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OVERALL AND BLADE-ELEMENT PERFORMANCE OF A MULTIPLE-CIRCULAR-ARC BLADED TRANSONIC COMPRESSOR ROTOR WITH TIP SPEED OF 1375 FEET PER SECOND

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16. Abstract

The design and experimental performance of a 20-inch-diameter multiple-circular-arc bladed axial-flow transonic compressor rotor is presented. Radial surveys of the flow conditions were made. At design speed the peak efficiency was 0.882 and occurred at a weight flow of 64.0 pounds per second. At this point the total-pressure and total-temperature ratios were 1.79 and 1.205, respectively. The stall margin at design speed was 8 percent based on weight flows and total-pressure ratios at experimental peak efficiency and near stall. The measured stall margin was 20 percent at design weight flow and speed.

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SUMMARY

A 20-inch-diameter multiple-circular-arc bladed axial-flow transonic compressor rotor with a design tip speed of 1375 feet per second was tested. Radial surveys of the flow conditions at the blade inlet and outlet were made. The flow and performance parameters were calculated at the blade leading and trailing edges at 11 radial positions. The radial surveys were made over the stable operating flow range at equivalent rotative speeds from 50 to 100 percent of design speed.

At the near-design weight flow of 65.6 pounds per second (design weight flow, 65.3 lbm/sec or 41.6 (lbm/sec)/ft^2 of annulus area), the experimental overall efficiency was 0.878. Total-pressure and total-temperature ratios at this equivalent weight flow were 1.715 and 1.190, and the design values were 1.650 and 1.186, respectively.

Experimental peak efficiency at design speed was 0.882 at the equivalent weight flow of 64.0 pounds per second. Total-pressure and total-temperature ratios at equivalent weight flow corresponding to peak efficiency were 1.790 and 1.205, respectively.

The stall margin at design speed was 8 percent based on weight flows and total-pressure ratios at experimental peak efficiency and near stall. The measured stall margin was 20 percent at design weight flow and speed.

Losses were lower than design over the blade span except behind the blade vibration damper.

Minimum loss incidence angles at design speed were within 1.0° of the design incidence angles of zero for all blade elements.

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 developing the technology to reduce the size and weight of fans and compressors while maintaining a high level of performance.

As part of this program experimental studies are being conducted to improve blade shapes for operating in the transonic flow regime. The basic objective of the study is to optimize the blade shape such that, for a given blade loading and inlet relative Mach number, the total loss is minimized. This can be accomplished by minimizing the shock loss and the shock - boundary-layer interactions through proper selection of blade profiles.

Three transonic compressor rotors have been designed and tested to evaluate the effect of blade profile on efficiency and flow range. All three rotors had the same overall design values of pressure ratio, weight flow, and blade speed. The flow paths were the same, and the rotors were designed for the same solidity and aspect ratio. The performance for two of these rotors is reported in references 1 and 2.

The design blade shape for all three rotors used the multiple-circular-arc profiles over a portion of the blade span. The multiple-circular-arc blade profile was used to minimize the suction surface Mach number and therefore the shock loss, by minimizing the camber over the forward portion of the blade where the flow is supersonic. The rotor of reference 1 was designed for multiple-circular-arc blade sections over the outer 32 percent of the blade span only and double-circular-arc sections over the remainder. The multiple-circular-arc blades sections were confined to the outer 32 percent of the span because of a resriction in the blade definition program, which was that the maximum thickness and the transition point of the two arcs be located at a common point on the blade. This restriction did not apply in the blade design of the remaining two rotors used in this investigation.

The rotor in reference 2 has tandem blades with multiple-circular-arc sections over 86-percent of the span from the rotor tip; this includes all span locations with supersonic-inlet relative Mach numbers. The objective of this design was to use the multiple-circular-blade shape to minimize the shock loss and to use the tandem blade concept to minimize the shock - boundary-layer interactions by allowing a new boundary layer to start on the suction surface just downstream of the normal shock at the blade entrance.

The purpose of this report is to present the design and experimental results for the third transonic compressor rotor for this investigation. This rotor also has multiple-circular-blade sections over 86 percent of the span from the rotor tip. The suction-surface camber on the forward portions of the blade is identical to that for the tandem rotor in reference 2. This blade was designed to minimize the shock loss through the use of multiple-circular-arc blade profiles and also to minimize the subsonic diffusion losses by making the throat area in the blade passage just sufficient to pass the design mass flow.

Both overall and blade-element performance data are presented over the stable operating range for 50 to 100 percent of 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 Lewis.

AERODYNAMIC DESIGN

Three computer programs were used in the design of this compressor rotor: the streamline analysis program, the blade geometry program, and the blade coordinate program. These three computer programs are described in detail in references 3 and 4, 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 of the rotor. The weight flow, rotative speed, flow-path geometry, and radial distributions of total pressure and temperature are inputs to 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. The blade-element 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 rotor are based on loss-diffusion factor correlations that include the data presented in reference 5.

The blade geometry parameters are used in the blade coordinate program (ref. 4) to compute blade elements on conical surfaces approximating the stream surfaces passing through the blade. The blade elements are then stacked on a line passing through their centers of gravity. The computed Cartesian blade coordinates are used directly in fabrication.

The overall performance parameters, the blade-element performance parameters, and the blade geometry compiled from the three design programs are listed in tables I to III. The flow path profile is shown in figure 1. The rotor, designated as rotor 6, was designed for a radially uniform pressure ratio of 1.65 at a weight flow of 65.3 pounds per second (41.6 $(lbm/sec)/ft^2$ of annulus area). The design tip speed was 1375 feet per second. The rotor has 48 blades with an aspect ratio of 2.8 and a tip solidity of 1.315.

The symbols used in this report are defined in appendix A. The equations used for calculating the overall blade-element performance parameters are presented in appendix B. All definitions along with units presented in the tables are shown in appendix C.

APPARATUS AND PROCEDURE

Compressor Test Facility

The compressor rotor was tested in a single-stage compressor facility (described in detail in ref. 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; it flows through the flow measuring orifice and into the plenum chamber upstream of the test rotor. The air then passes through the experimental compressor rotor into the collector and is exhausted to the atmosphere.

Test Rotor

A photograph of rotor 6 is shown in figure 3. Each rotor blade has a vibration damper located at about 45 percent span from the outlet rotor tip. The maximum thickness of the damper was 0.075 inch. The nonrotating radial tip clearance was a nominal 0.020 inch at ambient conditions.

Instrumentation

The compressor weight flow was determined from measurements on a calibrated thin-plate orifice that was 15.3 inches in diameter. The orifice temperature was determined from an average of two chromel-alumel thermocouples.

Radial surveys of the flow were made upstream and downstream of the rotor. Photographs of the survey probes are shown in figure 4. Total pressure, total temperature, and flow angle were measured with the combination probe (fig. 4(a)), and the static pressure was measured with an 8°, C-shaped wedge probe (fig. 4(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 probes were angularly alined in an air tunnel. Two combination probes and two wedge static probes were used at each of the measuring stations. The probe thermocouple material was iron constantan.

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 5. All pressures were obtained with calibrated strain-gage transducers.

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

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

Flow rate, lbm/sec	±0.5
Rotative speed, rpm	±30
Flow angle, deg	±1
Temperature, ^{o}R	±1
Rotor inlet total pressure, psi	±0.02
Rotor outlet total pressure, psi	±0.15
Rotor inlet static pressure, psi	±0.05
Rotor outlet static pressure, psi	±0.10

Test Procedure

The stage survey data were taken over a range of weight flows from maximum flow to the near-stall conditions at six rotative speeds from 50 to 100 percent of design speed (design speed, 16 000 rpm). Radial surveys were taken at five weight flows at each speed. At each selected flow the radial distributions of flow conditions were surveyed at measuring stations located approximately 1 inch upstream of the blade leading edge and 0.7 inch downstream of the blade trailing edge (see fig. 5). Measurements of total pressure, total temperature, and flow angle were recorded at streamlines corresponding to 5, 10, 30, 40, 42.5, 45, 47.5, 50, 70, 90, and 95 percent of the passage height from the outer wall at the trailing edge of the rotor blade. Static pressure measurements were recorded only at the 30-, 40-, 42.5-, 45-, 47.5-, 50-, 70-, and 90-percent streamlines.

At each of the six rotative speeds the back pressure on the rotor was increased by closing the sleeve valve in the collector until a stalled condition was detected by a sudden drop in rotor-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 the rotor along with a sudden increase in noise level. The near stall data were taken within 1 pound per second of the recorded stall condition.

Calculation Procedure

Measured total temperatures and total pressures were corrected for Mach number and streamline slope. These corrections were based on instrument probe calibrations

given in reference 6. The stream static pressure was corrected for Mach number and streamline slope based on an average calibration for the type of probe used.

Because of the size of the C-shaped static-pressure wedges, it was impossible 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. 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, recorded at the measuring stations, have been translated to the blade leading and trailing edges by the method presented in reference 3.

Orifice weight flow, total pressure, static pressures, and temperatures were all corrected to standard day conditions based on the rotor inlet conditions.

RESULTS AND DISCUSSION

The performance results of rotor 6 are presented in two sections entitled Overall Performance and Blade-Element Performance. The data presented in these sections are computer plotted; occasionally, a data point will be omitted because it falls outside the range of the parameter shown in the figure. All plotted data together with some additional performance parameters are presented in tabular form. The overall and the blade-element performance data are presented in tables IV and V. The definitions and units used for the tabular data are presented in appendix C.

Overall Performance

The overall performance curves for the range of speeds tested are shown in figure 6 where the values of total-pressure ratio, total-temperature ratio, and temperature-rise efficiency are plotted as functions of equivalent weight flow. Data are presented from choke to the near-stall condition at six speeds from 50 to 100 percent of design speed. Design-point values are shown as solid symbols.

At the near-design weight flow of 65.6 pounds per second, the experimental overall efficiency was 0.878. The total-pressure and total-temperature ratios of 1.715 and 1.190 compare favorably with the design values of 1.650 and 1.186, respectively. Peak efficiency for the rotor at the design tip speed of 1375 feet per second was 0.882, which occurred at an equivalent weight flow of 64.0 pounds per second. Total-pressure and

total-temperature ratios at the equivalent weight flow corresponding to peak efficiency were 1.790 and 1.205, respectively. The stall margin at design speed was 8 percent, based on the equivalent weight flow and pressure ratio at which experimental peak efficiency occurred as compared with the values just before stall. The measured stall margin was 20 percent at the design weight flow and speed.

The momentum rise efficiencies tabulated in table IV are consistently lower than the adiabatic efficiencies. At design speed the difference is 6 to 7 points. The integrated rotor exit mass flows are also lower than the measured orifice flows by as much as 5 percent. Analysis of the data indicates that inaccuracy in the measurement of the rotor exit flow angle is the most probable cause of the deviations in both momentum rise efficiency and integrated rotor exit mass flow. A change of 3° to 4° toward the axial direction in exit absolute flow angle would result in a more reasonable agreement of the values of these parameters with the calculated values of adiabatic efficiency and measured orifice mass flow, respectively. The deviation angle is the only blade-element parameter significantly affected by the measurement of the rotor exit absolute flow angle. The blade-element loss coefficient is based on measured local total temperatures and pressures that are not affected by the small change in flow direction relative to the measuring probe. The effect of a 3° to 4° change in exit absolute flow angle on the calculation of the diffusion factor is also negligible.

Blade-Element Performance

Radial distributions. - The radial distributions of selected flow and performance parameters at design speed are shown in figure 7. The data shown represent the flow conditions at near stall, peak efficiency, and choke. The design values are shown by solid symbols.

The pressure ratios at the measured peak efficiency weight flow were greater than the design values over the entire blade span with the largest differences occurring from the tip to the 40-percent span. The temperature rise efficiency at all weight flows at 100 percent of design speed was greater than design except in the regions at the damper and rotor hub.

Experimental deviation angles were less than the design values except at the tip and the region of the damper. These angles were within 2° of design value except at the rotor hub. However, these values are directly affected by the questionable measurement of rotor exit absolute flow angle previously discussed.

The total loss parameter distribution shows the losses to be less than design except in the damper region. The blade loading, as indicated by the diffusion factor, exceeded the design values over the entire blade span. Design losses for this rotor were overestimated.

Variations with incidence angle. - The variations of selected blade-element performance parameters with incidence angle are presented in figure 8. The data are presented for 60, 80, and 100 percent of design speed at blade elements located at 5, 10, 30, 50, 70, 90, and 95 percent of blade span as measured from the rotor tip. Design values are shown by solid symbols. These blade-element performance curves are presented primarily for future reference, to be compared with results for other blade forms. Only a few brief observations are made in this section.

The blades were designed for a zero incidence angle at the blade suction surface. Measured suction-surface incidence angles corresponding to minimum losses were within 1.0° of the design value for all blade elements. Minimum loss occurs at slightly negative incidence angles over most of the blade span; however, no well-defined minimums were established. At all elements except the 50-percent blade span in the region of the damper, the measured losses were less than the design values at design incidence.

SUMMARY OF RESULTS

This report presents the aerodynamic design and both the overall and blade-element performance of a transonic compressor rotor having a blade shape formed of multiple-circular-arc sections over 86 percent of the blade span from the rotor tip; the remainder of the span was formed of double-circular-arc blade sections. The rotor has a design weight flow of 65.3 pounds per second (41.6 (lbm/sec)/ft^2 of annulus area) at a blade tip speed of 1375 feet per second. Radial surveys of the flow conditions at the blade inlet and outlet were made over the stable operating flow range at equivalent rotating speeds from 50 to 100 percent of design speed. Flow and performance parameters were calculated across a number of selected blade elements.

1. At a near design weight flow of 65.6 pounds per second, the experimental overall efficiency was 0.878. The experimental total pressure and total temperature ratios of 1.715 and 1.190 compare favorably with the design values of 1.650 and 1.205, respectively.

2. Peak efficiency for the rotor at the design tip speed of 1375 feet per second was 0.882 and occurred at an equivalent weight flow of 64.0 pounds per second. The total-pressure and total-temperature ratios at the peak efficiency equivalent weight flow was 1.790 and 1.205.

3. Stall margin at design speed was 8 percent, based on weight flows and total-pressure ratios at experimental peak efficiency and near stall. The measured stall margin was 20 percent at design weight flow and speed.

4. The measured total loss parameter distribution for this rotor showed the loss to be lower than the design values except for the region at the damper.

5. At design speed the suction surface incidence angle corresponding to minimum loss was within 1.0° of the design incidence angle of zero.

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National Aeronautics and Space Administration,
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501-24.

APPENDIX A

SYMBOLS

A_{an} annulus area at rotor leading edge, ft^2

A_f frontal area at rotor leading edge, ft^2

a distance from blade leading edge to maximum camber point, in.

C_p specific heat at constant pressure, 0.24 (Btu/lbm)/^oR

c chord length, in.

D diffusion factor

g acceleration of gravity, 32.17 ft/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, 778.16 ft-lbf/Btu

N rotative speed, rpm

P total pressure, psia

p static pressure, psia

r radius, in.

SM stall margin, percent

T total temperature, ^oR

U wheel speed, ft/sec

V air velocity, ft/sec

W weight flow, lbm/sec

z axial distance referenced from rotor blade hub leading edge, in.

α_c cone angle, deg

α_s streamline slope, deg

β air angle, angle between air velocity and axial direction, deg

β'_c relative meridional air angle based on cone angle, $\arctan\left[\tan \beta'_m(\cos \alpha_c/\cos \alpha_s)\right]$, deg

γ ratio of specific heats (1.40)

γ_b blade setting angle, deg

δ ratio of rotor-inlet total pressure to standard pressure of 14.69 psia

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

θ ratio of rotor-inlet total temperature to standard temperature of 518.7° R

η efficiency

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

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

σ solidity, ratio of chord to spacing

φ camber angle, deg

φ_c equivalent camber, deg

$\overline{\omega}$ 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

r radial direction

ref reference

TE blade trailing edge

z axial direction

θ tangential direction

1 instrument plane upstream of rotor

2 instrument plane downstream of rotor

Superscript:

' relative to rotor

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 -

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

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 -

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

Adiabatic efficiency -

$$\eta_{ad} = \frac{\left[\frac{(P)_{TE}}{(P)_{LE}}\right]^{(\gamma-1)/\gamma} - 1}{\frac{(T)_{TE}}{(T)_{LE}} - 1} \tag{B9}$$

Momentum rise efficiency -

$$\eta_{mom} = \frac{\left[\frac{(P)_{TE}}{(P)_{LE}}\right]^{(\gamma-1)/\gamma} - 1}{\frac{\left(UV_\theta\right)_{TE} - \left(UV_\theta\right)_{LE}}{gJC_pT_{LE}}} \tag{B10}$$

Equivalent weight flow -

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

Equivalent rotative speed -

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

Stall margin -

$$SM = \left\{\frac{\left[\frac{(P)_{TE}}{(P)_{LE}}\right]_{stall}}{\left[\frac{(P)_{TE}}{(P)_{LE}}\right]_{ref}} \times \frac{\left[\frac{W\sqrt{\theta}}{\delta}\right]_{ref}}{\left[\frac{W\sqrt{\theta}}{\delta}\right]_{stall}} - 1\right\} 100 \tag{B13}$$

Weight flow per unit frontal area -

$$\frac{\frac{W\sqrt{\theta}}{\delta}}{A_f} \tag{B14}$$

Weight flow per unit annulus area -

$$\frac{\frac{W\sqrt{\theta}}{\delta}}{A_{an}} \tag{B15}$$

Head-rise coefficient -

$$\frac{gJC_pT_{LE}}{U_{Tip}^2}\left[\left(\frac{P_{TE}}{P_{LE}}\right)^{(\gamma-1)/\gamma} - 1\right] \tag{B16}$$

Flow coefficient -

$$\left(\frac{V_z}{U_{Tip}}\right)_{LE} \tag{B17}$$

APPENDIX C

DEFINITIONS AND UNITS USED IN TABLES

ABS	absolute
AERO CHORD	aerodynamic chord, in.
AREA RATIO	ratio of actual flow area to critical area (where Mach number is 1)
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 (see eq. (B3)), deg
D-FACT	diffusion factor (see eq. (B4))
EFF	adiabatic efficiency (see eq. (B9))
IN	inlet (leading edge of blade)
INCIDENCE	incidence angle (suction-surface defined by eq. (B1) and mean defined by eq. (B2))
KIC	angle between blade mean camber line at leading edge and meridional plane, deg
KOC	angle between blade mean camber line at trailing edge and meridional plane, deg
KTC	angle between blade mean camber line at transition point and 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, psia
PROF	profile
RADII	radius, in.
REL	relative to blade
RI	inlet radius (leading edge of blade), in.
RO	outlet radius (trailing edge of blade), in.
RP	radial position
RPM	equivalent rotative speed, rpm
SETTING ANGLE	angle between aerodynamic chord and meridional plane, deg
SOLIDITY	ratio of aerodynamic chord to blade spacing
SPEED	speed, ft/sec
SS	suction surface
STREAMLINE SLOPE	slope of streamline, deg
TANG	tangential
TEMP	temperature, ^{o}R
TI	thickness of blade at leading edge, in.
TM	thickness of blade at maximum thickness, in.
TO	thickness of blade at trailing edge, in.
TOT	total
TOTAL CAMBER	difference between inlet and outlet blade mean camber line, deg
VEL	velocity, ft/sec
WT FLOW	equivalent weight flow, lbm/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
ZMC	axial distance to blade maximum thickness point from inlet, in.
ZOC	axial distance to blade trailing edge from inlet, in.
ZTC	axial distance to transition point from inlet, in.

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TABLE I. - DESIGN OVERALL PARAMETERS FOR ROTOR 6

TOTAL PRESSURE RATIO	1.650
TOTAL TEMPERATURE RATIO	1.186
EFFICIENCY	0.827
WT FLOW PER UNIT FRONTAL AREA	30.819
WT FLOW PER UNIT ANNULUS AREA	41.592
WT FLOW	65.261
RPM	16000.000
TIP SPEED	1375.599

TABLE II. - DESIGN BLADE-ELEMENT PARAMETERS FOR ROTOR 6

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
TIP	9.852	9.818	0.	46.1	63.6	56.0	518.7	1.248	14.69	1.650
1	9.717	9.623	-0.	43.8	63.0	55.2	518.7	1.232	14.69	1.650
2	9.508	9.429	-0.	41.7	62.0	54.4	518.7	1.217	14.69	1.650
3	8.635	8.650	0.	39.0	58.6	50.2	518.7	1.189	14.69	1.650
4	8.180	8.261	0.	39.1	57.1	47.3	518.7	1.183	14.69	1.650
5	8.065	8.164	0.	39.2	56.7	46.4	518.7	1.182	14.69	1.650
6	7.949	8.067	0.	39.4	56.4	45.6	518.7	1.181	14.69	1.650
7	7.832	7.969	0.	39.5	56.0	44.7	518.7	1.181	14.69	1.650
8	7.714	7.872	0.	39.6	55.6	43.8	518.7	1.180	14.69	1.650
9	6.726	7.094	0.	40.4	53.0	35.1	518.7	1.172	14.69	1.650
10	5.592	6.315	0.	41.1	51.5	24.4	518.7	1.164	14.69	1.650
11	5.266	6.121	0.	41.3	51.5	21.5	518.7	1.162	14.69	1.650
HUB	5.014	5.926	-0.	41.3	51.0	18.5	518.7	1.159	14.69	1.650

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
TIP	682.8	784.5	1535.7	972.0	682.8	543.9	0.	565.3	1375.6	1370.9
1	690.0	776.5	1522.1	982.5	690.0	560.9	-0.	537.0	1356.7	1343.7
2	704.7	771.1	1503.1	988.5	704.7	575.7	-0.	513.0	1327.6	1316.5
3	735.6	773.9	1412.3	938.7	735.6	601.4	0.	487.1	1205.6	1207.8
4	739.4	784.3	1360.6	897.0	739.4	608.7	0.	494.6	1142.2	1153.5
5	739.3	787.8	1347.1	885.7	739.3	610.3	0.	498.0	1126.1	1139.9
6	738.7	791.6	1333.3	874.2	738.7	611.9	0.	502.1	1109.9	1126.3
7	737.8	795.4	1319.2	863.1	737.8	613.8	0.	505.9	1093.5	1112.7
8	736.5	799.3	1304.8	852.4	736.5	615.7	0.	509.7	1077.1	1099.1
9	707.3	836.4	1175.6	778.2	707.3	636.5	0.	542.6	939.1	990.5
10	620.8	881.9	997.5	729.7	620.8	664.4	0.	579.9	780.8	881.8
11	585.9	894.0	940.1	722.3	585.9	672.0	0.	589.6	735.3	854.6
HUB	567.1	907.8	900.9	718.9	567.1	681.8	-0.	599.4	700.1	827.4

	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	0.636	0.655	1.430	0.812	0.636	0.454	-8.64	-6.66	0.797	1.605
1	0.643	0.653	1.419	0.826	0.643	0.472	-7.79	-5.48	0.813	1.593
2	0.658	0.652	1.404	0.836	0.658	0.487	-6.45	-4.29	0.817	1.578
3	0.690	0.663	1.324	0.804	0.690	0.515	-0.71	0.83	0.817	1.527
4	0.693	0.675	1.276	0.772	0.693	0.524	2.40	3.62	0.823	1.508
5	0.693	0.678	1.263	0.763	0.693	0.525	3.21	4.35	0.826	1.504
6	0.693	0.682	1.250	0.753	0.693	0.527	4.04	5.10	0.828	1.500
7	0.692	0.686	1.237	0.744	0.692	0.529	4.89	5.87	0.832	1.496
8	0.691	0.690	1.223	0.736	0.691	0.531	5.77	6.66	0.836	1.492
9	0.661	0.728	1.098	0.677	0.661	0.554	14.10	14.04	0.900	1.467
10	0.574	0.775	0.923	0.641	0.574	0.584	26.07	24.46	1.070	1.288
11	0.540	0.788	0.866	0.637	0.540	0.592	29.84	27.76	1.147	1.211
HUB	0.522	0.802	0.829	0.635	0.522	0.603	32.84	31.19	1.202	1.157

	PERCENT	INCIDENCE		DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN	SS				TOT	PROF	TOT	PROF
TIP	0.	2.6	0.0	7.6	0.508	0.619	0.343	0.235	0.073	0.050
1	5.00	2.8	0.0	6.7	0.485	0.664	0.290	0.186	0.061	0.039
2	10.00	3.0	0.0	6.0	0.466	0.709	0.244	0.146	0.052	0.031
3	30.00	4.2	0.0	5.0	0.450	0.814	0.153	0.079	0.033	0.017
4	40.00	4.8	0.0	4.9	0.456	0.840	0.136	0.072	0.029	0.015
5	42.50	4.9	0.0	4.9	0.458	0.844	0.133	0.073	0.029	0.016
6	45.00	5.1	0.0	4.9	0.461	0.847	0.132	0.074	0.028	0.016
7	47.50	5.2	0.0	4.9	0.463	0.851	0.130	0.074	0.028	0.016
8	50.00	5.4	0.0	4.9	0.464	0.855	0.128	0.075	0.028	0.016
9	70.00	6.5	0.0	5.3	0.461	0.892	0.108	0.075	0.023	0.016
10	90.00	7.3	0.0	6.9	0.398	0.937	0.079	0.076	0.015	0.015
11	95.00	7.4	0.0	7.8	0.364	0.951	0.068	0.067	0.012	0.012
HUB	100.00	7.5	0.0	9.1	0.336	0.965	0.050	0.050	0.009	0.009

TABLE III. - BLADE GEOMETRY FOR ROTOR 6

RP	PERCENT SPAN	RADII RI	RO	BLADE ANGLES KIC	KTC	KOC	DELTA INC
TIP	0.	9.852	9.818	61.27	59.53	48.55	2.57
1	5.	9.717	9.623	60.39	58.83	48.51	2.75
2	10.	9.508	9.429	59.08	57.74	48.33	3.03
3	30.	8.635	8.650	54.43	53.07	45.16	4.18
4	40.	8.180	8.261	52.27	50.40	42.35	4.77
5	43.	8.065	8.164	51.75	49.69	41.52	4.91
6	45.	7.949	8.067	51.22	48.96	40.63	5.06
7	48.	7.832	7.969	50.70	48.23	39.71	5.21
8	50.	7.714	7.872	50.19	47.49	38.76	5.35
9	70.	6.726	7.094	46.38	41.40	29.63	6.46
10	90.	5.592	6.315	44.06	36.61	17.09	7.30
11	95.	5.266	6.121	43.89	36.11	13.27	7.42
HUB	100.	5.014	5.926	43.87	35.93	9.32	7.48

RP	BLADE THICKNESSES TI	TM	TO	AXIAL DIMENSIONS ZMC	ZTC	ZOC	CONE ANGLE
TIP	0.020	0.059	0.020	0.421	0.560	0.893	-2.181
1	0.020	0.061	0.020	0.432	0.561	0.922	-5.794
2	0.020	0.066	0.020	0.449	0.563	0.951	-4.776
3	0.020	0.083	0.020	0.509	0.551	1.069	0.842
4	0.020	0.092	0.020	0.538	0.535	1.132	4.083
5	0.020	0.094	0.020	0.545	0.530	1.148	4.922
6	0.020	0.096	0.020	0.552	0.524	1.165	5.771
7	0.020	0.099	0.020	0.560	0.518	1.181	6.638
8	0.020	0.101	0.020	0.567	0.512	1.197	7.520
9	0.020	0.120	0.020	0.624	0.445	1.328	15.492
10	0.020	0.142	0.020	0.669	0.351	1.438	26.702
11	0.020	0.148	0.020	0.676	0.324	1.459	30.363
HUB	0.020	0.153	0.020	0.680	0.302	1.477	31.686

RP	AERO CHORD	SETTING ANGLE	TOTAL CAMBER	SOLIDITY	X FACTOR	PHISS	AREA RATIO
TIP	1.719	58.28	12.72	1.308	0.514	5.14	1.083
1	1.745	57.50	11.88	1.350	0.532	5.11	1.075
2	1.744	56.39	10.74	1.378	0.559	5.12	1.063
3	1.742	51.62	9.27	1.508	0.672	5.88	1.042
4	1.744	48.84	9.92	1.587	0.730	6.61	1.038
5	1.745	48.09	10.23	1.609	0.745	6.83	1.038
6	1.746	47.31	10.59	1.631	0.760	7.06	1.037
7	1.748	46.52	10.99	1.655	0.775	7.30	1.037
8	1.750	45.71	11.43	1.679	0.790	7.54	1.036
9	1.781	38.55	16.75	1.929	0.915	9.63	1.033
10	1.889	30.54	26.96	2.374	1.000	11.35	1.050
11	1.944	28.55	30.62	2.555	1.000	11.41	1.063
HUB	1.963	26.69	34.54	2.685	1.000	11.35	1.074

TABLE IV. - OVERALL PERFORMANCE FOR ROTOR 6

(a) Percent of design speed, 100

	Reading number					
	196	197	198	199	200	208
ROTOR TOTAL PRESSURE RATIO	1.577	1.715	1.790	1.819	1.826	1.821
ROTOR TOTAL TEMPERATURE RATIO	1.164	1.190	1.205	1.216	1.221	1.218
ROTOR TEMP. RISE EFFICIENCY	0.848	0.878	0.882	0.864	0.851	0.859
ROTOR MOMENTUM RISE EFFICIENCY	0.764	0.806	0.814	0.805	0.792	0.803
ROTOR HEAD RISE COEFFICIENT	0.230	0.275	0.299	0.308	0.310	0.309
FLOW COEFFICIENT	0.437	0.432	0.418	0.397	0.385	0.392
WT FLOW PER UNIT FRONTAL AREA	31.308	30.974	30.238	29.199	28.473	28.231
WT FLOW PER UNIT ANNULUS AREA	42.252	41.801	40.808	39.406	38.426	38.100
WT FLOW AT ORIFICE	66.298	65.590	64.032	61.832	60.294	59.783
WT FLOW AT ROTOR INLET	66.169	65.829	64.259	61.905	60.470	60.171
WT FLOW AT ROTOR OUTLET	62.973	62.324	60.277	57.722	55.655	56.693
RPM	15958.898	15986.408	15979.492	15974.784	15966.192	15959.623
PERCENT OF DESIGN SPEED	99.743	99.915	99.872	99.842	99.789	99.741

(b) Percent of design speed, 90

	Reading number				
	203	204	205	206	207
ROTOR TOTAL PRESSURE RATIO	1.458	1.567	1.597	1.621	1.625
ROTOR TOTAL TEMPERATURE RATIO	1.125	1.148	1.155	1.164	1.169
ROTOR TEMP. RISE EFFICIENCY	0.909	0.924	0.923	0.901	0.879
ROTOR MOMENTUM RISE EFFICIENCY	0.804	0.851	0.844	0.824	0.804
ROTOR HEAD RISE COEFFICIENT	0.234	0.283	0.296	0.303	0.304
FLOW COEFFICIENT	0.448	0.431	0.415	0.383	0.363
WT FLOW PER UNIT FRONTAL AREA	29.282	28.364	27.506	25.972	24.883
WT FLOW PER UNIT ANNULUS AREA	39.518	38.279	37.122	35.051	33.581
WT FLOW AT ORIFICE	62.008	60.064	58.248	54.999	52.692
WT FLOW AT ROTOR INLET	62.437	60.541	58.777	55.426	53.082
WT FLOW AT ROTOR OUTLET	59.816	58.041	55.819	51.866	49.302
RPM	14314.733	14275.537	14286.732	14351.398	14362.780
PERCENT OF DESIGN SPEED	89.467	89.222	89.292	89.696	89.767

TABLE IV. - Continued. OVERALL PERFORMANCE FOR ROTOR 6

(c) Percent of design speed, 80

	Reading number				
	209	210	211	212	213
ROTOR TOTAL PRESSURE RATIO	1.340	1.425	1.446	1.453	1.450
ROTOR TOTAL TEMPERATURE RATIO	1.090	1.110	1.118	1.125	1.129
ROTOR TEMP. RISE EFFICIENCY	0.965	0.966	0.943	0.905	0.868
ROTOR MOMENTUM RISE EFFICIENCY	0.856	0.869	0.852	0.818	0.789
ROTOR HEAD RISE COEFFICIENT	0.226	0.273	0.285	0.289	0.287
FLOW COEFFICIENT	0.448	0.416	0.394	0.364	0.338
WT FLOW PER UNIT FRONTAL AREA	26.792	25.281	24.215	22.656	21.410
WT FLOW PER UNIT ANNULUS AREA	36.158	34.118	32.680	30.576	28.894
WT FLOW AT ORIFICE	56.735	53.534	51.278	47.977	45.337
WT FLOW AT ROTOR INLET	57.196	54.035	51.736	48.296	45.418
WT FLOW AT ROTOR OUTLET	55.624	52.085	49.363	45.823	43.123
RPM	12755.700	12825.298	12828.898	12818.854	12824.368
PERCENT OF DESIGN SPEED	79.723	80.158	80.181	80.118	80.152

(d) Percent of design speed, 70

	Reading number				
	215	216	217	218	219
ROTOR TOTAL PRESSURE RATIO	1.246	1.287	1.310	1.319	1.323
ROTOR TOTAL TEMPERATURE RATIO	1.063	1.075	1.086	1.091	1.096
ROTOR TEMP. RISE EFFICIENCY	1.028	0.993	0.936	0.905	0.866
ROTOR MOMENTUM RISE EFFICIENCY	0.892	0.878	0.864	0.832	0.795
ROTOR HEAD RISE COEFFICIENT	0.217	0.249	0.274	0.284	0.282
FLOW COEFFICIENT	0.450	0.419	0.382	0.358	0.329
WT FLOW PER UNIT FRONTAL AREA	24.246	22.837	20.906	19.671	18.462
WT FLOW PER UNIT ANNULUS AREA	32.721	30.820	28.214	26.548	24.915
WT FLOW AT ORIFICE	51.343	48.359	44.271	41.656	39.094
WT FLOW AT ROTOR INLET	51.751	48.716	44.476	41.822	39.004
WT FLOW AT ROTOR OUTLET	50.534	47.090	43.155	40.309	37.309
RPM	11235.738	11252.563	11100.446	11056.350	11146.307
PERCENT OF DESIGN SPEED	70.223	70.329	69.378	69.102	69.664

TABLE IV. - Concluded. OVERALL PERFORMANCE FOR ROTOR 6

(e) Percent of design speed, 60

	Reading number				
	222	223	224	226	227
ROTOR TOTAL PRESSURE RATIO	1.160	1.198	1.212	1.221	1.227
ROTOR TOTAL TEMPERATURE RATIO	1.046	1.058	1.064	1.068	1.074
ROTOR TEMP. RISE EFFICIENCY	0.931	0.917	0.888	0.863	0.811
ROTOR MOMENTUM RISE EFFICIENCY	0.905	0.892	0.861	0.832	0.783
ROTOR HEAD RISE COEFFICIENT	0.198	0.242	0.257	0.267	0.274
FLOW COEFFICIENT	0.454	0.407	0.378	0.351	0.315
WT FLOW PER UNIT FRONTAL AREA	21.335	19.314	18.197	16.997	15.423
WT FLOW PER UNIT ANNULUS AREA	28.793	26.065	24.558	22.938	20.814
WT FLOW AT ORIFICE	45.180	40.899	38.534	35.992	32.659
WT FLOW AT ROTOR INLET	45.527	41.380	38.769	36.230	32.758
WT FLOW AT ROTOR OUTLET	44.414	40.092	37.335	34.828	30.914
RPM	9607.661	9616.918	9635.848	9631.016	9633.316
PERCENT OF DESIGN SPEED	60.048	60.106	60.224	60.194	60.208

(f) Percent of design speed, 50

	Reading number				
	229	230	231	232	233
ROTOR TOTAL PRESSURE RATIO	1.097	1.107	1.135	1.147	1.157
ROTOR TOTAL TEMPERATURE RATIO	1.028	1.031	1.040	1.046	1.051
ROTOR TEMP. RISE EFFICIENCY	0.942	0.937	0.915	0.866	0.826
ROTOR MOMENTUM RISE EFFICIENCY	0.929	0.908	0.883	0.843	0.790
ROTOR HEAD RISE COEFFICIENT	0.179	0.194	0.245	0.267	0.278
FLOW COEFFICIENT	0.471	0.448	0.391	0.357	0.306
WT FLOW PER UNIT FRONTAL AREA	18.544	17.856	15.680	14.327	12.529
WT FLOW PER UNIT ANNULUS AREA	25.026	24.098	21.161	19.335	16.909
WT FLOW AT ORIFICE	39.269	37.813	33.204	30.338	26.531
WT FLOW AT ROTOR INLET	39.672	38.164	33.538	30.625	26.755
WT FLOW AT ROTOR OUTLET	38.580	37.022	32.267	29.430	25.420
RPM	7929.209	7988.674	7972.741	7931.008	8024.349
PERCENT OF DESIGN SPEED	49.558	49.929	49.830	49.569	50.152

