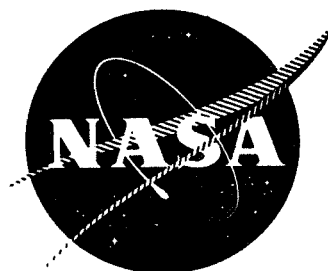


N71-25461

NASA CR-82867

GE R71 AEG 149



TASK IV STAGE DATA AND PERFORMANCE REPORT  
FOR  
CASING TREATMENT INVESTIGATIONS

**VOLUME II**

**EVALUATION OF RANGE AND DISTORTION TOLERANCE  
FOR HIGH MACH NUMBER TRANSONIC FAN STAGES**

By

W.A. Tesch

GENERAL ELECTRIC COMPANY  
Aircraft Engine Group  
Cincinnati, Ohio 45215

Prepared For

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

May, 1971

**CASE FILE  
COPY**

NASA Lewis Research Center  
Contract NAS3-11157  
Charles H. Voit Project Manager

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National Aeronautics and Space Administration  
Office of Scientific and Technical Information  
Attention: AFSS-A  
Washington, D. C. 20546

N71-25461

ERRATA

NASA Contractor Report CR-72867

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Cover Page: The NASA CR number should be CR-72867 instead of CR-82867

iii, Second Paragraph: The Volume I CR number should be CR-72862 instead of CR-82862

*Cards in file are correct*

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## ABSTRACT

Two high-tip-speed compressor stages were tested with various rotor tip casing treatment configurations under conditions of undistorted inlet flow, tip-radial distortion and circumferential distortion. The first stage consisted of a 1400 ft/sec tip speed medium-aspect-ratio rotor plus a stator vane row; the second stage had a 1500 ft/sec tip speed medium-aspect-ratio without zero-turning inlet guide vanes. Overall performance and stall margin were determined for each stage configuration and inlet condition at 70, 90, and 100% of design speed. Extensive surveys of flow conditions were made for the case of circumferential distortion. In addition, blade element data were obtained when testing with undistorted and radial distortion inlet conditions.

This report is the second of two volumes on the NASA Task IV program. Contained within is a tabulation of all blade element data obtained during undistorted inlet and radial distortion tests of the Task I and Task II stages. In addition, the circumferential distortion flow survey data are presented for both stages. The summary listings of overall performance from Volume I are also included for reference. Volume I, CR-82862, contains the techniques and procedure used to acquire the data and an analysis and discussion of the test results.



TABLE OF CONTENTS

VOLUME II

	<u>Page</u>
APPENDIX A - SYMBOLS	191
APPENDIX B - DUPLICATE LISTING OF TASK I AND TASK II STAGE TEST DATA	197
APPENDIX C - LISTING OF TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA	231
APPENDIX D - LISTING OF TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA	301
APPENDIX E - LISTING OF TASK I STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA	363
APPENDIX F - LISTING OF TASK II STAGE UNDISTORTED INLET BLADE ELEMENT DATA	383
APPENDIX G - LISTING OF TASK II STAGE RADIAL DISTORTION BLADE ELEMENT DATA	415
APPENDIX H - LISTING OF TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA	437
DISTRIBUTION LIST	519





LIST OF TABLES

VOLUME II

<u>Table</u>		<u>Page</u>
IV	Summary of Task I Stage Undistorted Inlet Test Data	198
V	Summary of Task I Stage Radial Distortion Test Data	209
VI	Summary of Task I Stage Circumferential Distortion Test Data	219
VIII	Summary of Task II Stage Undistorted Inlet Test Data	220
IX	Summary of Task II Stage Radial Distortion Test Data	224
X	Summary of Task II Stage Circumferential Distortion Test Data	227
XII	Symbols for Blade Element Output	232
XIII	Task I Stage Undistorted Inlet Blade Element Data	235
XIV	Task I Stage Radial Distortion Blade Element Data	302
XV	Task I Stage Circumferential Distortion Flow Survey Data; 100% Speed; Maximum Flow; Skewed Slots #2 Casing Treatment	364
XVI	Task I Stage Circumferential Distortion Flow Survey Data; 100% Speed; Near Stall; Skewed Slots #2 Casing Treatment	373
XVII	Task II Stage Undistorted Inlet Blade Element Data	384
XVIII	Task II Stage Radial Distortion Blade Element Data	416
XIX	Task II Stage Circumferential Distortion Flow Survey Data; 100% Speed; Near Stall; With Inlet Guide Vanes and Casing Treatment	438
XX	Task II Stage Circumferential Distortion Flow Survey Data; 100% Speed; Maximum Flow; With Inlet Guide Vanes and Casing Treatment	450
XXI	Task II Stage Circumferential Distortion Flow Survey Data; 70% Speed; Intermediate Flow; With Inlet Guide Vanes and Casing Treatment	462

LIST OF TABLES (Concluded)

VOLUME II

<u>Table</u>		<u>Page</u>
XXII	Task II Stage Circumferential Distortion Flow Survey Data; 100% Speed; Near Stall; Without Inlet Guide Vanes; With Casing Treatment	474
XXIII	Task II Stage Circumferential Distortion Flow Survey Data; 100% Speed; Maximum Flow; Without Inlet Guide Vanes; With Casing Treatment	483
XXIV	Task II Stage Circumferential Distortion Flow Survey Data; 70% Speed; Intermediate Flow; Without Inlet Guide Vanes; With Casing Treatment	492
XXV	Task II Stage Circumferential Distortion Flow Survey Data; 100% Speed; Near Stall; Without Inlet Guide Vanes; Without Casing Treatment	501
XXVI	Task II Stage Circumferential Distortion Flow Survey Data; 100% Speed; Maximum Flow; Without Inlet Guide Vanes; Without Casing Treatment	510

APPENDIX A

SYMBOLS

APPENDIX A - SYMBOLS

Symbol	Description	Units
A	Annulus or Streamtube Area	in. <sup>2</sup>
C	Chord Length of Cylindrical Section	in.
C <sub>h</sub>	Enthalpy-Equivalent Static-Pressure-Rise Coefficient, ie for Rotor:	---
	$C_h = \frac{2gJc_p t_1 \left[ \left( \frac{p_2}{p_1} \right)^{\frac{\gamma-1}{\gamma}} - 1 \right] - (U_2^2 - U_1^2)}{V_1'^2}$	
C <sub>p</sub>	Static-Pressure-Rise Coefficient, ie for Rotor:	---
	$C_p = \frac{p_2 - p_1}{p_1' - p_1}$	
c <sub>p</sub>	Specific Heat at Constant Pressure, 0.2399 Btu/lb-°R	
D	Diffusion Factor:	---
	$D_{\text{Rotor}} = 1 - \frac{V_2'}{V_1'} + \frac{r_2 V_{\theta_2} - r_1 V_{\theta_1}}{2\bar{r} \sigma V_1'}$	
	$D_{\text{IGV/Stator}} = 1 - \frac{V_2}{V_1} + \frac{r_1 V_{\theta_1} - r_2 V_{\theta_2}}{2\bar{r} \sigma V_1}$	
g	Acceleration Due to Gravity, 32.174 ft/sec <sup>2</sup>	
i	Incidence Angle; Difference Between Flow Angle and Camber Line Angle at Leading Edge in Cascade Projection	deg
i <sub>ss</sub>	Suction Surface Incidence Angle, Difference Between Flow Angle and Leading Edge Suction Surface	deg
J	Mechanical Equivalent of Heat, 778.161 ft-lb/Btu.	
K <sub>bl</sub>	Effective Area Coefficient Due to Wall Boundary Layer Blockage	---
M	Mach Number	---
N	Rotational Speed	rpm

APPENDIX A - SYMBOLS (Continued)

Symbol	Description	Units
P	Total or Stagnation Pressure	psia
p	Static Pressure	psia
r	Radius	in.
$\bar{r}$	Mean Radius, Average of Streamline Leading and Trailing Edge Radii	in.
T	Total or Stagnation Temperature	°R
t	Static Temperature	°R
U	Rotor Speed	ft/sec
V	Air Velocity	ft/sec
W	Weight Flow	lbs/sec
Z	Displacement Along Compressor Axis	in.
$\beta$	Flow Angle; Angle Whose Tangent is the Ratio of Tangential to Axial Velocity	deg
$\Delta\beta$	Flow Turning Angle, $\Delta\beta = \beta_1 - \beta_2$	deg
$\gamma$	Ratio of Specific Heats	---
$\gamma^\circ$	Blade-Chord Angle (Stagger), Angle in Cascade Projection Between Blade Chord and Axial Direction	deg
$\delta$	Pressure Correction, $P_{\text{Actual}}/14.696$ psia	
$\delta^\circ$	Deviation Angle, Difference Between Flow Angle and Camber Angle at Trailing Edge in Cascade Projection	deg
$\epsilon^\circ$	Slope of Meridional Streamline	deg
$\eta$	Efficiency	
$\theta$	Temperature Correction, $T_{\text{Actual}}/518.7^\circ\text{R}$	
$\theta^\circ$	Circumferential Position From Top Center	deg

APPENDIX A - SYMBOLS (Continued)

Symbol	Description	Units
$K^\circ$	Angle Between Tangent to Blade Meanline and the Axial Direction	deg
$\sigma$	Solidity, Ratio of Chord to Blade Spacing	---
$\bar{\omega}$	Total Pressure Loss Coefficient	---
	Rotor: $\bar{\omega}' = \frac{P_2'_{id} - P_2'}{P_1' - p_1}$ , IGV/Stator: $\bar{\omega} = \frac{P_1 - P_2}{P_1 - p_1}$	
$\frac{\bar{\omega} \cos \beta_2}{2\sigma}$	Total Pressure Loss Parameter	---
Subscripts		
ad	Adiabatic	
an	Annulus	
d	Downstream Measurement Station (Table III)	
e	Edge of Blade (Figure 7)	
id	Ideal	
j	Immersion	
m	Meridional Direction	
p	Polytropic	
s	Measurement Station (Figure 7)	
ss	Suction Surface	
t	Tip at Station 1.0	
u	Upstream Measurement Station (Table III)	
z	Axial Direction	
$\theta$	Tangential Direction	

APPENDIX A - SYMBOLS (Concluded)

Subscripts	Description
1	Leading Edge
2	Trailing Edge
0.01	Measurement Station Designation, Vehicle Inlet
0.18	Measurement Station Designation, IGV Inlet
0.95	Measurement Station Designation, Rotor Inlet
1.51	Measurement Station Designation, Stator Inlet
2.20	Measurement Station Designation, Stage Discharge

Superscripts	Description
'	Relative to Rotor
*	Critical Flow Condition





APPENDIX B

DUPLICATE LISTING OF TASK I  
AND TASK II STAGE TEST DATA

Table IV. Summary of Task I Stage Undistorted Inlet Test Data.

a. Honeycomb #1 Casing Treatment.

Reading Number	Percent Design Speed	Discharge Valve Setting	Inlet Corrected Weight Flow, Lbs/Sec	Stage Total-Pressure Ratio	Stage Adiabatic Efficiency	Type Point**
1	70	30	168.6	1.182	.812	OP
2	70	15	159.1	1.228	.862	OP
3	70	9	148.1	1.262	.861	OP
4	70	6	139.5	1.276	.827	OP
5	70	6	138.3	1.275	.824	OP
6	70	2	123.3	1.283	.759	OP
7	70	25*	113.9	1.285	.713	OP
8	90	50*	187.8	1.509	.843	OP
9	90	35*	173.6	1.532	.801	OP
10	90	80*	196.1	1.471	.858	OP
11	90	50	205.0	1.272	.697	OP
12	90	4.5	171.8	1.531	.788	OP
13	100	30	220.7	1.347	.691	OP
14	100	4.5	186.7	1.691	.755	OP
15	100	5	190.8	1.697	.775	BE (p. 235)
16	100	9	214.5	1.629	.835	BE (p. 237)
17	100	15	219.1	1.472	.798	BE (p. 239)
18	90	15	203.7	1.389	.823	OP
19	90	6	182.7	1.528	.822	OP
20	70	15	160.7	1.231	.865	OP
21	70	0.35	114.3	1.284	.702	OP

\* - Indicates discharge valve position with inner annulus discharge pipe closed.

\*\* - Overall Performance Reading

BE - Blade Element Performance Reading

Table IV. Summary of Task I Stage Undistorted Inlet Test Data (Continued).

b. Honeycomb Insert #2 Casing Treatment.

Reading Number	Percent Design Speed	Discharge Valve Setting	Inlet Corrected Weight Flow, Lbs/Sec	Stage Total-Pressure Ratio	Stage Adiabatic Efficiency	Type Point**
34	70	30	166.5	1.181	.807	OP
35	70	1.5	117.3	1.279	.735	OP
36	90	30	205.9	1.292	.741	OP
37	90	4.5	172.2	1.523	.801	OP
38	100	30	220.4	1.355	.693	OP
39	100	4.5	184.3	1.686	.758	BE (p. 241)
40	100	9	213.7	1.630	.844	BE (p. 243)
41	100	15	221.1	1.484	.816	BE (p. 245)
42	90	6	180.9	1.529	.840	OP
43	90	15	202.8	1.394	.826	OP
44	70	11	152.3	1.254	.865	OP
45	70	8	144.6	1.268	.847	OP
46	70	4.5	133.0	1.281	.814	OP
47	100	6.2	201.5	1.699	.820	OP
59	100	7.8	210.3	1.659	.841	OP
60	90	10	195.6	1.470	.868	OP
61	90	8	190.2	1.503	.856	OP
62	70	15.8	159.4	1.225	.870	OP
63	70	13.5	157.1	1.236	.872	OP
64	70	11	152.0	1.250	.869	OP

\* - Indicates discharge valve position with inner annulus discharge pipe closed.

\*\* - Overall Performance Reading

BE - Blade Element Performance Reading

Table IV. Summary of Task I Stage Undistorted Inlet Test Data (Continued).

c. Circumferential Grooved Insert #1 Casing Treatment.

Reading Number	Percent Design Speed	Discharge Valve Setting	Inlet Corrected Weight Flow, Lbs/Sec	Stage Total-Pressure Ratio	Stage Adiabatic Efficiency	Type Point**
65	70	30	167.3	1.181	.820	OP
66	70	13	156.6	1.236	.872	OP
67	70	8	144.5	1.263	.851	OP
68	70	2	121.6	1.280	.769	OP
69	70	4.5	132.7	1.277	.822	OP
70	90	30	203.4	1.286	.740	OP
71	90	15	201.2	1.385	.834	OP
72	90	10	196.4	1.466	.872	OP
73	90	6	181.4	1.522	.841	OP
74	90	4.5	169.3	1.522	.800	OP
75	100	30	216.7	1.341	.701	OP
76	100	30	216.9	1.342	.709	BE (p. 247)
77	100	9	212.5	1.619	.850	BE (p. 249)
78	100	6.5	202.6	1.687	.837	OP
79	100	6	199.2	1.693	.829	BE (p. 251)
80	100	5.9	198.6	1.692	.824	OP
81	70	16	160.3	1.226	.876	OP

\* - Indicates discharge valve position with inner annulus discharge pipe closed.

\*\* - Overall Performance Reading

BE - Blade Element Performance Reading

Table IV. Summary of Task I Stage Undistorted Inlet Test Data (Continued).

d. Circumferential Grooved Insert #2 Casing Treatment.

Reading Number	Percent Design Speed	Discharge Valve Setting	Inlet Corrected Weight Flow, Lbs/Sec	Stage Total-Pressure Ratio	Stage Adiabatic Efficiency	Type Point**
132	70	30	167.1	1.180	.797	OP
133	70	2	122.0	1.282	.758	OP
134	70	4.5	133.9	1.279	.812	OP
135	70	8	144.8	1.267	.850	OP
136	70	13.5	157.4	1.236	.872	OP
137	90	30	203.6	1.286	.742	OP
138	90	4.5	169.3	1.525	.797	OP
139	90	6	181.8	1.527	.843	OP
140	90	8	190.7	1.505	.869	OP
141	90	10	196.2	1.470	.877	OP
142	100	5	190.4	1.692	.789	BE (p. 253)
143	100	9	213.2	1.626	.857	BE (p. 255)
144	100	30	217.3	1.347	.710	BE (p. 257)
145	100	11	216.4	1.559	.847	OP
146	100	7	206.3	1.683	.848	OP

\* - Indicates discharge valve position with inner annulus discharge pipe closed.

\*\* - OP - Overall Performance Reading

BE - Blade Element Performance Reading

Table IV. Summary of Task I Stage Undistorted Inlet Test Data (Continued).

e. Circumferential Grooved Insert #3 Casing Treatment.

Reading Number	Percent Design Speed	Discharge Valve Setting	Inlet Corrected Weight Flow, Lbs/Sec	Stage Total-Pressure Ratio	Stage Adiabatic Efficiency	Type Point**
194	70	30	165.0	1.182	.818	OP
195	70	13.5	155.5	1.234	.874	OP
196	70	10	149.3	1.252	.871	OP
197	70	8	143.6	1.264	.860	OP
198	70	5	133.9	1.275	.820	OP
199	70	2.5	123.1	1.280	.786	OP
200	90	30	202.8	1.288	.743	OP
201	90	15	200.7	1.284	.839	OP
202	90	10	195.6	1.466	.878	OP
203	90	8	189.6	1.498	.869	OP
204	90	6	179.6	1.517	.844	OP
205	90	4	165.6	1.518	.789	OP
206	100	30	217.9	1.345	.699	OP
207	100	4.7	186.8	1.679	.781	BE (p. 259)
208	100	9	212.4	1.621	.854	BE (p. 261)
209	100	30	216.0	1.341	.705	BE (p. 263)
210	100	11	216.9	1.564	.853	OP
211	100	7	205.2	1.676	.854	OP
212	70	10	151.1	1.255	.863	OP
213	70	1.8	121.0	1.281	.761	OP

\* - Indicates discharge valve position with inner annulus discharge pipe closed.

\*\* - Overall Performance Reading

BE - Blade Element Performance Reading

Table IV. Summary of Task I Stage Undistorted Inlet Test Data (Continued).

f. Skewed Slotted Insert #1 Casing Treatment.

Reading Number	Percent Design Speed	Discharge Valve Setting	Inlet Corrected Weight Flow, Lbs/Sec	Stage Total-Pressure Ratio	Stage Adiabatic Efficiency	Type Point**
116	70	2 1/4*	110.9	1.287	.692	OP
117	100	4.8	187.8	1.695	.763	BE (p. 265)
118	100	9	214.0	1.630	.832	BE (p. 267)
119	100	30	219.6	1.354	.694	BE (p. 269)
120	100	11	218.1	1.567	.828	OP
121	100	7	206.1	1.692	.825	OP
122	90	4	166.5	1.535	.769	OP
123	90	6	181.7	1.538	.824	OP
124	90	8	190.4	1.512	.850	OP
125	90	10	196.9	1.477	.856	OP
126	90	15	201.9	1.394	.824	OP
127	90	30	205.3	1.292	.727	OP
128	70	30	168.6	1.184	.806	OP
129	70	13.5	157.5	1.237	.853	OP
130	70	8	145.1	1.268	.836	OP
131	70	2.5	125.5	1.285	.765	OP

\* - Indicates discharge valve position with inner annulus discharge pipe closed.

\*\* - Overall Performance Reading

BE - Blade Element Performance Reading



Table IV. Summary of Task I Stage Undistorted Inlet Test Data (Continued).

g. Skewed Insert #2 Casing Treatment.

Reading Number	Percent Design Speed	Discharge Valve Setting	Inlet Corrected Weight Flow, Lbs/Sec	Stage Total-Pressure Ratio	Stage Adiabatic Efficiency	Type Point**
163	90	30	202.3	1.285	.740	OP
164	90	5	172.5	1.532	.806	OP
165	90	6	181.1	1.532	.834	OP
166	90	8	190.8	1.509	.857	OP
167	90	10	196.4	1.472	.864	OP
168	90	15	200.5	1.386	.828	OP
169	100	4.5	185.2	1.687	.759	BE (p. 271)
170	100	9	212.3	1.619	.840	BE (p. 273)
171	100	30	216.3	1.344	.697	BE (p. 275)
172	100	11	214.8	1.551	.830	OP
173	100	7	207.5	1.676	.831	OP
174	70	30	167.6	1.187	.836	OP
175	70	13.5	156.0	1.237	.878	OP
176	70	8	144.5	1.266	.852	OP
177	70	2.5	124.9	1.283	.778	OP
178	70	26*	115.4	1.285	.728	OP
179	70	20	163.2	1.205	.843	OP

\* - Indicates discharge valve position with inner annulus discharge pipe closed.

\*\* - Overall Performance Reading

BE - Blade Element Performance Reading

Table IV. Summary of Task I Stage Undistorted Inlet Test Data (Continued).

h. Skewed Slotted Insert #3 Casing Treatment.

Reading Number	Percent Design Speed	Discharge Valve Setting	Inlet Corrected Weight Flow, Lbs/Sec	Stage Total-Pressure Ratio	Stage Adiabatic Efficiency	Type Point**
228	70	30	166.4	1.182	.829	OP
229	70	18.5	161.6	1.211	.856	OP
230	70	13.5	156.7	1.237	.875	OP
231	70	10	150.2	1.255	.873	OP
232	70	8	145.5	1.267	.846	OP
233	70	5	136.31	1.277	.814	OP
234	70	26.5	116.8	1.284	.730	OP
235	90	30	204.9	1.293	.733	OP
236	90	15	204.5	1.391	.839	OP
237	90	10	197.7	1.476	.865	OP
238	90	8	190.7	1.508	.861	OP
239	90	4.5	170.7	1.531	.792	OP
240	100	30	221.5	1.355	.694	BE (p. 277)
241	100	9	215.2	1.638	.848	BE (p. 279)
242	100	4.5	184.7	1.691	.766	BE (p. 281)
243	100	7	206.5	1.692	.831	OP
244	100	11	217.3	1.574	.833	OP

\* - Indicates discharge valve position with inner annulus discharge pipe closed.

\*\* - Overall Performance Reading

BE - Blade Element Performance Reading

Table IV. Summary of Task I Stage Undistorted Inlet Test Data (Continued).

## i. Skewed Slotted Insert #4 Casing Treatment.

Reading Number	Percent Design Speed	Discharge Valve Setting	Inlet Corrected Weight Flow, Lbs/Sec	Stage Total-Pressure Ratio	Stage Adiabatic Efficiency	Type Point**
1	70	30	167.7	1.183	.807	OP
2	70	18.5	162.2	1.213	.857	OP
3	70	13.5	158.2	1.240	.884	OP
4	70	10	151.3	1.259	.866	OP
5	90	30	205.1	1.296	.718	OP
6	90	15	202.9	1.398	.837	OP
7	90	10	196.7	1.478	.861	OP
8	90	8	190.3	1.515	.853	OP
9	70	24.8*	113.8	1.285	.712	OP
10	70	8	145.4	1.268	.838	OP
11	70	5	134.8	1.280	.812	OP
12	90	4.4	169.1	1.536	.771	OP
13	100	30	220.1	1.355	.688	BE (p. 283)
14	100	9	213.4	1.640	.832	BE (p. 285)
15	100	4.6	184.8	1.699	.745	BE (p. 287)
16	100	11	217.6	1.580	.828	OP
17	100	7	206.5	1.697	.821	OP
18	90	5	173.7	1.544	.788	OP

\* - Indicates discharge valve position with inner annulus discharge pipe closed.  
\*\* - OP - Overall Performance Reading  
BE - Blade Element Performance Reading

Table IV. Summary of Task I Stage Undistorted Inlet Test Data (Continued).

j. Blade Angle Slotted Insert #1 Casing Treatment.

Reading Number	Percent Design Speed	Discharge Valve Setting	Inlet Corrected Weight Flow, Lbs/Sec	Stage Total-Pressure Ratio	Stage Adiabatic Efficiency	Type Point**
257	70	30	166.5	1.181	.805	OP
258	70	18.5	162.2	1.211	.858	OP
259	70	13.5	157.0	1.236	.868	OP
260	70	10	151.0	1.255	.852	OP
261	70	8	144.8	1.267	.861	OP
262	70	5	135.9	1.278	.811	OP
263	90	30	205.2	1.293	.744	OP
264	90	15	203.0	1.391	.840	OP
265	90	10	195.5	1.463	.863	OP
266	90	8	190.3	1.499	.867	OP
267	70	25	113.8	1.283	.709	OP
268	90	3.6	162.4	1.514	.756	OP
269	100	30	221.7	1.443	.838	BE (p. 287)
284	100	30	220.9	1.358	.696	BE (p. 289)
285	100	9	214.4	1.620	.845	BE (p. 291)
286	100	4	180.6	1.681	.743	BE (p. 293)
287	100	7	205.1	1.670	.832	OP
288	100	11	218.2	1.565	.832	OP
289	70	10	150.8	1.256	.867	OP
290	70	8	145.1	1.266	.853	OP

\* - Indicates discharge valve position with inner annulus discharge pipe closed.

\*\* - Overall Performance Reading

BE - Blade Element Performance Reading

Table IV. Summary of Task I Stage Undistorted Inlet Test Data (Concluded).

k. Blade Angle Slotted Insert #2 Casing Treatment.

Reading Number	Percent Design Speed	Discharge Valve Setting	Inlet Corrected Weight Flow, Lbs/Sec	Stage Total-Pressure Ratio	Stage Adiabatic Efficiency	Type Point**
325	70	30	167.2	1.181	.788	OP
326	70	18.5	162.8	1.210	.838	OP
327	70	13.5	156.8	1.236	.867	OP
328	70	10	152.0	1.256	.869	OP
329	70	8	144.3	1.267	.853	OP
330	70	5	135.1	1.279	.81	OP
331	70	0.8	116.2	1.285	.737	OP
332	90	30	204.7	1.293	.729	OP
333	90	15	203.6	1.39	.837	OP
334	90	10	197.2	1.469	.865	OP
335	90	8	190.7	1.503	.858	OP
336	90	3.8	164.5	1.521	.777	OP
337	90	5	175.5	1.53	.812	OP
338	100	30	220.6	1.355	.696	BE (p. 295)
339	100	9	214.6	1.63	.846	BE (p. 297)
340	100	4.3	184.2	1.688	.757	BE (p. 299)
341	100	7	206.9	1.68	.826	OP
342	100	11	218.1	1.565	.831	OP

\* - Indicates discharge valve position with inner annulus discharge pipe closed.

\*\* - Overall Performance Reading

BE - Blade Element Performance Reading

Table V. Summary of Task I Stage Radial Distortion Test Data.

a. Honeycomb Insert #1 Casing Treatment.

Reading Number	Percent Design Speed	Discharge Valve Setting	Inlet Corrected Weight Flow, Lbs/Sec	Stage Total-Pressure Ratio	Stage Adiabatic Efficiency	Type Point**
22	70	30	164.8	1.178	.722	OP
23	70	15	158.1	1.240	.823	OP
24	70	4	129.6	1.275	.758	OP
25	70	7	141.2	1.277	.814	OP
26	90	30	202.0	1.309	.725	OP
27	90	5.5	176.5	1.521	.776	OP
28	90	10	193.0	1.473	.822	OP
29	100	30	214.4	1.362	.690	OP
30	100	6.5	199.9	1.672	.784	OP
31	100	7	202.1	1.668	.795	BE (p. 302)
32	100	12	211.3	1.547	.784	BE (p. 304)
33	100	30	214.3	1.363	.698	BE (p. 306)

\*\* - OP - Overall Performance Reading  
 BE - Blade Element Performance Reading

Table V. Summary of Task I Stage Radial Distortion Test Data (Continued).

b. Honeycomb Insert #2 Casing Treatment.

Reading Number	Percent Design Speed	Discharge Valve Setting	Inlet Corrected Weight Flow, Lbs/Sec	Stage Total-Pressure Ratio	Stage Adiabatic Efficiency	Type Point**
48	70	30	165.3	1.196	.797	OP
49	90	30	201.2	1.308	.731	OP
50	100	30	214.3	1.362	.703	OP
51	100	7.5	204.3	1.649	.786	BE (p. 308)
52	100	9	207.5	1.617	.797	BE (p. 310)
53	100	30	214.4	1.364	.708	BE (p. 312)
54	90	10	191.4	1.469	.825	OP
55	90	6.5	179.6	1.506	.797	OP
56	70	12.5	151.3	1.251	.844	OP
57	70	5	132.3	1.275	.777	OP
58	70	8	143.6	1.270	.819	OP

\*\* - OP - Overall Performance Reading  
 BE - Blade Element Performance Reading

Table V. Summary of Task I Stage Radial Distortion Test Data (Continued).

c. Circumferential Grooved Insert #1 Casing Treatment.

Reading Number	Percent Design Speed	Discharge Valve Setting	Inlet Corrected Weight Flow, Lbs/Sec	Stage Total-Pressure Ratio	Stage Adiabatic Efficiency	Type Point**
82	70	30	165.1	1.196	.800	OP
83	70	12	150.6	1.251	.843	OP
84	70	8	140.7	1.266	.821	OP
85	90	30	199.7	1.307	.741	OP
86	90	10	191.0	1.465	.831	OP
87	90	8.5	186.6	1.486	.827	OP
88	100	30	212.9	1.360	.712	OP
89	100	8.5	206.5	1.619	.808	OP
90	100	9	207.1	1.611	.811	BE (p. 314)
91	100	11	209.7	1.563	.804	BE (p. 316)
92	100	15	212.1	1.485	.778	BE (p. 318)
93	100	30	213.2	1.363	.710	OP
94	90	15	197.7	1.401	.817	OP
95	90	12	194.3	1.437	.825	OP
96	70	15	157.2	1.238	.843	OP
97	70	10	147.1	1.258	.838	OP

\*\* - OP - Overall Performance Reading  
 BE - Blade Element Performance Reading



Table V. Summary of Task I Stage Radial Distortion Test Data (Continued).

d. Circumferential Grooved Insert #2 Casing Treatment.

Reading Number	Percent Design Speed	Discharge Valve Setting	Inlet Corrected Weight Flow, Lbs/Sec	Stage Total-Pressure Ratio	Stage Adiabatic Efficiency	Type Point**
147	70	30	165.3	1.196	.795	OP
148	90	30	200.4	1.307	.734	OP
149	100	8.5	207.2	1.633	.813	BE (p. 320)
150	100	30	213.3	1.360	.706	BE (p. 322)
151	100	9.5	209.2	1.608	.812	BE (p. 324)
152	100	11	210.9	1.572	.806	OP
153	100	15	212.8	1.487	.781	OP
154	90	8	186.9	1.498	.826	OP
155	90	10	191.9	1.473	.834	OP
156	90	12	196.2	1.443	.832	OP
157	90	9	189.3	1.488	.833	OP
158	70	15	157.6	1.243	.848	OP
159	70	12.5	153.6	1.252	.846	OP
160	70	9	145.4	1.267	.833	OP
161	70	7.5	141.2	1.270	.821	OP

\*\* -- OP -- Overall Performance Reading  
 BE -- Blade Element Performance Reading

Table V. Summary of Task I Stage Radial Distortion Test Data (Continued).

e. Circumferential Grooved Insert #3 Casing Treatment.

Reading Number	Percent Design Speed	Discharge Valve Setting	Inlet Corrected Weight Flow, Lbs/Sec	Stage Total-Pressure Ratio	Stage Adiabatic Efficiency	Type Point**
214	70	30	163.5	1.197	.810	OP
215	70	7.7	139.0	1.266	.811	OP
216	70	10	145.7	1.261	.835	OP
217	70	12.5	151.8	1.250	.837	OP
218	70	15	155.6	1.238	.834	OP
219	90	30	198.5	1.309	.743	OP
220	90	12	193.6	1.439	.830	OP
221	90	10	190.7	1.465	.832	OP
222	90	8	183.6	1.489	.823	OP
223	100	30	211.9	1.363	.705	BE (p. 326)
224	100	9	204.9	1.608	.808	BE (p. 328)
225	100	8.5	205.1	1.620	.805	OP
226	100	11	207.6	1.563	.806	BE (p. 330)
227	100	15	211.3	1.488	.789	OP

\*\* - OP - Overall Performance Reading  
BE - Blade Element Performance Reading

Table V. Summary of Task I Stage Radial Distortion Test Data (Continued).

f. Skewed Slotted Insert #1 Casing Treatment.

Reading Number	Percent Design Speed	Discharge Valve Setting	Inlet Corrected Weight Flow, Lbs/Sec	Stage Total-Pressure Ratio	Stage Adiabatic Efficiency	Type Point**
100	70	30	166.7	1.199	.806	OP
101	70	4.5	134.4	1.291	.794	OP
102	70	8	144.2	1.281	.833	OP
103	70	12.5	155.2	1.256	.846	OP
104	70	15	158.4	1.244	.850	OP
105	90	30	203.1	1.315	.723	OP
106	90	5.2	177.5	1.548	.785	OP
107	90	12	197.5	1.457	.821	OP
108	90	10	194.6	1.488	.828	OP
109	90	8	188.1	1.519	.815	OP
110	100	30	215.7	1.369	.689	OP
111	100	6.5	202.2	1.690	.782	BE (p. 332)
112	100	9	209.9	1.634	.792	BE (p. 334)
113	100	11	212.6	1.576	.791	OP
114	100	15	214.8	1.493	.764	OP
115	100	30	215.3	1.370	.693	BE (p. 336)

\*\* - OP - Overall Performance Reading  
 BE - Blade Element Performance Reading

Table V. Summary of Task I Stage Radial Distortion Test Data (Continued).

g. Skewed Slotted Insert #3 Casing Treatment.

Reading Number	Percent Design Speed	Discharge Valve Setting	Inlet Corrected Weight Flow, Lbs/Sec	Stage Total-Pressure Ratio	Stage Adiabatic Efficiency	Type Point**
245	70	30	165.3	1.198	.759	OP
246	70	15	155.4	1.239	.821	OP
247	70	10	148.1	1.264	.847	OP
248	70	6.5	138.0	1.276	.800	OP
249	90	30	202.0	1.316	.736	OP
250	90	15	199.0	1.415	.797	OP
251	90	10	191.9	1.478	.820	OP
252	90	8	186.5	1.505	.808	OP
253	100	30	215.9	1.373	.706	BE (p. 338)
254	100	11	211.8	1.578	.791	BE (p. 340)
255	100	8.2	207.0	1.646	.794	BE (p. 342)
256	100	15	214.5	1.498	.772	OP

\*\* - OP - Overall Performance Reading  
 BE - Blade Element Performance Reading

Table V. Summary of Task I Stage Radial Distortion Test Data (Continued).

h. Skewed Slotted Insert #4 Casing Treatment.

Reading Number	Percent Design Speed	Discharge Valve Setting	Inlet Corrected Weight Flow, Lbs/Sec	Stage Total-Pressure Ratio	Stage Adiabatic Efficiency	Type Point**
19	70	30	165.8	1.200	.81	OP
20	70	12.5	153.4	1.256	.828	OP
21	70	5.9	137.1	1.283	.795	OP
22	70	10	149.1	1.268	.840	OP
23	70	15	156.3	1.244	.824	OP
24	90	30	202.5	1.321	.724	OP
25	90	15	199.4	1.422	.797	OP
26	90	10	193.6	1.490	.822	OP
27	90	5.6	178.2	1.545	.797	OP
28	90	8	188.0	1.521	.816	OP
29	100	30	216.0	1.374	.692	BE (p. 344)
30	100	11	212.7	1.583	.785	BE (p. 346)
31	100	9	209.1	1.637	.793	OP
32	100	7	203.5	1.684	.785	BE (p. 348)
33	100	15	214.5	1.504	.764	OP
34	70	10	149.8	1.269	.835	OP

\*\* - OP - Overall Performance Reading  
 BE - Blade Element Performance Reading

Table V. Summary of Task I Stage Radial Distortion Test Data (Continued).

i. Blade Angle Insert #1 Casing Treatment.

Reading Number	Percent Design Speed	Discharge Valve Setting	Inlet Corrected Weight Flow, Lbs/Sec	Stage Total-Pressure Ratio	Stage Adiabatic Efficiency	Type Point**
270	70	30	165.5	1.199	.809	OP
271	70	15	156.2	1.242	.836	OP
272	70	10	147.6	1.266	.823	OP
273	70	4.5	131.6	1.279	.787	OP
275	90	15	197.5	1.406	.801	OP
276	90	10	190.5	1.465	.812	OP
277	90	5.5	174.4	1.515	.784	OP
278	90	30	201.2	1.315	.730	OP
279	100	30	214.2	1.367	.685	BE (p. 350)
280	100	7	201.7	1.658	.782	BE (p. 352)
281	100	11	212.0	1.568	.789	BE (p. 354)
282	100	15	213.4	1.488	.769	OP
283	70	10	147.5	1.264	.827	OP

\*\* - OP - Overall Performance Reading  
 BE - Blade Element Performance Reading

Table V. Summary of Task I Stage Radial Distortion Test Data (Continued).

j. Blade Angle Slotted Insert #2 Casing Treatment.

Reading Number	Percent Design Speed	Discharge Valve Setting	Inlet Corrected Weight Flow, Lbs/Sec	Stage Total-Pressure Ratio	Stage Adiabatic Efficiency	Type Point**
343	70	30	165.7	1.199	.805	OP
344	70	15	156.1	1.242	.814	OP
345	70	12.5	152.2	1.254	.820	OP
346	70	10	148.0	1.265	.823	OP
347	70	7	140.0	1.275	.812	OP
348	90	30	201.9	1.313	.731	OP
349	90	15	198.3	1.408	.796	OP
350	90	12.5	195.7	1.438	.823	OP
351	90	10	191.9	1.472	.816	OP
352	90	7	182.3	1.511	.800	OP
353	100	30	214.7	1.367	.679	BE (p. 356)
354	100	11	212.1	1.572	.789	BE (p. 358)
355	100	7.4	203.2	1.650	.780	BE (p. 360)
356	100	9	208.7	1.617	.787	OP
357	100	15	213.9	1.486	.764	OP

\*\* - OP - Overall Performance Reading  
BE - Blade Element Performance Reading

Table VI. Summary of Task I Stage Circumferential Distortion Test Data.  
Skewed Slots #2 Casing Treatment.

Reading Number	Percent Design Speed	Discharge Valve Setting	Inlet Corrected Weight Flow, Lbs/Sec	Stage Total-Pressure Ratio	Stage Adiabatic Efficiency	Type Point*	Distortion Screen Pos. From TDC
358	70	98.5	163.6	1.181	.751	OP	195
359	70	50	163.6	1.184	.755	OP	195
360	70	30	162.6	1.197	.785	OP	195
361	70	10	144.5	1.260	.831	OP	195
362	70	5	130.1	1.277	.778	OP	195
363	70	2	118.0	1.279	.719	OP	195
364	90	50	201.4	1.305	.740	OP	195
365	90	15	194.8	1.410	.834	OP	195
366	90	11	188.0	1.454	.838	OP	195
367	90	7.5	176.8	1.486	.816	OP	195
368	90	6	169.8	1.495	.795	OP	195
369	100	50	216.4	1.367	.728	OP	195
370	100	13	209.7	1.532	.825	OP	195
371	100	9.6	202.4	1.583	.822	OP	195
372	100	7.3	192.2	1.611	.788	OP	195
373	100	17	213.4	1.473	.805	OP	195
399	100	8	196.6	1.597	.797	OP	195
374	100	9.6	202.2	1.584	.828	OP	195
387	100	50	214.9	1.366	.730	OP	195
374-386	100	9.6	202.2	1.581	.805	SRT	195-165 (p. 377)
387-398	100	50	214.9	1.374	.728	SRT	195-165 (p. 364)

\* - OP - Overall Performance Reading  
SRT- Screen Rotating Test (12 Circumferential Distortion Screen Positions in 30° Intervals from 195° TDC)



Table VIII. Summary of Task II Stage Undistorted Inlet Test Data.  
a. With Inlet Guide Vanes and Blade Angle Slots #1 Casing Treatment.

Reading Number	Percent Design Speed	Discharge Valve Setting	Inlet Corrected Weight Flow, Lbs/Sec	Stage Total-Pressure Ratio	Stage Adiabatic Efficiency	Type Point**
418	70	30	170.4	1.195	.763	OP
419	70	23.3*	117.0	1.317	.698	OP
420	70	15	164.1	1.245	.828	OP
421	70	10	155.4	1.277	.833	OP
422	70	6	145.4	1.301	.816	OP
423	90	30	207.3	1.309	.690	OP
424	90	2.5	162.9	1.577	.716	OP
425	90	15	205.4	1.416	.791	OP
426	90	10	201.4	1.503	.826	OP
427	90	9	200.2	1.529	.838	OP
428	100	30	222.9	1.365	.664	OP
429	100	8	218.9	1.705	.821	OP
430	100	30	224.1	1.371	.665	BE (p. 384)
431	100	9	220.6	1.675	.825	BE (p. 387)
432	100	4	192.6	1.791	.737	BE (p. 390)

\* - Indicates discharge valve position with inner annulus discharge pipe closed.

\*\* - OP - Overall Performance Reading

BE - Blade Element Performance Reading

Table VIII. Summary of Task II Stage Undistorted Inlet Test Data (Continued).

b. Without Inlet Guide Vanes and with Blade Angle Slots #1 Casing Treatment.

Reading Number	Percent Design Speed	Discharge Valve Setting	Inlet Corrected Weight Flow, Lbs/Sec	Stage Total-Pressure Ratio	Stage Adiabatic Efficiency	Type Point**
536	70	30	171.9	1.199	.787	OP
537	70	24.2*	119.8	1.323	.716	OP
538	90	9	201.5	1.536	.836	OP
539	90	3.6	173.2	1.601	.753	OP
540	90	7	195.8	1.577	.834	OP
541	90	15	208.8	1.428	.803	OP
542	90	30	208.5	1.314	.692	OP
543	100	30	226.2	1.383	.668	BE (p. 393)
544	70	15	165.7	1.251	.827	OP
545	70	11	160.1	1.279	.861	OP
546	70	6	145.8	1.305	.807	OP
547	100	15	224.9	1.507	.774	OP
548	100	9	221.4	1.676	.822	BE (p. 395)
549	90	9	201.0	1.539	.841	BE (p. 397)
550	90	5	187.6	1.642	.836	OP
551	70	2.5	131.5	1.313	.756	OP
552	100	7	218.5	1.755	.826	OP
553	100	3.7	190.9	1.806	.737	OP
554	100	4	195.2	1.814	.753	BE (p. 399)

\* - Indicates discharge valve position with inner annulus discharge pipe closed.

\*\* - OP - Overall Performance Reading

BE - Blade Element Performance Reading

Table VIII. Summary of Task II Stage Undistorted Inlet Test Data (Continued).

c. Without Inlet Guide Vanes and Without Blade Angle Slots #1 Casing Treatment.

Reading Number	Percent Design Speed	Discharge Valve Setting	Inlet Corrected Weight Flow, Lbs/Sec	Stage Total-Pressure Ratio	Stage Adiabatic Efficiency	Type Point**
586	70	30	173.6	1.199	.804	OP
587	70	10	157.7	1.281	.861	OP
588	70	2	129.8	1.318	.768	OP
589	90	30	209.7	1.319	.712	OP
590	90	5.2	184.6	1.603	.823	OP
591	90	8.5	200.1	1.549	.851	OP
592	90	12	206.5	1.475	.839	OP
593	100	30	224.6	1.374	.681	BE (p. 401)
594	100	6	212.6	1.788	.825	BE (p. 403)
595	100	8	221.2	1.722	.845	BE (p. 405)
596	100	15	224.3	1.513	.798	OP
597	100	10	222.9	1.644	.839	OP
598	100	9	223.0	1.680	.843	OP
599	100	6.6	226.3	1.859	.911	OP
600	90	9.8	203.2	1.516	.848	OP
601	90	6.6	193.3	1.577	.838	OP
602	70	15	165.3	1.248	.851	OP
603	70	8	152.9	1.293	.844	OP
604	70	4	138.1	1.312	.804	OP
605	70	11.4	160.0	1.270	.861	OP
(continued)						

\*\* - OP - Overall Performance Reading  
BE - Blade Element Performance Reading

Table VIII. Summary of Task II Stage Undistorted Inlet Test Data (Concluded).

c. Without Inlet Guide Vanes and Without Blade Angle Slots #1 Casing Treatment (Concluded).

Reading Number	Percent Design Speed	Discharge Valve Setting	Inlet Corrected Weight Flow, Lbs/Sec	Stage Total-Pressure Ratio	Stage Adiabatic Efficiency	Type Point**
642	100	6	210.5	1.778	.820	BE (p. 407)
643	100	8	218.3	1.716	.840	BE (p. 409)
644	100	6.6	213.1	1.759	.828	OP
645	100	9	220.6	1.680	.843	BE (p. 411)
646	100	10	221.8	1.645	.837	BE (p. 413)
647	100	12	223.0	1.585	.825	OP

\*\* - OP - Overall Performance Reading  
 BE - Blade Element Performance Reading

Table IX. Summary of Task II Stage Radial Distortion Test Data.

a. With Inlet Guide Vanes and Blade Angle Slots #1 Casing Treatment.

Reading Number	Percent Design Speed	Discharge Valve Setting	Inlet Corrected Weight Flow, Lbs/Sec	Stage Total-Pressure Ratio	Stage Adiabatic Efficiency	Type Point**
433	70	30	168.9	1.214	.775	OP
434	70	4	134.2	1.309	.764	OP
435	70	14	159.6	1.265	.812	OP
436	90	30	203.3	1.328	.698	OP
437	90	5.1	179.0	1.574	.758	OP
438	90	10.8	197.2	1.491	.788	OP
439	100	30	215.5	1.380	.660	BE (p. 416)
440	100	6	204.0	1.732	.755	BE (p. 419)
441	100	10	212.3	1.618	.763	BE (p. 422)
442	100	12	213.5	1.571	.752	OP
443	90	8	192.2	1.541	.801	OP
444	70	11	155.0	1.282	.815	OP

\*\* - OP - Overall Performance Reading  
 BE - Blade Element Performance Reading

Table IX. Summary of Task II Stage Radial Distortion Test Data (Continued).

b. Without Inlet Guide Vanes and with Blade Angle Slots #1 Casing Treatment.

Reading Number	Percent Design Speed	Discharge Valve Setting	Inlet Corrected Weight Flow, Lbs/Sec	Stage Total-Pressure Ratio	Stage Adiabatic Efficiency	Type Point**
555	70	30	169.8	1.217	.779	OP
556	70	14	161.9	1.269	.824	OP
557	70	5.2	140.3	1.313	.792	OP
558	90	30	203.8	1.329	.697	OP
559	90	10.3	198.4	1.505	.797	OP
560	90	6.3	186.5	1.569	.781	OP
561	100	30	216.3	1.384	.658	BE (p. 425)
562	100	10.5	213.6	1.612	.758	BE (p. 427)
563	100	6.5	206.8	1.728	.757	BE (p. 429)
564	100	8	210.0	1.685	.768	OP
565	100	11.2	214.1	1.592	.756	OP
566	90	9.2	194.9	1.527	.797	OP
568	70	11	156.6	1.286	.813	OP
569	70	8	150.2	1.304	.809	OP

\*\* - OP - Overall Performance Reading

BE - Blade Element Performance Reading

Table IX. Summary of Task II Stage Radial Distortion Test Data (Concluded).

c. Without Inlet Guide Vanes and Without Blade Angle Slots #1 Casing Treatment.

Reading Number	Percent Design Speed	Discharge Valve Setting	Inlet Corrected Weight Flow, Lbs/Sec	Stage Total-Pressure Ratio	Stage Adiabatic Efficiency	Type Point**
571	70	14	161.6	1.269	.816	OP
572	70	30	171.1	1.216	.784	OP
573	70	9.3	152.4	1.293	.817	OP
574	90	30	203.8	1.327	.695	OP
575	90	10.5	198.5	1.494	.795	OP
576	100	30	218.8	1.388	.676	BE (p. 431)
577	100	10.5	214.4	1.613	.772	BE (p. 433)
578	100	12.3	216.8	1.575	.773	BE (p. 435)
579	100	14	217.5	1.541	.761	OP
580	100	11.1	214.1	1.601	.770	OP
581	90	15	202.4	1.432	.769	OP
582	90	13.3	201.3	1.454	.783	OP
583	90	12	199.3	1.470	.788	OP
584	70	15	162.8	1.264	.807	OP
585	70	11	156.1	1.283	.821	OP

\*\* - OP - Overall Performance Reading  
 BE - Blade Element Performance Reading

Table X. Summary of Task II Stage Circumferential Distortion Test Data.

a. With Inlet Guide Vanes and with Blade Angle Slots #1 Casing Treatment.

Reading Number	Percent Design Speed	Discharge Valve Setting	Inlet Corrected Weight Flow, Lbs/Sec	Stage Total-Pressure Ratio	Stage Adiabatic Efficiency	Type Point*	Distortion Screen Pos. From TDC
406	70	30	167.8	1.220	.774	OP	195
407	90	30	207.0	1.357	.732	OP	195
408	90	4.5	172.1	1.579	.759	OP	195
409	90	11	198.9	1.505	.818	OP	195
410	90	13	201.8	1.476	.806	OP	195
411	100	30	222.0	1.422	.714	OP	195
412	100	6.3	199.3	1.709	.776	OP	195
413	100	10	213.9	1.642	.808	OP	195
414	100	12	217.7	1.600	.802	OP	195
415	70	11	155.1	1.286	.818	OP	195
416	70	25.7*	116.6	1.311	.689	OP	195
417	70	13	158.0	1.274	.812	OP	195
457	100	7.3	205.2	1.699	.802	OP	195
471	70	11	153.7	1.283	.810	OP	195
445-456	100	30	220.3	1.411	.716	SRT	195-165 (p. 450)
457-468	100	7.3	205.2	1.685	.774	SRT	195-165 (p. 435)
471-483	70	11	153.7	1.274	.843	SRT	195-165 (p. 462)

\* - Indicates discharge valve position with inner annulus discharge pipe closed.

\*\* - OP - Overall Performance Reading

SRT- Screen Rotating Test (12 Circumferential Distortion Screen Positions in 30° Intervals from 195° TDC)



Table X. Summary of Task II Stage Circumferential Distortion Test Data (Continued).

b. Without Inlet Guide Vanes and with Blade Angle Slots #1 Casing Treatment.

Reading Number	Percent Design Speed	Discharge Valve Setting	Inlet Corrected Weight Flow, Lbs/Sec	Stage Total-Pressure Ratio	Stage Adiabatic Efficiency	Type Point*	Distortion Screen Pos. From TDC
484	70	30	168.1	1.213	.760	OP	195
485	70	20	165.7	1.232	.785	OP	195
486	70	13	157.8	1.266	.800	OP	195
487	70	11	155.1	1.277	.802	OP	195
500	70	1.0	120.7	1.314	.693	OP	195
501	90	30	209.2	1.367	.750	OP	195
502	90	20	208.0	1.403	.778	OP	195
503	90	13	202.0	1.472	.810	OP	195
504	90	11	198.1	1.499	.819	OP	195
505	90	7	185.9	1.551	.806	OP	195
506	90	9	193.3	1.526	.815	OP	195
507	100	30	225.2	1.435	.736	OP	195
519	100	12.5	219.5	1.591	.806	OP	195
520	100	10	214.8	1.642	.819	OP	195
521	100	11	217.4	1.616	.808	OP	195
523	70	8	148.2	1.297	.808	OP	195
524	70	5	138.5	1.311	.778	OP	195
648	100	7	200.9	1.693	.776	OP	195
649	100	8.5	207.6	1.665	.796	OP	195
650	100	11	213.6	1.610	.808	OP	195
651	90	5.2	174.8	1.561	.764	OP	195
652	90	11	196.5	1.493	.818	OP	195
653	90	13	199.0	1.464	.807	OP	195
488-499	70	11	154.8	1.274	.829	SRT	195-165 (p. 492)
507-518	100	30	225.3	1.438	.719	SRT	195-165 (p. 483)
521-534	100	11	217.4	1.617	.789	SRT	195-165 (p. 474)

\* - OP - Overall Performance Reading

SRT- Screen Rotating Test (12 Circumferential Distortion Screen Positions in 30° Intervals from 195° TDC)

Table X. Summary of Task II Stage Circumferential Distortion Test Data (Concluded).

c. Without Inlet Guide Vanes and Without Blade Angle Slots #1 Casing Treatment.

Reading Number	Percent Design Speed	Discharge Valve Setting	Inlet Corrected Weight Flow, Lbs/Sec	Stage Total-Pressure Ratio	Stage Adiabatic Efficiency	Type Point*	Distortion Screen Pos. From TDC
606	70	30	168.1	1.210	.773	OP	195
607	70	11	154.3	1.275	.813	OP	195
608	70	4.3	135.4	1.310	.771	OP	195
609	70	13	157.4	1.266	.806	OP	195
610	90	30	206.7	1.370	.752	OP	195
611	90	11	197.7	1.495	.831	OP	195
612	90	7.2	185.5	1.543	.811	OP	195
613	100	30	221.7	1.420	.742	OP	195
614	100	12	217.0	1.598	.823	OP	195
615	100	9.5	212.9	1.645	.817	OP	195
627	100	9	209.4	1.652	.805	OP	195
628	100	30	222.5	1.426	.753	OP	195
640	100	10	211.7	1.631	.807	OP	195
641	90	13	199.6	1.463	.810	OP	195
615-626	100	9.5	212.9	1.647	.804	SRT	195-165 (p. 501)
628-639	100	30	222.6	1.430	.733	SRT	195-165 (p. 510)

\* - OP - Overall Performance Reading  
 SRT- Screen Rotating Test (12 Circumferential Distortion Screen Positions in 30° Intervals from 195° TDC)



APPENDIX C

LISTING OF TASK I STAGE UNDISTORTED  
INLET BLADE ELEMENT DATA

Table XII. Symbols for Blade Element Output.

		INLET GUIDE VANES										BLADE ELEMENT PERFORMANCE RESULTS										OVERALL PERFORMANCE SUMMARY																													
		POINT NUMBER					READING NUMBER					DATE					DATE					STAGE DATA					IGV DATA																								
		CHBR LN					INCID ANG					SUCTION SURF					INLET ABS					INLET REL					FIXED INST.					TRAV. INST.																			
		LE ANGLE					MN CMBR LN					LN					VELOCITY					VELOCITY					P <sub>2,20</sub> /P <sub>0,18</sub>					P <sub>0,95</sub> /P <sub>0,18</sub>																			
		*M/A					θ <sub>1</sub>					i					M/A					V <sub>1</sub>					M/A					V <sub>θ1</sub>					M/A														
		REL INLET FLOW ANG					ABS EXIT FLOW ANG					CHBR LN TE ANGLE					DEV ANG TE					TURN ANGLE					EXIT ABS VELOCITY					EXIT REL VELOCITY					EXIT AX VELOCITY					INLET ABS TANG VEL					INLET REL TANG VEL				
		M/A					θ <sub>2</sub>					*α <sub>1</sub>					α <sub>0</sub>					Δθ					V <sub>2</sub>					M/A					V <sub>θ2</sub>					M/A									
		ROTOR SPD AT INLET					INLET ABS MACH NO					INLET REL MACH NO					AXIAL VEL RATIO					TRAV LOSS IR TL PRESS COEFF					LOSS PARAM					DIFFUSION FACTOR					D					C <sub>L</sub>									
		M/A					M <sub>1</sub>					M/A					V <sub>z2</sub> /V <sub>z1</sub>					ω					ω Cos θ <sub>2</sub> / 2σ					M/A					M/A					C <sub>p</sub>									
		ROTOR SPD AT EXIT					EXIT ABS MACH NO					EXIT REL MACH NO					SOLIDITY					PERCENT IMMERSION					TRAV TOT PRESS RATIO					FIXED TOT PRESS RATIO					FIXED TOT TEMP RATIO					PERCENT DESIGN SPEED					DISCHARGE VALVE SETTING				
		M/A					M <sub>2</sub>					M/A					σ					5.0000					P <sub>0,95</sub> /P <sub>0,18</sub>					T <sub>0,95</sub> /T <sub>0,18</sub>					= 4M/√g					Discharge Valve Setting =									
		M/A					M <sub>2</sub>					M/A					σ					10.0000					P <sub>0,95</sub> /P <sub>0,18</sub>					T <sub>0,95</sub> /T <sub>0,18</sub>					Cor. Nozzle Weight Flow = W√g/s					TE Check Flow/Noz.Flow =									
		M/A					M <sub>2</sub>					M/A					σ					30.0000					P <sub>0,95</sub> /P <sub>0,18</sub>					T <sub>0,95</sub> /T <sub>0,18</sub>					Assumed IE Flow Coeff. =					TE Check Flow/Noz.Flow =									
		M/A					M <sub>2</sub>					M/A					σ					50.0000					P <sub>0,95</sub> /P <sub>0,18</sub>					T <sub>0,95</sub> /T <sub>0,18</sub>					Assumed IE Flow Coeff. =					TE Check Flow/Noz.Flow =									
		M/A					M <sub>2</sub>					M/A					σ					70.0000					P <sub>0,95</sub> /P <sub>0,18</sub>					T <sub>0,95</sub> /T <sub>0,18</sub>					Assumed IE Flow Coeff. =					TE Check Flow/Noz.Flow =									
		M/A					M <sub>2</sub>					M/A					σ					90.0000					P <sub>0,95</sub> /P <sub>0,18</sub>					T <sub>0,95</sub> /T <sub>0,18</sub>					Assumed IE Flow Coeff. =					TE Check Flow/Noz.Flow =									
		M/A					M <sub>2</sub>					M/A					σ					95.0000					P <sub>0,95</sub> /P <sub>0,18</sub>					T <sub>0,95</sub> /T <sub>0,18</sub>					Assumed IE Flow Coeff. =					TE Check Flow/Noz.Flow =									

\*Not Applicable

Table XII. Symbols for Blade Element Output (Continued).

ROTOR BLADE ROW														
BLADE ELEMENT PERFORMANCE RESULTS														
DATE / /1970														
POINT NUMBER BLADE ELEMENT READING NUMBER														
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHMR LN LE ANGLE	INCID ANG MN CMBR LN	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	INLET ABS TANG VEL	INLET REL TANG VEL			
1	$\theta_1'$	$\theta_1$	$\alpha_1^o$	$i$	$V_1$	$V_1'$	$V_{z1}$	$V_{\theta 1}$	$V_{\theta 1}'$	$V_{\theta 1}$	$V_{\theta 1}'$			
2				$i_{ss}$										
3														
4														
5														
6														
7														
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHMR LN TE ANGLE	REL DEV ANG TE	REL TJRN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	EXIT REL TANG VEL			
1	$\theta_2'$	$\theta_2$	$\alpha_2^o$	$\delta^o$	$\Delta\theta'$	$V_2$	$V_2'$	$V_{z2}$	$V_{\theta 2}$	$V_{\theta 2}'$	$V_{\theta 2}$			
2														
3														
4														
5														
6														
7														
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO										
1	$U_1$	$M_1$	$M_1'$	$\frac{V_{z2}}{V_{z1}}$										
2														
3														
4														
5														
6														
7														
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	SOLIDITY COEFFICIENT	LOSS	LOSS PARAM	ADB EFFICIENCY	POLY MOMEN EFFICIENCY	RISE	STAT PRESS RISE COEFF				
1	$U_2$	$M_2$	$M_2'$	$\sigma$	$\bar{\omega}'$	$\frac{\bar{\omega}'_{Obs} \rho_2'}{2\sigma}$	$\eta_{ad}$	$\eta_p$	$C_p$					
2														
3														
4														
5														
6														
7														
RADIAL POSITION	PERCENT IMMERSION	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT TEMP RATIO										
1	5.0000	$\frac{P_{1.51}}{P_{0.95}}$	$\frac{T_{1.51}}{T_{0.95}}$	$\frac{T_{1.51}}{T_{0.95}}$										
2	10.0000													
3	30.0000													
4	50.0000													
5	70.0000													
6	90.0000													
7	95.0000													
OVERALL PERFORMANCE SUMMARY														
STAGE DATA ROTOR DATA ROTOR DATA														
FIXED INST. FIXED INST. TRAV. INST.														
P 2.20/P 0.18 P 1.51/P 0.95 P 1.51/P 0.95														
$\eta_{ad}$ $\eta_{ad}$ $\eta_{ad}$														
$\eta_p$ $\eta_p$ $\eta_p$														
Discharge Valve Setting =														
LE Check Flow/Noz.Flow =														
Assumed LE Flow Coeff. =														
TE Check Flow/Noz.Flow =														
Assumed TE Flow Coeff. =														

Table XII. Symbols for Blade Element Output (Concluded).

		STATOR BLADE 304											
		BLADE ELEMENT PERFORMANCE RESULTS						STATOR DATA					
		POINT NUMBER	BLADE READING NUMBER	DATE	DATE	DATE	STATOR DATA						
		READING NUMBER	DATE	DATE	DATE	DATE	STATOR DATA						
		READING NUMBER	DATE	DATE	DATE	DATE	STATOR DATA						
RADIAL POSITION	1	REF INLET FLOW ANG	ABS INLET FLOW ANG	CMBK LN LE ANG	INCID ANG LN	INCID ANG SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL		
	2	*M/A	$\theta_1$	$\alpha_1$	i	N/A	$V_1$	N/A	$V_{z1}$	$V_{\theta 1}$	N/A		
	3												
	4												
	5												
	6												
	7												
RADIAL POSITION	1	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMBK LN LE ANG	DEV ANG	TJRN ANG	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL		
	2	N/A	$\theta_2$	$\alpha_2$	$\phi$	$\Delta\theta$	$V_2$	N/A	$V_{z2}$	$V_{\theta 2}$	N/A		
	3												
	4												
	5												
	6												
	7												
RADIAL POSITION	1	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO								
	2	N/A	$M_1$	N/A	$\frac{V_{z2}}{V_{z1}}$								
	3												
	4												
	5												
	6												
	7												
RADIAL POSITION	1	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	SOLIDITY COEFFICIENT	LOSS	TOT PRESS LOSS PARAM	ADB EFFICIENCY	POLY MOMEN RISE/ EFFICIENCY MEAS	STAT PRESS RISE COEFF			
	2	N/A	$M_2$	N/A	$\sigma$	$\omega$	$\frac{\omega \cos \beta_2}{2\sigma}$	N/A	$\eta_p$	N/A	$C_p$		
	3												
	4												
	5												
	6												
	7												
RADIAL POSITION	1	PERCENT IMMERSION	TRAV TOT PRESS RATIO	TRAV TOT TEAR RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEAR RATIO							
	2	5.0000	$\frac{P_{2.2}}{P_{1.51}}$	$\frac{\eta_{2.2}}{\eta_{1.51}}$	$\frac{P_{2.2}}{P_{1.51}}$	$\frac{\tau_{2.2}}{\tau_{1.51}}$							
	3	10.0000											
	4	30.0000											
	5	70.0000											
	6	90.0000											
	7	95.0000											

OVERALL PERFORMANCE SUMMARY

STAGE DATA STATOR DATA STATOR DATA  
 FIXED INST. FIXED INST. TRAV. INST.  
 $P_{2.20}/P_{0.18}$   $P_{2.20}/P_{1.51}$   $P_{2.20}/P_{1.51}$   
 $\eta_p$   $\eta_p$   $\eta_p$   
 Discharge Valve Setting =  $\frac{48\sqrt{g}}{1000}$   
 IE Check Flow/Noz.Flow =  $\frac{1000}{1000}$   
 Assumed IE Flow Coeff. =  $\frac{1000}{1000}$

060870

TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA

		ROTOR BLADE ROW #		NASA TASK IV			
		POINT NUMBER	14	READING NUMBER	15	DATE	6/ 4/1970
BLADE ELEMENT PERFORMANCE RESULTS							
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCLD ANS INCID ANS	INCID ANS INCID ANS	INLET ABS VELOCITY	INLET REL VELOCITY
				60CT	SURF		
1	66.47	-27.61	60.60	7.67	5.17	555.84	1489.23
2	66.07	42.31	59.64	7.26	4.23	578.31	1489.17
3	60.71	-15.02	56.01	4.70	0.24	679.71	1389.15
4	59.73	-31.08	52.56	7.17	1.33	646.68	843.87
5	57.31	-27.96	49.74	7.40	0.62	635.30	1157.11
6	58.83	-27.48	47.41	8.42	0.76	581.12	997.94
7	58.84	-11.48	46.13	9.41	1.51	546.72	932.77
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN LE ANGLE	REL DEV ANG	REL TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY
1	55.08	49.41	54.80	0.26	15.36	758.23	909.04
2	54.37	47.27	54.72	70.85	32.49	783.74	912.24
3	53.76	49.03	50.68	3.08	6.99	725.94	895.13
4	48.49	51.83	43.79	4.70	11.23	725.42	679.49
5	49.88	54.43	32.15	10.43	71.35	581.49	581.49
6	30.77	54.82	14.29	16.48	28.76	724.68	486.95
7	17.96	56.64	8.00	9.96	37.58	801.94	469.81
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO
1	158.97	0.502	0.358	0.952	184.81	0.654	0.748
2	189.82	0.530	1.345	0.928	185.74	0.651	0.757
3	199.42	0.630	1.287	0.700	197.35	0.611	0.678
4	106.84	0.598	1.182	0.699	107.90	0.614	0.679
5	95.31	0.588	1.070	0.668	95.85	0.606	0.679
6	78.91	0.539	0.918	0.745	88.49	0.622	0.622
7	742.83	0.501	0.855	0.844	807.17	0.651	0.805
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	SOLIDITY	LOSS EFFICIENCY	VOY PRESS LBSS PARAM	ADB EFFICIENCY
1	158.97	0.502	0.358	0.3340	0.253	0.054	0.7450
2	189.82	0.530	1.345	0.3690	0.249	0.053	0.7486
3	199.42	0.630	1.287	0.5800	0.154	0.030	0.8348
4	106.84	0.598	1.182	0.5760	0.158	0.031	0.8392
5	95.31	0.588	1.070	0.9060	0.112	0.022	0.8876
6	78.91	0.539	0.918	2.2170	0.139	0.026	0.8876
7	742.83	0.501	0.855	2.3390	0.201	0.041	0.8533
RADIAL POSITION	PERCENT	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED VOY PRESS RATIO	FIXED TOT TEMP RATIO	POLY MOMEN RISE/ MEAS %	STAT RISE COEFF
1	5.0000	1.928	1.828	1.856	1.260	0.7660	0.356
2	10.0000	1.899	1.751	1.839	1.254	0.7691	0.375
3	50.0000	1.804	1.707	1.771	1.213	0.8475	0.483
4	50.0000	1.747	1.697	1.705	1.196	0.8508	0.529
5	70.0000	1.669	1.611	1.639	1.171	0.8952	0.609
6	90.0000	1.637	1.571	1.610	1.164	0.8949	0.733
7	98.0000	1.748	1.602	1.602	1.169	0.8627	0.859

OVERALL PERFORMANCE SUMMARY

STAGE DATA	ROTOR DATA	ROTOR DATA
FIXED INST.	FIXED INST.	TRAV. INST.
Total Pressure Ratio =	1.6970	1.7420
Adiabatic Efficiency =	0.7746	0.8161
Polytropic Efficiency =	0.7907	0.8298
Percent Design Speed =	100.1	Discharge Valve Setting= 5.0
Cor. Nozzle Weight Flow=	190.8	

IE Check Flow/Noz.Flow = 1.0454 TE Check Flow/Noz.Flow = 0.9678  
 Assumed IE Flow Coeff. = 0.9850 Assumed TE Flow Coeff. = 0.9500



060870

TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

RADIAL POSITION		STATOR BLADE ROW # NASA TASK 10										ROTOR SPD AT INLET										ROTOR SPD AT EXIT									
RADIAL POSITION		BLADE ELEMENT PERFORMANCE RESULTS										DIFFUSION										POLY MOMEN RISE/ STAY PRESS									
RADIAL POSITION		PERFORMANCE PARAMETERS										EFFICIENCY										RISE COEFF									
RADIAL POSITION		Total Pressure Ratio =										EFFICIENCY										RISE COEFF									
RADIAL POSITION		Peltropic Efficiency =										EFFICIENCY										RISE COEFF									
RADIAL POSITION		Percent Design Speed = 100.1										EFFICIENCY										RISE COEFF									
RADIAL POSITION		Cor. Nozzle Weight Flow= 190.8										EFFICIENCY										RISE COEFF									
RADIAL POSITION		IE Check Flow/Noz.Flow = 0.9789										EFFICIENCY										RISE COEFF									
RADIAL POSITION		Assumed IE Flow Coeff. = 0.9550										EFFICIENCY										RISE COEFF									
1	1	48.95	39.47	9.48	12.98	61.790	67.59	19.57	0.466	0.193	0.212	0.415	0.454	0.263	0.357	0.601	0.472	0.604	0.518	0.719	0.426	0.177	0.195	0.245	0.335	0.449	0.495	0.399			
2	2	46.71	39.11	7.60	12.98	61.790	67.59	19.57	0.466	0.193	0.415	0.454	0.263	0.357	0.601	0.472	0.604	0.518	0.719	0.426	0.177	0.195	0.245	0.335	0.449	0.495	0.399				
3	3	47.21	39.01	8.20	14.14	63.728	57.542	44.46	0.415	0.212	0.454	0.263	0.357	0.601	0.472	0.604	0.518	0.719	0.426	0.177	0.195	0.245	0.335	0.449	0.495	0.399					
4	4	49.34	39.60	9.26	14.14	63.728	57.542	44.46	0.415	0.212	0.454	0.263	0.357	0.601	0.472	0.604	0.518	0.719	0.426	0.177	0.195	0.245	0.335	0.449	0.495	0.399					
5	5	52.03	40.86	11.17	14.14	63.728	57.542	44.46	0.415	0.212	0.454	0.263	0.357	0.601	0.472	0.604	0.518	0.719	0.426	0.177	0.195	0.245	0.335	0.449	0.495	0.399					
6	6	52.42	42.22	10.20	17.59	438.65	437.57	-11.36	0.415	0.212	0.454	0.263	0.357	0.601	0.472	0.604	0.518	0.719	0.426	0.177	0.195	0.245	0.335	0.449	0.495	0.399					
7	7	54.27	42.76	11.51	17.59	438.65	437.57	-11.36	0.415	0.212	0.454	0.263	0.357	0.601	0.472	0.604	0.518	0.719	0.426	0.177	0.195	0.245	0.335	0.449	0.495	0.399					
1	1	1.82	51.13	49.31	42.78	46.83	506.17	437.57	0.659	0.659	0.630	0.631	0.614	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619			
2	2	4.01	51.03	49.31	42.78	46.83	506.17	437.57	0.659	0.659	0.630	0.631	0.614	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619			
3	3	0.39	50.87	49.31	42.78	46.83	506.17	437.57	0.659	0.659	0.630	0.631	0.614	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619			
4	4	-0.60	50.75	49.31	42.78	46.83	506.17	437.57	0.659	0.659	0.630	0.631	0.614	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619			
5	5	-1.49	50.10	49.31	42.78	46.83	506.17	437.57	0.659	0.659	0.630	0.631	0.614	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619			
6	6	7.01	51.08	49.31	42.78	46.83	506.17	437.57	0.659	0.659	0.630	0.631	0.614	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619			
7	7	-5.73	51.36	49.31	42.78	46.83	506.17	437.57	0.659	0.659	0.630	0.631	0.614	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619	0.619			

OVERALL PERFORMANCE SUMMARY  
 SPACE DATA STATOR INLET STATOR DATA  
 FIXED INST. FIXED INST. TRAV. INST.  
 1.6970 0.9742 0.9557  
 0.7907 0.9929 0.8172  
 Discharge Valve Setting=5.0  
 IE Check Flow/Noz.Flow = 1.0157  
 Assumed IE Flow Coeff. = 0.9350

060870

TABLE XII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

ROTOR BLADE ROW 3 NASA TASK 19									
BLADE ELEMENT PERFORMANCE RESULTS									
POINT NUMBER 15		READING NUMBER 16		DATE 62 4Y1970		INLET AX		INLET REL	
RADIAL POSITION	REL INLET PLOW ANG	ABS INLET PLOW ANG	CHBR LN LE ANGLE	INCLD ANG MB CMBR LN	INCLD ANG MB CMBR LN	INLET ABS VELOCITY	INLET REL VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL
1	63.63	0.43	3.02	1.26	0.33	676.69	1514.16	5.07	135.55
2	60.87	0.44	59.61	1.26	-1.77	740.48	1517.51	9.64	1324.02
3	54.66	0.66	56.01	1.15	-5.62	837.88	1455.66	9.62	1196.38
4	52.91	0.83	52.56	0.95	-8.89	821.95	1348.08	0.46	1068.49
5	50.41	-0.95	49.71	0.70	-6.09	795.86	1338.28	-12.08	948.74
6	50.86	-1.48	47.11	0.55	-4.11	687.88	1357.53	-17.01	804.90
7	50.83	-1.90	46.13	0.50	-3.48	649.91	994.56	-9.72	752.90
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN FE ANGLE	REL DEV ANG TB	REL YURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL
1	56.49	40.56	54.80	0.69	5.14	713.52	1836.83	462.91	882.35
2	58.02	36.92	52.42	0.60	2.85	703.77	1832.69	441.24	876.13
3	53.21	41.32	50.68	0.43	1.79	781.38	902.50	476.17	721.76
4	49.40	42.99	43.79	0.61	3.32	782.31	789.37	478.77	590.24
5	43.87	44.49	38.15	0.22	0.03	727.13	885.71	504.44	452.36
6	33.85	48.01	18.29	0.26	17.10	710.87	972.80	524.07	312.83
7	23.87	52.80	9.00	0.87	28.76	783.53	1467.12	618.96	188.60
RADIAL POSITION	INLET ABS MACH NO	INLET REL MACH NO	ABIAL VEL RATIO	SOLIDITY	LOSS COEFFICIENT	TOY PRESS LOSS	ADD EFFICIENCY	POLY WOMEN RISE/ MEAS T. RISE	STAT PRESS RISE
1	0.627	1.403	0.809	1.3340	0.172	0.034	0.7993	0.8054	0.353
2	0.592	1.418	0.741	1.3660	0.142	0.031	0.7998	0.8140	0.379
3	0.793	1.377	0.647	1.5080	0.115	0.023	0.8562	0.8665	0.488
4	0.775	1.272	0.627	1.6848	0.115	0.022	0.8602	0.8696	0.562
5	0.749	1.166	0.654	1.9060	0.043	0.008	0.9481	0.9515	0.627
6	0.639	0.983	0.715	2.2170	0.042	0.015	0.9210	0.9250	0.709
7	0.602	0.921	0.761	2.3390	0.092	0.016	0.9216	0.9267	0.785
RADIAL POSITION	ROTOR SPD AT ENTRY	EXIT ABS MACH NO	EXIT REL MACH NO	TRAV TOT PRESS RATIO	FIXED TOT PRESS RATIO	TEMP RATIO	FIXED YURN RATIO	OVERALL PERFORMANCE SUMMARY	
1	1359.62	0.596	0.865	1.732	1.723	1.708	1.207	STAGE DATA ROTOR DATA ROTOR DATA	
2	1329.66	0.596	0.874	1.692	1.692	1.692	1.208	FIXED INST. FIXED INST. TRAV. INST.	
3	1316.87	0.615	0.769	1.662	1.662	1.662	1.176	Total Pressure Ratio =	1.6293
4	1297.83	0.601	0.675	1.654	1.654	1.654	1.157	Adiabatic Efficiency =	0.8350
5	1078.02	0.621	0.591	1.608	1.608	1.608	1.152	Polytropic Efficiency =	0.8459
6	956.60	0.613	0.494	1.580	1.580	1.580	1.152	Percent Design Speed =	100.1
7	836.90	0.678	0.447	1.566	1.566	1.566	1.157	Cor. Nozzle Weight Flow =	214.5
DISCHARGE VALVE SETTING = 9.0									
LE Check Flow/Noz.Flow = 1.0387									
Assumed LE Flow Coeff. = 0.9950									
Assumed TE Flow Coeff. = 0.9500									

060870

TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

STATOR BLADE ROW # NASA TASK 10														
BLADE ELEMENT PERFORMANCE RESULTS														
POINT NUMBER 15 READING NUMBER 16 DATE 6/ 4/1970														
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CMBR LN LE ANGLE	INCID ANG MB CMBR LN	INCID ANG GURT SURF	INLET ARS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	EXIT ARS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL
1		40.39	39.47	0.92	716.91	546.00	546.00	546.00	464.58	716.91	546.00	546.00	464.58	
2		38.33	39.11	-0.78	714.08	560.04	560.04	560.04	442.85	714.08	560.04	560.04	442.85	
3		39.38	39.01	0.37	750.12	579.56	579.56	579.56	475.71	750.12	579.56	579.56	475.71	
4		40.53	40.80	0.27	730.68	554.36	554.36	554.36	474.01	730.68	554.36	554.36	474.01	
5		41.78	40.86	0.92	744.53	552.59	552.59	552.59	493.78	744.53	552.59	552.59	493.78	
6		45.44	42.72	3.22	714.94	497.64	497.64	497.64	505.29	714.94	497.64	497.64	505.29	
7		50.30	42.76	7.54	778.32	493.40	493.40	493.40	594.25	778.32	493.40	493.40	594.25	
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CMBR LN LE ANGLE	INCID ANG MB CMBR LN	INCID ANG GURT SURF	INLET ARS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	EXIT ARS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL
1		-1.39	11.13	9.78	41.74	531.24	531.24	531.24	-12.96	531.24	531.24	531.24	-12.96	
2		1.18	10.10	11.28	37.16	582.95	582.95	582.95	11.96	582.95	582.95	582.95	11.96	
3		2.05	9.87	10.92	37.33	606.57	606.57	606.57	21.69	606.57	606.57	606.57	21.69	
4		0.75	9.75	9.50	36.78	544.03	544.03	544.03	7.26	544.03	544.03	544.03	7.26	
5		0.10	9.10	9.20	41.69	522.96	522.96	522.96	0.88	522.96	522.96	522.96	0.88	
6		2.26	10.58	12.84	43.18	514.58	514.58	514.58	20.22	514.58	514.58	514.58	20.22	
7		-1.43	12.56	10.93	51.73	497.48	497.48	497.48	-12.40	497.48	497.48	497.48	-12.40	
RADIAL POSITION	ROTOR SPD AT INLET	INLET ARS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	YURN ANGLE	LOSS COEFFICIENT	LOSS PARAM	POLY HOMOEN RISE/ RISE	DIFFUSION FACTOR	CH1				
1		0.999	1.009	1.009	41.74	0.151	0.050	0.5712	0.450	0.224				
2		0.605	1.041	1.041	37.16	0.197	0.032	0.7250	0.379	0.242				
3		0.641	1.045	1.045	37.33	0.199	0.012	0.7729	0.376	0.267				
4		0.627	0.998	0.998	36.78	0.139	0.009	0.8270	0.424	0.350				
5		0.643	0.944	0.944	41.69	0.111	0.011	0.7997	0.472	0.399				
6		0.617	1.030	1.030	43.18	0.171	0.017	0.9078	0.442	0.414				
7		0.673	1.005	1.005	51.73	0.107	0.026	0.6176	0.543	0.358				
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ARS MACH NO	EXIT REL MACH NO	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	EFFICIENCY	ADB EFFICIENCY	STATOR DATA STATOR DATA STATOR DATA				
1		0.959	0.980	0.980	0.959	1.008	1.008	0.5712	0.289	FIXED INST. TRAV. INST.				
2		0.487	0.977	0.977	0.977	1.008	1.008	0.7250	0.226	FIXED INST. TRAV. INST.				
3		0.511	0.978	0.978	0.978	1.008	1.008	0.7729	0.247	FIXED INST. TRAV. INST.				
4		0.468	0.980	0.980	0.980	1.008	1.008	0.8270	0.278	FIXED INST. TRAV. INST.				
5		0.445	0.980	0.980	0.980	1.008	1.008	0.7997	0.275	FIXED INST. TRAV. INST.				
6		0.438	0.990	0.990	0.990	1.008	1.008	0.9078	0.411	FIXED INST. TRAV. INST.				
7		0.422	0.989	0.989	0.989	1.008	1.008	0.6176	0.333	FIXED INST. TRAV. INST.				

OVERALL PERFORMANCE SUMMARY

STATOR DATA STATOR DATA STATOR DATA  
 STAGE DATA STATOR DATA STATOR DATA  
 FIXED INST. TRAV. INST. TRAV. INST.  
 PERFORMANCE PARAMETERS  
 Total Pressure Ratio = 1.6293 0.9855 0.9744  
 Polytropic Efficiency = 0.8459 0.9708 0.8765  
 Percent Design Speed = 100.1 Discharge Valve Setting=9.0  
 Cor. Nozzle Weight Flow= 214.5  
 IE Check Flow/Noz.Flow = 0.9383 TE Check Flow/Noz.Flow = 0.9246  
 Assumed IE Flow Coeff. = 0.9550 Assumed TE Flow Coeff. = 0.9350

060970

TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

RADIAL POSITION		ROTOR BLADE ROW # NASA TASK IV																
		BLADE ELEMENT PERFORMANCE RESULTS																
		POINT NUMBER 16 READING NUMBER 17 DATE 67 4/1970																
		PERFORMANCE PARAMETERS																
		Total Pressure Ratio = 1.4733																
		Adiabatic Efficiency = 0.7980																
		Polytropic Efficiency = 0.8087																
		Percent Design Speed = 100.1																
		Cor. Nozzle Weight Flow = 219.2																
		IE Check Flow/Noz.Flow = 1.0891																
		Assumed IE Flow Coeff. = 0.9850																
		REL INLET FLOW ARG	ABS INLET FLOW ARG	CHBR LN LE ANGLE	INCID ANG MN CHBR LN	INCID ANG SURF BUCT	INLET ABS VELOCITY	INLET REL VELOCITY	EXIT ABS VELOCITY	EXIT REL VELOCITY	INLET AX VELOCITY	INLET REL VELOCITY	EXIT AX VELOCITY	EXIT REL VELOCITY	INLET ARS TANG VEL	INLET REL TANG VEL	EXIT ARS TANG VEL	EXIT REL TANG VEL
1	1	63.23	0.13	60.60	2.63	-0.07	660.28	3523.18	676.59	1154.27	580.04	1154.74	585.98	348.37	996.60	996.60	996.60	996.60
2	2	61.48	-1.09	59.61	1.87	-1.16	732.47	1529.88	670.38	1154.74	585.98	1154.74	585.98	322.20	993.00	993.00	993.00	993.00
3	3	54.25	0.99	56.01	-1.76	-0.22	853.17	1460.05	683.35	1017.45	579.63	1017.45	579.63	361.61	836.06	836.06	836.06	836.06
4	4	51.80	0.68	52.56	-1.36	-0.20	854.02	1360.32	717.71	868.67	573.72	868.67	573.72	431.01	644.78	644.78	644.78	644.78
5	5	48.01	0.23	49.74	-1.70	-0.49	850.90	1262.14	742.48	780.21	589.86	780.21	589.86	448.27	508.33	508.33	508.33	508.33
6	6	47.94	-0.21	47.11	0.63	-0.63	743.08	1088.77	789.51	678.55	588.55	678.55	588.55	515.70	321.02	321.02	321.02	321.02
7	7	48.07	-0.71	46.13	2.54	-0.36	695.19	1037.51	839.08	640.69	587.69	640.69	587.69	585.50	221.88	221.88	221.88	221.88
		REL EXIT FLOW ARG	ABS EXIT FLOW ARG	CHBR LN TE ANGLE	REL DEV ANG TE	REL TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT ABS VELOCITY	EXIT REL VELOCITY	POLY EFFICIENCY	ADP EFFICIENCY	LOSS PARAM	LOSS COEFF	FIXED TOY PRESS RATIO	FIXED TOY TEMP RATIO	EXIT MACH NO	EXIT MACH NO
1	1	59.00	30.99	54.42	5.06	3.43	676.59	1154.27	580.04	1154.74	0.7418	0.7280	0.1032	0.172	1.448	1.154	1.448	1.448
2	2	58.27	31.96	50.68	4.59	2.01	670.38	1154.74	585.98	1154.74	0.7995	0.7882	0.024	0.131	1.473	1.149	1.473	1.473
3	3	48.43	36.92	43.79	4.64	-1.02	683.35	1017.45	579.63	1017.45	0.8466	0.8373	0.1020	0.106	1.500	1.150	1.500	1.500
4	4	40.75	37.23	32.15	8.60	7.25	742.48	868.67	573.72	868.67	0.8117	0.8006	0.1028	0.143	1.511	1.154	1.511	1.511
5	5	28.01	41.23	14.29	14.32	16.33	789.51	780.21	589.86	780.21	0.9242	0.9242	0.1011	0.055	1.526	1.136	1.526	1.526
6	6	20.68	44.89	8.00	12.68	27.98	839.08	640.69	587.69	640.69	0.9953	0.9953	0.1019	0.096	1.541	1.144	1.541	1.541
7	7										0.9121	0.9121	0.1018	0.098	1.553	1.144	1.553	1.553
		ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	INLET REL MACH NO	EXIT ABS MACH NO	EXIT REL MACH NO	EXIT ABS MACH NO	EXIT REL MACH NO	LOSS POLY	LOSS ADP	LOSS PARAM	LOSS COEFF	FIXED TOY PRESS RATIO	FIXED TOY TEMP RATIO	EXIT MACH NO	EXIT MACH NO
1	1	1344.97	0.580	0.586	1.3340	1.3340	0.579	0.598	1.3340	1.3340	0.7418	0.7280	0.1032	0.172	1.448	1.154	1.448	1.448
2	2	1197.47	0.591	0.860	1.5080	1.5080	0.579	0.598	1.5080	1.5080	0.7995	0.7882	0.024	0.131	1.473	1.149	1.473	1.473
3	3	1077.79	0.619	0.746	1.6840	1.6840	0.579	0.598	1.6840	1.6840	0.8466	0.8373	0.1020	0.106	1.500	1.150	1.500	1.500
4	4	956.80	0.649	0.682	1.9060	1.9060	0.579	0.598	1.9060	1.9060	0.8117	0.8006	0.1028	0.143	1.511	1.154	1.511	1.511
5	5	836.72	0.691	0.594	2.2170	2.2170	0.579	0.598	2.2170	2.2170	0.9242	0.9242	0.1011	0.055	1.526	1.136	1.526	1.526
6	6	743.03	0.647	0.562	2.3390	2.3390	0.579	0.598	2.3390	2.3390	0.9953	0.9953	0.1019	0.096	1.541	1.144	1.541	1.541
7	7										0.9121	0.9121	0.1018	0.098	1.553	1.144	1.553	1.553
		DIFFUSION FACTOR	DIFFUSION FACTOR	DIFFUSION FACTOR	DIFFUSION FACTOR	DIFFUSION FACTOR	DIFFUSION FACTOR	DIFFUSION FACTOR	DIFFUSION FACTOR	DIFFUSION FACTOR	POLY MOMEN RISE/ STAY PRESS	ADP MOMEN RISE/ STAY PRESS	LOSS PARAM	LOSS COEFF	FIXED TOY PRESS RATIO	FIXED TOY TEMP RATIO	EXIT MACH NO	EXIT MACH NO
1	1	0.342	0.342	0.342	0.342	0.342	0.342	0.342	0.342	0.342	0.7418	0.7280	0.1032	0.172	1.448	1.154	1.448	1.448
2	2	0.378	0.378	0.378	0.378	0.378	0.378	0.378	0.378	0.378	0.7995	0.7882	0.024	0.131	1.473	1.149	1.473	1.473
3	3	0.449	0.449	0.449	0.449	0.449	0.449	0.449	0.449	0.449	0.8466	0.8373	0.1020	0.106	1.500	1.150	1.500	1.500
4	4	0.540	0.540	0.540	0.540	0.540	0.540	0.540	0.540	0.540	0.8117	0.8006	0.1028	0.143	1.511	1.154	1.511	1.511
5	5	0.590	0.590	0.590	0.590	0.590	0.590	0.590	0.590	0.590	0.9242	0.9242	0.1011	0.055	1.526	1.136	1.526	1.526
6	6	0.567	0.567	0.567	0.567	0.567	0.567	0.567	0.567	0.567	0.9953	0.9953	0.1019	0.096	1.541	1.144	1.541	1.541
7	7	0.545	0.545	0.545	0.545	0.545	0.545	0.545	0.545	0.545	0.9121	0.9121	0.1018	0.098	1.553	1.144	1.553	1.553

OVERALL PERFORMANCE SUMMARY

SPACE DATA ROTOR DATA ROTOR DATA  
FIXED INST. FIXED INST. TRAV. INST.

1.4733 1.5002 1.5117  
0.7980 0.8390 0.8504  
0.8087 0.8480 0.8572

Discharge Valve Settings= 15.0

IE Check Flow/Noz.Flow = 1.0891  
Assumed IE Flow Coeff. = 0.9850

060870

TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

RADIAL POSITION		STATOR BLADE ROW # NASA TASK IV										ROTOR SPINNING									
		POINT NUMBER 16					BLADE ELEMENT PERFORMANCE RESULTS					POINT NUMBER 17					BLADE ELEMENT PERFORMANCE RESULTS				
		READING NUMBER #7					DATE 6/4/1970					READING NUMBER #8					DATE 6/4/1970				
		CHBR LN	INCID ANGLE	MIN CURV LN	INCID ANGLE	INLET ABS VELOCITY	INLET REL VELOCITY	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	INLET ABS VELOCITY	INLET REL VELOCITY	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL		
1	1	30.83	39.17	18.64	39.17	682.21	682.21	585.80	585.80	323.37	323.37	349.63	349.63	601.30	601.30	622.89	361.57	361.57	426.73		
2	2	26.127	39.11	-8.89	39.11	720.29	720.29	534.76	534.76	332.01	332.01	362.07	362.07	606.03	606.03	640.80	371.80	371.80	438.60		
3	3	34.41	39.80	15.30	39.80	756.71	756.71	642.07	642.07	362.07	362.07	382.56	382.56	639.09	639.09	667.74	391.46	391.46	467.22		
4	4	34.43	40.86	-6.43	40.86	807.51	807.51	664.21	664.21	382.56	382.56	407.56	407.56	704.73	704.73	704.73	417.71	417.71	497.22		
5	5	36.46	42.22	-3.76	42.22	846.57	846.57	697.77	697.77	427.76	427.76	447.64	447.64	697.51	697.51	697.51	431.61	431.61	562.13		
6	6	42.13	42.76	-0.63	42.76																
RADIAL POSITION		CHBR LN	INCID ANGLE	MIN CURV LN	INCID ANGLE	INLET ABS VELOCITY	INLET REL VELOCITY	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	INLET ABS VELOCITY	INLET REL VELOCITY	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL		
1	1	1.24	31.13	12.37	31.13	27.97	27.97	20.59	20.59	11.54	11.54	11.54	11.54	534.76	534.76	534.76	11.54	11.54	11.54		
2	2	0.31	31.10	10.41	31.10	27.97	27.97	20.59	20.59	11.54	11.54	11.54	11.54	534.76	534.76	534.76	11.54	11.54	11.54		
3	3	-0.18	31.07	8.71	31.07	27.97	27.97	20.59	20.59	11.54	11.54	11.54	11.54	534.76	534.76	534.76	11.54	11.54	11.54		
4	4	0.35	31.07	9.60	31.07	27.97	27.97	20.59	20.59	11.54	11.54	11.54	11.54	534.76	534.76	534.76	11.54	11.54	11.54		
5	5	-0.73	31.10	8.37	31.10	27.97	27.97	20.59	20.59	11.54	11.54	11.54	11.54	534.76	534.76	534.76	11.54	11.54	11.54		
6	6	0.30	31.08	10.68	31.08	27.97	27.97	20.59	20.59	11.54	11.54	11.54	11.54	534.76	534.76	534.76	11.54	11.54	11.54		
7	7	0.30	31.36	12.66	31.36	27.97	27.97	20.59	20.59	11.54	11.54	11.54	11.54	534.76	534.76	534.76	11.54	11.54	11.54		
RADIAL POSITION		INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	DEV ANG TE	YURN ANGLE	LOSS COEFFICIENT	LOSS PARAM	YOT PRESS	ADB EFFICIENCY	POLY MOMEN RISE/ RISE	SVAT PRESS	DIFFUSION FACTOR	CHI							
1	1	0.583	0.583	0.918	12.37	27.97	0.152	0.050	0.1050	0.3801	0.131	0.141	0.179	0.141							
2	2	0.591	0.591	1.008	10.41	27.97	0.067	0.028	0.028	0.122	0.144	0.264	0.264	0.155							
3	3	0.626	0.626	1.029	8.71	27.97	0.098	0.021	0.021	0.1352	0.142	0.264	0.264	0.175							
4	4	0.655	0.655	1.018	9.60	27.97	0.074	0.021	0.021	0.16898	0.183	0.318	0.318	0.199							
5	5	0.685	0.685	1.035	8.37	27.97	0.044	0.012	0.012	0.17341	0.182	0.300	0.300	0.200							
6	6	0.708	0.708	1.126	10.68	27.97	0.060	0.015	0.015	0.16557	0.182	0.271	0.271	0.149							
7	7	0.743	0.743	1.123	12.66	27.97	0.065	0.020	0.020	0.14082	0.175	0.328	0.328	0.125							
RADIAL POSITION		PERCENT REVERSION	TRAV TOT PRESS RATIO	FIXED TOY PRESS RATIO	FIXED TOY TEMP RATIO	LOSS COEFFICIENT	LOSS PARAM	YOT PRESS	ADB EFFICIENCY	POLY MOMEN RISE/ RISE	SVAT PRESS	DIFFUSION FACTOR	CHI								
1	1	5.0000	0.984	0.986	1.000	0.152	0.050	0.1050	0.3801	0.131	0.141	0.179	0.141								
2	2	10.0000	0.986	0.986	1.000	0.067	0.028	0.028	0.028	0.122	0.144	0.264	0.264								
3	3	30.0000	0.991	0.979	1.000	0.098	0.021	0.021	0.021	0.1352	0.142	0.264	0.264								
4	4	50.0000	0.981	0.981	1.000	0.074	0.021	0.021	0.021	0.16898	0.183	0.318	0.318								
5	5	70.0000	0.977	0.988	1.000	0.044	0.012	0.012	0.012	0.17341	0.182	0.300	0.300								
6	6	90.0000	0.973	0.983	1.000	0.060	0.015	0.015	0.015	0.16557	0.182	0.271	0.271								
7	7	95.0000	0.933	0.973	1.000	0.065	0.020	0.020	0.020	0.14082	0.175	0.328	0.328								

OVERALL PERFORMANCE SUMMARY

STAGE DATA STATOR DATA STATOR DATA  
 FIXED INST. FIXED INST. TRAV. INST.  
 Total Pressure Ratio = 1.4723 0.9814 0.9754  
 Polytropic Efficiency = 0.8087 0.9537 0.8378  
 Percent Design Speed = 100.1 Discharge Valve Setting = 15.0  
 Cor. Nozzle Weight Flow = 219.2

IE Check Flow/Noz.Flow = 0.9451 TE Check Flow/Noz.Flow = 0.9215  
 Assumed IE Flow Coeff. = 0.9550 Assumed TE Flow Coeff. = 0.9350

061170

TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

		ROTOR BLADE ROW # NASA TASK IV												
		BLADE ELEMENT PERFORMANCE RESULTS												
		POINT NUMBER	6		39		6		39		6		39	
		READING NUMBER	6		39		6		39		6		39	
		DATE	6/10/1970		6/10/1970		6/10/1970		6/10/1970		6/10/1970		6/10/1970	
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHMBR LN LE ANGLE	INCLD ANG MN CHMBR LN	INCLD ANG SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	INLET AX TANG VEL	INLET ABS TANG VEL	INLET REL TANG VEL	INLET RRL TANG VEL
1	69.64	-3.79	60.60	9.04	6.34	522.24	1487.92	517.12	-34.26	1393.48	517.12	-34.26	1393.48	1393.48
2	67.66	-2.59	59.41	8.05	5.02	559.22	1465.31	556.76	-25.18	1354.48	556.76	-25.18	1354.48	1354.48
3	61.84	-1.58	56.01	5.83	1.37	652.23	1381.37	651.97	-18.00	1217.83	651.97	-18.00	1217.83	1217.83
4	60.64	-3.14	52.56	6.08	2.24	623.18	1266.29	620.46	-34.01	1102.81	620.46	-34.01	1102.81	1102.81
5	58.18	-2.81	49.71	8.47	3.68	607.88	1177.17	598.75	-29.44	966.06	598.75	-29.44	966.06	966.06
6	56.96	-2.77	47.11	9.85	2.19	581.85	982.87	529.10	-25.59	813.36	529.10	-25.59	813.36	813.36
7	56.68	-2.83	46.13	10.55	2.65	531.71	933.80	504.84	-24.97	768.04	504.84	-24.97	768.04	768.04
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHMBR LN LE ANGLE	INCLD ANG MN CHMBR LN	INCLD ANG REL TURN	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	EXIT AX TANG VEL	EXIT ABS TANG VEL	EXIT REL TANG VEL	EXIT RRL TANG VEL
1	55.80	50.74	54.80	1.00	13.85	789.99	889.03	499.12	610.72	734.34	499.12	610.72	734.34	734.34
2	53.52	48.17	54.42	0.90	12.34	771.22	903.60	513.57	573.87	742.32	513.57	573.87	742.32	742.32
3	51.22	50.00	50.68	2.84	6.32	732.54	791.97	470.83	561.05	634.70	470.83	561.05	634.70	634.70
4	48.27	52.59	43.79	4.48	12.37	730.62	666.94	443.83	580.28	497.58	443.83	580.28	497.58	497.58
5	47.43	55.57	32.15	10.48	15.56	711.95	547.80	402.09	586.58	376.08	402.09	586.58	376.08	376.08
6	29.29	54.82	14.29	15.00	27.67	737.52	490.89	422.88	599.68	237.09	422.88	599.68	237.09	237.09
7	17.95	56.72	8.00	9.95	36.74	802.00	468.94	437.12	665.85	141.59	437.12	665.85	141.59	141.59
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	REL DEV ANGLE	LOSS COEFFICIENT	LOSS PARAM	POLY HOMOEN EFFICIENCY	ABD EFFICIENCY	DIFFUSION FACTOR	POLY HOMOEN MEAS T RISE	STAT PRESS RISE	CH1	
1	1459.42	0.474	1.352	0.965	1.00	0.277	0.058	0.7248	0.7474	0.564	0.7474	0.344	0.455	
2	1329.47	0.310	1.336	0.923	0.90	0.245	0.051	0.7534	0.7735	0.532	0.7735	0.368	0.477	
3	1199.63	0.602	1.274	0.722	0.84	0.164	0.032	0.8270	0.8403	0.566	0.8403	0.466	0.554	
4	1068.80	0.573	1.165	0.715	0.75	0.182	0.036	0.8161	0.8291	0.618	0.8291	0.523	0.583	
5	935.62	0.560	1.091	0.672	0.68	0.140	0.027	0.8639	0.8730	0.663	0.8730	0.600	0.656	
6	782.77	0.506	0.961	0.799	0.63	0.163	0.082	0.8686	0.8770	0.648	0.8770	0.703	0.676	
7	743.07	0.487	0.854	0.866	0.55	0.215	0.044	0.8431	0.8531	0.663	0.8531	0.740	0.693	
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	LOSS COEFFICIENT	LOSS PARAM	POLY HOMOEN EFFICIENCY	ABD EFFICIENCY	PERFORMANCE PARAMETERS	POLY HOMOEN MEAS T RISE	STAT PRESS RISE	SPACE DATA ROTOR DATA	ROTOR DATA
1	1445.06	0.650	0.731	1.3340	1.846	0.277	0.058	0.7248	0.7474	FIXED INST. FIXED INST. TRAV. INST.	0.7474	0.344	1.7353	1.7733
2	1315.18	0.644	0.755	1.3690	1.840	0.245	0.051	0.7534	0.7735	Total Pressure Ratio =	0.8403	0.466	0.8036	0.8524
3	1197.75	0.615	0.665	1.5080	1.770	0.164	0.032	0.8270	0.8403	Adiabatic Efficiency =	0.8291	0.523	0.7580	0.8524
4	1077.06	0.617	0.563	1.6840	1.687	0.182	0.036	0.8161	0.8291	Polytropic Efficiency =	0.8730	0.600	0.7750	0.8638
5	956.67	0.607	0.467	1.9060	1.634	0.140	0.027	0.8639	0.8730	Percent Design Speed =	0.8770	0.703	100.1	100.1
6	836.77	0.634	0.422	2.270	1.600	0.163	0.082	0.8686	0.8770	Cor. Nozzle Weight Flow =	0.8531	0.740	184.3	184.3
7	807.44	0.692	0.404	2.3390	1.595	0.215	0.044	0.8431	0.8531	Discharge Valve Setting =	0.8531	0.740	4.5	4.5
RADIAL POSITION	PERCENT DIMENSION	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	LOSS COEFFICIENT	LOSS PARAM	POLY HOMOEN EFFICIENCY	ABD EFFICIENCY	OVERALL PERFORMANCE SUMMARY	POLY HOMOEN MEAS T RISE	STAT PRESS RISE	SPACE DATA ROTOR DATA	ROTOR DATA
1	9.0000	1.912	1.870	1.846	1.264	0.277	0.058	0.7248	0.7474	PERFORMANCE PARAMETERS	0.7474	0.344	1.7353	1.7733
2	10.0000	1.884	1.829	1.840	1.253	0.245	0.051	0.7534	0.7735	Total Pressure Ratio =	0.8403	0.466	0.8036	0.8524
3	30.0000	1.800	1.812	1.770	1.214	0.164	0.032	0.8270	0.8403	Adiabatic Efficiency =	0.8291	0.523	0.7580	0.8524
4	50.0000	1.747	1.821	1.687	1.198	0.182	0.036	0.8161	0.8291	Polytropic Efficiency =	0.8730	0.600	0.7750	0.8638
5	70.0000	1.665	1.882	1.634	1.175	0.140	0.027	0.8639	0.8730	Percent Design Speed =	0.8770	0.703	100.1	100.1
6	90.0000	1.637	1.910	1.600	1.160	0.163	0.082	0.8686	0.8770	Cor. Nozzle Weight Flow =	0.8531	0.740	184.3	184.3
7	98.0000	1.729	1.979	1.595	1.169	0.215	0.044	0.8431	0.8531	Discharge Valve Setting =	0.8531	0.740	4.5	4.5

LE Check Flow/Noz.Flow = 1.0524  
 Assumed LE Flow Coeff. = 0.9500

061170 STATOR BLADE ROW # NASA TASK IV  
 TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

POINT NUMBER		6		READING NUMBER		39		DATE		6/10/1970	
RADIAL POSITION	REL INLET FLOW ANG	ARS INLET FLOW ANG	CHBR LN LE ANGLE	INCID ANG MN CHBR LN	INCID ANG SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	
1	50.56	47.60	39.47	11.11	58.08	793.37	703.74	525.82	612.92		
2	48.19	39.01	8.49	9.18	42.71	779.90	575.95	501.25	575.95		
3	50.33	39.80	10.35	10.35	48.42	752.19	560.51	501.25	560.51		
4	53.21	40.86	12.35	12.35	53.25	747.30	476.44	429.41	574.18		
5	52.41	42.22	10.19	10.19	56.08	719.16	458.69	458.69	578.19		
6	54.34	42.76	11.58	11.58	47.57	791.84	458.69	639.28	639.28		
7					60.33						
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	DEV ANG TE	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	
1	0.50	4.90	-11.13	11.63	58.08	615.44	615.44	615.44	5.40		
2	0.52	4.90	-10.10	15.00	42.71	639.43	639.43	639.43	54.59		
3	0.53	0.23	-8.87	8.64	48.42	565.85	565.85	565.85	-2.75		
4	0.62	-2.87	-8.75	5.83	53.25	485.67	485.67	485.67	524.72		
5	0.614	4.84	-9.10	6.23	56.08	437.38	435.90	435.90	-21.86		
6	0.63	5.99	-10.58	15.42	47.57	430.28	407.57	407.57	34.49		
7	0.662		-12.56	6.37	60.33	379.77	376.50	376.50	-39.49		
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	LOSS COEFFICIENT	TOT PRESS LOSS PARAM	ADD EFFICIENCY	POLY MOMEN RISE/ EFFICIENCY	STAT PRESS RISE COEFF	CHK1	
1	0.653	0.503	0.503	1.222	0.174	0.057	0.057	0.4696	0.164	0.179	
2	0.652	0.526	0.540	1.212	0.124	0.040	0.040	0.6050	0.182	0.198	
3	0.653	0.470	0.6310	1.128	0.134	0.041	0.041	0.6232	0.247	0.265	
4	0.632	0.404	0.7420	1.017	0.111	0.032	0.032	0.5166	0.377	0.349	
5	0.614	0.366	0.8800	1.015	0.091	0.024	0.024	0.7488	0.443	0.466	
6	0.63	0.344	0.9210	0.916	0.091	0.022	0.022	0.7649	0.496	0.520	
7	0.662	0.318	0.9800	0.821	0.071	0.017	0.017	0.5824	0.721	0.439	
RADIAL POSITION	PERCENT ILLUMINATION	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	PERFORMANCE PARAMETERS	TOTAL PRESSURE RATIO	POLYTROPIC EFFICIENCY	PERCENT DESIGN SPEED	COR. NOZZLE WEIGHT FLOW	
1	9.0000	0.942	0.981	0.956	1.000	Total Pressure Ratio =	1.6856	0.9714	100.1	184.3	
2	10.0000	0.962	1.004	0.969	1.000	Polytropic Efficiency =	0.7750	0.9472			
3	30.0000	0.956	0.992	0.968	1.000	Percent Design Speed =					
4	50.0000	0.942	0.988	0.973	1.000	Cor. Nozzle Weight Flow =					
5	70.0000	0.960	0.991	0.979	1.000						
6	90.0000	0.957	0.994	0.978	1.000						
7	95.0000	0.904	0.989	0.979	1.000						

OVERALL PERFORMANCE SUMMARY

STATOR DATA STATOR DATA STATOR DATA  
 FIXED INST. FIXED INST. TRAV. INST.  
 1.6856 0.9714 0.9517  
 0.7750 0.9472 0.7793  
 Discharge Valve Setting=4.5

IE Check Flow/Noz.Flow = 0.9881  
 Assumed IE Flow Coeff. = 0.9550  
 TE Check Flow/Noz.Flow = 1.0358  
 Assumed TE Flow Coeff. = 0.9350

061170  
 TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

ROTOR BLADE ROW #		NASA TASK IV																	
BLADE ELEMENT PERFORMANCE RESULTS		DATE																	
POINT NUMBER	7	READING NUMBER	46																
6/10/1970																			
RADIAL POSITION	1	REL INLET FLOW ANG	64.11	ARS INLET FLOW ANG	-0.39	CHBR LN LE ANGLE	60.60	INCID ANG	3.51	INLET ABS VELOCITY	1517.59	INLET REL VELOCITY	661.59	INLET AX VELOCITY	661.59	INLET ABS TANG VEL	-4.50	INLET REL TANG VEL	1367.30
	2		61.72		-0.21		59.61		2.11		718.70		716.27			-2.64		1331.50	
	3		54.85		0.62		56.16		-1.16		838.20		838.20			9.07		1190.70	
	4		53.01		-0.13		52.56		0.45		808.50		808.50			-1.87		1070.18	
	5		50.53		-1.11		49.71		0.82		793.74		793.74			-15.13		950.82	
	6		50.87		-1.07		47.11		-3.90		685.97		685.97			-21.46		808.87	
	7		50.74		-1.64		46.13		-3.29		654.14		654.14			-17.85		768.58	
RADIAL POSITION	1	REL EXIT FLOW ANG	58.41	ABS EXIT FLOW ANG	41.00	CHBR LN LE ANGLE	54.80	REL DEV ANGLE	3.61	REL TURN ANGLE	5.71	EXIT ABS VELOCITY	1020.48	EXIT REL VELOCITY	538.83	EXIT ABS TANG VEL	468.32	EXIT REL TANG VEL	874.12
	2		58.15		38.95		54.42		3.73		3.58		1033.23		544.80		438.75	874.83	
	3		53.50		41.48		50.68		2.82		1.35		900.39		535.49		473.49	723.71	
	4		49.35		43.50		43.79		5.54		3.68		785.04		511.56		482.00	595.37	
	5		41.36		44.98		32.15		9.21		9.12		679.11		508.76		508.37	447.86	
	6		33.75		48.65		14.29		19.46		17.12		563.52		463.49		526.70	309.70	
	7		22.71		53.28		8.00		14.71		28.03		506.94		458.74		615.03	192.63	
RADIAL POSITION	1	ROTOR SPD AT INLET	1359.80	INLET ABS MACH NO	0.618	INLET REL MACH NO	1.406	AXIAL VEL RATIO	0.614	DIFFUSION FACTOR	0.444								
	2		1328.86		0.620		1.411		0.761		0.487								
	3		1399.28		0.795		1.380		0.639		0.487								
	4		1068.31		0.763		1.265		0.635		0.522								
	5		935.19		0.748		1.166		0.650		0.563								
	6		787.41		0.638		0.986		0.704		0.568								
	7		742.73		0.606		0.929		0.738		0.635								
RADIAL POSITION	1	ROTOR SPD AT EXIT	134.45	EXIT ABS MACH NO	0.600	EXIT REL MACH NO	0.863	SOLIDITY RATIO	1.334	TOT PRESS LOSS PARAM	0.032	POLY EFFICIENCY	0.7999	ADB EFFICIENCY	0.8142	STAT PRESS RISE COEFF	0.348		
	2		1315.58		0.594		0.876		1.3690		0.028		0.8185		0.371				
	3		1197.20		0.609		0.767		1.5080		0.019		0.8769		0.487				
	4		1077.37		0.601		0.671		1.6840		0.020		0.8777		0.559				
	5		956.23		0.621		0.585		1.9060		0.008		0.9496		0.759				
	6		836.39		0.610		0.487		2.2570		0.017		0.9108		0.675				
	7		807.07		0.669		0.438		2.3390		0.019		0.9161		0.777				
RADIAL POSITION	1	PERCENT IMMERSION	9.0000	TRAV TOT PRESS RATIO	1.743	TRAV TOT TEMP RATIO	1.270	FIXED TOT PRESS RATIO	1.693	TEMP RATIO	1.203								
	2		10.0000		1.716		1.199		1.697		1.199								
	3		36.0000		1.712		1.183		1.699		1.187								
	4		50.0000		1.666		1.171		1.646		1.174								
	5		79.0000		1.634		1.159		1.611		1.154								
	6		98.0000		1.571		1.133		1.576		1.153								
	7		95.0000		1.664		1.167		1.600		1.157								

OVERALL PERFORMANCE SUMMARY

SPACE DATA ROTOR DATA ROTOR DATA  
 FIXED INST. FIXED INST. TRAV. INST.  
 PERFORMANCE PARAMETERS  
 Total Pressure Ratio = 1.6301 1.6572 1.6767  
 Adiabatic Efficiency = 0.8440 0.8747 0.8958  
 Polytropic Efficiency = 0.8544 0.8833 0.9032  
 Percent Design Speed = 100.1 Discharge Valve Setting = 9.0  
 Cor. Nozzle Weight Flow = 213.7

LE Check Flow/Noz.Flow = 1.0403 TE Check Flow/Noz.Flow = 0.9308  
 Assumed LE Flow Coeff. = 0.9850 Assumed TE Flow Coeff. = 0.9500



