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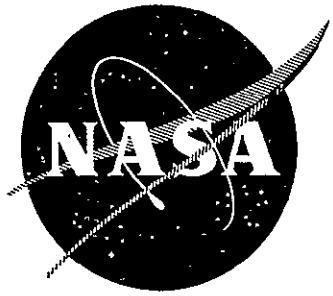

SINGLE-STAGE EVALUATION OF HIGHLY-LOADED HIGH-MACH-NUMBER COMPRESSOR STAGES IV. DATA AND PERFORMANCE OF HUB-SLIT-SUCTION STATOR

November 1971

By
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16. Abstract

A single stage compressor with a rotor tip speed of 1600 fps and 0.5 hub/tip ratio was used to demonstrate the effects of boundary layer suction through slits at the intersection of the stator suction surface and the hub wall. No efficiency benefit was obtained at design speed; 1.5 percentage points improvement was obtained at part speed. Maximum design speed stage efficiency of 82.7 percent was obtained at a pressure ratio of 1.935. Accounting for rotor work on the flow bled through the stator hub slit decreases this efficiency 0.5 percent.

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FOREWORD

The work described herein was done under NASA Contract NAS3-10482 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. The work was performed during the period 7 January 1971 through 4 March 1971.

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I. SUMMARY

A compressor stage with a rotor tip speed of 1600 ft/sec, high blade loadings, and boundary layer suction through a slit in the corner formed by the stator suction surface and the hub wall was tested. Both rotor and stator blades had multiple circular arc (MCA) airfoil sections. The stator chord angle was set 4 degrees more axial than design, to increase incidence for the purpose of evaluating the effect of slit suction on stator flow range.

Overall performance at design speed for data points with stator hub slit suction is compared to data without slit suction in Table 1. Two values of stage efficiency are given, the values in parenthesis were calculated using a procedure which accounts for the flow bled through the boundary layer suction slit. Comparison of data taken with and without slit suction showed that suction improved efficiency at maximum flow, part speed, but had little effect near stall. No significant increase in stage efficiency was obtained at design speed. Flow range from maximum flow to stall was not affected by slit suction. Slit suction reduced stator losses at 5, 10, and 15 percent span from the hub. Stator wakes were narrower and shallower with suction.

TABLE 1

OVERALL PERFORMANCE COMPARISON
WITH AND WITHOUT SLIT SUCTION
(DESIGN SPEED)

Parameter	Max Efficiency Data Point Without Suction	Max Efficiency Data Point With Suction	Near-Stall Data Point Without Suction	Near-Stall Data Point With Suction
Corrected Weight Flow, lb/sec	181.03	179.58	173.09	173.58
Rotor Pressure Ratio	1.906	1.935	2.003	2.033
Rotor Efficiency, Percent	87.3	87.6	85.8	86.5
Stage Pressure Ratio	1.842	1.871	1.908	1.937
Stage Efficiency, Percent	82.3	82.7 (82.2)	79.2	79.9 (79.4)

Contour plots were prepared for pressure, temperature, velocity, and air angle at the stator-exit instrumentation plane with stator hub slit-suction. Contour plots showed that stator losses were concentrated in corners where the stators intersected the endwalls, and that these loss areas grew with increased back pressure. Increased back pressure caused more severe total pressure gradients in the wake region although wake width remained approximately constant.

No stress limits were encountered during the test program. Rotating stall surveys showed that abrupt stalls occurred at all speeds with indications of rotating stall initiating a surge cycle.

II. INTRODUCTION

Recent results from research compressors have shown that compressor rotors can be designed to operate with high aerodynamic blade loading and/or high inlet relative Mach number and still achieve good efficiency (85 to 94 percent) with acceptable stall margin (12 to 15 percent). However, there is a severe penalty on stage efficiency due to high stator losses. The major portion of the high loss region occurs in the vicinity of the stator end-walls. Therefore, no appreciable overall gains in stage performance can be made without reducing the level of losses in the stator end-wall regions. In addition to high stator losses, in many cases the stall free range of the compressor stage is limited by stator stall. Slit-suction is one type of end-wall treatment that has shown some degree of success in reducing stator end-wall losses in cascades (Reference 2) and single stage compressors (Reference 3).

As part of Contract NAS3-10482, a stator end-wall treatment program was initiated to investigate the effectiveness of various types of end-wall treatments on reducing stator losses and increasing the stator stall free range of operation. The single stage compressor used in this investigation is the same as presented in Reference 1 with stator hub-slit-suction added. In order to evaluate the effect of end-wall treatment on stator range, the stator vanes were restaggered four degrees open (increased incidence) with respect to the design stagger. This compressor has a design rotor tip speed of 1600 ft/sec and demonstrated a rotor pressure ratio and efficiency of 2.0 and 89 percent respectively, and a stage pressure ratio and efficiency of 1.946 and 84.5 percent respectively.

The purpose of this report is to present the results of stator hub slit-suction applied to a high Mach number highly loaded single stage compressor.

III. APPARATUS AND PROCEDURE

A. Test Compressor

The compressor (Figure 1) is a highly-loaded, high-Mach-number, single stage with no inlet guide vanes, 30 MCA rotor blades and 44 MCA stator vanes. It is identical to the compressor of Reference 1 except for the addition of stator hub-slit-suction shown in Figure 2, and a stator restagger of four degrees to increase incidence so that the effects of slit suction on stator flow range could be evaluated. The rotor is the same one tested in Reference 1 except that blades tips were machined to remove results of tip abrasion, and leading edges were blended to remove nicks resulting from a bearing failure in a previous test. Extra material (0.030 inch) was added to the rotor shroud rub-strip to provide an acceptable blade tip clearance without changing the axial location of the rotor relative to the stator. Proximity measurements indicated that the rotor running clearance was 0.063 inch at design speed, compared with 0.050 inch in the test results reported in Reference 1. Rotor and stator design parameters are summarized in Table 2. The rotor assembly is shown in Figure 3. Complete design details are given in Reference 4.

TABLE 2

MCA ROTOR AND STATOR DESIGN PARAMETERS

Rotor – Stations 8 and 9

% Span	Dia – 1	Dia – 2	β^* 8	β^* 9	β^* 8ss	β^* sh	Solidity
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

Stator - Stations 10 and 11

% Span	Dia – 1	Dia – 2	β^* 10	β^* 11	β^* 10ss	β^* sh	Solidity
5 (hub)	20.41	21.49	39.23	-16.41	42.15	34.47	2.010
10	21.01	21.96	38.27	-15.44	41.21	32.62	1.959
15	21.59	22.43	37.42	-14.89	40.36	30.94	1.911
30	23.31	23.90	35.44	-15.22	38.44	27.18	1.781
50	25.60	25.89	33.60	-16.04	36.72	24.01	1.632
70	27.82	27.90	32.45	-17.48	35.68	22.38	1.508
85	29.41	29.38	32.12	-19.91	35.44	22.82	1.430
90	29.91	29.86	32.15	-21.40	35.48	23.36	1.407
95 (tip)	30.38	30.29	32.33	-23.69	35.69	24.40	1.387

NOTE: Symbol definitions appear in Appendix 2.

The suction slit design was based on data reported in References 2 and 3 which showed that end-wall-region cascade losses were reduced significantly by extracting small amounts of flow through a slit at the intersection of the wall and blade suction surface. These data showed that most of the attainable benefit was obtained by extracting the corner flow passing through the area common to the boundary layer displacement thickness growth on the vane surface and the wall.

The stator hub slit extends from 15 to 85 percent chord and is .025 inch wide. Design flow rate through the slits is 0.30 percent of compressor design flow. Slit suction design details are given in Reference 4.

Suction for stator hub slits was provided by test facility exhaust pumps. The stator hub slit suction plenum is evacuated using four hollow struts just upstream, and in line with the rear bearing support struts. Suction flow through these struts is measured using a common calibrated flow measuring orifice (Figure 4). Other facility hardware was the same as described in Reference 1.

B. Instrumentation and Calibration

Static pressure in the plenum beneath the suction slits was measured by three pressure taps, and the plenum temperature was measured by three bare-wire thermocouples. Slit-suction flow rate was measured by a 3.297 inch sharp-edge orifice (Figure 4) within an estimated accuracy of ± .03 lb/sec flow. Hot film probes are used to detect rotating stall. Other instrumentation is described in Reference 1. Typical instrumentation is shown in Figure 5. Axial and circumferential locations of instrumentation are shown in Figures 6 and 7, respectively.

C. Test Procedure

All testing was conducted with uniform inlet flow. Stator hub slit suction was used for all tests unless otherwise noted.

1. Shakedown Test

   Shakedown tests were conducted to establish the mechanical integrity of the compressor and to locate critical stress boundaries which could limit the operating range. Vibratory stresses were recorded during accelerations and decelerations from 50 to 105 percent of design speed with open throttle, part-throttle, and near stall throttle settings. All fixed instrumentation and wake rake traverse data were recorded at the beginning and end of each constant throttle acceleration to provide three data points at 50 percent and at 100 percent speed. At design speed, one performance data point was acquired which included traverse data at all stations to verify the hub-slit-suction flow rate and demonstrate the operation of data acquisition and reduction systems.

   Rotating stall surveys were conducted at 50, 70, 85, 90, 95, and 100 percent of design speed. Velocity fluctuations at the rotor inlet were indicated by a hot film

probe with three sensors located at 25, 50, and 85 percents of span from the hub (Figure 5f). Readings from this probe along with selected rotor and stator strain gages, a speed signal, and a stator leading edge static pressure were recorded simultaneously as the throttle was closed from wide open to stall. Several surge pulses were recorded for each stall-transient survey.

2. Performance Test

Performance data with stator hub slit suction were obtained at 50, 70, 85, 90, 95, and 100 percent of design speed for a total of 30 points. In addition stall flows were measured for all speeds. Traverse data were taken at nine diameters at the rotor-inlet and stator-exit for 26 of the data points. For the remaining four data points, boundary layer surveys were conducted at fifteen radial positions for all probes. Stator-inlet probes were traversed for these four points, in addition to the rotor inlet and stator exit probes. One combination probe (shown in Figure 5c) at the stator exit was tangentially traversed across a stator blade gap at fifteen radial locations to supplement the wake rake data. Three of the boundary layer survey points were acquired at design speed, part throttle, peak efficiency, and near stall. The fourth point was acquired at 70 percent speed, near stall flow.

Six additional performance data points, three at 70 and three at 100 percent of design speed were taken, without stator hub-slit-suction to isolate the effects of suction on performance. All radial traverse data were obtained for these six performance points including stator inlet traverses. Stall flow was measured at 100 percent speed without slit suction.

D. Calculation Procedure

The calculation procedure was the same as discussed in Reference 1 for uniform inlet flow conditions with an additional adjusted efficiency calculation which accounts for the stator hub-slit-suction flow.

Adjusted efficiency was defined as the ratio (ideal work/actual work) where ideal work was calculated for only the flow which reached the compressor exit, and actual work as the sum of work done on the bleed flow in addition to work done on compressor exit flow. The actual work term does not account for the work required by the facility exhausters. The equation of this adjusted adiabatic efficiency is given in Appendix 1. Adjusted efficiency values are tabulated for each data point in Appendix 3.

For the boundary layer survey points, overall performance and blade element calculations were made using the wake rake data and contour plots of various stator aerodynamic parameters were generated from combination probe measurements. Velocities were calculated from combination probe measurements of total and static pressure, total temperature, and air angle in the following manner: 1) Measurements of total and static pressure were used, with a probe calibration, to determine Mach numbers; 2) Total temperature measurements were corrected for Mach number and pressure level effects and used with Mach number to calculate absolute velocities; 3) Measured air angles were corrected for Mach number effects and used to resolve meridional and tangential velocity components.

IV. RESULTS AND DISCUSSION

A. Shakedown Test Results

Levels of vibratory stresses on the blades and vanes were recorded during accelerations and decelerations between 50 and 105 percent of design speed with wide open throttle, and near stall throttle settings. All observed blade and vane vibratory stress levels were within acceptable limits.

Surge occurred at all speeds. This was determined from continuous recordings of signals from a three-sensor hot film probe at the rotor inlet, from strain gages, and from static pressures located along the flow-path walls. At high speeds, these measurements showed large fluctuations in velocity simultaneous with high vibratory stresses in rotor and stator blades, and static pressure variations. Periodic fluctuations in velocity indicated that rotating stall occurred at the beginning of the surge cycle.

An oscillograph trace at 90 percent speed (Figure 8) shows a representative velocity pattern for all stalls. Velocities at midspan and hub decreased at surge whereas tip velocities increased. The period of the surge-pulse was approximately 0.13 seconds. The recovery period between surge pulses varied with speed, ranging from 1.05 seconds at design speed down to 0.11 seconds at 50 percent speed. At 50 percent speed, static pressure variation, velocity fluctuations, and vibratory stresses were small.

As flow was reduced at a given speed, rotor and stator vibratory stresses increased simultaneously, so that it was not clear which blade row stalled first.

B. Performance Test Results

1. Overall Performance

Overall performance of the rotor and stage with and without stator hub-slit-suction is presented in Figures 9 and 10. The stall line was established by extrapolating the characteristic speed lines to measured stall airflows, shown as slashed symbols on the figures. Stall flows are tabulated in Table 3. A maximum stage efficiency of 82.7 percent was achieved at design speed with slit suction at a pressure ratio of 1.871 and a corrected weight flow of 179.6 lb/sec. This efficiency drops to 82.2 percent when it is adjusted for the work done by the rotor on the hub-slit-suction flow. The same peak efficiency was recorded without slit suction. Efficiencies which have been adjusted to account for suction flow are shown in the upper efficiency scale in Figure 9. Rotor efficiency for the same data point with slit suction is 87.6 percent at a pressure ratio of 1.935. This rotor efficiency is 1.5 percentage points lower than the maximum rotor efficiency obtained at design speed in the test of Reference 1. The difference may be attributed to any or all of the five changes in apparatus between this test and that of Reference 1; i.e. (1) increased rotor tip clearance, (2) decreased rotor inlet annulus area due to rotor tip fill, (3) the restaggered stator, (4) blended out nicks in slightly damaged rotor blades (Figure 3), and (5) upstream effects of stator hub slit suction.

TABLE 3

SUMMARY OF STALL WEIGHT FLOWS

Percent Design Speed	With Stator Hub-Slit-Suction
50	74.2
70	109.8
85	138.8
90	150.2
95	161.3
100	173.3

Maximum adjusted stage efficiency with stator hub-slit-suction was 85.8 percent and occurred at 50 percent of design speed. For 70, 85, 90,and 95 percent design speed the maximum adjusted stage efficiency was approximately 84.5 percent. A net adjusted stage efficiency benefit of 1.5 percent was obtained with hub-slit-suction at 70 percent speed for the maximum flow condition, but no effect was seen at other speeds.

The lower pressure ratio seen near stall at design speed without stator hub-slit-suction (Figure 9) is probably due to blockage effects caused by stator leading edge transverse probes. These probes were not traversed during hub-slit-suction tests except for the boundary layer points. Evidence of traverse probe blockage at design speed is shown in Figure 11. Spanwise profiles of pressure ratio for two points with slit suction and no stator leading edge probes are compared to two points with stator leading edge probes, one with slit suction and one without slit suction. Spanwise pressure ratios agree well for the two points which include stator leading edge probe traverses except at the root where slit suction improvement is expected. These same points show a lower pressure in the tip region when compared to the points without stator leading edge probe traverses. This probe blockage effect on pressure ratio was not seen at 70 percent speed, where the stator inlet Mach number did not exceed 0.76.

Overall stator recovery (P_{11}/P_{10}) listed for points with and without slit suction in Appendices 3 and 4 as $\frac{P_o/P_o}{\text{LOCAL}}$ gives a direct measure of the effect of stator hub-slit-suction. Slit suction increased stator recovery for the peak efficiency point at design speed from .968 to .974. It must be remembered that this recovery increase with suction is gained at the expense of approximately a half percent in stage efficiency to account for the work done on the bleed flow.

Rotor performance for this test differed considerably from that achieved in the test of Reference 1. Maximum efficiency at design speed was 1.5 percentage points lower for this test as mentioned previously while pressure ratio was generally lower except near stall. At lower speeds, pressure ratios were slightly higher for this test at higher flows although near stall values were the same. Efficiency values were 0 to 5 percentage points higher at lower speeds for this test. Gains were largest at maximum flow points with no significant change near stall. Part of the difference may be due to measured wake rake total pressure readings which showed one rake consistently higher than the other although no reason could be found to dispute the data.

2. Blade Element Performance

Blade element total pressure loss coefficient, diffusion factor, and deviation versus incidence angle are presented for both rotor and stator in Figures 12 and 13 for the performance test with slit suction. These data are tabulated in Appendix 3. Although overall performance benefits obtained by the addition of stator hub-slit-suction were small, suction did reduce losses at 5, 10, and 15 percent of span from the hub for both 70 and 100 percent speeds. Figure 14 presents plots of stator blade element diffusion factor and total pressure loss coefficient versus incidence angle at these three spans for test points with and without slit suction. At 5 percent span from the hub, slit suction reduced the losses over the entire incidence range for 70 and 100 percent design speed. At 70 percent design speed the losses were reduced approximately 23 percent at the near stall incidence angle and 50 percent at the maximum flow incidence angle. At 100 percent design speed the losses were reduced approximately 18 percent at the near stall incidence angle and 29 percent at the maximum flow incidence angle. This effect diminishes outward from the hub until the effects are insignificant outboard of 15 percent span from the hub. Complete blade-element performance data for points without stator hub-slit-suction are tabulated in Appendix 4.

Gapwise distributions of stator exit total pressure, temperature, and adiabatic efficiency clearly show a narrower and shallower wake with slit suction. Figure 15 presents distribution at 5 percent span from the hub for open throttle and near stall data points at 70 percent speed showing that the effect of suction is much stronger at the maximum flow condition than at the near stall point. At design speed (Figure 16) the effect is of the same magnitude as at 70 percent speed near stall regardless of throttle setting. Slit suction effects on the total pressure and temperature wake distributions disappear above 15 percent of span from the hub. The increase in temperature in the wake region without suction may be caused by a redistribution of flow through the stator as a result of higher stator hub losses causing the stator to operate at a higher inlet pressure in the hub region. This would back pressure the rotor hub causing an increase in energy at the rotor hub. Another explanation is that enough high temperature air is being bled through the stator slits with suction to cause a lower temperature reading at the hub. The temperature ratio of the flow in the suction slit plenum is approximately .01 higher than the temperature ratio at 5 percent span from the hub at design speed.

This is the magnitude of the change seen in gapwise pressure profiles between suction and non-suction data points.

Rotor performance was calculated using stator-exit free-stream total pressure obtained from the peak wake rake reading at each radial location. Design speed data were also reduced using the stator-exit free-stream efficiency method, as discussed in Reference 1, to determine rotor performance. Figure 17 shows the rotor overall efficiency comparison for the two methods at design speed and shows the spanwise efficiency distribution for the peak efficiency point at design speed. Blade-element performance of the rotor and stator at design speed, using the free-stream efficiency method is given in Table 7, Appendix 3. The free-stream efficiency method gave lower rotor hub efficiencies which resulted in slightly lower overall rotor efficiency for the same stage efficiency.

3. Contour Plots of Stator Exit Traverse Data

Tangential traverses were made at the stator exit for part throttle, maximum efficiency, and near stall points at design speed and at near stall for 90 percent speed with stator hub-slit-suction. Measurements of total and static pressure, total temperature, and absolute air angle were obtained at 4.3, 5.8, 7.0, 9.7, 12.2, 15, 30, 50, 74, 90, 94, 97, 98, and 99.5 percentages of passage height from the hub. A fifteenth radial position was intended closer to the inner case but was not obtained due to an incorrect probe depth setting. Tangential spacing gave 15 readings across a stator gap at 90 percent span and 11 readings at 4.3 percent span. These measurements were used to calculate velocity vectors, and to construct contour plots showing patterns of P/P_{inlet}, T/T_{inlet}, airflow angle, and $V_m/\sqrt{\theta_7}$ at the stator-exit instrumentation plane. These contours are shown in Figures 18 through 22.

a. Total Pressure Ratio

Low pressure areas in the vicinity of the stator hub suction surface no longer exist as they did in Reference 5, possibly as a result of slit suction. Low-pressure areas in the tip region are still present.

Areas of strong gapwise gradients exist near both walls, Figure 18, and progress toward midspan as back-pressure is increased. At midspan the wake width increases slightly and the pressure gradient in the wake region becomes stronger with increased back-pressure. High pressure regions near the intersection of the stator pressure surface and the hub wall may be due to rotor wake flow migration to the stator pressure surface, as explained in Reference 6. Rotor work changes, due to locally high back-pressure ahead of the stator, may also cause gapwise total pressure variations in addition to stator losses.

b. Total Temperature Ratio

Total temperature plots (Figure 19) show endwall gradients similar to the total pressure plots, indicating that rotor-wake separation or rotor back-

pressure patterns cause gapwise variations in both parameters. Both hub and tip endwall regions have a .03 to .04 drop in temperature ratio from the stator pressure to suction surface at design speed regardless of back-pressure. Matching total pressure and temperature profiles led to the free stream efficiency method for calculating stator-inlet average total pressure, Reference 1. No consistent temperature pattern is seen at midspan but gapwise gradients tend to occur in the wake region.

c. Air-Flow Angle

Gapwise variations in air-flow angle were measured in the wake region at all spans (Figure 20). Studies have shown that the small (±10 degrees) angle variations indicated by the probe at midspan and hub can be attributed primarily to the large total pressure gradients in the wake region because side-hole pressures on a wedge probe tend to turn it in the direction of the higher total pressure. Steeper angle variations in the tip endwall region indicate a vortex formation downstream of the intersection of the wall and stator blade.

d. Static Pressure Ratio

Gapwise gradients of static pressure were weak (Figure 21) although showing a wake pattern similar to the total pressure wake. Measured static rise across the wake is probably all due to the total pressure gradient forcing the probe to yaw and measure part of the velocity head with the side holes. Pressure increased with radius probably as a result of streamline curvature as the up-stream hub convergence blends into a constant diameter wall.

e. Meridional Velocity

Meridional velocity contours (Figure 22) follow the patterns of the total pressure contours because static pressure variations are relatively small, and air angle does not vary enough to have a significant effect. Increasing back-pressure enlarges the corner stall region near the tip but does not appear to thicken the wall boundary layer.

V. REMARKS

Stator hub-slit-suction caused a reduction in hub losses for this test out to 15 percent span from the hub, maximum effect occurring at 5 percent span from the hub. These local benefits were not enough to influence the total stator losses appreciably so that overall stage efficiency benefits were slight. No adjusted efficiency benefit was seen at design speed, while the maximum benefit was 1.5 percentage points at 70 percent speed, maximum flow conditions. Similar loss reductions were seen during the test of Reference 3 with slit suction although the influence reached to 30 percent span from the hub. Stator hub recovery had more effect on the efficiency of the compressor in the test of Reference 3 than in this test so that the overall benefit was about 1.5 percent in unadjusted stage efficiency at design speed.

No stall line improvement was seen with slit suction in this test where results from hot film probes and strain gauges were inconclusive as to which blade now stalled first. It is believed that the stage stall is initiated by rotor stall even though the stator was restaggered four degrees open (4 degree increase in stator incidence angle).

The results of this test and those of References 3 and 7 show that hub-slit-suction effects are local and only benefit overall performance when the stator hub has very high losses. These local effects may be quite significant, however, in high bypass ratio engines where most of the flow into the engine comes from the high loss fan hub region.

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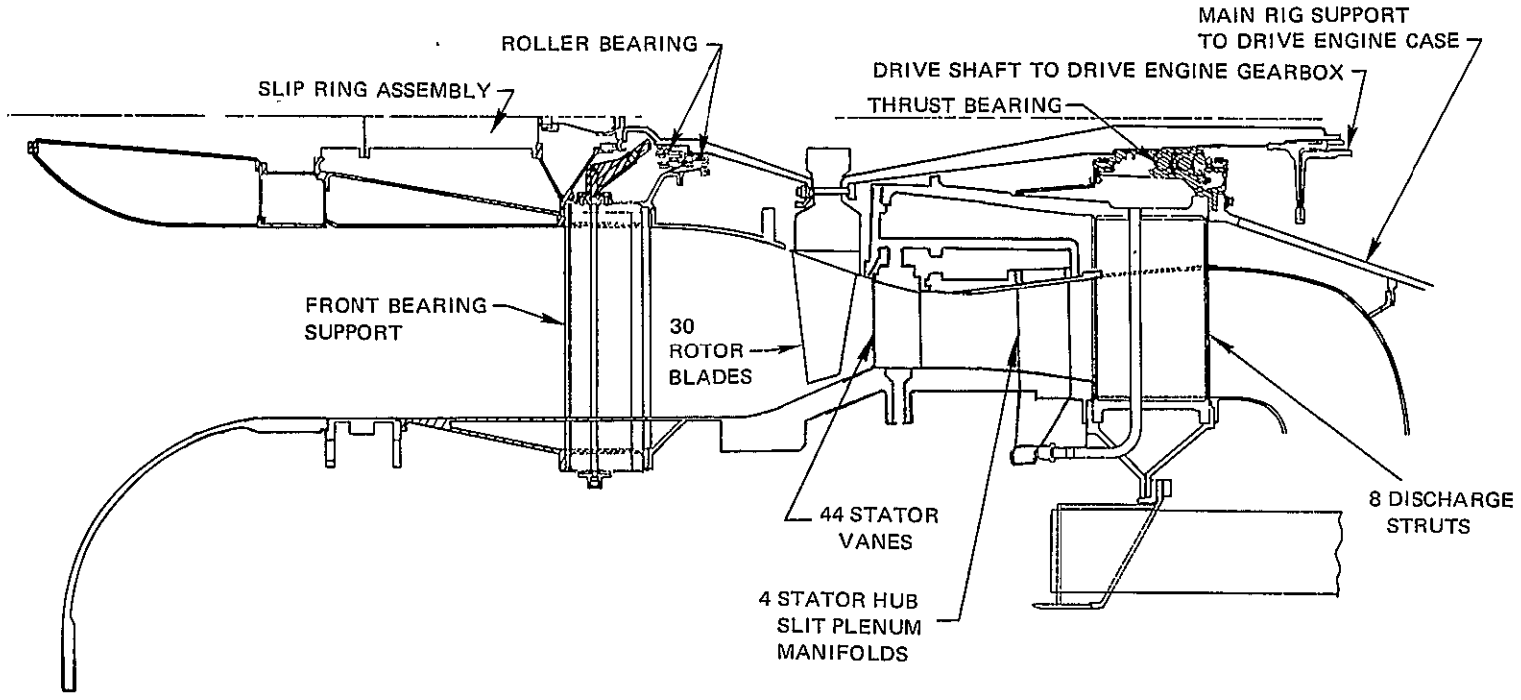
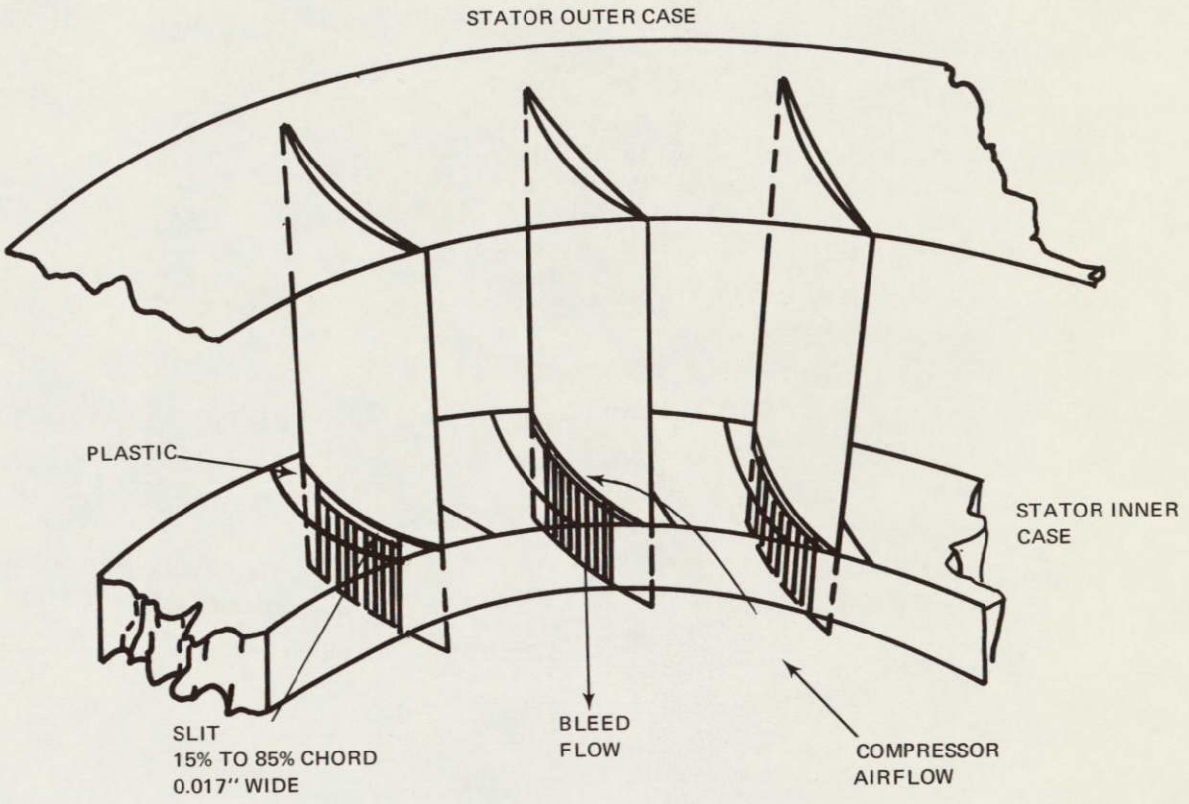


Figure 1 Cross Section of Test Compressor



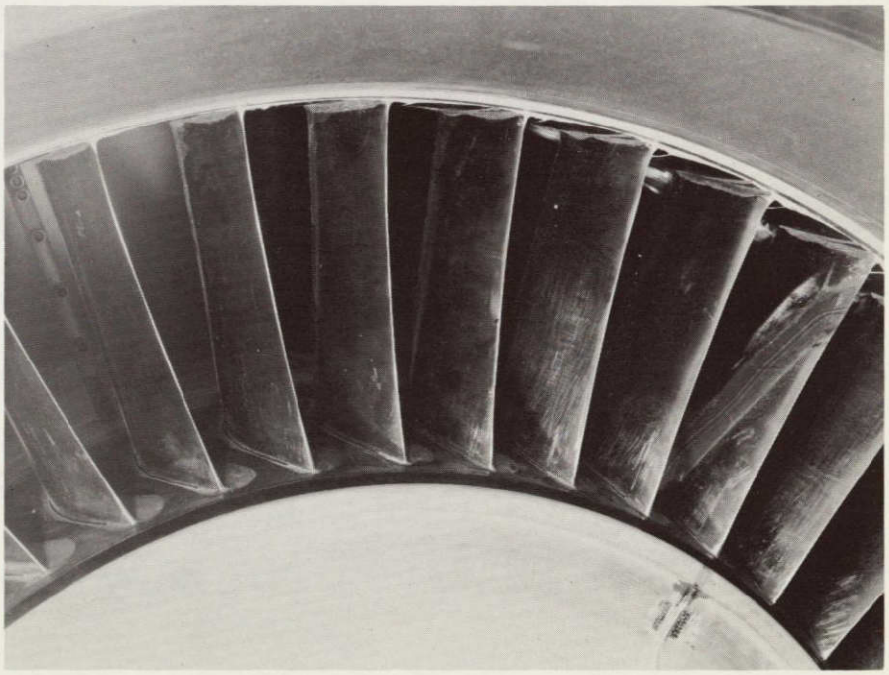


Figure 2 Boundary Layer Suction Slits at Stator Hub (XPN-16602)

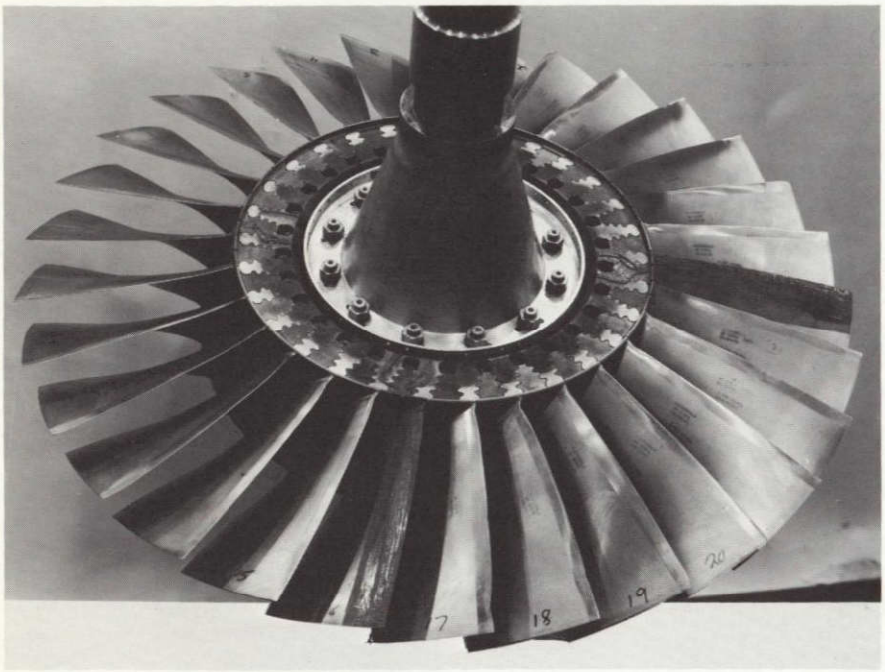


Figure 3 Assembled MCA Rotor (XPN 16597)

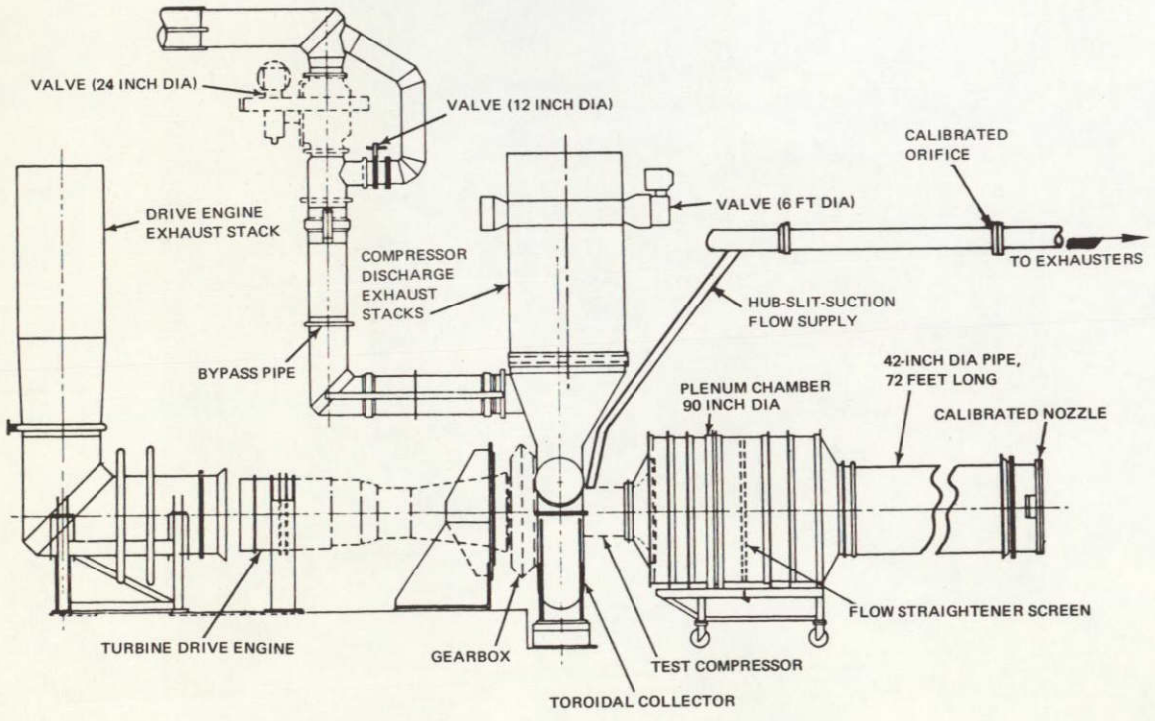
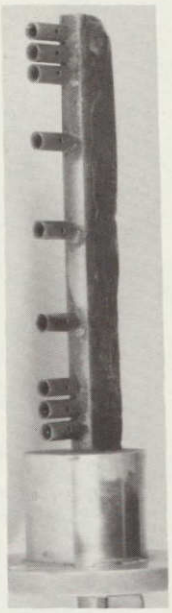
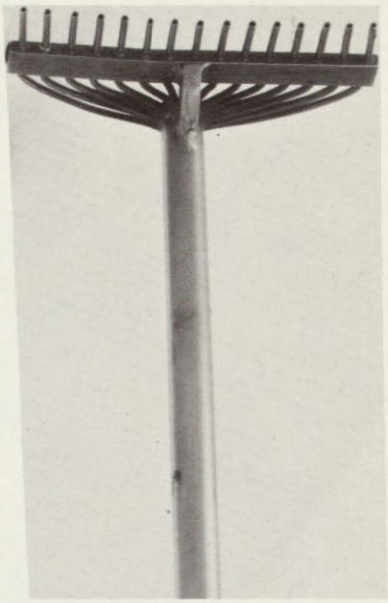


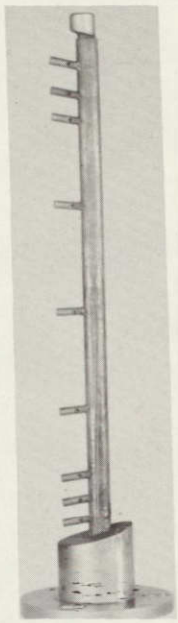
Figure 4 Schematic of Compressor Test Facility



XP-99889
(a)
RADIAL
TEMPERATURE
RAKE

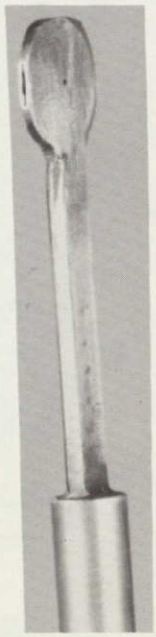


XPN-1815
(b)
TRAVERSABLE
TOTAL PRESSURE
RAKE

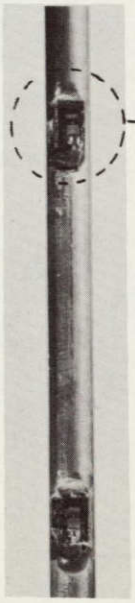


XP-99886
(c)
TOTAL
PRESSURE
RAKE

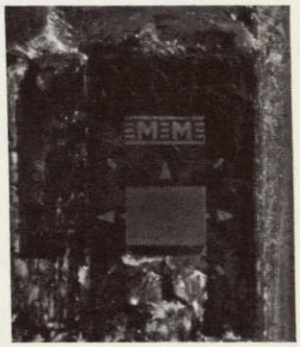
XPN-660
(d)
COMBINATION
PROBE



XP-99893
(e)
TRAVERSABLE
DISK
PROBE



XP-19285
(f)
HOT
FILM
PROBE



XP-19286

Figure 5 Typical Instrumentation

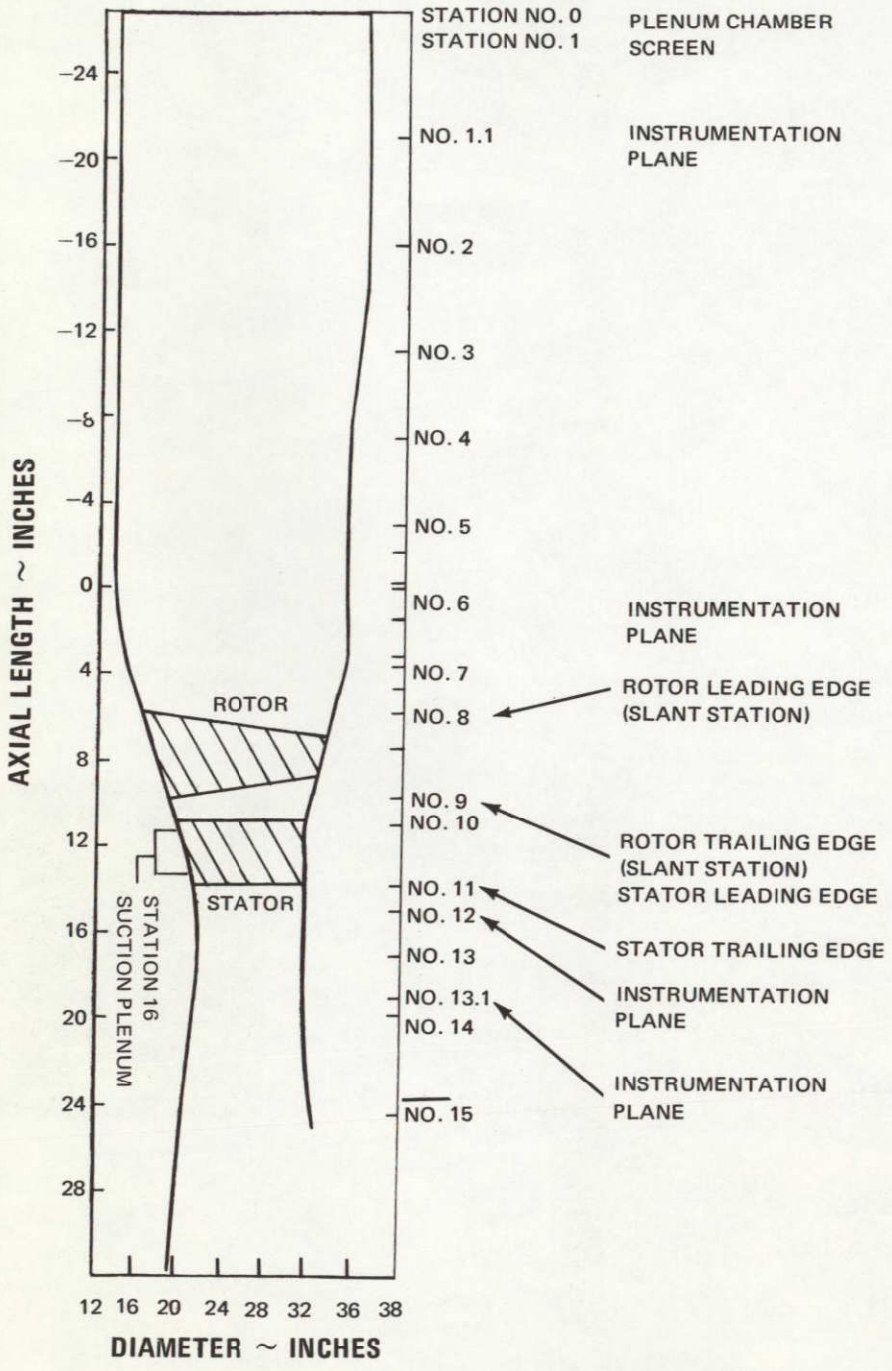


Figure 6 Axial Station Number Designation and Location of Instrumentation

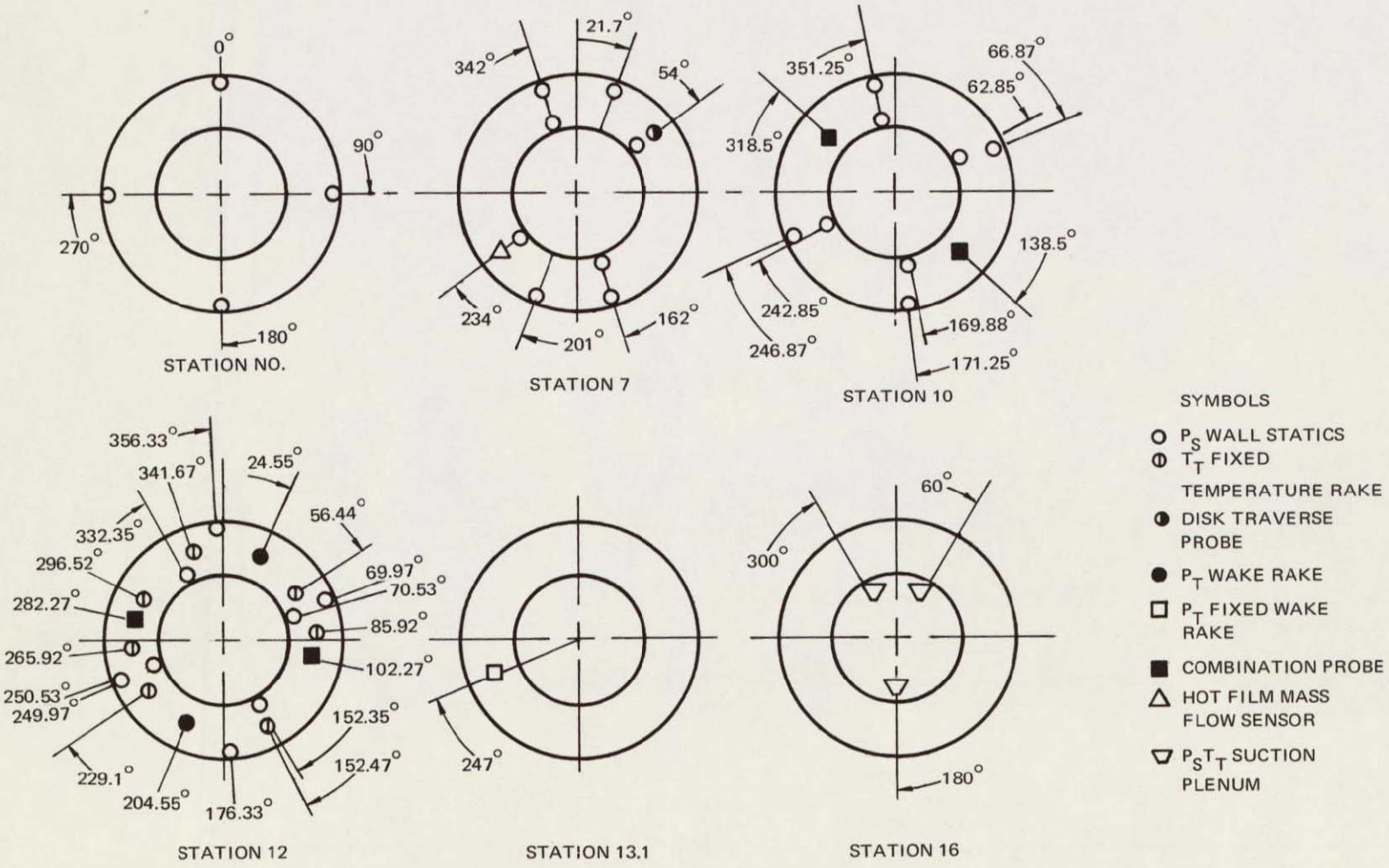


Figure 7 Circumferential Location of Instrumentation, Viewed from Rear

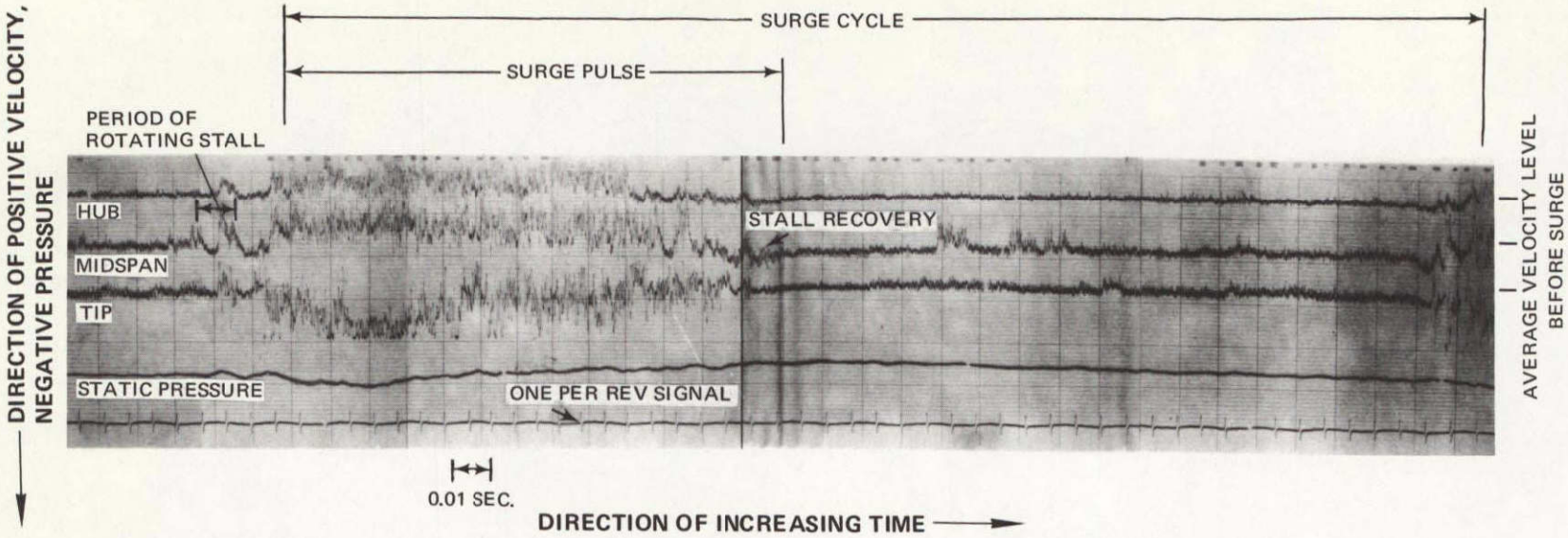


Figure 8 Oscillograph Trace of Typical Surge Cycle

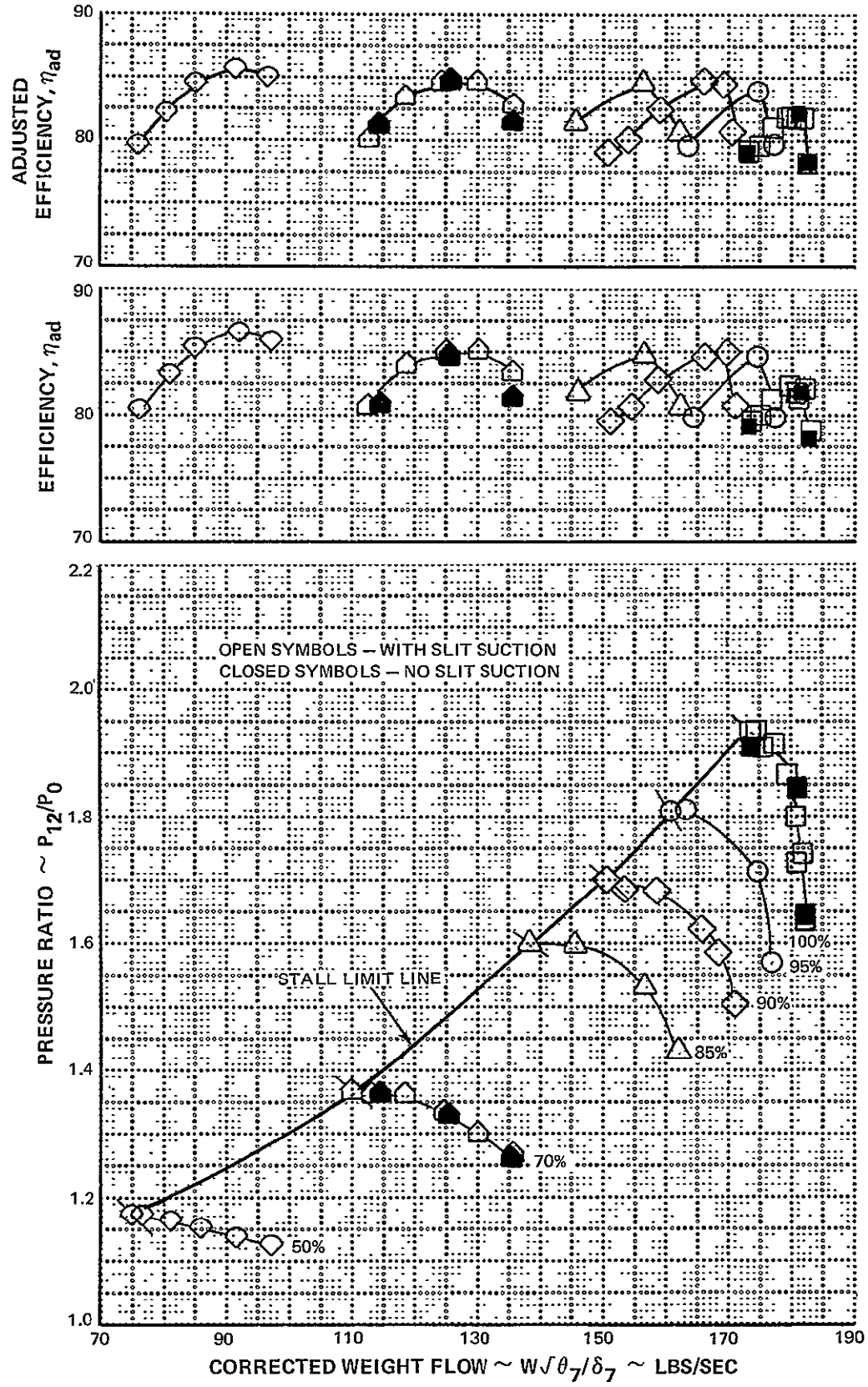


Figure 9 Stage Overall Performance

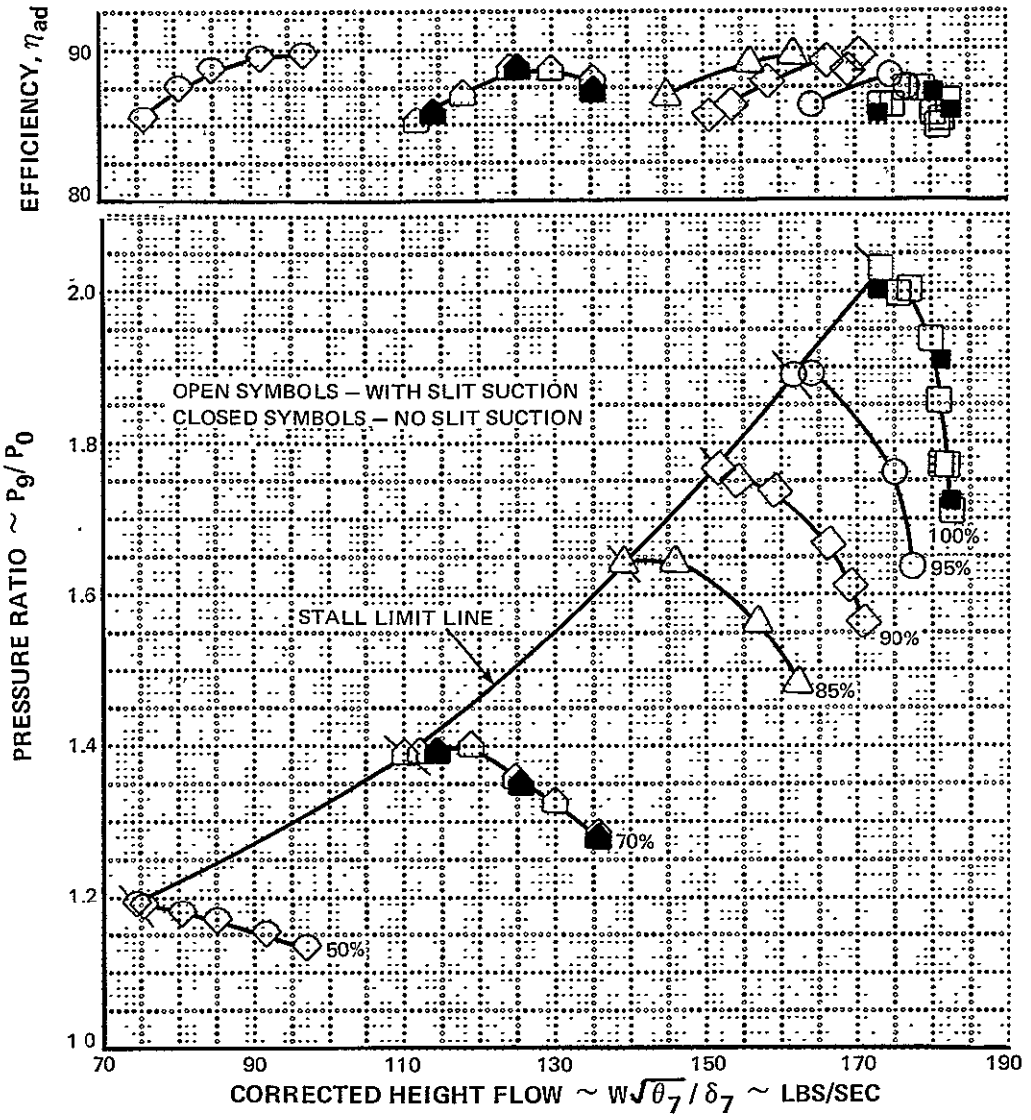


Figure 10 Rotor Overall Performance

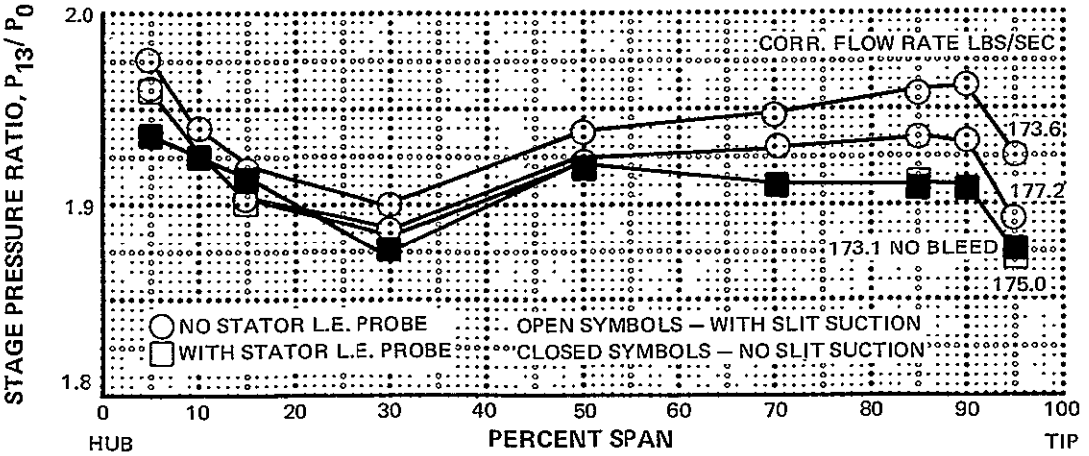


Figure 11 Effect of Stator Leading Edge Probe Blockage at Design Speed

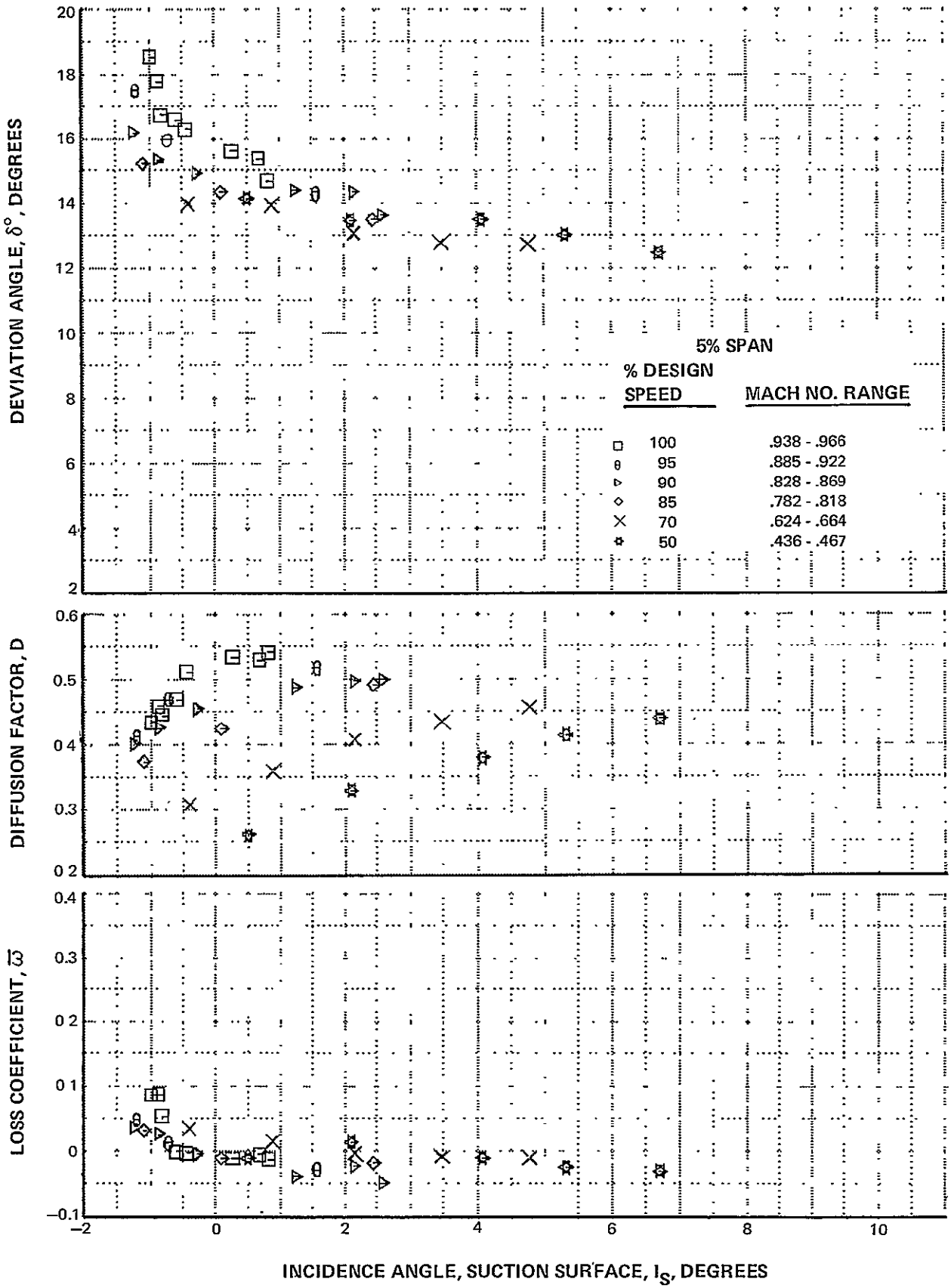


Figure 12a Rotor Blade Element Performance With Stator Hub Slit Suction, 5 Percent Span From Hub

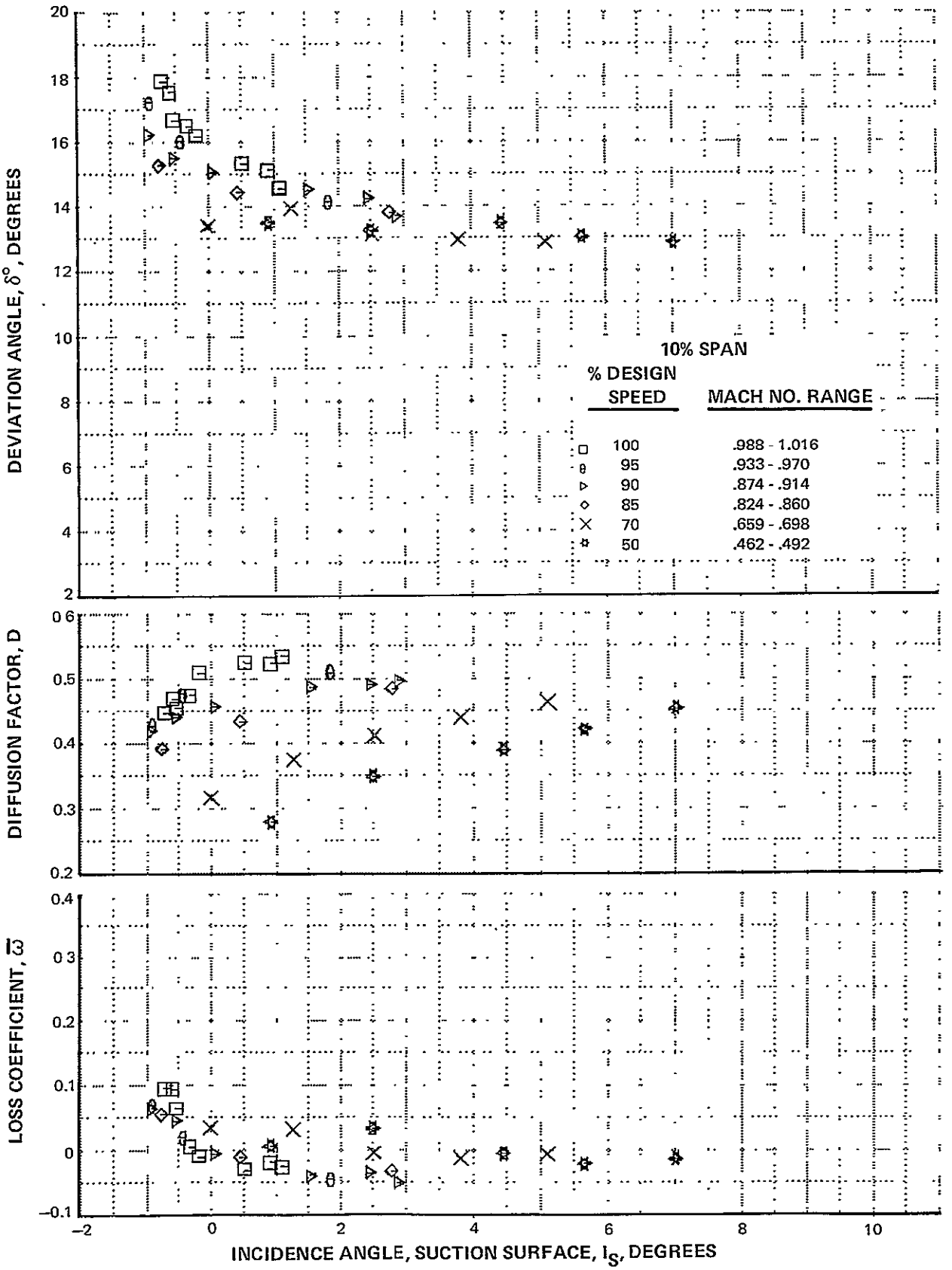


Figure 12b Rotor Blade Element Performance With Stator Hub Slit Suction, 10 Percent Span From Hub

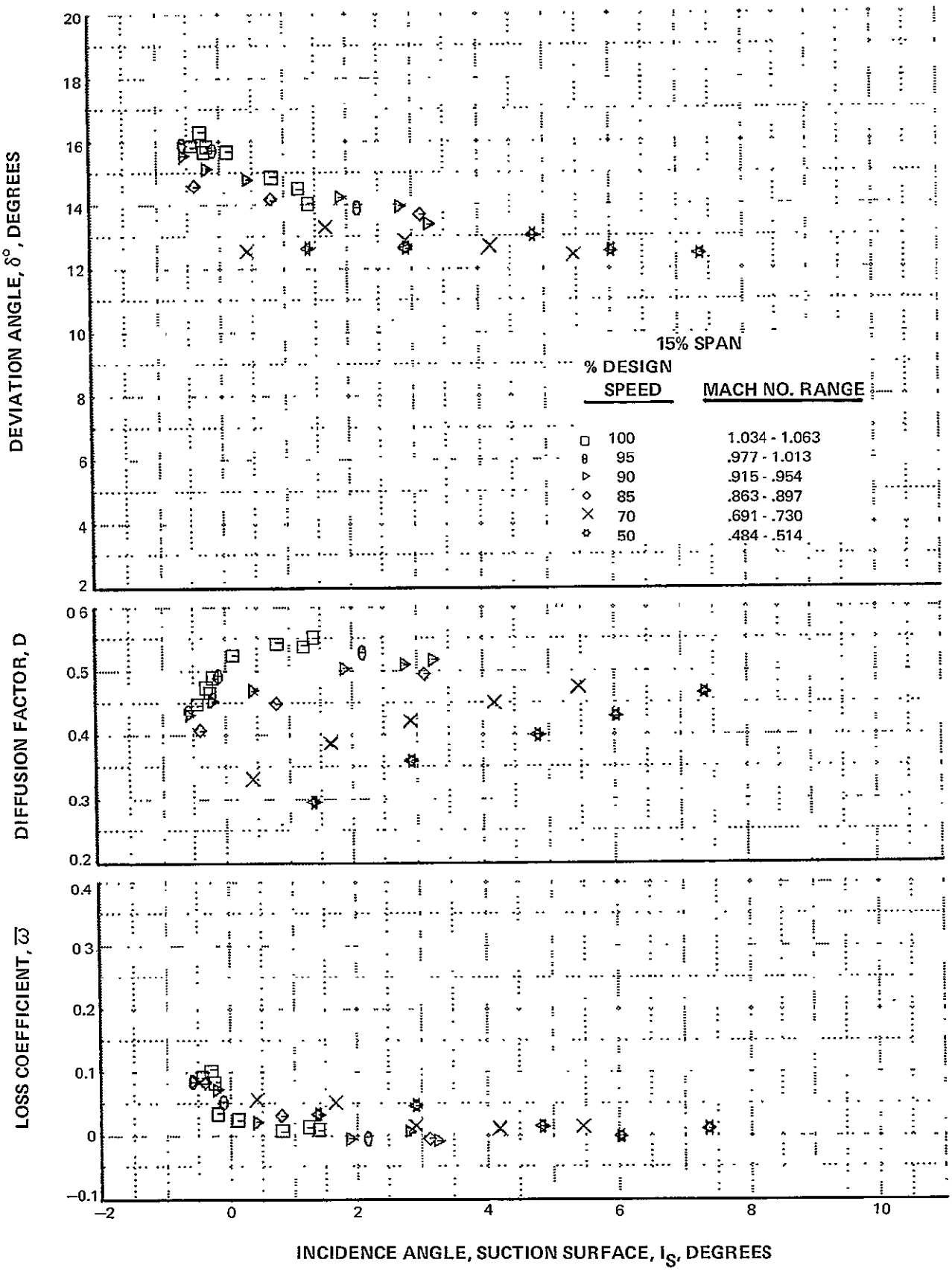


Figure 12c Rotor Blade Element Performance With Stator Hub Slit Suction, 15 Percent Span From Hub

