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USAAVLABS TECHNICAL REPORT 69-10B

ADVANCEMENT OF SMALL GAS TURBINE COMPONENT TECHNOLOGY

ADVANCED SMALL AXIAL COMPRESSOR

VOLUME II - TEST AND REDESIGN

By

James V. Davis

Edmund J. Dellert

February 1970

U. S. ARMY AVIATION MATERIEL LABORATORIES
FORT EUSTIS, VIRGINIA

CONTRACT DA 44-177-AMC-296(T)

CONTINENTAL AVIATION AND ENGINEERING CORPORATION
DETROIT, MICHIGAN

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The research described herein was conducted by Continental Aviation and Engineering Corporation under U.S. Army Contract DA 44-177-AMC-296(T). The work was performed under the technical management of Mr David B. Cale, Propulsion Division, U.S. Army Aviation Materiel Laboratories.

Appropriate technical personnel of this Command have reviewed this report and concur with the conclusions contained herein.

The findings and recommendations outlined herein will be considered in the planning of future axial compressor programs.

This is the second volume of a two-volume report. Volume I, USAAVLABS Technical Report 69-10A, covers the analysis and design. This volume covers test and redesign. The aerodynamic redesign portion of this volume is published as a classified addendum under separate cover.

Task 1G162203D14413
Contract DA 44-177-AMC-296 (T)
USAAVLABS Technical Report 69-10B
February 1970

ADVANCEMENT OF SMALL GAS TURBINE COMPONENT TECHNOLOGY

ADVANCED SMALL AXIAL COMPRESSOR

VOLUME II - TEST AND REDESIGN

Continental Report 1033

By

James V. Davis
Edmund J. Dellert

Prepared By

Continental Aviation and Engineering Corporation
Detroit, Michigan

for

U.S. ARMY AVIATION MATERIEL LABORATORIES
FORT EUSTIS, VIRGINIA

SUMMARY

This report presents the preliminary design and analysis of an advanced axial-centrifugal compressor for small gas turbines, and the detail design of the axial stages.

The program objective was to advance and demonstrate efficient high-pressure-ratio axial compressor technology to a level where, when matched analytically with both the advanced centrifugal compressor technology supplied by U. S. Army Aviation Materiel Laboratories (USAAVLABS) and the conventional engine component characteristics, a potential for a 0.460-pound-per-horsepower-hour specific fuel consumption (SFC) turboshaft engine at 2500°F turbine inlet gas temperature would be provided.

This volume discusses the fabrication, tests, and redesign of the axial compressor. The original axial compressor design (Volume I) was fabricated and tested. The axial compressor performance was capable of providing a potential for a 0.484-pound-per-horsepower-hour SFC turboshaft engine at 2500°F turbine inlet gas temperature. However, a low flow problem prevented the compressor from achieving the target efficiency.

The compressor was redesigned, fabricated, and tested. This compressor performance exceeded the contract objective by demonstrating 80-percent efficiency at 3.1:1 pressure ratio with a 4.91 lb/sec airflow, thus providing a potential for a 0.457-pound-per-horsepower-hour specific fuel consumption turboshaft engine at 2500°F turbine inlet gas temperature.

FOREWORD

This program is sponsored by the United States Army Aviation Material Laboratories under Contract DA44-177-AMC-296(T), Task 1G162203D14413.

This report, prepared by Continental Aviation and Engineering Corporation, presents Phase II and Phase III of a small axial compressor program for the advancement of small gas turbine component technology.

The detailed aerodynamic redesign of the compressor is presented in an addendum of Volume II under separate cover.

The details of the compressor concept definition and compressor mechanical design are included in Volume I. The original compressor design is published under separate cover as an addendum of Volume I.

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INTRODUCTION

This report presents the work accomplished in Phases II and III of Contract DA44-177-AMC-296(T) for the United States Army Aviation Materiel Laboratories, Fort Eustis, Virginia.

The project objectives are to advance and demonstrate efficient high-pressure-ratio axial compressor technology to the level where, when matched analytically with the advanced centrifugal compressor technology supplied by USAAVLABS and the conventional engine component characteristics, a potential for a 0.460-pound-per-horsepower-hour SFC turboshaft engine at 2500°F turbine inlet gas temperature will be provided.

The Phase I objectives are presented in Volume I.

The Phase II objectives were to fabricate and test the axial compressor to determine basic performance and to provide aerodynamic data for any necessary modification of the blade rows. An additional test of a modified compressor was to be conducted.

The Phase III objective was to redesign the axial compressor using the Phase II aerodynamic data as the basis for aerodynamic direction. The redesigned compressor was to be fabricated and tested to determine basic performance.

DISCUSSION

FABRICATION OF ORIGINAL DESIGN

General Fabrication Techniques

The Continental-designed compressor rig, Figure 1, is primarily an aerodynamic research vehicle, with the structural design emphasizing mechanical integrity, ease of assembly and instrumentation, and reasonable cost, wherever possible. Consequently, the majority of the stationary hardware fabrication was straightforward utilizing weldments and other common techniques. However, the manufacturing techniques used in the rotor and stator assemblies were somewhat more complex and are discussed in the following paragraphs.

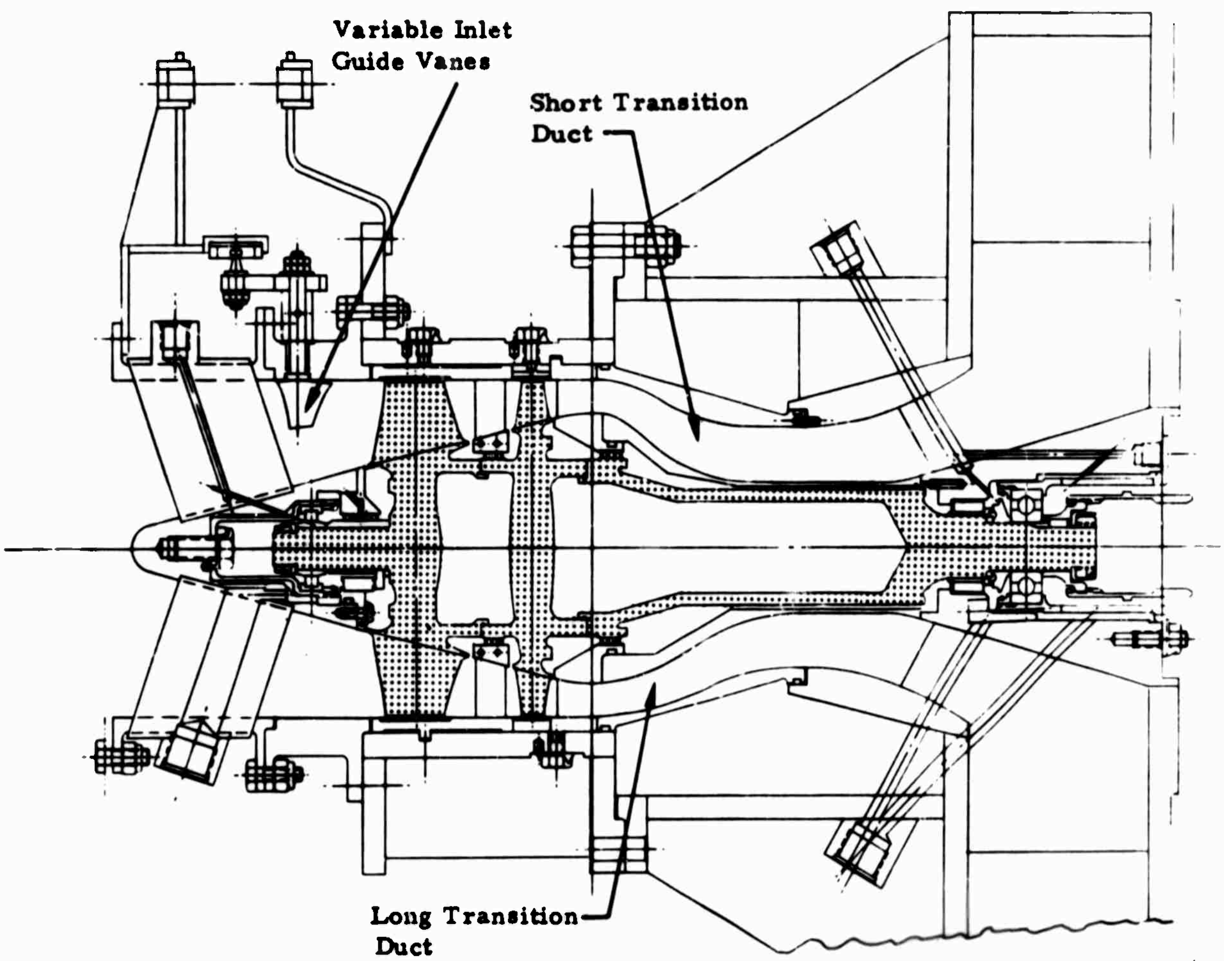


Figure 1. Advanced Axial Compressor Test Rig Design Layout.

Rotor Assembly

The integrally bladed rotors and the rear shaft, each machined from a solid AMS 5616 forging, were joined into a unitized assembly by electron-beam welding. The weld joints on the rotor assembly are shown in Figure 2. Two rotor assemblies were fabricated in this manner.

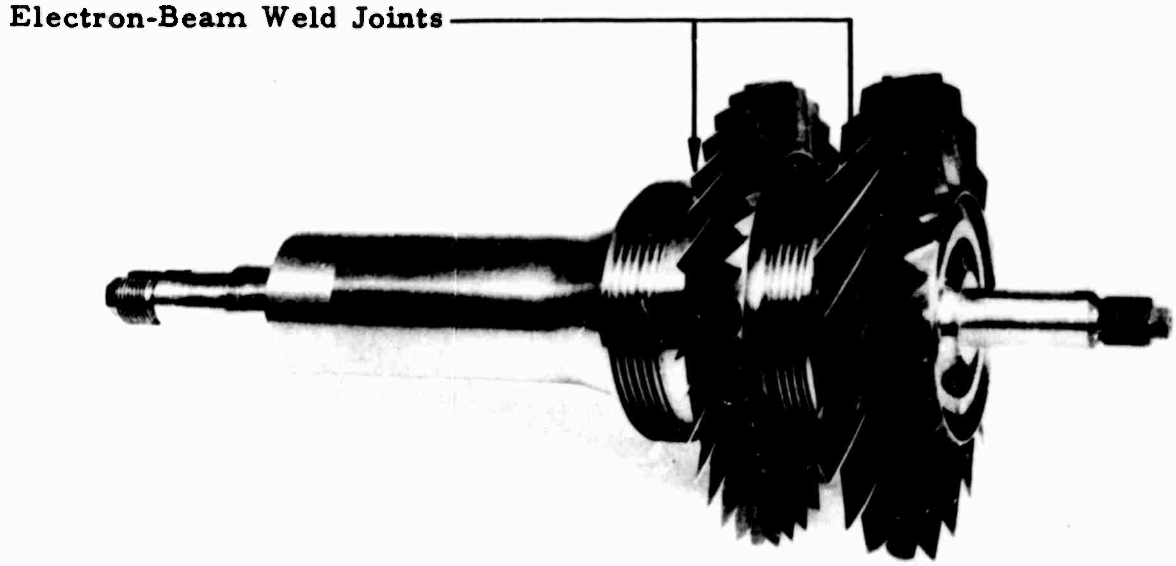


Figure 2. Rotor Assembly - Electron Beam Weldment.

After welding of the first rotor assembly, radiographic (X-Ray) inspection revealed extensive porosity throughout the weld. The short span between the first- and second-stage rotors prevented the use of X-Ray techniques and porosity depth repair procedures. Therefore, prior to welding the second rotor assembly, an extensive weld qualification technique was developed and is summarized as follows:

1. Establish basic weld parameters by using a sample bead weld on plate.
2. Evaluate joint configuration using flat plates by:
   a. X-Ray examination
   b. Macroscopic examination of the weld.
3. Evaluate joint configuration using circular components in the same manner as above.

4. Weld rotor assembly

   a. Examine by fluorescent penetrant

   b. Examine by X-Ray

During the course of establishing the qualification technique, it was determined that the operator's skill in focusing the electron beam and subtle changes in the operation of the beam filament were major factors in producing a sound weld.

Use of this technique resulted in an acceptable weld for the second rotor assembly. Maximum runout after welding was 0.003 inch; the total indicator reading after stress relief was 0.007 inch. The excessive runout condition after stress relief was corrected by heat straightening.

Final machining of the rotor assembly was accomplished following acceptance of the welds. Excess stock was provided in critical areas, such as bearing journals and labyrinth seals, so that any misalignment resulting from the welding operation could be readily corrected.

Stator Assembly

The individual contours of both the first- and second-stage stator vanes were machined by conventional methods from AISI 410 stainless steel.

The assembly of both stators was similar. The electron discharge machining (EDM) of the vane slots, in the inner and outer shrouds, was accomplished by using the vane section as an electrode. The vanes were then placed in the slots and brazed in place (Figures 3 and 4).

Variations in vane thickness made it necessary to hand rework and fit each vane in a particular slot. In addition, holding fixtures were needed to maintain vane positioning during the brazing process.

APPARATUS AND PROCEDURES

Test Cell Installation

The compressor, with the integrally mounted speed increaser was adapted as a package to the test cell and driving facilities. Input torque for this package is restricted by the integral speed increaser

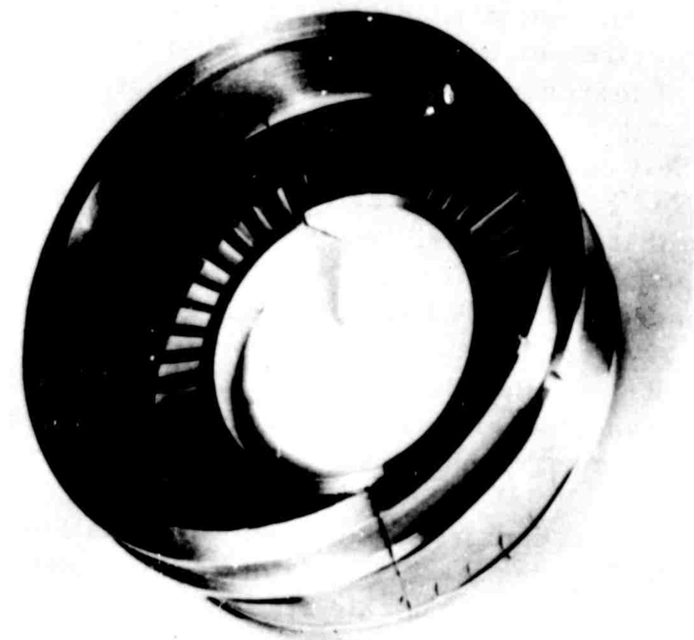


Figure 3. First-Stage Stator Assembly.

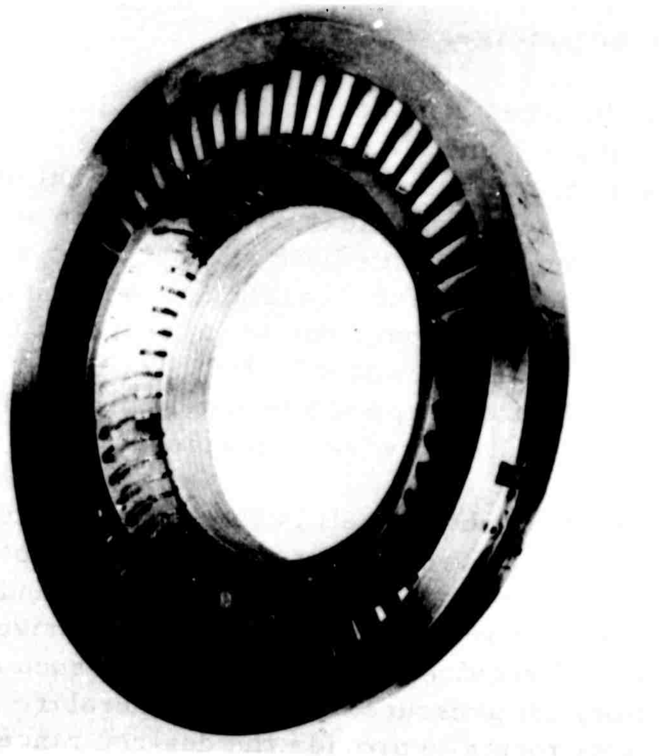


Figure 4. Second-Stage Stator Assembly.

to approximately 360 horsepower at the compressor design speed of 59,600 rpm. Consequently, in order to decrease the horsepower requirements, the compressor had to be operated at reduced inlet pressures up to 24 inches of mercury absolute at design point.

Two test cells can accommodate the compressor: the 1400 No. 1 or the 1400 No. 2. These test cells are in adjacent areas arranged back-to-back such that two reversible, 700-horsepower, electrical dynamometers can be coupled in series for 1400 horsepower to either cell or operated independently for 700 horsepower in each cell. Each cell provides lubrication services, inlet air temperature regulation from 300°F to -65°F, inlet air pressure regulation from 40 inches of mercury absolute to highly depressed conditions, and exhaust services ranging from atmospheric to high vacuum conditions.

The original compressor design was installed and tested in 1400 No. 1 test cell (Figures 5 and 6). This cell provides airflow measurement by means of an ASME nozzle station with the cell inlet plenum. Drive provision was from the intermediate shaft of a two-stage, 2500-horsepower, 42,000-rpm, 21:1 ratio gearbox. The first-stage ratio of this gearbox is 6.93:1 (1386 rpm) so that operation ranging to less than half speed adequately accommodate the input to the compressor/integral speed increaser package.

The redesigned compressor was installed and tested in 1400 No. 2 test cell (Figures 7 and 8). Installation of the No. 2 test cell required airflow measurement by means of a previously calibrated compressor inlet station because no cell measurement station was provided. Drive provision was from an intermediate shaft of a two-stage, 1400-horsepower, 42,000-rpm, 21:1 ratio gearbox. The first-stage ratio of this gearbox is 3.263:1 (6500 rpm); due to its design of twin load-sharing intermediate shafts, it is limited to 700 horsepower at 6500 rpm. Operation ranging to 80 percent speed adequately provided the input to the compressor/integral speed increaser package.

Adjacent to each test cell is its respective control room, which provides instrumentation read-out equipment for both aerodynamic and mechanical units, control of service equipment, and control of the drive systems. Inlet air temperature and pressure, drive speeds, discharge air pressure, and required service equipment such as flowpath traversing instrumentation, oil pressure, and oil temperature are regulated remotely from the control rooms to provide the desired ranges for test operation.

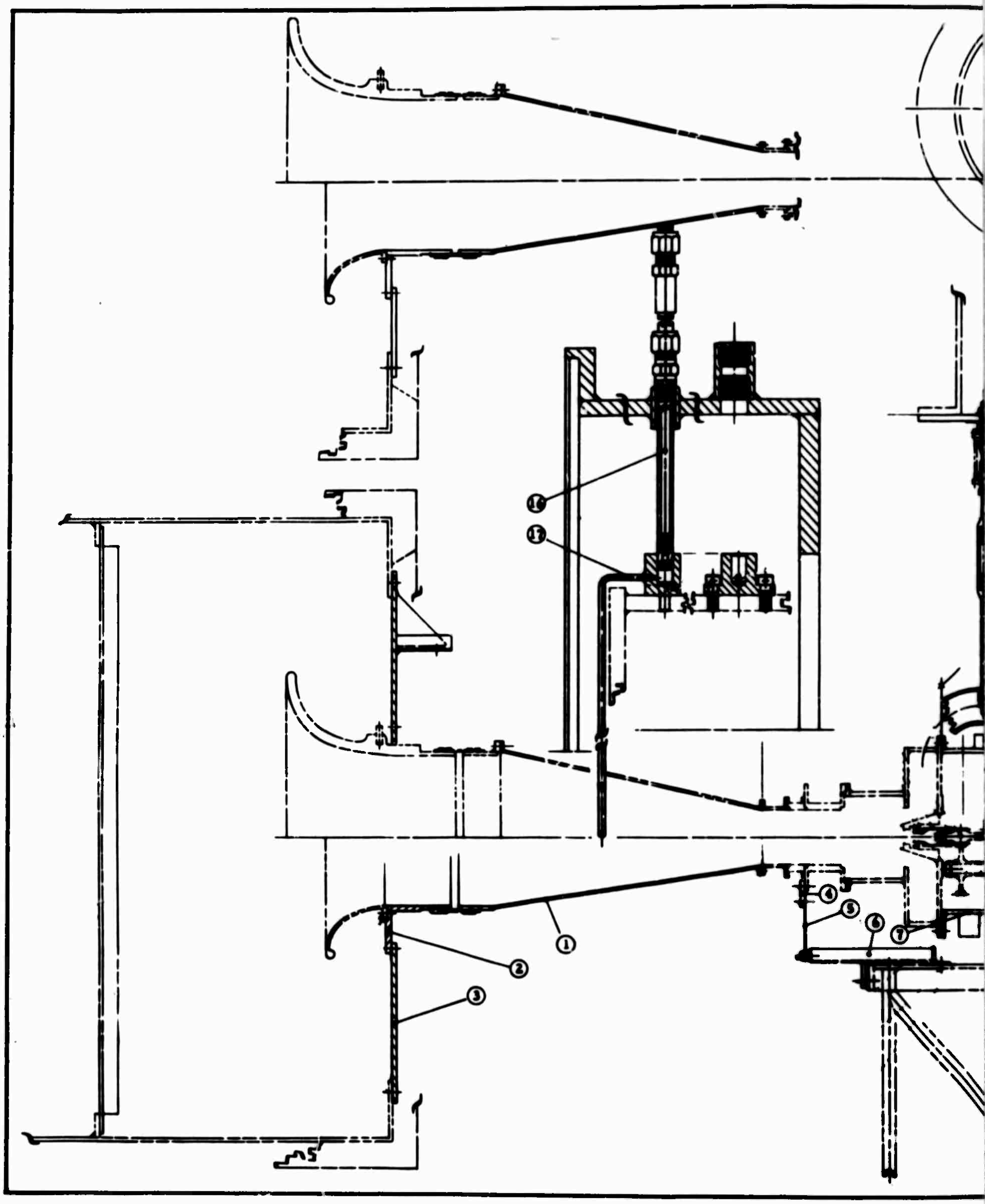
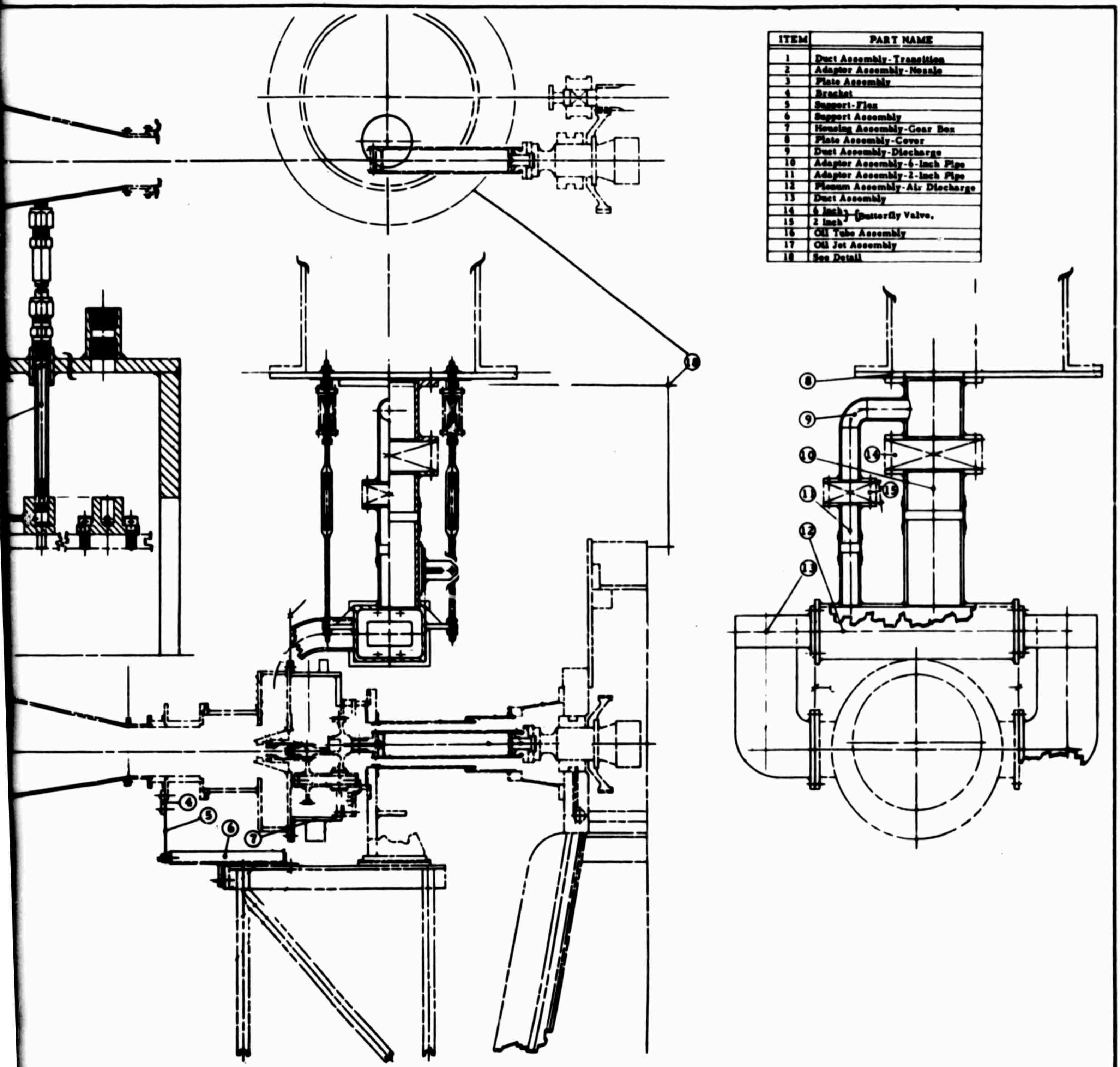


Figure 5. Compressor Test Cell 1400 No. 1 Layout.



ITEM	PART NAME
1	Duct Assembly-Transition
2	Adaptor Assembly-Nozzle
3	Plate Assembly
4	Bracket
5	Support-Flex
6	Support Assembly
7	Housing Assembly-Gear Box
8	Plate Assembly-Cover
9	Duct Assembly-Discharge
10	Adaptor Assembly-6-inch Pipe
11	Adaptor Assembly-2-inch Pipe
12	Plenum Assembly-Air Discharge
13	Duct Assembly
14	6 inch } Butterfly Valve,
15	2 inch }
16	Oil Tube Assembly
17	Oil Jet Assembly
18	See Detail

out.

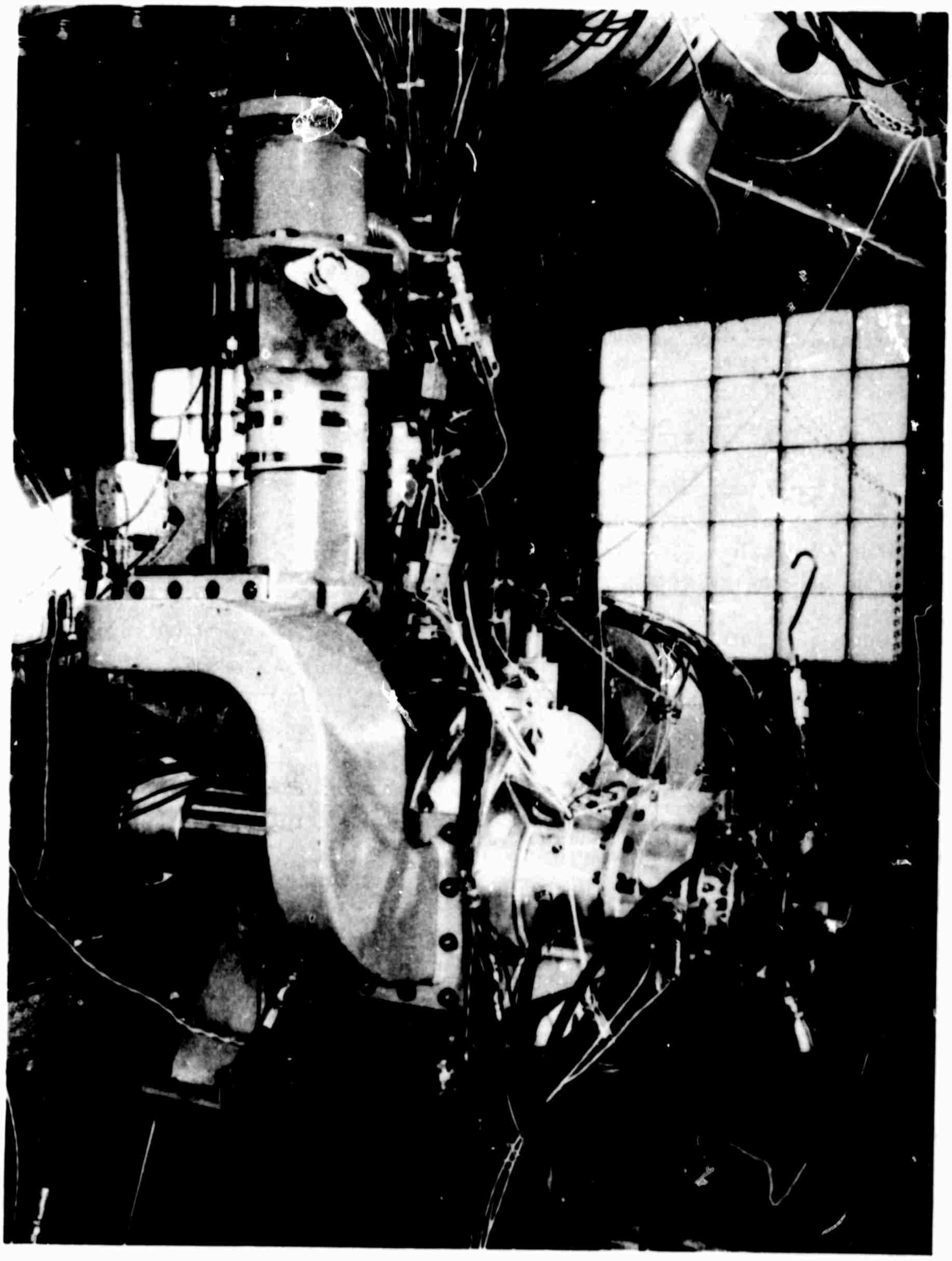


Figure 6. Compressor Installation - 1400 No. 1 Test Cell.

Test Procedure

Both the original design and the redesigned compressors were run at low speed to check mechanical integrity and then gradually accelerated from 50 to 100 percent of design speed in increments of 10 percent with the exit throttle valve open. The abradable shrouds were inspected at intervals of 50, 70, 90, and 100 percent of design speed. The compressor map was defined by setting a specific speed and gradually closing the throttle valve to determine the speed line. Approximately five data points, at different flow rates, were obtained for each speed line. Surge was determined by observing fluctuations in the exit manometers and the inlet flow manometers. Traverse data were obtained at selected points after the compressor map was defined.

Aerodynamic Instrumentation

In general, the same aerodynamic instrumentation was used for both the original design and the redesigned compressors, except for the methods of airflow measurement and the presence of traverse probes in the original design compressor. The different methods of flow measurement, as described below, were necessitated by the lack of a nozzle station in the 1400 No. 2 test cell.

Specific instrumentation installations for both compressor configurations are discussed in the following paragraphs.

Compressor Inlet. The compressor inlet conditions were measured in the tapered inlet transition duct at a plane 4.0 inches forward of the compressor inlet housing. The rake instrumentation was equally spaced at four points across the duct inner radius of 3.30 inches. The temperature was measured with four bare wire iron-constantan temperature probes. The inlet total pressure was measured by four elements of 0.062-inch diameter with a 30-degree internal taper. One inlet duct wall static was provided at this plane for Mach number correction of the temperature rake.

Compressor Exit. The compressor exit incorporated one three-element total pressure rake, positioned 0.075 inch behind the trailing edge of the second-stage stator vane and centered between vanes. The three elements were equally spaced across the 0.545 inch passage and fabricated from 0.040-inch tubing. Two outside diameter wall static taps were installed 90 degrees apart, approximately 0.020 inch behind the trailing edge of the stator and centered between vanes.

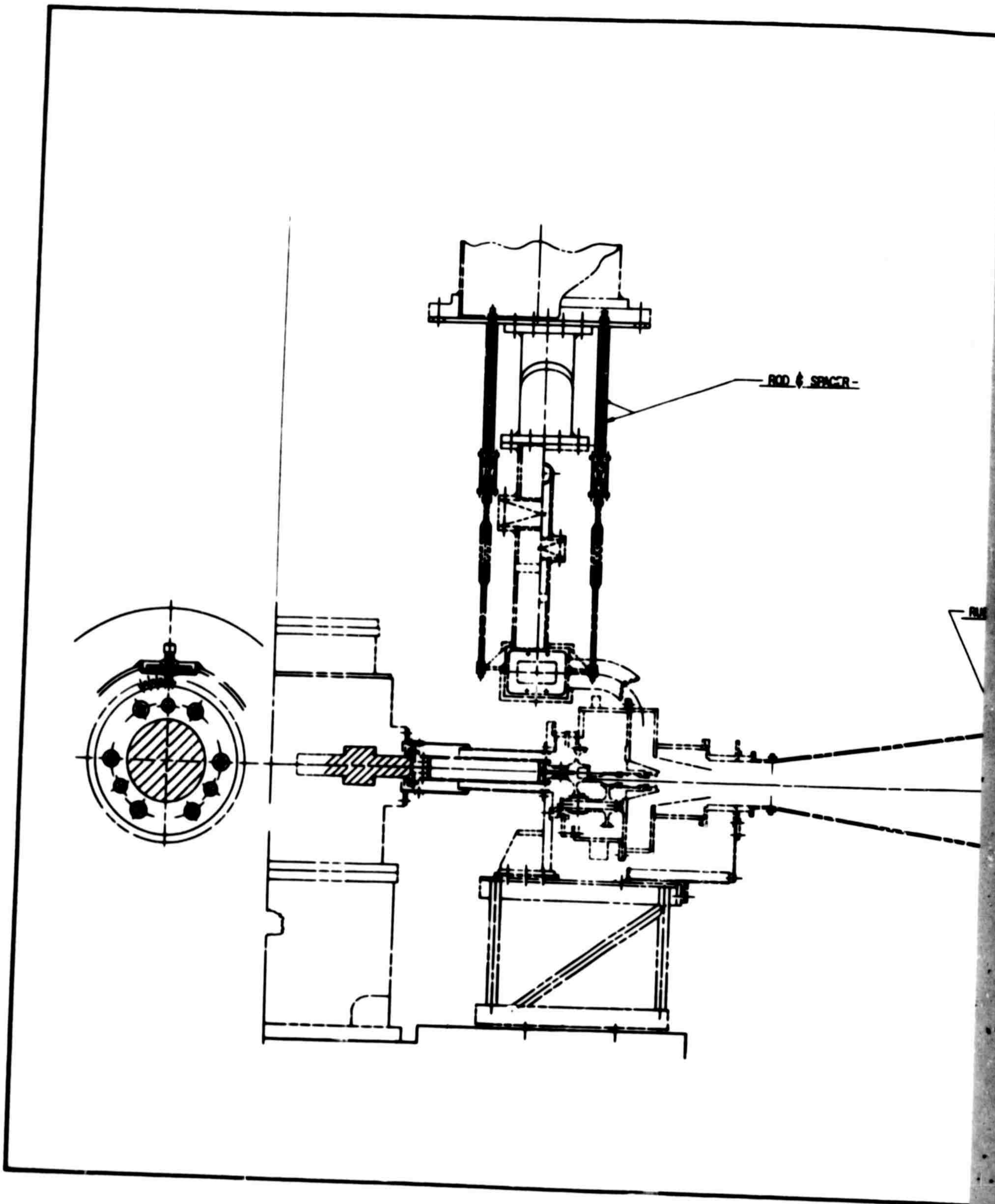
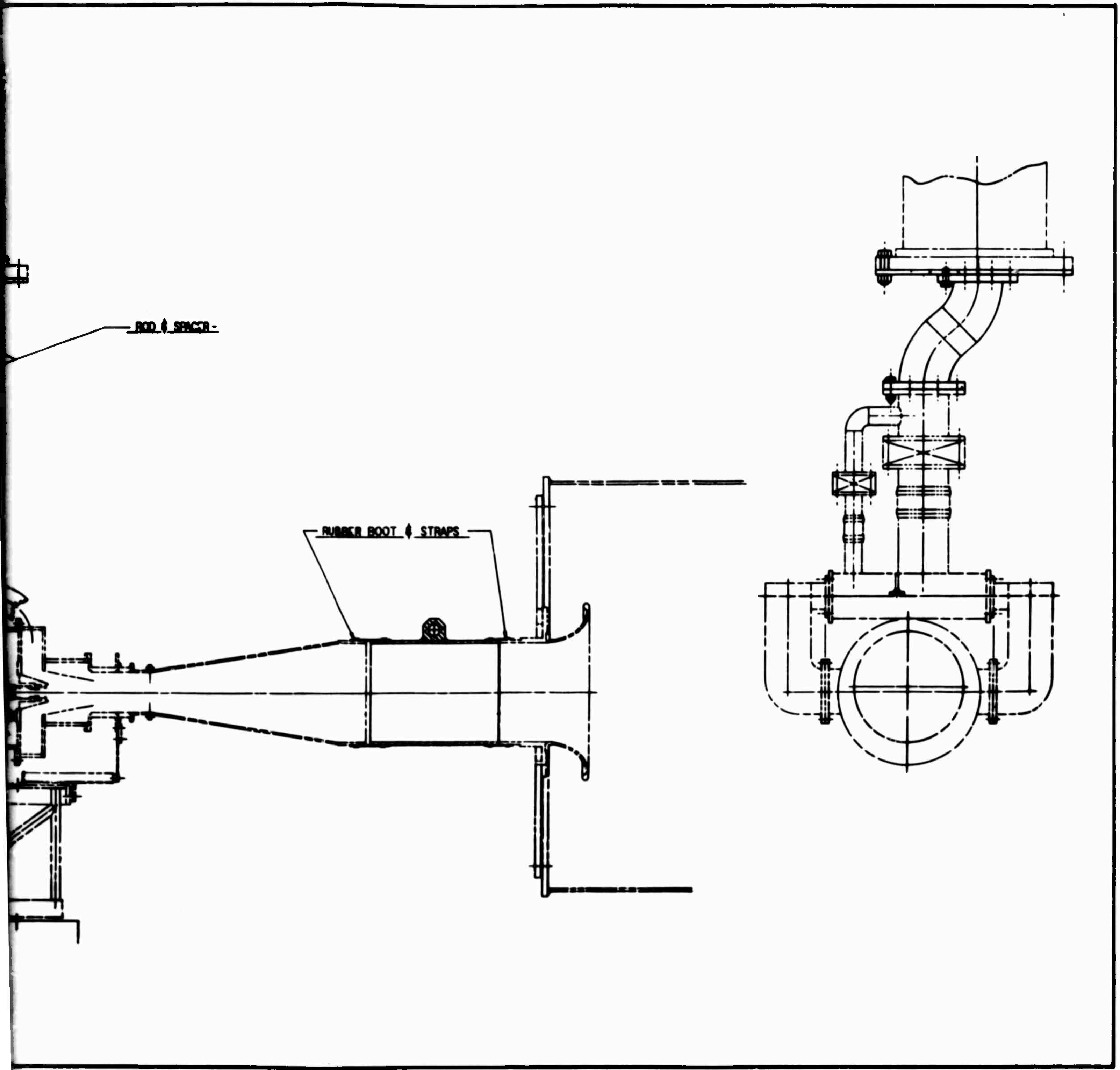


Figure 7. Compressor Test Cell 1400 No. 2 Layout.



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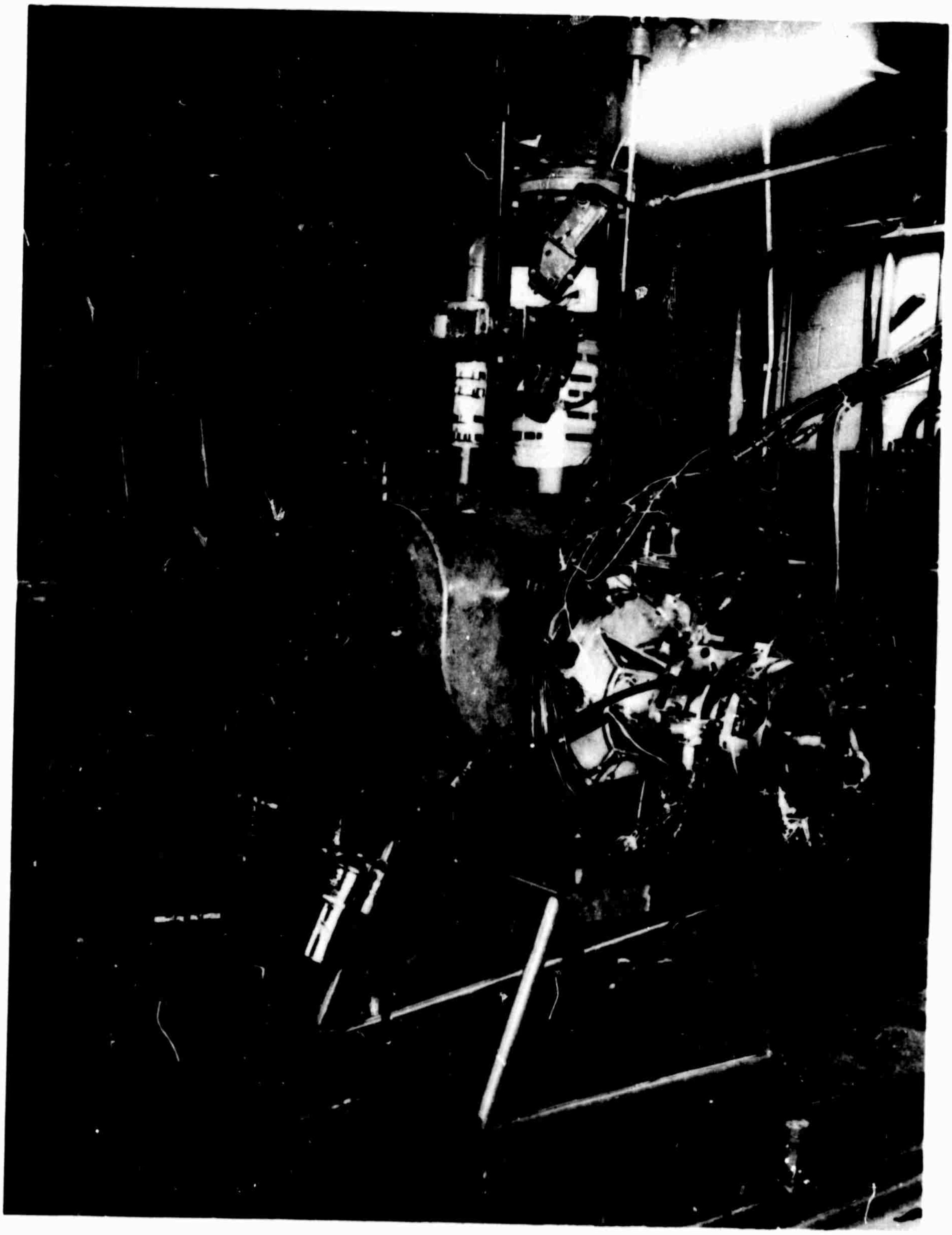


Figure 8. Compressor Installation - 1400 No. 2 Test Cell.

Transition Duct. Instrumentation at the exit of the transition duct consisted of three 3-element total pressure probes and three 3-element total temperature probes. The temperature probes were bare wire iron-constantan thermocouples, and the pressure probes were fabricated from 0.040-inch tubing. Elements were equally spaced across the 0.889-inch passage width. The rakes were circumferentially spaced 120 degrees apart. The sensing plane was located at approximately 0.190 inch behind the mating surface of the rear bearing housing and the transition duct. Two outside diameter and one inside diameter wall static pressure taps were installed at this plane.

Wall static instrumentation through the transition duct consisted of three static pressure taps - two at the outside diameter, 90 degrees apart, and one at the blade diameter - at each of three locations evenly spaced axially between the duct inlet and the duct exit.

Interstage Stat Pressure Instrumentation

Instrumentation through this section consisted of outside diameter wall static pressure taps installed in pairs, 90 degrees apart, at the following locations:

1. At the center of the variable inlet guide vane housing flange, one between the vanes and another in line with a vane.

2. At the first-stage rotor inlet, opposite the point of intersection of the rotor leading edge with the hub.

3. At the inlet to the first-stage stator, slightly ahead of the leading edge.

4. At the exit of the first-stage stator, slightly behind the trailing edge.

5. In line with the leading edge of the second-stage stator.

Inlet Airflow. With the redesigned compressor, the airflow was measured, using an airflow coefficient established by calibration of the inlet assembly against a 4.00- and a 5.00-inch ASME nozzle, over the flow range of 1.65 to 5.00 pounds per second. An average coefficient of 0.1553 was established for use with a conventional airflow calibration curve. The inlet total pressure was measured by four wall static pressure taps manifolded together and located in the inlet plenum forward of the inlet transition duct. To establish the pressure drop, two wall static pressure taps, located in the inlet housing, were manifolded and teed to the inlet plenum pressure. On the original design compressor, airflow was measured with a 5-inch ASME nozzle mounted in the inlet plenum upstream of the compressor.

Traverse Probes. Actuated total pressure cobra probes and bare wire iron-constantan total temperature probes were installed axially behind each rotor on the original design compressor. The leading edge of one stator vane was removed to enable the probes to traverse radially.

No traverse probes were utilized on the redesigned compressor.

Mechanical Instrumentation

The compressor assembly incorporated the usual rotating component rig instrumentation consisting of thermocouples on each of the bearing outer races, oil-in and -out temperatures and pressures, and vertical and horizontal accelerometers mounted on the front and rear of the compressor housing.

In addition, strain gages were mounted on two beams of the front bearing cage, at 90-degree spacing, to detect shaft oscillations transmitted through the cantilevered cage, thereby giving an indication of shaft motion relative to the housing.

The signals from the strain gages were fed into a dual beam oscilloscope, where they could be displayed in sine wave or orbit form.

Data Reduction

Overall Data. The average inlet total temperature was established by arithmetically averaging the four thermocouple temperature readings at the inlet station. The average inlet total pressure was established by manifolding the four manometers connected to the four inlet pressure probes. The exit conditions were measured in a similar manner to the inlet conditions.

Since the Mach number at the inlet plane and at the exit plane is high enough to cause velocity effects on the total temperature probe, the inlet probes were calibrated against a known source as a function of Mach number. The calibrations for each test are shown in Figures 9 and 10. The method of obtaining the actual temperature is summarized in the following:

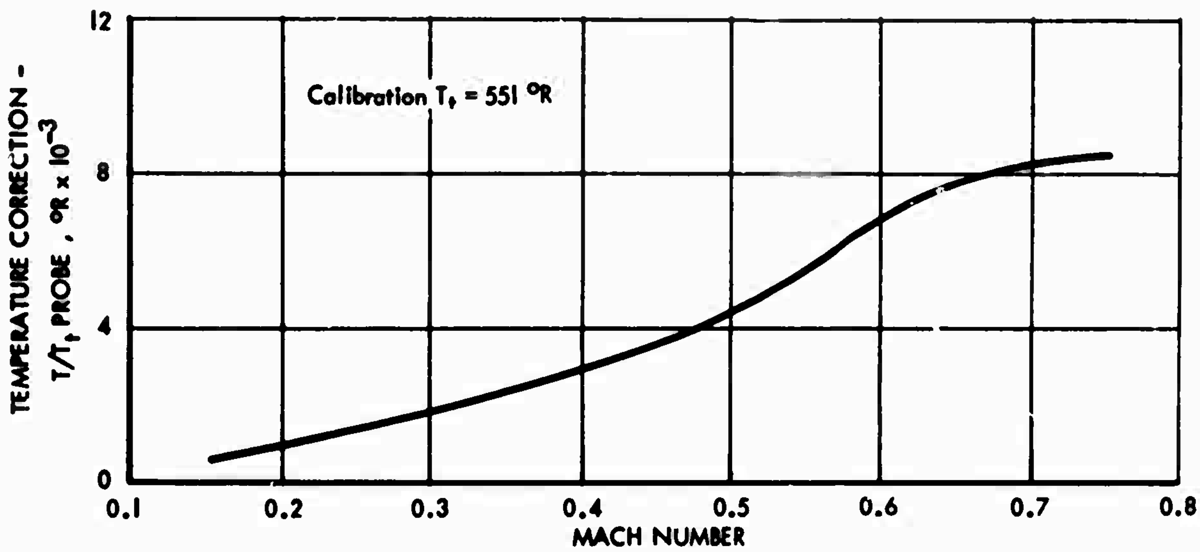


Figure 9. Inlet Duct Probe Calibration.

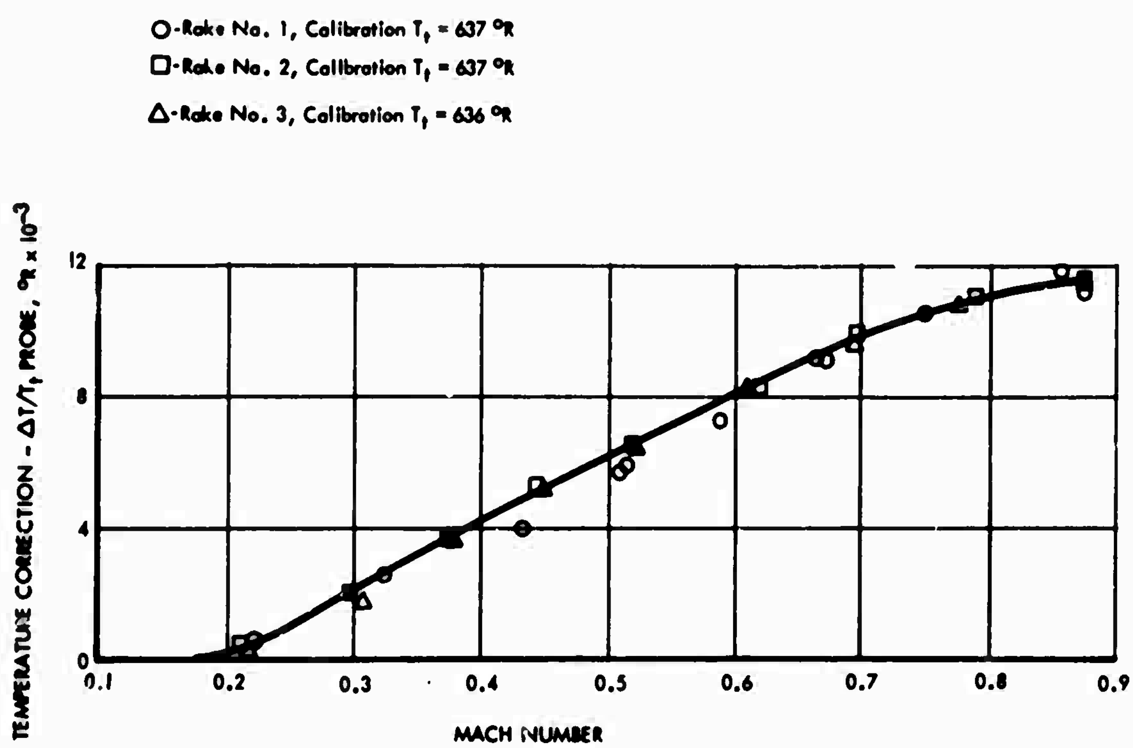


Figure 10. Exit Duct Probe Calibration.

1. Obtain static pressure and total pressure from manometer readings at the total temperature measuring station.

2. Calculate flow Mach number, using the following:

$$M = \sqrt{\frac{2}{a - 1}\left[\left(\frac{P_t}{P_s}\right)^{\frac{a-1}{a}} - 1\right]} \tag{1}$$

where:

M = Mach number

a = Specific heat ratio

P_t = Total pressure, psia

P_s = Static pressure, psia

3. Determine the temperature correction ($\Delta T/T_t$) from the calibration curves (Figures 9 and 10) and calculate the actual or true temperature as follows:

$$T\ \text{true} = T_t \left(1 + \frac{\Delta T}{T_t}\right) \tag{2}$$

T true = True temperature, $^{\circ}R$

T_t = Measured temperature by the probe, $^{\circ}R$

$\frac{\Delta T}{T_t}$ = Percentage difference between actual temperature and probe temperature.

Overall Efficiency. The overall efficiency was computed using the standard efficiency formula shown below:

$$\eta = \frac{(PR)^{\frac{a-1}{a}} - 1}{TR - 1} \tag{3}$$

where:

η = Efficiency

PR = Exit total pressure divided by inlet total pressure

TR = Exit total temperature (corrected for Mach number effects) divided by inlet total temperature.

a = Ratio of specific heats determined by an integrated averaging process

Traverse Data Measurements. The probes were traversed radially inward, and the data were recorded at the following percentages of blade height locations: 5, 10, 30, 50, 70, 90, and 95. The total pressure probe was adjusted to the proper flow angle by balancing the static pressures. The temperature probe data were recorded at the flow angles determined by the total pressure probe.

Both the total temperature and the total pressure probes were calibrated for Mach number effects. The method of obtaining the actual traverse temperature is equivalent to the method used for obtaining the actual overall temperature. The method of calculating the actual pressure is summarized below:

1. At each radial station, obtain the absolute Mach number from computer results. A definition of the computer output parameters is included in Appendix I.

2. Obtain pressure ratio (P_t probe/P_t true) from the probe calibration curve and calculate the actual pressure as defined below:

$$P_t \text{ actual} = P_t \text{ measured} \times \frac{1}{P_t \text{ probe}/P_t \text{ true}} \tag{4}$$

where:

P_t actual = Actual pressure measured in calibration tunnel, psia

P_t measured = Measured total pressure, psia

P_t probe = Instrument pressure measurement in calibration tunnel, psia

P_t probe/P_t true = Calibration total pressure ratio

The calibration curves for all of the traverse probes are presented in Figures 11 and 12.

Traverse Data Reduction. At the inlet to the first-stage rotor, the test static pressure, total temperature, and total pressure were assumed constant from hub to tip. Flow conditions at this station were obtained by the continuity relationship.

At the exit of the rotors, traverse data total temperature and total pressure were used to establish flow conditions. The slope of static pressure with radius was determined by assuming radial equilibrium. The level of static pressure was calculated by assuming continuity. The tangential velocity was established from the total temperature rise and the Euler turbomachinery equation.

The flow conditions behind the first-stage stator were established by assuming design losses to obtain the total pressure distribution. No change in total temperature was assumed from the exit of the first-stage rotor to the exit of the first-stage stator along a streamline. The flow direction was considered to be axial, and radial equilibrium was used to calculate the static pressure slope at the stator exit. Continuity determined the level of static pressure.

The exit conditions from the second-stage stator were calculated in the same manner as those from the first-stage stator except that the total pressure rake installed at the second stator exit was used to calculate the stator loss.

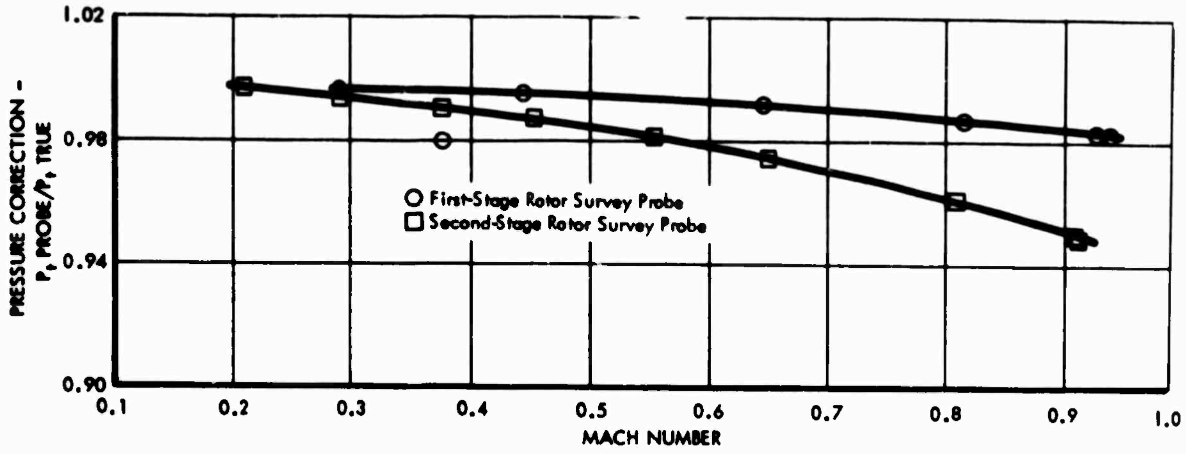


Figure 11. Survey Probe Calibration.

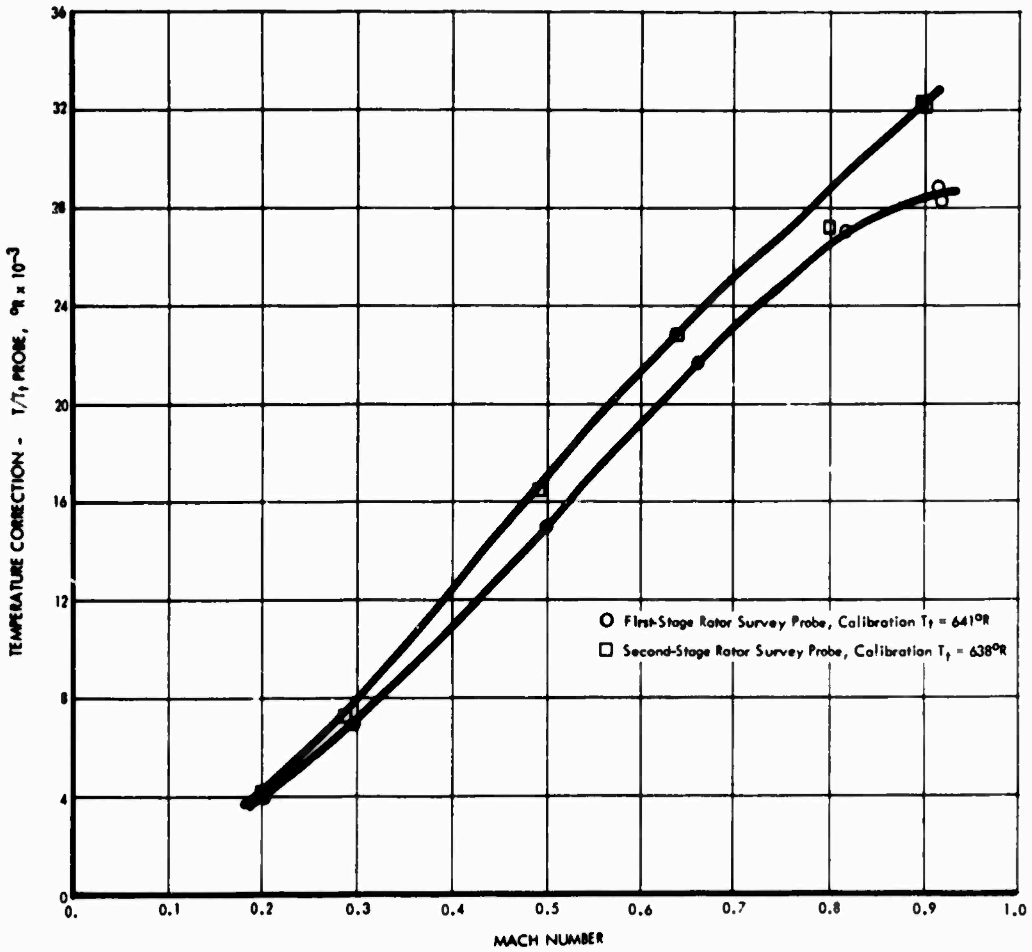


Figure 12. Survey Probe Calibration - Fully Shielded.

FIRST RIG TEST OF AXIAL COMPRESSOR

The axial compressor assembled with the long transition duct and without the variable inlet guide vanes was tested to define basic performance and to provide data for any necessary aerodynamic modifications. The design pressure ratio objective was reached. However, because of a low-flow condition, the compressor did not obtain the design flow and efficiency. A comparison of the demonstrated performance with the design objectives at 59,600 rpm is shown below:

	Design	Demonstrated
Overall pressure ratio	3.0:1	3.0:1
Efficiency, percent	82.3	72.5
Corrected flow, lb/sec.	5.00	4.32

Mechanically, the rig functioned satisfactorily, except for the air erosion of the abradable feltmetal (metal fiber) shrouds.

Aerodynamic Test Results

Overall Performance Data. Sufficient test data, Figure 13, were obtained to define an overall compressor map. These data were measured from the inlet of the compressor (4.5 inches upstream of the inlet struts) to the transition duct exit. The test data indicated performance potential for obtaining the design objectives. The overall compressor characteristics obtained were more than adequate. An excellent flow range was demonstrated by the compressor at all speeds. The design speed stall margin attained at 3.0:1 pressure ratio was 10.5 percent. The definition of stall margin is shown below:

$$\text{Stall Margin} = \frac{\left(PR/W_a\sqrt{\theta}/\delta\right)_S - \left(PR/W_a\sqrt{\theta}/\delta\right)_{OP}}{\left(PR/W_a\sqrt{\theta}/\delta\right)_{OP}} \times 100\% \qquad (5)$$

where:

PR = Compressor total pressure ratio

$W_a\sqrt{\theta}/\delta$ = Inlet corrected airflow

S = Surge

OP = Operating point

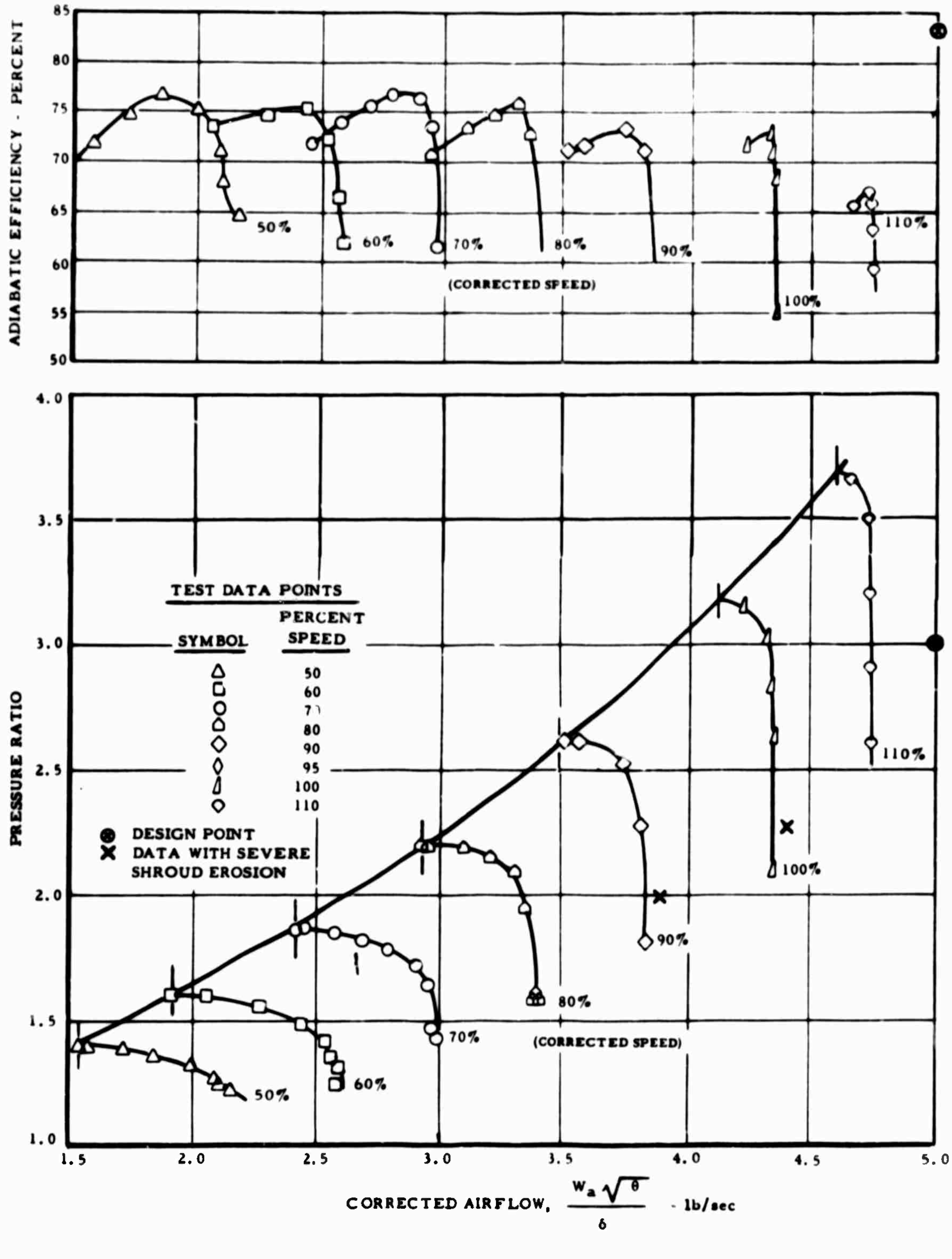


Figure 13. Axial Compressor Map - First Rig Test.

Because of premature choking condition, the compressor did not obtain the design flow and efficiency. Some improvement in flow was noticed with severe erosion of the first-stage rotor shroud, Figure 13.

The transition duct overall data, Figures 14 and 15, show a flow shift from the hub to the tip. This is indicated by the increase in absolute Mach number from hub to tip. A decaying efficiency gradient from hub to tip is noticed.

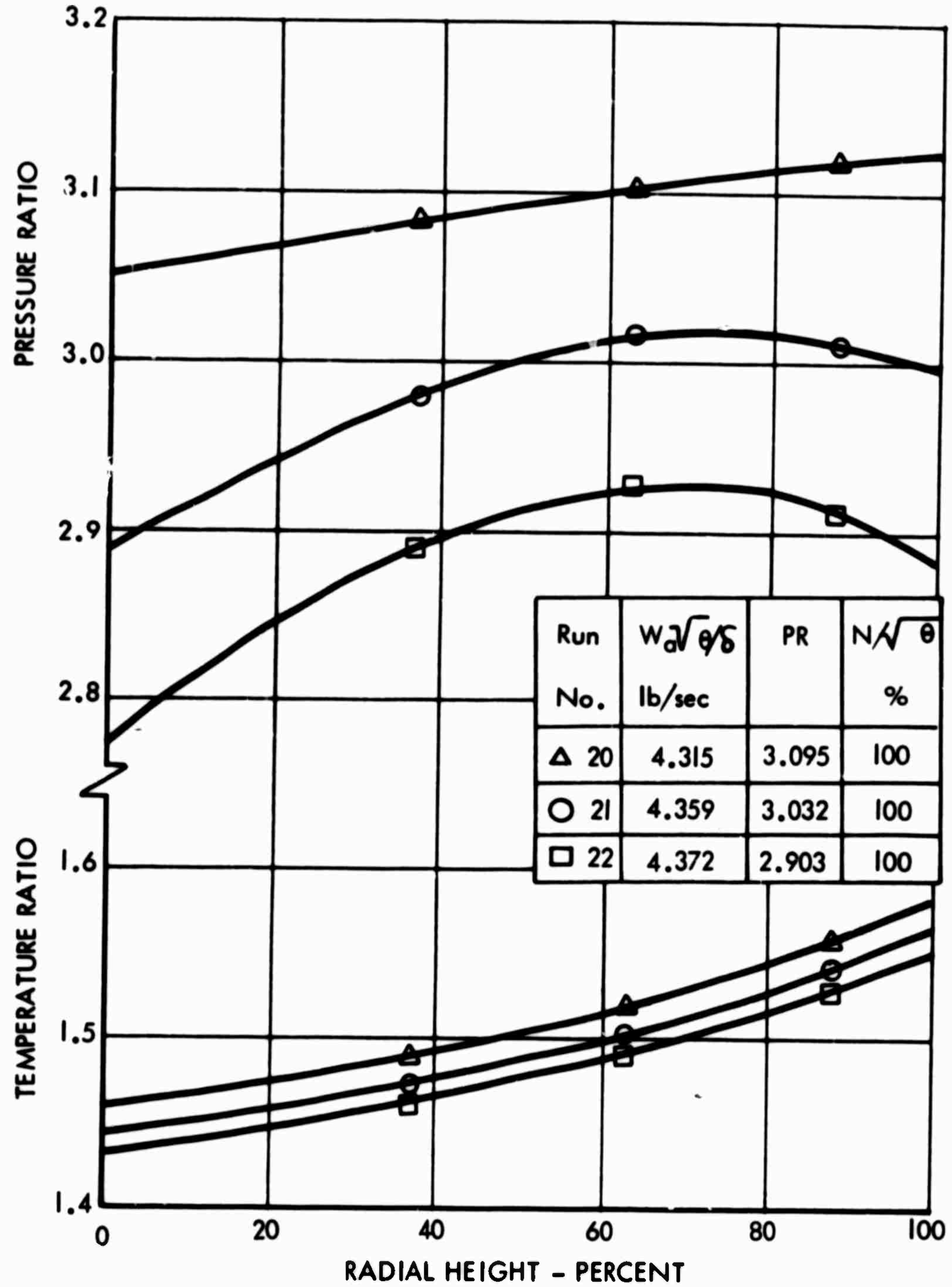
Static Pressure Data. The static pressure data, Figure 16, was normalized by the inlet total pressure to account for differences in the inlet total pressure. A complete range of data from choke to surge is also shown in Figure 16, for 100 percent of design speed.

The transition duct static pressure distribution, Figure 17, shows good agreement with the analytical prediction. The overall level of static pressure was high with respect to the predicted level because of the reduced flow rate.

Traverse Data. Traverse data were obtained for the compressor at the rotor exits in order to provide a basis for either a modification or a redesign. The interstage performance was recorded and reduced for the following test points:

Test Number	Corrected Airflow-Lb/Sec	Corrected Speed - Percent	Overall Pressure Ratio
19	4.514	105	2.898
20	4.315	100	3.095
21	4.359	100	3.032
22	4.372	100	2.903

Complete flow conditions for all blade rows obtained from the traverse data of the above test runs are presented in Appendix II. This appendix represents the computer program output data. The assumptions used to calculate the flow conditions are included in the discussion of traverse data reduction. A description of the computer program output symbols is included in Appendix I. Curves of the data from Continental Test 822B, run number 21 (plotted from Appendix II), are shown in Figures 18 through 37 and are compared to the design objectives. This particular test point (run 21) is of particular interest because it was conducted near the design pressure ratio, 3.0:1, and the design speed, 59,600 rpm.



Run No.	$W_a\sqrt{\theta}/\delta$ lb/sec	PR	$N/\sqrt{\theta}$ %
△ 20	4.315	3.095	100
○ 21	4.359	3.032	100
□ 22	4.372	2.903	100

Figure 14. Axial Compressor First Rig Test - Transition Duct Exit Temperature and Pressure Ratio Data.

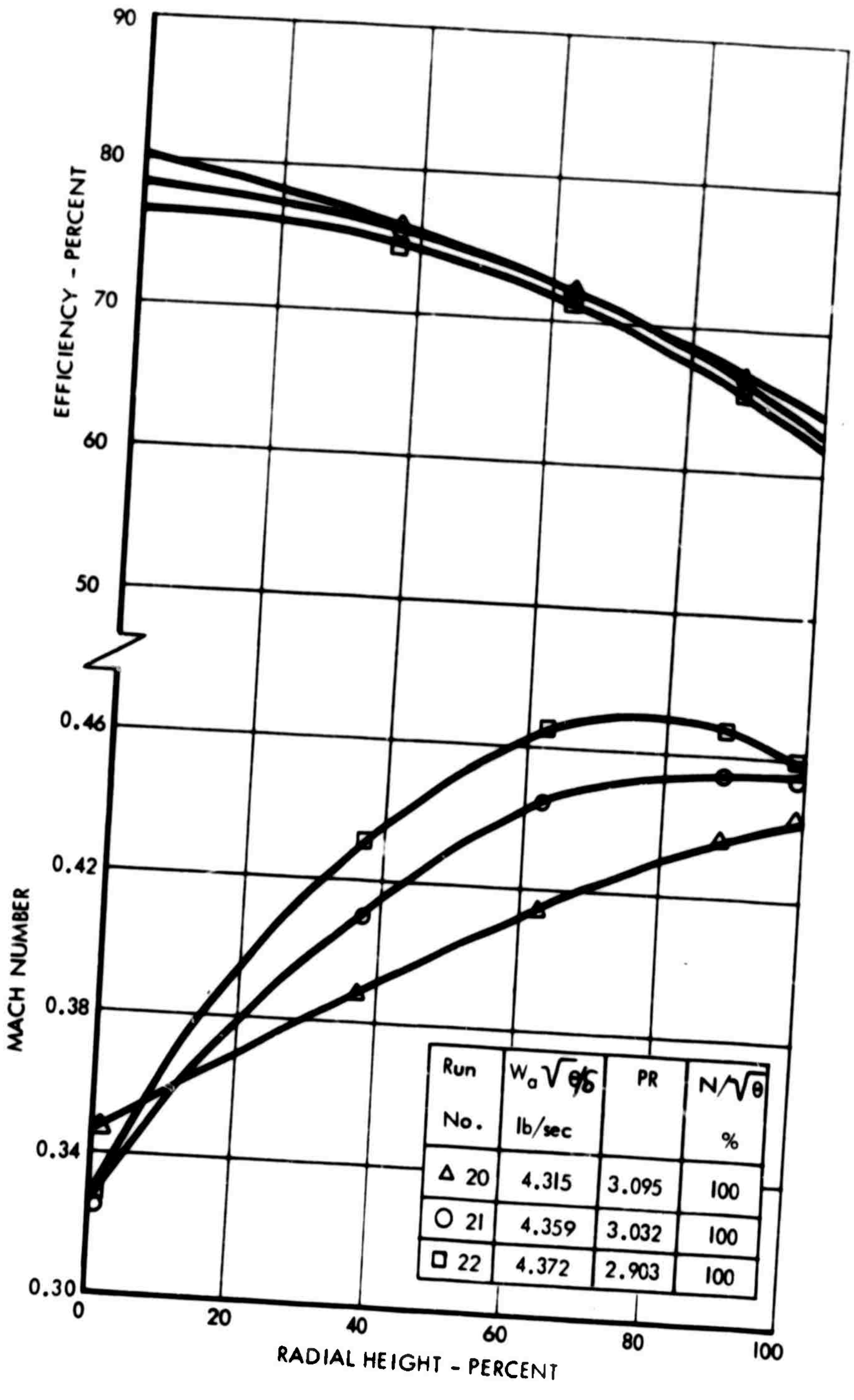


Figure 15. Axial Compressor First Rig Test Transition Duct Exit Mach Number and Efficiency Data.