061170 STATOR BLADE ROW \* NASA TASK IV  
 TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

RADIAL POSITION		REL INLET FLOW ANG		ABS INLET FLOW ANG		CHBR LN LE ANGLE		INCID ANG MN CHBR LN		INCID ANG SUCT SURF		INLET ABS VELOCITY		INLET REL VELOCITY		INLET AX VELOCITY		INLET ABS TANG VEL		INLET REL TANG VEL	
POINT NUMBER		7		7		7		7		7		7		7		7		7		7	
READING NUMBER		40		40		40		40		40		40		40		40		40		40	
DATE		6/10/1970		6/10/1970		6/10/1970		6/10/1970		6/10/1970		6/10/1970		6/10/1970		6/10/1970		6/10/1970		6/10/1970	
1	1	40.83	39.47	39.47	39.47	39.47	39.47	39.47	39.47	39.47	39.47	718.91	718.91	718.91	718.91	718.91	718.91	470.02	470.02	470.02	470.02
2	2	38.26	39.11	39.11	39.11	39.11	39.11	39.11	39.11	39.11	39.11	711.07	711.07	711.07	711.07	711.07	711.07	440.34	440.34	440.34	440.34
3	3	39.56	39.01	39.01	39.01	39.01	39.01	39.01	39.01	39.01	39.01	743.42	743.42	743.42	743.42	743.42	743.42	473.04	473.04	473.04	473.04
4	4	40.85	39.80	39.80	39.80	39.80	39.80	39.80	39.80	39.80	39.80	730.93	730.93	730.93	730.93	730.93	730.93	477.21	477.21	477.21	477.21
5	5	42.28	40.86	40.86	40.86	40.86	40.86	40.86	40.86	40.86	40.86	743.04	743.04	743.04	743.04	743.04	743.04	497.62	497.62	497.62	497.62
6	6	46.09	42.22	42.22	42.22	42.22	42.22	42.22	42.22	42.22	42.22	710.42	710.42	710.42	710.42	710.42	710.42	507.82	507.82	507.82	507.82
7	7	50.80	42.76	42.76	42.76	42.76	42.76	42.76	42.76	42.76	42.76	767.70	767.70	767.70	767.70	767.70	767.70	590.49	590.49	590.49	590.49
-----																					
RADIAL POSITION		REL EXIT FLOW ANG		ABS EXIT FLOW ANG		CHBR LN TE ANGLE		DEV ANG TE		TURN ANGLE		EXIT ABS VELOCITY		EXIT REL VELOCITY		EXIT AX VELOCITY		EXIT ABS TANG VEL		EXIT REL TANG VEL	
1	1	1.63	11.13	11.13	11.13	11.13	11.13	9.50	9.50	42.46	42.46	533.74	533.74	533.74	533.74	533.74	533.74	15.17	15.17	15.17	15.17
2	2	0.57	10.10	10.10	10.10	10.10	10.10	9.53	9.53	38.84	38.84	574.83	574.83	574.83	574.83	574.83	574.83	5.76	5.76	5.76	5.76
3	3	1.37	8.87	8.87	8.87	8.87	8.87	10.24	10.24	36.18	36.18	600.04	600.04	600.04	600.04	600.04	600.04	14.37	14.37	14.37	14.37
4	4	8.35	8.75	8.75	8.75	8.75	8.75	9.10	9.10	40.58	40.58	551.74	551.74	551.74	551.74	551.74	551.74	3.33	3.33	3.33	3.33
5	5	0.56	9.20	9.20	9.20	9.20	9.20	8.54	8.54	42.84	42.84	519.75	519.75	519.75	519.75	519.75	519.75	5.08	5.08	5.08	5.08
6	6	3.23	10.58	10.58	10.58	10.58	10.58	13.81	13.81	42.87	42.87	513.50	513.50	513.50	513.50	513.50	513.50	28.82	28.82	28.82	28.82
7	7	1.71	12.56	12.56	12.56	12.56	12.56	10.65	10.65	52.51	52.51	495.58	495.58	495.58	495.58	495.58	495.58	14.76	14.76	14.76	14.76
-----																					
RADIAL POSITION		ROTOR SPD AT INLET		INLET ABS MACH NO		INLET REL MACH NO		AXIAL VEL RATIO		SOLIDITY COEFFICIENT		LOSS		TOT PRESS LOSS		POLY WOMEN RISE/ RISE		STAT PRESS RISE COEFF		CH1	
1	1	0.603	0.603	0.603	0.603	0.603	0.603	0.981	0.981	1.5230	1.5230	0.055	0.055	0.034	0.034	0.5234	0.5234	0.212	0.212	0.227	0.227
2	2	0.635	0.635	0.635	0.635	0.635	0.635	1.047	1.047	1.5440	1.5440	0.034	0.034	0.034	0.034	0.7261	0.7261	0.235	0.235	0.252	0.252
3	3	0.627	0.627	0.627	0.627	0.627	0.627	0.999	0.999	1.6310	1.6310	0.016	0.016	0.016	0.016	0.6015	0.6015	0.348	0.348	0.348	0.348
4	4	0.642	0.642	0.642	0.642	0.642	0.642	0.948	0.948	1.7420	1.7420	0.011	0.011	0.011	0.011	0.6162	0.6162	0.403	0.403	0.403	0.403
5	5	0.614	0.614	0.614	0.614	0.614	0.614	1.046	1.046	1.8800	1.8800	0.016	0.016	0.016	0.016	0.8017	0.8017	0.440	0.440	0.440	0.440
6	6	0.663	0.663	0.663	0.663	0.663	0.663	1.025	1.025	2.0980	2.0980	0.025	0.025	0.025	0.025	0.6464	0.6464	0.370	0.370	0.370	0.370
-----																					
RADIAL POSITION		PERCENT DIMENSION		TRAV TOT PRESS RATIO		TRAV TOT TEMP RATIO		FIXED TOT PRESS RATIO		FIXED TOT TEMP RATIO		LOSS		TOT PRESS LOSS		POLY WOMEN RISE/ RISE		STAT PRESS RISE COEFF		CH1	
1	1	9.0000	9.0000	0.949	0.949	0.949	0.949	1.000	1.000	1.000	1.000	0.055	0.055	0.034	0.034	0.5234	0.5234	0.212	0.212	0.227	0.227
2	2	10.0000	10.0000	0.976	0.976	0.976	0.976	1.000	1.000	1.000	1.000	0.034	0.034	0.034	0.034	0.7261	0.7261	0.235	0.235	0.252	0.252
3	3	30.0000	30.0000	0.981	0.981	0.981	0.981	0.988	0.988	1.000	1.000	0.016	0.016	0.016	0.016	0.6015	0.6015	0.348	0.348	0.348	0.348
4	4	50.0000	50.0000	0.979	0.979	0.979	0.979	0.991	0.991	1.000	1.000	0.011	0.011	0.011	0.011	0.6162	0.6162	0.403	0.403	0.403	0.403
5	5	70.0000	70.0000	0.972	0.972	0.972	0.972	0.986	0.986	1.000	1.000	0.016	0.016	0.016	0.016	0.8017	0.8017	0.440	0.440	0.440	0.440
6	6	90.0000	90.0000	0.991	0.991	0.991	0.991	0.986	0.986	1.000	1.000	0.025	0.025	0.025	0.025	0.6464	0.6464	0.370	0.370	0.370	0.370
7	7	95.0000	95.0000	0.940	0.940	0.940	0.940	0.972	0.972	1.000	1.000	0.025	0.025	0.025	0.025	0.6464	0.6464	0.346	0.346	0.346	0.346

OVERALL PERFORMANCE SUMMARY

STAGE DATA STATOR DATA STATOR DATA  
 FIXED INST. FIXED INST. TRAV. INST.  
 PERFORMANCE PARAMETERS  
 Total Pressure Ratio = 1.6301 0.9836 0.9744  
 Polytropic Efficiency = 0.8544 0.9673 0.9106  
 Percent Design Speed = 100.1 Discharge Valve Setting=9.0  
 Cor. Nozzle Weight Flow= 213.7  
 IE Check Flow/Noz.Flow = 0.9357 TE Check Flow/Noz.Flow = 0.9225  
 Assumed IE Flow Coeff. = 0.9550 Assumed TE Flow Coeff. = 0.9350

061170 TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

ROTOR BLADE ROW # NASA TASK IV		BLADE ELEMENT PERFORMANCE RESULTS		DATE					
POINT NUMBER		READING NUMBER		DATE					
8		41		6/10/1970					
RADIAL POSITION	REL INLET FLOW ANG	ARS INLET FLOW ANG	CMR LN LE ANGLE	INCID ANG	INCID ANGL	INLET ABS VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL
1	63.29	-0.43	68.60	2.69	-0.01	886.93	886.93	-5.12	1365.45
2	61.72	-0.89	57.61	3.61	-1.42	737.18	737.18	-11.48	1341.84
3	54.14	0.35	56.01	1.87	-6.33	1532.25	1532.25	5.24	1195.39
4	50.93	0.77	52.96	-1.63	-7.47	1475.03	1475.03	11.48	1058.03
5	47.89	0.12	49.71	-1.82	-8.61	1267.59	1267.59	1.73	934.52
6	47.98	-0.51	47.11	0.87	-6.79	1081.95	1081.95	-8.39	794.69
7	48.35	-0.72	46.13	2.22	-5.68	703.69	703.69	-8.40	751.97
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMR LN TE ANGLE	REL DEV ANGLE	REL TURN ANGLE	EXIT ABS VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL
1	60.00	32.25	57.80	5.20	3.30	675.21	675.21	359.45	984.51
2	59.51	29.28	54.42	5.09	1.71	670.05	670.05	326.87	990.19
3	50.73	31.93	50.68	4.71	-1.25	681.74	681.74	360.51	838.04
4	48.19	37.14	43.79	4.40	2.74	721.83	721.83	435.60	647.98
5	40.17	36.96	32.15	8.02	7.72	751.99	751.99	451.20	506.11
6	28.58	41.84	17.29	14.29	19.40	787.26	787.26	520.60	314.73
7	21.56	45.39	8.00	13.56	26.79	825.76	825.76	581.37	226.40
RADIAL POSITION	ROTOR SPD AT INLET	INLET ARS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	LOSS COEFFICIENT	TOT PRESS LOSS	EFFICIENCY	POLY MOMEN MEAS T RISE	STAT PRESS RISE
1	1360.13	0.644	1.424	0.829	0.163	0.031	0.7389	0.7523	0.256
2	1330.36	0.577	1.434	0.791	0.121	0.022	0.8039	0.8142	0.273
3	1200.63	0.823	1.405	0.649	0.091	0.017	0.8573	0.8654	0.388
4	1069.51	0.820	1.299	0.670	0.125	0.025	0.8234	0.8334	0.449
5	936.25	0.815	1.267	0.718	0.045	0.009	0.9360	0.9416	0.544
6	788.30	0.699	1.821	0.812	0.105	0.021	0.8857	0.8922	0.582
7	743.57	0.656	0.959	0.857	0.088	0.017	0.9138	0.9188	0.673
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ARS MACH NO	EXIT REL MACH NO	FIXED TOT PRESS RATIO	LOSS COEFFICIENT	TOT PRESS LOSS	EFFICIENCY	POLY MOMEN MEAS T RISE	STAT PRESS RISE
1	1345.96	0.577	0.974	1.3340	0.163	0.031	0.7389	0.7523	0.256
2	1317.06	0.579	0.994	1.3690	0.121	0.022	0.8039	0.8142	0.273
3	1198.55	0.590	0.881	1.5080	0.091	0.017	0.8573	0.8654	0.388
4	1078.58	0.623	0.745	1.6840	0.125	0.025	0.8234	0.8334	0.449
5	957.30	0.656	0.686	1.9060	0.045	0.009	0.9360	0.9416	0.544
6	837.33	0.688	0.586	2.2170	0.105	0.021	0.8857	0.8922	0.582
7	807.98	0.723	0.351	2.3390	0.088	0.017	0.9138	0.9188	0.673
RADIAL POSITION	PERCENT IMMERSION	TRAY TOT PRESS RATIO	TRAY TOT TEMP RATIO	FIXED TOT PRESS RATIO	LOSS COEFFICIENT	TOT PRESS LOSS	EFFICIENCY	POLY MOMEN MEAS T RISE	STAT PRESS RISE
1	5.0000	1.505	1.168	1.452	0.163	0.031	0.7389	0.7523	0.256
2	19.0000	1.493	1.142	1.485	0.121	0.022	0.8039	0.8142	0.273
3	39.0000	1.504	1.144	1.517	0.091	0.017	0.8573	0.8654	0.388
4	50.0000	1.527	1.157	1.513	0.125	0.025	0.8234	0.8334	0.449
5	70.0000	1.542	1.142	1.529	0.045	0.009	0.9360	0.9416	0.544
6	90.0000	1.533	1.145	1.513	0.105	0.021	0.8857	0.8922	0.582
7	99.0000	1.595	1.151	1.534	0.088	0.017	0.9138	0.9188	0.673
OVERALL PERFORMANCE SUMMARY									
STAGE DATA ROTOR DATA ROTOR DATA									
FIXED INST. FIXED INST. TRAV. INST.									
PERFORMANCE PARAMETERS									
Total Pressure Ratio = 1.4835 1.5093 1.5216									
Adiabatic Efficiency = 0.8156 0.8333 0.8582									
Polytropic Efficiency = 0.8256 0.8616 0.8863									
Percent Design Speed = 100.2 Discharge Valve Setting = 15.0									
Cor. Nozzle Weight Flow = 221.1									
IE Check Flow/Noz.Flow = 1.0260 TE Check Flow/Noz.Flow = 0.9388									
Assumed IE Flow Coeff. = 0.9950 Assumed TE Flow Coeff. = 0.9900									

061170

TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

		STATOR BLADE ROW # NASA TASK IV										
		BLADE ELEMENT PERFORMANCE RESULTS					DATE 6/10/1970					
		POINT NUMBER	8	READING NUMBER	41	DATE						
RADIAL POSITION		CMBR LN	INCID ANG	INCID ANG	SUCT SURF	INLET ABS VELOCITY	INLET RBL VELOCITY	INLET AX VELOCITY	INLET ABS YANG VEL	INLET REL YANG VEL		
1		35.47	-7.38			679.05		575.29	360.74			
2		35.11	*+0.37			682.30		598.22	328.06			
3		35.01	-6.91			718.53		621.30	360.17			
4		35.80	-5.47			760.57		624.59	431.27			
5		40.86	-6.72			791.51		651.36	441.66			
6		42.22	-3.14			804.12		618.10	501.94			
7		42.76	-0.10			831.99		605.63	558.17			
RADIAL POSITION		CMBR LN	INCID ANG	DEV ANG	TURN ANGLE	EXIT ABS VELOCITY	EXIT RBL VELOCITY	EXIT AX VELOCITY	EXIT ABS YANG VEL	EXIT REL YANG VEL		
1		*11.13	9.54	9.54	33.68	531.03		530.82	-14.77			
2		*10.18	10.86	10.86	27.98	611.98		611.89	8.15			
3		-8.87	9.07	9.07	29.90	640.31		640.04	2.19			
4		-8.75	9.78	9.78	33.00	637.23		636.42	11.42			
5		-9.18	8.96	8.96	34.28	674.61		673.16	-1.61			
6		-10.58	11.23	11.23	38.43	700.83		698.02	7.92			
7		*12.36	13.45	13.45	41.58	695.07		692.71	13.17			
RADIAL POSITION		INLET REL MACH NO	AXIAL VEL RATIO						DIFFUSION FACTOR	CHI		
1		0.580	0.923						0.899	0.144		
2		0.591	1.023						0.255	0.158		
3		0.624	1.030						0.261	0.177		
4		0.659	1.019						0.320	0.199		
5		0.694	1.033						0.295	0.204		
6		0.705	1.130						0.275	0.158		
7		0.729	1.144						0.317	0.134		
RADIAL POSITION		EXIT ABS MACH NO	TRAV TOT PRESS RATIO	FIXED TOT PRESS RATIO	LOSS COEFFICIENT	TOT PRESS LOSS	ADB EFFICIENCY	POLY MOMEN RISE/ MEAS T RISE	STAY PRESS RISE COEFF			
1		0.452	1.5230	0.969	0.151	0.049		0.3865	0.174			
2		0.523	1.5440	0.987	0.061	0.020		0.8032	0.147			
3		0.551	1.6310	1.000	0.074	0.023		0.6609	0.143			
4		0.547	1.7420	0.983	0.067	0.019		0.8826	0.182			
5		0.586	1.8800	0.983	0.043	0.011		0.7631	0.186			
6		0.609	2.0510	0.988	0.059	0.014		0.8737	0.142			
7		0.603	2.0940	0.983	0.063	0.020		0.4606	0.170			
RADIAL POSITION		PERCENT DECELERATION	TRAV TOT TEMP RATIO	FIXED TOT TEMP RATIO	LOSS COEFFICIENT	TOT PRESS LOSS	ADB EFFICIENCY	OVERALL PERFORMANCE SUMMARY				
1		5.0000	0.947	0.969	1.000	1.000		SPACE DATA STATOR DATA STATOR DATA				
2		10.0000	0.991	0.987	1.000	1.000		FIXED INST. FIXED INST. TRAV. INST.				
3		30.0000	0.992	1.000	1.000	1.000		Total Pressure Ratio = 1.4835 0.9829 0.9774				
4		50.0000	0.972	0.993	1.000	1.000		Polytropic Efficiency = 0.8296 0.9582 0.9234				
5		70.0000	0.979	0.994	1.000	1.000		Percent Design Speed = 100.2 Discharge Valve Setting=15.0				
6		90.0000	0.974	0.994	1.000	1.000		Cor. Nozzle Weight Flow= 221.1				
7		95.0000	0.943	0.974	1.000	1.000		IE Check Flow/Noz.Flow = 0.9377 TE Check Flow/Noz.Flow = 0.9214				
								Assumed IE Flow Coeff. = 0.9550 Assumed TE Flow Coeff. = 0.9330				

061870

TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

		ROTOR BLADE ROW 4 NASA TASK IV												
		BLADE ELEMENT PERFORMANCE RESULTS												
		POINT NUMBER 12		READING NUMBER 76		DATE 6/18/1970								
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	MN CHBR LN INCID ANG	INCID ANG SUCT SURF	REL TURN ANGLE	EXIT ABS VELOCITY	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	INLET ABS TANG VEL	INLET REL TANG VEL
1	62.88	0.41	60.60	2.28	-6.42		699.57	699.57	1925.09	694.19	5.02	3355.19	5.02	3355.19
2	61.42	-0.67	57.61	1.91	-5.122		732.08	732.08	1525.86	729.46	-6.56	3336.80	-6.56	3336.80
3	54.04	0.58	56.01	-1.97	-6.743		864.54	864.54	1472.27	864.47	6.78	1191.74	6.78	1191.74
4	50.36	1.18	52.56	-2.20	-8.104		873.85	873.85	1365.07	871.15	17.94	1051.47	17.94	1051.47
5	47.29	0.95	49.71	-2.42	-9.121		863.16	863.16	1268.99	851.08	14.04	922.12	14.04	922.12
6	47.57	0.62	47.11	0.48	-7.120		743.38	743.38	1077.87	713.47	7.68	780.55	7.68	780.55
7	47.74	0.07	46.13	1.61	-6.129		709.87	709.87	1027.37	674.74	6.82	742.68	6.82	742.68
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	REL DEV ANGLE	REL TURN ANGLE	EXIT ABS VELOCITY	INLET ABS VELOCITY	INLET REL VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	EXIT ABS TANG VEL	EXIT REL TANG VEL
1	60.46	23.60	54.80	5.68	2.42	669.36	669.36	4241.10	613.32	613.32	267.12	1078.72	267.12	1078.72
2	59.31	22.25	54.42	4.89	2.50	681.32	681.32	1233.31	628.87	628.87	357.22	1059.72	357.22	1059.72
3	56.05	26.76	50.68	5.17	-2.81	674.77	674.77	1078.67	602.33	602.33	333.74	894.70	333.74	894.70
4	49.42	32.84	43.79	5.58	8.94	708.12	708.12	914.60	594.87	594.87	383.90	694.58	383.90	694.58
5	41.18	33.76	32.15	9.08	6.12	747.92	747.92	825.77	620.34	620.34	414.61	542.60	414.61	542.60
6	27.88	38.38	14.29	13.59	19.69	816.31	816.31	725.77	633.73	633.73	502.01	335.25	502.01	335.25
7	21.49	42.23	8.00	13.49	26.25	848.83	848.83	686.27	620.73	620.73	583.46	244.44	583.46	244.44
RADIAL POSITION	ROTOR SPD AT INLET	INLET REL MACH NO	INLET ABS MACH NO	AXIAL VEL RATIO	LOSS COEFFICIENT	LOSS LOSS PARAM	TOT PRESS LOSS PARAM	EFFICIENCY	AUB EFFICIENCY	POLY HOMOEN RISE/ STAT PRESS	DIFFUSION FACTOR	EXIT ABS TANG VEL	EXIT REL TANG VEL	EXIT ABS TANG VEL
1	1360.21	1.414	0.863	0.863	0.149	0.128	0.128	0.8970	0.7084	0.7084	0.250	0.281	0.281	0.281
2	1330.24	1.421	0.862	0.862	0.149	0.127	0.127	0.8970	0.7084	0.7084	0.250	0.281	0.281	0.281
3	1280.52	1.396	0.857	0.857	0.149	0.127	0.127	0.8970	0.7084	0.7084	0.250	0.281	0.281	0.281
4	1083.41	1.298	0.853	0.853	0.149	0.127	0.127	0.8970	0.7084	0.7084	0.250	0.281	0.281	0.281
5	936.16	1.198	0.848	0.848	0.149	0.127	0.127	0.8970	0.7084	0.7084	0.250	0.281	0.281	0.281
6	788.23	1.093	0.843	0.843	0.149	0.127	0.127	0.8970	0.7084	0.7084	0.250	0.281	0.281	0.281
7	743.50	0.956	0.838	0.838	0.149	0.127	0.127	0.8970	0.7084	0.7084	0.250	0.281	0.281	0.281
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT REL MACH NO	EXIT ABS MACH NO	SOLIDITY RATIO	LOSS COEFFICIENT	LOSS LOSS PARAM	TOT PRESS LOSS PARAM	EFFICIENCY	AUB EFFICIENCY	POLY HOMOEN RISE/ STAT PRESS	DIFFUSION FACTOR	EXIT ABS TANG VEL	EXIT REL TANG VEL	EXIT ABS TANG VEL
1	1345.84	1.083	1.3346	1.3346	0.149	0.128	0.128	0.8970	0.7084	0.7084	0.250	0.281	0.281	0.281
2	1316.94	1.081	1.3350	1.3350	0.149	0.127	0.127	0.8970	0.7084	0.7084	0.250	0.281	0.281	0.281
3	1198.44	0.944	1.5089	1.5089	0.149	0.127	0.127	0.8970	0.7084	0.7084	0.250	0.281	0.281	0.281
4	1078.48	0.617	1.6840	1.6840	0.149	0.127	0.127	0.8970	0.7084	0.7084	0.250	0.281	0.281	0.281
5	957.22	0.657	1.9068	1.9068	0.149	0.127	0.127	0.8970	0.7084	0.7084	0.250	0.281	0.281	0.281
6	837.26	0.720	2.2176	2.2176	0.149	0.127	0.127	0.8970	0.7084	0.7084	0.250	0.281	0.281	0.281
7	807.90	0.749	2.3328	2.3328	0.149	0.127	0.127	0.8970	0.7084	0.7084	0.250	0.281	0.281	0.281
RADIAL POSITION	PERCENT MASS FLOW	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	PERFORMANCE PARAMETERS	STAGE DATA ROTOR DATA	FIXED INST. FIXED INST.	TRAV. INST.					
1	5.0000	1.1350	1.114	1.114	1.113	Total Pressure Ratio =	1.3429	1.3964	1.4136					
2	10.0000	1.1365	1.106	1.106	1.113	Adiabatic Efficiency =	0.7092	0.8077	0.8977					
3	30.0000	1.1377	1.108	1.108	1.113	Polytropic Efficiency =	0.7211	0.8106	0.9026					
4	50.0000	1.1401	1.124	1.124	1.113	Percent Design Speed =	100.2	Discharge Valve Setting=	30.0					
5	70.0000	1.1452	1.115	1.115	1.113	Cor. Nozzle Weight Flow=	216.9							
6	90.0000	1.1501	1.116	1.116	1.113	IE Check Flow/Noz.Flow =	1.0426	TR Check Flow/Noz.Flow =	0.0475					
7	99.0000	1.1546	1.118	1.118	1.113	Assumed IE Flow Coeff. =	0.9050	Assumed TR Flow Coeff. =	0.9000					

TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

STATOR BLADE ROW • NASA TASK IV		POINT NUMBER		BLADE ELEMENT PERFORMANCE RESULTS		DATE	
		12	76	76	76	76	76
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCID ANG MN	INCID ANG LN	INCID ANG SURF	INLET ABS VELOCITY
1	23.46	23.46	39.47	=16.01	=17.34	=17.34	673.29
2	21.77	21.77	39.11	=17.34	=17.34	=17.34	696.06
3	25.06	25.06	39.01	=13.95	=16.98	=16.98	649.07
4	30.39	30.39	37.80	=9.41	=13.00	=13.00	648.03
5	30.97	30.97	40.88	=9.89	=9.89	=9.89	676.28
6	35.54	35.54	42.22	=6.68	=6.68	=6.68	677.54
7	39.42	39.42	42.78	=3.34	=3.34	=3.34	661.49
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	DEV ANG TE	TURN ANGLE	EXIT ABS VELOCITY	EXIT AX VELOCITY
1	0.25	0.25	=11.13	11.38	23.21	624.12	624.12
2	-0.26	-0.26	=10.10	9.84	22.03	700.43	700.43
3	1.11	1.11	=8.87	7.76	26.37	726.38	726.38
4	-0.06	-0.06	=8.75	8.69	30.45	741.53	741.53
5	-2.88	-2.88	=9.10	6.22	33.85	770.76	770.76
6	0.94	0.94	=10.58	11.52	34.60	876.13	876.13
7	0.74	0.74	=12.36	13.19	38.68	843.33	843.33
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	INLET ABS VELOCITY	DIFFUSION FACTOR	GM1
1	0.998	0.998	0.998	1.011	673.29	0.202	0.151
2	0.611	0.611	0.611	1.084	696.06	0.115	0.140
3	0.630	0.630	0.630	1.119	649.07	0.122	0.125
4	0.659	0.659	0.659	1.144	648.03	0.158	0.095
5	0.701	0.701	0.701	1.140	676.28	0.173	0.138
6	0.745	0.745	0.745	1.296	677.54	0.173	0.138
7	0.761	0.761	0.761	1.281	661.49	0.089	0.1265
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	SOLIDITY COEFFICIENT	TOT LOSS	POLY MOMEN RISE/ EFFICIENCY	STAT PRESS RISE COEFF
1	0.545	0.545	0.545	1.5230	0.214	0.070	0.137
2	0.617	0.617	0.617	1.5440	0.144	0.047	0.126
3	0.639	0.639	0.639	1.6310	0.143	0.044	0.112
4	0.651	0.651	0.651	1.7420	0.109	0.031	0.084
5	0.684	0.684	0.684	1.8800	0.114	0.030	0.120
6	0.782	0.782	0.782	2.0510	0.199	0.048	0.223
7	0.749	0.749	0.749	2.0980	0.231	0.055	0.212
RADIAL POSITION	PERCENT DEVISION	TRAV TOT PRESS RATIO	FIXED TOT PRESS RATIO	LOSS COEFFICIENT	TEMP RATIO	ADB EFFICIENCY	PERFORMANCE PARAMETERS
1	9.0000	0.934	0.934	1.080	1.000	0.047	STATOR DATA STATOR DATA
2	10.0000	0.969	0.968	1.000	1.000	0.044	FIXED INST. FIXED INST. FLAV. INST.
3	30.0000	0.973	0.967	1.000	1.000	0.031	Total Pressure Ratio = 1.3429
4	50.0000	0.965	0.972	1.000	1.000	0.030	Polytropic Efficiency = 0.7211
5	70.0000	0.939	0.967	1.000	1.000	0.048	Percent Design Speed = 100.2
6	90.0000	0.933	0.938	1.000	1.000	0.048	Cor. Nozzle Weight Flow = 216.9
7	95.0000	0.890	0.924	1.000	1.000	0.055	Discharge Valve Settings=30.0
OVERALL PERFORMANCE SUMMARY							
SOURCE DATA STATOR DATA STATOR DATA							
FIXED INST. FIXED INST. FLAV. INST.							
Total Pressure Ratio = 1.3429							
Polytropic Efficiency = 0.7211							
Percent Design Speed = 100.2							
Cor. Nozzle Weight Flow = 216.9							
IE Check Flow/Noz.Flow = 0.9525							
Assumed IE Flow Coeff. = 0.9550							
TE Check Flow/Noz.Flow = 0.9514							
Assumed TE Flow Coeff. = 0.9584							

061870

TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

ROTOR BLADE ROW 4 NASA TASK IV												
BLADE ELEMENT PERFORMANCE RESULTS												
POINT NUMBER 13 READING NUMBER 17 DATE 6/18/1978												
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCID ANG MN	INCID ANG CM	INCID ANG LN	SUCT SURE	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL
1	63.90	-11.16	60.60	3.30	3.30	3.30	0.60	678.68	1532.94	873.34	-13.69	1374.59
2	61.28	-10.76	59.61	1.65	1.65	1.65	-1.38	787.84	1330.23	735.19	69.72	1340.63
3	54.67	-1.22	56.01	-1.34	-1.34	-1.34	-1.80	838.89	1456.33	838.68	17.69	1183.23
4	52.06	1.08	52.56	-0.50	-0.50	-0.50	-0.34	824.75	1338.65	822.23	15.43	1054.52
5	49.50	0.02	49.71	0.21	0.21	0.21	0.00	830.93	1288.66	799.69	0.33	936.31
6	49.25	-0.17	47.11	2.64	2.64	2.64	-2.82	677.32	1054.17	669.29	21.96	790.58
7	49.76	-0.94	46.13	3.63	3.63	3.63	-4.21	666.65	1003.49	633.64	24.85	748.73
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	REL DEV ANG	REL TURN ANGLE	REL TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	
1	58.72	41.60	54.80	3.92	3.92	3.92	712.25	1024.57	531.43	471.84	674.68	
2	57.72	38.05	54.42	3.30	3.30	3.30	788.67	1043.79	556.92	435.94	881.67	
3	53.53	40.78	50.68	2.47	2.47	2.47	720.98	910.18	545.82	476.83	728.22	
4	49.84	42.45	43.79	6.05	2.22	2.22	686.62	798.54	513.90	470.16	608.67	
5	41.99	43.56	32.15	9.54	7.81	7.81	718.93	697.72	520.03	494.54	463.16	
6	33.98	48.120	14.29	19.69	15.87	15.87	706.08	569.67	467.32	522.72	314.97	
7	32.68	52.89	8.00	14.68	21.08	21.08	776.59	513.34	614.12	194.19		
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL REL MACH NO	SOLIDITY COEFFICIENT	LOSS	TOT PRESS LOSS	EFFICIENCY	ABD. EFFICIENCY	POLY. EFFICIENCY	MEAS. T RISE	STAT. PRESS COEFF
1	1360.90	0.628	1.418	0.789	1.3340	0.159	0.031	0.7981	0.8122	0.8122	0.333	0.333
2	1330.91	0.687	1.425	0.758	1.3360	0.134	0.026	0.8269	0.8331	0.8331	0.361	0.361
3	1201.13	0.791	1.567	0.651	1.3580	0.095	0.019	0.8780	0.8866	0.8866	0.488	0.488
4	1367.76	0.776	1.259	0.625	1.3840	0.096	0.019	0.8814	0.8892	0.8892	0.470	0.470
5	936.64	0.751	1.162	0.650	1.39060	0.052	0.010	0.9373	0.9413	0.9413	0.637	0.637
6	788.03	0.645	0.975	0.698	2.2370	0.090	0.017	0.9242	0.9242	0.9242	0.726	0.726
7	743.98	0.616	0.926	0.733	2.3390	0.085	0.017	0.9262	0.9309	0.9309	0.784	0.784
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	AXIAL REL MACH NO	PERCENT INCOMPRESSION	TRAV TOT PRESS RATIO	TRAV TOT PRESS RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	PERFORMANCE PARAMETERS	STAGE DATA ROTOR DATA	FIXED INST. DATA ROTOR DATA
1	1461.52	0.599	1.174	0.662	5.0000	1.714	1.702	1.671	1.198	Total Pressure Ratio =	1.6192	1.6407
2	1317.61	0.602	1.177	0.679	30.0000	1.704	1.670	1.678	1.182	Adiabatic Efficiency =	0.8509	0.8759
3	1199.05	0.615	1.153	0.625	50.0000	1.644	1.625	1.625	1.149	Polytropic Efficiency =	0.8607	0.8842
4	1079.03	0.596	1.146	0.601	70.0000	1.620	1.592	1.592	1.152	Percent Design Speed =	100.2	Discharge Valve Setting= 9.0
5	957.70	0.619	1.091	0.601	90.0000	1.563	1.563	1.563	1.153	Cor. Nozzle Weight Flow=	212.6	
6	837.68	0.609	1.044	0.601	95.0000	1.555	1.559	1.556	1.156	IE Check Flow/Noz.Flow =	1.0468	TE Check Flow/Noz.Flow = 0.9409
7	808.31	0.671	1.044	0.671						Assumed IE Flow Coeff. =	0.9950	Assumed TE Flow Coeff. = 0.9500

OVERALL PERFORMANCE SUMMARY

TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

STATOR BLADE ROW - NASA TASK IV										
BLADE ELEMENT PERFORMANCE RESULTS										
POINT NUMBER 13 READING NUMBER 77 DATE 6/18/70										
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CMBR LN LE ANGLE	INCID ANG MN CMBR LN	INCID SURF SUCT	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS YANG VEL	INLET REL YANG VEL
1		41.43	38.47	1.96		715.60	536.150	536.150	473.154	
2		37.17	35.11	-1.64		719.26	570.86	570.86	437.53	
3		38.64	39.01	-0.17		750.39	584.24	584.24	470.38	
4		40.01	39.80	0.21		725.37	554.61	554.61	465.48	
5		40.85	40.86	-0.01		743.65	559.81	559.81	484.09	
6		45.64	48.22	3.42		710.62	492.91	492.91	503.98	
7		50.39	42.76	7.63		771.15	487.89	487.89	589.61	
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMBR LN TE ANGLE	DEV ANG TE	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS YANG VEL	EXIT REL YANG VEL
1		-1.22	-11.13	9.91	42.65	531.69	531.47	531.47	-11.27	
2		-0.47	-10.10	9.63	37.94	565.86	585.81	585.81	-4.80	
3		1.08	-8.87	9.95	37.74	595.57	594.72	594.72	11.16	
4		0.49	-8.75	9.24	39.52	544.37	543.75	543.75	4.61	
5		-1.68	-9.10	7.42	42.53	518.64	-15.17	517.33	-15.17	
6		2.16	-10.58	12.74	43.48	527.48	525.47	525.47	10.81	
7		-1.13	-12.36	11.23	51.92	512.97	511.22	511.22	-10.09	
RADIAL POSITION	RBTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	LOSS COEFFICIENT	TOT PRESS LOSS PARAM	EFFICIENCY	ADB EFFICIENCY	POLY MOMEN RISE/ MEAS Y RISE	STAT PRESS RISE COEFF
1		0.602	0.991	1.5230	0.139	0.048	0.5749	0.5749	0.234	
2		0.612	1.026	1.5440	0.059	0.019	0.7936	0.7936	0.249	
3		0.642	1.018	1.6310	0.043	0.013	0.7661	0.7661	0.261	
4		0.623	0.969	1.7420	0.036	0.010	0.8328	0.8328	0.239	
5		0.642	0.924	1.8800	0.036	0.009	0.8047	0.8047	0.383	
6		0.613	1.066	2.0510	0.063	0.015	0.9732	0.9732	0.411	
7		0.666	1.048	2.0980	0.104	0.025	0.6595	0.6595	0.360	
RADIAL POSITION	RBTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	TRAV TOT PRESS RATIO	FIXED TOT TEMP RATIO	TOT PRESS LOSS PARAM	EFFICIENCY	ADB EFFICIENCY	POLY MOMEN RISE/ MEAS Y RISE	STAT PRESS RISE COEFF
1		0.444	0.984	0.984	1.000	0.048	0.5749	0.5749	0.234	
2		0.492	1.001	0.987	1.000	0.019	0.7936	0.7936	0.249	
3		0.503	0.995	0.990	1.000	0.013	0.7661	0.7661	0.261	
4		0.440	0.997	0.992	1.000	0.010	0.8328	0.8328	0.239	
5		0.441	0.990	0.991	1.000	0.009	0.8047	0.8047	0.383	
6		0.449	0.995	0.996	1.000	0.015	0.9732	0.9732	0.411	
7		0.455	0.987	0.978	1.000	0.025	0.6595	0.6595	0.360	
OVERALL PERFORMANCE SUMMARY										
STAGE DATA STATOR DATA STATOR DATA										
FIXED INST. FIXED INST. TRAV. INST.										
PERFORMANCE PARAMETERS										
Total Pressure Ratio = 1.6192 0.9869 0.9758										
Polytropic Efficiency = 0.8607 0.9734 0.9576										
Percent Design Speed = 100.2										
Cor. Nozzle Weight Flow = 212.6										
Discharge Valve Setting = 9.0										
LE Check Flow/Noz.Flow = 0.9458										
TE Check Flow/Noz.Flow = 0.9248										
Assumed LE Flow Coeff. = 0.9550										
Assumed TE Flow Coeff. = 0.9350										

TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

ROTOR BLADE ROW - NASA TASK 1V		BLADE ELEMENT PERFORMANCE RESULTS		DATE						
POINT NUMBER		15	19	19	1970					
READING NUMBER		6/18/73								
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CMBR LN LE ANGLE	INCID ANG MN CHBR LN	INCID ANG SUCT SURE	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL
1	66.07	51.21	60.60	5.41	2.77	613.67	3503.17	609.03	612.84	3372.17
2	64.13	49.52	59.61	4.52	3.49	649.79	3484.93	647.48	651.84	3335.22
3	58.72	45.01	52.56	2.71	2.75	734.73	3415.18	734.65	740.70	3209.45
4	56.92	41.68	49.71	4.36	2.14	711.98	3301.33	709.61	720.77	3089.50
5	54.55	38.47	47.11	6.74	0.95	697.56	3190.25	687.27	699.69	2965.25
6	53.82	35.47	46.13	7.28	0.70	616.93	3107.23	591.77	621.36	2809.08
7	53.33	33.37	45.13	7.28	0.70	592.79	2960.97	563.33	583.44	2756.46
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN YE ANGLE	REL DEV ANGLE	REL TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL
1	57.65	47.99	54.80	2.85	8.42	748.56	4355.85	500.18	555.26	789.71
2	57.16	44.55	54.42	2.74	8.97	730.83	4258.81	519.44	511.26	804.83
3	54.01	45.59	50.68	3.33	6.71	713.74	4050.11	499.49	509.90	687.77
4	47.70	43.79	43.79	3.91	9.22	728.83	4272.11	489.29	548.06	537.73
5	43.17	49.91	33.15	11.02	11.37	699.84	4161.11	449.95	534.45	422.15
6	34.03	54.13	14.29	19.74	18.79	697.56	4095.81	406.49	562.22	274.50
7	19.11	56.82	8.00	11.11	34.22	791.98	468.79	430.44	658.26	149.12
RADIAL POSITION	ROTOR SPD AT INLET	INLET REL MACH NO	AXIAL VEL	INLET REL MACH NO	DIFFUSION FACTOR					
1	3359.33	1.385	0.821	0.821	0.475					
2	3329.38	1.372	0.802	0.802	0.499					
3	3199.74	1.317	0.684	0.684	0.523					
4	3068.73	1.207	0.690	0.690	0.521					
5	935.56	1.102	0.655	0.655	0.620					
6	787.72	0.934	0.687	0.687	0.663					
7	743.02	0.882	0.764	0.764	0.716					
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	SOLIDITY	EXIT ABS MACH NO	POLY MOMEN EFFICIENCY	STAT PRESS COEFF				
1	3344.97	1.624	1.3340	1.624	0.8098	0.866				
2	3316.09	1.614	1.3690	1.614	0.815	0.386				
3	3197.67	1.603	1.5080	1.603	0.8760	0.490				
4	3077.79	1.618	1.6840	1.618	0.8831	0.557				
5	956.60	1.598	1.9060	1.529	0.9205	0.633				
6	836.72	1.598	2.2170	1.425	0.9218	0.759				
7	807.36	1.680	2.3390	1.399	0.9168	0.845				
RADIAL POSITION	PERCENT THROUGH	TRAV TOT PRESS RATIO	FIXED TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT TEMP RATIO	STAGE DATA	ROTOR DATA	ROTOR DATA		
1	9.0000	1.844	1.241	1.229	1.229	FIXED INST. FIXED INST.	TRAV. INST.			
2	10.0000	1.814	1.1794	1.226	1.226	=	1.6931	1.7551	1.7456	
3	38.0000	1.777	1.194	1.261	1.261	=	0.8293	0.8610	0.9104	
4	50.0000	1.744	1.184	1.389	1.389	=	0.8814	0.8713	0.9113	
5	78.0000	1.658	1.166	1.642	1.642	=				
6	90.0000	1.613	1.154	1.632	1.632	=				
7	92.0000	1.735	1.178	1.166	1.166	=				
OVERALL PERFORMANCE SUMMARY						Discharge Valve Setting= 6.0				
PERFORMANCE PARAMETERS						Cor. Nozzle Weight Flow= 199.2				
Total Pressure Ratio =						TE Check Flow/Noz.Flow = 0.9538				
Adiabatic Efficiency =						Assumed IE Flow Coeff. = 0.9500				
Polytropic Efficiency =										
Percent Design Speed = 100.1										



TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

STATOR BLADE ROW 4 NASA TASK IV															
BLADE ELEMENT PERFORMANCE RESULTS															
POINT NUMBER 15		BEADING NUMBER 79		DATE		6/10/97									
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCID ANG MN CHBR LN	INCID ANG SUCT SURE	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL
1	47.83	43.97	39.47	8.56	751.93	509.81	509.81	509.81	927.27	927.27	554.15	554.15	554.15	8.59	8.59
2	43.72	39.01	4.72	737.38	42.83	597.11	597.11	597.11	11.87	11.87	566.07	566.07	566.07	11.87	11.87
3	45.42	39.80	5.62	751.80	42.36	522.51	522.51	522.51	1.67	1.67	447.97	447.97	447.97	27.91	27.91
4	47.36	40.86	6.56	713.97	45.52	439.82	439.82	439.82	-0.13	-0.13	420.00	420.00	420.00	47.39	47.39
5	31.73	42.22	9.51	781.65	56.147	422.39	422.39	422.39	29.50	29.50					
6	58.146	42.75	13.79												
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	DEV ANG VE	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL
1	0.89	0.89	11.19	12.02	46.94	554.122	554.122	554.122	8.59	8.59	554.15	554.15	554.15	8.59	8.59
2	1.14	1.14	10.10	11.24	42.83	597.26	597.26	597.26	11.87	11.87	566.07	566.07	566.07	11.87	11.87
3	0.17	0.17	8.87	9.04	43.58	566.31	566.31	566.31	1.67	1.67	447.97	447.97	447.97	27.91	27.91
4	3.06	3.06	8.75	11.81	42.36	522.51	522.51	522.51	1.67	1.67	447.97	447.97	447.97	27.91	27.91
5	-0.02	-0.02	59.19	9.08	47.37	439.82	439.82	439.82	47.39	47.39	420.00	420.00	420.00	47.39	47.39
6	6.20	6.20	16.78	16.78	45.52	439.82	439.82	439.82	47.39	47.39	420.00	420.00	420.00	47.39	47.39
7	-4.02	-4.02	52.35	0.34	56.147	422.39	422.39	422.39							
RADIAL POSITION	ROTOR SPQ AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	LOSS COEFFICIENT	TBT PRESS LOSS PARAM	ADP EFFICIENCY	POLY MOMEN RISE/ MEAS T RISE	STAY PRESS COEFF	DIFFUSION FACTOR	CH1				
1	0.627	0.627	0.627	1.098	0.136	0.045	0.504	0.504	0.246	0.502	0.244	0.244	0.244	0.244	0.244
2	0.622	0.622	0.622	1.123	0.059	0.019	0.8318	0.8318	0.270	0.411	0.289	0.289	0.289	0.289	0.289
3	0.624	0.624	0.624	1.083	0.060	0.018	0.7802	0.7802	0.295	0.442	0.315	0.315	0.315	0.315	0.315
4	0.640	0.640	0.640	0.992	0.073	0.021	0.7673	0.7673	0.345	0.495	0.388	0.388	0.388	0.388	0.388
5	0.612	0.612	0.612	0.938	0.074	0.020	0.8206	0.8206	0.490	0.564	0.490	0.490	0.490	0.490	0.490
6	0.596	0.596	0.596	1.019	0.126	0.031	0.9041	0.9041	0.538	0.537	0.538	0.538	0.538	0.538	0.538
7	0.671	0.671	0.671	0.958	0.103	0.023	0.6023	0.6023	0.658	0.658	0.658	0.658	0.658	0.658	0.658
RADIAL POSITION	ROTOR SPQ AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	TRAV TOT PRESS RATIO	FIXED TOT TEMP RATIO	LOSS COEFFICIENT	TBT PRESS LOSS PARAM	ADP EFFICIENCY	POLY MOMEN RISE/ MEAS T RISE	STAY PRESS COEFF					
1	0.457	0.457	0.457	1.5238	0.968	0.136	0.045	0.504	0.504	0.246					
2	0.495	0.495	0.495	1.5440	0.987	0.059	0.019	0.8318	0.8318	0.270					
3	0.473	0.473	0.473	1.6318	0.985	0.060	0.018	0.7802	0.7802	0.295					
4	0.439	0.439	0.439	1.7428	0.994	0.073	0.021	0.7673	0.7673	0.345					
5	0.378	0.378	0.378	1.8809	0.991	0.074	0.020	0.8206	0.8206	0.490					
6	0.370	0.370	0.370	2.0518	0.991	0.126	0.031	0.9041	0.9041	0.538					
7	0.355	0.355	0.355	2.0958	0.981	0.103	0.023	0.6023	0.6023	0.658					
RADIAL POSITION	PERCENT MASS FLOW	TRAV TOT PRESS RATIO	FIXED TOT TEMP RATIO	LOSS COEFFICIENT	TBT PRESS LOSS PARAM	ADP EFFICIENCY	POLY MOMEN RISE/ MEAS T RISE	STAY PRESS COEFF	PERFORMANCE PARAMETERS	STATOR DATA STATOR DATA					
1	5.0000	0.982	0.968	0.136	0.045	0.504	0.504	0.246	STAGE DATA STATOR DATA STATOR DATA						
2	10.0000	0.984	0.987	0.059	0.019	0.8318	0.8318	0.270	FIXED INST. FLOW INST. TRAV. INST.						
3	30.0000	0.976	0.985	0.060	0.018	0.7802	0.7802	0.295	Total Pressure Ratio =	1.6931	0.9815	0.9713			
4	50.0000	0.967	0.991	0.073	0.021	0.7673	0.7673	0.345	Polytropic Efficiency =	0.8414	0.9657	0.9336			
5	70.0000	0.973	0.991	0.074	0.020	0.8206	0.8206	0.490	Percent Design Speed =		100.1				
6	90.0000	0.986	0.996	0.126	0.031	0.9041	0.9041	0.538	Cor. Nozzle Weight Flow =		199.2				
7	95.0000	0.918	0.978	0.103	0.023	0.6023	0.6023	0.658	Discharge Valve Setting =		6.0				
OVERALL PERFORMANCE SUMMARY															
IE Check Flow/Noz.Flow = 0.9588															
Assumed IE Flow Coeff. = 0.9550															
TE Check Flow/Noz.Flow = 0.9732															
Assumed TE Flow Coeff. = 0.9350															

062870 ROTOR BLADE NOM \* NASA TASK IV

TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

POINT NUMBER 11		BLADE ELEMENT PERFORMANCE RESULTS		READING NUMBER 142		DATE 6/26/1970				
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCIB ANG MN CHBR LN	INCID ANG SUCT SUPL	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL
1	67.25	-1.47	60.60	6.65	3.95	1493.55	1493.55	576.14	-14.79	1373.92
2	65.79	-0.89	59.61	6.18	3.15	604.86	1468.44	601.87	79.30	1338.48
3	60.21	-1.84	58.04	4.26	-0.126	694.81	1396.67	693.88	-12.55	1212.11
4	58.49	-2.80	56.56	5.93	0.109	676.49	1390.20	673.76	-30.55	1099.11
5	56.09	-2.95	49.71	6.38	0.41	651.44	1172.74	651.43	-33.58	968.99
6	58.36	-2.80	47.11	8.25	0.59	587.45	1002.41	583.22	-27.56	815.16
7	59.56	-2.47	46.13	9.43	1.53	582.69	943.74	524.90	-22.65	765.56
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	REL DEV ANGLE	REL TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL
1	56.02	51.71	54.80	1.22	11.23	790.35	875.86	488.97	619.41	725.35
2	59.52	46.99	54.62	1.16	10.27	764.24	920.37	520.50	558.00	757.90
3	53.35	48.89	50.68	2.67	6.86	730.23	832.25	484.82	545.92	651.57
4	47.25	50.64	43.79	3.46	11.24	738.59	698.06	468.38	570.98	506.65
5	42.23	53.44	32.15	10.08	13.86	712.58	578.56	423.90	571.70	384.75
6	30.30	54.82	14.29	16.01	25.06	726.72	489.41	417.65	592.55	244.04
7	17.30	56.74	8.00	9.38	38.12	807.17	478.02	439.65	670.33	136.93
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	LOSS COEFFICIENT	LOSS PERAM	ADB EFFICIENCY	POLY MOMEN RISE/ EFFICIENCY	STAT PRESS RISE COEFF	DIFFUSION CH1 FACTOR
1	1359.12	0.583	1.368	0.849	0.232	0.049	0.7581	0.7778	0.359	0.571
2	1329.18	0.555	1.349	0.855	0.207	0.043	0.7829	0.8004	0.382	0.492
3	1199.56	0.644	1.296	0.699	0.141	0.028	0.8466	0.8584	0.480	0.551
4	1068.56	0.627	1.196	0.695	0.139	0.028	0.8537	0.8643	0.540	0.604
5	935.41	0.612	1.086	0.652	0.118	0.023	0.8795	0.8876	0.642	0.647
6	787.60	0.540	0.923	0.742	0.152	0.030	0.8737	0.8819	0.675	0.655
7	742.91	0.508	0.867	0.838	0.177	0.036	0.8664	0.8750	0.710	0.666
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	SOLIDITY RATIO	FIXED TOT TEMP RATIO	FIXED TOT PRESS RATIO	PERAM EFFICIENCY	ADB EFFICIENCY	POLY MOMEN RISE/ EFFICIENCY	STAT PRESS RISE COEFF
1	1344.76	0.654	0.725	1.3348	1.232	1.833	0.7581	0.7581	0.7778	0.359
2	1315.69	0.639	0.759	1.3498	1.207	1.826	0.7829	0.8004	0.382	0.492
3	1197.49	0.615	0.685	1.5086	1.141	1.771	0.8466	0.8584	0.480	0.551
4	1077.62	0.626	0.584	1.6846	1.139	1.706	0.8537	0.8643	0.540	0.604
5	956.45	0.609	0.490	1.9066	1.118	1.637	0.8795	0.8876	0.642	0.647
6	836.59	0.627	0.421	2.2174	1.152	1.607	0.8737	0.8819	0.717	0.655
7	807.26	0.696	0.405	2.3356	1.177	1.602	0.8664	0.8750	0.796	0.666
RADIAL POSITION	PERCENT DIMENSION	PERCENT PRESS RATIO	TRAV TOT YMR RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	PERAM EFFICIENCY	ADB EFFICIENCY	POLY MOMEN RISE/ EFFICIENCY	STAT PRESS RISE COEFF	DIFFUSION CH1 FACTOR
1	5.0000	1.904	1.254	1.833	1.250	0.7581	0.7581	0.7778	0.359	0.571
2	10.0000	1.867	1.234	1.826	1.240	0.7829	0.8004	0.382	0.492	0.492
3	80.0000	1.800	1.205	1.771	1.140	0.8466	0.8584	0.480	0.551	0.551
4	50.0000	1.741	1.198	1.706	1.193	0.8537	0.8643	0.540	0.604	0.604
5	70.0000	1.667	1.175	1.637	1.172	0.8795	0.8876	0.642	0.647	0.647
6	90.0000	1.632	1.166	1.607	1.167	0.8737	0.8819	0.717	0.655	0.655
7	95.0000	1.742	1.155	1.602	1.167	0.8664	0.8750	0.796	0.666	0.666

OVERALL PERFORMANCE SUMMARY

STAGE DATA ROTOR DATA ROTOR DATA  
 FIXED INST. FIXED INST. TRAV. INST.  
 1.6920 1.7362 1.7724  
 0.7886 0.8304 0.8676  
 0.8037 0.8430 0.8778  
 Discharge Valve Setting= 5.0  
 100.1  
 190.4  
 IE Check Flow/Noz.Flow = 1.0709  
 Assumed IE Flow Coeff. = 0.9850  
 Assumed IE Flow Coeff. = 0.9500

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TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

		STATOR BLADE ROW - NASA TASK I*											
		BLADE ELEMENT PERFORMANCE RESULTS											
		POINT NUMBER 12 READING NUMBER 142 DATE 6/26/1970											
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CMBR LM LE ANGLE	INCID ANG MN CHBR LN	INCID ANG SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL			
1		51.96	39.47	12.09	793.70	773.14	493.47	538.00	621.65	621.65			
2		46.42	39.41	7.32	791.47	751.47	533.00	516.59	560.02	560.02			
3		46.55	39.04	7.54	791.47	758.12	516.59	503.61	545.39	545.39			
4		48.30	39.80	8.50	791.47	722.74	503.61	453.25	565.30	565.30			
5		50.99	40.88	10.13	791.47	725.85	453.25	439.72	559.61	559.61			
6		52.42	42.22	10.26	791.47	796.94	439.72	461.39	571.31	571.31			
7		54.56	48.76	11.60	791.47		461.39		643.58	643.58			
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMBR LM RE ANGLE	DEV ANG TE	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL			
1		1.06	-11.13	12.19	50.90	603.49	603.38	603.38	11.17	11.17			
2		2.69	-10.10	12.70	43.73	629.06	628.33	628.33	29.48	29.48			
3		0.01	-8.87	8.88	46.54	573.92	573.28	573.28	0.09	0.09			
4		0.96	-8.75	7.79	49.27	507.24	506.61	506.61	-8.51	-8.51			
5		2.33	-9.10	6.77	53.33	441.62	440.31	440.31	-17.93	-17.93			
6		6.18	-10.50	16.76	46.24	411.70	408.08	408.08	44.18	44.18			
7		0.88	-12.36	11.48	59.24	383.94	382.26	382.26	-5.85	-5.85			
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	DIFFUSION FACTOR	CHI							
1		0.697		1.223	0.492	0.204							
2		0.647		1.179	0.408	0.232							
3		0.635		1.116	0.459	0.272							
4		0.643		1.006	0.547	0.345							
5		0.618		0.974	0.599	0.472							
6		0.623		0.826	0.606	0.528							
7		0.666		0.628	0.709	0.426							
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	SOLIDITY	LOSS PARAM	LOSS COEFFICIENT	LOSS FRICTION	LOSS TOT	FIXED TOT	FIXED TOT TEMP RATIO	EFFICIENCY	PRESS RISE	STAT PRESS RISE COEFF
1		0.496		1.5236	1.5446	0.142	0.047	0.047	0.047	0.5032	0.5032	0.188	0.188
2		0.520		1.5446	1.6316	0.097	0.031	0.031	0.031	0.6945	0.6945	0.214	0.214
3		0.478		1.6316	1.7426	0.107	0.033	0.033	0.033	0.6613	0.6613	0.253	0.253
4		0.483		1.7426	1.8800	0.105	0.030	0.030	0.030	0.6368	0.6368	0.323	0.323
5		0.570		1.8800	2.0518	0.084	0.022	0.022	0.022	0.7619	0.7619	0.449	0.449
6		0.546		2.0518	2.0986	0.100	0.024	0.024	0.024	0.7858	0.7858	0.505	0.505
7		0.321		2.0986		0.073	0.017	0.017	0.017	0.9673	0.9673	0.199	0.199
RADIAL POSITION	PERCENT INJECTION	TRAV TOT PRESS RATIO	TRAV TOT PRESS RATIO	FIXED TOT PRESS RATIO	FIXED TOT PRESS RATIO	TEMP RATIO	TEMP RATIO	TEMP RATIO	TEMP RATIO	TEMP RATIO	PERFORMANCE PARAMETERS		
1	5.0800	0.941	0.961	0.963	1.000	1.000	1.000	1.000	1.000	1.000	Total Pressure Ratio = 1.6920		
2	40.0800	0.971	0.997	0.976	1.000	1.000	1.000	1.000	1.000	1.000	Polytropic Efficiency = 0.8037		
3	50.0800	0.962	0.995	0.974	1.000	1.000	1.000	1.000	1.000	1.000	Percent Design Speed = 100.1		
4	50.0800	0.945	0.989	0.974	1.000	1.000	1.000	1.000	1.000	1.000	Cor. Nozzle Weight Flow = 190.4		
5	70.0800	0.962	0.992	0.981	1.000	1.000	1.000	1.000	1.000	1.000	Discharge Valve Setting = 5.0		
6	90.0800	0.962	0.996	0.977	1.000	1.000	1.000	1.000	1.000	1.000	IE Check Flow/Noz.Flow = 0.9821		
7	95.0800	0.900	0.965	0.979	1.000	1.000	1.000	1.000	1.000	1.000	Assumed IE Flow Coeff. = 0.9550		
OVERALL PERFORMANCE SUMMARY													
STAGE DATA STATOR DATA STATOR DATA													
FIXED INST. FIXED INST. TRAV. INST.													
			1.6920			0.9745			0.9556				
			0.8037			0.9934			0.6136				

062670 ROTOR BLADE ROW - NASA TASK IX  
 TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

ROTOR BLADE ROW - NASA TASK IX		BLADE ELEMENT PERFORMANCE RESULTS		POINT NUMBER 12		BLADE ELEMENT PERFORMANCE RESULTS		POINT NUMBER 13		DATE	
										6/26/1970	
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCID ANG MN CHBR LN	INCID ANG SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS YANG VEL	INLET REL YANG VEL	INLET REL ANG VEL
1	63.69	-0.33	60.60	3.09	0.39	679.36	1523.04	674.14	-3.92	1363.13	1328.12
2	61.56	0.06	59.61	1.95	1.08	836.34	1518.05	719.49	0.74	1328.12	1186.82
3	54.83	0.88	54.83	1.18	1.64	835.64	1350.83	835.20	12.82	1061.36	338.83
4	51.87	0.50	52.56	0.69	1.53	815.67	1243.67	804.36	-3.35	790.57	755.89
5	49.41	-0.84	49.71	0.36	1.09	705.98	1059.90	677.60	-2.91	790.57	755.89
6	49.40	-0.85	49.41	2.29	1.37	705.98	1059.90	677.60	-2.91	790.57	755.89
7	49.61	-1.15	46.13	3.48	1.42	676.67	1014.44	643.07	-12.93	755.89	755.89
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	REL DEV ANG TE	REL TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS YANG VEL	EXIT REL YANG VEL	EXIT REL ANG VEL
1	56.20	42.34	54.80	3.40	5.49	722.45	1012.17	532.81	485.58	859.27	859.27
2	57.01	38.14	54.42	2.59	4.55	720.82	1040.17	565.76	444.32	871.66	871.66
3	52.71	46.82	50.66	2.03	2.13	727.13	908.10	558.15	475.23	722.14	722.14
4	49.77	42.66	43.79	5.98	2.10	798.27	798.27	512.32	472.16	603.54	603.54
5	41.21	43.89	32.13	9.06	6.20	696.81	696.81	520.47	500.73	455.78	455.78
6	33.31	48.93	14.29	19.02	16.09	723.93	693.18	467.79	529.26	307.38	307.38
7	28.00	53.86	6.00	14.00	23.64	780.31	509.85	482.93	620.27	187.04	187.04
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL	LOSS COEFFICIENT	LOSS PARAM	EFFICIENCY	ADB EFFICIENCY	POLY MOMEN RISE	STAT PRESS RISE	CHI
1	1359.21	0.628	1.489	0.786	0.159	0.831	0.9998	0.8138	0.458	0.342	0.458
2	1329.27	0.671	1.406	0.786	0.129	0.826	0.8359	0.8476	0.419	0.365	0.481
3	1199.64	0.789	1.369	0.658	0.078	0.816	0.9089	0.9080	0.480	0.562	0.638
4	1068.63	0.788	1.274	0.615	0.090	0.817	0.8878	0.8953	0.515	0.675	0.675
5	935.48	0.747	1.169	0.647	0.053	0.810	0.9354	0.9395	0.582	0.695	0.695
6	787.65	0.694	0.982	0.694	0.091	0.817	0.9116	0.9171	0.637	0.726	0.726
7	742.96	0.626	0.939	0.726	0.072	0.814	0.9354	0.9395	0.637	0.704	0.704
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	FIXED TOT PRESS RATIO	LOSS COEFFICIENT	LOSS PARAM	EFFICIENCY	ADB EFFICIENCY	POLY MOMEN RISE	STAT PRESS RISE	CHI
1	1344.89	0.607	0.890	1.3848	0.159	0.831	0.9998	0.8138	0.458	0.342	0.458
2	1315.98	0.613	0.884	1.3698	0.129	0.826	0.8359	0.8476	0.419	0.365	0.481
3	1197.57	0.620	0.774	1.5088	0.078	0.816	0.9089	0.9080	0.480	0.562	0.638
4	1077.70	0.596	0.679	1.6848	0.090	0.817	0.8878	0.8953	0.515	0.675	0.675
5	956.52	0.624	0.598	1.9068	0.053	0.810	0.9354	0.9395	0.582	0.695	0.695
6	836.65	0.614	0.688	2.2178	0.091	0.817	0.9116	0.9171	0.637	0.726	0.726
7	807.31	0.675	0.440	2.3398	0.072	0.814	0.9354	0.9395	0.637	0.704	0.704
RADIAL POSITION	PERCENT IMMERSTION	TRAV TOT PRESS RATIO	TRAV TOT PRESS RATIO	FIXED TOT PRESS RATIO	TEMP RATIO	PERFORMANCE PARAMETERS	STAGE DATA	ROTOR DATA	ROTOR DATA	ROTOR DATA	ROTOR DATA
1	5.0000	1.730	1.209	1.688	1.120	Total Pressure Ratio = 0.6486	FIXED INST. FINED INST. TRAV. INST.	1.6711	1.6711	1.6711	1.6711
2	10.0000	1.730	1.180	1.689	1.193	Adiabatic Efficiency = 0.8574		0.8836	0.8836	0.8836	0.8836
3	30.0800	1.712	1.133	1.703	1.183	Polytropic Efficiency = 0.8669		0.8915	0.8915	0.8915	0.8915
4	50.0000	1.648	1.137	1.659	1.153	Percent Design Speed = 100.1	Discharge Valve Setting= 9.0				
5	70.0000	1.627	1.143	1.594	1.152	Cor. Nozzle Weight Flow= 213.2					
6	90.0000	1.567	1.142	1.572	1.152	IE Check Flow/Noz.Flow = 1.0453	TE Check Flow/Noz.Flow = 0.9431				
7	95.0800	1.653	1.160	1.593	1.152	Assumed IE Flow Coeff. = 0.9850	Assumed TE Flow Coeff. = 0.9500				

062670

TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

STATOR BLADE ROW - NASA TASK IV		BLADE ELEMENT PERFORMANCE RESULTS		POINT NUMBER		READING NUMBER		DATE		
		12		143		672671970				
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CMBR LN LE ANGLE	INCID ANG	INCID ANG	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS YANG VEL	INLET REL YANG VEL
1	42.18	39.47	2.72	725.82	537.88	580.04	487.33	537.88	487.33	487.33
2	37.55	39.11	-1.56	731.67	580.04	589.08	474.77	580.04	474.77	445.94
3	38.87	39.01	+0.14	756.92	589.08	552.83	467.46	589.08	474.77	467.46
4	40.22	39.80	0.42	725.29	552.83	560.35	490.15	560.35	467.46	490.15
5	41.18	40.86	0.32	748.92	560.35	493.43	510.29	493.43	510.29	493.43
6	45.96	42.22	3.74	715.48	493.43	486.08	595.51	486.08	595.51	595.51
7	50.78	42.76	8.02	774.49	486.08					
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMBR LN TE ANGLE	DEV ANG	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS YANG VEL	EXIT REL YANG VEL
1	41.89	43.47	9.84	536.84	536.84	596.11	536.84	536.84	536.84	536.84
2	40.32	37.87	9.78	590.69	590.69	545.173	479	545.173	479	479
3	1.01	8.87	9.88	596.65	596.65	514.78	9.05	514.78	9.05	9.05
4	0.38	-8.75	9.13	546.35	546.35	495.24	-19.10	495.24	-19.10	-19.10
5	0.33	-9.10	8.57	519.97	519.97					
6	1.01	-10.58	11.59	516.45	516.45					
7	-2.21	-18.36	30.15	477.21	477.21					
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	AXIAL VEC RATIO	INLET REL MACH NO	DIFFUSION FACTOR	CHI				
1	0.610	0.997	1.018	0.997	0.487	0.246				
2	0.683	1.018	1.012	1.018	0.391	0.265				
3	0.648	0.987	0.987	0.987	0.399	0.283				
4	0.623	0.926	0.926	0.926	0.429	0.162				
5	0.647	0.943	0.943	0.943	0.479	0.104				
6	0.618	1.043	1.043	1.043	0.446	0.438				
7	0.669	1.019	1.019	1.019	0.544	0.170				
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	EXIT ABS VELOCITY	POLY MOMEN RISE/ EFFICIENCY	MEAS T RISE	STAT PRESS COEFF			
1	0.447	0.591	0.591	0.591	0.591	0.229	0.229			
2	0.496	0.7639	0.7639	0.7639	0.7639	0.247	0.247			
3	0.504	0.7580	0.7580	0.7580	0.7580	0.263	0.263			
4	0.482	0.8444	0.8444	0.8444	0.8444	0.341	0.341			
5	0.442	0.9229	0.9229	0.9229	0.9229	0.380	0.380			
6	0.439	0.9230	0.9230	0.9230	0.9230	0.415	0.415			
7	0.422	0.6444	0.6444	0.6444	0.6444	0.1345	0.1345			
RADIAL POSITION	TRAV TOT PRESS RATIO	TRAV TOT PRESS RATIO	FIXED TOT PRESS RATIO	FIXED TOT PRESS RATIO	TEMP RATIO	LOSS COEFFICIENT	LOSS PARAM	LOSS PARAM	POLY MOMEN RISE/ EFFICIENCY	STAT PRESS COEFF
1	5.0000	0.951	0.968	0.968	1.000	0.047	0.047	0.047	0.591	0.229
2	50.0000	1.000	0.986	0.986	1.000	0.047	0.047	0.047	0.7639	0.247
3	80.0000	0.995	0.988	0.988	1.000	0.034	0.034	0.034	0.7580	0.263
4	50.0000	0.997	0.992	0.992	1.000	0.038	0.038	0.038	0.8444	0.341
5	70.0000	0.990	0.985	0.985	1.000	0.065	0.065	0.065	0.9229	0.380
6	90.0000	0.994	0.985	0.985	1.000	0.098	0.098	0.098	0.9230	0.415
7	95.0000	0.984	0.974	0.974	1.000	0.098	0.098	0.098	0.6444	0.1345
OVERALL PERFORMANCE SUMMARY										
STAGE DATA STATOR DATA STATOR DATA										
FIXED INST. FIXED INST. TRAV. INST.										
Total Pressure Ratio = 1.6260 0.9863 0.9734										
Polytropic Efficiency = 0.8669 0.9724 0.9439										
Percent Design Speed = 100.1 Discharge Valve Setting=9.0										
Cor. Nozzle Weight Flow= 213.2										
IE Check Flow/Noz.Flow = 0.9480 TE Check Flow/Noz.Flow = 0.9243										
Assumed IE Flow Coeff. = 0.9550 Assumed TE Flow Coeff. = 0.9350										

062670 ROTOR BLADE ROW - NASA TASK IV

BLADE ELEMENT PERFORMANCE RESULTS										
POINT NUMBER 13 READING NUMBER 44 DATE 6/26/1970										
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCLB ANG MN CMR LN	INDIP ANG SUCT SUFF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL
1	63.23	-0.84	60.60	2.03	50.07	692.83	1528.72	687.51	-4.07	1362.72
2	61.56	0.08	59.61	1.98	51.08	721.74	1518.16	719.17	1.03	1327.68
3	54.36	0.71	56.01	*1.09	50.11	822.26	1462.57	852.17	10.50	1188.64
4	50.42	1.49	52.96	*2.98	51.98	867.33	1359.36	864.54	22.54	1045.65
5	47.63	0.70	49.71	42.08	53.87	855.74	1259.75	843.62	10.36	924.73
6	47.18	0.56	47.41	0.07	57.59	753.26	1084.49	728.95	7.09	780.24
7	47.75	0.05	46.13	1.62	56.28	709.26	1026.54	674.16	0.53	742.12
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	REL DEV ANG TE	REL TWMN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL
1	59.85	24.07	54.80	5.05	31.38	681.20	1235.54	619.98	277.00	1067.30
2	59.09	41.07	54.42	4.07	21.46	684.62	1228.65	627.97	266.42	1049.01
3	59.77	27.33	50.68	5.09	1.41	678.61	1073.33	602.53	311.37	885.70
4	49.31	33.40	43.79	1.11	678.61	708.22	906.71	591.11	389.84	687.41
5	46.87	33.21	32.15	8.72	4.75	752.21	829.43	625.95	414.43	541.69
6	27.01	38.39	14.29	12.72	20.17	827.37	729.88	642.30	508.83	327.47
7	20.35	42.82	6.00	12.35	21.60	858.29	676.55	621.89	576.31	230.66
RADIAL POSITION	REL ROTOR SPD AT INLET	INLET ABS MACH NO	AXIAL VEL BATIO	LOSS TOI WHEBB LOSS PARAM	EFFICIENCY ADB	POLY MOMEN RISE/ RISE COEFF	STAT PRESS	DIFFUSION FACTOR	CHI	
1	1358.65	0.641	1.415	0.902	0.030	0.6974	0.186	0.260	0.279	
2	1328.71	0.670	1.404	0.873	0.017	0.8117	0.205	0.254	0.300	
3	1199.14	0.805	0.707	1.508	0.017	0.8385	0.318	0.336	0.414	
4	1068.19	0.821	0.684	1.688	0.027	0.8768	0.410	0.413	0.478	
5	935.09	0.808	0.742	1.908	0.019	0.8528	0.483	0.426	0.534	
6	787.33	0.703	0.808	2.217	0.026	0.8582	0.517	0.434	0.506	
7	742.65	0.699	0.922	0.147	0.029	0.8515	0.527	0.466	0.484	
RADIAL POSITION	PERCENT EXCURSION	TRAV TOT PRESS RATIO	TRAV TOT VEHR RATIO	FIXED TOT TEMP RATIO	LOSS COEFFICIENT	EFFICIENCY	PERFORMANCE PARAMETERS	STAGE DATA	ROTOR DATA	
1	9.0000	1.365	1.118	1.319	0.439	0.6854	Total Pressure Ratio = 1.3468	1.4050	1.4103	
2	10.0800	1.368	1.106	1.317	0.439	0.8117	Adiabatic Efficiency = 0.7100	0.8158	0.9055	
3	10.0800	1.381	1.103	1.405	0.440	0.8768	Polytropic Efficiency = 0.7220	0.8244	0.9101	
4	50.0800	1.402	1.123	1.405	0.428	0.8528	Percent Design Speed = 100.1	Discharge Valve Settings = 30.0		
5	90.0800	1.439	1.114	1.414	0.428	0.8582	Cor. Nozzle Weight Flow = 217.3			
6	90.0800	1.511	1.129	1.419	0.428	0.8582				
7	95.0800	1.550	1.139	1.477	0.428	0.8515				

OVERALL PERFORMANCE SUMMARY

STAGE DATA ROTOR DATA ROTOR DATA  
 FIXED INST. FIXED INST. TRAV. INST.  
 Total Pressure Ratio = 1.3468 1.4050 1.4103  
 Adiabatic Efficiency = 0.7100 0.8158 0.9055  
 Polytropic Efficiency = 0.7220 0.8244 0.9101  
 Percent Design Speed = 100.1 Discharge Valve Settings = 30.0  
 Cor. Nozzle Weight Flow = 217.3  
 IE Check Flow/Noz.Flow = 1.0358 TE Check Flow/Noz.Flow = 0.9477  
 Assumed IE Flow Coeff. = 0.9850 Assumed TE Flow Coeff. = 0.9550

068670 STATOR BLADE ROM " NASA TASK IX  
 TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

POINT NUMBER 13		BLADE ELEMENT PERFORMANCE RESULTS		DATE 6/26/1970						
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LM LE ANGLE	INCID ANG MN CHBR LN	INCID ANG SUBT 9UMF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL
1		23.93	39.47	-15.54	695.32	626.40	626.40	626.40	278.00	278.00
2		22.50	39.11	-16.64	696.65	645.43	645.43	645.43	267.39	267.39
3		25.60	39.01	-13.41	720.85	649.25	649.25	649.25	311.07	311.07
4		30.95	39.80	-8.89	792.14	643.57	643.57	643.57	385.96	385.96
5		38.71	40.86	-10.15	799.51	682.98	682.98	682.98	405.67	405.67
6		35.52	42.22	-6.78	853.66	687.35	687.35	687.35	490.60	490.60
7		40.00	42.76	-2.76	870.53	659.47	659.47	659.47	553.31	553.31

RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LM TE ANGLE	ANG TB	DEV	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL
1		3.10	-13.13	12.23	22.83	632.92	632.92	632.92	12.16	12.16	12.16
2		0.81	-10.10	10.31	22.50	704.87	704.87	704.87	2.56	2.56	2.56
3		0.62	-8.87	8.25	26.122	734.89	734.89	734.89	-7.98	-7.98	-7.98
4		0.49	-8.75	9.24	30.46	749.50	749.50	749.50	6.39	6.39	6.39
5		-2.22	-9.10	6.88	32.93	776.41	776.41	776.41	-30.14	-30.14	-30.14
6		1.61	-10.58	12.19	38.91	849.68	849.68	849.68	24.45	24.45	24.45
7		1.88	-12.36	13.64	38.72	836.16	836.16	836.16	18.64	18.64	18.64

RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	AXIAL VEL RATIO	INLET REL MACH NO	DIFFUSION FACTOR	CH1
1		0.597	1.018	1.018	0.204	0.165
2		0.613	1.092	1.132	0.114	0.144
3		0.633	1.132	1.165	0.115	0.137
4		0.658	1.165	1.137	0.146	0.107
5		0.706	1.137	1.265	0.170	0.144
6		0.755	1.265	1.268	0.108	0.156
7		0.769	1.268		0.179	0.1245

RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	SOLIDITY COEFFICIENT	LOSS POLYMER LOSS	TOT PRESS POLYMER LOSS	ADP EFFICIENCY	POLY MOMEN RISE/MEAS T RISE	STAT PRESS RISE COEFF
1		0.552	1.5230	0.220	0.072	-1.2158	5.7866	0.119
2		0.581	1.5440	0.147	0.048	3.4305	3.4305	0.130
3		0.646	1.6316	0.162	0.059	33.8735	33.8735	0.123
4		0.659	1.7428	0.145	0.031	-3.5987	-3.5987	0.055
5		0.689	1.8800	0.115	0.049	5.3096	5.3096	0.125
6		0.775	2.0310	0.201	0.076	-4.0785	-4.0785	0.1215
7		0.742	2.0980	0.234				0.1204

RADIAL POSITION	TRAV TOT PRESS RATIO	TRAV TOT PRESS RATIO	FIXED TOT TEMP RATIO	LOSS POLYMER LOSS	TOT PRESS POLYMER LOSS	ADP EFFICIENCY	POLY MOMEN RISE/MEAS T RISE	STAT PRESS RISE COEFF
1	5.0000	0.927	1.000	0.220	0.072	-1.2158	5.7866	0.119
2	10.0000	0.969	1.000	0.147	0.048	3.4305	3.4305	0.130
3	30.0000	0.973	1.000	0.162	0.059	33.8735	33.8735	0.123
4	90.0000	0.969	1.000	0.145	0.031	-3.5987	-3.5987	0.055
5	70.0000	0.956	1.000	0.201	0.049	5.3096	5.3096	0.125
6	90.0000	0.949	1.000	0.234				0.1215
7	95.0000	0.880	1.000					0.1204

OVERALL PERFORMANCE SUMMARY

STATOR DATA STATOR DATA STATOR DATA  
 FIXED INST. FIXED INST. TRAV. INST.  
 PERFORMANCE PARAMETERS  
 Total Pressure Ratio = 1.3468 0.9586 0.9501  
 Polytropic Efficiency = 0.7220 0.8758  
 Percent Design Speed = 100.1 Discharge Valve Setting= 30.0  
 Cor. Nozzle Weight Flow= 217.3  
 LE Check Flow/Noz.Flow = 0.9527 TE Check Flow/Noz.Flow = 0.9538  
 Assumed LE Flow Coeff. = 0.9550 Assumed TE Flow Coeff. = 0.9550

081770  
TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

ROTOR BLADE ROW - NASA TASK IV		ROTOR BLADE ROW - NASA TASK IV		ROTOR BLADE ROW - NASA TASK IV		ROTOR BLADE ROW - NASA TASK IV		ROTOR BLADE ROW - NASA TASK IV		ROTOR BLADE ROW - NASA TASK IV		ROTOR BLADE ROW - NASA TASK IV		ROTOR BLADE ROW - NASA TASK IV	
PARTIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCID ANG MN CHBR LN	INCID ANG SUCT SUKRL	INLET ANG VELOCITY	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ARS YAW VEL	INLET REL YAW VEL	INLET AX VELOCITY	INLET ARS YAW VEL	INLET REL YAW VEL	INLET AX VELOCITY
1	67.93	31.88	60.70	7.33	2.63	1485.46	562.14	1485.46	557.53	518.33	1375.11	557.53	518.33	1375.11	557.53
2	66.59	31.76	59.61	6.98	3.95	1488.26	584.03	1488.26	582.30	517.91	1348.79	582.30	517.91	1348.79	582.30
3	61.41	31.37	56.01	5.49	0.94	1361.89	661.54	1361.89	661.54	537.08	1218.86	661.54	537.08	1218.86	661.54
4	57.20	33.40	52.28	6.62	0.74	1280.45	651.19	1280.45	651.19	537.08	1098.80	651.19	537.08	1098.80	651.19
5	57.20	33.42	49.71	7.49	0.70	1180.20	635.75	1180.20	635.75	537.08	974.23	635.75	537.08	974.23	635.75
6	56.49	33.76	47.11	6.38	1.72	998.70	568.38	998.70	568.38	535.77	822.02	568.38	535.77	822.02	568.38
7	56.06	32.04	46.13	9.08	2.03	535.38	535.38	535.38	511.45	510.22	756.65	511.45	510.22	756.65	511.45
PARTIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	REL DEV ANG VE	REL TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT RFL VELOCITY	EXIT AX VELOCITY	EXIT ARS YAW VEL	EXIT REL YAW VEL	EXIT AX VELOCITY	EXIT ARS YAW VEL	EXIT REL YAW VEL	EXIT AX VELOCITY
1	57.48	34.38	54.90	2.68	10.45	778.63	843.43	778.63	452.89	632.08	718.37	452.89	632.08	718.37	452.89
2	55.78	47.84	54.02	1.36	16.80	761.18	908.14	761.18	510.14	563.33	758.89	510.14	563.33	758.89	510.14
3	51.70	48.62	50.68	3.02	11.71	721.48	809.01	721.48	478.88	543.50	651.92	478.88	543.50	651.92	478.88
4	47.13	49.92	43.79	3.34	13.05	737.58	697.99	737.58	474.84	564.29	511.47	474.84	564.29	511.47	474.84
5	41.26	52.35	32.15	6.61	15.24	717.92	588.03	717.92	434.94	563.71	391.09	434.94	563.71	391.09	434.94
6	31.47	55.22	14.59	17.18	25.62	717.16	487.01	717.16	406.95	586.06	246.09	406.95	586.06	246.09	406.95
7	16.00	56.75	8.00	8.00	46.05	816.69	478.33	816.69	444.69	678.34	127.55	444.69	678.34	127.55	444.69
PARTIAL POSITION	ROTOR SPD AT EXIT	INLET ABS MACH NO	INLET REL MACH NO	ARIAL VEL RATIO	LOSS COEFFICIENT	YBT PRESS LOSS PARAM	ADW EFFICIENCY	POLY MOMEN RISEZ MEAS T RISE	EFFICIENCY	STAY PRESS	DIFFUSION FACTOR	CM1	STAY PRESS	ROTOR DATA	ROTOR DATA
1	142.45	0.642	0.655	1.3386	0.249	0.050	0.7426	0.17832	0.7821	0.387	0.595	0.458	0.387	1.7494	1.7494
2	131.62	0.616	0.759	1.3690	0.227	0.047	0.7633	0.17821	0.4374	0.363	0.525	0.472	0.363	1.7210	1.7494
3	1195.42	0.610	0.682	1.5890	0.163	0.032	0.8237	0.17821	0.4374	0.363	0.549	0.472	0.363	0.8211	0.8405
4	1075.77	0.624	0.591	1.6840	0.134	0.027	0.8547	0.17821	0.4374	0.363	0.594	0.472	0.363	0.8342	0.8526
5	931.83	0.610	0.501	1.9060	0.121	0.024	0.8771	0.17821	0.4374	0.363	0.632	0.472	0.363	0.8007	0.8211
6	784.24	0.615	0.414	2.2170	0.128	0.025	0.8938	0.17821	0.4374	0.363	0.660	0.472	0.363	0.7959	0.8342
7	741.63	0.493	0.407	2.3390	0.148	0.030	0.8912	0.17821	0.4374	0.363	0.659	0.472	0.363	0.7959	0.8342
PARTIAL POSITION	PERCENT DISLOCATION	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	SOLIDITY	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	PERFORMANCE PARAMETERS	PERCENT DESIGN SPEED	COR. NOZZLE WEIGHT FLOW	DISCHARGE VALVE SETTING	LE CHECK FLOW/MOZ.FLOW	TE CHECK FLOW/MOZ.FLOW	ADW EFFICIENCY	ADW EFFICIENCY	POLYTROPIC EFFICIENCY
1	10.0000	1.849	1.817	1.3386	1.251	1.251	Total Pressure Ratio = 1.6786	99.9	186.8	4.7	1.0703	0.9803	0.786	0.786	0.8405
2	30.0000	1.819	1.810	1.3690	1.242	1.242	Adiabatic Efficiency = 0.7805				0.9850	0.9850	0.8211	0.8211	0.8526
3	30.0000	1.772	1.774	1.5890	1.209	1.209	Polytropic Efficiency = 0.7959				0.9850	0.9850	0.8342	0.8342	0.8526
4	50.0000	1.745	1.698	1.6840	1.190	1.190	Percent Design Speed = 99.9				0.9850	0.9850	0.8342	0.8342	0.8526
5	70.0000	1.658	1.626	1.9060	1.170	1.170	Cor. Nozzle Weight Flow = 186.8				0.9850	0.9850	0.8342	0.8342	0.8526
6	90.0000	1.615	1.611	2.2170	1.166	1.166	LE Check Flow/Moz.Flow = 1.0703				0.9850	0.9850	0.8342	0.8342	0.8526
7	95.0000	1.745	1.619	2.3390	1.166	1.166	Assumed LE Flow Coeff. = 0.9500				0.9850	0.9850	0.8342	0.8342	0.8526



TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

681770

STATOR BLADE ROW = NASA TASK IV		BLADE ELEMENT PERFORMANCE RESULTS										
POINT NUMBER 14		READING NUMBER 287		DATE		R/17/1970						
PARTIAL POSITION	REL INLET FLOW ANG	ARS INLET FLOW ANG	INLET ANGLE	CMBR LN LE	INCID ANGLE	INCID ANGLE	SUCT SURE	INLET ARS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ARS TANG VEL	INLET REL TANG VEL
1	54.23	47.27	39.47	14.76	789.83	789.79		456.99	456.99	456.99	634.36	634.36
2	47.27	39.47	14.76	8.16	789.79	789.79		522.29	522.29	522.29	565.48	565.48
3	47.27	39.47	14.76	7.78	789.79	789.79		510.10	510.10	510.10	542.98	542.98
4	47.27	39.47	14.76	7.77	789.79	789.79		510.17	510.17	510.17	558.68	558.68
5	49.46	41.50	6.00	7.77	789.79	789.79		465.36	465.36	465.36	551.80	551.80
6	58.84	51.84	10.62	7.77	789.79	789.79		428.23	428.23	428.23	565.05	565.05
7	54.37	42.78	11.61	7.77	789.79	789.79		466.78	466.78	466.78	651.77	651.77
PARTIAL POSITION	REL EXIT FLOW ANG	ARS EXIT FLOW ANG	TE ANGLE	CMBR LN	DEV ANGLE	TURN ANGLE		EXIT ARS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ARS TANG VEL	EXIT REL TANG VEL
1	8.38	8.38	13.51	51.85	592.87	592.87		591.56	591.56	591.56	24.58	24.58
2	31.39	31.39	13.49	43.88	634.48	634.48		613.37	613.37	613.37	36.36	36.36
3	38.87	38.87	8.74	48.92	592.47	592.47		592.12	592.12	592.12	31.29	31.29
4	1.19	1.19	9.94	48.37	494.82	494.82		493.86	493.86	493.86	18.28	18.28
5	2.24	2.24	6.88	52.09	426.11	426.11		424.87	424.87	424.87	16.59	16.59
6	7.74	7.74	18.32	42.14	407.59	407.59		407.59	407.59	407.59	55.36	55.36
7	8.97	8.97	9.39	53.34	401.47	401.47		399.64	399.64	399.64	20.72	20.72
PARTIAL POSITION	RECTOR SPD AT INLET	INLET REL MACH NO	AXIAL VEL RATIO	SOLIDITY	COEFFICIENT	LOSS		TOT PRESS LOSS	ABB EFFICIENCY	POLY HOMEN RISE/ RISE	STAT PRESS COEFF	
1	0.64	0.64	1.294	1.5230	0.129	0.129		0.499	0.499	0.499	0.236	0.236
2	0.64	0.64	1.174	1.5640	0.104	0.104		0.424	0.424	0.424	0.259	0.259
3	0.69	0.69	1.088	1.5640	0.104	0.104		0.482	0.482	0.482	0.313	0.313
4	0.63	0.63	0.947	1.5640	0.109	0.109		0.554	0.554	0.554	0.370	0.370
5	0.820	0.820	0.918	1.5640	0.1085	0.1085		0.618	0.618	0.618	0.502	0.502
6	0.611	0.611	0.952	2.0980	0.104	0.104		0.592	0.592	0.592	0.348	0.348
7	0.693	0.693	0.856	2.0980	0.1077	0.1077		0.697	0.697	0.697	0.422	0.422
PARTIAL POSITION	PERCENT DECOMPOSITION	TRAV TOT PRESS RATIO	FIXED TOT PRESS RATIO	TEMP RATIO	FIXED TOT TEMP RATIO	LOSS		TOT PRESS LOSS	ABB EFFICIENCY	POLY HOMEN RISE/ RISE	STAT PRESS COEFF	
1	100.000	0.951	0.948	1.000	1.000	0.129		0.499	0.499	0.499	0.236	0.236
2	10.0000	0.976	0.977	1.000	1.000	0.104		0.424	0.424	0.424	0.259	0.259
3	30.0000	0.995	0.976	1.000	1.000	0.104		0.482	0.482	0.482	0.313	0.313
4	50.0000	0.946	0.975	1.000	1.000	0.109		0.554	0.554	0.554	0.370	0.370
5	70.0000	0.962	0.980	1.000	1.000	0.1085		0.618	0.618	0.618	0.502	0.502
6	90.0000	0.972	0.998	1.000	1.000	0.104		0.592	0.592	0.592	0.348	0.348
7	99.0000	0.979	0.977	1.000	1.000	0.1077		0.697	0.697	0.697	0.422	0.422

OVERALL PERFORMANCE SUMMARY

STAGE DATA STATOR DATA STATOR DATA  
 FIXED INST. FIXED INST. TRAV. INST.  
 PERFORMANCE PARAMETERS  
 Total Pressure Ratio = 1.6786 0.9754 0.9556  
 Polytropic Efficiency = 0.7959 0.9541 0.8870  
 Percent Design Speed = 99.9  
 Cor. Nozzle Weight Flow = 106.8  
 LE Check Flow/Noz. Flow = 0.9854  
 Assumed LE Flow Coeff. = 0.9550  
 TE Check Flow/Noz. Flow = 1.0116  
 Assumed TE Flow Coeff. = 0.9350

Discharge Valve Setting = 4.7

TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

081770

		ROTOR BLADE ROW - NASA TASK IV										
		BLADE ELEMENT PERFORMANCE RESULTS					POINT NUMBER 15 READING NUMBER 208 DATE 8/17/1970					
PARTIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CMBR LN LE ANGLE	INCID ANG MN CMBR LN	INCID ANGLE SUCT SURF	INLET ANG VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL VELOCITY
1	52.59	50.37	50.60	1.99	50.71	713.03	707.55	1364.64	1539.59	938.90	876.63	1025.05
2	53.41	50.93	50.61	0.80	50.93	759.66	756.99	1332.84	1534.12	558.18	476.10	1039.78
3	53.52	50.93	50.61	0.49	54.95	815.66	815.44	1187.23	1440.31	546.13	473.56	907.91
4	53.45	50.44	52.56	0.89	54.95	789.54	797.21	1078.41	1340.85	511.35	476.11	790.26
5	50.83	50.93	49.71	1.12	54.62	783.71	772.75	948.66	1244.94	508.52	453.20	880.77
6	50.98	51.06	47.11	3.87	53.79	675.85	648.29	800.12	1047.10	457.76	523.87	680.62
7	50.60	50.47	46.15	4.47	53.43	646.73	614.71	748.47	989.16	461.95	633.82	503.47
PARTIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMBR LN TE ANGLE	REL DEV ANGLE TE	REL TURN ANGLE	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL VELOCITY	DIFFUSION FACTOR	CM1		
1	58.24	41.40	54.80	3.44	4.35	720.04	938.90	876.63	0.450	0.463		
2	57.80	38.29	54.42	3.08	2.91	712.61	558.18	476.10	0.427	0.488		
3	55.00	40.93	50.69	2.32	3.52	723.80	546.13	473.56	0.476	0.575		
4	49.47	42.96	43.79	5.88	3.78	684.78	511.35	476.11	0.518	0.619		
5	41.82	44.85	32.15	9.67	9.01	715.73	508.52	453.20	0.558	0.657		
6	34.39	48.86	14.29	20.10	16.59	760.41	457.76	313.30	0.583	0.672		
7	20.64	53.91	6.00	12.64	29.96	790.52	461.95	174.01	0.635	0.693		
PARTIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VFL RATIO	SOLIDITY COEFFICIENT	LOSS COEFFICIENT	LOSS TOT	TOT PRESS LOSS PARAM	EFFICIENCY	POLY MOMEN RISE/ MEAS Y RISE	STAT PRESS RISE	CEFF
1	1760.08	0.652	1.429	0.762	1.3340	0.145	6.039	0.8496	0.8271	0.8473	0.345	
2	1330.11	0.709	1.431	0.737	1.3690	0.127	6.025	0.8356	0.8473	0.8473	0.369	
3	1200.60	0.766	1.353	0.670	1.5080	0.098	6.020	0.8781	0.8849	0.8849	0.478	
4	1067.31	0.749	1.258	0.641	1.6840	0.070	6.017	0.8807	0.8960	0.8960	0.545	
5	934.07	0.733	1.151	0.655	1.9060	0.057	6.011	0.9314	0.9357	0.9357	0.619	
6	783.15	0.624	0.968	0.706	2.2170	0.057	6.016	0.9170	0.9222	0.9222	0.704	
7	745.13	0.597	0.913	0.751	2.3390	0.059	6.012	0.9496	0.9529	0.9529	0.763	
PARTIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	TOT PRESS LOSS PARAM	EFFICIENCY	POLY MOMEN RISE/ MEAS Y RISE	STAT PRESS RISE	CEFF
1	1345.71	0.606	0.852	1.3340	1.683	1.197	1.197	6.039	0.8496	0.8473	0.345	
2	1154.82	0.606	0.884	1.3690	1.689	1.193	1.193	6.025	0.8356	0.8473	0.369	
3	1194.33	0.616	0.773	1.5080	1.680	1.167	1.167	6.020	0.8781	0.8849	0.478	
4	1078.18	0.597	0.678	1.6840	1.624	1.152	1.152	6.017	0.8807	0.8960	0.545	
5	957.13	0.616	0.586	1.9060	1.558	1.154	1.154	6.011	0.9314	0.9357	0.619	
6	837.18	0.602	0.482	2.2170	1.517	1.151	1.151	6.016	0.9170	0.9222	0.704	
7	807.82	0.681	0.474	2.3390	1.613	1.154	1.154	6.012	0.9496	0.9529	0.763	
PARTIAL POSITION	PERCENT LOSS	PERCENT LOSS	PERCENT LOSS	PERCENT LOSS	PERCENT LOSS	PERCENT LOSS	PERCENT LOSS	PERCENT LOSS	PERCENT LOSS	PERCENT LOSS	PERCENT LOSS	PERCENT LOSS
1	5.0000	1.717	1.203	1.683	1.197	1.197	1.197	6.039	0.8496	0.8473	0.345	0.345
2	10.9800	1.704	1.177	1.689	1.193	1.193	1.193	6.025	0.8356	0.8473	0.369	0.369
3	36.3000	1.705	1.173	1.680	1.167	1.167	1.167	6.020	0.8781	0.8849	0.478	0.478
4	50.9000	1.647	1.158	1.624	1.152	1.152	1.152	6.017	0.8807	0.8960	0.545	0.545
5	70.3000	1.617	1.149	1.558	1.154	1.154	1.154	6.011	0.9314	0.9357	0.619	0.619
6	90.0000	1.551	1.152	1.517	1.151	1.151	1.151	6.016	0.9170	0.9222	0.704	0.704
7	95.0000	1.658	1.170	1.613	1.154	1.154	1.154	6.012	0.9496	0.9529	0.763	0.763

OVERALL PERFORMANCE SUMMARY

STAGE DATA ROTOR DATA ROTOR DATA  
FIXED INST. FIXED INST. TRAV. INST.