TABLE V. - BLADE-ELEMENT PERFORMANCE AT BLADE EDGES FOR ROTOR 6

(a) Percent of design speed, 100; reading number, 196

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	9.717	9.623	-0.0	40.1	63.4	56.3	519.6	1.205	14.38	1.634
2	9.508	9.429	-0.0	38.7	61.5	54.5	519.5	1.192	14.65	1.631
3	8.635	8.650	-0.0	38.4	58.1	49.6	518.6	1.169	14.74	1.608
4	8.180	8.261	-0.0	42.0	56.3	47.9	518.5	1.163	14.74	1.535
5	8.065	8.164	-0.0	42.1	55.9	48.7	518.3	1.160	14.75	1.496
6	7.949	8.067	-0.0	42.7	55.4	49.2	519.4	1.159	14.74	1.468
7	7.832	7.969	-0.0	42.7	55.1	48.4	517.3	1.156	14.74	1.466
8	7.714	7.872	-0.0	42.5	54.7	46.2	518.3	1.157	14.74	1.488
9	6.726	7.094	-0.0	38.6	51.5	35.4	518.7	1.146	14.73	1.573
10	5.592	6.315	-0.0	40.0	50.3	25.1	518.2	1.140	14.68	1.581
11	5.266	6.121	-0.0	44.0	51.2	18.2	518.4	1.153	14.61	1.630

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	678.3	747.8	1514.2	1031.3	678.3	571.8	-0.5	481.9	1353.2	1340.1
2	719.5	763.7	1508.5	1027.7	719.5	596.3	-0.6	477.3	1325.3	1314.3
3	750.7	782.1	1419.0	945.0	750.7	612.7	-0.6	486.2	1203.6	1205.7
4	761.2	772.1	1371.1	855.9	761.2	574.2	-0.6	516.3	1139.7	1151.0
5	761.8	749.6	1357.0	843.7	761.8	556.6	-0.6	502.1	1122.4	1136.2
6	763.9	735.3	1346.8	827.6	763.9	540.6	-0.7	498.4	1108.5	1125.0
7	761.2	736.2	1330.5	815.9	761.2	541.2	-0.6	499.1	1090.6	1109.7
8	761.5	759.3	1317.1	808.1	761.5	559.7	-0.6	513.2	1074.0	1096.0
9	743.8	836.7	1195.4	802.6	743.8	654.2	-0.6	521.5	935.3	986.4
10	646.3	877.0	1011.9	742.3	646.3	672.0	-0.4	563.5	778.2	878.8
11	589.3	916.1	941.1	694.2	589.3	659.5	-0.4	635.8	733.3	852.4

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID PEAK SS	
RP	IN	OUT	IN	OUT	IN	OUT	VEL R	MACH NO
1	0.631	0.634	1.408	0.874	0.631	0.485	0.843	1.593
2	0.673	0.652	1.410	0.878	0.673	0.509	0.829	1.566
3	0.705	0.677	1.333	0.818	0.705	0.530	0.816	1.517
4	0.716	0.670	1.290	0.742	0.716	0.498	0.754	1.493
5	0.717	0.649	1.277	0.731	0.717	0.482	0.731	1.487
6	0.718	0.636	1.266	0.715	0.718	0.467	0.708	1.483
7	0.717	0.639	1.253	0.708	0.717	0.470	0.711	1.480
8	0.717	0.660	1.239	0.702	0.717	0.486	0.735	1.474
9	0.698	0.737	1.122	0.707	0.698	0.577	0.880	1.432
10	0.600	0.780	0.939	0.660	0.600	0.597	1.040	1.271
11	0.543	0.814	0.868	0.616	0.543	0.586	1.119	1.206

	PERCENT	INCIDENCE		DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN	SS				TOT	PROF	TOT	PROF
1	5.00	3.1	0.3	7.8	0.436	0.735	0.213	0.110	0.044	0.023
2	10.00	2.5	-0.5	6.2	0.433	0.783	0.167	0.071	0.035	0.015
3	30.00	3.6	-0.5	4.4	0.448	0.859	0.106	0.033	0.023	0.007
4	40.00	4.0	-0.8	5.5	0.495	0.802	0.150	0.087	0.032	0.018
5	42.50	4.0	-0.9	7.2	0.494	0.761	0.179	0.119	0.037	0.024
6	45.00	4.2	-0.9	8.5	0.500	0.729	0.203	0.146	0.041	0.029
7	47.50	4.3	-0.9	8.7	0.501	0.739	0.195	0.140	0.039	0.028
8	50.00	4.4	-1.0	7.4	0.504	0.768	0.178	0.126	0.037	0.026
9	70.00	5.0	-1.5	5.6	0.445	0.948	0.044	0.013	0.009	0.003
10	90.00	6.1	-1.2	7.6	0.391	0.998	0.002	-0.000	0.000	-0.000
11	95.00	7.2	-0.2	4.5	0.405	0.980	0.026	0.026	0.005	0.005

TABLE V. - Continued. BLADE-ELEMENT PERFORMANCE AT

BLADE EDGES FOR ROTOR 6

(b) Percent of design speed, 100; reading number, 197

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	9.717	9.623	-0.0	49.8	63.8	57.2	520.0	1.246	14.35	1.783
2	9.508	9.429	-0.1	45.9	61.7	54.2	519.2	1.227	14.66	1.792
3	8.635	8.650	-0.0	44.0	58.3	47.6	518.4	1.199	14.72	1.794
4	8.180	8.261	-0.1	47.1	56.7	45.9	518.3	1.195	14.73	1.712
5	8.065	8.164	-0.0	47.8	56.3	45.7	518.0	1.193	14.72	1.687
6	7.949	8.067	-0.1	48.3	55.9	45.7	518.8	1.191	14.73	1.666
7	7.832	7.969	-0.0	48.4	55.5	45.2	518.4	1.186	14.73	1.654
8	7.714	7.872	-0.0	46.8	55.1	43.9	518.8	1.181	14.73	1.659
9	6.726	7.094	-0.0	43.2	52.0	35.0	518.5	1.165	14.73	1.666
10	5.592	6.315	-0.0	43.8	50.5	25.1	518.6	1.151	14.73	1.625
11	5.266	6.121	-0.0	47.4	51.1	17.2	518.6	1.163	14.70	1.692

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	668.2	761.0	1512.1	906.6	668.2	491.5	-0.6	581.0	1355.9	1342.8
2	714.4	780.5	1506.6	929.7	714.4	543.3	-0.6	560.4	1325.9	1314.9
3	743.6	814.2	1416.3	868.2	743.6	585.4	-0.5	565.9	1204.9	1207.0
4	752.2	803.9	1368.5	786.0	752.2	546.8	-0.7	589.3	1142.5	1153.8
5	750.9	796.1	1352.3	765.3	750.9	534.5	-0.6	590.0	1124.0	1137.8
6	752.1	788.0	1340.2	750.4	752.1	524.3	-0.7	588.2	1108.6	1125.0
7	751.2	785.4	1326.5	740.1	751.2	521.8	-0.6	587.0	1092.7	1111.8
8	751.8	791.3	1313.2	751.8	751.8	541.7	-0.6	576.8	1076.1	1098.1
9	733.8	828.0	1191.5	736.2	733.8	603.1	-0.6	567.3	938.2	989.5
10	643.9	854.4	1011.7	680.9	643.9	616.5	-0.4	591.6	779.8	880.7
11	594.4	903.9	945.7	640.4	594.4	611.9	-0.4	665.3	735.1	854.5

	ABS MACH NO		REL MACH NO		MERID MACH NO				MERID PEAK SS	
RP	IN	OUT	IN	OUT	IN	OUT			VEL R	MACH NO
1	0.620	0.634	1.404	0.755	0.620	0.409			0.736	1.603
2	0.667	0.658	1.408	0.783	0.667	0.458			0.761	1.570
3	0.698	0.698	1.329	0.744	0.698	0.502			0.787	1.523
4	0.707	0.690	1.286	0.674	0.707	0.469			0.727	1.502
5	0.706	0.683	1.271	0.657	0.706	0.459			0.712	1.496
6	0.707	0.676	1.259	0.643	0.707	0.450			0.697	1.491
7	0.706	0.675	1.246	0.636	0.706	0.448			0.695	1.488
8	0.706	0.682	1.233	0.648	0.706	0.467			0.721	1.482
9	0.688	0.722	1.117	0.642	0.688	0.526			0.822	1.444
10	0.597	0.753	0.938	0.600	0.597	0.543			0.957	1.276
11	0.548	0.797	0.872	0.565	0.548	0.540			1.029	1.207

	PERCENT	INCIDENCE		DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN	SS				TOT	PROF	TOT	PROF
1	5.00	3.5	0.7	8.6	0.542	0.729	0.251	0.148	0.050	0.030
2	10.00	2.7	-0.3	5.9	0.517	0.799	0.178	0.081	0.038	0.017
3	30.00	3.9	-0.3	2.4	0.520	0.912	0.077	0.003	0.017	0.001
4	40.00	4.3	-0.4	3.5	0.562	0.853	0.131	0.067	0.029	0.015
5	42.50	4.5	-0.4	4.2	0.571	0.836	0.146	0.086	0.032	0.019
6	45.00	4.6	-0.5	5.0	0.576	0.821	0.159	0.101	0.034	0.022
7	47.50	4.7	-0.5	5.4	0.577	0.830	0.150	0.094	0.032	0.020
8	50.00	4.8	-0.6	5.1	0.560	0.858	0.126	0.073	0.027	0.016
9	70.00	5.4	-1.0	5.2	0.509	0.954	0.044	0.012	0.009	0.002
10	90.00	6.3	-1.0	7.6	0.458	0.986	0.016	0.013	0.003	0.002
11	95.00	7.0	-0.4	13.5	0.471	0.996	0.006	0.006	0.001	0.001

TABLE V. - Continued. BLADE-ELEMENT PERFORMANCE AT

BLADE EDGES FOR ROTOR 6

(c) Percent of design speed, 100; reading number, 198

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	9.717	9.623	-0.0	52.8	64.6	55.8	520.1	1.266	14.38	1.928
2	9.508	9.429	-0.1	50.4	62.5	53.4	519.5	1.251	14.66	1.913
3	8.635	8.650	-0.1	47.7	59.2	48.0	518.7	1.214	14.72	1.856
4	8.180	8.261	-0.0	50.4	57.7	45.7	518.7	1.206	14.73	1.791
5	8.065	8.164	-0.0	50.5	57.4	45.7	518.5	1.205	14.73	1.765
6	7.949	8.067	-0.0	51.6	57.1	45.3	518.5	1.204	14.72	1.747
7	7.832	7.969	-0.0	52.3	56.8	44.9	518.3	1.201	14.74	1.727
8	7.714	7.872	-0.0	51.7	56.4	43.1	518.5	1.199	14.72	1.733
9	6.726	7.094	-0.0	46.7	53.4	34.1	518.1	1.177	14.73	1.724
10	5.592	6.315	-0.0	47.7	51.7	24.3	518.4	1.159	14.73	1.655
11	5.266	6.121	-0.0	49.5	52.2	16.7	518.4	1.169	14.70	1.734

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	645.2	797.0	1501.7	855.7	645.2	481.5	-0.5	635.1	1355.5	1342.4
2	692.2	808.6	1497.7	863.5	692.2	515.0	-0.6	623.4	1327.6	1316.5
3	716.5	811.3	1401.2	815.8	716.5	546.3	-0.6	599.7	1203.6	1205.6
4	720.6	808.5	1349.7	739.0	720.6	515.7	-0.6	622.7	1140.6	1151.9
5	719.2	799.7	1335.2	728.4	719.2	508.9	-0.6	616.9	1124.3	1138.1
6	718.4	797.4	1321.8	703.5	718.4	494.9	-0.6	625.3	1108.9	1125.4
7	716.0	793.1	1305.8	683.9	716.0	484.6	-0.6	627.8	1091.4	1110.5
8	713.5	803.7	1290.3	682.0	713.5	498.2	-0.6	630.7	1074.4	1096.4
9	696.9	830.1	1169.5	688.4	696.9	569.8	-0.6	603.7	938.6	989.9
10	616.9	844.1	994.9	623.1	616.9	567.9	-0.5	624.5	780.1	880.9
11	570.0	893.4	929.7	605.3	570.0	579.8	-0.4	679.7	734.1	853.3

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID PEAK SS	
RP	IN	OUT	IN	OUT	IN	OUT	VEL R	MACH NO
1	0.597	0.661	1.391	0.710	0.597	0.399	0.746	1.616
2	0.645	0.676	1.395	0.722	0.645	0.431	0.744	1.584
3	0.670	0.690	1.310	0.694	0.670	0.465	0.762	1.536
4	0.674	0.690	1.263	0.631	0.674	0.440	0.716	1.518
5	0.673	0.683	1.249	0.622	0.673	0.434	0.708	1.515
6	0.672	0.681	1.237	0.600	0.672	0.422	0.689	1.512
7	0.670	0.677	1.221	0.584	0.670	0.414	0.677	1.509
8	0.667	0.688	1.206	0.584	0.667	0.427	0.698	1.505
9	0.651	0.720	1.092	0.597	0.651	0.494	0.818	1.477
10	0.570	0.740	0.920	0.546	0.570	0.498	0.921	1.290
11	0.525	0.785	0.856	0.531	0.525	0.509	1.017	1.218

	PERCENT	INCIDENCE		DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN	SS				TOT	PROF	TOT	PROF
1	5.00	4.3	1.5	7.2	0.586	0.777	0.223	0.119	0.047	0.025
2	10.00	3.5	0.4	5.0	0.574	0.812	0.182	0.084	0.039	0.018
3	30.00	4.8	0.6	2.8	0.560	0.904	0.090	0.016	0.020	0.004
4	40.00	5.4	0.6	3.4	0.599	0.881	0.113	0.050	0.025	0.011
5	42.50	5.6	0.7	4.1	0.599	0.862	0.132	0.071	0.029	0.015
6	45.00	5.8	0.7	4.6	0.614	0.846	0.148	0.089	0.032	0.019
7	47.50	6.0	0.8	5.1	0.623	0.839	0.155	0.099	0.033	0.021
8	50.00	6.1	0.8	4.3	0.619	0.856	0.140	0.087	0.030	0.019
9	70.00	6.9	0.4	4.3	0.549	0.949	0.053	0.019	0.011	0.004
10	90.00	7.5	0.2	6.8	0.514	0.972	0.034	0.031	0.007	0.006
11	95.00	8.2	0.7	3.0	0.503	1.006	-0.008	-0.008	-0.002	-0.002

TABLE V. - Continued. BLADE-ELEMENT PERFORMANCE AT

BLADE EDGES FOR ROTOR 6

(d) Percent of design speed, 100; reading number, 199

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	9.717	9.623	-0.0	55.6	65.9	56.0	520.3	1.286	14.41	1.970
2	9.508	9.429	-0.0	53.3	64.0	53.2	519.8	1.272	14.65	1.956
3	8.635	8.650	-0.0	50.2	60.8	48.6	518.6	1.224	14.72	1.876
4	8.180	8.261	-0.0	52.4	59.3	46.7	518.8	1.212	14.72	1.807
5	8.065	8.164	-0.1	53.5	59.0	46.2	519.2	1.212	14.73	1.791
6	7.949	8.067	-0.0	54.7	58.7	45.6	518.1	1.211	14.73	1.775
7	7.832	7.969	-0.0	55.1	58.4	44.7	518.6	1.211	14.74	1.761
8	7.714	7.872	-0.0	54.5	58.1	42.9	517.8	1.209	14.73	1.767
9	6.726	7.094	-0.0	48.9	55.0	33.3	518.3	1.184	14.72	1.753
10	5.592	6.315	-0.0	49.9	53.0	22.8	518.3	1.167	14.73	1.684
11	5.266	6.121	-0.0	53.0	53.6	14.4	518.5	1.174	14.69	1.750

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	606.8	806.6	1484.0	814.5	606.8	455.6	-0.5	665.6	1353.9	1340.8
2	646.6	821.1	1476.1	820.1	646.6	490.8	-0.5	658.4	1326.4	1315.4
3	673.1	808.3	1380.6	782.0	673.1	517.6	-0.6	620.8	1204.8	1206.9
4	677.0	800.5	1326.8	711.0	677.0	487.9	-0.6	634.6	1140.5	1151.8
5	677.2	800.7	1314.2	687.1	677.2	476.0	-0.6	643.9	1125.7	1139.5
6	674.9	800.2	1298.3	660.2	674.9	462.0	-0.6	653.3	1108.5	1125.0
7	672.9	800.9	1282.8	645.3	672.9	458.5	-0.5	656.7	1091.6	1110.7
8	670.0	809.9	1266.7	642.3	670.0	470.5	-0.6	659.2	1074.4	1096.4
9	655.7	833.9	1143.9	655.3	655.7	548.0	-0.5	628.6	936.8	988.1
10	586.5	848.5	975.3	592.6	586.5	546.1	-0.4	649.4	778.8	879.5
11	542.3	896.0	913.2	556.6	542.3	539.2	-0.4	715.5	734.3	853.5

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	0.559	0.664	1.368	0.670	0.559	0.375	0.751	1.638
2	0.599	0.681	1.367	0.680	0.599	0.407	0.759	1.609
3	0.626	0.685	1.284	0.662	0.626	0.438	0.769	1.565
4	0.630	0.681	1.235	0.605	0.630	0.415	0.721	1.546
5	0.630	0.681	1.222	0.584	0.630	0.405	0.703	1.544
6	0.628	0.681	1.209	0.562	0.628	0.393	0.685	1.543
7	0.626	0.682	1.193	0.549	0.626	0.390	0.681	1.539
8	0.624	0.691	1.179	0.548	0.624	0.402	0.702	1.538
9	0.609	0.722	1.062	0.567	0.609	0.474	0.836	1.514
10	0.541	0.742	0.899	0.518	0.541	0.477	0.931	1.303
11	0.498	0.785	0.838	0.488	0.498	0.473	0.994	1.234

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	5.6	2.8	7.5	0.617	0.748	0.268	0.162	0.056	0.034
2	10.00	5.0	2.0	4.9	0.606	0.777	0.232	0.132	0.050	0.029
3	30.00	6.4	2.2	3.4	0.583	0.880	0.118	0.042	0.026	0.009
4	40.00	7.0	2.2	4.3	0.616	0.869	0.130	0.065	0.028	0.014
5	42.50	7.2	2.3	4.6	0.630	0.856	0.144	0.081	0.031	0.017
6	45.00	7.4	2.3	4.9	0.647	0.844	0.158	0.097	0.034	0.021
7	47.50	7.6	2.4	5.0	0.653	0.831	0.173	0.115	0.037	0.025
8	50.00	7.8	2.4	4.1	0.650	0.846	0.160	0.104	0.035	0.023
9	70.00	8.5	2.0	3.5	0.573	0.946	0.060	0.023	0.013	0.005
10	90.00	8.8	1.5	5.4	0.541	0.963	0.049	0.046	0.009	0.009
11	95.00	9.5	2.1	0.7	0.555	0.996	0.006	0.006	0.001	0.001

TABLE V. - Continued. BLADE-ELEMENT PERFORMANCE AT

BLADE EDGES FOR ROTOR 6

(e) Percent of design speed, 100; reading number, 200

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	9.717	9.623	-0.1	58.3	66.7	57.2	520.3	1.290	14.41	1.968
2	9.508	9.429	-0.0	55.7	65.0	54.0	519.8	1.279	14.64	1.955
3	8.635	8.650	-0.1	51.2	61.7	48.8	518.6	1.226	14.72	1.876
4	8.180	8.261	-0.0	53.8	60.2	47.4	518.8	1.216	14.73	1.807
5	8.065	8.164	-0.1	54.0	59.9	46.7	518.2	1.213	14.73	1.792
6	7.949	8.067	-0.0	55.0	59.6	45.9	518.2	1.213	14.74	1.778
7	7.832	7.969	-0.0	55.9	59.3	44.3	518.9	1.215	14.73	1.778
8	7.714	7.872	-0.1	56.5	58.9	42.8	518.4	1.214	14.72	1.779
9	6.726	7.094	-0.0	51.5	55.9	32.3	518.1	1.187	14.73	1.764
10	5.592	6.315	-0.0	51.3	53.9	19.7	518.1	1.182	14.73	1.724
11	5.266	6.121	-0.0	52.6	54.3	14.7	518.3	1.183	14.69	1.751

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	582.5	804.7	1474.9	781.4	582.5	423.2	-0.5	684.4	1354.5	1341.4
2	618.5	819.6	1462.4	786.5	618.5	461.9	-0.5	677.1	1324.7	1313.7
3	648.4	805.9	1367.2	766.5	648.4	504.7	-0.6	628.3	1203.1	1205.2
4	653.1	795.7	1315.5	693.8	653.1	469.9	-0.5	642.2	1141.4	1152.7
5	651.3	793.9	1299.7	681.2	651.3	467.0	-0.6	642.0	1124.2	1138.0
6	649.4	795.2	1283.3	655.6	649.4	455.9	-0.5	651.6	1106.3	1122.8
7	648.6	807.3	1269.8	632.5	648.6	452.6	-0.6	668.4	1091.2	1110.2
8	647.6	815.7	1255.5	613.2	647.6	450.0	-0.6	680.4	1075.0	1097.1
9	634.7	840.4	1131.9	619.1	634.7	523.5	-0.5	657.5	936.7	987.9
10	569.0	875.6	964.7	581.3	569.0	547.3	-0.4	683.5	778.6	879.3
11	527.2	894.1	903.7	561.2	527.2	542.8	-0.4	710.4	733.7	852.8

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID PEAK SS	
RP	IN	OUT	IN	OUT	IN	OUT	VEL R	MACH NO
1	0.536	0.661	1.357	0.642	0.536	0.347	0.726	1.656
2	0.571	0.678	1.351	0.650	0.571	0.382	0.747	1.626
3	0.602	0.681	1.268	0.648	0.602	0.427	0.778	1.580
4	0.606	0.675	1.221	0.589	0.606	0.399	0.719	1.565
5	0.605	0.675	1.207	0.579	0.605	0.397	0.717	1.563
6	0.603	0.676	1.191	0.557	0.603	0.387	0.702	1.559
7	0.602	0.686	1.178	0.538	0.602	0.385	0.698	1.558
8	0.601	0.695	1.165	0.522	0.601	0.383	0.695	1.557
9	0.588	0.727	1.049	0.535	0.588	0.453	0.825	1.537
10	0.524	0.763	0.888	0.506	0.524	0.477	0.962	1.313
11	0.483	0.780	0.829	0.490	0.483	0.474	1.030	1.241

	PERCENT	INCIDENCE		DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN	SS				TOT	PROF	TOT	PROF
1	5.00	6.4	3.7	8.7	0.641	0.735	0.286	0.178	0.057	0.036
2	10.00	6.0	2.9	5.7	0.630	0.758	0.257	0.157	0.055	0.033
3	30.00	7.3	3.1	3.7	0.592	0.870	0.131	0.054	0.029	0.012
4	40.00	7.9	3.2	5.0	0.627	0.855	0.148	0.081	0.031	0.017
5	42.50	8.1	3.2	5.2	0.630	0.850	0.153	0.089	0.033	0.019
6	45.00	8.3	3.3	5.3	0.646	0.838	0.168	0.107	0.036	0.023
7	47.50	8.5	3.3	4.6	0.662	0.833	0.176	0.117	0.038	0.025
8	50.00	8.7	3.3	4.0	0.675	0.837	0.174	0.117	0.038	0.025
9	70.00	9.3	2.9	2.5	0.608	0.939	0.070	0.031	0.015	0.007
10	90.00	9.6	2.3	2.3	0.556	0.924	0.110	0.107	0.022	0.021
11	95.00	10.3	2.9	1.1	0.544	0.948	0.084	0.084	0.016	0.016

TABLE V. - Continued. BLADE-ELEMENT PERFORMANCE AT

BLADE EDGES FOR ROTOR 6

(f) Percent of design speed, 100; reading number, 208

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	9.717	9.623	-0.2	58.2	67.0	57.1	520.2	1.292	14.42	1.966
2	9.508	9.429	-0.2	54.1	65.3	53.5	519.8	1.283	14.63	1.958
3	8.635	8.650	-0.2	50.3	62.0	48.8	518.7	1.227	14.72	1.875
4	8.180	8.261	-0.2	53.5	60.6	47.6	518.6	1.214	14.73	1.801
5	8.065	8.164	-0.2	53.1	60.2	47.0	518.4	1.212	14.73	1.786
6	7.949	8.067	-0.2	55.1	60.0	46.4	518.5	1.212	14.73	1.773
7	7.832	7.969	-0.2	55.8	59.6	44.8	518.9	1.213	14.73	1.770
8	7.714	7.872	-0.2	55.3	59.1	42.9	518.1	1.211	14.74	1.775
9	6.726	7.094	-0.1	49.7	56.0	33.2	518.3	1.184	14.72	1.759
10	5.592	6.315	-0.1	50.7	53.9	23.1	518.2	1.162	14.72	1.691
11	5.266	6.121	-0.1	52.3	54.3	15.0	518.3	1.169	14.70	1.766

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	575.9	805.3	1472.1	781.1	575.9	424.4	-1.5	684.4	1353.2	1340.1
2	611.0	819.3	1459.8	808.3	611.0	480.8	-1.7	663.4	1324.2	1313.1
3	642.0	803.8	1365.6	779.3	642.0	512.9	-1.7	618.9	1203.5	1205.6
4	643.5	791.6	1311.0	698.7	643.5	471.4	-1.8	636.0	1140.4	1151.7
5	643.5	787.7	1296.0	694.0	643.5	473.3	-1.8	629.6	1123.3	1137.1
6	639.8	790.9	1279.9	655.9	639.8	452.7	-1.7	648.5	1106.7	1123.2
7	641.1	801.1	1266.0	634.0	641.1	450.2	-1.7	662.7	1090.0	1109.1
8	644.3	811.2	1253.7	629.8	644.3	461.5	-1.7	667.1	1073.7	1095.7
9	633.0	831.5	1130.8	642.3	633.0	537.3	-1.6	634.5	935.4	986.6
10	568.7	843.1	965.8	580.1	568.7	533.6	-1.3	652.7	779.4	880.2
11	527.0	892.2	904.0	564.5	527.0	545.3	-1.1	706.2	733.4	852.5

	ABS MACH NO		REL MACH NO		MERID MACH NO			
RP	IN	OUT	IN	OUT	IN	OUT	MERID VEL R	PEAK SS MACH NO
1	0.529	0.661	1.353	0.641	0.529	0.348	0.737	1.661
2	0.564	0.676	1.347	0.667	0.564	0.397	0.787	1.632
3	0.595	0.679	1.266	0.659	0.505	0.434	0.799	1.587
4	0.597	0.672	1.216	0.593	0.597	0.400	0.733	1.573
5	0.597	0.669	1.202	0.590	0.597	0.402	0.736	1.569
6	0.593	0.672	1.186	0.557	0.593	0.385	0.708	1.569
7	0.594	0.681	1.173	0.539	0.594	0.383	0.702	1.564
8	0.598	0.692	1.163	0.537	0.598	0.393	0.716	1.559
9	0.586	0.720	1.048	0.556	0.586	0.465	0.849	1.538
10	0.523	0.738	0.889	0.508	0.523	0.467	0.938	1.316
11	0.483	0.783	0.829	0.496	0.483	0.479	1.035	1.242

	PERCENT	INCIDENCE		DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN	SS				TOT	PROF	TOT	PROF
1	5.00	6.7	3.9	8.6	0.641	0.730	0.293	0.184	0.059	0.037
2	10.00	6.2	3.2	5.2	0.611	0.749	0.270	0.169	0.058	0.036
3	30.00	7.5	3.3	3.7	0.580	0.868	0.133	0.055	0.029	0.012
4	40.00	8.3	3.5	5.2	0.621	0.854	0.148	0.081	0.032	0.017
5	42.50	8.4	3.5	5.5	0.617	0.849	0.154	0.089	0.033	0.019
6	45.00	8.7	3.7	5.7	0.644	0.840	0.165	0.103	0.035	0.022
7	47.50	8.8	3.6	5.0	0.659	0.834	0.175	0.115	0.037	0.025
8	50.00	8.8	3.4	4.1	0.658	0.843	0.166	0.109	0.036	0.024
9	70.00	9.4	2.9	3.4	0.582	0.954	0.052	0.013	0.011	0.003
10	90.00	9.7	2.4	5.6	0.551	0.998	0.002	-0.001	0.000	-0.000
11	95.00	10.3	2.9	1.4	0.540	1.042	-0.066	-0.066	-0.012	-0.012

TABLE V. - Continued. BLADE-ELEMENT PERFORMANCE AT

BLADE EDGES FOR ROTOR 6

(g) Percent of design speed, 90; reading number, 203

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	9.717	9.623	-0.1	34.5	63.3	55.3	519.5	1.148	14.39	1.509
2	9.508	9.429	-0.1	34.6	61.4	53.7	519.2	1.140	14.64	1.492
3	8.635	8.650	-0.1	36.0	58.0	49.2	518.8	1.128	14.73	1.464
4	8.180	8.261	-0.1	38.1	56.0	45.1	518.3	1.129	14.72	1.446
5	8.065	8.164	-0.1	38.5	55.6	45.4	517.3	1.128	14.73	1.423
6	7.949	8.067	-0.1	39.0	55.1	45.2	518.7	1.128	14.73	1.406
7	7.832	7.969	-0.1	39.6	55.1	45.6	518.8	1.127	14.74	1.393
8	7.714	7.872	-0.1	39.3	54.4	43.0	518.2	1.124	14.74	1.416
9	6.726	7.094	-0.1	36.5	51.6	35.0	518.7	1.111	14.73	1.451
10	5.592	6.315	-0.1	38.2	49.9	23.9	518.6	1.110	14.72	1.460
11	5.266	6.121	-0.1	42.0	50.5	17.7	518.7	1.120	14.68	1.490

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	613.1	687.4	1366.5	996.1	613.1	566.6	-1.1	389.1	1220.1	1208.3
2	650.4	701.1	1360.0	975.1	650.4	577.5	-1.1	397.7	1193.3	1183.4
3	678.4	711.8	1280.0	881.3	678.4	575.6	-1.2	418.8	1084.2	1086.1
4	684.2	726.6	1222.9	810.9	684.2	571.9	-0.6	448.1	1012.9	1022.9
5	683.6	712.1	1209.3	793.7	683.6	557.0	-0.6	443.6	996.9	1009.1
6	685.6	706.4	1199.4	779.1	685.6	548.7	-0.6	445.0	983.6	998.2
7	685.9	703.1	1200.3	773.9	685.9	541.7	-1.2	448.3	983.9	1001.1
8	685.6	720.4	1176.9	761.6	685.6	557.3	-0.6	456.4	955.9	975.5
9	671.6	770.2	1080.2	755.9	671.6	619.3	-1.1	457.9	845.0	891.3
10	592.2	819.8	918.9	704.3	592.2	643.9	-0.9	507.3	701.8	792.5
11	546.5	848.2	858.7	661.7	546.5	630.3	-0.8	567.6	661.6	769.0

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	0.566	0.594	1.262	0.861	0.566	0.490	0.924	1.434
2	0.603	0.609	1.261	0.848	0.603	0.502	0.888	1.423
3	0.631	0.623	1.191	0.772	0.631	0.504	0.848	1.387
4	0.638	0.637	1.140	0.711	0.638	0.501	0.836	1.354
5	0.638	0.624	1.128	0.696	0.638	0.488	0.815	1.351
6	0.639	0.618	1.117	0.682	0.639	0.480	0.800	1.349
7	0.639	0.615	1.118	0.677	0.639	0.474	0.790	1.371
8	0.639	0.633	1.097	0.669	0.639	0.490	0.813	1.350
9	0.625	0.685	1.005	0.672	0.625	0.550	0.922	1.372
10	0.546	0.734	0.847	0.630	0.546	0.576	1.087	1.135
11	0.502	0.758	0.788	0.591	0.502	0.563	1.153	1.075

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	3.0	0.3	6.8	0.376	0.841	0.111	0.060	0.023	0.013
2	10.00	2.4	-0.6	5.3	0.389	0.867	0.089	0.043	0.019	0.009
3	30.00	3.6	-0.6	4.1	0.420	0.900	0.068	0.035	0.015	0.008
4	40.00	3.7	-1.1	2.8	0.453	0.858	0.102	0.079	0.023	0.018
5	42.50	3.8	-1.1	3.9	0.459	0.827	0.124	0.103	0.027	0.022
6	45.00	3.8	-1.2	4.6	0.465	0.798	0.146	0.126	0.031	0.027
7	47.50	4.4	-0.8	5.8	0.469	0.783	0.156	0.133	0.033	0.028
8	50.00	4.1	-1.3	4.2	0.470	0.839	0.117	0.099	0.026	0.022
9	70.00	5.0	-1.5	5.2	0.413	1.010	-0.008	-0.021	-0.002	-0.004
10	90.00	5.7	-1.6	6.4	0.357	1.039	-0.039	-0.039	-0.007	-0.007
11	95.00	6.4	-1.0	4.0	0.369	1.001	-0.001	-0.001	-0.000	-0.000

TABLE V. - Continued. BLADE-ELEMENT PERFORMANCE AT

BLADE EDGES FOR ROTOR 6

(h) Percent of design speed, 90; reading number, 204

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	9.717	9.623	-0.1	44.3	63.9	53.6	520.1	1.187	14.42	1.653
2	9.508	9.429	-0.1	41.8	62.4	52.5	520.5	1.176	14.64	1.647
3	8.635	8.650	-0.1	41.4	58.7	47.8	518.1	1.153	14.73	1.590
4	8.180	8.261	-0.1	44.1	57.4	45.2	518.3	1.148	14.73	1.569
5	8.065	8.164	-0.1	44.5	57.1	44.5	518.2	1.148	14.72	1.562
6	7.949	8.067	-0.1	45.6	56.3	43.3	517.9	1.150	14.74	1.542
7	7.832	7.969	-0.1	45.9	55.9	42.4	517.5	1.148	14.73	1.536
8	7.714	7.872	-0.1	44.6	55.6	41.7	518.9	1.145	14.73	1.535
9	6.726	7.094	-0.1	41.3	53.0	35.1	518.3	1.129	14.72	1.524
10	5.592	6.315	-0.1	44.1	51.3	23.3	518.2	1.120	14.72	1.497
11	5.266	6.121	-0.1	47.0	52.0	16.4	518.3	1.129	14.67	1.540

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	536.8	711.7	1336.2	858.7	586.8	509.4	-0.6	496.9	1199.8	1188.2
2	623.8	721.2	1345.2	882.2	623.8	537.2	-1.1	481.1	1190.7	1180.8
3	648.6	717.2	1249.1	801.3	648.6	537.8	-0.7	474.6	1066.8	1068.6
4	655.7	728.9	1217.8	743.6	655.7	523.5	-1.1	507.1	1025.1	1035.2
5	656.4	730.0	1207.0	730.3	656.4	520.4	-1.1	512.0	1011.9	1024.3
6	654.6	725.5	1181.2	697.7	654.6	507.5	-0.6	518.5	982.7	997.3
7	654.8	727.4	1169.3	686.1	654.8	506.4	-0.6	522.2	968.2	985.1
8	654.0	729.1	1158.0	695.0	654.0	518.9	-0.7	512.1	955.0	974.5
9	635.7	749.5	1057.2	688.4	635.7	563.5	-1.1	494.3	843.6	889.8
10	561.3	788.2	898.8	616.5	561.3	566.4	-0.9	548.1	701.0	791.7
11	517.6	824.2	840.0	585.3	517.6	561.6	-0.8	603.2	660.9	768.2

