

NASA TECHNICAL MEMORANDUM

NASA TM X-3451



NASA TM X-3451 *1.1*

LOAN COPY: RE
AFWL TECHNICAL
KIRTLAND AFB

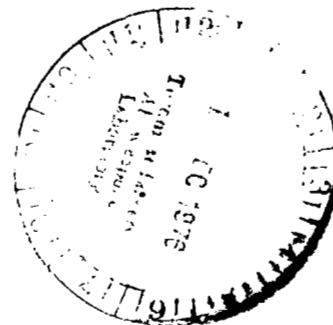


PERFORMANCE OF 1.15-PRESSURE-RATIO FAN STAGE AT SEVERAL ROTOR BLADE SETTING ANGLES WITH REVERSE FLOW

George Kovich and Royce D. Moore

Lewis Research Center

Cleveland, Ohio 44135



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION • WASHINGTON, D. C. • NOVEMBER 1976



0152312

1. Report No. NASA TM X-3451		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle PERFORMANCE OF 1.15-PRESSURE-RATIO FAN STAGE AT SEVERAL ROTOR BLADE SETTING ANGLES WITH REVERSE FLOW				5. Report Date November 1976	
				6. Performing Organization Code	
7. Author(s) George Kovich and Royce D. Moore				8. Performing Organization Report No. E-8571	
				10. Work Unit No. 505-04	
9. Performing Organization Name and Address Lewis Research Center National Aeronautics and Space Administration Cleveland, Ohio 44135				11. Contract or Grant No.	
				13. Type of Report and Period Covered Technical Memorandum	
12. Sponsoring Agency Name and Address National Aeronautics and Space Administration Washington, D.C. 20546				14. Sponsoring Agency Code	
				15. Supplementary Notes	
16. Abstract <p>A 51-cm-diameter low pressure ratio fan stage was tested in reverse flow. Survey flow data were taken over the range of rotative speed from 50 percent to 100 percent design speed at several rotor blade setting angles through both flat and feather pitch. Normal flow design values of pressure ratio and weight flow were 1.15 and 29.9 kg/sec with a rotor tip speed of 243.8 m/sec. The maximum thrust in reverse flow was 52.5 percent of design thrust in normal flow.</p>					
17. Key Words (Suggested by Author(s)) Compressor Reverse thrust Short haul aircraft			18. Distribution Statement Unclassified - unlimited STAR Category 02		
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Unclassified		21. No. of Pages 90	22. Price* \$5.00

PERFORMANCE OF 1.15-PRESSURE-RATIO FAN STAGE AT SEVERAL ROTOR BLADE SETTING ANGLES WITH REVERSE FLOW

by George Kovich and Royce D. Moore

Lewis Research Center

SUMMARY

The reverse-flow aerodynamic performance of a 51-centimeter-diameter fan stage is presented. The stage was designed for a pressure ratio of 1.15 at a tip speed of 243.8 meters per second and a flow of 29.9 kilograms per second. The stage was tested with the variable-pitch rotor blades set at five angles through feather pitch (-80° , -85° , -90° , -95° , and -100° from design setting angle) and three angles through flat pitch (85° , 95° , and 105° from design setting angle). Radial flow surveys were taken over the stable operating flow range for speeds from 50 to 100 percent of design speed. Of the eight tested, the stage with the rotor blades set at design -95° exhibited the highest flow. This configuration also produced the maximum reverse thrust of 52.5 percent of the design forward thrust. For all the configurations, there was little or no flow in the inner third of the exit passage due to the rotor blade being almost perpendicular to the axial direction in the hub region.

INTRODUCTION

NASA is currently engaged in investigating powered lift engines for short-haul commercial aircraft application. These aircraft must be dependable, economical, and have an efficient and reliable propulsion system which satisfies the low noise requirement for urban communities. The aircraft engines must be capable of a variety of operating conditions from takeoff, cruise, and approach to thrust reversal on landing.

In support of this program, the Lewis Research Center is investigating a variety of fan stages for powered lift engine application. Fans under investigation may have adjustable rotor blades to provide for varied flight demands with optimum fan performance. A reduced number of rotor blades and low solidity permit using devices for changing the rotor blade setting angle during engine operation. In addition, reverse pitch may be used for reverse thrust braking during landing thereby reducing the weight penalty of

conventional aircraft thrust reversal systems.

In reference 1, the performance of a 51-centimeter-diameter fan stage (stage 51B-51) incorporating provisions for manually adjusting the rotor blade setting angle was presented with the rotor blades at design setting angle. The performance of this fan stage with several off-design rotor blade angle settings was reported in reference 2.

This report presents the performance of this fan stage operating with reverse flow. Data were obtained for a number of rotor blade setting angles. The blades were turned through both flat and feather pitch. With reverse flow operation, the stator blades act like inlet guide vanes and introduce swirl to the rotor. Radial distributions of several flow parameters are presented for each rotor blade setting angle. The data are presented over a range of flows at speeds from 50 percent to 100 percent design speed.

APPARATUS AND PROCEDURE

Test Stage

The basic test stage is the same one used in references 1 and 2. Briefly the stage was designed for a pressure ratio of 1.15 at a tip speed of 243.8 meters per second and a weight flow of 29.9 kilograms per second. Photographs of rotor 51B and stator 51 are shown in figure 1. The rotor blade tips were contoured so that the blades could be turned past the axial direction while maintaining a minimum tip clearance of 0.05 centimeter at the blade stacking line. As shown in the flow path diagram (fig. 2), the stators in reverse flow operation become inlet guide vanes which turn the flow opposite the direction of rotation.

A solidity of less than unity over the whole blade height allows the rotor blades to pass through flat pitch for reverse thrust applications. When the rotor blades have been turned through flat pitch the blade setting angles are designated as positive measured from the design blade setting angle. For reverse flow operation at positive angles, the design leading edge of the blade is still the leading edge but the camber of the blade is reversed with respect to the direction of rotation and flow. The fan was tested with the rotor blades set at three different angles through flat pitch: design $+85^{\circ}$, design $+95^{\circ}$, and design $+105^{\circ}$. The stage designations are listed in figure 2.

When the rotor blades have been turned through feather pitch the blade setting angles are designated as negative measured from the design blade setting angle. For reverse flow operation at negative angles, the design trailing edge of the blade becomes the leading edge and the rotor blade camber remains proper with respect to the direction of rotation and flow. This fan was tested with the rotor blades set at five different angles through feather pitch: design -80° , design -85° , design -90° , design -95° , and design -100° .

Test Facility

A schematic diagram of the Lewis single-stage compressor test facility is shown in figure 3. The drive system consists of a 2238-kilowatt electric motor with a variable frequency power supply. The motor is coupled to a 5.52-to-1 gear-ratio speed increaser gearbox that in turn drives the test rotor. Air enters the test facility at the inlet located on the roof of the building. The air passes through the thin-plate orifice plate, through the butterfly throttle valve, and into the plenum chamber. Next, the air is accelerated to the test stage and flows through a throttle valve into a double exit collector; it is then exhausted into one of the two laboratory exhauster systems.

To obtain the reverse flow through the test stage, the Lewis single-stage test facility (fig. 3) was modified. The 90° elbows were removed from both sides of the cylindrical collector and replaced by a screen (fig. 4). Air was drawn from the room and into the collector. The air then passed through the test section, into the plenum, and was exhausted through the inlet throttle valves and orifice piping system on the roof. Flow was varied by controlling the inlet throttle valves. The collector throttle valve was wide open for all tests.

Instrumentation

Radial surveys of the flow were made at three axial stations (fig. 2). At each of the measuring stations, two combination probes and two wedge probes were used (fig. 5). The total pressure, total temperature, and flow angle were measured by the combination probe (fig. 5(a)) and the static pressure was determined from the 8° C-shaped wedge probe (fig. 5(b)). Each probe was positioned with a null-balancing, stream directional sensitive control system that automatically alined the probes to the direction of flow. The thermocouple material was Chromel-constantan. Inner and outer wall static-pressure taps were located at the same axial station as the survey probes. The circumferential locations of both types of survey probes along with static taps are shown in figure 6.

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

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

Weight flow, kg/sec	±0.3
Rotative speed, rpm	±30
Flow angle, deg	±1
Temperature, K	±0.6
Total pressure, N/cm ²	
Station 1 and 2	±0.04
Station 3	±0.10
Static pressure, N/cm ²	
Station 1 and 2	±0.04
Station 3	±0.07

Test Procedure

Survey data were taken at speeds from 50 to 100 percent of design speed. The data at each speed from 70 to 100 percent were obtained over a range of weight flows from maximum flow to the stall condition. Data was obtained for maximum flow only at 50 and 60 percent speeds. The maximum flow was limited by system losses. Data were recorded at nine radial positions for each operating condition. The radial positions selected were the same as those used for forward flow operation. Values of pressure, temperature, and flow angle were recorded at each radial position.

Calculation Procedure

At each radial position and each measuring station, the values of total pressure, total temperature, static pressure, and flow angle were mass averaged to obtain the values presented in this report. Because of the physical construction of the wedge probe, it was not possible to obtain static pressure measurements at radial positions 1 and 2. The static pressures presented at radial positions 1 and 2 are based on a linear interpolation between radial position 3 and the outer wall.

The total pressure and total temperature at stations 1 and 3 were integrated to determine the stage total pressure ratio, stage total temperature ratio, and stage adiabatic efficiency shown in tables I to VIII. The weight flows are based on the orifice measurements.

The sea-level static thrust is composed of both the momentum thrust and the pressure thrust. The momentum thrust is a product of the flow rate and the outlet velocity. The pressure thrust consists of a product of the outlet area and the difference between the outlet static pressure and inlet total pressure.

RESULTS AND DISCUSSION

The results from this investigation are presented in two sections. The stage overall performance with reverse flow for each rotor blade setting angle is presented first. A discussion of radial performance follows for each configuration. All plotted data and some additional performance parameters are presented in tabular form in tables I to VIII. The definitions and units used for tabular data are presented in the appendix.

Overall Performance

The overall stage performance is presented in figure 7 as a function of weight flow for speeds from 50 to 100 percent of design speed for each rotor blade setting angle. The minimum flow point at design speed is at the near-stall operating condition for all the negative blade setting angles except the design -95° and -100° configurations. For design -95° , a valid data point at the near-stall condition was not obtained. Operation with the design -100° setting angle at the low weight flow was limited by leakage through the throttle valve in the maximum closed position. Stall was indicated by sudden pressure drops and increase in noise levels as the throttle valve was closed. For all speeds with the three positive blade setting angles the stage operated as though it was in stall at the maximum system flow although no measurements were taken to correlate this.

The highest weight flow of 15.87 kilograms per second was obtained with the rotor blade setting angle of design -95° at a pressure ratio of 1.144.

One purpose of the variable-pitch rotor blades was to provide the required reverse thrust upon landing. The effect of rotor blade setting angle on the maximum reverse thrust calculated from the aerodynamic measurements is as follows:

Setting angle, deg	Stage	Sea-level static thrust, N
Design	51B	4600
Design -80	51BR6	-1620
Design -85	51BR5	-1790
Design -90	51BR2	-1980
Design -95	51BR4	-2420
Design -100	51BR3	-2320
Design +85	51BR9	-1000
Design +95	51BR7	-1000
Design +105	51BR8	-970

The thrust values obtained through flat pitch are significantly less than those obtained through feather pitch. This is attributed to the blade camber being opposite the direction of rotation for the flat pitch setting angles. The maximum reverse thrust of 52.5 percent of the design forward thrust was obtained with a rotor blade setting angle of design -95° .

Radial Distributions

Values of total pressure, static pressure, total temperature, and flow angle obtained in the radial surveys at stations 1, 2, and 3 are listed in tables I to VIII for all tested conditions. Typical radial distributions of pressure and flow angle are presented in figure 8 for each rotor blade setting angle at design speed and maximum flow.

Most of the total pressure rise across the rotor was observed in the outer 50 percent of the blade span. The measured inlet total pressure was relatively constant from the outer to inner wall. Over the inner third of the passage the static and total pressures are approximately equal indicating very low throughflow velocity in this region. This trend was expected because the blade chord in the hub region is almost perpendicular to the axial direction resulting in blockage to the flow.

As the blade is set to more negative angles (figs. 8(a) to (e)), the low or zero flow region moves further out from the inner wall. As the blade angle is set to more positive angles (figs. 8(f) to (h)), the zero flow region moves closer to the inner wall.

SUMMARY OF RESULTS

This report presents the reverse-flow performance of a 51-centimeter-diameter low pressure ratio fan stage compressor. Design parameters in normal flow are a total pressure ratio of 1.15 at an equivalent weight flow of 29.9 kilograms per second and a rotor tip speed of 243.8 meters per second. The stage performance was obtained at five negative rotor blade setting angles (design -80° , -85° , -90° , -95° , and -100°) by rotating the blades through feather pitch and three positive setting angles (design $+85^{\circ}$, $+95^{\circ}$, and $+105^{\circ}$) through flat pitch. Radial surveys of pressure, temperature, and flow angle were recorded for speeds of 50 to 100 percent of design speed. The aerodynamic measurements were used to calculate the sea-level static thrust. The following principal results were obtained:

1. The highest weight flow of 15.87 kilograms per second was obtained with the rotor setting angle of design -95° at a pressure ratio of 1.144. This configuration produced the maximum thrust in reverse flow, 52.5 percent of the design forward sea-level static thrust.

2. For all three positive rotor setting angles, the stage appeared to operate in stall at the maximum system flow over the range of rotative speed.
3. For the most part, only the outer 50 percent of the rotor blade span produces significant pressure rise in reverse flow.
4. Because of the rotor blade being almost perpendicular to the axial direction in the hub, there was little or no flow in the inner third of the exit passage for all setting angles. As the blade was set to more negative angles, the no flow region moves further out from the inner wall.

Lewis Research Center,
National Aeronautics and Space Administration,
Cleveland, Ohio, July 6, 1976,
505-04.

APPENDIX - DEFINITIONS AND UNITS USED IN TABLES

ABS BETAZ	absolute flow angle, deg
RP	radial position
RADIUS	radius, cm
STATIC PRESS	static pressure, N/cm^2
TOTAL PRESS	total pressure, N/cm^2
TOTAL TEMP	total temperature, K
WEIGHT FLOW	flow at orifice, kg/sec
ROTATIVE SPEED	rotative speed, rpm

REFERENCES

1. Kovich, George; and Steinke, Ronald J.: Performance of a Low-Pressure-Ratio Low-Tip-Speed Fan Stage with a Blade Tip Solidity of 0.65. NASA TM X-3341, 1976.
2. Kovich, George; Tysl, Edward R.; and Moore, Royce D.: Performance of Low-Pressure-Ratio Fan Stage at Two Off-Design Blade Setting Angles. NASA TM X-3447, 1976.
3. Urasek, Donald C.; and Janetzke, David C.: Performance of Tandem-Bladed Transonic Compressor Rotor with Tip Speed of 1375 Feet Per Second. NASA TM X-2484, 1972.
4. Glawe, George E.; Krause, Lloyd N.; and Dudzinski, Thomas J.: A Small Combination Sensing Probe for Measurement of Temperature, Pressure, and Flow Direction. NASA TN D-4816, 1968.

TABLE I. - PERFORMANCE FOR

STAGE 51BR9-51R

(a) Reading number 2094

STAGE TOTAL PRESSURE RATIO	1.024
STAGE TOTAL TEMPERATURE RATIO	1.014
STAGE ADIABATIC EFFICIENCY	0.505
WEIGHT FLOW	5.13
ROTATIVE SPEED	4616.7
PERCENT DESIGN SPEED	50.4

. . . STATION 1 . . .					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.12	10.09	288.54	-13.73
2	23.894	10.13	10.09	288.26	-13.75
3	23.175	10.13	10.09	288.11	-11.92
4	21.011	10.13	10.09	288.03	-4.69
5	18.105	10.13	10.09	288.11	-2.00
6	15.138	10.14	10.09	288.06	-0.74
7	12.807	10.14	10.10	288.23	3.04
8	11.981	10.14	10.10	288.34	4.43
9	11.130	10.14	10.09	288.39	3.68

. . . STATION 2 . . .					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	10.09	10.07	288.93	5.25
2	23.873	10.10	10.07	288.21	5.85
3	23.114	10.11	10.07	288.06	8.38
4	20.836	10.13	10.07	288.13	10.74
5	17.798	10.13	10.07	288.08	13.00
6	14.742	10.13	10.08	288.02	18.49
7	12.474	10.14	10.09	288.41	21.28
8	11.712	10.14	10.09	288.59	22.08
9	10.947	10.13	10.09	288.90	24.06

. . . STATION 3 . . .					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	10.62	10.27	295.30	55.91
2	23.863	10.51	10.22	294.13	50.85
3	23.078	10.44	10.18	292.99	42.35
4	20.714	10.31	10.16	290.66	21.46
5	17.579	10.17	10.15	289.53	9.81
6	14.503	10.13	10.13	291.25	16.54
7	12.273	10.13	10.13	292.06	12.38
8	11.549	10.13	10.13	292.24	16.85
9	10.833	10.13	10.13	292.11	21.85

TABLE I. - Continued.

(b) Reading number 2095

STAGE TOTAL PRESSURE RATIO	1.035
STAGE TOTAL TEMPERATURE RATIO	1.018
STAGE ADIABATIC EFFICIENCY	0.544
WEIGHT FLOW	6.03
ROTATIVE SPEED	5511.9
PERCENT DESIGN SPEED	60.1

* * * STATION 1 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.12	10.07	288.39	-13.29
2	23.894	10.12	10.07	288.44	-10.65
3	23.175	10.12	10.07	288.06	-8.61
4	21.011	10.13	10.08	288.14	-3.74
5	18.105	10.14	10.08	288.31	-1.99
6	15.138	10.14	10.08	287.89	1.26
7	12.807	10.14	10.08	287.91	3.22
8	11.981	10.14	10.08	288.24	3.74
9	11.130	10.14	10.08	288.47	4.47

* * * STATION 2 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	10.08	10.04	288.94	3.98
2	23.873	10.09	10.04	288.70	4.40
3	23.114	10.10	10.04	288.06	8.32
4	20.836	10.13	10.04	288.04	10.79
5	17.798	10.14	10.05	288.05	13.05
6	14.742	10.13	10.06	288.05	18.48
7	12.474	10.14	10.07	288.03	21.32
8	11.712	10.14	10.08	288.71	21.85
9	10.947	10.13	10.08	289.79	23.12

* * * STATION 3 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	10.82	10.32	298.16	56.48
2	23.863	10.66	10.26	296.50	50.17
3	23.078	10.57	10.20	294.82	41.97
4	20.714	10.38	10.18	291.27	20.72
5	17.579	10.18	10.16	289.43	7.73
6	14.503	10.13	10.13	291.74	33.81
7	12.273	10.14	10.13	293.05	65.55
8	11.549	10.14	10.13	293.00	71.84
9	10.833	10.14	10.13	292.95	73.80

TABLE I. - Continued.

(c) Reading number 2096

STAGE TOTAL PRESSURE RATIO	1.052
STAGE TOTAL TEMPERATURE RATIO	1.018
STAGE ADIABATIC EFFICIENCY	0.484
WEIGHT FLOW	5.64
ROTATIVE SPEED	5511.8
PERCENT DESIGN SPEED	60.1

* * * STATION 1 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.12	10.07	288.07	-14.13
2	23.894	10.13	10.08	287.91	-13.43
3	23.175	10.13	10.08	288.26	-12.01
4	21.011	10.13	10.08	288.00	-5.36
5	18.105	10.13	10.08	288.30	-2.72
6	15.138	10.13	10.09	288.03	-1.09
7	12.807	10.14	10.08	288.08	2.17
8	11.981	10.14	10.09	288.46	4.08
9	11.130	10.14	10.08	289.00	3.00

* * * STATION 2 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	10.18	10.06	294.72	-80.92
2	23.873	10.08	10.05	291.86	-68.40
3	23.114	10.04	10.05	290.23	-52.49
4	20.836	10.12	10.05	288.36	9.47
5	17.798	10.13	10.04	288.21	13.21
6	14.742	10.13	10.06	287.99	18.76
7	12.474	10.14	10.07	288.42	21.52
8	11.712	10.14	10.08	288.67	22.27
9	10.947	10.13	10.08	289.91	23.66

* * * STATION 3 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	10.81	10.31	298.54	60.31
2	23.863	10.64	10.26	296.53	54.32
3	23.078	10.52	10.20	295.06	43.26
4	20.714	10.36	10.18	290.81	18.97
5	17.579	10.17	10.16	289.94	7.77
6	14.503	10.14	10.13	292.53	42.35
7	12.273	10.14	10.13	293.22	60.37
8	11.549	10.14	10.13	293.14	71.97
9	10.833	10.14	10.13	293.59	77.06

TABLE I. - Continued.

(d) Reading number 2097

STAGE TOTAL PRESSURE RATIO	1.049
STAGE TOTAL TEMPERATURE RATIO	1.026
STAGE ADIABATIC EFFICIENCY	0.527
WEIGHT FLOW	7.05
ROTATIVE SPEED	6440.1
PERCENT DESIGN SPEED	70.3

. . . STATION 1 . . .					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.12	10.04	287.69	-12.91
2	23.894	10.11	10.05	288.19	-12.32
3	23.175	10.13	10.05	288.11	-9.91
4	21.011	10.13	10.05	288.20	-4.44
5	18.105	10.13	10.06	288.40	-1.08
6	15.138	10.14	10.06	287.78	0.14
7	12.807	10.14	10.06	288.35	3.71
8	11.981	10.14	10.06	288.47	3.69
9	11.130	10.14	10.06	288.80	3.15

. . . STATION 2 . . .					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	10.05	10.02	286.64	1.89
2	23.873	10.07	10.02	288.69	2.75
3	23.114	10.09	10.02	288.22	7.54
4	20.836	10.13	10.01	288.19	10.98
5	17.793	10.13	10.01	288.32	13.74
6	14.742	10.14	10.04	287.99	18.74
7	12.474	10.14	10.05	288.39	21.74
8	11.712	10.14	10.05	289.11	21.97
9	10.947	10.12	10.06	290.24	25.58

. . . STATION 3 . . .					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.643	11.10	10.38	301.84	56.45
2	23.863	10.87	10.30	299.51	50.63
3	23.078	10.72	10.23	297.46	41.54
4	20.714	10.47	10.19	292.88	20.60
5	17.579	10.21	10.17	290.56	2.89
6	14.503	10.14	10.13	293.35	45.63
7	12.273	10.14	10.13	294.40	77.10
8	11.549	10.14	10.13	294.71	73.86
9	10.833	10.14	10.13	294.95	81.90

TABLE I. - Continued.