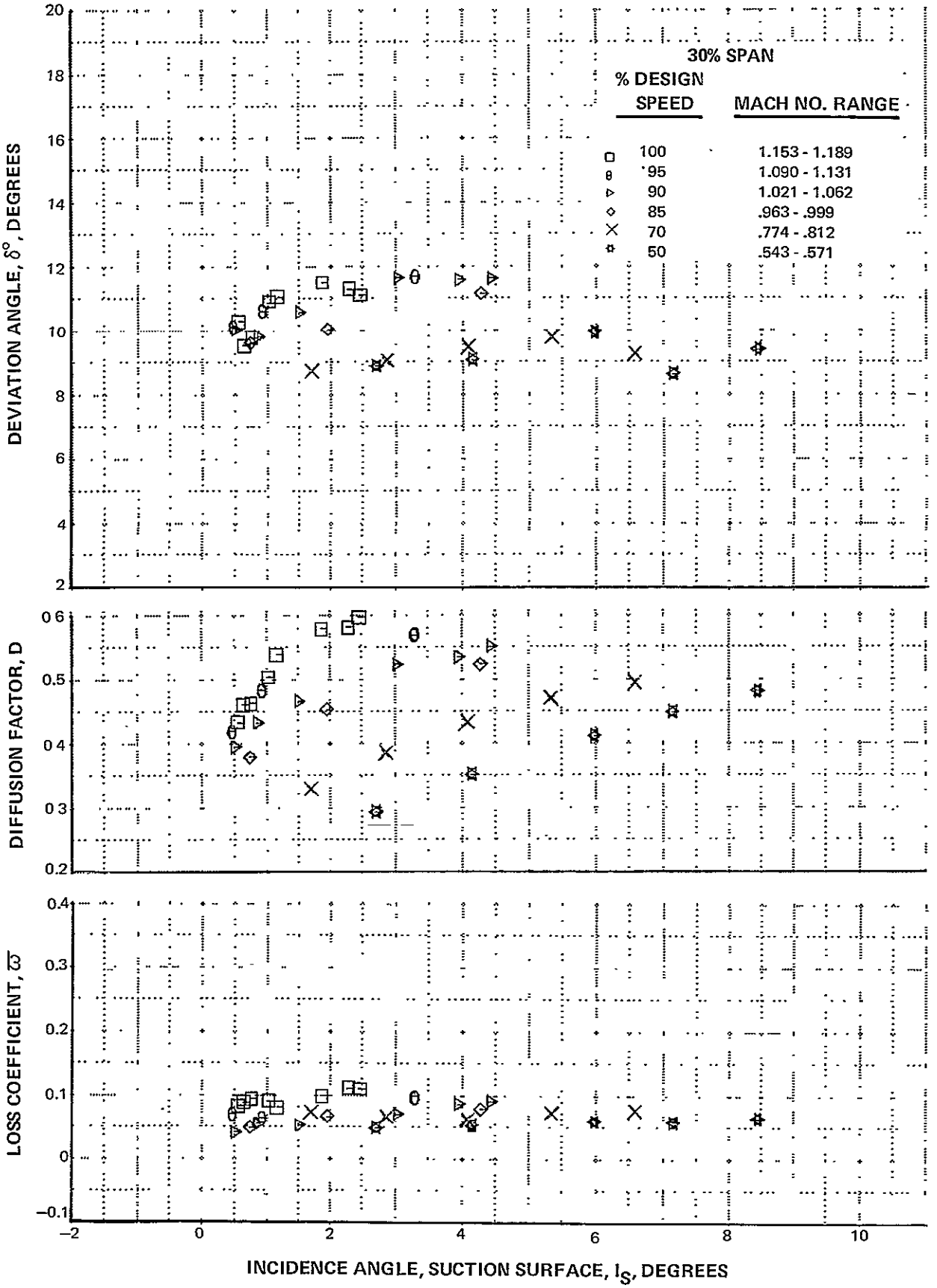


Figure 12d Rotor Blade Element Performance With Stator Hub Slit Suction, 30 Percent Span From Hub

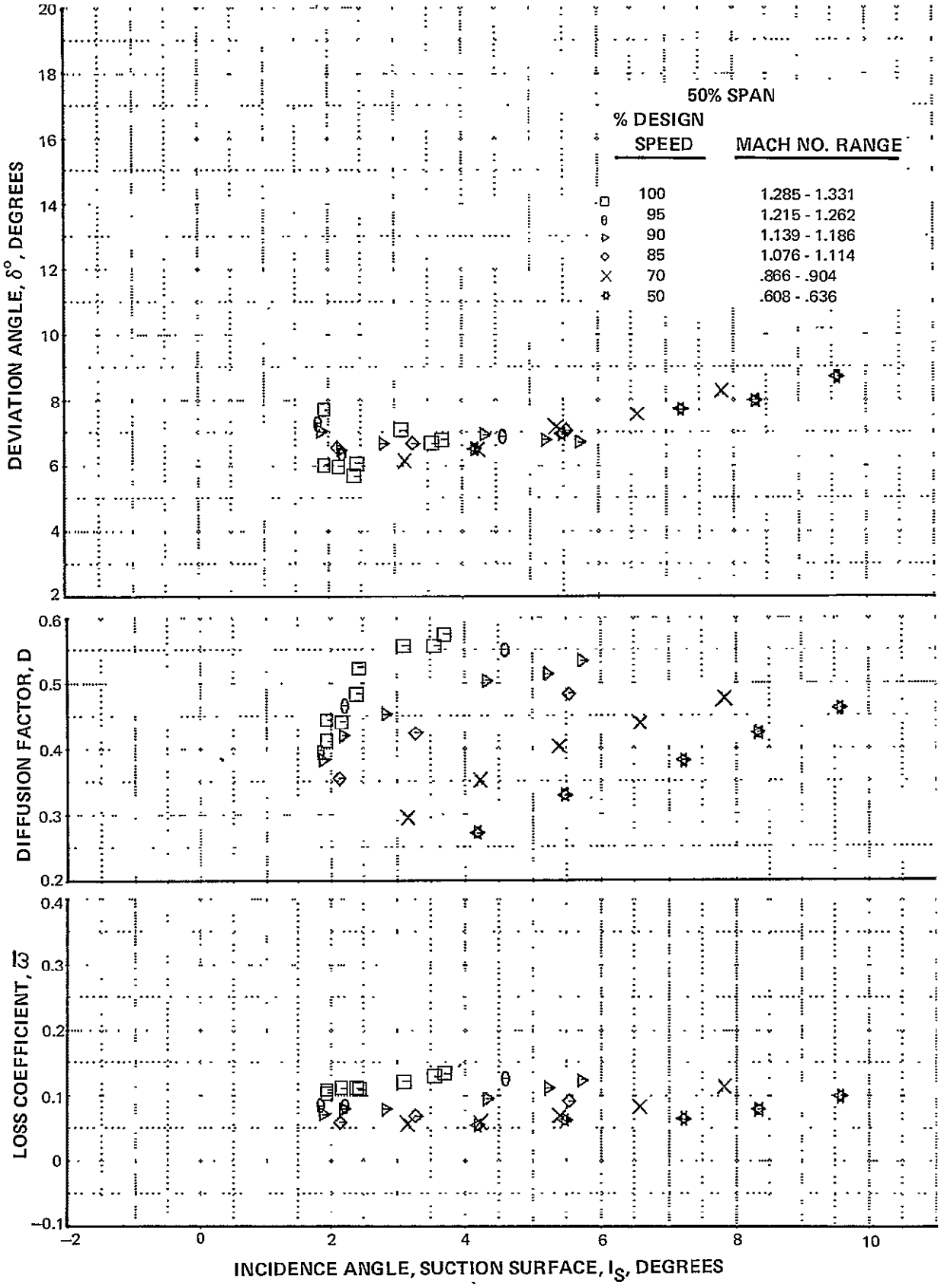


Figure 12e Rotor Blade Element Performance With Stator Hub Slit Suction, 50 Percent Span From Hub

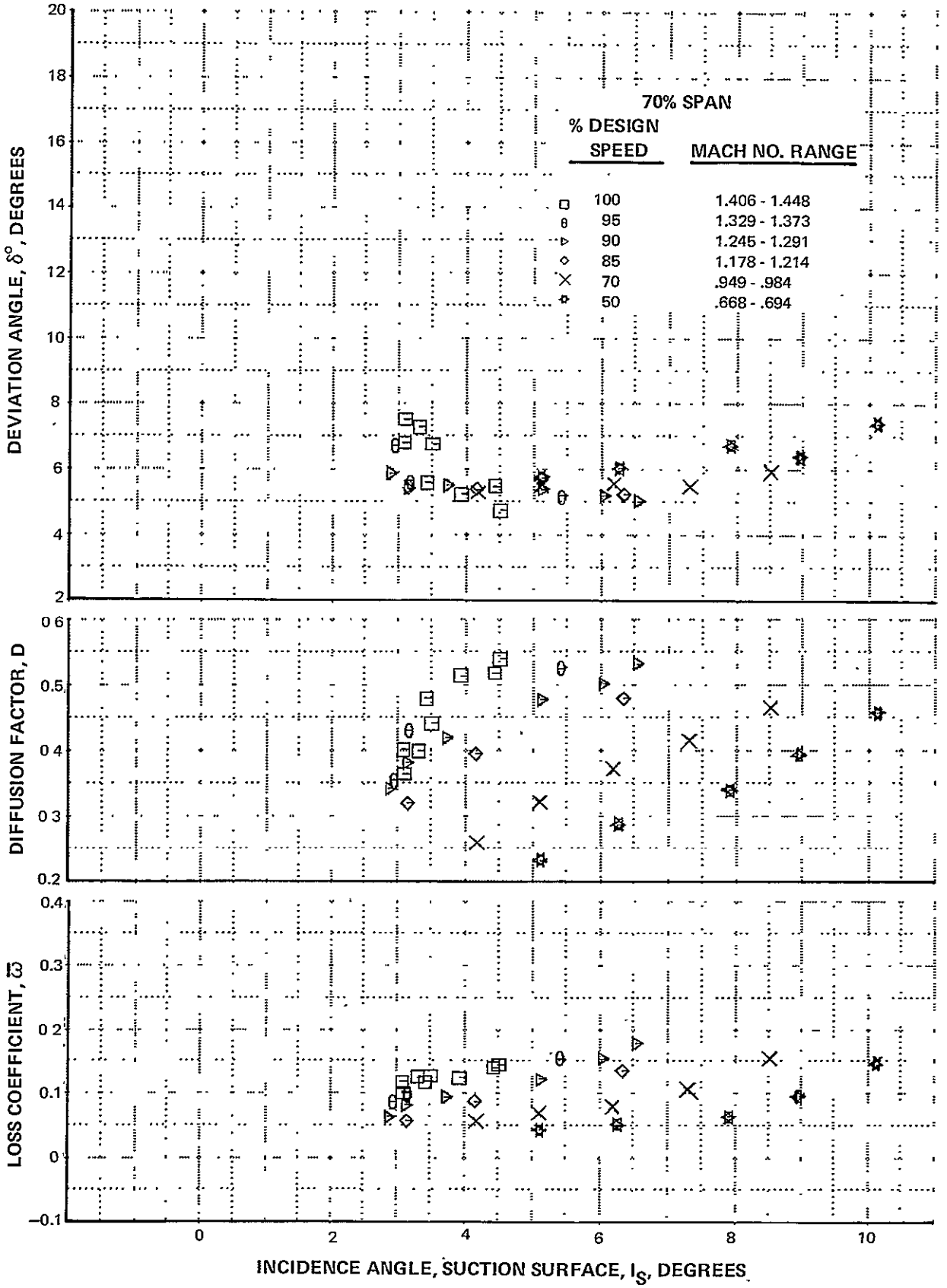


Figure 12f Rotor Blade Element Performance With Stator Hub Slit Suction, 70 Percent Span From Hub

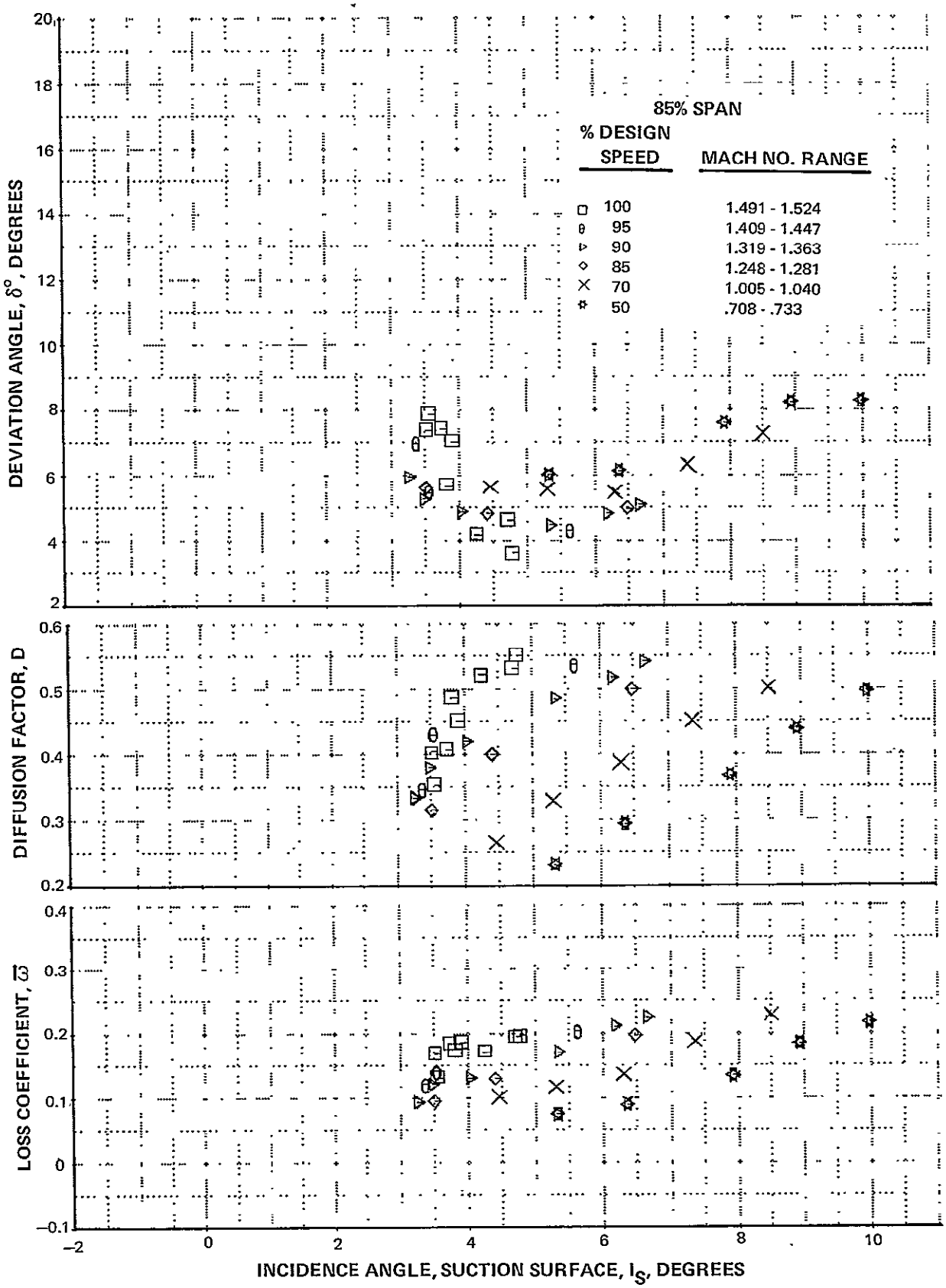


Figure 12g Rotor Blade Element Performance With Stator Hub Slit Suction, 85 Percent Span From Hub

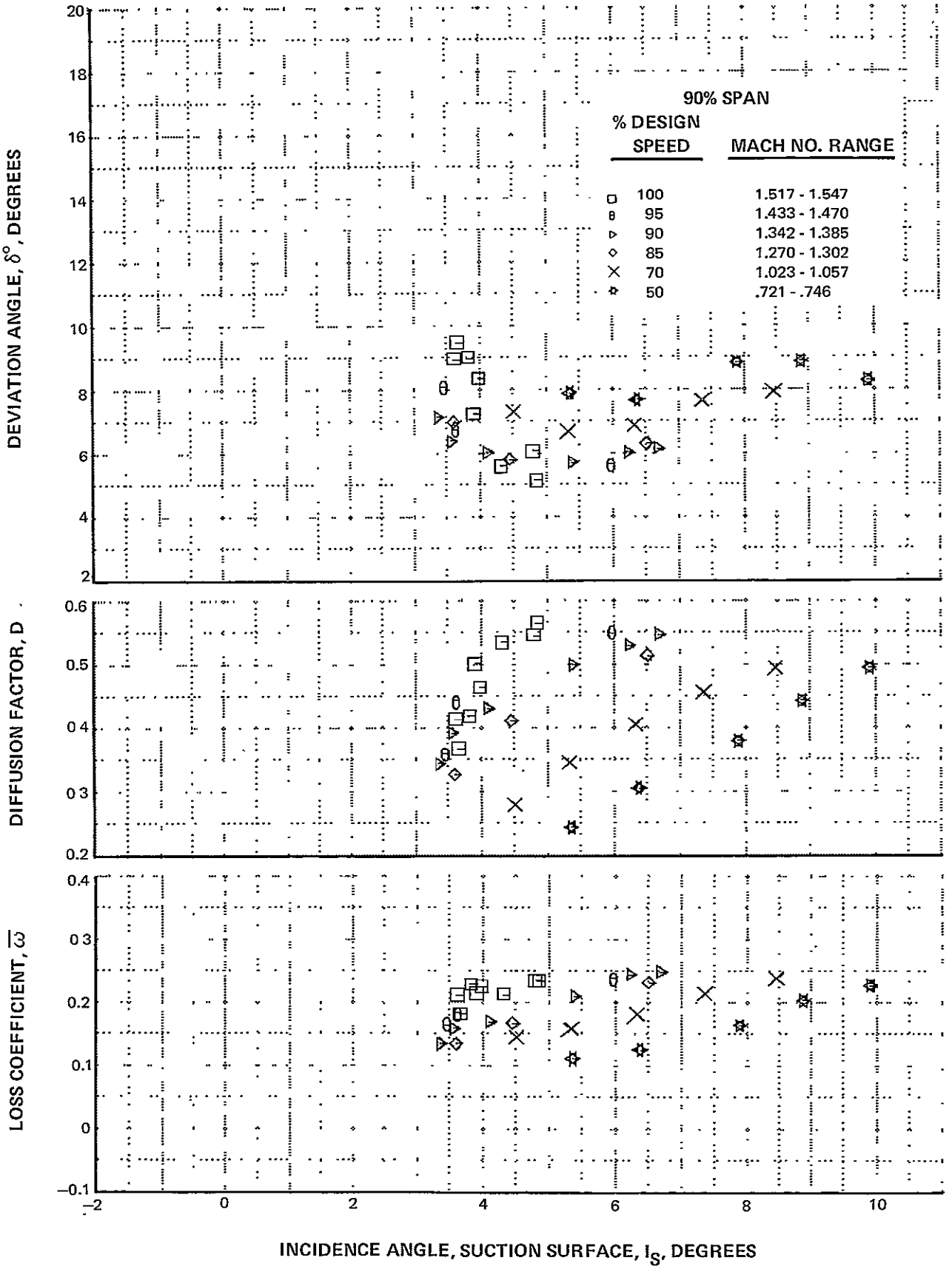


Figure 12h Rotor Blade Element Performance With Stator Hub Slit Suction, 90 Percent Span From Hub

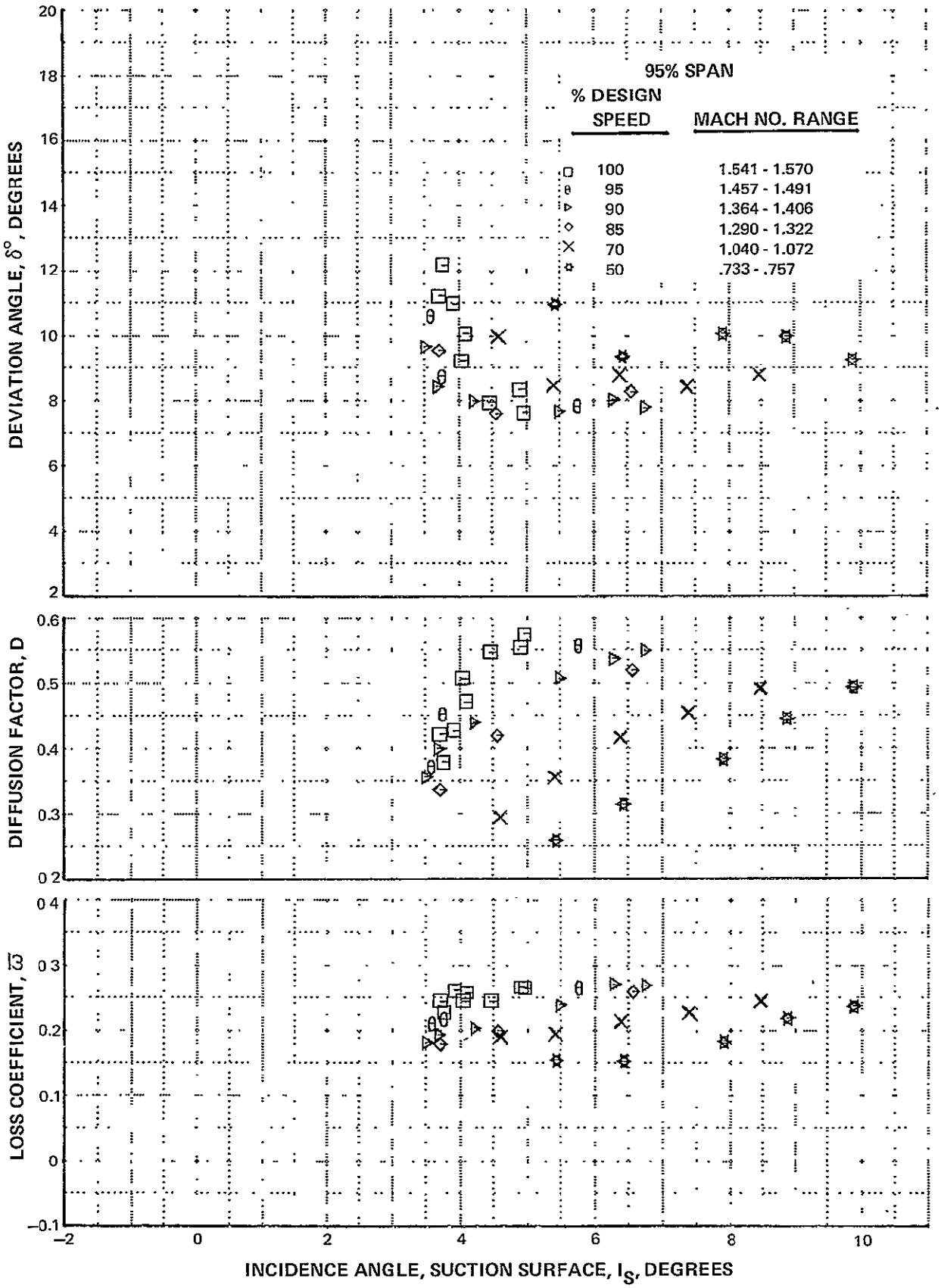


Figure 12i Rotor Blade Element Performance With Stator Hub Slit Suction, 95 Percent Span From Hub

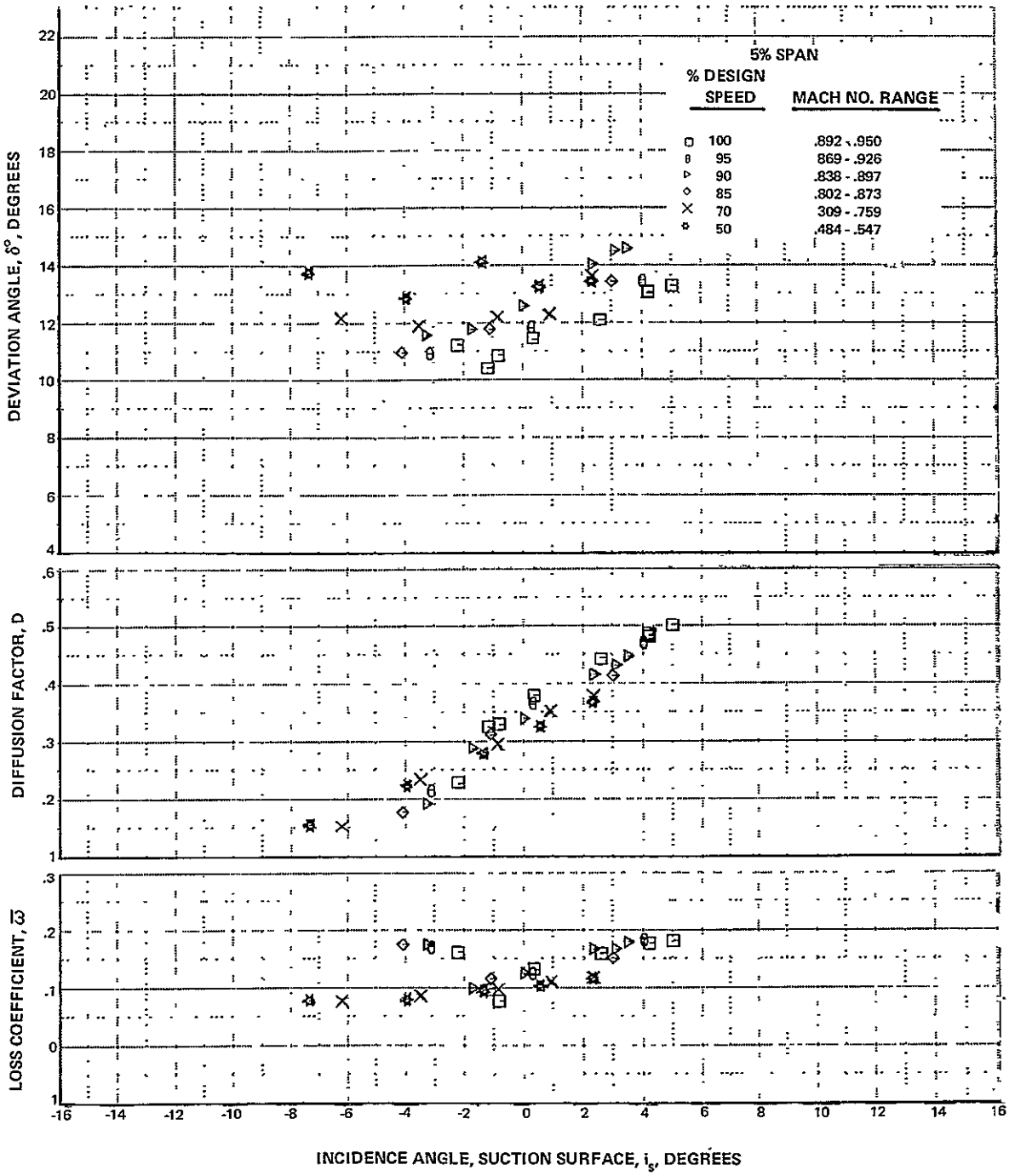


Figure 13a Stator Blade Element Performance With Stator Hub Slit Suction, 5 Percent Span From Hub

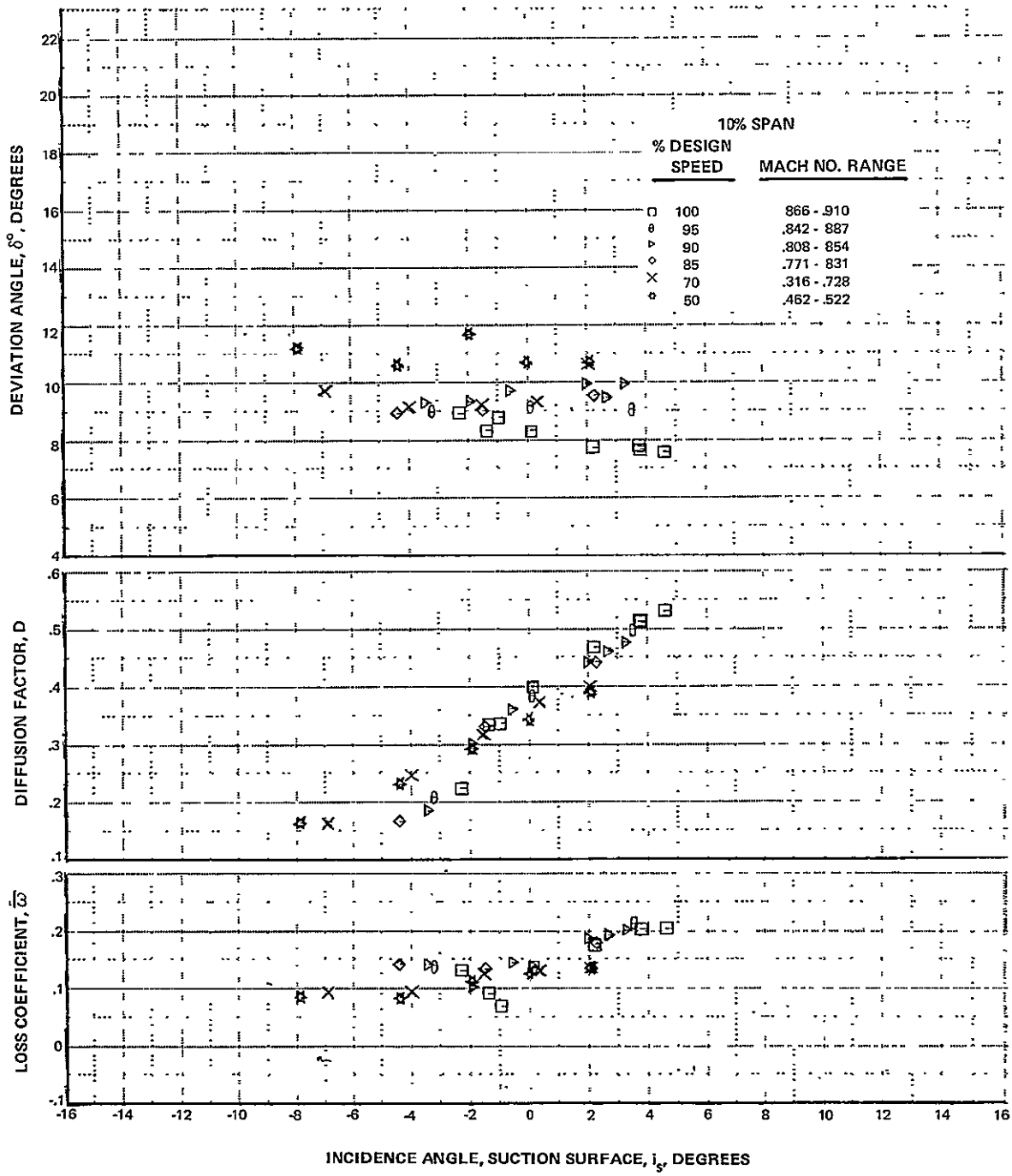


Figure 13b Stator Blade Element Performance With Stator Hub Slit Suction, 10 Percent Span From Hub

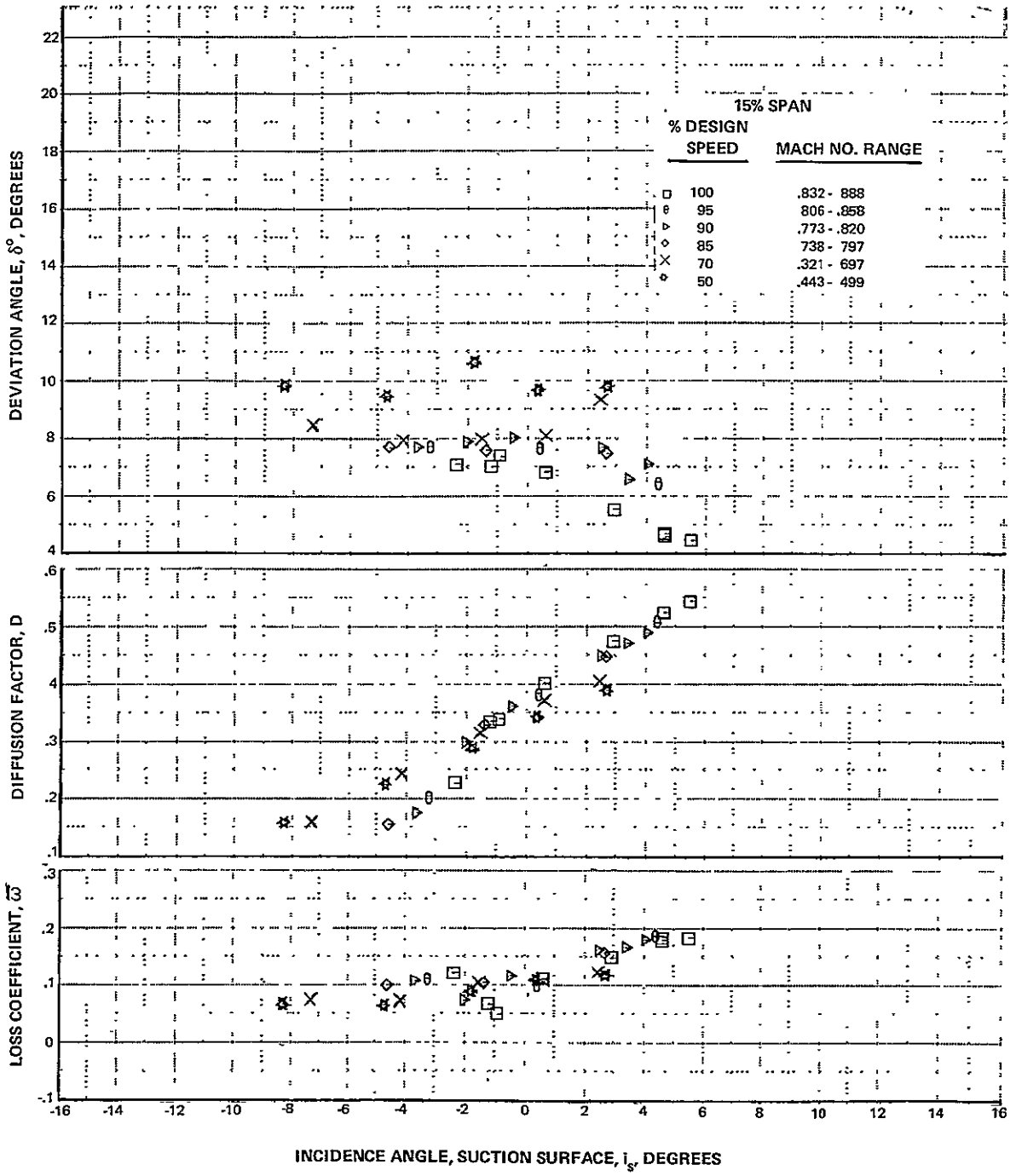


Figure 13c Stator Blade Element Performance With Stator Hub Slit Suction, 15 Percent Span From Hub

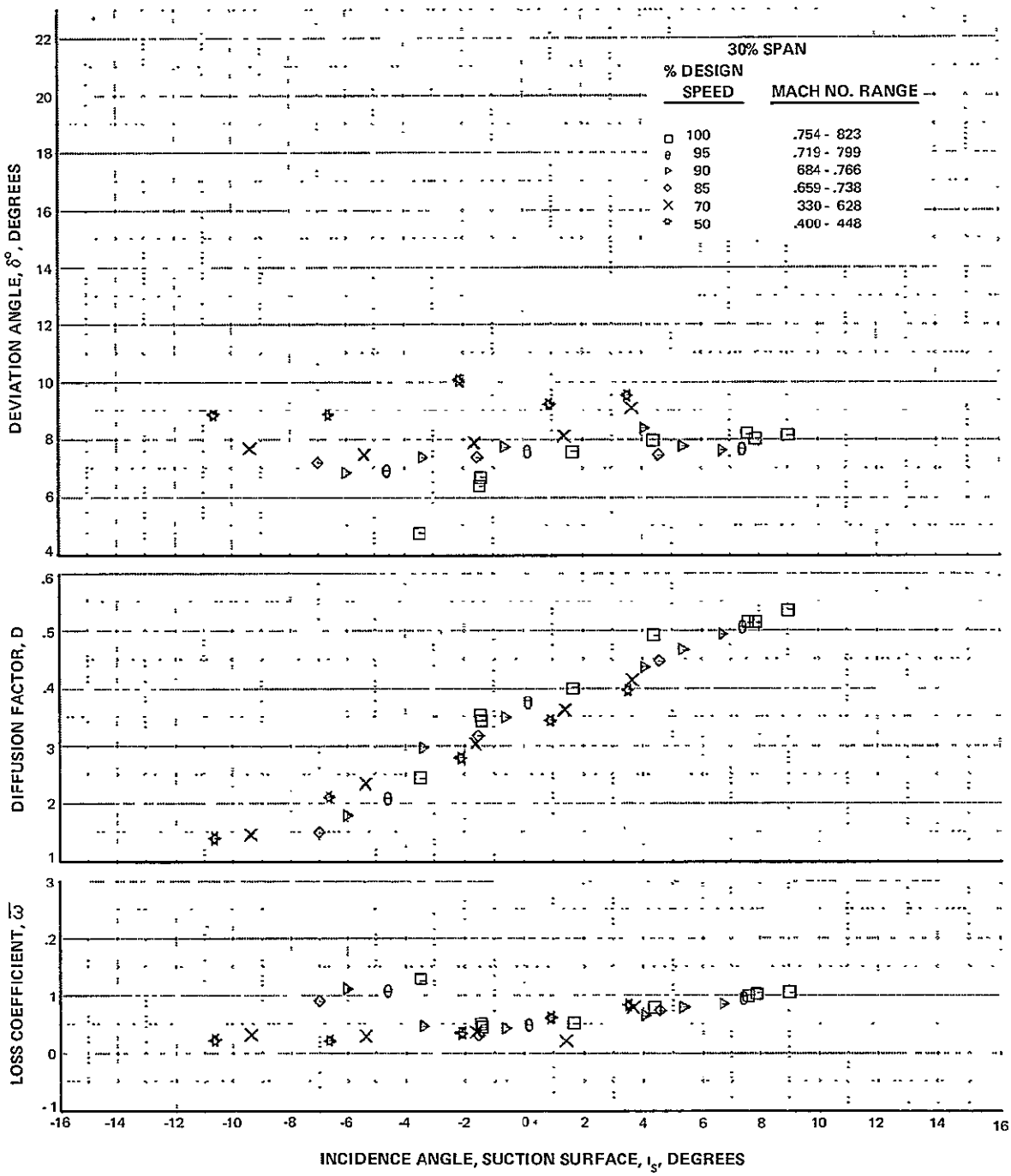


Figure 13d Stator Blade Element Performance With Stator Hub Slit Suction, 30 Percent Span From Hub

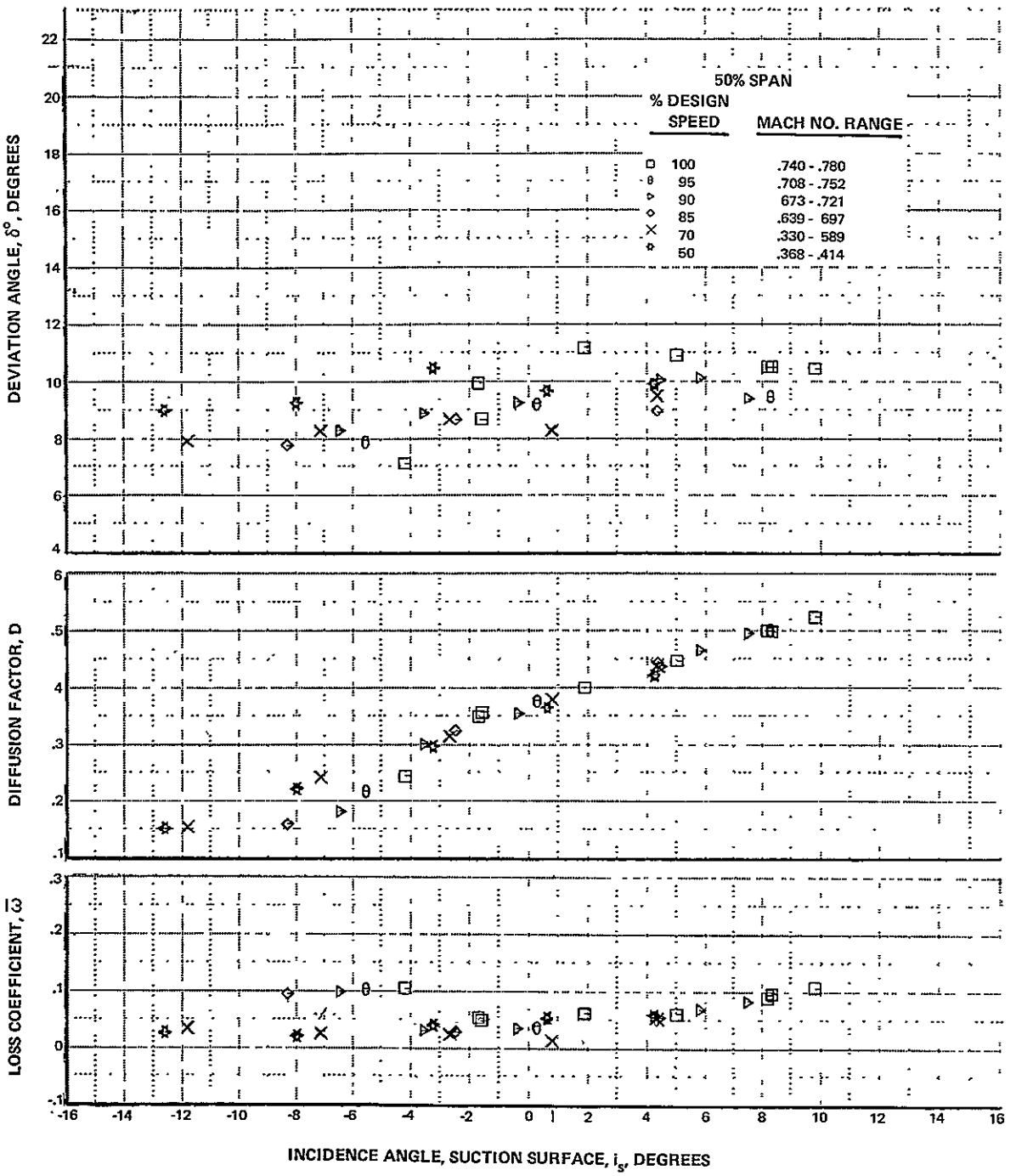


Figure 13e Stator Blade Element Performance With Stator Hub Slit Suction, 50 Percent Span From Hub

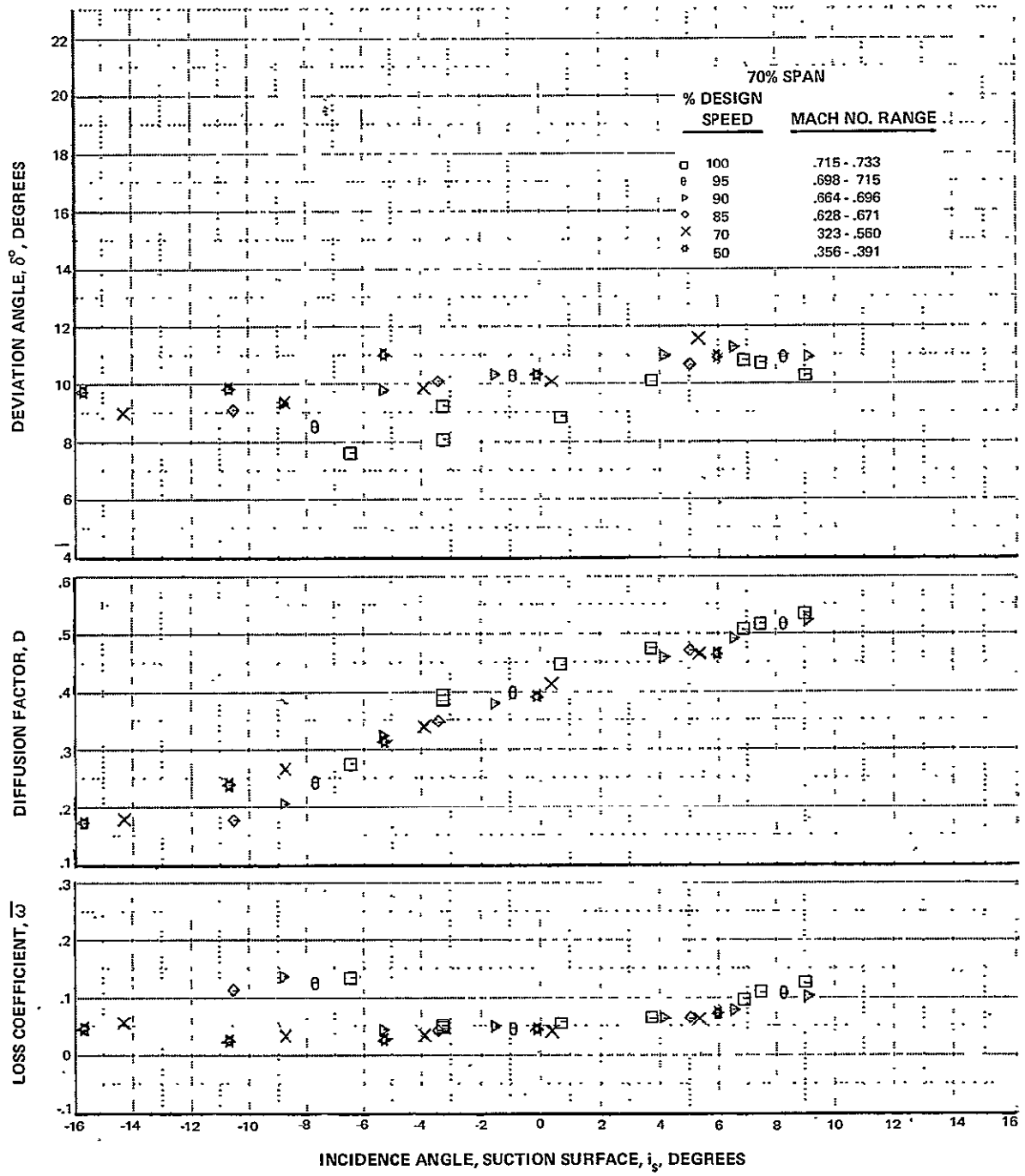


Figure 13f Stator Blade Element Performance With Stator Hub Slit Suction, 70 Percent Span From Hub

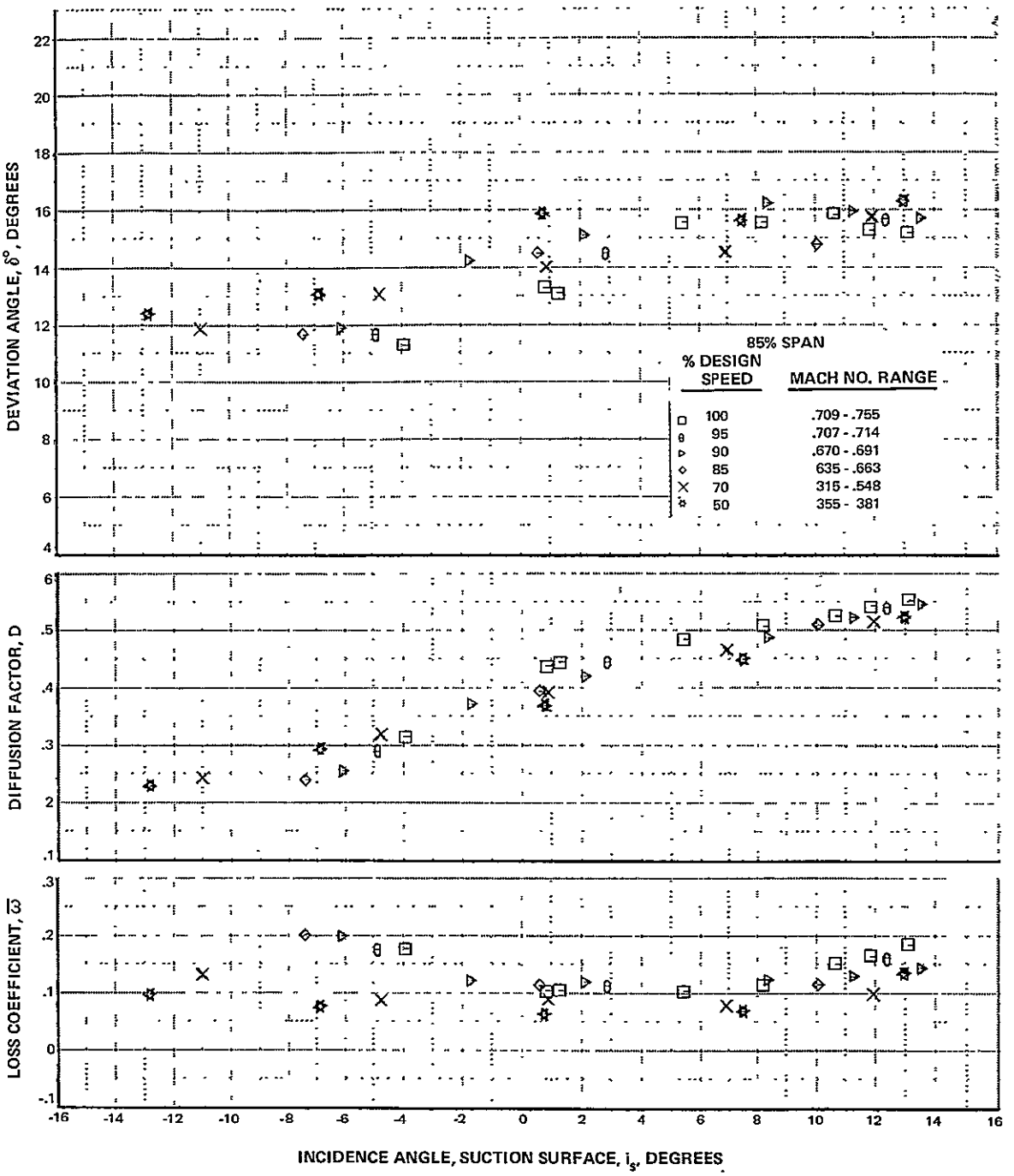


Figure 13g Stator Blade Element Performance With Stator Hub Slit Suction, 85 Percent Span From Hub

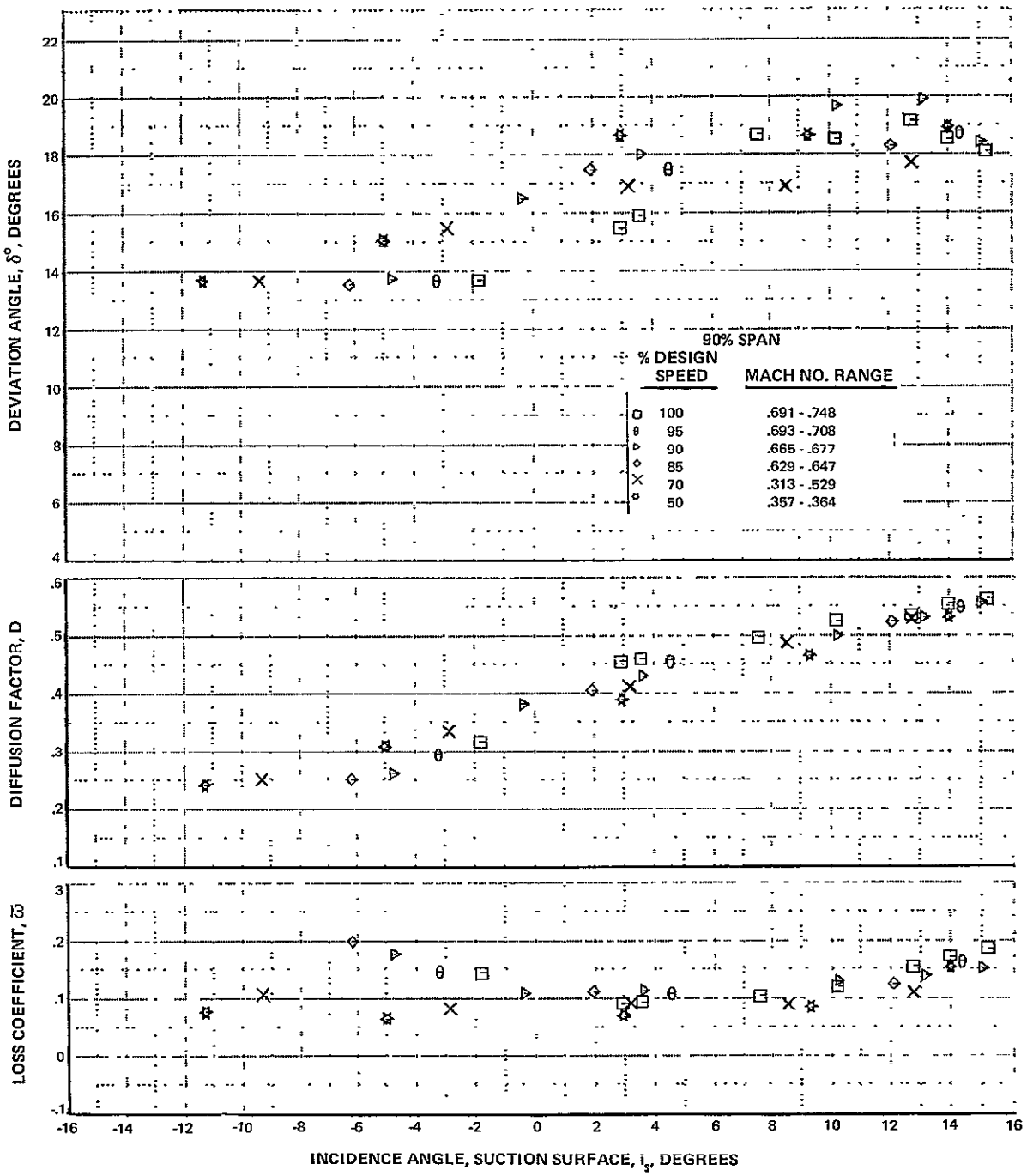


Figure 13h Stator Blade Element Performance With Stator Hub Slit Suction, 90 Percent Span From Hub

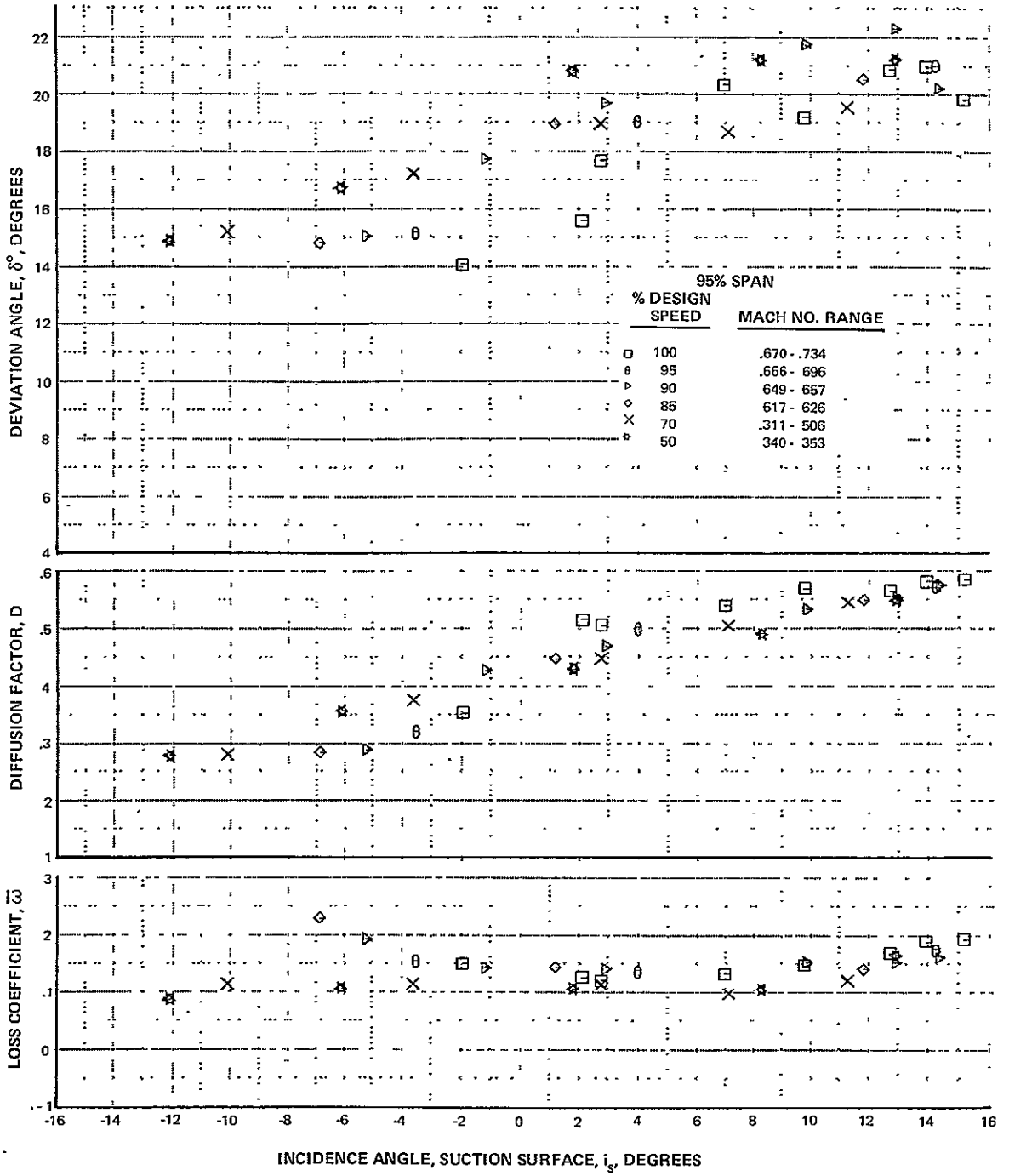


Figure 13i Stator Blade Element Performance With Stator Hub Slit Suction, 95 Percent Span From Hub

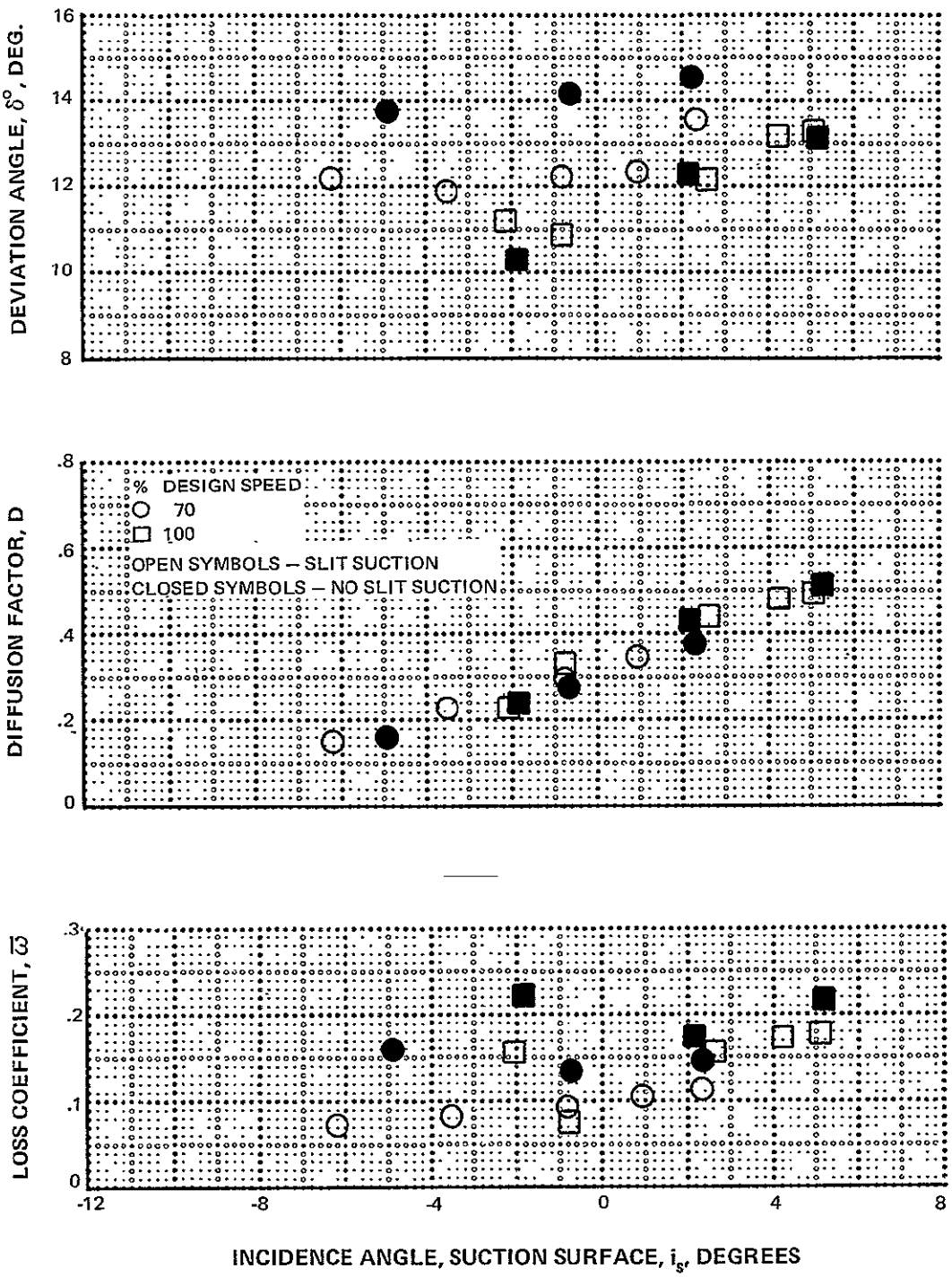


Figure 14a Effects of Stator Hub Slit Suction, 5 Percent Span from the Hub - Stator Blade Element Performance

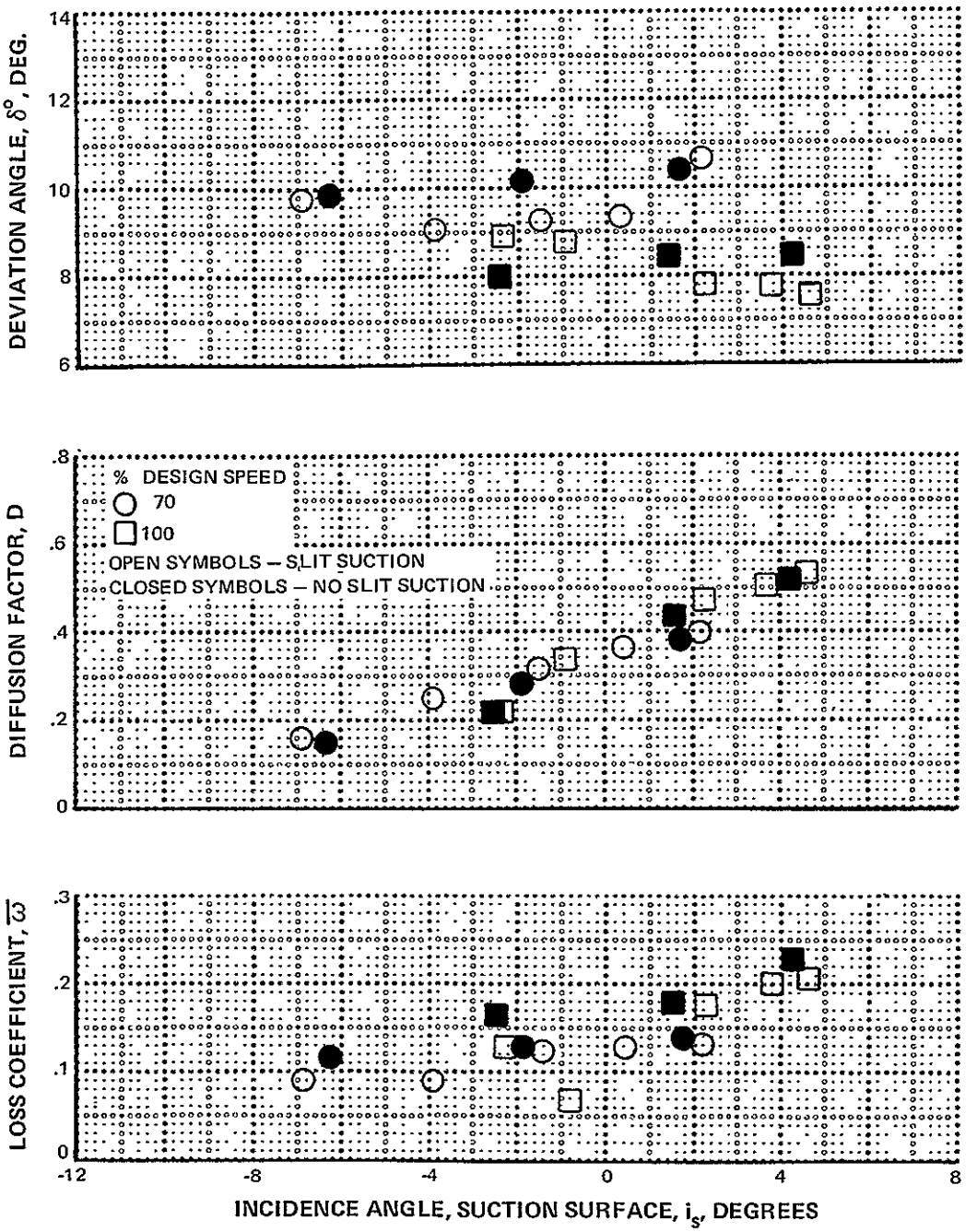


Figure 14b Effects of Stator Hub Slit Suction, 10 Percent Span from the Hub - Stator Blade Element Performance