1.6207 1.6432 1.5625  
0.8537 0.8798 0.9331  
0.8633 0.8879 0.9377

Discharge Valve Setting= 9.0

TE Check Flow/Noz.Flow = 0.9345  
Assumed IE Flow Coeff. = 0.9500

IE Check Flow/Noz.Flow = 1.0434  
Assumed IE Flow Coeff. = 0.9850

Percent Design Speed = 100.2  
Cor. Nozzle Weight Flow = 212.4

TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

PARTIAL POSITION	STATOR BLADE ROW - NASA TASK IV																			
	REL INLET FLOW ANG	ABS INLET FLOW ANG	CMR LN LE ANGLE	INCID ANG	INCID ANG	SUCT SUPR	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMR LN TE ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	
1	41.23	37.17	39.47	1.76	1.40	723.42	541.06	541.06	476.79	476.79	476.79									
2	37.17	38.19	39.01	-0.03	1.40	723.42	572.16	572.16	442.31	442.31	442.31									
3	40.51	40.51	39.50	0.71	1.40	726.96	551.72	551.72	471.37	471.37	471.37									
4	42.17	40.86	40.86	1.11	1.40	736.82	541.65	541.65	493.27	493.27	493.27									
5	46.11	42.22	42.22	4.09	1.40	784.08	483.49	483.49	505.10	505.10	505.10									
6	51.44	42.78	42.78	8.68	1.40	783.87	485.05	485.05	608.52	608.52	608.52									
7																				

PARTIAL POSITION	STATOR BLADE ROW - NASA TASK IV																		
	REL INLET FLOW ANG	ABS EXIT FLOW ANG	CMR LN TE ANGLE	INCID ANG	INCID ANG	SUCT SUPR	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMR LN TE ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL
1	1.27	1.27	11.13	9.86	42.50	531.26	531.42	531.42	511.76	511.76	511.76								
2	0.19	0.19	10.49	10.49	37.32	589.76	594.11	594.11	3.96	3.96	3.96								
3	1.62	1.62	8.87	10.49	37.32	594.11	541.29	541.29	16.83	16.83	16.83								
4	1.27	1.27	8.75	10.02	39.24	541.62	511.97	511.97	11.98	11.98	11.98								
5	0.10	0.10	8.10	9.20	42.06	513.87	504.57	504.57	0.90	0.90	0.90								
6	2.19	2.19	10.58	13.57	43.32	510.84	504.57	504.57	26.58	26.58	26.58								
7	0.146	0.146	13.36	11.90	51.90	586.28	504.60	504.60	4.02	4.02	4.02								

PARTIAL POSITION	STATOR BLADE ROW - NASA TASK IV																		
	REL INLET FLOW ANG	ABS EXIT FLOW ANG	CMR LN TE ANGLE	INCID ANG	INCID ANG	SUCT SUPR	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMR LN TE ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL
1	0.609	0.609	11.13	9.86	42.50	531.26	531.42	531.42	511.76	511.76	511.76								
2	0.615	0.615	10.49	10.49	37.32	589.76	594.11	594.11	3.96	3.96	3.96								
3	0.643	0.643	8.87	10.49	37.32	594.11	541.29	541.29	16.83	16.83	16.83								
4	0.623	0.623	8.75	10.02	39.24	541.62	511.97	511.97	11.98	11.98	11.98								
5	0.637	0.637	8.10	9.20	42.06	513.87	504.57	504.57	0.90	0.90	0.90								
6	0.605	0.605	10.58	13.57	43.32	510.84	504.57	504.57	26.58	26.58	26.58								
7	0.675	0.675	13.36	11.90	51.90	586.28	504.60	504.60	4.02	4.02	4.02								

PARTIAL POSITION	STATOR BLADE ROW - NASA TASK IV																		
	REL INLET FLOW ANG	ABS EXIT FLOW ANG	CMR LN TE ANGLE	INCID ANG	INCID ANG	SUCT SUPR	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMR LN TE ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL
1	0.444	0.444	11.13	9.86	42.50	531.26	531.42	531.42	511.76	511.76	511.76								
2	0.425	0.425	10.49	10.49	37.32	589.76	594.11	594.11	3.96	3.96	3.96								
3	0.502	0.502	8.87	10.49	37.32	594.11	541.29	541.29	16.83	16.83	16.83								
4	0.458	0.458	8.75	10.02	39.24	541.62	511.97	511.97	11.98	11.98	11.98								
5	0.436	0.436	8.10	9.20	42.06	513.87	504.57	504.57	0.90	0.90	0.90								
6	0.435	0.435	10.58	13.57	43.32	510.84	504.57	504.57	26.58	26.58	26.58								
7	0.410	0.410	13.36	11.90	51.90	586.28	504.60	504.60	4.02	4.02	4.02								

PARTIAL POSITION	STATOR BLADE ROW - NASA TASK IV																		
	REL INLET FLOW ANG	ABS EXIT FLOW ANG	CMR LN TE ANGLE	INCID ANG	INCID ANG	SUCT SUPR	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMR LN TE ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL
1	0.937	0.937	11.13	9.86	42.50	531.26	531.42	531.42	511.76	511.76	511.76								
2	0.915	0.915	10.49	10.49	37.32	589.76	594.11	594.11	3.96	3.96	3.96								
3	0.979	0.979	8.87	10.49	37.32	594.11	541.29	541.29	16.83	16.83	16.83								
4	0.940	0.940	8.75	10.02	39.24	541.62	511.97	511.97	11.98	11.98	11.98								
5	0.954	0.954	8.10	9.20	42.06	513.87	504.57	504.57	0.90	0.90	0.90								
6	0.971	0.971	10.58	13.57	43.32	510.84	504.57	504.57	26.58	26.58	26.58								
7	0.971	0.971	13.36	11.90	51.90	586.28	504.60	504.60	4.02	4.02	4.02								

DIFFUSION FACTOR: 0.487, 0.381, 0.395, 0.436, 0.481, 0.437, 0.451, 0.537  
 CH1: 0.251, 0.268, 0.359, 0.409, 0.451, 0.361  
 POLY NOMEN RISE/ STAT PRESS: 0.9627, 0.9023, 0.7736, 0.8174, 0.8052, 0.9692, 0.8376  
 EFFICIENCY: 0.044, 0.018, 0.014, 0.010, 0.011, 0.003, 0.005  
 LOSS PARAM: 0.135, 0.056, 0.045, 0.033, 0.042, 0.081, 0.105  
 LOSS COEFFICIENT: 0.135, 0.056, 0.045, 0.033, 0.042, 0.081, 0.105  
 SOLIDITY RATIO: 1.5230, 1.5440, 1.6310, 1.7420, 1.8800, 2.0510, 2.0980  
 INLET REL MACH NO: 1.140, 1.016, 0.979, 0.940, 1.054, 1.040  
 EXIT REL MACH NO: 0.977, 1.031, 0.979, 0.940, 1.054, 1.040  
 TRAV TOT TEMP RATIO: 0.962, 1.000, 0.993, 0.992, 0.988, 0.987, 0.978  
 PRESS RATIO: 0.951, 0.983, 0.976, 0.978, 0.972, 0.976, 0.937  
 PERCENT DEFORMATION: 5.0000, 10.0000, 31.0000, 51.0000, 70.0000, 90.0000, 95.0000  
 OVERALL PERFORMANCE SUMMARY: STAGE DATA STATOR DATA STATOR DATA, FIXED INST. FIXED INST. TRAV. INST., Total Pressure Ratio = 1.6207, 0.9863, 0.9723, Polytropic Efficiency = 0.8633, Percent Design Speed = 100.2, Cor. Nozzle Weight Flow = 212.4, Discharge Valve Setting = 9.0  
 IE Check Flow/Noz.Flow = 0.9394, TE Check Flow/Noz.Flow = 0.9219, Assumed IE Flow Coeff. = 0.9550, Assumed TE Flow Coeff. = 0.9380

081970  
 TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

		ROTOR BLADE ROW 4 NASA TASK IV													
		BLADE ELEMENT PERFORMANCE RESULTS													
		POINT NUMBER	16	READING NUMBER	209	DATE	8/17/1970								
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCID ANG MN CHBR LN	INCID ANG SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ARS YANG VEL	INLET REL YANG VEL	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ARS YANG VEL	EXIT REL YANG VEL
1	63.05	-0.24	60.60	27.45	-0.25	697.27	1529.03	694.91	-2.86	1360.79	877.27	1220.43	607.64	284.56	1057.02
2	61.45	-0.35	59.61	27.45	-1.19	827.43	1518.03	724.87	-4.39	1332.39	827.43	1219.68	624.04	267.99	1046.74
3	54.83	0.83	56.01	-1.18	-5.64	836.11	1451.37	836.00	12.10	1186.90	836.11	1070.49	601.85	311.29	885.15
4	50.59	1.32	52.56	-1.77	-7.81	863.53	1357.60	860.82	19.87	1047.75	863.53	1243.52	631.57	368	930.91
5	47.95	0.25	49.71	-1.76	-8.55	851.38	1243.52	839.57	3.68	930.91	851.38	1061.60	621.35	416.90	530.71
6	47.32	0.33	47.11	0.21	-7.45	752.18	1061.60	721.94	4.11	782.79	752.18	1026.31	500.59	577.45	335.26
7	47.47	0.31	46.13	1.34	-6.56	712.66	1026.31	677.38	3.72	730.54	712.66	654.59	599.57	577.45	229.10
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	REL DEV ANG TE	REL TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ARS YANG VEL	EXIT REL YANG VEL	LOSS TOT PRESS	LOSS COEFFICIENT	LOSS ANG	ADB EFFICIENCY	POLY MOMEN RISE/ STAT PRESS
1	60.11	25.25	54.80	5.71	2.94	874.00	1220.43	607.64	284.56	1057.02	0.026	0.141	0.7202	0.7312	0.168
2	58.20	23.24	54.82	4.78	2.25	881.01	1219.68	624.04	267.99	1046.74	0.017	0.089	0.8217	0.8293	0.266
3	55.79	27.35	50.66	5.11	-0.96	877.77	1070.49	601.85	311.29	885.15	0.021	0.115	0.7907	0.8000	0.315
4	49.11	33.17	43.79	5.72	1.49	811.45	909.58	595.41	369.19	687.49	0.032	0.163	0.8388	0.7505	0.401
5	41.08	34.01	32.15	8.93	6.87	747.14	821.35	617.87	416.90	530.71	0.019	0.095	0.8537	0.8606	0.479
6	28.21	38.49	14.29	13.92	19.11	808.46	719.92	625.00	500.59	335.26	0.023	0.118	0.8678	0.8749	0.516
7	20.91	43.92	8.00	12.91	26.56	842.29	654.59	599.57	577.45	229.10	0.027	0.133	0.8648	0.8722	0.529
RADIAL POSITION	ROTOR SPD AT INLET	INLET REL MACH NO	AXIAL VEL RATIO	INLET REL MACH NO	EXIT REL MACH NO	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	SOLIDITY	LOSS TOT PRESS	LOSS COEFFICIENT	LOSS ANG	ADB EFFICIENCY	POLY MOMEN RISE/ STAT PRESS
1	1357.93	0.647	1.418	0.878	1.095	1.3340	1.3328	1.117	1.117	1.3340	0.026	0.141	0.7202	0.7312	0.168
2	1328.01	0.677	1.412	0.861	1.068	1.3360	1.3360	1.113	1.113	1.3360	0.017	0.089	0.8217	0.8293	0.266
3	1198.50	0.789	1.369	0.720	0.936	1.5080	1.5080	1.122	1.122	1.5080	0.021	0.115	0.7907	0.8000	0.315
4	1067.62	0.818	1.285	0.692	0.792	1.6840	1.6840	1.131	1.131	1.6840	0.032	0.163	0.8388	0.7505	0.401
5	934.59	0.805	1.192	0.736	0.722	1.9060	1.9060	1.121	1.121	1.9060	0.019	0.095	0.8537	0.8606	0.479
6	786.91	0.702	1.013	0.866	0.692	2.2170	2.2170	1.136	1.136	2.2170	0.023	0.118	0.8678	0.8749	0.516
7	742.26	0.663	0.935	0.885	0.576	2.3390	2.3390	1.138	1.138	2.3390	0.027	0.133	0.8648	0.8722	0.529
RADIAL POSITION	PERCENT RECOMBINATION	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	PERFORMANCE PARAMETERS	Total Pressure Ratio	Adiabatic Efficiency	Polytropic Efficiency	Percent Design Speed	Cor. Nozzle Weight Flow	DISCHARGE VALVE SETTING			
1	5.0000	1.361	1.116	1.328	1.117	1.3413	1.3413	0.7048	0.8031	100.0	216.0	30.0			
2	10.0000	1.366	1.107	1.365	1.113	1.3413	1.3413	0.7048	0.8031	100.0	216.0	30.0			
3	30.0000	1.384	1.109	1.379	1.122	1.3413	1.3413	0.7048	0.8031	100.0	216.0	30.0			
4	50.0000	1.409	1.123	1.383	1.131	1.3413	1.3413	0.7048	0.8031	100.0	216.0	30.0			
5	70.0000	1.457	1.113	1.409	1.121	1.3413	1.3413	0.7048	0.8031	100.0	216.0	30.0			
6	90.0000	1.488	1.127	1.477	1.136	1.3413	1.3413	0.7048	0.8031	100.0	216.0	30.0			
7	95.0000	1.524	1.143	1.484	1.138	1.3413	1.3413	0.7048	0.8031	100.0	216.0	30.0			

OVERALL PERFORMANCE SUMMARY  
 STAGE DATA ROTOR DATA ROTOR DATA ROTOR DATA  
 FIXED INST. FIXED INST. TRAV. INST. TRAV. INST.  
 1.3413 1.3947 1.4160  
 0.7048 0.8031 0.8963  
 0.7168 0.8121 0.9013  
 Discharge Valve Setting= 30.0  
 LE Check Flow/Noz.Flow = 1.0436 TE Check Flow/Noz.Flow = 0.9480  
 Assumed LE Flow Coeff. = 0.9850 Assumed TE Flow Coeff. = 0.9500

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 TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

		STATOR BLADE ROW - NASA TASK IV										
		BLADE ELEMENT PERFORMANCE RESULTS										
		POINT NUMBER	16	READING NUMBER	209	DATE	07/17/1970					
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCID ANG MN CHBR LN	INCID ANG SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS YANG VEL	INLET REL YANG VEL		
1	25.10	22.75	39.47	-14.37	23.80	877.87	613.83	641.30	287.59	268.96		
2	22.75	20.40	39.11	-16.36	22.49	895.44	648.45	648.45	310.99	310.99		
3	25.62	23.27	39.01	-13.39	22.01	919.59	648.66	648.66	385.32	385.32		
4	30.71	28.36	39.80	-9.69	29.68	956.20	673.38	673.38	408.09	408.09		
5	31.22	28.87	40.86	-9.64	33.25	992.23	667.44	667.44	482.65	482.65		
6	35.87	33.52	42.22	-6.35	33.74	1032.55	634.58	634.58	554.40	554.40		
7	41.14	38.89	42.76	-1.62	39.53	1051.63	634.58	634.58	554.40	554.40		
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	ANG TE	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS YANG VEL	EXIT REL YANG VEL		
1	1.30	1.30	-11.13	12.43	23.80	835.83	635.66	635.66	14.43	14.43		
2	0.27	0.27	-10.10	16.37	22.49	809.12	709.08	709.08	5.32	5.32		
3	-0.38	-0.38	-8.87	8.49	26.01	730.71	730.39	730.39	4.91	4.91		
4	1.03	1.03	-8.75	9.78	29.68	744.06	743.12	743.12	13.33	13.33		
5	-2.03	-2.03	-9.10	7.07	33.25	773.60	771.46	771.46	-27.37	-27.37		
6	2.13	2.13	-10.58	12.71	33.74	870.40	866.82	866.82	32.21	32.21		
7	1.61	1.61	-12.36	13.97	39.53	829.87	826.87	826.87	23.26	23.26		
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	SOLIDITY	COEFFICIENT	LOSS	TOT PRESS LOSS PARAM	EFFICIENCY	ADB EFFICIENCY	POLY MOMEN RISE/ MEAS T RISE	STAT PRESS RISE COEFF
1	0.592	0.592	0.592	1.036	1.5230	0.233	0.233	0.076	-1.6905	-1.6905	0.170	-0.170
2	0.610	0.610	0.610	1.106	1.5440	0.149	0.149	0.048	3.5861	3.5861	0.149	-0.149
3	0.632	0.632	0.632	1.126	1.6310	0.129	0.129	0.039	4.6366	4.6366	0.135	-0.135
4	0.642	0.642	0.642	1.146	1.7420	0.091	0.091	0.026	-4.6190	-4.6190	0.101	-0.101
5	0.700	0.700	0.700	1.146	1.8800	0.122	0.122	0.033	-4.0882	-4.0882	0.139	-0.139
6	0.735	0.735	0.735	1.299	2.0310	0.208	0.208	0.051	2.9660	2.9660	0.240	-0.240
7	0.750	0.750	0.750	1.303	2.0980	0.265	0.265	0.063	-6.9918	-6.9918	0.270	-0.270
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	LOSS COEFFICIENT	FIXED TOT PRESS RATIO	LOSS PARAM	EFFICIENCY	ADB EFFICIENCY	POLY MOMEN RISE/ MEAS T RISE	STAT PRESS RISE COEFF
1	0.592	0.592	0.592	1.036	0.950	0.233	0.233	0.076	-1.6905	-1.6905	0.170	-0.170
2	0.610	0.610	0.610	1.106	0.947	0.149	0.149	0.048	3.5861	3.5861	0.149	-0.149
3	0.632	0.632	0.632	1.126	0.970	0.129	0.129	0.039	4.6366	4.6366	0.135	-0.135
4	0.642	0.642	0.642	1.146	0.956	0.091	0.091	0.026	-4.6190	-4.6190	0.101	-0.101
5	0.700	0.700	0.700	1.146	0.976	0.122	0.122	0.033	-4.0882	-4.0882	0.139	-0.139
6	0.735	0.735	0.735	1.299	0.957	0.208	0.208	0.051	2.9660	2.9660	0.240	-0.240
7	0.750	0.750	0.750	1.303	0.915	0.265	0.265	0.063	-6.9918	-6.9918	0.270	-0.270

OVERALL PERFORMANCE SUMMARY

SPACE DATA STATOR DATA STATOR DATA  
 FIXED INST. FIXED INST. INST. INST.  
 PERFORMANCE PARAMETERS  
 Total Pressure Ratio = 1.3413 0.9617 0.9478  
 Polytropic Efficiency = 0.7168 0.8826  
 Percent Design Speed = 100.0 Discharge Valve Setting = 30.0  
 Cor. Nozzle Weight Flow = 216.0  
 LE Check Flow/Noz.Flow = 0.9530 TE Check Flow/Noz.Flow = 0.9560  
 Assumed LE Flow Coeff. = 0.9550 Assumed TE Flow Coeff. = 0.9350

TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

		ROTOR BLADE RHM - NASA TASK IV																				
RATIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG		CHBR LN IE ANGLE	FRCTD ANG MN CHBR LN	INLET ANG SURF	INLET ARS VELOCITY		INLET AX VELOCITY	INLET ARS VELOCITY		INLET AX VELOCITY	INLET ARS VELOCITY		INLET AX VELOCITY	EXIT ARS VELOCITY		EXIT AX VELOCITY	EXIT ARS VELOCITY		EXIT AX VELOCITY	
		INLET	EXIT				INLET	EXIT		INLET	EXIT		INLET	EXIT		INLET	EXIT		INLET	EXIT		INLET
1	67.78	0.54	45.73	60.60	7.18	4.48	587.75	588.77	1465.41	1456.30	553.45	571.91	587.75	588.77	1465.41	1456.30	553.45	571.91	587.75	588.77	1465.41	1456.30
2	66.23	-0.19	45.23	59.61	6.62	5.22	599.98	607.98	1455.91	1456.30	286.71	311.91	599.98	607.98	1455.91	1456.30	286.71	311.91	599.98	607.98	1455.91	1456.30
3	60.68	-0.88	45.09	56.81	4.67	6.22	650.80	659.80	1280.63	1280.63	679.89	726.68	650.80	659.80	1280.63	1280.63	679.89	726.68	650.80	659.80	1280.63	1280.63
4	59.09	-2.50	44.91	52.56	6.53	6.69	639.30	647.30	1261.6	1261.6	829.54	877.00	639.30	647.30	1261.6	1261.6	829.54	877.00	639.30	647.30	1261.6	1261.6
5	57.02	-3.09	44.71	49.71	7.31	6.54	568.09	576.09	991.22	991.22	542.76	589.98	568.09	576.09	991.22	991.22	542.76	589.98	568.09	576.09	991.22	991.22
6	54.31	-2.74	44.51	47.11	9.20	6.09	539.67	547.67	934.66	934.66	512.61	559.98	539.67	547.67	934.66	934.66	512.61	559.98	539.67	547.67	934.66	934.66
7	51.12	-2.23	44.13	44.13	9.99	2.09	473.95	481.95	868.54	868.54	442.75	490.99	473.95	481.95	868.54	868.54	442.75	490.99	473.95	481.95	868.54	868.54

		ROTOR BLADE RHM - NASA TASK IV																				
RATIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG		CHBR LN IE ANGLE	FRCTD ANG MN CHBR LN	INLET ANG SURF	INLET ARS VELOCITY		INLET AX VELOCITY	INLET ARS VELOCITY		INLET AX VELOCITY	INLET ARS VELOCITY		INLET AX VELOCITY	EXIT ARS VELOCITY		EXIT AX VELOCITY	EXIT ARS VELOCITY		EXIT AX VELOCITY	
		INLET	EXIT				INLET	EXIT		INLET	EXIT		INLET	EXIT		INLET	EXIT		INLET	EXIT		INLET
1	1360.03	0.912	45.73	1333.40	7.18	4.48	724.77	800.68	2041.92	1938.94	504.92	518.00	724.77	800.68	2041.92	1938.94	504.92	518.00	724.77	800.68	2041.92	1938.94
2	1330.07	0.939	45.23	1334.00	6.62	5.22	726.93	723.08	1871.97	1871.97	474.76	558.33	726.93	723.08	1871.97	1871.97	474.76	558.33	726.93	723.08	1871.97	1871.97
3	1269.28	0.610	45.09	1285.00	4.67	6.22	803.37	803.37	1851.68	1851.68	474.76	558.33	803.37	803.37	1851.68	1851.68	474.76	558.33	803.37	803.37	1851.68	1851.68
4	1274.34	0.612	44.91	1274.34	4.67	6.22	737.08	737.08	1851.68	1851.68	474.76	558.33	737.08	737.08	1851.68	1851.68	474.76	558.33	737.08	737.08	1851.68	1851.68
5	1274.34	0.609	44.71	1274.34	4.67	6.22	737.08	737.08	1851.68	1851.68	474.76	558.33	737.08	737.08	1851.68	1851.68	474.76	558.33	737.08	737.08	1851.68	1851.68
6	1274.34	0.633	44.51	1274.34	4.67	6.22	737.08	737.08	1851.68	1851.68	474.76	558.33	737.08	737.08	1851.68	1851.68	474.76	558.33	737.08	737.08	1851.68	1851.68
7	1274.34	0.697	44.13	1274.34	4.67	6.22	737.08	737.08	1851.68	1851.68	474.76	558.33	737.08	737.08	1851.68	1851.68	474.76	558.33	737.08	737.08	1851.68	1851.68

		ROTOR BLADE RHM - NASA TASK IV																				
RATIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG		CHBR LN IE ANGLE	FRCTD ANG MN CHBR LN	INLET ANG SURF	INLET ARS VELOCITY		INLET AX VELOCITY	INLET ARS VELOCITY		INLET AX VELOCITY	INLET ARS VELOCITY		INLET AX VELOCITY	EXIT ARS VELOCITY		EXIT AX VELOCITY	EXIT ARS VELOCITY		EXIT AX VELOCITY	
		INLET	EXIT				INLET	EXIT		INLET	EXIT		INLET	EXIT		INLET	EXIT		INLET	EXIT		
1	1345.66	0.593	45.73	1333.40	7.18	4.48	724.77	800.68	2041.92	1938.94	504.92	518.00	724.77	800.68	2041.92	1938.94	504.92	518.00	724.77	800.68	2041.92	1938.94
2	1316.97	0.659	45.23	1334.00	6.62	5.22	726.93	723.08	1871.97	1871.97	474.76	558.33	726.93	723.08	1871.97	1871.97	474.76	558.33	726.93	723.08	1871.97	1871.97
3	1284.29	0.612	45.09	1285.00	4.67	6.22	803.37	803.37	1851.68	1851.68	474.76	558.33	803.37	803.37	1851.68	1851.68	474.76	558.33	803.37	803.37	1851.68	1851.68
4	1274.34	0.612	44.91	1274.34	4.67	6.22	737.08	737.08	1851.68	1851.68	474.76	558.33	737.08	737.08	1851.68	1851.68	474.76	558.33	737.08	737.08	1851.68	1851.68
5	1274.34	0.609	44.71	1274.34	4.67	6.22	737.08	737.08	1851.68	1851.68	474.76	558.33	737.08	737.08	1851.68	1851.68	474.76	558.33	737.08	737.08	1851.68	1851.68
6	1274.34	0.633	44.51	1274.34	4.67	6.22	737.08	737.08	1851.68	1851.68	474.76	558.33	737.08	737.08	1851.68	1851.68	474.76	558.33	737.08	737.08	1851.68	1851.68
7	1274.34	0.697	44.13	1274.34	4.67	6.22	737.08	737.08	1851.68	1851.68	474.76	558.33	737.08	737.08	1851.68	1851.68	474.76	558.33	737.08	737.08	1851.68	1851.68

		ROTOR BLADE RHM - NASA TASK IV																				
RATIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG		CHBR LN IE ANGLE	FRCTD ANG MN CHBR LN	INLET ANG SURF	INLET ARS VELOCITY		INLET AX VELOCITY	INLET ARS VELOCITY		INLET AX VELOCITY	INLET ARS VELOCITY		INLET AX VELOCITY	EXIT ARS VELOCITY		EXIT AX VELOCITY	EXIT ARS VELOCITY		EXIT AX VELOCITY	
		INLET	EXIT				INLET	EXIT		INLET	EXIT		INLET	EXIT		INLET	EXIT		INLET	EXIT		
1	1360.03	0.912	45.73	1333.40	7.18	4.48	724.77	800.68	2041.92	1938.94	504.92	518.00	724.77	800.68	2041.92	1938.94	504.92	518.00	724.77	800.68	2041.92	1938.94
2	1330.07	0.939	45.23	1334.00	6.62	5.22	726.93	723.08	1871.97	1871.97	474.76	558.33	726.93	723.08	1871.97	1871.97	474.76	558.33	726.93	723.08	1871.97	1871.97
3	1269.28	0.610	45.09	1285.00	4.67	6.22	803.37	803.37	1851.68	1851.68	474.76	558.33	803.37	803.37	1851.68	1851.68	474.76	558.33	803.37	803.37	1851.68	1851.68
4	1274.34	0.612	44.91	1274.34	4.67	6.22	737.08	737.08	1851.68	1851.68	474.76	558.33	737.08	737.08	1851.68	1851.68	474.76	558.33	737.08	737.08	1851.68	1851.68
5	1274.34	0.609	44.71	1274.34	4.67	6.22	737.08	737.08	1851.68	1851.68	474.76	558.33	737.08	737.08	1851.68	1851.68	474.76	558.33	737.08	737.08	1851.68	1851.68
6	1274.34	0.633	44.51	1274.34	4.67	6.22	737.08	737.08	1851.68	1851.68	474.76	558.33	737.08	737.08	1851.68	1851.68	474.76	558.33	737.08	737.08	1851.68	1851.68
7	1274.34	0.697	44.13	1274.34	4.67	6.22	737.08	737.08	1851.68	1851.68	474.76	558.33	737.08	737.08	1851.68	1851.68	474.76	558.33	737.08	737.08	1851.68	1851.68

STAGE DATA ROTOR DATA ROTOR DATA  
 FIXED INST. FIXED INST. TRAV. INST.  
 1.6946 1.7476 1.7763  
 0.7627 0.8111 0.8265  
 0.7796 0.8254 0.8399  
 Discharge Valve Setting= 4.8  
 Percent Design Speed = 100.2  
 Cor. Nozzle Weight Flow= 187.8  
 IE Check Flow/Noz.Flow = 1.0693  
 Assumed IE Flow Coeff. = 0.9850  
 Assumed IE Flow Coeff. = 0.9500

TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

065970

STATOR BLADE ROW = NACA TASK IV		BLADE ELEMENT PERFORMANCE RESULTS		POINT NUMBER 20		READING NUMBER 137		DATE 6/22/1976		
PARTIAL POSITION	REL INLET FLOW ANG	ANS INLET FLOW ANG	CHBR LN I'E ANGLE	INCID ANGLE	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET RFL TANG VFL	
1		45.57	39.47	61.6	728.00			519.87		
2		44.64	39.11	51.53	810.74			569.62		
3		47.40	39.01	8.59	747.16			509.80		
4		48.73	39.80	8.23	745.89			556.55		
5		51.78	40.86	10.62	723.38			566.92		
6		51.98	42.22	9.76	734.14			574.77		
7		54.15	42.76	11.39	766.57			643.12		
PARTIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN I'E ANGLE	TURB ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT RFL TANG VFL	
1		0.46	-11.13	45.14	623.85			5.05		
2		7.17	-10.10	37.47	642.75			80.85		
3		1.93	-8.87	45.47	574.92			-17.34		
4		-1.30	-8.75	50.03	496.98			-11.34		
5		-1.95	-9.10	7.15	440.61			-14.95		
6		7.98	-10.58	48.96	488.54			54.57		
7		-2.33	-12.56	10.03	385.71			-15.54		
PARTIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	DIFFUSION FACTOR	CHI				
1		0.596	0.596	1.224	0.375					
2		0.668	0.668	1.114	0.396					
3		0.630	0.630	1.136	0.448					
4		0.628	0.618	1.020	0.546					
5		0.631	0.631	0.986	0.602					
6		0.688	0.688	0.882	0.612					
7					0.712					
PARTIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	LOSS COEFFICIENT	POLY MOMEN RISE/ RISE COEFF	STAY PRESS RISE COEFF				
1		0.510	0.510	0.212	0.4521					
2		0.532	0.532	0.246	0.4830					
3		0.478	0.478	0.130	0.6066					
4		0.416	0.416	0.117	0.6292					
5		0.349	0.349	0.068	0.7388					
6		0.343	0.343	0.078	0.7606					
7		0.321	0.321	0.067	0.5694					
PARTIAL POSITION	PERCENT LOSS/LOSS	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TAY PRESS RATIO	FIXED TAY TEMP RATIO	LOSS COEFFICIENT	PERFORMANCE PARAMETERS			
1	5.0000	0.978	0.983	0.956	1.068		STATOR DATA STATOR DATA STATOR DATA			
2	10.0000	0.946	0.978	0.962	1.068		FIXED INST. FIXED INST. TRAV. INST.			
3	30.0000	0.957	0.995	0.999	1.068		Total Pressure Ratio =	1.6946	0.9696	0.9536
4	50.0000	0.947	0.992	0.972	1.068		Polytropic Efficiency =	0.7796	0.9445	0.8504
5	70.0000	0.958	0.992	0.990	1.068		Percent Design Speed =	100.2	Discharge Valve Setting=	4.8
6	90.0000	0.956	0.996	0.978	1.068		Cor. Nozzle Weight Flow=	187.8		
7	95.0000	0.900	0.968	0.968	1.068					

OVERALL PERFORMANCE SUMMARY

IE Check Flow/Noz.Flow = 1.0010  
 Assumed IE Flow Coeff. = 0.9550

TE Check Flow/Noz.Flow = 1.0299  
 Assumed TE Flow Coeff. = 0.9340

TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

065970

PARTIAL POSITION		ROTOR BLADE-RON - 2 - NASA TASK IV															INLET REL		EXIT REL		INLET ABS		EXIT ABS						
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27			
REL INLET FLOW ANG		ABS INLET FLOW ANG		CHBR LN		INCID ANG		BUDT ANGLE		INLET REL VELOCITY		EXIT REL VELOCITY		INLET ABS VELOCITY		EXIT ABS VELOCITY		INLET REL VELOCITY		EXIT REL VELOCITY		INLET ABS VELOCITY		EXIT ABS VELOCITY		INLET REL VELOCITY		EXIT REL VELOCITY	
64.06		1.31		60.80		3.46		-8.78		1494.72		1494.72		855.16		428.06		1494.72		1494.72		151.02		919.16		1494.72		919.16	
61.59		1.56		59.61		1.98		-5.03		1495.07		1495.07		709.78		455.64		1495.07		1495.07		191.30		619.45		1495.07		619.45	
54.66		1.12		56.01		*1.53		-5.84		1450.05		1450.05		840.48		467.06		1450.05		1450.05		161.46		739.61		1450.05		739.61	
58.43		0.38		52.56		-0.13		-5.97		1385.22		1385.22		819.34		476.01		1385.22		1385.22		91.32		603.68		1385.22		603.68	
49.60		-0.45		49.71		0.19		-6.60		1240.39		1240.39		794.30		459.58		1240.39		1240.39		56.17		643.59		1240.39		643.59	
50.12		-0.43		47.11		3.01		-5.69		105.72		105.72		794.30		459.58		105.72		105.72		25.03		794.67		105.72		794.67	
50.52		-1.13		46.13		4.59		-3.51		1001.43		1001.43		823.17		609.88		1001.43		1001.43		-12.33		754.49		1001.43		754.49	
REL EXIT FLOW ANG		ABS EXIT FLOW ANG		CHBR LN		REL DEV ANGLE		REL TURN ANGLE		EXIT REL VELOCITY		EXIT ABS VELOCITY		REL TURN ANGLE		EXIT ABS VELOCITY		EXIT REL VELOCITY		EXIT ABS VELOCITY		REL TURN ANGLE		EXIT ABS VELOCITY		EXIT REL VELOCITY		EXIT ABS VELOCITY	
59.22		38.02		54.60		4.42		4.64		696.73		696.73		1071.03		1071.03		696.73		696.73		428.06		919.16		696.73		919.16	
57.04		39.16		54.42		2.62		4.55		1029.12		1029.12		919.16		455.64		1029.12		1029.12		455.64		619.45		1029.12		619.45	
53.43		40.37		50.68		5.78		3.23		715.80		715.80		919.16		467.06		715.80		715.80		467.06		739.61		715.80		739.61	
49.53		42.75		43.79		5.74		2.80		781.32		781.32		919.16		476.01		781.32		781.32		476.01		603.68		781.32		603.68	
41.94		43.66		32.15		9.79		2.97		789.46		789.46		459.58		459.58		789.46		789.46		459.58		643.59		789.46		643.59	
38.89		47.75		14.29		18.60		1.24		597.86		597.86		479.59		479.59		597.86		597.86		479.59		310.13		597.86		310.13	
22.99		52.46		8.00		14.69		2.75		518.90		518.90		468.73		468.73		518.90		518.90		468.73		194.84		518.90		194.84	
ROTOR SPD AT INLET		INLET REL MACH NO		AXIAL VFL RATIO		REL TURN ANGLE		REL TURN ANGLE		EXIT REL VELOCITY		EXIT ABS VELOCITY		REL TURN ANGLE		EXIT ABS VELOCITY		EXIT REL VELOCITY		EXIT ABS VELOCITY		REL TURN ANGLE		EXIT ABS VELOCITY		EXIT REL VELOCITY		EXIT ABS VELOCITY	
1361.60		0.611		1.387		0.836		4.64		696.73		696.73		1071.03		1071.03		696.73		696.73		428.06		919.16		696.73		919.16	
1331.60		0.663		1.390		0.788		4.64		1029.12		1029.12		919.16		455.64		1029.12		1029.12		455.64		619.45		1029.12		619.45	
1201.75		0.797		1.377		0.647		3.23		715.80		715.80		919.16		467.06		715.80		715.80		467.06		739.61		715.80		739.61	
1678.51		0.776		1.271		0.628		2.80		781.32		781.32		919.16		476.01		781.32		781.32		476.01		603.68		781.32		603.68	
937.12		0.759		1.169		0.651		2.97		789.46		789.46		459.58		459.58		789.46		789.46		459.58		643.59		789.46		643.59	
789.83		0.642		0.978		0.723		1.24		597.86		597.86		479.59		479.59		597.86		597.86		479.59		310.13		597.86		310.13	
744.26		0.607		0.927		0.752		1.69		518.90		518.90		468.73		468.73		518.90		518.90		468.73		194.84		518.90		194.84	
ROTOR SPD AT EXIT		EXIT REL MACH NO		AXIAL VFL RATIO		REL TURN ANGLE		REL TURN ANGLE		EXIT REL VELOCITY		EXIT ABS VELOCITY		REL TURN ANGLE		EXIT ABS VELOCITY		EXIT REL VELOCITY		EXIT ABS VELOCITY		REL TURN ANGLE		EXIT ABS VELOCITY		EXIT REL VELOCITY		EXIT ABS VELOCITY	
1347.21		0.578		0.899		1.334		0.188		603.68		603.68		1071.03		1071.03		603.68		603.68		428.06		919.16		603.68		919.16	
1318.29		0.607		0.864		1.3690		0.178		1029.12		1029.12		919.16		455.64		1029.12		1029.12		455.64		619.45		1029.12		619.45	
1199.67		0.609		0.775		1.5080		0.109		715.80		715.80		919.16		467.06		715.80		715.80		467.06		739.61		715.80		739.61	
1079.59		0.599		0.678		1.6840		0.099		781.32		781.32		919.16		476.01		781.32		781.32		476.01		603.68		781.32		603.68	
986.20		0.617		0.600		1.9060		0.068		819.34		819.34		919.16		459.58		819.34		819.34		459.58		643.59		819.34		643.59	
838.14		0.619		0.458		2.2170		0.096		603.68		603.68		919.16		459.58		603.68		603.68		459.58		643.59		603.68		643.59	
888.73		0.670		0.448		2.3390		0.094		518.90		518.90		468.73		468.73		518.90		518.90		468.73		194.84		518.90		194.84	
ROTOR SPD AT EXIT		EXIT REL MACH NO		AXIAL VFL RATIO		REL TURN ANGLE		REL TURN ANGLE		EXIT REL VELOCITY		EXIT ABS VELOCITY		REL TURN ANGLE		EXIT ABS VELOCITY		EXIT REL VELOCITY		EXIT ABS VELOCITY		REL TURN ANGLE		EXIT ABS VELOCITY		EXIT REL VELOCITY		EXIT ABS VELOCITY	
1347.21		0.578		0.899		1.334		0.188		603.68		603.68		1071.03		1071.03		603.68		603.68		428.06		919.16		603.68		919.16	
1318.29		0.607		0.864		1.3690		0.178		1029.12		1029.12		919.16		455.64		1029.12		1029.12		455.64		619.45		1029.12		619.45	
1199.67		0.609		0.775		1.5080		0.109		715.80		715.80		919.16		467.06		715.80		715.80		467.06		739.61		715.80		739.61	
1079.59		0.599		0.678		1.6840		0.099		781.32		781.32		919.16		476.01		781.32		781.32		476.01		603.68		781.32		603.68	
986.20		0.617		0.600		1.9060		0.068		819.34		819.34		919.16		459.58		819.34		819.34		459.58		643.59		819.34		643.59	
838.14		0.619		0.458		2.2170		0.096		603.68		603.68		919.16		459.58		603.68		603.68		459.58		643.59		603.68		643.59	
888.73		0.670		0.448		2.3390		0.094		518.90		518.90		468.73		468.73		518.90		518.90		468.73		194.84		518.90		194.84	

STAGE DATA ROTOR DATA ROTOR DATA  
 FIXED INST. FIXED INST. TRAV. INST.  
 PERFORMANCE PARAMETERS = 1.6296 1.6561 1.6743  
 Total Pressure Ratio = 0.8319 0.8614 0.8640  
 Adiabatic Efficiency = 0.8430 0.8709 0.8735  
 Percent Design Speed = 100.2 Discharge Valve Setting= 9.0  
 Cor. Nozzle Weight Flow= 214.0  
 LE Check Flow/Noz.Flow = 1.0403 TE Check Flow/Noz.Flow = 0.9390  
 Assumed LE Flow Coeff. = 0.9850 Assumed TE Flow Coeff. = 0.9500



TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

062570

STATOR BLADE ROW = RASA TASK IV

BLADE ELEMENT PERFORMANCE RESULTS

POINT NUMBER 21      READING NUMBER 138      DATE      6/24/1970

PARTIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN IE ANGLE	MN CHBR LN ANGLE	INCID ANG SIBET SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL
1		37.85	39.47	11.62	700.12	552.81	552.81	552.81	429.60	429.60
2		86.58	39.11	-0.53	733.39	573.34	573.34	573.34	457.29	457.29
3		86.74	39.01	-0.27	746.60	581.63	581.63	581.63	466.61	466.61
4		40.30	39.80	0.50	720.95	555.74	555.74	555.74	431.27	431.27
5		40.96	40.86	0.10	740.47	556.58	556.58	556.58	433.15	433.15
6		45.16	42.22	2.94	723.74	509.06	509.06	509.06	386.16	386.16
7		49.95	42.76	7.19	770.90	585.54	585.54	585.54	452.21	452.21

PARTIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN IE ANGLE	MN CHBR LN ANGLE	DRV ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL
1		0.04	11.13	11.17	37.61	556.00	556.00	556.00	0.36	0.36
2		3.15	10.10	13.25	35.42	578.21	578.21	578.21	31.78	31.78
3		3.75	-6.87	12.62	34.98	604.65	604.65	604.65	39.53	39.53
4		2.10	-6.75	10.45	38.20	584.80	584.80	584.80	28.41	28.41
5		1.01	-9.70	10.11	39.95	525.31	525.31	525.31	9.24	9.24
6		4.08	10.58	14.66	41.08	516.21	516.21	516.21	36.79	36.79
7		-0.37	12.36	11.69	50.32	467.21	467.21	467.21	53.24	53.24

PARTIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	AXIAL VBL RATIO	INLET REL MACH NO	LOSS COEFFICIENT	LOSS ANGLE	TOY PRESS LOSS PARAM	TOY PRESS EFFICIENCY	ADD PRESS EFFICIENCY	POLY HUBBN RISE/MEAS Y RISE	STAY PRESS CORR COEFF
1		0.581	1.5230	0.178	0.178	0.178	0.056	0.4504	0.4504	0.4504	0.213
2		0.616	1.5440	0.175	0.175	0.175	0.040	0.3169	0.3169	0.3169	0.211
3		0.636	1.6310	0.172	0.172	0.172	0.013	0.7829	0.7829	0.7829	0.247
4		0.626	1.7420	0.034	0.034	0.034	0.010	0.6364	0.6364	0.6364	0.326
5		0.639	1.8800	0.044	0.044	0.044	0.012	0.8253	0.8253	0.8253	0.382
6		0.624	2.0510	0.061	0.061	0.061	0.015	0.5149	0.5149	0.5149	0.418
7		0.665	2.0980	0.103	0.103	0.103	0.024	0.6569	0.6569	0.6569	0.351

OVERALL PERFORMANCE SUMMARY

PERCENT INJECTION	TRAY TOT PRESS RATIO	FIXED TOT PRESS RATIO	TEMP RATIO	PERFORMANCE PARAMETERS
5.0000	0.971	0.974	1.006	Total Pressure Ratio = 1.6296
10.0000	0.963	0.987	1.000	Polytropic Efficiency = 0.9430
30.0000	0.979	0.995	1.000	Percent Design Speed = 100.2
50.0000	0.982	0.996	1.000	Cor. Nozzle Weight Flow = 214.0
70.0000	0.976	0.993	1.000	
90.0000	0.989	0.992	1.000	
98.0000	0.942	0.986	1.000	

STAGE DATA STATOR DATA STATOR DATA  
FIXED INST. FIXED INST. TRAY. INST.  
1.6296 0.9430 0.9840 0.9753  
Discharge Valve Setting=9.0  
TE Check Flow/Noz.Flow = 0.9439  
Assumed LE Flow Coeff. = 0.9550  
Assumed TE Flow Coeff. = 0.9352

TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

065970

PARTIAL POSITION		ROTOR BLADE ROW - NASA TASK 17										BLADE ELEMENT PERFORMANCE RESULTS												
POINT NUMBER		22		119		119		119		119		119		119		119		119		119		119		
READING NUMBER		6/24/1970		6/24/1970		6/24/1970		6/24/1970		6/24/1970		6/24/1970		6/24/1970		6/24/1970		6/24/1970		6/24/1970		6/24/1970		
1	1	REL INLET FLOW ANG	61.22	ABS INLET FLOW ANG	-0.03	INLET ANGLE	60.60	INCID ANGLE	2.62	SUCT - SURF	-0.208	INLET ABS VELOCITY	891.28	INLET REL VELOCITY	1923.07	INLET AX VELOCITY	885.98	INLET ARS Y-ANG VFL	-0.338	INLET RPL Y-ANG VFL	1359.40	INLET RPL Y-ANG VFL	1323.61	
2	2	REL INLET FLOW ANG	61.25	ABS INLET FLOW ANG	0.41	INLET ANGLE	59.61	INCID ANGLE	1.64	SUCT - SURF	-1.339	INLET ABS VELOCITY	728.95	INLET REL VELOCITY	1911.52	INLET AX VELOCITY	726.18	INLET ARS Y-ANG VFL	5.17	INLET RPL Y-ANG VFL	1184.58	INLET RPL Y-ANG VFL	1049.82	
3	3	REL INLET FLOW ANG	54.17	ABS INLET FLOW ANG	0.73	INLET ANGLE	56.01	INCID ANGLE	-1.84	SUCT - SURF	-0.630	INLET ABS VELOCITY	898.37	INLET REL VELOCITY	1466.05	INLET AX VELOCITY	858.28	INLET ARS Y-ANG VFL	10.67	INLET RPL Y-ANG VFL	1049.82	INLET RPL Y-ANG VFL	924.37	
4	4	REL INLET FLOW ANG	50.12	ABS INLET FLOW ANG	1.22	INLET ANGLE	52.56	INCID ANGLE	-2.44	SUCT - SURF	-0.428	INLET ABS VELOCITY	870.85	INLET REL VELOCITY	1369.83	INLET AX VELOCITY	877.12	INLET ARS Y-ANG VFL	10.67	INLET RPL Y-ANG VFL	1049.82	INLET RPL Y-ANG VFL	778.31	
5	5	REL INLET FLOW ANG	47.26	ABS INLET FLOW ANG	0.74	INLET ANGLE	49.71	INCID ANGLE	-2.55	SUCT - SURF	-0.414	INLET ABS VELOCITY	835.23	INLET REL VELOCITY	1264.71	INLET AX VELOCITY	851.20	INLET ARS Y-ANG VFL	10.67	INLET RPL Y-ANG VFL	1049.82	INLET RPL Y-ANG VFL	744.18	
6	6	REL INLET FLOW ANG	46.84	ABS INLET FLOW ANG	0.72	INLET ANGLE	47.11	INCID ANGLE	-0.27	SUCT - SURF	-0.493	INLET ABS VELOCITY	760.43	INLET REL VELOCITY	1674.09	INLET AX VELOCITY	729.61	INLET ARS Y-ANG VFL	9.23	INLET RPL Y-ANG VFL	778.31	INLET RPL Y-ANG VFL	744.18	
7	7	REL INLET FLOW ANG	47.71	ABS INLET FLOW ANG	-0.13	INLET ANGLE	46.18	INCID ANGLE	1.58	SUCT - SURF	-0.332	INLET ABS VELOCITY	712.27	INLET REL VELOCITY	1030.26	INLET AX VELOCITY	729.61	INLET ARS Y-ANG VFL	11.53	INLET RPL Y-ANG VFL	744.18	INLET RPL Y-ANG VFL	744.18	
1	1	REL EXIT FLOW ANG	59.25	ABS EXIT FLOW ANG	23.94	REL ANGLE	54.60	REL DEV ANGLE	5.705	REL SURF ANGLE	3.38	EXIT ABS VELOCITY	681.70	EXIT REL VELOCITY	1237.53	EXIT AX VELOCITY	621.01	EXIT ARS Y-ANG VFL	275.67	EXIT RPL Y-ANG VFL	1069.00	EXIT RPL Y-ANG VFL	1044.41	
2	2	REL EXIT FLOW ANG	59.02	ABS EXIT FLOW ANG	22.99	REL ANGLE	54.42	REL DEV ANGLE	4.60	REL SURF ANGLE	2.23	EXIT ABS VELOCITY	685.66	EXIT REL VELOCITY	1224.17	EXIT AX VELOCITY	629.64	EXIT ARS Y-ANG VFL	267.18	EXIT RPL Y-ANG VFL	1044.41	EXIT RPL Y-ANG VFL	861.18	
3	3	REL EXIT FLOW ANG	55.83	ABS EXIT FLOW ANG	27.86	REL ANGLE	50.68	REL DEV ANGLE	5.15	REL SURF ANGLE	-2.68	EXIT ABS VELOCITY	674.83	EXIT REL VELOCITY	1065.19	EXIT AX VELOCITY	598.24	EXIT ARS Y-ANG VFL	316.22	EXIT RPL Y-ANG VFL	861.18	EXIT RPL Y-ANG VFL	675.85	
4	4	REL EXIT FLOW ANG	48.14	ABS EXIT FLOW ANG	33.74	REL ANGLE	43.79	REL DEV ANGLE	4.35	REL SURF ANGLE	1.78	EXIT ABS VELOCITY	723.28	EXIT REL VELOCITY	904.73	EXIT AX VELOCITY	601.32	EXIT ARS Y-ANG VFL	401.70	EXIT RPL Y-ANG VFL	535.35	EXIT RPL Y-ANG VFL	329.28	
5	5	REL EXIT FLOW ANG	40.25	ABS EXIT FLOW ANG	33.05	REL ANGLE	32.15	REL DEV ANGLE	8.10	REL SURF ANGLE	7.11	EXIT ABS VELOCITY	761.60	EXIT REL VELOCITY	830.28	EXIT AX VELOCITY	632.46	EXIT ARS Y-ANG VFL	421.04	EXIT RPL Y-ANG VFL	535.35	EXIT RPL Y-ANG VFL	329.28	
6	6	REL EXIT FLOW ANG	27.28	ABS EXIT FLOW ANG	38.46	REL ANGLE	14.29	REL DEV ANGLE	12.99	REL SURF ANGLE	10.56	EXIT ABS VELOCITY	623.88	EXIT REL VELOCITY	727.88	EXIT AX VELOCITY	575.25	EXIT ARS Y-ANG VFL	507.25	EXIT RPL Y-ANG VFL	329.28	EXIT RPL Y-ANG VFL	234.15	
7	7	REL EXIT FLOW ANG	26.42	ABS EXIT FLOW ANG	42.28	REL ANGLE	8.00	REL DEV ANGLE	12.42	REL SURF ANGLE	2.30	EXIT ABS VELOCITY	622.60	EXIT REL VELOCITY	669.60	EXIT AX VELOCITY	629.94	EXIT ARS Y-ANG VFL	672.70	EXIT RPL Y-ANG VFL	234.15	EXIT RPL Y-ANG VFL	234.15	
1	1	ROTOR SPD AT INLET	1859.03	INLET REL MACH NO	0.642	INLET REL MACH NO	1.416	AXIAL VEL RATIO	0.905															
2	2	ROTOR SPD AT INLET	1829.78	INLET REL MACH NO	0.680	INLET REL MACH NO	1.410	AXIAL VEL RATIO	0.867															
3	3	ROTOR SPD AT INLET	1899.47	INLET REL MACH NO	0.816	INLET REL MACH NO	1.394	AXIAL VEL RATIO	0.697															
4	4	ROTOR SPD AT INLET	1668.49	INLET REL MACH NO	0.839	INLET REL MACH NO	1.306	AXIAL VEL RATIO	0.666															
5	5	ROTOR SPD AT INLET	935.35	INLET REL MACH NO	0.821	INLET REL MACH NO	1.204	AXIAL VEL RATIO	0.748															
6	6	ROTOR SPD AT INLET	767.54	INLET REL MACH NO	0.713	INLET REL MACH NO	1.021	AXIAL VEL RATIO	0.875															
7	7	ROTOR SPD AT INLET	748.86	INLET REL MACH NO	0.664	INLET REL MACH NO	0.960	AXIAL VEL RATIO	0.930															
1	1	ROTOR SPD AT EXIT	1344.67	EXIT REL MACH NO	0.590	EXIT REL MACH NO	1.071	LOSS COEFFICIENT	0.1340	LOSS COEFFICIENT	0.194	VOY PRESS LOSS	0.037	ADP EFFICIENCY	0.6371	POLY HDMN RISE/STAY PRESS	0.6508	EFFICIENCY HEAD RISE	0.149	DIFFUSION FACTOR	0.266	CHI	0.283	
2	2	ROTOR SPD AT EXIT	1315.80	EXIT REL MACH NO	0.600	EXIT REL MACH NO	1.078	LOSS COEFFICIENT	0.1360	LOSS COEFFICIENT	0.174	VOY PRESS LOSS	0.028	ADP EFFICIENCY	0.7627	POLY HDMN RISE/STAY PRESS	0.7729	EFFICIENCY HEAD RISE	0.212	DIFFUSION FACTOR	0.253	CHI	0.309	
3	3	ROTOR SPD AT EXIT	1397.40	EXIT REL MACH NO	0.990	EXIT REL MACH NO	0.929	LOSS COEFFICIENT	0.1080	LOSS COEFFICIENT	0.110	VOY PRESS LOSS	0.020	ADP EFFICIENCY	0.8063	POLY HDMN RISE/STAY PRESS	0.8155	EFFICIENCY HEAD RISE	0.323	DIFFUSION FACTOR	0.421	CHI	0.490	
4	4	ROTOR SPD AT EXIT	1077.95	EXIT REL MACH NO	0.628	EXIT REL MACH NO	0.786	LOSS COEFFICIENT	0.1680	LOSS COEFFICIENT	0.126	VOY PRESS LOSS	0.025	ADP EFFICIENCY	0.8036	POLY HDMN RISE/STAY PRESS	0.8134	EFFICIENCY HEAD RISE	0.410	DIFFUSION FACTOR	0.429	CHI	0.490	
5	5	ROTOR SPD AT EXIT	956.29	EXIT REL MACH NO	0.668	EXIT REL MACH NO	0.928	LOSS COEFFICIENT	0.9060	LOSS COEFFICIENT	0.093	VOY PRESS LOSS	0.019	ADP EFFICIENCY	0.8507	POLY HDMN RISE/STAY PRESS	0.8676	EFFICIENCY HEAD RISE	0.404	DIFFUSION FACTOR	0.429	CHI	0.546	
6	6	ROTOR SPD AT EXIT	836.53	EXIT REL MACH NO	0.725	EXIT REL MACH NO	0.840	LOSS COEFFICIENT	2.3170	LOSS COEFFICIENT	0.125	VOY PRESS LOSS	0.025	ADP EFFICIENCY	0.8815	POLY HDMN RISE/STAY PRESS	0.8651	EFFICIENCY HEAD RISE	0.494	DIFFUSION FACTOR	0.438	CHI	0.523	
7	7	ROTOR SPD AT EXIT	887.20	EXIT REL MACH NO	0.759	EXIT REL MACH NO	2.3390	LOSS COEFFICIENT	2.3390	LOSS COEFFICIENT	0.140	VOY PRESS LOSS	0.028	ADP EFFICIENCY	0.8594	POLY HDMN RISE/STAY PRESS	0.8671	EFFICIENCY HEAD RISE	0.502	DIFFUSION FACTOR	0.439	CHI	0.502	
1	1	PERCENT TEMPERATURE	5.0000	TRAV TOT PRESS RATIO	1.368	TRAV TOT PRESS RATIO	1.139	FIXED TOT TEMP RATIO	1.315	PERFORMANCE PARAMETERS		Total Pressure Ratio	1.3544	STAGE DATA ROTOR DATA	1.4190	ROTOR DATA	1.4329	FIXED INST. TRAV. INST.	0.6041	ADiabatic Efficiency	0.8063	PERCENT TEMPERATURE	5.0000	
2	2	PERCENT TEMPERATURE	5.0000	TRAV TOT PRESS RATIO	1.378	TRAV TOT PRESS RATIO	1.117	FIXED TOT TEMP RATIO	1.364	PERFORMANCE PARAMETERS		Adiabatic Efficiency	0.6941	STAGE DATA ROTOR DATA	1.4190	ROTOR DATA	1.4329	FIXED INST. TRAV. INST.	0.6041	PERCENT TEMPERATURE	5.0000	PERCENT TEMPERATURE	5.0000	
3	3	PERCENT TEMPERATURE	5.0000	TRAV TOT PRESS RATIO	1.428	TRAV TOT PRESS RATIO	1.434	FIXED TOT TEMP RATIO	1.434	PERFORMANCE PARAMETERS		Polytropic Efficiency	0.7070	STAGE DATA ROTOR DATA	1.4190	ROTOR DATA	1.4329	FIXED INST. TRAV. INST.	0.6041	PERCENT TEMPERATURE	5.0000	PERCENT TEMPERATURE	5.0000	
4	4	PERCENT TEMPERATURE	5.0000	TRAV TOT PRESS RATIO	1.480	TRAV TOT PRESS RATIO	1.437	FIXED TOT TEMP RATIO	1.437	PERFORMANCE PARAMETERS		Percent Design Speed	100.1	STAGE DATA ROTOR DATA	1.4190	ROTOR DATA	1.4329	FIXED INST. TRAV. INST.	0.6041	PERCENT TEMPERATURE	5.0000	PERCENT TEMPERATURE	5.0000	
5	5	PERCENT TEMPERATURE	5.0000	TRAV TOT PRESS RATIO	1.517	TRAV TOT PRESS RATIO	1.446	FIXED TOT TEMP RATIO	1.446	PERFORMANCE PARAMETERS		Cor. Nozzle Weight Flow	219.6	STAGE DATA ROTOR DATA	1.4190	ROTOR DATA	1.4329	FIXED INST. TRAV. INST.	0.6041	PERCENT TEMPERATURE	5.0000	PERCENT TEMPERATURE	5.0000	
6	6	PERCENT TEMPERATURE	5.0000	TRAV TOT PRESS RATIO	1.570	TRAV TOT PRESS RATIO	1.449	FIXED TOT TEMP RATIO	1.449	PERFORMANCE PARAMETERS		Discharge Valve Setting	30.0	STAGE DATA ROTOR DATA	1.4190	ROTOR DATA	1.4329	FIXED INST. TRAV. INST.	0.6041	PERCENT TEMPERATURE	5.0000	PERCENT TEMPERATURE	5.0000	

LE Check Flow/Noz.Flow = 1.0341  
 Assumed LE Flow Coeff. = 0.9850

TE Check Flow/Noz.Flow = 0.9442  
 Assumed TE Flow Coeff. = 0.9500

TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

065570

STATOR BLADE ROW = NASA TASK IV		ROTOR BLADE ROW = NASA TASK IV	
BLADE ELEMENT PERFORMANCE RESULTS		BLADE ELEMENT PERFORMANCE RESULTS	
POINT NUMBER	22	READING NUMBER	119
DATE	6/24/78	DATE	6/24/78
RACIAL POSITION		RACIAL POSITION	
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
RACIAL POSITION		RACIAL POSITION	
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
RACIAL POSITION		RACIAL POSITION	
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7

REL INLET FLOW ANG	ABS INLET FLOW ANG	CRBL LN	INCID ANG	MU CMBR LN	INGID ANG	SOBT SURP	TURN ANGLE	DEV ANGLE	TE ANGLE	INLET REL VELOCITY	INLET ABS VELOCITY	INLET AX VELOCITY	INLET RFL Y-ANG VFL
23.80	23.80	39.47	-15.67	35.11	16.60	700.55	22.47	12.45	37.45	685.72	685.72	627.42	276.167
22.51	22.51	35.01	-12.49	39.80	17.92	717.92	20.05	9.24	12.56	700.55	700.55	647.17	268.15
31.25	31.25	40.86	-10.04	42.22	16.61	809.34	30.06	7.69	9.62	771.84	771.84	855.58	363.70
35.61	35.61	42.76	-3.32			875.20	32.24	12.79	12.79	875.20	875.20	882.97	485.07
39.44	39.44						36.20	15.41	15.41	852.37	852.37	868.10	549.85

REL INLET FLOW ANG	ABS INLET FLOW ANG	CRBL LN	INCID ANG	MU CMBR LN	INGID ANG	SOBT SURP	TURN ANGLE	DEV ANGLE	TE ANGLE	INLET REL VELOCITY	INLET ABS VELOCITY	INLET AX VELOCITY	INLET RFL Y-ANG VFL
1.32	1.32	11.13	-11.13	10.10	12.56	743.02	25.75	9.62	9.62	637.10	637.10	636.93	1.172
2.46	2.46	10.10	-8.87	10.10	12.56	743.02	25.75	9.62	9.62	712.33	712.33	712.33	3.655
1.17	1.17	8.75	-8.75	9.10	9.62	749.81	30.06	7.69	7.69	749.81	749.81	749.26	1.83
-1.41	-1.41	10.58	-10.58	12.36	15.41	852.37	36.20	15.41	15.41	852.37	852.37	848.43	4.23

REL INLET FLOW ANG	ABS INLET FLOW ANG	CRBL LN	INCID ANG	MU CMBR LN	INGID ANG	SOBT SURP	TURN ANGLE	DEV ANGLE	TE ANGLE	INLET REL VELOCITY	INLET ABS VELOCITY	INLET AX VELOCITY	INLET RFL Y-ANG VFL
0.594	0.594	6.14	-6.14	6.29	6.71	714	7.72	3.55	3.55	6.71	6.71	6.71	1.72
0.629	0.629	6.71	-6.71	7.14	7.72	714	7.72	3.55	3.55	7.72	7.72	7.72	1.55
0.714	0.714	7.50	-7.50	7.72	7.72	714	7.72	3.55	3.55	7.72	7.72	7.72	1.64
0.750	0.750												
0.772	0.772												

ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VFL	PATIB RATIO	LOSS COEFFICIENT	LOSS PARM	POLY MOMEN RISE/ EFFICIENCY MEAS T	STAT PRESS RISE COEFF
	0.594	0.594	3.015	1.101	0.230	0.075	1.7101	0.196
	0.629	0.629	1.163	1.173	0.179	0.055	1.8237	0.192
	0.671	0.671	1.173	1.176	0.154	0.044	1.8984	0.088
	0.714	0.714	1.176	1.276	0.136	0.035	1.9980	0.138
	0.750	0.750	1.276	1.276	0.209	0.051	1.3227	0.159
	0.772	0.772	1.269	1.269	0.247	0.059	1.3227	0.097

ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	LOSS COEFFICIENT	LOSS PARM	POLY MOMEN RISE/ EFFICIENCY MEAS T	STAT PRESS RISE COEFF
	0.554	0.554	0.230	0.075	1.7101	0.196
	0.626	0.626	0.169	0.055	1.8237	0.192
	0.659	0.659	0.179	0.055	1.8984	0.088
	0.677	0.677	0.154	0.044	1.9980	0.138
	0.703	0.703	0.136	0.035	1.3227	0.159
	0.778	0.778	0.209	0.051	1.3227	0.097
	0.754	0.754	0.247	0.059	1.3227	0.160

PERCENT DECELERATION	TRAV TOY PRESS RATIO	FIXED TOY TEMP RATIO	PERFORMANCE PARAMETERS
5.0000	0.985	1.000	Total Pressure Ratio = 1.3544
10.0000	0.999	1.006	Polytropic Efficiency = 0.7070
30.0000	0.998	1.000	Percent Design Speed = 100.1
50.0000	0.991	1.000	Cor. Nozzle Weight Flow = 219.6
70.0000	0.992	1.000	IE Check Flow/Noz.Flow = 0.9492
90.0000	0.995	1.006	Assumed IE Flow Coeff. = 0.9550
98.0000	0.982	1.006	TE Check Flow/Noz.Flow = 0.9549
			Assumed TE Flow Coeff. = 0.9350

OVERALL PERFORMANCE SUMMARY		
STAGE DATA	STATOR DATA	ROTOR DATA
FIXED INST. FIXED INST. TRAV. INST.	FIXED INST. FIXED INST. TRAV. INST.	FIXED INST. FIXED INST. TRAV. INST.
1.3544	0.9545	0.9474
0.7070	0.8658	---
100.1	Discharge Valve Setting=	30.0
219.6		

071670

TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

ROTOR BLADE ROW - NASA TASK IV		BLADE ELEMENT PERFORMANCE RESULTS										DATE	
		POINT NUMBER		READING NUMBER		DATE		6/26/1970					
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCID ANG MN	INCID ANG LN	SUCT SURF ANGLE	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS YAW VEL	INLET REL YAW VEL	INLET AX VELOCITY	INLET ABS YAW VEL
1	67.72	0.42	60.60	7.12	559.53	4.42	1465.90	1453.58	555.23	4.10	1354.92	555.23	4.10
2	66.41	-0.22	59.61	6.80	583.46	3.77	1453.58	1389.96	581.41	-2.27	1331.34	581.41	-2.27
3	61.55	-1.53	56.01	5.14	671.02	0.68	1389.96	1280.96	670.77	-17.92	1217.39	670.77	-17.92
4	59.57	-3.11	52.56	7.01	651.05	1.17	1280.96	1153.75	648.22	-35.26	1103.74	648.22	-35.26
5	57.45	-3.07	49.71	7.74	627.82	0.95	1153.75	882.38	618.25	-33.21	968.55	618.25	-33.21
6	57.24	-3.10	47.11	10.13	547.79	2.47	882.38	533.98	525.07	-28.42	815.96	525.07	-28.42
7	56.41	-2.35	46.13	10.28	533.98	2.38	533.98	931.61	507.17	-20.82	763.68	507.17	-20.82
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	RBL DEV ANGLE	REL TURN ANGLE	REL TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS YAW VEL	EXIT REL YAW VEL	EXIT AX VELOCITY	EXIT ABS YAW VEL
1	56.80	46.62	54.80	2.00	10.92	10.92	758.13	950.61	519.94	550.20	794.46	519.94	550.20
2	53.18	45.27	54.42	-1.24	13.23	13.23	798.19	937.27	561.06	566.36	749.44	561.06	566.36
3	53.69	49.41	50.68	3.01	7.46	7.46	728.15	800.82	473.73	592.83	644.96	473.73	592.83
4	48.48	51.93	43.79	4.69	11.09	11.09	726.26	675.69	447.83	571.67	505.87	447.83	571.67
5	41.58	55.75	32.15	9.43	15.87	15.87	722.08	543.71	405.92	596.23	360.15	405.92	596.23
6	28.78	54.20	14.29	14.49	28.46	28.46	742.73	499.04	432.16	599.13	237.40	432.16	599.13
7	16.47	55.99	8.90	9.47	39.95	39.95	817.68	483.45	454.13	672.97	134.22	454.13	672.97
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	LOSS COEFFICIENT	LOSS COEFFICIENT	TOT PRESS LOSS PARAM	ADB EFFICIENCY	POLY EFFICIENCY	POLY MOMEN RISE/MEAN T RISE	STAY PRESS RISE COEFF	DIFFUSION FACTOR	CH1
1	1359.02	0.511	1.338	0.936	0.265	0.265	0.054	0.7399	0.7616	0.377	0.377	0.490	0.488
2	1329.08	0.534	1.284	0.969	0.240	0.240	0.053	0.7612	0.7809	0.389	0.389	0.498	0.498
3	1199.47	0.620	1.179	0.706	0.162	0.162	0.032	0.8280	0.8413	0.473	0.473	0.562	0.562
4	1068.48	0.599	1.061	0.691	0.173	0.173	0.034	0.8208	0.8334	0.531	0.531	0.614	0.592
5	935.14	0.577	1.061	0.657	0.149	0.149	0.029	0.8542	0.8639	0.602	0.602	0.673	0.629
6	787.54	0.501	0.898	0.823	0.170	0.170	0.034	0.8641	0.8728	0.698	0.698	0.639	0.652
7	742.85	0.488	0.851	0.895	0.203	0.203	0.042	0.8532	0.8627	0.768	0.768	0.647	0.680
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	SOLIDITY RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	TOT PRESS LOSS PARAM	ADB EFFICIENCY	POLY EFFICIENCY	POLY MOMEN RISE/MEAN T RISE	STAY PRESS RISE COEFF	DIFFUSION FACTOR	CH1
1	1344.66	0.618	0.774	1.3340	1.288	1.264	0.054	0.7399	0.7616	0.377	0.377	0.490	0.488
2	1315.79	0.658	0.772	1.3690	1.270	1.254	0.053	0.7612	0.7809	0.389	0.389	0.498	0.498
3	1197.40	0.609	0.669	1.5080	1.218	1.214	0.032	0.8280	0.8413	0.473	0.473	0.562	0.562
4	1077.54	0.610	0.567	1.6840	1.190	1.195	0.034	0.8208	0.8334	0.531	0.531	0.614	0.592
5	956.58	0.611	0.460	1.9060	1.162	1.175	0.029	0.8542	0.8639	0.602	0.602	0.673	0.629
6	836.53	0.633	0.426	2.2170	1.183	1.166	0.034	0.8641	0.8728	0.698	0.698	0.639	0.652
7	807.20	0.609	0.413	2.3390	1.200	1.170	0.042	0.8532	0.8627	0.768	0.768	0.647	0.680
RADIAL POSITION	PERCENT DEPRESSION	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	LOSS COEFFICIENT	TOT PRESS LOSS PARAM	ADB EFFICIENCY	POLY EFFICIENCY	POLY MOMEN RISE/MEAN T RISE	STAY PRESS RISE COEFF	DIFFUSION FACTOR	CH1
1	5.0000	1.866	1.288	1.288	1.264	0.265	0.054	0.7399	0.7616	0.377	0.377	0.490	0.488
2	10.0000	1.909	1.270	1.270	1.254	0.240	0.053	0.7612	0.7809	0.389	0.389	0.498	0.498
3	30.0000	1.793	1.218	1.171	1.214	0.162	0.032	0.8280	0.8413	0.473	0.473	0.562	0.562
4	50.0000	1.735	1.206	1.162	1.195	0.173	0.034	0.8208	0.8334	0.531	0.531	0.614	0.592
5	70.0000	1.666	1.190	1.162	1.175	0.149	0.029	0.8542	0.8639	0.602	0.602	0.673	0.629
6	90.0000	1.634	1.183	1.159	1.166	0.170	0.034	0.8641	0.8728	0.698	0.698	0.639	0.652
7	95.0000	1.725	1.200	1.164	1.170	0.203	0.042	0.8532	0.8627	0.768	0.768	0.647	0.680

OVERALL PERFORMANCE SUMMARY

STAGE DATA ROTOR DATA ROTOR DATA  
 FIXED INST. FIXED INST. TRAV. INST.  
 PERFORMANCE PARAMETERS  
 Total Pressure Ratio = 1.6874 1.7398 1.7703  
 Adiabatic Efficiency = 0.7590 0.8069 0.7928  
 Polytropic Efficiency = 0.7760 0.8214 0.8087  
 Percent Design Speed = 100.1 Discharge Valve Setting= 4.5  
 Cor. Nozzle Weight Flow= 185.2  
 LE Check Flow/Noz.Flow = 1.0697 TE Check Flow/Noz.Flow = 0.9914  
 Assumed LE Flow Coeff. = 0.9850 Assumed TE Flow Coeff. = 0.9500

071670 STATOR BLADE ROW - NASA TASK IV  
 TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

POINT NUMBER		8		6/26/1970		BLADE ELEMENT PERFORMANCE RESULTS				
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CMR LN LE ANGLE	INCID ANG MCHR LN	INCID ANG SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL
1		46.46	39.47	6.99		761.80	524.81	574.92	532.19	
2		44.67	39.11	5.56		808.49	574.92	504.36	568.41	
3		47.60	39.01	8.59		748.19	504.36	480.77	552.30	
4		49.65	39.80	9.85		743.58	480.77	433.53	565.98	
5		53.39	40.86	12.53		729.20	433.53	455.19	583.62	
6		51.76	42.22	9.54		740.09	455.19	476.76	577.66	
7		53.58	42.76	10.82		808.30	476.76		646.12	
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	DEV ANG TE	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL
1		0.66	11.13	11.79	45.79	631.90	631.85	645.25	7.30	
2		4.13	10.10	14.23	40.54	646.97	645.25	569.53	46.64	
3		0.54	8.67	9.41	47.06	569.79	569.53	478.14	5.32	
4		-2.45	-6.75	6.30	52.10	479.11	478.14	430.60	-20.44	
5		-1.62	-9.10	7.48	55.01	431.69	430.60	397.81	-12.17	
6		7.28	10.58	17.86	44.48	402.26	397.81	50.80	50.80	
7		0.43	12.36	12.79	53.15	382.39	381.15		2.84	
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	DIFFUSION FACTOR	CH1				
1		0.621	1.234	1.234	0.405	0.164				
2		0.667	1.122	1.122	0.408	0.161				
3		0.627	1.129	1.129	0.462	0.234				
4		0.625	0.995	0.995	0.581	0.353				
5		0.617	0.953	0.953	0.623	0.464				
6		0.631	0.874	0.874	0.626	0.525				
7		0.690	0.799	0.799	0.713	0.491				
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	SOLIDITY RATIO	LOSS TOT PRESS LOSS PARAM	ADB EFFICIENCY	POLY MOMEN RISE/ HEAD T RISE	STAT PRESS RISE COEFF		
1		0.517	0.970	1.5230	0.062	0.9701	0.5701	0.191		
2		0.532	0.975	1.5440	0.043	0.5324	0.5324	0.165		
3		0.474	0.985	1.6310	0.042	0.6252	0.6252	0.237		
4		0.399	0.976	1.7420	0.033	0.6205	0.6205	0.331		
5		0.361	0.975	1.8800	0.090	0.7306	0.7306	0.441		
6		0.338	0.978	2.0510	0.022	0.7589	0.7589	0.501		
7		0.320	0.969	2.0980	0.065	0.5965	0.5965	0.423		
RADIAL POSITION	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	OVERALL PERFORMANCE SUMMARY					
1	5.0000	0.967	1.000	1.000	STAGE DATA	STATOR DATA				
2	50.0000	0.975	0.966	1.000	FIXED INST. FIXED INST. TRAV. INST.					
3	30.0000	0.959	0.958	1.000	Total Pressure Ratio =	1.6874 0.9699 0.9529				
4	50.0000	0.943	0.972	1.000	Polytropic Efficiency =	0.7760 0.9447				
5	70.0000	0.956	0.979	1.000	Percent Design Speed =	100.1				
6	90.0000	0.955	0.978	1.000	Cor. Nozzle Weight Flow =	185.2				
7	95.0000	0.905	0.961	1.000	Discharge Valve Setting =	4.5				

IE Check Flow/Noz.Flow = 0.9966  
 Assumed IE Flow Coeff. = 0.9550  
 TE Check Flow/Noz.Flow = 1.0311  
 Assumed TE Flow Coeff. = 0.9350

TABLE XIII - TASK 1 STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

ROTOR BLADE ROW - NASA TASK IV		BLADE ELEMENT PERFORMANCE RESULTS																
		POINT NUMBER	Q	READING NUMBER	S70	DATE	6/26/1970											
RADIAL POSITION		ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCID ANG MN CHBR LN	INCID ANG SUCTY SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	INLET ABS VELOCITY	INLET REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL			
1		63.87	60.60	3.27	0.57	666.64	1804.31	661.49	7.41	1368.55	1320.49	661.49	722.62	1185.78	1058.59			
2		61.31	59.61	1.70	-1.33	729.18	1506.50	722.62	5.60	1320.49	1185.78	722.62	836.78	1058.59	937.13			
3		54.79	56.01	-1.22	-5.68	836.87	1451.30	828.13	7.49	1058.59	937.13	828.13	7.49	1058.59	937.13			
4		51.96	52.56	-0.60	-6.44	830.55	1345.50	803.33	-3.89	796.38	754.18	803.33	-3.89	796.38	754.18			
5		49.40	49.71	-0.31	-7.10	814.63	1241.70	803.33	-3.89	796.38	754.18	803.33	-3.89	796.38	754.18			
6		50.39	47.11	3.28	-4.38	686.76	1051.54	650.08	-10.61	796.38	754.18	650.08	-10.61	796.38	754.18			
7		50.12	46.13	3.99	-3.91	663.03	1004.11	630.10	-12.99	754.18	706.53	630.10	-12.99	754.18	706.53			
RADIAL POSITION		ABS EXIT FLOW ANG	CHBR LN TE ANGLE	REL DBV ANG TE	REL TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL			
1		37.95	54.80	4.52	4.39	691.82	1067.67	544.22	424.37	917.27	860.87	544.22	424.37	917.27	860.87			
2		38.87	54.42	2.90	4.39	721.57	1028.34	560.67	451.96	860.87	729.50	560.67	451.96	860.87	729.50			
3		53.15	50.68	2.47	1.64	717.99	911.73	546.70	465.21	607.86	472.79	546.70	465.21	607.86	472.79			
4		49.95	43.79	6.16	2.01	692.46	793.86	510.72	487.46	607.86	472.79	510.72	487.46	607.86	472.79			
5		42.37	32.15	10.22	7.03	708.78	702.93	515.38	481.44	472.79	424.37	515.38	481.44	472.79	424.37			
6		32.99	14.29	18.00	17.40	716.81	587.84	487.67	518.12	316.53	199.68	487.67	518.12	316.53	199.68			
7		22.64	8.00	14.64	27.49	778.92	828.89	478.86	605.70	199.68	199.68	478.86	605.70	199.68	199.68			
RADIAL POSITION		ROTOR SPD AT INLET	INLET REL MACH NO	AXIAL VEL RATIO	INLET REL MACH NO	INLET ABS MACH NO	INLET REL MACH NO	EXIT REL MACH NO	EXIT ABS MACH NO	EXIT REL MACH NO	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	EXIT ABS MACH NO	EXIT REL MACH NO			
1		1355.97	1.388	0.823	1.388	0.886	1.3340	0.886	1.3340	0.886	1341.64	1.374	0.886	1.374	0.886			
2		1326.09	1.399	0.776	1.399	0.861	1.3690	0.861	1.3690	0.861	1312.84	1.374	0.861	1.374	0.861			
3		1198.77	1.368	0.653	1.368	0.774	1.5080	0.774	1.5080	0.774	1194.71	1.479	0.774	1.479	0.774			
4		1066.08	1.266	0.617	1.266	0.679	1.6840	0.679	1.6840	0.679	1075.12	1.592	0.679	1.592	0.679			
5		933.24	1.166	0.645	1.166	0.605	1.9060	0.605	1.9060	0.605	954.23	1.613	0.605	1.613	0.605			
6		785.77	0.972	0.740	0.972	0.503	2.2170	0.503	2.2170	0.503	834.65	1.613	0.503	1.613	0.503			
7		741.18	0.928	0.760	0.928	0.454	2.3390	0.454	2.3390	0.454	805.38	1.688	0.454	1.688	0.454			
RADIAL POSITION		PERCENT DGESSION	DRAY TOT PRESS RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	LOSS COEFFICIENT	SOLIDITY	TOT PRESS LOSS PARAM	EFFICIENCY	ADB EFFICIENCY	POLY MOMEN RISE/ RISE COEFF	STAT PRESS	ROTOR DATA ROTOR DATA	FIXED INST. FIXED INST.	TRAV. INST.			
1		5.0000	1.689	1.227	1.208	1.203	1.689	0.7987	0.7987	0.350	0.350	1.6564	1.6564	1.6564	1.6564			
2		10.0000	1.711	1.212	1.203	1.184	1.689	0.8812	0.8812	0.487	0.487	0.8703	0.8703	0.8703	0.8703			
3		30.0000	1.700	1.178	1.184	1.152	1.689	0.8887	0.8887	0.570	0.570	0.8703	0.8703	0.8703	0.8703			
4		80.0000	1.641	1.157	1.184	1.132	1.689	0.9351	0.9351	0.640	0.640	0.8703	0.8703	0.8703	0.8703			
5		90.0000	1.610	1.147	1.152	1.132	1.689	0.9102	0.9102	0.706	0.706	0.8703	0.8703	0.8703	0.8703			
6		90.0000	1.580	1.131	1.152	1.132	1.689	0.9376	0.9376	0.781	0.781	0.8703	0.8703	0.8703	0.8703			
7		99.0000	1.631	1.178	1.159	1.159	1.689	0.814	0.814	0.781	0.781	0.8703	0.8703	0.8703	0.8703			

071670 STATOR BLADE ROW - NASA TASK IV  
**TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)**

POINT NUMBER		9		9		9		9		9		9		9		9		9		9			
BLADE ELEMENT PERFORMANCE RESULTS		READING NUMBER		DATE		DATE		DATE		DATE		DATE		DATE		DATE		DATE		DATE			
A/26/1970		A/26/1970		A/26/1970		A/26/1970		A/26/1970		A/26/1970		A/26/1970		A/26/1970		A/26/1970		A/26/1970		A/26/1970			
RADIAL POSITION	1	REL INLET FLOW ANG	37.78	ABS INLET FLOW ANG	36.29	CHBR LN LE ANGLE	39.47	INDIC ANG	-1.69	INDIC ANG	39.11	INCID ANG	-0.82	INCID ANG	39.01	INLET ABS VELOCITY	549.43	INLET REL VELOCITY	549.43	INLET ABS YAWG VEL	425.90	INLET REL YAWG VEL	425.90
	2		38.46		39.01		39.80		-0.55		40.03		-0.23			574.67		574.67		453.60		453.60	
	3		40.03		40.19		40.86		-0.67		41.27		-0.81			585.12		585.12		464.76		464.76	
	4		41.27		42.22		42.76		6.38		42.22		6.38			550.99		550.99		482.81		482.81	
	5		42.22		42.76											557.90		557.90		471.27		471.27	
	6		42.76													514.79		514.79		499.55		499.55	
	7															581.53		581.53		581.53		581.53	
RADIAL POSITION	1	REL EXIT FLOW ANG	1.22	ABS EXIT FLOW ANG	2.31	CHBR LN TE ANGLE	11.13	DEV ANGLE	12.35	DEV ANGLE	12.41	TURN ANGLE	36.96	TURN ANGLE	36.96	EXIT ABS VELOCITY	549.42	EXIT REL VELOCITY	549.42	EXIT ABS YAWG VEL	11.68	EXIT REL YAWG VEL	11.68
	2		3.19		3.19		-8.87		12.06		12.06		35.27			573.79		573.79		23.14		23.14	
	3		3.19		3.19		-8.87		12.06		12.06		35.27			612.38		612.38		34.16		34.16	
	4		3.19		3.19		-8.87		12.06		12.06		35.27			554.15		554.15		10.79		10.79	
	5		3.19		3.19		-8.87		12.06		12.06		35.27			519.87		519.87		20.23		20.23	
	6		3.19		3.19		-8.87		12.06		12.06		35.27			510.99		510.99		22.87		22.87	
	7		3.19		3.19		-8.87		12.06		12.06		35.27			498.14		498.14		20.86		20.86	
RADIAL POSITION	1	ROTOR SPD AT INLET	5,000	INLET ABS MACH NO	0.577	INLET REL MACH NO	0.577	AXIAL VEL RATIO	1.000	SOLIDITY	1.5230	LOSS COEFFICIENT	0.173	LOSS COEFFICIENT	0.173	TOT PRESS LOSS PARAM	0.057	EFFICIENCY	0.6634	POLY HOMOEN RISE/ MEAS T RISE	0.405	STAY PRESS COEFF	0.235
	2		10,000		0.614		0.614		0.998		1.5440		0.130			0.042		0.6278		0.406		0.215	
	3		30,000		0.637		0.637		1.047		1.6310		0.042			0.013		0.6256		0.409		0.244	
	4		50,000		0.618		0.618		1.006		1.7420		0.029			0.008		0.8589		0.409		0.325	
	5		70,000		0.633		0.633		0.930		1.8800		0.037			0.010		0.8250		0.461		0.381	
	6		90,000		0.619		0.619		0.993		2.0510		0.074			0.018		0.9118		0.448		0.417	
	7		95,000		0.664		0.664		0.990		2.0980		0.108			0.026		0.6740		0.536		0.381	

OVERALL PERFORMANCE SUMMARY  
 STAGE DATA STATOR DATA STATOR DATA  
 FIXED INST. FIXED INST. TRAV. INST. TRAV. INST.  
 1.6199 0.9843 0.9776  
 0.8511 0.9681  
 Total Pressure Ratio =  
 Polytropic Efficiency =  
 Percent Design Speed = 100.1  
 Cor. Nozzle Weight Flow = 212.3  
 Discharge Valve Setting = 9.0  
 LE Check Flow/Noz.Flow = 0.9446  
 Assumed LE Flow Coeff. = 0.9550  
 Assumed TE Flow Coeff. = 0.9350

TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

		ROTOR BLADE ROW - NASA TASK IV									
		BLADE ELEMENT PERFORMANCE RESULTS					DATE 6/26/1970				
		POINT NUMBER 10		READING NUMBER 171		DATE					
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCID ANG MN CHBR LN	INCID ANG SUCT SURF	INCID ANG	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL
1	63.21	0.64	60.60	2.61	-0.09	687.89	1516.63	682.57	7.88	1351.88	
2	61.41	-0.02	59.61	1.80	-1.23	727.10	1515.45	724.55	-0.23	1329.63	
3	54.57	0.38	56.01	-1.44	-5.90	849.51	1465.41	849.47	5.68	1194.06	
4	50.60	0.93	52.56	-1.96	-7.80	868.87	1366.43	866.25	14.03	1054.70	
5	47.86	0.31	49.71	-1.85	-8.64	854.36	1263.57	842.51	4.80	930.96	
6	47.60	0.10	47.11	0.89	-7.17	748.17	1085.46	718.10	1.29	786.43	
7	47.83	-0.11	46.13	1.70	-6.12	709.25	1028.10	674.15	-1.26	744.28	
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	REL DEV ANGLE	REL TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	
1	60.02	23.81	54.80	5.22	3.18	678.20	1238.93	638.43	272.86	1072.12	
2	59.25	21.98	54.42	4.83	2.16	682.71	1235.91	631.33	294.81	1061.28	
3	56.30	27.09	50.68	5.62	-1.73	669.19	1073.55	595.62	304.43	893.03	
4	49.08	33.23	43.79	5.29	1.52	712.52	909.81	595.89	300.41	687.38	
5	41.03	33.04	32.15	8.58	6.82	752.23	835.56	629.06	409.14	547.46	
6	27.53	37.74	14.29	13.24	20.88	825.00	737.48	645.99	500.07	336.45	
7	20.77	42.06	8.00	12.77	27.06	859.13	687.09	629.88	568.43	238.95	
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	LOSS COEFFICIENT	TOT PRESS LOSS	ADB EFFICIENCY	POLY MOMEN RISE/ EFFICIENCY	STAT PRESS RISE COEFF	DIFFUSION FACTOR	
1	1359.33	0.636	1.402	0.906	0.194	0.036	0.6290	0.6424	0.186	0.279	
2	1329.38	0.675	1.407	0.874	0.327	0.024	0.7523	0.7626	0.205	0.300	
3	1199.75	0.802	1.383	0.791	0.097	0.018	0.8221	0.8303	0.315	0.411	
4	1068.73	0.822	1.293	0.688	0.133	0.026	0.7896	0.7998	0.400	0.478	
5	935.56	0.806	1.193	0.747	0.100	0.020	0.8474	0.8548	0.423	0.533	
6	787.72	0.696	1.010	0.900	0.134	0.027	0.8519	0.8598	0.427	0.503	
7	743.03	0.658	0.954	0.934	0.132	0.026	0.8674	0.8747	0.455	0.480	
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	SOLIDITY RATIO	LOSS COEFFICIENT	TOT PRESS LOSS	ADB EFFICIENCY	POLY MOMEN RISE/ EFFICIENCY	STAT PRESS RISE COEFF	DIFFUSION FACTOR	
1	1344.97	0.581	1.061	1.3340	0.194	0.036	0.6290	0.6424	0.186	0.279	
2	1316.10	0.591	1.070	1.3690	0.327	0.024	0.7523	0.7626	0.205	0.300	
3	1197.67	0.584	0.936	1.5080	0.097	0.018	0.8221	0.8303	0.315	0.411	
4	1077.79	0.616	0.787	1.6840	0.133	0.026	0.7896	0.7998	0.400	0.478	
5	956.60	0.657	0.730	1.9060	0.100	0.020	0.8474	0.8548	0.423	0.533	
6	836.72	0.720	0.644	2.2170	0.134	0.027	0.8519	0.8598	0.427	0.503	
7	807.38	0.750	0.600	2.3390	0.132	0.026	0.8674	0.8747	0.455	0.480	
RADIAL POSITION	PERCENT INLETION	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	PERFORMANT PARAMETERS	SPACE DATA ROTOR DATA	FIXED INST. FIXED INST. TRAV. INST.	PERFORMANT PARAMETERS		
1	5.0000	1.348	1.153	1.298	1.123	Total Pressure Ratio =	1.3440	1.4018	1.4135		
2	10.0000	1.357	1.129	1.349	1.119	Adiabatic Efficiency =	0.6979	0.8024	0.7983		
3	30.0000	1.372	1.109	1.392	1.121	Polytropic Efficiency =	0.7103	0.8116	0.8084		
4	50.0000	1.407	1.135	1.418	1.133	Percent Design Speed =	100.1	Discharge Valve Setting=	30.0		
5	70.0000	1.459	1.124	1.416	1.123	Cor. Nozzle Weight Flow=	216.3				
6	90.0000	1.503	1.144	1.473	1.138						
7	95.0000	1.538	1.158	1.486	1.139						



TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

071670

		STATOR BLADE ROW - NASA TASK IV									
		BLADE ELEMENT PERFORMANCE RESULTS					BLADE ELEMENT PERFORMANCE RESULTS				
		POINT NUMBER	10	READING NUMBER	171	DATE	8/26/1970				
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CMBR LN LE ANGLE	INCID ANG MN CMBR LN	INCID ANG SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	INLET ABS TANG VEL
1	23.67	23.67	39.47	-15.80	17.60	682.13	624.74	624.74	273.84	273.84	273.84
2	22.51	22.51	39.11	-13.62	13.62	697.40	648.79	648.79	255.74	255.74	255.74
3	25.39	25.39	39.01	-9.02	9.02	710.18	641.20	641.20	304.35	304.35	304.35
4	30.78	30.78	40.86	-10.60	10.60	799.63	686.34	686.34	386.53	386.53	386.53
5	34.90	34.90	42.22	-7.32	7.32	851.99	691.12	691.12	400.49	400.49	400.49
6	39.25	39.25	42.76	-3.51	3.51	872.30	667.99	667.99	482.15	482.15	482.15
7									545.74	545.74	545.74
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMBR LN TE ANGLE	DEV ANG TE	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	EXIT ABS TANG VEL
1	0.50	0.50	11.13	11.63	23.17	612.18	612.14	612.14	5.37	5.37	5.37
2	-0.61	-0.61	10.10	9.49	22.12	692.88	692.80	692.80	-7.33	-7.33	-7.33
3	-0.08	-0.08	8.87	8.79	25.47	730.01	729.70	729.70	-1.05	-1.05	-1.05
4	1.10	1.10	8.75	9.85	29.68	754.43	753.46	753.46	14.53	14.53	14.53
5	-1.98	-1.98	9.10	7.12	32.25	777.41	775.28	775.28	-26.86	-26.86	-26.86
6	1.42	1.42	10.58	12.00	33.48	863.75	860.83	860.83	21.36	21.36	21.36
7	0.82	0.82	12.36	13.18	38.42	832.37	829.60	829.60	11.93	11.93	11.93
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	DIFFUSION FACTOR						
1	0.584	0.980	0.980	0.980	0.232					CHI	
2	0.605	1.068	1.068	1.068	0.128					-0.166	
3	0.622	1.138	1.138	1.138	0.142					-0.142	
4	0.658	1.161	1.161	1.161	0.104					-0.144	
5	0.702	1.130	1.130	1.130	0.143					-0.108	
6	0.747	1.246	1.246	1.246	0.169					-0.143	
7	0.763	1.242	1.242	1.242	0.115					-0.253	
					0.189					-0.240	
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	SOLIDITY COEFFICIENT	LOSS COEFFICIENT	TOT PRESS LOSS PARAM	ABR EFFICIENCY	POLY NOMEN RISE/ RISE COEFF	STAT PRESS RISE		
1	0.532	0.608	0.608	1.5230	0.215	0.071	0.071	-1.0449	-0.150		
2	0.608	0.643	0.643	1.5440	0.157	0.051	0.051	12.4058	-0.128		
3	0.662	0.662	0.662	1.6310	0.171	0.052	0.052	2.3110	-0.129		
4	0.687	0.687	0.687	1.7420	0.143	0.041	0.041	9.8172	-0.096		
5	0.767	0.767	0.767	1.8800	0.116	0.031	0.031	-3.8179	-0.124		
6	0.767	0.767	0.767	2.0510	0.187	0.046	0.046	5.1130	-0.213		
7	0.735	0.735	0.735	2.0980	0.236	0.056	0.056	-3.8889	-0.201		
RADIAL POSITION	PERCENT FLOW	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO						
1	5.0000	0.925	0.961	0.954	1.000					STATOR DATA	
2	17.0000	0.967	0.977	0.966	1.000					FIXED INST. FIXED INST. TRAV. INST.	
3	30.0000	0.978	0.995	0.961	1.000					1.3440 0.9588 0.9522	
4	50.0000	0.971	0.982	0.964	1.000					0.7103 0.8752 0.7353	
5	70.0000	0.939	0.983	0.967	1.000					Discharge Valve Setting= 30.0	
6	90.0000	0.923	0.979	0.941	1.000					Cor. Nozzle Weight Flow= 216.3	
7	95.0000	0.882	0.973	0.921	1.000					Percent Design Speed = 100.1	
OVERALL PERFORMANCE SUMMARY											
STAGE DATA STATOR DATA STATOR DATA											
FIXED INST. FIXED INST. TRAV. INST.											
PERFORMANCE PARAMETERS											
Total Pressure Ratio = 1.3440 0.9588 0.9522											
Polytropic Efficiency = 0.7103 0.8752 0.7353											
Percent Design Speed = 100.1											
Cor. Nozzle Weight Flow= 216.3											
IE Check Flow/Noz. Flow = 0.9466 TE Check Flow/Noz. Flow = 0.9550											
Assumed IE Flow Coeff. = 0.9550 Assumed TE Flow Coeff. = 0.9466											

081970 ROTOR BLADE NEW - NASA TASK IV

TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

POINT NUMBER 13		BLADE ELEMENT PERFORMANCE RESULTS		READING NUMBER 240		DATE 8/18/1970					
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCLD ANG MN CHBR LN	INCLD ANG SUCY SURF	INLET AVG VELOCITY	INLET REL VELOCITY	INLET ABS VELOCITY	INLET AX YANG VEL	INLET REL YANG VEL	INLET ABS YANG VEL
1	62.95	-0.58	60.60	2.35	20.35	702.47	1535.08	7.01	697.05	1364.94	7.31
2	61.14	-0.57	59.61	1.53	21.50	735.58	1535.95	7.31	735.95	1335.32	7.31
3	54.52	1.05	56.01	-1.49	25.95	851.58	1467.26	3.66	851.56	1194.185	3.66
4	50.26	1.27	52.56	-2.30	28.14	876.88	1368.92	16.29	874.20	1051.134	16.29
5	47.75	0.27	49.71	-1.96	25.75	857.21	1265.22	4.01	845.32	930.58	4.01
6	47.13	0.81	47.41	0.02	27.64	751.23	1088.52	10.19	720.97	776.72	10.19
7	47.84	1.04	46.13	1.71	26.19	695.85	1008.63	12.01	661.32	750.25	12.01
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	DEV ANGLE	TURN ANGLE	EXIT VELOCITY	EXIT REL VELOCITY	EXIT ABS VELOCITY	EXIT AX YANG VEL	EXIT REL YANG VEL	EXIT ABS YANG VEL
1	58.74	25.51	54.90	3.94	2.21	703.02	1220.02	301.83	832.16	1041.76	301.83
2	58.71	23.29	54.42	4.29	2.43	691.47	1220.57	272.63	633.41	1042.11	272.63
3	55.41	27.82	50.58	4.73	-0.89	684.10	1065.73	319.15	604.88	877.29	319.15
4	48.52	33.63	43.79	4.73	1.74	720.01	905.00	396.74	599.37	677.94	396.74
5	40.01	33.85	38.35	7.86	2.74	763.77	837.92	424.38	632.83	531.24	424.38
6	28.34	39.42	14.69	14.05	13.79	803.29	706.16	504.67	614.02	331.18	504.67
7	20.61	44.66	8.00	32.61	27.22	840.77	644.26	584.19	591.24	222.137	584.19
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	DIFFUSION FACTOR	CH1					
1	1357.93	0.654	1.428	0.907	0.280						0.286
2	1328.01	0.690	1.425	0.861	0.267						0.309
3	1198.51	0.808	1.392	0.710	0.345						0.418
4	1067.63	0.836	1.305	0.586	0.422						0.487
5	934.60	0.816	1.204	0.749	0.434						0.540
6	786.91	0.704	1.012	0.852	0.452						0.519
7	742.26	0.647	0.938	0.694	0.488						0.507
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	SOLIDITY RATIO	TOT PRESS LOSS	ABR EFFICIENCY	POLY EFFICIENCY	MOMEN RISE	STAT RISE	EFF	COEFF
1	1343.59	0.611	1.050	1.3340	0.177	0.034	0.6747	0.6881	0.191		
2	1344.74	0.603	1.025	1.3590	0.104	0.020	0.8133	0.8211	0.320		
3	1156.44	0.590	0.928	1.5080	0.124	0.023	0.7792	0.7853	0.408		
4	1076.68	0.625	0.786	1.6840	0.167	0.033	0.7398	0.7520	0.487		
5	955.62	0.671	0.727	1.9050	0.1097	0.020	0.8531	0.8603	0.531		
6	835.86	0.705	0.621	2.2170	0.121	0.024	0.8653	0.8726	0.531		
7	806.55	0.739	0.566	2.3390	0.158	0.032	0.8470	0.8554	0.557		
RADIAL POSITION	PERCENT IMERSION	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	PERFORMANCE PARAMETERS	OVERALL PERFORMANCE SUMMARY				
1	5.0000	1.392	1.136	1.345	1.131	Total Pressure Ratio =	STAGE DATA ROTOR DATA				
2	10.0000	1.382	1.122	1.390	1.123	Adiabatic Efficiency =	FIXED INST. FIXED INST. TRAV. INST.				
3	30.0000	1.396	1.128	1.393	1.128	Polytropic Efficiency =	1.3552	1.4114	1.4324		
4	50.0000	1.424	1.132	1.406	1.139	Percent Design Speed =	0.6945	0.7920	0.8169		
5	70.0000	1.484	1.131	1.427	1.126	Cor. Nozzle Weight Flow =	0.7074	0.8019	0.8260		
6	90.0000	1.490	1.137	1.480	1.137	Discharge Valve Setting =				100.0	30.0
7	95.0000	1.546	1.137	1.488	1.142					221.5	
							TE Check Flow/Noz.Flow =	1.0237			
							Assumed LE Flow Coeff. =	0.9850			
							Assumed TE Flow Coeff. =	0.9700			

TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

081970

		STATOR BLADE ROW - NASA TASK IV																						
		BLADE ELEMENT PERFORMANCE RESULTS																						
		POINT NUMBER 13 READING NUMBER 240 DATE 6/18/1970																						
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCLD ANG	INCLD ANG	SUCT SURF	INLET ABS VELOCITY	INLET AX VELOCITY	INLET REL VELOCITY	INLET ABS VELOCITY	INLET AX VELOCITY	INLET REL VELOCITY	INLET ABS VELOCITY	INLET AX VELOCITY	INLET REL VELOCITY	EXIT ABS VELOCITY	EXIT AX VELOCITY	EXIT REL VELOCITY	EXIT ABS VELOCITY	EXIT AX VELOCITY	EXIT REL VELOCITY	INLET REL TANG VEL	EXIT REL TANG VEL	
1	25.36	22.79	39.47	-14.11	-16.32	706.27	707.23	639.07	639.07	302.92	302.92	273.62	318.84	318.84	394.77	394.77	415.41	415.41	486.59	486.59	560.87	560.87	560.87	560.87
2	26.07	31.01	39.01	-12.94	-8.65	764.91	764.91	651.68	651.68	273.62	273.62	318.84	318.84	394.77	394.77	415.41	415.41	486.59	486.59	560.87	560.87	560.87	560.87	
3	31.15	31.00	40.86	-9.86	-5.61	811.47	811.47	653.15	653.15	318.84	318.84	394.77	394.77	415.41	415.41	486.59	486.59	560.87	560.87	560.87	560.87	560.87	560.87	
4	36.61	42.22	42.22	-5.61	-1.87	824.53	824.53	654.92	654.92	318.84	318.84	394.77	394.77	415.41	415.41	486.59	486.59	560.87	560.87	560.87	560.87	560.87	560.87	
5	41.89	42.76	42.76	-1.87	0.00	868.76	868.76	625.34	625.34	318.84	318.84	394.77	394.77	415.41	415.41	486.59	486.59	560.87	560.87	560.87	560.87	560.87	560.87	
6																								
7																								
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	DEV ANGLE	ANG TE	TURN ANGLE	EXIT ABS VELOCITY	EXIT AX VELOCITY	EXIT REL VELOCITY	EXIT ABS VELOCITY	EXIT AX VELOCITY	EXIT REL VELOCITY	EXIT ABS VELOCITY	EXIT AX VELOCITY	EXIT REL VELOCITY	DIFFUSION FACTOR	CHI							
1	0.79	-1.13	-11.13	11.92	24.57	24.57	655.16	655.16	730.41	730.41	730.41	730.41	730.41	730.41	730.41	0.210	-0.181							
2	0.64	-10.10	-8.67	8.97	25.43	25.43	750.60	750.60	748.92	748.92	748.92	748.92	748.92	748.92	748.92	0.097	-0.169							
3	0.64	0.64	8.67	9.51	7.91	7.91	789.27	789.27	786.06	786.06	786.06	786.06	786.06	786.06	786.06	0.099	-0.174							
4	0.16	0.16	8.75	8.91	9.09	9.09	788.12	788.12	786.06	786.06	786.06	786.06	786.06	786.06	786.06	0.154	-0.129							
5	0.81	-9.10	-9.10	7.29	12.81	12.81	873.15	873.15	844.08	844.08	844.08	844.08	844.08	844.08	844.08	0.172	-0.167							
6	0.27	-10.58	-10.58	10.85	15.34	15.34	875.86	875.86	844.08	844.08	844.08	844.08	844.08	844.08	844.08	0.078	-0.134							
7	1.94	-12.56	-12.56	14.30	19.95	19.95	847.29	847.29	844.08	844.08	844.08	844.08	844.08	844.08	844.08	0.148	-0.138							
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	SOLIDITY RATIO	LOSS COEFFICIENT	LOSS MACH	POLY MOMEN RISE/ RISE	EFFICIENCY	ADB EFFICIENCY	TOT PRESS LOSS	FIXED TOT TEMP RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	TRAV TOT PRESS RATIO	FIXED TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT TEMP RATIO
1	5.0000	0.615	0.615	1.025	1.5230	0.225	0.074	-1.3884	0.074	0.074	0.074	1.000	1.000	1.000	1.3522	0.9602	0.9602	1.3522	0.9602	0.9602	1.000	1.000	1.000	1.000
2	10.0000	0.617	0.617	1.122	1.5440	0.148	0.048	2.1968	0.048	0.048	0.048	1.000	1.000	1.000	1.3522	0.9602	0.9602	1.3522	0.9602	0.9602	1.000	1.000	1.000	1.000
3	30.0000	0.635	0.635	1.149	1.6310	0.115	0.035	2.4753	0.035	0.035	0.035	1.000	1.000	1.000	1.3522	0.9602	0.9602	1.3522	0.9602	0.9602	1.000	1.000	1.000	1.000
4	50.0000	0.667	0.667	1.161	1.7420	0.102	0.029	18.5261	0.029	0.029	0.029	1.000	1.000	1.000	1.3522	0.9602	0.9602	1.3522	0.9602	0.9602	1.000	1.000	1.000	1.000
5	70.0000	0.717	0.717	1.137	1.8600	0.133	0.039	3.4945	0.039	0.039	0.039	1.000	1.000	1.000	1.3522	0.9602	0.9602	1.3522	0.9602	0.9602	1.000	1.000	1.000	1.000
6	90.0000	0.727	0.727	1.333	2.0510	0.225	0.052	2.5459	0.052	0.052	0.052	1.000	1.000	1.000	1.3522	0.9602	0.9602	1.3522	0.9602	0.9602	1.000	1.000	1.000	1.000
7	95.0000	0.747	0.747	1.350	2.0980	0.274	0.065	63.7279	0.065	0.065	0.065	1.000	1.000	1.000	1.3522	0.9602	0.9602	1.3522	0.9602	0.9602	1.000	1.000	1.000	1.000

OVERALL PERFORMANCE SUMMARY

STAGE DATA STATOR DATA STATOR DATA  
 FIXED INST. FLYED INST. TRAV. INST.  
 Total Pressure Ratio = 1.3522 0.9602 0.9468  
 Polytropic Efficiency = 0.7074 0.8822  
 Percent Design Speed = 100.0 Discharge Valve Settings= 30.0  
 Cor. Nozzle Weight Flow= 221.5

TE Check Flow/Noz.Flow = 0.9369  
 Assumed LE Flow Coeff. = 0.9550  
 Assumed TE Flow Coeff. = 0.9550

081970  
 TABLE XII - TASK 1 STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

ROTOR BLADE RCH • NASA TASK IV		BLADE ELEMENT PERFORMANCE RESULTS												
POINT NUMBER 14		READING NUMBER 241		DATE 07/07/1970										
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CMBR LN LE ANGLE	INCID ANG	HN CMBR LN	SUCT SURF	INCID ANG	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL		
1	63.36	-0.25	60.60	2.76	0.06	0.06	0.06	687.54	1523.89	689.26	-2.99	1359.98		
2	61.06	-0.47	59.61	1.45	-1.58	-1.58	-1.58	739.74	1524.62	737.12	-6.06	1333.15		
3	54.97	0.61	56.01	-1.04	0.42	0.42	0.42	831.50	1448.38	831.40	13.71	1189.97		
4	52.98	-0.50	52.56	0.76	-0.63	-0.63	-0.63	812.37	1346.62	810.00	-7.12	1074.00		
5	50.47	-0.96	49.71	0.76	-0.63	-0.63	-0.63	892.87	1234.89	781.58	-13.05	947.00		
6	50.16	-0.61	47.11	3.05	-4.61	-4.61	-4.61	889.74	1051.24	661.98	-6.99	993.36		
7	50.41	0.14	46.13	4.28	-3.62	-3.62	-3.62	844.11	951.23	612.24	1.52	740.23		
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMBR LN YE ANGLE	REL DEV ANG YE	REL TURN ANGLE	REL TURN ANGLE	REL TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL		
1	57.27	41.24	54.80	2.47	6.09	6.09	6.09	735.76	1022.02	552.01	483.95	858.71		
2	57.11	38.33	54.42	2.69	3.95	3.95	3.95	818.12	1036.24	562.19	444.52	869.31		
3	53.51	40.74	50.68	2.83	1.46	1.46	1.46	813.18	908.48	540.25	468.36	730.25		
4	49.44	42.89	43.79	3.65	3.54	3.54	3.54	900.34	789.09	513.08	476.54	599.39		
5	41.06	44.95	32.15	3.91	5.40	5.40	5.40	723.02	678.87	509.89	509.89	445.07		
6	33.54	49.28	14.29	19.25	16.42	16.42	16.42	706.43	555.22	457.76	531.84	303.44		
7	20.82	54.77	0.00	12.82	29.59	29.59	29.59	783.00	489.65	448.77	635.37	170.62		
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VFL RATIO	INLET ABS MACH NO	EXIT ABS MACH NO	EXIT REL MACH NO	DIFFUSION FACTOR	DIFFUSION FACTOR	DIFFUSION FACTOR	DIFFUSION FACTOR	DIFFUSION FACTOR		
1	1356.99	0.638	1.414	0.809	0.809	0.809	0.809	0.448	0.448	0.448	0.448	0.448		
2	1327.09	0.691	1.425	0.763	0.763	0.763	0.763	0.428	0.428	0.428	0.428	0.428		
3	1197.68	0.787	1.371	0.650	0.650	0.650	0.650	0.476	0.476	0.476	0.476	0.476		
4	1066.89	0.767	1.272	0.633	0.633	0.633	0.633	0.521	0.521	0.521	0.521	0.521		
5	933.95	0.747	1.164	0.654	0.654	0.654	0.654	0.562	0.562	0.562	0.562	0.562		
6	786.36	0.841	0.978	0.691	0.691	0.691	0.691	0.590	0.590	0.590	0.590	0.590		
7	741.75	0.896	0.909	0.733	0.733	0.733	0.733	0.645	0.645	0.645	0.645	0.645		
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	SOLIDITY COEFFICIENT	LOSS COEFFICIENT	LOSS COEFFICIENT	LOSS COEFFICIENT	YGT PRESS LOSS PARAM	YGT PRESS LOSS PARAM	YGT PRESS LOSS PARAM	YGT PRESS LOSS PARAM	YGT PRESS LOSS PARAM		
1	1342.65	0.616	0.855	1.3340	0.166	0.166	0.166	0.034	0.034	0.034	0.034	0.034		
2	1313.83	0.608	0.877	1.3690	0.141	0.141	0.141	0.028	0.028	0.028	0.028	0.028		
3	1195.61	0.606	0.772	1.5080	0.100	0.100	0.100	0.020	0.020	0.020	0.020	0.020		
4	1075.93	0.598	0.674	1.6840	0.097	0.097	0.097	0.019	0.019	0.019	0.019	0.019		
5	954.95	0.623	0.585	1.8060	0.048	0.048	0.048	0.009	0.009	0.009	0.009	0.009		
6	835.28	0.609	0.479	2.2170	0.083	0.083	0.083	0.016	0.016	0.016	0.016	0.016		
7	805.99	0.677	0.423	2.3390	0.073	0.073	0.073	0.015	0.015	0.015	0.015	0.015		
RADIAL POSITION	PERCENT OF PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	PERFORMANCE PARAMETERS	PERFORMANCE PARAMETERS	PERFORMANCE PARAMETERS	PERFORMANCE PARAMETERS	PERFORMANCE PARAMETERS	PERFORMANCE PARAMETERS	PERFORMANCE PARAMETERS	PERFORMANCE PARAMETERS		
1	5.0000	1.751	1.227	1.721	1.210	1.210	1.210	0.7983	0.7983	0.7983	0.7983	0.7983		
2	10.0000	1.722	1.198	1.715	1.202	1.202	1.202	0.8245	0.8245	0.8245	0.8245	0.8245		
3	30.0000	1.707	1.185	1.696	1.187	1.187	1.187	0.8738	0.8738	0.8738	0.8738	0.8738		
4	50.0000	1.658	1.173	1.642	1.173	1.173	1.173	0.8810	0.8810	0.8810	0.8810	0.8810		
5	70.0000	1.636	1.161	1.607	1.154	1.154	1.154	0.9431	0.9431	0.9431	0.9431	0.9431		
6	90.0000	1.547	1.155	1.577	1.151	1.151	1.151	0.9198	0.9198	0.9198	0.9198	0.9198		
7	95.0000	1.675	1.172	1.607	1.155	1.155	1.155	0.9388	0.9388	0.9388	0.9388	0.9388		
OVERALL PERFORMANCE SUMMARY														
STAGE DATA			ROTOR DATA			ROTOR DATA			ROTOR DATA			ROTOR DATA		
FIXED INST. FIXED INST.			FIXED INST. FIXED INST.			FIXED INST. FIXED INST.			FIXED INST. FIXED INST.			FIXED INST. FIXED INST.		
Total Pressure Ratio =			1.6383			1.6617			1.6769			1.6769		
Adiabatic Efficiency =			0.8483			0.8746			0.8783			0.8783		
Polytropic Efficiency =			0.8585			0.8833			0.8868			0.8868		
Percent Design Speed =			99.9			Discharge Valve Setting = 9.0								
Cor. Nozzle Weight Flow =			215.3											
LE Check Flow/Noz.Flow =			1.0369			TE Check Flow/Noz.Flow =			0.9282					
Assumed LE Flow Coeff. =			0.9850			Assumed TE Flow Coeff. =			0.9500					

081970 **TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)**

		STATOR BLADE ROW # NASA TASK IV										
		BLADE ELEMENT PERFORMANCE RESULTS					POINT NUMBER 14					
		READING NUMBER	DATE	READING NUMBER	DATE	READING NUMBER	DATE	READING NUMBER	DATE	READING NUMBER	DATE	
RAJIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCID ANG MN	INCID ANG CHBR LN	INCID ANG SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL
1		41.07	39.47	1.60	1.77	1.77	39.11	739.27	557.32	557.32	489.69	489.69
2		37.75	39.01	-0.20	1.36	1.36	39.01	728.82	576.29	576.29	466.13	466.13
3		38.81	39.80	0.64	1.94	1.94	39.80	742.07	577.96	577.96	464.91	464.91
4		40.44	42.24	1.38	2.07	2.07	42.24	728.71	555.64	555.64	471.80	471.80
5		46.73	42.22	4.51	1.38	1.38	42.22	745.81	549.57	549.57	499.11	499.11
6		52.33	42.76	9.57	1.32	1.32	42.76	709.62	482.63	482.63	512.77	512.77
7								776.12	471.02	471.02	610.01	610.01
RAJIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	DEV ANG TE	INCID ANG	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL
1		0.64	0.64	-11.13	11.77	40.44	40.44	558.30	558.30	558.30	6.19	6.19
2		2.24	2.24	-10.10	12.34	35.51	35.51	595.63	595.63	595.63	23.28	23.28
3		3.07	3.07	-8.87	11.94	35.75	35.75	601.29	601.29	601.29	32.15	32.15
4		2.07	2.07	-8.75	10.82	38.36	38.36	545.48	545.48	545.48	19.73	19.73
5		1.07	1.07	-9.10	10.17	41.17	41.17	516.89	516.89	516.89	9.68	9.68
6		3.56	3.56	-10.58	14.14	43.17	43.17	462.15	462.15	462.15	31.12	31.12
7		-1.04	-1.04	-12.36	11.32	53.36	53.36	493.00	493.00	493.00	24.88	24.88
RAJIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	SOLIDITY COEFFICIENT	LOSS COEFFICIENT	TOT PRESS LOSS PARAM	POLY MOMEN RISE/ FACTOR	DIFFUSION	CH1		
1		0.619	0.619	1.002	1.5230	0.144	0.047	0.5725	0.458	0.237	0.220	0.220
2		0.617	0.617	1.033	1.5440	0.074	0.024	0.7949	0.370	0.262	0.244	0.244
3		0.633	0.633	1.038	1.6310	0.038	0.042	0.8362	0.368	0.283	0.264	0.264
4		0.624	0.624	0.984	1.7420	0.031	0.009	0.8294	0.428	0.361	0.339	0.339
5		0.644	0.644	0.941	1.6800	0.049	0.013	0.8050	0.478	0.410	0.386	0.386
6		0.612	0.612	1.035	2.0510	0.069	0.017	0.9375	0.454	0.464	0.441	0.441
7		0.670	0.670	1.043	2.0980	0.105	0.025	0.8558	0.551	0.464	0.464	0.464
RAJIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	FIXED TOT PRESS RATIO	TEMP RATIO	FIXED TOT PRESS RATIO	TEMP RATIO	PERCENT EFFICIENCY	ADB EFFICIENCY	POLY MOMEN RISE/ MEAS T RISE	STAT PRESS COEFF	
1		0.465	0.465	0.980	0.967	1.000	1.000	0.9859	0.9859	0.9769	0.9769	0.9769
2		0.499	0.499	0.998	0.983	1.000	1.000	0.9859	0.9859	0.9769	0.9769	0.9769
3		0.507	0.507	0.995	0.991	1.000	1.000	0.9859	0.9859	0.9769	0.9769	0.9769
4		0.461	0.461	0.995	0.993	1.000	1.000	0.9859	0.9859	0.9769	0.9769	0.9769
5		0.440	0.440	0.991	0.988	1.000	1.000	0.9859	0.9859	0.9769	0.9769	0.9769
6		0.427	0.427	0.993	0.985	1.000	1.000	0.9859	0.9859	0.9769	0.9769	0.9769
7		0.410	0.410	0.993	0.972	1.000	1.000	0.9859	0.9859	0.9769	0.9769	0.9769
OVERALL PERFORMANCE SUMMARY												
STAGE DATA STATOR DATA STATOR DATA												
FIXED INST. FIXED INST. TRAV. INST.												
1.6383 0.9859 0.9769												
0.8585 0.9719												
Discharge Valve Setting= 9.0												
Percent Design Speed = 99.9												
Cor. Nozzle Weight Flow= 215.3												
IE Check Flow/Noz.Flow = 0.9331												
Assumed IE Flow Coeff. = 0.9550												
Assumed TE Flow Coeff. = 0.9350												

081970

TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

MOTOR BLADE NO. • NASA TASK IV

BLADE ELEMENT PERFORMANCE RESULTS																	
POINT NUMBER 15 READING NUMBER 242 DATE 8/18/1970																	
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CMBR LN LE ANGLE	INLET ANS MN CHBR LN	INCID ANS SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	REL TURN ANGLE	REL DEV ANGLE	INLET REL VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL
1	67.88	61.79	60.60	7.28	4.98	522.40	1482.99	557.82	17.42	1372.32	32.89	0.14	580.80	1013.72	580.80	511.36	829.23
2	66.52	61.83	59.61	6.91	3.88	526.09	1465.95	583.73	18.67	1343.71	11.96	0.14	780.79	898.91	520.73	581.53	731.53
3	61.42	51.78	56.01	7.41	0.95	662.94	1385.22	662.07	20.62	1216.46	8.24	0.14	734.28	790.46	473.59	561.00	632.76
4	59.71	51.01	52.56	7.15	1.31	644.81	1373.70	642.07	33.80	1099.04	11.78	0.14	734.28	652.84	437.39	589.72	481.56
5	57.78	53.16	49.71	8.07	1.28	618.28	1346.55	608.79	33.66	964.18	15.88	0.14	717.50	537.41	399.22	595.25	356.23
6	57.08	52.70	47.11	9.97	2.31	546.82	976.66	524.31	24.70	801.85	26.53	0.14	722.90	470.49	400.48	597.59	296.40
7	56.84	50.90	46.13	10.71	2.81	513.85	965.99	488.38	26.82	747.42	11.31	0.14	816.98	489.86	434.31	685.68	110.06

RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CMBR LN LE ANGLE	INLET ANS MN CHBR LN	INCID ANS SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	REL TURN ANGLE	REL DEV ANGLE	INLET REL VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL
1	54.99	41.36	54.80	0.14	0.14	775.56	1013.72	580.80	511.36	829.23	32.89	0.14	580.80	1013.72	580.80	511.36	829.23
2	54.56	48.10	54.42	0.14	0.14	780.79	898.91	520.73	581.53	731.53	11.96	0.14	780.79	898.91	520.73	581.53	731.53
3	53.19	49.83	50.68	2.51	0.24	734.28	790.46	473.59	561.00	632.76	8.24	0.14	734.28	790.46	473.59	561.00	632.76
4	47.93	53.44	43.79	4.14	1.78	734.28	652.84	437.39	589.72	481.56	11.78	0.14	734.28	652.84	437.39	589.72	481.56
5	41.90	56.15	32.15	9.75	15.88	717.50	537.41	399.22	595.25	356.23	15.88	0.14	717.50	537.41	399.22	595.25	356.23
6	30.55	56.17	14.29	16.26	26.53	722.90	470.49	400.48	597.59	296.40	26.53	0.14	722.90	470.49	400.48	597.59	296.40
7	15.33	57.65	8.00	7.33	11.31	816.98	489.86	434.31	685.68	110.06	11.31	0.14	816.98	489.86	434.31	685.68	110.06

RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	AXIAL REL MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	ROTOR SPD AT EXIT	EXIT ABS MACH NO	AXIAL REL MACH NO	EXIT REL MACH NO	DIFFUSION FACTOR	CHI
1	1340.98	0.637	0.932	1.3340	1.041	1311.60	0.648	0.746	1.3690	0.449	0.488
2	1193.76	0.617	0.664	1.5080	0.681	1074.27	0.620	0.552	1.6840	0.535	0.488
3	953.48	0.612	0.458	1.9060	0.656	833.99	0.621	0.404	2.2170	0.568	0.557
4	804.75	0.705	0.397	2.3390	0.689					0.633	0.588
5										0.676	0.625
6										0.665	0.667
7										0.663	0.709

RADIAL POSITION	ROTOR SPD PERCENT	TRAV TOT PRESS RATIO	EXIT REL MACH NO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	LOSS TOY PRESS LOSS P/AM	EFFICIENCY	ADAB EFFICIENCY	POLY TROPIC EFFICIENCY	POLY MOMENT RISE/STAB PRESS COEFF
1	9.0000	1.891	0.932	1.854	1.262	1.262	0.057	0.733	0.8423	0.8373	0.739
2	10.0000	1.888	0.746	1.658	1.250	1.250	0.047	0.774	0.8291	0.8373	0.739
3	30.0000	1.801	0.664	1.771	1.214	1.214	0.032	0.8291	0.8423	0.8373	0.739
4	50.0000	1.745	0.552	1.685	1.195	1.195	0.034	0.8249	0.8423	0.8373	0.739
5	70.0000	1.666	0.458	1.628	1.175	1.175	0.029	0.8540	0.8423	0.8373	0.739
6	90.0000	1.624	0.404	1.591	1.164	1.164	0.032	0.8671	0.8423	0.8373	0.739
7	95.0000	1.748	0.397	1.598	1.166	1.166	0.039	0.8658	0.8423	0.8373	0.739

OVERALL PERFORMANCE SUMMARY											
STAGE DATA						ROTOR DATA					
FIXED INST.	FIXED INST.	TRAV. INST.	TRAV. INST.	TRAV. INST.	TRAV. INST.	FIXED INST.	FIXED INST.	TRAV. INST.	TRAV. INST.	TRAV. INST.	TRAV. INST.
1.6018	1.7390	1.7746	1.7390	1.7390	1.7746	0.7667	0.8101	0.8311	0.8101	0.8311	0.8311
0.7667	0.8243	0.8441	0.8243	0.8243	0.8441	0.7832	0.8243	0.8441	0.8243	0.8441	0.8441
Discharge Valve Setting = 4.5						Cor. Nozzle Weight Flow = 184.8					
IE Check Flow/Noz.Flow = 1.0701						TE Check Flow/Noz.Flow = 0.9891					
Assumed LE Flow Coeff. = 0.9850						Assumed TE Flow Coeff. = 0.9500					

081970 **TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)**

		STATOR BLADE NO. 4 - NASA TASK IV													
		BLADE ELEMENT PERFORMANCE RESULTS				8/18/1978									
		POINT NUMBER 15		READING NUMBER 242		WATP									
RADIAL POSITION	REL INLET FLOW ANG	INLET ABS FLOW ANG	CHBR LN LE ANGLE	INCID ANG MN CHBR LN	SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL
1	41.19	47.52	39.47	1.72	779.30	586.45	513.20	582.38	560.47	560.47	582.38	560.47	582.38	560.47	560.47
2	48.02	51.20	39.01	9.01	754.18	504.28	469.37	583.85	504.28	469.37	583.85	504.28	469.37	583.85	504.28
3	53.81	53.82	42.22	11.60	717.90	426.30	382.66	576.17	426.30	382.66	576.17	426.30	382.66	576.17	426.30
4	53.30	53.30	42.76	12.54	805.158	455.77	458.32	658.32	455.77	458.32	658.32	455.77	458.32	658.32	455.77
5	2.84	5.33	-11.13	13.97	621.19	620.42	30.73	60.45	621.19	620.42	30.73	60.45	621.19	620.42	30.73
6	1.09	1.09	-8.87	9.94	650.37	647.51	60.45	10.76	650.37	647.51	60.45	10.76	650.37	647.51	60.45
7	3.80	3.80	-8.75	4.95	476.93	475.36	31.59	425.32	476.93	475.36	31.59	425.32	476.93	475.36	31.59
8	0.28	0.28	-9.10	9.38	426.124	425.32	2.11	57.91	426.124	425.32	2.11	57.91	426.124	425.32	2.11
9	8.58	8.58	-10.58	19.16	389.124	383.73	420.04		389.124	383.73	420.04		389.124	383.73	420.04
10	-2.63	-2.63	-12.36	9.53	407.700	405.19			407.700	405.19			407.700	405.19	
DIFFUSION															
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	DEV ANGLE TE	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	POLY MOMEN RISE/STAI PRESS	LOSS COEFFICIENT	EFFICIENCY	POLY HEATS Y RISE	EFFICIENCY	HEATS Y RISE	STAI PRESS COEFF
1	0.640	0.640	0.508	1.5230	13.97	38.35	620.42	30.73	0.406	0.390	0.474	0.5178	0.183	0.183	0.183
2	0.656	0.656	0.536	1.5440	15.43	42.19	647.51	60.45	0.406	0.390	0.474	0.5178	0.183	0.183	0.183
3	0.635	0.635	0.469	1.6310	15.43	42.19	647.51	60.45	0.406	0.390	0.474	0.5178	0.183	0.183	0.183
4	0.618	0.618	0.397	1.7420	15.43	42.19	647.51	60.45	0.406	0.390	0.474	0.5178	0.183	0.183	0.183
5	0.616	0.616	0.357	1.8800	15.43	42.19	647.51	60.45	0.406	0.390	0.474	0.5178	0.183	0.183	0.183
6	0.616	0.616	0.327	2.0510	15.43	42.19	647.51	60.45	0.406	0.390	0.474	0.5178	0.183	0.183	0.183
7	0.694	0.694	0.342	2.0960	15.43	42.19	647.51	60.45	0.406	0.390	0.474	0.5178	0.183	0.183	0.183
PERCENT															
RADIAL POSITION	TRAV TOT	TRAV TOT	TRAV TOT	FIXED TOT	LOSS	LOSS	EFFICIENCY	EFFICIENCY	POLY HEATS Y RISE	EFFICIENCY	POLY HEATS Y RISE	EFFICIENCY	POLY HEATS Y RISE	EFFICIENCY	POLY HEATS Y RISE
1	5.0000	0.953	0.979	0.933	0.150	0.150	0.049	0.049	0.5178	0.183	0.183	0.183	0.183	0.183	0.183
2	10.0000	0.967	0.989	0.973	0.106	0.106	0.034	0.034	0.6246	0.183	0.183	0.183	0.183	0.183	0.183
3	80.0000	0.956	0.992	0.968	0.133	0.133	0.041	0.041	0.6252	0.183	0.183	0.183	0.183	0.183	0.183
4	50.0000	0.941	0.987	0.975	0.102	0.102	0.029	0.029	0.7416	0.183	0.183	0.183	0.183	0.183	0.183
5	70.0000	0.957	0.990	0.979	0.091	0.091	0.024	0.024	0.7783	0.183	0.183	0.183	0.183	0.183	0.183
6	90.0000	0.960	0.992	0.980	0.085	0.085	0.020	0.020	0.7783	0.183	0.183	0.183	0.183	0.183	0.183
7	95.0000	0.960	0.984	0.982	0.061	0.061	0.014	0.014	0.5653	0.183	0.183	0.183	0.183	0.183	0.183
OVERALL PERFORMANCE SUMMARY															
STAGE DATA STATOR DATA STATOR DATA															
FIXED INST. FIXED INST. TRAV. INST.															
1.6918 0.9729 0.9531															
0.7832 0.9501 0.9039															
Discharge Valve Settings = 4.5															
Cor. Nozzle Weight Flow = 99.8															
184.8															
IE Check Flow/Noz.Flow = 0.9943															
TE Check Flow/Noz.Flow = 1.0307															
Assumed IE Flow Coeff. = 0.9550															
Assumed TE Flow Coeff. = 0.9350															

TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

ROTOR BLADE ROW = NASA TASK IV		BLADE ELEMENT PERFORMANCE RESULTS		POINT NUMBER 13		DATE 9/1/1970				
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CMBR LN LE ANGLE	INCID ANG MN CMBR LN	INCID ANG SUUCT SURF	INLET KBS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ARS TANG VEL	INLET REC TANG VEL
1	63.24	-0.34	2.64	70.06	69.128	1525.86	685.97	685.97	4.05	1368.29
2	61.27	0.26	1.66	-11.53	727.82	1510.04	724.26	724.26	3.27	1358.09
3	53.74	1.15	56.01	-2.07	859.22	1459.86	859.02	859.02	17.29	1179.73
4	50.27	1.28	52.56	-2.29	872.89	1362.89	870.16	870.16	19.44	1046.86
5	47.52	0.60	49.71	-2.19	858.59	1261.67	846.65	846.65	8.93	924.50
6	47.02	0.57	47.11	-0.09	756.04	1085.36	725.62	725.62	7.17	778.76
7	47.74	0.17	46.13	1.61	706.71	822.175	671.74	671.74	2.03	739.31

RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMBR LN TE ANGLE	REL DEV ANGLE	REL TURN ANGLE	EXIT KBS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ARS TANG VEL	EXIT REC TANG VEL
1	58.18	25.24	54.80	3.58	4.86	1222.68	640.30	640.30	301.87	1040.05
2	58.36	23.30	54.42	3.94	698.18	1220.04	639.52	639.52	275.38	1037.72
3	55.55	28.89	50.68	4.87	679.28	1051.27	594.57	594.57	328.11	866.83
4	47.95	34.70	43.79	4.16	726.27	891.50	597.00	597.00	433.38	661.96
5	39.76	34.65	32.15	7.61	763.52	816.86	626.67	626.67	433.05	521.37
6	29.34	35.43	14.29	14.05	801.28	705.12	613.13	613.13	584.17	330.65
7	20.56	44.88	8.00	12.66	837.60	639.62	586.80	586.80	584.30	221.25

RADIAL POSITION	ROTOR SPD AT INLET	INLET MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	DIFFUSION FACTOR	CHI
1	1359.24	0.643	1.420	0.933	0.273	0.285
2	1326.36	0.680	1.411	0.882	0.258	0.311
3	1197.02	0.818	1.349	0.692	0.350	0.430
4	1066.30	0.832	1.300	0.686	0.432	0.490
5	933.43	0.817	1.201	0.740	0.442	0.542
6	789.93	0.709	1.018	0.845	0.456	0.519
7	741.33	0.659	0.953	0.874	0.502	0.500

RADIAL POSITION	ROTOR SPD AT EXIT	EXIT MACH NO	EXIT REL MACH NO	SOLIDITY RATIO	LOSS COEFFICIENT	LOSS	TOT PRESS LOSS PARAM	EFFICIENCY	ADB EFFICIENCY	POLY MOMEN RISE/ MEAS Y RISE	STAT RISE COEFF	ROTOR DATA
1	141.91	0.166	1.061	1.3340	0.174	0.174	0.034	0.6818	0.6950	0.7890	0.190	ROTOR DATA
2	113.10	0.611	1.067	1.3690	0.122	0.122	0.023	0.7788	0.7890	0.7788	0.214	FIXED INST. FIXED INST. TRAV. INST.
3	124.25	0.593	0.917	1.5880	0.129	0.129	0.024	0.7719	0.7823	0.7823	0.331	
4	1075.34	0.631	0.775	1.6840	0.166	0.166	0.033	0.7432	0.7554	0.7554	0.411	1.4133 1.4133 1.4354
5	954.43	0.671	0.717	1.9060	0.093	0.093	0.019	0.8603	0.8672	0.8672	0.490	0.6885 0.6885 0.6172
6	834.82	0.704	0.620	2.2170	0.132	0.132	0.026	0.8527	0.8606	0.8606	0.529	0.7016 0.7016 0.8263
7	755.55	0.736	0.562	2.3390	0.158	0.158	0.032	0.8429	0.8514	0.8514	0.545	Discharge Valve Setting= 30.0

RADIAL POSITION	PERCENT DIMENSION	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO
1	5.0000	1.401	1.144	1.131	1.131
2	10.0000	1.394	1.123	1.129	1.129
3	30.0000	1.435	1.142	1.139	1.139
4	70.0000	1.481	1.130	1.125	1.125
5	90.0000	1.487	1.139	1.138	1.138
6	95.0000	1.534	1.149	1.141	1.141

OVERALL PERFORMANCE SUMMARY	
STAGE DATA	ROTOR DATA
FIXED INST. FIXED INST.	TRAV. INST.
PERFORMANCE PARAMETERS	=
Total Pressure Ratio	1.3555
Adiabatic Efficiency	0.6885
Polytropic Efficiency	0.7016
Percent Design Speed	99.9
Cor. Nozzle Weight Flow	220.1
Discharge Valve Setting	30.0

IE Check Flow/Noz.Flow = 1.0323	
TE Check Flow/Noz.Flow	= 0.9374
Assumed IE Flow Coeff.	= 0.9850
Assumed TE Flow Coeff.	= 0.9500



TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

99270

POINT NUMBER 13		BLADE ELEMENT PERFORMANCE RESULTS		STATOR BLADE ROW - NASA TASK IV		READING NUMBER 13		DATE 9/1/1970		
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCID ANG MN CHBR LN	INCID ANG SUCT SURF	INLET XRS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ARS TANG VEL	INLET RFL TANG VEL
1	25.09	22.80	39.47	-14.38		714.46	647.04	647.04	302.96	
2	27.12	25.11	39.01	-16.31		713.30	657.55	657.55	276.88	
3	32.18	31.79	40.86	-11.89		719.49	646.02	646.02	327.80	
4	36.63	36.43	42.52	-7.62		809.50	650.44	650.44	409.27	
5	42.12	42.76	48.75	-9.07		823.41	683.90	683.90	423.90	
6				-5.59		845.09	653.91	653.91	486.10	
7				-0.64			620.43	620.43	560.98	
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	DEV ANG TE	YURN ANGLE	EXIT XRS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ARS TANG VEL	EXIT RFL TANG VEL
1	1.14	1.39	-11.13	12.27	28.95	658.65	658.51	658.51	13.10	
2	0.06	0.39	-10.10	11.49	21.41	739.18	738.92	738.92	17.89	
3	0.06	0.06	-8.67	8.93	27.06	744.59	744.28	744.28	0.73	
4	0.75	0.75	-8.75	9.60	31.33	761.84	760.91	760.91	11.33	
5	-1.58	-1.58	-9.10	7.52	33.37	785.18	786.20	786.20	-21.65	
6	0.42	0.42	-10.58	11.00	36.20	874.18	874.46	874.46	6.46	
7	1.36	1.36	-12.36	13.72	40.75	852.91	849.92	849.92	20.24	
RADIAL POSITION	ACTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	DIFFUSION FACTOR					
1	0.620	0.620	1.018	1.018	0.211				0.188	
2	0.625	0.625	1.124	1.124	0.081				0.178	
3	0.630	0.630	1.163	1.163	0.104				0.184	
4	0.673	0.673	1.170	1.170	0.158				0.133	
5	0.715	0.715	1.150	1.150	0.171				0.173	
6	0.726	0.726	1.333	1.333	0.078				0.338	
7	0.743	0.743	1.370	1.370	0.110				0.335	
RADIAL POSITION	ACTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	LOSS COEFFICIENT	TOT PRESS LOSS P/AB	ABB EFFICIENCY	POI Y MOMEN RISE/ EFFICIENCY	STAT PRESS RISE COEFF		
1	0.573	0.573	1.5230	0.211	0.069		1.3821		0.168	
2	0.649	0.649	1.5440	0.155	0.050		2.4937		0.159	
3	0.684	0.684	1.6310	0.127	0.039		2.6220		0.163	
4	0.667	0.667	1.7420	0.106	0.030		-0.2039		0.118	
5	0.677	0.677	1.8800	0.132	0.035		-3.9174		0.149	
6	0.777	0.777	2.0810	0.230	0.056		2.6079		0.283	
7	0.795	0.795	2.0980	0.283	0.067		12.0236		0.279	
PERCENT DIVERGION	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	OVERALL PERFORMANCE SUMMARY					
5,0000	0.916	0.916	0.950	1.000	STAGE DATA STATOR DATA STATOR DATA					
10,0000	0.971	0.971	0.964	1.000	FIXED INST. FIXED INST. TRAV. INST.					
30,0000	0.969	1.000	0.970	1.000	1.3555 0.9591 0.9444					
50,0000	0.954	0.993	0.972	1.000	0.7016 0.8792					
70,0000	0.924	0.993	0.940	1.000	Discharge Valve Setting= 30.0					
90,0000	0.925	0.996	0.932	1.000	LE Check Flow/Noz.Flow = 0.9423 TE Check Flow/Noz.Flow = 0.9540					
95,0000	0.886	0.991	0.911	1.000	Assumed LE Flow Coeff. = 0.9550 Assumed TE Flow Coeff. = 0.9450					

TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

		ROTOR BLADE ROW - NASA TASK IV													
		BLADE ELEMENT PERFORMANCE RESULTS													
		POINT NUMBER 14 READING NUMBER 14 DATE 9/ 1/1970													
RADIAL POSITION	REF INLET FLOW ANG	ARS INLET FLOW ANG	CHBR LN LE ANGLE	INCID ANG MN CMBR LN	INCID ANG SUCT SURF	INLET MRS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	EXIT MRS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL
1	64.14	0.24	60.90	37.54	0.84	681.65	1507.60	856.58	2.71	1354.65	718.57	1500.63	856.58	2.71	1354.65
2	61.50	0.78	59.61	-0.79	-1.14	718.15	1500.63	856.58	9.78	1317.67	826.97	1442.20	826.97	16.34	1381.66
3	59.02	1.13	56.01	-0.79	-1.14	826.97	1442.20	826.97	16.34	1381.66	826.97	1442.20	16.34	1381.66	
4	52.85	0.05	52.56	0.29	-5.55	810.38	1339.39	808.04	0.75	1066.43	783.97	1237.21	783.97	947.99	
5	50.41	-1.01	49.71	0.70	-6.09	755.11	1237.21	783.97	-13.78	947.99	692.57	1082.16	692.57	796.77	
6	50.70	0.90	47.11	3.59	-4.07	692.57	1082.16	692.57	-10.19	796.77	647.75	993.47	-10.19	796.77	
7	50.75	-1.06	46.13	4.62	-3.28	647.75	993.47	615.61	-11.39	753.14	615.61	993.47	-11.39	753.14	
RADIAL POSITION	REL EXIT FLOW ANG	ARS EXIT FLOW ANG	CMBR LN TR ANGLE	REL DEV ANGLE	REL TURN ANGLE	EXIT MRS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	LOSS PABAM	LOSS EFFICIENCY	ADP EFFICIENCY	POLY MOMEN RISE/ RISE	STAT PRESS RISE COEFF
1	57.55	41.33	54.80	2.75	6.59	731.02	1021.94	547.73	481.55	861.37	0.036	0.7890	0.8046	0.8046	0.343
2	56.10	38.87	54.42	1.68	5.40	737.22	1028.10	572.87	461.72	852.46	0.035	0.7991	0.8141	0.370	0.370
3	52.81	41.48	50.68	2.13	2.21	735.08	898.59	543.10	480.19	715.75	0.022	0.8689	0.8744	0.452	0.452
4	48.42	43.98	43.79	4.83	4.23	732.23	775.34	512.46	494.50	581.73	0.010	0.9427	0.9465	0.613	0.613
5	40.38	44.63	32.15	8.23	10.03	731.51	681.14	517.86	514.85	440.36	0.020	0.8976	0.9040	0.607	0.607
6	33.83	49.63	14.29	19.34	17.07	705.17	550.88	493.73	533.73	301.78	0.022	0.8979	0.9138	0.649	0.649
7	18.19	54.74	8.00	10.19	32.56	807.33	496.87	462.55	654.22	151.99	0.022	0.8979	0.9138	0.649	0.649
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	SOLUBILITY COEFFICIENT	LOSS EFFICIENT	LOSS RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	PERCENT IMMERSION	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	PERCENT IMMERSION	ROTOR DATA	ROTOR DATA
1	157.76	0.613	1.396	0.834	1.3240	0.179	1.215	1.728	1.215	5.0000	1.737	1.737	5.0000	STAGE DATA	ROTOR DATA
2	127.45	0.669	1.398	0.801	1.3690	0.171	1.215	1.696	1.188	30.0000	1.732	1.732	30.0000	FIXED INST. FIXED INST.	TRAV. INST.
3	198.01	0.783	1.366	0.657	1.5000	0.105	1.105	1.641	1.176	50.0000	1.703	1.703	50.0000	1.6406	1.6674
4	167.18	0.765	1.284	0.634	1.6840	0.112	1.112	1.696	1.157	70.0000	1.663	1.663	70.0000	0.8321	0.8615
5	234.20	0.750	1.167	0.661	1.9060	0.049	0.949	1.621	1.154	90.0000	1.587	1.587	90.0000	0.8434	0.8711
6	786.58	0.631	0.972	0.696	2.2370	0.108	1.108	1.572	1.154	95.0000	1.474	1.474	95.0000	Diaphragm Valve Setting=	9.0
7	741.95	0.599	0.919	0.751	2.3390	0.108	1.108	1.597	1.158		1.429	1.429			

OVERALL PERFORMANCE SUMMARY

STAGE DATA ROTOR DATA ROTOR DATA  
FIXED INST. FIXED INST. TRAV. INST.