	ABS MACH NO		REL MACH NO		MERID MACH NO			MERID PEAK SS	
RP	IN	OUT	IN	OUT	IN	OUT		VEL R	MACH NO
1	0.540	0.605	1.250	0.731	0.540	0.433		0.868	1.446
2	0.576	0.617	1.242	0.755	0.576	0.460		0.861	1.438
3	0.602	0.621	1.159	0.694	0.602	0.466		0.829	1.396
4	0.609	0.634	1.131	0.647	0.609	0.455		0.793	1.398
5	0.610	0.635	1.121	0.635	0.610	0.453		0.793	1.398
6	0.608	0.630	1.097	0.606	0.608	0.441		0.775	1.378
7	0.609	0.633	1.087	0.597	0.609	0.441		0.773	1.378
8	0.607	0.634	1.075	0.605	0.607	0.452		0.793	1.379
9	0.589	0.659	0.980	0.605	0.589	0.495		0.886	1.310
10	0.516	0.699	0.827	0.547	0.516	0.503		1.009	1.150
11	0.474	0.731	0.769	0.519	0.474	0.498		1.085	1.090

	PERCENT	INCIDENCE		DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN	SS				TOT	PROF	TOT	PROF
1	5.00	3.7	0.9	5.1	0.495	0.827	0.151	0.105	0.033	0.023
2	10.00	3.4	0.3	4.1	0.474	0.870	0.108	0.062	0.024	0.014
3	30.00	4.3	0.1	2.7	0.485	0.928	0.058	0.030	0.013	0.007
4	40.00	5.1	0.3	2.9	0.521	0.930	0.057	0.030	0.013	0.007
5	42.50	5.3	0.3	3.0	0.528	0.920	0.066	0.040	0.015	0.009
6	45.00	5.1	-0.0	2.7	0.545	0.881	0.102	0.080	0.023	0.018
7	47.50	5.2	-0.0	2.7	0.550	0.884	0.100	0.079	0.022	0.018
8	50.00	5.3	-0.0	2.9	0.533	0.900	0.086	0.067	0.019	0.015
9	70.00	6.5	0.0	5.3	0.474	0.989	0.010	0.003	0.002	0.001
10	90.00	7.1	-0.2	5.8	0.450	1.021	-0.024	-0.024	-0.005	-0.005
11	95.00	7.9	0.5	2.7	0.454	1.019	-0.026	-0.026	-0.005	-0.005

TABLE V. - Continued. BLADE-ELEMENT PERFORMANCE AT BLADE EDGES FOR ROTOR 6

(i) Percent of design speed, 90; reading number, 205

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	9.717	9.623	-0.1	48.1	65.0	54.9	520.5	1.197	14.46	1.687
2	9.508	9.429	-0.1	46.0	63.1	51.7	519.8	1.187	14.63	1.687
3	8.635	8.650	-0.1	44.5	60.0	48.8	518.2	1.162	14.72	1.626
4	8.180	8.261	-0.1	46.2	58.6	45.7	518.4	1.154	14.72	1.600
5	8.065	8.164	-0.1	46.6	57.9	44.2	517.8	1.153	14.73	1.590
6	7.949	8.067	-0.1	47.9	57.9	44.3	518.2	1.155	14.72	1.579
7	7.832	7.969	-0.1	48.1	57.6	43.6	517.6	1.154	14.73	1.566
8	7.714	7.872	-0.1	47.7	57.2	41.9	518.7	1.153	14.72	1.577
9	6.726	7.094	-0.1	44.5	53.9	34.1	518.5	1.132	14.73	1.540
10	5.592	6.315	-0.0	45.9	52.1	22.6	518.5	1.124	14.71	1.517
11	5.266	6.121	-0.1	49.1	52.9	16.1	518.3	1.132	14.70	1.554

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	567.8	712.2	1344.4	826.0	567.8	475.4	-1.0	530.3	1217.6	1205.8
2	596.6	728.1	1318.3	817.0	596.6	505.9	-0.6	523.7	1175.0	1165.2
3	625.1	716.3	1251.4	775.6	625.1	511.3	-1.1	501.6	1083.0	1084.9
4	626.5	723.4	1202.7	717.9	626.5	501.2	-1.1	521.7	1025.5	1035.7
5	625.8	723.8	1177.8	693.2	625.8	497.0	-0.6	526.1	997.1	1009.3
6	625.4	723.9	1177.4	678.1	625.4	485.1	-1.2	537.4	996.4	1011.2
7	622.3	722.1	1161.4	666.0	622.3	482.3	-1.1	537.4	979.5	996.7
8	623.3	735.1	1151.9	664.9	623.3	495.0	-1.1	543.5	967.6	987.4
9	605.3	739.4	1027.6	637.4	605.3	527.7	-0.6	517.8	829.8	875.2
10	537.9	774.5	876.4	584.4	537.9	539.4	-0.5	555.8	691.4	780.8
11	498.8	811.1	827.6	552.6	498.8	530.8	-0.7	613.3	659.6	766.7

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID PEAK SS	
RP	IN	OUT	IN	OUT	IN	OUT	VEL R	MACH NO
1	0.521	0.603	1.235	0.699	0.521	0.402	0.837	1.487
2	0.550	0.621	1.215	0.696	0.550	0.431	0.848	1.439
3	0.579	0.618	1.158	0.669	0.579	0.441	0.818	1.431
4	0.580	0.627	1.113	0.622	0.580	0.434	0.800	1.426
5	0.580	0.628	1.091	0.601	0.580	0.431	0.794	1.407
6	0.579	0.627	1.090	0.587	0.579	0.420	0.776	1.427
7	0.576	0.626	1.076	0.577	0.576	0.418	0.775	1.428
8	0.577	0.638	1.066	0.577	0.577	0.429	0.794	1.431
9	0.559	0.648	0.949	0.559	0.559	0.463	0.872	1.298
10	0.494	0.685	0.804	0.517	0.494	0.477	1.003	1.140
11	0.456	0.718	0.757	0.489	0.456	0.470	1.064	1.098

	PERCENT	INCIDENCE		DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN	SS				TOT	PROF	TOT	PROF
1	5.00	4.7	2.0	6.3	0.531	0.816	0.166	0.113	0.035	0.024
2	10.00	4.1	1.0	3.4	0.524	0.861	0.124	0.081	0.028	0.018
3	30.00	5.6	1.4	3.6	0.514	0.922	0.067	0.032	0.015	0.007
4	40.00	6.3	1.5	3.4	0.541	0.933	0.058	0.028	0.013	0.006
5	42.50	6.1	1.2	2.6	0.551	0.925	0.066	0.042	0.015	0.009
6	45.00	6.6	1.6	3.7	0.565	0.899	0.090	0.063	0.020	0.014
7	47.50	6.8	1.6	3.8	0.568	0.887	0.102	0.077	0.022	0.017
8	50.00	7.0	1.6	3.1	0.565	0.907	0.085	0.060	0.019	0.013
9	70.00	7.4	0.9	4.3	0.514	0.996	0.004	-0.000	0.001	-0.000
10	90.00	7.9	0.6	5.2	0.475	1.021	-0.025	-0.025	-0.005	-0.005
11	95.00	8.9	1.5	2.5	0.488	1.019	-0.027	-0.027	-0.005	-0.005

TABLE V. - Continued BLADE-ELEMENT PERFORMANCE AT BLADE EDGES FOR ROTOR 6

(j) Percent of design speed, 90; reading number, 206

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	9.717	9.623	-0.1	52.8	66.9	55.8	521.0	1.213	14.44	1.723
2	9.508	9.429	-0.1	51.6	65.3	53.4	521.0	1.202	14.62	1.718
3	8.635	8.650	-0.1	47.8	62.0	49.4	518.7	1.169	14.72	1.646
4	8.180	8.261	-0.1	49.4	60.6	46.8	518.0	1.162	14.73	1.617
5	8.065	8.164	-0.1	50.6	60.3	46.2	518.0	1.161	14.73	1.607
6	7.949	8.067	0.5	51.6	59.8	45.3	518.6	1.163	14.73	1.601
7	7.832	7.969	0.5	52.5	59.6	43.8	517.5	1.162	14.74	1.600
8	7.714	7.872	0.5	52.4	59.3	41.7	517.5	1.161	14.73	1.608
9	6.726	7.094	0.5	48.9	56.3	34.6	518.0	1.142	14.73	1.565
10	5.592	6.315	0.4	48.5	54.4	23.4	518.0	1.129	14.72	1.537
11	5.266	6.121	0.4	51.3	54.5	15.5	518.3	1.137	14.70	1.578

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	518.3	714.1	1322.3	767.9	518.3	431.8	-0.9	568.7	1215.5	1203.8
2	549.3	728.2	1312.1	759.4	549.3	452.3	-1.0	570.7	1190.6	1180.7
3	574.4	709.5	1224.5	733.2	574.4	476.8	-1.1	525.3	1080.4	1082.3
4	576.5	712.3	1175.9	677.1	576.5	463.7	-1.1	540.6	1023.9	1034.0
5	575.9	712.7	1163.4	653.8	575.9	452.7	-1.1	550.4	1009.7	1022.1
6	576.3	716.8	1147.3	633.0	576.3	445.0	5.2	561.9	997.3	1012.2
7	573.4	724.7	1132.0	612.0	573.4	441.6	5.2	574.7	981.3	998.4
8	570.7	737.5	1116.8	602.4	570.7	450.0	5.1	584.3	965.1	984.8
9	559.1	736.1	1007.2	588.5	559.1	484.4	4.8	554.3	842.5	888.6
10	499.3	764.1	857.3	552.0	499.3	506.5	3.9	572.0	700.8	791.4
11	467.9	805.0	806.5	522.6	467.9	503.6	3.4	628.0	660.3	767.6

	ABS MACH NO		REL MACH NO		MERID MACH NO			
RP	IN	OUT	IN	OUT	IN	OUT	MERID PEAK SS VEL R	MACH NO
1	0.474	0.600	1.208	0.645	0.474	0.363	0.833	1.528
2	0.503	0.616	1.202	0.642	0.503	0.382	0.823	1.501
3	0.529	0.609	1.127	0.630	0.529	0.409	0.830	1.475
4	0.531	0.614	1.083	0.584	0.531	0.400	0.804	1.476
5	0.531	0.615	1.072	0.564	0.531	0.391	0.786	1.479
6	0.531	0.618	1.056	0.546	0.531	0.384	0.772	1.474
7	0.528	0.626	1.043	0.529	0.528	0.381	0.770	1.478
8	0.526	0.638	1.029	0.521	0.526	0.389	0.788	1.483
9	0.514	0.642	0.926	0.514	0.514	0.423	0.866	1.344
10	0.457	0.673	0.784	0.486	0.457	0.446	1.015	1.174
11	0.427	0.710	0.736	0.461	0.427	0.444	1.076	1.108

	PERCENT	INCIDENCE		DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN	SS				TOT	PROF	TOT	PROF
1	5.00	6.6	3.9	7.3	0.578	0.790	0.205	0.147	0.043	0.031
2	10.00	6.2	3.2	5.1	0.579	0.826	0.166	0.114	0.036	0.025
3	30.00	7.6	3.4	4.3	0.544	0.906	0.086	0.048	0.019	0.010
4	40.00	8.3	3.6	4.4	0.570	0.907	0.087	0.054	0.019	0.012
5	42.50	8.5	3.6	4.6	0.586	0.900	0.094	0.062	0.020	0.013
6	45.00	8.6	3.5	4.7	0.598	0.885	0.111	0.081	0.024	0.017
7	47.50	8.8	3.6	4.1	0.613	0.885	0.112	0.083	0.024	0.018
8	50.00	9.0	3.6	2.9	0.617	0.903	0.096	0.068	0.021	0.015
9	70.00	9.7	3.3	4.8	0.561	0.960	0.042	0.036	0.009	0.008
10	90.00	10.2	2.9	5.9	0.504	1.010	-0.013	-0.013	-0.003	-0.003
11	95.00	10.5	3.1	1.8	0.515	1.020	-0.031	-0.031	-0.006	-0.006

TABLE V. - Continued. BLADE-ELEMENT PERFORMANCE AT

BLADE EDGES FOR ROTOR 6

(k) Percent of design speed, 90; reading number, 207

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	9.717	9.623	0.5	56.7	68.4	56.9	521.8	1.222	14.46	1.734
2	9.508	9.429	0.5	53.3	66.4	53.8	521.4	1.210	14.62	1.726
3	8.635	8.650	0.5	50.4	63.3	50.0	518.5	1.176	14.72	1.649
4	8.180	8.261	-0.1	52.1	62.1	47.6	517.7	1.167	14.72	1.617
5	8.065	8.164	-0.1	52.6	61.8	47.2	517.8	1.166	14.72	1.604
6	7.949	8.067	-0.1	53.8	61.5	46.1	517.1	1.165	14.73	1.599
7	7.832	7.969	-0.1	54.7	61.3	44.7	517.1	1.165	14.72	1.597
8	7.714	7.872	-0.1	54.8	60.9	42.4	518.5	1.167	14.72	1.607
9	6.726	7.094	-0.1	51.2	57.9	34.6	517.9	1.146	14.73	1.567
10	5.592	6.315	-0.1	50.1	55.7	22.8	517.6	1.131	14.73	1.545
11	5.266	6.121	-0.1	51.5	56.1	15.1	517.7	1.136	14.71	1.599

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	481.9	719.6	1307.8	723.8	481.9	394.8	4.2	601.6	1220.1	1208.3
2	517.5	730.0	1295.1	739.4	517.5	436.5	4.6	585.1	1191.8	1181.9
3	542.8	708.4	1206.0	702.4	542.8	451.5	5.0	545.8	1082.0	1083.8
4	543.1	708.9	1161.4	645.0	543.1	435.0	-0.9	559.7	1025.8	1035.9
5	542.8	705.8	1149.0	631.9	542.8	429.1	-0.9	560.4	1011.8	1024.2
6	540.1	710.7	1133.4	605.7	540.1	419.7	-1.0	573.5	995.5	1010.2
7	537.6	718.5	1118.4	583.3	537.6	414.8	-0.9	586.7	979.7	996.9
8	539.5	734.0	1107.9	573.6	539.5	423.4	-0.9	599.6	966.8	986.6
9	528.1	733.8	995.0	557.7	528.1	459.3	-0.9	572.3	842.4	888.5
10	478.4	763.5	849.3	531.7	478.4	490.0	-0.7	585.5	701.1	791.8
11	444.3	807.7	796.6	520.6	444.3	502.7	-1.0	632.2	660.2	767.4

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID PEAK SS	
RP	IN	OUT	IN	OUT	IN	OUT	VEL R	MACH NO
1	0.439	0.602	1.190	0.606	0.439	0.330	0.819	1.562
2	0.473	0.615	1.185	0.623	0.473	0.368	0.844	1.526
3	0.498	0.606	1.107	0.601	0.498	0.387	0.832	1.503
4	0.499	0.610	1.067	0.555	0.499	0.374	0.801	1.517
5	0.499	0.607	1.055	0.544	0.499	0.369	0.790	1.520
6	0.496	0.612	1.042	0.522	0.496	0.362	0.777	1.525
7	0.494	0.620	1.027	0.503	0.494	0.358	0.772	1.530
8	0.495	0.633	1.017	0.494	0.495	0.365	0.785	1.533
9	0.484	0.639	0.913	0.486	0.484	0.400	0.870	1.377
10	0.437	0.672	0.776	0.468	0.437	0.431	1.024	1.198
11	0.405	0.713	0.726	0.460	0.405	0.444	1.131	1.133

	PERCENT	INCIDENCE		DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN	SS				TOT	PROF	TOT	PROF
1	5.00	8.1	5.3	8.4	0.615	0.766	0.239	0.177	0.048	0.036
2	10.00	7.4	4.4	5.5	0.591	0.802	0.198	0.144	0.042	0.031
3	30.00	8.8	4.6	4.8	0.566	0.874	0.120	0.080	0.026	0.017
4	40.00	9.8	5.0	5.2	0.597	0.880	0.116	0.078	0.025	0.017
5	42.50	10.0	5.1	5.7	0.603	0.870	0.127	0.091	0.027	0.019
6	45.00	10.3	5.2	5.5	0.622	0.867	0.131	0.096	0.028	0.020
7	47.50	10.5	5.3	4.9	0.639	0.866	0.136	0.100	0.029	0.022
8	50.00	10.6	5.2	3.6	0.645	0.871	0.133	0.099	0.029	0.022
9	70.00	11.4	4.9	4.7	0.593	0.938	0.069	0.061	0.015	0.013
10	90.00	11.5	4.2	5.4	0.528	1.012	-0.016	-0.016	-0.003	-0.003
11	95.00	12.1	4.7	1.4	0.514	1.057	-0.088	-0.088	-0.017	-0.017

TABLE V. - Continued. BLADE-ELEMENT PERFORMANCE AT

BLADE EDGES FOR ROTOR 6

(*l*) Percent of design speed, 80; reading number, 209

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	9.717	9.623	-0.2	31.5	63.6	55.1	521.3	1.108	14.45	1.351
2	9.508	9.429	-0.2	30.9	61.6	53.5	520.5	1.102	14.65	1.353
3	8.635	8.650	-0.2	29.8	58.3	49.6	518.5	1.090	14.73	1.342
4	8.180	8.261	-0.1	32.7	56.6	46.3	518.1	1.089	14.72	1.335
5	8.065	8.164	-0.2	33.8	56.2	45.3	518.4	1.091	14.72	1.328
6	7.949	8.067	-0.2	35.0	55.9	44.9	518.2	1.092	14.72	1.317
7	7.832	7.969	-0.2	34.9	55.5	44.7	518.4	1.093	14.72	1.306
8	7.714	7.872	-0.2	33.7	55.1	43.3	518.0	1.091	14.72	1.321
9	6.726	7.094	-0.1	32.9	51.9	35.6	518.0	1.082	14.72	1.334
10	5.592	6.315	-0.1	35.9	50.1	23.8	518.1	1.080	14.71	1.351
11	5.266	6.121	-0.1	39.2	50.5	18.6	518.1	1.089	14.69	1.365

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	538.5	613.5	1209.4	915.0	538.5	523.2	-1.4	320.4	1081.5	1071.1
2	571.8	627.6	1204.2	905.3	571.8	538.8	-1.6	321.9	1058.2	1049.4
3	595.8	635.3	1133.0	851.0	595.8	551.4	-1.7	315.5	962.0	963.7
4	599.6	646.8	1090.2	787.7	599.6	544.3	-0.7	349.4	909.7	918.7
5	601.0	649.8	1080.3	768.1	601.0	540.3	-1.7	361.1	896.0	907.0
6	600.6	646.9	1071.0	747.8	600.6	530.1	-1.6	370.8	885.2	898.3
7	601.2	641.6	1061.0	740.5	601.2	526.3	-1.6	366.9	872.6	887.9
8	600.3	654.3	1049.5	748.9	600.3	544.6	-1.6	362.7	859.2	876.8
9	587.6	690.0	952.9	712.3	587.6	579.2	-1.5	375.0	748.7	789.7
10	522.3	745.3	813.6	659.4	522.3	603.5	-1.2	437.3	622.6	703.1
11	484.3	763.3	761.3	624.1	484.3	591.5	-1.1	482.4	586.3	681.4

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	0.493	0.536	1.107	0.799	0.493	0.457	0.972	1.334
2	0.525	0.551	1.106	0.794	0.525	0.473	0.942	1.301
3	0.550	0.562	1.045	0.753	0.550	0.488	0.926	1.292
4	0.554	0.573	1.007	0.698	0.554	0.483	0.908	1.300
5	0.555	0.576	0.997	0.681	0.555	0.479	0.899	1.217
6	0.555	0.573	0.989	0.662	0.555	0.469	0.883	1.217
7	0.555	0.567	0.980	0.655	0.555	0.465	0.875	1.212
8	0.554	0.580	0.969	0.664	0.554	0.483	0.907	1.206
9	0.542	0.617	0.879	0.637	0.542	0.518	0.986	1.141
10	0.479	0.671	0.746	0.594	0.479	0.543	1.155	1.003
11	0.442	0.686	0.696	0.561	0.442	0.531	1.221	0.949

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	3.3	0.5	6.6	0.342	0.832	0.104	0.087	0.022	0.018
2	10.00	2.6	-0.4	5.1	0.345	0.889	0.065	0.051	0.014	0.011
3	30.00	3.8	-0.3	4.5	0.342	0.977	0.013	0.004	0.003	0.001
4	40.00	4.3	-0.5	3.9	0.379	0.961	0.023	0.016	0.005	0.003
5	42.50	4.4	-0.5	3.8	0.394	0.932	0.042	0.039	0.009	0.009
6	45.00	4.6	-0.5	4.2	0.409	0.888	0.071	0.069	0.015	0.015
7	47.50	4.7	-0.5	5.0	0.408	0.858	0.092	0.090	0.020	0.019
8	50.00	4.8	-0.5	4.5	0.391	0.912	0.057	0.056	0.012	0.012
9	70.00	5.4	-1.1	5.8	0.358	1.053	-0.037	-0.037	-0.008	-0.008
10	90.00	5.8	-1.5	6.3	0.310	1.116	-0.104	-0.104	-0.020	-0.020
11	95.00	6.5	-1.0	4.9	0.314	1.049	-0.054	-0.054	-0.010	-0.010

TABLE V. - Continued. BLADE-ELEMENT PERFORMANCE AT

BLADE EDGES FOR ROTOR 6

(m) Percent of design speed, 80; reading number, 210

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	9.717	9.623	-0.2	42.2	65.3	54.5	521.9	1.138	14.47	1.477
2	9.508	9.429	-0.2	39.1	63.4	52.7	520.9	1.130	14.65	1.473
3	8.635	8.650	-0.2	39.2	60.1	49.5	518.3	1.112	14.73	1.434
4	8.180	8.261	-0.2	40.1	58.7	46.3	518.0	1.108	14.72	1.428
5	8.065	8.164	-0.2	40.9	58.3	45.4	518.0	1.108	14.73	1.424
6	7.949	8.067	-0.2	42.2	58.0	44.4	517.9	1.110	14.72	1.420
7	7.832	7.969	-0.2	43.2	57.7	43.6	518.2	1.112	14.72	1.411
8	7.714	7.872	-0.2	42.1	57.3	42.5	518.1	1.110	14.72	1.415
9	6.726	7.094	-0.2	40.6	54.5	36.1	517.9	1.097	14.72	1.390
10	5.592	6.315	-0.1	41.7	52.6	24.1	517.8	1.091	14.71	1.391
11	5.266	6.121	-0.1	44.8	52.9	17.4	518.0	1.097	14.69	1.421

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	501.1	629.5	1198.1	802.9	501.1	466.4	-1.4	422.8	1086.9	1076.3
2	534.2	639.8	1192.1	819.6	534.2	496.6	-1.5	403.4	1064.2	1055.4
3	556.8	629.3	1116.7	750.5	556.8	487.7	-1.5	397.7	966.5	968.2
4	558.8	640.8	1074.2	708.9	558.8	490.1	-1.5	412.8	915.9	925.0
5	557.9	642.9	1062.9	692.2	557.9	485.8	-1.5	421.1	903.2	914.2
6	557.5	646.3	1051.4	670.4	557.5	478.9	-1.5	434.0	889.9	903.2
7	554.6	647.0	1038.0	651.0	554.6	471.8	-1.5	442.7	875.9	891.2
8	554.5	653.0	1027.5	657.2	554.5	484.8	-1.5	437.5	863.6	881.3
9	537.8	659.5	926.6	620.2	537.8	501.0	-1.4	428.8	753.1	794.3
10	479.5	706.4	789.0	577.7	479.4	527.2	-1.1	470.2	625.5	706.4
11	447.1	738.7	740.5	549.4	447.1	524.2	-1.0	520.5	589.3	685.0

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID PEAK SS	
RP	IN	OUT	IN	OUT	IN	OUT	VEL R	MACH NO
1	0.457	0.542	1.092	0.692	0.457	0.402	0.931	1.384
2	0.489	0.554	1.091	0.710	0.489	0.430	0.930	1.352
3	0.512	0.551	1.027	0.657	0.512	0.427	0.876	1.350
4	0.514	0.563	0.988	0.623	0.514	0.430	0.877	1.270
5	0.513	0.565	0.977	0.608	0.513	0.427	0.871	1.266
6	0.513	0.567	0.967	0.588	0.513	0.420	0.859	1.260
7	0.510	0.567	0.954	0.571	0.510	0.414	0.851	1.254
8	0.510	0.573	0.945	0.577	0.510	0.426	0.874	1.249
9	0.494	0.583	0.851	0.549	0.494	0.443	0.932	1.181
10	0.438	0.630	0.721	0.515	0.438	0.470	1.100	1.033
11	0.407	0.659	0.675	0.490	0.407	0.468	1.172	0.976

	PERCENT	INCIDENCE		DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN	SS				TOT	PROF	TOT	PROF
1	5.00	5.0	2.2	6.0	0.460	0.853	0.115	0.093	0.025	0.020
2	10.00	4.4	1.3	4.4	0.435	0.896	0.078	0.060	0.017	0.013
3	30.00	5.7	1.5	4.3	0.447	0.969	0.022	0.010	0.005	0.002
4	40.00	6.3	1.6	3.9	0.462	0.993	0.005	0.000	0.001	0.000
5	42.50	6.5	1.6	3.9	0.473	0.984	0.012	0.008	0.003	0.002
6	45.00	6.7	1.6	3.7	0.490	0.956	0.034	0.031	0.007	0.007
7	47.50	6.9	1.7	3.8	0.503	0.926	0.059	0.056	0.013	0.012
8	50.00	7.1	1.7	3.7	0.489	0.948	0.042	0.040	0.009	0.009
9	70.00	8.0	1.5	6.3	0.454	1.018	-0.015	-0.015	-0.003	-0.003
10	90.00	8.4	1.1	6.6	0.401	1.083	-0.089	-0.089	-0.017	-0.017
11	95.00	8.8	1.4	3.7	0.406	1.091	-0.116	-0.116	-0.022	-0.022

TABLE V. - Continued. BLADE-ELEMENT PERFORMANCE AT

BLADE EDGES FOR ROTOR 6

(n) Percent of design speed, 80; reading number, 211

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	9.717	9.623	-0.2	46.5	66.4	55.2	522.4	1.149	14.49	1.499
2	9.508	9.429	-0.2	42.8	64.5	52.9	521.6	1.140	14.66	1.504
3	8.635	8.650	-0.2	41.3	61.4	49.6	518.2	1.120	14.71	1.462
4	8.180	8.261	-0.2	43.2	60.1	46.8	517.8	1.115	14.72	1.446
5	8.065	8.164	-0.2	43.9	59.8	45.8	517.6	1.115	14.73	1.445
6	7.949	8.067	-0.2	45.3	59.5	45.3	517.9	1.117	14.72	1.435
7	7.832	7.969	-0.2	46.8	59.2	44.3	517.7	1.118	14.72	1.426
8	7.714	7.872	-0.2	46.3	58.8	43.1	517.9	1.117	14.72	1.428
9	6.726	7.094	-0.1	45.3	56.2	35.3	517.8	1.104	14.72	1.409
10	5.592	6.315	-0.1	45.6	54.0	23.1	517.8	1.096	14.71	1.401
11	5.266	6.121	-0.1	47.1	54.3	17.4	518.1	1.101	14.69	1.428

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	475.8	626.8	1187.7	757.2	475.8	431.8	-1.3	454.4	1086.9	1076.3
2	507.5	640.3	1180.9	779.0	507.5	470.1	-1.4	434.8	1064.8	1056.0
3	527.2	627.7	1102.4	727.5	527.2	471.5	-1.5	414.4	966.7	968.4
4	526.2	633.1	1056.9	673.9	526.2	461.6	-1.4	433.3	915.2	924.3
5	527.1	637.5	1047.8	659.9	527.1	459.0	-1.4	442.4	904.1	915.2
6	525.7	636.7	1036.1	636.5	525.7	448.0	-1.4	452.5	891.4	904.6
7	523.1	638.6	1022.2	610.5	523.1	437.0	-1.4	465.7	876.7	892.1
8	523.0	643.7	1010.9	608.6	523.0	444.4	-1.4	465.6	863.7	881.4
9	505.8	657.4	908.2	586.8	505.8	462.8	-1.3	467.0	753.1	794.3
10	454.6	697.0	774.1	550.2	454.6	487.6	-1.0	498.2	625.5	706.4
11	423.2	724.3	726.0	516.8	423.2	493.3	-1.0	530.3	588.9	684.5

	ABS MACH NO		REL MACH NO		MERID MACH NO				MERID PEAK SS	
RP	IN	OUT	IN	OUT	IN	OUT			VEL R	MACH NO
1	0.435	0.597	1.080	0.648	0.453	0.370			0.907	1.414
2	0.465	0.552	1.077	0.671	0.465	0.405			0.926	1.385
3	0.485	0.547	1.011	0.634	0.485	0.411			0.894	1.392
4	0.485	0.554	0.969	0.539	0.485	0.404			0.877	1.297
5	0.484	0.558	0.961	0.577	0.484	0.402			0.871	1.294
6	0.482	0.557	0.950	0.556	0.482	0.392			0.852	1.289
7	0.480	0.558	0.937	0.534	0.480	0.392			0.835	1.282
8	0.480	0.563	0.927	0.532	0.480	0.389			0.850	1.275
9	0.463	0.580	0.832	0.500	0.463	0.408			0.915	1.203
10	0.414	0.620	0.706	0.471	0.414	0.433			1.073	1.048
11	0.385	0.644	0.660	0.459	0.385	0.439			1.166	0.990

	PERCENT	INCIDENCE		DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN	SS				TOT	PROF	TOT	PROF
1	5.00	6.1	3.3	6.7	0.504	0.822	0.149	0.125	0.032	0.026
2	10.00	5.5	2.5	4.5	0.474	0.883	0.094	0.074	0.021	0.016
3	30.00	7.0	2.8	4.4	0.465	0.957	0.034	0.018	0.007	0.004
4	40.00	7.8	3.1	4.4	0.493	0.963	0.029	0.024	0.006	0.005
5	42.50	8.0	3.1	4.3	0.504	0.965	0.028	0.024	0.006	0.005
6	45.00	8.2	3.2	4.6	0.521	0.929	0.059	0.055	0.013	0.012
7	47.50	8.4	3.2	4.5	0.542	0.904	0.082	0.078	0.018	0.017
8	50.00	8.6	3.2	4.3	0.537	0.918	0.071	0.068	0.015	0.015
9	70.00	9.6	3.2	5.5	0.513	0.990	0.009	0.009	0.002	0.002
10	90.00	9.8	2.5	5.7	0.459	1.060	-0.069	-0.069	-0.013	-0.013
11	95.00	10.3	2.9	3.7	0.442	1.065	-0.089	-0.089	-0.017	-0.017

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TABLE V. - Continued. BLADE-ELEMENT PERFORMANCE AT

BLADE EDGES FOR ROTOR 6

(o) Percent of design speed, 80; reading number, 212

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	9.717	9.623	-0.2	50.6	68.2	56.1	523.3	1.155	14.49	1.514
2	9.508	9.429	-0.2	47.6	66.5	53.2	522.0	1.149	14.66	1.517
3	8.635	8.650	-0.2	45.8	63.5	50.4	518.1	1.128	14.73	1.465
4	8.180	8.261	-0.2	48.1	62.3	47.5	517.8	1.125	14.71	1.448
5	8.065	8.164	-0.2	49.1	62.0	47.0	517.6	1.124	14.72	1.441
6	7.949	8.067	-0.2	50.0	61.7	46.3	518.1	1.125	14.71	1.435
7	7.832	7.969	-0.2	51.3	61.5	45.6	517.5	1.125	14.71	1.429
8	7.714	7.872	-0.2	51.4	61.2	44.1	517.7	1.125	14.71	1.428
9	6.726	7.094	-0.2	47.5	58.2	35.3	517.7	1.110	14.72	1.420
10	5.592	6.315	-0.1	47.3	55.8	23.2	517.6	1.098	14.70	1.412
11	5.266	6.121	-0.1	48.8	56.2	17.1	517.8	1.101	14.70	1.440

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	435.2	626.5	1171.5	713.0	435.2	397.6	-1.2	484.1	1086.5	1075.9
2	463.3	643.5	1162.0	724.5	463.3	433.8	-1.3	475.3	1064.4	1055.5
3	482.9	620.3	1081.1	679.0	482.9	432.8	-1.3	444.4	965.9	967.6
4	481.1	627.0	1035.1	619.7	481.1	418.3	-1.3	467.0	915.2	924.2
5	479.3	626.1	1022.5	600.7	479.3	409.6	-1.3	473.5	901.9	913.0
6	478.8	626.7	1010.8	583.8	478.8	403.2	-1.3	479.8	888.9	902.1
7	477.2	628.8	999.4	561.8	477.2	393.1	-1.3	490.8	876.8	892.2
8	475.7	635.3	986.0	551.8	475.7	396.6	-1.3	496.4	862.3	880.0
9	466.2	652.4	885.9	539.8	466.2	440.5	-1.2	481.2	752.1	793.2
10	425.0	688.9	756.8	508.2	425.0	467.3	-1.0	506.2	625.2	706.1
11	394.9	718.5	710.5	495.4	394.9	473.6	-0.9	540.2	589.8	685.6

	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	0.535	1.061	0.608	0.394	0.339			0.914	1.466
2	0.421	0.552	1.056	0.622	0.421	0.372			0.936	1.440
3	0.441	0.538	0.988	0.589	0.441	0.376			0.896	1.358
4	0.440	0.546	0.946	0.539	0.440	0.364			0.870	1.337
5	0.438	0.545	0.934	0.523	0.438	0.357			0.855	1.331
6	0.437	0.545	0.923	0.508	0.437	0.351			0.842	1.324
7	0.436	0.547	0.913	0.489	0.436	0.342			0.824	1.321
8	0.435	0.553	0.901	0.480	0.435	0.345			0.834	1.311
9	0.426	0.573	0.809	0.474	0.426	0.387			0.945	1.228
10	0.387	0.611	0.689	0.451	0.387	0.414			1.100	1.066
11	0.359	0.638	0.645	0.440	0.359	0.421			1.199	1.010

	PERCENT	INCIDENCE		DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN	SS				TOT	PROF	TOT	PROF
1	5.00	7.9	5.1	7.6	0.544	0.811	0.167	0.138	0.035	0.029
2	10.00	7.5	4.5	4.9	0.525	0.849	0.131	0.106	0.029	0.023
3	30.00	9.0	4.9	5.2	0.509	0.902	0.083	0.073	0.018	0.015
4	40.00	10.0	5.2	5.2	0.545	0.896	0.092	0.085	0.020	0.018
5	42.50	10.2	5.3	5.5	0.558	0.887	0.101	0.095	0.021	0.020
6	45.00	10.4	5.4	5.7	0.569	0.869	0.119	0.115	0.025	0.024
7	47.50	10.7	5.5	5.8	0.588	0.860	0.129	0.125	0.027	0.026
8	50.00	10.9	5.5	5.2	0.592	0.856	0.136	0.133	0.029	0.029
9	70.00	11.7	5.2	5.5	0.536	0.960	0.041	0.041	0.009	0.009
10	90.00	11.6	4.3	5.7	0.478	1.052	-0.064	-0.064	-0.012	-0.012
11	95.00	12.2	4.8	3.4	0.463	1.087	-0.124	-0.124	-0.023	-0.023

TABLE V. - Continued. BLADE-ELEMENT PERFORMANCE AT

BLADE EDGES FOR ROTOR 6

(p) Percent of design speed, 80; reading number, 213

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	9.717	9.623	-0.1	56.3	70.1	58.1	524.3	1.159	14.51	1.506
2	9.508	9.429	-0.2	51.5	68.2	54.9	522.5	1.157	14.66	1.502
3	8.635	8.650	-0.2	50.0	65.4	50.9	518.0	1.138	14.73	1.463
4	8.180	8.261	-0.2	51.4	64.3	47.6	517.6	1.134	14.71	1.451
5	8.065	8.164	-0.2	52.0	64.0	47.3	517.8	1.133	14.71	1.443
6	7.949	8.067	-0.2	53.0	63.6	46.8	517.4	1.131	14.70	1.437
7	7.832	7.969	-0.2	53.7	63.3	46.1	517.6	1.130	14.71	1.430
8	7.714	7.872	-0.2	52.9	63.0	44.8	517.5	1.130	14.71	1.429
9	6.726	7.094	-0.1	48.3	59.8	35.5	517.4	1.112	14.71	1.424
10	5.592	6.315	-0.1	47.6	57.2	23.9	517.5	1.098	14.71	1.414
11	5.266	6.121	-0.1	49.5	57.4	16.9	517.7	1.102	14.69	1.443

