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PERFORMANCE OF A SINGLE-STAGE TRANSONIC COMPRESSOR WITH A BLADE-TIP SOLIDITY OF 1.3

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16. Abstract

The design and experimental performance of a 50-centimeter-diameter single-stage axial-flow transonic compressor with a blade-tip solidity of 1.3 is presented. Radial surveys were made of the flow conditions for both the rotor and stator. At design speed, peak efficiencies for both rotor and stage were 0.87 and 0.82, respectively, and occurred at an equivalent weight flow of 29.6 kilograms per second (202 kg/sec/m^2 of annulus area). At peak efficiency, the total pressure ratios for both rotor and stage were 1.79 and 1.73, respectively. Stall margin for the stage was 17 percent.

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SUMMARY

A 50-centimeter-diameter single-stage axial-flow transonic compressor with a blade-tip solidity of 1.3 and a design rotor blade-tip speed of 423 meters per second was tested. Radial surveys of the flow conditions at the rotor inlet and outlet and stator outlet were made. The flow and performance parameters were calculated at the leading and trailing edges of both the rotor and stator blades for 11 radial positions. The radial surveys were made over the stable operating flow range of the stage at equivalent rotative speeds which varied from 50- to 100-percent design speed.

Peak efficiencies for both the rotor and stage occurred at an equivalent weight flow of 29.6 kilograms per second as compared to the design value of 29.5 kilograms per second (200.6 kg/sec/m^2 of annulus area). Peak efficiency values for both the rotor and stage were 0.87 and 0.82, respectively. The total pressure ratios for both rotor and stage, at the equivalent weight flow corresponding to peak efficiency, were 1.79 and 1.73, respectively, as compared to the design values of 1.80 and 1.75. Stall margin for the stage, at design speed, was 17 percent based on weight flows and total pressure ratios at peak efficiency and stall.

The experimental rotor losses showed good agreement with predicted design values across the complete span of the blade with the exception of the rotor damper region. However, the stator losses were greater than design values.

INTRODUCTION

The Lewis Research Center of the National Aeronautics and Space Administration is engaged in a research program on axial-flow fans and compressors for advanced air-breathing engines. The program is directed primarily toward providing the technology to permit reducing the size and weight of the fans and compressors while maintaining a high level of performance.

As a part of this program, a series of transonic compressor stages has been designed and tested to evaluate the effect of blade-row solidity on efficiency and stall margin. For these stages the aerodynamic chord length is held constant and the solidity is varied by changing the blade spacing.

This report presents the design and experimental performance of a single-stage axial-flow transonic compressor with a blade-tip solidity of 1.3. The stage is designated stage 14-10 with the rotor being rotor 14 and the stator being stator 10. Earlier, a compressor stage in this series with a blade-tip solidity of 1.7 was tested, and the results are presented in reference 1.

Overall performance for both the rotor and the stage along with blade element performance for both the rotor and stator are presented. The data are presented over the stage stable operating flow range at rotative speeds which varied from 50- to 100-percent design speed. Surveys of the flow conditions were taken at 11 radial positions. The tests were conducted in the single-stage compressor test facility at the Lewis Research Center.

AERODYNAMIC DESIGN

Three computer programs were used in the design of this compressor stage. These programs are the streamline analysis program, the blade geometry program, and the blade coordinate program. These three computer programs are presented in detail in references 2 and 3 and only a brief description of each is presented in this report.

The streamline analysis program was used to calculate the flow field parameters at several axial locations including planes approximating the blade leading and trailing edges for both the rotor and stator. The weight flow, rotative speed, flow path geometry, and radial distributions of total pressure and temperature are inputs in this program. The program accounts for both streamline curvature and entropy gradients; boundary layer blockage factors are also included.

The distributions of velocity vector, total pressure, and total temperature calculated in the streamline analysis program are used in the blade geometry program to compute blade geometry parameters. Total loss is calculated within the program. It is based on a calculated shock loss (as related to the selected blade shape) and a profile loss. The profile losses used for this stage are based on loss-diffusion factor correlations, which include the data presented in reference 3 for the rotor and in reference 4 for the stator.

The blade geometry parameters are used in the blade coordinate program (ref. 5) to compute blade elements on conical surfaces passing through the blade. In this program the blade elements are then stacked on a line passing through their centers of gravity, and Cartesian blade coordinates are computed and used directly in fabrication.

The overall design parameters for stage 14-10 are listed in table I and the flow path is shown in figure 1. This stage was designed for an overall pressure ratio of 1.75 at a weight flow of 29.5 kilograms per second (200.6 kg/sec/m^2 of annulus area). The design tip speed was 423 meters per second. The stage was designed for a tip solidity of 1.3 for both rotor and stator. This resulted in 43 rotor blades with an aspect ratio of 2.4 and 48 stator blades with an aspect ratio of 2.0. Both the rotor and stator used multiple-circular-arc blade shapes.

The blade element design parameters for rotor 14 are presented in table II. This rotor was designed for a radially constant total pressure ratio of 1.8. The stator blade element design parameters are given in table III. The blade geometry is presented in table IV for rotor 14 and in table V for stator 10. All symbols are defined in appendix A. The equations used for calculating the design parameters are presented in appendix B. All abbreviations along with the units presented in the tables are defined in appendix C.

APPARATUS AND PROCEDURE

Compressor Test Facility

The compressor stage was tested in the Lewis single-stage compressor facility which is described in detail in reference 2. A schematic diagram of the facility is shown in figure 2. Atmospheric air enters the test facility at an inlet located on the roof of the building and flows through the flow measuring orifice into the plenum chamber upstream of the test stage. The air then passes through the experimental compressor stage into the collector and is exhausted to the atmosphere.

Test Stage

Photographs of the rotor and stator are shown in figures 3 and 4, respectively. Each rotor blade has a vibration damper located at about a 48-percent span from the outlet rotor tip. The maximum thickness of the damper was 0.214 centimeter. The nonrotating radial tip clearance of the rotor was a nominal 0.05 centimeter at ambient conditions. The axial spacing between the rotor hub trailing edge and the stator hub leading edge was 3.3 centimeters. The hubs of the stator blades were seated on a rubber O-ring which was circumferentially recessed in the inner casing. This arrangement was quite effective in dampening blade vibrations, thereby reducing blade stresses.

Instrumentation

The compressor weight flow was determined from measurements on a calibrated thin-plate orifice that was 38.9 centimeters in diameter. The orifice temperature was determined from an average of two Chromel-Alumel thermocouples. Orifice pressures were measured by calibrated transducers.

Radial surveys of the flow were made upstream of the rotor, between the rotor and stator, and downstream of the stator. Photographs of the survey probes are shown in figure 5. Total pressure, total temperature, and flow angle were measured with the combination probe (fig. 5(a)), and the static pressure was measured with an 8° C-shaped wedge probe (fig. 5(b)). Each probe was positioned with a null-balancing, stream-directional sensitive control system that automatically alined the probe to the direction of flow. The thermocouple material was iron constantan. The probes were calibrated in an air tunnel. Two combination probes and two wedge static probes were used at each of the three measuring stations.

Inner and outer wall static pressure taps were located at the same axial stations as the survey probes. The circumferential locations of both types of survey probes along with inner and outer wall static pressure taps are shown in figure 6. The combination probes downstream of the stator (station 3) were circumferentially traversed one stator blade passage (7.5°) counterclockwise from the nominal values shown.

An electronic speed counter, in conjunction with a magnetic pickup, was used to measure rotative speed (rpm).

The estimated errors of the data based on inherent accuracies of the instrumentation and recording system are as follows:

Weight flow, kg/sec	±0.3
Rotative speed, rpm	±30
Flow angle, deg	±1
Temperature, K	±0.6
Rotor inlet total pressure, N/cm^2	±0.01
Rotor outlet total pressure, N/cm^2	±0.10
Stator outlet total pressure, N/cm^2	±0.10
Rotor inlet static pressure, N/cm^2	±0.04
Rotor outlet static pressure, N/cm^2	±0.07
Stator outlet static pressure, N/cm^2	±0.07

Test Procedure

The stage survey data were taken over a range of weight flows from maximum flow to the near-stall conditions. At 70-, 90-, and 100-percent design speed, radial surveys

were taken at five weight flows. At 50-, 60-, and 80-percent design speed, radial surveys were taken for the near-stall weight flow only. Data were recorded at 11 radial positions for each speed and weight flow.

At each radial position the two combination probes behind the stator were circumferentially traversed to nine different locations across the stator gap. The wedge probes were set at midgap because preliminary studies showed that the static pressure across the stator gap was constant. Values of pressure, temperature, and flow angle were recorded at each circumferential position. At the last circumferential position, values of pressure, temperature, and flow angle were also recorded at stations 1 and 2. All probes were then traversed to the next radial position and the circumferential traverse procedure repeated.

At each of the six rotative speeds the back pressure on the stage was increased by closing the sleeve valve in the collector until a stalled condition was detected by a sudden drop in stage outlet total pressure. This pressure was measured by a probe located at midpassage and was recorded on an X-Y plotter. Stall was corroborated by large increases in the measured blade stresses on both rotor and stator along with a sudden increase in noise level.

Calculation Procedure

Because of the physical construction of the C-shaped static pressure wedges, it was not possible to obtain static pressure measurements at 5-, 10-, and 95-percent span. The static pressure at 95-percent span was obtained by assuming a linear variation in static pressure between the values at the inner wall and the probe measurement at 90-percent span. A similar variation was assumed between the static pressure measurements at the outer wall and the 30-percent span to obtain the static pressure at 5- and 10-percent span.

At each radial position, averaged values of the nine circumferential measurements of pressure, temperature, and flow angle downstream of the stator (station 3) were obtained. The nine values of total temperature were mass averaged to obtain the stator outlet total temperature presented. The nine values of total pressure were energy averaged. The measured values of pressure, temperature, and flow angle were used to calculate axial and tangential velocities at each circumferential position. The flow angles presented for each radial position are calculated based on these mass-averaged axial and tangential velocities. To obtain the overall performance, the radial values of total temperature were mass averaged and the values of total pressure were energy averaged. At each measuring station, the integrated weight flow was computed based on the radial survey data.

The data, measured at the three measuring stations, have been translated to the blade leading and trailing edges by the method presented in reference 3.

An onsite digital computer was used to compute the orifice weight flow at stall with all survey probes removed from the flow passage. The weight flow at stall was obtained in the following manner. During operation of the near-stall condition, the collector valve was slowly closed in small increments. At each increment the weight flow was obtained. The weight flow obtained just before stall occurred is called the stall weight flow.

Orifice weight flow, total pressures, static pressures, and temperatures were all corrected to sea-level conditions based on the rotor inlet conditions.

RESULTS AND DISCUSSION

The results from this investigation are presented in three main sections. The overall performances for the rotor and the stage are presented first. Radial distributions of several performance parameters are then presented for the rotor and stator. Finally, the blade element data are presented for both the rotor and stator. The data presented are computer plotted and occasionally a data point is omitted because it falls outside the range of the parameters shown in the figure.

All of the plotted data together with some additional performance parameters are presented in tabular form. The overall performance data are presented in table VI. The blade element data are presented first for the rotor in table VII and then for the stator in table VIII. The definitions and units used for the tabular data are presented in appendix C.

Overall Performance

The overall performance for rotor 14 and for stage 14-10 is presented in figures 7 and 8, respectively. For both of these computer plotted figures, data are presented for speeds from 50- to 100-percent design speed. For 50-, 60-, and 80-percent design speeds, the overall performance is presented for the near-stall condition only. For 70-, 90-, and 100-percent design speeds, data are presented at several weight flows from choke to the near-stall conditions. Design point values are shown as solid symbols on both figures. The stall points for each speed line were established by extrapolating the overall performance curve to the stall weight flow value recorded with the onsite computer. The stall lines (dashed lines) shown in the figures were then established by fairing a curve through the stall points associated with each speed line.

Peak efficiency for both rotor and stage occurred at a measured equivalent weight flow of 29.6 kilograms per second (202 kg/sec/m^2 of annulus area) as compared to the design equivalent weight flow of 29.5 kilograms per second (200.6 kg/sec/m^2 of annulus area).

The experimental values of total pressure ratio and total temperature ratio for the rotor were 1.79 and 1.21, respectively, as compared to the design values of 1.80 and 1.21. Total pressure ratio for the stage was 1.73 as compared to the design value of 1.75. The peak efficiencies for the rotor and stage were 0.87 and 0.82, respectively. With the assumed losses, the corresponding design efficiencies for the rotor and stage are 0.89 and 0.84, respectively.

At design speed, the stall margin for the stage was 17 percent. The stall margin, defined in appendix B, is based on the equivalent weight flow and pressure ratio at which peak efficiency occurred as compared to the values just prior to stall.

Radial Distributions

The radial distributions of selected flow and performance parameters for both rotor and stator are shown in figures 9 and 10. The results are presented for three weight flows at design speed. The data shown represent the flow conditions at near stall, peak efficiency, and near choke. The design values are shown by solid symbols. In this section, flow and performance results at the near design equivalent weight flow corresponding to peak efficiency (29.6 kg/sec) are compared to the values at design weight flow (29.5 kg/sec).

Rotor. - The total pressure ratio and total temperature ratio were greater than design values in the region extending from the blade tip to 40-percent span and less than design values over the remainder of the blade except in the hub region where they were equal to design values.

The temperature rise efficiency was greater than design in the region from the blade tip to 30-percent blade span, less than design in the damper region, and equal to design over the remainder of the blade.

The experimental deviation angles were less than design values for the region extending from the blade tip to 40-percent blade span. The remainder of the blade span operated with deviation angles greater than design values.

The total loss parameter distribution shows that the losses across the blade span agree with design values with the exception of the damper region. The losses associated with the damper were not included in the aerodynamic design of the rotor. The blade loading levels, as indicated by the diffusion factor, closely agree with design values across the entire blade span. These results indicate that the losses were correctly estimated across the entire blade span with the exception of the damper region.

The level and distribution of the meridional velocity ratio agree closely with design values. The deviation angle had a measurable effect on the rotor energy addition which is reflected in the total temperature ratio. The deviation angles are lower than design values from the blade tip to 40-percent span and the total temperature ratio is greater than design. For the remainder of the blade span, the deviation angles are greater than design and the total temperature ratio is less.

Stator. - The total loss parameter distribution (fig. 10) shows the losses to be higher than design values with the exception of the region behind the rotor blade damper. The losses were particularly greater in the hub and tip regions. The blade loading level, indicated by the diffusion factor, was less than design across the entire blade passage. It is apparent that in the design process the losses were underestimated.

Variation of Blade Element Performance with Incidence Angle

The variations of selected rotor and stator blade element performance parameters with incidence angle are presented in figures 11 and 12. The data are presented for 70-, 90-, and 100-percent rotor design speed at blade elements located at 5-, 10-, 30-, 52.5-, 70-, 90-, and 95-percent blade span as measured from the rotor tip. Design values are shown by solid symbols. The variation in incidence angle curves is presented primarily for future correlation in comparing the performance of these blades with other blade designs. Only a few brief observations are made herein.

Rotor. - The rotor blades were designed for zero incidence angle on the blade suction surface. Minimum loss values, over the range of incidence angles tested, were defined across the entire rotor blade passage with exception of the hub region (90- and 95-percent blade span) (fig. 11). At design speed the rotor blade suction surface incidence angles corresponding to minimum losses were within 1.5° of the design values for all blade elements with exception of the hub region. The loss curves for the elements near the tip continue to decrease as the incidence angle is decreased. In the region of 50-percent blade span, the loss curves indicate a minimum loss value near design incidence with the losses increasing at both higher and lower values of incidence angle. Minimum losses could not be defined in the hub region. With the exception of the hub, peak element efficiencies occurred at incidence angles approximately 1.5° less than design. Peak efficiency for the rotor (fig. 8) occurred at a weight flow somewhat higher than design where these peak element efficiencies were obtained.

Stator. - Minimum loss values were defined across the entire stator blade span with exceptions at the 70- and 95-percent span locations (fig. 12). At all elements, except in the region behind the rotor damper, the measured losses were greater than the design values at design incidence. The loss curves indicate a minimum loss value at incidence

angles approximately 3° less than design. Deviation angles were greater than design values with exceptions in the regions behind the rotor damper and 70-percent span.

SUMMARY OF RESULTS

This report presents the aerodynamic design and both the overall and blade element performance of a 50-centimeter-diameter single-stage transonic compressor. This stage, which is one in a series designed to investigate the effect of blade solidity, has a blade-tip solidity of 1.3 for both rotor and stator. The stage had a design equivalent weight flow of 29.5 kilograms (200.6 kg/m^2 of annulus area) at a rotor blade tip speed of 423 meters per second. Radial surveys of the flow conditions at the rotor inlet, rotor outlet, and stator outlet were made over the stable operating flow range of the stage at equivalent rotative speeds from 50- to 100-percent design speed. Flow and performance parameters were calculated across a number of selected blade elements. The following principal results were obtained:

1. For the rotor, the peak efficiency was 0.87. With the assumed losses, the design efficiency was 0.89. Total pressure ratio and total temperature ratio at the equivalent weight flow corresponding to peak efficiency were 1.79 and 1.21, respectively, as compared to the design values of 1.80 and 1.21.

2. For the stage, the peak efficiency was 0.82. With the assumed losses, the design efficiency was 0.84. Total pressure ratio at the equivalent weight flow corresponding to peak efficiency was 1.73, as compared to the design value of 1.75.

3. For the stage at design speed, the stall margin was 17 percent based on weight flows and total pressure ratios at peak efficiency and stall.

4. The total loss distribution for the rotor agrees with design values except in the damper region.

5. The total loss distribution for the stator was higher than design values except in the region behind the rotor damper.

6. For the rotor at design speed, the suction surface incidence angle corresponding to minimum loss was within 1.5° of the design incidence angle of 0° for all blade elements except those in the hub region.

7. For the stator at design flow, the suction surface incidence angle corresponding to minimum loss was approximately 3° less than the design incidence angle of 0° for all elements except those at the 70- and 95-percent span.

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501-24.

APPENDIX A

SYMBOLS

A_{an}	annulus area at rotor leading edge, 0.147 m^2
A_f	frontal area at rotor leading edge, 0.198 m^2
C_p	specific heat at constant pressure, 1004 J/(kg)(K)
c	aerodynamic chord, cm
D	diffusion factor
g	acceleration of gravity, 9.8 m/sec^2
i_{mc}	mean incidence angle, angle between inlet air direction and line tangent to blade mean camber line at leading edge, deg
i_{ss}	suction surface incidence angle, angle between inlet air direction and line tangent to blade suction surface at leading edge, deg
J	mechanical equivalent of heat
N	rotative speed, rpm
P	total pressure, N/cm^2
p	static pressure, N/cm^2
r	radius, cm
SM	stall margin
T	total temperature, K
U	wheel speed, m/sec
V	air velocity, m/sec
W	weight flow, kg/sec
Z	axial distance references from rotor blade hub leading edge, cm
α_c	cone angle, deg
α_s	slope of streamline, deg
β	air angle, angle between air velocity and axial direction, deg
β'_c	relative meridional air angle based on cone angle, $\arctan(\tan \beta'_m \cos \alpha_c / \cos \alpha_s)$, deg
γ	ratio of specific heats (1.40)

δ ratio of rotor inlet total pressure to standard pressure of 10.13 N/m^2

δ^o deviation angle, angle between exit air direction and tangent to blade mean camber line at trailing edge, deg

θ ratio of rotor inlet total temperature to standard temperature of 288.2 K

η efficiency

κ_{mc} angle between the blade mean camber line and the meridional plane, deg

κ_{ss} angle between the blade suction surface camber line at the leading edge and the meridional plane, deg

σ solidity, ratio of chord to spacing

$\overline{\omega}$ total loss coefficient

$\overline{\omega}_p$ profile loss coefficient

$\overline{\omega}_s$ shock loss coefficient

Subscripts:

ad adiabatic (temperature rise)

id ideal

LE blade leading edge

m meridional direction

mom momentum rise

p polytropic

TE blade trailing edge

z axial direction

θ tangential direction

1 instrumentation plane upstream of rotor

2 instrumentation plane between rotor and stator

3 instrumentation plane downstream of stator

Superscript:

' relative to blade

APPENDIX B

EQUATIONS

Performance parameters are defined as follows:

Suction surface incidence angle -

$$i_{ss} = \left(\beta'_c\right)_{LE} - \kappa_{ss} \tag{B1}$$

Mean incidence angle -

$$i_{mc} = \left(\beta'_c\right)_{LE} - \left(\kappa_{mc}\right)_{LE} \tag{B2}$$

Deviation angle -

$$\delta^o = \left(\beta'_c\right)_{TE} - \left(\kappa_{mc}\right)_{TE} \tag{B3}$$

Diffusion factor -

$$D = 1 - \frac{V'_{TE}}{V'_{LE}} + \left| \frac{\left(rV_\theta\right)_{TE} - \left(rV_\theta\right)_{LE}}{(r_{TE} + r_{LE})\sigma(V'_{LE})} \right| \tag{B4}$$

Total loss coefficient -

$$\overline{\omega} = \frac{\left(P'_{id}\right)_{TE} - (P')_{TE}}{(P')_{LE} - (p)_{LE}} \tag{B5}$$

Profile loss coefficient -

$$\overline{\omega}_p = \overline{\omega} - \overline{\omega}_s \tag{B6}$$

Total loss parameter -

$$\frac{\overline{\omega} \cos\left(\beta'_m\right)_{TE}}{2\sigma} \tag{B7}$$

Profile loss parameter -

$$\frac{\overline{\omega}_p \cos\left(\beta'_m\right)_{TE}}{2\sigma} \tag{B8}$$

Adiabatic (temperature-rise) efficiency -

$$\eta_{ad} = \frac{\left(\frac{P_{TE}}{P_{LE}}\right)^{(\gamma-1)/1} - 1}{\frac{T_{TE}}{T_{LE}} - 1} \tag{B9}$$

Momentum-rise efficiency -

$$\eta_{mom} = \frac{\left(\frac{P_{TE}}{P_{LE}}\right)^{(\gamma-1)/1} - 1}{\frac{\left(UV_\theta\right)_{TE} - \left(UV_\theta\right)_{LE}}{T_{LE} g J C_p}} \tag{B10}$$

Equivalent weight flow -

$$\frac{W\sqrt{\theta}}{\delta} \tag{B11}$$

Equivalent rotative speed -

$$\frac{N}{\sqrt{\theta}} \tag{B12}$$

Weight flow per unit annulus area -

$$\left(\frac{W\sqrt{\theta}}{\delta}\right) \Big/ A_{an} \tag{B13}$$

Weight flow per unit frontal area -

$$\left(\frac{W\sqrt{\theta}}{\delta}\right)\Big/A_f \tag{B14}$$

Head-rise coefficient -

$$\frac{gJC_pT_{LE}}{U_{tip}^2}\left[\left(\frac{P_{TE}}{P_{LE}}\right)^{(\gamma-1)/\gamma} - 1\right] \tag{B15}$$

Flow coefficient -

$$\left(\frac{V_z}{U_{tip}}\right)_{LE} \tag{B16}$$

Stall margin -

$$SM = \left[\frac{\left(\frac{P_{TE}}{P_{LE}}\right)_{stall}}{\left(\frac{P_{TE}}{P_{LE}}\right)_{ref}} \times \frac{\left(\frac{W\sqrt{\theta}}{\delta}\right)_{ref}}{\left(\frac{W\sqrt{\theta}}{\delta}\right)_{stall}} - 1\right] 100 \tag{B17}$$

Polytropic efficiency -

$$\eta_p = e\left[\left(\frac{P_{TE}}{P_{LE}}\right)^{(\gamma-1)/\gamma}\Big/\left(\frac{T_{TE}}{T_{LE}}\right)\right] \tag{B18}$$

APPENDIX C

DEFINITIONS AND UNITS USED IN TABLES

ABS	absolute
AERO CHORD	aerodynamic chord, cm
AREA RATIO	ratio of actual flow area to critical area (where local Mach number is one)
BETAM	meridional air angle, deg
CONE ANGLE	angle between axial direction and conical surface representing blade element, deg
DELTA INC	difference between mean camber blade angle and suction surface blade angle at leading edge, deg
DEV	deviation angle (defined by eq. (B3)), deg
D-FACT	diffusion factor (defined by eq. (B4))
EFF	adiabatic efficiency (defined by eq. (B9))
IN	inlet (leading edge of blade)
INCIDENCE	incidence angle (suction surface defined by eq. (B1) and mean defined by eq. (B2)), deg
KIC	angle between the blade mean camber line at the leading edge and the meridional plane, deg
KOC	angle between the blade mean camber line at the trailing edge and the meridional plane, deg
KTC	angle between the blade mean camber line at the transition point and the meridional plane, deg
LOSS COEFF	loss coefficient (total defined by eq. (B5) and profile defined by eq. (B6))
LOSS PARAM	loss parameter (total defined by eq. (B7) and profile defined by eq. (B8))
MERID	meridional
MERID VEL R	meridional velocity ratio
OUT	outlet (trailing edge of blade)
PERCENT SPAN	percent of blade span from tip at rotor outlet

PHISS	suction surface camber ahead of assumed shock location, deg
PRESS	pressure, N/cm^2
PROF	profile
RADII	radius, cm
REL	relative to the blade
RI	inlet radius (leading edge of blade), cm
RO	outlet radius (trailing edge of blade), cm
RP	radial position
RPM	equivalent rotative speed, revolutions per minute
SETTING ANGLE	angle between aerodynamic chord and meridional plane, deg
SOLIDITY	ratio of aerodynamic chord to blade spacing
SPEED	speed, m/sec
SS	suction surface
STREAMLINE SLOPE	slope of streamline, deg
TANG	tangential
TEMP	temperature, K
TI	thickness of blade at leading edge, cm
TM	thickness of blade at maximum thickness, cm
TO	thickness of blade at trailing edge, cm
TOT	total
TOTAL CAMBER	difference between inlet and outlet blade mean camber lines, deg
VEL	velocity, m/sec
WT FLOW	equivalent weight flow, kg/sec
X FACTOR	ratio of suction surface camber ahead of assumed shock location of a multiple circular arc blade section to that of a double circular arc blade section
ZIC	axial distance to blade leading edge from inlet, cm
ZMC	axial distance to blade maximum thickness point from inlet, cm
ZOC	axial distance to blade trailing edge from inlet, cm
ZTC	axial distance to transition point from inlet, cm

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TABLE I. - DESIGN OVERALL

PARAMETERS FOR

STAGE 14-10

ROTOR TOTAL PRESSURE RATIO.....	1.800
STAGE TOTAL PRESSURE RATIO	1.750
ROTOR TOTAL TEMPERATURE RATIO.....	1.205
STAGE TOTAL TEMPERATURE RATIO	1.205
ROTOR ADIABATIC EFFICIENCY.....	0.890
STAGE ADIABATIC EFFICIENCY	0.843
ROTOR POLYTROPIC EFFICIENCY.....	0.898
STAGE POLYTROPIC EFFICIENCY	0.855
ROTOR HEAD RISE COEFFICIENT.....	0.296
STAGE HEAD RISE COEFFICIENT	0.281
FLOW COEFFICIENT.....	0.475
WT FLOW PER UNIT FRONTAL AREA	149.172
WT FLOW PER UNIT ANNULUS AREA.....	200.600
WT FLOW	29.484
RPM.....	16100.000
TIP SPEED	422.888

TABLE II. - DESIGN BLADE ELEMENT PARAMETERS

FOR ROTOR 14

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
TIP	25.082	24.701	0.	50.1	65.6	58.7	288.2	1.252	10.13	1.800
1	24.562	24.193	-0.	47.9	64.5	57.7	288.2	1.237	10.13	1.800
2	24.016	23.685	0.	46.3	63.5	56.5	288.2	1.225	10.13	1.800
3	21.752	21.653	0.	45.1	60.0	51.1	288.2	1.206	10.13	1.800
4	20.289	20.383	0.	45.7	58.2	46.7	288.2	1.200	10.13	1.800
5	19.991	20.129	0.	45.8	57.8	45.7	288.2	1.199	10.13	1.800
6	19.692	19.875	0.	46.0	57.5	44.7	288.2	1.199	10.13	1.800
7	19.391	19.621	0.	46.3	57.1	43.6	288.2	1.198	10.13	1.800
8	19.088	19.367	0.	46.5	56.8	42.4	288.2	1.197	10.13	1.800
9	16.900	17.589	0.	48.4	54.6	32.6	288.2	1.194	10.13	1.800
10	14.191	15.557	0.	52.3	52.2	15.8	288.2	1.195	10.13	1.800
11	13.464	15.049	0.	53.7	51.6	10.0	288.2	1.197	10.13	1.800
HUB	12.700	14.541	-0.	55.2	50.9	3.4	288.2	1.199	10.13	1.800

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
TIP	192.3	228.4	464.5	282.3	192.3	146.6	0.	175.2	422.9	416.5
1	197.5	226.5	458.8	284.1	197.5	152.0	-0.	167.9	414.1	407.9
2	202.2	225.8	452.6	283.1	202.2	156.1	0.	163.2	404.9	399.3
3	212.0	230.5	423.6	259.3	212.0	162.8	0.	163.2	366.7	365.1
4	212.5	235.7	402.7	240.4	212.5	164.8	0.	168.6	342.1	343.7
5	212.1	237.0	398.3	236.5	212.1	165.1	0.	170.0	337.1	339.4
6	211.7	238.3	393.8	232.6	211.7	165.4	0.	171.5	332.0	335.1
7	211.1	239.7	389.2	228.7	211.1	165.7	0.	173.2	326.9	330.8
8	210.4	241.2	384.5	224.8	210.4	166.0	0.	174.9	321.8	326.5
9	202.4	252.9	349.5	199.1	202.4	167.7	0.	189.3	284.9	296.6
10	185.6	272.1	302.8	173.0	185.6	166.5	0.	215.2	239.3	262.3
11	180.2	278.9	289.8	167.7	180.2	165.2	0.	224.7	227.0	253.7
HUB	174.2	286.7	276.0	164.0	174.2	163.7	-0.	235.4	214.1	245.2

	ABS MACH NO		REL MACH NO		MERID MACH NO		STREAMLINE SLOPE		MERID PEAK SS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	VEL R	MACH NO
TIP	0.584	0.623	1.411	0.770	0.584	0.400	-6.70	-6.64	0.762	1.588
1	0.601	0.621	1.396	0.779	0.601	0.417	-5.93	-5.60	0.770	1.570
2	0.616	0.622	1.380	0.780	0.616	0.430	-5.02	-4.53	0.772	1.558
3	0.649	0.642	1.296	0.722	0.649	0.453	-0.48	0.09	0.768	1.533
4	0.650	0.659	1.233	0.672	0.650	0.461	2.75	3.15	0.775	1.509
5	0.649	0.663	1.219	0.662	0.649	0.462	3.44	3.79	0.778	1.504
6	0.648	0.668	1.205	0.652	0.648	0.463	4.13	4.44	0.781	1.498
7	0.646	0.672	1.191	0.641	0.646	0.465	4.84	5.10	0.785	1.493
8	0.644	0.677	1.176	0.631	0.644	0.466	5.57	5.76	0.789	1.488
9	0.617	0.714	1.066	0.562	0.617	0.474	11.23	10.86	0.829	1.447
10	0.562	0.774	0.918	0.492	0.562	0.474	19.94	17.81	0.897	1.298
11	0.545	0.795	0.877	0.478	0.545	0.471	22.86	19.75	0.917	1.224
HUB	0.526	0.819	0.834	0.469	0.526	0.468	26.18	21.77	0.939	1.142

	PERCENT	INCIDENCE		DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN	SS				TOT	PROF	TOT	PROF
TIP	0.	2.5	0.0	7.9	0.537	0.725	0.255	0.154	0.051	0.031
1	5.00	2.7	-0.0	7.2	0.518	0.772	0.206	0.112	0.042	0.023
2	10.00	3.0	0.0	6.7	0.507	0.812	0.168	0.078	0.034	0.016
3	30.00	4.1	-0.0	6.0	0.517	0.888	0.102	0.031	0.022	0.006
4	42.50	4.8	-0.0	6.1	0.536	0.913	0.083	0.025	0.018	0.005
5	45.00	4.9	0.0	6.2	0.540	0.917	0.080	0.026	0.017	0.006
6	47.50	5.0	-0.0	6.3	0.544	0.920	0.078	0.026	0.017	0.006
7	50.00	5.2	-0.0	6.4	0.548	0.923	0.076	0.027	0.017	0.006
8	52.50	5.3	0.0	6.5	0.552	0.926	0.074	0.028	0.016	0.006
9	70.00	6.2	-0.0	7.6	0.577	0.943	0.065	0.038	0.015	0.009
10	90.00	7.1	-0.0	10.5	0.594	0.937	0.090	0.087	0.019	0.019
11	95.00	7.2	-0.0	11.6	0.593	0.928	0.111	0.111	0.023	0.023
HUB	100.00	7.3	-0.0	12.7	0.585	0.916	0.141	0.141	0.028	0.028

TABLE III. - DESIGN BLADE ELEMENT PARAMETERS FOR STATOR 10

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
TIP	24.384	24.384	45.1	0.	45.1	0.	360.8	1.001	18.24	0.956
1	23.941	23.946	42.9	-0.	42.9	-0.	356.4	1.000	18.24	0.966
2	23.503	23.537	41.3	0.	41.3	0.	353.0	1.000	18.24	0.973
3	21.742	21.900	40.0	0.	40.0	0.	347.5	1.000	18.24	0.980
4	20.637	20.882	40.4	0.	40.4	0.	345.8	1.000	18.24	0.978
5	20.416	20.680	40.5	0.	40.5	0.	345.6	1.000	18.24	0.978
6	20.195	20.479	40.7	0.	40.7	0.	345.4	1.000	18.24	0.978
7	19.975	20.278	40.8	0.	40.8	0.	345.2	1.000	18.24	0.977
8	19.755	20.078	41.0	0.	41.0	0.	345.0	1.000	18.24	0.977
9	18.227	18.714	42.3	0.	42.3	0.	344.0	1.000	18.24	0.973
10	16.531	17.252	44.8	0.	44.8	0.	344.4	1.000	18.24	0.955
11	16.121	16.904	45.8	0.	45.8	0.	344.9	1.000	18.24	0.942
HUB	15.697	16.485	46.9	-0.	46.9	-0.	345.6	1.000	18.24	0.924

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
TIP	250.6	176.4	250.6	176.4	176.7	176.4	177.6	0.	0.	0.
1	249.3	181.0	249.3	181.0	182.6	181.0	169.7	-0.	0.	0.
2	249.0	184.4	249.0	184.4	187.0	184.4	164.5	0.	0.	0.
3	252.8	190.2	252.8	190.2	193.6	190.2	162.5	0.	0.	0.
4	256.9	191.5	256.9	191.5	195.6	191.5	166.5	0.	0.	0.
5	257.9	191.8	257.9	191.8	196.0	191.8	167.6	0.	0.	0.
6	259.0	192.1	259.0	192.1	196.4	192.1	168.8	0.	0.	0.
7	260.1	192.5	260.1	192.5	196.8	192.5	170.1	0.	0.	0.
8	261.4	192.9	261.4	192.9	197.3	192.9	171.5	0.	0.	0.
9	271.5	196.8	271.5	196.8	200.9	196.8	182.6	0.	0.	0.
10	287.3	196.7	287.3	196.7	203.7	196.7	202.6	0.	0.	0.
11	292.6	194.8	292.6	194.8	203.9	194.8	209.8	0.	0.	0.
HUB	298.6	191.9	298.6	191.9	204.0	191.9	218.1	-0.	0.	0.

	ABS MACH NO		REL MACH NO		MERID MACH NO		STREAMLINE SLOPE		MERID PEAK SS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	VEL R	MACH NO
TIP	0.689	0.473	0.689	0.473	0.486	0.473	-0.32	-0.25	0.998	1.075
1	0.689	0.490	0.689	0.490	0.505	0.490	0.30	0.07	0.991	1.046
2	0.692	0.502	0.692	0.502	0.520	0.502	0.88	0.36	0.986	1.027
3	0.710	0.523	0.710	0.523	0.544	0.523	3.13	1.55	0.982	1.022
4	0.724	0.528	0.724	0.528	0.552	0.528	4.76	2.29	0.979	1.036
5	0.728	0.529	0.728	0.529	0.553	0.529	5.12	2.44	0.978	1.040
6	0.732	0.530	0.732	0.530	0.555	0.530	5.50	2.58	0.978	1.045
7	0.735	0.531	0.735	0.531	0.556	0.531	5.88	2.73	0.978	1.049
8	0.740	0.533	0.740	0.533	0.558	0.533	6.28	2.88	0.978	1.055
9	0.773	0.545	0.773	0.545	0.572	0.545	9.59	3.93	0.980	1.144
10	0.823	0.544	0.823	0.544	0.584	0.544	14.75	5.01	0.965	1.282
11	0.840	0.538	0.840	0.538	0.585	0.538	16.33	5.16	0.955	1.332
HUB	0.858	0.529	0.858	0.529	0.586	0.529	18.08	5.28	0.941	1.394

	PERCENT	INCIDENCE		DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN	SS				TOT	PROF	TOT	PROF
TIP	0.	6.2	-0.0	14.4	0.569	0.	0.169	0.169	0.065	0.065
1	5.00	6.2	0.0	12.8	0.532	0.	0.124	0.124	0.047	0.047
2	10.00	6.2	-0.0	11.7	0.505	0.	0.098	0.098	0.036	0.036
3	30.00	6.2	0.0	10.2	0.469	0.	0.070	0.070	0.024	0.024
4	42.50	6.2	0.0	9.8	0.466	0.	0.073	0.073	0.024	0.024
5	45.00	6.2	0.0	9.8	0.466	0.	0.074	0.074	0.024	0.024
6	47.50	6.2	0.0	9.8	0.466	0.	0.075	0.075	0.024	0.024
7	50.00	6.2	0.0	9.7	0.466	0.	0.076	0.076	0.024	0.024
8	52.50	6.2	0.0	9.7	0.466	0.	0.076	0.076	0.024	0.024
9	70.00	6.1	0.0	9.1	0.468	0.	0.082	0.082	0.024	0.024
10	90.00	6.0	0.0	8.9	0.497	0.	0.125	0.125	0.033	0.033
11	95.00	6.0	0.0	8.9	0.514	0.	0.156	0.154	0.040	0.039
HUB	100.00	6.0	0.1	9.0	0.535	0.	0.201	0.195	0.050	0.049

TABLE IV. - BLADE GEOMETRY FOR ROTOR 14

RP	PERCENT SPAN	RADII RI	RADII RO	BLADE ANGLES KIC	BLADE ANGLES KTC	BLADE ANGLES KOC	DELTA INC	CONE ANGLE
TIP	0.	25.082	24.701	62.89	61.15	50.70	2.49	-9.441
1	5.	24.562	24.193	61.63	60.18	50.30	2.73	-8.828
2	10.	24.016	23.685	60.36	59.00	49.68	2.99	-7.638
3	30.	21.752	21.653	55.88	53.60	45.06	4.07	-1.988
4	43.	20.289	20.383	53.42	50.38	40.63	4.75	1.770
5	45.	19.991	20.129	52.94	49.75	39.58	4.89	2.540
6	48.	19.692	19.875	52.47	49.11	38.44	5.03	3.321
7	50.	19.391	19.621	52.01	48.47	37.24	5.16	4.108
8	53.	19.088	19.367	51.55	47.82	35.98	5.30	4.900
9	70.	16.900	17.589	48.44	43.56	24.97	6.21	10.840
10	90.	14.191	15.557	45.34	40.14	5.19	7.09	18.729
11	95.	13.464	15.049	44.72	39.86	-1.71	7.24	20.942
HUB	100.	12.700	14.541	44.16	39.81	-9.35	7.37	23.380

RP	BLADE THICKNESSES TI	BLADE THICKNESSES TM	BLADE THICKNESSES TO	AXIAL DIMENSIONS ZIC	AXIAL DIMENSIONS ZMC	AXIAL DIMENSIONS ZTC	AXIAL DIMENSIONS ZOC
TIP	0.051	0.152	0.051	1.000	2.071	2.484	3.291
1	0.051	0.162	0.051	0.955	2.071	2.451	3.329
2	0.051	0.172	0.051	0.907	2.069	2.412	3.371
3	0.051	0.216	0.051	0.715	2.054	2.209	3.556
4	0.051	0.244	0.051	0.605	2.042	2.047	3.673
5	0.051	0.250	0.051	0.583	2.039	2.012	3.698
6	0.051	0.256	0.051	0.561	2.036	1.975	3.722
7	0.051	0.262	0.051	0.539	2.032	1.937	3.748
8	0.051	0.267	0.051	0.517	2.029	1.898	3.773
9	0.051	0.309	0.051	0.357	1.999	1.595	3.958
10	0.051	0.359	0.051	0.141	1.944	1.168	4.171
11	0.051	0.373	0.051	0.075	1.923	1.044	4.217
HUB	0.051	0.387	0.051	0.000	1.899	0.909	4.259

RP	AERO CHORD	SETTING ANGLE	TOTAL CAMBER	SOLIDITY	X FACTOR	PHISS	AREA RATIO
TIP	4.713	60.12	12.20	1.296	0.529	5.16	1.037
1	4.717	59.02	11.32	1.324	0.539	5.08	1.035
2	4.714	57.78	10.68	1.353	0.566	5.21	1.034
3	4.704	52.34	10.82	1.483	0.708	6.80	1.032
4	4.704	48.72	12.78	1.583	0.748	7.80	1.029
5	4.705	47.95	13.36	1.605	0.751	7.98	1.028
6	4.706	47.15	14.03	1.628	0.755	8.18	1.027
7	4.708	46.32	14.77	1.652	0.757	8.38	1.026
8	4.711	45.47	15.58	1.677	0.759	8.57	1.025
9	4.754	38.76	23.47	1.887	0.744	9.63	1.018
10	4.900	28.66	40.14	2.254	0.639	9.42	1.013
11	4.966	25.54	46.42	2.384	0.587	8.90	1.012
HUB	5.060	22.11	53.51	2.542	0.526	8.17	1.012

TABLE V. - BLADE GEOMETRY FOR STATOR 10

RP	PERCENT SPAN	RADII RI	RADII RO	BLADE ANGLES KIC	BLADE ANGLES KTC	BLADE ANGLES KOC	DELTA INC	CONE ANGLE
TIP	0.	24.384	24.384	38.97	30.50	-14.36	6.17	0.057
1	5.	23.941	23.946	36.70	29.29	-12.78	6.19	0.067
2	10.	23.503	23.537	35.12	28.46	-11.69	6.21	0.495
3	30.	21.742	21.900	33.81	28.04	-10.19	6.22	2.315
4	43.	20.637	20.882	34.23	28.57	-9.85	6.21	3.596
5	45.	20.416	20.680	34.37	28.71	-9.80	6.21	3.868
6	48.	20.195	20.479	34.52	28.86	-9.75	6.21	4.149
7	50.	19.975	20.278	34.69	29.02	-9.72	6.20	4.437
8	53.	19.755	20.078	34.88	29.20	-9.68	6.20	4.732
9	70.	18.227	18.714	36.32	28.72	-9.12	6.14	7.101
10	90.	16.531	17.252	39.28	29.09	-8.89	6.03	10.476
11	95.	16.121	16.904	40.43	29.26	-8.90	5.98	11.369
HUB	100.	15.697	16.485	41.77	29.48	-8.95	5.94	11.440

RP	BLADE THICKNESSES TI	BLADE THICKNESSES TM	BLADE THICKNESSES TO	AXIAL DIMENSIONS ZIC	AXIAL DIMENSIONS ZMC	AXIAL DIMENSIONS ZTC	AXIAL DIMENSIONS ZOC
TIP	0.051	0.279	0.051	7.571	9.324	9.065	11.422
1	0.051	0.279	0.051	7.543	9.331	8.974	11.423
2	0.051	0.279	0.051	7.524	9.336	8.903	11.424
3	0.051	0.279	0.051	7.507	9.340	8.766	11.424
4	0.051	0.279	0.051	7.510	9.339	8.716	11.423
5	0.051	0.279	0.051	7.511	9.339	8.708	11.422
6	0.051	0.279	0.051	7.512	9.338	8.699	11.422
7	0.051	0.279	0.051	7.514	9.338	8.691	11.422
8	0.051	0.279	0.051	7.515	9.337	8.684	11.421
9	0.051	0.279	0.051	7.511	9.338	8.598	11.422
10	0.051	0.279	0.051	7.519	9.336	8.530	11.421
11	0.051	0.279	0.051	7.524	9.335	8.517	11.421
HUB	0.051	0.279	0.051	7.529	9.333	8.506	11.420

RP	AERO CHORD	SETTING ANGLE	TOTAL CAMBER	SOLIDITY	X FACTOR	PHISS	AREA RATIO
TIP	4.138	19.58	53.33	1.297	0.600	13.73	1.178
1	4.138	18.31	49.48	1.320	0.600	12.40	1.159
2	4.139	17.45	46.81	1.344	0.600	11.44	1.144
3	4.142	16.65	44.00	1.450	0.600	10.12	1.114
4	4.146	16.81	44.08	1.526	0.600	9.85	1.101
5	4.147	16.88	44.17	1.542	0.600	9.82	1.098
6	4.149	16.94	44.28	1.558	0.600	9.79	1.095
7	4.150	17.02	44.41	1.575	0.600	9.77	1.092
8	4.152	17.10	44.56	1.592	0.600	9.75	1.089
9	4.168	16.80	45.43	1.724	0.706	11.33	1.085
10	4.203	17.11	48.16	1.901	0.825	13.58	1.091
11	4.214	17.29	49.33	1.950	0.862	14.46	1.097
HUB	4.214	17.51	50.72	2.000	0.904	15.50	1.104

TABLE VI. - OVERALL PERFORMANCE FOR STAGE 14-10

(a) Percent design speed, 100

	Reading number				
	350	341	342	337	343
ROTOR TOTAL PRESSURE RATIO	1.703	1.791	1.846	1.877	1.880
STAGE TOTAL PRESSURE RATIO	1.633	1.727	1.767	1.776	1.776
ROTOR TOTAL TEMPERATURE RATIO	1.193	1.209	1.223	1.233	1.235
STAGE TOTAL TEMPERATURE RATIO	1.191	1.207	1.219	1.232	1.235
ROTOR TEMP. RISE EFFICIENCY	0.851	0.866	0.860	0.847	0.839
STAGE TEMP. RISE EFFICIENCY	0.787	0.815	0.806	0.769	0.758
ROTOR MOMENTUM RISE EFFICIENCY	0.856	0.891	0.895	0.878	0.877
ROTOR HEAD RISE COEFFICIENT	0.264	0.293	0.311	0.320	0.320
STAGE HEAD RISE COEFFICIENT	0.242	0.273	0.287	0.289	0.288
FLOW COEFFICIENT	0.429	0.425	0.409	0.385	0.376
WT FLOW PER UNIT FRONTAL AREA	151.20	149.83	145.48	138.61	136.90
WT FLOW PER UNIT ANNULUS AREA	203.34	201.49	195.65	186.40	184.11
WT FLOW AT ORIFICE	29.88	29.61	28.76	27.40	27.06
WT FLOW AT ROTOR INLET	30.49	30.24	29.36	28.09	27.62
WT FLOW AT ROTOR OUTLET	30.02	30.26	29.49	28.14	28.10
WT FLOW AT STATOR OUTLET	31.18	30.81	29.64	28.18	28.07
ROTATIVE SPEED	16145.3	16114.1	16080.8	16075.6	16105.0
PERCENT OF DESIGN SPEED	100.3	100.1	99.9	99.8	100.0