PERFORMANCE PARAMETERS  
Total Pressure Ratio =  
Adiabatic Efficiency =  
Polytropic Efficiency =

Percent Design Speed = 100.1  
Cor. Nozzle Weight Flow = 213.4

IE Check Flow/Noz.Flow = 1.0413  
Assumed IE Flow Coeff. = 0.9850

TE Check Flow/Noz.Flow = 0.9334  
Assumed TE Flow Coeff. = 0.9500

TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

090270		STATOR BLADE ROW - NASA YASK IV									
BLADE ELEMENT PERFORMANCE RESULTS		POINY NUMBER 14		READING NUMBER 14		DATE 09 12 1970					
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCID ANG MN CHBR LN	INCID ANG SUCT SURF	INLET XRS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	
1	41.16	36.27	39.47	17.69	734.48	582.99	587.37	582.99	483.39	483.39	
2	39.54	39.81	39.81	17.69	748.19	587.37	587.37	587.37	463.48	463.48	
3	41.52	40.86	39.80	17.69	733.92	581.18	581.18	581.18	479.72	479.72	
4	42.12	47.09	40.86	17.69	754.94	587.42	587.42	587.42	489.58	489.58	
5	47.28	42.22	42.22	17.69	707.91	478.29	478.29	478.29	514.69	514.69	
6	52.28	42.76	42.76	17.69	799.63	485.77	485.77	485.77	626.11	626.11	
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	DEV ANGLE	TURN ANGLE	EXIT XRS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	
1	-0.01	-0.01	-11.13	11.12	41.17	557.75	557.75	557.75	-0.15	-0.15	
2	2.10	2.10	-10.10	12.20	36.17	607.96	607.96	607.96	22.31	22.31	
3	2.22	2.22	-8.87	11.09	37.32	598.35	598.35	598.35	23.42	23.42	
4	1.77	1.77	-8.75	10.52	39.75	553.73	553.73	553.73	17.13	17.13	
5	1.16	1.16	-9.10	10.26	40.96	533.93	533.93	533.93	16.78	16.78	
6	2.67	2.67	-10.58	13.25	46.42	507.16	507.16	507.16	23.43	23.43	
7	-1.51	-1.51	-12.56	10.85	53.60	502.37	502.37	502.37	-13.22	-13.22	
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	LOSS COEFFICIENT	LOSS LOSS P/BAM	APB EFFICIENCY	POLY MOMEN RISE/ MEAS Y RISE	STAT PRESS RISE COEFF		
1	0.612	0.612	0.612	1.009	0.164	0.854	0.6172	0.234	0.234		
2	0.630	0.630	0.630	1.034	0.115	0.837	0.8071	0.252	0.252		
3	0.644	0.644	0.644	1.028	0.037	0.811	0.8482	0.277	0.277		
4	0.635	0.635	0.635	1.002	0.028	0.808	0.8400	0.343	0.343		
5	0.652	0.652	0.652	1.055	0.051	0.814	0.8484	0.399	0.399		
6	0.610	0.610	0.610	1.050	0.074	0.816	0.9650	0.458	0.458		
7	0.640	0.640	0.640	1.030	0.100	0.824	0.8301	0.435	0.435		
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	FIXED TOT PRESS RATIO	LOSS COEFFICIENT	LOSS LOSS P/BAM	APB EFFICIENCY	POLY MOMEN RISE/ MEAS Y RISE	STAT PRESS RISE COEFF		
1	0.463	0.463	0.463	0.930	0.164	0.854	0.6172	0.234	0.234		
2	0.507	0.507	0.507	0.940	0.115	0.837	0.8071	0.252	0.252		
3	0.504	0.504	0.504	0.930	0.037	0.811	0.8482	0.277	0.277		
4	0.468	0.468	0.468	0.940	0.028	0.808	0.8400	0.343	0.343		
5	0.453	0.453	0.453	0.930	0.051	0.814	0.8484	0.399	0.399		
6	0.428	0.428	0.428	0.940	0.074	0.816	0.9650	0.458	0.458		
7	0.426	0.426	0.426	0.930	0.100	0.824	0.8301	0.435	0.435		
RADIAL POSITION	PERCENT DIVERGENCE	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	LOSS COEFFICIENT	LOSS LOSS P/BAM	APB EFFICIENCY	POLY MOMEN RISE/ MEAS Y RISE	STAT PRESS RISE COEFF		
1	5.0000	0.960	0.977	0.963	1.000	0.854	0.6172	0.234	0.234		
2	10.0000	0.982	0.995	0.973	1.000	0.837	0.8071	0.252	0.252		
3	30.0000	0.986	0.998	0.991	1.000	0.811	0.8482	0.277	0.277		
4	50.0000	0.981	0.997	0.993	1.000	0.808	0.8400	0.343	0.343		
5	70.0000	0.978	0.993	0.987	1.000	0.814	0.8484	0.399	0.399		
6	90.0000	0.998	0.993	0.984	1.000	0.816	0.9650	0.458	0.458		
7	95.0000	0.951	0.980	0.972	1.000	0.824	0.8301	0.435	0.435		
OVERALL PERFORMANCE SUMMARY											
STAGE DATA STATOR DATA STATOR DATA											
FIXED INST. FIXED INST. TRAV. INST.											
Total Pressure Ratio = 1.6406 0.9839 0.9792											
Polytropic Efficiency = 0.8434 0.9682											
Percent Design Speed = 100.1 Discharge Valve Settings=9.0											
Cor. Nozzle Weight Flow= 213.4											
IE Check Flow/Noz.Flow = 0.9384 TE Check Flow/Noz.Flow = 0.9366											
Assumed IE Flow Coeff. = 0.9550 Assumed TE Flow Coeff. = 0.9450											

TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

590270

ROTOR BLADE ROW - NASA TASK IV													
BLADE ELEMENT PERFORMANCE RESULTS													
POINT NUMBER 15 HEADING NUMBER 15 DATE 9/ 1/1970													
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCID ANG MN CHBR LN	INCID SURF SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET ABS VELOCITY	INLET REL VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	INLET ABS TANG VEL	INLET REL TANG VEL
1	56.97	-0.49	60.60	5.97	3.27	596.17	1489.73	596.17	1489.73	-5.11	1365.23	-5.11	1365.23
2	64.91	-0.09	59.61	5.33	2.27	625.37	1470.68	625.37	1470.68	-0.93	1331.10	-0.93	1331.10
3	61.30	-1.53	56.01	5.24	0.83	666.97	1388.90	666.97	1388.90	-17.80	1218.25	-17.80	1218.25
4	59.55	-2.69	52.56	6.94	1.15	649.03	1276.64	649.03	1276.64	-30.41	1099.77	-30.41	1099.77
5	57.63	-3.43	49.71	7.92	1.13	626.43	1156.43	626.43	1156.43	-36.64	972.75	-36.64	972.75
6	56.78	-3.01	47.11	9.67	2.01	557.64	980.15	557.64	980.15	-28.07	816.23	-28.07	816.23
7	56.23	-2.26	46.13	10.10	2.120	537.53	933.63	537.53	933.63	-20.16	763.62	-20.16	763.62
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	REL DEV ANG TE	REL TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	EXIT ABS TANG VEL	EXIT REL TANG VEL
1	57.58	48.68	54.90	2.78	8.99	722.90	926.65	722.90	926.65	564.46	781.31	564.46	781.31
2	52.07	45.90	54.42	0.65	9.84	769.23	934.43	769.23	934.43	551.57	765.30	551.57	765.30
3	53.62	49.98	50.68	2.94	7.68	731.42	793.01	731.42	793.01	560.02	638.36	560.02	638.36
4	47.76	53.15	43.79	3.97	11.80	738.42	658.75	738.42	658.75	590.82	487.60	590.82	487.60
5	41.15	56.22	32.15	9.00	16.48	727.51	537.66	727.51	537.66	604.05	353.12	604.05	353.12
6	29.38	57.03	14.29	14.09	28.40	742.41	462.61	742.41	462.61	619.97	217.24	619.97	217.24
7	12.12	57.85	8.00	4.12	44.11	846.16	467.57	846.16	467.57	711.76	96.10	711.76	96.10
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	LOSS COEFFICIENT	TOT PRESS LOSS PARAM	ADB EFFICIENCY	POLY MOMEN RISE/ MEAS T RISE	STAT PRESS RISE COEFF	WIPUSION FACTOR	CHI		
1	136.14	0.546	1.366	0.839	0.279	0.956	0.7235	0.7461	0.358	0.520	0.502		
2	133.17	0.575	1.352	0.858	0.295	0.953	0.8137	0.8281	0.407	0.501	0.518		
3	1200.45	0.617	1.264	0.705	0.177	0.938	0.8055	0.8195	0.478	0.567	0.567		
4	1069.36	0.599	1.179	0.689	0.191	0.931	0.8545	0.8647	0.531	0.629	0.618		
5	936.11	0.579	1.068	0.655	0.155	0.937	0.8470	0.8561	0.589	0.681	0.638		
6	788.19	0.512	0.907	0.752	0.188	0.949	0.8294	0.8404	0.681	0.683	0.638		
7	743.46	0.492	0.854	0.876	0.233	0.949	0.8294	0.8404	0.681	0.674	0.666		
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	TRAV TOT PRESS RATIO	FIXED TOI TEMP RATIO	LOSS COEFFICIENT	TOT PRESS LOSS PARAM	ADB EFFICIENCY	POLY MOMEN RISE/ MEAS T RISE	STAT PRESS RISE COEFF			
1	145.77	0.612	0.754	1.330	1.863	0.279	0.956	0.7235	0.7461	0.358			
2	136.87	0.635	0.771	1.369	1.896	0.295	0.953	0.8137	0.8281	0.407			
3	1198.38	0.614	1.508	1.508	1.774	0.177	0.938	0.8055	0.8195	0.478			
4	1378.43	0.624	0.557	1.684	1.683	0.191	0.931	0.8545	0.8647	0.531			
5	957.17	0.620	0.458	1.906	1.674	0.155	0.937	0.8470	0.8561	0.589			
6	837.21	0.637	0.397	2.217	1.568	0.188	0.949	0.8294	0.8404	0.681			
7	807.66	0.730	0.403	2.339	1.581	0.233	0.949	0.8294	0.8404	0.681			
RADIAL POSITION	PERCENT IMMERSION	TRAV TOT PRESS RATIO	FIXED TOI PRESS RATIO	FIXED TOI TEMP RATIO	LOSS COEFFICIENT	TOT PRESS LOSS PARAM	ADB EFFICIENCY	POLY MOMEN RISE/ MEAS T RISE	STAT PRESS RISE COEFF				
1	5.0000	1.800	1.292	1.863	0.269	0.956	0.7235	0.7461	0.358				
2	19.0000	1.891	1.259	1.896	0.279	0.953	0.8137	0.8281	0.407				
3	30.0000	1.814	1.213	1.774	0.177	0.938	0.8055	0.8195	0.478				
4	50.0000	1.756	1.203	1.683	0.191	0.931	0.8545	0.8647	0.531				
5	70.0000	1.674	1.187	1.674	0.186	0.937	0.8470	0.8561	0.589				
6	90.0000	1.626	1.175	1.568	0.187	0.949	0.8294	0.8404	0.681				
7	97.0000	1.761	1.190	1.581	0.169	0.949	0.8294	0.8404	0.681				

OVERALL PERFORMANCE SUMMARY

STAGE DATA ROTOR DATA ROTOR DATA  
 FIXED INST. FIXED INST. TRAV. INST.  
 PERFORMANCE PARAMETERS = 1.6904 1.7541 1.700  
 Total Pressure Ratio = 0.7455 0.7938 0.8180  
 Adiabatic Efficiency = 0.7638 0.8094 0.8327  
 Polytropic Efficiency =  
 Percent Design Speed = 100.1 Discharge Valve Setting= 4.6  
 Cor. Nozzle Weight Flow= 184.9  
 LE Check Flow/Noz.Flow = 1.0886 TE Check Flow/Noz.Flow = 0.9811  
 Assumed LE Flow Coeff. = 0.9850 Assumed TE Flow Coeff. = 0.9500

090270

TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

STATOR BLADE ROW - NASA TASK IV		BLADE ELEMENT PERFORMANCE RESULTS										
		POINT NUMBER	15	READING NUMBER	15	DATE	9/	1/1970				
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHMBR LN LE ANGLE	INCID ANG MN CHMBR LH	INCID ANG SUPT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	EXIT ABS VELOCITY	EXIT REL VELOCITY
1	48.52	45.32	39.47	9.02	6.21	756.16	778.51	500.82	566.50	553.57	626.14	673.11
2	48.17	45.00	39.01	9.16	6.21	751.06	754.67	500.74	559.48	559.48	626.14	673.11
3	50.90	53.87	40.86	11.10	13.01	754.19	754.67	475.32	584.99	591.28	626.14	673.11
4	34.71	55.49	42.22	12.49	12.73	756.39	834.30	423.14	597.75	683.35	626.14	673.11
5	34.71	55.49	42.22	12.49	12.73	756.39	834.30	423.14	597.75	683.35	626.14	673.11
6	34.71	55.49	42.22	12.49	12.73	756.39	834.30	423.14	597.75	683.35	626.14	673.11
7	34.71	55.49	42.22	12.49	12.73	756.39	834.30	423.14	597.75	683.35	626.14	673.11
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHMBR LN TE ANGLE	DEV ANG TE	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	EXIT ABS VELOCITY	EXIT REL VELOCITY
1	1.92	5.84	-11.13	15.02	46.60	626.47	676.66	626.14	21.01	68.90	626.14	673.11
2	0.90	-2.54	-8.75	6.21	53.44	478.55	475.02	502.02	8.60	-21.18	477.92	477.92
3	-0.96	-1.80	-10.58	8.14	54.83	460.52	383.44	459.47	-7.67	-12.00	382.05	382.05
4	-4.21	0.748	-12.36	8.15	59.70	371.64	371.64	369.42	-27.21	-27.21	369.42	369.42
RADIAL POSITION	W/TOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	LOSS COEFFICIENT	TOI PRESS LOSS PARAM	ADBS EFFICIENCY	POLY EFFICIENCY	MOMEN RISE/ PRESS T RISE	STAT COEFF RISE	W/TOR SPD AT INLET	CHI
1	0.615	0.643	0.632	1.250	0.170	0.056	0.4542	0.4542	0.408	0.132	0.615	0.132
2	0.643	0.632	0.632	1.250	0.170	0.056	0.4542	0.4542	0.408	0.132	0.643	0.132
3	0.632	0.632	0.632	1.250	0.170	0.056	0.4542	0.4542	0.408	0.132	0.632	0.132
4	0.632	0.632	0.632	1.250	0.170	0.056	0.4542	0.4542	0.408	0.132	0.632	0.132
5	0.632	0.632	0.632	1.250	0.170	0.056	0.4542	0.4542	0.408	0.132	0.632	0.132
6	0.632	0.632	0.632	1.250	0.170	0.056	0.4542	0.4542	0.408	0.132	0.632	0.132
7	0.632	0.632	0.632	1.250	0.170	0.056	0.4542	0.4542	0.408	0.132	0.632	0.132
RADIAL POSITION	W/TOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	FIXED TOT PRESS RATIO	LOSS COEFFICIENT	TOI PRESS LOSS PARAM	ADBS EFFICIENCY	POLY EFFICIENCY	MOMEN RISE/ PRESS T RISE	STAT COEFF RISE	W/TOR SPD AT EXIT	CHI
1	0.511	0.555	0.555	1.5250	0.170	0.056	0.4542	0.4542	0.408	0.132	0.511	0.132
2	0.555	0.467	0.467	1.5440	0.170	0.056	0.4542	0.4542	0.408	0.132	0.555	0.132
3	0.467	0.398	0.398	1.6310	0.170	0.056	0.4542	0.4542	0.408	0.132	0.467	0.132
4	0.398	0.384	0.384	1.7420	0.170	0.056	0.4542	0.4542	0.408	0.132	0.398	0.132
5	0.384	0.321	0.321	1.8600	0.170	0.056	0.4542	0.4542	0.408	0.132	0.384	0.132
6	0.321	0.311	0.311	2.0510	0.170	0.056	0.4542	0.4542	0.408	0.132	0.321	0.132
7	0.311	0.2980	0.2980	2.0980	0.170	0.056	0.4542	0.4542	0.408	0.132	0.311	0.132

OVERALL PERFORMANCE SUMMARY

STAGE DATA STATOR DATA STATOR DATA  
 FIXED INLET, FIXED INLET, TRAV. INST.  
 Total Pressure Ratio = 1.6994 0.9688 0.9543  
 Polytropic Efficiency = 0.7638 0.6437 0.8164  
 Percent Design Speed = 100.1 Discharge Valve Setting = 4.6  
 Cor. Nozzle Weight Flow = 184.9

IE Check Flow/Noz.Flow = 0.9862 TE Check Flow/Noz.Flow = 1.0428  
 Assumed IE Flow Coeff. = 0.9550 Assumed TE Flow Coeff. = 0.9350

TABLE XIII - TASK 1 STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

082670

ROTOR BLADE KON - NASA TASK IV

BLADE ELEMENT PERFORMANCE RESULTS  
 POINT NUMBER 28 8/25/1970  
 READING NUMBER 284

RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCLD ANG MN CHBR LN	INCLD ANG SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS YANG VEL	INLET REL YANG VEL
1	63.11	0.11	60.60	2.51	0.119	695.43	1528.03	690.10	1.32	1360.61
2	61.21	0.52	59.61	1.60	1.143	730.82	1513.47	728.23	6.57	1325.34
3	54.66	1.08	56.01	1.35	5.181	841.22	1454.07	841.05	15.90	1186.13
4	50.24	1.71	52.56	1.11	58.16	872.11	1360.67	859.21	26.01	1044.76
5	48.05	0.74	49.71	1.66	81.45	844.17	1253.77	832.93	10.78	926.56
6	47.21	0.79	47.11	0.10	57.56	751.53	1082.54	721.24	9.99	779.24
7	47.93	0.25	48.13	1.80	56.10	704.19	1022.61	659.34	2.92	741.52

RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN YE ANGLE	REL DEV ANG TE	REL TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS YANG VEL	EXIT REL YANG VEL
1	58.43	25.21	54.80	3.63	4.167	712.15	1228.11	642.24	302.31	1045.13
2	58.23	23.78	54.42	3.81	2.99	703.05	1219.62	641.64	282.69	1035.92
3	55.12	28.55	50.88	4.94	50.46	690.52	1060.58	606.38	329.96	870.00
4	47.85	34.88	43.79	4.06	2.39	730.66	893.18	599.31	417.73	662.12
5	40.05	34.00	32.15	7.90	7.99	764.81	828.06	632.57	426.66	531.77
6	28.40	39.45	16.29	14.11	18.81	803.63	707.45	614.78	505.84	332.47
7	20.60	45.10	8.00	12.60	27.53	840.26	638.97	586.42	588.50	220.42

RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	SOLIDITY	LOSS COEFFICIENT	LOSS PARAM	TOT PRESS EFFICIENCY	ADB EFFICIENCY	POLY MOMEN RISE/ MEAS T RISE	STAT PRESS RISE COEFF
1	1361.92	0.647	1.422	0.931	1.330	0.156	0.031	0.7114	0.7236	0.193	0.289
2	1331.92	0.684	1.416	0.881	1.3690	0.103	0.020	0.6077	0.6166	0.215	0.313
3	1202.03	0.799	1.381	0.721	1.5090	0.119	0.023	0.7916	0.8014	0.325	0.422
4	1070.76	0.832	1.299	0.689	1.6840	0.163	0.033	0.7480	0.7600	0.417	0.498
5	937.34	0.803	1.192	0.759	1.9060	0.088	0.018	0.6696	0.6762	0.540	0.521
6	789.22	0.705	1.016	0.852	2.2170	0.137	0.027	0.8493	0.8575	0.453	0.521
7	744.44	0.657	0.954	0.876	2.3390	0.145	0.029	0.8959	0.8638	0.503	0.499

RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	PERFORMANCE PARAMETERS
1	1347.54	0.619	1.007	1.141	1.128	1.128	1.128	Total Pressure Ratio = 1.3587
2	1318.60	0.615	1.068	1.124	1.124	1.124	1.124	Adiabatic Efficiency = 0.6964
3	1199.96	0.603	0.926	1.401	1.412	1.404	1.412	Polytropic Efficiency = 0.7093
4	1078.84	0.635	0.776	1.413	1.412	1.412	1.412	Percent Design Speed = 100.3
5	956.43	0.672	0.728	1.446	1.446	1.443	1.443	Cor. Nozzle Weight Flow = 280.9
6	838.31	0.706	0.622	1.496	1.481	1.481	1.481	Discharge Valve Setting = 30.0
7	808.92	0.739	0.562	1.541	1.492	1.492	1.492	IE Check Flow/Noz.Flow = 1.0267

OVERALL PERFORMANCE SUMMARY

STAGE DATA	ROTOR DATA	ROTOR DATA
FIXED INST.	FIXED INST.	TRAV. INST.
1.3587	1.4202	1.4466
0.6964	0.8032	0.8269
0.7093	0.8117	0.8357

TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

082670

		STATOR BLADE ROW - NASA TASK IV										
		BLADE ELEMENT PERFORMANCE RESULTS					BLADE ELEMENT PERFORMANCE RESULTS					
		POINT NUMBER	28	READING NUMBER	284	DATE	8/25/1970					
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCID ANG MN CHBR LN	INCIP ANG SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS YANG VEL	INLET REL YANG VEL		
1	25.06	39.47	-14.41	716.44	303.40	649.02	303.40	649.02	303.40	649.02		
2	23.27	39.11	-15.84	718.24	283.71	659.79	283.71	659.79	283.71	659.79		
3	26.76	39.01	-12.25	732.17	329.64	653.63	329.64	653.63	329.64	653.63		
4	32.34	39.80	9.71	774.79	413.57	653.16	413.57	653.16	413.57	653.16		
5	31.15	40.86	9.71	812.143	417.64	691.06	417.64	691.06	417.64	691.06		
6	36.64	42.22	9.58	825.91	487.71	655.79	487.71	655.79	487.71	655.79		
7	42.34	42.76	9.42	847.49	565.02	620.05	565.02	620.05	565.02	620.05		
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN WE ANGLE	DEV ANG TE	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS YANG VEL	EXIT REL YANG VEL		
1	0.02	11.13	-11.13	11.15	25.03	657.131	657.131	657.131	657.131	657.131		
2	0.06	10.16	-10.16	10.16	23.21	739.01	739.01	739.01	739.01	739.01		
3	0.18	9.05	-8.87	9.05	26.59	752.92	752.92	752.92	752.92	752.92		
4	0.78	9.53	-8.75	9.53	31.56	763.30	763.30	763.30	763.30	763.30		
5	-1.08	8.02	-9.10	8.02	32.23	793.46	793.46	793.46	793.46	793.46		
6	0.41	10.99	-10.58	10.99	36.23	883.01	883.01	883.01	883.01	883.01		
7	1.98	14.34	-12.36	14.34	40.36	844.89	844.89	844.89	844.89	844.89		
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	DIFFUSION FACTOR	CHI						
1	0.623	0.630	1.013	1.120	0.221	-0.195						
2	0.643	0.677	1.152	1.169	0.098	-0.177						
3	0.677	0.719	1.148	1.148	0.108	-0.189						
4	0.719	0.728	1.342	1.363	0.162	-0.155						
5	0.728	0.750	2.0510	2.0980	0.161	-0.192						
6	0.750	0.750	2.0980	2.0980	0.070	-0.366						
7	0.750	0.750	2.0980	2.0980	0.147	-0.150						
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	SOLIDITY	LOSS COEFFICIENT	TOT PRESS LOSS PARAM	ABR EFFICIENCY	POLY MOMEN RISE/ MEAS T RISE	STAT PRESS RISE COEFF			
1	0.572	0.650	1.5440	1.5230	0.229	0.075	-1.36601	0.174	-0.174			
2	0.650	0.662	1.6310	1.6310	0.131	0.042	2.9025	0.158	-0.158			
3	0.662	0.670	1.7420	1.7420	0.129	0.040	3.3536	0.168	-0.168			
4	0.670	0.703	1.8000	1.8000	0.114	0.033	-8.4108	0.136	-0.136			
5	0.703	0.785	2.0510	2.0510	0.153	0.041	-5.1781	0.165	-0.165			
6	0.785	0.750	2.0980	2.0980	0.243	0.059	2.5566	0.165	-0.165			
7	0.750	0.750	2.0980	2.0980	0.291	0.069	34.6443	0.150	-0.150			
RADIAL POSITION	PERCENT EXCURSION	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	OVERALL PERFORMANCE SUMMARY						
1	5.0000	0.911	0.986	0.945	1.000	STAGE DATA STATOR DATA STATOR DATA						
2	10.0000	0.968	0.998	0.968	1.000	FIXED INST. FINED INST. TRAV. INST.						
3	30.0000	0.962	1.001	0.968	1.000	1.3587 0.9567 0.9383						
4	50.0000	0.945	0.992	0.969	1.000	0.7093 0.8738						
5	70.0000	0.920	0.996	0.954	1.000	Discharge Valve Setting=30.0						
6	90.0000	0.919	0.998	0.927	1.000	Cor. Nozzle Weight Flow= 220.9						
7	95.0000	0.874	0.992	0.907	1.000	IE Check Flow/Noz.Flow = 0.9510 TE Check Flow/Noz.Flow = 0.9546						
						Assumed IE Flow Coeff. = 0.9550 Assumed TE Flow Coeff. = 0.9580						

082670  
**TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)**

ROTOR BLADE ROW - NASA TASK IV											
BLADE ELEMENT PERFORMANCE RESULTS											
POINT NUMBER 29 READING NUMBER 285 DATE 8/25/1970											
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCID ANG MN CHBR LN	INCID ANG SUCT SU4F	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	
1	64.16	0.93	3.56	3.56	0.86	650.27	1500.70	653.33	10.59	1348.66	
2	61.91	1.19	2.30	2.30	0.73	704.28	1491.37	701.66	14.61	1314.69	
3	55.00	1.73	1.01	1.01	0.47	823.16	1434.34	822.76	24.79	1174.88	
4	52.63	0.56	0.07	0.07	0.17	812.44	1356.05	810.03	7.97	1060.70	
5	49.89	-0.03	49.71	0.18	0.61	799.47	1250.85	788.40	-0.336	935.86	
6	49.95	0.11	2.84	2.84	0.82	688.72	1045.31	661.03	1.33	786.35	
7	50.02	-0.40	46.33	3.89	0.10	650.97	997.54	627.29	55.06	748.04	
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN LE ANGLE	REL DEV ANGLE TE	REL TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	
1	59.15	40.32	54.80	4.35	5.01	700.71	1040.70	533.04	452.33	892.56	
2	56.60	38.03	54.92	4.18	3.31	691.57	1044.55	543.67	425.17	890.84	
3	54.07	39.46	50.58	3.59	0.93	704.29	926.44	543.62	447.55	750.05	
4	48.86	41.91	45.79	5.07	3.77	709.15	802.18	527.65	473.63	604.09	
5	40.84	43.50	32.15	8.69	9.65	728.58	698.59	527.51	500.64	455.90	
6	34.27	48.54	14.29	19.98	15.68	701.75	584.37	461.44	522.28	314.39	
7	19.95	53.95	8.00	11.95	10.06	796.08	504.40	464.78	638.59	168.74	
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	SOLIDITY RATIO	LOSS COEFFICIENT	LOSS PARAM	EFFICIENCY	ADB	POLY MOMEN RISE/RISE	STAT PRESS RISE COEFF
1	1359.25	0.609	1.388	0.816	1.3340	0.167	0.032	0.7922	0.7922	0.8067	0.342
2	1329.30	0.655	1.387	0.775	1.3690	0.166	0.032	0.7934	0.7934	0.8078	0.366
3	1199.67	0.778	1.356	0.661	1.5080	0.133	0.020	0.8694	0.8694	0.8785	0.486
4	1068.66	0.767	1.261	0.651	1.8880	0.084	0.016	0.8963	0.8963	0.9032	0.357
5	935.50	0.753	1.150	0.669	1.9060	0.054	0.011	0.9362	0.9362	0.9403	0.628
6	787.67	0.640	0.971	0.698	2.2170	0.109	0.020	0.8968	0.8968	0.9031	0.718
7	742.98	0.611	0.924	0.741	2.3390	0.060	0.012	0.9483	0.9483	0.9517	0.766
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	LOSS COEFFICIENT	LOSS PARAM	EFFICIENCY	ADB	POLY MOMEN RISE/RISE	STAT PRESS RISE COEFF
1	1344.89	0.586	0.870	1.3340	1.672	0.167	0.032	0.7922	0.7922	0.8067	0.342
2	1316.01	0.587	0.887	1.3690	1.678	0.166	0.032	0.7934	0.7934	0.8078	0.366
3	1197.60	0.600	0.790	1.5080	1.633	0.133	0.020	0.8694	0.8694	0.8785	0.486
4	1077.72	0.607	0.687	1.8880	1.605	0.084	0.016	0.8963	0.8963	0.9032	0.628
5	956.54	0.629	0.603	1.9060	1.570	0.054	0.011	0.9362	0.9362	0.9403	0.628
6	836.67	0.604	0.486	2.2170	1.534	0.109	0.020	0.8968	0.8968	0.9031	0.718
7	807.33	0.687	0.435	2.3390	1.618	0.060	0.012	0.9483	0.9483	0.9517	0.766
RADIAL POSITION	PERCENT IMMERSION	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	LOSS COEFFICIENT	LOSS PARAM	EFFICIENCY	ADB	POLY MOMEN RISE/RISE	STAT PRESS RISE COEFF
1	5.0000	1.696	1.696	1.220	1.672	0.167	0.032	0.7922	0.7922	0.8067	0.342
2	10.0000	1.682	1.682	1.182	1.678	0.166	0.032	0.7934	0.7934	0.8078	0.366
3	30.0000	1.683	1.683	1.177	1.633	0.133	0.020	0.8694	0.8694	0.8785	0.486
4	50.0000	1.657	1.657	1.159	1.605	0.084	0.016	0.8963	0.8963	0.9032	0.628
5	70.0000	1.628	1.628	1.157	1.555	0.054	0.011	0.9362	0.9362	0.9403	0.628
6	90.0000	1.551	1.551	1.134	1.570	0.109	0.020	0.8968	0.8968	0.9031	0.718
7	95.0000	1.666	1.666	1.174	1.618	0.060	0.012	0.9483	0.9483	0.9517	0.766
OVERALL PERFORMANCE SUMMARY											
STAGE DATA						ROTOR DATA					
FIXED INST. FIXED INST. TRAV. INST.						FIXED INST. FIXED INST. TRAV. INST.					
1.6201						1.6420					
0.8454						0.8705					
0.8555						0.8792					
Percent Design Speed = 100.1						Discharge Valve Setting = 9.0					
Cor. Nozzle Weight Flow = 214.5						Cor. Nozzle Weight Flow = 214.5					
LE Check Flow/Noz.Flow = 1.0346						TE Check Flow/Noz.Flow = 0.9328					
Assumed LE Flow Coeff. = 0.9850						Assumed TE Flow Coeff. = 0.9500					



082670 TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

STATOR BLADE KJW - NASA TASK IV		BLADE ELEMENT PERFORMANCE RESULTS		POINT NUMBER 29		READING NUMBER 285		DATE 8/25/1970		
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCID ANG MN	INCIP ANG SUCY SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL
1	40.45	37.45	39.47	0.68	704.04	701.80	538.12	557.14	453.97	426.72
2	37.45	37.45	39.11	-1.66	734.08	734.08	581.78	581.78	447.12	447.12
3	39.44	39.44	39.80	-0.36	754.02	754.02	570.10	570.10	468.92	468.92
4	40.77	40.77	40.86	-0.09	705.77	705.77	568.28	568.28	490.06	490.06
5	45.98	45.98	42.22	3.76	789.40	789.40	486.54	486.54	503.56	503.56
6	51.48	51.48	48.76	2.72			488.10	488.10	613.11	613.11
7										
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN LE ANGLE	DEV ANG TE	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL
1	-1.35	0.34	-11.13	9.78	41.51	521.90	521.75	521.75	-12.34	-12.34
2	0.34	1.59	-10.10	10.44	37.11	564.40	564.36	564.36	3.30	3.30
3	1.59	1.17	-8.87	10.46	35.95	599.41	598.93	598.93	16.62	16.62
4	1.17	0.82	-8.75	9.92	38.27	559.64	558.90	558.90	11.40	11.40
5	0.82	1.71	-9.10	9.12	40.75	533.27	532.13	532.13	0.20	0.20
6	1.71	1.13	-10.58	12.29	44.27	519.12	517.29	517.29	15.48	15.48
7	1.13		-12.36	11.23	52.61	515.69	513.93	513.93	-10.15	-10.15
8										
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	LOSS COEFFICIENT	TOT PRESS LOSS	AD8 EFFICIENCY	POLY MOMEN RISE/ MEAS T RISE	STAT PRESS RISE COEFF	CFM1
1	0.589	0.435	0.472	0.970	0.145	0.048	0.5906	0.7708	0.1240	0.476
2	0.597	0.428	0.506	1.013	0.088	0.028	0.7708	0.8778	0.258	0.391
3	0.628	0.474	0.474	1.029	0.034	0.010	0.8286	0.8286	0.272	0.420
4	0.635	0.454	0.441	0.980	0.024	0.007	0.8103	0.8103	0.327	0.349
5	0.652	0.441	0.438	0.936	0.044	0.012	0.9855	0.9855	0.375	0.464
6	0.608	0.438	0.438	1.063	0.070	0.017	0.6280	0.6280	0.448	0.430
7	0.681			1.053	0.106	0.025			0.450	0.531
8										
RADIAL POSITION	PERCENT IMMERSION	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	LOSS COEFFICIENT	AD8 EFFICIENCY	POLY MOMEN RISE/ MEAS T RISE	STAT PRESS RISE COEFF	
1	5.0000	0.958	0.977	0.969	1.000	0.145	0.5906	0.7708	0.1240	
2	10.0000	0.980	1.008	0.981	1.000	0.088	0.7708	0.8778	0.258	
3	30.0000	0.969	0.999	0.992	1.000	0.034	0.8286	0.8286	0.272	
4	50.0000	0.980	0.993	0.989	1.000	0.024	0.8103	0.8103	0.327	
5	70.0000	0.973	0.993	0.989	1.000	0.044	0.9855	0.9855	0.375	
6	90.0000	0.998	0.993	0.988	1.000	0.070	0.6280	0.6280	0.448	
7	95.0000	0.936	0.979	0.971	1.000	0.106			0.450	
8										

OVERALL PERFORMANCE SUMMARY

STAGE DATA STATOR DATA STATOR DATA  
 FIXED INST. FIXED INST. TRAV. INST.  
 Total Pressure Ratio = 1.6201 0.9867 0.9786  
 Polytropic Efficiency = 0.8555 0.9730 0.9712  
 Percent Design Speed = 100.1 Discharge Valve Setting = 9.0  
 Cor. Nozzle Weight Flow = 214.5  
 LE Check Flow/Noz. Flow = 0.9377 TE Check Flow/Noz. Flow = 0.9180  
 Assumed LE Flow Coeff. = 0.9550 Assumed TE Flow Coeff. = 0.9350

TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

ROTOR BLADE ROW - NASA TASK IV

		BLADE ELEMENT PERFORMANCE RESULTS										8/25/1970	
		POINT NUMBER 30					READING NUMBER 286					DATE	
RADIAL POSITION		REL INLET FLOW ANG	ABS INLET FLOW ANG	CMBR LN LE ANGLE	INCLD ANG MN	INCLD ANG LN	INCLD ANG SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	
1		68.42	0.82	60.60	7.82	7.81	5.12	538.78	1454.85	534.60	7.64	1351.43	
2		67.42	-0.45	59.61	6.03	6.03	4.78	556.61	1445.00	-4.38	-4.38	1353.51	
3		62.04	-0.82	56.01	6.03	6.03	1.57	641.56	1368.33	641.48	-9.13	1208.64	
4		60.04	-2.04	52.56	7.48	7.48	1.64	631.00	1260.06	628.79	-22.39	1090.91	
5		58.05	-2.37	49.71	8.34	8.34	1.55	607.69	1136.05	598.77	-24.80	900.17	
6		57.19	-1.87	47.11	10.08	10.08	2.42	540.58	969.07	516.60	-16.89	804.46	
7		56.79	-0.79	46.13	10.66	10.66	2.76	516.43	910.30	490.83	-6.78	749.66	
RADIAL POSITION		REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMBR LN LE ANGLE	REL DEV ANGLE	REL TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL		
1		55.81	52.56	54.80	1.01	12.61	797.36	862.48	484.03	632.16	712.55		
2		54.31	47.77	54.42	-0.11	13.10	786.15	905.43	527.62	581.25	734.59		
3		53.44	50.20	50.68	2.76	8.61	734.15	788.78	469.84	583.98	633.46		
4		47.84	52.39	43.79	4.05	12.20	734.99	668.37	448.53	582.18	495.41		
5		41.64	55.91	32.15	9.49	16.42	721.85	541.73	404.11	597.19	359.23		
6		30.01	56.16	14.29	15.72	27.18	729.56	472.42	404.29	603.01	233.54		
7		13.69	57.73	8.00	5.69	43.10	832.85	464.46	441.79	699.63	107.59		
RADIAL POSITION		ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	SOLIDITY	COEFFICIENT	LOSS	TOT PRESS LOSS	EFFICIENCY	ADB EFFICIENCY	POLY MOMEN RISE/ MEAS T RISE	STAT PRESS COEFF
1		1359.07	0.490	1.324	0.905	1.3340	0.293	0.062	0.7174	0.7406	0.7406	0.370	
2		1329.13	0.507	1.317	0.951	1.3690	0.284	0.060	0.7257	0.7482	0.7482	0.378	
3		1199.51	0.592	1.162	0.732	1.5080	0.190	0.036	0.8128	0.8271	0.8271	0.467	
4		1068.52	0.582	1.162	0.732	1.5840	0.177	0.035	0.8197	0.8324	0.8324	0.530	
5		935.38	0.560	1.047	0.675	1.9060	0.163	0.032	0.8438	0.8542	0.8542	0.597	
6		787.57	0.495	0.887	0.780	2.1900	0.179	0.035	0.8563	0.8673	0.8673	0.711	
7		742.88	0.472	0.832	0.900	2.3390	0.207	0.043	0.8539	0.8632	0.8632	0.783	
RADIAL POSITION		ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	FIXED TOT PRESS RATIO	FIXED TOT PRESS RATIO	TEMP RATIO	FIXED TOT TEMP RATIO	PERFORMANCE PARAMETERS	STAGE DATA ROUNN DATA ROUNN DATA			
1		1344.71	0.649	1.702	1.1296	1.854	1.269	1.269	FIXED INST. FIXED INST. TRAV. INST.				
2		1315.84	0.652	1.751	1.849	1.849	1.264	1.264	Total Pressure Ratio =	1.6812	1.7325	1.7738	
3		1197.44	0.617	1.663	1.762	1.678	1.216	1.216	Adiabatic Efficiency =	0.7435	0.7001	0.6563	
4		1077.58	0.622	1.565	1.678	1.678	1.195	1.195	Polytropic Efficiency =	0.7010	0.8057	0.8397	
5		956.42	0.616	1.462	1.628	1.628	1.177	1.177	Percent Design Speed =	100.1	Discharge Valve Setting=	h.0	
6		836.56	0.627	1.406	1.591	1.591	1.165	1.165	Cor. Nozzle Weight Flow=	180.7			
7		807.23	0.718	1.401	1.595	1.595	1.167	1.167	LE Check Flow/Noz.Flow = 1.0763 TE Check Flow/Noz.Flow = 0.9988				
										Assumed IE Flow Coeff. = 0.9350 Assumed TE Flow Coeff. = 0.9900			

TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

STATOR BLADE MOW - NASA TASK IV		BLADE ELEMENT PERFORMANCE RESULTS		POINT NUMBER 30		READING NUMBER 286		DATE 8/25/1970		
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCLD ANG	INCLD ANG	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL
1	52.41	47.19	39.47	12.94	800.70	488.46	634.44	488.46	634.44	634.44
2	46.40	39.01	39.11	9.39	753.67	500.18	563.44	500.18	563.44	563.44
3	50.12	40.86	39.80	10.32	752.110	481.66	578.38	481.66	578.38	578.38
4	53.56	42.22	40.86	12.70	728.82	431.65	584.57	431.65	584.57	584.57
5	53.80	42.22	42.22	11.58	724.57	425.44	581.40	425.44	581.40	581.40
6	55.38	42.76	42.76	12.62	821.23	463.78	671.71	463.78	671.71	671.71
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	DEV ANG TE	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL
1	2.67	4.48	-11.13	13.80	49.74	617.11	616.43	616.43	28.77	28.77
2	4.48	-0.09	-10.10	14.58	42.71	632.77	630.80	630.80	49.44	49.44
3	-3.00	7.78	-8.87	8.78	48.49	551.94	551.71	551.71	-0.85	-0.85
4	-1.75	7.39	-8.75	5.75	53.12	472.88	471.71	471.71	-24.74	-24.74
5	6.79	-10.58	-9.10	7.39	55.31	423.19	422.09	422.09	46.27	46.27
6	-1.80	-12.36	-10.58	17.37	47.01	392.147	388.53	388.53	46.27	46.27
7			-12.36	10.56	57.18	377.104	375.64	375.64	-11.85	-11.85
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	DIFFUSION FACTOR					
1	0.652	0.660	0.637	1.262	0.478					
2	0.635	0.637	0.622	1.167	0.421					
3	0.637	0.622	0.622	1.103	0.497					
4	0.622	0.622	0.622	1.079	0.599					
5	0.622	0.622	0.622	0.978	0.635					
6	0.622	0.622	0.622	0.913	0.635					
7	0.707	0.707	0.707	0.810	0.736					
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	SOLIDITY COEFFICIENT	LOSS TOT LOSS PARAM	EFFICIENCY	POLY MOMEN RISE/ MEAS T RISE	STAT PRESS RISE COEFF		
1	0.503	0.518	0.458	1.5230	0.051	0.4991	0.174	0.174		
2	0.458	0.394	0.354	1.5440	0.045	0.15754	0.191	0.191		
3	0.394	0.354	0.329	1.6310	0.042	0.15999	0.255	0.255		
4	0.354	0.329	0.329	1.7420	0.029	0.16140	0.341	0.341		
5	0.329	0.329	0.329	1.8800	0.025	0.17248	0.451	0.451		
6	0.329	0.329	0.329	2.0510	0.021	0.17734	0.518	0.518		
7	0.316	0.316	0.316	2.0980	0.013	0.15624	0.404	0.404		
RADIAL POSITION	PERCENT DIMENSION	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO					
1	5.0000	0.945	0.961	1.000	1.000					
2	10.0000	0.954	0.998	1.000	1.000					
3	30.0000	0.950	0.995	1.000	1.000					
4	50.0000	0.938	0.986	1.000	1.000					
5	70.0000	0.953	0.992	1.000	1.000					
6	90.0000	0.959	0.993	1.000	1.000					
7	95.0000	0.890	0.981	1.000	1.000					
OVERALL PERFORMANCE SUMMARY										
STAGE DATA STATOR DATA STATOR DATA										
FIXED INST. FIXED INST. TRAV. INST.										
Total Pressure Ratio =						1.6812 0.9704 0.9409 0.9406				
Polytropic Efficiency =						0.7616 0.9453 0.7046				
Percent Design Speed =						100.1 Discharge Valve Setting= 4.0				
Cor. Nozzle Weight Flow =						180.7				
IE Check Flow/Noz.Flow =						1.0040 TE Check Flow/Noz.Flow = 1.0337				
Assumed IE Flow Coeff. =						0.9550 Assumed TE Flow Coeff. = 0.9350				

TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

ROTOR BLADE ROW = NACA TASK IV		POINT NUMBER 14		BLADE ELEMENT PERFORMANCE RESULTS		DATE 9/1/1970						
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CMBR LN LE ANGLE	INCID ANG LN	INCID ANG SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL		
1	62.76	-0.32	60.60	2.16	-0.54	706.28	1533.46	700.85	-3.94	1361.13		
2	61.17	-0.33	59.61	1.56	-1.47	735.58	1521.15	732.98	4.20	1331.49		
3	54.02	0.92	56.01	-1.99	-6.45	859.67	1463.11	859.54	13.86	1183.99		
4	50.17	1.54	52.56	-2.39	-8.73	873.23	1360.58	870.40	23.39	1043.85		
5	47.57	0.48	49.71	-2.14	-8.93	859.22	1263.93	847.29	7.18	926.09		
6	47.34	0.94	47.11	0.23	-7.43	743.96	1074.08	713.97	11.69	974.79		
7	47.70	0.25	46.13	1.57	-6.33	707.44	1022.98	672.43	2.92	738.94		
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMBR LN TE ANGLE	REL DEV ANG TE	REL YURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL		
1	59.91	24.06	53.80	5.41	2.85	679.35	1234.25	618.27	276.05	1066.81		
2	59.10	23.00	54.42	4.68	2.07	683.14	1222.16	623.11	266.23	1047.79		
3	59.32	28.17	50.68	4.64	-1.30	684.98	1061.09	603.68	323.30	872.49		
4	48.09	33.73	43.79	4.29	2.09	726.40	904.21	603.98	403.32	672.77		
5	37.61	34.43	32.15	7.46	7.96	767.09	821.01	631.21	432.71	522.38		
6	28.10	39.74	14.29	13.81	19.24	803.12	702.14	613.86	508.68	326.73		
7	20.40	45.68	8.00	12.40	27.50	835.72	626.99	577.43	591.34	234.77		
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	SOLIDITY COEFFICIENT	LOSS COEFFICIENT	LOSS	TOT PRESS LOSS PARAB	EFFICIENCY	ADB EFFICIENCY	POLY MOMEN RISE/ MEAS Y RISE	STAY PRESS COEFF
1	137.19	0.657	1.428	0.882	1.3340	0.167	0.031	0.823	0.8950	0.8950	0.193	0.193
2	132.29	0.688	1.423	0.856	1.3690	0.097	0.018	0.8107	0.8191	0.8191	0.212	0.212
3	119.86	0.819	1.393	0.702	1.5080	0.111	0.021	0.8009	0.8009	0.8009	0.329	0.329
4	106.05	0.833	1.298	0.694	1.6840	0.174	0.034	0.7348	0.7474	0.7474	0.413	0.413
5	93.09	0.818	1.203	0.745	1.9060	0.097	0.020	0.8538	0.8610	0.8610	0.489	0.489
6	78.48	0.697	1.006	0.857	2.2170	0.133	0.026	0.8545	0.8623	0.8623	0.580	0.580
7	74.16	0.660	0.954	0.859	2.3390	0.172	0.034	0.8306	0.8397	0.8397	0.543	0.543
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	TRAV TOT PRESS RATIO	FIXED TOT PRESS RATIO	TEMP RATIO	FIXED TOT TEMP RATIO	TOT PRESS LOSS PARAB	EFFICIENCY	ADB EFFICIENCY	POLY MOMEN RISE/ MEAS Y RISE	STAY PRESS COEFF
1	142.85	0.591	1.074	1.3340	1.128	1.126	1.118	0.823	0.8950	0.8950	0.193	0.193
2	131.92	0.598	1.069	1.3690	1.128	1.126	1.118	0.8107	0.8191	0.8191	0.212	0.212
3	119.57	0.598	0.926	1.5080	1.119	1.127	1.117	0.8009	0.8009	0.8009	0.329	0.329
4	106.09	0.631	0.786	1.6840	1.126	1.143	1.141	0.7348	0.7474	0.7474	0.413	0.413
5	95.10	0.673	0.720	1.9060	1.133	1.144	1.141	0.8538	0.8610	0.8610	0.489	0.489
6	83.40	0.706	0.617	2.2170	1.146	1.148	1.146	0.8545	0.8623	0.8623	0.580	0.580
7	80.11	0.733	0.551	2.3390	1.154	1.154	1.144	0.8306	0.8397	0.8397	0.543	0.543
RADIAL POSITION	PERCENT IMMERSION	TRAV TOT PRESS RATIO	FIXED TOT PRESS RATIO	TEMP RATIO	FIXED TOT TEMP RATIO	OVERALL PERFORMANCE SUMMARY						
1	5.0000	1.370	1.128	1.126	1.118	STAGE DATA ROTOR DATA ROTOR DATA						
2	10.0000	1.377	1.119	1.127	1.117	FIXED INST. FIXED INST. TRAV. INST.						
3	30.0000	1.401	1.126	1.143	1.141	Total Pressure Ratio = 1.3547 1.4117 1.4320						
4	50.0000	1.433	1.144	1.141	1.141	Adiabatic Efficiency = 0.6962 0.7055 0.8114						
5	70.0000	1.465	1.133	1.142	1.126	Polytropic Efficiency = 0.7090 0.8053 0.8836						
6	90.0000	1.492	1.140	1.139	1.139	Percent Design Speed = 100.0 Discharge Valve Setting = 30.0						
7	95.0000	1.528	1.154	1.144	1.144	Cor. Nozzle Weight Flow = 220.6						
IE Check Flow/Noz.Flow = 1.0311 TE Check Flow/Noz.Flow = 0.9345												
Assumed LE Flow Coeff. = 0.9850 Assumed TE Flow Coeff. = 0.9500												

099270 **TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)**

		STATOR BLADE ROW - NASA TASK IV																	
		BLADE ELEMENT PERFORMANCE RESULTS												DATE 97 17 1970					
		POINT NUMBER 14 READING NUMBER 38																	
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCID ANG MN CHBR LN	INCID ANG SUCT SURF	INLET ABS VELOCITY	INLET RBL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET AX TANG VEL	EXIT ABS VELOCITY	EXIT RBL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT AX TANG VEL				
1	23.92	26.41	39.47	-15.55	22.58	683.35	624.57	624.57	277.04	277.04	650.39	15.19	15.19	15.19	15.19				
2	22.22	26.41	39.01	-16.59	23.50	723.46	723.31	723.31	322.98	322.98	752.09	14.04	14.04	14.04	14.04				
3	26.41	31.23	39.80	-12.60	25.34	752.53	752.53	752.53	399.31	399.31	765.88	9.74	9.74	9.74	9.74				
4	31.23	31.23	40.86	-8.57	30.52	765.79	765.79	765.79	423.57	423.57	786.84	-22.23	-22.23	-22.23	-22.23				
5	31.23	36.93	42.22	-9.29	33.19	786.84	786.84	786.84	490.45	490.45	874.35	6.18	6.18	6.18	6.18				
6	36.93	42.94	42.22	-5.29	36.53	874.35	874.35	874.35	567.74	567.74	857.03	15.19	15.19	15.19	15.19				
7	42.94		42.76	0.18	41.93	857.03	857.03	857.03											
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	DEV ANGLE	TURN ANGLE	EXIT ABS VELOCITY	EXIT RBL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT AX TANG VEL									
1	1.34	-0.98	-11.13	12.47	22.58	650.39	650.39	650.39	15.19	15.19									
2	1.07	0.91	-10.10	9.42	23.50	723.46	723.46	723.46	-12.38	-12.38									
3	0.91	0.71	-8.87	9.94	25.34	752.53	752.53	752.53	14.04	14.04									
4	0.71	0.52	-8.75	9.76	30.52	765.79	765.79	765.79	9.74	9.74									
5	-1.62	0.41	-9.10	7.48	33.19	786.84	786.84	786.84	-22.23	-22.23									
6	0.41	1.02	-10.58	10.99	36.53	874.35	874.35	874.35	6.18	6.18									
7	1.02		-12.36	13.38	41.93	857.03	857.03	857.03	15.19	15.19									
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO															
1	0.595	0.611	0.637	1.044															
2	0.611	0.637	0.662	1.122															
3	0.637	0.662	0.674	1.156															
4	0.662	0.674	0.718	1.163															
5	0.674	0.718	0.727	1.142															
6	0.727	0.738		1.240															
7	0.738			1.405															
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	LOSS COEFFICIENT	LOSS PARAM	POLY MOMEN RISE/ RISE COEFF	APP EFFICIENCY	STATOR DATA STATOR DATA											
1	0.567	0.567	0.567	1.5230	0.237	0.078	2.4888	FIXED INST. RISE											
2	0.637	0.637	0.637	1.5440	0.148	0.148	2.3229	FIXED INST. TRAV. INST.											
3	0.662	0.662	0.662	1.6310	0.125	0.638	2.4592	1.3547	0.9596										
4	0.671	0.671	0.671	1.7420	0.106	0.630	2.13709	0.7090	0.8804										
5	0.698	0.698	0.698	1.8800	0.126	0.634	2.14026												
6	0.780	0.780	0.780	2.0510	0.230	0.656	2.15605												
7	0.761	0.761	0.761	2.0980	0.283	0.667	2.15605												
RADIAL POSITION	PERCENT IMMERSION	YRAT TOT	YRAT TOT	FIXED TOT	FIXED TOT	TEMP RATIO	TEMP RATIO	OVERALL PERFORMANCE SUMMARY											
1	5.0000	0.928	0.993	0.648	1.000	1.000	1.000	STATOR DATA STATOR DATA											
2	10.0000	0.973	0.976	0.967	1.000	1.000	1.000	FIXED INST. FIXED INST. TRAV. INST.											
3	30.0000	0.970	0.996	0.970	1.000	1.000	1.000	1.3547	0.9596	0.9462									
4	50.0000	0.956	0.994	0.972	1.000	1.000	1.000	0.7090	0.8804	---									
5	70.0000	0.923	0.970	0.962	1.000	1.000	1.000	Percent Design Speed = 100.0			Discharge Valve Setting = 30.0								
6	90.0000	0.925	0.996	0.931	1.000	1.000	1.000	Cor. Nozzle Weight Flow = 220.6											
7	95.0000	0.889	0.989	0.912	1.000	1.000	1.000	IE Check Flow/Noz. Flow = 0.9394			TE Check Flow/Noz. Flow = 0.9525								
								Assumed IE Flow Coeff. = 0.9550								Assumed TE Flow Coeff. = 0.9350			

TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

		ROTOR BLADE ROW - NASA TASK IV									
		BLADE ELEMENT PERFORMANCE RESULTS					DATE 9/ 1/1970				
		POINT NUMBER 15					READING NUMBER 339				
RADIAL POSITION		REL INLET FLOW ANG	ARS INLET FLOW ANG	CHBR LN LE ANGLE	INCID LN ANGLE	INLET SURF ANGLE	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL
1		63.74	-0.15	60.80	3.14	0.44	675.71	1517.59	670.53	-1.80	1358.86
2		61.40	-0.19	59.61	1.79	-1.24	727.48	1515.58	724.92	-2.41	1329.58
3		59.11	0.70	56.01	-0.90	-9.36	828.17	1447.78	828.09	10.19	1187.56
4		52.77	0.02	52.56	0.72	-5.63	812.85	1341.03	810.51	0.34	1066.60
5		50.48	-1.17	49.71	0.77	-6.02	794.98	1238.67	783.80	-16.04	950.04
6		50.62	-0.60	47.11	3.51	-4.15	678.51	1043.85	651.21	-6.87	793.28
7		50.52	-0.49	46.13	4.39	-3.51	647.35	988.50	615.29	-5.28	747.06
RADIAL POSITION		REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	REL DEV ANGLE	REL TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL
1		60.28	39.79	54.90	5.46	3.45	677.60	1048.91	549.44	432.64	910.08
2		53.33	38.04	54.42	3.83	3.15	697.00	1041.99	547.84	428.65	885.25
3		48.31	40.93	50.68	2.65	1.78	716.10	905.02	540.96	469.01	726.67
4		40.29	43.52	43.79	4.52	4.46	716.11	780.71	519.20	493.06	582.93
5		33.02	44.07	32.15	8.14	10.19	733.32	690.89	525.95	509.14	445.87
6		28.41	46.41	14.29	18.73	17.60	712.46	561.91	465.99	532.50	302.83
7		19.32	55.08	8.00	11.32	31.21	795.71	488.81	452.14	647.56	158.47
RADIAL POSITION		WTOR SPD AT INLET	INLET MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	LOSS COEFFICIENT	TOT PRESS LOSS PARAM	ADB EFFICIENCY	POLY MOMEN RISE/ MEAS T RISE	STAT PRESS RISE COEFF	CHI
1		157.05	0.626	1.407	0.775	0.178	0.033	0.7788	0.7942	0.338	0.454
2		132.15	0.678	0.756	0.756	0.147	0.028	0.8135	0.8267	0.362	0.479
3		117.74	0.783	0.653	0.653	0.095	0.019	0.8802	0.8888	0.479	0.577
4		106.94	0.767	0.641	0.641	0.104	0.021	0.8728	0.8814	0.553	0.622
5		93.00	0.749	0.671	0.671	0.048	0.010	0.9426	0.9463	0.617	0.657
6		78.41	0.630	0.969	0.716	0.107	0.020	0.8990	0.9052	0.703	0.671
7		741.79	0.599	0.915	0.735	0.105	0.021	0.9108	0.9165	0.760	0.691
RADIAL POSITION		WTOR SPD AT EXIT	EXIT MACH NO	EXIT REL MACH NO	SOLIDITY PRESS RATIO	FIXED TOT TEMP RATIO	TRAV TOT PRESS RATIO	PERCENT DIMENSION	OVERALL PERFORMANCE SUMMARY		
1		142.73	0.567	0.878	1.3340	1.203	1.213	5.0000	STAGE DATA ROTOR DATA		
2		113.20	0.591	0.884	1.3690	1.183	1.183	10.0000	FIXED INST. FIXED INST. TRAV. INST.		
3		115.67	0.610	0.771	1.5090	1.663	1.663	30.0000	PERFORMANCE PARAMETERS		
4		1075.99	0.612	0.667	1.6840	1.657	1.174	50.0000	Total Pressure Ratio = 1.6296		
5		953.91	0.595	0.595	1.9060	1.639	1.639	70.0000	Adiabatic Efficiency = 0.8403		
6		835.32	0.613	0.484	2.2170	1.540	1.163	90.0000	Polytropic Efficiency = 0.8465		
7		895.03	0.657	0.422	2.3390	1.571	1.571	95.0000	Percent Design Speed = 100.1		
						1.598	1.175		Cor. Nozzle Weight Flow = 214.7		
									Discharge Valve Setting = 9.0		
									IE Check Flow/Noz.Flow = 1.0367		
									Assumed IE Flow Coeff. = 0.9650		
									Accumed IE Flow Coeff. = 0.9600		

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TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

STATOR BLADE ROW		NASA TASK IV										
BLADE ELEMENT PERFORMANCE RESULTS		DATE 9/ 17/1970										
POINT NUMBER 15		READING NUMBER 339										
RADIAL POSITION:	REL INLET FLOW ANG	ABS INLET FLOW ANG	CMBR LN LE ANGLE	INCID ANG	INCID ANG	SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	
1	39.63	39.47	0.16	680.80	524.36	434.21	524.36	434.21	524.36	434.21	434.21	
2	37.46	39.11	-1.65	707.34	561.45	430.21	561.45	430.21	561.45	430.21	430.21	
3	36.99	39.01	-0.02	744.99	578.78	468.56	578.78	468.56	578.78	468.56	468.56	
4	41.05	39.80	1.25	744.62	560.55	488.16	560.55	488.16	560.55	488.16	488.16	
5	41.34	40.86	0.48	758.10	566.50	498.38	566.50	498.38	566.50	498.38	498.38	
6	46.25	42.22	4.03	716.32	491.48	513.41	491.48	513.41	491.48	513.41	513.41	
7	52.64	42.76	9.88	787.62	474.66	621.72	474.66	621.72	474.66	621.72	621.72	
RADIAL POSITION:	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMBR LN TE ANGLE	DEV ANGLE	YURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	EXIT REL CHI	
1	-0.49	-11.13	10.64	40.12	524.51	524.49	524.51	524.49	524.49	524.51	0.280	
2	0.80	-10.10	10.90	36.66	581.84	581.05	581.84	581.05	581.05	581.84	0.441	
3	3.65	-8.87	12.52	39.34	610.71	608.22	610.71	608.22	608.22	610.71	0.277	
4	1.96	58.75	10.71	39.09	557.98	537.03	557.98	537.03	537.03	557.98	0.351	
5	0.94	59.10	10.04	40.40	531.87	530.66	531.87	530.66	530.66	531.87	0.396	
6	4.45	-10.58	15.03	41.80	513.02	509.91	513.02	509.91	509.91	513.02	0.452	
7	-1.07	-12.36	11.29	53.71	510.54	508.81	510.54	508.81	508.81	510.54	0.366	
RADIAL POSITION:	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	SOLIDITY	COEFFICIENT	LOSS	TOT PRESS LOSS	EFFICIENCY	ABB EFFICIENCY	POLY MOMEN RISE/ MEAS T RISE	STAT PRESS COEFF
1	0.570	0.570	1.000	1.000	1.5230	0.163	0.163	0.053	0.7073	0.8500	0.264	0.264
2	0.501	0.501	1.035	1.035	1.5440	0.069	0.069	0.022	0.8500	0.8995	0.260	0.260
3	0.636	0.636	1.053	1.053	1.5440	0.069	0.069	0.022	0.8500	0.8995	0.272	0.272
4	0.638	0.638	0.994	0.994	1.6310	0.031	0.031	0.009	0.8995	0.8126	0.329	0.329
5	0.695	0.695	0.937	0.937	1.7420	0.024	0.024	0.007	0.8126	0.7928	0.371	0.371
6	0.617	0.617	1.038	1.038	1.8800	0.040	0.040	0.011	0.7928	0.9414	0.430	0.430
7	0.679	0.679	1.072	1.072	2.0510	0.068	0.068	0.017	0.9414	0.6474	0.452	0.452
RADIAL POSITION:	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	FIXED TOT PRESS RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	LOSS COEFFICIENT	TOT PRESS LOSS	EFFICIENCY	ABB EFFICIENCY	POLY MOMEN RISE/ MEAS T RISE	STAT PRESS COEFF
1	0.437	0.437	1.000	1.000	1.5230	0.163	0.163	0.053	0.7073	0.8500	0.264	0.264
2	0.487	0.487	1.035	1.035	1.5440	0.069	0.069	0.022	0.8500	0.8995	0.260	0.260
3	0.516	0.516	1.053	1.053	1.5440	0.069	0.069	0.022	0.8500	0.8995	0.272	0.272
4	0.472	0.472	0.994	0.994	1.6310	0.031	0.031	0.009	0.8995	0.8126	0.329	0.329
5	0.452	0.452	0.937	0.937	1.7420	0.024	0.024	0.007	0.8126	0.7928	0.371	0.371
6	0.436	0.436	1.038	1.038	1.8800	0.040	0.040	0.011	0.7928	0.9414	0.430	0.430
7	0.433	0.433	1.072	1.072	2.0510	0.068	0.068	0.017	0.9414	0.6474	0.452	0.452
PERCENT IMMERSION	TRAV TOT PRESS RATIO	TRAV TOT PRESS RATIO	TRAV TOT PRESS RATIO	FIXED TOT PRESS RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	LOSS COEFFICIENT	TOT PRESS LOSS	EFFICIENCY	ABB EFFICIENCY	POLY MOMEN RISE/ MEAS T RISE	STAT PRESS COEFF
1	5.0000	0.974	0.986	1.000	1.000	1.000	0.163	0.053	0.7073	0.8500	0.264	0.264
2	10.0000	0.988	1.003	0.985	1.000	1.000	0.069	0.022	0.8500	0.8995	0.260	0.260
3	30.0000	0.991	0.996	0.993	1.000	1.000	0.069	0.022	0.8500	0.8995	0.272	0.272
4	50.0000	0.977	0.993	0.994	1.000	1.000	0.031	0.009	0.8995	0.8126	0.329	0.329
5	70.0000	0.970	0.989	0.990	1.000	1.000	0.024	0.007	0.8126	0.7928	0.371	0.371
6	90.0000	0.992	0.991	0.985	1.000	1.000	0.040	0.011	0.7928	0.9414	0.430	0.430
7	95.0000	0.938	0.962	0.972	1.000	1.000	0.068	0.017	0.9414	0.6474	0.452	0.452
OVERALL PERFORMANCE SUMMARY												
STAGE DATA			STATOR DATA			STATOR DATA			STATOR DATA			
FIXED INST. FIXED INST. TRAV. INST.			FIXED INST. FIXED INST. TRAV. INST.			FIXED INST. FIXED INST. TRAV. INST.			FIXED INST. FIXED INST. TRAV. INST.			
1.6296			0.9875			0.9875			0.9803			
0.8565			0.9750			0.9750			0.9803			
Discharge Valve Setting=9.0			Discharge Valve Setting=9.0			Discharge Valve Setting=9.0			Discharge Valve Setting=9.0			
100.1			100.1			100.1			100.1			
214.7			214.7			214.7			214.7			
IF Check Flow/Noz.Flow = 0.928												
Assumed IR Flow Coeff. = 0.950												
TE Check Flow/Noz.Flow = 0.9251												
Assumed TE Flow Coeff. = 0.9350												

TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

		ROTOR BLADE ROW - NASA TASK IV												
		BLADE ELEMENT PERFORMANCE RESULTS					9/ 1/1970							
		POINT NUMBER	16	READING NUMBER	340	DATE								
RADIAL POSITION		REL INLET FLOW ANG	ABS INLET FLOW ANG	CMR LN LE ANGLE	INCID ANG MN	INCID ANG LN	INCID ANG SURF	INLET AHS VELOCITY	INLET AX VELOCITY	INLET ARS TANG VEL	INLET REL VELOCITY	INLET AX VELOCITY	INLET ARS TANG VEL	INLET REL VELOCITY
1		67.77	-1.26	60.60	7.17	4.47	563.89	1480.17	559.43	-12.27	1480.17	559.43	-12.27	1368.61
2		65.49	-1.09	59.61	5.86	2.85	612.25	1471.43	609.99	-11.61	1471.43	609.99	-11.61	1338.06
3		61.73	-1.53	56.01	5.72	1.26	653.50	1379.08	634.14	-17.44	1379.08	634.14	-17.44	1214.54
4		59.83	-2.20	52.56	7.27	1.43	636.44	1262.61	634.14	-24.38	1262.61	634.14	-24.38	1090.75
5		58.10	-2.79	49.71	8.39	1.60	608.33	1138.42	599.21	-29.20	1138.42	599.21	-29.20	962.70
6		56.94	-2.08	47.11	9.83	2.17	546.89	972.71	524.01	-19.67	972.71	524.01	-19.67	805.05
7		54.44	-1.22	46.13	10.31	2.41	525.83	917.13	498.95	-10.66	917.13	498.95	-10.66	752.05
RADIAL POSITION		REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMR LN TE ANGLE	REF DEV ANG TE	REL YURN ANGLE	EXIT AHS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ARS TANG VEL	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ARS TANG VEL	EXIT REL VELOCITY
1		57.86	50.98	54.80	3.06	9.71	755.52	893.78	474.94	586.05	893.78	474.94	586.05	755.96
2		55.66	47.80	54.42	1.24	9.83	762.74	907.93	511.57	564.24	907.93	511.57	564.24	748.95
3		53.06	49.74	50.68	2.38	6.67	736.64	792.07	475.99	562.06	792.07	475.99	562.06	632.97
4		48.12	52.45	43.79	4.33	11.71	730.42	666.76	445.09	579.06	666.76	445.09	579.06	496.35
5		42.28	56.30	32.15	10.13	15.82	714.99	536.55	396.25	594.23	536.55	396.25	594.23	368.26
6		31.17	55.93	14.29	16.88	23.77	718.91	475.10	401.79	591.84	475.10	401.79	591.84	243.03
7		14.10	58.46	8.00	6.10	42.34	824.12	451.11	428.37	694.03	451.11	428.37	694.03	107.57
RADIAL POSITION		ROTOR SPD AT INLET	INLET AHS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	LOSS COEFFICIENT	TOT PRESS LOSS PARAM	EFFICIENCY	ADD EFFICIENCY	POLY MOMEN RISE/ EFFICIENCY	MEAS T RISE	STAT RISE	DIFFUSION FACTOR	CHI
1		1756.73	0.515	1.351	0.849	0.285	0.057	0.7391	0.7161	0.7391	0.366	0.366	0.1547	0.478
2		1726.45	0.561	1.349	0.839	0.231	0.048	0.7641	0.7641	0.7834	0.389	0.389	0.1525	0.500
3		1197.10	0.604	1.274	0.729	0.159	0.032	0.8327	0.8327	0.8457	0.466	0.466	0.1565	0.555
4		1066.77	0.587	1.165	0.702	0.193	0.038	0.8060	0.8060	0.8197	0.534	0.534	0.1614	0.594
5		933.49	0.561	1.050	0.661	0.166	0.032	0.8419	0.8419	0.8524	0.605	0.605	0.1678	0.630
6		785.98	0.500	0.890	0.767	0.181	0.035	0.8560	0.8560	0.8651	0.676	0.676	0.1657	0.676
7		741.39	0.480	0.838	0.859	0.230	0.048	0.8361	0.8361	0.8464	0.702	0.702	0.1680	0.702
RADIAL POSITION		PERCENT DIMENSION	TRAY TOT PRESS RATIO	TRAY TOT PRESS RATIO	FIXED TOT PRESS RATIO	TEMP RATIO	LOSS COEFFICIENT	FIXED TOT PRESS RATIO	TEMP RATIO	PERFORMANCE PARAMETERS	OVERALL PERFORMANCE SUMMARY			
1		5.0000	1.859	1.277	1.835	1.264	1.250	1.845	1.250	Total Pressure Ratio = 1.6883	STAGE DATA ROTOR DATA ROTOR DATA			
2		10.0000	1.869	1.254	1.779	1.215	1.250	1.779	1.250	Adiabatic Efficiency = 0.7570	FIXED INST. FIXED INST. TRAV. INST.			
3		30.0000	1.803	1.214	1.686	1.179	1.250	1.686	1.179	Polytropic Efficiency = 0.7742	1.7361 1.7670			
4		50.0000	1.745	1.202	1.632	1.179	1.250	1.632	1.179	Percent Design Speed = 100.0	0.8006 0.8354			
5		70.0000	1.670	1.169	1.592	1.166	1.250	1.592	1.166	Cor. Nozzle Weight Flow = 184.2	0.8155 0.8480			
6		90.0000	1.622	1.169	1.592	1.166	1.250	1.592	1.166	Discharge Valve Setting = 4.3				
7		95.0000	1.753	1.182	1.588	1.169	1.250	1.588	1.169	IE Check Flow/Noz.Flow = 1.0741	TE Check Flow/Noz.Flow = 0.9729			
										Assumed IE Flow Coeff. = 0.9850	Assumed TE Flow Coeff. = 0.9400			



TABLE XIII - TASK I STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Concluded)

POINT NUMBER 16		READING NUMBER 340		DATE 92 1/1970						
STATOR BLADE ROW - NASA TASK IV										
RADIAL POSITION	REL INLET FLOW ANG	ARS INLET FLOW ANG	CMRR LN LE ANGLE	INCID ANG MN CMRR LN	INCID ANG SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ARS YANG VEL	INLET REL YANG VEL
1	50.82	39.47	11.35	8.12	39.11	758.72	523.75	479.28	586.16	479.28
2	47.93	35.04	8.12	4.92	35.04	771.88	506.90	479.28	566.29	479.28
3	50.19	39.80	10.39	13.11	39.80	747.28	477.85	423.06	575.30	423.06
4	53.97	40.86	13.11	11.25	40.86	721.85	423.06	422.74	561.67	422.74
5	53.47	42.22	11.25	7.14	42.22	811.67	449.48	449.48	576.63	449.48
6	56.15	42.76	13.39							
7										
RADIAL POSITION	REL EXIT FLOW ANG	ARS EXIT FLOW ANG	CMRR LN TE ANGLE	DEV ANGLE	YURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ARS YANG VEL	EXIT REL YANG VEL
1	2.05	2.05	13.18	48.78	614.23	613.83	21.93	613.83	21.93	613.83
2	10.10	10.10	12.35	44.99	639.09	630.36	25.11	630.36	25.11	630.36
3	8.87	8.87	9.34	47.46	571.47	571.21	4.64	571.21	4.64	571.21
4	7.75	7.75	5.96	52.98	486.63	485.52	-23.64	485.52	-23.64	485.52
5	1.51	1.51	59.48	429.97	429.97	428.90	-11.27	428.90	-11.27	428.90
6	7.44	7.44	18.02	46.03	399.16	394.60	51.52	394.60	51.52	394.60
7	4.06	4.06	8.30	60.21	380.65	378.48	-26.86	378.48	-26.86	378.48
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	DIFFUSION FACTOR	CHI				
1	0.620	0.620	1.281	0.435	0.183	0.183				
2	0.643	0.643	1.221	0.470	0.205	0.205				
3	0.637	0.637	1.127	0.470	0.266	0.266				
4	0.633	0.633	1.016	0.577	0.151	0.151				
5	0.615	0.615	1.014	0.620	0.457	0.457				
6	0.612	0.612	0.933	0.614	0.534	0.534				
7	0.609	0.609	0.842	0.732	0.427	0.427				
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	SOLIDITY	COEFFICIENT	LOSS	TOY PRESS LOSS	ADD EFFICIENCY	POLY MOMEN RISE/ MEAS ↑ RISE	STAT PRESS COEFF
1	0.502	0.502	1.5230	0.153	0.153	0.153	0.050	0.5617	0.169	0.169
2	0.527	0.527	1.5440	0.118	0.118	0.118	0.038	0.6533	0.189	0.189
3	0.475	0.475	1.6310	0.134	0.134	0.134	0.041	0.6304	0.247	0.247
4	0.405	0.405	1.7420	0.104	0.104	0.104	0.030	0.6202	0.329	0.329
5	0.359	0.359	1.6800	0.096	0.096	0.096	0.025	0.7175	0.434	0.434
6	0.335	0.335	2.0510	0.083	0.083	0.083	0.020	0.7840	0.511	0.511
7	0.319	0.319	2.0980	0.058	0.058	0.058	0.014	0.5605	0.399	0.399
RADIAL POSITION	PERCENT IMMERSION	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	OVERALL PERFORMANCE SUMMARY				
1	5.0000	0.962	0.977	0.965	1.000	STAGE DATA STATOR DATA				
2	10.0000	0.970	1.000	0.971	1.000	FIXED INST. FIXED INST. TRAV. INST.				
3	30.0000	0.957	0.953	0.968	1.000	1.6883 0.9725 0.9549				
4	50.0000	0.942	0.992	0.975	1.000	0.7742 0.9494 0.7082				
5	70.0000	0.954	0.992	0.978	1.000	Discharge Valve Setting=4.3				
6	90.0000	0.963	0.993	0.981	1.000	Percent Design Speed = 100.0				
7	95.0000	0.893	0.985	0.982	1.000	Cor. Nozzle Weight Flow= 184.2				
						IE Check Flow/Noz.Flow = 0.9781				
						Assumed IE Flow Coeff. = 0.9550				
						WE Check Flow/Noz.Flow = 1.0353				
						Assumed WE Flow Coeff. = 0.9330				

APPENDIX D

LISTING OF TASK I STAGE RADIAL  
DISTORTION BLADE ELEMENT DATA

060870

TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA

ROTOR BLADE ROW #		NASA TASK ID		DATE							
6		19		6/4/1970							
BLADE ELEMENT PERFORMANCE RESULTS											
POINT NUMBER		READING NUMBER		DATE							
10		31		6/4/1970							
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CMBR LN LE ANGLE	INCLD ANG MN CMBR LN	INCLD ANG BUCY SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	
1	70.95	-4.23	60.60	9.95	7.29	497.28	3479.90	492.14	336.39	1394.01	
2	69.05	-3.51	59.61	9.44	6.42	523.33	1456.94	520.52	331.94	1350.65	
3	61.33	-0.52	56.01	5.32	0.86	658.58	1372.84	658.47	86.03	1201.26	
4	51.00	0.63	52.56	-1.56	7.40	859.17	1362.82	858.65	0.46	1057.92	
5	46.71	0.30	49.74	3.08	-9.79	887.99	1289.64	875.67	4.66	920.72	
6	47.24	-0.54	47.11	0.13	7.53	764.64	1102.08	733.87	4.97	793.70	
7	47.90	-0.90	46.13	1.57	-6.33	720.74	1042.19	685.00	10.78	752.87	
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMBR LN TE ANGLE	REL DEV ANGLE	REL TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	
1	58.75	58.46	54.80	3.95	31.80	784.41	4790.94	409.88	667.81	678.47	
2	54.46	54.14	54.42	0.04	12.59	807.05	4133.35	472.27	653.33	661.10	
3	51.89	46.19	50.66	1.21	9.44	745.70	3367.46	516.12	538.06	658.11	
4	48.90	42.66	43.79	4.71	8.50	713.56	791.90	524.70	481.43	593.00	
5	42.99	43.31	32.15	10.44	4.12	706.45	698.25	513.09	483.72	471.67	
6	33.70	47.55	14.29	19.01	13.52	573.60	573.60	477.48	523.98	313.49	
7	23.64	51.81	5.00	15.64	24.06	789.81	524.92	471.84	593.78	204.58	
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	SOLIDITY COEFFICIENT	LOSS PARAM	EFFICIENCY	POLY MOMEN RISE/ EFFICIENCY	STAT PRESS RISE COEFF	CHI	
1	1257.02	0.451	1.341	0.833	1.3340	0.053	0.7434	0.7663	0.397	0.509	
2	1227.71	0.478	1.324	0.907	1.3690	0.051	0.7793	0.7957	0.416	0.525	
3	1198.23	0.512	1.275	0.784	1.5080	0.001	0.9927	0.9933	0.530	0.616	
4	1067.38	0.614	1.292	0.613	1.6840	0.022	0.8608	0.8699	0.581	0.651	
5	934.28	0.847	1.226	0.586	1.9060	0.011	0.9237	0.9283	0.683	0.683	
6	786.73	0.719	1.036	0.651	2.2170	0.021	0.8771	0.8842	0.678	0.678	
7	642.69	0.674	0.975	0.689	2.3390	0.027	0.8659	0.8737	0.608	0.608	
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	FIXED TOY PRESS RATIO	FIXED TOY TEMP RATIO	LOSS COEFFICIENT	EFFICIENCY	POLY MOMEN RISE/ EFFICIENCY	STAT PRESS RISE COEFF		
1	1343.28	0.635	1.640	1.3340	1.224	0.273	0.7434	0.7663	0.397		
2	1314.44	0.661	1.666	1.3690	1.955	0.243	0.7793	0.7957	0.416		
3	1196.16	0.629	1.706	1.5080	1.285	0.007	0.9927	0.9933	0.530		
4	1076.83	0.611	1.678	1.6840	1.910	0.110	0.8608	0.8699	0.581		
5	955.40	0.611	1.604	1.9060	1.618	0.058	0.9237	0.9283	0.683		
6	835.66	0.617	1.500	2.2170	1.144	0.114	0.8771	0.8842	0.696		
7	806.36	0.669	1.456	2.3390	1.528	0.138	0.8659	0.8737	0.753		
RADIAL POSITION	PERCENT DESIGN SPEED	DISCHARGE VALVE SETTINGS	PERFORMANCE PARAMETERS	STAGE DATA ROTOR DATA		FIXED INST. FIXED INST. TRAV. INST.		ROTOR DATA		TRAV. INST.	
1	100.0	7.0	Total Pressure Ratio = 1.6675	1.7010	1.7627	1.6675	1.7010	1.7627	1.6675	1.7010	1.7627
2	100.0	7.0	Adiabatic Efficiency = 0.7949	0.8282	0.8895	0.7949	0.8282	0.8895	0.7949	0.8282	0.8895
3	100.0	7.0	Polytropic Efficiency = 0.8091	0.8406	0.8980	0.8091	0.8406	0.8980	0.8091	0.8406	0.8980
4	100.0	7.0	Percent Design Speed = 100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
5	100.0	7.0	Cor. Nozzle Weight Flow = 202.1	202.1	202.1	202.1	202.1	202.1	202.1	202.1	202.1
6	100.0	7.0	LE Check Flow/Noz.Flow = 0.9936	0.9936	0.9936	0.9936	0.9936	0.9936	0.9936	0.9936	0.9936
7	100.0	7.0	Assumed LE Flow Coeff. = 0.9850	0.9850	0.9850	0.9850	0.9850	0.9850	0.9850	0.9850	0.9850
			TE Check Flow/Noz.Flow = 0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
			Assumed TE Flow Coeff. = 0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500

OVERALL PERFORMANCE SUMMARY

STAGE DATA ROTOR DATA ROTOR DATA  
FIXED INST. FIXED INST. TRAV. INST.