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	394.2	625.4	1157.2	656.1	394.2	347.1	-0.5	520.3	1087.5	1077.0
2	426.4	632.9	1147.6	684.7	426.4	393.9	-1.2	495.3	1064.3	1055.4
3	443.2	621.9	1064.5	633.5	443.2	399.6	-1.3	476.6	966.6	968.3
4	441.7	630.4	1017.2	583.7	441.7	393.2	-1.3	492.7	915.0	924.0
5	442.1	627.8	1006.7	570.9	442.1	386.8	-1.2	494.5	903.2	914.3
6	441.4	627.7	994.5	551.0	441.4	377.3	-1.2	501.6	889.9	903.1
7	442.2	627.7	983.3	536.3	442.2	371.7	-1.2	505.8	877.0	892.4
8	441.1	630.6	970.4	536.2	441.1	380.4	-1.2	502.9	863.1	880.8
9	439.3	649.9	872.2	530.6	439.3	432.0	-1.1	485.5	752.3	793.5
10	404.0	680.9	745.3	502.4	404.0	459.3	-1.0	502.6	625.3	706.2
11	377.4	715.7	700.6	485.7	377.4	464.9	-0.9	544.2	589.3	685.0

	ABS MACH NO		REL MACH NO		MERID MACH NO			MERID PEAK SS
RP	IN	OUT	IN	OUT	IN	OUT		VEL R MACH NO
1	0.356	0.532	1.044	0.558	0.356	0.295		0.880 1.521
2	0.386	0.540	1.039	0.585	0.386	0.356		0.924 1.490
3	0.404	0.537	0.970	0.547	0.404	0.345		0.901 1.398
4	0.402	0.547	0.927	0.506	0,402	0.341		0.890 1.373
5	0.403	0.544	0.917	0.495	0.403	0.335		0.875 1.368
6	0.402	0.545	0.906	0.478	0.402	0.327		0.855 1.361
7	0.403	0.545	0.896	0.466	0.403	0.323		0.841 1.352
8	0.402	0.548	0.884	0.466	0.402	0.330		0.862 1.343
9	0.400	0.570	0.795	0.466	0.400	0.379		0.984 1.249
10	0.367	0.604	0.677	0.445	0.367	0.407		1.137 1.080
11	0.342	0.635	0.635	0.431	0.342	0.413		1.232 1.021

	PERCENT	INCIDENCE		DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN	SS				TOT	PROF	TOT	PROF
1	5.00	9.8	7.0	9.5	0.599	0.780	0.202	0.166	0.040	0.033
2	10.00	9.2	6.1	6.5	0.560	0.786	0.196	0.165	0.041	0.035
3	30.00	11.0	6.8	5.7	0.554	0.832	0.154	0.141	0.032	0.029
4	40.00	12.0	7.2	5.3	0.580	0.840	0.153	0.145	0.032	0.031
5	42.50	12.2	7.2	5.8	0.587	0.831	0.163	0.156	0.034	0.033
6	45.00	12.4	7.3	6.1	0.602	0.830	0.165	0.159	0.035	0.033
7	47.50	12.5	7.3	6.4	0.612	0.826	0.171	0.167	0.036	0.035
8	50.00	12.7	7.3	6.0	0.604	0.827	0.173	0.169	0.037	0.036
9	70.00	13.2	6.8	5.7	0.540	0.947	0.056	0.056	0.012	0.012
10	90.00	13.0	5.7	6.4	0.477	1.057	-0.072	-0.072	-0.014	-0.014
11	95.00	13.4	6.0	3.2	0.470	1.080	-0.117	-0.117	-0.022	-0.022

TABLE V. - Continued. BLADE-ELEMENT PERFORMANCE AT

BLADE EDGES FOR ROTOR 6

(q) Percent of design speed, 70; reading number, 215

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	9.717	9.623	-0.2	28.4	63.7	55.1	519.9	1.076	14.51	1.246
2	9.508	9.429	-0.2	26.1	61.7	53.6	519.4	1.070	14.68	1.246
3	8.635	8.650	-0.2	27.0	58.4	49.7	518.6	1.061	14.71	1.243
4	8.180	8.261	-0.2	28.3	56.8	47.0	518.5	1.059	14.71	1.237
5	8.065	8.164	-0.2	28.6	56.4	46.4	518.5	1.060	14.71	1.236
6	7.949	8.067	-0.2	30.5	56.0	45.2	518.5	1.062	14.71	1.233
7	7.832	7.969	-0.2	31.7	55.7	43.7	518.4	1.065	14.71	1.236
8	7.714	7.872	-0.2	30.2	55.3	42.7	518.4	1.064	14.72	1.246
9	6.726	7.094	-0.1	30.5	52.2	35.8	518.5	1.058	14.72	1.246
10	5.592	6.315	-0.1	34.2	50.2	24.1	518.4	1.060	14.70	1.254
11	5.266	6.121	-0.1	36.0	50.4	19.9	518.4	1.064	14.68	1.273

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	471.3	543.5	1064.2	835.1	471.3	477.9	-1.3	258.8	952.9	943.7
2	502.1	557.0	1060.2	843.8	502.1	500.2	-1.4	245.1	932.4	924.6
3	521.8	563.4	995.2	776.4	521.8	502.2	-1.5	255.4	846.0	847.5
4	525.8	570.3	959.8	737.1	525.8	502.3	-1.5	270.0	801.5	809.4
5	526.0	571.7	951.1	728.3	526.0	502.2	-1.4	273.3	791.0	800.7
6	526.3	575.6	941.8	704.0	526.3	496.2	-1.5	291.8	779.5	791.1
7	524.9	583.6	930.9	687.0	524.9	496.8	-1.5	306.2	767.4	780.8
8	524.5	593.7	921.6	697.6	524.5	512.9	-1.4	299.1	756.4	771.9
9	512.1	616.6	836.1	654.6	512.1	531.2	-1.3	313.1	659.6	695.7
10	458.5	664.6	715.8	602.6	458.5	549.9	-1.1	373.2	548.7	619.6
11	428.6	682.9	672.1	587.7	428.6	552.8	-1.0	401.0	516.7	600.6

	ABS MACH NO		REL MACH NO		MERID MACH NO				MERID PEAK SS	
RP	IN	OUT	IN	OUT	IN	OUT			VEL R	MACH NO
1	0.429	0.480	0.970	0.737	0.429	0.422			1.014	1.165
2	0.459	0.494	0.969	0.748	0.459	0.443			0.996	1.132
3	0.478	0.502	0.912	0.692	0.478	0.448			0.962	1.091
4	0.482	0.509	0.880	0.658	0.482	0.448			0.955	1.073
5	0.482	0.510	0.872	0.650	0.482	0.448			0.955	1.071
6	0.482	0.513	0.863	0.628	0.482	0.443			0.943	1.066
7	0.481	0.520	0.853	0.613	0.481	0.443			0.946	1.061
8	0.481	0.530	0.845	0.623	0.481	0.458			0.978	1.058
9	0.469	0.553	0.765	0.587	0.469	0.477			1.037	1.002
10	0.418	0.599	0.653	0.543	0.418	0.496			1.199	0.880
11	0.390	0.615	0.611	0.530	0.390	0.498			1.290	0.832

	PERCENT	INCIDENCE		DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN	SS				TOT	PROF	TOT	PROF
1	5.00	3.4	0.7	6.6	0.305	0.856	0.077	0.076	0.016	0.016
2	10.00	2.7	-0.3	5.3	0.288	0.934	0.033	0.032	0.007	0.007
3	30.00	3.9	-0.2	4.5	0.306	1.046	-0.022	-0.022	-0.005	-0.005
4	40.00	4.5	-0.3	4.7	0.322	1.057	-0.029	-0.029	-0.006	-0.006
5	42.50	4.6	-0.3	4.9	0.325	1.042	-0.021	-0.021	-0.005	-0.005
6	45.00	4.7	-0.3	4.5	0.349	0.990	0.006	0.006	0.001	0.001
7	47.50	4.9	-0.3	3.9	0.363	0.965	0.020	0.020	0.004	0.004
8	50.00	5.0	-0.3	3.9	0.341	1.009	-0.005	-0.005	-0.001	-0.001
9	70.00	5.7	-0.8	6.0	0.317	1.110	-0.068	-0.068	-0.014	-0.014
10	90.00	6.6	-1.3	6.6	0.275	1.122	-0.102	-0.102	-0.020	-0.020
11	95.00	6.3	-1.1	6.1	0.251	1.120	-0.120	-0.120	-0.022	-0.022

TABLE V. - Continued. BLADE-ELEMENT PERFORMANCE AT

BLADE EDGES FOR ROTOR 6

(r) Percent of design speed, 70; reading number, 216

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	9.717	9.623	-0.2	34.7	65.3	55.3	519.7	1.093	14.53	1.306
2	9.508	9.429	-0.1	33.6	63.4	52.8	519.6	1.086	14.67	1.308
3	8.635	8.650	-0.1	33.5	60.1	50.0	518.3	1.076	14.71	1.286
4	8.180	8.261	-0.1	35.0	58.7	47.5	518.6	1.072	14.71	1.279
5	8.065	8.164	-0.1	35.0	58.4	46.2	518.5	1.073	14.71	1.283
6	7.949	8.067	-0.1	36.2	58.0	45.4	518.2	1.074	14.72	1.280
7	7.832	7.969	-0.1	37.6	57.7	44.2	518.3	1.076	14.72	1.278
8	7.714	7.872	-0.2	37.9	57.4	42.9	518.6	1.075	14.71	1.283
9	6.726	7.094	-0.2	37.7	54.5	35.6	518.5	1.068	14.71	1.274
10	5.592	6.315	-0.1	39.3	52.4	23.4	518.5	1.066	14.70	1.283
11	5.266	6.121	-0.1	41.5	52.7	18.2	518.6	1.070	14.68	1.300

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	439.6	538.2	1053.3	777.9	439.6	442.3	-1.3	306.8	955.9	946.7
2	469.0	560.8	1045.9	773.7	469.0	467.4	-0.6	310.0	934.3	926.6
3	487.0	550.0	978.1	713.1	487.0	458.8	-0.7	303.2	847.6	849.1
4	488.8	553.4	941.2	670.8	488.8	453.4	-0.7	317.3	803.7	811.7
5	488.3	561.5	930.8	664.6	488.3	460.1	-0.6	321.9	791.8	801.6
6	487.1	562.4	920.5	646.0	487.1	453.8	-0.6	332.2	780.4	792.0
7	486.5	566.6	910.5	626.5	486.5	449.0	-0.6	345.5	769.0	782.4
8	485.3	573.5	900.4	617.4	485.3	452.4	-1.4	352.4	757.0	772.5
9	471.4	590.9	812.1	575.5	471.4	467.8	-1.2	361.1	660.1	696.2
10	423.3	640.1	693.9	539.8	423.3	495.4	-1.0	405.3	548.8	619.7
11	394.0	660.6	650.6	521.1	394.0	494.9	-0.9	437.6	516.9	600.8

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	0.400	0.471	0.958	0.680	0.400	0.387	1.006	1.205
2	0.427	0.493	0.953	0.680	0.427	0.411	0.997	1.167
3	0.445	0.486	0.894	0.630	0.445	0.406	0.942	1.125
4	0.447	0.490	0.860	0.594	0.447	0.402	0.928	1.107
5	0.446	0.498	0.850	0.589	0.446	0.408	0.942	1.102
6	0.445	0.498	0.841	0.572	0.445	0.402	0.932	1.098
7	0.444	0.502	0.832	0.555	0.444	0.398	0.923	1.094
8	0.443	0.508	0.822	0.547	0.443	0.401	0.932	1.089
9	0.430	0.526	0.741	0.513	0.430	0.417	0.992	1.029
10	0.385	0.573	0.631	0.483	0.385	0.444	1.170	0.900
11	0.357	0.592	0.590	0.467	0.357	0.443	1.256	0.852

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	2.3	6.8	0.369	0.851	0.097	0.096	0.020	0.020
2	10.00	4.3	1.3	4.5	0.368	0.927	0.045	0.044	0.010	0.010
3	30.00	5.7	1.5	4.8	0.374	0.977	0.014	0.014	0.003	0.003
4	40.00	6.4	1.6	5.1	0.394	1.007	-0.004	-0.004	-0.001	-0.001
5	42.50	6.6	1.6	4.6	0.394	1.013	-0.009	-0.009	-0.002	-0.002
6	45.00	6.8	1.7	4.7	0.410	0.981	0.013	0.013	0.003	0.003
7	47.50	6.9	1.7	4.5	0.428	0.959	0.028	0.028	0.006	0.006
8	50.00	7.1	1.8	4.1	0.432	0.977	0.016	0.016	0.003	0.003
9	70.00	8.0	1.5	5.8	0.410	1.061	-0.045	-0.045	-0.010	-0.010
10	90.00	8.2	0.9	5.9	0.353	1.109	-0.107	-0.107	-0.021	-0.021
11	95.00	8.7	1.3	4.6	0.341	1.119	-0.137	-0.137	-0.025	-0.025

TABLE V. - Continued. BLADE-ELEMENT PERFORMANCE AT

BLADE EDGES FOR ROTOR 6

(s) Percent of design speed, 70; reading number, 217

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	9.717	9.623	-0.2	41.5	67.4	56.0	519.9	1.103	14.56	1.331
2	9.508	9.429	-0.2	39.3	65.5	53.3	519.4	1.101	14.68	1.340
3	8.635	8.650	-0.2	39.5	62.6	50.6	518.8	1.086	14.71	1.312
4	8.180	8.261	-0.2	42.1	61.3	46.9	518.7	1.085	14.71	1.310
5	8.065	8.164	-0.2	41.9	61.0	46.3	518.7	1.085	14.70	1.308
6	7.949	8.067	-0.2	43.8	60.8	45.8	518.7	1.086	14.71	1.301
7	7.832	7.969	-0.1	44.1	60.1	44.1	518.7	1.086	14.71	1.295
8	7.714	7.872	-0.1	44.6	59.8	42.9	518.6	1.086	14.70	1.295
9	6.726	7.094	-0.1	42.0	56.9	34.3	518.2	1.076	14.71	1.295
10	5.592	6.315	-0.1	43.1	54.6	22.7	518.1	1.073	14.70	1.293
11	5.266	6.121	-0.1	44.6	54.9	17.1	518.3	1.074	14.69	1.312

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	395.0	529.6	1027.9	709.0	395.0	396.6	-1.1	351.0	947.9	938.7
2	423.6	550.9	1020.8	712.5	423.6	426.3	-1.2	349.0	927.6	919.9
3	438.1	536.4	951.4	652.0	438.1	414.0	-1.3	341.0	843.2	844.7
4	436.9	550.6	911.1	598.6	436.9	408.8	-1.2	368.8	798.2	806.1
5	435.9	549.8	900.2	593.2	435.9	409.5	-1.2	366.8	786.4	796.0
6	434.6	549.2	890.5	567.9	434.6	396.1	-1.3	380.5	775.9	787.5
7	431.6	549.5	866.8	549.2	431.6	394.7	-0.6	382.4	751.1	764.3
8	431.3	554.8	858.0	539.2	431.3	395.1	-0.6	389.5	741.2	756.3
9	421.0	578.2	770.6	520.7	421.0	430.0	-0.5	386.6	644.9	680.2
10	382.0	614.0	659.5	486.1	382.0	448.5	-0.4	419.3	537.2	606.7
11	356.3	638.3	619.5	475.2	356.3	454.1	-0.4	448.6	506.4	588.6

	ABS MACH NO		REL MACH NO		MERID MACH NO				MERID PEAK SS	
RP	IN	OUT	IN	OUT	IN	OUT			VEL R	MACH NO
1	0.358	0.461	0.931	0.617	0.358	0.345			1.004	1.239
2	0.385	0.481	0.927	0.622	0.385	0.372			1.006	1.204
3	0.399	0.471	0.866	0.573	0.399	0.364			0.945	1.163
4	0.398	0.485	0.829	0.527	0.398	0.360			0.936	1.143
5	0.397	0.484	0.819	0.522	0.397	0.360			0.940	1.138
6	0.395	0.483	0.810	0.500	0.395	0.348			0.911	1.135
7	0.393	0.483	0.788	0.483	0.393	0.347			0.914	1.103
8	0.392	0.488	0.780	0.474	0.392	0.348			0.916	1.100
9	0.383	0.513	0.701	0.462	0.383	0.381			1.021	1.031
10	0.346	0.547	0.598	0.433	0.346	0.400			1.174	0.900
11	0.323	0.569	0.561	0.424	0.323	0.405			1.274	0.852

	PERCENT	INCIDENCE		DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN	SS				TOT	PROF	TOT	PROF
1	5.00	7.1	4.3	7.5	0.437	0.822	0.132	0.131	0.027	0.027
2	10.00	6.5	3.4	4.9	0.426	0.862	0.102	0.101	0.022	0.022
3	30.00	8.2	4.0	5.4	0.434	0.934	0.048	0.048	0.010	0.010
4	40.00	9.0	4.3	4.6	0.472	0.948	0.039	0.039	0.008	0.008
5	42.50	9.2	4.3	4.8	0.469	0.939	0.047	0.047	0.010	0.010
6	45.00	9.5	4.4	5.1	0.495	0.914	0.068	0.068	0.014	0.014
7	47.50	9.4	4.1	4.3	0.501	0.891	0.090	0.090	0.020	0.020
8	50.00	9.5	4.2	4.1	0.508	0.893	0.090	0.090	0.020	0.020
9	70.00	10.3	3.9	4.5	0.458	1.013	-0.012	-0.012	-0.003	-0.003
10	90.00	10.4	3.1	5.2	0.405	1.047	-0.055	-0.055	-0.011	-0.011
11	95.00	10.9	3.4	3.5	0.385	1.087	-0.116	-0.116	-0.022	-0.022

TABLE V. - Continued. BLADE-ELEMENT PERFORMANCE AT

BLADE EDGES FOR ROTOR 6

(t) Percent of design speed, 70; reading number, 218

	RADII		ABS BETAM		REL BETAM		OTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	9.717	9.623	-0.2	48.2	69.0	57.1	520.0	1.114	14.56	1.341
2	9.508	9.429	-0.2	43.9	67.3	54.1	519.3	1.111	14.68	1.348
3	8.635	8.650	-0.1	44.4	64.0	50.0	518.8	1.092	14.70	1.321
4	8.180	8.261	-0.1	45.8	62.8	45.8	518.7	1.091	14.83	1.323
5	8.065	8.164	-0.1	46.0	62.4	46.2	518.7	1.091	14.68	1.313
6	7.949	8.067	-0.1	46.8	62.1	45.1	518.9	1.090	14.70	1.312
7	7.832	7.969	-0.1	48.4	61.8	44.1	518.8	1.091	14.69	1.306
8	7.714	7.872	-0.1	48.6	61.5	43.3	518.8	1.090	14.69	1.306
9	6.726	7.094	-0.1	45.4	58.6	33.7	518.1	1.080	14.71	1.308
10	5.592	6.315	-0.1	45.8	56.1	22.0	518.1	1.074	14.69	1.300
11	5.266	6.121	-0.1	46.7	56.9	17.8	518.5	1.075	14.67	1.319

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	365.1	529.0	1017.9	649.5	365.1	352.5	-1.0	394.4	949.2	940.0
2	389.8	545.9	1009.2	670.7	389.8	393.1	-1.0	378.7	929.9	922.1
3	405.1	536.3	923.8	595.9	405.1	383.4	-0.5	374.9	829.7	831.2
4	404.2	552.7	883.1	552.2	404.2	385.0	-0.5	396.6	784.7	792.4
5	404.0	542.4	873.2	544.4	404.0	376.8	-0.5	390.2	773.6	783.1
6	404.3	547.1	864.2	530.9	404.3	374.7	-0.5	398.6	763.3	774.6
7	403.1	549.4	853.1	507.9	403.1	364.7	-0.5	411.0	751.3	764.5
8	402.9	550.8	843.7	500.1	402.9	364.2	-0.5	413.2	740.7	755.9
9	394.4	576.8	757.0	486.8	394.4	404.9	-0.5	410.8	645.7	681.0
10	361.9	607.3	648.2	456.9	361.9	423.5	-0.4	435.3	537.4	606.8
11	337.1	631.5	616.4	454.9	337.1	433.1	-0.8	459.7	515.3	599.0

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID PEAK SS	
RP	IN	OUT	IN	OUT	IN	OUT	VEL R	MACH NO
1	0.330	0.458	0.921	0.562	0.330	0.305	0.965	1.275
2	0.353	0.474	0.915	0.582	0.353	0.341	1.008	1.245
3	0.368	0.470	0.839	0.522	0.368	0.336	0.946	1.168
4	0.367	0.485	0.802	0.484	0.367	0.338	0.953	1.146
5	0.367	0.476	0.793	0.477	0.367	0.330	0.933	1.140
6	0.367	0.480	0.784	0.466	0.367	0.329	0.927	1.135
7	0.366	0.482	0.774	0.446	0.366	0.320	0.905	1.129
8	0.366	0.483	0.766	0.439	0.366	0.320	0.904	1.123
9	0.358	0.510	0.687	0.431	0.358	0.358	1.027	1.052
10	0.328	0.540	0.587	0.407	0.328	0.377	1.170	0.913
11	0.305	0.563	0.557	0.405	0.305	0.386	1.285	0.884

	PERCENT	INCIDENCE		DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN	SS				TOT	PROF	TOT	PROF
1	5.00	8.7	5.9	8.6	0.505	0.767	0.191	0.188	0.038	0.038
2	10.00	8.3	5.2	5.8	0.471	0.800	0.162	0.161	0.034	0.034
3	30.00	9.6	5.4	4.8	0.490	0.898	0.081	0.081	0.017	0.017
4	40.00	10.5	5.7	3.4	0.517	0.910	0.077	0.077	0.017	0.017
5	42.50	10.6	5.7	4.7	0.516	0.891	0.093	0.093	0.020	0.020
6	45.00	10.8	5.8	4.4	0.528	0.893	0.093	0.093	0.020	0.020
7	47.50	11.0	5.8	4.4	0.552	0.873	0.112	0.112	0.024	0.024
8	50.00	11.2	5.8	4.4	0.555	0.879	0.108	0.108	0.024	0.024
9	70.00	12.1	5.6	3.9	0.501	0.993	0.007	0.007	0.002	0.002
10	90.00	11.9	4.6	4.6	0.445	1.056	-0.067	-0.067	-0.013	-0.013
11	95.00	12.8	5.4	4.1	0.419	1.092	-0.125	-0.125	-0.023	-0.023

TABLE V. - Continued. BLADE-ELEMENT PERFORMANCE AT

BLADE EDGES FOR ROTOR 6

(u) Percent of design speed, 70; reading number, 219

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	9.717	9.623	-0.2	61.0	71.1	60.3	519.6	1.136	14.59	1.350
2	9.508	9.429	-0.2	54.5	69.4	56.7	519.1	1.128	14.68	1.344
3	8.635	8.650	-0.2	46.4	66.3	50.9	518.4	1.100	14.70	1.330
4	8.180	8.261	-0.2	47.7	65.0	47.7	518.4	1.095	14.71	1.327
5	8.065	8.164	-0.2	49.0	64.6	47.3	518.3	1.095	14.70	1.321
6	7.949	8.067	-0.2	49.6	64.3	46.9	518.3	1.094	14.71	1.315
7	7.832	7.969	-0.2	51.0	64.0	46.0	518.3	1.094	14.71	1.311
8	7.714	7.872	-0.2	51.3	63.6	44.5	518.3	1.093	14.69	1.314
9	6.726	7.094	-0.1	46.7	60.1	33.6	518.9	1.083	14.71	1.314
10	5.592	6.315	-0.1	45.8	57.5	23.0	518.8	1.074	14.70	1.304
11	5.266	6.121	-0.1	48.3	57.8	16.4	518.7	1.075	14.69	1.318

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	326.7	546.1	1006.3	534.6	326.7	265.0	-0.9	477.5	950.9	941.7
2	350.0	542.5	994.2	574.2	350.0	314.9	-1.0	441.7	929.6	921.9
3	369.9	536.6	921.3	587.3	369.9	370.4	-1.1	388.4	842.7	844.2
4	373.9	546.2	883.9	545.8	373.9	367.4	-1.1	404.1	799.9	807.8
5	374.2	545.0	873.9	527.3	374.2	357.8	-1.1	411.0	788.7	798.4
6	374.2	541.9	863.0	514.5	374.2	351.5	-1.1	412.5	776.6	788.2
7	374.1	544.3	852.2	493.3	374.1	342.5	-1.1	423.0	764.6	778.0
8	375.0	552.1	843.4	483.4	375.0	344.9	-1.1	431.1	754.4	769.9
9	371.2	575.0	745.1	473.5	371.2	394.1	-0.4	418.6	645.7	681.0
10	342.2	599.5	637.7	453.9	342.2	417.8	-0.4	429.9	537.8	607.3
11	318.3	623.2	597.2	432.1	318.3	414.6	-0.4	465.2	504.9	586.9

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID PEAK SS	
RP	IN	OUT	IN	OUT	IN	OUT	VEL R	MACH NO
1	0.295	0.468	0.909	0.459	0.295	0.227	0.811	1.324
2	0.317	0.467	0.899	0.495	0.317	0.271	0.900	1.290
3	0.335	0.468	0.835	0.513	0.335	0.323	1.001	1.231
4	0.339	0.478	0.801	0.478	0.339	0.322	0.983	1.207
5	0.339	0.477	0.792	0.462	0.339	0.313	0.956	1.200
6	0.339	0.475	0.782	0.451	0.339	0.308	0.939	1.193
7	0.339	0.477	0.772	0.432	0.339	0.300	0.916	1.184
8	0.340	0.484	0.764	0.424	0.340	0.302	0.920	1.179
9	0.336	0.508	0.675	0.418	0.336	0.348	1.062	1.070
10	0.309	0.533	0.577	0.403	0.309	0.371	1.221	0.927
11	0.287	0.555	0.539	0.385	0.287	0.369	1.303	0.874

	PERCENT	INCIDENCE		DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN	SS				TOT	PROF	TOT	PROF
1	5.00	10.7	8.0	11.8	0.644	0.657	0.328	0.324	0.060	0.059
2	10.00	10.4	7.3	8.4	0.583	0.690	0.286	0.284	0.057	0.057
3	30.00	11.9	7.7	5.7	0.503	0.850	0.128	0.128	0.027	0.027
4	40.00	12.7	7.9	5.3	0.528	0.884	0.102	0.102	0.022	0.022
5	42.50	12.8	7.9	5.7	0.544	0.874	0.112	0.112	0.024	0.024
6	45.00	13.0	8.0	6.2	0.552	0.865	0.122	0.122	0.026	0.026
7	47.50	13.2	8.0	6.3	0.573	0.860	0.128	0.128	0.027	0.027
8	50.00	13.3	8.0	5.7	0.581	0.868	0.122	0.122	0.026	0.026
9	70.00	13.6	7.1	3.8	0.514	0.983	0.018	0.018	0.004	0.004
10	90.00	13.3	6.0	5.5	0.439	1.064	-0.080	-0.080	-0.016	-0.016
11	95.00	13.8	6.3	2.7	0.440	1.097	-0.140	-0.140	-0.026	-0.026

TABLE V. - Continued. BLADE-ELEMENT PERFORMANCE AT

BLADE EDGES FOR ROTOR 6

(v) Percent of design speed, 60; reading number, 222

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	9.717	9.623	-0.0	22.1	63.9	55.0	519.1	1.050	14.53	1.162
2	9.508	9.429	-0.0	22.1	61.9	54.0	519.0	1.048	14.67	1.152
3	8.635	8.650	-0.0	22.0	58.3	50.1	518.7	1.043	14.71	1.149
4	8.180	8.261	-0.0	24.3	56.8	47.4	518.6	1.043	14.72	1.147
5	8.065	8.164	-0.0	25.1	56.5	46.7	518.5	1.044	14.71	1.150
6	7.949	8.067	-0.0	26.9	56.1	45.0	518.5	1.046	14.71	1.154
7	7.832	7.969	-0.0	28.0	55.8	44.0	518.7	1.048	14.71	1.153
8	7.714	7.872	-0.0	27.6	55.4	42.8	518.5	1.048	14.71	1.160
9	6.726	7.094	-0.0	28.2	52.2	35.2	518.6	1.046	14.71	1.168
10	5.592	6.315	-0.0	31.0	49.8	24.0	518.5	1.048	14.70	1.176
11	5.266	6.121	-0.0	34.3	50.1	19.1	518.6	1.052	14.69	1.183

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	399.9	475.7	909.2	768.0	399.9	440.6	-0.3	179.3	816.2	808.3
2	427.5	479.1	906.2	756.2	427.5	444.0	-0.3	179.9	798.7	792.0
3	446.9	488.2	850.5	705.5	446.9	452.5	-0.3	183.3	723.3	724.6
4	448.5	492.3	818.7	663.3	448.5	448.6	-0.3	202.7	684.5	691.3
5	447.6	494.7	811.2	653.0	447.6	448.1	-0.3	209.5	676.2	684.5
6	448.3	503.5	803.4	635.0	448.3	449.2	-0.3	227.5	666.3	676.2
7	447.2	505.9	794.8	620.3	447.2	446.6	-0.3	237.7	656.7	668.2
8	446.9	514.9	786.9	621.4	446.9	456.2	-0.3	238.7	647.4	660.6
9	438.7	544.6	715.2	587.2	438.7	480.0	-0.3	257.2	564.5	595.4
10	395.4	589.7	612.8	553.0	395.4	505.3	-0.3	303.8	467.9	528.5
11	368.6	603.1	575.0	527.3	368.6	498.2	-0.2	339.9	441.1	512.7

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID PEAK SS	
RP	IN	OUT	IN	OUT	IN	OUT	VEL R	MACH NO
1	0.363	0.423	0.825	0.683	0.363	0.392	1.102	0.996
2	0.389	0.427	0.824	0.673	0.389	0.395	1.039	0.965
3	0.407	0.436	0.774	0.630	0.407	0.404	1.013	0.925
4	0.408	0.440	0.745	0.593	0.408	0.401	1.000	0.910
5	0.408	0.442	0.739	0.584	0.408	0.401	1.001	0.909
6	0.408	0.450	0.732	0.567	0.408	0.401	1.002	0.905
7	0.407	0.452	0.724	0.554	0.407	0.399	0.999	0.902
8	0.407	0.460	0.717	0.555	0.407	0.408	1.021	0.899
9	0.399	0.488	0.651	0.527	0.399	0.430	1.094	0.850
10	0.359	0.530	0.556	0.497	0.359	0.455	1.278	0.743
11	0.334	0.542	0.521	0.474	0.334	0.448	1.352	0.704

	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	6.5	0.228	0.877	0.056	0.056	0.012	0.012
2	10.00	2.8	-0.2	5.7	0.237	0.859	0.062	0.062	0.013	0.013
3	30.00	3.9	-0.3	4.9	0.242	0.940	0.026	0.026	0.006	0.006
4	40.00	4.5	-0.3	5.1	0.268	0.934	0.031	0.031	0.007	0.007
5	42.50	4.7	-0.2	5.1	0.276	0.933	0.032	0.032	0.007	0.007
6	45.00	4.8	-0.3	4.3	0.297	0.905	0.049	0.049	0.011	0.011
7	47.50	5.0	-0.2	4.2	0.311	0.871	0.070	0.070	0.015	0.015
8	50.00	5.1	-0.2	4.0	0.302	0.899	0.056	0.056	0.012	0.012
9	70.00	5.6	-0.9	5.4	0.275	0.992	0.005	0.005	0.001	0.001
10	90.00	5.6	-1.7	6.5	0.208	0.993	0.006	0.006	0.001	0.001
11	95.00	6.1	-1.3	5.4	0.207	0.949	0.053	0.053	0.010	0.010

TABLE V. - Continued. BLADE-ELEMENT PERFORMANCE AT

BLADE EDGES FOR ROTOR 6

(w) Percent of design speed, 60; reading number, 223

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	9.717	9.623	-0.0	31.6	66.1	55.4	519.3	1.069	14.57	1.210
2	9.508	9.429	-0.0	30.9	64.1	53.5	519.1	1.064	14.67	1.209
3	8.635	8.650	-0.0	31.6	61.1	50.6	518.8	1.056	14.71	1.195
4	8.180	8.261	-0.0	33.4	59.7	47.6	518.7	1.056	14.71	1.193
5	8.065	8.164	-0.0	34.1	59.3	46.2	518.6	1.056	14.71	1.196
6	7.949	8.067	-0.0	36.0	59.1	45.0	518.7	1.058	14.71	1.196
7	7.832	7.969	-0.0	36.2	58.6	44.9	518.5	1.059	14.71	1.187
8	7.714	7.872	-0.0	35.7	58.4	43.6	518.4	1.058	14.71	1.193
9	6.726	7.094	-0.0	36.8	55.4	35.4	518.6	1.055	14.71	1.192
10	5.592	6.315	-0.0	38.8	53.1	23.3	518.4	1.054	14.70	1.198
11	5.266	6.121	-0.0	40.5	53.4	18.3	518.7	1.058	14.68	1.212

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	362.6	459.8	893.5	689.8	362.6	391.7	-0.3	240.8	816.4	808.5
2	386.8	472.3	886.3	681.5	386.8	405.2	-0.3	242.6	797.1	790.5
3	400.0	465.6	828.1	624.6	400.0	396.7	-0.3	243.7	724.8	726.1
4	400.8	473.5	794.8	586.1	400.8	395.6	-0.3	260.4	686.0	692.8
5	402.2	481.5	788.3	576.0	402.2	398.5	-0.3	270.1	677.7	686.0
6	399.5	484.0	777.5	553.9	399.5	391.4	-0.3	284.7	666.8	676.7
7	399.8	478.7	768.2	544.9	399.8	386.2	-0.3	282.8	655.7	667.2
8	399.4	487.3	761.1	546.0	399.4	395.6	-0.3	284.6	647.6	660.9
9	390.2	509.4	686.4	500.4	390.2	407.7	-0.2	305.3	564.5	595.4
10	352.3	550.4	587.0	467.2	352.3	429.0	-0.2	344.8	469.3	530.0
11	328.6	571.3	551.4	457.6	328.6	434.5	-0.2	370.9	442.6	514.5

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID PEAK SS	
RP	IN	OUT	IN	OUT	IN	OUT	VEL R	MACH NO
1	0.328	0.405	0.809	0.607	0.328	0.345	1.080	1.038
2	0.351	0.417	0.803	0.602	0.351	0.358	1.048	1.005
3	0.363	0.413	0.751	0.554	0.363	0.352	0.992	0.971
4	0.364	0.420	0.721	0.520	0.364	0.351	0.987	0.954
5	0.365	0.427	0.716	0.511	0.365	0.354	0.991	0.951
6	0.363	0.429	0.706	0.491	0.363	0.347	0.980	0.947
7	0.363	0.424	0.697	0.483	0.363	0.342	0.966	0.940
8	0.363	0.433	0.691	0.485	0.363	0.351	0.991	0.938
9	0.354	0.453	0.623	0.445	0.354	0.363	1.045	0.883
10	0.319	0.492	0.531	0.418	0.319	0.383	1.218	0.772
11	0.297	0.510	0.498	0.409	0.297	0.388	1.322	0.731

	PERCENT	INCIDENCE		DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN	SS				TOT	PROF	TOT	PROF
1	5.00	5.8	3.0	6.9	0.327	0.816	0.116	0.116	0.024	0.024
2	10.00	5.1	2.1	5.2	0.330	0.878	0.073	0.073	0.016	0.016
3	30.00	6.7	2.5	5.4	0.344	0.936	0.038	0.038	0.008	0.008
4	40.00	7.4	2.6	5.2	0.366	0.922	0.049	0.049	0.011	0.011
5	42.50	7.5	2.6	4.7	0.377	0.932	0.044	0.044	0.010	0.010
6	45.00	7.8	2.7	4.4	0.401	0.905	0.065	0.065	0.014	0.014
7	47.50	7.9	2.6	5.1	0.403	0.857	0.100	0.100	0.021	0.021
8	50.00	8.1	2.7	4.8	0.395	0.900	0.070	0.070	0.015	0.015
9	70.00	8.8	2.3	5.6	0.389	0.944	0.044	0.044	0.009	0.009
10	90.00	8.9	1.6	5.9	0.335	0.980	0.022	0.022	0.004	0.004
11	95.00	9.4	2.0	4.6	0.312	0.982	0.023	0.023	0.004	0.004