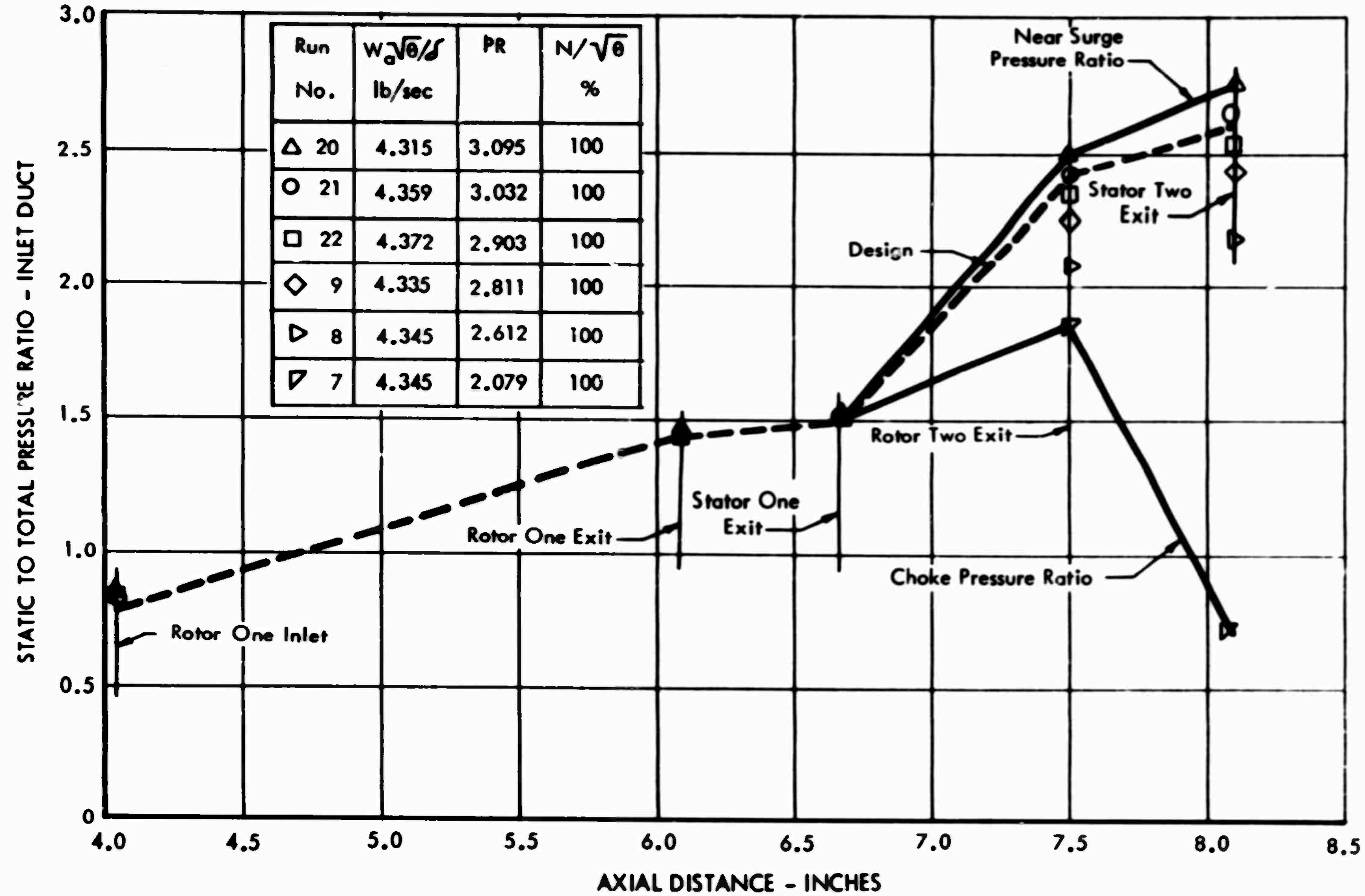


Figure 16. Axial Compressor First Rig Test - Static Pressure Distribution Along Compressor Tip.

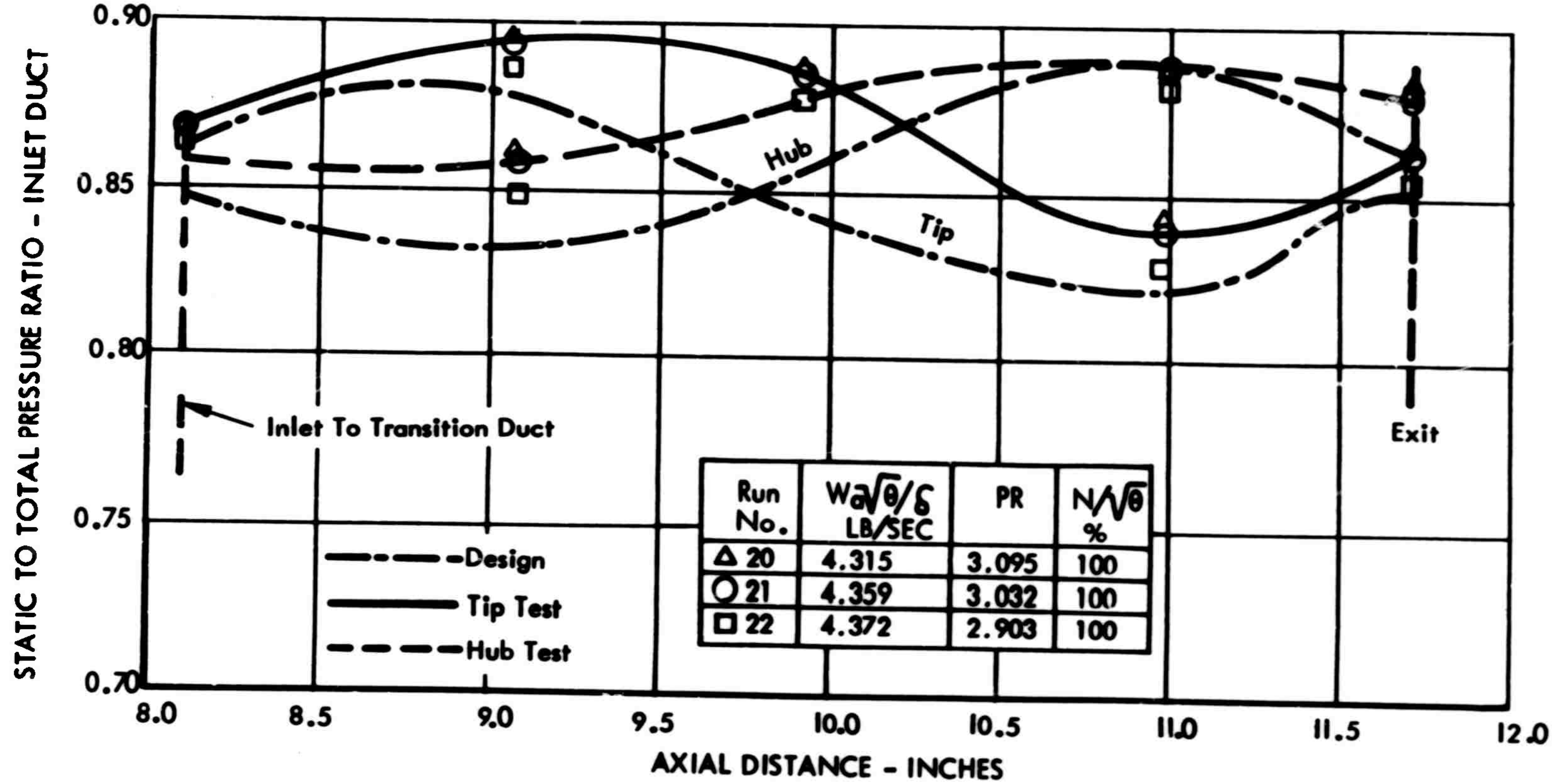


Figure 17. Axial Compressor First Rig Test - Transition Duct Static Pressure Distribution.

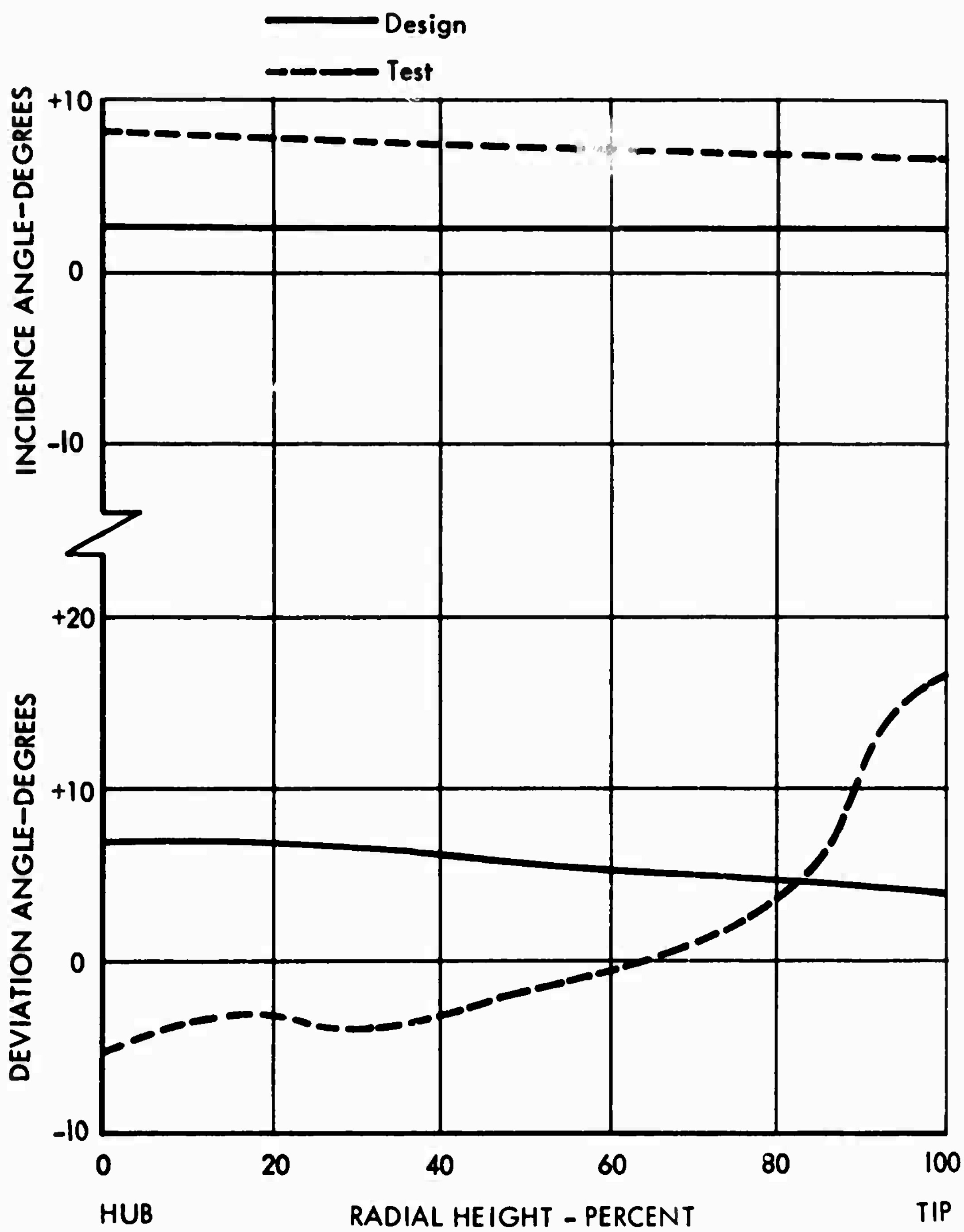


Figure 18. Axial Compressor Rotor One - Deviation and Incidence Angle Along Blade Radial Height.

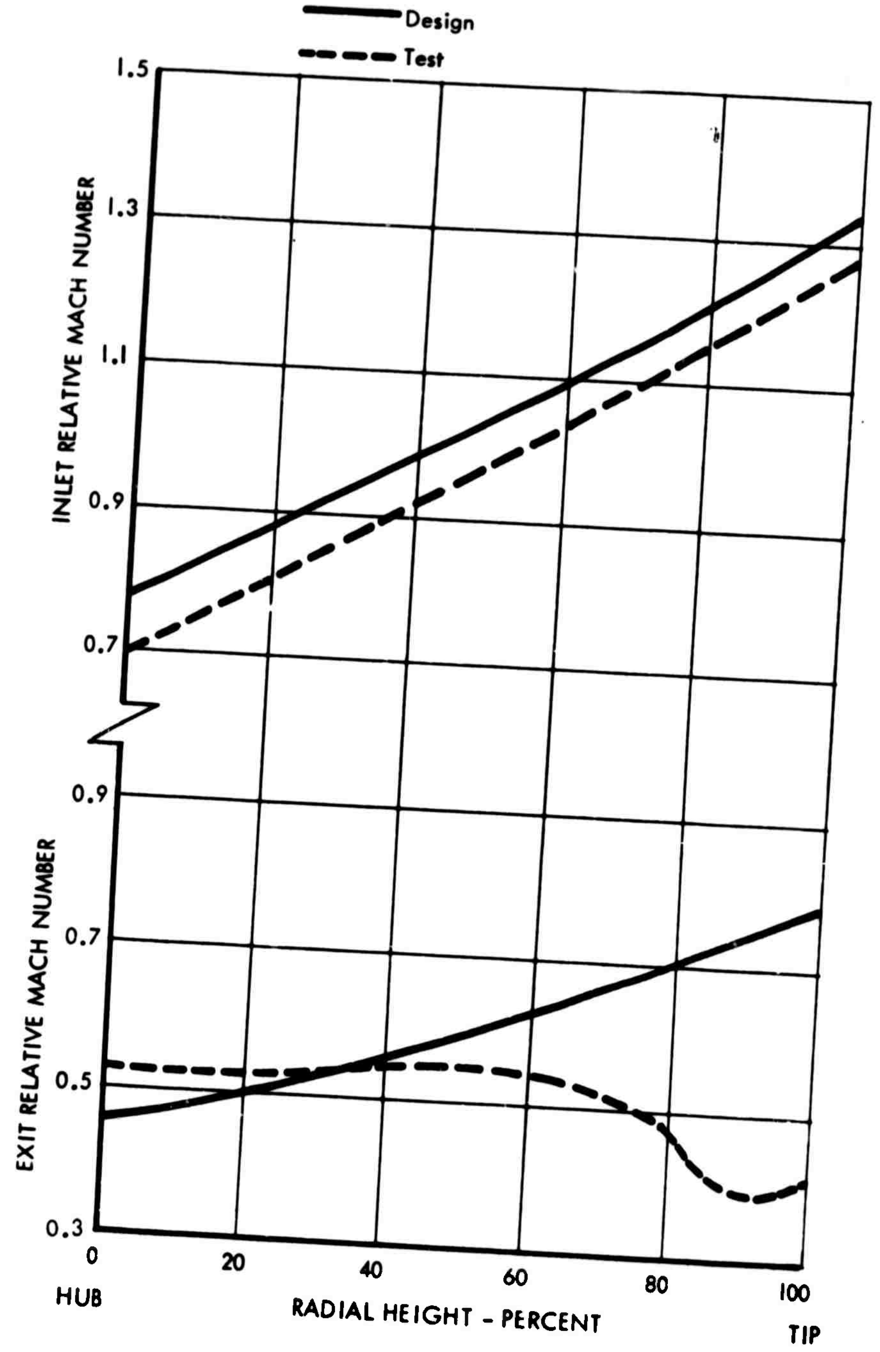


Figure 19. Axial Compressor Rotor One - Exit and Inlet Relative Mach Number Along Blade Radial Height.

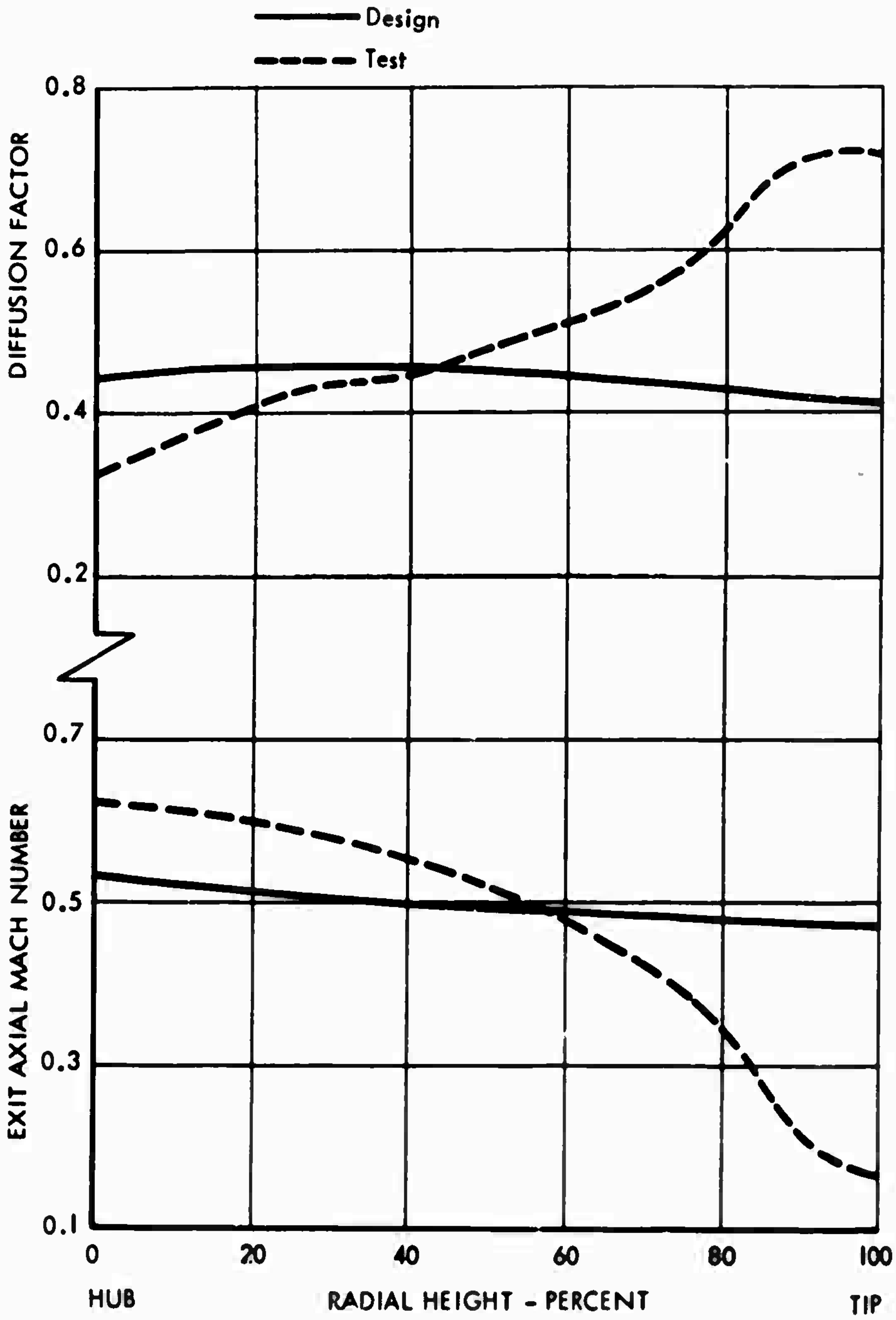


Figure 20. Axial Compressor Rotor One - Exit Mach Number and Diffusion Factor Along Blade Radial Height.

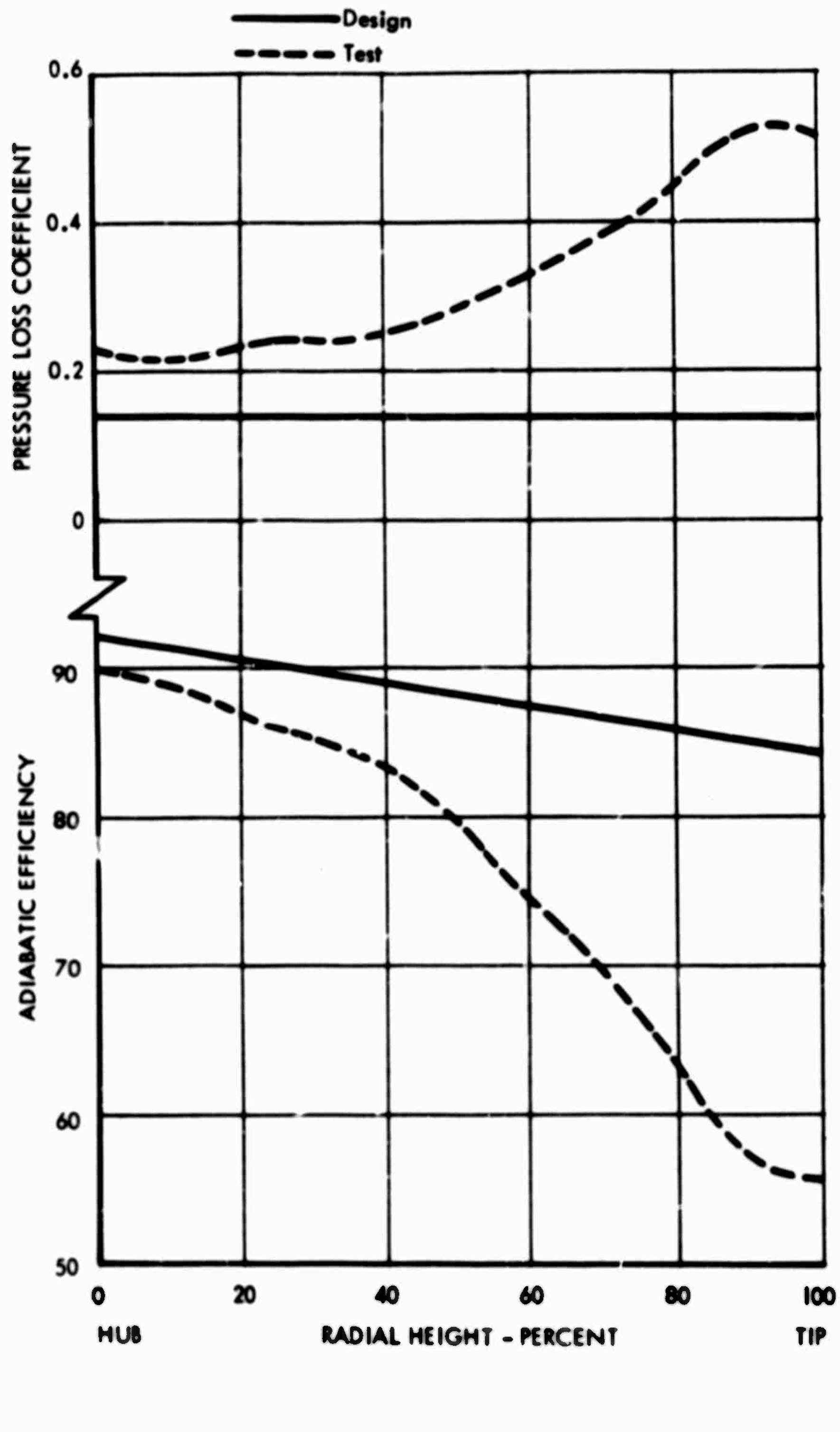


Figure 21. Axial Compressor Rotor One - Adiabatic Efficiency and Pressure Loss Coefficient Along Blade Radial Height.

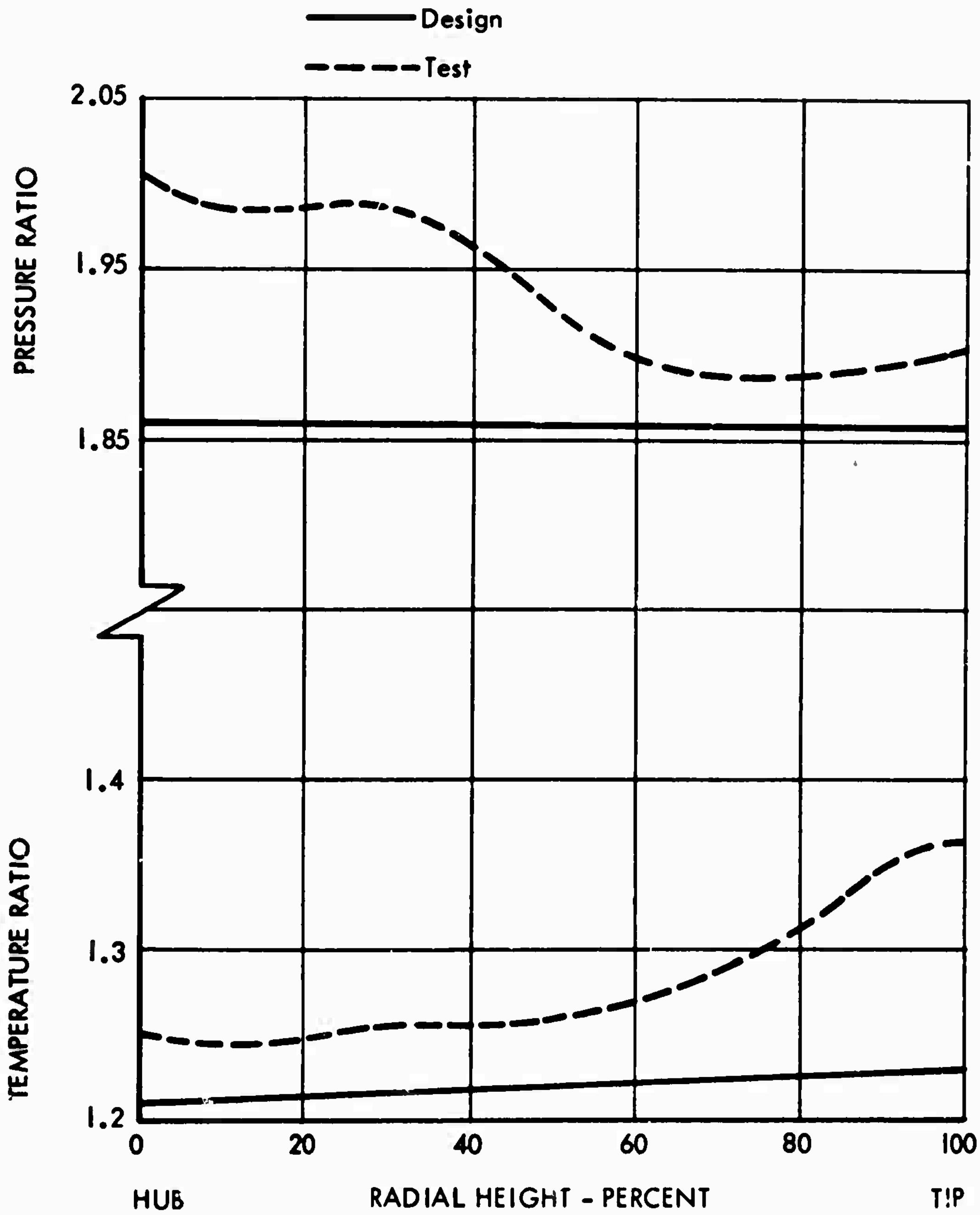


Figure 22. Axial Compressor Rotor One - Temperature and Pressure Ratio Along Blade Radial Height.

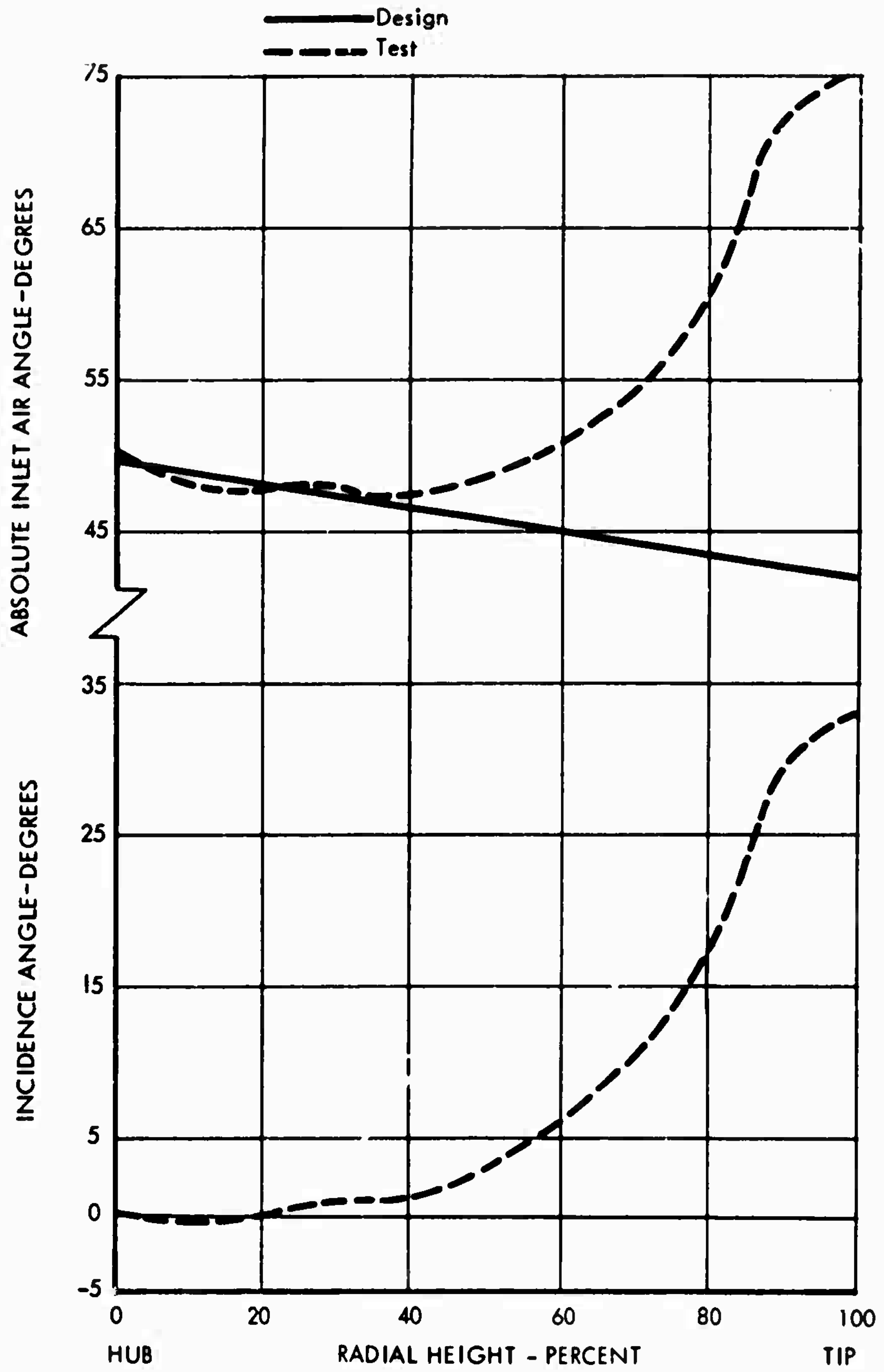


Figure 23. Axial Compressor Stator One - Incidence and Absolute Inlet Air Angle Along Blade Radial Height.

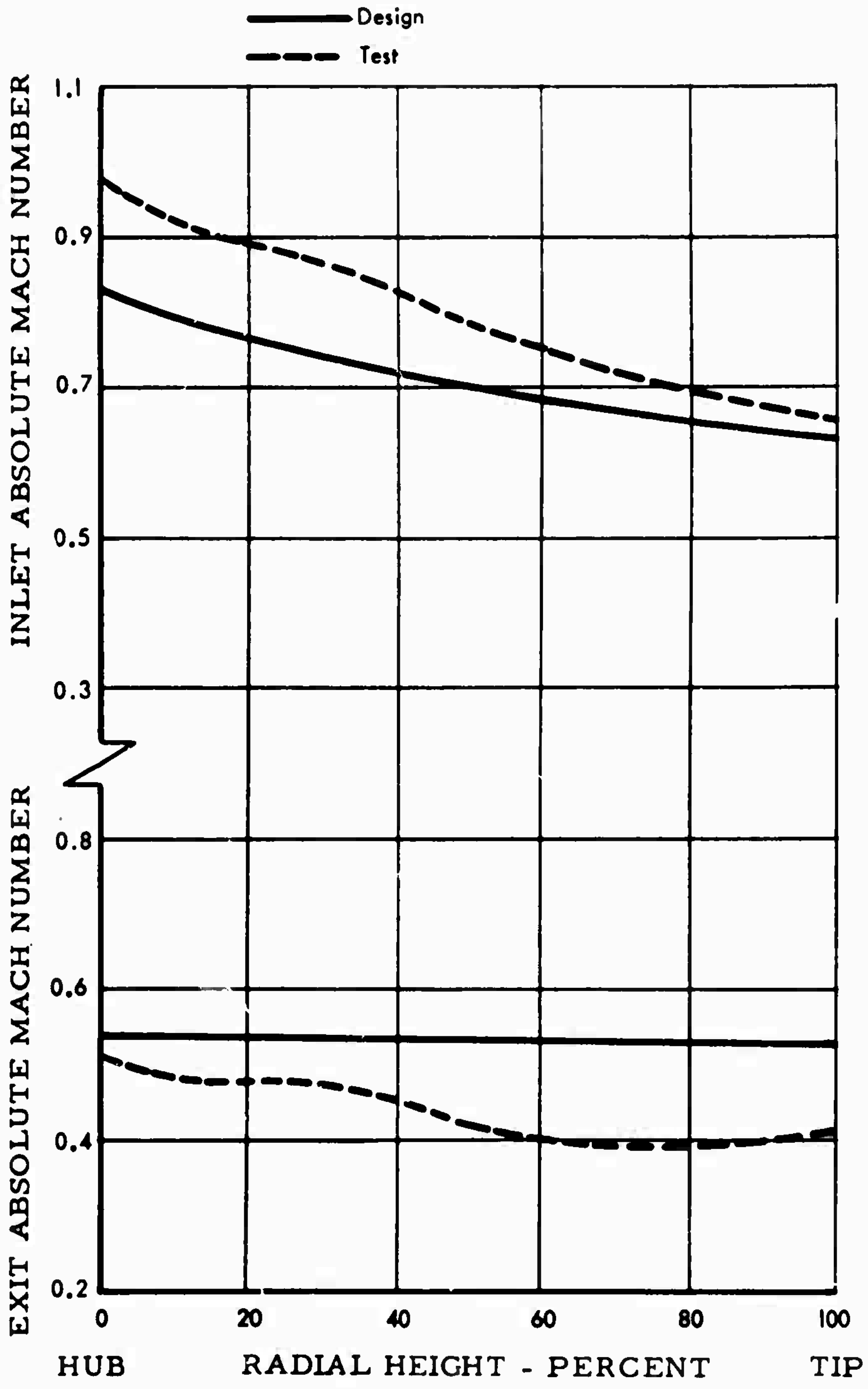


Figure 24. Axial Compressor Stator One - Inlet and Exit Mach Number Along Blade Radial Height.

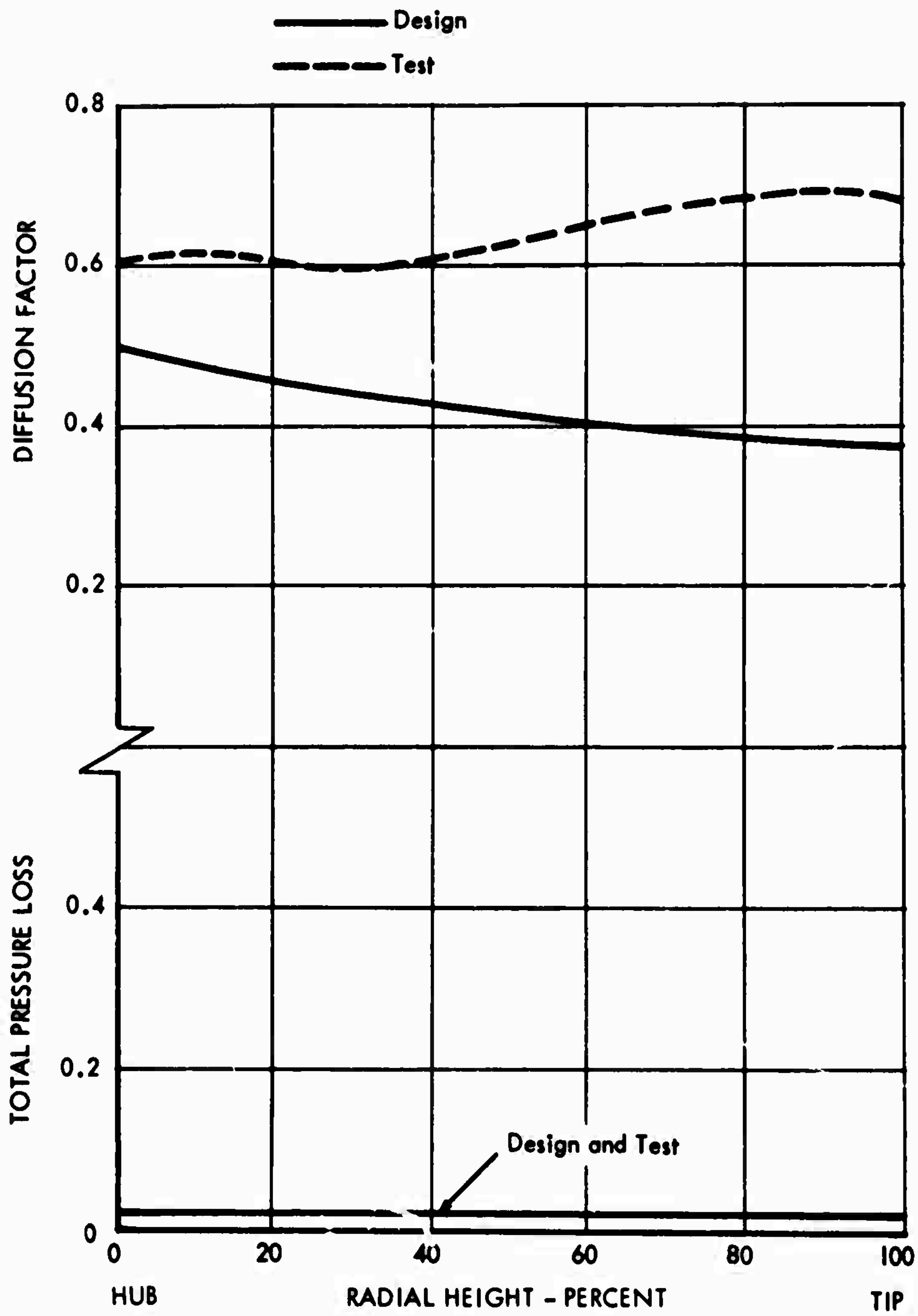


Figure 25. Axial Compressor Stator One - Pressure Loss and Diffusion Factor Along Blade Radial Height.

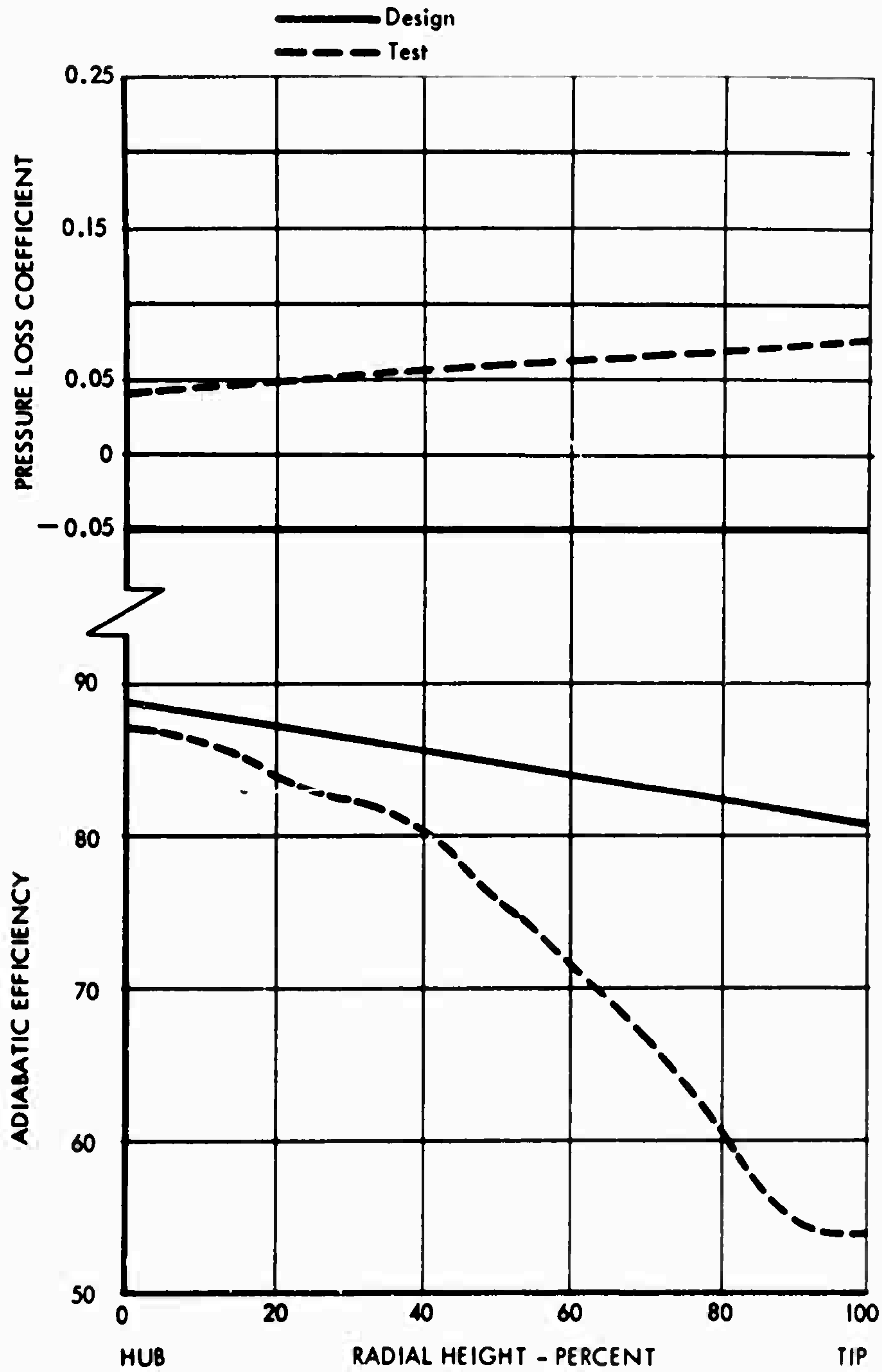


Figure 26. Axial Compressor Stator One - Adiabatic Efficiency and Pressure Loss Coefficient Along Blade Radial Height.

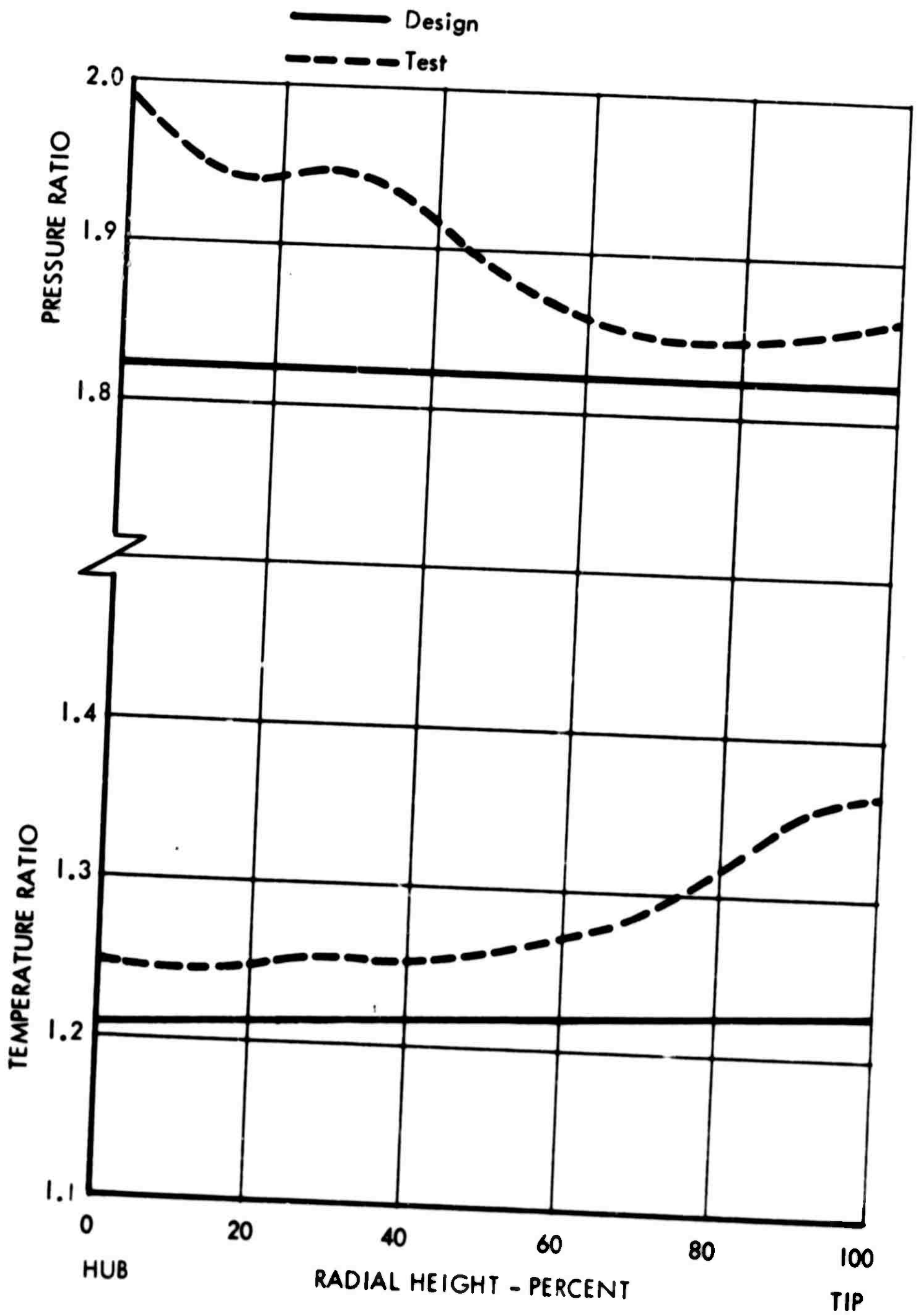


Figure 27. Axial Compressor Stator One - Static Temperature and Pressure Ratio Along Blade Radial Height.

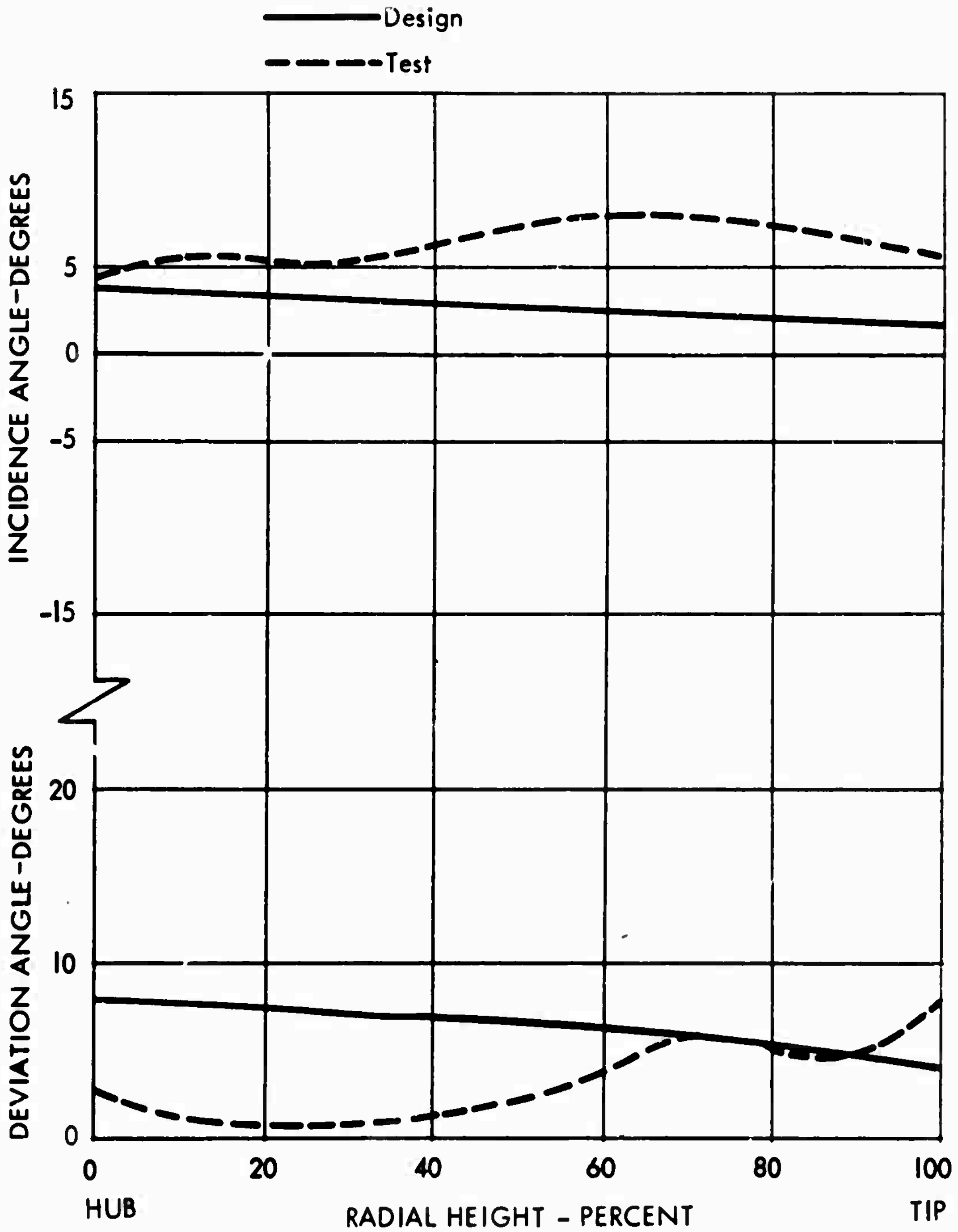


Figure 28. Axial Compressor Rotor Two - Deviation and Incidence Angle Along Blade Radial Height.

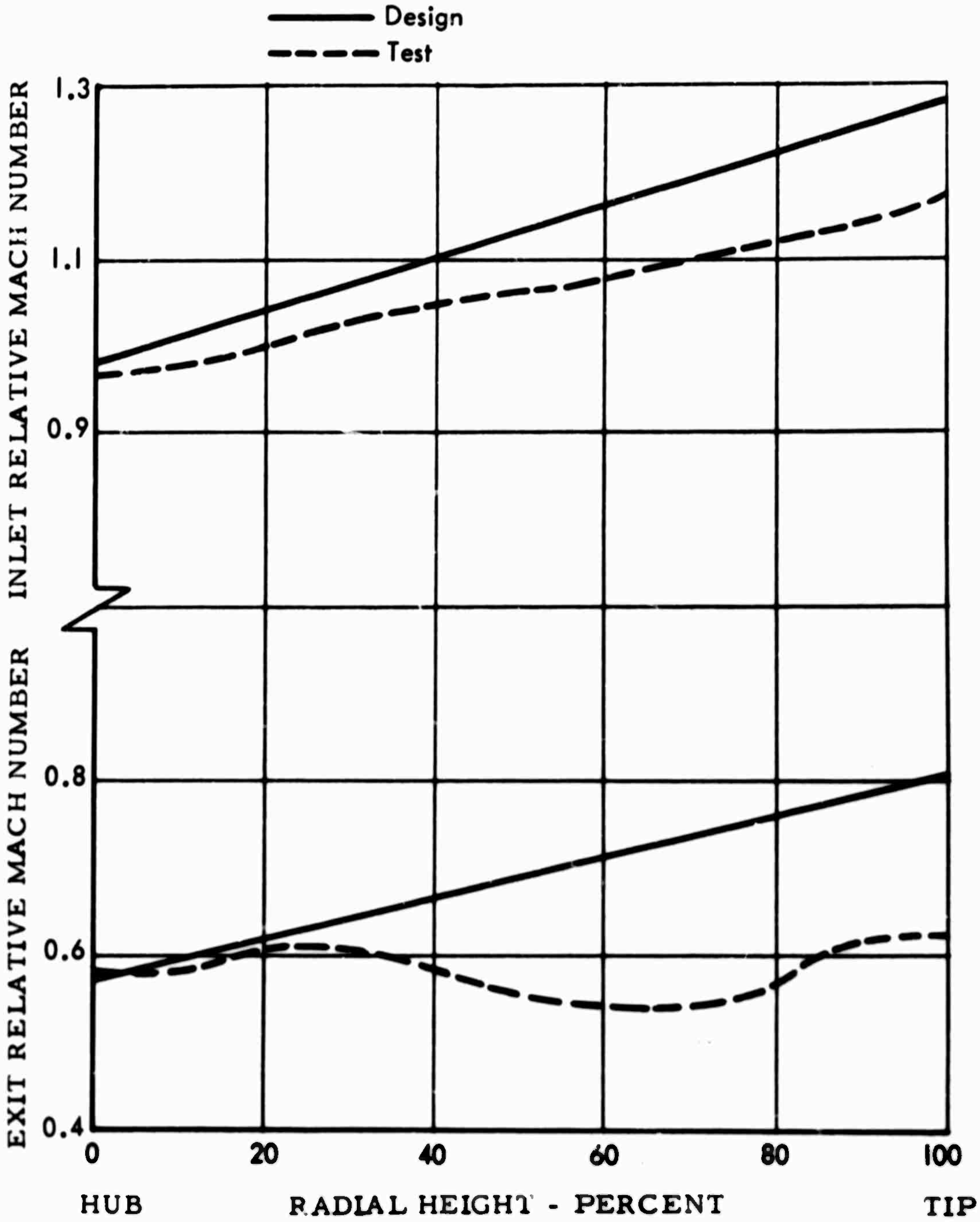


Figure 29. Axial Compressor Rotor Two - Inlet and Exit Mach Number Along Blade Radial Height.

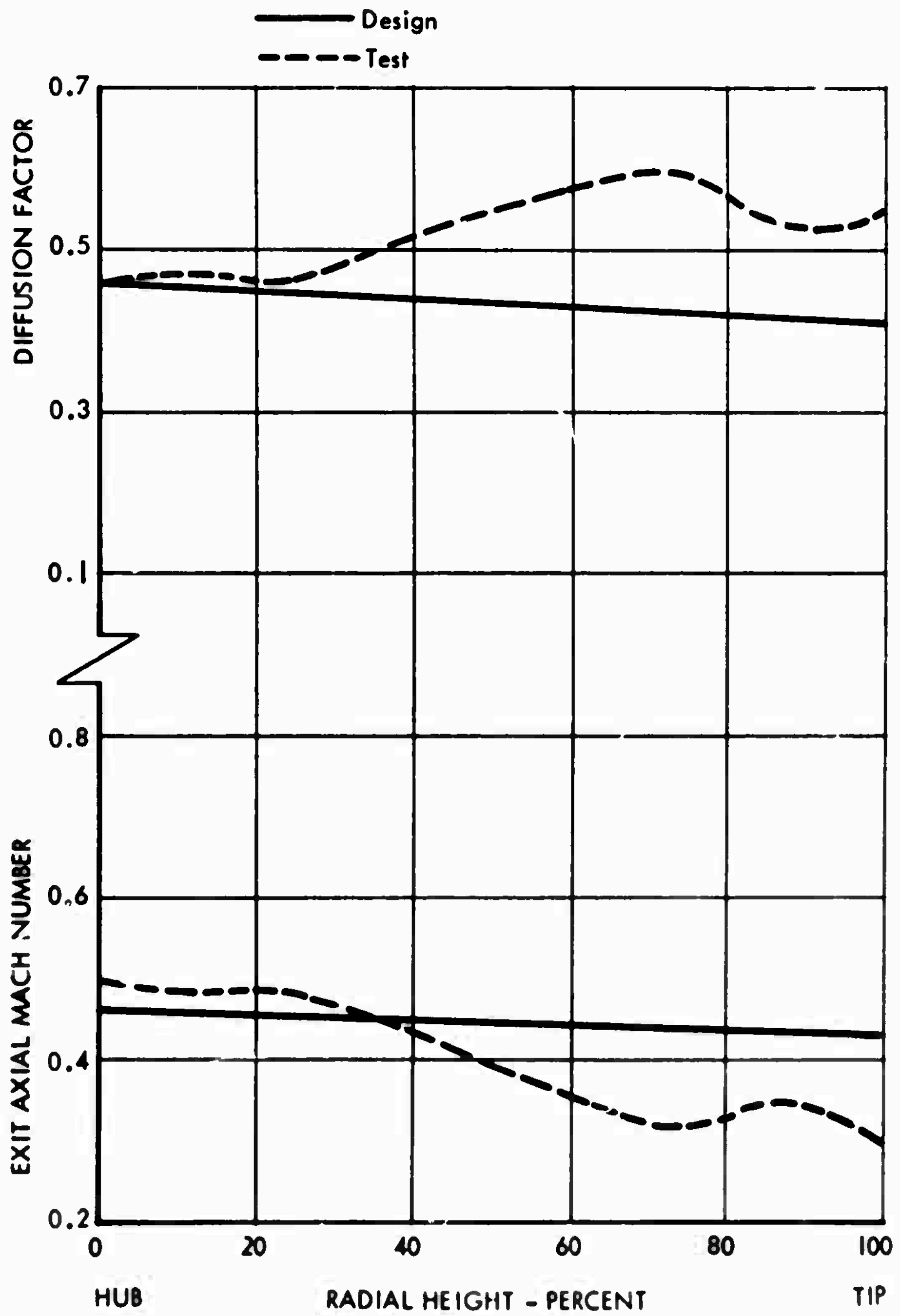


Figure 30. Axial Compressor Rotor Two - Exit Axial Mach Number and Diffusion Factor Along Blade Radial Height.

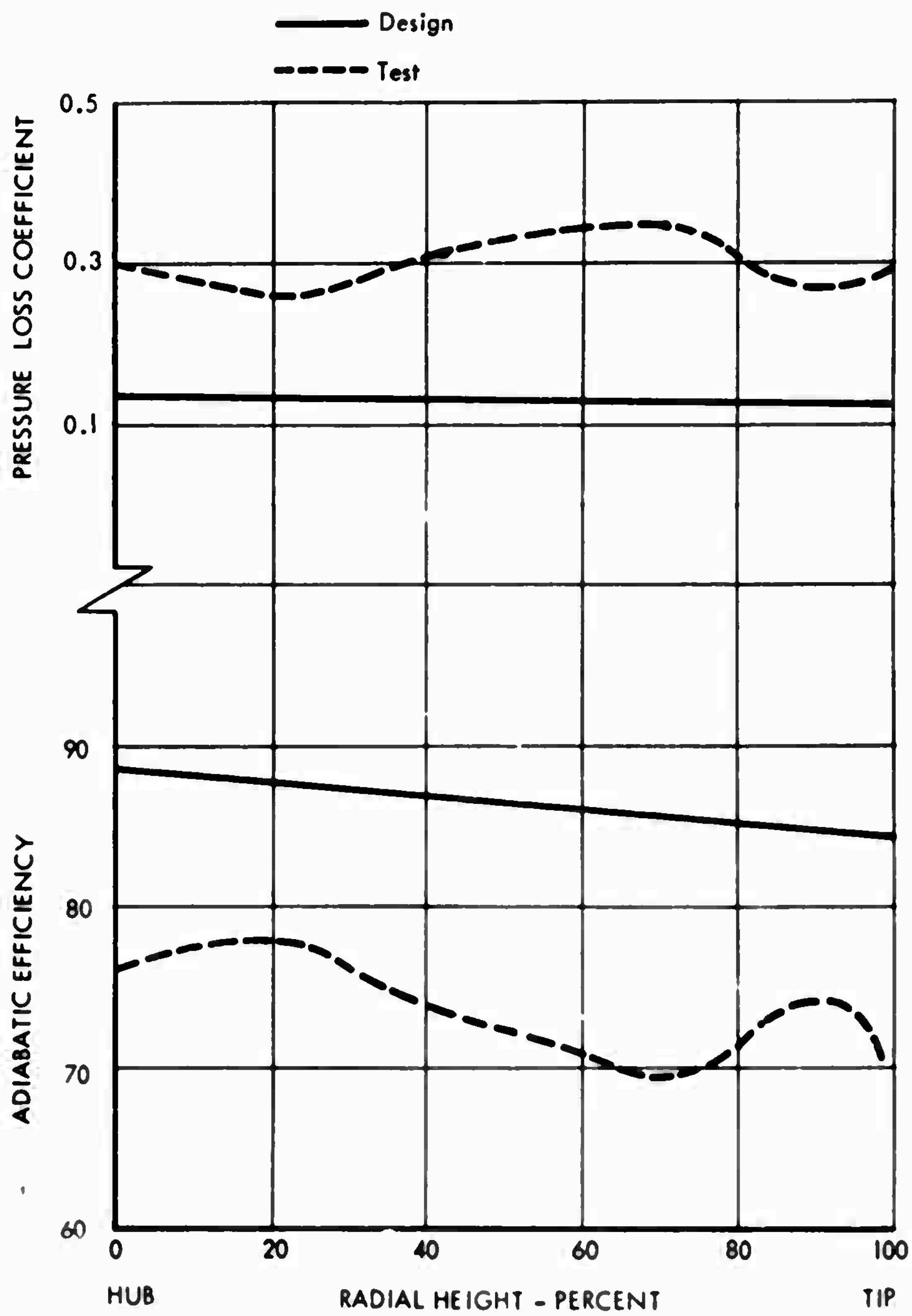


Figure 31. Axial Compressor Rotor Two - Adiabatic Efficiency and Pressure Loss Coefficient Along Blade Radial Height.

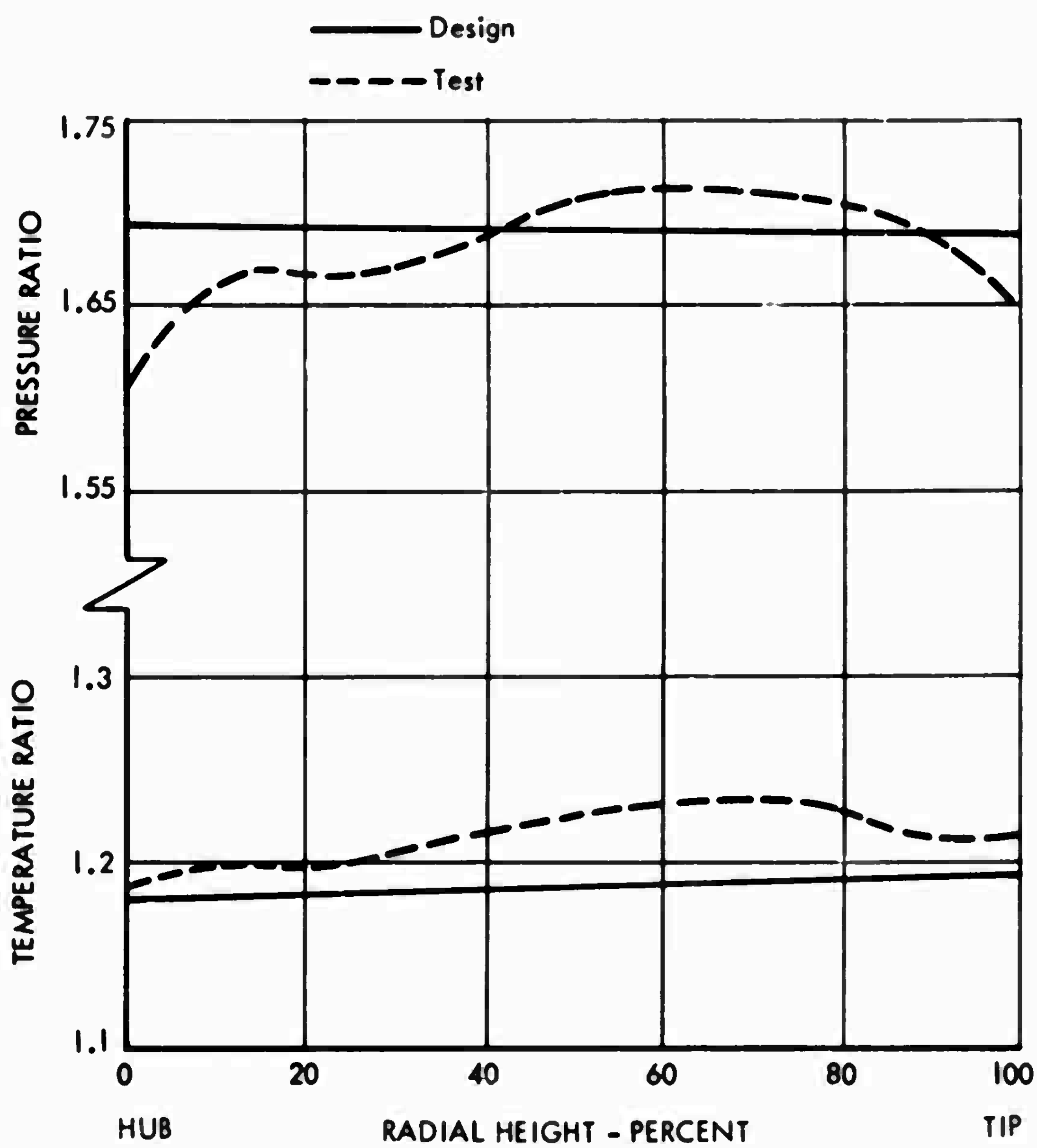


Figure 32. Axial Compressor Rotor Two - Temperature and Pressure Ratio Along Blade Radial Height.

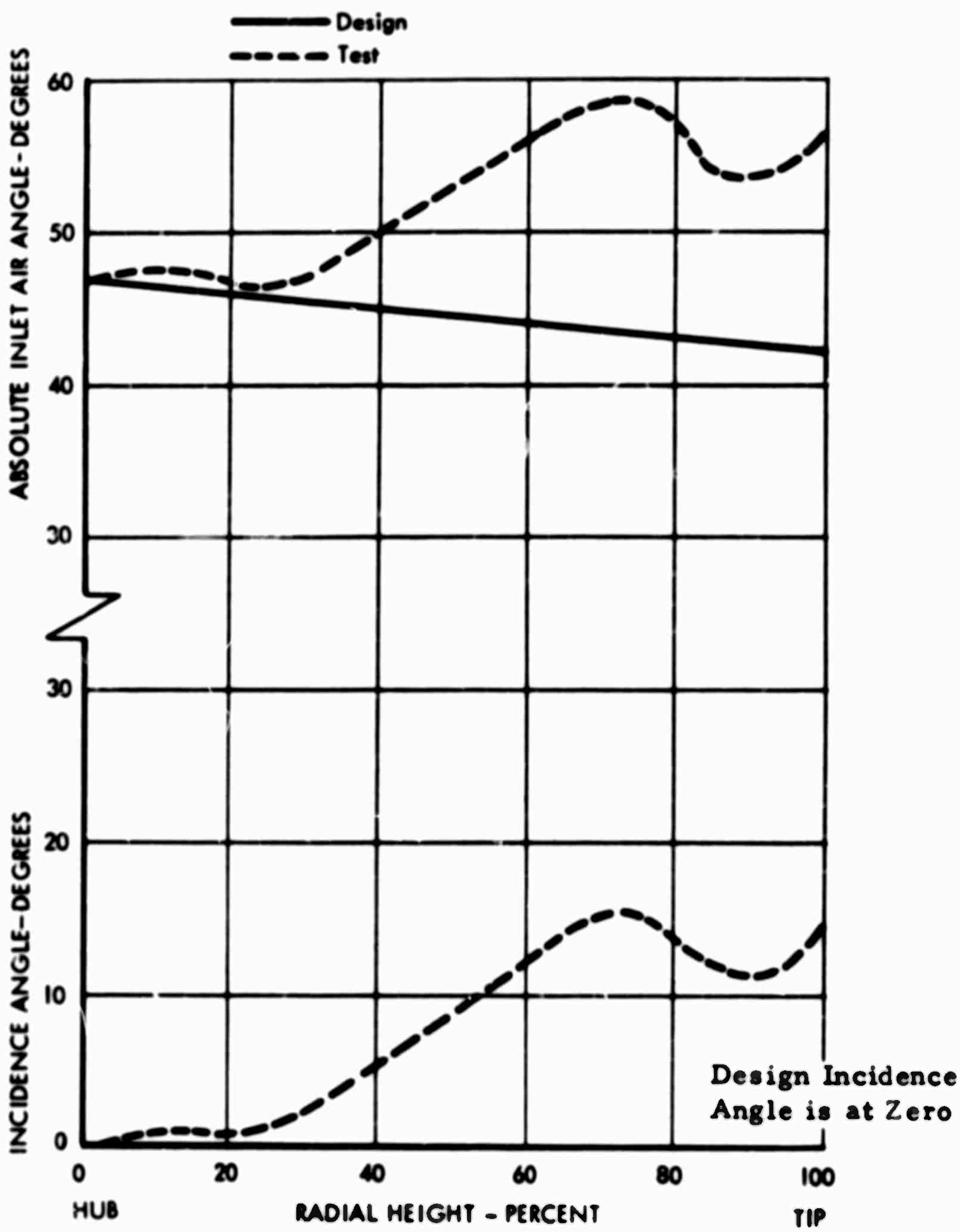


Figure 33. Axial Compressor Stator Two - Incidence and Air Inlet Angle Along Blade Radial Height.

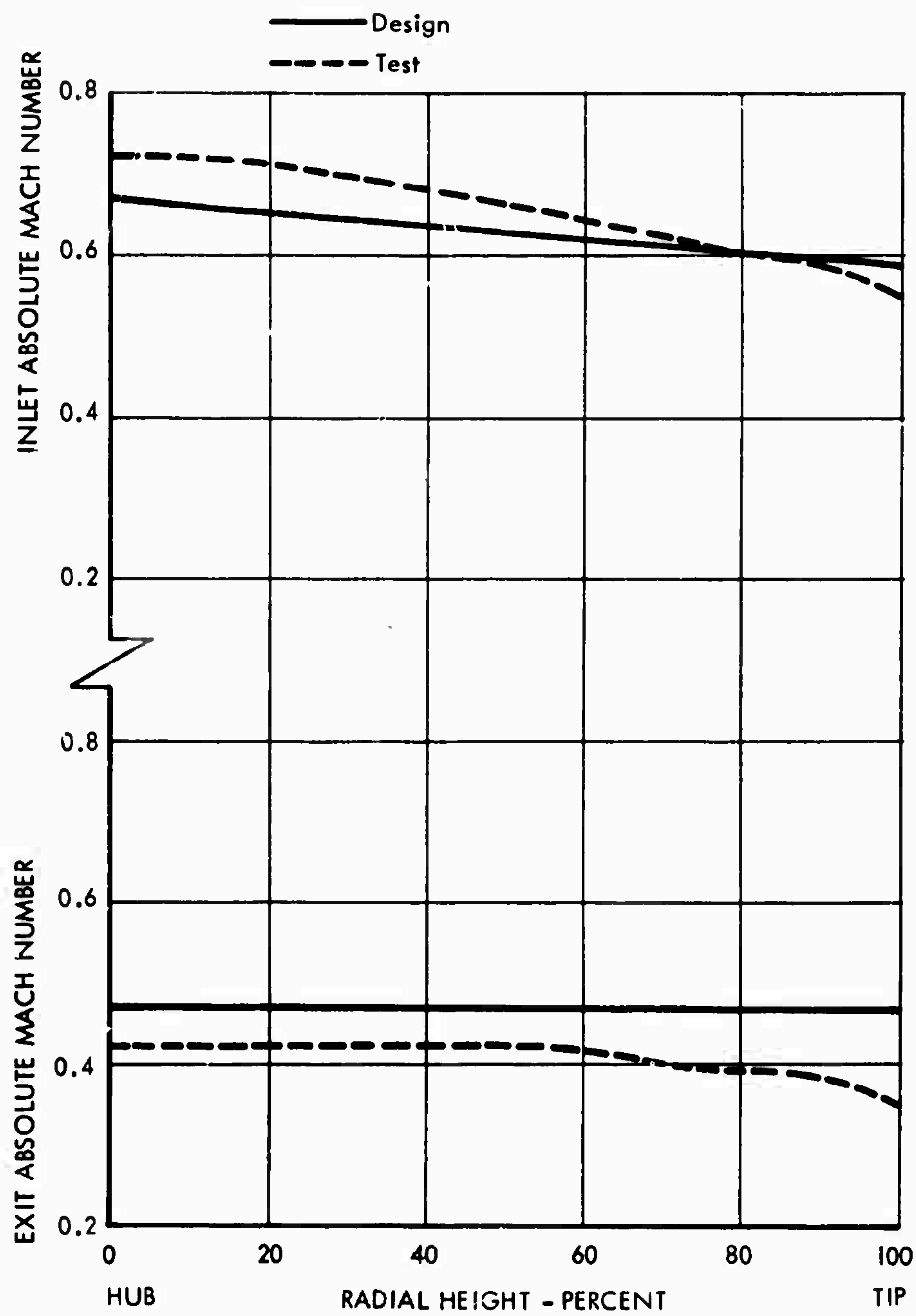


Figure 34. Axial Compressor Stator Two - Exit and Inlet Mach Number Along Blade Radial Height.

