$$

$$\frac{\bar{\omega} \cos \beta_{11}}{2} \qquad \text{(stator)}$$

g) Polytropic efficiency

1) $$\eta_p = \frac{\frac{\gamma - 1}{\gamma} \ln \left[\frac{P_9}{P_7} \right]}{\ln \left[\frac{T_9}{T_0} \right]} \qquad \text{(rotor)}$$

2) $$\eta_p = \frac{\frac{\gamma - 1}{\gamma} \ln \left[\frac{p_{11}}{p_{10}} \right]}{\ln \left[\frac{t_{11}}{t_{10}} \right]} \qquad \text{(stator)}$$

h) Adiabatic efficiency

$$\eta_{ad} = \frac{\left[\frac{P_9}{P_7} \right]^{\frac{\gamma - 1}{\gamma}} - 1}{\left[\frac{T_{12}}{T_0} \right] - 1} \qquad \text{(rotor)}$$

$$\eta_{ad} = \frac{\left[\frac{P_{12}}{P_7} \right]^{\frac{\gamma - 1}{\gamma}} - 1}{\left[\frac{T_{12}}{T_0} \right] - 1} \qquad \text{(stage)}$$

i) Wake blockage factor

$$\bar{K} = \frac{\sum_{1}^{n} \rho AV}{n} \Big/ \rho AV_{avg}$$

APPENDIX 2

Symbols

APPENDIX 2

Symbols

A	-	area, ft^2
A_{an}	-	annulus area, ft^2
A_f	-	frontal area, ft^2
c	-	chord length, in
D	-	diffusion factor
g_c	-	conversion factor, 32.17 $lb_m ft/lb\ sec^2$
i_m	-	incidence angle, angle between inlet air direction and line tangent to blade mean camber line at leading edge, degrees (labelled INCM, Table 5)
i_s	-	incidence angle, angle between inlet air direction and line tangent to blade suction surface at leading edge, degrees (labelled INCS, Table 5)
M	-	Mach number
MR	-	mass average in radial directions (Tables 15 and 16)
N	-	rotor speed, rpm ($N/\sqrt{\theta}$ labelled NCOR, Table 5)
P	-	total pressure, psfa
p	-	static pressure, psfa
r	-	radius, ft
R	-	gas constant for air, ft lb/lb_m °R
S	-	blade spacing, in
T	-	total temperature, °R
t	-	static temperature, °R
t/c	-	thickness-to-chord ratio

U	-	rotor speed, ft/sec
V	-	air velocity, ft/sec
Vm	-	meridional velocity $(Vr^2 + Vz^2)^{1/2}$ ft/sec (labelled VM, Table 5)
W	-	weight flow, lbs/sec
β	-	absolute air angle, $\cot^{-1}(Vm/V\theta)$, degrees (labelled B, Table 5)
β'	-	rotating air angle, $\cot^{-1}(Vm/V\theta')$, degrees (labelled B', Table 5)
γ	-	ratio of specific heats for air, 1.4
$\Delta\beta$	-	air turning angle, degrees
$\Delta\beta^*$	-	camber angle, degrees
δ	-	ratio of inlet total pressure to standard pressure of 2116.22 lbs/ft^2
$\delta°$	-	deviation angle, angle between exit air direction and tangent to blade mean camber line at trailing edge, degrees
ϵ	-	angle between tangent to streamline projected on meridional plane and axial direction, degrees
η	-	efficiency, %
θ	-	ratio of inlet total temperature to standard temperature of 518.6°R
ρ	-	mass density, $lbs\text{-}sec^2/ft^4$
σ	-	solidity, ratio of chord to spacing
$\bar{\omega}$	-	total pressure loss coefficient (labelled OMEGA - B, Table 5)
ω	-	angular velocity of rotor, radians/sec

Superscripts:

'	-	relative to moving blades
*	-	designates blade metal angle

Subscripts:

ad - adiabatic

p - polytropic or profile

r - radial direction

m - meridional direction (in z-r plane)

sh - shock

ss - suction surface

z - axial direction

θ - tangential direction (labelled O, Table 5)

0 - plenum chamber

7 - instrument plane upstream of rotor

8 - station at rotor leading edge

9 - station at rotor trailing edge

10 - station at stator leading edge

11 - station at stator trailing edge

12 - instrument plane downstream of stator

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APPENDIX 3

Blade-Element and Overall Performance with Uniform Inlet Flow

TABLE 5

Identification of Blade-Element and Overall Performance Table Headings

ROTOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5, 10, 15, 30, 50, 70, 85, 90	$2r_8$	$2r_9$	V_8	V_9	V_{m8}	V_{m9}	$V_{\theta 8}$	$V_{\theta 9}$	β_8	β_9	β'_5	β'_9	V'_8	V'_9	$V'_{\theta 8}$	$V'_{\theta 9}$	U_8	U_9

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5, 10, 15, 30, 50, 70, 85, 90, 95	i_{s8}	i_{m8}	δ^o_9	$\Delta\beta$	$\Delta\beta^*$	$\bar{\omega}_{sh}$	D	$\bar{\omega}$	$\frac{\bar{\omega}\cos\beta'_9}{2\sigma}$ → $\frac{(\bar{\omega}-\bar{\omega}_{sh})\cos\beta'_9}{2\sigma}$		$\frac{P_9}{P_8}$	η_p	η_{ad}	η_{ps}	M_8	M_9	M'_8	M'_9

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
$\frac{T_9}{T_0}$	$\frac{P_9}{P_0}$	η_{ad}	η_p

STATOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5, 10, 15, 30, 50, 70, 85, 90, 95	$2r_{10}$	$2r_{11}$	V_{10}	V_{11}	V_{m10}	V_{m11}	$V_{\theta 10}$	$V_{\theta 11}$	β_{10}	β_{11}	β'_{10}	β'_{11}	V'_{10}	V'_{11}	$V'_{\theta 10}$	$V'_{\theta 11}$	U_8	U_9

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5, 10, 15, 30, 50, 70, 85, 90, 95	i_{s10}	i_{m10}	δ^o_{11}	$\Delta\beta$	$\Delta\beta^*$	$\bar{\omega}_{sh}$	D	$\bar{\omega}$	$\frac{\bar{\omega}\cos\beta'_{11}}{2\sigma}$ → $\frac{(\bar{\omega}-\bar{\omega}_{sh})\cos\beta'_{11}}{2\sigma}$		$\frac{P_{11}}{P_{10}}$	η_p	η_{ad}	η_{ps}	M_{10}	M_{11}	M'_{10}	M'_{11}

STAGE PARAMETERS

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC/A-1 LBM/SEC SQFT
$\frac{N}{\sqrt{\theta}}$	$\frac{W\sqrt{\theta}}{\delta}$	$\frac{T_{11}}{T_0}$	$\frac{P_{11}}{P_0}$	η_{ad}	η_p	$\frac{W\sqrt{\theta}}{\delta A_{an}}$

TABLE 6

Blade-Element and Overall Performance - Design Data

ROTOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.769	615.494	970.440	615.49	580.18	0	777.90	.0	53.29	53.91	17.22	1044.7	607.39	-844.1	-179.7	844.1	957.6
10	18.467	20.408	625.705	946.940	625.765	600.49	0	732.19	.0	50.65	54.99	23.11	1090.4	652.85	-893.0	-256.1	893.0	988.3
15	19.467	21.047	636.763	926.804	636.763	604.91	0	702.17	.0	49.26	55.94	27.67	1136.6	682.97	-945.5	-317.0	941.5	1019.2
30	22.314	22.964	668.382	877.741	668.382	592.25	0	647.81	.0	47.57	58.20	38.07	1268.2	752.20	-1077.8	-463.7	1077.8	1111.5
50	25.791	25.520	697.536	829.215	697.536	574.46	0	597.98	.0	46.15	60.74	48.03	1426.8	858.92	-1244.7	-638.5	1244.7	1236.5
70	28.954	28.076	702.305	801.681	702.305	561.56	0	572.13	.0	45.54	63.33	54.56	1564.1	966.37	-1397.6	-788.9	1397.6	1361.0
85	31.295	29.993	686.769	793.611	686.769	554.34	0	567.91	.0	45.70	65.49	57.97	1655.1	1045.08	-1505.9	-885.9	1505.9	1453.8
90	31.883	30.630	678.618	795.003	678.618	537.71	0	585.56	.0	47.44	66.21	59.09	1682.2	1046.70	-1539.2	-898.0	1539.2	1483.6
95	32.499	31.271	670.550	800.046	670.550	493.36	0	629.81	.0	51.93	66.89	61.51	1708.1	1012.35	-1571.0	-884.0	1571.0	1513.8

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA SHOCK	BD-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-1.40	4.65	12.20	36.69	47.17	.0000	.5936	.1257	.0263	.0263	2.0	.9276	.9155	.8955	.569	.834	.9653	.5218
10	-0.96	4.72	10.75	31.88	39.99	.0132	.5642	.0931	.0197	.0167	2.0	.9414	.9424	.9127	.579	.813	1.0087	.5607
15	-0.55	4.70	9.80	28.27	34.03	.0183	.5537	.0662	.0141	.0106	2.0	.9542	.9529	.9402	.590	.795	1.0527	.5856
30	.40	4.46	7.50	20.13	24.17	.0406	.5462	.0580	.0123	.0037	2.0	.9515	.9471	.9435	.621	.747	1.1786	.6405
50	1.22	4.03	4.60	12.71	14.60	.0773	.5252	.0729	.0149	-.0009	2.0	.9290	.9225	.9244	.651	.700	1.3308	.7250
70	1.89	3.70	3.10	8.77	9.06	.1083	.5031	.1097	.0215	.0003	2.0	.8848	.8758	.8816	.655	.671	1.4597	.8103
85	2.29	3.45	3.42	7.52	7.93	.1327	.4910	.1514	.0291	.0036	2.0	.8364	.8260	.8326	.640	.659	1.5417	.8680
90	2.37	3.40	3.80	7.12	7.60	.1399	.5045	.1964	.0373	.0107	2.0	.7941	.7850	.7900	.631	.657	1.5654	.8644
95	2.50	3.32	4.40	5.38	7.42	.1508	.5443	.2377	.0426	.0156	2.0	.7562	.71533	.7521	.623	.654	1.5990	.8270

TO / TO	PO / PO	EFF-AD %	EFF-P %
1.247	2.0	88.7	89.8

STATOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	20.409	21.489	1010.79	663.52	675.09	663.52	752.30	0	48.10	0	19.42	57.50	715.79	1234.5	-237.9	-1041.2	990.2	1041.3
10	21.008	21.961	992.99	690.19	693.11	690.19	711.08	0	45.74	0	23.57	57.03	757.90	1268.2	-306.6	-1063.9	1017.7	1063.9
15	21.589	22.432	978.26	699.94	698.84	699.94	684.35	0	44.41	0	27.32	57.23	786.34	1292.8	-360.9	-1066.9	1045.4	1086.9
30	23.314	23.902	944.83	704.91	696.66	704.91	638.25	0	42.50	0	35.12	58.65	851.70	1354.6	-489.9	-1156.7	1128.2	1156.7
50	25.601	25.893	916.00	694.70	694.58	694.70	597.17	0	40.69	0	42.71	61.00	945.19	1432.5	-641.0	-1252.7	1238.2	1252.7
70	27.818	27.902	905.67	685.34	696.37	685.34	579.05	0	39.75	0	47.72	63.08	1035.02	1513.3	-765.7	-1349.2	1344.7	1349.2
85	29.408	29.382	910.49	675.22	701.25	675.22	580.71	0	39.63	0	50.18	68.51	1095.06	1573.3	-841.0	-1421.0	1421.7	1421.0
90	29.914	29.856	916.81	670.46	692.46	670.46	600.86	0	40.95	0	50.67	65.09	1092.45	1591.7	-844.9	-1443.6	1445.8	1443.6
95	30.382	30.293	927.39	663.86	662.65	663.86	648.80	0	44.40	0	51.09	65.64	1054.84	1608.9	-820.7	-1465.5	1469.5	1465.5

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA SHOCK	BD-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	1.95	4.82	11.80	48.10	55.91	0	.5245	.165	.0410	.0410	1.856	0	0	.7566	.473	.530	.6185	1.0236
10	.40	3.33	11.05	45.74	53.88	0	.4838	.123	.0314	.0314	1.903	0	0	.8039	.858	.575	.6552	1.0571
15	0	3.0	11.00	44.41	52.35	0	.4641	.097	.0254	.0254	1.927	0	0	.8311	.845	.585	.6793	1.0799
30	0	3.1	11.25	42.50	50.68	0	.4410	.065	.0183	.0183	1.957	0	0	.8776	.812	.569	.7316	1.1313
50	0	3.2	12.05	40.69	49.55	0	.4397	.061	.0187	.0187	1.960	0	0	.8764	.782	.578	.8063	1.1920
70	0	3.3	13.40	39.75	49.93	0	.4543	.080	.0265	.0265	1.949	0	0	.8415	.767	.567	.8769	1.2514
85	.31	3.62	15.43	39.63	51.98	0	.4810	.110	.0385	.0385	1.931	0	0	.7985	.767	.554	.9222	1.2915
90	1.45	4.73	17.00	40.95	53.84	0	.5013	.125	.0444	.0444	1.920	0	0	.7735	.768	.547	.9152	1.2986
95	3.80	7.00	18.90	44.40	56.04	0	.5365	.151	.0540	.0540	1.903	0	0	.7521	.769	.535	.8746	1.2974

NCOR-1 RPM	WCOR-1 LBM/SEC	TO/TQ	PO/PO	EFF-AD %	EFF-P %	WC/A-1 LBM/SEC SQFT
11,110.0	187.1	1.247	1.936	84.2	85.6	42.04

TABLE 7.1

Blade-Element and Overall Performance with Uniform Inlet

50% of Design Speed

ROTOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.769	282.1	580.7	282.1	442.8	.0	375.8	.00	40.32	56.30	13.09	508.4	454.6	-423.0	-103.0	423.0	478.7
10	18.467	20.468	288.0	547.2	288.0	419.9	.0	350.9	.00	39.88	57.22	18.84	531.9	444.0	-447.2	-143.3	447.2	494.2
15	19.467	21.047	293.2	519.9	293.2	407.9	.0	322.3	.00	38.29	58.12	24.63	555.1	449.3	-471.4	-187.4	471.4	509.7
30	22.314	22.964	303.7	471.8	303.7	394.9	.0	258.1	.00	33.15	60.66	36.97	619.8	495.2	-540.3	-298.0	540.3	556.1
50	25.791	25.520	307.4	425.3	307.4	374.8	.0	200.7	.00	28.15	63.79	48.02	696.1	561.2	-624.5	-417.2	624.5	618.0
70	28.054	28.076	301.8	393.2	301.8	358.9	.0	160.5	.00	24.09	66.71	55.34	763.3	631.4	-701.1	-519.4	701.1	679.9
85	31.295	29.903	292.2	366.1	292.2	336.0	.0	145.4	.00	23.42	68.91	59.96	812.2	671.2	-757.8	-580.9	757.8	726.3
90	31.883	30.630	289.5	336.1	289.5	302.7	.0	146.0	.00	25.79	69.45	63.07	824.5	668.4	-772.1	-595.8	772.1	741.7
95	32.499	31.271	287.1	296.5	287.1	258.0	.0	146.2	.00	29.54	69.96	67.11	837.7	663.3	-787.0	-611.1	787.0	757.2

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	.92	7.36	11.22	43.21	47.12	.0000	.2782	.0870	.0186	.0186	1.2032	.9415	.9399	.8003	.2550	.5191	.4612	.4064
10	1.27	7.61	9.21	38.38	39.99	.0000	.3246	.1428	.0311	.0311	1.1841	.8915	.8887	.7169	.2610	.4882	.4856	.3961
15	1.64	7.41	8.09	33.49	34.03	.0000	.3355	.1468	.0321	.0321	1.1698	.8724	.8693	.7163	.2657	.4634	.5077	.4005
30	2.84	6.78	7.24	23.69	24.18	.0000	.3148	.1030	.0222	.0222	1.1477	.8745	.8718	.7747	.2746	.4204	.5661	.4412
50	4.27	6.88	5.77	15.78	14.69	.0000	.2813	.0803	.0164	.0164	1.1247	.8603	.8577	.7893	.2771	.3788	.6327	.4998
70	5.27	7.06	4.86	11.37	9.16	.0000	.2428	.0664	.0128	.0128	1.1073	.8455	.8429	.7854	.2717	.3503	.6912	.5625
85	5.56	6.79	5.86	8.95	8.03	.0000	.2370	.0888	.0161	.0161	1.0931	.7618	.7584	.6950	.2637	.3258	.7314	.5973
90	5.63	6.69	7.99	6.38	7.68	.0000	.2532	.1328	.0221	.0221	1.0799	.6423	.6378	.5920	.2609	.2985	.7438	.5936
95	5.75	6.65	11.28	2.84	7.47	.0000	.2724	.1791	.0261	.0261	1.0647	.5123	.5075	.5064	.2588	.2627	.7552	.5877

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.0419	1.1283	83.74	84.05

STATOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	20.409	21.489	620.1	608.8	502.1	608.0	364.0	-30.1	35.94	-2.84	14.54	42.16	518.7	820.2	-130.2	-550.5	494.2	520.4
10	21.008	21.961	586.7	582.8	477.5	582.5	340.8	-20.8	35.50	-2.04	19.38	43.50	506.5	802.9	-167.9	-552.6	508.7	531.8
15	21.589	22.432	560.3	561.2	464.1	560.7	313.8	-23.4	34.05	-2.40	24.22	45.30	509.4	797.3	-209.0	-566.6	522.8	543.2
30	23.314	23.902	513.9	517.4	446.8	516.6	253.7	-29.0	29.57	-3.22	34.78	49.63	544.7	797.9	-310.8	-607.8	564.6	578.8
50	25.601	25.803	471.3	473.9	426.8	472.7	199.7	-33.5	25.06	-4.05	44.52	54.41	599.2	812.3	-420.3	-660.5	619.9	627.0
70	27.818	27.902	448.3	436.5	418.0	435.2	161.9	-33.9	21.16	-4.46	50.75	56.48	660.9	832.5	-511.8	-709.6	673.6	675.7
85	29.408	29.382	435.4	405.4	409.3	404.0	148.4	-34.4	19.94	-4.87	54.02	61.56	696.7	848.3	-563.7	-745.9	712.1	711.5
90	29.914	29.856	415.0	380.6	387.0	378.9	149.6	-35.2	21.15	-5.32	56.05	63.45	693.0	847.7	-574.8	-758.2	724.4	723.0
95	30.382	30.293	389.4	341.6	359.1	339.7	150.5	-36.1	22.73	-6.06	58.46	66.18	686.7	841.3	-585.3	-769.6	735.7	733.6

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-9.89	-6.07	9.58	38.77	55.90	.0000	.1729	.0644	.0160	.0160	.9878	.0000	.0000	-.5876	.5466	.5456	.4589	.7351
10	-9.99	-7.05	9.41	37.55	53.88	.0000	.1608	.0472	.0120	.0120	.9919	.0000	.0000	3.7805	.5152	.5219	.4530	.7190
15	-10.67	-7.73	8.62	36.45	52.51	.0000	.1532	.0379	.0099	.0099	.9940	.0000	.0000	1.8730	.4954	.5022	.4586	.7135
30	-13.19	-10.18	8.00	32.79	50.68	.0000	.1460	.0439	.0123	.0123	.9941	.0000	.0000	1.7932	.4552	.4628	.4916	.7136
50	-15.85	-12.72	7.99	29.11	49.60	.0000	.1453	.0473	.0144	.0144	.9946	.0000	.0000	2.4373	.4192	.4236	.5399	.7262
70	-18.60	-15.35	9.04	25.62	49.91	.0000	.1709	.0704	.0233	.0233	.9926	.0000	.0000	-.3002	.4002	.3900	.5938	.7439
85	-19.38	-16.07	11.02	24.80	51.99	.0000	.2157	.0822	.0286	.0286	.9918	.0000	.0000	.4096	.3876	.3617	.6225	.7568
90	-18.25	-14.92	12.09	26.46	53.57	.0000	.2413	.0710	.0251	.0251	.9936	.0000	.0000	.5688	.3687	.3308	.6178	.7548
95	-16.96	-13.59	13.63	28.79	56.02	.0000	.2955	.1047	.0375	.0375	.9916	.0000	.0000	.5659	.3467	.3034	.6113	.7471

NCOR-1 INLET RPM	WCOR-1 INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC/A-1 LBM/SEC SQFT
5550	96.42	1.0419	1.1221	79.88	80.24	21.67

TABLE 7.2

Blade-Element and Overall Performance with Uniform Inlet

50% of Design Speed

ROTOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.769	269.2	568.4	269.2	419.6	.0	383.3	.00	42.41	57.55	12.86	501.6	430.4	-423.3	-96.8	423.3	479.1
10	18.467	20.408	274.8	535.7	274.8	400.6	.0	355.6	.00	41.58	58.45	19.13	525.2	424.5	-447.5	-139.0	447.5	494.6
15	19.467	21.047	279.7	505.0	279.7	385.7	.0	325.9	.00	40.18	59.34	25.48	548.5	427.9	-471.8	-184.2	471.8	510.1
30	22.314	22.964	289.4	458.9	289.4	368.7	.0	273.1	.00	36.50	61.84	37.49	613.4	465.6	-540.8	-283.5	540.8	556.5
50	25.791	25.520	292.8	414.4	292.8	350.7	.0	220.6	.00	32.15	64.90	48.56	690.2	530.6	-625.0	-397.9	625.0	618.5
70	28.954	28.076	287.8	383.7	287.8	337.0	.0	[illegible]	.00	28.57	67.78	55.85	756.4	600.4	-701.7	-496.9	701.7	684.4
85	31.295	29.993	279.2	360.9	279.2	317.2	.0	171.9	.00	28.47	69.79	60.25	808.2	639.3	-758.4	-554.9	758.4	726.9
90	31.883	30.630	276.6	339.1	276.6	290.1	.0	175.5	.00	31.19	70.30	62.90	820.7	636.6	-772.7	-566.8	772.7	742.3
95	32.499	31.271	274.3	313.8	274.3	259.8	.0	176.0	.00	34.12	70.80	65.94	834.0	637.2	-787.6	-581.9	787.6	757.9

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	2.17	8.60	10.99	44.69	47.12	.0000	.3202	.0547	.0117	.0117	1.2134	.9649	.9638	.8926	.2432	.5072	.4549	.3841
10	2.50	8.84	9.51	39.32	39.99	.0000	.3552	.0962	.0209	.0209	1.1957	.9299	.9280	.8282	.2489	.4773	.4794	.3782
15	2.86	8.62	8.95	33.85	34.03	.0000	.3682	.1108	.0240	.0240	1.1794	.9072	.9049	.8062	.2533	.4495	.5016	.3808
30	4.01	7.95	7.76	24.35	24.18	.0000	.3626	.0989	.0211	.0211	1.1595	.8883	.8857	.8120	.2614	.4079	.5599	.4138
50	5.35	7.97	6.31	16.34	14.68	.0000	.3281	.0818	.0165	.0165	1.1398	.8722	.8696	.8165	.2638	.3681	.6264	.4714
70	6.24	8.08	5.34	11.85	9.14	.0000	.2889	.0708	.0134	.0134	1.1252	.8573	.8546	.8105	.2591	.3408	.6855	.5333
85	6.43	7.68	6.13	9.54	8.01	.0000	.2844	.0948	.0170	.0170	1.1144	.7861	.7824	.7334	.2519	.3201	.7264	.5670
90	6.47	7.55	7.78	7.41	7.64	.0000	.3014	.1363	.0229	.0229	1.1050	.6958	.6910	.6482	.2493	.3002	.7390	.5637
95	6.59	7.50	10.08	4.86	7.45	.0000	.3136	.1693	.0259	.0259	1.0952	.6193	.6137	.5884	.2472	.2773	.7508	.5631

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.0458	1.1441	85.60	85.90

STATOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	20.409	21.489	602.8	564.1	474.8	563.3	371.3	-29.4	38.03	-2.99	14.56	44.32	490.6	787.4	-123.3	-550.2	494.6	520.8
10	21.008	21.961	570.1	539.1	453.6	538.4	345.3	-29.0	37.27	-3.08	19.86	46.19	482.7	777.7	-163.8	-561.2	509.1	532.2
15	21.589	22.432	540.5	519.8	437.5	519.1	317.4	-27.9	35.95	-3.08	25.17	47.76	483.9	772.2	-205.8	-571.6	523.2	543.6
30	23.314	23.902	496.3	479.5	417.3	478.6	268.6	-26.0	32.75	-3.11	35.34	51.65	512.3	771.9	-296.4	-605.3	565.0	579.3
50	25.601	25.893	456.0	440.1	399.7	438.9	219.5	-32.9	28.76	-4.29	45.05	56.39	566.4	793.1	-401.0	-600.4	620.4	627.5
70	27.813	27.902	434.5	408.1	393.0	406.8	185.2	-31.8	25.22	-4.47	51.28	60.11	627.4	816.6	-489.0	-708.0	674.2	676.2
85	29.408	29.382	424.5	380.8	386.3	379.7	175.9	-29.6	24.48	-4.46	54.26	62.89	661.4	833.3	-536.8	-741.7	712.7	712.1
90	29.914	29.856	410.4	361.1	368.8	360.0	180.1	-28.1	26.03	-4.46	55.91	64.41	658.0	833.4	-544.9	-751.6	725.0	723.6
95	30.382	30.293	395.3	334.8	351.3	333.8	181.3	-26.0	27.29	-4.46	57.67	66.29	656.9	830.2	-555.0	-760.2	736.3	734.1

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-7.85	-4.93	9.42	41.01	55.96	.0000	.2258	.0818	.0203	.0203	.9853	.0000	.0000	.4163	.5310	.5032	.4339	.7024
10	-8.20	-5.26	8.37	40.35	53.87	.0000	.2187	.0643	.0164	.0164	.9896	.0000	.0000	.5730	.4986	.4808	.4303	.6935
15	-8.65	-5.71	7.93	39.03	52.51	.0000	.2027	.0330	.0086	.0086	.9951	.0000	.0000	.7262	.4772	.4634	.4341	.6883
30	-9.89	-6.88	8.11	35.86	50.60	.0000	.1988	.0308	.0086	.0086	.9961	.0000	.0000	.6870	.4388	.4270	.4605	.6873
50	-12.11	-8.97	7.76	33.05	49.60	.0000	.2036	.0272	.0083	.0083	.9971	.0000	.0000	.7195	.4046	.3917	.5086	.7058
70	-14.49	-11.24	9.03	29.69	49.90	.0000	.2261	.0394	.0130	.0130	.9961	.0000	.0000	.6921	.3867	.3630	.5616	.7264
85	-14.79	-11.47	11.44	28.94	51.99	.0000	.2721	.0562	.0196	.0196	.9947	.0000	.0000	.7081	.3768	.3382	.5886	.7399
90	-13.38	-10.05	12.94	30.49	53.54	.0000	.3006	.0524	.0186	.0186	.9954	.0000	.0000	.7742	.3641	.3200	.5847	.7386
95	-12.41	-9.04	15.23	31.75	56.01	.0000	.3424	.0745	.0268	.0268	.9939	.0000	.0000	.7506	.3511	.2962	.5830	.7344

NCOR-1 INLET RPM	WCOR-1 INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC/A-1 LBM/SEC SQFT
5554	92.28	1.0458	1.1396	83.06	83.40	20.74

TABLE 7.3

Biade–Element and Overall Performance with Uniform Inlet

50% of Design Speed

ROTOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.769	256.0	557.5	256.0	398.6	.0	389.7	.00	44.35	58.84	12.68	494.9	408.6	-423.5	-89.6	423.5	479.3
10	18.467	20.408	261.4	528.7	261.4	384.6	.0	362.7	.00	43.31	59.72	18.96	518.5	407.1	-447.8	-132.1	447.8	494.8
15	19.467	21.047	266.1	499.4	266.1	370.6	.0	334.7	.00	42.07	60.59	25.33	541.8	410.6	-472.0	-175.6	472.0	510.3
30	22.314	22.964	274.9	447.0	274.9	344.2	.0	285.1	.00	39.62	63.06	38.21	606.9	439.0	-541.1	-271.7	541.1	556.8
50	25.791	25.520	277.6	407.6	277.6	330.5	.0	238.5	.00	35.80	66.06	48.96	684.2	504.1	-625.4	-380.3	625.4	618.8
70	28.954	28.076	272.6	378.3	272.6	317.7	.0	205.4	.00	32.89	68.78	56.24	753.1	571.8	-702.1	-475.3	702.1	680.8
85	31.295	29.993	264.3	356.8	264.3	292.3	.0	204.5	.00	34.99	70.79	60.79	803.5	599.0	-758.8	-522.7	758.8	727.2
90	31.883	30.630	262.0	341.3	262.0	269.8	.0	209.0	.00	37.77	71.28	63.19	816.2	598.0	-773.1	-533.7	773.1	742.7
95	32.499	31.271	259.8	327.0	259.8	250.4	.0	210.3	.00	40.03	71.76	65.44	829.7	602.9	-788.0	-547.9	788.0	758.2

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	7.47	9.90	10.80	46.17	47.12	.0000	.3581	.0228	.0049	.0049	1.2226	.9858	.9853	.9596	.2312	.4967	.4487	.3641
10	3.77	10.11	9.33	40.77	39.99	.0000	.3837	.0514	.0112	.0112	1.2080	.9641	.9631	.9146	.2367	.4705	.4735	.3623
15	4.12	9.86	8.78	35.26	34.03	.0000	.3964	.0694	.0151	.0151	1.1930	.9447	.9432	.8864	.2409	.4439	.4960	.3650
30	5.24	9.17	8.48	24.85	24.17	.0000	.4050	.0922	.0195	.0195	1.1698	.9021	.8998	.8422	.2482	.3966	.5544	.3894
50	6.51	9.13	6.71	17.10	14.69	.0000	.3690	.0810	.0162	.0162	1.1541	.8847	.8821	.8375	.2500	.3613	.6209	.4068
70	7.32	9.12	5.74	12.54	9.15	.0000	.3316	.0787	.0148	.0148	1.1413	.8596	.8567	.8165	.2452	.3351	.6806	.5065
85	7.44	8.69	6.67	10.01	8.02	.0000	.3448	.1277	.0226	.0226	1.1318	.7584	.7537	.7049	.2384	.3152	.7217	.5292
90	7.45	8.53	8.07	8.10	7.64	.0000	.3598	.1635	.0272	.0272	1.1254	.6942	.6886	.6436	.2360	.3010	.7343	.5274
95	7.54	8.45	9.57	6.32	7.44	.0000	.3672	.1869	.0292	.0292	1.1202	.6492	.6430	.6050	.2340	.2880	.7462	.3306

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.0499	1.1589	86.34	86.65

STATOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	20.409	21.489	587.2	526.9	449.7	526.9	377.5	-.1	40.01	-.01	14.63	44.68	464.8	741.1	-117.4	-521.1	494.9	521.0
10	21.008	21.961	558.3	501.7	433.1	501.4	352.2	-15.5	39.11	-1.79	19.94	47.54	461.1	742.9	-157.2	-548.0	509.4	532.5
15	21.589	22.432	529.9	483.2	417.7	482.8	326.0	-20.7	37.96	-2.46	25.29	49.47	462.4	743.0	-197.4	-564.6	523.5	543.9
30	23.314	23.902	479.9	445.2	389.3	444.7	280.6	-21.1	35.76	-2.71	36.13	53.48	482.7	747.5	-284.7	-600.6	565.3	579.6
50	25.601	25.893	444.4	409.4	375.6	408.8	237.4	-21.9	32.29	-3.08	45.54	57.81	536.8	767.8	-383.3	-649.8	620.8	627.8
70	27.818	27.902	423.8	382.1	369.5	380.7	207.6	-32.7	29.32	-4.90	51.64	61.77	595.5	805.0	-466.9	-709.2	674.5	676.5
85	29.408	29.382	414.2	357.3	357.4	356.8	209.2	-18.1	30.35	-2.90	54.65	63.97	617.8	813.1	-503.8	-730.6	713.1	712.4
90	29.914	29.856	404.8	339.8	343.3	339.5	214.5	-13.8	32.01	-2.33	56.10	65.29	615.4	812.1	-510.8	-737.7	725.3	723.9
95	30.382	30.293	397.8	320.5	333.6	320.3	216.7	-12.6	33.01	-2.25	57.32	66.80	617.8	812.9	-520.0	-747.1	736.7	734.5

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-5.95	-3.02	12.40	40.02	55.90	.0000	.2584	.0971	.0241	.0241	.9834	.0000	.0000	.5549	.5173	.4683	.4115	.6586
10	-6.34	-3.40	9.65	40.90	53.87	.0000	.2661	.0950	.0242	.0242	.9852	.0000	.0000	.6165	.4886	.4457	.4110	.6600
15	-6.50	-3.56	8.56	40.42	52.51	.0000	.2562	.0667	.0174	.0174	.9905	.0000	.0000	.6796	.4669	.4292	.4131	.6598
30	-6.80	-3.30	8.51	38.48	50.68	.0000	.2468	.0314	.0088	.0088	.9963	.0000	.0000	.8375	.4240	.3950	.4325	.6632
50	-8.51	-5.38	8.97	35.37	49.61	.0000	.2567	.0337	.0103	.0103	.9966	.0000	.0000	.8202	.3935	.3629	.4802	.6807
70	-10.29	-7.05	8.59	34.23	49.90	.0000	.2862	.0309	.0102	.0102	.9971	.0000	.0000	.8289	.3761	.3385	.5302	.7132
85	-8.96	-5.65	13.00	33.26	52.30	.0000	.3294	.0446	.0156	.0156	.9760	.0000	.0000	.8200	.3667	.3156	.5475	.7183
90	-7.43	-4.10	15.07	34.35	53.54	.0000	.3613	.0563	.0200	.0200	.9952	.0000	.0000	.8152	.3581	.2996	.5447	.7161
95	-6.68	-3.32	17.44	35.26	56.30	.0000	.4024	.0887	.0319	.0319	.9927	.0000	.0000	.7613	.3518	.2622	.5461	.7157

NCOR-1 INLET RPM	WCOR-1 INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC/A-1 LBM/SEC SQFT
5557	87.89	1.0499	1.1533	83.45	83.81	19.75

TABLE 7.4

Blade–Element and Overall Performance with Uniform Inlet

50% of Design Speed

ROTOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.769	242.5	548.1	242.5	376.9	.0	398.0	.00	46.57	60.14	12.00	487.1	385.3	-422.5	-80.1	422.5	478.2
10	18.467	20.408	247.6	522.7	247.6	366.8	.0	372.3	.00	45.41	61.00	18.29	510.7	386.8	-446.7	-121.4	446.7	493.6
15	19.467	21.047	252.0	496.2	252.0	356.4	.0	345.3	.00	44.08	61.84	24.66	534.0	392.8	-470.8	-163.8	470.8	509.1
30	22.314	22.964	260.2	441.1	260.2	324.7	.0	298.5	.00	42.58	64.25	38.27	599.2	414.6	-539.7	-256.9	539.7	555.4
50	25.791	25.520	262.2	403.5	262.2	312.0	.0	255.9	.00	39.35	67.19	49.14	676.7	477.6	-623.8	-361.4	623.8	617.3
70	28.954	28.076	256.8	378.0	256.8	300.2	.0	229.6	.00	37.41	69.86	56.25	745.9	540.6	-700.3	-449.5	700.3	679.1
85	31.295	29.993	248.6	356.4	248.6	264.5	.0	238.8	.00	42.09	71.82	61.47	796.7	553.9	-756.9	-486.6	756.9	725.4
90	31.883	30.630	246.4	348.3	246.4	251.0	.0	241.5	.00	43.90	72.28	63.31	809.6	558.9	-771.2	-499.3	771.2	740.8
95	32.499	31.271	244.3	336.5	244.3	233.0	.0	242.8	.00	46.18	72.73	65.59	823.1	563.9	-786.1	-513.5	786.1	756.4

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	4.76	11.19	10.13	48.14	47.12	.0000	.3997	.0247	.0053	.0053	1.2270	.9853	.9849	.9609	.2189	.4877	.4416	.3428
10	5.04	11.38	8.66	42.71	39.99	.0000	.4187	.0419	.0092	.0092	1.2152	.9721	.9713	.9356	.2241	.4645	.4664	.3438
15	5.37	11.09	8.09	37.19	34.03	.0000	.4260	.0525	.0115	.0115	1.2025	.9604	.9593	.919	.2281	.4407	.4891	.3488
30	6.45	10.36	8.54	25.98	24.16	.0000	.4442	.0955	.0202	.0202	1.1784	.9051	.9028	.8491	.2348	.3907	.5480	.3672
50	7.66	10.27	4.91	18.05	14.69	.0000	.4088	.0916	.0183	.0183	1.1645	.8802	.8774	.8322	.2359	.3570	.6143	.4226
70	8.41	10.19	5.80	13.61	9.18	.0000	.3776	.1016	.0191	.0191	1.1544	.8595	.8359	.7902	.2307	.3340	.6747	.4777
85	8.47	9.71	7.38	10.35	8.04	.0000	.4109	.1751	.0303	.0303	1.1454	.7167	.7108	.6561	.2239	.3137	.7156	.4875
90	8.45	9.53	8.21	8.97	7.65	.0000	.4174	.1971	.0326	.0326	1.1426	.6819	.6754	.6224	.2218	.3062	.7280	.4913
95	8.52	9.43	9.74	7.14	7.45	.0000	.4235	.2177	.0338	.0338	1.1385	.6470	.6400	.5923	.2199	.2954	.7399	.4990

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.0539	1.1702	85.31	85.66

STATOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	20.409	21.489	573.5	494.9	424.6	494.9	385.6	1.8	42.24	.21	14.28	46.30	438.2	716.4	-108.1	-518.0	493.6	519.8
10	21.008	21.961	548.0	469.5	411.8	469.3	361.5	-11.2	41.27	-1.38	19.59	49.13	437.4	717.4	-146.6	-542.3	508.1	531.2
15	21.589	22.432	522.2	451.5	399.4	451.2	336.3	-15.2	40.09	-1.93	24.94	51.03	441.0	717.5	-185.8	-557.8	522.2	542.6
30	23.314	23.902	469.6	415.2	366.2	415.0	293.8	-14.3	38.73	-1.98	36.35	54.98	455.5	723.5	-270.1	-592.5	563.9	578.1
50	25.601	25.893	435.6	380.6	353.2	380.1	254.9	-18.1	35.81	-2.74	45.84	59.45	507.6	748.3	-364.3	-?44.4	619.2	626.3
70	27.818	27.902	418.0	356.9	347.6	356.1	232.1	-23.7	33.74	-3.79	51.74	62.99	561.4	784.1	-440.7	-698.5	672.8	674.9
85	29.408	29.382	407.4	334.0	326.2	334.0	244.1	-3.6	36.80	-.61	55.08	64.94	569.9	788.5	-467.2	-714.3	711.3	710.7
90	29.914	29.856	403.5	321.8	318.3	321.8	247.9	2.1	37.91	.38	56.20	65.92	572.3	788.7	-475.6	-720.0	723.5	722.1
95	30.382	30.293	397.5	305.6	308.9	305.6	250.2	2.6	39.00	.49	57.49	67.28	574.7	791.5	-484.7	-730.1	734.8	732.7

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-3.76	-.83	12.62	42.03	55.90	.0000	.2992	.1012	.0252	.0252	.9834	.0000	.0000	.6447	.5049	.4384	.3879	.6347
10	-4.22	-1.28	10.07	42.65	53.87	.0000	.3132	.1119	.0285	.0285	.9832	.0000	.0000	.6625	.4801	.4158	.3904	.6353
15	-4.35	-1.41	9.08	42.02	52.51	.0000	.3083	.0936	.0245	.0245	.9871	.0000	.0000	.6853	.4596	.3997	.3932	.6352
30	-3.77	-.77	9.24	40.71	50.63	.0000	.2978	.0430	.0121	.0121	.9952	.0000	.0000	.8353	.4144	.3673	.4068	.6399
50	-4.94	-1.81	9.30	38.55	49.61	.0000	.3174	.0485	.0149	.0149	.9953	.0000	.0000	.8140	.3854	.3363	.4523	.6611
70	-5.86	-2.62	9.70	37.53	49.92	.0000	.3487	.0443	.0147	.0147	.9960	.0000	.0000	.8335	.3700	.3150	.4975	.6919
85	-2.62	.70	15.30	37.41	52.01	.0000	.3927	.0512	.0179	.0179	.9956	.0000	.0000	.8508	.3597	.2936	.5031	.6932
90	-1.59	1.74	17.78	37.54	53.55	.0000	.4193	.0706	.0251	.0251	.9941	.0000	.0000	.8182	.3560	.2824	.5047	.6923
95	-.70	2.66	20.17	38.52	56.01	.0000	.4560	.0972	.0351	.0351	.9921	.0000	.0000	.7766	.3503	.2679	.5060	.6938

NCOR-1 INLET RPM	WCOR-1 INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC/A-1 LBM/SEC SQFT
5543	83.24	1.05??	1.1628	81.79	82.20	18.71

TABLE 7.5

Blade-Element and Overall Performance with Uniform Inlet

50% of Design Speed

ROTOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.769	228.7	535.7	226.7	353.2	.0	462.8	.00	48.70	61.57	12.05	480.5	361.2	-422.5	-75.4	422.5	478.2
10	18.467	20.408	233.5	513.4	233.5	349.0	.0	376.5	.00	47.10	62.40	18.53	504.1	368.6	-446.7	-117.1	446.7	493.7
15	19.467	21.047	237.7	488.0	237.7	340.6	.0	349.5	.00	45.73	63.22	25.09	527.5	376.7	-470.9	-159.6	470.9	509.1
30	22.314	22.964	245.3	431.9	245.3	306.7	.0	304.0	.00	44.73	65.56	39.26	592.9	397.2	-539.8	-251.5	539.8	555.5
50	25.791	25.520	246.3	392.5	246.3	288.8	.0	265.7	.00	42.61	68.45	50.54	670.8	455.3	-623.9	-351.6	623.9	617.3
70	28.954	28.076	240.6	372.6	240.6	275.7	.0	256.5	.00	42.26	71.04	57.24	740.6	509.8	-700.4	-428.7	700.4	679.2
85	31.295	29.993	232.8	361.9	232.8	245.3	.0	266.0	.00	47.32	72.91	61.90	792.0	520.9	-757.0	-459.5	757.0	725.5
90	31.883	30.630	230.7	358.6	230.7	235.8	.0	270.2	.00	48.90	73.35	63.40	805.0	526.5	-771.2	-470.7	771.2	740.9
95	32.499	31.271	228.7	347.0	228.7	216.0	.0	271.6	.00	51.50	73.78	65.98	818.7	530.8	-786.1	-484.9	786.1	756.4

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	6.19	12.02	10.18	49.52	47.12	.0000	.4439	.0132	.0028	.0028	1.2317	.9923	.9920	.9808	.2064	.4760	.4354	.3209
10	6.44	12.77	8.90	43.88	39.99	.0000	.4492	.0128	.0028	.0028	1.2227	.9916	.9914	.9812	.2113	.4559	.4604	.3273
15	6.75	12.44	8.50	38.13	34.03	.0000	.4513	.0201	.0044	.0044	1.2110	.9853	.9849	.9703	.2151	.4330	.4835	.3342
30	7.78	11.67	9.51	20.30	24.14	.0000	.4701	.0754	.0157	.0157	1.1869	.9280	.9261	.8868	.2211	.3822	.5432	.3515
50	8.93	11.53	8.32	17.90	14.70	.0000	.4414	.0914	.0177	.0177	1.1726	.8867	.8839	.8440	.2213	.3467	.6099	.4021
70	9.53	11.36	6.61	13.80	9.20	.0000	.4242	.1216	.0222	.0222	1.1661	.8254	.8213	.7743	.2159	.3284	.6699	.4493
85	9.56	10.80	7.81	11.01	8.05	.0000	.4612	.1945	.0331	.0331	1.1633	.7188	.7124	.6540	.2096	.3177	.7109	.4573
90	9.52	10.59	8.30	9.95	7.66	.0000	.4672	.2143	.0354	.0354	1.1629	.6922	.6852	.6261	.2075	.3144	.7235	.4615
95	9.57	10.48	10.13	7.79	7.46	.0000	.4737	.2349	.0359	.0359	1.1591	.6606	.6531	.5986	.2058	.3038	.7355	.4647

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.0569	1.1813	85.82	86.17

STATOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	20.409	21.489	557.4	461.7	398.1	461.5	390.2	10.5	44.43	1.30	14.58	47.82	411.3	687.4	-103.5	-509.3	493.7	519.8
10	21.008	21.961	535.1	437.9	390.6	437.7	365.6	-6.6	[illegible]	-.92	20.04	50.86	416.2	693.8	-142.6	-538.1	508.2	531.2
15	21.589	22.432	510.2	420.3	380.1	420.1	340.5	-12.3	41.85	-1.67	25.55	52.87	421.7	696.1	-181.8	-554.9	522.2	542.6
30	23.314	23.902	456.6	384.8	344.6	384.6	299.3	-11.2	40.96	-1.67	37.45	56.87	435.1	703.9	-264.6	-589.4	564.0	578.2
50	25.601	25.893	420.9	351.6	327.1	351.4	264.9	-11.4	39.00	-1.86	47.25	61.13	482.5	728.3	-354.4	-637.8	619.3	626.3
70	27.818	27.902	408.1	330.5	319.9	330.1	253.3	-15.6	38.38	-2.70	52.68	64.45	527.7	765.4	-419.6	-690.5	672.9	674.9
85	29.403	29.382	406.6	314.3	302.2	314.3	272.0	2.9	41.99	.54	55.48	66.06	533.3	774.4	-439.4	-707.8	711.4	710.7
90	29.914	29.856	406.2	307.5	296.6	307.4	277.4	9.4	43.09	1.75	56.38	66.68	535.8	776.3	-446.2	-712.8	723.6	722.2
95	30.382	30.293	389.9	294.4	285.6	293.9	279.8	17.5	44.41	3.40	57.89	67.66	537.4	773.3	-455.2	-715.3	734.9	732.8

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-1.66	1.27	13.71	43.13	55.90	.0000	.3366	.1134	.0282	.0282	.9824	.0000	.0000	.6737	.4906	.4079	.3647	.6073
10	-2.45	.49	10.53	44.01	53.87	.0000	.3555	.1310	.0334	.0334	.9812	.0000	.0000	.6742	.4688	.3868	.3718	.6128
15	-2.57	.38	9.34	43.52	52.51	.0000	.3537	.1156	.0302	.0302	.9848	.0000	.0000	.6854	.4489	.3712	.3755	.6147
30	-1.49	1.51	9.55	42.63	50.67	.0000	.3460	.0584	.0164	.0164	.9938	.0000	.0000	.8196	.4029	.3395	.3872	.6211
50	-1.70	1.43	10.18	40.86	49.61	.0000	.3640	.0452	.0139	.0139	.9959	.0000	.0000	.8567	.3721	.3099	.4279	.6418
70	-1.30	1.94	10.79	41.07	49.92	.0000	.4082	.0573	.0190	.0190	.9951	.0000	.0000	.8424	.3604	.2906	.4660	.6731
85	2.52	5.83	16.45	41.45	52.02	.0000	.4585	.0913	.0319	.0319	.9923	.0000	.0000	.7918	.3578	.2752	.4692	.6781
90	3.50	6.82	19.15	41.34	53.55	.0000	.4776	.1086	.0386	.0386	.9908	.0000	.0000	.7652	.3575	.2689	.4712	.6788
95	4.68	8.04	23.09	41.00	56.	.0000	.5006	.1253	.0451	.0451	.9898	.0000	.0000	.7431	.3514	.2571	.4714	.6753

NCOR-1 INLET RPM	WCOR-1 INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC/A-1 LBM/SEC SQFT
5544	78.40	1.0569	1.1721	81.67	82.10	17.62

TABLE 7.6

Blade-Element and Overall Performance with Uniform Inlet

50% of Design Speed

ROTOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.769	220.8	533.5	220.8	347.0	.0	405.2	.00	49.42	62.44	11.96	477.1	354.8	-422.9	-73.5	422.9	478.7
10	18.467	20.408	225.4	511.3	225.4	340.5	.0	391.4	.00	48.23	63.25	18.31	500.7	359.1	-447.1	-112.7	447.1	494.1
15	19.467	21.047	229.4	486.4	229.4	329.9	.0	357.4	.00	47.28	64.05	24.75	524.2	363.9	-471.4	-152.2	471.4	509.6
30	22.314	22.964	236.4	432.6	236.4	297.3	.0	314.2	.00	46.58	66.36	39.03	589.8	383.8	-540.3	-241.8	540.3	556.0
50	25.791	25.520	236.9	391.7	236.9	276.1	.0	277.8	.00	45.17	69.22	50.88	667.9	438.4	-624.5	-340.1	624.5	617.9
70	28.954	28.076	231.1	372.5	231.1	257.1	.0	269.5	.00	46.35	71.75	57.92	735.2	484.2	-701.1	-410.3	701.1	679.8
85	31.295	29.993	224.0	371.3	224.0	238.6	.0	284.5	.00	50.02	73.53	61.62	790.2	502.0	-757.7	-441.7	757.7	726.2
90	31.883	30.630	222.1	370.2	222.1	233.4	.0	287.4	.00	50.92	73.95	62.81	803.3	510.7	-772.0	-454.3	772.0	741.6
95	32.499	31.271	220.1	360.0	220.1	216.2	.0	287.8	.00	53.08	74.37	65.26	817.1	516.8	-786.9	-469.4	786.9	757.2

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	7.05	13.48	10.09	56.48	47.12	.0000	.4545	.0123	.0026	.0026	1.2336	.9930	.9928	.9827	.1992	.4738	.4325	.3151
10	7.29	13.61	8.68	44.94	39.99	.0000	.4669	.0218	.0048	.0048	1.2247	.9862	.9858	.9695	.2040	.4537	.4579	.3186
15	7.59	13.25	8.14	39.30	34.03	.0000	.4761	.0381	.0083	.0083	1.2134	.9732	.9724	.9468	.2076	.4312	.4811	.3226
30	8.60	12.47	9.27	27.33	24.13	.0000	.4948	.0909	.0190	.0190	1.1913	.9168	.9146	.8689	.2131	.3825	.5410	.3393
50	9.71	12.30	8.66	18.34	14.70	.0000	.4698	.1126	.0217	.0217	1.1768	.8673	.8640	.8177	.2127	.3455	.6077	.3867
70	10.28	12.07	7.48	13.83	9.20	.0000	.4655	.1558	.0280	.0280	1.1718	.7924	.7874	.7334	.2074	.3277	.6671	.4259
85	10.19	11.44	7.51	11.91	8.02	.0000	.4923	.2101	.0362	.0362	1.1747	.7163	.7095	.6452	.2018	.3254	.7080	.4400
90	10.12	11.21	7.68	11.14	7.63	.0000	.4935	.2234	.0376	.0376	1.1757	.6988	.6916	.6262	.1998	.3241	.7209	.4471
95	10.16	11.08	9.39	9.11	7.44	.0000	.4972	.2402	.0377	.0377	1.1727	.6732	.6655	.6040	.1980	.3148	.7334	.4519

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.0596	1.1872	84.32	84.72

STATOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	20.409	21.489	553.1	444.3	389.7	444.2	392.5	10.6	45.20	1.36	14.63	48.93	402.7	676.1	-101.7	-509.8	494.2	520.3
10	21.008	21.961	530.8	422.5	380.2	422.4	370.4	-5.7	44.24	-.79	19.98	51.83	404.9	683.7	-138.2	-537.4	508.7	531.7
15	21.589	22.432	506.5	405.1	367.7	405.0	348.2	-10.8	43.43	-1.53	25.38	53.83	407.5	686.3	-174.5	-554.0	522.7	543.1
30	23.314	23.902	455.1	369.7	333.7	369.6	309.4	-10.3	42.83	-1.59	37.34	57.88	420.5	695.5	-255.1	-589.0	564.5	578.7
50	25.601	25.693	418.3	335.6	313.0	336.4	277.0	-12.0	41.51	-2.05	47.57	62.23	464.5	722.2	-342.9	-639.0	619.9	626.9
70	27.818	27.902	405.0	316.5	300.5	316.3	272.8	-9.0	42.23	-1.74	53.14	65.22	501.0	754.7	-400.8	-685.2	673.6	675.6
85	29.408	29.382	412.6	304.5	292.4	304.4	291.1	6.9	44.87	1.29	55.22	66.63	512.5	767.5	-421.0	-704.6	712.1	711.4
90	29.914	29.856	413.8	301.1	290.0	301.0	295.2	6.8	45.50	1.29	55.95	67.20	518.0	776.8	-429.1	-716.1	724.3	722.9
95	30.382	30.293	408.7	291.5	281.3	291.4	296.5	6.6	46.51	1.30	57.36	68.15	521.5	783.1	-439.1	-726.9	735.6	733.5

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-.89	2.03	13.77	43.84	55.90	.0000	.3637	.1183	.0294	.0294	.9819	.0000	.0000	.6971	.4868	.3920	.3570	.5965
10	-1.13	1.81	10.66	45.03	53.87	.0000	.3810	.1295	.0330	.0330	.9817	.0000	.0000	.7020	.4652	.3726	.3603	.6030
15	-.95	1.99	9.44	44.96	52.51	.0000	.3821	.1142	.0299	.0299	.9852	.0000	.0000	.7193	.4457	.3572	.3623	.6051
30	.41	3.41	9.63	44.43	50.67	.0000	.3823	.0657	.0184	.0184	.9930	.0000	.0000	.8235	.4014	.3256	.3735	.6125
50	.82	3.95	9.99	43.55	49.61	.0000	.4055	.0478	.0146	.0146	.9957	.0000	.0000	.8685	.3692	.2960	.4108	.6351
70	2.56	5.79	11.75	43.97	49.92	.0000	.4506	.0645	.0230	.0230	.9941	.0000	.0000	.8319	.3577	.2775	.4415	.6619
85	5.45	8.76	17.22	43.58	52.01	.0000	.5029	.1384	.0484	.0484	.9880	.0000	.0000	.7130	.3624	.2659	.4501	.6703
90	5.97	9.29	18.69	44.21	53.54	.0000	.5203	.1538	.0546	.0546	.9866	.0000	.0000	.6924	.3631	.2627	.4547	.6777
95	6.81	10.18	20.93	45.21	56.00	.0000	.5429	.1649	.0594	.0594	.9860	.0000	.0000	.6816	.3586	.2540	.4568	.6824

NCOR-1 INLET RPM	WCOR-1 INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC/A-1 LBM/SEC SQFT
5549	75.64	1.0596	1.1764	79.74	80.22	16.99

TABLE 8.1

Blade-Element and Overall Performance with Uniform Inlet

70% of Design Speed

ROTOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.769	410.6	799.3	410.6	609.0	.0	516.6	.00	40.27	55.24	14.10	720.3	628.9	-591.8	-153.2	591.8	669.8
10	18.467	20.408	419.8	757.6	419.8	580.0	.0	487.4	.00	40.04	56.14	19.38	753.5	615.3	-625.7	-204.0	625.7	691.4
15	19.467	21.047	427.9	721.5	427.9	561.5	.0	453.0	.00	38.88	57.02	24.82	786.2	619.4	-659.6	-260.1	659.6	713.1
30	22.314	22.964	444.8	653.0	444.8	540.9	.0	365.7	.00	34.05	59.53	37.26	877.2	680.7	-756.0	-412.3	756.0	778.0
50	25.791	25.520	451.9	599.4	451.9	524.3	.0	290.4	.00	28.97	62.65	47.57	983.8	777.9	-873.8	-574.3	873.8	864.6
70	28.954	28.076	443.7	557.8	443.7	502.2	.0	242.8	.00	25.80	65.66	54.66	1076.7	868.5	-981.0	-708.4	981.0	951.2
85	31.295	29.993	428.7	521.2	426.7	467.5	.0	230.4	.00	26.26	67.98	59.25	1143.7	914.4	-1060.3	-785.7	1060.3	1016.2
90	31.883	30.630	424.3	483.1	424.3	423.0	.0	231.5	.00	28.71	68.55	62.28	1160.6	911.2	-1080.2	-806.3	1080.2	1037.8
95	32.459	31.271	420.9	418.6	420.9	347.6	.0	233.3	.00	33.87	69.08	67.18	1178.8	896.4	-1101.1	-826.2	1101.1	1059.5