(b) Percent design speed, 90

	Reading number				
	355	356	357	358	359
ROTOR TOTAL PRESSURE RATIO	1.531	1.566	1.621	1.657	1.675
STAGE TOTAL PRESSURE RATIO	1.447	1.504	1.561	1.593	1.599
ROTOR TOTAL TEMPERATURE RATIO	1.149	1.156	1.169	1.179	1.187
STAGE TOTAL TEMPERATURE RATIO	1.147	1.153	1.166	1.176	1.185
ROTOR TEMP. RISE EFFICIENCY	0.869	0.879	0.876	0.868	0.847
STAGE TEMP. RISE EFFICIENCY	0.757	0.806	0.819	0.809	0.775
ROTOR MOMENTUM RISE EFFICIENCY	0.874	0.889	0.895	0.888	0.872
ROTOR HEAD RISE COEFFICIENT	0.259	0.273	0.294	0.309	0.315
STAGE HEAD RISE COEFFICIENT	0.222	0.247	0.270	0.283	0.285
FLOW COEFFICIENT	0.435	0.429	0.411	0.387	0.363
WT FLOW PER UNIT FRONTAL AREA	140.82	139.35	134.84	128.88	122.49
WT FLOW PER UNIT ANNULUS AREA	189.37	187.40	181.34	173.32	164.73
WT FLOW AT ORIFICE	27.83	27.54	26.65	25.47	24.21
WT FLOW AT ROTOR INLET	28.48	28.16	27.29	26.07	24.77
WT FLOW AT ROTOR OUTLET	28.18	27.87	27.00	25.78	24.53
WT FLOW AT STATOR OUTLET	29.57	28.46	27.22	25.90	24.56
ROTATIVE SPEED	14492.3	14496.4	14521.6	14529.8	14545.6
PERCENT OF DESIGN SPEED	90.0	90.0	90.2	90.2	90.3

TABLE VI. - Continued. OVERALL PERFORMANCE FOR STAGE 14-10

(c) Percent design speed, 80

	Reading number
	364
ROTOR TOTAL PRESSURE RATIO	1.476
STAGE TOTAL PRESSURE RATIO	1.428
ROTOR TOTAL TEMPERATURE RATIO	1.143
STAGE TOTAL TEMPERATURE RATIO	1.140
ROTOR TEMP. RISE EFFICIENCY	0.823
STAGE TEMP. RISE EFFICIENCY	0.765
ROTOR MOMENTUM RISE EFFICIENCY	0.841
ROTOR HEAD RISE COEFFICIENT	0.298
STAGE HEAD RISE COEFFICIENT	0.271
FLOW COEFFICIENT	0.335
WT FLOW PER UNIT FRONTAL AREA	103.51
WT FLOW PER UNIT ANNULUS AREA	139.21
WT FLOW AT ORIFICE	20.46
WT FLOW AT ROTOR INLET	20.84
WT FLOW AT ROTOR OUTLET	20.61
WT FLOW AT STATOR OUTLET	20.81
ROTATIVE SPEED	12873.7
PERCENT OF DESIGN SPEED	80.0

(d) Percent design speed, 70

	Reading number				
	366	367	368	369	370
ROTOR TOTAL PRESSURE RATIO	1.265	1.294	1.321	1.333	1.341
STAGE TOTAL PRESSURE RATIO	1.218	1.255	1.284	1.294	1.300
ROTOR TOTAL TEMPERATURE RATIO	1.078	1.085	1.094	1.099	1.105
STAGE TOTAL TEMPERATURE RATIO	1.077	1.084	1.092	1.098	1.103
ROTOR TEMP. RISE EFFICIENCY	0.894	0.898	0.883	0.867	0.830
STAGE TEMP. RISE EFFICIENCY	0.748	0.801	0.807	0.783	0.754
ROTOR MOMENTUM RISE EFFICIENCY	0.911	0.924	0.913	0.893	0.858
ROTOR HEAD RISE COEFFICIENT	0.230	0.254	0.276	0.286	0.290
STAGE HEAD RISE COEFFICIENT	0.191	0.223	0.247	0.255	0.258
FLOW COEFFICIENT	0.438	0.419	0.387	0.363	0.334
WT FLOW PER UNIT FRONTAL AREA	116.15	111.35	103.93	98.02	91.24
WT FLOW PER UNIT ANNULUS AREA	156.20	149.74	139.77	131.81	122.70
WT FLOW AT ORIFICE	22.96	22.01	20.54	19.37	18.03
WT FLOW AT ROTOR INLET	23.40	22.47	20.95	19.77	18.37
WT FLOW AT ROTOR OUTLET	23.04	22.29	20.82	19.72	18.33
WT FLOW AT STATOR OUTLET	23.44	22.11	20.40	19.09	17.54
ROTATIVE SPEED	11260.9	11234.7	11216.2	11218.9	11236.2
PERCENT OF DESIGN SPEED	69.9	69.8	69.7	69.7	69.8

TABLE VI. - Concluded. OVERALL PERFORMANCE FOR STAGE 14-10

(e) Percent design speed, 60

	Reading number
	373
ROTOR TOTAL PRESSURE RATIO	1.245
STAGE TOTAL PRESSURE RATIO	1.210
ROTOR TOTAL TEMPERATURE RATIO	1.079
STAGE TOTAL TEMPERATURE RATIO	1.077
ROTOR TEMP. RISE EFFICIENCY	0.816
STAGE TEMP. RISE EFFICIENCY	0.723
ROTOR MOMENTUM RISE EFFICIENCY	0.840
ROTOR HEAD RISE COEFFICIENT	0.292
STAGE HEAD RISE COEFFICIENT	0.253
FLOW COEFFICIENT	0.313
WT FLOW PER UNIT FRONTAL AREA	74.29
WT FLOW PER UNIT ANNULUS AREA	99.91
WT FLOW AT ORIFICE	14.68
WT FLOW AT ROTOR INLET	14.99
WT FLOW AT ROTOR OUTLET	14.77
WT FLOW AT STATOR OUTLET	13.91
ROTATIVE SPEED	9627.7
PERCENT OF DESIGN SPEED	59.8

(f) Percent design speed, 50

	Reading number
	375
ROTOR TOTAL PRESSURE RATIO	1.165
STAGE TOTAL PRESSURE RATIO	1.140
ROTOR TOTAL TEMPERATURE RATIO	1.054
STAGE TOTAL TEMPERATURE RATIO	1.053
ROTOR TEMP. RISE EFFICIENCY	0.829
STAGE TEMP. RISE EFFICIENCY	0.719
ROTOR MOMENTUM RISE EFFICIENCY	0.858
ROTOR HEAD RISE COEFFICIENT	0.288
STAGE HEAD RISE COEFFICIENT	0.245
FLOW COEFFICIENT	0.317
WT FLOW PER UNIT FRONTAL AREA	63.51
WT FLOW PER UNIT ANNULUS AREA	85.41
WT FLOW AT ORIFICE	12.55
WT FLOW AT ROTOR INLET	12.81
WT FLOW AT ROTOR OUTLET	12.61
WT FLOW AT STATOR OUTLET	11.42
ROTATIVE SPEED	8067.1
PERCENT OF DESIGN SPEED	50.1

TABLE VII. - BLADE ELEMENT DATA AT BLADE EDGES FOR ROTOR 14

(a) Percent design speed, 100; reading number, 350

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	24.562	24.193	0.0	43.4	64.2	56.5	288.8	1.229	9.97	1.740
2	24.016	23.685	0.0	39.5	62.3	54.5	288.7	1.214	10.11	1.750
3	21.753	21.653	0.0	39.6	58.7	48.6	288.0	1.198	10.15	1.760
4	20.290	20.383	0.0	45.2	56.7	47.5	288.0	1.191	10.15	1.639
5	19.992	20.129	0.0	45.4	56.4	47.9	288.0	1.189	10.16	1.609
6	19.693	19.875	0.0	45.5	56.0	47.9	288.0	1.185	10.15	1.597
7	19.390	19.621	0.0	44.9	55.6	47.0	287.9	1.183	10.15	1.599
8	19.088	19.367	0.0	44.0	55.3	46.1	288.0	1.177	10.15	1.604
9	16.899	17.589	0.0	44.0	52.9	37.5	287.9	1.168	10.15	1.634
10	14.191	15.557	0.0	48.3	50.3	18.7	287.9	1.182	10.15	1.743
11	13.465	15.049	0.0	51.6	49.7	8.7	287.8	1.197	10.15	1.830

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	201.0	229.1	461.0	301.2	201.0	166.4	0.0	157.6	414.9	408.7
2	213.1	232.9	458.3	309.6	213.1	179.8	0.1	148.1	405.8	400.2
3	223.7	242.1	430.5	282.2	223.7	186.5	0.0	154.4	367.9	366.2
4	224.8	233.2	409.9	243.1	224.8	164.4	0.0	165.4	342.9	344.5
5	225.0	228.4	406.1	239.3	225.0	160.3	0.0	162.7	338.1	340.4
6	224.7	225.9	401.7	236.0	224.7	158.3	0.1	161.1	333.0	336.1
7	224.3	226.4	397.0	235.1	224.3	160.4	0.1	159.7	327.7	331.6
8	223.9	227.3	392.9	235.6	223.9	163.5	0.1	157.9	322.9	327.6
9	215.8	238.5	357.8	216.2	215.8	171.6	0.1	165.7	285.4	297.1
10	199.1	271.2	312.0	190.6	199.1	180.5	0.0	202.3	240.2	263.4
11	193.3	289.9	298.8	182.4	193.3	180.3	0.0	227.0	227.9	254.7

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID PEAK SS
RP	IN	OUT	IN	OUT	IN	OUT	VEL R MACH NO
1	0.612	0.630	1.403	0.829	0.612	0.458	0.828 1.564
2	0.652	0.646	1.402	0.859	0.652	0.499	0.844 1.539
3	0.688	0.679	1.324	0.792	0.688	0.523	0.833 1.515
4	0.692	0.654	1.261	0.682	0.692	0.461	0.731 1.487
5	0.692	0.641	1.250	0.671	0.692	0.450	0.713 1.481
6	0.691	0.634	1.236	0.662	0.691	0.444	0.705 1.475
7	0.690	0.636	1.222	0.661	0.690	0.451	0.715 1.467
8	0.689	0.641	1.208	0.664	0.689	0.461	0.730 1.461
9	0.662	0.678	1.097	0.615	0.662	0.488	0.795 1.407
10	0.607	0.776	0.951	0.546	0.607	0.517	0.907 1.282
11	0.588	0.831	0.908	0.523	0.588	0.517	0.933 1.209

	PERCENT	INCIDENCE		DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN	SS				TOT	PROF	TOT	PROF
1	5.00	2.4	-0.4	6.0	0.475	0.750	0.218	0.124	0.046	0.026
2	10.00	1.8	-1.2	4.7	0.443	0.812	0.159	0.070	0.034	0.015
3	30.00	2.8	-1.3	3.6	0.465	0.884	0.100	0.028	0.022	0.006
4	42.50	3.3	-1.4	6.9	0.535	0.793	0.181	0.123	0.039	0.026
5	45.00	3.4	-1.5	8.4	0.536	0.772	0.198	0.144	0.041	0.030
6	47.50	3.5	-1.5	9.5	0.536	0.771	0.199	0.148	0.041	0.030
7	50.00	3.6	-1.5	9.8	0.530	0.786	0.188	0.139	0.039	0.029
8	52.50	3.7	-1.6	10.1	0.521	0.817	0.160	0.114	0.033	0.024
9	70.00	4.5	-1.7	12.5	0.521	0.899	0.097	0.072	0.020	0.015
10	90.00	5.2	-1.9	13.4	0.540	0.947	0.069	0.065	0.014	0.014
11	95.00	5.4	-1.9	10.4	0.558	0.956	0.064	0.064	0.013	0.013

TABLE VII. - Continued. BLADE ELEMENT DATA AT BLADE EDGES

FOR ROTOR 14

(b) Percent design speed, 100; reading number, 341

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	24.562	24.193	-0.0	46.7	64.4	54.9	288.7	1.257	9.98	1.881
2	24.016	23.685	-0.0	42.8	62.6	53.4	288.4	1.238	10.12	1.877
3	21.753	21.653	-0.0	43.0	59.0	48.2	288.2	1.218	10.15	1.852
4	20.290	20.383	-0.0	46.6	57.1	45.7	288.2	1.208	10.15	1.761
5	19.992	20.129	-0.0	47.0	56.7	45.8	288.3	1.206	10.15	1.736
6	19.693	19.875	-0.0	47.4	56.3	46.1	287.4	1.201	10.15	1.714
7	19.390	19.621	-0.0	47.7	55.9	46.4	288.3	1.198	10.15	1.690
8	19.088	19.367	-0.0	47.2	55.6	45.4	288.1	1.193	10.15	1.690
9	16.899	17.589	-0.0	45.8	53.3	36.4	287.9	1.178	10.15	1.711
10	14.191	15.557	-0.0	49.5	50.7	19.4	287.9	1.186	10.15	1.763
11	13.465	15.049	-0.0	51.3	50.0	12.4	287.7	1.194	10.14	1.809

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	198.2	239.7	459.2	285.6	198.2	164.4	-0.0	174.5	414.3	408.0
2	210.0	239.9	456.6	294.9	210.0	175.9	-0.0	163.1	405.4	399.9
3	220.8	243.5	428.2	267.2	220.8	178.1	-0.0	166.0	366.8	365.1
4	221.6	240.5	408.0	236.4	221.6	165.2	-0.0	174.9	342.5	344.1
5	222.2	237.2	404.3	232.1	222.2	161.7	-0.0	173.5	337.7	340.0
6	221.2	232.8	399.0	227.3	221.2	157.6	-0.0	171.3	332.0	335.1
7	221.8	229.1	395.5	223.6	221.8	154.2	-0.0	169.5	327.5	331.4
8	220.8	229.9	390.7	222.4	220.8	156.2	-0.0	168.7	322.3	327.0
9	212.4	241.0	355.6	208.9	212.4	168.1	-0.0	172.8	285.2	296.8
10	196.2	265.7	309.7	183.1	196.2	172.7	-0.0	201.9	239.6	262.7
11	190.2	276.2	296.1	176.9	190.2	172.7	-0.0	215.5	226.8	253.5

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID PEAK SS VEL R	MERID PEAK SS MACH NO
1	0.603	0.654	1.396	0.779	0.603	0.449	0.829	1.567
2	0.642	0.660	1.395	0.812	0.642	0.484	0.837	1.544
3	0.678	0.678	1.315	0.743	0.678	0.496	0.807	1.516
4	0.681	0.671	1.253	0.660	0.681	0.461	0.745	1.491
5	0.683	0.662	1.242	0.648	0.683	0.451	0.728	1.484
6	0.680	0.651	1.227	0.636	0.680	0.441	0.712	1.479
7	0.681	0.640	1.215	0.624	0.681	0.430	0.695	1.471
8	0.678	0.644	1.200	0.623	0.678	0.437	0.707	1.466
9	0.650	0.683	1.089	0.592	0.650	0.476	0.791	1.416
10	0.597	0.757	0.942	0.522	0.597	0.492	0.880	1.283
11	0.578	0.788	0.899	0.505	0.578	0.493	0.908	1.207

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D-FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	2.7	-0.1	4.4	0.521	0.771	0.220	0.126	0.048	0.027
2	10.00	2.1	-0.9	3.6	0.485	0.827	0.160	0.071	0.035	0.016
3	30.00	3.1	-1.0	3.1	0.506	0.884	0.109	0.038	0.024	0.009
4	42.50	3.7	-1.1	5.1	0.556	0.842	0.151	0.094	0.033	0.021
5	45.00	3.7	-1.2	6.3	0.560	0.828	0.164	0.110	0.036	0.024
6	47.50	3.9	-1.1	7.7	0.563	0.828	0.163	0.112	0.035	0.024
7	50.00	3.9	-1.2	9.2	0.565	0.816	0.174	0.126	0.036	0.026
8	52.50	4.1	-1.2	9.4	0.561	0.837	0.155	0.110	0.032	0.023
9	70.00	4.9	-1.3	11.5	0.544	0.933	0.069	0.043	0.015	0.009
10	90.00	5.6	-1.5	14.1	0.560	0.947	0.071	0.067	0.015	0.014
11	95.00	5.7	-1.6	14.0	0.564	0.953	0.069	0.069	0.014	0.014

TABLE VII. - Continued. BLADE ELEMENT DATA AT BLADE EDGES

FOR ROTOR 14

(c) Percent design speed, 100; reading number, 342

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	24.562	24.193	-0.0	49.5	65.6	54.0	288.4	1.278	9.98	1.972
2	24.016	23.685	-0.0	46.8	63.9	52.8	288.3	1.258	10.11	1.942
3	21.753	21.653	-0.0	45.9	60.2	48.5	288.3	1.229	10.15	1.896
4	20.290	20.383	-0.0	48.5	58.3	45.4	288.2	1.220	10.15	1.828
5	19.992	20.129	-0.0	49.1	58.0	44.7	287.9	1.218	10.15	1.819
6	19.693	19.875	-0.0	49.8	57.7	44.6	288.2	1.216	10.15	1.796
7	19.390	19.621	-0.0	50.5	57.2	45.0	288.0	1.213	10.15	1.772
8	19.088	19.367	-0.0	50.2	56.9	44.1	288.0	1.208	10.15	1.768
9	16.899	17.589	-0.0	48.4	54.4	35.5	287.9	1.192	10.15	1.764
10	14.191	15.557	-0.0	51.5	51.8	20.5	287.9	1.190	10.15	1.766
11	13.465	15.049	-0.0	52.8	51.3	12.5	288.1	1.199	10.15	1.831

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	187.9	246.3	454.6	272.5	187.9	160.1	-0.0	187.2	413.9	407.7
2	198.4	244.3	450.5	276.8	198.4	167.2	-0.0	178.2	404.4	398.8
3	209.4	242.2	421.8	254.5	209.4	168.6	-0.0	173.9	366.2	364.5
4	210.9	241.6	401.4	228.1	210.9	160.2	-0.0	180.8	341.6	343.2
5	210.2	241.3	396.7	222.3	210.2	158.0	-0.0	182.4	336.5	338.8
6	209.9	238.8	392.4	216.7	209.9	154.2	-0.0	182.3	331.5	334.6
7	210.7	234.8	388.9	211.5	210.7	149.4	-0.0	181.1	326.9	330.8
8	210.0	235.1	384.3	209.7	210.0	150.5	-0.0	180.5	321.8	326.5
9	204.0	242.5	350.2	198.0	204.0	161.1	-0.0	181.2	284.6	296.2
10	187.8	257.3	303.5	171.0	187.8	160.1	-0.0	201.4	238.4	261.4
11	182.1	272.6	291.0	168.8	182.1	164.8	-0.0	217.1	227.0	253.7

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID PEAK SS
RP	IN	OUT	IN	OUT	IN	OUT	VEL R MACH NO
1	0.570	0.668	1.378	0.739	0.570	0.434	0.852 1.588
2	0.604	0.668	1.371	0.757	0.604	0.457	0.843 1.563
3	0.640	0.670	1.289	0.704	0.640	0.466	0.805 1.535
4	0.645	0.671	1.228	0.633	0.645	0.445	0.760 1.511
5	0.643	0.671	1.214	0.618	0.643	0.440	0.752 1.506
6	0.642	0.664	1.200	0.602	0.642	0.429	0.735 1.500
7	0.644	0.653	1.190	0.588	0.644	0.416	0.709 1.494
8	0.642	0.655	1.175	0.584	0.642	0.419	0.717 1.489
9	0.623	0.683	1.069	0.557	0.623	0.454	0.790 1.440
10	0.570	0.729	0.921	0.485	0.570	0.454	0.853 1.289
11	0.551	0.774	0.881	0.480	0.551	0.468	0.905 1.221

	PERCENT	INCIDENCE		DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN	SS				TOT	PROF	TOT	PROF
1	5.00	3.8	1.1	3.5	0.555	0.770	0.238	0.141	0.053	0.031
2	10.00	3.4	0.4	3.0	0.531	0.808	0.191	0.102	0.043	0.023
3	30.00	4.3	0.3	3.4	0.535	0.877	0.122	0.051	0.027	0.011
4	42.50	4.9	0.2	4.8	0.574	0.853	0.150	0.092	0.033	0.020
5	45.00	5.1	0.2	5.2	0.583	0.855	0.149	0.095	0.033	0.021
6	47.50	5.2	0.2	6.2	0.591	0.842	0.164	0.112	0.036	0.025
7	50.00	5.2	0.1	7.8	0.598	0.834	0.171	0.122	0.037	0.026
8	52.50	5.3	0.0	8.2	0.595	0.849	0.156	0.110	0.033	0.024
9	70.00	6.0	-0.3	10.6	0.575	0.917	0.092	0.066	0.020	0.014
10	90.00	6.6	-0.4	15.2	0.591	0.928	0.100	0.097	0.021	0.020
11	95.00	6.9	-0.3	14.1	0.585	0.950	0.078	0.078	0.016	0.016

TABLE VII. - Continued. BLADE ELEMENT DATA AT BLADE EDGES

FOR ROTOR 14

(d) Percent design speed, 100; reading number, 337

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	24.562	24.193	0.	54.2	67.1	54.4	288.6	1.300	10.00	2.006
2	24.016	23.685	-0.0	51.3	65.6	52.7	288.6	1.278	10.10	1.989
3	21.753	21.653	0.	48.9	62.1	49.1	288.2	1.237	10.15	1.916
4	20.290	20.383	0.	50.7	60.1	45.5	288.0	1.227	10.15	1.860
5	19.992	20.129	0.	51.6	59.7	45.0	288.0	1.225	10.16	1.845
6	19.693	19.875	0.0	52.5	59.3	44.4	288.0	1.225	10.15	1.834
7	19.390	19.621	0.	53.0	58.9	44.1	288.0	1.223	10.15	1.815
8	19.088	19.367	-0.0	52.7	58.6	43.1	287.9	1.219	10.15	1.811
9	16.899	17.589	-0.0	50.4	56.1	35.8	288.0	1.197	10.15	1.780
10	14.191	15.557	0.	52.9	53.2	19.8	287.9	1.194	10.15	1.799
11	13.465	15.049	0.	55.5	52.6	8.6	287.9	1.208	10.15	1.883

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	174.6	250.0	448.8	251.2	174.6	146.1	0.	202.9	413.5	407.3
2	183.1	248.6	443.4	256.8	183.1	155.5	-0.0	194.0	403.9	398.3
3	194.0	241.2	414.5	242.1	194.0	158.6	0.	181.7	366.3	364.6
4	196.6	241.9	394.1	218.7	196.6	153.3	0.	187.1	341.5	343.1
5	196.7	241.1	389.8	211.8	196.7	149.7	0.	189.0	336.5	338.8
6	196.8	241.0	385.7	205.1	196.8	146.6	0.0	191.3	331.7	334.8
7	196.8	239.3	381.3	200.5	196.8	144.1	0.	191.0	326.6	330.5
8	196.4	239.4	376.7	198.8	196.4	145.2	-0.0	190.4	321.4	326.1
9	191.5	240.7	342.9	189.3	191.5	153.5	-0.0	185.4	284.5	296.1
10	178.4	258.0	298.2	165.2	178.4	155.4	0.	205.9	238.9	261.9
11	173.0	278.1	285.1	159.2	173.0	157.4	0.	229.3	226.6	253.2

	ABS MACH NO		REL MACH NO		MERID MACH NO				MERID PEAK SS	
RP	IN	OUT	IN	OUT	IN	OUT			VEL R	MACH NO
1	0.527	0.673	1.354	0.676	0.527	0.393			0.837	1.617
2	0.554	0.675	1.342	0.697	0.554	0.422			0.850	1.594
3	0.590	0.665	1.260	0.667	0.590	0.437			0.817	1.571
4	0.598	0.670	1.199	0.606	0.598	0.425			0.780	1.546
5	0.599	0.668	1.186	0.587	0.599	0.415			0.761	1.540
6	0.599	0.668	1.174	0.569	0.599	0.406			0.745	1.535
7	0.599	0.663	1.160	0.556	0.599	0.399			0.732	1.530
8	0.598	0.665	1.146	0.552	0.598	0.403			0.739	1.524
9	0.582	0.676	1.042	0.531	0.582	0.431			0.802	1.484
10	0.540	0.730	0.902	0.468	0.540	0.440			0.871	1.308
11	0.522	0.789	0.861	0.452	0.522	0.446			0.910	1.234

	PERCENT	INCIDENCE		DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN	SS				TOT	PROF	TOT	PROF
1	5.00	5.3	2.6	3.9	0.610	0.734	0.292	0.193	0.064	0.042
2	10.00	5.1	2.2	2.9	0.581	0.780	0.235	0.143	0.053	0.032
3	30.00	6.2	2.1	4.0	0.563	0.860	0.146	0.072	0.032	0.016
4	42.50	6.7	1.9	4.9	0.595	0.856	0.154	0.094	0.034	0.021
5	45.00	6.8	1.9	5.5	0.608	0.850	0.162	0.105	0.036	0.023
6	47.50	6.9	1.8	6.0	0.621	0.841	0.174	0.119	0.038	0.026
7	50.00	6.9	1.8	6.9	0.627	0.831	0.186	0.135	0.040	0.029
8	52.50	7.0	1.7	7.1	0.624	0.843	0.173	0.125	0.038	0.027
9	70.00	7.7	1.4	10.8	0.594	0.911	0.104	0.075	0.022	0.016
10	90.00	8.1	1.0	14.5	0.606	0.941	0.086	0.083	0.018	0.017
11	95.00	8.3	1.1	10.3	0.619	0.951	0.082	0.081	0.017	0.017

TABLE VII. - Continued. BLADE ELEMENT DATA AT BLADE EDGES

FOR ROTOR 14

(e) Percent design speed, 100; reading number, 343

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	24.562	24.193	-0.0	55.1	67.9	54.9	288.7	1.304	9.99	2.003
2	24.016	23.685	-0.0	51.4	66.2	52.8	288.7	1.284	10.11	1.987
3	21.753	21.653	-0.0	49.1	62.7	48.8	288.1	1.243	10.15	1.925
4	20.290	20.383	-0.0	50.9	60.7	45.9	287.9	1.229	10.15	1.859
5	19.992	20.129	-0.0	51.7	60.3	44.8	288.1	1.229	10.15	1.855
6	19.693	19.875	-0.0	52.6	60.0	44.3	287.8	1.228	10.15	1.839
7	19.390	19.621	-0.0	53.1	59.6	43.9	287.6	1.225	10.15	1.822
8	19.088	19.367	-0.0	52.7	59.2	42.7	288.3	1.222	10.15	1.822
9	16.899	17.589	-0.0	50.5	56.6	36.0	287.8	1.197	10.15	1.785
10	14.191	15.557	-0.0	52.7	54.0	20.1	287.8	1.196	10.15	1.810
11	13.465	15.049	-0.0	54.3	53.4	11.6	287.9	1.203	10.15	1.862

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	168.2	249.3	446.8	248.5	168.2	142.8	-0.0	204.3	414.0	407.7
2	178.4	249.0	442.3	257.1	178.4	155.5	-0.0	194.5	404.7	399.2
3	189.7	242.9	413.2	241.4	189.7	158.9	-0.0	183.6	367.0	365.4
4	191.8	241.0	392.4	218.6	191.8	152.1	-0.0	186.9	342.3	343.9
5	192.4	242.4	388.3	212.0	192.4	150.3	-0.0	190.2	337.3	339.6
6	192.1	241.7	383.7	204.9	192.1	146.6	-0.0	192.1	332.2	335.2
7	191.5	240.1	378.8	200.0	191.5	144.1	-0.0	192.0	326.9	330.8
8	192.2	241.1	375.0	198.7	192.2	146.0	-0.0	191.9	321.9	326.7
9	187.6	240.3	341.1	188.9	187.6	152.8	-0.0	185.5	284.9	296.5
10	173.9	258.0	295.9	166.4	173.9	156.3	-0.0	205.2	239.4	262.4
11	169.0	272.4	283.2	162.2	169.0	158.8	-0.0	221.3	227.2	254.0

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID PEAK SS
RP	IN	OUT	IN	OUT	IN	OUT	VEL R MACH NO
1	0.506	0.669	1.345	0.667	0.506	0.383	0.849 1.635
2	0.539	0.674	1.336	0.696	0.539	0.421	0.872 1.609
3	0.576	0.668	1.254	0.664	0.576	0.437	0.838 1.586
4	0.583	0.667	1.192	0.605	0.583	0.421	0.793 1.563
5	0.584	0.671	1.180	0.587	0.584	0.416	0.781 1.555
6	0.584	0.669	1.166	0.567	0.584	0.406	0.763 1.551
7	0.582	0.666	1.152	0.555	0.582	0.400	0.753 1.547
8	0.584	0.669	1.139	0.551	0.584	0.405	0.759 1.538
9	0.569	0.674	1.035	0.530	0.569	0.429	0.814 1.501
10	0.525	0.730	0.894	0.471	0.525	0.442	0.899 1.319
11	0.510	0.773	0.854	0.460	0.510	0.450	0.940 1.245

	PERCENT	INCIDENCE		DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN	SS				TOT	PROF	TOT	PROF
1	5.00	6.1	3.4	4.4	0.615	0.722	0.308	0.207	0.067	0.045
2	10.00	5.7	2.8	2.9	0.580	0.763	0.257	0.163	0.057	0.036
3	30.00	6.8	2.7	3.8	0.565	0.848	0.161	0.085	0.036	0.019
4	42.50	7.3	2.6	5.3	0.594	0.845	0.168	0.106	0.037	0.023
5	45.00	7.4	2.5	5.3	0.607	0.844	0.171	0.112	0.038	0.025
6	47.50	7.5	2.5	5.9	0.621	0.833	0.186	0.129	0.041	0.028
7	50.00	7.7	2.5	6.7	0.626	0.829	0.191	0.138	0.042	0.030
8	52.50	7.6	2.3	6.8	0.624	0.840	0.180	0.130	0.039	0.028
9	70.00	8.2	2.0	11.0	0.593	0.912	0.105	0.073	0.022	0.016
10	90.00	8.9	1.8	14.8	0.598	0.944	0.083	0.080	0.017	0.017
11	95.00	9.0	1.8	13.2	0.600	0.955	0.075	0.074	0.015	0.015

TABLE VII. - Continued. BLADE ELEMENT DATA AT BLADE EDGES

FOR ROTOR 14

(f) Percent design speed, 90; reading number, 355

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	24.562	24.193	0.0	36.9	64.2	53.7	289.0	1.171	9.99	1.583
2	24.016	23.685	0.0	35.1	62.5	53.0	288.7	1.161	10.10	1.561
3	21.753	21.653	0.0	36.2	58.9	49.0	288.1	1.149	10.15	1.538
4	20.290	20.383	0.0	40.5	56.9	45.7	288.1	1.147	10.15	1.490
5	19.992	20.129	0.0	41.1	56.6	45.9	287.9	1.145	10.16	1.472
6	19.693	19.875	0.0	41.4	56.2	45.7	288.0	1.143	10.15	1.461
7	19.390	19.621	0.0	41.8	55.8	45.3	288.2	1.142	10.15	1.454
8	19.088	19.367	0.0	41.1	55.4	44.0	287.8	1.138	10.15	1.460
9	16.899	17.589	0.0	41.2	53.0	34.8	287.9	1.136	10.15	1.505
10	14.191	15.557	0.0	46.3	50.2	16.8	287.9	1.146	10.15	1.573
11	13.465	15.049	0.0	48.3	49.5	10.4	287.8	1.153	10.15	1.621

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	180.0	217.6	414.0	293.9	180.0	174.1	0.0	130.5	372.9	367.3
2	190.0	216.2	410.8	294.1	190.0	176.9	0.0	124.3	364.2	359.2
3	199.7	216.5	386.1	266.5	199.7	174.7	0.0	127.8	330.5	329.0
4	200.9	216.4	367.8	235.7	200.9	164.5	0.0	140.7	308.1	309.5
5	200.4	213.0	363.7	230.5	200.4	160.5	0.0	140.1	303.6	305.6
6	200.4	210.9	359.8	226.5	200.4	158.1	0.1	139.5	298.9	301.7
7	200.3	209.8	356.1	222.5	200.3	156.4	0.0	139.9	294.5	298.3
8	199.4	211.6	351.0	221.5	199.4	159.3	0.0	139.2	288.9	293.1
9	193.2	226.1	321.1	206.9	193.2	170.0	0.0	149.0	256.5	267.3
10	179.5	253.5	280.3	183.0	179.5	175.2	0.0	183.2	215.3	236.1
11	174.6	262.9	268.7	177.9	174.6	175.0	0.0	196.3	204.3	228.4

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID PEAK SS VEL R	MERID PEAK SS MACH NO
1	0.544	0.612	1.250	0.826	0.544	0.490	0.967	1.423
2	0.576	0.611	1.245	0.831	0.576	0.500	0.931	1.397
3	0.608	0.616	1.176	0.758	0.608	0.497	0.875	1.389
4	0.612	0.616	1.121	0.671	0.612	0.468	0.819	1.375
5	0.611	0.606	1.109	0.656	0.611	0.457	0.801	1.374
6	0.611	0.600	1.097	0.645	0.611	0.450	0.789	1.373
7	0.610	0.597	1.085	0.633	0.610	0.445	0.781	1.368
8	0.608	0.604	1.070	0.633	0.608	0.455	0.799	1.363
9	0.587	0.650	0.976	0.594	0.587	0.488	0.880	1.334
10	0.543	0.733	0.848	0.529	0.543	0.506	0.976	1.140
11	0.527	0.761	0.812	0.515	0.527	0.506	1.002	1.074

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D-FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	2.5	-0.3	3.2	0.408	0.820	0.142	0.097	0.032	0.022
2	10.00	2.0	-1.0	3.2	0.395	0.844	0.119	0.079	0.026	0.017
3	30.00	3.0	-1.1	3.9	0.421	0.878	0.094	0.063	0.021	0.014
4	42.50	3.5	-1.3	5.1	0.480	0.821	0.145	0.121	0.032	0.027
5	45.00	3.6	-1.2	6.3	0.487	0.803	0.159	0.137	0.035	0.030
6	47.50	3.7	-1.3	7.3	0.490	0.799	0.162	0.142	0.035	0.030
7	50.00	3.8	-1.4	8.1	0.495	0.794	0.168	0.149	0.036	0.032
8	52.50	3.9	-1.4	8.1	0.488	0.828	0.140	0.123	0.030	0.026
9	70.00	4.6	-1.6	9.8	0.481	0.912	0.081	0.073	0.018	0.016
10	90.00	5.1	-2.0	11.5	0.499	0.944	0.069	0.069	0.015	0.015
11	95.00	5.1	-2.1	12.0	0.500	0.970	0.042	0.042	0.009	0.009

TABLE VII. - Continued. BLADE ELEMENT DATA AT BLADE EDGES

FOR ROTOR 14

(g) Percent design speed, 90; reading number, 356

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	24.562	24.193	0.0	39.4	64.6	53.7	288.9	1.181	9.98	1.618
2	24.016	23.685	0.0	37.4	62.8	52.9	288.9	1.168	10.11	1.599
3	21.753	21.653	0.0	38.1	59.2	48.8	288.0	1.155	10.15	1.575
4	20.290	20.383	0.0	41.5	57.3	45.8	287.9	1.151	10.15	1.527
5	19.992	20.129	0.0	42.2	57.0	45.3	287.9	1.151	10.15	1.524
6	19.693	19.875	0.0	42.8	56.5	45.1	288.1	1.153	10.15	1.509
7	19.390	19.621	0.0	43.3	56.2	44.9	287.8	1.150	10.15	1.501
8	19.088	19.367	0.0	42.9	55.8	43.5	287.7	1.146	10.14	1.510
9	16.899	17.589	0.0	42.9	53.4	35.2	287.9	1.139	10.15	1.527
10	14.191	15.557	0.0	48.1	50.8	16.3	287.9	1.153	10.15	1.597
11	13.465	15.049	0.0	50.9	50.1	7.5	287.9	1.161	10.15	1.660

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	176.1	216.8	411.2	283.1	176.1	167.4	0.0	137.7	371.6	366.0
2	186.8	215.9	408.2	284.4	186.8	171.5	0.0	131.2	363.1	358.1
3	196.3	216.2	383.5	258.6	196.3	170.2	0.1	133.4	329.6	328.1
4	197.0	215.3	364.9	231.5	197.0	161.3	0.1	142.6	307.2	308.6
5	197.5	215.4	362.4	227.0	197.5	159.7	0.0	144.6	303.8	305.9
6	197.9	213.4	358.8	221.9	197.9	156.7	0.0	144.9	299.3	302.1
7	197.5	211.7	354.9	217.5	197.5	154.2	0.0	145.1	295.0	298.5
8	196.9	214.3	350.8	216.1	196.9	156.9	0.1	146.0	290.3	294.6
9	190.5	223.3	319.8	200.3	190.5	163.6	0.0	152.0	257.0	267.5
10	176.2	251.9	278.6	175.3	176.2	168.3	0.0	187.5	215.9	236.7
11	171.2	266.6	266.9	169.7	171.2	168.3	0.0	206.7	204.8	228.9

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID PEAK SS	
RP	IN	OUT	IN	OUT	IN	OUT	VEL R	MACH NO
1	0.531	0.607	1.240	0.792	0.531	0.468	0.950	1.428
2	0.565	0.607	1.236	0.800	0.565	0.483	0.918	1.400
3	0.597	0.613	1.167	0.733	0.597	0.483	0.867	1.394
4	0.600	0.612	1.111	0.657	0.600	0.458	0.819	1.384
5	0.601	0.612	1.103	0.645	0.601	0.454	0.808	1.384
6	0.602	0.605	1.092	0.629	0.602	0.444	0.792	1.380
7	0.601	0.601	1.081	0.618	0.601	0.438	0.781	1.380
8	0.600	0.610	1.068	0.615	0.600	0.447	0.797	1.378
9	0.579	0.640	0.971	0.574	0.579	0.469	0.859	1.342
10	0.532	0.725	0.842	0.505	0.532	0.485	0.955	1.149
11	0.517	0.769	0.805	0.490	0.517	0.486	0.983	1.083

	PERCENT	INCIDENCE		DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN	SS				TOT	PROF	TOT	PROF
1	5.00	2.9	0.1	3.3	0.437	0.816	0.153	0.109	0.034	0.024
2	10.00	2.3	-0.7	3.1	0.421	0.854	0.116	0.077	0.026	0.017
3	30.00	3.3	-0.7	3.8	0.443	0.891	0.088	0.057	0.019	0.013
4	42.50	3.9	-0.8	5.2	0.489	0.848	0.127	0.104	0.028	0.023
5	45.00	4.1	-0.8	5.8	0.498	0.844	0.132	0.109	0.029	0.024
6	47.50	4.1	-1.0	6.7	0.506	0.816	0.158	0.137	0.034	0.030
7	50.00	4.2	-0.9	7.7	0.512	0.821	0.154	0.134	0.033	0.029
8	52.50	4.3	-1.0	7.5	0.509	0.857	0.123	0.104	0.027	0.022
9	70.00	5.0	-1.2	10.2	0.502	0.923	0.074	0.066	0.016	0.014
10	90.00	5.6	-1.4	11.0	0.527	0.938	0.081	0.081	0.017	0.017
11	95.00	5.8	-1.5	9.2	0.536	0.965	0.051	0.051	0.011	0.011

TABLE VII. - Continued. BLADE ELEMENT DATA AT BLADE EDGES

FOR ROTOR 14

(h) Percent design speed, 90; reading number, 357

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	24.562	24.193	0.0	44.8	65.7	53.7	289.0	1.205	10.01	1.694
2	24.016	23.685	0.0	42.4	64.0	53.1	288.9	1.190	10.11	1.666
3	21.753	21.653	0.0	42.1	60.5	49.0	288.0	1.171	10.15	1.640
4	20.290	20.383	0.0	44.2	58.6	45.3	287.9	1.165	10.15	1.602
5	19.992	20.129	0.0	45.0	58.2	44.4	287.8	1.164	10.15	1.601
6	19.693	19.875	0.0	46.0	57.8	43.4	288.0	1.166	10.15	1.593
7	19.390	19.621	0.0	46.6	57.4	43.8	288.0	1.165	10.15	1.571
8	19.088	19.367	0.0	46.4	57.1	42.4	288.0	1.160	10.15	1.577
9	16.899	17.589	0.0	46.0	54.7	35.6	287.9	1.146	10.15	1.557
10	14.191	15.557	0.0	50.2	52.0	16.5	287.8	1.156	10.15	1.616
11	13.465	15.049	0.0	52.6	51.3	7.6	288.0	1.165	10.14	1.670

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	169.1	220.2	410.2	264.0	169.1	156.1	0.1	155.3	373.8	368.2
2	178.0	217.1	406.1	267.1	178.0	160.4	0.0	146.4	365.1	360.0
3	187.4	216.3	380.5	244.8	187.4	160.6	0.0	144.9	331.2	329.7
4	188.2	217.9	361.1	222.2	188.2	156.4	0.1	151.8	308.3	309.7
5	188.5	218.9	357.9	216.8	188.5	154.9	0.1	154.7	304.3	306.4
6	188.4	219.4	353.6	209.9	188.4	152.4	0.1	157.8	299.3	302.1
7	188.5	215.5	350.0	205.0	188.5	148.0	0.0	156.7	295.0	298.5
8	188.0	217.6	346.0	203.4	188.0	150.1	0.0	157.5	290.5	294.7
9	181.9	219.5	314.5	187.7	181.9	152.6	0.0	157.8	256.6	267.1
10	168.3	247.0	273.6	165.0	168.3	158.2	0.0	189.6	215.7	236.5
11	164.1	261.3	262.3	160.2	164.1	158.8	0.0	207.4	204.6	228.7

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID PEAK SS
RP	IN	OUT	IN	OUT	IN	OUT	VEL R MACH NO
1	0.509	0.610	1.235	0.732	0.509	0.433	0.923 1.458
2	0.537	0.605	1.226	0.745	0.537	0.447	0.901 1.434
3	0.568	0.609	1.154	0.689	0.568	0.452	0.857 1.428
4	0.571	0.616	1.096	0.628	0.571	0.442	0.831 1.418
5	0.572	0.619	1.086	0.613	0.572	0.438	0.822 1.417
6	0.572	0.620	1.073	0.593	0.572	0.431	0.809 1.413
7	0.572	0.608	1.062	0.579	0.572	0.418	0.785 1.412
8	0.570	0.616	1.050	0.576	0.570	0.425	0.798 1.411
9	0.551	0.626	0.952	0.535	0.551	0.435	0.839 1.356
10	0.508	0.709	0.825	0.474	0.508	0.454	0.940 1.162
11	0.494	0.751	0.790	0.460	0.494	0.456	0.968 1.094

	PERCENT	INCIDENCE		DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN	SS				TOT	PROF	TOT	PROF
1	5.00	3.9	1.2	3.3	0.498	0.793	0.190	0.142	0.043	0.032
2	10.00	3.5	0.5	3.3	0.474	0.827	0.152	0.109	0.034	0.024
3	30.00	4.6	0.5	3.9	0.485	0.889	0.098	0.064	0.022	0.014
4	42.50	5.2	0.4	4.7	0.518	0.876	0.114	0.088	0.025	0.019
5	45.00	5.3	0.4	4.9	0.529	0.876	0.115	0.090	0.026	0.020
6	47.50	5.4	0.3	5.0	0.544	0.856	0.137	0.113	0.030	0.025
7	50.00	5.4	0.3	6.6	0.551	0.837	0.156	0.134	0.034	0.029
8	52.50	5.6	0.3	6.5	0.549	0.870	0.124	0.103	0.027	0.023
9	70.00	6.3	0.1	10.6	0.539	0.922	0.080	0.072	0.017	0.016
10	90.00	6.9	-0.2	11.2	0.557	0.944	0.077	0.077	0.016	0.016
11	95.00	6.9	-0.3	9.3	0.564	0.958	0.064	0.064	0.013	0.013

TABLE VII. - Continued. BLADE ELEMENT DATA AT BLADE EDGES

FOR ROTOR 14

(i) Percent design speed, 90; reading number, 358

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	24.562	24.193	0.0	50.2	67.2	54.5	289.2	1.224	10.01	1.730
2	24.016	23.685	0.0	47.2	65.6	53.1	289.1	1.207	10.10	1.724
3	21.753	21.653	0.0	45.8	62.1	49.1	288.0	1.181	10.15	1.676
4	20.290	20.383	0.0	46.9	60.3	45.0	287.7	1.175	10.15	1.650
5	19.992	20.129	0.0	47.8	59.8	43.8	287.9	1.175	10.15	1.651
6	19.693	19.875	0.0	49.0	59.5	43.0	287.7	1.177	10.15	1.640
7	19.390	19.621	0.0	49.4	59.1	43.4	288.2	1.175	10.15	1.619
8	19.088	19.367	0.0	49.1	58.7	42.6	287.7	1.168	10.15	1.615
9	16.899	17.589	0.0	48.6	56.2	36.5	287.9	1.152	10.15	1.582
10	14.191	15.557	0.0	52.0	53.5	17.6	287.8	1.159	10.15	1.629
11	13.465	15.049	0.0	54.2	52.8	7.2	287.7	1.169	10.14	1.694

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	156.7	220.5	404.7	243.3	156.7	141.2	0.1	169.4	373.2	367.6
2	165.7	220.3	401.6	249.2	165.7	149.7	0.0	161.6	365.9	360.9
3	174.8	216.4	374.2	230.4	174.8	150.8	0.0	155.2	330.9	329.3
4	176.0	219.2	354.8	211.6	176.0	149.7	0.1	160.1	308.1	309.5
5	176.8	221.1	351.8	205.7	176.8	148.4	0.1	163.9	304.2	306.2
6	176.3	221.1	347.2	198.2	176.3	145.1	0.0	166.8	299.1	301.9
7	177.0	217.4	344.3	194.5	177.0	141.4	0.0	165.2	295.3	298.8
8	176.4	216.8	339.6	192.7	176.4	141.8	0.1	164.0	290.3	294.5
9	172.1	216.1	309.5	177.9	172.1	143.0	0.0	162.0	257.3	267.8
10	160.2	241.4	269.2	155.9	160.2	148.7	0.0	190.1	216.4	237.2
11	155.9	259.0	257.6	152.6	155.9	151.4	0.0	210.1	205.1	229.3