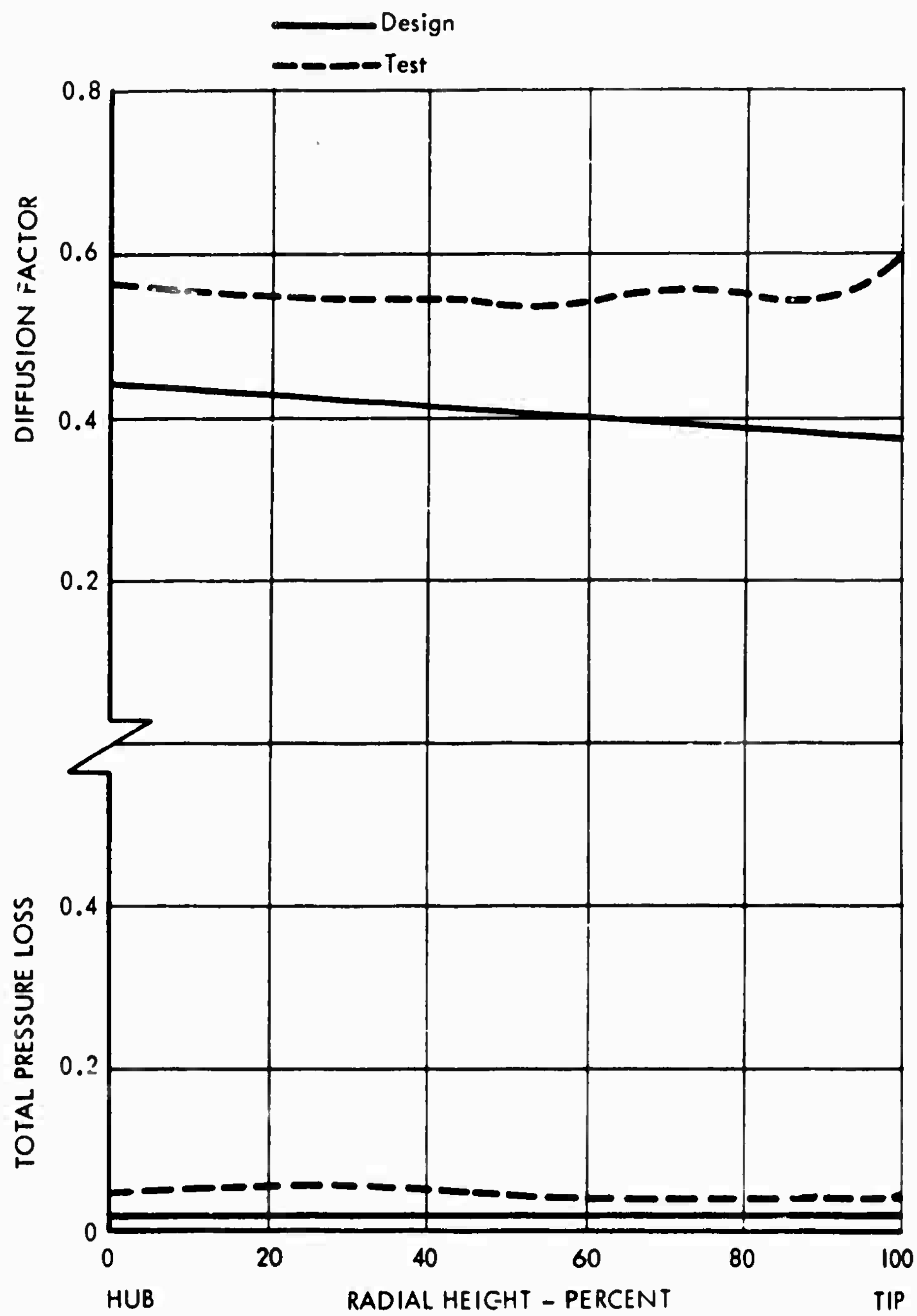


Figure 35. Axial Compressor Stator Two - Pressure Loss and Diffusion Factor Along Blade Radial Height.

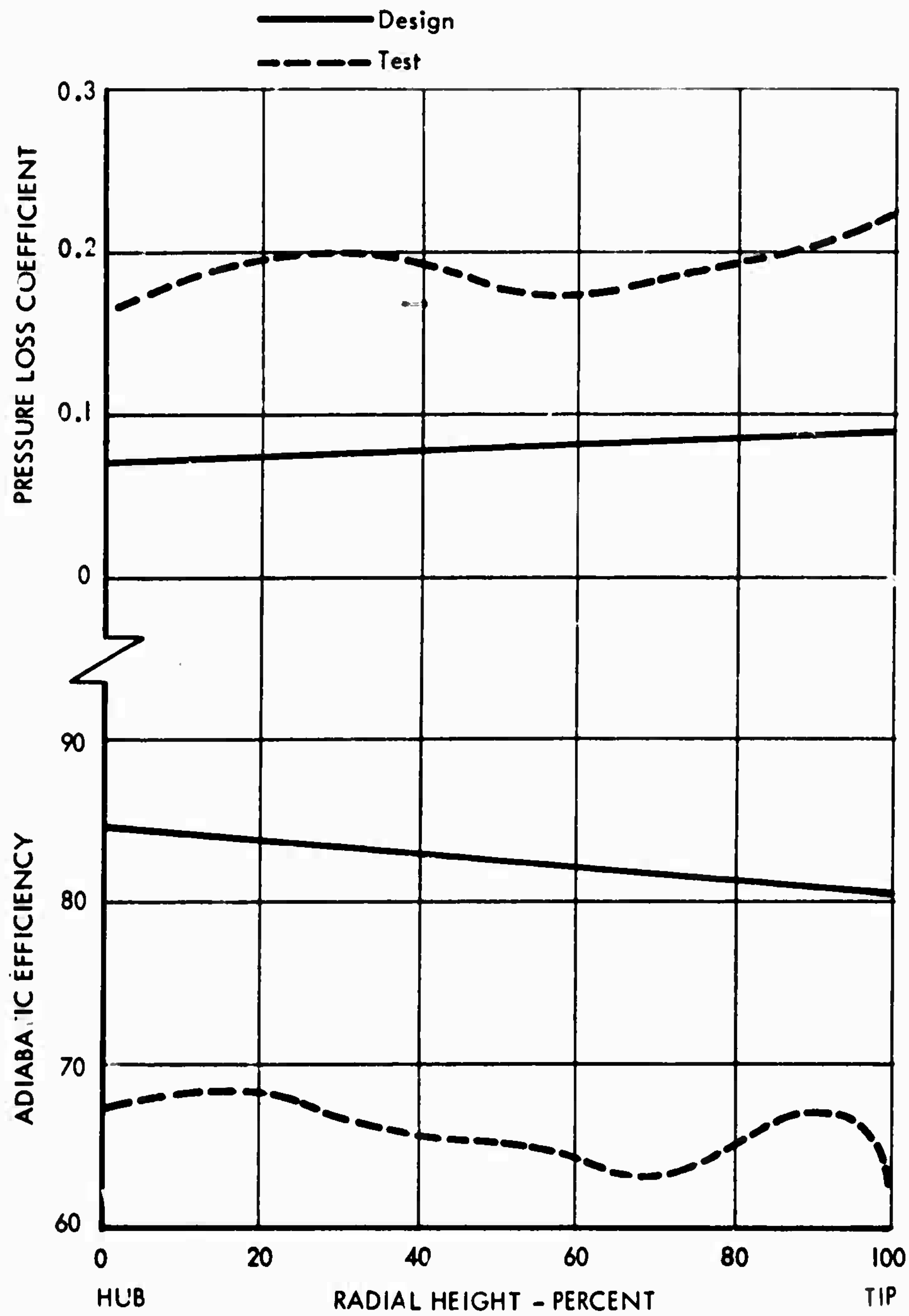


Figure 36. Axial Compressor Stator Two - Adiabatic Efficiency and Pressure Loss Coefficient Along Blade Radial Height.

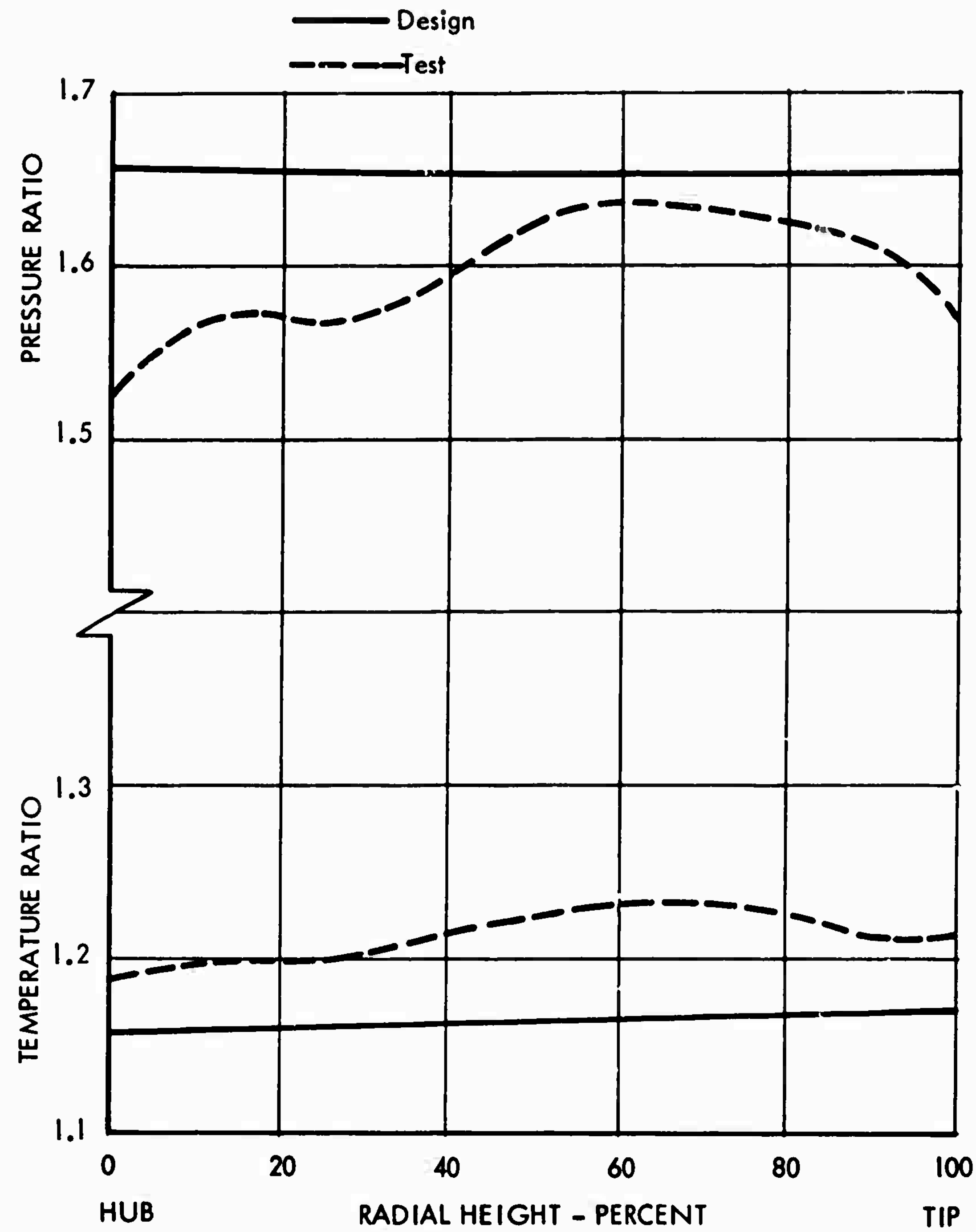


Figure 37. Axial Compressor Stator Two - Temperature and Pressure Ratio Along Blade Radial Height.

A head-flow analysis, using results of the traverse data, showed that both stages are operating at lower than design flow coefficient at near design point pressure ratio (Figure 38). A definition of the head flow parameters is shown below.

Definition of head and flow coefficient:

$$\text{Head Coefficient} = \psi = \frac{GJ\,C_p\,T_{t1}\left[(PR)^{\frac{\delta - 1}{\delta}} - 1\right]}{U^2} \qquad (6)$$

$$\text{Flow Coefficient} = \phi = \frac{C_x}{U} \qquad (7)$$

where:

G	=	Gravity Constant, ft/sec^2
J	=	Mechanical heat equivalent, ft - lb/Btu
C_p	=	Specific heat at constant pressure, Btu/lb ^{o}R
T_{t1}	=	Stage inlet total temperature, ^{o}R
PR	=	Stage total pressure ratio
δ	=	Ratio of specific heats
U	=	Mean radius wheel speed, ft/sec
C_x	=	Mean axial velocity, ft/sec

<u>Mechanical Test Results</u>. In completing the first test series, the advanced two-stage small axial compressor demonstrated excellent mechanical integrity with only minor problems developing.

The primary problem, realized during the early phases of testing, involved the abradable shrouds used in providing minimum tip clearances on the rotors. Initially, both the first- and second-stage shrouds utilized feltmetal as the abradable material. During testing, high-speed air erosion was experienced on the first-stage shroud, as shown in Figure 39.

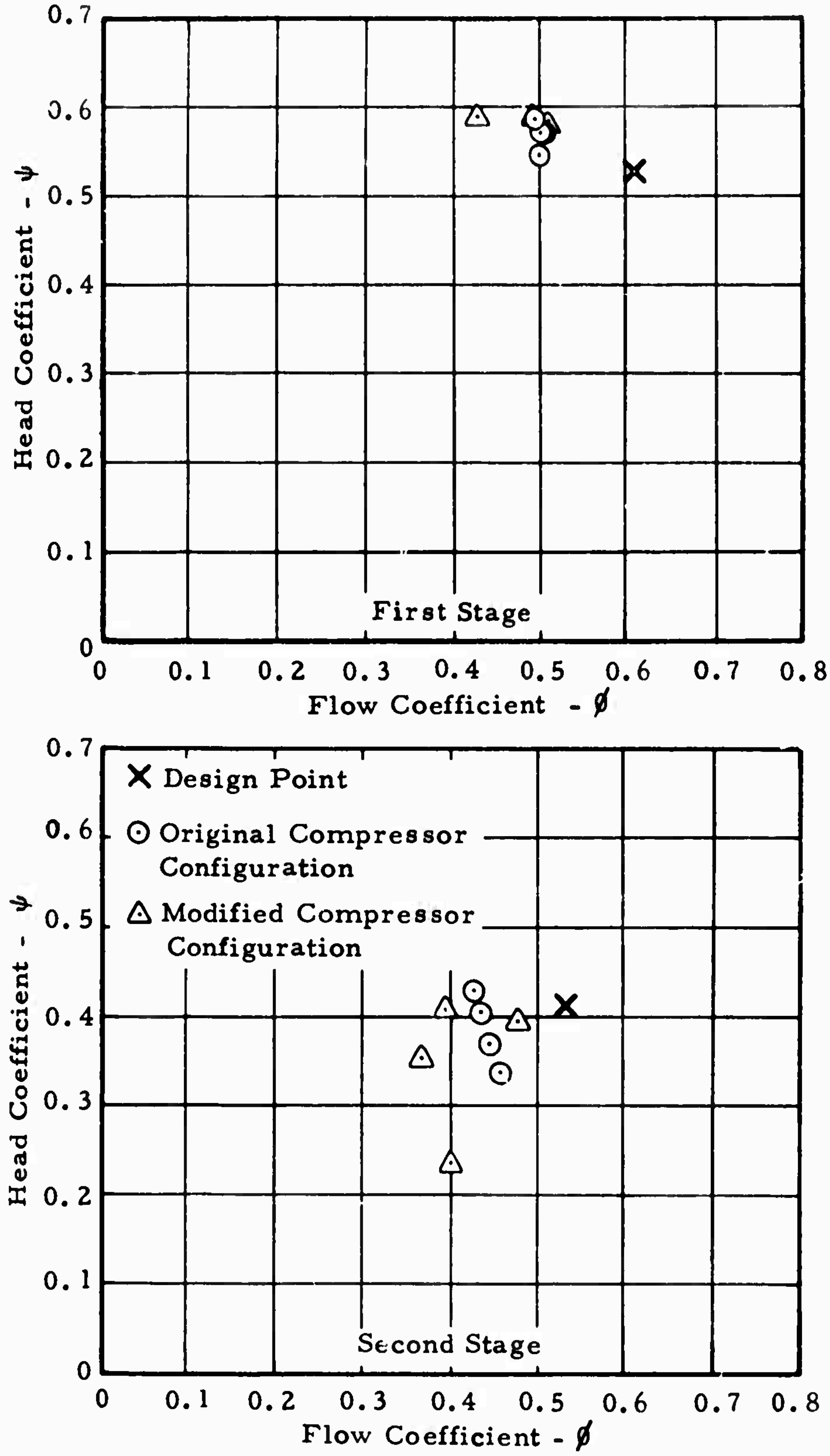


Figure 38. First-and Second-Stage Axial Compressor Head Coefficient Versus Flow Coefficient.

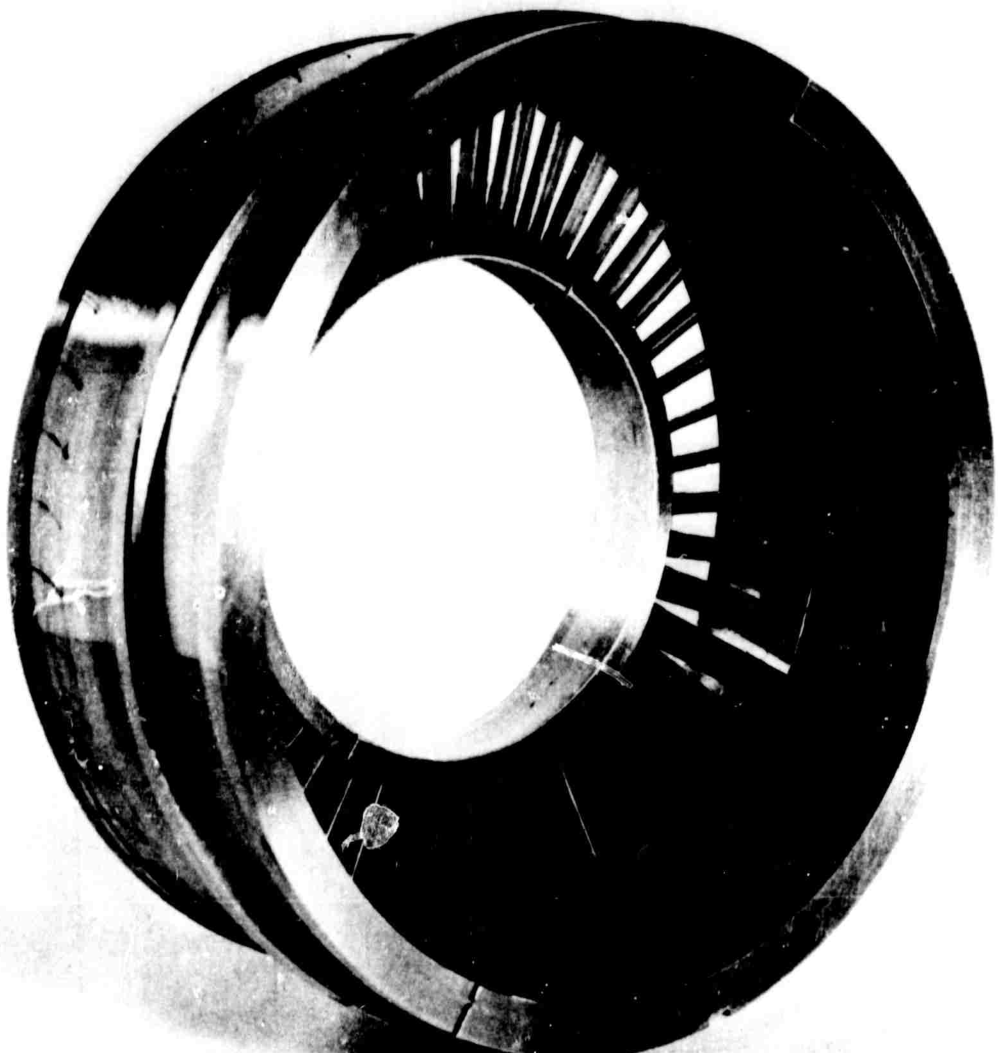


Figure 39. Erosion of Feltmetal Rotor Shroud Material in First Stage of USAAVLABS Two Stage 3:1 Compressor Test Rig.

After considering the problems experienced with the feltmetal, a search of other abradable material candidates was made, resulting in the decision to use flame-sprayed aluminum on the first-stage shroud. This shroud has proven to be very effective in use.

Aerodynamic Data Analysis

Comparison of Static Pressure Data and Traverse Data. The static pressure distribution shows an indication of choke in the vicinity of the inlet to the second-stage rotor. A choked condition exists when changes in downstream pressure do not affect the flow conditions upstream of the choked area; in this case, the flow is unaffected upstream of the second rotor inlet. Since all of the static pressure taps were located between blade rows (that is, there are no static pressure taps directly over the rotor blades or stator vanes) an exact location of the actual choked position was undeterminable from these data.

In general, the traverse data indicate a severe loss at the first-stage rotor tip and a tip-to-hub flow shift as the flow passes through this blade row. The first-stage stator, as a consequence of this flow shift, is stalled at the tip and choked at the hub. Both the second-stage rotor and the second-stage stator appear to be in stall, as indicated by high blade and vane incidence values. This observation, which is contrary to the results of the static pressure data, is discussed in detail below.

The analysis of the aerodynamic data was directed to determining the cause of the low-flow condition and to finding a solution. The anomaly in the data, a choked second-stage rotor based on static pressure measurements on the one hand, and a stalled second-stage rotor based on traverse data measurements on the other hand, was most difficult to decipher.

The conclusion reached from all the data was that the flow in the first rotor was stalled (or separated) at the tip, which caused a flow shift from the tip to the hub. This flow shift caused the first stator to be choked at the hub and stalled at the tip. The second-stage rotor, as a result of operating with a low inlet total pressure caused by the stator hub choke losses and the stator tip incidence losses, is choked and thus limits the overall compressor flow rate.

The apparent anomaly in the traverse data showing the second-stage rotor in stall can be explained by the assumptions used to reduce the data and to obtain the velocity triangles.

The first rotor exit traverses of total pressure and total temperature completely define the static conditions from hub to tip between the first-stage rotor and the first-stage stator with addition of the following assumptions:

1. No swirl is assumed at the rotor inlet.

2. The Euler turbomachinery equation defines the tangential swirl behind the rotor.

3. Design values of flow blockage are used.

4. Continuity was assumed.

5. Radial equilibrium was assumed.

These data and assumptions are considered adequate enough to describe the flow conditions behind the first-stage rotor. However, since traverses were impracticable to obtain behind the first-stage stator, loss assumptions had to be made in order to define the total pressure distribution in this location. In this case, the first-stage stator design losses were assumed. At the time that the data were being reduced, no blade row loss analysis was available at Continental to predict the stator losses and accompanying flow shifts that result from the severe tip stall-hub choke phenomenon. Therefore, the traverse data assumptions used in this particular blade row were probably inadequate. The losses should be much higher than shown, and in turn, the total pressure behind the stator is probably much lower than shown. Thus, if the stator losses were much higher than the values assumed, the second-stage rotor would show indications of choking.

Examination of Various Rotor Modifications. In order to pinpoint the cause of the first rotor tip stall condition, and in turn unchoke the second-stage rotor, an analytical study was conducted. This study consisted of determining why the first-stage rotor was stalled and of examining various modifications to increase the flow and provide aerodynamic data for the redesign phase. These modifications were assessed for performance increase, practicality, length of time required to complete the modification, and cost.

An analysis of the first-stage rotor flow passage between adjacent blades revealed that the variation of area normal to the relative flow does not follow that of a typical rotor. This area, shown in Figure 40, is defined as being normal to the relative flow and bounded by:

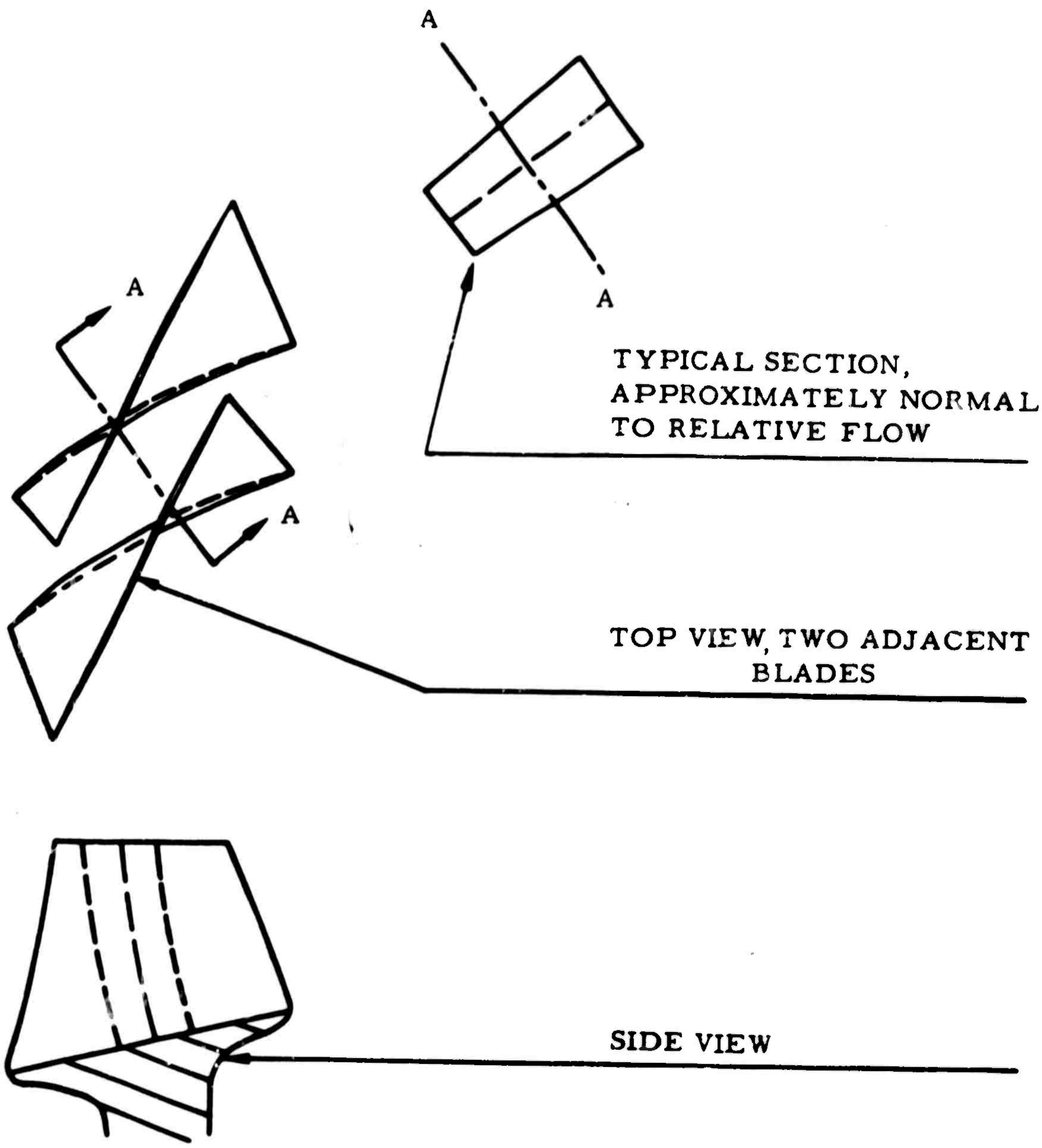


Figure 40. Typical Section, USAAVLABS First-Stage Rotor Passage Area.

- the suction side, surface of a blade
- the pressure side, surface of an adjacent blade
- the hub circumferential distance between blades
- the tip circumferential distance between blades

The area distribution, shown on Figure 41, minimizes at approximately 0.1 inch upstream of the rotor stacking line. Using this minimum area as a basis, one-dimensional flow analyses, assuming both design aerodynamic and test data conditions, were performed. The flow analyses showed that, in both cases, the rotor was choked. In addition, further analyses showed that the inlet area to the flow passage or channel, Figure 41, was large enough to pass design flow. Based on these results, modifications to the first rotor were considered.

The modifications which were evaluated to increase the flow of the first rotor and in turn the overall efficiency are presented in Table I and include:

1. Open tip blade twist (or restagger), 5 degrees
2. Open leading edge twist, 7 degrees
3. Hub relief, 0.110 inch
4. Extended tip, 0.060 inch
5. Variable inlet guide vanes, 21 degrees
6. Redesign, new stage one rotor and new inlet assembly

The flow and efficiency considerations for each of these candidate modifications are discussed below:

1. Blade Twist

The 5-degree open twist should increase the flow to the design value of 5 pounds per second, but at a first-stage efficiency penalty. Usually, when a rotor is twisted open, the throat is increased, but in turn, with an increase in incidence. For example, the first rotor incidence would increase from 6.6 to 7.25 degrees at a design speed.

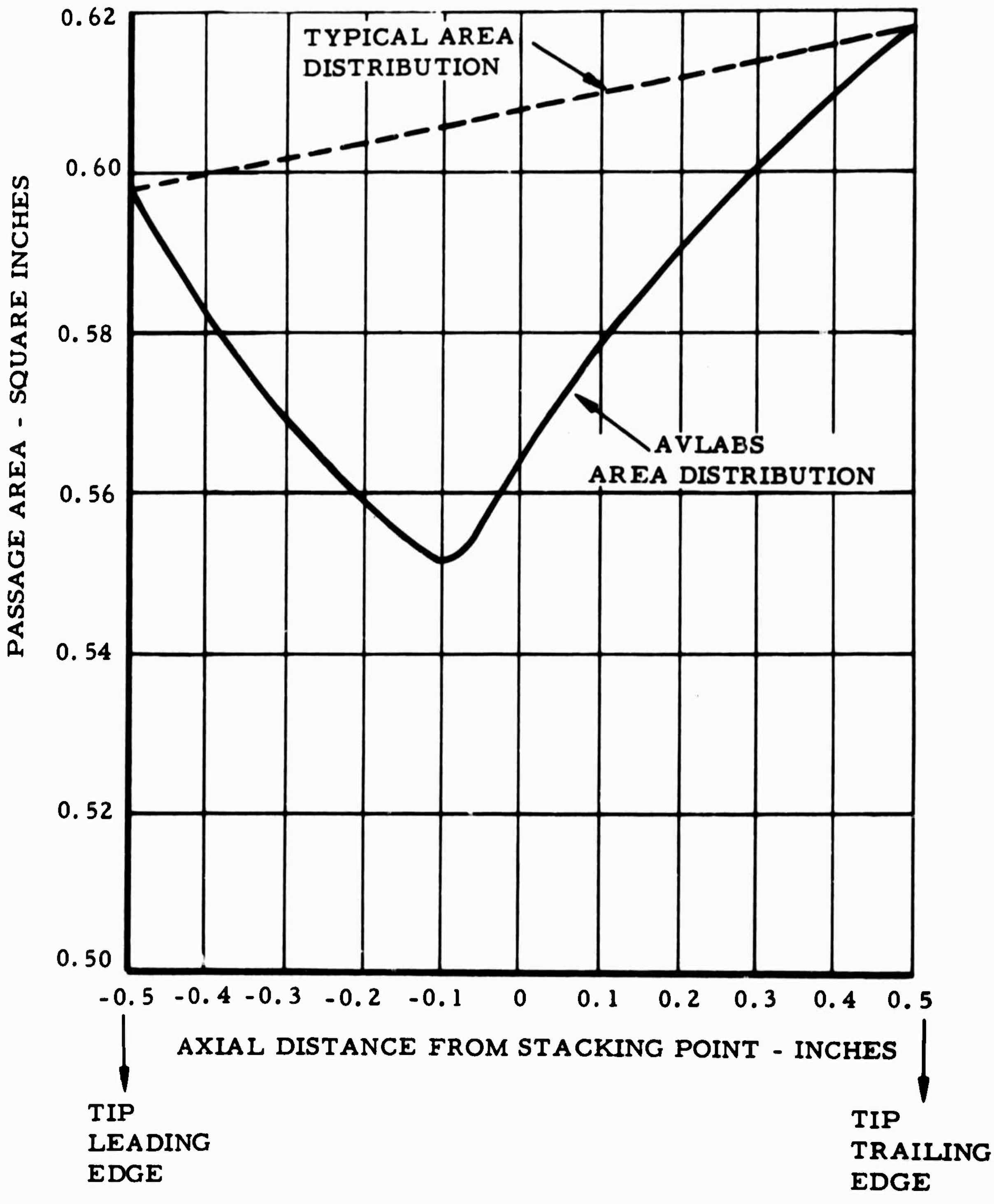


Figure 41. USAAVLABS First-Stage Rotor Passage Area Distribution.

TABLE I

FIRST-STAGE ROTOR MODIFICATION POSSIBILITIES

Modification	Blade Twist	Leading Edge Twist	Hub Relief	Extended Tip	Variable Inlet Guide Vanes	Redesign
Amount of Modification	5°	7°	0.110 in.	0.060 in. nominal	21° Setting angle	New stage one rotor new inlet assembly
Predicted Design Speed Tip Incidence	7.25°	9.25°	3.0°	6.1°	8.0°	3.0°
Predicted Design Speed Flow	5.0 lb/sec	5.0 lb/sec	5.0 lb/sec	5.0 lb/sec	4.5 lb/sec	5.0 lb/sec
Time Required to Complete Modification*	5 days	5 days	10 days	20 days	3 days	6 months

*Does not include time for reassembly.

High incidence values significantly increase the rotor relative shock losses and cause severe flow separation.

2. Leading Edge Twist

The 7-degree leading edge twist should also increase the flow to 5 pounds per second, but the incidence at design speed will be even higher. Since the minimum passage area is near the center (Figure 41), a higher twist angle is required for the leading edge twist than for the blade twist to obtain an equivalent amount of area increase. Thus, the rotor losses will be even higher than those of the blade twist.

3. Hub Relief

The hub relief shown on Figure 42 should increase the flow by the required amount and at the same time reduce the incidence to that of design, 3.0 degrees. This method opens the minimum area without changing the blade shape or stagger. The passage area, after relief, should approximate that of a typical rotor, as shown on Figure 41.

4. Extended Tip

The extended tip requires a tip radius increase of about 0.060 inch in order to pass 5 pounds-per-second flow. However, the incidence at design speed will not significantly change from the test value of 6.6 degrees even though the flow would be increased; because the axial velocity and tip speed remain nearly constant, the relative air angle and, in turn, the incidence would not be substantially changed. The actual change in incidence is about 0.5 degree and is not sufficient to substantially decrease the first-rotor losses.

5. Variable Inlet Guide Vanes

Use of the variable inlet guide vanes would not increase the flow to 5 pounds per second as shown in Table I. Since the airflow is lower than predicted, the relative air angles into the first rotor are much higher than the design angles. Therefore, the inlet velocity triangle is much "flatter" than originally intended, and a very large inlet guide vane turning angle is required to substantially increase the flow. As shown in Table I,

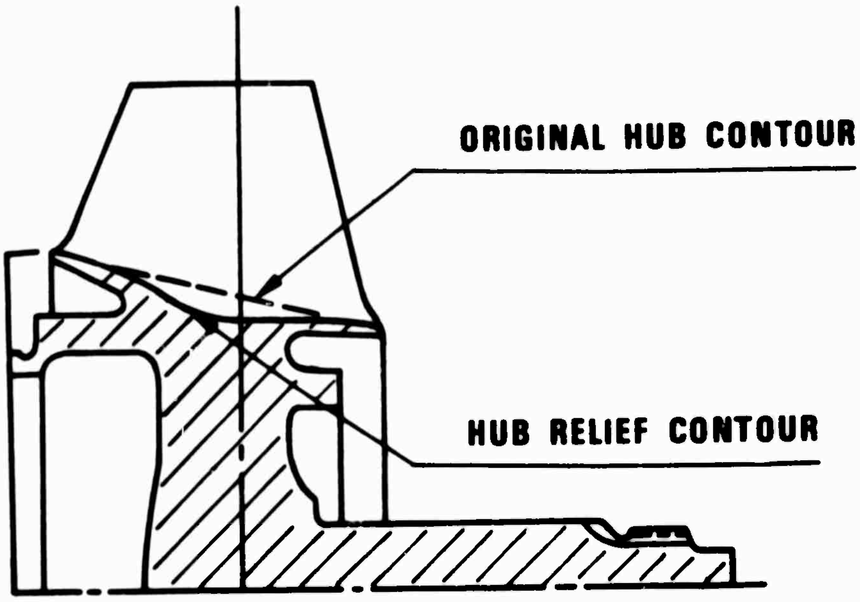


Figure 42. USAAVLABS First-Stage Rotor - Comparison of Hub Contours.

the relatively high value of variable inlet guide vane setting angle (21 degrees) increases the flow to only approximately 4.5 pounds per second.

6. Redesign

A redesign of the first rotor, using the first rig test results and the analytical study as a basis, should increase the flow and efficiency of the compressor to design values. The first stage would be redesigned to a slightly higher hub/tip ratio and different hub contour to ensure a satisfactory blade passage area distribution.

On the basis of the above flow and efficiency considerations for each modification, the hub relief and the redesign were recommended as being the most practical on the basis of time, cost, and risk.

SECOND RIG TEST OF AXIAL COMPRESSOR

Aerodynamic Test Results

The second rig test, with the hub relief first-stage rotor, was conducted and data were obtained at 60, 80, 90, and 100 percent of design speed. No significant change in compressor performance was observed compared to the first rig test. The flow at 100-percent design speed increased from 4.359 pounds per second to 4.428 pounds per second, an increase of about 1.5 percent (see Figure 43). No traverse data were obtained because of the small change in flow. Since the flow did not change, a check on the analysis of rotor flow passage area (candidate modification 3 (see Fabrication) was conducted. This analysis showed that the assumption of using the one-dimensional flow was inadequate. The examination should have used individual stream tube areas as the basis for analysis.

The decision was made to twist the rotor open 5 degrees at the tip (modification number 1 (see Fabrication). This is the only modification that had the possibility of providing a flow increase without a major change in hardware. As mentioned, the 5-degree open twist should increase the flow to the design value, but at a first-stage efficiency penalty. However, the overall compressor efficiency should increase because of the improved second-stage aerodynamic match. In addition, second-stage data should be obtained at near design inlet aerodynamic conditions, which is required to determine if the second-stage is performing satisfactorily and to provide a basis for a first-stage rotor redesign.

Mechanical Test Results

During the second rig test with the hub relief on the first-stage rotor, the compressor mechanical performance was again satisfactory. The only problems experienced were a result of a relatively strong, sustained surge at 103-percent mechanical speed. Running at this speed (equivalent to 100-percent corrected speed with heated inlet) was necessary to avoid the speed range within which blade vibration had been experienced.

The only damage to the compressor resulting from the surge consisted of heavy rubs on the second-stage abradable shroud and on the first-stage labyrinth seal silver rub ring (Figure 44).

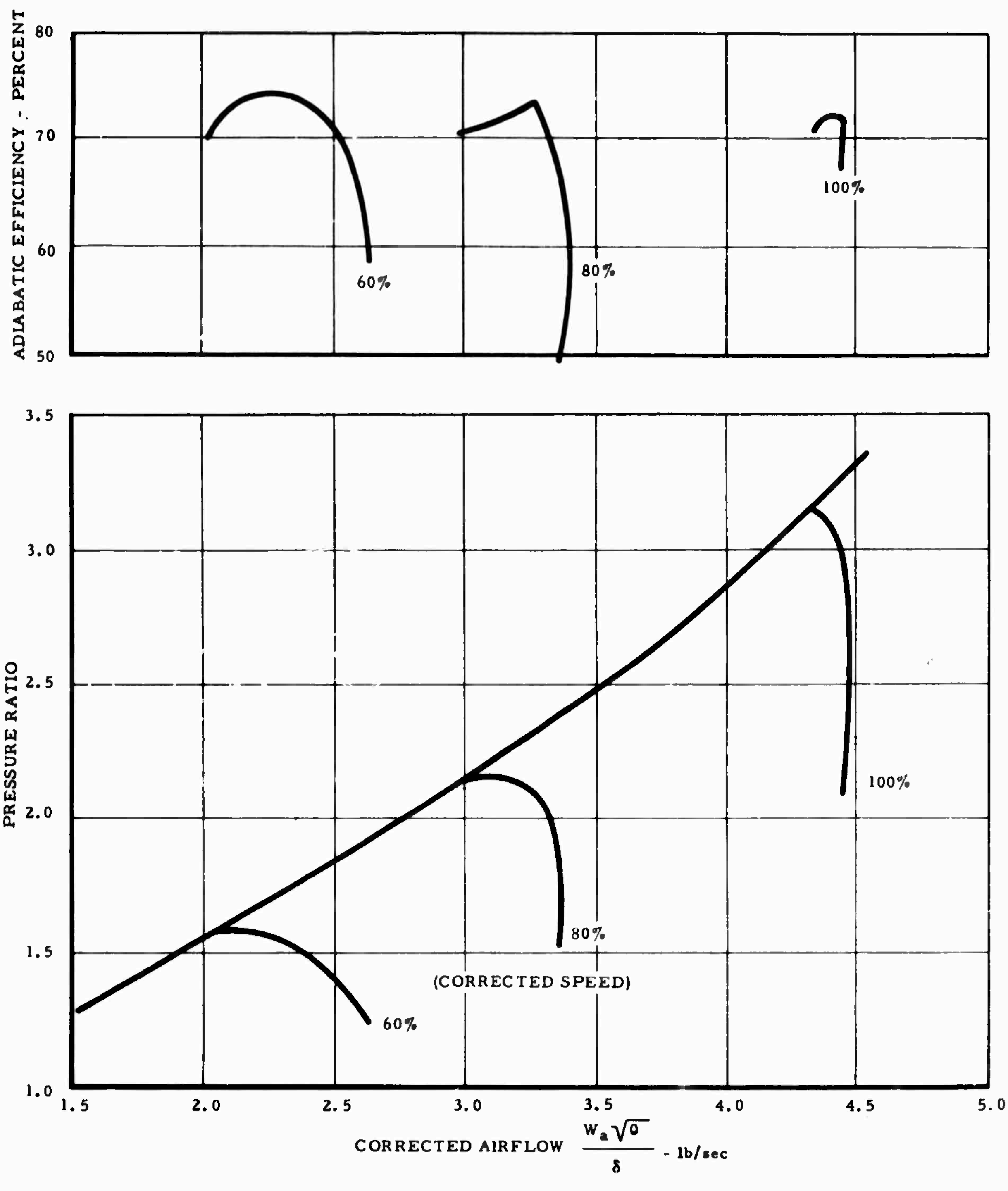


Figure 43. Advanced Two-Stage Axial Compressor Rig Test - Hub Relief.

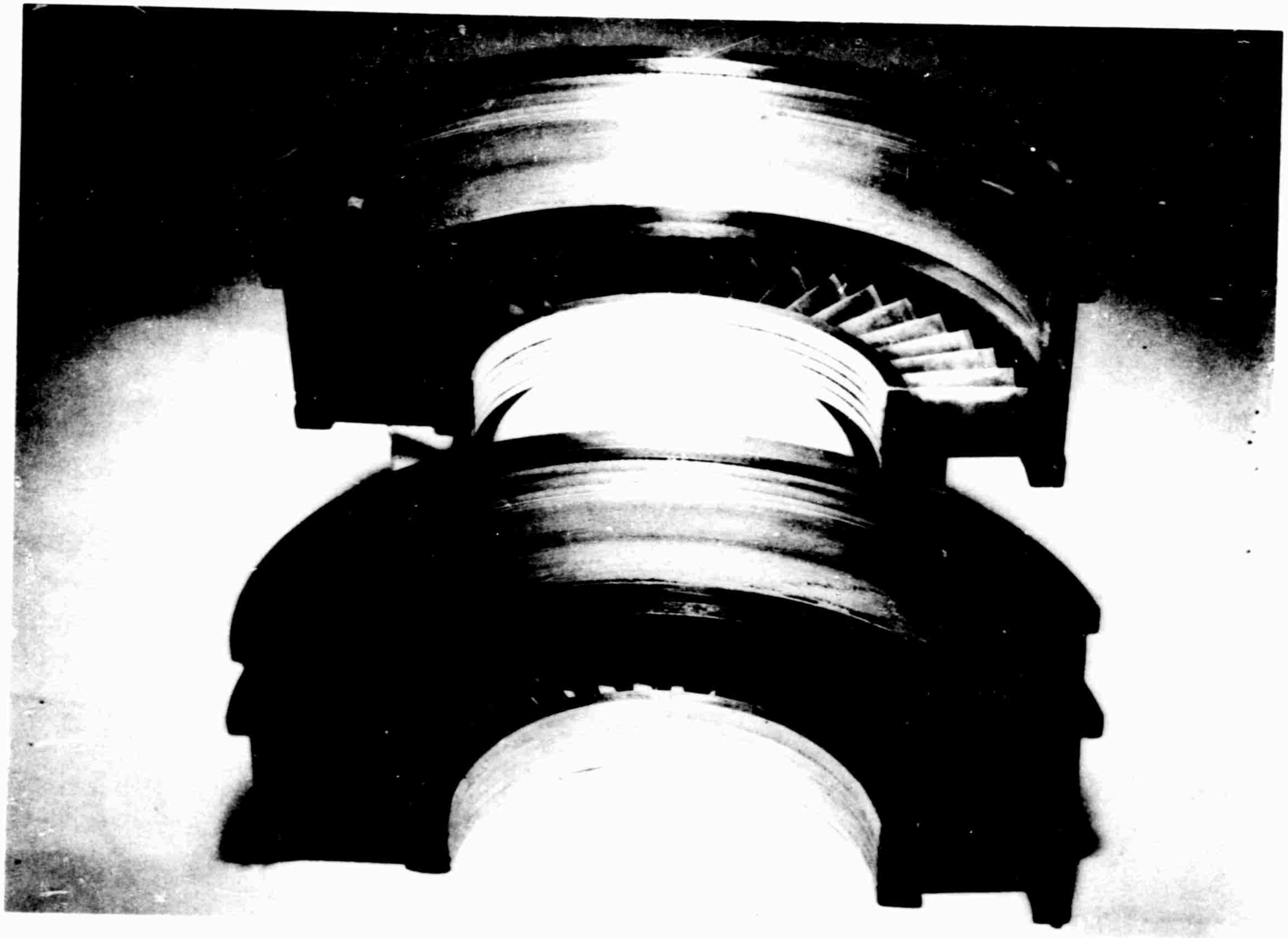


Figure 44. First-Stage Stator Assembly Showing Deep Groove on Labyrinth Seal Rub Ring.

THIRD RIG TEST OF AXIAL COMPRESSOR

Aerodynamic Test Results

The third rig test, with the hub relief and 5-degree twisted-open first-stage rotor, was conducted and data were obtained at 60, 80, 90, and 100 percent of design speed. A reduction in flow from the previous test was noticed as shown in Figure 45. The flow at 100 percent of design speed was reduced from 4.428 to 4.36 pounds per second. Traverse data were obtained at the following pressure ratios at design speed: 2.56:1, 2.97:1, and 3.13:1, shown in Appendix III. An additional traverse data point was obtained at 80-percent design speed, also shown in Appendix III. The data, in general, showed no significant change except for a further reduction in efficiency from that of the first test. Therefore, these data were used only in overall content as the basis for the redesign.

Mechanical Test Results

During the third test, no mechanical problems were encountered.

COMPRESSOR REDESIGN

Aerodynamic Redesign

Data Analysis of First Three Rig Tests. Based on the data of the first three rig tests, it was theorized and concluded that the second-stage rotor was choked and was therefore limiting the compressor flow. The problem in interpreting this theory and applying it as a basis for a redesign was twofold. It had to be determined whether the choked rotor by itself was limiting the flow for the entire compressor, or whether some phenomenon upstream of the second stage was causing the second stage to be choked and, in turn, limiting the compressor flow.

It was concluded that the low-flow phenomenon noticed on the first three rig tests was caused by a stalled or separated first-stage rotor tip. The flow in the first-stage rotor is forced to shift down towards the hub, causing a choked hub area as a result of the stalled tip area (see Figure 46). This condition in turn chokes the first-stage stator hub and stalls the first-stage stator tip. The accompanying high losses due to these flow shifts cause the second-stage rotor to be operating in choke.

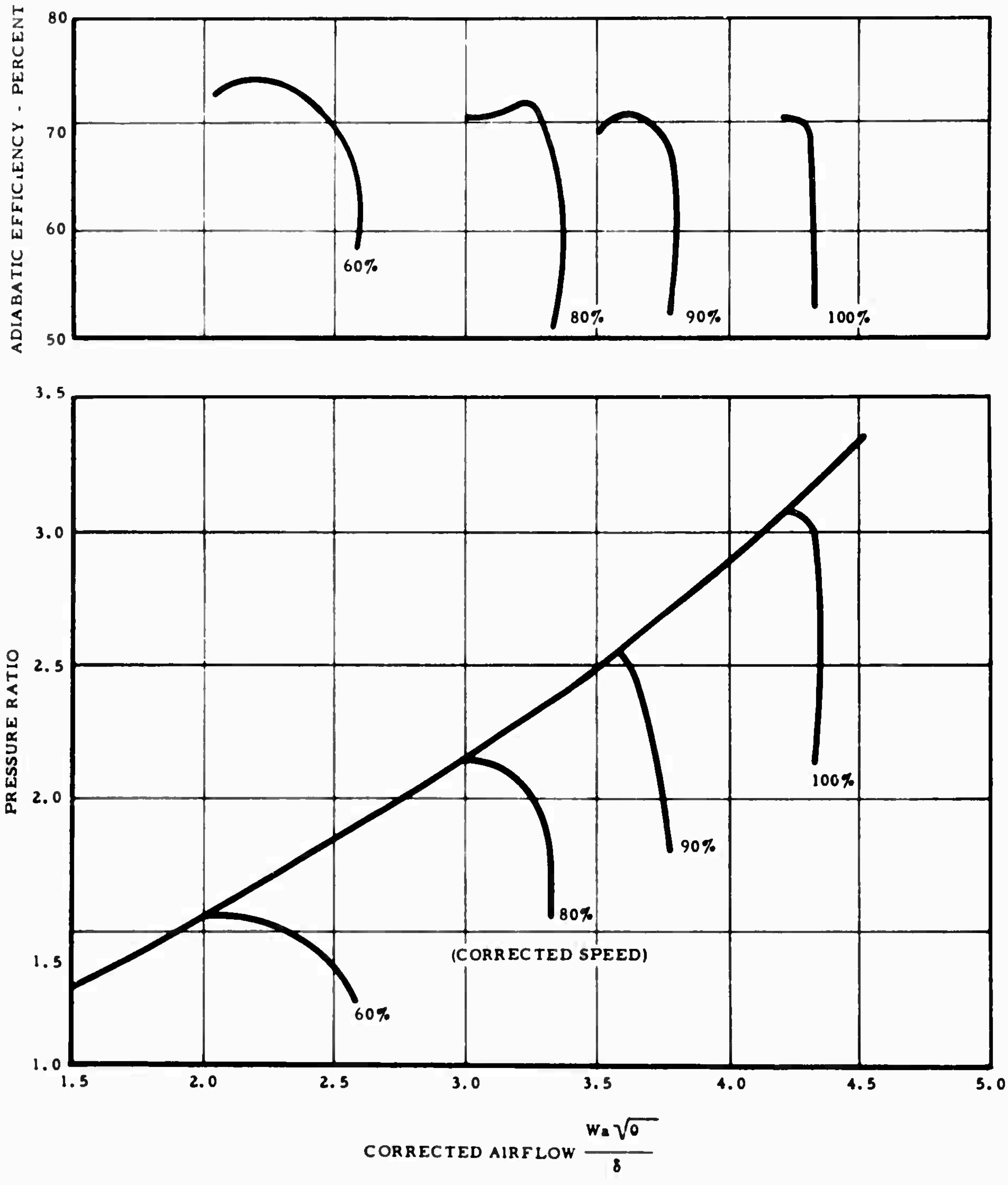


Figure 45. Advanced Two Stage Axial Compressor Rig Test - Blade Twist.

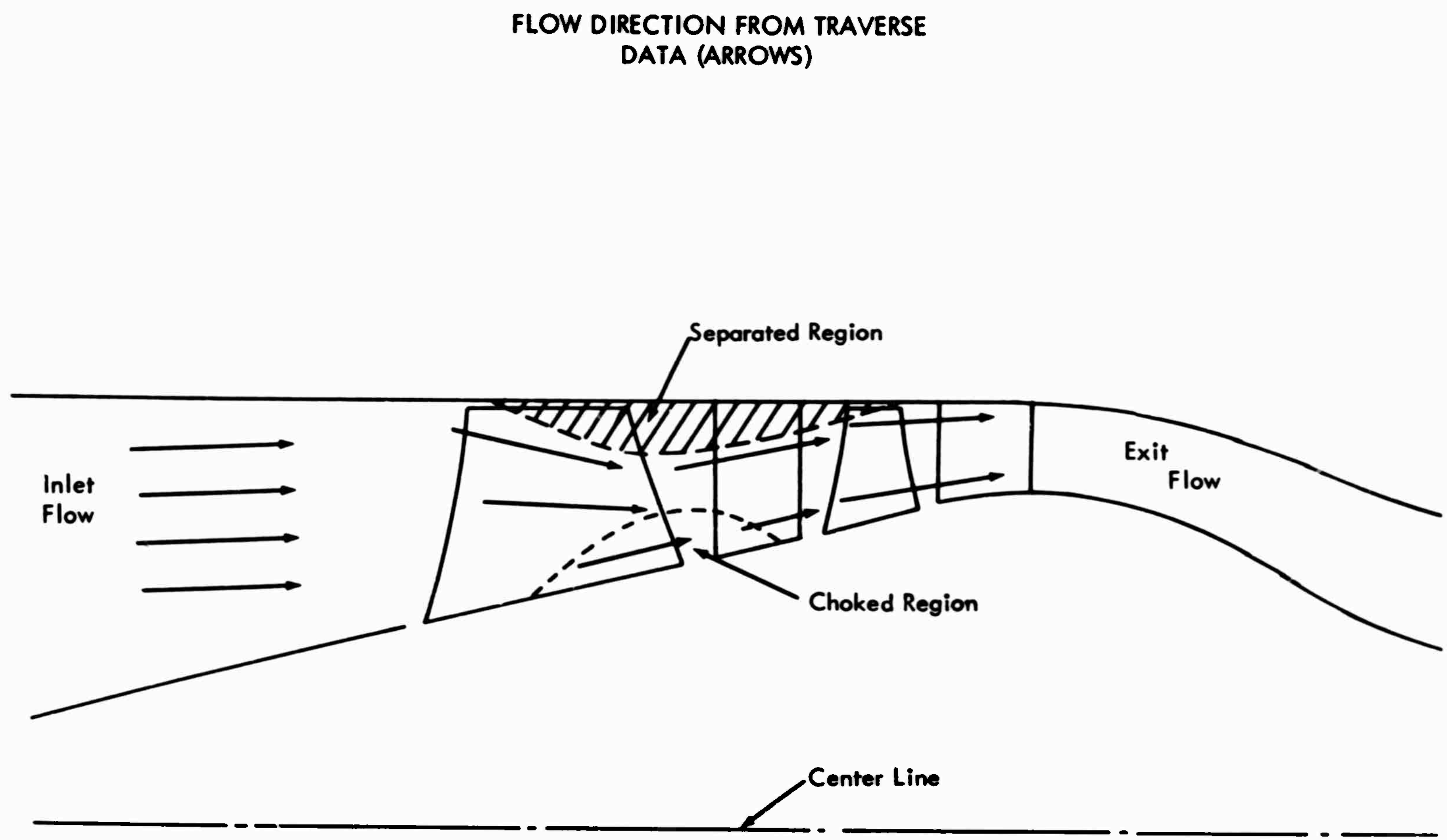


Figure 46. Two- Stage Axial Compressor - Original Design.

Preliminary Aerodynamic Redesign. Before the aerodynamic details of the redesign were approached, the cause of the first-stage rotor stalled tip had to be resolved. Therefore, a detailed analysis of a family of high-pressure-ratio axial compressor rotors (seven Continental rotors and the NASA rotor 2E*) was conducted to accomplish this task and to provide direction for the redesign. All of the compressors included in the family have demonstrated near design pressure ratio and flow test performance with the exception of the USAAVLABS rotors, which did not demonstrate design flow.

The analysis included investigations and comparisons of actual design data, free vortex design data, and test data. The design conditions for the eight rotors were mainly compared on a free vortex basis to establish equivalent design diffusion and blade loading criteria. Since the data used in the analysis are proprietary, only the overall results are presented.

Many test correlations of tip loss coefficient, tip efficiency, tip relative Mach number, aspect ratio, and so forth were tried and related to the free vortex design criteria. The only successful correlation was a relationship between test data tip performance and tip solidity. A definite trend was established that showed a significant increase in tip performance with decreasing solidity. Since, in general, a high solidity positions the adjacent blade shock intersection towards the leading edge as shown in Figure 47, severe shock boundary layer interactions may occur and in turn cause high losses with a high tip Mach number - high tip solidity axial rotor design, such as the original USAAVLABS design.

A comparison of the range of design parameters for the family of axial compressor rotors with the USAAVLABS design parameters in Table II showed that the USAAVLABS rotor is within the range of aerodynamic parameters investigated with the exception of flow rate, aspect ratio, and solidity. Since there was an axial rotor very near the flow rate and aspect ratio of the USAAVLABS rotor (the Continental small 2.0:1 pressure ratio axial compressor, 7.14-pounds-per-second flow rate and 0.67 aspect ratio), only the tip solidity stands out as a possible cause of the stalled tip condition, thus supporting the correlation developed with tip solidity and tip aerodynamic performance.

Detailed Aerodynamic Redesign. The detailed aerodynamic redesign of the compressor is presented in the classified Addendum to this report, published under separate cover.

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*Reference NASA Report CR-54583

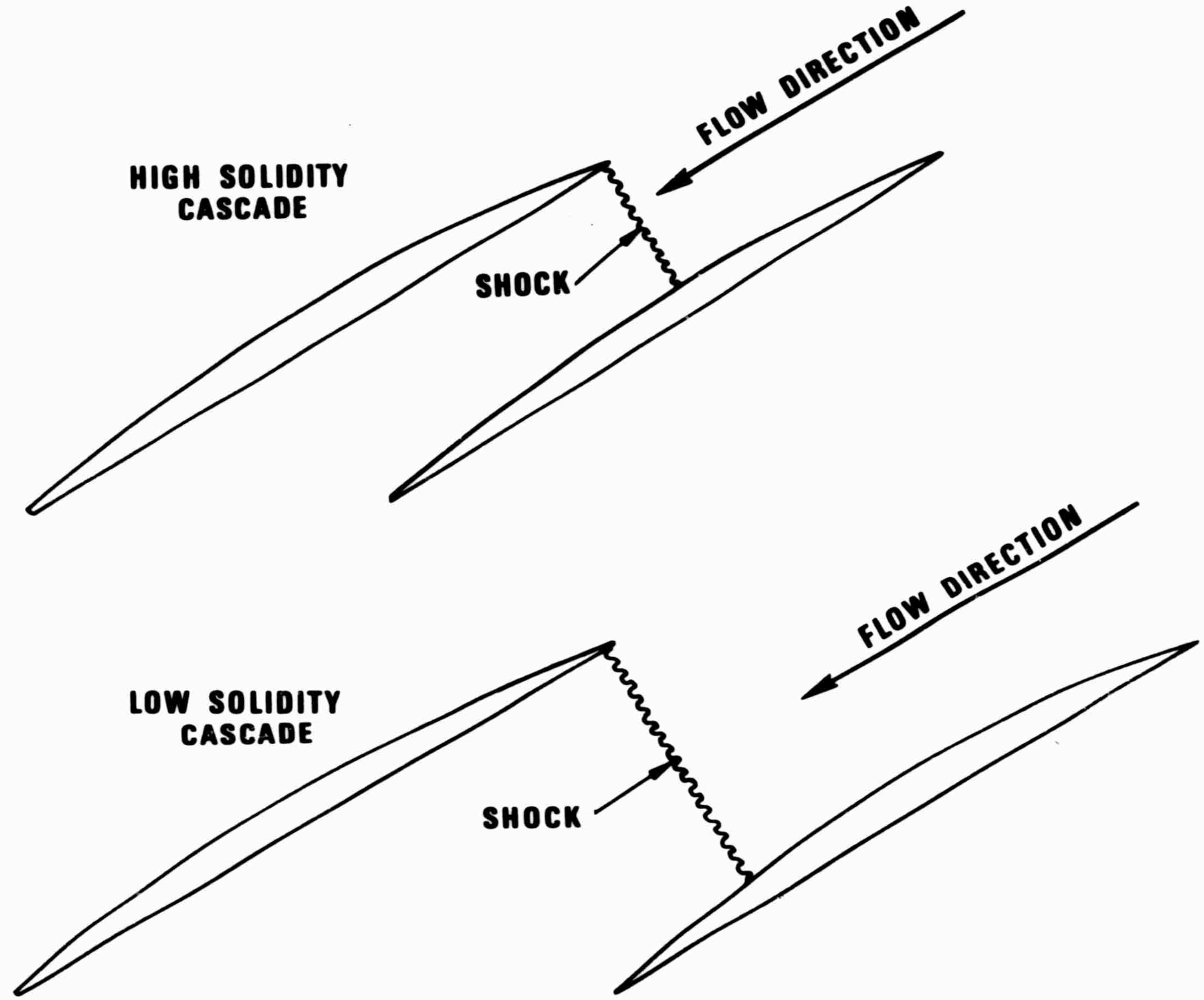

Figure 47. The Effect of Solidity on Shock Location for Supersonic Cascades.

TABLE II

ANALYSIS OF HIGH-PRESSURE-RATIO AXIAL ROTORS

Design Parameter	Range of Design Parameters Covered in Analysis: Low	High	First Rotor Design Parameter
Flow Rate, lb/sec	5.0	215.5	5.0
Pressure Ratio	1.70:1	2.05:1	1.86.1
Efficiency, percent	84	90	87
Inlet Hub/Tip Ratio	0.45	0.68	0.50
Tip Aspect Ratio	0.58	1.57	0.58
Tip Solidity	1.00	1.80	1.80
Tip Relative Inlet Air Angle*, degrees	63.9	68.3	65.5
Tip Air Turning Angle*, degrees	0.9	17.3	8.0
Tip Pressure Ratio Head Coefficient*	0.219	0.394	0.30
Tip Relative Velocity Ratio*	0.61	0.76	0.70
Tip Axial Velocity Ratio	0.77	1.04	0.91
Inlet Tip Speed, ft/sec	1324.0	1480.0	1411.0
Tip Relative Inlet Mach Number*	1.37	1.52	1.43
Tip Diffusion Factor*	0.37	0.53	0.39
Static Pressure Rise/ Inlet Velocity Head*	0.279	0.375	0.34

*Based on free vortex criteria.

MECHANICAL AND STRUCTURAL COMPRESSOR REDESIGN

The prime objective in the Phase III mechanical design was to provide a structurally sound vehicle for testing the redesign aerodynamics. The nature of the aerodynamic changes incorporated in the redesign made it feasible to use much of the Phase II hardware without modifications.

Mechanical Redesign

Figure 48 shows a comparison of the redesigned and original configurations of the compressor. The majority of the rig hardware is unchanged from the first design, consequently the assembly sequence, stack-ups, lubrication systems, and instrumentation also remain unchanged.

Table III lists the components which were redesigned to satisfy the new aerodynamic physical parameters. As seen from this table, four of the nine major components were manufactured through modification of original hardware. Since these components were some of the more complex ones in the compressor rig, substantial savings in cost and lead time were obtained. All of the other components, except those listed in Table III, were used without modification for the Phase III rig test.

Structural Redesign

The main area of structural investigation was in the rotating assembly. This included the rotor disc and blade stresses, vibratory characteristics, and shaft dynamics.

First-Stage Rotor and Blades. The integrally bladed first-stage rotor was machined from a Greek Ascoloy (AMS 5616) forging. The certified material exhibited the following physical properties at room temperature:

Ultimate tensile strength	142 ksi
Yield strength at 0.2 percent	114 ksi
Endurance limit stress - smooth bar	63 ksi
Endurance limit stress - notched bar $K_t = 3.6$	22 ksi

Continental computer programs, based on the Manson Elastic Method, were utilized for the disc analysis.

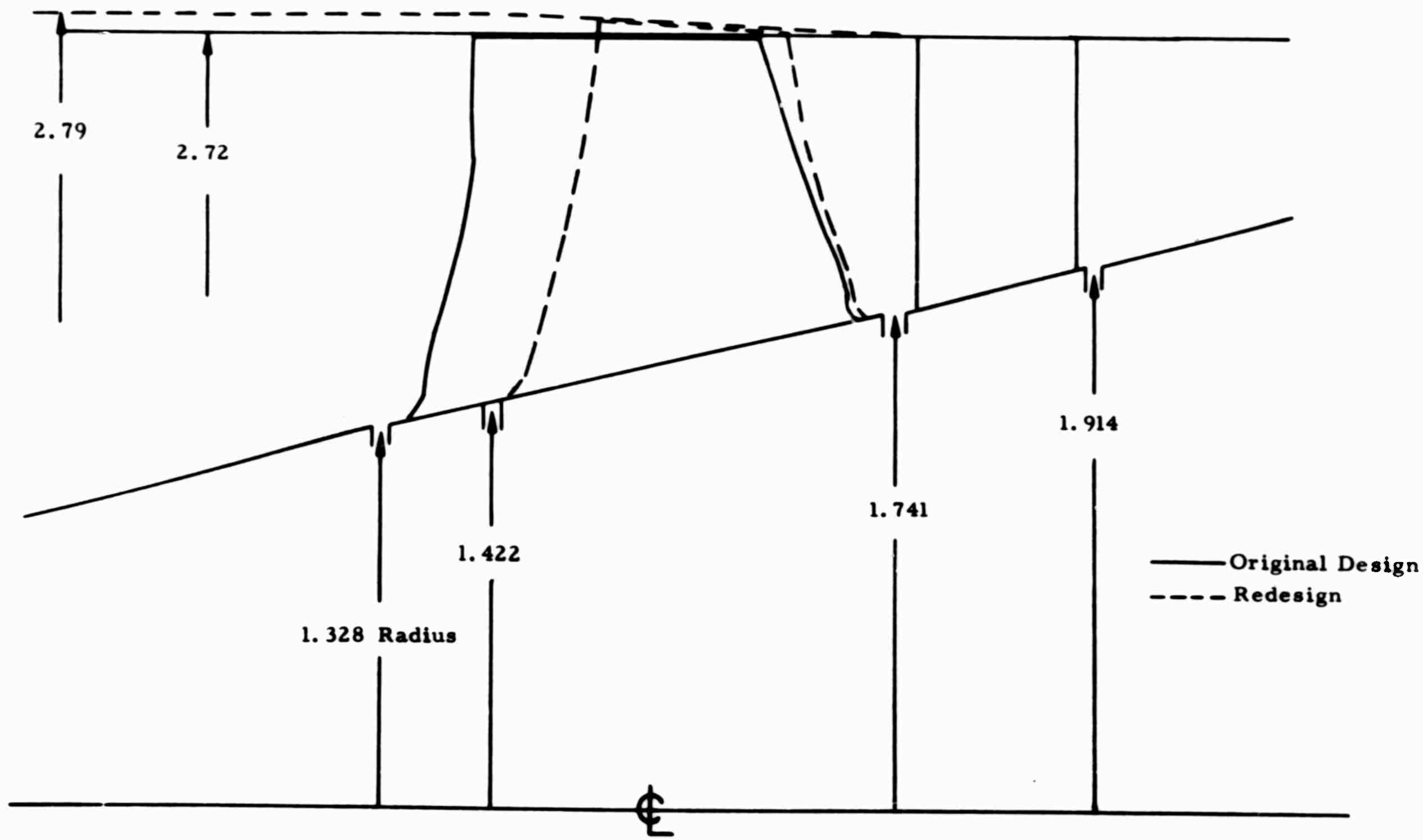

Figure 48. Comparison of USAAVLABS First-Stage Flow Paths.

TABLE III

SUMMARY OF PHASE III COMPONENT REDESIGN*

Part No.	Part Name	New/Modified	Description of Major Change or Modification
715663	Air Inlet Housing	Modified	Increased diameter of outer flowpath.
715667	VIGV Housing	Modified	Increased diameter of outer flowpath and revised method of retaining inlet guide vanes.
715666	Inlet Guide Vane Support	New	Configuration changed because of new method of retaining inlet guide vanes.
715665	Inlet Guide Vane Sleeve	New	Configuration changed because of new method of retaining inlet guide vanes.
715675	First-Stage Stator	Modified	Closed leading edge of stator vane 8.5 degrees, and modified integral first-stage rotor shroud to accommodate new first-stage rotor.
715664	Front Bearing Oil Seal Retainer	New	Lengthened to compensate for shorter axial length of first-stage rotor.
715658	First Stage Rotor	New	Totally new aerodynamic design.
715676	Second Stage Rotor	New	Only change is number of blades but being integrally bladed; new one has to be made.
715844	Inlet Duct	Modified	Increased diameter to accommodate new flowpath.

*Does not include miscellaneous hardware.

Rotor radial and tangential stresses are shown in Figure 49 as a function of distance from rotor centerline. The maximum radial and tangential bore stress of 38,500 psi at the design speed of 59,600 rpm is well within the allowable material limits. Average tangential stress of 35,300 psi provided an ample burst margin of 1.87 for the first-stage rotor.

The structural analysis of the first-stage blading was performed using Continental computer methods for the gas load conditions specified in Figure 50 and a design speed of 59,600 rpm.

Figures 51, 52, and 53 show blade centrifugal stresses, centrifugal untwist, and gas bending stresses, respectively. All stresses are within the AMS 5616 physical material property limits. The relatively high compressive untwist stress combined with centrifugal and gas bending stresses results in a net moderate compressive stress at the blade leading and trailing edges. A maximum combined steady stress of 76,000 psi tension occurs at the blade midchord root location. This point is shown on the modified Goodman diagram, Figure 54. As indicated on the diagram, the vibratory margin for the blades is high.

The torsional and bending natural frequencies of the first-stage blade are given in Figure 55. The interference diagram indicates that at design speed, no resonance will occur in any of the modes.

Second-Stage Rotor and Blades. The second-stage rotor, like the first, is integrally bladed and machined from the same AMS 5616 forging. The only change made in this rotor was the number of blades. The disc, being identical to the Phase II disc but carrying a lower rim load, exhibits conservative stress levels.

Figure 56 shows the disc tangential and radial stresses as derived from the Continental computor programs. The maximum radial and tangential stress, at the bore, is 48,500 psi at 59,600 rpm. An average tangential stress of 43,500 psi results in a conservative burst margin of 1.69 for the rotor.

The second-stage blading is physically identical to the Phase II blades. However, the decrease in number of airfoils results in an increase in gas loading per blade (Figure 57) and consequent changes in stress levels.

Design speed analysis of the blades resulted in centrifugal untwist and in gas bending stresses as shown in Figures 58, 59, and 60 respectively. None of the stresses exceed the safe operating limits.

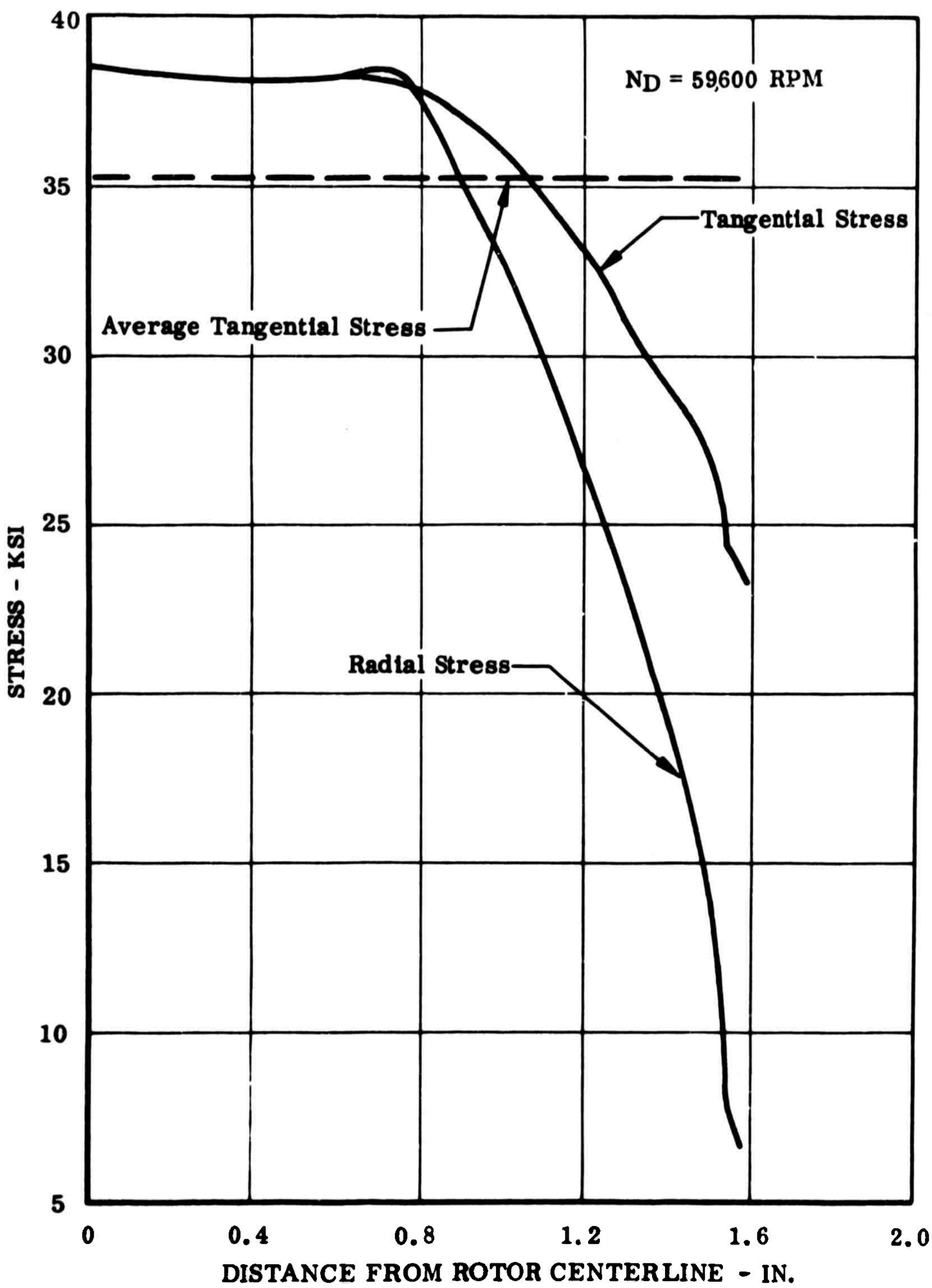

Figure 49. Phase III Compressor - First-Stage Rotor Disc Radial and Centrifugal Stress.