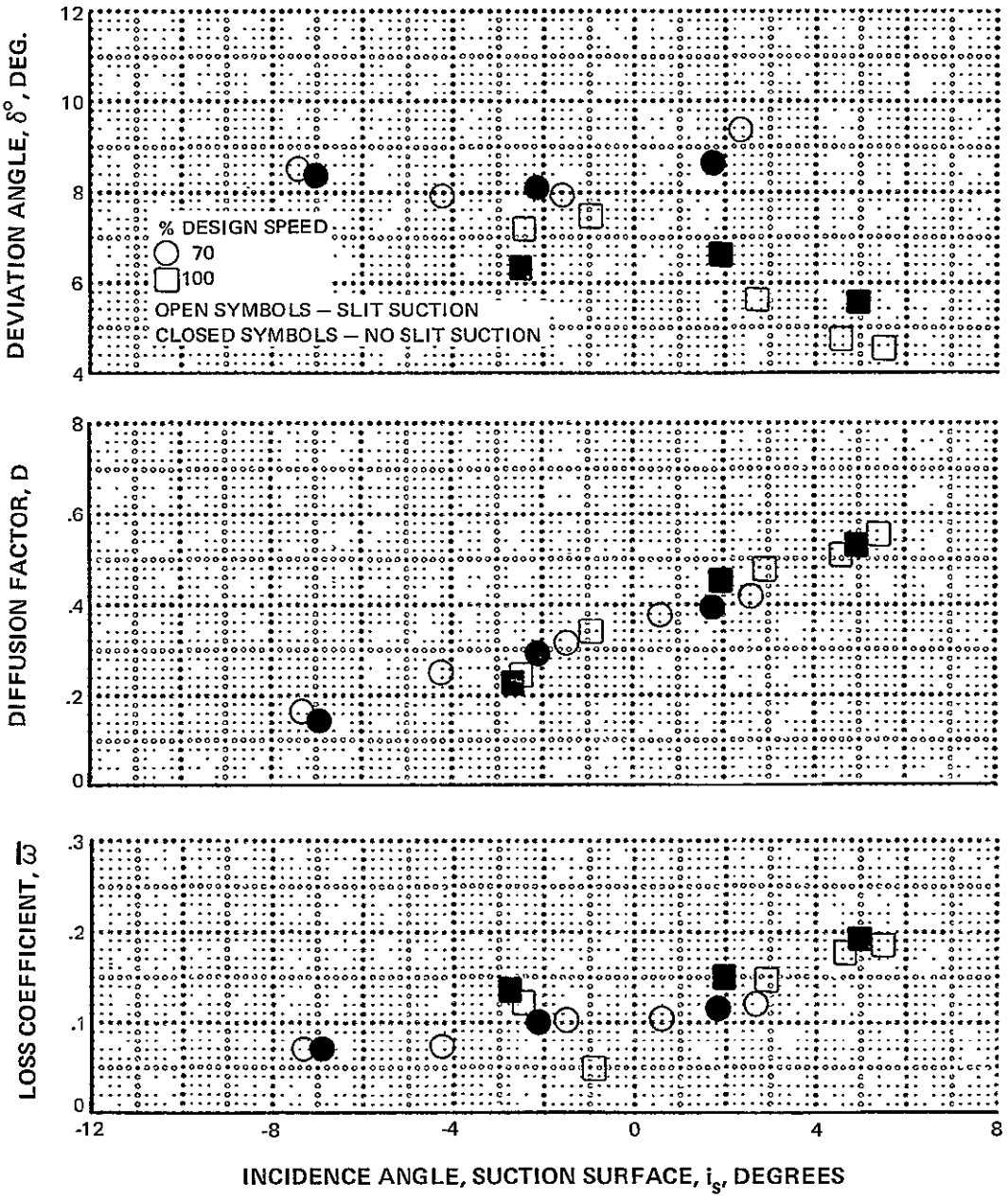


Figure 14c Effects of Stator Hub Slit Suction, 15 Percent Span from the Hub - Stator Blade Element Performance

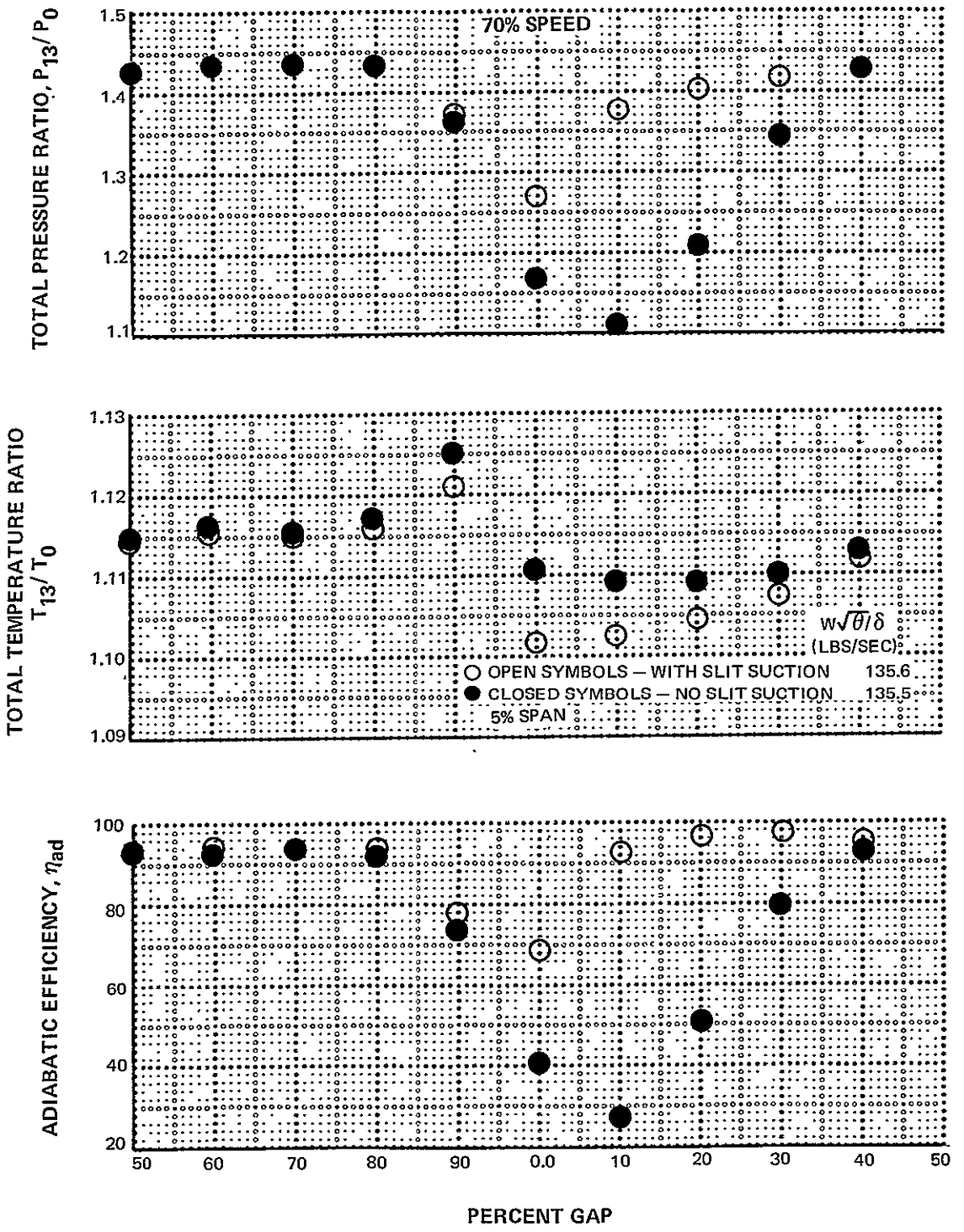


Figure 15a Effects of Stator Hub Slit Suction on Gapwise Distributions of Total Pressure, Temperature, and Efficiency, 5% Span, 70% Speed, Maximum Flow

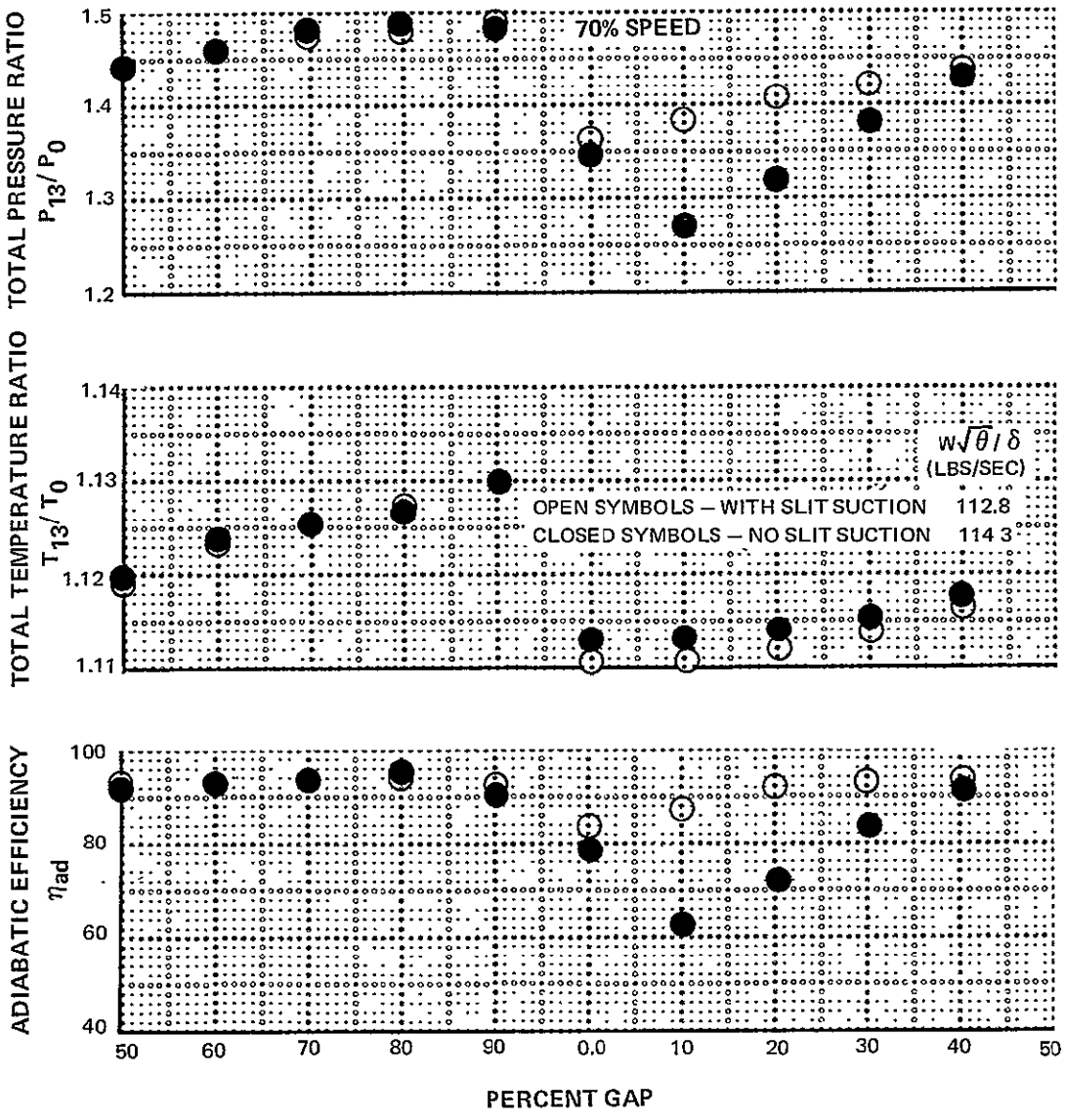


Figure 15b Effects of Stator Hub Slit Suction on Gapwise Distributions of Total Pressure, Temperature, and Efficiency, 5% Span, 70% Speed, Near Stall

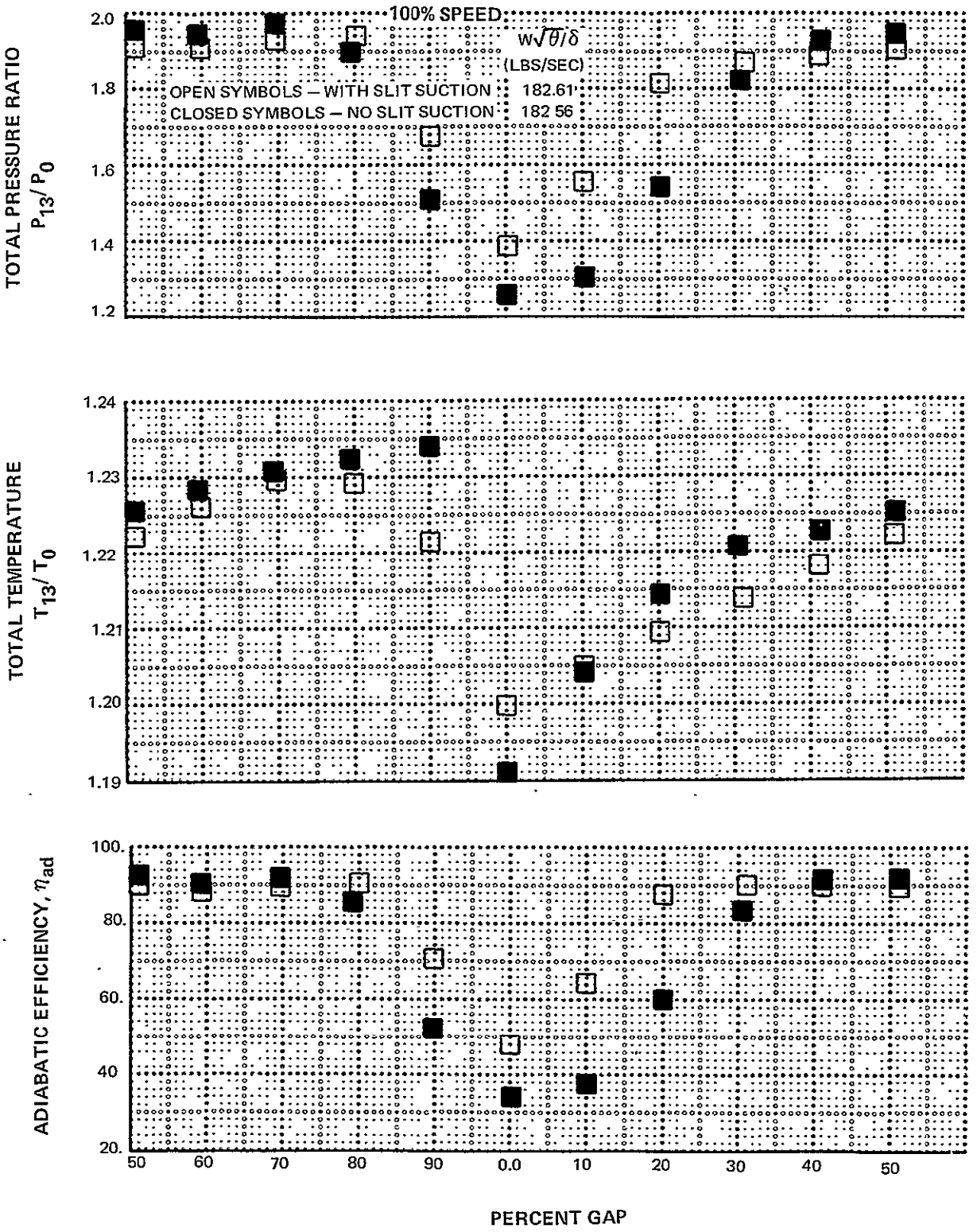


Figure 16a Effects of Stator Hub Slit Suction on Gapwise Distributions of Total Pressure, Temperature, and Efficiency, 5% Span, Design Speed, Maximum Flow

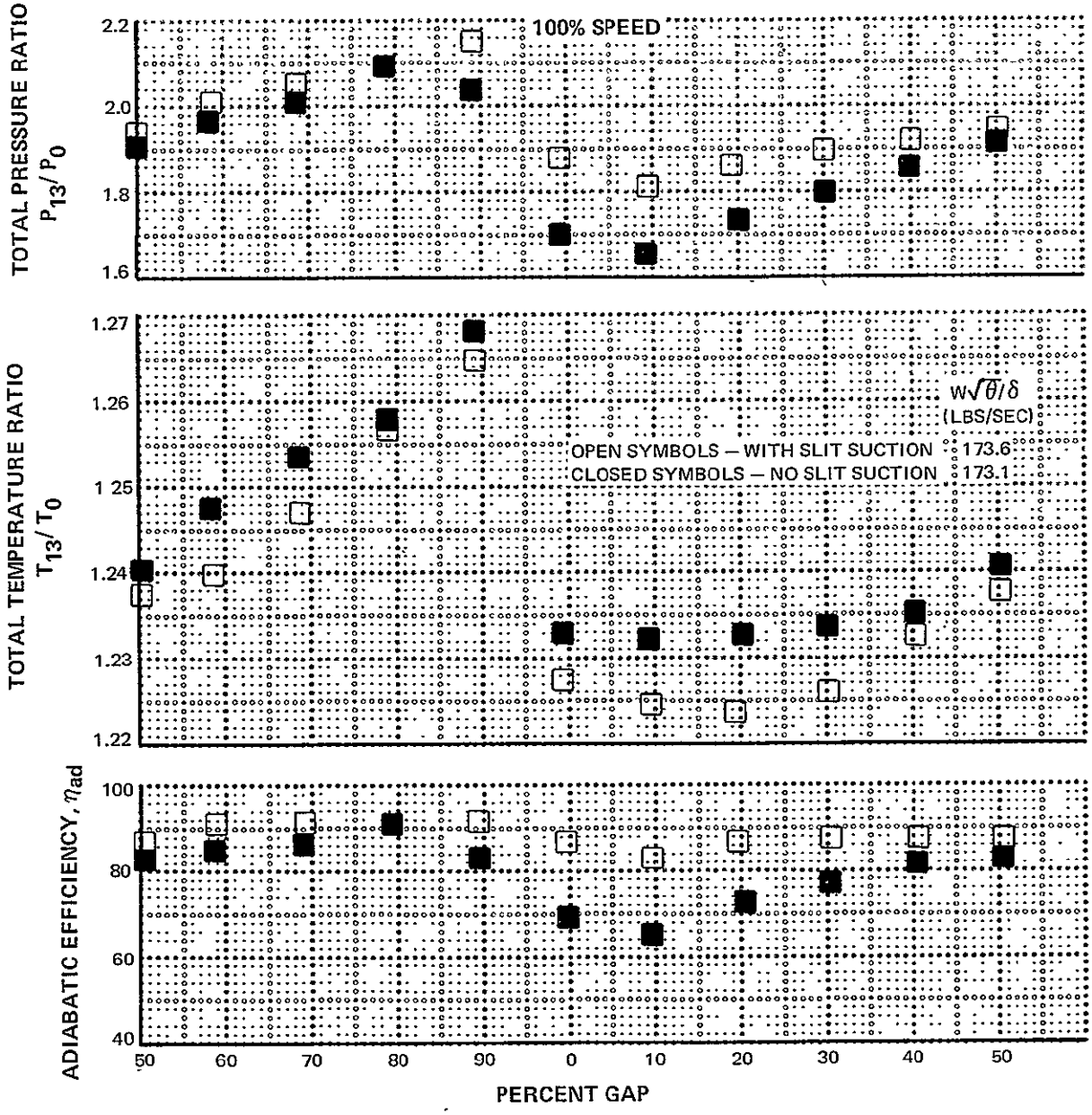


Figure 16b Effects of Stator Hub Slit Suction on Gapwise Distributions of Total Pressure, Temperature, and Efficiency, 5% Span, Design Speed, Near Stall

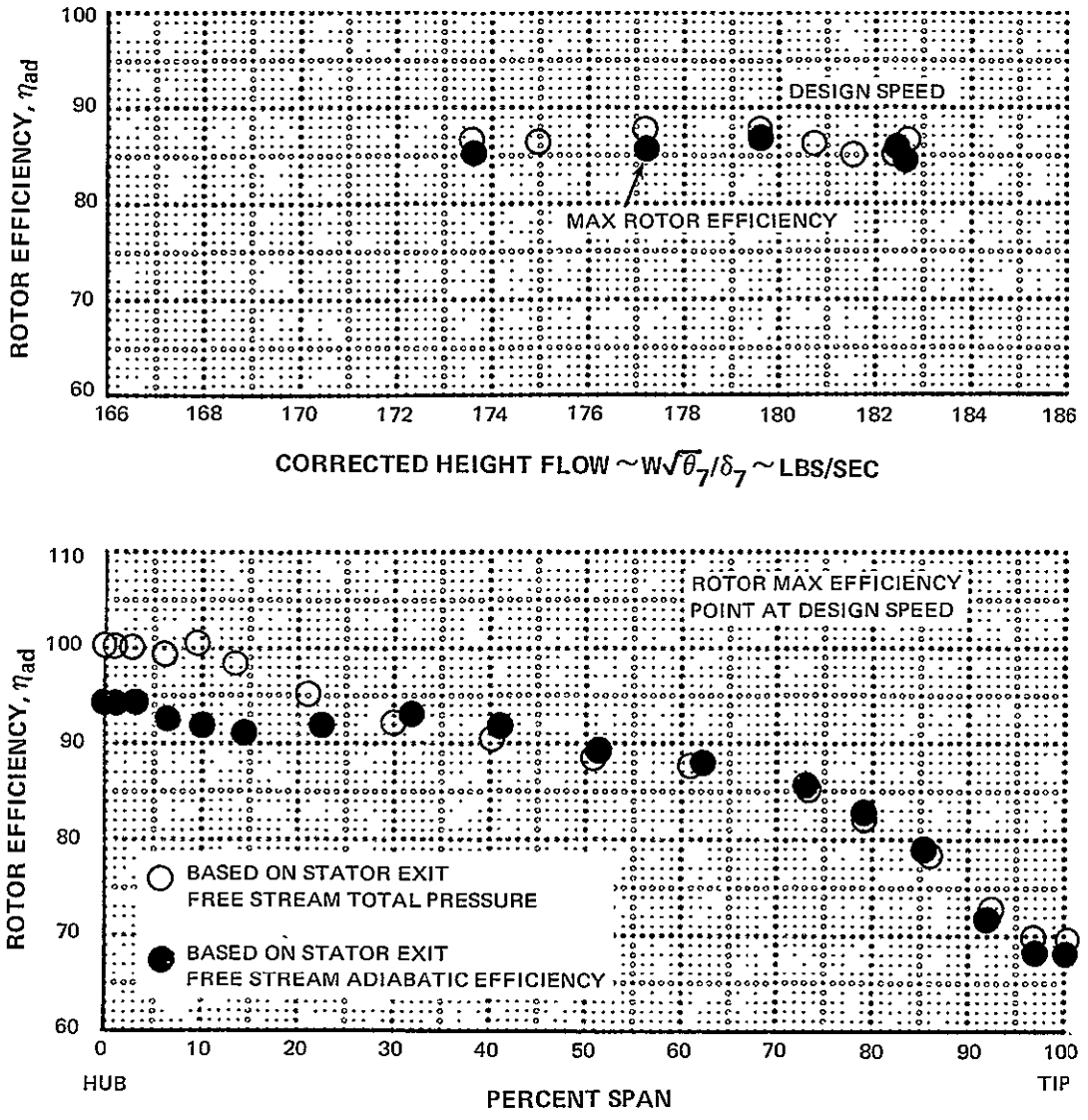


Figure 17 Efficiency Comparison of Free-Stream Total Pressure versus Free-Stream Efficiency Calculation Methods

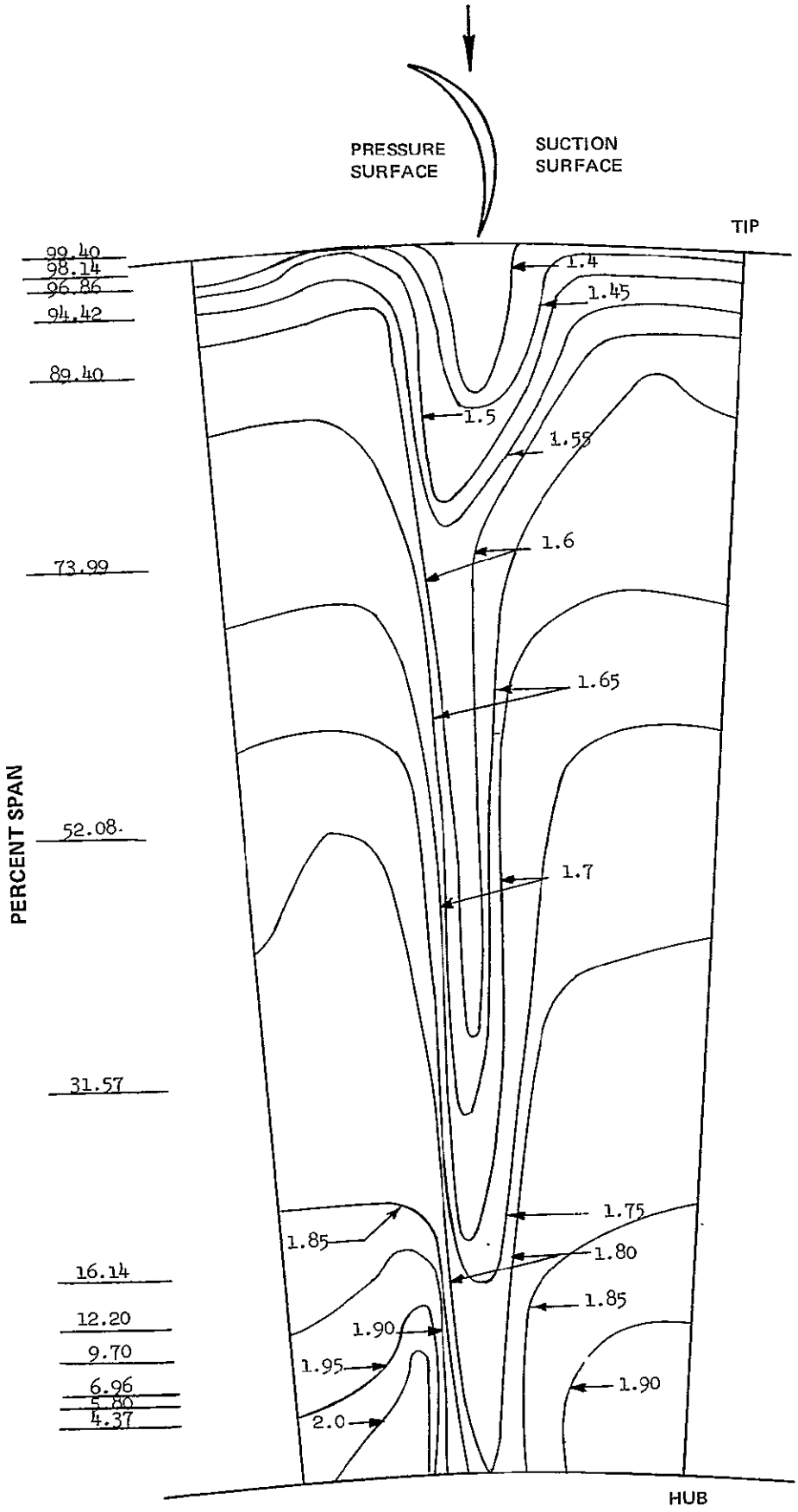


Figure 18a Total Pressure Ratio (P_{13}/P_0), 100 Percent Speed, 181.5 Pounds Per Second Flow Rate

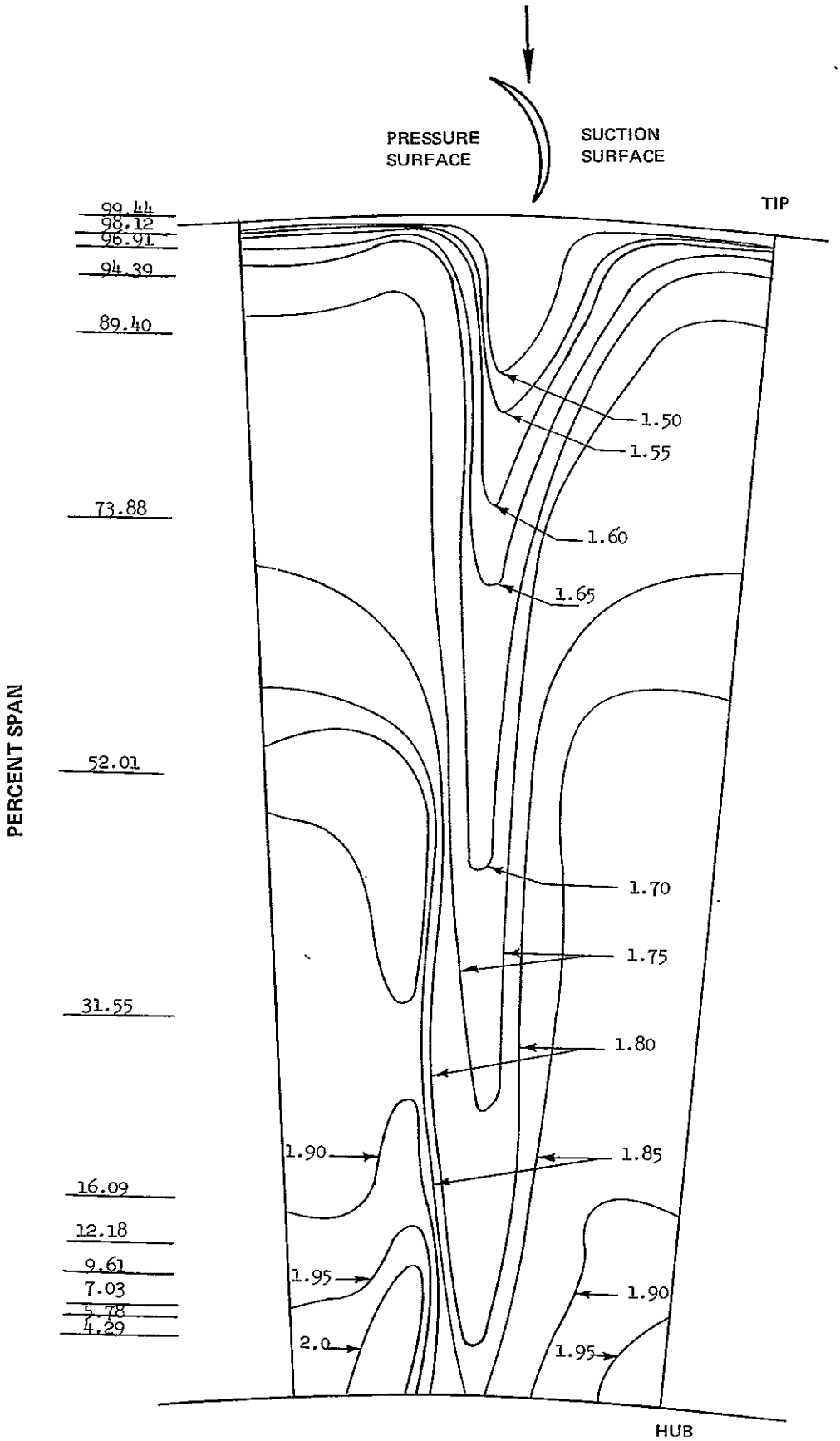


Figure 18b Total Pressure Ratio (P_{13}/P_0), 100 Percent Span, 180.7 Pounds Per Second Flow Rate

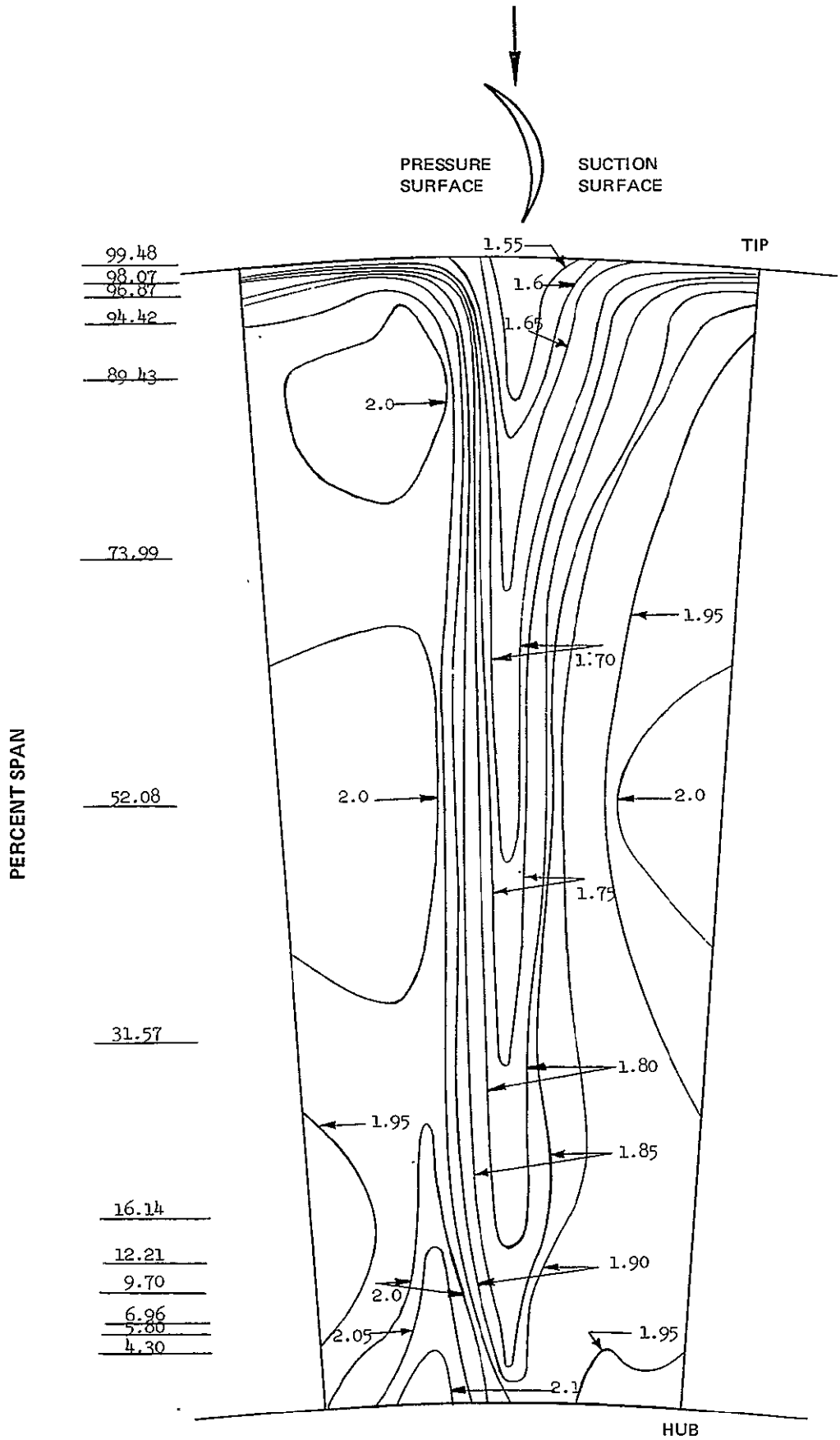


Figure 18c Total Pressure Ratio (P_{13}/P_0), 100 Percent Speed, 175.0 Pounds Per Second Flow Rate

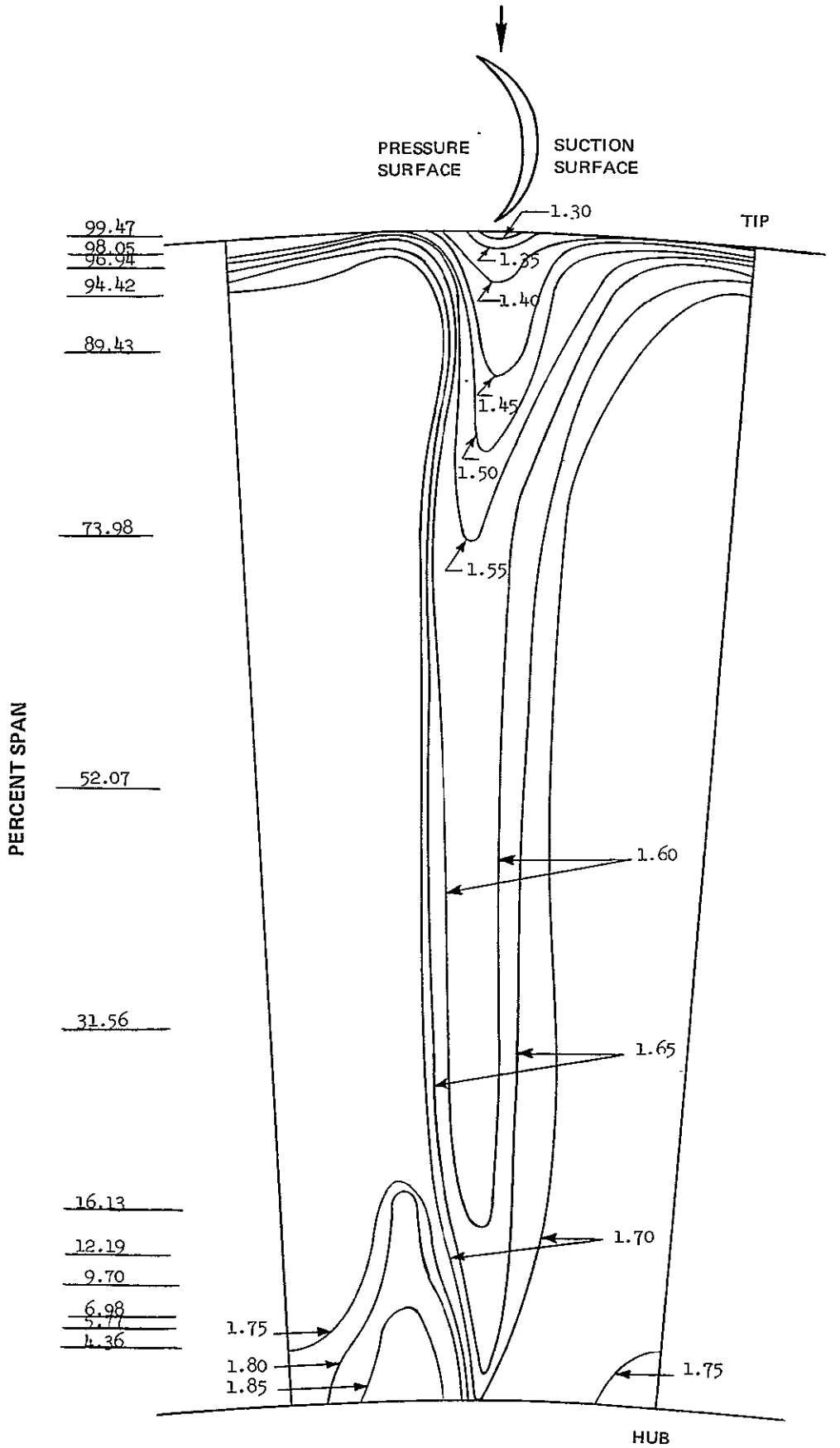


Figure 18d Total Pressure Ratio (P_{13}/P_0), 90 Percent Speed, 153.96 Pounds Per Second Flow Rate

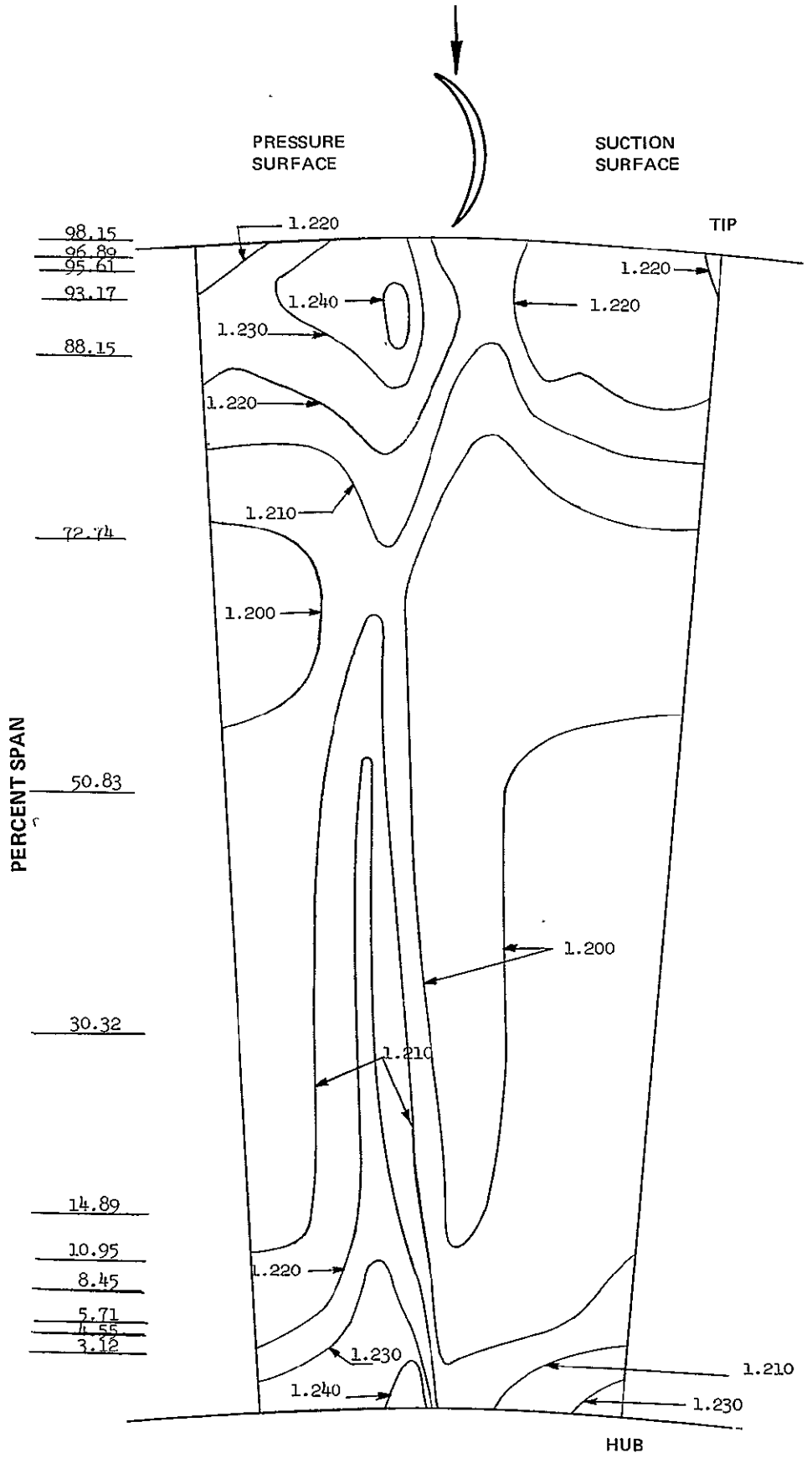


Figure 19a Total Temperature Ratio (T_{13}/T_0), 100 Percent Speed, 181.5 Pounds Per Second Flow Rate

20

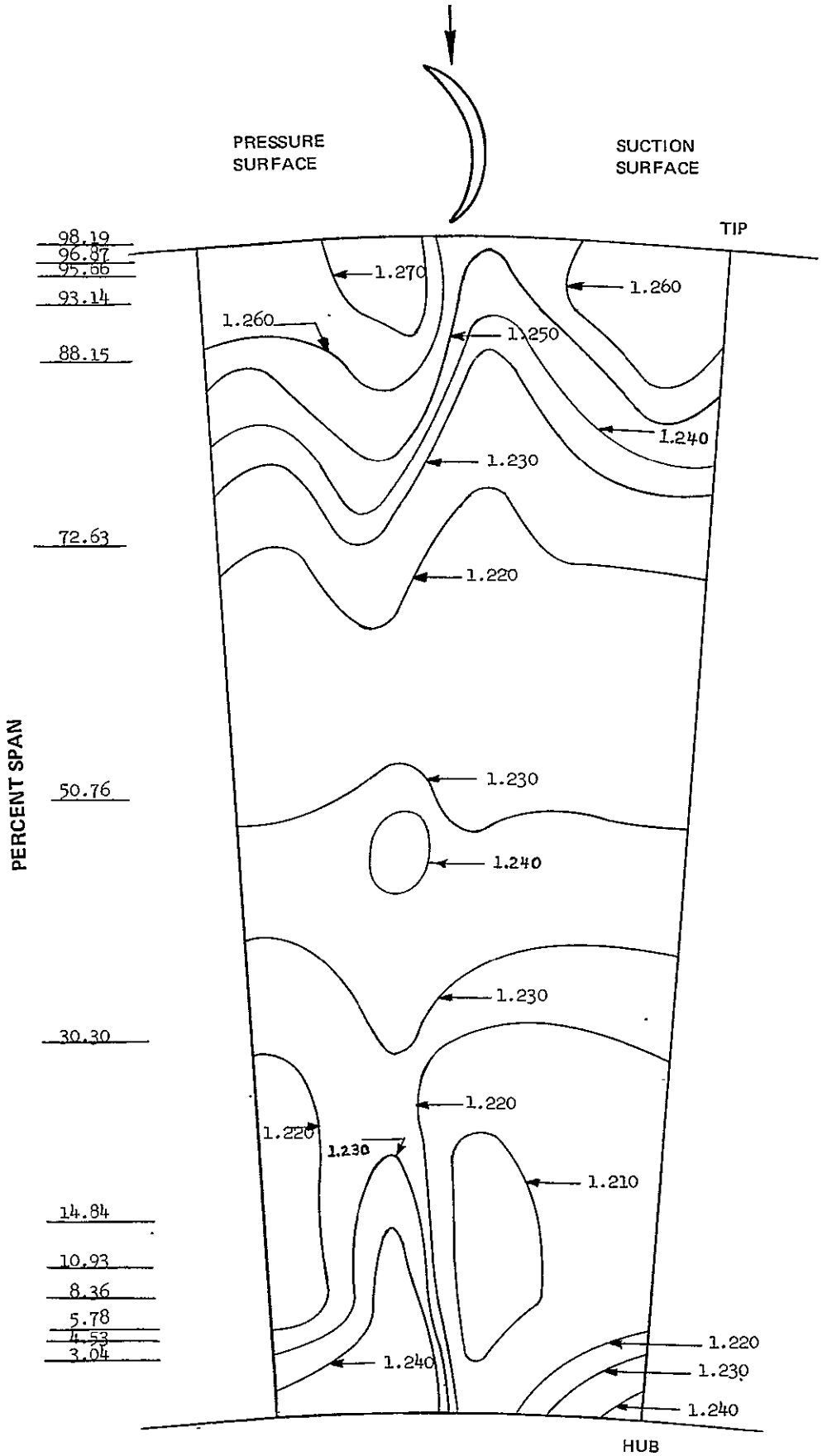


Figure 19b Total Temperature Ratio (T_{13}/T_0), 100 Percent Speed, 180.7 Pounds Per Second Flow Rate

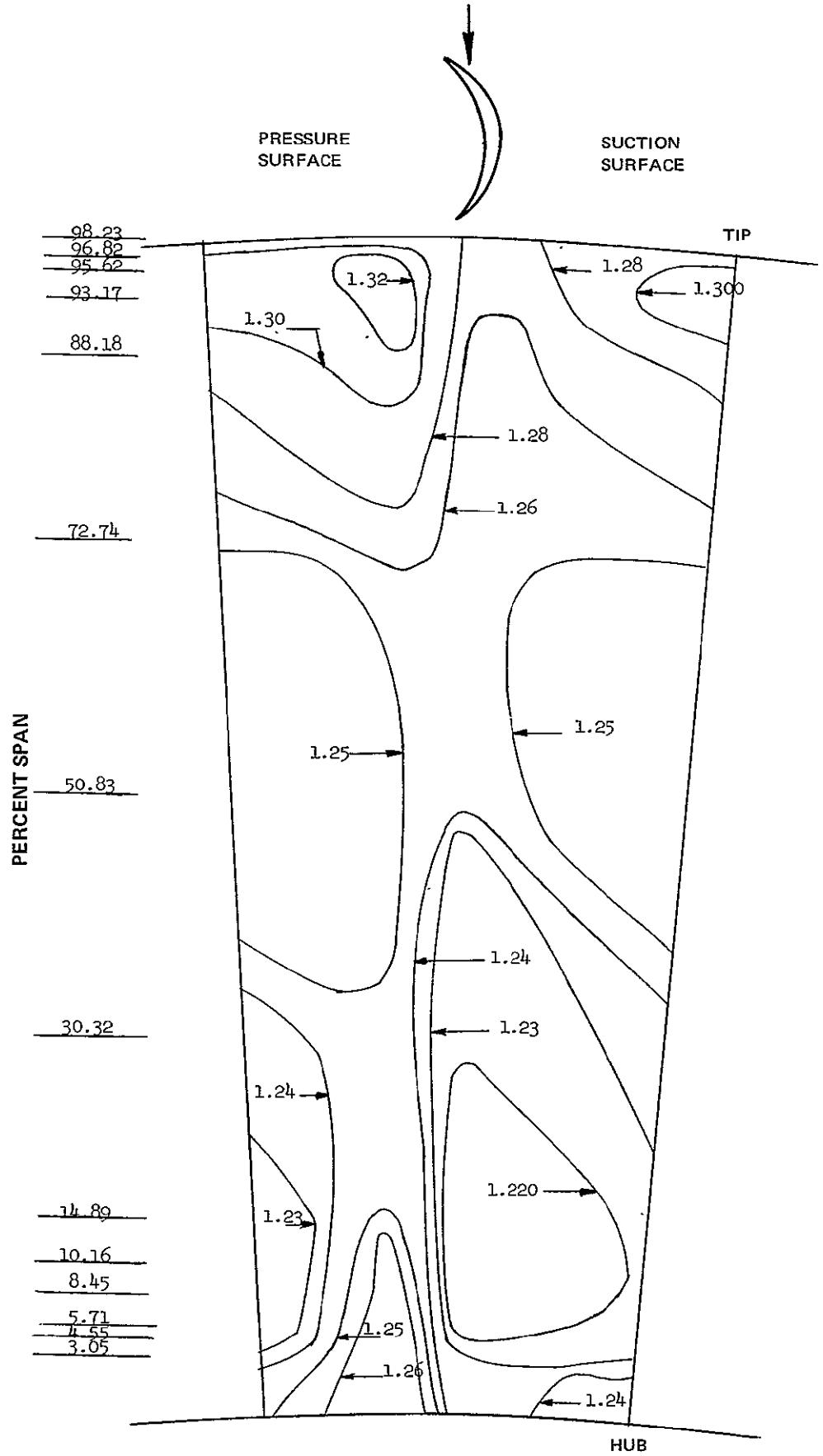


Figure 19c Total Temperature Ratio (T_{13}/T_0), 100 Percent Speed, 175.0 Pounds Per Second Flow Rate

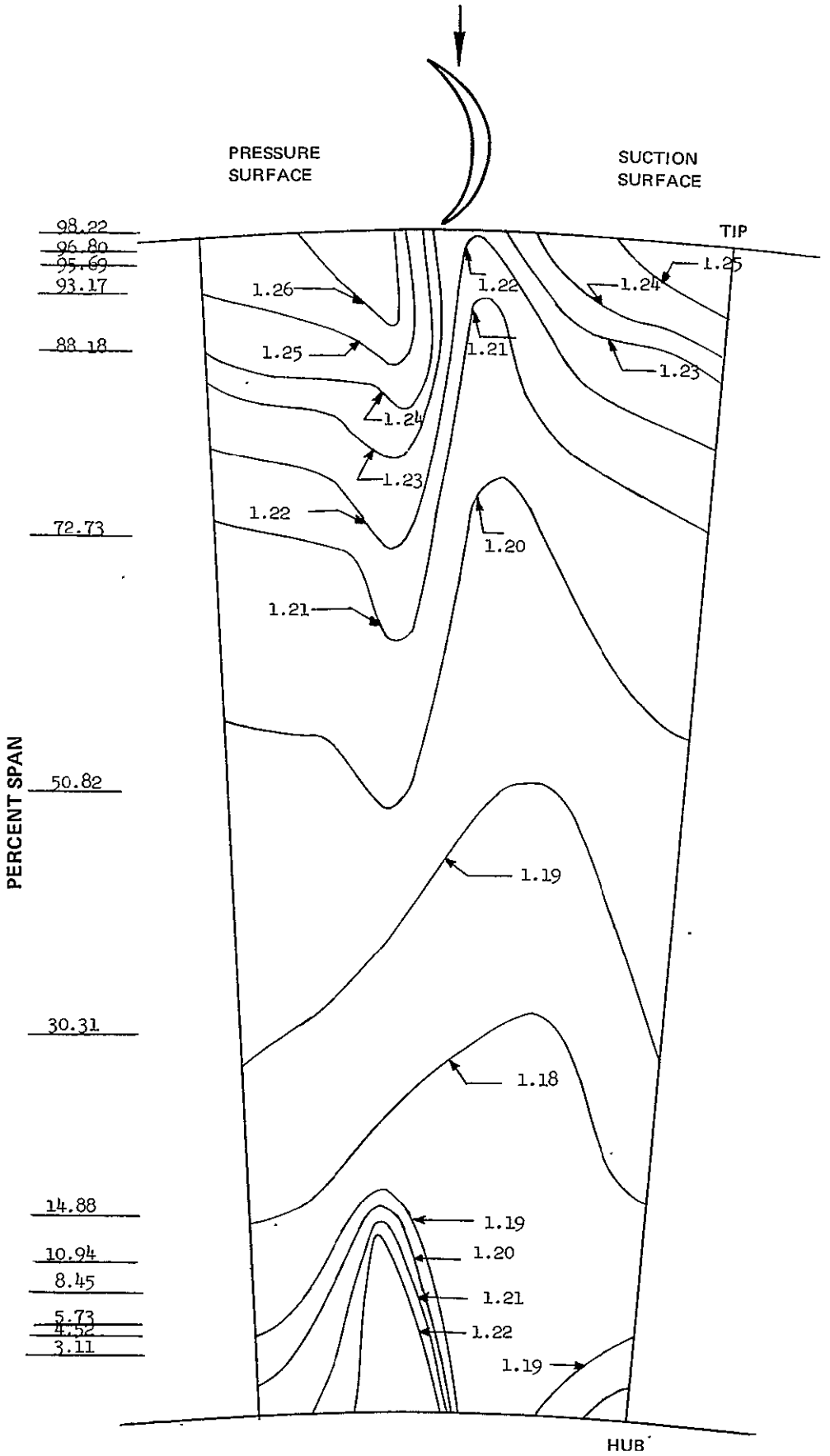


Figure 19d Total Temperature Ratio (T_{13}/T_0), 90 Percent Speed, 153.96 Pounds Per Second Flow Rate

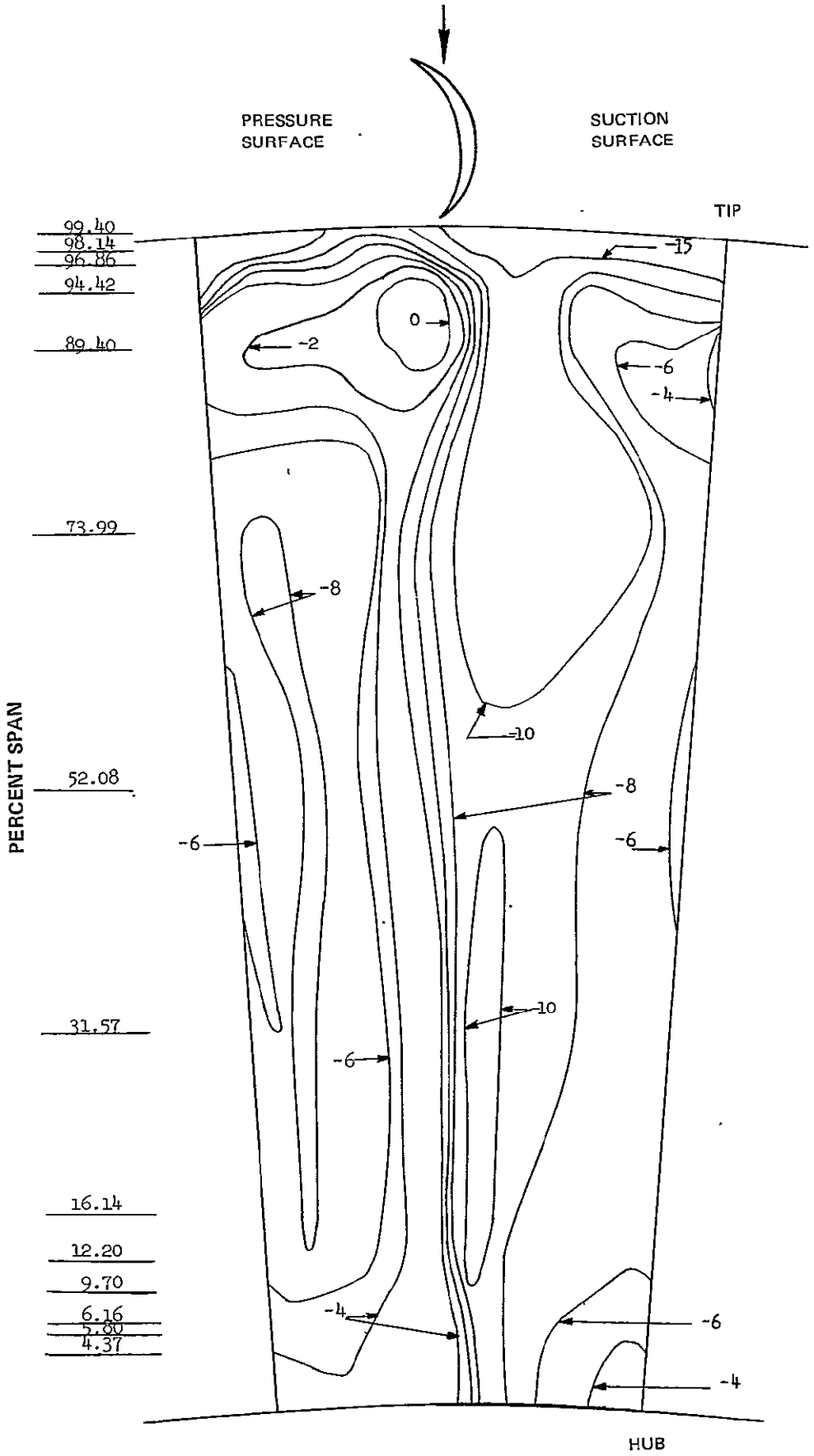


Figure 20a Absolute Air Angle, Degrees $(90-\beta_{13})$, 100 Percent Speed, 181.5 Pounds Per Second Flow Rate

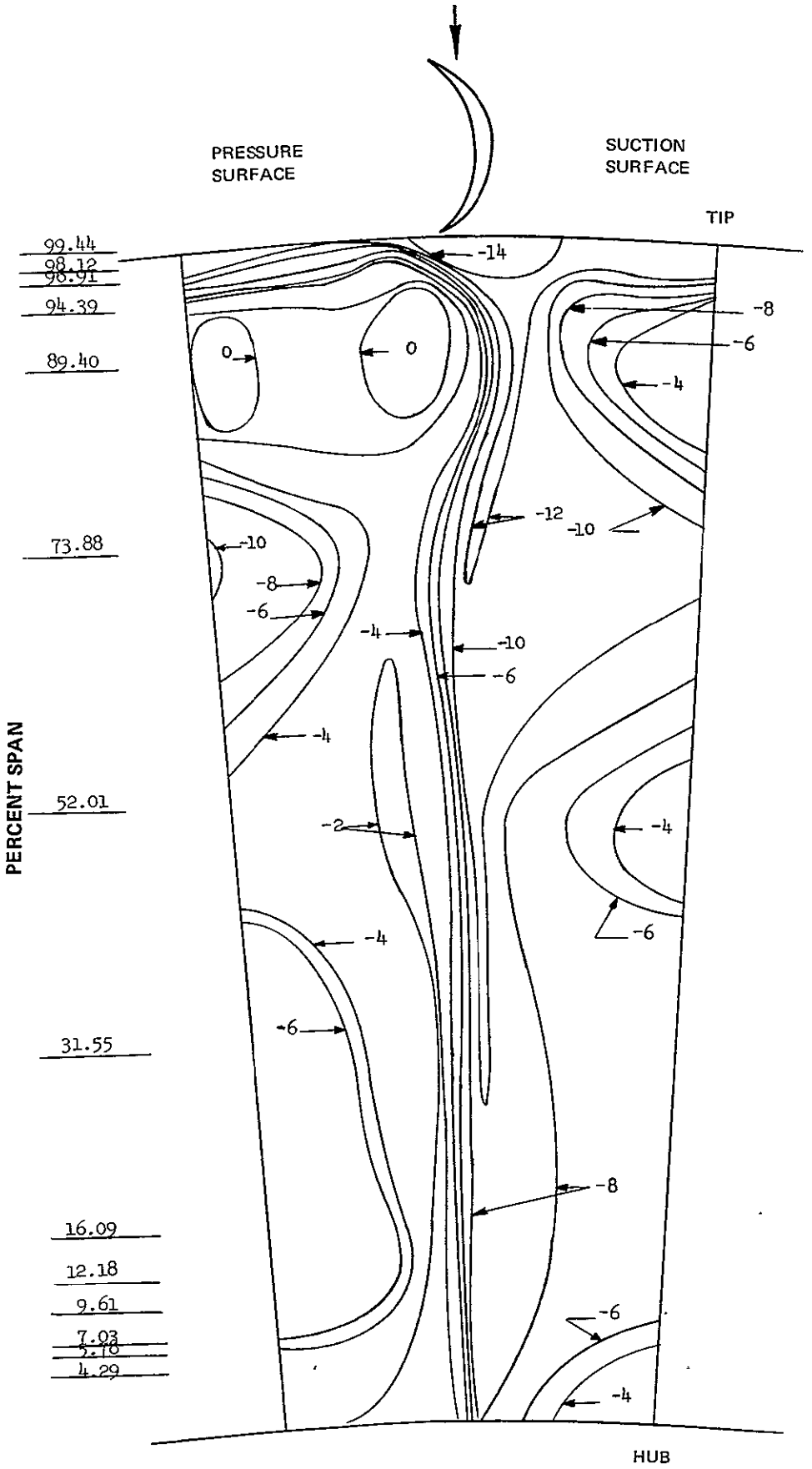


Figure 20b Absolute Air Angle, Degrees ($90 - \beta_{13}$), 100 Percent Speed, 180.7 Pounds Per Second Flow Rate

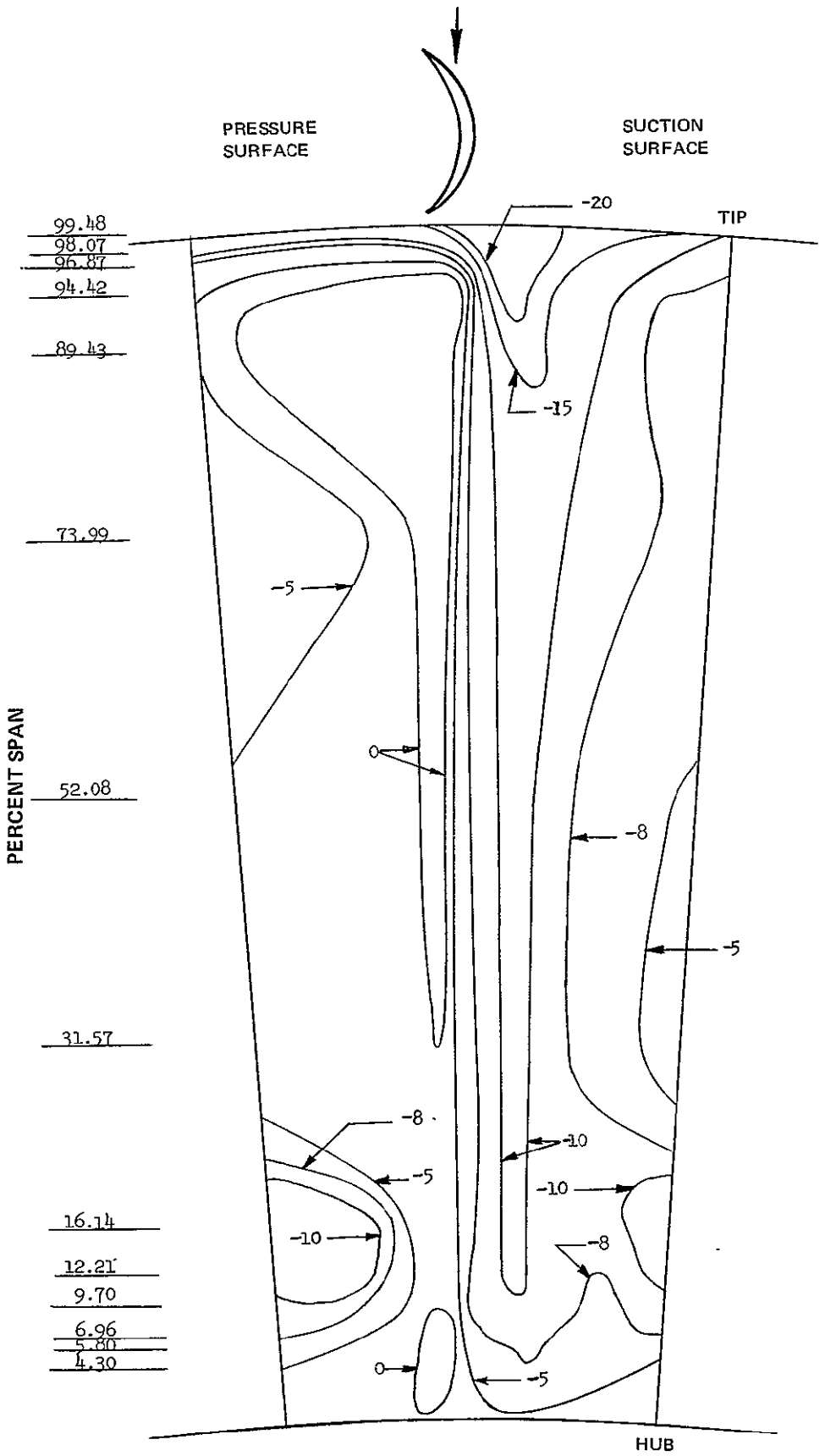


Figure 20c Absolute Air Angle, Degrees (90 - β_{13}), 100 Percent Speed, 175.0 Pounds Per Second Flow Rate

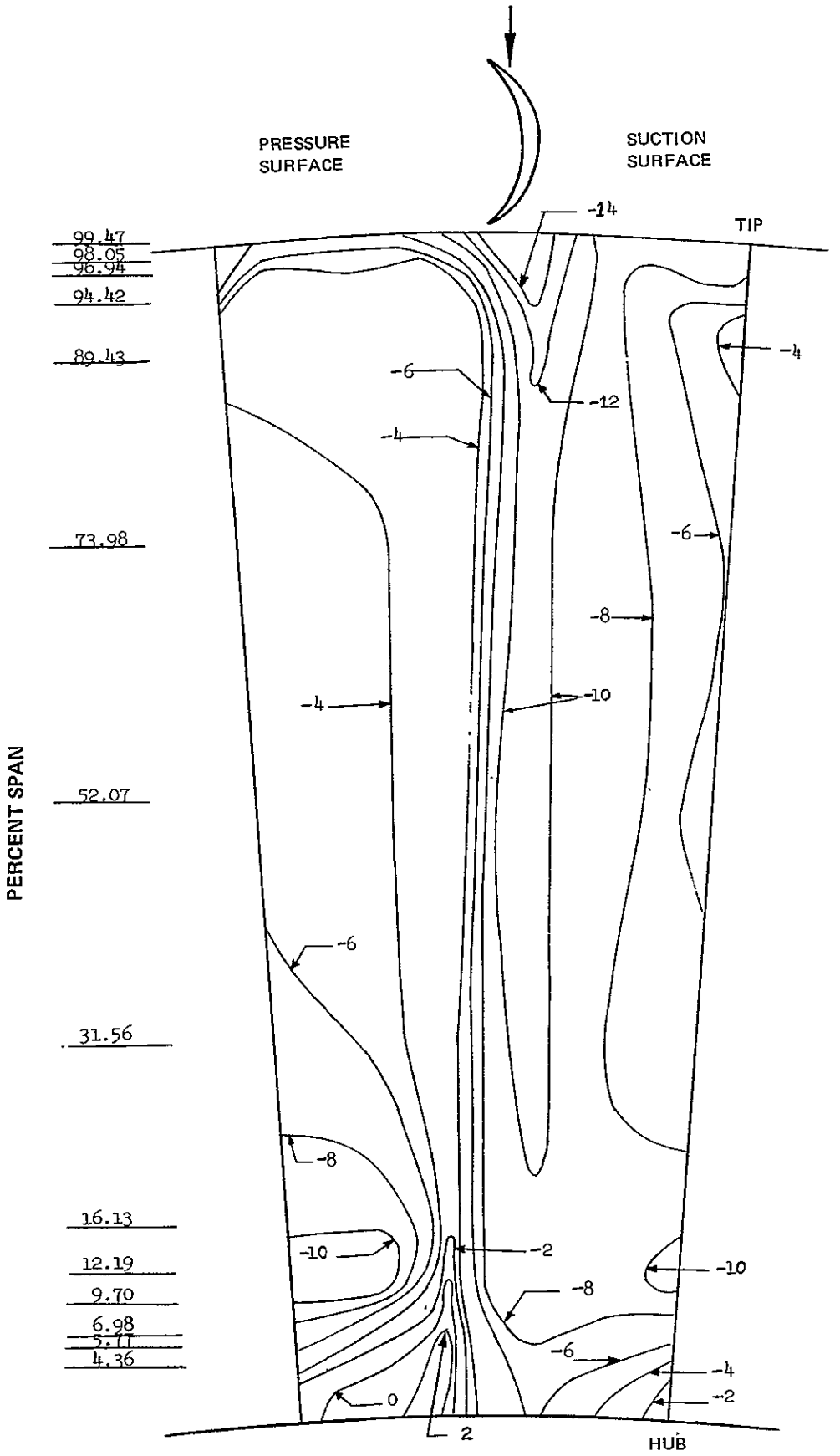


Figure 20d Absolute Air Angle, Degrees (90 - β_{13}), 90 Percent Speed, 153.96 Pounds Per Second Flow Rate