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-R SHOCK	D-FAC	OMEGA-R	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-.14	6.29	12.23	41.14	47.12	.0000	.2942	.0554	.0118	.0118	1.4264	.9632	.9613	.8935	.3739	.7128	.6579	.5608
10	.18	6.53	9.75	36.76	39.99	.0000	.3397	.1163	.0253	.0253	1.3893	.9146	.9105	.8039	.3834	.6731	.6926	.5466
15	.53	6.32	8.29	32.21	34.03	.0000	.3559	.1321	.0288	.0288	1.3599	.8906	.8857	.7835	.3910	.6398	.7241	.5492
30	1.68	5.63	7.54	22.27	24.19	.0000	.3379	.0982	.02[illegible]	.0211	1.3120	.8884	.8840	.8225	.4058	.5783	.8071	.6027
50	3.12	5.74	5.31	15.08	14.68	.0000	.2988	.0670	.01[illegible]	.0140	1.2743	.8940	.8903	.8533	.4112	.5307	.9015	.6888
70	4.23	6.02	4.17	11.00	9.15	.0000	.2684	[illegible]	.01[illegible]	.0139	1.2424	.8607	.8564	.8220	.4029	.4936	.9837	.7685
85	4.63	5.86	5.16	8.73	8.04	.0055	.2717	.1152	.02[illegible]	.0203	1.2110	.7544	.7477	.7081	.3898	.4596	1.0390	.8063
90	4.75	5.80	7.22	6.27	7.69	.0063	.2868	.1619	.0277	.0266	1.1854	.6338	.6453	.6224	.3853	.4244	1.0559	.8004
95	4.88	5.78	11.36	1.90	7.48	.0070	.3123	.2240	.0326	.0314	1.1480	.5463	.5065	.5313	.3823	.3656	1.0715	.7830

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.0856	1.2788	85.09	[illegible]

STATOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	20.409	21.489	860.8	853.2	700.3	851.6	500.4	-53.3	35.55	-3.58	15.26	42.5[illegible]	725.9	1155.7	-191.0	-781.4	691.5	728.1
10	21.008	21.961	820.0	826.9	669.4	825.2	473.7	-53.3	35.28	-3.70	19.58	44.6[illegible]	710.8	1147.6	-238.1	-797.3	711.8	744.1
15	21.589	22.432	785.5	801.1	649.7	795.1	441.4	-56.3	34.18	-4.03	24.04	45.61	712.0	1142.5	-290.0	-816.3	731.4	760.0
30	23.314	23.902	720.9	740.1	624.5	737.7	359.9	-59.5	29.94	-4.61	34.51	49.58	758.7	1140.3	-430.0	-869.3	789.9	809.8
50	25.601	25.893	673.2	687.7	607.8	[illegible]	289.2	-54.6	25.44	-4.56	43.54	53.65	839.2	1157.0	-578.2	-931.9	867.4	877.3
70	27.818	27.902	646.0	639.2	597.2	[illegible]	245.4	-52.5	22.29	-4.70	49.39	57.45	918.6	1183.9	-697.4	-997.9	942.5	945.3
85	29.408	29.382	631.9	591.8	586.6	59[illegible]	[illegible]	-20.3	21.84	-1.95	52.39	59.79	961.2	1175.4	-761.4	-1015.7	996.4	995.[illegible]
90	29.914	29.856	608.6	564.1	560.5	564.[illegible]	[illegible]	-[illegible]	22.94	-.01	54.18	60.88	957.7	1158.6	-776.5	-1012.0	1013.5	1011.
95	30.382	30.293	565.7	506.9	512.2	505.[illegible]	[illegible]	31.7	25.11	3.59	57.02	63.04	940.9	1115.9	-789.3	-994.6	1029.4	1026.3

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-R SHOCK	D-FAC	OMEGA-R	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-10.34	-7.41	8.83	39.13	55.90	.0000	.1654	[illegible]	[illegible]	[illegible]	.9661	.0000	.0000	-3.7234	.7618	.7663	.6449	1.0380
10	-10.05	-7.12	7.75	38.97	53.87	.0000	.1527	[illegible]	[illegible]	[illegible]	.9781	.0000	.0000	2.4967	.7224	.7417	.6347	1.0292
15	-10.48	-7.53	6.97	38.21	52.49	.0000	.1434	.0560	[illegible]	.0146	.9843	.0000	.0000	1.6031	.6947	.7177	.6396	1.0235
30	-12.79	-9.78	6.61	34.55	50.68	.0000	.1352	.0627	.0176	.0176	.9848	.0000	.0000	1.6041	.6388	.6520	.6830	1.0200
50	-15.40	-12.26	7.49	29.99	49.60	.0000	.1342	.0772	.0236	.0236	.9833	.0000	.0000	2.1856	.5985	.6146	.7534	1.0340
70	-17.40	-14.16	8.79	27.00	49.92	.0000	.1630	.1046	.0346	.0346	.9789	.0000	.0000	-3.4432	.5757	.5700	.8223	1.0557
85	-17.54	-14.23	13.94	23.79	52.01	.0000	.2048	.1446	.0505	.0505	.9720	.0000	.0000	-.0432	.5616	.5250	.8559	1.0427
90	-16.52	-13.19	17.39	22.95	53.57	.0000	.2120	.1318	.0469	.0469	.9762	.0000	.0000	.1579	.5395	.4987	.8498	1.0243
95	-14.61	-11.24	23.26	21.53	56.04	.0000	.2371	.1597	.0575	.0575	.9750	.0000	.0000	.2601	.5000	.4455	.8308	.9809

NCOR-1 INLET RPM	WCOR-1 INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC/A-1 LBM/SEC SQFT
7765	135.56	1.0856	1.2554	78.50	79.18	30.46

TABLE 8.2

Blade–Element and Overall Performance with Uniform Inlet

70% of Design Speed

ROTOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.769	394.7	787.4	394.7	580.5	.0	532.0	.00	42.50	56.27	13.29	710.8	596.5	-591.1	-137.1	591.1	689.1
10	18.467	20.408	403.4	740.1	403.4	547.0	.0	498.5	.00	42.34	57.16	19.38	743.9	580.4	-625.0	-192.2	625.0	690.7
15	19.467	21.047	411.0	695.1	411.0	[illegible]	.0	461.0	.00	41.53	58.04	25.74	776.5	578.3	-658.8	-251.3	658.8	712.3
30	22.314	22.964	426.9	636.8	426.9	506.5	.0	385.8	.00	37.28	60.52	37.64	867.5	640.7	-755.2	-391.4	755.2	777.2
50	25.791	25.520	433.7	583.5	433.7	488.6	.0	318.9	.00	33.13	63.57	48.08	974.7	732.0	-872.9	-544.8	872.9	863.7
70	[illegible]	28.076	426.8	544.9	420.8	469.5	.0	276.5	.00	30.49	66.46	55.12	1068.8	821.3	-979.9	-673.7	979.9	950.2
85	[illegible]	29.993	413.4	515.4	413.4	440.9	.0	266.8	.00	31.19	68.67	59.49	1137.0	868.6	-1059.1	-748.3	1059.1	1015.1
90	31.883	30.630	409.5	491.1	409.5	407.1	.0	274.6	.00	34.02	69.22	61.89	1154.1	864.0	-1079.0	-762.0	1079.0	1036.6
95	32.499	31.271	406.0	455.2	406.0	359.4	.0	279.3	.00	37.86	69.74	65.23	1172.4	857.9	-1099.9	-775.0	1099.9	1058.3

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	.89	7.32	11.42	42.98	47.12	.0000	.3354	.0237	.0051	.0051	1.4518	.9845	.9837	.9594	.3590	.7000	.6488	.5303
10	1.20	7.55	9.75	37.78	39.99	.0000	.3816	.0907	.0197	.0197	1.4099	.9363	.9332	.8635	.3681	.6555	.6834	.5140
15	1.55	7.34	9.21	32.30	34.03	.0000	.4035	.1221	.0264	.0264	1.3723	.9027	.8982	.8230	.3751	.6140	.7145	.5109
30	2.66	6.62	7.92	22.88	24.19	.0000	.3830	.0899	.0192	.0192	1.3375	.9047	.9006	.8551	.3888	.5616	.7964	.5650
50	4.02	6.65	5.81	15.50	14.67	.0000	.3482	.0729	.0149	.0149	1.3048	.8974	.8934	.8640	.3942	.5140	.8908	.6446
70	5.01	6.81	4.60	11.35	9.12	.0000	.3177	.0775	.0150	.0150	1.2785	.8668	.8622	.8365	.3874	.4793	.9736	.7224
85	5.31	6.56	5.37	9.18	8.01	.0065	.3192	.1163	.0214	.0202	1.2577	.7858	.7788	.7492	.3760	.4517	1.0298	.7512
90	5.30	6.46	6.77	7.33	7.64	.0072	.3373	.1628	.0263	.0270	1.2414	.7063	.6973	.6733	.3718	.4287	1.0471	.7542
95	5.53	6.44	9.38	4.51	7.45	.0089	.3559	.2084	.0328	.0314	1.2197	.6257	.6150	.6082	.3685	.3957	1.0633	.7458

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.0934	1.3118	86.33	86.85

STATOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	20.409	21.489	839.3	773.6	662.5	772.4	515.3	-41.7	37.87	-3.09	14.83	44.87	[illegible]	1090.0	-175.4	-769.0	690.7	[illegible]
10	21.008	21.961	792.9	739.3	627.8	738.1	484.4	-40.9	37.65	-3.17	19.86	46.73	667.9	1077.0	-226.6	-784.1	[illegible]	743.2
15	21.589	22.432	750.1	712.7	600.7	711.5	449.1	-40.6	36.77	-3.27	25.08	48.35	663.9	1070.6	-281.5	-799.8	730.7	759.2
30	23.314	23.902	695.2	662.3	582.3	660.6	379.6	-48.4	33.09	-4.19	35.07	52.38	712.3	1082.5	-409.4	-857.3	789.0	808.9
50	25.601	25.893	648.5	616.5	565.4	614.6	317.6	-47.7	29.32	-4.44	44.12	56.36	788.2	1109.9	-548.8	-924.0	866.4	876.3
70	[illegible]	27.902	624.2	576.7	558.3	575.0	279.1	-44.0	26.57	-4.37	49.87	59.81	866.3	1143.5	-662.3	-986.3	[illegible]	944.3
85	29.408	29.382	614.6	541.7	550.7	540.7	272.8	-32.5	26.36	-3.44	52.69	62.23	908.4	1160.6	-722.5	-1026.9	[illegible]	[illegible]
90	29.914	29.856	500.9	519.2	530.7	518.3	282.0	-31.0	27.99	-3.42	54.00	63.54	902.9	1163.3	-730.4	-1041.4	[illegible]	[illegible]
95	30.382	30.293	579.9	482.8	503.5	482.0	287.8	-28.4	29.75	-3.37	55.79	65.42	895.4	1158.6	-740.5	-1053.6	[illegible]	[illegible]

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-7.92	-5.00	9.32	[illegible]	55.90	.0000	.2398	.0969	.0241	.0241	.9697	.0000	.0000	.4785	.7382	.6865	.6045	.9673
10	-7.58	-4.64	8.28	40.82	53.88	.0000	.2336	.0716	.0183	.0183	.9797	.0000	.0000	.6272	.6908	.6552	.5908	.9546
15	-7.89	-4.95	7.74	40.04	52.50	.0000	.2179	.0307	.0080	.0060	.9921	.0000	.0000	.8486	.6603	.6312	.5943	.9482
30	-9.55	-6.54	7.03	37.28	50.68	.0000	.2184	.0329	.0092	.0092	.9925	.0000	.0000	.7690	.6127	.5859	.6376	.9575
50	-11.48	-8.34	7.61	33.76	49.60	.0000	.2212	.0334	.0102	.0102	.9933	.0000	.0000	.7298	.5730	.5448	.7032	.9878
70	-13.09	-9.85	9.11	30.94	49.90	.0000	.2475	.0492	.0163	.0163	.9908	.0000	.0000	.6953	.5524	.5036	.7698	1.0085
85	-12.95	-9.64	12.46	29.80	52.01	.0000	.2923	.0709	.0247	.0247	.9871	.0000	.0000	.7011	.5424	.4756	.8025	1.0191
90	-11.45	-8.12	13.98	31.41	53.55	.0000	.3212	.0704	.0250	.0250	.9878	.0000	.0000	.7456	.5289	.4532	.7950	1.0175
95	-9.98	-6.62	16.32	33.12	56.02	.0000	.3643	.0908	.0327	.0327	.9853	.0000	.0000	.7344	.5096	.4205	.7861	1.0091

NCOR-1 INLET RPM	WCOR-1 INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC/A-1 LBM/SEC SQFT
7756	131.14	1.0934	1.2497	83.28	83.89	29.53

TABLE 8.3

Blade-Element and Overall Performance with Uniform Inlet

70% of Design Speed

ROTOR

% SPAN	DIA-1 IN	DIA-2 IN	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	B*-1 DEGREE	B*-2 DEGREE	V*-1 FT/SEC	V*-2 FT/SEC	V0*-1 FT/SEC	V0*-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.759	378.7	770.9	378.7	546.8	.0	543.4	.00	44.82	57.37	13.01	702.5	561.2	-591.7	-126.3	591.7	669.7
10	18.467	20.408	387.1	731.0	387.1	524.8	.0	508.9	.00	44.11	58.25	19.18	735.6	556.2	-625.6	-182.4	625.6	691.3
15	19.467	21.047	394.4	686.8	394.4	502.1	.0	471.5	.00	43.18	59.12	25.65	768.4	557.9	-659.4	-241.5	659.4	713.0
30	22.314	22.964	408.9	622.1	408.9	474.1	.0	402.8	.00	40.34	61.58	38.29	859.4	605.1	-755.9	-375.1	755.9	777.9
50	25.791	25.520	414.3	567.9	414.3	452.0	.0	342.7	.00	37.11	64.62	49.01	966.9	691.1	-873.7	-521.8	873.7	864.3
70	28.954	28.076	407.4	536.9	407.4	440.7	.0	306.7	.00	34.84	67.44	55.63	1062.1	780.7	-980.8	-644.4	980.8	951.1
85	31.295	29.993	395.0	514.0	395.0	409.7	.0	310.3	.00	37.14	69.56	59.86	1131.3	816.1	-1060.1	-705.7	1060.1	1016.0
90	31.883	30.630	391.4	498.3	391.4	383.2	.0	318.4	.00	39.72	70.08	61.95	1148.8	815.0	-1080.0	-719.2	1080.0	1037.6
95	32.499	31.271	388.0	475.5	388.0	351.0	.0	320.8	.00	42.43	70.59	64.58	1167.3	817.7	-1100.9	-738.5	1100.9	1059.3

% SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M*-1	M*-2
5	1.99	8.42	11.13	44.37	47.12	.0000	.3816	-.0023	-.0005	-.0005	1.4724	1.0004	1.0004	1.0024	.3442	.6831	.6436	.4973
10	2.29	8.63	9.55	39.07	39.99	.0000	.4110	.0373	.0081	.0081	1.4404	.9745	.9732	.9472	.3529	.6460	.6755	.4915
15	2.63	8.40	9.11	33.47	34.03	.0000	.4272	.0646	.0140	.0140	1.4061	.9506	.9482	.9109	.3596	.6073	.7070	.4919
30	3.74	7.69	8.56	23.30	24.18	.0000	.4239	.0755	.0160	.0160	1.3633	.9244	.9210	.8887	.3720	.5468	.7894	.5318
50	5.07	7.70	6.75	15.61	14.66	.0000	.3928	.0765	.0153	.0153	1.3315	.9008	.8966	.8720	.3760	.4979	[illegible]	.6059
70	5.98	7.79	5.11	11.81	9.12	.0000	.3611	.0837	.0160	.0160	1.3139	.8711	.8660	.8427	.3695	.4698	.9657	.6832
85	6.20	7.45	5.73	9.70	8.00	.0081	.3759	.1408	.0256	.0241	1.2996	.7765	.7680	.7388	.3589	.4474	1.0227	.7103
90	6.24	7.32	6.82	8.13	7.63	.0088	.3907	.1789	.0310	.0295	1.2896	.7209	.7106	.6838	.3551	.4322	1.0402	.7069
95	6.37	7.28	8.71	6.01	7.44	.0106	.4006	.2091	.0337	.0320	1.2763	.6731	.6616	.5426	.3519	.4112	1.0568	.7071

T0/T0 INLET	P0/P0 INLET	EFF-AD INLET %	EFF-P INLET %
1.1011	1.3450	87.46	87.98

STATOR

% SPAN	DIA-1 IN	DIA-2 IN	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	B*-1 DEGREE	B*-2 DEGREE	V*-1 FT/SEC	V*-2 FT/SEC	V0*-1 FT/SEC	V0*-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	20.409	21.489	815.2	715.0	622.5	714.0	526.3	-38.1	40.21	-3.05	14.85	47.01	644.0	1047.2	-165.0	-766.0	691.3	727.9
10	21.008	21.961	775.8	679.2	597.9	678.1	494.4	-37.3	39.58	-3.15	19.98	49.05	636.6	1034.6	-217.3	-781.3	711.6	743.9
15	21.589	22.432	735.3	653.6	574.1	652.6	459.4	-36.3	38.65	-3.19	25.33	50.66	635.8	1029.6	-272.0	-796.2	731.3	759.9
30	23.314	23.902	672.6	608.1	543.3	607.1	396.5	-34.4	36.11	-3.24	35.86	54.27	671.2	1039.9	-393.3	-844.0	789.8	809.7
50	25.601	25.893	625.2	565.1	523.7	564.1	341.4	-33.5	33.10	-3.40	45.04	58.21	742.3	1071.3	-525.8	-910.6	867.2	877.1
70	27.818	27.902	607.2	534.7	522.0	533.4	310.1	-37.1	30.71	-3.97	50.45	61.50	820.0	1117.8	-632.3	-982.3	942.3	945.2
85	29.408	29.382	602.0	506.0	511.4	505.9	317.6	-11.8	31.85	-1.33	53.00	63.33	849.7	1127.0	-678.6	-1007.1	996.2	995.3
90	29.914	29.856	594.5	485.4	496.5	485.4	326.5	1.0	33.37	.16	54.12	64.33	847.1	1120.6	-686.4	-1010.0	1013.3	1011.4
95	30.382	30.293	582.7	456.8	480.0	456.8	330.5	3.1	34.55	.39	55.51	65.94	847.7	1120.4	-698.7	-1023.1	1029.2	1026.2

% SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M*-1	M*-2
5	-5.67	-2.75	9.36	43.27	55.90	.0000	.2913	.1096	.0272	.0272	.9675	.0000	.0000	.6078	.7157	.6295	.5676	.9219
10	-5.72	-2.78	8.29	42.73	53.87	.0000	.2961	.1088	.0277	.0277	.9704	.0000	.0000	.6553	.6755	.5973	.5631	.9099
15	-5.88	-2.94	7.82	41.84	52.49	.0000	.2845	.0748	.0195	.0195	.9814	.0000	.0000	.7331	.6452	.5745	.5660	.9049
30	-6.43	-3.42	7.99	39.35	50.68	.0000	.2738	.0368	.0103	.0103	.9922	.0000	.0000	.8509	.5907	.5339	.5968	.9129
50	-7.66	-4.53	8.64	36.50	49.60	.0000	.2795	.0230	.0070	.0070	.9957	.0000	.0000	.8972	.5500	.4954	.6580	.9392
70	-8.89	-5.65	9.51	34.68	49.89	.0000	.3087	.0353	.0117	.0117	.9938	.0000	.0000	.8414	.5343	.4677	.7232	.9778
85	-7.48	-4.17	14.58	33.17	52.00	.0000	.3508	.0619	.0216	.0216	.9893	.0000	.0000	.7973	.5274	.4401	.7448	.9801
90	-6.07	-2.75	17.56	33.20	53.54	.0000	.3782	.0799	.0284	.0284	.9866	.0000	.0000	.7793	.5194	.4206	.7404	.9710
95	-5.15	-1.78	20.03	34.16	56.01	.0000	.4190	.1095	.0395	.0395	.9823	.0000	.0000	.7424	.5085	.3945	.7391	.9676

NCOR-1 INLET RPM	WCOR-1 INLET LBM/SEC	T0/T0 INLET	P0/P0 INLET	EFF-AD INLET %	EFF-P INLET %	WC/A-1 LBM/SEC SQFT
7764	126.24	1.1011	1.3311	84.26	84.89	28.37

TABLE 8.4

Blade-Element and Overall Performance with Uniform Inlet

70% of Design Speed

ROTOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.769	363.5	760.0	363.5	523.8	.0	550.7	.00	46.44	58.43	12.78	694.3	537.1	-591.5	-118.8	591.5	669.5
10	18.467	20.408	371.4	724.4	371.4	588.2	.0	516.1	.00	45.43	59.29	19.00	727.4	538.1	-625.4	-175.0	625.4	691.1
15	19.467	21.047	378.5	686.3	378.5	489.9	.0	480.7	.00	44.45	60.14	25.32	760.2	542.8	-659.3	-232.1	659.3	712.8
30	22.314	22.964	391.8	613.8	391.8	449.1	.0	418.3	.00	42.95	62.59	38.59	851.2	575.9	-755.7	-359.4	755.7	777.7
50	25.791	25.520	396.0	558.2	396.0	425.4	.0	361.4	.00	40.34	65.61	49.73	959.0	658.9	-873.4	-502.9	873.4	864.3
70	28.958	28.076	389.2	536.1	389.2	421.5	.0	331.1	.00	38.15	68.35	55.77	1055.0	749.5	-980.6	-619.7	980.6	950.8
85	31.295	29.993	377.2	519.0	377.2	387.4	.0	345.3	.00	41.71	70.41	59.98	1125.0	774.4	-1059.8	-670.5	1059.8	1015.7
90	31.883	30.630	373.7	502.8	373.7	362.2	.0	348.7	.00	43.92	70.91	62.26	1142.6	773.0	-1079.8	-688.6	1079.8	1037.3
95	32.499	31.271	370.4	480.6	370.4	330.0	.0	348.8	.00	46.53	71.40	65.04	1161.3	783.5	-1100.6	-710.3	1100.6	1059.0

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	3.05	9.48	10.91	45.65	47.12	.0000	.4114	-.0117	-.0025	-.0025	1.4826	1.0057	1.0061	1.0150	.3300	.6720	.6327	.4749
10	3.33	9.67	9.38	40.29	39.99	.0000	.4317	.0136	.0030	.0030	1.4562	.9905	.9900	.9810	.3383	.6391	.6677	.4747
15	3.66	9.41	8.78	34.82	34.03	.0000	.4439	.0359	.0078	.0078	1.4266	.9732	.9718	.9515	.3448	.6044	.6997	.4779
30	4.77	8.70	8.87	24.00	24.18	.0000	.4577	.0805	.0169	.0169	1.3784	.9230	.9200	.8885	.3560	.5380	.7824	.5048
50	6.05	8.68	7.47	15.88	14.68	.0000	.4273	.0892	.0176	.0176	1.3472	.8914	.8867	.8609	.3589	.4879	.8750	.5758
70	6.88	8.69	5.26	12.58	9.13	.0000	.3941	.0957	.0182	.0182	1.3382	.8643	.8586	.8329	.3525	.4674	.9584	.6536
85	7.05	8.30	5.85	10.43	8.01	.0098	.4204	.1665	.0302	.0284	1.3292	.7620	.7522	.7183	.3423	.4495	1.0160	.6707
90	7.07	8.15	7.13	8.65	7.63	.0105	.4293	.1958	.0336	.0318	1.3195	.7209	.7098	.6789	.3386	.4343	1.0336	.6720
95	7.19	8.10	9.17	6.36	7.44	.0123	.4359	.2211	.0350	.0331	1.3008	.6822	.6700	.6460	.3356	.4139	1.0503	.6748

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.1070	1.3657	87.11	87.66

STATOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	20.409	21.489	798.5	672.7	594.3	671.9	533.4	-32.8	41.91	-2.80	14.87	48.54	614.8	1014.9	-157.8	-760.6	691.2	727.7
10	21.008	21.961	763.1	637.6	575.3	636.7	501.4	-32.2	41.07	-2.90	20.06	50.63	612.9	1003.9	-210.1	-776.0	711.5	743.7
15	21.589	22.432	726.3	612.6	555.1	611.8	468.4	-31.4	40.15	-2.94	25.31	52.28	614.7	1000.2	-262.7	-791.1	731.1	759.7
30	23.314	23.902	657.9	568.3	513.0	567.5	411.8	-29.5	38.75	-2.97	36.32	55.92	637.6	1013.0	-377.7	-838.9	789.6	809.5
50	25.601	25.893	609.2	525.1	491.3	524.4	360.2	-27.6	36.25	-3.01	45.86	59.89	706.0	1045.6	-506.8	-904.5	867.0	876.9
70	27.818	27.902	598.6	504.0	496.1	503.4	335.0	-23.2	34.03	-2.63	50.74	62.53	784.0	1091.2	-607.1	-968.1	942.1	944.9
85	29.408	29.382	597.4	481.1	482.0	481.1	352.9	4.9	36.22	.58	53.15	64.09	803.6	1100.9	-643.0	-990.2	995.9	995.1
90	29.914	29.856	588.6	460.4	407.4	460.4	357.8	5.8	37.44	.72	54.50	65.39	804.9	1105.8	-655.3	-1005.3	1013.1	1011.1
95	30.382	30.293	576.4	437.3	450.8	437.3	359.2	5.9	38.55	.77	56.05	66.80	807.3	1109.8	[illegible]	-1020.0	1028.9	1025.9

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-4.04	-1.12	9.61	44.71	55.90	.0000	.3299	.1151	.0286	.0286	.9672	.0000	.0000	.6689	.7001	.5891	.5416	.8888
10	-4.29	-1.36	8.55	43.97	53.87	.0000	.3395	.1234	.0315	.0315	.9674	.0000	.0000	.6884	.6650	.5579	.5427	.8784
15	-4.26	-1.32	8.07	43.89	52.50	.0000	.3335	.0994	.0260	.0260	.9759	.0000	.0000	.7226	.6362	.5357	.5447	.8744
30	-3.73	-.73	8.25	41.72	50.68	.0000	.3224	.0400	.0112	.0112	.9919	.0000	.0000	.8739	.5762	.4962	.5641	.8845
50	-4.50	-1.37	9.03	39.26	49.60	.0000	.3320	.0223	.0068	.0068	.9961	.0000	.0000	.9226	.5342	.4577	.6226	.9113
70	-5.55	-2.32	10.65	36.66	49.90	.0000	.3562	.0367	.0122	.0122	.9937	.0000	.0000	.8710	.5247	.4382	.6877	.9488
85	-3.18	.14	16.49	35.63	52.01	.0000	.3984	.0648	.0227	.0227	.9891	.0000	.0000	.8292	.5206	.4155	.7005	.9507
90	-2.05	1.28	18.12	36.72	53.54	.0000	.4305	.0811	.0288	.0288	.9867	.0000	.0000	.8100	.5120	.3964	.7000	.9520
95	-1.16	2.21	20.46	37.77	56.01	.0000	.4627	.0942	.0340	.0340	.9852	.0000	.0000	.7989	.5006	.3755	.7003	.9531

NCOR-1 INLET RPM	WCOR-1 INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC/A-1 LBM/SEC SQFT
7762	121.51	1.1070	1.3503	83.79	84.47	27.31

TABLE 5

Blade-Element and Overall Performance with Uniform Inlet

70% of Design Speed

ROTOR

% SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.769	348.1	750.9	348.1	506.4	.0	554.4	.00	47.59	59.52	12.81	686.3	519.4	-591.5	-115.1	591.5	669.5
10	18.467	20.408	355.7	718.6	355.7	495.1	.0	520.9	.00	46.44	60.37	18.98	719.5	524.1	-625.4	-170.3	625.4	691.1
15	19.467	21.047	362.4	682.3	362.4	476.4	.0	488.5	.00	45.71	61.20	25.20	752.3	527.3	-659.3	-224.3	659.3	712.8
30	22.314	22.964	374.5	608.0	374.5	427.3	.0	432.6	.00	45.34	63.63	38.85	843.4	550.0	-755.7	-345.1	755.7	777.7
50	25.791	25.520	377.4	551.4	377.4	400.8	.0	378.6	.00	43.36	66.63	50.42	951.5	629.9	-873.4	-485.6	873.4	864.2
70	~~28.954~~	~~28.076~~	~~370.0~~	~~556.7~~	~~370.0~~	~~401.3~~	~~.0~~	~~356.5~~	~~.00~~	~~41.60~~	~~39.32~~	~~55.97~~	~~1048.0~~	~~717.4~~	~~-980.5~~	~~-594.5~~	~~980.5~~	~~950.0~~
85	31.295	29.993	358.1	524.5	358.1	360.5	.0	380.9	.00	46.58	71.33	60.40	1118.7	730.1	-1059.8	-634.8	1059.8	1015.7
90	31.883	30.630	354.8	511.5	354.8	337.6	.0	384.2	.00	48.70	71.81	62.66	1136.5	735.2	-1079.7	-653.1	1079.7	1037.3
95	32.499	31.271	351.8	494.1	351.8	311.2	.0	383.8	.00	50.96	72.28	65.25	1155.4	743.5	-1100.6	-675.2	1100.6	1059.0

% SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	4.14	10.57	10.93	46.72	47.12	.0000	.4317	-.0266	-.0057	-.0057	1.4910	1.0138	1.0146	1.0336	.3159	.6630	.6254	.4586
10	4.41	10.74	9.35	41.39	39.99	.0000	.4464	-.0087	-.0019	-.0019	1.4688	1.0046	1.0049	1.0103	.3239	.6334	.6609	.4619
15	4.74	10.44	8.62	36.01	34.03	.0000	.4612	.0195	.0042	.0042	1.4411	.9856	.9848	.9740	.3300	.6001	.6933	.4638
30	5.85	9.75	9.11	24.79	24.16	.0000	.4880	.0882	.0185	.0185	1.3911	.9202	.9164	.8837	.3399	.5318	.7763	.4811
50	7.09	9.71	8.18	16.21	14.69	.0000	.4587	.1044	.0203	.0203	1.3601	.8800	.8747	.8461	.3415	.4805	.8683	.5489
70	~~7.86~~	~~9.66~~	~~5.49~~	~~13.35~~	~~9.16~~	~~.0000~~	~~.4287~~	~~.1171~~	~~.0222~~	~~.0222~~	~~1.3580~~	~~.8466~~	~~.8398~~	~~.8090~~	~~.3346~~	~~.4664~~	~~.9519~~	~~.6233~~
85	7.98	9.22	6.30	10.92	8.03	.0119	.4680	.2011	.0359	.0338	1.3534	.7384	.7270	.6867	.3245	.4521	1.0097	.6292
90	7.97	9.05	7.55	9.14	7.64	.0125	.4753	.2265	.0383	.0362	1.3464	.7057	.6931	.6555	.3211	.4397	1.0273	.6519
95	8.06	8.97	9.39	7.02	7.45	.0144	.4787	.2464	.0387	.0365	1.3373	.6770	.6635	.6311	.3183	.4237	1.0440	.6376

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.1128	1.3831	86.07	86.69

STATOR

% SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	20.409	21.489	784.7	633.6	572.1	633.0	537.0	-28.9	43.18	-2.62	15.08	50.09	592.6	986.5	-154.2	-756.7	691.2	727.7
10	21.008	21.961	752.5	603.4	556.9	602.7	506.0	-28.6	42.25	-2.72	20.25	52.03	594.0	975.9	-205.4	-772.4	711.4	743.7
15	21.589	22.432	717.2	579.6	536.3	578.9	476.1	-28.0	41.59	-2.77	25.43	53.68	594.4	977.6	-255.0	-787.6	731.1	759.7
30	23.314	23.902	646.7	533.8	486.5	533.1	426.0	-26.0	41.20	-2.79	36.72	57.45	608.0	991.2	-363.6	-835.4	789.5	809.5
50	25.601	25.893	596.6	488.1	461.9	487.5	377.5	-23.4	39.25	-2.75	46.63	61.56	673.2	1023.9	-489.5	-900.3	867.0	876.9
70	~~27.818~~	~~27.902~~	~~592.4~~	~~472.9~~	~~469.9~~	~~472.3~~	~~360.6~~	~~-22.6~~	~~37.50~~	~~-2.73~~	~~51.06~~	~~63.98~~	~~747.7~~	~~1076.7~~	~~-581.5~~	~~-967.5~~	~~942.1~~	~~944.9~~
85	29.408	29.382	594.5	457.2	449.3	457.1	389.2	7.6	40.90	.96	53.47	65.16	755.0	1088.1	-606.7	-987.4	995.9	995.0
90	29.914	29.856	587.9	442.1	436.1	442.0	394.2	8.6	42.11	1.12	54.83	66.21	757.1	1095.6	-618.9	-1002.5	1013.1	1011.1
95	30.382	30.293	578.4	424.4	422.4	424.3	395.2	8.5	43.10	1.15	56.32	67.36	761.5	1102.3	-633.7	-1017.4	1028.9	1025.9

% SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-2.85	.08	9.79	45.80	55.90	.0000	.3677	.1271	.0316	.0316	.9649	.0000	.0000	.6914	.6878	.5526	.5223	.8603
10	-3.07	-.14	8.73	44.97	53.87	.0000	.3759	.1322	.0337	.0337	.9660	.0000	.0000	.7084	.6561	.5260	.5252	.8541
15	-2.75	.19	8.24	44.36	52.50	.0000	.3724	.1085	.0283	.0283	.9743	.0000	.0000	.7391	.6277	.5048	.5248	.8515
30	-1.23	1.76	8.43	43.98	50.67	.0000	.3685	.0445	.0125	.0125	.9913	.0000	.0000	.8812	.5654	.4639	.5355	.8614
50	-1.47	1.66	9.29	42.00	49.61	.0000	.3866	.0277	.0085	.0085	.9953	.0000	.0000	.9214	.5217	.4232	.5906	.8878
70	~~-2.17~~	~~1.07~~	~~10.74~~	~~40.23~~	~~47.90~~	~~.0000~~	~~.4158~~	~~.0490~~	~~.0162~~	~~.0162~~	~~.9918~~	~~.0000~~	~~.0000~~	~~.8769~~	~~.5171~~	~~.4089~~	~~.6526~~	~~.9309~~
85	1.42	4.73	16.87	39.94	52.02	.0000	.4555	.0722	.0253	.0253	.9880	.0000	.0000	.8455	.5156	.3921	.6544	.9332
90	2.55	5.88	18.52	40.99	53.55	.0000	.4813	.0825	.0293	.0293	.9867	.0000	.0000	.8331	.5091	.3781	.6548	.9371
95	3.38	6.74	20.84	41.95	56.01	.0000	.5078	.0925	.0334	.0334	.9855	.0000	.0000	.8201	.4999	.3622	.6568	.9408

NCOR-1 INLET RPM	WCOR-1 INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC/A-1 LBM/SEC SQFT
7761.	116.47	1.1128	1.3654	82.51	83.26	26.17

TABLE 8.6

Blade-Element and Overall Performance with Uniform Inlet

70% of Design Speed

ROTOR

% SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.769	331.9	744.4	331.9	488.0	.0	562.1	.00	49.03	60.71	12.44	678.5	499.8	-591.7	-107.6	591.7	669.7
10	18.467	20.408	339.2	712.8	339.2	475.9	.0	530.6	.00	48.11	61.53	18.66	711.6	502.8	-625.6	-160.7	625.6	691.3
15	19.467	21.047	345.5	677.9	345.5	457.8	.0	500.0	.00	47.52	62.35	24.94	744.5	505.7	-659.5	-213.0	659.5	713.0
30	22.314	22.964	356.9	605.2	356.9	411.3	.0	443.9	.00	47.18	64.72	38.99	835.9	530.6	-755.9	-334.0	755.9	777.9
50	25.791	25.320	358.6	553.0	358.6	385.0	.0	397.0	.00	45.88	67.68	50.48	944.5	605.9	-873.7	-467.5	873.7	864.5
70	28.954	28.076	350.3	534.2	350.3	370.6	.0	394.5	.00	46.06	70.34	56.80	1041.5	677.1	-980.8	-566.6	980.8	951.1
85	31.295	29.993	339.0	529.1	339.0	332.5	.0	411.6	.00	51.08	72.27	61.18	1113.0	689.8	-1060.1	-604.4	1060.1	1016.0
90	31.883	30.630	335.9	525.7	335.9	322.3	.0	415.2	.00	52.18	72.72	62.62	1131.1	700.9	-1080.1	-622.5	1080.1	1037.6
96	32.499	31.271	333.0	511.5	333.0	300.2	.0	414.2	.00	54.07	73.17	65.05	1150.2	711.6	-1100.9	-645.1	1100.9	1059.3

% SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	LOSS-P PROFILE	PO2/PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	5.32	11.75	10.56	48.27	47.12	.0000	.4566	-.0143	-.0031	-.0031	1.4949	1.0068	1.0072	1.0169	.3010	.5562	.6180	.4406
10	5.57	11.90	9.03	42.88	39.99	.0000	.4736	.0060	.0013	.0013	1.4739	.9956	.9954	.9918	.3087	.5271	.6538	.4424
15	5.89	11.56	8.34	37.41	34.03	.0009	.4885	.0330	.0072	.0072	1.4483	.9771	.9759	.9586	.3145	.5952	.6864	.4440
30	6.95	10.94	9.25	25.73	24.14	.0000	.5104	.0947	.0198	.0198	1.4015	.9177	.9137	.8790	.3236	.5285	.7701	.4633
50	8.16	10.76	9.25	17.20	14.89	.0000	.4860	.1193	.0232	.0232	1.3749	.8705	.8645	.8312	.3240	.4808	.8530	.5268
70	8.88	10.67	6.35	13.54	9.19	.0000	.4728	.1562	.0289	.0289	1.3704	.8108	.8022	.7641	.3162	.4622	.9463	.5859
85	8.92	10.17	7.08	11.08	8.93	.0193	.5112	.2325	.0406	.0381	1.3732	.7191	.7064	.6503	.3068	.4541	1.0033	.5920
90	8.89	9.97	7.51	10.10	7.64	.0149	.5130	.2486	.0422	.0396	1.3739	.7004	.6868	.6409	.3038	.4502	1.0209	.6003
96	8.96	9.87	9.8	8.13	7.44	.0159	.5139	.2643	.0419	.0392	1.3675	.6783	.6639	.6223	.3011	.4371	1.0378	.6080

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.1186	1.3970	84.54	85.25

STATOR

% SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	20.409	21.489	773.7	604.9	549.7	604.2	544.4	-28.0	44.72	-2.66	14.97	51.37	569.0	967.8	-146.9	-756.0	691.4	728.0
10	21.008	21.961	742.2	575.3	533.9	574.6	515.5	-27.9	43.99	-2.78	20.17	53.33	569.3	962.3	-196.1	-771.9	711.7	744.0
15	21.589	22.432	708.2	551.0	513.9	550.3	487.3	-26.8	43.47	-2.79	25.40	55.03	569.5	960.2	-244.1	-786.8	731.3	759.9
30	23.314	23.902	639.1	503.9	466.1	503.4	437.2	-23.8	43.16	-2.71	37.05	58.87	585.1	973.9	-352.6	-833.5	789.8	809.7
50	25.601	25.893	592.8	460.0	441.2	459.5	395.9	-20.9	41.90	-2.50	46.86	62.89	645.8	1008.8	-471.4	-898.0	867.3	877.2
70	27.818	27.902	588.1	443.9	435.7	443.5	389.0	-16.7	41.76	-2.15	51.78	65.25	704.3	1059.2	-553.3	-961.9	942.4	945.2
85	29.409	29.382	591.6	431.6	415.8	431.4	420.9	12.4	45.34	1.65	54.15	66.30	709.9	1073.5	-575.4	-982.9	996.2	995.3
90	29.914	29.856	592.2	424.4	411.3	424.1	426.1	14.5	46.02	1.96	55.00	66.95	717.0	1083.4	-587.3	-996.9	1013.4	1011.4
95	30.382	30.293	585.1	411.5	400.4	410.1	426.6	33.8	46.81	4.72	56.40	67.55	723.5	1073.8	-602.6	-992.4	1029.2	1026.2

% SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	LOSS-P PROFILE	PO2/PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-1.33	1.60	9.75	47.38	55.90	.0000	.3979	.1246	.0309	.0309	.9665	.0000	.0000	.7282	.6767	.5257	.5008	.8411
10	-1.28	1.65	8.67	46.77	53.87	.0000	.4080	.1300	.0331	.0331	.9674	.0000	.0000	.7408	.6459	.4997	.5020	.8358
15	-.86	2.08	8.22	46.27	52.51	.0000	.4086	.1113	.0291	.0291	.9743	.0000	.0000	.7500	.6184	.4781	.5017	.8333
30	.74	3.74	8.51	45.87	50.57	.0000	.4117	.0581	.0163	.0163	.9889	.0000	.0000	.8651	.5579	.4364	.5141	.8433
50	1.21	4.35	9.44	44.50	49.51	.0000	.4382	.0511	.0156	.0156	.9915	.0000	.0000	.8907	.5170	.3971	.5640	.8710
70	2.02	5.25	11.33	43.91	49.91	.0000	.4702	.0647	.0214	.0214	.9896	.0000	.0000	.8702	.5074	.3815	.6118	.9105
85	5.88	9.19	17.55	43.70	52.02	.0000	.5119	.1087	.0380	.0380	.9823	.0000	.0000	.7961	.5102	.3679	.6119	.9150
90	6.46	9.78	19.35	44.05	53.55	.0000	.5306	.1265	.0449	.0449	.9794	.0000	.0000	.7685	.5105	.3609	.6173	.9214
96	7.12	10.48	24.41	42.10	56.01	.0000	.5391	.1351	.0485	.0485	.9786	.0000	.0000	.7577	.5034	.3494	.6211	.9115

NCOR-1 INLET RPM	WCOR-1 INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC/A-1 LBM/SEC SQFT
7764	111.19	1.1186	1.3753	80.39	81.25	24.99

TABLE 9.1

Blade–Element and Overall Performance with Uniform Inlet

90% of Design Speed

ROTOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.769	537.3	973.8	537.3	703.5	.0	673.4	.00	43.75	54.75	14.89	931.0	728.0	-760.3	-187.1	760.3	860.5
10	18.467	20.408	550.8	927.1	550.8	670.8	.0	639.9	.00	43.66	55.58	20.35	974.4	715.6	-803.9	-248.5	803.9	888.3
15	19.467	21.047	562.7	863.3	562.7	613.8	.0	607.0	.00	44.67	56.41	26.70	1017.2	687.6	-847.4	-309.1	847.4	916.2
30	22.314	22.964	588.7	801.7	588.7	617.7	.0	511.0	.00	39.59	58.78	38.33	1135.8	787.8	-971.3	-488.6	971.3	999.6
50	25.791	25.520	602.8	746.1	602.8	591.7	.0	454.4	.00	37.52	61.76	47.96	1274.3	883.9	-1122.7	-656.5	1122.7	1110.9
70	28.954	28.076	596.0	696.6	596.0	571.5	.0	398.2	.00	34.86	64.69	55.24	1394.2	1002.8	-1260.3	-823.9	1260.3	1222.1
85	31.295	29.993	578.0	679.6	578.0	556.9	.0	389.5	.00	34.97	67.01	58.70	1479.8	1072.1	-1362.2	-916.1	1362.2	1305.6
90	31.883	30.630	572.1	655.8	572.1	524.5	.0	393.6	.00	36.89	67.60	60.83	1501.1	1076.3	-1387.8	-939.7	1387.8	1333.3
95	32.499	31.271	566.4	607.7	566.4	462.5	.0	394.2	.00	40.44	68.18	64.44	1523.8	1072.0	-1414.7	-967.0	1414.7	1361.2

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-.65	5.78	13.02	39.86	47.12	.0000	.3868	.0429	.0091	.0091	1.7875	.9728	.9704	.9447	.4936	.8578	.8565	.6412
10	-.42	5.98	10.72	35.24	39.99	.0000	.4243	.0935	.0202	.0202	1.7325	.9369	.9316	.8880	.5078	.8125	.9020	.6271
15	-.14	5.76	10.19	29.71	34.03	.0000	.4730	.1691	.0363	.0363	1.6527	.8741	.8646	.8118	.5193	.7515	.9431	.5985
30	.84	4.86	8.59	20.45	24.18	.0169	.4293	.0991	.0209	.0173	1.6169	.9042	.8974	.8757	.5431	.6972	1.0514	.6851
50	2.15	4.81	5.62	13.80	14.62	.0357	.4146	.1091	.0225	.0150	1.5810	.8713	.8627	.8521	.5562	.6452	1.1766	.7644
70	3.20	5.04	4.66	9.45	9.07	.0552	.3759	.1018	.0196	.0090	1.5465	.8580	.8491	.8466	.5497	.6009	1.2836	.8650
85	3.62	4.89	4.52	8.31	7.95	.0698	.3689	.1268	.0239	.0109	1.5392	.8147	.8031	.8008	.5339	.5833	1.3555	.9202
90	3.74	4.84	5.68	6.77	7.61	.0750	.3779	.1619	.0291	.0158	1.5175	.7652	.7510	.7545	.5272	.5603	1.3778	.9195
96	3.95	4.87	8.55	3.74	7.42	.0827	.3918	.2065	.0335	.0202	1.4747	.6983	.6814	.7003	.5212	.5160	1.3990	.9103

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.1660	1.5896	85.24	86.18

STATOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	20.409	21.489	1040.6	956.8	810.8	955.0	652.3	-58.0	38.82	-3.48	16.23	46.13	844.5	1378.0	-236.1	-993.4	888.4	935.4
10	21.008	21.961	996.5	926.9	778.8	924.9	621.6	-60.5	38.60	-3.75	20.62	47.70	832.3	1374.4	-292.9	-1016.4	914.5	955.9
15	21.589	22.432	938.0	902.5	728.0	899.9	591.5	-69.1	39.09	-4.40	25.55	49.28	807.3	1379.7	-348.3	-1045.6	939.8	976.4
30	23.314	23.902	882.7	860.4	725.3	856.7	503.0	-80.4	34.74	-5.36	35.19	52.61	887.9	1410.8	-511.8	-1120.9	1014.8	1040.4
50	25.601	25.893	839.5	819.1	707.0	816.5	452.6	-66.0	32.62	-4.62	43.09	55.61	968.5	1445.8	-661.8	-1193.1	1114.4	1127.1
70	27.818	27.902	812.6	775.6	706.5	772.1	401.5	-72.6	29.61	-5.37	48.88	59.04	1074.3	1501.0	-809.4	-1287.2	1210.9	1214.6
86	29.408	29.382	822.9	749.5	720.2	748.0	398.0	-46.5	28.92	-3.56	50.77	60.56	1138.8	1522.0	-882.1	-1325.5	1280.1	1279.0
90	29.914	29.856	812.5	742.1	704.8	741.9	404.2	-17.9	29.84	-1.38	51.87	60.62	1141.5	1512.1	-897.9	-1317.6	1302.1	1299.6
95	30.382	30.293	785.7	690.3	672.7	690.2	405.9	5.4	31.11	.45	53.72	62.27	1137.0	1483.6	-916.6	-1313.3	1322.5	1318.6

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-7.14	-4.22	8.94	42.30	55.91	.0000	.2467	.2073	.0515	.0515	.9118	.0000	.0000	-.0078	.9124	.8407	.7452	1.2109
10	-6.21	-3.27	7.70	42.34	53.88	.0000	.2414	.1918	.048[illegible]	.0489	.9237	.0000	.0000	-.1017	.8623	.8128	.7258	1.2052
15	-5.49	-2.55	6.53	43.49	52.42	.0000	.2193	.1258	.0328	.0328	.9547	.0000	.0000	-.3693	.8201	.7902	.7152	1.2079
30	-7.76	-4.76	5.86	40.10	50.68	.0000	.2092	.1224	.0342	.0342	.9598	.0000	.0000	-1.0160	.7727	.7540	.7848	1.2363
50	-8.11	-4.98	7.41	37.25	49.57	.0000	.2127	.1358	.0415	.0415	.9591	.0000	.0000	-1.3780	.7329	.7147	.8509	1.2614
70	-10.02	-6.79	8.09	34.98	49.85	.0000	.2388	.1699	.0560	.0560	.9515	.0000	.0000	-.5672	.7106	.6748	.9414	1.3059
85	-10.43	-7.12	12.34	32.48	51.97	.0000	.2780	.2192	.0765	.0765	.9363	.0000	.0000	-.0784	.7172	.6479	.9931	1.3157
90	-9.62	-6.29	16.02	31.22	53.53	.0000	.2713	.1928	.0685	.0685	.9455	.0000	.0000	.0206	.7057	.6395	.9916	1.3030
96	-8.59	-5.22	20.14	30.66	56.01	.0000	.3056	.2429	.0876	.0876	.9354	.0000	.0000	.0843	.6799	.5907	.9829	1.2696

NCOR-1 INLET RPM	WCOR-1 INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC/A-1 LBM/SEC SQFT
9976	169.95	1.1660	1.5091	75.12	76.52	38.19

TABLE 9.2

Blade-Element and Overall Performance with Uniform Inlet

90% of Design Speed

ROTOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.769	523.5	955.0	523.5	663.2	.0	687.1	.00	46.02	55.47	14.70	923.5	685.7	-760.8	-174.0	760.8	861.1
10	18.467	20.408	536.5	912.0	536.5	640.1	.0	649.7	.00	45.43	56.30	20.51	966.9	683.7	-804.4	-239.3	804.4	888.9
15	19.467	21.047	548.1	852.6	548.1	598.7	.0	606.9	.00	45.38	57.12	27.33	1009.7	674.7	-847.9	-309.9	847.9	916.8
30	22.314	22.964	572.1	769.9	572.1	560.8	.0	527.5	.00	43.25	59.52	40.10	1127.8	733.7	-972.0	-472.7	972.0	1000.3
50	25.791	25.520	583.5	728.7	583.5	547.8	.0	480.5	.00	41.25	62.55	49.03	1265.9	835.8	-1123.4	-631.1	1123.4	1111.6
70	28.954	28.076	576.2	687.9	576.2	529.6	.0	439.0	.00	39.66	65.44	55.95	1386.6	946.1	-1261.2	-783.9	1261.2	1222.9
85	31.295	29.993	559.3	675.7	559.3	517.2	.0	434.8	.00	40.05	67.69	59.31	1473.4	1013.6	-1363.1	-871.7	1363.1	1306.4
90	31.883	30.630	553.8	661.3	553.8	491.9	.0	442.0	.00	41.95	68.26	61.13	1495.1	1018.8	-1388.8	-892.2	1388.8	1334.2
95	32.499	31.271	548.2	627.1	548.2	438.8	.0	448.1	.00	45.60	68.83	64.36	1518.0	1013.9	-1415.6	-914.0	1415.6	1362.1

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	.07	6.50	12.82	40.77	47.12	.0000	.4311	-.0346	-.0074	-.0074	1.8577	1.0176	1.0192	1.0371	.4804	.8373	.8489	.6012
10	.30	6.69	10.88	35.79	39.99	.0000	.4552	.0004	.0001	.0001	1.8111	.9979	.9977	.9977	.4942	.7965	.8947	.5971
15	.58	6.44	10.81	29.79	34.03	.0000	.4819	.0514	.0110	.0110	1.7385	.9617	.9585	.9435	.5055	.7411	.9364	.5864
30	1.62	5.61	10.37	19.42	24.18	.0185	.4773	.0697	.0144	.0105	1.6687	.9350	.9300	.9196	.5272	.6654	1.0448	.6341
50	2.95	5.60	6.70	13.53	14.63	.0374	.4549	.0836	.0167	.0092	1.6527	.9071	.9001	.8945	.5373	.6263	1.1672	.7184
70	3.95	5.80	5.37	9.50	9.07	.0570	.4232	.0964	.0183	.0075	1.6300	.8779	.8690	.8680	.5305	.5885	1.2740	.8094
85	4.31	5.58	5.13	8.38	7.95	.0715	.4168	.1262	.0234	.0103	1.6307	.8342	.8221	.8210	.5157	.5748	1.3466	.8622
90	4.41	5.51	5.98	7.13	7.60	.0767	.4255	.1589	.0283	.0148	1.6192	.7942	.7795	.7812	.5095	.5601	1.3693	.8628
95	4.60	5.52	8.46	4.47	7.41	.0846	.4408	.2024	.0329	.0193	1.5883	.7389	.7212	.7317	.5037	.5279	1.3909	.8535

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.1771	1.6684	88.84	89.64

STATOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	20.409	21.489	1009.6	818.1	759.1	818.1	665.6	7.2	41.25	.50	16.40	48.63	791.3	1237.8	-223.4	-928.8	889.0	936.0
10	21.008	21.961	968.2	779.7	734.4	779.3	630.9	-21.2	40.67	-1.58	21.16	51.44	787.7	1250.7	-284.1	-977.8	915.1	956.6
15	21.589	22.432	912.4	750.5	694.9	749.7	591.3	-35.6	40.39	-2.72	26.66	53.49	778.1	1260.1	-349.1	-1012.7	940.4	977.1
30	23.314	23.902	837.4	707.9	656.7	707.0	519.0	-36.4	38.35	-2.95	37.03	56.73	823.2	1288.9	-495.9	-1077.5	1015.5	1041.1
50	25.601	25.893	805.9	682.1	648.0	681.6	479.1	-25.8	36.47	-2.17	44.45	59.42	908.1	1340.1	-636.0	-1153.7	1115.1	1127.8
70	27.818	27.902	784.7	654.7	647.4	654.3	443.4	-22.2	34.40	-1.94	49.88	62.14	1004.7	1399.9	-768.3	-1237.6	1211.7	1215.4
85	29.408	29.382	795.7	633.4	660.0	633.3	444.5	9.0	33.96	.82	51.72	63.51	1065.4	1419.8	-836.4	-1270.8	1280.9	1279.8
90	29.914	29.856	792.0	617.8	648.5	617.4	454.6	22.8	35.03	2.12	52.61	64.21	1067.9	1419.0	-848.4	-1277.6	1303.0	1300.5
95	30.382	30.293	773.5	578.8	620.6	578.7	461.7	13.7	36.65	1.35	54.24	66.10	1061.9	1428.3	-861.7	-1305.8	1323.4	1319.5

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-4.68	-1.75	12.92	40.74	55.91	.0000	.3475	.1482	.0369	.0369	.9401	.0000	.0000	.6674	.8791	.7044	.6936	1.0657
10	-4.42	-1.48	9.87	42.25	53.88	.0000	.3630	.1509	.0385	.0385	.9429	.0000	.0000	.6884	.8333	.6705	.6877	1.0754
15	-4.10	-1.15	8.23	43.11	52.45	.0000	.3541	.0969	.0253	.0253	.9667	.0000	.0000	.7777	.7926	.6449	.6850	1.0827
30	-4.12	-1.12	8.28	41.30	50.68	.0000	.3390	.0354	.0099	.0099	.9894	.0000	.0000	.8966	.7278	.6077	.7210	1.1064
50	-4.22	-1.09	9.87	38.64	49.58	.0000	.3445	.0363	.0111	.0111	.9899	.0000	.0000	.8908	.6979	.5834	.7900	1.1462
70	-5.22	-1.98	11.52	36.35	49.85	.0000	.3620	.0429	.0142	.0142	.9886	.0000	.0000	.8705	.6785	.5502	.8705	1.1935
85	-5.36	-2.05	16.72	33.14	51.96	.0000	.3954	.0970	.0339	.0339	.9738	.0000	.0000	.7674	.6852	.5365	.9179	1.2026
90	-4.38	-1.05	19 2	32.91	53.52	.0000	.4138	.1064	.0378	.0378	.9717	.0000	.0000	.7653	.6792	.5209	.9161	1.1965
95	-3.05	.32	21.[illegible]	35.29	56.00	.0000	.4609	.1290	.0465	.0465	.9673	.0000	.0000	.7479	.6610	.4852	.9069	1.1974

NCOR-1 INLET RPM	WCOR-1 INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC/A-1 LBM/SEC SQFT
9983	166.23	1.1771	1.6332	84.87	85.90	37.36