PERFORMANCE PARAMETERS

Total Pressure Ratio = 1.6675 1.7010 1.7627  
Adiabatic Efficiency = 0.7949 0.8282 0.8895  
Polytropic Efficiency = 0.8091 0.8406 0.8980

Percent Design Speed = 100.0  
Cor. Nozzle Weight Flow = 202.1

LE Check Flow/Noz.Flow = 0.9936  
Assumed LE Flow Coeff. = 0.9850

TE Check Flow/Noz.Flow = 0.9500  
Assumed TE Flow Coeff. = 0.9500

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TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

		STATOR BLADE ROW # NASA TASK IV														
		BLADE ELEMENT PERFORMANCE RESULTS														
		POINT NUMBER	10	11	12	13	14	15	16	17	18	19	20	DATE		
		6/ 4/1970														
RADIAL POSITION		REL INLET FLOW ANG	ABS INLET FLOW ANG	CMBR LN LE ANGLE	INCID ANG MN CMBR LN	INCID ANG SURF	INLET ABS VELOCITY	INLET REL VLOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET RFL TANG VEL	EXIT ABS VELOCITY	EXIT REL VLOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT RFL TANG VEL
1		58.33	53.62	39.47	18.66	787.52	814.47	413.50	670.22	655.70	573.66	586.20	573.66	573.66	36.67	0.94
2		44.29	39.71	39.71	5.28	770.11	743.18	483.10	537.54	511.07	566.79	557.86	566.79	557.86	23.66	9.02
3		40.18	39.80	39.80	0.38	730.86	718.06	552.10	478.62	473.50	538.26	538.26	538.26	538.26	23.66	9.02
4		40.62	40.62	40.62	-0.24	718.06	718.06	503.93	503.27	503.27	503.93	507.20	507.20	507.20	0.60	0.60
5		44.96	42.22	42.22	2.74	718.06	718.06	449.73	503.27	503.27	449.73	449.73	449.73	449.73	15.12	15.12
6		49.28	42.76	42.76	6.52	765.83	765.83	422.01	575.85	575.85	422.01	422.01	422.01	422.01	-18.55	-18.55
RADIAL POSITION		REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMBR LN LE ANGLE	INCID ANG MN CMBR LN	INCID ANG SURF	EXIT ABS VELOCITY	EXIT REL VLOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT RFL TANG VEL	DIFFUSION FACTOR				
1		0.09	0.09	11.22	56.23	573.67	573.67	573.67	573.67	573.67	573.67	0.350	0.280	0.280	0.280	0.280
2		3.58	3.58	10.40	50.04	587.37	587.37	587.37	587.37	587.37	587.37	0.525	0.525	0.525	0.525	0.525
3		2.43	2.43	8.87	41.86	558.60	558.60	558.60	558.60	558.60	558.60	0.479	0.479	0.479	0.479	0.479
4		0.96	0.96	6.75	39.22	538.93	538.93	538.93	538.93	538.93	538.93	0.455	0.455	0.455	0.455	0.455
5		-0.07	-0.07	9.71	40.69	508.29	508.29	508.29	508.29	508.29	508.29	0.475	0.475	0.475	0.475	0.475
6		1.93	1.93	9.03	40.69	508.29	508.29	508.29	508.29	508.29	508.29	0.534	0.534	0.534	0.534	0.534
7		-2.52	-2.52	9.84	51.80	423.76	423.76	423.76	423.76	423.76	423.76	0.628	0.628	0.628	0.628	0.628
RADIAL POSITION		REL INLET FLOW ANG	ABS INLET FLOW ANG	CMBR LN LE ANGLE	INCID ANG MN CMBR LN	INCID ANG SURF	INLET ABS VELOCITY	INLET REL VLOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET RFL TANG VEL	DIFFUSION FACTOR				
1		0.637	0.637	1.587	1.587	1.587	1.587	1.587	1.587	1.587	1.587	0.350	0.280	0.280	0.280	0.280
2		0.667	0.667	1.213	1.213	1.213	1.213	1.213	1.213	1.213	1.213	0.525	0.525	0.525	0.525	0.525
3		0.652	0.652	1.012	1.012	1.012	1.012	1.012	1.012	1.012	1.012	0.479	0.479	0.479	0.479	0.479
4		0.638	0.638	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.455	0.455	0.455	0.455	0.455
5		0.633	0.633	0.919	0.919	0.919	0.919	0.919	0.919	0.919	0.919	0.475	0.475	0.475	0.475	0.475
6		0.622	0.622	0.892	0.892	0.892	0.892	0.892	0.892	0.892	0.892	0.534	0.534	0.534	0.534	0.534
7		0.665	0.665	0.852	0.852	0.852	0.852	0.852	0.852	0.852	0.852	0.628	0.628	0.628	0.628	0.628
RADIAL POSITION		REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMBR LN LE ANGLE	INCID ANG MN CMBR LN	INCID ANG SURF	EXIT ABS VELOCITY	EXIT REL VLOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT RFL TANG VEL	DIFFUSION FACTOR				
1		0.463	0.463	1.5230	1.5230	1.5230	1.5230	1.5230	1.5230	1.5230	1.5230	0.350	0.280	0.280	0.280	0.280
2		0.477	0.477	1.5440	1.5440	1.5440	1.5440	1.5440	1.5440	1.5440	1.5440	0.525	0.525	0.525	0.525	0.525
3		0.466	0.466	1.6310	1.6310	1.6310	1.6310	1.6310	1.6310	1.6310	1.6310	0.479	0.479	0.479	0.479	0.479
4		0.455	0.455	1.7420	1.7420	1.7420	1.7420	1.7420	1.7420	1.7420	1.7420	0.455	0.455	0.455	0.455	0.455
5		0.433	0.433	1.8800	1.8800	1.8800	1.8800	1.8800	1.8800	1.8800	1.8800	0.475	0.475	0.475	0.475	0.475
6		0.483	0.483	2.0510	2.0510	2.0510	2.0510	2.0510	2.0510	2.0510	2.0510	0.534	0.534	0.534	0.534	0.534
7		0.359	0.359	2.0980	2.0980	2.0980	2.0980	2.0980	2.0980	2.0980	2.0980	0.628	0.628	0.628	0.628	0.628
RADIAL POSITION		PERCENT UNCORRECTED	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	LOSS COEFFICIENT	LOSS PARAM	TOT PRESS EFFICIENCY	ABS EFFICIENCY	POLY MOMEN RISE/ RISE	SVAT PRESS RISE COEFF				
1		9.0000	0.954	0.968	0.963	1.006	1.006	0.051	0.6284	0.6284	0.281	0.281	0.281	0.281	0.281	0.281
2		10.0000	0.946	0.978	0.963	1.006	1.006	0.046	0.6160	0.6160	0.283	0.283	0.283	0.283	0.283	0.283
3		30.0000	0.971	0.990	0.962	1.006	1.006	0.022	0.7863	0.7863	0.343	0.343	0.343	0.343	0.343	0.343
4		50.0000	0.983	0.995	0.991	1.006	1.006	0.011	0.8731	0.8731	0.386	0.386	0.386	0.386	0.386	0.386
5		70.0000	0.984	0.995	0.990	1.006	1.006	0.011	0.8863	0.8863	0.430	0.430	0.430	0.430	0.430	0.430
6		90.0000	0.971	0.996	0.981	1.006	1.006	0.020	0.8152	0.8152	0.466	0.466	0.466	0.466	0.466	0.466
7		90.0000	0.928	0.991	0.975	1.006	1.006	0.022	0.6198	0.6198	0.397	0.397	0.397	0.397	0.397	0.397
OVERALL PERFORMANCE SUMMARY																
STAGE DATA STATOR DATA STATOR DATA																
FIXED INST. FIXED INST. TRAV. INST.																
PERFORMANCE PARAMETERS																
Total Pressure Ratio = 1.6675 0.9803 0.9853																
Polytropic Efficiency = 0.8091 0.9635 0.9197																
Percent Design Speed = 100.0 Discharge Valve Setting= 7.0																
Cor. Nozzle Weight Flow= 203.1																
LE Check Flow/Noz.Flow = 0.9142 TE Check Flow/Noz.Flow = 0.9245																
Assumed LE Flow Coeff. = 0.9500 Assumed TE Flow Coeff. = 0.9350																

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TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

ROTOR BLADE ROW #		NASA TASK ID		DATE	
67		471970		67 471970	
BLADE ELEMENT PERFORMANCE RESULTS					
POINT NUMBER	II	READING NUMBER	S2	DATE	
RADIAL POSITION	1	ABS INLET FLOW ANG	57.33	CMR LN LE ANGLE	60.60
	2	ABS INLET FLOW ANG	55.93	CMR LN LE ANGLE	59.61
	3	ABS INLET FLOW ANG	58.04	CMR LN LE ANGLE	56.01
	4	ABS INLET FLOW ANG	47.93	CMR LN LE ANGLE	52.56
	5	ABS INLET FLOW ANG	45.42	CMR LN LE ANGLE	49.71
	6	ABS INLET FLOW ANG	45.46	CMR LN LE ANGLE	47.11
	7	ABS INLET FLOW ANG	46.74	CMR LN LE ANGLE	46.13
RADIAL POSITION	1	REL INLET FLOW ANG	67.33	INCL ANG	6.53
	2	REL INLET FLOW ANG	65.93	INCL ANG	5.92
	3	REL INLET FLOW ANG	58.04	INCL ANG	2.63
	4	REL INLET FLOW ANG	47.93	INCL ANG	16.47
	5	REL INLET FLOW ANG	45.42	INCL ANG	13.08
	6	REL INLET FLOW ANG	45.46	INCL ANG	11.65
	7	REL INLET FLOW ANG	46.74	INCL ANG	7.29
RADIAL POSITION	1	ABS EXIT FLOW ANG	43.94	CMR LN RE ANGLE	57.86
	2	ABS EXIT FLOW ANG	43.62	CMR LN RE ANGLE	63.31
	3	ABS EXIT FLOW ANG	39.93	CMR LN RE ANGLE	73.44
	4	ABS EXIT FLOW ANG	35.30	CMR LN RE ANGLE	67.51
	5	ABS EXIT FLOW ANG	39.83	CMR LN RE ANGLE	69.99
	6	ABS EXIT FLOW ANG	41.38	CMR LN RE ANGLE	78.29
	7	ABS EXIT FLOW ANG	46.46	CMR LN RE ANGLE	80.56
RADIAL POSITION	1	REL EXIT FLOW ANG	56.94	INCL ANG	1.64
	2	REL EXIT FLOW ANG	56.71	INCL ANG	2.29
	3	REL EXIT FLOW ANG	51.39	INCL ANG	1.52
	4	REL EXIT FLOW ANG	45.03	INCL ANG	7.60
	5	REL EXIT FLOW ANG	30.73	INCL ANG	12.88
	6	REL EXIT FLOW ANG	22.66	INCL ANG	16.44
	7	REL EXIT FLOW ANG	22.66	INCL ANG	14.86
RADIAL POSITION	1	ROTOR SPD AT INLET	1358.86	AXIAL VEL	
	2	ROTOR SPD AT INLET	1328.93	AXIAL VEL	
	3	ROTOR SPD AT INLET	1399.34	AXIAL VEL	
	4	ROTOR SPD AT INLET	1668.37	AXIAL VEL	
	5	ROTOR SPD AT INLET	1351.24	AXIAL VEL	
	6	ROTOR SPD AT INLET	787.46	AXIAL VEL	
	7	ROTOR SPD AT INLET	742.78	AXIAL VEL	
RADIAL POSITION	1	EXIT MACH NO	0.629	INLET MACH NO	1.353
	2	EXIT MACH NO	0.616	INLET MACH NO	0.949
	3	EXIT MACH NO	0.627	INLET MACH NO	1.338
	4	EXIT MACH NO	0.590	INLET MACH NO	1.302
	5	EXIT MACH NO	0.679	INLET MACH NO	1.368
	6	EXIT MACH NO	0.762	INLET MACH NO	1.248
	7	EXIT MACH NO	0.693	INLET MACH NO	1.064
RADIAL POSITION	1	EXIT PRESS	0.036	TOT PRESS LOSS	0.036
	2	EXIT PRESS	0.032	TOT PRESS LOSS	0.032
	3	EXIT PRESS	0.022	TOT PRESS LOSS	0.022
	4	EXIT PRESS	0.028	TOT PRESS LOSS	0.028
	5	EXIT PRESS	0.029	TOT PRESS LOSS	0.029
	6	EXIT PRESS	0.029	TOT PRESS LOSS	0.029
	7	EXIT PRESS	0.029	TOT PRESS LOSS	0.029
RADIAL POSITION	1	EXIT VELOCITY	544.05	EXIT VELOCITY	985.43
	2	EXIT VELOCITY	506.40	EXIT VELOCITY	969.08
	3	EXIT VELOCITY	471.99	EXIT VELOCITY	918.87
	4	EXIT VELOCITY	389.16	EXIT VELOCITY	880.84
	5	EXIT VELOCITY	521.15	EXIT VELOCITY	738.63
	6	EXIT VELOCITY	499.47	EXIT VELOCITY	667.21
	7	EXIT VELOCITY	576.21	EXIT VELOCITY	605.80
RADIAL POSITION	1	INLET AX VELOCITY	373.23	INLET AX VELOCITY	1476.72
	2	INLET AX VELOCITY	602.11	INLET AX VELOCITY	1454.56
	3	INLET AX VELOCITY	721.59	INLET AX VELOCITY	1394.59
	4	INLET AX VELOCITY	952.50	INLET AX VELOCITY	1433.17
	5	INLET AX VELOCITY	906.84	INLET AX VELOCITY	1502.56
	6	INLET AX VELOCITY	775.71	INLET AX VELOCITY	1128.92
	7	INLET AX VELOCITY	702.41	INLET AX VELOCITY	1050.35
RADIAL POSITION	1	INLET ANG	0.17	INLET ANG	0.17
	2	INLET ANG	5.61	INLET ANG	6.53
	3	INLET ANG	13.33	INLET ANG	13.33
	4	INLET ANG	6.48	INLET ANG	6.48
	5	INLET ANG	20.76	INLET ANG	20.76
	6	INLET ANG	744.42	INLET ANG	744.42
RADIAL POSITION	1	EXIT ANG	0.17	EXIT ANG	0.17
	2	EXIT ANG	5.61	EXIT ANG	6.53
	3	EXIT ANG	13.33	EXIT ANG	13.33
	4	EXIT ANG	6.48	EXIT ANG	6.48
	5	EXIT ANG	20.76	EXIT ANG	20.76
	6	EXIT ANG	744.42	EXIT ANG	744.42
RADIAL POSITION	1	DIFFUSION FACTOR	0.465	DIFFUSION FACTOR	0.465
	2	DIFFUSION FACTOR	0.459	DIFFUSION FACTOR	0.459
	3	DIFFUSION FACTOR	0.451	DIFFUSION FACTOR	0.451
	4	DIFFUSION FACTOR	0.460	DIFFUSION FACTOR	0.460
	5	DIFFUSION FACTOR	0.521	DIFFUSION FACTOR	0.521
	6	DIFFUSION FACTOR	0.511	DIFFUSION FACTOR	0.511
	7	DIFFUSION FACTOR	0.546	DIFFUSION FACTOR	0.546
RADIAL POSITION	1	STAY PRESS	0.823	POLY MOMEN RISE	0.823
	2	STAY PRESS	0.840	POLY MOMEN RISE	0.840
	3	STAY PRESS	0.828	POLY MOMEN RISE	0.828
	4	STAY PRESS	0.839	POLY MOMEN RISE	0.839
	5	STAY PRESS	0.862	POLY MOMEN RISE	0.862
	6	STAY PRESS	0.827	POLY MOMEN RISE	0.827
	7	STAY PRESS	0.842	POLY MOMEN RISE	0.842
RADIAL POSITION	1	FIXED TOY TEMP RATIO	1.230	FIXED TOY TEMP RATIO	1.230
	2	FIXED TOY TEMP RATIO	1.817	FIXED TOY TEMP RATIO	1.817
	3	FIXED TOY TEMP RATIO	1.605	FIXED TOY TEMP RATIO	1.605
	4	FIXED TOY TEMP RATIO	1.476	FIXED TOY TEMP RATIO	1.476
	5	FIXED TOY TEMP RATIO	1.436	FIXED TOY TEMP RATIO	1.436
	6	FIXED TOY TEMP RATIO	1.452	FIXED TOY TEMP RATIO	1.452
	7	FIXED TOY TEMP RATIO	1.453	FIXED TOY TEMP RATIO	1.453

OVERALL PERFORMANCE SUMMARY  
 STAGE DATA ROTOR DATA ROTOR DATA  
 FIXED INST. FIXED INST. TRAV. INST.  
 1.5468 1.5710 1.6406  
 0.7837 0.8134 0.9251  
 0.7966 0.8249 0.9302  
 Percent Design Speed = 100.1  
 Cor. Nozzle Weight Flow = 211.4  
 Discharge Valve Setting = 12.0

PERFORMANCE PARAMETERS  
 Total Pressure Ratio =  
 Adiabatic Efficiency =  
 Polytropic Efficiency =  
 LE Check Flow/Noz.Flow = 0.9791  
 Assumed LE Flow Coeff. = 0.9850  
 TE Check Flow/Noz.Flow = 0.9077  
 Assumed TE Flow Coeff. = 0.9500

TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

		STATOR BLADE ROW 3 NASA TASK IV									
		BLADE ELEMENT PERFORMANCE RESULTS					POINT NUMBER 11				
		BLADE BEADING NUMBER	DATE	INLET ABS		INLET REL		EXIT ABS		EXIT REL	
		32	67 4X1970	VELOCITY	VELOCITY	VELOCITY	VELOCITY	VELOCITY	VELOCITY	VELOCITY	VELOCITY
				INLET ANG		INLET REL		EXIT ABS		EXIT REL	
		INCID	SUCT SURF	ANGLE	ANGLE	ANGLE	ANGLE	ANGLE	ANGLE	ANGLE	ANGLE
		LN	LN	TE	TE	TE	TE	TE	TE	TE	TE
		CMBR LN	CMBR LN	CMBR LN	CMBR LN	CMBR LN	CMBR LN	CMBR LN	CMBR LN	CMBR LN	CMBR LN
		LE ANGLE	LE ANGLE	LE ANGLE	LE ANGLE	LE ANGLE	LE ANGLE	LE ANGLE	LE ANGLE	LE ANGLE	LE ANGLE
		INLET FLOW ANG	INLET FLOW ANG	INLET FLOW ANG	INLET FLOW ANG	INLET FLOW ANG	INLET FLOW ANG	INLET FLOW ANG	INLET FLOW ANG	INLET FLOW ANG	INLET FLOW ANG
		ABS FLOW ANG	ABS FLOW ANG	ABS FLOW ANG	ABS FLOW ANG	ABS FLOW ANG	ABS FLOW ANG	ABS FLOW ANG	ABS FLOW ANG	ABS FLOW ANG	ABS FLOW ANG
		REL INLET FLOW ANG	REL INLET FLOW ANG	REL INLET FLOW ANG	REL INLET FLOW ANG	REL INLET FLOW ANG	REL INLET FLOW ANG	REL INLET FLOW ANG	REL INLET FLOW ANG	REL INLET FLOW ANG	REL INLET FLOW ANG
		REL FLOW ANG	REL FLOW ANG	REL FLOW ANG	REL FLOW ANG	REL FLOW ANG	REL FLOW ANG	REL FLOW ANG	REL FLOW ANG	REL FLOW ANG	REL FLOW ANG
		ROTOR SPD AT INLET	ROTOR SPD AT INLET	ROTOR SPD AT INLET	ROTOR SPD AT INLET	ROTOR SPD AT INLET	ROTOR SPD AT INLET	ROTOR SPD AT INLET	ROTOR SPD AT INLET	ROTOR SPD AT INLET	ROTOR SPD AT INLET
		MACH NO	MACH NO	MACH NO	MACH NO	MACH NO	MACH NO	MACH NO	MACH NO	MACH NO	MACH NO
		EXIT ABS MACH NO	EXIT ABS MACH NO	EXIT ABS MACH NO	EXIT ABS MACH NO	EXIT ABS MACH NO	EXIT ABS MACH NO	EXIT ABS MACH NO	EXIT ABS MACH NO	EXIT ABS MACH NO	EXIT ABS MACH NO
		EXIT REL MACH NO	EXIT REL MACH NO	EXIT REL MACH NO	EXIT REL MACH NO	EXIT REL MACH NO	EXIT REL MACH NO	EXIT REL MACH NO	EXIT REL MACH NO	EXIT REL MACH NO	EXIT REL MACH NO
		ROTOR SPD AT EXIT	ROTOR SPD AT EXIT	ROTOR SPD AT EXIT	ROTOR SPD AT EXIT	ROTOR SPD AT EXIT	ROTOR SPD AT EXIT	ROTOR SPD AT EXIT	ROTOR SPD AT EXIT	ROTOR SPD AT EXIT	ROTOR SPD AT EXIT
		MACH NO	MACH NO	MACH NO	MACH NO	MACH NO	MACH NO	MACH NO	MACH NO	MACH NO	MACH NO
		EXIT ABS MACH NO	EXIT ABS MACH NO	EXIT ABS MACH NO	EXIT ABS MACH NO	EXIT ABS MACH NO	EXIT ABS MACH NO	EXIT ABS MACH NO	EXIT ABS MACH NO	EXIT ABS MACH NO	EXIT ABS MACH NO
		EXIT REL MACH NO	EXIT REL MACH NO	EXIT REL MACH NO	EXIT REL MACH NO	EXIT REL MACH NO	EXIT REL MACH NO	EXIT REL MACH NO	EXIT REL MACH NO	EXIT REL MACH NO	EXIT REL MACH NO
		PERCENT LAMEN FLOW	PERCENT LAMEN FLOW	PERCENT LAMEN FLOW	PERCENT LAMEN FLOW	PERCENT LAMEN FLOW	PERCENT LAMEN FLOW	PERCENT LAMEN FLOW	PERCENT LAMEN FLOW	PERCENT LAMEN FLOW	PERCENT LAMEN FLOW
		INLET FLOW	INLET FLOW	INLET FLOW	INLET FLOW	INLET FLOW	INLET FLOW	INLET FLOW	INLET FLOW	INLET FLOW	INLET FLOW
		VELOCITY	VELOCITY	VELOCITY	VELOCITY	VELOCITY	VELOCITY	VELOCITY	VELOCITY	VELOCITY	VELOCITY
		INLET ABS VELOCITY	INLET ABS VELOCITY	INLET ABS VELOCITY	INLET ABS VELOCITY	INLET ABS VELOCITY	INLET ABS VELOCITY	INLET ABS VELOCITY	INLET ABS VELOCITY	INLET ABS VELOCITY	INLET ABS VELOCITY
		INLET REL VELOCITY	INLET REL VELOCITY	INLET REL VELOCITY	INLET REL VELOCITY	INLET REL VELOCITY	INLET REL VELOCITY	INLET REL VELOCITY	INLET REL VELOCITY	INLET REL VELOCITY	INLET REL VELOCITY
		EXIT ABS VELOCITY	EXIT ABS VELOCITY	EXIT ABS VELOCITY	EXIT ABS VELOCITY	EXIT ABS VELOCITY	EXIT ABS VELOCITY	EXIT ABS VELOCITY	EXIT ABS VELOCITY	EXIT ABS VELOCITY	EXIT ABS VELOCITY
		EXIT REL VELOCITY	EXIT REL VELOCITY	EXIT REL VELOCITY	EXIT REL VELOCITY	EXIT REL VELOCITY	EXIT REL VELOCITY	EXIT REL VELOCITY	EXIT REL VELOCITY	EXIT REL VELOCITY	EXIT REL VELOCITY
		DIFFUSION FACTOR	DIFFUSION FACTOR	DIFFUSION FACTOR	DIFFUSION FACTOR	DIFFUSION FACTOR	DIFFUSION FACTOR	DIFFUSION FACTOR	DIFFUSION FACTOR	DIFFUSION FACTOR	DIFFUSION FACTOR
		CHI	CHI	CHI	CHI	CHI	CHI	CHI	CHI	CHI	CHI
		0.207	0.207	0.207	0.207	0.207	0.207	0.207	0.207	0.207	0.207
		0.231	0.231	0.231	0.231	0.231	0.231	0.231	0.231	0.231	0.231
		0.248	0.248	0.248	0.248	0.248	0.248	0.248	0.248	0.248	0.248
		0.311	0.311	0.311	0.311	0.311	0.311	0.311	0.311	0.311	0.311
		0.342	0.342	0.342	0.342	0.342	0.342	0.342	0.342	0.342	0.342
		0.310	0.310	0.310	0.310	0.310	0.310	0.310	0.310	0.310	0.310
		0.279	0.279	0.279	0.279	0.279	0.279	0.279	0.279	0.279	0.279
		0.446	0.446	0.446	0.446	0.446	0.446	0.446	0.446	0.446	0.446
		0.371	0.371	0.371	0.371	0.371	0.371	0.371	0.371	0.371	0.371
		0.388	0.388	0.388	0.388	0.388	0.388	0.388	0.388	0.388	0.388
		0.362	0.362	0.362	0.362	0.362	0.362	0.362	0.362	0.362	0.362
		0.379	0.379	0.379	0.379	0.379	0.379	0.379	0.379	0.379	0.379
		0.397	0.397	0.397	0.397	0.397	0.397	0.397	0.397	0.397	0.397
		0.484	0.484	0.484	0.484	0.484	0.484	0.484	0.484	0.484	0.484
		0.7567	0.7567	0.7567	0.7567	0.7567	0.7567	0.7567	0.7567	0.7567	0.7567
		0.6811	0.6811	0.6811	0.6811	0.6811	0.6811	0.6811	0.6811	0.6811	0.6811
		0.664	0.664	0.664	0.664	0.664	0.664	0.664	0.664	0.664	0.664
		0.892	0.892	0.892	0.892	0.892	0.892	0.892	0.892	0.892	0.892
		0.7148	0.7148	0.7148	0.7148	0.7148	0.7148	0.7148	0.7148	0.7148	0.7148
		0.5372	0.5372	0.5372	0.5372	0.5372	0.5372	0.5372	0.5372	0.5372	0.5372

OVERALL PERFORMANCE SUMMARY

STAGE DATA STATOR DATA STATOR DATA  
 FIXED INST. FIXED INST. TRAV. INST.  
 Total Pressure Ratio = 1.5468 0.8846 0.8125  
 Polytropic Efficiency = 0.7966 0.9657 0.8449  
 Percent Design Speed = 100.1  
 Cor. Nozzle Weight Flow = 211.4  
 LE Check Flow/Noz.Flow = 0.9125 TE Check Flow/Noz.Flow = 0.8899  
 Assumed LE Flow Coeff. = 0.9500 Assumed TE Flow Coeff. = 0.9550

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TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

RADIAL POSITION		REL INLET FLOW ANG		ABS INLET FLOW ANG		CMBR LN LE ANGLE		INCID ANB		SUCT SURF		INLET ABS VELOCITY		INLET AX VELOCITY		INLET ABS TANG VEL		INLET REL TANG VFL	
RADIAL POSITION		REL EXIT FLOW ANG		ABS EXIT FLOW ANG		CMBR LN WE ANGLE		REL DEVI ANGLE		REL TURN ANGLE		EXIT ABS VELOCITY		EXIT AX VELOCITY		EXIT ABS TANG VEL		EXIT REL TANG VFL	
RADIAL POSITION		ROTOR SPD AT INLET		INLET ABS MACH NO		EXIT ABS MACH NO		INLET REL MACH NO		AXIAL VEL RATIO		TOT PRESS LOSS		EFFICIENCY		POLY WOMEN RISE/MEAS T. RISE		STAT PRESS RISE COEFF	
RADIAL POSITION		ROTOR SPD AT EXIT		EXIT ABS MACH NO		INLET ABS MACH NO		EXIT REL MACH NO		SOLIDITY		LOSS		EFFICIENCY		POLY WOMEN RISE/MEAS T. RISE		STAT PRESS RISE COEFF	
RADIAL POSITION		PERCENT REGENERATION		TRAV TOT PRESS RATIO		TRAV TOT PRESS RATIO		FIXED TOT PRESS RATIO		TEMP RATIO		FIXED TOT TEMP RATIO		PERFORMANCE PARAMETERS		STAGE DATA ROTOR DATA		ROTOR DATA	
RADIAL POSITION		PERCENT REGENERATION		TRAV TOT PRESS RATIO		TRAV TOT PRESS RATIO		FIXED TOT PRESS RATIO		TEMP RATIO		FIXED TOT TEMP RATIO		PERFORMANCE PARAMETERS		STAGE DATA ROTOR DATA		ROTOR DATA	
1	1	64.81	64.81	-0.02	60.60	59.61	5.61	3.24	3.24	8.56	7.15	596.56	596.56	596.56	596.56	391.54	952.80	952.80	952.80
2	2	64.95	64.95	1.04	59.61	4.84	4.84	3.81	3.81	6.18	3.85	629.05	629.05	629.05	629.05	368.46	947.02	947.02	947.02
3	3	57.98	57.98	1.20	56.01	1.87	1.87	2.59	2.59	5.18	2.02	697.36	697.36	697.36	697.36	376.02	821.09	821.09	821.09
4	4	40.82	40.82	1.01	52.56	-6.24	-6.24	-2.08	-2.08	5.18	1.87	735.06	735.06	735.06	735.06	304.05	773.74	773.74	773.74
5	5	45.35	45.35	0.48	49.71	-4.78	-4.78	-1.17	-1.17	0.83	0.83	839.80	839.80	839.80	839.80	368.62	587.54	587.54	587.54
6	6	45.82	45.82	0.78	47.11	-7.49	-7.49	-1.15	-1.15	1.33	1.33	846.04	846.04	846.04	846.04	483.65	352.67	352.67	352.67
7	7	46.84	46.84	-1.03	46.13	0.71	0.71	-7.19	-7.19	2.89	15.96	827.59	827.59	827.59	827.59	535.87	271.14	271.14	271.14
1	1	1844.84	1844.84	0.611	0.962	0.960	1.3340	0.150	0.150	0.109	0.109	0.030	0.7904	0.8030	0.8030	0.340	0.354	0.354	0.354
2	2	1315.98	1315.98	0.597	0.960	0.960	1.3340	0.150	0.150	0.109	0.109	0.030	0.7904	0.8030	0.8030	0.340	0.354	0.354	0.354
3	3	1977.11	1977.11	0.636	0.999	0.999	1.5080	-0.008	-0.008	0.124	0.124	-0.002	1.0122	1.0114	1.0114	0.341	0.346	0.346	0.346
4	4	956.43	956.43	0.619	0.962	0.962	1.6840	0.154	0.154	0.124	0.124	0.029	0.7590	0.7618	0.7618	0.347	0.347	0.347	0.347
5	5	836.83	836.83	0.753	0.993	0.993	1.9060	0.164	0.164	0.164	0.164	0.029	0.7181	0.7221	0.7221	0.385	0.385	0.385	0.385
6	6	807.00	807.00	0.727	0.901	0.901	2.0370	0.164	0.164	0.207	0.207	0.033	0.7868	0.7961	0.7961	0.402	0.402	0.402	0.402
7	7	742.88	742.88	0.699	0.995	0.995	2.3390	0.207	0.207	0.207	0.207	0.040	0.7588	0.7618	0.7618	0.474	0.474	0.474	0.474
1	1	5.0000	5.0000	1.587	1.176	1.176	1.584	1.170	1.170	1.170	1.170	0.030	0.7904	0.8030	0.8030	0.340	0.354	0.354	0.354
2	2	18.0000	18.0000	1.569	1.154	1.154	1.570	1.163	1.163	1.163	1.163	-0.002	1.0122	1.0114	1.0114	0.341	0.346	0.346	0.346
3	3	30.0000	30.0000	1.607	1.142	1.142	1.615	1.145	1.145	1.145	1.145	0.029	0.7590	0.7618	0.7618	0.347	0.347	0.347	0.347
4	4	50.0000	50.0000	1.348	1.095	1.095	1.328	1.112	1.112	1.112	1.112	0.029	0.7590	0.7618	0.7618	0.385	0.385	0.385	0.385
5	5	70.0000	70.0000	1.291	1.066	1.066	1.291	1.106	1.106	1.106	1.106	0.033	0.7868	0.7961	0.7961	0.402	0.402	0.402	0.402
6	6	90.0000	90.0000	1.438	1.028	1.028	1.382	1.082	1.082	1.082	1.082	0.040	0.7588	0.7618	0.7618	0.474	0.474	0.474	0.474
7	7	98.0000	98.0000	1.406	1.036	1.036	1.361	1.082	1.082	1.082	1.082	0.040	0.7588	0.7618	0.7618	0.474	0.474	0.474	0.474

OVERALL PERFORMANCE SUMMARY

STAGE DATA ROTOR DATA ROTOR DATA  
 FIXED INST. FIXED INST. TRAV. INST. TRAV. INST.  
 Total Pressure Ratio = 1.3659 1.4044 1.4655  
 Adiabatic Efficiency = 0.6975 0.7685 0.9066  
 Polytropic Efficiency = 0.7105 0.7793 0.9115  
 Percent Design Speed = 100.1 Discharge Valve Setting= 30.0  
 Cor. Nozzle Weight Flow= 214.4  
 LE Check Flow/Noz.Flow = 0.9733 TE Check Flow/Noz.Flow = 0.9180  
 Assumed LE Flow Coeff. = 0.9850 Assumed TE Flow Coeff. = 0.9500

TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

STATOR BLADE FOR 2 NASA TASK 1V		BLADE ELEMENT PERFORMANCE RESULTS												
		POINT NUMBER	12	13	14	15	16	17	18	19	20	DATE		
		READING NUMBER	38	39	40	41	42	43	44	45	46	67 4/19/70		
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CMBR LN LE ANGLE	INCID ANG	HN CHBR LN	INCID ANG	SUCTY 80HP	INLET ANG VELOCITY	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET REL TANG VEL	INLET ABS TANG VEL	INLET REL TANG VEL
1	33.11	33.11	39.47	56.36	39.11	719.56	705.45	605.55	605.55	605.55	605.55	592.95	592.95	
2	33.62	33.62	39.11	-7.49	39.01	705.45	773.53	600.72	600.72	600.72	600.72	569.79	569.79	
3	2.07	2.07	39.01	9.04	39.80	773.53	722.95	675.66	675.66	675.66	675.66	875.66	875.66	
4	2.67	2.67	39.80	415.13	40.86	722.95	748.03	655.27	655.27	655.27	655.27	304.02	304.02	
5	29.04	29.04	40.86	413.82	42.22	748.03	881.73	649.80	649.80	649.80	649.80	360.82	360.82	
6	32.35	32.35	42.22	79.87	42.76	881.73	835.62	736.26	736.26	736.26	736.26	466.32	466.32	
7	38.52	38.52	42.76	74.24		835.62		546.37	546.37	546.37	546.37	514.46	514.46	
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMBR LN LE ANGLE	DEV ANG TE	HN CHBR LN	INCID ANG	TURN ANGLE	EXIT ABS VELOCITY	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT REL TANG VEL	EXIT ABS TANG VEL	EXIT REL TANG VEL
1	21.46	21.46	11.13	13.59	11.13	30.65	30.65	628.61	628.61	628.61	628.61	27.02	27.02	
2	2.22	2.22	10.10	12.32	10.10	29.74	29.74	689.64	689.64	689.64	689.64	26.71	26.71	
3	0.43	0.43	8.87	9.30	8.87	28.65	28.65	704.87	704.87	704.87	704.87	5.23	5.23	
4	-1.09	-1.09	8.75	7.66	8.75	25.76	25.76	666.81	666.81	666.81	666.81	512.63	512.63	
5	-9.10	-9.10	9.10	7.56	9.10	30.58	30.58	666.78	666.78	666.78	666.78	517.84	517.84	
6	1.92	1.92	10.58	12.50	10.58	30.43	30.43	797.35	797.35	797.35	797.35	26.58	26.58	
7	1.33	1.33	12.36	13.69	12.36	37.19	37.19	773.68	773.68	773.68	773.68	17.84	17.84	
RADIAL POSITION	ROTGR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	LOSS COEFFICIENT	LOSS COEFFICIENT	LOSS COEFFICIENT	LOSS COEFFICIENT	LOSS COEFFICIENT	LOSS COEFFICIENT	LOSS COEFFICIENT
1	0.615	0.615	1.043	1.043	0.214	0.214	0.214	0.214	0.214	0.214	0.214	0.214	0.214	0.214
2	0.609	0.609	1.147	1.147	0.070	0.070	0.070	0.070	0.070	0.070	0.070	0.070	0.070	0.070
3	0.677	0.677	1.042	1.042	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023
4	0.640	0.640	1.016	1.016	0.031	0.031	0.031	0.031	0.031	0.031	0.031	0.031	0.031	0.031
5	0.661	0.661	1.024	1.024	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042
6	0.789	0.789	1.079	1.079	0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.026
7	0.739	0.739	1.192	1.192	0.024	0.024	0.024	0.024	0.024	0.024	0.024	0.024	0.024	0.024
RADIAL POSITION	ROTGR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	SOLIDITY RATIO	EXIT ABS MACH NO	EXIT REL MACH NO	SOLIDITY RATIO	POLY TROPIC EFFICIENCY	POLY TROPIC EFFICIENCY	POLY TROPIC EFFICIENCY	POLY TROPIC EFFICIENCY	POLY TROPIC EFFICIENCY	POLY TROPIC EFFICIENCY	POLY TROPIC EFFICIENCY
1	0.535	0.535	0.993	0.993	0.214	0.214	0.214	0.214	0.214	0.214	0.214	0.214	0.214	0.214
2	0.593	0.593	0.993	0.993	0.078	0.078	0.078	0.078	0.078	0.078	0.078	0.078	0.078	0.078
3	0.611	0.611	0.993	0.993	0.102	0.102	0.102	0.102	0.102	0.102	0.102	0.102	0.102	0.102
4	0.585	0.585	0.993	0.993	0.145	0.145	0.145	0.145	0.145	0.145	0.145	0.145	0.145	0.145
5	0.587	0.587	0.993	0.993	0.098	0.098	0.098	0.098	0.098	0.098	0.098	0.098	0.098	0.098
6	0.707	0.707	0.997	0.997	0.097	0.097	0.097	0.097	0.097	0.097	0.097	0.097	0.097	0.097
7	0.683	0.683	0.997	0.997	0.116	0.116	0.116	0.116	0.116	0.116	0.116	0.116	0.116	0.116
RADIAL POSITION	PERCENT DIMENSION	TRAV TOT PRESS RATIO	TRAV TOT PRESS RATIO	FIXED TOT PRESS RATIO	TRAV TOT PRESS RATIO	TRAV TOT PRESS RATIO	FIXED TOT PRESS RATIO	TEMP RATIO	TEMP RATIO	TEMP RATIO	TEMP RATIO	TEMP RATIO	TEMP RATIO	TEMP RATIO
1	5.0000	0.945	0.990	0.991	0.991	0.991	0.991	1.000	1.000	1.000	1.000	1.000	1.000	
2	10.0000	0.994	1.004	0.995	1.004	0.995	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
3	30.0000	0.962	1.003	0.973	1.003	0.973	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
4	50.0000	0.966	1.000	0.945	1.000	0.945	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
5	70.0000	0.952	0.989	0.975	0.989	0.975	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
6	90.0000	0.926	0.997	0.966	0.997	0.966	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
7	95.0000	0.946	0.988	0.966	0.988	0.966	1.000	1.000	1.000	1.000	1.000	1.000	1.000	

OVERALL PERFORMANCE SUMMARY

STAGE DATA	STATOR DATA	STATOR DATA
FIXED INST. EFFICIENCY	FIXED INST. EFFICIENCY	FIXED INST. EFFICIENCY
0.214	0.070	0.011
POLY TROPIC EFFICIENCY	POLY TROPIC EFFICIENCY	POLY TROPIC EFFICIENCY
0.023	0.5195	0.023
LOSS COEFFICIENT	LOSS COEFFICIENT	LOSS COEFFICIENT
0.031	0.2997	0.046
TEMP RATIO	TEMP RATIO	TEMP RATIO
0.042	0.2030	0.028
POLY TROPIC EFFICIENCY	POLY TROPIC EFFICIENCY	POLY TROPIC EFFICIENCY
0.026	0.1706	0.030
PERCENT DESIGN SPEED	PERCENT DESIGN SPEED	PERCENT DESIGN SPEED
100.1	100.1	100.1
COR. NOZZLE WEIGHT FLOW	COR. NOZZLE WEIGHT FLOW	COR. NOZZLE WEIGHT FLOW
24.4	24.4	24.4
DISCHARGE VALVE SETTING	DISCHARGE VALVE SETTING	DISCHARGE VALVE SETTING
30.0	30.0	30.0
TOTAL PRESSURE RATIO	TOTAL PRESSURE RATIO	TOTAL PRESSURE RATIO
1.3629	0.9705	0.9593
POLY TROPIC EFFICIENCY	POLY TROPIC EFFICIENCY	POLY TROPIC EFFICIENCY
0.7105	0.9117	0.1986





061170 STATOR BLADE ROW # NASA TASK IV  
 TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

RADIAL POSITION		BLADE ELEMENT PERFORMANCE RESULTS										STATOR BLADE ROW # NASA TASK IV				
		POINT NUMBER 4				BLADE ELEMENT PERFORMANCE RESULTS						6/10/1970				
		CHBR LN		INCID ANG		INLET ABS		INLET REL		INLET AX		INLET ABS		INLET REL		
		LE ANGLE	MN CHBR LN	INCID ANG	SUCT SURF	VELOCITY	VELOCITY	VELOCITY	VELOCITY	VELOCITY	VELOCITY	TANG VEL	TANG VEL	TANG VEL	TANG VEL	
1	1	57.59	39.47	18.22		792.42		423.43		669.46						
1	2	53.41	39.41	14.30		782.80		466.58		628.54						
1	3	42.82	39.01	3.81		769.20		584.01		522.60						
1	4	40.27	39.00	0.47		732.92		556.24		472.88						
2	1	39.34	40.86	-1.52		736.63		566.87		464.61						
2	2	43.50	42.22	1.28		732.18		526.55		499.67						
2	3	48.44	42.76	5.68		767.47		504.94		569.57						
3	1	ABS EXIT	CHBR LN	DEV	TURN	EXIT ABS	EXIT AX	EXIT REL	EXIT AX	EXIT ABS	EXIT REL					
3	2	FLOW ANG	LE ANGLE	ANG TE	ANSLB	VELOCITY	VELOCITY	VELOCITY	VELOCITY	TANG VEL	TANG VEL					
3	3	-0.02	*11.13	15.11	57.71	560.40		340.09		-0.18						
3	4	3.13	*10.10	13.23	50.28	593.48		592.57		32.40						
4	1	1.98	-8.87	10.85	40.84	553.42		552.86		19.11						
4	2	-0.61	-8.75	8.14	40.88	524.00		523.39		-5.62						
4	3	-1.36	-9.10	7.74	40.78	522.02		520.75		-12.41						
4	4	0.01	*18.58	10.59	43.49	492.90		491.38		0.05						
4	5	-5.48	*12.56	6.87	53.93	469.92		466.27		-44.83						
5	1	ROTOR SPD	INLET ABS	AXIAL VEL												
5	2	AT INLET	MACH NO	RATIO												
5	3	0.64	0.64	1.323												
5	4	0.67	0.67	1.270												
5	5	0.65	0.65	0.980												
5	6	0.629	0.629	0.938												
5	7	0.639	0.639	0.919												
5	8	0.634	0.634	0.933												
5	9	0.663	0.663	0.923												
6	1	ROTOR SPD	EXIT ABS	AXIAL VEL												
6	2	AT EXIT	MACH NO	RATIO												
6	3	0.454	0.454	1.5230												
6	4	0.483	0.483	1.5440												
6	5	0.462	0.462	1.6310												
6	6	0.442	0.442	1.7420												
6	7	0.445	0.445	1.8800												
6	8	0.428	0.428	2.0510												
6	9	0.399	0.399	2.0980												
7	1	PERCENT	TRAV TOT	FIXED TOT	LOSS	TOT PRESS	ADP	POLY	WOMEN	RISE/	STAT					
7	2	WATERGON	PRESS RATIO	TEMP RATIO	COEFFICIENT	LOSS PARAM	EFFICIENCY	EFFICIENCY	MEAS	RISE	RISE					
7	3	5.0000	0.971	0.965	0.139	0.046	0.6059	0.7231	0.270	0.270						
7	4	10.0000	0.993	1.000	0.069	0.021	0.7807	0.8543	0.241	0.241						
7	5	30.0000	0.970	0.968	0.042	0.012	0.8543	0.391	0.346	0.346						
7	6	50.0000	0.981	0.996	0.031	0.008	0.8943	0.417	0.417	0.417						
7	7	70.0000	0.985	0.992	0.074	0.018	0.8500	0.435	0.435	0.435						
7	8	90.0000	0.978	0.982	0.101	0.024	0.6663	0.458	0.458	0.458						
7	9	95.0000	0.967	0.973	0.101	0.024	0.408	0.408	0.408	0.408						

OVERALL PERFORMANCE SUMMARY

STAGE DATA STATOR DATA STATOR DATA  
 FIXED INST. FIXED INST. TRAV. INST.  
 PERFORMANCE PARAMETERS  
 Total Pressure Ratio = 1.6490 0.9816 0.9714  
 Polytropic Efficiency = 0.8008 0.9642 0.9332  
 Percent Design Speed = 100.3  
 Cor. Nozzle Weight Flow = 204.3  
 Discharge Valve Setting = 7.5  
 IE Check Flow/Noz.Flow = 0.9027 IE Check Flow/Noz.Flow = 0.9110  
 Assumed IE Flow Coeff. = 0.9500 Assumed IE Flow Coeff. = 0.9350

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 TABLE XIV - TASK 1 STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

ROTOR BLADE ROW # NACA TASK IV									
BLADE ELEMENT PERFORMANCE RESULTS									
POINT NUMBER 5 READING NUMBER 52 DATE 6/10/1970									
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCID ANG MN CHBR LN	INCID ANG SUCT SUPP	INLET ABS VELOCITY	INLET REL VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL
1	2.92	63.47	60.60	8.67	8.17	524.32	1483.10	519.64	1387.58
2	1.82	61.63	59.61	8.02	4.99	557.32	1459.28	555.08	1348.78
3	1.30	59.87	56.01	3.76	0.68	698.08	1396.92	4.28	1202.90
4	1.30	50.15	58.56	2.41	4.28	879.14	1368.44	19.94	1058.18
5	4.86	45.86	49.71	3.85	-18.64	920.44	1312.26	3.46	935.32
6	46.32	47.11	47.11	-0.79	-8.45	789.59	1119.53	-4.92	793.67
7	47.02	47.11	46.13	0.69	-7.01	743.18	1061.48	-14.04	758.04
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	REL DRV ANGLE	REL TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL
1	50.78	51.67	54.80	1.98	12.69	778.95	881.53	610.13	736.60
2	56.66	49.28	54.48	2.94	10.67	749.44	896.28	567.22	750.59
3	58.96	43.05	50.68	1.28	7.91	743.97	879.77	506.44	699.79
4	50.08	40.56	43.79	6.29	6.08	692.73	820.07	450.34	628.85
5	43.32	41.26	38.15	11.17	2.54	703.33	724.59	461.64	496.20
6	31.91	44.06	14.89	17.62	14.42	739.07	627.60	509.82	327.99
7	23.92	48.91	8.80	15.72	23.10	783.12	566.71	582.95	225.49
RADIAL POSITION	AT INLET MACH NO	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	LOSS COEFFICIENT	TOY PRESS LOSS PARAM	ADB EFFICIENCY	POLY MOMEN RISE/ MEAS T RISE	SVAT PRESS RISE COEFF
1	1361.10	0.477	1.348	0.928	0.189	0.839	0.8884	0.8249	0.383
2	1333.31	0.509	1.282	0.880	0.169	0.809	0.8457	0.409	0.495
3	1201.31	0.653	1.300	0.777	-0.018	-0.004	1.0202	1.0185	0.604
4	1079.12	0.839	1.266	0.600	0.141	0.027	0.8111	0.8223	0.637
5	936.78	0.889	1.267	0.580	0.083	0.016	0.8823	0.8890	0.656
6	788.75	0.747	1.060	0.695	0.119	0.022	0.8674	0.8747	0.641
7	743.99	0.697	0.996	0.728	0.125	0.024	0.8782	0.8774	0.647
RADIAL POSITION	TRAV TOY PRESS RATIO	TRAV TOY TEMP RATIO	FIXED TOY PRESS RATIO	FIXED TOY TEMP RATIO	PERFORMANCE PARAMETERS	OVERALL PERFORMANCE SUMMARY			
1	1.970	1.280	1.905	1.750	Total Pressure Ratio =	STAGE DATA ROTOR DATA ROTOR DATA			
2	1.933	1.231	1.879	1.748	Adiabatic Efficiency =	FIXED INST. FIXED INST. TRAV. INST.			
3	1.612	1.158	1.754	1.664	Polytropic Efficiency =	1.6168	1.6461	1.6461	1.7150
4	1.532	1.152	1.754	1.664	Percent Design Speed =	0.7988	0.8287	0.8287	0.8323
5	1.323	1.156	1.743	1.643	Cor. Nozzle Weight Flow =	0.8101	0.8403	0.8403	0.8036
6	1.587	1.158	1.504	1.348	Discharge Valve Settings= 9.0				

IE Check Flow/Noz.Flow = 0.9827  
 Assumed LE Flow Coeff. = 0.9850  
 Assumed TE Flow Coeff. = 0.9500

TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

STATOR BLADE ROW # NASA TASK IV		POINT NUMBER 5		BLADE ELEMENT PERFORMANCE RESULTS		READING NUMBER 52		DATE 6/10/1970				
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCID ANG MN	INCID ANG CHBR LN	INCID ANG SURE	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	
1	51.52	48.73	39.47	12.05	12.05	782.24	782.24	486.77	486.77	612.33	612.33	
2	41.10	39.01	39.11	9.62	9.62	757.48	757.48	499.67	499.67	569.28	569.28	
3	38.10	39.60	39.60	2.09	2.09	769.93	769.93	579.92	579.92	505.96	505.96	
4	38.56	40.86	40.86	-1.70	-1.70	723.93	723.93	568.58	568.58	445.86	445.86	
5	41.40	42.22	42.22	-0.82	-0.82	728.63	728.63	566.82	566.82	451.89	451.89	
7	46.30	42.76	42.76	3.54	3.54	781.10	781.10	557.57	557.57	491.55	491.55	
								534.85	534.85	559.68	559.68	
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	DEV ANG TE	INCID ANG	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	
1	2.15	3.68	*11.13	13.28	49.37	49.37	556.71	556.71	356.32	20.86	20.86	
2	0.53	0.53	*10.10	13.98	44.85	44.85	594.92	594.92	593.53	40.21	40.21	
3	-2.30	-1.30	-8.67	9.40	40.57	40.57	570.75	570.75	570.49	5.30	5.30	
4	-1.30	-0.27	-9.10	6.45	48.40	48.40	530.93	530.93	529.91	-21.29	-21.29	
5	-0.27	-0.27	*10.38	7.80	39.86	39.86	527.80	527.80	526.54	-11.92	-11.92	
7	-2.196	-2.196	*12.36	10.31	41.67	41.67	512.97	512.97	511.38	-2.45	-2.45	
					49.26	49.26	488.72	488.72	486.50	-25.15	-25.15	
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	DIFFUSION FACTOR	CHI						
1	0.645	0.632	1.188	1.143	0.536	0.268						
2	0.655	0.624	0.984	0.984	0.440	0.302						
3	0.633	0.652	0.929	0.932	0.457	0.340						
4	0.652	0.680	0.917	0.929	0.451	0.393						
5			0.910	0.910	0.443	0.416						
7					0.474	0.407						
					0.550	0.370						
RADIAL POSITION	PERCENT LOSS AT EXIT	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	LOSS COEFFICIENT	LOSS PARAM	TOT PRESS LOSS	ABD EFFICIENCY	POLY EFFICIENCY	POLY MOMEN RISE/ MEAS Y RISE	STAT PRESS RISE COEFF
1	9.0000	0.942	0.976	0.962	1.000	0.151	0.050	0.043	0.043	0.5649	0.249	0.249
2	10.0000	0.978	1.002	0.969	1.000	0.134	0.018	0.018	0.018	0.7910	0.282	0.282
3	30.0000	0.970	0.990	0.985	1.000	0.060	0.011	0.011	0.011	0.7694	0.317	0.317
4	50.0000	0.982	0.999	0.991	1.000	0.037	0.009	0.009	0.009	0.8538	0.370	0.370
5	70.0000	0.985	0.996	0.992	1.000	0.033	0.009	0.009	0.009	0.8819	0.392	0.392
7	90.0000	0.966	0.990	0.983	1.000	0.065	0.016	0.016	0.016	0.7758	0.382	0.382
		0.930	0.988	0.974	1.000	0.094	0.022	0.022	0.022	0.6209	0.344	0.344
OVERALL PERFORMANCE SUMMARY												
STAGE DATA STATOR DATA STATOR DATA												
FIXED INST. FIXED INST. TRAV. INST.												
Total Pressure Ratio = 1.6168 0.9822 0.9714												
Polytropic Efficiency = 0.8101 0.9641 0.8735												
Percent Design Speed = 100.2 Discharge Valve Settings= 9.0												
Cor. Nozzle Weight Flow= 207.5												
LE Check Flow/Noz.Flow = 0.9131 TE Check Flow/Noz.Flow = 0.8933												
Assumed LE Flow Coeff. = 0.9500 Assumed TE Flow Coeff. = 0.9350												

TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

ROTOR BLADE ROW #		NASA TASK IV																	
BLADE ELEMENT PERFORMANCE RESULTS		DATE																	
POINT NUMBER	6	READING NUMBER	53																
6710/1970																			
RADIAL POSITION	1	REL INLET FLOW ANG	66.64	ABS INLET FLOW ANG	0.20	CMR LN LE ANGLE	60.68	INCID ANG	3.34	INLET ABS VELOCITY	589.76	INLET REL VELOCITY	1476.88	INLET AX VELOCITY	589.76	INLET ABS Y ANG VEL	2.01	INLET REL Y ANG VEL	1355.96
	2		65.130		0.68		59.61		5.69		607.48		1454.78		7.17		1320.49		
	3		57.21		0.75		56.01		1.20		765.54		1413.71		10.07		1188.48		
	4		46.62		1.47		52.56		-3.26		985.08		1436.22		25.20		1042.48		
	5		42.86		0.62		49.71		-11.78		993.77		1366.65		10.73		923.90		
	6		45.75		-0.22		47.11		-13.64		769.85		1125.48		-2.91		789.85		
	7		46.51		-0.94		46.13		-7.52		715.17		1065.19		-11.71		753.99		
RADIAL POSITION	1	REL EXIT FLOW ANG	57.49	ABS EXIT FLOW ANG	33.96	CMR LN LE ANGLE	54.80	REL TURN ANGLE	9.14	EXIT ABS VELOCITY	599.11	EXIT REL VELOCITY	1116.07	EXIT AX VELOCITY	599.11	EXIT ABS Y ANG VEL	403.51	EXIT REL Y ANG VEL	940.12
	2		57.71		32.75		54.42		7.60		590.82		1106.87		379.99		934.79		
	3		52.25		30.92		50.68		4.96		632.81		1033.88		379.06		817.42		
	4		52.17		27.67		43.79		-5.55		594.12		968.87		311.51		765.20		
	5		44.13		31.33		32.15		-1.27		605.34		844.81		368.51		587.14		
	6		27.31		35.46		14.29		18.43		680.26		775.16		484.56		351.33		
	7		22.60		40.70		6.00		23.91		697.79		697.79		543.49		263.09		
RADIAL POSITION	1	ROTOR SPD AT INLET	157.98	INLET ABS MACH NO	0.542	INLET REL MACH NO	1.358	AXIAL VEL RATIO	1.023	TOT PRESS LOSS PARAM	0.026	ADB EFFICIENCY	0.8169	POLY EFFICIENCY	0.8279	MOHEN RISE	0.288	STAT PRESS RISE COEFF	0.278
	2		128.06		0.561		1.339		0.973		-0.015	0.8883	0.8953	0.8279	0.374	0.440	0.473		
	3		119.55		0.723		1.334		0.827		0.023	1.0492	0.7629	0.7229	0.440	0.473	0.474		
	4		167.66		0.958		1.893		0.603		0.027	0.7530	0.7229	0.7229	0.474	0.474	0.474		
	5		934.63		0.990		1.342		0.608		8.031	0.7945	0.7945	0.7945	0.474	0.474	0.474		
	6		786.94		0.760		1.067		0.884		0.036	0.7778	0.7778	0.7778	0.474	0.474	0.474		
	7		742.29		0.707		1.001		0.884						0.474	0.474	0.474		
RADIAL POSITION	1	ROTOR SPD AT EXIT	143.63	EXIT ABS MACH NO	0.617	EXIT REL MACH NO	0.991	SOLIDITY COEFFICIENT	0.129	LOSS COEFFICIENT	0.026	ADB EFFICIENCY	0.8169	POLY EFFICIENCY	0.8279	MOHEN RISE	0.288	STAT PRESS RISE COEFF	0.278
	2		119.79		0.606		0.993		0.078		-0.007	1.0492	0.7629	0.7229	0.440	0.473	0.474		
	3		119.648		0.641		0.898		-0.033		0.023	0.7530	0.7229	0.7229	0.474	0.474	0.474		
	4		167.672		0.590		0.852		0.127		0.027	0.7530	0.7229	0.7229	0.474	0.474	0.474		
	5		934.65		0.626		0.744		0.144		8.031	0.7945	0.7945	0.7945	0.474	0.474	0.474		
	6		786.94		0.750		0.689		0.156		0.036	0.7778	0.7778	0.7778	0.474	0.474	0.474		
	7		742.29		0.747		0.617		0.182						0.474	0.474	0.474		
RADIAL POSITION	1	HEIGHT INCREASION	9.0000	TRAV TOT PRESS RATIO	1.605	TRAV TOT TEMP RATIO	1.182	FIXED TOT PRESS RATIO	1.595	TEMP RATIO	1.165	PERFORMANCE PARAMETERS	STAGE DATA ROTOR DATA ROTOR DATA						
	2		10.0000		1.588		1.156		1.586		1.159	FIXED INST. FIXED INST. TRAV. INST.							
	3		30.0000		1.594		1.197		1.621		1.144	Total Pressure Ratio =	1.3639	1.4082	1.4716				
	4		50.0000		1.346		1.099		1.385		1.114	Adiabatic Efficiency =	0.7079	0.7844	0.8310				
	5		70.0000		1.332		1.119		1.294		1.106	Polytropic Efficiency =	0.7204	0.7945	0.8595				
	6		90.0000		1.431		1.136		1.386		1.123	Percent Design Speed =	100.0	Discharge Valve Setting =	30.0				
	7		95.0000		1.431		1.142		1.370		1.121	Cor. Nozzle Weight Flow =	214.3						
OVERALL PERFORMANCE SUMMARY												STAGE DATA ROTOR DATA ROTOR DATA							
PERFORMANCE PARAMETERS												FIXED INST. FIXED INST. TRAV. INST.							
Total Pressure Ratio =												1.3639 1.4082 1.4716							
Adiabatic Efficiency =												0.7079 0.7844 0.8310							
Polytropic Efficiency =												0.7204 0.7945 0.8595							
Percent Design Speed =												100.0 Discharge Valve Setting = 30.0							
Cor. Nozzle Weight Flow =												214.3							
LE Check Flow/Noz.Flow =												0.9752 TE Check Flow/Noz.Flow = 0.9187							
Assumed LE Flow Coeff. =												0.9850 Assumed TE Flow Coeff. = 0.9500							

061170

TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

061170

		STATOR BLADE ROW # NASA TASK IV									
		BLADE ELEMENT PERFORMANCE RESULTS					STATOR DATA				
		POINT NUMBER	6	READING NUMBER	53	DATE					
		6/10/1970									
RADIAL POSITION	REL INLET FLOW ANG	ARS INLET FLOW ANG	CMBR LN LE ANGLE	INCID ANG MN CMBR LN	INGID ANG SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS YANG VEL	INLET REL YANG VEL	
1	33.79	33.79	39.47	-5.68	728.14	605.12	605.12	605.12	404.97	404.97	
2	32.17	32.17	39.11	-6.94	716.29	606.29	606.29	606.29	381.37	381.37	
3	29.97	29.97	39.01	-10.04	782.31	684.04	684.04	684.04	376.69	376.69	
4	25.47	25.47	39.80	-14.33	719.41	647.61	647.61	647.61	308.41	308.41	
5	28.71	28.71	40.86	-12.15	755.70	658.52	658.52	658.52	360.72	360.72	
6	32.54	32.54	42.22	-9.68	878.73	732.25	732.25	732.25	467.19	467.19	
7	37.88	37.88	42.76	-4.88	859.71	670.70	670.70	670.70	521.80	521.80	
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMBR LN YE ANGLE	DEV ANGLE	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS YANG VEL	EXIT REL YANG VEL	
1	2.15	2.15	-11.13	13.28	31.64	619.15	619.15	619.15	23.24	23.24	
2	-0.32	-0.32	-10.10	9.78	32.49	685.63	685.63	685.63	-3.79	-3.79	
3	1.33	1.33	-8.87	10.20	27.64	703.36	703.36	703.36	16.30	16.30	
4	-2.04	-2.04	-8.75	6.71	27.50	662.75	662.75	662.75	-23.52	-23.52	
5	-2.31	-2.31	-9.10	6.79	31.03	669.11	669.11	669.11	661.59	661.59	
6	1.16	1.16	-10.58	13.74	31.37	806.85	806.85	806.85	16.33	16.33	
7	0.71	0.71	-12.56	13.07	37.17	782.01	782.01	782.01	9.69	9.69	
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	LOSS COEFFICIENT	LOSS TOY	POLY EFFICIENCY	POLY MOMEN RISE/ RISE COEFF	STAT PRESS	CHI	
1	0.621	0.621	0.621	1.022	0.195	0.064	0.0512	0.4687	0.012	0.1013	
2	0.617	0.617	0.617	1.131	0.079	0.026	0.3398	0.3398	0.034	0.038	
3	0.683	0.683	0.683	1.028	0.106	0.032	0.2646	0.2646	0.056	0.062	
4	0.656	0.656	0.656	1.022	0.172	0.049	0.1787	0.1787	0.037	0.210	
5	0.669	0.669	0.669	1.013	0.096	0.025	0.0422	0.0422	0.033	0.041	
6	0.784	0.784	0.784	1.098	0.100	0.024	-0.0085	-0.0085	-0.006	0.250	
7	0.762	0.762	0.762	1.162	0.115	0.027	-0.0807	-0.0807	-0.013	0.205	
										0.229	
RADIAL POSITION	PERCENT ACCELERATION	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	LOSS TOY	LOSS PARAM	EFFICIENCY	ADD EFFICIENCY	POLY MOMEN RISE/ RISE COEFF	STAT PRESS
1	8.0000	0.936	0.979	0.955	1.000	1.000	0.064	0.0512	0.4687	0.012	0.1013
2	10.0000	0.989	0.996	0.982	1.000	1.000	0.026	0.3398	0.3398	0.034	0.038
3	30.0000	0.961	0.992	0.971	1.000	1.000	0.032	0.2646	0.2646	0.056	0.062
4	50.0000	0.969	1.005	0.959	1.000	1.000	0.049	0.1787	0.1787	0.037	0.210
5	70.0000	0.948	0.992	0.975	1.000	1.000	0.025	0.0422	0.0422	0.033	0.041
6	90.0000	0.935	0.993	0.965	1.000	1.000	0.024	-0.0085	-0.0085	-0.006	0.250
7	95.0000	0.934	0.993	0.962	1.000	1.000	0.027	-0.0807	-0.0807	-0.013	0.229
OVERALL PERFORMANCE SUMMARY											
STAGE DATA STATOR DATA STATOR DATA											
FIXED INST. FIXED INST. TRAV. INST.											
Total Pressure Ratio = 1.3639 0.9685 0.9576											
Polytropic Efficiency = 0.7204 0.9067 0.3259											
Percent Design Speed = 100.0 Discharge Valve Setting= 30.0											
Cor. Nozzle Weight Flow= 214.4											
LE Check Flow/Noz.Flow = 0.9235 TE Check Flow/Noz.Flow = 0.8902											
Assumed LE Flow Coeff. = 0.9500 Assumed TE Flow Coeff. = 0.9350											

061070 ROTOB BLADE ROM - NASA TASK IV

TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

ROTOR BLADE ROM - NASA TASK IV		BLADE ELEMENT PERFORMANCE RESULTS																	
POINT NUMBER	26	READING NUMBER	90	DATE	6/18/87														
PARTIAL POSITION	1	REL INLET FLOW ANG	67.80	CHMBR LN LE ANGLE	60.60	INCID ANG MN CMBR LN	7.20	INCID ANG SUCT SURF	4.50	INLET ABS VELOCITY	559.44	INLET REL VELOCITY	1470.14	INLET AX VELOCITY	555.15	INLET ABS TANG VEL	23.24	INLET REL TANG VEL	1360.29
	2	REL INLET FLOW ANG	68.78	CHMBR LN LE ANGLE	59.61	INCID ANG MN CMBR LN	7.17	INCID ANG SUCT SURF	4.24	INLET ABS VELOCITY	575.92	INLET REL VELOCITY	1456.39	INLET AX VELOCITY	573.82	INLET ABS TANG VEL	59.59	INLET REL TANG VEL	1337.72
	3	REL INLET FLOW ANG	59.91	CHMBR LN LE ANGLE	56.01	INCID ANG MN CMBR LN	3.89	INCID ANG SUCT SURF	-0.66	INLET ABS VELOCITY	693.23	INLET REL VELOCITY	1378.35	INLET AX VELOCITY	693.17	INLET ABS TANG VEL	7.25	INLET REL TANG VEL	1191.36
	4	REL INLET FLOW ANG	45.96	CHMBR LN LE ANGLE	52.56	INCID ANG MN CMBR LN	6.69	INCID ANG SUCT SURF	-12.44	INLET ABS VELOCITY	1022.63	INLET REL VELOCITY	1468.79	INLET AX VELOCITY	1019.60	INLET ABS TANG VEL	13.32	INLET REL TANG VEL	1054.40
	5	REL INLET FLOW ANG	42.33	CHMBR LN LE ANGLE	49.71	INCID ANG MN CMBR LN	7.38	INCID ANG SUCT SURF	-14.17	INLET ABS VELOCITY	1025.51	INLET REL VELOCITY	1378.45	INLET AX VELOCITY	1011.21	INLET ABS TANG VEL	13.45	INLET REL TANG VEL	921.22
	6	REL INLET FLOW ANG	45.31	CHMBR LN LE ANGLE	47.11	INCID ANG MN CMBR LN	-1.89	INCID ANG SUCT SURF	59.46	INLET ABS VELOCITY	803.23	INLET REL VELOCITY	1119.11	INLET AX VELOCITY	770.91	INLET ABS TANG VEL	7.70	INLET REL TANG VEL	779.28
	7	REL INLET FLOW ANG	46.31	CHMBR LN LE ANGLE	46.13	INCID ANG MN CMBR LN	0.18	INCID ANG SUCT SURF	57.72	INLET ABS VELOCITY	750.63	INLET REL VELOCITY	1058.92	INLET AX VELOCITY	713.47	INLET ABS TANG VEL	84.60	INLET REL TANG VEL	746.93
PARTIAL POSITION	1	REL EXIT FLOW ANG	54.89	CHMBR LN TE ANGLE	54.80	REL DEV ANG TE	2.09	REL TURN ANGLE	10.90	EXIT ABS VELOCITY	788.00	EXIT REL VELOCITY	842.59	EXIT AX VELOCITY	459.66	EXIT ABS TANG VEL	68.73	EXIT REL TANG VEL	704.98
	2	REL EXIT FLOW ANG	56.02	CHMBR LN TE ANGLE	54.42	REL DEV ANG TE	1.60	REL TURN ANGLE	10.77	EXIT ABS VELOCITY	762.32	EXIT REL VELOCITY	892.69	EXIT AX VELOCITY	498.46	EXIT ABS TANG VEL	57.38	EXIT REL TANG VEL	739.47
	3	REL EXIT FLOW ANG	52.13	CHMBR LN TE ANGLE	50.68	REL DEV ANG TE	1.45	REL TURN ANGLE	7.68	EXIT ABS VELOCITY	739.03	EXIT REL VELOCITY	864.91	EXIT AX VELOCITY	530.85	EXIT ABS TANG VEL	51.98	EXIT REL TANG VEL	682.57
	4	REL EXIT FLOW ANG	49.06	CHMBR LN TE ANGLE	43.79	REL DEV ANG TE	5.87	REL TURN ANGLE	-3.79	EXIT ABS VELOCITY	697.48	EXIT REL VELOCITY	842.34	EXIT AX VELOCITY	545.16	EXIT ABS TANG VEL	43.76	EXIT REL TANG VEL	642.01
	5	REL EXIT FLOW ANG	44.30	CHMBR LN TE ANGLE	32.15	REL DEV ANG TE	12.15	REL TURN ANGLE	-2.97	EXIT ABS VELOCITY	686.11	EXIT REL VELOCITY	730.91	EXIT AX VELOCITY	522.14	EXIT ABS TANG VEL	44.08	EXIT REL TANG VEL	509.62
	6	REL EXIT FLOW ANG	32.77	CHMBR LN TE ANGLE	14.29	REL DEV ANG TE	18.48	REL TURN ANGLE	12.54	EXIT ABS VELOCITY	727.10	EXIT REL VELOCITY	620.93	EXIT AX VELOCITY	516.36	EXIT ABS TANG VEL	50.57	EXIT REL TANG VEL	332.36
	7	REL EXIT FLOW ANG	24.50	CHMBR LN TE ANGLE	8.00	REL DEV ANG TE	16.50	REL TURN ANGLE	24.01	EXIT ABS VELOCITY	770.10	EXIT REL VELOCITY	552.69	EXIT AX VELOCITY	493.61	EXIT ABS TANG VEL	58.63	EXIT REL TANG VEL	224.99
PARTIAL POSITION	1	KOTOR SPD AT INLET	1358.05	INLET REL MACH NO	1.344	AXIAL VEL RATIO	0.928	SOLIDITY	17340	LOSS COEFFICIENT	0.226	FIXED TOY PRESS RATIO	1.868	FIXED TOT PRESS RATIO	1.253	TEMP RATIO	1.242	TRAV TOT PRESS RATIO	1.947
	2	KOTOR SPD AT INLET	1329.13	INLET REL MACH NO	1.334	AXIAL VEL RATIO	0.869	SOLIDITY	17369	LOSS COEFFICIENT	0.174	FIXED TOY PRESS RATIO	1.887	FIXED TOT PRESS RATIO	1.258	TEMP RATIO	1.242	TRAV TOT PRESS RATIO	1.920
	3	KOTOR SPD AT INLET	1139.62	INLET REL MACH NO	1.284	AXIAL VEL RATIO	0.766	SOLIDITY	17500	LOSS COEFFICIENT	-0.047	FIXED TOY PRESS RATIO	1.950	FIXED TOT PRESS RATIO	1.189	TEMP RATIO	1.159	TRAV TOT PRESS RATIO	1.861
	4	KOTOR SPD AT INLET	1067.72	INLET REL MACH NO	1.176	AXIAL VEL RATIO	0.532	SOLIDITY	17840	LOSS COEFFICIENT	0.092	FIXED TOY PRESS RATIO	1.860	FIXED TOT PRESS RATIO	1.149	TEMP RATIO	1.149	TRAV TOT PRESS RATIO	1.512
	5	KOTOR SPD AT INLET	934.88	INLET REL MACH NO	1.000	AXIAL VEL RATIO	0.518	SOLIDITY	17968	LOSS COEFFICIENT	0.055	FIXED TOY PRESS RATIO	1.908	FIXED TOT PRESS RATIO	1.129	TEMP RATIO	1.129	TRAV TOT PRESS RATIO	1.512
	6	KOTOR SPD AT INLET	786.98	INLET REL MACH NO	0.757	AXIAL VEL RATIO	0.670	SOLIDITY	27217	LOSS COEFFICIENT	0.132	FIXED TOY PRESS RATIO	2.217	FIXED TOT PRESS RATIO	1.479	TEMP RATIO	1.479	TRAV TOT PRESS RATIO	1.488
	7	KOTOR SPD AT INLET	742.33	INLET REL MACH NO	0.994	AXIAL VEL RATIO	0.692	SOLIDITY	27330	LOSS COEFFICIENT	0.143	FIXED TOY PRESS RATIO	2.330	FIXED TOT PRESS RATIO	1.457	TEMP RATIO	1.457	TRAV TOT PRESS RATIO	1.599
PARTIAL POSITION	1	KOTOR SPD AT EXIT	1343.74	EXIT ABS MACH NO	0.649	REL MACH NO	0.594	LOSS PARAM	0.046	EFFICIENCY	0.772	ADD EFFICIENCY	0.791	POLY EFFICIENCY	0.791	STAY COEFF	0.388	ROTOR DATA FIXED INST.	0.404
	2	KOTOR SPD AT EXIT	1314.86	EXIT ABS MACH NO	0.636	REL MACH NO	0.745	LOSS PARAM	0.035	EFFICIENCY	0.823	ADD EFFICIENCY	0.837	POLY EFFICIENCY	0.837	STAY COEFF	0.404	ROTOR DATA FIXED INST.	0.404
	3	KOTOR SPD AT EXIT	1108.54	EXIT ABS MACH NO	0.627	REL MACH NO	0.734	LOSS PARAM	0.010	EFFICIENCY	1.054	ADD EFFICIENCY	1.054	POLY EFFICIENCY	1.054	STAY COEFF	0.320	ROTOR DATA FIXED INST.	0.320
	4	KOTOR SPD AT EXIT	1078.78	EXIT ABS MACH NO	0.602	REL MACH NO	0.727	LOSS PARAM	0.010	EFFICIENCY	0.861	ADD EFFICIENCY	0.869	POLY EFFICIENCY	0.869	STAY COEFF	0.372	ROTOR DATA FIXED INST.	0.372
	5	KOTOR SPD AT EXIT	925.70	EXIT ABS MACH NO	0.597	REL MACH NO	0.634	LOSS PARAM	0.010	EFFICIENCY	0.915	ADD EFFICIENCY	0.915	POLY EFFICIENCY	0.915	STAY COEFF	0.643	ROTOR DATA FIXED INST.	0.643
	6	KOTOR SPD AT EXIT	835.93	EXIT ABS MACH NO	0.632	REL MACH NO	0.540	LOSS PARAM	0.025	EFFICIENCY	0.847	ADD EFFICIENCY	0.847	POLY EFFICIENCY	0.855	STAY COEFF	0.660	ROTOR DATA FIXED INST.	0.660
	7	KOTOR SPD AT EXIT	806.62	EXIT ABS MACH NO	0.669	REL MACH NO	0.480	LOSS PARAM	0.028	EFFICIENCY	0.847	ADD EFFICIENCY	0.847	POLY EFFICIENCY	0.855	STAY COEFF	0.691	ROTOR DATA FIXED INST.	0.691
PARTIAL POSITION	1	PERCENT FLOW	5.0000	TRAV TOT PRESS RATIO	1.947	TEMP RATIO	1.270	FIXED TOY PRESS RATIO	1.868	FIXED TOT PRESS RATIO	1.253	TEMP RATIO	1.242	TRAV TOT PRESS RATIO	1.947	TEMP RATIO	1.242	TRAV TOT PRESS RATIO	1.947
	2	PERCENT FLOW	10.0000	TRAV TOT PRESS RATIO	1.920	TEMP RATIO	1.258	FIXED TOY PRESS RATIO	1.887	FIXED TOT PRESS RATIO	1.253	TEMP RATIO	1.242	TRAV TOT PRESS RATIO	1.920	TEMP RATIO	1.242	TRAV TOT PRESS RATIO	1.920
	3	PERCENT FLOW	15.0000	TRAV TOT PRESS RATIO	1.861	TEMP RATIO	1.202	FIXED TOY PRESS RATIO	1.899	FIXED TOT PRESS RATIO	1.189	TEMP RATIO	1.159	TRAV TOT PRESS RATIO	1.861	TEMP RATIO	1.159	TRAV TOT PRESS RATIO	1.861
	4	PERCENT FLOW	20.0000	TRAV TOT PRESS RATIO	1.584	TEMP RATIO	1.149	FIXED TOY PRESS RATIO	1.950	FIXED TOT PRESS RATIO	1.139	TEMP RATIO	1.139	TRAV TOT PRESS RATIO	1.584	TEMP RATIO	1.139	TRAV TOT PRESS RATIO	1.584
	5	PERCENT FLOW	30.0000	TRAV TOT PRESS RATIO	1.512	TEMP RATIO	1.129	FIXED TOY PRESS RATIO	1.908	FIXED TOT PRESS RATIO	1.140	TEMP RATIO	1.140	TRAV TOT PRESS RATIO	1.512	TEMP RATIO	1.140	TRAV TOT PRESS RATIO	1.512
	6	PERCENT FLOW	40.0000	TRAV TOT PRESS RATIO	1.488	TEMP RATIO	1.130	FIXED TOY PRESS RATIO	1.479	FIXED TOT PRESS RATIO	1.140	TEMP RATIO	1.140	TRAV TOT PRESS RATIO	1.488	TEMP RATIO	1.140	TRAV TOT PRESS RATIO	1.488
	7	PERCENT FLOW	95.0000	TRAV TOT PRESS RATIO	1.599	TEMP RATIO	1.457	FIXED TOY PRESS RATIO	1.457	FIXED TOT PRESS RATIO	1.457	TEMP RATIO	1.457	TRAV TOT PRESS RATIO	1.599	TEMP RATIO	1.457	TRAV TOT PRESS RATIO	1.599

OVERALL PERFORMANCE SUMMARY

STAGE DATA ROTOR DATA ROTOR DATA  
 FIXED INST. FIXED INST. TRAV. INST.  
 PERFORMANCE PARAMETERS  
 Total Pressure Ratio = 1.6119 1.6387 1.6908  
 Adiabatic Efficiency = 0.8113 0.8413 0.9100  
 Polytropic Efficiency = 0.8236 0.8520 0.9164  
 Percent Design Speed = 100.0 Discharge Valve Settings = 9.0  
 Cor. Nozzle Weight Flow = 207.1

LE Check Flow/Noz.Flow = 1.0047 TE Check Flow/Noz.Flow = 0.9029  
 Assumed LE Flow Coeff. = 0.9850 Assumed TE Flow Coeff. = 0.9500

TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

		STATOR BLADE RDH - NASA TASK IV									
		BLADE ELEMENT PERFORMANCE RESULTS									
		POINT NUMBER 26		READING NUMBER 90		DATE 6/10/1970					
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCID ANG	INCID ANG	SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL
1	54.11	39.47	14.64	791.24	791.24		463.83	463.83	541.04	541.04	
2	48.54	35.11	9.43	770.58	770.58		510.18	510.18	577.47	577.47	
3	42.14	30.01	3.18	765.69	765.69		567.47	567.47	513.48	513.48	
4	36.10	30.80	-3.70	731.95	731.95		590.19	590.19	430.44	430.44	
5	37.83	40.86	-3.03	715.65	715.65		562.28	562.28	436.65	436.65	
6	41.63	42.22	-0.59	737.50	737.50		546.19	546.19	485.52	485.52	
7	47.10	42.78	4.34	768.95	768.95		518.92	518.92	558.42	558.42	
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN LE ANGLE	DEV ANGLE	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	
1	21.43	11.13	13.55	563.01	563.01	563.30	563.30	563.30	23.86	23.86	
2	21.93	10.19	13.03	580.14	580.14	579.31	579.31	579.31	29.68	29.68	
3	21.34	8.87	9.21	581.82	581.82	581.57	581.57	581.57	3.48	3.48	
4	21.53	8.75	6.22	544.89	544.89	543.76	543.76	543.76	24.06	24.06	
5	21.99	9.10	7.11	524.07	524.07	522.64	522.64	522.64	18.17	18.17	
6	20.59	10.58	9.99	503.33	503.33	501.75	501.75	501.75	25.18	25.18	
7	23.39	22.36	9.01	473.62	473.62	471.30	471.30	471.30	27.58	27.58	
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	AXIAL VEL RATIO	INLET REL MACH NO	LOSS COEFFICIENT	LOSS PARAM	EFFICIENCY	ADB EFFICIENCY	POLY MOMEN RISE/RISE	STAT PRESS COEFF	
1	0.692	0.461	1.5239	0.134	0.134	0.044	0.9102	0.7419	0.269	0.269	
2	0.643	0.477	1.5446	0.103	0.103	0.033	0.8061	0.8061	0.296	0.296	
3	0.651	0.489	1.6310	0.052	0.052	0.016	0.8428	0.8428	0.311	0.311	
4	0.634	0.464	1.7420	0.041	0.041	0.012	0.9144	0.9144	0.398	0.398	
5	0.622	0.449	1.8800	0.072	0.072	0.018	0.8026	0.8026	0.400	0.400	
6	0.642	0.430	2.0510	0.092	0.092	0.022	0.6276	0.6276	0.356	0.356	
7	0.668	0.404	2.0990	0.092	0.092	0.022					
RADIAL POSITION	PERCENT PERF	TRAV TOT PRESS RATIO	FIXED TOY PRESS RATIO	FIXED TOT TEMP RATIO	LOSS	LOSS PARAM	EFFICIENCY	ADB EFFICIENCY	POLY MOMEN RISE/RISE	STAT PRESS COEFF	
1	9.0000	0.977	0.966	1.000	0.134	0.044	0.9102	0.7419	0.269	0.269	
2	10.0000	0.995	0.975	1.000	0.103	0.033	0.8061	0.8061	0.296	0.296	
3	30.0000	0.989	0.987	1.000	0.052	0.016	0.8428	0.8428	0.311	0.311	
4	50.0000	0.999	0.999	1.000	0.041	0.012	0.9144	0.9144	0.398	0.398	
5	70.0000	0.989	0.996	1.000	0.072	0.018	0.8026	0.8026	0.400	0.400	
6	90.0000	0.971	0.975	1.000	0.092	0.022	0.6276	0.6276	0.356	0.356	
7	99.0000	0.983	0.975	1.000	0.092	0.022					

OVERALL PERFORMANCE SUMMARY

STAGE DATA STATOR DATA STATOR DATA  
 FIXED INST. FIXED INST. TRAV. INST.  
 Total Pressure Ratio = 1.6119 0.9836 0.9731  
 Polytropic Efficiency = 0.8236 0.9667 0.9009  
 Percent Design Speed = 100.0 Discharge Valve Setting= 9.0  
 Cor. Nozzle Weight Flow= 207.1  
 IE Check Flow/Noz.Flow = 0.9077 TE Check Flow/Noz.Flow = 0.8049  
 Assumed IE Flow Coeff. = 0.9500 Assumed TE Flow Coeff. = 0.9350



061870 **TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)**

ROTOR BLADE ROW • NASA TASK IV		BLADE ELEMENT PERFORMANCE RESULTS		POINT NUMBER 27		READING NUMBER 91		DATE 6/18/1970													
RADIAL POSITION	1	REL INLET FLOW ANG	66.81	ABS INLET FLOW ANG	0.19	CHBR LN LE ANGLE	60.69	INCLD ANG	8.21	MN CHBR LN SUCT SURF	3.51	INLET REL VELOCITY	581.59	INLET AX VELOCITY	581.59	INLET ABS TANG VEL	1.96	INLET REL TANG VEL	1357.62		
	2		69.60		-0.55		59.61		2.96		5.99		605.77		605.77		-5.85	1335.47			
	3		58.97		0.53		56.01		2.96		5.99		717.98		717.98		6.69	1193.27			
	4		45.92		0.63		52.55		-6.64		12.48		1024.52		1024.52		11.21	1057.70			
	5		41.66		0.94		49.71		-7.75		14.54		1021.97		1021.97		16.84	918.88			
	6		45.10		0.78		47.11		-2.80		59.67		774.46		774.46		10.56	777.30			
	7		45.82		-0.59		46.13		-0.31		56.21		729.38		729.38		-7.49	750.65			
RADIAL POSITION	1	REL EXIT FLOW ANG	56.10	ABS EXIT FLOW ANG	47.98	CHBR LN YE ANGLE	54.80	REL DEV ANGLE	1.38	REL TURN ANGLE	10.71	EXIT REL VELOCITY	929.48	EXIT AX VELOCITY	929.48	EXIT ABS TANG VEL	374.69	EXIT REL TANG VEL	770.52		
	2		55.41		44.86		54.42		1.99		9.19		989.41		989.41		323.70	792.63			
	3		53.74		41.29		50.68		1.68		6.63		922.03		922.03		483.91	713.97			
	4		51.00		36.38		43.79		7.21		-5.108		868.93		868.93		546.79	675.22			
	5		45.48		39.73		32.13		13.35		-31.52		739.62		739.62		430.30	526.47			
	6		32.76		41.22		14.29		18.47		12.35		662.25		662.25		482.48	354.39			
	7		24.18		47.36		8.00		16.18		28.65		587.58		587.58		571.36	236.16			
RADIAL POSITION	1	ROTOR SPD AT INLET	1359.97	INLET MACH NO	0.537	INLET REL MACH NO	1.359	AXIAL VEL RATIO	0.898	LOSS COEFFICIENT	0.197	SOLIDITY	1.3340	FIXED TOT PRESS RATIO	1.806	TRAV TOT PRESS RATIO	1.989	PERCENT EFFICIENCY	0.7883	STAY PRESS	0.373
	2		1329.41		0.598		1.347		0.869		0.197		1.3080		1.834		1.857	0.8051	0.391		
	3		1199.76		0.669		1.259		0.768		0.139		1.5080		1.768		1.824	0.8606	0.508		
	4		1060.51		1.000		1.439		0.534		-0.1060		1.6840		1.6840		1.805	1.0656	0.548		
	5		935.72		1.000		1.336		0.507		0.105		1.9060		1.9060		1.808	0.8719	0.623		
	6		787.86		0.758		1.052		0.711		0.136		2.0230		2.0230		1.826	0.8472	0.622		
	7		743.16		0.720		1.007		0.721		0.143		2.0390		2.0390		1.8385	0.8467	0.643		
RADIAL POSITION	1	ROTOR SPD AT EXIT	1345.21	EXIT MACH NO	0.642	EXIT REL MACH NO	0.771	FIXED TOT PRESS RATIO	1.806	LOSS PARAM	0.104	LOSS PARAM EFFICIENCY	0.7883	POLY MOMEN RISE	0.391	STAY PRESS	0.373	EFFICIENCY	0.8051	ROTOR DATA	0.486
	2		1316.33		0.624		0.779		1.834		0.104		0.7883		0.391		0.373	0.8051	ROTOR DATA	0.502	
	3		1197.88		0.625		0.768		1.768		0.105		1.6840		1.6840		0.805	1.0656	ROTOR DATA	0.596	
	4		1077.98		0.586		0.750		1.6840		0.105		1.6840		1.6840		0.805	1.0656	ROTOR DATA	0.637	
	5		956.87		0.584		0.648		1.9060		0.108		1.9060		1.9060		0.805	1.0656	ROTOR DATA	0.683	
	6		830.87		0.644		0.577		2.0230		0.136		2.0230		2.0230		0.805	1.0656	ROTOR DATA	0.614	
	7		807.52		0.684		0.512		2.0390		0.143		2.0390		2.0390		0.805	1.0656	ROTOR DATA	0.606	
RADIAL POSITION	1	PERCENT EFFICIENCY	5.0000	TRAV TOT PRESS RATIO	1.989	TRAV TOT PRESS RATIO	1.989	FIXED TOT PRESS RATIO	1.806	TEMP RATIO	1.233	PERFORMANCE PARAMETERS	STAGE DATA	ROTOR DATA	ROTOR DATA	ROTOR DATA	ROTOR DATA	ROTOR DATA	ROTOR DATA	ROTOR DATA	ROTOR DATA
	2		10.0000		1.857		1.219		1.834		1.233	PERFORMANCE PARAMETERS	STAGE DATA	ROTOR DATA	ROTOR DATA	ROTOR DATA	ROTOR DATA	ROTOR DATA	ROTOR DATA	ROTOR DATA	
	3		30.0000		1.824		1.187		1.846		1.179	Total Pressure Ratio =	1.5636	1.5872	1.6475	1.6475	1.6475	1.6475	1.6475	1.6475	
	4		50.0000		1.523		1.138		1.491		1.146	Adiabatic Efficiency =	0.8045	0.8332	0.9467	0.9467	0.9467	0.9467	0.9467	0.9467	
	5		70.0000		1.458		1.107		1.463		1.133	Polytropic Efficiency =	0.8164	0.8437	0.9503	0.9503	0.9503	0.9503	0.9503	0.9503	
	6		90.0000		1.473		1.129		1.458		1.136	Percent Design Speed =	100.1	100.1	100.1	100.1	100.1	100.1	100.1	100.1	
	7		95.0000		1.534		1.149		1.446		1.133	Cor. Nozzle Weight Flow =	209.8	209.8	209.8	209.8	209.8	209.8	209.8	209.8	

TE Check Flow/Noz.Flow = 0.9916  
 Assumed LE Flow Coeff. = 0.950  
 Assumed TE Flow Coeff. = 0.9500

061870 STATOR BLADE ROW - NASA TASK IV  
 BLADE ELEMENT PERFORMANCE RESULTS  
 POINT NUMBER 27 READING NUMBER 91 DATE 6/18/1970

TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CMBR LN LE ANGLE	INCID ANG HN	INCID ANG LN	SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL
1		47.82	39.47	8.35	778.34		522.64	576.77			
2		44.28	39.11	5.17	752.91		539.07	525.60			
3		39.33	39.01	0.32	763.18		590.10	483.45			
4		33.98	37.89	45.84	715.32		592.04	398.76			
5		37.09	40.86	37.77	702.24		421.20	557.22			
6		38.54	42.22	33.68	754.10		583.96	465.19			
7		44.72	42.76	1.96	786.99		553.93	548.56			
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMBR LN TE ANGLE	ANG TE	DEV	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL
1		2.23	13.13	13.36	45.59		565.72	22.03			
2		1.12	10.10	11.22	602.39		602.120	11.80			
3		0.17	8.87	8.78	595.22		595.227	-1.76			
4		3.35	8.79	5.48	549.02		547.48	32.05			
5		2.57	9.10	6.53	539.22		537.53	24.09			
6		0.50	10.08	38.04	561.02		550.27	-4.89			
7		3.27	12.36	9.09	524.14		521.61	-29.83			
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	AXIAL VEL RATIO	INLET REL MACH NO	DIFFUSION FACTOR	LOSS COEFFICIENT	TGT PRESS LOSS PARAM	ADP EFFICIENCY	POLY MOMEN RISE/ MEAS T RISE	STAY PRESS RISE COEFF	
1		0.645	1.082	1.117	0.421	0.133	0.044	0.2650	0.237		
2		0.632	1.117	1.117	0.421	0.067	0.052	0.8057	0.266		
3		0.622	1.009	1.009	0.421	0.058	0.018	0.7472	0.264		
4		0.620	0.925	0.925	0.421	0.039	0.011	0.6374	0.264		
5		0.610	0.965	0.965	0.421	0.035	0.009	0.5127	0.347		
6		0.658	0.958	0.958	0.421	0.065	0.016	0.7993	0.328		
7		0.688	0.942	0.942	0.421	0.096	0.023	0.5863	0.293		
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	FIXED TOT PRESS RATIO	TEMP RATIO	PERCENT DEVIATION	PERFORMANCE PARAMETERS	Total Pressure Ratio	Polytropic Efficiency	Percent Design Speed	Cor. Nozzle Weight Flow	
1		0.466	0.944	0.944	9.0000	STAGE DATA STATOR DATA	1.5626	0.9851	100.1	Discharge Valve Setting=11.0	
2		0.500	0.975	0.975	10.0000	FIXED INST. FIXED INST. TRAV. INST.	0.8164	0.9676			
3		0.504	0.994	0.994	30.0000						
4		0.470	0.982	0.982	50.0000						
5		0.463	0.999	0.999	70.0000						
6		0.482	0.974	0.974	90.0000						
7		0.450	0.981	0.981	95.0000						
RADIAL POSITION	PERCENT DEVIATION	TRAV TOT PRESS RATIO	TEMP RATIO	FIXED TOT PRESS RATIO	TEMP RATIO	PERFORMANCE PARAMETERS	Total Pressure Ratio	Polytropic Efficiency	Percent Design Speed	Cor. Nozzle Weight Flow	
1	9.0000	0.944	0.944	0.967	1.000	STAGE DATA STATOR DATA	1.5626	0.9851	100.1	Discharge Valve Setting=11.0	
2	10.0000	0.981	0.981	0.985	1.000	FIXED INST. FIXED INST. TRAV. INST.	0.8164	0.9676			
3	30.0000	0.972	0.982	0.991	1.000						
4	50.0000	0.982	0.999	0.992	1.000						
5	70.0000	0.991	0.999	0.998	1.000						
6	90.0000	0.974	0.992	0.998	1.000						
7	95.0000	0.981	0.981	0.973	1.000						

061870

TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

ROTOR BLADE ROW - NASA TASK IV											
BLADE ELEMENT PERFORMANCE RESULTS											
POINT NUMBER		29		READING NUMBER		93		DATE		6/18/2970	
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCID ANG	HN CHBR LN	SUCT SURF	INCID ANG	REL TURN ANGLE	REL DEV ANGLE	CHBR LN LE ANGLE	ABS EXIT FLOW ANG
1	65.41	0.23	60.09	2.11	4.84	2.11	2.11	6.53	4.08	54.90	32.96
2	64.50	0.34	59.61	1.80	4.89	1.80	1.80	6.53	3.74	54.42	32.41
3	57.98	0.59	56.01	1.97	6.19	1.97	1.97	5.134	1.96	50.88	30.97
4	45.69	1.01	52.56	1.97	6.19	1.97	1.97	5.134	1.96	50.88	30.97
5	42.28	0.73	49.71	14.22	7.43	14.22	14.22	8.172	8.172	32.15	31.43
6	44.85	0.69	47.11	11.26	7.43	11.26	11.26	8.172	8.172	32.15	31.43
7	45.82	0.43	46.18	10.32	7.64	10.32	10.32	8.172	8.172	32.15	31.43
1	59.88	0.577	54.80	4.08	4.08	4.08	4.08	17.00	17.00	8.00	40.23
2	54.16	0.586	50.58	3.74	3.74	3.74	3.74	17.00	17.00	8.00	40.23
3	52.64	0.698	43.79	1.96	1.96	1.96	1.96	17.00	17.00	8.00	40.23
4	52.51	1.000	32.15	8.172	8.172	8.172	8.172	17.00	17.00	8.00	40.23
5	45.03	0.766	35.03	14.22	14.22	14.22	14.22	17.00	17.00	8.00	40.23
6	29.51	0.715	38.00	17.00	17.00	17.00	17.00	17.00	17.00	8.00	40.23
7	25.00	0.597	32.96	6.53	6.53	6.53	6.53	17.00	17.00	8.00	40.23
1	1359.49	1.377	1.377	0.948	0.948	0.948	0.948	0.948	0.948	1.377	0.577
2	1128.55	1.357	1.357	0.921	0.921	0.921	0.921	0.921	0.921	1.357	0.586
3	1199.00	1.315	1.315	0.841	0.841	0.841	0.841	0.841	0.841	1.315	0.698
4	1059.06	1.429	1.429	0.587	0.587	0.587	0.587	0.587	0.587	1.429	1.000
5	934.98	1.343	1.343	0.585	0.585	0.585	0.585	0.585	0.585	1.343	0.766
6	787.23	1.058	1.058	0.859	0.859	0.859	0.859	0.859	0.859	1.058	0.715
7	742.56	1.001	1.001	0.848	0.848	0.848	0.848	0.848	0.848	1.001	0.597
1	1344.11	0.968	0.968	1.3348	1.3348	1.3348	1.3348	1.3348	1.3348	0.968	0.597
2	1317.28	0.958	0.958	1.3698	1.3698	1.3698	1.3698	1.3698	1.3698	0.958	0.598
3	1195.93	0.898	0.898	1.5080	1.5080	1.5080	1.5080	1.5080	1.5080	0.898	0.636
4	1077.12	0.589	0.589	1.6848	1.6848	1.6848	1.6848	1.6848	1.6848	0.589	0.589
5	954.01	0.612	0.612	1.9060	1.9060	1.9060	1.9060	1.9060	1.9060	0.612	0.738
6	836.20	0.688	0.688	2.2470	2.2470	2.2470	2.2470	2.2470	2.2470	0.688	0.738
7	809.88	0.722	0.722	2.3398	2.3398	2.3398	2.3398	2.3398	2.3398	0.722	0.722
1	9.0000	1.566	1.566	1.167	1.167	1.167	1.167	1.167	1.167	1.566	1.566
2	10.0000	1.572	1.572	1.159	1.159	1.159	1.159	1.159	1.159	1.572	1.572
3	30.0000	1.600	1.600	1.142	1.142	1.142	1.142	1.142	1.142	1.600	1.600
4	50.0000	1.334	1.334	1.144	1.144	1.144	1.144	1.144	1.144	1.334	1.334
5	70.0000	1.059	1.059	1.184	1.184	1.184	1.184	1.184	1.184	1.059	1.059
6	90.0000	1.415	1.415	1.122	1.122	1.122	1.122	1.122	1.122	1.415	1.415
7	95.0000	1.377	1.377	1.119	1.119	1.119	1.119	1.119	1.119	1.377	1.377

OVERALL PERFORMANCE SUMMARY

STAGE DATA	ROTOR DATA	ROTOR DATA
FIXED INST.	FIXED INST.	TRAV. INST.
1.3633	1.3008	1.4530
0.7101	0.7738	0.9355
0.7226	0.7643	0.9294

PERFORMANCE PARAMETERS	
Total Pressure Ratio	= 100.1
Adiabatic Efficiency	= 0.9895
Polytropic Efficiency	= 0.9850
Percent Design Speed	= 100.1
Cor. Nozzle Weight Flow	= 213.3

ROTOR SPD	AT INLET	AT EXIT	TRAV TOT	FIXED TOT	FIXED TOT	TEMP RATIO	TEMP RATIO
1	1344.11	1344.11	1.566	1.566	1.167	1.167	1.167
2	1317.28	1317.28	1.572	1.572	1.159	1.159	1.159
3	1195.93	1195.93	1.600	1.600	1.142	1.142	1.142
4	1077.12	1077.12	1.334	1.334	1.144	1.144	1.144
5	954.01	954.01	1.059	1.059	1.184	1.184	1.184
6	836.20	836.20	1.415	1.415	1.122	1.122	1.122
7	809.88	809.88	1.377	1.377	1.119	1.119	1.119

Discharge Valve Setting= 30.0

IE Check Flow/Noz.Flow = 0.9895  
 Assumed IE Flow Coeff. = 0.9500

TE Check Flow/Noz.Flow = 0.9145  
 Assumed TE Flow Coeff. = 0.9500

TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

STATOR BLADE ROW # NASA TASK IV		BLADE ELEMENT PERFORMANCE RESULTS		POINT NUMBER 29		READING NUMBER 93		DATE 6/18/970			
RADIAL POSITION	REL INLET FLOW ANG	ARS INLET FLOW ANG	CMBR LN LE ANGLE	INCID ANG MN	INCID ANG LN	SUCT SURF	INLET ARS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL
1	32.80	39.47	39.47	41.88	32.09	32.09	611.41	611.36	611.36	7.60	
2	31.84	38.11	38.11	41.88	33.92	33.92	685.63	685.15	685.15	24.86	
3	29.04	37.01	37.01	41.88	27.74	27.74	696.63	696.17	696.17	15.79	
4	23.82	39.40	39.40	41.88	28.07	28.07	650.85	648.15	648.15	18.13	
5	28.85	40.86	40.86	41.88	31.29	31.29	651.54	648.56	648.56	27.63	
6	32.16	42.22	42.22	41.88	30.61	30.61	793.84	791.10	791.10	21.42	
7	37.47	42.78	42.78	41.88	36.60	36.60	750.09	747.62	747.62	8.71	
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMBR LN YE ANGLE	DEV ANG TE	YURN ANGLE	EXIT ARS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	
1	0.71	0.71	11.33	11.88	32.09	611.41	611.36	611.36	7.60		
2	2.08	2.08	10.10	8.02	33.92	685.63	685.15	685.15	24.86		
3	1.30	1.30	8.87	10.17	27.74	696.63	696.17	696.17	15.79		
4	4.25	4.25	8.75	4.50	28.07	650.85	648.15	648.15	18.13		
5	2.44	2.44	9.10	6.66	31.29	651.54	648.56	648.56	27.63		
6	1.55	1.55	10.58	12.13	30.61	793.84	791.10	791.10	21.42		
7	0.67	0.67	12.58	13.03	36.60	750.09	747.62	747.62	8.71		
RADIAL POSITION	R8TOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	LOSS COEFFICIENT	YBT PRESS LOSS PARAM	ADB EFFICIENCY	POLY EFFICIENCY	POLY MOMEN RISE/STAY PRESS COEFF	DIFFUSION FACTOR	
1	5.0000	0.603	0.603	1.938	0.199	0.065	0.1742	0.9788	0.1742	0.302	
2	16.0000	0.609	0.609	1.140	0.054	0.018	0.3704	0.3704	0.3704	0.213	
3	30.0000	0.677	0.677	1.028	0.086	0.026	0.2791	0.2791	0.2791	0.243	
4	50.0000	0.636	0.636	0.987	0.127	0.036	0.2499	0.2499	0.2499	0.250	
5	70.0000	0.553	0.553	1.009	0.092	0.074	0.0834	0.0834	0.0834	0.256	
6	90.0000	0.771	0.771	1.095	0.094	0.023	0.2358	0.2358	0.2358	0.200	
7	99.0000	0.736	0.736	1.147	0.109	0.026				0.235	
RADIAL POSITION	R8TOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	PERFORMANCE PARAMETERS			
1	5.0000	0.952	0.952	0.997	0.957	0.997	0.957	STAGE DATA STATOR DATA STATOR DATA			
2	16.0000	1.000	1.000	0.997	0.988	0.996	0.971	FIXED INST. FIXED INST. TRAV. INST.			
3	30.0000	0.983	0.983	0.996	0.969	0.988	0.969	1-3633 0.9739 0.9631			
4	50.0000	0.953	0.953	1.002	0.988	0.988	0.988	0.7226 0.9213 0.3782			
5	70.0000	0.944	0.944	0.997	0.969	0.997	0.969	Discharge Valve Setting= 30.0			
6	90.0000	0.951	0.951	0.988	0.967	0.988	0.967	Cor. Nozzle Weight Flow= 213.3			
OVERALL PERFORMANCE SUMMARY											
LE Check Flow/Noz.Flow = 0.9193 TE Check Flow/Noz.Flow = 0.8835											
Assumed LE Flow Coeff. = 0.9500 Assumed TE Flow Coeff. = 0.9350											

062670

TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

		ROTOR BLADE ROW " NASR TASK IV									
		BLADE ELEMENT PERFORMANCE RESULTS					DATE 6/26/1970				
		POINT NUMBER 18		READING NUMBER 149		DATE					
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCID ANG MN	INCID ANG LN	SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL
1	67.77	-0.39	60.60	7.17	4.47	4.47	861.36	1474.09	557.04	-3.79	1363.03
2	64.80	-0.93	59.61	7.19	4.16	4.16	875.86	1457.15	573.77	-9.28	1338.56
3	59.87	0.31	56.01	3.86	-0.60	-0.60	694.06	1382.77	694.03	3.79	1195.86
4	45.78	1.01	52.56	-6.78	-12.62	-12.62	1825.63	1468.17	1022.52	17.97	1050.68
5	42.47	0.50	49.71	7.24	-14.03	-14.03	1826.67	1382.95	1012.41	8.90	926.59
6	45.42	0.28	47.11	-1.69	-9.35	-9.35	804.81	1123.44	772.45	3.82	783.84
7	46.23	-0.47	46.13	0.10	-7.80	-7.80	854.72	1063.20	717.36	-5.91	748.88
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	REL DEV ANG TE	REL TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	
1	58.73	55.53	54.50	0.93	12.04	813.58	817.84	459.91	669.85	673.02	
2	53.37	49.75	54.42	0.95	11.42	875.66	851.67	500.45	591.24	724.75	
3	51.68	44.61	50.68	1.00	8.19	847.12	857.91	531.83	524.55	673.03	
4	48.87	39.45	43.79	5.08	-3.09	808.32	832.67	547.86	450.61	627.10	
5	43.72	41.08	32.15	11.57	-1.25	893.58	729.29	523.28	508.33	508.33	
6	32.78	44.94	14.29	18.49	12.64	829.60	612.81	509.55	508.54	328.11	
7	24.36	50.16	8.00	16.36	21.87	870.28	546.83	488.90	585.93	221.39	
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	DIFFUSION FACTOR	CHI					
1	1344.87	0.513	1.346	0.826	0.615	0.506					
2	1329.28	0.527	1.333	0.872	0.545	0.521					
3	1198.66	0.646	1.287	0.766	0.504	0.616					
4	1165.65	1.000	1.452	0.536	0.521	0.674					
5	935.49	1.000	1.347	0.517	0.561	0.707					
6	787.66	0.756	1.055	0.660	0.558	0.659					
7	742.97	0.706	0.995	0.682	0.610	0.656					
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	SOLIDITY	LOSS COEFFICIENT	TOT PRESS LOSS PARAM	EFFICIENCY ADB	POLY EFFICIENCY	POLY MOMEN RISE/ MEAS T RISE	STAT PRESS RISE COEFF	
1	1316.00	0.643	0.731	1.3340	0.235	0.850	0.7667	0.7865	0.394	0.394	
2	1197.58	0.633	0.727	1.3890	0.180	0.1037	0.8198	0.8355	0.411	0.411	
3	1077.71	0.611	0.717	1.5080	-0.049	0.1810	1.0549	1.0502	0.529	0.529	
4	956.53	0.602	0.628	1.6840	0.094	0.1818	0.8620	0.8705	0.590	0.590	
5	816.66	0.630	0.532	1.9060	0.054	0.1810	0.9193	0.9240	0.650	0.650	
6	807.32	0.668	0.475	2.2170	0.132	0.1025	0.8493	0.8575	0.671	0.671	
7				2.3390	0.113	0.1022	0.8816	0.8862	0.700	0.700	
RADIAL POSITION	PERCENT TRAV	TOT PRESS RATIO	TRAV TOT PRESS RATIO	FIXED TOT PRESS RATIO	TEMP RATIO	FIXED TOT TEMP RATIO					
1	5.0000	1.994	1.203	1.691	1.261	1.261					
2	10.0000	1.947	1.251	1.918	1.250	1.250					
3	30.0000	1.890	1.205	1.909	1.193	1.193					
4	50.0000	1.612	1.150	1.972	1.160	1.160					
5	70.0000	1.533	1.132	1.533	1.142	1.142					
6	90.0000	1.507	1.136	1.488	1.142	1.142					
7	95.0000	1.565	1.152	1.504	1.140	1.140					

OVERALL PERFORMANCE SUMMARY

STAGE DATA	ROTOR DATA	ROTOR DATA
FIXED INST.	FIXED INST.	TRAV. INST.
1.6333	1.6633	1.7167
0.8133	0.8457	0.9205
0.8258	0.8564	0.9363
Percent Design Speed = 100.1		
Cor. Nozzle Weight Flow = 207.2		
Discharge Valve Setting = 8.5		

IE Check Flow/Noz.Flow = 1.0087  
 Assumed IE Flow Coeff. = 0.9850  
 Assumed TE Flow Coeff. = 0.9500

TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

STATOR BLADE ROW - NASR TASK IV										
BLADE ELEMENT PERFORMANCE RESULTS										
POINT NUMBER	18	READING NUMBER	149	DATE	6/26/1970					
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CMBR LN LE ANGLE	INCID ANG MN CMBR LN	INCID ANG SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL
1	55.38	55.38	39.47	15.91	816.89	816.89	464.07	512.21	672.27	672.27
2	49.20	49.20	39.11	10.09	983.90	983.90	512.21	568.51	593.39	593.39
3	42.67	42.67	39.01	3.66	773.49	773.49	524.04	446.13	524.04	524.04
4	36.96	36.96	39.80	-2.84	743.52	743.52	592.97	446.56	446.56	446.56
5	38.39	38.39	40.86	-2.47	722.73	722.73	563.53	490.32	490.32	490.32
6	42.30	42.30	42.22	0.08	735.03	735.03	538.76	513.86	538.76	538.76
7	47.59	47.59	42.76	4.83	968.43	968.43	513.86	568.55	568.55	568.55
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMBR LN TE ANGLE	BIV ANG TE	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL
1	1.86	1.86	-11.13	12.99	53.53	968.00	968.00	568.49	10.42	10.42
2	3.30	3.30	-10.10	13.40	45.90	981.45	981.45	586.45	33.49	33.49
3	1.03	1.03	-8.87	9.90	41.64	977.95	977.95	577.62	10.35	10.35
4	-1.31	-1.31	-8.75	7.44	38.27	843.81	843.81	543.06	-12.45	-12.45
5	-1.27	-1.27	-9.10	7.83	39.66	817.17	817.17	515.94	-11.44	-11.44
6	-0.05	-0.05	-10.58	10.53	42.36	478.35	478.35	478.88	-0.43	-0.43
7	-3.13	-3.13	-12.36	9.23	50.72	951.57	951.57	449.45	-24.59	-24.59
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	LOSS COEFFICIENT	TOT LOSS PARAM	EFFICIENCY	POLY MOMEN RISE/ MEAS Y	STAT RISE COEFF	CH1
1	0.671	0.671	0.464	1.2250	0.129	0.042	0.6009	0.7472	0.275	0.297
2	0.651	0.651	0.477	1.5440	0.119	0.038	0.7472	0.8098	0.306	0.329
3	0.657	0.657	0.485	1.6310	0.056	0.017	0.8098	0.8439	0.326	0.349
4	0.642	0.642	0.442	1.7420	0.048	0.014	0.8439	0.8938	0.366	0.389
5	0.627	0.627	0.408	1.8800	0.044	0.012	0.8938	0.8018	0.409	0.432
6	0.638	0.638	0.384	2.0510	0.077	0.019	0.8018	0.433	0.457	0.489
7	0.667	0.667	0.384	2.0980	0.089	0.021	0.6391	0.433	0.457	0.489
RADIAL POSITION	PERCENT DIFFERENTIAL PRESS RATIO	TRAV TOT PRESS RATIO	TEMP RATIO	FIXED TOT PRESS RATIO	LOSS COEFFICIENT	TOT LOSS PARAM	EFFICIENCY	POLY MOMEN RISE/ MEAS Y	STAT RISE COEFF	CH1
1	5.0000	0.940	0.972	1.000	0.129	0.042	0.6009	0.7472	0.275	0.297
2	10.0000	0.968	0.988	1.000	0.119	0.038	0.7472	0.8098	0.306	0.329
3	50.0000	0.976	0.997	1.000	0.056	0.017	0.8098	0.8439	0.326	0.349
4	70.0000	0.980	0.999	1.000	0.048	0.014	0.8439	0.8938	0.366	0.389
5	90.0000	0.986	0.994	1.000	0.044	0.012	0.8938	0.8018	0.409	0.432
6	96.969	0.969	0.993	1.000	0.077	0.019	0.8018	0.433	0.457	0.489
7	95.0000	0.931	0.963	1.000	0.089	0.021	0.6391	0.433	0.457	0.489

OVERALL PERFORMANCE SUMMARY

STAGE DATA		STATOR DATA		STATOR DATA	
FIXED INST.	FIXED INST.	TRAV. INST.	TRAV. INST.	TRAV. INST.	TRAV. INST.
Total Pressure Ratio =	1.6333	0.9820	0.9711	0.9711	0.9711
Polytropic Efficiency =	0.8258	0.9643	0.9711	0.9711	0.9711
Percent Design Speed =	100.1	Discharge Valve Setting=	8.5		
Cor. Nozzle Weight Flow=	207.2				
IE Check Flow/Noz.Flow =	0.9132	TE Check Flow/Noz.Flow =	0.8977		
Assumed IE Flow Coeff. =	0.9500	Assumed TE Flow Coeff. =	0.9350		

062670 TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

		ROTOR BLADE ROW - NASA TASK IV											
		BLADE ELEMENT PERFORMANCE RESULTS											
		POINT NUMBER 19 READING NUMBER 150 DATE 8/26/1970											
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCLD ANG MN	INCLD ANG CMBR LN	INCLD ANG SURF	INCLD ANG SUCT	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	
1	35.39	1.21	60.60	4.79	4.33	1.30	821.27	1482.08	616.37	13.00	1345.64		
2	63.94	0.15	59.61	4.79	4.33	1.30	851.23	1478.52	648.95	1.66	1327.04		
3	59.79	0.91	56.01	2.78	2.78	1.68	815.33	1379.91	715.06	18.96	1188.17		
4	45.75	0.91	52.56	-6.81	-12.65	-12.65	1027.87	1470.62	1024.78	16.29	1051.90		
5	43.14	0.78	49.71	-6.57	-13.36	-13.36	857.61	1358.14	983.70	13.40	921.69		
6	44.88	0.69	47.11	-2.23	-9.89	-9.89	814.03	1225.96	781.28	9.35	777.97		
7	45.34	-0.14	46.13	-0.79	-8.69	-8.69	874.08	1073.96	735.78	-1.79	744.44		
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	REL REV ANGLE	REL TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL			
1	59.87	32.72	54.90	4.07	6.52	897.13	1132.56	584.83	375.81	968.47			
2	59.52	32.40	54.42	4.10	5.42	888.53	1111.74	579.99	368.11	947.31			
3	52.53	30.89	50.68	1.85	6.26	833.20	1034.59	629.04	374.33	828.73			
4	26.47	26.47	43.79	8.38	-6.42	874.10	983.70	603.31	300.39	776.65			
5	44.71	31.71	32.15	12.56	-1.58	800.70	838.19	594.60	367.41	588.71			
6	29.54	34.54	14.29	13.91	16.68	837.94	784.40	682.91	470.08	366.22			
7	24.87	40.14	8.00	16.87	20.47	818.62	693.46	617.60	520.74	286.23			
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	DIFFUSION FACTOR	CHI							
1	1353.64	0.572	1.365	0.949	0.327	0.7361							
2	1258.70	0.603	1.368	0.894	0.338	0.381							
3	1127.13	0.667	1.286	0.880	0.336	0.455							
4	1049.18	1.000	1.431	0.589	0.389	0.522							
5	945.08	0.965	1.313	0.684	0.452	0.536							
6	787.32	0.764	1.057	0.874	0.398	0.435							
7	742.65	0.726	1.007	0.839	0.463	0.386							
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	SOLIDITY RATIO	TOT PRESS LOSS COEFFICIENT	TOT PRESS LOSS PARAM	ADB EFFICIENCY	POLY MOMEN RISE/ EFFICIENCY	STAT PRESS RISE COEFF				
1	1344.29	0.597	0.970	1.3340	0.165	0.032	0.7619	0.7754	0.258				
2	1313.42	0.594	0.959	1.3690	0.084	0.016	0.8758	0.8835	0.277				
3	1197.06	0.638	0.901	1.5880	-0.012	0.002	1.0176	1.0165	0.366				
4	1077.24	0.593	0.865	1.6840	0.128	0.023	0.7391	0.7491	0.427				
5	954.11	0.616	0.737	1.9060	0.143	0.027	0.7200	0.7299	0.467				
6	835.29	0.746	0.698	2.2170	0.160	0.032	0.7891	0.7985	0.435				
7	804.97	0.724	0.614	2.3390	0.193	0.038	0.7578	0.7680	0.416				
RADIAL POSITION	TRAVEL DIST	TRAVEL RATIO	TRAVEL TOT PRESS RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	TOTAL PRESSURE RATIO	ADIABATIC EFFICIENCY	POLYTROPIC EFFICIENCY	PERCENT DESIGN SPEED	COR. NOZZLE WEIGHT FLOW			
1	5.0000	1.554	1.164	1.165	1.165	1.165	1.165	1.165	100.1	213.3			
2	10.0000	1.555	1.150	1.157	1.157	1.157	1.157	1.157	100.1	213.3			
3	30.0000	1.590	1.138	1.142	1.142	1.142	1.142	1.142	100.1	213.3			
4	50.0000	1.335	1.092	1.106	1.106	1.106	1.106	1.106	100.1	213.3			
5	70.0000	1.316	1.097	1.122	1.122	1.122	1.122	1.122	100.1	213.3			
6	90.0000	1.421	1.108	1.138	1.138	1.138	1.138	1.138	100.1	213.3			
7	95.0000	1.376	1.123	1.154	1.154	1.154	1.154	1.154	100.1	213.3			

OVERALL PERFORMANCE SUMMARY  
 STAGE DATA ROTOR DATA ROTOR DATA  
 FIXED INST. FIXED INST. TRAV. INST.  
 PERFORMANCE PARAMETERS  
 Total Pressure Ratio = 1.3604 1.3978 1.4486  
 Adiabatic Efficiency = 0.7060 0.7713 0.9308  
 Polytrropic Efficiency = 0.7185 0.7819 0.9343  
 Percent Design Speed = 100.1 Discharge Valve Settings= 30.0  
 Cor. Nozzle Weight Flow= 213.3  
 IE Check Flow/Noz.Flow = 0.9863 TE Check Flow/Noz.Flow = 0.9173  
 Assumed IE Flow Coeff. = 0.9850 Assumed TE Flow Coeff. = 0.9500

TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

		STATOR BLADE ROW - NASA TASK IV									
		BLADE ELEMENT PERFORMANCE RESULTS					6/26/1970				
		POINT NUMBER	19	READING NUMBER	150	DATE					
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCLD ANG MN CHBR LN	INCLD ANG SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	
1	32.56	31.84	39.47	-6.291	-7.227	800.82	590.66	590.66	377.17	377.17	
2	28.95	29.01	39.11	-10.706	-10.723	800.42	595.02	595.02	369.45	369.45	
3	24.31	29.80	39.80	-15.749	-15.749	824.30	679.75	679.75	297.40	297.40	
4	29.11	31.64	40.86	-11.775	-11.775	843.99	645.86	645.86	359.64	359.64	
5	31.64	37.37	42.22	-10.758	-10.758	874.28	735.58	735.58	453.23	453.23	
6	37.37		42.76	-5.339	-5.339	833.44	654.58	654.58	499.96	499.96	
7											
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	DEV ANG TE	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	
1	2.19	1.00	-11.13	13.32	30.37	614.99	614.99	614.99	23.47	23.47	
2	1.00	1.00	-10.10	11.10	30.83	685.54	685.54	685.54	12.00	12.00	
3	1.49	1.49	-8.87	10.36	27.45	696.63	696.63	696.63	18.16	18.16	
4	-1.57	-1.57	-8.75	7.18	25.87	652.32	652.32	652.32	-17.83	-17.83	
5	-2.15	-2.15	-9.10	6.95	31.26	656.18	656.18	656.18	-24.53	-24.53	
6	2.82	2.82	-10.58	13.40	28.82	698.30	698.30	698.30	39.13	39.13	
7	1.46	1.46	-12.86	13.82	35.91	652.93	652.93	652.93	19.18	19.18	
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	LOSS COEFFICIENT	TOT PRESS LOSS PARAM	AD8 EFFICIENCY	POLY MOMEN RISE/ EFFICIENCY MEAS	STAT RISE COEFF	CHK1	
1	0.601	0.601	0.601	1.040	0.196	0.064	0.1708	0.1708	0.035	0.038	
2	0.605	0.605	0.605	1.152	0.065	0.021	1.1370	1.1370	0.045	0.050	
3	0.680	0.680	0.680	1.024	0.072	0.022	0.4037	0.4037	0.070	0.078	
4	0.640	0.640	0.640	0.991	0.150	0.043	0.2827	0.2827	0.048	0.053	
5	0.658	0.658	0.658	1.013	0.091	0.024	0.2776	0.2776	0.054	0.059	
6	0.782	0.782	0.782	1.081	0.094	0.023	0.1157	0.1157	0.016	0.019	
7	0.739	0.739	0.739	1.146	0.108	0.026	0.1795	0.1795	0.020	0.031	
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	SOLIDITY RATIO	LOSS COEFFICIENT	TOT PRESS LOSS PARAM	AD8 EFFICIENCY	POLY MOMEN RISE/ EFFICIENCY MEAS	STAT RISE COEFF	CHK1	
1	0.524	0.524	0.524	1.5230	0.196	0.064	0.1708	0.1708	0.035	0.038	
2	0.591	0.591	0.591	1.5440	0.065	0.021	1.1370	1.1370	0.045	0.050	
3	0.605	0.605	0.605	1.6310	0.072	0.022	0.4037	0.4037	0.070	0.078	
4	0.573	0.573	0.573	1.7420	0.150	0.043	0.2827	0.2827	0.048	0.053	
5	0.577	0.577	0.577	1.8800	0.091	0.024	0.2776	0.2776	0.054	0.059	
6	0.708	0.708	0.708	2.0510	0.094	0.023	0.1157	0.1157	0.016	0.019	
7	0.665	0.665	0.665	2.0980	0.108	0.026	0.1795	0.1795	0.020	0.031	
RADIAL POSITION	PERCENT EFFICIENCY	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	LOSS COEFFICIENT	TOT PRESS LOSS PARAM	AD8 EFFICIENCY	POLY MOMEN RISE/ EFFICIENCY MEAS	STAT RISE COEFF	
1	5.0000	0.954	0.994	1.000	1.000	0.196	0.064	0.1708	0.1708	0.035	
2	10.0000	1.002	1.002	0.986	1.000	0.065	0.021	1.1370	1.1370	0.045	
3	30.0000	0.963	0.998	0.981	1.000	0.072	0.022	0.4037	0.4037	0.070	
4	50.0000	0.962	1.001	0.964	1.000	0.150	0.043	0.2827	0.2827	0.048	
5	70.0000	0.954	0.991	0.977	1.000	0.091	0.024	0.2776	0.2776	0.054	
6	90.0000	0.940	0.997	0.968	1.000	0.094	0.023	0.1157	0.1157	0.016	
7	95.0000	0.947	0.989	0.966	1.000	0.108	0.026	0.1795	0.1795	0.020	
OVERALL PERFORMANCE SUMMARY											
STAGE DATA STATOR DATA STATOR DATA											
FIXED INST. FIXED INST. TRAV. INST.											
PERFORMANCE PARAMETERS											
Total Pressure Ratio = 1.3604 0.9732 0.9630											
Polytropic Efficiency = 0.7185 0.9189 0.3580											
Percent Design Speed = 100.1 Discharge Valve Setting=30.0											
Cor. Nozzle Weight Flow= 213.3											
LE Check Flow/Noz.Flow = 0.9222 TE Check Flow/Noz.Flow = 0.8861											
Assumed LE Flow Coeff. = 0.9500 Assumed TE Flow Coeff. = 0.9350											



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TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

		ROTOR BLADE ROW " NASA TASK IV									
		BLADE ELEMENT PERFORMANCE RESULTS					DATE 6/26/1970				
		POINT NUMBER	20	READING NUMBER	151	DATE					
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCID ANG MN CHBR LN	INCID ANG SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	INLET ABS TANG VEL
1	67.10	0.23	60.90	6.50	3.80	877.44	1474.49	573.00	2.35	1356.72	
2	65.94	0.20	59.61	6.33	3.30	894.62	1454.16	592.53	2.09	1327.63	
3	58.76	0.93	56.01	2.75	-1.71	1389.31	1389.31	720.61	11.71	1187.81	
4	45.72	0.98	52.56	-6.84	-12.68	1028.08	1470.10	1024.97	17.55	1050.98	
5	42.41	0.55	49.71	-7.30	-14.09	1027.68	1383.10	1013.39	9.67	928.71	
6	45.51	0.47	47.11	-1.60	-9.26	999.82	1116.09	767.65	6.26	781.31	
7	46.07	-0.28	46.13	-0.06	-7.96	856.57	1062.79	719.12	-3.53	746.41	
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	REL DEV ANGLE	REL TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	EXIT ABS TANG VEL
1	51.86	51.25	54.80	1.06	11.25	990.93	881.74	494.28	615.88	728.84	
2	56.33	46.75	54.42	1.61	9.91	925.39	925.39	516.51	549.14	766.70	
3	51.51	42.81	50.68	0.83	7.25	881.08	881.08	548.35	507.94	689.50	
4	49.50	38.08	43.79	5.71	-3.78	800.54	849.11	551.37	431.97	645.62	
5	44.37	40.97	32.15	12.52	-1.96	887.25	725.81	517.89	449.73	506.69	
6	32.29	43.31	14.29	18.00	13.22	635.53	531.29	500.88	500.88	335.68	
7	23.80	48.89	8.00	15.80	22.26	881.22	566.46	508.59	582.89	224.34	
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	SOLIDITY COEFFICIENT	LOSS COEFFICIENT	TOT PRESS LOSS PARAM	EFFICIENCY ADB	POLY MOMEN RISE/ MEAS T RISE	STAT PRESS RISE COEFF	DIFFUSION FACTOR
1	1359.07	0.528	1.349	0.863	1.3340	0.217	0.846	0.7762	0.7946	0.392	0.557
2	1329.13	0.545	1.333	0.872	1.3690	0.154	0.831	0.8407	0.8542	0.413	0.522
3	1199.52	0.672	1.296	0.761	1.5080	-0.046	0.809	1.0522	1.0477	0.529	0.617
4	1068.52	1.000	1.450	0.538	1.6840	0.095	0.818	0.8566	0.8651	0.572	0.659
5	939.38	1.000	1.346	0.511	1.9060	0.069	0.813	0.8939	0.8998	0.634	0.693
6	787.57	0.751	1.049	0.692	2.2170	0.143	0.827	0.8361	0.8448	0.649	0.534
7	742.88	0.707	0.994	0.707	2.3390	0.121	0.824	0.8703	0.8773	0.670	0.590
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	FIXED TOT PRESS RATIO	TEMP RATIO	FIXED TOT TEMP RATIO	LOSS COEFFICIENT	EFFICIENCY ADB	POLY MOMEN RISE/ MEAS T RISE	STAT PRESS RISE COEFF	DIFFUSION FACTOR
1	1344.71	0.653	0.728	1.3340	1.266	1.248	0.217	0.7762	0.7946	0.392	0.557
2	1315.84	0.630	0.772	1.3690	1.233	1.236	0.154	0.8407	0.8542	0.413	0.522
3	1197.44	0.634	0.747	1.5080	1.201	1.188	-0.046	1.0522	1.0477	0.529	0.617
4	1077.58	0.603	0.731	1.6840	1.154	1.154	0.095	0.8566	0.8651	0.572	0.659
5	956.42	0.595	0.628	1.9060	1.128	1.139	0.069	0.8939	0.8998	0.634	0.693
6	836.56	0.640	0.553	2.2170	1.107	1.140	0.143	0.8361	0.8448	0.649	0.534
7	807.23	0.680	0.493	2.3390	1.133	1.148	0.121	0.824	0.8773	0.670	0.590
RADIAL POSITION	PERCENT THROUGH	TRAY TOT PRESS RATIO	TRAY TOT TEMP RATIO	FIXED TOT PRESS RATIO	TEMP RATIO	FIXED TOT TEMP RATIO	LOSS COEFFICIENT	EFFICIENCY ADB	POLY MOMEN RISE/ MEAS T RISE	STAT PRESS RISE COEFF	DIFFUSION FACTOR
1	5.0000	1.949	1.266	1.266	1.248	1.248	0.217	0.7762	0.7946	0.392	0.557
2	10.0000	1.904	1.233	1.233	1.236	1.236	0.154	0.8407	0.8542	0.413	0.522
3	30.0000	1.866	1.201	1.866	1.188	1.188	-0.046	1.0522	1.0477	0.529	0.617
4	50.0000	1.573	1.141	1.573	1.154	1.154	0.095	0.8566	0.8651	0.572	0.659
5	70.0000	1.501	1.128	1.501	1.139	1.139	0.069	0.8939	0.8998	0.634	0.693
6	90.0000	1.499	1.133	1.472	1.140	1.140	0.143	0.8361	0.8448	0.649	0.534
7	95.0000	1.551	1.148	1.485	1.138	1.138	0.121	0.824	0.8773	0.670	0.590
OVERALL PERFORMANCE SUMMARY											
SOURCE DATA						ROTOR DATA					
FIXED INST. FIXED INST. TRAV. INST.						FIXED INST. FIXED INST. TRAV. INST.					
Total Pressure Ratio = 1.6079						1.6341					
Adiabatic Efficiency = 0.8119						0.8415					
Polytropic Efficiency = 0.8241						0.8521					
Percent Design Speed = 100.1						Discharge Valve Settings= 9.5					
Cor. Nozzle Weight Flow= 209.2											
IE Check Flow/Noz.Flow = 0.9985						TE Check Flow/Noz.Flow = 0.9095					
Assumed IE Flow Coeff. = 0.9850						Assumed TE Flow Coeff. = 0.9500					

TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

		STATOR BLADE ROW * NASA TASK IV									
		BLADE ELEMENT PERFORMANCE RESULTS									
		POINT NUMBER	20	READING NUMBER	151	DATE	8/26/1970				
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCID LN MN CMR LN	INCID LN SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	
1	51.09	46.18	39.47	11.62	7.07	794.29	498.84	498.84	618.10	618.10	
2	40.85	35.61	39.11	1.84	7.07	763.86	528.87	528.87	551.14	551.14	
3	35.61	30.80	39.01	4.19	7.07	736.07	584.91	584.91	507.45	507.45	
4	30.80	25.56	40.86	-2.56	7.07	714.00	557.45	557.45	440.22	440.22	
5	25.56	20.65	42.22	-1.57	7.07	748.38	562.50	562.50	482.93	482.93	
6	20.65	15.29	42.76	3.53	7.07	881.22	535.07	535.07	559.63	559.63	
7	15.29										
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	BEV ANG TE	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	
1	3.47	2.87	-11.13	14.60	47.53	565.05	564.01	564.01	34.19	34.19	
2	2.87	2.19	-10.10	12.97	43.31	597.65	596.87	596.87	29.89	29.89	
3	0.45	-1.20	-8.87	9.32	40.40	586.29	586.03	586.03	4.59	4.59	
4	-1.20	-1.01	-8.75	7.55	36.80	542.99	542.27	542.27	-11.33	-11.33	
5	-1.01	0.30	-9.10	8.09	39.31	527.54	526.33	526.33	-9.27	-9.27	
6	0.30	-2.92	-10.58	10.88	40.35	603.55	501.99	501.99	2.63	2.63	
7	-2.92		-12.36	9.44	49.20	474.54	472.40	472.40	-24.07	-24.07	
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	LOSS COEFFICIENT	TOT PRESS LOSS PARAM	ADB EFFICIENCY	POLY MOMEN RISE/ HEAS T RISE	STAT PRESS RISE COEFF	CHI	
1	0.656	0.463	0.463	1.5230	0.125	0.041	0.5852	0.257	0.278	0.278	
2	0.638	0.493	0.493	1.5440	0.080	0.026	0.8301	0.296	0.317	0.317	
3	0.660	0.493	0.493	1.6310	0.052	0.016	0.7859	0.305	0.328	0.328	
4	0.637	0.462	0.462	1.7420	0.055	0.016	0.8255	0.350	0.372	0.372	
5	0.620	0.452	0.452	1.8800	0.039	0.010	0.9254	0.393	0.416	0.416	
6	0.652	0.430	0.430	2.0510	0.070	0.017	0.7753	0.394	0.419	0.419	
7	0.680	0.405	0.405	2.0980	0.086	0.021	0.6292	0.388	0.481	0.481	
RADIAL POSITION	TRAV TOT PRESS RATIO	TRAV TOT PRESS RATIO	TRAV TOT PRESS RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	LOSS COEFFICIENT	LOSS PARAM	ADB EFFICIENCY	POLY MOMEN RISE/ HEAS T RISE	STAT PRESS RISE COEFF	
1	0.943	0.943	0.975	1.000	1.000	0.125	0.041	0.5852	0.257	0.278	
2	0.982	0.982	0.993	1.000	1.000	0.080	0.026	0.8301	0.296	0.317	
3	0.973	0.973	0.985	1.000	1.000	0.052	0.016	0.7859	0.305	0.328	
4	0.978	0.978	0.995	1.000	1.000	0.055	0.016	0.8255	0.350	0.372	
5	0.991	0.991	0.994	1.000	1.000	0.039	0.010	0.9254	0.393	0.416	
6	0.965	0.965	0.993	1.000	1.000	0.070	0.017	0.7753	0.394	0.419	
7	0.930	0.930	0.982	1.000	1.000	0.086	0.021	0.6292	0.388	0.481	
OVERALL PERFORMANCE SUMMARY											
		STAGE DATA STATOR DATA STATOR DATA									
		FIXED INST. FIXED INST. TRAV. INST.									
		PERFORMANCE PARAMETERS									
		Total Pressure Ratio = 1.6079 0.9840 0.9731									
		Polytropic Efficiency = 0.8241 0.9671									
		Percent Design Speed = 100.1 Discharge Valve Setting=9.5									
		Cor. Nozzle Weight Flow= 209.2									
		LE Check Flow/Noz.Flow = 0.9143 TE Check Flow/Noz.Flow = 0.8890									
		Assumed LE Flow Coeff. = 0.9500 Assumed TE Flow Coeff. = 0.9350									

081970 **TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)**

ROTOR BLADE ROW - NASA TASK IV		BLADE ELEMENT PERFORMANCE RESULTS											
		POINT NUMBER	30	READING	NUMBR	225	DATE	8/17/1970					
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCID ANG MN	CHBR LN LN	SUCT SURF ANGLE	INCID ANG SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	INLET AX TANG VEL
1	68.84	0.59	50.80	5.24	5.09	2.54	2.54	81.10	1483.43	604.39	4.20	1351.72	604.39
2	68.70	0.45	59.81	5.09	5.09	2.06	2.06	82.84	146.40	625.42	4.92	1323.08	625.42
3	57.95	1.10	56.01	1.54	7.09	-2.92	-2.92	82.93	1403.14	752.77	14.40	1184.11	752.77
4	48.47	1.52	48.47	1.52	52.56	-12.93	-12.93	1826.81	1461.59	1023.50	27.13	1040.50	1023.50
5	42.18	0.97	49.71	1.52	49.71	-7.53	-7.53	1826.81	1376.92	1012.44	17.06	917.54	1012.44
6	45.52	0.55	47.11	1.59	47.11	-8.25	-8.25	1826.81	1115.38	765.64	7.33	779.58	765.64
7	48.39	-0.25	46.13	2.26	46.13	-5.64	-5.64	896.26	1019.80	661.80	-2.88	749.13	661.80
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	REL ANGLE	CHBR LN LN	REL TURN ANGLE	REL TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	EXIT AX TANG VEL
1	58.54	33.28	54.80	3.74	54.80	7.30	7.30	853.47	1124.96	586.44	384.99	958.59	586.44
2	58.29	32.75	54.42	3.87	54.42	6.41	6.41	892.82	1106.87	581.34	373.98	940.75	581.34
3	58.71	31.92	50.58	2.03	50.58	4.85	4.85	828.24	1020.11	617.96	384.96	811.47	617.96
4	52.49	26.31	43.79	8.70	43.79	-7.02	-7.02	858.48	983.95	599.10	294.25	788.42	599.10
5	48.57	32.05	32.15	12.42	32.15	-2.39	-2.39	801.46	834.04	593.09	371.29	584.32	593.09
6	29.09	34.80	14.29	14.29	14.29	-6.43	-6.43	822.11	773.60	667.98	464.23	371.62	667.98
7	24.86	40.18	8.00	16.86	8.00	23.53	23.53	817.92	692.45	616.71	528.76	285.79	616.71
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	INLET ABS MACH NO	EXIT REL MACH NO	EXIT ABS MACH NO	LOSS COEFFICIENT	TOT PRESS PARAM EFFICIENCY	LOSS COEFFICIENT	ABD EFFICIENCY	POLY MOMEN RISE/ MEAS. Y RISE	STAT PRESS RISE COEFF
1	1357.93	0.563	0.967	1.356	0.967	0.967	0.967	0.119	0.8300	0.119	0.8404	0.260	0.260
2	1328.01	0.579	1.331	0.930	0.930	0.930	0.930	0.077	0.899	0.077	0.899	0.278	0.278
3	1194.50	0.705	1.313	0.821	0.821	0.821	0.821	-0.009	0.802	-0.009	0.802	0.333	0.333
4	1067.62	1.000	1.424	0.585	0.585	0.585	0.585	0.132	0.824	0.132	0.7283	0.434	0.434
5	934.59	1.000	1.341	0.286	0.286	0.286	0.286	0.136	0.826	0.136	0.7268	0.482	0.482
6	786.91	0.749	1.048	0.872	0.872	0.872	0.872	0.167	0.833	0.167	0.7864	0.432	0.432
7	742.26	0.648	0.949	0.932	0.932	0.932	0.932	0.218	0.842	0.218	0.7520	0.429	0.429
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	SOLIDITY RATIO	EXIT ABS MACH NO	TRAV TOT PRESS RATIO	TRAV TOT PRESS RATIO	LOSS COEFFICIENT	TOT PRESS PARAM EFFICIENCY	LOSS COEFFICIENT	ABD EFFICIENCY	POLY MOMEN RISE/ MEAS. Y RISE	STAT PRESS RISE COEFF
1	1343.58	0.604	0.985	1.340	0.985	1.340	0.985	0.119	0.8300	0.119	0.8404	0.260	0.260
2	1314.73	0.596	0.953	1.390	0.953	1.390	0.953	0.077	0.899	0.077	0.899	0.278	0.278
3	1194.43	0.633	0.887	1.580	0.887	1.580	0.887	-0.009	0.802	-0.009	0.802	0.333	0.333
4	1078.67	0.589	0.887	1.680	0.887	1.680	0.887	0.132	0.824	0.132	0.7283	0.434	0.434
5	953.61	0.617	0.733	1.960	0.733	1.960	0.733	0.136	0.826	0.136	0.7268	0.482	0.482
6	835.85	0.729	0.686	2.370	0.686	2.370	0.686	0.167	0.833	0.167	0.7864	0.432	0.432
7	804.55	0.721	0.611	2.390	0.611	2.390	0.611	0.218	0.842	0.218	0.7520	0.429	0.429
RADIAL POSITION	PERCENT DIMENSION	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	LOSS COEFFICIENT	FIXED TOT TEMP RATIO	LOSS COEFFICIENT	ABD EFFICIENCY	LOSS COEFFICIENT	ABD EFFICIENCY	POLY MOMEN RISE/ MEAS. Y RISE	STAT PRESS RISE COEFF
1	5.0000	1.576	1.194	1.561	1.164	0.119	1.164	0.119	0.8300	0.119	0.8404	0.260	0.260
2	10.0000	1.569	1.195	1.594	1.160	-0.009	1.160	-0.009	0.802	-0.009	0.802	0.333	0.333
3	30.0000	1.578	1.140	1.812	1.144	0.132	1.144	0.132	0.824	0.132	0.7283	0.434	0.434
4	50.0000	1.332	1.091	1.809	1.110	0.136	1.110	0.136	0.826	0.136	0.7268	0.482	0.482
5	70.0000	1.319	1.101	1.894	1.105	0.167	1.105	0.167	0.833	0.167	0.7864	0.432	0.432
6	90.0000	1.407	1.117	1.866	1.124	0.218	1.124	0.218	0.842	0.218	0.7520	0.429	0.429
7	95.0000	1.426	1.135	1.958	1.122	0.218	1.122	0.218	0.842	0.218	0.7520	0.429	0.429

OVERALL PERFORMANCE SUMMARY

STAGE DATA	ROTOR DATA	ROTOR DATA
FIXED INST. FIXED INST.	TRAV. INST.	TRAV. INST.
1.3634	1.4014	1.4503
0.7053	0.7708	0.9085
0.7179	0.7815	0.9132
Discharge Valve Setting= 30.0		
100.0	211.9	
Cor. Nozzle Weight Flow=		
0.9919	0.9161	
0.9850	0.9500	
TE Check Flow/Noz.Flow = 0.9161		
Assumed LE Flow Coeff. = 0.9500		

081970

TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

STATOR BLADE ROW - NASA TASK IV										
BLADE ELEMENT PERFORMANCE RESULTS										
POINT NUMBER	30	READING NUMBER	223	DATE	8/17/1970					
RADIAL POSITION	REL INLET FLOW ANG	ARS INLET FLOW ANG	CMBR LN LE ANGLE	INCID ANG MN CMBR LN	INCID ANG SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL
1	33.12	32.18	39.47	-6.35	30.70	707.19	592.30	592.30	386.38	386.38
2	32.18	32.18	39.11	-6.93	30.01	704.71	596.41	596.41	375.34	375.34
3	29.98	29.98	39.01	-9.03	28.11	718.15	664.79	664.79	384.59	384.59
4	24.17	24.17	39.80	-15.63	25.45	744.26	653.50	653.50	298.30	298.30
5	29.44	29.44	40.86	-11.42	29.94	655.66	644.08	644.08	363.44	363.44
6	31.96	31.96	42.22	-10.26	36.44	632.54	717.51	717.51	447.60	447.60
7	37.42	37.42	42.76	-5.34	36.44	632.54	653.46	653.46	499.98	499.98
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMBR LN YE ANGLE	DEV ANG TE	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL
1	2.42	2.42	-11.13	13.55	30.70	617.84	617.28	617.28	26.09	26.09
2	2.17	2.17	-10.10	12.27	30.01	692.14	691.61	691.61	26.19	26.19
3	1.87	1.87	-8.67	10.74	28.11	701.30	700.64	700.64	22.86	22.86
4	-1.27	-1.27	-8.75	7.48	25.45	644.39	643.51	643.51	-14.31	-14.31
5	-1.52	-1.52	-9.10	7.58	30.95	657.93	656.29	656.29	-17.36	-17.36
6	2.02	2.02	-10.58	12.60	29.94	697.37	794.42	794.42	27.97	27.97
7	0.98	0.98	-12.36	13.34	36.44	658.22	755.67	755.67	12.95	12.95
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	SOLIDITY COEFFICIENT	TOT PRESS LOSS	EFFICIENCY	POLY MOMEN RISE/ STAT PRESS	DIFFUSION FACTOR	CHI
1	0.607	0.607	0.607	1.042	0.188	0.062	0.1769	0.1769	0.294	0.041
2	0.607	0.607	0.607	1.160	0.048	0.072	1.3167	1.3167	0.178	0.054
3	0.673	0.673	0.673	1.051	0.062	0.019	0.3807	0.3807	0.233	0.064
4	0.658	0.658	0.658	1.019	0.146	0.042	0.2320	0.2320	0.225	0.046
5	0.762	0.762	0.762	1.107	0.109	0.029	0.2395	0.2395	0.251	0.050
6	0.736	0.736	0.736	1.156	0.107	0.026	0.1714	0.1714	0.185	0.022
7	0.669	0.669	0.669	2.0980	0.118	0.028	0.1828	0.1828	0.226	0.029
RADIAL POSITION	PERCENT THROUGH	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	LOSS COEFFICIENT	EFFICIENCY	ADB EFFICIENCY	OVERALL PERFORMANCE SUMMARY	
1	5.0000	0.952	0.952	0.958	1.000	1.000	0.062	0.062	STAGE DATA STATOR DATA STATOR DATA	
2	10.0000	1.005	1.005	0.985	1.000	1.000	0.072	0.072	FIXED INST. FIXED INST. TRAV. INST.	
3	30.0000	0.968	0.968	0.964	1.000	1.000	0.019	0.019	1.3634	0.9729
4	50.0000	0.958	0.958	0.965	1.000	1.000	0.042	0.042	0.7179	0.9186
5	70.0000	0.953	0.953	0.972	1.000	1.000	0.029	0.029	Discharge Valve Setting= 30.0	
6	90.0000	0.958	0.958	0.966	1.000	1.000	0.026	0.026	Percent Design Speed = 100.0	
7	99.0000	0.953	0.953	0.964	1.000	1.000	0.028	0.028	Cor. Nozzle Weight Flow= 211.9	
LE Check Flow/Noz.Flow = 0.9209										
TE Check Flow/Noz.Flow = 0.8941										
Assumed IE Flow Coeff. = 0.9500										
Assumed TE Flow Coeff. = 0.9350										

081970  
TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

ROTOR BLADE ROW - NASA TASK IV		BLADE ELEMENT PERFORMANCE RESULTS		POINT NUMBER 31		READING NUMBER 224		DATE 8/17/1970		
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CMRR LN LE ANGLE	INCID ANG MN CHBR LN	INCID ANG SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL
1	68.00	-0.32	60.60	7.40	4.70	953.82	1688.157	549.157	-8.10	1366.14
2	66.58	-0.80	59.61	6.97	3.94	880.55	1459.94	578.46	-8.07	1335.21
3	60.62	1.09	56.01	4.61	0.15	867.29	1359.93	667.15	12.70	1185.02
4	43.92	1.32	52.56	-6.64	-12.48	1813.79	1354.80	1018.60	23.26	1083.66
5	44.25	1.05	49.71	-5.46	-12.25	954.52	1328.21	948.94	17.22	916.76
6	45.64	0.63	47.11	-3.47	-9.13	992.73	1110.70	760.83	8.39	778.00
7	48.68	-0.84	46.13	2.55	-5.35	895.15	1023.60	660.69	-9.63	751.40
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMRR LN TE ANGLE	REL DEV ANG TE	REL TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL
1	57.25	54.11	54.80	2.45	10.75	781.08	846.12	457.125	631.94	718.76
2	56.19	48.37	54.42	1.77	10.39	756.52	902.62	501.81	564.49	749.18
3	52.19	45.35	50.68	1.51	8.43	739.47	847.76	519.62	525.95	669.70
4	49.36	39.07	43.79	5.57	-3.44	701.16	835.77	544.29	441.85	634.12
5	43.46	40.50	32.15	11.31	0.79	698.39	731.50	529.96	452.71	502.28
6	32.57	44.36	14.29	18.28	13.07	728.55	620.02	516.74	503.26	338.04
7	24.05	51.25	8.00	16.05	24.62	767.76	531.53	476.33	593.41	212.61
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	LOSS COEFFICIENT	LOSS TOY PRESS PARAM	EFFICIENCY ADB	POLY EFFICIENCY	MEAS RISE	STAT PRESS RISE COEFF
1	1357.04	0.505	1.340	0.832	0.196	0.040	0.812	0.8180	0.501	0.390
2	1327.14	0.531	1.332	0.867	0.161	0.033	0.8349	0.8491	0.501	0.407
3	1197.72	0.619	1.261	0.779	-0.021	0.004	1.0234	1.0214	0.501	0.501
4	1066.92	0.696	1.145	0.639	0.104	0.020	0.8430	0.8522	0.574	0.574
5	933.98	0.918	1.273	0.563	0.073	0.014	0.8933	0.8993	0.619	0.619
6	786.39	0.745	1.044	0.679	0.128	0.024	0.8542	0.8620	0.659	0.659
7	741.77	0.647	0.953	0.721	0.118	0.023	0.8824	0.8890	0.783	0.783
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	SOLIDITY RATIO	LOSS COEFFICIENT	LOSS TOY PRESS PARAM	EFFICIENCY ADB	POLY EFFICIENCY	MEAS RISE	STAT PRESS RISE COEFF
1	1342.70	0.544	0.698	1.340	0.196	0.040	0.812	0.8180	0.501	0.390
2	1313.87	0.531	0.753	1.3690	0.161	0.033	0.8349	0.8491	0.501	0.407
3	1195.95	0.628	0.720	1.2080	-0.021	0.004	1.0234	1.0214	0.501	0.501
4	1075.97	0.604	0.720	1.0840	0.104	0.020	0.8430	0.8522	0.574	0.574
5	954.99	0.606	0.634	1.2060	0.073	0.014	0.8933	0.8993	0.619	0.619
6	835.31	0.633	0.539	1.2170	0.128	0.024	0.8542	0.8620	0.659	0.659
7	806.02	0.667	0.462	1.3390	0.118	0.023	0.8824	0.8890	0.783	0.783
RADIAL POSITION	PERCENT FLOW	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	LOSS COEFFICIENT	LOSS TOY PRESS PARAM	EFFICIENCY ADB	POLY EFFICIENCY	MEAS RISE	STAT PRESS RISE COEFF
1	5.0000	1.945	1.262	1.888	0.196	0.040	0.812	0.8180	0.501	0.390
2	10.0000	1.912	1.231	1.898	0.161	0.033	0.8349	0.8491	0.501	0.407
3	30.0000	1.829	1.199	1.871	-0.021	0.004	1.0234	1.0214	0.501	0.501
4	50.0000	1.575	1.145	1.532	0.104	0.020	0.8430	0.8522	0.574	0.574
5	70.0000	1.311	1.131	1.302	0.073	0.014	0.8933	0.8993	0.619	0.619
6	90.0000	1.500	1.139	1.482	0.128	0.024	0.8542	0.8620	0.659	0.659
7	95.0000	1.584	1.156	1.500	0.118	0.023	0.8824	0.8890	0.783	0.783
OVERALL PERFORMANCE SUMMARY										
STAGE DATA					ROTOR DATA					ROTOR DATA
FIXED INST. FIXED INST.					FIXED INST. FIXED INST.					TRAV. INST.
= 1.6089					= 1.6311					= 1.6837
= 0.8081					= 0.8331					= 0.9151
= 0.8205					= 0.8442					= 0.9211
= 99.9					= 99.9					Discharge Valve Setting= 9.0
= 205.0					= 205.0					Cor. Nozzle Weight Flow=
LE Check Flow/Noz.Flow = 1.0019										
Assumed LE Flow Coeff. = 0.9850										
TE Check Flow/Noz.Flow = 0.9053										
Assumed TE Flow Coeff. = 0.9700										

TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

081970		STATOR BLADE ROW - NASA TASK IV									
		BLADE ELEMENT PERFORMANCE RESULTS									
		POINT NUMBER	31	READING NUMBER	224	DATE	8/17/1970				
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCID ANG MN CMBR LN	INCID ANG SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	
1	53.96	47.81	39.47	14.49	14.49	454.30	461.39	461.39	634.22	634.22	
2	43.43	39.01	4.42	8.70	42.31	459.81	513.65	513.65	566.74	566.74	
3	36.99	39.60	-3.21	4.72	42.31	459.81	555.06	555.06	525.44	525.44	
4	37.81	40.86	-3.05	4.72	37.29	459.81	589.18	589.18	437.45	437.45	
5	41.71	42.22	-0.751	4.72	38.43	459.81	571.12	571.12	443.14	443.14	
6	48.71	42.76	5.795	4.72	43.02	459.81	546.60	546.60	487.16	487.16	
7					50.54	459.81	500.41	500.41	569.73	569.73	
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	DEV ANGLE	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	
1	3.27	14.40	-11.13	14.40	50.69	459.81	558.89	558.89	31.96	31.96	
2	5.91	15.761	-10.10	15.761	42.31	459.81	596.23	596.23	57.48	57.48	
3	2.19	-8.87	-8.87	13.06	41.24	459.81	576.73	576.73	22.02	22.02	
4	-0.70	8.05	-9.10	8.05	37.29	459.81	533.85	533.85	-6.51	-6.51	
5	-0.62	9.10	-10.58	9.10	38.43	459.81	520.39	520.39	-5.64	-5.64	
6	-1.31	9.27	-10.58	9.27	43.02	459.81	509.25	509.25	-11.49	-11.49	
7	-1.83	10.753	-12.36	10.753	50.54	459.81	483.60	483.60	-15.46	-15.46	
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	SOLIDITY COEFFICIENT	LOSS COEFFICIENT	TOT PRESS LOSS PARAM	ABB EFFICIENCY	POLY MOMEN RISE/ MEAS Y RISE	STAT PRESS RISE COEFF	
1	0.647	0.639	0.651	1.211	1.5230	0.120	0.039	0.8347	0.6184	0.272	
2	0.639	0.651	0.636	1.161	1.5440	0.079	0.026	0.8347	0.298	0.298	
3	0.651	0.636	0.643	1.039	1.5310	0.043	0.013	0.8074	0.318	0.318	
4	0.636	0.643	0.644	1.7420	1.7420	0.033	0.007	0.8235	0.362	0.362	
5	0.632	0.643	0.644	0.911	1.8800	0.073	0.009	0.8937	0.405	0.405	
6	0.643	0.644	0.644	0.919	2.0510	0.106	0.048	0.8417	0.420	0.420	
7	0.644	0.644	0.644	0.966	2.0980	0.106	0.025	0.7058	0.412	0.412	
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	LOSS COEFFICIENT	TOT PRESS LOSS PARAM	ABB EFFICIENCY	POLY MOMEN RISE/ MEAS Y RISE	STAT PRESS RISE COEFF	
1	0.949	0.949	0.949	0.970	1.000	0.120	0.039	0.8347	0.6184	0.272	
2	0.949	0.949	0.949	0.981	1.000	0.079	0.026	0.8347	0.298	0.298	
3	0.949	0.949	0.949	0.981	1.000	0.043	0.013	0.8074	0.318	0.318	
4	0.949	0.949	0.949	0.991	1.000	0.033	0.007	0.8235	0.362	0.362	
5	0.949	0.949	0.949	0.994	1.000	0.073	0.009	0.8937	0.405	0.405	
6	0.949	0.949	0.949	0.982	1.000	0.106	0.048	0.8417	0.420	0.420	
7	0.949	0.949	0.949	0.972	1.000	0.106	0.025	0.7058	0.412	0.412	
OVERALL PERFORMANCE SUMMARY											
STAGE DATA STATOR DATA STATOR DATA											
FIXED INST. FIXED INST. TRAV. INST.											
PERFORMANCE PARAMETERS											
Total Pressure Ratio = 1.6089 0.9864 0.9752											
Polytropic Efficiency = 0.8205 0.9719 0.9434											
Percent Design Speed = 99.9 Discharge Valve Setting = 9.0											
Cor. Nozzle Weight Flow = 205.0											
LE Check Flow/Noz.Flow = 0.9101 TE Check Flow/Noz.Flow = 0.9088											
Assumed IE Flow Coeff. = 0.9500 Assumed TE Flow Coeff. = 0.9350											

TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

		ROTOR BLADE ROW - NASA TASK IV																	
		BLADE ELEMENT PERFORMANCE RESULTS																	
		POINT NUMBER	33	READING NUMBER	226	DATE	6/17/1970												
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCLD ANG MN CHBR LN	INCLD ANG SUOT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS Y-ANG VEL	INLET REL Y-ANG VEL	INLET AX Y-ANG VEL	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS Y-ANG VEL	EXIT REL Y-ANG VEL	EXIT AX Y-ANG VEL		
1	67.26	-0.51	60.60	6.66	3.96	875.32	1478.74	570.69	-5.09	1362.21	570.69	570.69	570.69	570.69	570.69	570.69	570.69	570.69	
2	66.04	-0.07	59.61	6.43	3.40	592.07	1458.91	590.00	-0.74	1327.96	590.00	590.00	590.00	590.00	590.00	590.00	590.00	590.00	
3	58.33	0.70	56.01	2.32	-2.14	733.45	1304.80	733.38	9.02	1188.77	733.38	733.38	733.38	733.38	733.38	733.38	733.38	733.38	
4	45.53	1.32	52.56	-7.03	-12.87	1027.59	1484.28	1024.36	23.57	1043.42	1024.36	1024.36	1024.36	1024.36	1024.36	1024.36	1024.36	1024.36	
5	48.30	0.71	49.71	-7.41	-14.20	1026.94	1379.73	1012.63	12.51	921.52	1012.63	1012.63	1012.63	1012.63	1012.63	1012.63	1012.63	1012.63	
6	48.77	0.27	47.11	-1.74	-9.00	794.00	1119.02	762.08	3.59	782.85	762.08	762.08	762.08	762.08	762.08	762.08	762.08	762.08	
7	48.48	-0.96	46.13	2.35	-5.55	701.36	1028.97	666.57	-11.18	753.00	666.57	666.57	666.57	666.57	666.57	666.57	666.57	666.57	
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	REL DEV ANG TE	REL TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS Y-ANG VEL	EXIT REL Y-ANG VEL	EXIT AX Y-ANG VEL	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS Y-ANG VEL	EXIT REL Y-ANG VEL	EXIT AX Y-ANG VEL		
1	56.19	48.13	54.90	1.79	11.07	875.32	924.15	514.74	574.22	514.74	514.74	574.22	574.22	514.74	574.22	514.74	574.22		
2	56.49	44.49	54.82	2.07	9.55	740.11	959.79	527.13	517.79	527.13	527.13	487.46	487.46	527.13	487.46	487.46	527.13		
3	51.99	41.36	50.88	1.51	6.34	737.78	899.07	553.61	487.46	553.61	553.61	708.25	708.25	553.61	708.25	708.25	553.61		
4	50.68	36.25	43.79	6.89	-5.15	682.96	869.09	550.67	403.78	550.67	550.67	672.25	672.25	550.67	672.25	672.25	550.67		
5	44.68	39.21	32.15	12.53	-2.38	684.36	749.50	529.15	431.75	529.15	529.15	523.29	523.29	529.15	523.29	523.29	529.15		
6	38.44	41.56	14.29	18.15	13.33	839.89	657.54	546.76	486.56	546.76	546.76	348.79	348.79	546.76	348.79	348.79	546.76		
7	28.38	47.89	8.00	16.38	24.10	776.65	578.10	516.77	571.82	516.77	516.77	234.25	234.25	516.77	234.25	234.25	516.77		
RADIAL POSITION	ROTOR SPD AT INLET	INLET MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	ROTOR SPD AT EXIT	EXIT MACH NO	EXIT REL MACH NO	LOSS COEFFICIENT	SOLIDITY	LOSS COEFFICIENT	TOT PRESS LOSS PARAM	EFFICIENCY	ADB EFFICIENCY	POLY MOMEN RISE/ MEAS Y RISE	EFFICIENCY	ROTOR DATA ROTOR DATA	ROTOR DATA		
1	1357.12	0.527	1.384	0.962	1357.12	0.527	1.384	0.164	1.3840	0.164	0.034	0.8226	0.8371	0.8371	0.8371	1.5535	1.5535		
2	1327.21	0.543	1.333	0.893	1327.21	0.543	1.333	0.125	1.3690	0.125	0.025	0.8649	0.8761	0.8761	0.8761	1.5535	1.5535		
3	1197.79	0.685	1.304	0.755	1197.79	0.685	1.304	-0.037	1.5080	-0.037	0.008	1.0446	1.0409	1.0409	1.0409	0.8068	0.8068		
4	1066.98	1.000	1.425	0.538	1066.98	1.000	1.425	0.103	1.6840	0.103	0.019	0.8329	0.8419	0.8419	0.8419	0.8309	0.8309		
5	934.03	1.000	1.344	0.523	934.03	1.000	1.344	0.085	1.9060	0.085	0.016	0.8622	0.8653	0.8653	0.8653	0.8309	0.8309		
6	786.44	0.745	1.046	0.720	786.44	0.745	1.046	0.134	2.2170	0.134	0.025	0.8451	0.8513	0.8513	0.8513	0.8309	0.8309		
7	741.61	0.652	0.937	0.775	741.61	0.652	0.937	0.125	2.3390	0.125	0.025	0.8649	0.8720	0.8720	0.8720	0.8309	0.8309		
RADIAL POSITION	TRAV TOT PRESS RATIO	EXIT ABS PRESS RATIO	TRAV TOT PRESS RATIO	FIXED TOT PRESS RATIO	TRAV TOT PRESS RATIO	EXIT ABS PRESS RATIO	TRAV TOT PRESS RATIO	TEMP RATIO	TEMP RATIO	TEMP RATIO	TEMP RATIO	TEMP RATIO	TEMP RATIO	TEMP RATIO	TEMP RATIO	TEMP RATIO	TEMP RATIO	TEMP RATIO	
1	1.890	1.890	1.239	1.836	1.890	1.890	1.239	1.181	1.181	1.181	1.181	1.181	1.181	1.181	1.181	1.181	1.181	1.181	
2	1.853	1.798	1.211	1.849	1.853	1.798	1.211	1.142	1.142	1.142	1.142	1.142	1.142	1.142	1.142	1.142	1.142	1.142	
3	1.508	1.508	1.130	1.477	1.508	1.508	1.130	1.455	1.455	1.455	1.455	1.455	1.455	1.455	1.455	1.455	1.455	1.455	
4	1.457	1.457	1.125	1.461	1.457	1.457	1.125	1.461	1.461	1.461	1.461	1.461	1.461	1.461	1.461	1.461	1.461	1.461	
5	1.472	1.472	1.112	1.465	1.472	1.472	1.112	1.465	1.465	1.465	1.465	1.465	1.465	1.465	1.465	1.465	1.465	1.465	
6	1.553	1.553	1.118	1.465	1.553	1.553	1.118	1.465	1.465	1.465	1.465	1.465	1.465	1.465	1.465	1.465	1.465	1.465	
7	1.553	1.553	1.118	1.465	1.553	1.553	1.118	1.465	1.465	1.465	1.465	1.465	1.465	1.465	1.465	1.465	1.465	1.465	
OVERALL PERFORMANCE SUMMARY																			
STAGE DATA ROTOR DATA ROTOR DATA																			
FIXED INST. FIXED INST. TRAV. INST.																			
PERFORMANCE PARAMETERS																			
Total Pressure Ratio = 1.5535 1.5535 1.5387																			
Adiabatic Efficiency = 0.8068 0.8068 0.8309																			
Polytropic Efficiency = 0.8186 0.8186 0.9323																			
Percent Design Speed = 100.0 Discharge Valve Setting= 11.0																			
Cor. Nozzle Weight Flow= 207.7																			
LE Check Flow/Noz.Flow = 1.0017 TE Check Flow/Noz.Flow = 0.9108																			
Assumed LE Flow Coeff. = 0.9850 Assumed TE Flow Coeff. = 0.9200																			

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TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

STATOR BLADE ROW - NASR TASK IV																
BLADE ELEMENT PERFORMANCE RESULTS																
POINT NUMBER 33 READING NUMBER 226 DATE 8/17/1978																
RAJIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCID ANG MN	INCID ANG LN	INCID ANG SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL
1		47.96	39.47	6.49	6.49	475.93	519.29	519.29	519.29	519.29	519.29	519.29	519.29	519.29	519.29	519.29
2		43.91	39.11	4.80	4.80	449.39	539.90	539.90	539.90	539.90	539.90	539.90	539.90	539.90	539.90	539.90
3		39.40	39.01	0.39	0.39	467.61	487.00	487.00	487.00	487.00	487.00	487.00	487.00	487.00	487.00	487.00
4		33.83	39.80	-5.97	-5.97	419.64	399.78	399.78	399.78	399.78	399.78	399.78	399.78	399.78	399.78	399.78
5		36.55	40.86	-4.31	-4.31	413.59	422.63	422.63	422.63	422.63	422.63	422.63	422.63	422.63	422.63	422.63
6		38.88	42.22	-3.34	-3.34	454.77	570.18	570.18	570.18	570.18	570.18	570.18	570.18	570.18	570.18	570.18
7		45.27	42.76	2.51	2.51	479.99	549.00	549.00	549.00	549.00	549.00	549.00	549.00	549.00	549.00	549.00
RAJIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	DEV ANG TE	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL
1		4.79	-11.13	15.92	15.92	471.75	569.75	569.75	47.77	47.77	569.75	47.77	47.77	569.75	47.77	47.77
2		3.79	-10.10	13.69	13.69	416.44	619.06	619.06	40.70	40.70	619.06	40.70	40.70	619.06	40.70	40.70
3		1.05	-8.87	9.92	9.92	497.62	597.27	597.27	10.98	10.98	597.27	10.98	10.98	597.27	10.98	10.98
4		-1.59	-8.75	7.16	7.16	444.94	544.13	544.13	-13.10	-13.10	544.13	-13.10	-13.10	544.13	-13.10	-13.10
5		-0.52	-9.10	8.58	8.58	443.81	542.63	542.63	-4.96	-4.96	542.63	-4.96	-4.96	542.63	-4.96	-4.96
6		0.89	-10.58	11.47	11.47	464.66	562.85	562.85	6.72	6.72	562.85	6.72	6.72	562.85	6.72	6.72
7		-1.33	-12.36	11.03	11.03	431.15	529.30	529.30	-12.33	-12.33	529.30	-12.33	-12.33	529.30	-12.33	-12.33
RAJIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	DIFFUSION FACTOR	CH1										
1		0.647	0.647	1.097	0.467	0.263										
2		0.631	0.631	1.139	0.384	0.297										
3		0.656	0.656	1.007	0.411	0.302										
4		0.625	0.625	0.912	0.407	0.350										
5		0.621	0.621	0.952	0.396	0.382										
6		0.659	0.659	0.968	0.398	0.371										
7		0.679	0.679	0.973	0.487	0.352										
RAJIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	SOLIDITY COEFFICIENT	LOSS LOSS PARAM	POLY HOMOEN RISE/ MEAS T RISE	EFFICIENCY	ADB EFFICIENCY	LOSS LOSS PARAM	EFFICIENCY	STAY PRESS	STAY PRESS	STAY PRESS	STAY PRESS	STAY PRESS	STAY PRESS
1		0.472	0.472	1.5230	0.037	0.5942	0.9229	0.9229	0.018	0.018	0.244	0.244	0.244	0.244	0.244	0.244
2		0.513	0.513	1.5440	0.054	0.018	0.7864	0.7864	0.012	0.012	0.281	0.281	0.281	0.281	0.281	0.281
3		0.505	0.505	1.6310	0.041	0.012	0.8313	0.8313	0.009	0.009	0.329	0.329	0.329	0.329	0.329	0.329
4		0.467	0.467	1.7420	0.030	0.009	0.9268	0.9268	0.007	0.007	0.361	0.361	0.361	0.361	0.361	0.361
5		0.468	0.468	1.8800	0.028	0.007	0.8552	0.8552	0.016	0.016	0.317	0.317	0.317	0.317	0.317	0.317
6		0.486	0.486	2.0210	0.067	0.016	0.6742	0.6742	0.024	0.024	0.327	0.327	0.327	0.327	0.327	0.327
7		0.456	0.456	2.0980	0.101	0.024										
RAJIAL POSITION	TRAV TOT PRESS RATIO	TRAV TOT PRESS RATIO	TRAV TOT PRESS RATIO	FIXED TOT PRESS RATIO	LOSS LOSS PARAM	LOSS LOSS PARAM	EFFICIENCY	ADB EFFICIENCY	LOSS LOSS PARAM	EFFICIENCY	STAY PRESS	STAY PRESS	STAY PRESS	STAY PRESS	STAY PRESS	STAY PRESS
1	5.0000	0.949	0.983	0.972	1.000	1.000	1.5638	1.5638	0.9876	0.9876	0.9790	0.9790	0.9790	0.9790	0.9790	0.9790
2	10.0000	0.993	0.999	0.990	1.000	1.000	0.8186	0.8186	0.9728	0.9728	0.9728	0.9728	0.9728	0.9728	0.9728	0.9728
3	30.0000	0.976	0.989	0.990	1.000	1.000										
4	50.0000	0.981	0.995	0.993	1.000	1.000										
5	70.0000	0.992	0.991	0.994	1.000	1.000										
6	90.0000	0.981	0.992	0.983	1.000	1.000										
7	95.0000	0.947	0.981	0.973	1.000	1.000										

OVERALL PERFORMANCE SUMMARY

STAGE DATA STATOR DATA STATOR DATA  
 FIXED INST. FIXED INST. TRAV. INST.  
 Total Pressure Ratio = 1.5638 0.9876 0.9790  
 Polytropic Efficiency = 0.8186 0.9728  
 Percent Design Speed = 100.0 Discharge Valve Setting= 11.0  
 Cor. Nozzle Weight Flow= 207.7  
 I.P. Check Flow/Noz.Flow = 0.9156 TE Check Flow/Noz.Flow = 0.8960  
 Assumed LE Flow Coeff. = 0.9500 Assumed TE Flow Coeff. = 0.9350



062470 **TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)**

ROTOR BLADE ROW		NASA TASK IV									
BLADE ELEMENT PERFORMANCE RESULTS											
POINT NUMBER	14	READING NUMBER	111	DATE	6/24/1970						
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCID ANG MN CMBR LN	INCID ANG SUCT SURF	INLET REL VELOCITY	INLET ABS VELOCITY	INLET AX VELOCITY	INLET ARS TANG VEL	INLET REL TANG VEL	
1	69.71	0.09	60.60	9.11	6.41	501.69	505.57	501.69	0.75	1357.13	
2	68.47	-1.16	59.61	8.86	5.83	528.16	830.12	528.16	-10.71	1336.67	
3	61.92	-2.22	56.01	5.91	1.45	653.05	869.41	653.05	-25.36	1228.82	
4	50.75	0.44	52.56	-4.81	-7.65	866.88	869.41	866.88	6.73	1060.85	
5	45.30	0.25	49.71	-4.41	-11.20	920.74	933.69	920.74	3.96	938.59	
6	46.99	-0.11	47.11	-0.22	-7.88	736.06	968.97	736.06	-1.48	788.36	
7	47.60	-0.64	46.13	1.47	-6.43	684.69	920.38	684.69	-7.67	749.90	
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMBR LN TE ANGLE	REL DEV ANG TE	REL TURN ANGLE	EXIT REL VELOCITY	EXIT ABS VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	
1	62.95	54.71	54.80	8.05	6.87	399.56	892.25	399.56	584.54	778.98	
2	54.43	52.80	54.42	0.01	14.04	484.12	801.68	484.12	637.81	676.87	
3	52.07	48.02	50.68	1.39	9.84	499.63	747.03	499.63	555.20	641.19	
4	48.17	43.85	43.79	4.58	2.38	514.24	915.91	514.24	495.87	580.76	
5	42.40	42.20	32.15	10.25	2.91	476.88	810.64	524.25	476.88	478.49	
6	34.58	48.19	14.29	20.39	12.21	461.77	897.59	461.77	516.37	319.45	
7	24.26	54.60	8.00	16.26	23.34	434.10	855.18	434.10	610.89	195.62	
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL RATIO	SOLIDITY COEFFICIENT	LOSS	TOT PRESS LOSS PARAM	EFFICIENCY	ADD EFFICIENCY	POLY MOMEN RISE/ MEAS Y RISE	STAY PRESS RISE COEFF
1	1357.97	0.498	1.313	0.796	1.3340	0.291	0.050	0.7349	0.7584	0.540	0.555
2	1327.95	0.482	1.309	0.917	1.3690	0.267	0.057	0.7627	0.7848	0.585	0.560
3	1198.46	0.607	1.289	0.765	1.5080	0.035	0.007	0.9637	0.9670	0.553	0.608
4	1067.58	0.824	1.300	0.596	1.6840	0.114	0.022	0.8600	0.8694	0.540	0.660
5	934.56	0.899	1.269	0.569	1.9060	0.051	0.010	0.9331	0.9374	0.555	0.704
6	786.88	0.722	1.035	0.626	2.2170	0.125	0.023	0.8683	0.8761	0.593	0.694
7	742.23	0.672	0.970	0.634	2.3390	0.145	0.028	0.8602	0.8683	0.666	0.707
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	AXIAL RATIO	SOLIDITY COEFFICIENT	LOSS	TOT PRESS LOSS PARAM	EFFICIENCY	ADD EFFICIENCY	POLY MOMEN RISE/ MEAS Y RISE	STAY PRESS RISE COEFF
1	1343.23	0.558	0.706	0.796	1.3340	0.291	0.050	0.7349	0.7584	0.540	0.555
2	1314.68	0.652	0.677	0.917	1.3690	0.267	0.057	0.7627	0.7848	0.585	0.560
3	1196.39	0.829	0.685	0.765	1.5080	0.035	0.007	0.9637	0.9670	0.553	0.608
4	1076.53	0.611	0.663	0.596	1.6840	0.114	0.022	0.8600	0.8694	0.540	0.660
5	955.58	0.613	0.614	0.569	1.9060	0.051	0.010	0.9331	0.9374	0.555	0.704
6	835.62	0.603	0.490	0.626	2.2170	0.125	0.023	0.8683	0.8761	0.694	0.714
7	806.52	0.653	0.419	0.634	2.3390	0.145	0.028	0.8602	0.8683	0.707	0.764
RADIAL POSITION	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	PERFORMANCE PARAMETERS	STAGE DATA	ROTOR DATA				
1	5.0000	1.938	1.293	1.950	Total Pressure Ratio =	1.6899	1.7275				
2	10.0000	2.063	1.501	2.021	Adiabatic Efficiency =	0.7818	0.8173				
3	30.0000	1.933	1.225	1.646	Polytropic Efficiency =	0.7973	0.8308				
4	50.0000	1.684	1.168	1.642	Percent Design Speed =	100.0	Discharge Valve Setting= 6.5				
5	70.0000	1.594	1.152	1.593	Cor. Nozzle Weight Flow=	202.2					
6	90.0000	1.530	1.150	1.535	IE Check Flow/Noz. Flow =	1.0023	TE Check Flow/Noz. Flow = 0.9034				
7	93.0000	1.606	1.162	1.529	Assumed IE Flow Coeff. =	0.9850	Assumed TE Flow Coeff. = 0.9400				

OVERALL PERFORMANCE SUMMARY

STAGE DATA ROTOR DATA ROTOR DATA  
 FIXED INST. FIXED INST. TRAV. INST.  
 1.6899 1.7275 1.7684  
 0.7818 0.8173 0.8691  
 0.7973 0.8308 0.8792  
 Discharge Valve Setting= 6.5  
 100.0  
 202.2  
 1.0023  
 0.9850  
 1.0023  
 0.9850

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TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

STATOR BLADE ROW " NASA TASK IV											
BLADE ELEMENT PERFORMANCE RESULTS											
POINT NUMBER	DATE										
14	6/24/1970										
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCID ANG MN	INCID ANG LN	SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL
1	54.57	52.27	39.47	13.16	15.10		695.35	403.10	403.10	566.58	566.58
2	46.15	44.38	39.01	7.14	13.16		609.39	495.30	495.30	640.13	640.13
3	41.38	39.58	39.80	1.58	17.14		649.43	532.87	532.87	554.67	554.67
4	39.58	45.64	40.86	-1.28	12.94		643.91	557.19	557.19	490.94	490.94
5	42.22	52.18	42.76	9.42	11.11		603.48	564.59	564.59	466.80	466.80
6					12.94		601.99	486.92	486.92	497.86	497.86
7					53.87		647.75	455.31	455.31	586.51	586.51
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN YE ANGLE	DEV ANG TE	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	
1	-1.74	-1.74	-11.13	9.39	56.31	559.97	559.97	559.97	-16.98	-16.98	
2	4.31	4.07	-10.10	14.41	47.96	695.02	593.30	593.30	44.68	44.68	
3	4.07	2.36	-8.87	12.94	42.08	651.84	550.22	550.22	39.11	39.11	
4	2.36	0.59	-8.75	11.11	39.03	621.97	523.94	523.94	21.55	21.55	
5	0.59	2.40	-9.10	9.69	38.99	603.48	502.37	502.37	5.21	5.21	
6	2.40	-1.69	-10.58	12.94	43.24	638.62	436.89	436.89	18.32	18.32	
7	-1.69		-12.36	10.67	53.87	610.16	408.66	408.66	-12.07	-12.07	
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	SOLIDITY	LOSS COEFFICIENT	TOT PRESS LOSS PARAM	ADB EFFICIENCY	POLY MOMEN RISE/ RISE	STAT PRESS RISE COEFF	
1	0.561	0.480	0.480	1.5230	0.178	0.173	0.858	0.9502	0.470	0.318	
2	0.658	0.458	0.458	1.198	0.083	0.083	0.856	0.6272	0.503	0.277	
3	0.650	0.428	0.428	1.033	0.050	0.043	0.825	0.7430	0.488	0.357	
4	0.637	0.371	0.371	0.940	0.092	0.092	0.812	0.8886	0.474	0.428	
5	0.638	0.347	0.347	0.890	0.098	0.098	0.813	0.8906	0.481	0.469	
6	0.607			0.897			0.822		0.538	0.540	
7	0.646			0.898			0.823		0.639	0.460	
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	LOSS COEFFICIENT	TOT PRESS LOSS PARAM	ADB EFFICIENCY	POLY MOMEN RISE/ RISE	STAT PRESS RISE COEFF	
1	0.492	0.480	0.480	1.5230	0.927	0.178	0.858	0.9502	0.470	0.318	
2	0.480	0.458	0.458	1.198	0.956	0.083	0.856	0.6272	0.503	0.277	
3	0.458	0.428	0.428	1.033	0.979	0.050	0.825	0.7430	0.488	0.357	
4	0.442	0.371	0.371	0.940	0.994	0.092	0.812	0.8886	0.474	0.428	
5	0.428	0.347	0.347	0.890	0.988	0.098	0.813	0.8906	0.481	0.469	
6	0.371			0.897	0.980		0.822		0.538	0.540	
7	0.347			0.898	0.975		0.823		0.639	0.460	
RADIAL POSITION	PERCENT DESIGN SPEED	COR. NOZZLE WEIGHT FLOW	PERFORMANCE PARAMETERS	OVERALL PERFORMANCE SUMMARY		STAGE DATA STATOR DATA		FIXED INST. FIXED INST.		STATOR DATA	
1	100.0	202.2	Total Pressure Ratio =	1.6899	0.9782	0.9782	0.9782	0.9782	0.9782	0.9782	0.9782
2	100.0	202.2	Polytropic Efficiency =	0.7073	0.9597	0.9597	0.9597	0.9597	0.9597	0.9597	0.9597
3	100.0	202.2	Percent Design Speed =	100.0	Discharge Valve Setting =	6.5					
4	100.0	202.2	Cor. Nozzle Weight Flow =	202.2							
5	100.0	202.2	IE Check Flow/Noz. Flow =	0.9082	TE Check Flow/Noz. Flow =	0.9172					
6	100.0	202.2	Assumed IE Flow Coeff. =	0.9500	Assumed TE Flow Coeff. =	0.9350					
7	100.0	202.2									

062470 ROTOR BLADE ROW # NASH TASK IV  
**TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)**

RADIATION		BLADE ELEMENT PERFORMANCE RESULTS															DIFFUSION			
POSITION	RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CMBR LN LE ANGLE	INCID LN ANGLE	INCID ANGLE	SUCT SURF ANGLE	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	CH1 FACTOR		
1	1	68.10	1.87	60.60	7.50	4.80	4.80	546.84	1459.44	542.36	17.74	1348.94	472.27	955.15	472.27	523.09	829.16	0.539		
2	2	66.92	0.77	59.61	7.31	4.28	4.28	568.27	1449.33	566.22	7.62	1326.95	529.12	923.84	529.12	567.11	756.11	0.548		
3	3	58.47	0.10	56.01	2.46	-2.00	-2.00	539.13	1413.54	739.11	1.33	1204.91	538.27	864.76	518.67	685.48	685.48	0.619		
4	4	47.64	1.01	52.56	-4.92	-10.76	-10.76	967.22	1433.00	964.29	17.03	1057.47	532.62	824.22	454.72	628.90	628.90	0.663		
5	5	42.84	0.69	49.71	-6.87	-13.66	-13.66	1015.55	1375.87	1001.21	12.06	928.56	536.14	737.12	457.88	503.89	503.89	0.695		
6	6	45.38	0.44	47.11	-1.73	-9.39	-9.39	808.18	1127.32	775.68	6.02	785.96	513.91	618.87	508.80	332.44	332.44	0.554		
7	7	45.98	-0.45	46.13	-0.15	-8.05	-8.05	865.38	1073.50	727.48	-5.70	752.75	487.91	547.50	487.91	586.46	225.29	0.613		
1	1	60.34	47.92	54.80	5.54	7.76	7.76	706.00	955.15	472.27	523.09	829.16	472.27	955.15	472.27	523.09	829.16	0.539		
2	2	55.02	46.98	54.42	0.60	11.91	11.91	776.78	923.84	529.12	567.11	756.11	529.12	923.84	529.12	567.11	756.11	0.548		
3	3	52.28	44.37	50.68	3.60	6.20	6.20	741.89	864.76	538.27	518.67	685.48	538.27	864.76	518.67	685.48	685.48	0.619		
4	4	49.74	40.49	43.79	5.95	-2.10	-2.10	700.43	824.22	532.62	454.72	628.90	532.62	824.22	454.72	628.90	628.90	0.663		
5	5	43.22	40.50	32.15	11.07	-0.38	-0.38	706.46	737.12	536.14	457.88	503.89	536.14	737.12	457.88	503.89	503.89	0.695		
6	6	32.90	44.71	14.29	18.61	12.48	12.48	828.94	618.87	513.91	508.80	332.44	513.91	618.87	508.80	332.44	332.44	0.554		
7	7	24.78	50.24	8.00	16.78	21.19	21.19	870.02	547.50	487.91	586.46	225.29	487.91	547.50	487.91	586.46	225.29	0.613		
1	1	1366.68	0.498	1.324	0.871	0.232	0.232	0.843	0.7722	0.7915	0.428	0.428	0.7722	0.7915	0.428	0.428	0.428	0.428	0.539	
2	2	1336.57	0.518	1.318	0.934	0.182	0.182	0.838	0.8230	0.8387	0.440	0.440	0.8230	0.8387	0.440	0.440	0.440	0.440	0.548	
3	3	1206.23	0.691	1.322	0.717	-0.009	-0.009	40.002	1.0101	1.0092	0.508	0.508	1.0101	1.0092	0.508	0.508	0.508	0.508	0.619	
4	4	1074.51	0.928	1.375	0.552	0.128	0.128	0.825	0.8254	0.8362	0.516	0.516	0.8254	0.8362	0.516	0.516	0.516	0.516	0.663	
5	5	940.62	0.987	1.338	0.535	0.072	0.072	0.814	0.8960	0.9021	0.638	0.638	0.8960	0.9021	0.638	0.638	0.638	0.638	0.695	
6	6	791.98	0.759	1.059	0.663	0.151	0.151	0.829	0.8298	0.8391	0.666	0.666	0.8298	0.8391	0.666	0.666	0.666	0.666	0.554	
7	7	747.04	0.715	1.003	0.671	0.156	0.156	0.830	0.8361	0.8450	0.663	0.663	0.8361	0.8450	0.663	0.663	0.663	0.663	0.613	
1	1	152.25	0.574	0.777	1.3340	0.232	0.232	0.843	0.7722	0.7915	0.428	0.428	0.7722	0.7915	0.428	0.428	0.428	0.428	0.539	
2	2	1323.21	0.637	0.757	1.3690	0.182	0.182	0.838	0.8230	0.8387	0.440	0.440	0.8230	0.8387	0.440	0.440	0.440	0.440	0.548	
3	3	1204.15	0.624	0.729	1.5080	-0.009	-0.009	40.002	1.0101	1.0092	0.508	0.508	1.0101	1.0092	0.508	0.508	0.508	0.508	0.619	
4	4	1083.62	0.598	0.704	1.6840	0.128	0.128	0.825	0.8254	0.8362	0.516	0.516	0.8254	0.8362	0.516	0.516	0.516	0.516	0.663	
5	5	961.78	0.609	0.636	1.9060	0.072	0.072	0.814	0.8960	0.9021	0.638	0.638	0.8960	0.9021	0.638	0.638	0.638	0.638	0.695	
6	6	841.24	0.629	0.534	2.2170	0.151	0.151	0.829	0.8298	0.8391	0.666	0.666	0.8298	0.8391	0.666	0.666	0.666	0.666	0.554	
7	7	811.75	0.664	0.472	2.5390	0.156	0.156	0.830	0.8361	0.8450	0.663	0.663	0.8361	0.8450	0.663	0.663	0.663	0.663	0.613	
1	1	5.0000	1.898	1.275	1.887	1.257	1.257	1.257	1.257	1.257	1.257	1.257	1.257	1.257	1.257	1.257	1.257	1.257	1.257	1.257
2	2	10.0000	1.977	1.272	1.948	1.255	1.255	1.255	1.255	1.255	1.255	1.255	1.255	1.255	1.255	1.255	1.255	1.255	1.255	1.255
3	3	30.0000	1.870	1.219	1.911	1.201	1.201	1.201	1.201	1.201	1.201	1.201	1.201	1.201	1.201	1.201	1.201	1.201	1.201	1.201
4	4	50.0000	1.615	1.155	1.577	1.169	1.169	1.169	1.169	1.169	1.169	1.169	1.169	1.169	1.169	1.169	1.169	1.169	1.169	1.169
5	5	70.0000	1.532	1.143	1.541	1.147	1.147	1.147	1.147	1.147	1.147	1.147	1.147	1.147	1.147	1.147	1.147	1.147	1.147	1.147
6	6	90.0000	1.502	1.147	1.487	1.145	1.145	1.145	1.145	1.145	1.145	1.145	1.145	1.145	1.145	1.145	1.145	1.145	1.145	1.145
7	7	95.0000	1.563	1.162	1.485	1.143	1.143	1.143	1.143	1.143	1.143	1.143	1.143	1.143	1.143	1.143	1.143	1.143	1.143	1.143

OVERALL PERFORMANCE SUMMARY

STAGE DATA		ROTOR DATA		ROTOR DATA	
FIXED INST.	FIXED INST.	TRAV. INST.	TRAV. INST.	FIXED INST.	TRAV. INST.
PERFORMANCE PARAMETERS					
Total Pressure Ratio	=	1.6339	1.6639	1.7111	1.7111
Adiabatic Efficiency	=	0.7916	0.8231	0.8593	0.8593
Polytropic Efficiency	=	0.8055	0.8353	0.8696	0.8696
Percent Design Speed	=	100.4	Discharge Valve Setting= 9.0		
Cor. Nozzle Weight Flow	=	209.9			
IE Check Flow/Noz.Flow = 0.9867					
Assumed IE Flow Coeff. = 0.9830					
Assumed TE Flow Coeff. = 0.9700					

TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

STATOR BLADE ROW - NASA TASK IV										
BLADE ELEMENT PERFORMANCE RESULTS										
POINT NUMBER 15		READING NUMBER 112		DATE		8/24/1970				
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CMBR LN LE ANGLE	INCID ANG HN CHBR LN	INCID ANG SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL
1	47.77	46.41	39.47	8.30	8.30	408.05	476.60	476.60	524.98	524.98
2	42.44	39.01	39.11	7.30	7.30	485.84	541.82	541.82	569.17	569.17
3	38.03	39.60	39.01	3.43	3.43	468.17	518.17	518.17	518.17	518.17
4	37.79	40.86	39.60	1.77	1.77	432.19	575.64	575.64	450.20	450.20
5	42.07	42.22	40.86	3.07	3.07	435.23	577.96	577.96	448.20	448.20
6	47.68	42.76	42.22	0.15	0.15	438.72	543.41	543.41	490.57	490.57
7			42.76	4.92	4.92	468.01	512.71	512.71	563.05	563.05

RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMBR LN TE ANGLE	DEV ANG TE	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL
1	-0.35	-11.13	-11.13	10.78	48.11	553.23	553.23	553.23	-3.33	-3.33
2	3.31	-10.10	-10.10	13.41	43.10	593.78	592.76	592.76	34.31	34.31
3	2.73	-8.87	-8.87	11.60	39.71	661.02	580.12	580.12	27.66	27.66
4	-0.91	-8.75	-8.75	7.84	38.94	645.66	545.01	545.01	-8.64	-8.64
5	0.35	-9.10	-9.10	9.45	37.44	647.09	545.91	545.91	3.58	3.58
6	-0.58	-10.58	-10.58	10.00	42.66	496.84	495.28	495.28	-5.05	-5.05
7	-4.00	-12.36	-12.36	8.36	51.67	474.41	471.74	471.74	-32.95	-32.95

RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH RO	AXIAL VEL RATIO	LOSS COEFFICIENT	TOT PRESS LOSS PARAM	EFFICIENCY	ADB EFFICIENCY	POLY MOMEN RISE/ RISE	STAT PRESS RISE COEFF
1	0.577	0.645	0.577	1.161	0.177	0.858	0.7669	0.7669	0.1268	0.1268
2	0.648	0.627	0.648	1.094	0.146	0.847	0.6616	0.6616	0.250	0.250
3	0.636	0.638	0.636	1.024	0.059	0.818	0.7670	0.7670	0.296	0.296
4	0.638	0.611	0.638	0.945	0.032	0.809	0.8595	0.8595	0.354	0.354
5	0.662	0.911	0.662	0.911	0.038	0.810	0.9210	0.9210	0.381	0.381
6				0.920	0.077	0.819	0.8042	0.8042	0.409	0.409
7					0.098	0.823	0.6445	0.6445	0.362	0.362

RADIAL POSITION	PERCENT IMMERISION	TRAV TOT PRESS RATIO	FIXED TOT PRESS RATIO	TEMP RATIO	LOSS COEFFICIENT	FIXED TOT TEMP RATIO
1	5.8000	0.980	0.970	0.965	1.000	1.000
2	18.0000	0.961	0.971	0.964	1.000	1.000
3	30.0000	0.972	0.982	0.985	1.000	1.000
4	50.0000	0.983	0.991	0.993	1.000	1.000
5	70.0000	0.990	0.990	0.991	1.000	1.000
6	90.0000	0.971	0.984	0.981	1.000	1.000
7	95.0000	0.937	0.972	0.974	1.000	1.000

OVERALL PERFORMANCE SUMMARY		
STAGE DATA	STATOR DATA	STATOR DATA
FIXED INST.	FIXED INST.	TRAV. INST.
1.6339	0.9820	0.9750
0.8055	0.9643	
Discharge Valve Setting=9.0		
Percent Design Speed = 100.4		
Cor. Nozzle Weight Flow= 209.9		
LE Check Flow/Noz.Flow = 0.8977		
Assumed LE Flow Coeff. = 0.9500		
TE Check Flow/Noz.Flow = 0.8913		
Assumed TE Flow Coeff. = 0.9350		

062470

TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

		ROTOR BLADE ROW - NASA TASK IV											
		BLADE ELEMENT PERFORMANCE RESULTS						ROTOR DATA					
		POINT NUMBER 18		READING NUMBER 117		DATE 6/24/1970		STAGE DATA		ROTOR DATA		ROTOR DATA	
RADIAL POSITION		ABS INLET FLOW ANG	INLET ANGLE	INCID ANG MN	INCID ANG LN	SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ARS TANG VEL	INLET REL TANG VEL	EXIT ABS VELOCITY	EXIT REL VELOCITY
1		66.28	1.89	60.60	5.68	2.98	594.38	1467.06	589.51	19.47	1341.40	607.09	969.61
2		64.99	0.91	59.61	5.38	2.35	618.55	1458.72	616.31	9.77	1321.12	607.09	969.61
3		56.59	0.64	56.01	0.58	-3.88	986.59	1428.35	786.52	8.82	1192.29	630.43	810.76
4		45.59	1.28	52.56	6.97	-12.81	1428.76	1467.65	1025.54	22.96	1046.98	610.98	767.36
5		42.47	0.87	49.71	7.24	-14.03	1920.80	1375.05	1006.54	15.23	921.39	599.07	588.47
6		44.36	0.91	47.11	2.75	-10.41	926.90	1133.92	793.57	12.62	775.99	654.24	384.53
7		45.94	-0.18	46.13	0.19	-8.09	959.55	1064.69	721.96	-2.22	746.08	582.124	327.73
RADIAL POSITION		REL EXIT FLOW ANG	ABS EXIT FLOW ANG	REL DEV ANGLE	REL TURN ANGLE	REL TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ARS TANG VEL	EXIT REL TANG VEL	DIFFUSION FACTOR	CHI
1		57.95	31.83	3.15	8.33	7.63	416.51	1145.27	607.09	376.88	376.88	0.310	0.370
2		57.36	31.99	2.94	7.63	4.46	412.31	1118.66	607.09	376.88	376.88	0.325	0.390
3		52.13	31.63	1.45	4.46	4.46	740.59	1027.16	630.43	386.27	386.27	0.369	0.469
4		51.47	27.03	43.79	7.68	-5.88	886.02	980.99	610.98	311.65	311.65	0.390	0.538
5		44.49	31.65	12.34	-2.02	-2.02	709.47	841.23	599.07	369.21	369.21	0.456	0.548
6		30.45	34.71	16.16	13.91	13.91	804.33	767.78	654.24	453.13	453.13	0.413	0.497
7		29.37	39.54	21.37	16.57	16.57	965.20	679.70	582.124	480.56	480.56	0.463	0.481
RADIAL POSITION		ROTOR SPD AT INLET	INLET REL MACH NO	AXIAL RATIO	SOLIDITY	COEFFICIENT	LOSS PARAM	LOSS PARAM	POLY MOMEN RISE/ EFFICIENCY	STAT RISE COEFF	PRESS RATIO	TEMP RATIO	FIXED INST. TRAV. INST.
1		1362.87	0.546	1.030	1.3340	0.184	0.837	0.7529	0.7677	0.267	1.3702	1.4109	1.4681
2		1330.89	0.570	0.978	1.3690	0.088	0.817	0.8774	0.8852	0.287	0.6928	0.7604	0.8453
3		1201.11	0.744	0.802	1.5080	-0.005	0.801	1.0072	1.0067	0.372	1.3702	1.4109	1.4681
4		1059.94	1.000	0.596	1.6840	0.150	0.828	0.7145	0.7259	0.444	0.6928	0.7604	0.8453
5		936.62	1.000	0.595	1.8060	0.142	0.827	0.7275	0.7378	0.475	0.6928	0.7604	0.8453
6		788.62	0.784	0.824	2.2170	0.172	0.833	0.7709	0.7809	0.495	0.6928	0.7604	0.8453
7		743.87	0.713	0.866	2.3390	0.216	0.840	0.7342	0.7452	0.514	0.6928	0.7604	0.8453
RADIAL POSITION		ROTOR SPD AT EXIT	EXIT ABS MACH NO	AXIAL RATIO	SOLIDITY	COEFFICIENT	LOSS PARAM	LOSS PARAM	POLY MOMEN RISE/ EFFICIENCY	STAT RISE COEFF	PRESS RATIO	TEMP RATIO	FIXED INST. TRAV. INST.
1		1346.90	0.608	1.030	1.3340	0.184	0.837	0.7529	0.7677	0.267	1.3702	1.4109	1.4681
2		1317.59	0.611	0.960	1.3690	0.088	0.817	0.8774	0.8852	0.287	0.6928	0.7604	0.8453
3		1199.03	0.644	0.893	1.5080	-0.005	0.801	1.0072	1.0067	0.372	1.3702	1.4109	1.4681
4		1079.01	0.802	0.860	1.6840	0.150	0.828	0.7145	0.7259	0.444	0.6928	0.7604	0.8453
5		957.69	0.820	0.740	1.8060	0.142	0.827	0.7275	0.7378	0.475	0.6928	0.7604	0.8453
6		837.67	0.710	0.678	2.2170	0.172	0.833	0.7709	0.7809	0.495	0.6928	0.7604	0.8453
7		805.30	0.669	0.594	2.3390	0.216	0.840	0.7342	0.7452	0.514	0.6928	0.7604	0.8453

OVERALL PERFORMANCE SUMMARY

STAGE DATA ROTOR DATA ROTOR DATA  
 FIXED INST. TRAV. INST. TRAV. INST.  
 1.3702 1.4109 1.4681  
 0.6928 0.7604 0.8453  
 0.7061 0.7717 0.8535  
 Discharge Valve Setting= 30.0  
 Percent Design Speed = 100.2  
 Cor. Nozzle Weight Flow= 215.4  
 IE Check Flow/Noz.Flow = 0.9862  
 Assumed IE Flow Coeff. = 0.9850  
 IE Check Flow/Noz.Flow = 0.9142  
 Assumed IE Flow Coeff. = 0.9700

082470 STATOR BLADE ROW • NASM TASK IV  
 TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

BLADE ELEMENT PERFORMANCE RESULTS										
POINT NUMBER		18		READING NUMBER		115		DATE		
6/24/1970										
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCID ANG MN CHBR LN	INCID ANG SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL
1	31.67	31.41	39.47	-7.80		820.49	513.21	618.73	378.24	377.83
2	29.66	29.41	39.11	-9.25		884.41	681.30	881.30	387.90	387.90
3	24.81	24.81	39.80	-14.99		837.15	667.40	667.40	308.55	308.55
4	29.04	29.04	40.86	-11.82		849.43	651.06	651.06	361.41	361.41
5	31.93	31.93	42.22	-10.29		835.88	701.13	701.13	436.89	436.89
6	36.88	36.88	42.76	-5.88		877.99	614.90	614.90	461.38	461.38
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	DEV ANG TE	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL
1	3.23	4.73	-11.13	14.756	28.43	836.18	635.16	635.16	35.90	35.90
2	4.73	2.61	-10.10	14.983	26.68	897.40	694.99	694.99	57.53	57.53
3	2.61	-1.61	-8.87	11.48	27.05	803.59	702.57	702.57	31.97	31.97
4	-1.61	-1.05	-8.75	7.14	26.42	868.55	668.54	668.54	-18.80	-18.80
5	-1.05	2.20	-9.10	8.05	30.69	898.79	677.23	677.23	-12.43	-12.43
6	2.20	1.91	-10.58	12.778	29.73	802.00	798.94	798.94	30.73	30.73
7	1.91		-12.36	14.27	34.97	872.52	769.61	769.61	25.68	25.68
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	DIFFUSION FACTOR	CH1				
1	0.611	0.611	0.611	1.036	0.273	-0.013				
2	0.623	0.623	0.623	1.123	0.181	0.002				
3	0.685	0.685	0.685	1.031	0.242	0.055				
4	0.650	0.650	0.650	1.002	0.218	0.045				
5	0.662	0.662	0.662	1.040	0.226	0.026				
6	0.741	0.741	0.741	1.140	0.156	-0.114				
7	0.681	0.681	0.681	1.252	0.138	-0.191				
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	SOLIDITY RATIO	LOSS COEFFICIENT	TOT PRESS LOSS PARAM	ADB EFFICIENCY	POLY MOMEN RISE/ EFFICIENCY	STAT PRESS RISE COEFF	PERFORMANCE PARAMETERS
1	0.541	0.541	0.541	1.5330	0.203	0.866	-0.0639	-0.0639	-0.012	STAGE DATA STATOR DATA
2	0.600	0.600	0.600	1.5490	0.088	0.829	0.0239	0.0239	0.001	FIXED INST. FIXED INST. TRAV. INST.
3	0.610	0.610	0.610	1.6310	0.086	0.826	0.0275	0.0275	0.049	1.3702 0.9712 0.9565
4	0.586	0.586	0.586	1.7420	0.111	0.832	0.2570	0.2570	0.041	0.7061 0.9150
5	0.597	0.597	0.597	1.8800	0.118	0.831	0.1487	0.1487	0.023	Discharge Valve Setting=30.0
6	0.711	0.711	0.711	2.0510	0.104	0.825	-1.6338	-1.6338	-0.098	
7	0.683	0.683	0.683	2.0980	0.137	0.833	32.1528	32.1528	-0.166	
RADIAL POSITION	PERCENTAGE DISCREPANCY	TRAV TOT PRESS RATIO	FIXED TOT PRESS RATIO	TEMP RATIO	LOSS COEFFICIENT	FIXED TOT TEMP RATIO	OVERALL PERFORMANCE SUMMARY			
1	5.0000	0.945	0.92	0.954	1.000	1.000	STAGE DATA STATOR DATA			
2	10.0000	0.982	0.92	0.980	1.000	1.000	FIXED INST. FIXED INST. TRAV. INST.			
3	30.0000	0.956	0.997	0.976	1.000	1.000	Total Pressure Ratio = 1.3702 0.9712 0.9565			
4	50.0000	0.962	1.002	0.972	1.000	1.000	Polytropic Efficiency = 0.7061 0.9150			
5	70.0000	0.956	0.994	0.970	1.000	1.000	Percent Design Speed = 100.2			
6	90.0000	0.931	0.991	0.967	1.000	1.000	Cor. Nozzle Weight Flow= 215.4			
7	95.0000	0.941	0.981	0.963	1.000	1.000	TE Check Flow/Noz.Flow = 0.9190			
							Assumed LE Flow Coeff. = 0.9500			
							Assumed TE Flow Coeff. = 0.9350			

TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

RADIAL POSITION		REL INLET FLOW ANG		ABS INLET FLOW ANG		CHBR LN LE ANGLE		INCID ANG MN_CHBR LN		INCID ANG SUCT SURF		INLET ABS VELOCITY		INLET REL VELOCITY		INLET AX VELOCITY		INLET ARS YANG VEL		INLET REL YANG VEL			
1	1	65.56	0.00	0.00	0.00	60.90	5.96	3.26	592.27	1479.54	1468.23	614.61	587.73	0.00	1353.82	0.00	1326.94	28.46	1168.18	1027.40	916.21	778.95	733.50
2	2	65.15	-0.09	5.54	2.51	59.01	0.13	-4.59	751.92	1411.02	1400.00	791.39	791.39	1.00	1168.18	1.00	1168.18	28.46	1168.18	1027.40	916.21	778.95	733.50
3	3	58.80	2.06	2.16	-7.40	52.56	-7.40	-13.24	1025.52	1373.71	1373.71	1007.59	1007.59	0.00	1027.40	0.00	1027.40	28.46	1027.40	916.21	778.95	733.50	733.50
4	4	45.16	0.85	49.71	-7.37	42.34	49.71	-14.16	833.12	1440.53	1440.53	799.61	799.61	0.00	778.95	0.00	778.95	28.46	778.95	673.00	673.00	673.00	673.00
5	5	44.25	0.48	47.11	-2.86	41.13	-2.86	-10.52	857.02	1054.06	1054.06	719.53	719.53	0.00	733.50	0.00	733.50	28.46	733.50	673.00	673.00	673.00	673.00
6	6	45.55	0.61	46.13	-0.58	46.13	-0.58	-8.48	857.02	1054.06	1054.06	719.53	719.53	0.00	733.50	0.00	733.50	28.46	733.50	673.00	673.00	673.00	673.00
7	7	45.55	0.61	46.13	-0.58	46.13	-0.58	-8.48	857.02	1054.06	1054.06	719.53	719.53	0.00	733.50	0.00	733.50	28.46	733.50	673.00	673.00	673.00	673.00
RADIAL POSITION		REL EXIT FLOW ANG		ABS EXIT FLOW ANG		CHBR LN TE ANGLE		REL DEV ANGLE TE		REL TURN ANGLE		EXIT ABS VELOCITY		EXIT REL VELOCITY		EXIT AX VELOCITY		EXIT ARS YANG VEL		EXIT REL YANG VEL			
1	1	56.77	33.24	30.18	30.18	54.80	1.97	9.80	737.27	1123.29	1123.29	614.90	614.90	0.00	938.44	0.00	938.44	403.06	938.44	938.44	938.44	938.44	938.44
2	2	56.58	30.18	31.97	31.97	54.82	2.16	8.57	755.93	1137.71	1137.71	626.03	626.03	0.00	948.65	0.00	948.65	364.04	948.65	948.65	948.65	948.65	948.65
3	3	52.21	28.92	31.97	31.97	50.68	1.53	3.67	735.98	1018.80	1018.80	624.52	624.52	0.00	805.01	0.00	805.01	389.56	805.01	805.01	805.01	805.01	805.01
4	4	50.79	31.10	35.16	35.16	43.79	7.00	-5.63	890.84	958.43	958.43	604.57	604.57	0.00	748.99	0.00	748.99	334.02	748.99	748.99	748.99	748.99	748.99
5	5	43.21	35.16	41.45	41.45	32.15	11.06	-0.87	724.18	850.12	850.12	618.50	618.50	0.00	586.97	0.00	586.97	373.16	586.97	586.97	586.97	586.97	586.97
6	6	25.59	41.45	41.45	41.45	14.39	13.30	16.66	840.67	778.89	778.89	680.09	680.09	0.00	355.46	0.00	355.46	479.09	355.46	355.46	355.46	355.46	355.46
7	7	25.44	41.45	41.45	41.45	8.00	15.44	22.11	820.47	679.43	679.43	611.65	611.65	0.00	269.16	0.00	269.16	540.13	269.16	269.16	269.16	269.16	269.16
RADIAL POSITION		ROTOR SPD AT INLET		INLET MACH NO		INLET REL MACH NO		AXIAL VFL RATIO		LOSS COEFFICIENT		TOT PRESS LOSS PARAM		ADB EFFICIENCY		POLY MOMEN RISE/ STAY PRESS		DIFFUSION FACTOR		CHI			
1	1	1358.82	0.545	1.331	1.331	1.331	1.046	1.331	0.100	0.100	0.100	0.1021	0.8566	0.8566	0.8566	0.258	0.342	0.342	0.342	0.342	0.342		
2	2	1325.94	0.570	1.353	1.353	1.353	1.019	1.353	0.033	0.033	0.033	0.1607	0.9519	0.9519	0.9519	0.274	0.313	0.313	0.313	0.313	0.313		
3	3	1196.64	0.749	1.335	1.335	1.335	0.789	1.335	0.014	0.014	0.014	0.1603	0.9797	0.9797	0.9797	0.369	0.363	0.363	0.363	0.363	0.363		
4	4	1045.96	1.001	1.416	1.416	1.416	0.592	1.416	0.166	0.166	0.166	0.1031	0.6915	0.6915	0.6915	0.468	0.402	0.402	0.402	0.402	0.402		
5	5	933.14	1.000	1.344	1.344	1.344	0.614	1.344	0.149	0.149	0.149	0.1029	0.7151	0.7151	0.7151	0.474	0.450	0.450	0.450	0.450	0.450		
6	6	785.68	0.791	1.082	1.082	1.082	0.851	1.082	0.184	0.184	0.184	0.1037	0.7517	0.7517	0.7517	0.431	0.415	0.415	0.415	0.415	0.415		
7	7	741.10	0.712	0.991	0.991	0.991	0.850	0.991	0.203	0.203	0.203	0.1040	0.7557	0.7557	0.7557	0.420	0.468	0.468	0.468	0.468	0.468		
RADIAL POSITION		ROTOR SPD AT EXIT		EXIT MACH NO		EXIT REL MACH NO		FIXED TOT PRESS RATIO		TEMP RATIO		TOT PRESS LOSS PARAM		ADB EFFICIENCY		POLY MOMEN RISE/ STAY PRESS		DIFFUSION FACTOR		CHI			
1	1	1343.49	0.632	1.330	1.330	1.330	1.330	1.330	1.162	1.162	1.162	0.1021	0.8566	0.8566	0.8566	0.258	0.342	0.342	0.342	0.342	0.342		
2	2	1315.69	0.628	1.354	1.354	1.354	1.354	1.354	1.154	1.154	1.154	0.1607	0.9519	0.9519	0.9519	0.274	0.313	0.313	0.313	0.313	0.313		
3	3	1194.57	0.640	1.386	1.386	1.386	1.386	1.386	1.154	1.154	1.154	0.1603	0.9797	0.9797	0.9797	0.369	0.363	0.363	0.363	0.363	0.363		
4	4	1075.00	0.606	1.489	1.489	1.489	1.489	1.489	1.124	1.124	1.124	0.1031	0.6915	0.6915	0.6915	0.468	0.402	0.402	0.402	0.402	0.402		
5	5	953.13	0.638	1.348	1.348	1.348	1.348	1.348	1.112	1.112	1.112	0.1029	0.7151	0.7151	0.7151	0.474	0.450	0.450	0.450	0.450	0.450		
6	6	836.56	0.746	1.089	1.089	1.089	1.089	1.089	1.123	1.123	1.123	0.1037	0.7517	0.7517	0.7517	0.431	0.415	0.415	0.415	0.415	0.415		
7	7	803.29	0.729	0.999	0.999	0.999	0.999	0.999	1.122	1.122	1.122	0.1040	0.7557	0.7557	0.7557	0.420	0.468	0.468	0.468	0.468	0.468		
RADIAL POSITION		URGENT PRESS RATIO		TRAV TOT PRESS RATIO		FIXED TOT PRESS RATIO		TEMP RATIO		LOSS COEFFICIENT		TOT PRESS LOSS PARAM		ADB EFFICIENCY		POLY MOMEN RISE/ STAY PRESS		DIFFUSION FACTOR		CHI			
1	1	5.0000	1.625	1.177	1.177	1.177	1.275	1.177	1.162	1.162	1.162	0.1021	0.8566	0.8566	0.8566	0.258	0.342	0.342	0.342	0.342	0.342		
2	2	10.0000	1.614	1.158	1.158	1.158	1.154	1.154	1.154	1.154	1.154	0.1607	0.9519	0.9519	0.9519	0.274	0.313	0.313	0.313	0.313	0.313		
3	3	30.0000	1.546	1.153	1.153	1.153	1.154	1.154	1.154	1.154	1.154	0.1603	0.9797	0.9797	0.9797	0.369	0.363	0.363	0.363	0.363	0.363		
4	4	50.0000	1.390	1.108	1.108	1.108	1.124	1.124	1.124	1.124	1.124	0.1031	0.6915	0.6915	0.6915	0.468	0.402	0.402	0.402	0.402	0.402		
5	5	70.0000	1.335	1.114	1.114	1.114	1.112	1.112	1.112	1.112	1.112	0.1029	0.7151	0.7151	0.7151	0.474	0.450	0.450	0.450	0.450	0.450		
6	6	90.0000	1.408	1.131	1.131	1.131	1.123	1.123	1.123	1.123	1.123	0.1037	0.7517	0.7517	0.7517	0.431	0.415	0.415	0.415	0.415	0.415		
7	7	95.0000	1.388	1.114	1.114	1.114	1.122	1.122	1.122	1.122	1.122	0.1040	0.7557	0.7557	0.7557	0.420	0.468	0.468	0.468	0.468	0.468		

OVERALL PERFORMANCE SUMMARY

STAGE DATA ROTOR DATA ROTOR DATA  
 FIXED INST. FIXED INST. TRAV. INST.  
 PERFORMANCE PARAMETERS  
 Total Pressure Ratio = 1.4095 1.4095 1.4677  
 Adiabatic Efficiency = 0.7063 0.7673 0.8499  
 Polytropic Efficiency = 0.7191 0.7783 0.8576  
 Percent Design Speed = 99.9 Discharge Valve Setting = 30.0  
 Cor. Nozzle Weight Flow = 216.0  
 LE Check Flow/Noz.Flow = 0.9769 TE Check Flow/Noz.Flow = 0.9173  
 Assumed LE Flow Coeff. = 0.9850 Assumed TE Flow Coeff. = 0.9700

TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

081970		STATOR BLADE ROW - NASR TASK IV											
		BLADE ELEMENT PERFORMANCE RESULTS					DATE 8/18/1970						
		POINT NUMBER	26	READING NUMBER	253	DATE							
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CMBR LN LE ANGLE	INCID ANG MN CHBR LN	INCID ANG SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL			
1	33.07	39.47	-0.40	14.51	29.69	836.46	741.28	621.17	404.51	37.54			
2	29.60	39.11	-9.51	12.50	27.20	899.68	643.20	635.34	37.54	37.54			
3	30.00	39.01	-9.01	10.709	28.78	702.26	389.19	699.23	29.27	14.94			
4	26.62	39.80	-13.18	7.27	28.10	857.77	674.06	701.81	14.94	14.94			
5	28.45	40.86	-12.41	7.64	29.91	878.10	659.76	658.82	-16.93	-16.93			
6	32.26	42.22	-9.96	12.07	30.77	790.83	674.18	676.43	-17.21	-17.21			
7	38.67	42.76	-4.09	13.18	37.86	767.35	461.92	788.13	20.48	20.48			
							647.88	764.80	10.93	10.93			
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMBR LN TE ANGLE	DEV ANGLE	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL			
1	3.38	3.38	-11.13	14.51	29.69	836.46	635.34	635.34	37.54	37.54			
2	2.40	2.40	-10.10	12.50	27.20	899.68	699.23	699.23	29.27	29.27			
3	1.22	1.22	-8.67	10.709	28.78	702.26	701.81	701.81	14.94	14.94			
4	-1.48	-1.48	-8.75	7.27	28.10	857.77	658.82	658.82	-16.93	-16.93			
5	-1.46	-1.46	-9.10	7.64	29.91	878.10	676.43	676.43	-17.21	-17.21			
6	1.49	1.49	-10.58	12.07	30.77	790.83	788.13	788.13	20.48	20.48			
7	0.82	0.82	-12.36	13.18	37.86	767.35	764.80	764.80	10.93	10.93			
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	SOLIDITY	COEFFICIENT	LOSS	TOT PRESS LOSS PARAM	EFFICIENCY	ADB EFFICIENCY	POLY MOMEN RISE/ RISE COEFF	STAT PRESS	
1	5.0000	0.635	0.635	1.5230	0.171	0.056	0.171	0.056	0.4301	0.029	0.029	0.029	
2	10.0000	0.641	0.641	1.5440	0.066	0.021	0.066	0.021	0.4911	0.046	0.046	0.046	
3	30.0000	0.681	0.681	1.6310	0.059	0.018	0.059	0.018	0.4355	0.072	0.072	0.072	
4	50.0000	0.652	0.652	1.7420	0.074	0.028	0.074	0.028	0.3412	0.065	0.065	0.065	
5	70.0000	0.780	0.780	1.8800	0.117	0.031	0.117	0.031	0.2769	0.055	0.055	0.055	
6	90.0000	0.741	0.741	2.0510	0.101	0.025	0.101	0.025	0.1214	0.018	0.018	0.018	
7	95.0000	0.741	0.741	2.0780	0.115	0.027	0.115	0.027	0.0748	0.011	0.011	0.011	
RADIAL POSITION	PERCENTAGE ROTATION	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	LOSS	COEFFICIENT	LOSS	TOT PRESS LOSS PARAM	EFFICIENCY	ADB EFFICIENCY	POLY MOMEN RISE/ RISE COEFF	STAT PRESS
1	5.0000	0.941	0.984	0.959	1.000	0.171	0.056	0.171	0.056	0.4301	0.029	0.029	0.029
2	10.0000	0.985	0.998	0.984	1.000	0.066	0.021	0.066	0.021	0.4911	0.046	0.046	0.046
3	30.0000	0.967	0.998	0.984	1.000	0.059	0.018	0.059	0.018	0.4355	0.072	0.072	0.072
4	50.0000	0.960	1.004	0.975	1.000	0.074	0.028	0.074	0.028	0.3412	0.065	0.065	0.065
5	70.0000	0.949	1.003	0.968	1.000	0.117	0.031	0.117	0.031	0.2769	0.055	0.055	0.055
6	90.0000	0.936	0.991	0.965	1.000	0.101	0.025	0.101	0.025	0.1214	0.018	0.018	0.018
7	95.0000	0.949	0.982	0.964	1.000	0.115	0.027	0.115	0.027	0.0748	0.011	0.011	0.011
OVERALL PERFORMANCE SUMMARY													
STAGE DATA STATOR DATA STATOR DATA													
FIXED INST. FIXED INST. TRAV. INST.													
1.3732 0.9742 0.9584													
0.7191 0.9239 0.4028													
Discharge Valve Setting= 30.0													
99.9 Percent Design Speed = 216.0													
0.9221 TE Check Flow/Noz.Flow = 0.8834													
0.9500 Assumed IE Flow Coeff. = 0.9350													



TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

ROTOR BLADE ROW - NASR TASK IV		BLADE ELEMENT PERFORMANCE RESULTS									
POINT NUMBER 27		READING NUMBER 254		DATE 8/18/1970							
RADIAL POSITION		REL INLET FLOW ANG	ABS INLET FLOW ANG	CMR LN LE ANGLE	INCID ANG MN CHBR LN	INCID ANG SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL
1		67.37	-0.59	60.60	6.77	4.07	571.67	1476.11	567.26	-5.89	1368.99
2		65.64	2.10	59.61	6.03	3.00	606.44	1465.57	604.25	-8.99	1334.24
3		57.18	2.17	56.01	5.17	-3.29	654.19	1390.38	753.66	27.63	1168.39
4		50.00	2.17	52.56	2.56	-8.40	669.43	1349.45	866.31	32.85	1032.56
5		43.79	0.89	49.71	5.92	-12.71	671.01	1336.00	957.44	14.91	917.74
6		44.88	0.97	47.11	3.43	-9.89	613.43	1125.21	780.70	7.79	777.48
7		45.93	0.90	46.13	0.20	-8.10	748.05	1048.32	711.01	6.26	734.46
RADIAL POSITION		REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMR LN TE ANGLE	REL BVF ANGLE	REL TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL
1		56.84	4.43	54.80	2.04	10.54	655.01	950.53	519.36	546.03	794.75
2		55.59	43.24	54.42	1.17	10.04	651.55	968.23	546.55	513.99	798.01
3		51.84	40.78	50.68	1.16	5.34	638.63	905.08	559.15	482.39	711.55
4		49.64	38.64	43.79	6.05	0.16	693.21	839.57	541.35	432.82	641.62
5		42.56	38.51	32.15	10.41	1.23	712.54	756.84	556.42	442.68	510.95
6		31.53	42.14	14.29	17.24	13.35	647.23	651.82	549.27	497.07	337.04
7		24.08	48.48	8.00	16.08	21.85	677.98	569.86	510.58	576.70	228.17
RADIAL POSITION		ROTOR SPD AT EXIT	INLET ABS MACH NO	REL INLET MACH NO	AXIAL VEL RATIO	SOLIDITY COEFFICIENT	LOSS	TOT PRESS LOSS PARAM	EFFICIENCY	POLY MOMEN RISE/ MEAS T RISE	STAT PRESS RISE COEFF
1		1340.79	0.524	1.392	0.916	0.134	0.027	0.8660	0.8539	0.495	0.497
2		1312.00	0.559	1.351	0.905	0.101	0.021	0.8898	0.8992	0.469	0.511
3		1193.95	0.709	1.307	0.742	-0.006	0.001	1.0069	1.0063	0.457	0.591
4		1074.44	0.825	1.280	0.625	0.155	0.030	0.7918	0.8037	0.466	0.619
5		932.65	0.940	1.294	0.581	0.130	0.025	0.8112	0.8212	0.518	0.647
6		785.27	0.769	1.063	0.704	0.155	0.030	0.8179	0.8274	0.521	0.599
7		740.71	0.701	0.982	0.718	0.136	0.026	0.8571	0.8648	0.578	0.600
RADIAL POSITION		PERCENT HUMIDIFICATION	TRAV TOT PRESS RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	LOSS	TOT PRESS LOSS PARAM	EFFICIENCY	POLY MOMEN RISE/ MEAS T RISE	STAT PRESS RISE COEFF	
1		5.0000	1.906	1.238	1.850	0.134	0.027	0.8660	0.495	0.497	
2		10.0000	1.892	1.222	1.886	0.101	0.021	0.8898	0.469	0.511	
3		30.0000	1.775	1.194	1.825	-0.006	0.001	1.0069	0.457	0.591	
4		50.0000	1.570	1.147	1.914	0.155	0.030	0.7918	0.466	0.619	
5		70.0000	1.486	1.136	1.473	0.130	0.025	0.8112	0.518	0.647	
6		90.0000	1.465	1.140	1.459	0.155	0.030	0.8179	0.521	0.599	
7		98.0000	1.517	1.192	1.478	0.136	0.026	0.8571	0.578	0.600	
OVERALL PERFORMANCE SUMMARY											
STAGE DATA		ROTOR DATA		ROTOR DATA		FIXED INST, FIXED INST, TRAV, INST.					
PERFORMANCE PARAMETERS		Total Pressure Ratio =		Adiabatic Efficiency =		Polytropic Efficiency =		Discharge Valve Setting= 11.0			
		1.5775		0.7905		0.8035		1.6034 1.6573			
		1.147		1.144		1.139		0.8207 0.8948			
		1.136		1.144		1.139		0.8322 0.9020			
		1.140		1.459		1.138		99.8 211.8			
		1.517		1.478		1.138		TE Check Flow/Noz.Flow = 0.9061			
		1.517		1.478		1.138		Assumed IE Flow Coeff. = 0.9850			
		1.517		1.478		1.138		Assumed TE Flow Coeff. = 0.9700			

081970

TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

STATOR BLADE ROW - NASA TASK IV		BLADE ELEMENT PERFORMANCE RESULTS		POINT NUMBER 27		READING NUMBER 254		DATE 8/18/1970		
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCLD ANG MN CHBR LN	INCLD ANG SUCY SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS YANG VEL	INLET REL YANG VEL
1	46.27	42.65	39.47	67.80	43.33	524.24	524.24	524.24	546.01	546.01
2	39.01	37.54	39.11	37.54	38.47	560.03	560.03	560.03	515.85	515.85
3	39.81	39.01	39.80	-0.20	38.85	599.15	599.15	599.15	481.93	481.93
4	36.19	37.61	39.80	72.23	37.71	585.76	585.76	585.76	428.51	428.51
5	35.78	40.86	40.86	51.08	36.41	601.31	601.31	601.31	433.32	433.32
6	39.45	42.22	42.22	-2.77	37.95	582.35	582.35	582.35	479.26	479.26
7	45.86	42.76	42.76	31.10	46.61	537.22	537.22	537.22	553.68	553.68
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	DEV ANGLE	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS YANG VEL	EXIT REL YANG VEL
1	2.94	2.94	-11.13	14.07	43.33	29.31	29.31	29.31	29.31	29.31
2	4.18	4.18	-10.10	14.28	38.47	617.78	617.78	617.78	451.16	451.16
3	-0.04	-0.04	-8.87	8.83	38.85	586.50	586.50	586.50	-0.40	-0.40
4	-5.52	-5.52	-8.75	7.23	37.71	545.15	545.15	545.15	-14.48	-14.48
5	-0.83	-0.83	-9.10	8.27	36.41	559.85	559.85	559.85	-6.09	-6.09
6	1.51	1.51	-10.58	12.09	37.95	568.94	568.94	568.94	14.80	14.80
7	-0.75	-0.75	-12.36	11.01	46.61	546.38	546.38	546.38	-7.05	-7.05
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	LOSS COEFFICIENT	TOT PRESS LOSS PARAM	ADB EFFICIENCY	POLY EFFICIENCY	MOYEN RISE	STAT PRESS RISE COEFF
1	0.632	0.632	0.632	1.006	0.138	0.045	0.5829	0.5829	0.276	0.276
2	0.641	0.641	0.641	1.540	0.087	0.028	0.7893	0.7893	0.245	0.245
3	0.658	0.658	0.658	1.630	0.067	0.021	0.7577	0.7577	0.291	0.291
4	0.628	0.628	0.628	1.7420	0.029	0.008	0.8411	0.8411	0.343	0.343
5	0.650	0.650	0.650	1.8800	0.032	0.009	0.6719	0.6719	0.353	0.353
6	0.665	0.665	0.665	2.0510	0.071	0.017	0.6381	0.6381	0.348	0.348
7	0.678	0.678	0.678	2.0980	0.099	0.023	0.6950	0.6950	0.324	0.324
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	TRAV TOT PRESS RATIO	PERCENT DIFFERENTIATION	TRAV TOT PRESS RATIO	TRAV TOT PRESS RATIO	PERCENT DIFFERENTIATION	FIXED INST. FIXED INST. TRAV. INST.	FIXED INST. FIXED INST. TRAV. INST.
1	0.953	0.953	0.953	1.000	5.0000	1.000	1.000	1.000	1.5775	0.9838
2	0.980	0.980	0.980	0.979	30.0000	0.979	0.979	0.979	0.8035	0.9655
3	0.970	0.970	0.970	0.985	30.0000	0.985	0.985	0.985	0.9746	0.9719
4	0.981	0.981	0.981	0.992	58.0000	0.992	0.992	0.992	Discharge Valve Setting=	11.0
5	0.984	0.984	0.984	1.001	70.0000	1.001	1.001	1.001	99.8	TE Check Flow/Noz.Flow = 0.8817
6	0.978	0.978	0.978	0.985	90.0000	0.985	0.985	0.985	Assumed IE Flow Coeff. =	0.9700
7	0.952	0.952	0.952	0.973	95.0000	0.973	0.973	0.973	Assumed IE Flow Coeff. =	0.9350

TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

ROTOR BLADE ROW - NASA TASK IV		BLADE ELEMENT PERFORMANCE RESULTS										STAGE DATA ROTOR DATA ROTOR DATA									
POINT NUMBER 28		READING NUMBER 255					DATE 8/18/1970					FIXED INST. FIXED INST. TRAV. INST.					TRAV. INST.				
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CMBR LN LE ANGLE	INCID ANG MN	INCID ANG LN	SUCT SURF	INLET ABS VELOCITY	EXIT ABS VELOCITY	INLET REL VELOCITY	EXIT REL VELOCITY	INLET AX VELOCITY	EXIT AX VELOCITY	INLET ABS YANG VEL	EXIT ABS YANG VEL	INLET REL YANG VEL	EXIT REL YANG VEL	CHI				
1	69.08	-1.95	60.60	6.48	5.78		530.336	530.336	1474.0	1474.0	525.99	525.99	-17.92	1376.15	1376.15						
2	67.71	-1.96	59.61	6.10	5.07		554.60	554.60	1456.76	1456.76	552.34	552.34	-18.89	1347.19	1347.19						
3	58.91	0.47	56.01	2.90	-1.56		419.23	419.23	1392.87	1392.87	719.18	719.18	5.95	1192.83	1192.83						
4	49.65	1.29	52.56	-2.91	-8.75		492.98	492.98	1376.54	1376.54	890.18	890.18	20.08	1047.78	1047.78						
5	44.01	0.29	49.71	4.91	-12.49		476.29	476.29	1348.26	1348.26	962.75	962.75	4.91	926.89	926.89						
6	46.06	-0.03	47.11	-1.05	-8.71		790.69	790.69	1115.92	1115.92	758.91	758.91	-0.38	787.46	787.46						
7	46.73	0.74	46.13	0.60	-7.30		426.43	426.43	1032.27	1032.27	690.43	690.43	8.07	733.46	733.46						
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMBR LN YE ANGLE	REL DEV ANG TE	REL TURN ANGLE		EXIT ABS VELOCITY	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT AX VELOCITY	EXIT ABS YANG VEL	EXIT ABS YANG VEL	EXIT REL YANG VEL						
1	57.56	52.79	54.80	2.76	11.52		464.92	464.92	867.79	867.79	464.92	464.92	612.32	731.57	731.57						
2	54.61	48.59	54.42	0.19	13.10		783.40	783.40	894.39	894.39	517.45	517.45	586.72	728.32	728.32						
3	51.75	45.09	50.68	1.07	7.16		446.30	446.30	851.07	851.07	528.82	528.82	528.43	668.27	668.27						
4	49.70	42.29	43.79	4.91	0.95		410.98	410.98	798.90	798.90	523.90	523.90	478.31	598.61	598.61						
5	41.65	40.95	32.15	9.50	2.36		421.66	421.66	729.33	729.33	543.95	543.95	472.09	483.74	483.74						
6	32.23	46.40	14.29	17.94	13.83		426.83	426.83	594.72	594.72	497.49	497.49	522.44	313.61	313.61						
7	22.66	52.13	8.00	14.66	24.07		478.13	478.13	523.14	523.14	473.58	473.58	609.02	197.71	197.71						
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VFL RATIO																	
1	1358.23	0.483	1.342	0.884									0.571	0.516	0.516						
2	1328.31	0.507	1.331	0.937									0.517	0.525	0.525						
3	1193.78	0.673	1.303	0.733									0.513	0.601	0.601						
4	1067.96	0.850	1.310	0.591									0.520	0.658	0.658						
5	934.80	0.945	1.306	0.365									0.551	0.682	0.682						
6	787.09	0.745	1.031	0.656									0.575	0.641	0.641						
7	742.42	0.679	0.965	0.686									0.623	0.660	0.660						
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	SOLIDITY RATIO	LOSS COEFFICIENT	LOSS	TOT PRESS LOSS PARAM	EFFICIENCY	ADB EFFICIENCY	POLY MOMEN RISE/ MEAS Y RISE	EFFICIENCY	POLY MOMEN RISE/ STAT PRESS	EFFICIENCY	MEAS Y RISE	STAT PRESS						
1	1343.88	0.632	0.713	1.3340	0.180	0.180	0.036	0.8214	0.8214	0.8372	0.8372	0.405	0.416	0.416							
2	1317.03	0.649	0.741	1.3690	0.154	0.154	0.033	0.8188	0.8188	0.8625	0.8625	0.512	0.512	0.512							
3	1196.70	0.832	0.720	1.5080	0.021	0.021	0.004	0.9777	0.9777	0.9796	0.9796	0.586	0.586	0.586							
4	1076.92	0.609	0.682	1.6840	0.149	0.149	0.029	0.8105	0.8105	0.8225	0.8225	0.627	0.627	0.627							
5	955.83	0.625	0.632	1.9040	0.086	0.086	0.017	0.8783	0.8783	0.8855	0.8855	0.852	0.852	0.852							
6	836.04	0.629	0.515	2.2170	0.119	0.119	0.023	0.8664	0.8664	0.8739	0.8739	0.852	0.852	0.852							
7	808.73	0.674	0.453	2.3390	0.109	0.109	0.021	0.8944	0.8944	0.9006	0.9006	0.714	0.714	0.714							
RADIAL POSITION	PERCENT IMMERSE	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO																
1	5.0000	1.989	1.270	1.942	1.254																
2	10.0000	1.989	1.256	1.973	1.254																
3	30.0000	1.846	1.211	1.891	1.204																
4	50.0000	1.649	1.161	1.590	1.175																
5	70.0000	1.554	1.144	1.536	1.149																
6	90.0000	1.499	1.151	1.503	1.143																
7	95.0000	1.577	1.162	1.534	1.146																
OVERALL PERFORMANCE SUMMARY																					
STAGE DATA ROTOR DATA ROTOR DATA																					
FIXED INST. FIXED INST. TRAV. INST.																					
PERFORMANCE PARAMETERS																					
Total Pressure Ratio = 1.6463 1.6777 1.7260																					
Adiabatic Efficiency = 0.7944 0.8269 0.8845																					
Polytropic Efficiency = 0.8083 0.8390 0.8930																					
Percent Design Speed = 100.0 Discharge Valve Setting = 8.2																					
Cor. Nozzle Weight Flow = 207.1																					
LE Check Flow/Noz.Flow = 0.9936 TE Check Flow/Noz.Flow = 0.9057																					
Assumed LE Flow Coeff. = 0.9850 Assumed TE Flow Coeff. = 0.9500																					

081970

081970  
 TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

STATOR BLADE ROW - NASR TASK IV																				
BLADE ELEMENT PERFORMANCE RESULTS										DATE 8/18/1970										
POINT NUMBER 28										READING NUMBER 255										
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CMBR LN LE ANGLE	INCID ANG HN CMBR LN	INCID ANG SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	POLY MOMEN RISE/ RISE	EFFICIENCY	ADB	STAT PRESS	CHI
1	52.64	48.02	39.11	13.17	13.17	873.14	873.14	873.14	614.53	614.53	869.13	869.13	869.13	29.77	29.77	0.6475	0.16475	0.047	0.265	0.284
2	43.16	39.01	39.01	4.15	4.15	801.58	801.58	801.58	588.85	588.85	529.79	529.79	529.79	61.55	61.55	0.456	0.1456	0.039	0.279	0.301
3	38.81	38.81	39.80	0.01	0.01	859.27	859.27	859.27	7.06	7.06	598.39	598.39	598.39	3.65	3.65	0.482	0.1482	0.023	0.222	0.363
4	38.21	40.86	40.86	-2.65	-2.65	828.21	828.21	828.21	4.37	4.37	525.61	525.61	525.61	4.37	4.37	0.471	0.1471	0.008	0.448	0.422
5	43.78	42.22	42.22	1.56	1.56	817.76	817.76	817.76	4.37	4.37	516.63	516.63	516.63	7.35	7.35	0.498	0.1498	0.021	0.487	0.448
6	49.61	42.76	42.76	6.85	6.85	878.43	878.43	878.43	-23.30	-23.30	485.84	485.84	485.84	7.35	7.35	0.566	0.1566	0.026	0.487	0.448
7																				
ROTOR SPD																				
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	DEV ANG VE	TURN ANGLE	LOSS COEFFICIENT	SOLIDITY	LOSS	TOT PRESS LOSS PARAM	EFFICIENCY	ADB	POLY MOMEN RISE/ RISE	EFFICIENCY	ADB	STAT PRESS	CHI			
1	0.635	1.212	1.212	1.212	14.13	49.64	0.145	1.5230	0.145	0.047	0.16475	0.047	0.6475	0.16475	0.047	0.265	0.284			
2	0.657	1.129	1.129	1.129	15.97	42.15	0.121	1.5440	0.121	0.039	0.1456	0.039	0.456	0.1456	0.039	0.279	0.301			
3	0.655	1.193	1.193	1.193	9.59	42.44	0.075	1.6310	0.075	0.023	0.1482	0.023	0.482	0.1482	0.023	0.222	0.363			
4	0.636	1.025	1.025	1.025	9.15	39.41	0.040	1.7420	0.040	0.008	0.471	0.008	0.471	0.471	0.008	0.448	0.422			
5	0.653	1.080	1.080	1.080	9.58	37.73	0.067	1.8800	0.067	0.011	0.498	0.011	0.498	0.498	0.011	0.487	0.448			
6	0.636	0.924	0.924	0.924	11.75	42.91	0.108	2.0510	0.108	0.021	0.487	0.021	0.487	0.487	0.021	0.487	0.448			
7	0.670	0.957	0.957	0.957	9.56	52.41	0.108	2.0980	0.108	0.026	0.566	0.026	0.566	0.566	0.026	0.487	0.448			
PERCENT DIMENSION																				
RADIAL POSITION	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO																
1	0.957	0.957	0.975	0.965																
2	0.967	0.967	0.987	0.981																
3	0.969	0.969	0.995	0.981																
4	0.980	0.980	0.999	0.994																
5	0.979	0.979	0.996	0.990																
6	0.982	0.982	0.989	0.979																
7	0.947	0.947	0.983	0.971																
OVERALL PERFORMANCE SUMMARY																				
STAGE DATA										STATOR DATA										
FIXED INST. FIXED INST. TRAV. INST.										FIXED INST. FIXED INST. TRAV. INST.										
Total Pressure Ratio = 1.6463										Total Pressure Ratio = 0.9813										
Polytropic Efficiency = 0.8083										Polytropic Efficiency = 0.9634										
Percent Design Speed = 100.0										Discharge Valve Setting = 8.2										
Cor. Nozzle Weight Flow = 207.1										Cor. Nozzle Weight Flow = 207.1										
LE Check Flow/Noz. Flow = 0.9115										LE Check Flow/Noz. Flow = 0.8953										
Assumed LE Flow Coeff. = 0.9500										Assumed LE Flow Coeff. = 0.9350										

090270

TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

ROTOR BLADE ROW - NASA TASK IV		BLADE ELEMENT PERFORMANCE RESULTS										DATE			
		POINT NUMBER		READING NUMBER		DATE		DATE							
		29	29	29	29	29	29	29	29	29	29	29	29		
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CMBR LN LE ANGLE	INCID ANGLE	HN CHBR LN	INLET SURF ANGLE	INLET ABS VELOCITY	INLET REL VELOCITY	INLET ABS VELOCITY	INLET REL VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	INLET ABS TANG VEL	INLET REL TANG VEL	
1	66.24	0.	5.64	2.94	602.01	602.01	148.73	148.73	602.01	602.01	0.	0.	0.	0.	
2	64.84	0.	5.23	2.20	806.54	806.54	146.33	146.33	806.54	806.54	0.	0.	0.	0.	
3	56.95	0.	0.04	4.42	1024.20	1024.20	144.09	144.09	1024.20	1024.20	0.	0.	0.	0.	
4	46.26	0.	-6.50	-12.14	1021.01	1021.01	1479.05	1479.05	1021.01	1021.01	0.	0.	0.	0.	
5	42.85	0.	49.71	-13.65	816.16	816.16	1383.84	1383.84	816.16	816.16	0.	0.	0.	0.	
6	45.11	0.	47.11	-9.66	721.16	721.16	1133.44	1133.44	721.16	721.16	0.	0.	0.	0.	
7	47.26	0.	46.13	-6.77	822.04	822.04	1034.62	1034.62	822.04	822.04	0.	0.	0.	0.	
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMBR LN TE ANGLE	REL TURN ANGLE	REL DEV ANGLE	REL TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	EXIT ABS TANG VEL	EXIT REL TANG VEL	
1	56.91	32.40	24.80	9.33	2.11	9.33	735.20	1135.31	735.20	1135.31	392.77	950.10	392.77	950.10	
2	56.21	31.29	54.42	8.63	1.79	8.63	733.19	1125.10	733.19	1125.10	379.90	934.13	379.90	934.13	
3	52.91	32.07	50.68	3.14	2.23	3.14	724.09	1017.39	724.09	1017.39	384.33	811.47	384.33	811.47	
4	50.91	28.73	43.79	7.12	7.12	7.12	689.96	959.43	689.96	959.43	331.53	744.57	331.53	744.57	
5	43.44	32.20	32.15	-0.58	11.29	-0.58	717.68	835.79	717.68	835.79	381.50	573.61	381.50	573.61	
6	27.91	35.88	14.29	17.20	13.62	17.20	831.33	763.76	831.33	763.76	482.22	353.19	482.22	353.19	
7	23.94	41.26	8.00	23.32	15.94	23.32	822.04	680.16	822.04	680.16	535.28	270.86	535.28	270.86	
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	AXIAL VEL RATIO	SOLIDITY	LOSS COEFFICIENT	LOSS PARAM	EFFICIENCY	AD8 EFFICIENCY	TOT PRESS LOSS PARAM	EFFICIENCY	POLI MOMEN RISE/MEAS T RISE	STAT PRESS RISE COEFF	DIFFUSION FACTOR	CHI	
1	157.21	0.554	1.367	1.036	0.115	0.024	0.8395	0.8395	0.024	0.8395	0.18499	0.252	0.354	0.354	
2	152.50	0.578	1.357	1.003	0.062	0.013	0.9130	0.9130	0.013	0.9130	0.19189	0.273	0.327	0.327	
3	1197.87	0.765	1.369	0.761	0.032	0.006	0.9526	0.9526	0.006	0.9526	0.9559	0.357	0.384	0.384	
4	1167.06	1.000	1.444	0.592	0.163	0.030	0.6918	0.6918	0.030	0.6918	0.7040	0.439	0.418	0.418	
5	934.10	1.000	1.355	0.602	0.151	0.029	0.7172	0.7172	0.029	0.7172	0.7281	0.465	0.469	0.469	
6	786.49	0.773	1.073	0.851	0.190	0.038	0.7469	0.7469	0.038	0.7469	0.7598	0.425	0.425	0.425	
7	741.86	0.674	0.968	0.890	0.234	0.046	0.7274	0.7274	0.046	0.7274	0.7387	0.458	0.458	0.458	
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	TRAV TOT PRESS RATIO	FIXED TOT PRESS RATIO	TEMP RATIO	LOSS COEFFICIENT	LOSS PARAM	EFFICIENCY	AD8 EFFICIENCY	TOT PRESS LOSS PARAM	EFFICIENCY	POLI MOMEN RISE/MEAS T RISE	STAT PRESS RISE COEFF	DIFFUSION FACTOR	CHI
1	142.87	0.629	1.587	1.587	1.168	0.115	0.024	0.8395	0.8395	0.024	0.8395	0.18499	0.252	0.354	0.354
2	134.04	0.631	1.587	1.587	1.163	0.062	0.013	0.9130	0.9130	0.013	0.9130	0.19189	0.273	0.327	0.327
3	1195.80	0.882	1.587	1.587	1.148	0.032	0.006	0.9526	0.9526	0.006	0.9526	0.9559	0.357	0.384	0.384
4	1076.10	0.604	1.684	1.684	1.123	0.163	0.030	0.6918	0.6918	0.030	0.6918	0.7040	0.439	0.418	0.418
5	955.11	0.632	1.355	1.355	1.111	0.151	0.029	0.7172	0.7172	0.029	0.7172	0.7281	0.465	0.469	0.469
6	839.41	0.737	1.073	1.073	1.115	0.190	0.038	0.7469	0.7469	0.038	0.7469	0.7598	0.425	0.425	0.425
7	806.12	0.723	0.968	0.968	1.125	0.234	0.046	0.7274	0.7274	0.046	0.7274	0.7387	0.458	0.458	0.458
RADIAL POSITION	PERCENT IMPROVEMENT	TRAV TOT PRESS RATIO	FIXED TOT PRESS RATIO	TEMP RATIO	LOSS COEFFICIENT	LOSS PARAM	EFFICIENCY	AD8 EFFICIENCY	TOT PRESS LOSS PARAM	EFFICIENCY	POLI MOMEN RISE/MEAS T RISE	STAT PRESS RISE COEFF	DIFFUSION FACTOR	CHI	
1	9.0000	1.598	1.587	1.168	0.115	0.024	0.8395	0.8395	0.024	0.8395	0.18499	0.252	0.354	0.354	
2	19.0000	1.609	1.170	1.163	0.062	0.013	0.9130	0.9130	0.013	0.9130	0.19189	0.273	0.327	0.327	
3	30.0000	1.533	1.155	1.148	0.032	0.006	0.9526	0.9526	0.006	0.9526	0.9559	0.357	0.384	0.384	
4	50.0000	1.385	1.111	1.123	0.163	0.030	0.6918	0.6918	0.030	0.6918	0.7040	0.439	0.418	0.418	
5	70.0000	1.330	1.114	1.115	0.151	0.029	0.7172	0.7172	0.029	0.7172	0.7281	0.465	0.469	0.469	
6	90.0000	1.404	1.130	1.125	0.190	0.038	0.7469	0.7469	0.038	0.7469	0.7598	0.425	0.425	0.425	
7	95.0000	1.414	1.145	1.123	0.234	0.046	0.7274	0.7274	0.046	0.7274	0.7387	0.458	0.458	0.458	