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID PEAK SS VEL R	MERID PEAK SS MACH NO
1	0.470	0.606	1.213	0.669	0.470	0.388	0.901	1.433
2	0.498	0.610	1.207	0.690	0.498	0.414	0.903	1.473
3	0.528	0.607	1.130	0.646	0.528	0.423	0.863	1.467
4	0.532	0.617	1.073	0.596	0.532	0.421	0.851	1.461
5	0.534	0.622	1.063	0.579	0.534	0.418	0.840	1.459
6	0.533	0.622	1.050	0.558	0.533	0.408	0.823	1.458
7	0.535	0.611	1.040	0.547	0.535	0.397	0.799	1.457
8	0.533	0.612	1.027	0.544	0.533	0.400	0.804	1.457
9	0.520	0.614	0.934	0.505	0.520	0.406	0.831	1.380
10	0.482	0.690	0.810	0.446	0.482	0.425	0.928	1.181
11	0.469	0.742	0.774	0.438	0.469	0.434	0.971	1.113

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D-FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	5.5	2.7	4.0	0.556	0.757	0.242	0.190	0.053	0.042
2	10.00	5.2	2.2	3.2	0.527	0.815	0.177	0.129	0.039	0.029
3	30.00	6.2	2.2	4.0	0.524	0.879	0.115	0.078	0.025	0.017
4	42.50	6.9	2.1	4.4	0.546	0.879	0.120	0.090	0.027	0.020
5	45.00	6.9	2.0	4.3	0.561	0.878	0.122	0.094	0.028	0.021
6	47.50	7.0	2.0	4.6	0.577	0.861	0.143	0.117	0.032	0.026
7	50.00	7.1	1.9	6.2	0.581	0.843	0.162	0.137	0.036	0.030
8	52.50	7.2	1.9	6.7	0.577	0.872	0.130	0.106	0.029	0.023
9	70.00	7.8	1.6	11.5	0.567	0.921	0.086	0.077	0.018	0.016
10	90.00	8.3	1.3	12.3	0.585	0.941	0.085	0.085	0.018	0.018
11	95.00	8.4	1.2	8.9	0.588	0.964	0.059	0.059	0.012	0.012

TABLE VII. - Continued. BLADE ELEMENT DATA AT BLADE EDGES

FOR ROTOR 14

(j) Percent design speed, 90; reading number, 359

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	24.562	24.193	0.0	56.9	68.9	55.5	289.4	1.249	10.02	1.759
2	24.016	23.685	0.0	51.5	67.3	53.7	289.4	1.223	10.10	1.737
3	21.753	21.653	0.0	48.0	63.7	49.2	288.0	1.191	10.15	1.697
4	20.290	20.383	0.0	48.8	61.9	45.0	287.8	1.182	10.15	1.676
5	19.992	20.129	0.0	49.8	61.5	44.1	288.0	1.182	10.15	1.671
6	19.693	19.875	0.0	51.0	61.1	43.2	287.9	1.184	10.15	1.662
7	19.390	19.621	0.0	51.5	60.7	43.7	287.6	1.180	10.15	1.638
8	19.088	19.367	0.0	51.1	60.4	42.9	287.9	1.175	10.15	1.634
9	16.899	17.589	0.0	50.6	57.9	36.8	287.7	1.157	10.15	1.597
10	14.191	15.557	0.0	53.3	55.2	17.6	287.5	1.162	10.15	1.646
11	13.465	15.049	0.0	55.2	54.4	7.5	287.6	1.171	10.15	1.699

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	144.3	225.4	400.8	217.8	144.3	123.2	0.0	188.8	374.0	368.4
2	153.2	221.1	396.3	232.6	153.2	137.6	0.1	173.0	365.5	360.5
3	163.9	217.2	369.7	222.6	163.9	145.4	0.1	161.4	331.5	329.9
4	165.1	219.8	350.2	205.0	165.1	144.9	0.0	165.3	308.9	310.3
5	165.6	220.7	346.7	198.3	165.6	142.4	0.0	168.7	304.7	306.8
6	165.5	221.2	342.4	190.8	165.5	139.1	0.1	172.0	299.8	302.6
7	165.5	216.9	338.3	186.8	165.5	135.1	0.0	169.6	295.2	298.7
8	165.3	216.8	334.4	185.5	165.3	136.0	0.0	168.8	290.7	295.9
9	161.7	215.0	304.0	170.3	161.7	136.4	0.1	166.1	257.5	268.1
10	150.4	239.4	263.5	150.1	150.4	143.1	0.0	191.9	216.4	237.3
11	146.7	255.8	252.2	147.1	146.7	145.8	0.0	210.1	205.2	229.3

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID PEAK SS	
RP	IN	OUT	IN	OUT	IN	OUT	VEL R	MACH NO
1	0.431	0.613	1.197	0.593	0.431	0.335	0.854	1.536
2	0.459	0.608	1.186	0.639	0.459	0.378	0.898	1.511
3	0.493	0.606	1.113	0.621	0.493	0.406	0.887	1.507
4	0.497	0.617	1.055	0.575	0.497	0.407	0.878	1.506
5	0.499	0.619	1.044	0.556	0.499	0.399	0.860	1.505
6	0.499	0.620	1.031	0.535	0.499	0.390	0.840	1.505
7	0.499	0.609	1.020	0.524	0.499	0.379	0.817	1.506
8	0.498	0.609	1.007	0.522	0.498	0.382	0.823	1.508
9	0.487	0.609	0.915	0.482	0.487	0.386	0.844	1.403
10	0.451	0.683	0.791	0.428	0.451	0.408	0.951	1.199
11	0.440	0.731	0.756	0.421	0.440	0.417	0.994	1.130

	PERCENT	INCIDENCE		DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN	SS				TOT	PROF	TOT	PROF
1	5.00	7.1	4.4	5.1	0.633	0.704	0.321	0.263	0.069	0.056
2	10.00	6.8	3.8	3.9	0.573	0.767	0.238	0.187	0.052	0.041
3	30.00	7.8	3.7	4.1	0.545	0.856	0.145	0.103	0.032	0.023
4	42.50	8.5	3.7	4.4	0.564	0.875	0.130	0.096	0.029	0.021
5	45.00	8.6	3.7	4.6	0.580	0.868	0.141	0.108	0.031	0.024
6	47.50	8.7	3.6	4.8	0.598	0.849	0.164	0.133	0.037	0.030
7	50.00	8.7	3.6	6.5	0.600	0.842	0.171	0.140	0.037	0.031
8	52.50	8.9	3.6	6.9	0.597	0.860	0.151	0.122	0.033	0.027
9	70.00	9.5	3.3	11.8	0.588	0.911	0.102	0.093	0.022	0.020
10	90.00	10.1	3.0	12.3	0.599	0.945	0.083	0.083	0.018	0.018
11	95.00	10.1	2.8	9.1	0.601	0.955	0.078	0.078	0.016	0.016

TABLE VII. - Continued. BLADE ELEMENT DATA AT BLADE EDGES

FOR ROTOR 14

(k) Percent design speed, 80; reading number, 364

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	24.562	24.193	0.0	55.7	70.4	55.2	290.5	1.187	10.06	1.533
2	24.016	23.685	0.0	49.8	68.9	53.9	289.5	1.168	10.12	1.516
3	21.753	21.653	0.0	48.2	65.8	51.2	287.8	1.143	10.14	1.471
4	20.290	20.383	0.0	49.8	64.1	47.0	287.7	1.139	10.14	1.461
5	19.992	20.129	0.0	50.5	63.7	46.7	287.2	1.137	10.14	1.454
6	19.693	19.875	0.0	51.5	63.4	46.8	287.8	1.137	10.14	1.441
7	19.390	19.621	0.0	53.0	63.1	46.0	287.7	1.137	10.14	1.438
8	19.088	19.367	0.0	53.1	62.7	44.9	287.5	1.136	10.14	1.436
9	16.899	17.589	0.0	49.7	60.2	35.5	287.6	1.123	10.14	1.446
10	14.191	15.557	0.0	51.7	57.3	17.3	287.6	1.126	10.14	1.483
11	13.465	15.049	0.0	53.6	56.6	8.6	287.6	1.131	10.14	1.512

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	118.0	199.2	351.5	196.9	118.0	112.3	0.0	164.5	331.1	326.2
2	125.0	193.9	347.1	212.1	125.0	125.1	0.0	148.1	323.9	319.4
3	131.6	185.5	321.3	197.0	131.6	123.5	0.0	138.3	293.2	291.8
4	132.7	188.6	303.8	178.4	132.7	121.7	0.0	144.1	273.3	274.6
5	132.9	187.6	300.4	173.9	132.9	119.3	0.0	144.7	269.4	271.3
6	133.1	185.3	297.0	168.6	133.1	115.4	0.0	145.0	265.5	268.0
7	132.8	186.3	293.5	161.4	132.8	112.1	0.0	148.7	261.7	264.9
8	132.9	186.7	289.5	158.1	132.9	112.0	0.0	149.4	257.2	261.0
9	130.4	193.7	262.4	153.9	130.4	125.3	0.0	147.7	227.7	237.1
10	122.8	214.7	227.5	139.2	122.8	132.9	0.0	168.6	191.5	209.9
11	119.7	226.7	217.3	136.1	119.7	134.6	0.0	182.4	181.4	202.7

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID PEAK SS
RP	IN	OUT	IN	OUT	IN	OUT	VEL R MACH NO
1	0.350	0.551	1.041	0.545	0.350	0.311	0.952 1.481
2	0.371	0.541	1.032	0.592	0.371	0.349	1.001 1.466
3	0.393	0.524	0.959	0.556	0.393	0.349	0.938 1.463
4	0.396	0.534	0.907	0.506	0.396	0.345	0.917 1.417
5	0.397	0.532	0.898	0.493	0.397	0.338	0.898 1.408
6	0.397	0.525	0.887	0.478	0.397	0.327	0.867 1.396
7	0.397	0.528	0.877	0.458	0.397	0.318	0.844 1.387
8	0.397	0.530	0.865	0.449	0.397	0.318	0.843 1.372
9	0.389	0.554	0.784	0.440	0.389	0.358	0.961 1.263
10	0.366	0.617	0.678	0.400	0.366	0.382	1.083 1.077
11	0.357	0.653	0.647	0.392	0.357	0.388	1.124 1.014

	PERCENT	INCIDENCE		DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN	SS				TOT	PROF	TOT	PROF
1	5.00	8.6	5.9	4.7	0.615	0.697	0.311	0.282	0.067	0.061
2	10.00	8.4	5.5	4.0	0.545	0.752	0.239	0.213	0.052	0.046
3	30.00	9.9	5.9	6.1	0.532	0.814	0.177	0.158	0.037	0.033
4	42.50	10.7	5.9	6.4	0.563	0.822	0.180	0.170	0.039	0.037
5	45.00	10.8	5.9	7.1	0.572	0.821	0.182	0.173	0.039	0.037
6	47.50	10.9	5.9	8.4	0.583	0.803	0.203	0.196	0.043	0.041
7	50.00	11.1	5.9	8.8	0.604	0.800	0.210	0.204	0.044	0.043
8	52.50	11.2	5.9	9.0	0.609	0.799	0.214	0.209	0.045	0.044
9	70.00	11.8	5.6	10.5	0.566	0.902	0.114	0.114	0.025	0.025
10	90.00	12.2	5.1	12.0	0.560	0.945	0.085	0.085	0.018	0.018
11	95.00	12.2	5.0	10.2	0.560	0.954	0.079	0.079	0.016	0.016

TABLE VII. - Continued. BLADE ELEMENT DATA AT BLADE EDGES

FOR ROTOR 14

(*l*) Percent design speed, 70; reading number, 366

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	24.562	24.193	0.0	27.5	64.4	53.9	288.5	1.081	10.05	1.263
2	24.016	23.685	0.0	26.8	62.7	53.2	288.4	1.077	10.12	1.257
3	21.753	21.653	0.0	27.7	59.3	50.2	288.1	1.072	10.14	1.251
4	20.290	20.383	0.0	30.8	57.4	46.7	288.1	1.073	10.14	1.241
5	19.992	20.129	0.0	31.9	57.0	45.5	288.0	1.074	10.14	1.244
6	19.693	19.875	0.0	33.5	56.6	44.3	288.1	1.077	10.14	1.244
7	19.390	19.621	0.0	34.7	56.3	43.6	287.8	1.078	10.14	1.239
8	19.088	19.367	0.0	34.6	56.0	42.5	287.9	1.077	10.14	1.243
9	16.899	17.589	0.0	35.5	53.5	34.5	288.1	1.076	10.14	1.266
10	14.191	15.557	0.0	42.0	50.5	16.7	288.0	1.085	10.14	1.318
11	13.465	15.049	0.0	44.3	49.6	11.0	288.0	1.090	10.14	1.334

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	138.9	169.7	320.9	255.8	138.9	150.6	0.0	78.3	289.3	285.0
2	146.3	169.9	318.8	253.2	146.3	151.6	0.0	76.6	283.2	279.3
3	152.7	167.8	299.3	232.0	152.7	148.6	0.0	78.0	257.4	256.3
4	153.1	168.6	283.9	211.4	153.1	144.8	0.0	86.3	239.2	240.3
5	153.1	170.5	281.1	206.4	153.1	144.7	0.0	90.2	235.8	237.5
6	152.7	171.5	277.7	199.7	152.7	143.0	0.0	94.7	231.9	234.1
7	152.5	171.1	274.9	194.4	152.5	140.7	0.0	97.3	228.8	231.5
8	151.9	172.5	271.3	192.7	151.9	142.0	0.0	97.9	224.8	228.1
9	147.7	182.0	248.1	179.7	147.7	148.1	0.0	105.8	199.4	207.5
10	138.1	205.9	217.1	159.7	138.1	153.0	0.0	137.8	167.5	183.6
11	135.0	211.6	208.1	154.3	135.0	151.5	0.0	147.7	158.4	177.1

	ABS MACH NO		REL MACH NO		MERID MACH NO			
RP	IN	OUT	IN	OUT	IN	OUT	MERID PEAK SS VEL R	MACH NO
1	0.415	0.491	0.959	0.740	0.415	0.435	1.084	1.202
2	0.438	0.492	0.954	0.734	0.438	0.439	1.037	1.178
3	0.458	0.487	0.898	0.674	0.458	0.432	0.973	1.167
4	0.459	0.490	0.852	0.614	0.459	0.421	0.946	1.134
5	0.459	0.495	0.844	0.600	0.459	0.420	0.945	1.128
6	0.458	0.498	0.833	0.579	0.458	0.415	0.937	1.118
7	0.458	0.496	0.825	0.564	0.458	0.408	0.923	1.113
8	0.456	0.501	0.814	0.560	0.456	0.412	0.935	1.103
9	0.443	0.530	0.743	0.523	0.443	0.431	1.003	1.027
10	0.413	0.602	0.649	0.467	0.413	0.447	1.108	0.879
11	0.403	0.618	0.622	0.451	0.403	0.443	1.122	0.824

	PERCENT	INCIDENCE		DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN	SS				TOT	PROF	TOT	PROF
1	5.00	2.6	-0.1	3.4	0.294	0.849	0.087	0.085	0.019	0.019
2	10.00	2.2	-0.8	3.4	0.294	0.872	0.071	0.070	0.016	0.016
3	30.00	3.4	-0.6	5.1	0.312	0.917	0.048	0.048	0.010	0.010
4	42.50	4.0	-0.8	6.1	0.352	0.873	0.079	0.079	0.017	0.017
5	45.00	4.1	-0.8	6.0	0.366	0.869	0.084	0.084	0.018	0.018
6	47.50	4.2	-0.8	5.9	0.386	0.835	0.112	0.112	0.025	0.025
7	50.00	4.3	-0.8	6.4	0.401	0.811	0.132	0.132	0.029	0.029
8	52.50	4.4	-0.9	6.6	0.398	0.835	0.116	0.116	0.025	0.025
9	70.00	5.1	-1.2	9.5	0.391	0.915	0.070	0.070	0.015	0.015
10	90.00	5.4	-1.7	11.4	0.411	0.963	0.042	0.042	0.009	0.009
11	95.00	5.2	-2.0	12.6	0.416	0.954	0.060	0.060	0.012	0.012

TABLE VII. - Continued. BLADE ELEMENT DATA AT BLADE EDGES

FOR ROTOR 14

(m) Percent design speed, 70; reading number, 367

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	24.562	24.193	0.0	31.9	65.4	54.0	288.4	1.093	10.06	1.301
2	24.016	23.685	0.0	30.9	63.7	53.3	288.3	1.088	10.13	1.292
3	21.753	21.653	0.0	32.2	60.4	49.9	288.1	1.081	10.14	1.283
4	20.290	20.383	0.0	34.6	58.6	46.4	288.1	1.081	10.14	1.274
5	19.992	20.129	0.0	35.7	58.3	45.1	287.8	1.081	10.14	1.278
6	19.693	19.875	0.0	37.0	57.9	43.7	288.1	1.085	10.14	1.280
7	19.390	19.621	0.0	38.4	57.6	43.4	288.1	1.085	10.14	1.270
8	19.088	19.367	0.0	37.8	57.2	42.6	288.2	1.083	10.14	1.273
9	16.899	17.589	0.0	38.3	54.8	33.8	288.0	1.082	10.14	1.293
10	14.191	15.557	0.0	44.3	51.8	16.6	288.0	1.089	10.14	1.327
11	13.465	15.049	0.0	46.6	51.2	9.9	287.9	1.093	10.14	1.351

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	132.2	167.8	317.7	242.2	132.2	142.4	0.0	88.7	288.9	284.6
2	139.9	167.7	315.6	240.7	139.9	143.9	0.0	86.2	282.9	279.0
3	145.7	166.0	294.8	217.9	145.7	140.4	0.0	88.5	256.3	255.2
4	145.6	167.4	279.6	199.8	145.6	137.8	0.0	95.1	238.7	239.8
5	145.1	169.5	276.3	194.9	145.1	137.7	0.0	98.8	235.2	236.8
6	145.2	171.3	273.4	189.2	145.2	136.8	0.0	103.1	231.7	233.8
7	144.7	169.2	269.8	182.3	144.7	132.5	0.0	105.2	227.7	230.4
8	144.7	170.4	267.3	182.9	144.7	134.7	0.0	104.3	224.8	228.1
9	140.3	180.6	243.3	170.5	140.3	141.7	0.0	112.0	198.8	206.9
10	131.0	200.3	212.0	149.6	131.0	143.4	0.0	139.9	166.7	182.8
11	127.3	208.8	203.1	145.6	127.3	143.4	0.0	151.8	158.3	177.0

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID PEAK SS
RP	IN	OUT	IN	OUT	IN	OUT	VEL R MACH NO
1	0.394	0.482	0.948	0.696	0.394	0.409	1.077 1.228
2	0.418	0.483	0.943	0.693	0.418	0.415	1.029 1.201
3	0.436	0.480	0.883	0.630	0.436	0.406	0.964 1.181
4	0.436	0.484	0.837	0.578	0.436	0.399	0.946 1.151
5	0.435	0.491	0.828	0.564	0.435	0.399	0.949 1.145
6	0.435	0.495	0.819	0.547	0.435	0.395	0.942 1.136
7	0.433	0.489	0.808	0.527	0.433	0.383	0.916 1.125
8	0.433	0.493	0.800	0.529	0.433	0.390	0.931 1.120
9	0.420	0.524	0.728	0.495	0.420	0.411	1.009 1.039
10	0.391	0.583	0.633	0.436	0.391	0.417	1.094 0.887
11	0.380	0.609	0.606	0.424	0.380	0.418	1.127 0.838

	PERCENT	INCIDENCE		DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN	SS				TOT	PROF	TOT	PROF
1	5.00	3.6	0.9	3.5	0.342	0.834	0.109	0.108	0.024	0.024
2	10.00	3.2	0.2	3.4	0.338	0.862	0.088	0.087	0.019	0.019
3	30.00	4.5	0.4	4.8	0.362	0.917	0.054	0.054	0.012	0.012
4	42.50	5.2	0.5	5.8	0.393	0.889	0.078	0.078	0.017	0.017
5	45.00	5.4	0.5	5.5	0.406	0.894	0.077	0.077	0.017	0.017
6	47.50	5.5	0.5	5.3	0.424	0.864	0.104	0.104	0.023	0.023
7	50.00	5.6	0.4	6.2	0.443	0.831	0.131	0.131	0.029	0.029
8	52.50	5.7	0.4	6.6	0.433	0.863	0.106	0.106	0.023	0.023
9	70.00	6.4	0.2	8.9	0.423	0.931	0.063	0.063	0.014	0.014
10	90.00	6.7	-0.4	11.4	0.447	0.949	0.063	0.063	0.013	0.013
11	95.00	6.9	-0.4	11.6	0.449	0.963	0.052	0.052	0.011	0.011

TABLE VII. - Continued. BLADE ELEMENT DATA AT BLADE EDGES

FOR ROTOR 14

(n) Percent design speed, 70; reading number, 368

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	24.562	24.193	0.0	38.7	67.0	54.4	288.4	1.108	10.06	1.334
2	24.016	23.685	0.0	36.7	65.6	53.1	288.4	1.101	10.11	1.335
3	21.753	21.653	0.0	37.8	62.4	50.1	288.1	1.092	10.13	1.316
4	20.290	20.383	0.0	40.0	60.7	46.2	288.1	1.090	10.25	1.310
5	19.992	20.129	0.0	40.7	60.3	45.0	287.9	1.090	10.13	1.310
6	19.693	19.875	0.0	41.8	60.0	43.8	288.2	1.092	10.13	1.311
7	19.390	19.621	0.0	43.4	59.7	44.0	287.9	1.092	10.13	1.297
8	19.088	19.367	0.0	42.8	59.4	43.5	288.1	1.090	10.13	1.296
9	16.899	17.589	0.0	42.6	57.0	34.5	288.0	1.087	10.13	1.310
10	14.191	15.557	0.0	47.4	54.1	16.7	288.0	1.091	10.13	1.339
11	13.465	15.049	0.0	49.4	53.4	9.4	288.0	1.097	10.13	1.362

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	122.6	165.8	313.5	222.2	122.6	129.4	0.0	103.7	288.6	284.3
2	128.3	167.3	310.2	223.3	128.3	134.1	0.0	100.0	282.4	278.5
3	133.9	163.3	288.6	201.2	133.9	129.0	0.0	100.2	255.7	254.5
4	134.0	166.2	273.4	183.8	134.0	127.3	0.0	106.9	238.4	239.5
5	133.4	167.2	269.4	179.2	133.4	126.8	0.0	109.0	234.1	235.7
6	133.7	168.8	267.0	174.5	133.7	125.9	0.0	112.4	231.1	233.3
7	133.1	165.7	263.6	167.3	133.1	120.3	0.0	113.9	227.5	230.2
8	132.6	165.3	260.6	167.3	132.6	121.3	0.0	112.4	224.3	227.6
9	128.8	174.7	236.7	156.1	128.8	128.6	0.0	118.2	198.5	206.7
10	120.5	194.4	205.6	137.4	120.5	131.6	0.0	143.1	166.6	182.6
11	117.8	204.2	197.4	134.6	117.8	132.8	0.0	155.1	158.4	177.1

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID PEAK SS VEL R	MERID PEAK SS MACH NO
1	0.365	0.473	0.933	0.634	0.365	0.369	1.055	1.269
2	0.382	0.479	0.924	0.639	0.382	0.384	1.045	1.249
3	0.400	0.469	0.862	0.578	0.400	0.371	0.963	1.212
4	0.400	0.478	0.816	0.529	0.400	0.366	0.950	1.180
5	0.398	0.481	0.805	0.516	0.398	0.365	0.950	1.168
6	0.399	0.486	0.797	0.502	0.399	0.362	0.942	1.161
7	0.398	0.477	0.787	0.481	0.398	0.346	0.903	1.153
8	0.396	0.476	0.778	0.482	0.396	0.349	0.915	1.147
9	0.384	0.505	0.706	0.451	0.384	0.372	0.998	1.062
10	0.359	0.564	0.612	0.399	0.359	0.382	1.092	0.906
11	0.351	0.593	0.587	0.391	0.351	0.385	1.127	0.856

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D-FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	5.2	2.5	3.9	0.415	0.796	0.156	0.154	0.034	0.034
2	10.00	5.1	2.1	3.2	0.398	0.848	0.113	0.111	0.025	0.025
3	30.00	6.5	2.4	5.0	0.420	0.889	0.084	0.083	0.018	0.018
4	42.50	7.3	2.5	5.6	0.452	0.887	0.092	0.092	0.020	0.020
5	45.00	7.4	2.5	5.5	0.461	0.887	0.094	0.094	0.021	0.021
6	47.50	7.5	2.5	5.4	0.476	0.873	0.109	0.109	0.024	0.024
7	50.00	7.7	2.5	6.8	0.497	0.837	0.142	0.142	0.031	0.031
8	52.50	7.9	2.6	7.6	0.487	0.856	0.125	0.125	0.027	0.027
9	70.00	8.6	2.4	9.5	0.476	0.925	0.075	0.075	0.016	0.016
10	90.00	9.0	1.9	11.4	0.493	0.951	0.066	0.066	0.014	0.014
11	95.00	9.0	1.8	11.0	0.492	0.953	0.071	0.071	0.015	0.015

TABLE VII. - Continued. BLADE ELEMENT DATA AT BLADE EDGES

FOR ROTOR 14

(o) Percent design speed, 70; reading number, 369

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	24.562	24.193	0.0	43.1	68.5	55.0	288.4	1.116	10.05	1.350
2	24.016	23.685	0.0	40.6	67.0	53.2	288.3	1.110	10.11	1.353
3	21.753	21.653	0.0	41.9	64.0	50.6	288.1	1.098	10.23	1.329
4	20.290	20.383	0.0	43.6	62.3	46.1	288.1	1.097	10.12	1.328
5	19.992	20.129	0.0	44.4	62.0	45.2	288.1	1.097	10.12	1.326
6	19.693	19.875	0.0	45.5	61.6	44.4	287.9	1.097	10.12	1.321
7	19.390	19.621	0.0	46.9	61.4	44.4	287.9	1.097	10.12	1.310
8	19.088	19.367	0.0	46.6	61.0	43.2	288.2	1.096	10.11	1.311
9	16.899	17.589	0.0	45.0	58.6	35.4	288.1	1.088	10.12	1.316
10	14.191	15.557	0.0	49.3	55.8	16.7	288.0	1.093	10.12	1.345
11	13.465	15.049	0.0	51.2	55.0	9.1	288.0	1.097	10.11	1.366

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	113.5	164.4	309.8	209.5	113.5	120.1	0.0	112.3	288.3	283.9
2	120.0	166.9	306.4	211.6	120.0	126.7	0.0	108.6	282.0	278.1
3	124.8	161.7	284.4	189.6	124.8	120.4	0.0	108.0	255.6	254.5
4	125.2	166.4	269.6	173.8	125.2	120.5	0.0	114.8	238.9	240.0
5	124.9	166.8	266.3	169.2	124.9	119.2	0.0	116.7	235.2	236.8
6	124.7	166.7	262.6	163.4	124.7	116.8	0.0	118.9	231.1	233.2
7	124.1	164.6	259.2	157.3	124.1	112.5	0.0	120.3	227.6	230.3
8	124.0	165.5	255.9	156.2	124.0	113.8	0.0	120.2	223.9	227.2
9	121.1	171.0	232.8	148.3	121.1	120.9	0.0	121.0	198.8	206.9
10	113.4	191.7	201.7	130.5	113.4	125.0	0.0	145.4	166.8	182.8
11	110.9	201.1	193.2	127.6	110.9	126.0	0.0	156.7	158.2	176.8

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID PEAK SS VEL R	MERID PEAK SS MACH NO
1	0.337	0.467	0.920	0.595	0.337	0.341	1.058	1.292
2	0.357	0.476	0.912	0.603	0.357	0.361	1.056	1.268
3	0.372	0.463	0.847	0.543	0.372	0.345	0.965	1.240
4	0.373	0.477	0.803	0.499	0.373	0.346	0.963	1.207
5	0.372	0.479	0.793	0.486	0.372	0.342	0.955	1.198
6	0.372	0.478	0.783	0.469	0.372	0.335	0.937	1.186
7	0.370	0.472	0.772	0.451	0.370	0.323	0.906	1.177
8	0.369	0.475	0.762	0.448	0.369	0.327	0.918	1.165
9	0.361	0.494	0.693	0.428	0.361	0.349	0.998	1.080
10	0.337	0.556	0.600	0.378	0.337	0.362	1.102	0.921
11	0.329	0.583	0.574	0.370	0.329	0.365	1.137	0.868

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D-FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	6.7	4.0	4.5	0.460	0.771	0.189	0.186	0.041	0.040
2	10.00	6.5	3.5	3.4	0.439	0.822	0.143	0.141	0.032	0.031
3	30.00	8.1	4.0	5.5	0.461	0.860	0.115	0.114	0.025	0.024
4	42.50	8.9	4.2	5.5	0.490	0.867	0.118	0.118	0.026	0.026
5	45.00	9.1	4.2	5.7	0.501	0.861	0.126	0.126	0.028	0.028
6	47.50	9.2	4.2	6.0	0.517	0.852	0.136	0.136	0.030	0.030
7	50.00	9.4	4.2	7.2	0.534	0.829	0.160	0.160	0.035	0.035
8	52.50	9.5	4.2	7.3	0.531	0.841	0.151	0.151	0.033	0.033
9	70.00	10.2	4.0	10.4	0.503	0.929	0.074	0.074	0.016	0.016
10	90.00	10.6	3.5	11.4	0.520	0.951	0.070	0.070	0.015	0.015
11	95.00	10.6	3.4	10.7	0.519	0.958	0.067	0.067	0.014	0.014

TABLE VII. - Continued. BLADE ELEMENT DATA AT BLADE EDGES

FOR ROTOR 14

(p) Percent design speed, 70; reading number, 370

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	24.562	24.193	0.0	51.6	70.6	56.2	288.5	1.133	10.07	1.364
2	24.016	23.685	0.0	47.4	68.8	54.6	288.3	1.123	10.13	1.356
3	21.753	21.653	0.0	45.2	66.0	50.9	288.1	1.105	10.14	1.339
4	20.290	20.383	0.0	47.0	64.3	46.2	288.1	1.103	10.14	1.339
5	19.992	20.129	0.0	47.9	64.0	45.9	288.1	1.102	10.14	1.333
6	19.693	19.875	0.0	48.7	63.7	45.4	287.9	1.101	10.14	1.327
7	19.390	19.621	0.0	50.1	63.3	44.8	288.1	1.102	10.14	1.323
8	19.088	19.367	0.0	50.0	63.0	43.6	288.1	1.102	10.14	1.323
9	16.899	17.589	0.0	47.0	60.5	36.2	288.1	1.092	10.14	1.322
10	14.191	15.557	0.0	50.9	57.5	17.5	288.0	1.094	10.14	1.348
11	13.465	15.049	0.0	52.7	56.7	9.2	288.0	1.099	10.14	1.370

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	101.6	166.4	306.2	185.5	101.6	103.3	0.0	130.5	288.9	284.6
2	109.4	165.0	303.1	193.1	109.4	111.8	0.0	121.4	282.7	278.8
3	113.9	161.5	279.9	180.2	113.9	113.7	0.0	114.7	255.6	254.5
4	114.8	166.3	264.8	163.9	114.8	113.5	0.0	121.6	238.7	239.8
5	114.6	165.2	261.6	159.2	114.6	110.9	0.0	122.5	235.2	236.8
6	114.5	164.3	258.1	154.4	114.5	108.3	0.0	123.5	231.4	233.5
7	114.7	164.5	255.3	148.7	114.7	105.6	0.0	126.2	228.1	230.9
8	114.7	165.4	252.2	146.7	114.7	106.2	0.0	126.8	224.6	227.9
9	112.5	168.5	228.6	142.4	112.5	114.9	0.0	123.2	199.1	207.2
10	106.4	187.8	198.1	124.1	106.4	118.4	0.0	145.8	167.1	183.2
11	104.0	198.5	189.6	121.8	104.0	120.3	0.0	157.8	158.6	177.3

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID PEAK SS VEL R	MERID PEAK SS MACH NO
1	0.301	0.469	0.907	0.523	0.301	0.291	1.017	1.340
2	0.325	0.467	0.900	0.547	0.325	0.317	1.022	1.315
3	0.339	0.461	0.832	0.514	0.339	0.325	0.998	1.273
4	0.341	0.476	0.787	0.469	0.341	0.325	0.988	1.236
5	0.341	0.473	0.778	0.456	0.341	0.317	0.968	1.227
6	0.340	0.470	0.768	0.442	0.340	0.310	0.946	1.216
7	0.341	0.471	0.759	0.425	0.341	0.302	0.920	1.206
8	0.341	0.473	0.750	0.420	0.341	0.304	0.926	1.196
9	0.334	0.485	0.679	0.410	0.334	0.331	1.022	1.103
10	0.316	0.543	0.588	0.359	0.316	0.342	1.113	0.938
11	0.309	0.575	0.563	0.353	0.309	0.348	1.156	0.885

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D-FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	8.9	6.2	5.7	0.554	0.694	0.288	0.283	0.060	0.059
2	10.00	8.4	5.4	4.8	0.510	0.741	0.231	0.228	0.049	0.049
3	30.00	10.1	6.0	5.8	0.494	0.831	0.150	0.149	0.032	0.032
4	42.50	10.9	6.2	5.6	0.526	0.847	0.146	0.146	0.032	0.032
5	45.00	11.1	6.2	6.3	0.538	0.836	0.159	0.159	0.035	0.035
6	47.50	11.2	6.2	7.0	0.549	0.829	0.168	0.168	0.036	0.036
7	50.00	11.3	6.2	7.6	0.568	0.819	0.182	0.182	0.039	0.039
8	52.50	11.4	6.1	7.7	0.569	0.819	0.185	0.185	0.040	0.040
9	70.00	12.1	5.9	11.2	0.523	0.903	0.108	0.108	0.023	0.023
10	90.00	12.4	5.3	12.3	0.544	0.943	0.085	0.085	0.018	0.018
11	95.00	12.4	5.1	10.8	0.542	0.952	0.081	0.081	0.017	0.017

TABLE VII. - Continued. BLADE ELEMENT DATA AT BLADE EDGES

FOR ROTOR 14

(q) Percent design speed, 60; reading number, 373

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	24.562	24.193	0.0	58.5	72.0	57.1	288.5	1.107	10.09	1.268
2	24.016	23.685	0.0	52.7	70.4	56.1	288.4	1.097	10.13	1.253
3	21.753	21.653	0.0	46.5	67.5	51.3	288.1	1.078	10.13	1.242
4	20.290	20.383	0.0	47.5	65.9	46.6	288.1	1.076	10.14	1.243
5	19.992	20.129	0.0	48.4	65.5	46.0	288.1	1.076	10.14	1.240
6	19.693	19.875	0.0	49.4	65.2	45.8	288.1	1.075	10.14	1.234
7	19.390	19.621	0.0	50.7	64.8	45.1	288.1	1.075	10.14	1.231
8	19.088	19.367	0.0	51.2	64.4	44.0	288.1	1.075	10.14	1.229
9	16.899	17.589	0.0	48.7	62.0	34.9	288.0	1.069	10.14	1.235
10	14.191	15.557	0.0	50.9	59.0	17.1	288.0	1.070	10.14	1.253
11	13.465	15.049	0.0	52.4	58.3	9.3	288.0	1.073	10.13	1.266

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	80.8	147.0	260.9	141.7	80.8	76.9	0.0	125.3	248.1	244.3
2	86.5	140.7	257.2	153.0	86.5	85.3	0.0	111.9	242.3	238.9
3	90.9	137.9	237.4	151.6	90.9	94.9	0.0	100.1	219.3	218.3
4	91.6	141.9	224.5	139.4	91.6	95.8	0.0	104.6	205.0	205.9
5	91.8	141.7	221.7	135.2	91.8	94.0	0.0	106.0	201.8	203.1
6	91.9	140.2	218.7	131.0	91.9	91.3	0.0	106.4	198.5	200.3
7	91.9	140.1	215.8	125.7	91.9	88.7	0.0	108.5	195.3	197.6
8	91.6	140.5	212.4	122.4	91.6	88.1	0.0	109.4	191.6	194.4
9	90.6	146.2	192.8	117.6	90.6	96.4	0.0	109.9	170.2	177.1
10	86.1	161.9	167.1	106.9	86.1	102.2	0.0	125.6	143.2	157.3
11	84.0	170.0	159.7	105.0	84.0	103.6	0.0	134.8	135.9	151.9

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID PEAK SS VEL R	MERID PEAK SS MACH NO
1	0.239	0.417	0.770	0.402	0.239	0.218	0.952	1.173
2	0.256	0.401	0.761	0.436	0.256	0.243	0.986	1.146
3	0.269	0.396	0.703	0.436	0.269	0.273	1.044	1.112
4	0.271	0.409	0.665	0.402	0.271	0.276	1.046	1.079
5	0.272	0.408	0.656	0.389	0.272	0.271	1.024	1.068
6	0.272	0.404	0.648	0.377	0.272	0.263	0.994	1.058
7	0.272	0.404	0.639	0.362	0.272	0.255	0.965	1.048
8	0.271	0.405	0.629	0.353	0.271	0.254	0.962	1.034
9	0.268	0.423	0.571	0.340	0.268	0.279	1.064	0.954
10	0.255	0.470	0.494	0.310	0.255	0.297	1.186	0.812
11	0.249	0.494	0.472	0.305	0.249	0.301	1.233	0.767

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D-FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	10.2	7.5	6.6	0.637	0.654	0.343	0.343	0.070	0.070
2	10.00	9.9	6.9	6.3	0.565	0.685	0.293	0.293	0.060	0.060
3	30.00	11.6	7.5	6.2	0.503	0.820	0.159	0.159	0.033	0.033
4	42.50	12.5	7.8	6.0	0.526	0.840	0.153	0.153	0.033	0.033
5	45.00	12.6	7.7	6.4	0.540	0.835	0.160	0.160	0.035	0.035
6	47.50	12.7	7.7	7.4	0.551	0.825	0.172	0.172	0.037	0.037
7	50.00	12.8	7.7	7.9	0.570	0.814	0.188	0.188	0.040	0.040
8	52.50	12.9	7.6	8.0	0.578	0.813	0.192	0.192	0.041	0.041
9	70.00	13.6	7.3	9.9	0.544	0.899	0.116	0.116	0.025	0.025
10	90.00	13.8	6.7	11.8	0.534	0.955	0.068	0.068	0.014	0.014
11	95.00	13.9	6.6	11.0	0.529	0.956	0.076	0.076	0.016	0.016

TABLE VII. - Concluded. BLADE ELEMENT DATA AT BLADE EDGES

FOR ROTOR 14

(r) Percent design speed, 50; reading number, 375

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	24.562	24.193	0.0	53.4	71.4	57.1	288.7	1.068	10.11	1.173
2	24.016	23.685	0.0	47.6	70.0	55.1	288.4	1.063	10.13	1.171
3	21.753	21.653	0.0	44.6	67.2	50.9	288.1	1.054	10.13	1.165
4	20.290	20.383	0.0	45.8	65.7	46.6	288.1	1.052	10.13	1.165
5	19.992	20.129	0.0	46.7	65.3	46.3	288.3	1.052	10.14	1.162
6	19.693	19.875	0.0	47.8	65.1	45.9	288.0	1.052	10.13	1.160
7	19.390	19.621	0.0	49.1	64.7	45.3	288.0	1.052	10.13	1.157
8	19.088	19.367	0.0	49.3	64.3	44.2	288.0	1.052	10.13	1.157
9	16.899	17.589	0.0	48.3	61.8	34.9	288.0	1.048	10.13	1.160
10	14.191	15.557	0.0	50.7	58.9	17.9	287.9	1.048	10.13	1.169
11	13.465	15.049	0.0	51.8	58.2	11.6	287.9	1.050	10.13	1.174

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	69.7	118.1	218.3	129.7	69.7	70.4	0.0	94.8	206.9	203.8
2	73.6	117.1	215.6	138.1	73.6	78.9	0.0	86.5	202.7	199.9
3	77.1	115.8	199.1	130.7	77.1	82.4	0.0	81.3	183.5	182.7
4	77.3	118.3	188.0	120.1	77.3	82.5	0.0	84.9	171.4	172.1
5	77.7	117.7	186.0	116.8	77.7	80.7	0.0	85.7	169.0	170.2
6	77.7	117.5	184.2	113.5	77.7	78.9	0.0	87.1	167.1	168.6
7	77.4	116.8	181.0	108.7	77.4	76.4	0.0	88.4	163.7	165.6
8	77.5	117.5	178.9	107.0	77.5	76.7	0.0	89.0	161.3	163.7
9	76.3	122.7	161.8	99.4	76.3	81.5	0.0	91.7	142.6	148.5
10	72.2	134.4	140.0	89.5	72.2	85.2	0.0	104.0	119.9	131.5
11	70.6	139.5	134.0	88.1	70.6	86.3	0.0	109.6	113.9	127.3

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID PEAK SS
RP	IN	OUT	IN	OUT	IN	OUT	VEL R MACH NO
1	0.205	0.339	0.644	0.373	0.205	0.202	1.010 0.967
2	0.217	0.337	0.636	0.398	0.217	0.227	1.073 0.952
3	0.228	0.335	0.588	0.378	0.228	0.239	1.069 0.925
4	0.228	0.343	0.555	0.348	0.228	0.239	1.067 0.898
5	0.229	0.341	0.549	0.338	0.229	0.234	1.038 0.893
6	0.229	0.341	0.544	0.329	0.229	0.229	1.017 0.888
7	0.229	0.339	0.535	0.315	0.229	0.222	0.987 0.875
8	0.229	0.341	0.529	0.310	0.229	0.222	0.990 0.868
9	0.226	0.357	0.478	0.289	0.226	0.237	1.068 0.797
10	0.213	0.392	0.413	0.261	0.213	0.248	1.179 0.679
11	0.208	0.407	0.396	0.257	0.208	0.252	1.223 0.642

	PERCENT	INCIDENCE		DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN	SS				TOT	PROF	TOT	PROF
1	5.00	9.6	6.9	6.7	0.568	0.687	0.278	0.278	0.057	0.057
2	10.00	9.6	6.6	5.3	0.507	0.730	0.230	0.230	0.049	0.049
3	30.00	11.3	7.2	5.8	0.481	0.831	0.143	0.143	0.030	0.030
4	42.50	12.3	7.6	6.0	0.504	0.852	0.135	0.135	0.029	0.029
5	45.00	12.4	7.5	6.8	0.516	0.837	0.152	0.152	0.033	0.033
6	47.50	12.6	7.6	7.5	0.530	0.839	0.151	0.151	0.032	0.032
7	50.00	12.7	7.5	8.1	0.548	0.821	0.173	0.173	0.037	0.037
8	52.50	12.8	7.5	8.3	0.551	0.824	0.173	0.173	0.037	0.037
9	70.00	13.4	7.2	9.9	0.539	0.901	0.110	0.110	0.024	0.024
10	90.00	13.8	6.7	12.6	0.533	0.946	0.080	0.080	0.017	0.017
11	95.00	13.8	6.6	13.3	0.523	0.942	0.096	0.096	0.020	0.020

TABLE VIII. - BLADE ELEMENT DATA AT BLADE EDGES

FOR STATOR 10

(a) Percent design speed, 100; reading number, 350

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	23.942	23.945	38.2	4.8	38.2	4.8	354.8	0.995	17.35	0.936
2	23.503	23.538	34.1	2.5	34.1	2.5	350.4	0.996	17.70	0.964
3	21.742	21.900	34.1	1.0	34.1	1.0	345.1	0.998	17.86	0.961
4	20.637	20.881	39.9	-0.5	39.9	-0.5	343.0	0.994	16.63	0.984
5	20.417	20.681	40.2	-1.1	40.2	-1.1	342.3	0.995	16.35	0.993
6	20.196	20.480	40.3	-1.6	40.3	-1.6	341.4	0.996	16.21	0.999
7	19.975	20.279	39.5	-1.4	39.5	-1.4	340.5	0.999	16.23	1.001
8	19.754	20.079	38.6	-1.5	38.6	-1.5	339.0	1.003	16.28	0.996
9	18.227	18.715	37.7	-2.4	37.7	-2.4	336.2	1.000	16.59	0.982
10	16.530	17.252	40.1	2.0	40.1	2.0	340.2	1.009	17.69	0.910
11	16.121	16.904	43.1	1.2	43.1	1.2	344.5	1.001	18.57	0.875

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	257.3	202.8	257.3	202.8	202.1	202.1	159.2	17.1	0.	0.
2	266.0	224.1	266.0	224.1	220.2	223.9	149.3	9.6	0.	0.
3	274.4	232.4	274.4	232.4	227.3	232.4	153.8	3.9	0.	0.
4	254.5	220.9	254.5	220.9	195.2	220.9	163.3	-1.7	0.	0.
5	248.5	219.4	248.5	219.4	189.7	219.3	160.4	-4.3	0.	0.
6	245.3	219.4	245.3	219.4	187.1	219.3	158.6	-6.0	0.	0.
7	246.4	222.8	246.4	222.8	190.0	222.7	156.9	-5.5	0.	0.
8	248.4	224.1	248.4	224.1	194.2	224.1	154.8	-6.0	0.	0.
9	261.6	235.6	261.6	235.6	207.1	235.4	159.9	-9.9	0.	0.
10	295.5	241.7	295.5	241.7	226.0	241.5	190.4	8.3	0.	0.
11	310.4	254.0	310.4	254.0	226.7	253.9	211.9	5.4	0.	0.