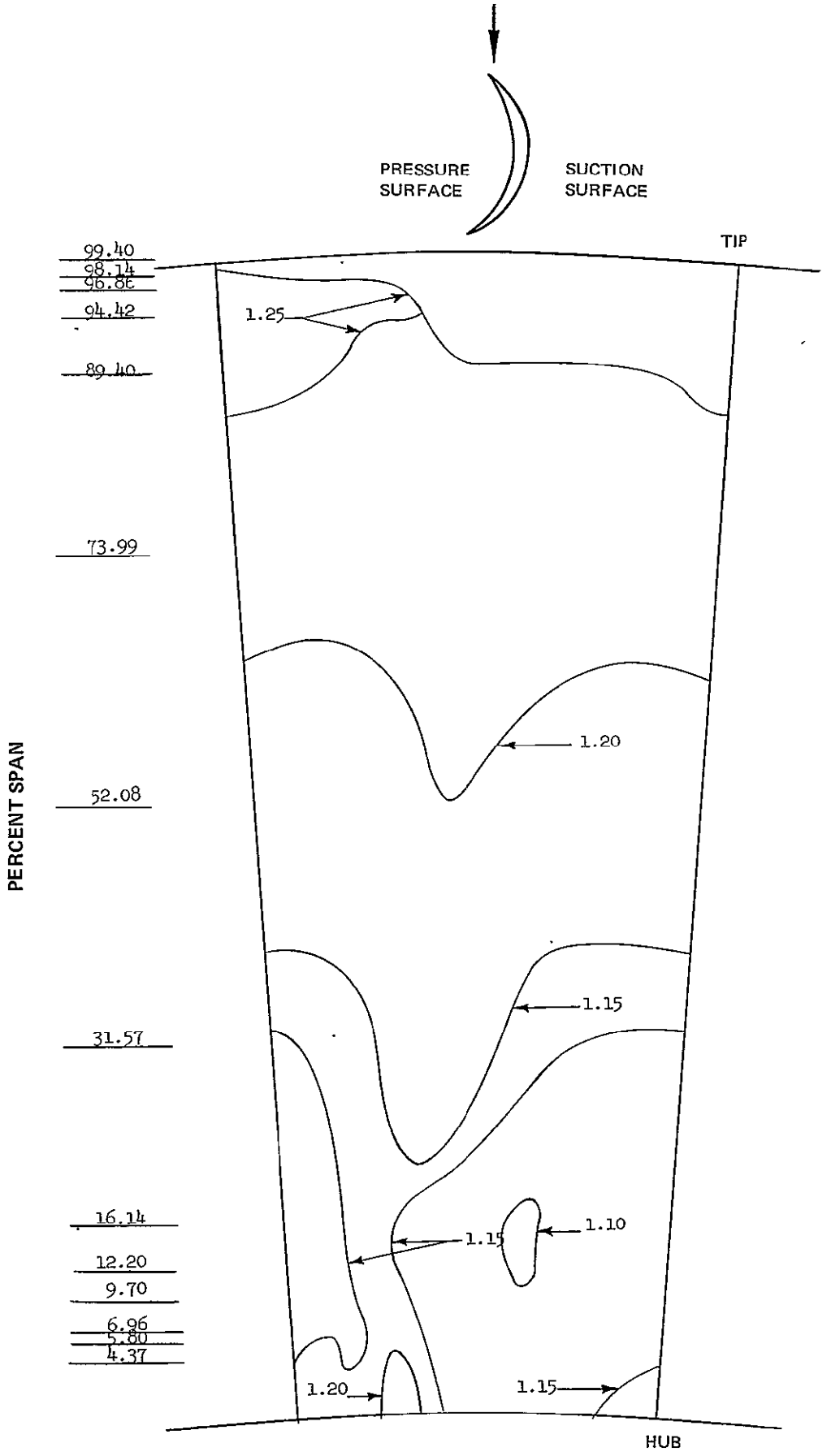


Figure 21a Static Pressure Ratio (P_{13}/P_0), 100 Percent Speed, 181.5 Pounds Per Second Flow Rate

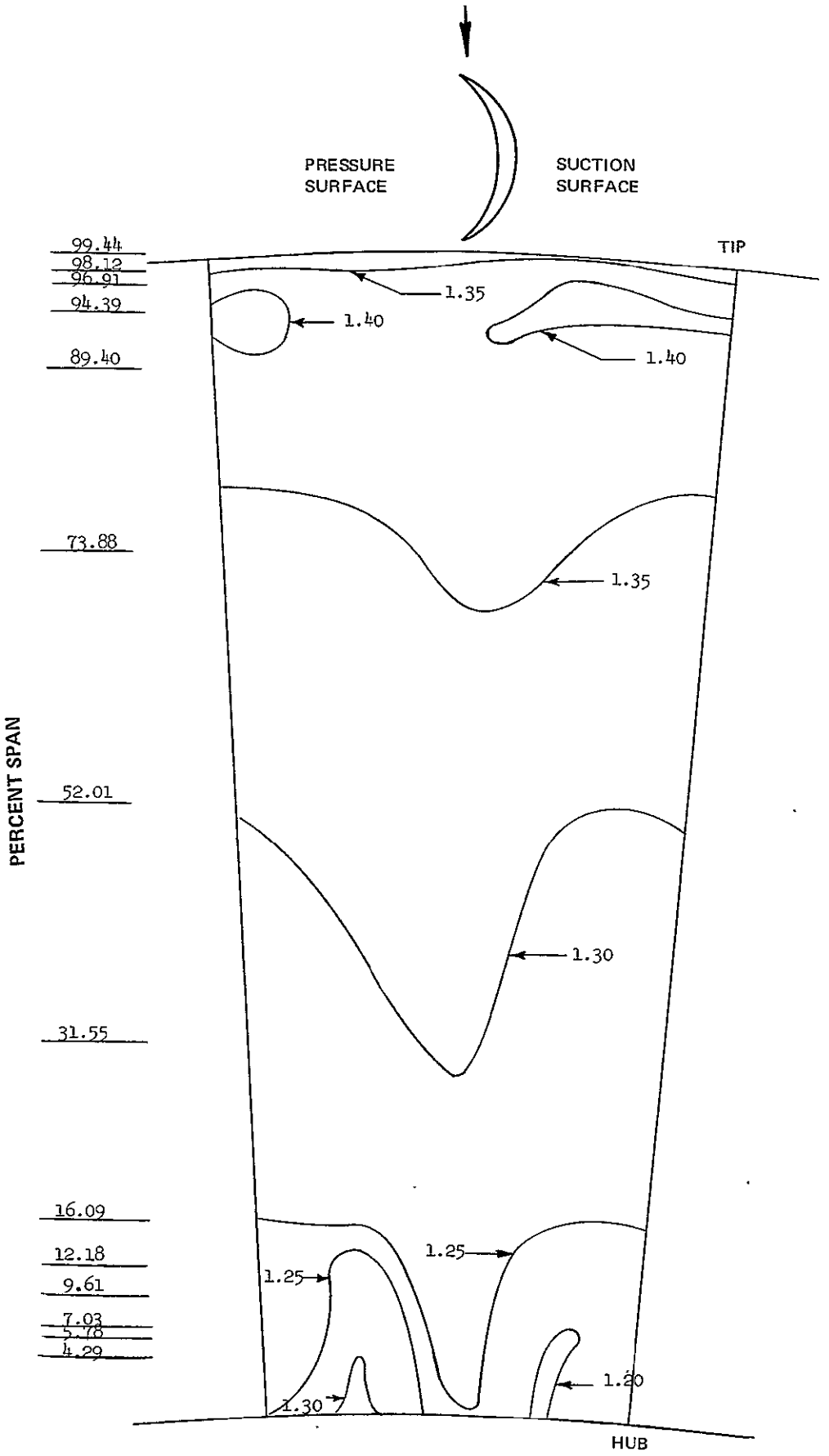


Figure 21b Static Pressure Ratio (P_{13}/P_0), 100 Percent Speed, 180.7 Pounds Per Second Flow Rate

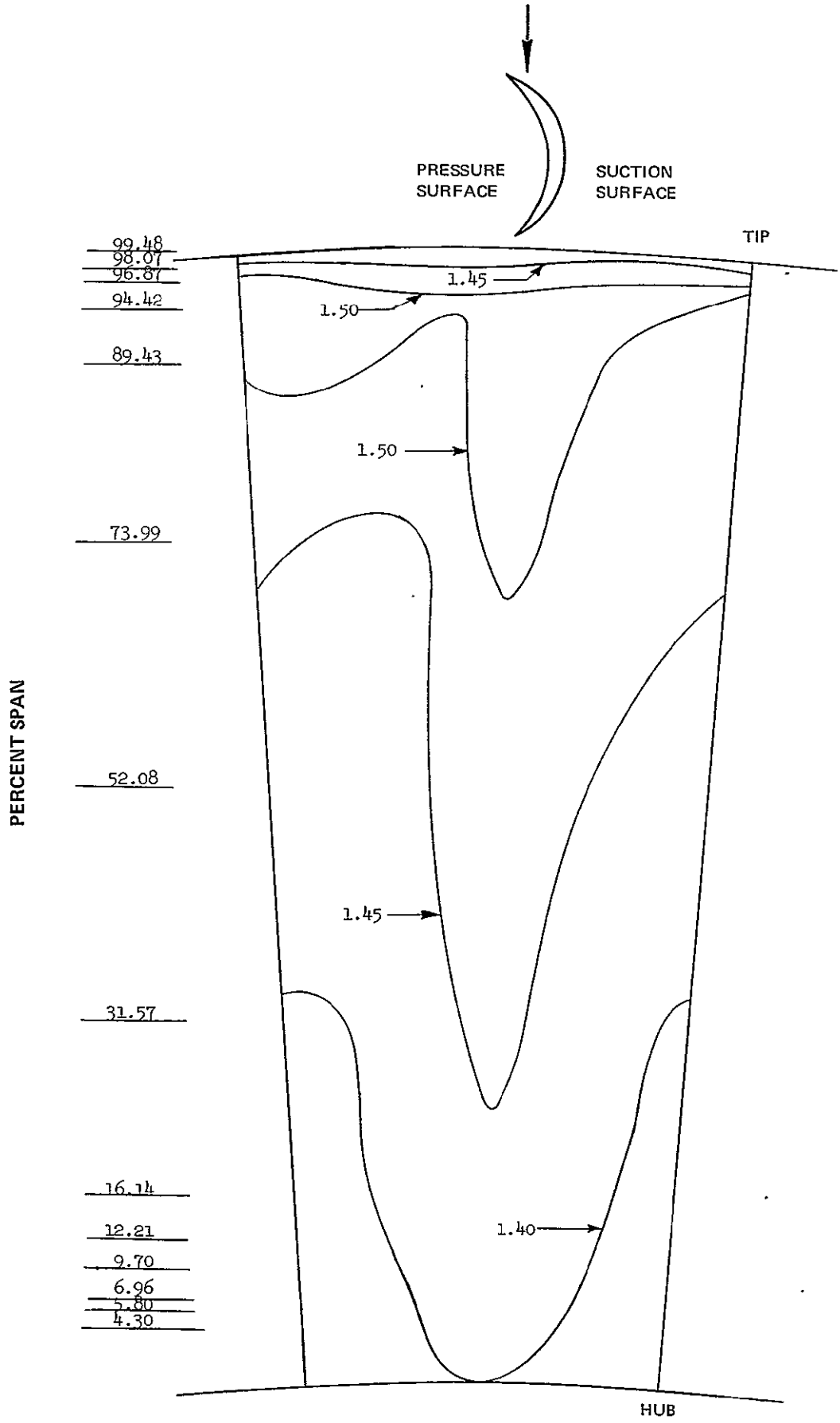


Figure 21c Static Pressure Ratio (P_{13}/P_0), 100 Percent Speed, 175.0 Pounds Per Second Flow Rate

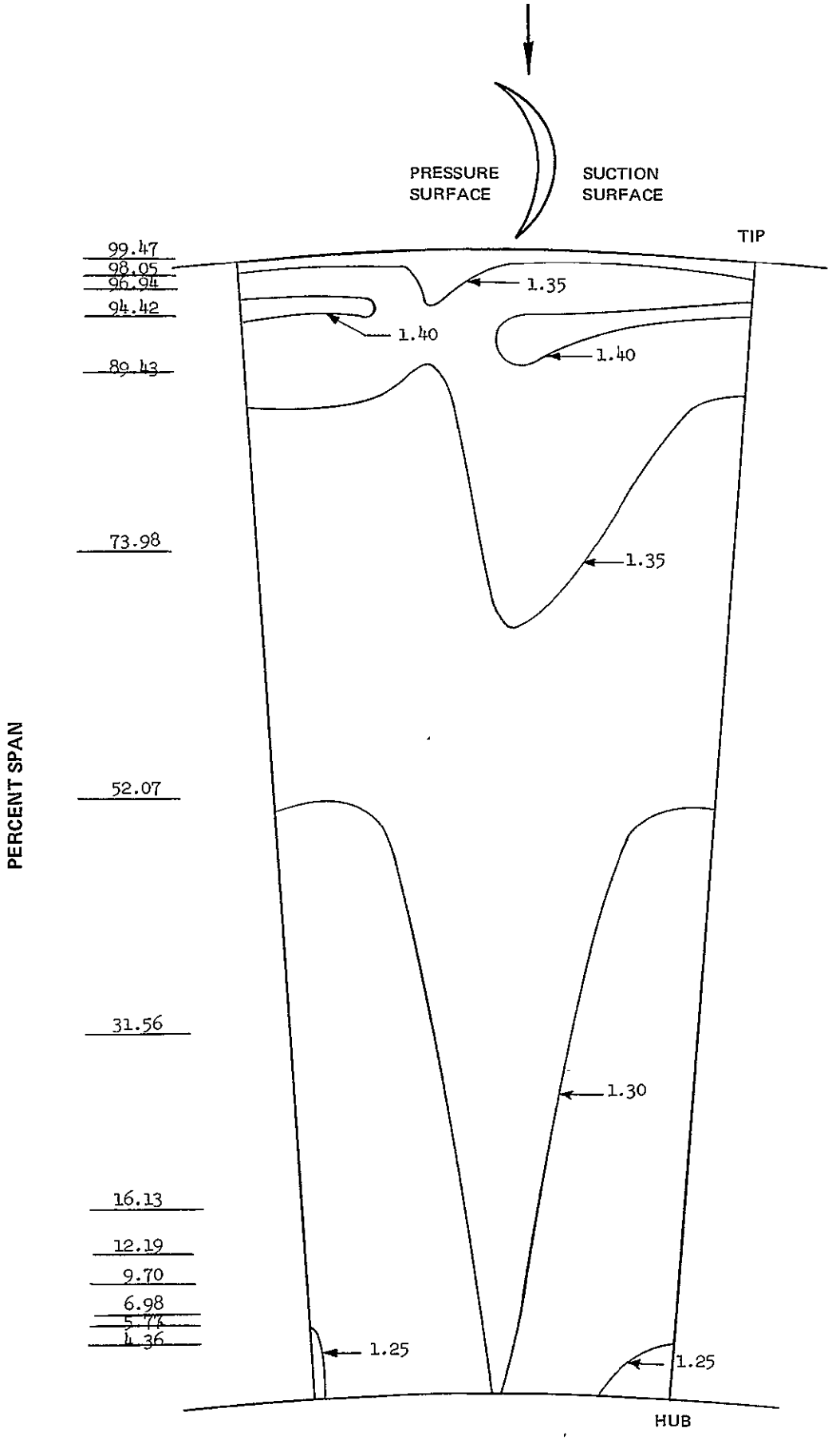


Figure 21d Static Pressure Ratio (P_{13}/P_0), 90 Percent Speed, 153.96 Pounds Per Second Flow Rate

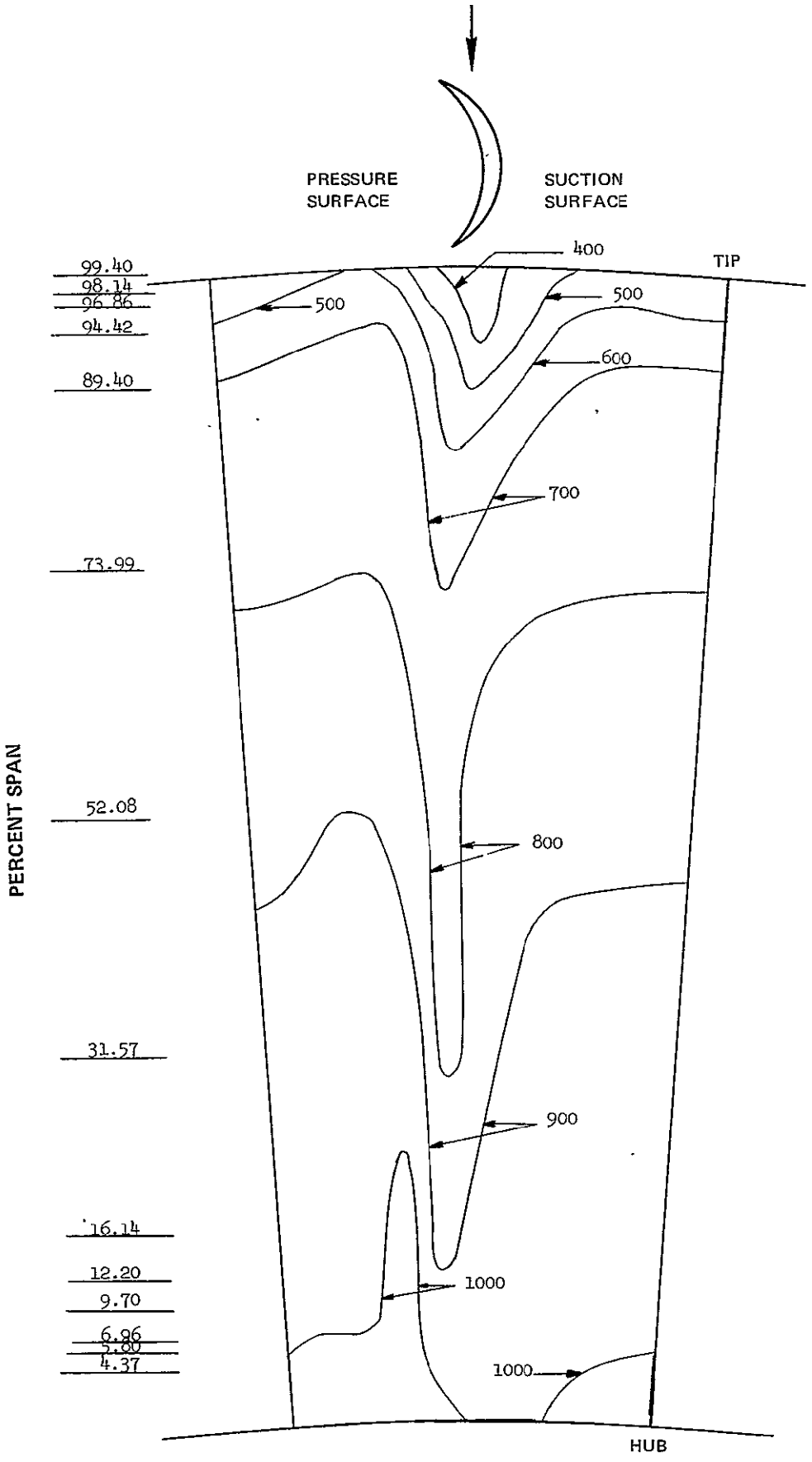


Figure 22a Meridional Velocity, Ft/Sec (V_{m13}), 100 Percent Speed, 181.5 Pounds Per Second Flow Rate

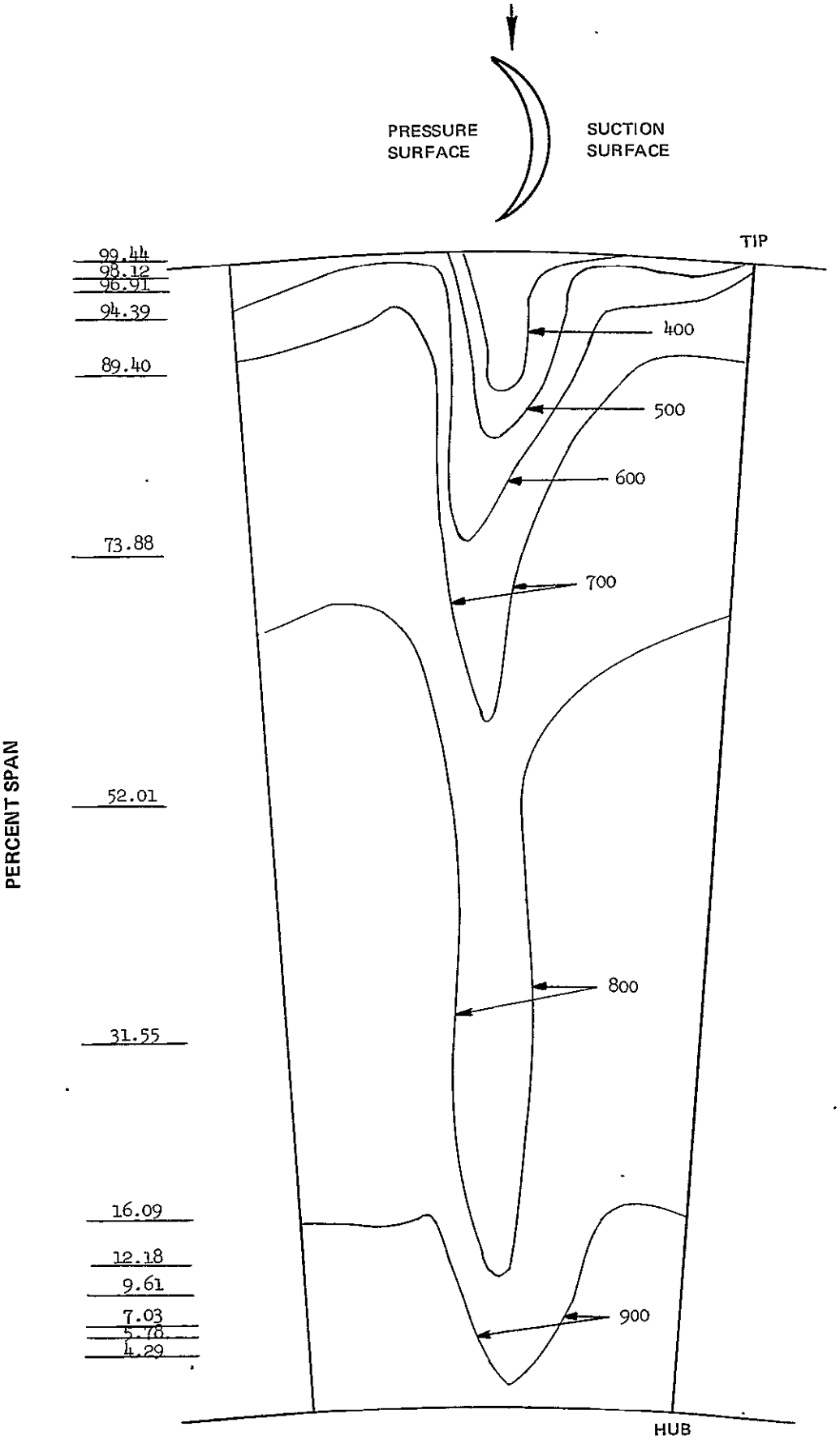


Figure 22b Meridional Velocity, Ft/Sec (V_{m13}), 100 Percent Speed, 180.7 Pounds Per Second Flow Rate

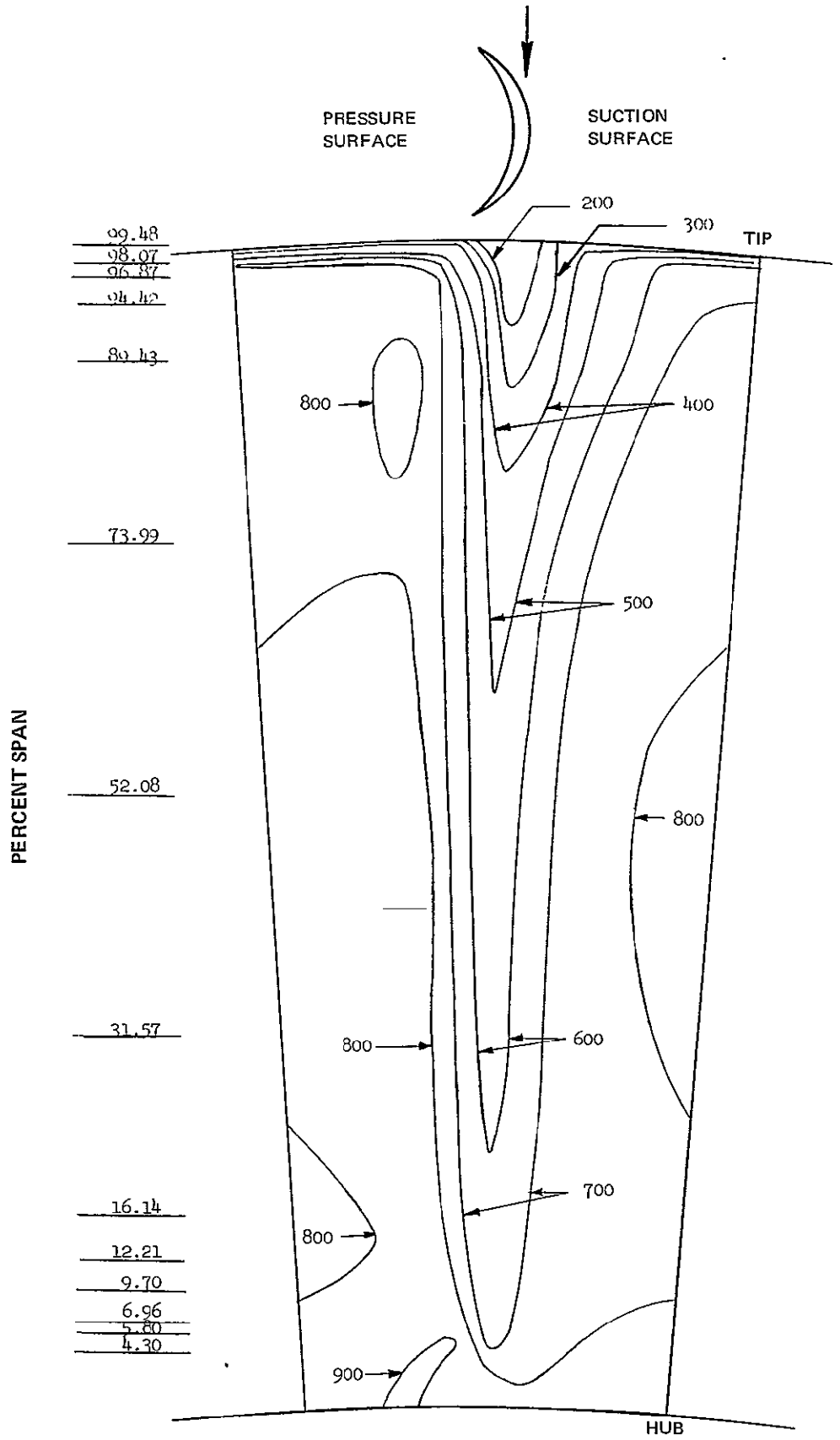


Figure 22c Meridional Velocity, Ft/Sec (V_{m13}), 100 Percent Speed, 175.0 Pounds Per Second Flow Rate

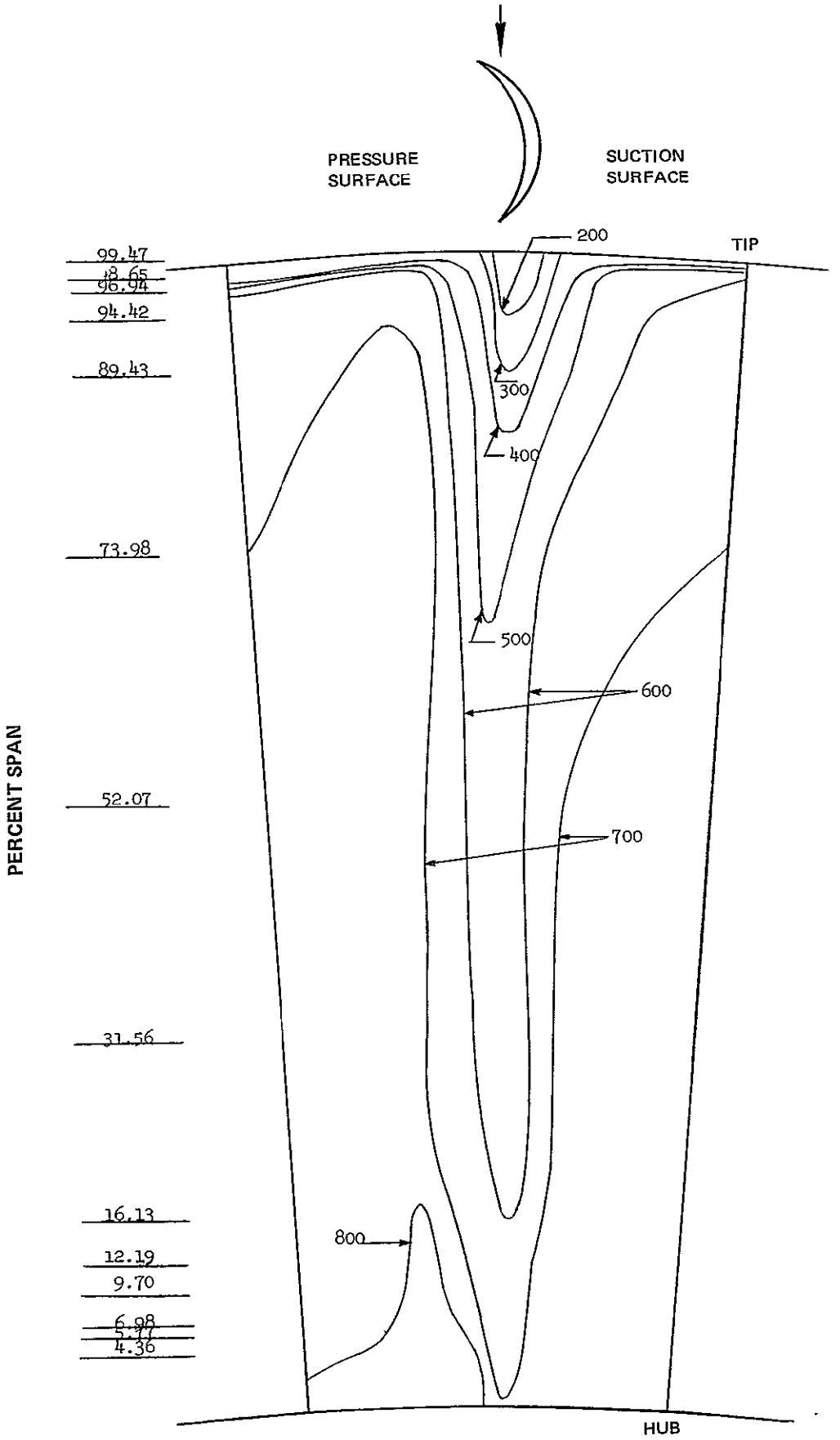


Figure 22d Meridional Velocity, Ft/Sec (V_{m13}), 90 Percent Speed, 153.96 Pounds Per Second Flow Rate

APPENDIX 1

PERFORMANCE PARAMETERS

a) Relative total temperature

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

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

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

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

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

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

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

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

$$\eta_{ad\ adjusted} = \frac{W_{12}\left[\left(\frac{P_{12}}{P_7}\right)^{\frac{\gamma-1}{\gamma}} - 1\right]}{W_{12}\left[\frac{T_{12}}{T_0} - 1\right] + W_{16}\left[\frac{T_{16}}{T_0} - 1\right]} \quad \text{(stage)}$$

i) Wake blockage factor

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

where n is number of tangential traverse points equally spaced across a stator gap and ρAV_{avg} is calculated from mass flow averaged values of P, p, and T at that radius

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 4)

i_s - incidence angle, angle between inlet air direction and line tangent to blade suction surface at leading edge, degrees (labelled INCS, Table 4)

M - Mach number

MR - mass average in radial directions (Tables 15 and 16)

N - rotor speed, rpm ($N/\sqrt{\theta}$ labelled NCOR, Table 4)

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

$\sim$ U – rotor speed, ft/sec

V – air velocity, ft/sec

Vm – meridional velocity $(Vr^2 + Vz^2)^{1/2}$, ft/sec (labelled VM, Table 4)

W – weight flow, lbs/sec

β – absolute air angle, $\cot^{-1}(Vm/V\theta)$, degrees (labelled B, Table 4)

β' – relative air angle, $\cot^{-1}(Vm/V\theta')$, degrees (labelled B', Table 4)

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

δ° – 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-sec^2/ft^4

σ – solidity, ratio of chord to spacing

$\bar{\omega}$ – total pressure loss coefficient (labelled OMEGA - B, Table 4)

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 4)
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

APPENDIX 3

BLADE-ELEMENT AND OVERALL PERFORMANCE WITH STATOR HUB SLIT SUCTION

TABLE 4

IDENTIFICATION OF BLADE-ELEMENT 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	$2r_8$	$2r_9$	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
50																		
70																		
85																		
90																		

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	P02/ P01	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5																		
10																		
15																		
30																		
50																		
70	i_{s8}	i_{m8}	δ°_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
85																		
90																		
95																		

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	$2r_{10}$	$2r_{11}$	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
50																		
70																		
85																		
90																		
95																		

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	P02/ P01	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5																		
10																		
15																		
30																		
50																		
70	i_{s10}	i_{m10}	δ°_{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}
85																		
90																		
95																		

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	$\frac{W_{BLEED}}{W_{TOTAL}}$	EFF - AD ADJUSTED	PO/PO LOCAL
$\frac{N}{\sqrt{\theta}}$	$\frac{W\sqrt{\theta}}{\delta}$	$\frac{T_{11}}{T_0}$	$\frac{P_{11}}{P_0}$	η_{ad}	η_p	$\frac{W\sqrt{\theta}}{\delta A_{an}}$	$\frac{W_{BLEED}}{W}$	η_{ad} ADJUSTED	$\frac{P_{11}}{P_0}$

TABLE 5
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	1041.7	607.39	-844.1	-179.7	844.1	957.6
10	18.467	20.408	625.705	946.940	625.765	606.49	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	926.801	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	617.81	.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	968.37	-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	1635.1	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-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	P02/ P01	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	9197	.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	.5162	.0580	.0123	.0037	2.0	.9515	.9471	.9435	.621	.747	1.1788	.6405
50	1.22	4.03	4.60	12.71	14.60	.0773	.5252	.0729	.0149	-.0009	2.0	.9290	.9223	.9211	.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	1.5880	.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	1234.7	-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	24.87	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	684.55	0	44.41	0	27.32	57.23	786.54	1292.8	-360.9	-1086.9	1045.4	1086.9
30	23.314	23.902	944.83	704.91	696.66	701.91	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	-611.0	-1252.7	1238.2	1252.7
70	27.818	27 902	903.67	685.34	696.37	685.34	579.05	0	39.75	0	47.72	63.06	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	63.51	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	63.09	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	1054.81	1608.9	-820.7	-1465.5	1469.5	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	P02/P01	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	.0110	.9331	0	0	.7566	.873	.550	.6185	1.0236
10	.40	3.33	11.05	45.74	53.88	0	.4838	.123	.0314	.0314	.9503	0	0	.8039	.858	.575	.6552	1.0571
15	0	3.0	11.00	14.41	52.35	0	.4641	.097	.0254	.0254	.9624	0	0	.8311	.843	.585	.6793	1.0799
30	0	3.1	11.25	42.50	50.68	0	.4410	.065	.0183	.0183	.9771	0	0	.8776	.812	.589	.7316	1.1313
50	0	3.2	12.05	40.69	49.55	0	.4397	.061	.0187	.0187	.9792	0	0	.8764	.782	.578	.8065	1.1920
70	0	3.3	13.40	39.75	49.93	0	.4543	.080	.0265	.0265	.9733	0	0	.8413	767	.567	.8769	1.2514
85	.31	3.62	15.43	39.63	51.98	0	.4810	.110	.0385	.0385	.9641	0	0	.7985	.767	.554	.9222	1.2915
90	1.45	4.73	17.00	40.95	53.84	0	.5013	.125	.0444	.0444	.9579	0	0	.7735	.768	.547	.9152	1.2986
95	3.80	7.00	16.90	44.40	56.04	0	.5365	.150	.0340	.0340	.9532	0	0	.7521	.769	.535	.8746	1.2974

NCOR-1 RPM	WCOR-1 LBM/SEC	TO/ TO	PO/ PO	EFF-AD %	EFF-P %	WC/A-1 LBM/SEC SQFT
11,110.0	187.1	1.247	1.936	81.2	85.6	42 04

TABLE 6.1
BLADE ELEMENT AND OVERALL PERFORMANCE WITH STATOR HUB SLIT
SUCTION, 100 PERCENT OF DESIGN SPEED, POINTS 1-8

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	604.5	1008.3	604.5	712.5	.0	713.5	.00	45.04	54.37	18.71	1037.8	752.4	-843.6	-241.2	843.6	954.7
10	18.467	20.408	618.8	971.4	618.8	697.7	.0	675.9	.00	44.09	55.24	23.92	1085.5	763.5	-891.8	-309.6	891.8	985.6
15	19.467	21.047	632.2	944.8	632.2	691.3	.0	643.9	.00	42.96	56.08	28.28	1133.0	786.1	-940.1	-372.6	940.1	1016.4
30	22.314	22.964	662.5	862.5	662.5	663.9	.0	550.5	.00	39.66	58.41	40.07	1265.0	867.7	-1077.6	-558.5	1077.6	1107.0
50	25.791	25.520	677.6	792.2	677.6	629.9	.0	480.5	.00	37.33	61.45	50.03	1418.0	981.2	-1245.6	-752.0	1245.6	1232.5
70	28.954	28.076	665.4	717.6	665.6	592.0	.0	405.5	.00	34.40	64.53	58.04	1548.8	1120.1	-1398.3	-950.4	1398.3	1355.9
85	31.295	29.993	644.5	683.5	644.5	563.0	.0	387.5	.00	34.56	66.90	62.05	1643.1	1201.3	-1511.4	-1061.0	1511.4	1448.5
90	31.883	30.630	639.0	649.6	639.0	514.5	.0	396.1	.00	37.63	67.46	64.59	1667.1	1199.4	-1539.8	-1083.1	1539.8	1479.2
95	32.499	31.271	635.2	598.2	635.2	446.1	.0	390.2	.00	41.81	67.97	60.14	1693.2	1198.5	-1569.5	-1112.0	1569.5	1510.2

% SPAN	INCS DEGREE	INCH DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P PROFILE	LOSS-P	P02/ P01	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-1.00	5.43	18.54	35.67	48.82	.0107	.4354	.0861	.0179	.0157	1.9261	.9469	.9418	.9098	.5603	.8791	.9655	.6560
10	-.73	5.66	17.86	31.32	43.54	.0136	.4472	.0956	.0201	.0172	1.8863	.9354	.9296	.9002	.5757	.8442	1.0159	.6635
15	-.44	5.36	15.84	27.80	38.10	.0102	.4480	.0913	.0193	.0154	1.8632	.9326	.9267	.9027	.5889	.8194	1.0626	.6817
30	.55	4.50	10.30	18.34	24.12	.0402	.4331	.0829	.0171	.0085	1.7810	.9215	.9148	.9047	.6182	.7446	1.1893	.7491
50	1.94	4.51	7.71	11.42	14.64	.0763	.4108	.1023	.0201	.0049	1.7098	.8809	.8714	.8722	.6303	.6800	1.3288	.8422
70	3.09	4.88	7.52	8.49	9.13	.1070	.3639	.1002	.0179	-.0014	1.6291	.8583	.8480	.8590	.6174	.6147	1.4439	.9594
85	3.55	4.79	7.88	4.05	7.96	.1307	.3524	.1320	.0224	.0004	1.5913	.8011	.7875	.8050	.5980	.5825	1.5203	1.0237
90	3.65	4.72	9.45	2.87	7.59	.1379	.3664	.1818	.0267	.0070	1.5540	.7307	.7133	.7439	.5919	.5499	1.5439	1.0152
95	3.76	4.67	12.17	-.17	7.33	.1485	.3787	.2268	.0317	.0112	1.5054	.6622	.6421	.6724	.5882	.5030	1.5663	1.0077

TO/TO INLET	PO/PO INLET	EFF-AD INLET	EFF-P INLET
		%	%
1.1921	1.7110	86.25	87.27

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	1020.4	822.6	1016.3	691.1	-91.8	40.03	-5.16	19.70	48.02	873.9	1519.5	-294.5	-1129.6	985.6	1037.0
10	21.008	21.961	1041.0	1002.3	806.0	995.8	656.3	-113.4	39.08	-6.50	23.91	49.69	884.0	1539.5	-358.3	-1174.0	1014.6	1060.6
15	21.589	22.432	1017.6	983.9	801.2	974.5	627.4	-134.6	38.06	-7.88	27.37	51.33	903.0	1560.1	-415.2	-1217.9	1042.6	1083.3
30	23.314	23.902	946.1	911.8	775.3	896.6	542.3	-165.9	34.97	-10.48	36.97	55.82	970.5	1595.9	-583.7	-1320.2	1125.9	1154.3
50	25.601	25.893	889.3	860.8	749.2	850.4	479.1	-133.4	32.59	-8.92	45.29	58.43	1049.4	1624.4	-757.3	-1383.9	1236.4	1250.5
70	27.818	27.902	836.5	786.7	729.3	775.2	409.5	-134.1	29.31	-9.82	51.99	62.38	1105.2	1672.3	-934.0	-1481.6	1343.4	1347.5
85	29.408	29.382	826.2	743.5	726.1	735.1	394.3	-111.5	28.51	-8.63	54.71	64.35	1256.9	1697.9	-1026.0	-1530.5	1420.2	1419.0
90	29.914	29.856	806.7	730.8	697.7	723.9	404.8	-100.4	30.13	-7.90	56.14	64.86	1252.3	1703.8	-1039.9	-1542.3	1444.7	1441.9
95	30.382	30.293	775.9	690.7	658.6	680.9	409.2	-115.0	31.87	-9.62	58.10	66.66	1246.5	1710.9	-1050.1	-1578.0	1467.3	1463.0

% SPAN	INCS DEGREE	INCH DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P PROFILE	LOSS-P	P02/ P01	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-2.19	.73	11.23	45.20	55.89	.0026	.2279	.1615	.0400	.0394	.9292	.0000	.0000	-.2042	.9406	.8913	.7692	1.3273
10	-2.30	.64	8.99	45.58	53.66	.0031	.2229	.1301	.0330	.0322	.9456	.0000	.0000	-.3442	.9101	.8754	.7797	1.3446
15	-2.39	.55	7.09	45.93	52.45	.0035	.2266	.1210	.0313	.0304	.9511	.0000	.0000	-.4199	.8876	.8585	.7943	1.3613
30	-3.51	-.51	4.74	45.45	50.66	.0023	.2450	.1279	.0353	.0347	.9538	.0000	.0000	-.4171	.8228	.7925	.8520	1.3870
50	-4.19	-1.05	7.12	41.51	49.58	.0017	.2424	.1053	.0319	.0313	.9657	.0000	.0000	-.3747	.7699	.7452	.9306	1.4063
70	-6.47	-3.23	7.63	39.12	49.88	.0001	.2746	.1349	.0441	.0440	.9601	.0000	.0000	-.0345	.7246	.6792	1.0337	1.4437
85	-3.95	-3.52	11.31	37.13	52.08	.0000	.3142	.1771	.0612	.0612	.9488	.0000	.0000	.2167	.7137	.6375	1.0875	1.4557
90	-1.02	-2.04	13.68	38.03	53.82	.0000	.3167	.1423	.0501	.0501	.9608	.0000	.0000	.3290	.6933	.6236	1.0774	1.4537
95	-1.96	-.48	14.06	41.49	56.07	.0000	.3534	.1502	.0534	.0534	.9616	.0000	.0000	.3755	.6626	.5857	1.0662	1.4575

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WCI/AI LBM/SEC SQFT
11068.	182.61	1.1921	1.6375	78.71	80.16	41.22

WBLEED / WTOTAL	EFF - AD ADJ.	PO/PO LOCAL
.00297	78.43	.9578

TABLE 6.2
BLADE ELEMENT AND OVERALL PERFORMANCE WITH STATOR HUB SLIT SUCTION, 100 PERCENT OF DESIGN SPEED, POINTS 1-8

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	602.9	1009.5	602.9	696.1	.0	731.1	.00	46.40	54.49	17.94	1038.1	731.9	-845.1	-225.3	845.1	956.5
10	18.467	20.408	617.0	969.2	617.0	681.1	.0	689.5	.00	45.35	55.37	23.61	1085.8	743.7	-893.5	-297.8	893.5	987.4
15	19.467	21.047	630.3	931.5	630.3	663.8	.0	653.4	.00	44.54	56.21	28.75	1133.3	758.2	-941.9	-364.9	941.9	1018.3
30	22.314	22.964	661.0	870.4	661.0	649.9	.0	579.1	.00	41.70	58.51	39.30	1265.9	839.8	-1079.6	-532.0	1079.6	1111.1
50	25.791	25.520	678.5	821.0	678.5	630.7	.0	525.6	.00	39.80	61.46	48.33	1420.4	949.3	-1247.8	-709.1	1247.8	1234.7
70	28.954	28.076	667.3	735.4	667.3	581.3	.0	450.4	.00	37.76	64.52	57.33	1551.8	1078.6	-1400.9	-908.0	1400.9	1358.4
85	31.295	29.993	646.7	704.0	646.7	544.0	.0	446.7	.00	39.41	66.87	61.56	1646.5	1142.4	-1514.1	-1004.4	1514.1	1451.1
90	31.883	30.630	641.5	674.7	641.5	499.2	.0	453.6	.00	42.29	67.42	64.11	1670.7	1143.4	-1542.6	-1028.4	1542.6	1481.9
95	32.499	31.271	637.7	635.4	637.7	445.0	.0	453.3	.00	45.56	67.92	67.22	1696.8	1149.6	-1572.4	-1059.6	1572.4	1513.0

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P PROFILE	LOSS-P PO1	PO2/ TOTAL	EFF-P TOTAL	EFF-AD STATIC	EFF-P M-1	M-2	M'-1	M'-2
5	-.88	5.55	17.77	36.55	48.82	.0111	.4593	.0871	.0182	.0159	1.9575	.9476	.9423	.9123	.5589	.8780	.9664	.6365
10	-.60	5.78	17.54	31.76	43.55	.0140	.4685	.0939	.0198	.0168	1.9134	.9379	.9320	.9055	.5740	.8402	1.0165	.6447
15	-.31	5.49	16.31	27.46	38.09	.0188	.4749	.1022	.0215	.0175	1.8720	.9256	.9190	.8961	.5869	.8051	1.0626	.6553
30	.63	4.59	9.54	19.21	24.12	.0409	.4616	.0895	.0187	.0100	1.8295	.9191	.9121	.9019	.6166	.7406	1.1885	.7223
50	1.94	4.52	6.01	13.13	14.64	.0772	.4439	.1081	.0219	.0061	1.7957	.8839	.8741	.8726	.6313	.7012	1.3310	.8108
70	3.08	4.87	6.80	7.19	9.13	.1081	.4015	.1171	.0214	.0014	1.7034	.8492	.8372	.8481	.6191	.6255	1.4477	.9173
85	3.52	4.75	7.39	5.31	7.95	.1319	.4022	.1685	.0290	.0065	1.6697	.7747	.7578	.7764	.6001	.5938	1.5239	.9635
90	3.61	4.68	8.96	3.31	7.59	.1391	.4137	.2107	.0339	.0116	1.6373	.7208	.7008	.7293	.5945	.5656	1.5473	.9583
95	3.71	4.62	11.23	.71	7.32	.1498	.4209	.2444	.0355	.0140	1.5980	.6736	.6514	.6931	.5908	.5297	1.5696	.9583

TO/TO INLET	PO/PO INLET	EFF-AD INLET	EFF-P INLET
1.2085	1.7743	85.32%	86.45%

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	1070.5	911.7	802.7	907.4	708.2	-88.1	41.42	-5.55	19.18	51.18	850.1	1447.6	-279.2	-112.8	987.4	1039.7
10	21.008	21.981	1033.5	878.2	787.5	872.3	669.3	-101.9	40.36	-6.67	23.78	53.16	860.9	1455.0	-347.1	-116.4	1016.4	1062.5
15	21.589	22.432	1000.5	854.6	771.6	847.0	636.8	-113.1	39.53	-7.62	27.83	54.74	873.2	1467.8	-407.8	-119.5	1044.5	1085.3
30	23.314	23.902	948.1	808.5	757.3	798.9	570.4	-123.9	36.99	-8.82	36.36	58.03	940.5	1509.2	-557.6	-128.0	1128.0	1156.4
50	25.601	25.893	909.4	775.6	743.3	769.2	524.0	-99.5	35.18	-7.37	43.86	60.36	1031.3	1555.9	-714.6	-152.2	1238.6	1252.8
70	27.848	27.902	845.1	702.9	712.2	695.7	454.8	-100.6	32.55	-8.23	51.34	64.38	1141.1	1608.8	-891.1	-145.0	1345.9	1350.0
85	29.408	29.382	834.9	655.2	700.1	650.7	454.9	-76.3	33.02	-6.69	54.12	66.52	1194.6	1633.2	-968.0	-149.9	1422.8	1421.6
90	29.914	29.856	817.6	634.6	673.1	631.1	463.9	-66.9	34.58	-6.04	55.61	67.34	1191.8	1637.8	-983.4	-151.4	1447.3	1444.5
95	30.382	30.293	793.5	582.2	642.0	576.4	466.2	-81.8	35.99	-8.12	57.40	69.57	1191.7	1651.5	-1003.8	-154.7	1470.0	1465.6

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P PROFILE	LOSS-P PO1	PO2/ TOTAL	EFF-P TOTAL	EFF-AD STATIC	EFF-P M-1	M-2	M'-1	M'-2
5	-.81	2.11	10.85	46.97	55.89	.0045	.3296	.0772	.0191	.0180	.9665	.0000	.0000	.7944	.9328	.7820	.7460	1.2416
10	-.96	1.98	8.77	47.03	53.87	.0048	.3376	.0691	.0175	.0163	.9715	.0000	.0000	.8384	.8944	.7526	.7551	1.2468
15	-.92	2.03	7.40	47.14	52.51	.0053	.3393	.0498	.0129	.0115	.9805	.0000	.0000	.8695	.8678	.7314	.7667	1.2562
30	-1.48	-1.53	-6.40	45.80	50.67	.0056	.3513	.0497	.0138	.0122	.9821	.0000	.0000	.8546	.8206	.6900	.8241	1.2881
50	-1.59	1.55	8.67	42.55	49.58	.0068	.3563	.0490	.0149	.0128	.9836	.0000	.0000	.8757	.7800	.6593	.8978	1.3225
70	-3.27	-.03	-9.22	40.78	49.87	.0022	.3857	.0469	.0154	.0147	.9861	.0000	.0000	.8965	.7240	.5961	.9906	1.3642
85	.81	1.19	13.29	39.70	52.11	.0017	.4377	.1036	.0360	.0354	.9701	.0000	.0000	.7474	.7106	.5497	1.0206	1.3702
90	-2.89	-2.58	-15.45	40.63	53.72	.0022	.4547	.0901	.0319	.0311	.9751	.0000	.0000	.7875	.6929	.5298	1.0130	1.3672
95	2.09	3.72	15.57	44.11	56.06	.0020	.5156	.1264	.0451	.0444	.9670	.0000	.0000	.7575	.6697	.4832	1.0089	1.3706

WCORR INLET	WCORR INLET	TO/TO INLET	PO/PO INLET	EFF-AD INLET	EFF-P INLET	WCI/A1 LBM/SEC-SQFT
RPM	LBM/SEC					
11088.	182.36	1.2084	1.7417	82.36%	83.68%	41.16

WBLEED / WTOTAL	EFF - AD ADJ.
.00418	81.96

PO/PO LOCAL
.9821

TABLE 6.3

BLADE ELEMENT AND OVERALL PERFORMANCE WITH STATOR HUB SLIT

SUCTION, 100 PERCENT OF DESIGN SPEED, POINTS 1-8

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	601.0	1026.5	601.0	713.7	.0	737.8	.00	45.95	54.53	16.91	1035.8	746.1	-843.6	-217.0	843.6	954.8
10	18.467	20.408	615.2	983.6	615.2	697.9	.0	693.1	.00	44.80	55.40	22.74	1083.5	757.2	-891.9	-292.5	891.9	985.6
15	19.467	21.047	628.4	940.6	628.4	675.3	.0	654.7	.00	44.10	56.24	28.14	1130.9	767.1	-940.2	-361.8	940.2	1016.5
30	22.314	22.964	657.6	865.0	657.6	644.5	.0	576.9	.00	41.83	58.60	39.53	1262.5	835.9	-1077.7	-532.2	1077.7	1109.1
50	25.791	25.520	672.4	820.4	672.4	631.5	.0	523.6	.00	39.66	61.63	48.27	1415.6	950.0	-1245.6	-709.0	1245.6	1232.5
70	23.954	28.076	659.5	725.7	659.5	573.2	.0	445.1	.00	37.82	64.74	57.78	1546.2	1076.6	-1398.4	-910.9	1398.4	1356.0
85	31.295	29.993	638.8	704.0	638.8	539.4	.0	452.1	.00	39.99	67.09	61.57	1640.9	1133.3	-1511.4	-996.5	1511.4	1448.6
90	31.883	30.630	633.8	675.4	633.8	493.8	.0	460.5	.00	43.03	67.53	64.14	1665.2	1132.8	-1539.8	-1018.8	1539.8	1479.3
95	32.499	31.271	639.1	642.2	639.1	445.6	.0	462.3	.00	46.08	68.13	66.96	1691.3	1139.0	-1569.6	-1048.0	1569.6	1510.3

% SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-.83	5.69	16.75	37.62	48.82	.0110	.4459	.0532	.0112	.0089	1.9947	.9677	.9643	.9445	.5575	.8943	.9655	.6500
10	-.55	5.80	16.67	32.66	43.55	.0139	.4557	.0641	.0130	.0106	1.9435	.9575	.9534	.9335	.5730	.8542	1.0167	.6576
15	-.24	5.49	15.67	28.10	33.06	.0185	.4662	.0834	.0177	.0137	1.8898	.9394	.9340	.9137	.5857	.8140	1.0634	.6638
30	.76	4.69	9.78	19.06	24.13	.0405	.4628	.0955	.0198	.0113	1.8173	.9136	.9062	.8954	.6134	.7438	1.1881	.7188
50	2.16	4.72	5.98	13.37	14.67	.0766	.4411	.1110	.0225	.0067	1.7865	.8808	.8708	.8679	.6249	.7010	1.3279	.8118
70	3.32	5.10	7.27	6.95	9.13	.1074	.3995	.1251	.0225	.0029	1.6801	.8375	.8250	.8364	.6110	.6173	1.4427	.9158
85	3.74	4.97	7.42	5.51	7.97	.1310	.4069	.1849	.0318	.0094	1.6557	.7548	.7368	.7544	.5921	.5932	1.5179	.9549
90	3.92	4.89	9.00	3.49	7.60	.1381	.4198	.2282	.0367	.0145	1.5241	.7005	.6794	.7071	.5867	.5655	1.5412	.9481
95	3.92	4.83	10.99	1.16	7.33	.1488	.4272	.2605	.0383	.0106	1.5916	.6566	.6334	.6727	.5833	.5348	1.5633	.9485

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.2084	1.7699	84.97	86.12

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	1087.6	932.9	819.9	927.8	714.6	-97.4	41.08	-5.99	18.29	50.74	863.7	1466.2	-271.1	-1135.3	985.7	1037.8
10	21.008	21.961	1047.9	895.7	803.3	880.8	672.9	-110.4	39.94	-7.09	23.04	52.80	873.4	1470.3	-341.8	-1171.1	1014.6	1060.6
15	21.539	22.432	1009.6	867.4	782.3	859.0	638.1	-120.6	39.20	-8.00	27.32	54.49	881.4	1479.3	-404.0	-1204.0	1042.7	1083.4
30	23.314	23.902	943.2	812.0	752.8	803.1	568.2	-120.2	37.04	-8.51	36.53	57.78	937.0	1506.5	-557.8	-1274.6	1126.0	1154.4
50	25.611	25.893	908.6	776.4	743.6	772.0	522.1	-82.5	35.07	-6.11	43.83	59.91	1031.5	1540.7	-714.3	-1333.0	1236.4	1250.5
70	27.818	27.902	835.3	691.0	704.0	681.7	449.6	-112.7	32.55	-9.39	51.75	64.97	1138.2	1611.6	-893.9	-1460.2	1343.5	1347.6
85	29.418	29.382	833.1	652.1	694.4	647.3	460.3	-78.3	33.54	-6.88	54.12	66.62	1184.9	1631.3	-960.6	-1497.3	1420.3	1419.1
90	29.914	29.856	816.2	630.8	666.5	627.8	470.9	-61.6	35.25	-5.60	55.61	67.34	1180.2	1629.4	-973.8	-1503.6	1444.7	1441.9
95	30.332	30.293	796.4	588.0	639.0	584.7	475.3	-61.7	36.65	-6.03	57.21	69.02	1180.2	1633.1	-992.1	-1524.7	1467.4	1463.1

% SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-1.18	1.74	10.40	47.07	55.89	.0047	.3243	.0975	.0241	.0230	.9566	.0000	.0000	.7330	.9582	.8018	.7595	1.2602
10	-1.36	1.57	8.35	47.03	53.86	.0047	.3330	.0910	.0230	.0218	.9617	.0000	.0000	.7727	.9685	.7690	.7662	1.2624
15	-1.21	1.74	7.02	47.20	52.52	.0050	.3347	.0675	.0175	.0162	.9732	.0000	.0000	.8150	.8762	.7436	.7730	1.2681
30	-1.44	1.56	6.71	45.55	50.67	.0056	.3423	.0450	.0125	.0110	.9840	.0000	.0000	.8611	.8170	.6937	.8209	1.2870
50	-1.68	1.46	9.93	41.18	49.59	.0065	.3485	.0533	.0162	.0143	.9822	.0000	.0000	.8616	.7791	.6604	.8973	1.3104
70	-3.27	-.03	8.06	41.94	49.87	.0020	.3956	.0512	.0167	.0161	.9851	.0000	.0000	.8901	.7154	.5860	.9877	1.3666
85	1.27	1.70	13.09	40.43	52.11	.0023	.4433	.1049	.0364	.0356	.9699	.0000	.0000	.7468	.7087	.5465	1.0109	1.3670
90	3.56	3.23	15.90	40.85	53.73	.0331	.4592	.0937	.0331	.0320	.9742	.0000	.0000	.7833	.6912	.5258	1.0016	1.3581
95	2.76	4.35	17.65	42.68	56.06	.0030	.5052	.1215	.0436	.0425	.9661	.0000	.0000	.7632	.6720	.4874	.9979	1.3537

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT
11069.	181.47	1.2083	1.7338	81.68	83.04	40.96

WBLEED/WTOTAL	EFF - AD ADJ.
.00397	81.68

PO/PO LOCAL
.9804

TABLE 6.4
BLADE ELEMENT AND OVERALL PERFORMANCE WITH STATOR HUB SLIT SUCTION, 100 PERCENT OF DESIGN SPEED, POINTS 1-8

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	596.6	1018.5	596.6	691.8	.0	747.5	.00	47.21	54.76	16.76	1034.0	722.7	-844.5	-298.3	844.5	955.8
10	18.467	20.408	610.9	979.3	610.9	681.3	.0	703.5	.00	45.92	55.62	22.57	1081.8	738.2	-892.9	-283.2	892.9	986.7
15	19.467	21.47	624.0	933.3	624.0	654.3	.0	665.5	.00	45.48	56.46	28.26	1129.3	744.1	-941.2	-352.1	941.2	1017.6
30	22.314	22.964	651.6	844.3	651.6	597.6	.0	596.4	.00	44.94	58.86	40.69	1260.4	788.2	-1078.9	-513.9	1078.9	1110.3
50	25.791	25.520	665.3	825.0	665.3	602.0	.0	564.1	.00	43.14	61.91	48.03	1413.4	900.8	-1247.0	-669.8	1247.0	1233.9
70	28.954	28.076	653.9	742.1	653.9	554.2	.0	493.6	.00	41.68	64.95	57.27	1545.2	1026.8	-1399.9	-863.9	1399.9	1357.4
85	31.295	29.993	634.3	724.0	634.3	519.6	.0	504.1	.00	44.14	67.25	61.23	1640.7	1079.4	-1513.1	-946.1	1513.1	1450.1
90	31.833	30.830	629.3	705.4	629.3	481.0	.0	515.6	.00	47.01	67.79	63.52	1665.0	1078.8	-1541.5	-965.3	1541.3	1480.9
95	32.499	31.271	625.3	681.0	625.3	440.6	.0	519.1	.00	49.69	68.30	66.06	1691.1	1086.4	-1571.3	-992.9	1571.3	1511.9

% SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	P02/ P01	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-.61	5.82	16.59	38.00	48.82	.0116	.4698	-.0012	-.0002	-.0027	2.0581	.9987	.9986	.9994	.5529	.8850	.9625	.6279
10	-.34	6.03	16.51	33.08	43.55	.0145	.4748	.0052	.0011	.0020	2.0148	.9956	.9944	.9932	.5685	.8485	1.0141	.6396
15	-.2	5.71	15.81	28.19	38.08	.0191	.4883	.0353	.0075	.0034	1.9551	.9739	.9714	.9638	.5812	.8055	1.0611	.6421
30	1.02	4.96	10.92	18.17	24.12	.0413	.5040	.0916	.0187	.0101	1.8600	.9198	.9128	.9062	.6071	.7217	1.1840	.6738
50	2.39	4.97	5.71	13.88	14.64	.0774	.4837	.1106	.0220	.0066	1.8729	.8891	.8791	.8772	.6181	.7002	1.3217	.7646
70	3.50	5.30	6.76	7.68	9.14	.1082	.4418	.1259	.0230	.0031	1.7864	.8511	.8387	.8476	.6059	.6265	1.4382	.8667
85	3.89	5.14	7.04	6.03	7.94	.1320	.4510	.1874	.0327	.0099	1.7708	.7745	.7557	.7701	.5881	.6048	1.5152	.9017
90	3.98	5.06	8.36	4.27	7.58	.1391	.4640	.2252	.0375	.0148	1.7503	.7295	.7074	.7284	.5827	.5856	1.5388	.8955
95	4.18	5.00	10.07	2.24	7.31	.1498	.4707	.2578	.0593	.0167	1.7261	.6941	.6698	.6986	.5787	.5624	1.5616	.8972

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.2232	1.8542	86.37	87.49

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	20.489	21.489	1069.8	857.9	787.6	854.7	724.0	-74.2	42.59	-4.96	18.45	52.43	830.4	1403.5	-262.7	-1113.2	986.8	1039.0
10	21.038	21.961	1032.4	818.1	774.4	811.7	682.7	-101.1	41.40	-7.12	23.27	55.08	843.3	1418.4	-333.3	-1102.9	1015.7	1061.8
15	21.569	22.432	990.7	789.0	746.8	780.9	646.6	-112.5	40.90	-8.20	27.81	56.88	847.5	1429.4	-395.2	-1197.0	1043.8	1084.6
30	23.314	23.932	911.8	737.7	697.3	731.2	587.4	-98.1	40.11	-7.64	37.74	59.75	881.9	1451.4	-539.8	-1253.8	1127.2	1155.6
50	25.691	25.893	901.0	730.8	704.0	728.2	562.2	-61.6	38.61	-4.85	43.30	60.99	975.9	1502.0	-675.5	-1313.5	1237.8	1251.9
70	27.618	27.902	838.8	661.0	674.8	653.5	496.1	-98.8	36.43	-8.61	51.42	65.70	1083.1	1588.6	-846.8	-1447.8	1345.0	1349.0
85	29.418	29.382	839.3	631.0	663.7	629.1	513.7	-48.6	37.74	-4.41	53.84	66.82	1124.8	1598.2	-908.1	-1469.2	1421.9	1420.6
90	29.914	29.856	830.4	615.7	640.9	614.9	527.0	-31.0	39.48	-2.88	55.10	67.36	1120.1	1597.6	-918.5	-1474.5	1446.3	1445.5
95	30.342	30.293	817.1	580.9	618.6	580.0	533.8	-33.7	40.79	-3.34	56.51	68.84	1121.3	1606.8	-935.2	-1498.4	1468.9	1464.6

% SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	P02/ P01	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	.36	3.23	11.44	47.56	55.89	.0068	.3793	.1306	.0324	.0307	.9435	.0000	.0000	.7264	.9301	.7291	.7270	1.1928
10	.12	3.05	8.32	48.51	53.86	.0069	.3981	.1378	.0349	.0331	.9435	.0000	.0000	.7314	.8917	.6946	.7365	1.2042
15	.57	3.51	6.81	49.09	52.50	.0078	.4017	.1116	.0289	.0269	.9571	.0000	.0000	.7068	.8562	.6689	.7380	1.2117
30	1.66	4.67	7.57	47.76	50.66	.0118	.4001	.0503	.0140	.0107	.9832	.0000	.0000	.8736	.7857	.6229	.7645	1.2256
50	1.89	5.03	11.19	43.46	49.58	.0173	.4000	.0619	.0189	.0136	.9798	.0000	.0000	.8602	.7689	.6140	.8399	1.2620
70	.69	3.93	8.84	45.04	49.88	.0102	.4476	.0561	.0184	.0150	.9838	.0000	.0000	.8813	.7137	.5536	.9286	1.3305
85	5.41	5.80	15.54	42.15	52.08	.0127	.4625	.1037	.0361	.0317	.9704	.0000	.0000	.7795	.7387	.5224	.9505	1.3230
90	7.57	7.39	18.69	42.36	53.79	.0156	.4978	.1030	.0366	.0310	.9714	.0000	.0000	.7920	.6976	.5069	.9415	1.3152
95	6.93	8.46	20.34	44.13	56.06	.0160	.5399	.1322	.0476	.0418	.9645	.0000	.0000	.7663	.6836	.4758	.9391	1.3158

NCORR RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT
11081.	180.69	1.2232	1.8046	82.26	83.66	89.79

WBLEED / WTOTAL	EFF - AD ADJ.
.00458	81.86

PO/PO LOCAL
.9742

TABLE 6.5
BLADE ELEMENT AND OVERALL PERFORMANCE WITH STATOR HUB SLIT SUCTION, 100 PERCENT OF DESIGN SPEED, POINTS 1-8

Rotor

%SPAN	DIA-1 IN	DIA-2 IN	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VU-1 FT/SEC	VU-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	VU'-1 FT/SEC	VU'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.769	592.3	1003.3	592.3	653.0	.0	761.7	.00	49.39	54.92	16.46	1030.6	681.1	-843.4	-192.9	843.4	954.6
10	18.467	20.408	606.3	969.9	606.3	651.1	.0	718.9	.00	47.83	55.78	22.27	1078.3	703.9	-891.7	-266.6	891.7	985.4
15	19.467	21.047	619.3	924.5	619.3	622.2	.0	683.7	.00	47.70	56.62	28.11	1125.7	706.4	-940.0	-332.6	940.0	1016.3
30	22.314	22.964	646.2	840.2	646.2	567.1	.0	620.0	.00	47.55	59.03	40.76	1256.5	748.9	-1077.5	-488.9	1077.5	1108.9
50	25.791	25.520	661.2	820.6	661.2	566.6	.0	593.5	.00	46.33	62.03	48.42	1410.1	853.9	-1245.4	-638.7	1245.4	1232.3
70	28.958	28.076	653.8	768.6	653.8	547.5	.0	539.4	.00	44.57	64.92	56.10	1543.6	983.3	-1398.1	-816.3	1398.1	1355.7
85	31.295	29.993	635.8	757.2	635.8	518.8	.0	551.4	.00	46.74	67.18	59.95	1639.5	1036.1	-1511.1	-896.8	1511.1	1448.3
90	31.883	30.650	630.6	739.1	630.6	478.9	.0	562.6	.00	49.62	67.73	62.41	1663.7	1034.3	-1539.5	-916.4	1539.5	1479.0
95	32.490	31.271	626.0	714.0	626.0	436.2	.0	565.2	.00	52.36	68.25	65.21	1689.6	1040.8	-1569.3	-944.8	1569.3	1510.0