(e) Reading number 2098

STAGE TOTAL PRESSURE RATIO	1.043
STAGE TOTAL TEMPERATURE RATIO	1.026
STAGE ADIABATIC EFFICIENCY	0.473
WEIGHT FLOW	6.52
ROTATIVE SPEED	6438.2
PERCENT DESIGN SPEED	70.2

• • •		STATION 1			• • •	
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS	BETAZ
1	24.610	10.12	10.06	288.49	-13.24	
2	23.894	10.13	10.06	288.08	-12.79	
3	23.175	10.12	10.07	288.35	-8.79	
4	21.011	10.13	10.07	288.15	-3.98	
5	18.105	10.13	10.07	287.66	-1.73	
6	15.138	10.14	10.07	288.19	0.22	
7	12.807	10.14	10.07	288.41	3.16	
8	11.981	10.14	10.07	288.54	4.81	
9	11.130	10.14	10.07	288.73	5.66	

• • •		STATION 2			• • •	
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS	BETAZ
1	24.630	10.21	10.07	297.83	-80.33	
2	23.873	10.07	10.07	294.44	-70.96	
3	23.114	10.01	10.06	291.40	-39.20	
4	20.856	10.10	10.04	288.51	7.64	
5	17.798	10.13	10.01	288.07	13.60	
6	14.742	10.13	10.04	288.62	18.61	
7	12.474	10.14	10.05	288.52	21.66	
8	11.712	10.13	10.06	289.36	21.77	
9	10.947	10.13	10.06	290.84	23.05	

• • •		STATION 3			• • •	
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS	BETAZ
1	24.648	11.07	10.37	302.62	59.99	
2	23.863	10.82	10.30	299.78	54.11	
3	23.078	10.67	10.23	297.51	43.92	
4	20.714	10.44	10.19	292.20	18.80	
5	17.579	10.19	10.17	290.37	5.30	
6	14.503	10.13	10.13	293.49	46.19	
7	12.273	10.14	10.13	294.38	65.43	
8	11.549	10.14	10.13	294.67	76.00	
9	10.833	10.14	10.13	294.99	80.17	

TABLE I. - Continued.

(f) Reading number 2099

STAGE TOTAL PRESSURE RATIO	1.059
STAGE TOTAL TEMPERATURE RATIO	1.033
STAGE ADIABATIC EFFICIENCY	0.496
WEIGHT FLOW	7.62
ROTATIVE SPEED	7378.4
PERCENT DESIGN SPEED	80.5

* * * STATION 1 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.11	10.03	287.97	-13.10
2	23.894	10.13	10.03	288.19	-10.87
3	23.175	10.13	10.04	287.93	-8.41
4	21.011	10.12	10.04	288.18	-2.99
5	18.105	10.14	10.04	288.16	-1.61
6	15.138	10.14	10.04	288.11	1.10
7	12.807	10.14	10.05	288.19	3.83
8	11.981	10.15	10.05	288.62	3.83
9	11.130	10.15	10.05	288.86	4.51

* * * STATION 2 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	10.02	10.01	295.59	-69.28
2	23.873	9.97	10.02	292.36	-37.76
3	23.114	10.01	10.02	289.74	-18.52
4	20.836	10.11	10.01	288.48	10.10
5	17.798	10.14	9.98	288.21	13.67
6	14.742	10.13	10.01	288.21	18.92
7	12.474	10.14	10.03	288.65	21.70
8	11.712	10.14	10.04	289.19	21.80
9	10.947	10.13	10.05	290.91	22.72

* * * STATION 3 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	11.37	10.44	306.61	58.39
2	23.863	11.05	10.34	303.29	52.81
3	23.078	10.85	10.25	300.09	43.09
4	20.714	10.53	10.21	293.48	19.31
5	17.579	10.21	10.17	290.95	2.92
6	14.503	10.13	10.13	294.02	49.56
7	12.273	10.14	10.12	295.05	68.64
8	11.549	10.14	10.12	295.35	73.50
9	10.833	10.14	10.13	295.56	73.47

TABLE I. - Continued.

(g) Reading number 2100

STAGE TOTAL PRESSURE RATIO	1.055
STAGE TOTAL TEMPERATURE RATIO	1.034
STAGE ADIABATIC EFFICIENCY	0.454
WEIGHT FLOW	7.33
ROTATIVE SPEED	7370.1
PERCENT DESIGN SPEED	80.4

. . . STATION 1 . . .					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.11	10.04	288.12	-12.15
2	23.894	10.13	10.04	288.47	-11.27
3	23.175	10.12	10.05	288.18	-9.47
4	21.011	10.13	10.05	288.18	-4.16
5	18.105	10.13	10.05	287.94	-1.57
6	15.138	10.14	10.05	287.94	0.73
7	12.807	10.14	10.05	288.38	4.49
8	11.981	10.14	10.05	288.38	4.06
9	11.130	10.14	10.05	289.07	4.74

. . . STATION 2 . . .					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	10.46	10.08	302.89	-82.15
2	23.873	10.20	10.07	299.34	-76.08
3	23.114	9.99	10.05	294.58	-52.41
4	20.836	10.08	10.02	289.04	-5.62
5	17.798	10.13	9.97	288.12	13.87
6	14.742	10.13	10.01	287.86	18.89
7	12.474	10.14	10.03	288.92	21.90
8	11.712	10.14	10.04	289.53	21.93
9	10.947	10.13	10.05	291.00	22.84

. . . STATION 3 . . .					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	11.33	10.44	306.94	60.49
2	23.863	11.03	10.35	303.50	55.33
3	23.078	10.82	10.26	300.23	43.95
4	20.714	10.53	10.22	293.34	18.30
5	17.579	10.21	10.18	291.00	4.92
6	14.503	10.13	10.14	293.84	65.68
7	12.273	10.15	10.13	295.69	71.29
8	11.549	10.15	10.13	295.65	77.69
9	10.833	10.14	10.13	296.02	76.08

TABLE I. - Continued.

(h) Reading number 2101

STAGE TOTAL PRESSURE RATIO	1.070
STAGE TOTAL TEMPERATURE RATIO	1.041
STAGE ADIABATIC EFFICIENCY	0.475
WEIGHT FLOW	8.38
ROTATIVE SPEED	8242.5
PERCENT DESIGN SPEED	89.9

* * * STATION 1 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.11	10.01	287.91	-13.15
2	23.894	10.12	10.01	287.92	-11.21
3	23.175	10.13	10.01	288.05	-8.75
4	21.011	10.13	10.02	287.76	-4.43
5	18.105	10.13	10.02	288.41	-1.47
6	15.138	10.14	10.02	288.14	1.64
7	12.807	10.14	10.02	288.42	1.49
8	11.981	10.14	10.02	288.84	1.92
9	11.130	10.14	10.02	289.20	4.93

* * * STATION 2 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	10.15	10.01	300.97	-81.65
2	23.873	9.97	10.01	296.30	-66.92
3	23.114	9.94	10.00	291.57	-36.17
4	20.036	10.10	9.98	288.37	8.13
5	17.793	10.13	9.94	288.32	13.74
6	14.742	10.13	9.98	283.19	18.76
7	12.474	10.14	10.01	283.50	21.73
8	11.712	10.14	10.01	289.04	21.62
9	10.947	10.12	10.02	290.42	22.45

* * * STATION 3 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	11.65	10.51	310.83	59.33
2	23.363	11.25	10.39	305.91	54.14
3	23.078	11.00	10.27	303.09	42.90
4	20.714	10.62	10.25	294.53	18.29
5	17.579	10.25	10.19	291.61	1.95
6	14.503	10.12	10.13	294.46	62.02
7	12.273	10.14	10.12	293.25	78.22
8	11.549	10.14	10.12	293.46	76.87
9	10.833	10.14	10.12	296.75	74.44

TABLE I. - Continued.

(i) Reading number 2102

STAGE TOTAL PRESSURE RATIO	1.068
STAGE TOTAL TEMPERATURE RATIO	1.042
STAGE ADIABATIC EFFICIENCY	0.451
WEIGHT FLOW	8.11
ROTATIVE SPEED	8251.2
PERCENT DESIGN SPEED	90.0

* * * STATION 1 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.12	10.02	288.40	-13.17
2	23.894	10.12	10.02	287.93	-11.15
3	23.175	10.12	10.03	288.10	-8.40
4	21.011	10.13	10.03	288.18	-4.03
5	18.105	10.13	10.03	288.07	-1.83
6	15.138	10.14	10.03	288.00	1.32
7	12.807	10.14	10.03	288.11	4.50
8	11.981	10.15	10.03	288.76	3.73
9	11.130	10.15	10.03	288.80	3.11

* * * STATION 2 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	10.55	10.07	306.78	-82.17
2	23.873	10.23	10.05	301.24	-77.18
3	23.114	9.98	10.04	296.14	-56.00
4	20.836	10.04	10.00	288.99	-19.77
5	17.798	10.13	9.94	288.34	13.75
6	14.742	10.13	9.98	288.28	18.83
7	12.474	10.14	10.01	288.55	21.89
8	11.712	10.14	10.02	289.03	21.73
9	10.947	10.13	10.02	290.94	22.55

* * * STATION 3 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	11.64	10.51	311.58	60.73
2	23.863	11.27	10.41	307.50	56.14
3	23.078	10.97	10.29	303.26	43.86
4	20.714	10.62	10.24	294.58	19.75
5	17.579	10.22	10.20	291.17	4.97
6	14.503	10.13	10.14	294.98	54.68
7	12.273	10.15	10.13	296.65	75.47
8	11.549	10.15	10.13	296.89	79.06
9	10.833	10.15	10.13	297.02	75.66

TABLE I. - Continued.

(j) Reading number 2103

STAGE TOTAL PRESSURE RATIO	1.089
STAGE TOTAL TEMPERATURE RATIO	1.051
STAGE ADIABATIC EFFICIENCY	0.486
WEIGHT FLOW	9.21
ROTATIVE SPEED	9181.5
PERCENT DESIGN SPEED	100.2

		STATION 1				
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS. BETAZ	
1	24.610	10.10	9.98	288.10	-12.72	
2	23.894	10.09	9.98	288.31	-9.16	
3	23.175	10.12	9.98	287.88	-8.21	
4	21.011	10.12	10.00	287.91	-2.77	
5	18.105	10.14	10.00	287.88	-1.77	
6	15.158	10.15	10.00	288.16	0.24	
7	12.807	10.15	9.99	288.55	-22.25	
8	11.981	10.16	9.97	288.99	-26.52	
9	11.130	10.15	9.96	290.03	-22.82	

		STATION 2				
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS. BETAZ	
1	24.630	10.02	9.96	300.80	-78.78	
2	23.875	9.81	9.95	294.62	-54.05	
3	23.114	9.94	9.94	290.16	-19.19	
4	20.835	10.10	9.96	288.83	9.44	
5	17.798	10.14	9.90	288.08	13.60	
6	14.742	10.13	9.95	288.28	18.86	
7	12.474	10.13	9.98	289.92	21.37	
8	11.712	10.12	9.99	290.81	22.29	
9	10.947	10.12	9.99	292.20	23.93	

		STATION 3				
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS. BETAZ	
1	24.648	12.04	10.59	316.22	58.41	
2	23.863	11.54	10.45	311.16	52.30	
3	23.078	11.22	10.30	306.60	42.56	
4	20.714	10.74	10.26	296.07	17.94	
5	17.579	10.25	10.20	291.74	1.86	
6	14.503	10.13	10.14	295.89	51.14	
7	12.273	10.15	10.13	297.63	76.49	
8	11.549	10.15	10.13	297.95	80.01	
9	10.833	10.14	10.13	298.34	75.48	

TABLE I. - Concluded.

(k) Reading number 2104

STAGE TOTAL PRESSURE RATIO	1.025
STAGE TOTAL TEMPERATURE RATIO	1.050
STAGE ADIABATIC EFFICIENCY	0.460
WEIGHT FLOW	9.08
ROTATIVE SPEED	9167.7
PERCENT DESIGN SPEED	100.0

STATION 1					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.11	9.99	287.95	-12.97
2	23.894	10.11	9.99	287.88	-9.45
3	23.175	10.12	9.99	287.96	-7.56
4	21.011	10.13	9.99	287.84	-4.32
5	18.105	10.14	10.00	288.42	-5.15
6	15.158	10.15	10.00	288.08	-17.64
7	12.007	10.14	10.00	288.55	2.94
8	11.981	10.15	10.00	288.42	5.06
9	11.130	10.14	10.00	289.27	4.60

STATION 2					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.650	10.47	10.04	305.90	-81.46
2	23.873	10.10	10.02	306.10	-72.98
3	23.114	10.15	10.01	301.68	-63.35
4	20.836	10.11	9.96	294.23	-28.86
5	17.798	10.08	9.89	291.06	3.81
6	14.742	10.09	9.95	288.89	9.98
7	12.474	10.14	9.98	288.12	17.85
8	11.712	10.13	9.99	288.52	20.32
9	10.947	10.13	9.99	289.21	21.66

STATION 3					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.643	11.98	10.59	316.58	61.24
2	23.863	11.49	10.45	311.48	55.08
3	23.078	11.15	10.31	306.54	43.47
4	20.714	10.72	10.25	295.91	18.29
5	17.579	10.25	10.21	291.84	3.08
6	14.503	10.13	10.13	296.14	51.22
7	12.273	10.14	10.12	297.77	79.14
8	11.549	10.14	10.12	297.98	77.12
9	10.833	10.14	10.12	298.14	75.56

TABLE II. - PERFORMANCE FOR

STAGE 51BR7-51R

(a) Reading number 2056

STAGE TOTAL PRESSURE RATIO	1.023
STAGE TOTAL TEMPERATURE RATIO	1.015
STAGE ADIABATIC EFFICIENCY	0.443
WEIGHT FLOW	4.87
ROTATIVE SPEED	4622.0
PERCENT DESIGN SPEED	50.4

* * * STATION 1 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.13	10.09	288.50	-12.29
2	23.894	10.13	10.09	288.50	-11.61
3	23.175	10.13	10.10	288.06	-11.00
4	21.011	10.13	10.09	288.10	-6.84
5	18.105	10.13	10.09	288.09	-1.78
6	15.138	10.13	10.10	288.25	-0.27
7	12.807	10.14	10.10	288.04	1.86
8	11.981	10.14	10.10	288.14	3.47
9	11.130	10.14	10.09	288.17	3.25

* * * STATION 2 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	10.79	10.10	301.54	-82.26
2	23.873	10.61	10.02	299.17	-82.27
3	23.114	10.46	9.93	297.17	-82.31
4	20.836	10.15	9.94	292.83	-55.39
5	17.798	10.10	9.97	289.48	2.74
6	14.742	10.13	10.02	288.25	14.94
7	12.474	10.14	10.04	288.15	18.20
8	11.712	10.13	10.04	288.27	18.77
9	10.947	10.13	10.05	288.62	18.95

* * * STATION 3 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	10.73	10.30	297.79	66.42
2	23.863	10.56	10.25	295.90	63.31
3	23.078	10.45	10.20	294.36	54.35
4	20.714	10.30	10.14	291.10	28.03
5	17.579	10.18	10.12	289.05	4.72
6	14.503	10.12	10.12	289.72	5.19
7	12.273	10.11	10.12	291.51	44.30
8	11.549	10.11	10.12	292.04	67.82
9	10.833	10.12	10.12	291.93	78.41

TABLE II. - Continued.

(b) Reading number 2057

STAGE TOTAL PRESSURE RATIO	1.032
STAGE TOTAL TEMPERATURE RATIO	1.021
STAGE ADIABATIC EFFICIENCY	0.437
WEIGHT FLOW	5.77
ROTATIVE SPEED	5497.7
PERCENT DESIGN SPEED	60.0

* * * STATION 1 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.12	10.08	288.04	-12.14
2	23.894	10.13	10.08	288.40	-10.39
3	23.175	10.12	10.08	288.46	-8.26
4	21.011	10.13	10.08	288.14	-4.17
5	18.105	10.13	10.08	287.91	-1.22
6	15.138	10.14	10.08	288.10	-3.91
7	12.807	10.14	10.08	288.12	3.67
8	11.981	10.14	10.08	288.21	2.33
9	11.130	10.14	10.08	288.95	0.32

* * * STATION 2 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	11.05	10.09	305.98	-82.24
2	23.873	10.83	9.98	303.73	-82.28
3	23.114	10.58	9.86	301.08	-82.30
4	20.836	10.15	9.86	294.71	-54.91
5	17.798	10.09	9.91	289.92	3.11
6	14.742	10.13	9.98	288.53	16.07
7	12.474	10.14	10.01	288.19	19.37
8	11.712	10.13	10.01	288.28	19.79
9	10.947	10.13	10.02	288.85	19.86

* * * STATION 3 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	10.95	10.36	301.32	66.91
2	23.863	10.74	10.30	299.29	63.91
3	23.078	10.59	10.23	297.27	53.76
4	20.714	10.38	10.15	292.63	27.40
5	17.579	10.20	10.11	289.57	4.15
6	14.503	10.12	10.11	290.10	0.96
7	12.273	10.10	10.12	292.16	21.85
8	11.549	10.11	10.12	292.33	58.14
9	10.833	10.11	10.12	292.52	63.10

TABLE II. - Continued.

(c) Reading number 2058

STAGE TOTAL PRESSURE RATIO	1.043
STAGE TOTAL TEMPERATURE RATIO	1.027
STAGE ADIABATIC EFFICIENCY	0.441
WEIGHT FLOW	6.68
ROTATIVE SPEED	6423.6
PERCENT DESIGN SPEED	70.1

* * * STATION 1 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.12	10.06	287.82	-11.69
2	23.894	10.13	10.06	287.94	-10.84
3	23.175	10.12	10.06	288.06	-7.73
4	21.011	10.13	10.06	288.20	-3.56
5	18.105	10.13	10.06	288.11	-0.88
6	15.138	10.14	10.06	288.41	-0.02
7	12.807	10.14	10.06	288.08	3.01
8	11.981	10.14	10.06	288.32	1.61
9	11.130	10.14	10.06	288.58	5.97

* * * STATION 2 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	11.43	10.07	312.80	-82.23
2	23.873	11.10	9.93	309.05	-82.24
3	23.114	10.76	9.77	305.39	-82.26
4	20.836	10.16	9.77	297.06	-54.63
5	17.798	10.07	9.84	290.84	2.89
6	14.742	10.13	9.92	288.87	16.40
7	12.474	10.13	9.96	288.18	19.56
8	11.712	10.14	9.96	288.33	20.17
9	10.947	10.12	9.97	289.25	20.20

* * * STATION 3 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	11.26	10.44	305.91	66.80
2	23.863	10.95	10.35	302.96	63.17
3	23.078	10.76	10.27	300.13	54.05
4	20.714	10.46	10.15	294.11	26.92
5	17.579	10.23	10.11	290.01	3.44
6	14.503	10.12	10.11	290.71	0.98
7	12.273	10.10	10.11	292.49	27.98
8	11.549	10.11	10.11	293.04	50.88
9	10.833	10.11	10.11	293.69	68.43

TABLE II. - Continued.

(d) Reading number 2060

STAGE TOTAL PRESSURE RATIO	1.070
STAGE TOTAL TEMPERATURE RATIO	1.046
STAGE ADIABATIC EFFICIENCY	0.422
WEIGHT FLOW	8.37
ROTATIVE SPEED	8251.8
PERCENT DESIGN SPEED	90.0

. . . STATION 1 . . .					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.12	10.01	288.18	-12.42
2	23.894	10.11	10.02	288.09	-8.25
3	23.175	10.12	10.02	288.25	-7.36
4	21.011	10.13	10.02	288.07	-3.97
5	18.105	10.13	10.01	287.99	-1.87
6	15.138	10.14	10.01	288.04	0.49
7	12.807	10.14	10.01	288.17	2.95
8	11.981	10.14	10.01	288.60	3.64
9	11.130	10.14	10.01	289.40	3.43

. . . STATION 2 . . .					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	12.42	10.06	330.81	-82.25
2	23.875	11.81	9.82	323.56	-82.28
3	23.114	11.23	9.57	317.65	-82.33
4	20.835	10.20	9.57	303.06	-54.74
5	17.798	10.04	9.66	292.79	3.32
6	14.742	10.13	9.78	288.77	16.66
7	12.474	10.14	9.85	288.35	20.46
8	11.712	10.14	9.86	288.96	20.95
9	10.947	10.12	9.88	290.01	20.34

. . . STATION 3 . . .					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	11.97	10.64	317.46	66.53
2	23.863	11.48	10.50	312.42	63.23
3	23.078	11.15	10.34	307.97	53.46
4	20.714	10.68	10.17	298.25	26.69
5	17.579	10.29	10.09	292.08	2.84
6	14.503	10.11	10.09	292.77	-0.01
7	12.273	10.09	10.10	295.99	41.44
8	11.549	10.10	10.10	296.67	69.61
9	10.833	10.11	10.10	296.93	67.21

TABLE II. - Concluded.