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID PEAK VEL R	MERID PEAK SS MACH NO
1	0.715	0.555	0.715	0.555	0.562	0.553	1.000	0.970
2	0.748	0.621	0.748	0.621	0.619	0.621	1.017	0.918
3	0.781	0.651	0.781	0.651	0.647	0.650	1.022	0.956
4	0.720	0.619	0.720	0.619	0.552	0.619	1.132	1.018
5	0.702	0.615	0.702	0.615	0.536	0.615	1.156	0.996
6	0.693	0.616	0.693	0.616	0.529	0.616	1.172	0.981
7	0.698	0.626	0.698	0.626	0.538	0.626	1.172	0.965
8	0.706	0.630	0.706	0.630	0.552	0.630	1.154	0.946
9	0.751	0.669	0.751	0.669	0.594	0.669	1.137	0.991
10	0.856	0.680	0.856	0.680	0.654	0.680	1.069	1.194
11	0.899	0.716	0.899	0.716	0.657	0.716	1.120	1.343

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D-FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	1.5	-4.7	17.6	0.421	0.	0.220	0.220	0.083	0.083
2	10.00	-1.0	-7.2	14.1	0.353	0.	0.116	0.116	0.043	0.043
3	30.00	0.3	-5.9	11.2	0.341	0.	0.118	0.118	0.041	0.041
4	42.50	5.7	-0.5	9.4	0.343	0.	0.053	0.053	0.018	0.018
5	45.00	5.9	-0.3	8.7	0.331	0.	0.026	0.026	0.008	0.008
6	47.50	5.8	-0.4	8.2	0.319	0.	0.004	0.004	0.001	0.001
7	50.00	4.9	-1.3	8.3	0.304	0.	-0.003	-0.003	-0.001	-0.001
8	52.50	3.7	-2.5	8.2	0.299	0.	0.014	0.014	0.004	0.004
9	70.00	1.5	-4.6	6.7	0.285	0.	0.058	0.058	0.017	0.017
10	90.00	1.3	-4.7	10.8	0.341	0.	0.236	0.236	0.062	0.062
11	95.00	3.2	-2.7	10.1	0.348	0.	0.307	0.302	0.079	0.077

TABLE VIII. - Continued. BLADE ELEMENT DATA AT BLADE EDGES

FOR STATOR 10

(b) Percent design speed, 100; reading number, 341

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	23.942	23.945	41.5	6.0	41.5	6.0	362.8	0.992	18.77	0.947
2	23.503	23.538	37.5	4.2	37.5	4.2	357.1	0.996	18.99	0.965
3	21.742	21.900	37.6	2.3	37.6	2.3	351.0	0.997	18.80	0.968
4	20.637	20.881	41.4	0.8	41.4	0.8	348.3	0.995	17.87	0.981
5	20.417	20.681	41.8	0.1	41.8	0.1	347.8	0.996	17.62	0.985
6	20.196	20.480	42.2	-0.1	42.2	-0.1	345.2	0.997	17.40	0.993
7	19.975	20.279	42.5	-0.2	42.5	-0.2	345.4	0.998	17.15	1.005
8	19.754	20.079	41.9	-0.2	41.9	-0.2	343.8	1.001	17.16	0.999
9	18.227	18.715	39.5	-1.3	39.5	-1.3	339.1	0.999	17.37	0.972
10	16.530	17.252	41.6	1.6	41.6	1.6	341.3	1.008	17.89	0.933
11	16.121	16.904	43.0	3.0	43.0	3.0	343.5	1.007	18.36	0.885

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	266.1	200.7	266.1	200.7	199.2	199.6	176.4	21.0	0.	0.
2	270.1	213.6	270.1	213.6	214.3	213.1	164.4	15.7	0.	0.
3	271.0	216.6	271.0	216.6	214.7	216.4	165.3	8.7	0.	0.
4	261.3	207.2	261.3	207.2	196.0	207.1	172.7	2.8	0.	0.
5	256.7	204.3	256.7	204.3	191.4	204.3	171.1	0.3	0.	0.
6	251.1	202.8	251.1	202.8	186.0	202.8	168.6	-0.2	0.	0.
7	246.3	202.8	246.3	202.8	181.6	202.8	166.5	-0.7	0.	0.
8	247.7	201.6	247.7	201.6	184.3	201.6	165.4	-0.8	0.	0.
9	261.8	204.1	261.8	204.1	201.9	204.1	166.7	-4.5	0.	0.
10	286.0	215.2	286.0	215.2	213.8	215.1	190.0	6.1	0.	0.
11	295.0	204.6	295.0	204.6	215.8	204.3	201.2	10.7	0.	0.

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID PEAK SS
RP	IN	OUT	IN	OUT	IN	OUT	VEL R MACH NO
1	0.733	0.543	0.733	0.543	0.549	0.540	1.002 1.078
2	0.752	0.584	0.752	0.584	0.597	0.583	0.994 1.017
3	0.762	0.598	0.762	0.598	0.604	0.597	1.008 1.033
4	0.735	0.573	0.735	0.573	0.552	0.573	1.057 1.076
5	0.722	0.565	0.722	0.565	0.538	0.565	1.068 1.062
6	0.707	0.562	0.707	0.562	0.524	0.562	1.090 1.046
7	0.692	0.562	0.692	0.562	0.510	0.562	1.117 1.028
8	0.698	0.559	0.698	0.559	0.520	0.559	1.093 1.017
9	0.748	0.571	0.748	0.571	0.577	0.571	1.011 1.037
10	0.823	0.599	0.823	0.599	0.615	0.599	1.006 1.191
11	0.850	0.566	0.850	0.566	0.621	0.565	0.947 1.267

	PERCENT	INCIDENCE		DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN	SS				TOT	PROF	TOT	PROF
1	5.00	4.8	-1.4	18.8	0.467	0.	0.175	0.175	0.066	0.066
2	10.00	2.4	-3.8	15.9	0.414	0.	0.112	0.112	0.042	0.042
3	30.00	3.8	-2.4	12.5	0.399	0.	0.101	0.101	0.035	0.035
4	42.50	7.2	1.0	10.6	0.419	0.	0.063	0.063	0.021	0.021
5	45.00	7.5	1.3	9.9	0.418	0.	0.050	0.050	0.016	0.016
6	47.50	7.7	1.5	9.7	0.407	0.	0.023	0.023	0.007	0.007
7	50.00	7.9	1.7	9.5	0.391	0.	-0.018	-0.018	-0.006	-0.006
8	52.50	7.1	0.9	9.5	0.395	0.	0.003	0.003	0.001	0.001
9	70.00	3.4	-2.7	7.9	0.408	0.	0.091	0.091	0.026	0.026
10	90.00	2.8	-3.2	10.5	0.413	0.	0.187	0.187	0.049	0.049
11	95.00	3.2	-2.8	11.8	0.468	0.	0.306	0.306	0.078	0.078

TABLE VIII. - Continued. BLADE ELEMENT DATA AT BLADE EDGES

FOR STATOR 10

(c) Percent design speed, 100; reading number, 342

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	23.942	23.945	44.4	5.9	44.4	5.9	368.6	0.995	19.68	0.940
2	23.503	23.538	41.7	4.8	41.7	4.8	362.8	0.997	19.63	0.964
3	21.742	21.900	40.7	2.4	40.7	2.4	354.3	0.998	19.25	0.962
4	20.637	20.881	43.3	1.1	43.3	1.1	351.7	0.994	18.55	0.964
5	20.417	20.681	44.0	0.6	44.0	0.6	350.7	0.994	18.46	0.960
6	20.196	20.480	44.7	0.4	44.7	0.4	350.5	0.991	18.22	0.964
7	19.975	20.279	45.4	0.6	45.4	0.6	349.3	0.992	17.99	0.972
8	19.754	20.079	45.0	0.7	45.0	0.7	348.0	0.994	17.94	0.972
9	18.227	18.715	42.3	-0.7	42.3	-0.7	343.2	0.993	17.90	0.960
10	16.530	17.252	44.1	1.8	44.1	1.8	342.6	1.007	17.93	0.945
11	16.121	16.904	44.8	3.2	44.8	3.2	345.3	1.005	18.59	0.892

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	270.5	196.3	270.5	196.3	193.3	195.2	189.1	20.2	0.	0.
2	270.2	207.3	270.2	207.3	201.9	206.6	179.6	17.5	0.	0.
3	265.5	201.8	265.5	201.8	201.2	201.6	173.1	8.5	0.	0.
4	260.2	191.0	260.2	191.0	189.3	191.0	178.6	3.5	0.	0.
5	259.0	187.5	259.0	187.5	186.4	187.5	179.8	2.1	0.	0.
6	255.2	184.4	255.2	184.4	181.4	184.4	179.5	1.3	0.	0.
7	249.8	182.5	249.8	182.5	175.3	182.5	177.9	1.9	0.	0.
8	250.2	182.2	250.2	182.2	176.8	182.2	177.0	2.2	0.	0.
9	259.7	184.5	259.7	184.5	192.0	184.5	174.9	-2.2	0.	0.
10	272.2	194.0	272.2	194.0	195.4	193.9	189.5	5.9	0.	0.
11	287.4	184.8	287.4	184.8	203.7	184.5	202.6	10.5	0.	0.

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID PEAK SS VEL R	MERID PEAK SS MACH NO
1	0.740	0.525	0.740	0.525	0.529	0.523	1.010	1.060
2	0.746	0.561	0.746	0.561	0.557	0.559	1.023	1.116
3	0.741	0.552	0.741	0.552	0.562	0.551	1.002	1.084
4	0.728	0.524	0.728	0.524	0.529	0.523	1.009	1.114
5	0.725	0.514	0.725	0.514	0.522	0.514	1.006	1.121
6	0.714	0.506	0.714	0.506	0.507	0.506	1.017	1.117
7	0.699	0.501	0.699	0.501	0.490	0.501	1.041	1.136
8	0.701	0.501	0.701	0.501	0.496	0.501	1.030	1.096
9	0.736	0.512	0.736	0.512	0.544	0.512	0.961	1.091
10	0.777	0.536	0.777	0.536	0.558	0.535	0.992	1.191
11	0.822	0.507	0.822	0.507	0.583	0.506	0.905	1.277

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D-FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	7.7	1.5	18.7	0.511	0.	0.196	0.196	0.074	0.074
2	10.00	6.5	0.3	16.5	0.456	0.	0.116	0.116	0.043	0.043
3	30.00	6.9	0.7	12.6	0.453	0.	0.125	0.125	0.043	0.043
4	42.50	9.2	2.9	10.9	0.485	0.	0.122	0.122	0.040	0.040
5	45.00	9.6	3.4	10.4	0.497	0.	0.137	0.137	0.044	0.044
6	47.50	10.2	4.0	10.1	0.500	0.	0.124	0.124	0.040	0.040
7	50.00	10.8	4.6	10.3	0.491	0.	0.099	0.099	0.031	0.031
8	52.50	10.2	4.0	10.4	0.489	0.	0.099	0.099	0.031	0.031
9	70.00	6.2	0.0	8.4	0.485	0.	0.134	0.134	0.039	0.039
10	90.00	5.3	-0.7	10.6	0.461	0.	0.167	0.167	0.044	0.044
11	95.00	5.0	-1.0	12.1	0.524	0.	0.302	0.302	0.077	0.077

TABLE VIII. - Continued. BLADE ELEMENT DATA AT BLADE EDGES

FOR STATOR 10

(d) Percent design speed, 100· reading number, 337

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	23.942	23.945	49.6	7.5	49.6	7.5	375.1	0.999	20.07	0.935
2	23.503	23.538	46.4	6.6	46.4	6.6	368.9	1.001	20.10	0.948
3	21.742	21.900	43.9	3.0	43.9	3.0	356.6	0.999	19.44	0.951
4	20.637	20.881	45.7	1.3	45.7	1.3	353.3	0.995	18.89	0.947
5	20.417	20.681	46.7	1.1	46.7	1.1	352.9	0.994	18.73	0.949
6	20.196	20.480	47.7	1.2	47.7	1.2	352.8	0.992	18.62	0.949
7	19.975	20.279	48.1	1.3	48.1	1.3	352.3	0.991	18.42	0.956
8	19.754	20.079	47.7	1.5	47.7	1.5	351.1	0.992	18.37	0.957
9	18.227	18.715	44.5	-0.3	44.5	-0.3	344.6	0.993	18.07	0.953
10	16.530	17.252	45.8	1.4	45.8	1.4	343.8	1.007	18.27	0.937
11	16.121	16.904	48.1	4.6	48.1	4.6	347.9	0.999	19.11	0.887

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	269.4	193.2	269.4	193.2	174.7	191.6	205.0	25.2	0.	0.
2	269.9	201.2	269.9	201.2	186.1	199.9	195.5	23.0	0.	0.
3	260.8	189.4	260.8	189.4	187.8	189.2	181.0	9.8	0.	0.
4	258.2	176.1	258.2	176.1	180.2	176.0	184.8	4.0	0.	0.
5	256.0	173.5	256.0	173.5	175.6	173.4	186.4	3.5	0.	0.
6	254.8	171.1	254.8	171.1	171.6	171.1	188.3	3.6	0.	0.
7	252.1	170.1	252.1	170.1	168.4	170.1	187.6	3.8	0.	0.
8	252.4	169.7	252.4	169.7	169.9	169.7	186.7	4.4	0.	0.
9	255.0	166.7	255.0	166.7	181.8	166.7	178.9	-0.7	0.	0.
10	270.5	180.3	270.5	180.3	188.7	180.3	193.8	4.5	0.	0.
11	287.8	175.8	287.8	175.8	192.4	175.2	214.1	14.0	0.	0.

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID VEL R	PEAK SS MACH NO
1	0.730	0.511	0.730	0.511	0.473	0.506	1.096	1.272
2	0.738	0.537	0.738	0.537	0.509	0.534	1.074	1.223
3	0.724	0.514	0.724	0.514	0.522	0.513	1.007	1.139
4	0.720	0.479	0.720	0.479	0.503	0.479	0.977	1.159
5	0.714	0.472	0.714	0.472	0.489	0.472	0.988	1.170
6	0.710	0.466	0.710	0.466	0.478	0.466	0.997	1.182
7	0.702	0.464	0.702	0.464	0.469	0.464	1.010	1.175
8	0.705	0.463	0.705	0.463	0.474	0.463	0.999	1.165
9	0.720	0.459	0.720	0.459	0.513	0.459	0.917	1.121
10	0.770	0.495	0.770	0.495	0.537	0.495	0.955	1.222
11	0.820	0.481	0.820	0.481	0.548	0.479	0.911	1.363

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D-FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	12.9	6.7	20.3	0.536	0.	0.219	0.219	0.082	0.082
2	10.00	11.3	5.1	18.2	0.492	0.	0.172	0.172	0.063	0.063
3	30.00	10.1	3.9	13.2	0.499	0.	0.168	0.168	0.058	0.058
4	42.50	11.5	5.3	11.2	0.546	0.	0.181	0.181	0.059	0.059
5	45.00	12.4	6.2	10.9	0.553	0.	0.178	0.178	0.058	0.058
6	47.50	13.2	7.0	11.0	0.559	0.	0.178	0.178	0.057	0.057
7	50.00	13.5	7.3	11.0	0.555	0.	0.156	0.156	0.050	0.050
8	52.50	12.9	6.7	11.2	0.552	0.	0.154	0.154	0.048	0.048
9	70.00	8.4	2.3	8.9	0.548	0.	0.161	0.161	0.047	0.047
10	90.00	7.0	0.9	10.3	0.513	0.	0.193	0.193	0.051	0.051
11	95.00	8.2	2.3	13.4	0.563	0.	0.316	0.314	0.081	0.080

TABLE VIII. - Continued. BLADE ELEMENT DATA AT BLADE EDGES

FOR STATOR 10

(e) Percent design speed, 100; reading number, .343

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	23.942	23.945	50.5	7.0	50.5	7.0	376.5	1.000	20.02	0.937
2	23.503	23.538	46.5	6.0	46.5	6.0	370.7	1.001	20.09	0.944
3	21.742	21.900	44.2	2.8	44.2	2.8	358.0	0.998	19.54	0.947
4	20.637	20.881	45.9	1.1	45.9	1.1	354.0	0.995	18.87	0.949
5	20.417	20.681	46.8	1.2	46.8	1.2	354.0	0.993	18.83	0.949
6	20.196	20.480	47.8	1.4	47.8	1.4	353.5	0.992	18.66	0.953
7	19.975	20.279	48.2	1.7	48.2	1.7	352.4	0.992	18.48	0.960
8	19.754	20.079	47.8	1.9	47.8	1.9	352.4	0.991	18.49	0.958
9	18.227	18.715	44.7	-0.4	44.7	-0.4	344.7	0.994	18.12	0.956
10	16.530	17.252	45.5	2.1	45.5	2.1	344.1	1.008	18.37	0.921
11	16.121	16.904	46.7	2.9	46.7	2.9	346.4	1.006	18.89	0.883

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	267.7	194.1	267.7	194.1	170.4	192.6	206.5	23.7	0.	0.
2	270.2	200.1	270.2	200.1	186.0	199.0	196.0	20.8	0.	0.
3	262.4	189.8	262.4	189.8	188.2	189.6	182.9	9.4	0.	0.
4	257.0	176.8	257.0	176.8	178.7	176.8	184.6	3.5	0.	0.
5	257.4	176.1	257.4	176.1	176.3	176.0	187.5	3.8	0.	0.
6	255.4	174.1	255.4	174.1	171.6	174.1	189.1	4.1	0.	0.
7	252.9	173.5	252.9	173.5	168.4	173.4	188.6	5.0	0.	0.
8	254.1	173.2	254.1	173.2	170.8	173.1	188.1	5.6	0.	0.
9	254.4	169.5	254.4	169.5	180.8	169.5	179.0	-1.2	0.	0.
10	270.9	171.4	270.9	171.4	189.9	171.3	193.2	6.2	0.	0.
11	284.0	165.2	284.0	165.2	194.9	165.0	206.6	8.5	0.	0.

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID PEAK SS	
RP	IN	OUT	IN	OUT	IN	OUT	VEL R	MACH NO
1	0.723	0.512	0.723	0.512	0.460	0.508	1.130	1.283
2	0.737	0.533	0.737	0.533	0.508	0.530	1.070	1.223
3	0.728	0.514	0.728	0.514	0.522	0.513	1.007	1.150
4	0.715	0.481	0.715	0.481	0.498	0.481	0.989	1.157
5	0.717	0.479	0.717	0.479	0.491	0.479	0.998	1.175
6	0.711	0.474	0.711	0.474	0.478	0.474	1.014	1.186
7	0.705	0.473	0.705	0.473	0.469	0.473	1.030	1.183
8	0.708	0.472	0.708	0.472	0.476	0.472	1.014	1.173
9	0.718	0.467	0.718	0.467	0.510	0.467	0.937	1.122
10	0.771	0.469	0.771	0.469	0.540	0.469	0.902	1.217
11	0.810	0.450	0.810	0.450	0.555	0.450	0.847	1.309

	PERCENT	INCIDENCE		DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN	SS				TOT	PROF	TOT	PROF
1	5.00	13.8	7.6	19.8	0.534	0.	0.215	0.215	0.081	0.081
2	10.00	11.4	5.2	17.6	0.501	0.	0.183	0.183	0.068	0.068
3	30.00	10.4	4.2	13.0	0.504	0.	0.179	0.179	0.062	0.062
4	42.50	11.7	5.5	11.0	0.542	0.	0.176	0.176	0.058	0.058
5	45.00	12.4	6.2	11.0	0.546	0.	0.175	0.175	0.057	0.057
6	47.50	13.3	7.1	11.1	0.549	0.	0.165	0.165	0.053	0.053
7	50.00	13.6	7.4	11.4	0.542	0.	0.142	0.142	0.045	0.045
8	52.50	13.0	6.8	11.5	0.542	0.	0.149	0.149	0.047	0.047
9	70.00	8.6	2.4	8.7	0.536	0.	0.152	0.152	0.044	0.044
10	90.00	6.7	0.7	10.9	0.545	0.	0.242	0.242	0.064	0.064
11	95.00	6.9	0.9	11.8	0.593	0.	0.333	0.332	0.085	0.085

TABLE VIII. - Continued. BLADE ELEMENT DATA AT BLADE EDGES

FOR STATOR 10

(f) Percent design speed, 90; reading number, 355

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	23.942	23.945	31.7	3.8	31.7	3.8	338.4	0.996	15.81	0.903
2	23.503	23.538	30.0	1.2	30.0	1.2	335.2	0.997	15.77	0.958
3	21.742	21.900	31.1	-1.2	31.1	-1.2	331.0	0.999	15.61	0.956
4	20.637	20.881	35.3	-2.2	35.3	-2.2	330.5	0.996	15.13	0.976
5	20.417	20.681	35.9	-2.7	35.9	-2.7	329.7	0.997	14.94	0.982
6	20.196	20.480	36.2	-3.0	36.2	-3.0	329.2	0.997	14.84	0.985
7	19.975	20.279	36.6	-3.1	36.6	-3.1	329.2	0.995	14.77	0.991
8	19.754	20.079	35.8	-3.5	35.8	-3.5	327.5	0.998	14.82	0.987
9	18.227	18.715	35.0	-3.5	35.0	-3.5	326.9	0.997	15.28	0.973
10	16.530	17.252	38.2	3.9	38.2	3.9	330.0	1.008	15.96	0.874
11	16.121	16.904	39.6	5.6	39.6	5.6	331.7	1.008	16.45	0.784

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	251.2	216.1	251.2	216.1	213.8	215.6	131.9	14.3	0.	0.
2	250.3	237.1	250.3	237.1	216.7	237.1	125.3	5.1	0.	0.
3	246.3	240.3	246.3	240.3	210.8	240.3	127.3	-5.2	0.	0.
4	240.2	243.5	240.2	243.5	195.9	243.3	138.9	-9.2	0.	0.
5	235.3	242.9	235.3	242.9	190.5	242.6	138.1	-11.3	0.	0.
6	232.3	242.6	232.3	242.6	187.4	242.3	137.3	-12.6	0.	0.
7	230.6	244.6	230.6	244.6	185.2	244.3	137.4	-13.3	0.	0.
8	233.3	246.4	233.3	246.4	189.2	245.9	136.5	-15.1	0.	0.
9	250.9	272.6	250.9	272.6	205.6	272.0	143.8	-16.8	0.	0.
10	279.0	273.5	279.0	273.5	219.3	272.8	172.4	18.8	0.	0.
11	287.4	243.3	287.4	243.3	221.4	242.2	183.2	23.7	0.	0.

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID PEAK SS VEL R	MERID PEAK SS MACH NO
1	0.715	0.609	0.715	0.609	0.609	0.607	1.098	0.781
2	0.716	0.676	0.716	0.676	0.620	0.676	1.094	0.732
3	0.708	0.690	0.708	0.690	0.606	0.690	1.139	0.775
4	0.690	0.702	0.690	0.702	0.563	0.701	1.242	0.861
5	0.675	0.700	0.675	0.700	0.547	0.699	1.274	0.854
6	0.667	0.700	0.667	0.700	0.538	0.699	1.293	0.846
7	0.661	0.707	0.661	0.707	0.531	0.706	1.319	0.844
8	0.672	0.714	0.672	0.714	0.545	0.712	1.300	0.832
9	0.728	0.800	0.728	0.800	0.597	0.798	1.323	0.887
10	0.816	0.794	0.816	0.794	0.641	0.792	1.244	1.082
11	0.841	0.695	0.841	0.695	0.648	0.692	1.094	1.156

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D-FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	-5.0	-11.2	16.6	0.317	0.	0.337	0.337	0.128	0.128
2	10.00	-5.1	-11.3	12.9	0.231	0.	0.144	0.144	0.053	0.053
3	30.00	-2.7	-8.9	8.9	0.209	0.	0.154	0.154	0.053	0.053
4	42.50	1.2	-5.1	7.7	0.187	0.	0.088	0.088	0.029	0.029
5	45.00	1.6	-4.6	7.1	0.173	0.	0.068	0.068	0.022	0.022
6	47.50	1.8	-4.4	6.8	0.162	0.	0.057	0.057	0.018	0.018
7	50.00	1.9	-4.3	6.6	0.145	0.	0.035	0.035	0.011	0.011
8	52.50	1.0	-5.2	6.2	0.147	0.	0.049	0.049	0.015	0.015
9	70.00	-1.2	-7.3	5.6	0.098	0.	0.091	0.091	0.026	0.026
10	90.00	-0.6	-6.7	12.8	0.161	0.	0.357	0.357	0.094	0.094
11	95.00	-0.2	-6.2	14.4	0.291	0.	0.584	0.584	0.149	0.149

TABLE VIII. - Continued. BLADE ELEMENT DATA AT BLADE EDGES

FOR STATOR 10

(g) Percent design speed, 90; reading number, 356

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	23.942	23.945	34.3	5.0	34.3	5.0	341.1	0.995	16.16	0.938
2	23.503	23.538	32.4	3.1	32.4	3.1	337.5	0.997	16.17	0.965
3	21.742	21.900	33.0	-0.3	33.0	-0.3	332.8	0.999	15.98	0.973
4	20.637	20.881	36.3	0.0	36.3	0.0	331.5	0.999	15.50	0.984
5	20.417	20.681	37.0	-0.4	37.0	-0.4	331.5	0.997	15.47	0.980
6	20.196	20.480	37.6	-0.8	37.6	-0.8	332.1	0.995	15.33	0.987
7	19.975	20.279	38.0	-0.8	38.0	-0.8	330.9	0.997	15.24	0.989
8	19.754	20.079	37.6	-1.4	37.6	-1.4	329.7	0.998	15.32	0.982
9	18.227	18.715	36.7	-2.5	36.7	-2.5	328.1	0.997	15.50	0.976
10	16.530	17.252	40.3	2.3	40.3	2.3	331.8	1.004	16.21	0.923
11	16.121	16.904	42.6	3.4	42.6	3.4	334.3	1.004	16.84	0.855

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	246.9	197.7	246.9	197.7	204.0	197.0	139.1	17.1	0.	0.
2	247.0	211.2	247.0	211.2	208.6	210.9	132.2	11.3	0.	0.
3	243.7	214.6	243.7	214.6	204.3	214.6	132.8	-1.3	0.	0.
4	237.8	212.6	237.8	212.6	191.6	212.6	140.9	0.0	0.	0.
5	237.0	210.7	237.0	210.7	189.3	210.7	142.5	-1.4	0.	0.
6	233.8	210.7	233.8	210.7	185.3	210.6	142.6	-2.9	0.	0.
7	231.3	210.8	231.3	210.8	182.2	210.8	142.5	-3.1	0.	0.
8	234.5	211.0	234.5	211.0	185.8	210.9	143.1	-5.2	0.	0.
9	245.3	224.7	245.3	224.7	196.6	224.5	146.7	-10.0	0.	0.
10	273.0	234.4	273.0	234.4	208.4	234.2	176.4	9.6	0.	0.
11	285.2	221.8	285.2	221.8	210.0	221.4	193.0	13.1	0.	0.

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID PEAK SS	
RP	IN	OUT	IN	OUT	IN	OUT	VEL R	MACH NO
1	0.699	0.551	0.699	0.551	0.577	0.549	0.966	0.846
2	0.703	0.594	0.703	0.594	0.594	0.593	1.011	0.811
3	0.698	0.608	0.698	0.608	0.585	0.608	1.051	0.826
4	0.681	0.604	0.681	0.604	0.549	0.604	1.110	0.876
5	0.679	0.598	0.679	0.598	0.542	0.598	1.113	0.884
6	0.668	0.598	0.668	0.598	0.530	0.598	1.136	0.881
7	0.661	0.599	0.661	0.599	0.521	0.599	1.157	0.879
8	0.673	0.601	0.673	0.601	0.533	0.601	1.135	0.879
9	0.709	0.645	0.709	0.645	0.568	0.644	1.142	0.911
10	0.793	0.669	0.793	0.669	0.606	0.668	1.124	1.111
11	0.830	0.627	0.830	0.627	0.611	0.626	1.054	1.226

	PERCENT	INCIDENCE		DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN	SS				TOT	PROF	TOT	PROF
1	5.00	-2.4	-8.6	17.7	0.387	0.	0.224	0.224	0.085	0.085
2	10.00	-2.8	-9.0	14.8	0.327	0.	0.123	0.123	0.046	0.046
3	30.00	-0.8	-7.0	9.9	0.308	0.	0.098	0.098	0.034	0.034
4	42.50	2.1	-4.1	9.9	0.299	0.	0.060	0.060	0.020	0.020
5	45.00	2.6	-3.6	9.4	0.307	0.	0.074	0.074	0.024	0.024
6	47.50	3.1	-3.1	9.0	0.297	0.	0.051	0.051	0.016	0.016
7	50.00	3.4	-2.8	8.9	0.287	0.	0.042	0.042	0.013	0.013
8	52.50	2.8	-3.4	8.3	0.297	0.	0.068	0.068	0.021	0.021
9	70.00	0.6	-5.6	6.6	0.267	0.	0.084	0.084	0.024	0.024
10	90.00	1.4	-4.6	11.2	0.298	0.	0.226	0.226	0.059	0.059
11	95.00	2.8	-3.2	12.2	0.380	0.	0.398	0.398	0.102	0.102

TABLE VIII. - Continued. BLADE ELEMENT DATA AT BLADE EDGES

FOR STATOR 10

(h) Percent design speed, 90; reading number, 357

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	23.942	23.945	39.8	6.3	39.8	6.3	348.2	0.993	16.96	0.945
2	23.503	23.538	37.4	4.4	37.4	4.4	343.7	0.996	16.83	0.970
3	21.742	21.900	37.1	1.4	37.1	1.4	337.1	1.000	16.64	0.973
4	20.637	20.881	39.1	1.2	39.1	1.2	335.2	0.998	16.26	0.976
5	20.417	20.681	39.8	0.5	39.8	0.5	335.1	0.997	16.24	0.972
6	20.196	20.480	40.9	0.5	40.9	0.5	335.9	0.994	16.17	0.972
7	19.975	20.279	41.5	0.2	41.5	0.2	335.4	0.992	15.94	0.982
8	19.754	20.079	41.1	-0.2	41.1	-0.2	334.0	0.994	16.01	0.973
9	18.227	18.715	40.0	-1.7	40.0	-1.7	330.0	0.997	15.80	0.978
10	16.530	17.252	42.7	1.9	42.7	1.9	332.6	1.004	16.40	0.938
11	16.121	16.904	44.7	3.4	44.7	3.4	335.4	1.002	16.93	0.887

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	245.1	185.8	245.1	185.8	188.2	184.7	156.9	20.5	0.	0.
2	242.9	194.6	242.9	194.6	192.9	194.0	147.5	15.1	0.	0.
3	239.3	194.9	239.3	194.9	191.0	194.9	144.3	4.7	0.	0.
4	238.0	191.2	238.0	191.2	184.8	191.2	149.9	3.9	0.	0.
5	238.1	190.1	238.1	190.1	182.9	190.1	152.5	1.8	0.	0.
6	237.5	188.0	237.5	188.0	179.6	188.0	155.3	1.6	0.	0.
7	232.3	188.1	232.3	188.1	173.9	188.1	153.9	0.6	0.	0.
8	234.8	186.5	234.8	186.5	176.8	186.5	154.4	-0.6	0.	0.
9	236.9	192.4	236.9	192.4	181.5	192.3	152.3	-5.6	0.	0.
10	263.3	206.1	263.3	206.1	193.6	206.0	178.5	6.9	0.	0.
11	275.5	197.8	275.5	197.8	195.9	197.4	193.6	11.6	0.	0.

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID PEAK SS
RP	IN	OUT	IN	OUT	IN	OUT	VEL R MACH NO
1	0.685	0.512	0.685	0.512	0.526	0.508	0.981 0.967
2	0.683	0.540	0.683	0.540	0.543	0.538	1.006 0.921
3	0.680	0.545	0.680	0.545	0.542	0.545	1.020 0.908
4	0.678	0.536	0.678	0.536	0.526	0.536	1.034 0.937
5	0.678	0.533	0.678	0.533	0.521	0.533	1.039 0.952
6	0.675	0.528	0.675	0.528	0.511	0.528	1.047 0.968
7	0.660	0.528	0.660	0.528	0.494	0.528	1.081 0.957
8	0.669	0.525	0.669	0.525	0.504	0.525	1.055 0.957
9	0.680	0.545	0.680	0.545	0.521	0.544	1.060 0.954
10	0.761	0.581	0.761	0.581	0.560	0.581	1.064 1.128
11	0.797	0.555	0.797	0.555	0.567	0.554	1.008 1.233

	PERCENT	INCIDENCE		DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN	SS				TOT	PROF	TOT	PROF
1	5.00	3.1	-3.1	19.1	0.453	0.	0.202	0.202	0.076	0.076
2	10.00	2.3	-3.9	16.1	0.401	0.	0.111	0.111	0.041	0.041
3	30.00	3.3	-2.9	11.6	0.386	0.	0.100	0.100	0.035	0.035
4	42.50	4.9	-1.3	11.0	0.396	0.	0.090	0.090	0.030	0.030
5	45.00	5.5	-0.7	10.3	0.406	0.	0.106	0.106	0.034	0.034
6	47.50	6.4	0.2	10.2	0.414	0.	0.105	0.105	0.034	0.034
7	50.00	6.9	0.7	9.9	0.398	0.	0.072	0.072	0.023	0.023
8	52.50	6.3	0.1	9.5	0.411	0.	0.106	0.106	0.033	0.033
9	70.00	3.9	-2.3	7.5	0.379	0.	0.081	0.081	0.023	0.023
10	90.00	3.9	-2.2	10.8	0.385	0.	0.196	0.196	0.051	0.051
11	95.00	4.8	-1.1	12.2	0.447	0.	0.330	0.330	0.085	0.085

TABLE VIII. - Continued. BLADE ELEMENT DATA AT BLADE EDGES

FOR STATOR 10

(i) Percent design speed, 90; reading number, 358

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	23.942	23.945	45.5	6.6	45.5	-6.6	353.9	0.994	17.33	0.951
2	23.503	23.538	42.4	5.2	42.4	5.2	348.9	0.996	17.41	0.965
3	21.742	21.900	41.0	1.9	41.0	1.9	340.1	1.000	17.01	0.973
4	20.637	20.881	41.9	1.6	41.9	1.6	338.0	0.997	16.74	0.968
5	20.417	20.681	42.8	1.2	42.8	1.2	338.4	0.995	16.76	0.962
6	20.196	20.480	44.0	1.1	44.0	1.1	338.5	0.992	16.65	0.961
7	19.975	20.279	44.5	0.6	44.5	0.6	338.7	0.989	16.43	0.970
8	19.754	20.079	44.1	0.3	44.1	0.3	336.1	0.994	16.39	0.968
9	18.227	18.715	42.8	-1.2	42.8	-1.2	331.6	0.997	16.06	0.973
10	16.530	17.252	44.8	2.0	44.8	2.0	333.6	1.003	16.53	0.938
11	16.121	16.904	46.6	3.7	46.6	3.7	336.2	1.000	17.18	0.889

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	240.2	177.0	240.2	177.0	168.5	175.8	171.2	20.2	0.	0.
2	241.7	186.7	241.7	186.7	178.6	185.9	162.9	17.0	0.	0.
3	235.8	182.5	235.8	182.5	178.0	182.4	154.6	6.0	0.	0.
4	236.6	176.9	236.6	176.9	176.1	176.9	158.1	4.9	0.	0.
5	237.7	175.3	237.7	175.3	174.4	175.3	161.6	3.7	0.	0.
6	236.4	172.8	236.4	172.8	170.0	172.8	164.2	3.3	0.	0.
7	231.7	171.4	231.7	171.4	165.4	171.4	162.3	1.9	0.	0.
8	231.2	169.6	231.2	169.6	166.1	169.6	160.8	1.0	0.	0.
9	230.1	170.2	230.1	170.2	168.9	170.2	156.3	-3.5	0.	0.
10	254.0	181.3	254.0	181.3	180.3	181.2	179.0	6.4	0.	0.
11	269.8	175.6	269.8	175.6	185.3	175.3	196.1	11.4	0.	0.

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID PEAK SS
RP	IN	OUT	IN	OUT	IN	OUT	VEL R MACH NO
1	0.664	0.482	0.664	0.482	0.466	0.478	1.044 1.066
2	0.674	0.513	0.674	0.513	0.498	0.510	1.041 1.024
3	0.665	0.506	0.665	0.506	0.502	0.506	1.024 0.979
4	0.670	0.492	0.670	0.492	0.499	0.492	1.005 0.993
5	0.673	0.488	0.673	0.488	0.494	0.488	1.005 1.014
6	0.669	0.481	0.669	0.481	0.481	0.481	1.016 1.031
7	0.654	0.478	0.654	0.478	0.467	0.478	1.036 1.015
8	0.656	0.473	0.656	0.473	0.471	0.473	1.021 1.004
9	0.657	0.478	0.657	0.478	0.482	0.478	1.008 0.984
10	0.730	0.507	0.730	0.507	0.518	0.507	1.005 1.135
11	0.777	0.489	0.777	0.489	0.534	0.488	0.946 1.255

	PERCENT	INCIDENCE		DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN	SS				TOT	PROF	TOT	PROF
1	5.00	8.8	2.6	19.3	0.501	0.	0.192	0.192	0.072	0.072
2	10.00	7.2	1.0	16.9	0.452	0.	0.133	0.133	0.049	0.049
3	30.00	7.2	1.0	12.1	0.443	0.	0.107	0.107	0.037	0.037
4	42.50	7.7	1.5	11.4	0.463	0.	0.125	0.125	0.041	0.041
5	45.00	8.5	2.3	11.0	0.476	0.	0.146	0.146	0.047	0.047
6	47.50	9.5	3.3	10.9	0.486	0.	0.150	0.150	0.048	0.048
7	50.00	9.8	3.6	10.4	0.478	0.	0.120	0.120	0.038	0.038
8	52.50	9.3	3.1	10.0	0.482	0.	0.127	0.127	0.040	0.040
9	70.00	6.6	0.5	7.9	0.459	0.	0.107	0.107	0.031	0.031
10	90.00	6.0	-0.0	10.9	0.461	0.	0.208	0.208	0.055	0.055
11	95.00	6.8	0.8	12.6	0.520	0.	0.336	0.336	0.086	0.086

TABLE VIII. - Continued. BLADE ELEMENT DATA AT BLADE EDGES

FOR STATOR 10

(j) Percent design speed, 90; reading number, 359

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	23.942	23.945	52.6	7.5	52.6	7.5	361.4	0.991	17.61	0.941
2	23.503	23.538	46.9	5.8	46.9	5.8	353.8	0.998	17.54	0.959
3	21.742	21.900	43.2	2.1	43.2	2.1	342.9	0.998	17.23	0.965
4	20.637	20.881	43.9	2.1	43.9	2.1	340.1	0.997	17.01	0.959
5	20.417	20.681	45.0	1.8	45.0	1.8	340.4	0.994	16.96	0.957
6	20.196	20.480	46.2	1.5	46.2	1.5	340.9	0.990	16.87	0.956
7	19.975	20.279	46.6	1.3	46.6	1.3	339.3	0.992	16.62	0.964
8	19.754	20.079	46.2	1.1	46.2	1.1	338.3	0.993	16.58	0.963
9	18.227	18.715	45.0	-1.0	45.0	-1.0	332.9	0.996	16.20	0.966
10	16.530	17.252	46.3	2.1	46.3	2.1	334.1	1.003	16.71	0.928
11	16.121	16.904	47.8	3.6	47.8	3.6	336.9	1.000	17.24	0.889

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	240.0	170.6	240.0	170.6	145.7	169.1	190.8	22.1	0.	0.
2	238.7	178.1	238.7	178.1	163.0	177.2	174.3	17.9	0.	0.
3	234.7	173.7	234.7	173.7	171.0	173.6	160.7	6.4	0.	0.
4	235.6	167.4	235.6	167.4	169.9	167.3	163.2	6.0	0.	0.
5	235.4	165.3	235.4	165.3	166.6	165.2	166.3	5.3	0.	0.
6	234.6	163.3	234.6	163.3	162.4	163.2	169.3	4.3	0.	0.
7	229.3	160.6	229.3	160.6	157.5	160.6	166.6	3.7	0.	0.
8	229.3	159.2	229.3	159.2	158.7	159.2	165.5	3.0	0.	0.
9	226.8	155.8	226.8	155.8	160.4	155.8	160.3	-2.7	0.	0.
10	250.0	163.6	250.0	163.6	172.8	163.5	180.6	6.1	0.	0.
11	264.6	158.8	264.6	158.8	177.7	158.5	196.1	10.0	0.	0.

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID PEAK SS VEL R	MERID PEAK SS MACH NO
1	0.657	0.459	0.657	0.459	0.398	0.455	1.161	1.214
2	0.660	0.484	0.660	0.484	0.451	0.481	1.087	1.105
3	0.659	0.479	0.659	0.479	0.480	0.479	1.015	1.029
4	0.665	0.463	0.665	0.463	0.479	0.463	0.985	1.029
5	0.664	0.458	0.664	0.458	0.470	0.457	0.992	1.049
6	0.661	0.452	0.661	0.452	0.458	0.452	1.005	1.067
7	0.647	0.445	0.647	0.445	0.444	0.445	1.019	1.050
8	0.648	0.442	0.648	0.442	0.448	0.441	1.003	1.038
9	0.645	0.435	0.645	0.435	0.456	0.435	0.971	1.015
10	0.716	0.455	0.716	0.455	0.495	0.455	0.947	1.150
11	0.760	0.440	0.760	0.440	0.510	0.439	0.892	1.257

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D-FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	15.9	9.7	20.2	0.556	0.	0.234	0.234	0.088	0.088
2	10.00	11.8	5.6	17.4	0.498	0.	0.162	0.162	0.060	0.060
3	30.00	9.4	3.2	12.3	0.485	0.	0.139	0.139	0.048	0.048
4	42.50	9.7	3.5	11.9	0.507	0.	0.161	0.161	0.053	0.053
5	45.00	10.6	4.4	11.6	0.518	0.	0.170	0.170	0.055	0.055
6	47.50	11.7	5.5	11.3	0.528	0.	0.173	0.173	0.056	0.056
7	50.00	12.0	5.8	11.0	0.523	0.	0.148	0.148	0.047	0.047
8	52.50	11.4	5.2	10.8	0.527	0.	0.150	0.150	0.047	0.047
9	70.00	8.9	2.7	8.1	0.519	0.	0.137	0.137	0.040	0.040
10	90.00	7.5	1.4	11.0	0.525	0.	0.249	0.249	0.066	0.066
11	95.00	8.0	2.0	12.4	0.576	0.	0.349	0.349	0.089	0.089

TABLE VIII. - Continued. BLADE ELEMENT DATA AT BLADE EDGES

FOR STATOR 10

(k) Percent design speed, 80; reading number, 364

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	23.942	23.945	51.5	8.3	51.5	8.3	344.7	0.988	15.43	0.953
2	23.503	23.538	45.4	6.2	45.4	6.2	338.1	0.996	15.34	0.968
3	21.742	21.900	43.8	2.0	43.8	2.0	329.0	0.998	14.91	0.973
4	20.637	20.881	45.2	1.3	45.2	1.3	327.7	0.995	14.81	0.966
5	20.417	20.681	45.9	1.0	45.9	1.0	326.7	0.994	14.74	0.970
6	20.196	20.480	46.9	1.0	46.9	1.0	327.3	0.995	14.61	0.979
7	19.975	20.279	48.4	1.1	48.4	1.1	327.1	0.994	14.59	0.981
8	19.754	20.079	48.5	1.2	48.5	1.2	326.6	0.995	14.56	0.984
9	18.227	18.715	44.1	0.0	44.1	0.0	323.1	0.998	14.67	0.982
10	16.530	17.252	44.7	2.1	44.7	2.1	323.9	1.002	15.04	0.946
11	16.121	16.904	46.1	4.1	46.1	4.1	325.4	1.000	15.33	0.916

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	212.4	151.5	212.4	151.5	132.3	149.9	166.2	21.8	0.	0.
2	209.8	157.1	209.8	157.1	147.4	156.2	149.3	17.0	0.	0.
3	199.2	145.7	199.2	145.7	143.9	145.6	137.8	5.1	0.	0.
4	200.6	140.3	200.6	140.3	141.3	140.2	142.3	3.1	0.	0.
5	198.7	140.2	198.7	140.2	138.3	140.1	142.7	2.4	0.	0.
6	195.5	140.8	195.5	140.8	133.6	140.8	142.7	2.4	0.	0.
7	195.4	142.0	195.4	142.0	129.7	142.0	146.1	2.7	0.	0.
8	195.5	143.3	195.5	143.3	129.6	143.3	146.5	3.1	0.	0.
9	204.6	152.4	204.6	152.4	146.9	152.4	142.5	0.1	0.	0.
10	225.6	157.1	225.6	157.1	160.3	157.0	158.7	5.8	0.	0.
11	236.3	151.7	236.3	151.7	163.9	151.3	170.3	10.7	0.	0.

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID PEAK SS VEL R	MERID PEAK SS MACH NO
1	0.590	0.417	0.590	0.417	0.368	0.412	1.134	1.268
2	0.589	0.435	0.589	0.435	0.413	0.433	1.060	0.954
3	0.565	0.408	0.565	0.408	0.408	0.407	1.012	0.885
4	0.570	0.393	0.570	0.393	0.402	0.393	0.992	0.909
5	0.566	0.394	0.566	0.394	0.394	0.394	1.013	0.911
6	0.555	0.395	0.555	0.395	0.380	0.395	1.054	0.910
7	0.555	0.399	0.555	0.399	0.369	0.399	1.095	0.935
8	0.556	0.403	0.556	0.403	0.369	0.403	1.106	0.935
9	0.587	0.431	0.587	0.431	0.421	0.431	1.037	0.906
10	0.651	0.444	0.651	0.444	0.463	0.443	0.980	1.011
11	0.683	0.427	0.683	0.427	0.474	0.426	0.923	1.091

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D-FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	14.8	8.6	21.0	0.544	0.	0.223	0.223	0.084	0.084
2	10.00	10.3	4.0	17.9	0.485	0.	0.152	0.152	0.056	0.056
3	30.00	10.0	3.7	12.2	0.498	0.	0.139	0.139	0.048	0.048
4	42.50	11.0	4.8	11.1	0.527	0.	0.169	0.169	0.056	0.056
5	45.00	11.6	5.4	10.8	0.522	0.	0.151	0.151	0.049	0.049
6	47.50	12.4	6.2	10.7	0.508	0.	0.110	0.110	0.035	0.035
7	50.00	13.8	7.6	10.8	0.504	0.	0.099	0.099	0.031	0.031
8	52.50	13.7	7.5	10.9	0.495	0.	0.082	0.082	0.026	0.026
9	70.00	8.0	1.9	9.1	0.455	0.	0.085	0.085	0.025	0.025
10	90.00	5.9	-0.1	11.0	0.478	0.	0.218	0.218	0.057	0.057
11	95.00	6.3	0.3	12.9	0.527	0.	0.314	0.314	0.080	0.080

TABLE VIII. - Continued. BLADE ELEMENT DATA AT BLADE EDGES

FOR STATOR 10

(l) Percent design speed, 70; reading number, 366

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	23.942	23.945	23.6	4.7	23.6	4.7	312.0	1.000	12.70	0.921
2	23.503	23.538	23.0	2.1	23.0	2.1	310.8	0.999	12.73	0.961
3	21.742	21.900	23.8	-1.8	23.8	-1.8	308.9	0.999	12.69	0.977
4	20.637	20.881	26.5	-2.3	26.5	-2.3	309.1	1.000	12.58	0.983
5	20.417	20.681	27.5	-2.0	27.5	-2.0	309.4	0.999	12.62	0.981
6	20.196	20.480	29.0	-2.2	29.0	-2.2	310.2	0.997	12.62	0.982
7	19.975	20.279	30.0	-2.1	30.0	-2.1	310.3	0.997	12.57	0.987
8	19.754	20.079	29.8	-2.4	29.8	-2.4	310.0	0.997	12.60	0.983
9	18.227	18.715	30.0	-2.8	30.0	-2.8	310.1	0.999	12.84	0.983
10	16.530	17.252	34.5	3.4	34.5	3.4	312.5	1.005	13.37	0.927
11	16.121	16.904	36.1	6.3	36.1	6.3	313.9	1.005	13.53	0.877

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	197.8	167.6	197.8	167.6	181.3	167.0	79.1	13.6	0.	0.
2	197.5	189.1	197.5	189.1	181.8	189.0	77.2	6.9	0.	0.
3	192.3	198.3	192.3	198.3	175.9	198.2	77.7	-6.4	0.	0.
4	190.8	201.3	190.8	201.3	170.7	201.1	85.3	-7.9	0.	0.
5	192.3	202.4	192.3	202.4	170.5	202.3	89.0	-7.2	0.	0.
6	192.5	203.4	192.5	203.4	168.4	203.3	93.2	-7.7	0.	0.
7	191.1	205.3	191.1	205.3	165.5	205.2	95.6	-7.4	0.	0.
8	192.9	205.7	192.9	205.7	167.3	205.5	95.9	-8.6	0.	0.
9	204.3	222.4	204.3	222.4	176.9	222.1	102.1	-11.0	0.	0.
10	229.2	231.3	229.2	231.3	188.9	230.9	129.7	13.9	0.	0.
11	233.9	216.6	233.9	216.6	189.0	215.3	137.9	23.8	0.	0.