%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	P02/ P01	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-.45	5.98	16.29	38.46	48.82	.0118	.5117	-.0027	-.0006	-.0031	2.0831	.9996	.9996	1.0006	.5483	.8681	.9578	.5893
10	-.19	6.20	16.20	33.52	43.54	.0147	.5084	-.0100	-.0021	-.0053	2.0548	1.0042	1.0047	1.0074	.5634	.8374	1.0082	.6077
15	.12	5.92	15.66	28.52	38.09	.0192	.5241	.0243	.0052	.0010	1.9976	.9820	.9801	.9757	.5758	.7948	1.0545	.6073
30	1.15	5.13	11.05	18.28	24.18	.0411	.5388	.0812	.0166	.0080	1.9158	.9315	.9250	.9205	.6010	.7153	1.1753	.6376
50	2.43	5.05	6.06	13.61	14.62	.0769	.5222	.1084	.0220	.0063	1.9379	.8963	.8861	.8863	.6141	.6926	1.3121	.7207
70	3.42	5.26	5.59	8.82	9.16	.1073	.4794	.1172	.0221	.0019	1.9029	.8721	.8600	.8664	.6067	.6450	1.4317	.8252
85	3.81	5.07	5.72	7.23	7.90	.1310	.4873	.1749	.0317	.0084	1.9040	.8061	.7878	.7980	.5901	.6288	1.5119	.8604
90	3.91	5.00	7.24	5.31	7.56	.1381	.5006	.2152	.0368	.0134	1.8844	.7646	.7428	.7585	.5843	.6100	1.5362	.8535
95	4.03	4.95	9.21	3.04	7.30	.1488	.5073	.2449	.0366	.0155	1.8587	.7316	.7073	.7298	.5796	.5862	1.5596	.8544

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.2367	1.9350	87.60	88.71

Stator

%SPAN	DIA-1 IN	DIA-2 IN	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VU-1 FT/SEC	VU-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	VU'-1 FT/SEC	VU'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	20.409	21.489	1046.6	777.5	742.4	775.2	737.8	-58.6	44.82	-4.32	18.45	54.73	782.8	1342.6	-247.7	-1096.2	985.5	1037.6
10	21.008	21.961	1014.3	739.4	736.3	732.5	697.6	-98.7	43.45	-7.71	23.28	57.70	801.9	1371.5	-316.8	-1159.2	1014.4	1060.4
15	21.589	22.432	973.1	713.5	709.0	703.9	666.4	-116.7	43.22	-9.41	27.93	59.60	803.3	1391.2	-376.1	-1199.9	1042.5	1083.2
30	23.314	23.902	898.7	677.4	659.5	672.0	610.6	-85.4	42.80	-7.24	37.99	61.54	836.9	1410.0	-515.2	-1239.6	1125.8	1154.2
50	25.601	25.893	890.2	692.4	664.8	689.6	592.0	-61.8	41.69	-5.12	44.10	62.27	925.7	1482.3	-644.2	-1312.1	1236.2	1250.3
70	27.818	27.902	857.5	656.5	662.4	653.0	544.4	-84.6	39.41	-7.38	50.30	65.48	1038.0	1573.9	-798.8	-1431.9	1343.3	1347.3
85	29.408	29.382	865.3	640.9	657.4	638.2	562.6	-48.4	40.55	-4.34	52.52	66.49	1080.5	1600.0	-857.5	-1467.2	1420.0	1418.8
90	29.914	29.856	856.9	624.1	634.0	623.2	576.3	-33.8	42.28	-3.09	53.86	67.10	1075.1	1601.6	-868.2	-1475.4	1444.5	1441.7
95	30.382	30.293	843.2	590.1	610.7	588.2	581.4	-45.9	43.60	-4.49	55.41	68.70	1075.9	1619.4	-885.7	-1508.7	1467.1	1462.8

%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	P02/ P01	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	2.59	5.51	12.08	49.14	55.89	.0113	.4422	.1588	.0394	.0366	.9339	.0000	.0000	.7262	.9053	.6534	.6820	1.1285
10	2.23	5.16	7.73	51.16	53.86	.0112	.4681	.1772	.0448	.0420	.9296	.0000	.0000	.7110	.8728	.6209	.6962	1.1518
15	2.89	5.83	5.55	52.63	52.45	.0135	.4744	.1497	.0386	.0352	.9444	.0000	.0000	.7425	.8385	.5985	.6956	1.1669
30	4.37	7.37	7.97	50.04	50.66	.0214	.4617	.0789	.0220	.0160	.9744	.0000	.0000	.8485	.7699	.5667	.7187	1.1796
50	5.03	8.16	10.89	46.81	49.55	.0321	.4462	.0617	.0188	.0090	.9805	.0000	.0000	.8677	.7575	.5765	.7888	1.2342
70	3.72	6.96	10.10	46.80	49.91	.0242	.4749	.0649	.0213	.0134	.9808	.0000	.0000	.8648	.7265	.5467	.8817	1.3065
85	8.23	8.48	15.56	44.89	52.52	.0281	.5073	.1150	.0401	.0303	.9659	.0000	.0000	.7787	.7272	.5255	.9083	1.3138
90	10.22	10.13	18.52	45.37	53.83	.0329	.5249	.1200	.0426	.0309	.9653	.0000	.0000	.7774	.7157	.5096	.8981	1.3076
95	9.76	11.25	19.19	48.09	56.06	.0336	.5669	.1479	.0532	.0411	.9586	.0000	.0000	.7505	.7011	.4793	.8953	1.3153

NCORR INLET PPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT
11067.	179.58	1.2367	1.8711	82.74	84.19	40.54

WBLEED / WTOTAL	EFF - AD ADJ.	PO/PO LOCAL
.00564	82.25	.9677

TABLE 6.6
BLADE ELEMENT AND OVERALL PERFORMANCE WITH STATOR HUB SLIT
SUCTION, 100 PERCENT OF DESIGN SPEED, POINTS 1-8

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	576.5	1000.6	576.5	632.5	.0	775.4	.00	50.80	55.64	15.80	1021.5	657.5	-843.3	-179.0	843.3	954.4
10	18.467	20.408	590.1	973.6	590.1	638.7	.0	734.8	.00	49.00	56.49	21.41	1069.2	686.1	-891.5	-250.5	891.5	985.2
15	19.467	21.047	602.6	929.2	602.6	609.2	.0	701.6	.00	49.04	57.33	27.31	1116.4	686.4	-939.8	-314.5	939.8	1016.1
30	22.314	22.964	627.6	835.3	627.6	528.1	.0	647.2	.00	50.79	59.76	41.13	1246.8	701.8	-1077.3	-461.5	1077.3	1108.6
50	25.791	25.520	641.2	811.6	641.2	525.4	.0	618.6	.00	49.66	62.74	49.38	1400.6	807.9	-1245.1	-613.4	1245.1	1232.0
70	28.954	28.076	637.4	783.1	637.4	527.8	.0	578.4	.00	47.62	65.47	55.76	1536.4	939.6	-1377.8	-777.0	1377.8	1355.4
85	31.295	29.993	622.3	793.7	622.3	520.5	.0	599.1	.00	49.02	67.61	58.48	1634.0	995.8	-1510.8	-848.9	1510.8	1448.0
90	31.883	30.630	617.1	781.5	617.1	483.8	.0	613.2	.00	51.75	68.15	60.80	1658.3	991.9	-1539.2	-865.5	1539.2	1478.7
95	32.499	31.271	612.1	756.4	612.1	435.2	.0	618.4	.00	54.89	68.69	63.97	1684.1	992.1	-1569.0	-891.3	1569.0	1509.7

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	SHOCK	DIFAC	OMEGA-B TOTAL	OMEGA-B PROFILE	LOSS-P TOTAL	LOSS-P PROFILE	P02/ P01	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	.25	6.68	15.63	39.84	48.82	.0134	.5335	.0118	.0025	.0053	2.1153	1.0094	1.0048	1.0085	.6323	.8638	.9460	.5676
10	.50	6.93	15.35	35.08	43.55	.0165	.5244	.0301	.0065	.0100	2.1017	1.0156	1.0174	1.0252	.5469	.8391	.9959	.5913
15	.81	6.65	14.86	30.02	38.10	.0207	.5422	.0073	.0016	.0029	2.0472	.9935	.9928	.9913	.5588	.7973	1.0420	.5889
30	1.86	5.87	11.52	18.63	24.27	.0424	.5790	.0983	.0200	.0112	1.9509	.9213	.9134	.9081	.5819	.7077	1.1614	.5946
50	3.10	5.78	7.06	13.36	14.65	.0779	.5572	.1205	.0239	.0085	1.9770	.8899	.8786	.8786	.5939	.6814	1.2949	.6783
70	3.93	6.82	5.23	9.71	9.14	.1078	.5140	.1233	.0235	.0031	1.9870	.8740	.8612	.8653	.5908	.6534	1.4163	.7832
85	4.24	5.53	4.20	9.13	7.85	.1315	.5208	.1719	.0326	.0081	2.0301	.8236	.8050	.8093	.5776	.6555	1.5006	.8224
90	4.32	5.43	5.59	7.35	7.53	.1387	.5358	.2119	.0382	.0137	2.0195	.7861	.7638	.7717	.5716	.6413	1.5265	.8139
95	4.45	5.38	7.94	4.72	7.28	.1494	.5463	.2458	.0406	.0164	1.9929	.7518	.7265	.7405	.5662	.6169	1.5512	.8092

TO/TO INLET	PO/PO INLET	EFF-AD INLET	EFF-P INLET
1.2509	2.0026	87.51	88.68

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	1036.0	726.8	713.6	725.6	751.1	-42.1	46.46	-3.32	18.17	54.09	751.2	1300.8	-234.2	-1079.6	985.3	1037.4
10	21.008	21.961	1009.3	692.4	714.3	685.9	713.0	-91.9	44.95	-7.67	22.86	59.22	775.4	1341.1	-301.2	-1152.1	1014.2	1060.2
15	21.589	22.432	968.6	668.1	685.8	657.4	684.0	-119.1	44.93	-10.27	27.59	61.32	774.4	1370.2	-358.3	-1202.1	1042.3	1083.0
30	23.314	23.902	885.2	629.5	614.2	624.7	637.5	-77.0	46.07	-7.02	38.47	63.09	784.7	1380.4	-488.0	-1230.9	1125.5	1153.9
50	25.601	25.893	874.7	646.1	619.6	643.0	617.5	-62.3	44.90	-5.53	44.93	63.89	875.6	1461.4	-618.5	-1312.3	1235.9	1250.0
70	27.818	27.902	865.4	645.5	638.0	641.2	584.7	-75.0	42.51	-6.67	49.90	65.72	991.1	1559.9	-758.2	-1422.0	1343.0	1347.0
85	29.408	29.382	894.7	655.3	651.8	653.6	612.9	-46.2	43.24	-4.05	51.07	65.95	1037.2	1603.9	-806.8	-1464.7	1419.7	1418.5
90	29.914	29.856	890.9	647.2	630.3	646.5	629.4	-28.1	44.96	-2.48	52.28	66.25	1030.2	1605.4	-814.8	-1469.5	1444.2	1441.4
95	30.382	30.293	877.5	622.9	604.1	622.1	636.3	-30.6	46.49	-2.83	53.96	67.38	1027.0	1617.6	-830.4	-1493.1	1466.8	1462.5

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	SHOCK	DIFAC	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	4.22	7.15	13.08	49.79	55.90	.0159	.4845	.1766	.0439	.0399	.9279	.0000	.0000	.7268	.8924	.6066	.6530	1.0855
10	3.74	6.68	7.77	52.62	53.87	.0158	.5140	.2034	.0514	.0474	.9202	.0000	.0000	.6994	.8660	.5775	.6712	1.1106
15	4.63	7.58	4.65	55.20	52.41	.0197	.5241	.1782	.0459	.0408	.9346	.0000	.0000	.7245	.8320	.5566	.6675	1.1414
30	7.60	10.60	0.20	53.09	50.66	.0391	.5132	.0992	.0277	.0168	.9688	.0000	.0000	.8325	.7551	.5222	.6688	1.1451
50	8.23	11.36	10.49	50.43	49.55	.0537	.4984	.0894	.0273	.0109	.9720	.0000	.0000	.8386	.7400	.5335	.7391	1.2068
70	6.89	10.09	10.83	49.18	49.93	.0450	.5065	.0973	.0320	.0172	.9710	.0000	.0000	.8174	.7288	.5314	.8338	1.2842
85	10.67	11.11	15.84	47.29	52.00	.0497	.5253	.1517	.0529	.0356	.9530	.0000	.0000	.7293	.7472	.5339	.8662	1.3069
90	12.74	12.71	19.16	47.44	53.86	.0570	.5360	.1556	.0552	.0350	.9526	.0000	.0000	.7264	.7401	.5244	.8558	1.3006
95	12.72	14.10	20.85	49.33	56.06	.0604	.5646	.1692	.0610	.0392	.9501	.0000	.0000	.7114	.7254	.5021	.8488	1.3037

NCORR RPM	WCORR LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET	EFF-P INLET	WC1/A1 LBM/SEC-SQFT	WBLEED/WTOTAL	EFF - AD ADJ.	PO/PO LOCAL
11064.	177.17	1.2505	1.9197	81.66	83.26	39.99	.00599	81.17	.9592

TABLE 6.7
BLADE ELEMENT AND OVERALL PERFORMANCE WITH STATOR HUB SLIT
SUCTION, 100 PERCENT OF DESIGN SPEED, POINTS 1-8

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	568.6	1005.4	568.6	636.0	.0	778.6	.00	50.75	56.04	15.56	1018.1	660.5	-844.5	-177.1	844.5	955.7
10	18.467	20.408	582.0	977.0	582.0	639.6	.0	738.5	.00	49.11	56.90	21.20	1065.8	686.1	-892.8	-248.1	892.8	986.6
15	19.467	21.047	594.2	935.4	594.2	614.5	.0	705.2	.00	48.94	57.73	26.95	1113.0	690.1	-941.1	-312.3	941.1	1017.5
30	22.314	22.964	618.4	838.7	618.4	527.6	.0	652.0	.00	51.02	60.16	40.97	1243.5	699.2	-1070.8	-458.2	1070.8	1110.2
50	25.791	25.520	630.5	818.3	630.5	530.0	.0	623.5	.00	49.63	63.17	49.00	1397.3	808.5	-1246.9	-610.3	1246.9	1233.8
70	28.954	28.076	624.5	782.5	624.5	521.5	.0	583.5	.00	48.21	65.94	55.98	1532.9	933.5	-1399.8	-773.9	1399.8	1357.4
85	31.295	29.993	608.7	793.2	608.7	507.4	.0	609.7	.00	50.23	68.08	58.87	1630.9	981.7	-1513.0	-840.4	1513.0	1450.0
90	31.883	30.630	603.7	781.7	603.7	470.0	.0	624.1	.00	53.04	68.61	61.26	1665.4	977.5	-1541.4	-856.7	1541.4	1480.8
95	32.499	31.271	599.1	758.5	599.1	424.0	.0	628.8	.00	56.02	69.13	64.35	1681.5	979.9	-1571.2	-883.1	1571.2	1511.8

% SPAN	INCS DEGREE	INCH DEGREE	DEV DEGREE	TURN DEGREE	AMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	P02/ P01	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	.66	7.09	15.39	40.48	48.82	.0145	.5293	-.0044	-.0009	-.0040	2.1170	1.0004	1.0005	1.0021	.5248	.8680	.9426	.5702
10	.91	7.33	15.13	35.70	43.54	.0177	.5237	-.0185	-.0040	-.0078	2.1009	1.0088	1.0098	1.0149	.5390	.8419	.9927	.5912
15	1.22	7.04	14.50	30.78	38.09	.0218	.5382	.0124	.0027	-.0021	2.0511	.9903	.9867	.9807	.5507	.8027	1.0391	.5922
30	2.28	6.27	11.29	19.20	24.21	.0437	.5811	.1109	.0226	-.0135	1.9486	.9123	.9036	.8962	.5732	.7102	1.1594	.5920
50	3.55	6.20	6.67	14.17	14.64	.0794	.5568	.1288	.0258	-.0099	1.9786	.8835	.8717	.8693	.5834	.6869	1.2932	.6786
70	4.42	6.28	5.47	9.96	9.16	.1095	.5179	.1400	.0265	-.0059	1.9748	.8584	.8441	.8468	.5779	.6522	1.4138	.7779
85	4.71	5.99	4.62	9.21	7.88	.1333	.5307	.1960	.0367	.0122	2.0149	.8014	.7807	.7834	.5639	.6537	1.4971	.8090
90	4.79	5.89	6.06	7.35	7.54	.1405	.5459	.2352	.0418	.0172	2.0051	.7652	.7409	.7472	.5582	.6400	1.5227	.8003
95	4.90	5.83	8.33	4.78	7.29	.1513	.5551	.2662	.0433	.0192	1.9817	.7339	.7071	.7189	.5533	.6174	1.5471	.7976

TO/TO INLET	P0/P0 INLET	EFF-AD INLET %	EFF-P INLET %
1.2529	1.9975	86.29	87.56

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	21.409	1040.2	733.9	716.4	732.6	754.2	-43.2	46.47	-3.37	17.98	55.90	753.4	1306.7	-232.5	-1082.1	986.7	1038.9
10	21.008	21.961	1012.4	698.5	715.1	691.7	716.7	-94.1	45.06	-7.79	22.69	59.08	775.2	1347.3	-299.0	-1155.8	1015.6	1061.7
15	21.589	22.432	974.0	673.7	689.9	662.8	687.5	-121.0	44.91	-10.35	27.32	61.20	777.1	1375.8	-356.2	-1205.5	1043.7	1084.5
30	23.314	23.902	887.7	633.0	612.8	628.0	642.3	-79.4	46.35	-7.20	38.35	63.05	781.5	1385.5	-484.9	-1235.0	1127.1	1155.6
50	25.601	25.893	879.4	650.3	621.5	647.3	622.2	-62.4	45.03	-5.51	44.72	63.78	874.7	1464.9	-615.5	-1314.2	1237.7	1251.8
70	27.818	27.902	862.2	636.9	629.1	632.5	589.6	-75.0	43.14	-6.76	50.18	64.04	983.1	1558.1	-755.3	-1423.9	1344.9	1348.9
85	29.408	29.382	890.5	644.3	636.0	642.2	623.3	-51.7	44.42	-4.60	51.46	66.43	1020.8	1606.2	-798.5	-1472.2	1421.7	1420.5
90	29.914	29.856	887.0	635.2	613.7	634.2	640.2	-34.5	46.21	-3.11	52.72	66.77	1013.2	1608.3	-806.1	-1477.9	1446.2	1443.4
95	30.382	30.293	874.6	610.3	589.5	609.7	646.9	-28.8	47.71	-2.71	54.40	67.79	1011.0	1613.1	-821.9	-1493.3	1468.8	1464.5

% SPAN	INCS DEGREE	INCH DEGREE	DEV DEGREE	TURN DEGREE	AMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	P02/ P01	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	4.24	7.17	13.03	49.84	55.90	.0162	.4808	.1763	.0438	.0398	.9276	.0000	.0000	.7248	.8958	.6126	.6545	1.0907
10	3.81	6.75	7.65	52.85	53.87	.0164	.5110	.2024	.0512	.0470	.9202	.0000	.0000	.6988	.8690	.5826	.6719	1.1237
15	4.63	7.57	4.59	55.26	52.43	.0201	.5225	.1835	.0472	.0421	.9320	.0000	.0000	.7153	.8364	.5611	.6697	1.1459
30	7.89	10.89	8.01	53.55	50.66	.0413	.5129	.1020	.0284	.0169	.9678	.0000	.0000	.8269	.7565	.5249	.6658	1.1487
50	8.36	11.50	10.51	50.54	49.55	.0553	.4979	.0964	.0294	.0125	.9704	.0000	.0000	.8247	.7436	.5367	.7384	1.2070
70	7.98	10.72	10.74	49.90	49.93	.0497	.5165	.1085	.0357	.0193	.9680	.0000	.0000	.8001	.7251	.5234	.8261	1.2804
85	11.86	12.28	15.29	49.02	52.01	.0592	.5416	.1646	.0574	.0367	.9496	.0000	.0000	.7127	.7417	.5234	.8503	1.3048
90	13.99	13.96	18.53	49.32	53.86	.0681	.5544	.1719	.0610	.0368	.9482	.0000	.0000	.7047	.7347	.5130	.8394	1.2989
95	13.93	15.32	20.97	50.42	56.06	.0719	.5812	.1900	.0685	.0425	.9444	.0000	.0000	.6844	.7211	.4904	.8334	1.2960

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	P0/P0 INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT
11080.	175.04	1.2530	1.9096	80.12	81.84	39.51

WBLEED / WTOTAL	EFF - AD ADJ.
.00602	79.65

P0/P0 LOCAL
.9566

TABLE 6.8
BLADE ELEMENT AND OVERALL PERFORMANCE WITH STATOR HUB SLIT
SUCTION, 100 PERCENT OF DESIGN SPEED, POINTS 1-8

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	563.8	1006.5	563.8	627.5	.0	787.0	.00	51.43	56.20	14.83	1013.5	649.4	-842.2	-166.2	842.2	953.2
10	18.467	20.408	577.0	977.5	577.0	630.9	.0	746.6	.00	49.80	57.05	20.62	1061.0	674.2	-890.4	-237.4	890.4	984.0
15	19.467	21.047	589.0	935.3	589.0	604.4	.0	713.8	.00	49.76	57.89	26.49	1108.1	676.0	-938.6	-301.0	938.6	1014.8
30	22.314	22.964	612.5	839.4	612.5	515.3	.0	662.7	.00	52.14	60.33	40.78	1238.1	680.9	-1075.9	-449.5	1075.9	1107.2
50	25.791	25.520	624.6	818.3	624.6	513.3	.0	637.3	.00	51.15	63.33	49.10	1391.6	784.6	-1243.5	-593.1	1243.5	1230.4
70	28.954	28.076	620.1	797.5	620.1	514.5	.0	607.7	.00	49.64	66.03	55.26	1527.6	907.5	-1396.0	-746.0	1396.0	1351.7
85	31.295	29.993	605.3	814.2	605.3	507.9	.0	636.4	.00	51.40	68.14	57.90	1625.8	955.9	-1508.9	-809.7	1508.9	1446.1
90	31.883	30.630	600.2	802.8	600.2	471.1	.0	649.6	.00	54.07	68.67	60.35	1650.3	952.3	-1537.2	-827.2	1537.2	1476.8
95	32.499	31.271	595.5	778.4	595.5	423.3	.0	653.0	.00	57.07	69.19	63.65	1676.3	954.1	-1566.9	-854.7	1566.9	1507.7

%SPAN	INCS DEGREE	INCH DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P PROFILE	LOSS-P	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	.81	7.24	14.66	41.37	48.82	.0146	.5405	-.0125	-.0027	-.0058	2.1352	1.0046	1.0051	1.0092	.5200	.8684	.9379	.5602
10	1.07	7.48	14.55	36.43	43.54	.0178	.5346	-.0255	-.0055	-.0094	2.1178	1.0126	1.0140	1.0209	.5341	.8416	.9877	.5805
15	1.38	7.20	14.03	31.40	38.09	.0218	.5509	.0085	.0018	-.0029	2.0677	.9930	.9922	.9904	.5455	.8019	1.0338	.5795
30	2.45	6.44	11.12	19.56	24.23	.0432	.5963	.1102	.0225	.0135	1.9677	.9145	.9058	.8983	.5672	.7099	1.1529	.6758
50	3.69	6.35	6.77	14.23	14.65	.0784	.5762	.1330	.0266	.0109	2.0004	.8823	.8702	.8676	.5775	.6854	1.2851	.6572
70	4.50	6.38	4.74	10.77	9.14	.1080	.5386	.1440	.0278	.0071	2.0291	.8697	.8451	.8462	.5737	.6630	1.4061	.7544
85	4.77	6.06	3.63	10.24	7.86	.1316	.5510	.1965	.0379	.0130	2.0796	.8084	.7876	.7877	.5608	.6693	1.4905	.7857
90	4.84	5.95	5.14	8.32	7.53	.1387	.5654	.2339	.0427	.0179	2.0710	.7748	.7507	.7538	.5550	.6557	1.5166	.7778
95	4.96	5.89	7.62	5.54	7.28	.1495	.5745	.2644	.0491	.0197	2.0457	.7446	.7179	.7265	.5498	.6320	1.5414	.7747

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.2596	2.0334	86.46	87.74

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	1038.6	713.0	705.5	712.0	762.3	-38.9	47.22	-3.13	17.45	56.48	739.6	1289.4	-221.7	-1075.0	984.0	1036.1
10	21.008	21.961	1010.1	678.4	703.8	671.6	724.5	-92.3	45.83	-7.86	-22.28	59.72	760.8	1333.1	-288.4	-1151.1	1012.9	1058.8
15	21.589	22.432	971.2	654.5	677.3	643.6	695.9	-119.1	45.79	-10.48	27.00	61.81	760.8	1362.4	-345.0	-1200.7	1040.9	1081.6
30	23.314	23.902	885.5	614.1	598.2	609.4	652.8	-75.6	47.50	-7.07	-38.22	63.61	761.7	1370.9	-471.2	-1228.0	1124.1	1152.4
50	25.601	25.893	877.1	631.6	603.7	628.6	636.2	-61.4	46.50	-5.58	44.72	64.36	850.0	1452.9	-598.2	-1309.9	1234.3	1248.4
70	27.818	27.902	874.6	637.2	622.2	632.2	614.7	-79.7	44.65	-7.19	49.40	66.07	956.7	1559.0	-726.6	-1425.0	1391.2	1345.3
85	29.408	29.382	908.8	652.0	634.2	649.8	651.0	-53.2	45.75	-4.69	50.41	66.15	995.1	1607.1	-766.9	-1469.9	1417.9	1416.6
90	29.914	29.856	905.1	647.2	612.2	646.0	666.5	-39.9	47.44	-3.53	51.73	66.41	988.3	1614.3	-775.8	-1479.4	1442.3	1439.5
95	30.382	30.293	891.6	628.1	586.0	626.6	671.9	-42.0	48.91	-3.85	53.53	67.36	986.1	1628.1	-792.9	-1502.6	1464.9	1460.6

%SPAN	INCS DEGREE	INCH DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P PROFILE	LOSS-P	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	5.00	7.92	13.27	50.34	55.90	.0190	.5009	.1810	.0450	.0402	.9260	.0000	.0000	.7304	.8933	.5934	.6416	1.0731
10	4.60	7.53	7.57	53.69	53.87	.0192	.5313	.2048	.0518	.0469	.9197	.0000	.0000	.7074	.8660	.5642	.6581	1.1082
15	5.50	8.44	4.44	56.27	52.42	.0238	.5426	.1836	.0472	.0411	.9324	.0000	.0000	.7266	.8332	.5437	.6547	1.1316
30	9.02	12.01	8.15	54.57	50.66	.0498	.5351	.1057	.0294	.0156	.9669	.0000	.0000	.8302	.7540	.5077	.6478	1.1334
50	9.82	12.96	10.44	52.08	49.55	.0686	.5224	.1067	.0325	.0116	.9675	.0000	.0000	.8184	.7399	.5194	.7152	1.1948
70	8.99	12.23	10.32	51.84	49.93	.0646	.5343	.1260	.0414	.0202	.9621	.0000	.0000	.7783	.7333	.5216	.8010	1.2759
85	13.09	13.60	15.20	50.44	52.00	.0741	.5536	.1856	.0647	.0389	.9416	.0000	.0000	.6860	.7546	.5275	.8265	1.3003
90	15.17	15.14	18.11	50.97	53.86	.0829	.5625	.1864	.0661	.0367	.9422	.0000	.0000	.6845	.7481	.5209	.8170	1.2992
95	15.16	16.50	19.83	52.76	56.06	.0870	.5848	.1935	.0697	.0384	.9419	.0000	.0000	.6749	.7336	.5032	.8108	1.3043

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT
11050.	173.58	1.2597	1.9372	79.94	81.72	39.18

WBLEED / WTOTAL	EFF - AD ADJ.
.00624	79.44

PO/PO LOCAL
.9534

TABLE 7.1
BLADE ELEMENT AND OVERALL PERFORMANCE WITH STATOR HUB SLIT SUCTION FREE STREAM EFFICIENCY METHOD, 100 PERCENT OF DESIGN SPEED, POINTS 1-5

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	606.3	1017.8	606.3	725.8	.0	713.5	.00	44.51	54.29	18.39	1038.8	765.1	-843.6	-241.3	843.6	954.7
10	18.467	20.408	620.6	983.3	620.6	714.2	.0	675.9	.00	43.42	55.16	23.43	1086.6	778.5	-891.8	-309.7	891.8	985.6
15	19.467	21.047	634.2	954.2	634.2	704.2	.0	643.9	.00	42.43	56.00	27.85	1134.0	797.5	-940.1	-372.5	940.1	1016.4
30	22.314	22.964	664.3	860.3	664.3	661.0	.0	550.6	.00	39.79	58.34	40.19	1266.0	865.3	-1077.6	-558.4	1077.6	1109.0
50	25.791	25.520	680.9	798.6	680.9	637.3	.0	481.3	.00	37.06	61.33	49.68	1419.6	985.2	-1245.6	-751.2	1245.6	1232.5
70	28.954	28.076	671.7	731.6	671.7	608.4	.0	406.3	.00	33.72	64.33	57.31	1551.4	1128.2	-1398.3	-949.6	1398.3	1355.9
85	31.295	29.993	651.8	694.6	651.8	577.1	.0	386.4	.00	33.81	66.67	61.48	1645.9	1208.8	-1511.4	-1062.0	1511.4	1448.6
90	31.883	30.630	646.3	662.8	646.3	531.8	.0	395.2	.00	36.65	67.23	63.87	1669.9	1207.7	-1539.8	-1084.0	1539.8	1479.2
95	32.499	31.271	642.1	615.9	642.1	469.7	.0	397.9	.00	40.32	67.75	67.10	1695.8	1207.8	-1569.5	-1112.3	1569.5	1510.2

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	ZAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	P02/ P01	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-1.08	5.35	18.22	35.91	48.82	.0106	.4238	.1089	.0227	.0205	1.9074	.9329	.9266	.8830	.5620	.8887	.9665	.6680
10	-.81	5.58	17.37	31.73	43.55	.0134	.4338	.1121	.0237	.0208	1.8720	.9242	.9175	.8797	.5775	.8560	1.0170	.6778
15	-.51	5.28	15.41	28.15	38.10	.0181	.4385	.1124	.0239	.0200	1.8439	.9170	.9098	.8778	.5907	.8287	1.0638	.6926
30	.47	4.42	10.43	18.15	24.13	.0401	.4354	.1196	.0246	.0162	1.7429	.8868	.8776	.8633	.6198	.7424	1.1891	.7468
50	1.78	4.37	7.33	11.65	14.61	.0761	.4089	.1207	.0238	.0087	1.6892	.8595	.8485	.8487	.6340	.6858	1.3282	.8460
70	2.86	4.67	6.79	7.02	9.19	.1067	.3600	.1059	.0194	.0002	1.6228	.8501	.8393	.8495	.6241	.6276	1.4451	.9276
85	3.30	4.55	7.28	5.19	7.93	.1304	.3488	.1353	.0234	.0011	1.5839	.7951	.7812	.7984	.6056	.5927	1.5228	1.0314
90	3.42	4.49	8.71	3.36	7.58	.1375	.3623	.1835	.0298	.0076	1.5491	.7269	.7094	.7390	.5995	.5619	1.5465	1.0237
95	3.53	4.45	11.12	.65	7.32	.1482	.3742	.2272	.0332	.0118	1.5037	.6608	.6407	.6888	.5952	.5187	1.5692	1.0170

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.1921	1.6927	84.38	85.52

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	1023.2	840.3	1019.0	691.1	-92.1	39.43	-5.16	19.32	47.95	890.6	1521.5	-294.6	-1129.9	985.6	1037.8
10	21.008	21.961	1057.1	1005.1	828.6	998.6	656.3	-113.7	38.38	-6.50	23.38	49.62	902.9	1541.6	-358.3	-1174.3	1014.6	1060.6
15	21.589	22.432	1031.7	986.7	818.9	977.4	627.4	-135.0	37.45	-7.88	26.87	51.25	918.8	1562.2	-415.2	-1218.3	1042.6	1083.3
30	23.314	23.902	950.8	915.1	780.9	899.8	542.4	-166.7	34.78	-10.49	36.77	55.74	974.9	1598.4	-583.6	-1321.0	1125.9	1154.3
50	25.601	25.893	902.5	866.5	764.4	856.1	479.7	-134.1	32.11	-8.91	44.70	58.27	1075.6	1628.0	-756.6	-1384.6	1236.4	1250.5
70	27.818	27.902	857.9	795.4	753.4	783.7	410.1	-135.4	28.55	-9.81	51.06	62.14	1199.8	1677.4	-933.4	-1482.9	1343.4	1347.5
85	29.408	29.382	846.5	753.8	749.5	745.2	393.6	-113.2	27.71	-8.63	53.87	64.06	1271.1	1703.8	-1026.6	-1532.1	1420.2	1419.0
90	29.914	29.856	829.7	741.4	724.5	734.3	404.3	-102.2	29.17	-7.92	56.15	64.57	1267.9	1709.8	-1040.4	-1544.1	1444.7	1441.9
95	30.382	30.293	802.7	702.5	690.6	692.6	409.0	-116.9	30.65	-9.61	56.87	66.32	1263.8	1725.3	-1058.2	-1579.9	1467.3	1463.0

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	ZAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	P02/ P01	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-2.82	.11	11.23	44.60	55.89	.0022	.2351	.1380	.0342	.0336	.9383	.0000	.0000	.1384	.9552	.8941	.7861	1.3296
10	-2.99	-.05	8.94	44.88	53.86	.0026	.2322	.1099	.0279	.0272	.9529	.0000	.0000	.1659	.9264	.8782	.7979	1.3470
15	-2.97	-.02	7.08	45.33	52.45	.0031	.2345	.0940	.0243	.0236	.9612	.0000	.0000	.1923	.9011	.8614	.8091	1.3637
30	-3.73	-.73	4.73	45.27	50.66	.0022	.2455	.0697	.0192	.0186	.9746	.0000	.0000	.2794	.8274	.7957	.8574	1.3899
50	-4.72	-1.58	7.13	41.02	49.57	.0016	.2476	.0662	.0200	.0195	.9779	.0000	.0000	.3535	.7824	.7507	.9431	1.4105
70	-7.27	-4.02	7.65	38.35	49.88	.0000	.2834	.1157	.0378	.0378	.9642	.0000	.0000	.3390	.7451	.6873	1.0507	1.4495
85	-4.60	-4.27	11.30	36.34	52.07	.0000	.3189	.1531	.0529	.0529	.9538	.0000	.0000	.3771	.7328	.6470	1.1025	1.4624
90	-2.80	-2.97	13.66	37.09	53.81	.0000	.3235	.1234	.0434	.0434	.9643	.0000	.0000	.4819	.7148	.6333	1.0937	1.4605
95	-3.19	-1.68	14.07	40.26	56.07	.0000	.3613	.1348	.0479	.0479	.9633	.0000	.0000	.5091	.6877	.5965	1.0843	1.4647

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC(1)/A(1) LBM/SEC SQFT	WBLEED/WTOTAL	EFF - AD ADJ.	PO/PO LOCAL
11068.	182.61	1.1920	1.6373	78.69	80.15	41.22	.00297	78.43	.9679

TABLE 7.2
BLADE ELEMENT AND OVERALL PERFORMANCE WITH STATOR HUB SLIT SUCTION FREE STREAM EFFICIENCY METHOD, 100 PERCENT OF DESIGN SPEED, POINTS 1-5

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	603.0	1004.3	603.0	688.5	.0	731.1	.00	46.72	54.48	18.12	1038.2	724.7	-845.1	-225.3	845.1	956.5
10	18.467	20.408	617.1	968.3	617.1	679.5	.0	689.8	.00	45.43	55.36	23.64	1085.9	742.0	-893.5	-297.6	893.5	987.4
15	19.467	21.047	630.5	932.1	630.5	664.6	.0	653.5	.00	44.51	56.20	28.72	1133.4	758.8	-941.9	-364.8	941.9	1018.3
30	22.314	22.964	661.8	874.4	661.8	655.2	.0	579.1	.00	41.47	58.48	39.07	1266.3	844.0	-1079.6	-532.0	1079.6	1111.1
50	25.791	25.520	679.1	818.6	679.1	627.7	.0	525.4	.00	39.93	61.44	48.46	1420.7	947.4	-1247.8	-709.3	1247.8	1234.7
70	28.954	28.076	667.4	738.9	667.4	585.9	.0	450.1	.00	37.52	64.51	57.14	1551.8	1081.2	-1400.9	-908.3	1400.9	1358.4
85	31.295	29.993	645.8	703.0	645.8	541.9	.0	447.5	.00	39.57	66.90	61.63	1646.1	1140.8	-1514.1	-1003.6	1514.1	1451.1
90	31.883	30.630	640.5	673.0	640.5	496.2	.0	454.4	.00	42.51	67.45	64.22	1670.3	1141.3	-1542.6	-1027.6	1542.6	1481.9
95	32.499	31.271	637.0	625.4	637.0	430.2	.0	453.6	.00	46.56	67.95	67.90	1696.5	1143.8	-1572.4	-1059.4	1572.4	1513.0

% SPAN	INCS DEGREE	INCH DEGREE	DEV DEGREE	TURN DEGREE	DAHBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P PROFILE	LOSS-P	P02/ P01	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	H-1	H-2	H'-1	H'-2
5	-.89	5.54	17.95	36.37	48.82	.0110	.4663	.0961	.0201	.0178	1.9501	.9422	.9365	.9045	.5589	.8727	.9659	.6297
10	-.61	5.77	17.57	31.72	43.55	.0140	.4701	.0924	.0195	.0165	1.9152	.9388	.9331	.9073	.5739	.8392	1.0158	.6431
15	-.33	5.49	16.28	27.48	38.10	.0187	.4745	.0969	.0204	.0164	1.8771	.9295	.9232	.9015	.5870	.8056	1.0622	.6558
30	.60	4.56	9.31	19.41	24.12	.0409	.4585	.0794	.0166	.0079	1.8404	.9281	.9218	.9124	.6175	.7524	1.1893	.7262
50	1.93	4.50	6.16	12.97	14.65	.0771	.4453	.1081	.0219	.0061	1.7952	.8838	.8740	.8729	.6319	.6990	1.3319	.8090
70	3.09	4.87	6.61	7.37	9.13	.1081	.3998	.1122	.0206	.0005	1.7096	.8554	.8439	.8538	.6190	.6287	1.4485	.9200
85	3.55	4.78	7.48	5.26	7.97	.1320	.4032	.1702	.0292	.0067	1.6690	.7727	.7557	.7743	.5990	.5927	1.5245	.9619
90	3.65	4.71	9.09	3.22	7.60	.1392	.4149	.2130	.0341	.0118	1.6354	.7179	.6978	.7267	.5932	.5639	1.5479	.9563
95	3.74	4.65	11.93	.05	7.34	.1498	.4242	.2509	.0354	.0144	1.5888	.6643	.6418	.6866	.5900	.5209	1.5699	.9526

TO/TO INLET	PO/PO INLET	EFF-AD INLET	EFF-P INLET
		%	%
1.2085	1.7771	85.58	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	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	1065.3	912.0	795.8	907.7	708.2	-88.2	41.67	-5.55	19.33	51.17	843.5	1447.8	-279.2	-1127.9	987.4	1039.7
10	21.008	21.961	1032.3	878.6	785.8	872.7	669.5	-101.9	40.43	-6.67	23.81	53.15	859.2	1455.3	-346.9	-1164.5	1016.4	1062.5
15	21.589	22.432	1000.7	855.1	771.9	847.5	636.8	-113.2	39.52	-7.62	27.81	54.73	873.5	1468.1	-407.7	-1198.5	1044.5	1085.3
30	23.314	23.902	951.2	809.1	761.2	799.5	570.4	-124.0	36.84	-8.82	36.22	58.02	943.6	1509.6	-557.6	-1280.5	1128.0	1156.4
50	25.601	25.893	906.6	775.8	769.4	769.8	523.9	-99.5	35.30	-7.37	44.00	60.36	1028.9	1556.0	-714.7	-1352.3	1238.6	1252.8
70	27.818	27.902	847.0	702.8	714.5	695.6	454.6	-100.6	32.46	-8.23	51.25	64.38	1142.6	1608.7	-891.3	-1450.5	1345.9	1350.0
85	29.408	29.382	833.2	654.5	697.8	650.0	455.3	-76.3	33.13	-6.68	54.20	66.54	1192.9	1632.9	-967.5	-1497.8	1422.8	1421.6
90	29.914	29.856	815.1	633.7	669.9	630.2	464.3	-66.8	34.74	-6.04	55.73	67.36	1189.6	1637.4	-983.0	-1511.3	1447.3	1444.5
95	30.382	30.293	784.7	581.1	631.1	575.2	466.3	-81.7	36.48	-8.12	57.84	69.60	1185.7	1651.0	-1003.6	-1547.3	1470.0	1465.6

% SPAN	INCS DEGREE	INCH DEGREE	DEV DEGREE	TURN DEGREE	DAHBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P PROFILE	LOSS-P	P02/ P01	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	H-1	H-2	H'-1	H'-2
5	-.59	2.34	10.85	47.22	55.89	.0048	.3261	.0692	.0171	.0160	.9702	.0000	.0000	.8102	.9279	.7822	.7404	1.2417
10	-.91	2.02	8.77	47.10	53.87	.0049	.3365	.0714	.0181	.0169	.9706	.0000	.0000	.8316	.8932	.7530	.7541	1.2471
15	-.95	2.00	7.40	47.13	52.51	.0053	.3390	.0566	.0147	.0133	.9778	.0000	.0000	.8502	.8683	.7319	.7675	1.2566
30	-1.59	1.42	6.41	45.66	50.67	.0055	.3528	.0655	.0182	.0166	.9763	.0000	.0000	.8120	.8230	.6906	.8264	1.2885
50	-1.49	1.65	8.67	42.67	49.59	.0069	.3540	.0489	.0149	.0127	.9837	.0000	.0000	.8731	.7779	.6595	.8956	1.3227
70	-3.37	-.13	9.22	40.69	49.87	.0022	.3872	.0595	.0195	.0188	.9823	.0000	.0000	.8624	.7263	.5960	.9919	1.3442
85	.84	1.26	13.29	39.81	52.12	.0018	.4376	.1043	.0362	.0356	.9700	.0000	.0000	.7479	.7093	.5491	1.0190	1.3698
90	3.06	2.70	15.45	40.78	53.72	.0023	.4543	.0883	.0312	.0304	.9757	.0000	.0000	.7929	.6909	.5290	1.0109	1.3668
95	2.62	4.21	15.56	44.59	56.07	.0024	.5116	.1084	.0387	.0379	.9722	.0000	.0000	.7869	.6615	.4823	1.0026	1.3700

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT	WBLEED/WTOTAL	EFF - AD ADJ.	PO/PO LOCAL
11088.	182.36	1.2084	1.7417	82.36	83.68	41.16	.00418	81.96	.9805

TABLE 7.3

BLADE ELEMENT AND OVERALL PERFORMANCE WITH STATOR HUB SLIT SUCTION FREE STREAM EFFICIENCY METHOD, 100 PERCENT OF DESIGN SPEED, POINTS 1-5

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	586.4	981.3	586.4	618.7	.0	761.7	.00	50.92	55.19	17.33	1027.3	648.3	-843.4	-192.9	843.4	954.6
10	18.467	20.408	599.6	936.3	599.6	596.9	.0	721.4	.00	50.39	56.08	23.86	1074.6	652.8	-891.7	-264.1	891.7	985.4
15	19.467	21.047	612.1	897.1	612.1	580.0	.0	684.3	.00	49.71	56.93	29.76	1121.8	668.6	-940.0	-332.0	940.0	1016.3
30	22.314	22.964	643.1	858.1	643.1	592.5	.0	620.6	.00	46.32	59.15	39.43	1254.9	768.2	-1077.5	-488.3	1077.5	1108.9
50	25.791	25.520	665.0	834.2	665.0	587.4	.0	592.3	.00	45.24	61.89	47.43	1411.8	868.9	-1245.4	-640.0	1245.4	1232.3
70	28.954	28.076	659.3	778.5	659.3	561.4	.0	539.4	.00	43.85	64.74	55.43	1545.9	991.1	-1398.1	-816.3	1398.1	1355.7
85	31.295	29.993	640.2	765.9	640.2	530.8	.0	552.2	.00	46.13	67.04	59.36	1641.2	1041.5	-1511.1	-896.1	1511.1	1448.3
90	31.883	30.630	634.7	739.6	634.7	478.2	.0	563.6	.00	49.73	67.59	62.43	1665.2	1033.2	-1539.6	-915.4	1539.5	1479.0
95	32.499	31.271	630.3	706.2	630.3	422.7	.0	565.5	.00	53.25	68.12	65.89	1691.1	1035.1	-1569.3	-944.5	1569.3	1510.0

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P PROFILE	LOSS-P PO1/PO2	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-.20	6.23	17.16	37.86	48.82	.0124	.5419	.1028	.0216	.0190	1.9961	.9415	.9353	.9083	.5417	.8463	.9514	.5592
10	.07	6.50	17.81	32.21	43.56	.0154	.5547	.1155	.0243	.0210	1.9493	.9278	.9206	.8971	.5551	.8043	.9983	.5608
15	.34	6.31	17.33	27.17	38.13	.0198	.5563	.1170	.0244	.0203	1.9127	.9195	.9119	.8938	.5669	.7683	1.0418	.5726
30	1.17	5.25	9.89	19.73	24.37	.0412	.5229	.0755	.0197	.0071	1.9229	.9362	.9301	.9239	.5962	.7320	1.1640	.6554
50	2.26	4.92	5.09	14.46	14.64	.0766	.5119	.0984	.0203	.0045	1.9485	.9055	.8961	.8950	.6176	.7054	1.3107	.7347
70	3.23	5.07	4.91	9.30	9.14	.1070	.4751	.1126	.0214	.0011	1.9096	.8768	.8651	.8708	.6122	.6541	1.4344	.8326
85	3.67	4.93	5.14	7.68	7.91	.1308	.4847	.1733	.0320	.0083	1.9082	.8079	.7897	.7991	.5943	.6365	1.5154	.8856
90	3.78	4.86	7.26	5.17	7.57	.1379	.5019	.2205	.0376	.0143	1.8767	.7585	.7363	.7531	.5881	.6102	1.5396	.8625
95	3.90	4.81	9.89	2.23	7.31	.1486	.5112	.2546	.0391	.0166	1.8406	.7197	.6947	.7206	.5837	.5793	1.5625	.8490

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.2367	1.9211	86.55	87.74

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	1023.0	767.7	708.7	765.5	737.8	-57.8	46.15	-4.32	19.27	55.05	750.9	1336.4	-247.7	-1095.5	985.5	1037.6
10	21.008	21.961	980.8	730.6	687.4	723.8	699.6	-97.4	45.50	-7.70	24.61	57.98	756.2	1365.8	-314.8	-1157.9	1014.4	1060.4
15	21.589	22.432	947.3	705.9	672.7	696.4	666.9	-115.5	44.75	-9.42	29.15	59.84	770.6	1386.4	-375.6	-1198.7	1042.5	1083.2
30	23.314	23.902	916.2	674.6	682.5	669.2	611.1	-85.0	41.83	-7.24	36.99	61.63	855.2	1408.3	-514.7	-1239.1	1125.8	1154.2
50	25.601	25.893	903.7	693.9	683.7	691.2	590.9	-61.9	40.83	-5.12	43.33	62.22	940.3	1483.1	-645.3	-1312.2	1236.2	1250.3
70	27.818	27.902	868.0	661.7	676.1	656.2	544.4	-84.8	38.84	-7.36	49.73	65.37	1046.8	1575.4	-798.9	-1432.1	1343.3	1347.3
85	29.408	29.382	875.1	643.2	670.2	641.4	562.8	-48.6	40.02	-4.34	51.98	66.39	1088.1	1601.5	-857.3	-1467.4	1420.0	1418.8
90	29.914	29.856	860.3	627.2	658.2	626.2	576.7	-34.1	42.11	-3.11	53.67	67.01	1077.4	1603.1	-867.8	-1475.7	1444.5	1441.7
95	30.382	30.293	840.0	593.3	606.0	591.4	581.5	-46.1	43.82	-4.49	55.61	68.59	1073.2	1620.8	-885.6	-1508.9	1467.1	1462.8

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER S	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P PROFILE	LOSS-P PO1/PO2	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	4.14	7.07	12.08	50.47	55.90	.0138	.4388	.0628	.0156	.0122	.9748	.0000	.0000	.8882	.8769	.6445	.6482	1.1221
10	4.22	7.15	7.74	53.20	53.88	.0155	.4591	.0529	.0134	.0094	.9801	.0000	.0000	.9266	.8365	.6130	.6565	1.1459
15	4.29	7.18	5.54	54.17	52.46	.0174	.4680	.0407	.0105	.0060	.9856	.0000	.0000	.9301	.8131	.5917	.6716	1.1620
30	3.28	6.28	7.98	49.07	50.67	.0184	.4750	.0885	.0247	.0195	.9703	.0000	.0000	.8431	.7853	.5642	.7418	1.1779
50	4.21	7.35	10.90	45.95	49.55	.0284	.4524	.0769	.0235	.0148	.9750	.0000	.0000	.8381	.7700	.5779	.8041	1.2351
70	3.15	6.39	10.12	46.20	49.92	.0222	.4777	.0748	.0246	.0173	.9773	.0000	.0000	.8481	.7363	.5495	.8908	1.3081
85	7.66	7.93	15.55	44.36	52.02	.0260	.5093	.1196	.0417	.0326	.9630	.0000	.0000	.7761	.7363	.5283	.9158	1.3154
90	10.05	9.93	18.50	45.22	53.85	.0321	.5236	.1071	.0380	.0266	.9688	.0000	.0000	.8033	.7188	.5122	.9004	1.3092
95	10.01	11.46	19.19	48.32	56.07	.0348	.5636	.1169	.0420	.0295	.9675	.0000	.0000	.8001	.6983	.4820	.8926	1.3167

NCORR RPM	WCORR LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT
11067.	179.58	1.2367	1.8711	82.74	84.18	40.54

WBLEED/WTOTAL	EFF - AD ADJ.
.00564	82.25

PO/PO LOCAL
.9742

TABLE 7.4
BLADE ELEMENT AND OVERALL PERFORMANCE WITH STATOR HUB SLIT SUCTION FREE STREAM EFFICIENCY METHOD, 100 PERCENT OF DESIGN SPEED, POINTS 1-5

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	570.0	974.6	570.0	590.4	.0	775.4	.00	52.72	55.94	16.87	1017.8	617.2	-843.3	-179.0	843.3	954.4
10	18.467	20.408	582.8	935.9	582.8	575.6	.0	738.0	.00	52.04	56.82	23.23	1065.1	626.7	-891.5	-247.3	891.5	985.2
15	19.467	21.047	595.0	904.9	595.0	571.7	.0	701.5	.00	50.82	57.66	28.82	1112.3	652.6	-939.8	-314.6	939.8	1016.1
30	22.314	22.964	624.2	852.3	624.2	555.2	.0	646.6	.00	49.34	59.90	39.69	1245.1	722.9	-1077.3	-462.0	1077.3	1108.6
50	25.791	25.520	645.5	829.7	645.5	554.5	.0	617.2	.00	48.06	62.59	47.91	1402.5	828.3	-1245.1	-614.9	1245.1	1232.0
70	28.956	28.476	643.7	797.4	643.7	549	.0	578.3	.00	46.49	65.26	54.72	1537.0	951.8	-1397.8	-777.2	1397.8	1355.4
85	31.295	29.993	627.6	798.0	627.6	526.8	.0	600.0	.00	48.76	67.44	58.19	1636.8	997.9	-1510.8	-848.0	1510.8	1448.0
90	31.883	30.630	622.1	785.1	622.1	488.3	.0	614.3	.00	51.54	67.99	60.55	1660.2	993.2	-1539.2	-864.5	1539.2	1478.7
95	32.499	31.271	617.2	750.9	617.2	424.7	.0	618.7	.00	55.58	68.53	64.52	1686.0	987.5	-1569.0	-890.9	1569.0	1509.7

%SPAN	INCS DEGREE	INCH DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P PROFILE	LOSS-P	P02/ P01	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	H-1	H-2	H'-1	H'-2
5	.54	6.97	16.70	39.07	48.82	.0141	.5713	.1183	.0249	.0219	2.0082	.9347	.9278	.8979	.5251	.8381	.9393	.5308
10	.80	7.23	17.17	33.60	43.56	.0173	.5790	.1206	.0255	.0218	1.9762	.9272	.9196	.8951	.5379	.8020	.9853	.5371
15	1.06	7.07	16.40	28.84	38.14	.0213	.5708	.1060	.0223	.0178	1.9551	.9297	.9226	.9048	.5494	.7738	1.0289	.5581
30	1.89	6.00	10.15	20.21	24.37	.0425	.5612	.1026	.0213	.0125	1.9449	.9179	.9098	.9015	.5768	.7237	1.1492	.6138
50	2.91	5.64	5.59	14.68	14.66	.0776	.5430	.1137	.0233	.0075	1.9829	.8957	.8850	.8831	.5976	.6982	1.2926	.6970
70	3.72	5.60	4.18	10.54	9.13	.1076	.5069	.1211	.0237	.0028	1.9897	.8759	.8633	.8663	.5971	.6664	1.4195	.7954
85	4.06	5.35	3.92	9.26	7.86	.1312	.5202	.1800	.0344	.0098	2.0167	.8149	.7956	.8001	.5827	.6592	1.5044	.8244
90	4.16	5.27	5.35	7.44	7.54	.1384	.5357	.2207	.0401	.0153	2.0045	.7767	.7536	.7620	.5764	.6443	1.5301	.8151
95	4.30	5.22	8.50	4.01	7.29	.1491	.5496	.2596	.0420	.0185	1.9653	.7363	.7099	.7265	.5710	.6121	1.5545	.8049

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.2504	1.9794	85.89	87.19

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	1008.9	716.4	673.6	715.2	751.1	-41.5	48.11	-3.32	19.18	56.46	713.4	1294.5	-234.2	-1079.0	985.3	1037.4
10	21.008	21.961	972.5	683.0	658.9	676.6	715.2	-90.6	47.35	-7.66	24.40	59.53	723.6	1335.3	-299.0	-1150.8	1014.2	1060.2
15	21.589	22.432	946.1	659.9	653.8	649.3	683.9	-117.8	46.29	-10.28	28.72	61.60	745.7	1365.2	-358.4	-1200.8	1042.3	1083.0
30	23.314	23.902	902.9	626.4	639.8	621.6	637.1	-76.6	44.87	-7.02	37.32	63.20	805.4	1378.6	-488.5	-1230.5	1125.5	1153.9
50	25.601	25.893	893.5	647.6	647.0	644.5	616.2	-62.6	43.61	-5.55	43.74	63.85	896.0	1462.3	-619.7	-1312.6	1235.9	1250.0
70	27.818	27.902	881.3	648.7	659.6	644.4	584.5	-75.3	41.55	-6.66	48.97	65.62	1005.3	1561.5	-758.5	-1422.3	1343.0	1347.0
85	29.408	29.382	902.1	658.3	661.7	656.6	613.1	-46.5	42.81	-4.05	50.64	65.86	1043.3	1605.4	-806.6	-1464.9	1419.7	1418.5
90	29.914	29.856	898.3	650.1	640.5	649.4	629.7	-28.3	44.52	-2.49	51.82	66.16	1036.2	1606.8	-814.5	-1469.7	1444.2	1441.4
95	30.382	30.293	878.0	625.9	604.6	625.1	636.5	-30.7	46.48	-2.83	53.94	67.28	1027.3	1618.9	-830.3	-1493.2	1466.8	1462.5

%SPAN	INCS DEGREE	INCH DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P PROFILE	LOSS-P	P02/ P01	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	H-1	H-2	H'-1	H'-2
5	4.15	9.08	13.08	51.44	55.91	.0200	.4808	.0572	.0142	.0092	.9777	.0000	.0000	.9083	.8601	.5973	.6133	1.0792
10	5.90	8.84	7.78	55.01	50.35	.0225	.5086	.0571	.0145	.0087	.9789	.0000	.0000	.9267	.8289	.5692	.6297	1.1126
15	5.95	8.89	4.63	56.57	52.41	.0243	.5212	.0630	.0162	.0100	.9778	.0000	.0000	.8996	.8083	.5493	.6453	1.1363
30	4.43	9.43	8.20	51.89	50.68	.0329	.5260	.0886	.0247	.0155	.9712	.0000	.0000	.8659	.7693	.5195	.6919	1.1434
50	6.95	10.09	10.48	49.15	49.54	.0454	.5069	.0961	.0293	.0154	.9696	.0000	.0000	.8294	.7575	.5348	.7606	1.2077
70	5.89	9.12	10.84	48.21	49.93	.0397	.5117	.0980	.0323	.0192	.9699	.0000	.0000	.8217	.7437	.5342	.8480	1.2858
85	10.20	10.67	15.84	46.86	52.01	.0471	.5260	.1286	.0449	.0284	.9596	.0000	.0000	.7754	.7540	.5365	.8721	1.3084
90	12.28	12.23	19.15	47.01	53.87	.0539	.5368	.1311	.0465	.0274	.9595	.0000	.0000	.7753	.7470	.5269	.8618	1.3021
95	12.70	14.05	20.85	49.32	56.07	.0603	.5616	.1260	.0454	.0237	.9628	.0000	.0000	.7856	.7263	.5046	.8493	1.3051

N CORR INLET RPM	W CORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT
11064.	177.17	1.2505	1.9197	81.65	83.25	39.99

W BLEED / W TOTAL	EFF - AD ADJ.	PO/PO LOCAL
.00599	81.17	.9700

TABLE 7.5
BLADE ELEMENT AND OVERALL PERFORMANCE WITH STATOR HUB SLIT SUCTION FREE STREAM EFFICIENCY METHOD, 100 PERCENT OF DESIGN SPEED, POINTS 1-5

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	554.5	979.9	554.5	583.8	.0	787.0	.00	53.44	56.63	15.90	1008.4	607.3	-842.2	-166.2	842.2	953.2
10	18.467	20.408	566.7	936.7	566.7	561.6	.0	749.6	.00	53.16	57.52	22.64	1055.5	608.8	-890.4	-234.3	890.4	984.0
15	19.467	21.047	578.2	899.9	578.2	548.7	.0	713.3	.00	52.43	58.36	28.78	1102.4	626.1	-938.6	-301.5	938.6	1014.8
30	22.314	22.964	605.5	854.3	605.5	540.6	.0	661.5	.00	50.74	60.62	39.42	1234.6	701.3	-1075.9	-445.7	1075.9	1107.2
50	25.791	25.520	625.0	831.9	625.0	537.5	.0	634.9	.00	49.75	63.31	47.88	1391.8	802.6	-1243.5	-595.5	1243.5	1230.4
70	28.954	28.076	622.1	810.8	622.1	538.1	.0	606.5	.00	48.42	65.97	54.20	1528.5	921.0	-1396.0	-747.2	1396.0	1353.7
85	31.295	29.993	604.9	817.8	604.9	514.6	.0	635.5	.00	51.00	68.15	57.59	1625.6	960.2	-1538.9	-810.6	1508.9	1446.1
90	31.883	30.630	599.1	804.4	599.1	474.5	.0	649.0	.00	53.85	68.71	60.19	1649.9	954.6	-1537.2	-827.9	1537.2	1476.8
95	32.499	31.271	593.7	768.9	593.7	405.4	.0	652.7	.00	58.21	69.25	64.64	1675.6	947.1	-1566.9	-855.1	1565.9	1507.7

%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	1.24	7.67	15.73	40.73	48.82	.0158	.5799	.1159	.0245	.0212	2.0300	.9377	.9310	.9009	.5102	.8421	.9296	.5219
10	1.50	7.93	16.59	34.88	47.[illegible]	.0[illegible]	.5[illegible]	.1288	.0274	.0233	1.9885	.9242	.9164	.8893	.5224	.8015	.9755	.5210
15	1.77	7.77	16.36	29.58	38.14	.0228	.5936	.1252	.0264	.0215	1.9586	.9192	.9111	.8899	.5331	.7679	1.0185	.5342
30	2.60	6.72	9.88	21.19	24.36	.0437	.5783	.1123	.0234	.0143	1.9629	.9129	.9041	.8935	.5583	.7239	1.1370	.5942
50	3.63	6.36	5.56	15.43	14.66	.0783	.5618	.1252	.0256	.0097	2.0059	.8889	.8774	.8731	.5773	.6982	1.2793	.6736
70	4.42	6.31	3.68	11.77	9.15	.1078	.5298	.1354	.0268	.0056	2.0352	.8679	.8540	.8534	.5758	.6752	1.4062	.7669
85	4.77	6.05	3.35	10.57	7.90	.1316	.5481	.1965	.0382	.0130	2.0775	.8082	.7874	.7867	.5605	.6726	1.4917	.7896
90	4.89	5.98	5.04	8.52	7.58	.1388	.5637	.2356	.0432	.0181	2.0661	.7729	.7487	.7511	.5536	.6572	1.5175	.7799
95	5.02	5.94	8.68	4.61	7.35	.1497	.5783	.2739	.0441	.0206	2.0252	.7345	.7071	.7172	.5479	.6238	1.5419	.7684

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.2596	2.0128	85.08	86.48

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 DEGPEE	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	1010.1	700.3	662.8	699.3	762.3	-38.2	49.00	-3.13	16.50	56.94	699.1	1281.9	-221.7	-1074.3	984.0	1036.1
10	21.006	21.961	968.9	666.7	640.9	660.0	726.6	-90.6	48.58	-7.85	24.06	60.12	702.1	1325.8	-286.3	-1149.4	1012.9	1058.8
15	21.589	22.432	937.7	644.0	628.9	633.2	695.6	-117.4	47.98	-10.50	28.76	62.16	717.7	1356.0	-345.3	-1199.0	1040.9	1081.6
30	23.314	23.902	901.2	609.3	622.2	604.6	651.9	-75.1	46.33	-7.07	37.15	63.78	781.6	1368.3	-472.2	-1227.5	1124.1	1152.4
50	25.601	25.893	892.1	632.5	627.4	629.5	634.3	-61.8	45.31	-5.61	43.70	64.34	868.3	1453.6	-600.1	-1310.2	1234.3	1248.4
70	27.818	27.902	891.3	640.9	646.2	635.8	613.8	-60.1	43.53	-7.18	46.36	65.95	973.1	1560.8	-727.4	-1425.4	1341.2	1345.3
85	29.408	29.362	919.3	655.8	649.3	653.6	650.8	-53.5	45.07	-4.68	49.76	66.03	1005.0	1608.9	-767.1	-1470.1	1417.9	1416.6
90	29.914	29.656	914.3	651.0	625.5	649.7	666.6	-40.2	46.83	-3.54	51.12	66.29	996.6	1616.1	-775.7	-1479.7	1442.3	1432.5
95	30.382	30.293	891.4	631.9	585.3	630.4	672.0	-42.3	49.96	-3.85	53.57	67.24	935.8	1629.8	-792.8	-1502.8	1464.9	1460.6

%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	7.12	10.05	13.28	52.13	55.91	.0241	.4992	.0659	.0164	.0104	.9743	.0000	.0000	.8992	.9587	.5822	.5985	1.3655
10	7.28	10.22	7.59	56.44	53.88	.0283	.5236	.0550	.0139	.0067	.9799	.0000	.0000	.9320	.8221	.5539	.6075	1.1015
15	7.51	10.46	4.42	58.36	52.43	.0321	.5370	.0480	.0124	.0041	.9834	.0000	.0000	.9232	.7995	.5345	.6204	1.1253
30	7.89	10.89	8.15	53.40	50.68	.0423	.5481	.0974	.0272	.0154	.9685	.0000	.0000	.8966	.7658	.5335	.6705	1.1338
50	8.67	11.81	10.42	50.92	49.54	.0593	.5289	.1132	.0345	.0184	.9644	.0000	.0000	.8861	.7538	.5202	.7353	1.1955
70	7.87	11.10	10.33	50.70	49.93	.0564	.5387	.1390	.0457	.0272	.9569	.0000	.0000	.7593	.7490	.5247	.8177	1.2778
85	12.39	12.91	15.20	49.75	52.00	.0686	.5546	.1791	.0624	.0385	.9425	.0000	.0000	.7021	.7644	.5308	.8359	1.3022
90	14.56	14.51	18.10	50.37	53.86	.0775	.5636	.1748	.0620	.0345	.9449	.0000	.0000	.7100	.7567	.5241	.8249	1.3011
95	15.19	15.50	19.83	52.81	56.05	.0875	.5805	.1582	.0569	.0254	.9525	.0000	.0000	.7335	.7341	.5064	.8110	1.3061

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT
11050.	173.58	1.2598	1.9373	79.94	81.72	39.18

W_{BLEED}/W_{TOTAL}	EFF - AD ADJ.
.00624	79.44

PO/PO LOCAL
.9628

TABLE 8.1
BLADE ELEMENT AND OVERALL PERFORMANCE WITH STATOR HUB SLIT
SUCTION, 95 PERCENT OF DESIGN SPEED, POINTS 1-3

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	581.4	986.3	581.4	709.5	.0	685.0	.00	43.99	54.15	17.65	992.8	744.8	-804.7	-225.7	804.7	910.8
10	18.467	20.408	594.7	943.3	594.7	689.4	.0	643.7	.00	43.03	55.04	23.27	1038.1	750.7	-850.8	-296.5	850.8	940.2
15	19.467	21.047	607.0	904.3	607.0	669.4	.0	607.8	.00	42.23	55.91	28.35	1083.0	761.7	-896.9	-361.8	896.9	969.6
30	22.314	22.964	634.1	828.5	634.1	647.6	.0	516.8	.00	38.59	58.32	39.88	1207.9	843.9	-1028.0	-541.1	1028.0	1058.0
50	25.791	25.520	648.3	764.3	648.3	618.8	.0	448.6	.00	35.94	61.38	49.59	1353.6	954.9	-1188.2	-727.1	1188.2	1175.7
70	27.254	27.086	639.6	716.9	639.6	595.4	.0	382.0	.00	33.0	64.40	56.20	1414.0	1010.4	-1333.1	-811.4	1333.1	1223.5
85	28.295	28.993	628.2	688.9	628.2	588.5	.0	388.1	.00	33.39	66.72	61.15	1589.5	1187.4	-1441.8	-1013.7	1441.8	1381.8
90	31.883	30.630	615.2	644.1	615.2	522.1	.0	376.9	.00	35.85	67.27	63.21	1592.5	1158.7	-1468.9	-1034.2	1468.9	1411.1
95	32.499	31.271	611.1	596.3	611.1	460.0	.0	379.1	.00	39.56	67.80	66.58	1617.2	1157.3	-1497.2	-1061.6	1497.2	1440.7

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P PROFILE	LOSS-P PO1	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-1.22	5.21	17.48	36.50	48.82	.0073	.4109	.0470	.0099	.0083	1.8581	.9696	.9670	.9457	.5377	.8645	.9219	.6528
10	-.92	5.46	17.20	31.78	43.54	.0096	.4266	.0674	.0143	.0122	1.8076	.9528	.9486	.9240	.5520	.8239	.9697	.6558
15	-.59	5.20	15.90	27.56	38.10	.0121	.4367	.0841	.0178	.0152	1.7632	.9356	.9302	.9057	.5637	.7875	1.0133	.6634
30	.46	4.41	10.11	18.44	24.11	.0270	.4183	.0697	.0144	.0087	1.6936	.9308	.9253	.9146	.5895	.7190	1.1308	.7323
50	1.84	4.42	7.25	11.79	14.62	.0550	.3951	.0841	.0166	.0056	1.6342	.8971	.8896	.8875	.6012	.6601	1.2624	.8247
70	2.94	4.74	6.69	7.20	9.15	.0799	.3530	.0847	.0155	.0008	1.5695	.8750	.8668	.8729	.5910	.6033	1.3729	.9345
85	3.36	4.61	6.95	5.57	7.93	.1001	.3457	.1198	.0209	.0037	1.5372	.8120	.8003	.8122	.5743	.5735	1.4468	.9923
90	3.46	4.54	8.06	4.06	7.58	.1063	.3579	.1643	.0273	.0097	1.5110	.7480	.7329	.7543	.5687	.5491	1.4696	.9879
95	3.58	4.49	10.59	1.22	7.32	.1158	.3707	.2096	.0313	.0143	1.4670	.6778	.6599	.6998	.5647	.5052	1.4913	.9805

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.1729	1.6395	87.66	88.51

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	1052.6	1013.4	817.1	1008.8	663.5	-96.7	39.08	-5.48	8.7	47.13	862.8	1482.8	-276.7	-1086.7	940.3	990.0
10	21.008	21.961	1012.8	988.4	797.0	982.1	624.8	-111.2	38.09	-6.46	23.28	48.83	867.9	1491.9	-343.0	-1122.9	967.9	1011.8
15	21.589	22.432	978.5	966.0	778.9	958.2	592.2	-121.9	37.23	-7.26	27.30	50.33	877.4	1501.2	-402.4	-1155.4	994.6	1033.5
30	23.314	23.902	913.3	901.8	758.2	892.3	509.1	-130.2	33.88	-8.30	36.69	54.07	945.6	1520.7	-565.0	-1231.3	1074.1	1101.2
50	25.601	25.893	862.4	848.9	737.4	840.3	447.2	-120.0	31.23	-8.13	44.79	57.38	1039.3	1558.9	-732.3	-1312.9	1179.5	1192.9
70	27.818	27.902	819.8	788.2	723.4	778.6	385.6	-122.4	28.05	-8.94	51.06	61.05	1151.8	1609.0	-896.0	-1407.9	1281.6	1285.5
85	29.408	29.382	812.4	746.9	720.7	739.1	375.1	-107.5	27.50	-8.28	53.66	63.17	1216.3	1637.5	-979.8	-1461.2	1354.8	1353.6
90	29.914	29.856	800.6	739.7	701.6	732.6	385.7	-102.1	28.80	-7.93	54.74	63.63	1215.5	1649.3	-992.5	-1477.6	1378.2	1375.5
95	30.382	30.293	772.8	703.5	667.2	695.7	389.8	-104.1	30.31	-8.52	56.55	65.11	1210.6	1653.3	-1009.9	-1499.7	1399.7	1395.6