(e) Reading number 2061

STAGE TOTAL PRESSURE RATIO	1.084
STAGE TOTAL TEMPERATURE RATIO	1.056
STAGE ADIABATIC EFFICIENCY	0.420
WEIGHT FLOW	9.19
ROTATIVE SPEED	9172.2
PERCENT DESIGN SPEED	100.1

* * * STATION 1 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.12	9.98	288.13	-10.56
2	23.894	10.11	9.98	287.71	-11.37
3	23.175	10.13	9.98	287.87	-7.50
4	21.011	10.12	9.98	287.97	-5.24
5	18.105	10.14	9.98	288.19	-4.89
6	15.138	10.14	9.98	288.44	-2.64
7	12.807	10.14	9.98	288.12	5.48
8	11.981	10.14	9.98	288.67	0.22
9	11.130	10.14	9.98	289.17	3.29

* * * STATION 2 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	12.94	10.04	339.90	-82.30
2	23.873	12.28	9.75	332.51	-82.35
3	23.114	11.55	9.46	324.74	-82.20
4	20.836	10.24	9.44	306.62	-55.22
5	17.798	10.03	9.55	293.86	2.72
6	14.742	10.12	9.70	288.94	16.92
7	12.474	10.13	9.78	288.33	20.93
8	11.712	10.13	9.80	288.61	21.47
9	10.947	10.11	9.81	289.59	20.87

* * * STATION 3 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	12.39	10.75	324.35	66.67
2	23.863	11.78	10.57	317.94	63.13
3	23.078	11.37	10.39	312.50	53.56
4	20.714	10.79	10.17	300.12	26.41
5	17.579	10.32	10.08	292.50	2.39
6	14.503	10.11	10.08	293.08	-0.21
7	12.273	10.08	10.08	296.99	45.33
8	11.549	10.09	10.09	297.94	75.49
9	10.833	10.09	10.08	298.32	74.15

**TABLE III. - PERFORMANCE FOR
STAGE 51BR8-51R**

(a) Reading number 2071

STAGE TOTAL PRESSURE RATIO	1.019
STAGE TOTAL TEMPERATURE RATIO	1.017
STAGE ADIABATIC EFFICIENCY	0.319
WEIGHT FLOW	4.21
ROTATIVE SPEED	4604.4
PERCENT DESIGN SPEED	50.2

. . . STATION 1 . . .					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.12	10.11	288.77	-10.36
2	23.894	10.13	10.11	288.64	-10.32
3	23.175	10.13	10.11	288.29	-10.69
4	21.011	10.13	10.11	288.11	-8.73
5	18.105	10.13	10.10	288.05	-5.45
6	15.138	10.13	10.10	288.05	-3.26
7	12.807	10.13	10.10	287.96	-0.04
8	11.981	10.14	10.10	288.10	2.39
9	11.130	10.13	10.10	288.05	3.58

. . . STATION 2 . . .					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	11.10	10.24	305.02	-82.28
2	23.873	10.98	10.21	303.62	-82.28
3	23.114	10.80	10.18	301.06	-82.27
4	20.836	10.34	10.07	296.61	-75.28
5	17.798	10.06	9.92	292.39	-18.59
6	14.742	10.12	9.96	289.19	15.09
7	12.474	10.14	9.99	288.01	17.52
8	11.712	10.14	10.00	288.09	17.82
9	10.947	10.14	10.00	288.39	17.55

. . . STATION 3 . . .					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	10.75	10.30	300.34	73.59
2	23.863	10.56	10.26	298.47	74.21
3	23.078	10.45	10.20	296.76	71.14
4	20.714	10.31	10.15	293.83	39.50
5	17.579	10.23	10.12	289.80	9.54
6	14.503	10.16	10.13	289.73	6.11
7	12.273	10.13	10.13	291.70	10.15
8	11.549	10.13	10.13	292.19	5.65
9	10.833	10.13	10.13	292.74	6.58

TABLE III. - Continued.

(b) Reading number 2072

STAGE TOTAL PRESSURE RATIO	1.026
STAGE TOTAL TEMPERATURE RATIO	1.024
STAGE ADIABATIC EFFICIENCY	0.309
WEIGHT FLOW	4.98
ROTATIVE SPEED	5488.4
PERCENT DESIGN SPEED	59.9

* * *					
STATION 1					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.13	10.10	288.43	-10.77
2	23.894	10.13	10.10	288.27	-10.06
3	23.175	10.13	10.10	288.06	-10.10
4	21.011	10.13	10.09	288.13	-7.55
5	18.105	10.13	10.09	288.05	-6.29
6	15.138	10.13	10.09	288.19	-3.88
7	12.807	10.13	10.09	288.07	-2.91
8	11.981	10.13	10.09	288.53	0.11
9	11.130	10.13	10.09	288.23	-2.35

* * *					
STATION 2					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	11.56	10.28	312.49	-82.22
2	23.873	11.35	10.23	309.45	-82.23
3	23.114	11.13	10.18	306.92	-82.23
4	20.836	10.45	10.04	300.11	-75.38
5	17.798	10.04	9.84	294.03	-19.01
6	14.742	10.12	9.90	289.74	15.96
7	12.474	10.14	9.93	287.96	18.57
8	11.712	10.14	9.93	288.08	18.75
9	10.947	10.13	9.94	288.22	18.85

* * *					
STATION 3					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	10.98	10.37	304.60	74.31
2	23.863	10.73	10.30	302.22	74.66
3	23.078	10.57	10.24	300.19	71.37
4	20.714	10.37	10.16	296.09	39.54
5	17.579	10.27	10.12	290.73	7.85
6	14.503	10.17	10.13	289.95	3.07
7	12.273	10.13	10.13	292.13	14.44
8	11.549	10.13	10.13	292.82	3.32
9	10.833	10.13	10.13	293.34	2.76

TABLE III. - Continued.

(c) Reading number 2073

STAGE TOTAL PRESSURE RATIO	1.036
STAGE TOTAL TEMPERATURE RATIO	1.033
STAGE ADIABATIC EFFICIENCY	0.306
WEIGHT FLOW	5.75
ROTATIVE SPEED	6414.3
PERCENT DESIGN SPEED	70.0

* * * STATION 1 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.12	10.09	288.26	-14.75
2	25.894	10.13	10.09	288.44	-13.46
3	23.175	10.13	10.09	288.31	-9.71
4	21.011	10.13	10.09	287.92	-6.00
5	18.105	10.13	10.08	288.05	-2.55
6	15.138	10.13	10.08	288.09	-1.11
7	12.807	10.14	10.08	288.20	0.92
8	11.981	10.14	10.08	288.51	-3.77
9	11.130	10.14	10.08	288.76	-1.98

* * * STATION 2 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	12.12	10.53	321.94	-82.19
2	23.873	11.86	10.27	318.63	-82.18
3	23.114	11.54	10.21	314.84	-82.16
4	20.836	10.52	10.01	304.29	-74.93
5	17.798	10.00	9.73	296.39	-17.37
6	14.742	10.11	9.82	290.32	16.30
7	12.474	10.14	9.86	289.30	18.70
8	11.712	10.14	9.87	288.18	19.30
9	10.947	10.14	9.88	288.55	18.78

* * * STATION 3 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	11.31	10.46	311.19	74.02
2	23.863	10.94	10.37	307.64	74.32
3	23.078	10.72	10.27	305.16	71.13
4	20.714	10.46	10.17	299.08	39.35
5	17.579	10.32	10.12	291.79	7.57
6	14.503	10.18	10.13	290.49	1.67
7	12.273	10.14	10.13	292.97	3.28
8	11.549	10.14	10.13	293.75	0.74
9	10.833	10.14	10.14	294.88	0.81

TABLE III. - Continued.

(d) Reading number 2074

STAGE TOTAL PRESSURE RATIO	1.044
STAGE TOTAL TEMPERATURE RATIO	1.042
STAGE ADIABATIC EFFICIENCY	0.293
WEIGHT FLOW	6.48
ROTATIVE SPEED	7334.9
PERCENT DESIGN SPEED	80.0

. . . . STATION 1					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.13	10.07	288.21	-8.92
2	23.894	10.13	10.08	287.88	-5.27
3	23.175	10.13	10.07	287.84	-6.83
4	21.011	10.13	10.07	287.86	-6.31
5	18.105	10.13	10.07	288.13	-5.18
6	15.138	10.14	10.06	288.54	-6.58
7	12.807	10.13	10.06	288.51	-5.02
8	11.981	10.14	10.06	288.41	-8.81
9	11.130	10.13	10.06	289.30	-2.24

. . . . STATION 2					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	12.78	10.39	332.05	-82.19
2	23.873	12.38	10.32	328.44	-82.18
3	23.114	11.88	10.24	323.97	-82.18
4	20.835	10.71	9.98	310.20	-75.19
5	17.793	9.99	9.64	299.14	-18.25
6	14.742	10.11	9.73	290.83	16.21
7	12.474	10.14	9.78	288.39	18.79
8	11.712	10.14	9.79	288.17	19.34
9	10.947	10.14	9.80	288.76	18.64

. . . . STATION 3					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	11.62	10.54	317.56	74.22
2	23.863	11.12	10.45	312.94	74.55
3	23.078	10.87	10.31	309.90	70.45
4	20.714	10.54	10.17	302.44	39.17
5	17.579	10.37	10.11	292.95	6.90
6	14.503	10.20	10.12	291.07	-0.50
7	12.273	10.13	10.13	294.49	0.40
8	11.549	10.14	10.13	295.29	1.00
9	10.833	10.13	10.13	296.93	2.42

TABLE III. - Continued.

(e) Reading number 2075

STAGE TOTAL PRESSURE RATIO	1.054
STAGE TOTAL TEMPERATURE RATIO	1.052
STAGE ADIABATIC EFFICIENCY	0.291
WEIGHT FLOW	7.16
ROTATIVE SPEED	8241.1
PERCENT DESIGN SPEED	89.9

* * * STATION 1 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.12	10.06	288.00	-11.07
2	23.894	10.12	10.06	288.01	-11.99
3	23.175	10.12	10.06	287.89	-7.57
4	21.011	10.13	10.05	287.80	-5.70
5	18.105	10.14	10.05	288.15	-5.28
6	15.138	10.14	10.05	288.44	-5.64
7	12.807	10.14	10.05	289.50	-3.70
8	11.981	10.14	10.04	288.33	-19.94
9	11.150	10.14	10.03	289.17	-2.11

* * * STATION 2 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	13.51	10.46	344.46	-82.23
2	23.873	13.01	10.36	333.79	-82.23
3	23.114	12.37	10.26	333.59	-82.22
4	20.835	10.80	9.95	316.04	-74.88
5	17.798	9.95	9.51	301.88	-18.73
6	14.742	10.11	9.64	291.70	16.23
7	12.474	10.14	9.70	289.30	18.95
8	11.712	10.14	9.71	288.49	18.85
9	10.947	10.14	9.72	288.47	19.02

* * * STATION 3 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	11.95	10.64	324.81	74.33
2	23.863	11.38	10.49	319.41	74.78
3	23.078	11.05	10.35	315.65	70.85
4	20.714	10.65	10.18	306.01	39.65
5	17.579	10.44	10.11	293.90	6.18
6	14.503	10.22	10.12	291.88	-1.79
7	12.273	10.14	10.13	295.58	0.85
8	11.549	10.14	10.14	297.32	45.00
9	10.855	10.14	10.14	298.80	24.42

TABLE III. - Concluded.

(f) Reading number 2076

STAGE TOTAL PRESSURE RATIO	1.064
STAGE TOTAL TEMPERATURE RATIO	1.066
STAGE ADIABATIC EFFICIENCY	0.271
WEIGHT FLOW	7.81
ROTATIVE SPEED	9178.0
PERCENT DESIGN SPEED	100.1

* * * STATION 1 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.10	10.05	288.02	-4.68
2	23.894	10.12	10.04	288.03	-4.84
3	23.175	10.12	10.04	288.18	-6.67
4	21.011	10.13	10.04	288.15	-12.44
5	18.105	10.13	10.03	288.02	-6.55
6	15.138	10.14	10.02	288.08	-21.95
7	12.807	10.14	10.03	288.03	3.56
8	11.981	10.14	10.02	288.66	4.95
9	11.130	10.13	10.03	289.47	-0.53

* * * STATION 2 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	14.34	10.52	358.82	-82.27
2	23.873	13.67	10.40	351.84	-82.25
3	23.114	12.94	10.28	345.05	-82.25
4	20.636	10.88	9.92	325.82	-75.22
5	17.798	9.92	9.39	305.47	-17.20
6	14.742	10.11	9.54	292.35	16.64
7	12.474	10.14	9.60	288.48	18.80
8	11.712	10.14	9.61	288.39	19.09
9	10.947	10.14	9.63	289.11	18.87

* * * STATION 3 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	12.31	10.76	334.65	74.15
2	23.863	11.63	10.57	327.24	74.70
3	23.078	11.22	10.39	322.15	71.16
4	20.714	10.72	10.19	310.67	37.64
5	17.579	10.50	10.10	295.56	6.24
6	14.503	10.23	10.12	293.41	-2.23
7	12.273	10.13	10.13	297.44	2.70
8	11.549	10.13	10.13	299.45	5.58
9	10.833	10.13	10.13	301.49	17.49

**TABLE IV. - PERFORMANCE FOR
STAGE 51BR6-51R**

(a) Reading number 2043

STAGE TOTAL PRESSURE RATIO	1.046
STAGE TOTAL TEMPERATURE RATIO	1.021
STAGE ADIABATIC EFFICIENCY	0.602
WEIGHT FLOW	9.94
ROTATIVE SPEED	5531.5
PERCENT DESIGN SPEED	60.3

. . . STATION 1 . . .					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.11	9.95	288.58	-11.59
2	23.894	10.12	9.95	288.46	-11.98
3	23.175	10.13	9.95	287.92	-10.66
4	21.011	10.13	9.95	289.20	-4.81
5	18.105	10.13	9.95	287.95	-1.96
6	15.138	10.14	9.96	288.18	-1.63
7	12.807	10.14	9.96	288.21	0.30
8	11.981	10.14	9.96	288.26	1.62
9	11.130	10.14	9.96	288.27	3.17

. . . STATION 2 . . .					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	10.07	9.96	288.46	12.29
2	23.873	10.08	9.94	288.31	11.13
3	23.114	10.08	9.93	287.87	10.59
4	20.836	10.11	9.90	288.16	11.19
5	17.798	10.13	9.90	288.04	13.26
6	14.742	10.12	9.92	288.21	18.70
7	12.474	10.13	9.94	288.13	20.57
8	11.712	10.13	9.94	288.14	20.65
9	10.947	10.11	9.95	288.66	20.70

. . . STATION 3 . . .					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	11.18	10.28	303.03	69.69
2	23.863	10.88	10.20	300.54	64.69
3	23.078	10.71	10.11	298.41	54.91
4	20.714	10.62	10.10	294.17	29.01
5	17.579	10.52	10.11	291.53	16.44
6	14.503	10.27	10.10	290.25	10.55
7	12.273	10.11	10.10	290.85	12.64
8	11.549	10.10	10.10	290.62	11.49
9	10.833	10.09	10.10	290.89	13.19

TABLE IV. - Continued.

(b) Reading number 2044

STAGE TOTAL PRESSURE RATIO	1.062
STAGE TOTAL TEMPERATURE RATIO	1.029
STAGE ADIABATIC EFFICIENCY	0.590
WEIGHT FLOW	11.32
ROTATIVE SPEED	6435.9
PERCENT DESIGN SPEED	70.2

* * * STATION 1 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.09	9.90	288.04	-11.36
2	23.894	10.12	9.90	287.99	-10.72
3	23.175	10.13	9.90	288.24	-8.60
4	21.011	10.12	9.90	288.09	-4.35
5	18.105	10.14	9.91	288.08	-2.51
6	15.138	10.14	9.91	288.09	-0.23
7	12.807	10.15	9.91	288.43	2.01
8	11.981	10.15	9.92	288.28	2.50
9	11.130	10.15	9.92	288.97	-0.06

* * * STATION 2 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	10.05	9.90	288.15	12.13
2	23.873	10.07	9.89	287.98	10.87
3	23.114	10.09	9.88	288.18	9.81
4	20.856	10.11	9.84	288.09	10.96
5	17.798	10.13	9.85	288.01	15.23
6	14.742	10.12	9.86	288.37	18.78
7	12.474	10.13	9.88	288.53	20.70
8	11.712	10.13	9.89	288.47	20.86
9	10.947	10.12	9.90	289.55	20.72

* * * STATION 3 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	11.54	10.32	308.22	69.86
2	23.863	11.15	10.22	304.48	65.08
3	23.078	10.92	10.10	301.81	54.52
4	20.714	10.79	10.08	296.29	29.01
5	17.579	10.65	10.11	293.08	16.51
6	14.503	10.33	10.09	291.43	9.68
7	12.273	10.10	10.09	292.11	13.81
8	11.549	10.09	10.09	292.03	14.34
9	10.833	10.09	10.09	292.19	16.66

TABLE IV. - Continued.

(c) Reading number 2045

STAGE TOTAL PRESSURE RATIO	1.078
STAGE TOTAL TEMPERATURE RATIO	1.039
STAGE ADIABATIC EFFICIENCY	0.553
WEIGHT FLOW	12.59
ROTATIVE SPEED	7367.3
PERCENT DESIGN SPEED	80.4

* * *					
STATION 1					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.07	9.83	288.36	-6.56
2	23.894	10.10	9.83	288.30	-7.65
3	23.175	10.11	9.83	288.28	-7.52
4	21.011	10.13	9.83	288.20	-13.34
5	19.105	10.15	9.83	288.02	-18.80
6	15.138	10.16	9.81	288.15	-24.07
7	12.807	10.15	9.81	287.98	-25.20
8	11.981	10.15	9.81	288.07	-24.35
9	11.130	10.14	9.80	288.29	-22.96

* * *					
STATION 2					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	10.04	9.80	288.37	15.76
2	23.873	10.07	9.78	288.25	13.20
3	23.114	10.12	9.77	288.28	12.44
4	20.856	10.12	9.72	288.31	10.89
5	17.798	10.14	9.73	288.16	12.01
6	14.742	10.06	9.77	288.20	15.44
7	12.474	10.08	9.81	288.68	19.73
8	11.712	10.07	9.81	289.16	20.39
9	10.947	10.07	9.81	289.58	21.74

* * *					
STATION 3					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	12.06	10.42	315.13	70.57
2	23.863	11.49	10.29	309.98	67.23
3	23.078	11.11	10.14	306.11	57.00
4	20.714	10.96	10.11	299.80	31.20
5	17.579	10.77	10.12	294.16	18.33
6	14.503	10.36	10.09	292.48	14.42
7	12.273	10.11	10.09	292.95	16.58
8	11.549	10.09	10.09	293.04	18.59
9	10.833	10.08	10.09	292.94	26.21

TABLE IV. - Continued.

(d) Reading number 2046

STAGE TOTAL PRESSURE RATIO	1.095
STAGE TOTAL TEMPERATURE RATIO	1.048
STAGE ADIABATIC EFFICIENCY	0.544
WEIGHT FLOW	13.51
ROTATIVE SPEED	8251.2
PERCENT DESIGN SPEED	90.0

* * * STATION 1 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.04	9.76	288.22	-7.71
2	23.894	10.08	9.77	288.04	-8.09
3	23.175	10.10	9.78	288.21	-10.93
4	21.011	10.14	9.78	288.34	-14.69
5	18.105	10.16	9.76	287.84	-19.80
6	15.138	10.17	9.75	288.43	-24.86
7	12.807	10.16	9.74	287.96	-28.19
8	11.981	10.15	9.73	288.00	-27.57
9	11.130	10.14	9.73	288.46	-27.55

* * * STATION 2 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	10.02	9.75	288.22	16.89
2	23.873	10.05	9.72	288.05	13.50
3	23.114	10.08	9.69	288.17	11.99
4	20.836	10.13	9.64	288.27	11.12
5	17.798	10.15	9.64	287.99	12.20
6	14.742	10.05	9.70	288.48	15.39
7	12.474	10.06	9.74	288.91	19.66
8	11.712	10.05	9.75	289.44	20.43
9	10.947	10.03	9.76	290.03	21.86

* * * STATION 3 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	12.51	10.52	321.51	71.49
2	23.863	11.82	10.35	315.62	67.76
3	23.078	11.33	10.18	310.90	59.19
4	20.714	11.14	10.12	302.77	33.86
5	17.579	10.92	10.11	295.64	18.40
6	14.503	10.42	10.09	293.30	14.48
7	12.273	10.10	10.08	293.44	16.90
8	11.549	10.08	10.08	294.08	24.73
9	10.833	10.07	10.09	294.27	25.88

TABLE IV. - Concluded.

(e) Reading number 2047

STAGE TOTAL PRESSURE RATIO	1.112
STAGE TOTAL TEMPERATURE RATIO	1.059
STAGE ADIABATIC EFFICIENCY	0.519
WEIGHT FLOW	14.30
ROTATIVE SPEED	9168.0
PERCENT DESIGN SPEED	100.0

* * *					
STATION 1					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.02	9.71	288.25	-9.03
2	23.894	10.08	9.72	288.46	-10.26
3	23.175	10.09	9.71	288.16	-11.55
4	21.011	10.13	9.71	288.29	-18.58
5	18.105	10.16	9.71	288.24	-22.80
6	15.138	10.17	9.69	287.98	-27.51
7	12.807	10.17	9.67	287.72	-30.19
8	11.981	10.17	9.68	288.06	-31.41
9	11.130	10.15	9.65	288.22	-28.52

* * *					
STATION 2					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	9.98	9.70	288.82	16.24
2	25.873	10.05	9.67	288.58	13.45
3	23.114	10.06	9.59	288.26	11.97
4	20.856	10.12	9.55	288.55	11.14
5	17.798	10.15	9.55	288.44	12.19
6	14.742	10.03	9.62	288.01	15.00
7	12.474	10.03	9.68	288.57	19.42
8	11.712	10.01	9.70	289.13	19.49
9	10.947	10.02	9.69	289.98	21.34

* * *					
STATION 3					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	13.06	10.56	329.70	71.50
2	23.863	12.17	10.36	321.72	69.45
3	25.078	11.53	10.12	315.79	61.56
4	20.714	11.32	10.06	306.46	34.82
5	17.579	11.05	10.08	297.56	19.38
6	14.503	10.47	10.06	294.36	13.97
7	12.273	10.10	10.07	294.19	16.29
8	11.549	10.08	10.08	294.93	37.17
9	10.833	10.05	10.07	295.22	27.37

TABLE V. - PERFORMANCE FOR

STAGE 51BR5-51R

(a) Reading number 2020

STAGE TOTAL PRESSURE RATIO	1.051
STAGE TOTAL TEMPERATURE RATIO	1.014
STAGE ADIABATIC EFFICIENCY	0.659
WEIGHT FLOW	8.15
ROTATIVE SPEED	4590.4
PERCENT DESIGN SPEED	50.1

• • • STATION 1 • • •

RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.11	10.01	288.81	-11.62
2	25.894	10.13	10.02	288.53	-11.49
3	25.175	10.12	10.02	288.44	-10.44
4	21.011	10.13	10.02	288.21	-6.77
5	18.105	10.13	10.02	287.82	-4.71
6	15.138	10.14	10.02	287.90	-3.30
7	12.807	10.14	10.02	288.05	0.09
8	11.981	10.14	10.02	287.91	0.82
9	11.130	10.14	10.02	288.52	-0.15

• • • STATION 2 • • •

RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	10.09	10.00	288.83	10.87
2	25.873	10.11	10.00	288.45	9.67
3	25.114	10.11	10.00	288.42	9.62
4	20.856	10.13	9.98	288.10	10.59
5	17.798	10.13	9.98	287.85	12.91
6	14.742	10.13	10.00	287.80	18.49
7	12.474	10.14	10.02	287.92	20.64
8	11.712	10.14	10.02	287.95	20.77
9	10.947	10.13	10.02	288.46	20.81

• • • STATION 3 • • •

RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	10.72	10.22	297.73	67.25
2	23.863	10.59	10.19	295.93	58.63
3	23.078	10.53	10.15	294.51	45.86
4	20.714	10.47	10.15	291.47	23.10
5	17.579	10.37	10.14	290.11	16.26
6	14.503	10.21	10.12	289.73	11.25
7	12.273	10.12	10.12	290.36	72.06
8	11.549	10.12	10.12	290.50	17.76
9	10.833	10.12	10.12	290.70	17.16

TABLE V. - Continued.