TABLE 9.3

Blade-Element and Overall Performance with Uniform Inlet

90% of Design Speed

ROTOR

% SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.769	508.7	942.4	508.7	632.3	.0	698.8	.00	47.86	56.22	14.35	914.8	652.7	-760.3	-161.8	760.3	860.6
10	18.467	20.408	521.1	904.7	521.1	620.1	.0	658.7	.00	46.72	57.04	20.32	958.0	661.7	-803.9	-229.7	803.9	888.4
15	19.467	21.047	532.4	853.5	532.4	592.6	.0	614.2	.00	46.02	57.86	26.98	1000.8	665.6	-847.4	-302.0	847.4	916.2
30	22.314	22.964	555.0	759.3	555.0	536.2	.0	537.6	.00	45.07	60.26	40.71	1118.7	708.1	-971.3	-462.0	971.3	999.6
50	25.791	25.520	564.1	725.7	564.1	524.7	.0	501.3	.00	43.69	63.32	49.26	1256.5	804.4	-1122.7	-609.6	1122.7	1110.9
70	28.954	28.076	556.0	687.9	556.0	506.0	.0	466.0	.00	42.64	66.20	56.20	1377.6	909.9	-1260.4	-756.2	1260.4	1222.2
85	31.295	29.993	539.5	682.1	539.5	494.4	.0	470.0	.00	43.55	68.39	59.39	1465.2	970.9	-1362.3	-835.6	1362.3	1305.6
90	31.883	30.630	534.2	670.3	534.2	469.3	.0	478.6	.00	45.57	68.95	61.23	1487.2	975.1	-1387.9	-854.7	1387.9	1333.3
95	32.499	31.271	529.0	642.5	529.0	423.0	.0	483.7	.00	48.83	69.50	64.27	1510.4	974.2	-1414.7	-877.6	1414.7	1361.2

% SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	.81	7.24	12.48	41.87	47.12	.0000	.4646	-.0334	-.0071	-.0071	1.8736	1.0164	1.0179	1.0335	.4661	.8236	.8397	.5704
10	1.04	7.43	10.69	36.72	39.99	.0000	.4754	-.0207	-.0045	-.0045	1.8383	1.0108	1.0117	1.0200	.4794	.7884	.8851	.5766
15	1.33	7.18	10.46	30.88	34.03	.0000	.4881	.0086	.0019	.0019	1.7797	.9921	.9915	.9890	.4903	.7412	.9272	.5781
30	2.38	6.36	10.98	19.55	24.18	.0201	.4984	.0611	.0125	.0083	1.6923	.9445	.9401	.9313	.5106	.6545	1.0361	.6104
50	3.73	6.37	6.95	14.06	14.64	.0389	.4808	.0883	.0176	.0098	1.6853	.9068	.8994	.8927	.5184	.6214	1.1573	.6889
70	4.71	6.55	5.63	9.99	9.07	.0584	.4522	.1098	.0207	.0097	1.6668	.8695	.8595	.8564	.5108	.5857	1.2638	.7748
85	5.02	6.29	5.21	9.01	7.95	.0729	.4512	.1474	.0272	.0139	1.6757	.8203	.8066	.8022	.4965	.5769	1.3366	.8211
90	5.10	6.20	6.08	7.72	7.61	.0781	.4607	.1799	.0320	.0183	1.6673	.7836	.7674	.7649	.4906	.5643	1.3595	.8208
95	5.27	6.19	8.37	5.23	7.41	.0860	.4729	.2166	.0353	.0214	1.6430	.7398	.7210	.7249	.4852	.5380	1.3813	.8157

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.1651	1.7037	88.75	89.59

STATOR

% SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	20.409	21.489	990.1	769.1	722.6	769.1	676.9	.0	43.13	.00	16.32	50.57	753.0	1211.0	-211.5	-935.4	888.4	935.4
10	21.008	21.961	953.4	732.7	707.1	732.2	639.6	-23.6	42.13	-1.87	21.25	53.22	758.9	1223.3	-274.9	-979.6	914.5	956.0
15	21.589	22.432	904.8	704.3	678.7	703.3	598.4	-37.2	41.40	-3.04	26.69	55.24	760.2	1233.9	-341.4	-1013.7	939.8	976.5
30	23.314	23.902	818.9	661.2	624.5	660.1	529.7	-37.1	40.30	-3.21	37.82	58.50	791.1	1263.8	-485.2	-1077.6	1014.9	1040.5
50	25.601	25.893	794.2	643.5	617.0	643.2	500.0	-16.9	39.02	-1.51	44.86	60.65	870.9	1312.6	-614.4	-1144.1	1114.4	1127.1
70	27.818	27.902	775.2	622.0	615.7	621.9	471.1	-14.4	37.42	-1.33	50.23	63.16	962.6	1377.4	-739.9	-1229.0	1210.9	1214.6
85	29.408	29.382	790.6	609.8	627.5	609.6	480.9	17.2	37.46	1.62	51.86	64.21	1016.2	1401.3	-799.3	-1261.8	1280.1	1279.0
90	29.914	29.856	788.1	595.3	615.4	594.7	492.3	25.2	38.66	2.43	52.77	64.98	1017.2	1406.4	-809.9	-1274.4	1302.2	1299.6
95	30.382	30.293	773.4	559.7	591.5	559.2	498.3	23.6	40.11	2.42	54.33	66.65	1014.6	1410.6	-824.3	-1295.1	1322.5	1318.7

% SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-2.87	.05	12.42	43.13	55.91	.0000	.3888	.1562	.0389	.0389	.9390	.0000	.0000	.6916	.8596	.6575	.6588	1.0353
10	-3.17	-.23	9.58	44.00	53.86	.0000	.4054	.1670	.0426	.0426	.9386	.0000	.0000	.6987	.8215	.6261	.6648	1.0453
15	-3.02	-.07	7.91	44.43	52.4[illegible]	.0000	.4023	.1312	.0343	.0343	.9556	.0000	.0000	.7416	.7843	.6016	.6665	1.0540
30	-2.14	.86	8.01	43.52	50.68	.0000	.3848	.0420	.0118	.0118	.9880	.0000	.0000	.8956	.7098	.5641	.6888	1.0782
50	-1.66	1.47	10.52	40.53	49.58	.0000	.3881	.0398	.0122	.0122	.9893	.0000	.0000	.9005	.6851	.5465	.7522	1.1148
70	-2.20	1.03	12.13	38.75	49.85	.0000	.4049	.0368	.0122	.0122	.9905	.0000	.0000	.9074	.6663	.5263	.8277	1.1654
85	-1.90	1.41	17.51	35.84	51.96	.0000	.4337	.0863	.0301	.0301	.9773	.0000	.0000	.8155	.6760	.5122	.8690	1.1769
90	-.82	2.51	19.83	36.23	53.53	.0000	.4555	.0992	.0352	.0352	.9741	.0000	.0000	.8022	.6715	.4976	.8686	1.1757
95	.41	3.78	22.11	37.69	56.00	.0000	.4980	.1255	.0452	.0452	.9685	.0000	.0000	.7723	.6565	.4554	.8603	1.1730

NCOR-1 INLET RPM	WCOR-1 INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC/A-1 LBM/SEC SQFT
9976	162.22	1.1851	1.6656	84.69	85.78	36.45

TABLE 9.4

Blade-Element and Overall Performance with Uniform Inlet

90% of Design Speed

ROTOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.769	494.5	935.7	494.5	615.8	.0	704.4	.00	48.84	58.96	14.24	907.1	835.4	-780.5	-158.3	780.5	860.7
10	18.467	20.408	506.6	899.9	506.6	607.8	.0	663.6	.00	47.51	57.79	20.30	950.3	648.5	-804.0	-224.9	804.0	888.5
15	19.467	21.047	517.4	853.7	517.4	586.7	.0	620.2	.00	46.59	58.60	26.77	993.0	657.8	-847.5	-296.2	847.5	916.3
30	22.314	22.964	538.4	753.9	538.4	514.2	.0	551.4	.00	47.00	61.01	41.05	1110.7	682.6	-971.5	-448.4	971.5	999.8
50	25.791	25.520	545.8	725.6	545.8	507.1	.0	519.0	.00	45.66	64.07	49.40	1248.5	779.7	-1122.9	-592.1	1122.9	1111.1
70	28.954	28.076	537.1	696.0	537.1	493.0	.0	491.4	.00	44.91	66.92	56.00	1370.2	881.7	-1260.6	-731.0	1260.6	1222.3
85	31.295	29.993	520.6	694.4	520.6	477.5	.0	504.1	.00	46.55	69.09	59.22	1458.6	933.1	-1362.5	-801.7	1362.5	1305.8
90	31.883	30.630	515.5	682.3	515.5	449.1	.0	513.6	.00	48.83	69.63	61.29	1480.7	935.0	-1388.1	-820.0	1388.1	1333.5
95	32.499	31.271	510.5	653.5	510.5	398.8	.0	517.7	.00	52.40	70.16	64.70	1504.2	933.3	-1414.9	-843.7	1414.9	1361.5

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	1.56	7.99	12.36	42.73	47.12	.0000	.4807	-.0407	-.0087	-.0087	1.8467	1.0200	1.0218	1.0401	.4527	.8163	.8318	.5543
10	1.79	8.17	10.67	37.48	39.99	.0000	.4863	-.0352	-.0076	-.0076	1.8555	1.0191	1.0208	1.0346	.4655	.7832	.8773	.5644
15	2.07	7.91	10.24	31.83	34.03	.0000	.4935	-.0138	-.0030	-.0030	1.8850	1.0073	1.0079	1.0124	.4759	.7409	.9197	.5709
30	3.14	7.11	11.32	19.96	24.18	.0220	.5211	.0703	.0143	.0098	1.7077	.9386	.9336	.9234	.4946	.6482	1.0285	.5868
50	4.49	7.13	7.10	14.67	14.65	.0407	.5016	.0976	.0194	.0113	1.7085	.9012	.8933	.8844	.5007	.6196	1.1487	.6658
70	5.44	7.28	5.43	10.92	9.07	.0605	.4760	.1241	.0235	.0120	1.7006	.8605	.8494	.8427	.4925	.5905	1.2556	.7480
85	5.71	6.98	5.06	9.87	7.97	.0748	.4828	.1718	.0319	.0182	1.7144	.8036	.7882	.7789	.4782	.5842	1.3291	.7851
90	5.78	6.88	6.15	8.34	7.61	.0800	.4940	.2053	.0364	.0224	1.7062	.7680	.7500	.7426	.4724	.5713	1.3521	.7828
95	5.94	6.86	8.82	5.46	7.42	.0879	.5063	.2408	.0386	.0247	1.6808	.7274	.7067	.7058	.4674	.5442	1.3739	.7772

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.1927	1.7307	87.96	88.87

STATOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	20.409	21.489	978.1	732.0	700.8	732.0	682.3	2.1	44.24	.16	16.40	51.90	730.5	1186.3	-206.2	-933.5	868.6	935.6
10	21.008	21.961	943.1	697.5	688.7	697.0	644.3	-23.0	43.09	-1.91	21.43	54.55	740.1	1202.1	-270.3	-979.1	914.6	956.1
15	21.589	22.432	[illegible]	670.5	665.4	669.4	604.3	-36.9	42.24	-3.16	26.76	56.55	745.8	1214.8	-335.7	-1013.6	939.9	976.6
30	23.314	23.902	807.1	626.7	596.9	625.7	543.3	-34.2	42.30	-3.13	38.29	59.79	761.1	1243.7	-471.8	-1074.8	1015.0	1040.6
50	25.601	25.893	787.5	615.6	593.2	615.4	517.8	-18.0	41.12	-1.67	45.16	61.75	881.5	1300.2	-596.8	-1145.3	1114.6	1127.3
70	27.818	27.902	775.6	602.1	595.1	601.8	497.3	-16.3	39.88	-1.55	50.18	63.95	929.4	1370.3	-713.8	-1231.1	1211.1	1214.8
85	29.408	29.382	793.0	593.7	602.2	593.5	515.9	17.5	40.59	1.69	51.77	64.81	973.2	1394.4	-764.4	-1261.7	1280.3	1279.2
90	29.914	29.856	789.4	578.6	587.0	577.7	527.8	33.0	41.96	3.27	52.84	65.49	971.9	1392.4	-774.6	-1266.9	1302.4	1299.8
95	30.382	30.293	773.1	543.7	559.8	543.2	533.2	23.3	43.61	2.45	54.66	67.25	967.9	1404.9	-789.5	-1295.6	1322.7	1318.9

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-1.80	-1.12	12.58	44.07	55.91	.0000	.4201	.1670	.0415	.0415	.9362	.0000	.0000	.6996	.8477	.6229	.6384	1.0094
10	-2.28	.65	9.54	45.00	53.88	.0000	.4374	.1786	.0456	.0456	.9356	.0000	.0000	.7026	.8135	.5934	.6490	1.0227
15	-2.10	.84	7.78	45.40	52.43	.0000	.4375	.1508	.0394	.0394	.9496	.0000	.0000	.7285	.7784	.5702	.6515	1.0332
30	-.14	2.86	8.09	45.43	50.68	.0000	.4222	.0470	.0132	.0132	.9869	.0000	.0000	.8980	.6977	.5319	.6592	1.0556
50	.44	3.56	10.36	42.79	49.58	.0000	.4255	.0443	.0136	.0136	.9883	.0000	.0000	.9042	.6771	.5201	.7228	1.0985
70	.24	3.47	11.90	41.43	49.85	.0000	.4429	.0447	.0148	.0148	.9886	.0000	.0000	.9070	.6633	.5063	.7946	1.1524
85	1.16	4.47	17.57	38.90	51.97	.0000	.4711	.0940	.0328	.0328	.9753	.0000	.0000	.8188	.6741	.4950	.8272	1.1624
90	2.41	5.74	20.67	38.69	53.54	.0000	.4900	.1070	.0379	.0379	.9723	.0000	.0000	.8044	.6688	.4800	.8231	1.1551
95	3.88	7.25	22.14	41.15	56.01	.0000	.5350	.1288	.0464	.0464	.9680	.0000	.0000	.7800	.6522	.4487	.8153	1.1595

NCOR-1 INLET RPM	WCOR-1 INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC/A-1 LBM/SEC SQFT
9978	158.36	1.1927	1.6882	83.66	84.84	35.59

TABLE 9.5

Blade–Element and Overall Performance with Uniform Inlet

90% of Design Speed

ROTOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.769	480.9	934.7	480.9	607.1	.0	710.8	.00	49.50	57.70	13.89	899.9	625.4	-760.7	-150.2	760.7	860.9
10	18.467	20.408	492.5	899.9	492.5	599.5	.0	671.0	.00	48.22	58.52	19.95	943.0	638.2	-804.2	-217.7	804.2	888.8
15	19.467	21.047	502.9	858.1	502.9	582.1	.0	630.4	.00	47.28	59.32	26.17	985.7	649.4	-847.8	-206.2	847.8	916.6
30	22.314	22.964	522.4	754.7	522.4	543.0	.0	562.7	.00	48.20	61.74	40.96	1103.3	667.0	-971.8	-437.4	971.8	1000.1
50	25.791	25.520	527.7	728.3	527.7	495.3	.0	533.9	.00	47.15	64.83	49.35	1241.0	761.0	-1123.2	-577.5	1123.2	1111.4
70	28.934	28.076	517.2	703.8	517.2	473.7	.0	519.3	.00	47.63	67.70	56.04	1362.9	848.1	-1260.9	-703.4	1260.9	1222.7
85	31.295	29.993	500.8	700.5	500.8	449.8	.0	537.0	.00	50.05	69.82	59.68	1452.0	891.1	-1362.9	-769.2	1362.9	1306.2
90	31.883	30.630	496.0	688.4	496.0	426.8	.0	540.1	.00	51.68	70.34	61.73	1474.4	901.3	-1388.5	-793.8	1388.5	1333.9
95	32.499	31.271	491.4	665.6	491.4	388.1	.0	540.7	.00	54.33	70.85	64.70	1498.2	908.2	-1415.3	-821.1	1415.3	1361.8

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTA	LOSS-P TOTA	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	2.30	8.73	12.02	43.81	47.12	.0000	.4893	-.0460	-.0098	-.0098	1.8997	1.0223	1.0243	1.0450	.4398	.8147	.8247	.5451
10	2.52	8.90	10.32	38.57	39.99	.0000	.4952	-.0395	-.0085	-.0085	1.8699	1.0211	1.0230	1.0386	.4522	.7824	.8706	.5548
15	2.81	8.61	9.64	33.16	34.03	.0000	.5009	-.0208	-.0045	-.0045	1.8263	1.0116	1.0127	1.0195	.4622	.7441	.9132	.5631
30	3.91	7.85	11.23	20.77	24.17	.0241	.5349	.0760	.0155	.0105	1.7323	.9357	.9304	.9184	.4793	.6478	1.0224	.5725
50	5.27	7.90	7.08	15.48	14.67	.0428	.5174	.1093	.0217	.0131	1.7248	.8933	.8846	.8727	.4831	.6206	1.1423	.6484
70	6.23	8.05	5.50	11.66	9.11	.0628	.5046	.1544	.0292	.0170	1.7204	.8355	.8224	.8109	.4731	.5939	1.2480	.7165
85	6.46	7.72	5.53	10.14	7.98	.0772	.5174	.2079	.0380	.0241	1.7344	.7747	.7567	.7426	.4590	.5862	1.3215	.7457
90	6.50	7.59	6.60	8.61	7.62	.0824	.5211	.2307	.0403	.0261	1.7272	.7505	.7305	.7185	.4538	.5739	1.3454	.7514
96	6.64	7.55	8.82	6.16	7.43	.0902	.5267	.2559	.0411	.0267	1.7091	.7216	.6999	.6929	.4492	.5525	1.3602	.7539

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.1996	1.[illegible]49	86.69	87.70

STATOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	20.409	21.489	973.3	708.1	687.9	708.1	688.5	11.4	45.02	.93	16.23	52.55	716.5	1164.4	-200.3	-924.4	888.8	935.8
10	21.008	21.961	939.1	675.3	676.1	675.0	651.7	-17.9	43.94	-1.54	21.27	55.28	725.9	1185.5	-263.2	-976.3	914.9	950.4
15	21.589	22.432	898.7	649.0	655.9	648.2	614.3	-31.7	43.13	-2.80	26.42	57.27	733.0	1199.0	-325.9	-1008.6	940.2	976.9
30	23.314	23.902	802.9	601.8	580.8	600.9	554.3	-33.3	43.66	-3.17	38.41	60.77	791.8	1230.9	-461.0	-1074.2	1015.0	1040.9
50	25.601	25.893	784.7	592.9	576.0	592.4	532.9	-24.3	42.77	-2.35	45.28	62.78	819.0	1295.3	-582.0	-1151.9	1114.9	1127.6
70	27.818	27.902	776.0	581.8	570.8	581.7	525.7	-11.5	42.65	-1.14	50.23	64.63	832.2	1357.6	-685.7	-1226.7	1211.5	1215.1
85	29.408	29.382	790.7	574.3	568.9	574.0	549.1	19.1	43.98	1.91	52.13	65.52	926.4	1385.0	-731.6	-1260.5	1280.7	1279.6
90	29.914	29.856	786.4	558.2	557.6	557.9	554.5	18.6	44.84	1.91	53.31	66.48	933.2	1397.8	-748.3	-1281.7	1302.8	1300.2
96	30.382	30.293	774.3	534.4	537.9	534.2	556.9	17.5	45.99	1.88	54.93	67.69	936.2	1407.1	-766.2	-1301.8	1323.1	1319.3

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTA	LOSS-P TOTA	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-1.02	1.90	13.34	44.10	55.91	.0000	.4408	.1757	.0437	.0437	.9335	.0000	.0000	.7024	.8426	.6006	.6253	.9875
10	-1.45	1.49	9.90	45.48	53.88	.0000	.4590	.1860	.0475	.0475	.9335	.0000	.0000	.7034	.8108	.5726	.6362	1.0052
15	-1.20	1.75	8.15	45.92	52.43	.0000	.4626	.1664	.0435	.0435	.9445	.0000	.0000	.7185	.7778	.5500	.6388	1.0165
30	1.22	4.21	8.05	46.83	50.67	.0000	.4536	.0596	.0167	.0167	.9836	.0000	.0000	.8845	.6930	.5089	.6402	1.0409
50	2.05	5.18	9.68	45.12	49.59	.0000	.4608	.0552	.0169	.0169	.9856	.0000	.0000	.8970	.6732	.4988	.7006	1.0898
70	2.94	6.17	12.31	43.78	49.87	.0000	.4794	.0566	.0188	.0188	.9856	.0000	.0000	.9019	.6602	.4862	.7586	1.1346
85	4.53	7.84	17.79	42.08	51.98	.0000	.5001	.1013	.0354	.0354	.9738	.0000	.0000	.8202	.6681	.4753	.7625	1.1462
90	5.28	8.60	19.32	42.93	53.56	.0000	.5326	.1178	.0418	.0418	.9700	.0000	.0000	.7998	.6629	.4602	.7860	1.1525
96	6.29	9.66	21.57	44.12	56.01	.0000	.5613	.1305	.0470	.0470	.9678	.0000	.0000	.7849	.6503	.4390	.7848	1.1558

NCOR-1 INLET RPM	WCOR-1 INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC/A-1 LBM/SEC
9981	154.20	1.1996	1.7012	82.04	83.34	34.65

TABLE 9.6

Blade-Element and Overall Performance with Uniform Inlet

90% of Design Speed

ROTOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.769	465.4	934.8	465.4	600.3	.0	716.5	.00	50.04	58.55	13.56	892.0	617.5	-761.0	-144.7	761.0	861.3
10	18.467	20.408	476.6	898.5	476.6	591.0	.0	676.7	.00	48.86	59.36	19.75	935.1	628.4	-804.5	-212.4	804.5	889.1
15	19.467	21.047	486.5	856.7	486.5	572.6	.0	637.1	.00	48.05	60.16	26.04	977.7	630.1	-848.1	-279.8	848.1	916.9
30	22.314	22.964	504.6	754.2	504.6	487.4	.0	575.6	.00	49.74	62.57	41.02	1095.3	647.0	-972.1	-424.9	972.1	1000.5
50	25.791	25.520	508.2	733.8	508.2	484.9	.0	550.8	.00	48.65	65.66	49.14	1233.2	741.7	-1123.6	-561.0	1123.6	1111.8
70	~~28.954~~	~~28.076~~	~~496.7~~	~~716.0~~	~~496.7~~	~~452.7~~	.0	554.7	.00	50.78	~~68.51~~	~~55.69~~	~~1335.7~~	~~807.4~~	~~-1261.4~~	~~-668.5~~	~~1261.4~~	~~1223.2~~
85	31.295	29.993	480.9	706.0	480.9	421.2	.0	566.6	.00	53.37	70.57	60.35	1445.8	851.6	-1363.4	-740.1	1363.4	1306.7
90	31.883	30.630	476.5	698.6	476.5	408.7	.0	566.5	.00	54.19	71.07	61.98	1468.5	869.9	-1389.0	-767.9	1389.0	1334.4
95	32.499	31.271	472.1	683.3	472.1	384.7	.0	564.7	.00	55.74	71.56	64.25	1492.5	885.6	-1415.9	-797.7	1415.9	1362.4

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	3.15	9.58	11.68	44.99	47.12	.0000	.4951	-.0472	-.0101	-.0101	1.9093	1.0223	1.0244	1.0459	.4253	.8140	.8170	.5378
10	3.37	9.74	10.12	39.60	39.99	.0000	.5028	-.0368	-.0080	-.0080	1.8772	1.0191	1.0209	1.0356	.4372	.7804	.8632	.5458
15	3.66	9.43	9.50	34.12	34.03	.0000	.5101	-.0153	-.0033	-.0033	1.8334	1.0079	1.0086	1.0137	.4468	.7420	.9061	.5527
30	4.76	8.69	11.29	21.55	24.16	.0268	.5529	.0932	.0190	.0134	1.7304	.9239	.9176	.9020	.4622	.6461	1.0151	.5543
50	6.12	8.74	6.68	16.52	14.68	.0454	.5341	.1243	.0248	.0157	1.7416	.8832	.8736	.8574	.4643	.6239	1.1349	.6306
70	~~7.05~~	~~8.85~~	~~5.38~~	12.62	9.14	.0654	.5406	.1912	.0363	.0238	~~1.7463~~	~~.8082~~	~~.7927~~	~~.7745~~	~~.4533~~	~~.6020~~	~~1.2416~~	~~.6789~~
85	7.21	8.47	6.21	10.22	7.99	.0797	.5499	.2380	.0426	.0285	1.7549	.7536	.7334	.7146	.4400	.5880	1.3133	.7092
90	7.23	8.32	6.84	9.09	7.62	.0849	.5471	.2515	.0436	.0290	1.7544	.7392	.7178	.7004	.4353	.5801	1.3364	.7224
95	7.34	8.26	8.36	7.31	7.42	.0929	.5460	.2669	.0436	.0285	1.7456	.7211	.6985	.6865	.4309	.5656	1.3584	.7331

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.2071	1.7664	85.18	86.31

STATOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	20.409	21.489	969.3	687.3	676.7	687.2	694.1	14.8	45.73	1.23	16.08	53.29	704.3	1149.5	-195.1	-921.4	889.2	936.2
10	21.008	21.961	933.7	652.4	663.1	652.0	657.2	-18.7	44.74	-1.68	21.25	56.23	711.9	1173.7	-258.0	-975.5	915.3	956.8
15	21.589	22.432	893.0	624.1	641.8	623.0	620.9	-37.5	44.05	-3.45	26.47	58.45	717.6	1191.0	-319.6	-1014.8	940.5	977.3
30	23.314	23.902	797.6	578.5	561.0	577.9	567.0	-27.4	45.31	-2.72	38.62	61.60	718.7	1215.0	-448.7	-1068.8	1015.7	1041.3
50	25.601	25.893	785.0	573.9	560.2	573.8	549.9	-12.4	44.47	-1.23	45.25	63.29	796.1	1276.7	-565.4	-1140.4	1115.4	1128.1
70	~~27.810~~	~~27.902~~	~~782.3~~	~~564.9~~	~~545.1~~	~~564.8~~	~~561.1~~	~~-11.0~~	~~45.85~~	~~-1.11~~	~~50.05~~	~~65.28~~	~~849.0~~	1350.4	-650.8	-1226.6	1211.9	~~1215.6~~
85	29.408	29.382	789.1	552.1	536.0	552.0	579.1	9.8	47.22	1.01	52.64	66.51	883.3	1385.1	-702.1	-1270.3	1281.2	1280.1
90	29.914	29.856	788.4	544.3	532.5	544.2	581.4	9.6	47.51	1.01	53.58	67.14	897.0	1401.2	-721.8	-1291.1	1303.3	1300.7
95	30.382	30.293	781.6	531.7	522.3	531.6	581.5	9.3	48.07	1.00	54.86	67.92	907.5	1414.2	-742.1	-1310.5	1323.6	1319.8

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-.28	2.64	13.64	44.50	55.90	.0000	.4605	.1781	.0443	.0443	.9331	.0000	.0000	.7128	.8377	.5813	.6131	.9721
10	-.63	2.31	9.76	46.42	53.87	.0000	.4821	.1885	.0481	.0481	.9333	.0000	.0000	.7138	.8054	.5516	.6228	.9922
15	-.26	2.69	7.50	47.51	52.44	.0000	.4907	.1715	.0448	.0448	.9435	.0000	.0000	.7256	.7724	.5273	.6241	1.0062
30	2.85	5.84	8.50	48.02	50.67	.0000	.4815	.0621	.0174	.0174	.9832	.0000	.0000	.8898	.6870	.4874	.6180	1.0236
50	3.67	6.79	10.79	45.71	49.59	.0000	.4872	.0669	.0205	.0205	.9826	.0000	.0000	.8913	.6716	.4809	.6791	1.0698
70	~~6.06~~	~~9.29~~	~~12.34~~	~~46.94~~	~~49.88~~	~~.0000~~	~~.5200~~	~~.0842~~	~~.0279~~	~~.0279~~	~~.9785~~	~~.0000~~	.0000	~~.8644~~	.6622	.4688	.7176	1.1206
85	7.78	11.09	16.95	6.20	51.99	.0000	.5527	.1272	.0445	.0445	.9675	.0000	.0000	.7907	.6628	.4538	.7409	1.1385
90	8.00	11.33	18.44	48.51	53.58	.0000	.5676	.1405	.0494	.0499	.9644	.0000	.0000	.7729	.6611	.4462	.7511	1.1486
95	8.41	11.77	20.69	47.07	56.00	.0000	.5842	.1481	.0534	.0534	.9631	.0000	.0000	.7617	.6539	.4347	.7573	1.1563

NCOR-1 INLET RPM	WCOR-1 INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC/A-1 LBM/SEC SQFT
9985	149.74	1.2071	1.7123	80.14	81.59	33.65

TABLE 10.1

Blade-Element and Overall Performance with Uniform Inlet

100% of Design Speed

ROTOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.769	603.1	1016.5	603.1	707.4	.0	730.0	.00	45.90	54.50	17.78	1038.5	742.9	-845.4	-226.9	845.4	956.9
10	18.467	20.408	618.8	970.6	618.8	677.5	.0	695.0	.00	45.78	55.38	23.37	1087.1	738.3	-893.8	-292.8	893.8	987.8
15	19.467	21.047	633.4	930.2	633.4	657.9	.0	666.0	.00	45.35	56.09	28.17	1135.3	746.8	-942.2	-352.7	942.2	1018.7
30	22.314	22.964	667.6	885.7	667.6	665.5	.0	584.4	.00	41.28	58.28	38.35	1269.7	849.3	-1080.0	-537.1	1080.0	1113.5
50	25.791	25.520	686.8	834.2	686.8	643.9	.0	530.4	.00	39.47	61.18	47.55	1424.8	955.1	-1248.3	-704.8	1248.3	1235.2
70	28.954	28.076	674.7	743.1	674.7	589.1	.0	457.9	.00	37.55	64.29	56.96	1555.4	1080.8	-1401.4	-906.0	1401.4	1358.9
85	31.295	29.993	649.9	716.2	649.9	566.4	.0	436.2	.00	37.74	66.78	60.80	1648.3	1161.1	-1514.7	-1013.5	1514.7	1481.7
90	31.803	30.630	642.7	685.9	642.7	523.1	.0	443.5	.00	40.32	67.39	63.28	1671.7	1163.5	-1543.2	-1039.1	1543.2	1482.6
95	32.499	31.271	636.7	635.7	636.7	452.1	.0	446.8	.00	44.67	67.96	67.03	1697.0	1158.6	-1573.0	-1066.7	1573.0	1513.6

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-.91	5.52	15.91	36.71	47.12	.0000	.4486	.1137	.0238	.0238	1.9343	.9316	.9250	.8832	.5576	.8856	.9618	.8463
10	-.71	5.68	13.74	31.93	39.99	.0139	.4752	.1450	.0306	.0277	1.8786	.9045	.8959	.8551	.5743	.8408	1.0124	.8396
15	-.48	5.43	11.66	27.92	34.03	.0186	.4887	.1566	.0332	.0292	1.8442	.8874	.8776	.8432	.5887	.8080	1.0592	.8449
30	.34	4.35	8.64	19.92	24.26	.0468	.4569	.1023	.0216	.0129	1.8254	.9080	.9001	.8870	.6217	.7625	1.1871	.7812
50	1.63	4.28	5.26	13.63	14.88	.0760	.4426	.1191	.0245	.0080	1.7912	.8726	.8619	.8593	.6393	.7130	1.3329	.8163
70	2.05	4.65	6.45	7.33	9.11	.1098	.4021	.1289	.0238	.0034	1.6928	.8342	.8213	.8333	.6265	.6321	1.4503	.9194
85	3.40	4.65	6.67	5.98	8.01	.1321	.3897	.1565	.0276	.0045	1.6691	.7876	.7716	.7868	.6037	.6058	1.5287	.9821
90	3.56	4.63	8.17	4.11	7.64	.1397	.3998	.1971	.0327	.0095	1.6363	.7346	.7156	.7402	.5950	.5767	1.5499	.9782
95	3.76	4.66	11.18	.93	7.46	.1499	.4141	.2434	.0356	.0137	1.5863	.6708	.6488	.6903	.5897	.5306	1.5710	.9671

To/To INLET	Po/Po INLET	EFF-AD INLET	EFF-P INLET
1.2091	1.762	83.97	85.18

STATOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	20.409	21.489	1088.0	952.3	826.9	950.4	707.1	-67.3	40.53	-4.05	18.75	49.36	873.3	1459.3	-280.7	-1107.4	987.8	1040.1
10	21.008	21.961	1045.9	933.1	798.7	931.0	675.2	-61.9	40.21	-3.80	23.16	50.39	868.9	1460.2	-341.7	-1129.9	1016.8	1063.0
15	21.589	22.432	1014.0	916.9	779.7	914.8	649.2	-61.8	39.78	-3.87	26.90	51.43	874.6	1467.7	-395.8	-1147.5	1044.9	1085.8
30	23.314	23.902	969.9	885.1	780.7	882.2	575.6	-71.9	36.40	-4.66	35.29	54.32	956.9	1512.7	-552.7	-1228.8	1128.4	1150.9
50	25.631	25.893	929.4	845.6	764.4	843.2	520.5	-62.7	34.65	-4.26	42.88	57.34	1044.1	1563.2	-710.0	-1318.0	1239.1	1253.3
70	27.818	27.902	864.3	776.0	733.5	772.7	457.1	-71.1	31.93	-5.25	50.48	61.47	1152.8	1518.1	-889.3	-1421.6	1346.4	1350.5
85	29.408	29.382	863.4	739.3	738.5	738.0	447.3	-43.7	31.21	-3.38	52.89	63.28	1224.9	1041.1	-976.1	-1405.8	1423.4	1422.1
90	29.914	29.856	847.9	721.3	715.7	721.0	454.6	-20.9	32.43	-1.66	54.23	53.81	1224.3	1033.8	-993.3	-1400.0	1447.9	1445.1
95	30.382	30.293	818.6	664.9	677.1	664.8	460.0	-15.0	34.19	-1.30	55.18	65.83	1216.4	1023.6	-1010.5	-1481.3	1470.5	1466.2

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-5.50	-2.57	8.36	44.58	55.90	.0000	.2975	.1764	.0438	.0438	.9214	.0000	.0000	.4420	.9459	.8219	.7648	1.2588
10	-4.96	-2.03	7.64	44.01	53.88	.0000	.2844	.1404	.0358	.0358	.9411	.0000	.0000	.4925	.9064	.8044	.7610	1.2588
15	-4.70	-1.76	7.07	43.65	52.42	.0000	.2767	.1187	.0310	.0310	.9525	.0000	.0000	.5159	.8816	.7896	.7687	1.2630
30	-6.08	-3.07	6.57	41.05	53.68	.0000	.2731	.1236	.0346	.0346	.9539	.0000	.0000	.4280	.8419	.7620	.6546	1.3025
50	-6.09	-2.95	7.78	38.91	49.60	.0000	.2841	.1418	.0433	.0433	.9508	.0000	.0000	.3509	.8011	.7239	.9074	1.3383
70	-7.76	-4.52	8.23	37.18	49.90	.0000	.3045	.1356	.0448	.0448	.9581	.0000	.0000	[illegible]	.7457	.6625	.9976	1.3819
85	-8.18	-4.86	12.53	34.59	52.02	.0000	.3420	.1758	.0614	.0614	.9461	.0000	.0000	.4500	.7420	[illegible]	1.0526	[illegible]
90	-7.06	-3.73	15.74	34.39	53.56	.0000	.3488	.1593	.0566	.0566	.9529	.0000	.0000	.5175	.7250	.6086	1.0477	1.3784
95	-5.55	-2.18	18.39	35.49	56.02	.0000	.3973	.2011	.0725	.0725	.9444	.0000	.0000	.4965	.6970	.5865	1.0345	1.3909

NCOR-1 INLET RPM	WCOR-1 INLET LBM/SEC	Tc/To INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC/A-1 LBM/SEC SQFT
11093	184.32	1.2091	1.6757	75.95	77.54	41.42

TABLE 10.2

Blade-Element and Overall Performance with Uniform Inlet

100% of Design Speed

ROTOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.769	601.1	1024.9	601.1	683.9	.0	[illegible]	.00	48.14	54.58	15.79	1037.3	710.8	-845.3	-193.4	845.3	956.7
10	18.467	20.408	616.5	967.3	616.5	661.8	.0	705.4	.00	46.82	55.40	23.08	1085.7	719.7	-893.7	-282.3	893.7	987.7
15	19.467	21.047	631.2	931.3	631.2	660.2	.0	656.9	.00	44.85	56.18	28.70	1134.0	753.0	-942.1	-361.7	942.1	1018.6
30	22.314	22.964	666.1	877.8	666.1	656.9	.0	582.2	.00	41.55	58.33	38.83	1268.8	843.8	-1079.9	-529.2	1079.9	1111.4
50	25.791	25.520	685.5	[illegible]	685.5	637.2	.0	531.5	.00	39.83	61.22	47.80	1424.0	949.7	-1248.2	-703.6	1248.2	1235.1
70	28.954	28.076	673.4	[illegible]	673.4	584.1	.0	457.3	.00	38.06	64.33	57.05	1554.7	1074.2	-1401.3	-901.5	1401.3	1358.8
85	31.295	29.993	648.1	712.5	648.1	556.6	.0	444.5	.00	38.63	66.83	61.07	1647.4	1150.8	-1514.5	-1007.0	1514.5	1451.5
90	31.883	30.630	640.9	676.5	640.9	502.3	.0	452.8	.00	42.07	67.44	64.00	1670.8	1145.8	-1543.0	-1029.3	[illegible]	1482.4
96	32.499	31.271	635.3	629.8	635.3	430.3	.0	459.8	.00	46.90	68.00	67.78	1696.3	1138.1	-1572.8	-1053.6	1572.8	1513.4

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-P SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-.82	5.61	13.92	38.79	47.12	.0000	.4864	.1399	.0296	.0296	1.9693	.9193	.9111	.8638	.5554	.8893	.9595	.6167
10	-.63	5.78	13.46	32.32	39.99	.0141	.4940	.1432	.0303	.0273	1.8980	.9071	.8984	.8605	.5715	.8363	1.0091	.6222
15	-.41	5.54	12.19	27.48	34.03	.0188	.4805	.1159	.0244	.0205	1.8661	.9160	.9086	.8832	.5861	.8044	1.0562	.6504
30	.40	4.40	9.11	19.50	24.20	.0408	[illegible]	.0839	.0176	.0090	1.8412	.9242	.9176	.9079	.6202	.7552	1.1861	.7260
50	1.68	4.30	5.52	13.42	14.66	.0768	.4465	.1038	.0213	.0054	1.8131	.8893	.8799	.8784	.6380	.7087	1.3324	.8111
70	2.91	4.70	6.53	7.28	9.12	.1097	.4069	.1171	.0215	.0012	1.7189	.8510	.8391	.8502	.6249	.6304	1.4503	.9129
85	3.47	4.70	6.96	5.76	8.02	.1321	.3970	.1511	.0264	.0035	1.6917	.7978	.7822	.7976	.6015	.6016	1.5258	.9717
90	3.63	4.69	8.91	3.44	7.66	.1394	.4120	.2006	.0324	.0097	1.6520	.7348	.7154	.7422	.5934	.5673	1.5490	.9607
96	3.80	4.70	11.94	.22	7.47	.1498	.4238	.2493	.0353	.0141	1.6053	.6706	.6480	.6910	.5382	.5240	1.5707	.9469

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.2106	1.7843	85.37	86.50

STATOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	20.409	21.489	1091.9	897.3	803.5	897.3	739.4	-6.2	42.62	-.40	17.17	49.38	841.0	1378.3	-248.3	-1046.2	987.7	1040.0
10	21.008	21.961	1038.7	877.3	780.7	877.1	685.1	-16.5	41.26	-1.08	23.01	50.90	848.4	1390.9	-331.6	-1079.3	1016.7	1062.6
15	21.589	22.432	1005.8	862.1	775.8	861.6	640.2	-27.1	39.53	-1.80	27.53	52.24	875.1	1407.4	-404.6	-1112.7	1044.8	1085.6
30	23.314	23.902	958.3	828.8	767.8	828.1	573.4	-33.7	36.75	-2.33	35.84	55.17	947.6	1450.3	-554.9	-1190.5	[illegible]	1156.8
50	25.601	25.893	920.0	799.6	752.2	799.1	529.6	-25.3	35.14	-1.82	43.30	57.98	1034.4	1507.9	-709.4	-1278.4	1239.0	1253.1
70	27.818	27.902	855.6	728.6	720.4	727.5	461.5	-40.2	32.65	-3.16	50.84	62.38	1181.0	1569.5	-884.7	-1390.6	1346.3	1350.3
85	29.408	29.382	851.1	679.6	720.2	679.4	453.5	-17.0	32.20	-1.42	53.40	64.72	1208.0	1591.3	-969.8	-1438.9	1423.2	1422.0
90	29.914	29.856	831.0	648.3	689.4	648.3	463.9	-8.7	33.95	-.77	54.98	65.96	1201.4	1591.8	-983.8	-1453.6	1447.7	1444.9
96	30.382	30.293	802.9	597.7	648.6	597.6	473.3	-10.6	36.12	-1.01	56.96	67.97	1189.5	1593.0	-997.1	-1476.6	1470.4	1466.1

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-P SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-3.31	-.39	12.02	43.02	55.90	.0000	.3437	.1546	.0384	.0384	.9312	.0000	.0000	.6496	.9419	.7648	.7304	1.1748
10	-4.41	-1.48	10.37	42.35	53.88	.0000	.3242	.0945	.0241	.0241	.9609	.0000	.0000	.7969	.8972	.7504	.7493	1.1898
15	-4.95	-2.00	9.14	41.33	52.44	.0000	.3135	.0694	.0181	.0181	.9726	.0000	.0000	.8108	.8730	.7381	.7696	1.2050
30	-5.71	-2.70	8.89	39.08	50.68	.0000	.3111	.0720	.0202	.0202	.9737	.0000	.0000	.7754	.8304	.7087	.8300	1.2401
50	-5.39	-2.46	10.22	36.96	49.60	.0000	.3147	.0748	.0229	.0229	.9745	.0000	.0000	.7683	.7907	.6807	.8988	1.2837
70	-7.06	-3.82	10.33	35.81	49.91	.0000	.3425	.0715	.0236	.0236	.9784	.0000	.0000	.7781	.7364	.6183	.9876	1.3318
85	-7.05	-3.74	14.47	33.62	52.00	.0000	.3948	.1347	.0471	.0471	.9598	.0000	.0000	.6758	.7278	.5718	[illegible]	1.3388
90	-5.40	-2.07	16.63	34.72	53.56	.0000	.4221	.1313	.0466	.0466	.9627	.0000	.0000	.7075	.7062	[illegible]	[illegible]	1.3308
96	-3.61	-.24	18.68	37.13	56.03	.0000	.4732	.1520	.0548	.0548	.9596	.0000	.0000	.7072	.6800	.4960	1.0070	1.3219

NCOR-1 INLET RPM	WCOR-1 INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC/A-1 LBM/SEC SQFT
11092	183.99	1.2106	1.7320	80.63	82.06	41.35

TABLE 10.3

Blade–Element and Overall Performance with Uniform Inlet

100% of Design Speed

ROTOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.769	597.1	1005.8	597.1	667.4	.0	752.5	.00	48.43	54.75	16.79	1034.7	697.9	-845.0	-203.9	845.0	956.4
10	18.467	20.408	613.0	963.6	613.0	647.6	.0	713.5	.00	47.77	55.54	22.42	1083.5	703.3	-893.4	-273.8	893.4	987.3
15	19.467	21.047	627.6	912.9	627.6	617.7	.0	672.1	.00	47.41	56.32	29.24	1131.8	708.3	-941.8	-346.1	941.8	1018.2
30	22.314	22.964	660.6	855.5	660.6	607.9	.0	601.9	.00	44.72	58.53	39.92	1265.6	793.0	-1079.5	-509.0	1079.5	1111.0
50	25.791	25.520	678.2	833.3	678.2	603.3	.0	574.9	.00	43.62	61.47	47.54	1420.2	894.3	-1247.7	-659.8	1247.7	1234.6
70	28.954	28.076	666.5	758.9	666.5	563.3	.0	508.6	.00	42.08	64.55	56.45	1551.3	1019.5	-1400.8	-849.7	1400.8	1358.3
85	31.295	29.993	642.3	724.0	642.3	519.6	.0	504.2	.00	44.14	67.01	61.25	1644.7	1080.1	-1514.0	-946.8	1514.0	1451.0
90	31.883	30.630	635.5	703.9	635.5	480.0	.0	514.7	.00	47.01	67.61	63.60	1668.3	1079.7	-1542.5	-967.1	1542.5	1481.9
95	32.499	31.271	629.7	670.8	629.7	424.7	.0	519.3	.00	50.72	68.17	66.86	1693.7	1080.6	-1572.3	-993.6	1572.3	1512.9

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-.66	5.77	15.12	37.76	47.12	.0000	.4951	.0304	.0064	.0064	2.0417	.9812	.9792	.9702	.5513	.8715	.9503	.6047
10	-.48	5.94	13.30	32.62	39.99	.0143	.5100	.0485	.0103	.0072	1.9958	.9684	.9651	.9537	.5683	.8317	1.0072	.6070
15	-.26	5.68	12.73	27.08	34.03	.0190	.5224	.0718	.0151	.0111	1.9341	.9489	.9440	.9319	.5827	.7848	1.0543	.6069
30	.59	4.61	10.19	18.61	24.18	.0410	.5034	.0609	.0126	.0041	1.9044	.9463	.9413	.9372	.6144	.7317	1.1809	.6782
50	1.89	4.53	5.22	13.93	14.64	.0770	.4932	.0920	.0190	.0030	1.9207	.9087	.8999	.8997	.6309	.7066	1.3247	.7582
70	3.11	4.92	5.91	8.10	9.10	.1097	.4519	.1066	.0199	-.0007	1.8492	.8768	.8659	.8739	.6186	.6398	1.4440	.8595
85	3.64	4.88	7.11	5.76	8.00	.1321	.4519	.1594	.0277	.0050	1.8175	.8092	.7926	.8071	.5963	.6047	1.5205	.9022
90	3.77	4.85	8.48	4.00	7.63	.1393	.4642	.2004	.0328	.0101	1.7959	.7638	.7436	.7646	.5886	.5843	1.5440	.8963
95	3.96	4.87	10.99	1.32	7.44	.1498	.4748	.2376	.0350	.0130	1.7624	.7199	.6958	.7274	.5828	.5534	1.5603	.8915

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.2265	1.8875	87.80	88.83

STATOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	20.409	21.489	1060.3	798.2	770.1	798.1	728.9	-6.5	43.43	-.47	18.55	52.66	812.4	1315.8	-258.5	-1046.1	987.4	1039.6
10	21.008	21.961	1020.1	766.2	748.7	765.7	692.9	-25.2	42.78	-1.90	23.37	54.85	815.7	1330.3	-323.5	-1087.7	1016.4	1062.5
15	21.589	22.432	973.2	743.8	719.7	743.0	655.0	-34.8	42.30	-2.63	28.40	56.44	818.5	1344.1	-389.4	-1120.0	1044.5	1085.2
30	23.314	23.902	922.5	723.3	706.4	722.9	593.3	-24.5	40.03	-1.94	37.10	58.52	886.0	1384.5	-534.6	-1180.8	1127.9	1156.4
50	25.601	25.893	908.8	727.3	705.5	727.1	572.8	-16.0	39.07	-1.26	43.32	60.18	970.2	1462.4	-665.7	-1268.7	1238.6	1252.7
70	27.818	27.902	857.2	672.8	686.2	672.6	513.7	-17.1	36.82	-1.45	50.48	63.80	1078.6	1523.5	-832.1	-1367.0	1345.8	1349.9
85	29.408	29.382	847.0	625.6	672.3	625.5	515.1	7.8	37.46	.72	53.47	66.13	1129.5	1545.9	-907.6	-1413.7	1422.7	1421.5
90	29.914	29.856	838.0	604.7	650.8	604.4	527.9	18.2	39.05	1.72	54.70	67.03	1126.4	1549.1	-919.3	-1426.2	1447.2	1444.4
95	30.382	30.293	819.8	564.0	621.5	564.0	534.7	10.2	40.71	1.03	56.39	68.82	1122.9	1560.9	-935.2	-1455.4	1469.9	1465.6

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-2.57	.35	11.95	43.89	55.91	.0000	.4154	.1388	.0345	.0345	.9409	.0000	.0000	.7574	.9132	.6732	.7064	1.1097
10	-2.40	.53	9.55	44.68	53.88	.0000	.4249	.1324	.0338	.0338	.9469	.0000	.0000	.7851	.8721	.6459	.7088	1.1215
15	-2.19	.76	8.24	44.98	52.41	.0000	.4179	.0894	.0234	.0234	.9667	.0000	.0000	.8387	.8387	.6269	.7147	1.1328
30	-2.39	.61	9.28	41.97	50.68	.0000	.4019	.0597	.0168	.0168	.9796	.0000	.0000	.8672	.7950	.6392	.7674	1.1062
50	-1.62	1.51	10.77	40.34	49.58	.0000	.3971	.0520	.0159	.0159	.9829	.0000	.0000	.8837	.7787	.6096	.8324	1.2257
70	-2.81	.43	12.02	38.27	49.88	.0000	.4201	.0363	.0120	.0120	.9891	.0000	.0000	.9134	.7304	.5623	.9209	1.2732
85	-1.90	1.42	16.62	36.74	52.01	.0000	.4708	.0800	.0280	.0280	.9768	.0000	.0000	.8444	.7165	.5177	.9558	1.2792
90	-.42	2.91	19.12	37.33	53.56	.0000	.4948	.0837	.0297	.0297	.9763	.0000	.0000	.8502	.7054	.4975	.9482	1.2745
95	.98	4.35	20.72	39.68	56.02	.0000	.5430	.1044	.0377	.0377	.9718	.0000	.0000	.8320	.6871	.4613	.9404	1.2765

NCOR-1 INLET RPM	WCOR-1 INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC/A-1 LBM/SEC SQFT
11088	183.12	1.2265	1.8437	84.27	85.55	41.15

TABLE 10.4

Blade-Element and Overall Performance with Uniform Inlet

100% of Design Speed

ROTOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.769	584.0	999.1	584.0	620.1	.0	776.2	.00	50.97	55.35	15.99	1027.3	654.5	-845.1	-180.4	845.1	956.5
10	18.467	20.408	599.4	903.5	599.4	625.2	.0	733.1	.00	49.54	56.15	22.13	1075.9	675.0	-893.5	-254.3	893.5	987.4
15	19.467	21.047	613.5	923.1	613.5	600.3	.0	693.4	.00	48.70	56.92	28.06	1124.1	690.9	-941.9	-324.9	941.9	1018.3
30	22.314	22.964	642.6	828.0	642.6	530.3	.0	636.7	.00	50.21	59.24	41.80	1256.4	711.6	-1079.7	-474.4	1079.7	1111.1
50	25.791	25.520	657.6	819.[illegible]	657.6	539.5	.0	616.9	.00	48.83	62.21	48.87	1410.6	820.3	-1247.9	-617.8	1247.9	1234.8
70	28.954	28.076	651.6	760.2	651.6	534.0	.0	568.8	.00	46.81	65.05	55.91	1545.1	953.4	-1400.9	-789.6	1400.9	1358.4
85	31.295	29.993	631.3	787.2	631.3	520.0	.0	583.0	.00	47.78	67.37	58.65	1640.5	1016.7	-1514.2	-868.2	1514.2	1451.2
90	31.883	30.630	624.3	774.7	624.3	494.1	.0	596.6	.00	50.38	67.97	60.84	1664.2	1014.0	-1542.6	-885.4	1542.6	1482.0
95	32.499	31.271	617.6	738.6	617.6	423.9	.0	604.8	.00	54.97	68.56	64.98	1689.4	1002.3	-1572.4	-908.2	1572.4	1513.0

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-.06	6.37	14.12	39.36	47.12	.0000	.5391	-.0159	-.0034	-.0034	2.1235	1.0065	1.0073	1.0119	.5385	.8620	.9481	.5647
10	.12	6.54	12.52	34.01	39.99	.0000	.5372	-.0202	-.0043	-.0043	2.0930	1.0100	1.0111	1.0159	.5548	.8292	.9987	.5809
15	.35	6.28	11.55	28.86	34.03	.0201	.5394	-.0083	-.0018	-.0061	2.0492	1.0033	1.0037	1.0052	.5688	.7921	1.0462	.5928
30	1.30	5.32	12.06	17.44	24.17	.0422	.5721	.0799	.0161	.0075	1.9528	.9343	.9277	.9251	.5961	.7024	1.1693	.6032
50	2.56	5.25	6.51	13.34	14.60	.0780	.5513	.1020	.0205	.0049	2.0008	.9058	.8960	.8971	.6102	.6887	1.3059	.6893
70	3.54	5.40	5.32	9.14	9.36	.1103	.5057	.1045	.0198	-.0010	1.9957	.8911	.8799	.8853	.6049	.6518	1.4274	.7964
85	3.97	5.25	4.45	8.72	7.93	.1327	.5064	.1474	.0278	.0032	2.0359	.8455	.8291	.8348	.5869	.6516	1.5096	.8415
90	4.11	5.21	5.69	7.13	7.60	.1400	.5204	.1873	.0337	.0090	2.0255	.8073	.7871	.7962	.5786	.6372	1.5350	.8340
96	4.33	5.25	9.08	3.58	7.42	.1505	.5385	.2337	.0371	.0135	1.9836	.7600	.7356	.7532	.5713	.6028	1.5588	.8180

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.2478	2.0103	89.00	90.04

STATOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	20.409	21.489	1040.6	704.4	719.5	704.4	751.8	-5.4	46.26	-.44	18.13	56.02	757.2	1260.4	-235.7	-1045.1	987.5	1039.7
10	21.008	21.961	1006.1	676.1	711.0	675.3	711.9	-30.6	45.03	-2.60	23.19	58.29	775.6	1285.1	-304.0	-1093.1	1016.5	1062.0
15	21.589	22.432	967.8	654.3	692.6	653.0	675.9	-40.3	44.30	-3.52	28.02	59.88	784.9	1301.4	-368.6	-1125.6	1044.6	1085.4
30	23.314	23.902	883.6	626.2	621.7	626.1	627.8	-11.3	45.28	-1.04	38.81	61.80	798.0	1325.1	-500.2	-1167.8	1128.0	1156.5
50	25.601	25.893	884.9	651.4	635.6	651.3	615.7	-9.3	44.09	-.82	44.42	62.70	890.0	1420.3	-623.0	-1262.1	1238.7	1252.8
70	27.818	27.902	866.7	645.5	649.8	645.1	574.4	-22.0	41.51	-1.96	49.93	64.82	1008.2	1516.2	-771.6	-1372.1	1346.0	1350.0
85	29.408	29.382	897.3	648.9	669.9	648.5	596.9	22.8	41.70	2.01	50.96	65.13	1063.5	1541.8	-826.0	-1398.9	1422.9	1421.6
90	29.914	29.856	894.7	637.9	651.2	636.7	613.5	37.6	43.29	3.39	52.01	65.65	1058.0	1544.3	-833.8	-1406.9	1447.4	1444.6
95	30.382	30.293	873.3	601.7	612.1	601.0	622.9	29.9	45.50	2.84	54.15	67.29	1045.1	1556.6	-847.1	-1435.9	1470.0	1465.7

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
6	.08	3.00	11.97	46.70	55.91	.0000	.4994	.1788	.0445	.0445	.9265	.0000	.0000	.7437	.8932	.5865	.6575	1.0494
10	-.31	2.62	8.85	47.64	53.88	.0000	.5126	.1828	.0466	.0466	.9287	.0000	.0000	.7453	.8622	.5631	.6723	1.0704
15	.00	2.95	7.33	47.83	52.34	.0000	.5142	.1624	.0424	.0424	.9404	.0000	.0000	.7585	.8313	.5448	.6777	1.0837
30	2.83	5.82	10.18	46.32	50.67	.0000	.4920	.0639	.0179	.0179	.9800	.0000	.0000	.8943	.7540	.5200	.6803	1.1004
50	3.44	6.57	11.20	44.91	49.55	.0000	.4791	.0661	.0203	.0203	.9794	.0000	.0000	.8832	.7499	.5382	.7512	1.1774
70	1.92	5.15	11.49	43.47	49.83	.0000	.4831	.0527	.0174	.0174	.9842	.0000	.0000	.9014	.7315	.5322	.8487	1.2502
85	2.29	5.61	17.91	39.69	51.98	.0000	.5006	.1114	.0389	.0389	.9652	.0000	.0000	.8125	.7514	.5299	.8004	1.2502
90	3.70	7.03	20.85	39.91	53.61	.0000	.5160	.1158	.0411	.0411	.9643	.0000	.0000	.8148	.7461	.5179	.8824	1.2529
96	5.77	9.14	22.53	42.66	56.01	.0000	.5562	.1231	.0443	.0443	.9638	.0000	.0000	.8062	.7244	.4873	.8648	1.2554