TABLE V. - Continued. BLADE-ELEMENT PERFORMANCE AT

BLADE EDGES FOR ROTOR 6

(x) Percent of design speed, 60; reading number, 224

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	9.717	9.623	-0.0	40.0	67.7	56.0	519.3	1.076	14.60	1.224
2	9.508	9.429	-0.0	36.7	65.9	54.0	519.1	1.073	14.68	1.228
3	8.635	8.650	-0.0	36.7	62.9	51.1	518.6	1.063	14.70	1.210
4	8.180	8.261	-0.0	38.7	61.5	47.3	518.5	1.063	14.71	1.212
5	8.065	8.164	-0.0	39.3	61.2	46.4	518.3	1.063	14.71	1.212
6	7.949	8.067	-0.0	40.2	61.0	45.8	518.8	1.063	14.72	1.211
7	7.832	7.969	-0.0	41.8	60.6	45.4	518.8	1.064	14.71	1.203
8	7.714	7.872	-0.0	41.4	60.2	44.2	518.3	1.064	14.71	1.204
9	6.726	7.094	-0.0	40.6	57.5	35.8	518.7	1.058	14.70	1.205
10	5.592	6.315	-0.0	41.3	55.1	23.9	518.5	1.056	14.70	1.208
11	5.266	6.121	-0.0	43.8	55.1	17.5	518.9	1.059	14.69	1.221

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	335.5	454.2	883.0	622.9	335.5	347.9	-0.2	292.0	816.5	808.6
2	358.6	466.8	876.8	635.9	358.6	374.1	-0.3	279.1	799.9	793.2
3	371.7	456.6	815.5	583.3	371.7	366.2	-0.3	272.8	725.5	726.8
4	372.9	472.0	782.0	542.6	372.9	368.2	-0.3	295.3	687.1	693.9
5	372.0	474.4	772.8	531.6	372.0	366.9	-0.3	300.7	677.1	685.4
6	371.5	474.9	766.0	520.3	371.5	362.7	-0.3	306.6	669.7	679.6
7	371.7	471.4	757.1	500.4	371.7	351.2	-0.3	314.4	659.3	670.8
8	371.5	476.2	748.0	498.6	371.5	357.5	-0.3	314.6	648.9	662.2
9	361.4	498.6	671.8	466.8	361.4	378.8	-0.2	324.2	566.0	597.0
10	328.5	534.9	574.1	439.7	328.5	401.8	-0.2	353.0	470.6	531.4
11	308.9	559.0	539.6	423.1	308.9	403.5	-0.2	386.8	442.3	514.1

	ABS MACH NO		REL MACH NO		MERID MACH NO			
RP	IN	OUT	IN	OUT	IN	OUT	MERID PEAK SS VEL R	MACH NO
1	0.303	0.398	0.798	0.546	0.303	0.305	1.037	1.068
2	0.325	0.410	0.793	0.559	0.325	0.329	1.043	1.041
3	0.337	0.403	0.739	0.515	0.337	0.323	0.985	1.001
4	0.338	0.417	0.709	0.480	0.338	0.326	0.987	0.982
5	0.337	0.420	0.700	0.470	0.337	0.325	0.986	0.978
6	0.336	0.420	0.694	0.460	0.336	0.321	0.976	0.977
7	0.337	0.416	0.686	0.442	0.337	0.310	0.945	0.971
8	0.337	0.421	0.678	0.441	0.337	0.316	0.962	0.965
9	0.327	0.443	0.608	0.414	0.327	0.336	1.048	0.907
10	0.297	0.477	0.519	0.392	0.297	0.358	1.223	0.789
11	0.279	0.498	0.487	0.377	0.279	0.360	1.306	0.743

	PERCENT	INCIDENCE		DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN	SS				TOT	PROF	TOT	PROF
1	5.00	7.4	4.6	7.5	0.417	0.780	0.155	0.155	0.032	0.032
2	10.00	6.8	3.8	5.6	0.390	0.829	0.117	0.117	0.025	0.025
3	30.00	8.4	4.3	5.9	0.396	0.887	0.076	0.076	0.016	0.016
4	40.00	9.2	4.4	4.9	0.426	0.901	0.072	0.072	0.015	0.015
5	42.50	9.4	4.5	4.8	0.434	0.902	0.072	0.072	0.015	0.015
6	45.00	9.7	4.6	5.1	0.444	0.888	0.085	0.085	0.018	0.018
7	47.50	9.8	4.6	5.7	0.466	0.843	0.122	0.122	0.026	0.026
8	50.00	9.9	4.6	5.4	0.460	0.857	0.112	0.112	0.024	0.024
9	70.00	10.9	4.4	6.0	0.434	0.938	0.055	0.055	0.012	0.012
10	90.00	10.9	3.6	6.5	0.372	0.982	0.021	0.021	0.004	0.004
11	95.00	11.0	3.6	3.8	0.367	0.991	0.012	0.012	0.002	0.002

TABLE V. - Continued. BLADE-ELEMENT PERFORMANCE AT

BLADE EDGES FOR ROTOR 6

(y) Percent of design speed, 60; reading number, 226

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	9.717	9.623	-0.0	47.8	69.4	57.2	518.3	1.086	14.60	1.234
2	9.508	9.429	-0.0	42.0	67.5	54.7	518.5	1.079	14.68	1.234
3	8.635	8.650	-0.0	40.8	64.7	51.2	519.0	1.068	14.70	1.222
4	8.180	8.261	-0.0	42.6	63.4	47.5	518.8	1.067	14.71	1.224
5	8.065	8.164	-0.0	43.3	63.0	47.4	518.2	1.067	14.70	1.218
6	7.949	8.067	-0.0	44.2	63.0	46.8	519.4	1.068	14.70	1.215
7	7.832	7.969	-0.0	46.3	62.4	45.7	519.1	1.067	14.71	1.213
8	7.714	7.872	-0.0	46.3	62.1	44.7	518.8	1.068	14.71	1.213
9	6.726	7.094	-0.0	43.5	59.1	35.5	518.6	1.062	14.70	1.216
10	5.592	6.315	-0.0	44.4	56.7	23.3	518.5	1.059	14.70	1.214
11	5.266	6.121	-0.0	46.4	57.1	17.3	518.7	1.061	14.69	1.227

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	307.9	454.5	874.2	563.1	307.9	305.2	-0.2	336.8	817.9	810.0
2	330.0	459.1	861.5	590.4	330.0	341.3	-0.2	307.1	795.5	788.9
3	343.5	454.9	802.5	550.0	343.5	344.3	-0.3	297.3	725.0	726.2
4	344.9	469.0	769.4	511.1	344.9	345.2	-0.3	317.4	687.5	694.3
5	345.2	464.8	761.0	499.5	345.2	338.3	-0.3	318.7	677.9	686.2
6	341.1	464.6	750.4	486.0	341.1	333.0	-0.3	324.0	668.1	678.0
7	345.0	468.3	744.2	463.9	345.0	323.7	-0.3	338.4	659.1	670.7
8	344.2	471.0	735.2	457.6	344.2	325.2	-0.3	340.8	649.4	662.7
9	338.3	494.8	659.2	441.1	338.3	359.2	-0.2	340.4	565.5	596.4
10	308.4	526.0	561.4	409.5	308.4	376.1	-0.2	367.7	468.9	529.6
11	287.0	549.7	528.7	396.9	287.0	379.1	-0.2	398.1	443.8	515.8

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID PEAK SS	
RP	IN	OUT	IN	OUT	IN	OUT	VEL R	MACH NO
1	0.278	0.397	0.789	0.492	0.278	0.267	0.991	1.104
2	0.298	0.402	0.779	0.517	0.298	0.299	1.034	1.065
3	0.311	0.400	0.726	0.484	0.311	0.303	1.002	1.028
4	0.312	0.413	0.696	0.451	0.312	0.304	1.001	1.009
5	0.312	0.410	0.689	0.441	0.312	0.298	0.980	1.005
6	0.308	0.409	0.678	0.428	0.308	0.293	0.976	1.002
7	0.312	0.413	0.673	0.409	0.312	0.285	0.938	0.995
8	0.311	0.415	0.665	0.403	0.311	0.287	0.945	0.990
9	0.306	0.438	0.596	0.391	0.306	0.318	1.062	0.924
10	0.278	0.468	0.507	0.364	0.278	0.335	1.220	0.799
11	0.259	0.489	0.477	0.353	0.259	0.338	1.321	0.761

	PERCENT	INCIDENCE		DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN	SS				TOT	PROF	TOT	PROF
1	5.00	9.1	6.3	8.7	0.498	0.718	0.225	0.225	0.045	0.045
2	10.00	8.5	5.4	6.3	0.444	0.785	0.163	0.163	0.034	0.034
3	30.00	10.2	6.0	6.1	0.438	0.863	0.103	0.103	0.021	0.021
4	40.00	11.1	6.3	5.1	0.466	0.882	0.094	0.094	0.020	0.020
5	42.50	11.2	6.3	5.8	0.475	0.861	0.112	0.112	0.024	0.024
6	45.00	11.7	6.6	6.1	0.486	0.844	0.130	0.130	0.027	0.027
7	47.50	11.6	6.4	6.0	0.515	0.847	0.128	0.128	0.027	0.027
8	50.00	11.8	6.5	5.9	0.517	0.831	0.147	0.147	0.031	0.031
9	70.00	12.6	6.1	5.7	0.468	0.931	0.067	0.067	0.014	0.014
10	90.00	12.5	5.2	5.8	0.417	0.972	0.035	0.035	0.007	0.007
11	95.00	13.1	5.7	3.6	0.408	0.992	0.011	0.011	0.002	0.002

TABLE V. - Continued. BLADE-ELEMENT PERFORMANCE AT

BLADE EDGES FOR ROTOR 6

(z) Percent of design speed, 60; reading number, 227

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	9.717	9.623	-0.0	63.7	72.1	61.0	519.7	1.107	14.62	1.254
2	9.508	9.429	-0.0	56.9	70.4	57.5	519.4	1.099	14.68	1.245
3	8.635	8.650	-0.0	45.7	67.2	51.3	518.8	1.075	14.71	1.233
4	8.180	8.261	-0.0	47.0	65.8	47.9	518.8	1.072	14.70	1.233
5	8.065	8.164	-0.0	48.1	65.5	47.7	518.6	1.072	14.71	1.228
6	7.949	8.067	-0.0	49.1	65.1	47.2	518.4	1.071	14.71	1.224
7	7.832	7.969	-0.0	50.1	64.8	46.6	518.9	1.071	14.71	1.220
8	7.714	7.872	-0.0	50.5	64.6	45.6	517.5	1.070	14.70	1.217
9	6.726	7.094	-0.0	46.5	61.3	36.1	518.2	1.066	14.70	1.217
10	5.592	6.315	-0.0	46.1	58.5	24.0	519.3	1.060	14.70	1.217
11	5.266	6.121	-0.0	48.5	59.2	17.3	519.3	1.062	14.69	1.228

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	264.6	477.2	859.0	436.2	264.6	211.6	-0.2	427.7	817.1	809.2
2	284.7	467.3	848.2	475.0	284.7	255.1	-0.2	391.5	798.8	792.2
3	306.0	458.2	788.6	512.0	306.0	319.9	-0.2	328.1	726.6	727.8
4	309.2	468.1	755.1	476.2	309.2	319.4	-0.2	342.2	688.6	695.5
5	309.6	465.8	747.0	461.5	309.6	310.9	-0.2	346.8	679.6	687.9
6	309.4	463.1	735.8	446.4	309.4	303.4	-0.2	349.9	667.4	677.3
7	309.7	463.4	727.9	433.0	309.7	297.4	-0.2	355.3	658.6	670.1
8	307.0	464.7	716.7	423.0	307.0	295.9	-0.2	358.4	647.4	660.6
9	308.7	484.8	643.5	413.6	308.7	334.0	-0.2	351.4	564.4	595.3
10	287.8	515.2	551.0	390.9	287.8	357.0	-0.2	371.4	469.7	530.4
11	264.6	539.3	516.3	373.9	264.6	357.1	-0.1	404.1	443.2	515.2

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID PEAK SS	
RP	IN	OUT	IN	OUT	IN	OUT	VEL R	MACH NO
1	0.238	0.413	0.773	0.377	0.238	0.183	0.800	1.154
2	0.257	0.406	0.764	0.412	0.257	0.221	0.896	1.123
3	0.276	0.402	0.712	0.449	0.276	0.281	1.045	1.070
4	0.279	0.412	0.682	0.419	0.279	0.281	1.033	1.047
5	0.279	0.410	0.674	0.406	0.279	0.273	1.004	1.042
6	0.279	0.408	0.664	0.393	0.279	0.267	0.981	1.032
7	0.279	0.408	0.657	0.381	0.279	0.262	0.961	1.027
8	0.277	0.410	0.648	0.373	0.277	0.261	0.964	1.022
9	0.279	0.428	0.581	0.365	0.279	0.295	1.082	0.946
10	0.259	0.457	0.497	0.347	0.259	0.317	1.241	0.815
11	0.238	0.479	0.465	0.332	0.238	0.317	1.350	0.775

	PERCENT	INCIDENCE		DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN	SS				TOT	PROF	TOT	PROF
1	5.00	11.7	9.0	12.5	0.676	0.626	0.367	0.367	0.066	0.066
2	10.00	11.4	8.3	9.2	0.607	0.653	0.327	0.327	0.064	0.064
3	30.00	12.7	8.6	6.2	0.489	0.820	0.152	0.152	0.031	0.031
4	40.00	13.5	8.7	5.5	0.513	0.851	0.131	0.131	0.028	0.028
5	42.50	13.7	8.8	6.1	0.527	0.842	0.140	0.140	0.029	0.029
6	45.00	13.9	8.8	6.5	0.540	0.834	0.150	0.150	0.031	0.031
7	47.50	14.1	8.8	6.9	0.554	0.821	0.165	0.165	0.034	0.034
8	50.00	14.4	9.0	6.8	0.560	0.820	0.167	0.167	0.035	0.035
9	70.00	14.8	8.3	6.3	0.503	0.869	0.140	0.140	0.029	0.029
10	90.00	14.3	7.0	6.5	0.441	0.962	0.050	0.050	0.010	0.010
11	95.00	15.1	7.7	3.6	0.440	0.977	0.036	0.036	0.007	0.007

TABLE V. - Continued. BLADE-ELEMENT PERFORMANCE AT

BLADE EDGES FOR ROTOR 6

(aa) Percent of design speed, 50; reading number, 229

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	9.717	9.623	-0.0	16.8	62.5	55.3	519.6	1.027	14.59	1.084
2	9.508	9.429	-0.0	17.2	61.4	54.0	518.9	1.027	14.67	1.089
3	8.635	8.650	-0.0	18.2	57.9	50.5	518.7	1.026	14.71	1.088
4	8.180	8.261	-0.0	19.8	56.3	47.8	518.7	1.026	14.71	1.090
5	8.065	8.164	-0.0	20.2	55.5	46.2	517.6	1.026	14.71	1.089
6	7.949	8.067	-0.0	22.4	54.9	44.7	519.7	1.028	14.71	1.090
7	7.832	7.969	-0.0	23.6	54.6	43.5	518.0	1.030	14.71	1.090
8	7.714	7.872	-0.0	23.4	54.1	41.7	518.8	1.031	14.71	1.097
9	6.726	7.094	-0.0	25.1	51.5	35.1	518.3	1.030	14.71	1.106
10	5.592	6.315	-0.0	28.4	49.1	24.5	518.6	1.031	14.70	1.112
11	5.266	6.121	-0.0	31.3	49.2	20.1	518.6	1.034	14.69	1.116

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	345.4	392.7	747.5	660.1	345.4	375.9	-0.3	113.6	662.6	656.2
2	364.0	410.4	759.2	666.3	364.0	392.0	-0.3	121.6	666.0	660.4
3	379.2	413.2	714.2	617.6	379.2	392.5	-0.3	129.1	604.9	605.9
4	381.6	420.0	688.3	588.5	381.6	395.2	-0.3	142.2	572.5	578.2
5	378.2	420.8	668.0	570.7	378.2	394.9	-0.3	145.2	550.4	557.1
6	382.0	425.3	664.1	553.3	382.0	393.3	-0.3	161.8	542.9	551.0
7	379.7	427.9	656.0	540.6	379.7	391.9	-0.3	171.6	534.6	543.9
8	381.8	442.2	650.9	543.6	381.8	405.7	-0.3	175.9	526.9	537.7
9	375.5	468.7	602.7	518.4	375.5	424.3	-0.2	199.1	471.2	497.0
10	338.2	503.4	516.9	486.6	338.2	442.8	-0.2	239.5	390.7	441.2
11	317.1	512.9	485.7	466.6	317.1	438.0	-0.2	266.8	367.8	427.5

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID PEAK SS	
RP	IN	OUT	IN	OUT	IN	OUT	VEL R	MACH NO
1	0.312	0.351	0.675	0.590	0.312	0.336	1.088	0.783
2	0.329	0.368	0.687	0.597	0.329	0.351	1.077	0.794
3	0.344	0.370	0.647	0.554	0.344	0.352	1.035	0.765
4	0.346	0.377	0.624	0.528	0.346	0.354	1.036	0.751
5	0.343	0.378	0.606	0.512	0.343	0.355	1.044	0.725
6	0.346	0.381	0.601	0.495	0.346	0.352	1.029	0.719
7	0.344	0.383	0.595	0.485	0.344	0.351	1.032	0.718
8	0.346	0.396	0.590	0.487	0.346	0.363	1.063	0.713
9	0.340	0.421	0.546	0.466	0.340	0.381	1.130	0.700
10	0.306	0.453	0.467	0.438	0.306	0.399	1.310	0.614
11	0.286	0.461	0.439	0.420	0.286	0.394	1.381	0.579

	PERCENT	INCIDENCE		DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN	SS				TOT	PROF	TOT	PROF
1	5.00	2.2	-0.6	6.8	0.173	0.854	0.051	0.051	0.011	0.011
2	10.00	2.3	-0.7	5.6	0.180	0.920	0.027	0.027	0.006	0.006
3	30.00	3.5	-0.7	5.4	0.195	0.955	0.016	0.016	0.003	0.003
4	40.00	4.0	-0.8	5.4	0.211	0.961	0.015	0.015	0.003	0.003
5	42.50	3.7	-1.2	4.7	0.214	0.966	0.013	0.013	0.003	0.003
6	45.00	3.6	-1.5	4.0	0.242	0.881	0.053	0.053	0.012	0.012
7	47.50	3.8	-1.4	3.8	0.256	0.846	0.073	0.073	0.016	0.016
8	50.00	3.8	-1.5	2.9	0.246	0.880	0.059	0.059	0.013	0.013
9	70.00	4.9	-1.6	5.3	0.228	0.983	0.010	0.010	0.002	0.002
10	90.00	4.9	-2.4	7.0	0.162	1.012	-0.009	-0.009	-0.002	-0.002
11	95.00	5.2	-2.2	6.4	0.155	0.939	0.057	0.057	0.011	0.011

TABLE V. - Continued. BLADE-ELEMENT PERFORMANCE AT

BLADE EDGES FOR ROTOR 6

(bb) Percent of design speed, 50; reading number, 230

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	9.717	9.623	-0.0	21.7	64.4	55.1	517.9	1.032	14.58	1.105
2	9.508	9.429	-0.0	20.9	62.3	53.8	518.3	1.030	14.69	1.103
3	8.635	8.650	-0.0	21.6	58.3	50.2	518.7	1.029	14.70	1.096
4	8.180	8.261	-0.0	23.4	57.3	47.6	518.4	1.030	14.70	1.101
5	8.065	8.164	-0.0	24.2	56.3	46.4	518.7	1.031	14.70	1.096
6	7.949	8.067	-0.0	25.5	56.7	45.8	518.6	1.032	14.70	1.103
7	7.832	7.969	-0.0	27.5	56.2	44.1	517.4	1.032	14.71	1.103
8	7.714	7.872	-0.0	26.3	55.9	43.3	520.0	1.034	14.70	1.107
9	6.726	7.094	-0.0	28.5	52.9	35.3	518.7	1.031	14.71	1.113
10	5.592	6.315	-0.0	31.3	50.4	24.0	518.7	1.033	14.70	1.120
11	5.266	6.121	-0.0	33.8	50.6	19.8	518.7	1.035	14.69	1.124

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	325.4	395.9	753.8	642.7	325.4	367.9	-0.2	146.2	679.8	673.2
2	348.7	403.2	749.7	637.3	348.7	376.6	-0.2	143.9	663.5	658.0
3	364.2	397.6	692.8	577.3	364.2	369.5	-0.2	146.6	589.1	590.1
4	367.7	411.9	680.6	560.8	367.7	378.0	-0.3	163.8	572.5	578.1
5	367.6	407.6	662.6	539.5	367.6	371.8	-0.2	166.9	551.0	557.8
6	367.4	417.2	668.5	540.0	367.4	376.6	-0.3	179.5	558.2	566.5
7	366.0	421.5	658.5	520.7	366.0	375.9	-0.2	194.4	547.2	556.8
8	366.9	429.0	654.5	528.6	366.9	384.5	-0.3	190.1	541.7	552.8
9	357.2	452.4	591.6	487.3	357.2	397.8	-0.2	215.6	471.3	497.1
10	324.2	491.7	508.8	459.7	324.2	420.0	-0.2	255.8	392.0	442.7
11	303.3	502.0	477.9	443.5	303.3	417.4	-0.2	278.9	369.1	429.0

	ABS MACH NO		REL MACH NO		MERID MACH NO				MERID PEAK SS	
RP	IN	OUT	IN	OUT	IN	OUT			VEL R	MACH NO
1	0.294	0.354	0.682	0.574	0.294	0.329			1.131	0.636
2	0.316	0.361	0.678	0.570	0.316	0.357			1.080	0.806
3	0.330	0.355	0.627	0.516	0.330	0.330			1.015	0.749
4	0.333	0.369	0.617	0.502	0.333	0.338			1.028	0.764
5	0.333	0.364	0.600	0.482	0.333	0.332			1.012	0.734
6	0.333	0.373	0.605	0.483	0.333	0.337			1.025	0.761
7	0.332	0.377	0.597	0.466	0.332	0.335			1.022	0.754
8	0.332	0.383	0.592	0.472	0.332	0.343			1.048	0.753
9	0.323	0.406	0.535	0.437	0.323	0.357			1.114	0.712
10	0.293	0.442	0.460	0.413	0.293	0.377			1.295	0.624
11	0.274	0.451	0.431	0.398	0.274	0.375			1.376	0.590

	PERCENT	INCIDENCE		DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN	SS				TOT	PROF	TOT	PROF
1	5.00	4.1	1.4	6.6	0.219	0.899	0.041	0.041	0.009	0.009
2	10.00	3.3	0.2	5.4	0.220	0.941	0.023	0.023	0.005	0.005
3	30.00	5.9	-0.3	5.0	0.237	0.915	0.036	0.036	0.008	0.008
4	40.00	5.0	0.2	5.3	0.252	0.938	0.028	0.028	0.006	0.006
5	42.50	4.5	-0.4	4.9	0.265	0.856	0.070	0.070	0.015	0.015
6	45.00	5.4	0.3	5.1	0.275	0.875	0.063	0.063	0.013	0.013
7	47.50	5.5	0.2	4.3	0.299	0.897	0.051	0.051	0.011	0.011
8	50.00	5.6	0.3	4.5	0.280	0.865	0.073	0.073	0.016	0.016
9	70.00	6.3	-0.2	5.5	0.273	0.997	0.002	0.002	0.000	0.000
10	90.00	6.2	-1.1	6.5	0.209	0.985	0.013	0.013	0.002	0.002
11	95.00	6.6	-0.9	6.1	0.195	0.968	0.032	0.032	0.006	0.006

TABLE V. - Continued. BLADE-ELEMENT PERFORMANCE AT

BLADE EDGES FOR ROTOR 6

(cc) Percent of design speed, 50; reading number, 231

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	9.717	9.623	-0.0	33.6	66.4	54.7	517.8	1.050	14.62	1.143
2	9.508	9.429	-0.0	31.7	64.8	53.5	518.6	1.044	14.69	1.139
3	8.635	8.650	-0.0	32.6	61.9	49.7	519.3	1.039	14.70	1.134
4	8.180	8.261	-0.0	34.8	61.0	47.9	518.7	1.037	14.70	1.133
5	8.065	8.164	-0.0	35.6	60.6	46.4	521.3	1.041	14.71	1.136
6	7.949	8.067	-0.0	36.6	60.2	45.8	518.1	1.040	14.71	1.133
7	7.832	7.969	-0.0	38.3	60.0	45.3	520.0	1.042	14.70	1.131
8	7.714	7.872	-0.0	37.7	59.6	44.0	518.2	1.041	14.70	1.133
9	6.726	7.094	-0.0	37.9	56.7	36.0	518.4	1.037	14.71	1.131
10	5.592	6.315	-0.0	39.5	54.5	23.6	518.5	1.038	14.69	1.136
11	5.266	6.121	-0.0	41.7	54.7	18.5	518.5	1.040	14.68	1.142

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	289.8	380.5	724.7	547.9	289.8	316.9	-0.2	210.6	664.0	657.6
2	305.6	384.5	717.8	549.9	305.6	327.2	-0.2	201.9	649.2	643.8
3	316.2	386.6	671.2	503.9	316.2	325.6	-0.2	208.3	591.8	592.9
4	316.1	389.8	653.0	477.3	316.1	319.9	-0.2	222.7	571.2	576.8
5	318.3	398.1	648.6	469.6	318.3	323.7	-0.2	231.7	564.9	571.9
6	318.1	396.3	640.4	456.6	318.1	318.2	-0.2	236.4	555.6	563.8
7	317.3	395.8	635.1	441.5	317.3	310.4	-0.2	245.5	549.9	559.5
8	317.6	402.2	628.3	442.3	317.6	318.3	-0.2	245.9	541.9	553.0
9	308.6	417.6	562.3	407.4	308.6	329.7	-0.2	256.2	469.8	495.5
10	279.5	454.0	481.1	382.4	279.5	350.3	-0.2	288.8	391.4	442.0
11	261.2	468.4	452.3	368.6	261.2	349.5	-0.2	311.9	369.1	429.0

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	0.262	0.337	0.654	0.485	0.262	0.280	1.093	0.848
2	0.276	0.341	0.648	0.488	0.276	0.290	1.071	0.826
3	0.285	0.343	0.606	0.448	0.285	0.289	1.030	0.799
4	0.285	0.347	0.590	0.425	0.285	0.285	1.012	0.807
5	0.287	0.353	0.584	0.416	0.287	0.287	1.017	0.803
6	0.287	0.353	0.579	0.406	0.287	0.283	1.000	0.800
7	0.286	0.351	0.573	0.392	0.286	0.275	0.978	0.799
8	0.287	0.358	0.568	0.393	0.287	0.283	1.002	0.797
9	0.279	0.372	0.508	0.363	0.279	0.294	1.068	0.744
10	0.252	0.406	0.434	0.342	0.252	0.313	1.253	0.651
11	0.235	0.419	0.407	0.330	0.235	0.312	1.338	0.616

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	6.1	3.4	6.1	0.351	0.773	0.150	0.150	0.032	0.032
2	10.00	5.8	2.8	5.1	0.336	0.859	0.084	0.084	0.018	0.018
3	30.00	7.5	3.3	4.6	0.352	0.939	0.037	0.037	0.008	0.008
4	40.00	8.7	4.0	5.5	0.377	0.975	0.015	0.015	0.003	0.003
5	42.50	8.8	3.9	4.9	0.388	0.906	0.063	0.063	0.013	0.013
6	45.00	8.9	3.9	5.2	0.401	0.904	0.063	0.063	0.014	0.014
7	47.50	9.2	4.0	5.6	0.423	0.841	0.113	0.113	0.024	0.024
8	50.00	9.4	4.0	5.2	0.414	0.887	0.079	0.079	0.017	0.017
9	70.00	10.2	3.7	6.2	0.397	0.968	0.025	0.025	0.005	0.005
10	90.00	10.3	3.0	6.1	0.339	0.982	0.020	0.020	0.004	0.004
11	95.00	10.7	3.3	4.8	0.330	0.977	0.029	0.029	0.005	0.005

TABLE V. - Continued. BLADE-ELEMENT PERFORMANCE AT

BLADE EDGES FOR ROTOR 6

(dd) Percent of design speed, 50; reading number, 232

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	9.717	9.623	-0.0	44.4	69.1	57.0	519.3	1.057	14.63	1.154
2	9.508	9.429	-0.0	40.6	67.5	54.3	519.1	1.053	14.69	1.157
3	8.635	8.650	-0.0	39.0	64.6	51.4	518.8	1.046	14.70	1.146
4	8.180	8.261	-0.0	40.8	62.9	45.8	518.4	1.046	14.70	1.148
5	8.065	8.164	-0.0	41.6	63.0	46.7	518.8	1.046	14.70	1.148
6	7.949	8.067	-0.0	42.8	62.2	45.2	518.1	1.046	14.70	1.143
7	7.832	7.969	-0.0	44.4	61.9	45.0	518.2	1.044	14.71	1.139
8	7.714	7.872	-0.0	44.0	61.4	43.0	519.3	1.045	14.70	1.139
9	6.726	7.094	-0.0	42.6	58.7	33.9	518.4	1.044	14.70	1.143
10	5.592	6.315	-0.0	43.3	56.3	21.3	518.0	1.040	14.70	1.143
11	5.266	6.121	-0.0	45.7	57.3	17.5	518.5	1.040	14.69	1.148

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	259.8	375.2	729.7	491.9	259.8	268.0	-0.2	262.6	681.7	675.1
2	276.0	386.9	721.7	503.6	276.0	293.6	-0.2	251.9	666.6	661.1
3	287.4	378.1	670.0	470.8	287.4	293.7	-0.2	238.1	605.0	606.1
4	286.7	395.1	629.2	428.9	286.7	299.2	-0.2	258.1	559.9	565.4
5	288.8	393.2	635.8	428.7	288.8	294.0	-0.2	261.1	566.2	573.1
6	287.1	389.5	615.4	405.5	287.1	285.8	-0.2	264.6	544.2	552.2
7	285.8	385.2	607.3	389.6	285.8	275.4	-0.2	269.4	535.6	545.0
8	287.6	394.0	600.9	387.8	287.6	283.5	-0.2	273.6	527.4	538.2
9	280.5	415.2	540.3	368.5	280.5	305.7	-0.2	281.0	461.6	486.8
10	255.6	445.5	460.4	347.9	255.6	324.1	-0.2	305.6	382.7	432.2
11	237.3	458.4	438.9	335.5	237.3	320.0	-0.1	328.2	369.0	428.9

	ABS MACH NO		REL MACH NO		MERID MACH NO				MERID PEAK SS	
RP	IN	OUT	IN	OUT	IN	OUT			VEL R	MACH NO
1	0.254	0.330	0.657	0.433	0.254	0.256			1.032	0.913
2	0.249	0.342	0.650	0.445	0.249	0.259			1.064	0.890
3	0.259	0.335	0.604	0.417	0.259	0.260			1.022	0.854
4	0.259	0.350	0.568	0.380	0.259	0.265			1.043	0.814
5	0.260	0.348	0.573	0.380	0.260	0.260			1.018	0.835
6	0.259	0.345	0.555	0.360	0.259	0.253			0.995	0.806
7	0.258	0.342	0.548	0.346	0.258	0.244			0.963	0.801
8	0.259	0.349	0.542	0.344	0.259	0.251			0.986	0.793
9	0.253	0.369	0.487	0.328	0.253	0.272			1.090	0.748
10	0.230	0.398	0.415	0.311	0.230	0.289			1.268	0.648
11	0.214	0.409	0.395	0.300	0.214	0.286			1.348	0.633

	PERCENT	INCIDENCE		DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN	SS				TOT	PROF	TOT	PROF
1	5.00	8.8	6.1	8.5	0.459	0.729	0.200	0.200	0.040	0.040
2	10.00	8.5	5.5	6.0	0.428	0.808	0.134	0.134	0.028	0.028
3	30.00	10.2	6.0	6.2	0.415	0.873	0.088	0.088	0.018	0.018
4	40.00	10.6	5.8	3.4	0.448	0.870	0.102	0.102	0.022	0.022
5	42.50	11.2	6.3	5.2	0.454	0.864	0.105	0.105	0.022	0.022
6	45.00	10.9	5.9	4.5	0.474	0.847	0.124	0.124	0.027	0.027
7	47.50	11.1	5.9	5.3	0.494	0.855	0.117	0.117	0.025	0.025
8	50.00	11.1	5.8	4.2	0.492	0.843	0.130	0.130	0.028	0.028
9	70.00	12.2	5.7	4.1	0.456	0.896	0.102	0.102	0.022	0.022
10	90.00	12.1	4.8	3.9	0.393	0.974	0.032	0.032	0.006	0.006
11	95.00	13.2	5.8	3.8	0.393	1.009	-0.013	-0.013	-0.002	-0.002

TABLE V. - Concluded. BLADE-ELEMENT PERFORMANCE AT

BLADE EDGES FOR ROTOR 6

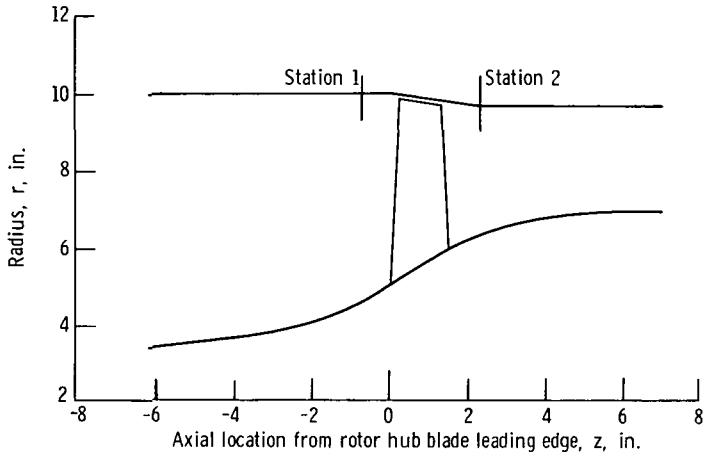
(ee) Percent of design speed, 50; reading number, 233

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	9.717	9.623	-0.0	63.7	72.8	61.0	519.6	1.075	14.64	1.175
2	9.508	9.429	-0.0	58.3	70.9	57.7	519.1	1.070	14.69	1.169
3	8.635	8.650	-0.0	45.7	68.1	51.5	518.8	1.053	14.70	1.160
4	8.180	8.261	-0.0	46.9	66.1	46.5	519.3	1.050	14.70	1.158
5	8.065	8.164	-0.0	47.5	66.3	47.8	518.1	1.049	14.70	1.155
6	7.949	8.067	-0.0	48.8	66.0	47.2	519.0	1.051	14.70	1.154
7	7.832	7.969	-0.0	50.1	65.6	46.9	518.5	1.050	14.70	1.149
8	7.714	7.872	-0.0	50.5	65.3	46.2	517.4	1.047	14.70	1.147
9	6.726	7.094	-0.0	46.9	62.1	34.7	518.7	1.046	14.70	1.154
10	5.592	6.315	-0.0	45.9	59.4	24.4	518.7	1.041	14.70	1.149
11	5.266	6.121	-0.0	48.1	59.7	18.1	518.8	1.042	14.69	1.155

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	212.1	399.3	715.4	364.2	212.1	176.8	-0.2	358.0	683.1	676.5
2	231.1	393.6	706.5	386.8	231.1	206.7	-0.2	335.0	667.4	661.9
3	244.9	382.2	655.2	428.6	244.9	267.1	-0.2	273.3	607.5	608.6
4	248.0	390.6	613.1	387.5	248.0	266.9	-0.2	285.2	560.6	566.1
5	249.2	386.7	618.9	388.7	249.2	261.1	-0.2	285.3	566.3	573.3
6	249.5	387.7	612.8	376.2	249.5	255.4	-0.2	291.7	559.6	567.9
7	249.0	384.2	602.7	361.1	249.0	246.6	-0.2	294.6	548.7	558.3
8	247.8	383.3	593.1	351.9	247.8	243.7	-0.2	295.8	538.6	549.6
9	249.7	413.2	533.9	343.6	249.7	282.3	-0.2	301.7	471.7	497.5
10	232.1	429.0	456.3	327.9	232.1	298.5	-0.1	308.0	392.8	443.6
11	215.9	445.4	427.5	312.7	215.9	297.3	-0.1	331.7	368.8	428.7

	ABS MACH NO		REL MACH NO		MERID MACH NO			
RP	IN	OUT	IN	OUT	IN	OUT	MERID VEL R	PEAK SS MACH NO
1	0.191	0.349	0.643	0.318	0.191	0.155	0.834	0.974
2	0.208	0.345	0.635	0.339	0.208	0.181	0.894	0.945
3	0.220	0.337	0.590	0.378	0.220	0.236	1.090	0.905
4	0.223	0.345	0.552	0.343	0.223	0.236	1.076	0.853
5	0.224	0.342	0.557	0.344	0.224	0.231	1.048	0.876
6	0.225	0.343	0.552	0.332	0.225	0.226	1.024	0.873
7	0.224	0.340	0.543	0.319	0.224	0.218	0.991	0.863
8	0.223	0.340	0.535	0.312	0.223	0.216	0.983	0.856
9	0.225	0.367	0.481	0.305	0.225	0.251	1.130	0.795
10	0.209	0.382	0.411	0.292	0.209	0.266	1.286	0.687
11	0.194	0.397	0.384	0.279	0.194	0.265	1.377	0.648

	PERCENT	INCIDENCE		DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN	SS				TOT	PROF	TOT	PROF
1	5.00	12.4	9.7	12.4	0.675	0.634	0.353	0.353	0.063	0.063
2	10.00	11.9	8.8	9.4	0.624	0.648	0.329	0.329	0.064	0.064
3	30.00	13.6	9.4	6.3	0.484	0.819	0.149	0.149	0.031	0.031
4	40.00	13.8	9.1	4.1	0.515	0.862	0.122	0.122	0.026	0.026
5	42.50	14.[illegible]	9.6	6.3	0.516	0.855	0.125	0.125	0.026	0.026
6	45.00	14.7	9.6	6.6	0.533	0.824	0.158	0.158	0.033	0.033
7	47.50	14.8	9.6	7.2	0.550	0.809	0.175	0.175	0.036	0.036
8	50.00	15.0	9.7	7.3	0.557	0.848	0.135	0.135	0.028	0.028
9	70.00	15.6	9.1	4.9	0.507	0.916	0.089	0.089	0.019	0.019
10	90.00	15.2	7.9	6.9	0.432	0.985	0.019	0.019	0.004	0.004
11	95.00	15.6	8.2	4.4	0.432	1.003	-0.005	-0.005	-0.001	-0.001



Axial location, z, in.	Hub contour, r, in.	Casing contour, r, in.
-6.00	3.450	10.000
-5.00	3.575	↓
-4.00	3.700	
-3.00	3.850	
-2.00	4.075	
-1.00	4.460	
-.75	4.590	
0	5.000	
.72	5.466	9.900
1.20	5.750	9.820
1.51	5.995	9.770
2.28	6.330	9.720
2.60	6.460	9.695
3.03	6.560	↓
4.00	6.775	
4.40	6.840	
5.10	6.915	
6.10	6.915	

Figure 1. - Compressor flow path.