(b) Reading number 2021

STAGE TOTAL PRESSURE RATIO	1.045
STAGE TOTAL TEMPERATURE RATIO	1.020
STAGE ADIABATIC EFFICIENCY	0.646
WEIGHT FLOW	9.71
ROTATIVE SPEED	5555.8
PERCENT DESIGN SPEED	60.4

* * * STATION 1 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.11	9.97	200.55	-12.11
2	23.894	10.13	9.97	200.57	-11.10
3	23.175	10.12	9.97	200.04	-10.00
4	21.011	10.13	9.97	200.20	-5.26
5	18.105	10.14	9.97	200.28	-3.25
6	15.158	10.14	9.98	200.88	-0.80
7	12.807	10.14	9.98	200.11	1.35
8	11.981	10.15	9.98	200.12	2.00
9	11.150	10.14	9.98	200.36	2.57

* * * STATION 2 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	10.09	9.97	200.32	10.90
2	23.873	10.11	9.96	200.26	9.25
3	23.114	10.11	9.95	200.15	9.90
4	20.836	10.13	9.92	200.17	11.06
5	17.798	10.13	9.93	200.19	13.28
6	14.742	10.14	9.95	200.97	18.79
7	12.474	10.14	9.97	200.05	20.90
8	11.712	10.14	9.98	200.23	20.99
9	10.947	10.12	9.98	200.86	21.22

* * * STATION 3 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	10.96	10.27	301.16	67.10
2	23.863	10.80	10.21	299.08	58.36
3	23.078	10.72	10.16	297.00	46.06
4	20.714	10.63	10.15	293.13	23.11
5	17.579	10.48	10.14	291.07	16.10
6	14.503	10.24	10.12	290.51	10.75
7	12.273	10.12	10.12	290.82	56.31
8	11.549	10.12	10.12	290.86	64.15
9	10.833	10.12	10.12	291.24	40.92

TABLE V. - Continued.

(c) Reading number 2022

STAGE TOTAL PRESSURE RATIO	1.057
STAGE TOTAL TEMPERATURE RATIO	1.027
STAGE ADIABATIC EFFICIENCY	0.588
WEIGHT FLOW	10.78
ROTATIVE SPEED	6363.4
PERCENT DESIGN SPEED	69.4

* * * STATION 1 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.09	9.92	288.50	-7.66
2	23.894	10.11	9.95	288.47	-8.04
3	23.175	10.12	9.95	288.45	-7.77
4	21.011	10.13	9.92	288.32	-13.17
5	18.105	10.14	9.92	288.08	-17.30
6	15.138	10.14	9.91	287.64	-21.26
7	12.807	10.15	9.91	288.01	-24.04
8	11.981	10.14	9.91	288.28	-24.17
9	11.130	10.14	9.90	288.05	-21.34

* * * STATION 2 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	10.10	9.91	288.48	14.45
2	23.873	10.11	9.89	288.49	11.72
3	23.114	10.13	9.88	288.48	11.56
4	20.856	10.14	9.85	288.36	11.10
5	17.799	10.15	9.86	288.25	12.22
6	14.742	10.10	9.90	287.91	16.55
7	12.474	10.12	9.92	288.66	20.57
8	11.712	10.11	9.93	289.23	21.28
9	10.947	10.10	9.93	289.30	22.40

* * * STATION 3 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	11.27	10.34	305.70	68.37
2	23.863	10.99	10.26	302.85	61.21
3	23.078	10.84	10.19	300.40	49.41
4	20.714	10.76	10.18	295.16	24.29
5	17.579	10.58	10.15	292.19	17.76
6	14.503	10.26	10.12	291.76	14.43
7	12.273	10.12	10.12	292.08	36.08
8	11.549	10.13	10.13	292.28	31.80
9	10.833	10.12	10.13	292.28	23.97

TABLE V. - Continued.

(d) Reading number 2023

STAGE TOTAL PRESSURE RATIO	1.075
STAGE TOTAL TEMPERATURE RATIO	1.035
STAGE ADIABATIC EFFICIENCY	0.588
WEIGHT FLOW	12.30
ROTATIVE SPEED	7337.0
PERCENT DESIGN SPEED	80.0

. . . STATION 1 . . .					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.07	9.86	288.50	-7.18
2	23.894	10.10	9.86	288.65	-6.93
3	23.175	10.11	9.87	288.49	-9.19
4	21.011	10.13	9.86	288.33	-14.48
5	18.105	10.15	9.85	287.90	-18.70
6	15.138	10.15	9.84	287.69	-22.07
7	12.807	10.15	9.83	288.23	-26.01
8	11.981	10.15	9.83	288.04	-25.85
9	11.130	10.14	9.85	288.22	-22.44

. . . STATION 2 . . .					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	10.08	9.84	288.53	14.79
2	23.873	10.11	9.81	288.66	11.27
3	23.114	10.12	9.79	288.55	10.72
4	20.836	10.15	9.76	288.47	10.58
5	17.798	10.16	9.77	288.17	12.20
6	14.742	10.09	9.82	287.96	16.40
7	12.474	10.09	9.85	288.99	20.55
8	11.712	10.10	9.86	289.27	21.48
9	10.947	10.09	9.87	289.46	22.72

. . . STATION 3 . . .					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	11.64	10.40	311.58	68.77
2	23.863	11.27	10.30	307.75	61.49
3	23.078	11.06	10.19	304.46	49.68
4	20.714	10.96	10.18	297.14	24.82
5	17.579	10.72	10.15	293.64	17.85
6	14.503	10.30	10.12	292.49	14.43
7	12.273	10.12	10.12	293.43	23.67
8	11.549	10.12	10.12	293.67	30.08
9	10.833	10.12	10.12	293.74	21.30

TABLE V. - Continued.

(e) Reading number 2024

STAGE TOTAL PRESSURE RATIO	1.093
STAGE TOTAL TEMPERATURE RATIO	1.044
STAGE ADIABATIC EFFICIENCY	0.581
WEIGHT FLOW	13.49
ROTATIVE SPEED	8258.2
PERCENT DESIGN SPEED	90.1

* * *					
STATION 1					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.06	9.79	288.42	-7.18
2	23.894	10.08	9.80	288.50	-7.55
3	23.175	10.10	9.80	288.45	-10.14
4	21.011	10.13	9.79	287.92	-14.47
5	18.105	10.15	9.79	288.21	-20.44
6	15.138	10.16	9.77	287.85	-23.81
7	12.807	10.16	9.75	288.08	-28.32
8	11.981	10.15	9.75	288.23	-27.99
9	11.130	10.14	9.73	288.60	-25.76

* * *					
STATION 2					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	10.08	9.78	288.30	15.34
2	23.873	10.10	9.75	288.43	11.83
3	23.114	10.12	9.72	288.46	10.81
4	20.836	10.14	9.67	289.15	11.57
5	17.798	10.17	9.69	288.42	12.02
6	14.742	10.06	9.75	288.00	15.63
7	12.474	10.05	9.79	289.05	20.42
8	11.712	10.06	9.79	289.74	20.99
9	10.947	10.07	9.80	290.10	22.74

* * *					
STATION 3					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	12.02	10.46	317.26	69.68
2	23.863	11.56	10.34	312.47	62.06
3	23.078	11.31	10.21	308.55	50.45
4	20.714	11.16	10.20	299.59	24.89
5	17.579	10.87	10.16	295.08	17.75
6	14.503	10.34	10.12	295.59	14.67
7	12.273	10.12	10.12	284.37	30.21
8	11.549	10.12	10.12	295.05	55.41
9	10.833	10.12	10.12	295.34	57.14

TABLE V. - Continued.

(f) Reading number 2025

STAGE TOTAL PRESSURE RATIO	1.114
STAGE TOTAL TEMPERATURE RATIO	1.055
STAGE ADIABATIC EFFICIENCY	0.575
WEIGHT FLOW	14.68
ROTATIVE SPEED	9171.9
PERCENT DESIGN SPEED	100.0

* * * STATION 1 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.02	9.73	288.23	-9.01
2	23.894	10.07	9.72	288.30	-9.91
3	23.175	10.09	9.73	288.23	-10.70
4	21.011	10.13	9.72	288.34	-16.41
5	18.105	10.17	9.71	287.97	-22.11
6	15.138	10.18	9.68	287.98	-25.96
7	12.807	10.16	9.67	288.09	-28.61
8	11.981	10.16	9.65	288.26	-30.93
9	11.130	10.14	9.62	288.52	-24.78

* * * STATION 2 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	10.07	9.73	288.34	16.91
2	23.873	10.09	9.67	288.36	13.26
3	23.114	10.11	9.63	288.42	11.39
4	20.836	10.15	9.58	288.47	10.99
5	17.798	10.18	9.61	288.55	12.30
6	14.742	10.06	9.67	288.14	15.71
7	12.474	10.06	9.72	289.34	20.02
8	11.712	10.00	9.72	289.95	20.62
9	10.947	10.04	9.72	290.34	22.62

* * * STATION 3 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	12.52	10.54	324.82	70.02
2	23.863	11.87	10.37	318.24	63.03
3	23.078	11.57	10.22	313.39	51.75
4	20.714	11.39	10.22	302.40	25.55
5	17.579	11.03	10.16	296.44	18.33
6	14.503	10.38	10.12	294.88	14.65
7	12.273	10.12	10.11	295.88	65.21
8	11.549	10.12	10.12	296.33	26.27
9	10.833	10.10	10.11	296.46	14.96

• TABLE V. - Continued.

(g) Reading number 2026

STAGE TOTAL PRESSURE RATIO	1.103
STAGE TOTAL TEMPERATURE RATIO	1.058
STAGE ADIABATIC EFFICIENCY	0.494
WEIGHT FLOW	10.51
ROTATIVE SPEED	9171.9
PERCENT DESIGN SPEED	100.1

• • • STATION 1 • • •					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.07	9.91	288.18	-8.25
2	23.894	10.10	9.91	288.24	-8.06
3	23.175	10.12	9.91	288.21	-10.34
4	21.011	10.13	9.91	288.21	-15.75
5	18.105	10.15	9.90	288.05	-21.42
6	15.138	10.15	9.89	288.09	-25.22
7	12.807	10.15	9.87	288.01	-29.04
8	11.981	10.14	9.87	288.38	-27.65
9	11.130	10.14	9.87	288.60	-26.23

• • • STATION 2 • • •					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	11.15	9.91	321.55	-82.23
2	23.873	10.60	9.76	315.70	-81.33
3	23.114	10.19	9.60	309.04	-70.80
4	20.836	9.93	9.53	293.75	-15.95
5	17.798	10.10	9.62	289.99	10.58
6	14.742	10.12	9.74	288.62	17.66
7	12.474	10.09	9.81	288.89	20.52
8	11.712	10.08	9.82	289.72	20.99
9	10.947	10.08	9.84	290.28	22.14

• • • STATION 3 • • •					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	12.73	10.75	324.94	73.42
2	23.863	12.13	10.57	319.23	72.09
3	23.078	11.66	10.37	314.49	66.62
4	20.714	11.15	10.24	305.11	38.98
5	17.579	10.87	10.19	297.95	21.91
6	14.503	10.42	10.21	295.02	18.83
7	12.273	10.21	10.21	295.22	53.61
8	11.549	10.19	10.22	295.36	25.78
9	10.833	10.21	10.22	296.01	67.78

TABLE V. - Continued. .

(h) Reading number 2028

STAGE TOTAL PRESSURE RATIO	1.109
STAGE TOTAL TEMPERATURE RATIO	1.056
STAGE ADIABATIC EFFICIENCY	0.541
WEIGHT FLOW	12.71
ROTATIVE SPEED	9169.2
PERCENT DESIGN SPEED	100.0

. . . STATION 1 . . .					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.05	9.80	288.29	-7.34
2	23.894	10.07	9.80	288.25	-8.21
3	23.175	10.10	9.81	288.19	-10.08
4	21.011	10.13	9.81	288.32	-17.32
5	18.105	10.16	9.80	288.01	-22.88
6	15.138	10.16	9.77	288.02	-25.68
7	12.807	10.16	9.76	287.97	-29.17
8	11.981	10.15	9.76	288.25	-26.81
9	11.130	10.13	9.74	288.54	-24.10

. . . STATION 2 . . .					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	10.01	9.77	289.55	12.85
2	23.873	10.00	9.72	289.35	7.43
3	23.114	10.08	9.67	288.81	10.22
4	20.856	10.14	9.64	288.59	10.83
5	17.798	10.16	9.68	288.23	12.17
6	14.742	10.08	9.73	288.15	15.60
7	12.474	10.07	9.77	289.23	20.26
8	11.712	10.08	9.78	289.97	20.88
9	10.947	10.08	9.79	290.22	22.29

. . . STATION 3 . . .					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	12.59	10.63	324.72	71.75
2	23.863	11.96	10.46	318.87	68.04
3	23.078	11.52	10.28	313.91	59.47
4	20.714	11.29	10.23	304.21	32.33
5	17.579	11.01	10.21	296.88	19.65
6	14.503	10.44	10.18	294.94	17.24
7	12.273	10.18	10.18	295.71	44.36
8	11.549	10.16	10.18	295.71	17.27
9	10.833	10.17	10.18	296.10	20.93

TABLE V. - Continued.

(i) Reading number 2029

STAGE TOTAL PRESSURE RATIO	1.092
STAGE TOTAL TEMPERATURE RATIO	1.045
STAGE ADIABATIC EFFICIENCY	0.569
WEIGHT FLOW	11.61
ROTATIVE SPEED	8232.0
PERCENT DESIGN SPEED	89.8

* * *		STATION 1			* * *	
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ	
1	24.610	10.07	9.86	288.24	-6.92	
2	23.894	10.10	9.87	288.41	-7.13	
3	23.175	10.11	9.87	288.36	-8.96	
4	21.011	10.13	9.86	288.16	-13.71	
5	18.105	10.15	9.86	288.06	-20.44	
6	15.138	10.15	9.84	288.01	-24.92	
7	12.807	10.15	9.84	288.09	-25.82	
8	11.981	10.15	9.84	287.87	-24.76	
9	11.130	10.14	9.84	288.66	-24.85	

* * *		STATION 2			* * *	
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ	
1	24.630	10.03	9.83	289.27	13.00	
2	23.873	10.09	9.80	288.81	11.76	
3	23.114	10.08	9.76	288.73	9.73	
4	20.836	10.14	9.72	288.38	10.59	
5	17.798	10.17	9.75	288.26	12.12	
6	14.742	10.08	9.80	288.23	15.78	
7	12.474	10.10	9.84	289.21	20.80	
8	11.712	10.09	9.84	289.41	21.15	
9	10.947	10.09	9.86	290.47	22.52	

* * *		STATION 3			* * *	
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ	
1	24.648	12.11	10.56	317.29	71.16	
2	23.863	11.60	10.42	312.63	68.00	
3	23.078	11.29	10.27	308.87	57.40	
4	20.714	11.13	10.23	300.75	29.67	
5	17.579	10.87	10.21	295.31	19.79	
6	14.503	10.40	10.18	293.78	17.03	
7	12.273	10.18	10.18	294.53	55.64	
8	11.549	10.17	10.18	294.28	14.79	
9	10.833	10.17	10.19	294.70	15.05	

TABLE V. - Continued.

(j) Reading number 2030

STAGE TOTAL PRESSURE RATIO	1.076
STAGE TOTAL TEMPERATURE RATIO	1.036
STAGE ADIABATIC EFFICIENCY	0.577
WEIGHT FLOW	10.74
ROTATIVE SPEED	7575.2
PERCENT DESIGN SPEED	80.5

* * * STATION 1 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.08	9.91	288.42	-6.48
2	23.894	10.10	9.92	288.26	-6.81
3	23.175	10.12	9.92	288.35	-8.15
4	21.011	10.13	9.91	288.32	-12.64
5	18.105	10.14	9.91	288.14	-18.84
6	15.138	10.15	9.90	287.75	-21.58
7	12.807	10.15	9.90	288.03	-23.49
8	11.981	10.15	9.90	288.05	-23.76
9	11.130	10.14	9.89	288.37	-21.69

* * * STATION 2 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	10.09	9.89	288.72	14.24
2	23.873	10.10	9.86	288.56	10.14
3	23.114	10.11	9.84	288.46	10.20
4	20.836	10.15	9.81	288.23	10.71
5	17.798	10.16	9.83	288.30	12.08
6	14.742	10.12	9.87	287.94	16.45
7	12.474	10.13	9.90	288.87	20.74
8	11.712	10.10	9.90	289.27	21.53
9	10.947	10.11	9.91	289.75	22.33

* * * STATION 3 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	11.74	10.48	311.82	70.89
2	23.863	11.34	10.37	307.82	66.22
3	23.078	11.07	10.26	304.76	56.12
4	20.714	10.95	10.22	298.19	29.85
5	17.579	10.74	10.20	294.01	19.47
6	14.503	10.36	10.18	293.15	17.00
7	12.273	10.18	10.18	293.45	58.55
8	11.549	10.17	10.18	293.34	12.08
9	10.833	10.16	10.18	293.16	17.11

TABLE V. - Continued.

(k) Reading number 2031

STAGE TOTAL PRESSURE RATIO	1.058
STAGE TOTAL TEMPERATURE RATIO	1.028
STAGE ADIABATIC EFFICIENCY	0.590
WEIGHT FLOW	9.36
ROTATIVE SPEED	6403.1
PERCENT DESIGN SPEED	69.8

* * * STATION 1 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.09	9.97	288.49	-7.21
2	23.894	10.11	9.97	288.33	-7.16
3	23.175	10.12	9.97	288.25	-7.40
4	21.011	10.13	9.97	288.14	-9.86
5	18.105	10.14	9.97	287.98	-17.22
6	15.138	10.15	9.97	288.28	-21.14
7	12.807	10.15	9.96	287.77	-22.37
8	11.981	10.14	9.96	288.21	-22.86
9	11.130	10.14	9.95	288.41	-20.63

* * * STATION 2 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	10.09	9.95	288.58	14.01
2	23.873	10.11	9.95	288.48	11.06
3	23.114	10.12	9.91	288.30	10.84
4	20.856	10.15	9.90	288.12	11.41
5	17.793	10.16	9.90	288.09	11.94
6	14.742	10.12	9.95	288.38	16.30
7	12.474	10.14	9.96	288.76	20.46
8	11.712	10.12	9.96	289.39	21.16
9	10.947	10.12	9.96	289.82	22.00

* * * STATION 3 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	11.36	10.40	305.85	69.96
2	23.863	11.05	10.31	303.11	66.22
3	23.078	10.86	10.23	300.60	55.77
4	20.714	10.76	10.21	295.58	29.18
5	17.579	10.60	10.19	292.55	19.59
6	14.503	10.31	10.18	292.01	16.92
7	12.273	10.17	10.17	292.22	46.11
8	11.549	10.18	10.18	292.44	24.01
9	10.833	10.18	10.18	292.64	42.54

TABLE V. - Continued.

(L) Reading number 2032

STAGE TOTAL PRESSURE RATIO	1.047
STAGE TOTAL TEMPERATURE RATIO	1.020
STAGE ADIABATIC EFFICIENCY	0.663
WEIGHT FLOW	8.47
ROTATIVE SPEED	5524.8
PERCENT DESIGN SPEED	60.3

. . . STATION 1 . . .					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.10	10.01	287.96	-11.55
2	23.894	10.12	10.02	287.94	-9.89
3	23.175	10.12	10.01	288.00	-8.70
4	21.011	10.13	10.02	288.18	-5.93
5	18.105	10.14	10.02	288.15	-3.92
6	15.138	10.14	10.02	288.22	-1.90
7	12.807	10.14	10.02	288.42	-1.35
8	11.981	10.14	10.02	288.29	0.67
9	11.130	10.15	10.02	288.52	2.11

. . . STATION 2 . . .					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	10.10	9.99	288.22	12.21
2	23.873	10.12	9.99	289.12	10.27
3	23.114	10.13	9.98	288.24	10.12
4	20.836	10.15	9.96	288.21	11.03
5	17.798	10.15	9.97	288.17	13.37
6	14.742	10.15	9.99	287.90	18.89
7	12.474	10.16	10.01	288.08	21.02
8	11.712	10.16	10.01	288.31	21.18
9	10.947	10.14	10.02	288.88	21.27

. . . STATION 3 . . .					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	11.06	10.33	301.08	69.40
2	23.863	10.84	10.27	298.77	63.19
3	23.078	10.72	10.20	297.25	52.29
4	20.714	10.63	10.19	293.45	27.74
5	17.579	10.51	10.19	291.17	18.16
6	14.503	10.28	10.17	290.98	14.48
7	12.273	10.17	10.17	291.32	13.20
8	11.549	10.18	10.17	291.09	15.83
9	10.833	10.18	10.17	291.33	17.04

TABLE V. - Concluded.