NCOR-1 INLET RPM	WCOR-1 INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC/A-1 LBM/SEC SQFT
11089.	180.43	1.2478	1.9464	84.48	85.87	40.55

TABLE 10.5

Blade-Element and Overall Performance with Uniform Inlet

100% of Design Speed

ROTOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.769	570.2	1002.1	570.2	620.9	.0	786.6	.00	51.72	56.01	15.36	1020.0	643.9	-845.7	-170.5	845.7	957.2
10	18.467	20.408	584.9	964.5	584.9	616.4	.0	741.9	.00	50.28	56.81	21.77	1068.5	663.9	-894.1	-246.2	894.1	988.1
15	19.467	21.047	598.5	925.7	598.5	603.9	.0	701.6	.00	49.28	57.58	27.73	1111.5	682.6	-942.5	-317.4	942.5	1019.0
30	22.314	22.964	625.8	828.3	625.8	515.6	.0	648.3	.00	51.51	59.92	41.94	1248.6	693.4	-1080.4	-463.5	1080.4	1111.9
50	25.791	25.520	639.0	819.2	639.0	526.5	.0	627.6	.00	50.01	62.90	49.10	1402.7	804.3	-1248.7	-608.0	1248.7	1235.6
70	28.951	28.076	632.5	785.6	632.5	519.2	.0	589.6	.00	48.63	65.71	55.98	1538.0	925.6	-1401.9	-769.7	1401.9	1359.4
85	31.293	29.993	613.0	799.7	613.0	518.3	.0	608.9	.00	49.59	67.97	58.42	1634.5	989.8	-1515.2	-843.2	1515.2	1452.2
90	31.883	30.630	606.2	789.2	606.2	483.6	.0	623.6	.00	52.21	68.56	60.64	1658.5	986.2	-1543.7	-859.4	1543.7	1483.0
95	32.499	31.271	599.8	756.3	599.8	415.8	.0	631.8	.00	56.65	69.13	64.77	1683.9	975.4	-1573.5	-882.3	1573.5	1514.1

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	.60	7.03	13.48	50.65	47.12	.0000	.5485	-.0125	-.0026	-.0026	2.1407	1.0046	1.0051	1.0089	.5251	.8636	.9403	.5549
10	.78	7.20	11.61	35.03	39.99	.0000	.5464	-.0164	-.0035	-.0035	2.1070	1.0076	1.0085	1.0125	.5408	.8291	.9908	.5707
15	1.02	6.93	11.21	29.86	34.03	.0216	.5455	-.0092	-.0020	-.0066	2.0666	1.0038	1.0043	1.0060	.5542	.7936	1.0383	.5852
30	1.99	6.01	12.20	17.98	24.18	.0437	.5865	.0914	.0183	.0095	1.9646	.9270	.9196	.9155	.5796	.7308	1.1609	.5867
50	3.25	5.94	6.74	13.79	14.60	.0794	.5624	.1107	.0221	.0063	2.0146	.9002	.8898	.8891	.5918	.687[illegible]	1.2965	.6746
70	4.20	6.07	5.39	9.74	9.06	.1118	.5240	.1231	.0233	.0023	2.0184	.8765	.8636	.8672	.5860	.6542	1.4178	.7732
85	4.58	5.87	4.22	9.56	7.93	.1342	.5266	.1659	.0315	.0064	2.0714	.8328	.8147	.8173	.5687	.6594	1.5009	.8162
90	4.70	5.80	5.48	7.92	7.60	.1415	.5414	.2052	.0371	.0120	2.0645	.7968	.7750	.7804	.5608	.6466	1.5267	.8079
95	4.91	5.83	8.87	4.37	7.42	.1521	.5590	.2488	.0398	.0157	2.0267	.7538	.7282	.7408	.5538	.6150	1.5509	.7931

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.2547	2.0318	88.03	89.16

STATOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	20.409	21.489	1039.8	687.1	707.6	687.1	761.9	-7.2	47.12	-.60	17.73	56.74	742.9	1252.8	-226.2	-1047.6	988.1	1040.4
10	21.008	21.961	1003.4	658.8	698.4	658.2	720.4	-27.3	45.88	-2.39	23.02	58.88	759.0	1274.0	-296.8	-1090.6	1017.1	1063.3
15	21.589	22.432	966.3	637.1	682.6	636.0	684.0	-38.5	45.06	-3.46	27.89	60.51	772.7	1292.6	-361.3	-1124.6	1045.3	1086.1
30	23.314	23.902	879.0	606.5	603.3	606.4	639.2	-13.2	46.65	-1.24	39.04	62.61	777.1	1318.2	-489.6	-1170.4	1128.8	1157.3
50	25.601	25.893	880.3	628.4	618.5	628.3	626.4	-6.9	45.37	-.63	44.74	63.51	870.9	1408.5	-613.1	-1260.6	1239.5	1253.7
70	27.818	27.902	867.4	633.3	630.4	633.1	595.8	-17.6	43.39	-1.59	49.99	65.17	980.5	1507.9	-751.0	-1368.5	1346.9	1350.9
85	29.408	29.382	903.8	644.5	654.1	643.9	623.7	25.5	43.64	2.27	50.74	65.26	1033.5	1538.3	-800.2	-1397.1	1423.9	1422.6
90	29.914	29.856	902.5	635.3	634.9	633.9	641.4	41.3	45.29	3.73	51.81	65.70	1026.7	1540.7	-806.9	-1404.2	1444.4	1445.5
95	30.382	30.293	883.0	601.4	596.9	600.5	650.6	33.9	47.46	3.23	53.96	67.26	1014.6	1553.5	-820.4	-1432.8	1471.0	1466.7

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	.96	3.88	11.81	47.72	55.91	.0000	.5185	.1881	.0468	.0468	.9230	.0000	.0000	.7396	.6905	.5703	.6434	1.0399
10	.50	3.43	9.06	48.28	53.88	.0000	.5297	.1888	.0481	.0481	.9268	.0000	.0000	.7449	.8591	.5472	.6592	1.0582
15	.77	3.71	7.39	48.52	52.34	.0000	.5329	.1720	.0449	.0449	.9371	.0000	.0000	.7528	.8292	.5291	.6458	1.0730
30	4.20	7.19	9.97	47.90	50.67	.0000	.5158	.0727	.0204	.0204	.9774	.0000	.0000	.8871	.7483	.5020	.6602	1.0910
50	4.70	7.83	11.38	46.00	49.55	.0000	.5054	.0857	.0263	.0263	.9737	.0000	.0000	.8606	.7441	.5173	.7322	1.1594
70	3.80	7.03	11.85	44.98	49.84	.0000	.5039	.0668	.0221	.0221	.9801	.0000	.0000	.8843	.7292	.5197	.8216	1.2373
85	4.22	7.53	18.17	41.37	51.98	.0000	.5184	.1282	.0448	.0448	.9598	.0000	.0000	.7935	.7531	.5236	.8611	1.2497
90	5.66	8.99	21.22	41.56	53.62	.0000	.5326	.1341	.0475	.0475	.9584	.0000	.0000	.7923	.7491	.5131	.8527	1.2443
95	7.75	11.11	22.92	44.25	56.01	.0000	.5712	.1443	.0520	.0520	.9572	.0000	.0000	.7759	.7289	.4825	.8355	1.2464

NCOR-1 INLET RPM	WCOR-1 INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC/A-1 LBM/SEC SQFT
11096	177.14	1.2547	1.9586	83.01	84.54	39.81

TABLE 10.6

Blade-Element and Overall Performance with Uniform Inlet

100% of Design Speed

ROTOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.769	557.0	1004.5	557.0	619.6	.0	790.6	.00	51.91	56.62	15.03	1012.6	641.6	-845.6	-166.4	845.6	957.0
10	18.467	20.408	571.3	987.2	571.3	615.5	.0	746.1	.00	50.45	57.42	21.44	1061.0	661.5	-894.0	-241.6	894.0	987.7
15	19.467	21.047	584.5	930.2	584.5	606.6	.0	705.3	.00	49.31	58.20	27.35	1108.9	683.3	-942.5	-313.6	942.5	1018.9
30	22.314	22.964	610.2	830.5	610.2	511.5	.0	654.3	.00	51.98	60.54	41.77	1240.7	686.3	-1080.2	-457.4	1080.2	1111.7
50	25.791	25.520	620.8	821.6	620.8	521.4	.0	634.9	.00	50.61	63.56	49.02	1394.4	795.4	-1248.5	-600.5	1248.5	1235.4
70	28.954	28.076	612.0	792.3	612.0	505.5	.0	610.1	.00	50.36	66.41	55.98	1529.5	903.7	-1401.7	-749.1	1401.7	1359.2
85	31.295	29.993	592.5	806.9	592.5	501.1	.0	632.5	.00	51.61	68.64	58.55	1626.7	960.6	-1515.0	-819.5	1515.0	1452.0
90	31.883	30.630	586.1	795.9	586.1	465.4	.0	645.5	.00	54.21	69.20	60.93	1651.0	958.0	-1543.4	-837.3	1543.4	1482.8
95	32.499	31.271	580.1	767.8	580.1	405.6	.0	652.0	.00	58.12	69.76	64.80	1676.8	952.6	-1573.3	-861.9	1573.3	1513.8

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	1.21	7.64	13.16	41.59	47.12	.0000	.5485	-.0121	-.0026	-.0026	2.1475	1.0043	1.0048	1.0087	.5125	.8655	.9327	.5528
10	1.40	7.81	11.81	35.98	39.99	.0000	.5464	-.0161	-.0034	-.0034	2.1143	1.0073	1.0081	1.0123	.5277	.8313	.9835	.5685
15	1.65	7.52	10.81	30.86	34.03	.0231	.5426	-.0135	-.0029	-.0079	2.0773	1.0065	1.0072	1.009	.5407	.7976	1.0313	.5859
30	2.64	6.63	12.04	18.77	24.18	.0449	.5910	.0991	.0199	.0108	1.9687	.9223	.9143	.9083	.5644	.7022	1.1543	.5803
50	3.94	6.61	6.68	14.54	14.61	.0806	.5678	.1213	.0243	.0081	2.0171	.8926	.8815	.8783	.5738	.6884	1.2891	.6664
70	4.91	6.76	5.40	10.43	9.07	.1130	.5421	.1511	.0286	.0073	2.0238	.8535	.8382	.8392	.5656	.6577	1.4093	.7502
85	5.26	6.53	4.37	10.09	7.95	.1353	.5474	.1957	.0370	.0118	2.0776	.8088	.7881	.7872	.5483	.6629	1.4916	.7891
90	5.36	6.45	5.79	8.27	7.61	.1427	.5611	.2322	.0416	.0165	2.0702	.7760	.7581	.7537	.5409	.6497	1.5173	.7821
95	5.54	6.45	8.91	4.96	7.42	.1533	.5751	.2691	.0430	.0187	2.0431	.7402	.7131	.7209	.5345	.6226	1.5415	.7724

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.2598	2.0376	86.69	87.95

STATOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	20.409	21.489	1040.0	681.6	703.7	681.6	765.8	-.2	47.42	-.01	17.52	56.77	738.0	1243.8	-222.2	-1040.4	988.0	1040.3
10	21.008	21.961	1003.9	654.1	694.8	653.5	724.5	-25.4	46.20	-2.25	22.82	59.01	754.0	1269.8	-292.5	-1088.5	1017.0	1063.1
15	21.589	22.432	968.3	633.0	681.9	631.8	687.5	-38.9	45.24	-3.52	27.68	60.67	770.4	1290.2	-357.6	-1124.8	1045.1	1085.9
30	23.314	23.902	877.9	597.7	595.6	597.6	644.9	-11.2	47.28	-1.07	39.06	62.91	767.4	1312.3	-483.7	-1168.3	1128.6	1157.1
50	25.601	25.893	878.8	616.4	608.8	616.3	633.7	-7.9	46.15	-.74	44.84	63.96	858.8	1403.9	-605.6	-1261.4	1239.3	1253.5
70	27.818	27.902	869.1	623.2	612.4	623.2	616.8	-6.2	45.21	-.57	50.00	65.33	952.7	1493.2	-729.9	-1356.9	1346.7	1350.7
85	29.408	29.382	904.5	632.6	631.6	632.1	647.4	24.3	45.71	2.20	50.86	65.67	1000.7	1534.4	-776.2	-1398.1	1423.6	1422.4
90	29.914	29.856	901.8	623.1	610.8	622.2	665.4	33.1	47.37	3.05	52.11	66.22	994.4	1543.3	-794.7	-1412.2	1448.1	1445.3
95	30.382	30.293	885.8	597.4	577.9	596.5	671.4	32.6	49.28	3.13	54.14	67.41	986.4	1553.0	-799.4	-1433.9	1470.8	1466.5

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	1.28	4.20	12.40	47.44	55.91	.0000	.5231	.1904	.0473	.0473	.9221	.0000	.0000	.7390	.8902	.5652	.6306	1.0314
10	.76	3.69	9.20	48.44	53.88	.0000	.5351	.1906	.0486	.0486	.9261	.0000	.0000	.7456	.8598	.5428	.6554	1.0537
15	.95	3.89	7.34	48.76	52.34	.0000	.5391	.1765	.0461	.0461	.9353	.0000	.0000	.7495	.8308	.5253	.6635	1.0705
30	4.82	7.81	10.14	48.35	50.67	.0000	.5264	.0772	.0217	.0217	.9761	.0000	.0000	.8838	.7467	.4939	.6909	1.0834
50	5.45	8.58	11.28	46.88	49.56	.0000	.5211	.0939	.0288	.0288	.9713	.0000	.0000	.8543	.7421	.5063	.7206	1.1538
70	5.58	8.80	12.88	45.77	49.85	.0000	.5202	.0780	.0258	.0258	.9769	.0000	.0000	.8742	.7280	.5091	.7945	1.2199
85	6.27	9.58	18.10	43.51	51.99	.0000	.5416	.1426	.0498	.0498	.9555	.0000	.0000	.7800	.7502	.5112	.8299	1.2400
90	7.68	11.01	20.53	44.32	53.63	.0000	.5577	.1478	.0524	.0524	.9545	.0000	.0000	.7780	.7457	.5008	.8226	1.2402
96	9.55	12.92	22.82	46.15	56.02	.0000	.5861	.1543	.0556	.0556	.9542	.0000	.0000	.7636	.7287	.4773	.8091	1.2408

NCOR-1 INLET RPM	WCOR-1 INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC/A-1 LBM/SEC SQFT
11095	173.71	1.2598	1.9589	81.40	83.08	39.04

TABLE 10.7

Blade-Element and Overall Performance with Uniform Inlet, Alternate Method

100% of Design Speed

ROTOR

%SPAN	DIA-1 IN	DIA-2 IN	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	Vθ'-1 FT/SEC	Vθ'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.769	605.8	1024.3	605.8	718.7	.0	729.9	.00	45.44	54.37	17.53	1040.1	753.7	-845.4	-227.0	845.4	956.8
10	18.467	20.408	621.9	983.2	621.9	696.3	.0	694.2	.00	44.93	55.17	22.90	1088.9	756.3	-893.8	-293.6	893.8	987.8
15	19.467	21.447	636.3	932.1	636.3	652.8	.0	665.3	.00	45.54	55.97	28.40	1136.9	742.9	-942.2	-353.4	942.2	1018.7
30	22.314	22.964	668.4	876.9	668.4	653.5	.0	584.6	.00	41.81	58.24	38.83	1270.2	839.9	-1080.0	-526.9	1080.0	1111.5
50	25.791	25.520	685.6	826.4	685.6	634.2	.0	529.8	.00	39.87	61.22	48.00	1424.2	949.2	-1248.3	-705.4	1248.3	1235.2
70	28.954	28.876	673.2	739.0	673.2	572.3	.0	453.3	.00	38.38	64.34	57.70	1554.7	1071.4	-1401.4	-905.7	1401.4	1358.9
85	31.295	29.993	649.4	717.1	649.4	568.1	.0	437.6	.00	37.61	66.79	60.74	1648.1	1162.4	-1514.7	-1014.1	1514.7	1451.7
90	31.883	30.630	642.0	705.4	642.0	548.5	.0	443.2	.00	38.98	67.41	62.19	1671.4	1175.5	-1543.2	-1039.4	1543.2	1482.5
95	32.499	31.271	635.6	630.7	635.6	445.0	.0	446.9	.00	45.13	68.00	67.35	1696.6	1155.7	-1573.0	-1066.6	1573.0	1513.6

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-1.02	5.41	15.65	36.85	49.83	.0109	.4390	.0503	.0105	.0083	1.9859	.9690	.9657	.9471	.5611	.8929	.9657	.6570
10	-.82	5.53	13.25	32.28	43.55	.0137	.4594	.0772	.0164	.0134	1.9365	.9491	.9442	.9209	.5785	.8536	1.0182	.6565
15	-.56	5.26	11.88	27.57	39.11	.0194	.4926	.1313	.0278	.0238	1.8660	.9055	.8971	.8701	.5927	.8042	1.0655	.6409
30	.35	4.33	9.12	19.41	24.21	.0407	.4645	.0949	.0199	.0113	1.8337	.9146	.9072	.8968	.6230	.7541	1.1906	.7222
50	1.69	4.31	5.73	13.22	14.67	.0767	.4464	.1130	.0231	.0072	1.7977	.8791	.8689	.8676	.6381	.7057	1.3338	.8106
70	2.90	4.70	7.18	6.64	9.12	.1099	.4079	.1300	.0235	.0035	1.6921	.8329	.8199	.8342	.6250	.6202	1.4494	.9101
85	3.41	4.66	6.60	6.05	7.99	.1321	.3888	.1437	.0254	.0022	1.6871	.8051	.7902	.8042	.6036	.6066	1.5244	.9834
90	3.58	4.65	7.07	5.22	7.64	.1394	.3925	.1713	.0294	.0056	1.6764	.7712	.7540	.7713	.5950	.5943	1.5482	.9903
95	3.79	4.69	11.51	.64	7.46	.1499	.4157	.2360	.0341	.0125	1.5986	.6819	.6603	.7016	.5886	.5262	1.5705	.9643

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.2091	1.7771	85.34	86.47

STATOR

%SPAN	DIA-1 IN	DIA-2 IN	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	Vθ'-1 FT/SEC	Vθ'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	20.409	21.489	1094.7	958.0	835.7	955.5	707.1	-67.6	40.24	-4.05	18.57	49.22	881.6	1463.0	-280.7	-1107.7	987.8	1040.1
10	21.008	21.761	1056.5	937.2	813.2	935.2	674.5	-62.1	39.68	-3.80	22.85	50.27	882.6	1463.0	-342.3	-1125.1	1016.8	1062.9
15	21.589	22.432	1008.8	920.1	772.7	918.0	649.6	-62.0	40.01	-3.87	27.14	51.34	868.8	1469.8	-396.3	-1147.7	1044.9	1085.7
30	23.314	23.902	959.6	886.0	767.7	883.1	575.8	-71.8	36.87	-4.65	35.73	54.29	946.2	1513.3	-552.7	-1228.7	1128.4	1156.9
50	25.601	25.393	919.7	844.8	752.9	842.5	528.0	-62.9	35.03	-4.27	43.33	57.37	1036.1	1562.9	-711.1	-1316.1	1239.1	1253.3
70	27.818	27.902	849.0	775.5	715.2	772.3	457.5	-70.7	32.61	-5.22	51.18	61.48	1140.9	1617.5	-888.9	-1421.2	1346.4	1350.5
85	29.408	29.382	859.2	739.7	733.8	738.3	446.9	-43.4	31.34	-3.36	53.07	63.26	1221.5	1641.0	-976.5	-1465.5	1423.4	1422.1
90	29.914	29.356	857.1	721.4	726.6	721.1	454.5	-21.2	32.04	-1.68	53.82	63.82	1230.9	1634.2	-993.4	-1466.3	1447.9	1445.1
95	30.362	30.293	810.2	665.1	666.8	664.9	460.2	-15.0	34.61	-1.29	56.58	65.83	1210.5	1623.6	-1010.3	-1481.2	1470.5	1466.2

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-6.01	-3.09	8.36	44.28	55.89	.0000	.2971	.2289	.0568	.0568	.8969	.0000	.0000	.2722	.9586	.8270	.7777	1.2629
10	-5.31	-2.37	7.64	43.48	53.86	.0000	.2875	.2062	.0525	.0525	.9121	.0000	.0000	.2741	.9153	.8084	.7689	1.2619
15	-4.39	-1.45	7.08	43.87	52.42	.0008	.2692	.1484	.0387	.0385	.9412	.0000	.0000	.3295	.8760	.7927	.7601	1.2662
30	-5.61	-2.61	6.57	41.52	50.68	.0005	.2643	.1380	.0386	.0385	.9494	.0000	.0000	.2704	.8322	.7629	.8273	1.3029
50	-5.69	-2.56	7.77	39.31	49.60	.0008	.2772	.1559	.0476	.0474	.9469	.0000	.0000	.2037	.7918	.7233	.8988	1.3380
70	-7.09	-3.84	8.26	37.83	49.90	.0000	.2925	.1385	.0457	.0457	.9586	.0000	.0000	.3070	.7309	.6620	.9858	1.3807
85	-8.05	-4.74	12.54	34.70	52.00	.0000	.3387	.2115	.0738	.0738	.9357	.0000	.0000	.3137	.7389	.6270	1.0509	1.3911
90	-7.40	-4.07	15.72	33.72	53.56	.0000	.3557	.2285	.0812	.0812	.9311	.0000	.0000	.3397	.7335	.6087	1.0540	1.3787
95	-5.17	-1.80	18.40	35.91	56.02	.0000	.3909	.2319	.0836	.0836	.9370	.0000	.0000	.3901	.6898	.5566	1.0290	1.3589

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT
11093.	184.32	1.2091	1.6762	75.99	77.67	41.42

TABLE 10.8
Blade-Element and Overall Performance with Uniform Inlet, Alternate Method
100% of Design Speed

ROTOR

%SPAN	DIA-1 IN	DIA-2 IN	V-1 FT/SEC	V-2 FT/SEC	V'-1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	Vθ'-1 FT/SEC	Vθ'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.769	601.5	1005.5	601.5	654.6	.0	763.3	.00	49.39	54.56	16.46	1037.5	682.5	-845.3	-193.4	845.3	956.7
10	18.467	20.408	616.7	962.9	616.7	654.8	.0	705.8	.00	47.14	55.39	23.26	1085.9	713.1	-893.7	-281.8	893.7	987.7
15	19.467	21.047	631.7	942.8	631.7	670.3	.0	656.8	.00	44.16	56.16	28.12	1134.3	767.3	-942.1	-361.7	942.1	1019.6
30	22.314	22.964	666.9	872.6	666.9	649.7	.0	582.4	.00	41.87	58.30	39.11	1269.2	938.2	-1079.9	-528.9	1079.9	1111.4
50	25.791	25.520	685.2	829.6	635.2	625.9	.0	531.1	.00	40.31	61.23	48.32	1423.9	942.5	-1248.2	-703.9	1248.2	1235.0
70	28.954	28.076	673.1	735.7	673.1	570.1	.0	457.6	.00	38.46	64.34	57.40	1554.5	1069.6	-1401.2	-901.1	1401.2	1358.7
85	31.295	29.993	648.4	711.0	648.4	555.0	.0	444.2	.00	38.68	66.82	61.14	1647.5	1150.2	-1514.5	-1007.3	1514.5	1451.5
90	31.883	30.630	641.1	685.5	641.1	514.6	.0	452.4	.00	41.37	67.44	63.46	1670.9	1151.6	-1543.0	-1029.9	1543.0	1482.3
95	32.499	31.271	635.2	626.6	635.2	425.7	.0	459.9	.00	47.21	68.01	68.00	1696.2	1136.2	-1572.8	-1053.5	1572.8	1513.4

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-.85	5.53	14.59	38.10	43.83	.0112	.5137	.1598	.0337	.0313	1.9525	.9077	.8985	.8510	.5556	.8699	.9591	.5905
10	-.64	5.70	13.62	32.13	43.55	.0141	.5002	.1274	.0269	.0239	1.9126	.9175	.9097	.8777	.5714	.8319	1.0082	.6161
15	-.43	5.52	11.61	28.03	34.12	.0187	.4680	.0675	.0143	.0103	1.9106	.9507	.9462	.9303	.5866	.8156	1.0564	.6638
30	.39	4.37	9.40	19.19	24.20	.0407	.4650	.0726	.0152	.0066	1.8537	.9341	.9284	.9208	.6213	.7502	1.1885	.7206
50	1.70	4.32	6.04	12.92	14.67	.0767	.4513	.0993	.0201	.0044	1.8181	.8940	.8849	.8849	.6377	.7004	1.3332	.8041
70	2.91	4.70	6.88	6.94	3.13	.1098	.4099	.1108	.0202	.0000	1.7284	.8591	.8477	.8593	.6247	.6249	1.4501	.9084
85	3.45	4.69	7.02	5.68	3.01	.1320	.3974	.1400	.0244	.0015	1.7080	.8129	.7982	.8131	.6020	.6003	1.5255	.9711
90	3.62	4.68	8.36	3.98	7.66	.1393	.4085	.1822	.0300	.0069	1.6804	.7603	.7422	.7651	.5937	.5753	1.5488	.9665
95	3.81	4.70	12.16	.01	7.47	.1498	.4298	.2404	.0338	.0127	1.6201	.6835	.6613	.7039	.5981	.5213	1.5707	.9451

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.2106	1.7974	86.55	87.59

STATOR

%SPAN	DIA-1 IN	DIA-2 IN	V-1 FT/SEC	V-2 FT/SEC	V -1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	Vθ'-1 FT/SEC	Vθ'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	20.409	21.189	1072.0	593.4	775.2	898.4	739.4	-6.2	43.61	-.40	17.74	49.35	815.0	1379.0	-248.3	-1046.2	987.7	1040.0
10	21.003	21.961	1032.9	879.3	772.8	978.1	685.3	-16.5	41.56	-1.08	23.20	50.87	941.0	1391.5	-331.4	-1079.3	1016.7	1062.8
15	21.589	22.432	1014.2	863.0	786.6	862.6	640.1	-27.1	39.14	-1.80	27.21	52.21	884.9	1408.0	-404.7	-1112.7	1044.8	1085.6
30	23.314	23.702	951.3	829.2	758.9	828.5	573.7	-33.7	37.08	-2.33	36.14	55.16	940.2	1450.4	-554.6	-1190.4	1128.3	1156.7
50	25.001	25.193	909.4	799.0	739.5	798.6	529.3	-25.5	35.59	-1.84	43.79	58.00	1025.4	1507.8	-709.7	-1278.6	1239.0	1253.1
70	27.816	27.902	~~445.7~~	~~729.9~~	~~739.6~~	~~727.8~~	~~461.9~~	~~-39.9~~	~~33.06~~	~~-3.13~~	~~51.25~~	~~62.36~~	~~1133.9~~	~~1569.3~~	~~-884.4~~	~~-1390.2~~	~~1346.3~~	~~1350.3~~
85	29.408	29.332	845.4	680.7	713.5	680.5	453.3	-16.9	32.43	-1.42	53.66	64.69	1204.1	1591.7	-969.9	-1438.9	1423.2	1422.0
90	29.914	29.856	833.2	649.3	692.2	645.2	463.7	-8.9	33.83	-.79	54.88	65.94	1203.2	1592.3	-984.0	-1453.8	1447.7	1444.9
95	30.382	30.293	775.3	598.5	640.3	598.5	473.4	-10.6	36.47	-1.02	57.29	67.94	1184.9	1593.3	-997.0	-1476.7	1470.3	1466.0

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-2.56	.36	12.01	44.00	55.90	.0018	.3306	.1408	.0350	.0346	.9391	.0000	.0000	.6494	.9271	.7658	.7117	1.1755
10	-4.42	-1.48	10.37	42.54	53.88	.0010	.3195	.1136	.0290	.0287	.9534	.0000	.0000	.7339	.8973	.7514	.7493	1.1905
15	-5.27	-2.32	9.15	40.34	52.45	.0000	.3181	.1247	.0326	.0326	.9501	.0000	.0000	.6617	.8800	.7390	.7772	1.2056
30	-5.36	-2.36	8.90	39.41	50.68	.0006	.3057	.0910	.0255	.0254	.9671	.0000	.0000	.7021	.8232	.7090	.8222	1.2403
50	-5.15	-2.02	10.21	37.42	49.60	.0011	.3073	.0855	.0262	.0259	.9714	.0000	.0000	.7115	.7605	.6802	.8901	1.2836
70	~~-6.64~~	~~-3.39~~	~~10.36~~	~~36.20~~	~~49.91~~	~~.0001~~	~~.3352~~	~~.0911~~	~~.0301~~	~~.0301~~	~~.9729~~	~~.0000~~	~~.0000~~	~~.7015~~	~~.7273~~	~~.6186~~	~~.9807~~	~~1.3317~~
85	-6.84	-3.53	14.47	33.85	51.99	.0000	.3893	.1670	.0583	.0583	.9508	.0000	.0000	.5859	.7234	.5728	1.0318	1.3393
90	-5.46	-2.13	16.62	34.62	53.56	.0000	.4225	.1864	.0662	.0662	.9467	.0000	.0000	.5876	.7075	.5429	1.0236	1.3314
95	-3.24	.12	18.67	37.49	56.03	.0000	.4678	.1889	.0681	.0681	.9505	.0000	.0000	.6239	.6739	.4967	1.0022	1.3223

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT
11091.	183.99	1.2106	1.7325	80.67	82.10	41.35

TABLE 10.9

Blade Element and Overall Performance with Uniform Inlet, Alternate Method

100% of Design Speed

ROTOR

% SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.769	595.7	975.9	595.7	621.4	.0	752.5	.00	50.45	54.82	18.16	1033.9	654.1	-845.0	-203.9	845.0	956.4
10	18.467	20.408	610.8	932.0	610.8	598.5	.0	714.4	.00	50.05	55.64	24.51	1082.2	657.8	-893.4	-272.9	893.4	987.3
15	19.467	21.047	625.4	922.4	625.4	631.0	.0	672.9	.00	46.84	56.41	28.68	1130.5	719.4	-941.8	-345.4	941.8	1018.2
30	22.314	22.964	660.8	857.5	660.8	610.7	.0	601.9	.00	44.58	58.53	39.80	1265.7	795.2	-1079.5	-509.1	1079.5	1111.0
50	25.791	25.520	681.0	834.4	681.0	605.2	.0	574.4	.00	43.50	61.37	47.46	1421.5	895.9	-1247.7	-660.2	1247.7	1234.6
70	28.954	28.076	670.3	762.8	670.3	567.9	.0	509.2	.00	41.88	64.43	56.21	1552.9	1021.5	-1400.8	-849.0	1400.8	1359.3
85	31.295	29.993	644.9	731.2	644.9	528.5	.0	505.2	.00	43.72	66.93	60.81	1645.7	1083.5	-1514.0	-945.8	1514.0	1451.0
90	31.883	30.630	637.5	707.3	637.5	483.4	.0	516.0	.00	46.90	67.54	63.42	1669.0	1080.4	-1542.5	-965.9	1542.5	[illegible]
95	32.499	31.271	631.7	656.2	631.7	400.3	.0	519.9	.00	52.40	68.11	68.04	1694.4	1070.6	-1572.3	-992.9	1572.3	1512.9

% SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-.60	5.83	16.29	36.65	48.83	.0117	.5371	.1052	.0219	.0195	1.9799	.9389	.9326	.9061	.5496	.8419	.9544	.5643
10	-.40	6.03	14.99	31.13	43.58	.0145	.5516	.1191	.0249	.0219	1.9352	.9242	.9167	.8940	.5650	.8007	1.0025	.5651
15	-.20	5.82	12.18	27.73	38.14	.0191	.5122	.0522	.0110	.0070	1.9539	.9625	.9588	.9493	.5795	.7939	1.0490	.6191
30	.57	4.60	10.07	18.73	24.19	.0409	.5017	.0521	.0108	.0023	1.9139	.9536	.9494	.9457	.6143	.7335	1.1794	.6802
50	1.79	4.43	5.15	13.91	14.64	.0767	.4924	.0835	.0172	.0013	1.9311	.9168	.9087	.9089	.6337	.7077	1.3262	.7598
70	2.99	4.79	5.68	8.21	9.10	.1097	.4513	.0982	.0185	-.0023	1.8631	.8864	.8763	.8838	.6221	.6433	1.4468	.8615
85	3.56	4.80	6.69	6.12	8.01	.1319	.4503	.1505	.0266	.0034	1.8346	.8203	.8045	.8176	.5984	.6111	1.5233	.9055
90	3.73	4.79	8.33	4.12	7.66	.1392	.4642	.1953	.0322	.0090	1.8076	.7706	.7598	.7710	.5901	.5872	1.5466	.8969
95	3.91	4.81	12.21	.07	7.47	.1497	.4810	.2437	.0342	.0131	1.7527	.7121	.6886	.7235	.5846	.5406	1.5685	.8820

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.2264	1.8926	88.23	89.23

STATOR

% SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	20.409	21.489	1029.7	794.6	727.4	794.6	728.9	-6.5	45.06	-.47	19.56	52.78	772.0	1313.6	-258.5	-1046.1	987.4	1039.6
10	21.008	21.961	989.5	762.7	705.7	762.2	693.6	-25.1	44.51	-1.90	24.57	54.97	776.0	1328.3	-322.7	-1087.6	1016.3	1062.4
15	21.589	22.432	980.5	741.0	729.0	740.2	655.6	-34.6	41.96	-2.67	28.06	56.53	826.4	1342.4	-388.8	-1119.8	1044.4	1085.2
30	23.314	23.902	923.0	722.2	707.1	721.8	593.2	-24.5	39.99	-1.94	37.08	58.56	886.6	1384.0	-534.7	-1180.8	1127.9	1156.3
50	25.601	25.893	908.3	727.3	705.2	727.1	572.5	-16.1	39.07	-1.27	43.34	60.18	970.3	1462.5	-666.1	-1268.8	1238.5	1252.7
70	27.818	27.902	858.3	674.8	687.3	674.6	514.1	-16.7	36.80	-1.41	50.43	63.73	1079.0	1524.0	-831.7	-1366.5	1345.8	1349.9
85	29.408	29.382	851.0	628.1	677.2	628.1	515.3	7.8	37.27	.72	53.27	66.05	1132.3	1546.9	-907.4	-1413.6	1422.7	1421.5
90	29.914	29.856	839.6	606.9	652.4	606.7	528.4	17.6	39.02	1.66	54.63	66.96	1126.9	1550.5	-918.8	-1426.8	1447.2	1444.4
95	30.382	30.293	806.0	566.3	602.8	566.2	535.1	10.1	41.59	1.02	57.18	68.74	1112.3	1561.7	-934.8	-1455.5	1469.8	1465.5

% SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-.96	1.97	11.95	45.52	55.91	.0023	.4015	.0727	.0181	.0175	.9705	.0000	.0000	.8635	.8833	.6698	.6692	1.1074
10	-1.53	1.41	9.55	46.41	53.89	.0031	.4109	.0632	.0161	.0153	.9759	.0000	.0000	.9102	.8554	.6427	.6902	1.1193
15	-2.51	.43	8.26	44.64	52.43	.0021	.4253	.1137	.0297	.0292	.9571	.0000	.0000	.8005	.8440	.6243	.7228	1.1310
30	-2.41	.59	9.28	41.94	50.68	.0027	.4033	.0736	.0206	.0199	.9749	.0000	.0000	.8375	.7951	.6083	.7690	1.1656
50	-1.64	1.50	10.76	40.34	49.59	.0061	.3967	.0702	.0215	.0197	.9769	.0000	.0000	.8432	.7756	.6097	.8337	1.2259
70	-2.83	.41	12.07	38.21	49.90	.0027	.4184	.0621	.0206	.0197	.9814	.0000	.0000	.8553	.7312	.5639	.9219	1.2737
85	-2.10	1.21	16.63	36.55	52.03	.0023	.4705	.1121	.0392	.0384	.9672	.0000	.0000	.7856	.7203	.5198	.9586	1.2802
90	-.52	2.81	19.06	37.36	53.57	.0035	.4935	.1092	.0388	.0376	.9690	.0000	.0000	.8068	.7074	.4994	.9492	1.2758
95	1.78	5.14	20.71	40.58	56.04	.0048	.5327	.0895	.0323	.0305	.9765	.0000	.0000	.8524	.6756	.4632	.9306	1.2774

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT
11088.	183.12	1.2264	1.8441	84.32	85.50	41.15

TABLE 10.10

Blade-Element and Overall Performance with Uniform Inlet, Alternate Method
100% of Design Speed

ROTOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.769	581.9	994.1	581.9	621.1	.0	776.2	.00	51.34	55.45	16.18	1026.1	646.7	-845.1	-180.3	845.1	956.5
10	18.467	20.408	596.6	939.2	596.6	587.5	.0	732.8	.00	51.28	56.27	23.43	1074.4	640.5	-893.5	-254.6	893.5	987.4
15	19.467	21.047	610.0	891.8	610.0	560.6	.0	693.6	.00	51.05	57.07	30.06	1122.2	648.0	-941.9	-324.7	941.9	1018.3
30	22.314	22.964	641.0	844.9	641.0	557.2	.0	635.1	.00	48.74	59.30	40.51	1255.6	732.9	-1079.6	-476.0	1079.6	1111.1
50	25.791	25.520	661.7	833.1	661.7	560.2	.0	616.6	.00	47.75	62.06	47.81	1412.4	834.3	-1247.9	-618.1	1247.9	1234.8
70	28.954	28.976	656.8	792.0	656.8	550.9	.0	569.0	.00	45.93	64.88	55.87	1547.2	962.7	-1400.9	-789.4	1400.9	1358.4
85	31.295	29.993	634.7	790.4	634.7	531.9	.0	584.7	.00	47.71	67.26	58.46	1641.8	1016.7	-1514.2	-866.5	1514.2	1451.2
90	31.883	30.630	627.3	780.7	627.3	500.8	.0	598.9	.00	50.10	67.87	60.44	1665.3	1015.2	-1542.6	-883.1	1542.6	1482.0
95	32.499	31.271	620.8	731.4	620.8	410.4	.0	605.3	.00	55.87	68.46	65.67	1690.5	996.2	-1572.4	-907.7	1572.4	1513.0

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	.04	6.47	14.31	39.27	43.83	.0131	.5431	.0359	.0076	.0048	2.0803	.9790	.9767	.9673	.5365	.8570	.9473	.5576
10	.24	6.65	13.79	32.83	43.55	.0161	.5686	.0702	.0148	.0114	2.0122	.9566	.9520	.9384	.5518	.8056	.9964	.5494
15	.48	6.46	13.55	27.01	38.14	.0204	.5768	.0872	.0181	.0139	1.9600	.9408	.9348	.9230	.5646	.7621	1.0411	.5537
30	1.30	5.37	10.77	18.80	24.19	.0422	.5545	.0745	.0153	.0066	1.9556	.9385	.9323	.9282	.5937	.7178	1.1627	.6226
50	2.40	5.11	5.45	14.26	14.61	.0777	.5419	.0992	.0203	.0045	2.0039	.9082	.8987	.8987	.6140	.7012	1.3065	.7022
70	3.38	5.23	4.48	9.81	9.05	.1101	.5004	.1050	.0204	-.0009	1.9951	.8904	.8791	.8838	.6090	.6625	1.4317	.8053
85	3.86	5.13	4.28	8.80	7.95	.1325	.5070	.1586	.0301	.0053	2.0193	.8336	.8162	.8222	.5898	.6543	1.5136	.8416
90	4.02	5.11	5.29	7.43	7.61	.1398	.5203	.1973	.0359	.0109	2.0120	.7970	.7758	.7849	.5809	.6422	1.5386	.8351
95	4.24	5.15	9.80	2.79	7.44	.1503	.5425	.2502	.0387	.0156	1.9517	.7415	.7159	.7364	.5741	.5964	1.5616	.8124

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.2477	1.9932	87.80	88.94

STATOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	20.409	21.489	1035.3	698.7	711.7	698.7	751.9	-5.9	46.57	-.48	18.31	56.25	749.7	1257.6	-235.6	-1045.6	987.5	1039.7
10	21.008	21.961	983.2	670.6	678.4	669.8	711.7	-31.5	46.37	-2.70	24.19	58.52	743.8	1283.0	-304.7	-1094.0	1016.5	1062.6
15	21.589	22.432	939.5	649.2	652.3	647.9	676.2	-40.0	46.03	-3.53	29.44	60.07	749.3	1298.6	-368.4	-1125.4	1044.6	1085.4
30	23.314	23.902	900.0	623.4	646.4	623.3	626.3	-12.1	44.09	-1.11	37.82	61.92	818.3	1324.4	-501.8	-1168.6	1128.0	1156.5
50	25.601	25.393	899.3	651.7	655.5	651.7	615.7	-9.0	43.21	-.79	43.54	62.69	904.3	1420.2	-622.9	-1261.8	1238.7	1252.8
70	27.816	27.902	879.4	646.6	665.8	646.2	574.5	-22.8	40.79	-2.02	49.20	64.79	1019.0	1517.3	-771.5	-1372.8	1345.9	1350.0
85	29.408	29.382	901.9	649.3	675.6	649.0	597.5	19.6	41.49	1.73	50.70	65.16	1066.6	1544.9	-825.4	-1402.0	1422.9	1421.6
90	29.914	29.856	901.0	642.8	658.9	641.6	614.5	38.5	43.01	3.44	51.65	65.47	1062.0	1545.5	-832.8	-1406.0	1447.4	1444.6
95	30.382	30.293	869.7	602.8	606.7	602.1	623.2	30.3	45.77	2.88	54.38	67.24	1041.8	1556.6	-846.8	-1435.4	1470.0	1465.7

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	.50	3.43	11.93	47.06	55.90	.0048	.5025	.1327	.0330	.0318	.9459	.0000	.0000	.8123	.8866	.5814	.6476	1.0465
10	1.18	4.12	8.74	49.08	53.88	.0062	.5070	.0901	.0230	.0214	.9662	.0000	.0000	.8798	.8374	.5583	.6420	1.0681
15	1.59	4.53	7.32	49.56	52.34	.0076	.5050	.0487	.0127	.0107	.9830	.0000	.0000	.9247	.8050	.5404	.6482	1.0809
30	1.67	4.67	10.11	45.20	50.67	.0105	.5041	.0661	.0186	.0156	.9786	.0000	.0000	.8888	.7697	.5176	.7016	1.0996
50	2.54	5.67	11.22	44.00	49.54	.0192	.4870	.0698	.0214	.0155	.9777	.0000	.0000	.8807	.7631	.5385	.7662	1.1734
70	1.19	4.42	11.42	42.81	49.85	.0139	.4895	.0500	.0166	.0120	.9846	.0000	.0000	.9095	.7434	.5332	.8592	1.2512
85	2.04	5.36	17.63	39.76	52.00	.0158	.5041	.0840	.0293	.0238	.9735	.0000	.0000	.8656	.7556	.5303	.8933	1.2618
90	3.27	6.60	20.89	39.57	53.62	.0192	.5140	.0823	.0292	.0224	.9743	.0000	.0000	.8779	.7532	.5221	.8877	1.2553
95	5.93	9.30	22.57	42.89	56.03	.0247	.5531	.0685	.0247	.0158	.9800	.0000	.0000	.8951	.7221	.4863	.8624	1.2555

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT
11089.	183.44	1.2478	1.9468	84.51	85.90	40.55

TABLE 10.11

Blade-Element and Overall Performance with Uniform Inlet, Alternate Method

100% of Design Speed

ROTOR

% SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.769	566.0	988.7	566.0	598.9	.0	786.6	.00	52.71	56.20	15.89	1017.6	622.8	-845.7	-170.5	845.7	957.2
10	18.467	20.409	580.1	942.8	580.1	581.6	.0	742.0	.00	51.91	57.02	22.94	1065.8	631.7	-894.1	-246.1	894.1	988.[illegible]
15	19.467	21.[illegible]47	592.9	887.2	592.9	542.9	.0	701.7	.00	52.27	57.82	30.29	1113.5	629.0	-942.5	-317.3	942.5	1019.0
30	22.314	22.964	622.5	843.9	622.5	542.7	.0	646.2	.00	49.98	60.05	40.62	1246.9	715.1	-1080.4	-465.6	1080.4	1111.8
50	25.791	25.520	642.2	829.2	642.2	541.7	.0	626.4	.00	49.15	62.78	48.34	1404.2	815.3	-1248.7	-609.2	1248.7	1235.6
70	28.954	28.[illegible]76	638.7	791.9	638.7	528.9	.0	589.5	.00	48.10	65.51	55.49	1540.5	934.2	-1401.9	-769.9	1401.9	1359.3
85	31.295	29.993	519.2	607.0	519.2	529.5	.0	609.0	.00	48.99	67.77	57.87	1636.9	995.7	-1515.2	-843.2	1515.2	1452.2
90	31.883	30.330	612.2	800.8	612.2	501.6	.0	624.2	.00	51.21	68.37	59.71	1660.6	994.7	-1543.7	-858.9	1543.7	1483.0
95	32.499	31.271	605.6	756.5	605.6	415.7	.0	632.0	.00	56.67	68.95	64.76	1686.0	975.2	-1573.5	-882.1	1573.5	1514.0

% SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	V-2	M'-1	M'-2
5	.79	7.22	14.02	40.31	49.83	.0150	.5683	.0645	.0136	.0104	2.0767	.9645	.9607	.9439	.5210	.8503	.9376	.5356
10	.97	7.41	13.29	34.09	43.56	.0181	.5755	.0724	.0153	.0115	2.0288	.9564	.9517	.9367	.5355	.8080	.9861	.5414
15	1.23	7.22	13.78	27.54	39.14	.0222	.5925	.1026	.0213	.0167	1.9624	.9321	.9252	.9107	.5477	.7568	1.0307	.5365
30	2.04	6.13	10.92	19.43	24.23	.0439	.5681	.0862	.0176	.0087	1.9665	.9310	.9240	.9181	.5752	.7155	1.1513	.6064
50	3.11	5.83	5.99	14.45	14.62	.0793	.5548	.1099	.0223	.0063	2.0128	.9006	.8903	.8888	.5944	.6955	1.2943	.6847
70	3.99	5.86	4.89	10.02	9.04	.1114	.5212	.1245	.0239	.0027	2.0154	.8748	.8618	.8654	.5921	.6599	1.4199	.7784
85	4.38	5.66	3.66	9.90	7.92	.1338	.5237	.1657	.0320	.0065	2.0714	.8328	.8147	.8170	.5750	.6660	1.5041	.8217
90	4.51	5.61	4.55	8.66	7.60	.1411	.5370	.2023	.0377	.0119	2.0710	.7997	.7781	.7824	.5666	.6568	1.5301	.8158
95	4.73	5.64	8.88	4.19	7.43	.1517	.5596	.2539	.0406	.0166	2.0160	.7480	.7220	.7359	.5594	.6151	1.5541	.7930

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.2547	2.0150	86.89	88.12

STATOR

% SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	20.409	21.489	1026.0	680.0	687.1	680.0	761.9	-7.1	47.96	-.60	18.22	57.01	723.4	1248.9	-226.2	-1047.[illegible]	988.1	1040.4
10	21.008	21.961	982.2	651.7	667.4	651.1	720.6	-27.0	47.19	-2.39	23.96	59.15	730.5	1270.1	-296.5	-1090.3	1017.1	1063.3
15	21.589	22.432	931.0	630.6	631.4	629.4	684.1	-38.0	47.29	-3.46	29.76	60.75	727.6	1288.4	-361.2	-1124.1	1045.3	1086.1
30	23.314	23.902	894.9	603.4	628.5	603.3	637.0	-13.1	45.39	-1.24	38.04	62.73	798.0	1316.7	-491.8	-1170.3	1128.8	1157.3
50	25.601	25.393	891.2	629.5	634.6	629.5	625.7	-7.0	44.60	-.64	44.04	63.47	882.9	1409.1	-613.8	-1260.6	1239.5	1253.7
70	27.818	27.902	875.7	636.6	642.0	636.4	595.6	-17.7	42.85	-1.60	49.48	65.06	988.3	1509.4	-751.3	-1368.7	1346.9	1350.9
85	29.408	29.382	913.5	648.5	667.9	647.9	623.2	25.6	43.02	2.26	50.16	65.12	1042.7	1539.9	-800.7	-1397.0	1423.8	1422.6
90	29.914	29.556	916.8	639.8	655.0	638.4	641.4	41.9	44.40	3.76	50.93	65.54	1039.4	1542.0	-807.0	-1403.6	1448.3	1445.5
95	30.382	30.293	887.6	605.9	603.6	605.0	650.7	34.2	47.15	3.23	53.65	67.11	1018.4	1555.0	-820.3	-1432.5	1471.0	1466.7

% SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	V-2	M'-1	M'-2
5	1.82	4.75	11.81	48.56	55.90	.0073	.5189	.1211	.0301	.0283	.9515	.0000	.0000	.8334	.8768	.5641	.6247	1.0360
10	2.14	5.07	9.06	49.59	53.88	.0080	.5269	.0999	.0255	.0234	.9626	.0000	.0000	.8718	.8327	.5410	.6273	1.0543
15	2.85	5.79	7.39	50.75	52.35	.0107	.5221	.0400	.0105	.0077	.9863	.0000	.0000	.9390	.7958	.5234	.6284	1.0694
30	2.97	5.97	9.98	46.63	50.67	.0146	.5273	.0731	.0205	.0164	.9766	.0000	.0000	.8825	.7532	.4993	.6826	1.0895
50	3.92	7.06	11.38	45.23	49.54	.0253	.5100	.0824	.0252	.0175	.9741	.0000	.0000	.8664	.7541	.5182	.7458	1.1600
70	3.24	6.47	11.85	44.45	49.84	.0227	.5048	.0604	.0200	.0125	.9817	.0000	.0000	.8952	.7370	.5226	.8297	1.2389
85	3.60	6.92	18.16	40.75	51.99	.0236	.5189	.1255	.0439	.0356	.9599	.0000	.0000	.7981	.7623	.5270	.8700	1.2515
90	4.78	8.11	21.23	40.64	53.62	.0276	.5347	.1402	.0497	.0399	.9553	.0000	.0000	.7858	.7620	.5169	.8645	1.2458
95	7.35	10.71	22.92	43.92	56.02	.034[illegible]	.5683	.1253	.0451	.0326	.9625	.0000	.0000	.8067	.7341	.4863	.8400	1.2480

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT
11096.	177.14	1.2547	1.9586	83.02	84.55	39.81

TABLE 10.12
Blade-Element and Overall Performance with Uniform Inlet, Alternate Method
100% of Design Speed

ROTOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.769	554.3	998.8	554.3	610.3	.0	790.6	.00	52.33	56.75	15.25	1011.0	632.6	-845.6	-165.4	845.6	957.0
10	18.467	20.408	568.1	955.7	568.1	598.0	.0	745.4	.00	51.27	57.56	22.10	1059.2	645.9	-894.0	-242.5	894.0	987.9
15	19.467	21.047	580.5	893.1	580.5	547.7	.0	705.4	.00	52.17	58.36	29.75	1106.9	631.4	-942.4	-313.4	942.4	1018.9
30	22.314	22.964	607.5	843.0	607.5	533.9	.0	652.4	.00	50.70	60.64	40.69	1239.3	704.4	-1080.2	-459.3	1080.2	1111.7
50	25.791	25.520	623.8	829.0	623.8	533.8	.0	634.2	.00	49.92	63.45	48.40	1395.7	803.9	-1248.5	-601.2	1248.5	1235.4
70	28.954	28.076	618.0	801.8	618.0	520.2	.0	610.1	.00	49.55	66.21	55.21	1531.8	912.1	-1401.6	-749.1	1401.6	1359.1
85	31.295	29.993	597.5	820.7	597.5	521.3	.0	633.9	.00	50.56	68.47	57.49	1628.6	970.1	-1515.0	-818.0	1515.0	1451.9
90	31.883	30.630	590.6	806.9	590.6	480.7	.0	647.9	.00	53.44	69.06	60.07	1652.6	963.4	-1543.4	-834.8	1543.4	1482.8
95	32.499	31.271	584.5	755.4	584.5	380.6	.0	652.5	.00	59.75	69.62	66.16	1678.3	941.7	-1573.3	-861.3	1573.3	1513.8

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	1.35	7.78	13.36	41.50	48.83	.0164	.5567	.0369	.0078	.0043	2.1070	.9793	.9770	.9666	.5100	.8598	.9318	.5446
10	1.55	7.94	12.45	35.46	43.54	.0196	.5602	.0408	.0087	.0045	2.0632	.9753	.9726	.9629	.5246	.8202	.9818	.5543
15	1.80	7.71	13.24	28.61	38.12	.0234	.5887	.0917	.0191	.0142	1.9798	.9401	.9339	.9194	.5364	.7619	1.0273	.5387
30	2.67	6.72	10.96	19.95	24.19	.0451	.5755	.0959	.0196	.0104	1.9686	.9247	.9169	.9093	.5612	.7140	1.1469	.5966
50	3.80	6.49	6.03	15.05	14.59	.0804	.5619	.1223	.0248	.0086	2.0139	.8914	.8802	.8763	.5768	.6953	1.2878	.6743
70	4.71	6.56	4.61	11.00	9.05	.1127	.5374	.1498	.0289	.0073	2.0255	.8546	.8393	.8397	.5715	.6662	1.4118	.7579
85	5.09	6.35	3.32	10.98	7.96	.1350	.5424	.1928	.0375	.0116	2.0863	.8119	.7914	.7889	.5530	.6751	1.4957	.7979
90	5.22	6.30	4.94	6.99	7.62	.1424	.5587	.2334	.0429	.0171	2.0737	.7753	.7512	.7516	.5446	.6592	1.5216	.7870
95	5.41	6.31	10.31	3.46	7.45	.1530	.5820	.2843	.0431	.0200	2.0090	.7237	.6955	.7071	.5385	.6117	1.5451	.7625

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.2598	2.0231	85.73	87.08

STATOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	20.409	21.489	1034.1	676.4	694.8	676.4	765.8	-.2	47.78	-.01	17.73	56.97	729.5	1241.0	-222.2	-1040.4	988.0	1040.3
10	21.008	21.961	992.7	648.6	679.2	648.0	724.1	-25.2	46.84	-2.24	23.35	59.22	740.1	1266.8	-292.9	-1088.3	1017.0	1063.1
15	21.589	22.432	933.8	627.7	631.7	626.6	687.7	-38.4	47.43	-3.50	29.49	60.87	726.1	1287.2	-357.4	-1124.3	1045.1	1085.9
30	23.314	23.902	890.9	595.1	616.4	595.0	643.2	-11.2	46.22	-1.08	38.21	63.01	784.6	1311.1	-485.4	-1168.3	1128.6	1157.1
50	25.601	25.893	887.2	617.5	621.6	617.4	633.0	-7.9	45.52	-.74	44.28	63.92	868.4	1404.4	-606.3	-1261.4	1239.3	1253.5
70	27.818	27.902	879.2	626.3	626.9	626.3	616.4	-6.3	44.52	-.58	49.35	65.22	962.4	1494.6	-730.2	-1357.0	1346.7	1350.7
85	29.408	29.382	918.5	636.1	651.2	635.6	647.8	24.4	44.85	2.20	49.99	65.55	1012.9	1535.7	-775.9	-1398.0	1423.6	1422.4
90	29.914	29.856	913.8	626.6	627.2	625.7	664.4	33.4	46.66	3.06	51.34	66.10	1003.8	1544.4	-783.7	-1411.9	1448.1	1445.3
95	30.382	30.293	879.2	600.6	567.3	599.7	671.6	32.8	49.82	3.13	54.63	67.30	980.0	1554.1	-799.1	-1433.7	1470.8	1466.5