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P PROFILE	LOSS-P PO1	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-3.13	-.21	10.92	44.56	55.89	.0000	.2134	.1687	.0418	.0418	.9276	.0000	.0000	-.6985	.9262	.8920	.7625	1.3051
10	-3.22	-.29	8.97	44.55	53.86	.0013	.2067	.1369	.0347	.0344	.9446	.0000	.0000	-1.3291	.8873	.8698	.7664	1.3126
15	-3.24	-.30	7.70	44.49	52.44	.0015	.2013	.1094	.0284	.0280	.9580	.0000	.0000	-2.7632	.8575	.8490	.7749	1.3195
30	-4.62	-1.62	6.92	42.18	50.66	.0007	.2076	.1065	.0296	.0294	.9633	.0000	.0000	-2.6797	.7985	.7903	.8343	1.3327
50	-5.55	-2.41	7.90	39.36	49.57	.0004	.2165	.1027	.0312	.0310	.9677	.0000	.0000	-2.0019	.7916	.7409	.9135	1.3607
70	-7.71	-4.47	8.52	36.99	49.89	.0000	.2436	.1250	.0409	.0409	.9638	.0000	.0000	-.3899	.7150	.6862	1.0107	1.4008
85	-4.88	-4.53	11.65	35.77	52.06	.0000	.2884	.1742	.0603	.0603	.9505	.0000	.0000	.0588	.7065	.6464	1.0590	1.4151
90	-3.22	-3.37	13.66	36.74	53.83	.0000	.2927	.1453	.0512	.0512	.9600	.0000	.0000	.1655	.6934	.6367	1.0533	1.4195
95	-3.52	-2.04	15.16	38.82	56.07	.0000	.3204	.1540	.0549	.0549	.9603	.0000	.0000	.2309	.6655	.6021	1.0435	1.4149

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT
10559.	177.11	1.1728	1.5742	80.02	81.27	39.98

WBLEED / WTOTAL	EFF - AD ADJ.	PO/PO LOCAL
.00308	79.74	.9609

TABLE 8.2
BLADE ELEMENT AND OVERALL PERFORMANCE WITH STATOR HUB SLIT
SUCTION, 95 PERCENT OF DESIGN SPEED, POINTS 1-3

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	19.749	549.5	974.5	549.5	463.1	.0	714.8	.00	47.23	54.4	14.12	984.2	990.4	-802.7	-191.7	802.7	908.5
10	18.487	20.408	582.5	937.0	582.5	851.1	.0	673.8	.00	45.98	55.53	22.07	1029.4	902.9	-848.7	-264.0	848.7	937.8
15	19.467	21.047	594.4	887.6	594.4	620.4	.0	634.6	.00	45.64	56.40	28.15	1074.1	704.8	-894.6	-332.6	894.6	967.2
30	22.314	22.964	620.3	809.9	620.3	588.3	.0	556.7	.00	43.42	58.82	40.26	1198.5	771.4	-1025.4	-498.6	1025.4	1055.3
50	25.791	25.520	635.4	773.8	635.4	577.9	.0	514.5	.00	41.68	61.80	48.71	1344.8	876.0	-1185.2	-658.3	1185.2	1172.8
70	28.954	28.074	629.3	722.7	629.3	553.5	.0	464.7	.00	40.01	64.67	56.11	1472.0	994.3	-1330.6	-825.6	1330.6	1290.2
85	31.295	29.993	613.3	707.9	613.3	534.0	.0	464.7	.00	41.03	66.90	59.69	1563.5	1058.3	-1438.2	-913.7	1438.2	1378.3
90	31.883	30.630	608.5	688.2	608.5	497.9	.0	474.7	.00	43.66	67.45	61.91	1586.5	1057.7	-1465.2	-932.9	1465.2	1407.6
95	32.499	31.271	604.1	658.1	604.1	452.4	.0	477.7	.00	46.59	67.98	64.75	1611.0	1060.9	-1493.5	-959.3	1493.5	1437.1

%SPAN	INCS DEGREE	INCH DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P PROFILE	LOSS-P	P02/ P01	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-.73	5.70	15.96	38.52	48.82	.0080	.4685	.0115	.0024	.0007	1.9325	.9915	.9907	.9867	.5260	.8511	.9126	.6018
10	-.44	5.95	16.00	33.46	43.54	.0104	.4753	.0185	.0039	.0017	1.8921	.9864	.9852	.9795	.5398	.8145	.9598	.6110
15	-.11	5.70	15.71	28.24	38.10	.0130	.4914	.0513	.0109	.0081	1.8320	.9622	.9588	.9469	.5510	.7684	1.0028	.6102
30	.92	4.91	10.60	18.56	24.23	.0273	.4833	.0639	.0131	.0075	1.7664	.9411	.9361	.9295	.5751	.6971	1.1170	.6639
50	2.21	4.82	6.36	13.09	14.62	.0546	.4647	.0842	.0170	.0059	1.7570	.9096	.9021	.9002	.5885	.6616	1.2480	.7491
70	3.17	5.01	5.60	8.56	9.16	.0789	.4297	.0975	.0184	.0036	1.7192	.8800	.8703	.8749	.6823	.6149	1.3611	.8460
85	3.53	4.80	5.45	7.21	7.89	.0989	.4286	.1397	.0255	.0077	1.7131	.8225	.8085	.8159	.5680	.5979	1.4376	.8938
90	3.62	4.72	6.72	5.54	7.55	.1050	.4415	.1814	.0315	.0135	1.6928	.7737	.7563	.7695	.5626	.5780	1.4610	.8882
95	3.75	4.67	8.73	3.23	7.29	.1145	.4508	.2165	.0347	.0167	1.6633	.7298	.7098	.7318	.5580	.5497	1.4835	.8861

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.1979	1.7604	88.54	89.42

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	1027.8	838.4	757.8	835.7	694.3	-67.0	42.50	-4.59	17.82	51.60	796.1	1345.6	-243.6	-1054.6	937.9	987.5
10	21.008	21.961	990.0	797.3	743.5	792.4	653.7	-87.1	41.32	-6.29	22.75	54.14	806.5	1353.0	-311.7	-1096.3	965.4	1009.2
15	21.589	22.432	945.8	769.5	715.7	763.2	618.3	-98.3	40.82	-7.35	27.56	55.94	808.1	1363.1	-373.8	-1129.2	992.1	1030.9
30	23.314	23.902	878.0	727.6	685.9	721.2	548.0	-96.7	38.62	-7.64	37.34	58.89	862.9	1395.9	-523.4	-1195.1	1071.4	1098.4
50	25.601	25.893	853.2	714.8	681.7	709.7	513.1	-85.0	36.97	-6.83	44.22	60.89	951.3	1459.1	-663.4	-1274.9	1176.5	1189.9
70	27.818	27.902	821.6	677.7	674.6	672.3	468.9	-84.8	34.80	-7.19	50.16	63.81	1053.9	1523.5	-809.5	-1367.1	1278.4	1282.2
85	29.408	29.382	826.7	648.1	677.2	645.1	474.3	-61.8	35.01	-5.47	52.33	65.45	1108.2	1562.4	-877.2	-1412.0	1351.4	1350.2
90	29.914	29.856	817.7	634.6	657.0	632.9	486.6	-45.9	36.53	-4.14	53.51	65.94	1104.8	1552.8	-888.1	-1417.9	1374.7	1372.0
95	30.382	30.293	801.1	596.3	632.6	594.3	491.5	-48.1	37.85	-4.65	55.04	67.57	1104.1	1558.3	-904.7	-1440.3	1396.2	1392.1

%SPAN	INCS DEGREE	INCH DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P PROFILE	LOSS-P	P02/ P01	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	.31	3.24	11.81	47.08	55.89	.0049	.3646	.1241	.0308	.0296	.9490	.0000	.0000	.7175	.8954	.7173	.6980	1.1513
10	.10	3.04	9.15	47.61	53.87	.0049	.3824	.1339	.0340	.0327	.9481	.0000	.0000	.7218	.8553	.6814	.7049	1.1562
15	.40	3.35	7.64	48.16	52.48	.0056	.3818	.0988	.0256	.0242	.9643	.0000	.0000	.7775	.8200	.6570	.7076	1.1637
30	.16	3.17	7.58	46.24	50.67	.0059	.3756	.0480	.0134	.0117	.9847	.0000	.0000	.8739	.7600	.6205	.7532	1.1904
50	.26	3.40	9.20	43.79	49.55	.0085	.3761	.0371	.0113	.0087	.9888	.0000	.0000	.8985	.7347	.6073	.8252	1.2398
70	.92	2.32	10.28	41.99	49.89	.0051	.3983	.0448	.0147	.0130	.9873	.0000	.0000	.8815	.7059	.5740	.9110	1.2905
85	2.84	3.02	14.45	40.47	52.03	.0046	.4428	.1118	.0389	.0373	.9683	.0000	.0000	.7386	.7066	.5440	.9483	1.3031
90	4.55	4.46	17.45	40.67	53.81	.0057	.4554	.1078	.0382	.0362	.9702	.0000	.0000	.7545	.6949	.5300	.9397	1.2968
95	3.98	5.54	19.03	42.50	56.05	.0056	.4989	.1376	.0495	.0474	.9634	.0000	.0000	.7295	.6778	.4954	.9356	1.2945

NCORR RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT
10532.6	174.92	1.1979	1.7199	84.63	85.77	39.49

WBLEED/WTOTAL	EFF - AD ADJ.	PO/PO LOCAL
.00503	84.16	.9778

TABLE 8.3
BLADE ELEMENT AND OVERALL PERFORMANCE WITH STATOR HUB SLIT
SUCTION, 95 PERCENT OF DESIGN SPEED, POINTS 1-3

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	523.4	972.4	523.4	618.7	.0	750.2	.00	50.49	56.93	14.47	959.3	639.2	-804.0	-159.7	804.0	909.9
10	18.467	20.408	535.1	945.5	535.1	624.5	.0	709.9	.00	48.66	57.80	20.17	1004.4	665.5	-850.0	-229.4	850.0	939.3
15	19.467	21.047	545.8	899.4	545.8	594.7	.0	674.8	.00	48.62	58.65	26.32	1049.1	664.5	-896.0	-294.0	896.0	968.7
30	22.314	22.964	565.9	792.7	565.9	504.8	.0	611.2	.00	50.45	61.13	41.45	1172.7	673.5	-1027.0	-445.8	1027.0	1057.0
50	25.791	25.520	574.1	776.2	574.1	504.5	.0	589.9	.00	49.46	64.18	49.20	1318.7	772.3	-1187.1	-584.7	1187.1	1174.6
70	28.954	28.076	567.2	752.7	567.2	494.8	.0	567.2	.00	48.90	66.93	55.65	1448.5	878.1	-1332.7	-725.1	1332.7	1292.3
85	31.295	29.993	553.3	763.0	553.3	483.6	.0	590.2	.00	50.67	68.98	58.53	1543.0	926.6	-1440.4	-790.3	1440.4	1380.5
90	31.883	30.630	549.0	752.9	549.0	451.5	.0	602.2	.00	53.15	69.49	60.80	1566.8	925.6	-1467.5	-807.6	1467.5	1409.8
95	32.499	31.271	544.9	731.2	544.9	409.8	.0	605.5	.00	55.93	69.98	63.82	1592.0	929.3	-1495.8	-833.8	1495.8	1439.3

%SPAN	INCS DEGREE	INCH 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	1.56	7.99	14.30	42.47	48.82	.0130	.5163	-.0296	-.0063	-.0091	2.0195	1.0134	1.0148	1.0250	.4811	.8431	.8852	.5542
10	1.83	8.23	14.10	37.63	43.54	.0159	.5083	-.0465	-.0101	-.0135	2.0051	1.0246	1.0272	1.0428	.4936	.8185	.9328	.5762
15	2.17	7.94	13.86	32.34	38.08	.0189	.5273	-.0050	-.0011	-.0052	1.9495	1.0015	1.0016	1.0029	.5036	.7754	.9767	.5728
30	3.29	7.24	11.67	19.69	24.10	.0327	.5682	.0973	.0197	.0129	1.8361	.9211	.9143	.9038	.5219	.6751	1.0902	.5735
50	4.59	7.21	6.85	14.99	14.62	.0602	.5501	.1258	.0251	.0130	1.8621	.8843	.8740	.8657	.5283	.6555	1.2154	.6522
70	5.41	7.27	5.15	11.28	9.17	.0844	.5243	.1525	.0291	.0131	1.8695	.8461	.8320	.8268	.5218	.6304	1.3290	.7354
85	5.62	6.90	4.28	10.45	7.88	.1044	.5353	.2021	.0383	.0188	1.9061	.7932	.7737	.7664	.5097	.6327	1.4085	.7682
90	5.67	6.77	5.60	8.69	7.55	.1104	.5484	.2371	.0427	.0231	1.8994	.7606	.7380	.7332	.5049	.6208	1.4332	.7631
95	5.76	6.69	7.80	6.16	7.29	.1200	.5565	.2657	.0441	.0245	1.8797	.7312	.7063	.7065	.5006	.5998	1.4569	.7623

TO/TO INLET	PO/PO INLET	EFF-AD INLET	EFF-P INLET
1.2307	1.8907	86.43%	87.59%

Stator

%SPAN	DIA-1 IN	DIA-2 IN	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	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	1005.3	718.7	694.6	717.7	726.7	-37.2	46.29	-2.97	17.02	55.03	726.6	1252.3	-212.7	-1026.2	939.4	989.1
10	21.008	21.961	978.2	682.7	694.7	678.2	688.7	-75.7	44.75	-6.40	21.03	58.01	748.6	1281.1	-278.3	-1086.5	966.9	1010.8
15	21.589	22.432	935.4	656.3	665.2	649.0	657.6	-97.3	44.68	-8.54	26.82	60.12	746.2	1303.2	-336.1	-1129.8	993.7	1032.5
30	23.314	23.902	839.3	604.4	584.5	599.1	602.3	-79.3	45.86	-7.54	38.85	63.07	750.6	1322.9	-470.8	-1179.4	1073.1	1100.1
50	25.601	25.893	833.0	616.3	589.3	612.3	588.8	-70.6	44.97	-6.58	45.01	64.13	833.6	1403.1	-589.6	-1262.4	1178.3	1191.8
70	27.818	27.902	826.3	612.7	595.0	608.7	573.4	-70.2	43.94	-6.58	49.90	65.80	924.2	1484.9	-707.0	-1354.4	1280.4	1284.2
85	29.408	29.382	853.0	621.3	602.9	619.5	603.4	-46.0	45.02	-4.25	51.21	66.10	962.4	1529.4	-750.2	-1398.3	1353.6	1352.4
90	29.914	29.856	850.0	615.2	583.8	614.3	617.7	-31.1	46.62	-2.89	52.44	66.39	957.7	1533.7	-759.1	-1405.2	1376.9	1374.2
95	30.382	30.293	838.3	595.5	560.8	594.9	623.0	-27.8	48.01	-2.68	54.12	67.30	957.0	1541.6	-775.4	-1422.1	1398.4	1394.3

%SPAN	INCS DEGREE	INCH 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	4.03	6.95	13.44	49.26	55.90	.0133	.4697	.1832	.0455	.0422	.9280	.0000	.0000	.7034	.8694	.6041	.6341	1.0526
10	3.52	6.46	9.03	51.15	53.87	.0131	.4980	.2125	.0539	.0506	.9199	.0000	.0000	.6741	.8421	.5734	.6505	1.0761
15	4.38	7.32	6.43	53.21	52.45	.0162	.5064	.1859	.0481	.0439	.9348	.0000	.0000	.7018	.8063	.5507	.6456	1.0934
30	7.41	10.41	7.67	53.40	50.65	.0333	.5057	.0949	.0264	.0172	.9724	.0000	.0000	.8343	.7188	.5052	.6423	1.1059
50	8.29	11.42	9.44	51.55	49.55	.0500	.5016	.0945	.0288	.0136	.9731	.0000	.0000	.8276	.7082	.5124	.7067	1.1666
70	8.26	11.50	10.92	50.51	49.93	.0530	.5163	.1065	.0351	.0176	.9704	.0000	.0000	.8027	.6976	.5065	.7790	1.2275
85	12.39	12.87	15.64	49.27	52.01	.0610	.5379	.1590	.0554	.0341	.9542	.0000	.0000	.7179	.7138	.5083	.8055	1.2515
90	14.37	14.34	18.75	49.51	53.86	.0686	.5478	.1635	.0580	.0337	.9535	.0000	.0000	.7123	.7084	.5009	.7982	1.2487
95	14.25	15.61	21.00	50.69	56.06	.0716	.5699	.1750	.0631	.0372	.9517	.0000	.0000	.6978	.6958	.4828	.7939	1.2497

NCORR RPM	WCORR LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET	EFF-P INLET	WC1/A1 LBM/SEC SQFT
10549.	163.81	1.2308	1.8132	80.23%	81.81%	36.98

WBLEED/WTOTAL	EFF - AD ADJ.	PO/PO LOCAL
.00650	79.71	.9599

TABLE 9.1
BLADE ELEMENT AND OVERALL PERFORMANCE WITH STATOR HUB SLIT SUCTION, 90 PERCENT OF DESIGN SPEED, POINTS 1-6

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	550.6	952.4	550.6	687.6	.0	659.0	.00	43.78	54.10	16.37	939.0	716.8	-760.6	-201.9	760.6	860.9
10	18.467	20.408	562.7	906.4	562.7	664.9	.0	616.0	.00	42.81	55.02	22.30	981.5	718.9	-804.2	-272.7	804.2	888.7
15	19.467	21.047	573.7	860.9	573.7	640.1	.0	575.6	.00	41.95	55.91	27.99	1023.6	726.0	-847.7	-341.0	847.7	916.6
30	22.314	22.964	590.2	789.5	598.2	630.1	.0	475.6	.00	37.04	58.37	39.75	1141.1	819.9	-971.7	-529.4	971.7	1000.0
50	25.791	25.520	611.5	727.0	611.5	595.7	.0	416.7	.00	34.97	61.43	49.38	1278.8	915.1	-1123.1	-699.6	1123.1	1111.3
70	28.954	28.076	604.5	676.7	604.5	575.3	.0	356.3	.00	31.76	64.37	56.37	1398.4	1040.3	-1260.9	-866.4	1260.9	1222.6
85	31.295	29.993	588.7	649.7	588.7	553.0	.0	341.1	.00	31.67	66.63	60.19	1484.6	1112.2	-1362.8	-965.0	1362.8	1306.1
90	31.883	30.630	584.1	623.5	584.1	517.7	.0	347.3	.00	33.89	67.18	62.31	1506.3	1114.4	-1368.4	-988.6	1388.4	1333.9
95	32.499	31.271	580.1	575.8	580.1	458.5	.0	348.0	.00	37.26	67.71	65.67	1529.5	1113.0	-1415.3	-1013.8	1415.3	1361.8

% SPAN	INCS DEGREE	INCH DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P PROFILE	LOSS-P	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-1.20	-5.17	16.20	37.73	48.82	.0045	.4004	.0371	.0078	.0069	1.7704	.9755	.9734	.9541	.5076	.8379	.8693	.6306
10	-.94	5.45	16.23	32.71	43.54	.0063	.4192	.0631	.0134	.0121	1.7178	.9549	.9512	.9246	.5204	.7946	.9136	.6303
15	-.59	5.22	15.54	27.93	38.10	.0082	.4311	.0843	.0179	.0161	1.6668	.9334	.9283	.9004	.5307	.7524	.9537	.6345
30	.49	4.47	10.04	18.62	24.18	.0162	.3954	.0414	.0086	.0052	1.6089	.9561	.9530	.9442	.5536	.6892	1.0625	.7158
50	1.87	4.46	7.02	12.04	14.60	.0353	.3834	.0709	.0141	.0070	1.5544	.9089	.9032	.8984	.5650	.6313	1.1861	.7946
70	2.88	4.71	5.86	8.00	9.16	.0535	.3409	.0636	.0119	.0019	1.5107	.9010	.8952	.8960	.5577	.5870	1.2912	.9029
85	3.26	4.92	5.96	6.45	7.90	.0692	.3323	.0933	.0168	.0045	1.4859	.8462	.8374	.8416	.5437	.5612	1.3627	.9602
90	3.36	4.45	7.14	4.87	7.57	.0743	.3436	.1357	.0233	.0106	1.4604	.7801	.7682	.7806	.5385	.5359	1.3847	.9577
95	3.49	4.41	9.67	2.04	7.31	.0823	.3561	.1806	.0280	.0154	1.4188	.7056	.6908	.7214	.5349	.4921	1.4056	.9512

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.1523	1.5658	89.69	90.32

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	1016.5	997.5	791.0	994.0	638.3	83.8	38.90	4.82	17.57	45.73	829.9	1423.9	-250.4	-1019.5	888.8	935.8
10	21.008	21.961	973.5	970.2	768.4	964.5	597.7	103.9	37.87	6.16	22.43	47.71	831.6	1433.5	-317.2	-1060.3	914.9	956.4
15	21.589	22.432	933.6	945.2	746.5	937.6	560.5	119.4	36.89	7.27	26.92	49.46	838.1	1442.8	-379.6	-1096.3	940.2	976.9
30	23.314	23.902	872.0	882.3	735.6	872.9	468.1	128.1	32.47	8.35	36.64	53.25	916.9	1469.0	-547.2	-1169.0	1015.3	1040.9
50	25.601	25.893	823.1	835.6	710.7	828.0	415.3	112.3	30.30	7.73	44.55	56.26	997.3	1491.0	-699.6	-1239.9	1114.9	1127.6
70	27.818	27.902	793.0	785.3	706.8	777.4	359.4	111.2	26.95	8.14	50.29	59.62	1107.3	1537.5	-852.0	-1328.3	1211.4	1216.1
85	29.408	29.382	789.0	745.7	708.2	738.5	347.9	104.0	26.17	8.02	52.79	61.91	1171.1	1568.3	-932.7	-1383.6	1280.7	1279.5
90	29.914	29.856	776.2	735.8	689.8	726.9	355.6	100.6	27.28	7.86	53.93	62.51	1171.7	1579.1	-947.1	-1400.8	1302.7	1300.2
95	30.382	30.293	748.5	699.1	657.3	691.2	357.9	104.7	28.58	8.63	55.75	64.11	1167.8	1583.0	-965.1	-1423.9	1323.1	1319.2

% SPAN	INCS DEGREE	INCH DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P PROFILE	LOSS-P	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-3.28	-.36	11.58	43.72	55.89	.0000	.1918	.1745	.0433	.0433	.9283	.0000	.0000	-2.5292	.8965	.8036	.7348	1.2613
10	-3.44	-.51	9.28	44.03	53.86	.0006	.1845	.1413	.0358	.0357	.9457	.0000	.0000	-2.2905	.8535	.7890	.7355	1.2693
15	-3.67	-.72	7.69	44.15	52.44	.0009	.1756	.1065	.0276	.0275	.9617	.0000	.0000	-2.3462	.8204	.7863	.7436	1.2765
30	-6.03	-3.03	6.87	40.82	50.67	.0000	.1788	.1116	.0310	.0310	.9638	.0000	.0000	-4.1088	.7661	.7796	.8152	1.2893
50	-6.50	-3.36	8.30	38.03	49.56	.0000	.1806	.0907	.0300	.0300	.9710	.0000	.0000	-3.1174	.7212	.7352	.8813	1.3120
70	-8.84	-5.60	9.32	35.09	49.89	.0000	.2061	.1361	.0447	.0447	.9623	.0000	.0000	-4.2415	.6968	.6896	.9780	1.3500
85	-6.12	-5.88	11.91	34.18	52.04	.0000	.2551	.1991	.0689	.0689	.9455	.0000	.0000	-.5446	.6907	.6505	1.0272	1.3679
90	-4.75	-4.87	13.74	35.14	53.82	.0000	.2611	.1774	.0625	.0625	.9530	.0000	.0000	-.4576	.6767	.6394	1.0228	1.3722
95	-5.26	-3.75	15.05	37.21	56.06	.0000	.2891	.1930	.0688	.0688	.9522	.0000	.0000	-.3037	.6492	.6044	1.0146	1.3684

N/CORR RPM	WCORR LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT
9980.	170.51	1.1522	1.5030	81.07	82.11	38.49

WBLEED/WTOTAL	EFF - AD ADJ.
.00314	80.75

PO/PO LOCAL
.9605

TABLE 9.2
BLADE ELEMENT AND OVERALL PERFORMANCE WITH STATOR HUB SLIT
SUCTION, 90 PERCENT OF DESIGN SPEED, POINTS 1-6

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	543.3	951.2	543.3	669.9	.0	675.4	.00	45.24	54.48	15.53	-935.2	695.4	-761.2	-188.1	761.2	861.5
10	18.467	20.408	555.2	907.4	555.2	651.1	.0	632.0	.00	44.15	55.39	21.57	977.7	700.4	-804.7	-257.3	804.7	889.3
15	19.467	21.047	566.1	859.1	566.1	623.6	.0	590.8	.00	43.44	56.28	27.58	1019.9	704.7	-848.3	-326.4	848.3	917.2
30	22.314	22.964	590.1	785.6	590.1	603.7	.0	502.6	.00	39.78	58.73	39.51	1137.5	782.8	-972.4	-498.1	972.4	1000.7
50	25.791	25.520	603.6	733.0	603.6	578.2	.0	450.6	.00	37.93	61.75	48.84	1275.8	878.6	-1123.9	-661.5	1123.9	1112.1
70	28.954	28.076	597.8	684.8	597.8	557.6	.0	397.6	.00	35.48	64.64	55.93	1396.3	996.8	-1261.7	-825.9	1261.7	1223.5
85	31.295	29.993	583.3	646.5	583.3	537.6	.0	393.9	.00	36.23	66.84	59.51	1483.3	1059.6	-1363.7	-913.1	1363.7	1307.0
90	31.883	30.630	578.8	645.3	578.8	505.7	.0	400.5	.00	38.41	67.38	61.57	1505.1	1062.5	-1389.4	-939.2	1389.4	1334.8
95	32.499	31.271	574.8	610.4	574.8	460.0	.0	401.0	.00	41.11	67.91	64.43	1528.4	1066.3	-1416.2	-961.7	1416.2	1362.7

%SPAN	INCS DEGREE	INCH DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P PROFILE	LOSS-P	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M*-1	M*-2
5	-.88	5.55	15.36	38.95	98.82	.0051	.4249	.0259	.0055	.0044	1.8022	.9829	.9813	.9689	.5005	.8348	.8651	.6103
10	-.57	5.82	15.50	33.83	43.54	.0069	.4399	.0447	.0096	.0081	1.7546	.9686	.9659	.9480	.5131	.7938	.9094	.8127
15	-.22	5.59	15.13	28.70	38.10	.0090	.4537	.0706	.0151	.0131	1.6999	.9458	.9414	.9196	.5233	.7990	.9496	.8194
30	.85	4.83	9.82	19.23	24.20	.0170	.4326	.0543	.0113	.0077	1.6415	.9460	.9420	.9323	.5455	.8026	1.0576	.8803
50	2.17	4.78	6.48	12.92	14.61	.0360	.4185	.0783	.0157	.0084	1.6055	.9067	.9002	.8951	.5572	.8334	1.1809	.9592
70	3.13	4.97	5.42	8.71	9.16	.0542	.3809	.0805	.0153	.0050	1.5689	.8871	.8797	.8805	.5513	.8501	1.2871	.8569
85	3.97	4.79	5.27	7.33	7.88	.0700	.3799	.1203	.0221	.0095	1.5560	.8257	.8144	.8176	.5386	.8708	1.3595	.9075
90	3.56	4.65	6.38	5.81	7.55	.0750	.3903	.1584	.0278	.0148	1.5357	.7737	.7595	.7686	.5336	.8600	1.3818	.9056
95	3.68	4.61	8.92	3.48	7.29	.0830	.3990	.1936	.0314	.0182	1.5044	.7220	.7055	.7257	.5294	.8178	1.4032	.9045

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.1654	1.6164	88.83	89.57

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	20.909	21.489	1009.0	895.3	768.2	892.4	654.2	71.9	40.42	-4.61	17.02	48.49	803.5	1346.5	-235.2	1008.3	889.4	936.4
10	21.008	21.961	967.5	852.4	748.5	847.5	613.0	-90.6	39.31	-6.11	22.00	51.03	807.6	1347.7	-302.4	1047.6	915.5	957.0
15	21.589	22.432	924.8	822.6	723.9	816.2	575.3	-102.2	38.46	-7.15	26.75	52.91	811.8	1353.8	-365.4	1079.7	940.8	977.5
30	23.319	23.902	860.7	771.4	704.3	764.2	494.6	-105.1	35.07	-7.83	36.50	56.32	876.4	1378.0	-521.4	1148.7	1016.0	1041.8
50	25.601	25.893	820.3	737.9	686.4	732.1	449.2	-91.8	33.20	-7.15	44.15	59.03	956.7	1423.0	-666.4	1220.2	1115.6	1128.3
70	27.818	27.902	791.4	699.9	682.2	693.6	401.1	-93.7	30.45	-7.70	49.91	62.09	1060.1	1482.0	-811.2	1309.6	1212.2	1215.9
85	29.408	29.382	793.8	662.5	684.4	659.2	402.1	-65.9	30.43	-5.71	52.11	63.91	1114.4	1499.0	-879.4	1346.3	1281.5	1280.4
90	29.919	29.856	783.9	651.1	667.7	648.6	410.6	-57.8	31.59	-5.09	53.22	64.48	1115.1	1505.7	-893.0	1358.8	1303.6	1301.0
95	30.382	30.293	764.5	609.6	643.5	606.3	412.6	-62.9	32.67	-5.94	54.77	66.33	1115.8	1510.3	-911.3	1383.0	1324.0	1320.1

%SPAN	INCS DEGREE	INCH DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P PROFILE	LOSS-P	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M*-1	M*-2
5	-1.74	1.18	11.79	45.02	55.89	.0015	.2880	.0990	.0245	.0242	.9600	.0000	.0000	.6508	.8851	.7796	.7088	1.1725
10	-1.98	.96	9.33	45.93	53.87	.0015	.3016	.1029	.0261	.0257	.9610	.0000	.0000	.6786	.8411	.7910	.7114	1.1716
15	-2.05	.89	7.86	45.61	52.50	.0015	.2995	.0727	.0189	.0185	.9743	.0000	.0000	.7504	.8077	.7944	.7178	1.1758
30	-3.41	-.40	7.39	42.91	50.67	.0007	.2978	.0465	.0129	.0127	.9854	.0000	.0000	.8164	.7516	.6894	.7739	1.1958
50	-3.57	-.43	8.88	40.35	49.56	.0010	.3018	.0317	.0096	.0093	.9908	.0000	.0000	.8768	.7139	.6380	.8409	1.2305
70	-5.32	-2.08	9.76	38.15	49.88	.0001	.3226	.0432	.0142	.0141	.9882	.0000	.0000	.8403	.6888	.6040	.9297	1.2790
85	-1.72	-1.55	19.22	36.14	52.04	.0000	.3716	.1209	.0421	.0420	.9671	.0000	.0000	.6445	.6880	.5669	.9679	1.2827
90	-.39	-.48	16.50	36.68	53.79	.0000	.3818	.1087	.0385	.0384	.9712	.0000	.0000	.6861	.6763	.5550	.9636	1.2834
95	-1.22	.36	17.74	38.62	56.05	.0000	.4272	.1425	.0511	.0511	.9640	.0000	.0000	.6584	.6568	.5171	.9609	1.2809

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WCI/AI LBM/SEC SQFT
9987.	169.16	1.1653	1.5851	85.02	85.97	38.19

WBLEED / WTOTAL	EFF - AD ADJ.
.0044	84.56

PO/PO LOCAL
.9813

TABLE 9.3
BLADE ELEMENT AND OVERALL PERFORMANCE WITH STATOR HUB SLIT
SUCTION, 90 PERCENT OF DESIGN SPEED, POINTS 1-6

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	17.487	19.769	530.7	941.5	530.7	643.3	.0	687.5	.00	46.90	55.08	15.06	927.3	666.3	-760.4	-173.1	760.4	860.6
10	18.467	20.408	542.4	904.1	542.4	635.9	.0	642.6	.00	45.30	55.99	21.14	969.8	682.1	-803.9	-245.9	803.9	888.9
15	19.467	21.047	553.0	857.1	553.0	610.8	.0	601.2	.00	44.54	56.87	27.25	1011.9	688.2	-847.5	-315.0	847.5	916.3
30	22.314	22.964	575.1	768.1	575.1	566.2	.0	519.0	.00	42.51	59.36	40.32	1129.0	742.9	-971.4	-480.7	971.4	999.7
50	25.791	25.520	586.7	728.5	586.7	549.8	.0	477.9	.00	40.99	62.40	49.02	1266.9	838.6	-1122.8	-634.1	1122.8	1111.0
70	28.954	28.076	581.2	685.5	581.2	530.6	.0	433.9	.00	39.27	65.23	56.01	1388.1	950.7	-1260.5	-788.4	1260.5	1222.3
85	31.295	29.993	567.6	678.9	567.6	520.0	.0	436.4	.00	40.01	67.38	59.11	1475.9	1013.0	-1362.4	-869.3	1362.4	1305.7
90	31.883	30.630	563.3	660.8	563.3	488.3	.0	444.8	.00	42.36	67.91	61.21	1498.0	1014.2	-1388.0	-888.6	1388.0	1333.5
95	32.499	31.271	559.2	631.4	559.2	446.1	.0	446.7	.00	45.06	68.43	64.00	1521.3	1017.9	-1414.8	-914.7	1414.8	1361.4

%SPAN	INCS DEGREE	INCH DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P PROFILE	LOSS-P P02/P01	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M*-1	M*-2
5	-.28	6.15	14.90	40.02	48.82	.0059	.4545	-.0056	-.0012	-.0025	1.8394	1.0014	1.0015	1.0043	.4884	.8239	.8570	.5831
10	.04	6.42	15.07	34.86	43.54	.0079	.4568	-.0061	-.0013	-.0030	1.8041	1.0020	1.0021	1.0047	.5007	.7895	.9015	.5957
15	-.39	6.17	14.80	29.62	38.09	.0100	.4683	.0206	.0044	-.0022	1.7510	.9834	.9820	.9758	.5106	.7461	.9421	.5991
30	1.49	5.46	10.59	19.04	24.15	.0180	.4677	.0520	.0107	.0069	1.6694	.9503	.9464	.9388	.5310	.6646	1.0493	.6427
50	2.82	5.43	6.67	13.38	14.61	.0370	.4526	.0797	.0160	.0085	1.6515	.9108	.9041	.8991	.5407	.6264	1.1704	.7211
70	3.72	5.57	5.51	9.22	9.16	.0550	.4193	.0925	.0175	.0071	1.6238	.8813	.8727	.8727	.5353	.5869	1.2765	.8139
85	4.01	5.29	4.86	8.27	7.87	.0706	.4186	.1311	.0244	.0115	1.6270	.8278	.8153	.8153	.5235	.5775	1.3498	.8612
90	4.09	5.19	6.01	6.70	7.54	.0757	.4304	.1694	.0301	.0169	1.6101	.7807	.7653	.7695	.5186	.5593	1.3725	.8585
95	4.20	5.13	7.98	4.43	7.29	.0836	.4392	.2030	.0335	.0199	1.5835	.7365	.7187	.7311	.5144	.5319	1.3943	.8575

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.1758	1.6673	89.37	90.13

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	20.407	21.489	791.3	830.9	734.3	829.0	666.0	-55.3	42.21	-3.82	14.86	50.08	767.4	1291.9	-222.5	-990.9	888.5	935.5
10	21.008	21.961	955.2	787.3	723.9	783.2	623.2	-78.6	40.72	-5.75	21.93	52.87	780.6	1297.9	-291.4	-1034.6	914.6	956.1
15	21.589	22.432	912.7	758.5	700.0	752.9	585.6	-92.0	39.91	-6.98	26.82	54.83	785.3	1307.4	-354.3	-1068.6	939.9	976.6
30	23.314	23.902	833.7	711.1	658.8	705.0	510.9	-92.5	37.79	-7.47	37.42	58.11	829.5	1334.5	-504.1	-1133.1	1015.0	1040.6
50	25.601	25.893	804.9	688.9	648.7	684.1	476.5	-81.2	36.30	-6.77	44.52	60.48	909.9	1388.7	-638.0	-1208.4	1114.5	1127.2
70	27.818	27.902	780.0	656.5	645.4	651.4	437.9	-81.6	34.15	-7.14	50.12	63.32	1007.3	1450.8	-773.1	-1298.3	1211.0	1214.7
85	29.408	29.382	791.9	634.9	654.6	632.6	445.8	-53.1	34.26	-4.79	61.89	64.60	1060.6	1474.8	-834.5	-1332.2	1280.3	1279.1
90	29.914	29.856	783.6	623.6	637.0	622.3	456.2	-39.2	35.61	-3.60	53.02	65.07	1059.2	1476.5	-846.1	-1339.0	1302.3	1299.8
95	30.382	30.293	767.5	588.2	614.7	586.8	459.6	-40.9	36.79	-4.00	54.54	66.66	1059.7	1481.1	-863.1	-1359.7	1322.7	1318.8

%SPAN	INCS DEGREE	INCH DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P TOTAL	LOSS-P PROFILE	P02/P01	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M*-1	M*-2
5	-.02	2.90	12.58	46.03	55.89	.0032	.3389	.1250	.0310	.0302	.9510	.0000	.0000	.6780	.8666	.7165	.6756	1.1141
10	-.61	2.32	9.69	46.47	53.87	.0028	.3601	.1453	.0369	.0362	.9462	.0000	.0000	.6652	.8290	.6781	.6866	1.1179
15	-.50	2.45	8.03	46.89	52.50	.0028	.3604	.1172	.0304	.0297	.9596	.0000	.0000	.7076	.7943	.6527	.6903	1.1251
30	-.64	2.36	7.74	45.27	50.66	.0028	.3485	.0437	.0122	.0114	.9870	.0000	.0000	.8628	.7253	.6114	.7270	1.1474
50	-.41	2.73	9.26	43.07	49.56	.0046	.3556	.0353	.0107	.0093	.9902	.0000	.0000	.8911	.6966	.5899	.7931	1.1892
70	-1.56	1.68	10.33	41.30	49.89	.0025	.3789	.0491	.0161	.0153	.9871	.0000	.0000	.8594	.6740	.5604	.8753	1.2386
85	-2.10	2.23	13.12	39.05	52.02	.0023	.4186	.1198	.0417	.0409	.9680	.0000	.0000	.6994	.6815	.5376	.9137	1.2488
90	3.60	3.53	18.00	39.21	53.81	.0028	.4290	.1140	.0404	.0394	.9703	.0000	.0000	.7207	.6706	.5258	.9072	1.2450
95	2.92	4.47	19.68	40.79	56.05	.0025	.4691	.1421	.0511	.0502	.9644	.0000	.0000	.6979	.6543	.4937	.9048	1.2430

NCORR RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT
9977.	166.26	1.1757	1.6292	85.07	86.09	37.53

WBLEED/WTOTAL	EFF - AD ADJ.
.00517	84.59

PO/PO LOCAL
.9780

TABLE 9.4
BLADE ELEMENT AND OVERALL PERFORMANCE WITH STATOR HUB SLIT
SUCTION, 90 PERCENT OF DESIGN SPEED, POINTS 1-6

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	502.5	731.2	502.5	610.9	.0	702.8	.00	49.00	56.57	14.57	912.2	631.4	-761.3	-158.8	761.3	861.6
10	18.467	20.408	513.3	898.1	513.3	607.4	.0	661.5	.00	47.44	57.47	20.56	954.6	649.2	-804.9	-227.9	804.9	889.5
15	19.467	21.047	523.1	853.4	523.1	581.1	.0	624.9	.00	47.08	58.34	26.70	996.8	651.8	-848.4	-292.4	848.4	917.3
30	22.314	22.964	542.0	751.1	542.0	511.1	.0	550.4	.00	47.12	60.86	41.39	1113.4	681.3	-972.5	-450.5	972.5	1000.9
50	25.791	25.520	550.6	727.8	550.6	508.9	.0	520.3	.00	45.63	63.90	49.31	1251.7	780.7	-1124.1	-592.0	1124.1	1112.3
70	28.954	28.076	544.8	698.0	544.8	495.3	.0	491.9	.00	44.80	66.64	55.87	1374.6	883.9	-1261.9	-731.8	1261.9	1223.7
85	31.295	29.993	531.9	703.9	531.9	484.8	.0	509.6	.00	46.42	68.69	58.70	1464.0	933.4	-1363.9	-797.6	1363.9	1307.2
90	31.883	30.630	527.9	690.8	527.9	453.5	.0	520.8	.00	48.97	69.20	60.89	1486.5	932.2	-1389.6	-814.2	1389.6	1335.0
95	32.499	31.271	524.1	668.5	524.1	415.2	.0	523.8	.00	51.62	69.69	63.67	1510.3	936.4	-1416.4	-839.1	1416.4	1362.9

%SPAN	INCS DEGREE	INCH DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P PROFILE	LOSS-P	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	1.21	7.64	14.40	42.00	48.82	.0086	.4877	-.0382	-.0081	-.0100	1.8839	1.0189	1.0205	1.0369	.4615	.8119	.8418	.6505
10	1.52	7.89	14.50	36.90	43.54	.0110	.4875	-.0398	-.0086	-.0110	1.8567	1.0220	1.0241	1.0391	.4729	.7816	.8867	.5649
15	1.88	7.62	14.23	31.64	38.06	.0135	.5027	-.0043	-.0009	-.0039	1.8067	1.0011	1.0012	1.0024	.4819	.7401	.9275	.5652
30	3.02	6.97	11.61	19.47	24.10	.0217	.5232	.0709	.0143	.0098	1.7065	.9378	.9328	.9231	.4987	.6456	1.0332	.5856
50	4.31	6.92	6.95	14.59	14.61	.0407	.5025	.0955	.0190	.0109	1.7137	.9033	.8955	.8873	.5055	.6214	1.1519	.6666
70	5.12	6.97	5.37	10.77	9.17	.0587	.4763	.1210	.0230	.0119	1.7054	.8636	.8527	.8473	.5000	.5922	1.2592	.7499
85	5.33	6.61	4.98	9.99	7.88	.0743	.4859	.1715	.0323	.0185	1.7266	.8050	.7896	.7812	.4889	.5917	1.3341	.7852
90	5.38	6.48	5.69	8.31	7.55	.0793	.4997	.2086	.0375	.0234	1.7164	.7660	.7476	.7416	.4845	.5781	1.3573	.7800
95	5.47	6.40	7.65	6.03	7.29	.0874	.5079	.2381	.0397	.0254	1.6971	.7324	.7117	.7110	.4805	.5568	1.3795	.7799

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.1936	1.7370	88.18	89.08

Stator

%SPAN	DIA-1 IN	DIA-2 IN	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	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	969.3	739.7	690.1	739.0	680.7	-30.6	44.61	-2.37	16.83	52.61	721.1	1217.2	-208.8	967.1	889.5	936.6
10	21.008	21.961	936.9	700.9	682.5	697.4	641.8	-66.8	43.24	-5.50	21.86	55.73	735.7	1239.2	-273.8	1023.9	915.6	957.1
15	21.589	22.432	895.4	673.0	656.5	667.4	608.9	-85.8	42.84	-7.34	26.83	57.08	736.7	1255.8	-332.1	1063.5	940.9	977.7
30	23.314	23.902	803.3	623.0	592.7	618.6	542.3	-74.2	42.46	-6.84	38.64	61.00	758.9	1275.9	-473.9	1115.9	1016.1	1041.7
50	25.601	25.893	789.4	622.3	594.8	619.0	519.0	-64.5	41.11	-5.95	45.10	62.58	842.6	1344.0	-596.8	1193.0	1115.8	1128.5
70	27.818	27.902	776.2	606.3	596.2	602.5	496.9	-67.4	39.81	-6.39	50.17	64.05	931.5	1417.9	-715.5	1283.5	1212.4	1216.1
85	29.408	29.382	797.8	604.7	604.4	603.5	520.7	-38.7	40.74	-3.67	51.54	65.42	971.9	1450.7	-761.0	1319.2	1281.7	1280.8
90	29.914	29.856	793.1	593.6	586.1	593.1	534.2	-20.2	42.35	-1.94	52.71	65.83	967.4	1448.5	-769.6	1321.4	1303.8	1301.2
95	30.382	30.293	781.1	566.3	565.3	566.0	539.0	-18.9	43.64	-1.92	54.25	67.09	967.6	1454.0	-785.2	1339.1	1324.2	1320.3

%SPAN	INCS DEGREE	INCH DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P PROFILE	LOSS-P	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	2.33	5.26	14.03	46.98	55.89	.0067	.4151	.1666	.0414	.0397	.9373	.0000	.0000	.6848	.8438	.6300	.6325	1.0367
10	1.96	4.89	9.93	48.74	53.86	.0066	.4415	.1872	.0475	.0459	.9332	.0000	.0000	.6665	.8116	.5964	.6435	1.0544
15	2.50	5.44	7.66	50.18	52.49	.0078	.4484	.1622	.0421	.0401	.9462	.0000	.0000	.6974	.7765	.5720	.6423	1.0675
30	4.02	7.02	8.38	49.29	50.66	.0128	.4378	.0643	.0179	.0143	.9823	.0000	.0000	.8607	.6943	.5287	.6571	1.0826
50	4.44	7.58	10.07	47.06	49.55	.0200	.4371	.0542	.0165	.0104	.9856	.0000	.0000	.8773	.6785	.5259	.7246	1.1359
70	4.14	7.38	11.10	46.19	49.92	.0197	.4596	.0655	.0216	.0151	.9832	.0000	.0000	.8534	.6639	.5100	.7974	1.1927
85	8.37	8.64	16.22	44.41	52.01	.0237	.4872	.1224	.0427	.0344	.9676	.0000	.0000	.7477	.6779	.5040	.8258	1.2091
90	10.23	10.17	19.68	44.29	53.84	.0280	.5002	.1299	.0461	.0362	.9662	.0000	.0000	.7405	.6704	.4923	.8178	1.2019
95	9.83	11.28	21.76	45.56	56.05	.0287	.5329	.1537	.0554	.0451	.9612	.0000	.0000	.7160	.6577	.4677	.8161	1.2006

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WCI/AI LBM/SEC SQFT
9989.	158.66	1.1936	1.6856	83.01	84.24	35.81

WBLEED / WTOTAL	EFF - AD ADJ.
.00625	82.45

PO/PO LOCAL
.9714

TABLE 9.5
BLADE ELEMENT AND OVERALL PERFORMANCE WITH STATOR HUB SLIT SUCTION, 90 PERCENT OF DESIGN SPEED, POINTS 1-6

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	484.4	925.3	484.4	598.9	.0	705.3	.00	49.66	57.49	14.50	901.4	618.8	-760.1	-155.0	760.1	860.3
10	18.467	20.408	499.8	897.3	499.8	601.8	.0	665.6	.00	47.88	58.33	20.29	943.7	642.0	-803.6	-222.5	803.6	808.1
15	19.467	21.047	504.1	852.4	504.1	573.1	.0	631.0	.00	47.76	59.25	26.43	985.8	641.3	-847.1	-284.9	847.1	915.9
30	22.314	22.964	521.6	750.0	521.6	499.7	.0	559.3	.00	48.22	61.74	41.35	1102.3	666.0	-971.0	-440.0	971.0	999.3
50	25.791	25.520	528.7	730.5	528.7	500.4	.0	532.2	.00	46.77	64.77	49.13	1240.6	764.8	-1122.3	-578.3	1122.3	1110.5
70	28.954	28.076	521.3	705.6	521.3	480.5	.0	516.7	.00	47.08	67.51	55.69	1363.6	853.4	-1260.0	-705.0	1260.0	1221.8
85	31.295	29.993	508.2	708.7	508.2	459.3	.0	519.8	-.00	49.61	69.53	59.03	1453.6	892.6	-1361.9	-765.4	1361.9	1305.2
90	31.883	30.630	504.5	699.1	504.5	430.4	.0	550.6	.00	52.00	70.02	61.18	1478.3	893.1	-1387.4	-782.3	1387.4	1332.9
95	32.499	31.271	501.0	678.9	501.0	393.4	.0	553.2	.00	54.60	70.49	64.03	1500.4	898.6	-1414.2	-807.6	1414.2	1360.8

% SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	2.13	8.56	14.34	42.98	48.82	.0106	.4961	-.0227	-.0048	1.8761	1.0103	1.0112	1.0211	.4442	.8060	.8309	.5391
10	2.44	8.79	14.22	38.09	43.54	.0131	.4902	-.0353	-.0076	-.0105	1.0581	1.0189	1.0207	1.0346	.4552	.7805	.8760	.5584
15	2.80	8.50	13.94	32.81	38.03	.0158	.5093	.0058	.0013	-.0022	1.8077	.9945	.9940	.9921	.4637	.7387	.9171	.5567
30	3.93	7.86	11.59	20.39	24.11	.0240	.5346	.0870	.0176	.0126	1.7073	.9262	.9202	.9067	.4791	.6438	1.0230	.5716
50	5.21	7.80	6.78	15.64	14.62	.0427	.5137	.1113	.0222	.0136	1.7190	.8910	.8821	.8695	.4844	.6228	1.1419	.6520
70	6.01	7.84	5.19	11.82	9.17	.0605	.5004	.1539	.0294	.0178	1.7147	.8350	.8220	.8103	.4772	.5966	1.2491	.7215
85	6.18	7.44	4.81	10.50	7.90	.0759	.5176	.2117	.0395	.0255	1.7336	.7710	.7526	.7380	.4659	.5933	1.3234	.7473
90	6.21	7.30	6.01	8.84	7.56	.0809	.5300	.2446	.0435	.0293	1.7274	.7381	.7172	.7045	.4618	.5823	1.3463	.7439
95	6.27	7.20	8.02	6.47	7.30	.0890	.5370	.2707	.0446	.0302	1.7110	.7090	.6862	.6786	.4584	.5630	1.3682	.7452

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.1994	1.7421	86.10	87.15

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	959.3	717.5	673.5	717.1	683.1	-23.9	45.41	-1.91	16.93	53.21	709.1	1197.5	-205.0	-959.0	888.1	935.1
10	21.008	21.961	931.5	682.1	671.2	678.0	645.9	-70.5	43.90	-5.98	21.79	56.53	723.2	1230.3	-260.3	-1026.1	914.2	956.7
15	21.589	22.432	889.6	654.4	643.0	647.4	614.9	-95.5	43.72	-8.41	26.79	58.86	721.3	1252.3	-324.6	-1071.7	939.5	976.2
30	23.319	23.902	796.5	598.8	575.2	593.7	550.9	-77.6	43.76	-7.45	38.86	62.02	738.9	1269.6	-463.6	-1117.8	1014.5	1040.1
50	25.601	25.893	785.8	601.5	579.6	598.3	530.7	-61.7	42.48	-5.89	45.18	63.28	822.4	1330.6	-583.4	-1188.5	1114.1	1126.8
70	27.818	27.902	777.1	589.8	575.9	586.4	521.9	-64.0	42.18	-6.23	50.08	65.35	897.8	1406.3	-688.7	-1278.2	1210.5	1214.2
85	29.408	29.382	796.1	587.9	574.7	586.5	550.9	-40.4	43.79	-3.94	51.74	66.03	928.1	1443.5	-728.8	-1319.0	1279.7	1278.6
90	29.914	29.856	793.8	579.5	558.1	579.1	564.3	-17.7	45.32	-1.79	52.08	66.26	924.9	1438.4	-737.4	-1316.9	1301.8	1299.2
95	30.382	30.293	782.8	559.2	537.5	559.0	569.1	-13.2	46.64	-1.36	54.48	67.22	925.3	1444.2	-753.0	-1331.5	1322.1	1318.2

% SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P PROFILE	LOSS-P TOTAL	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	3.07	6.00	14.49	47.32	55.89	.0081	.4309	.1677	.0417	.0397	.9380	.0000	.0000	.6970	.8348	.6096	.6179	1.0174
10	2.65	5.59	9.46	49.87	53.86	.0079	.4605	.1928	.0489	.0469	.9319	.0000	.0000	.6700	.8085	.5790	.6313	1.0444
15	3.38	6.32	6.59	52.13	52.50	.0099	.4702	.1664	.0431	.0405	.9455	.0000	.0000	.7032	.7710	.5549	.6277	1.0619
30	5.33	8.32	7.76	51.21	50.65	.0178	.4677	.0781	.0217	.0168	.9708	.0000	.0000	.8464	.6872	.5064	.6378	1.0705
50	9.80	8.93	10.12	48.37	49.55	.0272	.4645	.0697	.0212	.0129	.9817	.0000	.0000	.8588	.6743	.5066	.7045	1.1206
70	6.50	9.74	11.25	48.41	49.92	.0341	.4906	.0794	.0262	.0149	.9798	.0000	.0000	.8414	.6621	.4935	.7642	1.1766
85	11.22	11.65	15.95	47.73	52.02	.0443	.5213	.1299	.0453	.0299	.9660	.0000	.0000	.7557	.6725	.4869	.7840	1.1956
90	13.13	13.06	19.89	47.06	53.86	.0503	.5308	.1396	.0496	.0317	.9639	.0000	.0000	.7433	.6678	.4777	.7781	1.1860
95	12.86	14.25	22.32	48.01	56.06	.0523	.5544	.1537	.0554	.0366	.9615	.0000	.0000	.7270	.6561	.4591	.7754	1.1858

NCORR RPM	WCORR LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WCI/AI LBM/SEC SQFT
9973.	153.96	1.1995	1.6864	80.66	82.04	34.75

WBLEED / WTOTAL	EFF - AD ADJ.
.00612	80.17

PO/PO LOCAL
.9689

TABLE 9.6
BLADE ELEMENT AND OVERALL PERFORMANCE WITH STATOR HUB SLIT
SUCTION, 90 PERCENT OF DESIGN SPEED, POINTS 1-6

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	476.7	932.2	476.7	599.2	.0	719.1	.00	50.00	57.93	13.78	897.9	617.1	-760.9	-147.0	760.9	861.1
10	18.467	20.408	486.9	901.4	486.9	598.0	.0	674.5	.00	48.44	58.81	19.73	940.3	635.7	-804.4	-214.5	804.4	889.0
15	19.467	21.047	496.1	857.1	496.1	569.8	.0	640.2	.00	48.34	59.67	25.91	982.4	634.8	-848.0	-276.5	848.0	916.8
30	22.314	22.964	512.4	750.4	512.4	486.5	.0	571.4	.00	49.59	62.19	41.38	1098.8	648.7	-972.0	-428.9	972.0	1000.3
50	25.791	25.520	517.5	734.8	517.5	487.2	.0	550.0	.00	48.47	65.26	49.04	1236.9	743.6	-1123.4	-561.6	1123.4	1111.6
70	28.954	28.076	508.8	716.9	508.8	464.0	.0	546.5	.00	49.66	68.02	55.52	1360.1	820.6	-1261.2	-676.5	1261.2	1223.0
85	31.295	29.993	495.9	715.1	495.9	441.8	.0	562.3	.00	51.84	70.01	59.30	1450.6	865.5	-1363.2	-744.2	1363.2	1306.5
90	31.883	30.630	492.2	705.8	492.2	418.6	.0	568.1	.00	53.62	70.48	61.34	1473.5	873.3	-1388.8	-766.2	1388.8	1334.2
95	32.499	31.271	488.8	689.4	488.8	390.6	.0	568.0	.00	55.49	70.95	63.80	1497.7	885.2	-1415.6	-794.2	1415.6	1362.1

% SPAN	INCS DEGREE	INCH DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P PROFILE	LOSS-P PO2/PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	2.57	9.00	13.61	44.14	48.82	.0118	.4984	-.0489	-.0105	-.0130	1.9067	1.0236	1.0257	1.0473	.4371	.8118	.8281	.5374
10	2.88	9.22	13.66	39.08	43.54	.0144	.4973	-.0514	-.0111	-.0143	1.8833	1.0277	1.0302	1.0506	.4480	.7835	.8738	.5526
15	3.25	8.91	13.37	33.77	37.99	.0171	.5167	-.0082	-.0018	-.0056	1.8332	1.0036	1.0039	1.0063	.4563	.7421	.9153	.5496
30	4.41	8.32	11.62	20.81	24.11	.0256	.5518	.0914	.0185	.0132	1.7245	.9244	.9182	.9040	.4702	.6430	1.0210	.5558
50	5.72	8.31	6.72	16.22	14.64	.0444	.5338	.1222	.0244	.0155	1.7414	.8844	.8749	.8602	.4735	.6249	1.1387	.6324
70	6.53	8.35	5.03	12.49	9.18	.0623	.5305	.1770	.0339	.0219	1.7468	.8197	.8052	.7897	.4653	.6037	1.2451	.6910
85	6.66	7.93	5.08	10.71	7.91	.0778	.5409	.2251	.0416	.0275	1.7632	.7652	.7458	.7286	.4541	.5966	1.3188	.7219
90	6.67	7.77	6.16	9.14	7.56	.0829	.5468	.2496	.0442	.0297	1.7586	.7406	.7193	.7040	.4502	.5864	1.3417	.7255
95	6.73	7.66	7.79	7.15	7.29	.0910	.5488	.2691	.0447	.0298	1.7472	.7187	.6959	.6845	.4468	.5706	1.3639	.7327

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.2062	1.7691	85.79	86.88

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	964.3	706.0	671.8	705.6	691.7	-22.5	45.83	-1.83	16.36	53.64	700.3	1190.3	-197.3	-958.6	889.0	936.0
10	21.008	21.961	933.7	668.0	665.8	664.7	654.5	-63.5	44.51	-5.49	21.37	56.90	715.4	1217.9	-260.6	-1020.1	915.1	956.6
15	21.589	22.432	892.0	638.8	637.5	632.7	623.9	-87.5	44.39	-7.90	26.42	59.27	712.9	1238.8	-316.5	-1064.6	940.4	977.1
30	23.314	23.902	794.1	580.5	560.3	575.4	562.8	-76.7	45.13	-7.59	38.93	62.76	720.5	1257.2	-452.8	-1117.8	1015.5	1041.2
50	25.601	25.893	786.7	585.7	563.9	581.8	548.6	-67.4	44.21	-6.61	45.13	64.04	799.4	1329.4	-566.6	-1195.3	1115.2	1127.9
70	27.818	27.902	783.4	578.8	555.8	575.0	552.0	-66.0	44.80	-6.55	49.87	65.83	862.8	1404.5	-659.7	-1281.4	1211.7	1215.4
85	29.408	29.382	796.4	577.8	552.0	576.3	574.1	-42.1	46.13	-4.18	52.01	66.45	896.8	1442.1	-706.9	-1321.9	1281.0	1279.9
90	29.914	29.856	793.6	570.6	539.1	569.7	582.3	-32.0	47.21	-3.21	53.20	66.85	900.1	1449.2	-720.7	-1332.5	1303.0	1300.5
95	30.382	30.293	785.2	556.3	524.3	555.2	584.4	-33.3	48.11	-3.43	54.64	67.68	906.2	1462.4	-739.0	-1352.8	1323.4	1319.5

% SPAN	INCS DEGREE	INCH DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P PROFILE	LOSS-P PO2/PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	3.49	6.41	14.57	47.67	55.89	.0095	.4476	.1783	.0443	.0420	.9336	.0000	.0000	.6947	.8381	.5985	.6141	1.0090
10	3.24	6.17	9.94	50.00	53.86	.0097	.4772	.2019	.0513	.0488	.9285	.0000	.0000	.6701	.8081	.5656	.6242	1.0312
15	4.04	6.98	7.12	52.29	52.52	.0121	.4894	.1798	.0466	.0434	.9409	.0000	.0000	.6963	.7727	.5402	.6195	1.0475
30	6.68	9.67	7.62	52.72	50.65	.0246	.4929	.0856	.0238	.0170	.9770	.0000	.0000	.8442	.6839	.4894	.6199	1.0599
50	7.49	10.62	9.40	50.82	49.56	.0390	.4943	.0831	.0253	.0134	.9782	.0000	.0000	.8479	.6732	.4913	.6823	1.1151
70	9.09	12.33	10.94	51.35	49.93	.0566	.5224	.1020	.0336	.0149	.9739	.0000	.0000	.8126	.6643	.4814	.7305	1.1682
85	13.50	13.98	15.71	50.30	52.02	.0661	.5451	.1424	.0497	.0266	.9630	.0000	.0000	.7443	.6699	.4762	.7542	1.1886
90	14.99	14.95	18.42	50.42	53.86	.0689	.5564	.1514	.0537	.0293	.9611	.0000	.0000	.7313	.6654	.4686	.7545	1.1900
95	14.35	15.72	20.24	51.54	56.06	.0672	.5757	.1622	.0584	.0342	.9593	.0000	.0000	.7171	.6564	.4554	.7573	1.1972

N CORR RPM	W CORR LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC/A LBM/SEC SQFT
9983.	151.39	1.2063	1.7056	79.83	81.29	34.17

W BLEED / W TOTAL	EFF - AD ADJ.
.00685	79.29

PO/PO LOCAL
.9651

TABLE 10.1

BLADE ELEMENT AND OVERALL PERFORMANCE WITH STATOR HUB SLIT

SUCTION, 85 PERCENT OF DESIGN SPEED, POINTS 1-3

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	517.7	922.5	517.7	676.0	.0	627.7	.00	42.88	54.29	15.39	885.9	701.3	-718.9	-185.9	-718.9	-813.6
10	18.467	20.408	528.7	878.0	528.7	655.6	.0	584.1	.00	41.69	55.17	21.32	925.9	704.1	-760.0	-255.9	760.0	839.9
15	19.467	21.047	538.7	832.5	538.7	629.6	.0	544.5	.00	40.84	56.08	27.01	965.4	707.9	-801.4	-321.7	801.2	866.2
30	22.314	22.964	560.2	755.2	560.2	611.0	.0	443.8	.00	35.99	58.60	39.36	1075.8	790.4	-918.4	-501.3	918.4	945.1
50	25.791	25.520	571.5	697.6	571.5	586.0	.0	378.5	.00	32.86	61.69	48.90	1205.6	891.5	-1061.5	-671.8	1061.5	1050.3
70	28.954	28.076	564.4	648.4	564.4	562.8	.0	321.9	.00	29.76	64.64	55.93	1318.6	1006.1	-1191.6	-833.5	1191.6	1155.5
85	31.295	29.993	549.8	620.1	549.8	536.7	.0	310.7	.00	30.06	66.88	59.84	1400.4	1068.3	-1268.0	-923.7	1288.0	1234.4
90	31.883	30.630	545.7	590.6	545.7	500.2	.0	313.7	.00	32.12	67.42	62.16	1421.1	1071.2	-1312.2	-946.9	1312.2	1260.6
95	32.499	31.271	542.2	542.3	542.2	442.9	.0	312.6	.00	35.27	67.93	65.56	1443.3	1070.7	-1337.5	-974.4	1337.5	1287.0

%SPAN	INCS DEGREE	INCH DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P PROFILE	LOSS-P	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-1.12	5.31	15.22	38.85	48.82	.0027	.3738	.0302	.0064	.0058	1.6828	.9794	.9777	.9583	.4759	.8151	.8180	.6497
10	-.77	5.61	15.25	33.85	43.54	.0040	.3920	.0546	.0117	.0100	1.6348	.9601	.9572	.9279	.4875	.7735	.8597	.6202
15	-.40	5.38	14.57	29.07	38.09	.0055	.4075	.0819	.0176	.0164	1.5853	.9341	.9297	.8944	.4967	.7311	.8974	.6217
30	.74	4.70	9.61	19.24	24.14	.0104	.3781	.0491	.0102	.0080	1.5201	.9470	.9438	.9290	.5165	.6822	.9987	.6931
50	2.14	4.73	6.54	12.80	14.61	.0215	.3558	.0581	.0116	.0073	1.4727	.9200	.9164	.9070	.5259	.6099	1.1143	.7794
70	3.16	4.98	5.42	8.71	9.15	.0338	.3183	.0570	.0108	.0044	1.4293	.9052	.9003	.8962	.5186	.5662	1.2137	.8786
85	3.51	4.77	5.63	7.04	7.91	.0452	.3158	.0950	.0173	.0092	1.4027	.8326	.8245	.8222	.5056	.5391	1.2813	.9288
90	3.60	4.69	6.98	5.27	7.57	.0491	.3261	.1358	.0234	.0150	1.3763	.7633	.7525	.7589	.5011	.5112	1.3020	.9271
95	3.71	4.63	9.56	2.37	7.31	.0554	.3379	.1790	.0278	.0193	1.3378	.6845	.6713	.6979	.4977	.4870	1.3218	.9221

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.1326	1.4828	89.83	90.38

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	985.7	982.1	775.8	977.7	608.0	-92.6	38.08	-5.41	-16.65	-44.98	809.9	1382.2	-232.0	-977.0	-840.0	-884.4
10	21.008	21.961	943.8	955.5	754.8	949.3	566.6	-108.2	36.89	-6.51	-21.55	-46.83	811.8	1387.7	-298.0	-1012.0	864.6	903.8
15	21.589	22.432	903.5	931.6	731.5	924.2	530.2	-117.5	35.92	-7.25	-26.06	-48.39	815.3	1392.0	-358.3	-1040.7	888.5	923.2
30	23.314	23.902	836.2	867.2	713.0	858.7	436.8	-120.9	31.49	-8.02	-36.25	-52.14	884.1	1399.2	-522.7	-1104.7	959.5	983.7
50	25.601	25.893	790.8	816.0	695.0	807.6	377.2	-117.0	28.49	-8.24	-44.22	-55.67	969.9	1432.2	-676.6	-1182.6	1053.4	1065.6
70	27.818	27.902	760.8	770.9	687.9	762.7	324.8	-112.0	25.27	-8.35	-49.99	-58.82	1070.6	1473.2	-820.1	-1260.3	1144.9	1148.3
85	29.408	29.382	754.4	721.7	684.6	714.2	316.8	-103.6	24.83	-8.25	-52.54	-61.45	1125.6	1494.6	-893.6	-1312.9	1210.3	1209.2
90	29.914	29.856	738.2	702.4	664.7	695.5	321.2	-98.1	25.80	-8.03	-53.85	-62.34	1127.0	1498.1	-910.0	-1326.9	1231.1	1228.7
95	30.382	30.293	709.5	660.5	632.5	652.6	321.5	-101.5	26.96	-8.86	-55.75	-64.17	1123.9	1498.1	-928.9	-1348.3	1250.4	1246.7

%SPAN	INCS DEGREE	INCH DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P PROFILE	LOSS-P	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-4.11	-1.19	10.99	43.50	55.89	.0000	.1770	.1792	.0431	.0431	.9311	.0000	.0000	*******	.8731	.8756	.7199	1.2323
10	-4.42	-1.49	8.93	43.40	53.86	.0000	.1673	.1401	.0355	.0355	.9482	.0000	.0000	4.0421	.8312	.8517	.7207	1.2369
15	-4.81	-1.87	7.72	43.17	52.45	.0001	.1591	.0991	.0257	.0257	.9658	.0000	.0000	2.0094	.7971	.8298	.7256	1.2399
30	-7.09	-4.04	7.20	39.51	50.66	.0000	.1489	.0887	.0247	.0247	.9729	.0000	.0000	1.8334	.7378	.7715	.7877	1.2448
50	-8.31	-5.17	7.79	36.73	49.57	.0000	.1589	.0941	.0285	.0285	.9738	.0000	.0000	2.0273	.6969	.7235	.8624	1.2698
70	-10.52	-7.28	9.10	33.62	49.88	.0000	.1767	.1128	.0370	.0370	.9705	.0000	.0000	3.8838	.6713	.6824	.9515	1.3041
85	-7.94	-7.16	11.69	33.09	52.07	.0000	.2382	.2016	.0698	.0698	.9482	.0000	.0000	-.9549	.6626	.6538	.9922	1.3125
90	-6.17	-6.33	13.53	33.83	53.79	.0000	.2505	.1989	.0700	.0700	.9510	.0000	.0000	-.7618	.6466	.6144	.9096	1.3105
95	-6.91	-5.35	14.82	35.82	56.06	.0000	.2843	.2299	.0819	.0819	.9474	.0000	.0000	-.5095	.6186	.5749	.9826	1.3038