(m) Reading number 2033

STAGE TOTAL PRESSURE RATIO	1.033
STAGE TOTAL TEMPERATURE RATIO	1.013
STAGE ADIABATIC EFFICIENCY	0.706
WEIGHT FLOW	7.12
ROTATIVE SPEED	4587.9
PERCENT DESIGN SPEED	50.0

* * * STATION 1 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.12	10.06	288.07	-12.39
2	23.894	10.13	10.06	288.07	-12.50
3	23.175	10.13	10.06	288.11	-12.16
4	21.011	10.13	10.06	283.33	-8.48
5	18.105	10.13	10.06	283.00	-5.68
6	15.138	10.14	10.06	283.17	-4.48
7	12.807	10.14	10.06	283.24	-1.89
8	11.981	10.14	10.06	283.32	0.10
9	11.130	10.14	10.06	288.32	1.65

* * * STATION 2 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	10.12	10.04	287.92	12.79
2	23.873	10.13	10.04	287.97	11.27
3	23.114	10.14	10.03	288.02	10.91
4	20.836	10.15	10.02	288.28	11.40
5	17.798	10.15	10.02	287.99	13.13
6	14.742	10.15	10.03	287.83	18.61
7	12.474	10.16	10.05	287.76	20.82
8	11.712	10.16	10.05	288.18	21.03
9	10.947	10.15	10.05	288.68	21.14

* * * STATION 3 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	10.78	10.28	297.15	68.98
2	23.863	10.64	10.23	295.67	63.29
3	23.078	10.54	10.19	294.39	52.15
4	20.714	10.48	10.18	291.57	27.34
5	17.579	10.40	10.18	289.99	18.48
6	14.503	10.25	10.17	289.99	15.20
7	12.273	10.17	10.17	290.24	66.30
8	11.549	10.17	10.17	290.02	9.68
9	10.833	10.17	10.17	290.14	10.88

TABLE VI. - PERFORMANCE FOR

STAGE 51BR2-51R

(a) Reading number 1959

STAGE TOTAL PRESSURE RATIO	1.055
STAGE TOTAL TEMPERATURE RATIO	1.015
STAGE ADIABATIC EFFICIENCY	0.742
WEIGHT FLOW	8.60
ROTATIVE SPEED	4627.6
PERCENT DESIGN SPEED	50.5

* * * STATION 1 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.11	10.01	288.04	-11.41
2	23.894	10.12	10.01	288.13	-10.43
3	23.175	10.13	10.01	288.15	-8.98
4	21.011	10.13	10.01	288.55	-3.46
5	18.105	10.13	10.01	288.05	-2.25
6	15.138	10.14	10.02	288.18	-1.04
7	12.807	10.15	10.02	288.19	2.86
8	11.981	10.15	10.02	288.04	2.95
9	11.130	10.15	10.02	288.17	3.62

* * * STATION 2 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	10.11	9.97	288.08	8.43
2	23.873	10.11	9.98	288.24	8.71
3	23.114	10.13	9.99	288.24	8.93
4	20.836	10.14	9.98	288.26	10.65
5	17.798	10.14	10.00	287.99	12.95
6	14.742	10.15	10.03	287.87	18.93
7	12.474	10.15	10.04	287.93	21.13
8	11.712	10.15	10.04	288.04	21.45
9	10.947	10.12	10.04	288.53	21.73

* * * STATION 3 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	10.66	10.25	294.81	46.48
2	23.863	10.63	10.23	294.54	41.83
3	23.078	10.60	10.21	293.13	30.90
4	20.714	10.51	10.18	291.40	22.38
5	17.579	10.33	10.16	290.10	18.07
6	14.503	10.17	10.14	290.38	18.02
7	12.273	10.14	10.14	290.95	30.96
8	11.549	10.14	10.14	290.75	71.73
9	10.833	10.15	10.14	290.85	25.30

TABLE VI. - Continued.

(b) Reading number 1960

STAGE TOTAL PRESSURE RATIO	1.049
STAGE TOTAL TEMPERATURE RATIO	1.018
STAGE ADIABATIC EFFICIENCY	0.741
WEIGHT FLOW	10.03
ROTATIVE SPEED	5487.9
PERCENT DESIGN SPEED	59.9

* * * STATION 1 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.10	9.95	288.15	-11.13
2	23.894	10.12	9.96	288.12	-9.88
3	23.175	10.11	9.95	288.22	-8.16
4	21.011	10.12	9.96	288.28	-3.37
5	18.105	10.14	9.98	288.00	-1.61
6	15.138	10.15	9.98	288.10	-0.54
7	12.807	10.15	9.98	288.24	3.69
8	11.981	10.15	9.98	288.33	2.35
9	11.130	10.15	9.98	288.29	2.64

* * * STATION 2 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	10.07	9.90	288.24	8.28
2	23.873	10.12	9.92	288.16	8.79
3	23.114	10.11	9.92	288.20	9.00
4	20.836	10.13	9.92	288.21	10.76
5	17.798	10.15	9.95	287.95	13.00
6	14.742	10.14	9.99	288.01	19.09
7	12.474	10.15	10.01	287.98	21.24
8	11.712	10.14	10.01	288.13	21.56
9	10.947	10.13	10.01	288.66	21.93

* * * STATION 3 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	10.86	10.29	297.93	47.99
2	23.863	10.82	10.26	297.15	42.51
3	23.078	10.77	10.23	295.11	30.36
4	20.714	10.66	10.20	292.43	21.79
5	17.579	10.42	10.17	290.82	17.03
6	14.503	10.19	10.15	290.82	16.35
7	12.273	10.15	10.15	291.67	29.91
8	11.549	10.15	10.15	291.76	46.11
9	10.833	10.15	10.15	291.79	33.78

TABLE VI. - Continued.

(c) Reading number 1961

STAGE TOTAL PRESSURE RATIO	1.065
STAGE TOTAL TEMPERATURE RATIO	1.025
STAGE ADIABATIC EFFICIENCY	0.732
WEIGHT FLOW	11.47
ROTATIVE SPEED	6428.1
PERCENT DESIGN SPEED	70.1

* * *					
STATION 1					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.11	9.91	287.87	-10.46
2	23.894	10.12	9.90	288.07	-10.43
3	23.175	10.12	9.91	288.15	-9.39
4	21.011	10.13	9.91	288.12	-4.11
5	18.105	10.14	9.91	288.01	-2.08
6	15.138	10.14	9.91	288.42	-0.50
7	12.807	10.14	9.92	288.34	0.53
8	11.981	10.14	9.92	288.32	0.96
9	11.130	10.15	9.92	288.54	2.16

* * *					
STATION 2					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	10.08	9.85	287.82	8.22
2	23.873	10.10	9.85	287.96	8.63
3	23.114	10.11	9.85	288.31	8.75
4	20.836	10.13	9.85	288.06	11.03
5	17.798	10.13	9.88	287.97	12.95
6	14.742	10.13	9.92	287.94	19.04
7	12.474	10.14	9.95	287.98	21.45
8	11.712	10.14	9.96	288.32	21.75
9	10.947	10.12	9.96	289.06	22.22

* * *					
STATION 3					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	11.12	10.36	301.38	49.67
2	23.863	11.06	10.31	300.13	43.72
3	23.078	10.98	10.26	297.47	31.27
4	20.714	10.85	10.23	293.89	21.42
5	17.579	10.51	10.17	291.75	16.31
6	14.503	10.20	10.14	291.71	16.26
7	12.273	10.14	10.14	292.30	34.23
8	11.549	10.14	10.14	292.60	45.95
9	10.833	10.14	10.14	292.66	49.60

TABLE VI. - Continued.

(d) Reading number 1962

STAGE TOTAL PRESSURE RATIO	1.081
STAGE TOTAL TEMPERATURE RATIO	1.034
STAGE ADIABATIC EFFICIENCY	0.670
WEIGHT FLOW	12.67
ROTATIVE SPEED	7357.0
PERCENT DESIGN SPEED	80.3

. . . STATION 1 . . .					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.07	9.84	288.03	-10.10
2	23.894	10.11	9.85	288.29	-6.91
3	23.175	10.12	9.86	288.35	-8.49
4	21.011	10.14	9.85	288.13	-11.85
5	18.105	10.15	9.85	288.11	-15.56
6	15.138	10.14	9.85	287.88	-1.35
7	12.807	10.15	9.86	288.30	2.04
8	11.981	10.15	9.82	288.40	-23.98
9	11.130	10.15	9.80	288.71	-22.44

. . . STATION 2 . . .					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	10.05	9.78	288.29	8.10
2	23.873	10.11	9.77	288.33	9.79
3	23.114	10.13	9.77	288.43	9.52
4	20.836	10.15	9.76	288.29	10.37
5	17.798	10.16	9.80	288.29	11.66
6	14.742	10.13	9.86	287.91	18.94
7	12.474	10.15	9.90	288.02	21.47
8	11.712	10.10	9.90	289.31	22.39
9	10.947	10.10	9.90	290.04	23.82

. . . STATION 3 . . .					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	11.41	10.41	306.21	52.54
2	23.863	11.30	10.38	304.71	47.13
3	23.078	11.20	10.31	301.27	32.93
4	20.714	11.03	10.27	295.56	21.08
5	17.579	10.62	10.18	293.63	19.21
6	14.503	10.21	10.14	292.99	18.02
7	12.273	10.14	10.14	293.84	46.56
8	11.549	10.15	10.15	294.62	45.42
9	10.833	10.15	10.15	294.78	55.66

TABLE VI. - Continued.

(e) Reading number 1963

STAGE TOTAL PRESSURE RATIO	1.098
STAGE TOTAL TEMPERATURE RATIO	1.042
STAGE ADIABATIC EFFICIENCY	0.644
WEIGHT FLOW	15.74
ROTATIVE SPEED	8249.2
PERCENT DESIGN SPEED	90.0

. . . STATION 1 . . .					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.05	9.78	288.38	-6.69
2	23.894	10.08	9.79	288.26	-7.59
3	23.175	10.10	9.79	288.41	-9.35
4	21.011	10.13	9.78	288.27	-15.51
5	18.105	10.15	9.78	288.08	-19.25
6	15.158	10.16	9.76	287.75	-22.57
7	12.807	10.16	9.75	288.12	-25.55
8	11.981	10.15	9.75	288.20	-26.34
9	11.130	10.14	9.73	288.48	-22.91

. . . STATION 2 . . .					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.650	10.07	9.71	288.47	11.50
2	23.873	10.11	9.70	288.42	10.37
3	23.114	10.12	9.69	288.52	10.67
4	20.856	10.14	9.68	288.51	10.49
5	17.798	10.16	9.73	288.27	11.66
6	14.742	10.07	9.79	287.89	17.10
7	12.474	10.09	9.84	289.11	21.96
8	11.712	10.07	9.84	289.58	22.72
9	10.947	10.08	9.84	290.17	25.80

. . . STATION 3 . . .					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	11.66	10.49	311.58	54.05
2	23.863	11.55	10.41	309.46	49.07
3	23.078	11.41	10.32	304.78	34.96
4	20.714	11.21	10.23	297.37	20.64
5	17.579	10.73	10.19	294.67	19.36
6	14.503	10.22	10.15	294.16	18.62
7	12.273	10.15	10.15	295.86	55.59
8	11.549	10.14	10.14	296.14	57.59
9	10.833	10.15	10.14	296.29	47.11

TABLE VI. - Continued.

(f) Reading number 1964

STAGE TOTAL PRESSURE RATIO	1.117
STAGE TOTAL TEMPERATURE RATIO	1.052
STAGE ADIABATIC EFFICIENCY	0.625
WEIGHT FLOW	14.87
ROTATIVE SPEED	9175.7
PERCENT DESIGN SPEED	100.1

* * * STATION 1 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.05	9.72	288.24	-6.12
2	23.894	10.08	9.73	288.54	-8.09
3	23.175	10.09	9.72	288.45	-9.88
4	21.011	10.13	9.72	288.07	-14.21
5	18.105	10.16	9.71	288.32	-20.56
6	15.138	10.18	9.69	287.74	-22.15
7	12.807	10.14	9.65	287.68	-28.34
8	11.981	10.14	9.65	288.19	-27.15
9	11.130	10.13	9.63	288.48	-24.96

* * * STATION 2 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	10.07	9.64	288.38	13.02
2	23.873	10.10	9.63	288.50	11.02
3	23.114	10.11	9.61	288.43	10.51
4	20.836	10.14	9.59	288.13	11.27
5	17.798	10.18	9.64	288.58	11.83
6	14.742	10.05	9.73	287.84	16.73
7	12.474	10.03	9.75	288.95	21.63
8	11.712	10.04	9.77	289.83	22.65
9	10.947	10.04	9.78	290.70	24.36

* * * STATION 3 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	11.99	10.57	316.63	55.15
2	23.863	11.82	10.45	314.19	50.57
3	23.078	11.67	10.33	309.17	36.44
4	20.714	11.44	10.30	299.49	20.04
5	17.579	10.87	10.20	296.02	19.37
6	14.503	10.23	10.15	295.39	17.80
7	12.273	10.13	10.13	297.12	53.28
8	11.549	10.14	10.14	297.78	72.43
9	10.833	10.14	10.14	298.14	51.19

TABLE VI. - Continued.

(g) Reading number 1965

STAGE TOTAL PRESSURE RATIO	1.114
STAGE TOTAL TEMPERATURE RATIO	1.053
STAGE ADIABATIC EFFICIENCY	0.594
WEIGHT FLOW	12.15
ROTATIVE SPEED	9156.8
PERCENT DESIGN SPEED	99.9

* * *					
STATION 1					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.05	9.35	200.20	-7.31
2	23.894	10.11	9.64	200.17	-8.64
3	23.175	10.11	9.65	200.42	-10.24
4	21.011	10.12	9.62	200.16	-18.43
5	18.105	10.16	9.62	200.05	-24.20
6	15.193	10.15	9.60	200.01	-24.05
7	12.607	10.15	9.79	200.05	-27.64
8	11.931	10.16	9.70	200.57	-24.59
9	11.150	10.14	9.79	200.57	-26.66

* * *					
STATION 2					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.650	10.07	9.60	200.79	14.36
2	23.873	10.10	9.70	200.41	11.18
3	23.114	10.13	9.76	200.50	10.25
4	20.856	10.13	9.72	200.35	10.82
5	17.798	10.16	9.76	200.22	12.10
6	14.742	10.07	9.60	200.30	15.90
7	12.474	10.10	9.65	200.29	20.78
8	11.712	10.10	9.86	290.16	21.75
9	10.947	10.07	9.87	290.54	23.51

* * *					
STATION 3					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	12.11	10.73	317.98	65.13
2	23.863	11.85	10.59	315.27	61.63
3	23.078	11.59	10.46	311.28	49.41
4	20.714	11.39	10.40	301.16	25.97
5	17.579	10.94	10.34	296.24	22.20
6	14.503	10.38	10.28	295.97	24.55
7	12.273	10.29	10.29	296.45	51.79
8	11.549	10.28	10.28	296.85	50.91
9	10.833	10.29	10.29	297.02	63.90

TABLE VI. - Concluded.

(h) Reading number 1966

STAGE TOTAL PRESSURE RATIO	1.036
STAGE TOTAL TEMPERATURE RATIO	1.045
STAGE ADIABATIC EFFICIENCY	0.620
WEIGHT FLOW	11.21
ROTATIVE SPEED	8235.9
PERCENT DESIGN SPEED	89.8

* * *					
STATION 1					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.07	9.83	288.42	-6.59
2	25.834	10.12	9.88	287.67	-6.54
3	25.175	10.15	9.90	287.79	-7.66
4	21.011	10.15	9.88	288.34	-15.78
5	18.105	10.14	9.87	288.45	-19.19
6	15.158	10.15	9.86	287.39	-22.01
7	12.807	10.14	9.85	287.85	-26.05
8	11.981	10.14	9.85	288.26	-24.00
9	11.130	10.11	9.82	288.86	-22.09

* * *					
STATION 2					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.650	10.09	9.85	288.49	13.60
2	25.875	10.09	9.85	287.59	9.50
3	25.114	10.12	9.86	287.88	9.44
4	21.856	10.15	9.88	288.35	10.50
5	17.798	10.16	9.81	288.55	12.01
6	14.742	10.08	9.86	288.12	16.62
7	12.474	10.10	9.90	289.07	21.55
8	11.712	10.10	9.91	289.75	22.17
9	10.947	10.07	9.89	290.42	23.31

* * *					
STATION 3					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	11.72	10.62	311.92	63.55
2	25.863	11.55	10.48	309.75	59.61
3	25.078	11.40	10.37	306.51	47.24
4	20.714	11.18	10.36	298.50	24.86
5	17.579	10.80	10.30	294.72	21.98
6	14.503	10.34	10.26	294.59	24.15
7	12.273	10.26	10.26	295.09	46.54
8	11.549	10.26	10.26	295.60	62.35
9	10.833	10.25	10.25	296.03	63.32

**TABLE VII. - PERFORMANCE FOR
STAGE 51BR4-51R**

(a) Reading number 2000

STAGE TOTAL PRESSURE RATIO	1.035
STAGE TOTAL TEMPERATURE RATIO	1.011
STAGE ADIABATIC EFFICIENCY	0.889
WEIGHT FLOW	8.15
ROTATIVE SPEED	4619.8
PERCENT DESIGN SPEED	50.4

* * * STATION 1 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.11	10.02	288.84	-10.64
2	23.894	10.12	10.02	288.99	-10.20
3	23.175	10.12	10.03	288.24	-9.12
4	21.011	10.13	10.02	287.89	-7.16
5	18.105	10.13	10.03	288.25	-2.84
6	15.138	10.14	10.03	287.81	-0.91
7	12.807	10.14	10.03	289.08	1.93
8	11.981	10.14	10.03	287.84	3.59
9	11.130	10.14	10.03	288.12	4.99

* * * STATION 2 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	10.11	9.98	288.74	7.92
2	23.875	10.11	9.98	288.87	8.58
3	23.114	10.12	9.98	288.37	9.11
4	20.836	10.13	9.98	287.74	11.11
5	17.798	10.13	10.01	287.81	13.71
6	14.742	10.14	10.04	287.48	20.02
7	12.474	10.14	10.05	287.91	22.02
8	11.712	10.14	10.06	288.08	22.80
9	10.947	10.12	10.06	289.65	23.85

* * * STATION 3 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	10.59	10.24	293.84	31.47
2	23.863	10.60	10.23	292.86	25.89
3	23.078	10.59	10.22	291.88	23.96
4	20.714	10.48	10.19	290.34	19.79
5	17.579	10.27	10.16	289.64	14.87
6	14.503	10.15	10.15	291.21	54.33
7	12.273	10.15	10.15	291.66	61.36
8	11.549	10.15	10.15	291.62	33.85
9	10.833	10.15	10.15	291.93	10.73

TABLE VII. - Continued.

(b) Reading number 2001

STAGE TOTAL PRESSURE RATIO	1.051
STAGE TOTAL TEMPERATURE RATIO	1.016
STAGE ADIABATIC EFFICIENCY	0.874
WEIGHT FLOW	9.75
ROTATIVE SPEED	5516.1
PERCENT DESIGN SPEED	60.2

* * * STATION 1 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.10	9.98	288.28	-12.13
2	23.894	10.12	9.98	288.24	-10.25
3	23.175	10.13	9.98	288.34	-8.44
4	21.011	10.13	9.98	288.38	-5.55
5	18.105	10.13	9.98	287.65	-1.42
6	15.138	10.14	9.99	288.33	-0.33
7	12.807	10.14	9.99	288.22	1.45
8	11.981	10.14	9.99	288.05	4.68
9	11.130	10.14	9.99	288.13	3.03

* * * STATION 2 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	10.10	9.91	288.49	7.95
2	23.873	10.12	9.91	288.32	8.44
3	23.114	10.12	9.91	288.36	9.07
4	20.836	10.15	9.92	288.34	11.01
5	17.798	10.14	9.93	287.72	13.55
6	14.742	10.15	10.00	287.95	19.97
7	12.474	10.15	10.02	288.12	22.18
8	11.712	10.14	10.02	288.34	22.90
9	10.947	10.12	10.03	288.94	24.12

* * * STATION 3 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	10.81	10.23	295.84	31.84
2	23.863	10.81	10.27	294.68	25.36
3	23.078	10.79	10.26	293.64	23.40
4	20.714	10.64	10.21	292.16	19.58
5	17.579	10.33	10.17	290.06	14.51
6	14.503	10.15	10.16	291.71	12.20
7	12.273	10.16	10.16	292.09	12.28
8	11.549	10.16	10.15	292.15	19.22
9	10.833	10.16	10.16	291.98	19.21

TABLE VII. - Continued.

(c) Reading number 2002

STAGE TOTAL PRESSURE RATIO	1.070
STAGE TOTAL TEMPERATURE RATIO	1.022
STAGE ADIABATIC EFFICIENCY	0.870
WEIGHT FLOW	11.56
ROTATIVE SPEED	6457.2
PERCENT DESIGN SPEED	70.4

* * * STATION 1 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.09	9.92	288.23	-11.82
2	25.894	10.11	9.92	288.50	-10.01
3	23.175	10.12	9.93	288.30	-7.83
4	21.011	10.13	9.93	287.82	-3.92
5	18.105	10.13	9.93	288.14	-1.50
6	15.138	10.14	9.93	288.39	0.47
7	12.807	10.16	9.92	287.62	-22.80
8	11.981	10.15	9.94	288.64	0.02
9	11.130	10.15	9.94	288.77	1.89

* * * STATION 2 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	10.10	9.93	288.66	7.71
2	23.873	10.10	9.93	288.61	8.38
3	23.114	10.13	9.93	288.17	8.96
4	20.835	10.15	9.93	288.11	11.08
5	17.798	10.14	9.89	288.22	13.45
6	14.742	10.15	9.93	287.99	19.85
7	12.474	10.13	9.98	288.40	23.17
8	11.712	10.15	9.99	288.88	23.72
9	10.947	10.12	9.99	289.40	24.82

* * * STATION 3 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	11.06	10.34	298.39	31.50
2	23.863	11.06	10.33	296.89	25.35
3	23.078	11.03	10.31	295.73	23.45
4	20.714	10.82	10.25	293.47	19.37
5	17.579	10.39	10.18	291.16	13.79
6	14.503	10.16	10.16	292.77	14.50
7	12.273	10.18	10.17	293.34	17.93
8	11.549	10.17	10.16	293.45	12.11
9	10.833	10.17	10.16	293.66	7.24

TABLE VII. - Continued.

(d) Reading number 2003

STAGE TOTAL PRESSURE RATIO	1.092
STAGE TOTAL TEMPERATURE RATIO	1.029
STAGE ADIABATIC EFFICIENCY	0.869
WEIGHT FLOW	12.99
ROTATIVE SPEED	7357.4
PERCENT DESIGN SPEED	80.3

* * * STATION 1 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.08	9.86	288.25	-11.44
2	23.894	10.11	9.86	287.86	-10.46
3	23.175	10.13	9.86	288.23	-8.75
4	21.011	10.12	9.86	287.98	-5.50
5	18.105	10.14	9.86	288.18	-1.23
6	15.158	10.14	9.87	287.97	0.61
7	12.807	10.15	9.87	288.52	0.92
8	11.981	10.16	9.88	288.92	-1.28
9	11.130	10.16	9.88	288.44	-22.14

* * * STATION 2 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.650	10.06	9.74	288.50	7.82
2	23.873	10.11	9.74	287.93	8.25
3	23.114	10.12	9.73	288.11	8.92
4	20.836	10.15	9.75	288.21	11.71
5	17.798	10.13	9.82	288.14	13.79
6	14.742	10.15	9.89	287.98	20.06
7	12.474	10.17	9.93	288.56	22.37
8	11.712	10.16	9.95	289.18	23.43
9	10.947	10.11	9.96	290.26	25.54

* * * STATION 3 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	11.36	10.43	300.70	30.88
2	23.863	11.37	10.40	298.86	25.26
3	23.078	11.33	10.37	298.00	23.41
4	20.714	11.04	10.28	295.52	19.45
5	17.579	10.47	10.20	292.64	13.38
6	14.503	10.17	10.17	294.12	54.35
7	12.273	10.18	10.18	294.77	9.86
8	11.549	10.19	10.18	294.82	9.31
9	10.833	10.19	10.19	295.69	10.15

TABLE VII. - Continued.