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	-2	M'-1	M'-2
5	1.56	4.48	12.40	47.80	55.90	.0073	.5254	.1483	.0359	.0351	.9399	.0000	.0000	.7986	.8863	.5606	.6319	1.0285
10	1.88	4.82	9.20	49.08	53.87	.0078	.5353	.1342	.0342	.0322	.9489	.0000	.0000	.8250	.8422	.5379	.6334	1.0507
15	3.04	5.99	7.37	50.93	52.36	.0111	.5276	.0554	.0145	.0116	.9809	.0000	.0000	.9171	.798[illegible]	.5206	.6250	1.0676
30	3.79	6.79	10.14	47.30	50.67	.0176	.5358	.0751	.0211	.0161	.9762	.0000	.0000	.8833	.7588	.4917	.6694	1.0832
50	4.84	7.97	11.28	46.26	49.55	.0300	.5241	.0876	.0268	.0177	.9728	.0000	.0000	.8630	.7496	.5073	.7314	1.1537
70	4.88	8.11	12.87	45.09	49.85	.0324	.5221	.0789	.0252	.0154	.9761	.0000	.0000	.8720	.7373	.5118	.8046	1.2213
85	5.38	8.69	18.10	42.65	52.01	.0344	.5449	.1496	.0523	.0403	.9521	.0000	.0000	.7744	.7631	.5142	.8415	1.2414
90	6.75	10.08	20.53	43.60	53.64	.0414	.5599	.1471	.0522	.0375	.9537	.0000	.0000	.7870	.7588	.5037	.8338	1.2414
95	9.89	13.25	22.82	46.69	56.04	.0539	.5794	.1068	.0385	.0191	.9687	.0000	.0000	.8363	.7249	.4800	.8048	1.2420

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT
11095.	173.71	1.2598	1.9589	81.41	83.09	39.04

TABLE 11.1

Blade-Element and Overall Performance with Uniform Inlet

105% of Design Speed

ROTOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.769	630.3	1062.9	630.3	744.4	.0	758.8	.00	45.55	54.65	18.36	1089.5	784.3	-888.7	-247.0	888.7	1005.8
10	18.467	20.408	647.6	1013.6	647.6	700.7	.0	732.5	.00	46.27	55.42	23.58	1141.1	764.8	-939.6	-305.8	939.6	1038.3
15	19.467	21.047	663.5	980.0	663.5	678.2	.0	707.4	.00	46.20	56.18	28.15	1192.1	769.9	-990.4	-363.4	990.4	1070.8
30	22.314	22.964	700.5	921.8	700.5	680.8	.0	621.4	.00	42.38	58.32	38.74	1334.0	873.7	-1135.3	-547.0	1135.3	1168.4
50	25.791	25.520	720.4	871.1	720.4	666.2	.0	561.2	.00	40.11	61.23	47.84	1497.0	994.4	-1312.2	-737.2	1312.2	1298.4
70	28.954	28.076	703.8	756.8	703.8	590.2	.0	473.7	.00	38.75	64.46	58.26	1632.6	1122.6	-1473.1	-954.8	1473.1	1428.4
85	31.295	29.993	675.7	723.4	675.7	556.8	.0	461.7	.00	39.68	67.00	62.38	1729.7	1201.3	-1592.2	-1064.3	1592.2	1526.0
90	31.883	30.630	668.3	695.3	668.3	512.7	.0	469.5	.00	42.50	67.61	64.79	1754.4	1203.7	-1622.1	-1088.9	1622.1	1556.4
95	32.499	31.271	662.3	656.1	662.3	456.5	.0	471.3	.00	45.92	68.17	67.82	1781.2	1209.2	-1653.5	-1119.7	1653.5	1591.6

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-.75	5.68	16.49	36.29	47.12	.0155	.4426	.1007	.0210	.0177	2.0572	.9405	.9342	.8994	.5850	.9232	1.0131	.6812
0	-.59	5.79	13.95	31.84	39.99	.0211	.4848	.1595	.0336	.0291	1.9864	.8977	.8872	.8477	.6038	.8741	1.0685	.6595
15	-.38	5.49	11.64	28.03	34.03	.0288	.5023	.1769	.0375	.0313	1.9499	.8768	.8645	.8315	.6196	.8413	1.1189	.6609
30	.42	4.40	9.03	19.59	24.21	.0592	.4723	.1292	.0272	.0146	1.9177	.8883	.8775	.8660	.6555	.7886	1.2552	.7474
50	1.73	4.34	5.58	13.39	14.67	.1042	.4494	.1354	.0277	.0060	1.8328	.8606	.8477	.8482	.6730	.7401	1.4099	.8448
70	3.07	4.84	7.79	6.20	9.16	.1435	.4089	.1545	.0275	.0017	1.7423	.8070	.7915	.8111	.6545	.6392	1.5310	.9481
85	3.64	4.87	8.25	4.62	8.83	.1691	.4000	.1907	.0320	.0037	1.7065	.7488	.7292	.7548	.6290	.6065	1.6074	1.0071
90	3.79	4.86	9.70	2.82	7.66	.1772	.4105	.2312	.0363	.0084	1.6747	.6983	.6756	.7109	.6208	.5792	1.6311	1.0026
95	3.97	4.87	11.98	.35	7.46	.1888	.4185	.2660	.0377	.0110	1.6353	.6515	.6266	.6748	.6151	.5432	1.6539	1.0011

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.2318	1.8405	82.07	83.53

STATOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	20.409	21.489	1135.3	982.4	865.3	979.0	735.0	-82.2	40.34	-4.80	19.32	50.21	917.0	1529.8	-303.4	-1175.5	1038.4	1093.3
10	21.008	21.961	1089.5	963.1	825.0	959.8	711.6	-79.5	40.78	-4.73	23.42	51.27	899.2	1534.2	-357.3	-1196.8	1068.8	1117.3
15	21.589	22.432	1058.6	947.3	803.2	944.1	689.6	-78.5	40.65	-4.75	26.96	52.26	901.5	1542.5	-408.8	-1219.8	1098.4	1141.3
30	23.314	23.902	1006.6	911.8	799.1	908.7	612.0	-75.0	37.44	-4.72	35.67	54.85	984.3	1578.9	-574.1	-1291.0	1186.2	1216.1
50	25.601	25.893	965.9	857.1	787.4	854.0	559.4	-72.8	35.39	-4.68	43.31	58.43	1083.3	1631.8	-743.1	-1390.2	1302.5	1317.4
70	27.[illegible]18	27.902	878.6	771.0	737.3	768.4	478.0	-71.7	32.95	-5.33	51.81	62.74	1192.6	1677.7	-937.4	-1491.3	1415.3	1419.6
85	29.408	29.382	871.4	726.9	733.1	725.2	471.0	-49.5	32.72	-3.91	54.43	64.85	1260.4	1706.2	-1025.2	-1544.4	1496.2	1494.9
90	29.914	29.856	857.4	715.4	709.7	714.5	481.1	-34.9	34.14	-2.79	55.71	65.31	1259.8	1710.3	-1040.9	-1553.9	1522.0	1519.8
95	30.382	30.293	835.2	675.3	679.8	675.1	485.2	-14.1	35.52	-1.20	57.34	66.54	1259.7	1695.6	-1060.6	-1555.4	1543.8	1541.2

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-5.63	-2.70	7.61	45.14	55.90	.0000	.3100	.1916	.0475	.0475	.9098	.0000	.0000	.4462	.9846	.8429	.8002	1.3126
10	-4.29	-1.35	6.71	45.51	53.87	.0000	.2980	.1480	.0377	.0377	.9347	.0000	.0000	.5024	.9413	.8244	.7828	1.3133
15	-3.82	-.87	6.19	45.40	52.43	.0000	.2920	.1265	.0330	.0330	.9467	.0000	.0000	.5335	.9149	.8097	.7877	1.3185
30	-5.06	-2.06	6.51	42.16	50.68	.0000	.2839	.1231	.0345	.0345	.9519	.0000	.0000	.4767	.8686	.7791	.8583	1.3490
50	-5.34	-2.21	7.17	40.26	49.61	.0000	.3122	.1765	.0539	.0539	.9357	.0000	.0000	.3495	.8268	.7271	.9358	1.3844
70	-6.73	-3.49	8.16	38.28	49.92	.0000	.3287	.1490	.0492	.0492	.9533	.0000	.0000	.4616	.7524	.6529	1.0242	1.4192
85	-6.70	-3.39	12.00	36.63	52.03	.0000	.3747	.1868	.0652	.0652	.9427	.0000	.0000	.4872	.7427	.6096	1.0744	1.4308
90	-5.41	-2.08	14.61	36.92	53.37	.0000	.3797	.1593	.0566	.0566	.9526	.0000	.0000	.5634	.7276	.5970	1.0683	1.4274
95	-4.24	-.88	18.49	36.72	56.03	.0000	.4074	.1799	.0649	.0649	.9493	.0000	.0000	.5607	.7056	.5601	1.0623	1.4063

NCOR-1 INLET RPM	WCOR-1 INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC/A-1 LBM/SEC SQFT
11660	189.36	1.2318	1.7391	73.82	75.78	42.55

TABLE 11.2

Blade-Element and Overall Performance with Uniform Inlet

105% of Design Speed

ROTOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.769	629.9	1061.7	629.9	730.7	.0	770.2	.00	46.51	54.63	17.77	1088.3	767.3	-887.4	-234.2	887.4	1004.4
10	18.467	20.408	647.1	1011.7	647.1	700.9	.0	729.5	.00	40.14	55.41	23.66	1139.7	765.6	-938.2	-307.3	938.2	1036.8
15	19.467	21.047	663.2	981.5	663.2	692.2	.0	695.8	.00	45.14	56.16	28.32	1190.8	787.0	-989.0	-373.5	989.0	1069.3
30	22.314	22.964	700.5	922.0	700.5	679.2	.0	623.4	.00	42.54	58.28	38.61	1332.7	870.3	-1133.7	-543.3	1133.7	1166.7
50	25.791	25.520	718.7	863.1	718.7	653.8	.0	563.5	.00	40.75	61.25	48.21	1494.5	983.1	-1310.3	-733.0	1310.3	1296.6
70	28.954	28.076	760.6	761.3	760.6	590.1	.0	481.0	.00	39.19	64.53	58.01	1629.3	1114.7	-1471.0	-945.4	1471.0	1426.4
85	31.295	29.993	671.5	723.2	671.5	544.3	.0	476.0	.00	41.19	67.10	62.55	1726.0	1181.0	-1590.0	-1047.8	1590.0	1523.8
90	31.883	30.630	664.0	694.3	664.0	407.8	.0	483.5	.00	44.20	67.71	65.11	1750.7	1182.8	-1619.8	-1072.6	1619.8	1556.2
95	32.499	31.271	658.6	650.1	658.6	428.0	.0	489.4	.00	48.83	68.25	68.73	1777.6	1179.8	-1651.1	-1099.4	1651.1	1588.7

%SPAN	INCS DEGREE	INCH DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-.77	5.66	15.90	30.86	47.12	.0153	.4599	.0977	.0204	.0172	2.0794	.9430	.9369	.9051	.5845	.7205	1.0117	.6653
10	-.61	5.77	14.03	31.74	39.99	.0260	.4828	.1265	.0267	.0222	2.0116	.9188	.9103	.8793	.6033	.8727	1.0669	.6604
15	-.40	5.45	11.81	27.83	34.03	.0284	.4850	.1224	.0259	.0198	1.9836	.9139	.9050	.8810	.6197	.8444	1.1183	.6774
30	.41	4.37	8.40	19.67	24.20	.0580	.4748	.1118	.0235	.0110	1.9416	.9037	.8942	.8846	.6560	.7886	1.2569	.7443
50	1.79	4.38	5.96	13.04	14.68	.1034	.4566	.1331	.0271	.0056	1.8897	.8635	.8508	.8526	.6710	.7324	1.4095	.8341
70	3.17	4.93	7.56	6.52	9.17	.1426	.4140	.1501	.0269	.0010	1.7649	.8154	.8002	.8178	.6505	.6424	1.5293	.9406
85	3.76	4.98	8.40	4.55	8.05	.1681	.4133	.2018	.0336	.0056	1.7204	.7406	.7200	.7458	.6240	.6046	1.6052	.9872
90	3.91	4.96	10.06	2.60	7.70	.1763	.4240	.2423	.0375	.0098	1.6875	.6909	.6674	.7029	.6160	.5766	1.6286	.9823
95	4.06	4.95	12.91	-.47	7.48	.1877	.4375	.2849	.0387	.0131	1.6422	.6361	.6099	.6608	.6112	.5359	1.6511	.9726

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.2337	1.8601	82.93	84.35

STATOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	20.409	21.489	1132.4	927.7	851.9	927.5	746.1	-16.5	41.21	-1.02	18.85	50.07	900.2	1445.2	-290.8	-1108.2	1030.9	1091.8
10	21.008	21.961	1085.6	912.9	822.2	912.6	708.8	-25.0	40.76	-1.57	23.55	51.34	897.2	1461.0	-358.5	-1140.8	1067.3	1115.7
15	21.589	22.432	1057.7	901.3	811.5	900.8	678.3	-29.8	39.89	-1.90	27.27	52.39	913.4	1476.3	-418.6	-1109.5	1096.8	1139.7
30	23.314	23.902	1003.8	862.7	794.1	862.0	614.0	-32.4	37.71	-2.15	35.67	55.33	978.2	1515.9	-570.5	-1240.8	1184.5	1214.4
50	25.601	25.893	954.4	807.1	771.5	806.0	561.7	-41.7	36.05	-2.97	43.72	59.29	1068.9	1578.8	-738.9	-1357.2	1300.7	1315.5
70	27.818	27.902	875.3	725.2	728.5	725.0	485.1	-41.5	33.67	-3.27	51.86	63.58	1180.0	1629.4	-928.1	-1459.1	1413.3	1417.6
85	29.408	29.382	862.2	667.2	712.9	667.2	484.9	-4.5	34.23	-.38	54.76	55.98	1235.6	1639.3	-1009.1	-1497.3	1494.1	1492.8
90	29.914	29.856	847.1	641.2	687.4	641.2	494.9	4.9	35.76	.44	56.15	67.02	1234.2	1642.3	-1024.9	-1511.9	1519.8	1516.9
95	30.382	30.293	819.5	600.5	646.5	600.5	503.7	-1.6	37.92	-.16	58.13	68.71	1224.5	1653.6	-1039.9	-1540.7	1543.6	1539.1

%SPAN	INCS DEGREE	INCH DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-4.76	-1.84	11.39	42.23	55.90	.0000	.3441	.1625	.0404	.0404	.9240	.0000	.0000	.6400	.9795	.7888	.7838	1.2283
10	-4.59	-1.65	9.87	42.33	53.87	.0000	.3286	.1061	.0271	.0271	.9534	.0000	.0000	.7480	.9389	.7771	.7864	1.2436
15	-4.50	-1.56	9.07	41.78	52.45	.0000	.3198	.0825	.0216	.0216	.9652	.0000	.0000	.7786	.9152	.7671	.7985	1.2564
30	-4.75	-1.75	9.07	39.86	50.68	.0000	.3194	.0762	.0214	.0214	.9704	.0000	.0000	.7767	.8647	.7323	.8519	1.2868
50	-4.68	-1.55	9.07	39.02	49.61	.0000	.3471	.1059	.0324	.0324	.9522	.0000	.0000	.7171	.8147	.6805	.9228	1.3312
70	-6.00	-2.76	10.23	36.93	49.93	.0000	.3695	.0768	.0254	.0254	.9762	.0000	.0000	.7891	.7474	.6105	1.0127	1.3698
85	-5.10	-1.79	15.51	34.61	50.01	.0000	.4247	.1296	.0453	.0453	.9611	.0000	.0000	.7188	.7310	.5547	1.0488	1.3628
90	-3.69	-.36	17.84	35.32	53.58	.0000	.4469	.1266	.0450	.0450	.9634	.0000	.0000	.7452	.7144	.5299	1.0414	1.3575
95	-1.81	1.56	19.53	38.08	56.04	.0000	.4900	.1247	.0450	.0450	.9662	.0000	.0000	.7710	.6877	.4930	1.0264	1.3576

NCOR-1 INLET RPM	WCOR-1 INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC/A-1 LBM/SEC SQFT
11644	189.00	1.2337	1.7971	77.93	79.67	42.47

TABLE 11.3

Blade-Element and Overall Performance with Uniform Inlet

105% of Design Speed

ROTOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.769	625.4	1053.2	625.4	700.3	.0	786.6	.00	48.32	54.84	17.31	1086.0	733.5	-887.9	-218.3	887.9	1004.9
10	18.467	20.408	642.5	1008.4	642.5	676.1	.0	748.1	.00	47.89	55.61	23.17	1137.5	736.0	-938.7	-289.3	938.7	1037.4
15	19.467	21.047	658.4	958.9	658.4	645.8	.0	708.7	.00	47.65	56.36	29.17	1188.6	740.5	-989.5	-361.1	989.5	1069.8
30	22.314	22.964	694.3	899.7	694.3	631.2	.0	641.1	.00	45.44	58.53	39.78	1329.9	822.0	-1134.2	-526.2	1134.2	1167.3
50	25.791	25.520	712.4	884.0	712.4	633.9	.0	616.1	.00	44.18	61.40	47.00	1492.1	931.4	-1311.0	-681.1	1311.0	1297.2
70	28.954	28.076	694.3	774.7	694.3	557.5	.0	538.0	.00	43.98	64.74	57.90	1627.3	1049.7	-1471.8	-889.2	1471.8	1427.1
85	31.295	29.993	666.2	780.0	666.2	505.8	.0	540.0	.00	46.89	67.27	62.81	1724.6	1107.0	-1590.8	-984.5	1590.8	1524.6
90	31.883	30.630	659.2	721.3	659.2	469.8	.0	547.3	.00	49.37	67.86	65.05	1749.6	1113.7	-1620.6	-1009.7	1620.6	1557.0
95	32.499	31.271	653.8	695.1	653.8	422.0	.0	552.3	.00	52.62	68.41	67.86	1776.6	1119.8	-1652.0	-1037.2	1652.0	1589.5

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-.56	5.87	15.44	37.53	47.12	.0158	.4935	.0393	.0082	.0049	2.1662	.9766	.9739	.9632	.5801	.9096	1.0094	.6336
10	-.40	5.97	13.54	32.44	39.99	.0213	.5118	.0643	.0136	.0091	2.1101	.9593	.9549	.9409	.5989	.8669	1.0650	.6327
15	-.19	5.65	12.65	27.19	34.03	.0289	.5258	.0897	.0188	.0127	2.0440	.9379	.9313	.9180	.6149	.8206	1.1162	.6337
30	.64	4.61	10.06	18.75	24.20	.0591	.5137	.0898	.0186	.0063	2.0071	.9247	.9168	.9127	.6494	.7650	1.2519	.6989
50	2.00	4.60	4.75	14.48	14.68	.1038	.5010	.1181	.0246	.0026	2.0336	.8884	.8767	.8776	.6646	.7448	1.4049	.7847
70	3.38	5.14	7.45	6.85	9.18	.1431	.4649	.1521	.0273	.0012	1.8975	.8308	.8149	.8306	.6442	.6473	1.5261	.8770
85	3.93	5.15	8.73	4.47	8.05	.1687	.4689	.2111	.0349	.0070	1.8608	.7566	.7346	.7583	.6190	.6115	1.6021	.9146
90	4.05	5.11	9.98	2.81	7.68	.1768	.4763	.2438	.0379	.0102	1.8407	.7210	.6962	.7259	.6116	.5926	1.6256	.9150
96	4.20	5.10	12.03	.55	7.47	.1882	.4890	.2754	.0389	.0123	1.8139	.6854	.6581	.6958	.6060	.5677	1.6483	.9146

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.2523	1.9755	84.98	86.36

STATOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	20.409	21.489	1110.4	835.1	807.7	835.0	761.9	-14.2	43.33	-.97	18.83	52.96	853.4	1386.2	-275.5	-1106.3	1037.4	1092.3
10	21.008	21.961	1068.0	803.7	782.5	803.0	726.9	-31.8	42.89	-2.28	23.55	55.03	854.0	1401.2	-341.0	-1148.1	1067.9	1116.3
15	21.589	22.432	1021.5	779.3	752.4	778.4	690.8	-37.1	42.55	-2.72	28.36	56.53	855.6	1411.5	-406.5	-1177.3	1097.4	1140.2
30	23.314	23.902	968.0	752.6	733.6	752.4	631.6	-18.0	40.72	-1.37	37.01	58.60	919.2	1444.4	-553.5	-1232.9	1185.1	1215.0
50	25.601	25.893	959.0	740.7	736.6	740.5	614.1	-16.8	39.81	-1.31	42.98	60.94	1008.1	1525.1	-687.3	-1333.0	1301.3	1316.2
70	27.818	27.902	872.4	660.6	683.0	660.1	542.6	-26.8	38.47	-2.31	51.90	65.45	1107.3	1588.8	-871.4	-1445.1	1414.0	1418.3
85	29.408	29.382	859.7	609.4	660.0	609.2	550.7	10.0	39.84	.95	55.04	67.67	1152.0	1603.8	-944.1	-1483.5	1494.8	1493.5
90	29.914	29.856	851.1	587.0	640.1	586.5	560.8	23.6	41.22	2.30	56.30	68.57	1153.7	1605.1	-959.8	-1494.0	1520.6	1517.6
95	30.382	30.293	836.7	549.8	613.8	549.5	568.6	19.4	42.81	2.03	57.83	70.13	1152.7	1616.6	-975.7	-1520.4	1544.3	1539.8

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-2.67	.25	11.44	44.30	55.90	.0000	.4174	.1322	.0329	.0329	.9403	.0000	.0000	.7726	.9557	.7003	.7402	1.1523
10	-2.21	.72	9.17	45.17	53.88	.0000	.4252	.1182	.0301	.0301	.9497	.0000	.0000	.8108	.9106	.6734	.7382	1.1742
15	-1.90	1.04	8.25	45.28	52.47	.0000	.4203	.0781	.0204	.0204	.9690	.0000	.0000	.8637	.8762	.6525	.7437	1.1819
30	-1.70	1.30	9.86	42.09	50.68	.0000	.4087	.0555	.0156	.0156	.9798	.0000	.0000	[illegible]	.8299	.6288	.7937	1.2068
50	-.85	2.28	10.73	41.12	49.61	.0000	.4280	.0983	.0301	.0301	.9652	.0000	.0000	.8078	.8120	.6142	.8605	1.2645
70	-1.16	2.09	11.18	40.78	49.93	.0000	.4588	.0459	.0152	.0152	.9861	.0000	.0000	.8983	.7360	.5458	.9379	1.3124
85	.51	3.83	16.84	38.89	52.01	.0000	.5111	.0889	.0311	.0311	.9741	.0000	.0000	.8385	.7188	.4975	.9642	1.3092
90	1.79	5.12	19.70	38.92	53.56	.0000	.5348	.0972	.0345	.0345	.9723	.0000	.0000	.8380	.7083	.4766	.9605	1.3032
95	3.09	6.46	21.72	40.78	56.02	.0000	.5800	.1198	.0432	.0432	.9671	.0000	.0000	.8213	[illegible]	.4438	.9552	1.3050

NCOR-1 INLET RPM	WCOR-1 INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC/A-1 LBM/SEC SQFT
11650.	188.07	1.2523	1.9212	81.17	82.82	42.26

TABLE 11.4

Blade-Element and Overall Performance with Uniform Inlet
105% of Design Speed

ROTOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.769	626.4	1058.8	626.4	720.3	.0	776.0	.00	47.13	54.81	17.67	1087.0	756.0	-888.3	-229.4	888.3	1005.4
10	18.467	20.408	643.5	1007.2	643.5	684.4	.0	739.0	.00	47.20	55.58	23.59	1138.5	747.3	-939.2	-298.9	939.2	1037.9
15	19.467	21.047	659.3	962.1	659.3	659.0	.0	700.9	.00	46.76	56.34	29.23	1189.5	756.0	-990.0	-369.4	990.0	1070.4
30	22.314	22.964	696.3	911.5	696.3	658.1	.0	630.6	.00	43.78	58.47	39.19	1331.4	849.9	-1134.8	-537.3	1134.8	1167.9
50	25.791	25.520	715.8	872.8	715.8	647.3	.0	585.4	.00	42.12	61.37	47.69	1494.3	963.5	-1311.7	-712.5	1311.7	1297.9
70	28.954	28.076	698.5	767.1	698.5	576.6	.0	505.9	.00	41.27	64.62	57.96	1629.8	1087.6	-1472.5	-921.9	1472.5	1427.9
85	31.295	29.993	669.8	731.1	669.8	527.9	.0	505.7	.00	43.78	67.17	62.63	1726.8	1148.4	-1591.6	-1019.7	1591.6	1525.4
90	31.883	30.630	662.5	706.4	662.5	485.2	.0	513.1	.00	46.62	67.77	65.09	1751.6	1152.0	-1621.5	-1044.6	1621.5	1557.8
95	32.499	31.271	657.1	668.5	657.1	422.2	.0	518.3	.00	50.83	68.32	68.50	1778.6	1152.2	-1652.8	-1072.1	1652.8	1590.4

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-.59	5.84	15.80	37.14	47.12	.0158	.4710	.0729	.0153	.0119	2.1150	.9575	.9529	.9304	.5811	.9167	1.0103	.6545
10	-.43	5.94	13.96	31.99	39.99	.0213	.5003	.1142	.0241	.0195	2.0435	.9278	.9201	.8940	.5998	.8669	1.0657	.6432
15	-.22	5.64	12.72	27.10	34.03	.0289	.5116	.1296	.0272	.0210	1.9875	.9097	.9004	.8792	.6156	.8248	1.1164	.6480
30	.57	4.54	9.48	19.28	24.20	.0592	.4911	.1043	.0218	.0093	1.9674	.9113	.9022	.8951	.6514	.7775	1.2532	.7249
50	1.89	4.49	5.43	13.69	14.67	.1040	.4741	.1234	.0253	.0036	1.9549	.8780	.8658	.8672	.6683	.7385	1.4077	.8151
70	3.25	5.41	7.50	6.66	9.17	.1433	.4359	.1494	.0268	.0007	1.8254	.8245	.8091	.8259	.6485	.6445	1.5290	.9137
85	3.83	5.05	8.55	4.55	8.05	.1689	.4385	.2062	.0343	.0062	1.7851	.7483	.7271	.7519	.6225	.6079	1.6053	.9547
90	3.97	5.03	10.03	2.69	7.70	.1771	.4480	.2435	.0378	.0099	1.7571	.7050	.6809	.7138	.6197	.5817	1.6208	.9518
95	4.12	5.01	12.68	-.18	7.48	.1886	.4593	.2818	.0387	.0127	1.7176	.6584	.6315	.6767	.6098	.5486	1.6514	.9455

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.2420	1.9085	83.71	8[illegible].13

STATOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	20.409	21.489	1123.0	877.0	834.3	876.9	751.6	-15.2	42.01	-.99	18.94	51.67	882.1	1413.0	-286.3	-1108.1	1037.9	1092.9
10	21.008	21.961	1074.7	851.9	799.6	851.7	718.1	-20.7	41.52	-1.39	23.66	53.18	873.4	1421.2	-350.3	-1137.5	1068.4	1116.9
15	21.589	22.432	1032.7	832.0	774.3	831.7	683.3	-22.5	41.42	-1.55	28.15	54.43	878.7	1430.2	-414.7	-1163.4	1098.0	1140.8
30	23.314	23.902	986.9	799.7	766.9	799.6	621.2	-13.9	39.00	-.99	36.33	56.95	952.5	1466.7	-564.5	-1229.5	1185.7	1215.6
50	25.601	25.893	955.7	758.6	756.9	757.9	583.5	-32.8	37.62	-2.48	43.47	60.67	1044.2	1548.1	-718.5	-1349.6	1302.9	1316.8
70	27.818	27.902	872.7	682.9	707.8	682.2	510.4	-29.4	35.79	-2.46	51.94	64.78	1148.5	1601.2	-904.4	-1448.4	1414.7	1419.0
85	29.408	29.382	860.2	626.8	688.6	626.8	515.4	3.5	36.81	.34	54.91	67.20	1198.0	1617.2	-980.2	-1590.7	1495.6	1494.3
90	29.914	29.856	847.5	601.0	664.9	600.8	525.5	14.5	38.33	1.38	56.27	68.22	1197.5	1619.5	-995.9	-1503.9	1521.3	1518.4
95	30.382	30.293	824.3	561.8	628.4	561.7	533.5	9.2	40.33	.94	58.15	69.86	1191.0	1631.1	-1011.7	-1531.4	1545.1	1540.6

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-3.89	-.97	11.42	43.01	55.90	.0000	.3847	.1214	.0302	.0302	.9440	.0000	.0000	.7711	.9678	.7401	.7553	1.1723
10	-3.22	-.28	10.06	43.31	53.88	.0000	.3790	.0794	.0203	.0203	.9658	.0000	.0000	.8620	.9190	.7188	.7580	1.1990
15	-3.11	-.16	9.43	42.97	52.47	.0000	.3699	.0389	.0102	.0102	.9843	.0000	.0000	.9281	.8888	.7017	.7680	1.2061
30	-3.[illegible]4	-.43	10.23	40.00	50.68	.0000	.3682	.0478	.0134	.0134	.9820	.0000	.0000	.8834	.8477	.6728	.8278	1.2339
50	-3.06	.07	9.56	40.10	49.61	.0000	.4027	.1003	.0307	.0307	.9644	.0000	.0000	.7911	.8116	.6337	.8978	1.2931
70	-3.84	-.60	11.04	38.25	49.93	.0000	.4222	.0500	.0166	.0166	.9847	.0000	.0000	.8800	.7408	.5688	.9802	1.3335
85	-2.49	.82	16.22	36.48	52.01	.0000	.4794	.0986	.0345	.0345	.9709	.0000	.0000	.8103	.7242	.5160	1.0100	1.3312
90	-1.09	2.24	18.79	36.94	53.58	.0000	.5054	.1004	.0357	.0357	.9713	.0000	.0000	.8231	.7[illegible]98	.4919	1.0036	1.3256
95	.61	3.98	20.63	39.38	56.03	.0000	.5482	.1026	.0370	.0370	.9722	.0000	.0000	.8370	.6875	.4571	.9925	1.3270

NCOR-1 INLET RPM	WCOR-1 INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC/A-1 LBM/SEC SQFT
11656	188.53	1.2420	1.8621	80.25	81.69	42.37

TABLE 11.5

Blade-Element and Overall Performance with Uniform Inlet

105% of Design Speed

ROTOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.769	615.1	1043.8	615.1	657.8	.0	810.4	.00	50.94	55.29	16.48	1080.3	686.0	-888.0	-194.6	888.0	1005.1
10	18.467	20.408	632.0	1009.7	632.0	655.2	.0	768.2	.00	49.54	56.05	22.34	1131.7	708.5	-938.9	-269.3	938.9	1037.5
15	19.467	21.047	647.7	967.3	647.7	638.7	.0	726.4	.00	48.68	56.79	28.27	1182.8	725.6	-989.7	-343.6	989.7	1070.0
30	22.314	22.964	681.6	882.5	681.6	572.8	.0	671.4	.00	49.53	59.00	40.88	1323.5	757.9	-1134.4	-496.1	1134.4	1167.5
50	25.791	25.520	697.9	878.3	697.9	581.6	.0	658.2	.00	48.54	61.97	47.68	1485.4	864.5	-1311.2	-639.2	1311.2	1297.4
70	28.954	28.076	686.2	799.0	686.2	539.3	.0	589.6	.00	47.55	65.01	57.23	1624.1	996.4	-1472.0	-837.8	1472.0	1427.4
85	31.295	29.993	661.8	796.6	661.8	515.5	.0	607.3	.00	49.68	67.41	60.67	1723.2	1052.4	-1591.0	-917.5	1591.0	1524.8
90	31.883	30.630	654.5	787.8	654.5	487.7	.0	618.7	.00	51.75	68.01	62.54	1748.1	1057.7	-1620.9	-938.6	1620.9	1557.2
95	32.499	31.271	647.8	753.7	647.8	419.1	.0	626.4	.00	56.22	68.59	66.49	1778.7	1050.7	-1652.2	-963.4	1652.2	1589.8

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-.12	6.31	14.61	38.81	47.12	.0000	.5399	.0369	.0078	.0078	2.2159	.9787	.9761	.9674	.5691	.8970	1.0003	.5896
10	.03	6.44	12.72	33.71	39.99	.0221	.5379	.0271	.0058	.0010	2.1884	.9822	.9801	.9748	.5873	.8655	1.0547	.6074
15	.22	6.13	11.75	28.53	34.03	.0296	.5399	.0348	.0074	.0010	2.1389	.9752	.9725	.9672	.6033	.8265	1.1061	.6200
30	1.09	5.09	11.15	18.12	24.18	.0598	.5660	.1043	.0215	.0090	2.0544	.9166	.9078	.9052	.6357	.7449	1.2404	.6397
50	2.39	5.03	5.36	14.30	14.64	.1045	.5525	.1316	.0270	.0055	2.1140	.8831	.8701	.8721	.6507	.7338	1.3685	.7223
70	3.55	5.36	6.66	7.78	9.08	.1431	.5074	.1440	.0264	.0001	2.0412	.8526	.8370	.8409	.6387	.6626	1.5137	.8263
85	4.03	5.29	6.52	6.74	7.98	.1689	.5142	.1984	.0352	.0056	2.0617	.7945	.7724	.7871	.6163	.6530	1.5950	.8627
90	4.17	5.25	7.40	5.47	7.62	.1771	.5228	.2304	.0392	.0094	2.0561	.7644	.7394	.7572	.6078	.6421	1.6201	.8620
95	4.38	5.28	10.62	2.10	7.44	.1887	.5379	.2719	.0407	.0127	2.0161	.7222	.6937	.7203	.6009	.6096	1.6441	.8498

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.2723	2.0855	85.67	87.08

STATOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	20.409	21.489	1088.9	747.0	754.6	746.8	785.0	-16.5	46.13	-1.27	18.50	56.04	795.8	1337.0	-252.6	-1109.0	1037.6	1092.5
10	21.008	21.961	1056.1	717.9	747.5	716.8	746.0	-38.9	44.94	-3.12	23.30	58.18	814.1	1359.9	-322.0	-1155.4	1068.0	1116.5
15	21.589	22.432	1016.0	695.0	728.7	693.5	708.1	-45.7	44.18	-3.76	28.12	59.68	826.5	1374.0	-389.5	-1186.1	1097.6	1140.4
30	23.314	23.902	940.3	668.0	667.9	667.8	661.9	-16.0	44.74	-1.37	38.07	61.52	848.6	1400.6	-523.4	-1231.1	1185.3	1215.2
50	25.601	25.893	943.9	694.6	678.7	694.5	656.0	3.5	44.02	.29	43.54	62.11	937.0	1485.3	-645.6	-1312.8	1301.5	1310.4
70	27.818	27.902	888.1	542.5	658.0	642.2	596.4	-19.1	42.19	-1.70	51.18	65.93	1049.7	1574.5	-817.9	-1437.6	1414.3	1418.5
85	29.408	29.382	905.9	625.9	659.5	625.6	621.1	18.7	43.28	1.71	52.96	67.02	1094.9	1602.3	-874.0	-1475.1	1495.1	1493.8
90	29.914	29.856	905.6	619.9	645.4	619.6	635.2	20.2	44.55	1.87	53.92	67.53	1095.8	1620.8	-885.6	-1497.7	1520.8	1517.9
95	30.382	30.293	885.9	582.6	607.2	582.0	645.1	26.5	46.73	2.61	55.98	68.97	1085.3	1621.6	-899.6	-1513.6	1544.6	1540.1

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-.02	2.90	11.15	47.40	55.91	.0000	.4926	.1500	.0373	.0373	.9346	.0000	.0000	.7845	.9317	.6184	.6892	1.1070
10	-.41	2.53	8.33	48.06	53.88	.0000	.5062	.1583	.0404	.0404	.9341	.0000	.0000	.7859	.9000	.5945	.7056	1.1262
15	-.11	2.84	7.14	47.94	52.40	.0000	.5067	.1368	.0357	.0357	.9463	.0000	.0000	.7977	.8683	.5754	.7120	1.1375
30	2.31	5.31	9.85	46.11	50.67	.0000	.4895	.0637	.0179	.0179	.9781	.0000	.0000	.8901	.7996	.5510	.7229	1.1552
50	3.34	6.47	12.32	43.73	49.58	.0000	.4747	.0743	.0228	.0228	.9747	.0000	.0000	.8678	.7953	.5691	.7895	1.2170
70	2.56	5.80	11.76	43.89	49.87	.0000	.5059	.0586	.0194	.0194	.9820	.0000	.0000	.8926	.7440	.5247	.8797	1.2857
85	3.87	7.19	17.61	41.57	52.00	.0000	.5417	.1237	.0432	.0432	.9614	.0000	.0000	.8025	.7517	.5048	.9086	1.2924
90	4.99	8.32	19.27	42.68	53.55	.0000	.5571	.1259	.0447	.0447	.9610	.0000	.0000	.8056	.7484	.4975	.9054	1.3007
96	6.96	10.33	22.30	44.12	56.02	.0000	.5945	.1375	.0495	.0495	.9593	.0000	.0000	.7978	.7278	.4645	.8905	1.2928

NCOR-1 INLET RPM	WCOR-1 INLET LBM/SEC	TC/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC/A-1 LBM/SEC SQFT
11652	186.60	1.2723	2.0161	81.30	83.07	41.93

TABLE 11.6

Blade-Element and Overall Performance with Uniform Inlet

105% of Design Speed

ROTOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.769	597.3	1034.8	597.3	640.3	.0	812.9	.00	51.77	56.12	16.86	1071.6	669.1	-889.7	-194.0	889.7	1006.9
10	18.467	20.408	613.3	1001.9	613.3	639.7	.0	771.1	.00	50.32	[illegible]	22.76	1122.9	693.8	-940.6	-268.4	940.6	1039.5
15	19.467	21.047	628.2	967.5	628.2	632.9	.0	731.7	.00	49.14	57.64	28.26	1173.8	719.0	-991.6	-340.3	991.6	1072.0
30	22.314	22.964	659.2	878.4	659.2	546.7	.0	687.6	.00	51.51	59.89	41.38	1313.9	729.1	-1136.6	-482.1	1136.6	1169.7
50	25.791	25.520	673.0	870.3	673.0	556.0	.0	669.6	.00	50.30	62.87	48.56	1476.0	840.6	-1313.7	-630.3	1313.7	1299.9
70	28.954	28.076	662.1	818.8	662.1	527.8	.0	626.0	.00	49.87	65.82	56.72	1616.6	961.8	-1474.8	-804.1	1474.8	1430.1
85	31.295	29.993	639.0	832.9	639.0	507.3	.0	660.5	.00	52.47	68.15	59.67	1717.4	1004.7	-1594.0	-867.2	1594.0	1527.7
90	31.883	30.630	631.9	827.1	631.9	475.4	.0	676.7	.00	54.91	68.74	61.71	1742.6	1003.2	-1624.0	-883.4	1624.0	1560.2
95	32.499	31.271	625.5	797.0	625.5	409.9	.0	683.5	.00	59.05	69.30	65.74	1769.6	997.5	-1655.4	-909.3	1655.4	1592.8

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	.71	7.14	14.98	39.27	47.12	.0090	.5525	.0367	.0077	.0077	2.2245	.9792	.9766	.9681	.5516	.8876	.9906	.5739
10	.87	7.28	13.14	34.14	39.99	.0242	.5480	.0244	.0052	.0000	2.2002	.9840	.9821	.9774	.5688	.8573	1.0447	.5937
15	1.08	6.97	11.74	29.38	34.03	.0316	.5431	.0211	.0045	-.0023	2.1678	.9843	.9825	.9791	.5839	.8259	1.0960	.6137
30	1.99	5.98	11.65	18.51	24.18	.0619	.5882	.1206	.0244	.0118	2.0728	.9068	.8968	.8924	.6132	.7390	1.2292	.6133
50	3.28	5.93	6.24	14.31	14.63	.1066	.5682	.1420	.0287	.0071	2.1300	.8770	.8631	.8634	.6256	.7248	1.3749	.7001
70	4.35	6.18	6.14	9.10	9.07	.1454	.5340	.1643	.0305	.0035	2.1032	.8411	.8235	.8314	.6148	.6756	1.5012	.7936
85	4.77	6.03	5.52	8.48	7.98	.1713	.5513	.2262	.0414	.0104	2.1540	.7812	.7567	.7645	.5937	.6780	1.5848	.8178
90	4.89	5.98	6.58	7.02	7.62	.1795	.5646	.2614	.0457	.0147	2.1537	.7509	.7231	.7334	.5855	.6688	1.6107	.8112
95	5.08	5.99	9.87	3.56	7.44	.1911	.5785	.2982	.0460	.0168	2.1186	.7156	.6846	.7021	.5789	.6398	1.6352	.8007

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.2847	2.1294	84.52	86.09

STATOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	20.409	21.489	1074.4	711.6	731.0	711.6	787.4	-7.8	47.13	-.63	19.03	57.16	773.3	1312.1	-252.1	-1102.4	1039.5	1094.6
10	21.008	21.961	1042.7	684.9	725.6	683.9	748.8	-33.9	45.90	-2.85	23.88	59.31	793.6	1340.3	-321.3	-1152.5	1070.1	1118.6
15	21.589	22.432	1009.9	665.6	714.8	664.2	713.4	-42.6	44.95	-3.66	28.39	60.73	812.8	1358.6	-386.3	-1185.2	1099.7	1142.5
30	23.314	23.902	929.8	637.9	636.5	637.8	677.7	-10.1	46.80	-.91	38.67	62.54	815.6	1383.4	-509.8	-1227.6	1187.5	1217.5
50	25.601	25.893	930.6	662.2	648.1	662.1	667.9	10.3	45.86	.89	44.45	63.16	908.3	1466.5	-636.1	-1308.5	1304.0	1318.8
70	27.818	27.902	900.6	635.4	639.8	635.1	633.8	-19.4	44.73	-1.75	50.75	66.21	1011.3	1574.4	-783.1	-1440.6	1416.9	1421.2
85	29.408	29.382	933.8	637.0	644.3	636.8	675.9	13.5	46.37	1.21	51.91	66.76	1044.4	1614.0	-822.0	-1483.1	1497.9	1496.6
90	29.914	29.856	936.0	635.5	626.9	635.3	695.6	13.9	47.95	1.25	52.89	67.14	1039.1	1635.3	-828.7	-1506.8	1523.7	1520.7
95	30.382	30.293	918.5	607.4	590.3	607.0	703.8	21.1	50.01	1.99	55.02	68.25	1029.8	1638.5	-843.8	-1521.9	1547.5	1543.0

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	.95	3.87	11.79	47.76	55.91	.0000	.5171	.1567	.0390	.0390	.9332	.0000	.0000	.7857	.9169	.5868	.6684	1.0819
10	.46	3.40	8.60	48.75	53.88	.0000	.5309	.1644	.0419	.0419	.9330	.0000	.0000	.7846	.8094	.5650	.6884	1.1057
15	.71	3.65	7.22	48.61	52.38	.0000	.5334	.1539	.0402	.0402	.9403	.0000	.0000	.7822	.8621	.5489	.6977	1.1205
30	4.35	7.35	10.31	47.71	50.67	.0000	.5191	.0714	.0201	.0201	.9760	.0000	.0000	.8883	.7872	.5234	.6907	1.1351
50	5.18	8.30	12.92	44.97	49.58	.0000	.5037	.0855	.0262	.0262	.9717	.0000	.0000	.8592	.7815	.5398	.7606	1.1955
70	5.05	8.28	11.70	46.47	49.85	.0000	.5345	.0889	.0295	.0295	.9723	.0000	.0000	.8605	.7496	.5151	.8417	1.2762
85	6.88	10.19	17.10	45.16	51.99	.0000	.5660	.1595	.0557	.0557	.9484	.0000	.0000	.7601	.7687	.5090	.8601	1.2898
90	8.28	11.60	18.69	46.69	53.59	.0000	.5799	.1623	.0576	.0576	.9478	.0000	.0000	.7601	.7672	.5049	.8521	1.2992
95	10.22	13.59	21.66	48.02	56.02	.0000	.6072	.1685	.0607	.0607	.9479	.0000	.0000	.7518	.7488	.4796	.8376	1.2938

NCOR-1 INLET RPM	WCOR-1 INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC/A-1 LBM/SEC SQFT
11674	182.71	1.2847	2.0448	79.50	81.47	41.06

APPENDIX 4

Blade-Element and Overall Performance with Radial Inlet Distortion

TABLE 12.1

Blade-Element and Overall Performance with Radial Inlet Distortion

70% of Design Speed

ROTOR

% SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.769	487.7	786.6	487.7	608.9	.0	498.0	.00	39.28	50.58	15.90	768.0	633.2	-593.3	-173.5	593.3	671.5
10	18.467	20.408	494.2	757.3	494.2	589.8	.0	475.0	.00	38.84	51.76	20.31	798.6	629.2	-627.3	-218.3	627.3	693.2
15	19.467	21.047	502.2	728.7	502.2	577.4	.0	444.3	.00	37.56	52.77	25.07	830.4	638.4	-661.3	-270.6	661.3	714.9
30	22.314	22.964	513.1	661.4	513.1	559.2	.0	352.9	.00	32.23	55.89	37.31	915.4	704.5	-758.0	-427.2	758.0	780.1
50	25.791	25.520	472.7	597.[illegible]	472.7	518.1	.0	298.1	.00	29.92	61.63	47.64	995.8	770.0	-876.1	-568.8	876.1	866.9
70	28.954	28.076	374.6	536.2	374.6	451.6	.0	288.7	.00	32.62	69.13	55.82	1052.9	804.1	-983.6	-665.0	983.5	953.7
85	31.295	29.993	331.5	502.3	331.5	391.0	.0	315.1	.00	38.88	72.68	60.94	1113.6	805.2	-1063.1	-703.7	1063.1	1018.8
90	31.883	30.630	324.2	482.9	324.2	352.7	.0	323.0	.00	42.05	73.34	63.45	1130.5	802.4	-1083.0	-717.5	1083.0	1040.5
95	32.499	31.271	314.8	451.6	314.8	313.0	.0	325.5	.00	46.12	74.08	66.98	1148.0	800.5	-1104.0	-736.8	1104.0	1062.2

% SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-4.84	1.59	14.03	34.68	47.12	.0000	.3267	.1475	.0311	.0311	1.3725	.8869	.8817	.7551	.4453	.7016	.7016	.5647
10	-4.28	2.15	10.71	31.46	39.99	.0000	.3555	.1676	.0361	.0361	1.3530	.8597	.8536	.7371	.4516	.6736	.7303	.5597
15	-3.87	2.20	8.54	27.71	34.03	.0000	.3645	.1651	.0359	.0359	1.3331	.8464	.8400	.7427	.4589	.6472	.7585	.5670
30	-2.29	1.87	7.68	18.58	24.30	.0000	.3354	.0973	.0206	.0208	1.2965	.8770	.8724	.8298	.4697	.5870	.8321	.6252
50	1.53	4.38	5.39	13.99	14.66	.0000	.3175	.0489	.0100	.0100	1.2939	.9239	.9211	.9019	.4375	.5286	.9006	.6809
70	6.97	8.92	5.16	13.32	8.95	.0000	.3280	.0508	.0097	.0097	1.3130	.9180	.9147	.8922	.3524	.4704	.9488	.7053
85	9.22	10.52	6.61	11.74	7.80	.0159	.3776	.1388	.0245	.0218	1.3113	.7892	.7802	.7365	.3038	.4365	.9984	.6996
90	9.43	10.59	8.21	9.89	7.51	.0170	.3938	.1764	.0292	.0264	1.3024	.7366	.7266	.6827	.2944	.4181	1.0169	.6946
95	9.85	10.77	11.04	7.10	7.37	.0200	.4072	.2096	.0308	.0279	1.2877	.6865	.6750	.6388	.2850	.3895	1.0338	.6905

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.0935	1.3032	84.11	85.82

STATOR

% SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	20.409	21.489	838.1	795.6	686.3	795.5	482.4	14.7	35.10	1.06	17.08	41.96	718.0	1069.8	-210.9	-715.3	693.3	730.0
10	21.008	21.961	810.7	775.3	666.2	775.1	461.8	-10.6	34.73	-.80	20.71	44.30	712.5	1083.4	-251.8	-756.6	713.6	746.0
15	21.589	22.432	783.0	752.1	651.8	751.4	433.8	-30.2	33.63	-2.32	24.66	46.51	717.9	1092.2	-299.6	-792.2	733.4	762.0
30	23.31"	23.9?2	719.0	688.6	628.9	686.6	348.3	-52.5	28.96	-4.38	35.16	51.54	770.3	1104.2	-443.6	-864.4	792.0	811.9
50	25.601	25.893	663.9	636.6	593.7	634.6	297.0	-51.1	26.58	-4.51	43.95	55.71	825.3	1126.6	-572.6	-930.7	869.6	879.6
70	27.818	27.902	622.2	589.9	551.0	588.8	288.9	-34.6	27.60	-3.36	49.97	59.06	856.8	1145.4	-656.0	-982.4	945.0	947.8
85	29.408	29.382	612.3	558.9	522.3	558.6	319.5	-16.2	31.46	-1.66	52.45	61.16	857.0	1158.0	-679.5	-1014.3	999.0	998.1
90	29.914	29.856	605.6	539.6	507.9	539.4	329.7	-11.5	32.90	-1.23	53.51	62.26	854.0	1159.0	-686.5	-1025.7	1016.1	1014.2
95	30.382	30.293	586.3	513.3	481.2	512.9	335.0	-19.0	34.84	-2.13	55.38	63.92	847.0	1166.9	-697.1	-1048.1	1032.0	1029.0

% SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-11.07	-8.15	13.47	34.05	55.89	.0000	.1864	.0641	.0150	.0159	.9799	.0000	.0000	.4880	.7478	.7104	.6439	.9552
10	-10.54	-7.61	10.65	35.52	53.87	.0000	.1892	.0489	.0125	.0125	.9855	.0000	.0000	.5773	.7181	.6914	.6372	.9661
15	-11.02	-8.08	8.69	35.95	52.50	.0000	.1919	.0439	.0115	.0115	.9877	.0000	.0000	.6186	.6944	.6702	.6449	.9732
30	-13.60	-10.60	6.85	33.34	50.67	.0000	.1973	.0662	.0185	.0185	.9839	.0000	.0000	.3422	.6393	.6131	.6908	.9830
50	-14.12	-11.00	7.43	31.18	49.61	.0000	.2009	.0679	.0207	.0207	.9857	.0000	.0000	.2653	.5909	.5651	.7346	1.0000
70	-12.15	-8.91	10.14	31.03	49.95	.0000	.2241	.0566	.0187	.0187	.9895	.0000	.0000	.5388	.5508	.5202	.7578	1.0100
85	-8.12	-4.81	14.24	33.12	52.04	.0000	.2791	.0815	.0285	.0285	.9855	.0000	.0000	.5914	.5374	.4881	.7519	1.0113
90	-6.76	-3.44	16.17	34.22	53.59	.0000	.3095	.1050	.0373	.0373	.9817	.0000	.0000	.5642	.5319	.4693	.7485	1.0081
95	-4.92	-1.55	17.56	36.97	56.04	.0000	.3426	.1116	.0402	.0402	.9818	.0000	.0000	.5722	.5121	.4448	.7377	1.0110

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	W1/A1 LBM/SEC SQFT
7785	132.60	1.0935	1.2849	79.47	81.31	29.70

PRECEDING PAGE BLANK NOT FILMED.