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID PEAK SS	
RP	IN	OUT	IN	OUT	IN	OUT	VEL R	MACH NO
1	0.577	0.484	0.577	0.484	0.529	0.483	0.921	0.577
2	0.577	0.551	0.577	0.551	0.531	0.551	1.039	0.577
3	0.563	0.582	0.563	0.582	0.515	0.582	1.127	0.563
4	0.558	0.591	0.558	0.591	0.499	0.590	1.178	0.558
5	0.563	0.594	0.563	0.594	0.499	0.594	1.186	0.563
6	0.562	0.597	0.562	0.597	0.492	0.597	1.207	0.562
7	0.558	0.603	0.558	0.603	0.483	0.603	1.240	0.558
8	0.564	0.604	0.564	0.604	0.489	0.604	1.228	0.564
9	0.599	0.657	0.599	0.657	0.519	0.656	1.256	0.599
10	0.676	0.681	0.676	0.681	0.557	0.679	1.222	0.800
11	0.689	0.632	0.689	0.632	0.557	0.628	1.139	0.859

	PERCENT	INCIDENCE		DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN	SS				TOT	PROF	TOT	PROF
1	5.00	-13.1	-19.3	17.4	0.278	0.	0.391	0.391	0.148	0.148
2	10.00	-12.1	-18.3	13.8	0.175	0.	0.194	0.194	0.072	0.072
3	30.00	-10.0	-16.2	8.3	0.119	0.	0.118	0.118	0.041	0.041
4	42.50	-7.7	-13.9	7.6	0.104	0.	0.090	0.090	0.030	0.030
5	45.00	-6.8	-13.0	7.8	0.109	0.	0.100	0.100	0.032	0.032
6	47.50	-5.5	-11.7	7.6	0.110	0.	0.093	0.093	0.030	0.030
7	50.00	-4.6	-10.8	7.7	0.096	0.	0.069	0.069	0.022	0.022
8	52.50	-5.0	-11.2	7.3	0.103	0.	0.088	0.088	0.027	0.027
9	70.00	-6.2	-12.3	6.3	0.070	0.	0.077	0.077	0.022	0.022
10	90.00	-4.4	-10.4	12.3	0.120	0.	0.277	0.277	0.073	0.073
11	95.00	-3.7	-9.7	15.1	0.195	0.	0.451	0.451	0.115	0.115

TABLE VIII. - Continued. BLADE ELEMENT DATA AT BLADE EDGES

FOR STATOR 10

(m) Percent design speed, 70; reading number, 367

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	23.942	23.945	27.7	4.2	27.7	4.2	315.4	0.996	13.08	0.946
2	23.503	23.538	26.9	2.4	26.9	2.4	313.7	0.998	13.08	0.975
3	21.742	21.900	28.1	-1.8	28.1	-1.8	311.3	0.999	13.01	0.981
4	20.637	20.881	30.2	-1.8	30.2	-1.8	311.3	1.000	12.92	0.983
5	20.417	20.681	31.1	-1.5	31.1	-1.5	311.2	1.000	12.96	0.981
6	20.196	20.480	32.3	-1.0	32.3	-1.0	312.4	0.996	12.98	0.981
7	19.975	20.279	33.7	-1.1	33.7	-1.1	312.5	0.996	12.87	0.988
8	19.754	20.079	32.9	-1.6	32.9	-1.6	312.0	0.997	12.91	0.984
9	18.227	18.715	32.7	-2.2	32.7	-2.2	311.6	0.998	13.11	0.977
10	16.530	17.252	36.9	3.0	36.9	3.0	313.6	1.003	13.45	0.948
11	16.121	16.904	38.6	5.1	38.6	5.1	314.7	1.003	13.70	0.909

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	192.5	156.1	192.5	156.1	170.4	155.6	89.6	11.5	0.	0.
2	192.2	171.9	192.2	171.9	171.5	171.7	86.8	7.3	0.	0.
3	187.3	175.0	187.3	175.0	165.3	174.9	88.1	-5.6	0.	0.
4	186.9	176.3	186.9	176.3	161.6	176.2	94.0	-5.5	0.	0.
5	188.6	177.5	188.6	177.5	161.5	177.4	97.4	-4.5	0.	0.
6	189.8	178.5	189.8	178.5	160.4	178.5	101.5	-3.1	0.	0.
7	186.3	178.9	186.3	178.9	155.0	178.9	103.3	-3.5	0.	0.
8	188.2	179.1	188.2	179.1	158.0	179.0	102.3	-5.0	0.	0.
9	200.0	190.6	200.0	190.6	168.3	190.4	108.0	-7.3	0.	0.
10	219.3	201.9	219.3	201.9	175.3	201.6	131.7	10.6	0.	0.
11	227.0	194.4	227.0	194.4	177.3	193.7	141.7	17.3	0.	0.

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID PEAK SS VEL R	MERID PEAK SS MACH NO
1	0.557	0.448	0.557	0.448	0.493	0.447	0.914	0.557
2	0.558	0.496	0.558	0.496	0.498	0.496	1.002	0.558
3	0.545	0.508	0.545	0.508	0.481	0.507	1.058	0.545
4	0.544	0.511	0.544	0.511	0.470	0.511	1.091	0.544
5	0.549	0.515	0.549	0.515	0.470	0.515	1.099	0.573
6	0.552	0.518	0.552	0.518	0.466	0.518	1.113	0.610
7	0.541	0.519	0.541	0.519	0.450	0.519	1.154	0.628
8	0.547	0.520	0.547	0.520	0.459	0.520	1.133	0.611
9	0.584	0.556	0.584	0.556	0.492	0.555	1.132	0.654
10	0.643	0.587	0.643	0.587	0.514	0.586	1.150	0.823
11	0.666	0.563	0.666	0.563	0.520	0.561	1.092	0.892

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D-FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	-9.0	-15.2	17.0	0.343	0.	0.284	0.284	0.107	0.107
2	10.00	-8.3	-14.5	14.1	0.259	0.	0.132	0.132	0.049	0.049
3	30.00	-5.7	-11.9	8.4	0.238	0.	0.106	0.106	0.036	0.036
4	42.50	-4.0	-10.2	8.1	0.230	0.	0.091	0.091	0.030	0.030
5	45.00	-3.2	-9.4	8.3	0.233	0.	0.100	0.100	0.033	0.033
6	47.50	-2.1	-8.3	8.8	0.235	0.	0.102	0.102	0.033	0.033
7	50.00	-0.9	-7.1	8.6	0.220	0.	0.065	0.065	0.021	0.021
8	52.50	-1.9	-8.1	8.1	0.226	0.	0.086	0.086	0.027	0.027
9	70.00	-3.5	-9.6	6.9	0.213	0.	0.111	0.111	0.032	0.032
10	90.00	-1.9	-7.9	11.9	0.221	0.	0.213	0.213	0.056	0.056
11	95.00	-1.2	-7.2	13.9	0.280	0.	0.354	0.354	0.090	0.090

TABLE VIII.. - Continued. BLADE ELEMENT DATA AT BLADE EDGES

FOR STATOR 10

(n) Percent design speed, 70; reading number, 368

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	23.942	23.945	34.3	4.8	34.3	4.8	319.5	0.998	13.42	0.962
2	23.503	23.538	32.4	3.2	32.4	3.2	317.6	0.998	13.50	0.976
3	21.742	21.900	33.5	-0.5	33.5	-0.5	314.5	0.998	13.33	0.980
4	20.637	20.881	35.4	0.4	35.4	0.4	314.1	0.999	13.43	0.971
5	20.417	20.681	36.0	0.5	36.0	0.5	314.0	0.998	13.27	0.979
6	20.196	20.480	37.0	0.4	37.0	0.4	314.7	0.995	13.28	0.977
7	19.975	20.279	38.7	-0.0	38.7	-0.0	314.5	0.996	13.14	0.985
8	19.754	20.079	38.0	-0.1	38.0	-0.1	313.9	0.997	13.12	0.985
9	18.227	18.715	37.0	-0.9	37.0	-0.9	313.0	0.998	13.26	0.980
10	16.530	17.252	40.2	2.4	40.2	2.4	314.3	1.003	13.56	0.958
11	16.121	16.904	41.7	4.1	41.7	4.1	315.9	1.001	13.80	0.925

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	185.9	144.6	185.9	144.6	153.5	144.1	104.7	12.0	0.	0.
2	188.1	156.5	188.1	156.5	158.8	156.3	100.8	8.8	0.	0.
3	180.8	154.1	180.8	154.1	150.8	154.1	99.8	-1.4	0.	0.
4	182.1	155.4	182.1	155.4	148.4	155.4	105.6	1.1	0.	0.
5	182.7	154.8	182.7	154.8	147.8	154.8	107.5	1.3	0.	0.
6	183.7	154.8	183.7	154.8	146.7	154.8	110.6	1.2	0.	0.
7	179.1	154.3	179.1	154.3	139.9	154.3	111.9	-0.0	0.	0.
8	179.1	154.3	179.1	154.3	141.2	154.3	110.2	-0.3	0.	0.
9	189.6	163.7	189.6	163.7	151.5	163.7	114.1	-2.6	0.	0.
10	208.7	175.0	208.7	175.0	159.4	174.8	134.7	7.4	0.	0.
11	217.7	168.5	217.7	168.5	162.6	168.0	144.8	12.1	0.	0.

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID PEAK SS	
RP	IN	OUT	IN	OUT	IN	OUT	VEL R	MACH NO
1	0.533	0.411	0.533	0.411	0.440	0.409	0.938	0.645
2	0.542	0.447	0.542	0.447	0.457	0.447	0.984	0.626
3	0.522	0.442	0.522	0.442	0.436	0.442	1.021	0.627
4	0.527	0.446	0.527	0.446	0.429	0.446	1.048	0.659
5	0.529	0.445	0.529	0.445	0.427	0.445	1.048	0.670
6	0.531	0.445	0.531	0.445	0.424	0.445	1.055	0.690
7	0.517	0.443	0.517	0.443	0.404	0.443	1.103	0.699
8	0.518	0.444	0.518	0.444	0.408	0.444	1.093	0.683
9	0.551	0.472	0.551	0.472	0.440	0.472	1.080	0.713
10	0.609	0.504	0.609	0.504	0.465	0.504	1.097	0.851
11	0.635	0.483	0.635	0.483	0.474	0.482	1.034	0.919

	PERCENT	INCIDENCE		DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN	SS				TOT	PROF	TOT	PROF
1	5.00	-2.4	-8.6	17.5	0.411	0.	0.218	0.218	0.082	0.082
2	10.00	-2.7	-8.9	14.9	0.350	0.	0.133	0.133	0.049	0.049
3	30.00	-0.3	-6.5	9.7	0.340	0.	0.119	0.119	0.041	0.041
4	42.50	1.2	-5.0	10.2	0.333	0.	0.168	0.168	0.055	0.055
5	45.00	1.7	-4.5	10.3	0.340	0.	0.124	0.124	0.040	0.040
6	47.50	2.6	-3.7	10.2	0.347	0.	0.133	0.133	0.043	0.043
7	50.00	4.0	-2.2	9.7	0.336	0.	0.090	0.090	0.029	0.029
8	52.50	3.2	-3.0	9.6	0.330	0.	0.090	0.090	0.028	0.028
9	70.00	0.8	-5.3	8.2	0.313	0.	0.105	0.105	0.030	0.030
10	90.00	1.4	-4.6	11.3	0.318	0.	0.191	0.191	0.050	0.050
11	95.00	1.9	-4.1	13.0	0.378	0.	0.317	0.317	0.081	0.081

TABLE VIII. - Continued. BLADE ELEMENT DATA AT BLADE EDGES

FOR STATOR 10

(o) Percent design speed, 70; reading number, 369

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	23.942	23.945	38.7	6.2	38.7	6.2	321.9	1.000	13.57	0.968
2	23.503	23.538	36.2	4.2	36.2	4.2	319.9	1.000	13.67	0.974
3	21.742	21.900	37.5	0.2	37.5	0.2	316.4	1.001	13.60	0.970
4	20.637	20.881	39.0	0.7	39.0	0.7	316.2	0.996	13.44	0.973
5	20.417	20.681	39.7	0.3	39.7	0.3	316.2	0.994	13.41	0.973
6	20.196	20.480	40.8	0.2	40.8	0.2	315.9	0.995	13.37	0.975
7	19.975	20.279	42.2	0.1	42.2	0.1	315.7	0.994	13.26	0.980
8	19.754	20.079	41.8	0.1	41.8	0.1	315.8	0.995	13.26	0.980
9	18.227	18.715	39.5	-0.5	39.5	-0.5	313.4	1.000	13.32	0.982
10	16.530	17.252	42.2	2.5	42.2	2.5	314.7	1.003	13.61	0.959
11	16.121	16.904	43.6	4.1	43.6	4.1	316.0	1.002	13.82	0.931

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	181.6	137.7	181.6	137.7	141.8	136.8	113.5	14.9	0.	0.
2	185.3	146.5	185.3	146.5	149.4	146.1	109.5	10.8	0.	0.
3	176.7	142.2	176.7	142.2	140.2	142.2	107.6	0.5	0.	0.
4	180.1	141.1	180.1	141.1	140.0	141.1	113.3	1.7	0.	0.
5	180.0	140.1	180.0	140.1	138.5	140.1	115.1	0.7	0.	0.
6	179.0	140.0	179.0	140.0	135.5	140.0	117.0	0.5	0.	0.
7	175.9	139.1	175.9	139.1	130.3	139.1	118.1	0.3	0.	0.
8	177.0	139.7	177.0	139.7	132.0	139.7	117.9	0.2	0.	0.
9	183.7	148.9	183.7	148.9	141.8	148.9	116.8	-1.3	0.	0.
10	203.5	158.8	203.5	158.8	150.7	158.7	136.8	7.0	0.	0.
11	212.0	153.1	212.0	153.1	153.5	152.7	146.3	10.9	0.	0.

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID PEAK SS
RP	IN	OUT	IN	OUT	IN	OUT	VEL R MACH NO
1	0.518	0.389	0.518	0.389	0.405	0.386	0.965 0.711
2	0.531	0.416	0.531	0.416	0.428	0.415	0.978 0.694
3	0.508	0.405	0.508	0.405	0.403	0.405	1.014 0.687
4	0.519	0.403	0.519	0.403	0.403	0.403	1.008 0.716
5	0.518	0.400	0.518	0.400	0.399	0.400	1.011 0.726
6	0.516	0.400	0.516	0.400	0.390	0.400	1.033 0.739
7	0.506	0.398	0.506	0.398	0.375	0.398	1.067 0.746
8	0.510	0.399	0.510	0.399	0.380	0.399	1.058 0.740
9	0.532	0.427	0.532	0.427	0.411	0.427	1.050 0.736
10	0.592	0.455	0.592	0.455	0.438	0.455	1.053 0.869
11	0.617	0.437	0.617	0.437	0.447	0.436	0.995 0.934

	PERCENT	INCIDENCE		DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN	SS				TOT	PROF	TOT	PROF
1	5.00	2.0	-4.2	19.0	0.448	0.	0.193	0.193	0.073	0.073
2	10.00	1.1	-5.1	15.9	0.407	0.	0.146	0.146	0.054	0.054
3	30.00	3.7	-2.5	10.4	0.403	0.	0.187	0.187	0.065	0.065
4	42.50	4.8	-1.4	10.5	0.418	0.	0.158	0.158	0.052	0.052
5	45.00	5.4	-0.8	10.1	0.427	0.	0.161	0.161	0.052	0.052
6	47.50	6.3	0.1	10.0	0.426	0.	0.151	0.151	0.048	0.048
7	50.00	7.6	1.4	9.8	0.420	0.	0.122	0.122	0.039	0.039
8	52.50	6.9	0.7	9.8	0.418	0.	0.123	0.123	0.039	0.039
9	70.00	3.3	-2.8	8.6	0.374	0.	0.100	0.100	0.029	0.029
10	90.00	3.4	-2.6	11.4	0.383	0.	0.196	0.196	0.051	0.051
11	95.00	3.8	-2.2	12.9	0.437	0.	0.304	0.304	0.078	0.078

TABLE VIII. - Continued. BLADE ELEMENT DATA AT BLADE EDGES

FOR STATOR 10

(p) Percent design speed, 70; reading number, 370

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	23.942	23.945	47.4	7.2	47.4	7.2	327.0	0.996	13.73	0.962
2	23.503	23.538	43.1	5.7	43.1	5.7	323.7	0.998	13.73	0.970
3	21.742	21.900	40.9	1.1	40.9	1.1	318.2	0.998	13.57	0.975
4	20.637	20.881	42.4	0.9	42.4	0.9	317.7	0.995	13.57	0.966
5	20.417	20.681	43.3	0.5	43.3	0.5	317.6	0.994	13.52	0.968
6	20.196	20.480	44.1	0.3	44.1	0.3	317.1	0.995	13.45	0.971
7	19.975	20.279	45.5	0.4	45.5	0.4	317.4	0.994	13.41	0.974
8	19.754	20.079	45.3	0.6	45.3	0.6	317.4	0.994	13.41	0.975
9	18.227	18.715	41.5	0.2	41.5	0.2	314.5	0.999	13.40	0.982
10	16.530	17.252	44.0	2.5	44.0	2.5	315.2	1.003	13.66	0.956
11	16.121	16.904	45.3	4.2	45.3	4.2	316.5	1.002	13.88	0.935

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	179.0	125.6	179.0	125.6	121.1	124.6	131.8	15.7	0.	0.
2	179.2	132.4	179.2	132.4	130.9	131.7	122.3	13.1	0.	0.
3	174.6	130.0	174.6	130.0	132.1	130.0	114.3	2.5	0.	0.
4	178.0	125.6	178.0	125.6	131.5	125.6	120.1	2.0	0.	0.
5	176.2	125.0	176.2	125.0	128.3	125.0	120.8	1.2	0.	0.
6	174.6	124.7	174.6	124.7	125.3	124.7	121.6	0.6	0.	0.
7	173.9	125.0	173.9	125.0	122.0	125.0	123.9	0.8	0.	0.
8	174.7	126.3	174.7	126.3	122.8	126.3	124.3	1.3	0.	0.
9	179.5	135.9	179.5	135.9	134.5	135.9	118.9	0.4	0.	0.
10	197.6	141.3	197.6	141.3	142.1	141.2	137.2	6.1	0.	0.
11	207.4	140.0	207.4	140.0	146.0	139.6	147.4	10.2	0.	0.

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID PEAK SS VEL R	MERID PEAK SS MACH NO
1	0.506	0.352	0.506	0.352	0.343	0.349	1.029	0.846
2	0.509	0.372	0.509	0.372	0.372	0.371	1.006	0.786
3	0.500	0.369	0.500	0.369	0.378	0.369	0.984	0.735
4	0.511	0.357	0.511	0.357	0.377	0.357	0.956	0.766
5	0.506	0.355	0.506	0.355	0.368	0.355	0.974	0.770
6	0.501	0.355	0.501	0.355	0.360	0.355	0.995	0.775
7	0.499	0.356	0.499	0.356	0.350	0.356	1.025	0.790
8	0.501	0.359	0.501	0.359	0.352	0.359	1.029	0.789
9	0.518	0.388	0.518	0.388	0.388	0.388	1.011	0.753
10	0.573	0.403	0.573	0.403	0.412	0.403	0.993	0.876
11	0.602	0.398	0.602	0.398	0.424	0.397	0.956	0.945

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D-FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	10.7	4.5	19.9	0.544	0.	0.239	0.239	0.090	0.090
2	10.00	7.9	1.7	17.4	0.488	0.	0.184	0.184	0.068	0.068
3	30.00	7.1	0.9	11.3	0.475	0.	0.157	0.157	0.054	0.054
4	42.50	8.2	2.0	10.8	0.510	0.	0.211	0.211	0.069	0.069
5	45.00	8.9	2.7	10.3	0.509	0.	0.202	0.202	0.065	0.065
6	47.50	9.7	3.5	10.0	0.507	0.	0.182	0.182	0.058	0.058
7	50.00	10.8	4.6	10.1	0.504	0.	0.168	0.168	0.053	0.053
8	52.50	10.5	4.3	10.2	0.496	0.	0.158	0.158	0.050	0.050
9	70.00	5.3	-0.8	9.3	0.431	0.	0.108	0.108	0.031	0.031
10	90.00	5.2	-0.8	11.3	0.455	0.	0.218	0.218	0.057	0.057
11	95.00	5.4	-0.5	13.0	0.490	0.	0.297	0.297	0.076	0.076

TABLE VIII. - Continued. BLADE ELEMENT DATA AT BLADE EDGES

FOR STATOR 10

(q) Percent design speed, 60; reading number, 373

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	23.942	23.945	54.7	8.0	54.7	8.0	319.5	0.992	12.80	0.962
2	23.503	23.538	48.7	6.2	48.7	6.2	316.3	0.996	12.69	0.974
3	21.742	21.900	42.3	1.4	42.3	1.4	310.5	0.999	12.58	0.979
4	20.637	20.881	43.1	1.3	43.1	1.3	310.0	0.996	12.59	0.970
5	20.417	20.681	44.0	1.2	44.0	1.2	310.0	0.996	12.57	0.971
6	20.196	20.480	44.9	1.0	44.9	1.0	309.7	0.996	12.51	0.974
7	19.975	20.279	46.2	1.1	46.2	1.1	309.8	0.996	12.48	0.977
8	19.754	20.079	46.6	1.2	46.6	1.2	309.6	0.996	12.46	0.978
9	18.227	18.715	43.4	0.3	43.4	0.3	307.9	0.999	12.52	0.979
10	16.530	17.252	44.1	2.6	44.1	2.6	308.0	1.002	12.70	0.959
11	16.121	16.904	45.1	4.6	45.1	4.6	309.0	1.001	12.83	0.943

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	155.1	104.4	155.1	104.4	89.6	103.4	126.6	14.6	0.	0.
2	150.1	107.9	150.1	107.9	99.1	107.3	112.7	11.7	0.	0.
3	148.1	106.7	148.1	106.7	109.5	106.6	99.6	2.5	0.	0.
4	151.2	102.2	151.2	102.2	110.4	102.2	103.3	2.3	0.	0.
5	150.5	101.4	150.5	101.4	108.3	101.3	104.5	2.2	0.	0.
6	148.4	101.4	148.4	101.4	105.1	101.3	104.7	1.8	0.	0.
7	147.6	101.6	147.6	101.6	102.1	101.6	106.6	2.0	0.	0.
8	147.6	102.3	147.6	102.3	101.4	102.3	107.3	2.2	0.	0.
9	154.3	110.6	154.3	110.6	112.2	110.6	106.0	0.7	0.	0.
10	170.0	114.4	170.0	114.4	122.2	114.3	118.2	5.2	0.	0.
11	177.5	109.6	177.5	109.6	125.2	109.3	125.8	8.7	0.	0.

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID PEAK SS VEL R	MERID PEAK SS MACH NO
1	0.441	0.295	0.441	0.295	0.255	0.292	1.154	0.848
2	0.429	0.306	0.429	0.306	0.283	0.304	1.083	0.743
3	0.427	0.305	0.427	0.305	0.316	0.305	0.974	0.647
4	0.437	0.293	0.437	0.293	0.319	0.293	0.926	0.664
5	0.434	0.290	0.434	0.290	0.313	0.290	0.936	0.672
6	0.428	0.290	0.428	0.290	0.303	0.290	0.964	0.673
7	0.426	0.291	0.426	0.291	0.294	0.291	0.996	0.686
8	0.426	0.293	0.426	0.293	0.293	0.293	1.008	0.689
9	0.447	0.318	0.447	0.318	0.325	0.318	0.986	0.679
10	0.495	0.328	0.495	0.328	0.356	0.328	0.936	0.757
11	0.517	0.314	0.517	0.314	0.365	0.313	0.872	0.809

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D-FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	18.0	11.8	20.8	0.600	0.	0.304	0.304	0.114	0.114
2	10.00	13.6	7.4	17.9	0.531	0.	0.218	0.218	0.080	0.080
3	30.00	8.5	2.3	11.6	0.505	0.	0.182	0.182	0.063	0.063
4	42.50	8.9	2.7	11.1	0.542	0.	0.244	0.244	0.080	0.080
5	45.00	9.7	3.5	11.0	0.545	0.	0.242	0.242	0.079	0.079
6	47.50	10.4	4.2	10.8	0.538	0.	0.217	0.217	0.070	0.070
7	50.00	11.6	5.4	10.8	0.535	0.	0.200	0.200	0.064	0.064
8	52.50	11.8	5.6	10.9	0.529	0.	0.187	0.187	0.059	0.059
9	70.00	7.3	1.1	9.5	0.479	0.	0.162	0.162	0.047	0.047
10	90.00	5.2	-0.8	11.5	0.497	0.	0.266	0.266	0.070	0.070
11	95.00	5.3	-0.7	13.4	0.547	0.	0.344	0.344	0.088	0.088

TABLE VIII. - Concluded. BLADE ELEMENT DATA AT BLADE EDGES

FOR STATOR 10

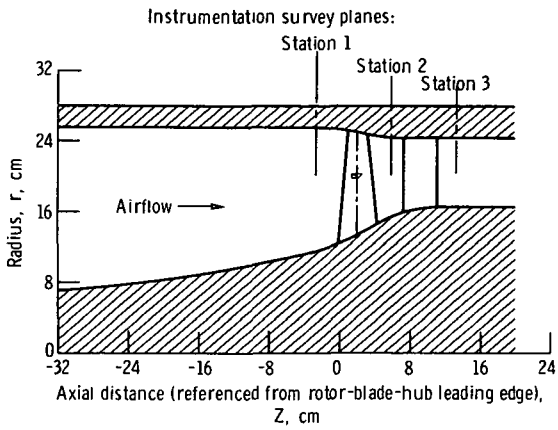
(r) Percent design speed, 50; reading number, 375

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	23.942	23.945	49.5	7.5	49.5	7.5	308.3	0.997	11.86	0.975
2	23.503	23.538	43.6	5.7	43.6	5.7	306.7	0.998	11.87	0.978
3	21.742	21.900	40.5	1.2	40.5	1.2	303.6	0.999	11.81	0.981
4	20.637	20.881	41.5	1.3	41.5	1.3	303.1	0.998	11.80	0.977
5	20.417	20.681	42.4	1.0	42.4	1.0	303.4	0.997	11.78	0.978
6	20.196	20.480	43.4	0.9	43.4	0.9	302.9	0.998	11.76	0.979
7	19.975	20.279	44.7	0.8	44.7	0.8	302.9	0.998	11.72	0.982
8	19.754	20.079	44.7	1.0	44.7	1.0	302.8	0.997	11.72	0.982
9	18.227	18.715	43.1	0.4	43.1	0.4	301.8	0.999	11.75	0.982
10	16.530	17.252	44.0	3.0	44.0	3.0	301.8	1.002	11.85	0.971
11	16.121	16.904	44.5	4.9	44.5	4.9	302.3	1.002	11.89	0.959

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	125.9	85.9	125.9	85.9	81.8	85.2	95.8	11.1	0.	0.
2	126.4	90.0	126.4	90.0	91.5	89.5	87.2	8.9	0.	0.
3	124.7	89.9	124.7	89.9	94.9	89.9	81.0	1.8	0.	0.
4	126.5	87.2	126.5	87.2	94.7	87.2	83.8	2.0	0.	0.
5	125.4	86.4	125.4	86.4	92.6	86.4	84.5	1.5	0.	0.
6	124.8	86.0	124.8	86.0	90.7	86.0	85.7	1.3	0.	0.
7	123.4	86.1	123.4	86.1	87.7	86.1	86.8	1.3	0.	0.
8	124.0	86.4	124.0	86.4	88.1	86.4	87.3	1.5	0.	0.
9	129.5	93.2	129.5	93.2	94.6	93.2	88.5	0.6	0.	0.
10	141.0	97.3	141.0	97.3	101.5	97.2	97.9	5.0	0.	0.
11	145.8	89.7	145.8	89.7	104.0	89.4	102.3	7.6	0.	0.

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID PEAK SS VEL R	MERID PEAK SS MACH NO
1	0.363	0.246	0.363	0.246	0.235	0.244	1.042	0.631
2	0.365	0.258	0.365	0.258	0.264	0.257	0.978	0.570
3	0.362	0.259	0.362	0.259	0.275	0.259	0.948	0.526
4	0.367	0.252	0.367	0.252	0.275	0.252	0.920	0.539
5	0.364	0.249	0.364	0.249	0.269	0.249	0.932	0.543
6	0.362	0.248	0.362	0.248	0.263	0.248	0.949	0.551
7	0.358	0.249	0.358	0.249	0.255	0.249	0.981	0.558
8	0.360	0.250	0.360	0.250	0.256	0.250	0.981	0.559
9	0.377	0.270	0.377	0.270	0.275	0.270	0.986	0.569
10	0.412	0.281	0.412	0.281	0.296	0.281	0.958	0.629
11	0.426	0.259	0.426	0.259	0.304	0.258	0.860	0.658

RP	PERCENT SPAN	INCIDENCE MEAN	INCIDENCE SS	DEV	D-FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	12.8	6.6	20.2	0.573	0.	0.292	0.292	0.110	0.110
2	10.00	8.5	2.3	17.4	0.518	0.	0.248	0.248	0.092	0.092
3	30.00	6.7	0.5	11.4	0.497	0.	0.218	0.218	0.075	0.075
4	42.50	7.3	1.1	11.2	0.521	0.	0.258	0.258	0.085	0.085
5	45.00	8.0	1.8	10.8	0.524	0.	0.253	0.253	0.082	0.082
6	47.50	8.9	2.7	10.6	0.526	0.	0.242	0.242	0.078	0.078
7	50.00	10.1	3.9	10.6	0.521	0.	0.217	0.217	0.069	0.069
8	52.50	9.9	3.7	10.6	0.519	0.	0.215	0.215	0.068	0.068
9	70.00	7.0	0.8	9.5	0.474	0.	0.188	0.188	0.055	0.055
10	90.00	5.2	-0.9	11.8	0.479	0.	0.261	0.261	0.069	0.069
11	95.00	4.7	-1.3	13.7	0.547	0.	0.349	0.349	0.089	0.089



Flow path coordinates		
Axial distance, Z, cm	Radius, r, cm	
	Inner	Outer
-30.480	7.303	25.400
-25.400	7.493	
-22.860	7.874	
-20.320	8.255	
-15.240	9.144	
-10.160	10.097	
-5.080	10.922	
[a] -2.540	11.659	
0	12.668	25.273
4.572	14.605	24.511
[a] 6.096	15.240	24.397
7.620	15.748	24.384
11.176	16.510	
[a] 13.462		
15.240		
20.320		

[a] Instrumentation survey plane.

Figure 1. - Flow path for stage 14-10 showing axial location of instrumentation.

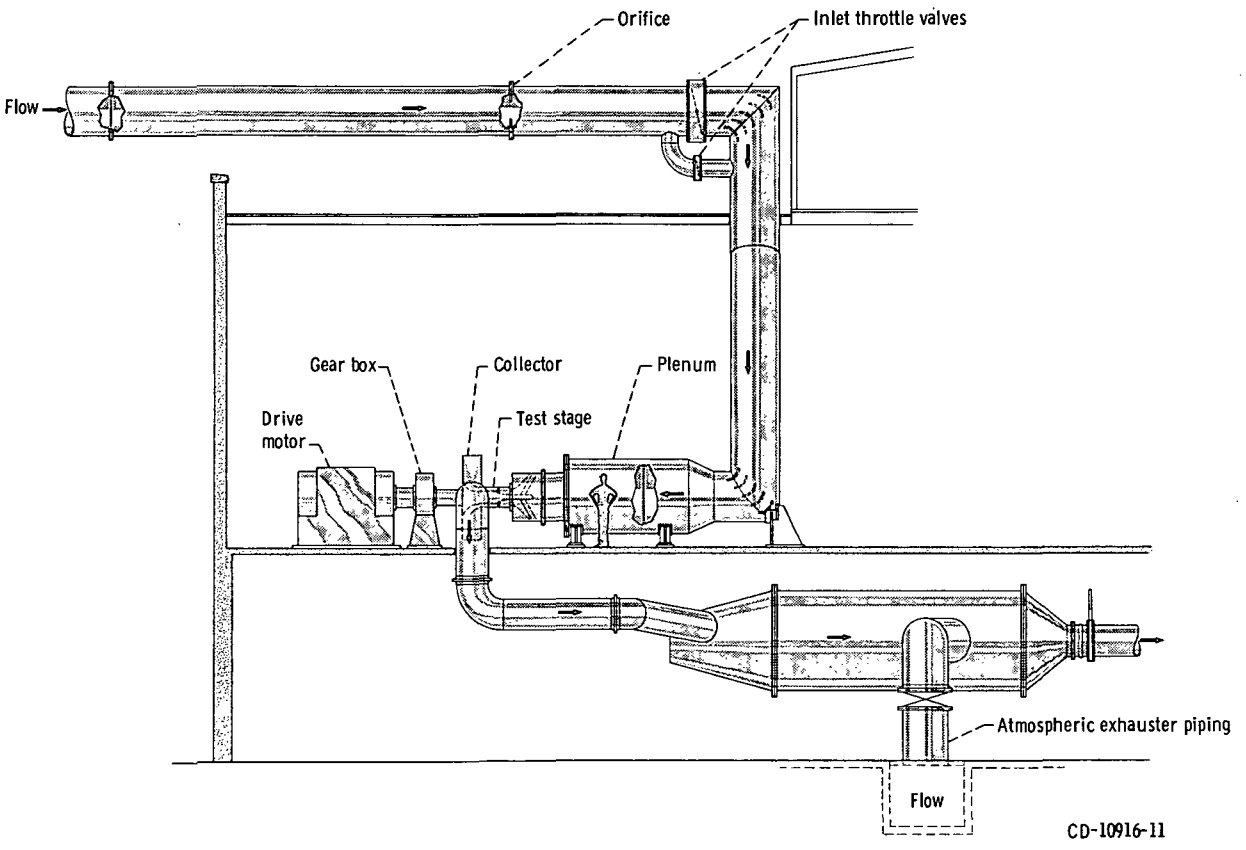


Figure 2. - Test facility schematic.

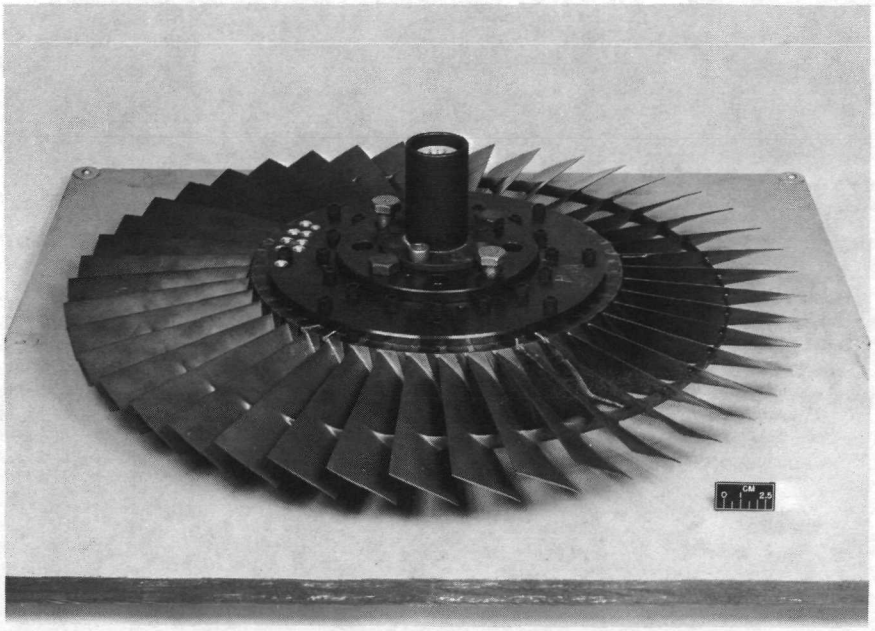


Figure 3. - Test rotor (rotor 14).

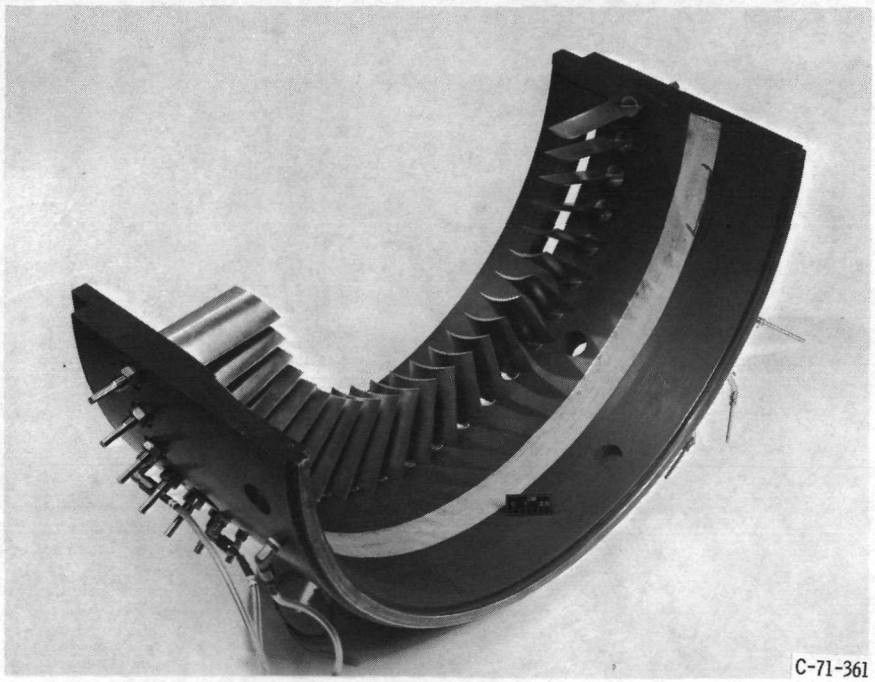
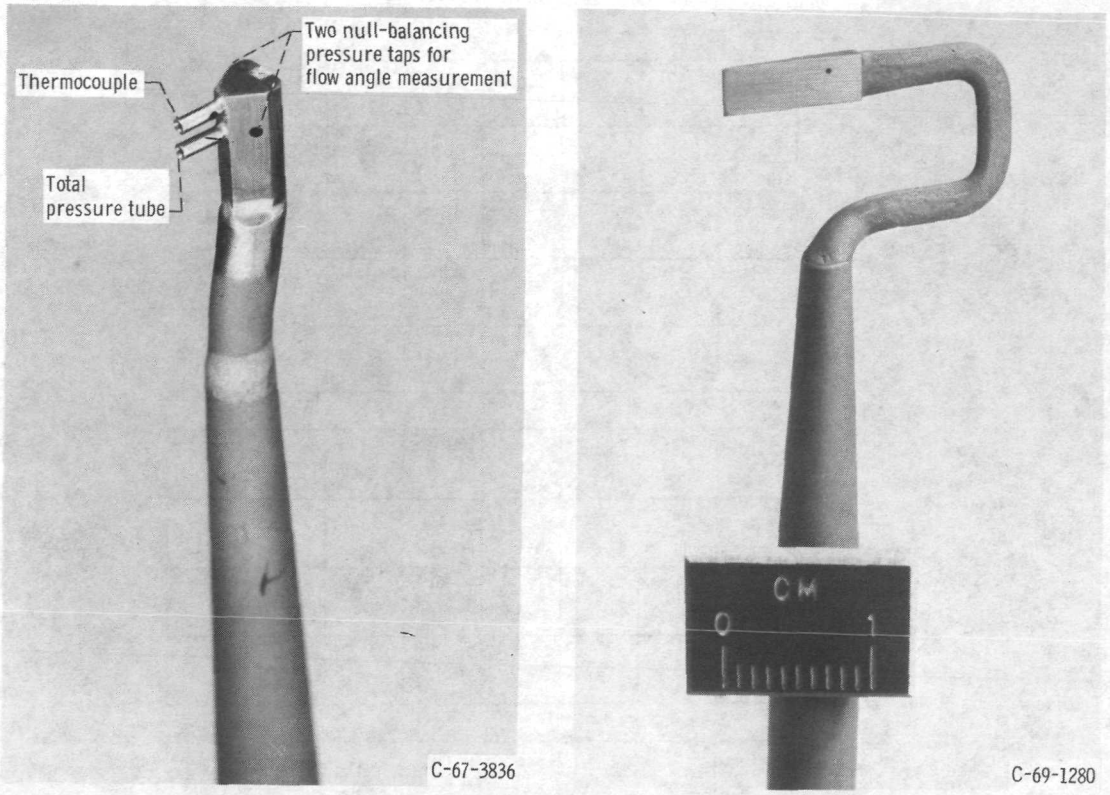


Figure 4. - Test stator (stator 10).



(a) Combination total pressure, total temperature, and flow angle probe (double barrel).

(b). Static pressure probe.

Figure 5. - Survey probes.

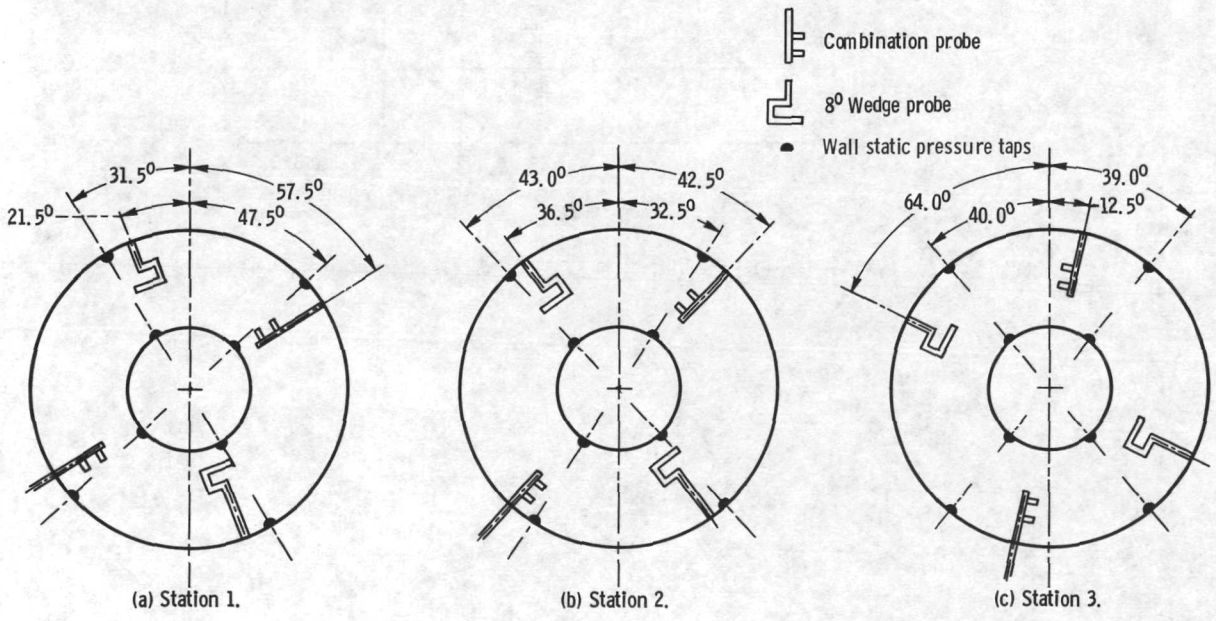


Figure 6. - Circumferential location of instrumentation at measuring stations (facing downstream).