OVERALL PERFORMANCE SUMMARY

STAGE DATA ROTOR DATA ROTOR DATA  
 FIXED INST. FIXED INST. TRAV. INST.  
 1.3742 1.4116 1.4610  
 0.6922 0.7536 0.8139  
 0.7057 0.7653 0.8236  
 Discharge Valve Setting= 30.0  
 Percent Design Speed = 100.0  
 Cor. Nozzle Weight Flow= 216.0  
 LE Check Flow/Noz.Flow = 0.9800  
 Assumed LE Flow Coeff. = 0.9850  
 TE Check Flow/Noz.Flow = 0.9056  
 Assumed TE Flow Coeff. = 0.9500

TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

STATOR BLADE ROW - NASA TASK IV												
BLADE ELEMENT PERFORMANCE RESULTS												
POINT NUMBER 29 HEADING NUMBER 29 DATE 9/ 1/1970												
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CMBR LN LE ANGLE	INCID ANG MN CMBR LN	INCID ANG SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	EXIT ABS VELOCITY	EXIT REL VELOCITY
1	32.23	39.47	-7.24	739.22	746.80	625.34	642.14	625.34	394.19	381.28	636.37	26.11
2	30.70	39.11	-8.41	765.26	759.05	661.48	660.17	661.48	385.96	328.23	706.85	45.20
3	30.13	39.01	-8.88	782.57	863.63	659.14	716.07	659.14	373.44	464.94	659.14	-32.25
4	26.44	39.80	-15.56	834.97	844.97	646.04	646.04	646.04	513.90	513.90	646.04	7.33
5	29.53	40.86	-11.33									
6	33.00	42.22	-9.22									
7	38.50	42.76	-4.26									
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMBR LN TE ANGLE	DEV ANG TE	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	WILFUSION FACTOR	CHI
1	2.35	13.48	-11.13	13.48	29.88	636.37	636.37	636.37	26.11	26.11	0.302	0.025
2	3.66	13.76	-10.10	13.76	27.04	708.33	708.33	708.33	45.20	45.20	0.197	0.038
3	0.52	9.59	-8.87	9.59	29.62	700.06	699.74	699.74	6.29	6.29	0.236	0.072
4	-2.80	8.75	-8.75	8.75	29.24	661.34	659.14	659.14	-32.25	-32.25	0.244	0.072
5	-1.19	7.91	7.91	7.91	30.72	684.46	682.82	682.82	-14.14	-14.14	0.236	0.043
6	1.43	12.01	-10.58	12.01	31.57	793.45	790.79	790.79	19.74	19.74	0.204	0.003
7	0.54	12.90	-12.56	12.90	37.96	774.05	771.54	771.54	7.33	7.33	0.215	0.000
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	LOSS COEFFICIENT	SOLIDITY	LOSS ANGLE	TOT PRESS LOSS PARAM	EFFICIENCY	ADB EFFICIENCY	POLY PUMEN RISE/ MEAS T RISE	STAT PRESS RISE COEFF
1	0.529	0.643	1.101	1.018	0.189	1.2230	0.075	0.062	0.1072	0.1072	0.4044	0.023
2	0.667	1.000	1.000	1.000	0.064	1.5440	0.075	0.024	0.4044	0.4044	0.4044	0.035
3	0.851	1.000	1.000	1.000	0.093	1.6310	0.064	0.020	0.4509	0.4509	0.4509	0.065
4	0.675	1.000	1.000	1.000	0.125	1.7420	0.093	0.027	0.5609	0.5609	0.5609	0.065
5	0.769	1.104	1.104	1.104	0.102	1.8800	0.125	0.033	0.2237	0.2237	0.2237	0.038
6	0.736	1.194	1.194	1.194	0.118	2.0510	0.102	0.025	0.0219	0.0219	0.0219	0.003
7					0.118	2.0980	0.118	0.028	0.0023	0.0023	0.0023	0.000
RADIAL POSITION	PERCENT IMPERSON	TRAV TOT PRESS RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	LOSS ANGLE	LOSS ANGLE	LOSS ANGLE	LOSS ANGLE	LOSS ANGLE	LOSS ANGLE	LOSS ANGLE	LOSS ANGLE
1	7.0000	0.976	0.976	0.976	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2	11.0000	0.994	0.994	0.982	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
3	30.0000	0.973	0.973	0.989	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
4	50.0000	0.963	1.002	0.977	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
5	70.0000	0.954	0.998	0.967	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
6	90.0000	0.941	0.994	0.966	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
7	92.0000	0.955	0.981	0.964	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

OVERALL PERFORMANCE SUMMARY

STAGE INLET STATOR INLET STATOR DATA  
 FIXED INST. FIXED INST. TRAV. INST.  
 1.3742 0.9735 0.9621  
 0.7057 0.9221 0.4140  
 Discharge Valve Setting= 30.0  
 Percent Design Speed = 100.0  
 Cor. Nozzle Weight Flow = 216.0  
 IE Check Flow/Noz.Flow = 0.9104  
 Assumed IE Flow Coeff. = 0.9550  
 TE Check Flow/Noz.Flow = 0.8845  
 Assumed TE Flow Coeff. = 0.9550

090270

TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

		ROTOR BLADE ROW - NASA TASK IV											
		BLADE ELEMENT PERFORMANCE RESULTS											
		POINT NUMBER 30										9/ 1/1970	
		HEADING NUMBER 30											
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCID ANG MN CHBR LN	INCID ANG SURT	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL			
1	67.17	0.	60.60	6.57	3.87	576.65	1476.40	572.23	0.	3359.13			
2	65.83	0.	59.61	6.22	3.19	598.67	1457.78	596.57	0.	3329.18			
3	57.51	0.	56.01	1.50	-2.96	763.88	1422.14	763.80	0.	1199.57			
4	50.93	0.	52.56	-1.63	-7.47	869.95	1377.91	867.42	0.	1068.57			
5	44.21	0.	49.71	-5.50	-12.29	975.13	1351.25	961.62	0.	935.42			
6	44.88	0.	47.11	-2.23	-9.89	824.11	1139.95	790.97	0.	787.60			
7	47.42	0.	46.13	1.29	-6.61	718.15	1033.27	682.64	0.	742.91			
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	REL DEV ANG TE	REL TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL			
1	56.50	46.51	54.80	1.70	10.66	763.18	950.99	524.21	552.69	792.08			
2	55.23	44.34	54.42	0.81	10.59	762.20	955.47	544.22	531.81	784.09			
3	52.51	41.90	50.68	1.63	5.21	734.53	893.82	546.43	490.32	707.17			
4	50.20	39.54	43.79	6.41	0.73	689.86	831.20	531.97	439.07	638.56			
5	42.97	38.77	32.15	10.82	1.24	708.74	755.00	551.48	442.84	513.62			
6	31.02	43.17	14.29	16.73	13.85	731.37	641.52	543.42	509.75	326.85			
7	23.33	49.21	0.00	15.33	24.09	784.61	563.42	507.60	588.31	218.95			
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	LOSS COEFFICIENT	TOT PRESS LOSS PAHAM	EFFICIENCY ADB	POLY ROMEN EFFICIENCY	RISE T	STAT PRESS COEFF			
1	1549.77	0.629	0.784	1.3340	0.157	0.052	0.8339	0.8472	0.379	0.379			
2	1315.90	0.636	0.797	1.3690	0.132	0.027	0.8622	0.8744	0.398	0.398			
3	1197.49	0.625	0.760	1.5080	-0.001	1.0000	1.0000	1.0000	0.477	0.477			
4	1068.57	0.825	1.307	0.613	0.147	0.028	0.7968	0.8084	0.594	0.594			
5	935.42	0.945	1.310	0.573	0.121	0.023	0.8224	0.8320	0.637	0.637			
6	787.60	0.780	1.079	0.687	0.147	0.029	0.8241	0.8332	0.541	0.541			
7	742.91	0.670	0.965	0.744	0.153	0.030	0.8414	0.8497	0.582	0.582			
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	FIXED TOT PRESS RATIO	LOSS COEFFICIENT	TOT PRESS LOSS PAHAM	EFFICIENCY ADB	POLY ROMEN EFFICIENCY	RISE T	STAT PRESS COEFF			
1	1549.77	0.629	0.784	1.3340	0.157	0.052	0.8339	0.8472	0.379	0.379			
2	1315.90	0.636	0.797	1.3690	0.132	0.027	0.8622	0.8744	0.398	0.398			
3	1197.49	0.625	0.760	1.5080	-0.001	1.0000	1.0000	1.0000	0.477	0.477			
4	1068.57	0.825	1.307	0.613	0.147	0.028	0.7968	0.8084	0.594	0.594			
5	935.42	0.945	1.310	0.573	0.121	0.023	0.8224	0.8320	0.637	0.637			
6	787.60	0.780	1.079	0.687	0.147	0.029	0.8241	0.8332	0.541	0.541			
7	742.91	0.670	0.965	0.744	0.153	0.030	0.8414	0.8497	0.582	0.582			
RADIAL POSITION	PERCENT IMMERSION	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	TEMP RATIO	LOSS COEFFICIENT	TOT PRESS LOSS PAHAM	EFFICIENCY ADB	POLY ROMEN EFFICIENCY	RISE T	STAT PRESS COEFF		
1	5.0000	1.890	1.871	1.235	1.235	0.052	0.8339	0.8472	0.379	0.379			
2	13.0000	1.891	1.904	1.234	1.187	0.027	0.8622	0.8744	0.398	0.398			
3	30.0000	1.766	1.821	1.151	1.158	-0.001	1.0000	1.0000	0.477	0.477			
4	50.0000	1.564	1.515	1.144	1.144	0.028	0.7968	0.8084	0.594	0.594			
5	70.0000	1.482	1.480	1.144	1.144	0.023	0.8224	0.8320	0.637	0.637			
6	90.0000	1.475	1.464	1.144	1.144	0.029	0.8241	0.8332	0.541	0.541			
7	95.0000	1.555	1.464	1.137	1.137	0.030	0.8414	0.8497	0.582	0.582			
OVERALL PERFORMANCE SUMMARY													
STAGE DATA ROTOR DATA ROTOR DATA													
FIXED INST. FIXED INST. TRAV. INST.													
1.5830 1.6087 1.6549													
0.7652 0.8147 0.8498													
0.7987 0.8267 0.8601													
Percent Design Speed = 100.0 Discharge Valve Setting= 11.0													
Cor. Nozzle Weight Flow= 212.8													
LE Check Flow/Noz.Flow = 0.9782 TE Check Flow/Noz.Flow = 0.8879													
Assumed LE Flow Coeff. = 0.9850 Assumed TE Flow Coeff. = 0.9500													

TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

STATOR BLADE ROW - NASA TASK IV		BLADE ELEMENT PERFORMANCE RESULTS										INLET REL		INLET ABS		EXIT REL		EXIT ABS		INLET REL		INLET ABS		EXIT REL		EXIT ABS				
RADIAL POSITION	POINT NUMBER	30		50		70		90		110		130		150		170		190		210		230		250		270		290		
		NO	DATE	NO	DATE	NO	DATE	NO	DATE	NO	DATE	NO	DATE	NO	DATE	NO	DATE	NO	DATE	NO	DATE	NO	DATE	NO	DATE	NO	DATE	NO	DATE	
1	39.47	46.35	39.47	46.35	39.47	46.35	39.47	46.35	39.47	46.35	39.47	46.35	39.47	46.35	39.47	46.35	39.47	46.35	39.47	46.35	39.47	46.35	39.47	46.35	39.47	46.35	39.47	46.35	39.47	46.35



TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

		ROTOR BLADE ROW - NASA TASK IV									
		BLADE ELEMENT PERFORMANCE RESULTS									
		POINT NUMBER 32 READING NUMBER 32 DATE 9/ 1/1970									
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	MN CHBR LN	INCLD ANG	INCLD SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL
1	64.55	0.	60.60	7.95	5.25	5.25	548.70	1463.53	534.59	0.	1360.78
2	65.64	0.	59.61	7.03	4.00	4.00	576.93	1450.47	574.94	0.	1330.79
3	61.02	0.	56.01	5.01	0.55	0.55	665.18	1372.92	665.18	0.	1201.02
4	52.47	0.	52.56	-0.09	-5.93	-5.93	824.20	1350.53	821.61	0.	1065.86
5	46.32	0.	49.71	-3.39	-10.18	-10.18	906.88	1303.67	894.34	0.	936.55
6	45.61	0.	47.11	-0.50	-8.16	-8.16	776.63	1106.79	745.44	0.	788.56
7	43.58	0.	46.13	2.45	-5.45	-5.45	690.33	1014.80	656.17	0.	743.62
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	REL DEV ANG TE	REL TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	
1	58.20	55.48	54.90	3.40	10.35	775.62	834.13	439.00	638.22	708.18	
2	54.25	47.34	54.42	-0.17	12.38	802.87	845.34	493.34	632.18	685.31	
3	51.55	44.52	50.58	0.87	9.47	754.66	822.44	511.50	554.69	644.05	
4	45.92	43.79	43.79	5.13	3.55	710.36	770.72	506.40	498.04	565.90	
5	42.51	42.54	32.15	10.36	3.81	709.86	709.59	522.08	479.01	478.61	
6	33.93	48.25	14.29	19.64	12.68	706.46	569.09	467.12	523.40	314.21	
7	22.74	55.16	8.00	14.74	25.85	788.08	481.39	435.52	625.72	182.52	
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	SOLIDITY	COEFFICIENT	LOSS	TOT PRESS LOSS	ABD EFFICIENCY	POLY FUMEN RISE/ REAS T RISE	STAT PRESS RISE
1	1360.78	0.490	1.331	0.821	1.3340	0.255	0.255	0.046	0.7828	0.8024	0.434
2	1330.79	0.528	1.357	0.858	1.3690	0.211	0.211	0.045	0.8061	0.8242	0.450
3	1291.02	0.618	1.276	0.769	1.5080	0.027	0.027	0.006	0.9720	0.9742	0.514
4	1259.86	0.776	1.272	0.616	1.6840	0.129	0.129	0.025	0.8449	0.8552	0.573
5	1254.55	0.868	1.248	0.584	1.9060	0.078	0.078	0.015	0.8985	0.9047	0.633
6	788.56	0.732	1.040	0.627	2.2170	0.124	0.124	0.023	0.8674	0.8751	0.699
7	743.62	0.642	0.943	0.664	2.3390	0.143	0.143	0.028	0.8684	0.8761	0.719
RADIAL POSITION	PERCENT IMMERGION	TRAV TOT PRESS RATIO	EXIT REL MACH NO	FIXED TOI PRESS RATIO	FIXED TOT TEMP RATIO	LOSS	EFFICIENCY	PERFORM PARAM	ABD EFFICIENCY	POLY FUMEN RISE/ REAS T RISE	STAT PRESS RISE
1	90.0000	2.015	1.303	2.006	1.281	0.255	0.7828	0.046	0.7828	0.8024	0.434
2	10.0000	2.039	1.287	2.031	1.278	0.211	0.8061	0.045	0.8061	0.8242	0.450
3	30.0000	1.893	1.222	1.930	1.213	0.027	0.9720	0.006	0.9720	0.9742	0.514
4	50.0000	1.684	1.168	1.635	1.179	0.129	0.8449	0.025	0.8449	0.8552	0.573
5	70.0000	1.579	1.149	1.576	1.155	0.078	0.8985	0.015	0.8985	0.9047	0.633
6	90.0000	1.522	1.152	1.528	1.149	0.124	0.8674	0.023	0.8674	0.8751	0.699
7	95.0000	1.635	1.171	1.535	1.150	0.143	0.8684	0.028	0.8684	0.8761	0.719
DIFFUSION FACTOR											
1	0.545										
2	0.559										
3	0.601										
4	0.539										
5	0.553										
6	0.681										
7	0.863										
OVERALL PERFORMANCE SUMMARY											
STAGE DATA ROTOR DATA ROTOR DATA											
FIXED INST. FIXED INST. TRAV. INST.											
PERFORMANCE PARAMETERS											
Total Pressure Ratio = 1.6847 1.7224 1.7631											
Adiabatic Efficiency = 0.7859 0.8219 0.8683											
Polytropic Efficiency = 0.8010 0.8350 0.8784											
Percent Design Speed = 100.1 Discharge Valve Setting= 7.0											
Cor. Nozzle Weight Flow= 203.5											
IE Check Flow/Noz.Flow = 0.9980 TE Check Flow/Noz.Flow = 0.8979											
Assumed IE Flow Coeff. = 0.9850 Assumed TE Flow Coeff. = 0.9500											

TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

		STATOR BLADE ROW - NASA TASK IV											
		BLADE ELEMENT PERFORMANCE RESULTS											
		DATE 9/ 1/1970											
		POINT NUMBER 32											
		HEADING NUMBER 32											
		DATE 9/ 1/1970											
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CMBR LN LE ANGLE	INCID ANG MN	INCID ANG LN	INCID ANG SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AA VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL		
1		55.34	39.47	15.87	12.38	810.82	778.77	442.91	640.53	634.48			
2		51.49	39.11	12.38	778.19	778.19	599.04	504.84	504.36	554.36			
3		45.45	39.01	6.44	2.24	757.04	757.04	493.08	493.08	488.89			
4		42.38	39.80	2.24	-1.05	735.87	735.87	562.13	562.13	504.64			
5		39.83	40.86	42.22	3.47	710.94	710.94	492.74	492.74	600.75			
6		45.69	42.22	9.99	9.99	759.95	759.95	456.87	456.87				
7		52.75	42.76										
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMBR LN TE ANGLE	DEV ANGLE	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AA VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL			
1		0.94	11.13	12.07	54.40	579.47	579.47	579.39	9.48				
2		5.72	10.10	15.82	45.77	602.07	602.07	554.02	59.99				
3		2.40	8.87	11.27	43.05	554.76	554.76	517.33	23.20				
4		1.51	8.75	10.06	40.77	518.05	518.05	517.33	11.82				
5		0.64	9.10	9.74	39.19	492.87	492.87	491.79	5.51				
6		0.53	10.58	11.11	45.16	443.20	443.20	441.84	4.07				
7		-2.58	12.56	9.78	55.33	432.41	432.41	430.59	-19.39				
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL	LOSS COEFFICIENT	LOSS PARAM	TOT PRESS	ADB EFFICIENCY	POLY EFFICIENCY	POLY MOMEN T RISE	STAT PRESS RISE COEFF		
1		0.631	1.308	1.3230	0.149	0.049	0.6754	0.6754	0.6754	0.286			
2		0.665	1.187	1.5440	0.147	0.047	0.6921	0.6921	0.6921	0.301			
3		0.698	1.015	1.6310	0.080	0.027	0.7882	0.7882	0.7882	0.487			
4		0.651	0.947	1.7420	0.034	0.010	0.8584	0.8584	0.8584	0.382			
5		0.637	0.875	1.8800	0.060	0.016	0.8724	0.8724	0.8724	0.451			
6		0.614	0.897	2.0510	0.098	0.024	0.8847	0.8847	0.8847	0.478			
7		0.654	0.942	2.0980	0.107	0.025	0.8882	0.8882	0.8882	0.536			
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	FIXED TOI PRESS RATIO	FIXED TOI TEMP RATIO	LOSS COEFFICIENT	LOSS PARAM	TOT PRESS	ADB EFFICIENCY	POLY EFFICIENCY	POLY MOMEN T RISE	STAT PRESS RISE COEFF	
1		0.469	0.968	0.962	1.000	0.149	0.049	0.6754	0.6754	0.6754	0.286		
2		0.489	0.983	0.962	1.000	0.147	0.047	0.6921	0.6921	0.6921	0.301		
3		0.461	0.993	0.978	1.000	0.080	0.027	0.7882	0.7882	0.7882	0.487		
4		0.436	0.996	0.992	1.000	0.034	0.010	0.8584	0.8584	0.8584	0.454		
5		0.418	0.998	0.980	1.000	0.060	0.016	0.8724	0.8724	0.8724	0.454		
6		0.376	0.992	0.978	1.000	0.098	0.024	0.8847	0.8847	0.8847	0.513		
7		0.366	0.978	0.978	1.000	0.107	0.025	0.8882	0.8882	0.8882	0.456		
RADIAL POSITION	DIFFUSION FACTOR	CM1	OVERALL PERFORMANCE SUMMARY										
1		0.286		STAGE DATA STATOR DATA STATOR DATA									
2		0.301		FIXED INST. FIXED INST. TRAV. INST.									
3		0.382		Total Pressure Ratio = 1.6847 0.9781 0.9711									
4		0.451		Polytropic Efficiency = 0.8010 0.9593 0.9343									
5		0.478		Percent Design Speed = 100.1 Discharge Valve Setting=7.0									
6		0.536		Cor. Nozzle Weight Flow= 203.5									
7		0.456		LE Check Flow/Noz.Flow = 0.9026 TE Check Flow/Noz.Flow = 0.9082									
				Assumed LE Flow Coeff. = 0.9550 Assumed TE Flow Coeff. = 0.9350									

TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

		ROTOR BLADE ROW - NASA TASK IV											
		BLADE ELEMENT PERFORMANCE RESULTS						ROTOR DATA					
		POINT NUMBER		READING NUMBER		DATE		STAGE DATA		ROTOR DATA		ROTOR DATA	
		23	279	279	279	8/25/1970	FIXED INST.	FIXED INST.	TRAV. INST.	TRAV. INST.	TRAV. INST.	TRAV. INST.	
RADIAL POSITION		CMBR LN	INCID ANG	INCID ANG	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	INLET AX TANG VEL	INLET ABS TANG VEL	INLET REL TANG VEL	
1		60.60	6.32	31.82	584.121	1488.52	579.73	-2.29	1360.38	579.73	-2.29	1360.38	
2		56.61	5.67	21.64	614.121	1464.71	612.00	-1.54	1329.71	612.00	-1.54	1329.71	
3		56.01	5.39	4.85	802.46	1420.29	802.00	26.49	1172.16	802.00	26.49	1172.16	
4		52.56	5.33	-13.17	1026.37	1454.31	1022.76	36.76	1030.99	1022.76	36.76	1030.99	
5		49.71	4.77	-14.25	1023.26	1373.46	1008.91	18.37	916.33	1008.91	18.37	916.33	
6		47.11	52.75	-80.41	822.54	1127.90	789.35	15.11	771.89	789.35	15.11	771.89	
7		46.13	50.40	-81.30	745.15	1040.52	708.11	15.92	726.43	708.11	15.92	726.43	
RADIAL POSITION		CMBR LN	REL DEV ANGLE	REL TUNN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	EXIT AX TANG VEL	EXIT ABS TANG VEL	EXIT REL TANG VEL	
1		54.80	2.71	91.41	723.81	1129.88	606.20	391.79	951.96	606.20	391.79	951.96	
2		54.42	2.85	81.02	713.29	1136.61	613.99	359.67	955.22	613.99	359.67	955.22	
3		50.68	2.14	21.80	727.06	1027.29	620.73	378.20	818.38	620.73	378.20	818.38	
4		49.70	5.91	24.87	709.28	954.66	617.42	348.82	727.59	617.42	348.82	727.59	
5		35.15	10.40	60.30	733.64	847.45	623.14	383.72	572.00	623.14	383.72	572.00	
6		14.29	12.80	47.77	843.97	769.37	676.53	489.96	346.00	676.53	489.96	346.00	
7		8.00	14.93	221.80	831.84	677.56	612.21	547.67	258.98	612.21	547.67	258.98	
RADIAL POSITION		INLET REL MACH NO	AXIAL VEL RATIO	LOSS COEFFICIENT	LOSS PERCENT	TOT PRESS LOSS PARAM	EFFICIENCY	ADB EFFICIENCY	POLY MOMEN RISE/STAT PRESS RISE COEFF	DIFFUSION FACTOR	CH1		
1		1.359	1.046	0.131	1.3340	0.024	0.8281	0.8385	0.249	0.336	0.349		
2		1.352	1.003	0.065	1.3690	0.013	0.9057	0.9117	0.266	0.314	0.367		
3		1.344	0.774	0.037	1.5090	0.007	0.9455	0.9489	0.368	0.359	0.464		
4		1.418	0.604	0.177	1.6840	0.034	0.6789	0.6918	0.465	0.488	0.558		
5		1.342	0.618	0.140	1.9060	0.031	0.7028	0.7140	0.478	0.453	0.550		
6		1.066	0.857	0.200	2.2170	0.040	0.7393	0.7505	0.438	0.415	0.439		
7		0.974	0.865	0.231	2.3390	0.043	0.7455	0.7565	0.435	0.463	0.397		
RADIAL POSITION		EXIT REL MACH NO	FIXED TOY PRESS RATIO	FIXED TOY TEMP RATIO	PERCENT IRRADIATION	PERFORMANCE PARAMETERS	Total Pressure Ratio	Adiabatic Efficiency	Polytropic Efficiency	Percent Design Speed	Cor. Nozzle Weight Flow		
1		0.964	1.179	1.153	5.0000	0.024	1.4038	0.6853	0.6969	100.0	214.2		
2		0.982	1.155	1.156	10.0000	0.013	1.4038	0.6853	0.6969	100.0	214.2		
3		0.890	1.147	1.147	30.0000	0.007	1.4038	0.6853	0.6969	100.0	214.2		
4		0.630	1.117	1.128	50.0000	0.034	1.4038	0.6853	0.6969	100.0	214.2		
5		0.645	1.116	1.115	70.0000	0.031	1.4038	0.6853	0.6969	100.0	214.2		
6		0.681	1.345	1.364	90.0000	0.040	1.4038	0.6853	0.6969	100.0	214.2		
7		0.595	1.345	1.345	95.0000	0.043	1.4038	0.6853	0.6969	100.0	214.2		
OVERALL PERFORMANCE SUMMARY													
STAGE DATA Rotor Data Rotor Data													
Fixed Inst. Fixed Inst. Trav. Inst.													
1.3678 1.4038 1.4632													
0.6853 0.7449 0.8290													
0.6969 0.7568 0.8379													
Discharge Valve Setting= 30.0													
LE Check Flow/Noz.Flow = 0.9862 TE Check Flow/Noz.Flow = 0.9208													
Assumed LE Flow Coeff. = 0.9850 Assumed TE Flow Coeff. = 0.9500													

082670

TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

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		STATOR BLADE ROW - NASA TASK IV											
		BLADE ELEMENT PERFORMANCE RESULTS						POINT NUMBER 23 READING NUMBER 279 DATE 8/25/1970					
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCID ANG MN CHBR LN	INCID ANG SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	INLET ABS TANG VEL	INLET REL TANG VEL	
1		32.71	39.47	-6.76		727.71	812.33	812.33	393.20	393.20	393.20	393.20	
2		29.79	39.11	9.32		726.56	630.52	630.52	360.98	360.98	360.98	360.98	
3		29.43	39.01	9.58		769.49	669.86	669.86	377.84	377.84	377.84	377.84	
4		27.10	39.80	-12.70		759.98	674.90	674.90	345.35	345.35	345.35	345.35	
5		28.93	40.56	-11.93		781.55	679.66	679.66	375.61	375.61	375.61	375.61	
6		33.00	42.52	9.22		877.45	727.52	727.52	472.40	472.40	472.40	472.40	
7		39.04	42.76	3.72		844.28	648.42	648.42	525.81	525.81	525.81	525.81	
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	DEV ANG TE	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	EXIT ABS TANG VEL	EXIT REL TANG VEL	
1		2.21	-11.13	13.34	30.50	620.31	619.84	619.84	23.93	23.93	23.93	23.93	
2		2.75	-10.10	12.85	27.05	683.48	682.66	682.66	32.73	32.73	32.73	32.73	
3		1.82	-8.97	10.69	27.61	700.60	699.96	699.96	22.19	22.19	22.19	22.19	
4		0.20	-8.75	8.98	26.90	675.61	674.85	674.85	2.40	2.40	2.40	2.40	
5		-1.30	-9.10	7.80	30.23	684.61	682.97	682.97	-15.51	-15.51	-15.51	-15.51	
6		1.27	-10.58	11.85	31.72	790.69	788.05	788.05	17.54	17.54	17.54	17.54	
7		0.40	-12.36	12.76	38.63	772.20	769.70	769.70	5.44	5.44	5.44	5.44	
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	DIFFUSION FACTOR	CH1							
1		0.621	1.012	1.012	0.314	0.034							
2		0.629	1.083	1.083	0.205	0.051							
3		0.670	1.045	1.045	0.231	0.072							
4		0.668	1.000	1.000	0.240	0.064							
5		0.691	1.005	1.005	0.256	0.046							
6		0.780	1.083	1.083	0.223	0.003							
7		0.743	1.187	1.187	0.229	-0.013							
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	FIXED TOT PRESS RATIO	TOT PRESS PARAM LOSS	POLY MOMEN RISE/ RISE	STAT PRESS RISE COEFF						
1		0.530	0.942	1.5230	0.056	0.1338	0.031						
2		0.589	0.983	1.5440	0.1022	0.4535	0.047						
3		0.607	0.999	1.6310	0.017	0.4344	0.065						
4		0.589	0.971	1.7420	0.025	0.3119	0.058						
5		0.601	0.992	1.8800	0.033	0.2068	0.041						
6		0.699	0.942	2.0510	0.025	0.0156	0.002						
7		0.682	0.941	2.0980	0.028	0.0881	-0.011						
RADIAL POSITION	PERCENT LIMBULLION	TRAV TOT PRESS RATIO	YRAT TOT TEMP RATIO	FIXED TOT TEMP RATIO	LOSS COEFFICIENT	LOSS	FIXED TOT TEMP RATIO						
1	5.0000	0.942	0.981	0.980	1.000	1.000	1.000						
2	10.0000	0.983	0.999	0.984	1.000	1.000	1.000						
3	30.0000	0.971	0.995	0.985	1.000	1.000	1.000						
4	50.0000	0.957	0.992	0.977	1.000	1.000	1.000						
5	70.0000	0.942	0.982	0.966	1.000	1.000	1.000						
6	90.0000	0.929	0.987	0.964	1.000	1.000	1.000						
7	95.0000	0.941	0.978	0.963	1.000	1.000	1.000						

OVERALL PERFORMANCE SUMMARY

STAGE DATA STATOR DATA STATOR DATA -  
 FIXED INST. FIXED INST. TRAV. INST.  
 1.3678 0.9744 0.9529  
 0.6989 0.9235 0.4365

PERFORMANCE PARAMETERS  
 Total Pressure Ratio = 100.0  
 Polytropic Efficiency = 214.2  
 Percent Design Speed = 30.0  
 Cor. Nozzle Weight Flow = 214.2

LE Check Flow/Noz.Flow = 0.9256  
 Assumed LE Flow Coeff. = 0.9550

TE Check Flow/Noz.Flow = 0.8877  
 Assumed TE Flow Coeff. = 0.9350

Discharge Valve Setting = 30.0

TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

082670

		ROTOR BLADE MON • NASA TASK IV																
		BLADE ELEMENT PERFORMANCE RESULTS						8/25/1970										
		POINT NUMBER 24		READING NUMBER 280		DATE												
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCLD ANG MN CHBR LN	INCLD ANG SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	INLET AX TANG VEL	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	EXIT AX TANG VEL	
1	69.71	0.15	60.50	9.11	6.41	504.99	1446.71	201.12	1.33	1355.71	1.33	394.85	783.47	394.85	669.24	673.46	673.46	
2	68.26	0.29	59.61	8.65	5.62	530.11	1426.62	228.25	2.66	1324.48	2.66	460.89	830.55	460.89	623.93	689.94	689.94	
3	60.49	0.09	56.01	4.48	0.02	677.29	1374.99	677.27	1.10	1196.61	1.10	841.38	779.97	841.38	531.90	663.75	663.75	
4	50.17	1.57	52.56	2.39	81.23	872.95	1359.96	870.11	23.84	1043.08	23.84	715.09	722.87	715.09	492.91	583.06	583.06	
5	45.26	1.22	49.71	4.48	11.24	915.35	1286.75	906.41	19.25	914.73	19.25	723.47	782.87	723.47	477.95	477.104	477.104	
6	46.83	0.61	47.11	6.128	71.94	761.03	1088.76	730.40	17.75	778.64	17.75	716.04	582.74	716.04	521.28	314.022	314.022	
7	47.71	1.24	46.13	1.158	6.132	696.34	1006.86	661.74	14.38	727.139	14.38	499.50	499.50	499.50	612.94	193.08	193.08	
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	REL DEV ANG TE	REL TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	EXIT AX TANG VEL	TOT PRESS LOSS PARAM	EFFICIENCY	ADB EFFICIENCY	POLY MOMEN RISE/RISE COEFF	STAT PRESS RISE COEFF	DIFFUSION FACTOR	CH1
1	59.62	59.46	54.80	4.82	10.10	777.83	783.47	394.85	669.24	673.46	673.46	0.046	0.7716	0.7918	0.418	0.432	0.632	0.527
2	56.26	53.55	54.42	1.84	12.00	776.58	830.55	460.89	623.93	689.94	689.94	0.048	0.7840	0.8035	0.432	0.505	0.576	0.538
3	52.09	45.82	50.68	4.41	8.40	741.81	841.38	841.38	531.90	663.75	663.75	0.008	0.9588	0.9623	0.505	0.592	0.516	0.592
4	48.39	43.58	43.79	4.60	1.78	715.09	779.97	715.09	492.91	583.06	583.06	0.027	0.8300	0.8410	0.592	0.661	0.529	0.661
5	41.39	41.45	32.15	9.24	3.87	723.47	782.87	723.47	477.95	477.104	477.104	0.015	0.8986	0.9048	0.640	0.680	0.536	0.687
6	33.01	47.17	14.29	18.72	13.82	716.04	582.74	483.28	521.28	314.022	314.022	0.022	0.8774	0.8845	0.680	0.660	0.574	0.660
7	23.20	53.69	8.00	15.20	24.50	766.76	499.50	450.44	612.94	193.08	193.08	0.020	0.9086	0.9141	0.752	0.689	0.637	0.689
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	LOSS COEFFICIENT	SOLIDITY	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	PERCENT REACTION	STAGE DATA ROTOR DATA	FIXED INST. TRAV. INST.	ROTOR DATA	FIXED INST. TRAV. INST.			
1	1357.04	0.458	1.312	0.788	0.244	1.3340	1.944	1.271	1.991	1.944	5.0000	1.6581	1.6930	1.6581	1.7299			
2	1327.13	0.483	1.299	0.872	0.235	1.3690	1.909	1.272	1.975	1.889	10.0000	0.7829	0.8185	0.7829	0.8655			
3	1197.72	0.631	1.281	0.768	0.039	1.5080	1.810	1.176	1.852	1.810	30.0000	0.7978	0.8315	0.7978	0.8755			
4	1066.92	0.829	1.252	0.595	0.138	1.6840	1.613	1.151	1.665	1.613	50.0000							
5	933.98	0.883	1.246	0.597	0.077	1.9050	1.561	1.148	1.576	1.561	70.0000							
6	786.39	0.715	1.023	0.662	0.115	2.2170	1.523	1.146	1.513	1.523	90.0000							
7	741.77	0.649	0.938	0.681	0.099	2.3390	1.554	1.148	1.594	1.554	95.0000							
OVERALL PERFORMANCE SUMMARY																		
												STAGE DATA ROTOR DATA ROTOR DATA						
												FIXED INST. TRAV. INST. TRAV. INST.						
												Total Pressure Ratio = 1.6581						
												Adiabatic Efficiency = 0.7829						
												Polytropic Efficiency = 0.7978						
												Percent Design Speed = 99.9						
												Cor. Nozzle Weight Flow = 201.7						
												TE Check Flow/Noz. Flow = 1.0083						
												Assumed IE Flow Coeff. = 0.9500						
												Assumed TE Flow Coeff. = 0.9500						

TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

082670

STATOR BLADE ROW - NASA TASK IV																
BLADE ELEMENT PERFORMANCE RESULTS																
POINT NUMBER 24 READING NUMBER 280 DATE 8/25/1970																
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCID ANG MN CHBR LN	INCID ANG SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS YANG VEL	INLET REL YANG VEL	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS YANG VEL	EXIT REL YANG VEL	
1		59.33	39.47	19.86		780.89	398.32		671.65							
2		53.03	39.11	13.92		783.81	471.40		626.20							
3		43.91	39.01	4.90		766.47	551.97		531.39							
4		41.11	39.80	1.31		743.47	559.16		488.01							
5		38.70	40.86	-2.16		752.06	583.92		467.85							
6		44.57	42.22	2.35		722.17	510.22		502.60							
7		51.22	42.76	8.46		760.42	472.75		588.48							
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN LE ANGLE	DEV ANG TE	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS YANG VEL	EXIT REL YANG VEL	DIFFUSION FACTOR					
1		-0.27	-11.13	10.86		554.11	554.09		-2.66							
2		2.17	-10.10	12.27		584.05	583.60		22.07							
3		1.43	-8.87	10.30		531.15	550.75		13.74							
4		1.36	-8.75	10.11		530.12	529.38		12.56							
5		0.36	-9.10	9.46		517.83	516.51		3.22							
6		0.74	-10.58	11.32		478.03	476.51		6.17							
7		*3.50	-12.16	9.06		467.78	465.51		=26.85							
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO												
1		0.633		1.391												
2		0.644		1.238												
3		0.650		0.998												
4		0.638		0.947												
5		0.654		0.885												
6		0.626		0.934												
7		0.657		0.985												
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	SOLIDITY COEFFICIENT	LOSS TOY PRESS LOSS PARAM	EFFICIENCY	ADB EFFICIENCY	POLY MOMEN RISE/ RISE COEFF	STAY PRESS RISE COEFF							
1		0.449		1.5230	0.146	0.048	0.6187	0.271								
2		0.475		1.5440	0.151	0.049	0.7140	0.268								
3		0.458		1.6310	0.101	0.031	0.7796	0.350								
4		0.447		1.7420	0.032	0.009	0.8635	0.398								
5		0.441		1.8800	0.042	0.011	0.8639	0.427								
6		0.407		2.0510	0.096	0.021	0.9029	0.479								
7		0.397		2.0980	0.111	0.026	0.7209	0.414								
RADIAL POSITION	PERCENT UNDERFLOW	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO											
1	5.0000	0.951	0.963	0.965	1.000											
2	10.0000	0.965	0.987	0.983	1.000											
3	30.0000	0.969	0.999	0.975	1.000											
4	50.0000	0.981	0.999	0.992	1.000											
5	70.0000	0.979	0.999	0.989	1.000											
6	90.0000	0.995	0.993	0.980	1.000											
7	95.0000	0.990	0.983	0.971	1.000											
OVERALL PERFORMANCE SUMMARY																
STAGE DATA STATOR DATA STATOR DATA -																
FIXED INST. FIXED INST. TRAV. INST.																
1.6581 0.9789 0.9716																
0.7978 0.9595 0.8681																
Discharge Valve Setting=7.0																
IE Check Flow/Noz.Flow = 0.9079 TE Check Flow/Noz.Flow = 0.9194																
Assumed IE Flow Coeff. = 0.9550 Assumed TE Flow Coeff. = 0.9550																

TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

RADIATION		ROTOR BLADE ROW - NASA TASK IV												8/25/1970	
POINT NUMBER		BLADE ELEMENT PERFORMANCE RESULTS												PATB	
25		READING NUMBER 281												281	
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	LE ANGLE	CMR LN	INCID ANG	INCIP ANG	SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	TANG VEL	INLET ABS TANG VEL	INLET REL TANG VEL	ROTOR SPD AT INLET	PERCENT LOSS
1	67.72	1.30	60.60	7.12	3.44	4.42	55.52	145.28	551.12	551.12	12.49	13.51	13.51	1357.63	0.508
2	66.08	0.81	59.61	6.47	3.44	4.42	57.23	144.19	585.11	585.11	8.27	13.94	13.94	1327.71	0.540
3	57.19	2.83	56.01	1.18	-3.28	7.49	74.61	138.61	748.61	748.61	37.03	11.91	11.91	1198.24	0.705
4	50.34	2.65	52.56	2.22	-8.06	8.55	72.35	133.95	852.35	852.35	35.41	10.27	10.27	1067.39	0.811
5	43.90	1.37	49.71	5.18	-12.60	9.57	67.07	131.82	944.06	944.06	25.84	9.08	9.08	934.38	0.926
6	44.73	1.54	47.11	2.38	-10.04	8.06	66.02	111.75	773.36	773.36	20.73	7.66	7.66	786.73	0.762
7	46.19	2.11	46.13	0.06	-7.84	7.23	89.10	101.83	687.65	687.65	25.34	7.16	7.16	742.09	0.677
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	RE ANGLE	CMR LN	REL DEV ANGLE	REL TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	TANG VEL	EXIT ABS TANG VEL	EXIT REL TANG VEL	ROTOR SPD AT EXIT	PERCENT LOSS	
1	58.12	46.91	54.80	3.32	9.60	735.97	951.24	501.86	501.86	530.44	806.84	806.84	1343.28	0.610	
2	57.08	42.96	54.42	2.66	9.01	726.72	977.90	530.96	530.96	494.35	820.09	820.09	1314.44	0.612	
3	52.05	40.47	50.68	1.37	5.14	736.41	840.27	560.11	560.11	477.88	718.29	718.29	1196.17	0.628	
4	49.56	38.72	43.79	5.77	0.77	698.63	840.27	544.97	544.97	436.97	639.47	639.47	1076.44	0.602	
5	42.00	38.49	32.15	9.85	1.90	721.40	759.63	563.44	563.44	448.06	507.34	507.34	955.40	0.628	
6	31.02	42.48	14.29	16.73	33.71	753.38	650.25	550.90	550.90	504.45	331.22	331.22	835.47	0.657	
7	24.15	48.38	8.00	16.15	22.03	779.10	572.04	512.25	512.25	576.65	239.72	239.72	806.37	0.678	
RADIAL POSITION	INLET REL MACH NO	EXIT ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	SOLIDITY COEFFICIENT	LOSS	TOT PRESS LOSS	EFFICIENCY	ADD EFFICIENCY	POLY MOMEN MEAS	RISE	STAT PRESS RISE COEFF	ROTOR DATA	ROTOR DATA	
1	0.508	0.508	1.330	0.911	1.3340	0.142	0.028	0.8456	0.8581	0.8581	0.382	0.382	1.5683	1.5917	
2	0.540	0.540	0.907	0.907	1.3690	0.139	0.028	0.8517	0.8640	0.8640	0.395	0.395	0.7891	0.8168	
3	0.705	0.705	0.748	0.748	1.5080	0.004	0.001	0.9949	0.9953	0.9953	0.490	0.490	0.8030	0.8285	
4	0.811	0.811	0.639	0.639	1.6840	0.155	0.030	0.7923	0.8040	0.8040	0.538	0.538	1.5683	1.5917	
5	0.926	0.926	0.597	0.597	1.9060	0.123	0.024	0.8222	0.8317	0.8317	0.586	0.586	0.7891	0.8168	
6	0.762	0.762	0.712	0.712	2.2170	0.141	0.027	0.8354	0.8441	0.8441	0.613	0.613	0.8030	0.8285	
7	0.677	0.677	0.952	0.952	2.3390	0.124	0.024	0.8737	0.8805	0.8805	0.667	0.667	100.0	Discharge Valve Setting= 11.0	
RADIAL POSITION	EXIT ABS MACH NO	EXIT ABS MACH NO	EXIT ABS MACH NO	FIXED TOT PRESS RATIO	TEMP RATIO	FIXED TOT TEMP RATIO	TOT PRESS LOSS	EFFICIENCY	ADD EFFICIENCY	POLY MOMEN MEAS	RISE	STAT PRESS RISE COEFF	ROTOR DATA	ROTOR DATA	
1	0.610	0.610	0.788	1.828	1.222	1.222	0.028	0.8456	0.8581	0.8581	0.382	0.382	1.5683	1.5917	
2	0.612	0.612	0.824	1.850	1.226	1.226	0.028	0.8517	0.8640	0.8640	0.395	0.395	0.7891	0.8168	
3	0.628	0.628	0.777	1.798	1.184	1.184	0.004	0.9949	0.9953	0.9953	0.490	0.490	0.8030	0.8285	
4	0.602	0.602	0.723	1.512	1.158	1.158	0.030	0.7923	0.8040	0.8040	0.538	0.538	1.5683	1.5917	
5	0.628	0.628	0.661	1.472	1.142	1.142	0.024	0.8222	0.8317	0.8317	0.586	0.586	0.7891	0.8168	
6	0.657	0.657	0.567	1.463	1.136	1.136	0.027	0.8354	0.8441	0.8441	0.613	0.613	0.8030	0.8285	
7	0.678	0.678	0.498	1.482	1.136	1.136	0.024	0.8737	0.8805	0.8805	0.667	0.667	100.0	Discharge Valve Setting= 11.0	

OVERALL PERFORMANCE SUMMARY  
 STAGE DATA ROTOR DATA ROTOR DATA  
 FIXED INST. FIXED INST. TRAV. INST.  
 PERFORMANCE PARAMETERS  
 Total Pressure Ratio = 1.5683 1.5917 1.6389  
 Adiabatic Efficiency = 0.7891 0.8168 0.8741  
 Polytropic Efficiency = 0.8030 0.8284 0.8825  
 Percent Design Speed = 100.0 Discharge Valve Setting= 11.0  
 Cor. Nozzle Weight Flow= 212.1  
 IE Check Flow/Noz.Flow = 0.9762 TE Check Flow/Noz.Flow = 0.9006  
 Assumed IE Flow Coeff. = 0.9850 Assumed TE Flow Coeff. = 0.9500

082670 STATOR BLADE ROW = NASA TASK IV

POINT NUMBER		25		BLADE ELEMENT PERFORMANCE RESULTS		281		8/25/1970				
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	ABS INLET FLOW ANG	LE ANGLE	HN ANGLE	INCID ANG	SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS YANG VEL	INLET REL TANG VEL
1	46.75	42.37	39.47	7.28	3.26	739.22	736.21	506.54	543.89	600.22	538.38	496.15
2	42.37	38.50	35.01	50.51	53.54	767.28	733.02	589.91	609.37	432.62	477.42	436.59
3	36.26	35.74	40.86	55.12	52.44	754.96	767.52	584.17	584.17	486.37	486.37	486.37
4	35.74	42.22	42.22	3.01	3.01	779.76		539.02	539.02	553.64	553.64	553.64
5	39.78	45.77	42.76									
6	45.77											
7												

RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	DEV ANG T6	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS YANG VEL	EXIT REL TANG VEL
1	2.41	11.13	13.54	44.34	551.69	551.20	551.20	23.17	23.17
2	4.13	10.10	14.23	38.24	597.70	596.11	596.11	43.08	43.08
3	2.10	-8.87	10.97	36.40	587.52	586.88	586.88	21.54	21.54
4	-1.28	-8.75	7.47	37.54	552.80	552.05	552.05	-12.35	-12.35
5	-0.83	-9.10	8.27	36.58	568.24	568.96	568.96	-8.22	-8.22
6	0.15	-10.58	10.73	39.63	569.11	567.36	567.36	1.51	1.51
7	-2.68	-12.36	9.68	48.44	546.146	544.10	544.10	-25.45	-25.45

RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	AXIAL VEL RATIO	SOLIDITY COEFFICIENT	LOSS COEFFICIENT	TOT PRESS LOSS PARAM	ADB EFFICIENCY	POLY MOMEN RISE/ MEAS T RISE	STAT PRESS RISE COEFF
1	0.613	0.456	1.5230	0.141	0.946	0.6153	0.243	0.243	0.243
2	0.621	0.496	1.5440	0.093	0.930	0.8210	0.264	0.264	0.264
3	0.633	0.496	1.6310	0.050	0.915	0.7762	0.294	0.294	0.294
4	0.660	0.470	1.7420	0.026	0.908	0.8394	0.337	0.337	0.337
5	0.671	0.459	1.8800	0.029	0.908	0.8599	0.347	0.347	0.347
6	0.671	0.459	2.0510	0.071	0.917	0.8154	0.357	0.357	0.357
7	0.679	0.469	2.0980	0.098	0.923	0.6930	0.319	0.319	0.319

RADIAL POSITION	PERCENT INTERACTION	TRAV TOT PRESS RATIO	FIXED TOT PRESS RATIO	TEMP RATIO	FIXED TOT TEMP RATIO
1	5.0000	0.973	0.968	1.000	1.000
2	10.0000	0.984	0.979	1.000	1.000
3	30.0000	0.973	0.987	1.000	1.000
4	50.0000	0.981	0.994	1.000	1.000
5	70.0000	0.982	0.993	1.000	1.000
6	90.0000	0.975	0.981	1.000	1.000
7	95.0000	0.952	0.973	1.000	1.000

STAGE DATA	STATOR DATA	STATOR DATA
FIXED INST.	FIXED INST.	TRAV. INST.
1.5683	0.9853	0.9757
0.8020	0.9681	0.8942
Discharge Valve Setting= 11.0		

PERFORMANCE PARAMETERS	PERCENT DESIGN SPEED	COR. NOZZLE WEIGHT FLOW
Total Pressure Ratio =	100.0	212.1
Polytropic Efficiency =		

OVERALL PERFORMANCE SUMMARY	IE Check Flow/Noz.Flow	TE Check Flow/Noz.Flow	Assumed IE Flow Coeff.
Overall Performance Summary	0.9053	0.8762	0.9350
Assumed IE Flow Coeff.	0.9550		



090270

TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

		ROTOR BLADE ROW - NASA TASK IV											
		BLADE ELEMENT PERFORMANCE RESULTS											
		POINT NUMBER 29 READING NUMBER 353 DATE 9/ 1/1970											
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CMBR LN LE ANGLE	INCID ANG	HN CMBR LN	INCID ANG	SUCT SURF	INCID ANG	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL
1	66.75	0.67	61.5	3.45	58.565	1474.12	6.75	1352.81	581.12	1474.12	581.12	1.43	1352.81
2	65.34	0.13	59.61	2.70	611.92	1462.86	1.43	1328.18	609.77	1462.86	609.77	32.71	1328.18
3	58.68	2.35	56.01	-0.33	707.54	1413.31	-4.79	1167.24	796.89	1413.31	796.89	41.70	1167.24
4	48.42	2.36	52.56	-12.98	1015.95	1444.15	-12.98	1027.21	1015.17	1444.15	1015.17	22.35	1027.21
5	42.14	1.57	49.71	-14.36	1023.71	1371.75	-14.36	913.56	1009.28	1371.75	1009.28	9.37	913.56
6	44.64	0.68	47.11	-2.47	821.54	1311.76	-2.47	778.49	788.47	1311.76	788.47	9.84	778.49
7	45.30	0.78	46.13	-0.83	763.39	1058.50	-0.83	733.31	725.56	1058.50	725.56		733.31
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMBR LN TE ANGLE	REL DEV ANGLE	REL TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL
1	56.45	31.96	54.60	3.65	6.30	705.70	1142.57	597.19	372.58	1142.57	597.19	353.19	963.13
2	57.57	29.99	54.42	3.15	7.77	708.25	1142.14	611.92	353.19	1142.14	611.92	353.19	816.52
3	52.66	31.48	50.88	1.98	3.01	730.49	1027.88	622.83	381.35	1027.88	622.83	341.28	736.69
4	50.02	28.92	43.79	6.23	-4.59	705.93	961.55	617.79	341.28	961.55	617.79	376.75	580.01
5	43.17	31.35	32.15	14.02	16.84	725.90	849.86	618.35	478.64	849.86	618.35	478.64	358.22
6	27.79	35.16	14.29	13.50	16.84	840.04	977.74	679.64	478.64	977.74	679.64	540.60	266.92
7	23.41	41.24	8.00	13.41	21.90	830.60	684.15	645.58	540.60	684.15	645.58		266.92
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	AXIAL VEL RATIO	SOLIDITY	COEFFICIENT	LOSS	VOY PRESS LOSS PARAM	EFFICIENCY	ADD EFFICIENCY	POLY MOMEN RISE/ MEAS Y RISE	STAT PRESS RISE COEFF		
1	1359.56	0.537	1.028	1.3340	0.117	0.023	0.8327	0.8428	0.8327	0.8428	0.258		
2	1329.61	0.564	1.348	1.5690	0.043	0.808	0.9371	0.9411	0.9371	0.9411	0.272		
3	1199.95	0.754	1.356	1.5080	0.036	0.807	0.9472	0.9506	0.9472	0.9506	0.371		
4	1068.91	0.987	1.403	1.5840	0.189	0.836	0.6651	0.6785	0.6651	0.6785	0.466		
5	935.72	1.000	1.340	1.5060	0.176	0.834	0.6786	0.6906	0.6786	0.6906	0.460		
6	787.85	0.777	1.070	2.2470	0.203	0.640	0.7358	0.7472	0.7358	0.7472	0.432		
7	743.15	0.746	0.993	2.3390	0.262	0.851	0.6899	0.7024	0.6899	0.7024	0.436		
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	TRAV TOT PRESS RATIO	FIXED TOT PRESS RATIO	TEMP RATIO	LOSS COEFFICIENT	VOY PRESS LOSS PARAM	EFFICIENCY	ADD EFFICIENCY	POLY MOMEN RISE/ MEAS Y RISE	STAT PRESS RISE COEFF		
1	1345.20	0.606	1.981	1.3340	1.161	0.117	0.023	0.8327	0.8428	0.8428	0.258		
2	1315.32	0.613	1.988	1.5690	1.152	0.043	0.808	0.9371	0.9411	0.9411	0.272		
3	1197.87	0.632	1.889	1.5080	1.149	0.036	0.807	0.9472	0.9506	0.9506	0.371		
4	1077.97	0.817	1.841	1.5840	1.1589	0.189	0.836	0.6651	0.6785	0.6785	0.466		
5	956.76	0.938	1.746	1.5060	1.130	0.176	0.834	0.6786	0.6906	0.6906	0.460		
6	836.86	0.743	1.688	2.2470	1.127	0.203	0.640	0.7358	0.7472	0.7472	0.432		
7	807.52	0.730	1.602	2.3390	1.126	0.262	0.851	0.6899	0.7024	0.7024	0.436		
RADIAL POSITION	PERCENT IMMERSION	TRAV TOT PRESS RATIO	FIXED TOT PRESS RATIO	TEMP RATIO	PERFORMANCE PARAMETERS	STAGE DATA	ROTOR DATA						
1	5.0000	1.588	1.159	1.152	Total Pressure Ratio =	1.3668	1.4023						
2	10.0000	1.592	1.149	1.152	Adiabatic Efficiency =	0.6794	0.7379						
3	30.0000	1.535	1.157	1.149	Polytropic Efficiency =	0.6932	0.7501						
4	50.0000	1.404	1.113	1.118	Cor. Nozzle Weight Flow =	100.1	Discharge Valve Setting= 30.0						
5	70.0000	1.337	1.115	1.118	Cor. Nozzle Weight Flow =	214.7							
6	90.0000	1.411	1.133	1.166									
7	95.0000	1.392	1.143	1.158									

OVERALL PERFORMANCE SUMMARY

STAGE DATA ROTOR DATA ROTOR DATA  
 FIXED INST. FIXED INST. TRAV. INST.  
 1.3668 1.4023 1.4621  
 0.6794 0.7379 0.8451  
 0.6932 0.7501 0.8532  
 Discharge Valve Setting= 30.0  
 100.1  
 214.7

IE Check Flow/Noz.Flow = 0.9789 TE Check Flow/Noz.Flow = 0.9174  
 Assumed LE Flow Coeff. = 0.9850 Assumed TE Flow Coeff. = 0.9500

TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

		STATOR BLADE ROW - NASA TASK IV									
		BLADE ELEMENT PERFORMANCE RESULTS					POINT NUMBER 29				
		READING NUMBER 353					DATE 9/1/1970				
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCD ANG MCH LN	INCD ANG SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS YANG VEL	INLET REL YANG VEL	
1	31.79	39.47	-7.68	709.71	603.20	373.92	373.92	603.20	373.92	373.92	
2	29.43	39.11	-9.68	721.48	628.37	354.47	354.47	628.37	354.47	354.47	
3	29.54	39.01	-9.47	773.09	672.21	380.98	380.98	672.21	380.98	380.98	
4	26.58	39.80	-13.22	757.02	675.34	337.89	337.89	675.34	337.89	337.89	
5	28.69	40.86	-12.17	773.16	673.88	368.78	368.78	673.88	368.78	368.78	
6	32.26	42.22	-9.96	874.78	731.17	461.49	461.49	731.17	461.49	461.49	
7	38.47	42.76	-4.29	843.97	653.28	519.02	519.02	653.28	519.02	519.02	
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	DEV ANG TE	YURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS YANG VEL	EXIT REL YANG VEL	
1	3.40	11.13	14.53	28.40	625.85	624.74	624.74	625.85	624.74	624.74	
2	0.06	-10.10	10.16	29.37	685.77	685.73	685.73	685.77	685.73	685.73	
3	1.44	-8.87	10.31	28.11	703.43	702.91	702.91	703.43	702.91	702.91	
4	-0.21	-6.75	8.54	26.79	674.85	674.10	674.10	674.85	674.10	674.10	
5	-1.16	-9.10	7.94	29.85	686.68	687.06	687.06	686.68	687.06	687.06	
6	1.25	-10.58	11.83	31.01	793.39	790.75	790.75	793.39	790.75	790.75	
7	0.47	-12.35	12.83	30.00	773.06	770.55	770.55	773.06	770.55	770.55	
RADIAL POSITION	RATOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	SOLIDITY	LOSS COEFFICIENT	POLY MOMEN RISE/ EFFICIENCY	STAT PRESS RISE COEFF	DIFFUSION FACTOR	CHI	
1	0.609	1.836	1.836	1.836	0.178	0.058	0.1330	0.026	0.274	0.028	
2	0.625	1.891	1.891	1.891	0.065	0.021	0.5459	0.047	0.268	0.052	
3	0.672	1.046	1.046	1.046	0.056	0.017	0.4300	0.064	0.234	0.071	
4	0.666	0.998	0.998	0.998	0.088	0.025	0.3193	0.059	0.237	0.065	
5	0.683	1.020	1.020	1.020	0.121	0.032	0.2188	0.039	0.240	0.044	
6	0.778	1.081	1.081	1.081	0.103	0.025	0.0350	0.005	0.214	0.016	
7	0.743	1.160	1.160	1.160	0.117	0.028	0.0308	0.004	0.226	0.014	
RADIAL POSITION	PERCENTAGE ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	TRAV TOT PRESS RATIO	FIXED TOT PRESS RATIO	TEMP RATIO	LOSS COEFFICIENT	POLY MOMEN RISE/ EFFICIENCY	STAT PRESS RISE COEFF	DISCHARGE VALVE SETTING	
1	5.0000	0.953	0.992	1.000	1.000	1.000	0.178	0.1330	0.026	30.0	
2	10.0000	0.968	0.999	0.985	1.000	1.000	0.065	0.5459	0.047	1-3668	
3	30.0000	0.971	0.994	0.977	1.000	1.000	0.056	0.4300	0.064	0.6932	
4	50.0000	0.958	1.000	0.977	1.000	1.000	0.088	0.3193	0.059	Discharge Valve Setting=30.0	
5	70.0000	0.950	0.995	0.967	1.000	1.000	0.121	0.2188	0.039	100.1	
6	90.0000	0.934	0.990	0.965	1.000	1.000	0.103	0.0350	0.005	214.7	
7	95.0000	0.945	0.980	0.963	1.000	1.000	0.117	0.0308	0.004	TE Check Flow/Noz.Flow = 0.9222	
OVERALL PERFORMANCE SUMMARY											
STAGE DATA STATOR DATA STATOR DATA											
FIXED INST. FIXED INST. TRAV. INST.											
Total Pressure Ratio = 1.3668 0.9747 0.9599											
Polytropic Efficiency = 0.6932 0.9241 0.3950											
Percent Design Speed = 100.1											
Cor. Nozzle Weight Flow = 214.7											
IE Check Flow/Noz.Flow = 0.9222											
Assumed IE Flow Coeff. = 0.9550											
Assumed TE Flow Coeff. = 0.9350											

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TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

		ROTOR BLADE ROW - NASA TASK IV											
		BLADE ELEMENT PERFORMANCE RESULTS					POINT NUMBER 30						
		READING NUMBER 354					DATE 9/1/1970						
RADIAL POSITION	REL INLET FLOW AVG	ABS INLET FLOW AVG	CMR LN LE ANGLE	INCID ANG MN	INCID ANG LN	SUCT SURF ANGLE	INLET ABS VELOCITY	INLET REL VELOCITY	EXIT ABS VELOCITY	EXIT REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL
1	67.81	0.81	60.60	7.21	4.51	9.20	561.63	1476.92	953.17	953.17	557.27	-7.90	1365.99
2	65.84	0.32	59.61	6.23	3.20	9.23	599.46	1460.20	981.73	981.73	597.55	-3.32	1331.48
3	57.65	1.92	56.01	1.65	-2.81	9.80	743.60	1389.12	907.75	907.75	743.17	24.94	1173.71
4	49.54	2.42	52.56	-3.02	-8.86	10.03	882.39	1356.27	844.42	844.42	879.07	37.11	1030.64
5	42.47	0.74	49.71	-7.24	-14.03	10.22	1023.22	1375.63	757.94	757.94	1006.98	12.95	921.76
6	45.56	0.45	47.11	-1.55	-9.21	14.26	798.09	116.66	658.51	658.51	765.99	5.97	781.03
7	45.56	0.61	46.13	-0.57	-8.47	25.17	757.94	1059.52	786.95	786.95	720.40	7.70	734.65
RADIAL POSITION	REL EXIT FLOW AVG	ABS EXIT FLOW AVG	CMR LN TE ANGLE	REL DEV ANG	REL TURN ANGLE	REL TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL
1	58.61	46.95	54.80	3.81	9.20	9.20	727.91	953.17	953.17	953.17	495.95	530.96	812.78
2	56.61	42.58	54.42	2.19	9.23	9.23	734.36	981.73	981.73	981.73	539.77	496.02	818.87
3	51.35	40.73	50.68	1.17	9.80	9.80	739.98	907.75	907.75	907.75	560.61	482.78	713.60
4	49.47	38.41	43.79	5.68	0.07	10.03	700.34	844.42	844.42	844.42	548.68	435.05	641.75
5	42.44	38.57	32.15	10.29	0.03	10.22	715.54	757.94	757.94	757.94	598.27	445.18	510.55
6	31.30	41.82	14.29	17.01	14.26	14.26	752.97	658.51	658.51	658.51	556.26	497.73	338.23
7	23.84	47.90	8.00	15.84	25.17	25.17	786.95	586.24	586.24	586.24	526.21	474.17	232.48
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	SOLIDITY RATIO	LOSS COEFFICIENT	TOT PRESS LOSS PARAM	ADH EFFICIENCY	POLY MOMEN RISE/MEAS T RISE	STAY PRESS RISE COEFF	DIFFUSION FACTOR	CHI	
1	1358.99	0.514	1.351	0.890	1.3340	0.146	0.028	0.898	0.8528	0.377	0.490	0.889	
2	1328.17	0.552	1.344	0.904	1.3690	0.102	0.020	0.8886	0.8940	0.397	0.452	0.908	
3	1198.65	0.699	1.305	0.754	1.5080	-0.000	-0.600	1.0005	1.0005	0.485	0.456	0.977	
4	1067.75	0.839	1.289	0.624	1.6840	0.159	0.031	0.7859	0.7981	0.554	0.465	0.626	
5	934.70	1.000	1.347	0.554	1.9060	0.132	0.026	0.6000	0.6105	0.597	0.532	0.661	
6	787.00	0.753	1.053	0.726	2.2370	0.135	0.026	0.8424	0.8507	0.596	0.512	0.589	
7	742.15	0.711	0.990	0.730	2.3390	0.163	0.032	0.8240	0.8331	0.634	0.565	0.594	
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	TEMP RATIO	FIXED TOT PRESS RATIO	TEMP RATIO	LOSS COEFFICIENT	FIXED TOT PRESS RATIO	ADH EFFICIENCY	POLY MOMEN RISE/MEAS T RISE	STAY PRESS RISE COEFF		
1	1343.74	0.604	0.791	1.826	1.224	1.219	0.146	0.898	0.8528	0.377	0.490		
2	1314.89	0.620	0.828	1.866	1.239	1.219	0.102	0.8886	0.8940	0.397	0.452		
3	1196.58	0.631	0.775	1.818	1.194	1.186	-0.000	1.0005	1.0005	0.485	0.456		
4	1074.81	0.602	0.726	1.514	1.150	1.160	0.159	0.7859	0.7981	0.554	0.465		
5	959.73	0.623	0.659	1.468	1.138	1.145	0.132	0.6000	0.6105	0.597	0.532		
6	835.96	0.655	0.573	1.472	1.147	1.137	0.135	0.8424	0.8507	0.596	0.512		
7	805.64	0.685	0.510	1.453	1.155	1.137	0.163	0.8240	0.8331	0.634	0.565		
RADIAL POSITION	PERCENTAGE IMPROVEMENT	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	LOSS COEFFICIENT	ADH EFFICIENCY	POLY MOMEN RISE/MEAS T RISE	STAY PRESS RISE COEFF				
1	5.0000	1.866	1.224	1.826	1.219	0.146	0.898	0.8528	0.377				
2	10.0000	1.866	1.209	1.866	1.219	0.102	0.8886	0.8940	0.397				
3	30.0000	1.765	1.194	1.818	1.186	-0.000	1.0005	1.0005	0.485				
4	50.0000	1.576	1.150	1.514	1.160	0.159	0.7859	0.7981	0.554				
5	70.0000	1.487	1.138	1.468	1.145	0.132	0.6000	0.6105	0.597				
6	90.0000	1.472	1.147	1.467	1.137	0.135	0.8424	0.8507	0.596				
7	95.0000	1.517	1.155	1.453	1.137	0.163	0.8240	0.8331	0.634				

OVERALL PERFORMANCE SUMMARY

STAGE DATA ROTOR DATA ROTOR DATA  
 FIXED INST. FIXED INST. TRAV. INST.  
 1.5716 1.5954 1.492  
 0.7885 0.8165 0.8824  
 0.8016 0.8282 0.9941

Discharge Valve Setting= 11.0  
 Cor. Nozzle Weight Flow= 212.1  
 IE Check Flow/Noz.Flow = 0.9780 TE Check Flow/Noz.Flow = 0.9048  
 Assumed IE Flow Coeff. = 0.9950 Assumed TE Flow Coeff. = 0.9500

TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

STATOR BLADE ROW - NASA TASK IV															
BLADE ELEMENT PERFORMANCE RESULTS															
POINT NUMBER 30      READING NUMBER 354      DATE 97 1/1970															
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	INLET CMR LN	INCLD ANG	INCID SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL
1	46.79	41.99	39.47	7.32	731.12	500.56	532.88	500.56	532.88	500.56	532.88	500.56	532.88	500.56	532.88
2	41.99	38.76	39.11	2.88	744.41	497.82	497.82	497.82	497.82	497.82	497.82	497.82	497.82	497.82	497.82
3	38.76	35.94	39.01	-0.25	770.79	482.32	482.32	482.32	482.32	482.32	482.32	482.32	482.32	482.32	482.32
4	35.94	33.12	39.80	3.86	735.30	594.10	430.73	594.10	430.73	594.10	430.73	594.10	430.73	594.10	430.73
5	33.12	30.30	40.86	-5.03	748.45	603.45	435.77	603.45	435.77	603.45	435.77	603.45	435.77	603.45	435.77
6	30.30	27.48	42.22	-3.10	761.06	590.89	479.89	590.89	479.89	590.89	479.89	590.89	479.89	590.89	479.89
7	27.48	24.65	42.76	2.09	788.96	551.25	551.25	551.25	551.25	551.25	551.25	551.25	551.25	551.25	551.25
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMR LN	DEV	TURN ANGLE	EXIT ABS VELOCITY	EXIT R VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	EXIT ABS VELOCITY	EXIT R VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL
1	5.24	16.37	-11.13	41.55	555.65	50.75	50.75	50.75	50.75	50.75	50.75	50.75	50.75	50.75	50.75
2	3.07	13.17	-10.10	38.92	611.20	32.78	32.78	32.78	32.78	32.78	32.78	32.78	32.78	32.78	32.78
3	0.04	8.91	-8.87	36.72	595.39	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38
4	-1.30	7.45	-8.75	39.24	551.30	-12.48	-12.48	-12.48	-12.48	-12.48	-12.48	-12.48	-12.48	-12.48	-12.48
5	0.48	6.62	-9.10	36.31	565.43	-4.72	-4.72	-4.72	-4.72	-4.72	-4.72	-4.72	-4.72	-4.72	-4.72
6	0.65	11.23	-10.58	38.48	576.75	6.49	6.49	6.49	6.49	6.49	6.49	6.49	6.49	6.49	6.49
7	-2.30	10.06	-12.36	47.13	546.01	-21.84	-21.84	-21.84	-21.84	-21.84	-21.84	-21.84	-21.84	-21.84	-21.84
RADIAL POSITION	POTR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	LOSS COEFFICIENT	LOSS TOT	POLY EFFICIENCY	POLY MOMEN RISE/ MEAS T RISE	STAY PRESS COEFF	DIFFUSION FACTOR	CHI	DIFFUSION FACTOR	CHI	DIFFUSION FACTOR	CHI
1	0.607	0.460	0.460	1.230	0.148	0.048	0.6613	0.6613	0.251	0.456	0.268	0.456	0.268	0.456	0.268
2	0.629	0.509	0.509	1.540	0.076	0.025	0.8516	0.8516	0.260	0.381	0.278	0.381	0.278	0.381	0.278
3	0.660	0.560	0.560	1.104	0.091	0.027	0.7861	0.7861	0.292	0.419	0.314	0.419	0.314	0.419	0.314
4	0.635	0.527	0.527	0.927	0.060	0.018	0.7861	0.7861	0.292	0.422	0.358	0.422	0.358	0.422	0.358
5	0.654	0.554	0.554	0.937	0.029	0.008	0.8261	0.8261	0.336	0.398	0.370	0.398	0.370	0.398	0.370
6	0.670	0.570	0.570	1.800	0.030	0.008	0.8670	0.8670	0.346	0.397	0.361	0.397	0.361	0.397	0.361
7	0.687	0.607	0.607	2.0510	0.066	0.016	0.8448	0.8448	0.337	0.478	0.340	0.478	0.340	0.478	0.340
RADIAL POSITION	POTR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	SOLIDITY RATIO	LOSS COEFFICIENT	LOSS TOT	POLY EFFICIENCY	POLY MOMEN RISE/ MEAS T RISE	STAY PRESS COEFF	DIFFUSION FACTOR	CHI	DIFFUSION FACTOR	CHI	DIFFUSION FACTOR	CHI
1	0.265	0.1978	0.1978	1.000	0.095	0.023	100.0	100.0	0.995	0.9095	0.8835	0.9095	0.8835	0.9095	0.8835
2	0.265	0.1978	0.1978	1.000	0.095	0.023	100.0	100.0	0.995	0.9095	0.8835	0.9095	0.8835	0.9095	0.8835
3	0.265	0.1978	0.1978	1.000	0.095	0.023	100.0	100.0	0.995	0.9095	0.8835	0.9095	0.8835	0.9095	0.8835
4	0.265	0.1978	0.1978	1.000	0.095	0.023	100.0	100.0	0.995	0.9095	0.8835	0.9095	0.8835	0.9095	0.8835
5	0.265	0.1978	0.1978	1.000	0.095	0.023	100.0	100.0	0.995	0.9095	0.8835	0.9095	0.8835	0.9095	0.8835
6	0.265	0.1978	0.1978	1.000	0.095	0.023	100.0	100.0	0.995	0.9095	0.8835	0.9095	0.8835	0.9095	0.8835
7	0.265	0.1978	0.1978	1.000	0.095	0.023	100.0	100.0	0.995	0.9095	0.8835	0.9095	0.8835	0.9095	0.8835

OVERALL PERFORMANCE SUMMARY

STAGE DATA STATOR DATA STATOR DATA  
 FIXED INST. FIXED INST. TRAV. INST.  
 Total Pressure Ratio = 1.5716    0.9851    0.9773  
 Polytropic Efficiency = 0.8016    0.9679    0.8911  
 Percent Design Speed = 100.0  
 Cor. Nozzle Weight Flow = 212.1  
 Discharge Valve Setting = 11.0  
 IE Check Flow/Noz.Flow = 0.9095    TE Check Flow/Noz.Flow = 0.8835  
 Assumed IE Flow Coeff. = 0.9550    Assumed TE Flow Coeff. = 0.9350

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TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

		ROTOR BLADE ROW - NASA TASK IV											
		BLADE ELEMENT PERFORMANCE RESULTS											
		POINT NUMBER 31										DATE 9/ 1/1970	
RADIAL POSITION	REL INLET FLW ANG	ABS INLET FLOW ANG	CMBR LN LE ANGLE	INCID AN MN	INCID AN LN	SUCT SURF ANGLE	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL		
1	67.69	-0.91	60.80	8.09	8.09	9.39	537.55	1468.99	533.36	-8.49	1367.13		
2	27.08	-0.62	59.61	7.47	4.44	566.33	1449.96	564.31	-6.09	1334.80			
3	63.15	1.07	56.01	4.14	4.14	-0.32	1367.91	680.95	12.76	1186.37			
4	51.85	1.97	52.56	-0.71	0.71	-6.55	819.96	1324.1	817.12	28.06			
5	47.22	0.76	49.71	-3.49	3.49	-10.28	897.06	1287.10	884.54	12.01			
6	45.57	0.36	47.11	-0.54	0.54	-8.20	772.04	1099.35	740.99	4.66			
7	45.35	0.79	46.13	0.22	0.22	-7.68	735.59	1038.88	699.13	9.69			
RADIAL POSITION	REL EXIT FLW ANG	ABS EXIT FLOW ANG	CMBR LN TE ANGLE	REL DEV ANGLE	REL TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL			
1	58.96	58.92	54.80	4.16	9.73	785.00	785.96	404.84	671.59	672.70			
2	58.86	52.38	54.42	1.44	11.22	778.27	846.25	474.46	615.73	699.69			
3	51.49	45.16	50.68	0.81	8.66	750.60	849.88	529.16	532.16	664.90			
4	41.23	42.40	43.79	4.74	3.61	713.67	795.60	229.87	483.89	593.35			
5	41.83	41.09	32.15	9.68	4.39	713.28	727.50	541.06	471.80	484.31			
6	32.50	46.48	14.29	18.21	14.07	728.97	993.29	494.83	521.07	315.22			
7	22.83	51.89	8.00	14.83	23.52	777.70	526.23	475.80	606.66	200.31			
RADIAL POSITION	RETUR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO			DIFFUSION FACTOR		GM1				
1	158.64	0.489	1.336	0.959		0.637		0.523		0.536			
2	128.70	0.518	1.326	0.841		0.572		0.595		0.572			
3	119.13	0.634	1.273	0.777		0.504		0.645		0.504			
4	102.18	0.772	1.247	0.648		0.502		0.679		0.502			
5	73.08	0.857	1.230	0.612		0.529		0.659		0.529			
6	72.32	0.725	1.033	0.668		0.569		0.659		0.569			
7	74.65	0.688	0.972	0.681		0.622		0.622		0.622			
RADIAL POSITION	RETUR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	SOLIDITY RATIO	LOSS COEFFICIENT	TOT PRESS LOSS P/BAM	ABB EFFICIENCY	POLY MOMEN RISE/ EFFICIENCY	MEAS T RISE	STAT PRESS RISE COEFF			
1	144.29	0.637	0.638	1.330	0.246	0.848	0.7636	0.7842	0.837	0.412			
2	115.43	0.642	0.698	1.389	0.187	0.838	0.8186	0.837	0.9644	0.27			
3	119.76	0.634	0.718	1.580	0.037	0.808	0.9610	0.827	0.9644	0.308			
4	177.24	0.614	0.680	1.680	0.162	0.832	0.8084	0.827	0.827	0.579			
5	254.11	0.622	0.630	1.980	0.102	0.820	0.8681	0.8760	0.8760	0.623			
6	836.29	0.627	0.514	2.270	0.121	0.823	0.8693	0.8768	0.8768	0.676			
7	853.97	0.674	0.456	2.390	0.160	0.831	0.8460	0.8548	0.8548	0.732			
RADIAL POSITION	PERFORM IMPRESSION	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	PERFORMANCE PARAMETERS		STAGE DATA		ROTOR DATA			
1	5.0000	1.994	1.277	1.924	1.257	Total Pressure Ratio =		FIXED INST. FIXED INST. TRAV. INST.		ROTOR DATA			
2	19.0800	1.976	1.264	1.950	1.257	Adiabatic Efficiency =		1.6502		1.6827			
3	30.0000	1.848	1.215	1.801	1.179	Polytropic Efficiency =		0.7804		0.8131			
4	50.0000	1.665	1.167	1.605	1.153	Percent Design Speed =		0.7953		0.8263			
5	70.0000	1.566	1.146	1.546	1.146	Cor. Nozzle Weight Flow =		100.1		Discharge Valve Setting = 7.4			
6	90.0000	1.519	1.149	1.519	1.151	Cor. Nozzle Weight Flow =		203.2					
7	95.0000	1.589	1.163	1.521	1.151								

LE Check Flow/Noz.Flow = 1.0019  
 Assumed LE Flow Coeff. = 0.9850  
 TE Check Flow/Noz.Flow = 0.9086  
 Assumed TE Flow Coeff. = 0.9500

TABLE XIV - TASK I STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Concluded)

STATOR BLADE ROW - NASA TASK IV

RADIAL POSITION		BLADE ELEMENT PERFORMANCE RESULTS										POINT NUMBER 31		DATE 97 1/1970	
		READING NUMBER 355													
REL INLET FLOW ANG	ABS INLET FLOW ANG	CMBR LN LE ANGLE	INCLD LN ANGLE	INCLD ANG SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS YANG VEL	INLET REL YANG VEL	INLET AX YANG VEL	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS YANG VEL	EXIT REL YANG VEL
1	58.79	39.47	19.32	788.10	404.42	674.01	485.40	617.97	531.65	479.08	461.83	502.39	499.86	582.45	
2	51.85	39.11	12.74	785.83	485.40	617.97	531.65	479.08	461.83	502.39	499.86	582.45			
3	43.23	39.01	4.22	776.49	572.59	479.08	461.83	502.39	499.86	582.45					
4	39.92	39.80	0.12	747.94	583.65	461.83	502.39	499.86	582.45						
5	38.35	41.86	-2.51	748.12	522.75	502.39	499.86	582.45							
6	43.86	42.22	1.64	731.23	499.86	582.45									
7	49.36	42.76	6.60	773.65											

RADIAL POSITION		YURN																	
		CMBR LN	DEV	ANGLE	TE	INCLD LN ANGLE	INCLD ANG SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS YANG VEL	INLET REL YANG VEL	INLET AX YANG VEL	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS YANG VEL	EXIT REL YANG VEL	EXIT AX YANG VEL
1	1.87	13.00	56.91	557.16	18.20	556.86	34.21	579.83	579.83	579.83	579.83	579.83	579.83	579.83	579.83	579.83	579.83	579.83	579.83
2	3.38	13.48	48.47	579.83	34.21	579.83	34.21	579.83	579.83	579.83	579.83	579.83	579.83	579.83	579.83	579.83	579.83	579.83	579.83
3	2.90	11.37	40.73	570.24	24.88	569.47	24.88	569.47	569.47	569.47	569.47	569.47	569.47	569.47	569.47	569.47	569.47	569.47	569.47
4	1.01	9.76	38.90	535.25	9.47	534.57	9.47	534.57	534.57	534.57	534.57	534.57	534.57	534.57	534.57	534.57	534.57	534.57	534.57
5	0.50	8.75	37.85	519.52	4.56	518.38	4.56	518.38	518.38	518.38	518.38	518.38	518.38	518.38	518.38	518.38	518.38	518.38	518.38
6	0.50	9.10	37.85	519.52	4.56	518.38	4.56	518.38	518.38	518.38	518.38	518.38	518.38	518.38	518.38	518.38	518.38	518.38	518.38
7	0.50	11.08	43.36	487.87	4.26	485.85	4.26	485.85	485.85	485.85	485.85	485.85	485.85	485.85	485.85	485.85	485.85	485.85	485.85
	0.50	9.31	52.41	473.33	25.17	471.15	25.17	473.33	473.33	473.33	473.33	473.33	473.33	473.33	473.33	473.33	473.33	473.33	473.33

RADIAL POSITION		DIFFUSION									
		INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	LOSS COEFFICIENT	LOSS PARAM	EFFICIENCY	POLY MOMEN RISE/ RISE	STAY PRESS COEFF	CHI FACTOR	
1	0.640	1.363	1.363	1.5830	0.141	0.046	0.6212	0.274	0.295		
2	0.649	1.392	1.392	1.5440	0.128	0.041	0.7235	0.298	0.320		
3	0.658	1.007	1.007	1.6310	0.087	0.027	0.8303	0.354	0.378		
4	0.642	0.934	0.934	1.7420	0.076	0.008	0.4668	0.307	0.421		
5	0.649	0.888	0.888	1.8800	0.041	0.011	0.8680	0.422	0.466		
6	0.634	0.929	0.929	2.0510	0.083	0.020	0.8681	0.454	0.496		
7	0.670	0.943	0.943	2.0980	0.108	0.026	0.6882	0.478	0.572		

RADIAL POSITION		PERFORMANCE PARAMETERS									
		PERCENT UNDERFLOW	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	LOSS COEFFICIENT	LOSS PARAM	EFFICIENCY	POLY MOMEN RISE/ RISE	STAY PRESS COEFF
1	9.0000	0.984	0.965	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2	10.0000	0.965	0.968	0.978	1.000	1.000	1.000	1.000	1.000	1.000	1.000
3	30.0000	0.977	0.995	0.994	1.000	1.000	1.000	1.000	1.000	1.000	1.000
4	50.0000	0.982	0.999	0.994	1.000	1.000	1.000	1.000	1.000	1.000	1.000
5	70.0000	0.980	0.998	0.990	1.000	1.000	1.000	1.000	1.000	1.000	1.000
6	90.0000	0.980	0.994	0.980	1.000	1.000	1.000	1.000	1.000	1.000	1.000
7	95.0000	0.942	0.987	0.971	1.000	1.000	1.000	1.000	1.000	1.000	1.000

RADIAL POSITION		OVERALL PERFORMANCE SUMMARY										
		STAGE DATA	STATOR DATA	STATOR DATA	FIXED INST. FIXED INST.	TRAV. INST.	TRAV. INST.	PERFORMANCE PARAMETERS	Total Pressure Ratio	Polytropic Efficiency	Percent Design Speed	Cor. Nozzle Weight Flow
1	1.6502	0.9807	0.9727	0.9143	1.6502	0.9807	0.9727	0.9143	1.6502	0.9807	0.9727	0.9143
2	0.7953	0.9625	0.9143	0.9143	0.7953	0.9625	0.9143	0.9143	0.7953	0.9625	0.9143	0.9143
Discharge Valve Setting=7.4												
IE Check Flow/Noz.Flow = 0.9134												
TE Check Flow/Noz.Flow = 0.9179												
Assumed IE Flow Coeff. = 0.9750												
Assumed TE Flow Coeff. = 0.6340												



APPENDIX E

LISTING OF TASK I STAGE CIRCUMFERENTIAL  
DISTORTION FLOW SURVEY DATA



TABLE XV - TASK I STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA: 100% SPEED; MAXIMUM FLOW;  
 SKEWED SLOTS #2 CASING TREATMENT

PLANE NO. # 0.95		RADIUS = 17,420		SLOPE = -1.92			
IMMERSION NO. # 1							
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.
27.98	13.70	10.82	518.69	-1.15	637.05	636.93	0.590
57.98	13.67	10.69	518.69	1.37	650.06	649.87	0.603
87.98	13.64	10.89	518.69	2.09	623.15	622.73	0.576
117.98	13.66	10.74	518.69	7.14	643.32	638.32	0.596
147.98	11.79	9.97	518.69	11.10	539.44	529.35	0.495
177.98	11.84	9.51	518.69	3.46	613.84	612.72	0.567
207.98	11.82	9.43	518.69	-0.96	623.65	623.57	0.677
237.98	13.71	10.04	518.69	-7.26	728.96	723.13	0.683
267.98	13.73	10.57	518.69	-4.95	670.22	667.72	0.823
297.98	13.67	10.60	518.69	-2.45	660.59	659.98	0.613
327.98	13.64	10.77	518.69	-1.79	638.27	637.96	0.591
357.98	13.74	10.69	518.69	-0.09	656.48	656.48	0.809
CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL WT. FLOW
27.98	1336.33	-12.75	1349.08	64.73	1491.88	1.382	3.26
57.98	1336.33	15.40	1320.73	63.80	1471.96	1.365	3.30
87.98	1336.33	22.71	1313.62	64.64	1453.75	1.344	3.20
117.98	1336.33	80.01	1256.32	63.07	1409.19	1.306	3.25
147.98	1336.33	103.83	1232.49	66.96	1341.36	1.230	2.45
177.98	1336.33	37.06	1299.27	64.75	1436.50	1.327	2.74
207.98	1336.33	-10.46	1346.79	65.16	1484.14	1.372	2.77
237.98	1336.33	-92.07	1428.40	63.15	1601.01	1.499	3.51
267.98	1336.33	-57.82	1394.15	64.41	1545.80	1.437	3.36
297.98	1336.33	-28.20	1364.53	64.19	1515.76	1.407	3.33
327.98	1336.33	-19.92	1356.24	64.81	1498.80	1.388	3.25
357.98	1336.33	-1.03	1337.36	63.85	1469.80	1.363	3.33



TABLE XV - TASK I STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; MAXIMUM FLOW;  
 SKEWED SLOTS #2 CASING TREATMEN. (Continued)

PLANE NO.	CIRC. IMPERSON NO.	W	RADIUS	SLOPE	W		
		0.95	9.910	15.60			
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS' FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.
27.98	13.80	10.23	518.69	0.76	688.44	688.38	0.643
57.98	13.81	10.31	518.69	3.53	681.06	679.76	0.636
87.98	13.86	10.40	518.69	5.79	675.92	672.48	0.631
117.98	13.80	10.46	518.69	15.72	665.10	640.24	0.620
147.98	13.62	9.96	518.69	30.78	709.58	609.61	0.664
177.98	11.61	9.06	518.69	9.88	630.29	620.95	0.585
207.98	11.76	8.93	518.69	-10.47	663.25	652.20	0.618
237.98	13.72	9.69	518.69	13.55	741.88	721.23	0.698
267.98	13.82	9.98	518.69	-8.58	717.86	709.83	0.673
297.98	13.76	10.04	518.69	-6.11	705.68	701.68	0.661
327.98	13.79	10.11	518.69	-3.34	700.48	699.29	0.656
357.98	13.73	10.16	518.69	-0.93	690.68	690.59	0.646
CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL WT. FLOW
27.98	760.22	9.16	751.06	47.49	1018.81	0.952	2.38
57.98	760.22	41.97	718.25	46.58	988.92	0.923	2.36
87.98	760.22	68.18	692.04	45.82	964.96	0.900	2.35
117.98	760.22	180.16	580.06	42.18	863.93	0.805	2.25
147.98	760.22	363.15	397.07	33.08	727.52	0.661	2.06
177.98	760.22	108.12	652.10	46.40	900.45	0.835	1.87
207.98	760.22	173.82	880.77	53.48	1095.96	1.021	1.95
237.98	760.22	107.07	934.04	52.33	1180.08	1.111	2.39
267.98	760.22	175.05	867.29	50.70	1120.74	1.051	2.41
297.98	760.22	40.79	835.27	49.97	1090.88	1.022	2.39
327.98	760.22	-40.79	801.01	48.88	1063.31	0.995	2.40
357.98	760.22	-11.20	771.42	48.16	1035.37	0.968	2.37

TABLE XV - TASK I STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; MAXIMUM FLOW;  
 SKEWED SLOTS #2 CASING TREATMENT (Continued)

PLANE NO. IMMERSION NO. # 1/51	RADIUS # 17.081	SLOPE # -0.83										
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL WT. FLOW	
15.00	18.73	13.96	579.46	25.75	749.42	675.02	0.862					
45.00	18.58	13.90	577.88	26.45	743.51	665.66	0.857					
75.00	18.44	13.86	575.90	27.49	736.19	653.04	0.852					
105.00	18.15	13.81	572.11	29.49	718.41	625.33	0.837					
135.00	16.84	13.59	560.35	40.86	652.39	478.26	0.862					
175.00	17.98	13.66	568.54	39.18	735.89	570.39	0.839					
195.00	18.30	13.74	600.12	36.40	753.20	606.28	0.853					
225.00	20.39	14.39	619.95	23.28	840.27	771.85	0.723					
255.00	19.24	14.24	586.23	21.43	761.87	709.22	0.870					
285.00	19.00	14.05	582.58	23.19	760.49	699.02	0.871					
315.00	18.67	13.97	582.13	24.73	788.80	689.19	0.870					
345.00	18.76	13.95	580.30	25.12	752.10	680.94	0.864					
CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL WT. FLOW					
15.00	1310.32	325.33	984.79	55.57	1193.93	1.055	3.33					
45.00	1310.32	331.22	979.11	55.79	1183.96	1.042	3.27					
75.00	1310.32	339.88	970.45	56.06	1169.71	1.035	3.21					
105.00	1310.32	353.66	956.66	56.83	1142.91	1.013	3.07					
135.00	1310.32	413.74	896.98	61.92	1016.17	0.903	2.32					
165.00	1310.32	464.95	845.37	55.99	1019.80	0.886	2.66					
195.00	1310.32	446.92	863.48	54.92	1055.01	0.915	2.84					
225.00	1310.32	332.11	978.21	51.72	1246.06	1.073	3.72					
255.00	1310.32	278.31	1032.01	55.90	1252.22	1.101	3.53					
285.00	1310.32	299.51	1010.81	55.33	1228.97	1.084	3.46					
315.00	1310.32	317.49	992.84	55.23	1208.60	1.066	3.39					
345.00	1310.32	319.33	991.00	55.51	1202.40	1.062	3.35					

TABLE XV - TASK I STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; MAXIMUM FLOW;  
 SKEWED SLOTS #2 CASING TREATMENT (Continued)

PLANE NO. = 1.51		RADIUS # 14,056		SLOPE # 3.14			
IMPRESSION NO. = 3							
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.
15.00	19.56	13.87	589.67	33.66	813.48	677.13	0.718
45.00	19.27	13.71	587.90	34.91	808.26	662.84	0.714
75.00	19.04	13.74	585.74	36.30	791.19	637.64	0.699
105.00	18.57	13.50	580.72	39.22	779.05	603.53	0.690
135.00	17.22	13.26	568.77	51.12	701.56	440.40	0.623
165.00	17.53	13.23	590.01	49.24	739.69	482.90	0.646
195.00	18.06	13.35	593.20	41.97	767.61	570.71	0.671
225.00	20.07	14.11	619.09	32.93	843.54	708.03	0.727
255.00	20.11	14.31	597.88	30.39	814.87	702.94	0.713
285.00	19.22	13.90	594.97	33.81	794.12	659.81	0.695
315.00	19.54	13.95	591.58	32.41	806.87	681.21	0.710
345.00	19.53	13.82	590.22	33.14	815.72	683.06	0.719

CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL WT. FLOW
15.00	1078.27	450.62	627.45	42.82	923.14	0.814	3.67
45.00	1078.27	462.52	615.75	42.99	904.71	0.799	3.56
75.00	1078.27	468.41	608.86	43.72	882.33	0.779	3.43
105.00	1078.27	492.62	585.65	44.14	840.98	0.745	3.21
135.00	1078.27	546.11	532.16	50.39	690.76	0.613	2.31
165.00	1078.27	560.31	517.96	47.01	708.15	0.519	2.45
195.00	1078.27	533.34	564.93	44.71	803.02	0.702	2.92
225.00	1078.27	488.54	619.73	41.20	940.94	0.811	3.72
255.00	1078.27	412.18	666.09	43.46	968.40	0.848	3.87
285.00	1078.27	441.91	636.36	43.96	916.68	0.803	3.53
315.00	1078.27	432.42	645.85	43.47	938.70	0.826	3.69
345.00	1078.27	445.89	632.38	42.79	930.84	0.821	3.68

TABLE XV - TASK I STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; MAXIMUM FLOW;  
 SKEWED SLOTS #2 CASING TREATMENT (Continued)

PLANE NO. IMMERISION NO. #	# 1.51 5	RADIUS #	11.030	SLOPE #	11.17		
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.
15.00	20.90	13.96	594.51	38.34	874.35	683.40	0.772
45.00	20.62	13.86	591.79	39.33	863.49	667.92	0.766
75.00	20.38	13.75	589.24	40.09	858.01	56.40	0.763
105.00	19.87	13.54	584.02	42.01	844.79	627.75	0.753
135.00	18.59	13.05	573.26	47.92	794.99	532.77	0.711
165.00	17.72	12.86	576.84	54.16	774.32	453.34	0.688
195.00	17.95	12.90	591.32	49.31	793.51	517.33	0.698
225.00	20.26	14.03	611.75	32.03	844.28	715.72	0.734
255.00	21.09	14.14	608.31	39.07	877.83	681.51	0.768
285.00	20.60	14.00	599.47	38.03	857.78	675.66	0.755
315.00	20.81	13.99	595.83	37.49	866.23	687.34	0.866
345.00	20.94	13.98	594.77	38.01	872.26	687.29	0.773
CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL MACH NO.
15.00	846.14	540.57	305.57	24.09	748.60	0.663	2.24
45.00	846.14	547.27	298.87	24.11	731.74	0.649	2.18
75.00	846.14	552.56	293.58	24.10	719.06	0.639	2.13
105.00	846.14	565.33	280.81	24.10	687.69	0.613	2.02
135.00	846.14	590.05	256.09	25.67	591.13	0.529	1.96
165.00	846.14	627.74	218.40	25.72	503.20	0.447	1.88
195.00	846.14	601.69	244.45	25.29	572.18	0.503	1.94
225.00	846.14	447.84	398.30	29.10	819.08	0.712	2.27
255.00	846.14	593.28	292.86	23.25	741.77	0.649	2.21
285.00	846.14	528.47	317.67	25.18	746.61	0.657	2.19
315.00	846.14	527.17	318.97	24.89	757.75	0.670	2.25
345.00	846.14	537.10	309.04	24.81	753.57	0.668	2.25







TABLE XV - TASK 1 STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; MAXIMUM FLOW;  
SKEWED SLOTS #2 CASING TREATMENT (Concluded)

PLANE NO. = 2.20 IMMERSION NO. = 5		RADIUS = 11.775		SLOPE = 1.14			
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.
18.56	18.75	12.12	591.93	-5.58	913.31	908.98	0.815
48.56	19.06	12.60	588.24	-4.11	888.16	885.88	0.792
78.56	19.50	12.87	586.22	-2.12	888.16	887.56	0.994
108.56	19.46	13.05	582.07	-0.95	868.79	868.67	0.978
138.56	18.46	13.39	572.79	-0.40	776.44	776.42	0.693
168.56	16.11	13.85	557.80	5.33	532.03	529.73	0.769
198.56	16.94	13.55	588.04	2.63	681.85	681.13	0.593
228.56	17.93	12.42	605.05	-0.10	851.16	851.16	0.744
258.56	19.72	12.31	610.76	-4.16	961.33	958.79	0.849
288.56	18.91	11.60	598.67	+5.84	968.57	963.53	0.866
318.56	18.76	11.59	596.02	-6.55	959.16	952.90	0.858
348.56	18.77	11.77	593.12	-6.55	942.81	936.66	0.844
CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL MACH NO.
18.56	903.29	-88.83	992.12	47.50	1345.56	1.200	2.36
48.56	903.29	-63.64	966.93	47.50	1311.39	1.170	2.39
78.56	903.29	-32.84	936.13	46.53	1290.00	1.153	2.45
108.56	903.29	-14.48	917.76	46.57	1263.68	1.131	2.44
138.56	903.29	-5.36	908.64	49.49	1195.19	1.066	2.22
168.56	903.29	49.44	853.85	58.18	1004.83	0.887	1.54
198.56	903.29	31.27	872.02	52.01	1106.51	0.963	1.85
228.56	903.29	-1.55	903.84	46.75	1242.26	1.085	2.17
258.56	903.29	-69.80	973.09	45.42	1366.08	1.206	2.47
288.56	903.29	-98.63	1001.92	46.12	1390.05	1.242	2.40
318.56	903.29	-109.34	1013.63	46.74	1390.48	1.244	2.38
348.56	903.29	-107.48	1010.77	47.18	1378.04	1.233	2.38

TABLE XVI - TASK I STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; NEAR STALL;  
 SKEWED SLOTS #2 CASING TREATMENT

PLANE NO. = 0.95 IMPRESSION NO. = 1		RADIUS = 17.420		SLOPE = -1.92			
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.
27.98	13.83	11.04	518.69	0.44	622.86	322.85	0.576
57.98	13.81	10.91	518.69	1.45	636.79	636.59	0.890
87.98	13.86	11.06	518.69	1.94	623.46	623.10	0.577
117.98	13.80	10.88	518.69	4.98	639.60	637.18	0.593
147.98	12.20	10.31	518.69	6.18	541.14	538.00	0.496
177.98	12.21	10.16	518.69	-2.62	565.30	564.71	0.520
207.98	12.20	10.57	518.69	-9.55	508.07	493.14	0.757
237.98	13.77	11.73	518.69	-10.29	528.11	519.61	0.484
267.98	13.78	11.58	518.69	-0.49	550.02	550.00	0.505
297.98	13.82	11.20	518.69	2.00	602.03	601.66	0.555
327.98	13.84	11.10	518.69	1.72	617.12	616.84	0.570
357.98	13.88	10.92	518.69	0.76	642.58	642.52	0.595
CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL WT. FLOW
27.98	1336.33	4.79	1331.54	64.93	1470.01	1.359	3.24
57.98	1336.33	16.16	1320.17	64.26	1465.64	1.359	3.29
87.98	1336.33	21.11	1315.22	64.65	1455.36	1.346	3.25
117.98	1336.33	55.52	1280.81	63.95	1430.55	1.325	3.28
147.98	1336.33	58.22	1278.11	67.17	1386.73	1.272	2.57
177.98	1336.33	-25.70	1362.12	67.48	1474.54	1.356	2.67
207.98	1336.33	-82.97	1419.33	70.84	1502.53	1.373	2.40
237.98	1336.33	-94.35	1430.68	70.04	1522.11	1.394	2.82
267.98	1336.33	4.69	1341.02	67.70	1449.43	1.331	2.96
297.98	1336.33	21.01	1335.32	65.42	1446.40	1.335	3.17
327.98	1336.33	18.51	1337.82	64.92	1455.04	1.345	3.22
357.98	1336.33	8.93	1327.86	64.18	1475.09	1.367	3.32

TABLE XVI - TASK I STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; NEAR STALL;  
SKEWED SLOTS #2 CASING TREATMENT (Continued)

CIRC. POSITION	WHEEL SPEED	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.	CIRC. POSITION	WHEEL SPEED	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.	PLANE NO. = 0.95	
																		RADIUS = 13.797	SLOPE = 4.85
27.98	1058.40	13.93	10.43	518.69	2.02	700.58	700.15	0.654	27.98	1058.40	13.93	10.43	518.69	2.02	700.58	700.15	0.654	REL. MACH NO.	LOCAL WT. FLOW
57.98	1058.40	13.93	10.44	518.69	2.18	699.41	698.90	0.653	57.98	1058.40	13.93	10.44	518.69	2.18	699.41	698.90	0.653	1.165	3.76
87.98	1058.40	13.99	10.49	518.69	3.68	698.77	697.32	0.652	87.98	1058.40	13.99	10.49	518.69	3.68	698.77	697.32	0.652	1.163	3.76
117.98	1058.40	13.94	10.52	518.69	8.49	692.26	684.67	0.645	117.98	1058.40	13.94	10.52	518.69	8.49	692.26	684.67	0.645	1.148	3.70
147.98	1058.40	12.14	9.88	518.69	8.81	593.96	586.95	0.548	147.98	1058.40	12.14	9.88	518.69	8.81	593.96	586.95	0.548	1.096	2.92
177.98	1058.40	12.16	10.15	518.69	-8.44	558.53	552.49	0.513	177.98	1058.40	12.16	10.15	518.69	-8.44	558.53	552.49	0.513	1.043	2.80
207.98	1058.40	12.11	10.36	518.69	-16.45	519.81	498.54	0.476	207.98	1058.40	12.11	10.36	518.69	-16.45	519.81	498.54	0.476	1.164	2.56
237.98	1058.40	13.90	11.50	518.69	-11.77	571.52	559.51	0.526	237.98	1058.40	13.90	11.50	518.69	-11.77	571.52	559.51	0.526	1.194	3.22
267.98	1058.40	13.91	11.03	518.69	-3.50	630.21	629.03	0.593	267.98	1058.40	13.91	11.03	518.69	-3.50	630.21	629.03	0.593	1.197	3.51
297.98	1058.40	13.95	10.66	518.69	-0.69	676.56	676.52	0.630	297.98	1058.40	13.95	10.66	518.69	-0.69	676.56	676.52	0.630	1.175	3.69
327.98	1058.40	13.95	10.54	518.69	0.55	690.56	690.53	0.644	327.98	1058.40	13.95	10.54	518.69	0.55	690.56	690.53	0.644	1.173	3.74
357.98	1058.40	13.96	10.46	518.69	1.54	700.34	700.09	0.654	357.98	1058.40	13.96	10.46	518.69	1.54	700.34	700.09	0.654	1.170	3.77

TABLE XVI - TASK I STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; NEAR STALL;  
 SKEWED SLOTS #2 CASING TREATMENT (Continued)

PLANE NO. IMMERISION NO. #	0.95	RADIUS #	9.910	SLOPE =	15.60		
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.
27.98	13.94	10.52	518.69	1.66	669.43	669.15	0.624
57.98	13.94	10.55	518.69	2.50	665.01	664.37	0.620
87.98	14.02	10.60	518.69	5.04	666.86	664.28	0.621
117.98	13.93	10.70	518.69	12.29	649.47	634.60	0.604
147.98	12.95	10.19	518.69	25.62	623.29	562.00	0.578
177.98	12.25	10.24	518.69	-12.77	538.39	525.07	0.495
207.98	12.55	10.38	518.69	-26.28	555.61	498.21	0.511
237.98	13.92	11.02	518.69	-19.23	613.62	579.39	0.568
267.98	13.96	10.95	518.69	-6.50	624.74	620.96	0.579
297.98	13.90	10.68	518.69	-1.22	648.09	647.94	0.603
327.98	13.92	10.58	518.69	0.36	660.32	660.31	0.615
357.98	13.88	10.49	518.69	0.83	666.79	666.72	0.621
CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL MW. FLOW
27.98	760.22	19.33	740.89	47.91	998.34	0.931	2.37
57.98	760.22	28.97	731.25	47.74	987.99	0.921	2.35
87.98	760.22	58.54	701.68	46.57	966.24	0.900	2.37
117.98	760.22	138.21	622.01	44.43	888.60	0.826	2.27
147.98	760.22	269.53	490.69	41.12	746.07	0.694	1.90
177.98	760.22	-119.01	879.23	59.15	1024.08	0.941	1.76
207.98	760.22	-245.96	1006.18	63.66	1122.77	1.033	1.69
237.98	760.22	-202.06	962.28	58.95	1125.25	1.040	2.12
267.98	760.22	-68.59	828.81	53.16	1035.62	0.960	2.26
297.98	760.22	-13.79	774.01	50.07	1009.41	0.939	2.31
327.98	760.22	4.15	756.07	48.87	1003.82	0.935	2.34
357.98	760.22	9.60	750.62	48.89	1003.96	0.936	2.35

TABLE XVI - TASK I STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; NEAR STALL;  
 SKEWED SLOTS #2 CASING TREATMENT (Continued)

PLANE NO, IMMERSION NO, #	#	RADIUS #	SLOPE #	CIRC, POSITION	TOT, PRESSURE	TOT, TEMP,	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO,
15.00	21.99	15.18	26.96	1310.32	605.08	854.73	761.86	0.747	4.00	0.747
45.00	82.05	15.27	27.25	1310.32	605.93	851.87	757.30	0.744	3.99	0.744
75.00	21.95	15.20	27.91	1310.32	604.94	850.95	751.98	0.744	3.95	0.744
105.00	21.68	15.17	29.07	1310.32	604.76	839.35	733.63	0.732	3.84	0.732
135.00	20.82	15.09	35.54	1310.32	596.71	793.58	645.76	0.694	3.77	0.694
165.00	23.47	15.76	34.50	1310.32	640.70	909.95	749.92	0.776	3.90	0.776
195.00	24.08	15.85	35.99	1310.32	657.22	943.45	763.37	0.797	4.04	0.797
225.00	24.65	15.84	34.64	1310.32	677.36	982.89	808.02	0.820	4.04	0.820
255.00	21.97	15.18	35.45	1310.32	646.81	883.36	719.69	0.747	3.94	0.747
285.00	22.20	15.19	32.66	1310.32	614.46	871.20	733.47	0.757	3.94	0.757
315.00	22.00	15.25	28.21	1310.32	607.57	852.18	750.94	0.743	3.94	0.743
345.00	22.00	15.34	27.06	1310.32	607.52	845.05	752.57	0.736	3.97	0.736
CIRC, POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL, TANG VELOCITY	REL, FLOW ANGLE	REL, VELOCITY	REL, MACH NO,	LOCAL WT, FLOW			
15.00	1310.32	387.47	922.86	50.46	1196.70	1.046	4.00			
45.00	1310.32	390.10	920.22	50.55	1191.77	1.041	3.99			
75.00	1310.32	398.29	912.04	50.49	1182.07	1.033	3.95			
105.00	1310.32	407.61	902.51	50.89	1163.07	1.015	3.84			
135.00	1310.32	461.28	849.05	52.74	1066.72	0.932	3.77			
165.00	1310.32	515.39	784.94	46.67	1092.84	0.938	3.89			
195.00	1310.32	554.40	755.93	44.72	1074.32	0.907	3.90			
225.00	1310.32	558.77	751.56	42.91	1103.95	0.921	4.04			
255.00	1310.32	512.28	798.05	47.96	1074.60	0.909	3.53			
285.00	1310.32	470.12	840.20	48.88	1115.31	0.969	3.80			
315.00	1310.32	402.85	907.47	50.39	1177.89	1.029	3.94			
345.00	1310.32	384.38	925.94	50.90	1193.20	1.039	3.97			

TABLE XVI - TASK I STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; NEAR STALL;  
 SKEWED SLOTS #2 CASING TREATMENT (Continued)

PLANE NO. IMPRESSION NO. =	1.51 3	RADIUS = 14.056		SLOPE = 3.14			
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.
15.00	21.85	14.83	602.22	34.27	870.64	719.47	0.765
45.00	21.80	14.84	599.58	35.06	865.22	708.20	0.761
75.00	21.86	14.82	599.21	35.40	869.20	708.49	0.765
105.00	21.58	14.74	598.07	36.91	860.32	687.89	0.758
135.00	20.68	14.68	599.00	42.55	811.60	597.88	0.716
165.00	22.11	15.08	619.72	42.33	877.65	648.80	0.759
195.00	22.19	14.98	636.13	51.24	900.47	563.75	0.770
225.00	23.03	15.11	648.42	48.74	939.99	619.92	0.800
255.00	21.03	14.64	633.19	44.62	869.28	615.92	0.739
285.00	21.54	14.70	605.85	38.77	866.94	675.91	0.759
315.00	21.84	14.84	600.89	35.43	867.94	707.18	0.763
345.00	21.91	14.84	601.69	34.76	871.98	716.36	0.766
CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL WT. FLOW
15.00	1078.27	490.29	587.98	39.26	929.17	0.816	4.13
45.00	1078.27	497.05	561.22	39.38	916.17	0.806	4.08
75.00	1078.27	503.53	574.74	39.05	912.29	0.803	4.09
105.00	1078.27	516.73	561.54	39.23	887.95	0.782	3.94
135.00	1078.27	548.84	520.43	41.53	798.60	0.705	3.43
165.00	1078.27	591.05	487.22	36.91	811.57	0.702	3.68
195.00	1078.27	702.17	376.10	33.71	672.61	0.580	3.10
225.00	1078.27	706.59	371.68	30.95	722.81	0.615	3.40
255.00	1078.27	607.74	470.53	37.38	775.08	0.662	3.30
285.00	1078.27	542.88	535.38	38.38	862.26	0.754	3.82
315.00	1078.27	503.20	575.07	39.12	911.49	0.801	4.07
345.00	1078.27	497.16	561.13	39.05	922.42	0.811	4.12