TABLE 12.2

Blade–Element and Overall Performance with Radial Inlet Distortion

70% of Design Speed

ROTOR

% SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.769	472.9	778.7	472.9	589.8	.0	508.5	.00	40.76	51.39	15.35	758.0	611.7	-592.3	-161.9	592.3	670.4
10	18.467	20.408	479.5	744.0	479.5	568.9	.0	479.4	.00	40.12	52.55	20.49	788.8	607.8	-626.2	-212.6	626.2	692.1
15	19.467	21.047	487.1	712.2	487.1	554.7	.0	446.6	.00	38.82	53.57	25.67	820.5	616.4	-660.2	-267.1	660.2	713.7
30	22.314	22.964	496.5	649.9	496.5	536.5	.0	356.8	.00	34.34	56.71	37.46	905.2	677.1	-756.7	-412.0	756.7	778.8
50	25.791	25.520	457.6	590.1	457.6	497.5	.0	317.3	.00	32.53	62.36	47.74	987.4	740.8	-874.6	-548.2	874.6	865.4
70	28.954	28.078	361.5	538.3	361.5	443.6	.0	318.6	.00	36.33	69.77	55.82	1046.7	767.9	-961.9	-633.5	961.9	952.1
85	31.295	29.993	318.8	513.7	318.8	371.8	.0	354.4	.00	43.64	73.28	60.70	1108.1	760.1	-1061.3	-662.8	1061.3	1017.1
90	31.883	30.630	311.9	494.4	311.9	338.6	.0	360.1	.00	46.80	73.91	63.49	1125.3	758.7	-1081.2	-678.7	1081.2	1038.7
95	32.499	31.271	302.7	465.7	302.7	205.0	.0	360.4	.00	50.69	74.64	67.15	1142.9	759.7	-1102.1	-700.1	1102.1	1060.5

% SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-4.02	2.41	13.48	36.04	47.12	.0000	.3493	.1181	.0250	.0250	1.3937	.9132	.9090	.8153	.4314	.6932	.6919	.5445
10	-3.49	2.94	10.89	32.06	39.99	.0000	.3760	.1407	.0303	.0303	1.3686	.8860	.8808	.7909	.4378	.6605	.7209	.5395
15	-3.07	2.99	9.12	27.89	34.03	.0000	.3843	.1419	.0307	.0307	1.3458	.8715	.8659	.7898	.4447	.6313	.7490	.5463
30	-1.45	2.69	7.82	19.25	24.29	.0000	.3623	.0911	.0194	.0194	1.3143	.8910	.8867	.8506	.4539	.5753	.8221	.5993
50	2.30	5.13	5.48	14.62	14.66	.0000	.3472	.0537	.0110	.0110	1.3134	.9223	.9192	.9006	.4227	.5202	.8919	.6530
70	7.66	9.60	4.96	14.16	8.95	.0000	.3681	.0721	.0138	.0138	1.3363	.8954	.8910	.8632	.3392	.4703	.9425	.6709
85	9.83	11.12	6.39	12.57	7.81	.0176	.4278	.1691	.0301	.0270	1.3434	.7701	.7603	.7114	.2918	.4442	.9932	.6571
90	10.06	11.17	8.27	10.42	7.52	.0185	.4417	.2025	.0334	.0304	1.3345	.7270	.7156	.6685	.2828	.4260	1.0119	.6536
95	10.42	11.33	11.21	7.49	7.37	.0215	.4515	.2298	.0336	.0304	1.3213	.6879	.6754	.6352	.2738	.3999	1.0288	.6524

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.0994	1.3259	84.42	85.95

STATOR

% SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	20.409	21.489	824.8	747.2	661.7	747.2	492.5	4.6	36.66	.35	16.79	44.10	691.1	1040.5	-199.6	-724.1	692.1	728.7
10	21.008	21.961	791.5	723.4	639.5	723.0	466.3	-20.2	36.09	-1.62	21.05	46.61	685.6	1052.8	-246.1	-765.0	712.4	744.7
15	21.589	22.432	760.6	700.4	623.2	699.4	435.9	-36.7	34.96	-3.02	25.40	48.74	690.3	1060.9	-296.2	-797.5	732.1	760.7
30	23.314	23.902	701.3	647.4	600.6	645.4	361.8	-50.6	31.05	-4.49	35.48	53.15	738.6	1076.4	-428.8	-861.2	790.6	810.6
50	25.601	25.893	649.1	597.1	567.0	595.4	315.8	-45.1	29.12	-4.33	44.23	57.17	791.9	1098.6	-552.4	-923.1	868.2	878.1
70	27.818	27.902	614.4	552.9	525.5	552.3	318.0	-23.7	31.19	-2.45	49.96	60.34	818.9	1118.2	-825.3	-969.9	943.4	946.2
85	29.408	29.382	611.4	524.4	494.6	524.4	359.5	.2	36.01	.02	52.21	62.24	[illegible]	1125.9	-637.8	-956.2	997.3	996.4
90	29.914	29.856	603.7	509.3	478.8	509.3	367.6	3.8	37.52	.42	53.50	63.21	904.8	1130.0	-646.9	-1008.7	1014.4	1012.5
95	30.382	30.293	585.0	487.3	452.4	487.3	370.9	3.8	39.34	.45	55.54	64.54	899.7	1133.5	-659.4	-1023.5	1030.3	1027.3

% SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-9.50	-6.58	12.76	36.31	55.89	.0000	.2374	.0754	.0188	.0188	.9771	.0000	.0000	.6587	.7326	.6626	.6176	.9227
10	-9.23	-6.30	9.83	37.71	53.86	.0000	.2397	.0559	.0143	.0143	.9841	.0000	.0000	.7654	.6980	.6409	.6115	.9328
15	-9.63	-6.69	7.99	37.98	52.50	.0000	.2391	.0403	.0105	.0105	.9893	.0000	.0000	.8303	.6728	.6202	.6181	.9395
30	-11.46	-8.46	6.74	35.54	50.67	.0000	.2403	.0404	.0113	.0113	.9907	.0000	.0000	.7894	.6216	.5729	.6595	.9525
50	-11.59	-8.46	7.71	33.44	49.61	.0000	.2496	.0418	.0128	.0128	.9916	.0000	.0000	.7623	.5756	.5267	.7020	.9691
70	-8.71	-5.48	11.05	33.63	49.95	.0000	.2843	.0447	.0148	.0148	.9919	.0000	.0000	.8375	.5411	.4840	.7193	.9771
85	-3.59	-.23	15.92	35.99	52.05	.0000	.3479	.0890	.0311	.0311	.9843	.0000	.0000	.7226	.5336	.4540	.7038	.9747
90	-2.29	1.04	17.82	37.10	53.59	.0000	.3709	.0965	.0343	.0343	.9835	.0000	.0000	.7201	.5274	.4395	.7014	.9751
95	-.42	2.94	20.14	38.89	56.04	.0000	.3937	.0911	.0329	.0329	.9853	.0000	.0000	.7348	.5083	.4191	.6923	.9750

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	W1/A1 LBM/SEC SQFT
7772	128.99	1.0394	1.3113	80.99	82.62	28.99

TABLE 12.3

Blade-Element and Overall Performance with Radial Inlet Distortion

70% of Design Speed

ROTOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.769	461.2	773.7	461.2	574.7	.0	518.0	.00	42.03	52.07	14.80	750.3	594.5	-591.9	-151.9	591.9	669.9
10	18.467	20.408	467.4	739.8	467.4	556.5	.0	487.5	.00	41.21	53.24	20.14	781.1	593.2	-625.7	-204.0	625.7	691.5
15	19.467	21.047	474.9	703.6	474.9	538.2	.0	453.1	.00	40.07	54.24	25.75	812.8	598.5	-659.6	-260.0	659.6	713.2
30	22.314	22.964	483.2	641.8	483.2	518.2	.0	378.6	.00	36.14	57.40	37.57	897.4	655.0	-756.1	-399.5	756.1	778.1
50	25.791	25.520	443.9	586.2	443.9	481.1	.0	334.8	.00	34.85	63.05	47.73	980.4	716.2	-873.9	-529.9	873.9	864.7
70	28.954	28.076	349.9	541.4	349.9	417.7	.0	343.9	.00	39.49	70.36	55.49	1042.0	737.4	-981.1	-607.4	981.1	951.3
85	31.295	29.993	308.6	518.4	308.6	350.6	.0	381.6	.00	47.44	73.77	61.08	1104.4	725.3	-1060.4	-634.7	1060.4	1016.3
90	31.883	30.630	301.6	502.6	301.6	320.6	.0	386.9	.00	50.38	74.40	63.78	1121.7	725.8	-1080.3	-651.0	1080.3	1037.9
95	32.499	31.271	291.8	481.2	291.8	288.2	.0	385.4	.00	53.21	75.16	66.85	1139.2	733.3	-1101.2	-674.2	1101.2	1059.6

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-3.33	3.10	12.93	37.27	47.12	.0000	.3686	.0983	.0209	.0209	1.4104	.9303	.9268	.8534	.4203	.6876	.6844	.5283
10	-2.80	3.63	10.54	33.1	39.99	.0000	.3916	.1155	.0249	.0249	1.3869	.9096	.9053	.8339	.4265	.6559	.7137	.5260
15	-2.39	3.65	9.18	28.49	34.03	.0000	.4025	.1262	.0273	.0273	1.3594	.8892	.8843	.8205	.4333	.6227	.7419	.5297
30	-.75	3.39	7.92	19.83	24.29	.0060	.3851	.0888	.0189	.0189	1.3283	.8983	.8941	.8614	.4413	.5668	.8145	.5784
50	3.01	5.84	5.47	15.32	14.66	.0000	.3731	.0603	.0124	.0124	1.3305	.9180	.9146	.8949	.4095	.5154	.8849	.6296
70	8.31	10.24	4.84	14.87	8.96	.0000	.4626	.0925	.0178	.0178	1.3586	.8762	.8707	.8382	.3272	.4714	.9377	.6421
85	10.33	11.63	6.77	12.69	7.82	.0000	.4662	.1920	.0337	.0337	1.3646	.7566	.7457	.6949	.2822	.4465	.9895	.6247
90	10.55	11.66	8.56	10.62	7.52	.0200	.4779	.2210	.0361	.0329	1.3584	.7215	.7093	.6602	.2735	.4315	1.0079	.6232
95	10.92	11.85	10.91	8.30	7.37	.0232	.4811	.2383	.0352	.0318	1.3505	.6969	.6838	.6393	.2640	.4121	1.0247	.6280

TC/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.1044	1.3441	84.48	85.94

STATOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	20.409	21.489	815.2	711.5	642.5	711.5	501.7	-1.7	37.99	-.14	16.46	45.73	669.9	1019.3	-189.8	-729.9	691.5	728.1
10	21.008	21.961	782.8	687.1	622.7	686.8	474.3	-19.1	37.29	-1.61	20.89	48.02	666.9	1027.0	-237.6	-763.3	711.8	744.1
15	21.589	22.432	747.5	664.6	602.5	663.8	442.4	-32.2	36.27	-2.79	25.62	50.04	669.0	1033.8	-289.2	-792.3	731.5	760.1
30	23.314	23.902	688.4	615.7	578.3	614.1	373.4	-44.0	32.84	-4.09	35.73	54.28	713.3	1051.9	-416.6	-853.9	790.0	809.9
50	25.601	25.893	639.8	567.6	546.3	566.2	333.0	-39.9	31.37	-4.03	44.35	58.30	764.6	1078.1	-534.5	-917.2	867.5	877.4
70	27.818	27.902	610.8	526.7	505.2	526.2	343.1	-20.3	34.10	-2.20	49.88	61.81	784.0	1099.8	-599.5	-965.8	942.6	945.4
85	29.408	29.382	608.0	503.5	468.8	503.5	387.0	7.6	39.54	.87	52.43	63.00	768.9	1108.9	-609.4	-988.0	996.5	995.6
90	29.914	29.856	601.6	490.3	453.4	490.2	395.3	11.2	41.09	1.30	53.75	63.90	766.8	1114.2	-618.3	-1000.5	1013.6	1011.7
95	30.332	30.293	588.7	470.3	435.0	470.2	396.6	11.2	42.36	1.36	55.49	65.15	767.9	1118.9	-632.8	-1015.3	1029.5	10?6.5

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-8.21	-5.29	12.27	38.13	55.89	.0000	.2765	.0926	.0230	.0230	.9725	.0000	.0000	.6807	.7230	.6278	.5979	.8994
10	-8.00	-5.07	9.84	38.89	53.86	.0000	.2797	.0791	.0202	.0202	.9780	.0000	.0000	.7455	.6884	.6059	.5928	.9056
15	-8.28	-5.33	8.22	39.06	52.56	.0000	.2741	.0494	.0129	.0129	.9873	.0000	.0000	.8366	.6597	.5859	.5967	.9114
30	-9.64	-6.64	7.13	36.93	50.67	.0000	.2741	.0354	.0099	.0099	.9921	.0000	.0000	.8584	.6091	.5423	.6346	.9267
50	-9.37	-6.24	8.01	35.40	49.61	.0000	.2906	.0379	.0116	.0116	.9926	.0000	.0000	[illegible]	.5660	.4983	.6753	.9463
70	-5.85	-2.61	11.29	36.39	49.95	.0000	.3348	.0475	.0157	.0157	.9916	.0000	.0000	.8965	.5360	[illegible]	.6883	.9576
85	-.16	3.15	16.78	38.68	52.05	.0000	.3901	.0780	.0273	.0273	.9865	.0000	.0000	.8130	.5285	.4336	.6680	.9548
90	1.32	4.44	18.70	39.79	53.60	.0000	.4122	.0864	.0307	.0307	.9854	.0000	.0000	.7880	.5229	.4208	.6646	.9561
95	2.62	5.99	21.05	40.99	56.04	.0000	.4376	.0960	.0346	.0346	.9845	.0000	.0000	.7630	.5094	.4025	.6621	.9376

NCORR INLET PPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WI/AI LBM/SEC SQFT
7766	125.83	1.1044	1.3290	81.10	82.68	28.28

TABLE 13.1

Blade-Element and Overall Performance with Radial Inlet Distortion

90% of Design Speed

ROTOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.769	641.6	943.4	641.6	690.4	.0	642.8	.00	42.95	49.82	11.46	994.5	723.9	-759.9	-217.2	759.9	860.1
10	18.467	20.408	649.7	925.3	649.7	703.6	.0	600.9	.00	40.50	51.03	22.18	1033.3	760.0	-803.4	-286.9	803.4	887.9
15	19.467	21.047	660.1	902.7	660.1	593.0	.0	578.4	.00	39.85	52.06	25.93	1073.8	771.2	-846.9	-337.2	846.9	915.7
30	22.314	22.964	678.9	824.1	678.9	661.4	.0	491.6	.00	36.61	55.01	37.45	1184.7	834.5	-970.8	-507.4	970.8	999.1
50	25.791	25.520	634.8	739.5	634.8	599.4	.0	433.2	.00	35.86	60.48	48.45	1289.5	904.8	-1122.0	-677.1	1122.0	1110.3
70	28.954	28.076	520.4	688.5	520.4	541.4	.0	425.3	.00	38.16	67.54	55.78	1363.4	962.9	-1259.6	-796.1	1259.6	1221.5
85	31.295	29.993	461.9	668.7	461.9	498.7	.0	445.3	.00	41.76	71.26	59.88	1437.8	993.9	-1361.5	-859.6	1361.5	1304.9
90	31.883	30.630	451.9	649.5	451.9	462.4	.0	455.6	.00	44.62	71.96	62.21	1455.8	991.8	-1387.1	-877.0	1387.1	1332.6
95	32.499	31.271	442.5	602.4	442.5	388.6	.0	460.3	.00	49.82	72.62	65.65	1481.5	980.5	-1413.9	-900.2	1413.9	1360.5

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-5.63	.80	15.59	32.36	47.12	.0000	.4228	.2418	.0506	.0506	1.6026	.8248	.8126	.7217	.5940	.8306	.5199	.6374
10	-5.05	1.38	12.58	28.85	39.99	.0005	.4046	.1619	.0387	.0387	1.6055	.8556	.8455	.7805	.6019	.8150	.9568	.6695
15	-4.62	1.52	9.46	26.12	34.03	.0000	.4160	.1806	.0389	.0389	1.5917	.8459	.8353	.7828	.6118	.7931	.9933	.6776
30	-3.18	.99	7.84	17.57	24.31	.0116	.4087	.1503	.0321	.0296	1.5364	.8384	.8284	.8102	.6317	.7209	1.0934	.7299
50	.32	3.22	6.23	12.02	14.64	.0305	.4002	.1149	.0232	.0172	1.5372	.8557	.8467	.8428	.5975	.6414	1.1825	.7847
70	5.22	7.20	5.09	11.76	8.89	.0613	.3980	.0790	.0151	.0036	1.6249	.8989	.8916	.8821	.4986	.5906	1.2408	.8259
85	7.75	9.07	5.51	11.38	7.74	.0818	.4190	.1193	.0218	.0072	1.6652	.8519	.8406	.8237	.4287	.5674	1.2981	.8433
90	8.08	9.20	6.93	9.74	7.45	.0674	.4334	.1571	.0271	.0127	1.6554	.8088	.7945	.7775	.4143	.5481	1.3216	.8370
95	8.39	9.31	10.69	5.97	7.35	.0961	.4528	.2053	.0306	.0164	1.6171	.7497	.7321	.7228	.4036	.5049	1.3443	.8218

TO/TO INLET	PO/PC INLET	EFF-AD INLET %	EFF-P INLET %
1.1683	1.5707	81.76	83.71

STATOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	20.409	21.489	1009.6	931.9	794.3	929.4	623.2	-67.9	38.11	-4.18	18.43	47.17	837.3	1367.2	-264.7	-1002.8	887.9	934.9
10	21.008	21.961	992.1	932.0	802.1	929.4	583.9	-69.3	36.05	-4.27	22.37	47.79	867.5	1383.5	-330.1	-1024.7	914.0	955.4
15	21.589	22.432	971.2	927.6	790.6	924.7	564.1	-73.7	35.50	-4.56	25.36	48.62	875.5	1398.9	-375.2	-1049.6	939.2	975.9
30	23.314	23.902	900.5	877.8	758.8	874.6	484.8	-74.1	32.56	-4.84	34.88	51.86	925.9	1416.4	-529.5	-1113.9	1014.3	1039.9
50	25.601	25.893	830.6	815.5	710.0	813.6	431.0	-54.7	31.26	-3.84	43.86	55.44	985.3	1434.4	-682.8	-1181.2	1113.8	1126.5
70	27.818	27.902	803.7	772.8	680.7	771.6	427.3	-42.7	32.11	-3.16	48.99	58.45	1037.5	1474.6	-783.0	-1256.6	1210.2	1213.9
85	29.408	29.382	813.6	751.8	676.2	751.7	452.5	-4.7	33.79	-.36	50.73	59.63	1068.2	1487.0	-826.9	-1283.0	1279.4	1278.3
90	29.914	29.856	811.3	750.3	664.5	750.1	465.4	15.2	35.01	1.16	51.53	59.70	1068.0	1486.8	-836.1	-1283.7	1301.4	1298.9
95	30.382	30.293	783.1	712.0	623.5	711.7	473.7	22.3	37.23	1.79	53.67	61.22	1052.6	1478.2	-848.0	-1295.6	1321.8	1317.9

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-8.32	-5.40	8.23	42.29	55.89	.0000	.2436	.2161	.0536	.0536	.9119	.0000	.0000	-.1210	.8945	.8193	.7483	1.2021
10	-9.24	-6.30	7.18	40.32	53.86	.0000	.2256	.1863	.0474	.0474	.9259	.0000	.0000	-.2145	.8799	.8218	.7725	1.2199
15	-8.90	-5.95	6.33	40.06	52.36	.0000	.2141	.1550	.0404	.0404	.9404	.0000	.0000	-.3541	.8602	.8179	.7772	1.2335
30	-9.88	-6.88	6.38	37.40	50.67	.0000	.1977	.1183	.0331	.0331	.9596	.0000	.0000	-.8700	.7954	.7731	.6181	1.2475
50	-9.47	-6.35	8.19	35.10	49.61	.0000	.1965	.1098	.0336	.0336	.9674	.0000	.0000	-1.5485	.7290	.7137	.8633	1.2554
70	-7.60	-4.37	10.31	35.28	49.92	.0000	.2320	.1538	.0509	.0509	.9572	.0000	.0000	-.7466	.6984	.6693	.9012	1.2770
85	-5.72	-2.41	15.55	34.15	52.03	.0000	.2726	.2122	.0742	.0742	.9406	.0000	.0000	-.2388	.7013	.6437	.9208	1.2733
90	-4.77	-1.45	18.56	33.85	53.57	.0000	.2727	.1974	.0702	.0702	.9453	.0000	.0000	-.1658	.7000	.6399	.9200	1.2682
95	-2.64	.73	21.48	35.43	56.04	.0000	.2990	.2184	.0787	.0787	.9435	.0000	.0000	-.0872	.6707	.6030	.8989	1.2518

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	W1/A1 LBM/SEC SQFT
9971	166.73	1.1683	1.4932	72.07	74.42	37.47

TABLE 13.2

Blade–Element and Overall Performance with Radial Inlet Distortion

90% of Design Speed

ROTOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	VØ'-1 FT/SEC	VØ'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.769	636.3	936.3	636.3	682.3	.0	641.2	.00	43.22	50.11	17.91	992.2	717.1	-761.3	-220.5	761.3	861.7
10	18.467	20.408	644.5	912.2	644.5	682.7	.0	624.9	.00	41.54	51.31	22.61	1031.2	740.0	-804.9	-284.6	804.9	889.5
15	19.457	21.047	654.7	885.1	654.7	674.3	.0	573.2	.00	40.36	52.34	27.02	1071.8	757.6	-848.5	-344.2	848.5	917.4
30	22.314	22.964	674.1	813.6	674.1	643.8	.0	497.4	.00	37.68	55.25	37.98	1183.5	818.1	-972.6	-503.5	972.6	1000.9
50	25.791	25.520	629.9	742.7	629.9	585.8	.0	456.5	.00	37.94	60.71	48.20	1289.0	880.0	-1124.2	-655.9	1124.2	1112.3
70	28.954	28.076	514.9	692.5	514.9	521.5	.0	455.4	.00	41.14	67.79	55.83	1363.5	928.7	-1262.0	-768.3	1262.0	1223.7
85	31.295	29.993	455.7	681.1	455.7	479.5	.0	483.6	.00	45.25	71.52	59.79	1438.2	953.1	-1364.1	-823.7	1364.1	1307.3
90	31.883	30.630	445.5	664.8	445.5	441.2	.0	496.6	.00	48.44	72.22	62.27	1459.4	948.0	-1389.7	-838.5	1389.7	1335.1
96	32.499	31.271	436.2	617.9	436.2	360.6	.0	581.7	.00	54.30	72.88	67.28	1482.2	933.7	-1416.5	-861.3	1416.5	1363.0

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-5.33	1.10	16.04	32.20	47.12	.0000	.4279	.1802	.0376	.0376	1.6450	.8711	.8615	.7972	.5890	.8236	.9179	.6308
10	-4.76	1.67	13.02	28.70	39.99	.0000	.4238	.1475	.0313	.0313	1.6378	.8848	.8763	.8301	.5971	.8015	.9547	.6502
15	-4.33	1.79	10.53	25.32	34.03	.0000	.4263	.1370	.0293	.0293	1.6196	.8834	.8750	.8405	.6068	.7762	.9920	.6644
30	-2.91	1.25	8.36	17.27	24.31	.0121	.4233	.1188	.0252	.0226	1.5741	.8745	.8663	.8551	.6268	.7100	1.0930	.7139
50	.62	3.49	5.96	12.51	14.65	.0314	.4247	.1007	.0205	.0142	1.5920	.8798	.8716	.8686	.5914	.6418	1.1828	.7604
70	5.58	7.54	5.16	11.96	8.92	.0627	.4305	.0827	.0158	.0040	1.6805	.9008	.8931	.8846	.4903	.5909	1.2413	.7925
85	8.02	9.34	5.45	11.73	7.77	.0837	.4570	.1324	.0242	.0091	1.7302	.8475	.8352	.8181	.4221	.5744	1.2994	.8038
90	8.35	9.47	7.02	9.96	7.49	.0894	.4737	.1724	.0297	.0149	1.7230	.8054	.7901	.7724	.4078	.5575	1.3228	.7949
96	8.66	9.58	11.35	5.60	7.37	.0981	.4948	.2214	.0321	.0180	1.6831	.7494	.7304	.7203	.3975	.5144	1.3452	.7774

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.1759	1.6200	83.95	85.76

STATOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	VØ'-1 FT/SEC	VØ'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	20.409	21.489	996.5	842.1	779.3	841.9	621.0	14.8	38.55	1.01	19.01	47.59	824.3	1248.4	-268.5	-921.8	889.6	936.6
10	21.008	21.961	973.7	825.1	776.8	825.0	588.2	-7.9	37.16	-.56	22.87	49.47	842.5	1269.8	-327.5	-965.1	915.7	957.2
15	21.589	22.432	948.1	809.1	765.7	808.7	559.1	-25.1	36.13	-1.78	26.50	51.11	856.0	1288.4	-381.9	-1002.8	941.0	977.7
30	23.314	23.902	882.0	759.4	733.3	758.0	490.1	-46.9	33.76	-3.55	35.63	55.15	903.0	1326.8	-526.0	-1088.8	1016.2	1041.8
50	25.601	25.893	822.5	706.1	685.9	705.0	453.9	-39.1	33.50	-3.17	43.97	58.87	953.6	1364.1	-662.0	-1167.7	1115.9	1128.6
70	27.818	27.902	793.6	668.6	648.9	668.1	456.8	-25.6	35.15	-2.19	49.35	61.72	996.0	1410.0	-755.7	-1241.7	1212.5	1216.2
85	29.408	29.382	807.6	651.4	641.4	651.2	490.8	16.2	37.42	1.42	50.97	62.75	1018.4	1422.3	-791.0	-1264.5	1281.8	1280.7
90	29.914	29.856	808.1	641.9	629.9	641.4	506.6	25.1	38.85	2.24	51.72	63.32	1015.8	1428.4	-797.2	-1276.3	1303.9	1301.3
96	30.382	30.293	776.9	604.2	586.5	603.7	516.4	23.9	41.66	2.26	54.30	65.03	994.8	1430.2	-807.8	-1296.5	1324.3	1320.4

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-7.70	-4.77	13.42	37.54	55.89	.0000	.3022	.0792	.0197	.0197	.9694	.0000	.0000	.7889	.8792	.7314	.7331	1.0843
10	-8.25	-5.31	10.89	37.71	53.87	.0000	.3055	.0761	.0194	.0194	.9767	.0000	.0009	.8117	.8570	.7170	.7500	1.1035
15	-8.27	-5.33	9.20	37.91	52.46	.0000	.3049	.0632	.0105	.0165	.9767	.0000	.0000	.8278	.8341	.7028	.7590	1.1192
30	-8.67	-5.67	7.68	37.36	50.67	.0000	.3081	.0423	.0119	.0119	.9861	.0000	.0000	.8711	.7743	.6585	.7965	1.1504
50	-7.20	-4.08	8.87	36.67	49.61	.0000	.3243	.0365	.0112	.0112	.9894	.0000	.0000	.8845	.7177	.6079	.8318	1.1744
70	-4.58	-1.35	11.30	37.33	49.93	.0000	.3587	.0515	.0171	.0171	.9861	.0000	.0000	.8609	.6850	.5696	.8596	1.2013
85	-2.08	1.23	17.33	36.80	52.09	.0000	.3990	.1125	.0392	.0392	.9693	.0000	.0000	.7404	.6902	.5483	.8707	1.1971
90	-.98	2.34	19.64	36.61	53.56	.0000	.4177	.1238	.0440	.0440	.9664	.0000	.0000	.7313	.6913	.5375	.8682	1.1961
96	1.79	5.16	21.95	39.39	56.04	.0000	.4514	.1170	.0422	.0422	.9706	.0000	.0000	.7503	.6592	.5025	.8416	1.1896

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WI/A1 LBM/SEC SQFT
9989	165.76	1.1759	1.5893	80.40	82.39	37.25

TABLE 13.3

Blade-Element and Overall Performance with Radial Inlet Distortion

90% of Design Speed

ROTOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.769	630.4	938.9	630.4	676.0	.0	651.6	.00	43.95	50.37	17.26	988.4	707.9	-761.3	-210.0	761.[illegible]	861.6
10	18.467	20.408	638.4	906.7	638.4	668.0	.0	613.1	.00	42.54	51.57	22.46	1027.4	723.4	-804.9	-276.4	804.9	889.5
15	19.467	21.[illegible]47	643.8	877.9	648.[illegible]	660.8	.0	577.9	.00	41.16	52.59	27.16	1068.1	743.5	-848.5	-339.5	848.5	917.3
30	22.314	22.964	668.0	809.3	668.0	635.3	.0	501.4	.00	38.28	55.50	38.13	1180.0	808.8	-972.5	-499.4	972.5	1000.9
50	25.791	25.52[illegible]	623.6	744.[illegible]	623.6	578.3	.0	467.9	.00	38.99	60.96	48.06	1285.8	866.4	-1124.1	-644.4	1124.1	1112.3
70	28.954	28.076	509.4	696.3	509.4	513.5	.0	470.2	.00	42.48	68.08	55.72	1361.4	912.0	-1261.9	-753.5	1261.9	122[illegible].7
85	31.295	29.993	449.9	687.1	449.9	469.0	.0	502.0	.00	46.95	71.74	59.78	1436.3	931.9	-1364.0	-805.2	1364.0	1307.2
90	31.883	30.630	439.8	673.4	439.8	434.0	.0	514.3	.00	49.89	72.44	62.15	1457.6	928.8	-1389.6	-820.7	1389.6	1335.0
95	32.499	31.271	430.3	630.4	430.3	359.6	.0	517.8	.00	55.23	73.10	66.95	1480.4	918.4	-1416.5	-848.1	1416.5	1362.9

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-5.07	1.37	15.38	33.11	47.12	.0000	.4374	.1726	.0362	.0362	1.6652	.8792	.8699	.8085	.5832	.8251	.9139	.6221
10	-4.50	1.93	12.86	29.11	39.99	.0000	.4397	.1532	.0325	.0325	1.6456	.8824	.8736	.8283	.5911	.7952	.9506	.6344
15	-4.08	2.04	10.68	25.43	34.03	.0000	.4386	.1388	.0296	.0296	1.6252	.8833	.8748	.8418	.6009	.7687	.9878	.6510
30	-2.67	1.49	8.51	17.37	24.31	.0124	.43[illegible]4	.1137	.0240	.0214	1.5851	.8813	.8734	.8629	.6207	.7055	1.0887	.7050
50	.87	3.74	5.83	12.89	14.65	.0318	.4365	.1025	.0209	.0146	1.6101	.8807	.8724	.8686	.5852	.6418	1.1789	.7474
70	5.79	7.76	5.06	12.28	8.92	.0633	.4455	.0903	.0173	.0154	1.7009	.8952	.8869	.8774	.4849	.5929	1.2385	.7765
85	8.24	9.55	5.43	11.96	7.76	.0845	.4756	.1439	.0263	.0111	1.7542	.8397	.8266	.8081	.4169	.5778	1.2968	.7837
90	8.57	9.68	6.89	10.29	7.49	.0902	.4966	.1802	.0311	.0162	1.7502	.8028	.7868	.7677	.4025	.5632	1.3202	.7769
95	8.87	9.80	11.01	6.15	7.37	.0990	.5086	.2236	.0329	.0184	1.7146	.7543	.7349	.7225	.3920	.5239	1.3426	.7632

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.1800	1.6370	83.95	85.75

STATOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	20.409	21.489	995.7	820.1	770.1	820.1	631.2	7.0	39.34	.49	18.54	48.58	[illegible]	1239.7	-258.3	-929.6	889.5	936.6
10	21.008	21.961	965.2	799.6	759.9	[illegible]9.4	596.2	-12.7	38.14	-.92	22.82	50.49	[illegible]3.8	1257.0	-319.5	-969.8	915.6	957.2
15	21.589	22.432	937.7	781.3	749.4	780.7	563.6	-28.1	36.94	-2.07	26.71	52.17	839.4	1273.4	-377.3	-1005.8	940.9	977.7
30	23.314	23.902	874.2	734.6	721.3	733.2	493.9	-45.6	34.40	-3.56	35.88	56.00	891.0	1311.6	-522.2	-1087.4	1016.1	1041.8
50	25.601	25.893	820.0	685.8	675.2	684.8	465.2	-38.1	34.57	-3.18	43.92	59.58	938.0	1352.9	-650.6	-1166.7	1115.8	1128.5
70	27.818	27.9[illegible]2	793.2	648.9	637.8	648.8	471.4	-10.1	36.47	-.89	49.28	62.12	977.8	1387.2	-741.[illegible]	-1226.2	1212.4	1216.1
85	29.408	29.382	808.7	638.9	627.9	638.6	509.6	19.2	39.06	1.72	50.88	63.15	995.2	1413.8	-772.1	-1261.4	1281.7	1280.6
90	29.914	29.856	810.2	631.1	616.9	630.1	525.1	35.1	40.42	3.19	51.62	63.54	993.5	1414.4	-778.7	-1266.2	1303.8	1301.3
95	30.382	30.293	782.2	594.4	572.5	593.5	533.0	33.6	42.95	3.24	54.11	65.24	976.6	1417.0	-791.2	-1286.7	1324.2	320.3

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-6.84	-3.92	12.90	38.85	55.89	.0000	.3281	.0812	.0202	.0202	.9677	.0000	.0000	.8063	.8756	.7094	.7195	1.0723
10	-7.39	-4.37	10.53	39.46	53.87	.0000	.3291	.0670	.0171	.0171	.9746	.0000	.0000	.8580	.8466	.6921	.7319	1.0680
15	-7.50	-4.56	8.91	39.91	52.47	.0000	.3290	.0553	.0145	.0145	.9800	.0000	.0000	.[illegible]691	.8233	.6760	.7435	1.1019
30	-8.[illegible]2	-5.02	7.66	37.96	50.67	.0000	.3312	.0354	.0099	.0099	.9885	.0000	.0000	.9026	.7664	.6348	.7845	1.1334
50	-6.15	-3.03	8.86	37.75	49.61	.0000	.3507	.0317	.0097	.0097	.9909	.0000	.0000	.9139	.7141	.5882	.8163	1.1602
70	-3.31	-.08	12.60	37.35	49.93	.0000	.3829	.0503	.0167	.0167	.9865	.0000	.0000	.8894	.6828	.5505	.8415	1.1768
85	-.46	2.86	17.63	37.34	52.04	.0000	.4221	.0995	.0348	.0348	.9729	.0000	.0000	.7926	.6[illegible]	.5354	.8480	1.1847
90	.58	3.90	20.59	37.23	53.58	.0000	.4363	.1112	.0394	.0394	.9699	.0000	.0000	.7761	.6910	.5262	.8465	1.1793
95	3.09	6.46	22.93	39.71	56.04	.0000	.4707	.1097	.0395	.0395	.9722	.0000	.0000	.7817	.6620	.4926	.8241	1.1742

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	W1/A1 LBM/SEC SQFT
9989	164.57	1.1800	1.0090	80.80	82.78	36.98

TABLE 14.1

Blade-Element and Overall Performance with Radial Inlet Distortion

100% of Design Speed

ROTOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.769	707.5	1023.3	707.5	749.1	.0	697.1	.00	42.94	50.14	19.26	1103.8	793.6	-847.3	-261.9	847.3	959.0
10	18.467	20.408	717.1	1005.3	717.1	749.[illegible]	.0	669.6	.00	41.76	51.32	20.12	1147.5	815.6	-895.8	-320.5	895.8	990.0
15	19.467	21.047	729.3	986.3	729.3	742.4	.0	649.4	.00	41.17	52.31	26.57	1193.2	830.8	-944.3	-371.6	944.3	1021.0
30	22.314	22.964	755.8	898.9	755.8	703.9	.0	559.1	.00	38.45	55.06	38.21	1320.3	897.4	-1082.4	-554.9	1082.4	1113.9
50	25.791	25.520	710.2	793.6	710.2	612.9	.0	504.1	.00	39.44	60.39	50.08	1439.0	956.8	-1251.1	-733.8	1251.1	1237.9
70	28.954	28.076	589.4	738.6	589.4	561.4	.0	479.8	.00	40.52	67.22	57.52	1523.7	1045.7	-1404.5	-882.1	1404.5	1361.9
85	31.295	29.993	524.0	732.2	524.0	523.8	.0	511.6	.00	44.32	70.95	60.96	1606.0	1079.0	-1518.1	-943.3	1518.1	1454.9
90	31.883	30.630	512.9	733.2	512.9	512.4	.0	524.0	.00	45.68	71.65	61.96	1629.4	1090.1	-1546.6	-961.8	1546.6	1485.8
95	32.499	31.271	502.8	679.7	502.8	425.1	.0	530.4	.00	51.29	72.31	66.69	1654.7	1074.2	-1576.5	-986.5	1576.5	1516.9

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-5.29	1.14	17.39	30.87	47.12	.0050	.4281	.2370	.0491	.0480	1.7644	.8343	.8207	.7518	.6603	.8960	1.0299	.6949
10	-4.74	1.69	13.52	28.19	39.99	.0090	.4299	.2085	.0440	.0421	1.7683	.8440	.8312	.7789	.6703	.8785	1.0725	.7127
15	-4.33	1.76	10.07	25.74	34.03	.0146	.4393	.2029	.0435	.0404	1.7607	.8378	.8246	.7839	.6824	.8595	1.1160	.7239
30	-3.05	1.08	8.57	16.85	24.29	.0387	.4357	.1860	.0393	.0312	1.6806	.8143	.8001	.7935	.7098	.7785	1.2346	.7771
50	.34	3.20	7.85	10.31	14.65	.0727	.4413	.1809	.0354	.0215	1.6593	.7926	.7771	.7887	.6723	.6781	1.3337	.8175
70	4.96	6.95	6.85	9.70	8.89	.1155	.4189	.1166	.0212	.0006	1.7763	.8616	.8502	.8481	.5666	.6246	1.3960	.8843
85	7.44	8.77	6.58	10.00	7.72	.1437	.4416	.1564	.0276	.0024	1.8517	.8215	.8055	.7957	.4897	.6110	1.4564	.9004
90	7.77	8.90	6.65	9.6[illegible]	7.42	.1512	.447[illegible]	.1791	.0312	.0063	1.8683	.8004	.7823	.7711	.4731	.6091	1.4822	.9056
95	8.07	9.00	10.73	5.62	7.35	.1623	.4691	.2319	.0345	.0105	1.8148	.7411	.7187	.7173	.3609	.5598	1.5081	.8847

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.2137	1.7220	78.56	80.85

STATOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	20.409	21.489	1094.8	981.5	861.6	977.6	675.4	-87.0	38.09	-5.09	20.06	49.12	917.3	1493.8	-314.6	-1129.4	990.0	1042.4
10	21.008	21.961	1077.2	981.5	858.8	978.3	650.3	-79.1	37.13	-4.62	23.24	49.47	934.7	1505.6	-368.8	-1144.4	1019.1	1065.3
15	21.589	22.432	1060.0	978.8	850.0	976.2	633.4	-71.6	36.69	-4.19	25.95	49.91	945.8	1515.9	-413.9	-1159.7	1047.2	1088.1
30	23.314	23.902	981.9	921.6	8'2.7	917.5	551.1	-87.3	34.13	-5.44	35.48	53.65	999.1	1548.2	-579.9	-1246.7	1130.9	1159.4
50	25.601	25.893	894.1	836.6	739.9	832.5	502.0	-83.1	34.15	-5.70	44.97	58.13	1046.7	1576.9	-739.9	-1339.1	1241.9	1256.0
70	27.818	27.902	864.8	790.2	718.1	786.5	482.0	-75.4	33.87	-5.48	50.38	61.17	1126.1	1631.1	-867.4	-1428.9	1349.4	1353.5
85	29.408	29.382	888.1	788.2	719.4	787.	520.8	-42.6	35.90	-3.10	51.54	61.80	1156.7	1665.6	-905.7	-1467.9	1426.5	1425.3
90	29.914	29.856	902.4	802.5	775.7	802.5	536.2	-4.6	36.47	-.33	51.58	61.09	1167.8	1659.8	-914.9	-1452.9	1451.1	1448.3
95	30.382	30.293	871.7	742.2	679.6	742.2	5.5.9	-.3	38.77	-.02	53.78	63.21	1150.2	1646.6	-927.9	-1469.8	1473.8	1469.5

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-8.25	-5.33	7.32	43.18	55.88	.0000	.2732	.2199	.0545	.0545	.9004	.0000	.0000	.1732	.9662	.8540	.8149	1.2997
10	-8.14	-5.21	6.82	41.76	53.85	.0000	.2585	.1920	.0488	.0488	.9[illegible]	.0000	.0000	.1638	.9508	.8546	.8270	1.3109
15	-7.72	-4.78	6.69	40.88	52.35	.0000	.2478	.1665	.0434	.0434	.9283	.0000	3000	.1642	.9338	.8519	.8339	1.3194
30	-8.31	-5.32	5.78	39.57	50.66	.0000	.2422	.1245	.0348	.0348	.9523	.0000	.0000	.2017	.8616	.8004	.8749	1.3446
50	-6.57	-3.45	6.34	39.85	49.61	.0000	.2638	.1141	.0346	.0348	.9627	.0000	.0000	.2656	.7750	.7187	.9038	1.3545
70	-5.91	-2.68	7.99	39.34	49.91	.0000	.2998	.1494	.0493	.0493	.9542	.0000	.0006	.2683	.7422	.6726	.9661	1.3885
85	-3.54	-.23	12.79	39.01	52.01	.0000	.3344	.1877	.0655	.0655	.9410	.0000	.0000	.2809	.7527	.6621	.9813	1.3992
90	-3.31	.01	17.07	36.80	53.56	.0000	.3239	.1764	.0627	.0627	.9434	.0000	.0000	.3199	.7681	.6719	.9926	1.3897
95	-1.09	2.28	19.67	38.79	56.03	.0000	.3749	.2347	.0847	.0847	.9296	.0000	.0000	.2846	.7356	.6151	.9680	1.3645

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	W1/A1 LBM/SEC SQFT
11117	179.58	1.2137	1.6253	69.61	72.34	40.36

TABLE 14.2

Blade-Element and Overall Performance with Radial Inlet Distortion

100% of Design Speed

ROTOR

%SPAN	DIA-1 IN	DIA-2 IN	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	Vθ'-1 FT/SEC	Vθ'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.769	687.7	1002.8	687.7	690.[illegible]	.0	727.7	.00	46.52	50.90	18.45	1090.6	727.4	-846.4	-230.2	846.4	958.0
10	18.467	20.408	697.1	975.1	697.1	687.[illegible]	.0	691.2	.00	45.15	52.07	23.38	1134.4	749.6	-894.9	-297.7	894.9	988.9
15	19.467	21.047	709.6	959.6	709.6	696.8	.0	659.6	.00	43.42	53.04	27.31	1180.5	784.9	-943.3	-360.3	943.3	1019.9
30	22.314	22.964	736.4	904.7	736.4	676.3	.0	600.9	.00	41.63	55.73	37.10	1308.3	849.0	-1081.3	-511.9	1081.3	1112.8
50	25.791	25.520	691.3	820.6	691.3	584.1	.0	576.3	.00	[illegible]	61.03	48.46	1428.6	882.4	-1249.8	-660.3	1249.8	1236.6
70	28.954	28.076	570.6	770.7	570.6	522.1	.0	566.7	.00	47.35	67.85	56.65	1515.2	950.2	-1403.0	-793.8	1403.0	1360.5
85	31.295	29.993	504.3	773.7	504.3	434.7	.0	602.8	.00	51.20	71.60	60.33	1598.2	979.1	-1516.5	-850.6	1515.5	1453.4
90	31.883	30.630	493.1	758.9	493.1	436.1	.0	620.4	.00	54.93	72.30	63.23	1621.8	968.1	-1545.0	-863.8	1545.0	1484.2
95	32.499	31.271	483.3	723.2	483.3	362.7	.0	625.7	.00	59.90	72.94	67.82	1647.3	960.7	-1574.8	-889.6	1574.8	1515.3

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-4.54	1.89	16.58	32.45	47.12	.0056	.4884	.2252	.0469	.0457	1.8258	.8517	.8387	.7861	.6402	.8715	1.0145	.6322
10	-4.00	2.43	13.78	28.70	39.99	.0095	.4861	.1964	.0414	.0394	1.8158	.8600	.8479	.8103	.6496	.8456	1.0561	.6501
15	-3.62	2.50	10.83	25.73	34.03	.0149	.4743	.1606	.0342	.0310	1.8214	.8762	.8656	.8395	.6618	.8317	1.0995	.6802
30	-2.37	1.75	7.45	18.63	24.28	.0385	.4763	.1479	.0317	.0235	1.8007	.8642	.8528	.8458	.6897	.7787	1.2205	.7307
50	1.07	3.89	6.22	12.57	14.65	.0727	.5047	.1737	.0351	.0207	1.8132	.8254	.8103	.8145	.6511	.6946	1.3230	.7467
70	5.77	7.72	6.00	11.20	8.95	.1163	.4979	.1395	.0260	.0047	1.9428	.8578	.8438	.8394	.5426	.6433	1.3872	.7932
85	8.11	9.41	6.01	11.27	7.80	.1450	.5216	.1807	.0325	.0070	2.0384	.8211	.8021	.7904	.4684	.6369	1.4508	.8060
90	8.44	9.55	8.01	9.07	7.52	.1527	.5416	.2241	.0373	.0128	2.0325	.7827	.7598	.7494	.4525	.6201	1.4763	.7911
95	8.71	9.63	11.69	5.12	7.38	.1640	.5568	.2623	.0372	.0141	1.9989	.7449	.7188	.7144	.4418	.5868	1.5007	.7795

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.2387	1.8550	80.80	83.02

STATOR

%SPAN	DIA-1 IN	DIA-2 IN	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	Vθ-1 FT/SEC	Vθ-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	Vθ'-1 FT/SEC	Vθ'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	20.409	21.489	1057.1	792.8	787.7	792.7	704.9	-12.4	41.82	-.40	19.83	53.05	837.4	1318.6	-284.1	-1053.7	989.0	1041.3
10	21.000	21.961	1030.5	779.9	781.3	779.8	671.9	-11.8	40.69	-.87	23.88	54.07	854.7	1328.9	-346.1	-1076.0	1018.0	1064.2
15	21.589	22.432	1015.9	771.2	786.4	771.0	643.1	-13.5	39.27	-1.00	27.12	54.98	883.9	1343.8	-403.0	-1100.5	1046.1	1087.0
30	23.314	23.902	965.9	742.0	763.8	741.3	591.3	-31.6	37.75	-2.45	35.17	58.07	935.0	1402.1	-538.4	-1189.8	1129.7	1158.2
50	25.601	25.893	894.1	676.7	686.3	675.6	573.0	-38.5	39.86	-3.26	44.18	62.41	957.9	1459.3	-667.6	-1293.2	1240.6	1254.7
70	27.818	27.902	862.8	636.3	649.1	636.2	568.4	-11.1	41.21	-1.00	50.21	64.98	1014.4	1504.3	-779.6	-1363.1	1348.0	1332.1
85	29.408	29.382	890.3	638.1	647.3	637.6	611.3	26.4	43.36	2.37	51.50	65.48	1039.8	1536.0	-813.8	-1397.4	1425.0	1423.8
90	29.914	29.856	890.6	636.0	626.4	634.8	632.9	38.2	45.30	3.45	52.52	65.74	1029.3	1545.0	-816.6	-1408.5	1449.6	1446.7
95	30.382	30.293	867.9	600.2	581.9	599.1	644.0	46.3	47.90	3.47	54.91	67.29	1012.2	1551.9	-828.2	-1431.6	1472.2	1467.9

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	C-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-4.37	-1.45	11.52	42.72	55.89	.0000	.4146	.0718	.0178	.0178	.9694	.0000	.0000	.8752	.9193	.6702	.7345	1.1148
10	-4.84	-1.91	10.58	41.56	53.87	.0000	.4088	.0569	.0145	.0145	.9767	.0000	.0000	.9105	.8980	.6600	.7550	1.1246
15	-5.15	-2.21	9.97	40.28	52.46	.0000	.4068	.0630	.0165	.0165	.9747	.0000	.0000	.8874	.8848	.6527	.7758	1.1374
30	-4.61	-1.61	8.77	40.20	50.67	.0000	.4108	.0500	.0140	.0140	.9816	.0000	.0000	.9003	.8364	.6264	.8121	1.1836
50	-.85	2.28	8.78	43.12	49.61	.0000	.4515	.0365	.0112	.0112	.9883	.0000	.0000	.9289	.7640	.5644	.8181	1.2169
70	1.48	4.72	12.49	42.20	49.94	.0000	.4848	.0611	.0203	.0203	.9818	.0000	.0000	.8945	.7281	.5249	.8560	1.2407
85	3.78	7.09	18.28	40.99	52.04	.0000	.5131	.1220	.0426	.0426	.9626	.0000	.0000	.8066	.7430	.5194	.8687	1.2501
90	5.41	8.74	20.64	41.86	53.59	.0000	.5235	.1195	.0424	.0424	.9637	.0000	.0000	.8158	.7419	.5145	.8577	1.2499
95	8.05	11.41	23.16	44.43	56.05	.0000	.5614	.1266	.0456	.0456	.9635	.0000	.0000	.8007	.7170	.4621	.8339	1.2465

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	W1/A1 LBM/SEC SQFT
11106	176.26	1.2387	1.8140	77.61	80.04	39.61

TABLE 14.3

Blade-Element and Overall Performance with Radial Inlet Distortion

100% of Design Speed

ROTOR

% SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.769	690.7	993.1	690.7	706.7	0	697.7	.00	44.63	50.74	20.11	1091.5	752.6	-845.2	-258.8	845.2	956.5
10	18.467	20.408	704.3	982.3	704.3	721.4	0	666.7	.00	42.74	51.75	23.95	1137.8	789.7	-893.5	-320.8	893.5	987.5
15	19.467	21.047	718.9	967.8	718.9	724.0	0	642.3	.00	41.58	52.64	27.43	1185.0	816.3	-941.9	-376.1	941.9	1018.4
30	22.314	22.964	737.0	886.6	737.0	677.0	0	572.6	.00	40.23	55.66	38.47	1307.4	866.2	-1079.7	-538.5	1079.7	1111.1
50	25.791	25.520	687.7	781.9	687.7	575.5	0	529.3	.00	42.61	61.11	50.74	1425.3	911.2	-1247.9	-705.5	1247.9	1234.8
70	28.954	28.076	578.3	735.1	578.3	534.7	0	504.4	.00	43.33	67.55	57.94	1516.1	1007.8	-1401.0	-854.1	1401.0	1358.5
85	31.295	29.993	523.8	735.2	523.8	511.0	0	528.4	.00	45.96	70.92	61.02	1602.3	1054.9	-1514.2	-922.8	1514.2	1451.2
90	31.883	30.630	518.0	720.6	518.0	471.5	0	544.1	.00	49.15	71.44	63.33	1627.3	1050.3	-1542.7	-938.0	1542.7	1482.1
95	32.499	31.271	514.6	670.2	514.6	381.2	0	551.3	.00	53.34	71.88	68.38	1654.6	1034.6	-1572.5	-961.8	1572.5	1513.1

% SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-4.69	1.74	18.24	30.63	47.12	.0033	.4594	.2047	.0422	.0411	1.7939	.8600	.8482	.7983	.6433	.8656	1.0162	.6560
10	-4.31	2.12	14.35	27.80	39.99	.0091	.4472	.1595	.0335	.0316	1.8078	.8824	.8724	.8374	.6573	.8561	1.0616	.6882
15	-4.00	2.08	10.93	25.21	34.03	.0143	.4461	.1416	.0301	.0271	1.8079	.8877	.8781	.8525	.6720	.8422	1.1074	.7103
30	-2.41	1.69	8.81	17.19	24.28	.0380	.4569	.1443	.0304	.0224	1.7512	.8618	.8505	.8455	.6908	.7651	1.2220	.7473
50	1.14	3.97	8.50	10.38	14.66	.0717	.4734	.1594	.0308	.0172	1.7361	.8277	.8139	.8227	.6478	.6644	1.3194	.7742
70	5.52	7.48	7.28	9.62	8.95	.1145	.4465	.1011	.0182	-.0021	1.8525	.8857	.8756	.8744	.5486	.6187	1.3872	.8481
85	7.52	8.82	6.70	9.89	7.80	.1416	.4589	.1357	.0239	-.0007	1.9249	.8501	.8356	.8288	.4842	.6118	1.4556	.8778
90	7.62	8.73	8.11	8.11	7.52	.1487	.4756	.1807	.0300	.0062	1.9128	.8049	.7864	.7814	.4749	.5957	1.4842	.8682
95	7.66	8.58	12.47	3.50	7.39	.1590	.4975	.2360	.0327	.0107	1.8550	.7441	.7211	.7287	.4713	.5493	1.5116	.8480

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.2195	1.7894	82.34	84.37

STATOR

% SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	VO'-1 FT/SEC	VO'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	20.409	21.489	1055.1	884.8	810.2	884.8	675.8	5.9	39.83	.39	21.04	49.44	868.1	1360.8	-311.7	-1033.8	987.5	1039.8
10	21.008	21.961	1044.5	878.7	819.3	878.6	647.8	15.3	38.33	1.00	24.22	50.01	898.5	1367.1	-368.7	-1047.3	1016.5	1062.6
15	21.589	22.432	1031.0	873.7	819.1	873.6	626.2	10.3	37.40	.67	7.05	50.90	920.1	1385.4	-418.4	-1075.1	1044.6	1085.4
30	23.314	23.902	956.7	819.9	772.7	819.6	564.0	-22.0	36.13	-1.55	36.11	55.17	957.5	1435.9	-564.1	-1178.5	1128.1	1156.5
50	25.601	25.893	865.5	733.8	686.6	732.8	526.9	-38.9	37.51	-3.04	46.00	60.43	989.4	1485.3	-711.8	-1291.8	1238.7	1252.9
70	27.818	27.902	838.9	699.9	668.2	699.6	507.2	-17.8	37.20	-1.46	51.45	62.91	1072.4	1536.4	-838.8	-1367.9	1346.0	1350.1
85	29.408	29.382	864.9	702.1	677.9	701.3	537.1	33.7	38.39	2.75	52.58	63.19	1115.4	1555.1	-885.8	-1388.0	1422.9	1421.7
90	29.914	29.856	866.6	695.4	664.7	694.5	555.7	34.8	39.91	2.87	53.31	63.77	1112.3	1571.7	-891.7	-1409.8	1447.4	1444.6
95	30.382	30.293	833.7	653.1	610.9	652.3	567.4	32.4	42.89	2.84	55.91	65.53	1090.0	1574.8	-902.7	-1433.4	1470.1	1465.7

% SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-6.49	-3.57	12.80	39.45	55.89	.0000	.3151	.0955	.0238	.0238	.9592	.0000	.0000	.7592	.9245	.7597	.7678	1.1683
10	-7.08	-4.14	12.44	37.34	53.86	.0000	.3096	.1019	.0260	.0260	.9571	.0000	.0000	.7434	.9171	.7550	.7964	1.1746
15	-6.95	-4.00	11.65	36.72	52.45	.0000	.3057	.0976	.0255	.0255	.9597	.0000	.0000	.7393	.9020	.7506	.8093	1.1901
30	-6.26	-3.26	9.67	37.68	50.66	.0000	.3129	.0672	.0189	.0189	.9754	.0000	.0000	.8023	.8311	.7016	.8346	1.2285
50	-3.19	-.07	9.00	40.54	49.62	.0000	.3514	.0547	.0167	.0167	.9832	.0000	.0000	.8399	.7429	.6234	.8492	1.2557
70	-2.48	.75	12.03	38.66	49.92	.0000	.3729	.0808	.0268	.0268	.9767	.0000	.0000	.7809	.7145	.5872	.9132	1.2890
85	-1.10	2.21	16.66	35.64	52.03	.0000	.3918	.1283	.0448	.0448	.9617	.0000	.0000	.6966	.7301	.5828	.9421	1.2908
90	.06	3.38	20.26	37.04	53.58	.0000	.4115	.1354	.0480	.0480	.9598	.0000	.0000	.7001	.7317	.5739	.9383	1.2970
95	2.99	6.36	22.53	40.04	56.04	.0000	.4485	.1357	.0489	.0489	.9626	.0000	.0000	.7106	.6975	.5346	.9092	1.2892

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WI/AI LBM/SEC SQFT
11089	177.89	1.2195	1.7378	77.85	80.17	39.98

TABLE 14.4

Blade–Element and Overall Performance with Radial Inlet Distortion

100% of Design Speed

ROTOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.769	686.6	981.9	686.6	685.1	.0	703.4	.00	45.76	50.95	20.37	1089.8	730.3	-846.4	-284.4	846.4	957.9
10	18.467	20.408	700.2	969.1	700.2	698.0	.0	672.3	.00	43.92	51.95	24.17	1135.2	766.6	-894.8	-316.6	894.8	968.9
15	19.467	21.047	714.9	956.1	714.9	704.4	.0	646.5	.00	42.54	52.83	27.90	1183.6	797.6	-943.3	-373.3	943.3	1019.8
30	22.314	22.964	733.0	880.7	733.0	671.6	.0	583.6	.00	40.99	55.55	38.20	1306.4	856.0	-1081.2	-529.1	1081.2	1112.7
50	25.791	25.520	684.6	794.1	684.6	574.3	.0	548.3	.00	40.69	61.26	50.10	1425.3	897.0	-1249.7	-688.1	1249.7	1236.6
70	28.954	28.076	575.0	747.3	575.0	526.0	.0	531.7	.00	48.37	67.70	57.64	1516.7	981.1	-1402.9	-878.7	1402.9	1360.4
85	31.295	29.993	520.0	747.7	520.0	489.9	.0	564.8	.00	49.06	71.07	61.13	1603.1	1014.7	-1516.4	-888.5	1516.4	1453.3
90	31.883	30.630	514.5	738.1	514.5	454.1	.0	581.4	.00	52.04	71.58	63.31	1628.3	1010.8	-1544.9	-902.7	1544.9	1484.2
95	32.499	31.271	510.9	703.8	510.9	387.4	.0	587.6	.00	56.61	72.02	67.33	1655.5	1005.2	-1574.7	-927.6	1574.7	1515.2

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-4.49	1.94	18.50	30.58	47.12	.0056	.4798	.2090	.0430	.0418	1.8014	.8586	.8466	.8009	.6390	.8536	1.0136	.6354
10	-4.11	2.32	14.78	27.58	39.99	.0094	.4679	.1671	.0350	.0330	1.8121	.8781	.8677	.8356	.6527	.8421	1.0484	.6661
15	-3.82	2.29	11.42	24.94	34.03	.0148	.4621	.1426	.0302	.0271	1.8159	.8879	.8783	.8557	.6674	.8300	1.1039	.6923
30	-2.25	1.87	9.55	17.64	24.28	.0385	.4666	.1318	.0279	.0198	1.7871	.8763	.8660	.8610	.6857	.7665	1.2192	.7373
50	1.30	4.13	7.86	11.16	14.65	.0725	.4874	.1528	.0299	.0160	1.7850	.8405	.8272	.8335	.6443	.6734	1.3192	.7605
70	5.71	7.66	7.00	10.06	8.97	.1157	.4703	.1124	.0205	-.0002	1.9066	.8785	.8670	.3652	.6439	.6264	1.3460	.8223
85	7.67	8.97	6.82	9.94	7.81	.1431	.4923	.1616	.0284	.0037	1.9741	.8308	.8137	.8065	.4805	.6185	1.4561	.8393
90	7.77	8.88	8.08	8.27	7.51	.1501	.5086	.2034	.0338	.0097	1.9685	.7915	.7705	.7649	.4715	.6066	1.4840	.8306
96	7.80	8.72	11.41	4.69	7.39	.1605	.5236	.2457	.0356	.0124	1.9301	.7475	.7230	.7243	.4680	.5744	1.5114	.8203

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.2280	1.8274	82.36	84.44

STATOR

%SPAN	DIA-1 IN	DIA-2 IN	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	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	V0'-1 FT/SEC	V0'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	20.409	21.489	1039.3	853.0	784.7	853.0	681.4	-2.6	40.97	-.18	21.40	50.75	842.8	1348.1	-307.5	-1043.9	988.9	1041.2
10	21.008	21.961	1027.0	843.4	792.4	843.4	633.2	5.0	39.80	.34	24.70	51.47	872.4	1353.9	-364.7	-1059.1	1017.9	1064.1
15	21.589	22.432	1014.9	835.6	795.4	835.6	630.3	6.3	38.39	.43	27.58	52.28	897.8	1366.1	-415.8	-1080.6	1046.1	1086.9
30	23.314	23.902	954.2	792.7	761.9	792.4	574.5	-23.6	37.02	-1.72	36.06	56.15	943.[illegible]	1423.1	-555.1	-1181.7	1129.7	1158.2
50	25.601	25.893	872.0	714.5	680.1	713.7	545.7	-34.7	38.75	-2.78	45.58	61.03	972.7	1473.8	-694.8	-1289.3	1240.5	1254.8
70	27.818	27.902	845.4	680.2	655.3	680.0	534.1	-15.3	39.18	-1.29	51.16	63.56	1044.8	1527.8	-813.8	-1367.3	13[illegible].9	1352.0
85	29.408	29.382	871.2	684.6	655.2	683.7	574.1	36.0	41.22	3.02	52.40	63.77	1073.9	1547.0	-850.8	-1367.7	1444.9	1423.7
90	29.914	29.856	874.7	679.1	641.5	677.7	594.5	43.3	42.83	3.65	53.12	64.22	1069.0	1558.5	-855.0	-1403.4	1449.5	1446.7
96	30.382	30.293	854.9	643.9	604.2	642.6	604.8	41.0	45.03	3.65	55.14	65.75	1057.0	1564.9	-867.3	-1426.9	1472.1	1467.8

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-5.35	-2.43	12.23	41.15	55.89	.0000	.3387	.0647	.0161	.0161	.9731	.0000	.0000	.8502	.9070	.7287	.7431	1.1517
10	-5.95	-3.01	11.79	39.16	53.87	.0000	.3362	.0760	.0194	.0194	.9689	.0000	.0000	.8297	.8982	.7208	.7712	1.1571
15	-5.98	-3.04	11.40	37.96	52.45	.0000	.3342	.0826	.0216	.0216	.9668	.0000	.0000	.8049	.8853	.7135	.7880	1.1671
30	-5.37	-2.37	9.50	38.74	50.66	.0000	.3432	.0656	.0184	.0184	.9762	.0000	.0000	.8321	.8277	.6749	.8202	1.2114
50	-1.98	1.15	9.26	41.52	49.61	.0000	.3834	.0546	.0167	.0167	.9831	.0000	.0000	.8658	.7470	.6009	.8319	1.2393
70	-.58	2.66	12.19	40.47	49.92	.0000	.4103	.0744	.0247	.0247	.9784	.0000	.0000	.8408	.7164	.5669	.8852	1.2726
85	1.64	4.95	18.92	38.20	52.03	.0000	.4302	.1171	.0409	.0409	.9650	.0000	.0000	.7680	.7304	.5635	.9014	1.2731
90	2.97	6.30	21.05	39.17	53.58	.0000	.4479	.1285	.0456	.0456	.9317	.0000	.0000	.7527	.7327	.5554	.8952	1.2746
96	5.18	8.55	23.34	41.38	56.04	.0000	.4851	.1465	.0527	.0527	.9583	.0000	.0000	.7214	.7108	.5229	.8765	1.2707

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	W1/A1 LBM/SEC SQFT
11105	177.23	1.2280	1.7796	78.43	80.76	39.83

APPENDIX 5

Circumferential Inlet Distortion, Distribution and Overall Performance

PRECEDING PAGE BLANK NOT FILMED.