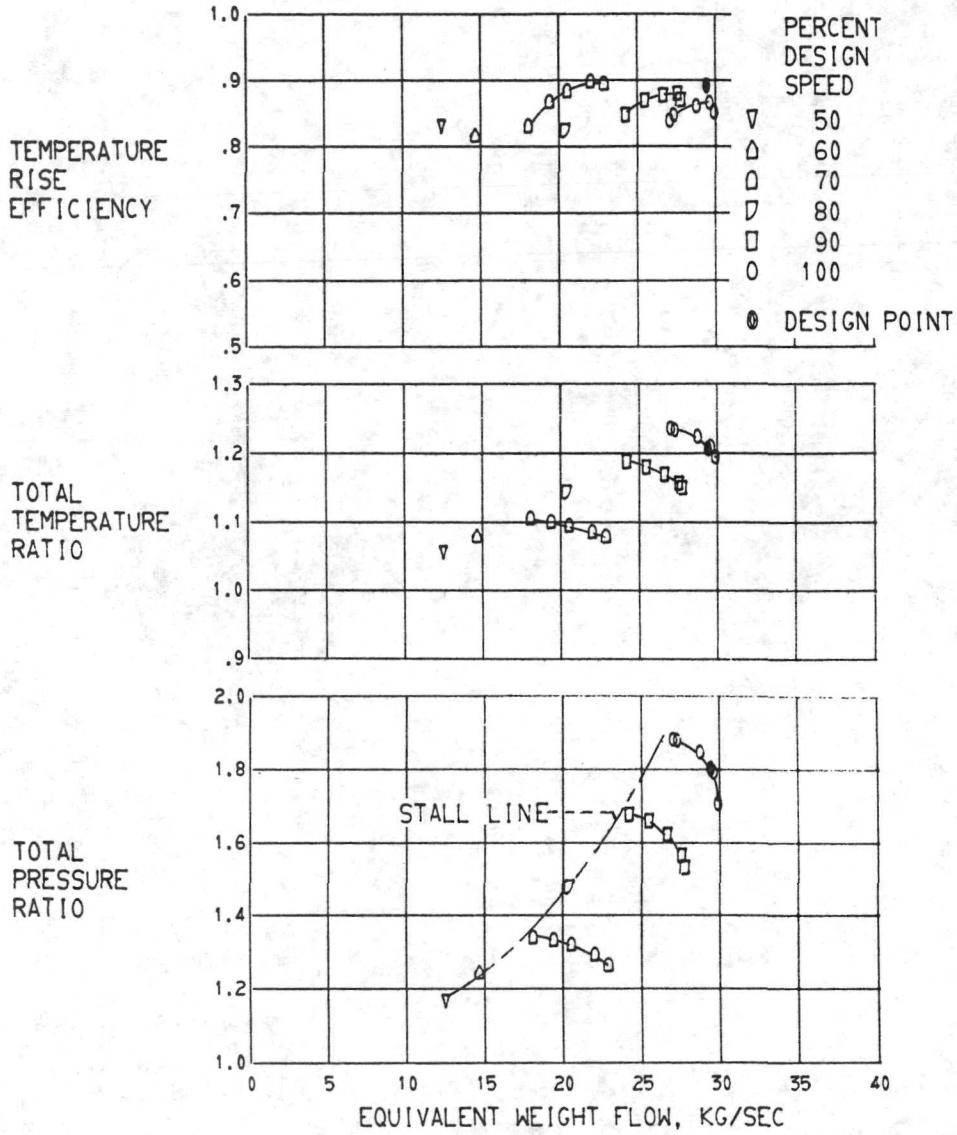


FIGURE 7. - OVERALL PERFORMANCE FOR ROTOR 14.

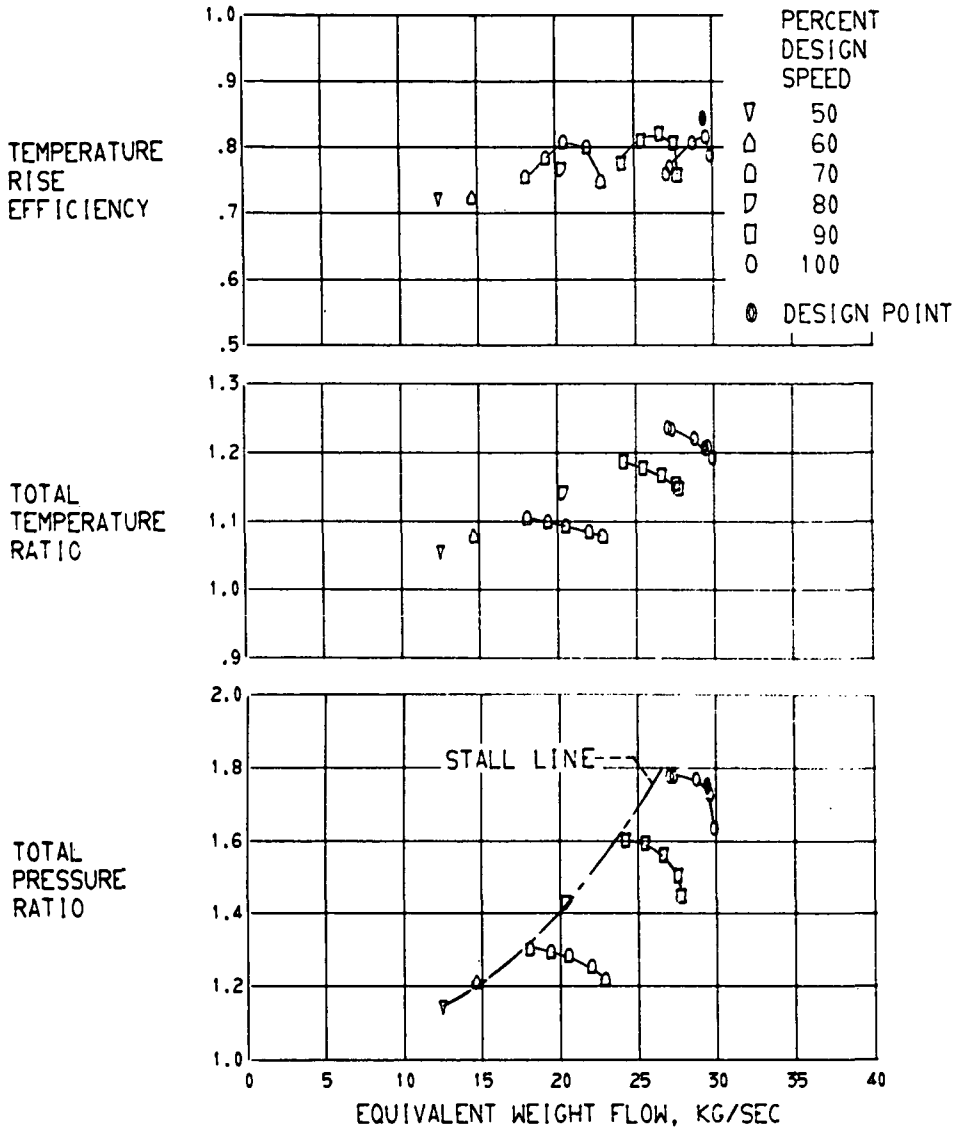


FIGURE 8. - OVERALL PERFORMANCE FOR STAGE 14 - 10.

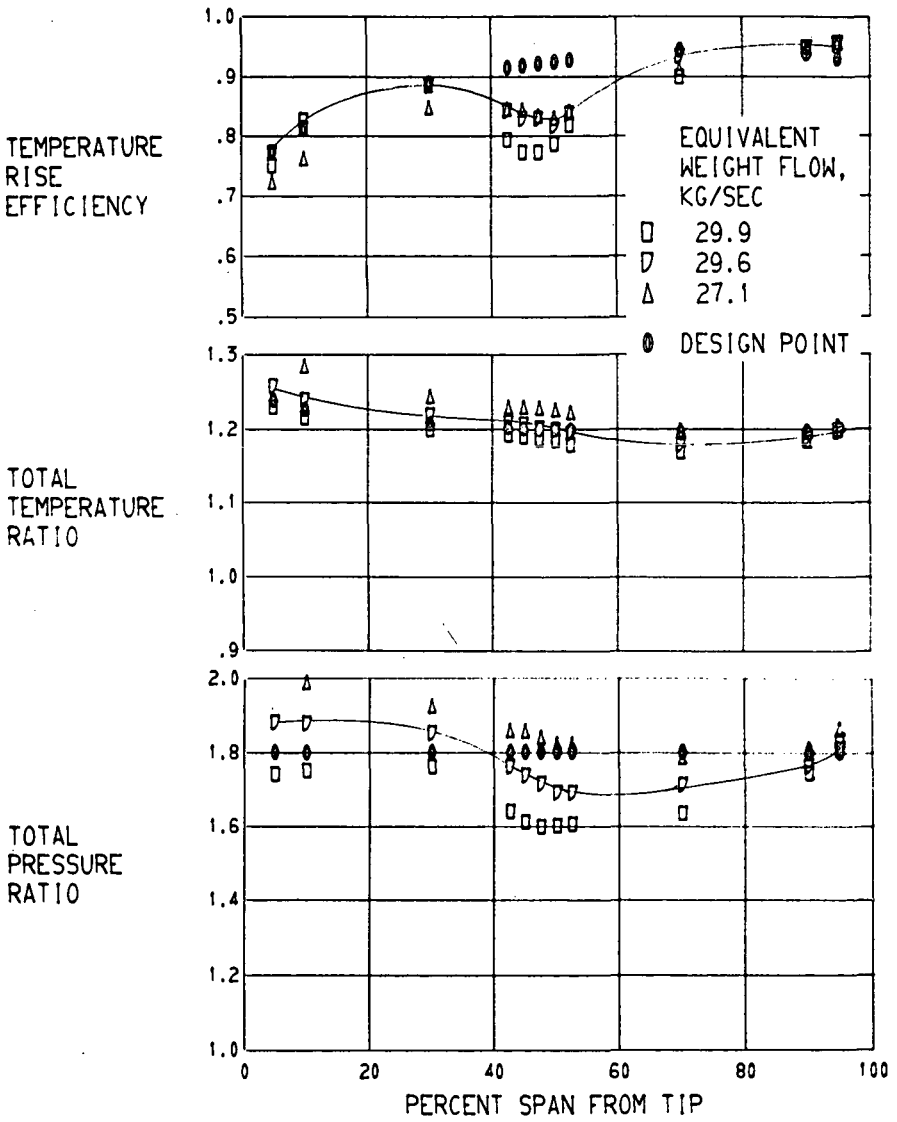


FIGURE 9. -RADIAL DISTRIBUTION OF PERFORMANCE FOR ROTOR 14. 100 PERCENT DESIGN SPEED.

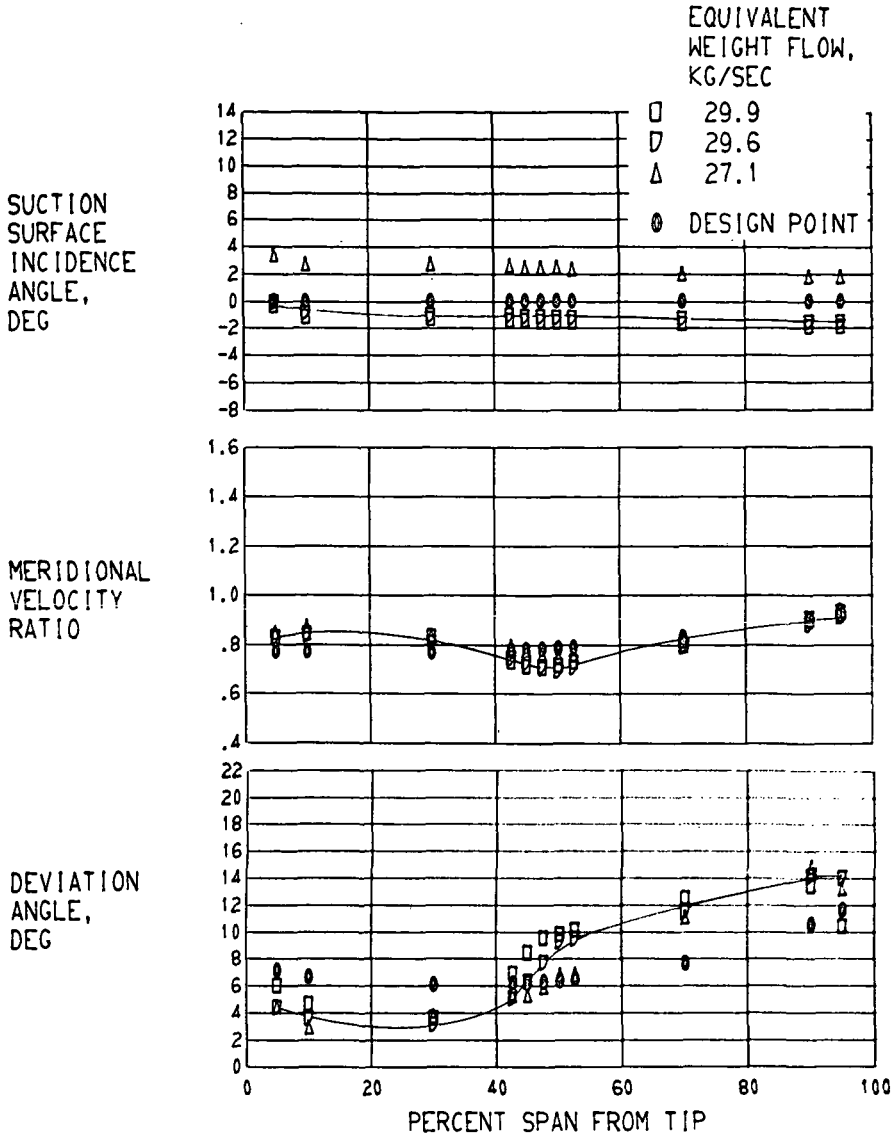


FIGURE 9. -CONTINUED.

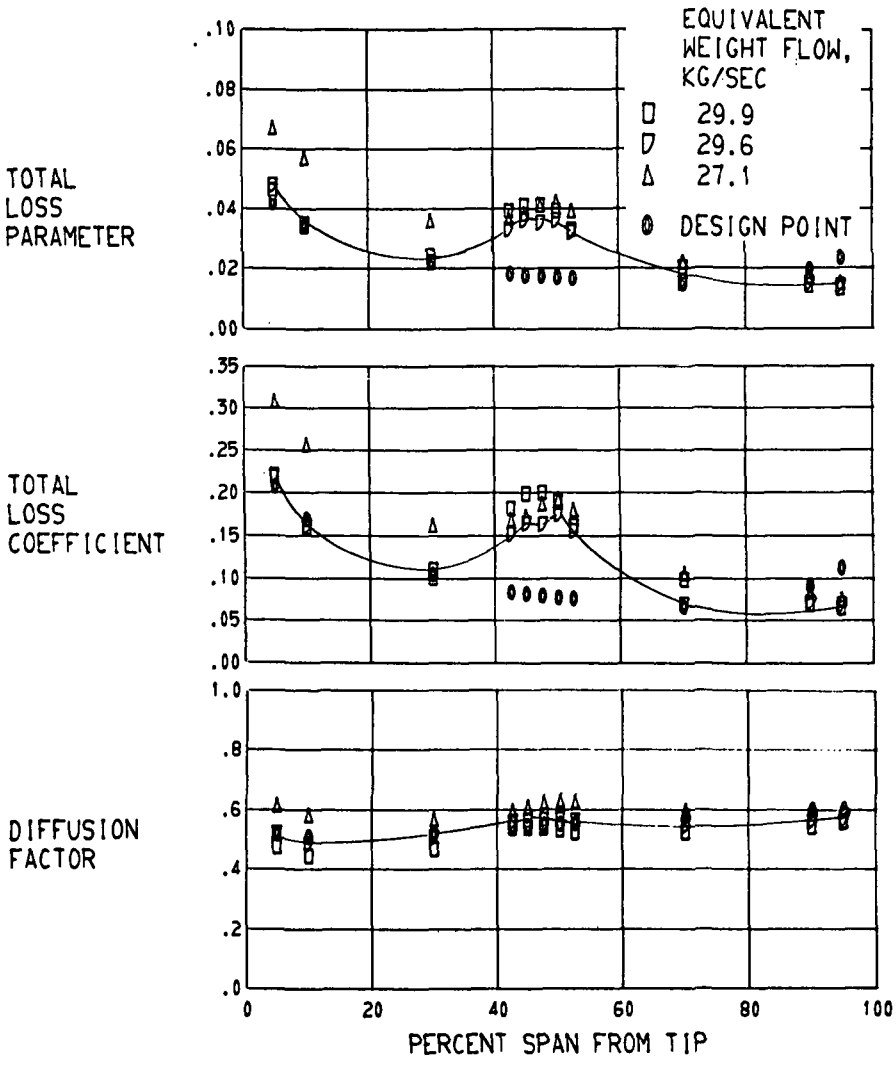


FIGURE 9. -CONCLUDED.

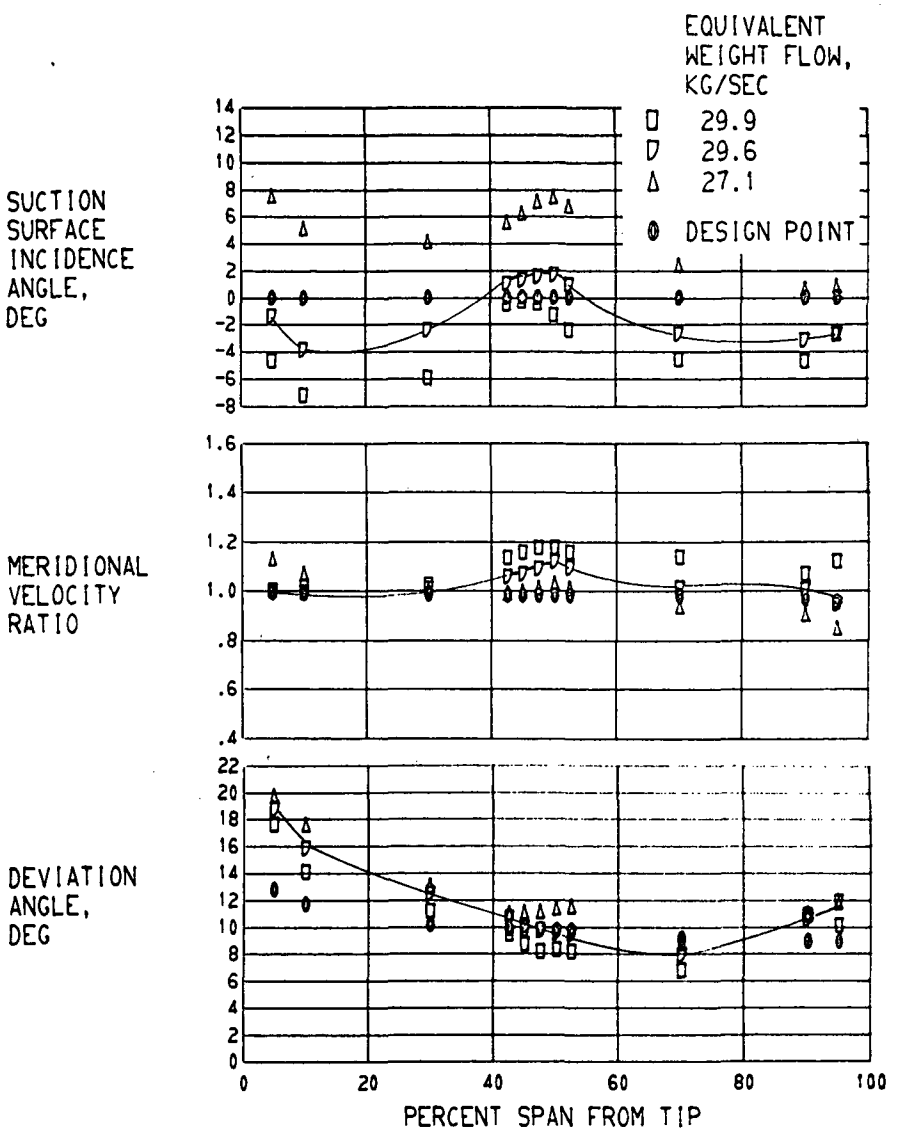


FIGURE 10. -RADIAL DISTRIBUTION OF PERFORMANCE FOR STATOR 10. 100 PERCENT DESIGN SPEED.

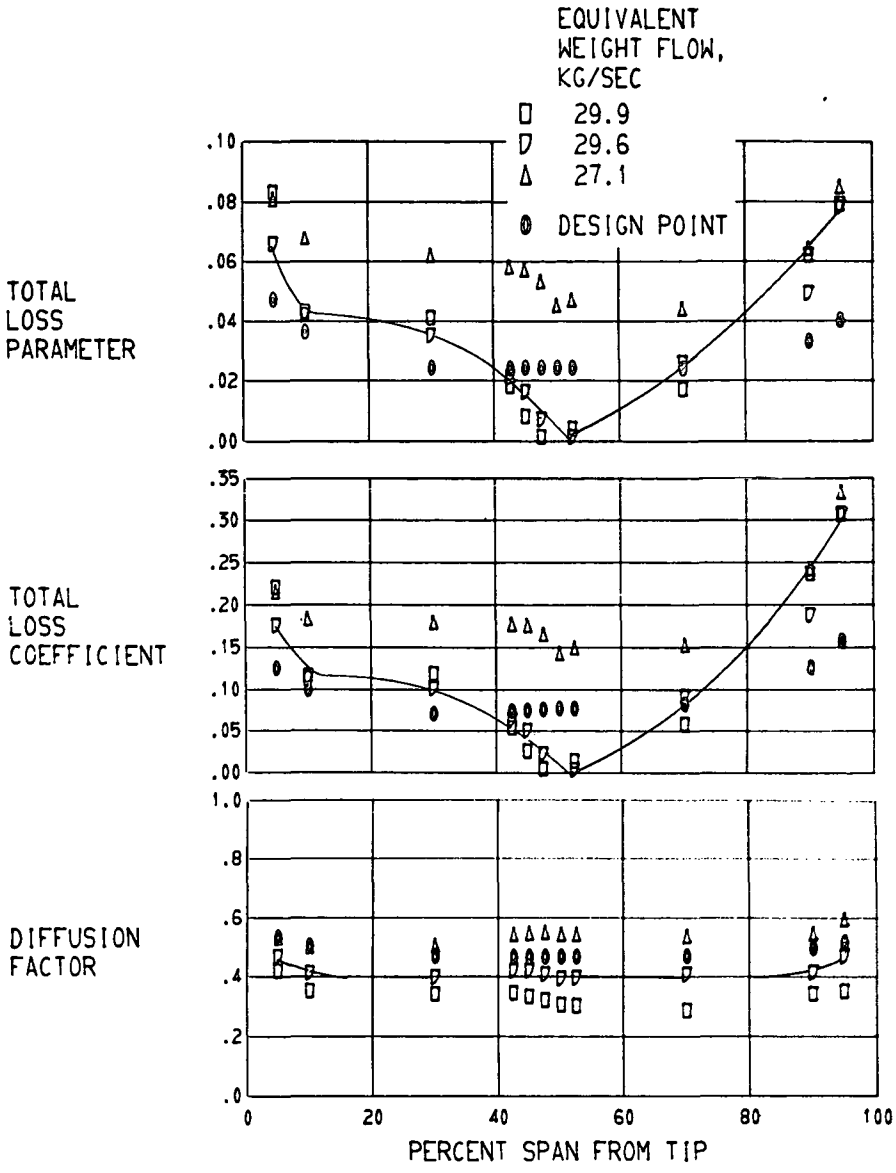
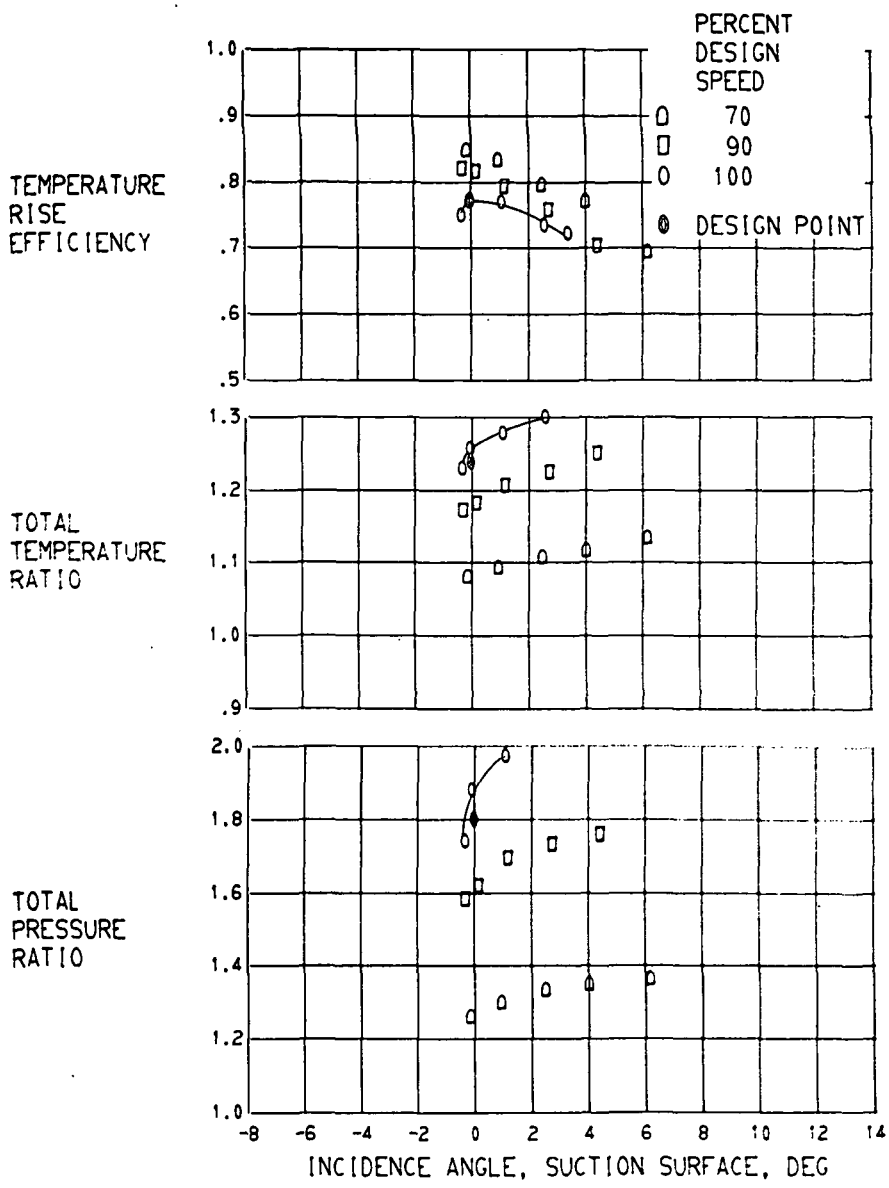
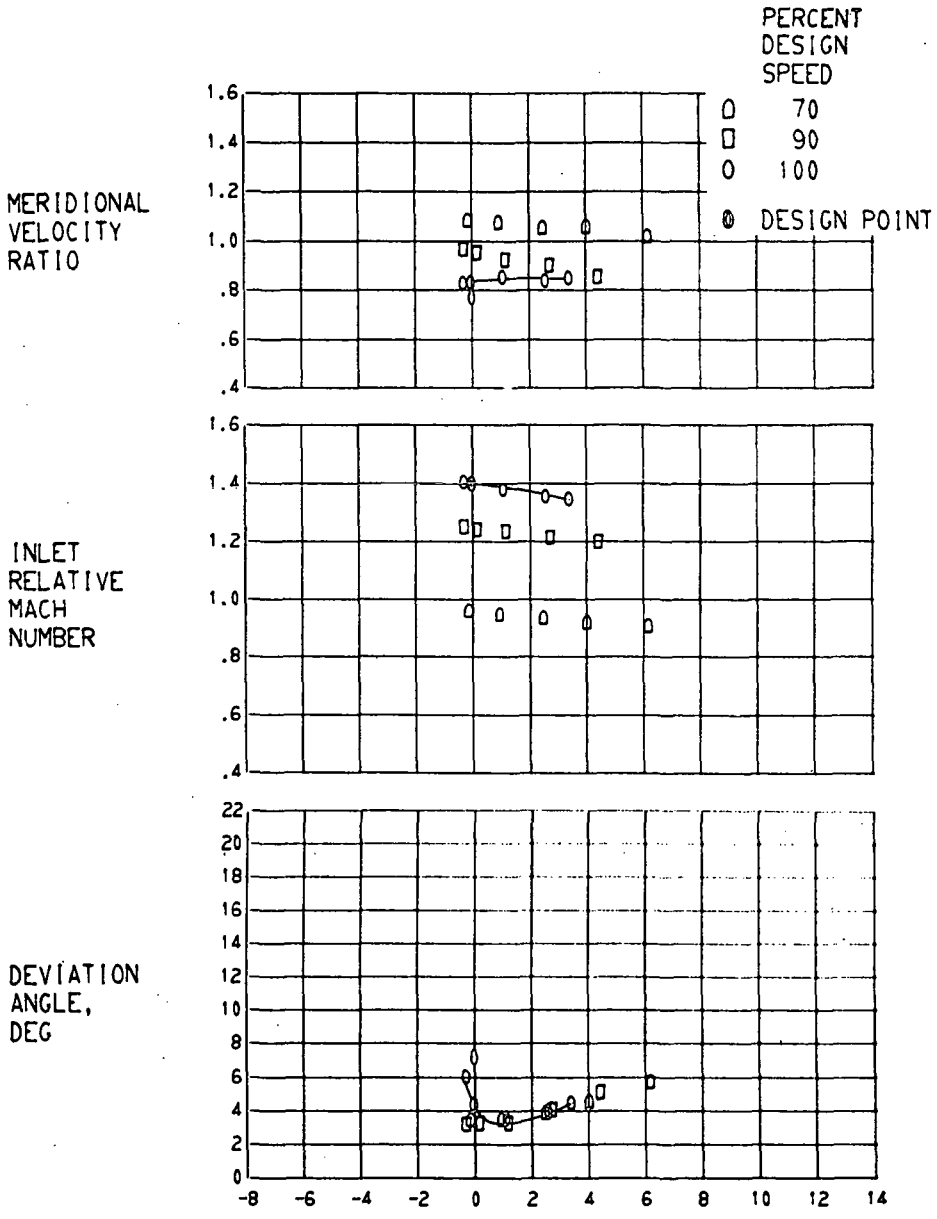


FIGURE 10. -CONCLUDED.



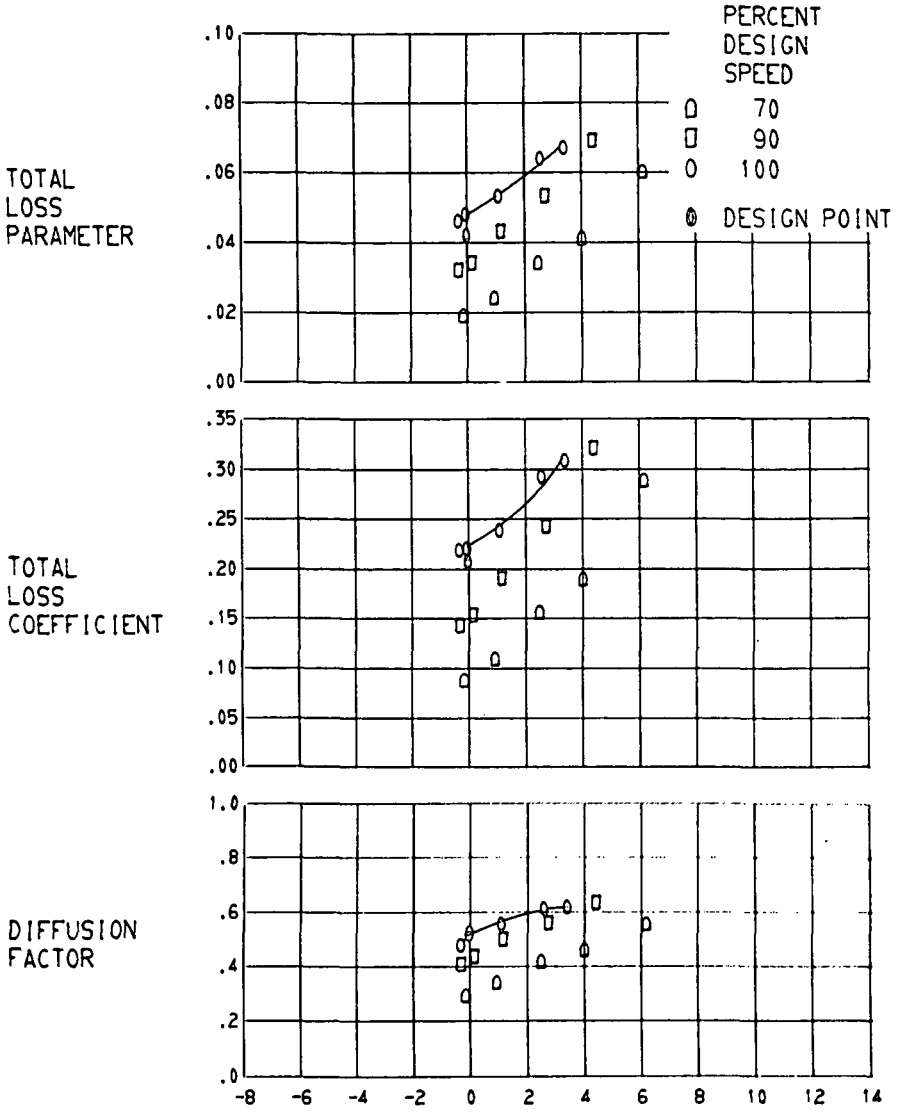
(A) 5.0 PERCENT SPAN.

FIGURE 11. - BLADE ELEMENT PERFORMANCE FOR ROTOR 14.



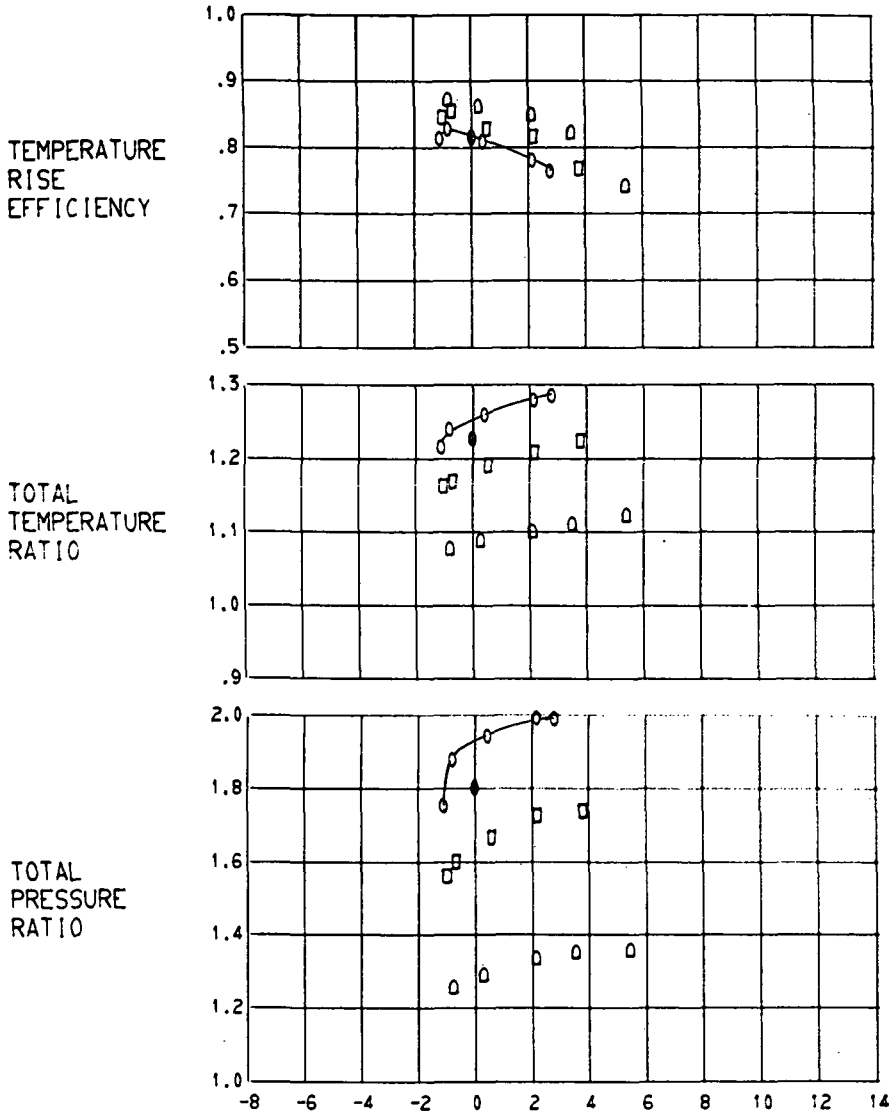
(A) CONTINUED. 5.0 PERCENT SPAN.

FIGURE 11. - BLADE ELEMENT PERFORMANCE FOR ROTOR 14.



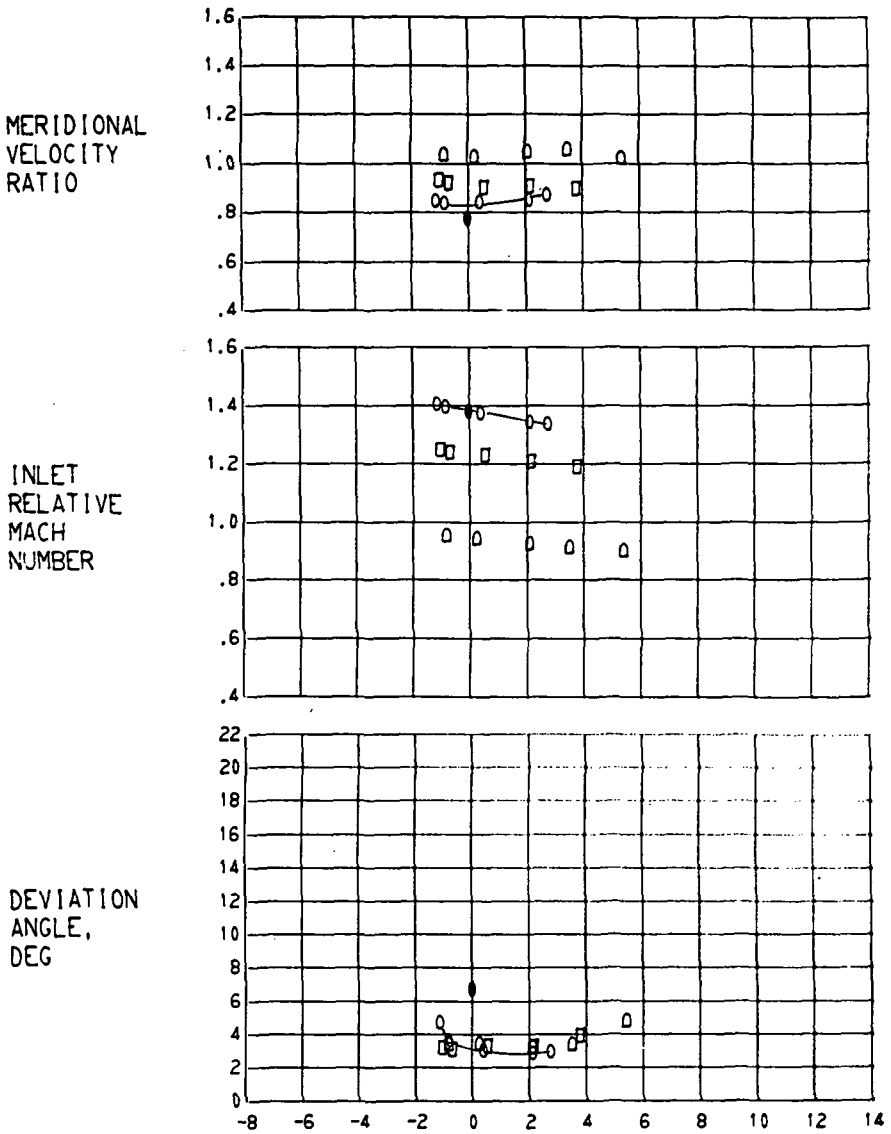
(A) CONCLUDED. 5.0 PERCENT SPAN.

FIGURE 11. - BLADE ELEMENT PERFORMANCE FOR ROTOR 14.



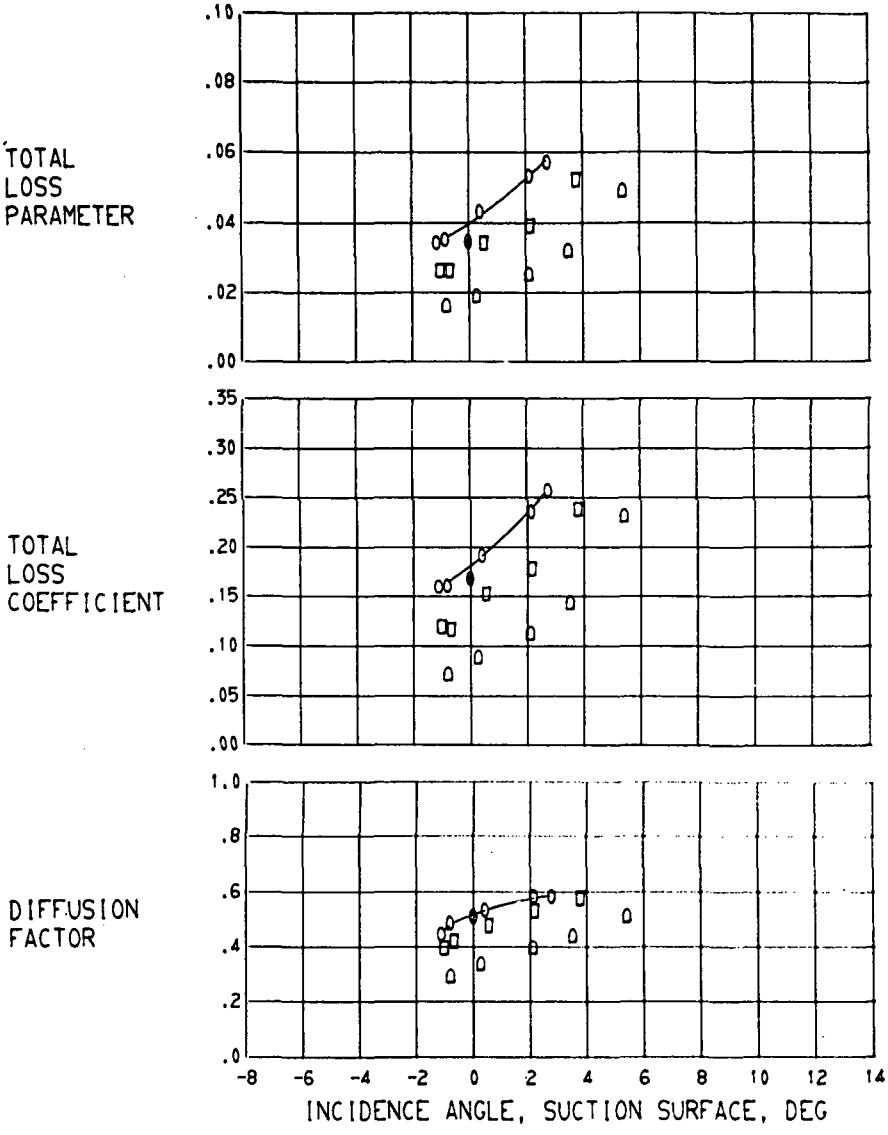
(B) 10.0 PERCENT SPAN.

FIGURE 11. - BLADE ELEMENT PERFORMANCE FOR ROTOR 14.



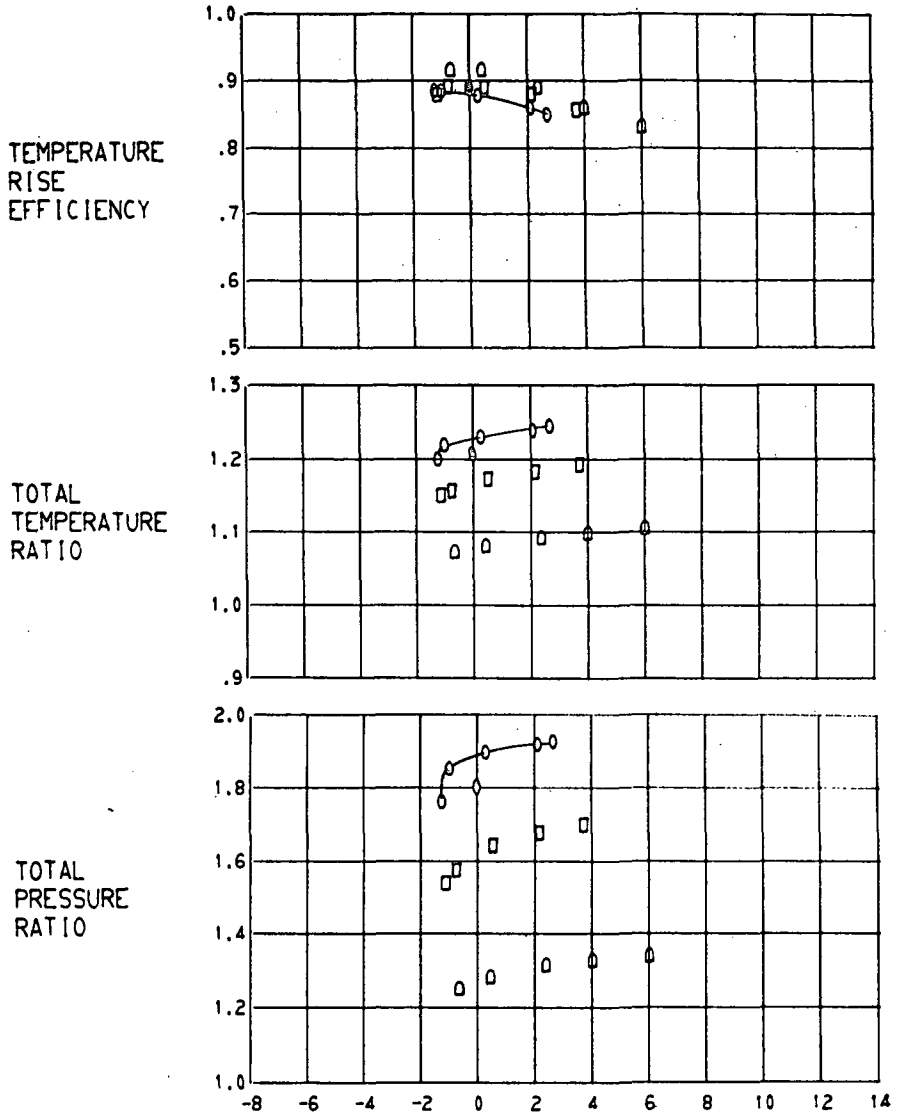
(B) CONTINUED. 10.0 PERCENT SPAN.

FIGURE 11. - BLADE ELEMENT PERFORMANCE FOR ROTOR 14.