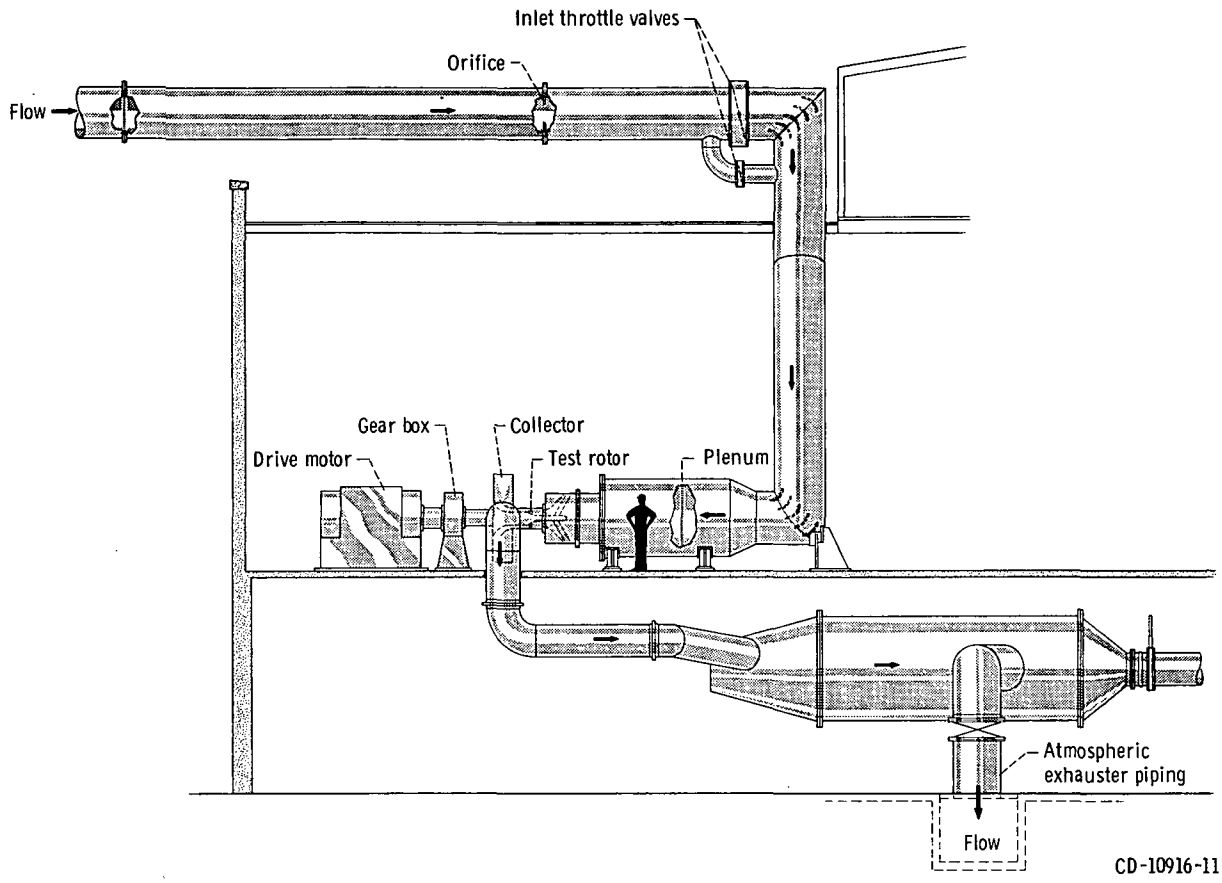


Figure 2. - Test facility.

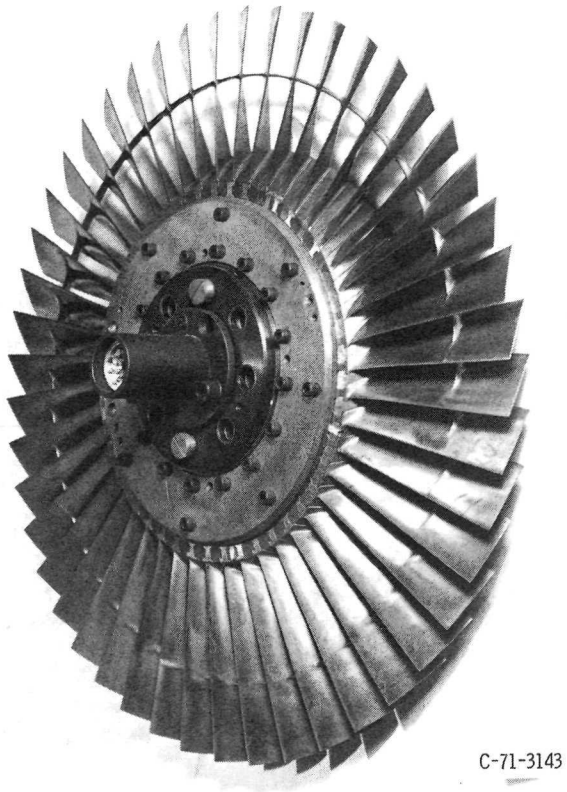
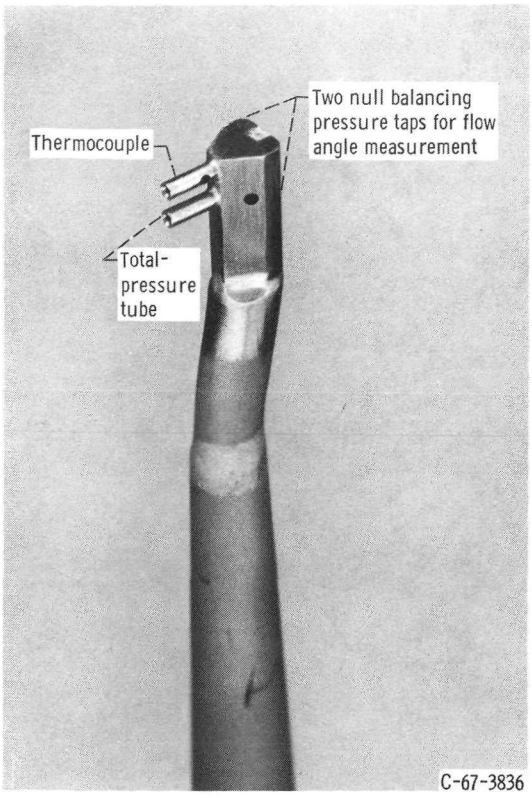
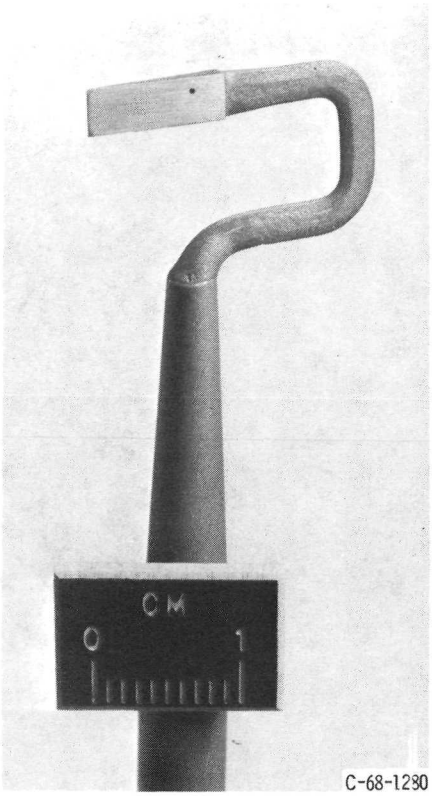


Figure 3. - Multiple-circular-arc rotor 6.



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



(b) Static-pressure probe; 8^{0} C-shaped wedge.

Figure 4. - Survey probes.

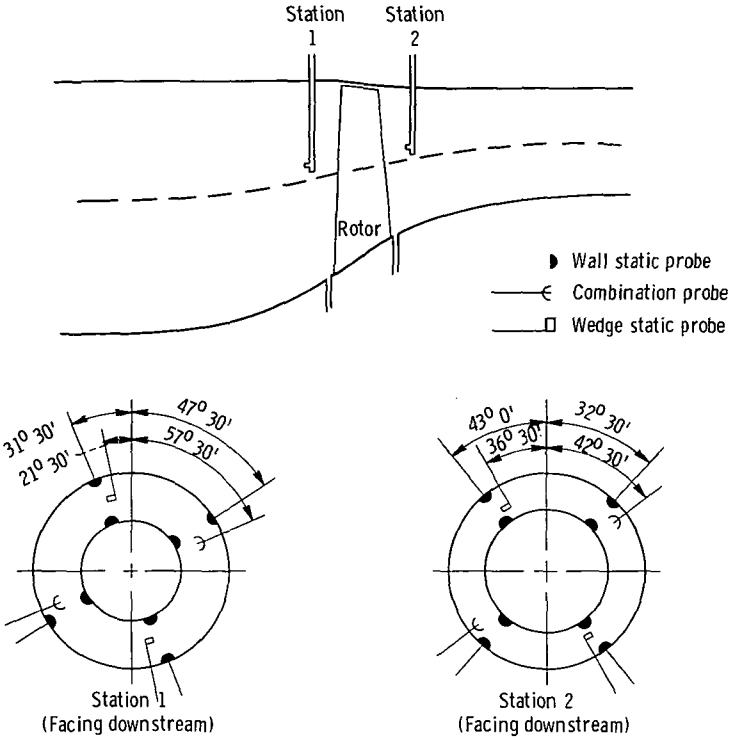


Figure 5. - Circumferential location of measurements.

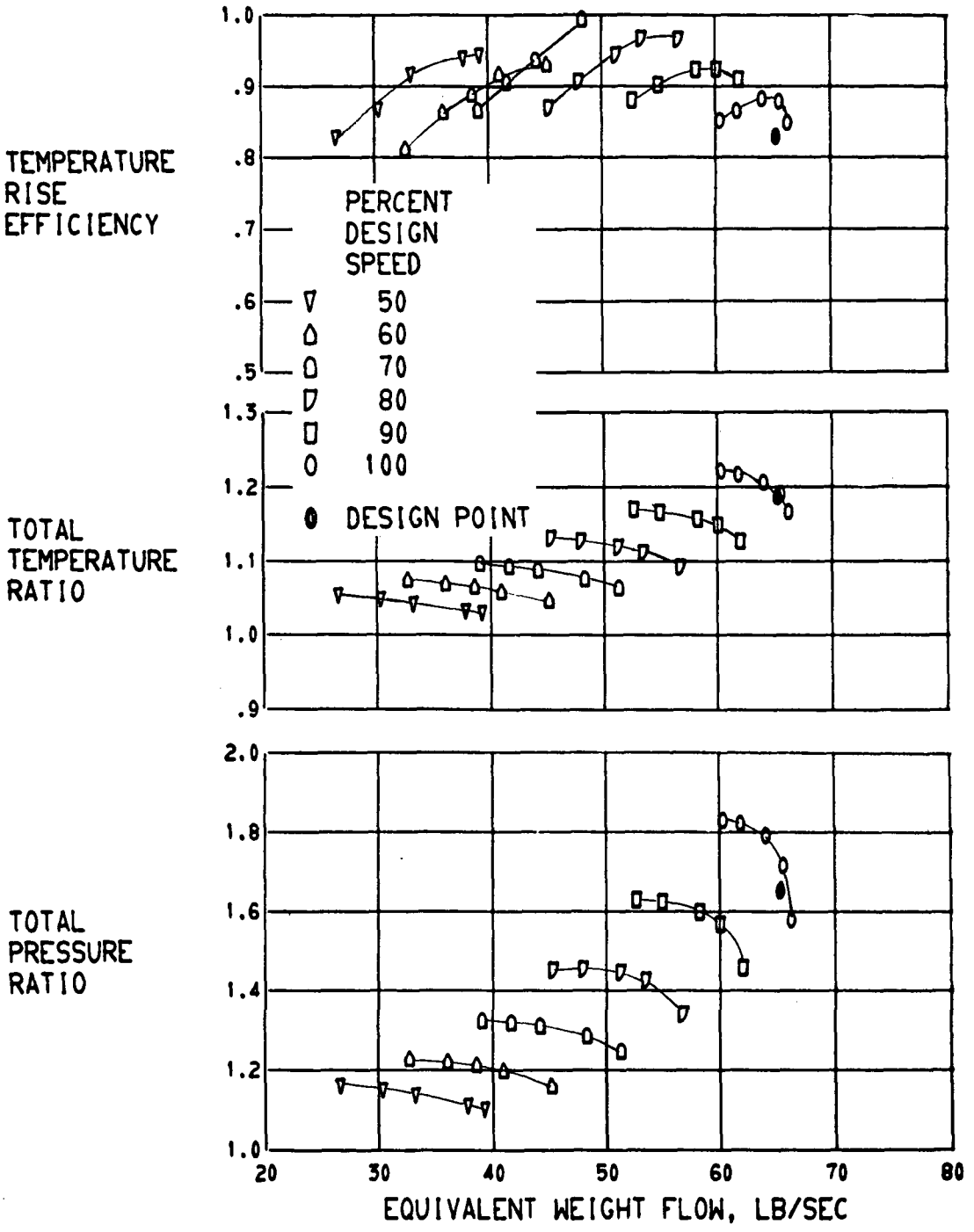


FIGURE 6. - OVERALL PERFORMANCE FOR ROTOR NO. 6

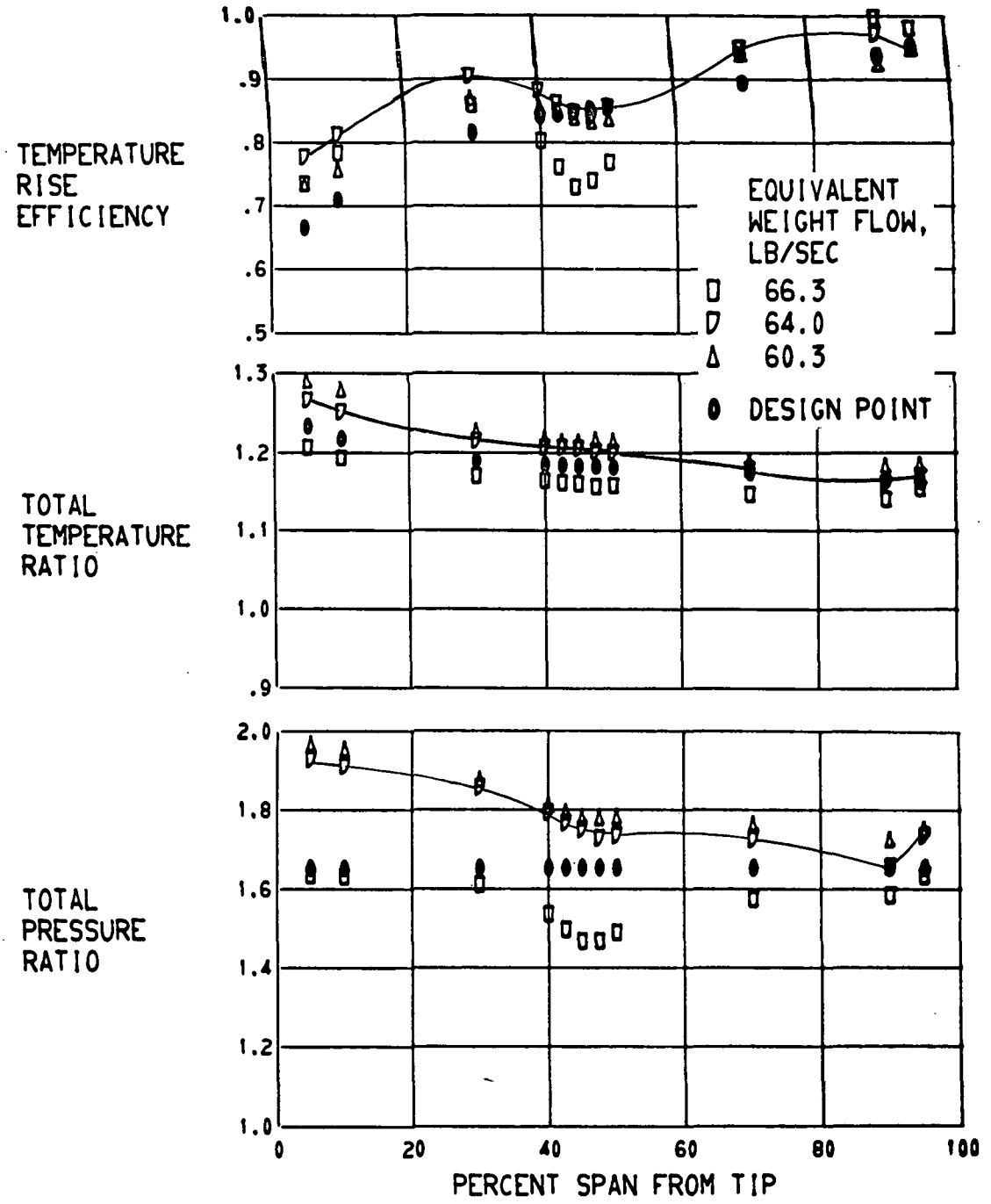


FIGURE 7 .-RADIAL DISTRIBUTION OF PERFORMANCE FOR ROTOR 6. 100 PERCENT DESIGN SPEED.

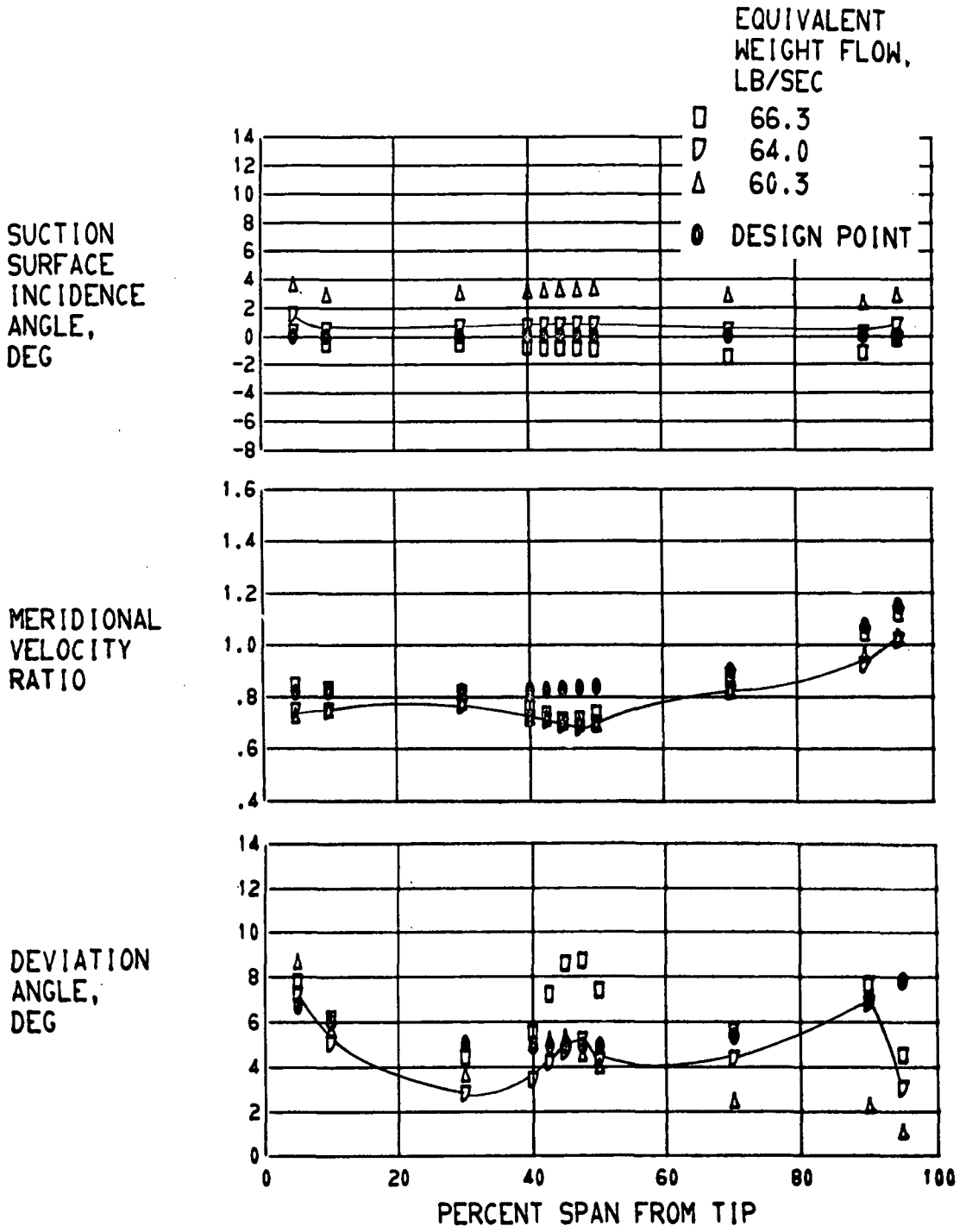


FIGURE 7 .-CONTINUED. RADIAL DISTRIBUTION OF PERFORMANCE FOR ROTOR 6. 100 PERCENT DESIGN SPEED.

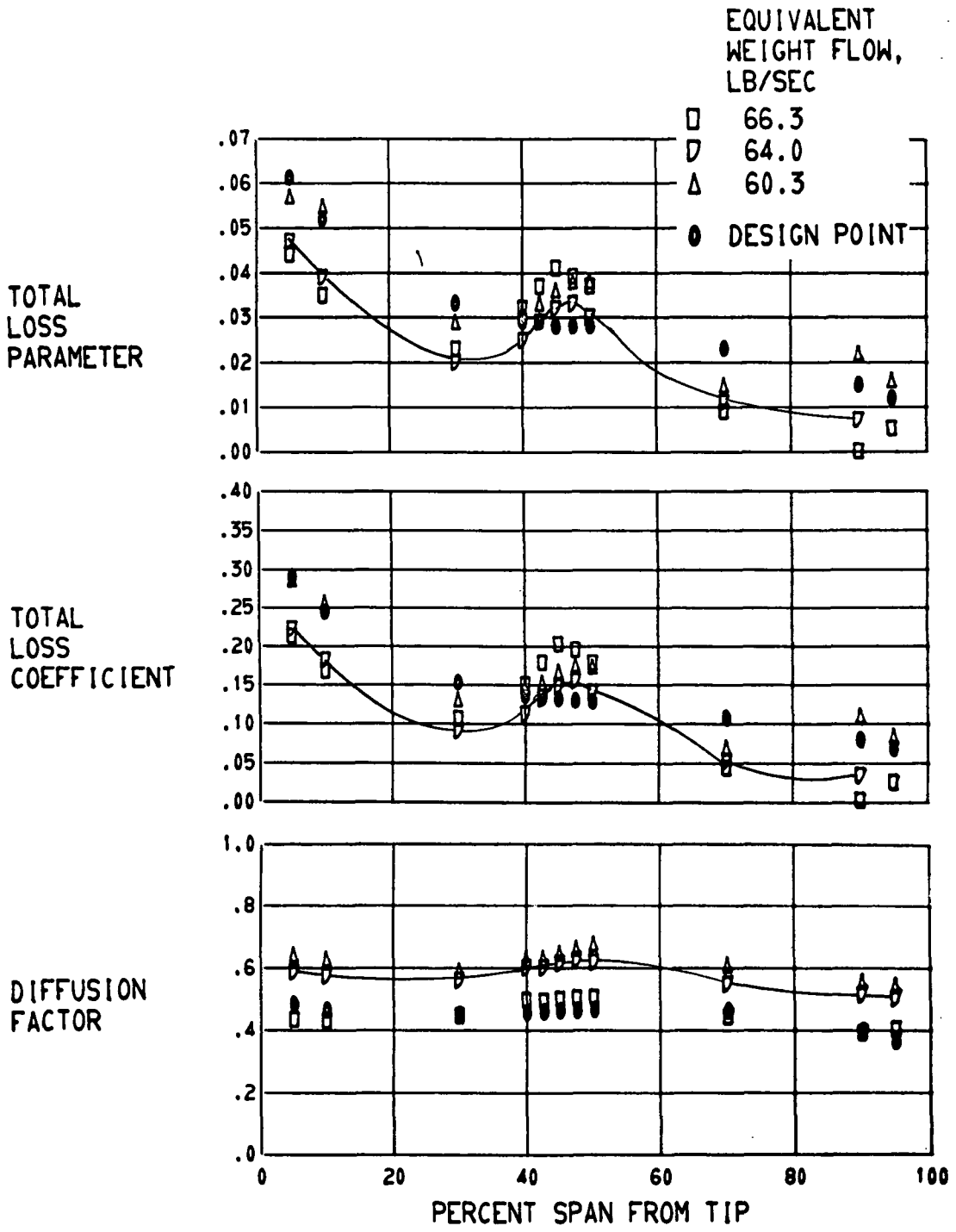
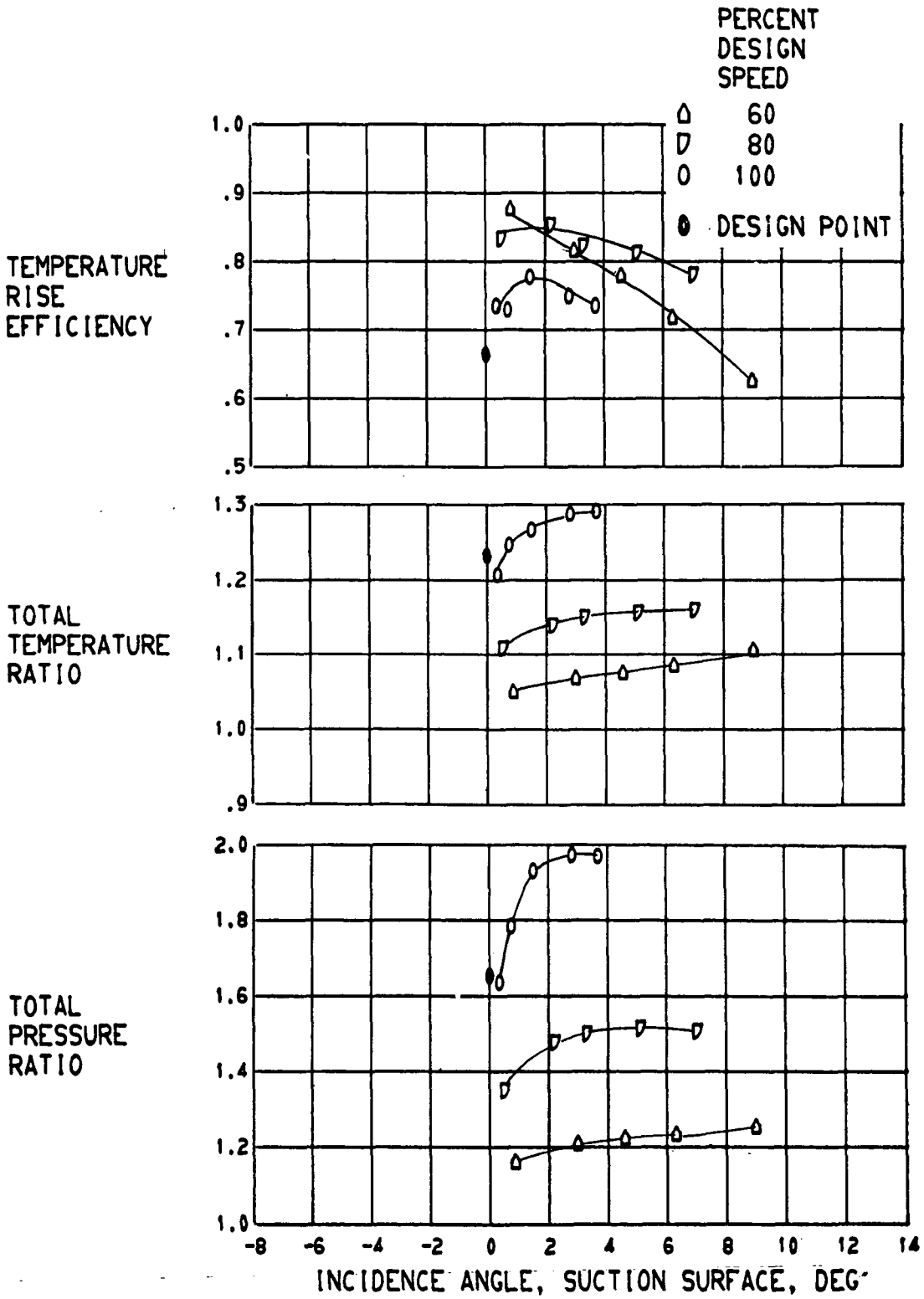
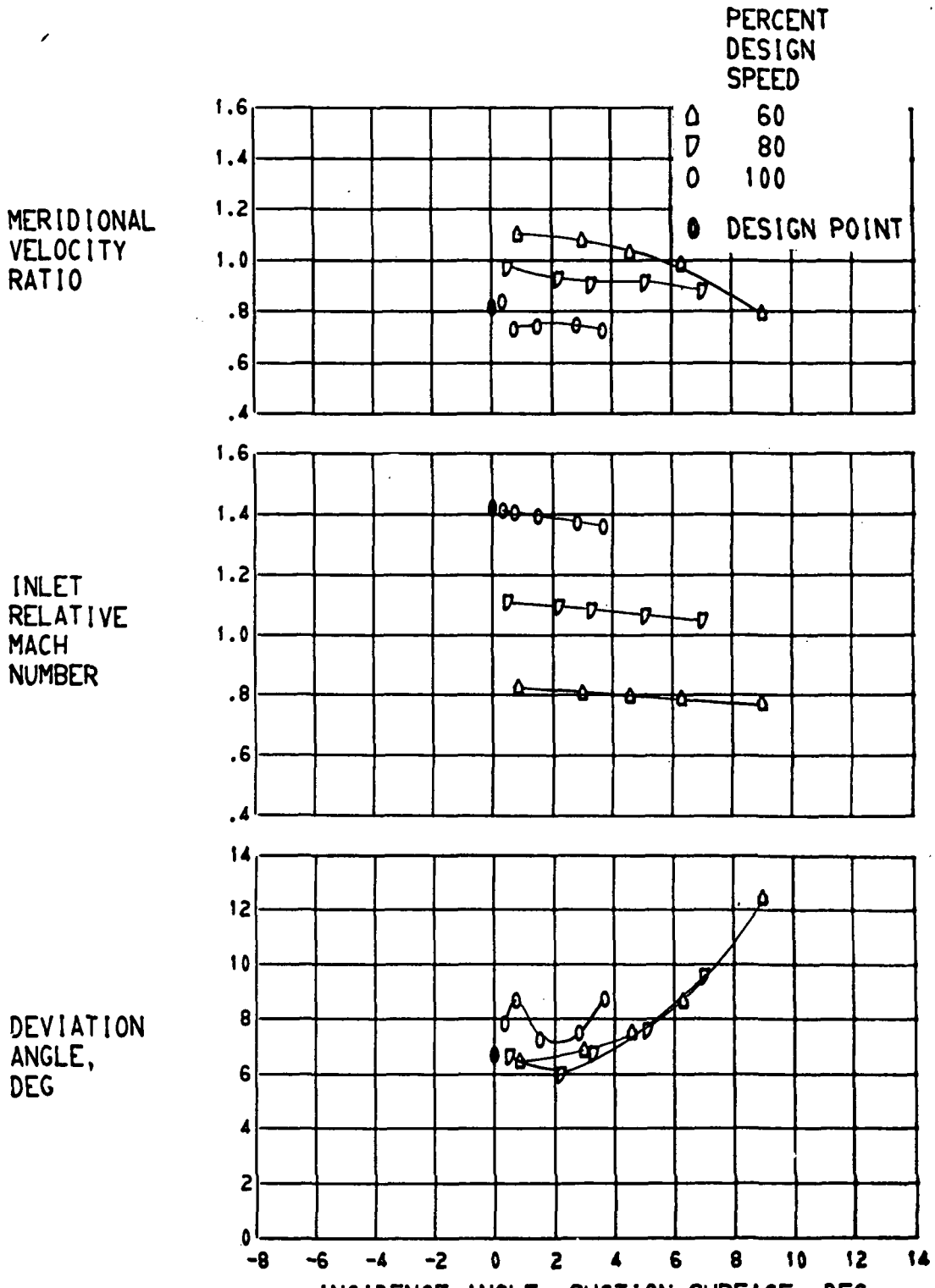


FIGURE 7 .-CONCLUDED. RADIAL DISTRIBUTION OF PERFORMANCE FOR ROTOR 6. 100 PERCENT DESIGN SPEED.