TABLE 15.1

Rotor Inlet Circumferential Distributions

Disk Probe Station 7, 70% of Design Speed, $\frac{W\sqrt{\theta}}{\delta} = 129.8$

Circumferential Position	54°						114°						174°					
% Span	P_7/P_o	$90-\beta'_7$	$90-\beta_7$	M	V	V_m	P_7/P_o	$90-\beta'_7$	$90-\beta_7$	M	V	V_m	P_7/P_o	$90-\beta'_7$	$90-\beta_7$	V	V	V_m
5 (hub)	.975	30.75	96.1	.321	355	352	.968	30.00	90.6	.291	322	322	.966	34.40	76.2	.303	335	325
10	.973	30.35	95.6	.335	370	368	.970	30.02	90.6	.313	346	346	.975	34.46	78.7	.332	367	360
15	.973	30.18	94.8	.351	387	385	.972	30.18	90.8	.334	369	369	.972	33.75	79.6	.344	380	373
30	.970	27.49	94.9	.366	403	402	.972	27.85	91.0	.357	394	394	.965	29.55	80.5	.352	388	383
50	.976	24.60	94.0	.380	418	417	.976	24.35	91.0	.366	403	403	.971	25.78	83.8	.370	408	405
70	.973	20.75	93.7	.355	392	391	.975	20.70	90.5	.346	382	382	.972	22.10	84.7	.359	396	394
85	.967	17.50	95.5	.321	354	353	.972	17.70	90.7	.317	350	350	.969	19.15	84.5	.335	370	368
90	.962	15.81	96.3	.299	331	329	.968	16.20	91.7	.299	330	330	.966	17.75	84.8	.318	352	350
95 (tip)	.954	13.35	100.1	.262	291	286	.954	13.12	95.6	.250	277	276	.952	14.61	86.8	.268	297	297
MR	.971		95.0	.350	386	384	.972		91.1	.338	373	373	.968		82.9	.346	382	379

	204°						264°						324°					
5 (hub)	.952	42.20	60.7	.346	382	333	.863	21.88	89.2	.200	222	222	.951	27.70	112.1	.362	399	370
10	.947	39.78	63.5	.349	385	335	.861	21.20	89.2	.206	229	229	.952	28.45	109.5	.384	422	398
15	.938	36.18	60.6	.338	373	325	.859	20.90	89.2	.215	239	239	.948	28.00	108.8	.394	433	410
30	.924	28.40	70.7	.323	357	337	.860	26.35	88.1	.237	263	263	.956	27.40	106.4	.430	472	453
50	.914	22.65	71.3	.307	340	322	.860	17.12	86.9	.241	268	267	.965	24.90	105.4	.445	487	470
70	.915	19.28	68.3	.301	333	309	.860	14.50	87.1	.232	258	258	.969	21.80	105.8	.431	473	455
85	.918	17.30	66.6	.297	329	302	.862	12.85	88.2	.223	248	248	.966	19.12	107.0	.405	445	425
90	.921	16.90	65.3	.299	330	300	.862	12.30	89.2	.219	244	244	.961	17.50	108.2	.378	416	395
95 (tip)	.916	14.63	62.6	.270	299	266	.861	11.20	93.5	.207	230	229	.936	12.62	116.6	.295	327	292
MR	.922		67.3	.312	345	318	.861		88.3	.228	253	253	.960		107.3	.415	456	435

1) Inlet plenum conditions: $P_o = 2012$ psf, $T_o = 534$ °R
2) V_m calculation is based on standard-day inlet plenum conditions
3) Circumferential reference position is TDC looking forward
4) Relative position of circumferential distortion screen is 210° - 330°
5) $\beta_7{}^* = \tan^{-1} [\tan \beta_7 / \cos \epsilon]$

TABLE 15.2

Rotor Inlet Circumferential Distributions

Disk Probe Station 7, 70% of Design Speed, $\frac{W\sqrt{\theta}}{\delta} = 122.1$

Circumferential Position

24°

% Span	P_7/P_o	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.971	29.63	95.8	.304	337	335
10	.971	29.48	94.6	.320	353	352
15	.972	28.70	94.8	.328	362	361
30	.977	27.12	93.6	.357	394	393
50	.975	23.20	93.9	.355	391	390
70	.976	19.80	94.0	.338	373	372
85	.975	16.70	98.6	.314	347	344
90	.974	15.60	102.5	.304	336	328
95 (tip)	.974	13.50	107.8	.286	317	301
MR	.975		95.8	.335	370	368

54°

% Span	P_7/P_o	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.979	29.55	96.3	.305	337	335
10	.977	28.92	96.2	.317	351	349
15	.976	28.48	95.7	.328	362	361
30	.975	26.05	95.4	.346	382	380
50	.979	23.35	94.3	.357	394	393
70	.976	19.70	94.8	.338	373	372
85	.968	16.23	96.2	.299	331	329
90	.963	14.85	96.5	.280	310	308
95 (tip)	.951	12.18	100.2	.235	261	257
MR	.974		95.5	.330	364	362

8[illegible]

% Span	P_7/P_o	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.978	31.90	89.2	.[illegible]9	342	342
10	.979	31.18	89.3	.32[illegible]	356	356
15	.977	30.17	89.5	.329	363	363
30	.977	26.85	90.7	.341	377	377
50	.976	23.33	90.1	.344	380	380
70	.976	19.45	91.5	.325	359	359
85	.974	16.65	95.0	.305	337	336
90	.974	15.50	97.1	.294	326	323
95 (tip)	.974	13.78	103.0	.279	309	301
MR	.976		92.0	.326	360	360

114°

% Span	P_7/P_o	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.968	28.30	92.3	.275	305	305
10	74	28.80	92.2	.302	334	333
15	.975	29.15	91.8	.322	356	356
30	.975	26.65	92.1	.344	379	379
50	.976	23.20	92.0	.348	384	384
70	.976	19.75	91.2	.331	365	365
85	.969	16.48	92.8	.298	330	329
90	.962	14.95	94.1	.277	307	306
95 (tip)	.951	12.18	98.3	.233	258	256
MR	. 73		92.4	.323	357	356

144°

% Span	P_7/P_o	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.974	32.85	82.3	.300	332	329
10	.976	31.70	83.7	.312	345	343
15	.974	30.40	83.8	.316	349	347
30	.978	27.60	85.8	.339	374	373
50	.977	23.70	86.1	.342	377	376
70	.975	20.10	86.3	.326	360	360
85	.974	16.90	91.2	.303	335	335
90	.972	16.00	91.2	.294	325	325
95 (tip)	.971	14.05	98.1	.272	302	299
MR	.975		87.2	.322	356	356

174°

% Span	P_7/P_o	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.968	31.98	78.2	.282	313	306
10	.976	33.80	80.4	.316	350	345
15	.974	31.75	81.3	.325	359	355
30	.969	27.7[illegible]	82.7	.333	367	364
50	.975	24.43	85.7	.353	390	388
70	.976	21.07	86.3	.344	379	379
85	.971	18.03	86.9	.317	350	350
90	.965	16.48	87.5	.298	329	329
95 (tip)	.953	13.55	89.8	.250	278	278
MR	.971		84.9	.329	363	362

204°

% Span	P_7/P_o	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.955	38.30	60.7	.312	345	301
10	.949	35.20	60.5	.311	344	299
15	.943	32.30	63.1	.305	337	301
30	.945	28.73	73.7	.330	364	350
50	.946	25.20	73.7	.344	380	364
70	.950	21.75	72.6	.339	374	357
85	.954	19.85	72.7	.336	371	3[illegible]5
90	.953	18.73	71.6	.3[illegible]8	362	343
95 (tip)	.937	15.10	68.7	.273	303	282
MR	.947		71.1	.329	363	344

234°

% Span	P_7/P_o	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.909	30.95	65.3	.258	286	260
10	.897	25.98	67.1	.235	261	240
15	.891	23.40	67.1	.225	249	230
30	.877	15.60	67.2	.181	201	185
50	.875	11.70	63.8	.166	185	166
70	.875	9.20	64.0	.151	168	151
85	.875	8.25	78.3	.141	157	154
90	.873	6.50	82.4	.115	128	127
95 (tip)	.873	5.04	82.5	.091	102	101
MR	.881		68.1	.181	201	187

2[illegible]4°

% Span	P_7/P_o	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.874	22.00	88.7	.200	222	222
10	.873	20.65	88.7	.200	222	222
30	.872	19.65	88.7	.201	223	223
50	.871	18.20	87.1	.216	240	240
70	.870	15.28	89.[illegible]	.217	241	241
85	.871	12.90	89.0	.207	230	230
90	.875	11.88	89.6	.207	230	23[illegible]
95 (tip)	.878	11.42	90.7	.205	228	228
MR	.876	10.70	94.4	.200	222	222
	.872		89.4	.209	232	232

294°

% Span	P_7/P_o	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.909	23.75	107.7	.269	299	284
10	.900	22.55	104.4	.257	285	276
30	.892	20.85	103.1	.244	270	263
50	.876	16.12	103.5	.213	236	230
70	.873	12.97	106.0	.204	227	218
85	.873	9.32	109.2	.166	185	175
90	.871	6.74	109.4	.129	143	135
95 (tip)	.871	6.00	115.4	.124	138	125
MR	.871	4.12	119.8	.090	100	87
	.880		106.8	.204	227	217

324°

% Span	P_7/P_o	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.951	25.03	113.9	.324	358	327
10	.955	26.55	110.0	.350	386	363
30	.950	25.85	109.4	.353	389	367
50	.952	24.75	107.8	.383	421	401
70	.955	21.90	107.6	.388	427	407
85	.966	19.85	107.2	.390	429	410
90	.964	16.97	109.4	.359	396	374
95 (tip)	.956	14.90	112.3	.328	363	336
MR	.932	10.60	119.7	.252	280	2[illegible]3
	.956		109.1	.369	406	381

354°

% Span	P_7/P_o	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.973	29.10	104.9	.331	366	354
10	.971	28.47	102.7	.340	375	366
30	.968	27.70	101.6	.342	378	370
50	.976	27.35	98.0	.379	417	413
70	.976	23.33	98.3	.373	411	406
85	.972	19.65	98.3	.348	384	380
90	.972	16.30	103.9	.321	354	344
95 (tip)	.972	15.15	106.2	.311	344	331
MR	.971	13.18	111.8	.291	322	299
	.97[illegible]		100.3	.351	387	380

1) Inlet plenum conditions: P_o = 2020 psf, T_o = 525.2 °R
2) V_m calculation is based on standard-day inlet plenum conditions
3) Circumferential reference position is TDC looking forward
4) Relative position of circumferential distortion screen is 210° - 330°
5) $\beta_7° = \tan^{-1} [\tan \beta_7/\cos \epsilon]$

TABLE 15.3

Rotor Inlet Circumferential Distributions

Disk Probe Station 7, 70% of Design Speed, $\frac{W\sqrt{\theta}}{\delta} = 111.0$

Circumferential Position	54°						114°						174°					
% Span	P_7/P_o	$90-\beta'_7$	$90-\beta_7$	M	V	V_m	P_7/P_o	$90-\beta'_7$	$90-\beta_7$	M	V	V_m	P_7/P_o	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.981	27.10	93.0	.263	291	291	.975	27.60	88.7	.258	286	286	.975	30.60	78.3	.269	298	292
10	.983	27.10	92.8	.281	311	311	.976	26.90	89.3	.269	299	299	.979	30.65	80.5	.293	325	320
15	.981	26.60	92.4	.291	323	322	.977	26.60	89.7	.284	314	314	.979	30.00	80.9	.304	336	332
30	.979	23.80	92.4	.302	334	333	.979	25.00	90.1	.313	346	346	.975	26.05	82.3	.310	343	340
50	.982	20.90	91.9	.309	342	341	.982	21.90	89.9	.320	354	354	.980	23.00	85.1	.328	363	361
70	.981	17.10	91.4	.282	313	313	.981	18.45	89.6	.303	335	335	.981	19.65	85.6	.318	351	350
85	.976	14.25	92.8	.255	283	282	.978	15.55	90.8	.276	305	305	.978	16.80	85.6	.292	324	323
90	.973	13.08	94.1	.241	267	266	.974	14.30	92.3	.260	289	289	.975	15.60	86.4	.279	309	309
95 (tip)	.964	10.75	99.2	.206	229	227	.961	11.50	96.6	.217	241	240	.963	12.75	89.4	.235	261	261
MR	.979		92.6	.284	315	314	.978		90.4	.295	327	327	.977		84.3	.306	338	337

Circumferential Position	204°						264°						324°					
% Span	P_7/P_o	$90-\beta'_7$	$90-\beta_7$	M	V	V_m	P_7/P_o	$90-\beta'_7$	$90-\beta_7$	M	V	V_m	P_7/P_o	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.955	32.60	64.9	.271	300	272	.902	20.90	96.4	.200	222	221	.967	23.85	113.0	.297	328	302
10	.959	31.15	69.3	.293	324	303	.898	19.65	96.5	.200	222	221	.969	24.70	110.4	.317	351	329
15	.954	30.60	70.3	.294	325	306	.896	18.70	96.5	.200	222	221	.966	24.15	109.7	.323	356	336
30	.935	23.40	72.3	.267	296	282	.897	16.60	96.0	.206	229	228	.968	23.00	107.6	.345	381	363
50	.933	19.40	72.7	.265	293	280	.898	14.50	93.3	.208	232	231	.974	20.35	107.3	.352	388	370
70	.931	16.20	70.7	.254	282	266	.898	12.10	95.7	.200	222	221	.979	17.00	108.3	.327	361	343
85	.931	14.50	69.1	.248	275	257	.898	11.25	94.9	.200	222	222	.974	13.70	111.3	.286	317	295
90	.935	14.50	68.4	.255	283	263	.899	11.00	94.9	.200	222	222	.966	11.70	115.1	.257	285	258
95 (tip)	.934	13.10	67.1	.239	266	245	.899	10.50	98.1	.200	222	220	.945	8.65	119.7	.200	222	193
MR	.937		70.5	.264	292	276	.898		95.4	.203	226	225	.971		109.4	.323	357	337

1) Inlet plenum conditions: $P_o = 2037$ psf, $T_o = 529.3$ °R
2) V_m calculation is based on standard-day inlet plenum conditions
3) Circumferential reference position is TDC looking forward
4) Relative position of circumferential distortion screen is 210° - 330°
5) $\beta_7{}' = \tan^{-1} [\tan \beta_7 / \cos \epsilon]$

TABLE 15.4
Rotor Inlet Circumferential Distributions
Disk Probe Station 7, 90% Speed, $\frac{W\sqrt{\theta}}{\delta} = 164.8$

Circumferential Position 24°

% Span	P_7/P_o	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.940	32.80	90.0	.453	496	493
10	.936	31.30	96.2	.460	503	500
15	.937	30.60	96.3	.470	513	510
30	.945	28.60	95.3	.505	550	548
50	.951	26.10	94.4	.514	559	557
70	.950	21.50	95.6	.490	534	532
85	.949	18.40	97.0	.449	491	488
90	.951	17.30	98.0	.435	477	472
95 (tip)	.950	15.95	98.7	.410	450	445
MR	.947		95.9	.482	526	523

Circumferential Position 54°

% Span	P_7/P_o	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.940	31.40	96.6	.430	472	468
10	.947	31.60	95.8	.460	503	500
15	.947	30.78	95.7	.471	515	512
30	.947	28.30	95.2	.497	541	539
50	.952	24.85	94.6	.501	546	544
70	.947	21.10	94.6	.472	515	514
85	.943	17.96	94.4	.429	471	469
90	.941	16.98	94.7	.411	451	450
95 (tip)	.930	14.50	96.5	.361	398	395
MR	.946		95.1	.467	511	509

Circumferential Position 84°

% Span	P_7/P_o	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.954	34.40	89.5	.447	490	490
10	.956	33.10	90.7	.463	506	506
15	.954	32.20	90.8	.472	515	515
30	.953	29.00	91.0	.487	531	531
50	.954	25.20	90.6	.490	534	534
70	.952	21.30	91.8	.468	512	511
85	.950	18.10	92.7	.428	469	469
90	.946	16.70	92.8	.404	444	443
95 (tip)	.937	14.68	94.4	.360	397	396
MR	.951		91.4	.463	506	506

Circumferential Position 114°

% Span	P_7/P_o	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.930	31.40	91.0	.400	440	439
10	.939	31.70	90.6	.431	472	472
15	.945	31.80	90.6	.461	504	504
30	.950	29.10	90.9	.487	531	531
50	.950	25.20	91.0	.490	535	534
70	.947	21.58	90.8	.468	511	511
85	.948	18.50	91.2	.431	473	473
90	.946	17.41	91.5	.417	457	457
95 (tip)	.933	14.94	93.2	.364	401	401
MR	.946		91.1	.459	502	502

Circumferential Position 144°

% Span	P_7/P_o	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.949	36.30	81.9	.436	477	473
10	.945	34.60	82.7	.447	490	486
15	.935	32.20	83.8	.439	481	478
30	.952	30.00	85.9	.485	529	527
50	.954	26.20	86.1	.492	537	536
70	.948	21.60	87.7	.463	506	506
85	.943	18.49	87.6	.424	466	465
90	.941	17.20	87.7	.405	444	444
95 (tip)	.933	15.07	87.7	.360	397	397
MR	.947		86.2	.458	501	500

Circumferential Position 174°

% Span	P_7/P_o	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.930	29.60	76.6	.417	458	445
10	.940	29.40	78.7	.449	492	482
15	.938	29.00	79.7	.462	505	497
30	.933	26.50	81.2	.474	517	511
50	.943	24.50	84.4	.496	541	538
70	.946	21.75	86.0	.486	530	529
85	.945	18.82	85.2	.454	496	495
90	.945	17.85	84.7	.438	480	478
95 (tip)	.928	15.40	84.6	.383	421	419
MR	.940		83.4	.467	511	507

Circumferential Position 204°

% Span	P_7/P_o	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.904	42.80	60.7	.453	496	432
10	.899	40.30	60.5	.457	500	435
15	.883	36.00	60.7	.437	479	418
30	.887	31.60	73.0	.470	513	491
50	.900	28.15	73.6	.500	544	522
70	.905	24.70	73.1	.498	543	520
85	.918	22.30	71.7	.493	537	510
90	.915	21.00	70.0	.474	517	486
95 (tip)	.883	16.60	55.6	.288		389
MR	.899		70.5	.477		491

Circumferential Position 234°

% Span	P_7/P_o	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.827	36.50	60.0	.387	425	368
10	.813	30.78	66.2	.359	396	363
15	.805	27.70	69.0	.342	378	353
30	.771	17.70	69.0	.261	290	270
50	.767	14.38	61.6	.260	289	254
70	.766	12.19	67.4	.250	277	256
85	.768	11.40	79.7	.251	278	274
90	.771	11.20	81.1	.253	231	228
95 (tip)	.770	9.65	87.3	.226	251	251
MR	.778		69.6	.282	312	292

Circumferential Position 264°

% Span	P_7/P_o	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.757	20.88	81.1	.232	258	255
10	.756	20.70	84.3	.251	279	277
15	.755	20.90	84.1	.277	307	305
30	.759	20.00	83.3	.302	334	332
50	.764	17.70	85.2	.319	352	351
70	.765	15.75	84.8	.322	356	354
85	.762	13.19	88.9	.298	330	329
90	.758	12.30	91.2	.283	314	314
95 (tip)	.751	10.30	98.3	.239	265	263
MR	.761		86.1	.300	331	331

Circumferential Position 294°

% Span	P_7/P_o	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.821	26.72	107.0	.401	441	422
10	.818	26.90	102.2	.409	449	439
15	.805	25.65	101.1	.397	436	428
30	.772	19.40	101.1	.333	368	361
50	.765	14.03	101.3	.318	351	345
70	.757	12.80	108.1	.296	328	312
85	.758	10.76	108.0	.270	299	285
90	.756	9.98	108.0	.256	284	271
95 (tip)	.755	8.86	110.7	.238	264	247
MR	.774		104.4	.328	362	351

Circumferential Position 324°

% Span	P_7/P_o	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.884	25.30	119.3	.472	516	450
10	.876	24.95	116.9	.477	521	465
15	.872	26.60	111.0	.492	536	501
30	.898	27.91	105.6	.569	615	592
50	.917	25.40	104.9	.589	636	614
70	.925	22.38	105.3	.574	621	599
85	.931	19.85	106.1	.546	592	569
90	.923	18.60	106.8	.519	564	540
95 (tip)	.889	15.00	111.5	.435	477	444
MR	.909		107.1	.550	596	569

Circumferential Position 354°

% Span	P_7/P_o	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.934	30.40	106.3	.480	524	503
10	.936	30.20	103.9	.500	545	529
15	.931	30.20	102.1	.508	553	540
30	.946	29.20	99.3	.546	592	585
50	.947	25.30	98.0	.544	590	584
70	.945	21.80	99.0	.514	559	553
85	.946	18.80	100.6	.477	521	512
90	.945	17.50	101.9	.458	501	490
95 (tip)	.937	15.60	104.6	.422	463	448
MR	.943		100.3	.512	558	549

1) Inlet plenum conditions: $P_o = 1968$ psf, $T_o = 536.2$
2) V_m calculation is based on standard-day inlet conditions
3) Circumferential reference position is TDC looking forward
4) Relative position of circumferential distortion screen is 210° - 330°
5) $\beta'_7 = \tan^{-1} [\tan\beta_7/\cos\epsilon]$

TABLE 15.5

Rotor Inlet Circumferential Distributions

Disk Probe Station 7, 90% of Design Speed, $\frac{W\sqrt{\theta}}{\delta} = 156.2$

Circumferential Position 24°

% Span	P_7/P_o	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.944	31.40	93.7	.112	452	451
10	.947	31.20	92.9	.434	476	475
15	.952	30.60	92.9	.450	493	492
30	.960	28.60	92.4	.480	524	523
50	.957	24.18	92.6	.473	517	516
70	.952	20.07	95.5	.449	492	489
85	.955	17.28	96.7	.418	459	455
90	.956	16.33	97.6	.405	445	441
95 (tip)	.950	14.48	98.8	.366	403	398
MR	.954		94.3	.448	491	489

54°

% Span	P_7/P_o	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.954	31.80	94.3	.422	463	451
10	.952	31.20	94.0	.438	480	479
15	.954	30.70	93.2	.455	498	497
30	.950	27.70	93.4	.471	515	514
50	.957	24.60	92.3	.484	528	528
70	.953	20.60	93.6	.456	499	498
85	.949	17.70	93.4	.419	460	459
90	.948	17.20	93.5	.402	442	441
95 (tip)	.939	14.50	94.2	.355	391	390
MR	.952		93.3	.451	493	492

84°

% Span	P_7/P_o	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.961	34.10	88.0	.429	470	470
10	.961	33.00	88.8	.444	487	487
15	.959	31.70	88.9	.450	493	493
30	.957	28.35	89.0	.466	509	509
50	[illegible]	24.63	89.3	.471	515	515
70	.956	20.70	91.6	.450	493	493
85	.954	17.50	92.5	.411	451	451
90	.954	16.65	92.5	.399	438	438
95 (tip)	.953	14.90	93.6	.365	402	402
MR	.957		90.4	445	487	487

114°

% Span	P_7/P_o	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.932	30.10	90.6	.375	413	413
10	.941	31.00	90.5	.418	459	459
15	.950	31.05	90.7	.449	491	491
30	.952	28.50	90.8	.476	520	519
50	.955	24.70	90.6	.478	522	522
70	.953	21.20	90.2	.460	503	503
85	.949	18.07	91.0	.421	462	462
90	.948	17.00	91.5	.405	445	444
95 (tip)	.939	14.75	93.2	.359	396	395
MR	.950		90.8	.449	491	491

144°

% Span	P_7/P_o	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.956	35.45	82.6	.425	466	463
10	.956	34.00	84.0	.440	482	479
15	.952	32.60	84.0	.445	487	484
30	.960	29.70	85.6	.477	520	519
50	.961	25.35	86.8	.479	523	522
70	.958	21.55	87.6	.460	503	502
85	.959	18.52	88.2	.427	469	469
90	.958	17.43	88.3	.410	450	450
95 (tip)	.958	16.10	88.3	.386	425	424
MR	.959		86.5	.453	496	495

174°

% Span	P_7/P_o	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.950	36.30	78.4	.423	464	454
10	.947	34.64	79.9	.434	476	468
15	.946	33.40	80.8	.446	489	482
30	.938	29.20	82.1	.457	500	495
50	.956	26.30	85.5	.493	538	536
70	.953	22.30	86.4	.472	516	515
85	.950	19.30	85.9	.440	482	481
90	.949	18.16	85.9	.424	465	464
95 (tip)	.937	15.64	85.5	.369	406	405
MR	.949		84.2	.457	499	497

204°

% Span	P_7/P_o	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.905	39.20	60.7	.414	455	397
10	.897	36.18	60.6	.411	452	394
15	.884	32.80	65.5	.403	442	402
30	.890	29.30	74.7	.438	480	463
50	.895	25.20	77.2	.451	493	481
70	.896	22.35	75.2	.453	495	479
85	.911	20.50	74.0	.454	497	477
90	.915	19.70	72.7	.446	488	466
95 (tip)	.900	17.08	69.3	.397	436	408
MR	.897		73.1	.439	481	460

234°

% Span	P_7/P_o	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.836	31.60	66.1	.336	371	339
10	.823	26.90	71.5	.319	353	334
15	.818	24.70	73.1	.309	342	327
30	.794	17.80	72.6	.261	290	277
50	.793	15.54	72.8	.274	303	290
70	.790	13.10	77.3	.264	293	286
85	.790	11.10	90.6	.249	277	277
90	.793	10.80	90.7	.250	278	278
95 (tip)	.788	8.86	96.6	.214	237	236
MR	.798		77.6	.273	303	296

264°

% Span	P_7/P_o	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.793	19.00	93.8	.226	251	251
10	.792	18.70	93.8	.239	265	264
15	.789	18.80	93.7	.254	282	281
30	.791	18.50	93.3	.294	325	325
50	.791	15.75	95.1	.297	328	327
70	.784	12.20	99.0	.264	293	289
85	.785	10.33	100.1	.243	270	266
90	.785	10.23	98.6	.246	273	270
95 (tip)	.781	8.36	103.9	.211	234	227
MR	.788		96.6	.269	298	296

294°

% Span	P_7/P_o	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.843	24.0	109.9	.363	400	376
10	.835	24.0	104.5	.364	401	388
15	.827	22.3	104.7	.350	386	373
30	.792	13.9	105.4	.275	305	294
50	.786	11.88	115.4	.262	291	263
70	.781	9.02	119.9	.234	260	226
85	.762	7.64	119.8	.212	236	205
90	.781	7.13	119.8	.202	225	195
95 (tip)	.780	6.16	119.7	.177	197	171
MR	.797		112.7	.279	309	285

324°

% Span	P_7/P_o	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.905	23.38	119.3	.423	464	405
10	.898	23.60	115.7	.425	466	420
15	.898	24.95	110.5	.444	486	455
30	.918	25.35	106.5	.501	546	523
50	.927	22.10	106.9	.503	547	524
70	.933	18.83	108.5	.480	524	497
85	.941	16.45	105.6	.451	493	465
90	[illegible]	14.95	111.4	.422	463	431
95 (tip)	.899	10.50	119.7	.321	355	308
MR	.923		109.4	.469	512	483

354°

% Span	P_7/P_o	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.949	29.80	103.7	.443	485	471
10	.942	28.70	101.9	.445	488	477
15	.941	28.39	100.6	.453	496	488
30	.957	27.85	96.9	.495	540	536
50	.952	23.35	97.2	.480	524	520
70	.952	19.50	98.2	.446	488	483
85	.952	16.40	100.7	.407	447	440
90	.950	15.54	100.7	.393	432	425
95 (tip)	.945	13.40	103.6	.350	386	375
MR	.951		99.1	.453	495	489

1) Inlet plenum conditions P_o = 1977 psf, T_o = 536.1 °R
2) V_m calculations is based on standard-day inlet conditions
3) Circumferential reference position is TDC looking forward
4) Relative position of circumferential distortion screen is 210°-330°
5) $\beta_7^* = \tan^{-1} [\tan \beta_7 / \cos \epsilon]$

TABLE 15.6
Rotor Inlet Circumferential Distributions
Disk Probe Station 7, 100% of Design Speed, $\frac{W\sqrt{\theta}}{\delta} = 178.2$

Circumferential Position 24°

% Span	P_7/P_0	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.926	32.00	96.2	.490	534	531
10	.922	20.80	95.9	.501	545	543
15	.924	30.40	95.3	.514	559	557
30	.933	28.10	95.2	.550	596	594
50	.941	24.75	94.5	.558	604	602
70	.939	22.35	95.3	.527	572	570
85	.940	18.00	96.6	.487	531	528
90	.942	17.12	96.9	.474	518	514
95 (tip)	.942	15.80	97.8	.447	490	485
MR	.936		95.5	.523	568	565

54°

% Span	P_7/P_0	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.930	31.20	97.6	.480	524	520
10	.934	31.25	96.7	.510	555	551
15	.937	34.23	96.1	.530	576	572
30	.932	29.60	95.7	.544	590	587
50	.940	24.52	94.8	.551	597	595
70	.938	21.07	94.4	.524	569	568
85	.936	18.18	94.4	.482	526	525
90	.932	16.98	94.6	.458	501	500
95 (tip)	.919	15.28	96.8	.409	449	446
MR	.935		95.3	.517	563	560

84°

% Span	P_7/P_0	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.946	34.18	89.5	.489	533	533
10	.946	32.78	90.5	.508	553	553
15	.948	32.00	90.6	.520	565	565
30	.941	28.40	90.7	.530	576	576
50	.944	24.60	90.9	.533	579	579
70	.942	20.90	91.0	.509	555	554
85	.936	17.55	92.3	.458	501	500
90	.930	16.18	92.4	.432	473	473
95 (tip)	.920	14.38	94.1	.392	432	430
MR	.941		91.2	.504	548	548

114°

% Span	P_7/P_0	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.919	31.43	91.2	.447	489	489
10	.928	31.70	90.7	.480	524	524
15	.933	31.26	90.7	.502	547	547
30	.935	27.70	90.6	.532	577	577
50	.939	24.70	90.9	.535	581	581
70	.938	21.27	90.5	.513	558	558
85	.939	18.32	90.3	.474	517	517
90	.937	17.14	90.6	.452	495	495
95 (tip)	.922	15.11	92.0	.407	447	447
MR	.935		90.8	.503	548	548

144°

% Span	P_7/P_0	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.937	36.50	80.3	.483	527	520
10	.936	34.65	81.7	.498	543	537
15	.925	32.57	83.1	.491	536	532
30	.940	29.75	85.3	.533	579	577
50	.945	25.65	86.3	.540	586	585
70	.937	21.45	87.2	.511	556	555
85	.934	18.42	86.6	.467	510	510
90	.929	16.98	87.0	.442	484	483
95 (tip)	.914	15.00	86.8	.397	436	435
MR	.936		85.7	.504	549	548

174°

% Span	P_7/P_0	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.915	36.23	76.4	.463	506	492
10	.925	35.85	78.5	.498	542	531
15	.926	34.60	79.5	.512	557	548
30	.919	30.47	80.8	.528	574	566
50	.929	26.10	83.7	.541	587	584
70	.936	22.70	84.9	.533	579	577
85	.940	19.90	84.4	.503	548	543
90	.938	18.77	83.8	.484	528	525
95 (tip)	.914	15.96	83.6	.417	458	455
MR	.928		82.7	.515	560	555

204°

% Span	P_7/P_0	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.880	42.50	60.7	.503	548	478
10	.876	39.70	60.5	.503	547	476
15	.857	35.40	62.3	.479	523	463
30	.868	30.80	74.0	.514	559	538
50	.884	26.95	74.4	.535	581	559
70	.896	24.35	73.6	.550	597	572
85	.904	22.10	70.9	.542	588	556
90	.890	20.05	68.6	.504	549	511
95 (tip)	.838	14.60	63.4	.386	424	379
MR	.881		70.8	.520	565	534

234°

% Span	P_7/P_0	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.815	35.05	63.0	.417	458	408
10	.792	28.78	66.6	.370	408	374
15	.777	24.08	67.6	.331	366	338
30	.741	13.55	65.5	.227	252	229
50	.737	10.23	59.9	.213	237	205
70	.728	6.48	64.1	.154	171	154
85	.736	8.51	74.9	.209	232	224
90	.740	8.79	75.9	.221	246	238
95 (tip)	.740	8.66	75.9	.223	248	241
MR	.762		66.8	.264	293	269

264°

% Span	P_7/P_0	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.719	16.18	80.5	.200	222	219
10	.717	15.10	83.3	.200	222	221
15	.719	14.25	83.3	.200	222	221
30	.719	12.10	83.2	.200	222	221
50	.728	10.15	85.1	.200	222	222
70	.727	8.93	85.3	.200	222	222
85	.730	8.15	87.2	.200	222	222
90	.731	7.92	89.2	.200	222	222
95 (tip)	.724	7.52	95.5	.200	222	221
MR	.725		85.7	.200	222	222

294°

% Span	P_7/P_0	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.794	23.57	106.3	.374	412	395
10	.780	21.72	101.7	.339	374	366
15	.765	28.82	99.6	.297	329	324
30	.735	11.79	99.8	.208	231	228
50	.725	6.91	98.5	.141	157	155
70	.720	4.06	102.5	.094	105	103
85	.722	4.12	100.2	.111	124	122
90	.725	5.29	100.1	.137	153	150
95 (tip)	.725	5.06	102.7	.136	152	148
MR	.744		100.9	.233	258	254

324°

% Span	P_7/P_0	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	[illegible]	24.20	119.3	.500	545	475
10	[illegible]	23.58	117.5	.490	535	474
15	[illegible]	24.10	111.7	.480	524	487
30	[illegible]	25.00	105.5	.540	586	565
50	.904	22.60	104.9	.562	609	588
70	.912	20.55	105.0	.573	620	598
85	.922	19.30	106.0	.586	632	608
90	.912	18.50	106.6	.573	619	594
95 (tip)	.870	15.08	111.3	.486	530	494
MR	.895		107.1	.549	595	569

354°

% Span	P_7/P_0	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.913	29.44	106.4	.513	558	535
10	.922	29.80	104.1	.542	589	571
15	.919	29.58	102.6	.550	596	582
30	.933	28.70	99.2	.598	643	635
50	.935	25.45	97.5	.596	643	637
70	.934	21.50	98.7	.563	610	603
85	.936	18.54	100.4	.521	567	557
90	.935	17.46	101.1	.503	548	538
95 (tip)	.929	15.28	105.4	.460	504	486
MR	.931		100.1	.559	605	596

1) Inlet plenum conditions $P_0 = 1946$ psf, $T_0 = 538.5\ °R$
2) V_m calculation is based on standard-day inlet plenum conditions
3) Circumferential reference position is TDC looking forward
4) Relative position of circumferential distortion screen is 210° - 330°
5) $\beta_7' = \tan^{-1}\ [\tan\beta_7/\cos\epsilon]$

TABLE 15.7

Rotor Inlet Circum[illegible]rential Distributions

Disk Probe Station 7, 100% of Design Speed, $\frac{W\sqrt{\theta}}{\delta} = 173.1$

Circumferential Position	24°						54°						84°						114°					
% Span	P_7/P_0	$90-\beta'_7$	$90-\beta_7$	M	V	V_m	P_7/P_0	$90-\beta'_7$	$90-\beta_7$	M	V	V_m	P_7/P_0	$90-\beta'_7$	$90-\beta_7$	M	V	V_m	P_7/P_0	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.926	31.70	94.5	.472	516	514	.935	31.45	96.0	.476	520	517	.946	33.80	88.9	.480	524	523	.918	30.77	91.3	.434	476	476
10	.925	30.65	94.2	.488	533	531	.936	30.95	95.6	.495	540	537	.948	32.58	89.8	.500	545	545	.927	31.20	91.0	.473	517	517
15	.927	30.20	94.3	.504	549	547	.940	30.78	94.8	.519	564	562	.947	31.78	89.9	.509	554	554	.935	31.18	90.9	.502	547	547
30	.941	28.30	93.7	.546	592	591	.933	27.65	94.6	.534	580	578	.943	28.30	90.0	.524	569	569	.941	28.85	91.0	.540	586	586
50	.943	24.70	93.0	.548	594	593	.943	24.48	94.0	.545	591	590	.946	24.60	90.1	.530	575	575	.943	24.62	91.3	.537	582	582
70	.944	20.80	94.6	.520	566	564	.940	20.80	94.0	.516	561	560	.945	20.86	90.9	.507	552	552	.940	21.17	90.6	.510	556	555
85	.943	17.97	95.6	.481	525	522	.940	17.90	93.8	.474	517	516	.943	17.80	91.4	.462	505	505	.942	18.32	90.5	.474	518	518
90	.946	17.03	95.9	.468	511	508	.937	16.85	93.7	.453	496	495	.939	16.60	91.7	.442	484	484	.939	17.12	91.1	.454	496	496
95 (tip)	.945	15.50	97.6	.436	478	474	.918	14.60	95.[illegible]	.401	441	439	.930	14.58	95.0	.401	440	439	.925	15.00	92.5	.407	447	447
MR	.940		94.4	.515	560	558	.938		94.4	.509	555	553	.944		90.7	.500	545	545	.938		91.1	.504	549	549

Circumferential Position	144°						174°						204°						234°					
% Span	P_7/P_0	$90-\beta'_7$	$90-\beta_7$	M	V	V_m	P_7/P_0	$90-\beta'_7$	$90-\beta_7$	M	V	V_m	P_7/P_0	$90-\beta'_7$	$90-\beta_7$	M	V	V_m	P_7/P_0	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.940	35.60	81.7	.475	519	513	.923	36.45	77.2	.469	513	500	.880	40.90	60.7	.484	528	461	.804	33.80	64.7	.405	445	403
10	.937	33.55	83.3	.485	529	526	.927	35.38	[illegible].4	.493	538	528	.872	37.95	60.5	.480	524	456	.789	28.20	70.2	.372	409	385
15	.925	31.30	84.6	.475	519	516	.926	34.20	8[illegible].2	.509	554	546	.855	34.10	63.8	.463	507	455	.780	25.12	71.7	.348	384	365
30	.947	29.45	86.2	.531	577	575	.921	30.08	81.9	.524	570	564	.866	30.60	74.8	.512	558	538	.743	14.63	70.2	242	269	253
50	.947	25.35	86.4	.53[illegible]	579	578	.934	26.40	84.7	.547	593	591	.976	26.50	75.3	.527	573	554	.739	11.48	67.3	230	256	236
70	.940	2[illegible].18	87.7	.504	549	548	.938	22.55	86.1	.534	580	579	.884	23.70	74.4	.536	582	560	.739	10.20	73.9	.231	257	247
85	.937	18.22	87.0	.463	506	505	.940	19.65	85.2	.498	543	541	.900	21.65	72.2	.532	578	550	.746	10.25	81.0	.252	280	276
90	.937	17.00	87.2	.443	485	485	.940	18.68	85.0	.483	528	526	.900	20.75	70.8	.518	563	532	.753	10.70	82.0	.270	300	297
95 (tip)	.9[illegible]	15.22	86.1	.406	446	445	.917	16.00	84.9	.421	461	460	.870	16.90	67.2	.438	480	443	.756	10.70	83.9	.278	308	306
MR	.940		86.3	.498	543	542	.931		83.7	.515	560	557	.878		71.9	.512	558	530	.755		73.1	281	312	298

Circumferential Position	264°						294°						324°						354°					
% Span	P_7/P_0	$90-\beta'_7$	$90-\beta_7$	M	V	V_m	P_7/P_0	$90-\beta'_7$	$90-\beta_7$	M	V	V_m	P_7/P_0	$90-\beta'_7$	$90-\beta_7$	M	V	V_m	P_7/P_0	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.736	16.18	92.8	.210	253	233	.802	24.20	108.2	.400	440	418	.873	23.70	119.3	.485	529	461	.924	29.90	104.7	.508	553	535
10	.736	15.43	92.9	.21[illegible]	237	236	.784	21.95	103.9	.358	394	383	.865	23.80	116.0	.484	528	474	.919	29.25	102.9	.519	564	550
15	.7[illegible]6	15.11	91.[illegible]	.218	243	24[illegible]	.773	19.70	103.0	.326	361	351	.864	25.35	110.0	.500	545	512	.917	29.30	101.0	.531	577	566
30	.736	13.08	92.4	.222	247	247	.741	12.47	106.5	.236	262	251	.899	25.93	105.5	.568	615	593	.939	28.60	98.1	.[illegible]24	631	625
50	.733	10.92	93.7	.221	246	246	.737	9.94	108.8	.222	247	234	.911	22.95	105.2	.576	622	601	.935	24.96	96.7	.57[illegible]	623	618
70	.734	9.26	95.0	.215	239	233	.733	8.90	111.7	.211	235	218	.928	20.48	105.8	.575	621	598	.936	23.40	97.8	.548	594	588
85	.742	9.54	95.0	.241	268	267	.734	7.64	110.5	.213	237	221	.929	17.85	106.5	.534	579	556	.938	[illegible].20	99.9	.506	551	543
90	.744	9.54	95.2	.247	274	273	734	7.40	110.5	.212	236	221	.920	16.50	107.1	.501	546	522	.937	16.90	101.1	.486	530	520
95 (tip)	.738	8.43	100.3	.229	254	250	.734	7.70	113.2	.212	235	216	.879	12.75	112.9	.407	447	412	.930	14.95	104.5	.447	489	474
MR	.737		94.2	.224	249	248	.749		108.4	.265	294	278	.906		107.3	.544	591	564	.934		99.2	.543	590	582

1) Inlet plenum conditions: $P_0 = 195[illegible]$ psf, $T_0 = 536.8$ °R
2) V_m calculation is based on standard-day inlet plenum conditions
3) Circumferential reference position is TDC looking forward
4) Relative position of circumferential distortion screen is 210° - 330°
5) $\beta_7^* = \tan^{-1} \{\tan \beta_7 / \cos \epsilon\}$

TABLE 15.8

Rotor Inlet Circumferential Distributions
Disk Probe Station 7, 100% of Design Speed, $\frac{W\sqrt{\theta}}{\delta} = 167.2$

Circumferential Position: 24°, 54°, 84°, 114°

% Span	P_7/P_o (24°)	$90-\beta'_7$	$90-\beta_7$	M	V	V_m	P_7/P_o (54°)	$90-\beta'_7$	$90-\beta_7$	M	V	V_m	P_7/P_o (84°)	$90-\beta'_7$	$90-\beta_7$	M	V	V_m	P_7/P_o (114°)	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.933	30.45	93.2	.440	462	481	.946	31.00	93.0	.449	492	491	.951	31.68	86.5	.460	503	502	.926	30.78	90.1	.428	470	470
10	.936	29.60	93.4	.461	504	503	.946	30.45	92.9	.468	512	511	.952	30.95	87.7	.477	520	520	.936	31.20	90.0	.467	511	511
15	.940	29.20	93.5	.476	520	519	.948	30.00	92.4	.487	531	530	.953	30.65	87.8	.489	533	533	.940	30.80	89.9	.488	533	533
30	.951	27.25	92.4	.512	557	557	.939	26.60	92.4	.496	541	540	.949	27.90	87.9	.506	551	550	.946	28.30	90.1	.524	570	570
50	.947	22.80	92.7	.498	543	542	.948	23.40	91.9	.507	553	552	.952	24.20	88.1	.511	556	556	.948	24.48	90.3	.527	573	573
70	.947	19.00	93.4	.463	506	505	.945	19.60	91.9	.474	518	517	.949	20.38	89.1	.487	531	531	.946	20.85	90.0	.502	547	547
85	.949	16.18	95.1	.422	463	461	.941	16.80	91.6	.433	475	475	.947	17.28	89.9	.443	485	485	.945	18.00	90.0	.464	507	507
90	.950	15.05	96.4	.410	450	447	.939	15.75	91.8	.415	456	456	.943	15.85	91.3	.420	461	460	.945	16.90	90.4	.446	489	488
95 (tip)	.947	13.40	98.2	.373	411	407	.929	13.60	92.5	.365	402	402	.939	14.38	92.7	.390	429	428	.929	14.80	91.6	.398	437	437
MR	.947		93.7	.469	512	511	.943		92.1	.472	516	516	.949		88.8	.481	525	525	.943		90.2	.493	538	538

Circumferential Position: 144°, 174°, 204°, 234°

% Span	P_7/P_o (144°)	$90-\beta'_7$	$90-\beta_7$	M	V	V_m	P_7/P_o (174°)	$90-\beta'_7$	$90-\beta_7$	M	V	V_m	P_7/P_o (204°)	$90-\beta'_7$	$90-\beta_7$	M	V	V_m	P_7/P_o (234°)	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (hub)	.945	35.18	81.5	.469	513	507	.935	36.20	78.4	.470	513	503	.879	38.45	60.7	.455	498	434	.810	31.78	67.7	.384	423	391
10	.944	33.20	82.7	.484	528	524	.933	34.55	79.9	.482	526	517	.870	35.65	61.7	.453	496	437	.801	28.15	73.2	.377	411	394
15	.935	31.65	84.0	.478	522	519	.924	33.38	81.0	.497	541	535	.857	32.40	66.3	.444	486	445	.794	26.30	74.5	.367	404	390
30	.948	29.00	85.7	.519	564	563	.927	29.45	82.7	.514	559	555	.868	29.65	75.6	.495	540	523	.763	18.85	74.5	.310	342	330
50	.953	25.60	85.9	.530	576	575	.948	26.40	85.4	.550	597	595	.871	25.65	76.5	.510	556	540	.763	15.92	76.2	.312	345	335
70	.948	21.10	87.2	.502	547	546	.945	22.10	86.3	.524	570	562	.875	22.25	75.9	.503	548	532	.760	13.50	79.2	.303	336	330
85	.945	18.10	86.8	.460	503	502	.946	19.30	85.5	.490	534	532	.894	30.58	73.3	.504	549	526	.768	12.63	84.5	.312	345	343
90	.942	16.78	87.6	.436	478	478	.944	18.18	85.5	.470	514	512	.900	19.88	71.9	.499	544	517	.774	12.52	84.5	.318	351	350
95 (tip)	.933	15.00	87.7	.398	438	438	.922	15.55	84.9	.409	449	447	.883	17.03	69.2	.440	482	451	.775	11.28	88.2	.296	327	327
MR	.946		86.0	.494	539	537	.939		84.2	.509	554	551	.876		73.2	.491	535	512	.772		78.0	.323	357	349

Circumferential Position: 264°, 294°, 324°, 354°

% Span	P_7/P_o (264°)	$90-\beta'_7$	$90-\beta_7$	M	V	V_m	P_7/P_o (294°)	$90-\beta'_7$	$90-\beta_7$	M	V	V_m	P_7/P_o (324°)	$90-\beta'_7$	$90-\beta_7$	M	V	V_m	P_7/P_o (354°)	$90-\beta'_7$	$90-\beta_7$	M	V	V_m
5 (tip)	.761	13.82	97.9	.258	286	283	.836	24.42	111.2	.426	467	436	.892	23.30	119.3	.470	513	448	.937	28.55	104.8	.476	520	503
10	.756	18.63	97.3	.270	299	297	.827	24.38	106.4	.426	467	448	.886	22.70	118.2	.473	517	435	.934	27.70	103.3	.483	528	513
15	.754	18.38	97.4	.283	314	311	.814	23.22	105.0	.410	450	435	.882	23.70	112.0	.480	524	483	.932	27.40	102.1	.490	535	523
30	.757	16.58	97.5	.297	329	326	.768	15.20	109.4	.305	337	318	.904	24.73	107.2	.547	594	567	.947	26.70	98.0	.523	579	573
50	.757	14.03	97.4	.296	323	325	.757	10.70	119.9	.280	310	268	.917	21.40	107.8	.545	592	563	.945	22.60	97.7	.514	560	554
70	.751	11.42	101.2	.278	308	302	.760	8.76	119.9	.253	281	244	.941	18.80	108.3	.532	578	549	.944	18.48	98.2	.467	511	505
85	.759	11.65	98.1	.302	334	331	.761	7.64	119.8	.236	262	237	.941	16.00	109.6	.487	531	500	.945	15.28	101.6	.420	461	452
90	.761	11.25	97.6	.299	331	328	.760	7.08	119.8	.223	248	215	.928	14.20	112.3	.448	490	453	.942	14.30	101.6	.404	443	434
95 (hub)	.762	10.03	98.8	.274	303	300	.759	6.50	119.7	.209	233	202	.881	9.65	119.7	.324	358	311	.933	11.92	105.8	.349	384	370
MR	.757		98.3	.289	320	316	.778		114.5	.317	350	319	.916		110.0	.512	557	523	.942		99.9	.481	525	517

1) Inlet plenum conditions: $P_o = 1964$ psf, $T_o = 539.5$ °R
2) V_m calculation is based on standard-day inlet plenum conditions
3) Circumferential reference position is TDC looking forward
4) Relative position of circumferential distortion screen is 210° - 330°
5) $\beta_7{}' = \tan^{-1} [\tan\beta_7/\cos\epsilon]$

TABLE 16.1

Stator Discharge Circumferential Distributions

Disk Probe Station 12, 70% of Design Speed, $\frac{W\sqrt{\theta}}{\delta} = 129.8$

Circumferential Position	12°					42°					72°					102°				
% Span	P_{12}/P_o	$90-\beta_{12}^*$	M	V	V_m	P_{12}/P_o	$90-\beta_{12}^*$	M	V	V_m	P_{12}/P_o	$90-\beta_{12}^*$	M	V	V_m	P_{12}/P_o	$90-\beta_{12}^*$	M	V	V_m
5 (hub)	1.437	91.6	.860	948	948	1.414	87.3	.841	928	927	1.397	87.6	.811	898	897	1.393	92.1	.818	907	907
10	1.381	94.2	.804	891	889	1.387	90.0	.807	893	893	1.372	90.1	.787	872	872	1.362	94.0	.782	869	867
15	1.350	94.7	.772	857	854	1.371	90.8	.792	877	877	1.360	90.9	.775	859	859	1.344	94.8	.760	845	842
30	1.299	94.7	.714	793	791	1.309	93.2	.736	815	814	1.304	93.8	.721	801	799	1.280	94.9	.694	773	770
50	1.280	92.9	.684	761	760	1.280	93.4	.699	775	774	1.265	93.8	.673	749	748	1.245	95.0	.649	725	723
70	1.244	93.7	.644	719	717	1.241	94.2	.652	726	724	1.230	93.9	.633	708	707	1.213	93.3	.614	688	687
85	1.226	93.1	.622	698	697	1.223	94.3	.635	709	707	1.215	95.5	.612	687	684	1.194	94.5	.589	664	662
90	1.211	92.6	.600	676	675	1.209	95.4	.609	684	681	1.199	95.6	.590	665	662	1.187	94.5	.574	648	646
95 (tip)	1.172	92.6	.544	616	615	1.178	100.8	.560	633	621	1.175	100.4	.547	620	610	1.156	94.6	.524	595	593
MR	1.284	93.5	.695	775	773	1.285	93.3	.705	784	783	1.275	93.6	.685	764	762	1.258	94.3	.669	748	746

Circumferential Position	132°					162°					192°					222°				
% Span	P_{12}/P_o	$90-\beta_{12}^*$	M	V	V_m	P_{12}/P_o	$90-\beta_{12}^*$	M	V	V_m	P_{12}/P_o	$90-\beta_{12}^*$	M	V	V_m	P_{12}/P_o	$90-\beta_{12}^*$	M	V	V_m
5 (hub)	1.387	88.5	.790	878	877	1.379	91.6	.746	835	834	1.322	89.0	.698	787	787	1.209	87.6	.546	626	625
10	1.346	91.0	.756	841	841	1.337	93.0	.707	793	792	1.287	91.3	.664	750	749	1.184	89.8	.518	594	594
15	1.338	91.2	.748	832	832	1.320	94.0	.688	771	770	1.279	91.4	.656	740	740	1.178	91.2	.508	582	582
30	1.269	94.1	.697	777	775	1.276	94.8	.636	714	712	1.236	92.8	.603	680	679	1.155	92.4	.468	534	533
50	1.249	94.8	.646	722	720	1.234	94.8	.588	662	659	1.212	93.9	.571	644	642	1.149	92.4	.452	515	514
70	1.213	94.4	.607	681	679	1.197	94.9	.543	612	610	1.159	96.2	.505	572	568	1.133	92.3	.423	482	482
85	1.199	96.0	.587	661	658	1.180	95.9	.520	589	586	1.150	96.3	.486	553	550	1.124	90.5	.406	464	464
90	1.184	96.1	.565	639	635	1.164	95.9	.497	565	562	1.139	96.2	.465	531	528	1.117	90.5	.392	449	449
95 (tip)	1.101	100.3	.526	598	589	1.138	95.7	.444	507	504	1.131	96.2	.448	513	510	1.103	90.5	.358	412	412
MR	1.259	94.2	.660	739	737	1.246	94.6	.604	680	678	1.211	93.9	.572	647	645	1.149	91.4	.455	519	519