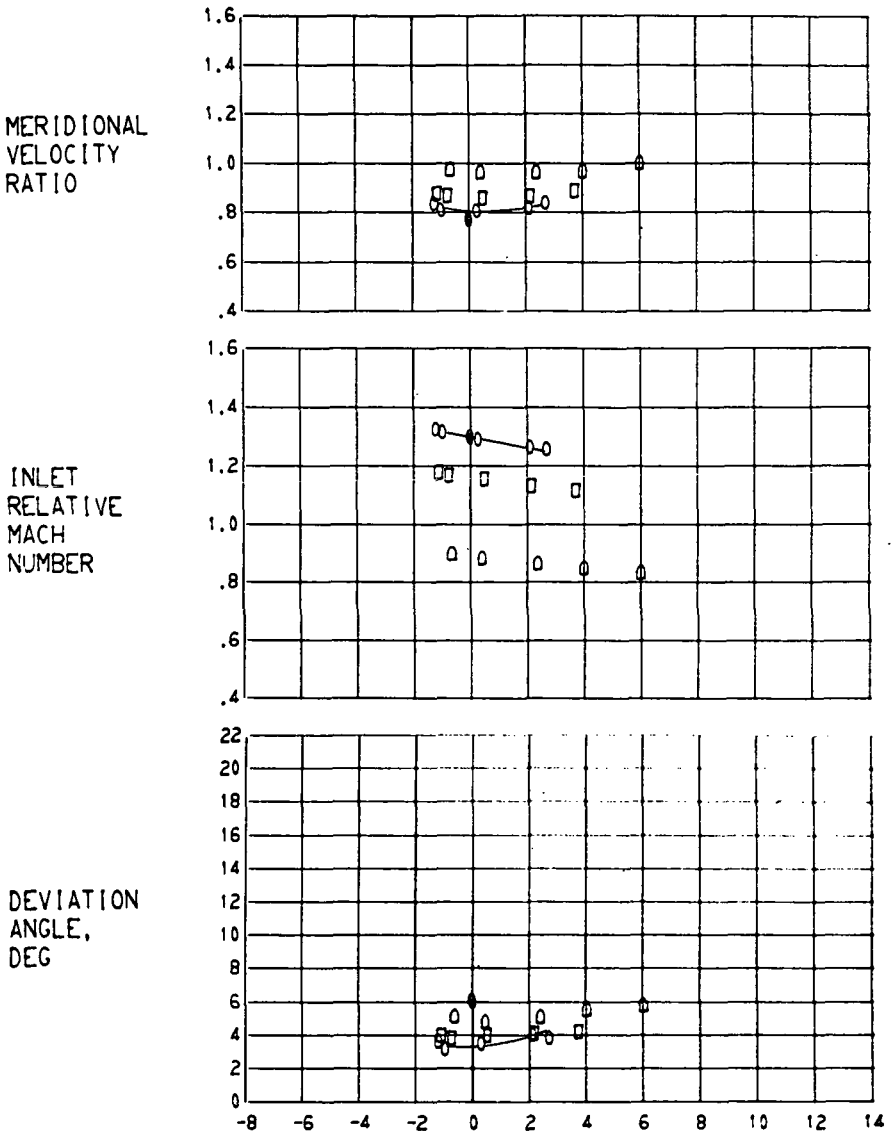
(B) CONCLUDED. 10.0 PERCENT SPAN.

FIGURE 11. - BLADE ELEMENT PERFORMANCE FOR ROTOR 14.



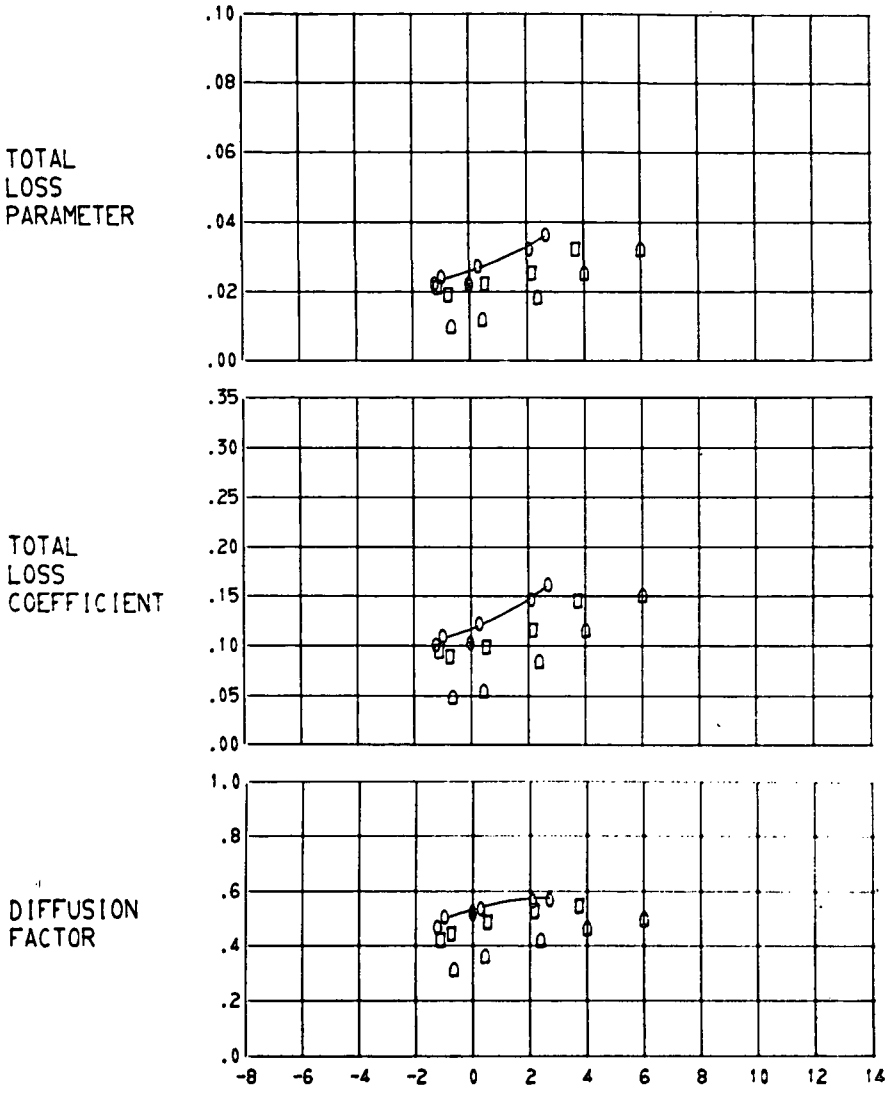
(C) 30.0 PERCENT SPAN.

FIGURE 11. - BLADE ELEMENT PERFORMANCE FOR ROTOR 14.



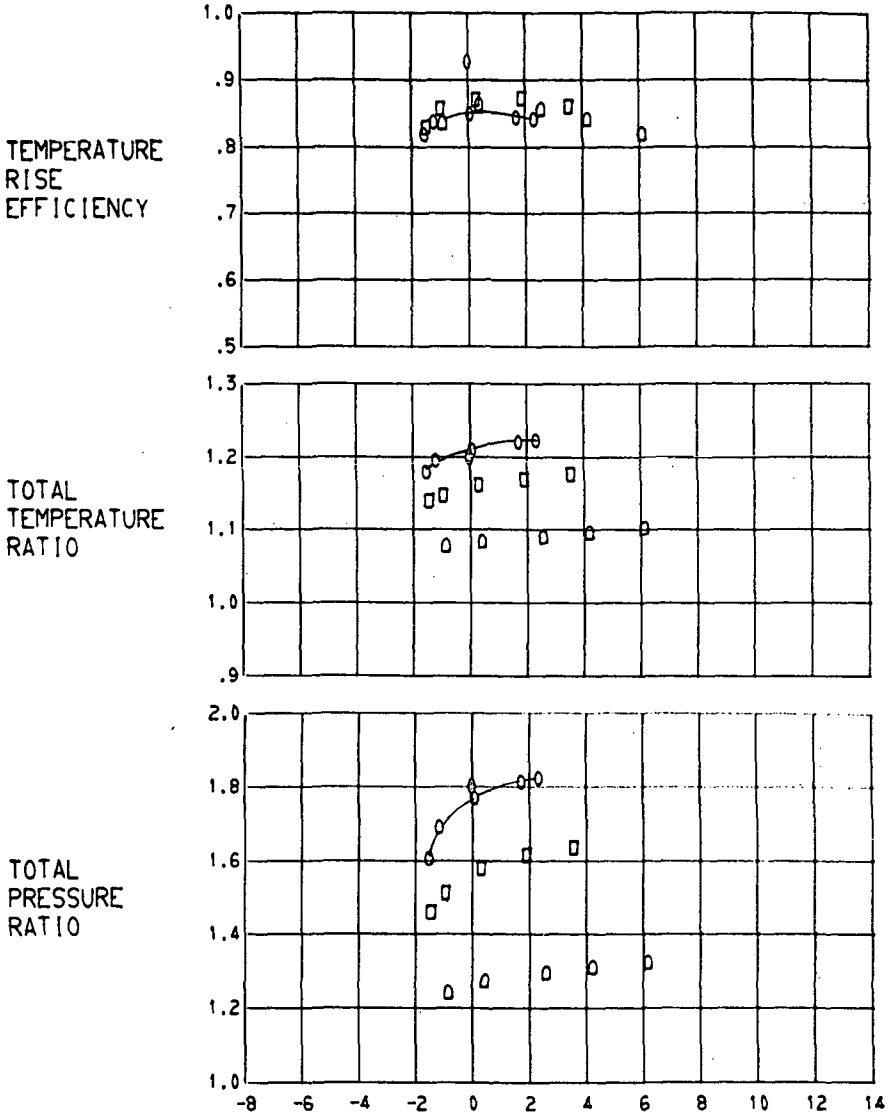
(C) CONTINUED. 30.0 PERCENT SPAN.

FIGURE 11. - BLADE ELEMENT PERFORMANCE FOR ROTOR 14.



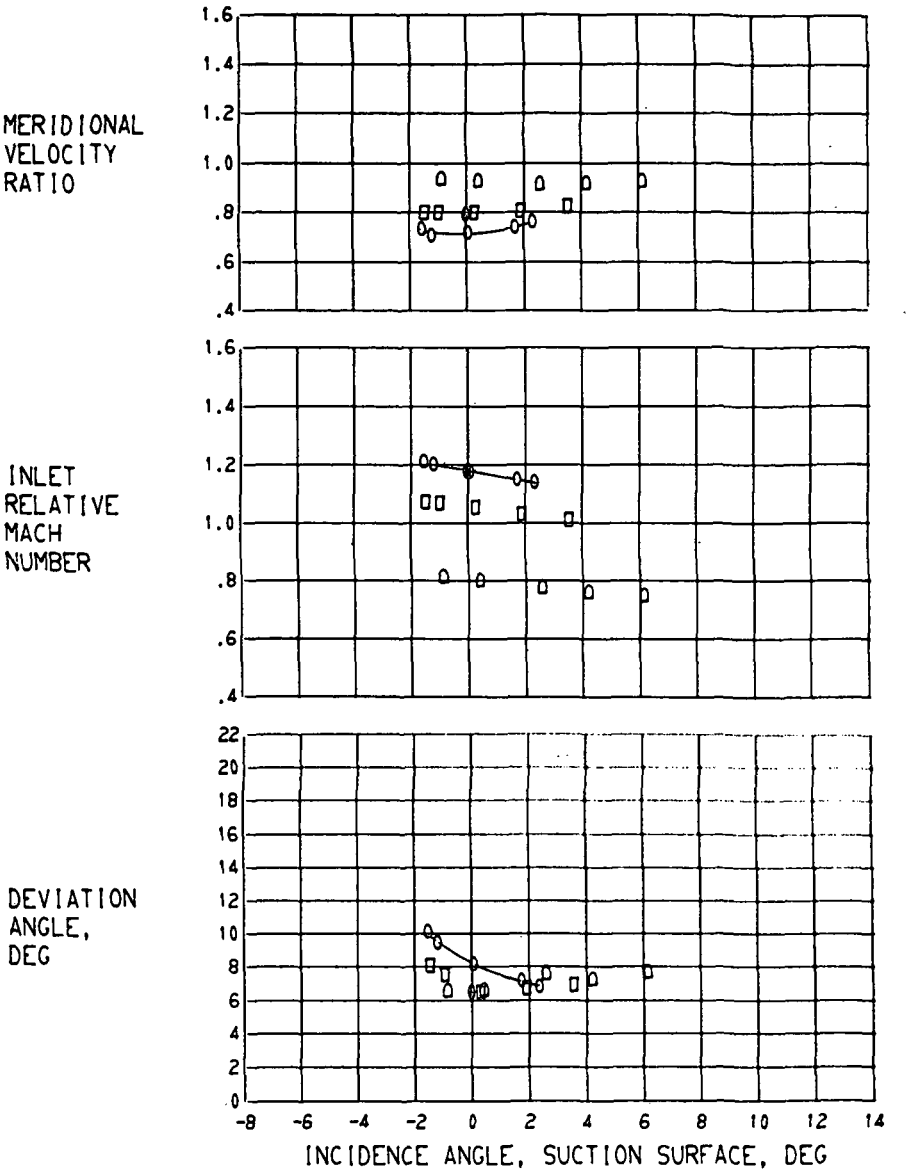
(C) CONCLUDED. 30.0 PERCENT SPAN.

FIGURE 11. - BLADE ELEMENT PERFORMANCE FOR ROTOR 14.



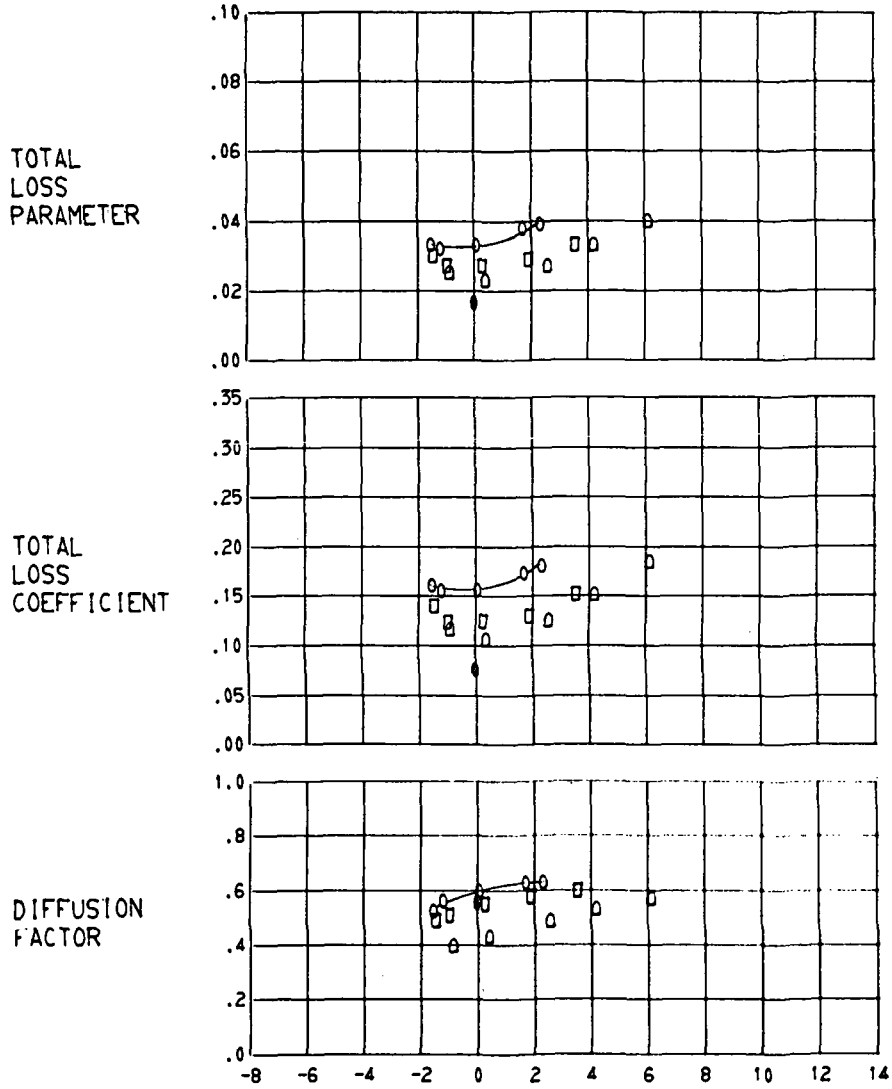
(D) 52.5 PERCENT SPAN.

FIGURE 11. - BLADE ELEMENT PERFORMANCE FOR ROTOR 14.



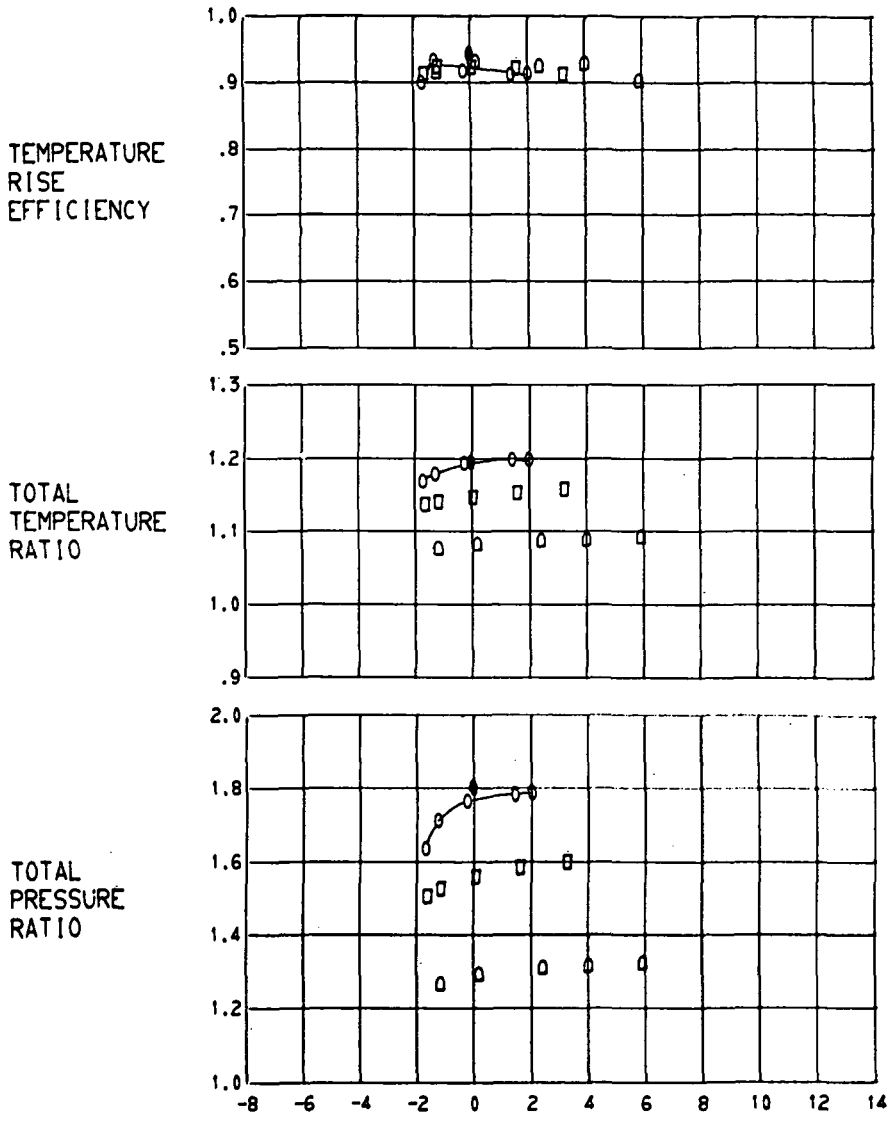
(D) CONTINUED. 52.5 PERCENT SPAN.

FIGURE 11. - BLADE ELEMENT PERFORMANCE FOR ROTOR 14.



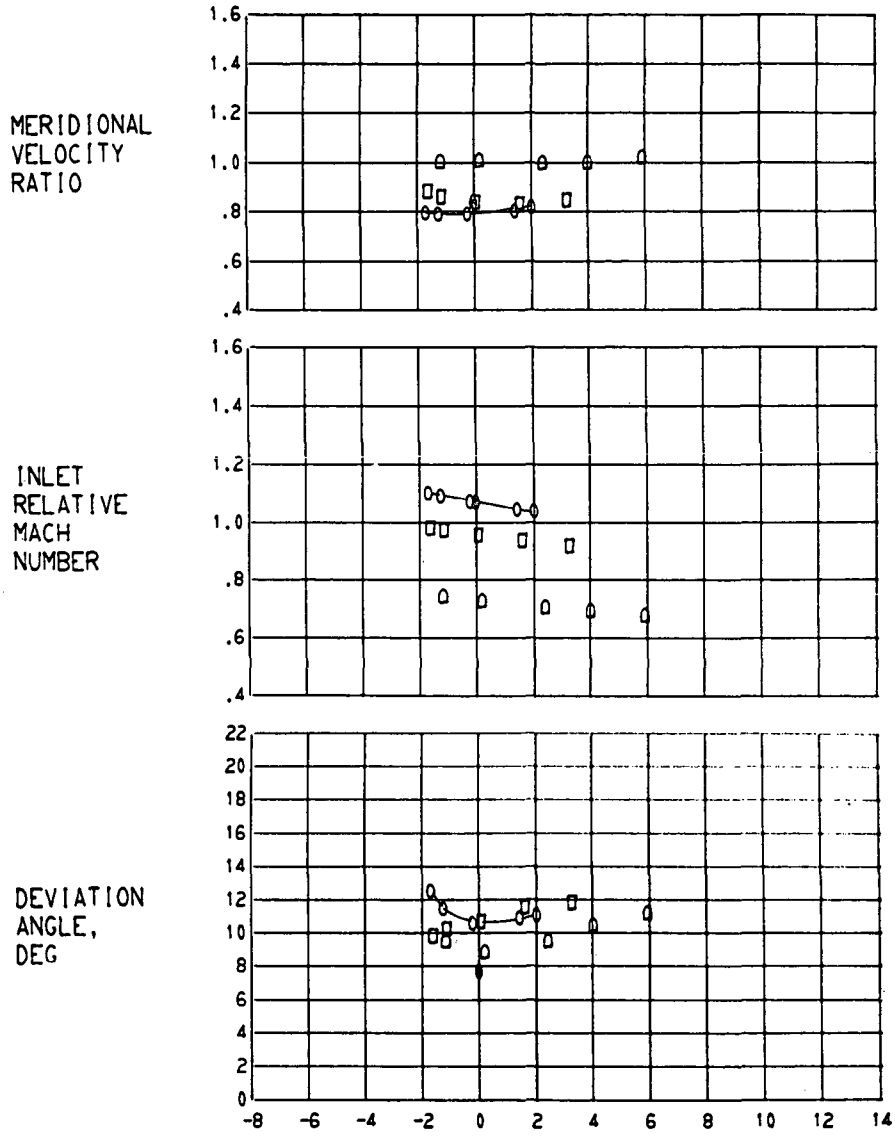
(D) CONCLUDED. 52.5 PERCENT SPAN.

FIGURE 11. - BLADE ELEMENT PERFORMANCE FOR ROTOR 14.



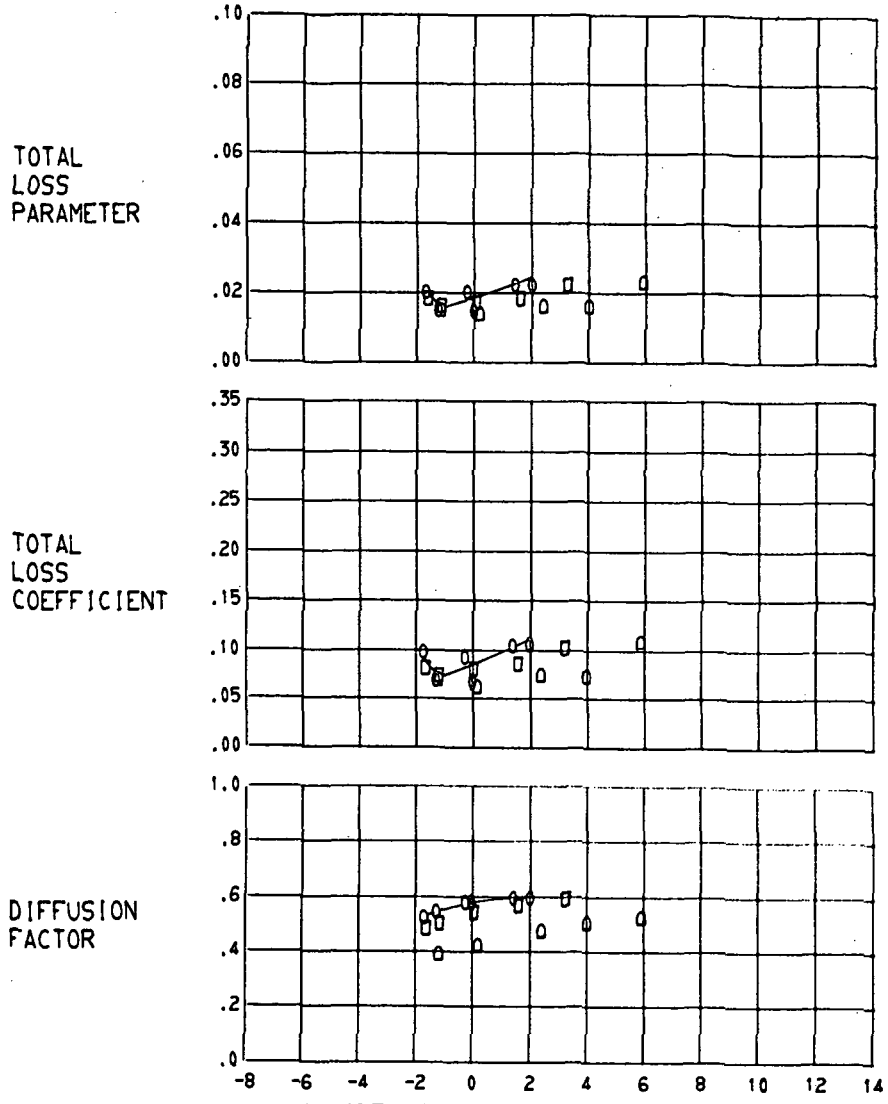
(E) 70.0 PERCENT SPAN.

FIGURE 11. - BLADE ELEMENT PERFORMANCE FOR ROTOR 14.



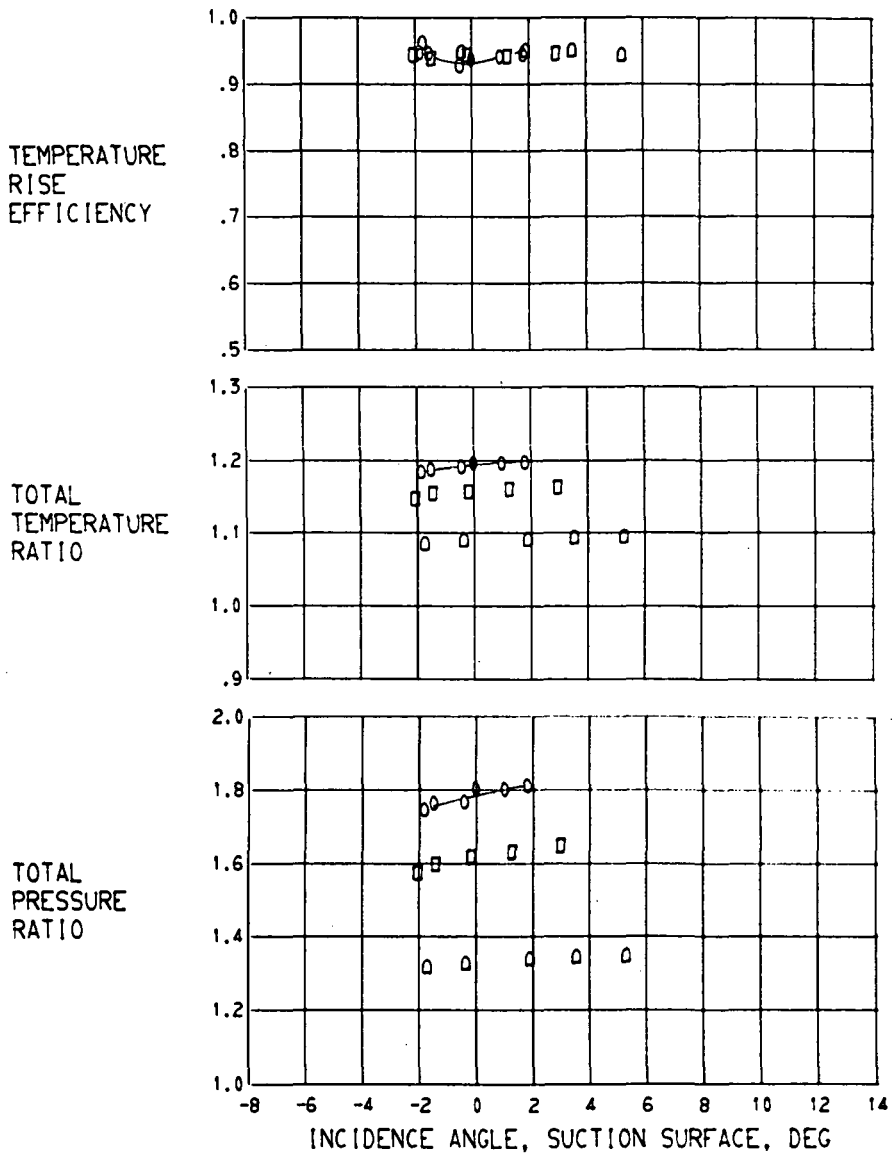
(E) CONTINUED. 70.0 PERCENT SPAN.

FIGURE 11. - BLADE ELEMENT PERFORMANCE FOR ROTOR 14.



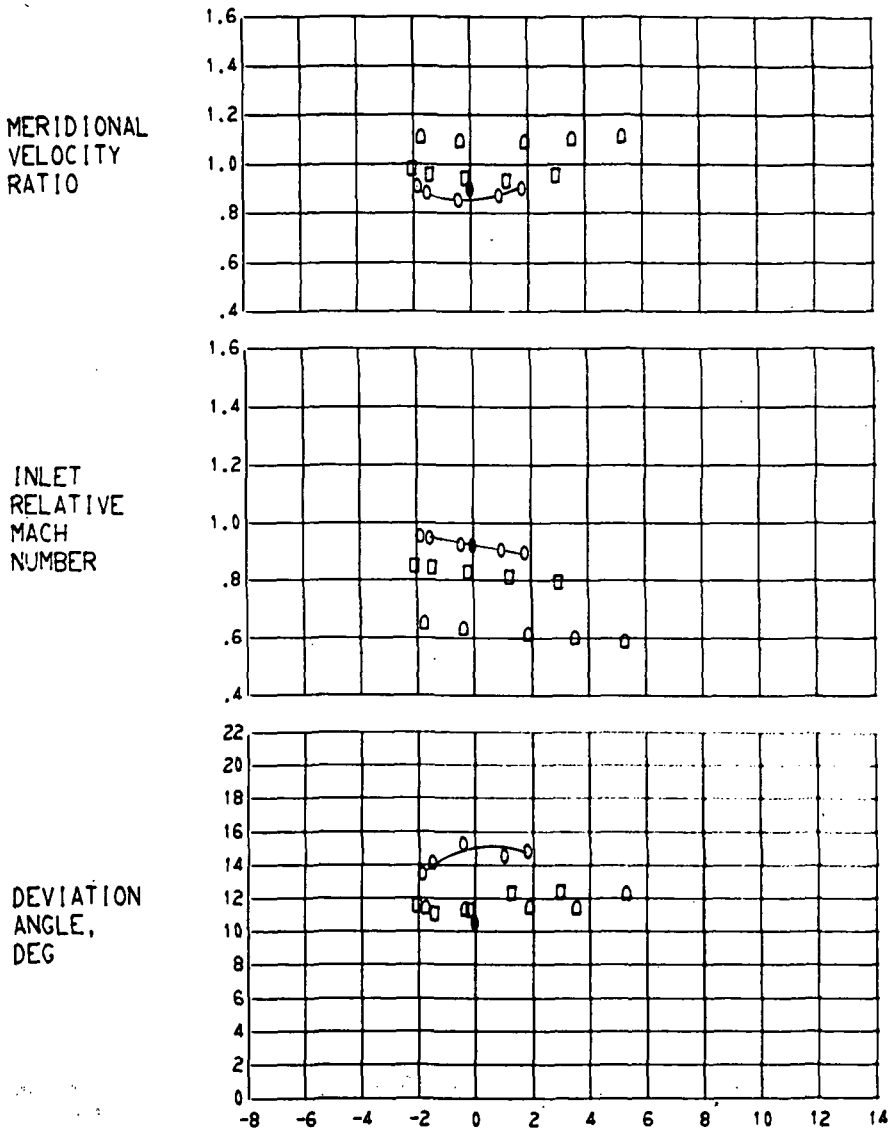
(E) CONCLUDED. 70.0 PERCENT SPAN.

FIGURE 11. - BLADE ELEMENT PERFORMANCE FOR ROTOR 14.



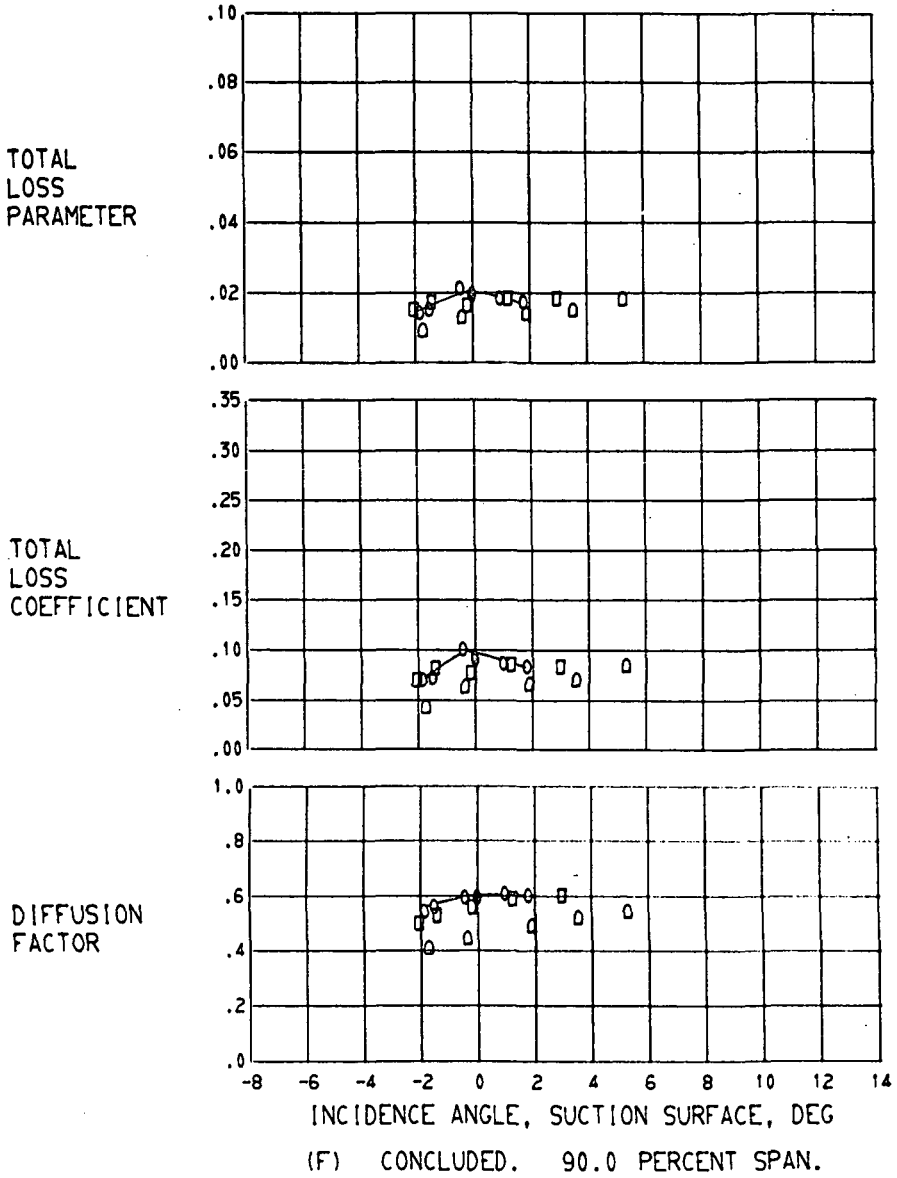
(F) 90.0 PERCENT SPAN.

FIGURE 11. - BLADE ELEMENT PERFORMANCE FOR ROTOR 14.



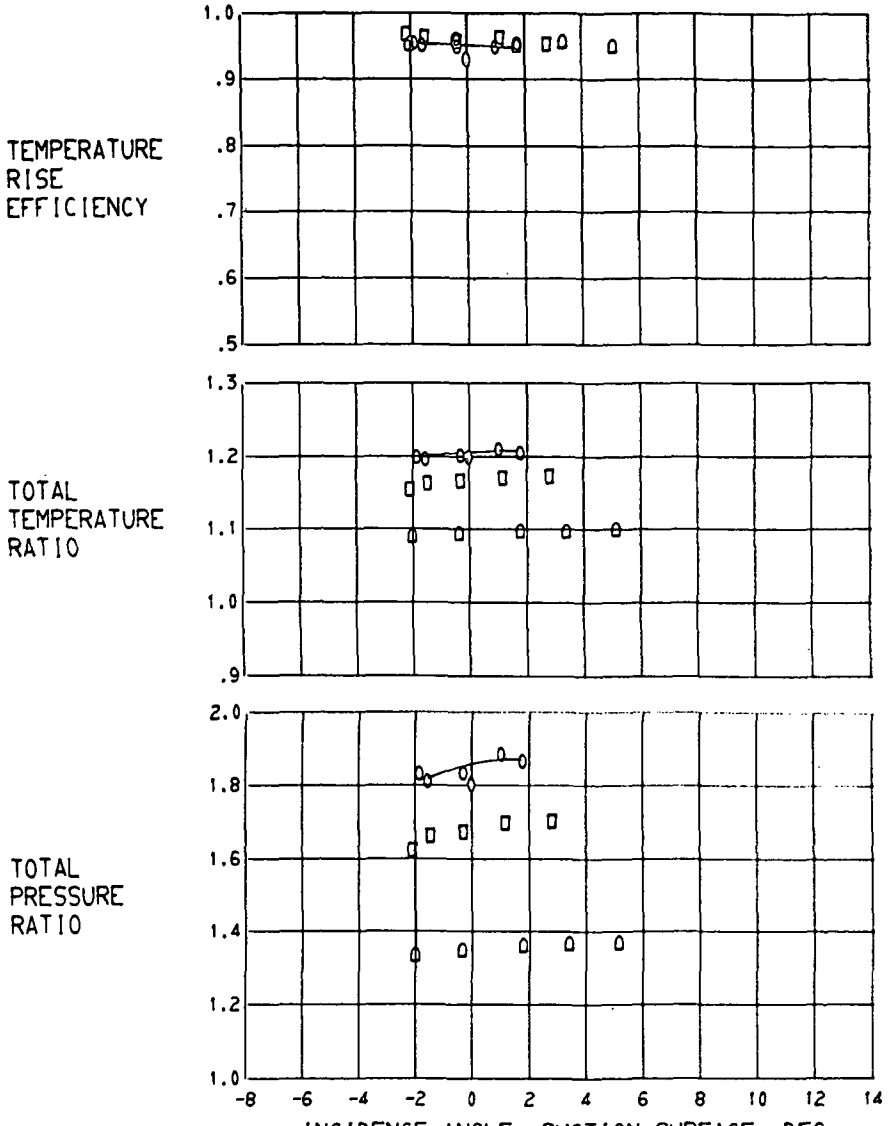
(F) CONTINUED. 90.0 PERCENT SPAN.

FIGURE 11. - BLADE ELEMENT PERFORMANCE FOR ROTOR 14.



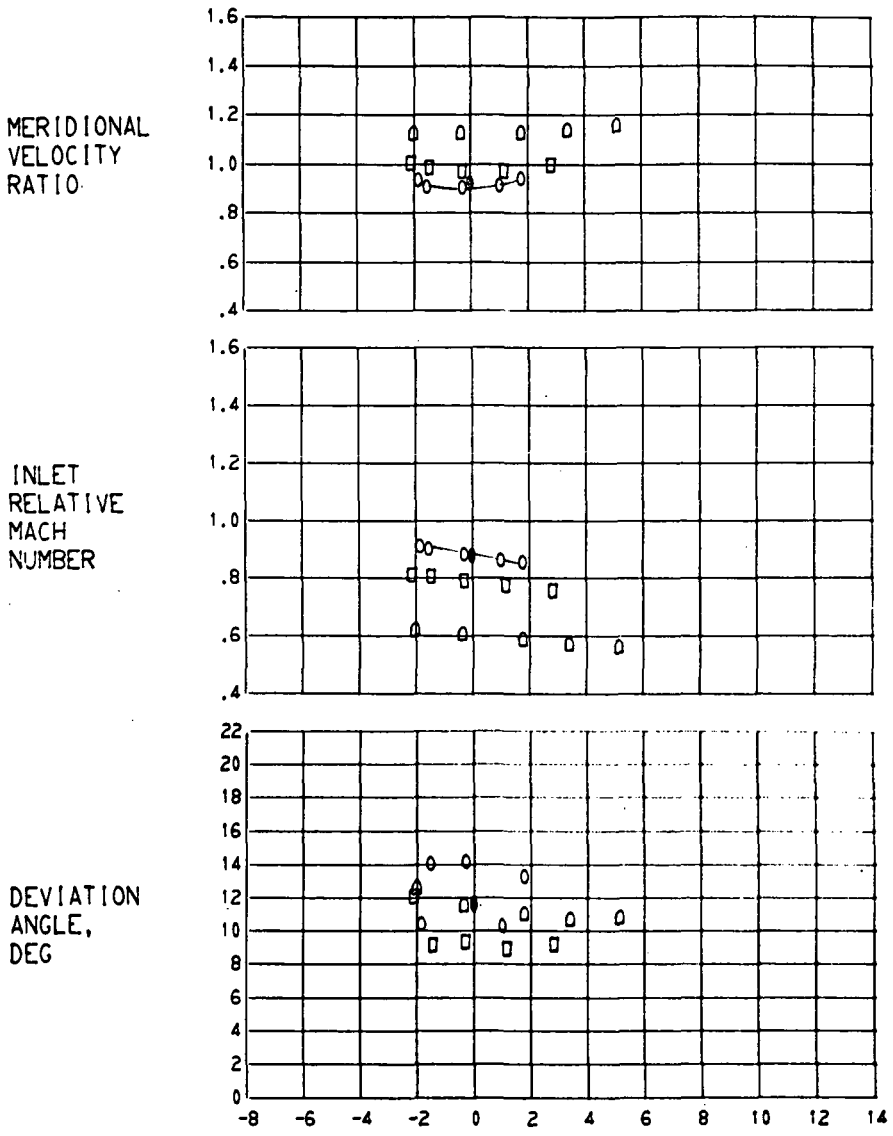
(F) CONCLUDED. 90.0 PERCENT SPAN.

FIGURE 11. - BLADE ELEMENT PERFORMANCE FOR ROTOR 14.



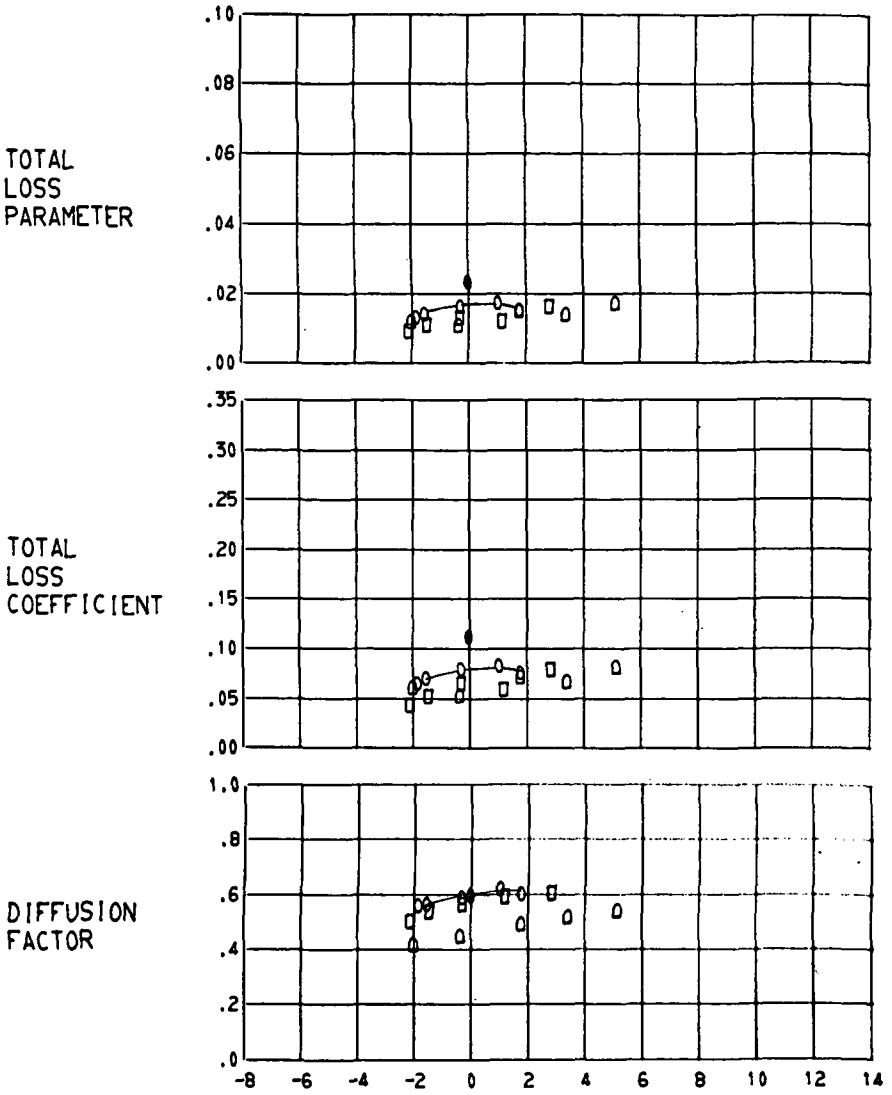
(G) 95.0 PERCENT SPAN.

FIGURE 11. - BLADE ELEMENT PERFORMANCE FOR ROTOR 14.