NCORR INLET RPM	WCORR INLET	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WCI/AI LBM/SEC SQFT	WBLEED/WTOTAL	EFF - AD ADJ.	PO/PO LOCAL
9432.	162.12	1.1325	1.4302	81.24	82.15	36.60	.00333	80.93	.9651

TABLE 10.2
BLADE ELEMENT AND OVERALL PERFORMANCE WITH STATOR HUB SLIT SUCTION, 85 PERCENT OF DESIGN SPEED, POINTS 1-3

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	494.9	907.6	494.9	633.5	.0	649.9	.00	45.73	55.45	14.50	872.8	664.5	-718.9	-163.8	718.9	813.6
10	18.467	20.408	505.4	869.4	505.4	621.8	.0	607.5	.00	44.33	56.37	20.49	912.8	664.3	-760.0	-232.4	760.0	839.9
15	19.467	21.047	514.9	822.4	514.9	595.1	.0	567.7	.00	43.64	57.27	26.62	952.4	666.8	-801.2	-298.6	801.2	866.2
30	22.314	22.964	534.3	734.0	534.3	548.4	.0	487.9	.00	41.66	59.80	39.82	1062.5	714.0	-918.4	-457.2	918.4	945.1
50	25.791	25.520	544.3	689.2	544.3	537.3	.0	431.7	.00	38.78	62.85	49.02	1192.9	819.6	-1061.5	-618.7	1061.5	1050.3
70	28.954	28.076	538.9	648.2	538.9	516.1	.0	392.1	.00	37.22	65.65	55.90	1307.9	921.9	-1191.7	-763.5	1191.7	1155.5
85	31.295	29.993	526.6	639.6	526.6	501.6	.0	396.8	.00	38.35	67.76	59.08	1391.5	976.4	-1288.0	-837.6	1288.0	1234.4
90	31.883	30.630	522.7	623.9	522.7	474.6	.0	404.8	.00	40.48	68.28	60.99	1412.5	978.8	-1312.2	-855.9	1312.2	1260.6
95	32.499	31.271	519.0	596.7	519.0	436.4	.0	406.8	.00	43.01	68.79	63.62	1434.7	982.7	-1337.6	-880.2	1337.6	1287.0

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	.09	6.52	14.33	40.95	48.82	.0041	.4239	-.0118	-.0025	-.0034	1.7358	1.0049	1.0053	1.0124	.4542	.7980	.8048	.5765
10	.43	6.80	14.43	35.88	43.54	.0057	.4331	-.0014	-.0003	-.0015	1.6997	.9990	.9989	.9999	.4652	.7627	.8467	.5827
15	.80	6.56	14.16	30.66	38.08	.0075	.4487	.0310	.0067	.0050	1.6492	.9755	.9737	.9621	.4739	.7192	.8896	.6830
30	1.94	5.90	10.04	19.98	24.11	.0131	.4536	.0668	.0138	.0111	1.5717	.9354	.9312	.9170	.4914	.6381	.9846	.6207
50	3.27	5.87	6.66	13.83	14.61	.0238	.4229	.0687	.0137	.0090	1.5478	.9182	.9131	.9042	.4995	.6970	1.0981	.7098
70	4.15	5.99	5.40	9.76	9.17	.0359	.3950	.0865	.0164	.0096	1.5204	.8818	.8747	.8694	.4942	.6592	1.1985	.7953
85	4.40	5.67	4.83	8.68	7.88	.0472	.3995	.1302	.0243	.0156	1.5188	.8173	.8063	.8000	.4836	.6484	1.2678	.8371
90	4.46	5.56	5.80	7.29	7.54	.0511	.4107	.1666	.0298	.0208	1.5055	.7703	.7567	.7536	.4794	.6526	1.2893	.8356
95	4.56	5.49	7.60	5.17	7.28	.0574	.4196	.1993	.0333	.0239	1.4830	.7247	.7090	.7137	.4757	.6072	1.3100	.8353

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.1529	1.5650	89.21	89.87

Stator

%SPAN	DIA-1 IN	DIA-2 IN	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	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	957.3	829.2	721.2	826.5	629.5	66.7	41.12	4.61	16.27	49.01	751.4	1260.1	210.5	951.1	840.0	884.4
10	21.008	21.961	920.3	785.6	706.9	780.6	589.2	87.5	39.80	6.42	21.29	51.78	759.1	1262.1	275.4	991.4	864.6	903.9
15	21.589	22.432	877.7	756.9	681.7	750.5	552.9	98.1	39.04	7.46	26.20	53.69	760.6	1267.7	335.6	1021.4	888.5	923.2
30	23.319	23.902	799.2	706.3	638.6	699.7	480.5	96.1	36.96	7.82	36.87	57.05	798.3	1286.8	479.0	1079.8	959.5	983.7
50	25.601	25.893	764.3	674.1	631.7	668.5	430.2	86.6	34.25	7.38	44.62	59.88	887.6	1332.2	623.4	1152.2	1053.7	1065.7
70	27.818	27.902	740.6	641.1	625.9	635.8	395.7	82.5	32.30	7.39	50.10	62.68	976.4	1385.4	749.2	1230.8	1149.9	1148.4
85	29.408	29.382	749.9	616.6	630.9	613.9	405.4	58.1	32.72	5.41	51.91	64.16	1022.8	1408.2	805.0	1267.4	1210.3	1209.1
90	29.914	29.856	743.4	605.9	616.5	604.2	415.2	43.5	33.96	4.11	52.93	64.60	1022.7	1408.5	816.0	1272.3	1231.2	1228.8
95	30.382	30.293	728.7	571.0	596.5	569.0	418.6	47.1	35.06	4.75	54.36	66.26	1023.7	1413.7	831.9	1293.9	1250.4	1246.8

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	1.12	1.81	11.79	45.73	55.89	.0012	.3109	.1150	.0285	.0282	.9568	.0000	.0000	.6462	.8404	.7217	.6643	1.0967
10	1.51	1.42	9.02	46.22	53.87	.0010	.3309	.1334	.0338	.0336	.9530	.0000	.0000	.6353	.8014	.6826	.6695	1.0966
15	1.37	1.57	7.57	46.49	52.51	.0011	.3290	.1025	.0266	.0263	.9665	.0000	.0000	.6922	.7667	.6570	.6712	1.1003
30	1.55	1.45	7.40	44.77	50.67	.0010	.3171	.0312	.0087	.0084	.9913	.0000	.0000	.8880	.6978	.6122	.7041	1.1154
50	2.96	.68	8.65	41.63	49.56	.0008	.3244	.0284	.0086	.0084	.9927	.0000	.0000	.8943	.6658	.5830	.7795	1.1622
70	3.41	.17	10.08	39.69	49.89	.0003	.3480	.0420	.0138	.0137	.9897	.0000	.0000	.8518	.6443	.5527	.8545	1.1943
85	.57	.73	14.51	38.13	52.03	.0003	.3938	.1133	.0394	.0393	.9720	.0000	.0000	.6798	.6497	.5273	.8872	1.2042
90	1.95	1.88	17.48	38.07	53.80	.0004	.4044	.1111	.0394	.0392	.9731	.0000	.0000	.6982	.6411	.5161	.8829	1.1998
95	1.18	2.75	18.93	39.81	56.05	.0003	.4472	.1447	.0520	.0519	.9663	.0000	.0000	.6680	.6261	.4843	.8812	1.1989

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WCI/AI LBM/SEC SQFT
9433.	156.59	1.1529	1.5355	85.24	86.10	35.35

WBLEED / WTOTAL	EFF - AD ADJ.
.0053	84.74

PO/PO LOCAL
.9820

TABLE 10.3
BLADE ELEMENT AND OVERALL PERFORMANCE WITH STATOR HUB SLIT
SUCTION, 85 PERCENT OF DESIGN SPEED, POINTS 1-3

Rotor

%SPAN	DIA-1 IN	DIA-2 IN	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VU-1 FT/SEC	VU-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	VU'-1 FT/SEC	VU'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.769	453.0	886.2	453.0	573.7	.0	675.4	.00	49.65	57.61	13.65	850.6	590.5	-719.9	-139.4	719.9	814.8
10	18.467	20.408	462.5	855.8	462.5	575.6	.0	633.3	.00	47.73	58.71	13.84	890.6	612.4	-761.1	-207.8	761.1	841.1
15	19.467	21.047	471.0	813.4	471.0	554.2	.0	595.3	.00	47.05	59.59	26.15	930.4	618.6	-802.3	-272.1	802.3	867.5
30	22.314	22.964	487.1	715.2	487.1	483.6	.0	526.9	.00	47.46	62.08	40.93	1040.9	640.3	-919.7	-419.5	919.7	943.5
50	25.791	25.520	493.4	696.4	493.4	483.3	.0	487.4	.00	45.24	65.10	45.42	1171.9	743.1	-1063.0	-564.4	1063.0	1051.6
70	28.954	28.076	486.1	663.8	486.1	466.0	.0	472.7	.00	45.41	67.62	54.72	1238.6	828.3	-1193.4	-684.5	1193.4	1157.2
85	31.295	29.993	473.6	663.4	473.6	441.9	.0	494.3	.00	48.23	69.83	59.20	1274.1	863.1	-1239.8	-741.4	1239.8	1236.2
90	31.883	30.630	470.1	651.7	470.1	412.1	.0	514.7	.00	50.76	70.31	61.46	1295.7	862.6	-1314.1	-757.8	1314.1	1262.4
95	32.499	31.271	467.0	631.8	467.0	376.6	.0	507.0	.00	53.40	70.78	64.27	1318.6	868.1	-1339.5	-781.9	1339.5	1288.8

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P PROFILE	LOSS-P	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	2.46	3.89	13.49	49.16	48.82	.0083	.4011	-.0182	-.0039	-.0056	1.7752	1.0081	1.0086	1.0176	.4144	.7744	.7821	.5160
10	2.77	9.13	13.78	38.87	43.54	.0104	.4643	-.0322	-.0070	-.0093	1.7542	1.0173	1.0187	1.0331	.4242	.7468	.8243	.5344
15	3.13	8.85	13.66	32.44	38.04	.0127	.4945	-.0454	-.0091	-.0139	1.7118	1.0016	1.0017	1.0037	.4320	.7079	.8629	.5384
30	4.27	8.19	11.16	21.15	24.11	.0196	.5232	.0780	.0161	.0120	1.6228	.9313	.9264	.9111	.4461	.6170	.9532	.5524
50	5.54	8.13	7.08	15.66	14.62	.0296	.4821	.0514	.0181	.0122	1.6249	.9056	.8988	.8854	.4507	.5892	1.0756	.6379
70	6.33	8.16	5.22	12.10	9.17	.0419	.4755	.1349	.0257	.0177	1.6160	.8477	.8368	.8222	.4437	.5657	1.1774	.7059
85	6.48	7.74	4.39	10.53	7.92	.0533	.4995	.1872	.0366	.0268	1.6265	.7753	.7591	.7403	.4329	.5602	1.2478	.7288
90	6.50	7.59	6.29	8.85	7.57	.0572	.5126	.2326	.0409	.0309	1.6182	.7388	.7205	.7036	.4292	.5478	1.2695	.7252
95	6.56	7.43	8.26	6.51	7.30	.0638	.5198	.2585	.0422	.0319	1.6030	.7079	.6879	.6759	.4261	.5289	1.2902	.7267

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.1750	1.6440	87.13	88.02

Stator

%SPAN	DIA-1 IN	DIA-2 IN	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VU-1 FT/SEC	VU-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	VU'-1 FT/SEC	VU'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	20.409	21.489	919.9	707.7	646.7	706.8	654.2	736.9	45.33	-2.59	16.12	52.54	673.2	1162.2	-186.9	-922.6	841.2	885.7
10	21.008	21.961	889.9	669.0	643.9	665.3	614.2	-68.2	43.64	-5.89	21.34	55.64	691.7	1179.3	-231.7	-973.4	865.9	905.1
15	21.589	22.432	850.7	641.1	621.8	635.5	580.0	-84.4	43.01	-7.58	26.48	57.79	695.7	1192.6	-309.8	-1068.9	889.8	924.5
30	23.314	23.902	761.0	586.9	556.4	581.5	519.1	-79.3	43.01	-7.77	38.44	61.35	710.6	1213.0	-441.8	-1064.5	960.9	985.1
50	25.601	25.893	740.4	582.4	558.5	576.0	466.1	-71.6	41.04	-7.06	45.53	63.69	797.4	1277.1	-569.1	-1136.8	1055.2	1067.2
70	27.818	27.902	732.0	567.6	554.9	563.6	477.4	-67.4	40.71	-6.82	50.32	65.15	869.4	1341.6	-669.1	-1217.4	1146.5	1150.0
85	29.408	29.362	746.1	560.1	549.2	557.9	515.0	-49.8	42.66	-5.11	52.16	66.13	895.3	1378.7	-707.1	-1260.8	1212.1	1211.0
90	29.914	29.856	741.4	549.1	531.1	543.1	517.2	-31.9	44.24	-3.31	53.42	66.53	891.3	1376.2	-715.7	-1262.4	1232.9	1230.5
95	30.382	30.293	730.1	527.7	510.9	526.9	521.6	-28.8	45.61	-3.14	55.04	67.58	891.6	1381.9	-730.6	-1277.4	1252.2	1249.5

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P PROFILE	LOSS-P	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	2.99	5.91	13.41	48.32	55.89	.0060	.4132	.1512	.0376	.0361	.9472	.0000	.0000	.7059	.8015	.6057	.5925	.9946
10	2.26	5.20	9.55	49.53	53.86	.0053	.4405	.1786	.0453	.0440	.9468	.0000	.0000	.6780	.7714	.5721	.6075	1.0065
15	2.69	5.62	7.45	50.58	52.52	.0060	.4475	.1579	.0409	.0394	.9515	.0000	.0000	.6992	.7384	.5477	.6079	1.0190
30	4.56	7.56	7.45	50.78	50.66	.0121	.4475	.1740	.0206	.0172	.9812	.0000	.0000	.8411	.6594	.5002	.6175	1.0337
50	4.36	7.49	8.96	48.09	49.56	.0157	.4431	.0509	.0155	.0107	.9378	.0000	.0000	.8841	.6392	.4952	.6883	1.0858
70	5.04	8.27	10.66	47.53	49.92	.0208	.4710	.0659	.0217	.0148	.9846	.0000	.0000	.8566	.6281	.4797	.7459	1.1337
85	10.08	10.46	14.78	47.70	52.02	.0303	.5094	.1157	.0403	.0297	.9725	.0000	.0000	.7684	.6352	.4688	.7623	1.1539
90	12.10	12.01	18.31	47.56	53.85	.0361	.5228	.1246	.0442	.0314	.9718	.0000	.0000	.7572	.6286	.4576	.7557	1.1468
95	11.81	13.22	20.54	48.74	56.06	.0379	.5495	.1403	.0505	.0369	.9682	.0000	.0000	.7392	.6170	.4381	.7534	1.1472

NCORR RPM	WCORR LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT
9446.	145.92	1.1750	1.6008	82.14	83.31	32.94

WBLEED/WTOTAL	EFF - AD ADJ.
.00670	81.57

PO/PO LOCAL
.9746

TABLE 11.1
BLADE ELEMENT AND OVERALL PERFORMANCE WITH STATOR HUB SLIT
SUCTION, 70 PERCENT OF DESIGN SPEED, POINTS 1-5

Rotor

%SPAN	DIA-1 IN	DIA-2 IN	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VU-1 FT/SEC	VU-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	VU'-1 FT/SEC	VU'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.769	415.6	795.1	415.6	603.1	.0	518.1	.00	40.66	54.92	14.13	723.3	622.0	-591.9	-151.9	591.9	670.0
10	18.467	20.408	423.9	765.9	423.9	596.1	.0	480.8	.00	38.88	55.89	19.47	755.9	632.7	-625.8	-210.8	625.8	691.6
15	19.467	21.047	431.3	727.6	431.3	577.0	.0	443.1	.00	37.50	56.83	25.06	788.2	638.2	-659.7	-270.2	659.7	713.3
30	22.314	22.964	446.1	641.0	446.1	535.5	.0	352.1	.00	33.31	59.45	38.47	878.0	684.7	-756.2	-426.1	756.2	778.2
50	25.791	25.520	452.0	588.7	452.0	516.9	.0	281.8	.00	28.59	62.65	48.41	984.0	779.4	-874.0	-583.1	874.0	864.9
70	28.954	28.076	444.6	541.4	444.6	490.5	.0	228.9	.00	25.01	65.61	55.80	1077.3	873.6	-981.2	-722.6	981.2	951.5
85	31.295	29.993	432.7	513.0	432.7	462.8	.0	221.2	.00	25.56	67.80	59.80	1145.5	920.3	-1060.6	-795.3	1060.6	1016.4
90	31.883	30.630	429.6	480.5	429.6	425.5	.0	223.0	.00	27.69	68.32	62.43	1162.8	919.7	-1080.5	-815.1	1080.5	1038.0
95	32.499	31.271	427.2	434.9	427.2	373.3	.0	222.8	.00	30.88	68.80	65.96	1181.3	916.8	-1101.4	-837.0	1101.4	1059.8

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P PROFILE	LOSS-P PO1	PO2/ TOTAL	EFF-P TOTAL	EFF-AD STATIC	EFF-P	M-1	M-2	M'-1	M'-2
5	-.41	6.02	13.97	40.79	48.82	.0001	.3072	.0330	.0070	.0070	1.4355	.9776	.9765	.9392	.3794	.7085	.6641	.5543
10	-.01	6.32	13.40	36.42	43.54	.0004	.3166	.0338	.0073	.0073	1.4132	.9744	.9731	.9385	.3879	.6817	.6985	.5631
15	.41	6.08	12.53	31.76	38.00	.0008	.3306	.0567	.0123	.0122	1.3795	.9520	.9498	.9006	.3946	.6463	.7297	.5669
30	1.69	5.59	8.73	20.98	24.13	.0025	.3298	.0726	.0153	.0148	1.3096	.9143	.9109	.8670	.4074	.5678	.8116	.6065
50	3.16	5.73	6.13	14.24	14.67	.0047	.2947	.0572	.0116	.0106	1.2703	.9080	.9049	.8756	.4112	.5214	.9036	.6903
70	4.17	5.95	5.28	9.81	9.14	.0048	.2598	.0566	.0108	.0098	1.2319	.8821	.8786	.8546	.4040	.4794	.9843	.7735
85	4.45	5.69	5.64	8.00	7.96	.0053	.2650	.1017	.0185	.0175	1.2079	.7746	.7684	.7379	.3938	.4527	1.0395	.8121
90	4.51	5.58	7.29	5.88	7.60	.0059	.2783	.1451	.0248	.0237	1.1856	.6787	.6707	.6540	.3906	.4225	1.0565	.8087
95	4.59	5.50	9.99	2.84	7.33	.0075	.2934	.1896	.0290	.0279	1.1584	.5749	.5657	.5807	.3884	.3809	1.0724	.8030

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.0832	1.2811	88.20	88.61

Stator

%SPAN	DIA-1 IN	DIA-2 IN	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VU-1 FT/SEC	VU-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	VU'-1 FT/SEC	VU'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	20.409	21.489	850.6	859.0	686.9	856.6	501.8	-63.2	36.15	-4.22	15.45	42.73	712.7	1166.3	-189.8	-791.4	691.6	728.2
10	21.008	21.961	822.4	825.5	677.3	821.4	466.4	-82.1	34.54	-5.72	19.93	45.17	720.8	1165.3	-245.6	-826.3	711.9	744.2
15	21.589	22.432	787.1	797.3	658.2	792.0	431.5	-91.5	33.22	-6.60	24.50	47.08	724.3	1163.3	-300.2	-851.7	731.6	760.2
30	23.314	23.902	708.4	729.4	617.6	723.1	346.8	-95.3	29.31	-7.51	35.65	51.38	760.5	1158.8	-443.3	-905.3	790.1	810.0
50	25.601	25.893	663.1	676.1	600.6	669.3	280.9	-95.5	25.06	-8.12	44.31	55.47	839.8	1181.1	-586.7	-973.0	867.6	877.5
70	27.818	27.902	629.4	623.9	585.4	617.1	231.1	-92.0	21.53	-8.48	50.54	59.26	921.7	1207.2	-711.7	-1037.6	942.7	945.6
85	29.408	29.382	618.8	576.1	576.3	570.3	225.4	-81.3	21.36	-8.11	53.23	62.10	962.0	1218.8	-771.2	-1077.1	996.6	995.7
90	29.914	29.856	597.9	556.2	552.6	550.9	228.2	-76.0	22.45	-7.86	54.88	63.14	960.6	1219.4	-785.6	-1087.8	1013.8	1011.8
95	30.382	30.293	568.7	519.4	520.5	513.7	229.1	-76.4	23.77	-8.47	56.97	65.03	955.0	1216.9	-800.6	-1103.0	1029.6	1026.6

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P PROFILE	LOSS-P PO1	PO2/ TOTAL	EFF-P TOTAL	EFF-AD STATIC	EFF-P	M-1	M-2	M'-1	M'-2
5	-6.21	-3.29	12.18	40.37	55.89	.0000	.1521	.0772	.0191	.0191	.9753	.0000	.0000	3.4867	.7589	.7721	.6402	1.0483
10	-6.92	-3.98	9.72	40.26	53.86	.0000	.1637	.0922	.0234	.0234	.9720	.0000	.0000	3.8529	.7280	.7409	.6460	1.0458
15	-7.32	-4.38	8.45	39.82	52.56	.0000	.1586	.0727	.0189	.0189	.9795	.0000	.0000	2.3302	.6972	.7147	.6492	1.0427
30	-9.38	-6.38	7.71	36.82	50.67	.0000	.1443	.0310	.0086	.0086	.9927	.0000	.0000	1.2122	.6284	.6527	.6845	1.0369
50	-11.82	-8.68	7.92	33.18	49.60	.0000	.1537	.0355	.0108	.0108	.9925	.0000	.0000	1.4312	.5888	.6042	.7550	1.0555
70	-14.30	-11.06	8.97	30.01	49.87	.0000	.1787	.0577	.0189	.0189	.9889	.0000	.0000	3.8779	.5601	.5568	.8280	1.0774
85	-11.03	-10.60	11.86	29.48	52.11	.0000	.2423	.1309	.0453	.0453	.9756	.0000	.0000	.1193	.5478	.5111	.8569	1.0811
90	-9.32	-9.66	13.65	30.39	53.73	.0000	.2507	.1078	.0379	.0379	.9812	.0000	.0000	.2768	.5287	.4920	.8525	1.0787
95	-10.10	-8.54	15.21	32.24	56.06	.0000	.2806	.1147	.0409	.0409	.9818	.0000	.0000	.3680	.5014	.4578	.8447	1.0725

NCORR RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT
7767.	135.58	1.0831	1.2651	83.71	84.23	30.60

W_{BLEED}/W_{TOTAL}	EFF - AD ADJ.
.00482	83.21

PO/PO LOCAL
.9882

TABLE 11.2
BLADE ELEMENT AND OVERALL PERFORMANCE WITH STATOR HUB SLIT SUCTION, 70 PERCENT OF DESIGN SPEED, POINTS 1-5

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	396.3	772.0	396.3	562.4	.0	528.8	.00	43.24	56.20	14.11	712.5	580.0	-592.1	-141.3	592.1	670.2
10	18.467	20.408	404.1	737.1	404.1	548.9	.0	491.9	.00	41.86	57.16	20.01	745.1	584.6	-626.0	-199.9	626.0	691.8
15	19.467	21.047	411.0	700.4	411.0	531.3	.0	456.3	.00	40.64	58.09	25.80	777.4	591.3	-659.9	-257.2	659.9	713.5
30	22.314	22.964	424.9	624.5	424.9	496.1	.0	379.3	.00	37.40	60.66	38.80	867.7	636.9	-756.5	-399.2	756.5	778.5
50	25.701	25.520	431.0	574.9	431.0	479.5	.0	317.2	.00	33.48	63.75	48.79	974.8	728.3	-874.3	-548.0	874.3	865.1
70	28.954	28.076	425.0	532.8	425.0	456.7	.0	274.4	.00	30.99	66.58	55.98	1069.7	817.2	-981.5	-677.4	981.5	951.8
85	31.295	29.993	414.6	512.1	414.6	433.2	.0	273.1	.00	32.24	68.65	59.78	1139.1	860.6	-1060.9	-743.6	1060.9	1016.8
90	31.883	30.630	411.8	493.7	411.8	405.8	.0	281.0	.00	34.73	69.14	61.82	1156.6	859.4	-1080.8	-757.4	1080.8	1038.4
95	32.499	31.271	409.2	467.0	409.2	371.1	.0	283.3	.00	37.39	69.62	64.46	1175.3	861.0	-1101.7	-776.7	1101.7	1060.1

% SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	P02/ P01	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	.87	7.30	13.94	42.09	48.82	.0005	.3593	.0145	.0031	.0030	1.4527	.9901	.9896	.9767	.3612	.6852	.6535	.5148
10	-1.25	7.59	-13.94	-37.15	-43.54	-.0010	.3749	.0316	.0068	.0066	1.4255	.9771	.9759	.9516	.3692	.6530	.6875	.5179
15	1.65	7.35	13.29	32.29	38.01	.0016	.3860	.0505	.0109	.0106	1.3958	.9593	.9573	.9238	.3753	.6193	.7182	.5229
30	-2.86	6.78	9.04	-21.87	-24.12	-.0040	.3854	.0675	.0142	.0133	1.3417	.9273	.9242	.8926	.3874	.5505	.7996	.5615
50	4.22	6.80	6.48	14.96	14.65	.0065	.3516	.0597	.0120	.0107	1.3106	.9156	.9122	.8900	.3917	.5061	.8922	.6411
70	5.10	6.91	5.47	10.60	9.16	.0064	.3214	.0491	.0131	.0119	1.2814	.8803	.8761	.8561	.3859	.4683	.9742	.7183
85	5.30	6.55	5.57	8.87	7.92	.0066	.3295	.1167	.0213	.0201	1.2662	.7895	.7824	.7571	.3771	.4482	1.0306	.7532
90	5.33	6.42	6.65	7.32	7.57	.0073	.3448	.1579	.0275	.0263	1.2536	.7211	.7121	.6904	.3742	.4306	1.0480	.7495
95	5.41	6.33	8.46	5.17	7.31	.0090	.3562	.1923	.0312	.0297	1.2370	.6599	.6496	.6393	.3717	.4060	1.0646	.7485

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.0936	1.3212	88.55	89.00

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	817.5	766.3	637.1	764.0	512.2	-60.2	38.80	-4.51	15.75	45.91	662.0	1098.0	-179.6	-788.6	691.9	728.5
10	21.008	21.961	783.7	730.6	621.7	726.1	477.0	-79.7	37.49	-6.27	20.72	48.62	665.1	1098.6	-235.2	-824.1	712.2	744.5
15	21.589	22.432	749.9	704.9	604.0	699.5	444.3	-87.3	36.32	-7.12	25.44	50.47	669.8	1099.3	-287.6	-847.7	731.9	760.5
30	23.314	23.902	680.9	649.3	569.3	643.3	373.5	-87.7	33.26	-7.76	36.20	54.38	705.8	1104.7	-416.9	-897.9	790.4	810.3
50	25.601	25.893	638.5	605.9	554.8	600.3	316.0	-82.2	29.67	-7.79	44.83	57.97	782.6	1132.3	-551.8	-959.9	867.9	877.8
70	27.818	27.902	609.7	565.4	543.2	559.8	276.8	-79.9	27.00	-8.12	50.79	61.38	859.8	1168.6	-666.2	-1025.8	943.0	945.9
85	29.408	29.382	604.3	531.8	536.2	527.9	278.8	-64.0	27.48	-6.91	53.25	63.53	896.2	1184.2	-718.1	-1060.0	996.9	996.1
90	29.914	29.856	594.4	518.0	519.9	515.1	288.0	-54.8	28.99	-6.07	54.39	64.23	893.1	1184.8	-726.1	-1066.9	1014.1	1012.1
95	30.382	30.293	578.7	485.8	499.9	482.7	291.5	-54.7	30.25	-6.47	55.90	65.95	891.8	1184.6	-738.5	-1081.6	1030.0	1026.9

% SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	P02/ P01	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-3.51	-.59	11.89	43.30	55.89	.0000	.2332	.0845	.0209	.0209	.9748	.0000	.0000	.4459	.7231	.6799	.5903	.9741
10	-3.97	-1.03	9.16	43.76	53.86	.0000	.2462	.0924	.0234	.0234	.9743	.0000	.0000	.4626	.6882	.6473	.5928	.9733
15	-4.16	-1.22	7.93	43.44	52.56	.0000	.2429	.0715	.0186	.0186	.9815	.0000	.0000	.5210	.6602	.6240	.5970	.9730
30	-5.36	-2.36	7.46	41.02	50.67	.0000	.2351	.0296	.0082	.0082	.9935	.0000	.0000	.7880	.6002	.5739	.6314	.9765
50	-7.13	-4.00	8.25	37.46	49.59	.0000	.2414	.0243	.0074	.0074	.9953	.0000	.0000	.8302	.5631	.5350	.6983	.9998
70	-8.76	-5.52	9.33	35.12	49.87	.0000	.2662	.0334	.0110	.0110	.9940	.0000	.0000	.8078	.5382	.4984	.7651	1.0301
85	-4.76	-4.41	13.05	34.38	52.08	.0000	.3184	.0874	.0303	.0303	.9846	.0000	.0000	.6197	.5314	.4660	.7897	1.0377
90	-2.86	-3.06	15.48	35.06	53.76	.0000	.3337	.0819	.0289	.0289	.9861	.0000	.0000	.6688	.5216	.4525	.7848	1.0349
95	-3.63	-2.05	17.21	36.73	56.05	.0000	.3766	.1155	.0414	.0414	.9814	.0000	.0000	.6377	.5063	.4229	.7820	1.0311

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT
7769.	130.39	1.0935	1.3079	85.30	85.86	29.43

W_{BLEED}/W_{TOTAL}	EFF - AD ADJ.
.00608	84.66

PO/PO LOCAL
.9906

TABLE 11.3
BLADE ELEMENT AND OVERALL PERFORMANCE WITH STATOR HUB SLIT SUCTION, 70 PERCENT OF DESIGN SPEED, POINTS 1-5

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	376.5	759.5	376.5	529.0	.0	545.0	.00	45.86	57.51	13.22	701.0	543.5	-591.3	-124.2	591.3	669.2
10	18.467	20.408	383.9	729.6	383.9	523.4	.0	508.3	.00	44.15	58.44	19.22	733.6	554.7	-625.1	-182.6	625.1	690.8
15	19.467	21.047	390.5	692.4	390.5	506.3	.0	472.2	.00	43.00	59.35	25.36	766.0	561.4	-659.0	-240.2	659.0	712.5
30	22.314	22.964	403.4	610.6	403.4	460.4	.0	401.1	.00	41.06	61.88	39.24	856.4	594.8	-755.4	-376.3	755.4	777.4
50	25.791	25.520	408.3	561.5	408.3	441.8	.0	346.5	.00	38.10	64.93	49.49	963.9	680.5	-873.1	-517.4	873.1	863.9
70	28.954	28.076	402.5	530.5	402.5	429.4	.0	311.5	.00	35.95	67.66	56.06	1059.6	770.0	-980.1	-638.9	980.1	950.4
85	31.295	29.993	392.6	517.0	392.6	406.5	.0	319.5	-.00	38.17	69.66	59.71	1129.8	805.8	-1059.4	-695.8	1059.4	1015.3
90	31.883	30.630	389.8	499.9	389.8	376.3	.0	328.8	.00	41.18	70.14	62.02	1147.5	802.0	-1079.3	-708.0	1079.3	1036.9
95	32.499	31.271	387.4	477.0	387.4	342.3	.0	332.0	.00	44.15	70.60	64.77	1166.4	803.3	-1100.1	-726.6	1100.1	1058.6

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	P02/ P01	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	2.16	8.59	13.05	44.29	48.82	.0013	.4062	-.0038	-.0008	-.0011	1.4741	1.0013	1.0014	1.0043	.3426	.6720	.6415	.4808
10	2.52	8.87	13.15	39.22	43.54	.0040	.4113	-.0041	-.0009	-.0013	1.4542	1.0018	1.0019	1.0047	.3502	.6447	.6756	.4901
15	2.91	8.61	12.87	33.99	38.03	.0029	.4211	.0160	.0035	.0028	1.4251	.9873	.9866	.9768	.3561	.6107	.7066	.4952
30	4.08	8.00	9.47	22.65	24.11	.0060	.4335	.0630	.0131	.0119	1.3672	.9370	.9341	.9091	.3672	.5362	.7885	.5223
50	5.39	7.97	7.17	15.44	14.64	.0088	.4031	.0697	.0138	.0120	1.3398	.9110	.9072	.8861	.3706	.4918	.8805	.5960
70	6.18	7.99	5.56	11.60	9.16	.0084	.3712	.0797	.0151	.0135	1.3222	.8793	.8744	.8540	.3650	.4637	.9631	.6731
85	6.31	7.57	5.51	9.96	7.92	.0083	.3870	.1376	.0251	.0237	1.3142	.7878	.7794	.7513	.3566	.4495	1.0207	.7006
90	6.33	7.42	6.85	8.12	7.58	.0089	.4047	.1803	.0312	.0297	1.3028	.7274	.7170	.6912	.3537	.4330	1.0383	.6947
95	6.38	7.30	8.77	5.83	7.31	.0107	.4161	.2128	.0341	.0324	1.2888	.6779	.6662	.6482	.3514	.4118	1.0551	.6936

T0/T0 INLET	P0/P0 INLET	EFF-AD INLET %	EFF-P INLET %
1.1024	1.3556	88.76	89.24

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	796.8	703.2	596.8	701.3	527.9	-51.5	41.50	-4.20	15.28	48.00	618.7	1048.2	-163.0	-778.9	690.9	727.4
10	21.008	21.961	767.2	664.9	588.1	660.9	492.6	-71.8	39.94	-6.22	20.38	50.97	627.7	1049.7	-218.6	-815.2	711.2	743.4
15	21.589	22.432	732.6	640.0	570.3	635.1	459.8	-78.6	38.87	-7.06	25.40	52.84	632.2	1051.7	-271.0	-838.0	730.8	759.4
30	23.314	23.902	657.8	589.1	526.1	584.2	394.9	-75.4	36.89	-7.35	36.83	56.55	657.6	1060.1	-394.3	-884.5	789.2	809.1
50	25.601	25.893	615.9	549.7	509.9	545.1	345.3	-70.7	34.10	-7.39	45.62	60.07	729.4	1092.9	-521.3	-947.2	866.6	876.5
70	27.818	27.902	596.5	521.6	506.9	517.0	314.3	-69.3	31.80	-7.64	51.04	62.98	806.7	1138.1	-627.4	-1013.8	941.7	944.5
85	29.408	29.382	596.4	494.8	499.3	492.1	326.2	-51.3	33.16	-5.94	53.28	64.80	835.1	1155.9	-669.3	-1045.9	995.5	994.6
90	29.914	29.856	586.8	480.9	480.3	478.4	337.0	-39.1	35.07	-4.67	54.60	65.50	829.0	1153.7	-675.6	-1049.8	1012.6	1010.7
95	30.382	30.293	573.0	453.3	460.1	451.8	341.5	-37.3	36.59	-4.73	56.19	66.97	826.9	1154.9	-687.0	-1062.8	1028.5	1025.5

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	P02/ P01	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-.85	2.07	12.20	45.70	55.90	.0000	.2944	.0963	.0239	.0239	.9726	.0000	.0000	.6522	.7015	.6184	.5503	.9218
10	-1.55	1.39	9.22	46.16	53.87	.0000	.3180	.1257	.0319	.0319	.9664	.0000	.0000	.6132	.6706	.5840	.5582	.9219
15	-1.53	1.41	7.99	45.93	52.56	.0000	.3160	.1047	.0272	.0272	.9741	.0000	.0000	.6420	.6422	.5617	.5607	.9230
30	-1.64	1.36	7.87	44.24	50.67	.0000	.3035	.0363	.0101	.0101	.9926	.0000	.0000	.8591	.5774	.5163	.5844	.9292
50	-2.66	.48	8.65	41.49	49.58	.0000	.3136	.0249	.0076	.0076	.9955	.0000	.0000	.8990	.5408	.4810	.6461	.9564
70	-3.91	-.67	9.82	39.44	49.87	.0000	.3384	.0333	.0109	.0109	.9943	.0000	.0000	.8721	.5237	.4556	.7121	.9941
85	.88	1.24	14.00	39.10	52.07	.0000	.3917	.0897	.0312	.0312	.9848	.0000	.0000	.7157	.5208	.4293	.7299	1.0029
90	3.17	3.00	16.90	39.74	53.79	.0000	.4100	.0905	.0320	.0320	.9852	.0000	.0000	.7344	.5110	.4150	.7224	.9976
95	2.75	4.28	18.95	41.32	56.06	.0000	.4476	.1138	.0409	.0409	.9822	.0000	.0000	.7162	.4977	.3907	.7192	.9955

NCORR INLET RPM	WCORR INLET LBM/SEC	T0/T0 INLET	P0/P0 INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT
7758.	124.57	1.1022	1.3394	85.18	85.78	28.12

W_{BLEED}/W_{TOTAL}	EFF - AD ADJ.
.00701	84.52

P0/P0 LOCAL
.9888

TABLE 11.4
BLADE ELEMENT AND OVERALL PERFORMANCE WITH STATOR HUB SLIT
SUCTION, 70 PERCENT OF DESIGN SPEED, POINTS 1-5

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	357.4	748.3	357.4	505.1	.0	552.1	.00	47.54	58.61	12.96	690.3	518.5	-590.5	-116.2	590.5	668.4
10	18.467	20.408	364.4	720.4	364.4	501.6	.0	517.0	.00	45.86	59.73	19.02	722.9	531.0	-624.4	-173.0	624.4	690.0
15	19.467	21.047	370.6	684.0	370.6	484.0	.0	483.3	.00	44.95	60.62	25.23	755.3	536.2	-658.2	-228.2	658.2	711.6
30	22.314	22.964	382.3	602.2	382.3	433.4	.0	418.1	.00	43.96	63.12	39.55	845.8	562.6	-754.4	-358.3	754.4	776.4
50	25.791	25.520	386.1	556.1	386.1	416.8	.0	368.1	.00	41.44	66.11	49.86	953.6	647.1	-872.0	-494.7	872.0	862.8
70	28.954	28.076	379.9	533.9	379.9	407.7	.0	344.6	.00	40.20	68.77	55.98	1050.1	729.4	-978.9	-604.6	978.9	949.2
85	31.295	29.993	370.3	517.7	370.3	366.6	.0	365.5	-.00	44.92	70.71	60.52	1121.0	745.0	-1058.1	-648.5	1058.1	1014.0
90	31.883	30.630	367.9	503.1	367.9	343.1	.0	367.7	.00	47.00	71.15	62.80	1139.0	751.0	-1077.9	-667.8	1077.9	1035.6
95	32.499	31.271	365.6	493.6	365.6	330.3	.0	366.8	.00	48.00	71.59	64.43	1158.0	765.4	-1098.8	-690.5	1098.8	1057.2

% SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P PROFILE	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	3.47	9.90	12.79	45.85	48.82	.0026	.4356	-.0099	-.0021	-.0027	1.4825	1.0047	1.0050	1.0119	.3249	.6608	.6314	.4578
10	3.81	10.15	12.95	40.71	43.54	.0036	.4383	-.0128	-.0028	-.0036	1.4654	1.0072	1.0076	1.0158	.3321	.6353	.6657	.4683
15	4.18	9.86	12.71	35.38	38.00	.0048	.4500	.0117	.0025	.0015	1.4377	.9909	.9905	.9837	.3376	.6021	.6970	.4719
30	5.34	9.24	9.79	23.57	24.11	.0085	.4699	.0733	.0152	.0134	1.3812	.9310	.9277	.9007	.3474	.5273	.7789	.4927
50	6.58	9.16	7.56	16.25	14.66	.0116	.4386	.0832	.0164	.0141	1.3583	.9013	.8969	.8728	.3498	.4855	.8706	.5649
70	7.30	9.10	5.48	12.89	9.16	.0108	.4147	.1051	.0199	.0178	1.3493	.8573	.8511	.8242	.3440	.4646	.9538	.6347
85	7.36	8.62	6.33	10.18	7.94	.0103	.4510	.1879	.0335	.0317	1.3407	.7451	.7344	.6999	.3358	.4470	1.0114	.6433
90	7.35	8.44	7.64	8.35	7.58	.0108	.4574	.2133	.0360	.0342	1.3323	.7106	.6987	.6675	.3334	.4333	1.0288	.6468
95	7.38	8.30	8.42	7.16	7.30	.0127	.4558	.2261	.0367	.0346	1.3280	.6907	.6781	.6497	.3313	.4244	1.0456	.6581

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.1095	1.3761	87.26	87.82

Stator

% SPAN	DIA-1 IN	DIA-2 IN	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	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	21.409	779.8	647.6	567.5	645.9	534.8	-46.6	43.30	-4.13	15.30	50.12	588.4	1007.5	-155.2	-773.2	690.0	726.5
10	21.008	21.961	751.9	614.2	560.5	610.6	501.2	-65.2	41.79	-6.11	20.45	52.91	598.6	1012.7	-209.1	-807.7	710.3	742.5
15	21.589	22.432	717.9	590.8	542.0	586.5	470.8	-71.4	40.97	-6.95	25.55	54.75	601.6	1016.3	-259.1	-829.8	729.9	758.4
30	23.314	23.902	642.6	544.1	493.4	539.9	411.7	-67.4	39.84	-7.12	37.33	58.33	620.9	1028.7	-376.5	-875.5	788.2	808.1
50	25.601	25.893	603.2	507.1	478.7	502.4	366.9	-68.6	37.47	-7.77	46.15	61.97	691.3	1069.4	-498.6	-944.0	865.5	875.4
70	27.818	27.902	591.3	482.9	478.1	478.9	347.9	-62.0	36.04	-7.38	51.09	64.53	761.5	1113.6	-592.6	-1005.3	940.5	943.3
85	29.408	29.382	587.8	459.8	454.3	457.7	373.0	-43.4	39.39	-5.42	53.82	66.18	769.7	1133.4	-621.3	-1036.8	994.3	993.4
90	29.914	29.856	579.2	444.1	439.8	442.6	376.9	-36.3	40.60	-4.68	55.27	67.06	772.1	1135.6	-634.5	-1045.7	1011.4	1009.4
95	30.382	30.293	575.5	435.6	434.5	433.9	377.4	-38.1	40.98	-5.02	56.23	67.78	781.6	1147.5	-649.7	-1062.3	1027.2	1024.2

% SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B 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	3.84	12.27	47.43	55.90	.0002	.3509	.1086	.0269	.0269	.9703	.0000	.0000	.7165	.6850	.5659	.5227	.8804
10	.36	3.30	9.32	47.91	53.87	.0001	.3721	.1299	.0330	.0329	.9666	.0000	.0000	.6969	.6561	.5363	.5307	.8842
15	.62	3.56	8.11	47.92	52.57	.0002	.3717	.1060	.0275	.0275	.9748	.0000	.0000	.7290	.6281	.5155	.5316	.8868
30	1.39	4.39	8.10	46.96	50.67	.0005	.3607	.0215	.0060	.0059	.9958	.0000	.0000	.9406	.5621	.4741	.5487	.8964
50	.78	3.91	8.27	45.24	49.59	.0005	.3796	.0132	.0040	.0039	.9977	.0000	.0000	.9546	.5278	.4410	.6089	.9300
70	.37	3.61	10.08	43.42	49.88	.0004	.4129	.0413	.0136	.0134	.9931	.0000	.0000	.8805	.5170	.4186	.6677	.9652
85	6.91	7.34	14.52	44.81	52.06	.0039	.4655	.0789	.0275	.0261	.9871	.0000	.0000	.8055	.5099	.3953	.6685	.9744
90	8.56	8.44	16.91	45.28	53.81	.0045	.4870	.0894	.0317	.0301	.9859	.0000	.0000	.7948	.5014	.3809	.6690	.9739
95	7.11	8.60	18.66	46.09	56.05	.0031	.5039	.0980	.0352	.0341	.9847	.0000	.0000	.7873	.4980	.3730	.6768	.9827

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 INLET LBM/SEC SQFT
7748.	118.63	1.1094	1.3610	84.16	84.84	26.78

W_{BLEED}/W_{TOTAL}	EFF - AD ADJ.	PO/PO LOCAL
.00782	83.47	.9898

TABLE 11.5
BLADE ELEMENT AND OVERALL PERFORMANCE WITH STATOR HUB SLIT
SUCTION, 70 PERCENT OF DESIGN SPEED, POINTS 1-5

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	339.9	741.2	339.9	488.3	.0	557.6	.00	48.79	60.12	12.91	682.3	501.1	-591.6	-111.9	591.6	669.5
10	18.467	20.408	346.5	713.6	346.5	482.9	.0	525.3	.00	47.40	61.01	18.94	715.0	511.0	-625.4	-165.9	625.4	691.2
15	19.467	21.047	352.4	680.7	352.4	467.3	.0	495.0	.00	46.65	61.87	24.98	747.6	516.6	-659.3	-217.8	659.3	712.8
30	22.314	22.964	363.2	606.2	363.2	421.3	.0	435.8	.00	45.96	64.32	39.01	838.5	543.1	-755.7	-342.0	755.7	777.7
50	25.791	25.520	365.1	551.9	365.1	399.2	.0	390.3	.00	45.01	67.31	50.50	946.7	614.1	-873.5	-474.0	873.5	864.3
70	28.954	28.076	357.3	536.4	357.3	378.0	.0	380.6	.00	45.19	69.97	56.44	1043.7	684.3	-980.6	-570.3	980.6	950.9
85	31.295	29.993	347.8	522.7	347.8	334.5	.0	401.6	.00	50.21	71.83	61.42	1115.5	699.4	-1059.9	-614.2	1059.9	1015.8
90	31.883	30.630	345.5	514.1	345.5	324.1	.0	399.0	.00	50.92	72.26	63.07	1133.7	716.0	-1079.8	-638.3	1079.8	1037.4
95	32.499	31.271	343.3	503.7	343.3	312.2	.0	395.3	.00	51.70	72.68	64.80	1153.0	733.6	-1100.7	-663.8	1100.7	1059.1

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	P02/ P01	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	4.77	11.20	12.74	47.21	48.82	.0047	.4563	-.0115	-.0025	-.0035	1.4894	1.0054	1.0057	1.0134	.3088	.6536	.6241	.4418
10	5.09	11.42	12.87	42.07	43.53	.0060	.4629	-.0074	-.0016	-.0029	1.4729	1.0037	1.0039	1.0084	.3156	.6282	.6589	.4499
15	5.45	11.08	12.42	36.89	37.96	.0075	.4744	.0157	.0034	.0018	1.4493	.9885	.9879	.9793	.3209	.5982	.6907	.4539
30	6.58	10.45	9.26	25.30	24.11	.0118	.4944	.0775	.0162	.0137	1.4000	.9310	.9277	.8985	.3297	.5299	.7738	.4747
50	7.82	10.38	8.25	16.81	14.69	.0153	.4764	.1128	.0219	.0189	1.3702	.8751	.8694	.8383	.3300	.4803	.8662	.5344
70	8.51	10.29	5.95	13.53	9.17	.0142	.4657	.1527	.0285	.0259	1.3669	.8125	.8040	.7667	.3228	.4645	.9487	.5925
85	8.49	9.75	7.25	10.41	7.95	.0131	.5006	.2279	.0395	.0372	1.3622	.7174	.7049	.6627	.3149	.4490	1.0053	.6008
90	8.45	9.54	7.92	9.18	7.59	.0136	.4957	.2379	.0398	.0375	1.3588	.7021	.6890	.6491	.3126	.4409	1.0227	.6141
95	8.46	9.39	8.80	7.87	7.30	.0156	.4901	.2459	.0393	.0369	1.3546	.6876	.6741	.6374	.3107	.4314	1.0397	.6284

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.1165	1.3932	85.33	86.00

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	768.1	615.7	546.2	614.9	540.1	-20.9	44.68	-2.79	15.46	50.94	566.8	975.9	-151.1	-757.7	691.2	727.8
10	21.008	21.961	740.6	584.2	537.5	582.0	509.4	-49.0	43.46	-4.83	20.59	53.71	574.6	983.7	-202.0	-792.8	711.5	743.8
15	21.589	22.432	709.7	560.3	520.7	557.5	482.2	-56.0	42.80	-5.75	25.55	55.65	577.9	988.3	-249.0	-815.8	731.2	759.7
30	23.314	23.902	640.4	508.5	475.4	505.6	429.2	-54.2	42.07	-6.13	37.14	59.65	596.9	1001.0	-360.4	-863.8	789.6	809.5
50	25.601	25.893	592.7	467.6	447.1	464.5	389.2	-53.6	41.04	-6.59	46.89	63.47	654.5	1040.1	-477.9	-930.6	867.1	876.9
70	27.818	27.902	586.2	455.9	442.7	453.5	384.2	-46.8	40.95	-5.89	51.55	65.42	712.3	1090.5	-557.9	-991.7	942.1	945.0
85	29.408	29.382	583.6	437.4	415.5	436.3	409.8	-31.9	44.60	-4.19	54.67	66.98	718.6	1115.9	-586.2	-1027.0	996.0	995.1
90	29.914	29.856	579.5	428.7	410.8	427.7	408.8	-29.2	44.86	-3.90	55.79	67.65	730.8	1124.9	-604.3	-1040.4	1013.1	1011.2
95	30.382	30.293	574.5	418.8	405.6	417.7	406.8	-30.3	45.08	-4.15	56.89	68.42	742.8	1135.9	-622.2	-1056.3	1029.0	1026.0

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	P02/ P01	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	2.33	5.25	13.61	47.47	55.90	.0006	.3788	.1180	.0293	.0292	.9686	.0000	.0000	.7295	.6730	.5360	.5023	.8496
10	2.06	4.99	10.60	48.29	53.87	.0007	.4001	.1361	.0346	.0344	.9660	.0000	.0000	.7143	.6454	.5081	.5085	.8556
15	2.47	5.41	9.32	48.55	52.58	.0010	.4058	.1230	.0320	.0318	.9715	.0000	.0000	.7234	.6200	.4869	.5095	.8588
30	3.65	6.65	9.09	48.20	50.67	.0031	.4158	.0788	.0220	.0212	.9848	.0000	.0000	.8116	.5595	.4409	.5254	.8679
50	4.35	7.48	9.45	47.63	49.60	.0057	.4390	.0540	.0164	.0147	.9910	.0000	.0000	.8658	.5174	.4042	.5723	.8992
70	5.29	8.52	11.57	46.84	49.89	.0106	.4657	.0633	.0209	.0174	.9897	.0000	.0000	.8537	.5097	.3924	.6193	.9387
85	11.93	12.47	15.74	48.79	52.06	.0288	.5151	.0989	.0345	.0245	.9843	.0000	.0000	.7927	.5038	.3736	.6204	.9529
90	12.76	12.65	17.70	48.77	53.83	.0247	.5291	.1100	.0390	.0302	.9828	.0000	.0000	.7762	.4996	.3656	.6302	.9592
95	11.26	12.71	19.53	49.24	56.05	.0191	.5458	.1214	.0437	.0368	.9813	.0000	.0000	.7612	.4947	.3567	.6399	.9674

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT
7762.	112.82	1.1165	1.3699	80.81	81.64	2[illegible]47

W_{BLEED}/W_{TOTAL}	EFF - AD ADJ.
.00868	80.12

PO/PO LOCAL
.9840.

TABLE 12.1
BLADE ELEMENT AND OVERALL PERFORMANCE WITH STATOR HUB SLIT SUCTION, 50 PERCENT OF DESIGN SPEED, POINTS 1-5

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	287.8	578.9	287.8	449.6	.0	364.7	.00	39.05	55.80	14.31	512.1	464.0	-423.5	-114.7	423.5	479.3
10	18.467	20.408	293.2	555.2	293.2	440.0	.0	338.5	.00	37.55	56.79	19.56	535.2	467.3	-447.8	-156.4	447.8	494.8
15	19.467	21.047	297.9	526.1	297.9	425.0	.0	310.1	.00	36.09	57.74	25.20	558.2	470.7	-472.0	-200.2	472.0	510.3
30	22.314	22.964	306.9	462.2	306.9	394.1	.0	241.3	.00	31.47	60.42	38.63	622.1	505.1	-541.0	-315.5	541.0	556.8
50	25.791	25.520	309.6	419.8	309.6	372.9	.0	192.7	.00	27.32	63.66	48.76	697.8	566.4	-625.4	-426.0	625.4	618.8
70	28.954	28.076	304.2	384.8	304.2	354.3	.0	150.0	.00	22.93	66.56	56.25	765.2	638.3	-702.0	-530.8	702.0	680.8
85	31.295	29.993	296.4	364.5	296.4	336.0	.0	141.2	.00	22.31	68.66	60.17	814.6	675.7	-759.8	-586.1	758.8	727.2
90	31.863	30.630	294.3	337.6	294.3	307.3	.0	139.8	.00	24.48	69.16	62.99	827.2	676.9	-773.1	-602.9	773.1	742.7
95	32.499	31.271	292.7	298.2	292.7	264.2	.0	138.1	.00	27.66	69.62	66.93	840.6	674.3	-788.0	-620.1	788.0	758.2

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P PROFILE	LOSS-P PO1	PO2/ TOTAL	EFF-P TOTAL	EFF-AD STATIC	M-1	M-2	M'-1	M'-2
5	.49	6.92	14.14	41.49	48.82	.0000	.2601	.0118	.0025	.0025	1.2124	1.0078	1.0080	1.0265	.2608	.5178	.4674	.4152
10	.91	7.23	13.49	37.22	43.53	.0000	.2797	.0078	.0017	.0017	1.1997	.9936	.9934	.9806	.2663	.4961	.4919	.4176
15	1.37	6.99	12.62	32.54	37.95	.0000	.2954	.0338	.0074	.0074	1.1829	.9694	.9687	.9263	.2704	.4697	.5138	.4202
30	2.70	6.58	8.88	21.79	24.12	.0000	.2940	.0497	.0105	.0105	1.1482	.9351	.9337	.8851	.2778	.4121	.5714	.4503
50	4.18	6.74	6.51	14.89	14.70	.0000	.2720	.0555	.0112	.0112	1.1255	.8993	.8974	.8503	.2791	.3741	.6361	.5047
70	5.11	6.90	5.74	10.31	9.15	.0000	.2310	.0436	.0082	.0082	1.1059	.8912	.8894	.8523	.2741	.3430	.6935	.5690
85	5.32	6.55	6.02	8.49	7.97	.0000	.2319	.0754	.0136	.0136	1.0941	.7914	.7883	.7365	.2675	.3245	.7334	.6016
90	5.35	6.42	7.86	6.17	7.60	.0000	.2427	.1117	.0187	.0187	1.0819	.6956	.6916	.6426	.2654	.3001	.7458	.6316
95	5.42	6.33	10.96	2.70	7.34	.0000	.2583	.1541	.0227	.0227	1.0665	.5559	.5514	.5540	.2640	.2645	.7572	.5981

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.0403	1.1322	89.74	89.94

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	615.6	613.0	504.2	612.3	353.2	-28.3	35.01	-2.65	15.53	41.90	523.8	322.7	-141.6	-549.4	494.3	521.0
10	21.008	21.861	591.8	587.8	492.5	586.2	328.0	-43.0	33.65	-4.21	20.22	44.47	525.2	321.6	-181.4	-575.5	509.4	532.5
15	21.589	22.432	564.4	566.3	478.9	563.9	301.8	-51.4	32.30	-5.23	24.92	46.56	526.7	320.2	-221.7	-595.3	523.5	543.9
30	23.314	23.902	504.6	516.4	445.2	513.2	237.5	-57.4	28.07	-6.38	36.33	51.14	553.1	318.1	-327.9	-636.9	565.3	579.6
50	25.601	25.893	466.0	472.2	424.6	468.7	192.0	-58.0	24.32	-7.00	45.25	55.65	603.6	330.8	-428.8	-685.8	620.7	627.9
70	27.818	27.902	439.0	432.8	412.1	428.8	151.3	-58.1	20.15	-7.72	51.76	59.73	666.1	350.7	-523.2	-734.7	674.5	676.5
85	29.408	29.382	429.8	400.2	404.9	396.7	144.0	-52.7	19.58	-7.58	54.57	62.60	693.5	362.0	-569.1	-765.2	713.1	712.4
90	29.914	29.856	410.9	381.0	385.1	377.5	143.1	-51.8	20.39	-7.81	56.52	64.05	698.2	362.7	-582.2	-775.7	725.3	723.9
95	30.382	30.293	383.8	347.1	356.5	343.0	142.1	-53.0	21.75	-8.79	59.06	66.46	693.4	359.1	-594.6	-787.5	736.7	734.5

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P PROFILE	LOSS-P PO1	PO2/ TOTAL	EFF-P TOTAL	EFF-AD STATIC	M-1	M-2	M'-1	M'-2
5	-7.37	-4.45	13.75	37.67	55.88	.0000	.1551	.0779	.0194	.0194	.9854	.0000	.0000	.5474	.5502	.4702	.7384
10	-7.88	-4.95	11.23	37.86	53.87	.0000	.1639	.0858	.0218	.0218	.9850	.0000	.0000	.5352	.5218	.5272	.4707	.7368
15	-8.28	-5.34	9.84	37.52	52.59	.0000	.1581	.0673	.0175	.0175	.9892	.0000	.0000	3.2299	.4988	.5075	.4724	.7351
30	-10.66	-7.65	8.84	34.45	50.68	.0000	.1394	.0226	.0063	.0063	.9970	.0000	.0000	1.1006	.4478	.4625	.4994	.7327
50	-12.62	-9.48	8.98	31.38	49.61	.0000	.1504	.0268	.0082	.0082	.9970	.0000	.0000	1.2832	.4141	.4225	.5445	.7433
70	-15.73	-12.49	9.73	27.97	49.66	.0000	.1721	.0444	.0146	.0146	.9955	.0000	.0000	.8366	.3913	.3871	.6003	.7609
85	-12.85	-12.41	12.40	27.15	52.11	.0000	.2288	.0975	.0338	.0338	.9905	.0000	.0000	.3000	.3807	.3571	.5242	.7691
90	-11.78	-11.73	13.65	28.20	53.68	.0000	.2413	.0777	.0274	.0274	.9931	.0000	.0000	.4702	.3644	.3395	.6231	.7666
95	-12.13	-10.53	14.89	30.54	56.06	.0000	.2790	.0878	.0313	.0313	.9932	.0000	.0000	.5367	.3399	.3087	.6174	.7639

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT
5557.	97.09	1.0402	1.1263	86.17	86.43	21.92

WBLEED / WTOTAL	EFF - AD ADJ.
.00870	85.10

PO/PO LOCAL
.9955

TABLE 12.2
BLADE ELEMENT AND OVERALL PERFORMANCE WITH STATOR HUB SLIT SUCTION, 50 PERCENT OF DESIGN SPEED, POINTS 1-5

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	270.4	560.6	270.4	413.5	.0	378.6	.00	42.48	57.42	13.64	502.2	425.5	-423.1	-130.3	423.1	478.9
10	18.467	20.408	275.4	535.8	275.4	402.8	.0	353.3	.00	41.24	58.38	19.30	525.3	427.2	-447.4	-141.1	447.4	494.4
15	19.467	21.047	279.8	509.1	279.8	391.1	.0	325.8	.00	39.77	59.32	25.17	548.3	433.1	-471.6	-148.1	471.6	509.9
30	22.314	22.964	288.4	449.5	288.4	365.4	.0	261.8	.00	35.62	61.91	38.83	612.7	469.5	-540.6	-294.5	540.6	556.3
50	25.791	25.520	291.4	408.0	291.4	344.9	.0	217.9	.00	32.27	64.99	49.22	689.4	528.6	-624.8	-400.3	-624.8	-618.2
70	28.954	28.076	287.0	376.3	287.0	330.7	.0	179.6	.00	28.49	67.73	56.52	757.9	600.1	-701.4	-500.6	701.4	680.2
85	31.295	29.993	280.3	359.7	280.3	314.0	.0	175.6	.00	29.22	69.71	60.33	808.3	634.2	-758.1	-551.0	758.1	726.6
90	31.883	30.630	278.4	340.0	278.4	289.6	.0	177.9	.00	31.61	70.18	62.62	821.0	634.3	-772.4	-564.1	772.4	742.0
95	32.499	31.271	276.7	319.9	276.7	265.7	.0	178.1	.00	33.86	70.63	65.36	834.5	637.6	-787.3	-579.5	787.3	757.6

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	P02/P01	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	2.10	8.53	13.47	43.78	48.82	.0000	.3286	.0130	.0028	.0028	1.2169	.9913	.9911	.9745	.2448	.5001	.4579	.3796
10	2.49	8.62	13.22	39.09	43.54	.0000	.3494	.0338	.0073	.0073	1.2046	.9751	.9744	.9391	.2498	.4775	.4820	.3836
15	2.91	8.57	12.62	34.15	37.97	.0000	.3585	.0470	.0102	.0102	1.1907	.9607	.9597	.9151	.2536	.4532	.5038	.3856
30	4.14	8.03	9.08	23.07	24.12	.0000	.3505	.0524	.0110	.0110	1.1620	.9386	.9372	.8979	.2608	.3997	.5615	.4175
50	5.47	8.05	6.94	15.77	14.68	.0001	.3291	.0619	.0123	.0123	1.1431	.9024	.9003	.8621	.2626	.3624	.6268	.4695
70	6.26	8.06	6.01	11.22	9.16	.0000	.2870	.0510	.0095	.0095	1.1260	.8950	.8930	.8631	.2586	.3342	.6851	.5330
85	6.36	7.62	6.13	9.38	7.93	.0000	.2924	.0085	.0159	.0159	1.1197	.8043	.8007	.7591	.2529	.3189	.7259	.5623
90	6.37	7.46	7.66	7.35	7.58	.0000	.3058	.1251	.0211	.0211	1.1111	.7247	.7201	.6826	.2510	.3009	.7384	.5614
95	6.42	7.34	9.36	5.27	7.31	.0000	.3146	.1530	.0240	.0240	1.1030	.6602	.6549	.6292	.2495	.2827	.7504	.5634

T0/T0 INLET	P0/P0 INLET	EFF-AD INLET %	EFF-P INLET %
1.0454	1.1495	89.48	89.70

Stator

%SPAN	DIA-1 IN	DIA-2 IN	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	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	581.1	557.1	463.6	556.1	365.7	-34.3	38.35	-3.54	15.40	44.94	480.9	785.6	-127.7	-558.9	484.8	520.6
10	21.008	21.961	566.4	532.7	451.2	530.8	342.3	-45.0	37.17	-4.86	20.29	47.39	481.3	784.1	-166.6	-577.1	508.9	532.0
15	21.589	22.432	541.3	514.2	438.7	511.7	317.0	-50.0	35.83	-5.59	25.13	49.23	485.4	783.8	-206.0	-593.4	523.0	543.4
30	23.314	23.902	486.0	470.2	412.1	467.3	257.7	-52.2	32.01	-6.38	36.67	53.49	514.2	785.5	-307.1	-631.2	564.8	579.0
50	25.601	25.893	448.8	431.6	392.8	428.5	217.0	-51.0	28.90	-6.79	45.72	57.70	563.1	802.4	-403.2	-678.2	620.2	627.3
70	27.818	27.902	425.3	401.1	384.8	397.5	181.0	-53.3	25.18	-7.64	52.00	61.40	625.5	830.5	-492.9	-729.2	673.9	675.9
85	29.408	29.382	418.6	374.2	378.2	371.5	179.3	-44.7	25.36	-6.85	54.65	63.84	653.7	842.8	-533.2	-756.5	712.4	711.8
90	29.914	29.856	405.3	359.5	361.9	357.2	182.4	-40.3	26.75	-6.44	56.28	64.93	652.1	843.0	-542.3	-763.6	724.7	723.3
95	30.382	30.293	392.7	333.3	347.4	330.9	183.2	-40.2	27.82	-6.93	57.85	66.85	652.9	841.9	-552.8	-774.0	736.9	733.9

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B	LOSS-P TOTAL	LOSS-P PROFILE	P02/P01	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-3.97	-1.04	12.87	41.88	55.90	.0000	.2226	.0791	.0196	.0196	.9863	.0000	.0000	.3888	.5225	.4959	.4295	.7007
10	-4.39	-1.46	10.58	42.03	53.87	.0000	.2310	.0836	.0212	.0212	.9866	.0000	.0000	.4190	.4973	.4748	.4309	.6990
15	-4.73	-1.79	9.48	41.42	52.59	.0000	.2250	.0640	.0167	.0167	.9905	.0000	.0000	.4719	.4767	.4581	.4347	.6984
30	-6.66	-3.65	8.85	38.38	50.68	.0000	.2101	.0220	.0061	.0061	.9973	.0000	.0000	.8438	.4297	.4188	.4631	.6996
50	-7.99	-4.86	9.26	35.69	49.60	.0000	.2206	.0213	.0065	.0065	.9978	.0000	.0000	.8600	.3975	.3840	.5065	.7139
70	-10.69	-7.45	9.81	32.82	49.86	.0000	.2392	.0257	.0084	.0084	.9976	.0000	.0000	.8633	.3776	.3568	.5617	.7389
85	-6.87	-6.49	13.12	32.22	52.09	.0000	.2930	.0771	.0267	.0267	.9930	.0000	.0000	.6062	.3699	.3320	.5812	.7478
90	-5.00	-5.26	15.07	33.19	53.72	.0000	.3084	.0648	.0229	.0229	.9944	.0000	.0000	.6874	.3583	.3184	.5789	.7468
95	-6.11	-4.48	16.75	34.75	56.05	.0000	.3567	.1069	.0383	.0383	.9914	.0000	.0000	.6286	.3475	.2948	.5794	.7445

NCORR INLET RPM	WCORR INLET LBM/SEC	T0/T0 INLET	P0/P0 INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT
5552.	91.86	1.0453	1.1444	86.77	87.04	20.74

WBLEED/WTOTAL	EFF - AD ADJ.
.00972	85.82

P0/P0 LOCAL
.9961

TABLE 12.3
BLADE ELEMENT AND OVERALL PERFORMANCE WITH STATOR HUB SLIT SUCTION, 50 PERCENT OF DESIGN SPEED, POINTS 1-5

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	250.0	543.6	250.0	383.4	.0	385.3	.00	45.14	59.40	13.67	491.2	394.7	-422.9	-93.3	422.9	478.6
10	18.467	20.408	254.6	521.8	254.6	377.7	.0	360.0	.00	43.61	60.33	19.53	514.5	401.2	-447.1	-134.1	447.1	494.0
15	19.467	21.047	258.7	495.2	258.7	365.5	.0	334.2	.00	42.43	61.23	25.61	537.6	406.2	-471.3	-175.3	471.3	509.5
30	22.314	22.964	266.4	434.1	266.4	331.3	.0	280.5	.00	40.24	63.74	39.69	602.3	431.1	-540.2	-275.4	540.2	555.9
50	25.791	25.520	268.6	397.7	268.6	317.2	.0	239.9	.00	37.09	66.72	49.95	679.7	493.6	-624.4	-379.9	624.4	617.8
70	28.954	28.076	263.9	367.8	263.9	304.7	.0	205.9	.00	34.04	69.36	57.22	749.8	563.5	-700.9	-473.8	700.9	679.7
85	31.295	29.993	257.1	348.5	257.1	295.1	.0	213.9	.00	37.88	71.25	61.76	800.8	581.4	-757.6	-512.2	757.6	726.1
90	31.883	30.630	255.4	335.7	255.4	256.0	.0	217.0	.00	40.32	71.69	63.99	813.8	583.8	-771.8	-524.5	771.8	741.5
95	32.499	31.271	253.9	323.6	253.9	239.5	.0	217.6	.00	42.26	72.11	66.05	826.7	590.3	-786.8	-539.4	786.8	757.0

% SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P PROFILE	LOSS-P	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	4.07	10.51	13.50	45.73	48.82	.0000	.3797	-.0112	-.0024	-.0024	1.2246	1.0065	1.0066	1.0168	.2262	.4340	.4479	.3514
10	4.44	10.75	13.45	40.91	43.53	.0000	.3894	-.0044	-.0010	-.0010	1.2151	1.0028	1.0028	1.0060	.2309	.4642	.4724	.3569
15	4.83	10.44	13.03	35.62	37.94	.0000	.3997	.0155	.0034	.0034	1.2019	.9877	.9874	.9742	.2344	.4402	.4946	.3610
30	5.98	9.86	9.94	24.05	24.12	.0004	.4116	.0601	.0125	.0124	1.1735	.9361	.9345	.8991	.2406	.3949	.5526	.3823
50	7.21	9.77	7.69	16.77	14.69	.0007	.3809	.0653	.0128	.0127	1.1592	.9085	.9064	.8730	.2417	.3523	.6182	.4372
70	7.90	9.68	6.72	12.14	9.16	.0004	.3392	.0634	.0116	.0115	1.1463	.8800	.8856	.8556	.2373	.3256	.6775	.4988
85	7.91	9.16	7.60	9.50	7.97	.0002	.3680	.1347	.0231	.0230	1.1377	.7573	.7524	.7087	.2317	.3075	.7184	.5129
90	7.88	8.97	8.84	7.70	7.60	.0002	.3785	.1641	.0265	.0265	1.1325	.7057	.6999	.6593	.2300	.2957	.7308	.5142
95	7.90	8.82	10.06	6.06	7.32	.0002	.3838	.1838	.0280	.0280	1.1280	.6679	.6616	.6264	.2287	.2848	.7427	.5194