Circumferential Position	252°					282°					312°					342°				
% Span	P_{12}/P_o	$90-\beta_{12}^*$	M	V	V_m	P_{12}/P_o	$90-\beta_{12}^*$	M	V	V_m	P_{12}/P_o	$90-\beta_{12}^*$	M	V	V_m	P_{12}/P_o	$90-\beta_{12}^*$	M	V	V_m
5 (hub)	1.136	87.8	.474	546	546	1.177	87.8	.557	638	638	1.315	90.4	.741	829	829	1.397	87.6	.837	924	923
10	1.150	86.7	.492	565	564	1.203	87.7	.582	663	663	1.308	92.3	.729	815	815	1.388	89.1	.827	912	912
15	1.171	88.4	.514	587	587	1.205	89.5	.581	661	661	1.315	92.8	.731	814	813	1.370	90.0	.807	891	891
30	1.177	92.4	.516	586	586	1.202	90.9	.571	646	646	1.312	93.2	.714	794	793	1.333	91.5	.761	841	840
50	1.170	92.4	.500	568	567	1.194	92.4	.555	626	626	1.293	93.7	.685	762	761	1.290	92.8	.712	790	789
70	1.170	90.5	.497	564	564	1.177	92.4	.530	599	599	1.275	91.1	.663	739	739	1.255	94.6	.671	746	744
85	1.165	90.5	.484	551	551	1.166	90.8	.514	583	583	1.259	91.8	.643	719	719	1.240	93.4	.652	728	727
90	1.166	90.4	.479	546	546	1.160	90.8	.500	569	569	1.238	92.6	.616	693	692	1.211	93.5	.615	691	689
95 (tip)	1.155	90.3	.452	517	517	1.156	90.8	.487	556	556	1.178	95.2	.39	611	608	1.193	96.2	.582	656	653
MR	1.167	90.8	.496	565	565	1.185	91.1	.545	618	618	1.284	92.6	.681	760	760	1.295	92.5	.720	799	799

1) Inlet plenum conditions $P_o = 2012$ psf, $T_o = 534$ °R
2) V_m calculation is based on standard-day inlet plenum conditions
3) Circumferential reference position is TDC looking forward
4) Relative position of circumferential distortion screen is 210°-330°
5) $\beta^*_{12} = \tan^{-1} [\tan \beta_{12} / \cos \epsilon]$

TABLE 16.2

Stator Discharge Circumferential Distributions
Disk Probe Station 12, 70% of Design Speed, $\frac{W\sqrt{\theta}}{\delta} = 122.1$

Circumferential Position	12°					42°					72°					102°				
% Span	P_{12}/P_o	$90-\beta_{12}$	M	V	V_m	P_{12}/P_o	$90-\beta_{12}$	M	V	V_m	P_{12}/P_o	$90-\beta_{12}$	M	V	V_m	P_{12}/P_o	$90-\beta_{12}$	M	V	V_m
5 (hub)	1.450	89.9	.727	818	818	1.418	88.5	.716	805	804	1.409	89.6	.702	791	791	1.415	90.2	.710	799	799
10	1.404	92.1	.687	775	774	1.393	91.6	.687	774	774	1.382	91.5	.681	767	767	1.377	92.4	.670	756	756
15	1.376	93.3	.658	744	742	1.378	91.6	.677	762	762	1.370	92.1	.672	756	756	1.362	93.2	.652	736	735
30	1.342	93.2	.621	701	700	1.339	93.6	.632	712	710	1.336	94.1	.630	710	708	1.324	94.1	.610	688	687
50	1.310	94.1	.583	660	658	1.310	94.4	.597	674	672	1.303	94.2	.593	670	668	1.293	94.1	.570	646	644
70	1.270	95.4	.535	611	608	1.269	94.5	.553	627	625	1.260	95.0	.543	617	615	1.250	94.2	.524	597	595
85	1.257	94.0	.523	600	599	1.260	95.1	.538	614	611	1.256	95.0	.532	607	605	1.245	94.6	.512	587	585
90	1.245	92.8	.504	581	580	1.241	94.3	.515	591	589	1.241	93.8	.520	596	594	1.233	93.6	.498	573	572
95 (tip)	1.235	92.7	.478	552	551	1.230	94.3	.498	573	571	1.231	94.6	.500	575	573	1.209	95.4	.455	525	523
MR	1.317	93.6	.593	673	672	1.312	93.5	.603	682	681	1.306	93.8	.597	677	675	1.298	93.8	.581	660	658

% Span	132°					162°					192°					222°				
	P_{12}/P_o	$90-\beta_{12}$	M	V	V_m	P_{12}/P_o	$90-\beta_{12}$	M	V	V_m	P_{12}/P_o	$90-\beta_{12}$	M	V	V_m	P_{12}/P_o	$90-\beta_{12}$	M	V	V_m
5 (hub)	1.403	89.7	.687	775	775	1.395	89.5	.665	753	753	1.355	89.4	.612	698	698	1.228	85.7	.438	507	506
10	1.375	91.6	.663	748	747	1.359	92.1	.627	711	710	1.323	91.5	.576	658	656	1.240	88.8	.451	521	521
15	1.363	92.0	.653	736	735	1.344	93.0	.611	692	691	1.313	91.5	.567	647	647	1.233	90.9	.438	506	506
30	1.327	93.8	.610	690	688	1.311	93.9	.570	647	645	1.290	91.6	.536	611	611	1.218	91.7	.405	470	470
50	1.299	94.0	.579	656	654	1.280	93.9	.533	606	604	1.257	94.3	.489	560	558	1.213	91.7	.395	454	454
70	1.253	95.6	.523	596	593	1.241	95.2	.482	551	549	1.234	95.7	.454	522	519	1.214	91.7	.395	454	454
85	1.249	94.2	.517	592	591	1.239	92.6	.479	550	549	1.242	91.0	.462	534	534	1.212	88.8	.388	449	449
90	1.242	94.2	.505	581	580	1.233	92.5	.465	536	536	1.231	91.0	.448	519	519	1.208	88.8	.383	444	444
95 (tip)	1.231	94.2	.491	567	565	1.214	94.1	.430	497	496	1.219	92.2	.431	501	500	1.196	90.6	.360	418	418
MR	1.300	93.7	.580	659	658	1.287	[illegible]	.543	618	617	1.269	92.7	.506	580	579	1.216	90.6	.403	465	465

% Span	252°					282°					312°					342°				
	P_{12}/P_o	$90-\beta_{12}$	M	V	V_m	P_{12}/P_o	$90-\beta_{12}$	M	V	V_m	P_{12}/P_o	$90-\beta_{12}$	M	V	V_m	P_{12}/P_o	$90-\beta_{12}$	M	V	V_m
5 (hub)	1.145	87.6	.317	370	370	1.187	88.9	.403	469	469	1.305	87.5	.588	671	670	1.410	88.1	.706	795	794
10	1.159	86.8	.343	399	399	1.211	88.9	.433	501	501	1.301	91.2	.583	664	664	1.394	90.9	.687	772	772
15	1.194	86.8	.405	467	467	1.221	89.4	.448	516	516	1.304	93.2	.580	659	658	1.378	91.5	.671	755	755
30	1.223	91.1	.439	504	504	1.243	89.4	.473	542	542	1.336	92.5	.595	673	673	1.326	94.2	.613	692	690
50	1.228	91.1	.442	506	506	1.254	90.7	.481	550	550	1.317	94.9	.568	645	642	1.278	95.0	.559	634	631
70	1.244	90.3	.457	523	523	1.249	90.7	.470	538	538	1.288	93.8	.538	613	612	1.251	95.1	.525	598	596
85	1.244	90.3	.450	518	518	1.232	90.7	.446	514	514	1.275	89.2	.521	597	597	1.225	91.3	.495	568	568
90	1.247	88.5	.453	522	522	1.224	90.7	.433	501	501	1.275	88.0	.514	590	590	1.220	89.3	.485	558	558
95 (tip)	1.244	88.5	.446	515	513	1.221	90.7	.426	494	494	1.268	88.0	.500	575	575	1.220	89.3	.478	551	551
MR	1.227	89.9	.437	502	502	1.237	90.2	.460	528	528	1.303	92.1	.559	636	636	1.295	92.9	.581	659	658

1) Inlet plenum conditions P_o = 2020 psf, T_o = 525.2 °R
2) V_m calculation is based on standard-day inlet plenum conditions
3) Circumferential reference position is TDC looking forward
4) Relative position of circumferential distortion screen is 210°-330°
5) $\beta^*_{12} = \tan^{-1}[\tan\beta_{12}/\cos\epsilon]$

TABLE 16.3

Stator Discharge Circumferential Distributions
Disk Probe Station 12, 70% of Design Speed, $\frac{W\sqrt{\theta}}{\delta} = 111.0$

Circumferential Position	12°					42°					72°					102°				
% Span	P_{12}/P_o	$90-\beta_{12}$	M	V	V_m	P_{12}/P_o	$90-\beta_{12}$	M	V	V_m	P_{12}/P_o	$90-\beta_{12}$	M	V	V_m	P_{12}/P_o	$90-\beta_{12}$	M	V	V_m
5 (hub)	1.460	88.5	.650	739	739	1.423	87.8	.629	715	715	1.418	88.1	.628	715	714	1.416	88.9	.641	728	728
10	1.421	91.2	.613	699	699	1.405	90.5	.610	694	694	1.398	90.6	.613	697	697	1.383	91.4	.610	694	694
15	1.399	91.9	.591	674	673	1.390	90.6	.600	682	682	1.383	91.1	.600	682	682	1.370	92.0	.593	675	674
30	1.341	92.0	.528	604	603	1.346	92.4	.544	621	620	1.355	92.0	.562	639	639	1.343	92.0	.559	636	635
50	1.303	93.3	.474	545	544	1.302	93.9	.490	561	560	1.306	94.4	.506	579	578	1.304	94.7	.512	586	584
70	1.264	93.1	.419	487	486	1.274	94.0	.446	514	513	1.293	94.4	.484	558	556	1.296	93.4	.498	574	573
85	1.242	89.8	.386	452	452	1.248	91.6	.413	480	480	1.270	91.0	.447	519	519	1.278	91.0	.469	545	545
90	1.239	89.8	.374	440	440	1.239	91.6	.397	463	463	1.263	89.3	.438	510	510	1.273	88.5	.467	544	544
95 (tip)	1.235	89.8	.363	426	426	1.235	91.6	.390	456	456	1.264	89.3	.443	517	517	1.268	88.4	.448	522	522
MR	1.321	91.7	.500	576	576	1.316	92.2	.509	584	583	1.324	92.1	.526	603	603	1.322	92.1	.533	611	610

	132°					162°					192°					222°				
5 (hub)	1.414	88.9	.630	717	717	1.409	89.1	.617	703	703	1.373	89.7	.565	649	649	1.204	85.0	.322	376	375
10	1.388	90.9	.606	689	689	1.372	91.6	.579	661	661	1.353	91.2	.544	624	624	1.263	87.8	.411	476	476
15	1.371	90.9	.592	674	674	1.359	92.5	.561	640	640	1.342	91.2	.533	612	612	1.267	90.6	.411	476	476
30	1.347	92.2	.557	635	634	1.329	93.5	.526	600	599	1.314	91.3	.496	569	569	1.265	90.6	.404	466	466
50	1.303	95.2	.506	580	578	1.301	94.8	.487	559	55[illegible]	1.293	93.6	.464	534	533	1.254	91.6	.382	441	441
70	1.306	92.9	.504	580	580	1.294	93.1	.474	547	546	1.285	93.6	.445	515	514	1.261	91.6	.385	446	446
85	1.294	91.7	.488	566	565	1.287	90.0	.462	536	536	1.284	91.4	.441	511	514	1.261	98.1	.386	450	450
90	1.284	91.7	.471	549	548	1.283	90.0	.451	524	524	1.275	91.4	.427	499	499	1.254	88.1	.374	437	437
95 (tip)	1.281	91.7	.468	545	545	1.271	89.9	.433	504	504	1.267	91.4	.421	493	493	1.243	89.4	.355	415	415
MR	1.326	92.4	.532	611	610	1.317	92.4	.508	583	583	1.305	92.1	.478	552	552	1.257	90.1	.386	448	448

	252°					282°					312°					342°				
5 (hub)	1.222	87.0	.350	409	408	1.209	89.0	.349	407	407	1.324	87.2	.522	601	600	1.422	88.2	.625	711	711
10	1.250	87.0	.392	455	454	1.237	89.0	.391	454	454	1.325	91.2	.523	600	600	1.407	90.1	.609	692	692
15	1.266	89.1	.418	484	484	1.250	91.3	.409	471	473	1.327	93.7	.520	596	595	1.385	91.0	.589	671	671
30	1.269	90.3	.419	483	483	1.271	90.2	.430	495	495	1.357	92.4	.535	611	611	1.326	93.0	.519	593	592
50	1.279	90.3	.427	492	492	1.295	89.4	.452	520	520	1.346	94.5	.518	593	591	1.291	93.0	.469	538	538
70	1.291	92.0	.442	511	510	1.268	90.7	.417	484	484	1.308	94.5	.470	543	541	1.245	93.0	.399	463	462
85	1.283	91.9	.425	495	495	1.260	95.5	.406	474	472	1.297	89.2	.454	529	529	1.221	93.0	.361	422	422
90	1.278	91.9	.413	482	482	1.264	96.8	.411	480	477	1.295	87.8	.448	522	522	1.213	93.0	.345	405	404
95 (tip)	1.270	91.8	.402	470	470	1.267	96.8	.410	491	477	1.290	87.7	.431	504	503	1.209	93.0	.340	399	399
MR	1.275	90.6	.421	488	487	1.268	91.5	.422	489	488	1.326	92.2	.499	574	574	1.302	92.3	.487	560	560

1) Inlet plenum conditions $P_o = 2037$ psf, $T_o = 529.3$ °R
2) V_m calculation is based on standard-day inlet plenum conditions
3) Circumferential reference position is TDC looking forward
4) Relative position of circumferential distortion is 210°-330°
5) $\beta^*_{12} = \tan^{-1}[\tan\beta_{12}/\cos\epsilon]$

TABLE 16. 4

Stator Discharge Circumferential Distributions
Disk Probe Station 12, 90% of Design Speed, $\frac{W\sqrt{\theta}}{\delta} = 164.8$

Circumferential Position	42°					72°					132°				
% Span	P_{12}/P_o	$90-\beta_{12}$°	M	V	V_m	P_{12}/P_o	$90-\beta_{12}$°	M	V	V_m	P_{12}/P_o	$90-\beta_{12}$°	M	V	V_m
5 (hub)	1.481	93.8	.903	1022	1019	1.520	95.6	.986	1094	1089	1.499	95.4	1.063	1110	1105
10	1.570	93.4	1.054	1161	1159	1.547	95.2	1.036	1139	1134	1.524	94.4	1.047	1148	1145
15	1.638	92.8	1.105	1205	1203	1.622	93.9	1.105	1197	1195	1.581	93.6	1.100	1195	1192
30	1.563	92.7	1.027	1124	1123	1.575	93.1	1.036	1125	1123	1.538	91.9	1.030	1125	1124
50	1.556	91.3	.995	1091	1091	1.540	91.8	.989	1082	1081	1.486	91.9	.960	1060	1059
70	1.494	91.3	.938	1035	1034	1.492	92.1	.956	1050	1050	1.443	92.6	.905	1006	1005
85	1.476	91.3	.898	1000	1000	1.468	92.7	.919	1020	1019	1.444	92.4	.894	1000	999
90	1.459	90.2	.873	979	979	1.449	91.3	.879	983	963	1.439	91.2	.874	982	982
95 (tip)	1.426	94.8	.807	917	913	1.404	96.1	.807	913	908	1.390	96.9	.796	907	900
MR	1.527	92.1	.968	1070	1069	1.523	93.0	.980	1077	1075	1.485	92.9	.959	1062	1060

Circumferential Position	192°					282°					342°				
% Span	P_{12}/P_o	$90-\beta_{12}$°	M	V	V_m	P_{12}/P_o	$90-\beta_{12}$°	M	V	V_m	P_{12}/P_o	$90-\beta_{12}$°	M	V	V_m
5 (hub)	1.358	89.4	.819	940	940	1.136	88.0	.548	649	648	1.489	92.3	.895	1012	1011
10	1.371	88.0	.843	961	960	1.204	86.1	.619	726	724	1.547	91.3	.990	1100	1100
15	1.467	90.1	.904	1017	1017	1.290	88.1	.696	807	806	1.608	91.3	1.067	1168	1167
30	1.420	91.4	.862	969	969	1.309	90.5	.713	817	817	1.602	91.5	1.014	1112	1111
50	1.359	91.8	.799	905	904	1.296	93.6	.693	795	793	1.587	90.6	.968	1067	1067
70	1.314	94.0	.739	843	841	1.297	91.6	.685	786	786	1.512	90.6	.901	1002	1002
85	1.319	92.5	.737	844	843	1.318	87.9	.694	798	797	1.489	91.3	.878	985	985
90	1.302	93.9	.706	814	812	1.330	87.8	.691	796	796	1.438	90.7	.832	943	943
95 (tip)	1.271	98.9	.656	762	753	1.327	90.6	.668	774	774	1.398	96.0	.768	880	875
MR	1.361	92.4	.795	904	903	1.296	90.6	.687	791	791	1.541	91.4	.942	1046	1046

1) Inlet plenum conditions P_o = 1968 psf, T_o = 536.2
2) V_m calculation is based on standard-day inlet conditions
3) Circumferential reference position is TDC looking forward
4) Relative position of circumferential distortion screen is 210°-330°
5) $\beta^{*}_{12} = \tan^{-1} [\tan \beta_{12} / \cos \epsilon]$

TABLE 16.5

Stator Discharge Circumferential Distributions

Disk Probe Station 12, 90% of Design Speed, $\frac{W\sqrt{\theta}}{\delta} = 156.2$

Circumferential Position	42°					72°					132°				
% Span	P_{12}/P_o	$90-\beta_{12}$	M	V	V_m	P_{12}/P_o	$90-\beta_{12}$	M	V	V_m	P_{12}/P_o	$90-\beta_{12}$	M	V	V_m
5 (hub)	1.431	89.5	.714	830	830	1.451	89.2	.732	847	847	1.484	89.4	.732	846	846
10	1.576	86.1	.824	942	940	1.534	86.5	.802	915	914	1.519	87.3	.767	881	880
15	1.655	89.7	.873	989	989	1.628	89.8	.856	968	968	1.617	88.8	.830	943	943
30	1.600	90.0	.840	950	950	1.583	89.9	.834	941	941	1.570	91.0	.791	901	901
50	1.543	89.7	.777	885	885	1.555	89.7	.787	895	895	1.523	91.4	.745	855	855
70	1.482	93.1	.715	824	823	1.483	92.9	.720	829	828	1.466	93.7	.690	801	800
85	1.489	91.3	.715	830	830	1.499	90.7	.725	840	840	1.486	92.0	.699	817	816
90	1.464	91.7	.687	803	802	1.487	91.3	.707	824	823	1.478	92.1	.687	808	807
95 (tip)	1.440	91.9	.662	778	778	1.442	94.0	.664	780	778	1.430	94.0	.644	762	761
MR	1.532	90.7	.769	882	882	1.531	90.8	.770	882	882	1.516	91.6	.739	853	853

Circumferential Position	192°					282°					342°				
% Span	P_{12}/P_o	$90-\beta_{12}$	M	V	V_m	P_{12}/P_o	$90-\beta_{12}$	M	V	V_m	P_{12}/P_o	$90-\beta_{12}$	M	V	V_m
5 (hub)	1.430	90.2	.620	730	730	1.269	89.6	.437	523	523	1.446	89.6	.688	803	803
10	1.480	90.1	.652	764	764	1.307	89.6	.479	570	570	1.529	88.1	.752	867	866
15	1.536	90.6	.696	808	808	1.332	90.7	.507	600	599	1.592	88.6	.794	909	909
30	1.494	93.1	.658	763	762	1.382	89.4	.551	644	644	1.596	88.6	.793	901	901
50	1.475	93.2	.638	740	739	1.398	92.6	.558	653	652	1.523	91.5	.727	833	833
70	1.440	94.9	.596	700	697	1.412	92.6	.575	674	673	1.418	95.0	.635	739	736
85	1.438	91.9	.591	699	699	1.407	92.6	.568	670	669	1.345	91.3	.568	669	669
90	1.460	91.9	.604	715	715	1.352	92.7	.512	609	608	1.317	89.2	.537	638	638
95 (tip)	1.439	92.0	.590	701	701	1.319	89.8	.468	559	559	1.298	89.3	.513	611	611
MR	1.469	92.7	.630	737	736	1.378	91.5	.544	640	640	1.484	90.8	.702	811	811

1) Inlet plenum conditions P_o = 1977 psf, T_o = 536.1 °R
2) V_m calculations is based on standard-day inlet conditions
3) Circumferential reference position is TDC looking forward
4) Relative position of circumferential distortion screen is 210°-330°
5) $\beta^*_{12} = \tan^{-1}[\tan\beta_{12}/\cos\epsilon]$

TABLE 16.6
Stator Discharge Circumferential Distributions
Disk Probe Station 12, 100% of Design Speed, $\frac{W\sqrt{\theta}}{\delta} = 178.2$

Circumferential Position ...	12°					42°					72°					102°				
% Span	P_{12}/P_o	$90-\beta_{12}$	M	V	V_m	P_{12}/P_o	$90-\beta_{12}$	M	V	V_m	P_{12}/P_o	$90-\beta_{12}$	M	V	V_m	P_{12}/P_o	$90-\beta_{12}$	M	V	V_m
5 (hub)	1.738	94.9	1.118	1241	1236	1.688	93.6	1.037	1165	1163	1.720	94.4	1.101	1217	1213	1.838	95.7	1.147	1267	1260
10	1.739	94.9	1.118	1238	1233	1.775	93.5	1.108	1230	1228	1.762	93.6	1.112	1223	1221	1.779	95.8	1.133	1252	1246
15	1.740	96.1	1.109	1227	1220	1.779	93.0	1.106	1227	1226	1.760	93.7	1.106	1216	1214	1.735	97.6	1.116	1235	1224
30	1.744	94.1	1.109	1216	1213	1.750	92.1	1.071	1184	1183	1.718	92.2	1.061	1165	1165	1.643	95.6	1.100	1211	1206
50	1.588	98.2	1.041	1152	1140	1.587	94.6	.978	1093	1089	1.600	94.6	.982	1092	1088	1.564	97.1	1.032	1147	1138
70	1.492	94.7	.935	1050	1046	1.532	92.3	.909	1023	1022	1.523	93.2	.925	1036	1034	1.491	97.2	.958	1073	1065
85	1.451	93.3	.868	988	9.7	1.500	92.6	.871	990	989	1.510	92.0	.892	1009	1008	1.472	94.8	.898	1018	1014
90	1.418	93.4	.829	952	950	1.461	91.4	.832	955	955	1.462	92.5	.839	960	959	1.453	93.6	.868	990	988
95 (tip)	1.386	90.5	.765	885	885	1.437	94.9	.785	909	906	1.430	95.8	.787	909	904	1.420	91.0	.788	909	909
MR	1.597	95.0	1.011	1128	1124	1.613	93.1	.976	1095	1094	1.608	93.5	.985	1098	1096	1.585	96.0	1.018	1136	1130

Circumferential Position	132°					162°					192°					222°				
% Span	P_{12}/P_o	$90-\beta_{12}$	M	V	V_m	P_{12}/P_o	$90-\beta_{12}$	M	V	V_m	P_{12}/P_o	$90-\beta_{12}$	M	V	V_m	P_{12}/P_o	$90-\beta_{12}$	M	V	V_m
5	1.698	94.6	1.102	1216	1212	1.755	95.7	1.137	1254	1248	1.575	93.7	1.050	1180	1177	1.444	91.7	.858	992	992
10	1.719	93.6	1.109	1222	1219	1.687	95.8	1.123	1241	1234	1.593	92.2	1.102	1223	1222	1.394	91.8	.819	952	952
15	1.708	94.0	1.099	1213	1210	1.661	96.9	1.112	1229	1220	1.565	93.3	1.043	1168	1166	1.364	93.7	.782	913	911
30	1.666	92.5	1.050	1161	1160	1.599	96.9	1.096	1204	1195	1.529	91.9	1.011	1129	1128	1.302	94.6	.720	839	836
50	1.609	92.6	1.010	1124	1123	1.519	97.0	1.002	1119	1111	1.481	92.5	.939	1058	1057	1.274	94.3	.688	802	800
70	1.519	93.1	.941	1056	1055	1.455	97.1	.897	1013	1006	1.416	91.4	.871	987	987	1.248	94.2	.660	769	767
85	1.522	93.1	.900	1020	1019	1.455	94.0	.881	1002	1000	1.414	90.5	.851	971	971	1.243	91.0	.646	757	757
90	1.503	91.9	.878	1002	1001	1.448	92.8	.859	983	982	1.397	91.1	.817	939	939	1.262	88.4	.656	770	770
95	1.464	95.7	.818	944	940	1.394	90.6	.771	893	893	1.358	96.5	.759	882	876	1.244	88.4	.610	721	720
MR	1.596	93.2	.953	1110	1108	1.540	95.9	.994	1112	1107	1.475	92.3	.936	1057	1056	1.295	93.0	.708	826	825

Circumferential Position	252°					282°					312°					342°				
% Span	P_{12}/P_o	$90-\beta_{12}$	M	V	V_m	P_{12}/P_o	$90-\beta_{12}$	M	V	V_m	P_{12}/P_o	$90-\beta_{12}$	M	V	V_m	P_{12}/P_o	$90-\beta_{12}$	M	V	V_m
5	1.120	89.0	.563	673	673	1.268	86.9	.732	864	863	1.485	94.8	1.001	1124	1120	1.631	91.2	.952	1083	1083
10	1.110	87.8	.546	652	651	1.332	85.8	.772	904	902	1.484	96.2	.975	1099	1093	1.673	91.2	1.004	1133	1132
15	1.154	87.7	.589	698	697	1.381	86.3	.797	929	927	1.509	96.2	1.024	1144	1137	1.702	91.2	1.025	1151	1150
30	1.272	90.3	.696	808	808	1.367	89.8	.793	918	918	1.561	96.1	1.030	1142	1136	1.797	90.6	1.054	1167	1167
50	1.285	90.4	.705	816	816	1.364	91.0	.779	901	901	1.581	96.1	1.024	1137	1130	1.713	91.0	1.016	1133	1133
70	1.288	90.3	.692	800	800	1.372	88.6	.768	885	885	1.607	94.9	1.022	1132	1127	1.570	93.1	.984	1001	999
85	1.286	90.3	.681	794	794	1.369	87.1	.755	873	872	1.586	92.8	.979	1096	1095	1.534	90.6	.864	985	985
90	1.295	90.3	.676	790	790	1.388	87.2	.754	874	873	1.555	91.1	.896	1019	1019	1.455	91.3	.795	919	919
95	1.264	90.2	.628	738	738	1.367	91.8	.715	835	835	1.477	91.5	.797	920	920	1.414	96.2	.741	856	859
MR	1.259	90.0	.673	784	784	1.362	89.0	.770	892	892	1.560	94.9	.996	1113	1108	1.646	91.7	.957	1078	1077

1) Inlet plenum conditions P_o = 1946 psf, T_o = 538.5 °R
2) V_m calculation is based on standard-day inlet plenum conditions
3) Circumferential reference position is TDC looking forward
4) Relative position of circumferential distortion screen is 210°-330°
5) $\beta^{*}_{12} = \tan^{-1}[\tan\beta_{12}/\cos\epsilon]$

TABLE 16. 7

Stator Discharge Circumferential Distributions
Disk Probe Station 12, 100% of Design Speed, $\frac{W\sqrt{\theta}}{\delta} = 173.1$

Circumferential Position

% Span	12°					42°					72°					102°				
	P_{12}/P_o	$90-\beta^\circ_{12}$	M	V	V_m	P_{12}/P_o	$90-\beta^\circ_{12}$	M	V	V_m	P_{12}/P_o	$90-\beta^\circ_{12}$	M	V	V_{12}	P_{12}/P_o	$90-\beta^\circ_{12}$	M	V	V_m
5 (hub)	1.827	92.9	1.065	1197	1196	1.634	91.3	.893	1028	1028	1.651	90.6	.872	1003	1003	1.832	94.3	1.103	1231	1228
10	1.815	95.6	1.008	1142	1138	1.736	91.2	1.024	1154	1153	1.779	90.3	1.007	1131	1131	1.797	94.3	1.084	1210	1206
15	1.813	94.9	.987	1119	1115	1.751	91.2	1.032	1162	1161	1.783	90.3	1.013	1136	1136	1.774	95.9	1.038	1164	1158
30	1.779	92.6	.943	1070	1069	1.756	89.8	1.008	1130	1130	1.733	90.3	.922	1043	1043	1.681	94.7	.896	1020	1017
50	1.664	94.7	.823	952	949	1.650	91.4	.891	1017	1017	1.642	90.9	.844	968	968	1.623	94.2	.839	965	963
70	1.611	94.4	.769	898	896	1.579	91.9	.819	943	943	1.566	94.1	.765	888	886	1.545	95.7	.765	891	886
85	1.598	91.4	.753	890	890	1.559	91.4	.793	925	925	1.568	91.6	.762	888	888	1.549	92.7	.758	890	889
90	1.570	91.0	.723	861	861	1.524	92.3	.758	894	893	1.527	92.5	.724	851	850	1.523	92.4	.731	865	864
95 (tip)	1.524	89.4	.683	817	817	1.488	94.4	.721	857	855	1.483	94.9	.683	809	806	1.463	91.9	.676	805	805
MR	1.689	93.3	.861	995	993	1.641	91.4	.892	1022	1022	1.639	91.7	.846	972	972	1.635	94.4	.868	998	995

% Span	132°					162°					192°					222°				
5 (hub)	1.642	89.0	.840	972	972	1.777	91.8	.971	1107	1107	1.558	90.4	.692	823	823	1.476	88.0	.594	712	712
10	1.758	88.7	.925	1056	1055	1.730	92.0	.900	1034	1033	1.643	89.1	.747	880	879	1.474	88.0	.596	714	713
15	1.761	90.3	.917	1046	1046	1.709	93.4	.871	1004	1002	1.630	90.8	.735	866	866	1.464	90.7	.579	695	695
30	1.702	90.6	.862	988	988	1.641	95.4	.798	923	919	1.591	93.2	.700	822	821	1.431	90.8	.548	654	654
50	1.649	90.4	.803	931	931	1.570	94.5	.735	859	856	1.582	93.3	.680	802	801	1.415	90.8	.525	628	628
70	1.558	94.4	.725	852	850	1.508	94.0	.683	803	801	1.503	93.6	.615	733	731	1.408	90.9	.517	618	618
85	1.556	93.0	.720	855	853	1.507	92.0	.674	800	799	1.481	93.9	.588	708	706	1.389	90.8	.491	594	594
90	1.532	93.4	.696	833	832	1.489	92.0	.653	778	778	1.475	93.7	.578	701	699	1.389	90.8	.485	590	590
95 (tip)	1.492	93.8	.661	796	795	1.430	91.9	.602	722	722	1.447	93.9	.560	681	679	1.379	90.7	.468	570	570
MR	1.629	91.7	.797	928	928	1.590	93.6	.764	892	890	1.549	92.9	.660	784	783	1.422	90.5	.533	639	639

% Span	252°					282°					312°					342°				
5 (hub)	1.211	90.8	.227	279	279	1.404	90.2	.579	698	698	1.453	87.7	.639	761	760	1.609	89.1	.835	972	972
10	1.200	91.5	.208	255	255	1.448	90.1	.618	738	738	1.447	90.1	.639	758	758	1.688	88.7	.885	1020	1020
15	1.215	91.5	.248	304	304	1.461	91.4	.624	744	744	1.496	92.6	.669	790	789	1.728	88.8	.923	1056	1056
30	1.312	92.2	.407	490	490	1.513	91.2	.655	771	771	1.585	93.0	.720	843	841	1.754	88.8	.929	1053	1053
50	1.495	90.7	.602	713	713	1.553	92.9	.676	795	794	1.599	92.9	.716	841	840	1.646	91.3	.829	956	956
70	1.591	90.8	.678	795	795	1.586	93.8	.704	826	824	1.587	90.1	.697	822	822	1.566	93.7	.761	886	884
65	1.633	87.9	.706	829	829	1.522	92.5	.662	787	786	1.546	90.0	.661	791	791	1.491	90.4	.703	831	831
90	1.641	87.8	.703	829	828	1.391	89.9	.550	664	664	1.537	90.0	.646	777	777	1.467	86.3	.680	808	807
95 (tip)	1.634	87.7	.688	812	812	1.393	89.9	.545	661	661	1.533	89.9	.634	764	764	1.459	86.4	.663	792	791
MR	1.516	90.1	.617	731	731	1.515	92.1	.655	776	775	1.559	91.3	.688	814	814	1.624	90.3	.822	952	952

1) Inlet plenum conditions $P_o = 1955$ psf, $T_o = 536.8$ °R
2) V_m calculation is based on standard-day inlet plenum conditions
3) Circumferential reference position is TDC looking forward
4) Relative position of circumferential distortion screen is 210°-330°
5) $\beta^\circ_{12} = \tan^{-1} [\tan \beta_{12} / \cos \epsilon]$

TABLE 16.8
Stator Discharge Circumferential Distributions
Disk Probe Station 12, 100% of Design Speed, $\frac{W\sqrt{\theta}}{\delta} = 167.2$

Circumferential Position: 12°

% Span	P_{12}/P_o	$90-\beta^*_{12}$	M	V	V_m
5 (hub)	1.891	92.3	.865	1006	1006
10	1.873	92.4	.857	996	995
15	1.861	92.5	.844	980	979
30	1.795	92.3	.774	903	903
50	1.631	91.1	.653	775	775
70	1.504	91.1	.554	669	669
85	1.440	91.2	.493	612	612
90	1.420	91.1	.470	579	579
95 (tip)	1.412	91.0	.448	554	553
MR	1.668	91.7	.698	828	828

Circumferential Position: 42°

% Span	P_{12}/P_o	$90-\beta^*_{12}$	M	V	V_m
5 (hub)	1.768	87.7	.832	970	969
10	1.832	88.3	.871	1007	1007
15	1.831	88.3	.872	1008	1008
30	1.797	89.8	.825	954	954
50	1.681	91.8	.736	861	861
70	1.593	93.0	.659	782	781
85	1.525	91.5	.609	734	734
90	1.491	91.6	.574	697	697
95 (tip)	1.469	91.6	.552	674	674
MR	1.679	90.8	.743	874	874

Circumferential Position: 72°

% Span	P_{12}/P_o	$90-\beta^*_{12}$	M	V	V_m
5 (hub)	1.701	87.3	.823	956	955
10	1.806	88.9	.881	1012	1012
15	1.807	89.5	.884	1014	1014
30	1.770	89.8	.844	970	970
50	1.710	90.5	.788	915	915
70	1.854	92.0	.735	865	865
85	1.634	89.4	.718	854	854
90	1.619	88.7	.701	838	837
95 (tip)	1.601	88.7	.685	822	822
MR	1.703	90.0	.786	918	918

Circumferential Position: 102°

% Span	P_{12}/P_o	$90-\beta^*_{12}$	M	V	V_m
5 (hub)	1.847	92.1	.995	1131	1130
10	1.791	92.2	.915	1050	1049
15	1.781	93.9	.887	1020	1018
30	1.738	94.1	.843	969	966
50	1.666	93.9	.772	897	895
70	1.641	92.5	.743	873	872
85	1.636	90.3	.728	866	866
90	1.619	90.0	.710	849	849
95 (tip)	1.561	89.8	.662	796	796
MR	1.692	92.7	.661	934	933

Circumferential Position: 132°

% Span	P_{12}/P_o	$90-\beta^*_{12}$	M	V	V_m
5 (hub)	1.673	87.3	.796	930	929
10	1.757	88.8	.884	978	978
15	1.747	89.8	.839	972	972
30	1.728	90.0	.813	943	943
50	1.711	90.8	.777	909	908
70	1.644	92.2	.727	862	862
85	1.639	92.7	.710	854	853
90	1.617	93.0	.689	834	833
95 (tip)	1.573	91.7	.667	812	811
MR	1.683	90.9	.766	903	902

Circumferential Position: 162°

% Span	P_{12}/P_o	$90-\beta^*_{12}$	M	V	V_m
5 (hub)	1.792	90.7	.837	975	975
10	1.751	92.9	.799	932	931
15	1.730	92.7	.785	917	916
30	1.685	93.9	.734	857	855
50	1.638	93.4	.686	810	808
70	1.570	93.3	.632	755	754
85	1.559	91.1	.619	747	747
90	1.546	91.1	.603	731	731
95 (tip)	1.492	91.2	.557	678	678
MR	1.639	92.7	.698	826	825

Circumferential Position: 192°

% Span	P_{12}/P_o	$90-\beta^*_{12}$	M	V	V_m
5 (hub)	1.625	89.7	.678	809	809
10	1.674	90.7	.701	832	832
15	1.659	90.8	.696	825	825
30	1.636	92.6	.667	790	789
50	1.545	92.6	.664	786	785
70	1.573	92.9	.606	728	727
85	1.546	93.0	.575	699	698
90	1.543	93.1	.568	694	693
95 (tip)	1.518	93.1	.553	676	675
MR	1.607	92.3	.640	765	764

Circumferential Position: 222°

% Span	P_{12}/P_o	$90-\beta^*_{12}$	M	V	V_m
5 (hub)	1.442	87.9	.452	551	550
10	1.493	88.1	.503	609	608
15	1.522	88.0	.531	640	640
30	1.507	88.0	.516	620	619
50	1.496	88.1	.502	604	603
70	1.499	88.1	.503	608	608
85	1.477	88.0	.475	580	580
90	1.469	87.9	.461	567	566
95 (tip)	1.459	87.8	.444	546	546
MR	1.493	88.0	.497	602	601

Circumferential Position: 252°

% Span	P_{12}/P_o	$90-\beta^*_{12}$	M	V	V_m
5 (hub)	1.271	92.8	.202	249	249
10	1.272	92.8	.218	268	267
15	1.289	92.8	.257	316	315
30	1.379	92.8	.400	484	483
50	1.576	91.7	.598	712	712
70	1.685	91.1	.681	807	807
85	1.733	91.2	.700	835	835
90	1.734	87.1	.702	839	838
95 (tip)	1.728	85.9	.693	829	827
MR	1.603	90.9	.617	737	737

Circumferential Position: 282°

% Span	P_{12}/P_o	$90-\beta^*_{12}$	M	V	V_m
5 (hub)	1.428	90.9	.516	626	626
10	1.473	92.1	.559	672	672
15	1.480	93.4	.563	675	674
30	1.523	91.9	.584	694	694
50	1.568	92.8	.612	726	725
70	1.600	95.8	.648	771	767
85	1.495	96.0	.579	701	697
90	1.351	92.6	.428	527	527
95 (tip)	1.329	90.0	.384	476	476
MR	1.523	93.5	.589	704	703

Circumferential Position: 312°

% Span	P_{12}/P_o	$90-\beta^*_{12}$	M	V	V_m
5 (hub)	1.530	91.0	.591	709	708
10	1.541	91.0	.608	726	726
15	1.587	91.1	.644	766	765
30	1.681	91.2	.693	817	817
50	1.698	92.1	.688	815	814
70	1.700	92.3	.676	807	806
85	1.639	92.2	.634	770	770
90	1.618	92.6	.615	751	750
95 (tip)	1.612	92.7	.599	732	732
MR	1.656	91.9	.661	789	789

Circumferential Position: 342°

% Span	P_{12}/P_o	$90-\beta^*_{12}$	M	V	V_m
5 (hub)	1.657	87.7	.724	855	855
10	1.752	87.0	.780	913	912
15	1.765	87.8	.788	920	919
30	1.738	88.6	.756	881	881
50	1.593	89.5	.641	760	760
70	1.427	89.8	.490	594	594
85	1.394	95.7	.457	560	558
90	1.384	99.6	.435	536	529
95 (tip)	1.375	99.6	.422	522	515
MR	1.591	90.3	.650	774	774

1) Inlet plenum conditions P_o = 1964 psf, T_o = 539.5 °R
2) V_m calculation is based on standard-day inlet plenum conditions
3) Circumferential reference position is TDC looking forward
4) Relative position of circumferential distortion screen is 210°-330°
5) $\beta^*_{12} = \tan^{-1} [\tan \beta_{12} / \cos \epsilon]$

TABLE 17.1

Stator Discharge Circumferential Distributions
Temperature Rakes 70% Speed

$\frac{W\sqrt{\theta}}{\delta} = 129.8$

% Span	26° T_{12}/T_o	56° T_{12}/T_o	86° T_{12}/T_o	116° T_{12}/T_o	146° T_{12}/T_o	176° T_{12}/T_o	206° T_{12}/T_o	236° T_{12}/T_o	266° T_{12}/T_o	296° T_{12}/T_o	326° T_{12}/T_o	356° T_{12}/T_o
5 (hub)	1.1307	1.1199	1.1173	1.1106	1.1138	1.1027	1.0938	1.0868	1.1011	1.1230	1.1416	1.1382
10	1.1203	1.1094	1.1079	1.1009	1.1048	1.0915	1.0848	1.0796	1.0974	1.1161	1.1294	1.1238
15	1.1129	1.1044	1.1027	1.0973	1.0978	1.0864	1.0758	1.0769	1.0943	1.1108	1.1203	1.1114
30	1.0963	1.0930	1.0923	1.0888	1.0873	1.0794	1.0643	1.0735	1.0945	1.1092	1.1164	1.1029
50	1.0884	1.0838	1.0816	1.0804	1.0805	1.0749	1.0571	1.0791	1.0985	1.1102	1.1079	1.0941
70	1.0817	1.0767	1.0747	1.0732	1.0747	1.0682	1.0524	1.0842	1.0984	1.1134	1.1090	1.0887
85	1.0840	1.0789	1.0777	1.0742	1.0772	1.0680	1.0554	1.0865	1.1102	1.1237	1.1222	1.0910
90	1.0890	1.0825	1.0818	1.0779	1.0800	1.0698	1.0586	1.0881	1.1147	1.1251	1.1280	1.0948
95 (tip)	1.0906	1.0847	1.0837	1.0811	1.0833	1.0735	1.0615	1.0909	1.1179	1.1277	1.1347	1.0970
MR	1.0950	1.0893	1.0877	1.0842	1.0853	1.0770	1.0632	1.0812	1.1000	1.1149	1.1179	1.1001

Inlet Plenum Conditions: $P_o = 2012$ psf $T_o = 534$ °R

$\frac{W\sqrt{\theta}}{\delta} = 122.1$

% Span	26°	56°	86°	116°	146°	176°	206°	236°	266°	296°	326°	356°
5	1.1285	1.1191	1.1181	1.1137	1.1158	1.1075	1.1006	1.0914	1.1023	1.1191	1.1406	1.1429
10	1.1182	1.1095	1.1101	1.1057	1.1071	1.1003	1.0922	1.0851	1.0999	1.1137	1.1320	1.1299
15	1.1136	1.1046	1.1043	1.1014	1.1003	1.0948	1.0863	1.0846	1.0979	1.1106	1.1259	1.1188
30	1.1009	1.0971	1.0967	1.0935	1.0938	1.0903	1.0787	1.0864	1.0991	1.1139	1.1235	1.1090
50	1.0961	1.0903	1.0921	1.0904	1.0888	1.0845	1.0737	1.0928	1.1085	1.1210	1.1227	1.1042
70	1.0938	1.0879	1.0872	1.0876	1.0854	1.0836	1.0711	1.1006	1.1194	1.1329	1.1366	1.1093
85	1.1045	1.0946	1.0927	1.0925	1.0886	1.0873	1.0767	1.1074	1.1299	1.1454	1.1584	1.1230
90	1.1099	1.1002	1.0979	1.0982	1.0934	1.0923	1.0827	1.1117	1.1348	1.1493	1.1634	1.1282
95	1.1142	1.1035	1.1016	1.1024	1.0983	1.0977	1.0882	1.1140	1.1386	1.1539	1.1695	1.1342
MR	1.1041	1.0970	1.0967	1.0949	1.0934	1.0899	1.0797	1.0953	1.1119	1.1285	1.1355	1.1158

Inlet Plenum Conditions: $P_o = 2020$ psf $T_o = 525.2$ °R

$\frac{W\sqrt{\theta}}{\delta} = 111.0$

% Span	26°	56°	86°	116°	146°	176°	206°	236°	266°	296°	326°	356°
5	1.1322	1.1219	1.1889	1.1142	1.1155	1.1095	1.1053	1.0975	1.1043	1.1287	1.1414	1.1423
10	1.1237	1.1146	1.1120	1.1074	1.1091	1.1026	1.0968	1.0895	1.1022	1.1227	1.1330	1.1314
15	1.1177	1.1098	1.1066	1.1029	1.1034	1.0985	1.0913	1.0894	1.1012	1.1188	1.1254	[illegible]
30	1.1046	1.1037	1.1009	1.0988	1.0986	1.0952	1.0860	1.0952	1.1053	1.1193	1.1230	[illegible]
50	1.1037	1.0981	1.0957	1.0958	1.0942	1.0911	1.0827	1.1010	1.1145	1.1306	1.1252	1.1164
70	1.1117	1.1097	1.1025	1.0960	1.0943	1.0932	1.0826	1.1111	1.1241	1.1399	1.1375	1.1256
85	1.1239	1.1230	1.1152	1.1086	1.1018	1.1038	1.0918	1.1190	1.1371	1.1525	1.1558	1.1366
90	1.1305	1.1285	1.1180	1.1124	1.1071	1.1080	1.0974	1.1225	1.1426	1.1578	1.1639	1.1406
95	1.1387	1.1327	1.1242	1.1165	1.1104	1.1116	1.1026	1.1262	1.1487	1.1634	1.1716	1.1445
MR	1.1149	1.1105	1.1060	1.1025	1.1003	1.0979	1.0892	1.1037	1.1178	1.1341	1.1364	1.1252

Inlet Plenum Conditions: $P_o = 2037$ psf $T_o = 529.3$ °R

TABLE 17.2
Stator Discharge Circumferential Distributions
Temperature Rakes 90% Speed

$\frac{W\sqrt{\theta}}{\delta} = 164.8$

% Span	26° T_{12}/T_o	56° T_{12}/T_o	8 • T_{12}/T_o	116° T_{12}/T_o	146° T_{12}/T_o	176° T_{12}/T_o	206° T_{12}/T_o	236° T_{12}/T_o	266° T_{12}/T_o	296° T_{12}/T_o	326° T_{12}/T_o	356° T_{12}/T_o
5	1.2162	1.2011	1.1971	1.1780	1.1861	1.1745	1.1579	1.1366	1.1551	1.1823	1.2227	1.2362
10	1.2013	1.1886	1.1842	1.1677	1.1749	1.1711	1.1467	1.1177	1.1487	1.1783	1.2098	1.2195
15	1.1904	1.1822	1.1785	1.1640	1.1618	1.1565	1.1360	1.1103	[illegible]	1.1744	1.2044	1.2058
30	1.1780	1.1718	1.1650	1.1563	1.1496	1.1379	1.1127	1.1018	1.1563	1.1719	1.2101	1.1971
50	1.1799	1.1661	1.1589	1.1517	1.1465	1.1350	1.1020	1.1083	1.1652	1.1716	1.2167	1.1939
70	1.1655	1.1559	1.1539	1.1486	1.1457	1.1338	1.1004	1.1139	1.1705	1.1838	1.2163	1.1729
85	1.1716	1.1534	1.1581	1.1531	[illegible]	[illegible]	1.1038	1.1152	1.1927	1.1995	1.2308	1.1766
90	1.1810	1.1614	1.1673	1.1598	1.1531	1 .370	1.1100	1.1166	1.2027	1.2094	1.2432	1.1845
95	1.1865	1.1682	1.1731	1.1656	1.1616	1.1427	1.1161	1.1187	1.2115	1.2205	1.2584	1.1903
	1.1803	1.1683	1.1655	1.1568	1.1531	1.1415	1.1134	1.1122	1.1695	1.1831	1.2200	1.1923

Inlet Plenum Conditions: $P_o = 1968$ psf $T_o = 536.2$ °R

$\frac{W\sqrt{\theta}}{\delta} = 156.2$

% Span	26° T_{12}/T_o	56° T_{12}/T_o	8 • T_{12}/T_o	116° T_{12}/T_o	146° T_{12}/T_o	176° T_{12}/T_o	206° T_{12}/T_o	236° T_{12}/T_o	266° T_{12}/T_o	296° T_{12}/T_o	326° T_{12}/T_o	356° T_{12}/T_o
5	1.2065	1.1959	1.1906	1.1818	1.1859	1.1739	1.1650	1.1450	1.1626	1.1818	1.2264	1.2274
10	1.1991	1.1864	1.1812	1.1690	1.1767	1.1651	1.1582	1.1362	1.1624	1.1769	1.2173	1.2153
15	1.1907	1.1764	1.1732	1.1627	[illegible]	1.1552	1.1484	1.1319	1.1660	1.1758	1.2088	[illegible]
30	1.1802	1.1679	1.1601	1.1580	1.1527	1.1438	1.1344	1.1380	1.1815	1.1803	1.2052	1.1914
50	1.1748	1.1610	1.1585	1.1544	[illegible]	1.1460	1.1287	1.1521	1.1992	1.1994	1.2114	1.1847
70	1.1752	1.1619	1.1580	1.1563	[illegible]	1.1459	1.1299	1.1674	1.2162	1.2249	1.2216	1.1980
85	1.2011	1.1636	1.1624	1.1600	1.1561	1.1479	1.1365	1.1753	1.2372	1.2565	1.2427	1.2257
90	1.2092	1.1729	1.1702	1.1686	1.1620	1.1540	1.1430	1.1775	1.2407	1.2672	1.2543	1.2333
95	1.2238	1.1798	1.1766	1.1747	1.1710	1.1609	1.1487	1.1814	1.2468	1.2729	1.2694	1.2447
	1.1877	1.1693	1.1651	1.1610	1.1582	1.1505	1.1381	1.1538	1.2005	1.2107	1.2222	1.2047

Inlet Plenum Conditions: $P_o = 1977$ psf $T_o = 536.1$ °R

TABLE 17.3
Stator Discharge Circumferential Distributions
Temperature Rakes 100% Speed

$\frac{W\sqrt{\theta}}{\delta} = 178.2$

% Span	26° T_{12}/T_o	56° T_{12}/T_o	86° T_{12}/T_o	116° T_{12}/T_o	146° T_{12}/T_o	176° T_{12}/T_o	206° T_{12}/T_o	236° T_{12}/T_o	266° T_{12}/T_o	296° T_{12}/T_o	326° T_{12}/T_o	356° T_{12}/T_o
5	1.2557	1.2439	1.2432	1.2181	1.2216	1.2070	1.1989	1.1621	1.1827	1.2198	1.2694	1.2781
10	1.2463	1.2325	1.2346	1.2011	1.2138	1.1985	1.1915	1.1436	1.1746	1.2163	1.2571	1.2649
15	1.2380	1.2245	1.2272	1.2013	1.2042	1.1693	1.1799	1.1347	1.1750	1.2142	1.2535	1.2539
30	1.2373	1.2166	1.2143	1.1952	1.1868	1.1695	1.1493	1.1193	1.1849	1.2098	1.2624	1.2535
50	1.2195	1.2105	1.2110	1.1959	1.1887	1.1692	1.1347	1.1268	1.1895	1.2156	1.2664	1.2232
70	1.2060	1.1880	1.1941	1.1812	1.1766	1.1629	1.1307	1.1364	1.1966	1.2284	1.2589	1.2044
85	1.2107	1.1894	1.1996	1.1926	1.1836	1.1641	1.1370	1.1425	1.2177	1.2395	1.2551	1.2160
90	1.2248	1.1986	1.2084	1.2017	1.1896	1.1696	1.1475	1.1449	1.2242	1.2511	1.2651	1.2244
95	1.2362	1.2074	1.2168	1.2086	1.1974	1.1799	1.1597	1.1476	1.2304	1.2615	1.2812	1.2310
MR	1.2253	1.2087	1.2120	1.1962	1.1903	1.1735	1.1493	1.1346	1.1945	1.2241	1.2625	1.2324

Inlet Plenum Conditions: P_o = 1946 psf T_o = 538.5 °R

$\frac{W\sqrt{\theta}}{\delta} = 173.1$

% Span	26° T_{12}/T_o	56° T_{12}/T_o	86° T_{12}/T_o	116° T_{12}/T_o	146° T_{12}/T_o	176° T_{12}/T_o	206° T_{12}/T_o	236° T_{12}/T_o	266° T_{12}/T_o	296° T_{12}/T_o	326° T_{12}/T_o	356° T_{12}/T_o
5	1.2545	1.2352	1.2368	1.2216	1.2262	1.2094	1.1976	1.1651	1.1912	1.2289	1.2736	1.2785
10	1.2434	1.2323	1.2336	1.2187	1.2207	1.2028	1.1896	1.1613	1.1882	1.2198	1.2674	1.2678
15	1.2303	1.2216	1.2220	1.2069	1.2090	1.1945	1.1819	1.1589	1.1874	1.2140	1.2606	1.2562
30	1.2281	1.2124	1.2090	1.1970	1.1907	1.1782	1.1603	1.1646	1.2087	1.2180	1.2651	1.246[illegible]
50	1.2293	1.2164	1.2128	1.2020	1.1938	1.1821	1.1528	1.1844	1.2429	1.2368	1.2752	1.233[illegible]
70	1.2044	1.1957	1.1927	1.1837	1.1802	1.1764	1.1515	1.2032	1.2776	1.2807	1.2945	1.2351
85	1.2084	1.1978	1.2044	1.1960	1.1936	1.1796	1.1615	1.2127	1.2903	1.3146	1.3247	1.2758
90	1.2185	1.2089	1.2144	1.2073	1.2007	1.1865	1.1714	1.2145	1.2952	1.3268	1.3391	1.2961
95	1.2254	1.2201	1.2231	1.2157	1.2083	1.1970	1.1807	1.2173	1.3068	1.3360	1.3546	1.3159
	1.2236	1.2124	1.2116	1.2004	1.1957	1.1850	1.1643	1.1845	1.2414	1.2538	1.2883	1.2555

Inlet Plenum Conditions: P_o = 1955 psf T_o = 536.8 °R

$\frac{W\sqrt{\theta}}{\delta} = 167.2$

% Span	26° T_{12}/T_o	56° T_{12}/T_o	86° T_{12}/T_o	116° T_{12}/T_o	146° T_{12}/T_o	176° T_{12}/T_o	206° T_{12}/T_o	236° T_{12}/T_o	266° T_{12}/T_o	296° T_{12}/T_o	326° T_{12}/T_o	356° T_{12}/T_o
5	1.2576	1.2379	1.2285	1.2178	1.2206	1.2095	1.2020	1.1720	1.2047	1.2423	1.2889	1.2829
10	1.2512	1.2309	1.2179	1.2034	1.2122	1.2041	1.1950	1.1707	1.2039	1.2365	1.2771	1.2718
15	1.2456	1.2223	1.2070	1.1949	1.2021	1.1965	1.1882	1.1705	1.2[illegible]41	1.2336	1.2685	1.2626
30	1.2391	1.2173	1.2044	1.1960	1.1917	1.1827	1.1709	1.1766	1.2230	1.2346	1.2604	1.2513
50	1.2260	1.2127	1.2047	1.2007	1.1994	1.1879	1.1695	1.1979	1.2630	1.2631	1.2595	1.2526
70	1.2366	1.2203	1.2015	1.1952	1.1896	1.1847	1.1666	1.2216	1.2904	1.3024	1.2704	1.2701
85	1.2596	1.2480	1.2163	1.2048	1.1983	1.1867	1.1796	1.2339	1.3105	1.3354	1.2950	1.2981
90	1.2707	1.2614	1.2255	1.2160	1.2060	1.1954	1.1895	1.2371	1.3161	1.3449	1.3052	1.3103
95	1.2676	1.2762	1.2347	1.2251	1.2159	1.2053	1.1994	1.2408	1.3279	1.3510	1.3223	1.3212
	1.2442	1.2272	1.210[illegible]	1.2[illegible]19	1.1992	1.1905	1.1779	1.1989	1.2573	1.2761	1.2750	1.2716

Inlet Plenum Conditions: P_o = 1964 psf T_o = 539.5 °R

TABLE 18

Stage Overall Performance for Inlet Circumferential Distortion

% of Design Speed	$W\sqrt{\theta}/\delta$	P_{12}/P_8	η	T_{12}/T_O
70	129.8	1.292	82.4	1.092
	122.1	1.320	82.2	1.101
	111.0	1.341	76.4	1.114
90	164.8	1.522	78.1	1.163
	156.2	1.594	79.3	1.180
100	178.2	1.647	76.3	1.201
	173.1	1.747	77.7	1.223
	167.2	1.781	76.5	1.235