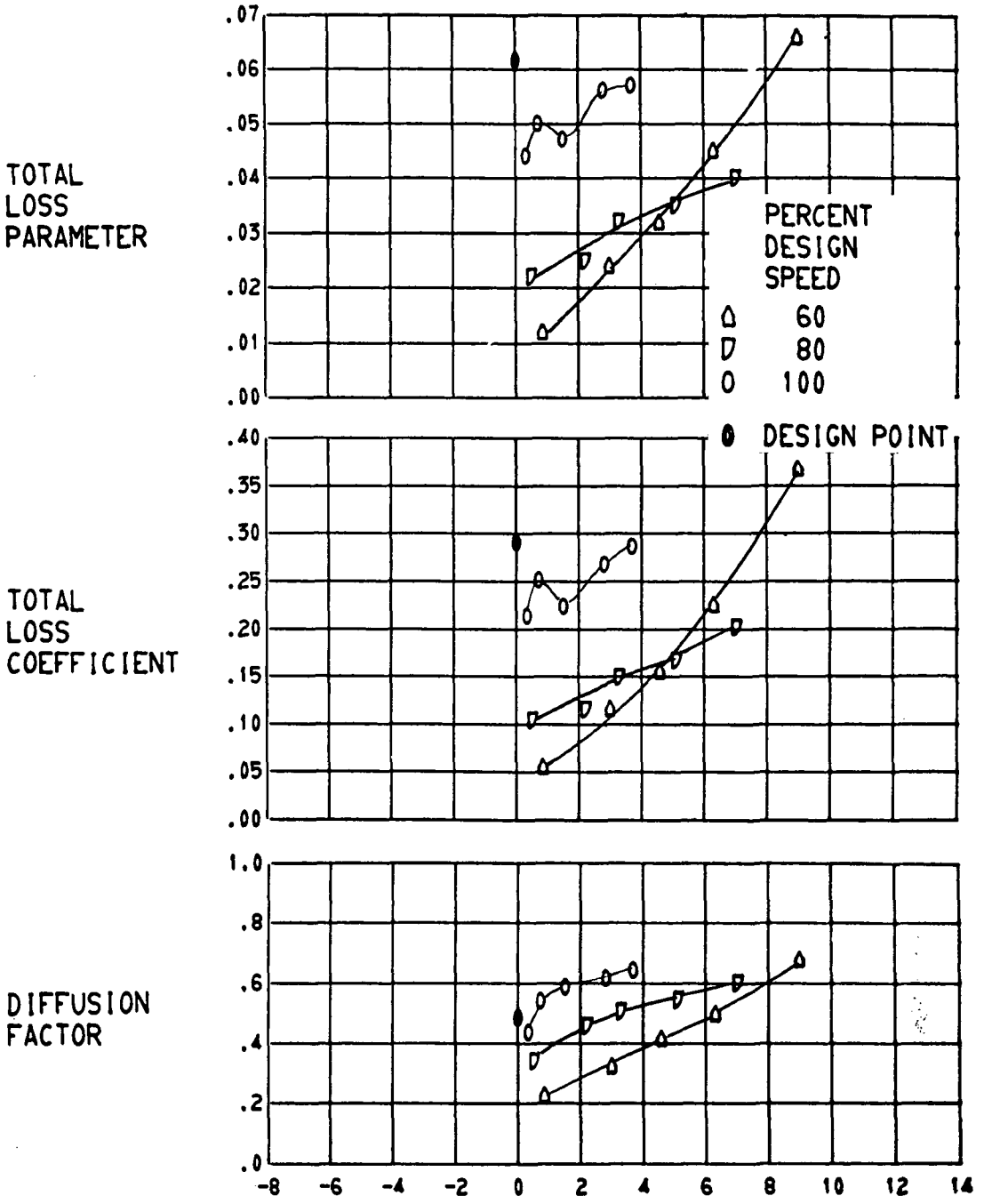
(A) 5.0 PERCENT SPAN.

FIGURE 8. - BLADE ELEMENT PERFORMANCE FOR ROTOR NO. 6



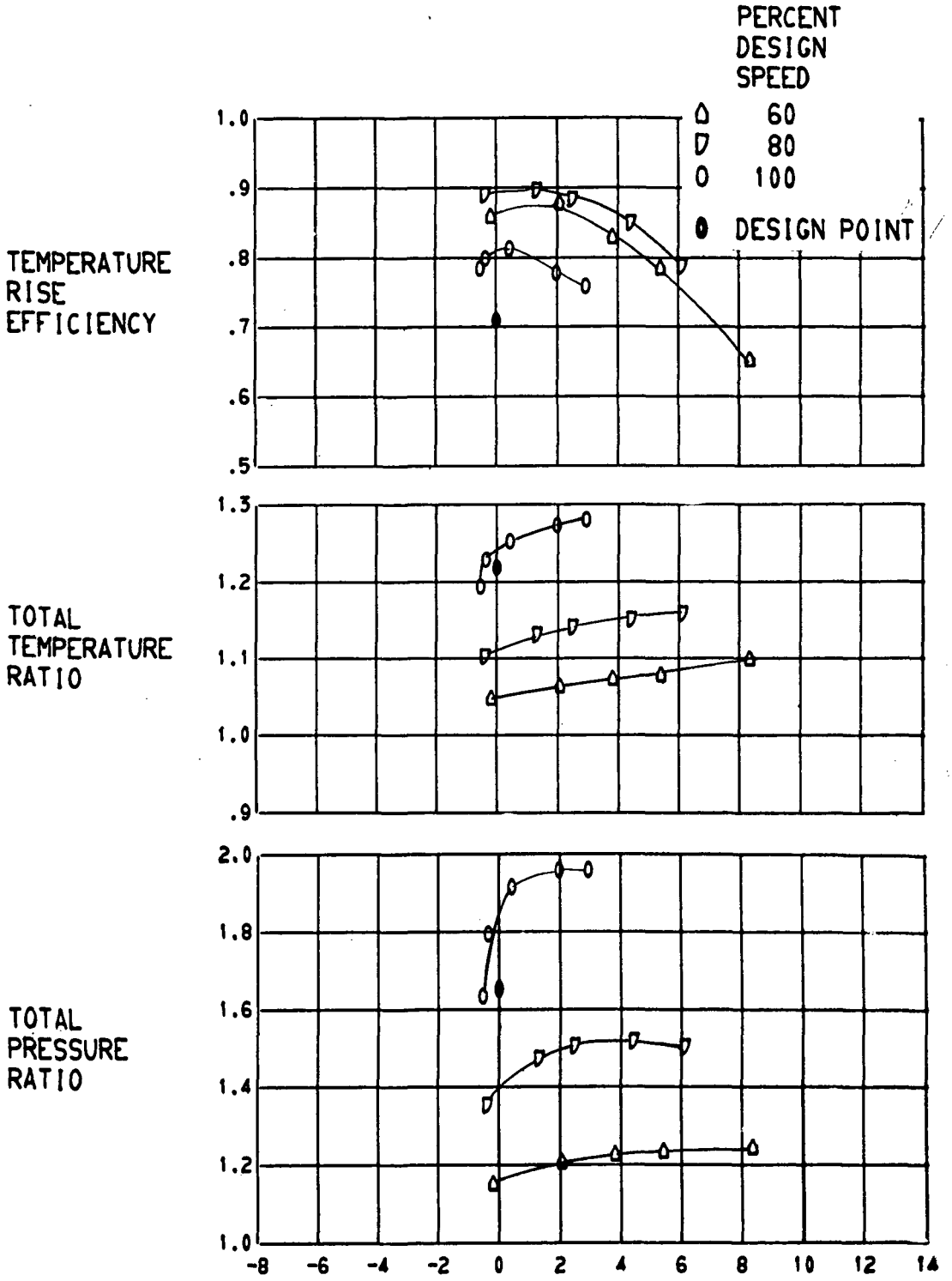
(A) CONTINUED. 5.0 PERCENT SPAN.

FIGURE 8. - BLADE ELEMENT PERFORMANCE FOR ROTOR NO. 6



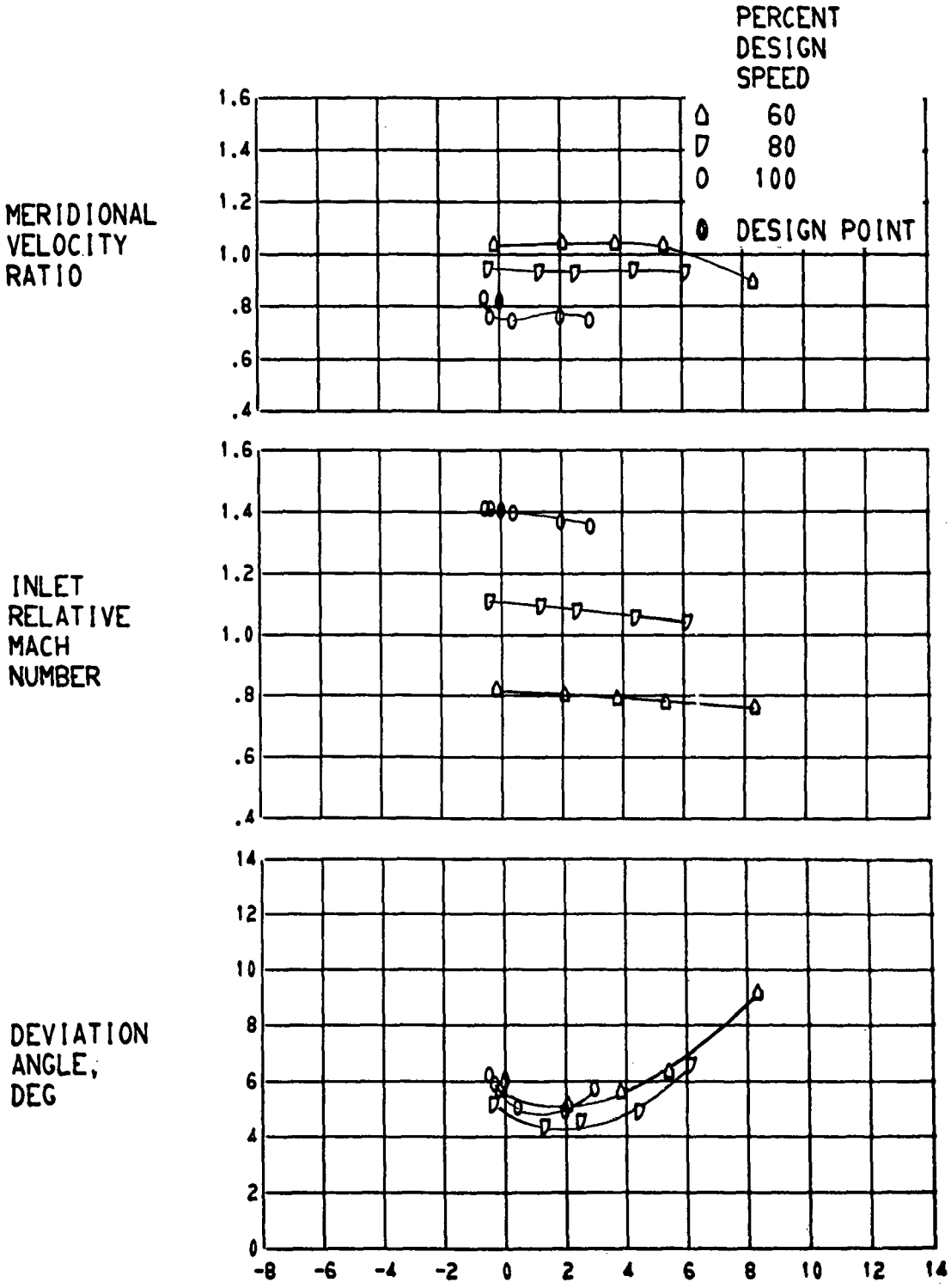
(A) CONCLUDED. 5.0 PERCENT SPAN.

FIGURE 8. - BLADE ELEMENT PERFORMANCE FOR ROTOR NO. 6



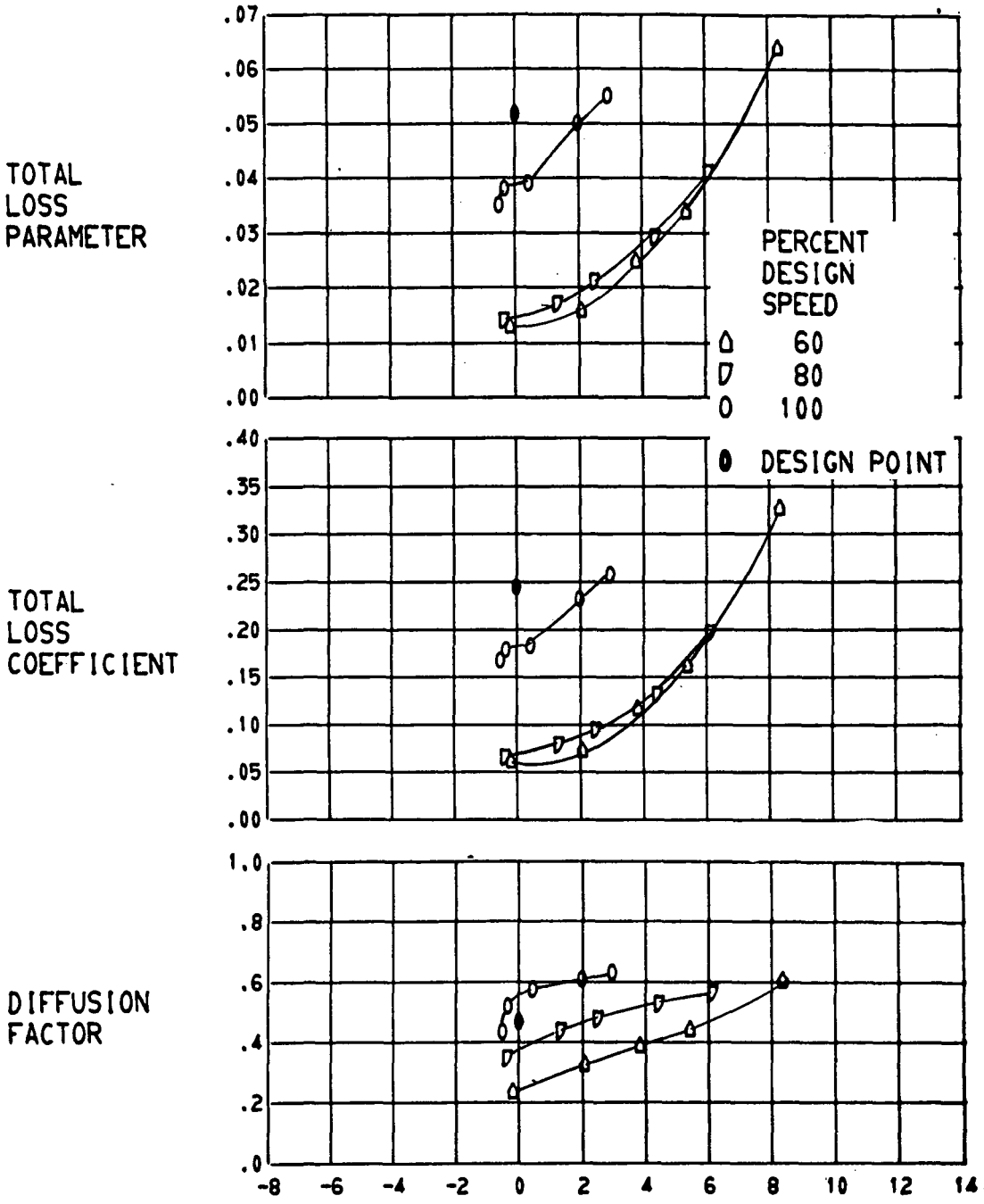
(B) 10.0 PERCENT SPAN.

FIGURE 8. - BLADE ELEMENT PERFORMANCE FOR ROTOR NO. 6



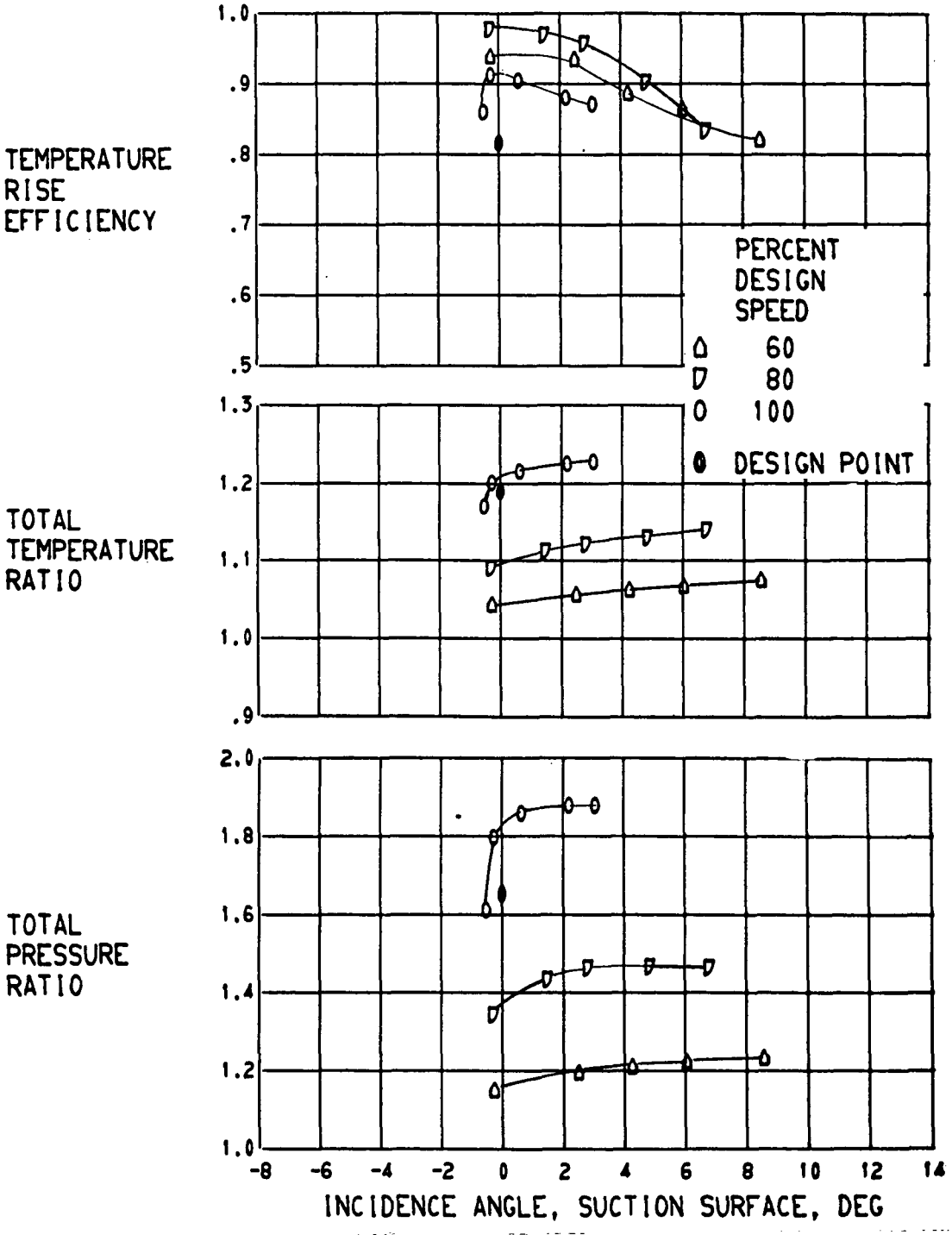
(B) CONTINUED. 10.0 PERCENT SPAN.

FIGURE 8. - BLADE ELEMENT PERFORMANCE FOR ROTOR NO. 6



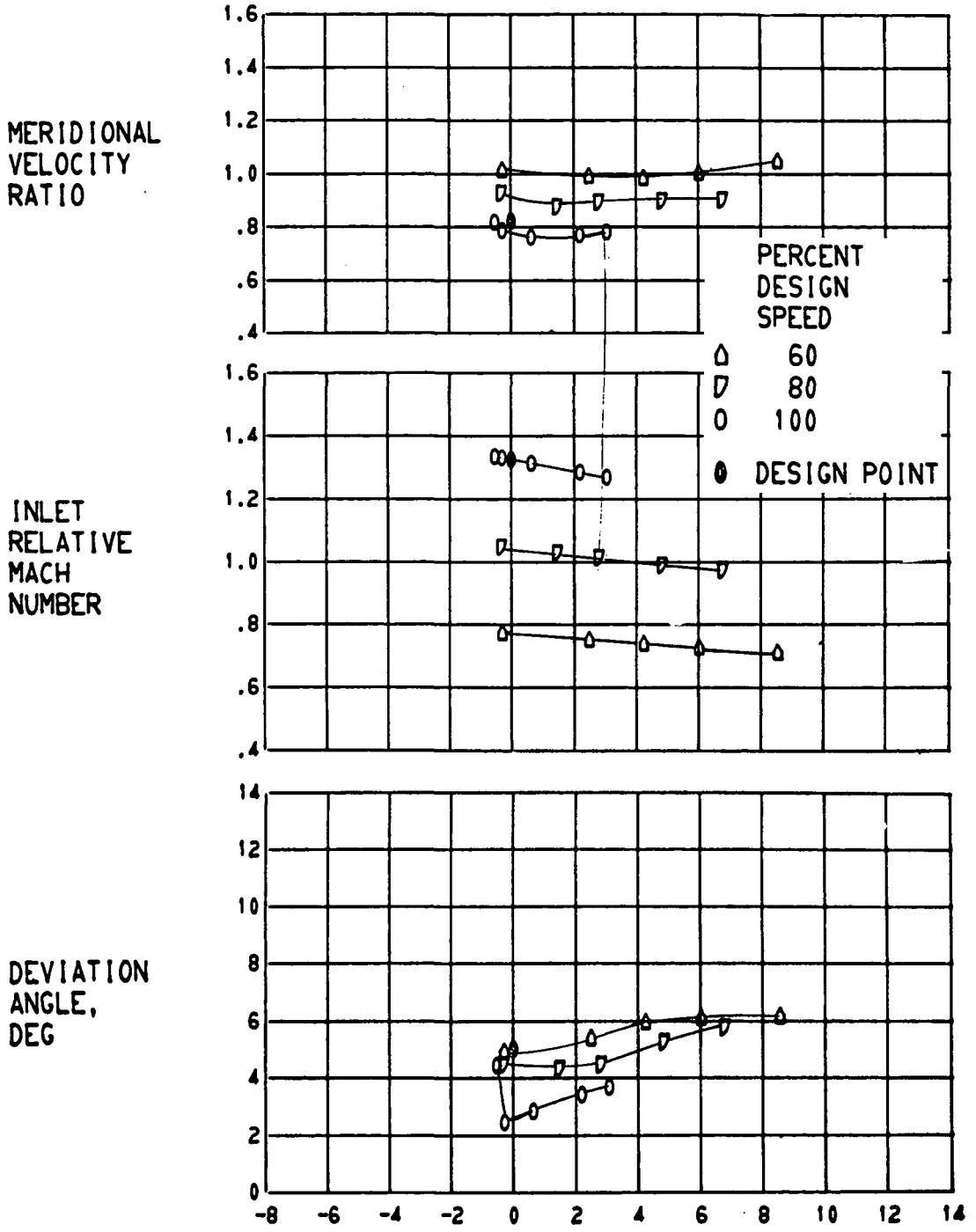
(B) CONCLUDED. 10.0 PERCENT SPAN.

FIGURE 8. - BLADE ELEMENT PERFORMANCE FOR ROTOR NO. 6



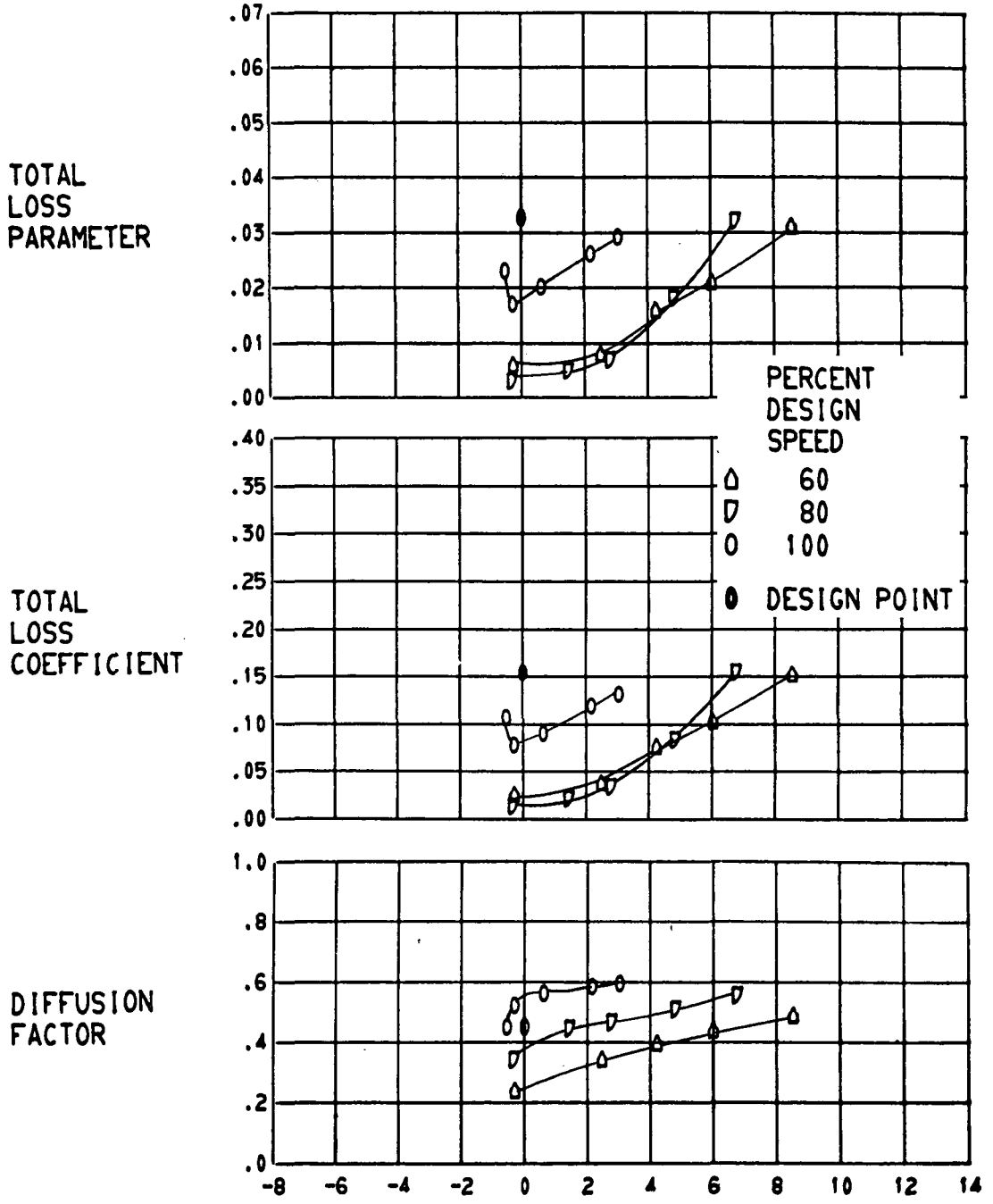
(C) 30.0 PERCENT SPAN.

FIGURE 8. - BLADE ELEMENT PERFORMANCE FOR ROTOR NO. 6



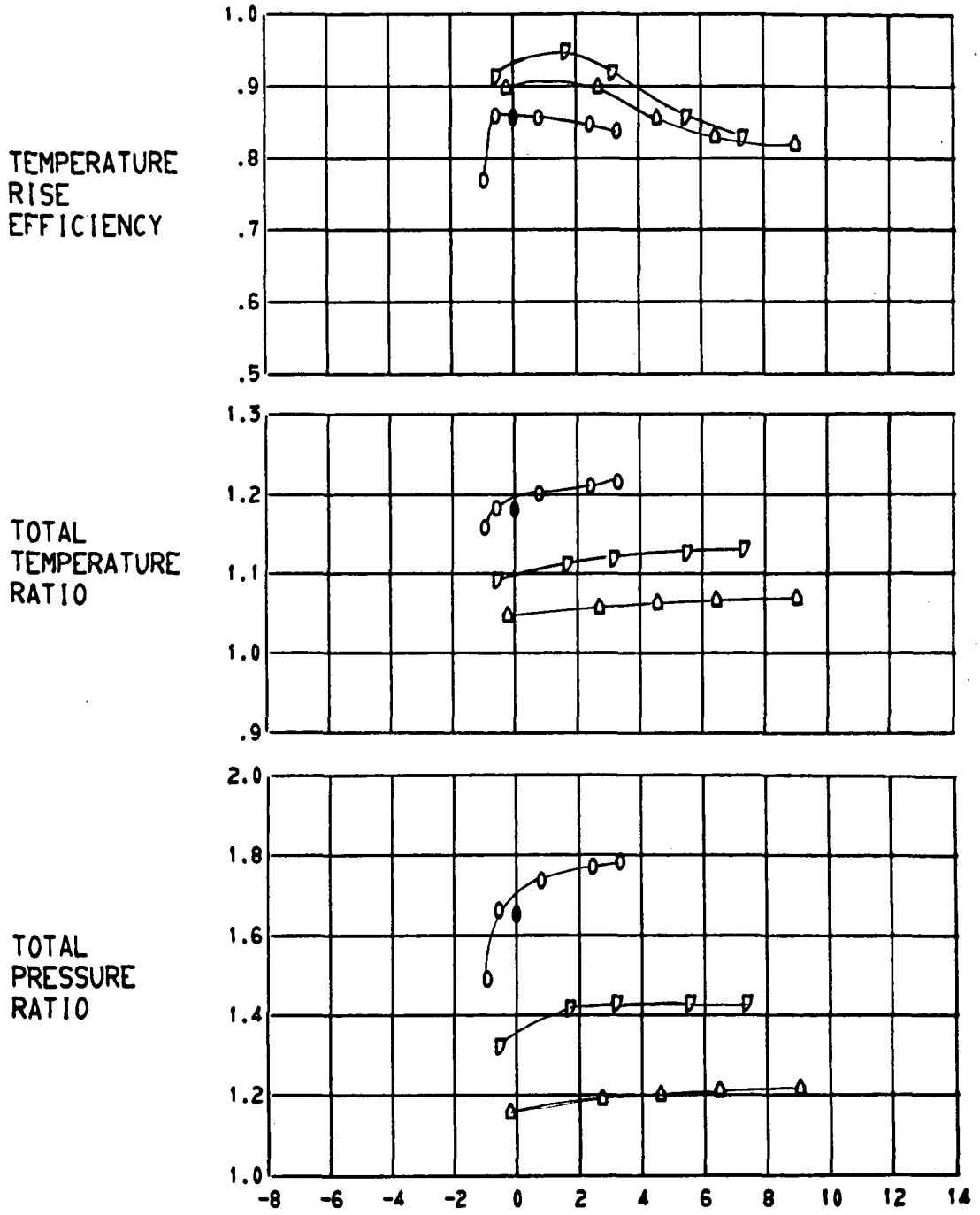
(C) CONTINUED. 30.0 PERCENT SPAN.

FIGURE 8. - BLADE ELEMENT PERFORMANCE FOR ROTOR NO. 6



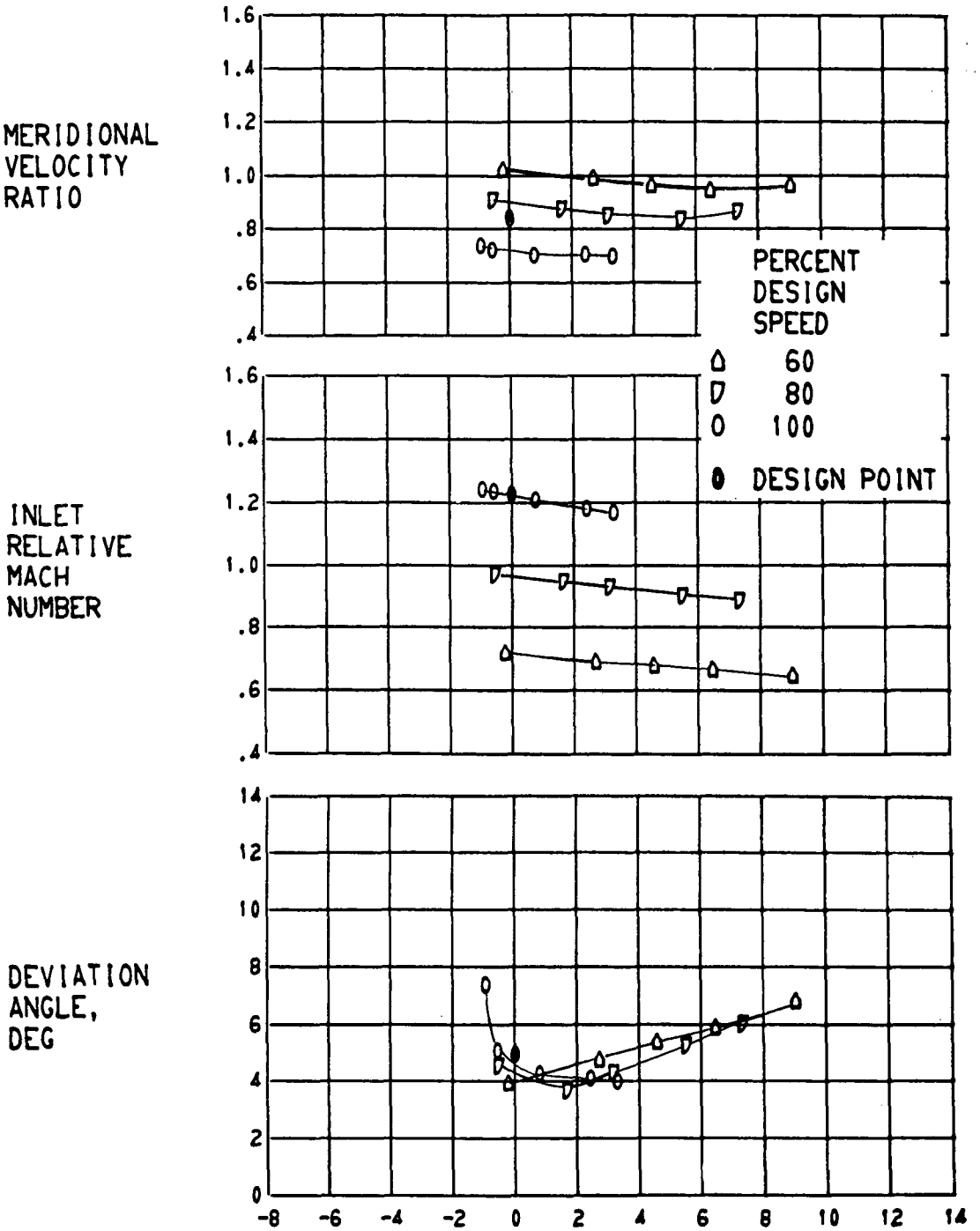
(C) CONCLUDED. 30.0 PERCENT SPAN.

FIGURE 8. - BLADE ELEMENT PERFORMANCE FOR ROTOR NO. 6



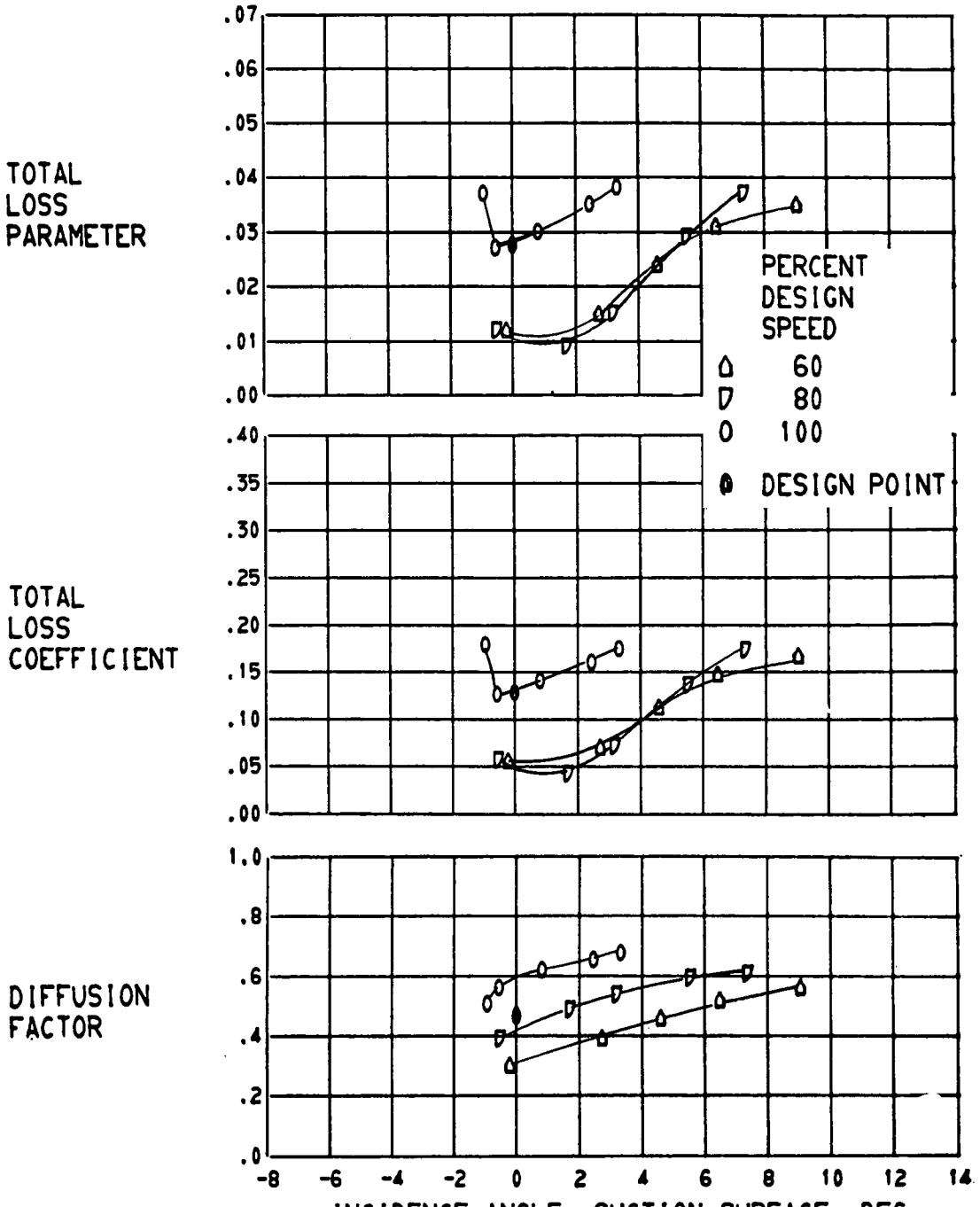
(D) 50.0 PERCENT SPAN.