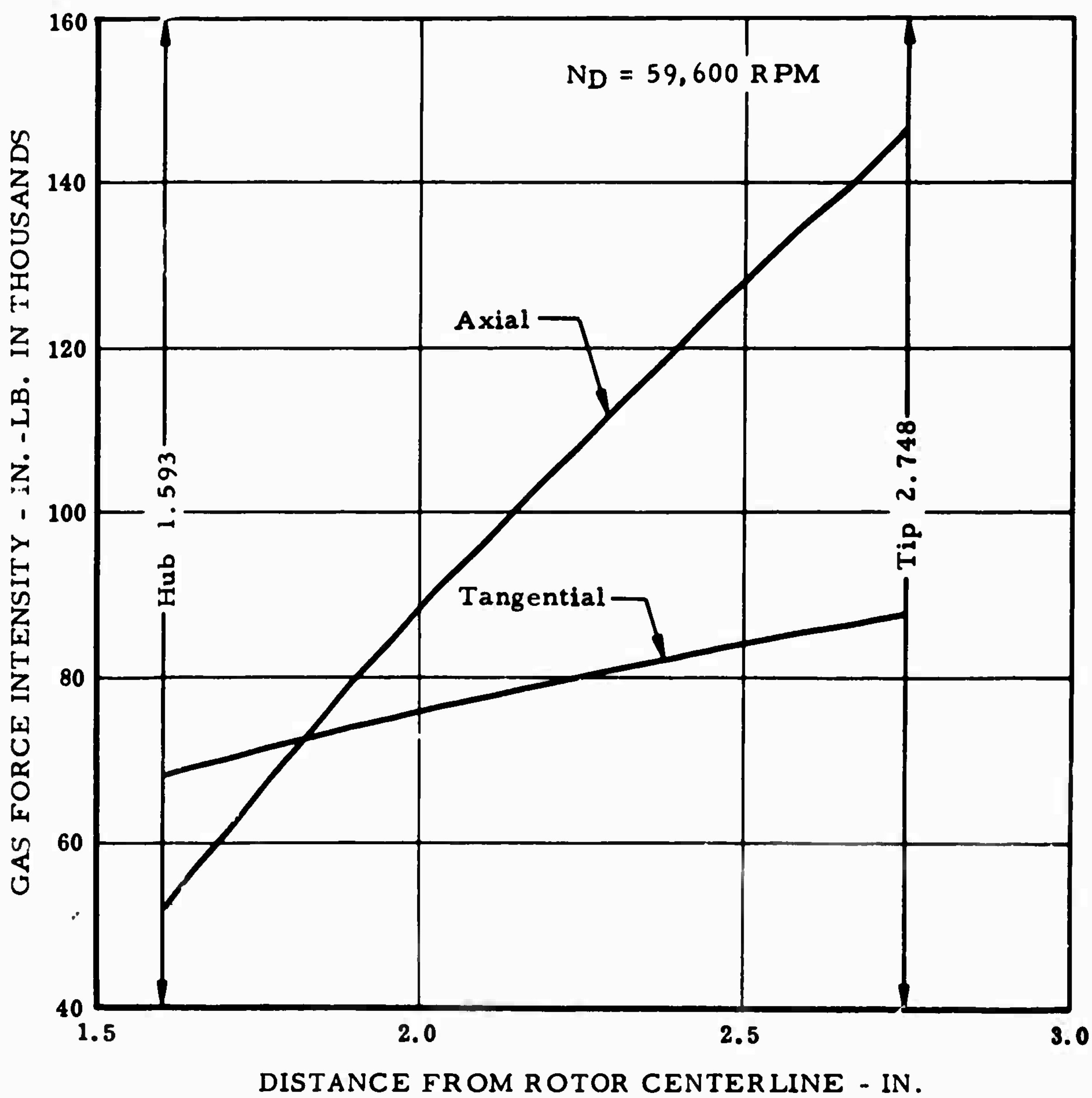

Figure 50. Phase III Compressor - First-Stage Rotor Blades Gas Force Intensity.

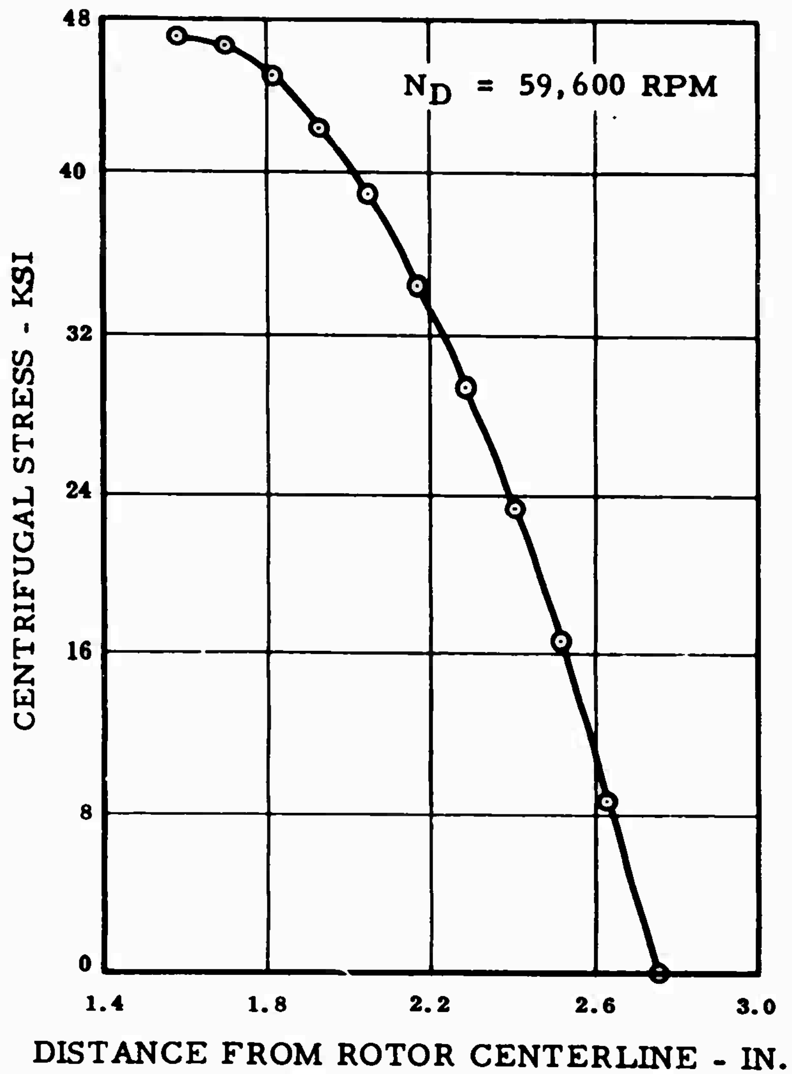

Figure 51. Phase III Compressor - First-Stage Rotor Blade Centrifugal Stress.

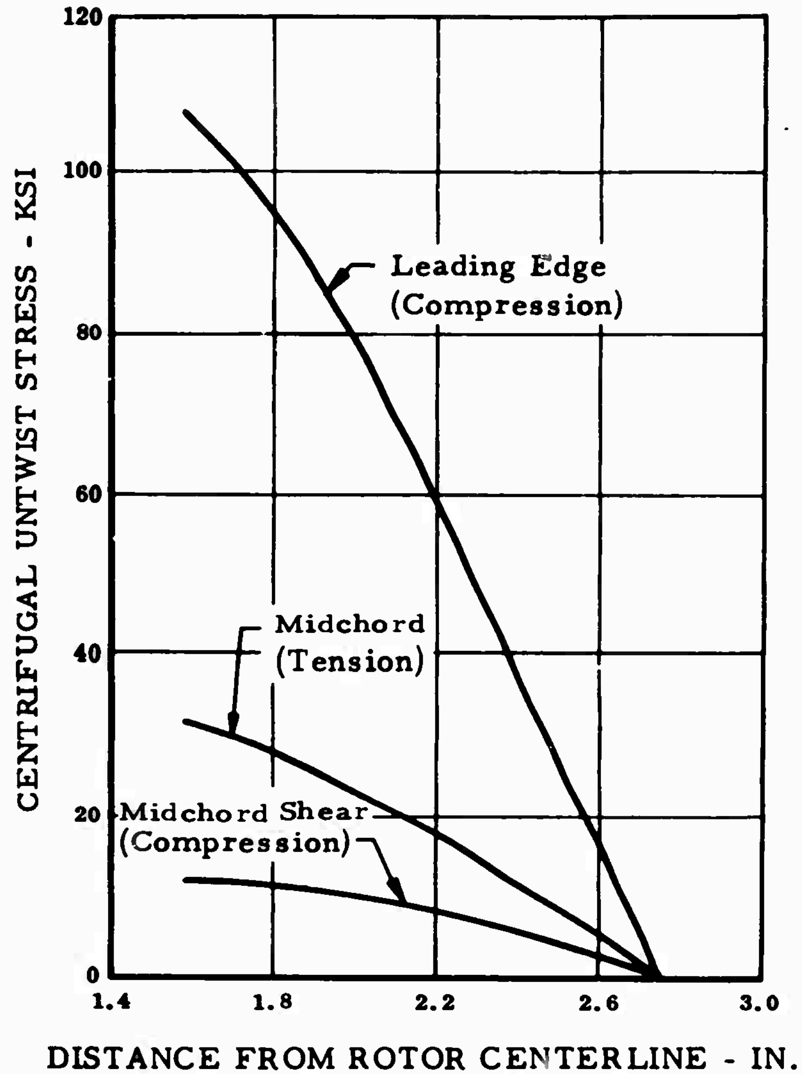

Figure 52. Phase III Compressor - First-Stage Rotor Blade Centrifugal Untwist Stress.

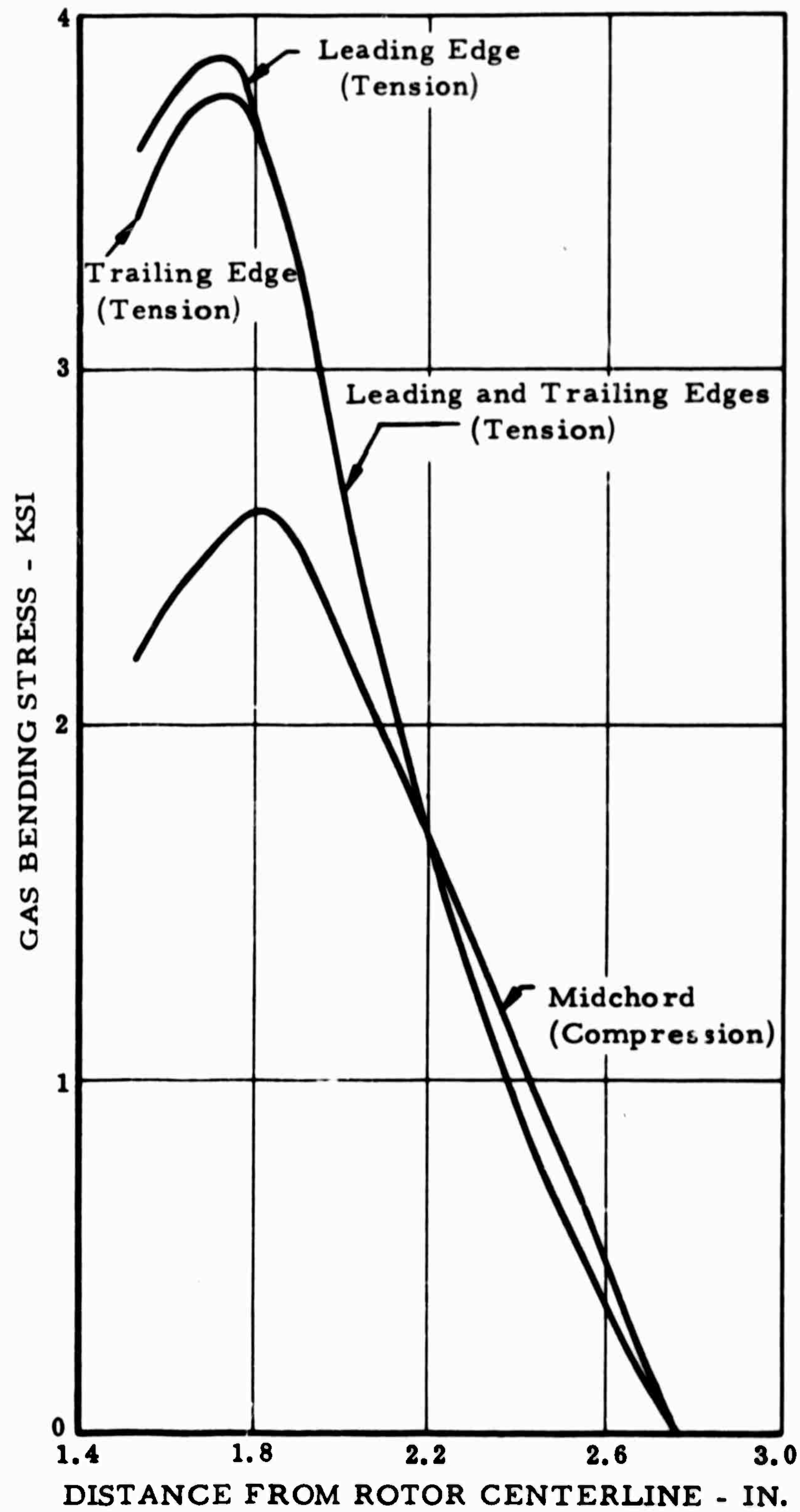

Figure 53. Phase III Compressor - First-Stage Rotor Blade Gas Bending Stress.

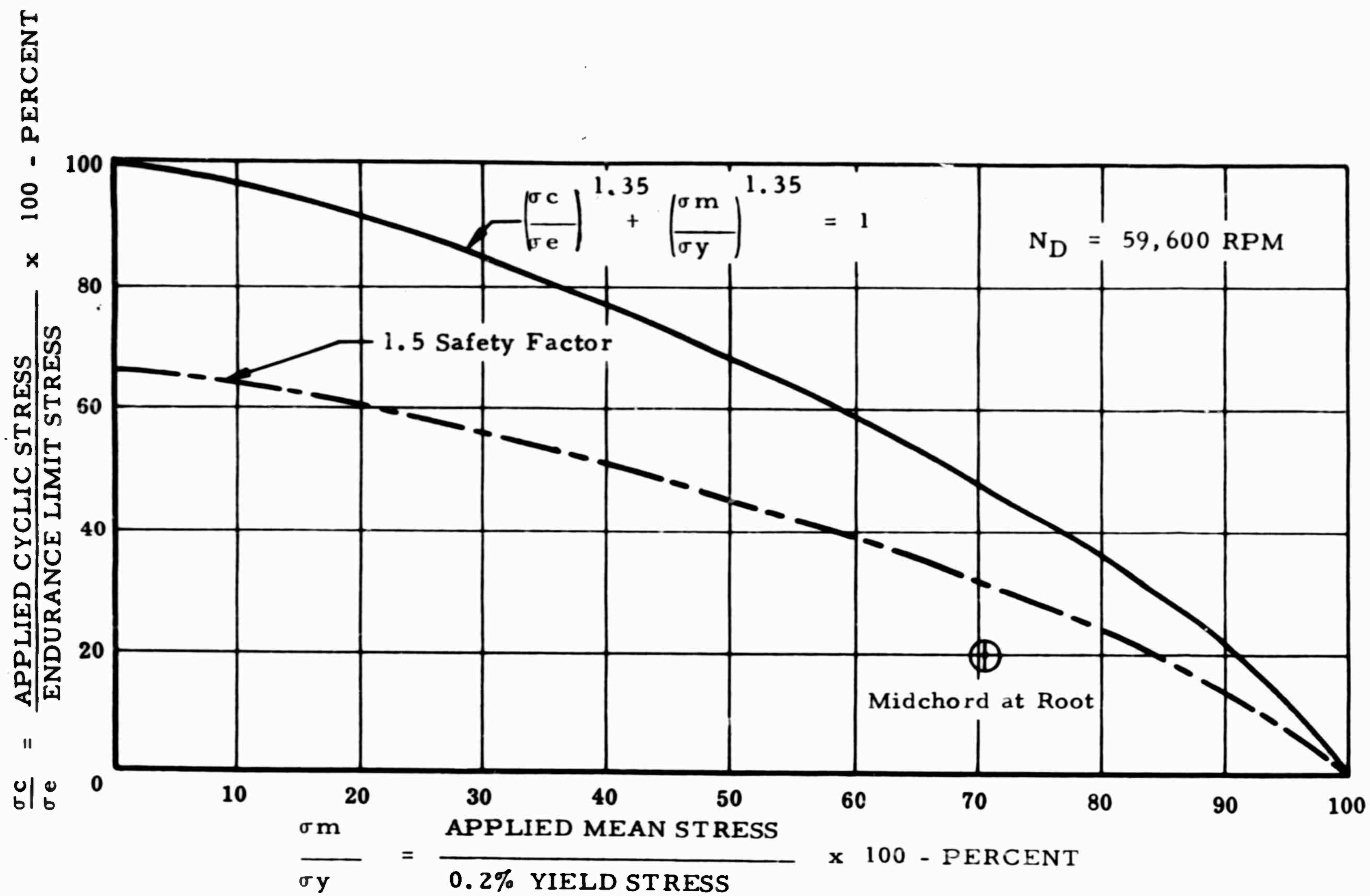

Figure 54. Phase III Compressor - First-Stage Rotor Blade Modified Goodman Diagram.

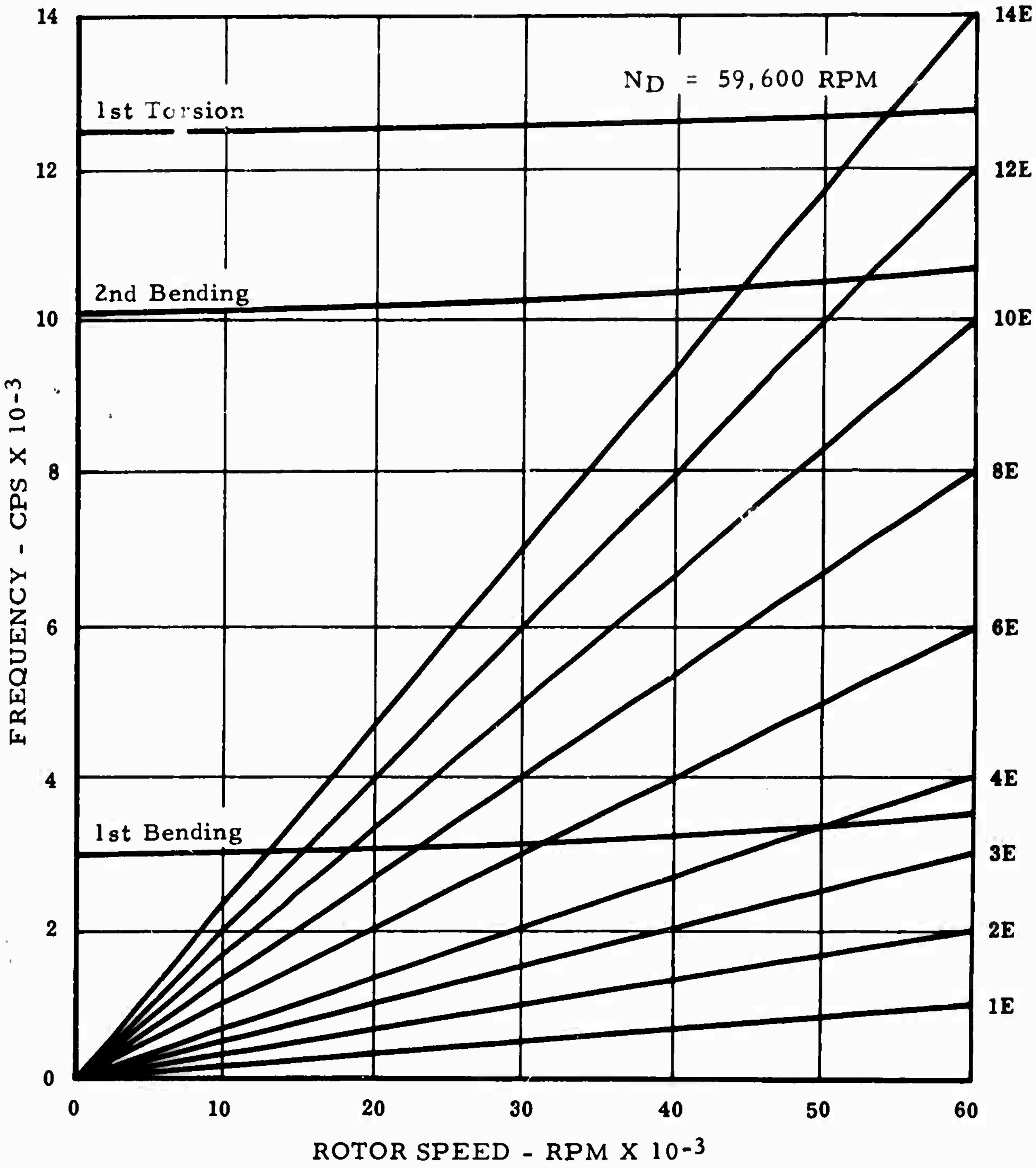

Figure 55. USAAVLABS Phase II Compressor - First-Stage Rotor Blade Interference Diagram.

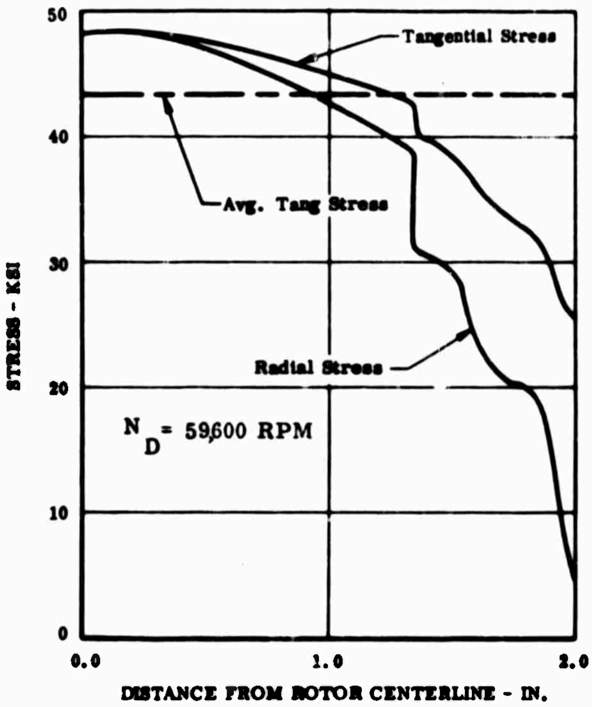

Figure 56. USAAVLABS Phase III Compressor - Second-Stage Rotor Disc Radial and Tangential Stress.

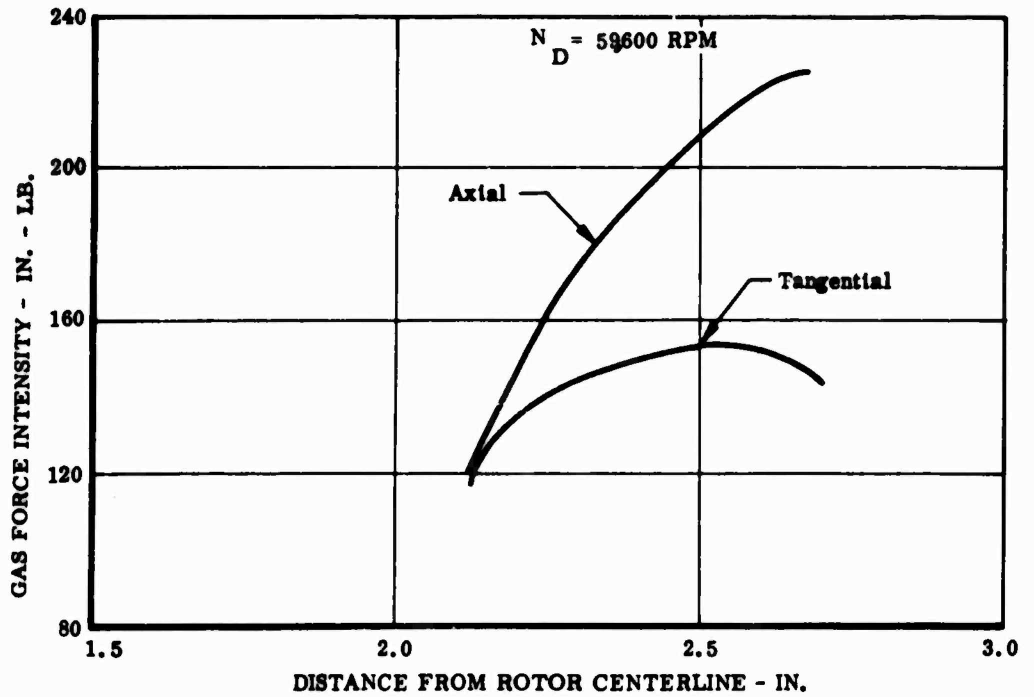

Figure 57. USAAVLABS Phase III Compressor - Second-Stage Rotor Blade Gas Force Intensity.

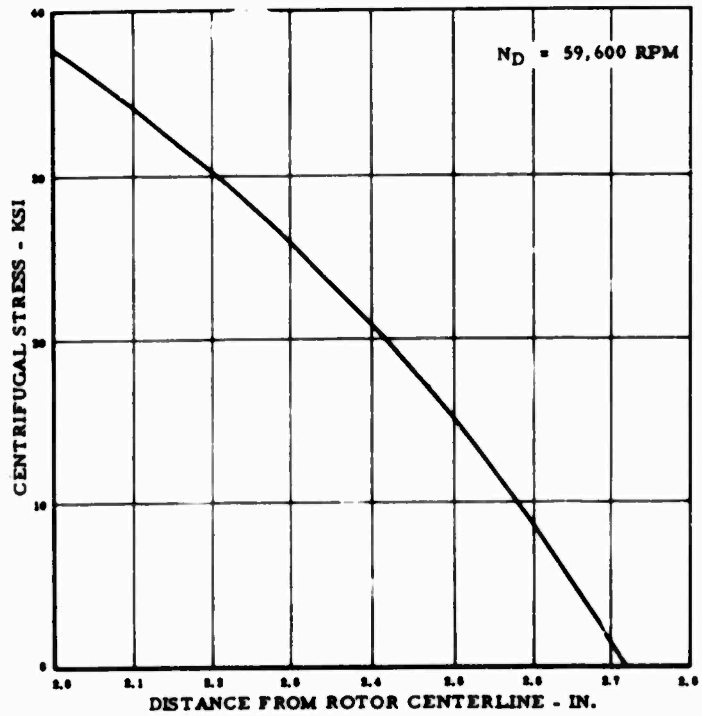

Figure 58. USAAVLABS Phase III Compressor - Second-Stage Rotor Blade Centrifugal Stress.

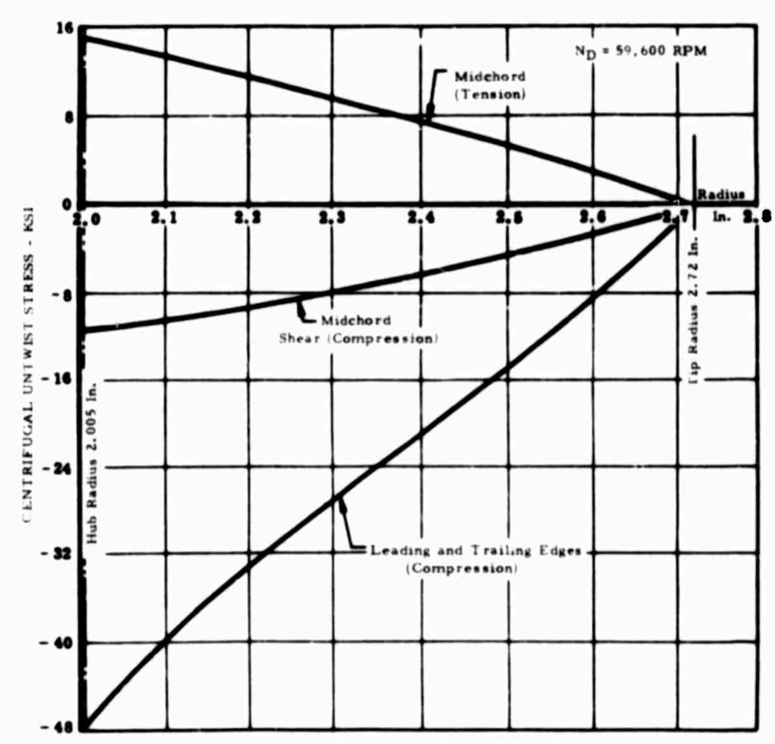

Figure 59. USAAVLABS Phase III Compressor - Second-Stage Rotor Blade Centrifugal Untwist Stress.

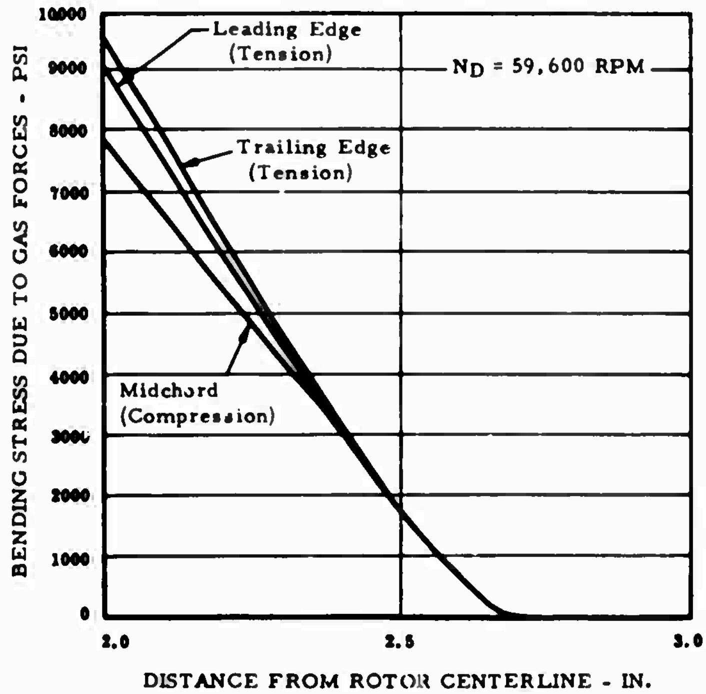

Figure 60. USAAVLABS Phase III Compressor - Second-Stage Rotor Blade Gas Bending Stress.

At the blade root trailing edge location, a maximum combined steady stress of 47,000 psi tension exists. Figure 61 shows this maximum stress point on the modified Goodman diagram and indicates a satisfactory vibratory margin for the second stage blades.

The interference diagram in Figure 62, showing the natural frequencies of the blades, indicates that no resonance will occur at design speed.

Shaft Dynamics. The shaft dynamics of the Phase III USAAVLABS compressor configuration were analyzed to determine if the original main bearing spring cages could be utilized or if one or both of the supports would have to be redesigned to accommodate the change in mass and moment of inertia resulting from the new rotor geometry.

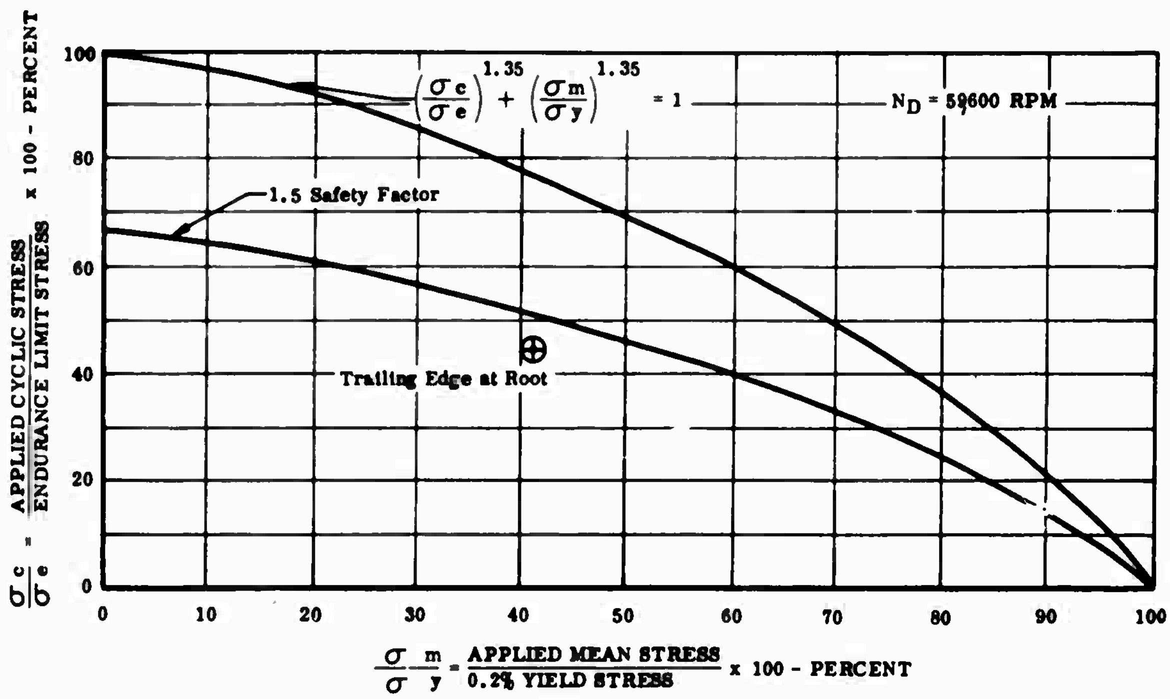

Figure 61. USAAVLABS Phase III Compressor - Second-Stage Rotor Blade Modified Goodman Diagram.

Using the original bearing support spring rates and the new rotor mass parameters as input, the first three modes of lateral vibration were calculated by computer techniques using the Prohl-Myklestad Holzer type analysis. The results are tabulated below:

First Critical	6,800 rpm
Second Critical	12,700 rpm
Third Critical	132,000 rpm

With the operating range of the compressor between 20,000 and 60,000 rpm, it was concluded that the existing main bearing spring supports would function satisfactorily with the new rotor configuration.

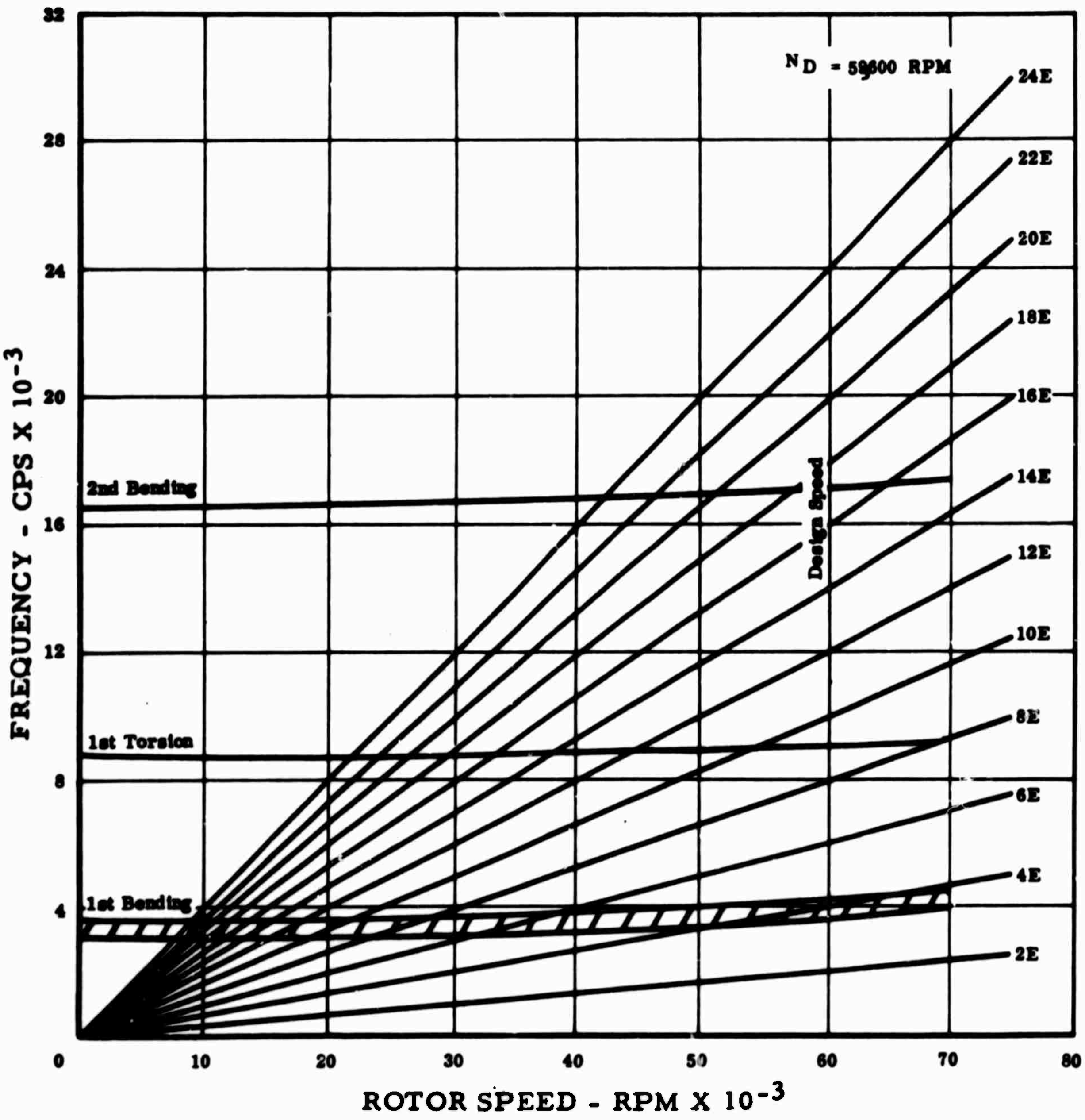

Figure 62. USAAVLABS Phase III Compressor - Second-Stage Rotor Blade Interference Diagram.

FABRICATION OF REDESIGNED COMPRESSOR

The redesigned components for the Phase III compressor and the nature of their redesign are listed in Table III. As shown in Table III, some parts were fabricated by modifying Phase II hardware in addition to total fabrication of items such as the rotors.

Fabrication of some of the more critical components is covered in the following paragraphs.

ROTOR ASSEMBLY

Because of the overall similarity of the redesigned rotor to the original rotor, the integrally bladed rotors were machined by the same methods as used previously. On the second-stage rotor, where the only change was the number of blades, it was possible to use much of the original tooling.

The two rotors and the shaft were electron-beam welded into an assembly, using the same procedure as was used in welding the first two rotor assemblies. The rotor weldment was acceptable, with no excessive runout (see Figure 63).

STATOR ASSEMBLY

Increasing the tip diameter of the first-stage rotor required that corresponding changes be made to the stationary abradable rub shroud, integral with the first-stage stator. In addition to machining the diameter of the shroud, the flame-sprayed aluminum insert was replaced to provide proper clearances (see Figure 64).

Also, for aerodynamic reasons, the top 20 percent of the first-stage stator vane leading edge was closed, varying from 8.5 degrees at the tip to 0 degrees at 80-percent vane length. This was accomplished by making an EDM cut at the vane tip extending downstream approximately 50 percent of the chord length. Through the use of a fixture, the vane was then bent the appropriate amount (see Figure 65). The EDM slots were then filled with epoxy and blended to provide a smooth flowpath.

No modifications were made to the second-stage stator.

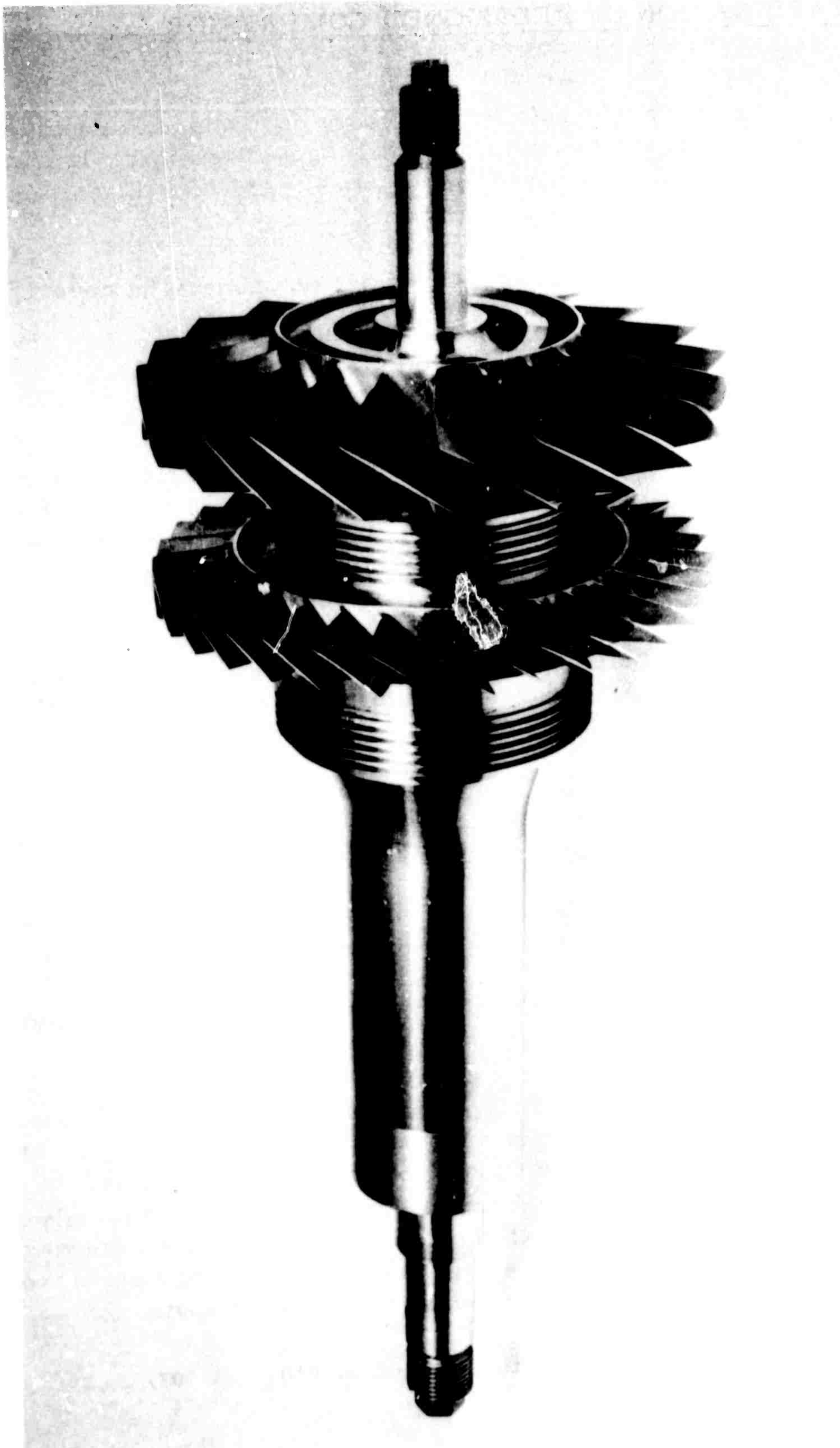

Figure 63. Redesigned Welded Rotor Assembly.

Figure 64. Redesigned First-Stage Stator and Compressor Housings.

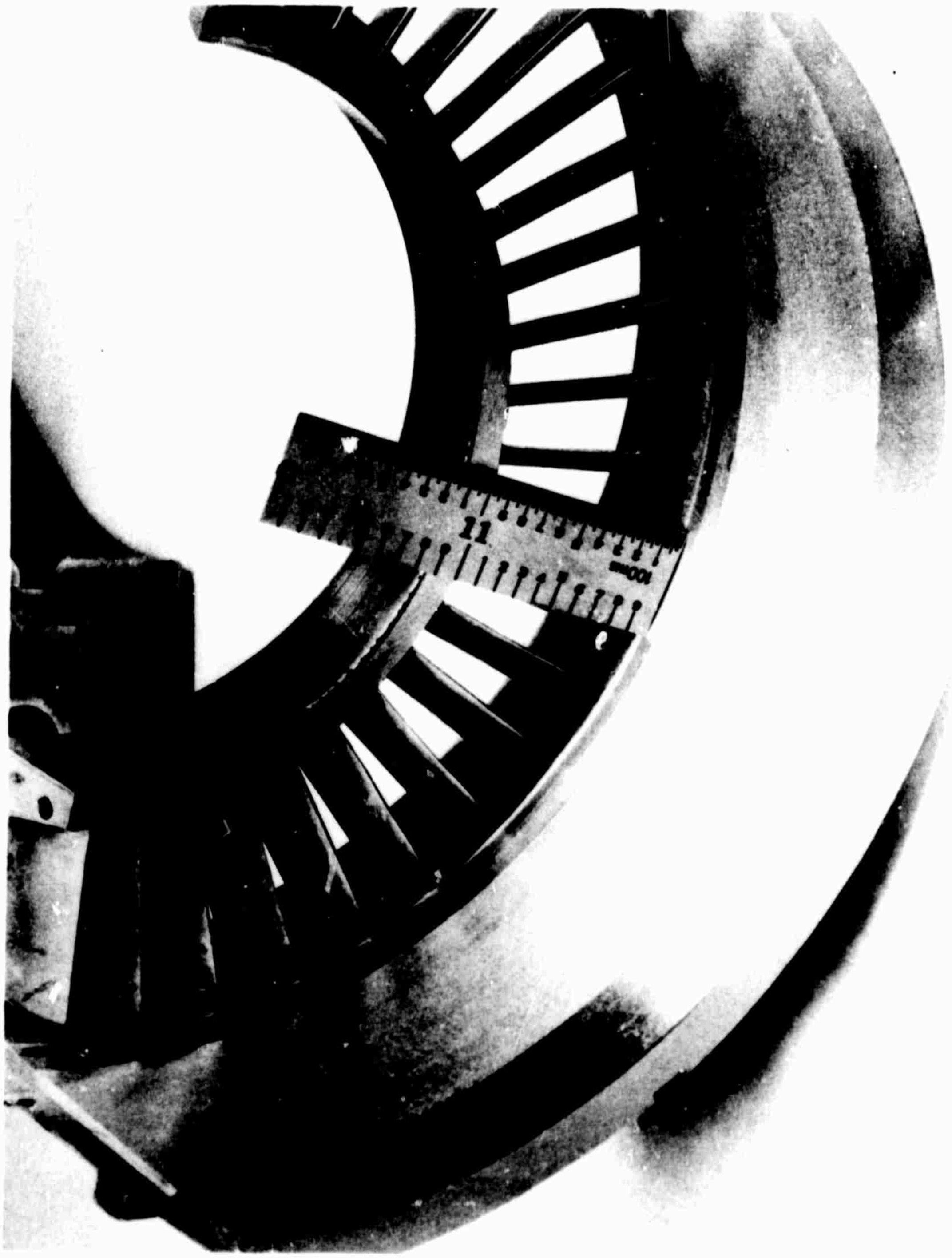

Figure 65. Redesigned First-Stage Stator Showing EDM Cut in Vane Tip.

INLET GUIDE VANE ASSEMBLY

The increased rotor tip diameter required that the outer flowpath diameter in the variable inlet guide vane (VIGV) assembly also be increased. It was possible to maintain the original vanes and actuation system, although the vanes are cantilevered through the outer flowpath, by modifying or replacing the bushings and spacers in the vane retention system. Figure 66 shows the modified VIGV assembly as it will be installed for the final rig test.

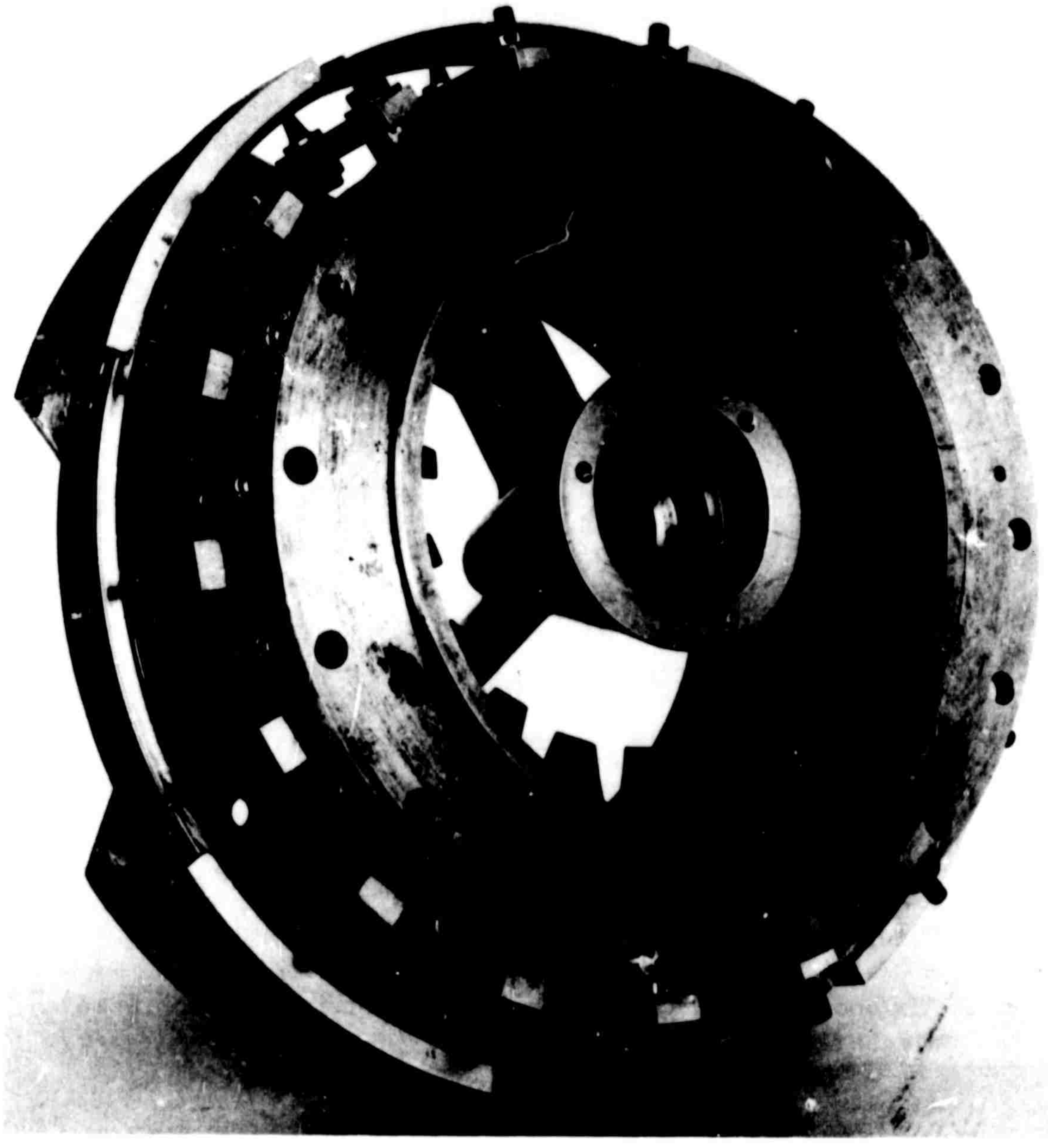

Figure 66. Redesigned Variable Inlet Guide Vane Assembly.

FINAL RIG TEST OF REDESIGNED COMPRESSOR

AERODYNAMIC TEST RESULTS

The compressor was assembled with the long transition duct and with the variable inlet guide vanes. The compressor was tested with the instrumentation as defined in Volume I except for the traverse probes.

The redesigned compressor test demonstrated sufficient performance to provide a potential for a 0.457-pound-per-horsepower-hour specific fuel consumption engine. Figure 67 represents the performance of an engine using the USAAVLABS centrifugal technology, Figure 68, and the conventional engine component characteristics listed below. The calculation of specific fuel consumption is based on an unregenerated free shaft power turbine engine cycle which is operated as follows:

1. The centrifugal compressor, Figure 68, runs at 100-percent mechanical speed.

2. The total cycle pressure drop is 11.5 percent:

Inlet	0.5 percent
Combustor	4.5 percent
Exhaust	6.5 percent

3. Turbine efficiencies are:

High Pressure	83.9 percent
Low Pressure	86.0 percent
Power Turbine	88.1 percent

4. Combustion efficiency is 98.5 percent.

5. Output mechanical efficiency is 98 percent.

6. Turbine inlet gas temperature is 2500°F.

7. Air cooling bleed is 2 percent from centrifugal compressor discharge into the exhaust duct.

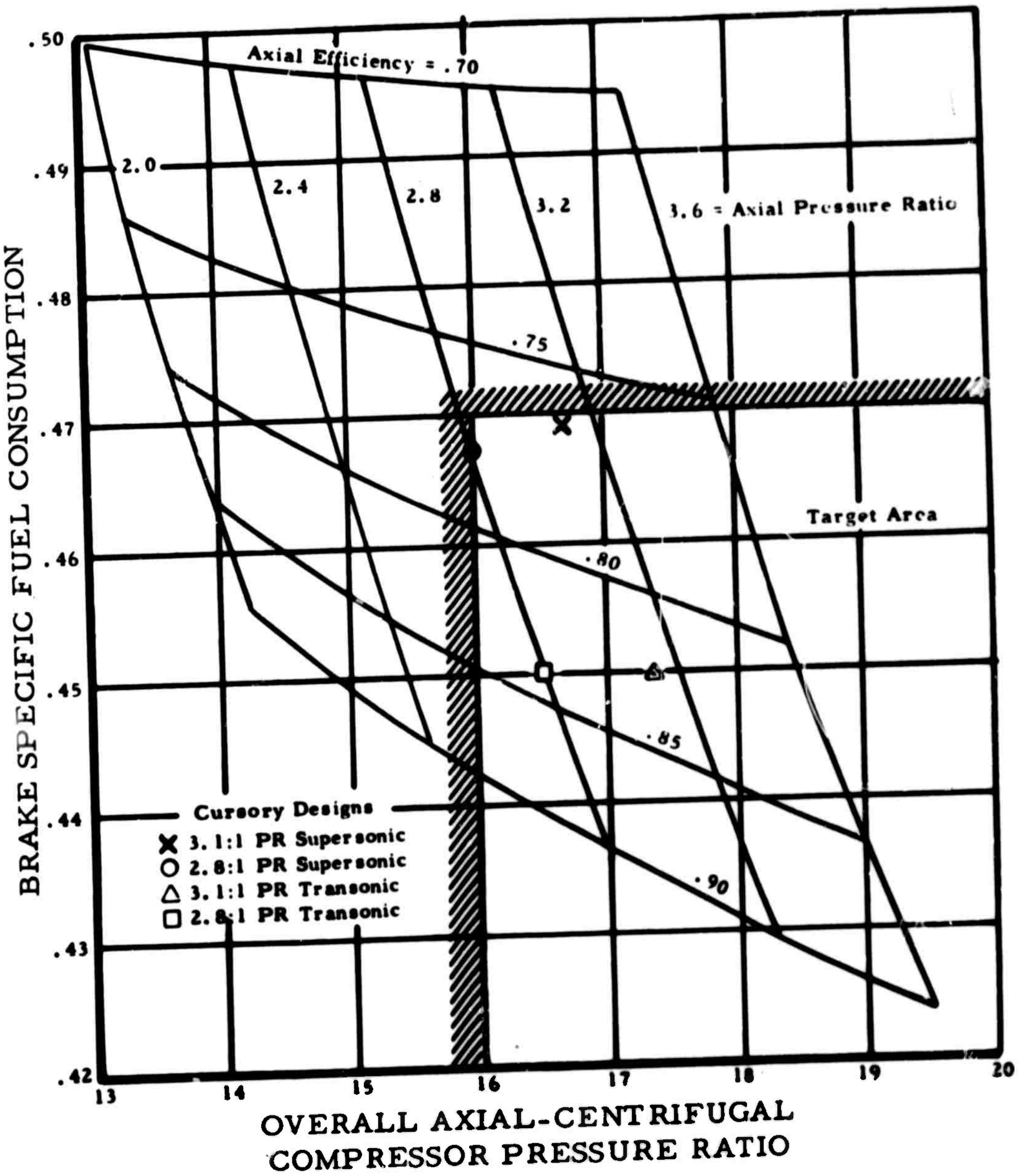

Figure 67. The Effect of Overall Axial Centrifugal Compressor Pressure Ratio and Axial Compressor Performance on Brake Specific Fuel Consumption.

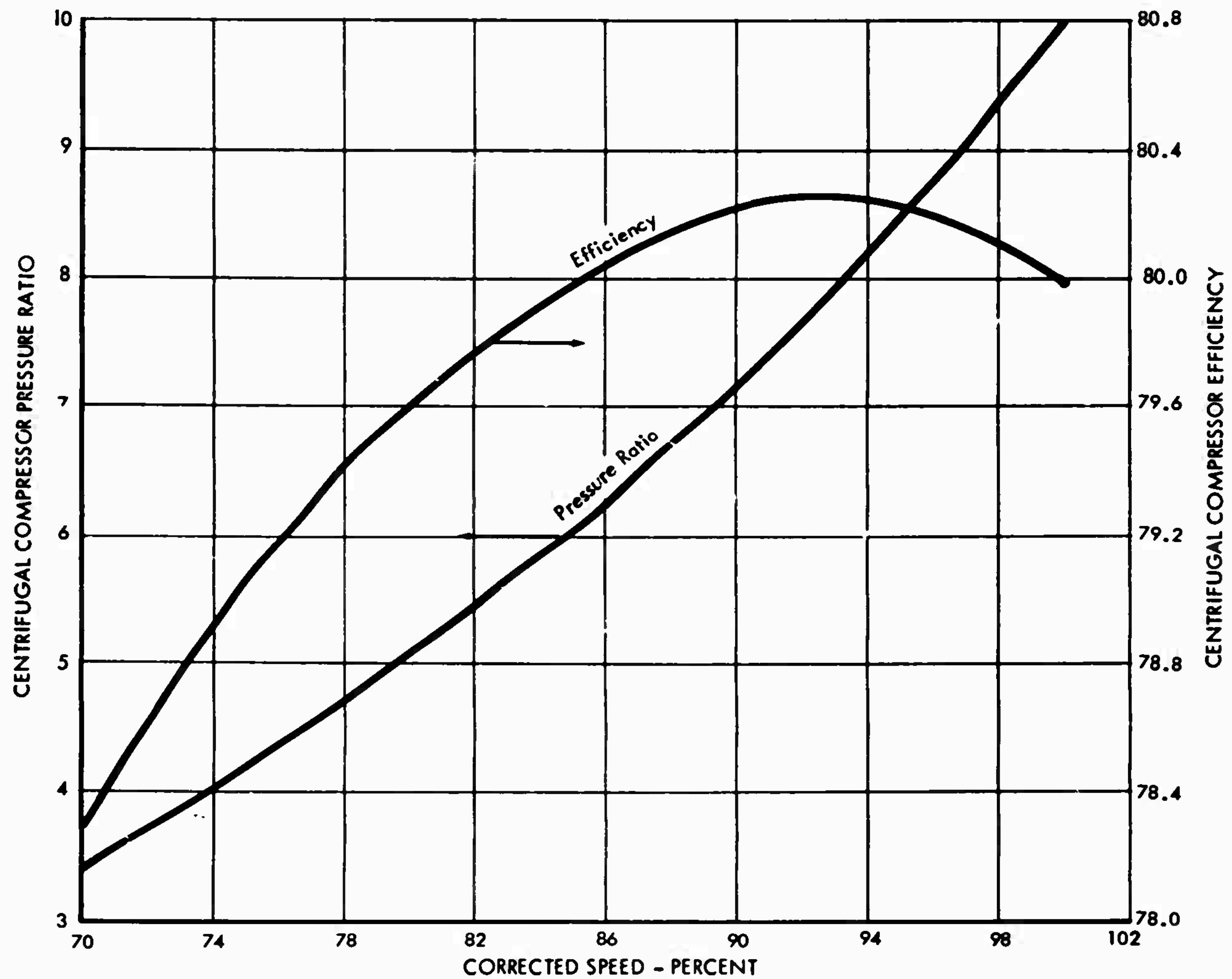

Figure 68. USAAVLABS Centrifugal Compressor Technology Performance Along Given Operating Line.

The compressor demonstrated the following performance at design speed (performance measured from compressor inlet to transition duct exit):

Pressure ratio	3.0:1	3.1:1	3.2:1
Efficiency, percent	79.0	80.0	81.0
Airflow, lb/sec	4.920	4.910	4.865

The overall compressor characteristics, Figure 69, are probably more than adequate for use in an engine. As can be seen in Figure 69 , a peak efficiency of 84 percent was obtained at a 2.3:1 pressure ratio. A stall margin (defined in First Rig Test Section) of 10.1 percent was obtained at a 3.1:1 pressure ratio.

The transition duct exit pressure ratio and efficiency radial profiles at 100 percent of design speed are presented in Figure 70. As can be seen, the pressure ratio profile is reasonably flat while the efficiency profile falls off towards the shroud as a result of higher losses at the tip of the compressor. The pressure ratio and efficiency radial profiles translate to the velocity and Mach number profiles shown in Figure 71. These data were obtained by assuming a linear gradient of measured static pressure from hub to tip. The radial profiles at the transition duct exit are, in general, skewed from hub to tip. This condition can be improved through minor development, if necessary. However, these profiles do provide acceptable inlet conditions to a centrifugal compressor inducer, as shown in Figure 72. This figure presents inlet velocity triangles to a centrifugal compressor inducer running at the same mechanical speed (single spool) as the axial compressor. The inducer tip inlet relative Mach number is 0.88 and the tip inlet relative flow angle is 58.8 degrees, both well within conventional inducer design limits.

Since this axial compressor was designed for a specific engine application using a centrifugal compressor, the design rotational speed was maximized to provide for as high a centrifugal specific speed as practical for single spool application. Figure 73 shows the effect of the overall axial-centrifugal compressor pressure ratio and centrifugal specific speed. This figure is for a family of centrifugal compressors capable of match behind the axial compressor running at design speed and at a 3.1:1 pressure ratio. If, for example, an overall axial-centrifugal pressure ratio of 15:1 is desired, the required centrifugal pressure ratio would be 4.85:1 and the specific speed would be 71.2.

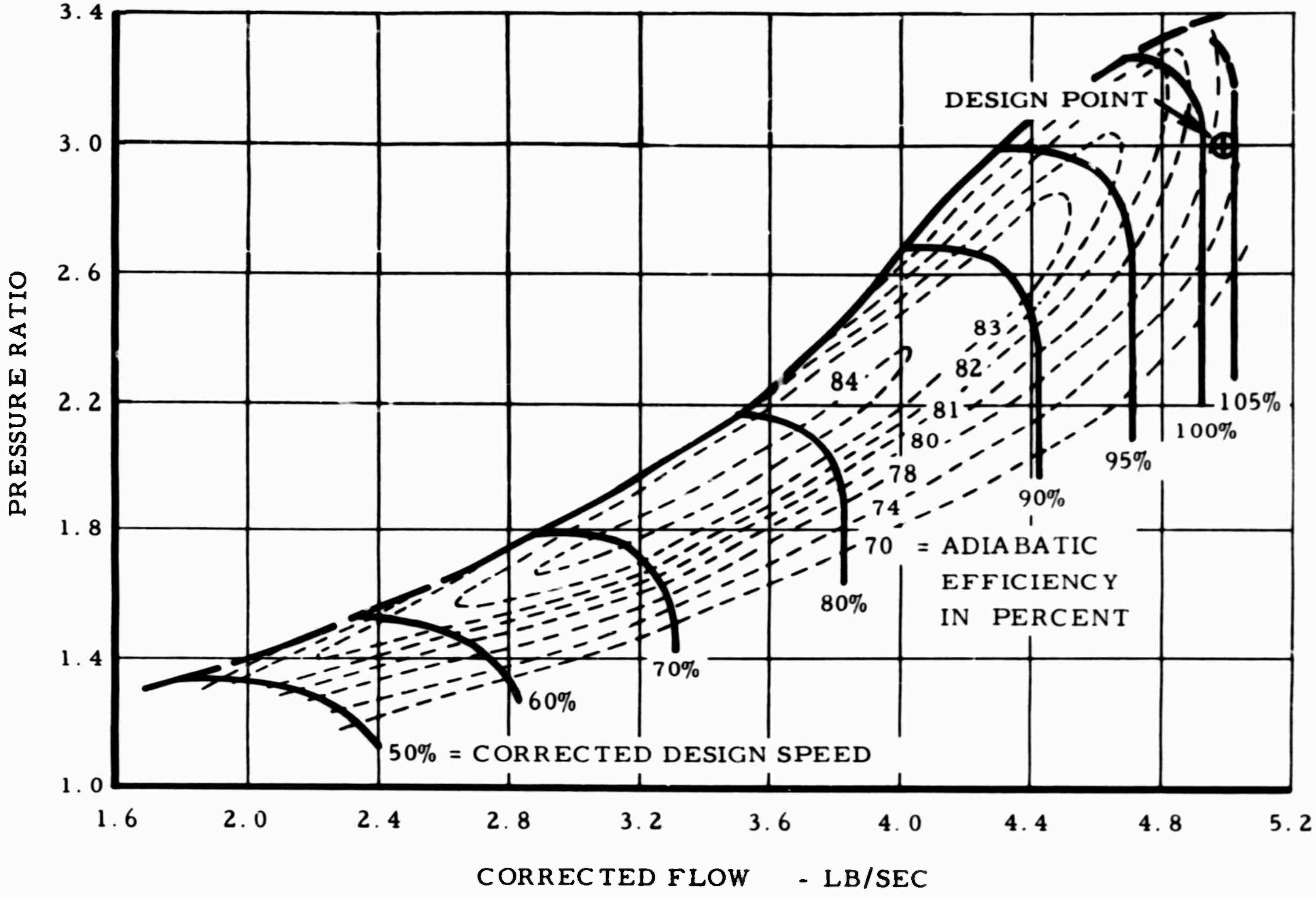

Figure 29. USAAVL BS Two-Stage Transonic Axial Compressor Performance.

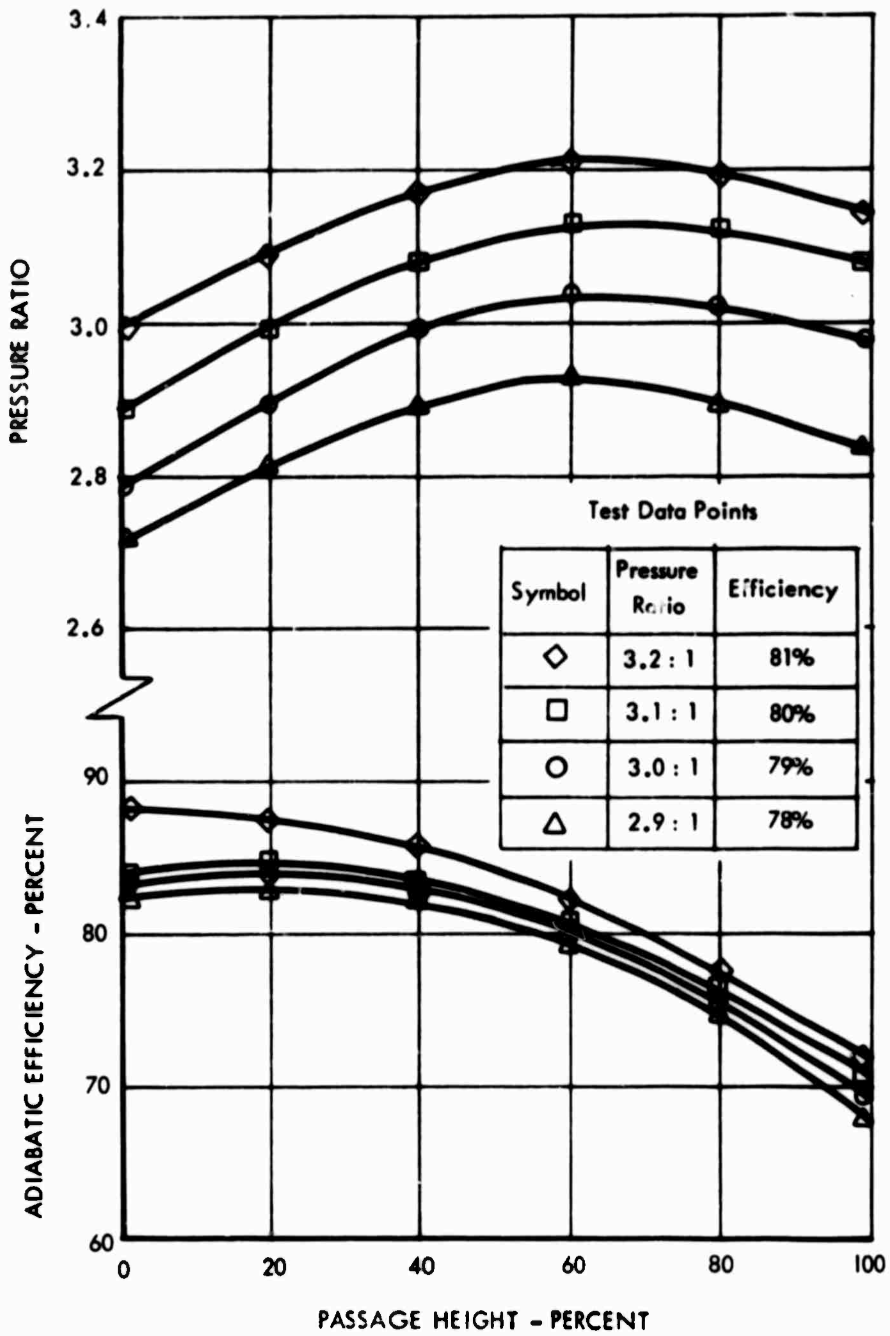

Figure 70. Two-Stage Axial Compressor Transition Duct Exit Performance at Compressor Design Speed - Efficiency and Pressure Ratio.

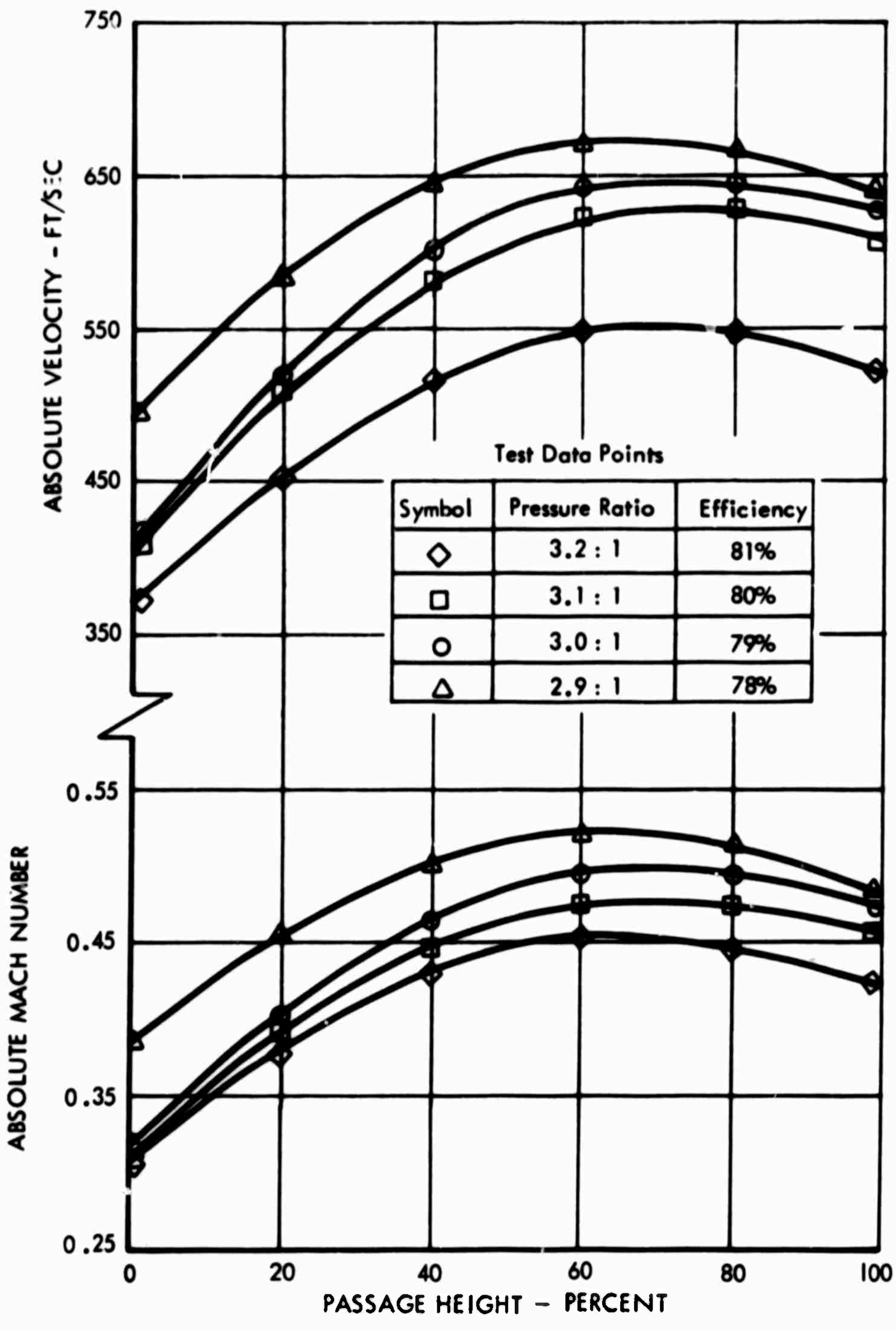

Figure 71. Two-Stage Axial Compressor Transition Duct Exit Performance at Compressor Design Speed - Mach Number and Absolute Velocity.