(e) Reading number 2004

STAGE TOTAL PRESSURE RATIO	1.116
STAGE TOTAL TEMPERATURE RATIO	1.037
STAGE ADIABATIC EFFICIENCY	0.859
WEIGHT FLOW	14.33
ROTATIVE SPEED	8269.6
PERCENT DESIGN SPEED	90.2

* * *		STATION 1			* * *
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.06	9.76	288.15	-5.31
2	23.894	10.08	9.77	288.38	-6.91
3	23.175	10.10	9.77	288.43	-8.18
4	21.011	10.13	9.78	288.03	-11.44
5	18.105	10.15	9.76	288.13	-18.51
6	15.138	10.16	9.74	288.30	-24.21
7	12.807	10.16	9.74	287.82	-25.06
8	11.981	10.14	9.72	288.01	-25.75
9	11.130	10.15	9.71	288.18	-25.74

* * *		STATION 2			* * *
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	10.09	9.60	288.20	10.17
2	23.875	10.12	9.60	288.46	9.75
3	23.114	10.13	9.59	288.40	9.76
4	20.856	10.16	9.63	288.19	11.49
5	17.798	10.17	9.72	288.47	11.66
6	14.742	10.07	9.81	288.60	18.63
7	12.474	10.09	9.65	289.50	25.02
8	11.712	10.08	9.86	289.91	24.66
9	10.947	10.09	9.87	290.03	24.66

* * *		STATION 3			* * *
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	11.69	10.51	304.31	30.15
2	23.863	11.69	10.48	301.90	24.00
3	23.078	11.64	10.44	300.13	22.69
4	20.714	11.25	10.32	297.11	20.86
5	17.579	10.54	10.21	294.35	19.74
6	14.503	10.18	10.18	295.69	45.00
7	12.273	10.18	10.18	296.62	16.67
8	11.549	10.18	10.17	296.84	20.00
9	10.833	10.18	10.18	297.34	56.57

TABLE VII. - Continued.

(f) Reading number 2005

STAGE TOTAL PRESSURE RATIO	1.144
STAGE TOTAL TEMPERATURE RATIO	1.046
STAGE ADIABATIC EFFICIENCY	0.858
WEIGHT FLOW	15.87
ROTATIVE SPEED	9145.4
PERCENT DESIGN SPEED	99.8

* * * STATION 1 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.02	9.57	288.64	-5.58
2	23.894	10.07	9.58	288.51	-6.99
3	23.175	10.10	9.59	288.34	-8.63
4	21.011	10.13	9.58	287.97	-12.43
5	18.105	10.15	9.67	288.15	-19.00
6	15.133	10.17	9.65	288.11	-23.78
7	12.807	10.17	9.64	287.93	-24.64
8	11.981	10.17	9.64	287.78	-24.91
9	11.130	10.14	9.63	288.65	-24.95

* * * STATION 2 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.650	10.09	9.49	288.88	12.08
2	23.873	10.12	9.47	288.31	10.31
3	23.114	10.13	9.46	288.34	9.81
4	20.836	10.16	9.50	288.17	11.23
5	17.793	10.18	9.62	288.50	12.04
6	14.742	10.04	9.73	288.50	18.14
7	12.474	10.08	9.79	289.55	23.64
8	11.712	10.06	9.81	290.19	25.27
9	10.947	10.05	9.82	291.15	26.91

* * * STATION 3 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	12.05	10.60	307.67	29.34
2	23.863	12.07	10.56	304.65	24.11
3	23.078	12.01	10.52	303.14	22.78
4	20.714	11.49	10.35	299.33	21.45
5	17.579	10.62	10.23	295.47	19.45
6	14.503	10.19	10.19	297.32	20.52
7	12.273	10.20	10.19	298.54	15.52
8	11.549	10.19	10.18	298.89	19.85
9	10.833	10.19	10.19	299.49	17.97

TABLE VII. - Continued.

(g) Reading number 2007

STAGE TOTAL PRESSURE RATIO	1.123
STAGE TOTAL TEMPERATURE RATIO	1.041
STAGE ADIABATIC EFFICIENCY	0.810
WEIGHT FLOW	11.93
ROTATIVE SPEED	8251.3
PERCENT DESIGN SPEED	89.8

* * *					
STATION 1					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.07	9.86	288.35	-6.23
2	23.894	10.09	9.86	288.50	-7.02
3	23.175	10.11	9.87	288.19	-8.74
4	21.011	10.13	9.86	288.04	-12.89
5	18.105	10.15	9.86	288.19	-19.17
6	15.138	10.16	9.84	288.23	-22.39
7	12.807	10.15	9.83	287.77	-25.80
8	11.981	10.15	9.83	287.87	-25.66
9	11.130	10.14	9.83	288.51	-21.84

* * *					
STATION 2					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	10.12	9.75	288.51	11.28
2	23.873	10.14	9.74	288.42	10.35
3	23.114	10.15	9.73	288.20	8.97
4	20.836	10.17	9.74	288.23	10.81
5	17.798	10.18	9.81	288.52	11.51
6	14.742	10.11	9.88	288.60	18.40
7	12.474	10.12	9.92	289.35	23.44
8	11.712	10.11	9.93	289.91	25.20
9	10.947	10.10	9.95	290.78	26.37

* * *					
STATION 3					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	11.83	10.71	308.62	44.53
2	23.863	11.72	10.66	304.25	32.56
3	23.078	11.64	10.61	301.08	26.79
4	20.714	11.33	10.49	297.66	24.83
5	17.579	10.71	10.39	295.20	25.07
6	14.503	10.36	10.36	297.07	44.37
7	12.273	10.37	10.37	297.73	25.99
8	11.549	10.36	10.36	297.93	50.81
9	10.833	10.36	10.37	298.43	58.09

TABLE VII. - Continued.

(h) Reading number 2008

STAGE TOTAL PRESSURE RATIO	1.100
STAGE TOTAL TEMPERATURE RATIO	1.052
STAGE ADIABATIC EFFICIENCY	0.851
WEIGHT FLOW	11.00
ROTATIVE SPEED	7342.5
PERCENT DESIGN SPEED	80.1

* * * STATION 1 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.10	9.91	208.42	-12.64
2	23.894	10.11	9.91	208.08	-10.45
3	23.175	10.12	9.91	208.09	-8.27
4	21.011	10.13	9.93	208.24	-10.53
5	18.105	10.15	9.92	207.90	-17.30
6	15.138	10.14	9.95	208.25	0.67
7	12.807	10.14	9.95	208.05	2.67
8	11.981	10.14	9.94	208.08	2.44
9	11.130	10.14	9.93	209.00	4.11

* * * STATION 2 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	10.10	9.81	208.25	8.03
2	23.873	10.13	9.81	208.37	8.30
3	23.114	10.14	9.80	208.07	9.10
4	20.836	10.17	9.85	208.22	10.71
5	17.798	10.18	9.88	208.13	12.00
6	14.742	10.16	9.94	208.10	19.02
7	12.474	10.17	9.97	208.55	22.27
8	11.712	10.15	9.98	209.13	23.36
9	10.947	10.12	9.99	209.03	25.09

* * * STATION 3 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	11.48	10.57	303.41	40.02
2	23.863	11.41	10.53	300.36	30.87
3	23.078	11.37	10.49	298.49	26.83
4	20.714	11.11	10.43	295.72	24.12
5	17.579	10.61	10.35	293.70	24.81
6	14.503	10.31	10.32	295.36	16.51
7	12.273	10.32	10.32	295.87	35.60
8	11.549	10.31	10.32	296.01	27.38
9	10.833	10.30	10.32	296.53	16.02

TABLE VII. - Continued.

(i) Reading number 2009

STAGE TOTAL PRESSURE RATIO	1.077
STAGE TOTAL TEMPERATURE RATIO	1.025
STAGE ADIABATIC EFFICIENCY	0.866
WEIGHT FLOW	9.65
ROTATIVE SPEED	6424.8
PERCENT DESIGN SPEED	70.1

• • •		STATION 1			• • •	
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ	
1	24.610	10.09	9.98	288.43	-12.51	
2	23.894	10.12	9.99	288.05	-11.57	
3	23.175	10.12	9.99	288.14	-9.04	
4	21.011	10.13	9.99	288.41	-4.68	
5	18.105	10.14	9.99	287.66	-2.20	
6	15.138	10.14	9.99	288.01	0.24	
7	12.807	10.15	10.00	288.11	1.88	
8	11.981	10.15	10.00	288.59	4.18	
9	11.150	10.15	9.99	288.55	4.19	

• • •		STATION 2			• • •	
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ	
1	24.650	10.13	9.92	288.20	8.54	
2	23.873	10.14	9.91	288.02	8.59	
3	23.114	10.16	9.91	288.43	8.41	
4	20.833	10.17	9.92	288.15	11.81	
5	17.798	10.16	9.95	287.92	13.46	
6	14.742	10.17	10.00	287.93	19.81	
7	12.474	10.18	10.02	288.25	22.52	
8	11.712	10.17	10.03	289.64	23.31	
9	10.947	10.17	10.04	290.45	23.31	

• • •		STATION 3			• • •	
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ	
1	24.648	11.18	10.49	300.29	43.20	
2	23.863	11.13	10.47	297.89	32.52	
3	23.078	11.09	10.43	296.30	27.37	
4	20.714	10.91	10.37	293.76	25.24	
5	17.579	10.50	10.31	292.04	21.26	
6	14.503	10.29	10.29	293.54	53.43	
7	12.273	10.30	10.29	294.06	26.92	
8	11.549	10.29	10.29	294.77	51.83	
9	10.833	10.30	10.29	294.66	16.36	

TABLE VII. - Continued.

(j) Reading number 2010

STAGE TOTAL PRESSURE RATIO	1.052
STAGE TOTAL TEMPERATURE RATIO	1.018
STAGE ADIABATIC EFFICIENCY	0.918
WEIGHT FLOW	8.33
ROTATIVE SPEED	5519.8
PERCENT DESIGN SPEED	60.2

* * * STATION 1 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.11	10.03	288.44	-15.02
2	23.894	10.12	10.03	288.22	-13.42
3	23.175	10.12	10.03	288.34	-11.79
4	21.011	10.13	10.04	288.03	-6.90
5	18.105	10.14	10.03	288.02	-3.18
6	15.138	10.14	10.04	288.00	-0.30
7	12.807	10.14	10.04	288.30	3.49
8	11.981	10.14	10.04	288.34	5.50
9	11.130	10.14	10.04	288.69	6.65

* * * STATION 2 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	10.14	9.98	288.19	8.50
2	23.873	10.15	9.98	288.16	9.10
3	23.114	10.16	9.97	288.17	9.01
4	20.836	10.17	9.98	287.79	11.61
5	17.798	10.16	10.01	287.74	13.86
6	14.742	10.18	10.03	287.50	20.00
7	12.474	10.18	10.06	287.93	22.45
8	11.712	10.17	10.06	288.84	23.41
9	10.947	10.15	10.07	290.06	25.07

* * * STATION 3 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	10.91	10.40	296.95	41.62
2	23.863	10.88	10.38	295.14	32.21
3	23.078	10.85	10.36	293.88	27.32
4	20.714	10.71	10.31	292.17	23.21
5	17.579	10.42	10.27	290.87	20.25
6	14.503	10.26	10.25	291.81	22.53
7	12.273	10.26	10.25	292.61	30.74
8	11.549	10.26	10.25	292.59	21.04
9	10.833	10.26	10.25	292.86	36.73

TABLE VII. - Concluded.

(k) Reading number 2011

STAGE TOTAL PRESSURE RATIO	1.041
STAGE TOTAL TEMPERATURE RATIO	1.000
STAGE ADIABATIC EFFICIENCY	1.217
WEIGHT FLOW	6.65
ROTATIVE SPEED	4504.6
PERCENT DESIGN SPEED	50.0

* * * STATION 1 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.11	10.06	287.93	-15.20
2	23.894	10.13	10.06	288.22	-18.46
3	23.175	10.13	10.06	288.16	-16.50
4	21.011	10.13	10.06	288.18	-12.01
5	18.105	10.14	10.06	288.30	-8.65
6	15.138	10.14	10.06	288.11	-5.26
7	12.807	10.14	10.06	288.07	2.17
8	11.981	10.14	10.06	287.75	5.74
9	11.130	10.14	10.06	288.57	8.74

* * * STATION 2 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.656	10.14	10.02	287.43	9.72
2	23.873	10.16	10.02	287.40	9.60
3	23.114	10.16	10.02	287.26	9.76
4	20.856	10.17	10.02	287.59	11.47
5	17.790	10.17	10.04	287.03	13.60
6	14.742	10.18	10.06	286.74	20.21
7	12.474	10.18	10.07	286.98	22.60
8	11.712	10.18	10.08	287.64	23.62
9	10.947	10.16	10.08	288.69	25.40

* * * STATION 3 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	10.60	10.32	293.45	40.96
2	23.863	10.65	10.30	292.52	31.23
3	23.078	10.63	10.28	291.44	26.31
4	20.714	10.54	10.25	290.10	22.58
5	17.579	10.35	10.22	289.27	18.80
6	14.503	10.23	10.21	290.47	9.56
7	12.273	10.23	10.21	290.24	10.02
8	11.549	10.23	10.21	290.64	9.62
9	10.833	10.24	10.21	291.01	8.84

**TABLE VIII. - PERFORMANCE FOR
STAGE 51BR3-51R**

(a) Reading number 1975

STAGE TOTAL PRESSURE RATIO	1.029
STAGE TOTAL TEMPERATURE RATIO	1.007
STAGE ADIABATIC EFFICIENCY	1.092
WEIGHT FLOW	7.17
ROTATIVE SPEED	4604.7
PERCENT DESIGN SPEED	50.2

* * * STATION 1 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.12	10.06	209.44	-11.97
2	23.894	10.12	10.06	209.14	-11.32
3	23.175	10.13	10.06	209.54	-10.90
4	21.011	10.13	10.06	207.06	-8.60
5	18.105	10.13	10.06	209.31	-5.40
6	15.150	10.14	10.06	207.87	-2.15
7	12.007	10.14	10.06	207.70	2.02
8	11.901	10.14	10.06	207.77	3.50
9	11.130	10.14	10.06	208.52	4.64

* * * STATION 2 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.650	10.14	10.02	209.10	0.50
2	23.873	10.14	10.02	209.60	0.40
3	23.114	10.14	10.02	207.02	0.60
4	20.850	10.15	10.03	207.60	10.47
5	17.790	10.15	10.05	207.41	15.71
6	14.742	10.15	10.07	207.00	19.00
7	12.474	10.16	10.09	207.40	21.92
8	11.712	10.15	10.09	207.76	25.09
9	10.947	10.14	10.09	208.66	25.71

* * * STATION 3 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	10.53	10.22	292.24	24.40
2	23.863	10.53	10.21	291.69	23.20
3	23.078	10.51	10.20	290.70	22.13
4	20.714	10.41	10.17	289.23	18.60
5	17.579	10.22	10.15	288.74	16.00
6	14.503	10.15	10.14	290.12	19.34
7	12.273	10.15	10.14	291.23	18.61
8	11.549	10.15	10.14	290.99	19.24
9	10.833	10.15	10.14	291.83	29.86

TABLE VIII. - Continued.

(b) Reading number 1976

STAGE TOTAL PRESSURE RATIO	1.042
STAGE TOTAL TEMPERATURE RATIO	1.012
STAGE ADIABATIC EFFICIENCY	0.948
WEIGHT FLOW	8.64
ROTATIVE SPEED	5539.8
PERCENT DESIGN SPEED	60.4

. . . STATION 1 . . .					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.11	10.05	288.19	-9.72
2	23.894	10.12	10.02	288.04	-10.94
3	23.175	10.12	10.05	288.19	-9.57
4	21.011	10.13	10.02	288.72	-4.07
5	18.105	10.13	10.05	287.95	-3.40
6	15.138	10.14	10.03	287.57	-1.91
7	12.807	10.14	10.03	288.75	2.16
8	11.981	10.14	10.03	288.57	2.80
9	11.130	10.14	10.03	288.04	3.71

. . . STATION 2 . . .					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	10.13	9.97	288.25	8.22
2	23.873	10.14	9.97	288.05	8.26
3	23.114	10.15	9.97	287.93	8.70
4	20.836	10.16	9.98	288.16	10.90
5	17.793	10.16	10.01	287.65	15.45
6	14.742	10.16	10.04	287.18	20.12
7	12.474	10.17	10.06	287.75	22.22
8	11.712	10.15	10.07	288.14	23.29
9	10.947	10.13	10.07	289.21	25.90

. . . STATION 3 . . .					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	10.71	10.24	293.90	24.68
2	23.863	10.72	10.24	292.98	22.98
3	23.078	10.68	10.24	292.24	21.84
4	20.714	10.53	10.19	291.12	18.05
5	17.579	10.26	10.16	289.60	15.04
6	14.503	10.15	10.15	290.76	17.44
7	12.273	10.16	10.15	291.09	18.33
8	11.549	10.15	10.15	291.55	19.45
9	10.833	10.15	10.15	291.72	24.22

TABLE VIII. - Continued.

(c) Reading number 1977

STAGE TOTAL PRESSURE RATIO	1.052
STAGE TOTAL TEMPERATURE RATIO	1.018
STAGE ADIABATIC EFFICIENCY	0.922
WEIGHT FLOW	10.01
ROTATIVE SPEED	6453.6
PERCENT DESIGN SPEED	70.4

. . . STATION 1 . . .					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.10	9.99	288.36	-10.56
2	23.894	10.12	9.99	287.93	-10.24
3	23.175	10.11	9.98	288.58	-6.89
4	21.011	10.13	9.99	288.00	-3.61
5	18.105	10.14	9.99	288.23	-2.79
6	15.158	10.14	9.99	287.93	-1.79
7	12.807	10.15	9.99	288.10	2.45
8	11.981	10.15	9.99	288.04	3.08
9	11.130	10.15	9.99	288.53	2.63

. . . STATION 2 . . .					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.650	10.12	9.90	288.52	7.49
2	23.873	10.13	9.90	287.99	7.84
3	23.114	10.15	9.90	288.51	8.59
4	20.836	10.17	9.92	287.85	10.60
5	17.793	10.15	9.96	287.97	13.56
6	14.742	10.17	10.01	287.49	20.12
7	12.474	10.17	10.04	287.88	22.25
8	11.712	10.16	10.04	288.41	25.41
9	10.947	10.14	10.05	289.71	25.40

. . . STATION 3 . . .					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	10.94	10.30	295.91	25.00
2	23.863	10.93	10.29	294.95	22.74
3	23.078	10.90	10.28	294.40	21.50
4	20.714	10.68	10.22	292.01	17.87
5	17.579	10.30	10.17	290.65	14.36
6	14.503	10.17	10.16	291.31	14.65
7	12.273	10.16	10.16	292.48	18.14
8	11.549	10.16	10.16	292.96	15.87
9	10.833	10.16	10.16	293.08	25.92

TABLE VIII. - Continued.

(d) Reading number 1978

STAGE TOTAL PRESSURE RATIO	1.077
STAGE TOTAL TEMPERATURE RATIO	1.025
STAGE ADIABATIC EFFICIENCY	0.851
WEIGHT FLOW	11.40
ROTATIVE SPEED	7382.7
PERCENT DESIGN SPEED	80.5

. . . STATION 1 . . .					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.08	9.93	288.55	-9.82
2	23.894	10.11	9.93	288.22	-11.23
3	23.175	10.13	9.93	288.27	-7.86
4	21.011	10.12	9.93	288.13	-4.99
5	18.105	10.15	9.94	288.13	-16.12
6	15.138	10.15	9.93	287.48	-20.26
7	12.807	10.14	9.93	288.50	-0.96
8	11.981	10.14	9.94	288.25	3.35
9	11.130	10.14	9.94	289.29	2.87

. . . STATION 2 . . .					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	10.11	9.82	288.78	7.33
2	23.873	10.14	9.82	288.56	8.02
3	23.114	10.16	9.82	288.25	8.85
4	20.856	10.16	9.84	288.26	10.66
5	17.798	10.18	9.91	288.26	11.39
6	14.742	10.13	9.97	288.34	18.85
7	12.474	10.18	10.00	288.31	22.57
8	11.712	10.16	10.00	289.24	23.84
9	10.947	10.12	10.01	290.74	25.98

. . . STATION 3 . . .					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	11.19	10.35	298.40	24.38
2	23.863	11.19	10.34	297.48	22.24
3	23.078	11.14	10.33	296.44	21.25
4	20.714	10.86	10.24	293.91	17.82
5	17.579	10.34	10.18	292.73	16.12
6	14.503	10.17	10.17	294.37	15.31
7	12.273	10.16	10.16	294.39	22.19
8	11.549	10.17	10.16	294.59	15.39
9	10.833	10.16	10.16	295.09	47.88

TABLE VIII. - Continued.

(e) Reading number 1980

STAGE TOTAL PRESSURE RATIO	1.095
STAGE TOTAL TEMPERATURE RATIO	1.031
STAGE ADIABATIC EFFICIENCY	0.845
WEIGHT FLOW	12.54
ROTATIVE SPEED	8229.6
PERCENT DESIGN SPEED	89.8

* * *					
STATION 1					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.07	9.88	233.65	-5.26
2	23.894	10.10	9.88	238.41	-4.84
3	23.175	10.11	9.88	232.49	-7.19
4	21.011	10.13	9.88	238.26	-10.68
5	18.105	10.15	9.87	238.17	-18.10
6	15.138	10.15	9.88	237.82	-21.91
7	12.807	10.15	9.85	237.55	-23.61
8	11.981	10.15	9.85	237.64	-25.56
9	11.130	10.14	9.85	238.56	-21.29

* * *					
STATION 2					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	10.13	9.73	233.60	9.81
2	23.873	10.15	9.74	238.09	9.61
3	23.114	10.16	9.74	238.46	10.17
4	20.256	10.17	9.77	233.19	10.73
5	17.798	10.18	9.84	233.49	11.24
6	14.742	10.11	9.91	233.25	18.65
7	12.474	10.13	9.95	233.89	24.14
8	11.712	10.12	9.97	239.60	25.36
9	10.947	10.11	9.98	290.65	26.93

* * *					
STATION 3					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	11.46	10.42	300.67	23.68
2	23.863	11.45	10.40	299.10	20.95
3	23.078	11.38	10.38	298.21	20.52
4	20.714	11.00	10.27	295.83	19.09
5	17.579	10.38	10.18	293.40	17.79
6	14.503	10.17	10.16	295.30	18.36
7	12.273	10.17	10.16	295.93	26.26
8	11.549	10.17	10.16	296.19	24.61
9	10.833	10.17	10.17	296.64	48.62

TABLE VIII. - Continued.