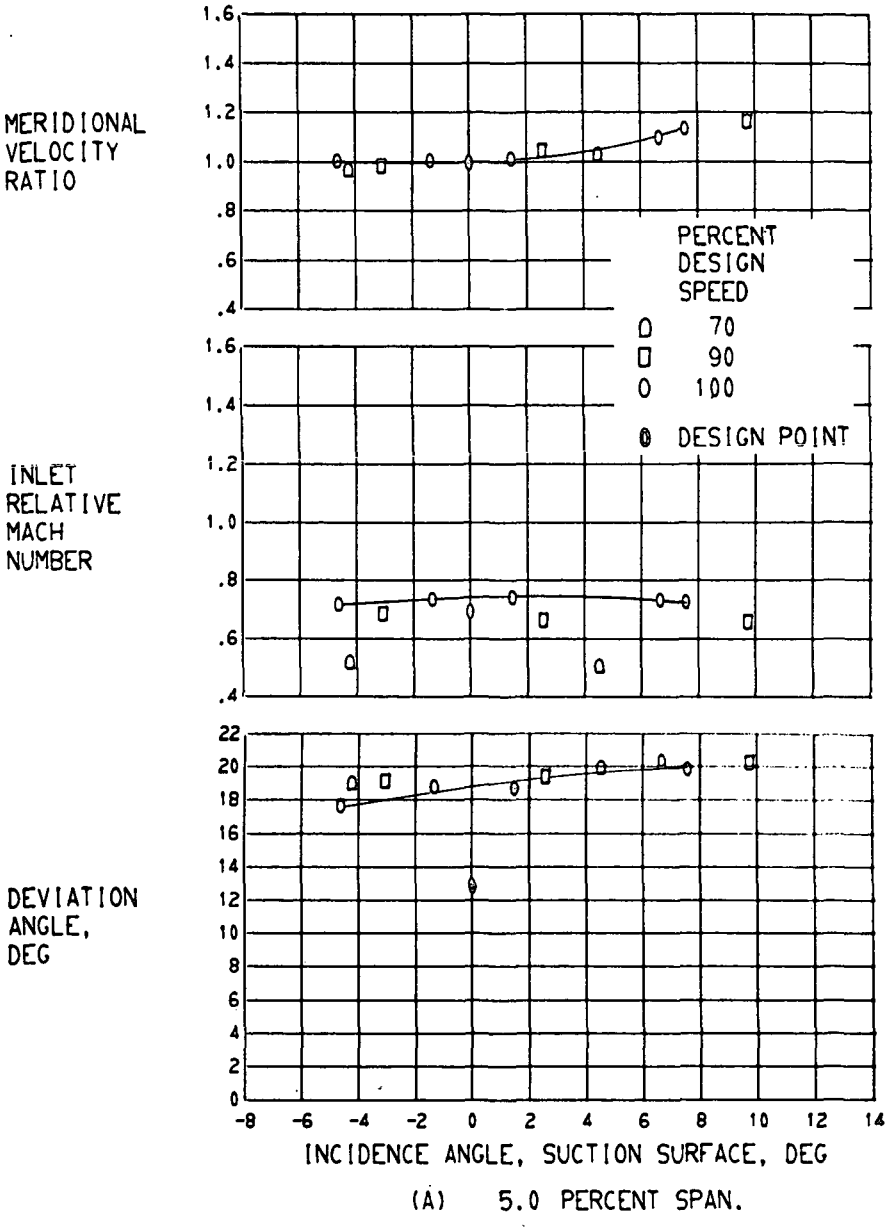
(G) CONTINUED. 95.0 PERCENT SPAN.

FIGURE 11. - BLADE ELEMENT PERFORMANCE FOR ROTOR 14.



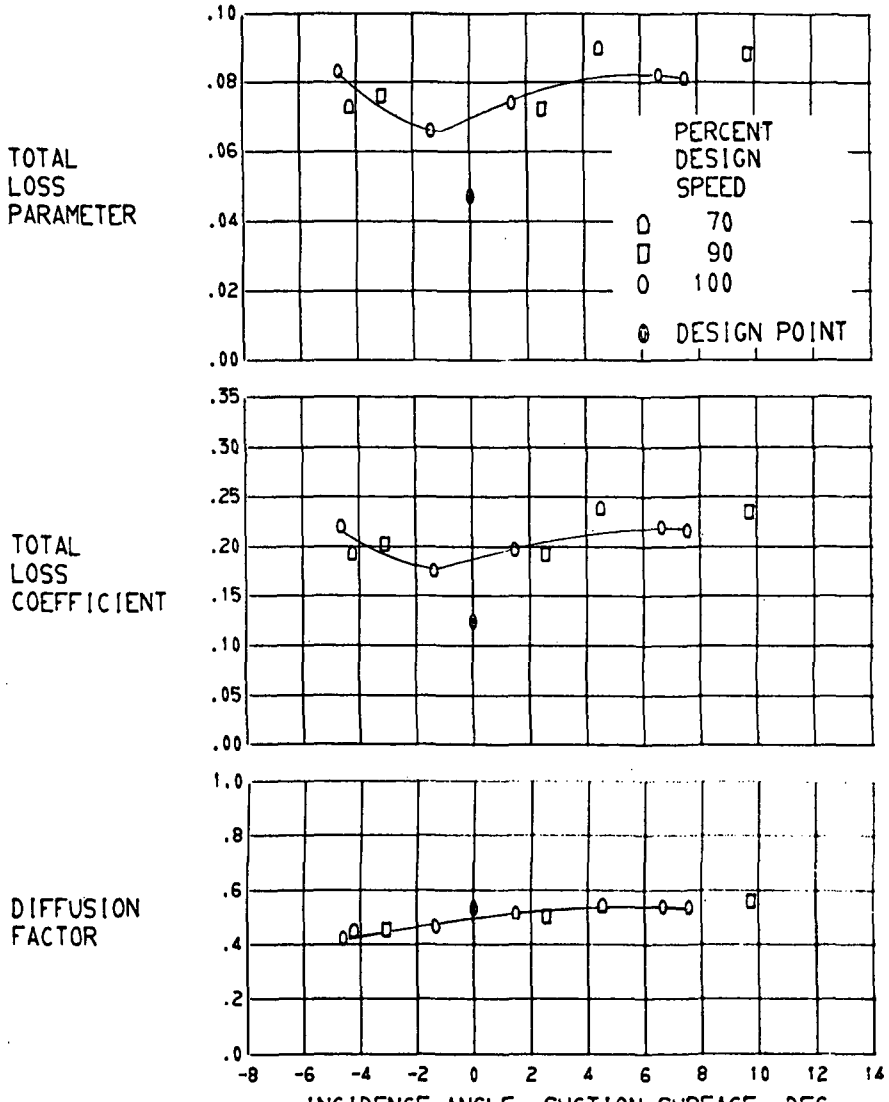
(G) CONCLUDED. 95.0 PERCENT SPAN.

FIGURE 11. - BLADE ELEMENT PERFORMANCE FOR ROTOR 14.



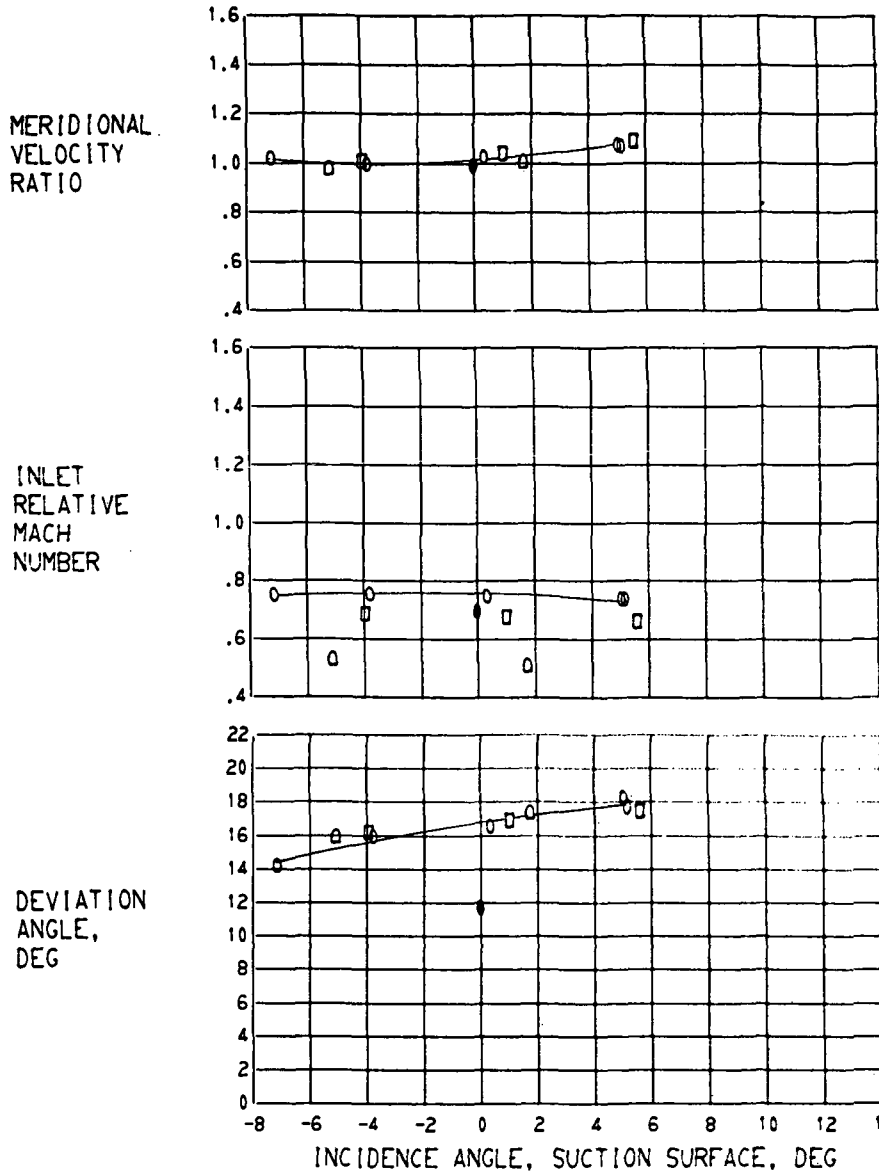
(A) 5.0 PERCENT SPAN.

FIGURE 12. - BLADE ELEMENT PERFORMANCE FOR STATOR 10.



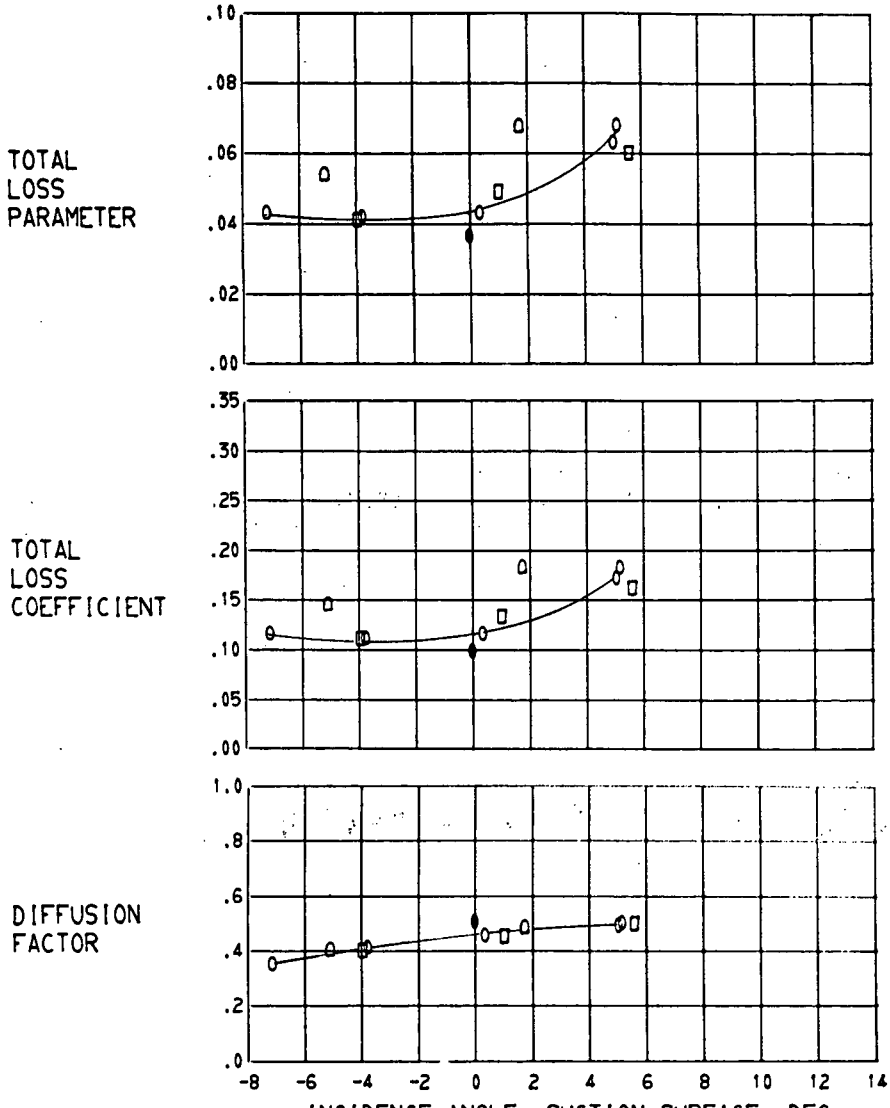
(A) CONCLUDED. 5.0 PERCENT SPAN.

FIGURE 12. - BLADE ELEMENT PERFORMANCE FOR STATOR 10.



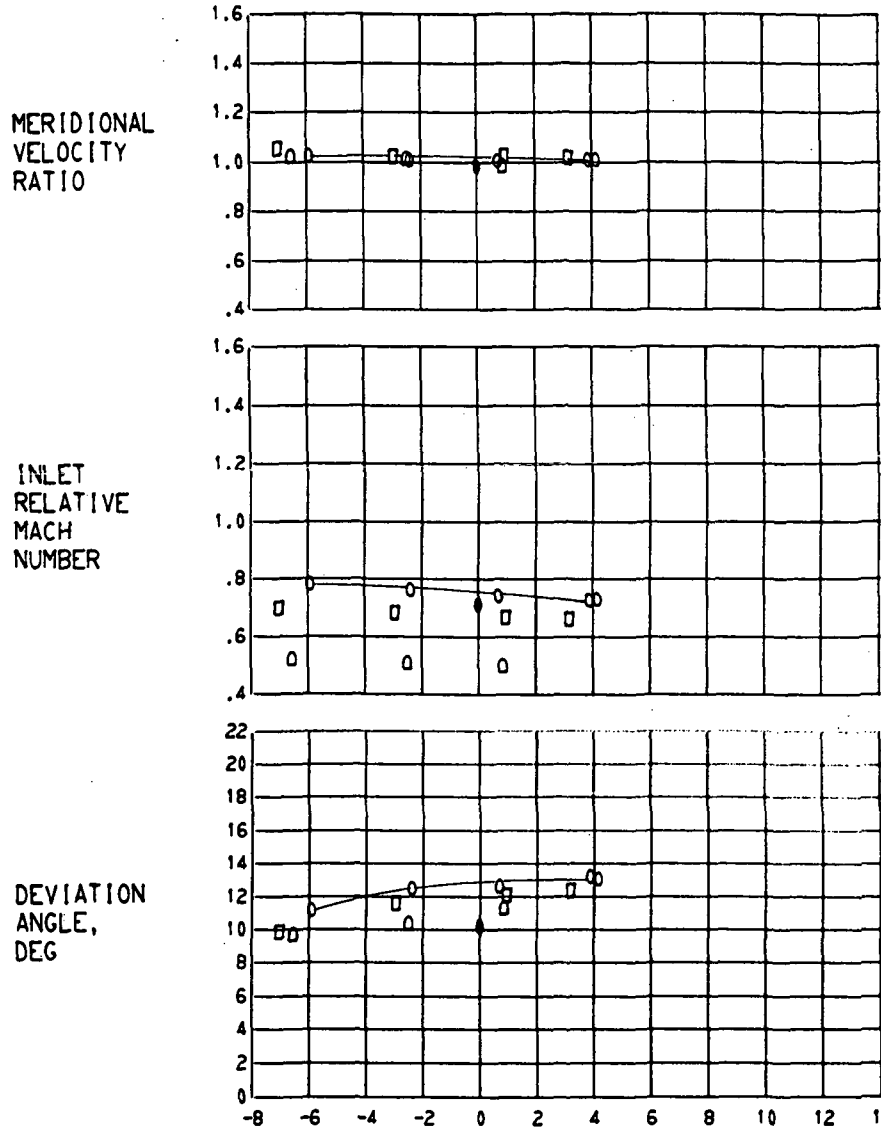
(B) 10.0 PERCENT SPAN.

FIGURE 12. - BLADE ELEMENT PERFORMANCE FOR STATOR 10.



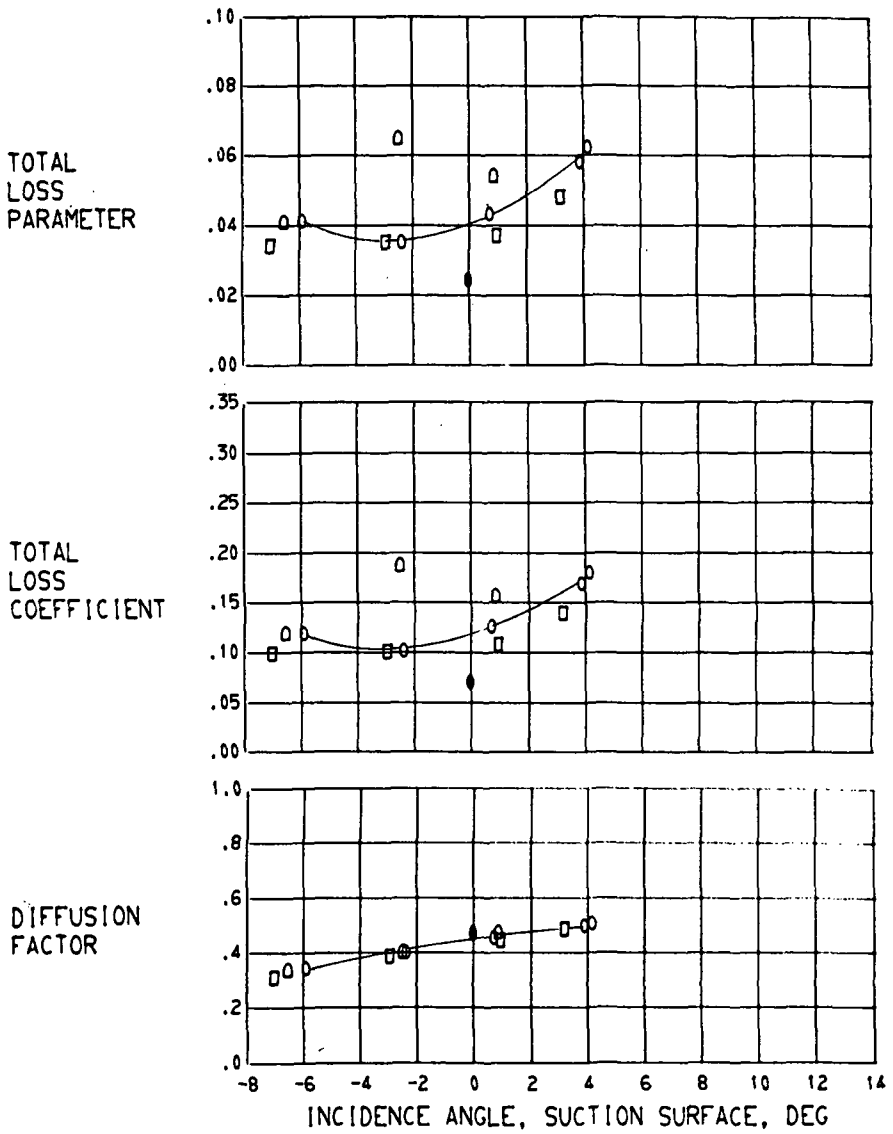
(B) CONCLUDED. 10.0 PERCENT SPAN.

FIGURE 12. - BLADE ELEMENT PERFORMANCE FOR STATOR 10.



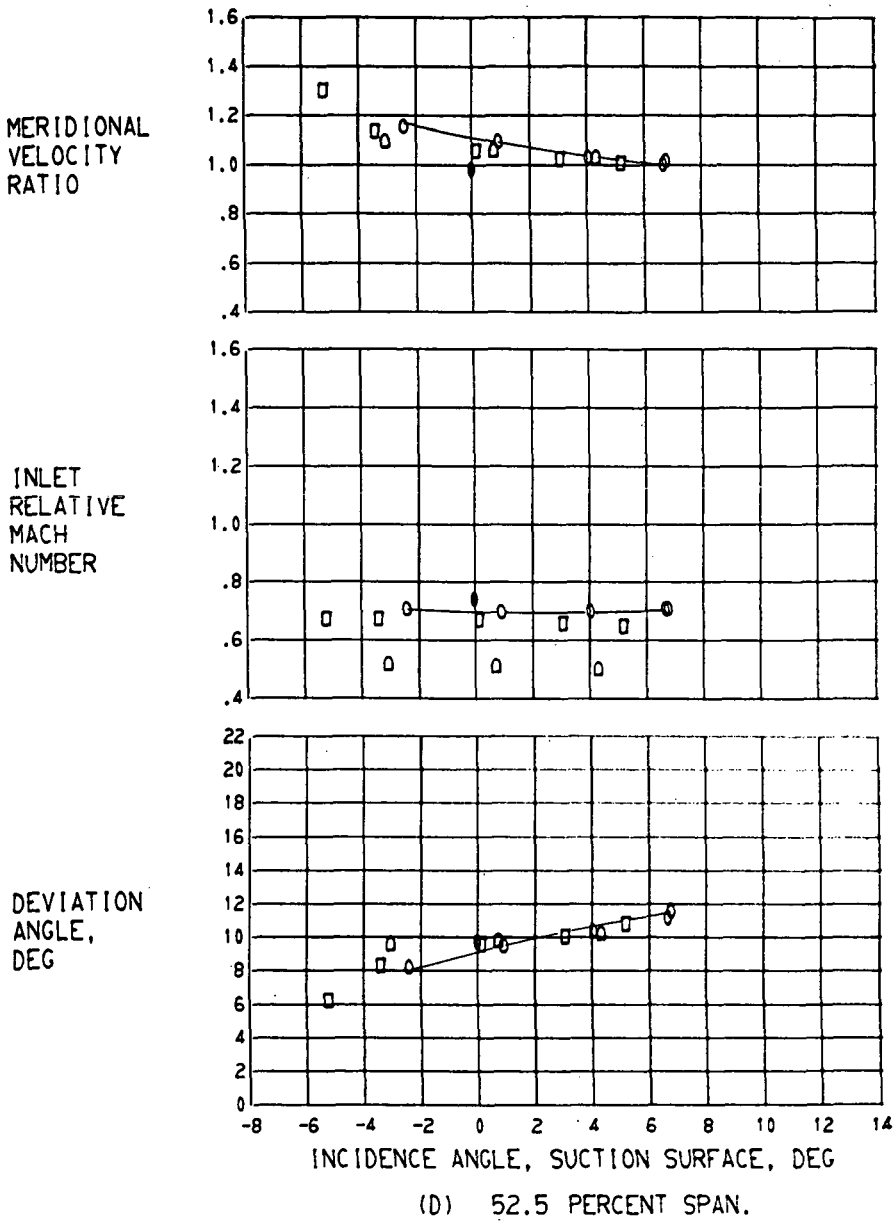
(C) 30.0 PERCENT SPAN.

FIGURE 12. - BLADE ELEMENT PERFORMANCE FOR STATOR 10.



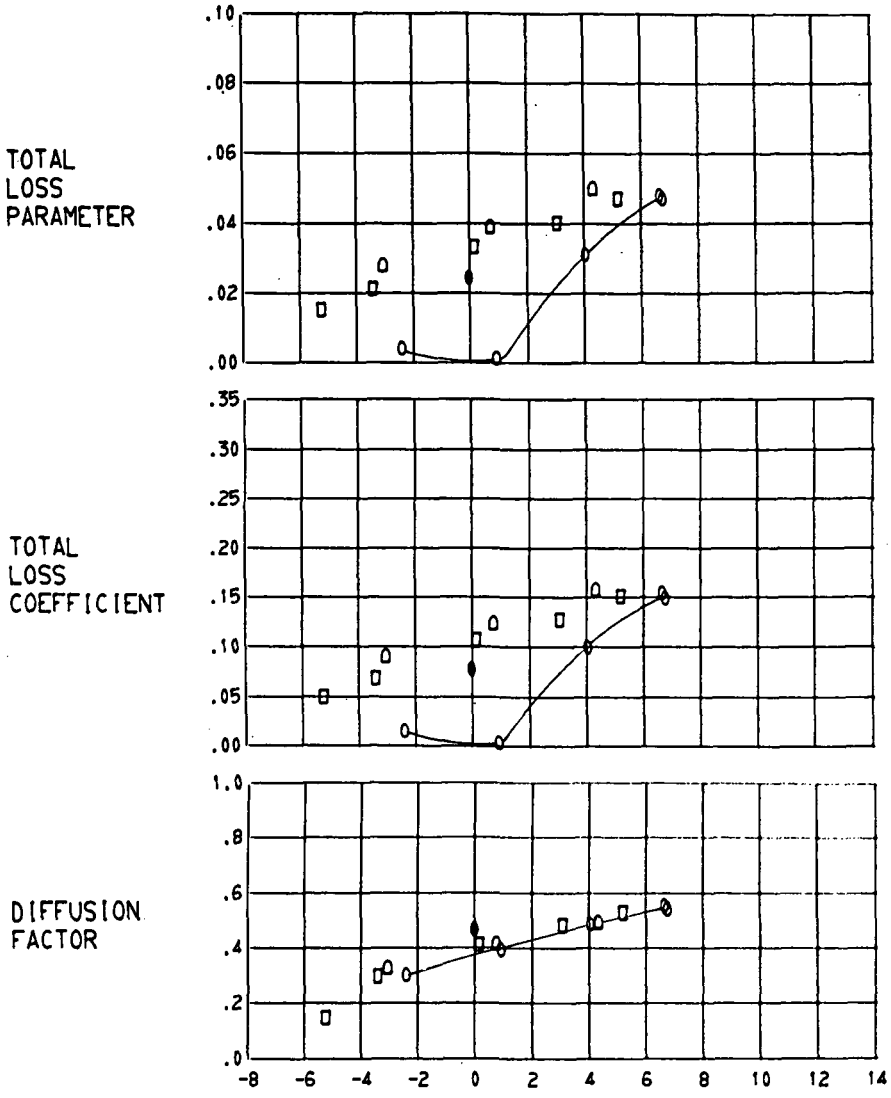
(C) CONCLUDED. 30.0 PERCENT SPAN.

FIGURE 12. - BLADE ELEMENT PERFORMANCE FOR STATOR 10.



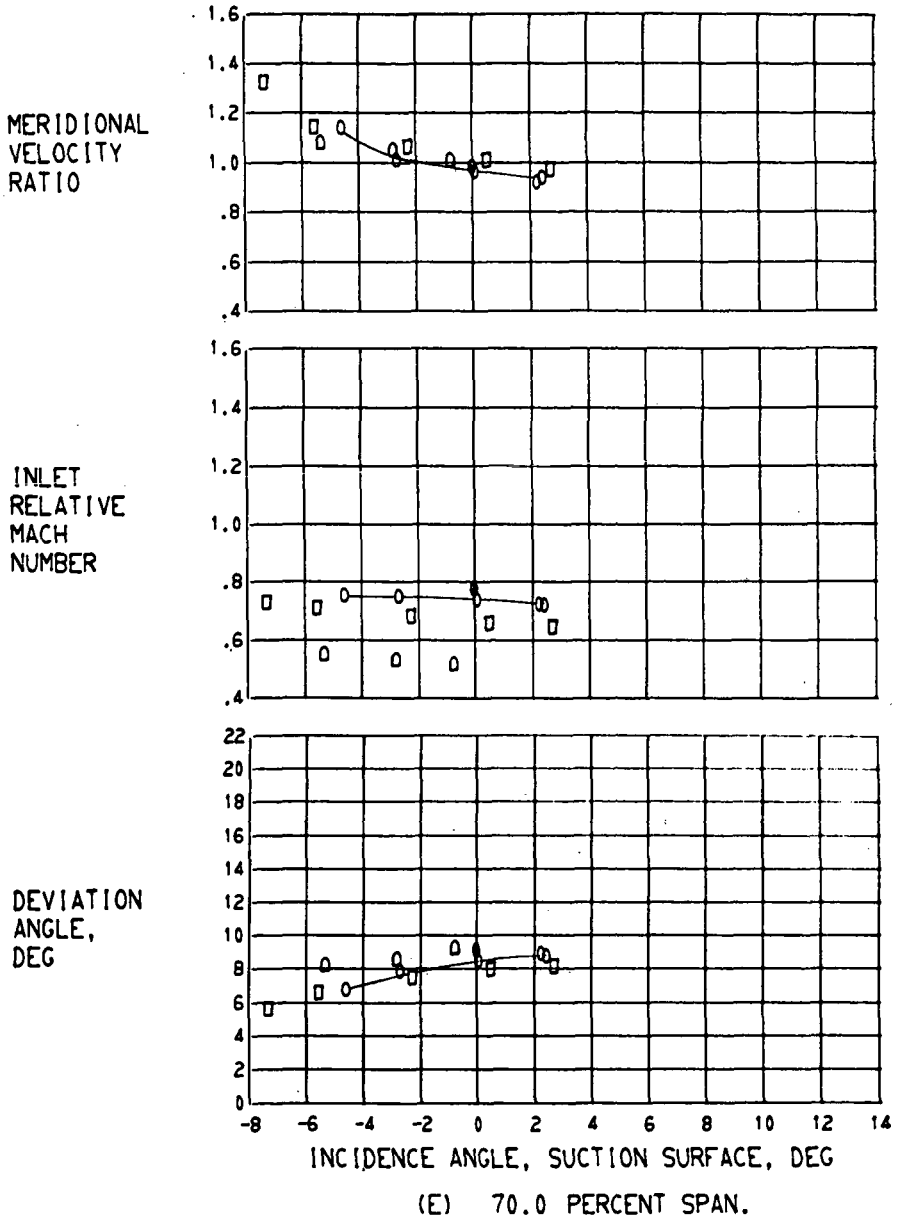
(D) 52.5 PERCENT SPAN.

FIGURE 12. - BLADE ELEMENT PERFORMANCE FOR STATOR 10.



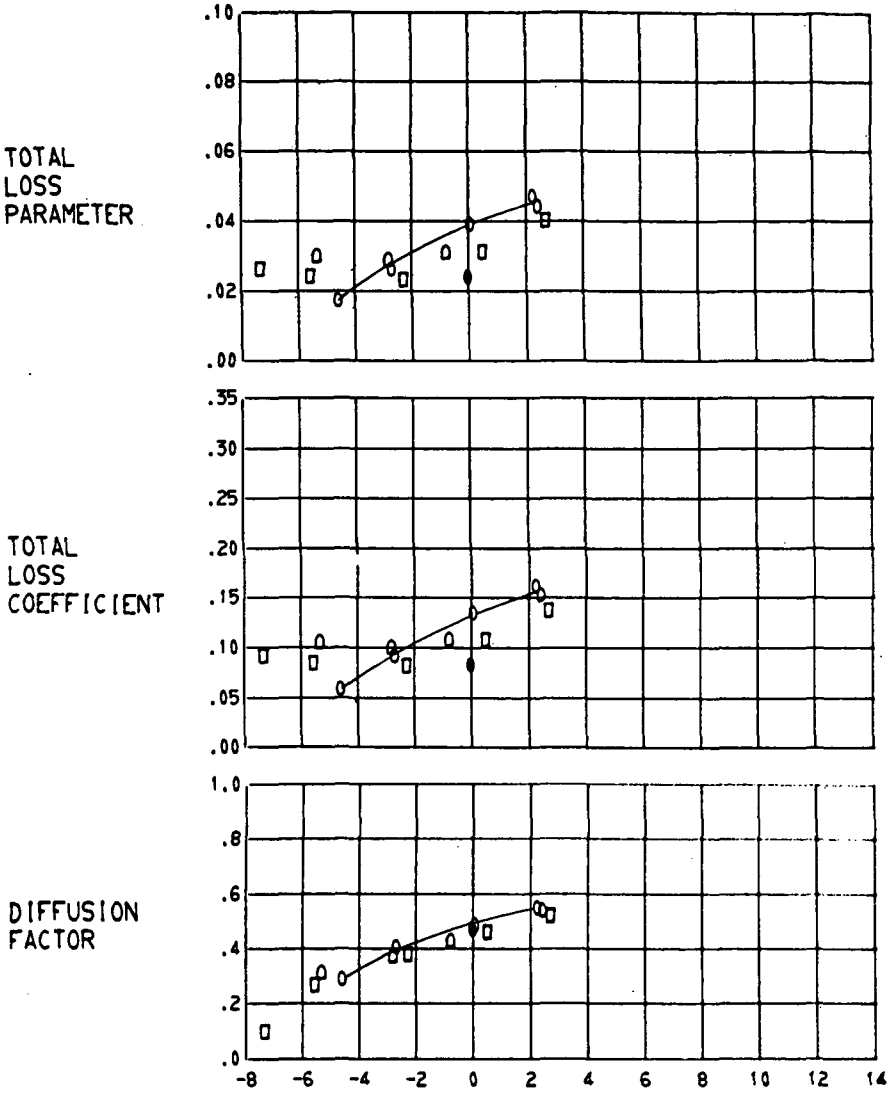
(D) CONCLUDED. 52.5 PERCENT SPAN.

FIGURE 12. - BLADE ELEMENT PERFORMANCE FOR STATOR 10.



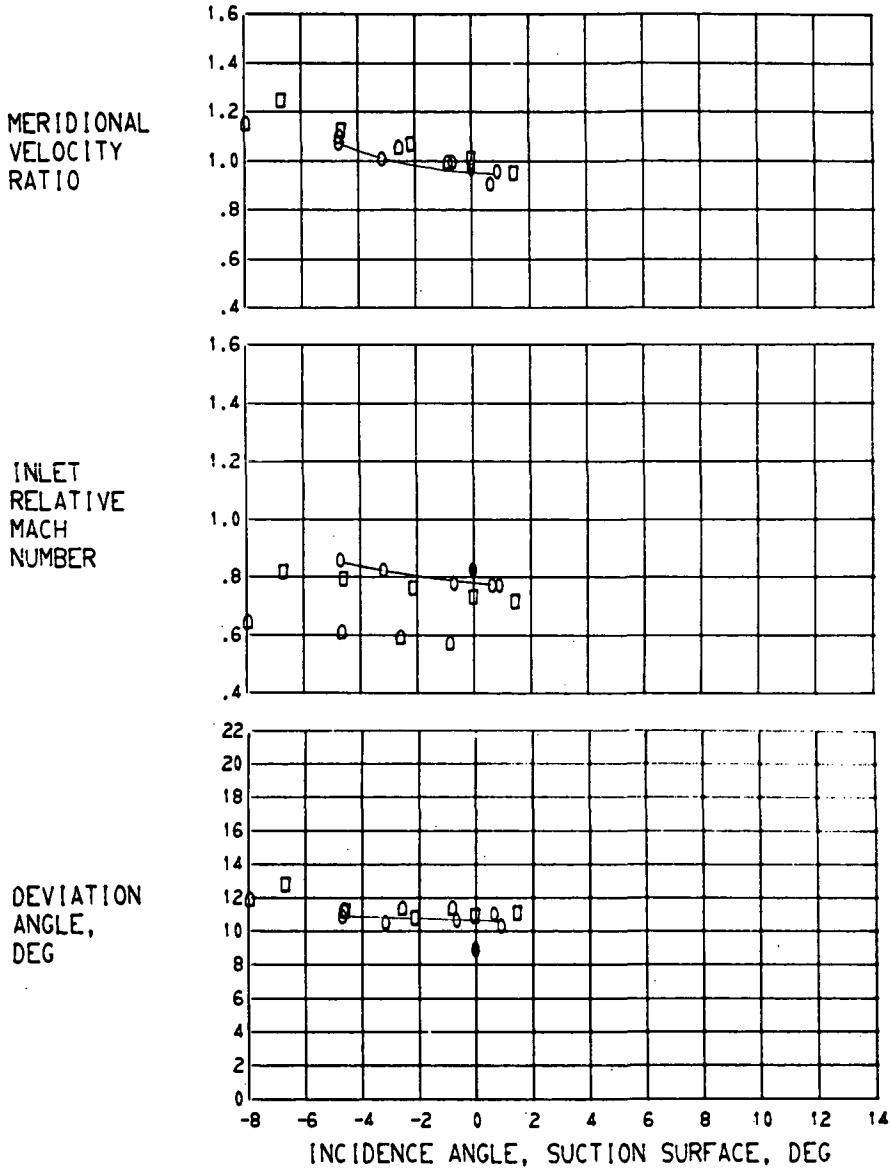
(E) 70.0 PERCENT SPAN.

FIGURE 12. - BLADE ELEMENT PERFORMANCE FOR STATOR 10.



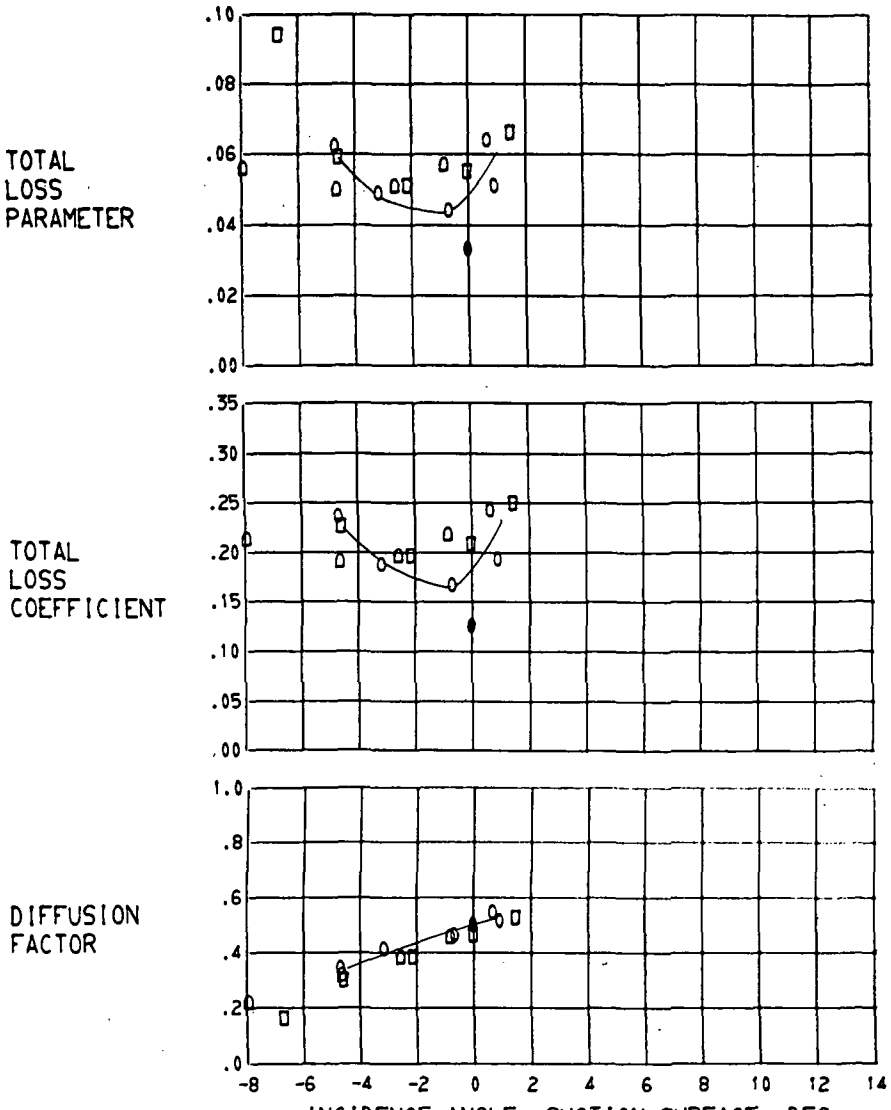
(E) CONCLUDED. 70.0 PERCENT SPAN.

FIGURE 12. - BLADE ELEMENT PERFORMANCE FOR STATOR 10.



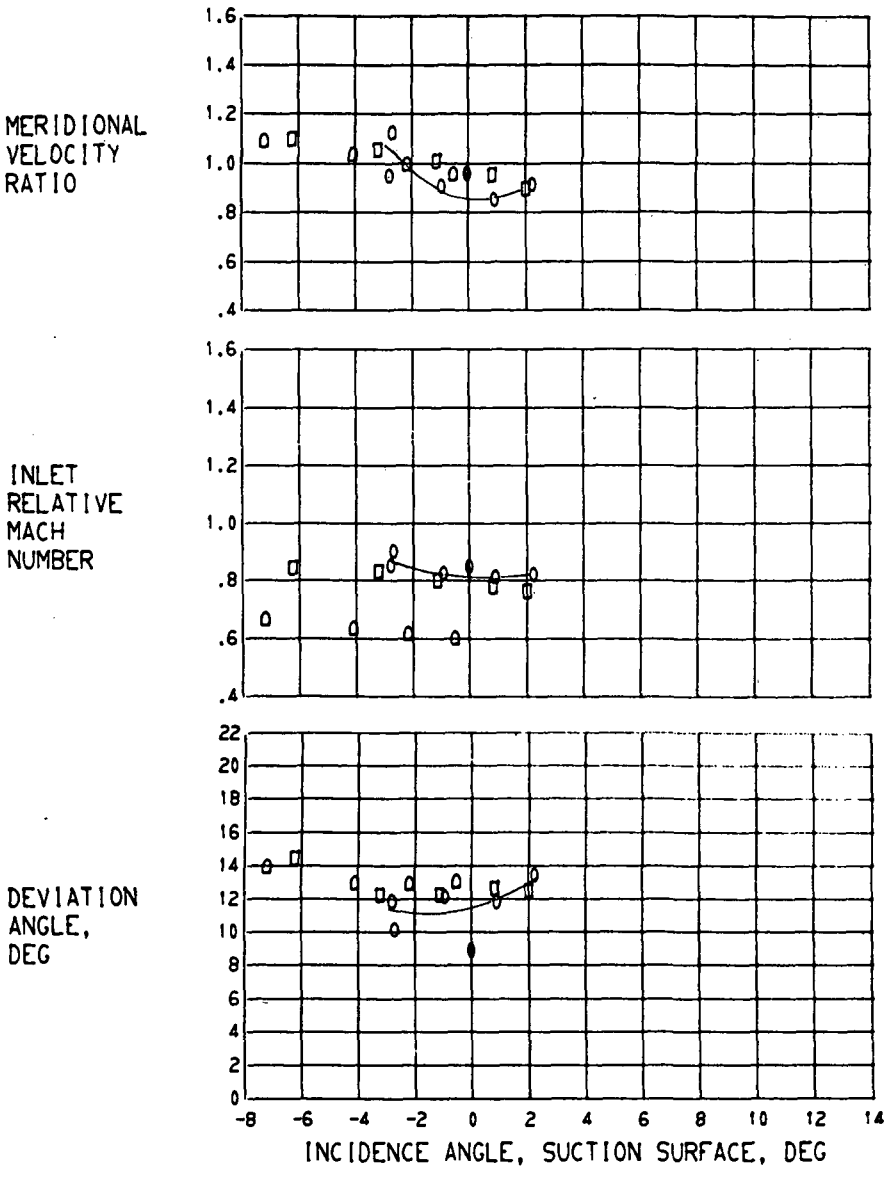
(F) 90.0 PERCENT SPAN.

FIGURE 12. - BLADE ELEMENT PERFORMANCE FOR STATOR 10.



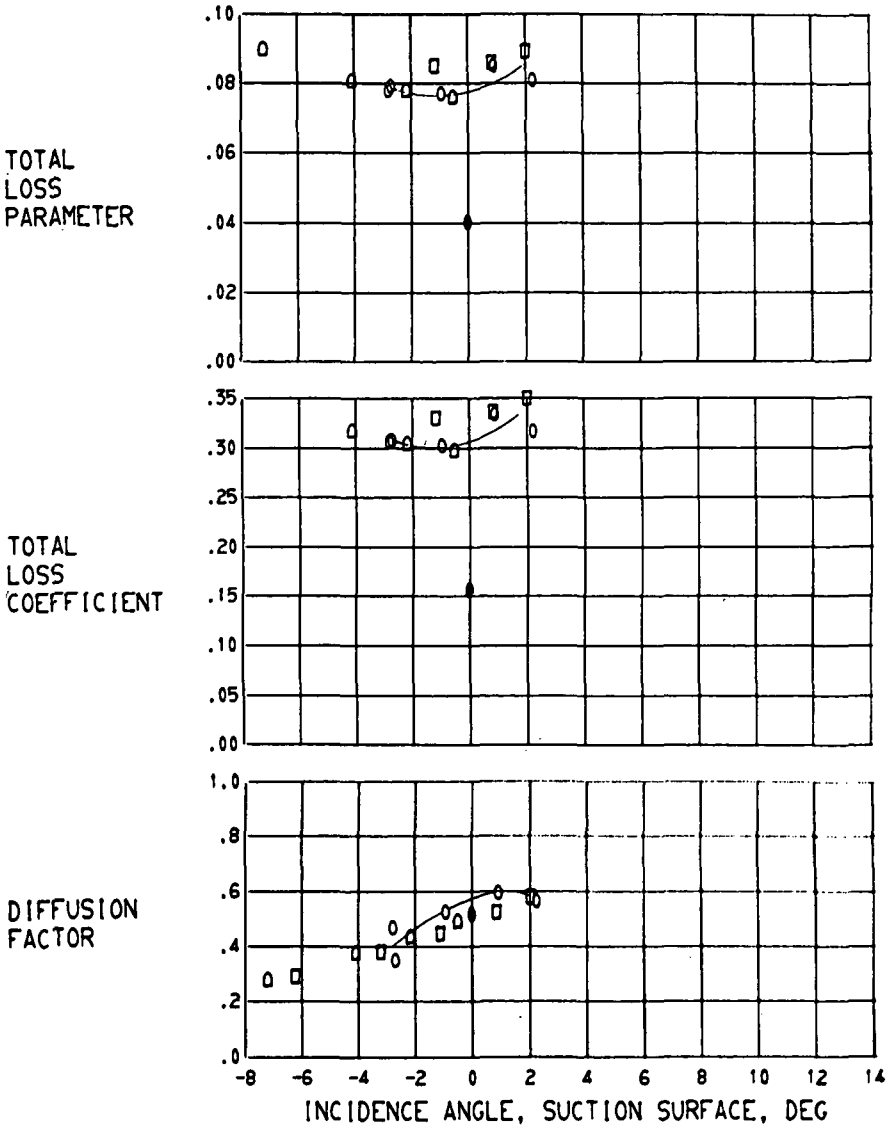
(F) CONCLUDED. 90.0 PERCENT SPAN.

FIGURE 12. - BLADE ELEMENT PERFORMANCE FOR STATOR 10.



(G) 95.0 PERCENT SPAN.

FIGURE 12. - BLADE ELEMENT PERFORMANCE FOR STATOR 10.



(G) CONCLUDED. 95.0 PERCENT SPAN.

FIGURE 12. - BLADE ELEMENT PERFORMANCE FOR STATOR 10.

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—NATIONAL AERONAUTICS AND SPACE ACT OF 1958

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