FIGURE 8. - BLADE ELEMENT PERFORMANCE FOR ROTOR NO. 6



(D) CONTINUED. 50.0 PERCENT SPAN.

FIGURE 8. - BLADE ELEMENT PERFORMANCE FOR ROTOR NO. 6



(D) CONCLUDED. 50.0 PERCENT SPAN.

FIGURE 8. - BLADE ELEMENT PERFORMANCE FOR ROTOR NO. 6

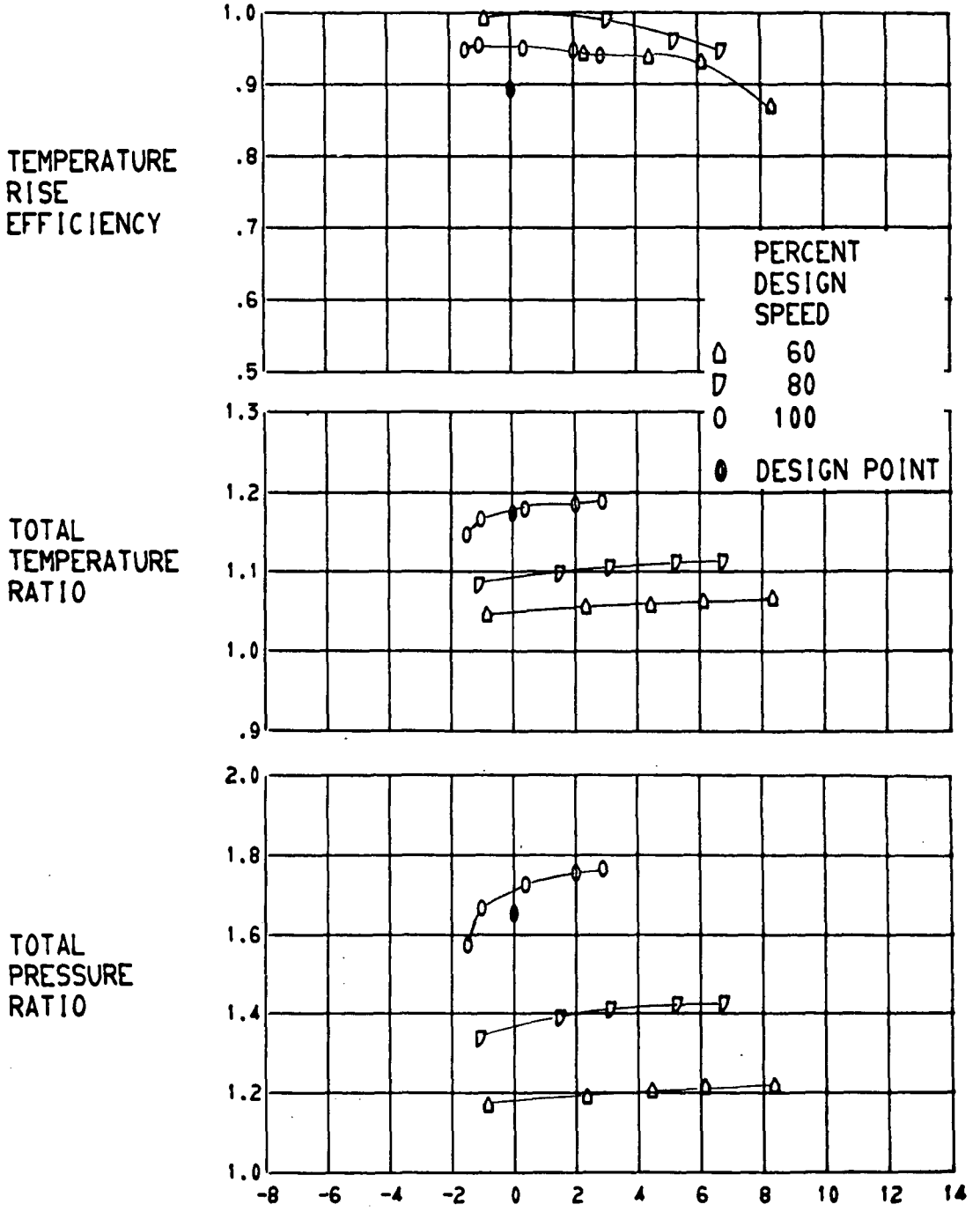
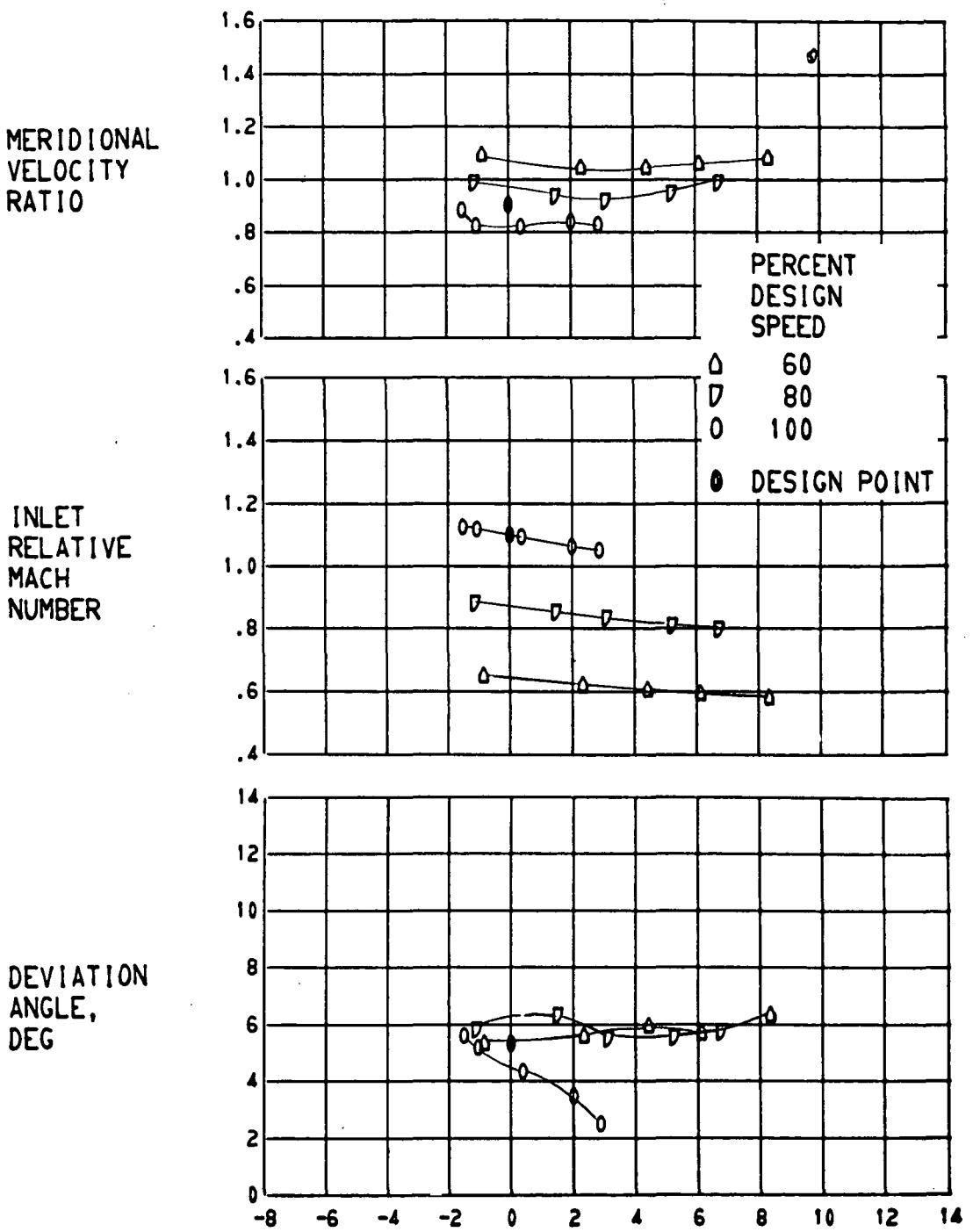
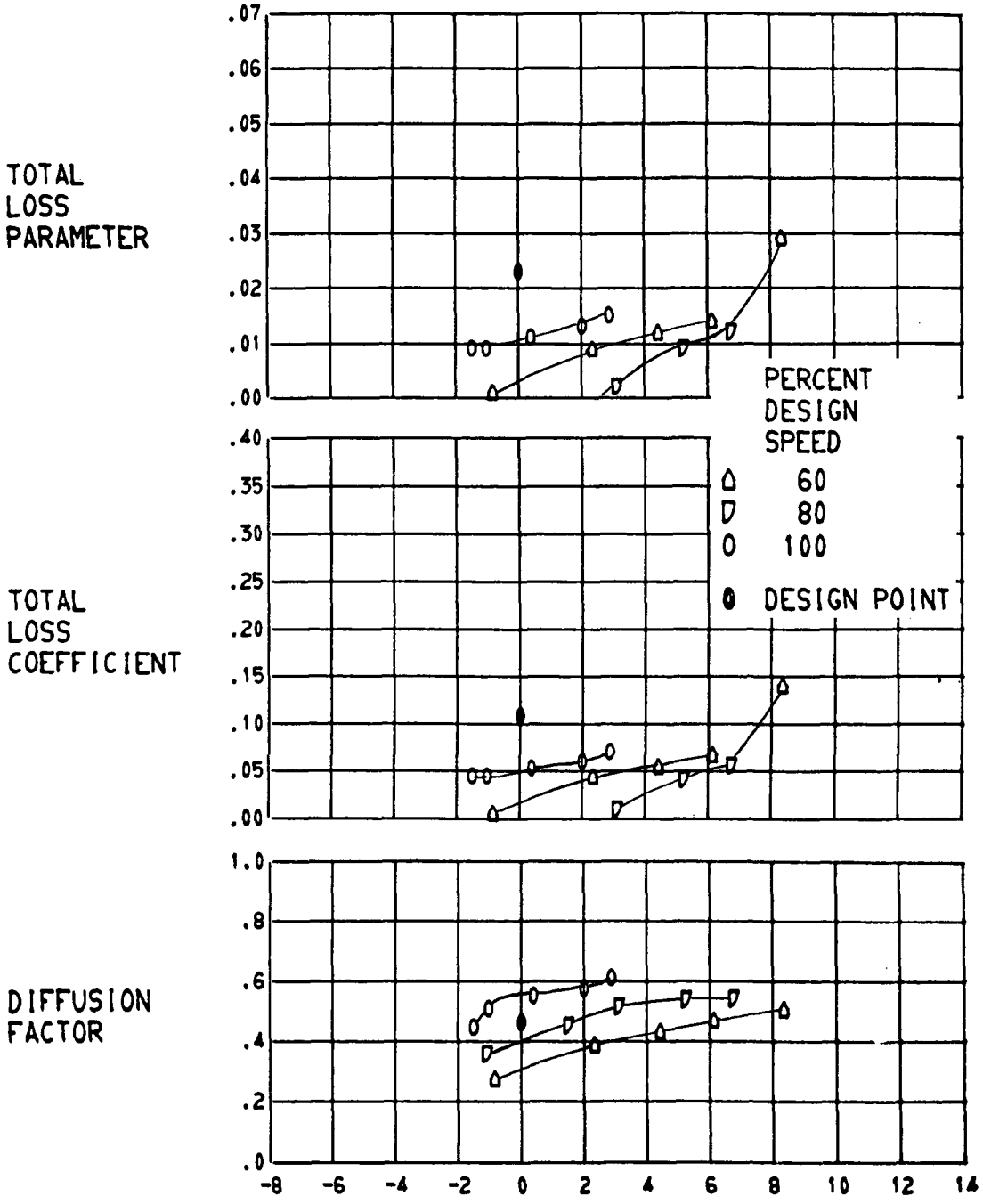


FIGURE 8. - BLADE ELEMENT PERFORMANCE FOR ROTOR NO. 6



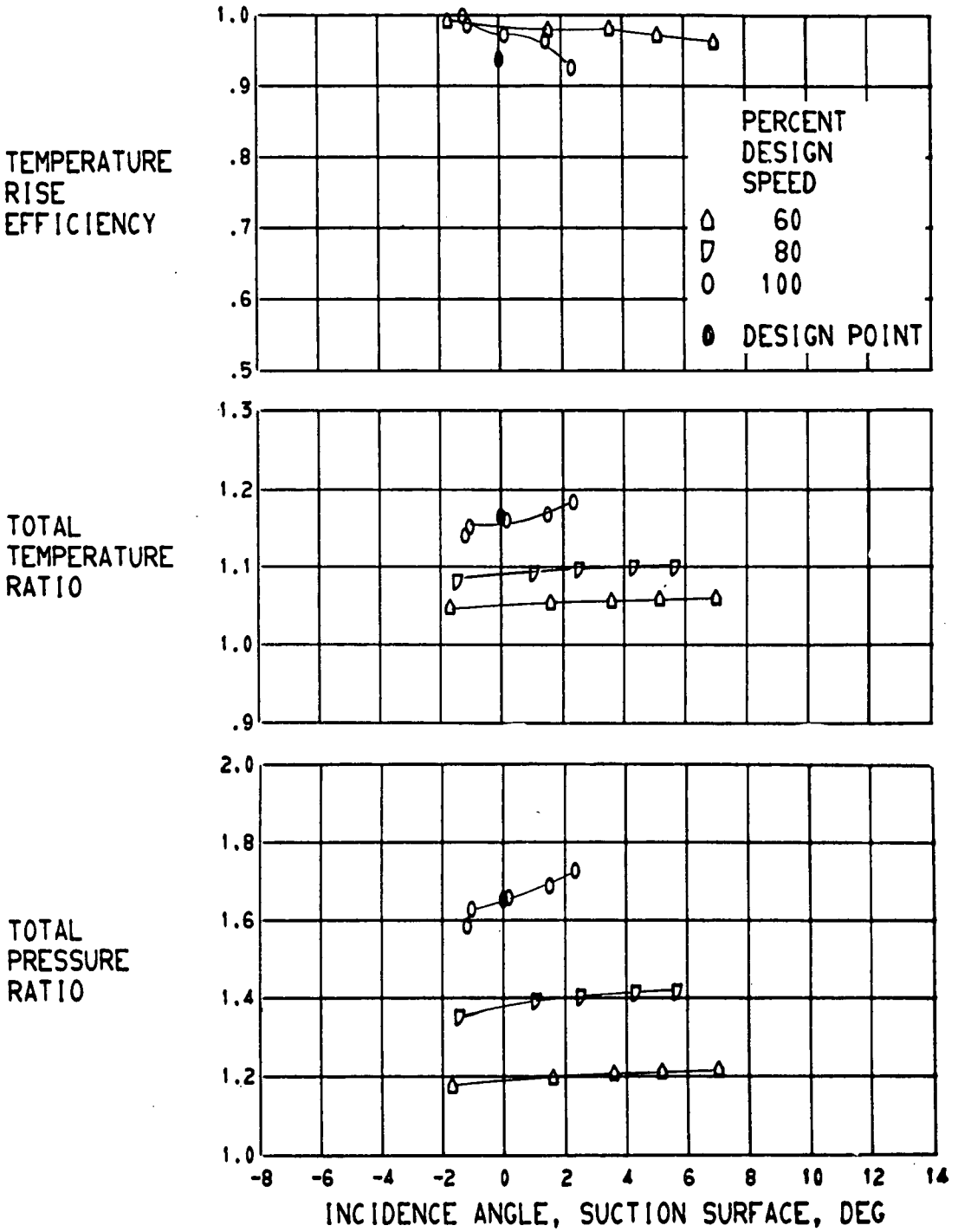
(E) CONTINUED. 70.0 PERCENT SPAN.

FIGURE 8. - BLADE ELEMENT PERFORMANCE FOR ROTOR NO. 6



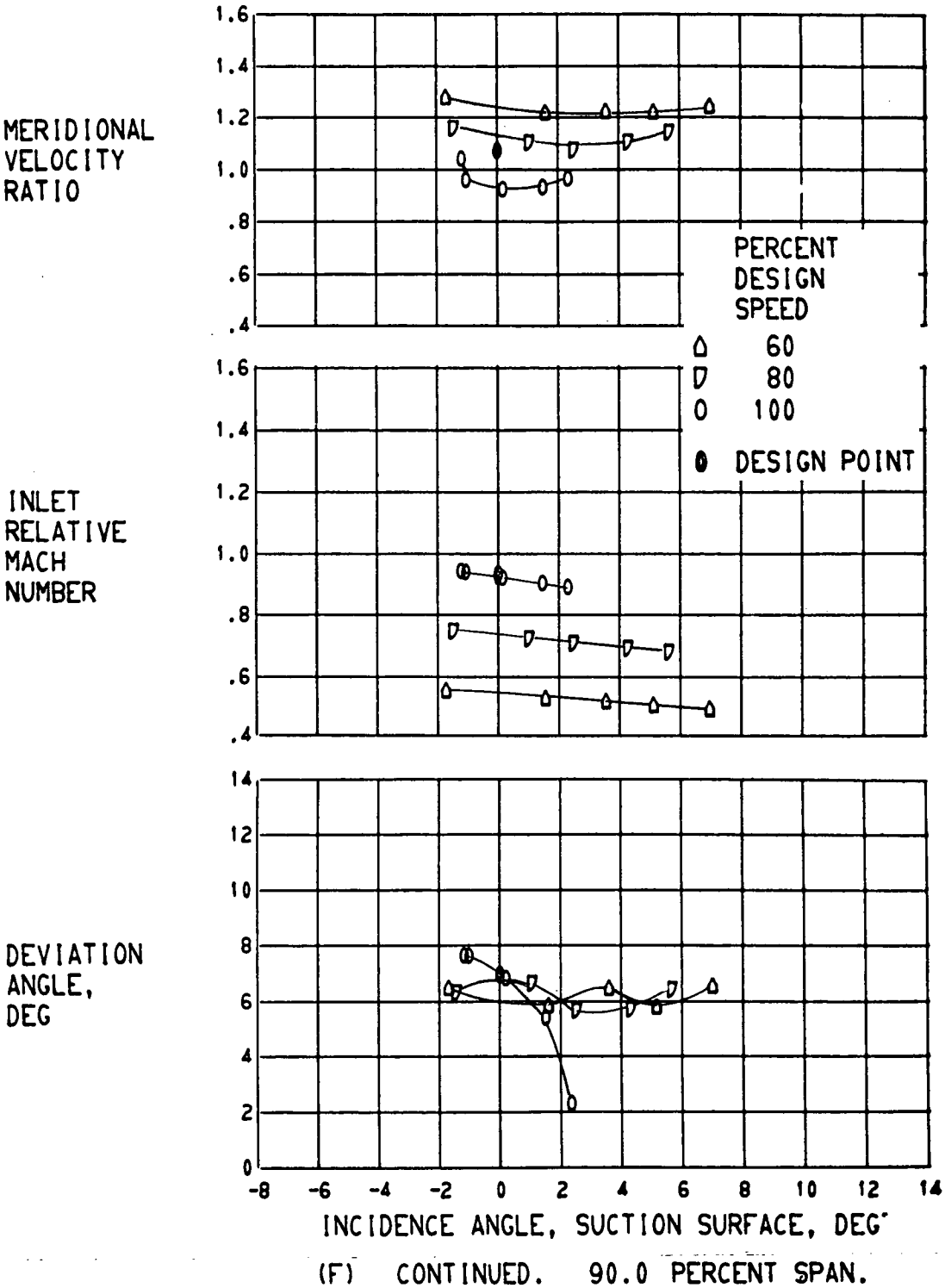
(E) CONCLUDED. 70.0 PERCENT SPAN.

FIGURE 8. - BLADE ELEMENT PERFORMANCE FOR ROTOR NO. 6



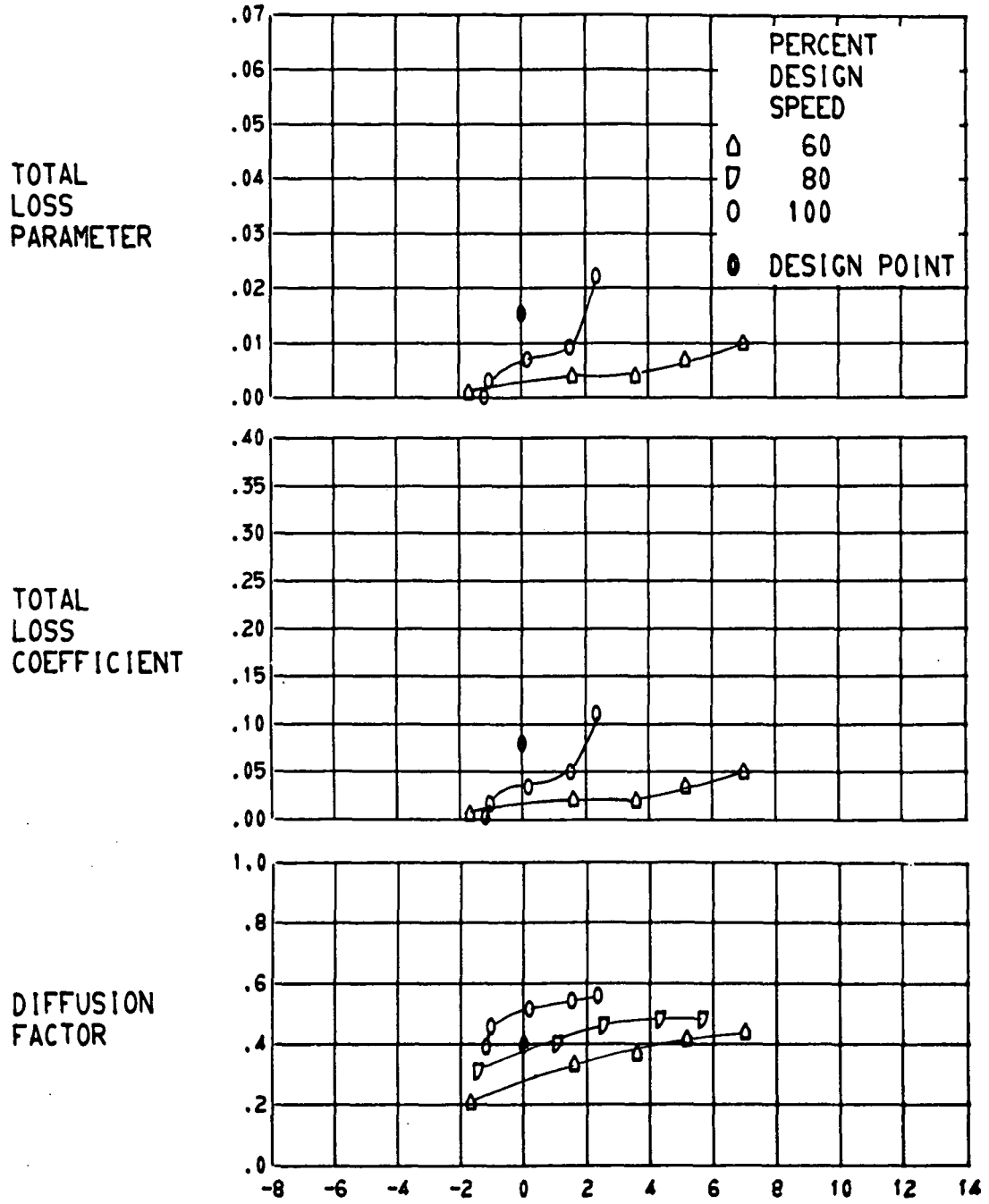
(F) 90.0 PERCENT SPAN.

FIGURE 8. - BLADE ELEMENT PERFORMANCE FOR ROTOR NO. 6



(F) CONTINUED. 90.0 PERCENT SPAN.

FIGURE 8. - BLADE ELEMENT PERFORMANCE FOR ROTOR NO. 6



(F) CONCLUDED. 90.0 PERCENT SPAN.

FIGURE 8. - BLADE ELEMENT PERFORMANCE FOR ROTOR NO. 6

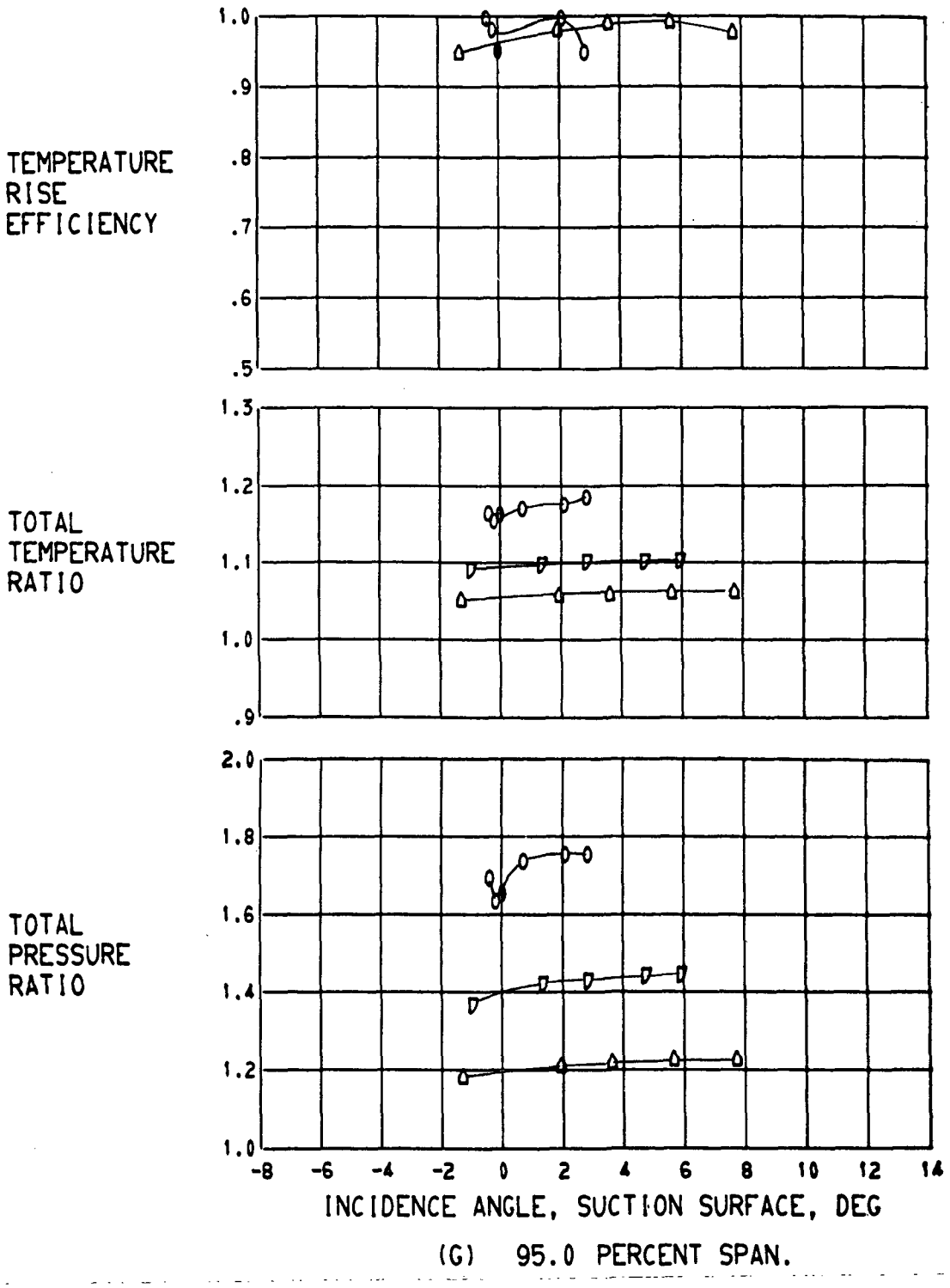
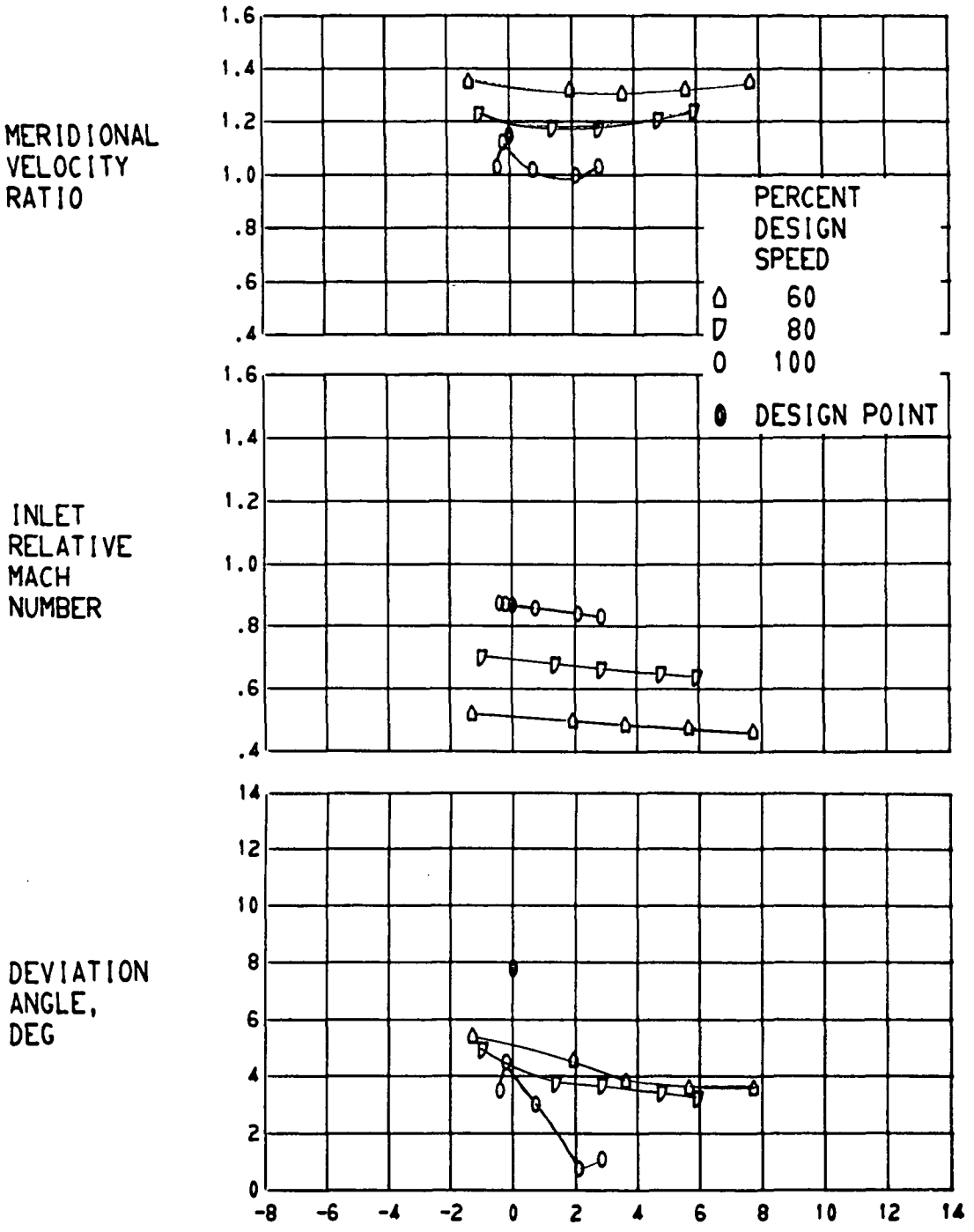
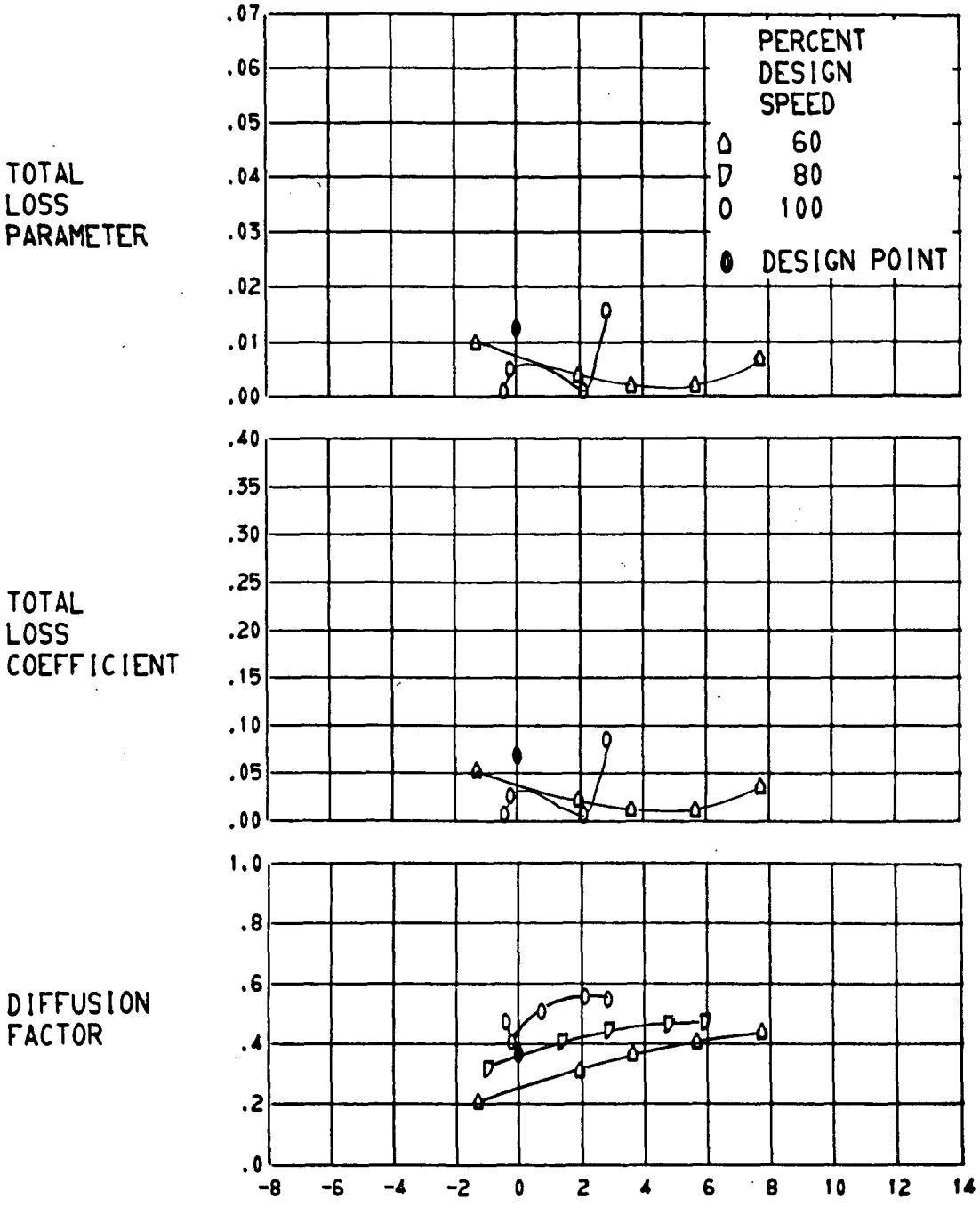


FIGURE 8. - BLADE ELEMENT PERFORMANCE FOR ROTOR NO. 6



(G) CONTINUED. 95.0 PERCENT SPAN.

FIGURE 8. - BLADE ELEMENT PERFORMANCE FOR ROTOR NO. 6



(G) CONCLUDED. 95.0 PERCENT SPAN.

FIGURE 8. - BLADE ELEMENT PERFORMANCE FOR ROTOR NO. 6

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