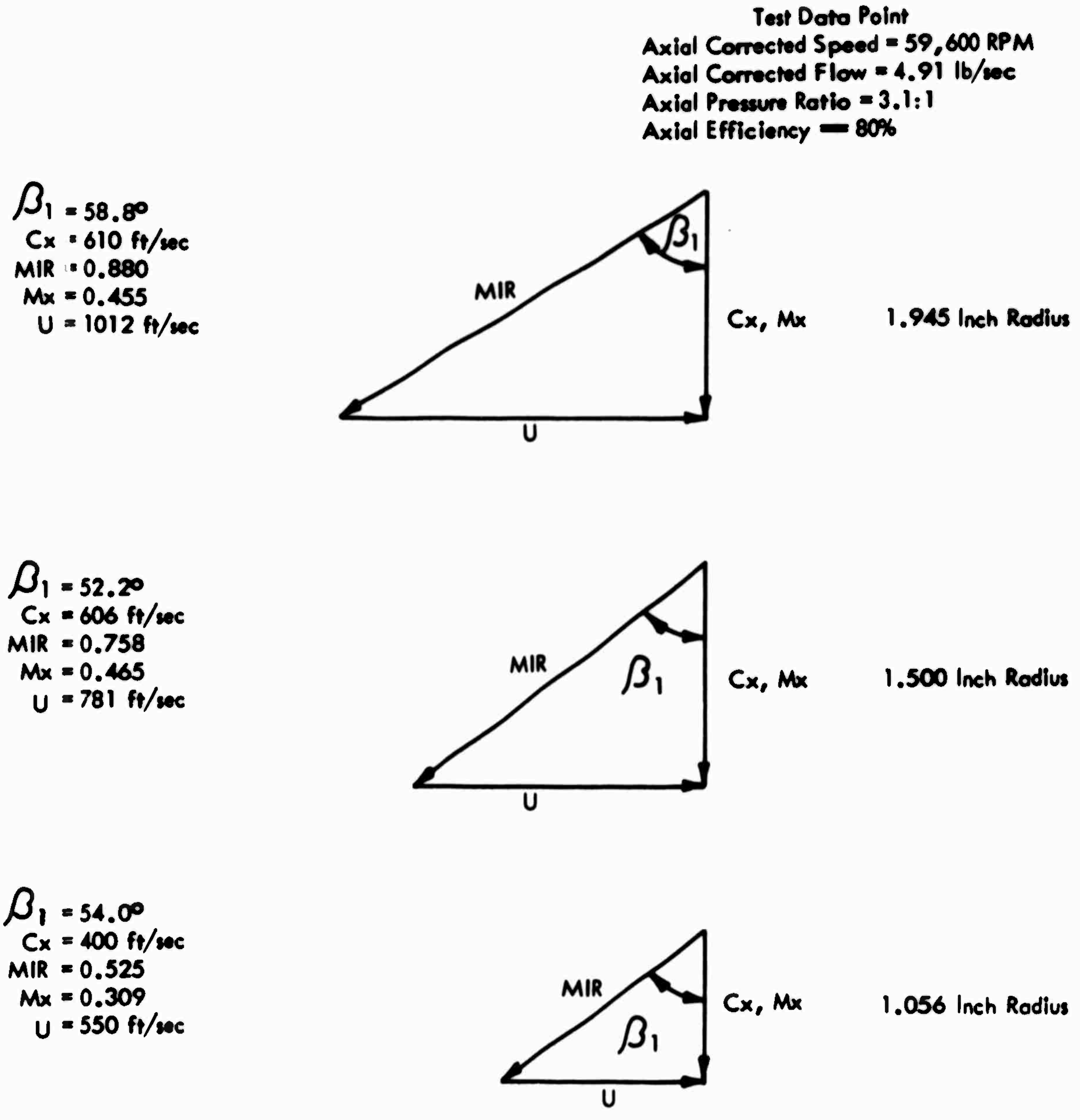

Figure 72. Two-Stage Axial Compressor Transition Duct Exit Triangle for a Centrifugal Compressor Inducer Inlet at Design RPM.

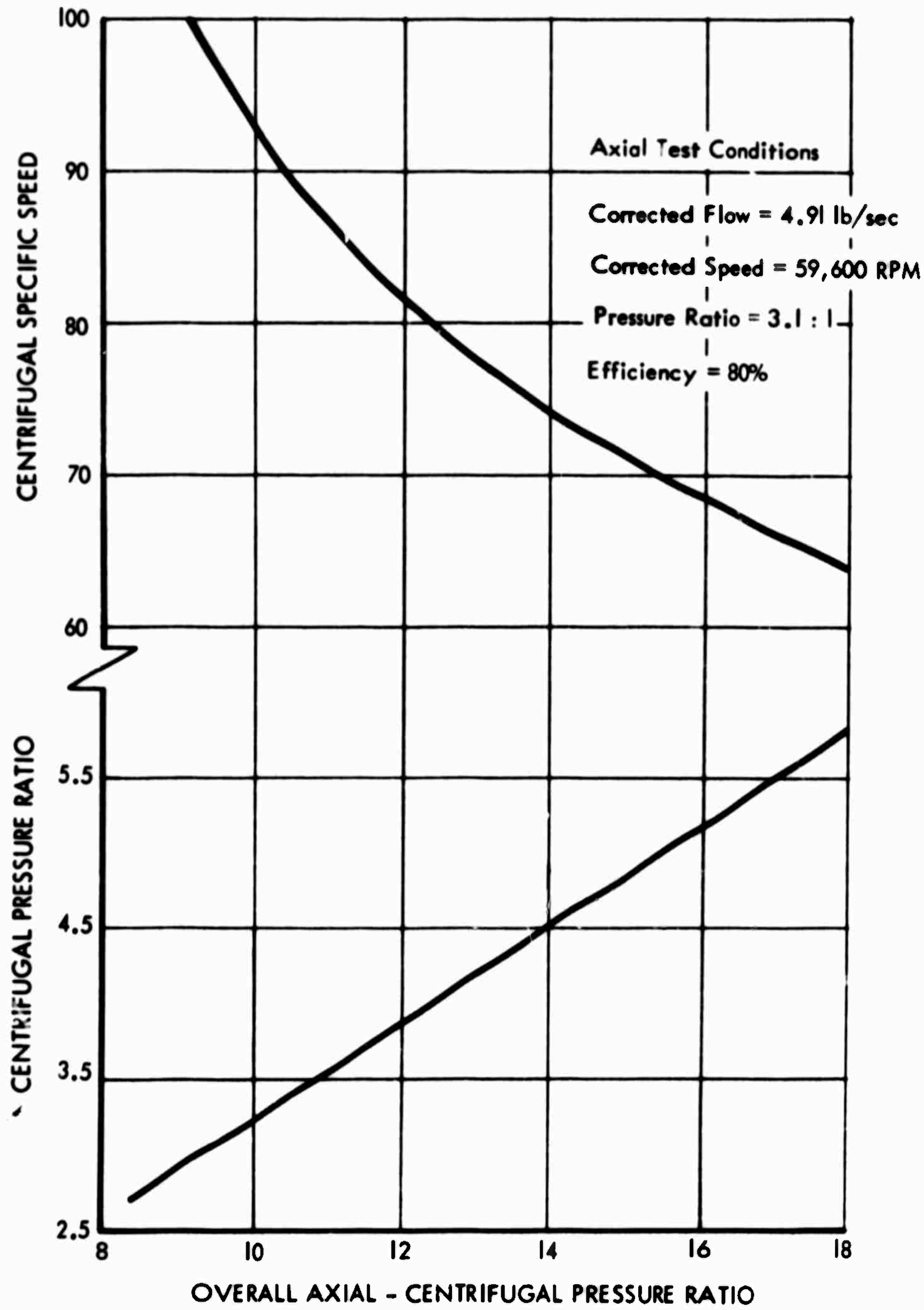

Figure 73. Parametric Results of a Family of Centrifugal Compressors Operating in Single-Spool Configuration Behind USAAVLABS Two-Stage Axial Compressor.

An investigation of the transition duct loss using the averaged total pressure test data, Figure 74, showed that the duct loss at the 3.1:1 pressure test point was 2.25 percent. It is believed that the actual loss is more in the order of 1 percent. The transition duct inlet total pressure test data are based on a rake of three probes circumferentially located midway between adjacent stage two stator vanes, and therefore, records main passage pressure. Thus, the pressure rake does not measure the true mass averaged pressure. Additional probes on the suction surface and pressure surface of the vanes were not installed because of possible blockage effects. A compressor efficiency (measured from compressor inlet to second-stage stator exit) of 82.5 percent at 3.17 pressure ratio is calculated if the measured pressure is assumed.

The measured tip static pressure distribution throughout the compressor at 100 percent design speed is compared to the design static pressure distribution in Figure 75. The data for run number 14, at 3.015 pressure ratio, compare very well with the design tip static pressure values except for the exit of rotor one. The higher measured static pressure values at this location are possibly attributable to tip losses higher than those of design rotor one. However, in the absence of traverse data, no definite conclusion can be reached as to the cause of the higher pressure. There are indications that the second-stage rotor choking condition has been relieved. This is shown by the larger spread in static pressure at the inlet to the second-stage rotor as compared to the original design measured static pressure distribution at this location.

The transition duct measured static pressure values are compared to the design values in Figure 76. The minor differences between design and test static pressure are probably attributable to the skewed radial velocity gradient at the compressor exit.

The effect of the variable inlet guide vane on design speed compressor performance is shown in Figure 77. A peak efficiency of 81.5 percent was recorded at +10 degrees stagger angle. As can be seen in Figure 78, a 30-degree change in stagger angle produced a 3.5-percent change in surge flow at design speed. A more dramatic change in flow was expected with the part-span guide vanes based on results of previous Continental testing of another transonic axial compressor. Those data may indicate that the first stage is not limiting flow and, therefore, making the compressor insensitive to inlet guide vane changes.

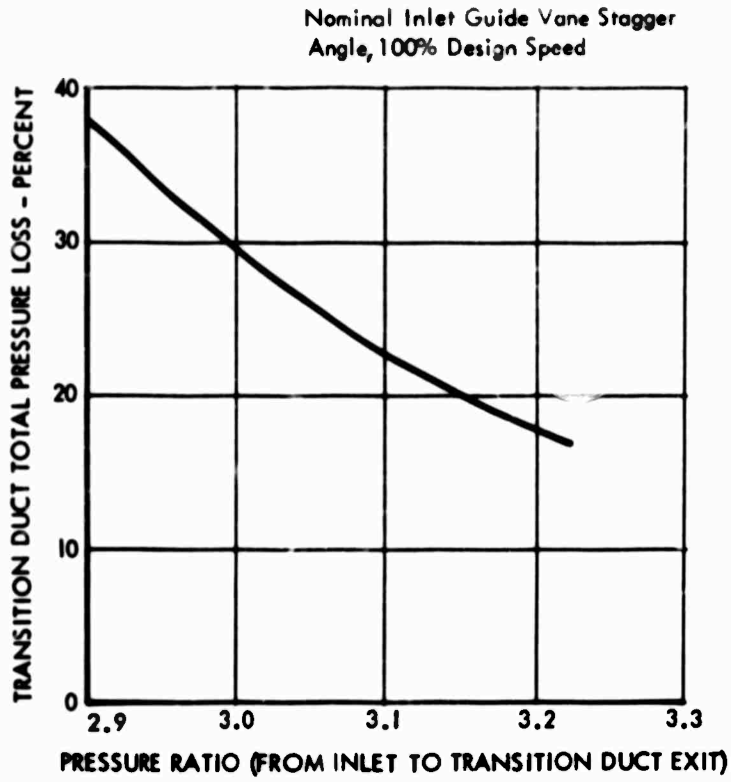

Figure 74. Advanced Two-Stage Axial Compressor Transition Duct Total Pressure Loss.

A compressor test at 50, 70, 90, and 100 percent of design speed was conducted with the variable inlet guide vanes set at +20 degrees stagger angle. The data from this test, shown in Figure 79, as compared to the nominal inlet guide vane data, showed a loss in efficient flow range. Therefore, the nominal guide vane setting angle provides the best compressor performance at both high and low speeds. The difference in performance shown on Figure 79, is due to the rematch between stages as a result of inlet guide vane swirl. An increase in part speed performance with inlet guide vane swirl is expected after the compressor is fully developed.

MECHANICAL TEST RESULTS

During the final test series, the compressor rig, incorporating the redesigned hardware, exhibited excellent mechanical integrity.

The only minor problem that developed during running was erratic vibration readings at 100 percent design speed. These readings were observed on the vertical accelerometer mounted on the outside of the compressor housing. The horizontal accelerometer showed no vibration. Also, the strain gages on the front bearing cage gave no indication that the rotor was vibrating relative to the housing. Therefore, it was concluded that the compressor assembly as a whole was being excited.

Although the amplitude was not excessive, refrigerated inlet was used at the higher speed lines to keep the mechanical speed below 95 percent and, consequently, out of this vibration range.

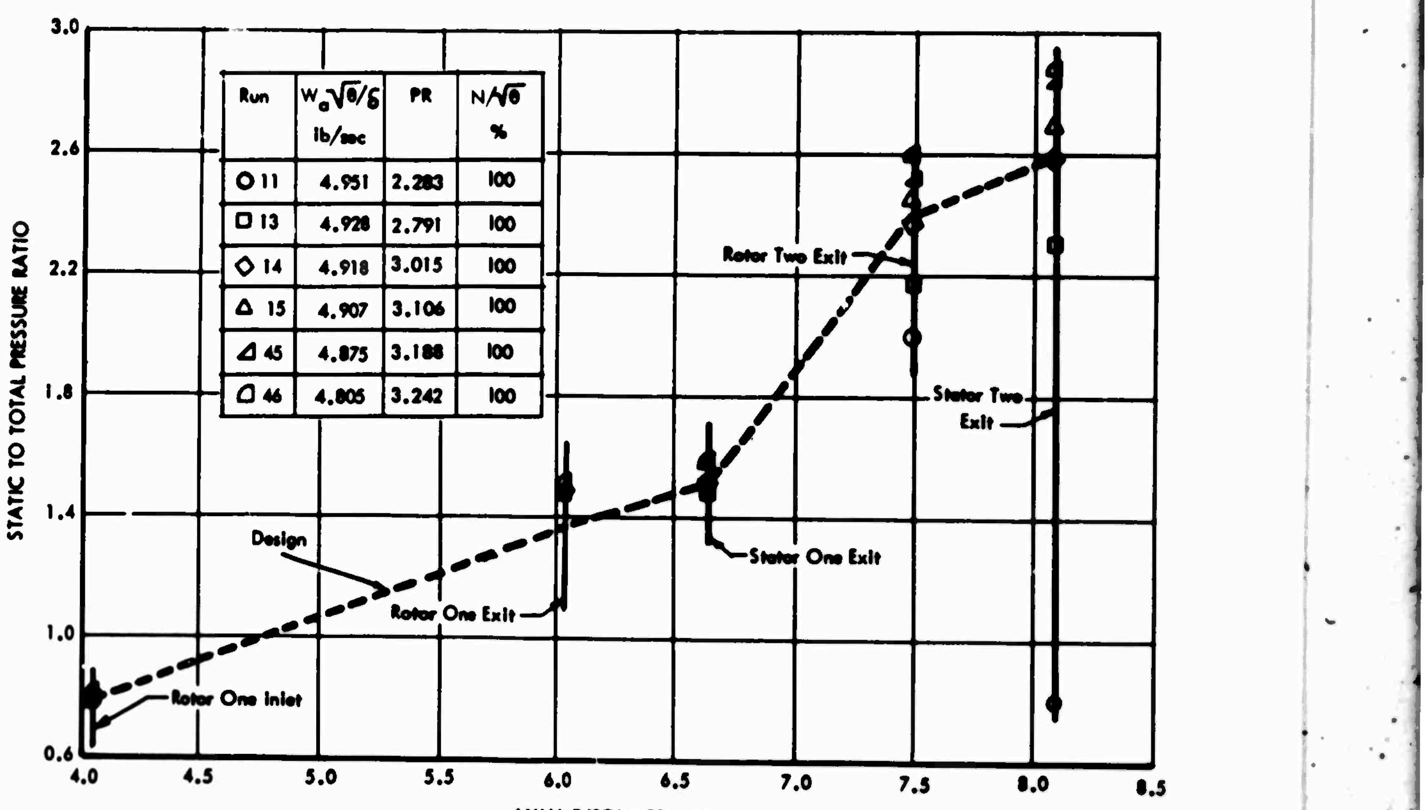

Figure 75. Static Pressure Distribution Along Compressor Tip.

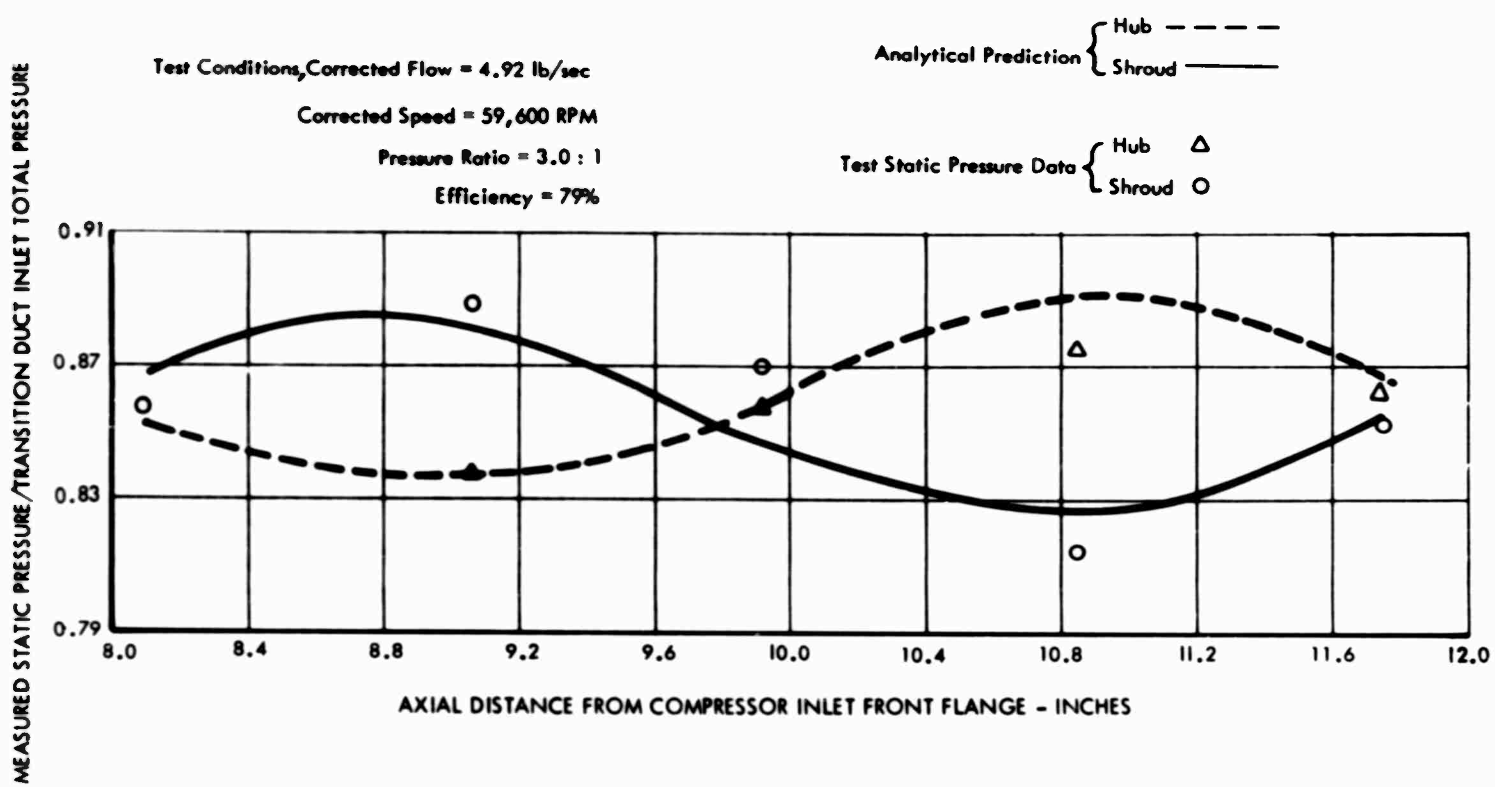

Figure 76. Two-Stage Compressor Transition Duct Exit Static Pressure Distribution.

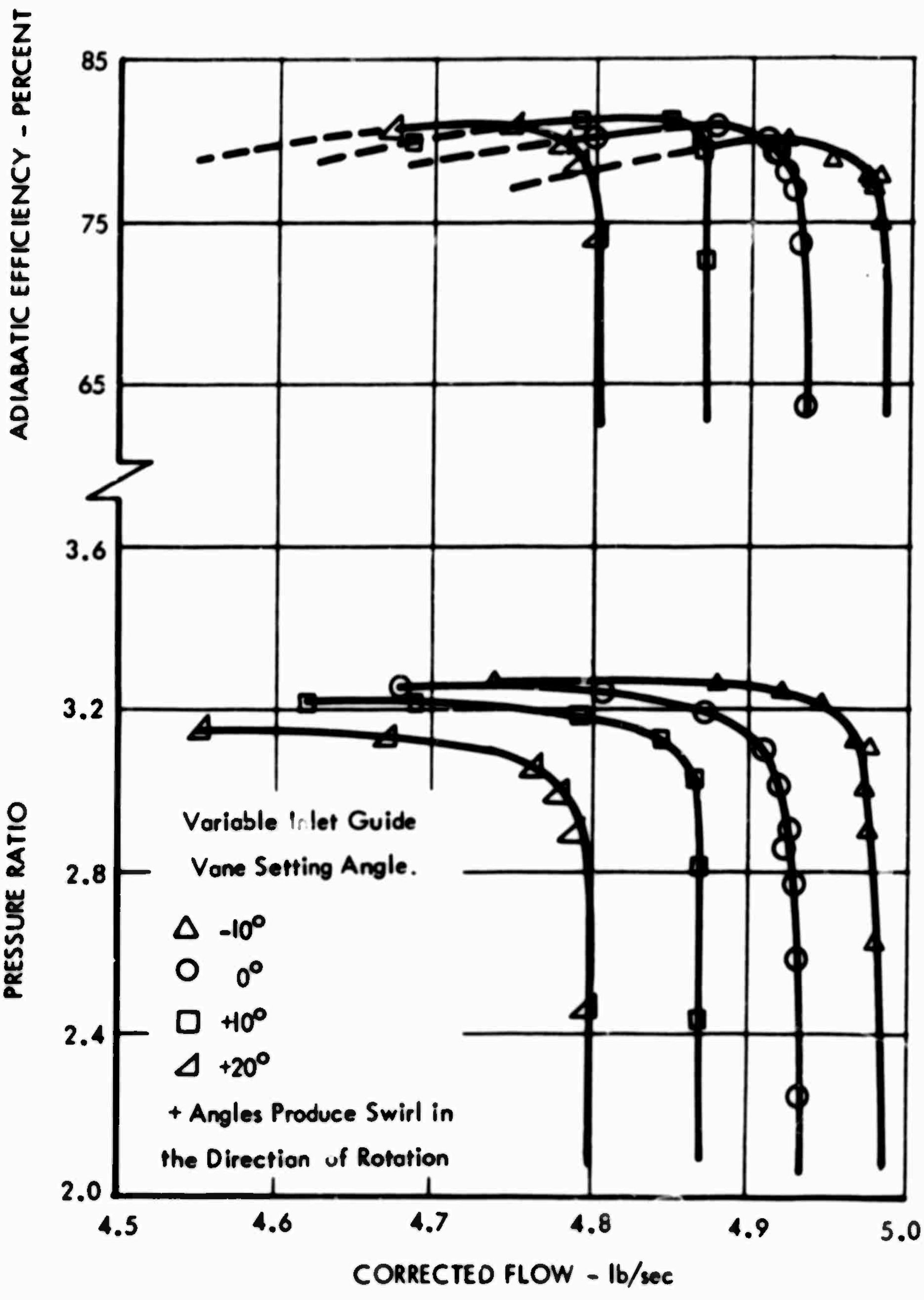

Figure 77. Transonic Two-Stage Axial Compressor - The Effect of Variable Inlet Guide Vane Setting Angle on 100-Percent Design Speed Compressor Performance.

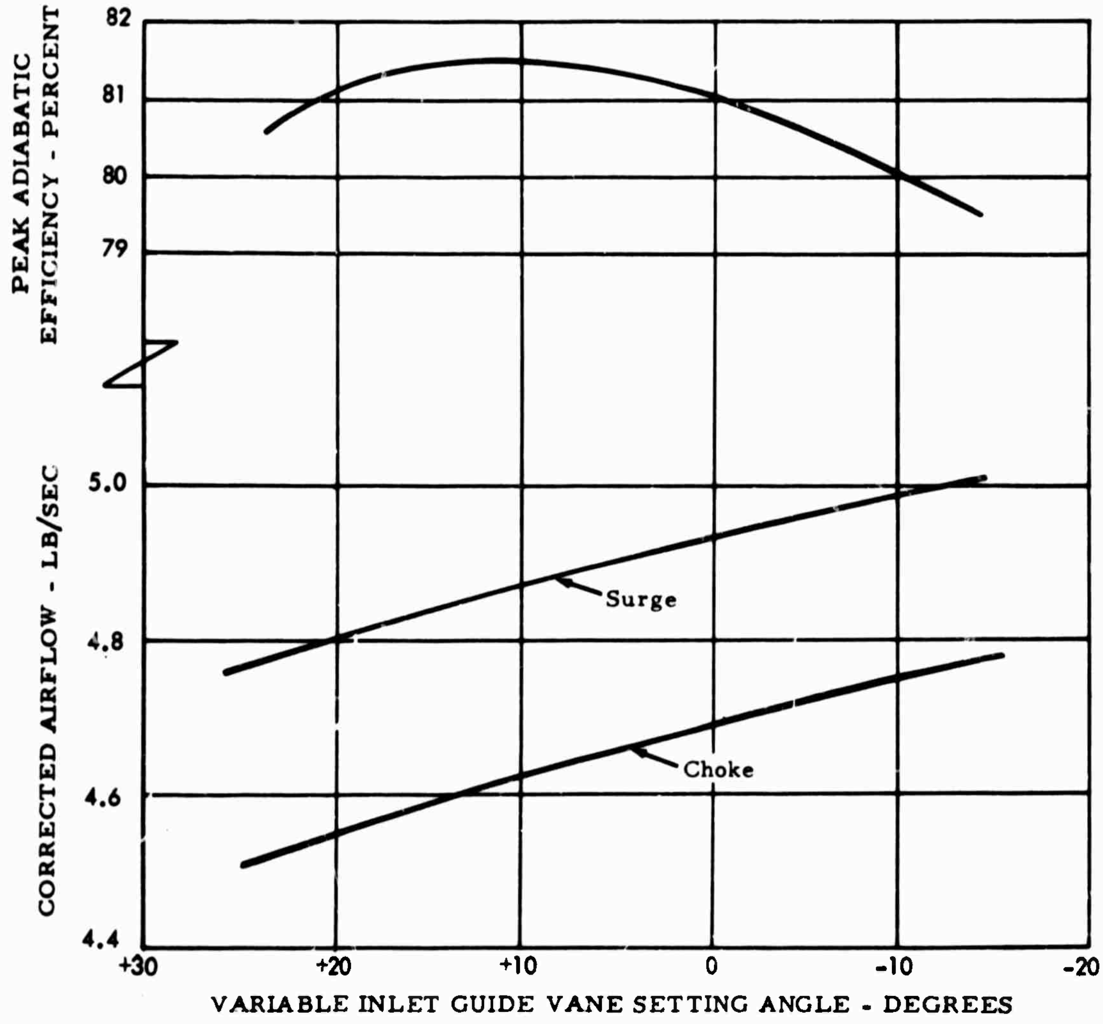

Figure 78. Transonic Two-Stage Axial Compressor - The Effect of Variable Inlet Guide Vane Setting Angle on 100-Percent Design Speed Compressor Performance.

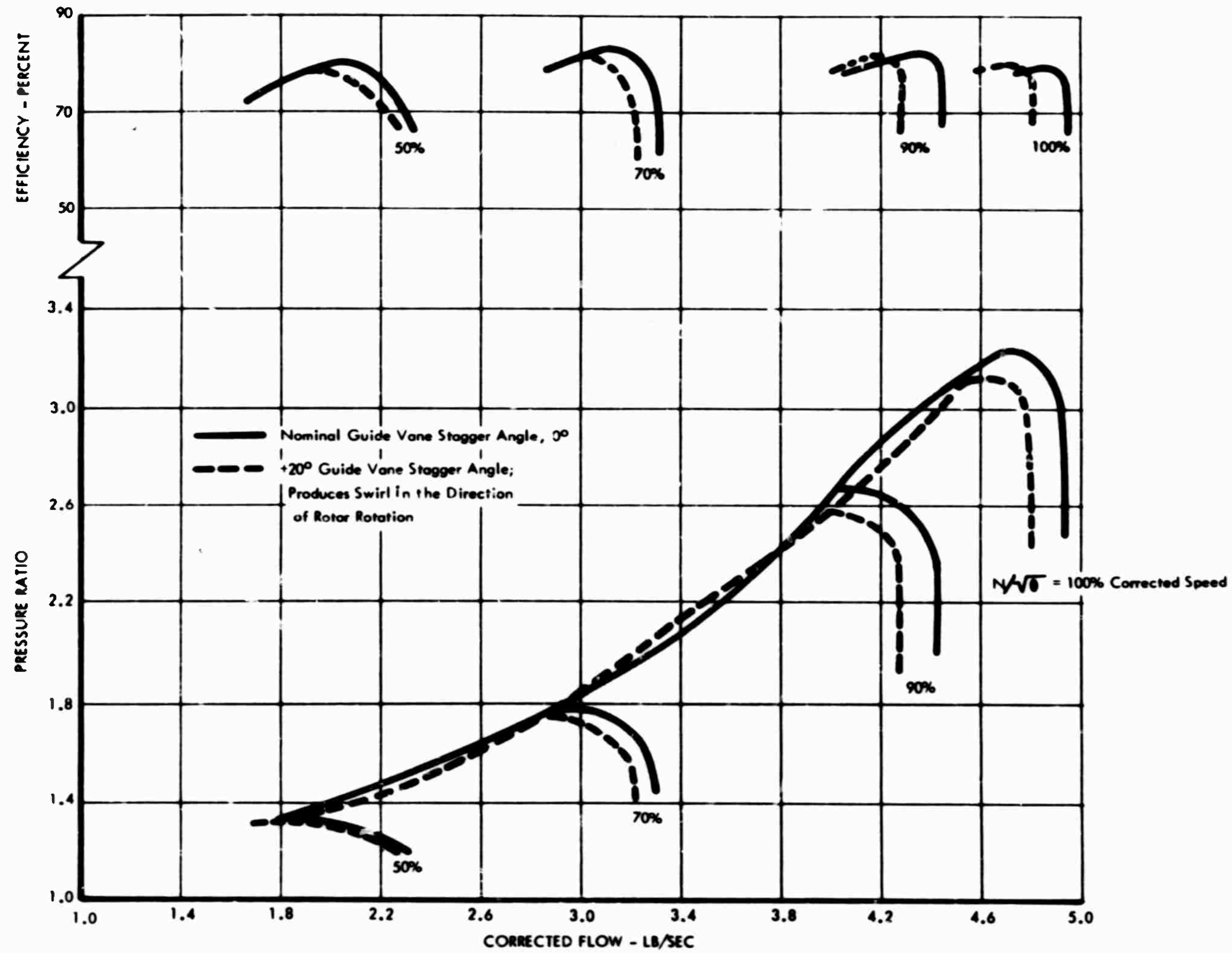

Figure 79. Advanced Two-Stage Compressor Comparison of Nominal and +20 Degree Inlet Guide Vane Stagger Angle on Compressor Performance.

CONCLUSIONS

1. The performance of the redesigned axial compressor has exceeded the contractural aerodynamic pressure ratio and efficiency goals. A potential for a 0.457-pound-per-horsepower-hour specific fuel consumption turboshaft engine at 2500°F turbine inlet gas temperature using the projected USAAVLABS advanced centrifugal technology and conventional engine component characteristics was demonstrated. The feasibility of a 17:1 overall axial-centrifugal pressure ratio was shown.

2. The redesigned compressor configuration showed a significant increase in design and part power performance level, over that of the original design compressor.

	Original Design		Redesign	
Percent Corrected Speed	100	80	100	80
Airflow	4.36	3.29	4.91	3.72
Pressure Ratio	3.0:1	2.1:1	3.1:1	2.1:1
Percent Efficiency	72.5	76	80	84

3. The performance increase was attributed to the reduced solidity in the first- and second-stage rotors of the redesigned compressor.

4. The mechanical design of the compressor and the rig proved to be extremely reliable over the entire 97 hours of rig running.

5. Through development, the compressor should be capable of even higher efficiency levels than those that were demonstrated.

6. The exact performance contribution for each of the combined variations such as the solidity, aspect ratio, and blade shape, made to the redesigned compressor is not known at this time. Time and funding precluded an independent analysis of each of the variations.

RECOMMENDATIONS

The compressor should be developed to increase efficiency and part-speed flow range. Traverses of the redesigned compressor should be conducted to determine interstage performance and to provide direction for any modifications.

The following additional tasks are recommended to increase and more closely define the performance of the compressor:

1. A series of first-stage tests should be conducted with varying solidity of the first-stage rotor to extend the data used for redesign and thus determine the optimum solidity for this type of rotor configuration.

2. The blade shape of the first-stage rotor should be changed in an attempt to minimize shock losses.

3. A series of rotor tip clearances tests should be conducted to determine the optimum tip clearance.

4. A straight transition duct should be tested to evaluate the basic compressor performance and the long transition duct losses.

5. The short transition duct should be evaluated.

APPENDIX I

DESCRIPTION OF TRAVERSE DATA COMPUTOR OUTPUT

OUTPUT NOMENCLATURE AND UNITS

The following is a listing of output quantities in the sequence of their appearance in the program output. For each quantity, the symbol is given as it appears in output, and the quantity is defined as to its meaning and units.

The output appears under one of the following three row designations: INLET, ROTOR, or STATOR. Under any of these readings, two types of output appear. The first is the output for each streamline; flow characteristics, properties, and geometry are described on a streamline or incremental basis within the flow field at particular radial stations. The second is the row output summary; interstage flow performance and geometric properties are summarized on an overall basis for the row. Appropriate quantities, given also on a streamline basis, are mass averaged in the summary.

As mentioned previously, the three types of rows, or axial stations, within a compressor are INLET, ROTOR, and STATOR. INLET is self-descriptive; it refers to the initial axial station considered, and all quantities given apply to the inlet stations. ROTOR refers to an axial station or row which, in terms of radial specification of streamlines, is considered to be at a rotor exit; however, both rotor inlet and exit quantities appear in ROTOR output. Similarly, STATOR refers to stator exit with respect to the definition of radial stations; as for a rotor, stator inlet and exit quantities are given under STATOR.

The three types of axial stations or rows lend themselves to a form of subscripting. Symbols for output quantities may contain a numeric character for row designation according to the following convention:

1. Refers to compressor inlet row or inlet to first stator.
2. Refers to a rotor exit and stator inlet row.
3. Refers to a stator exit and/or rotor inlet row.

OUTPUT:

INLET TO COMPRESSOR:

FLOW	Absolute Airflow	lb/sec

OUTPUT: (Continued)

INLET TO COMPRESSOR: (Continued)

RPM	Actual Speed	revolutions/minute
PO1	Inlet Total Pressure	psia
TO1	Inlet Total Temperature	^{o}R
PS	Inlet Static Pressure	psia
TS	Inlet Static Temperature	^{o}R
AL1	Inlet Air Angle	degrees
EPS1	Streamline Angle With Respect to Axis at Inlet	degrees
PERL	Percent Radial Height (From Hub)	%
R1	Radius at Inlet	inches
R/RT	Streamline Radius/Actual Tip Radius	-
CX1	Inlet Axial Air Velocity	ft/sec
CU1	Inlet Tangential Air Velocity	ft/sec
CR1	Inlet Radial Air Velocity	ft/sec
CM1	Inlet Meridional Air Velocity	ft/sec
U1	Blade Velocity Based on Radial at Inlet	ft/sec
CA1	Inlet Absolute Air Velocity	ft/sec
M1A	Inlet Absolute Mach No.	-
DW1	Incremental Flow Rate Between Streamlines	lbm/sec

OUTPUT: (Continued)

INLET TO COMPRESSOR: (Continued)

RC	Radius of Curvature of Streamline	inches
WCR1	Corrected Inlet Flow Rate	lbm/sec
NCR1	Corrected Wheel Speed	rpm
WC/A1	Ratio of Corrected Inlet Flow to Actual Inlet Area	lbm/sec
POA	Mass Averaged Total Pressure	psia
TOA	Mass Averaged Total Temperature	^{o}R
PHI	Ratio of Inlet Axial Air Velocity to Blade Velocity at Mean Radii	-
HUB/TIP	Ratio of Hub Radius to Tip Radius Actual	-
AREA	Inlet Annular Area, Actual	$inches^2$
AREAE	Inlet Annual Area, Effective	$inches^2$
CP	Constant Pressure Specific Heat	$Btu/lbm^{o}R$
GAMMA	Ratio of Specific Heats	-

ROTOR OUTPUT:

PO1R	Total Pressure at Rotor Inlet, Relative to Rotor	psia
PO2R	Total Pressure at Rotor Exit, Relative to Rotor	psia

OUTPUT: (Continued)

ROTOR OUTPUT: (Continued)

TO1R	Total Temperature at Rotor Inlet, Relative to Rotor	^{o}R
TO2R	Total Temperature at Rotor Exit, Relative to Rotor	^{o}R
PS2	Static Pressure at Rotor Exit	psia
ZR	Rotor Loss Coefficient $\frac{PO1R - PO2R}{PO1R - PS1}$	-
PERL2	Percent Radial Height at Rotor Exit	%
R2	Radius at Rotor Exit	inches
R/RT	Radius at Streamline Divided by Tip Radius	-
B1	Inlet Air Angle, Relative to Rotor	degrees
THETA	Flow Turning Angle, (B1 - B2)	degrees
B2	Exit Air Angle, Relative to Rotor	degrees
DBI	Incidence Angle, (B1 - B1*)	degrees
SLD	Solidity, Ratio of Chord to Spacing	-
DFACTR	Rotor Diffusion Factor	-
DP/QR	$\frac{PS2 - PS1}{PO1R - PSI}$ for Rotor	-
DEQUIV	Equivalent Diffusion Factor	-

OUTPUT: (Continued)

ROTOR OUTPUT:(Continued)

DW2	Incremental Flow Rate Between Streamlines at Rotor Exit	lb/sec
B1*	Angle Between Tangent to Blade Mean Camber Line and Axis at Inlet	degrees
THETA*	Blade Turning Angle (B1* - B2*)	degrees
B2*	Angle Between Tangent to Blade Mean Camber Line and Axis at Exit	degrees
DEV	Deviation Angle, (B2 - B2*)	degrees
EPS2	Streamline Angle With Respect to Axis, at Rotor Exit	degrees
RC2	Radius of Curvature of Streamline at Exit	degrees
F-TANG	Tangential Force on Blades	lbf
F-AXIAL	Axial Force on Blades	lbf
R-STRESS	Radius at Which Forces are Given	inches
M1R	Inlet Relative Mach No.	-
M2R	Exit Relative Mach No.	-
W1R	Inlet Air Velocity, Relative to Blade	ft/sec
W2R	Exit Air Velocity, Relative to Blade	ft/sec
CX2	Exit Axial Air Velocity	ft/sec

OUTPUT: (Continued)

ROTOR OUTPUT: (Continued)

WU2	Exit Tangential Air Velocity	ft/sec
CM2	Exit Meridional Air Velocity	ft/sec
CR2	Exit Radial Air Velocity	ft/sec
U2	Exit Blade Velocity	ft/sec
PRS	Stage Total Pressure Ratio	-
TRS	Stage Total Temperature Ratio	-
EFFS	State Efficiency	%
PRC	Cumulative Total Pressure Ratio	-
TRC	Cumulative Total Temperature Ratio	-
EFFC	Cumulative Efficiency	%
MX2	Axial Mach No. at Rotor Exit	-
CX2/CX1	Ratio of Exit to Inlet Axial Velocity	-
WCR2	Corrected Flow Rate, at Rotor Exit	lbm/sec
NCR2	Corrected Wheel Speed, at Rotor Exit	rev/min
WC/A2	Ratio of Corrected Exit Flow Rate to Actual Rotor Exit Area	lbm/sec ft^2
PRSA	Mass Averaged Stage Pressure Ratio	-
TRSA	Mass Averaged Stage Temperature Ratio	-

OUTPUT: (Continued)

ROTOR OUTPUT: (Continued)

EFFSA	Mass Averaged Stage Efficiency	%
PRCA	Mass Averaged Cumulative Pressure Ratio	-
TRCA	Mass Averaged Cumulative Temperature Ratio	-
EFFCA	Mass Averaged Cumulative Efficiency	%
PO2A	Mass Averaged Total Pressure at Rotor Exit	psia
TO2A	Mass Averaged Total Temperature at Rotor Exit	^oR
PHI2	Flow Coefficient - Ratio of Rotor Exit Axial Air Velocity to Rotor Exit Mean Blade Velocity	-
PSI2	Pressure Coefficient	-
AREA2	Actual Rotor Exit Area	inches^2
AREE2	Effective Rotor Exit Area	inches^2
HPS	Stage Horsepower (Absorbed)	horsepower
HPC	Cumulative Stage Horsepower	horsepower
CP	Specific Heat Constant Pressure	Btu/lbm ^oR
GAMMA	Ratio of Specific Heats	-

STATOR OUTPUT:

PO2A	Absolute Total Pressure at Stator Inlet	psia

OUTPUT: (Continued)

STATOR OUTPUT: (Continued)

PO3A	Absolute Total Pressure at Stator Exit	psia
TO23A	Absolute Total Temperature through Stator (at both Inlet and Exit)	°R
PS3	Static Pressure at Stator Exit	psia
ZS	Stator Loss Coefficient	-
DPO/P	Ratio of Total Pressure Loss Across Stator to Stator Inlet Total Pressure	-
PERL3	Percent Length (from Hub) at Stator Exit	-
R3	Radius, at Stator Exit	inches
R/RT	Radius at Streamline Divided by Tip Radius	-
AL2	Stator Inlet Air Angle	degrees
THETA	Stator Flow Turning Angle	degrees
AL3	Stator Exit Air Angle	degrees
DAL2	Stator Incidence Angle	degrees
SLD	Solidity; Ratio of Vane Chord to Spacing	-
DFACTS	Stator Diffusion Factor	-
DP/QS	$\frac{PS3 - PS2}{PS2A - PS2}$	-
DEQUIV	Equivalent Diffusion Parameter	-

OUTPUT: (Continued)

STATOR OUTPUT: (Continued)

DW3	Incremental Flow Rate Between Streamlines, at Stator Exit	lbm/sec
AL2*	Stator Inlet Metal Angle; Angle between Tangent to Vane Element Mean Line at Leading Edge and Axis	degrees
THETA*	Vane Camber or Turning Angle	degrees
AL3*	Stator Exit Metal Angle; Angle between Tangent to Vane Element Mean Line at Trailing Edge and Axis	degrees
DEV	Stator Deviation Angle	degrees
EPS3	Streamline Angle With Respect to Axis, at Stator Exit	degrees
RC3	Radius of Curvature of Streamlines at Stator Exit	inches
F-TANG	Tangential Force on Blades	lb
F-AXIAL	Axial Force on Blades	lb
R-STRESS	Radius at Which F-TANG and F-AXIAL Are Given	inches
M2A	Stator Inlet Absolute Mach No.	-
M3A	Stator Exit Absolute Mach No.	-
C2A	Stator Inlet Absolute Air Velocity	ft/sec
C3A	Stator Exit Absolute Air Velocity	ft/sec
CX3	Stator Exit Axial Air Velocity	ft/sec

OUTPUT: (Continued)

STATOR OUTPUT: (Continued)

CU3	Stator Exit Tangential Air Velocity	ft/sec
CM3	Stator Exit Meridional Air Velocity	ft/sec
CR3	Stator Exit Radial Air Velocity	ft/sec
U3	Blade Velocity, Based on R3, of Next Rotor	ft/sec
PRS	Stage Total Pressure Ratio	-
TRS	Stage Total Temperature Ratio	-
EFFS	Stage Efficiency	-
PRC	Cumulative Total Pressure Ratio	-
TRC	Cumulative Total Temperature Ratio	-
EFFC	Cumulative Efficiency	%
MX3	Axial Mach No. at Stator Exit	-
CU2	Stator Inlet Tangential Velocity	ft/sec
WCR3	Corrected Flow Rate, at Stator Exit	lbm/sec
NCR2	Corrected Wheel Speed, at Stator Exit	rev/min
WC/A3	Ratio of Corrected Exit Flow to Actual Stator Exit Area	lbm/sec ft^2

OUTPUT: (Continued)

STATOR OUTPUT: (Continued)

PRSA	Mass Averaged Stage Pressure Ratio	-
TRSA	Mass Averaged Stage Temperature Ratio	-
EFFSA	Mass Averaged Stage Efficiency	%
PRCA	Mass Averaged Cumulative Pressure Ratio	-
TRCA	Mass Averaged Cumulative Temperature Ratio	-
EFFCA	Mass Averaged Cumulative Efficiency	%
PO3A	Mass Averaged Total Pressure at Stator Exit	psia
TO3A	Mass Averaged Total Temperature at Stator Edge	^{o}R
PHI3	Flow Coeffieicnt - Ratio of Stator Exit Axial Air Velocity to Rotor Inlet Mean Blade Velocity	-
PSI3	Pressure Coefficient	-
AREA3	Stator Exit Area, Actual	$inches^2$
AREE3	Stator Exit Area, Effective	$inches^2$
CP	Specific Heat Constant Pressure	Btu/lbm ^{o}R
GAMMA	Ratio of Specific Heats	-

APPENDIX II

COMPUTOR OUTPUT OF TRAVERSE DATA FOR COMPRESSOR

TABLE IV
COMPUTER OUTPUT OF TRAVERSE DATA FOR COMPRESSOR - ORIGNAL DESIGN
TEST NUMBER 19

***** INLET *****

RPM = 0.5603000 05
FLOW = 0.3840000 01

STRM	PU1	TO1	PS	TS	AL1	EPS1	PERL	R1	R/RT
1	0.1125000 02	0.4190000 03	0.9438840 01	0.3984460 03	0.0	0.0	0.5000000-02	0.1346900 01	0.4951840 00
2	0.1125000 02	0.4190000 03	0.9438840 01	0.3984460 03	0.0	0.0	0.2285730 00	0.1655430 01	0.6086140 00
3	0.1125000 02	0.4190000 03	0.9438840 01	0.3984460 03	0.0	0.0	0.4155290 00	0.1913430 01	0.7034670 00
4	0.1125000 02	0.4190000 03	0.9438840 01	0.3984460 03	0.0	0.0	0.5810510 00	0.2141850 01	0.7874450 00
5	0.1125000 02	0.4190000 03	0.9438840 01	0.3984460 03	0.0	0.0	0.7305480 00	0.2348160 01	0.8632930 00
6	0.1125000 02	0.4190000 03	0.9438840 01	0.3984460 03	0.0	0.0	0.8671390 00	0.2536650 01	0.9325920 00
7	0.1125000 02	0.4190000 03	0.9438840 01	0.3984460 03	0.0	0.0	0.9950000 00	0.2713100 01	0.9974530 00

STRM	CX1	CU1	CR1	CM1	U1	CA1	M1A	OW1	RC
1	0.4962100 03	0.0	0.0	0.4962100 03	0.6585720 03	0.4962100 03	0.5068340 00	0.0	0.1000000 01
2	0.4962100 03	0.0	0.0	0.4962100 03	0.8094290 03	0.4962100 03	0.5068340 00	0.6412500 00	0.1000000 01
3	0.4962100 03	0.0	0.0	0.4962100 03	0.9355790 03	0.4962100 03	0.5068340 00	0.6374100 00	0.1000000 01
4	0.4962100 03	0.0	0.0	0.4962100 03	0.1047270 04	0.4962100 03	0.5068340 00	0.6412500 00	0.1000000 01
5	0.4962100 03	0.0	0.0	0.4952100 03	0.1148140 04	0.4962100 03	0.5068340 00	0.6412500 00	0.1000000 01
6	0.4962100 03	0.0	0.0	0.4962100 03	0.1240310 04	0.4962100 03	0.5068340 00	0.6374100 00	0.1000000 01
7	0.4962100 03	0.0	0.0	0.4962100 03	0.1326580 04	0.4962100 03	0.5068340 00	0.6412500 00	0.1000000 01

WCR1	NCR1	WC/A1	PUA	TOA	PHI	HUB/TIP	AREA	AREAE
0.4509670 01	0.6234070 05	0.3689370 02	0.1125000 02	0.4190000 03	0.4999210 00	0.4926470 00	0.1760170 02	0.1742570 02

CP	GAMMA
0.2393140 00	0.1401620 01

TABLE IV - Continued

***** ROTOR 1*****

STRM	PO1R	PO2R	TO1R	TO2P	PS2	ZR	PERL2	R2	R/RT
1	0.150232D 02	0.164079D 02	0.455205D 03	0.479757D 03	0.118524D 02	0.293362D 00	0.100000D-01	0.174485D 01	0.641489D 00
2	0.172623D 02	0.178580D 02	0.473691D 03	0.494090D 03	0.128482D 02	0.273626D 00	0.207879D 00	0.193976D 01	0.713147D 00
3	0.197143D 02	0.189954D 02	0.492067D 03	0.508337D 03	0.135554D 02	0.300627D 00	0.386582D 00	0.211578D 01	0.777861D 00
4	0.224223D 02	0.193563D 02	0.510553D 03	0.522670D 03	0.141229D 02	0.344946D 00	0.552477D 00	0.227919D 01	0.837938D 00
5	0.253857D 02	0.194164D 02	0.529039D 03	0.537002D 03	0.146282D 02	0.459525D 00	0.707249D 00	0.243164D 01	0.893986D 00
6	0.285982D 02	0.191779D 02	0.547415D 03	0.551249D 03	0.151286D 02	0.580577D 00	0.852027D 00	0.257425D 01	0.946614D 00
7	0.321124D 02	0.161258D 02	0.565901D 03	0.565582D 03	0.156472D 02	0.614089D 00	0.990000D 00	0.271015D 01	0.996379D 00

STRM	B1	THETA	B2	DB1	SLD	DFACTR	DP/DR	DEQUIV	DW2
1	0.510933D 02	0.490825D 03	0.392083D 01	0.851331D 01	0.239400D 01	0.287159D 00	0.432189D 00	0.142533D 01	0.0
2	0.554902D 02	0.400034D 02	0.184867D 02	0.821627D 01	0.227527D 01	0.364898D 00	0.435789D 00	0.158019D 01	0.831355D 00
3	0.620595D 02	0.330513D 02	0.290082D 02	0.789512D 01	0.216805D 01	0.417249D 00	0.400617D 00	0.169953D 01	0.822312D 00
4	0.646477D 02	0.280384D 02	0.366093D 02	0.761305D 01	0.206851D 01	0.464979D 00	0.360774D 00	0.181303D 01	0.803221D 00
5	0.666267D 02	0.212114D 02	0.454153D 02	0.736736D 01	0.197565D 01	0.564178D 00	0.325418D 00	0.208998D 01	0.708625D 00
6	0.681951D 02	0.744506D 01	0.607500D 02	0.714929D 01	0.188878D 01	0.709530D 00	0.296969D 00	0.264399D 01	0.488368D 00
7	0.694916D 02	-.195084D 02	0.890000D 02	0.696160D 01	0.160600D 01	0.782674D 00	0.273810D 00	-.306529D 01	0.185791D 00

STRM	B1*	THETA*	B2*	DEV	EPS2	KC2	F-TANG	F-AXIAL	R-STRESS
1	0.444900D 02	0.353200D 02	0.917000D 01	-.524917D 01	0.0	0.100000D 01	0.0	0.0	0.0
2	0.502719D 02	0.278330D 02	0.224409D 02	-.395418D 01	0.0	0.100000D 01	-.196539D 02	-.110993D 02	0.167174D 01
3	0.541644D 02	0.216508D 02	0.325136D 02	-.350543D 01	0.0	0.100000D 01	-.177403D 02	-.131787D 02	0.190610D 01
4	0.573347D 02	0.170333D 02	0.400013D 02	-.339205D 01	0.0	0.100000D 01	-.166085D 02	-.141694D 02	0.211256D 01
5	0.597593D 02	0.135715D 02	0.456878D 02	-.272553D 00	0.0	0.100000D 01	-.148004D 02	-.136438D 02	0.230021D 01
6	0.613453D 02	0.108968D 02	0.501491D 02	0.106010D 02	0.0	0.100000D 01	-.108955D 02	-.121331D 02	0.247267D 01
7	0.625300D 02	0.878000D 01	0.537500D 02	0.352500D 02	0.0	0.100000D 01	-.446787D 01	-.132778D 02	0.263354D 01

STRM	M1R	M2R	W1R	W2R	CX2	WU2	CM2	CR2	U2
1	0.642249D 00	0.597424D 00	0.824586D 03	0.715132D 03	0.713458D 03	0.488992D 02	0.713458D 03	0.0	0.853151D 03
2	0.969744D 00	0.701914D 00	0.949421D 03	0.729988D 03	0.692319D 03	0.231468D 03	0.692319D 03	0.0	0.948454D 03
3	0.108173D 01	0.710988D 00	0.105902D 04	0.749132D 03	0.655154D 03	0.363280D 03	0.655154D 03	0.0	0.103452D 04
4	0.119367D 01	0.714638D 00	0.115889D 04	0.763158D 03	0.612603D 03	0.455113D 03	0.612603D 03	0.0	0.111442D 04
5	0.127756D 01	0.648766D 00	0.125073D 04	0.708063D 03	0.497034D 03	0.504292D 03	0.497034D 03	0.0	0.118896D 04
6	0.136449D 01	0.518640D 00	0.133588D 04	0.581956D 03	0.284356D 03	0.507754D 03	0.284356D 03	0.0	0.125869D 04
7	0.144667D 01	0.462979D 00	0.141635D 04	0.528723D 03	0.922745D 01	0.528642D 03	0.922745D 01	0.0	0.132514D 04

STRM	PRS	TRS	EFFS	PRC	TRC	EFFC	MX2	CX2/CX1
1	0.211337D 01	0.127339D 01	0.974700D 00	0.211337D 01	0.127339D 01	0.873964D 00	0.695792D 00	0.143781D 01
2	0.206174D 01	0.127095D 01	0.850272D 00	0.206174D 01	0.127095D 01	0.849559D 00	0.665694D 00	0.139521D 01
3	0.201736D 01	0.127669D 01	0.805018D 00	0.201736D 01	0.127669D 01	0.804345D 00	0.621795D 00	0.132032D 01
4	0.199918D 01	0.129276D 01	0.750005D 00	0.199918D 01	0.129276D 01	0.749379D 00	0.573655D 00	0.123456D 01
5	0.193517D 01	0.132435D 01	0.642045D 00	0.193517D 01	0.132435D 01	0.641511D 00	0.455410D 00	0.100166D 01
6	0.189283D 01	0.137661D 01	0.532684D 00	0.189283D 01	0.137661D 01	0.532243D 00	0.253516D 00	0.573055D 00
7	0.192546D 01	0.142055D 01	0.471044D 00	0.192546D 01	0.142055D 01	0.490637D 00	0.807920D-02	0.185959D-01

WCR2	NCR2	WC/A2	PRSA	TRSA	EFFSA	PRCA	TRCA	EFFCA
0.255925D 01	0.547408D 05	0.267326D 02	0.200675D 01	0.129694D 01	0.743880D 00	0.200675D 01	0.129694D 01	0.743259D 00

PO2A	TO2A	PH12	PS12	AREA2	AREE2	HPS	HPC
0.225760D 02	0.543420D 03	0.583174D 00	0.562737D 00	0.137859D 02	0.135101D 02	0.161787D 03	0.161910D 03

CP	GAMMA
0.239314D 00	0.140162D 01

TABLE IV - Continued

***** STATOR 1*****

STRM	PO2A	PT3A	TO23A	PS3	ZS	DPO/PO	PERL3	R3	R/RT
1	0.2377540 02	0.2329990 02	0.5335510 03	0.1906410 02	0.3988130-01	0.2000000-01	0.1500000-01	0.1932000 01	0.7102940 00
2	0.2319460 02	0.2273070 02	0.5325300 03	0.1906410 02	0.4483620-01	0.2000000-01	0.2022620 00	0.2081810 01	0.7653710 00
3	0.2269530 02	0.2224140 02	0.5349310 03	0.1906410 02	0.4966170-01	0.2000000-01	0.3759110 00	0.2220730 01	0.8164440 00
4	0.2249080 02	0.2204090 02	0.5416650 03	0.1906410 02	0.5375530-01	0.2000000-01	0.5402760 00	0.2352220 01	0.8647870 00
5	0.2177070 02	0.2133530 02	0.5549050 03	0.1906410 02	0.6096140-01	0.2000000-01	0.6959270 00	0.2476740 01	0.9105670 00
6	0.2129430 02	0.2086940 02	0.5768000 03	0.1906410 02	0.6907310-01	0.2000000-01	0.8432520 00	0.2594600 01	0.9538980 00
7	0.2166140 02	0.2172820 02	0.5952110 03	0.1906410 02	0.7203380-01	0.2000000-01	0.9850000 00	0.2708000 01	0.9955880 00

STRM	AL2	THETA	AL3	DAL2	SLD	DFACTS	DP/QS	DEQUIV	DW3
1	0.4842350 02	0.4842350 02	0.0	-.1516460 01	0.2288000 01	0.6076350 00	0.6048580 00	0.2253070 01	0.0
2	0.4600270 02	0.4600270 02	0.0	-.2014710 01	0.2138190 01	0.6063690 00	0.6007850 00	0.2247140 01	0.7739460 00
3	0.4569490 02	0.4569490 02	0.0	-.7778620 00	0.1999270 01	0.6179710 00	0.6027130 00	0.2268280 01	0.7139140 00
4	0.4710290 02	0.4710290 02	0.0	0.1926750 01	0.1867780 01	0.6249310 00	0.5935000 00	0.2245980 01	0.6869410 00
5	0.5402230 02	0.5402230 02	0.0	0.9940870 01	0.1743260 01	0.6892220 00	0.6210630 00	0.2369480 01	0.6212550 00
6	0.6925990 02	0.6925990 02	0.0	0.2611550 02	0.1625400 01	0.7641130 00	0.6382940 00	0.2376550 01	0.5282870 00
7	0.8933630 02	0.8933630 02	0.0	0.4701630 02	0.1512000 01	0.7467540 00	0.5681440 00	0.1926100 01	0.5156470 00

STRM	AL2*	THETA*	AL3*	DEV	EPS3	RC3	F-TANG	F-AXIAL	R-STRESS
1	0.4934000 02	0.4994000 02	0.0	0.0	0.0	0.1000000 01	0.0	0.0	0.0
2	0.4801740 02	0.4801740 02	0.0	0.0	0.0	0.1000000 01	0.1829670 02	-.9945070 01	0.1924600 01
3	0.4647270 02	0.4647270 02	0.0	0.0	0.0	0.1000000 01	0.1540180 02	-.8608860 01	0.2089520 01
4	0.4517620 02	0.4517620 02	0.0	0.0	0.0	0.1000000 01	0.1420410 02	-.8047130 01	0.2241980 01
5	0.4408140 02	0.4408140 02	0.0	0.0	0.0	0.1000000 01	0.1297560 02	-.8179870 01	0.2384950 01
6	0.4314440 02	0.4314440 02	0.0	0.0	0.0	0.1000000 01	0.1178610 02	-.9302460 01	0.2519310 01
7	0.4232000 02	0.4232000 02	0.0	0.0	0.0	0.1000000 01	0.1240020 02	-.1232490 02	0.2646750 01

STRM	M2A	M3A	C2A	C.A	CX3	CU3	CM3	CR3	D3
1	0.1048480 01	0.5428530 00	0.1075100 04	0.5975870 03	0.5975870 03	0.0	0.5975870 03	0.0	0.9446590 03
2	0.9583510 00	0.5073820 00	0.9966810 03	0.5599860 03	0.5599860 03	0.0	0.5599860 03	0.0	0.1017910 04
3	0.8902110 00	0.4742210 00	0.9379710 03	0.5262030 03	0.5262030 03	0.0	0.5262030 03	0.0	0.1085830 04
4	0.8427630 00	0.4597830 00	0.8999810 03	0.5140490 03	0.5140490 03	0.0	0.5140490 03	0.0	0.1150130 04
5	0.7752040 00	0.4040060 00	0.8460580 03	0.4593120 03	0.4593120 03	0.0	0.4593120 03	0.0	0.1211010 04
6	0.7158830 00	0.3615530 00	0.8029690 03	0.4204100 03	0.4204100 03	0.0	0.4204100 03	0.0	0.1268640 04
7	0.6974290 00	0.3947300 00	0.7965500 03	0.4651150 03	0.4651150 03	0.0	0.4651150 03	0.0	0.1324090 04

STRM	PRS	TRS	EFFS	PRC	TRC	EFFC	MX3	CU2
1	0.2071110 01	0.1273390 01	0.9435380 00	0.2071110 01	0.1273390 01	0.8477810 00	0.5428530 00	0.8042520 03
2	0.2020500 01	0.1270950 01	0.8240610 00	0.2020500 01	0.1270950 01	0.8233290 00	0.5073820 00	0.7169850 03
3	0.1977020 01	0.1276690 01	0.7795090 00	0.1977020 01	0.1276670 01	0.7788190 00	0.4742210 00	0.6712400 03
4	0.1959200 01	0.1292760 01	0.7259590 00	0.1959200 01	0.1292760 01	0.7253170 00	0.4597830 00	0.6593060 03
5	0.1896470 01	0.1324350 01	0.6205430 00	0.1896470 01	0.1324350 01	0.6199960 00	0.4040060 00	0.6046680 03
6	0.1954970 01	0.1376610 01	0.5142830 00	0.1954970 01	0.1376610 01	0.5138320 00	0.3615530 00	0.7509340 03
7	0.1886950 01	0.1420550 01	0.4744850 00	0.1886950 01	0.1420550 01	0.4740670 00	0.3947300 00	0.7964970 03

WCR3	NCR2	WC/A3	PRSA	TRSA	EFFSA	PRCA	TRCA	EFFCA
0.2637330 01	0.5451760 05	0.3256210 02	0.1955550 01	0.1307580 01	0.6888640 00	0.1955550 01	0.1307580 01	0.6882550 00

PO3A	TO3A	PH13	PS13	AREA3	AREE3	CP	GAMMA
0.2200030 02	0.5478770 03	0.4596050 00	0.5409730 00	0.1166160 02	0.1131170 02	0.2398390 00	0.1400390 01

TABLE IV - Continued

***** ROTOR 2*****

STRM	PC1A	PO2R	TO1R	TO2R	PS2	ZR	PERL2	R2	R/RT
1	0.3576510 02	0.3425500 02	0.6190430 03	0.6214850 03	0.2437270 02	0.3068830 00	0.1500000-01	0.2099450 01	0.7718570 00
2	0.3843430 02	0.3337180 02	0.6130270 03	0.6302650 03	0.2481520 02	0.3902860 00	0.1956680 00	0.2213270 01	0.8137030 00
3	0.4009920 02	0.3335990 02	0.6333520 03	0.6424090 03	0.2522160 02	0.4174470 00	0.3664840 00	0.2320890 01	0.8532670 00
4	0.4211330 02	0.3304000 02	0.6520860 03	0.6589440 03	0.2560310 02	0.4600300 00	0.5306860 00	0.2424330 01	0.8912990 00
5	0.4274130 02	0.3393000 02	0.6773250 03	0.6819850 03	0.2595840 02	0.4169690 00	0.6881620 00	0.2523540 01	0.9277730 00
6	0.4333570 02	0.3683980 02	0.7111490 03	0.7136230 03	0.2625440 02	0.2894540 00	0.8387860 00	0.2618440 01	0.9626600 00
7	0.4572040 02	0.3865410 02	0.7415610 03	0.7418360 03	0.2648160 02	0.2673260 00	0.9850000 00	0.2710550 01	0.9965260 00

STRM	A1	THETA	B2	DB1	SLD	OFACTR	OP/QR	OEQUIV	DW2
1	0.5754270 02	0.2454470 02	0.3309800 02	0.4352750 01	0.2390400 01	0.3476280 00	0.2999030 00	0.1596130 01	0.0
2	0.6118330 02	0.2172550 02	0.3945690 02	0.5332710 01	0.2274770 01	0.4235590 00	0.2969010 00	0.1751660 01	0.8073540 00
3	0.6414440 02	0.1903310 02	0.4511160 02	0.6498180 01	0.2165450 01	0.4653880 00	0.2927250 00	0.1844390 01	0.7065210 00
4	0.6591770 02	0.1487470 02	0.5103930 02	0.6595850 01	0.2060360 01	0.5161890 00	0.2836890 00	0.1970590 01	0.6115650 00
5	0.6922930 02	0.1545190 02	0.5377730 02	0.8349600 01	0.1959580 01	0.5152920 00	0.2906900 00	0.1950220 01	0.5500620 00
6	0.7166550 02	0.1671230 02	0.5495320 02	0.9472290 01	0.1863180 01	0.4431330 00	0.2962420 00	0.1760680 01	0.5757750 00
7	0.7064530 02	0.1160410 02	0.5904100 02	0.7215040 01	0.1769600 01	0.4208370 00	0.2782600 00	0.1710760 01	0.5887100 00

STRM	A1*	THETA*	B2*	DEV	EPS2	RC2	F-TANG	F-AXIAL	R-STRESS
1	0.5333000 02	0.2179000 02	0.2954000 02	0.3558010 01	0.0	0.1000000 01	0.0	0.0	0.0
2	0.5595010 02	0.2044280 02	0.3540730 02	0.4049520 01	0.0	0.1000000 01	-.1450780 02	-.1086960 02	0.2081630 01
3	0.5764660 02	0.1757290 02	0.4037380 02	0.5037760 01	0.0	0.1000000 01	-.1288340 02	-.1051360 02	0.2209170 01
4	0.5912190 02	0.1527790 02	0.4404400 02	0.6995040 01	0.0	0.1000000 01	-.1134300 02	-.1039590 02	0.2329540 01
5	0.6343970 02	0.1329510 02	0.4744460 02	0.6332770 01	0.0	0.1000000 01	-.1035440 02	-.1098340 02	0.2444210 01
6	0.6219320 02	0.1184530 02	0.5034790 02	0.4605320 01	0.0	0.1000000 01	-.1037410 02	-.1273170 02	0.2553330 01
7	0.6343010 02	0.1054300 02	0.5285000 02	0.6190970 01	0.0	0.1000000 01	-.9681790 01	-.1357310 02	0.2657900 01

STRM	M1R	M2R	W1R	W2R	CX2	WU2	CM2	CR2	U2
1	0.1015420 01	0.7145210 00	0.1117810 04	0.8318090 03	0.6968380 03	0.4542290 03	0.6968380 03	0.0	0.1026530 04
2	0.1052540 01	0.6644460 00	0.1161780 04	0.7839320 03	0.6052760 03	0.4981860 03	0.6052760 03	0.0	0.1082190 04
3	0.1047420 01	0.6448220 00	0.1206620 04	0.7698520 03	0.5433070 03	0.5454260 03	0.5433070 03	0.0	0.1134810 04
4	0.1126790 01	0.6161620 00	0.1259780 04	0.7475420 03	0.4700480 03	0.5812720 03	0.4700480 03	0.0	0.1185390 04
5	0.1139230 01	0.6304730 00	0.1295190 04	0.7768750 03	0.4590750 03	0.6267260 03	0.4590750 03	0.0	0.1233900 04
6	0.1149380 01	0.7127330 00	0.1334490 04	0.8893130 03	0.5106830 03	0.7280660 03	0.5106830 03	0.0	0.1280290 04
7	[illegible]	0.7552640 00	0.1401400 04	0.9554240 03	0.4914940 03	0.8193100 03	0.4914940 03	0.0	0.1325330 04

STRM	PRS	TRS	EFFS	PRC	TRC	EFFC	MX2	CX2/CX1
1	0.1555410 01	0.1183730 01	0.7327170 00	0.3221430 01	0.1507350 01	0.7825870 00	0.5985830 00	0.1166090 01
2	0.1532130 01	0.1194060 01	0.6550740 00	0.3095680 01	0.1522670 01	0.7294040 00	0.5130520 00	0.1080680 01
3	0.1534100 01	0.1203690 01	0.6236950 00	0.3032940 01	0.1543110 01	0.6871150 00	0.4550690 00	0.1032500 01
4	0.1514890 01	0.1220680 01	0.5752200 00	0.2975800 01	0.1578040 01	0.6327120 00	0.3874370 00	0.9144010 00
5	0.1573330 01	0.1225390 01	0.6144030 00	0.2985630 01	0.1622850 01	0.5891340 00	0.3725620 00	0.9994820 00
6	0.1608350 01	0.1204700 01	0.7109450 00	0.2983450 01	0.1658410 01	0.5570070 00	0.4092830 00	0.1214730 01
7	0.1540470 01	0.1168240 01	0.6990060 00	0.2907540 01	0.1687950 01	0.5185050 00	0.3885270 00	0.1056710 01

WCR2	NCR2	WC/A2	PRSA	TRSA	EFFSA	PRCA	TRCA	EFFCA
0.1669710 01	0.4958650 05	0.2828140 02	0.1550640 01	0.1208740 01	0.6400300 00	0.3032350 01	0.1580580 01	0.6426400 00

PC2A	TO2A	PHI2	PSI2	AREA2	AREE2	HPS	HPC
0.3411400 02	0.6622630 01	0.4072870 00	0.3415490 00	0.9519970 01	0.9234370 01	0.1490660 03	0.3171210 03

CP	GAMMA
0.2398390 00	0.1400390 01

TABLE IV - Continued

***** STATOR 2*****

STRM	PD2A	PD3A	TD23A	PS3	ZS	OPD/PD	PERL3	R3	P/RT
1	0.3624100 02	0.3551620 02	0.6315810 03	0.2903050 02	0.6107180-01	0.2000000-01	0.1503300-01	0.2183170 01	0.8026380 00
2	0.3482640 02	0.3412990 02	0.6380000 03	0.2903050 02	0.6957460-01	0.2000000-01	0.1926630 00	0.2280000 01	0.8382360 00
3	0.3412060 02	0.3343820 02	0.6465640 03	0.2903050 02	0.7668430-01	0.2000000-01	0.3620820 00	0.2372330 01	0.8721820 00
4	0.3347770 02	0.3280820 02	0.6612000 03	0.2903050 02	0.8502660-01	0.2000000-01	0.5261140 00	0.2461730 01	0.9050480 00
5	0.3358160 02	0.3290990 02	0.6799750 03	0.2903050 02	0.8810370-01	0.2000000-01	0.6843940 00	0.2547990 01	0.9367630 00
6	0.3356380 02	0.3289250 02	0.6948720 03	0.2903050 02	0.9183740-01	0.2000000-01	0.8365860 00	0.2630940 01	0.9672570 00
7	0.3270990 02	0.3205570 02	0.7072520 03	0.2903050 02	0.1050370 00	0.2000000-01	0.9850000 00	0.2711820 01	0.9969940 00