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.0502	1.1653	89.02	89.27

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	568.5	506.0	428.9	505.6	373.2	-20.2	41.03	-2.29	15.73	46.90	445.7	740.1	-120.8	-540.4	494.1	520.2
10	21.008	21.961	546.6	481.5	420.8	480.5	348.8	-31.3	39.64	-3.73	20.78	49.52	450.5	740.2	-159.8	-562.9	508.6	531.6
15	21.509	22.432	521.5	464.3	407.5	462.9	325.4	-36.0	38.59	-4.45	25.82	51.36	453.4	741.5	-197.3	-579.0	522.6	543.0
30	23.319	23.902	464.5	422.2	373.4	420.5	276.1	-38.0	36.47	-5.16	37.63	55.70	472.0	746.5	-288.3	-616.6	564.4	578.6
50	25.601	25.893	431.8	387.9	359.6	386.1	239.0	-37.7	33.60	-5.58	46.60	59.83	523.3	768.6	-380.8	-664.5	619.8	626.8
70	27.818	27.902	409.2	363.0	352.6	360.7	207.7	-40.7	30.50	-6.44	52.85	63.27	584.2	801.9	-465.7	-716.2	673.4	675.5
85	29.408	29.382	399.1	336.8	334.1	335.9	218.3	-24.1	33.16	-4.10	55.91	65.45	596.1	808.6	-493.6	-735.4	711.9	711.3
90	29.914	29.856	390.8	323.5	321.3	323.1	222.4	-16.2	34.70	-2.85	57.37	66.38	595.9	806.5	-501.8	-739.0	724.2	722.8
95	30.382	30.293	383.7	305.2	311.6	304.8	223.9	-15.2	35.70	-2.85	58.65	67.84	599.1	808.2	-511.6	-748.5	735.5	733.4

% SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P PROFILE	LOSS-P	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-1.37	1.55	14.11	43.32	55.80	.0000	.2781	.0949	.0236	.0236	.9847	.0000	.0000	.6093	.5019	.4492	.3984	.6570
10	-1.95	.98	11.71	43.37	53.87	.0000	.2933	.1116	.0284	.0284	.9833	.0000	.0000	.6045	.4790	.4273	.4031	.6558
15	-1.79	1.16	10.62	43.05	52.60	.0000	.2980	.0890	.0232	.0232	.9878	.0000	.0000	.6304	.4580	.4118	.4040	.6577
30	-2.13	.88	10.06	41.63	50.68	.0000	.2709	.0348	.0097	.0097	.9962	.0000	.0000	.8554	.4099	.3742	.4237	.6615
50	-3.23	-.10	10.47	39.17	49.60	.0000	.2970	.0418	.0127	.0127	.9960	.0000	.0000	.8252	.3816	.3435	.4691	.6805
70	-5.27	-2.03	11.01	36.93	49.86	.0000	.3140	.0272	.0090	.0090	.9976	.0000	.0000	.9003	.3623	.3213	.5215	.7098
85	.74	1.24	15.87	37.26	52.10	.0000	.3685	.0628	.0219	.0219	.9948	.0000	.0000	.7663	.3521	.2970	.5273	.7128
90	2.94	2.64	18.66	37.56	53.74	.0000	.3892	.0700	.0248	.0248	.9945	.0000	.0000	.7687	.3444	.2848	.5264	.7099
95	1.80	3.37	20.83	38.55	56.05	.0000	.4297	.1064	.0383	.0383	.9919	.0000	.0000	.7168	.3383	.2692	.5291	.7105

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WQ1/A1 LBM/SEC SQFT
5548.	85.02	1.0501	1.1585	85.70	86.02	19.19

W_{BLEED}/W_{TOTAL}	EFF - AD ADJ.
.01094	84.67

PO/PO LOCAL
.9948

TABLE 12.4
BLADE ELEMENT AND OVERALL PERFORMANCE WITH STATOR HUB SLIT SUCTION, 50 PERCENT OF DESIGN SPEED, POINTS 1-5

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	238.2	538.0	238.2	366.9	.0	393.4	.00	46.99	60.64	13.17	485.9	376.9	-423.5	-85.9	423.5	479.3
10	18.467	20.408	242.6	517.7	242.6	363.0	.0	369.0	.00	45.46	61.55	19.09	509.2	384.5	-447.7	-125.8	447.7	494.8
15	19.467	21.047	246.5	493.0	246.5	352.3	.0	344.9	.00	44.38	62.42	25.14	532.5	390.0	-472.0	-165.4	472.0	510.3
30	22.314	22.964	253.7	433.6	253.7	316.6	.0	296.3	.00	43.09	64.87	39.38	597.5	410.4	-541.0	-260.5	541.0	556.8
50	25.791	25.520	255.0	395.7	255.0	299.2	.0	259.0	.00	40.87	67.81	50.20	675.3	468.1	-625.3	-359.8	625.3	618.7
70	28.954	28.076	249.6	373.9	249.6	289.9	.0	236.1	.00	39.17	70.42	56.88	745.1	530.8	-702.0	-444.6	702.0	680.7
85	31.295	29.993	242.6	354.5	242.6	278.8	.0	252.5	.00	45.44	72.27	62.33	796.6	535.9	-758.7	-474.6	758.7	727.2
90	31.883	30.630	241.0	348.5	241.0	238.0	.0	254.5	.00	46.93	72.68	64.00	809.7	543.1	-773.0	-493.1	773.0	742.6
95	32.499	31.271	239.6	339.6	239.6	224.5	.0	254.7	.00	48.60	73.03	65.95	823.6	551.4	-787.9	-503.5	787.9	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	5.31	11.74	13.01	47.47	48.82	.0001	.4133	-.0249	-.0053	-.0053	1.2321	1.0191	1.0146	1.0359	.2154	.9784	.4431	.3352
10	5.65	11.95	13.01	42.46	43.53	.0002	.4201	-.0209	-.0045	-.0046	1.2238	1.0134	1.0138	1.0304	.2200	.4600	.4679	.3417
15	6.02	11.61	12.54	37.28	37.92	.0004	.4293	-.0013	-.0003	-.0004	1.2121	1.0058	1.0088	1.0012	.2234	.4377	.4905	.3463
30	7.14	11.00	9.63	25.49	24.11	.0011	.4487	.0589	.0123	.0126	1.1853	.9416	.9400	.9080	.2290	.3840	.5492	.3634
50	8.32	10.88	7.97	17.61	14.71	.0016	.4231	.0791	.0154	.0151	1.1708	.8935	.8961	.8601	.2292	.3498	.6151	.4138
70	8.97	10.74	6.39	13.54	9.17	.0010	.3930	.0951	.0176	.0174	1.1624	.8545	.8511	.8111	.2241	.3300	.6748	.4685
85	8.93	10.17	8.21	9.93	8.00	.0005	.4395	.1859	.0311	.0311	1.1545	.7163	.7101	.6581	.2184	.3115	.7154	.4709
90	8.88	9.96	8.87	8.68	7.61	.0005	.4428	.2034	.0329	.0326	1.1525	.6884	.6817	.6309	.2169	.3059	.7276	.4767
95	8.38	9.79	9.97	7.13	7.32	.0007	.4444	.2184	.0334	.0333	1.1496	.6623	.6551	.6080	.2157	.2977	.7395	.4834

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.0550	1.1790	87.59	87.89

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	559.3	476.9	409.4	476.1	381.1	-26.0	42.95	-3.13	15.53	48.96	424.9	725.2	-113.8	-547.0	494.8	521.0
10	21.008	21.961	538.8	452.8	403.0	451.2	357.7	-37.5	41.58	-4.76	20.61	51.63	430.8	727.0	-151.6	-570.0	509.3	532.4
15	21.589	22.432	515.3	435.9	390.8	434.0	335.9	-41.1	40.67	-5.42	25.64	53.43	434.2	728.5	-187.6	-585.0	523.4	543.9
30	23.314	23.902	459.6	394.0	355.1	391.9	291.7	-41.1	39.40	-6.00	37.56	57.73	448.5	734.1	-273.5	-620.6	565.2	579.5
50	25.601	25.893	425.4	361.4	338.1	359.2	258.1	-40.2	37.36	-6.39	46.97	61.72	495.9	758.5	-362.6	-668.0	620.7	627.8
70	27.818	27.902	409.8	342.3	333.4	339.7	238.3	-42.3	35.56	-7.09	52.59	64.70	549.0	795.0	-436.1	-718.7	674.4	676.5
85	29.408	29.382	398.9	318.3	304.5	317.4	257.6	-24.1	40.24	-4.34	56.23	66.69	547.8	802.0	-455.4	-735.5	713.0	712.4
90	29.914	29.856	395.9	310.1	297.9	309.7	260.8	-15.7	41.20	-2.89	57.32	67.28	551.8	801.8	-464.5	-739.5	725.3	723.9
95	30.382	30.293	390.9	298.5	290.0	298.3	262.0	-12.8	42.10	-2.46	58.57	68.24	556.2	804.6	-474.6	-747.3	736.6	734.4

%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	.55	3.48	13.27	46.08	55.90	.0000	.3243	.1037	.0258	.0258	.9838	.0030	.0001	.6727	.4930	.4221	.3797	.6419
10	-.02	2.91	10.68	46.34	53.87	.0000	.3435	.1251	.0318	.0318	.9818	.0000	.0000	.6561	.4722	.4006	.3958	.6432
15	.34	3.28	9.65	46.09	52.60	.0000	.3425	.1087	.0283	.0283	.9854	.0000	.0000	.6673	.4524	.3855	.3861	.6442
30	.90	3.90	9.22	45.39	50.67	.0000	.3440	.0617	.0172	.0172	.9933	.0000	.0000	.7958	.4052	.3480	.4009	.6495
50	.62	3.75	9.66	43.74	49.61	.0000	.3642	.0528	.0161	.0161	.9951	.0000	.0000	.8221	.3759	.3139	.4415	.6692
70	-.11	3.12	10.35	42.65	49.87	.0000	.3913	.0449	.0148	.0148	.9961	.0000	.0000	.8575	.3623	.3017	.4866	.7006
85	7.48	8.13	15.62	44.58	52.11	.0001	.4491	.0697	.0243	.0243	.9943	.0000	.0000	.8100	.3512	.2792	.4827	.7033
90	9.30	9.01	18.67	44.08	53.77	.0001	.4650	.0849	.0301	.0301	.9932	.0000	.0000	.7847	.3483	.2717	.4858	.7023
95	8.27	9.74	21.22	44.56	56.06	.0001	.4902	.1052	.0379	.0379	.9917	.0000	.0000	.7557	.3435	.2612	.4891	.7040

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT
5557.	80.86	1.0550	1.1699	83.49	83.88	18.25

WBLEED/WTOTAL	EFF - AD ADJ.
.01205	82.43

PO/PO LOCAL
.9929

TABLE 12.5
BLADE ELEMENT AND OVERALL PERFORMANCE WITH STATOR HUB SLIT
SUCTION, 50 PERCENT OF DESIGN SPEED, POINTS 1-5

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	224.2	532.4	224.2	352.4	.0	399.0	.00	48.54	62.04	12.63	478.1	361.2	-422.3	-79.0	422.3	478.0
10	18.467	20.408	228.4	509.4	228.4	344.5	.0	375.2	.00	47.43	62.91	18.92	501.5	364.6	-446.5	-118.2	446.5	483.4
15	19.467	21.047	232.0	485.3	232.0	333.0	.0	353.1	.00	46.67	63.76	25.07	524.8	368.5	-470.7	-155.8	470.7	508.9
30	22.314	22.964	238.5	432.0	239.5	302.4	.0	308.4	.00	45.56	66.14	39.14	589.9	390.8	-539.5	-246.8	539.5	555.2
50	25.791	25.520	238.9	390.4	238.9	278.4	.0	273.6	.00	44.50	69.04	50.92	667.8	442.3	-623.6	-343.4	623.6	617.0
70	28.954	28.076	233.1	371.4	233.1	259.9	.0	265.3	.00	45.60	71.58	57.84	737.9	488.5	-730.1	-413.5	700.1	678.8
85	31.295	29.993	226.6	365.6	226.6	230.9	.0	283.5	.00	50.84	73.31	62.40	789.9	498.4	-756.7	-441.7	756.7	725.2
90	31.883	30.630	225.3	365.1	225.3	228.0	.0	285.1	.00	51.35	73.70	63.40	803.1	509.4	-770.9	-455.4	770.9	740.6
95	32.499	31.271	223.9	358.2	223.9	217.3	.0	284.7	.00	52.66	74.09	65.25	817.1	519.1	-785.8	-471.3	785.8	756.1

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P PROFILE	LOSS-P P01	P02/ TOTAL	EFF-P TOTAL	EFF-AD STATIC	EFF-P	M-1	M-2	M'-1	M'-2
5	6.70	13.13	12.47	49.40	48.82	.0006	.4393	-.0304	.0065	.0066	1.2354	1.0166	1.0171	1.0416	.2028	.4730	.4365	.3210
10	7.01	13.30	12.85	43.99	43.53	.0009	.4540	-.0123	-.0027	-.0029	1.2257	1.0075	1.0077	1.0165	.2071	.4522	.4616	.3236
15	7.36	12.91	12.44	38.69	37.89	.0013	.4659	.0112	.0024	.0021	1.2148	.9919	.9917	.9837	.2102	.4304	.4842	.3268
30	8.43	12.27	9.39	27.00	24.10	.0026	.4804	.0647	.0135	.0130	1.1923	.9396	.9379	.9043	.2151	.3921	.5432	.3457
50	9.57	12.11	8.71	18.12	14.72	.0032	.4618	.0996	.0191	.0185	1.1767	.8869	.8779	.8365	.2143	.3445	.6033	.3904
70	10.13	11.89	7.37	13.74	9.17	.0020	.4576	.1460	.0263	.0259	1.1710	.8024	.7977	.7465	.2091	.3268	.6681	.4298
85	9.98	11.23	8.25	10.91	7.97	.0011	.4962	.2166	.0363	.0361	1.1711	.7059	.6990	.6377	.2042	.3204	.7081	.4367
90	9.90	10.99	8.25	10.31	7.60	.0011	.4942	.2264	.0374	.0372	1.1722	.6918	.6846	.6225	.2028	.3197	.7205	.4459
95	9.88	10.81	9.25	8.85	7.31	.0013	.4932	.2376	.0374	.0372	1.1705	.6729	.6653	.6060	.2015	.3133	.7328	.4540

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.0588	1.1877	85.73	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	550.5	448.4	382.1	447.8	386.5	-23.4	44.59	-3.00	15.26	50.49	406.5	703.9	-107.9	-543.0	483.5	519.6
10	21.008	21.961	527.5	422.8	382.0	421.3	363.8	-35.2	43.59	-4.76	20.66	53.34	408.6	705.7	-144.2	-566.0	507.9	531.0
15	21.589	22.432	504.7	406.6	369.3	404.9	343.9	-37.4	42.96	-5.29	25.74	55.07	410.6	707.3	-178.0	-579.8	522.0	542.4
30	23.314	23.302	454.4	368.3	337.9	366.5	303.8	-36.3	41.94	-5.66	37.52	59.17	426.7	715.4	-259.9	-614.3	563.7	577.9
50	25.601	25.893	416.6	335.4	314.9	333.4	272.8	-35.9	40.90	-6.15	47.68	63.25	468.2	741.3	-346.2	-662.0	619.0	626.0
70	27.818	27.902	403.4	316.2	301.7	314.1	267.8	-35.8	41.60	-6.51	53.29	66.15	504.9	776.8	-404.7	-710.5	672.6	674.6
85	29.408	29.382	404.4	301.0	282.4	300.4	289.5	-19.2	45.71	-3.65	56.19	67.62	507.4	789.0	-421.6	-729.6	711.0	710.4
90	29.914	29.856	406.4	299.3	282.3	298.9	292.4	-13.8	46.01	-2.65	56.77	67.89	515.1	794.1	-430.9	-735.7	723.3	721.9
95	30.382	30.293	402.7	292.0	276.2	291.8	293.1	-12.5	46.70	-2.45	57.97	68.61	520.8	800.0	-441.5	-744.9	734.6	732.4

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P PROFILE	LOSS-P P01	P02/ TOTAL	EFF-P TOTAL	EFF-AD STATIC	EFF-P	M-1	M-2	M'-1	M'-2
5	2.32	5.25	13.40	47.59	55.90	.0000	.3565	.1173	.0291	.0231	.9322	.0000	.0000	.6956	.4837	.3959	.3614	.6215
10	2.07	5.00	10.68	48.35	53.87	.0000	.3879	.1348	.0343	.0343	.9611	.0000	.0000	.6904	.4616	.3731	.3649	.6228
15	2.68	5.62	9.78	48.25	52.60	.0000	.3388	.1187	.0309	.0309	.9347	.0000	.0000	.6982	.4430	.3586	.3645	.6239
30	3.50	6.51	9.55	47.61	50.67	.0000	.3974	.0826	.0231	.0231	.9913	.0000	.0000	.7610	.4003	.3245	.3801	.6304
50	4.24	7.37	9.89	47.05	49.62	.0001	.4209	.0590	.0180	.0179	.9947	.0000	.0000	.8346	.3678	.2950	.4148	.6521
70	5.96	9.20	10.94	48.11	49.87	.0020	.4656	.0729	.0240	.0233	.9939	.0000	.0000	.8164	.3556	.2774	.4454	.6816
85	12.95	13.58	16.30	49.36	52.09	.0185	.5226	.1351	.0471	.0467	.9387	.0000	.0000	.7065	.3552	.2629	.4459	.6891
90	14.00	13.80	18.93	48.66	53.79	.0157	.5317	.1528	.0543	.0487	.9371	.0000	.0000	.6773	.3567	.2611	.4523	.6929
95	12.89	14.34	21.23	49.15	56.05	.0135	.5488	.1662	.0599	.0551	.9363	.0000	.0000	.6624	.3530	.2546	.4568	.6974

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT
5541.	76.05	1.0588	1.1758	80.66	81.12	17.17

WBLEED / WTOTAL	EFF - AD ADJ.	PO/PO LOCAL
.01292	79.70	.9906

APPENDIX 4

BLADE-ELEMENT AND OVERALL PERFORMANCE WITHOUT STATOR HUB SLIT SUCTION

TABLE 13.1
BLADE ELEMENT AND OVERALL PERFORMANCE WITHOUT STATOR HUB
SLIT SUCTION, 100 PERCENT OF DESIGN SPEED, POINTS 1-3

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	608.2	1017.2	608.2	712.7	.0	725.8	.00	45.52	54.22	17.65	1040.4	748.9	-844.1	-229.5	844.1	955.4
10	18.467	20.408	622.5	982.3	622.5	708.9	.0	680.0	.00	43.80	55.10	23.35	1088.1	772.5	-892.4	-306.2	892.4	986.2
15	19.467	21.047	635.9	949.6	635.9	697.9	.0	644.0	.00	42.69	55.94	28.09	1135.5	792.3	-940.8	-373.1	940.8	1017.1
30	22.314	22.964	665.2	866.3	665.2	667.0	.0	552.7	.00	39.65	58.32	39.84	1267.1	869.2	-1078.3	-557.0	1078.3	1109.8
50	25.791	25.520	678.1	800.7	678.1	638.6	.0	482.9	.00	37.08	61.45	49.55	1418.9	986.0	-1246.4	-750.4	1246.4	1233.3
70	28.954	28.076	663.0	710.4	663.0	583.7	.0	404.9	.00	34.74	64.63	58.45	1548.5	1116.9	-1399.2	-951.9	1399.2	1356.8
85	31.295	29.993	641.0	681.7	641.0	552.1	.0	399.5	-.00	35.92	67.03	62.26	1642.6	1186.4	-1512.4	-1049.9	1512.4	1449.4
90	31.883	30.630	635.7	651.6	635.7	506.9	.0	409.1	.00	38.93	67.58	64.68	1666.8	1185.3	-1540.8	-1071.2	1540.8	1480.2
95	32.499	31.271	632.0	610.6	632.0	449.7	.0	412.7	.00	42.58	68.08	67.73	1692.9	1187.3	-1570.5	-1098.5	1570.5	1511.2

%SPAN	INCS DEGREE	INCH DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P PROFILE	LOSS-P TOTAL	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-1.14	5.29	17.68	36.37	48.82	.0105	.4430	.0735	.0154	.0132	1.9578	.9550	.9505	.9237	.6643	.8865	.9695	.6527
10	-.86	5.50	17.29	31.75	43.55	.0134	.4411	.0629	.0133	.0104	1.9218	.9572	.9532	.9334	.5798	.8545	1.0205	.6719
15	-.54	5.20	15.63	27.86	38.07	.0102	.4439	.0676	.0143	.0104	1.8853	.9497	.9452	.9273	.5930	.8241	1.0679	.6875
30	.51	4.42	10.10	18.47	24.13	.0403	.4332	.0760	.0157	.0072	1.7927	.9280	.9219	.9126	.6211	.7479	1.1947	.7504
50	2.00	4.56	7.29	11.90	14.68	.0767	.4083	.0980	.0194	.0039	1.7203	.8866	.8779	.8768	.6301	.6876	1.3331	.8467
70	3.23	5.00	7.94	6.18	9.13	.1077	.3657	.1116	.0197	.0004	1.6137	.8421	.8309	.8438	.6142	.6081	1.4461	.9560
85	3.68	4.91	8.12	4.77	7.98	.1313	.3638	.1597	.0269	.0049	1.5785	.7849	.7491	.7691	.5942	.5794	1.5209	1.0082
90	3.78	4.84	9.55	2.90	7.61	.1385	.3775	.2070	.0326	.0108	1.5452	.6999	.6808	.7131	.5805	.5501	1.5436	1.0006
95	3.87	4.78	11.77	.35	7.34	.1492	.3885	.2471	.0352	.0141	1.5060	.6411	.6198	.6682	.5851	.5123	1.5655	.9962

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.1944	1.7190	86.06	87.10

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	1083.8	1021.6	824.9	1015.8	703.1	-109.1	40.44	-6.13	18.95	48.49	872.3	1532.6	-283.2	-1147.6	986.3	1038.5
10	21.008	21.961	1051.7	1017.0	818.6	1008.4	660.2	-131.3	38.88	-7.42	23.44	49.78	892.5	1561.8	-355.0	-1192.5	1015.2	1061.3
15	21.589	22.432	1022.8	1002.2	807.6	990.3	627.6	-153.7	37.84	-8.84	27.21	51.33	909.0	1585.4	-415.7	-1237.8	1043.3	1084.0
30	23.314	23.902	950.3	932.6	778.7	916.9	544.5	-170.2	34.96	-10.62	34.77	55.32	972.4	1611.6	-582.1	-1325.3	1126.7	1155.1
50	25.601	25.893	897.7	872.2	757.4	861.6	481.9	-135.6	32.46	-8.95	44.90	58.14	1070.0	1633.0	-755.3	-1386.9	1237.2	1251.3
70	27.818	27.902	830.2	778.2	722.2	764.3	409.2	-146.3	29.53	-10.85	52.29	62.91	1181.8	1678.9	-935.1	-1494.7	1344.3	1348.4
85	29.408	29.382	823.7	741.2	716.4	731.8	406.4	-117.3	29.57	-9.11	54.78	64.54	1242.3	1702.6	-1014.8	-1537.2	1421.2	1419.9
90	29.914	29.856	806.6	726.4	689.8	718.9	418.0	-104.0	31.22	-8.22	56.13	65.07	1237.8	1705.7	-1027.6	-1546.8	1445.6	1442.8
95	30.382	30.293	782.2	696.0	667.2	687.9	424.0	-106.0	32.84	-8.77	57.82	66.34	1233.9	1714.1	-1044.2	-1569.9	1468.2	1463.9

%SPAN	INCS DEGREE	INCH DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P PROFILE	LOSS-P TOTAL	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-1.90	1.02	10.26	46.57	55.07	.0035	.2902	.2251	.0556	.0540	.9002	.0000	.0000	-.4950	.9517	.8909	.7686	1.3365
10	-2.47	.46	8.01	46.30	53.85	.0031	.2221	.1646	.0417	.0409	.9301	.0000	.0000	-.9063	.9227	.8895	.7856	1.3660
15	-2.59	.35	6.08	46.68	52.40	.0033	.2175	.1292	.0334	.0325	.9479	.0000	.0000	-1.4625	.8959	.8767	.7984	1.3868
30	-3.51	-.51	4.70	45.48	50.66	.0024	.2283	.1088	.0300	.0294	.9605	.0000	.0000	-1.3361	.8281	.8125	.8520	1.4040
50	-4.29	-1.16	7.09	41.40	49.59	.0018	.2384	.1018	.0308	.0303	.9663	.0000	.0000	-.4961	.7777	.7558	.9235	1.4150
70	-6.22	-2.98	6.60	40.37	49.88	.0001	.2842	.1327	.0432	.0432	.9612	.0000	.0000	.0968	.7184	.6711	1.0289	1.4479
85	-3.06	-2.51	10.84	38.67	52.11	.0000	.3226	.1620	.0559	.0559	.9536	.0000	.0000	.2838	.7102	.6337	1.0720	1.4557
90	-.70	-.98	13.35	39.45	53.81	.0000	.3295	.1377	.0484	.0484	.9623	.0000	.0000	.3844	.6918	.6179	1.0620	1.4507
95	-.97	.46	14.91	41.61	56.07	.0000	.3548	.1381	.0492	.0492	.9643	.0000	.0000	.4331	.6673	.5887	1.0530	1.4497

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WCI/AI LBM/SEC SQFT
11075.	182.56	1.1943	1.6424	78.31	79.80	41.21

PO/PO LOCAL
.9566

TABLE 13.2
BLADE ELEMENT AND OVERALL PERFORMANCE WITHOUT STATOR HUB
SLIT SUCTION, 100 PERCENT OF DESIGN SPEED, POINTS 1-3

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	595.8	1009.9	595.8	663.0	.0	761.7	.00	48.96	54.78	16.29	1033.3	691.0	-844.2	-193.7	844.2	955.5
10	18.467	20.408	609.9	976.3	609.9	664.0	.0	715.7	.00	47.14	55.65	22.18	1081.0	717.4	-892.5	-270.7	892.5	986.4
15	19.467	21.047	623.0	929.4	623.0	636.3	.0	677.4	.00	46.79	56.49	28.08	1128.4	722.4	-940.9	-339.9	-940.9	1017.2
30	22.314	22.964	650.5	844.7	650.5	583.3	.0	611.0	.00	46.33	58.89	40.54	1259.5	767.6	-1078.5	-498.9	1078.5	1109.9
50	25.791	25.520	664.7	823.7	664.7	581.5	.0	583.4	.00	45.09	61.93	48.18	1412.7	872.2	-1246.5	-650.0	1246.5	1233.4
70	28.954	28.076	654.8	762.0	654.8	553.8	.0	523.4	.00	43.38	64.91	56.35	1545.1	1001.1	-1399.4	-833.5	1399.4	1357.0
85	31.295	29.993	635.4	737.5	635.4	514.0	.0	528.8	-.00	45.82	67.21	60.83	1640.6	1054.6	-1512.5	-920.8	1512.5	1449.6
90	31.883	30.630	630.3	718.0	630.3	472.6	.0	540.1	.00	48.84	67.75	63.32	1664.9	1052.6	-1541.0	-940.3	1541.0	1480.4
95	32.499	31.271	626.2	694.5	626.2	432.3	.0	543.4	.00	51.52	68.26	65.93	1691.0	1060.3	-1570.7	-967.9	1570.7	1511.4

%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	-.59	5.84	16.12	38.50	48.82	.0116	.5034	.0067	.0014	-.0011	2.0767	.9945	.9939	.9922	.5518	.8746	.9607	.5984
10	-.32	6.06	16.11	33.47	43.54	.0145	.4964	-.0074	-.0016	-.0047	2.0479	1.0027	1.0030	1.0051	.5671	.8440	1.0115	.6202
15	-.01	5.77	15.63	28.41	38.08	.0191	.5098	.0237	.0050	.0009	1.9872	.9822	.9803	.9758	.5797	.8002	1.0582	.6219
30	1.03	4.99	10.76	18.35	24.11	.0412	.5232	.0790	.0162	.0076	1.9017	.9322	.9260	.9211	.6056	.7205	1.1807	.6547
50	2.37	4.96	5.82	13.75	14.61	.0772	.5079	.1089	.0222	.0063	1.9162	.8941	.8839	.8835	.6176	.6967	1.3182	.7377
70	3.44	5.25	5.84	8.56	9.15	.1079	.4649	.1203	.0226	.0022	1.8620	.8650	.8528	.8597	.6072	.6409	1.4363	.8420
85	3.85	5.10	6.63	6.38	7.93	.1317	.4714	.1796	.0317	.0088	1.8418	.7931	.7798	.7875	.5893	.6139	1.5148	.8778
90	3.94	5.02	8.16	4.43	7.58	.1388	.4850	.2211	.0366	.0138	1.8202	.7488	.7270	.7461	.5838	.5939	1.5386	.8706
95	4.05	4.96	9.93	2.33	7.31	.1495	.4914	.2503	.0384	.0157	1.7967	.7154	.6912	.7174	.5796	.5715	1.5614	.8724

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.2315	1.9056	87.31	88.41

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	20.407	21.489	1055.9	798.6	755.4	796.5	737.8	-57.6	44.33	-4.14	18.21	54.00	795.4	1355.0	-248.6	-1096.2	986.4	1038.6
10	21.008	21.961	1023.3	770.3	751.6	764.4	694.4	-93.7	42.73	-7.01	23.12	56.50	817.5	1385.4	-320.9	-1155.2	1015.4	1061.4
15	21.589	22.432	980.8	746.5	725.3	738.4	660.1	-109.7	42.30	-8.45	27.84	58.26	821.1	1403.9	-383.3	-1193.9	1043.4	1084.2
30	23.314	23.902	906.3	706.4	677.5	701.2	601.9	-86.0	41.62	-7.00	37.76	60.54	857.1	1425.6	-524.9	-1241.3	1126.8	1156.2
50	25.601	25.893	895.0	712.6	680.4	710.0	581.5	-61.2	40.52	-4.93	43.94	61.59	945.1	1492.4	-655.9	-1312.6	1237.3	1251.5
70	27.818	27.902	852.8	664.3	669.4	658.9	528.2	-84.8	38.27	-7.34	50.61	65.30	1055.9	1577.6	-816.3	-1433.3	1344.5	1348.5
85	29.408	29.382	848.1	631.3	654.8	629.2	538.9	-50.4	39.46	-4.57	53.42	66.83	1098.8	1599.5	-882.4	-1470.5	1421.3	1420.1
90	29.914	29.856	838.2	612.7	629.9	611.9	552.9	-30.7	41.28	-2.86	54.80	67.45	1092.8	1595.7	-892.9	-1473.7	1445.8	1443.0
95	30.382	30.293	825.5	578.6	607.5	576.9	558.8	-43.0	42.61	-4.29	56.26	69.05	1093.9	1613.9	-909.6	-1507.1	1468.4	1464.1

%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	2.08	5.00	12.26	48.46	55.89	.0104	.4269	.1791	.0444	.0418	.9244	.0000	.0000	.6777	.9151	.6727	.6939	1.1414
10	1.46	4.39	8.42	49.75	53.86	.0097	.4405	.1800	.0456	.0431	.9274	.0000	.0000	.6854	.8828	.6493	.7115	1.1677
15	1.99	4.88	6.51	50.75	52.44	.0110	.4413	.1452	.0376	.0347	.9453	.0000	.0000	.7268	.8472	.6288	.7127	1.1825
30	3.19	6.19	8.22	48.61	50.66	.0169	.4316	.0764	.0213	.0166	.9747	.0000	.0000	.8371	.7788	.5933	.7383	1.1974
50	3.82	6.96	11.10	45.45	49.56	.0258	.4227	.0614	.0187	.0109	.9803	.0000	.0000	.8636	.7627	.5956	.8082	1.2473
70	2.57	5.81	10.13	45.61	49.90	.0182	.4589	.0644	.0212	.0152	.9810	.0000	.0000	.8615	.7239	.5534	.8998	1.3141
85	7.11	7.47	15.35	44.03	52.06	.0206	.4987	.1085	.0378	.0306	.9687	.0000	.0000	.7808	.7136	.5202	.9251	1.3180
90	9.31	9.17	18.72	44.14	53.81	.0251	.5167	.1138	.0404	.0315	.9681	.0000	.0000	.7828	.7015	.5020	.9149	1.3072
95	8.76	10.27	19.39	46.91	56.06	.0259	.5624	.1938	.0517	.0424	.9609	.0000	.0000	.7542	.6880	.4715	.9124	1.3151

WCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WGT/AT LBM/SEC SQFT
11077.	181.03	1.2314	1.8425	82.35	83.80	40.79

PO/PO LOCAL
.9679

TABLE 13.3
BLADE ELEMENT AND OVERALL PERFORMANCE WITHOUT STATOR HUB
SLIT SUCTION, 100 PERCENT OF DESIGN SPEED, POINTS 1-3

Rotor

% SPAN	DIA-1 IN	DIA-2 IN	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VU-1 FT/SEC	VU-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	BT-1 DEGREE	BT-2 DEGREE	V*-1 FT/SEC	V*-2 FT/SEC	VU*-1 FT/SEC	VU*-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.769	557.7	1004.8	557.7	621.0	.0	789.8	.00	51.82	58.57	15.02	1012.7	643.2	-845.1	-166.7	845.1	956.5
10	18.467	20.408	570.8	980.5	570.8	637.1	.0	745.2	.00	49.47	57.42	20.81	1060.3	681.7	-893.5	-242.2	893.5	987.4
15	19.467	21.047	582.7	935.9	582.7	611.9	.0	708.1	.00	49.18	58.26	26.89	1107.6	687.1	-941.9	-310.2	941.9	1018.4
30	22.314	22.964	605.8	829.8	605.8	519.6	.0	647.0	.00	51.24	60.69	41.77	1238.1	696.9	-1079.7	-464.1	1079.7	1111.1
50	25.791	25.520	616.2	810.5	616.2	527.1	.0	626.2	.00	49.91	63.71	49.09	1391.8	805.2	-1247.9	-608.6	1247.9	1234.8
70	28.954	28.076	608.1	784.1	608.1	511.4	.0	594.5	.00	49.30	66.52	56.16	1527.3	919.6	-1400.9	-764.0	1400.9	1358.5
85	31.295	29.993	591.7	771.6	591.7	489.1	.0	622.4	.00	51.84	68.65	59.45	1625.7	962.4	-1514.2	-828.8	1514.2	1451.2
90	31.883	30.630	586.9	782.2	586.9	453.1	.0	637.2	.00	54.60	69.17	61.80	1650.6	958.9	-1542.7	-844.8	1542.7	1482.0
95	32.499	31.271	582.7	761.5	582.7	408.7	.0	642.3	.00	57.55	69.67	64.85	1677.0	962.1	-1572.5	-870.7	1572.5	1513.0

% SPAN	INCS DEGREE	INCH 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	1.18	7.61	14.85	41.55	48.82	.0159	.5469	.0132	.0028	-.0006	2.1243	.9914	.9905	.9869	.5143	.8659	.9366	.5543
10	1.44	7.85	14.74	36.61	43.54	.0192	.5269	-.0237	-.0051	-.0093	2.1184	1.0116	1.0128	1.0196	.5280	.8444	.9865	.5871
15	1.75	7.56	14.44	31.37	38.09	.0231	.5394	.0059	.0013	-.0038	2.0640	.9946	.9940	.9926	.5394	.8029	1.0331	.6893
30	2.82	6.79	12.04	18.92	24.15	.0451	.5800	.1068	.0215	.0122	1.9453	.9157	.9073	.8997	.5609	.7024	1.1542	.5899
50	4.12	6.74	6.75	14.62	14.62	.0810	.5580	.1293	.0258	.0096	1.9863	.8844	.8726	.8683	.5694	.6867	1.2082	.6755
70	5.01	6.86	5.67	10.36	9.17	.1112	.5276	.1541	.0290	.0081	1.9810	.8474	.8319	.8324	.5615	.6523	1.4085	.7649
85	5.29	6.56	5.22	9.20	7.90	.1351	.5438	.2144	.0395	.0150	2.0150	.7865	.7642	.7648	.5469	.6505	1.4911	.7909
90	5.35	6.45	6.62	7.37	7.56	.1423	.5587	.2521	.0440	.0195	2.0085	.7525	.7270	.7306	.5415	.6388	1.5165	.7830
95	5.44	6.37	8.84	4.82	7.30	.1530	.5675	.2814	.0949	.0209	1.9886	.7233	.6954	.7042	.5371	.6183	1.5408	.7812

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.2556	2.0032	85.77	87.10

Stator

% SPAN	DIA-1 IN	DIA-2 IN	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VU-1 FT/SEC	VU-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	BT-1 DEGREE	BT-2 DEGREE	V*-1 FT/SEC	V*-2 FT/SEC	VU*-1 FT/SEC	VU*-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	20.409	21.489	1037.3	706.6	700.5	705.5	765.1	-39.7	47.52	-3.22	17.61	56.83	735.1	1289.6	-222.4	-1079.5	987.5	1039.7
10	21.008	21.961	1012.9	688.8	709.5	683.4	722.9	-83.4	45.53	-6.98	22.47	59.18	768.1	1334.5	-293.6	-1146.8	1016.5	1062.6
15	21.589	22.432	971.6	670.3	683.8	661.5	690.2	-108.7	45.27	-9.33	27.41	61.01	771.0	1365.2	-354.4	-1194.0	1044.6	1085.4
30	23.314	23.902	876.0	619.0	601.1	613.6	637.2	-81.4	46.67	-7.55	39.23	63.63	776.1	1381.6	-490.8	-1237.9	1128.0	1156.5
50	25.601	25.893	876.0	641.8	613.9	639.0	624.9	-59.9	45.51	-5.36	44.99	64.04	868.2	1460.0	-613.8	-1312.8	1238.7	1252.8
70	27.818	27.902	859.4	627.8	614.7	623.7	600.6	-72.0	44.34	-6.58	50.46	66.31	966.2	1552.8	-745.3	-1422.0	1346.0	1350.0
85	29.408	29.382	883.7	630.4	613.8	628.0	635.7	-55.4	46.00	-5.04	52.06	66.97	998.2	1605.0	-787.2	-1477.0	1422.9	1421.6
90	29.914	29.856	881.9	622.8	592.2	621.4	653.2	-40.1	47.81	-3.68	53.29	67.29	990.7	1609.5	-794.1	-1484.7	1447.4	1444.6
95	30.382	30.293	870.9	601.8	567.2	600.5	660.7	-40.0	49.36	-3.82	54.97	68.26	988.4	1621.1	-809.3	-1505.7	1470.0	1465.7

% SPAN	INCS DEGREE	INCH 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	5.23	8.15	13.10	50.74	55.90	.0200	.5073	.2180	.0541	.0492	.9111	.0000	.0000	.6772	.8925	.5873	.6386	1.0718
10	4.24	7.17	8.46	52.51	53.87	.0182	.5197	.2266	.0574	.0528	.9108	.0000	.0000	.6692	.8694	.5734	.6653	1.1109
15	4.95	7.89	5.59	54.61	52.41	.0214	.5221	.1924	.0497	.0441	.9291	.0000	.0000	.7028	.8347	.5579	.6641	1.1362
30	8.18	11.17	7.66	54.22	50.65	.0424	.5215	.1077	.0300	.0182	.9668	.0000	.0000	.8195	.7472	.5130	.6605	1.1450
50	8.82	11.95	10.66	50.87	49.55	.0591	.5057	.1078	.0329	.0148	.9672	.0000	.0000	.8112	.7401	.5291	.7311	1.2035
70	8.66	11.89	10.92	50.92	49.93	.0599	.5286	.1173	.0386	.0189	.9657	.0000	.0000	.7925	.7210	.5146	.8090	1.2726
85	13.33	13.83	14.85	51.05	52.02	.0736	.5601	.1723	.0600	.0344	.9482	.0000	.0000	.7109	.7334	.5104	.8286	1.2995
90	15.55	15.50	17.95	51.49	53.87	.0843	.5735	.1821	.0646	.0347	.9459	.0000	.0000	.6977	.7283	.5013	.8183	1.2954
95	16.59	16.95	19.86	53.18	56.06	.0897	.5996	.1975	.0711	.0388	.9429	.0000	.0000	.6774	.7159	.4820	.8121	1.2982

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/AI LBM/SEC SQFT
******	173.09	1.2557	1.9078	79.16	80.96	38.90

PO/PO LOCAL
.9532

TABLE 14.1
BLADE ELEMENT AND OVERALL PERFORMANCE WITHOUT STATOR HUB
SLIT SUCTION, 70 PERCENT OF DESIGN SPEED, POINTS 1-3

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	19.789	415.7	793.4	415.7	589.7	.0	530.8	.00	41.99	54.93	13.30	723.5	606.0	-592.2	139.4	592.2	670.2
10	18.467	20.408	423.7	763.3	423.7	589.1	.0	485.3	.00	39.47	55.91	19.32	756.0	624.7	-626.1	-206.6	626.1	691.9
15	19.467	21.047	431.0	725.3	431.0	572.2	.0	445.5	.00	37.87	56.85	25.06	788.3	632.9	-660.0	-268.1	660.0	713.6
30	22.314	22.964	445.8	644.8	445.8	539.6	.0	352.9	.00	33.17	59.48	38.25	870.2	687.6	-756.5	-425.7	756.5	778.6
50	25.791	25.520	451.8	589.6	451.8	516.4	.0	284.5	.00	28.84	62.67	48.33	984.3	777.4	-874.4	-580.8	874.4	886.2
70	28.954	28.076	444.7	543.9	444.7	492.2	.0	231.5	.00	25.18	65.62	55.63	1077.7	872.6	-981.6	-720.3	901.6	951.9
85	31.295	29.993	433.1	516.4	433.1	469.8	.0	224.9	.00	25.83	67.77	59.59	1146.0	918.4	-1061.0	-792.0	1061.0	1016.9
90	31.803	30.630	429.9	483.8	429.9	427.1	.0	227.2	.00	28.06	68.31	62.24	1163.3	917.0	-1081.0	-811.2	1081.0	1038.5
95	32.499	31.271	427.5	444.7	427.5	382.2	.0	227.2	.00	30.77	68.83	65.36	1181.8	916.7	-1101.8	-833.0	1101.8	1060.2

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P PROFILE	LOSS-P P02/P01	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-.91	6.02	13.13	41.63	48.02	.0001	.3337	.0815	.0174	.0174	1.4312	.9471	.9443	.8624	.3791	.7059	.6634	.5392
10	-.01	6.35	13.25	36.59	43.54	.0004	.3289	.0578	.0126	.0125	1.4090	.9571	.9549	.8994	.3874	.6788	.6972	.5555
15	.41	6.13	12.57	31.79	38.04	.0008	.3381	.0720	.0157	.0155	1.3760	.9393	.9365	.8766	.3941	.6439	.7283	.5619
30	1.69	6.61	8.49	21.23	24.12	.0026	.3269	.0688	.0146	.0140	1.3123	.9189	.9158	.8726	.4071	.5719	.8106	.6092
50	3.16	5.74	6.09	14.34	14.66	.0048	.2979	.0640	.0130	.0120	1.2499	.8980	.8946	.8622	.4112	.5220	.9031	.6882
70	4.16	5.96	5.11	9.99	9.14	.0048	.2818	.0605	.0116	.0106	1.2328	.8754	.8717	.8456	.4042	.4816	.9841	.7726
85	4.44	5.69	5.42	8.20	7.95	.0053	.2681	.1065	.0195	.0185	1.2096	.7672	.7609	.7282	.3942	.4555	1.0396	.8102
90	4.50	5.58	7.09	6.07	7.59	.0060	.2823	.1509	.0259	.0249	1.1973	.6714	.6633	.6445	.3910	.4253	1.0566	.8060
95	4.58	5.50	9.37	3.44	7.32	.0076	.2952	.1906	.0299	.0287	1.1634	.5804	.5711	.5792	.3887	.3895	1.0726	.8029

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.0840	1.2808	87.22	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	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	847.1	844.2	673.2	843.3	514.2	-40.4	37.37	-2.75	14.79	42.36	696.3	1141.3	-777.0	-769.0	691.9	726.6
10	21.008	21.961	818.1	831.4	669.2	827.4	470.6	-81.1	35.10	-5.60	19.85	44.94	711.9	1169.0	-241.7	-825.6	712.2	744.6
15	21.589	22.432	783.7	810.3	652.6	804.7	433.7	-94.4	33.58	-6.70	24.54	46.73	718.4	1174.3	-298.3	-854.9	731.9	760.5
30	23.314	23.902	711.4	741.9	620.7	734.7	347.5	-103.4	29.24	-8.01	35.49	51.20	762.7	1172.6	-442.9	-913.8	790.4	810.4
50	25.601	25.893	664.5	686.7	601.0	679.2	283.5	-100.9	25.25	-8.45	44.18	55.24	838.5	1191.5	-584.4	-978.8	868.0	877.9
70	27.818	27.902	633.3	635.3	588.6	628.1	233.7	-95.2	21.65	-8.61	50.30	58.90	922.0	1216.0	-709.4	-1041.1	943.1	946.0
85	29.408	29.382	623.9	590.5	580.3	584.9	229.2	-80.7	21.56	-7.85	52.92	61.49	962.5	1225.5	-767.8	-1076.8	997.0	996.2
90	29.914	29.856	603.1	568.7	556.4	563.9	232.6	-74.1	22.70	-7.48	54.55	62.57	959.5	1224.0	-781.6	-1086.3	1014.2	1012.2
95	30.382	30.293	578.8	537.9	529.5	531.5	233.7	-82.5	23.82	-8.84	56.38	64.40	956.5	1230.4	-796.4	-1109.6	1030.1	1027.0

%SPAN	INCS DEGREE	INCM DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P PROFILE	LOSS-P P02/P01	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	-4.97	-2.05	13.65	40.12	55.80	.0000	.1626	.1620	.0402	.0402	.9486	.0000	.0000	*******	.7567	.7561	.6237	1.0221
10	-6.31	-3.38	9.83	40.70	53.85	.0000	.1531	.1142	.0290	.0290	.9657	.0000	.0000	3.2077	.7286	.7460	.6376	1.0490
15	-6.93	-3.99	8.27	40.28	52.47	.0000	.1400	.0715	.0186	.0186	.9800	.0000	.0000	1.7103	.6977	.7271	.6434	1.0538
30	-9.34	-6.34	7.20	37.25	50.67	.0000	.1339	.0415	.0115	.0115	.9901	.0000	.0000	1.2993	.6324	.6646	.6844	1.0504
50	-11.58	-8.45	7.59	33.70	49.59	.0000	.1434	.0369	.0112	.0112	.9922	.0000	.0000	1.3296	.5908	.6140	.7522	1.0655
70	-14.13	-10.91	8.83	30.27	49.87	.0000	.1688	.0587	.0192	.0192	.9865	.0000	.0000	4.4907	.5641	.5674	.8272	1.0859
85	-10.85	-10.43	12.12	29.41	52.10	.0000	.2272	.1252	.0433	.0433	.9763	.0000	.0000	-.0645	.5528	.5242	.8565	1.0879
90	-9.15	-9.43	14.06	30.18	53.76	.0000	.2378	.1099	.0387	.0387	.9805	.0000	.0000	.1109	.5335	.5033	.8514	1.0832
95	-10.06	-8.50	14.84	32.67	56.06	.0000	.2678	.1149	.0410	.0410	.9811	.0000	.0000	.2339	.5109	.4745	.8463	1.0853

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT
7770.	135.55	1.0840	1.2607	81.46	82.05	30.60

PO/PO LOCAL
.9847

TABLE 14.2
BLADE ELEMENT AND OVERALL PERFORMANCE WITHOUT STATOR HUB
SLIT SUCTION, 70 PERCENT OF DESIGN SPEED, POINTS 1-3

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	379.7	755.5	379.7	524.1	.0	544.2	.00	46.08	57.27	13.35	702.2	538.7	-590.7	-124.4	590.7	668.6
10	18.467	20.408	386.9	726.8	386.9	526.2	.0	501.3	.00	43.60	58.22	19.74	734.7	559.5	-624.6	-188.9	624.6	692.2
15	19.467	21.047	393.5	690.8	393.5	510.0	.0	465.8	.00	42.39	59.14	25.72	767.0	567.2	-658.4	-246.0	658.4	711.8
30	22.314	22.964	406.1	613.9	406.1	468.2	.0	397.0	.00	40.29	61.70	39.01	857.0	603.0	-754.7	-379.6	754.7	776.7
50	25.791	25.520	410.8	558.2	410.8	443.8	.0	333.6	.00	37.34	64.78	49.74	964.2	687.2	-872.3	-524.5	872.3	883.1
70	28.954	28.076	405.1	528.4	405.1	433.5	.0	302.1	.00	34.87	67.52	56.16	1059.8	779.3	-979.2	-647.4	979.2	949.5
85	31.295	29.993	395.1	514.9	395.1	412.3	.0	308.4	-.00	36.79	69.53	59.71	1129.8	817.6	-1058.4	-706.0	1058.4	1014.4
90	31.883	30.630	392.3	494.9	392.3	378.6	.0	318.4	.00	40.10	70.01	62.19	1147.5	811.5	-1078.3	-717.6	1078.3	1035.9
95	32.499	31.271	389.9	473.6	389.9	346.9	.0	322.2	.00	42.90	70.47	64.74	1166.2	813.3	-1099.1	-735.4	1099.1	1057.6

%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	1.92	8.35	13.19	43.91	48.82	.0011	.4137	.0146	.0031	.0029	1.4567	.9915	.9900	.9794	.3455	.6682	.6428	.4765
10	2.30	8.65	13.67	38.47	43.54	.0018	.4034	-.0081	-.0018	-.0022	1.4481	1.0046	1.0048	1.0104	.3530	.6425	.6767	.4946
15	2.70	8.40	13.21	33.42	38.02	.0026	.4121	.0120	.0026	.0023	1.4195	.9931	.9896	.9821	.3588	.6097	.7078	.5006
30	3.91	7.83	9.25	22.70	24.12	.0056	.4230	.0590	.0124	.0112	1.3642	.9402	.9375	.9128	.3697	.5395	.7896	.5300
50	5.24	7.82	7.44	15.03	14.65	.0084	.3938	.0705	.0139	.0122	1.3296	.9077	.9039	.8825	.3728	.4893	.8912	.6024
70	6.03	7.85	5.65	11.36	9.16	.0080	.3595	.0761	.0143	.0128	1.3121	.8812	.8765	.8564	.3674	.4625	.9634	.6820
85	6.18	7.43	5.51	9.81	7.93	.0079	.3730	.1309	.0239	.0225	1.3036	.7914	.7834	.7555	.3589	.4484	1.0209	.7120
90	6.20	7.28	7.03	7.82	7.58	.0085	.3931	.1777	.0306	.0291	1.2901	.7230	.7128	.6881	.3560	.4292	1.0385	.7038
95	6.25	7.17	8.74	5.73	7.31	.0103	.4045	.2100	.0337	.0320	1.2773	.6729	.6614	.6444	.3537	.4094	1.0551	.7031

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.1001	1.3474	88.87	89.33

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	793.3	709.2	592.9	708.6	527.1	-28.6	41.64	-2.31	15.38	46.83	615.0	1035.7	-163.1	-755.4	590.2	726.8
10	21.008	21.961	765.2	685.4	591.1	682.3	486.0	-63.6	39.42	-5.34	20.79	49.75	632.6	1056.5	-224.5	-806.4	710.5	742.7
15	21.589	22.432	732.1	662.7	574.6	657.9	453.6	-79.4	38.28	-6.89	25.68	51.87	638.4	1065.7	-276.5	-838.1	730.2	758.7
30	23.314	23.902	662.1	608.2	534.3	603.8	391.0	-72.7	36.19	-6.87	36.63	55.57	666.1	1068.2	-397.5	-881.1	788.5	808.4
50	25.601	25.893	614.2	562.0	513.2	557.1	337.4	-74.1	33.32	-7.57	45.82	59.60	736.7	1101.2	-528.4	-949.8	865.8	875.7
70	27.818	27.902	596.1	533.3	512.2	528.6	304.9	-70.2	30.76	-7.57	51.13	62.46	816.6	1143.5	-635.9	-1013.9	940.8	943.7
85	29.408	29.382	596.4	507.2	506.6	505.0	314.7	-46.5	31.85	-5.25	53.31	64.10	847.9	1156.4	-679.9	-1040.2	994.6	993.7
90	29.914	29.856	584.5	489.4	484.8	488.5	326.3	-27.7	33.95	-3.23	54.73	64.79	839.6	1146.7	-685.4	-1037.5	1011.7	1009.7
95	30.382	30.293	572.1	465.9	466.2	465.0	331.4	-28.2	35.41	-3.48	56.19	66.17	837.9	1150.9	-696.1	-1052.7	1027.5	1024.5

%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	-.67	2.25	14.08	43.95	55.88	.0000	.2762	.1374	.0341	.0341	.9612	.0000	.0000	.4283	.7024	.6240	.5462	.9113
10	-1.99	.95	10.09	44.76	53.85	.0000	.2844	.1297	.0330	.0330	.9655	.0000	.0000	.4617	.6751	.6035	.5623	.9302
15	-2.17	.78	8.10	45.17	52.49	.0000	.2825	.1015	.0264	.0264	.9749	.0000	.0000	.5312	.6462	.5833	.5666	.9379
30	-2.30	.70	8.35	43.06	50.67	.0000	.2764	.0470	.0131	.0131	.9903	.0000	.0000	.7533	.5824	.5343	.5909	.9384
50	-3.44	-.30	8.46	40.89	49.58	.0000	.2894	.0277	.0084	.0084	.9950	.0000	.0000	.8596	.5401	.4929	.6526	.9657
70	-4.96	-1.72	9.89	38.33	49.88	.0000	.3137	.0380	.0125	.0125	.9935	.0000	.0000	.8304	.5242	.4669	.7218	1.0011
85	-.46	-.07	14.69	37.10	52.07	.0000	.3613	.0909	.0317	.0317	.9845	.0000	.0000	.6792	.5216	.4413	.7424	1.0061
90	2.06	1.88	18.34	37.18	53.79	.0000	.3781	.0933	.0331	.0331	.9848	.0000	.0000	.6999	.5097	.4241	.7328	.9939
95	1.57	3.08	20.20	38.89	56.06	.0000	.4126	.1130	.0407	.0407	.9824	.0000	.0000	.6879	.4979	.4026	.7299	.9945

NCORR RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT
7751.	125.21	1.1001	1.3292	84.65	85.26	28.26

PO/PO LOCAL
.9868

TABLE 14.3
BLADE ELEMENT AND OVERALL PERFORMANCE WITHOUT STATOR HUB
SLIT SUCTION, 70 PERCENT OF DESIGN SPEED, POINTS 1-3

Rotor

%SPAN	DIA-1 IN	DIA-2 IN	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VU-1 FT/SEC	VU-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	VU'-1 FT/SEC	VU'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	17.467	19.769	345.0	745.3	345.0	489.4	.0	562.1	.00	48.96	59.73	12.33	684.5	501.0	-591.2	-107.0	591.2	869.1
10	18.467	20.408	351.7	719.3	351.7	489.7	.0	526.8	.00	47.08	60.63	18.50	717.2	516.9	-625.1	-164.0	625.1	690.8
15	19.467	21.047	357.7	684.9	357.7	474.9	.0	493.6	.00	46.10	61.50	24.72	749.8	523.9	-658.9	-218.8	659.9	712.4
30	22.314	22.964	368.8	608.3	368.8	427.5	.0	432.7	.00	45.34	63.96	38.82	840.6	549.5	-755.3	-344.6	755.3	777.3
50	25.731	25.520	371.1	552.6	371.1	397.4	.0	383.9	.00	44.01	66.97	50.33	948.6	623.2	-873.0	-475.9	873.0	863.8
70	28.954	28.076	363.5	533.9	363.5	384.9	.0	369.9	.00	43.86	69.64	56.42	1045.3	696.6	-980.0	-580.4	980.0	950.3
85	31.295	29.993	353.9	522.8	353.9	346.8	.0	391.1	.00	48.44	71.52	60.94	1116.8	714.0	-1059.3	-624.1	1059.3	1015.2
90	31.883	30.630	351.5	510.4	351.5	330.5	.0	388.9	.00	49.65	71.96	62.96	1135.0	727.5	-1079.2	-647.9	1079.2	1036.8
95	32.499	31.271	349.3	498.3	349.3	315.7	.0	385.5	.00	50.69	72.38	64.86	1154.2	743.4	-1100.0	-672.9	1100.0	1058.5

%SPAN	INCS DEGREE	INCH DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P PROFILE	LOSS-P	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	4.38	10.81	12.17	47.39	48.82	.0039	.4598	.0063	.0013	.0005	1.4879	.9958	.9955	.9916	.3134	.6572	.6259	.4418
10	4.71	11.04	12.43	42.13	43.54	.0052	.4569	-.0060	-.0013	-.0025	1.4737	1.0029	1.0030	1.0068	.3204	.6336	.6605	.4553
15	5.07	10.72	12.18	36.78	37.98	.0066	.4657	.0134	.0029	.0015	1.4483	.9900	.9895	.9819	.3257	.6023	.6922	.4606
30	6.21	10.09	9.07	25.14	24.11	.0107	.4870	.0770	.0162	.0139	1.3964	.9307	.9273	.8980	.3349	.5320	.7754	.4806
50	7.46	10.03	8.08	16.63	14.69	.0141	.4658	.1072	.0209	.0181	1.3651	.8790	.9736	.8436	.3356	.4813	.8676	.5428
70	8.17	9.96	5.93	13.21	9.16	.0132	.4514	.1430	.0267	.0243	1.3589	.8193	.8113	.7764	.3286	.4629	.9500	.6039
85	8.18	9.44	6.76	10.59	7.95	.0123	.4848	.2172	.0382	.0361	1.3553	.7239	.7118	.6706	.3206	.4498	1.0069	.6143
90	8.15	9.24	7.80	9.00	7.59	.0128	.4829	.2315	.0388	.0367	1.3491	.7027	.6899	.6520	.3182	.4384	1.0293	.6248
95	8.17	9.09	8.86	7.52	7.30	.0147	.4791	.2419	.0386	.0363	1.3434	.6850	.6717	.6375	.3162	.4273	1.0413	.6374

TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %
1.1146	1.3878	85.64	86.29

Stator

%SPAN	DIA-1 IN	DIA-2 IN	V-1 FT/SEC	V-2 FT/SEC	VM-1 FT/SEC	VM-2 FT/SEC	VU-1 FT/SEC	VU-2 FT/SEC	B-1 DEGREE	B-2 DEGREE	B'-1 DEGREE	B'-2 DEGREE	V'-1 FT/SEC	V'-2 FT/SEC	VU'-1 FT/SEC	VU'-2 FT/SEC	U-1 FT/SEC	U-2 FT/SEC
5	21.409	21.489	773.3	615.7	549.0	615.3	544.5	-20.4	44.76	-1.90	14.92	50.55	568.3	969.4	-146.3	-747.8	690.8	727.4
10	21.008	21.961	747.2	599.3	545.4	596.8	510.7	-53.0	43.11	-5.09	20.17	53.14	581.4	995.3	-200.4	-796.3	711.1	743.3
15	21.589	22.432	714.9	577.7	529.2	574.0	480.7	-65.2	42.25	-6.49	25.28	55.15	586.1	1004.8	-250.0	-824.5	730.8	759.3
30	23.314	23.902	644.0	523.4	482.8	519.6	426.1	-63.4	41.43	-6.96	36.91	59.22	604.4	1015.6	-363.0	-872.4	789.1	809.0
50	25.601	25.893	595.1	478.1	455.6	473.9	382.8	-63.4	40.04	-7.62	46.70	63.24	664.6	1052.6	-483.8	-939.8	866.6	876.4
70	27.818	27.902	585.7	463.7	451.2	460.2	373.5	-57.0	39.62	-7.07	51.53	65.32	725.6	1102.2	-568.1	-1001.5	941.6	944.4
85	29.408	29.382	585.8	445.7	428.9	444.4	399.1	-34.2	42.94	-4.40	54.23	66.64	734.6	1120.6	-596.3	-1028.7	995.4	994.5
90	29.914	29.856	578.7	436.3	419.7	435.4	398.4	-27.2	43.51	-3.57	55.65	67.24	743.9	1125.4	-614.1	-1037.8	1012.5	1010.6
95	30.382	30.293	572.3	425.9	412.5	424.9	396.7	-29.5	43.89	-3.97	56.85	68.06	754.4	1137.2	-631.6	-1054.9	1028.4	1025.4

%SPAN	INCS DEGREE	INCH DEGREE	DEV DEGREE	TURN DEGREE	CAMBER DEGREE	OMEGA-B SHOCK	D-FAC	OMEGA-B TOTAL	LOSS-P PROFILE	LOSS-P	PO2/ PO1	EFF-P TOTAL	EFF-AD TOTAL	EFF-P STATIC	M-1	M-2	M'-1	M'-2
5	2.33	5.25	14.50	46.66	55.90	.0007	.3812	.1511	.0376	.0374	.9594	.0000	.0000	.6576	.6784	.5358	.5047	.8427
10	1.66	4.60	10.34	48.20	53.86	.0006	.3869	.1386	.0352	.0351	.9649	.0000	.0000	.6928	.6520	.5220	.5151	.8668
15	1.08	4.82	8.57	48.74	52.57	.0007	.3887	.1157	.0301	.0299	.9723	.0000	.0000	.7265	.6255	.5029	.5173	.8747
30	3.00	6.00	8.26	48.39	50.67	.0021	.3986	.0704	.0196	.0190	.9863	.0000	.0000	.8187	.5629	.4545	.5324	.8819
50	3.35	6.48	8.42	47.66	49.60	.0034	.4252	.0531	.0161	.0151	.9911	.0000	.0000	.8600	.5199	.4140	.5821	.9115
70	3.95	7.19	10.39	46.68	49.[illegible]	.0058	.4517	.0576	.0189	.0170	.9906	.0000	.0000	.8580	.5101	.4000	.6319	.9506
85	10.28	10.81	15.52	47.34	52-	.0176	.4978	.0974	.0339	.0278	.9843	.0000	.0000	.7880	.5066	.3814	.6354	.9590
90	11.41	11.29	18.04	47.08	53.83	.0159	.5076	.0981	.0348	.0292	.9846	.0000	.0000	.7908	.4997	.3728	.6425	.9616
95	10.08	11.51	19.71	47.86	56.06	.0123	.5248	.1051	.0378	.0334	.9839	.0000	.0000	.7831	.4936	.3634	.6508	.9705

NCORR INLET RPM	WCORR INLET LBM/SEC	TO/TO INLET	PO/PO INLET	EFF-AD INLET %	EFF-P INLET %	WC1/A1 LBM/SEC SQFT
7757.	114.33	1.1146	1.3645	81.06	81.88	25.84

PO/PO LOCAL
.9842

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	Attention:	J. L. Wilkins, SESOS		1
		S. Kobelak, APTP		1
		R. P. Carmichael, SESSP		1

6. Department of the Navy
Naval Air Systems Command
Propulsion Division, AIR 536
Washington, D. C. 20360 — 1

7. Department of Navy
Bureau of Ships
Washington, D. C. 20360
Attention: G. L. Graves — 1

8. NASA-Langley Research Center
Technical Library
Hampton, Virginia 23365
Attention: Mark R. Nichols — 1
John V. Becker — 1

9. The Boeing Company
Commercial Airplane Group
Attention: G. J. Schott
Organization: G-8410, M. S. 73-24
P. O. Box 3707
Seattle, Washington 98124 — 1

10. Douglas Aircraft Company
3855 Lakewood Boulevard
Long Beach, California 90801
Attention: J. E. Merriman — 1
Technical Information Center C1-250

11. Pratt & Whitney Aircraft
Florida Research & Development Center
P. O. Box 2691
West Palm Beach, Florida 33402
Attention: J. Brent — 1
H. D. Stetson — 1
W. R. Alley — 1
R. W. Rockenbach — 1
B. A. Jones — 1
J. A. Fligg — 1

12. Pratt & Whitney Aircraft
400 Main Street
East Hartford, Connecticut 06108
Attention: R. E. Palatine — 1
H. V. Marman — 1
M. J. Keenan — 1
A. A. Milolajczak — 1
Library (UARL) — 1
W. M. Foley (UARL) — 1

13. Allison Division, GMC
Department 8894, Plant 8
P. O. Box 894
Indianapolis, Indiana 46206

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	P. Tramm	1

14. Northern Research and Engineering
219 Vassar Street
Cambridge, Massachusetts 02139

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	K. Ginwala	1

15. General Electric Company
Flight Propulsion Division
Cincinnati, Ohio 45215

Attention:		
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	E. E. Hood/J. C. Pirtle J-165	1
	L. H. Smith H-50	1
	Technical Information Center N-32	1
	Marlen Miller H-50	1
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16. General Electric Company
1000 Western Avenue
West Lynn, Massachusetts 01905

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	Dr. C. W. Smith Library Bldg. 2-40M	1

17. Curtiss-Wright Corporation
Wright Aeronautical
Wood-Ridge, New Jersey 07075

Attention:		
	S. Lombardo	1

18. AiResearch Manufacturing Company
402 South 36th Street
Phoenix, Arizona 85034

Attention:		
	Robert O. Bullock	1
	Jack Erwin - Dept. 32-1 - J	1
	Don Seylor - Dept. 32-1 - J	1
	Jack Switzer - Dept. 32-1 - M	1

19. AiResearch Manufacturing Company
2525 West 190th Street -
Torrance, California 90509

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20. Union Carbide Corporation
Nuclear Division
Oak Ridge Gaseous Diffusion Plant
P. O. Box "P"
Oak Ridge, Tennessee 37830
Attention: R. G. Jordan 1
D. W. Burton, K-1001, K-25 1

21 Avco Corporation
Lycoming Division
550 South Main Street
Stratford, Connecticut 06497
Attention: Clause W. Bolton 1

22. Teledyne Cae
1330 Laskey Road
Toledo, Ohio 43601
Attention: Eli H. Benstein 1

23. Solar
San Diego, California 92112
Attention: P. A. Pitt 1

24. Goodyear Atomic Corporation
Box 628
Piketon, Ohio 45661
Attention: C. O. Langebrake 1

25. Iowa State University of Science and Technology
Ames, Iowa 50010
Attention: Professor George K. Serovy
Dept. of Mechanical Engineering 1

26. Hamilton Standard Division of
United Aircraft Corporation
Windsor Locks, Connecticut 06906
Attention: Mr. Carl Rohrbach
Head of Aerodynamics and
Hydrodynamics 1

27. Westinghouse Electric Corporation
Small Steam and Gas Turbine Engineering B-4
Lester Branch
P. O. Box 9175
Philadelphia, Pennsylvania 19113
Attention: Mr. S. M. DeCorso 1

28. J. Richard Joy
Supervisor, Analytical Section
Williams Research Corporation
P. O. Box 95
Walled Lake, Michigan 48088 — 1

29. Technical Library
Lockheed Missile and Space Company
P. O. Box 879
Mountain View, California 94040 — 1

30. James D. Raisbeck
The Boeing Company
224 N. Wilkinson
Dayton, Ohio 45402 — 1

31. James Furlong
Chrysler Corporation
Research Office
Dept. 9000
P. O. Box 1118
Detroit, Michigan 48231 — 1

32. Elliott Company
Jeannette, Pennsylvania 15644
Attention: J. Rodger Schields
Director-Engineering — 1

33. R. H. Carmody
Dresser Industries Inc.
Clark Gas Turbine Division
16530 Peninsula Boulevard
P. O. Box 9989
Houston, Texas 77015 — 1

34. California Institute of Technology
Pasadena, California 91109
Attention: Professor Duncan Rannie — 1

35. Massachusetts Institute of Technology
Cambridge, Massachusetts 02139
Attention: Dr. J. L. Kerrebrock — 1

36. Caterpillar Tractor Company
Peoria, Illinois 61601
Attention: J. Wiggins — 1

37. Professor B. Lakshminarayana
Department of Aerospace Engineering
233 Hammond Building
Penn State University
University Park, Pennsylvania 16802 — 1

38. Dr. Meherwan P. Boyce P. E.
Department of Mechanical Engineering
Texas A&M University
College Station, Texas 77843 — 1

39. National Technical Information Service
Springfield, Virginia 22151 — 40