(f) Reading number 1981

STAGE TOTAL PRESSURE RATIO	1.129
STAGE TOTAL TEMPERATURE RATIO	1.058
STAGE ADIABATIC EFFICIENCY	0.874
WEIGHT FLOW	14.09
ROTATIVE SPEED	9161.3
PERCENT DESIGN SPEED	99.9

* * * STATION 1 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.09	9.81	289.04	-11.13
2	25.894	10.13	9.82	289.15	-8.54
3	25.175	10.12	9.82	287.99	-9.00
4	21.011	10.13	9.82	287.92	-4.42
5	18.105	10.14	9.82	288.21	-1.17
6	15.138	10.14	9.82	288.30	-0.58
7	12.867	10.15	9.82	287.54	2.12
8	11.981	10.15	9.82	288.95	5.21
9	11.130	10.15	9.83	290.04	1.50

* * * STATION 2 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.650	10.10	9.65	288.09	8.39
2	25.875	10.12	9.64	287.96	8.68
3	25.114	10.15	9.65	288.14	9.50
4	20.856	10.18	9.68	287.83	11.51
5	17.798	10.14	9.77	287.70	13.95
6	14.742	10.17	9.86	287.78	20.18
7	12.474	10.17	9.91	288.18	22.50
8	11.712	10.14	9.92	289.42	23.72
9	10.947	10.09	9.94	290.97	26.26

* * * STATION 3 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	11.81	10.49	303.13	25.88
2	25.863	11.80	10.47	301.69	21.93
3	25.078	11.72	10.44	300.90	21.15
4	20.714	11.27	10.29	297.37	17.94
5	17.579	10.43	10.19	293.90	12.71
6	14.503	10.18	10.17	296.12	13.99
7	12.273	10.17	10.17	297.59	19.40
8	11.549	10.17	10.17	298.07	15.25
9	10.833	10.17	10.17	298.39	47.90

TABLE VIII. - Continued.

(g) Reading number 1982

STAGE TOTAL PRESSURE RATIO	1.151
STAGE TOTAL TEMPERATURE RATIO	1.048
STAGE ADIABATIC EFFICIENCY	0.863
WEIGHT FLOW	11.44
ROTATIVE SPEED	9174.1
PERCENT DESIGN SPEED	100.1

* * * STATION 1 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.09	9.91	288.91	-5.23
2	23.894	10.11	9.90	288.62	-6.12
3	23.175	10.11	9.90	288.20	-3.63
4	21.011	10.11	9.90	288.28	-3.83
5	18.105	10.15	9.91	288.21	-14.89
6	15.138	10.16	9.89	287.42	-23.09
7	12.807	10.15	9.88	287.99	-25.25
8	11.981	10.15	9.87	288.05	-24.87
9	11.130	10.14	9.86	288.53	-23.12

* * * STATION 2 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	10.14	9.77	288.57	11.32
2	23.873	10.16	9.77	288.45	10.09
3	23.114	10.17	9.77	287.94	9.96
4	20.836	10.17	9.79	288.38	11.30
5	17.798	10.18	9.86	288.54	11.50
6	14.742	10.12	9.93	288.19	19.03
7	12.474	10.13	9.98	289.77	24.21
8	11.712	10.13	9.99	290.03	26.10
9	10.947	10.11	10.01	290.82	28.75

* * * STATION 3 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	12.09	10.92	307.62	34.55
2	23.863	12.04	10.87	304.70	28.42
3	23.078	11.96	10.82	302.75	26.68
4	20.714	11.54	10.67	298.82	25.09
5	17.579	10.76	10.58	298.77	30.79
6	14.503	10.57	10.56	299.89	32.30
7	12.273	10.56	10.56	301.23	69.57
8	11.549	10.56	10.56	301.81	61.63
9	10.833	10.57	10.56	301.97	39.81

TABLE VIII. - Continued.

(h) Reading number 1983

STAGE TOTAL PRESSURE RATIO	1.138
STAGE TOTAL TEMPERATURE RATIO	1.044
STAGE ADIABATIC EFFICIENCY	0.858
WEIGHT FLOW	12.38
ROTATIVE SPEED	9198.6
PERCENT DESIGN SPEED	100.3

. . . STATION 1 . . .					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.06	9.84	288.65	-5.80
2	23.894	10.09	9.85	288.43	-6.59
3	23.175	10.11	9.86	288.67	-8.54
4	21.011	10.13	9.85	288.43	-12.30
5	18.105	10.14	9.85	287.85	-16.17
6	15.138	10.16	9.84	287.87	-22.16
7	12.807	10.16	9.82	287.70	-24.06
8	11.981	10.15	9.83	287.57	-22.94
9	11.130	10.14	9.83	288.34	-23.12

. . . STATION 2 . . .					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	10.13	9.68	288.67	10.46
2	23.873	10.14	9.68	288.27	9.52
3	23.114	10.16	9.69	288.46	10.20
4	20.856	10.18	9.72	288.55	10.76
5	17.798	10.18	9.81	288.23	11.50
6	14.742	10.12	9.89	288.32	19.11
7	12.474	10.13	9.95	289.43	24.66
8	11.712	10.12	9.95	290.30	25.55
9	10.947	10.11	9.97	290.93	28.36

. . . STATION 3 . . .					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	11.96	10.69	305.62	26.96
2	23.863	11.94	10.63	303.30	24.25
3	23.078	11.87	10.58	301.64	23.64
4	20.714	11.38	10.49	298.59	23.27
5	17.579	10.62	10.40	296.81	24.41
6	14.503	10.39	10.38	298.97	26.66
7	12.273	10.39	10.38	300.21	27.09
8	11.549	10.37	10.37	300.01	46.63
9	10.833	10.39	10.39	300.98	51.20

TABLE VIII. - Continued.

(i) Reading number 1984

STAGE TOTAL PRESSURE RATIO	1.122
STAGE TOTAL TEMPERATURE RATIO	1.059
STAGE ADIABATIC EFFICIENCY	0.867
WEIGHT FLOW	10.31
ROTATIVE SPEED	8265.9
PERCENT DESIGN SPEED	90.2

* * *					
STATION 1					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.10	9.96	288.48	-12.48
2	23.894	10.12	9.06	288.36	-11.76
3	23.175	10.13	9.96	288.55	-9.71
4	21.011	10.13	9.96	288.42	-4.67
5	18.105	10.13	9.96	288.20	-1.85
6	15.138	10.14	9.96	288.09	-0.13
7	12.807	10.15	9.96	286.81	-17.77
8	11.981	10.16	9.95	287.96	-23.09
9	11.130	10.15	9.94	288.40	-21.06

* * *					
STATION 2					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	10.13	9.85	288.45	8.23
2	23.873	10.16	9.85	288.20	8.90
3	23.114	10.16	9.85	288.07	9.15
4	20.856	10.18	9.87	288.04	11.43
5	17.798	10.16	9.95	287.93	13.54
6	14.742	10.18	9.98	287.76	20.34
7	12.474	10.15	10.03	289.37	23.46
8	11.712	10.16	10.04	290.45	25.27
9	10.947	10.14	10.05	290.92	27.64

* * *					
STATION 3					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	11.74	10.77	304.46	36.36
2	23.863	11.69	10.72	301.48	29.83
3	23.078	11.62	10.68	299.94	27.37
4	20.714	11.30	10.57	295.06	25.24
5	17.579	10.66	10.50	295.91	29.92
6	14.503	10.51	10.50	297.99	32.11
7	12.273	10.51	10.50	293.59	28.61
8	11.549	10.50	10.51	299.35	56.94
9	10.833	10.51	10.51	299.80	43.10

TABLE VIII. - Continued.

(j) Reading number 1985

STAGE TOTAL PRESSURE RATIO	1.108
STAGE TOTAL TEMPERATURE RATIO	1.055
STAGE ADIABATIC EFFICIENCY	0.848
WEIGHT FLOW	11.30
ROTATIVE SPEED	8269.0
PERCENT DESIGN SPEED	90.2

* * *					
STATION 1					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.08	9.90	288.52	-5.06
2	23.894	10.10	9.91	288.54	-6.55
3	23.175	10.11	9.91	288.35	-7.85
4	21.011	10.14	9.91	288.20	-11.83
5	18.105	10.14	9.91	288.09	-14.70
6	15.138	10.15	9.90	287.94	-21.30
7	12.807	10.15	9.89	287.86	-24.37
8	11.981	10.15	9.90	287.98	-21.95
9	11.130	10.14	9.89	288.33	-21.16

* * *					
STATION 2					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	10.15	9.77	288.66	10.24
2	23.873	10.16	9.77	288.58	10.31
3	23.114	10.17	9.77	288.34	9.52
4	20.836	10.19	9.81	288.15	11.00
5	17.799	10.18	9.87	288.31	11.89
6	14.742	10.15	9.94	288.46	19.42
7	12.474	10.14	9.98	289.52	24.36
8	11.712	10.14	10.00	290.49	25.87
9	10.947	10.12	10.01	291.00	27.85

* * *					
STATION 3					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	11.59	10.59	302.14	26.84
2	23.863	11.58	10.55	300.31	23.42
3	23.078	11.51	10.51	298.86	22.96
4	20.714	11.12	10.39	296.60	22.51
5	17.579	10.52	10.32	295.50	23.04
6	14.503	10.33	10.32	297.09	19.56
7	12.275	10.32	10.31	297.64	22.42
8	11.549	10.32	10.31	297.92	26.78
9	10.833	10.32	10.32	298.30	55.98

TABLE VIII. - Continued.

(k) Reading number 1986

STAGE TOTAL PRESSURE RATIO	1.097
STAGE TOTAL TEMPERATURE RATIO	1.030
STAGE ADIABATIC EFFICIENCY	0.883
WEIGHT FLOW	9.06
ROTATIVE SPEED	7340.7
PERCENT DESIGN SPEED	80.1

* * * STATION 1 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.12	10.01	288.38	-3.64
2	23.894	10.12	10.01	287.90	-10.66
3	23.175	10.12	10.01	288.21	-10.19
4	21.011	10.13	10.01	288.09	-5.89
5	18.105	10.13	10.01	288.21	-3.42
6	15.138	10.14	10.02	289.08	-0.61
7	12.807	10.14	10.01	288.15	4.97
8	11.981	10.14	10.02	288.31	5.17
9	11.130	10.14	10.01	288.47	6.11

* * * STATION 2 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	10.18	9.93	288.28	10.49
2	23.873	10.16	9.93	287.77	8.51
3	23.114	10.17	9.93	287.85	8.75
4	20.856	10.18	9.94	287.56	11.07
5	17.798	10.17	9.98	287.75	13.52
6	14.742	10.19	10.03	287.61	20.13
7	12.474	10.19	10.05	288.33	22.59
8	11.712	10.18	10.06	289.29	24.00
9	10.947	10.15	10.07	291.50	27.35

* * * STATION 3 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	11.43	10.66	301.20	36.81
2	23.863	11.36	10.62	298.85	30.94
3	23.078	11.31	10.58	297.55	28.25
4	20.714	11.06	10.49	294.77	26.16
5	17.579	10.58	10.45	295.32	29.29
6	14.503	10.46	10.45	295.40	22.50
7	12.273	10.45	10.44	296.33	28.43
8	11.549	10.45	10.44	296.69	42.33
9	10.833	10.44	10.45	297.18	73.92

TABLE VIII. - Continued.

(2) Reading number 1987

STAGE TOTAL PRESSURE RATIO	1.086
STAGE TOTAL TEMPERATURE RATIO	1.027
STAGE ADIABATIC EFFICIENCY	0.885
WEIGHT FLOW	10.26
ROTATIVE SPEED	7355.7
PERCENT DESIGN SPEED	80.2

* * * STATION 1 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.09	9.97	288.37	-12.64
2	23.894	10.13	9.97	288.30	-11.01
3	23.175	10.13	9.97	288.33	-9.04
4	21.011	10.12	9.97	288.09	-3.62
5	18.105	10.14	9.98	288.00	-0.82
6	15.158	10.14	9.98	288.05	0.51
7	12.807	10.15	9.98	288.73	3.11
8	11.981	10.14	9.98	287.67	-7.73
9	11.130	10.14	9.97	288.04	-15.25

* * * STATION 2 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	10.14	9.87	288.30	7.44
2	23.873	10.17	9.87	287.93	7.98
3	23.114	10.17	9.87	288.04	9.19
4	20.836	10.19	9.89	287.99	11.13
5	17.798	10.17	9.94	288.06	13.63
6	14.742	10.19	9.99	287.66	20.46
7	12.474	10.20	10.03	288.52	22.43
8	11.712	10.16	10.04	289.88	24.77
9	10.947	10.14	10.05	290.97	27.02

* * * STATION 3 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	11.28	10.50	299.21	28.28
2	23.863	11.28	10.47	297.95	24.75
3	23.078	11.22	10.43	296.62	23.11
4	20.714	10.95	10.35	294.36	20.62
5	17.579	10.45	10.29	293.58	20.40
6	14.503	10.29	10.28	294.58	19.85
7	12.273	10.30	10.28	295.29	17.35
8	11.549	10.30	10.29	295.13	17.67
9	10.833	10.30	10.29	295.86	16.56

TABLE VIII. - Continued.

(m) Reading number 1988

STAGE TOTAL PRESSURE RATIO	1.074
STAGE TOTAL TEMPERATURE RATIO	1.021
STAGE ADIABATIC EFFICIENCY	1.008
WEIGHT FLOW	8.02
ROTATIVE SPEED	6413.3
PERCENT DESIGN SPEED	70.0

* * * STATION 1 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.11	10.03	288.95	-19.87
2	23.894	10.12	10.04	288.15	-16.03
3	23.175	10.13	10.04	288.48	-14.73
4	21.011	10.13	10.04	287.92	-8.16
5	18.105	10.13	10.04	288.23	-3.44
6	15.138	10.13	10.04	287.87	0.37
7	12.807	10.14	10.04	288.37	6.10
8	11.981	10.14	10.04	288.24	6.61
9	11.130	10.14	10.04	287.55	8.87

* * * STATION 2 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	10.18	9.97	287.86	7.44
2	23.873	10.17	9.97	287.52	8.25
3	23.114	10.18	9.98	287.44	8.65
4	20.836	10.19	9.98	287.25	10.60
5	17.798	10.18	10.01	287.30	13.46
6	14.742	10.19	10.05	286.82	20.31
7	12.474	10.19	10.07	287.57	22.71
8	11.712	10.18	10.07	288.45	24.04
9	10.947	10.15	10.08	289.52	28.28

* * * STATION 3 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	11.12	10.52	297.87	35.76
2	23.863	11.09	10.50	295.61	29.86
3	23.078	11.05	10.47	294.58	27.41
4	20.714	10.84	10.40	292.28	25.27
5	17.579	10.48	10.36	292.80	26.76
6	14.503	10.38	10.36	293.14	17.39
7	12.273	10.38	10.35	293.60	15.48
8	11.549	10.38	10.36	293.91	19.12
9	10.833	10.36	10.36	293.95	59.91

TABLE VIII. - Continued.

(n) Reading number 1989

STAGE TOTAL PRESSURE RATIO	1.057
STAGE TOTAL TEMPERATURE RATIO	1.016
STAGE ADIABATIC EFFICIENCY	0.986
WEIGHT FLOW	6.94
ROTATIVE SPEED	5549.2
PERCENT DESIGN SPEED	60.5

* * * STATION 1 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.12	10.03	207.86	-13.09
2	23.894	10.12	10.00	208.35	-11.47
3	23.175	10.11	10.00	209.25	-9.92
4	21.011	10.13	10.08	209.36	-6.83
5	18.105	10.13	10.03	209.36	-4.11
6	15.156	10.14	10.09	209.24	-1.90
7	12.807	10.14	10.09	209.00	3.12
8	11.981	10.14	10.09	207.87	4.72
9	11.130	10.14	10.08	208.07	6.38

* * * STATION 2 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.650	10.17	10.03	207.58	8.40
2	23.873	10.18	10.04	208.08	8.82
3	23.114	10.18	10.04	208.04	8.62
4	20.836	10.19	10.04	207.67	10.75
5	17.790	10.19	10.06	207.05	13.82
6	14.742	10.20	10.09	207.03	20.49
7	12.474	10.20	10.11	207.49	22.92
8	11.712	10.19	10.11	208.42	24.55
9	10.947	10.16	10.11	209.50	28.87

* * * STATION 3 * * *					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.643	10.87	10.44	295.45	35.35
2	23.863	10.85	10.43	294.12	31.20
3	23.078	10.82	10.40	292.65	28.74
4	20.714	10.68	10.35	291.50	26.19
5	17.579	10.42	10.33	292.00	27.60
6	14.503	10.34	10.32	292.55	21.43
7	12.273	10.34	10.32	292.66	21.12
8	11.549	10.33	10.32	292.63	23.94
9	10.833	10.33	10.33	293.14	31.85

TABLE VIII. - Concluded.

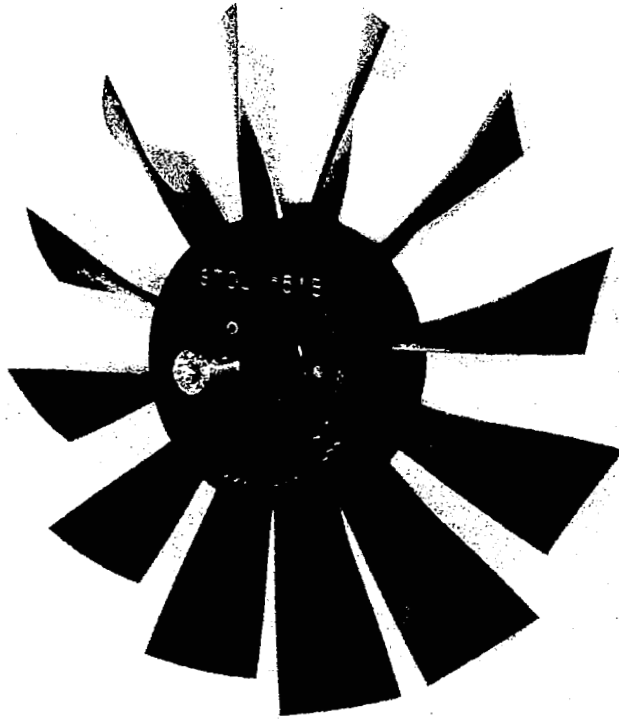
(c) Reading number 1990

STAGE TOTAL PRESSURE RATIO	1.039
STAGE TOTAL TEMPERATURE RATIO	1.012
STAGE ADIABATIC EFFICIENCY	0.909
WEIGHT FLOW	6.01
ROTATIVE SPEED	4678.7
PERCENT DESIGN SPEED	50.5

* * *					
STATION 1					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.610	10.12	10.12	288.19	-11.65
2	23.894	10.12	10.12	287.92	-11.46
3	23.175	10.12	10.12	289.53	-10.79
4	21.011	10.13	10.12	288.07	-7.17
5	18.105	10.14	10.12	288.28	-4.56
6	15.138	10.14	10.12	289.01	-2.17
7	12.807	10.14	10.12	289.13	-0.13
8	11.981	10.14	10.12	289.15	1.42
9	11.130	10.14	10.12	288.36	5.15

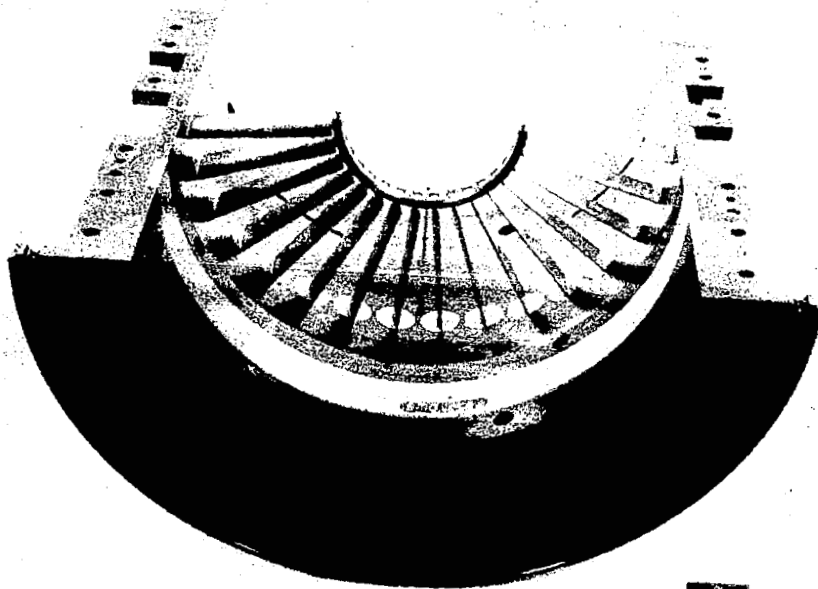
* * *					
STATION 2					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.630	10.18	10.09	288.44	9.27
2	23.873	10.18	10.09	287.99	9.51
3	23.114	10.18	10.09	288.40	9.23
4	20.836	10.19	10.09	287.98	10.48
5	17.798	10.19	10.11	288.02	13.16
6	14.742	10.20	10.12	287.77	16.97
7	12.474	10.20	10.14	288.29	22.03
8	11.712	10.19	10.14	289.22	24.64
9	10.947	10.17	10.14	291.08	30.57

* * *					
STATION 3					
RP	RADIUS	TOTAL PRESS	STATIC PRESS	TOTAL TEMP	ABS BETAZ
1	24.648	10.65	10.36	293.56	36.33
2	23.863	10.63	10.35	292.58	31.41
3	23.078	10.61	10.33	291.88	28.82
4	20.714	10.51	10.30	290.37	26.12
5	17.579	10.33	10.27	291.36	27.80
6	14.503	10.28	10.27	291.79	34.41
7	12.273	10.27	10.27	291.80	43.08
8	11.549	10.27	10.27	291.91	58.85
9	10.833	10.28	10.27	292.11	34.21



(a) Rotor 51B.