STRM	AL2	THETA	AL3	DAL2	SLD	DFACTS	DP/QS	DEQUIV	DW3
1	0.3939590 02	0.3939590 02	0.0	-.7554090 01	0.2292500 01	0.4156310 00	0.3924560 00	0.1730100 01	0.0
2	0.4397510 02	0.4397510 02	0.0	-.2012030 01	0.2203670 01	0.4578500 00	0.4210580 00	0.1798380 01	0.7575610 00
3	0.4732930 02	0.4732930 02	0.0	0.2206690 01	0.2110960 01	0.4817520 00	0.4[illegible]80100 00	0.1826490 01	0.6829210 00
4	0.5211440 02	0.5211440 02	0.0	0.7772200 01	0.2036940 0[illegible]	0.5113120 00	0.[illegible]2440 00	0.18[illegible]3910 01	0.6274650 00
5	0.5290750 02	0.5290750 02	0.0	0.9270560 01	0.1957800 01	0.4992070 00	0.4029950 00	0.1802520 01	0.6048590 00
6	0.4723830 02	0.4723830 02	0.0	0.4242940 01	0.1881710 01	0.4758580 00	0.3797980 00	0.1781900 01	0.6020320 00
7	0.4583450 02	0.4583450 02	0.0	0.3434550 01	0.1807500 01	0.5079100 00	0.4092440 00	0.1866230 01	0.5651520 00

STRM	AL2*	THETA*	AL3*	DEV	EPS3	RC3	F-TANG	F-AXIAL	R-STRESS
1	0.4695000 02	0.4695000 02	0.0	0.0	0.0	0.1000000 01	0.0	0.0	0.0
2	0.4598720 02	0.4598720 02	0.0	0.0	0.0	0.1000000 01	0.1361310 02	-.5475560 01	0.2193970 01
3	0.4512260 02	0.4512260 02	0.0	0.0	0.0	0.1000000 01	0.1245300 02	-.5550170 01	0.2296620 01
4	0.4434220 02	0.4434220 02	0.0	0.0	0.0	0.1000000 01	0.1163790 02	-.5737950 01	0.2394820 01
5	0.4363690 02	0.4363690 02	0.0	0.0	0.0	0.1000000 01	0.1138590 02	-.5843390 01	0.2489400 01
6	0.4299540 02	0.4299540 02	0.0	0.0	0.0	0.1000000 01	0.1084720 02	-.5175740 01	0.2580230 01
7	0.4240000 02	0.4240000 02	0.0	0.0	0.0	0.1000000 01	0.9294370 01	-.4074970 01	0.2667940 01

STRM	M2A	M3A	C2A	C3A	CX3	CU3	CM3	CP3	U3
1	0.7745850 00	0.5444670 00	0.9017300 03	0.6517640 03	0.6517640 03	0.0	0.6517640 03	0.0	0.1067470 04
2	0.7129280 00	0.4863610 00	0.8410910 03	0.5884990 03	0.5884990 03	0.0	0.5884990 03	0.0	0.1114820 04
3	0.6714070 00	0.4538840 00	0.8015920 03	0.5544960 03	0.5544960 03	0.0	0.5544960 03	0.0	0.1159960 04
4	0.6309160 00	0.4216660 00	0.7654420 03	0.5223520 03	0.5223520 03	0.0	0.5223520 03	0.0	0.1203670 04
5	0.6177410 00	0.4270640 00	0.7611870 03	0.5362610 03	0.5362610 03	0.0	0.5362610 03	0.0	0.1245850 04
6	0.6028180 00	0.4261450 00	0.7521660 03	0.5409780 03	0.5409780 03	0.0	0.5409780 03	0.0	0.1286410 04
7	0.5576410 00	0.3789420 00	0.7054270 03	0.4871130 03	0.4871130 03	0.0	0.4871130 03	0.0	0.1325960 04

STRM	PRS	TRS	EFFS	PRC	TRC	EFFC	MX3	CU2
1	0.1524300 01	0.1183730 01	0.6971490 00	0.3157000 01	0.1507350 01	0.7667240 00	0.5444670 00	0.5723060 03
2	0.1501490 01	0.1198060 01	0.6222210 00	0.3033770 01	0.1522670 01	0.7141800 00	0.4863610 00	0.5840010 03
3	0.1503420 01	0.1209690 01	0.5925030 00	0.2972290 01	0.1543110 01	0.6725500 00	0.4538840 00	0.5893800 03
4	0.1488510 01	0.1220680 01	0.5450080 00	0.2916280 01	0.1578040 01	0.6191010 00	0.4216660 00	0.6041170 03
5	0.1542510 01	0.1225390 01	0.5853110 00	0.2925330 01	0.1622850 01	0.5764920 00	0.4270640 00	0.6071700 03
6	0.1576190 01	0.1204700 01	0.6787140 00	0.2923780 01	0.1656410 01	0.5450490 00	0.4261450 00	0.5522290 03
7	0.1510050 01	0.1188240 01	0.6643820 00	0.2849390 01	0.1687950 01	0.5071450 00	0.3789420 00	0.5060240 03

WCR3	NCR2	WC/A3	PRSA	TRSA	EFFSA	PRCA	TRCA	EFFCA
0.1910140 01	0.4956730 05	0.3281920 02	0.1518400 01	C.1209720 01	0.6048000 00	0.2969320 01	0.1581810 01	.6271510 00

PO3A	TO3A	PHI3	PS13	AREA3	APCE3	CP	GAMMA
0.3340490 02	0.6627770 03	0.4381140 00	0.3258330 00	0.8381060 01	0.8129630 01	0.2410480 00	0.1397580 01

TABLE V

COMPUTER OUTPUT OF TRAVERSE DATA FOR COMPRESSOR - ORIGINAL DESIGN-TEST NUMBER 20

***** INLET *****

RPM = 0.6115000 05
FLOW = 0.3147000 01

STRM	P01	T01	PS	TS	AL1	EPS1	PERL	R1	R/RT
1	0.1101300 02	0.5480000 03	0.9421300 01	0.5240790 03	0.0	0.0	0.5000000-02	0.1346900 01	0.4951840 00
2	0.1101300 02	0.5480000 03	0.9421300 01	0.5240790 01	0.0	0.0	0.2285730 00	0.1655430 01	0.6086140 00
3	0.1101300 02	0.5480000 03	0.9421300 01	0.5240790 03	0.0	0.0	0.4155290 00	0.1913430 01	0.7034670 00
4	0.1101300 02	0.5480000 03	0.9421300 01	0.5240790 03	0.0	0.0	0.5810510 00	0.2141850 01	0.7874450 00
5	0.1101300 02	0.5480000 03	0.9421300 01	0.5240790 03	0.0	0.0	0.7305480 00	0.2349160 01	0.8632930 00
6	0.1101300 02	0.5480000 03	0.9421300 01	0.5240790 03	0.0	0.0	0.8671390 00	0.2536650 01	0.9325920 00
7	0.1101300 02	0.5480000 03	0.9421300 01	0.5240790 03	0.0	0.0	0.9950000 00	0.2713100 01	0.9974630 00

STRM	CX1	CU1	CR1	CM1	U1	CA1	M1A	OW1	RC
1	0.5358990 03	0.0	0.0	0.5358990 03	0.7187520 03	0.5358990 03	0.4774860 00	0.0	0.1000000 01
2	0.5358990 03	0.0	0.0	0.5358990 03	0.8833950 03	0.5358990 03	0.4774860 00	0.5255450 00	0.1000000 01
3	0.5358990 01	0.0	0.0	0.5358990 03	0.1021070 04	0.5358990 03	0.4774860 00	0.5223990 00	0.1000000 01
4	0.5358990 03	0.0	0.0	0.5358990 03	0.1142970 04	0.5358990 03	0.4774860 00	0.5255450 00	0.1000000 01
5	0.5358990 03	0.0	0.0	0.5358990 03	0.1253060 04	0.5358990 03	0.4774860 00	0.5255450 00	0.1000000 01
6	0.5358990 03	0.0	0.0	0.5358990 03	0.1353640 04	0.5358990 03	0.4774860 00	0.5223980 00	0.1000000 01
7	0.5358990 03	0.0	0.0	0.5358990 03	0.1447800 04	0.5358990 03	0.4774860 00	0.5255450 00	0.1000000 01

WCR1	NCR1	WCAI	POA	TOA	PHI	HUB/TIP	AREA	AREAE
0.4317590 01	0.5949280 05	0.3532220 02	0.1101300 02	0.5480000 03	0.4947010 00	0.4926470 00	0.1760170 02	0.1742570 02

CP	GAMMA
0.2348400 00	0.1400390 01

TABLE V - Continued

***** ROTOR 1*****

STRM	P01R	P02R	T01R	T02R	PS2	ZR	PERL2	R2	R/RT
1	0.1434530 02	0.1546960 02	0.5910290 03	0.6202100 03	0.1208040 02	0.3066280 00	0.1000000-01	0.1744850 01	0.6414890 00
2	0.1629920 02	0.1695840 02	0.6130000 03	0.6372440 03	0.1306170 02	0.2484910 00	0.2078790 00	0.1939760 01	0.7131470 00
3	0.1842220 02	0.1796520 02	0.6348400 03	0.6541770 03	0.1377430 02	0.2772400 00	0.3865820 00	0.2115780 01	0.7778610 00
4	0.2075020 02	0.1869870 02	0.6568110 03	0.6712110 03	0.1434170 02	0.3254360 00	0.5524770 00	0.2279190 01	0.8379380 00
5	0.2328110 02	0.1897280 02	0.6787810 03	0.6882460 03	0.1482640 02	0.3941970 00	0.7072490 00	0.2431640 01	0.8939860 00
6	0.2600790 02	0.1833560 02	0.7006210 03	0.7051780 03	0.1529790 02	0.4985220 00	0.8520270 00	0.2574250 01	0.9464140 00
7	0.2897390 02	0.1855250 02	0.7225920 03	0.7222120 03	0.1577480 02	0.5302760 00	0.9900000 00	0.2710150 01	0.9963790 00

STRM	B1	THETA	B2	OB1	SLD	DFACTR	DP/QR	OEQUIV	DW2
1	0.5329130 02	0.5120840 02	0.2083460 01	0.8801920 01	0.2394000 01	0.3661770 00	0.5399720 00	0.1557790 01	0.0
2	0.5875750 02	0.4142040 02	0.1733710 02	0.8483580 01	0.2275270 01	0.4229140 00	0.5292870 00	0.1694220 01	0.6503580 00
3	0.6230770 02	0.3412600 02	0.2818170 02	0.8143310 01	0.2168050 01	0.4753870 00	0.4836160 00	0.1830730 01	0.6511340 00
4	0.6487960 02	0.2661440 02	0.3826530 02	0.7844970 01	0.2068510 01	0.5201200 00	0.4343210 00	0.1960370 01	0.6177230 00
5	0.6684490 02	0.2006860 02	0.4677630 02	0.7585570 01	0.1975650 01	0.5808700 00	0.3899840 00	0.2145670 01	0.5526490 00
6	0.6840170 02	0.1059070 02	0.5781100 02	0.7355900 01	0.1888780 01	0.6965520 00	0.3542970 00	0.2585820 01	0.4166080 00
7	0.6968810 02	-.2953720 01	0.7264190 02	0.7158150 01	0.1806000 01	0.7463290 00	0.3249450 00	0.2708600 C1	0.2585250 00

STRM	B1*	THETA*	B2*	DEV	EPS2	RC2	F-TANG	F-AXIAL	R-STRESS
1	0.4449000 02	0.3532000 02	0.9170000 01	-.7086530 01	0.0	0.1000000 01	0.0	0.0	0.0
2	0.5027330 02	0.2783300 02	0.2244090 02	-.5103830 01	0.0	0.1000000 01	-.1737630 02	-.9925420 01	0.1671740 01
3	[illegible]16440 02	0.2165080 02	0.3251360 02	-.4331940 01	0.0	0.1000000 01	-.1604050 02	-.1231370 02	0.1906100 01
4	0.5703470 02	0.1703330 02	0.4000130 02	-.1736090 01	0.0	0.1000000 01	-.1451710 02	-.1325010 02	0.2112560 01
5	0.5925930 02	0.1357150 02	0.4568780 02	0.1088470 01	0.0	0.1000000 01	-.1281570 02	-.1333290 02	0.2300210 01
6	0.6104530 02	0.1089680 02	0.5014910 02	0.7661940 01	0.0	0.1000000 01	-.1017490 02	-.1290580 02	0.2472670 01
7	0.6253000 02	0.8780000 01	0.5375000 02	0.1889190 02	0.0	0.1000000 01	-.6703250 01	-.1357440 02	0.2633540 01

STRM	M1R	M2R	W1R	W2R	CX2	WU2	CM2	CR2	U2
1	0.7988210 00	0.6049520 00	0.8965450 03	0.7129520 03	0.7124810 03	0.2591960 02	0.7124810 03	0.0	0.9311120 03
2	0.9206120 00	0.6221990 00	0.1033230 04	0.7418170 03	0.7081150 03	0.2210560 03	0.7081150 03	0.0	0.1035120 04
3	0.1027460 01	0.6278140 00	0.1153160 04	0.7578970 03	0.6680520 03	0.3579310 03	0.6680520 03	0.0	0.1129050 04
4	0.1124760 01	0.6273800 00	0.1262360 04	0.7672090 03	0.6023760 03	0.4751350 03	0.6023760 03	0.0	0.1216250 04
5	0.1214290 01	0.6040680 00	0.1362840 04	0.7500170 03	0.5136480 03	0.5465270 03	0.5136480 03	0.0	0.1297610 04
6	0.1297180 01	0.5152680 00	0.1455860 04	0.6536730 03	0.3482210 03	0.5532000 03	0.3482210 03	0.0	0.1373710 04
7	0.1375530 01	0.4869150 00	0.1543800 04	0.6268150 03	0.1870060 03	0.5982690 03	0.1870060 03	0.0	0.1446230 04

STRM	PRS	TRS	EFFS	PRC	TRC	EFFC	MX2	CX2/CX1
1	0.2023140 01	0.1256210 01	0.8711610 00	0.2023140 01	0.1256210 01	0.8680320 00	0.6045520 00	0.1329510 01
2	0.2017010 01	0.1256150 01	0.8672010 00	0.2017010 01	0.1256150 01	0.8640870 00	0.5939310 00	0.1321360 01
3	0.1996060 01	0.1264660 01	0.8255670 00	0.1996060 01	0.1264660 01	0.8226070 00	0.5533890 00	0.1246600 01
4	0.1948460 01	0.1274010 01	0.7668170 00	0.1948460 01	0.1274010 01	0.7640770 00	0.4925890 00	0.1124050 01
5	0.1924210 01	0.1296270 01	0.6946090 00	0.1924210 01	0.1296270 01	0.6921310 00	0.4136950 00	0.9584800 00
6	0.1931440 01	.1342630 01	0.6043380 00	0.1931440 01	0.1342630 01	0.6022310 00	0.2744900 00	0.6497880 00
7	0.1943010 01	0.1372790 01	0.5610240 00	0.1943010 01	0.1372790 01	0.5590200 00	0.1452680 00	0.3489580 00

WCR2	NCR2	WC/A2	PRSA	TRSA	EFFSA	PRCA	TRCA	EFFCA
0.2475290 01	0.5256740 05	0.2585550 02	0.1974080 01	0.1280840 01	0.7642850 00	0.1974080 01	0.1280840 01	0.7615500 00

P02A	T02A	PH12	PS12	AREA2	AREE2	HPS	HPC
0.2174050 02	0.7019010 03	0.5270120 00	0.6017430 00	0.1378590 02	0.1351010 02	0.1643670 03	0.1649050 03

CP	GAMMA
0.2393430 00	0.1400390 01

TABLE V - Continued

***** STATOR 1*****

STRM	PU2A	PO3A	TO23A	PS3	ZS	OPD/PO	PERL3	R3	R/RT
1	0.2228040 02	0.2183520 02	0.6884010 03	0.1877100 02	0.4368610-01	0.2000000-01	0.1500000-01	0.1932000 01	0.7102940 00
2	0.2221330 02	0.2176910 02	0.6883720 03	0.1877100 02	0.4854510-01	0.2000000-01	0.2022620 00	0.2081810 01	0.7653710 00
3	0.2198270 02	0.2154300 02	0.6930340 03	0.1877100 02	0.5356170-01	0.2000000-01	0.3759110 00	0.2220730 01	0.8164440 00
4	0.2145840 02	0.2102920 02	0.6981570 03	0.1877100 02	0.6030450-01	0.2000000-01	0.5402760 00	0.2352220 01	0.8647870 00
5	0.2119130 02	0.2076750 02	0.7103540 03	0.1877100 02	0.6658770-01	0.2000000-01	0.6959270 00	0.2476740 01	0.9105670 00
6	0.2127100 02	0.2084560 02	0.7357630 03	0.1877100 02	0.7122270-01	0.2000000-01	0.8432520 00	0.2594600 01	0.9538980 00
7	0.2139430 02	0.2097040 02	0.7522900 03	0.1877100 02	0.7610320-01	0.2000000-01	0.9850000 00	0.2708000 01	0.9955880 00

STRM	AL2	THETA	AL3	OAL2	SLD	OFACTS	DP/QS	OEQUIV	OW3
1	0.5179360 02	0.5179360 02	0.0	0.1853560 01	0.2288000 01	0.6583690 00	0.6559130 00	0.2434150 01	0.0
2	0.4898170 02	0.4898170 02	0.0	0.9642080 00	0.2138190 01	0.6337690 00	0.6238550 00	0.2324210 01	0.5947690 00
3	0.4909640 02	0.4909640 02	0.0	0.2623730 01	0.1999270 01	0.6334400 00	0.6087310 00	0.2287690 01	0.5772350 00
4	0.5089600 02	0.5089600 02	0.0	0.5719880 01	0.1867780 01	0.6658100 00	0.6223810 00	0.2361680 01	0.5355470 00
5	0.5563260 02	0.5563260 02	0.0	0.1155120 02	0.1743260 01	0.6950690 00	0.6197380 00	0.2368640 01	0.4888970 00
6	0.6700380 02	0.6700380 0_	0.0	0.2385940 02	0.1625400 01	0.7101990 00	0.5814580 00	0.2190270 01	0.4715550 00
7	0.7756330 02	0.7756330 02	0.0	0.3524330 02	0.1512000 01	0.7117670 00	0.5327900 00	0.1971410 01	0.4790790 00

STRM	AL2*	THETA*	AL3*	DEV	EPS3	RC3	F-TANG	F-AXIAL	R-STRESS
1	0.4994000 02	0.4994000 02	0.0	0.0	0.0	0.1000000 01	0.0	0.0	0.0
2	0.4801740 02	0.4801740 02	0.0	0.0	0.0	0.1000000 01	0.1589110 02	-.9626720 01	0.1924600 01
3	0.4647270 02	0.4647270 02	0.0	0.0	0.0	0.1000000 01	0.1422000 02	-.8446080 01	0.2089520 01
4	0.4517620 02	0.4517620 02	0.0	0.0	0.0	0.1000000 01	0.1258590 02	-.7866480 01	0.2241980 01
5	0.4408140 02	0.4408140 02	0.0	0.0	0.0	0.1000000 01	0.1133730 02	-.7662820 01	0.2384950 01
6	0.4314440 02	0.4314440 02	0.0	0.0	0.0	0.1000000 01	0.1151690 02	-.8558720 01	0.2519310 01
7	0.4232000 02	0.4232000 02	0.0	0.0	0.0	0.1000000 01	0.1242190 02	-.1043770 02	0.2646750 01

STRM	M2A	M3A	C2A	C3A	CX3	CU3	CM3	CR3	U3
1	0.9774540 00	0.4697790 00	0.1151960 04	0.5913570 03	0.5913570 03	0.0	0.5913570 03	0.0	0.1030980 04
2	0.9049580 00	0.4649400 00	0.1078950 04	0.5855080 03	0.5855080 03	0.0	0.5855080 03	0.0	0.1110930 04
3	0.8451430 00	0.4479280 00	0.1020260 04	0.5668370 03	0.5668370 03	0.0	0.5668370 03	0.0	0.1185060 04
4	0.7809830 00	0.4060840 00	0.9550470 03	0.5175630 03	0.5175630 03	0.0	0.5175630 03	0.0	0.1255230 04
5	0.7324560 00	0.3827030 00	0.9099210 03	0.4928870 03	0.4928870 03	0.0	0.4928870 03	0.0	0.1321670 04
6	0.7026130 00	0.3898450 00	0.8913400 03	0.5107130 03	0.5107130 03	0.0	0.5107130 03	0.0	0.1384570 04
7	0.6745300 00	0.4009640 00	0.8683360 03	0.5306930 03	0.5306930 03	0.0	0.5306930 03	0.0	0.1445080 04

STRM	PRS	TRS	EFFS	PRC	TRC	EFFC	MX3	CU2
1	0.1982670 01	0.1256210 01	0.8436630 00	0.1982670 01	0.1256210 01	0.8405390 00	0.4697790 00	0.9051920 03
2	0.1976670 01	0.1256150 01	0.8397210 00	0.1976670 01	0.1256150 01	0.8366130 00	0.4649400 00	0.8140670 03
3	0.1956140 01	0.1264660 01	0.7990500 00	0.1956140 01	0.1264660 01	0.7960960 00	0.4479280 00	0.7711230 03
4	0.1909490 01	0.1274010 01	0.7413810 00	0.1909490 01	0.1274010 01	0.7386500 00	0.4060840 00	0.7411190 03
5	0.1885710 01	0.1296270 01	0.6711680 00	0.1885730 01	0.1296270 01	0.6687000 00	0.3827030 00	0.7510810 03
6	0.1892810 01	0.1342630 01	0.5840970 00	0.1892810 01	0.1342630 01	0.5819480 00	0.3898450 00	0.8205060 03
7	0.1904150 01	0.1372790 01	0.5423430 00	0.1904150 01	0.1372790 01	0.5403460 00	0.4009640 00	0.8479600 03

WCR3	NCR2	WC/A3	PRSA	TRSA	EFFSA	PRCA	TRCA	EFFCA
0.2538500 01	0.5241570 05	0.3134600 02	0.1930480 01	0.1288270 01	0.7177800 00	0.1930480 01	0.1288270 01	0.7151320 00

PO3A	TO3A	PH13	PS13	AREA3	AREE3	CP	GAMMA
0.2126040 02	0.7059700 03	0.4260240 00	0.5845460 00	0.1166160 02	0.1131170 02	0.2416910 00	0.1396110 01

TABLE V - Continued

***** RDTOR 2*****

STRM	PO1R	PO2R	TO1R	TO2R	PS2	2R	PERL2	R2	R/RT
1	0.3343720 02	0.3239010 02	0.776935D 03	0.7928230 D3	0.2536720 02	0.234278D 00	0.150000D-01	0.209945D 01	0.7718570 DD
2	0.3542020 02	0.3281870 02	0.7911680 03	0.804457D 03	0.259317D 02	0.284895D OD	0.195668D 00	0.221327D D1	0.813703D 00
3	0.371715D 02	0.329290D 02	0.810006D 03	0.820712D 03	0.264647D D2	D.326252D 00	0.366484D 00	D.232089D 01	0.853267D 00
4	0.3841180 02	0.325859D 02	0.829391D 03	0.837498D 03	0.269762D 02	0.364831D 00	D.530686D D0	0.242433D D1	0.891299D 00
5	0.398492D 02	0.323933D 02	0.855851D 03	0.861358D 03	D.274739D 02	0.396956D 00	0.688162D D0	D.252354D 01	0.927773D 00
6	0.414329D 07	C.340081D 02	0.895437D 03	0.898361D 03	D.279234D 02	0.348764D D0	0.838786D D0	0.261844D 01	D.962660D 0D
7	0.4340580 02	0.352098D 02	0.926226D 03	D.926551D 03	0.282972D D2	0.334879D 0D	0.9850000 0D	D.271055D 01	0.996526D 00

STRM	B1	THETA	B2	DB1	SLD	DFACTR	DP/QR	DEQUIV	DW2
1	0.601620D 02	0.301304D 02	0.300316D 02	0.683199D 01	D.239040D 01	0.436383D 0D	0.452843D 00	0.176976D 01	0.0
2	0.6220870 02	0.286077D 02	0.3360100 02	0.635860D 01	0.227477D 01	0.485989D DJ	0.430096D 00	0.188699D 01	0.676031D 00
3	0.644373D 02	0.256932D 02	0.387440D 02	0.679062D D1	0.216545D 01	0.535134D 00	0.418122D 00	0.201909D 01	0.627084D 00
4	0.675924D 02	0.227487D 02	0.448436D 02	0.827045D 01	0.206036D D1	0.597101D 00	0.417766D 00	0.220605D D1	0.552266D 00
5	0.695482D 02	0.183447D 02	0.512035D 02	0.870851D 01	D.195958D 01	0.652818D D0	0.412887D 00	0.240208D 01	0.453072D D0
6	0.6975300 02	0.1614350 02	0.5360940 02	0.755974D 01	0.186318D 01	0.618192D 00	0.4038670 00	0.225151D 01	0.429648D 00
7	0.6983470 02	0.8675370 01	0.611593D 02	0.6404710 01	0.176960D 01	0.599934D 00	0.3866990 00	0.2169800 01	0.4090670 00

STRM	B1*	THETA*	B2*	DEV	EPS2	RC2	F-TANG	F-AXIAL	R-STRESS
1	0.5333000 02	0.237900D 02	0.295400D 02	0.491599D 00	0.0	0.100000D 01	0.0	0.0	0.0
2	0.5585010 02	0.2044280 02	0.354073D 02	-.180635D 01	0.0	0.100000D 01	-.1535190 02	-.1311880 02	0.208163D 01
3	0.5764660 02	0.1757290 02	0.4007380 02	-.1329740 01	0.0	0.100000D 01	-.1458930 02	-.1332020 02	0.220917D 01
4	0.593219D 02	0.1527790 02	0.440440D 02	0.799613D 00	0.0	0.100000D 01	-.131814D 02	-.1360730 02	0.2329540 01
5	0.6083970 02	0.133951D 02	0.4744460 D2	0.375894D 01	D.0	0.100000D 01	-.111947D 02	-.138366D 02	0.2444210 01
6	0.6219320 02	0.118453D 02	0.503479D 02	0.326152D 01	0.0	0.100000D 01	-.105987D 02	-.143288D 02	0.255333D 01
7	0.634300D 02	0.105800D 02	0.5285000 02	0.830934D 01	0.0	0.100000D 01	-.957128D 01	-.147793D 02	0.265790D 01

STRM	M1R	M2R	W1R	W2R	CX2	WU2	CM2	CR2	U2
1	D.944185D 00	0.6021100 00	0.118854D 04	D.801614D 03	0.693997D 03	0.401190D 03	0.693997D 03	0.0	0.112034D 04
2	0.9971870 00	0.5907100 00	0.1255780 04	0.793184D 03	0.660652D 03	0.438953D 03	0.6606520 03	0.0	0.118108D 04
3	0.1038080 01	0.5683170 00	0.131365D 04	0.7726460 03	0.602625D 03	0.4835540 03	0.602625D 03	0.0	0.1238500 04
4	0.106530D 01	0.5272830 00	0.135774D 04	0.727202D 03	0.5156110 03	0.5128040 03	0.5156110 03	0.0	0.1293710 04
5	0.1095250 01	C.491490D 00	0.141059D 04	0.689791D 03	0.432193D 03	0.537607D 03	0.432193D 03	0.D	0.1346650 04
6	0.1126500 01	0.538937D 00	0.1475760 04	0.7689120 03	0.456185D 03	0.6189670 03	0.456185D 03	0.0	0.1397290 04
7	0.1163130 01	0.5683420 00	0.1539450 04	0.820990D 03	0.3960250 03	0.719158D 03	0.396025D 03	0.0	0.1446440 04

STRM	PRS	TRS	EFFS	PRC	TRC	EFFC	MX2	CX2/CX1
1	0.168683D 01	0.1194460 01	0.8223560 00	0.3344440 01	0.1500490 01	0.8153320 00	0.521276D 00	0.1173570 01
2	0.1712[illegible]70 01	0.1211630 01	0.778996D 00	0.338469D 01	0.1521990 01	0.790899D 00	0.492009D 00	0.1128340 01
3	0.17[illegible]8820 01	0.122432D 01	0.740519D 00	0.336226D 01	0.1548350 01	0.7480380 00	0.4432580 00	0.1063140 01
4	0.1744720 01	0.1240650 01	0.710881D 00	0.3331530 01	0.1580590 01	[illegible].700177D 00	0.373861D 00	0.996228D 00
5	0.1761330 01	0.1255110 01	0.6929370 00	0.3321380 01	0.1626950 01	0.646464D 00	0.3079460 00	0.876859D 00
6	0.175231D 01	0.1246010 01	0.701259D 00	0.331679D 01	0.167293D 01	0.601480D 00	0.319744D 00	0.893232D 00
7	0.1685240 01	0.1232930 01	0.68[illegible]930 00	0.320895D 01	0.169256D 01	0.5655140 00	0.2741540 00	0.7462420 00

WCR2	NCR2	WC/A2	PHSA	TRSA	EFFSA	PRCA	TRCA	EFFCA
0.162407D 01	0.4733050 05	0.2456590 02	0.1730980 01	0.1226430 01	0.7439430 00	0.334163D 01	0.157996D 01	0..030230 00

PO2A	TO2A	PHI2	PSI2	AREA2	AREE2	HPS	HPC
0.363014D 02	0.865819D 03	0.4144250 00	0.4693760 00	0.9519970 01	0.9234370 01	0.1720380 03	0.342395D 03

CP	GAMMA
0.241691D 00	0.139611D 01

TABLE V - Continued

***** STATOR 2*****

STRM	PO2A	PO3A	TO23A	PS3	ZS	DPO/PO	PERL3	R3	P/R7
1	0.3643230 02	0.3529250 02	0.8222660 03	0.3141040 02	0.1343040 00	0.4180590-01	0.1500000-01	0.2183170 01	0.8026380 00
2	0.3727550 02	0.3494090 02	0.8340530 03	0.3141040 02	0.2058070 00	0.6263200-01	0.1926630 00	0.2280000 01	0.8382360 00
3	0.3702850 02	0.3484010 02	0.8484940 03	0.3141040 02	0.2071630 00	0.5910160-01	0.3620820 00	0.2372330 01	0.8721820 00
4	0.3669010 02	0.3470700 02	0.8661660 03	0.3141040 02	0.2041580 00	0.5405190-01	0.5261140 00	0.2461730 01	0.9050480 00
5	0.3657340 02	0.3492780 02	0.8915710 03	0.3141040 02	0.1819410 00	0.4526070-01	0.6843940 00	0.2547990 01	0.9367630 00
6	0.3652790 02	0.3510460 02	0.9167650 03	0.3141040 02	0.1654010 00	0.3896150-01	0.8365860 00	0.2630940 01	0.9672570 00
7	0.3534010 02	0.3400300 02	0.9275230 03	0.3141040 02	0.1698640 00	0.3783780-01	0.9850000 00	0.2711820 01	0.9969940 00

STRM	AL2	THETA	AL3	OAL2	SLO	DFACTS	OP/OS	OEQUIV	OW3
1	0.4601970 02	0.4601970 02	0.0	-.9303370 00	0.2292500 01	0.5878030 00	0.5270990 00	0.2201500 01	0.0
2	0.4832400 02	0.4832400 02	0.0	0.2336810 01	0.2203670 01	0.6178420 00	0.4829660 00	0.2279570 01	0.5550360 00
3	0.5140200 02	0.5140200 02	0.0	0.6279440 01	0.2118960 01	0.6198330 00	0.4681790 00	0.2232370 01	0.5324140 00
4	0.5656420 02	0.5656420 02	0.0	0.1722700 02	0.2036940 01	0.6268200 00	0.4564600 00	0.2175870 01	0.5192500 00
5	0.6188870 02	0.6188870 02	0.0	0.1925180 02	0.1957800 01	0.6089480 00	0.4323750 00	0.2027360 01	0.5131790 00
6	0.5962480 02	0.5962480 02	0.0	0.1662940 02	0.1991710 01	0.5786870 00	0.4057610 00	0.1938990 01	0.5301490 00
7	0.6143060 02	0.6143060 02	0.0	0.1903060 02	0.1807500 01	0.6395470 00	0.4420320 00	0.2091070 01	0.4920030 00

STRM	AL2*	THETA*	AL3*	OFV	EPS3	RC3	F-TANG	F-AXIAL	R-STRESS
1	0.4695000 02	0.4695000 02	0.0	0.0	0.0	0.1000000 01	0.0	0.0	0.0
2	0.4598720 02	0.4598720 02	0.0	0.0	0.0	0.1000000 01	0.1260430 02	-.6010050 01	0.2193970 01
3	0.4512260 02	0.4512260 02	0.0	0.0	0.0	0.1000000 01	0.1238680 02	-.5880340 01	0.2296620 01
4	0.4434220 02	0.4434220 02	0.0	0.0	0.0	0.1000000 01	0.1239340 02	-.6371600 01	0.2394820 01
5	0.4363690 02	0.4363690 02	0.0	0.0	0.0	0.1000000 01	0.1280340 02	-.7224040 01	0.2489400 01
6	0.4299540 02	0.4299540 02	0.0	0.0	0.0	0.1000000 01	0.1307790 02	-.7456210 01	0.2580230 01
7	0.4240000 02	0.4240000 02	0.0	0.0	0.0	0.1000000 01	0.1151180 02	-.6555540 01	0.2667940 01

STRM	M2A	M3A	C2A	C3A	CX3	CU3	CM3	CR3	U3
1	0.7506740 00	0.4119780 00	0.9994030 03	0.5688000 03	0.5688000 03	0.0	0.5688000 03	0.0	0.1165020 04
2	0.7399550 00	0.3936030 00	0.9935850 03	0.5480900 03	0.5480900 03	0.0	0.5480900 03	0.0	0.1216690 04
3	0.7105180 00	0.3881460 00	0.9659740 03	0.5453730 03	0.5453730 03	0.0	0.5453730 03	0.0	0.1265960 04
4	0.6785120 00	0.3908050 00	0.9357690 03	0.5408950 03	0.5408950 03	0.0	0.5408950 03	0.0	0.1313660 04
5	0.6535550 00	0.3926280 00	0.9172460 03	0.5653110 03	0.5653110 03	0.0	0.5653110 03	0.0	0.1359700 04
6	0.6323290 00	0.4022800 00	0.9021560 03	0.5869030 03	0.5869030 03	0.0	0.5869030 03	0.0	0.1403960 04
7	0.5732760 00	0.3389690 00	0.8281180 03	0.4996830 03	0.4996830 03	0.0	0.4996830 03	0.0	0.1447120 04

STRM	PRS	TRS	EFFS	PRC	TRC	EFFC	MX3	CU2
1	0.1616310 01	0.1194460 01	0.7505200 00	0.3204620 01	0.1500490 01	0.7812920 00	0.4119780 00	0.7191490 03
2	0.1605070 01	0.1211630 01	0.6789090 00	0.3172700 01	0.1521990 01	0.7415490 00	0.3936030 00	0.7421250 03
3	0.1617230 01	0.1224320 01	0.6514390 00	0.3163540 01	0.1548350 01	0.7038400 00	0.3881460 00	0.7549500 03
4	0.1650420 01	0.1240650 01	0.6347610 00	0.3151450 01	0.1580590 01	0.6621590 00	0.3808050 00	0.7809030 03
5	0.1681610 01	0.1255110 01	0.6228460 00	0.3171050 01	0.1626950 01	0.6170790 00	0.3926280 00	0.8090420 03
6	0.1684040 01	0.1246010 01	0.6478200 00	0.3187560 01	0.1672930 01	0.5779560 00	0.4022800 00	0.7783200 03
7	0.1621480 01	0.1232930 01	0.6310050 00	0.3087530 01	0.1692560 01	0.5435320 00	0.3389690 00	0.7272850 03

WCR3	NCR2	WC/A3	PRSA	TRSA	EFFSA	PRCA	TRCA	EFFCA
0.1718140 01	0.4718460 05	0.2952040 02	0.1641270 01	0.1234020 01	0.6449790 00	0.3168440 01	0.1589740 01	0.6554650 00

PU3A	TO3A	PHI3	PSI3	AREA3	AREE3	CP	GAMMA
0.3499410 02	0.8711800 03	0.4131320 00	0.4264340 00	0.8381060 01	0.8129630 01	0.2450520 00	0.1388560 01

TABLE VI

COMPUTER OUTPUT OF TRAVERSE DATA FOR COMPRESSOR - ORIGINAL DESIGN - TEST NUMBER 21

***** INLET *****

RPM = 0.6134000 05
FLOW = 0.3160000 01

STRM	PU1	TU1	PS	TS	AL1	EPS1	PERL	R1	R/RT
1	0.1099000 02	0.5516000 03	0.9364190 01	0.5269240 03	0.0	0.0	0.5000000-02	0.1346900 01	0.4951840 00
2	0.1099000 02	0.5516000 03	0.9364190 01	0.5269240 03	0.0	0.0	0.2285730 00	0.1655430 01	0.6086140 00
3	0.1099000 02	0.5516000 03	0.9364190 01	0.5269240 03	0.0	0.0	0.4155290 00	0.1913430 01	0.7034670 00
4	0.1099000 02	0.5516000 03	0.9364190 01	0.5269240 03	0.0	0.0	0.5810510 00	0.2141850 01	0.7874450 00
5	0.1099000 02	0.5516000 03	0.9364190 01	0.5269240 03	0.0	0.0	0.7305480 00	0.2348160 01	0.8632930 00
6	0.1099000 02	0.5516000 03	0.9364190 01	0.5269240 03	0.0	0.0	0.8671390 00	0.2536650 01	0.9325920 00
7	0.1099000 02	0.5516000 03	0.9364190 01	0.5269240 03	0.0	0.0	0.9950000 00	0.2713100 01	0.9974630 00

STRM	CX1	CU1	CR1	CM1	U1	CA1	M1A	OM1	PC
1	0.5443300 03	0.0	0.0	0.5443300 03	0.7209850 03	0.5443300 03	0.4836990 00	0.0	0.1000000 01
2	0.5443300 03	0.0	0.0	0.5443300 03	0.8861400 03	0.5443300 03	0.4836990 00	0.5277130 00	0.1000000 01
3	0.5443300 03	0.0	0.0	0.5443300 03	0.1024240 04	0.5443300 03	0.4836990 00	0.5245530 00	0.1000000 01
4	0.5443300 03	0.0	0.0	0.5443300 03	0.1146520 04	0.5443300 03	0.4836990 00	0.5277130 00	0.1000000 01
5	0.5443300 03	0.0	0.0	0.5443300 03	0.1256950 04	0.5443300 03	0.4836990 00	0.5277130 00	0.1000000 01
6	0.5443300 03	0.0	0.0	0.5443300 03	0.1357850 04	0.5443300 03	0.4836990 00	0.5245530 00	0.1000000 01
7	0.5443300 03	0.0	0.0	0.5443300 03	0.1452300 04	0.5443300 03	0.4836990 00	0.5277130 00	0.1000000 01

WCR1	NCR1	WC/A1	POA	TOA	PHI	HUB/TIP	AREA	AREAE
0.4358740 01	0.5948260 05	0.3565890 02	0.1099000 02	0.5516000 03	0.5009280 00	0.4926470 00	0.1760170 02	0.1742570 02

CP	GAMMA
0.2398670 00	0.1400330 01

TABLE VI - Continued

***** ROTOR 1*****

STRM	PD1R	PU2R	TO1R	TO2R	PS2	ZR	PERL2	R2	R/RT
1	0.143146D 02	0.157950D 02	0.594892D 03	0.624251D 03	0.121112D 02	0.231666D 00	0.100000D-01	0.174485D 01	0.641489D 00
2	0.162632D 02	0.170796D 02	0.616997D 03	0.641390D 03	0.130375D 02	0.224065D 00	0.207879D 00	0.193976D 01	0.713147D 00
3	0.183808D 02	0.181654D 02	0.638970D 03	0.658426D 03	0.137006D 02	0.249387D 00	0.386582D 00	0.211578D 01	0.777861D 00
4	0.207029D 02	0.188239D 02	0.661075D 03	0.675564D 03	0.142247D 02	0.309563D 00	0.552477D 00	0.227919D 01	0.837938D 00
5	0.232273D 02	0.190232D 02	0.683181D 03	0.692703D 03	0.146751D 02	0.386376D 00	0.707249D 00	0.243164D 01	0.893986D 00
6	0.259471D 02	0.182549D 02	0.705154D 03	0.709738D 03	0.151191D 02	0.499737D 00	0.852027D 00	0.257425D 01	0.946414D 00
7	0.289055D 02	0.186017D 02	0.727259D 03	0.726877D 03	0.155690D 02	0.524569D 00	0.990000D 00	0.271015D 01	0.996379D 00

STRM	B1	THETA	B2	DB1	SLD	DFACTR	OP/QR	DEQUIV	DW2
1	0.529479D 02	0.488938D 02	0.405406D 01	0.845788D 01	0.239400D 01	0.335155D 00	0.554903D 00	0.150833D 01	0.0
2	0.584384D 02	0.392867D 02	0.191520D 02	0.816487D 01	0.227527D 01	0.407443D 00	0.532442D 00	0.166912D 01	0.661061D 00
3	0.620118D 02	0.322210D 02	0.297907D 02	0.784737D 01	0.216805D 01	0.451594D 00	0.480932D 00	0.178012D 01	0.656146D 00
4	0.646031D 02	0.249705D 02	0.396325D 02	0.756840D 01	0.206851D 01	0.499801D 00	0.428661D 00	0.191036D 01	0.620290D 00
5	0.665847D 02	0.188495D 02	0.477352D 02	0.732535D 01	0.197565D 01	0.563785D 00	0.383096D 00	0.209400D 01	0.552252D 00
6	0.681553D 02	0.920531D 01	0.589500D 02	0.710950D 01	0.188878D 01	0.685014D 00	0.347037D 00	0.253207D 01	0.408242D 00
7	0.694537D 02	-.169709D 01	0.711508D 02	0.692374D 01	0.180600D 01	0.723842D 00	0.317522D 00	0.261436D 01	0.262078D 00

STRM	B1*	THETA*	B2*	DEV	EPS2	RC2	F-TANG	F-AXIAL	R-STRESS
1	0.444900D 02	0.353200D 02	0.917000D 01	-.511594D 01	0.0	0.100000D 01	0.0	0.0	0.0
2	0.502739D 02	0.278330D 02	0.224409D 02	-.328889D 01	0.0	0.100000D 01	-.171752D 02	-.103963D 02	0.167174D 01
3	0.541644D 02	0.216508D 02	0.325136D 02	-.272289D 01	0.0	0.100000D 01	-.156408D 02	-.124374D 02	0.190610D 01
4	0.570347D 02	0.170333D 02	0.400013D 02	-.368797D 00	0.0	0.100000D 01	-.140714D 02	-.132119D 02	0.211256D 01
5	0.592593D 02	0.135715D 02	0.456878D 02	0.204736D 01	0.0	0.100000D 01	-.124182D 02	-.131118D 02	0.230021D 01
6	0.610458D 02	0.108968D 02	0.501491D 02	0.880094D 01	0.0	0.100000D 01	-.974545D 01	-.125722D 02	0.247267D 01
7	0.625300D 02	0.878000D 01	0.537500D 02	0.174008D 02	0.0	0.100000D 01	-.665170D 01	-.132209D 02	0.263354D 01

STRM	M1R	M2R	W1R	W2R	CX2	WU2	CM2	CR2	D2
1	0.802764D 00	0.627740D 00	0.903391D 03	0.740266D 03	0.738414D 03	0.523351D 02	0.738414D 03	0.0	0.934005D 03
2	0.924131D 00	0.633233D 00	0.103997D 04	0.756439D 03	0.714571D 03	0.248169D 03	0.714571D 03	0.0	0.103834D 04
3	0.103070D 01	0.647744D 00	0.115990D 04	0.782635D 03	0.679207D 03	0.388840D 03	0.679207D 03	0.0	0.113256D 04
4	0.112780D 01	0.645434D 00	0.126917D 04	0.790147D 03	0.608532D 03	0.504004D 03	0.608532D 03	0.0	0.122003D 04
5	0.121718D 01	0.620268D 00	0.136975D 04	0.771182D 03	0.518665D 03	0.570708D 03	0.518665D 03	0.0	0.130164D 04
6	0.129994D 01	0.525906D 00	0.146289D 04	0.668607D 03	0.344858D 03	0.572807D 03	0.344858D 03	0.0	0.137797D 04
7	0.137820D 01	0.510649D 00	0.155096D 04	0.657989D 03	0.212582D 03	0.622702D 03	0.212582D 03	0.0	0.145072D 04

STRM	PRS	TRS	EFFS	PRC	TRC	EFFC	MX2	CX2/CX1
1	0.202731D 01	0.124866D 01	0.900379D 00	0.202731D 01	0.124866D 01	0.897192D 00	0.626169D 00	0.135655D 01
2	0.198895D 01	0.124775D 01	0.876786D 00	0.198895D 01	0.124775D 01	0.873691D 00	0.598184D 00	0.131275D 01
3	0.196599D 01	0.125435D 01	0.838180D 00	0.196599D 01	0.125435D 01	0.835226D 00	0.562142D 00	0.124778D 01
4	0.191162D 01	0.126379D 01	0.771454D 00	0.191162D 01	0.126379D 01	0.768745D 00	0.497082D 00	0.111795D 01
5	0.188758D 01	0.128729D 01	0.693219D 00	0.188758D 01	0.128729D 01	0.690789D 00	0.417166D 00	0.952849D 00
6	0.188979D 01	0.133503D 01	0.595635D 00	0.188979D 01	0.133503D 01	0.593547D 00	0.271255D 00	0.633546D 00
7	0.190342D 01	0.136273D 01	0.556951D 00	0.190342D 01	0.136273D 01	0.554997D 00	0.164979D 00	0.390538D 00

WCR2	NCR2	WC/A2	PRSA	TRSA	EFFSA	PRCA	TRCA	EFFCA
0.252862D 01	0.527486D 05	0.264127D 02	0.194382D 01	0.127162D 01	0.770429D 00	0.194382D 01	0.127162D 01	0.767718D 00

PU2A	TO2A	PHI2	PSI2	AREA2	AREE2	HPS	HPC
0.213626D 02	0.701426D 03	0.531514D 00	0.586932D 00	0.137859D 02	0.135101D 02	0.160694D 03	0.161212D 03

CP	GAMMA
[illegible]	[illegible]

TABLE VI - Continued

***** STATOR 1*****

STRM	PO2A	PO3A	TO23A	PS3	ZS	DPD/PD	PEHL3	R3	R/RT
1	0.2228020 02	0.2183460 02	0.6887620 03	0.1828560 02	0.4381990-01	0.2000000-01	0.1500000-01	0.1932000 01	0.7102940 00
2	0.2185860 02	0.2142140 02	0.6882600 03	0.1828560 02	0.4955990-01	0.2000000-01	0.2022620 00	0.2081810 01	0.7653710 00
3	0.2160620 02	0.2117410 02	0.6918990 03	0.1828560 02	0.5466020-01	0.2000000-01	0.3759110 00	0.2220730 01	0.8164440 00
4	0.2100870 02	0.2058850 02	0.6971070 03	0.1828560 02	0.6193560-01	0.2000000-01	0.5402760 00	0.2352220 01	0.8647870 00
5	0.2074450 02	0.2032970 02	0.7100710 03	0.1828560 02	0.6835710-01	0.2000000-01	0.6959270 00	0.2476740 01	0.9105670 00
6	0.2076880 02	0.2035340 02	0.7364040 03	0.1828560 02	0.735[illegible]0-01	0.2000000-01	0.8432520 00	0.2594600 01	0.9538980 00
7	0.2091860 02	0.2050020 02	0.7616840 03	0.1828560 02	[illegible]	0.2000000-01	0.9850000 00	0.2708000 01	0.9955880 00

STRM	AL2	THETA	AL3	DAL2	SLD	DFACTS	DP/QS	DEQUIV	DW3
1	0.5005320 02	0.5005320 02	0.0	0.1132340 00	0.2288000 01	0.6114960 00	0.6071810 00	0.2250270 01	0.0
2	0.4787620 02	0.4787620 02	0.0	-.1612930 00	0.2138190 01	0.6058810 00	0.5949490 00	0.2223420 01	0.6129590 00
3	0.4759600 02	0.4759600 02	0.0	0.1123320 01	0.1999270 01	0.6347770 00	0.5799680 00	0.2193390 01	0.5825880 00
4	0.4963980 02	0.4963980 02	0.0	0.4463590 01	0.1867780 01	0.6417840 00	0.5986020 00	0.2278840 01	0.5365250 00
5	0.5464070 02	0.5464070 02	0.0	0.1055930 02	0.1743260 01	0.6711320 00	0.5948650 00	0.2283570 01	0.4885430 00
6	0.6681420 02	0.6681420 02	0.0	0.2366990 02	0.1625600 01	0.6931680 00	0.5604760 00	0.2129940 01	0.4668730 00
7	0.7560120 02	0.7560120 02	0.0	0.3328120 02	0.1512000 01	0.6901370 00	0.5078190 00	0.1931520 01	0.4724800 00

STRM	AL2*	THETA*	AL3*	DEV	EPS3	RC3	F-TANG	F-AXIAL	R-STRESS
1	0.4994000 02	0.4994000 02	0.0	0.0	0.0	0.1000000 01	0.0	0.0	0.0
2	0.4801740 02	0.4801740 02	0.0	0.0	0.0	0.1000000 01	0.1592540 02	-.8931490 01	0.1924600 01
3	0.4647270 02	0.4647270 02	0.0	0.0	0.0	0.1000000 01	0.1388740 02	-.7738120 01	0.2089520 01
4	0.4517620 02	0.4517620 02	0.0	0.0	0.0	0.1000000 01	0.1217120 02	-.7171060 01	0.2241980 01
5	0.4408140 02	0.4408140 02	0.0	0.0	0.0	0.1000000 01	0.1098560 02	-.7034500 01	0.2384950 01
6	0.4314440 02	0.4314440 02	0.0	0.0	0.0	0.1000000 01	0.1114510 02	-.8008570 01	0.2519310 01
7	0.4232000 02	0.4232000 02	0.0	0.0	0.0	0.1000000 01	0.1199180 02	-.9718210 01	0.2646750 01

STRM	M2A	M3A	C2A	C3A	[illegible]	CU3	CM3	CR3	U3
1	0.9752270 00	0.5097790 00	0.1150040 04	0.6394680 03	0.6394680 03	0.0	0.6394680 03	0.0	0.1034190 04
2	0.8918340 00	0.4808850 00	0.1065350 04	0.6046520 03	0.6046520 03	0.0	0.6046520 03	0.0	0.1114380 04
3	0.8336010 00	0.4625210 00	0.1037200 04	0.5840660 03	0.5840660 03	0.0	0.5840660 03	0.0	0.1188740 04
4	0.7675460 00	0.4151190 00	0.9396860 03	0.5282900 03	0.5282900 03	0.0	0.5282900 03	0.0	0.1259130 04
5	0.7208650 00	0.3919970 00	0.8962550 03	0.5043940 03	0.5043940 03	0.0	0.5043940 03	0.0	0.1325780 04
6	0.6499660 00	0.3941840 00	0.8759120 03	0.5164410 03	0.5164410 03	0.0	0.5164410 03	0.0	0.1388870 04
7	0.6634460 00	0.4074000 00	0.8548740 03	0.5387100 03	0.5387100 03	0.0	0.5387100 03	0.0	0.1449570 04

STRM	PRS	TRS	EFFS	PRC	TRC	EFFC	MX3	CU2
1	0.1986770 01	0.1248660 01	0.8720340 00	0.1986770 01	0.1248650 01	0.8688520 00	0.5097790 00	0.8816700 03
2	0.1949170 01	0.1247750 01	0.8434920 00	0.1949170 01	0.1247750 01	0.8454040 00	0.4808850 00	0.7901700 03
3	0.1926670 01	0.1254350 01	0.8107110 00	0.1926670 01	0.1254350 01	0.8077660 00	0.4625210 00	0.7437230 03
4	0.1873390 01	0.1263790 01	0.7451800 00	0.1873390 01	0.1263790 01	0.7424830 00	0.4151190 00	0.7160290 03
5	0.1849830 01	0.1287290 01	0.6691810 00	0.1849830 01	0.1287290 01	0.6667630 00	0.3919970 00	0.7309300 03
6	0.1851990 01	0.1335030 01	0.5750160 00	0.1851990 01	0.1335030 01	0.5729340 00	0.3941840 00	0.8051670 03
7	0.1865350 01	0.1362730 01	0.5378670 00	0.1865350 01	0.1362730 01	0.5359220 00	0.4074000 00	0.8280210 03

WCR3	NCR2	WC/A3	PRSA	TRSA	EFFSA	PRCA	TRCA	EFFCA
0.2594170 01	0.5259930 05	0.3703340 02	0.1900080 01	0.1274850 01	0.7223330 00	0.1900080 01	0.1278850 01	0.7197140 00

PO3A	TO3A	PHI3	PSI3	AREA3	AREE3	CP	GAMMA
0.2084190 02	0.7054130 03	0.4340640 00	0.5692130 00	0.1166160 02	0.1131170 02	0.2416820 00	0.1396130 01

TABLE VI - Continued

***** ROTOR 2*****

STRM	PO1R	PO2R	TO1R	TO2R	PS2	ZR	PERL2	R2	R/RT
1	0.3341210 02	0.3139360 02	0.7778370 03	0.7938240 03	0.2490270 02	0.2976430 00	0.1500000D-01	0.2093450 01	0.7718570 00
2	0.3495530 02	0.3246190 02	0.7916830 03	0.8050560 03	0.2541980 02	0.2771280 00	0.1955680 00	0.2213270 01	0.8137030 00
3	0.3664070 02	0.3292760 02	0.8095860 03	0.8203590 03	0.2588880 02	0.2991240 00	0.3664840 00	0.2320890 01	0.8532670 00
4	0.3776610 02	0.3255930 02	0.8291440 03	0.8373010 03	0.2633690 02	0.3354240 00	0.5306860 00	0.2424330 01	0.8912990 00
5	0.3916310 02	0.3266970 02	0.8564570 03	0.8619930 03	0.2676340 02	0.3542030 00	0.6881620 00	0.2523540 01	0.9277730 00
6	0.4059010 02	0.3461090 02	0.8970540 03	0.8999970 03	0.2713140 02	0.2892020 00	0.8387860 00	0.2618440 01	0.9626600 00
7	0.4262930 02	0.3570310 02	0.9766830 03	0.9270100 03	0.2743700 02	0.2866960 00	0.9850000 00	0.2710550 01	0.9965260 00

STRM	B1	THETA	B2	DR1	SLO	DFACTR	DP/QR	DEQUIV	OM2
1	0.5827020 02	0.2609040 02	0.3217990 02	0.4940220 01	0.2390400 01	0.4635070 00	0.4374520 00	0.1850880 01	0.0
2	0.6151610 02	0.2514600 02	0.3637010 02	0.5665980 01	0.2274770 01	0.4728310 00	0.4279580 00	0.1863320 01	0.6419630 00
3	0.6383360 02	0.2273880 02	0.4109490 02	0.6186960 01	0.2165450 01	0.5036270 00	0.4133270 00	0.1937680 01	0.6164150 00
4	0.6723860 02	0.2061480 02	0.4662380 02	0.7916700 01	0.2060360 01	0.5611200 00	0.4132520 00	0.2092540 01	0.5524540 00
5	0.6917070 02	0.1615090 02	0.5301970 02	0.8330980 01	0.1959580 01	0.5957350 00	0.4060720 00	0.2193570 01	0.4628120 00
6	0.6960270 02	0.1448980 02	0.5511290 02	0.7409500 01	0.1863190 01	0.5495500 00	0.3965930 00	0.2033460 01	0.4469400 00
7	0.6961320 02	0.9509180 01	0.6010500 02	0.6193230 01	0.1769600 01	0.5414510 00	0.3759250 00	0.1995990 01	0.4394200 00

STRM	B1*	THETA*	B2*	DEV	EPS2	RC2	F-TANG	F-AXIAL	R-STRESS
1	0.5333000 02	0.2379000 02	0.2954000 02	0.2633860 01	0.0	0.1000000 01	0.0	0.0	0.0
2	0.5585010 02	0.2044280 02	0.3540730 02	0.9627410 00	0.0	0.1000000 01	-.1409840 02	-.1197080 02	0.2081630 01
3	0.5764660 02	0.1757290 02	0.4007380 02	0.1021070 01	0.0	0.1000000 01	-.1356560 02	-.1287690 02	0.2209170 01
4	0.5932190 02	0.1527790 02	0.4404400 02	0.2579400 01	0.0	0.1000000 01	-.1244170 02	-.1336740 02	0.2329540 01
5	0.6083970 02	0.1339510 02	0.4744460 02	0.5575180 01	0.0	0.1000000 01	-.1067690 02	-.1363350 02	0.2444210 01
6	0.6219320 02	0.1184530 02	0.5034730 02	0.4764980 01	0.0	0.1000000 01	-.1005840 02	-.1412830 02	0.2553330 01
7	0.6343000 02	0.1058000 02	0.5285000 02	0.7255040 01	0.0	0.1000000 01	-.9384440 01	-.1458760 02	0.2657900 01

STRM	M1R	M2R	W1R	W2R	CX2	WO2	CM2	CR2	U2
1	0.9693210 00	0.5856290 00	0.1215920 04	0.7815850 01	0.6615180 03	0.4162550 03	0.6615180 03	0.0	0.1123920 04
2	0.1004310 01	0.6022840 00	0.1267850 04	0.8079970 03	0.6506020 03	0.4791410 03	0.6506020 03	0.0	0.1184750 04
3	0.1048850 01	0.5971220 00	0.1324480 04	0.8091130 03	0.6097660 03	0.5318360 03	0.6097660 03	0.0	0.1242350 04
4	0.1072950 01	0.5596050 00	0.1365460 04	0.7691610 03	0.5282480 03	0.5590720 03	0.5282480 03	0.0	0.1297730 04
5	0.1102400 01	0.5420870 00	0.1418490 04	0.7573560 03	0.4555800 03	0.6050090 03	0.4555800 03	0.0	0.1350830 04
6	0.1131000 01	0.6009780 00	0.1441780 04	0.8525190 03	0.4876080 03	0.6993040 03	0.4876080 03	0.0	0.1401630 04
7	0.1169490 01	0.6258620 00	0.1546440 04	0.8935820 03	0.4478630 03	0.7790170 03	0.4478630 03	0.0	0.1450940 04

STRM	PRS	TRS	EFFS	PRC	TRC	EFFC	MX2	CX2/CX1
1	0.1618100 01	0.1191930 01	0.7627190 00	0.3214780 01	0.1488190 01	0.8039550 00	0.4956650 00	0.1034480 01
2	0.1667710 01	0.1201920 01	0.7734440 00	0.3250660 01	0.1499700 01	0.7942190 00	0.4849610 00	0.1075990 01
3	0.1681180 01	0.1212180 01	0.7484850 00	0.3239070 01	0.1520500 01	0.7597620 00	0.4500040 00	0.1044000 01
4	0.1713430 01	0.1228740 01	0.7216850 00	0.3209910 01	0.1552870 01	0.7088110 00	0.3843280 00	0.9999210 00
5	0.1712660 01	0.1236100 01	0.6985490 00	0.3168130 01	0.1591230 01	0.6540960 00	0.3260870 00	0.9032220 00
6	0.1702820 01	0.1222620 01	0.7323050 00	0.3153620 01	0.1632250 01	0.6088110 00	0.3437070 00	0.9441690 00
7	0.1658030 01	0.1216160 01	0.7136730 00	0.3092810 01	0.1657300 01	0.5740070 00	0.3119370 00	0.8313620 00

WCR2	NCR2	WC/A2	PRSA	TRSA	EFFSA	PRCA	TRCA	EFFCA
0.1695560 01	0.4772480 05	0.2564720 02	0.1686240 01	0.1214710 01	0.7442960 00	0.3204000 01	0.1553430 01	0.7067900 00

PO2A	TO2A	PM12	PS12	AREA2	AREE2	HPS	HPC
0.3521190 02	0.8568690 03	0.4218160 00	0.4421720 00	0.9519970 01	0.9234370 01	0.1636720 03	0.3301510 03

CP	GAMMA
0.2416820 00	0.1396130 01

TABLE VI - Continued

***** STATOR 2*****

STRM	PO2A	PO3A	TO23A	PS3	ZS	OPO/PO	PERL3	R3	R/RT
1	0.3533340 02	0.3355950 02	0.8208840 03	0.2975920 02	0.1698330 00	0.5012590-01	0.1500000-01	0.2183170 01	0.8026380 00
2	0.3572470 02	0.3365630 02	0.8272330 03	0.2975920 02	0.2007250 00	0.5789950-01	0.1926630 00	0.2280000 01	0.8382360 00
3	0.3559740 02	0.3362900 02	0.8387C80 03	0.2975920 02	0.2027470 00	0.5529610-01	0.3620820 00	0.2372330 01	0.8721820 00
4	0.3527630 02	0.3366590 02	0.8565650 03	0.2975920 02	0.1801960 00	0.4566600-01	0.5261140 00	0.2461730 01	0.9050480 00
5	0.3481770 02	0.3330580 02	0.8777220 03	0.2975920 02	0.1877070 00	0.4342200-01	0.6843940 00	0.2547990 01	0.9367630 00
6	0.3465830 02	0.3312700 02	0.9003460 03	0.2975920 02	0.2034460 00	0.4418290-01	0.8365860 00	0.2630940 01	0.9672570 00
7	0.3398930 02	0.3246290 02	0.9141660 03	0.2975920 02	0.2330260 00	0.4492500-01	0.9850000 00	0.2711820 01	0.9969940 00

STRM	AL2	THETA	AL3	OAL2	SLO	OFACTS	OP/QS	OEQUIV	OM3
1	0.4592630 02	0.4692630 02	0.0	-.2368250-01	0.2292500 01	0.5636260 00	0.4657270 00	0.2103000 01	0.0
2	0.4732250 02	0.4732250 02	0.0	0.1335320 01	0.2203670 01	0.5562310 00	0.4210980 00	0.2060260 01	0.5541360 00
3	0.4936380 02	0.4935180 02	0.0	0.4241190 01	0.2118960 01	0.5508940 00	0.3986580 00	0.2009440 01	0.5492180 00
4	0.5442960 02	0.5442960 02	0.0	0.1008730 02	0.2036940 01	0.5422510 00	0.3828370 00	0.1919190 01	0.5508020 00
5	0.5858170 02	0.5858170 02	0.0	0.1494480 02	0.1957800 01	0.5567920 00	0.3719500 00	0.1903650 01	0.5297320 00
6	0.5522850 02	0.5522860 02	0.0	0.1223320 02	0.1881710 01	0.5501140 00	0.3491200 00	0.1903550 01	0.5051320 00
7	0.5631490 02	0.5531490 02	0.0	0.1391490 02	0.1807500 01	0.5872350 00	0.3543710 00	0.1984230 01	0.4710720 00

STRM	AL2*	THETA*	AL3*	DEV	EPS3	RC3	F-TANG	F-AXIAL	R-STRESS
1	0.4695000 02	0.4695000 02	0.0	0.0	0.0	0.1000000 01	0.0	0.0	0.0
2	0.4598720 02	0.4598720 02	0.0	0.0	0.0	0.1000000 01	0.1216960 02	-.5115140 01	0.2193970 01
3	0.4512250 02	0.4512260 02	0.0	0.0	0.0	0.1000000 01	0.1208680 02	-.4980930 01	0.2296620 01
4	0.4434220 02	0.4434220 02	0.0	0.0	0.0	0.1000000 01	0.1240450 02	-.5541020 01	0.2394820 01
5	0.4353690 02	0.4363690 02	0.0	0.0	0.0	0.1000000 01	0.1222070 02	-.6122340 01	0.2489400 01
6	0.4299540 02	0.4299540 02	0.0	0.0	0.0	0.1000000 01	0.1136800 02	-.5613910 01	0.2580230 01
7	0.4240000 02	0.4240000 02	0.0	0.0	0.0	0.1000000 01	0.1006040 02	-.4705570 01	0.2667940 01

STRM	M2A	M3A	C2A	C3A	CX3	CU3	CM3	CR3	U3
1	0.7257330 00	0.4184890 00	0.9646350 03	0.5770080 03	0.5770080 03	0.0	0.5770080 03	0.0	0.1168640 04
2	0.7154140 00	0.4235600 00	0.9597720 03	0.5860150 03	0.5860150 03	0.0	0.5860150 03	0.0	0.1220470 04
3	0.6909410 00	0.4221380 00	0.9362950 03	0.5881530 03	0.5881530 03	0.0	0.5881530 03	0.0	0.1269890 04
4	0.6606950 00	0.4240640 00	0.9081060 03	0.5969990 03	0.5969990 03	0.0	0.5969990 03	0.0	0.1317750 04
5	0.6255480 00	0.4048460 00	0.8739610 03	0.5778210 03	0.5778210 03	0.0	0.5778210 03	0.0	0.1363920 04
6	0.6026750 00	0.3948930 00	0.8549970 03	0.5712700 03	0.5712700 03	0.0	0.5712700 03	0.0	0.1408320 04
7	0.5624240 00	0.3551400 00	0.8375010 03	0.5191780 03	0.5191780 03	0.0	0.5191790 03	0.0	0.1451620 04

STRM	PRS	TRS	EFFS	PRC	TRC	EFFC	MX3	CU2
1	0.1536490 01	0.1191830 01	0.6751560 00	0.3053640 01	0.1488190 01	0.7625740 00	0.4154890 00	0.7075650 03
2	0.1571150 01	0.1201920 01	0.6773610 00	0.3062440 01	0.1499700 01	0.7472530 00	0.4235600 00	0.7056060 03
3	0.1588210 01	0.1212180 01	0.6610460 00	0.3059960 01	0.1520500 01	0.7167810 00	0.4221380 00	0.7105160 03
4	0.1635180 01	0.1228740 01	0.6345810 00	0.3063330 01	0.1552870 01	0.6755840 00	0.4240640 00	0.7386550 03
5	0.1638290 01	0.1236100 01	0.6367910 00	0.3030560 01	0.1591230 01	0.6246830 00	0.4048460 00	0.7458250 03
6	0.1627540 01	0.1222620 01	0.6657550 00	0.3014280 01	0.1632250 01	0.5808540 00	0.3948930 00	0.7023240 03
7	0.1593560 01	0.1216160 01	0.6444820 00	0.2953860 01	0.1657300 01	0.5468090 00	0.3551400 00	0.6719200 03

MCR3	NCR2	WC/A3	PRSA	TRSA	EFFSA	PRCA	TRCA	EFFCA
0.1758640 01	0.4764730 05	0.4373170 02	0.1601090 01	0.1218660 01	0.6534150 00	0.3042210 01	0.1558490 01	0.6639750 00

PO3A	TO3A	PHI3	PSI3	AREA3	AREE3	CP	GAMMA
0.3343390 02	0.8596610 03	0.4560940 00	0.4003960 00	0.8381060 01	0.8129630 01	0.2447740 00	0.1389180 01

TABLE VII

COMPUTER OUTPUT OF TRAVERSE DATA FOR COMPRESSOR - ORIGINAL DESIGN-TEST NUMBER 22

***** INLET *****

RPM = 0.6136000 05
FLOW = 0.3160000 01

STRM	P01	T01	PS	TS	AL1	EPS1	PERL	R1	R/RT
1	0.1096900 02	0.5520000 03	0.9337170 01	0.5271590 03	0.0	0.0	0.5000000D-02	0.1346900 01	0.4951840 00
2	0.1096900 02	0.5520000 03	0.9337170 01	0.5271590 03	0.0	0.0	0.2285730 00	0.1655430 01	0.6086140 00
3	0.1096900 02	0.5520000 03	0.9337170 01	0.5271590 03	0.0	0.0	0.4155290 00	0.1913430 01	0.7034670 00
4	0.1096900 02	0.5520000 03	0.9337170 01	0.5271590 03	0.0	0.0	0.5810510 00	0.2141850 01	0.7874450 00
5	0.1096900 02	0.5520000 03	0.9337170 01	0.5271590 03	0.0	0.0	0.7305480 00	0.2348160 01	0.8632930 00
6	0.1096900 02	0.5570000 03	0.9337170 01	0.5271590 03	0.0	0.0	0.8671390 00	0.2536650 01	0.9325920 00
7	0.1096900 02	0.5520000 03	0.9337170 01	0.5271590 03	0.0	0.0	0.9950000 00	0.2713100 01	0.9974630 00

STRM	CX1	CU1	CR1	CM1	U1	CA1	M1A	OM1	RC
1	0.5461480 03	0.0	0.0	0.5461480 03	0.7212210 03	0.5461480 03	0.4852070 00	0.0	0.1000000 01
2	0.5461480 03	0.0	0.0	0.5461480 03	0.8864280 03	0.5461480 03	0.4852070 00	0.5277130 00	0.1000000 01
3	0.5461480 03	0.0	0.0	0.5461480 03	0.1024580 04	0.5461480 03	0.4852070 00	0.5245530 00	0.1000000 01
4	0.5461480 03	0.0	0.0	0.5461480 03	0.1146890 04	0.5461480 03	0.4852070 00	0.5277130 00	0.1000000 01
5	0.5461480 03	0.0	0.0	0.5461480 03	0.1257360 04	0.5461480 03	0.4852070 00	0.5277130 00	0.1000000 01
6	0.5461480 03	0.0	0.0	0.5461480 03	0.1358290 04	0.5461480 03	0.4852070 00	0.5245530 00	0.1000000 01
7	0.5461480 03	0.0	0.0	0.5461480 03	0.1452780 04	0.5461480 03	0.4852070 00	0.5277130 00	0.1000000 01

WCR1	NCR1	WC/A1	P0A	T0A	PHI	HUB/TIP	AREA	AREAE
0.4368670 01	0.5948040 05	0.3574010 02	0.1096900 02	0.5520000 03	0.5024370 00	0.4926470 00	0.1760170 02	0.1742570 02

CP	GAMMA
0.2398700 00	0.1400320 01

TABLE VII - Continued

***** ROTOR 1*****

STRM	PU1R	PO2R	TO1R	TO2R	PS2	ZR	PERL2	R2	R/RT
1	0.142970D 02	0.155382D 02	0.595320D 03	0.624698D 03	0.120558D 02	0.276931D 00	0.100000D-01	0.174485D 01	0.641489D 00
2	0.162317D 02	0.171685D 02	0.617439D 03	0.641847D 03	0.129921D 02	0.206064D 00	0.207879D 00	0.193976D 01	0.713147D 00
3	0.183451D 02	0.181591D 02	0.639426D 03	0.658894D 03	0.136446D 02	0.245909D 00	0.386582D 00	0.211578D 01	0.777861D 00
4	0.206625D 02	0.189152D 02	0.661545D 03	0.676043D 03	0.141618D 02	0.298012D 00	0.552477D 00	0.227919D 01	0.837938D 00
5	0.231818D 02	0.189460D 02	0.683665D 03	0.693193D 03	0.146064D 02	0.389013D 00	0.707249D 00	0.243164D 01	0.893986D 00
6	0.258961D 02	0.181245D 02	0.705652D 03	0.710240D 03	0.150471D 02	0.505188D 00	0.852027D 00	0.257425D 01	0.946414D 00
7	0.288485D 02	0.185473D 02	0.727771D 03	0.727389D 03	0.154944D 02	0.525248D 00	0.990000D 00	0.271015D 01	0.996379D 00

STRM	B1	THETA	B2	OB1	SLD	OFACTR	OP/QR	OEQUIV	DW2
1	0.528650D 02	0.503062D 02	0.255877D 01	0.837497D 01	0.239400D 01	0.358209D 00	0.549233D 00	0.154650D 01	0.0
2	0.583618D 02	0.388522D 02	0.195096D 02	0.808795D 01	0.227527D 01	0.395017D 00	0.530123D 00	0.164461D 01	0.658555D 00
3	0.619403D 02	0.321684D 02	0.297718D 02	0.777588D 01	0.216805D 01	0.447206D 00	0.478182D 00	0.177009D 01	0.659815D 00
4	0.645362D 02	0.251140D 02	0.394222D 02	0.750156D 01	0.206851D 01	0.489184D 00	0.426001D 00	0.188226D 01	0.628002D 00
5	0.665217D 02	0.187145D 02	0.478072D 02	0.726243D 01	0.197565D 01	0.563078D 00	0.380599D 00	0.209220D 01	0.555524D 00
6	0.680957D 02	0.846663D 01	0.596291D 02	0.704991D 01	0.188878D 01	0.647892D 00	0.344826D 00	0.254412D 01	0.399569D 00
7	0.693970D 02	-.100777D 01	0.704048D 02	0.686703D 01	0.180600D 01	0.721695D 00	0.315571D 00	0.261281D 01	0.258741D 00

STRM	B1*	THETA*	B2*	DEV	EPS2	RC2	F-TANG	F-AXIAL	R-STRESS
1	0.444900D 02	0.353200D 02	0.917000D 01	-.661123D 01	0.0	0.100000D 01	0.0	0.0	0.0
2	0.502739D 02	0.278330D 02	0.224409D 02	-.293129D 01	0.0	0.100000D 01	-.172351D 02	-.102153D 02	0.167174D 01
3	0.541644D 02	0.216508D 02	0.325136D 02	-.274179D 01	0.0	0.100000D 01	-.156248D 02	-.125187D 02	0.190610D 01
4	0.570347D 02	0.170333D 02	0.400013D 02	-.579102D 00	0.0	0.100000D 01	-.141736D 02	-.132839D 02	0.211256D 01
5	0.592593D 02	0.135715D 02	0.456878D 02	0.211941D 01	0.0	0.100000D 01	-.124353D 02	-.130882D 02	0.230021D 01
6	0.610458D 02	0.108968D 02	0.501491D 02	0.948002D 01	0.0	0.100000D 01	-.953032D 01	-.124161D 02	0.247267D 01
7	0.625300D 02	0.878000D 01	0.537500D 02	0.166548D 02	0.0	0.100000D 01	-.656576D 01	-.131168D 02	0.263354D 01

STRM	M1R	M2R	W1R	W2R	CX2	WU2	CM2	CR2	U2
1	0.803724D 00	0.613107D 00	0.904675D 03	0.724488D 03	0.723766D 03	0.323441D 02	0.723766D 03	0.0	0.934310D 03
2	0.924992D 00	0.643732D 00	0.104117D 04	0.768300D 03	0.724188D 03	0.256585D 03	0.724188D 03	0.0	0.103868D 04
3	0.103150D 01	0.652210D 00	0.116105D 04	0.787888D 03	0.683894D 03	0.391224D 03	0.683894D 03	0.0	0.113293D 04
4	0.112855D 01	0.656465D 00	0.127029D 04	0.802870D 03	0.620207D 03	0.509847D 03	0.620207D 03	0.0	0.122043D 04
5	0.121789D 01	0.621044D 00	0.137085D 04	0.772349D 03	0.518731D 03	0.572225D 03	0.518731D 03	0.0	0.130206D 04
6	0.130062D 01	0.522454D 00	0.146398D 04	0.664679D 03	0.336059D 03	0.573466D 03	0.336059D 03	0.0	0.137842D 04
7	0.137886D 01	0.513403D 00	0.155204D 04	0.661591D 03	0.221880D 03	0.623276D 03	0.221880D 03	0.0	0.145120D 04

STRM	PRS	TRS	EFFS	PRC	TRC	EFFC	MX2	CX2/CX1
1	0.202988D 01	0.125428D 01	0.882214D 00	0.202988D 01	0.125428D 01	0.879096D 00	0.612496D 00	0.132522D 01
2	0.198847D 01	0.124512D 01	0.885848D 00	0.198847D 01	0.124512D 01	0.882727D 00	0.606773D 00	0.132599D 01
3	0.196481D 01	0.125356D 01	0.839973D 00	0.196481D 01	0.125356D 01	0.837018D 00	0.566124D 00	0.125221D 01
4	0.191344D 01	0.126168D 01	0.778924D 00	0.191344D 01	0.126168D 01	0.776194D 00	0.507111D 00	0.113560D 01
5	0.189084D 01	0.128675D 01	0.690256D 00	0.189084D 01	0.128675D 01	0.687842D 00	0.417110D 00	0.949798D 00
6	0.187890D 01	0.133481D 01	0.590111D 00	0.187890D 01	0.133481D 01	0.588048D 00	0.264151D 00	0.615326D 00
7	0.190068D 01	0.136254D 01	0.555878D 00	0.190068D 01	0.136254D 01	0.553931D 00	0.172161D 00	0.406263D 00

WCR2	NCR2	WC/A2	PRSA	TRSA	EFFSA	PRCA	TRCA	EFFCA
0.753603D 01	0.527680D 05	0.264901D 02	0.194177D 01	0.127059D 01	0.771990D 00	0.194177D 01	0.127059D 01	0.769279D 00

PO2A	TO2A	PHI2	PSI2	AREA2	AREE2	HPS	HPC
0.712993D 02	0.701368D 03	0.541098D 00	0.585951D 00	0.137859D 02	0.135101D 02	0.160205D 03	0.160721D 03

CP	GAMMA
0.239870D 00	0.140032D 01

TABLE VII - Continued

***** STATOR 1*****

STRM	PU2A	PU3A	TO23A	PS3	ZS	OPO/PO	PERL3	R3	R/RT
1	0.2226580 02	0.2182050 02	0.6923640 03	0.1819450 02	0.4361550-01	0.2000000-01	0.1500000-01	0.1932000 01	0.7102940 00
2	0.2191150 02	0.2137530 02	0.6873050 03	0.1819450 02	0.4946260-01	0.2000000-01	0.2022620 00	0.2081810 01	0.7653710 00
3	0.2155230 02	0.2112100 02	0.6919630 03	0.1819450 02	0.5451070-01	0.2000000-01	0.3759110 00	0.2220730 01	0.8164440 00
4	0.2098850 02	0.2056870 02	0.6964460 03	0.1819450 02	0.6148920-01	0.2000000-01	0.5402760 00	0.2352220 01	0.8647870 00
5	0.2063090 02	0.2021830 02	0.7102840 03	0.1819450 02	0.6848970-01	0.2000000-01	0.6959270 00	0.2476740 01	0.9105670 00
6	0.2060960 02	0.2019740 02	0.7368140 03	0.1819450 02	0.7410210-01	0.2000000-01	0.8432520 00	0.2594600 01	0.9538980 00
7	0.2084860 02	0.2043160 02	0.7521220 03	0.1819450 02	0.7787730-01	0.2000000-01	0.9850000 00	0.2708000 01	0.9955880 00

STRM	AL2	THETA	AL3	OAL2	SLD	OFACTS	OP/QS	OEQUIV	DW3
1	0.5125530 02	0.5125530 02	0.0	0.1315340 01	0.2288000 01	0.6094590 00	0.6012470 00	0.2228480 01	0.0
2	0.4720150 02	0.4720150 02	0.0	-.8159920 00	0.2138190 01	0.5997580 00	0.5898850 00	0.2207360 01	0.6162850 00
3	0.4732230 02	0.4732230 02	0.0	0.8496090 00	0.1999270 01	0.6001350 00	0.5753990 00	0.2179200 01	0.5847560 00
4	0.4888510 02	0.4888510 02	0.0	0.3708970 01	0.1867780 01	0.6325620 00	0.5907310 00	0.2252240 01	0.5422780 00
5	0.5459680 02	0.5459680 02	0.0	0.1051540 02	0.1743260 01	0.6716920 00	0.5955840 00	0.2286510 01	0.4896590 00
6	0.6734010 02	0.6734010 02	0.0	0.2419580 02	0.1625400 01	0.6990550 00	0.5658260 00	0.2143280 01	0.4595190 00
7	0.7499750 02	0.7499750 02	0.0	0.3267750 02	0.1512000 01	0.6863070 00	0.5043040 00	0.1928380 01	0.4675020 00

STRM	AL2*	THETA*	AL3*	OEV	EPS3	RC3	F-TANG	F-AXIAL	R-STRESS
1	0.4994000 02	0.4994000 02	0.0	0.0	0.0	0.1000000 01	0.0	0.0	0.0
2	0.4801740 02	0.4801740 02	0.0	0.0	0.0	0.1000000 01	0.1612890 02	-.9010000 01	0.1924600 01
3	0.4647270 02	0.4647270 02	0.0	0.0	0.0	0.1000000 01	0.1384740 02	-.7614660 01	0.2089520 01
4	0.4517620 02	0.4517620 02	0.0	0.0	0.0	0.1000000 01	0.1223890 02	-.7068630 01	0.2241980 01
5	0.4408140 02	0.4408140 02	0.0	0.0	0.0	0.1000000 01	0.1096100 02	-.6949940 01	0.2384950 01
6	0.4314440 02	0.4314440 02	0.0	0.0	0.0	0.1000000 01	0.1096020 02	-.7958150 01	0.2519310 01
7	0.4232000 02	0.4232000 02	0.0	0.0	0.0	0.1000000 01	0.1186320 02	-.9622240 01	0.2646750 01

STRM	M2A	M3A	C2A	C3A	CX3	CU3	CM3	CR3	U3
1	0.9786610 00	0.5161520 00	0.1156450 04	0.6487490 03	0.6487490 03	0.0	0.6487490 03	0.0	0.1034520 04
2	0.8930710 00	0.4852750 00	0.1365890 04	0.6095000 03	0.6095000 03	0.0	0.6095000 03	0.0	0.1114740 04
3	0.8351480 00	0.4665030 00	0.1008880 04	0.5889110 03	0.5889110 03	0.0	0.5889110 03	0.0	0.1189130 04
4	0.7711880 00	0.4222360 00	0.9431790 03	0.5367820 03	0.5367820 03	0.0	0.5367820 03	0.0	0.1259540 04
5	0.7199900 00	0.3910610 00	0.8954020 03	0.5032990 03	0.5032990 03	0.0	0.5032990 03	0.0	0.1326210 04
6	0.6856430 00	0.3891100 00	0.8722920 03	0.5101310 03	0.5101310 03	0.0	0.5101310 03	0.0	0.1389320 04
7	0.6651490 00	0.4103650 00	0.8571360 03	0.5426610 03	0.5426610 03	0.0	0.5426610 03	0.0	0.1450040 04

STRM	PRS	TRS	EFFS	PRC	TRC	EFFC	MX3	CU2
1	0.1989290 01	0.1254280 01	0.8544860 00	0.1989290 01	0.1254280 01	0.8513720 00	0.5161520 00	0.9019660 03
2	0.1948700 01	0.1245120 01	0.8572530 00	0.1948700 01	0.1245120 01	0.8541380 00	0.4852750 00	0.7820920 03
3	0.1925520 01	0.1253560 01	0.8124230 00	0.1925520 01	0.1253560 01	0.8094760 00	0.4665030 00	0.7417080 03
4	0.1875170 01	0.1261680 01	0.7524310 00	0.1875170 01	0.1261680 01	0.7497120 00	0.4222360 00	0.7105840 03
5	0.1843220 01	0.1286750 01	0.6661980 00	0.1843220 01	0.1286750 01	0.6637960 00	0.3910610 00	0.7298380 03
6	0.1841320 01	0.1334810 01	0.5695130 00	0.1841320 01	0.1334810 01	0.5674590 00	0.3891100 00	0.8049580 03
7	0.1862670 01	0.1362540 01	0.5367920 00	0.1862670 01	0.1362540 01	0.5348530 00	0.4103650 00	0.8279200 03

WCR3	NCR2	WC/A3	PRSA	TRSA	EFFSA	PRCA	TRCA	EFFCA
.7602530 01	0.5261790 05	0.3213660 02	0.1897550 01	0.1277850 01	0.7232640 00	0.1897550 01	0.1277850 01	0.7206460 00

PO3A	TO3A	PHI3	PSI3	AREA3	AREE3	CP	GAMMA
0.2081430 02	0.7053760 03	0.4410920 00	0.5679520 00	0.1166160 02	0.1131170 02	0.2416810 00	0.1396130 01

TABLE VII - Continued

***** ROTOR 2*****

STRM	PO1R	PO2R	TO1R	TO2R	PS2	ZR	PERL2	R2	R/RT
1	0.333297D 02	0.316386D 02	0.781495D 03	0.797493D 03	0.242093D 02	0.274759D 00	0.150000D-01	0.209945D 01	0.771857D 00
2	0.349133D 02	0.318062D 02	0.790795D 03	0.804176D 03	0.246703D 02	0.313063D 00	0.195668D 00	0.221327D 01	0.813703D 00
3	0.365991D 02	0.321422D 02	0.809726D 03	0.820505D 03	0.250885D 02	0.337048D 00	0.366484D 00	0.232089D 01	0.853267D 00
4	0.377657D 02	0.319272D 02	0.828567D 03	0.836730D 03	0.254853D 02	0.366158D 00	0.530686D 00	0.242433D 01	0.891299D 00
5	0.389569D 02	0.322115D 02	0.856764D 03	0.862309D 03	0.258609D 02	0.368041D 00	0.688162D 00	0.252354D 01	0.927773D 00
6	0.402815D 02	0.350069D 02	0.897567D 03	0.900511D 03	0.261744D 02	0.259982D 00	0.838786D 00	0.261844D 01	0.962660D 00
7	0.424887D 02	0.366812D 02	0.927233D 03	0.927560D 03	0.264175D 02	0.241228D 00	0.985000D 00	0.271055D 01	0.996526D 00

STRM	B1	THETA	B2	OBI	SLD	DFACTR	DP/QR	DEQUIV	DW2
1	0.579082D 02	0.255015D 02	0.324067D 02	0.457817D 01	0.239040D 01	0.412225D 00	0.397401D 00	0.172871D 01	0.0
2	0.613317D 02	0.231503D 02	0.381815D 02	0.548161D 01	0.227477D 01	0.457430D 00	0.387335D 00	0.182922D 01	0.643685D 00
3	0.636532D 02	0.203199D 02	0.433334D 02	0.600659D 01	0.216545D 01	0.490275D 00	0.374579D 00	0.190697D 01	0.590063D 00
4	0.669176D 02	0.183146D 02	0.486030D 02	0.759566D 01	0.206036D 01	0.539619D 00	0.372526D 00	0.203193D 01	0.527915D 00
5	0.692142D 02	0.152167D 02	0.540014D 02	0.837851D 01	0.195958D 01	0.563413D 00	0.369244D 00	0.208949D 01	0.450560D 00
6	0.694374D 02	0.151158D 02	0.547191D 02	0.764458D 01	0.186318D 01	0.486855D 00	0.361293D 00	0.186584D 01	0.464503D 00
7	0.694823D 02	0.103723D 02	0.591100D 02	0.605227D 01	0.176960D 01	0.462967D 00	0.338474D 00	0.180153D 01	0.483355D 00

STRM	B1*	THETA*	B2*	DEV	EPS2	RC2	F-TANG	F-AXIAL	R-STRESS
1	0.533300D 02	0.237900D 02	0.295400D 02	0.286670D 01	0.0	0.100000D 01	0.0	0.0	0.0
2	0.558501D 02	0.204428D 02	0.354073D 02	0.277413D 01	0.0	0.100000D 01	-.135110D 02	-.112408D 02	0.208163D 01
3	0.576466D 02	0.175729D 02	0.400735D 02	0.325958D 01	0.0	0.100000D 01	-.124351D 02	-.114802D 02	0.220917D 01
4	0.593219D 02	0.152779D 02	0.440440D 02	0.455897D 01	0.0	0.100000D 01	-.113510D 02	-.118777D 02	0.232954D 01
5	0.608397D 02	0.133951D 02	0.474446D 02	0.655688D 01	0.0	0.100000D 01	-.989512D 01	-.123104D 02	0.244421D 01
6	0.621932D 02	0.118453D 02	0.503479D 02	0.437114D 01	0.0	0.100000D 01	-.976608D 01	-.131779D 02	0.255333D 01
7	0.634300D 02	0.105800D 02	0.528500D 02	0.626000D 01	0.0	0.100000D 01	-.929940D 01	-.138464D 02	0.265790D 01

STRM	M1R	M2R	W1R	W2R	CX2	WO2	CM2	CR2	U2
1	0.971530D 00	0.611143D 00	0.122111D 04	0.839969D 03	0.709157D 03	0.450161D 03	0.709157D 03	0.0	0.112419D 04
2	0.101154D 01	0.614322D 00	0.127049D 04	0.822584D 03	0.646598D 03	0.508484D 03	0.646598D 03	0.0	0.118513D 04
3	0.105115D 01	0.606379D 00	0.132697D 04	0.820885D 03	0.597089D 03	0.563326D 03	0.597089D 03	0.0	0.124276D 04
4	0.107694D 01	0.577387D 00	0.136915D 04	0.791840D 03	0.523622D 03	0.593995D 03	0.523622D 03	0.0	0.129815D 04
5	0.110217D 01	0.569718D 00	0.141850D 04	0.793824D 03	0.466582D 03	0.642229D 03	0.466582D 03	0.0	0.135127D 04
6	0.112491D 01	0.658933D 00	0.148002D 04	0.928825D 03	0.536476D 03	0.758227D 03	0.536476D 03	0.0	0.140209D 04
7	0.117081D 01	0.702000D 00	0.154826D 04	0.994958D 03	0.512856D 03	0.857260D 03	0.512856D 03	0.0	0.145141D 04

STRM	PRS	TRS	EFFS	PRC	TRC	EFFC	MX2	CX2/CX1
1	0.158770D 01	0.118189D 01	0.770574D 00	0.315838D 01	0.148242D 01	0.799368D 00	0.532852D 00	0.109311D 01
2	0.159823D 01	0.117401D 01	0.733453D 00	0.311446D 01	0.146665D 01	0.781079D 00	0.482892D 00	0.106087D 01
3	0.160122D 01	0.120300D 01	0.703955D 00	0.308317D 01	0.150903D 01	0.740492D 00	0.441064D 00	0.101389D 01
4	0.163089D 01	0.121840D 01	0.681658D 00	0.305820D 01	0.153723D 01	0.694344D 00	0.381811D 00	0.975485D 00
5	0.164231D 01	0.122454D 01	0.673154D 00	0.302715D 01	0.157567D 01	0.641080D 00	0.334860D 00	0.927046D 00
6	0.164448D 01	0.120418D 01	0.742884D 00	0.302894D 01	0.160735D 01	0.608024D 00	0.380591D 00	0.105164D 01
7	0.154904D 01	0.119129D 01	0.734168D 00	0.295993D 01	0.162318D 01	0.578264D 00	0.360401D 00	0.945077D 00

WCR2	NCR2	WC/A2	PRSA	TRSA	EFFSA	PRCA	TRCA	EFFCA
0.175619D 01	0.479448D 05	0.267156D 02	0.161715D 01	0.120444D 01	0.714736D 00	0.306863D 01	0.153910D 01	0.694399D 00

PO2A	TO2A	PH12	PS12	AREA2	AREE2	HPS	HPC
0.336599D 02	0.849581D 03	0.416421D 00	0.404019D 00	0.951997D 01	0.923437D 01	0.155836D 03	0.321750D 03

CP	GAMMA
0.241631D 00	0.139613D 01

TABLE VII - Continued

***** STATOR 2*****

STRM	PO2A	PO3A	TO23A	PS3	ZS	OPO/PD	PERL3	R3	R/RT
1	0.3464430 02	0.3270150 02	0.8182950 03	0.2831000 02	0.1861740 00	0.5607660-01	0.1500000-01	0.2183170 01	0.8026380 00
2	0.3416250 02	0.3254740 02	0.8206490 03	0.2831000 02	0.1701550 00	0.4727850-01	0.1926630 00	0.2280000 01	0.8382360 00
3	0.3381930 02	0.3236940 02	0.8324320 03	0.2831000 02	0.1660640 00	0.4287110-01	0.3620820 00	0.2372330 01	0.8721820 00
4	0.3354540 02	0.3225630 02	0.8485500 03	0.2831000 02	0.1599400 00	0.3842940-01	0.5261140 00	0.2461730 01	0.9050480 00
5	0.3320480 02	0.3187300 02	0.8697720 03	0.2831000 02	0.1813530 00	0.4010960-01	0.6843940 00	0.2547990 01	0.9367630 00
6	0.3372440 02	0.3176540 02	0.8872570 03	0.2831000 02	0.2069550 00	0.4391460-01	0.8365860 00	0.2630940 01	0.9672570 00
7	0.3246750 02	0.3092120 02	0.8959950 03	0.2831000 02	0.2555810 00	0.4762500-01	0.9850000 00	0.2711820 01	0.9969940 00

STRM	AL2	THETA	AL3	OAL2	SLO	OFACTS	OP/QS	DEQUIV	OW3
1	0.4354500 02	0.4354500 02	0.0	-.3404960 01	0.2292500 01	0.5063390 00	0.3929800 00	0.1945700 01	0.0
2	0.4630100 02	0.4630100 02	0.0	0.3138100 00	0.2203670 01	0.5008610 00	0.3834430 00	0.1897320 01	0.5728850 00
3	0.4869080 02	0.4869080 02	0.0	0.3568170 01	0.2118960 01	0.4995920 00	0.3689840 00	0.1863410 01	0.5554450 00
4	0.5336480 02	0.5336480 02	0.0	0.9022590 01	0.2036940 01	0.5008350 00	0.3504560 00	0.1814860 01	0.5464640 00
5	0.5665340 02	0.5665340 02	0.0	0.1301650 02	0.1957800 01	0.5102940 00	0.3334870 00	0.1817250 01	0.5201520 00
6	0.5019820 02	0.5019820 02	0.0	0.7202830 01	0.1881710 01	0.5032120 00	0.3029250 00	0.1825330 01	0.5007800 00
7	0.4920000 02	0.4920000 02	0.0	0.6800020 01	0.1807500 01	0.5498500 00	0.3128180 00	0.1951210 01	0.4642740 00

STRM	AL2*	THETA*	AL3*	DEV	EPS3	RC3	F-TANG	F-AXIAL	R-STRESS
1	0.4695000 02	0.4695000 02	0.0	0.0	0.0	0.1000000 01	0.0	0.0	0.0
2	0.4598720 02	0.4598720 02	0.0	0.0	0.0	0.1000000 01	0.1202500 02	-.4437520 01	0.2193970 01
3	0.4512260 02	0.4512260 02	0.0	0.0	0.0	0.1000000 01	0.1170550 02	-.4679630 01	0.2296620 01
4	0.4434220 02	0.4434220 02	0.0	0.0	0.0	0.1000000 01	0.1174990 02	-.5126550 01	0.2394820 01
5	0.4363690 02	0.4363690 02	0.0	0.0	0.0	0.1000000 01	0.1142350 02	-.5435190 01	0.2489400 01
6	0.4293540 02	0.4293540 02	0.0	0.0	0.0	0.1000000 01	0.1052880 02	-.4613680 01	0.2580230 01
7	0.4240000 02	0.4240000 02	0.0	0.0	0.0	0.1000000 01	0.8932290 01	-.3308700 01	0.2667940 01

STRM	M2A	M3A	C2A	C3A	CX3	CU3	CM3	CR3	U3
1	0.7351380 00	0.4592000 00	0.9783730 03	0.6299920 03	0.6299920 03	0.0	0.6299920 03	0.0	0.1169020 04
2	0.6989620 00	0.4514620 00	0.9359190 03	0.6206810 03	0.6206810 03	0.0	0.6206810 03	0.0	0.1220870 04
3	0.6681540 00	0.4423260 00	0.9045130 03	0.6129470 03	0.6129470 03	0.0	0.6129470 03	0.0	0.1270310 04
4	0.6398510 00	0.4364000 00	0.8775040 03	0.6108660 03	0.6108660 03	0.0	0.6108660 03	0.0	0.1318180 04
5	0.6091660 00	0.4155780 00	0.8487890 03	0.5899480 03	0.5899480 03	0.0	0.5899480 03	0.0	0.1364370 04
6	0.5945490 00	0.4095080 00	0.8380700 03	0.5874270 03	0.5874270 03	0.0	0.5874270 03	0.0	0.1408780 04
7	0.5515600 00	0.3577450 00	0.7848800 03	0.5176700 03	0.5176700 03	0.0	0.5176700 03	0.0	0.1452090 04

STRM	PRS	TRS	EFFS	PRC	TRC	EFFC	MX3	CU2
1	0.1478660 01	0.1181890 01	0.6687670 00	0.2981270 01	0.1482420 01	0.7527020 00	0.4592000 00	0.6740250 03
2	0.1527670 01	0.1194010 01	0.6530960 00	0.2967220 01	0.1486680 01	0.7423550 00	0.4514620 00	0.6766500 03
3	0.1532570 01	0.1203000 01	0.6343930 00	0.2950990 01	0.1508030 01	0.7070010 00	0.4423260 00	0.6794320 03
4	0.1568220 01	0.1218400 01	0.6234920 00	0.2940680 01	0.1537230 01	0.6660630 00	0.4364000 00	0.7041540 03
5	0.1576440 01	0.1224540 01	0.6139520 00	0.2905730 01	0.1575670 01	0.6135990 00	0.4155780 00	0.7090450 03
6	0.1572740 01	0.1204160 01	0.6714670 00	0.2895920 01	0.1607350 01	0.5794620 00	0.4095080 00	0.6438590 03
7	0.1513400 01	0.1191290 01	0.6521930 00	0.2819960 01	0.1623180 01	0.5482350 00	0.3577450 00	0.5941500 03

MCR3	MCM2	WC/A3	PRSA	TRSA	EFFSA	PRCA	TRCA	EFFCA
0.1450300 01	0.4791080 05	0.3179110 02	0.1544730 01	0.1206140 01	0.6370150 00	0.2931210 01	0.1541280 01	0.6587910 00

PO3A	TO3A	PHI3	PSI3	AREA3	AREE3	CP	GAMMA
0.3215240 02	0.8507840 03	0.4673830 00	0.3674200 00	0.8381060 01	0.8129630 01	0.2445640 00	0.1389640 01

APPENDIX III

COMPUTOR OUTPUT OF TRAVERSE DATA FOR COMPRESSOR - REDESIGN

TABLE VIII

COMPUTER OUTPUT OF TRAVERSE DATA FOR COMPRESSOR - REDESIGN - TEST NUMBER 15

***** INLET *****

RPM = 0.5644000 05
FLOW = 0.3944000 01

STRM	PO1	TO1	PS	TS	AL1	EPS1	PERL	R1	R/RT
1	0.1258700 02	0.4670000 03	0.1083430 02	0.4463550 03	0.0	0.0	0.5000000-02	0.1346900 01	0.4951840 00
2	0.1268700 02	0.4670000 03	0.1083430 02	0.4463550 03	0.0	0.0	0.2285730 00	0.1655430 01	0.6086140 00
3	0.1268700 02	0.4670000 03	0.1083430 02	0.4463550 03	0.0	0.0	0.4155290 00	0.1913430 01	0.7034670 00
4	0.1268700 02	0.4670000 03	0.1083430 02	0.4463550 03	0.0	0.0	0.5810510 00	0.2141850 01	0.7874450 00
5	0.1268700 02	0.4670000 03	0.1083430 02	0.4463550 03	0.0	0.0	0.7305480 00	0.2348160 01	0.8632930 00
6	0.1268700 02	0.4670000 03	0.1083430 02	0.4463550 03	0.0	0.0	0.8671390 00	0.2536650 01	0.9325920 00
7	0.1268700 02	0.4670000 03	0.1083430 02	0.4463550 03	0.0	0.0	0.9950000 00	0.2713100 01	0.9974630 00

STRM	CX1	CU1	CR1	CM1	U1	C61	M1A	DW1	RC
1	0.4974100 03	0.0	0.0	0.4974100 03	0.6633910 03	0.4974100 03	0.4800590 00	0.0	0.1000000 01
2	0.4974100 03	0.0	0.0	0.4974100 03	0.8153520 03	0.4974100 03	0.4800590 00	0.6586410 00	0.1000000 01
3	0.4974100 03	0.0	0.0	0.4974100 03	0.9424250 03	0.4974100 03	0.4800590 00	0.6546970 00	0.1000000 01
4	0.4974100 03	0.0	0.0	0.4974100 03	0.1054930 04	0.4974100 03	0.4800590 00	0.6586410 00	0.1000000 01
5	0.4974100 03	0.0	0.0	0.4974100 03	0.1156540 04	0.4974100 03	0.4800590 00	0.4586410 00	0.1000000 01
4	0.4974100 03	0.0	0.0	0.4974100 03	0.1249380 04	0.4974100 03	0.4800590 00	0.4546970 00	0.1000000 01
7	0.4974100 03	0.0	0.0	0.4974100 03	0.1336290 04	0.4974100 03	0.4800590 00	0.6586410 00	0.1000000 01

WCR1	NCR1	WC/A1	POA	TOA	PHI	HUB/TIP	AREA	AREAE
0.4336060 01	0.5448220 05	0.3547340 02	0.1268700 02	0.4670000 03	0.4974890 00	0.4926470 00	0.1760170 02	0.1742570 02
CP	GAMMA							
0.2394120 00	0.1401390 01							

TABLE VIII - Continued

***** ROTOR 1*****

STRM	P01R	P02R	T01R	T02R	PS2	ZR	PERL2	R2	R/RT
1	0.1652460 02	0.1797550 02	0.5037210 03	0.5286240 03	0.1452890 02	0.2779110 00	0.1000000-01	0.1744850 01	0.6414890 00
2	0.1877360 02	0.1955130 02	0.5224720 03	0.5431620 03	0.1570430 02	0.2454190 00	0.2078790 00	0.1939760 01	0.7131470 00
3	0.2121750 02	0.2054290 02	0.5411090 03	0.5576120 03	0.1654850 02	0.2909410 00	0.3865820 00	0.2115780 01	0.7778610 00
4	0.2389710 02	0.2171890 02	0.5598600 03	0.5721490 03	0.1717680 02	0.3108270 00	0.5524770 00	0.2279190 01	0.8379380 00
5	0.2680980 02	0.2199520 02	0.5786100 03	0.5866860 03	0.1769630 02	0.3845960 00	0.7072490 00	0.2431640 01	0.8939860 00
6	0.2994780 02	0.2428690 02	0.5972480 03	0.6011370 03	0.1819980 02	0.3320840 00	0.8520270 00	0.2574250 01	0.9464140 00
7	0.3336070 02	0.2321890 02	0.6159980 03	0.6156740 03	0.1868780 02	0.4475020 00	0.9900000 00	0.2710150 01	0.9963790 00

STRM	B1	THETA	B2	DB1	SLD	DF&CTR	DP/QR	DEQUIV	DW2
1	0.5313750 02	0.5050090 02	0.2636570 01	0.8647490 01	0.2394000 01	0.4217310 00	0.6492730 00	0.1676980 01	0.0
2	0.5861450 02	0.4071870 02	0.1789580 02	0.8340610 01	0.2275270 01	0.4842700 00	0.6134060 00	0.1845230 01	0.7763210 00
3	0.6217500 02	0.2943850 02	0.3273660 02	0.8010600 01	0.2168050 01	0.5353480 00	0.5503310 00	0.2013120 01	0.7420660 00
4	0.6475570 02	0.1954360 02	0.4521210 02	0.7720980 01	0.2068510 01	0.5480610 00	0.4855360 00	0.2061080 01	0.6814530 00
5	0.6672820 02	0.1131030 02	0.5541800 02	0.7468930 01	0.1975650 01	0.6070720 00	0.4295290 00	0.2245380 01	0.5403630 00
6	0.6829130 02	0.2009180 02	0.4819940 02	0.7245470 01	0.1888780 01	0.5728790 00	0.3853530 00	0.2101930 01	0.6489670 00
7	0.6958310 02	-.1337660 00	0.6971690 02	0.7053110 01	0.1806000 01	0.6702340 00	0.3486350 00	0.2392700 01	0.5550150 00

STRM	B1*	THETA*	B2*	DEV	EPS2	RC2	F-TANG	F-AXIAL	R-STRESS
1	0.4449000 02	0.3532000 02	0.9170000 01	-.6533430 01	0.0	0.1000000 01	0.0	0.0	0.0
2	0.5027390 02	0.2783300 02	0.2244090 02	-.4545090 01	0.0	0.1000000 01	-.1922180 02	-.1158200 02	0.1671740 01
3	0.5416440 02	0.2165080 02	0.3251360 02	0.2229260 00	0.0	0.1000000 01	-.1685470 02	-.1394830 02	0.1906100 01
4	0.5703470 02	0.1703330 02	0.4000130 02	0.5210740 01	0.0	0.1000000 01	-.1427860 02	-.1495840 02	0.2112560 01
5	0.5925930 02	0.1357150 02	0.4568780 02	0.9730150 01	0.0	0.1000000 01	-.1100040 02	-.1534490 02	0.2300210 01
6	0.6104530 02	0.1089680 02	0.5014910 02	-.1949630 01	0.0	0.1000000 01	-.1377200 02	-.1681040 02	0.2472670 01
7	0.6253000 02	0.8780000 01	0.5375000 02	0.1596690 02	0.0	0.1000000 01	-.1219270 02	-.1734840 02	0.2633540 01

STRM	M1R	M2R	W1R	W2R	CX2	WU2	CM2	CR2	U2
1	0.8002370 00	0.5596860 00	0.8291590 03	0.6121490 03	0.6115010 03	0.2815920 02	0.6115010 03	0.0	0.8593940 03
2	0.9217850 00	0.5680850 00	0.9551000 03	0.6292580 03	0.5988130 03	0.1933630 03	0.5988130 03	0.0	0.9553940 03
3	0.1028470 01	0.5642110 00	0.1065640 04	0.6334880 03	0.5328690 03	0.3425760 03	0.5328690 03	0.0	0.1042090 04
4	0.1125630 01	0.5885180 00	0.1166320 04	0.6675760 03	0.4702970 03	0.4737920 03	0.4702970 03	0.0	0.1122570 04
5	0.1215060 01	0.5658890 00	0.1258970 04	0.6516100 03	0.3698450 03	0.5364800 03	0.3698450 03	0.0	0.1197660 04
6	0.1297850 01	0.6551850 00	0.1344760 04	0.7559340 03	0.5038600 03	0.5635260 03	0.5038600 03	0.0	0.1267900 04
7	0.1376130 01	0.5653880 00	0.1425860 04	0.6669590 03	0.2312070 03	0.6256010 03	0.2312070 03	0.0	0.1334840 04

STRM	PRS	TRS	EFFS	PRC	TRC	EFFC	MX2	CX2/CX1
1	0.2032860 01	0.1255270 01	0.8826640 00	0.2032860 01	0.1255270 01	0.8812350 00	0.5590930 00	0.1229370 01
2	0.2038750 01	0.1260160 01	0.8699790 00	0.2038750 01	0.1260160 01	0.8685690 00	0.5405990 00	0.1203860 01
3	0.1956290 01	0.1260490 01	0.8135380 00	0.1956290 01	0.1260490 01	0.8122270 00	0.4745950 00	0.1071290 01
4	0.1889320 01	0.1260260 01	0.7680380 00	0.1889320 01	0.1260260 01	0.7668070 00	0.4146020 00	0.9454920 00
5	0.1865680 01	0.1282970 01	0.6911190 00	0.1865680 01	0.1282970 01	0.6900130 00	0.3211910 00	0.7435410 00
6	0.2085160 01	0.1319140 01	0.7340610 00	0.2085160 01	0.1319140 01	0.7328670 00	0.4367070 00	0.1012970 01
7	0.1928640 01	0.1338310 01	0.6118350 00	0.1928640 01	0.1338310 01	0.6108510 00	0.1959970 00	0.4648230 00

WCR2	NCR2	WC/A2	PRSA	TRS6	EFFSA	PRC6	TRCA	EFFC6
0.2474320 01	0.5262410 05	0.2584550 02	0.1980800 01	0.1277630 01	0.7789170 00	0.1980800 01	0.1277630 01	0.7776600 00

PU2A	TO2A	PH12	PS12	AREA2	AREE2	HPS	HPC
0.2513040 02	0.5966520 03	0.4513070 00	0.6053810 00	0.1378590 02	0.1351010 02	0.1732280 03	0.1734820 03

CP	GAMMA
0.2394120 00	0.1401390 01

TABLE VIII - Continued

***** STATOR 1*****

STRM	PU2A	PO3A	TO23A	PS3	ZS	OPD/PO	PERL3	R3	R/RT
1	0.2579090 02	0.2527510 02	0.5862120 03	0.2167170 02	0.4580150-01	0.2000000-01	0.1500000-01	0.1932000 01	0.7102940 00
2	0.2586560 02	0.2534830 02	0.5884950 03	0.2167170 02	0.5091000-01	0.2000000-01	0.2022620 00	0.2081810 01	0.7653710 00
3	0.2481950 02	0.2432310 02	0.5886490 03	0.2167170 02	0.6001580-01	0.2000000-01	0.3759110 00	0.2220730 01	0.8164440 00
4	0.2396990 02	0.2349050 02	0.5885400 03	0.2167170 02	0.7057110-01	0.2000000-01	0.5402760 00	0.2352220 01	0.8647870 00
5	0.2366990 02	0.2319650 02	0.5991480 03	0.2167170 02	0.7924770-01	0.2000000-01	0.6959270 00	0.2476740 01	0.9105670 00
6	0.2645440 02	0.2592540 02	0.6160380 03	0.2167170 02	0.6409570-01	0.2000000-01	0.8432520 00	0.2594600 01	0.9538980 00
7	0.2446470 02	0.2397930 02	0.6249890 03	0.2167170 02	0.8465380-01	0.2000000-01	0.9850000 00	0.2708000 01	0.9955880 00

STRM	AL2	THETA	AL3	DAL2	SLD	DFACTS	DP/OS	DEQUIV	DW3
1	0.5365990 02	0.5365980 02	0.0	0.3719820 01	0.2288000 01	0.6427930 00	0.6342390 00	0.2339040 01	0.0
2	0.5183930 02	0.5183930 02	0.0	0.3821870 01	0.2138190 01	0.6097800 00	0.5872660 00	0.2192350 01	0.7669500 00
3	0.5270100 02	0.5270100 02	0.0	0.6228250 01	0.1999270 01	0.6542710 00	0.6194190 00	0.2326310 01	0.6981880 00
4	0.5406190 02	0.5406190 02	0.0	0.8885780 01	0.1867780 01	0.7160930 00	0.6616930 00	0.2547080 01	0.5854140 00
5	0.6077870 02	0.6077870 02	0.0	0.1669730 02	0.1743260 01	0.7591010 00	0.6654950 00	0.2583550 01	0.4783370 00
6	0.5442260 02	0.5442260 02	0.0	0.1127830 02	0.1625400 01	0.5483850 00	0.4206020 00	0.1848920 01	0.6826010 00
7	0.7194420 02	0.7194420 02	0.0	0.2962420 02	0.1512000 01	0.6943220 00	0.5161640 00	0.1997940 01	0.7326820 00

STRM	AL2*	THETA*	AL3*	OEV	EPS3	RC3	F-TANG	F-AXIAL	R-STRESS
1	0.4994000 02	0.4994000 02	0.0	0.0	0.0	0.1000000 01	0.0	0.0	0.0
2	0.4801740 02	0.4801740 02	0.0	0.0	0.0	0.1000000 01	0.1898980 02	-.1118810 02	0.1924600 01
3	0.4647270 02	0.4647270 02	0.0	0.0	0.0	0.1000000 01	0.1585800 02	-.9698720 01	0.2089520 01
4	0.4517620 02	0.4517620 02	0.0	0.0	0.0	0.1000000 01	0.1226630 02	-.8456700 01	0.2241950 01
5	0.4408140 02	0.4408140 02	0.0	0.0	0.0	0.1000000 01	0.9737740 01	-.8052900 01	0.2384950 01
6	0.4314440 02	0.4314440 02	0.0	0.0	0.0	0.1[illegible]0000 01	0.1448570 02	-.8669320 01	0.2519310 01
7	0.4232000 02	0.4232000 02	0.0	0.0	0.0	0.10[illegible]000 01	0.1609570 02	-.1047200 02	0.2646750 01

STRM	M2A	M3A	C2A	C3A	CX3	CU3	CM3	CR3	U3
1	0.9434920 00	0.4737310 00	0.1031930 04	0.5502650 03	0.5502650 03	0.0	0.5502650 03	0.0	0.9515720 03
2	0.8749410 00	0.4782640 00	0.9691580 03	0.5563800 03	0.5563800 03	0.0	0.5563800 03	0.0	0.1025360 04
3	0.7831930 00	0.4092350 00	0.8793590 03	0.4789620 03	0.4789620 03	0.0	0.4789620 03	0.0	0.1093780 04
4	0.7064140 00	0.3410980 00	0.8013100 03	0.4011750 03	0.4011750 03	0.0	0.4011750 03	0.0	0.1158540 04
5	0.6579280 00	0.3130340 00	0.7575910 03	0.3721420 03	0.3721420 03	0.0	0.3721420 03	0.0	0.1219870 04
6	0.7506110 00	0.5122930 00	0.8660350 03	0.6077910 03	0.6077910 03	0.0	0.6077910 03	0.0	0.1277920 04
7	0.6323670 00	0.3827780 00	0.7459690 03	0.4625610 03	0.4625610 03	0.0	0.4625610 03	0.0	0.1333780 04

STRM	PRS	TRS	EFFS	PRC	TRC	EFFC	MX3	CO2
1	0.1992200 01	0.1255270 01	0.8549690 00	0.1992200 01	0.1255270 01	0.8535640 00	0.4737310 00	0.8312350 03
2	0.1997930 01	0.1260160 01	0.8427810 00	0.1997980 01	0.1260160 01	0.8413960 00	0.4782640 00	0.7620310 03
3	0.1917170 01	0.1260490 01	0.7866940 00	0.1917170 01	0.1260490 01	0.7854080 00	0.4092350 00	0.6995150 03
4	0.1851540 01	0.1260260 01	0.7414370 00	0.1851540 01	0.1260260 01	0.7402310 00	0.3410980 00	0.6487820 03
5	0.1828370 01	0.1282970 01	0.6667420 00	0.1828370 01	0.1282970 01	0.6656590 00	0.3130340 00	0.6611810 03
6	0.2043460 01	0.1319140 01	0.7117460 00	0.2043460 01	0.1319140 01	0.7105720 00	0.5122930 00	0.7043730 03
7	0.1890070 01	0.1338310 01	0.5912500 00	0.1890070 01	0.1338310 01	0.5902850 00	0.3827780 00	0.7092340 03

WCR3	NCR2	WC/A3	PRSA	TRSA	EFFSA	PRCA	TRCA	EFFCA
0.2520730 01	0.5255390 05	0.3112650 02	0.1946940 01	0.1281040 01	0.7481290 00	0.1946940 01	0.1281040 01	0.7469040 00

PO3A	TO3A	PHI3	PSI3	AREA3	AREE3	CP	GAMMA
0.2470380 02	0.5982460 03	0.3638470 00	0.5907370 00	0.1166160 02	0.1131170 02	0.2402800 00	0.1399360 01

TABLE VIII - Continued

***** ROTOR 2*****

STRM	PO1R	PO2R	TO1R	TO2R	PS2	ZR	PERL2	R2	R/RT
1	0.3859340 02	0.3406610 02	0.6617670 03	0.6753810 03	0.2682410 02	0.4362310 00	0.1500000-03	0.2099450 01	0.7738570 00
2	0.4117560 02	0.3523720 02	0.6762220 03	0.6876090 03	0.2745210 02	0.4316840 00	0.1956680 00	0.2213270 01	0.8137030 00
3	0.4202800 02	0.3540960 02	0.6884740 03	0.6976470 03	0.2798290 02	0.4233420 00	0.3664840 00	0.2320890 01	0.8532670 00
4	0.4315470 02	0.3533790 02	0.7005370 03	0.7074830 03	0.2847360 02	0.4345260 00	0.5306860 00	0.2424330 01	0.8912990 00
5	0.4477050 02	0.3600880 02	0.7233160 03	0.7280360 03	0.2892570 02	0.4239950 00	0.6881620 00	0.2523540 01	0.9277730 00
6	0.5208650 02	0.3864810 02	0.7523040 03	0.7548100 03	0.2931490 02	0.4619060 00	0.8387860 00	0.2618440 01	0.9626600 00
7	0.5044030 02	0.3930660 02	0.7734270 03	0.7737060 03	0.2964600 02	0.3896493 00	0.9850000 00	0.2710550 01	0.9965260 00

STRM	B1	THETA	B2	DB1	SLD	DFACTR	OP/QR	OEQUIV	OM2
1	0.5496050 02	0.3375830 02	0.2620230 02	0.6630530 01	0.2390400 01	0.4537860 00	0.3044840 00	0.1801020 01	0.0
2	0.6151430 02	0.2778520 02	0.3372960 02	0.5664700 01	0.2274770 01	0.4678120 00	0.2963740 00	0.1843350 01	0.7967820 00
3	0.6635160 02	0.2615060 02	0.4020090 02	0.8704920 01	0.2165450 01	0.5009790 00	0.3100380 00	0.1916660 01	0.7354960 00
4	0.7090330 02	0.2433070 02	0.4656960 02	0.1157840 02	0.2060360 01	0.5450720 00	0.3166160 00	0.2025130 01	0.6498650 00
5	0.7303480 02	0.2148460 02	0.5155020 02	0.1219510 02	0.1959580 01	0.5587650 00	0.3140400 00	0.2054600 01	0.5696260 00
6	0.6456380 02	0.1271790 02	0.5184390 02	0.2370620 03	0.1863380 01	0.5321800 00	0.2533000 00	0.1995360 01	0.5976330 00
7	0.7047320 02	0.1303110 02	0.5784200 02	0.7443160 01	0.1769600 01	0.5222310 00	0.2769940 00	0.1943280 01	0.5946170 00

STRM	B1*	THETA*	B2*	DEV	EPS2	RC2	F-TANG	F-AXIAL	R-STRESS
1	0.5333370 02	0.2379000 02	0.2954000 02	-.3337720 01	0.0	0.1000000 01	0.0	0.0	0.0
2	0.5545010 02	0.2044280 02	0.3540730 02	-.1677730 01	0.0	0.3000000 01	-.1711540 02	-.1096310 02	0.2081630 01
3	0.5754460 02	0.1757290 02	0.4007380 02	0.1271360 00	0.0	0.1000000 01	-.1529160 02	-.3366610 02	0.2209170 01
4	0.5932190 02	0.1527790 02	0.4404400 02	0.2525590 01	0.0	0.1000000 01	-.1355960 02	-.1269900 02	0.2329540 01
5	0.6083970 02	0.1339510 02	0.4744460 02	0.4105640 01	0.0	0.1000000 03	-.1193780 02	-.1335630 02	0.2444230 03
6	0.6219320 02	0.1184530 02	0.5034790 02	0.1496010 03	0.0	0.1000000 01	-.1216230 02	-.1246010 02	0.2553330 01
7	0.6343000 02	0.1058000 02	0.5785000 02	0.4997010 01	0.0	0.1000000 01	-.3158730 02	-.1238030 02	0.2657900 03

STRM	M1R	M2R	W1R	W2R	CX2	WU2	CM2	CR2	U2
1	0.9663330 00	0.5945640 00	0.1099220 04	0.7318560 03	0.6566520 03	0.3231450 03	0.6566520 03	0.0	0.1034050 04
2	0.1002790 01	0.6081440 00	0.1166580 04	0.7541710 03	0.6272390 03	0.4187720 03	0.6272190 03	0.0	0.1090110 04
3	0.1020220 01	0.5898960 00	0.1194050 04	0.7383640 03	0.5639520 03	0.4765920 03	0.5639520 03	0.0	0.1143110 04
4	0.1042430 01	0.5642650 00	0.1226040 04	0.7132160 03	0.4903170 03	0.5179450 03	0.4903170 03	0.0	0.1194060 04
5	0.1072810 01	0.5664630 00	0.1275340 04	0.7284390 03	0.4529640 03	0.5704790 03	0.4529640 03	0.0	0.1242920 04
6	0.1132750 01	0.6411220 00	0.1415100 04	0.8298410 03	0.5126810 03	0.6525300 03	0.5126810 03	0.0	0.1289660 04
7	0.1168220 01	0.6479240 00	0.1411710 04	0.8483920 03	0.4515610 03	0.7182350 03	0.4515630 03	0.0	0.1335030 04

STRM	PRS	TRS	EFFS	PRC	TRC	EFFC	MX2	CX2/CX1
1	0.1595680 01	0.1208980 01	0.6826740 00	0.3118920 01	0.1517590 01	0.7550070 00	0.5334670 00	0.1193340 01
2	0.1559140 01	0.1207310 01	0.6518350 00	0.3115130 01	0.1521410 01	0.7341030 00	0.5057730 00	0.1127320 01
3	0.1592110 01	0.1215830 01	0.6576160 00	0.3052340 01	0.1532540 01	0.7037230 00	0.4505540 00	0.1177450 03
4	0.1674630 01	0.1228780 01	0.6492850 00	0.3008070 01	0.1548580 01	0.6727310 00	0.3879170 00	0.3222200 03
5	0.1632490 01	0.1232700 01	0.6451380 00	0.2984800 01	0.1583530 01	0.6294080 00	0.3534240 00	0.1217180 01
6	0.1473350 01	0.1222590 01	0.5312290 00	0.3023000 01	0.1632760 01	0.6054240 00	0.3960890 00	0.8435150 00
7	0.1557170 01	0.1215940 01	0.6125320 00	0.2943060 01	0.3632650 01	0.5698910 00	0.3448630 00	0.9762190 00

WCR2	NCR2	WC/A2	PRSA	TRSA	EFFSA	PRCA	TRCA	EFFCA
0.1774920 01	0.4765350 05	0.2684610 02	0.1566320 01	0.1216240 01	0.6318110 00	0.3049530 01	0.1558060 03	0.6709010 00

PU2A	TU2A	PHI2	PSI2	AREA2	AREE2	HPS	HPC
0.3468930 02	0.7276120 03	0.4232760 00	0.3764900 00	0.9519970 03	0.9234370 01	0.1734730 03	0.3496770 03

CP	GAMMA
0.2402900 00	0.1399360 01

TABLE VIII - Continued

***** STATOR 2*****

STRM	PD2A	PU3A	TD23A	PS3	ZS	DPD/PO	PERL3	R3	R/RT
1	0.4033100 02	0.3897340 02	0.7087170 03	0.3336280 02	0.1005060 00	0.3365960-01	0.1500000-01	0.2183170 01	0.8026380 00
2	0.3952160 02	0.3834560 02	0.7104990 03	0.3336280 02	0.9743610-01	0.2975610-01	0.1926630 00	0.2280000 01	0.8382360 00
3	0.3872510 02	0.3770750 02	0.7156970 03	0.3336280 02	0.9472900-01	0.2627730-01	0.3620820 00	0.2372330 01	0.8721820 00
4	0.3816330 02	0.3729550 02	0.7231860 03	0.3336280 02	0.8956180-01	0.2274000-01	0.5261140 00	0.2461730 01	0.9050480 00
5	0.3786820 02	0.3710440 02	0.7385730 03	0.3336280 02	0.8540700-01	0.2016870-01	0.6843940 00	0.2547990 01	0.9367630 00
6	0.3835290 02	0.3764540 02	0.7531590 03	0.3336280 02	0.7826610-01	0.1844340-01	0.8365860 00	0.2630940 01	0.9672570 00
7	0.3733860 02	0.3668990 02	0.7624470 03	0.3336280 02	0.8433170-01	0.1737430-01	0.9850000 00	0.2711820 01	0.9969940 00

STRM	AL2	THETA	AL3	DAL2	SLD	DFACTS	DP/US	DEQUIV	DW3
1	0.4727170 02	0.4727170 02	0.0	0.3216830 00	0.2292500 01	0.5317790 00	0.4841050 00	0.1993240 01	0.0
2	0.4694580 02	0.4694580 02	0.0	0.9585860 00	0.2203670 01	0.5378530 00	0.4897240 00	0.2003510 01	0.7401930 00
3	0.4976490 02	0.4976490 02	0.0	0.4642280 01	0.2118960 01	0.5574670 00	0.5008220 00	0.2026680 01	0.6874220 00
4	0.5405050 02	0.5405050 02	0.0	0.9708290 01	0.2036940 01	0.5739560 00	0.5045800 00	0.2020500 01	0.6490850 00
5	0.5603550 02	0.5603550 02	0.0	0.1239860 02	0.1957800 01	0.5763680 00	0.4961850 00	0.1989730 01	0.6164570 00
6	0.5117750 02	0.5117750 02	0.0	0.8182060 01	0.1881710 01	0.5295910 00	0.4478830 00	0.1887040 01	0.6345950 00
7	0.5379190 02	0.5379190 02	0.0	0.1139190 02	0.1807500 01	0.5751040 00	0.4831690 00	0.1976330 01	0.6161080 00

STRM	AL2*	THETA*	AL3*	DEV	EPS3	RC3	F-TANG	F-AXIAL	R-STRESS
1	0.4695000 02	0.4695000 02	0.0	0.0	0.0	0.1000000 01	0.0	0.0	0.0
2	0.4598720 02	0.4598720 02	0.0	0.0	0.0	0.1000000 01	0.1589980 02	-.7564270 01	0.2193970 01
3	0.4512260 02	0.4512260 02	0.0	0.0	0.0	0.1000000 01	0.1429210 02	-.7156130 01	0.2296620 01
4	0.4434220 02	0.4434220 02	0.0	0.0	0.0	0.1000000 01	0.1354330 02	-.7393790 01	0.2394820 01
5	0.4363690 02	0.4363690 02	0.0	0.0	0.0	0.1000000 01	0.1291930 02	-.7550040 01	0.2489400 01
6	0.4299540 02	0.4299540 02	0.0	0.0	0.0	0.1000000 01	0.1291500 02	-.7077620 01	0.2580230 01
7	0.4240000 02	0.4240000 02	0.0	0.0	0.0	0.1000000 01	0.1200590 02	-.6425670 01	0.2667940 01

STRM	M2A	M3A	C2A	C3A	CX3	CU3	CM3	CR3	U3
1	0.7862180 00	0.4766090 00	0.9677660 03	0.6081780 03	0.6081780 03	0.0	0.6081780 03	0.0	0.1075280 04
2	0.7408530 00	0.4504990 00	0.9187460 03	0.5769180 03	0.5769180 03	0.0	0.5769180 03	0.0	0.1122970 04
3	0.6975320 00	0.4219620 00	0.8730910 03	0.5436460 03	0.5436460 03	0.0	0.5436460 03	0.0	0.1168450 04
4	0.6607660 00	0.4022660 00	0.8351910 03	0.5217920 03	0.5217920 03	0.0	0.5217920 03	0.0	0.121[illegible] 04
5	0.6326080 00	0.3927420 00	0.8107770 03	0.5152060 03	0.5152060 03	0.0	0.5152060 03	0.0	0.125497[illegible]
6	0.6318110 00	0.4190640 00	0.8177900 03	0.5539920 03	0.5539920 03	0.0	0.5539920 03	0.0	0.129[illegible]
7	0.5837990 00	0.3711060 00	0.7644260 03	0.4954240 03	0.4954240 03	0.0	0.4954240 03	0.0	0.133566[illegible]

STRM	PRS	TRS	FFFS	PRC	TRC	EFFC	MX3	CU2
1	0.1541970 01	0.1208980 01	0.6295090 00	0.3071920 01	0.1517590 01	0.7288760 00	0.4766090 00	0.7109010 03
2	0.1512750 01	C.1207310 01	0.6048340 00	0.3022430 01	0.1521410 01	0.7113340 00	0.4504990 00	0.6713350 03
3	0.1550270 01	0.1215830 01	0.6175600 00	0.2972130 01	0.1532540 01	0.6841730 00	0.4219620 00	0.6665180 03
4	0.1587690 01	0.1228780 01	0.6164360 00	0.2939660 01	0.1548580 01	0.6563950 00	0.4022660 00	0.6761160 03
5	0.1599570 01	0.1232700 01	0.6164820 00	0.2924600 01	0.1581530 01	0.6157810 00	0.3927420 00	0.6724460 03
6	0.1452070 01	0.1222590 01	0.5046090 00	0.2967240 01	0.1612760 01	0.5935610 00	0.4190640 00	0.6371330 03
7	0.1530060 01	0.1219940 01	0.5867700 00	0.2891930 01	0.1632650 01	0.5591530 00	0.3711060 00	0.6167980 03

WCR3	NCR2	WC/A3	PRSA	TRSA	EFFSA	PRCA	TRCA	EFFCA
0.1821720 01	0.4762630 05	0.3130000 02	0.1526870 01	0.1217630 01	0.5898960 00	0.2972720 01	G.1559840 01	0.6509560 00

PD3A	TD3A	PHI3	PSI3	AREA3	AREE3	CP	GAMMA
0.3771490 02	0.7284430 03	0.4348900 00	0.3564000 00	0.8381060 01	0.8129630 01	0.2420650 00	0.1395250 01

TABLE IX

COMPUTER OUTPUT OF TRAVERSE DATA FOR COMPRESSOR - REDESIGN - TEST NUMBER 16

***** INLET *****

RPM = 0.5631000 05
FLOW = 0.3747000 01

STRM	PO1	TO1	PS	TS	AL1	EPS1	PERL	R1	R/RT
1	0.1210000 02	0.4650000 03	0.1035890 02	0.4447610 03	0.0	0.0	0.5000000-02	0.1346900 01	0.4951840 00
2	0.1210000 02	0.4650000 03	0.1035890 02	0.4447610 03	0.0	0.0	0.2285730 00	0.1655430 01	0.6086140 00
3	0.1210000 02	0.4650000 03	0.1035890 02	0.4447610 03	0.0	0.0	0.4155290 00	0.1913430 01	0.7034670 00
4	0.1210000 02	0.4650000 03	0.1035890 02	0.4447610 03	0.0	0.0	0.5810510 00	0.2141850 01	0.7874450 00
5	0.1210000 02	0.4650000 03	0.1035890 02	0.4447610 03	0.0	0.0	0.7305480 00	0.2348160 01	0.8632930 00
6	0.1210000 02	0.4650000 03	0.1035890 02	0.4447610 03	0.0	0.0	0.8671390 00	0.2536650 01	0.9325920 00
7	0.1210000 02	0.4650000 03	0.1035890 02	0.4447610 03	0.0	0.0	0.9950000 00	0.2713100 01	0.9974630 00

STRM	CX1	CU1	CR1	CM1	U1	CA1	M1A	DW1	RC
1	0.4924900 03	0.0	0.0	0.4924900 03	0.6518630 03	0.4924900 03	0.4761600 00	0.0	0.1000000 01
2	0.4924900 03	0.0	0.0	0.4924900 03	0.8134740 03	0.4924900 03	0.4761600 00	0.6257440 00	0.1000000 01
3	0.4924900 03	0.0	0.0	0.4924900 03	0.9402550 03	0.4924900 03	0.4761600 00	0.6219970 00	0.1000000 01
4	0.4924900 03	0.0	0.0	0.4924900 03	0.1052500 04	0.4924900 03	0.4761600 00	0.6257440 00	0.1000000 01
5	0.4924900 03	0.0	0.0	0.4924900 03	0.1153880 04	0.4924900 03	0.4761600 00	0.6257440 00	0.1000000 01
6	0.4924900 03	0.0	0.0	0.4924900 03	0.1246500 04	0.4924900 03	0.4761600 00	0.6219970 00	0.1000000 01
7	0.4924900 03	0.0	0.0	0.4924900 03	0.1333210 04	0.4924900 03	0.4761600 00	0.6257440 00	0.1000000 01

WCR1	NCR1	WC/A1	POA	TOA	PHI	HUB/TIP	AREA	AREAE
0.4310070 01	0.5947260 05	0.3526070 02	0.1210000 02	0.4650000 03	0.4937060 00	0.4926470 00	0.1760170 02	0.1742570 02
CP	GAMMA							
0.2394060 C0	0.1401410 01							

TABLE IX - Continued

***** ROTOR 1*****

STRM	PO1R	PO2R	TO1R	TO2R	PS2	ZR	PERL2	R2	R/RT
1	0.157588D 02	0.167847D 02	0.501553D 03	0.526342D 03	0.131565D 02	0.345352D 00	0.100000D-01	0.174485D 01	0.641489D 00
2	0.179028D 02	0.183113D 02	0.520218D 03	0.540813D 03	0.143034D 02	0.290361D 00	0.207879D 00	0.193976D 01	0.713147D 00
3	0.202327D 02	0.191661D 02	0.538770D 03	0.555197D 03	0.151357D 02	0.334555D 00	0.386582D 00	0.211578D 01	0.777861D 00
4	0.227871D 02	0.199195D 02	0.557435D 03	0.569668D 03	0.157751D 02	0.375100D 00	0.552477D 00	0.227919D 01	0.837938D 00
5	0.255638D 02	0.205592D 02	0.576099D 03	0.584139D 03	0.163106D 02	0.412493D 00	0.707249D 00	0.243164D 01	0.893986D 00
6	0.285551D 02	0.211730D 02	0.594652D 03	0.598523D 03	0.168093D 02	0.441652D 00	0.852027D 00	0.257425D 01	0.946414D 00
7	0.318085D 02	0.208424D 02	0.613316D 03	0.612994D 03	0.173022D 02	0.508531D 00	0.990000D 00	0.271015D 01	0.996379D 00

STRM	B1	THETA	B2	OB1	SLO	OFACTR	OP/QR	DEQUIV	OM2
1	0.533477D 02	0.534180D 02	-.708584D-01	0.885719D 01	0.239400D 01	0.377508D 00	0.518080D 00	0.157183D 01	0.0
2	0.588086D 02	0.439721D 02	0.148366D 02	0.853472D 01	0.227527D 01	0.448907D 00	0.522869D 00	0.174320D 01	0.763868D 00
3	0.623552D 02	0.341752D 02	0.281800D 02	0.819076D 01	0.216805D 01	0.515196D 00	0.483784D 00	0.193620D 01	0.743468D 00
4	0.649240D 02	0.243717D 02	0.405523D 02	0.786928D 01	0.206851D 01	0.557467D 00	0.435799D 00	0.207803D 01	0.673729D 00
5	0.668866D 02	0.185352D 02	0.483513D 02	0.762725D 01	0.197565D 01	0.597574D 00	0.391434D 00	0.220523D 01	0.595270D 00
6	0.684412D 02	0.152727D 02	0.531685D 02	0.739535D 01	0.188878D 01	0.633713D 00	0.354493D 00	0.231924D 01	0.551010D 00
7	0.697257D 02	0.207646D 01	0.676492D 02	0.719568D 01	0.180600D 01	0.713881D 00	0.323703D 00	0.260303D 01	0.419747D 00

STRM	B1*	THETA*	B2*	DEV	EPS2	RC2	F-TANG	F-AXIAL	R-STRESS
1	0.444900D 02	0.353200D 02	0.917000D 01	-.924086D 01	0.0	0.100000D 01	0.0	0.0	0.0
2	0.502739D 02	0.278330D 02	0.224409D 02	-.760435D 01	0.0	0.100000D 01	-.194806D 02	-.103607D 02	0.167174D 01
3	0.541644D 02	0.216508D 02	0.325136D 02	-.433368D 01	0.0	0.100000D 01	-.174581D 02	-.127641D 02	0.190610D 01
4	0.570347D 02	0.170333D 02	0.400013D 02	0.550927D 00	0.0	0.100000D 01	-.148291D 02	-.135095D 02	0.211256D 01
5	0.592593D 02	0.135715D 02	0.456878D 02	0.266352D 01	0.0	0.100000D 01	-.127870D 02	-.139364D 02	0.230021D 01
6	0.610458D 02	0.108968D 02	0.501491D 02	0.301943D 01	0.0	0.100000D 01	-.121332D 02	-.145472D 02	0.247267D 01
7	0.625300D 02	0.878000D 01	0.537500D 02	0.138992D 02	0.0	0.100000D 01	-.967604D 01	-.149865D 02	0.263354D 01

STRM	M1R	M2R	W1R	W2R	CX2	WU2	CM2	CR2	U2
1	0.797635D 00	0.599997D 00	0.824991D 03	0.651953D 03	0.651952D 03	-.806278D 00	0.651952D 03	0.0	0.857415D 03
2	0.919404D 00	0.604406D 00	0.950940D 03	0.665380D 03	0.643196D 03	0.170379D 03	0.643196D 03	0.0	0.953193D 03
3	0.102623D 01	0.590411D 00	0.106143D 04	0.659591D 03	0.581409D 03	0.311487D 03	0.581409D 03	0.0	0.103969D 04
4	0.112349D 01	0.586748D 00	0.116203D 04	0.664256D 03	0.504710D 03	0.431860D 03	0.504710D 03	0.0	0.111999D 04
5	0.121298D 01	0.584442D 00	0.125458D 04	0.670166D 03	0.445366D 03	0.500771D 03	0.445366D 03	0.0	0.119490D 04
6	0.129583D 01	0.583528D 00	0.134027D 04	0.677374D 03	0.406061D 03	0.542172D 03	0.406061D 03	0.0	0.126498D 04
7	0.137414D 01	0.522379D 00	0.142127D 04	0.617613D 03	0.234864D 03	0.571214D 03	0.234864D 03	0.0	0.133176D 04

STRM	PRS	TRS	EFFS	PRC	TRC	EFFC	MX2	CX2/CX1
1	0.203975D 01	0.126409D 01	0.857713D 00	0.203975D 01	0.126409D 01	0.856294D 00	0.599996D 00	0.132379D 01
2	0.204507D 01	0.126780D 01	0.849233D 00	0.204502D 01	0.126780D 01	0.847827D 00	0.584255D 00	0.130601D 01
3	0.197423D 01	0.127172D 01	0.791614D 00	0.197423D 01	0.127172D 01	0.790310D 00	0.520429D 00	0.118055D 01
4	0.190078D 01	0.127660D 01	0.730209D 00	0.190078D 01	0.127660D 01	0.729012D 00	0.445819D 00	0.102481D 01
5	0.190307D 01	0.129767D 01	0.679900D 00	0.190307D 01	0.129767D 01	0.678786D 00	0.388397D 00	0.904315D 00
6	0.195230D 01	0.132815D 01	0.643653D 00	0.195230D 01	0.132815D 01	0.642595D 00	0.349804D 00	0.824506D 00
7	0.193789D 01	0.136351D 01	0.573979D 00	0.193789D 01	0.136351D 01	0.573036D 00	0.198648D 00	0.476890D 00

WCR2	NCR2	WC/A2	PRSA	TRSA	EFFSA	PRCA	TRCA	EFFCA
0.248424D 01	0.524280D 05	0.259491D 02	0.196809D 01	0.128679D 01	0.746230D 00	0.196809D 01	0.128679D 01	0.745001D 00

PO2A	TO2A	PHI2	PS12	AREA2	AREE2	HPS	HPC
0.238138D 02	0.598358D 03	0.481924D 00	0.599299D 00	0.137859D 02	0.135101D 02	0.169276D 03	0.169530D 03

CP	GAMMA
0.239406D 00	0.140141D 01

TABLE IX - Continued

***** STATOR 1*****

STRM	PO2A	PO3A	TO23A	PS3	ZS	DPO/PO	PERL3	R3	R/RT
1	0.2468100 02	0.2418740 02	0.5878020 03	0.2054580 02	0.4283210-01	0.2000000-01	0.1500000-01	0.1932000 01	0.7102940 00
2	0.2474470 02	0.2424980 02	0.5895250 03	0.2054580 02	0.4739750-01	0.2000000-01	0.2022620 00	0.2081810 01	0.7653710 00
3	0.2388820 02	0.2341040 02	0.5913500 03	0.2054580 02	0.5458590-01	0.2000000-01	0.3759110 00	0.2220730 01	0.8164440 00
4	0.2299950 02	0.2253950 02	0.5936180 03	0.2054580 02	0.6367180-01	0.2000000-01	0.5402760 00	0.2352220 01	0.8647870 00
5	0.2302720 02	0.2256670 02	0.6034180 03	0.2054580 02	0.6856820-01	0.2000000-01	0.6959270 00	0.2476740 01	0.9105670 00
6	0.2362280 02	0.2315030 02	0.6175900 03	0.2054580 02	0.6934170-01	0.2000000-01	0.8432520 00	0.2594600 01	0.9538980 00
7	0.2344850 02	0.2297960 02	0.6340340 03	0.2054580 02	0.7630070-01	0.2000000-01	0.9850000 00	0.2708000 01	0.9955880 00

STRM	AL2	THETA	AL3	DAL2	SLO	OFACTS	DP/QS	DEQUIV	DW3
1	0.5277770 02	0.5277770 02	0.0	0.2837700 01	0.2288000 01	0.6477880 00	0.6411860 00	0.2372400 01	0.0
2	0.5059190 02	0.5059190 02	0.0	0.2574470 01	0.2138190 01	0.6157630 00	0.5978560 00	0.2230310 01	0.7469390 00
3	0.5139560 02	0.5139560 02	0.0	0.4922860 01	0.1999270 01	0.6481770 00	0.6181250 00	0.2318390 01	0.6939790 00
4	0.5374170 02	0.5374170 02	0.0	0.8565490 01	0.1867780 01	0.7101670 00	0.6603610 00	0.2522780 01	0.5880510 00
5	0.5731510 02	0.5731510 02	0.0	0.1323370 02	0.1743260 01	0.7104660 00	0.6305590 00	0.2409030 01	0.5367410 00
6	0.6067340 02	0.6067340 02	0.0	0.1752900 02	0.1625400 01	0.6666150 00	0.5483980 00	0.2128160 01	0.5797070 00
7	0.7283880 02	0.7283880 02	0.0	0.3051880 02	0.1512000 01	0.7007870 00	0.5277350 00	0.2005500 01	0.6015400 00

STRM	AL2*	THETA*	AL3*	DEV	EPS3	RC3	F-TANG	F-AXIAL	R-STRESS
1	0.4994000 02	0.4994000 02	0.0	0.0	0.0	0.1000000 01	0.0	0.0	0.0
2	0.4801740 02	0.4801740 02	0.0	0.0	0.0	0.1000000 01	0.1904880 02	-.1118570 02	0.1924600 01
3	0.4647270 02	0.4647270 02	0.0	0.0	0.0	0.1000000 01	0.1629600 02	-.9797880 01	0.2089520 01
4	0.4517620 02	0.4517620 02	0.0	0.0	0.0	0.1000000 01	0.1294330 02	-.8830560 01	0.2241980 01
5	0.4408140 02	0.4408140 02	0.0	0.0	0.0	0.1000000 01	0.1152970 02	-.8424840 01	0.2384950 01
6	0.4314440 02	0.4314440 02	0.0	0.0	0.0	0.1000000 01	0.1276510 02	-.8851250 01	0.2519310 01
7	0.4232000 02	0.4232000 02	0.0	0.0	0.0	0.1000000 01	0.1386670 02	-.1044580 02	0.2646750 01

STRM	M2A	M3A	C2A	C3A	CX3	CU3	CM3	CR3	U3
1	0.9918790 00	0.4882600 00	0.1077770 04	0.5671520 03	0.5671520 03	0.0	0.5671520 03	0.0	0.9493800 03
2	0.9203200 00	0.4921970 00	0.1013190 04	0.5723500 03	0.5723500 03	0.0	0.5723500 03	0.0	0.1023000 04
3	0.8341000 00	0.4356620 00	0.9318950 03	0.5099580 03	0.5099580 03	0.0	0.5099580 03	0.0	0.1091260 04
4	0.7538020 00	0.3659770 00	0.8533770 03	0.4315470 03	0.4315470 03	0.0	0.4315470 03	0.0	0.1155880 04
5	0.7192290 00	0.3683790 00	0.8247240 03	0.4378760 03	0.4378760 03	0.0	0.4378760 03	0.0	0.1217060 04
6	0.7141960 00	0.4162640 00	0.8290570 03	0.4987430 03	0.4987430 03	0.0	0.4987430 03	0.0	0.1274980 04
7	0.6732460 00	0.4029310 00	0.7959850 03	0.4896720 03	0.4896720 03	0.0	0.4896720 03	0.0	0.1330700 04

STRM	PRS	TRS	EFFS	PRC	TRC	EFFC	MX3	CU2
1	0.1998960 01	0.1264090 01	0.8309160 00	0.1998960 01	0.1264090 01	0.8295190 00	0.4882600 00	0.8502210 03
2	0.2004120 01	0.1267800 01	0.8227860 00	0.2004120 01	0.1267800 01	0.8214030 00	0.4921970 00	0.7828150 03
3	0.1934740 01	0.1271720 01	0.7658120 00	0.1934740 01	0.1271720 01	0.7645300 00	0.4356620 00	0.7242030 03
4	0.1862770 01	0.1276600 01	0.7051250 00	0.1862770 01	0.1276600 01	0.7039610 00	0.3659770 00	0.6881280 03
5	0.1865010 01	0.1297670 01	0.6565930 00	0.1865010 01	0.1297670 01	0.6555000 00	0.3683790 00	0.6941310 03
6	0.1913250 01	0.1328150 01	0.6223560 00	0.1913250 01	0.1328150 01	0.6213160 00	0.4162640 00	0.7228070 03
7	0.1899140 01	0.1363510 01	0.5547940 00	0.1899140 01	0.1363510 01	0.5538680 00	0.4029310 00	0.7605470 03

WCR3	NCR2	WC/A3	PRSA	TRSA	EFFSA	PRCA	TRCA	EFFCA
0.2538870 01	0.5235250 05	0.3134990 02	0.1928550 01	0.1290510 01	0.7124720 00	0.1928550 01	0.1290510 01	0.7112800 00

PD3A	ID3A	PH13	PS13	AREA3	AREE3	CP	GAMMA
0.2333550 02	0.6000850 03	0.3882980 00	0.5817590 00	0.1166160 02	0.1131170 02	0.2402990 00	0.1399320 01

TABLE IX - Continued

***** ROTOR 2*****

STRM	PO1R	PO2R	TO1R	TO2R	PS2	ZR	PERL2	R2	R/RT
1	0.3682520 02	0.3283260 02	0.6630110 03	0.6765620 03	0.2701290 02	0.4114530 00	0.1500000-01	0.2099450 01	0.7718570 00
2	0.3927800 02	0.3445060 02	0.6768500 03	0.6881840 03	0.2768790 02	0.3833490 00	0.1956680 00	0.2213270 01	0.8137030 00
3	0.4026390 02	0.3537620 02	0.6907180 03	0.6998480 03	0.2824500 02	0.3440470 00	0.3664840 00	0.2320890 01	0.8532670 00
4	0.4110530 02	0.3572500 02	0.7051020 03	0.7120160 03	0.2874490 02	0.3312430 00	0.5306860 00	0.2424330 01	0.8912990 00
5	0.4375160 02	0.3565600 02	0.7270180 03	0.7317150 03	0.2921550 02	0.3780050 00	0.6881620 00	0.2523540 01	0.9277730 00
6	0.4630250 02	0.3723270 02	0.7532330 03	0.7557270 03	0.2964470 02	0.3730800 00	0.8387860 00	0.2618440 01	0.9626600 00
7	0.4774990 02	0.3899630 02	0.7817930 03	0.7820700 03	0.3000840 02	0.3239570 00	0.9850000 00	0.2710550 01	0.9965260 00

STRM	B1	THETA	B2	DB1	SLD	DFACTR	OP/QR	DEQUIV	DW2
1	0.5914630 02	0.3327890 02	0.2586740 02	0.5816260 01	0.2390400 01	0.5244700 00	0.3972540 00	0.1998630 01	0.0
2	0.6077370 02	0.2697080 02	0.3380290 02	0.4923540 01	0.2274770 01	0.5145250 00	0.3812750 00	0.1974260 01	0.7316500 00
3	0.6495280 02	0.2498190 02	0.3997090 02	0.7306130 01	0.2165450 01	0.5192070 00	0.3904620 00	0.1973400 01	0.7074300 00
4	0.6952680 02	0.2380490 02	0.4572190 02	0.1020490 02	0.2060360 01	0.5445300 00	0.3987980 00	0.2028160 01	0.6580750 00
5	0.7021230 02	0.1915790 02	0.5105440 02	0.9372600 01	0.1959580 01	0.5938720 00	0.3818250 00	0.2179130 01	0.5705960 00
6	0.6863570 02	0.1527530 02	0.5336040 02	0.6442480 01	0.1863180 01	0.5782990 00	0.3532620 00	0.2121980 01	0.5403760 00
7	0.6979740 02	0.1217060 02	0.5762680 02	0.6367400 01	0.1769600 01	0.5460510 00	0.3470370 00	0.2009870 01	0.5391110 00