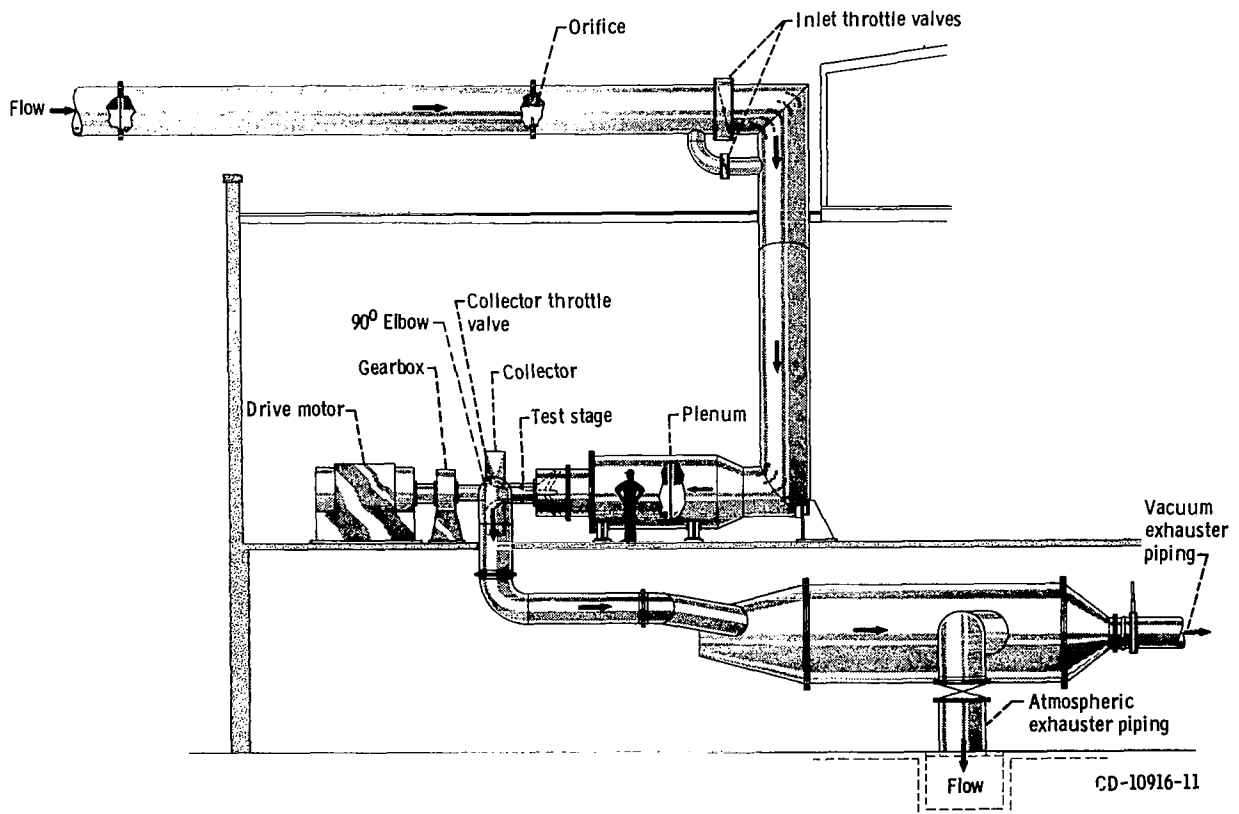
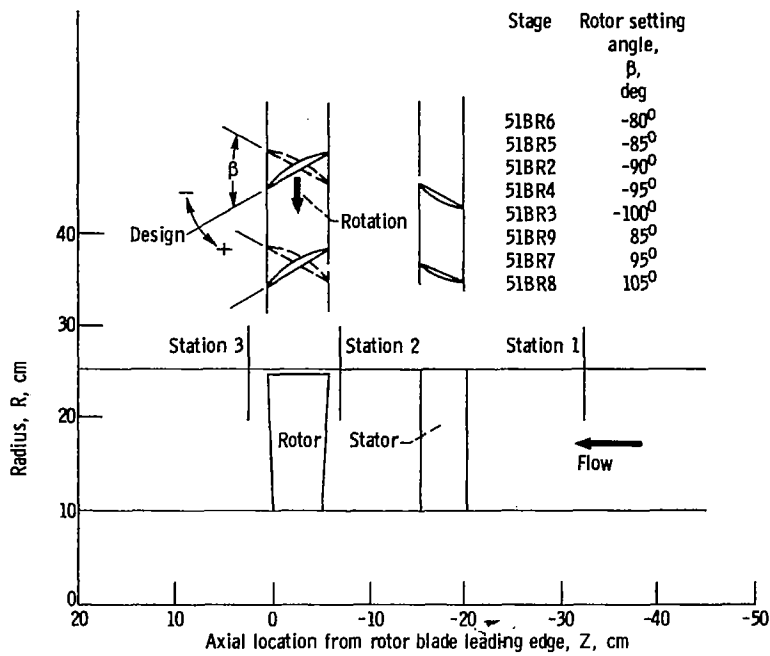
C-72-3848



(b) Stator 51.

C-72-3847

Figure 1. - Stage 51B-51.



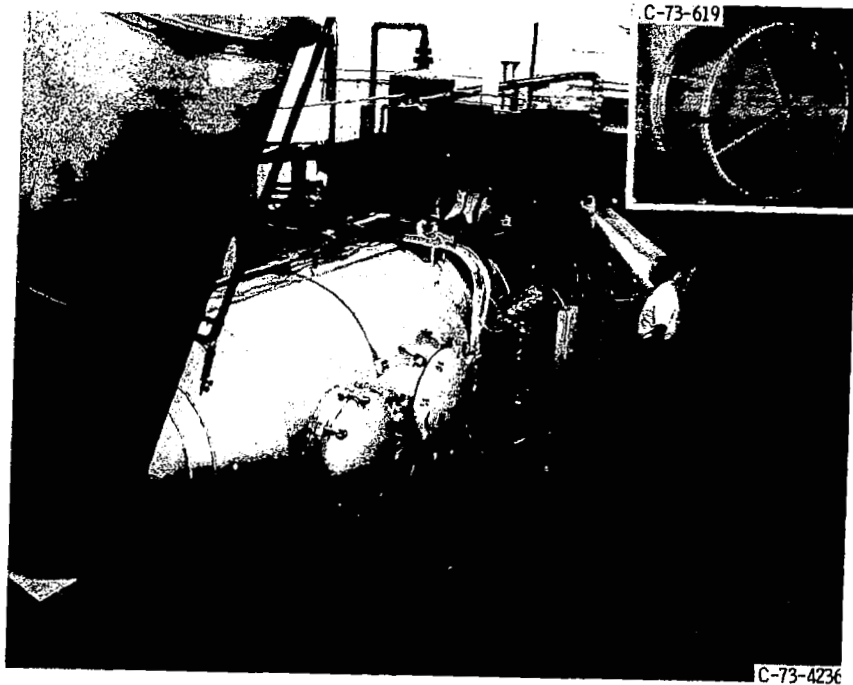


Figure 4. - Modified test facility.

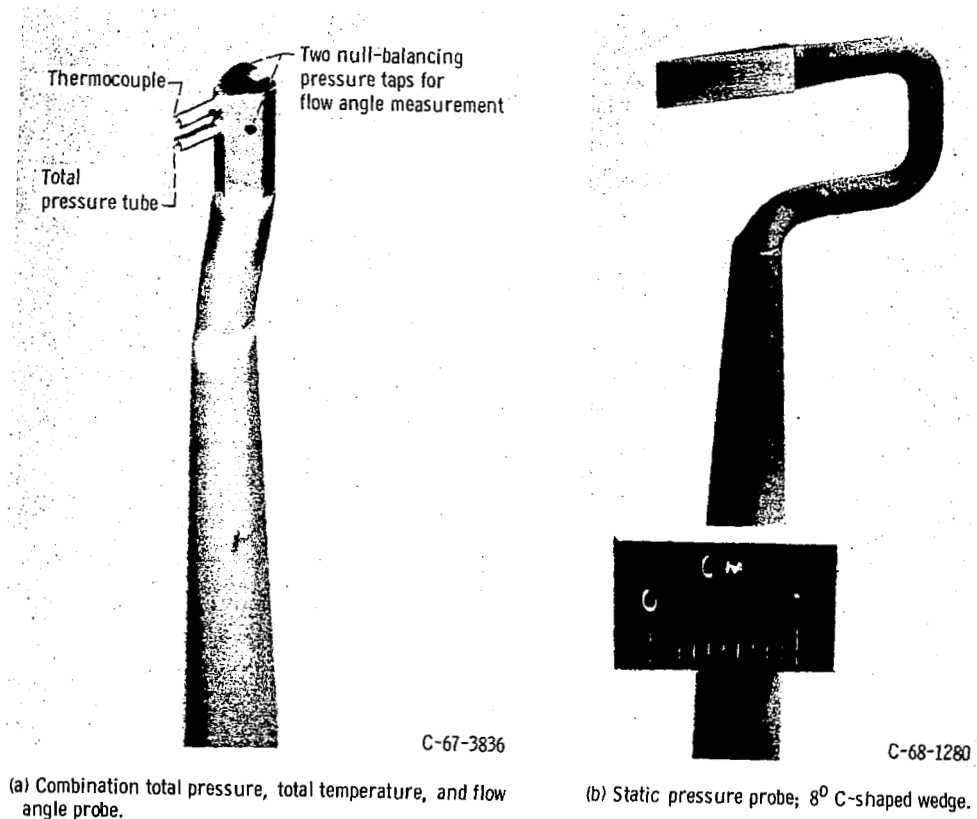


Figure 5. - Survey probes.

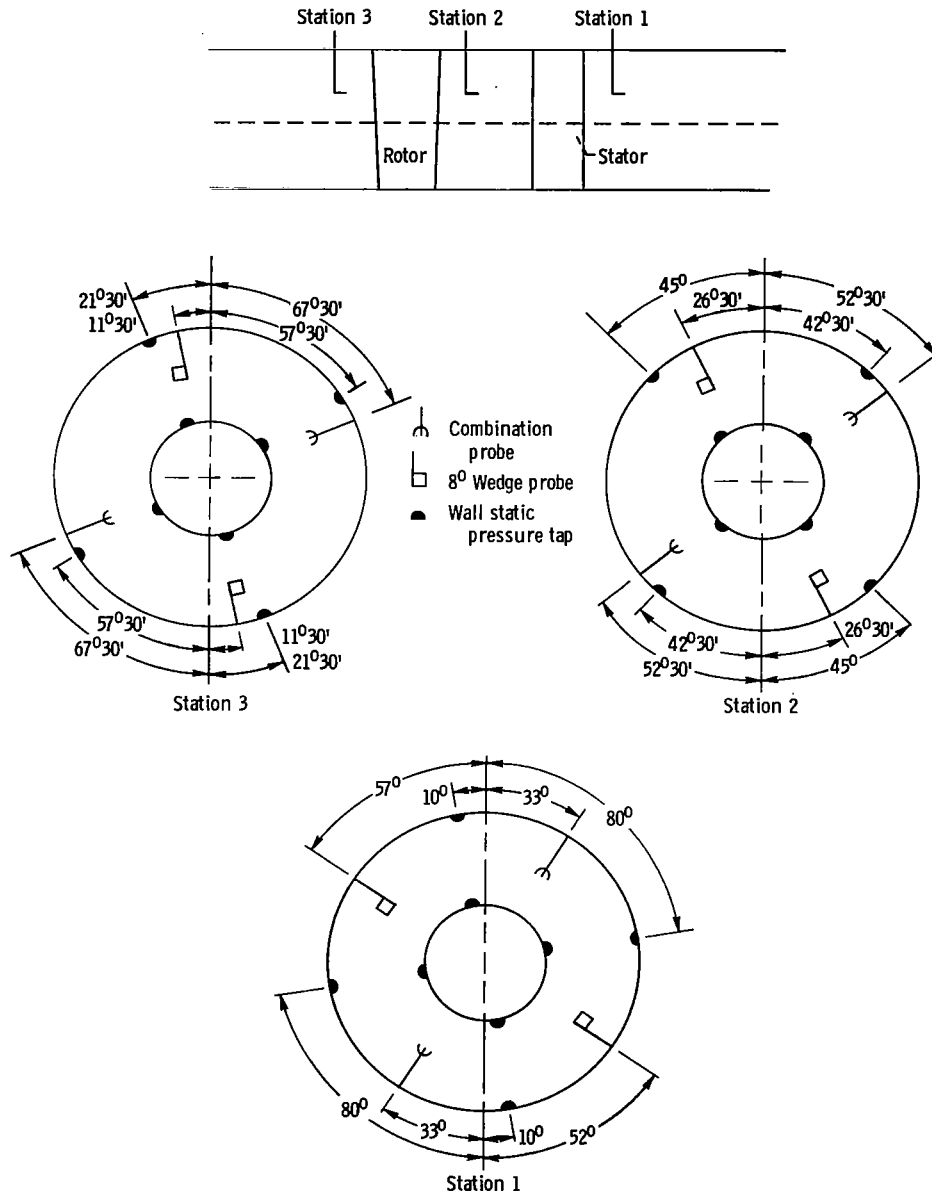


Figure 6. - Circumferential location of instrumentation.

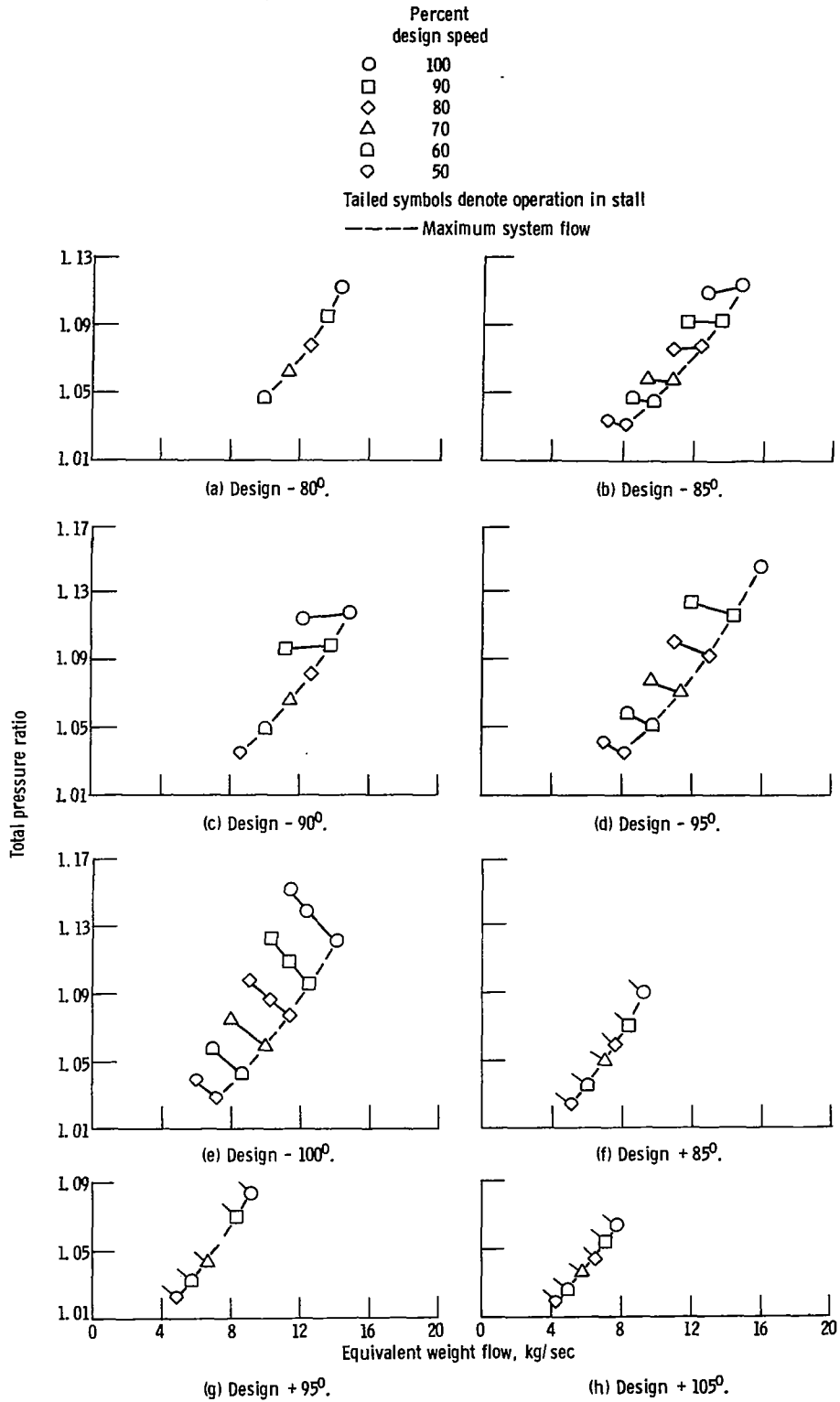


Figure 7. - Overall performance of stage 51B-51 in reverse flow at several rotor blade setting angles.

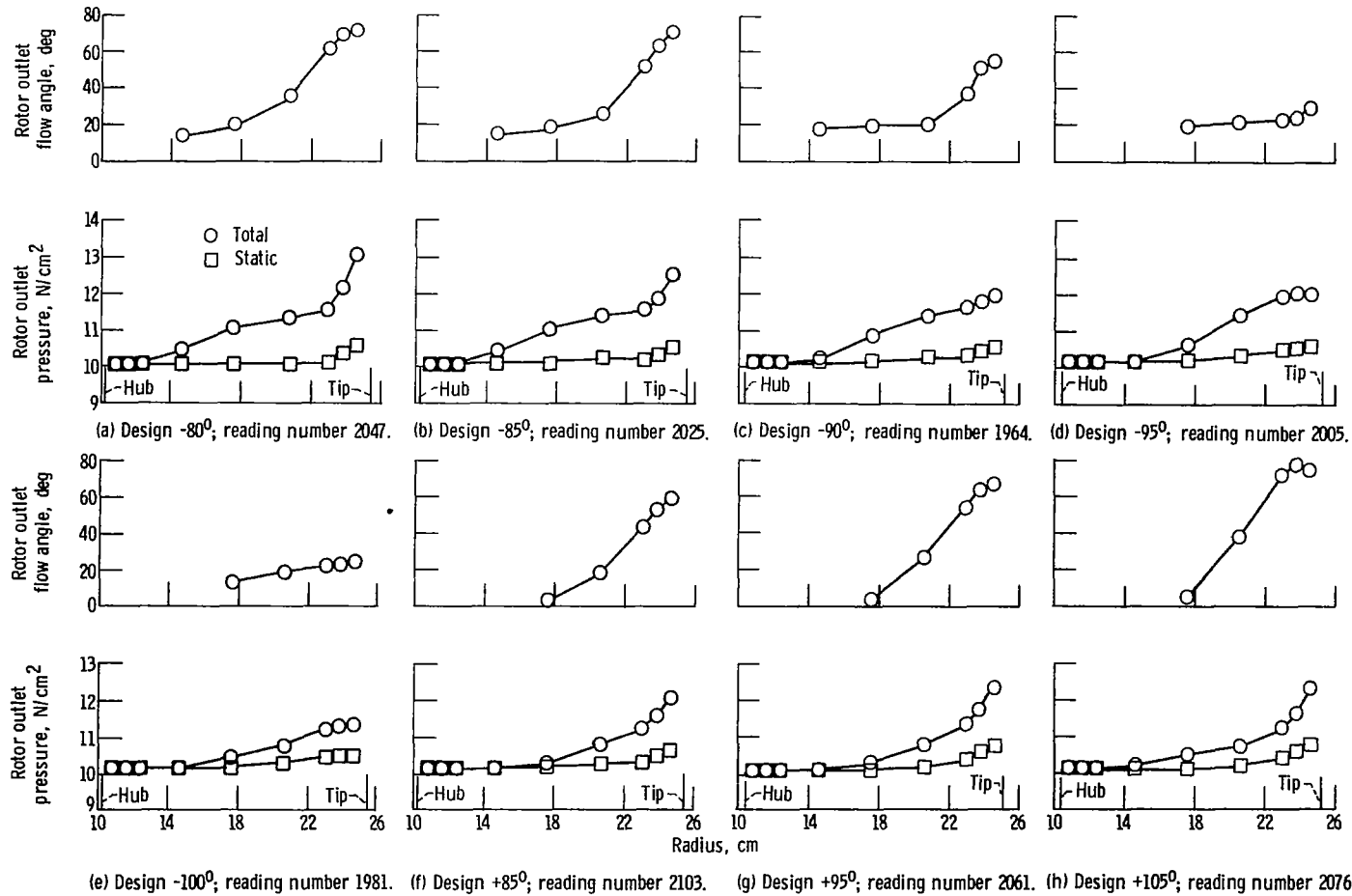
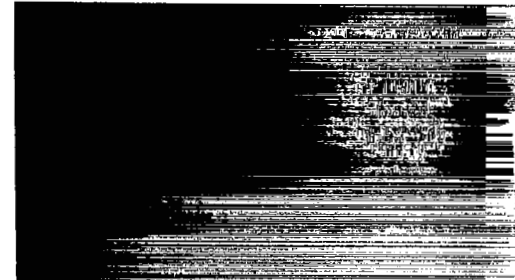


Figure 8. - Radial distribution of outlet flow parameter for reverse flow at design speed for several rotor blade setting angles.



902 001 C1 U A 761105 S00903DS
DEPT OF THE AIR FORCE
AF WEAPONS LABORATORY
ATTN: TECHNICAL LIBRARY (SUL)
KIRTLAND AFB NM 87117



POSTMASTER: If Undeliverable (Section 158
Postal Manual) Do Not Return

"The aeronautical and space activities of the United States shall be conducted so as to contribute . . . to the expansion of human knowledge of phenomena in the atmosphere and space. The Administration shall provide for the widest practicable and appropriate dissemination of information concerning its activities and the results thereof."

—NATIONAL AERONAUTICS AND SPACE ACT OF 1958

NASA SCIENTIFIC AND TECHNICAL PUBLICATIONS

TECHNICAL REPORTS: Scientific and technical information considered important, complete, and a lasting contribution to existing knowledge.

TECHNICAL NOTES: Information less broad in scope but nevertheless of importance as a contribution to existing knowledge.

TECHNICAL MEMORANDUMS: Information receiving limited distribution because of preliminary data, security classification, or other reasons. Also includes conference proceedings with either limited or unlimited distribution.

CONTRACTOR REPORTS: Scientific and technical information generated under a NASA contract or grant and considered an important contribution to existing knowledge.

TECHNICAL TRANSLATIONS: Information published in a foreign language considered to merit NASA distribution in English.

SPECIAL PUBLICATIONS: Information derived from or of value to NASA activities. Publications include final reports of major projects, monographs, data compilations, handbooks, sourcebooks, and special bibliographies.

TECHNOLOGY UTILIZATION PUBLICATIONS: Information on technology used by NASA that may be of particular interest in commercial and other non-aerospace applications. Publications include Tech Briefs, Technology Utilization Reports and Technology Surveys.

Details on the availability of these publications may be obtained from:

**SCIENTIFIC AND TECHNICAL INFORMATION OFFICE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Washington, D.C. 20546**