STRM	B1*	THETA*	B2*	DEV	EPS2	RC2	F-TANG	F-AXIAL	R-STRESS
1	0.5333000 02	0.2379000 02	0.2954000 02	-.3672590 01	0.0	0.1000000 01	0.0	0.0	0.0
2	0.5585010 02	0.2044280 02	0.3540730 02	-.1604490 01	0.0	0.1000000 01	-.1632810 02	-.1153640 02	0.2081630 01
3	0.5764660 02	0.1757290 02	0.4007380 02	-.1028660 00	0.0	0.1000000 01	-.1505680 02	-.1287040 02	0.2209170 01
4	0.5932190 02	0.1527790 02	0.4404400 02	0.1677860 01	0.0	0.1000000 01	-.1383650 02	-.1449210 02	0.2329540 01
5	0.6083970 02	0.1339510 02	0.4744460 02	0.3609790 01	0.0	0.1000000 01	-.1219310 02	-.1487760 02	0.2444210 01
6	0.6219320 02	0.1184530 02	0.5034790 02	0.3017480 01	0.0	0.1000000 01	-.1156580 02	-.1463750 02	0.2553330 01
7	0.6343000 02	0.1058000 02	0.5285000 02	0.4776780 01	0.0	0.1000000 01	-.1102810 02	-.1507720 02	0.2657900 01

STRM	M1R	M2R	W1R	W2R	CX2	WU2	CM2	CR2	U2
1	0.9520550 00	0.5355100 00	0.1105890 04	0.6638790 03	0.5973620 03	0.2896440 03	0.5973620 03	0.0	0.1031660 04
2	0.1008060 01	0.5676980 00	0.1172220 04	0.7074340 03	0.5878470 03	0.3935720 03	0.5878470 03	0.0	0.1087600 04
3	0.1029050 01	0.5764730 00	0.1204540 04	0.7237500 03	0.5546600 03	0.4649360 03	0.5546600 03	0.0	0.1140480 04
4	0.1046340 01	0.5661700 00	0.1233810 04	0.7177580 03	0.5010970 03	0.5138860 03	0.5010970 03	0.0	0.1191310 04
5	0.1088150 01	0.5412810 00	0.1293440 04	0.6974390 03	0.4383980 03	0.5424280 03	0.4383980 03	0.0	0.1240060 04
6	0.1142650 01	0.5801390 00	0.1369060 04	0.7565710 03	0.4515060 03	0.6070770 03	0.4515060 03	0.0	0.1286690 04
7	0.1166760 01	0.6235440 00	0.1417940 04	0.8232140 03	0.4407760 03	0.6952690 03	0.4407760 03	0.0	0.1331960 04

STRM	PRS	TRS	EFFS	PRC	TRC	EFFC	MX2	CX2/CX1
1	0.1650370 01	0.1217010 01	0.7082340 00	0.3299010 01	0.1538410 01	0.7531630 00	0.4818550 00	0.1053270 01
2	0.1627070 01	0.1213430 01	0.6982160 00	0.3260850 01	0.1539390 01	0.7445480 00	0.4717330 00	0.1027080 01
3	0.1667690 01	0.1217240 01	0.7233180 00	0.3226560 01	0.1547990 01	0.7238000 00	0.4417920 00	0.1087660 01
4	0.1714980 01	0.1226740 01	0.7339170 00	0.3194610 01	0.1566050 01	0.6937200 00	0.3952670 00	0.1161160 01
5	0.1704450 01	0.1239130 01	0.6873080 00	0.3178820 01	0.1607990 01	0.6426300 00	0.3402400 00	0.1001190 01
6	0.1666910 01	0.1236240 01	0.6645160 00	0.3189220 01	0.1641910 01	0.6106950 00	0.3462150 00	0.9052890 00
7	0.1648190 01	0.1223250 01	0.6864780 00	0.3130140 01	0.1667920 01	0.5758230 00	0.3338650 00	0.9001440 00

WCR2	NCR2	WC/A2	PHSA	TRSA	EFFSA	PRCA	TRCA	EFFCA
0.1683600 01	0.4733230 05	0.2546640 02	0.1667910 01	0.1223370 01	0.7036580 00	0.3216650 01	0.1578770 01	0.6831920 00

PO2A	TO2A	PHI2	PSI2	AREA2	AREE2	HPS	HPC
0.3892140 02	0.7341290 03	0.4332530 00	0.4365050 00	0.9519970 01	0.9234370 01	0.1707800 03	0.3431140 03

CP	GAMMA
0.2402990 00	0.1399320 01

TABLE IX - Continued

***** STATOR 2*****

STRM	PO2A	PO3A	TO23A	PS3	ZS	DPO/PO	PERL3	R3	R/RT
1	0.3991800 02	0.3823810 02	0.7153600 03	0.3396040 02	0.1301720 00	0.4208350-01	0.1500000-01	0.2183170 01	0.8026380 00
2	0.3945630 02	0.3814310 02	0.7153490 03	0.3396040 02	0.1115860 00	0.3328200-01	0.1926630 00	0.2280000 01	0.8382360 00
3	0.3904130 02	0.3792290 02	0.7198160 03	0.3396040 02	0.1035940 00	0.2864760-01	0.3620820 00	0.2372330 01	0.8721820 00
4	0.3865470 02	0.3766660 02	0.7282120 03	0.3396040 02	0.9971150-01	0.2556290-01	0.5261140 00	0.2461730 01	0.9050480 00
5	0.3846380 02	0.3756890 02	0.7477160 03	0.3396040 02	0.9676470-01	0.2326630-01	0.6843940 00	0.254[illegible]990 01	0.9367630 00
6	0.3858960 02	0.3776540 02	0.7634860 03	0.3396040 02	0.9213640-01	0.2135680-01	0.8365860 00	0.2630940 01	0.9672570 00
7	0.3787460 02	0.3712990 02	0.7755830 03	0.3396040 02	0.9466990-01	0.1966210-01	0.9850000 00	0.2711820 01	0.9969940 00

STRM	AL2	THETA	AL3	DAL2	SLD	DFACTS	OP/OS	OEQUIV	OW3
1	0.5116430 02	0.5116430 02	0.0	0.4214250 01	0.2292500 01	0.6080490 00	0.5383550 00	0.2224780 01	0.0
2	0.4973500 02	0.4973500 02	0.0	0.3747800 01	0.2203670 01	0.5907900 00	0.5329940 00	0.2157690 01	0.6663240 00
3	0.5061190 02	0.5061190 02	0.0	0.5489320 01	0.2118960 01	0.5896190 00	0.5293860 00	0.2127690 01	0.6483490 00
4	0.5350930 02	0.5350930 02	0.0	0.9167100 01	0.2036940 01	0.5979010 00	0.5262970 00	0.2107250 01	0.6290820 00
5	0.5785440 02	0.5785440 02	0.0	0.1421750 02	0.1957800 01	0.6027840 00	0.5139600 00	0.2054540 01	0.6071920 00
6	0.5640170 02	0.5640170 02	0.0	0.1340630 02	0.1881710 01	0.5796110 00	0.4824800 00	0.1978170 01	0.6082570 00
7	0.5530540 02	0.5530540 02	0.0	0.1290540 02	0.1807500 01	0.6020230 00	0.5024010 00	0.2043340 01	0.5877890 00

STRM	AL2*	THETA*	AL3*	OEV	EPS3	RC3	F-TANG	F-AXIAL	R-STRESS
1	0.4695000 02	0.4695000 02	0.0	0.0	0.0	0.1000000 01	0.0	0.0	0.0
2	0.4598720 02	0.4598720 02	0.0	0.0	0.0	0.1000000 01	0.1487020 02	-.7988540 01	0.2193970 01
3	0.4512260 02	0.4512260 02	0.0	0.0	0.0	0.1000000 01	0.1379930 02	-.7447130 01	0.2296620 01
4	0.4434220 02	0.4434220 02	0.0	0.0	0.0	0.1000000 01	0.1322690 02	-.7439590 01	0.2394820 01
5	0.4363690 02	0.4363690 02	0.0	0.0	0.0	0.1000000 01	0.1297510 02	-.7777930 01	0.2489400 01
6	0.4299540 02	0.4299540 02	0.0	0.0	0.0	0.1000000 01	0.1301880 02	-.7780490 01	0.2580230 01
7	0.4240000 02	0.4240000 02	0.0	0.0	0.0	0.1000000 01	0.1202380 02	-.7029050 01	0.2667940 01

STRM	M2?	M3A	C2A	C3A	CX3	CU3	CM3	CR3	U3
1	0.76939[illegible] [illegible]0	0.4152920 00	0.9525950 03	0.5352070 03	0.5352070 03	0.0	0.5352070 03	0.0	0.1072810 04
2	0.72987[illegible] 00	0.4108420 00	0.9095240 03	0.5296560 03	0.5296560 03	0.0	0.5296560 03	0.0	0.1120390 04
3	0.6962070 00	0.4003030 00	0.8740730 03	0.5181070 03	0.5181070 03	0.0	0.5181070 03	0.0	0.1165760 04
4	0.6646580 00	0.3876230 00	0.8426170 03	0.5051000 03	0.5051000 03	0.0	0.5051000 03	0.0	0.1209690 04
5	0.6394620 00	0.3826580 00	0.8239450 03	0.5054520 03	0.5054520 03	0.0	0.5054520 03	0.0	0.1252080 04
6	0.6256520 00	0.3925680 00	0.8159260 03	0.5235910 03	0.5235910 03	0.0	0.5235910 03	0.0	0.1292840 04
7	0.5865500 00	0.3594000 00	0.7743740 03	0.4843070 03	0.4843070 03	0.0	0.4843070 03	0.0	0.1332580 04

STRM	PRS	TRS	EFFS	PRC	TRC	EFFC	MX3	CU2
1	0.1580910 01	0.1217010 01	0.6434050 00	0.3160170 01	0.1538410 01	0.7213150 00	0.4152920 00	0.7420210 03
2	0.1572920 01	0.1213430 01	0.6464650 00	0.3152320 01	0.1538390 01	0.7195170 00	0.4108420 00	0.6940240 03
3	0.1619920 01	0.1217240 01	0.6793210 00	0.3134120 01	0.1547990 01	0.7027270 00	0.4003030 00	0.6755410 03
4	0.1671140 01	0.1226740 01	0.6960420 00	0.3112940 01	0.1566050 01	0.6755840 00	0.3876230 00	0.6774250 03
5	0.1664800 01	0.1239130 01	0.6547070 00	0.3104870 01	0.160799[illegible]	0.6272940 00	0.3826580 00	0.6976340 03
6	0.1631310 01	0.1236240 01	0.6344370 00	0.3121110 01	0.1641910 01	0.5973560 00	0.3925680 00	0.6796160 03
7	0.1615780 01	0.1223250 01	0.6572880 00	0.3068590 01	0.1667920 01	0.5640890 00	0.3594000 00	0.6366880 03

WCR3	WCR2	WC/A3	PRSA	TRSA	EFFSA	PRCA	TRCA	EFFCA
0.1734460 01	0.4728110 05	0.2980080 02	0.1620760 01	0.1226030 01	0.6536760 00	0.3125720 01	0.1582190 01	0.6596220 00

PO3A	TO3A	PHI3	PSI3	AREA3	AREE3	CP	GAMMA
0.3782120 02	0.7357200 03	0.4209380 00	0.4135480 00	0.8381060 01	0.8129630 01	0.2421920 00	0.1394960 01

TABLE X
COMPUTER OUTPUT OF TRAVERSE DATA FOR COMPRESSOR - REDESIGN - TEST NUMBER 17

***** INLET *****

RPM = 0.5644000 05
FLOW = 0.4147000 01

STRM	PO1	TO1	PS	TS	AL1	EPS1	PERL	R1	R/AT
1	0.1316000 02	0.4670000 03	0.1117280 02	0.4456100 03	0.0	0.0	0.5000000-02	0.1346900 01	0.4951840 00
2	0.1314000 02	0.4470000 03	0.1117280 02	0.4456100 03	0.0	0.0	0.2285730 00	0.1655430 01	0.6086140 00
3	0.1314000 02	0.4470000 03	0.1117280 02	0.4456100 03	0.0	0.0	0.4155290 00	0.1913430 01	0.7034670 00
4	0.1316000 02	0.4670000 03	0.1117280 02	0.4456100 03	0.0	0.0	0.5810510 00	0.2141850 01	0.7874450 00
5	0.1316000 02	0.4670000 03	0.1117280 02	0.4456100 03	0.0	0.0	0.7305480 00	0.2348160 01	0.8632930 00
6	0.1316000 02	0.4670000 03	0.1117280 02	0.4456100 03	0.0	0.0	0.8671390 00	0.2536650 01	0.9325920 00
7	0.1316000 02	0.4470000 03	0.1117280 02	0.4454100 03	0.0	0.0	0.9950000 00	0.2713100 01	0.9974630 00

STAN	CX1	CU1	CR1	CM1	U1	CA1	M1A	DW1	RC
1	0.5063140 03	0.0	0.0	0.5063140 03	0.6633910 03	0.5063140 03	0.4890620 00	0.0	0.1000000 01
2	0.5063140 03	0.0	0.0	0.5063140 03	0.8153520 03	0.5063140 03	0.4890620 00	0.6925360 00	0.1000000 01
3	0.5063140 03	0.0	0.0	0.5063140 03	0.9424250 03	0.5063140 03	0.4890620 00	0.6883900 00	0.1000000 01
4	0.5063140 03	0.0	0.0	0.5063140 03	0.1054930 04	0.5063140 03	0.4890620 00	0.4925360 00	0.1000000 01
5	0.5063140 03	0.0	0.0	0.5063140 03	0.1156540 04	0.5063140 03	0.4890620 00	0.6925360 00	0.1000000 01
6	0.5063140 01	0.0	0.0	0.5063140 03	0.1249380 04	0.5063140 03	0.4890620 00	0.6883900 00	0.1000000 01
7	0.5063140 03	0.0	0.0	0.5063140 03	0.1336290 04	0.5063140 03	0.4890620 00	0.6925360 00	0.1000000 01

WC41	NCA1	WC/A1	POA	TOA	PH1	HUB/TIP	AREA	AREAE
0.4395370 01	0.5948220 05	0.1595860 02	0.1316000 02	0.4670000 03	0.5063960 00	0.4924470 00	0.1760170 02	0.1742570 02

CP	GAMMA
0.2394120 00	0.1401390 01

TABLE X - Continued

***** ROTOR 1*****

STRM	PO1R	PO2R	TO1R	TO2R	PS2	ZR	PERL2	R2	R/R1
1	0.1714070 02	0.1822660 02	0.5037710 03	0.5286240 03	0.1430720 02	0.3450840 00	0.1000000-01	0.1744850 01	0.6414890 00
2	0.1947350 02	0.1966090 02	0.5224720 03	0.5431620 03	0.1557510 02	0.3180990 00	0.2078790 00	0.1939760 01	0.7131470 00
3	0.2200850 02	0.2080220 02	0.5411090 03	0.5576120 03	0.1647890 02	0.3359310 00	0.3865820 00	0.2115780 01	0.7778610 00
4	0.2478830 02	0.2187390 02	0.5598600 03	0.5721490 03	0.1715290 02	0.3574210 00	0.5524770 00	0.2279190 01	0.8379380 00
5	0.2780930 02	0.2261700 02	0.5786100 03	0.5866860 03	0.1770840 02	0.3937970 00	0.7072490 00	0.2431640 01	0.8939860 00
6	0.3106430 02	0.2349630 02	0.5972480 03	0.6011370 03	0.1821950 02	0.4162580 00	0.8520270 00	0.2574250 01	0.9464140 00
7	0.3460450 02	0.2374440 02	0.6159980 03	0.6156740 03	0.1872960 02	0.4607720 00	0.9900000 00	0.2710150 01	0.9963790 00

STRM	B1	THETA	H2	DB1	SLO	OFACTR	OP/QR	OEQUIV	OW2
1	0.5264830 02	0.5324740 02	-.6390450 00	0.8158350 01	0.2394000 01	0.3871710 00	0.5252150 00	0.1593410 01	0.0
2	0.5816070 02	0.4363230 02	0.1452840 02	0.7886800 01	0.2275270 01	0.4740810 00	0.5303550 00	0.1807610 01	0.8123060 00
3	0.6175330 02	0.3245320 02	0.2930000 02	0.7588840 01	0.2168050 01	0.5199300 00	0.4896820 00	0.1957750 01	0.7870400 00
4	0.6436130 02	0.2321900 02	0.4115130 02	0.7326600 01	0.2068510 01	0.5451990 00	0.4392240 00	0.2044770 01	0.7311610 00
5	0.6635730 02	0.1728020 02	0.4907680 02	0.7097690 01	0.1975650 01	0.5798380 00	0.3928460 00	0.2148860 01	0.6536050 00
6	0.6793360 02	0.1511160 02	0.5282800 02	0.6893850 01	0.1884780 01	0.6062510 00	0.3542560 00	0.2221320 01	0.6079480 00
7	0.6924850 02	0.1122000 02	0.5802850 02	0.6718500 01	0.1806000 01	0.6572590 00	0.3225040 00	0.2389070 01	0.5549810 00

STRM	HI*	THETA*	d2*	OFV	EPS2	RC2	F-TANG	F-AXIAL	R-STRESS
1	0.4449000 02	0.3532000 02	0.9170000 01	-.9809040 01	0.0	0.1000000 01	0.0	0.0	0.0
2	0.5027390 02	0.2783100 02	0.2244090 02	-.7912520 01	0.0	0.1000000 01	-.2094820 02	-.1085280 02	0.1671740 01
3	0.5416440 02	0.2165080 02	0.3251360 02	-.3213600 01	0.0	0.1000000 01	-.1851100 02	-.1345450 02	0.1906100 01
4	0.5703470 02	0.1703330 02	0.4000130 02	0.1149960 01	0.0	0.1000000 01	-.1586580 02	-.1463650 02	0.2112560 01
5	0.5925910 02	0.1357150 02	0.4568780 02	0.3389010 01	0.0	0.1000000 01	-.1372450 02	-.1523230 02	0.2300210 01
6	0.6104530 02	0.1089680 02	0.5014910 02	0.2674960 01	0.0	0.1000000 01	-.1300510 02	-.1597090 02	0.2472670 01
7	0.6253030 02	0.8780000 01	0.5375000 02	0.4278480 01	0.0	0.1000000 01	-.1246450 02	-.1694420 02	0.2633540 01

STRM	M1R	M2R	W1R	W2R	CX2	WU2	CM2	CR2	U2
1	0.8060950 00	0.5981600 00	0.8345310 03	0.6514960 03	0.6514550 03	-.7266260 01	0.6514550 03	0.0	0.8593940 03
2	0.9270640 00	0.5863490 00	0.9597680 03	0.6482030 03	0.6274760 03	0.1626080 03	0.6274760 03	0.0	0.9553940 03
3	0.1033370 01	0.5863840 00	0.1069820 04	0.6568050 03	0.5727790 03	0.3214290 03	0.5727790 03	0.0	0.1042090 04
4	0.1130270 01	0.5994520 00	0.1170140 04	0.6791510 03	0.5113830 03	0.4469150 03	0.5113830 03	0.0	0.1122570 04
5	0.1219500 01	0.6025320 00	0.1262510 04	0.6910190 03	0.4526500 03	0.5221260 03	0.4526500 03	0.0	0.1197660 04
6	0.1302140 01	0.6136330 00	0.1348080 04	0.7114670 03	0.4298750 03	0.5669150 03	0.4298750 03	0.0	0.1267900 04
7	0.1380330 01	0.5718980 00	0.1428990 04	0.6962190 03	0.3686470 03	0.5906110 03	0.3686470 03	0.0	0.1334840 04

STRM	PRS	TRS	EFFS	PRC	TRC	EFFC	MX2	CX2/CX1
1	0.2047960 01	0.1266150 01	0.8563490 00	0.2047960 01	0.1266150 01	0.8549130 00	0.5981230 00	0.1286660 01
2	0.2034580 01	0.1270660 01	0.8335750 00	0.2034580 01	0.1270660 01	0.8321790 00	0.5676000 00	0.1239300 01
3	0.1951770 01	0.1269360 01	0.7866710 00	0.1951770 01	0.1268360 01	0.7853330 00	0.5113670 00	0.1131270 01
4	0.1889400 01	0.1271040 01	0.7378030 00	0.1889800 01	0.1271040 01	0.73[illegible]790 00	0.4513720 00	0.1010010 01
5	0.1882240 01	0.1289120 01	0.6869120 00	0.1882240 01	0.1289120 01	0.6857740 00	0.3946860 00	0.9940090 00
6	0.1936890 01	0.1317600 01	0.6563640 00	0.1936890 01	0.1317600 01	0.6552720 00	0.3707630 00	0.8490280 00
7	0.1985480 01	0.1355000 01	0.6114730 00	0.1985480 01	0.1355000 01	0.6104520 00	0.3134090 00	0.7280980 00

WCR2	NCR2	WC/A2	PRSA	TRSA	EFFSA	PRCA	TRCA	EFFCA
0.2346750 01	0.5248800 05	0.2660200 02	0.1955860 01	0.1284260 01	0.7452300 00	0.1955850 01	0.1284260 01	0.7439890 00

PO2A	TO2A	PHI2	PSI2	AREA2	AREE2	HPS	HPC
0.2573910 02	0.5597500 03	0.4839780 00	0.5930420 00	0.1378590 02	0.1351010 02	0.1864980 03	0.1867810 03

CP	GAMMA
0.2394120 00	0.1401390 01

TABLE X - Continued

***** STATOR 1*****

STRM	PU24	PU36	TO236	PS3	ZS	DPO/PO	PERL3	R3	R/R1
1	0.2695110 02	0.2641210 02	0.5917930 03	0.2205430 02	0.4263120-01	0.2000000-01	0.1500000-01	0.1932000 01	0.7102940 00
2	0.2677510 02	0.2623960 02	0.5933990 03	0.2205430 02	0.4781270-01	0.2000000D-01	0.2022620 00	0.2081810 01	0.7653710 00
3	0.2568530 02	0.2517160 02	0.5923260 03	0.2205430 02	0.5579860-01	0.2000000D-01	0.3759110 00	0.2220730 01	0.8164440 00
4	0.2486970 02	0.2437230 02	0.5935750 03	0.2205430 02	0.6445630-01	0.2000000D-01	0.5402760 00	0.2352220 01	0.8647870 00
5	0.2477010 02	0.2427490 02	0.6020170 03	0.2205430 02	0.7015240-01	0.2000000-01	0.6959270 00	0.2476740 01	0.9105670 00
6	0.2548940 02	0.2497970 02	0.6153200 03	0.2205430 02	0.7012310-01	0.2000000D-01	0.8432520 00	0.2594600 01	0.9538980 00
7	0.2612900 02	0.2560640 02	0.6327830 03	0.2205430 02	0.7062510-01	0.2000000D-01	0.9850000 00	0.2708000 01	0.9955880 00

STRM	AL2	THETA	AL3	DAL2	SLD	DFACTS	DP/QS	DEQUIV	OM3
1	0.5306840 02	0.5306840 02	0.0	0.3128390 01	0.2288000 01	0.6238280 00	0.6127110 00	0.2265660 01	0.0
2	0.5163900 02	0.5163900 02	0.0	0.3621580 01	0.2138190 01	0.6021780 00	0.5784940 00	0.2165980 01	0.8304140 00
3	0.5152240 02	0.5152240 02	0.0	0.5049730 01	0.1999270 01	0.6378580 00	0.6055980 00	0.2273810 01	0.7529160 00
4	0.5287910 02	0.5287910 02	0.0	0.7702970 01	0.1867780 01	0.6846970 00	0.6351520 00	0.2415400 01	0.6482380 00
5	0.5617550 02	0.5617550 02	0.0	0.1209410 02	0.1743260 01	0.6944570 00	0.6153970 00	0.2357070 01	0.5895440 00
6	0.5848150 02	0.5848150 02	0.0	0.1533710 02	0.1625400 01	0.6439950 00	0.5274810 00	0.2082120 01	0.6270580 00
7	0.6364840 02	0.6364880 02	0.0	0.2132880 02	0.1512000 01	0.6178340 00	0.4493140 00	0.1887220 01	0.6988210 00

STRM	AL2*	THETA*	AL3*	DEV	EPS3	RC3	F-TANG	F-AXIAL	R-STRESS
1	0.4994000 02	0.4994000 02	0.0	0.0	0.0	0.1000000 01	0.0	0.0	0.0
2	0.4801740 02	0.4801740 02	0.0	0.0	0.0	0.1000000 01	0.2141520 02	-.1227450 02	0.1924600 01
3	0.4647270 02	0.4647270 02	0.0	0.0	0.0	0.1000000 01	0.1770840 02	-.1053010 02	0.2089520 01
4	0.4517620 02	0.4517620 02	0.0	0.0	0.0	0.1000000 01	0.1406650 02	-.9203010 01	0.2241980 01
5	0.4408140 02	0.4408140 02	0.0	0.0	0.0	0.1000000 01	0.1237940 02	-.8662940 01	0.2384950 01
6	0.4314440 02	0.4314440 02	0.0	0.0	0.0	0.1000000 01	0.1341390 02	-.8959050 01	0.2519310 01
7	0.4232000 02	0.4232000 02	0.0	0.0	0.0	0.1000000 01	0.1569500 02	-.1035050 02	0.2646750 01

STRM	M2A	W1A	C2A	C36	CX3	CU3	CM3	CR3	U3
1	0.9354420 00	0.5139050 00	0.1084200 04	0.5972190 03	0.5972390 03	0.0	0.5972390 03	0.0	0.9515720 03
2	0.9145790 00	0.5042460 00	0.1011060 04	0.5876080 03	0.5876080 03	0.0	0.5876080 03	0.0	0.1025360 04
3	0.8218590 00	0.4385230 00	0.9205590 03	0.5136040 03	0.5136040 03	0.0	0.5136040 03	0.0	0.1093780 04
4	0.7479250 00	0.3801860 00	0.8473650 03	0.4480490 03	0.4480490 03	0.0	0.4480490 03	0.0	0.1158540 04
5	0.7090370 00	0.3725760 00	0.8131660 03	0.4422130 03	0.4422130 03	0.0	0.4422130 03	0.0	0.1219870 04
6	0.7092220 00	0.4254040 00	0.8222960 03	0.5083750 03	0.5083750 03	0.0	0.5083750 03	0.0	0.1277920 04
7	0.7060790 00	0.4666370 00	0.8305240 03	0.5635040 03	0.5635040 03	0.0	0.5635040 03	0.0	0.1331780 04

STRM	PRS	TRS	EFFS	PRC	TRC	EFFC	MX3	CU2
1	0.2007000 01	0.1266150 01	0.8297290 00	0.2007000 01	0.1266150 01	0.8283260 00	0.5139050 00	0.8666610 03
2	0.1993890 01	0.1270660 01	0.8074480 00	0.1993890 01	0.1270660 01	0.8060840 00	0.5042460 00	0.7927860 03
3	0.1912740 01	0.1268360 01	0.7606340 00	0.1912740 01	0.1268360 01	0.7593560 00	0.4385230 00	0.7206610 03
4	0.1852000 01	0.1271040 01	0.7122560 00	0.1852000 01	0.1271040 01	0.7110670 00	0.3803860 00	0.6756590 03
5	0.1844590 01	0.1289120 01	0.6629920 00	0.1844590 01	0.1289120 01	0.6618830 00	0.3725760 00	0.6755340 03
6	0.1898150 01	0.1317600 01	0.6344100 00	0.1898150 01	0.1317600 01	0.6333460 00	0.4254040 00	0.7009830 03
7	0.1945780 01	0.1355000 01	0.5916920 00	0.1945780 01	0.1355000 01	0.5906950 00	0.4666370 00	0.7442240 03

WCR3	WCR2	WC/W3	PHS6	TRS6	EFFSA	PRC6	TRCA	EFFC6
0.2598420 01	0.5244030 05	0.3208590 02	0.1918700 01	0.1286600 01	0.7159890 00	0.1918700 01	0.1286600 01	0.7147860 00

PU3A	TO3A	PH13	PS13	AREA3	AREE3	CP	GAMMA
0.2525010 02	0.6008420 03	0.4012250 00	0.5766030 00	0.1146160 02	0.1131170 02	0.2403060 00	0.1399300 01

TABLE X - Continued

***** ROTOR 2*****

STRM	P01R	P02R	T01R	T02R	PS2	ZR	PERL2	R2	R/RT7
1	0.401915D 02	0.351871D 02	0.666847D 03	0.[illegible]90466D 03	0.255068D 02	0.438534D 00	0.150000D-01	0.209945D 01	0.771857D 00
2	0.424639D 02	0.369829D 02	0.681125D 03	0.692511D 03	0.258693D 02	0.393002D 00	0.195669D 00	0.221327D 01	0.813703D 00
3	0.433576D 02	0.378752D 02	0.692151D 03	0.701324D 03	0.261415D 02	0.353446D 00	0.366484D 00	0.232089D 01	0.853267D 00
4	0.445631D 02	0.380278D 02	0.705572D 03	0.712517D 03	0.263744D 02	0.359487D 00	0.530686D 00	0.242433D 01	0.891299D 00
5	0.467182D 02	0.392932D 02	0.726185D 03	0.730904D 03	0.265748D 02	0.344532D 00	0.688162D 00	0.252354D 01	0.927773D 00
6	0.502235D 02	0.397780D 02	0.751587D 03	0.754097D 03	0.267512D 02	0.391725D 00	0.838786D 00	0.261844D 01	0.962660D 00
7	0.534408D 02	0.397511D 02	0.781222D 03	0.781500D 03	0.269063D 02	0.438294D 00	0.985000D 00	0.271055D 01	0.996524D 00

STRM	B1	THETA	B2	OB1	SLD	DFACTR	OP/QR	DEQUIV	OM2
1	0.578862D 02	0.244605D 02	0.314257D 02	0.455620D 01	0.239040D 01	0.336017D 00	0.190357D 00	0.157416D 01	0.0
2	0.601840D 02	0.190942D 02	0.410898D 02	0.433390D 01	0.227477D 01	0.320373D 00	0.186922D 00	0.154887D 01	0.827144D 00
3	0.648467D 02	0.183118D 02	0.465349D 02	0.720008D 01	0.216545D 01	0.319737D 00	0.191858D 00	0.154233D 01	0.782525D 00
4	0.688558D 02	0.168486D 02	0.520082D 02	0.953489D 01	0.206036D 01	0.342256D 00	0.191933D 00	0.157689D 01	0.712042D 00
5	0.700741D 02	0.144950D 02	0.555790D 02	0.923439D 01	0.195958D 01	0.340984D 00	0.183286D 00	0.157148D 01	0.657545D 00
6	0.681067D 02	0.104621D 02	0.578446D 02	0.611344D 01	0.186318D 01	0.370112D 00	0.166740D 00	0.162086D 01	0.626274D 00
7	0.670965D 02	0.186451D 01	0.652320D 02	0.366654D 01	0.176960D 01	0.396460D 00	0.154591D 00	0.164438D 01	0.541462D 00

STRM	M1*	THETA*	B2*	DEV	EPS2	RC2	F-TANG	F-AXIAL	R-STRESS
1	0.533300D 02	0.237900D 02	0.295400D 02	0.388571D 01	0.0	0.100000D 01	0.0	0.0	0.0
2	0.558501D 02	0.204428D 02	0.354073D 02	0.568247D 01	0.0	0.100000D 01	-.137116D 02	-.844844D 01	0.208163D 01
3	0.576466D 02	0.175729D 02	0.400738D 02	0.646115D 01	0.0	0.100000D 01	-.118516D 02	-.906453D 01	0.220917D 01
4	0.593219D 02	0.152779D 02	0.440440D 02	0.796423D 01	0.0	0.100000D 01	-.104312D 02	-.970918D 01	0.232954D 01
5	0.608397D 02	0.133951D 02	0.474446D 02	0.813448D 01	0.0	0.100000D 01	-.935631D 01	-.975965D 01	0.244421D 01
6	0.621932D 02	0.118453D 02	0.503479D 02	0.749670D 01	0.0	0.100000D 01	-.879357D 01	-.896324D 01	0.255333D 01
7	0.634300D 02	0.105800D 02	0.528500D 02	0.123820D 02	0.0	0.100000D 01	-.746089D 01	-.707671D 01	0.265790D 01

STRM	M1R	M2R	W1R	W2R	CR2	WU2	CM2	CR2	U2
1	0.966[illegible]09D 00	0.693989D 00	0.112347D 04	0.847369D 03	0.707215D 03	0.466778D 03	0.707215D 03	0.0	0.103405D 04
2	0.101414D 01	0.733338D 00	0.118180D 04	0.898724D 03	0.677351D 03	0.590679D 03	0.677351D 03	0.0	0.109011D 04
3	0.103172D 01	0.747656D 00	0.120836D 04	0.920326D 03	0.633103D 03	0.667967D 03	0.633103D 03	0.0	0.114311D 04
4	0.105459D 01	0.742488D 00	0.124216D 04	0.921867D 03	0.567453D 03	0.726522D 03	0.567453D 03	0.0	0.119406D 04
5	0.109322D 01	0.769000D 00	0.129755D 04	0.963558D 03	0.544669D 03	0.794846D 03	0.544669D 03	0.0	0.124292D 04
6	0.115087D 01	0.774850D 00	0.137533D 04	0.985375D 03	0.524434D 03	0.834226D 03	0.524434D 03	0.0	0.128966D 04
7	0.119903D 01	0.768154D 00	0.144793D 04	0.995371D 03	0.417005D 03	0.903808D 03	0.417005D 03	0.0	0.133503D 04

STRM	PRS	TRS	EFFS	PRC	TRC	EFFC	MX2	CX2/CX1
1	0.139245D 01	0.116541D 01	0.598987D 00	0.279465D 01	0.147559D 01	0.716881D 00	0.579204D 00	0.118414D 01
2	0.135133D 01	0.115309D 01	0.586041D 00	0.269440D 01	0.146519D 01	0.703006D 00	0.552702D 00	0.115273D 01
3	0.137136D 01	0.115308D 01	0.616028D 00	0.262305D 01	0.146253D 01	0.685149D 00	0.514322D 00	0.123267D 01
4	0.137176D 01	0.115707D 01	0.600952D 00	0.254050D 01	0.147069D 01	0.647852D 00	0.457037D 00	0.126650D 01
5	0.135726D 01	0.115458D 01	0.589226D 00	0.250360D 01	0.148838D 01	0.613239D 00	0.434692D 00	0.123169D 01
6	0.131162D 01	0.115953D 01	0.504489D 00	0.248965D 01	0.152780D 01	0.563516D 00	0.412389D 00	0.103159D 01
7	0.121695D 01	0.115213D 01	0.378792D 00	0.236790D 01	0.156114D 01	0.497180D 00	0.321814D 00	0.740021D 00

WCR2	NCR2	WC/A2	PRSA	TRSA	EFFSA	PRCA	TRCA	EFFCA
0.206949D 01	0.488172D 05	0.313033D 02	0.134878D 01	0.115394D 01	0.578970D 00	0.258790D 01	0.148446D 01	0.643412D 00

P02A	T02A	PHI2	PSI2	AREA2	AREE2	HPS	HPC
0.340567D 02	0.693338D 03	0.486664D 00	0.246702D 00	0.951997D 01	0.923437D 01	0.130430D 03	0.319051D 03

CP	GAMMA
0.2403[illegible]6D 00	0.139930D 01

TABLE X - Continued

***** STATUR 2*****

STRM	PO2A	PO3A	TO23A	PS3	ZS	UPO/PO	PERL3	R3	R/R7
1	0.3677750 02	0.3622920 02	0.6990980 03	0.2801160 02	0.4865230-01	0.1490980-01	0.1500000-01	0.2183170 01	0.8026380 00
2	0.3545940 02	0.3505410 02	0.6942420 03	0.2803160 02	0.4215770-01	0.1140080-01	0.1926630 00	0.2280000 01	0.8382360 00
3	0.3451930 02	0.3416980 02	0.6930000 03	0.2803160 02	0.4172640-01	0.1012700-01	0.3620820 00	0.2372330 01	0.8721820 00
4	0.3343300 02	0.3312490 02	0.6868100 03	0.2803160 02	0.4365190-01	0.9216010-02	0.5261140 00	0.2461730 01	0.9050480 00
5	0.3294740 02	0.3265270 02	0.6950740 03	0.2803160 02	0.4624560-01	0.8944630-02	0.6843940 00	0.2547990 01	0.9367630 00
6	0.3276370 02	0.3246210 02	0.7134820 03	0.2803160 02	0.5015940-01	0.9204850-02	0.8365860 00	0.2630940 01	0.9672570 00
7	0.3116160 02	0.3085290 02	0.7290520 03	0.2803160 02	0.7253350-01	0.9904750-02	0.9850000 00	0.2711820 01	0.9969940 00

STRM	AL2	THETA	AL3	DAL2	SLO	OFACTS	OP/QS	OEQUIV	OW3
1	0.3873360 02	0.3873360 02	0.0	-.8216360 01	0.2292500 01	0.2927310 00	0.2240080 00	0.1481350 01	0.0
2	0.3640230 02	0.3640230 02	0.0	-.9584870 01	0.2203670 01	0.2871480 00	0.2254930 00	0.1477540 01	0.8217580 00
3	0.3688820 02	0.3688820 02	0.0	-.8234420 01	0.2118960 01	0.2929000 00	0.2256040 00	0.1482440 01	0.7646060 00
4	0.3948590 02	0.3948590 02	0.0	-.4855300 01	0.2036940 01	0.3128660 00	0.2347660 00	0.1502530 01	0.7064100 00
5	0.3944290 02	0.3944290 02	0.0	-.4194030 01	0.1957800 01	0.3159590 00	0.2285[illegible]0 00	0.1504050 01	0.6565240 00
6	0.4097220 02	0.4097220 02	0.0	-.2023190 01	0.1881710 01	0.3200910 00	0.2129[illegible]0 00	0.1499160 01	0.6348020 00
7	0.4596040 02	0.4596040 02	0.0	0.3560380 01	0.1807500 01	0.3877400 00	0.2644290 00	0.1588740 01	0.5628860 00

STRM	AL2*	THETA*	AL3*	DEV	EPS3	RC3	F-TANG	F-AXIAL	R-STRESS
1	0.4695000 02	0.4695000 02	0.0	0.0	0.0	0.1000000 01	0.0	0.0	0.0
2	0.4598720 02	0.4598720 02	0.0	0.0	0.0	0.1000000 01	0.1362230 02	-.4405780 01	0.2193970 01
3	0.4512260 02	0.4512260 02	0.0	0.0	0.0	0.1000000 01	0.1158020 02	-.3690970 01	0.2296620 01
4	0.4434220 02	0.4434220 02	0.0	0.0	0.0	0.1000000 01	0.1034870 02	-.3495750 01	0.2394820 01
5	0.4363690 02	0.4363690 02	0.0	0.0	0.0	0.1000000 01	0.9341780 01	-.3277760 01	0.2489400 01
6	0.4299540 02	0.4299540 02	0.0	0.0	0.0	0.1000000 01	0.8913320 01	-.3140320 01	0.2580230 01
7	0.4240000 02	0.4240000 02	0.0	0.0	0.0	0.1000000 01	0.7756090 01	-.2945730 01	0.2667940 01

STRM	M2A	M3A	C2A	C3A	CX3	CU3	CM3	CR3	U3
1	0.7425090 00	0.6167780 00	0.9066130 03	0.7649420 03	0.7649420 03	0.0	0.7649420 03	0.0	0.1075280 04
2	0.6866990 00	0.5744100 00	0.8415650 03	0.7132290 03	0.7132290 03	0.0	0.7132290 03	0.0	0.1122970 04
3	0.6430560 00	0.5395940 00	0.7915690 03	0.6718350 03	0.6718350 03	0.0	0.6718350 03	0.0	0.1168450 04
4	0.5921850 00	0.4943680 00	0.7352520 03	0.6199820 03	0.6199820 03	0.0	0.6199820 03	0.0	0.1212480 04
5	0.5678840 00	0.4721450 00	0.7052940 03	0.5968850 03	0.5968850 03	0.0	0.5968850 03	0.0	0.1254970 04
6	0.5461930 00	0.4628090 00	0.6945890 03	0.5932740 03	0.5932740 03	0.0	0.5932740 03	0.0	0.1295820 04
7	0.4624330 00	0.3727780 00	0.5998730 03	0.4865660 03	0.4865660 03	0.0	0.4865660 03	0.0	0.1335660 04

STRM	PRS	TRS	EFFS	PRC	TRC	EFFC	MX3	CU2
1	0.1471690 01	0.1165410 01	0.5705650 00	0.2752980 01	0.1475590 01	0.7048120 00	0.6167780 00	0.5672680 03
2	0.1335920 01	0.1153090 01	0.5427890 00	0.2663690 01	0.1465190 01	0.6936790 00	0.5744100 00	0.4994280 03
3	0.1357470 01	0.1153080 01	0.5952940 00	0.2596490 01	0.1462530 01	0.6768840 00	0.5395940 00	0.4751430 03
4	0.1359120 01	0.1157070 01	0.5425680 00	0.2517090 01	0.1470690 01	0.6405300 00	0.4943680 00	0.4675380 03
5	0.1345120 01	0.1154580 01	0.5711520 00	0.2481210 01	0.1488380 01	0.6064200 00	0.4721450 00	0.4480790 03
6	0.1299540 01	0.1159530 01	0.4866390 00	0.2466730 01	0.1527800 01	0.5570320 00	0.4628090 00	0.4554370 03
7	0.1204890 01	0.1152130 01	0.3590730 00	0.2344450 01	0.1561140 01	0.4907100 00	0.3727780 00	0.4312240 03

WCR3	NCR2	WC/A3	PRSA	TRSA	EFFSA	PRCA	TRCA	EFFCA
0.2092670 01	0.4880880 05	0.3595540 02	0.1334060 01	0.1154340 01	0.5554250 00	0.2559670 01	0.1485180 01	0.6342760 00

PO3A	TO3A	PHI3	PSI3	AREA3	AREE3	CP	GAMMA
0.3368520 02	0.6935770 03	0.5195760 00	0.2384560 00	0.8381060 01	0.8129630 01	0.2414960 00	0.1396550 01

TABLE XI

COMPUTER OUTPUT OF TRAVERSE DATA FOR COMPRESSOR - REDESIGN - TEST NUMBER 18

***** INLET *****

RPM = 0.4531000 05
FLOW = 0.3119000 01

STMN	PO1	TO1	PS	TS	AL1	EPS1	PERL	R1	R/RT
1	0.1379000 02	0.4703000 03	0.1280960 02	0.4604710 03	0.0	0.0	0.5000000-02	0.1346900 01	0.4951840 00
2	0.1379000 02	0.4703000 03	0.1280960 02	0.4604710 03	0.0	0.0	0.2285730 00	0.1655430 01	0.6086140 00
3	0.1379000 02	0.4703000 03	0.1280960 02	0.4604710 03	0.0	0.0	0.4155290 00	0.1913430 01	0.7034670 00
4	0.1379000 02	0.4703000 03	0.1280960 02	0.4604710 03	0.0	0.0	0.5810510 00	0.2141850 01	0.7874450 00
5	0.1379000 02	0.4703000 03	0.1280960 02	0.4604710 03	0.0	0.0	0.7305480 00	0.2348160 01	0.8632930 00
6	0.1379000 02	0.4703000 03	0.1280960 02	0.4604710 03	0.0	0.0	0.8671390 00	0.2536650 01	0.9325920 00
7	0.1379000 02	0.4703000 03	0.1280960 02	0.4604710 03	0.0	0.0	0.9950000 00	0.2713100 01	0.9974630 00

STMN	CX1	CU1	CR1	CM1	U1	CA1	M1A	OW1	RC
1	0.3432400 03	0.0	0.0	0.3432300 03	0.5325700 03	0.3432300 03	0.3261440 00	0.0	0.1000000 01
2	0.3432300 03	0.0	0.0	0.3432300 03	0.6545640 03	0.3432300 03	0.3261440 00	0.5208740 00	0.1000000 01
3	0.3432300 03	0.0	0.0	0.3432300 03	0.7565790 03	0.3432300 03	0.3261440 00	0.5177550 00	0.1000000 01
4	0.3432300 03	0.0	0.0	0.3432300 03	0.8468970 03	0.3432300 03	0.3261440 00	0.5208740 00	0.1000000 01
5	0.3432300 03	0.0	0.0	0.3432300 03	0.9284710 03	0.3432300 03	0.3261440 00	0.5208740 00	0.1000000 01
6	0.3432300 03	0.0	0.0	0.3432300 03	0.1003000 04	0.3432300 03	0.3261440 00	0.5177550 00	0.1000000 01
7	0.3432300 03	0.0	0.0	0.3432300 03	0.1072770 04	0.3432300 03	0.3261440 00	0.5208740 00	0.1000000 01

WCR1	NCR1	WC/A1	POA	TOA	PHI	HUB/TIP	AREA	AREAE
0.3165730 01	0.4759440 05	0.2590030 02	0.1379000 02	0.4703000 03	0.4276100 00	0.4926470 00	0.1760170 02	0.1742570 02

CP	GAMMA
0.2394230 00	0.1401370 01

TABLE XI - Continued

***** RDTOR 1*****

STRM	PU1R	PU2R	TO1R	TO2R	PS2	ZR	PERL2	R2	R/R7
1	0.1636850 02	0.1691210 02	0.4939650 03	0.5100140 03	0.1399270 02	D.390466D 00	0.10D0000-01	0.174485D 01	0.6414890 DD
2	0.1790970 02	0.1803280 02	0.5060490 03	0.519383D 03	0.148173D D2	0.2939500 00	D.207879D DO	0.193976D D1	0.7131470 DD
3	0.1932970 02	0.1834510 02	0.518060D 03	0.528696D 03	0.154345D 02	D.3690D30 00	0.386582D OD	0.211578D 01	0.7778610 00
4	0.2095020 02	0.1859740 02	0.5301440 03	0.538064D 03	0.159569D 02	0.425784D 00	0.552477D 00	0.227919D 01	0.8379380 00
5	0.2266530 02	0.1842790 02	0.5422280 03	0.547433D 03	0.164091D D2	0.507954D OD	D.7D7249D 00	0.243164D D1	0.893986D 00
6	0.2446710 02	0.1849730 02	0.5542390 03	0.556745D D3	0.1682430 D2	0.545428D 00	0.8520270 00	0.257425D 01	0.9464140 00
7	0.2618090 02	0.1950290 02	0.5663230 03	0.566114D 03	0.1720190 02	0.504303D 00	0.[illegible]0D00D DO	0.271015D D1	0.996379D OD

STRM	B1	THETA	B2	OB1	SLO	DFACTR	DP/OR	OEQUIV	DW2
1	0.5714910 02	C.5905390 02	-.1854810 01	0.1270910 02	0.2394000 01	0.2847610 00	0.332439D 00	0.1380870 01	0.0
2	0.6232930 02	0.4921300 02	0.1311610 02	0.120552D 02	0.2275270 01	0.365751D 00	0.401523D 00	0.154122D 01	0.718885D 00
3	0.6559810 02	0.438569D 02	0.217411D C2	0.1143360 02	0.2168050 01	0.487434D 00	0.402582D 00	0.181264D 01	0.694574D 00
4	0.6793330 02	0.3545120 02	0.3248710 02	0.1090360 02	0.206851D 01	0.573638D 00	0.3866220 00	0.2077950 01	0.631835D 00
5	0.697120D 02	0.2335750 C2	0.465546D 02	0.1045270 02	0.1975650 01	0.6835990 00	0.3652180 00	0.252495D 01	0.499707D 00
6	0.7110890 02	0.9122740 01	0.6198620 02	0.1006310 02	0.1888780 01	0.758457D 00	0.3443850 00	D.2896910 01	0.323323D 00
7	0.7225810 02	0.6293900 01	0.6596420 02	0.972807D 01	0.1806000 01	0.719186D 00	0.3236480 00	0.2640760 01	0.250670D OD

STRM	B1*	THETA*	B2*	DEV	EPS2	RC2	F-TANG	F-AXIAL	R-STRESS
1	0.4449000D 02	0.3532000D 02	0.9170000 01	-.1102480D 02	0.0	0.1000000D 01	0.0	0.0	0.0
2	0.5027190 02	0.2781300 02	0.2244090 02	-.932486D 01	0.0	D.1000000 01	-.150025D D2	-.768713D D1	0.167174D 01
1	0.5416440 02	0.2165090 02	0.1251360 02	-.1077250 02	D.0	0.1DD0000 01	-.1366850 02	-.9326300 0J	0.190610D 01
4	0.5703470 02	0.1701130 02	0.4000130 02	-.7514230 01	0.0	0.1000000 01	-.1227760 02	-.9532320 01	0.2112560 01
5	0.592591D 02	0.135715D 02	0.456878D 02	0.8667540 00	0.0	D.1000000 01	-.9659990 01	-.8944530 01	0.230021D 01
6	0.6104590 02	0.1089680 02	0.5014910 02	0.118371D 02	0.0	0.1000000 01	-.638072D 01	-.8731220 01	0.2472670 01
7	0.6253000 02	0.8780000 01	0.5375000 02	0.122142D 02	0.0	0.1000000 01	-.4944060 01	-.9682170 01	0.2633540 01

STRM	M1R	M2R	W1R	W2R	CX2	WU2	CM2	CR2	U2
1	0.6020510 00	0.5271700 00	0.6135910 03	0.5682410 03	0.5679430 03	-.183922D 02	0.567943D 03	0.0	0.689921D 03
2	0.7023030 00	0.5369670 00	0.7390950 01	0.583515D 03	0.5682920 03	0.132414D 03	[illegible]5682920 03	0.0	0.766990D 03
3	0.7694370 00	0.5027470 00	D.8307940 03	0.553074D 03	0.513732D 03	0.2048660 0[illegible]	[illegible]137320 03	0.0	0.836590D 0[illegible]
4	0.8681170 00	0.4726520 00	0.9138060 03	0.5260290 03	0.443712D 03	0.2825350 [illegible]	[illegible].4437120 03	0.0	0.901202D 03
5	0.9406050 00	0.4103360 00	0.9898820 03	0.4630880 03	0.3184490 03	0.336216D [illegible]	0.318449D 03	0.0	0.961481D 03
6	0.1007330 01	0.3703390 00	0.1060100 04	0.4227730 03	0.1985700 03	0.3732380 03	0.198570D 03	0.0	0.101787D 04
7	0.1070270 01	0.4271210 00	0.112634D 04	0.489520D 03	0.1993850 03	0.447074D 03	0.1993850 03	0.0	0.107161D 04

STRM	PRS	TRS	EFFS	PRC	TRC	EFFC	MX2	CX2/CX1
1	0.161499D 01	0.1173390 01	0.8486670 00	0.1614990 01	0.117339D 01	0.8478170 00	0.5268940 00	0.1654700 01
2	0.161262D 01	0.1172700 01	0.8493100 00	0.1612620 01	0.1172700 D1	0.8484600 00	0.522959D 00	0.1655720 01
3	0.1610980 01	0.118752D 01	0.780382D 00	0.1610980 01	0.118752D 01	0.7796010 00	0.4669850 00	0.149676D 01
4	0.1583040 01	0.1197830 01	0.7107580 00	0.1583040 01	0.119783D 01	0.7100490 00	0.3986870 00	0.129275D 01
5	0.154461D 01	0.1213310 01	0.6216550 00	0.1544610 01	0.1213310 01	0.621036D D0	0.282173D 00	0.927799D 00
6	0.154545D 01	0.1232820 01	0.5703180 00	0.154545D 01	D.1232820 01	0.569771D 00	D.1739420 0D	0.5785320 00
7	0.1557580 01	0.1237470 01	0.569861D 00	0.1557580 01	0.1237470 01	0.5692950 00	0.1739700 00	0.58D9080 00

WCR2	NCR2	WC/A2	PRSA	TRSA	EFFSA	PRCA	TRCA	EFFCA
0.217568D 01	0.4155210 05	0.2272600 02	0.158986D 01	0.119374D 01	0.732993D 00	0.158986D 01	0.1193740 01	0.732261D 00

PU2A	TO2A	PH12	PS12	AREA2	AREE2	MPS	MPC
0.2192420 02	0.5614180 03	0.537090D D0	0.621254D 00	0.1378590 02	0.1351010 02	0.962815D 02	0.9637160 D2

CP	GAMMA
0.239473D 00	C.1401170 01

TABLE XI - Continued

***** STATOR 1*****

STRM	PO2A	PO3A	TO23A	PS3	ZS	OPO/PO	PERL3	R3	R/R7
1	0.2227070 02	0.2182520 02	0.5518470 03	0.1949650 02	0.5380730D-01	0.200000D-01	0.1500000-01	0.1932000 01	0.7102940 00
2	0.2223910 02	0.2179330 02	0.5515190 03	0.1949650 02	0.5993430-01	0.2000000-01	0.2022620 00	0.2081810 01	0.7653710 00
3	0.2221540 02	0.2177110 02	0.5584910 03	0.1949650 02	0.6552330-01	0.200000D-01	0.3759110 00	0.2220730 01	0.8164440 00
4	0.2193070 02	0.2139360 02	0.5633390 03	0.1949650 02	0.7433810-01	0.200000D-01	0.5402760 00	0.2352220 01	0.8647870 00
5	0.2130010 02	0.2087410 02	0.5706210 03	0.1949650 02	0.8709880-01	0.200000D-01	0.6959270 00	0.2476740 01	0.9105670 00
6	0.2131180 02	0.2088550 02	0.5797940 03	0.1949650 02	0.9498400-01	0.200000D-01	0.8432520 00	0.2594600 01	0.9538980 00
7	0.2147900 02	0.2104940 02	0.5819810 03	0.1949650 02	0.1004380 00	0.200000D-01	0.9850000 00	0.2708000 01	0.9955880 00

STRM	AL2	THETA	AL3	OAL2	SLO	OFACTS	DP/QS	OEQUIV	OW3
1	0.5127650 02	0.5127650 02	0.0	0.1336520 01	0.2288000 01	0.6653600 00	0.6648760 00	0.2474830 01	0.0
2	0.4815410 02	0.4815410 02	0.0	0.1366200 00	0.2138190 01	0.6394410 00	0.6305590 00	0.2359530 01	0.5909410 00
3	0.5088120 02	0.5088120 02	0.0	0.4408500 01	0.1999270 01	0.6335910 00	0.5990350 00	0.2264920 01	0.5861450 00
4	0.5435160 02	0.5435160 02	0.0	0.9175450 01	0.1867780 01	0.6646370 00	0.6026630 00	0.2305440 01	0.5588310 00
5	0.6301020 02	0.6301020 02	0.0	0.1892880 02	0.1743260 01	0.7369550 00	0.6312400 00	0.2432410 01	0.4826400 00
6	0.7287920 02	0.7287920 02	0.0	0.2973490 02	0.1625400 01	0.7479980 00	0.5954780 00	0.2244710 01	0.4431500 00
7	0.7229400 02	0.7229400 02	0.0	0.2997400 02	0.1512000 01	0.7214380 00	0.5364820 00	0.2083760 01	0.4574360 00

STRM	AL2*	THETA*	AL3*	OEV	EPS3	RC3	F-TANG	F-AXIAL	R-STRESS
1	0.4994000 02	0.4994000 02	0.0	0.0	0.0	0.1000000 01	0.0	0.0	0.0
2	0.4801740 02	0.4801740 02	0.0	0.0	0.0	0.1000000 01	0.1233240 02	-.7697650 01	0.1924600 01
3	0.4647270 02	0.4647270 02	0.0	0.0	0.0	0.1000000 01	0.1153470 02	-.6956930 01	0.2089520 01
4	0.4517620 02	0.4517620 02	0.0	0.0	0.0	0.1000000 01	0.1085900 02	-.6855850 01	0.2241980 01
5	0.4408140 02	0.4408140 02	0.0	0.0	0.0	0.1000000 01	0.9330070 01	-.6839100 01	0.2384950 01
6	0.4314440 02	0.4314440 02	0.0	0.0	0.0	0.1000000 01	0.8745470 01	-.7308350 01	0.2519310 01
7	0.4232000 02	0.4232000 02	0.0	0.0	0.0	0.1000000 01	0.9022200 01	-.7674760 01	0.2646750 01

STRM	M2A	M3A	C2A	C3A	CX3	CU3	CM3	CR3	U3
1	0.8422730 00	0.4045500 00	0.9078920 03	0.4586060 03	0.4586060 03	0.0	0.4586060 03	0.0	0.7639210 03
2	0.7838940 00	0.4018740 00	0.8518470 03	0.4555320 03	0.4555320 03	0.0	0.4555320 03	0.0	0.8231570 03
3	0.7401530 00	0.4000030 00	0.8142450 03	0.4563350 03	0.4563350 03	0.0	0.4563350 03	0.0	0.8780860 03
4	0.6840790 00	0.3664660 00	0.7613330 03	0.4209390 03	0.4209390 03	0.0	0.4209390 03	0.0	0.9300780 03
5	0.6217560 00	0.3136860 00	0.7016880 03	0.3639140 03	0.3639140 03	0.0	0.3639140 03	0.0	0.9793150 03
6	0.5908640 00	0.3149530 00	0.6745200 03	0.3682800 03	0.3682800 03	0.0	0.3682800 03	0.0	0.1025920 04
7	0.5720200 00	0.3325440 00	0.6555860 03	0.3891460 03	0.3891460 03	0.0	0.3891460 03	0.0	0.1070750 04

STRM	PRS	TRS	EFFS	PRC	TRC	EFFC	MX3	CU2
1	0.1582690 01	0.1173390 01	0.8104960 00	0.1582690 01	0.1173390 01	0.8096570 00	0.4045500 00	0.7083130 03
2	0.1580370 01	0.1172700 01	0.8110010 00	0.1580370 01	0.1172700 01	0.8101620 00	0.4018740 00	0.6345760 03
3	0.1578760 01	0.1187520 01	0.7451120 00	0.1578760 01	0.1187520 01	0.7443410 00	0.4000030 00	0.6317240 03
4	0.1551380 01	0.1197830 01	0.6774930 00	0.1551380 01	0.1197830 01	0.6767940 00	0.3664660 00	0.6186660 03
5	0.1513710 01	0.1713310 01	0.5910210 00	0.1513710 01	0.1213310 01	0.5904130 00	0.3136860 00	0.6252660 03
6	0.1514540 01	0.1232820 01	0.5422660 00	0.1514540 01	0.1232820 01	0.5417080 00	0.3149530 00	0.6446300 03
7	0.1526430 01	0.1237470 01	0.5422790 00	0.1526430 01	0.1237470 01	0.5417200 00	0.3325440 00	0.6245310 03

WCR3	NCR2	WC/A3	PRSA	TRSA	EFFSA	PRCA	TRCA	EFFCA
0.2233840 01	0.4345450 05	0.2758400 02	0.1551940 01	0.1199110 01	0.6737190 00	0.1551940 01	0.1199110 01	0.6730240 00

PO3A	TO3A	PHI3	PS13	AREA3	AREE3	CP	GAMMA
0.2140130 02	0.5639420 03	0.4708960 00	0.5881610 00	0.1166160 02	0.1131170 02	0.2399650 00	0.1400100 01

TABLE XI - Continued

***** ROTOR 2******

STRM	PD1R	PD2R	TD1R	TD2R	PS2	ZR	PERL2	R2	R/RT
1	0.293208D 02	0.285495D 02	0.600539D 03	0.609325D 03	0.233298D 02	0.234114D 00	0.150000D-01	0.209945D 01	0.771857D 00
2	0.306409D 02	0.286876D 02	0.608055D 03	0.615404D 03	0.236716D 02	0.293317D 00	0.195668D 00	0.221327D 01	0.813703D 00
3	0.318567D 02	0.290290D 02	0.622824D 03	0.628744D 03	0.239698D 02	0.315519D 00	0.366484D 00	0.232089D 01	0.853267D 00
4	0.325901D 02	0.288231D 02	0.635516D 03	0.639999D 03	0.242384D 02	0.349682D 00	0.530686D 00	0.242433D 01	0.891299D 00
5	0.330068D 02	0.293739D 02	0.650642D 03	0.653688D 03	0.244802D 02	0.309151D 00	0.688162D 00	0.252354D 01	0.927773D 00
6	0.341745D 02	0.307151D 02	0.667612D 03	0.669229D 03	0.246833D 02	0.255480D 00	0.838786D 00	0.261844D 01	0.962660D 00
7	0.358098D 02	0.309469D 02	0.677643D 03	0.677823D 03	0.248606D 02	0.300131D 00	0.985000D 00	0.271055D 01	0.996526D 00

STRM	B1	THETA	B2	DB1	SLD	DFACTR	DP/QR	DEQUIV	DW2
1	0.590223D 02	0.305657D 02	0.284536D 02	0.569230D 01	0.239040D 01	0.388735D 00	0.390187D 00	0.166350D 01	0.0
2	0.610400D 02	0.267737D 02	0.342663D 02	0.518988D 01	0.227477D 01	0.441559D 00	0.374633D 00	0.178238D 01	0.634970D 00
3	0.625394D 02	0.226590D 02	0.398805D 02	0.489277D 01	0.216545D 01	0.469129D 00	0.361911D 00	0.184937D 01	0.588518D 00
4	0.656493D 02	0.191727D 02	0.464766D 02	0.632735D 01	0.206036D 01	0.519169D 00	0.362150D 00	0.197393D 01	0.520417D 00
5	0.696149D 02	0.183087D 02	0.513062D 02	0.877522D 01	0.195958D 01	0.514642D 00	0.368879D 00	0.194385D 01	0.461844D 00
6	0.702531D 02	0.166661D 02	0.535870D 02	0.805985D 01	0.186318D 01	0.474195D 00	0.353373D 00	0.183312D 01	0.463531D 00
7	0.700273D 02	0.118202D 02	0.582070D 02	0.659726D 01	0.176960D 01	0.500539D 00	0.328818D 00	0.188982D 01	0.449900D 00

STRM	B1*	THETA*	B2*	DEV	EPS2	RC2	F-TANG	F-AXIAL	R-STRESS
1	0.533300D 02	0.237900D 02	0.295400D 02	-.108638D 01	0.0	0.100000D 01	0.0	0.0	0.0
2	0.558501D 02	0.204428D 02	0.354073D 02	-.114108D 01	0.0	0.100000D 01	-.103234D 02	-.819957D 01	0.208163D 01
3	0.576466D 02	0.175729D 02	0.400738D 02	-.193324D 00	0.0	0.100000D 01	-.944128D 01	-.799719D 01	0.220917D 01
4	0.593219D 02	0.152779D 02	0.440440D 02	0.243254D 01	0.0	0.100000D 01	-.831234D 01	-.797096D 01	0.232954D 01
5	0.608397D 02	0.133951D 02	0.474446D 02	0.386161D 01	0.0	0.100000D 01	-.733435D 01	-.844379D 01	0.244421D 01
6	0.621932D 02	0.118453D 02	0.503479D 02	0.323905D 01	0.0	0.100000D 01	-.705186D 01	-.916680D 01	0.255333D 01
7	0.634300D 02	0.105800D 02	0.528500D 02	0.535701D 01	0.0	0.100000D 01	-.662977D 01	-.922032D 01	0.265790D 01

STRM	M1R	M2R	W1R	W2R	CX2	WU2	CM2	CR2	U2
1	0.785985D 00	0.544887D 00	0.891008D 03	0.640591D 03	0.563209D 03	0.305208D 03	0.563209D 03	0.0	0.830132D 03
2	0.829977D 00	0.531240D 00	0.940796D 03	0.628526D 03	0.519433D 03	0.353885D 03	0.519433D 03	0.0	0.875137D 03
3	0.867426D 00	0.530264D 00	0.989584D 03	0.634198D 03	0.486673D 03	0.406640D 03	0.486673D 03	0.0	0.917688D 03
4	0.888787D 00	0.503683D 00	0.102090D 04	0.609362D 03	0.419638D 03	0.441844D 03	0.419638D 03	0.0	0.958591D 03
5	0.900548D 00	0.516941D 00	0.104474D 04	0.631242D 03	0.394626D 03	0.492683D 03	0.394626D 03	0.0	0.997819D 03
6	0.932183D 00	0.567683D 00	0.109002D 04	0.697759D 03	0.414191D 03	0.561527D 03	0.414191D 03	0.0	0.103534D 04
7	0.973568D 00	0.568168D 00	0.113928D 04	0.702788D 03	0.370765D 03	0.597339D 03	0.370265D 03	0.0	0.107176D 04

STRM	PRS	TRS	EFFS	PRC	TRC	EFFC	MX2	CX2/CX1
1	0.142576D 01	0.113167D 01	0.810189D 00	0.225653D 01	0.132789D 01	0.798483D 00	0.479067D 00	0.122809D 01
2	0.140990D 01	0.113794D 01	0.747739D 00	0.222816D 01	0.133446D 01	0.769191D 00	0.439033D 00	0.114028D 01
3	0.139351D 01	0.114007D 01	0.710101D 00	0.220002D 01	0.135386D 01	0.714142D 00	0.406916D 00	0.106648D 01
4	0.139183D 01	0.114669D 01	0.675471D 00	0.215926D 01	0.137354D 01	0.658641D 00	0.346862D 00	0.996911D 00
5	0.141500D 01	0.114739D 01	0.707564D 00	0.214191D 01	0.139214D 01	0.620089D 00	0.323170D 00	0.108439D 01
6	0.141332D 01	0.114121D 01	0.735823D 00	0.214053D 01	0.140691D 01	0.597017D 00	0.336978D 00	0.112466D 01
7	0.138863D 01	0.114584D 01	0.674469D 00	0.211964D 01	0.141794D 01	0.572942D 00	0.299340D 00	0.951481D 00

WCR2	NCR2	WC/A2	PRSA	TRSA	EFFSA	PRCA	TRCA	EFFCA
0.169732D 01	0.406772D 05	0.256739D 02	0.140596D 01	0.114121D 01	0.724164D 00	0.218196D 01	0.136944D 01	0.677877D 00

PD2A	TD2A	PHI2	PSI2	AREA2	AREE2	HPS	HPC
0.300893D 02	0.643579D 03	0.451117D 00	0.411635D 00	0.951997D 01	0.923437D 01	0.843398D 02	0.183520D 03

CP	GAMMA
0.239965D 00	0.140010D 01

TABLE XI - Continued

***** STATOR 2*****

STRM	PO2A	PO3A	TO23A	PS3	ZS	OPO/PO	PERL3	R3	R/RT
1	0.311175D 02	0.305476D 02	0.674509D 03	0.266629D 02	0.731900D-01	0.183173D-01	0.150000D-01	0.218317D 01	0.802638D 00
2	0.307264D 02	0.302559D 02	0.627597D 03	0.266629D 02	0.6668[illegible]D-01	0.153106D-01	0.192663D 00	0.228000D 01	0.838236D 00
3	0.303383D 02	0.299430D 02	0.636721D 03	0.266629D 02	0.620790D-01	0.130315D-01	0.362082D 00	0.237233D 01	0.872182D 00
4	0.297762D 02	0.294355D 02	0.645976D 03	0.266629D 02	0.61[illegible]206D-01	0.114417D-01	0.526114D 00	0.246173D 01	0.905048D 00
5	0.295349D 02	0.292393D 02	0.654722D 03	0.266629D 02	0.588554D-01	0.100761D-01	0.684394D 00	0.254799D 01	0.936763D 00
6	0.295179D 02	0.292537D 02	0.661669D 03	0.266629D 02	0.546485D-01	0.895059D-02	0.836586D 00	0.263094D 01	0.967257D 00
7	0.292799D 02	0.289938D 02	0.666856D 03	0.266629D 02	0.540283D-01	0.807613D-02	0.985000D 00	0.271182D 01	0.996994D 00

STRM	AL2	THETA	AL3	DAL2	SLO	DFACTS	DP/OS	DEQUIV	DW3
1	0.429849D 02	0.429849D 02	0.0	-.396509D 01	0.229250D 01	0.454110D 00	0.427993D 00	0.180352D 01	0.0
2	0.451002D 02	0.451002D 02	0.0	-.887026D 00	0.220367D 01	0.457900D 00	0.424020D 00	0.179051D 01	0.592508D 00
3	0.463995D 02	0.463995D 02	0.0	0.127692D 01	0.211896D 01	0.463188D 00	0.422883D 00	0.178576D 01	0.563254D 00
4	0.509208D 02	0.509208D 02	0.0	0.657853D 01	0.203694D 01	0.491907D 00	0.437820D 00	0.181287D 01	0.524198D 00
5	0.520021D 02	0.520021D 02	0.0	0.836516D 01	0.195780D 01	0.495616D 00	0.431651D 00	0.180143D 01	0.490241D 00
6	0.488412D 02	0.488412D 02	0.0	0.584578D 01	0.188171D 01	0.475618D 00	0.409472D 00	0.176776D 01	0.480006D 00
7	0.520297D 02	0.520297D 02	0.0	0.962967D 01	0.180750D 01	0.494604D 00	0.412501D 00	0.177435D 01	0.469020D 00

STRM	AL2*	THETA*	AL3*	DEV	EPS3	RC3	F-TANG	F-AXIAL	R-STRESS
1	0.469500D 02	0.469500D 02	0.0	0.0	0.0	0.100000D 01	0.0	0.0	0.0
2	0.459872D 02	0.459872D 02	0.0	0.0	0.0	0.100000D 01	0.963305D 01	-.412567D 01	0.219397D 01
3	0.451226D 02	0.451226D 02	0.0	0.0	0.0	0.100000D 01	0.903598D 01	-.406145D 01	0.229662D 01
4	0.443422D 02	0.443422D 02	0.0	0.0	0.0	0.100000D 01	0.837273D 01	-.409453D 01	0.239482D 01
5	0.436369D 02	0.436369D 02	0.0	0.0	0.0	0.100000D 01	0.778531D 01	-.406746D 01	0.248940D 01
6	0.429954D 02	0.429954D 02	0.0	0.0	0.0	0.100000D 01	0.730250D 01	-.371074D 01	0.258023D 01
7	0.424000D 02	0.424000D 02	0.0	0.0	0.0	0.100000D 01	0.691151D 01	-.351036D 01	0.266794D 01

STRM	M2A	M3A	C2A	C3A	CX3	CU3	CM3	CR3	U3
1	0.654880D 00	0.445101D 00	0.769903D 03	0.534769D 03	0.534769D 03	0.0	0.534769D 03	0.0	0.863237D 03
2	0.621974D 00	0.428819D 00	0.735875D 03	0.517188D 03	0.517188D 03	0.0	0.517188D 03	0.0	0.901522D 03
3	0.590054D 00	0.410500D 00	0.705706D 03	0.499421D 03	0.499421D 03	0.0	0.499421D 03	0.0	0.938031D 03
4	0.550230D 00	0.378590D 00	0.645476D 03	0.465069D 03	0.465069D 03	0.0	0.465069D 03	0.0	0.973379D 03
5	0.524939D 00	0.365395D 00	0.441009D 03	0.452321D 03	0.452321D 03	0.0	0.452321D 03	0.0	0.100749D 04
6	0.512008D 00	0.366381D 00	0.629328D 03	0.455908D 03	0.455908D 03	0.0	0.455908D 03	0.0	0.104028D 04
7	0.486532D 00	0.348084D 00	0.601809D 03	0.435389D 03	0.435389D 03	0.0	0.435389D 03	0.0	0.107227D 04

STRM	PRS	TRS	EFFS	PRC	TRC	EFFC	MX3	CU2
1	0.139965D 01	0.113167D 01	0.765904D 00	0.221520D 01	0.132789D 01	0.778197D 00	0.445101D 00	0.524924D 03
2	0.138431D 01	0.113794D 01	0.712557D 00	0.219405D 01	0.133446D 01	0.752645D 00	0.428819D 00	0.521252D 03
3	0.137535D 01	0.114007D 01	0.680733D 00	0.217135D 01	0.135386D 01	0.700888D 00	0.410500D 00	0.511048D 03
4	0.137570D 01	0.114669D 01	0.650873D 00	0.213455D 01	0.137354D 01	0.647682D 00	0.378590D 00	0.516747D 03
5	0.140074D 01	0.114739D 01	0.685912D 00	0.212033D 01	0.139214D 01	0.610920D 00	0.365395D 00	0.505136D 03
6	0.140067D 01	0.114121D 01	0.715764D 00	0.212137D 01	0.140691D 01	0.589172D 00	0.366381D 00	0.473813D 03
7	0.137741D 01	0.114584D 01	0.657C38D 00	0.210252D 01	0.141794D 01	0.566070D 00	0.348084D 00	0.474424D 03

WCR1	WCR2	WC/A3	PHSA	TRSA	EFFSA	PRCA	TRCA	EFFCA
0.177073D 01	0.406580D 05	0.295650D 02	0.138748D 01	0.114230D 01	0.689441D 00	0.215329D 01	0.136974D 01	0.662741D 00

PO3A	TO3A	PHI3	PS13	AREA3	AREE3	CP	GAMMA
0.246939D 02	0.644188D 03	0.484729D 00	0.396277D 00	0.838106D 01	0.812963D 01	0.240803D 00	0.139815D 01

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13. ABSTRACT

This report presents the redesign analysis of a two-stage axial compressor program for the advancement of small gas turbine component technology. The discussion covers fabrication, test, and redesign of the axial compressor which was presented in Volume I.

The Continental-redesigned compressor demonstrated a potential for a 0.457-pound-per-horsepower-hour SFC turboshaft engine at 2500°F turbine inlet temperature. It exceeded the contract objective by demonstrating 80 percent efficiency at 3.1:1 pressure ratio with a 4.91-lb/sec airflow.

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