TABLE XVI - TASK I STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; NEAR STALL;  
SKEWED SLOTS #2 CASING TREATMENT (Continued)

PLANE NO. IMPERSON NO.	#	1.51	RADIUS #	11.030	SLOPE #	11.17	
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.
15.00	21.36	14.46	595.79	41.65	860.12	642.67	0.760
45.00	21.41	14.48	593.57	41.91	859.41	639.60	0.761
75.00	21.23	14.43	593.82	42.93	854.55	625.72	0.756
105.00	20.96	14.33	589.57	44.12	845.86	607.24	0.750
135.00	20.06	14.27	582.14	49.91	799.50	514.87	0.710
165.00	21.91	14.59	601.09	53.85	884.26	521.68	0.780
195.00	20.76	14.70	612.31	61.95	827.73	389.24	0.717
225.00	21.83	14.91	628.09	47.82	904.18	607.11	0.780
255.00	21.84	14.62	608.85	40.66	880.69	668.10	0.771
285.00	22.04	14.59	601.89	42.96	887.58	649.55	0.783
315.00	21.47	14.45	594.45	42.59	865.18	636.91	0.766
345.00	21.44	14.48	594.48	41.68	861.43	643.42	0.762
CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL WT. FLOW
15.00	846.14	571.65	274.48	23.13	698.83	0.617	2.17
45.00	846.14	574.02	272.12	23.05	695.08	0.615	2.17
75.00	846.14	582.00	264.13	22.89	679.18	0.601	2.11
105.00	846.14	588.84	257.29	22.96	659.50	0.585	2.04
135.00	846.14	611.64	234.49	24.49	565.75	0.502	1.73
165.00	846.14	713.98	132.15	14.22	538.16	0.474	1.77
195.00	846.14	730.49	115.65	16.35	406.06	0.352	1.28
225.00	846.14	670.04	176.10	16.18	632.13	0.545	1.96
255.00	846.14	573.80	272.33	22.18	721.47	0.631	2.24
285.00	846.14	604.89	241.25	20.38	692.90	0.611	2.20
315.00	846.14	589.56	260.57	22.25	688.15	0.609	2.15
345.00	846.14	572.78	273.36	23.02	699.08	0.618	2.18

TABLE XVI - TASK I STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; NEAR STALL;  
 SKEWED SLOTS #2 CASING TREATMENT (Continued)

PLANE NO., IMMERISION NO. #	2.20 1	RADIUS =	17.330	SLOPE =	0.24		
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.
6.83	21.55	17.77	608.84	2.08	626.02	625.60	0.532
36.83	21.61	17.80	610.60	1.90	628.70	628.35	0.533
66.83	21.53	17.83	610.08	1.93	620.16	619.81	0.526
96.83	21.44	17.91	608.89	1.87	605.62	605.30	0.514
126.83	21.00	17.95	605.31	2.66	565.32	564.71	0.479
156.83	21.31	17.71	623.41	2.82	621.91	620.76	0.521
186.83	23.23	17.49	654.17	2.49	782.88	782.14	0.650
216.83	23.35	17.39	663.66	3.03	802.95	801.83	0.663
246.83	21.60	17.43	652.61	3.09	682.46	681.47	0.562
276.83	21.80	17.59	635.86	3.01	674.15	673.22	0.562
306.83	21.43	17.76	613.66	2.39	620.44	620.44	0.525
336.83	21.52	17.76	609.61	2.08	624.98	624.57	0.531
CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL WT. FLOW
6.83	1314.08	22.78	1291.31	64.15	1434.87	1.219	3.35
36.83	1314.08	20.88	1291.20	64.09	1437.78	1.220	3.36
66.83	1314.08	20.94	1293.15	64.39	1434.01	1.216	3.32
96.83	1314.08	19.72	1294.36	64.94	1428.90	1.212	3.25
126.83	1314.08	26.27	1287.81	66.32	1406.18	1.192	3.04
156.83	1314.08	30.53	1283.56	64.19	1425.79	1.196	3.23
186.83	1314.08	33.95	1280.14	58.58	1500.16	1.246	3.94
216.83	1314.08	42.44	1271.62	57.17	1503.33	1.241	3.97
246.83	1314.08	36.73	1277.39	61.92	1447.77	1.192	3.36
276.83	1314.08	35.38	1278.71	62.23	1445.10	1.205	3.44
306.83	1314.08	25.93	1280.15	64.28	1429.78	1.209	3.42
336.83	1314.08	22.68	1291.48	64.19	1434.51	1.218	3.34





TABLE XVI - TASK I STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; NEAR STALL;  
 SKEWED SLOTS #2 CASING TREATMENT (Concluded)

PLANE NO. IMMERSION NO.	2.20 5	RADIUS =	11.775	SLOPE =	1.14		
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.
18.56	21.02	16.70	593.07	0.16	673.92	673.92	0.583
48.56	21.02	16.69	592.13	0.02	673.47	673.47	0.583
78.56	20.99	16.86	590.22	0.11	659.62	655.61	0.568
108.56	20.89	16.96	589.96	0.35	640.33	640.32	0.554
138.56	20.09	17.44	585.65	2.18	527.37	526.98	0.453
168.56	18.37	18.01	578.49	6.49	197.79	196.53	0.166
198.56	18.03	17.90	600.85	2.68	121.88	121.75	0.102
228.56	19.05	17.74	619.05	-1.19	387.57	387.49	0.321
258.56	21.70	16.72	613.30	-0.97	728.01	727.90	0.622
288.56	21.91	16.40	600.28	-0.61	756.96	756.92	0.657
318.56	21.26	16.55	593.17	-1.26	701.57	701.50	0.609
348.56	21.05	16.57	592.19	-0.08	685.79	685.79	0.595
CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL WT. FLOW
18.56	903.29	1.90	901.39	53.22	1125.46	0.974	2.27
48.56	903.29	0.27	903.02	53.28	1126.50	0.976	2.27
78.56	903.29	1.30	901.99	53.99	1115.08	0.966	2.23
108.56	903.29	3.95	899.33	54.55	1104.00	0.955	2.18
138.56	903.29	20.10	883.19	59.18	1028.46	0.884	1.83
168.56	903.29	22.34	880.95	77.42	902.60	0.767	0.69
198.56	903.29	5.70	897.59	82.28	905.81	0.754	0.41
228.56	903.29	-8.03	911.32	66.97	990.27	0.820	1.27
258.56	903.29	-12.29	915.58	51.51	1169.67	1.000	2.39
288.56	903.29	-8.02	911.51	50.29	1184.66	1.028	2.51
318.56	903.29	-15.42	918.74	52.84	1158.91	1.003	2.35
348.56	903.29	-0.93	904.22	52.82	1134.87	0.984	2.30



APPENDIX F

LISTING OF TASK II STAGE UNDISTORTED  
INLET BLADE ELEMENT DATA

TABLE XVII - TASK II STAGE UNDISTORTED INLET BLADE ELEMENT DATA

093070		INLET GUIDE VANES 3 NASA TASK IV-B											
		BLADE ELEMENT PERFORMANCE RESULTS										9/29/1970	
		POINT NUMBER 13 READING NUMBER 430 DATE											
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCID ANG	INCID ANG	INLET ANG	INLET ANG	INLET REL VELOCITY	INLET ABS VELOCITY	INLET AX VELOCITY	INLET ARS TANG VEL	INLET REL TANG VEL	INLET ABS TANG VEL
1	0.30	0.30	0.0	0.36	0.36	490.22	490.22	532.12	532.12	2.61	2.61	2.61	2.61
2	0.23	0.23	0.0	0.28	0.28	532.20	532.20	574.12	574.12	2.61	2.61	2.61	2.61
3	0.03	0.03	0.0	0.03	0.03	606.39	606.39	648.32	648.32	5.06	5.06	5.06	5.06
4	0.47	0.47	0.0	0.47	0.47	611.21	611.21	653.24	653.24	6.58	6.58	6.58	6.58
5	0.59	0.59	0.0	0.59	0.59	608.58	608.58	651.24	651.24	6.58	6.58	6.58	6.58
6	0.90	0.90	0.0	0.90	0.90	608.16	608.16	651.24	651.24	6.58	6.58	6.58	6.58
7	1.08	1.08	0.0	1.08	1.08	592.73	592.73	631.12	631.12	6.58	6.58	6.58	6.58
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	DEV ANG TE	TURN ANGLE	EXIT REL VELOCITY	EXIT ABS VELOCITY	EXIT AX VELOCITY	EXIT ARS TANG VEL	EXIT REL TANG VEL	EXIT ABS TANG VEL	EXIT REL TANG VEL	EXIT ABS TANG VEL
1	0.35	0.35	0.0	0.35	0.63	591.94	591.94	631.12	631.12	4.30	4.30	4.30	4.30
2	0.40	0.40	0.0	0.40	0.32	670.67	670.67	712.64	712.64	3.38	3.38	3.38	3.38
3	0.29	0.29	0.0	0.29	0.74	686.10	686.10	727.04	727.04	4.43	4.43	4.43	4.43
4	0.19	0.19	0.0	0.19	2.27	627.07	627.07	668.09	668.09	11.78	11.78	11.78	11.78
5	0.15	0.15	0.0	0.15	2.72	581.53	581.53	621.10	621.10	14.44	14.44	14.44	14.44
6	1.36	1.36	0.0	1.36									
7	1.64	1.64	0.0	1.64									
RADIAL POSITION	RBTOR SPD AT INLET	INLET ARS MACH NO	INLET REL MACH NO	AXIAL VFL RATIO	TRAV LOSS COEFFICIENT	TR V LOSS	TR V PRESS LOSS	DIFFUSION FACTOR	GM1				
1	0.456	0.456	0.456	1.166	0.068	0.026	0.026	0.181	0.457				
2	0.488	0.488	0.488	1.156	0.075	0.029	0.029	0.161	0.395				
3	0.560	0.560	0.560	1.106	0.103	0.041	0.041	0.108	0.216				
4	0.564	0.564	0.564	1.108	0.087	0.003	0.003	0.125	0.247				
5	0.562	0.562	0.562	1.082	0.023	0.008	0.008	0.097	0.188				
6	0.261	0.261	0.261	0.999	0.037	0.005	0.005	0.111	0.056				
7	0.546	0.546	0.546	0.948	0.045	0.004	0.004	0.032	0.029				
RADIAL POSITION	RBTOR SPD AT EXIT	EXIT ARS MACH NO	EXIT REL MACH NO	YRAY YCT	FIXED TOY PRESS RATIO	FIXED TOY TEMP RATIO	PERCENT IMMERSION	PERFORMANCE PARAMETERS		IGW DATA			
1	0.544	0.544	0.544	1.309	0.924	1.000	1.000	Total Pressure Ratio = 0.9984		STAGE DATA			
2	0.560	0.560	0.560	1.317	0.924	1.000	1.000	Polytropic Efficiency = 0.6802		FIXED INST.			
3	0.622	0.622	0.622	1.368	0.925	1.000	1.000	Percent Design Speed = 99.9		1.3719			
4	0.617	0.617	0.617	1.419	0.925	1.000	1.000	Cor. Nozzle Weight Flow = 224.1		0.6802			
5	0.622	0.622	0.622	1.508	0.925	1.000	1.000	Discharge Valve Setting = 30.0		0.9984			
6	0.574	0.574	0.574	1.648	0.925	1.000	1.000						
7	0.534	0.534	0.534	1.718	0.925	1.000	1.000						
RADIAL POSITION	PERCENT IMMERSION	PRESS RATIO	TEMP RATIO	FIXED TOY PRESS RATIO	FIXED TOY TEMP RATIO	OVERALL PERFORMANCE SUMMARY		PERFORMANCE PARAMETERS		IGW DATA			
1	5.0000	0.991	1.007	0.924	1.000	Total Pressure Ratio = 0.9984		Polytropic Efficiency = 0.6802		STAGE DATA			
2	10.0000	0.989	1.006	0.924	1.000	Percent Design Speed = 99.9		Cor. Nozzle Weight Flow = 224.1		FIXED INST.			
3	30.0000	1.001	1.004	0.924	1.000	Discharge Valve Setting = 30.0				1.3719			
4	50.0000	1.001	1.005	0.925	1.000					0.6802			
5	70.0000	1.004	1.004	0.924	1.000								
6	90.0000	0.997	1.005	0.925	1.000								
7	99.0000	0.997	1.005	0.925	1.000								

TE Check Flow/Noz.Flow = 1.0028  
 Assumed TE Flow Coeff. = 0.9850

TABLE XVII - TASK II STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

093070

ROTOR BLADE BOW - NASA TASK IVeR													
BLADE ELEMENT PERFORMANCE RESULTS													
POINT NUMBER 13 READING NUMBER 430 DATE 9/29/1970													
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	MN CHBR LN LE ANGLE	INCID. ANG	INLET ABS VELOCITY	INLET ABS VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL VELOCITY
1	65.46	60.31	61.28	4.16	67.01	470.01	460.58	865.58	58.63	1458.51	865.58	58.63	1458.51
2	63.72	60.25	60.25	3.47	704.33	3583.88	704.33	1420.81	4.32	1420.81	704.33	4.32	1420.81
3	57.91	6.24	57.07	0.84	801.92	1509.46	801.90	1278.83	3.38	1278.83	801.90	3.38	1278.83
4	54.40	6.45	53.90	0.50	813.49	1394.38	810.98	1332.52	9.23	1332.52	810.98	9.23	1332.52
5	51.54	30.12	50.68	0.74	805.61	1283.53	798.47	1200.70	54.70	1200.70	798.47	54.70	1200.70
6	48.28	50.98	48.56	0.28	790.37	1162.33	757.47	1051.79	52.97	1051.79	757.47	52.97	1051.79
7	48.26	51.12	48.02	0.24	755.06	1103.33	717.90	1047.61	54.01	1047.61	717.90	54.01	1047.61
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	REL DEV ANGLE	REL YURN ANGLE	EXIT ABS VELOCITY	EXIT ABS VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL VELOCITY
1	59.90	27.04	57.52	2.38	5.56	725.30	1268.31	643.85	328.49	1118.72	643.85	328.49	1118.72
2	57.26	23.41	57.18	0.08	6.46	775.91	1324.08	715.47	295.00	1127.73	715.47	295.00	1127.73
3	51.44	25.64	52.85	1.41	6.47	817.94	1162.87	737.35	353.83	1241.85	737.35	353.83	1241.85
4	43.47	28.13	46.18	1.60	6.93	880.35	1070.03	775.17	444.96	1351.66	775.17	444.96	1351.66
5	36.17	35.39	34.78	1.47	35.36	872.00	878.40	705.41	504.81	1515.78	705.41	504.81	1515.78
6	21.39	41.29	16.84	4.95	26.89	951.16	779.97	705.29	619.34	1747.32	705.29	619.34	1747.32
7	9.27	43.60	10.78	5.43	38.99	1083.33	805.02	733.08	766.26	1267.32	733.08	766.26	1267.32
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL	DIFFUSION	CM1							
1	1454.38	0.620	1.486	0.967	0.271	0.219							
2	1425.14	0.655	1.475	1.028	0.227	0.227							
3	1282.12	0.757	1.424	0.919	0.288	0.281							
4	1141.75	0.748	1.317	0.997	0.315	0.318							
5	998.01	0.740	1.212	0.848	0.417	0.371							
6	818.42	0.745	1.024	0.922	0.460	0.480							
7	790.60	0.707	1.034	1.073	0.421	0.217							
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	LOSS COEFFICIENT	LOSS PARAM	POLY MOMENT RISE	EFFICIENCY MEAS	POLY MOMENT RISE	EFFICIENCY MEAS	POLY MOMENT RISE	EFFICIENCY MEAS	POLY MOMENT RISE	EFFICIENCY MEAS
1	1439.51	0.628	1.112	0.185	0.032	0.6832	0.6832	0.6832	0.134	0.134	0.134	0.134	0.134
2	1407.72	0.684	1.168	0.137	0.023	0.7493	0.7493	0.7493	0.139	0.139	0.139	0.139	0.139
3	1278.68	0.725	1.048	0.143	0.026	0.7533	0.7533	0.7533	0.139	0.139	0.139	0.139	0.139
4	1150.62	0.746	0.955	0.117	0.024	0.8105	0.8105	0.8105	0.250	0.250	0.250	0.250	0.250
5	1020.59	0.773	0.848	0.136	0.028	0.8256	0.8256	0.8256	0.324	0.324	0.324	0.324	0.324
6	895.66	0.846	0.688	0.151	0.031	0.8409	0.8409	0.8409	0.407	0.407	0.407	0.407	0.407
7	863.47	0.981	0.729	0.187	0.039	0.8194	0.8194	0.8194	0.483	0.483	0.483	0.483	0.483
RADIAL POSITION	PERCENT IMMERSION	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	PERFORMANCE PARAMETERS							
1	5.0000	1.357	1.148	1.369	1.141	Total Pressure Ratio = 1.3719							
2	10.0000	1.387	1.128	1.399	1.135	Adiabatic Efficiency = 0.6657							
3	30.0000	1.410	1.125	1.408	1.136	Polytropic Efficiency = 0.6802							
4	50.0000	1.414	1.128	1.414	1.144	Percent Design Speed = 99.9							
5	70.0000	1.462	1.139	1.475	1.145	Cor. Nozzle Weight Flow = 224.1							
6	90.0000	1.609	1.154	1.567	1.163	LE Check Flow/Noz.Flow = 1.0027							
7	95.0000	1.655	1.162	1.568	1.166	Assumed LE Flow Coeff. = 0.9850							
OVERALL PERFORMANCE SUMMARY													
STAGE DATA ROTOR DATA ROTOR DATA													
FIXED INST. FIXED INST. TRAV. INST.													
1.3719 1.4477 1.4674													
0.6657 0.7850 0.8632													
0.6802 0.7959 0.8704													
Discharge Valve Setting= 30.0													
TE Check Flow/Noz.Flow = 0.9865													
Assumed TE Flow Coeff. = 0.9500													

TABLE XVII - TASK II STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

STATOR BLADE ROW = NASA TASK IV-B		POINT NUMBER 13		BLADE ELEMENT PERFORMANCE RESULTS		READING NUMBER 436		DATE 9/29/5976		
PARTIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CMR LN LE	INCID ANS	INCID ANS SUCT SURE	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS YANG VEL	INLET REL YANG VEL
1	28.58	-10.89	39.47	-13.48	690.13	806.06	806.06	806.06	330.10	330.10
2	23.28	-15.88	39.11	-15.48	740.11	848.08	848.08	848.08	352.86	352.86
3	23.52	-13.94	39.04	-12.52	895.91	795.05	795.05	795.05	410.07	410.07
4	23.28	-17.52	39.80	-17.52	904.48	854.48	854.48	854.48	462.04	462.04
5	33.12	-17.09	40.86	-17.09	989.74	874.34	874.34	874.34	507.63	507.63
6	37.52	-17.09	42.22	-17.09	989.74	874.34	874.34	874.34	507.63	507.63
7	39.14	-13.62	42.76	-13.62	1129.68	867.65	867.65	867.65	706.00	706.00
PARTIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMR LN TE	DEV ANS TE	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS YANG VEL	EXIT REL YANG VEL
1	2.62	13.78	51.18	13.78	25.92	706.64	706.64	706.64	327.73	327.73
2	2.09	12.19	51.18	12.19	24.43	717.19	717.19	717.19	267.16	267.16
3	1.09	12.19	51.18	12.19	24.43	717.19	717.19	717.19	267.16	267.16
4	0.76	12.19	51.18	12.19	24.43	717.19	717.19	717.19	267.16	267.16
5	2.30	6.88	59.16	6.88	35.46	825.07	825.07	825.07	333.00	333.00
6	2.33	5.25	50.58	5.25	42.85	794.73	794.73	794.73	273.77	273.77
7	2.64	8.78	52.38	8.78	42.29	644.73	644.73	644.73	241.16	241.16
PARTIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	LOSS COEFFICIENT	YGT PRESS LOSS PARAM	EFFICIENCY	POLY MOMEN RISEZ	MEAN Y RISE	STAT PRESS RISE COEFF
1	1.595	0.595	1.153	1.153	0.236	0.071	0.4224	0.4224	0.071	0.071
2	1.658	0.658	1.062	1.062	0.097	0.031	0.5622	0.5622	0.031	0.031
3	1.729	0.729	1.007	1.007	0.118	0.034	0.7017	0.7017	0.034	0.034
4	1.801	0.801	1.007	1.007	0.136	0.036	0.8351	0.8351	0.036	0.036
5	1.886	0.886	1.016	1.016	0.158	0.053	0.9662	0.9662	0.053	0.053
6	1.932	0.932	1.016	1.016	0.181	0.053	1.0962	1.0962	0.053	0.053
7	2.000	1.000	1.016	1.016	0.204	0.053	1.2264	1.2264	0.053	0.053
PARTIAL POSITION	PERCENT IMMERSION	TRAV TOT PRESS RATIO	EXIT REL MACH NO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	OVERALL PERFORMANCE SUMMARY				
1	5.0000	1.008	0.996	0.996	1.080	STAGE DATA. STATOR DATA STATOR DATA				
2	10.0000	1.008	0.996	0.996	1.080	FIXED INST. FIXED INST. TRAV. INST.				
3	30.0000	1.004	1.016	0.974	1.080	Total Pressure Ratio = 1.3719 0.9526 0.9587				
4	50.0000	1.004	1.016	0.974	1.080	Polytropic Efficiency = 0.6802 0.8688 0.4005				
5	70.0000	0.965	1.008	0.952	1.080	Percent Design Speed = 99.9 Discharge Valve Setting= 30.0				
6	90.0000	0.819	0.999	0.918	1.080	Cor. Nozzle Weight Flow= 224.1				
7	95.0000	0.494	0.992	0.882	1.080	LE Check Flow/Noz.Flow = 0.9865 TE Check Flow/Noz.Flow = 0.9598				
						Assumed LE Flow Coeff. = 0.9500 Assumed TE Flow Coeff. = 0.9350				

093676 TABLE XVII- TASK II STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

INLET GUIDE VANES & NASA TASK IV-9														
BLADE ELEMENT PERFORMANCE RESULTS														
POINY NUMBER 14 BRADING NUMBER 431 DATE 972921976														
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LM LE ANGLE	INCID ANG	CHBR LM SUCT SUKE	INLET ABS VELOCITY	INLET REL VELOCITY	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS YANG VEL	INLET REL YANG VEL	INLET AX VELOCITY	INLET ABS YANG VEL
1	0.23	0.28	0.00	0.28	489.49	524.92	595.36	489.49	524.92	489.49	1.95	1.74	489.49	1.95
2	0.08	0.08	0.00	0.10	595.44	601.03	601.03	595.44	601.03	595.44	1.08	1.08	595.44	1.08
3	0.21	0.21	0.00	0.21	596.00	593.45	593.45	596.00	593.45	596.00	1.96	1.96	593.45	1.96
4	0.67	0.95	0.00	0.95	594.34	582.41	582.41	594.34	582.41	594.34	1.84	1.84	582.41	1.84
5	1.12	1.12	0.00	1.12	583.01			583.01		583.01	1.43	1.43	582.41	1.43
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LM TE ANGLE	DEV ANG TE	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS YANG VEL	EXIT REL YANG VEL	EXIT AX VELOCITY	EXIT ABS YANG VEL
1	0.66	1.05	0.00	0.66	0.44	577.48	613.08	577.48	613.08	577.48	4.70	4.70	577.48	4.70
2	1.73	1.73	0.00	1.73	0.13	637.19	667.30	637.19	667.30	637.19	1.19	1.19	637.19	1.19
3	0.92	0.92	0.00	0.92	0.70	677.93	675.78	677.93	675.78	677.93	1.83	1.83	677.93	1.83
4	0.48	0.48	0.00	0.48	0.14	657.84	656.68	657.84	656.68	657.84	1.46	1.46	657.84	1.46
5	2.78	2.78	0.00	2.78	0.73	604.68	591.17	604.68	591.17	604.68	2.73	2.73	591.17	2.73
6	3.27	3.27	0.00	3.27	0.40	570.86	558.18	570.86	558.18	570.86	3.48	3.48	558.18	3.48
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VFL RATIO	TRAV LOSS TR %	TRAV COEFF	LOSS PARAM	TRAV LOSS TR %	PRESS	DIFFUSION FACTOR	ROTOR RISE/MEAS Y	STAY PRESS RISE COEFF	ROTOR RISE/MEAS Y	STAY PRESS RISE COEFF
1	0.447	0.447	0.447	1.180	0.072	0.021	0.021	0.021	0.021	0.184	0.447	0.447	0.184	0.447
2	0.491	0.491	0.491	1.168	0.079	0.030	0.030	0.030	0.030	0.177	0.426	0.426	0.177	0.426
3	0.544	0.544	0.544	1.121	0.084	0.003	0.003	0.003	0.003	0.135	0.254	0.254	0.135	0.254
4	0.555	0.555	0.555	1.124	-0.003	0.001	0.001	0.001	0.001	0.133	0.264	0.264	0.133	0.264
5	0.551	0.551	0.551	1.099	-0.021	0.007	0.007	0.007	0.007	0.102	0.204	0.204	0.102	0.204
6	0.548	0.548	0.548	0.978	0.018	0.006	0.006	0.006	0.006	0.001	0.055	0.055	0.001	0.055
7	0.537	0.537	0.537	0.945	0.016	0.005	0.005	0.005	0.005	0.043	0.032	0.032	0.043	0.032
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	SOLIDITY	PERCENT IMMERSION	TRAV TOT PRESS RATIO	FIXED TOT TEMP RATIO	PERCENT IMMERSION	TRAV TOT PRESS RATIO	FIXED TOT TEMP RATIO	PERCENT IMMERSION	TRAV TOT PRESS RATIO	FIXED TOT TEMP RATIO	PERCENT IMMERSION
1	0.529	0.529	0.529	1.3090	0.995	1.000	1.000	0.995	1.000	1.000	0.995	1.000	0.995	1.000
2	0.564	0.564	0.564	1.3170	0.995	1.000	1.000	0.995	1.000	1.000	0.995	1.000	0.995	1.000
3	0.619	0.619	0.619	1.3010	0.995	1.000	1.000	0.995	1.000	1.000	0.995	1.000	0.995	1.000
4	0.629	0.629	0.629	1.4190	0.995	1.000	1.000	0.995	1.000	1.000	0.995	1.000	0.995	1.000
5	0.614	0.614	0.614	1.5020	0.995	1.000	1.000	0.995	1.000	1.000	0.995	1.000	0.995	1.000
6	0.559	0.559	0.559	1.6460	0.995	1.000	1.000	0.995	1.000	1.000	0.995	1.000	0.995	1.000
7	0.524	0.524	0.524	1.7160	0.995	1.000	1.000	0.995	1.000	1.000	0.995	1.000	0.995	1.000
OVERALL PERFORMANCE SUMMARY														
STAGE DATA														
FIXED INST.										IGV DATA				
1.6751										TRAV. INST.				
0.8377										0.9978				
Total Pressure Ratio =														
Polytropic Efficiency =														
Percent Design Speed = 99.9														
Cor. Nozzle Weight Flow = 220.6														
Discharge Valve Settings=9.0														
LE Check Flow/Noz.Flow = 1.0140														
TE Check Flow/Noz.Flow = 1.0131														
Assumed LE Flow Coeff. = 0.9900														
Assumed TE Flow Coeff. = 0.9950														



TABLE XVII - TASK II STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

PARTIAL POSITION		REL INLET FLOW ANG		ABS INLET FLOW ANG		CHBR LN LE ANGLE		INLET ANR MN CHBR LN		INLET ABS VELOCITY		INLET REL VELOCITY		INLET AX VELOCITY		INLET ABS Y ANG VEL		INLET REL Y ANG VEL	
PARTIAL POSITION		REL INLET FLOW ANG		ABS INLET FLOW ANG		CHBR LN LE ANGLE		INLET ANR MN CHBR LN		INLET ABS VELOCITY		INLET REL VELOCITY		INLET AX VELOCITY		INLET ABS Y ANG VEL		INLET REL Y ANG VEL	
1	1	65.90	0.60	61.28	4.62	65.74	156.74	61.28	4.62	65.74	156.74	61.28	4.62	64.15	6.76	1446.57	1412.84	1412.84	1412.84
2	2	63.48	0.92	60.25	3.43	781.48	1377.38	60.25	3.43	781.48	1377.38	60.25	3.43	896.77	43.25	1412.84	1412.84	1412.84	1412.84
3	3	57.72	1.85	57.07	0.65	786.84	1491.53	57.07	0.65	786.84	1491.53	57.07	0.65	796.58	20.17	1261.12	1261.12	1261.12	1261.12
4	4	54.80	0.76	53.90	0.90	800.02	1384.76	53.90	0.90	800.02	1384.76	53.90	0.90	797.45	10.60	1138.33	1138.33	1138.33	1138.33
5	5	52.06	0.38	50.88	1.26	792.35	1377.50	50.88	1.26	792.35	1377.50	50.88	1.26	781.67	5.21	1082.50	1082.50	1082.50	1082.50
6	6	49.74	0.22	48.58	1.16	762.42	1352.62	48.58	1.16	762.42	1352.62	48.58	1.16	731.73	22.80	864.02	864.02	864.02	864.02
7	7	49.49	0.25	48.02	1.47	735.03	1398.97	48.02	1.47	735.03	1398.97	48.02	1.47	695.49	52.41	817.44	817.44	817.44	817.44
ROTOR BLADE ROW - NASA TASK IVeB																			
BLADE ELEMENT PERFORMANCE RESULTS																			
PARTIAL POSITION		REL YRN ANGLE		REL YRN ANGLE		REL DIV ANGLE		REL DIV ANGLE		EXIT ABS VELOCITY		EXIT REL VELOCITY		EXIT AX VELOCITY		EXIT ABS Y ANG VEL		EXIT REL Y ANG VEL	
PARTIAL POSITION		REL YRN ANGLE		REL YRN ANGLE		REL DIV ANGLE		REL DIV ANGLE		EXIT ABS VELOCITY		EXIT REL VELOCITY		EXIT AX VELOCITY		EXIT ABS Y ANG VEL		EXIT REL Y ANG VEL	
1	1	60.98	3.46	57.52	3.46	41.66	57.52	41.66	57.52	736.94	1302.54	736.94	1302.54	534.40	425.78	364.08	364.08	364.08	364.08
2	2	56.93	0.25	57.18	0.25	30.25	57.18	30.25	57.18	770.30	1335.73	770.30	1335.73	619.18	455.78	930.93	930.93	930.93	930.93
3	3	51.11	0.18	52.85	1.74	1.74	52.85	1.74	52.85	802.41	1004.97	802.41	1004.97	495.94	784.74	784.74	784.74	784.74	784.74
4	4	43.64	0.10	46.18	2.46	2.46	46.18	2.46	46.18	838.99	892.59	838.99	892.59	648.76	514.03	418.74	418.74	418.74	418.74
5	5	34.70	0.11	34.70	0.00	0.00	34.70	0.00	34.70	864.46	787.53	864.46	787.53	644.50	573.93	445.93	445.93	445.93	445.93
6	6	21.94	0.10	16.84	5.10	5.10	16.84	5.10	16.84	864.76	632.28	864.76	632.28	574.76	663.52	231.90	231.90	231.90	231.90
7	7	13.61	0.10	10.78	2.91	2.91	10.78	2.91	10.78	938.52	618.28	938.52	618.28	585.10	720.16	141.70	141.70	141.70	141.70
DIFFUSION																			
PARTIAL POSITION		ROTOR SPD AT INLET		INLET REL MACH NO		EXIT REL MACH NO		POLY MOMEN RISE		EFFICIENCY		MEAS V RISE		POLY MOMEN RISE		EFFICIENCY		MEAS V RISE	
PARTIAL POSITION		ROTOR SPD AT INLET		INLET REL MACH NO		EXIT REL MACH NO		POLY MOMEN RISE		EFFICIENCY		MEAS V RISE		POLY MOMEN RISE		EFFICIENCY		MEAS V RISE	
1	1	143.33	0.82	1.48	0.26	0.26	1.48	0.26	1.48	0.1036	0.7488	0.1036	0.7488	0.7671	0.7671	0.283	0.283	0.283	0.283
2	2	140.71	0.69	1.46	0.26	0.26	1.46	0.26	1.46	0.1036	0.7488	0.1036	0.7488	0.7671	0.7671	0.283	0.283	0.283	0.283
3	3	127.76	0.60	1.46	0.26	0.26	1.46	0.26	1.46	0.1036	0.7488	0.1036	0.7488	0.7671	0.7671	0.283	0.283	0.283	0.283
4	4	119.80	0.78	1.77	0.26	0.26	1.77	0.26	1.77	0.1036	0.7488	0.1036	0.7488	0.7671	0.7671	0.283	0.283	0.283	0.283
5	5	103.86	0.62	1.77	0.26	0.26	1.77	0.26	1.77	0.1036	0.7488	0.1036	0.7488	0.7671	0.7671	0.283	0.283	0.283	0.283
6	6	89.01	0.77	1.61	0.26	0.26	1.61	0.26	1.61	0.1036	0.7488	0.1036	0.7488	0.7671	0.7671	0.283	0.283	0.283	0.283
7	7	861.85	0.825	1.53	0.26	0.26	1.53	0.26	1.53	0.1036	0.7488	0.1036	0.7488	0.7671	0.7671	0.283	0.283	0.283	0.283
STAGE DATA ROTOR DATA ROTOR DATA																			
PARTIAL POSITION		PERCENT DIMENSION PRESS RATIO		TRAV TOT PRESS RATIO		FIXED TOT PRESS RATIO		FIXED TOT TRMP RATIO		LOSS PARAM		EFFICIENCY		POLY MOMEN RISE		EFFICIENCY		POLY MOMEN RISE	
PARTIAL POSITION		PERCENT DIMENSION PRESS RATIO		TRAV TOT PRESS RATIO		FIXED TOT PRESS RATIO		FIXED TOT TRMP RATIO		LOSS PARAM		EFFICIENCY		POLY MOMEN RISE		EFFICIENCY		POLY MOMEN RISE	
1	1	5.0000	1.700	1.700	1.725	1.725	1.725	1.225	1.225	0.1036	0.7488	0.1036	0.7488	0.7671	0.7671	0.283	0.283	0.283	0.283
2	2	30.0000	1.745	1.745	1.721	1.721	1.721	1.219	1.219	0.1036	0.7488	0.1036	0.7488	0.7671	0.7671	0.283	0.283	0.283	0.283
3	3	30.0000	1.705	1.705	1.725	1.725	1.725	1.199	1.199	0.1036	0.7488	0.1036	0.7488	0.7671	0.7671	0.283	0.283	0.283	0.283
4	4	50.0000	1.657	1.657	1.695	1.695	1.695	1.184	1.184	0.1036	0.7488	0.1036	0.7488	0.7671	0.7671	0.283	0.283	0.283	0.283
5	5	90.0000	1.701	1.701	1.668	1.668	1.668	1.174	1.174	0.1036	0.7488	0.1036	0.7488	0.7671	0.7671	0.283	0.283	0.283	0.283
6	6	90.0000	1.661	1.661	1.671	1.671	1.671	1.172	1.172	0.1036	0.7488	0.1036	0.7488	0.7671	0.7671	0.283	0.283	0.283	0.283
7	7	95.0000	1.733	1.733	1.628	1.628	1.628	1.175	1.175	0.1036	0.7488	0.1036	0.7488	0.7671	0.7671	0.283	0.283	0.283	0.283
PERFORMANCE PARAMETERS																			
PARTIAL POSITION		Total Pressure Ratio		Adiabatic Efficiency		Polytropic Efficiency		Percent Design Speed		Cor. Nozzle Weight Flow		Discharge Valve Settings		STAGE DATA ROTOR DATA ROTOR DATA		FIXED INST. FIXED INST. TRAV. INST.		FIXED INST. FIXED INST. TRAV. INST.	
PARTIAL POSITION		Total Pressure Ratio		Adiabatic Efficiency		Polytropic Efficiency		Percent Design Speed		Cor. Nozzle Weight Flow		Discharge Valve Settings		STAGE DATA ROTOR DATA ROTOR DATA		FIXED INST. FIXED INST. TRAV. INST.		FIXED INST. FIXED INST. TRAV. INST.	
1	1	1.6751	0.8255	0.8377	0.8680	0.8680	99.9	224.1	30.0	1.0027	0.9850	1.0027	0.9850	1.7066	0.8577	0.8680	0.8680	0.9300	0.9300
TE Check Flow/Noz.Flow = 1.0027																			
Assumed TE Flow Coeff. = 0.9850																			

093070

TABLE XVII - TASK II STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

093070

STATOR BLADE ROW - NASA TASK IV-R		POINT NUMBER 14		BLADE ELEMENT PERFORMANCE RESULTS		READING NUMBER 431		DATE 9/29/1970			
PARTIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCID ANG	MN CHBR LN SUUCT SURF	INCID ANG	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ARS TANG VEL	INLET REL YANG VEL
1	43.27	37.89	39.47	39.11	-1.75	43.05	696.53	507.16	507.16	477.43	477.43
2	37.36	39.01	39.01	-0.96		35.08	753.87	559.18	559.18	457.47	457.47
3	38.05	39.89	39.89	-1.84		35.08	802.65	611.99	611.99	494.57	494.57
4	38.46	40.86	40.86	1.50		38.45	844.65	660.60	660.60	524.78	524.78
5	39.36	43.68	43.68	4.32		45.37	866.51	683.10	683.10	560.48	560.48
6	45.95	42.22	42.22	-2.73		51.29	898.27	621.57	621.57	640.27	640.27
7	47.60	42.76	42.76	-4.84		51.29	942.18	630.61	630.61	690.56	690.56
PARTIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	DEV ANG TE	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ARS TANG VEL	EXIT REL YANG VEL	
1	0.22	11.18	11.18	11.35	43.05	560.79	560.79	560.79	27.17	27.17	
2	2.29	10.10	10.10	12.39	35.08	568.33	568.33	568.33	29.67	29.67	
3	2.45	8.67	8.67	11.32	35.08	630.48	630.48	630.48	27.00	27.00	
4	0.01	8.75	8.75	8.74	38.45	612.52	612.52	612.52	61.09	61.09	
5	1.37	9.16	9.16	10.47	37.99	627.72	627.72	627.72	15.00	15.00	
6	0.48	10.58	10.58	11.06	45.37	625.71	625.71	625.71	65.80	65.80	
7	0.69	12.38	12.38	8.67	51.29	577.98	577.98	577.98	53.08	53.08	
PARTIAL POSITION	ROTOR SPD AT INLET	INLET REL MACH NO	AXIAL VEL RATIO	DIFFUSION FACTOR	CHI						
1	0.580	0.580	1.106	0.419	0.376						
2	0.642	0.642	0.988	0.433	0.383						
3	0.690	0.690	0.927	0.393	0.380						
4	0.733	0.733	0.917	0.452	0.439						
5	0.778	0.778	0.917	0.454	0.475						
6	0.788	0.788	1.004	0.473	0.454						
7	0.828	0.828	0.911	0.507	0.488						
PARTIAL POSITION	ROTOR SPD AT EXIT	EXIT REL MACH NO	SOLIDITY PRESS LOSS COEFFICIENT	POLY MOMEN RISE/ EFFICIENCY	STAT PRESS RISE COEFF						
1	0.463	0.463	1.5236	0.445	1.0808						
2	0.472	0.472	1.5440	0.070	0.8702						
3	0.530	0.530	1.6310	0.042	0.013						
4	0.518	0.518	1.7420	0.024	0.007						
5	0.533	0.533	1.8800	0.032	0.008						
6	0.531	0.531	2.0518	0.031	0.008						
7	0.488	0.488	2.1096	0.078	0.019						
PARTIAL POSITION	PERCENT IMMERGION	TRAV TOT PRESS RATIO	FIXED TOT PRESS RATIO	TEMP RATIO	FIXED TOT TEMP RATIO						
1	5.0000	1.006	0.995	0.974	1.080						
2	10.0000	1.004	1.018	0.984	1.080						
3	30.0000	1.001	1.008	0.989	1.080						
4	50.0000	0.987	1.002	0.988	1.080						
5	70.0000	0.989	1.008	0.989	1.080						
6	90.0000	0.974	1.005	0.998	1.080						
7	95.0000	0.916	0.998	0.974	1.080						
OVERALL PERFORMANCE SUMMARY											
STAGE DATA STATOR DATA STATOR DATA											
FIXED INST. FIXED INST. TRAV. INST.											
1.6751 0.9865 0.9874											
0.8377 0.9744 0.8106											
Discharge Valve Setting=9.0											
99.9											
Cor. Nozzle Weight Flow= 220.6											
IE Check Flow/Noz.Flow = 0.9872											
Assumed IE Flow Coeff. = 0.9500											
WE Check Flow/Noz.Flow = 0.9745											
Assumed WE Flow Coeff. = 0.9350											

100170

TABLE XVII - TASK II STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

POINT NUMBER 15		READING NUMBER 432		DATE 9/29/1970		INLET GUIDE VANES - NASA TASK IV*8											
BLADE ELEMENT PERFORMANCE RESULTS														IGV DATA			
														TRAV, INSTR.			
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CMBR LN LE ANGLE	INLET ANGLE	INCID ANGLE	CMBR LN MN CMBR LN	SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL					
1	-0.50	-0.71	0.	-0.50	413.02	449.00	413.03	449.00	449.00	413.03	-3.52	-3.52					
2	-0.38	-0.38	0.	-0.38	511.48	509.41	511.40	509.41	509.41	511.40	-3.38	-3.38					
3	0.00	0.00	0.	0.00	501.64	497.69	501.10	497.69	497.69	501.10	2.43	2.43					
4	0.28	0.12	0.	0.28	486.125	486.125	486.125	486.125	486.125	486.125	8.35	8.35					
5	0.98	0.98	0.	0.98													
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMBR LN TE ANGLE	DEV ANGLE	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL							
1	-4.00	-2.50	0.	-4.00	3.50	467.99	466.81	466.81	-32.66	-32.66							
2	-0.09	-3.88	0.	-0.09	-0.29	503.47	502.98	502.98	-21.99	-21.99							
3	-7.13	-5.12	0.	-7.13	7.41	565.77	565.49	565.49	-0.90	-0.90							
4	-6.40	-6.40	0.	-6.40	7.39	571.04	568.02	568.02	-38.51	-38.51							
5			0.			569.38	559.83	559.83	-70.07	-70.07							
6			0.			537.67	520.87	520.87	-63.23	-63.23							
7			0.			508.37	487.85	487.85	-54.76	-54.76							
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL	TRAV LOSS	TR IL PRESS	DIFFUSION										
1	0.375	1.130	0.050	1.130	0.131	0.055	0.389										
2	0.409	1.120	0.144	1.120	0.144	0.055	0.373										
3	0.468	1.116	0.054	1.116	0.054	0.020	0.108										
4	0.468	1.117	0.036	1.117	0.036	0.002	0.094										
5	0.455	1.048	0.020	1.048	0.020	0.006	0.086										
6	0.444	1.004	0.023	1.004	0.023	0.007	0.040										
7							0.007										
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	SOLIDITY	PERCENT DIMENSION	TRAV TOT	PERCENT DIMENSION	TRAV TOT	TRAV TOT	TRAV TOT	TRAV TOT	TRAV TOT	TRAV TOT	TRAV TOT	TRAV TOT	TRAV TOT	TRAV TOT
1	0.424	1.3090	1.014	0.996	5,000	0.988	1.014	0.996	1.014	0.996	1.014	0.996	1.014	0.996	1.014	0.996	1.014
2	0.457	1.3170	1.014	0.997	10,000	0.984	1.014	0.997	1.014	0.997	1.014	0.997	1.014	0.997	1.014	0.997	1.014
3	0.518	1.3610	1.008	0.997	30,000	0.992	1.008	0.997	1.008	0.997	1.008	0.997	1.008	0.997	1.008	0.997	1.008
4	0.523	1.4190	1.004	0.996	50,000	0.995	1.004	0.996	1.004	0.996	1.004	0.996	1.004	0.996	1.004	0.996	1.004
5	0.522	1.5020	1.003	0.997	70,000	0.999	1.003	0.997	1.003	0.997	1.003	0.997	1.003	0.997	1.003	0.997	1.003
6	0.492	1.6460	1.004	0.997	90,000	0.997	1.004	0.997	1.004	0.997	1.004	0.997	1.004	0.997	1.004	0.997	1.004
7	0.464	1.7160			95,000	0.997											
OVERALL PERFORMANCE SUMMARY																	
PERFORMANCE PARAMETERS																	
STAGH DATA																	
FIXED INSTR. = 1.7916																	
IGV DATA = 0.9936																	
TRAV, INSTR. = 0.7584																	
Total Pressure Ratio = 1.7916																	
Polytropic Efficiency = 0.7584																	
Percent Design Speed = 100.0																	
Cor. Nozzle Weight Flow = 192.6																	
Discharge Valve Setting = 4.0																	
TE Check Flow/Noz. Flow = 1.0448																	
Assumed TE Flow Coeff. = 0.9900																	
TE Check Flow/Noz. Flow = 1.0439																	
Assumed TE Flow Coeff. = 0.9930																	

100170 TABLE XVII - TASK II STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

		ROTOR BLADE ROW - NASA TASK IVeR										
		BLADE ELEMENT PERFORMANCE RESULTS					ROTOR DATA					
		POINT NUMBER	15	READING NUMBER	432	DATE	9/29/1970					
RACIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CMBR LN LE ANGLE	INLET ANGLE	INCID ANGLE	REL DEV ANGLE	REL TURN ANGLE	EXIT ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	EXIT REL TANG VEL
1	70.95	33.67	61.28	9.67	8.67	0.64	12.79	57.58	574.96	513.74	32.96	741.41
2	51.95	21.26	60.25	8.60	8.60	-2.76	14.43	846.82	539.164	543.91	647.65	760.36
3	63.19	0.08	57.07	6.12	6.12	-3.84	16.17	876.09	851.00	580.14	656.40	622.53
4	61.36	3.35	53.90	7.46	7.46	-3.84	19.10	853.67	722.85	534.61	665.03	485.83
5	54.94	5.95	50.80	8.14	8.14	0.14	24.10	841.07	623.62	509.08	666.40	354.40
6	52.20	5.21	48.58	6.62	6.62	4.35	34.01	864.23	527.59	483.88	708.27	187.57
7	54.42	4.54	48.02	6.40	6.40	3.07	40.64	900.20	525.91	497.44	740.70	121.95
RACIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMBR LN TE ANGLE	EXIT ANGLE	REL DEV ANGLE	REL TURN ANGLE	LOSS COEFFICIENT	EXIT ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	EXIT REL TANG VEL
1	51.16	56.61	57.52	57.52	0.64	12.79	0.333	57.58	573.78	460.40	698.39	741.41
2	54.42	49.98	57.18	57.18	-2.76	14.43	0.311	846.82	939.164	543.91	647.65	760.36
3	47.02	48.53	52.85	52.85	-3.84	16.17	0.178	876.09	851.00	580.14	656.40	622.53
4	42.26	51.20	46.10	46.10	-3.84	19.10	0.171	853.67	722.85	534.61	665.03	485.83
5	34.84	52.62	34.70	34.70	0.14	24.10	0.133	841.07	623.62	509.08	666.40	354.40
6	21.19	52.66	16.84	16.84	4.35	34.01	0.211	864.23	527.59	483.88	708.27	187.57
7	13.77	56.12	10.70	10.70	3.07	40.64	0.230	900.20	525.91	497.44	740.70	121.95
RACIAL POSITION	ROTOR SPD AT INLET	EXIT ABS MACH NO	INLET ABS MACH NO	REL AXIAL VEL RATIO	SOLIDITY RATIO	LOSS COEFFICIENT	FIXED TOT LOSS	EXIT ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	EXIT REL TANG VEL
1	1454.67	0.471	1.431	0.896	1.4310	0.333	0.041	57.58	573.78	460.40	698.39	741.41
2	1423.42	0.513	1.417	0.971	1.4610	0.311	0.062	846.82	939.164	543.91	647.65	760.36
3	1242.47	0.599	1.327	0.894	1.6120	0.178	0.038	876.09	851.00	580.14	656.40	622.53
4	1141.98	0.598	1.242	0.830	1.7730	0.171	0.036	853.67	722.85	534.61	665.03	485.83
5	894.21	0.505	1.155	0.790	1.9640	0.133	0.028	841.07	623.62	509.08	666.40	354.40
6	833.99	0.602	1.024	0.777	2.2480	0.211	0.044	864.23	527.59	483.88	708.27	187.57
7	793.76	0.584	0.969	0.829	2.3470	0.230	0.048	900.20	525.91	497.44	740.70	121.95
RACIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	INLET ABS MACH NO	REL AXIAL VEL RATIO	SOLIDITY RATIO	LOSS COEFFICIENT	FIXED TOT LOSS	EXIT ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	EXIT REL TANG VEL
1	1439.80	0.675	0.704	0.896	1.4310	0.333	0.041	57.58	573.78	460.40	698.39	741.41
2	1434.01	0.702	0.776	0.971	1.4610	0.311	0.062	846.82	939.164	543.91	647.65	760.36
3	1274.94	0.744	0.723	0.894	1.6120	0.178	0.038	876.09	851.00	580.14	656.40	622.53
4	1157.86	0.730	0.618	0.830	1.7730	0.171	0.036	853.67	722.85	534.61	665.03	485.83
5	1023.80	0.725	0.537	0.790	1.9640	0.133	0.028	841.07	623.62	509.08	666.40	354.40
6	895.84	0.749	0.459	0.777	2.2480	0.211	0.044	864.23	527.59	483.88	708.27	187.57
7	862.65	0.782	0.452	0.829	2.3470	0.230	0.048	900.20	525.91	497.44	740.70	121.95
RACIAL POSITION	PERCENT DILUTION	TRAV TOT PRESS RATIO	EXIT REL PRESS RATIO	FIXED TOT PRESS RATIO	TEMP RATIO	LOSS COEFFICIENT	FIXED TOT LOSS	EXIT ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	EXIT REL TANG VEL
1	5.0000	2.026	1.333	2.004	1.318	0.333	0.041	57.58	573.78	460.40	698.39	741.41
2	10.0000	2.029	1.266	1.965	1.302	0.311	0.062	846.82	939.164	543.91	647.65	760.36
3	30.0000	1.846	1.227	1.904	1.246	0.178	0.038	876.09	851.00	580.14	656.40	622.53
4	50.0000	1.865	1.205	1.814	1.223	0.171	0.036	853.67	722.85	534.61	665.03	485.83
5	70.0000	1.802	1.189	1.752	1.200	0.133	0.028	841.07	623.62	509.08	666.40	354.40
6	90.0000	1.796	1.183	1.676	1.194	0.211	0.044	864.23	527.59	483.88	708.27	187.57
7	95.0000	1.842	1.188	1.679	1.194	0.230	0.048	900.20	525.91	497.44	740.70	121.95
DIFFUSION CH1												
FACTOR												
0.607												
0.544												
0.550												
0.610												
0.651												
0.679												
0.665												
POLY MOMEN RISE/ STAT PRESS												
EFFICIENCY MEAS T RISE												
0.7191												
0.7306												
0.8884												
0.8453												
0.8806												
0.8345												
0.814												
0.664												
STAGE DATA ROTOR DATA ROTOR DATA												
FIXED INST. FIXED INST. TRAV. INST.												
1.7916 1.8588 1.9033												
0.7379 0.7687 0.8992												
0.7594 0.8063 0.9079												
Discharge Valve Setting= 4.0												
Percent Design Speed = 100.0												
Cor. Nozzle Weight Flow= 192.6												
IE Check Flow/Noz.Flow = 1.0438												
TE Check Flow/Noz.Flow = 1.0424												
Assumed IE Flow Coeff. = 0.9850												
Assumed TE Flow Coeff. = 0.9500												

1001/9

TABLE XVII - TASK II STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

STATOR BLADE ROW - NASA TASK IV#H		BLADE ELEMENT PERFORMANCE RESULTS									
		POINT NUMBER 15		READING NUMBER 432		DATE 9/29/1970					
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CMBR LN LE ANGLE	MN CMBR LN	INCID ANG SUCT SURF	INCID ANG	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL
1	57.99	50.91	39.47	11.80	18.52	827.19	438.52	701.39	438.52	650.04	650.04
2	50.91	48.40	39.11	9.39	11.80	837.52	528.07	528.07	528.07	654.60	654.60
3	48.40	50.43	39.01	10.63	10.63	853.22	543.10	543.10	543.10	657.20	657.20
4	50.43	50.57	40.86	9.71	9.71	844.32	535.04	535.04	535.04	650.89	650.89
5	50.57	52.75	42.22	10.53	10.53	862.86	519.64	519.64	519.64	683.45	683.45
7	52.75	53.14	42.76	10.38	10.38	893.01	532.54	532.54	532.54	710.26	710.26
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMBR LN TE ANGLE	BEV ANGLE	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	
1	-1.95	-1.95	11.13	9.18	59.94	657.27	656.88	656.88	-22.37	-22.37	
2	-1.96	-1.96	10.10	8.14	52.87	636.59	636.20	636.20	-21.77	-21.77	
3	-3.18	-3.18	8.87	5.69	51.58	582.71	581.66	581.66	-32.36	-32.36	
4	-6.45	-6.45	8.75	2.30	56.88	509.62	506.03	506.03	-57.25	-57.25	
5	-9.10	-9.10	10.58	6.19	53.49	421.60	420.38	420.38	-21.40	-21.40	
6	-11.26	-11.26	10.58	9.32	54.01	284.03	283.13	283.13	-6.22	-6.22	
7	-11.72	-11.72	12.36	10.64	54.86	253.28	252.28	252.28	-7.57	-7.57	
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	DIFFUSION FACTOR						
1	0.665	0.665	1.498	1.498	0.493						
2	0.694	0.694	1.205	1.205	0.499						
3	0.743	0.743	1.001	1.001	0.574						
4	0.730	0.730	0.932	0.932	0.642						
5	0.728	0.728	0.786	0.786	0.710						
6	0.748	0.748	0.745	0.745	0.862						
7	0.775	0.775	0.474	0.474	0.904						
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	SOLIDITY RATIO	LOSS COEFFICIENT	TOT PRESS LOSS PARAM	ADP EFFICIENCY	POLY MOMEN RISE/STAY PRESS EFFICIENCY	MEAS T RISE	COEFF	
1	0.534	0.534	1.5230	1.5230	0.177	0.038	0.8789	0.8789	0.7145	0.7145	
2	0.518	0.518	1.5440	1.5440	0.144	0.047	0.5360	0.5360	0.203	0.203	
3	0.479	0.479	1.6310	1.6310	0.123	0.038	0.6167	0.6167	0.311	0.311	
4	0.421	0.421	1.7420	1.7420	0.097	0.028	0.8714	0.8714	0.396	0.396	
5	0.350	0.350	1.8800	1.8800	0.071	0.019	0.8868	0.8868	0.477	0.477	
6	0.235	0.235	2.0510	2.0510	0.045	0.011	0.6198	0.6198	0.509	0.509	
7	0.209	0.209	2.0980	2.0980	0.052	0.012	0.5784	0.5784	0.519	0.519	
RADIAL POSITION	PERCENT DIMENSION	TRAV TOT PRESS RATIO	TRAV TOT PRESS RATIO	FIXED TOT PRESS RATIO	TEMP RATIO	OVERALL PERFORMANCE SUMMARY		STAGE DATA		STATOR DATA	
1	5,0000	0.948	0.952	0.955	1.000	PERFORMANCE PARAMETERS		FIXED INST. FIXED INST. TRAV. INST.			
2	10,0000	0.938	0.997	0.960	1.000	Total Pressure Ratio =		1.7916		0.9672	
3	30,0000	0.923	1.003	0.961	1.000	Polytropic Efficiency =		0.7584		0.9462	
4	50,0000	0.926	1.004	0.978	1.000	Percent Design Speed =		100.0		Discharge Valve Setting=4.0	
5	70,0000	0.919	1.002	0.978	1.000	Cor. Nozzle Weight Flow=		192.6			
6	90,0000	0.881	0.999	0.985	1.000	IE Check Flow/Noz.Flow =		1.0424		TE Check Flow/Noz.Flow =	
7	95,0000	0.856	0.998	0.981	1.000	Assumed IE Flow Coeff. =		0.9300		Assumed TE Flow Coeff. =	

IE Check Flow/Noz.Flow = 1.0424  
 Assumed IE Flow Coeff. = 0.9300  
 TE Check Flow/Noz.Flow = 0.9933  
 Assumed TE Flow Coeff. = 0.9550

100770

TABLE XVII - TASK II STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

ROTOR BLADE ROM - NASA TASK IV-B											
BLADE ELEMENT PERFORMANCE RESULTS											
POINT NUMBER 6      READING NUMBER 543      DATE 10/ 6/1970											
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCID ANG MN CHBR LN	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	INLET ABS TANG VEL	INLET REL TANG VEL
1	65.01	-0.77	61.28	3.73	686.88	1616.70	682.59	-9.15	1463.56	-9.15	1463.56
2	63.91	-0.89	60.25	3.66	705.02	1600.26	703.50	-10.96	1436.13	-10.96	1436.13
3	58.38	-1.31	57.07	1.31	801.04	1527.36	800.82	-18.34	1300.58	-18.34	1300.58
4	55.26	-1.03	53.90	1.36	804.48	1408.45	801.83	-14.60	1156.18	-14.60	1156.18
5	51.99	-0.80	50.80	1.19	799.30	1287.19	788.47	-10.98	1009.00	-10.98	1009.00
6	49.05	-2.14	48.58	0.47	783.81	1168.38	752.20	-28.08	866.92	-28.08	866.92
7	49.14	-2.29	48.02	1.12	745.44	107.03	708.56	-28.30	818.92	-28.30	818.92
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	REL DEV ANG TE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	EXIT ABS TANG VEL	EXIT REL TANG VEL
1	59.60	26.51	57.52	2.08	732.66	1292.55	553.36	325.93	1113.61	325.93	1113.61
2	57.45	21.02	57.18	0.27	775.10	1342.35	721.81	277.27	1130.49	277.27	1130.49
3	51.49	24.94	52.85	-1.36	849.18	1192.81	742.69	345.41	933.30	345.41	933.30
4	44.75	27.19	46.10	-1.35	860.26	1077.13	764.45	392.75	757.90	392.75	757.90
5	38.25	34.98	34.70	3.25	841.66	877.74	685.98	479.92	540.70	479.92	540.70
6	21.10	38.36	16.84	4.26	984.30	822.12	760.73	602.15	293.53	602.15	293.53
7	14.31	41.70	10.70	3.81	1020.76	795.92	750.56	668.41	194.08	668.41	194.08
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	LOSS COEFFICIENT	REL TURN ANGLE	TOT PRESS LOSS PARAM	ADD EFFICIENCY	POLY WOMEN RISE/ EFFICIENCY	STAT PRESS RISE COEFF	CHI FACTOR
1	1454.41	0.638	1.501	0.958	0.202	5.41	0.036	0.6413	0.6566	0.141	0.229
2	1425.17	0.656	1.487	1.026	0.127	6.46	0.023	0.7650	0.7761	0.159	0.227
3	1282.24	0.755	1.439	0.927	0.143	6.89	0.028	0.7570	0.7669	0.193	0.303
4	1141.78	0.758	1.327	0.953	0.138	10.50	0.028	0.7866	0.7973	0.246	0.317
5	998.03	0.754	1.214	0.870	0.138	13.75	0.027	0.8163	0.8264	0.332	0.416
6	838.84	0.736	1.098	1.011	0.173	27.95	0.036	0.8199	0.8310	0.370	0.411
7	790.62	0.697	1.035	1.059	0.192	34.63	0.040	0.8162	0.8275	0.376	0.421
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	TEMP RATIO	FIXED TOT PRESS RATIO	TEMP RATIO	PERFORMANCE PARAMETERS	STAGE DATA	ROTOR DATA	ROTOR DATA	ROTOR DATA
1	139.54	0.632	1.315	1.4310	1.145	1.145	Total Pressure Ratio =	FIXED INST. FIXED INST. TRAV. INST.	FIXED INST. FIXED INST. TRAV. INST.	FIXED INST. FIXED INST. TRAV. INST.	FIXED INST. FIXED INST. TRAV. INST.
2	1407.76	0.682	1.182	1.4610	1.134	1.134	Adiabatic Efficiency =	1.3834	1.4542	1.4720	1.4720
3	1278.71	0.725	1.056	1.6120	1.141	1.141	Polytropic Efficiency =	0.6684	0.7769	0.8825	0.8825
4	1150.65	0.767	0.960	1.7730	1.147	1.147	Percent Design Speed =	0.6832	0.7884	0.8888	0.8888
5	1020.62	0.744	0.775	1.9640	1.168	1.168	Cor. Nozzle Weight Flow =	99.9	Discharge Valve Setting=	30.0	30.0
6	895.68	0.882	0.745	2.2480	1.568	1.568	TE Check Flow/Noz.Flow =	0.9891	TE Check Flow/Noz.Flow =	0.9873	0.9873
7	862.49	0.913	0.712	2.3370	1.168	1.168	Assumed IE Flow Coeff. =	0.9850	Assumed TE Flow Coeff. =	0.9500	0.9500

100770 TABLE XVII - TASK II STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

STATOR BLADE ROW - NASA TASK IV-8		POINT NUMBER 8		BLADE ELEMENT PERFORMANCE RESULTS		READING NUMBER 543		DATE 10/ 6/1970			
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCID ANG MN CHBR LN	INCID ANG SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	
1	28.04	21.86	39.47	-11.43	29.92	696.38	747.47	614.64	327.33	278.29	
2	24.83	26.38	39.11	-17.25	21.48	820.56	874.80	693.71	344.46	344.46	
3	32.66	34.21	39.80	-13.42	24.69	871.85	1043.15	744.43	368.13	368.13	
4	37.62		40.86	-8.20	26.69	1060.92		782.51	468.60	468.60	
5			42.22	-8.01	35.19			731.13	581.05	581.05	
6			42.76	-5.14	40.49			854.70	640.94	640.94	
7					43.27			831.78			
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	DEV ANG TE	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	
1	-0.88	0.38	-11.13	10.25	28.92	727.22	727.13	727.13	-11.18	-11.18	
2	0.10	-0.31	-10.10	10.48	21.48	730.32	730.29	730.29	4.86	4.86	
3	0.18	-0.31	-8.87	8.05	24.69	788.95	788.72	788.72	2.42	2.42	
4	-2.53	-6.29	-8.75	8.44	35.19	813.94	813.34	813.34	-4.39	-4.39	
5			-10.58	6.57	40.49	849.41	841.86	841.86	-37.54	-37.54	
6			-12.36	6.70	43.27	724.72	718.68	718.68	-92.73	-92.73	
7									-71.18	-71.18	
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	SOLIDITY	LOSS COEFFICIENT	TOT PRESS LOSS PARAM	ABB EFFICIENCY	POLY MOMEN RISE/ RISE	STAT PRESS RISE COEFF	
1	0.598	0.632	0.641	1.183	1.540	0.1248	0.081	0.8514	0.034	-0.083	
2	0.656	0.693	0.717	1.053	1.6310	0.117	0.038	0.9148	0.067	0.034	
3	0.727	0.782	0.773	1.060	1.7420	0.115	0.034	0.9245	0.069	0.067	
4	0.773	0.844	0.826	1.161	1.8800	0.141	0.033	1.4227	0.105	0.105	
5	0.844	0.926	0.926	0.985	2.0510	0.210	0.051	1.4227	0.032	0.032	
6	0.926			0.864	2.0980	0.246	0.058	-0.0335	-0.017	-0.017	
7											
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	FIXED TOT PRESS RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	LOSS COEFFICIENT	TOT PRESS LOSS PARAM	ABB EFFICIENCY	POLY MOMEN RISE/ RISE	STAT PRESS RISE COEFF
1	9.0000	1.004	0.985	0.947	1.000	1.000	0.1248	0.081	0.8514	0.034	-0.083
2	10.0000	0.998	0.994	0.971	1.000	1.000	0.117	0.038	0.9148	0.067	0.034
3	30.0000	0.998	1.007	0.967	1.000	1.000	0.115	0.034	0.9245	0.069	0.067
4	50.0000	0.990	1.011	0.961	1.000	1.000	0.141	0.033	1.4227	0.105	0.105
5	70.0000	1.030	1.009	0.954	1.000	1.000	0.210	0.051	1.4227	0.032	0.032
6	90.0000	0.833	1.001	0.904	1.000	1.000	0.246	0.058	-0.0335	-0.017	-0.017
7	99.0000	0.716	0.990	0.883	1.000	1.000					

DIFFUSION FACTOR 0.115 -0.092  
 0.141 0.038  
 0.166 0.076  
 0.198 0.120  
 0.177 0.079  
 0.341 0.039  
 0.474 -0.017

OVERALL PERFORMANCE SUMMARY

STAGE DATA STATOR DATA STATOR DATA  
 FIXED INST. FIXED INST. TRAV. INST.  
 1.3834 0.9513 0.9701  
 0.6832 0.8666 0.3820  
 Discharge Valve Setting= 30.0  
 Percent Design Speed = 99.9  
 Cor. Nozzle Weight Flow= 226.2  
 LE Check Flow/Noz.Flow = 0.9873 TE Check Flow/Noz.Flow = 0.9767  
 Assumed LE Flow Coeff. = 0.9500 Assumed TE Flow Coeff. = 0.9350

TABLE XVII - TASK II STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

ROTOR BLADE ROW - NASA TASK IV-B		BLADE ELEMENT PERFORMANCE RESULTS										
POINT NUMBER 13		READING NUMBER 548										
		DATE 10/ 6/1970										
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN	INCID ANG	HN	CHBR LN	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	
1	64.47	-0.85	61.28	3.19	704.29	704.29	704.29	1625.19	699.58	-10.36	1454.69	
2	64.17	-0.65	60.25	3.92	696.44	696.44	696.44	1593.24	693.80	-7.89	1432.98	
3	58.41	-0.98	57.07	1.34	797.02	797.02	797.02	1521.22	796.89	-13.61	1295.79	
4	55.35	-0.79	53.90	1.49	799.18	799.18	799.18	1502.61	796.60	-11.00	1192.71	
5	52.40	-1.20	50.80	1.60	792.09	792.09	792.09	1286.90	781.27	-16.41	1014.38	
6	49.24	-2.25	48.58	0.96	771.27	771.27	771.27	1160.66	740.12	-29.04	867.83	
7	50.36	-3.75	48.02	2.34	729.68	729.68	729.68	1108.71	692.54	-45.40	835.98	
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN	TE ANGLE	REL DEV ANG	TE ANGLE	REL TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL
1	61.88	41.85	57.52	4.36	2.59	700.10	700.10	1104.79	520.23	466.02	973.45	
2	57.62	36.06	57.16	0.44	6.54	696.83	696.83	1141.28	610.58	444.84	965.04	
3	51.15	37.54	52.69	-1.70	7.26	802.35	802.35	1014.21	636.16	488.82	799.82	
4	44.20	38.45	46.10	-1.90	11.16	832.37	832.37	909.06	517.35	517.25	633.33	
5	36.12	41.47	34.70	1.42	16.27	847.83	847.83	787.02	632.43	558.99	461.58	
6	24.71	45.59	18.84	7.87	24.83	874.56	874.56	678.74	604.83	617.33	278.30	
7	13.78	48.74	10.70	3.09	36.97	955.73	955.73	658.16	622.69	709.65	152.80	
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO				DIFFUSION FACTOR				
1	1454.33	0.655	1.512	0.744				0.422			0.410	
2	1425.09	0.647	1.481	0.780				0.380			0.409	
3	1282.17	0.750	1.432	0.798				0.436			0.459	
4	1141.72	0.792	1.320	0.818				0.458			0.497	
5	997.97	0.745	1.210	0.809				0.503			0.543	
6	838.79	0.725	1.091	0.817				0.543			0.555	
7	790.98	0.682	1.037	0.899				0.557			0.503	
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	SOLIDITY COEFFICIENT	LOSS COEFFICIENT	LOSS TOT	TOT PRESS LOSS PARAM	EFFICIENCY	ADB EFFICIENCY	POLY MOMEN RISE/ RISE COEFF	STAT PRESS	
1	139.46	0.583	0.920	1.4310	0.221	0.036	0.7240	0.7435	0.287			
2	1407.68	0.646	0.974	1.4610	0.073	0.013	0.9187	0.9187	0.287			
3	1278.64	0.690	0.873	1.6120	0.133	0.026	0.8349	0.8470	0.352			
4	1150.99	0.722	0.789	1.7730	0.134	0.027	0.8394	0.8506	0.416			
5	1020.26	0.740	0.687	1.8640	0.094	0.019	0.8927	0.9001	0.492			
6	695.63	0.767	0.596	2.2480	0.130	0.026	0.8723	0.8809	0.565			
7	862.45	0.842	0.580	2.3470	0.134	0.028	0.8796	0.8880	0.541			
RADIAL POSITION	PERCENT DIMENSION	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	PERFORMANCE PARAMETERS						
1	5.0000	1.683	1.229	1.686	1.223	Total Pressure Ratio =	1.6762	1.6972	1.7124			
2	16.0000	1.735	1.187	1.876	1.216	Adiabatic Efficiency =	0.8217	0.8430	0.9505			
3	30.0000	1.723	1.179	1.720	1.188	Polytropic Efficiency =	0.8341	0.8543	0.9542			
4	50.0000	1.720	1.167	1.671	1.175	Percent Design Speed =	99.9	Discharge Valve Setting =	9.0			
5	70.0000	1.709	1.160	1.655	1.175	Cor. Nozzle Weight Flow =	221.5					
6	90.0000	1.694	1.161	1.642	1.179							
7	98.0000	1.780	1.178	1.665	1.179							

OVERALL PERFORMANCE SUMMARY

STAGE DATA ROTOR DATA ROTOR DATA  
 FIXED INST. FIXED INST. TRAV. INST.  
 1.6762 1.6972 1.7124  
 0.8217 0.8430 0.9505  
 0.8341 0.8543 0.9542  
 Discharge Valve Setting = 9.0

LE Check Flow/Noz.Flow = 1.0091  
 Assumed LE Flow Coeff. = 0.9950  
 TE Check Flow/Noz.Flow = 0.9909  
 Assumed TE Flow Coeff. = 0.9520



TABLE XVII - TASK II STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

		STATOR BLADE ROW - NASA TASK IV-8												
		BLADE ELEMENT PERFORMANCE RESULTS												
		POINT NUMBER	13	READING NUMBER	548	DATE	10/ 6/1970							
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN	INCID ANG	INCID ANG	SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS YAWG VEL	INLET REL YAWG VEL	INLET ABS TANG VEL	INLET REL TANG VEL	
1	37.05	43.45	39.47	3.98			680.56	494.08	494.08	468.02	468.02	468.02	468.02	
2	37.41	37.41	39.01	-1.60			740.71	591.15	591.15	446.28	446.28	446.28	446.28	
3	39.17	37.62	39.80	-2.18			838.39	637.36	637.36	487.48	487.48	487.48	487.48	
4	42.24	39.17	40.86	-1.69			867.05	663.29	663.29	511.16	511.16	511.16	511.16	
5	45.30	42.24	42.22	0.02			892.74	656.00	656.00	545.81	545.81	545.81	545.81	
6		45.30	42.76	2.54			905.12	673.35	673.35	595.69	595.69	595.69	595.69	
7										680.49	680.49	680.49	680.49	
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN	TE ANGLE	ANG TE	DEV	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	EXIT ABS YAWG VEL	
1	-0.97	-0.97	-11.13	10.16			44.41	554.45	554.45	554.45	-9.34	-9.34	-9.34	
2	0.93	1.48	-10.10	11.03			36.12	564.61	564.61	564.61	9.21	9.21	9.21	
3	0.19	1.48	-8.87	10.35			35.93	631.95	631.95	631.95	16.32	16.32	16.32	
4	0.01	0.19	-9.10	8.94			37.43	633.56	633.56	633.56	2.08	2.08	2.08	
5	0.05	0.01	-10.58	10.63			42.19	635.08	635.08	635.08	0.07	0.07	0.07	
6	-2.09	0.05	-12.36	10.27			47.40	621.41	621.41	621.41	0.28	0.28	0.28	
7								546.12	546.12	546.12	-19.97	-19.97	-19.97	
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEO RATIO	SOLIDITY	LOSS COEFFICIENT	LOSS ANG	TOT LOSS PARAM	ABB EFFICIENCY	POLY WOMEN RISE/ MEAS T RISE	STAT PRESS RISE COEFF	DIFFUSION FACTOR	CHI	
1	0.566	0.458	0.470	1.122	1.5230	0.157	0.157	0.052	1.0255	0.8119	0.320	0.415	0.337	
2	0.631	0.470	0.470	0.955	1.5440	0.067	0.067	0.022	0.8119	0.320	0.320	0.429	0.344	
3	0.691	0.533	0.533	0.991	1.6310	0.032	0.032	0.010	0.9359	0.332	0.332	0.392	0.358	
4	0.728	0.533	0.533	0.955	1.7420	0.017	0.017	0.005	0.9228	0.366	0.366	0.417	0.396	
5	0.758	0.542	0.542	0.942	1.6800	0.027	0.027	0.007	0.9311	0.396	0.396	0.431	0.429	
6	0.785	0.530	0.530	0.947	2.0510	0.043	0.043	0.011	0.8597	0.405	0.405	0.461	0.441	
7	0.851	0.463	0.463	0.811	2.0980	0.075	0.075	0.018	0.6585	0.436	0.436	0.601	0.436	
RADIAL POSITION	PERCENT INCREASE	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	LOSS COEFFICIENT	LOSS ANG	TOT LOSS PARAM	ABB EFFICIENCY	POLY WOMEN RISE/ MEAS T RISE	STAT PRESS RISE COEFF	DIFFUSION FACTOR	CHI	
1	9.0000	1.002	0.990	0.990	0.970	1.000	1.000	0.052	1.0255	0.8119	0.320	0.415	0.337	
2	10.0000	0.978	1.011	1.011	0.984	1.000	1.000	0.022	0.8119	0.320	0.320	0.429	0.344	
3	30.0000	0.992	1.006	1.006	0.991	1.000	1.000	0.010	0.9359	0.332	0.332	0.392	0.358	
4	50.0000	0.988	1.005	1.005	0.995	1.000	1.000	0.005	0.9228	0.366	0.366	0.417	0.396	
5	70.0000	0.987	1.003	1.003	0.991	1.000	1.000	0.007	0.9311	0.396	0.396	0.431	0.429	
6	90.0000	0.970	1.007	1.007	0.985	1.000	1.000	0.011	0.8597	0.405	0.405	0.461	0.441	
7	99.0000	0.894	0.993	0.993	0.971	1.000	1.000	0.018	0.6585	0.436	0.436	0.601	0.436	

OVERALL PERFORMANCE SUMMARY

STAGE DATA STATOR DATA STATOR DATA  
 FIXED INST, FIXED INST, TRAV, INST.  
 1.6762 0.9876 0.9827  
 0.8341 0.9764 0.8002  
 Discharge Valve Setting=9.0  
 Percent Design Speed = 99.9  
 Cor. Nozzle Weight Flow = 221.5  
 IE Check Flow/Noz.Flow = 0.9979  
 Assumed IE Flow Coeff. = 0.9500  
 TR Check Flow/Noz.Flow = 0.9772  
 Assumed TR Flow Coeff. = 0.9350

TABLE XVII - TASK II STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

		ROTOR BLADE ROW - NASA TASK IV-B																						
		BLADE ELEMENT PERFORMANCE RESULTS					POINT NUMBER 14																	
		READING NUMBER 549					DATE 10/ 6/1970																	
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	MN CMBR LN AN	INCID ANG	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	MN CMBR LN AN	INCID ANG	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL			
1	67.29	-1.74	61.28	6.01	6.01	559.19	1439.40	555.26	16.87	136.45	2	66.12	-1.61	60.25	5.87	5.87	578.50	1424.13	576.106	18.21	1301.47			
3	60.82	-3.24	57.07	3.75	3.75	666.70	1365.45	665.63	37.66	1192.22	4	57.93	-4.73	53.90	4.03	4.03	683.92	1280.74	679.47	56.22	1084.31			
5	53.90	-4.34	50.80	3.10	3.10	705.13	1182.93	693.70	52.61	961.25	6	50.51	-3.54	48.58	1.93	1.93	684.15	1048.77	655.83	40.62	795.93			
7	50.79	-4.00	48.02	2.77	2.77	649.15	994.73	615.96	43.05	734.94	1	61.63	39.86	57.52	4.11	4.11	630.07	1018.34	482.45	402.78	893.42			
2	56.92	36.15	57.18	-0.26	-0.26	694.34	1025.91	559.151	408.78	888.79	3	49.94	36.50	52.85	-2.91	-2.91	742.58	927.34	596.84	441.71	709.67			
4	44.33	36.86	46.10	-1.77	-1.77	839.39	839.39	600.04	48.84	566.23	5	36.93	39.97	38.70	2.23	2.23	757.60	726.74	578.02	484.58	484.41			
6	24.13	44.30	16.84	7.29	7.29	801.97	632.67	568.66	552.78	232.71	7	15.12	47.10	10.70	4.42	4.42	858.67	613.39	576.87	620.77	155.84			
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO
1	1309.58	0.511	1.316	0.869	1296.19	0.532	0.857	1.4310	1309.58	0.511	1.316	0.869	1296.19	0.532	0.857	1.4310	1309.58	0.511	1.316	0.869	1296.19	0.532	0.857	1.4310
2	1267.57	0.597	1.304	0.971	1267.57	0.597	0.882	1.4610	1267.57	0.597	1.304	0.971	1267.57	0.597	0.882	1.4610	1267.57	0.597	1.304	0.971	1267.57	0.597	0.882	1.4610
3	1154.56	0.617	1.264	0.897	1154.56	0.645	0.806	1.6120	1154.56	0.617	1.264	0.897	1154.56	0.617	0.806	1.6120	1154.56	0.617	1.264	0.897	1154.56	0.617	0.806	1.6120
4	1028.08	0.634	1.188	0.883	1036.97	0.657	0.735	1.7730	1028.08	0.634	1.188	0.883	1036.97	0.657	0.735	1.7730	1028.08	0.634	1.188	0.883	1036.97	0.657	0.735	1.7730
5	898.85	0.657	1.102	0.833	918.99	0.666	0.638	1.9640	898.85	0.657	1.102	0.833	918.99	0.666	0.638	1.9640	898.85	0.657	1.102	0.833	918.99	0.666	0.638	1.9640
6	755.31	0.636	0.974	0.864	806.49	0.707	0.558	2.2480	755.31	0.636	0.974	0.864	806.49	0.707	0.558	2.2480	755.31	0.636	0.974	0.864	806.49	0.707	0.558	2.2480
7	711.89	0.600	0.920	0.937	776.61	0.759	0.542	2.3470	711.89	0.600	0.920	0.937	776.61	0.759	0.542	2.3470	711.89	0.600	0.920	0.937	776.61	0.759	0.542	2.3470
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO
1	1296.19	0.532	0.857	1.4310	1296.19	0.532	0.857	1.4310	1296.19	0.532	0.857	1.4310	1296.19	0.532	0.857	1.4310	1296.19	0.532	0.857	1.4310	1296.19	0.532	0.857	1.4310
2	1267.57	0.597	0.882	1.4610	1267.57	0.597	0.882	1.4610	1267.57	0.597	0.882	1.4610	1267.57	0.597	0.882	1.4610	1267.57	0.597	0.882	1.4610	1267.57	0.597	0.882	1.4610
3	1154.56	0.617	0.806	1.6120	1154.56	0.645	0.806	1.6120	1154.56	0.617	0.806	1.6120	1154.56	0.617	0.806	1.6120	1154.56	0.617	0.806	1.6120	1154.56	0.617	0.806	1.6120
4	1036.97	0.657	0.735	1.7730	1036.97	0.657	0.735	1.7730	1036.97	0.657	0.735	1.7730	1036.97	0.657	0.735	1.7730	1036.97	0.657	0.735	1.7730	1036.97	0.657	0.735	1.7730
5	918.99	0.666	0.638	1.9640	918.99	0.666	0.638	1.9640	918.99	0.666	0.638	1.9640	918.99	0.666	0.638	1.9640	918.99	0.666	0.638	1.9640	918.99	0.666	0.638	1.9640
6	806.49	0.707	0.558	2.2480	806.49	0.707	0.558	2.2480	806.49	0.707	0.558	2.2480	806.49	0.707	0.558	2.2480	806.49	0.707	0.558	2.2480	806.49	0.707	0.558	2.2480
7	776.61	0.759	0.542	2.3470	776.61	0.759	0.542	2.3470	776.61	0.759	0.542	2.3470	776.61	0.759	0.542	2.3470	776.61	0.759	0.542	2.3470	776.61	0.759	0.542	2.3470
RADIAL POSITION	PERCENT DIMENSION	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	LOSS COEFFICIENT	LOSS	TOT PRESS LOSS PARAM	EFFICIENCY	ABB EFFICIENCY	POLY MOMEN RISE/ MEAS Y RISE	STAT PRESS RISE COEFF	SPACE DATA ROTOR DATA FIXED INST. FIXED INST. TRAV. INST.	SPACE DATA ROTOR DATA FIXED INST. FIXED INST. TRAV. INST.										
1	5.0000	1.540	1.180	1.567	1.180	0.186	0.031	0.7605	0.7751	0.283	1.5389	1.5667	1.5389	1.5667										
2	10.0000	1.597	1.150	1.575	1.179	0.174	0.033	0.7761	0.7899	0.291	1.5389	1.5667	1.5389	1.5667										
3	30.0000	1.575	1.143	1.572	1.163	0.115	0.023	0.8493	0.8586	0.329	1.5389	1.5667	1.5389	1.5667										
4	50.0000	1.553	1.130	1.537	1.147	0.086	0.017	0.8879	0.8945	0.378	1.5389	1.5667	1.5389	1.5667										
5	70.0000	1.544	1.128	1.544	1.138	0.044	0.009	0.9450	0.9482	0.467	1.5389	1.5667	1.5389	1.5667										
6	90.0000	1.558	1.130	1.530	1.142	0.058	0.012	0.9409	0.9444	0.556	1.5389	1.5667	1.5389	1.5667										
7	99.0000	1.627	1.141	1.583	1.148	0.055	0.011	0.9507	0.9538	0.522	1.5389	1.5667	1.5389	1.5667										

OVERALL PERFORMANCE SUMMARY

DISCHARGE VALVE SETTINGS = 9.0

PERFORMANCE PARAMETERS

Total Pressure Ratio = 1.5389

Adiabatic Efficiency = 0.8413

Polytropic Efficiency = 0.8506

Percent Design Speed = 90.0

Cor. Nozzle Weight Flow = 201.1

LE Check Flow/Noz.Flow = 1.0295

Assumed LE Flow Coeff. = 0.9890

TE Check Flow/Noz.Flow = 1.0075

Assumed TE Flow Coeff. = 0.9700

109770, TABLE XVII - TASK II STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

STATOR BLADE ROW - NASA TASK IV-B		BLADE ELEMENT PERFORMANCE RESULTS		POINT NUMBER 14		READING NUMBER 549		DATE 10/ 6/1970		
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CMBR LN LE ANGLE	INCID ANG HN CMBR LN	INCID ANG SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL
1	41.40	37.09	39.47	-1.93	611.68	458.83	404.51	458.83	404.51	404.51
2	37.09	36.38	39.11	-2.02	480.34	542.49	410.29	542.49	410.29	410.29
3	36.38	36.07	39.01	-2.63	742.86	597.91	440.49	597.91	440.49	440.49
4	36.07	37.81	39.80	-3.73	755.92	610.24	444.94	610.24	444.94	444.94
5	37.81	41.08	42.22	-3.05	774.53	609.81	473.16	609.81	473.16	473.16
6	41.08	43.79	42.76	-1.14	818.09	611.96	533.41	611.96	533.41	533.41
7	43.79			-1.83	867.53	620.90	595.26	620.90	595.26	595.26
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMBR LN TE ANGLE	DEV ANG TE	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL
1	-0.37	2.24	-11.13	10.76	41.77	541.60	541.58	541.58	-3.46	-3.46
2	2.24	1.34	-10.10	12.34	34.85	550.92	550.48	550.48	21.53	21.53
3	1.34	-0.70	-8.87	10.21	35.04	603.32	603.01	603.01	14.13	14.13
4	-0.70	-1.06	-8.75	8.05	36.77	593.24	592.77	592.77	-7.21	-7.21
5	-1.06	0.14	-9.10	8.04	38.67	595.91	595.84	595.84	-11.03	-11.03
6	0.14	-0.75	-10.58	10.72	40.93	614.92	613.11	613.11	1.54	1.54
7	-0.75		-12.36	11.61	44.55	548.50	546.53	546.53	-7.20	-7.20
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	DIFFUSION FACTOR	CHIA				
1	0.515	0.515	0.515	1.180	0.333	0.309	0.333	0.309	0.333	0.309
2	0.584	0.584	0.584	1.014	0.375	0.312	0.375	0.312	0.375	0.312
3	0.645	0.645	0.645	1.009	0.363	0.316	0.363	0.316	0.363	0.316
4	0.662	0.662	0.662	0.971	0.386	0.364	0.386	0.364	0.386	0.364
5	0.682	0.682	0.682	0.977	0.394	0.381	0.394	0.381	0.394	0.381
6	0.723	0.723	0.723	1.002	0.404	0.392	0.404	0.392	0.404	0.392
7	0.768	0.768	0.768	0.880	0.530	0.356	0.530	0.356	0.530	0.356
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	TRAV TOT TEMP RATIO	LOSS TOT LOSS PARAM	POLY MOMEN RISE/ MEAS T RISE	EFFICIENCY	AD8 EFFICIENCY	STAT PRESS RISE COEFF	STAT PRESS COEFF
1	0.455	0.455	0.455	1.5230	0.172	0.057	1.4560	1.4560	0.295	0.295
2	0.465	0.465	0.465	1.5440	0.096	0.031	0.8907	0.8907	0.295	0.295
3	0.515	0.515	0.515	1.6310	0.027	0.008	0.9141	0.9141	0.294	0.294
4	0.509	0.509	0.509	1.7420	0.017	0.005	0.9383	0.9383	0.340	0.340
5	0.513	0.513	0.513	1.8800	0.023	0.006	0.9525	0.9525	0.365	0.365
6	0.529	0.529	0.529	2.0510	0.038	0.009	0.8936	0.8936	0.363	0.363
7	0.469	0.469	0.469	2.0980	0.082	0.020	0.5021	0.5021	0.324	0.324
RADIAL POSITION	PERCENT RECEPTION	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	OVERALL PERFORMANCE SUMMARY				
1	5.0000	1.018	1.018	0.972	1.000	STAGE DATA STATOR DATA STATOR DATA				
2	10.0000	0.991	1.010	0.980	1.000	FIXED INST. FIXED INST. TRAV. INST.				
3	30.0000	0.991	1.009	0.993	1.000	Total Pressure Ratio = 1.5389 0.9686 0.9899				
4	50.0000	0.993	1.008	0.996	1.000	Polytropic Efficiency = 0.8506 0.9739 0.7312				
5	70.0000	0.994	1.009	0.994	1.000	Percent Design Speed = 90.0 Discharge Valve Setting= 9.0				
6	90.0000	0.983	1.009	0.989	1.000	Cor. Nozzle Weight Flow= 201.1				
7	95.0000	0.909	1.000	0.973	1.000	IE Check Flow/Noz.Flow = 1.0075 TE Check Flow/Noz.Flow = 0.9957				
						Assumed IE Flow Coeff. = 0.9500 Assumed TE Flow Coeff. = 0.9350				

TABLE XVII - TASK II STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

100770

ROTOR BLADE ROW - NASA TASK IV-B											
BLADE ELEMENT PERFORMANCE RESULTS											
POINT NUMBER 19 READING NUMBER 554 DATE 10/ 6/1970											
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCD ANG MN CHBR LN	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	INLET ABS TANG VEL	INLET REL TANG VEL
1	70.88	-4.34	61.28	9.50	522.87	1582.15	517.96	-39.32	1493.77		
2	69.50	-2.55	60.25	9.25	544.47	1548.04	541.91	-24.12	1449.33		
3	64.02	-2.71	57.07	6.95	640.41	1460.13	639.86	-30.26	1312.54		
4	61.89	-4.92	53.90	7.59	643.67	1357.84	639.31	-55.04	1196.85		
5	59.63	-6.87	50.80	8.03	642.40	1249.03	629.33	-75.79	1073.85		
6	56.05	-6.48	48.58	7.47	640.46	1109.20	611.41	-69.41	908.27		
7	55.67	-6.62	48.02	7.52	620.50	1077.20	595.20	-68.02	858.73		
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	REL DEV ANG TE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	EXIT ABS TANG VEL	EXIT REL TANG VEL
1	58.87	57.19	57.52	1.35	829.58	868.23	448.89	896.40	743.19		
2	55.27	50.88	57.18	-1.91	836.06	925.66	526.88	647.84	759.96		
3	48.88	49.18	52.85	-3.97	849.29	845.44	556.00	641.92	636.83		
4	42.87	50.94	46.10	-3.23	845.56	727.10	532.51	656.29	494.39		
5	35.65	52.81	34.70	0.95	832.11	620.35	501.48	661.00	359.65		
6	23.23	54.28	16.84	6.39	849.85	546.24	492.15	683.56	211.24		
7	13.60	56.51	10.70	2.90	899.31	519.73	491.94	743.51	119.01		
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	DIFFUSION FACTOR	CHI					
1	1454.45	0.475	1.438	0.867	0.512	0.439					
2	1425.21	0.496	1.410	0.972	0.550	0.459					
3	1282.28	0.590	1.346	0.869	0.564	0.486					
4	1141.81	0.593	1.252	0.833	0.613	0.505					
5	998.06	0.593	1.153	0.797	0.652	0.536					
6	838.86	0.591	1.024	0.805	0.663	0.576					
7	790.64	0.572	0.974	0.839	0.678	0.578					
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	SOLIDITY RATIO	TOT PRESS LOSS COEFFICIENT	LOSS	POLY MOMEN EFFICIENCY	MEAS Y RISE	STAT PRESS RISE COEFF		
1	1439.59	0.666	0.697	1.4310	0.342	0.6829	0.7120	0.320	0.320		
2	1407.80	0.690	0.764	1.4610	0.297	0.7186	0.7442	0.339	0.339		
3	1278.75	0.717	0.713	1.6120	0.182	0.8175	0.8332	0.388	0.388		
4	1150.68	0.720	0.619	1.7730	0.168	0.8341	0.8474	0.432	0.432		
5	1020.65	0.715	0.533	1.9650	0.126	0.8771	0.8864	0.494	0.494		
6	895.71	0.736	0.473	2.2480	0.086	0.9291	0.9347	0.602	0.602		
7	862.52	0.780	0.451	2.3470	0.129	0.9022	0.9097	0.637	0.637		
RADIAL POSITION	PERCENT THROUGH	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	OVERALL PERFORMANCE SUMMARY					
1	5.0000	2.023	1.340	2.004	1.322	STAGE DATA ROTOR DATA ROTOR DATA					
2	10.0000	2.040	1.275	1.984	1.301	FIXED INST. FIXED INST. FRAY. INST.					
3	30.0000	1.954	1.233	1.902	1.248	Total Pressure Ratio = 1.8140 1.8761 1.9075					
4	50.0000	1.881	1.210	1.820	1.224	Adiabatic Efficiency = 0.7527 0.7991 0.8570					
5	70.0000	1.609	1.190	1.758	1.198	Polytropic Efficiency = 0.7724 0.8160 0.8967					
6	90.0000	1.277	1.129	1.288	1.184	Percent Design Speed = 99.9 Discharge Valve Setting= h.0					
7	95.0000	1.636	1.191	1.776	1.198	Cor. Nozzle Weight Flow= 195.3					

IE Check Flow/Noz.Flow = 1.0174 TE Check Flow/Noz.Flow = 1.0158  
 Assumed IE Flow Coeff. = 0.9850 Assumed TE Flow Coeff. = 0.9500

100770 TABLE XVII - TASK II STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

STATOR BLADE ROW - NASA TASK IV-B													
BLADE ELEMENT PERFORMANCE RESULTS													
POINT NUMBER 19 READING NUMBER 554 DATE 10/ 6/1970													
RADIAL POSITION	REL INLET FLOW ANG	INLET ABS FLOW ANG	CMBR LN LE ANGLE	INCID ANG MN	INCID ANG LN	INCID ANG SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	INLET AX TANG VEL	INLET REL TANG VEL
1	58.55	58.55	39.47	19.08	19.08	19.08	819.83	427.76	427.76	999.39	599.39	999.39	599.39
2	51.79	51.79	39.11	12.68	12.68	12.68	827.51	511.82	511.82	650.23	650.23	650.23	650.23
3	48.97	48.97	39.01	9.96	9.96	9.96	848.69	556.97	556.97	640.15	640.15	640.15	640.15
4	50.17	50.17	39.80	10.37	10.37	10.37	845.18	540.92	540.92	648.56	648.56	648.56	648.56
5	50.78	50.78	40.86	9.92	9.92	9.92	834.98	528.80	528.80	645.41	645.41	645.41	645.41
6	51.32	51.32	42.22	9.10	9.10	9.10	850.53	528.69	528.69	660.48	660.48	660.48	660.48
7	53.56	53.56	42.76	10.80	10.80	10.80	891.42	526.45	526.45	712.95	712.95	712.95	712.95

RADIAL POSITION	REL EXIT FLOW ANG	EXIT ABS FLOW ANG	CMBR LN TE ANGLE	DEV ANG	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	EXIT AX TANG VEL	EXIT REL TANG VEL
1	-1.85	-1.85	-11.13	9.28	60.40	650.61	650.61	650.26	-21.01	-21.01	650.26	650.26
2	-2.26	-2.26	-10.10	7.84	54.05	641.50	641.50	640.99	-25.30	-25.30	640.99	640.99
3	-3.07	-3.07	-8.87	5.80	52.05	585.01	585.01	584.02	-31.34	-31.34	584.02	584.02
4	-4.12	-4.12	-8.75	2.83	56.29	521.59	521.59	518.24	-55.58	-55.58	518.24	518.24
5	-3.12	-3.12	-9.10	5.98	53.90	417.52	417.52	416.23	-22.72	-22.72	416.23	416.23
6	-2.37	-2.37	-10.58	8.21	53.69	317.03	317.03	315.83	-13.06	-13.06	315.83	315.83
7	-4.58	-4.58	-12.36	7.78	58.13	300.46	300.46	298.46	-23.88	-23.88	298.46	298.46

RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	SOLIDITY COEFFICIENT	LOSS	TOY PRESS LOSS PARAM	AD98 EFFICIENCY	POLY MOMEN RISE/ MEAS T RISE	STAY PRESS RISE COEFF
1	0.697	0.697	0.697	1.5230	0.193	0.193	0.063	0.5745	0.180	0.180
2	0.682	0.682	0.682	1.5440	0.148	0.148	0.048	0.4983	0.176	0.176
3	0.716	0.716	0.716	1.6310	0.131	0.131	0.040	0.5689	0.269	0.269
4	0.720	0.720	0.720	1.7420	0.100	0.100	0.029	0.6573	0.373	0.373
5	0.717	0.717	0.717	1.8800	0.071	0.071	0.019	0.6714	0.466	0.466
6	0.737	0.737	0.737	2.0510	0.046	0.046	0.011	0.6732	0.539	0.539
7	0.772	0.772	0.772	2.0980	0.048	0.048	0.012	0.6311	0.548	0.548

RADIAL POSITION	PERCENT IMMERSSION	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO
1	3.0000	0.957	0.961	0.992	1.000
2	10.0000	0.939	0.990	0.960	1.000
3	30.0000	0.924	1.000	0.961	1.000
4	50.0000	0.928	1.001	0.970	1.000
5	70.0000	0.918	0.998	0.979	1.000
6	90.0000	0.893	1.005	0.985	1.000
7	95.0000	0.878	0.998	0.983	1.000

OVERALL PERFORMANCE SUMMARY													
STAGE DATA. STATOR DATA STATOR DATA													
FIXED INST. FIXED INST. TRAV. INST.													
		1.8140		0.9669		0.9669		0.9669		0.9669		0.9669	
		0.7724		0.9466		0.9466		0.9466		0.9466		0.9466	
		Discharge Valve Settings		h, 0		195.3		195.3		195.3		195.3	
		IE Check Flow/Noz.Flow =		1.0158		TE Check Flow/Noz.Flow =		0.9950		0.9950		0.9950	
		Assumed IE Flow Coeff. =		0.9500		Assumed TE Flow Coeff. =		0.9350		0.9350		0.9350	

TABLE XVII - TASK II STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

ROTOR BLADE ROW - NASA TASK IV-B																						
BLADE ELEMENT PERFORMANCE RESULTS																						
POINT NUMBER 24 READING NUMBER 593 DATE 10/ 7/1970																						
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	CHBR LN HN CHBR LN	INCID ANG	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	REL TURN ANGLE	REL DEV ANG TE	REL INLET VELOCITY	REL EXIT VELOCITY	REL TURN ANGLE	REL DEV ANG TE	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	
1	65.47	-1.77	61.28	4.19	3.96	679.00	1525.91	674.21	-20.84	1477.49	5.47	2.48	1309.51	653.97	7.05	-0.02	782.70	1343.15	727.74	308.87	1132.89	
2	64.21	-1.56	60.25	3.96	3.96	701.69	1607.49	698.81	-19.02	1446.38	7.02	-1.35	815.00	737.59	7.02	-0.14	838.72	1074.35	746.48	353.46	927.22	
3	58.52	-0.73	57.07	1.45	1.57	792.72	1517.78	792.64	-10.14	1294.36	9.22	-0.14	838.72	1074.35	13.32	4.55	880.98	678.97	467.42	380.64	771.78	
4	55.17	-0.35	53.90	1.27	1.27	803.47	1400.45	798.95	-4.51	1148.44	29.71	3.05	1006.90	845.26	29.71	3.05	1006.90	845.26	778.63	615.40	281.66	
5	52.57	-2.02	50.80	1.77	1.77	797.54	1300.26	786.33	-27.75	1027.32	37.93	1.07	1065.05	817.71	37.93	1.07	1065.05	817.71	779.28	701.46	162.57	
6	49.60	-3.17	48.58	1.02	1.02	782.61	1178.17	750.47	-41.54	881.67												
7	49.70	-3.35	48.02	1.68	1.68	744.09	1116.29	706.50	-41.30	833.14												
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	CHBR LN LE ANGLE	INCID ANG	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	REL TURN ANGLE	REL DEV ANG TE	EXIT ABS VELOCITY	EXIT REL VELOCITY	REL TURN ANGLE	REL DEV ANG TE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	
1	60.00	25.28	57.52	5.47	3.96	679.00	1525.91	674.21	308.87	1132.89	5.47	2.48	1309.51	653.97	7.05	-0.02	782.70	1343.15	727.74	308.87	1132.89	
2	57.16	21.21	57.18	5.47	3.96	701.69	1607.49	698.81	353.46	927.22	7.02	-1.35	815.00	737.59	7.02	-0.14	838.72	1074.35	746.48	353.46	927.22	
3	51.50	25.60	52.85	5.47	1.57	792.72	1517.78	792.64	467.42	771.78	9.22	-0.14	838.72	1074.35	13.32	4.55	880.98	678.97	467.42	380.64	771.78	
4	45.96	27.02	46.10	1.27	1.27	803.47	1400.45	798.95	615.40	281.66	29.71	3.05	1006.90	845.26	29.71	3.05	1006.90	845.26	778.63	615.40	281.66	
5	39.25	34.54	34.70	1.77	1.77	797.54	1300.26	786.33	701.46	162.57	37.93	1.07	1065.05	817.71	37.93	1.07	1065.05	817.71	779.28	701.46	162.57	
6	19.89	38.32	16.84	1.02	1.02	782.61	1178.17	750.47														
7	11.77	41.99	10.70	1.68	1.68	744.09	1116.29	706.50														
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	SOLIDITY RATIO	LOSS COEFFICIENT	LOSS TOY PARAM	ADB EFFICIENCY	POLY MOMEN RISE/RISE COEFF	STAT PRESS RISE COEFF	DIFFUSION FACTOR	CHI										
1	1441.76	0.630	1.137	1.4310	1.4310	0.177	0.031	0.6664	0.6802	0.133	0.265	0.218										
2	1427.37	0.659	1.488	1.041	1.4610	0.116	0.022	0.7804	0.7907	0.138	0.228	0.278										
3	1284.22	0.743	1.423	0.931	1.6120	0.126	0.024	0.7824	0.7930	0.194	0.294	0.278										
4	1143.54	0.748	1.313	0.934	1.7730	0.131	0.026	0.7883	0.7984	0.245	0.311	0.312										
5	999.57	0.748	1.220	0.863	1.9650	0.139	0.027	0.8067	0.8167	0.317	0.420	0.366										
6	840.13	0.733	1.104	1.038	2.2480	0.154	0.032	0.8368	0.8469	0.327	0.410	0.320										
7	791.34	0.695	1.043	1.103	2.3470	0.174	0.036	0.8306	0.8410	0.290	0.415	0.249										
RADIAL POSITION	PERCENT EXHAUST	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	LOSS COEFFICIENT	LOSS TOY PARAM	ADB EFFICIENCY	POLY MOMEN RISE/RISE COEFF	STAT PRESS RISE COEFF	DIFFUSION FACTOR	CHI										
1	5.0000	1.360	1.134	1.350	1.134	0.177	0.031	0.6664	0.6802	0.133	0.265	0.218										
2	10.0000	1.408	1.112	1.403	1.130	0.116	0.022	0.7804	0.7907	0.138	0.228	0.278										
3	30.0000	1.418	1.119	1.423	1.136	0.126	0.024	0.7824	0.7930	0.194	0.294	0.278										
4	50.0000	1.440	1.108	1.412	1.132	0.131	0.026	0.7883	0.7984	0.245	0.311	0.312										
5	70.0000	1.452	1.121	1.459	1.141	0.139	0.027	0.8067	0.8167	0.317	0.420	0.366										
6	90.0000	1.636	1.142	1.573	1.165	0.154	0.032	0.8368	0.8469	0.327	0.410	0.320										
7	95.0000	1.686	1.140	1.568	1.165	0.174	0.036	0.8306	0.8410	0.290	0.415	0.249										

OVERALL PERFORMANCE SUMMARY

STAGE DATA			
FIXED INST.	FIXED INST.	ROTOR DATA	ROTOR DATA
TRAV. INST.	TRAV. INST.	TRAV. INST.	TRAV. INST.
1.3735	1.4409	1.4620	1.4620
0.6805	0.7686	0.9385	0.9385
0.6945	0.7992	0.9417	0.9417
Discharge Valve Setting= 30.0			
Cor. Nozzle Weight Flow= 224.7			
Percent Design Speed = 100.1			
Total Pressure Ratio =			
Adiabatic Efficiency =			
Polytropic Efficiency =			
IE Check Flow/Noz.Flow = 0.9880			
Assumed IE Flow Coeff. = 0.9500			
TE Check Flow/Noz.Flow = 0.9866			
Assumed TE Flow Coeff. = 0.9500			

100872 TABLE XVII - TASK II STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

STATOR BLADE ROW - NASA TASK IV-B		POINT NUMBER 24		BLADE ELEMENT PERFORMANCE RESULTS		READING NUMBER 593		DATE 10/ 7/1970		
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCLD ANG HN CHBR LN	INCLD ANG SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL
1	26.77	22.07	39.47	-12.70	588.78	614.97	614.97	614.97	310.20	310.20
2	25.49	20.77	39.11	-17.04	754.49	699.18	699.18	699.18	283.49	283.49
3	26.24	21.47	39.81	-13.52	819.32	739.130	739.130	739.130	352.49	352.49
4	32.26	26.63	40.86	-13.56	852.18	763.23	763.23	763.23	376.15	376.15
5	33.92	26.63	42.22	-8.60	858.55	723.15	723.15	723.15	456.40	456.40
6	37.54	26.63	42.76	-8.30	1074.23	883.15	883.15	883.15	593.84	593.84
7				-9.22	1115.40	875.41	875.41	875.41	672.63	672.63
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	DEV ANGLE TE	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL
1	1.24	0.60	-11.13	12.37	25.23	703.08	703.08	703.08	15.16	15.16
2	0.60	0.60	-10.10	10.70	21.47	741.68	741.68	741.68	7.77	7.77
3	1.12	0.99	-8.87	24.37	24.37	787.61	787.61	787.61	15.41	15.41
4	-0.40	0.35	-8.75	6.35	26.63	801.02	801.02	801.02	-5.55	-5.55
5	-2.04	7.06	-9.10	34.30	34.30	833.90	833.90	833.90	-29.71	-29.71
6	-6.07	32.98	-10.58	4.51	32.98	808.53	808.53	808.53	-85.20	-85.20
7	-5.24	42.78	-12.36	7.12	42.78	703.63	703.63	703.63	-64.07	-64.07
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	SOLIDITY	LOSS COEFFICIENT	POLY MOMEN RISE/ STAT PRESS EFFICIENCY	DIFFUSION FACTOR	CH1	
1	0.596	0.596	1.143	1.5230	0.236	0.077	1.6576	0.120	-0.088	
2	0.654	0.654	1.061	1.5440	0.126	0.041	1.1879	0.135	0.040	
3	0.724	0.724	1.065	1.5310	0.104	0.032	0.9319	0.164	0.073	
4	0.760	0.760	1.049	1.7420	0.115	0.031	0.8068	0.188	0.097	
5	0.783	0.783	1.151	1.8800	0.128	0.048	0.9920	0.178	0.062	
6	0.977	0.977	0.908	2.0510	0.197	0.054	0.3021	0.399	0.127	
7	1.015	1.015	0.798	2.0980	0.228	0.054	0.1782	0.524	0.101	
RADIAL POSITION	PERCENT DIVERGENCE	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	LOSS	LOSS PARAM	POLY MOMEN RISE/ STAT PRESS EFFICIENCY	STATOR DATA	
1	5.0000	0.991	0.989	0.950	1.000	1.000	0.077	1.6576	STAT PRESS	
2	10.0000	1.002	1.000	0.968	1.000	1.000	0.041	1.1879	STAT COEFF	
3	30.0000	0.998	1.003	0.969	1.000	1.000	0.032	0.9319	FIXED INST. FIXED INST. TRAV. INST.	
4	50.0000	1.001	1.005	0.960	1.000	1.000	0.031	0.8068	1.3735 0.9532 0.9668	
5	70.0000	1.000	1.007	0.963	1.000	1.000	0.048	0.9920	0.6945 0.8690 0.4866	
6	90.0000	0.923	1.000	0.906	1.000	1.000	0.054	0.3021	Discharge Valve Setting=30.0	
7	95.0000	0.716	0.987	0.883	1.000	1.000	0.054	0.1782	Cor. Nozzle Weight Flow= 224.7	

OVERALL PERFORMANCE SUMMARY

STAGE DATA STATOR DATA STATOR DATA  
 FIXED INST. FIXED INST. TRAV. INST.  
 1.3735 0.9532 0.9668  
 0.6945 0.8690 0.4866  
 Discharge Valve Setting=30.0  
 Cor. Nozzle Weight Flow= 224.7  
 LE Check Flow/Noz.Flow = 0.9866 TE Check Flow/Noz.Flow = 0.0602  
 Assumed LE Flow Coeff. = 0.9500 Assumed TE Flow Coeff. = 0.9350

108978 **TABLE XVII - TASK II STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)**

ROTOR BLADE ROW - NASA TASK IV#B											
BLADE ELEMENT PERFORMANCE RESULTS											
POINT NUMBER 25 READING NUMBER 594 DATE 10/ 7/1970											
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	MN CHBR LN INCID ANG	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	INLET ABS TANG VEL	INLET REL TANG VEL
1	67.26	-0.25	61.28	5.98	615.50	1583.18	611.44	-2.62	1458.63		
2	65.52	-0.68	60.25	5.27	655.71	1577.27	653.22	-7.60	1434.53		
3	59.94	-1.08	57.07	2.87	751.823	1499.51	751.09	-14.19	1297.84		
4	55.55	-2.89	53.90	4.09	740.93	1391.02	737.68	-37.19	1188.22		
5	55.55	-4.37	50.80	4.75	735.22	1284.26	723.27	-55.31	1054.43		
6	52.41	-4.75	48.58	3.83	721.35	1149.70	690.52	-57.32	897.08		
7	52.149	-4.66	45.02	5.47	683.64	1085.14	648.16	-52.88	844.57		
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	REL DEV ANG TE	REL TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	EXIT REL TANG VEL
1	61.34	52.78	57.52	3.82	5.92	758.49	956.02	488.06	603.06	838.07	838.07
2	53.66	45.09	57.18	-3.52	11.86	846.21	1007.77	596.52	598.38	810.92	810.92
3	48.73	42.69	52.85	-4.12	11.21	844.75	941.34	620.92	572.67	707.44	707.44
4	44.02	41.77	46.10	-2.08	13.97	829.02	818.50	588.21	583.48	568.43	568.43
5	36.66	47.21	34.70	1.96	18.90	827.40	701.59	539.96	605.00	416.73	416.73
6	26.72	51.26	16.84	9.88	25.70	826.54	581.49	512.45	638.75	257.91	257.91
7	17.48	54.25	10.70	6.78	35.00	875.74	544.99	506.70	703.83	159.61	159.61
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	LOSS COEFFICIENT	TOT PRESS LOSS PARAM	ADB EFFICIENCY	POLY MOMEN EFFICIENCY	RISE/MEAS T RISE	STAT PRESS RISE COEFF	CHS FACTOR
1	1456.01	0.565	1.7453	0.749	0.233	0.839	0.7540	0.7748	0.321	0.321	0.443
2	1426.73	0.604	1.453	0.913	0.203	0.841	0.7810	0.7996	0.321	0.321	0.444
3	1283.65	0.699	1.395	0.827	0.182	0.827	0.8547	0.8667	0.321	0.321	0.493
4	1143.03	0.689	1.294	0.797	0.100	0.820	0.8912	0.8998	0.321	0.321	0.539
5	999.12	0.683	1.192	0.724	0.070	0.814	0.9272	0.9281	0.321	0.321	0.588
6	839.76	0.669	1.067	0.742	0.086	0.817	0.9223	0.9281	0.321	0.321	0.630
7	791.49	0.632	1.004	0.782	0.106	0.822	0.9130	0.9196	0.321	0.321	0.652
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	SOLIDITY RATIO	LOSS COEFFICIENT	TOT PRESS LOSS PARAM	ADB EFFICIENCY	POLY MOMEN EFFICIENCY	RISE/MEAS T RISE	STAT PRESS RISE COEFF	CHS FACTOR
1	1441.12	0.626	1.789	1.4310	0.233	0.839	0.7540	0.7748	0.321	0.321	0.443
2	1409.30	0.709	1.845	1.4610	0.203	0.841	0.7810	0.7996	0.321	0.321	0.444
3	1280.11	0.719	1.801	1.6120	0.182	0.827	0.8547	0.8667	0.321	0.321	0.493
4	1151.91	0.710	1.701	1.7730	0.100	0.820	0.8912	0.8998	0.321	0.321	0.539
5	1021.74	0.714	1.605	1.9640	0.070	0.814	0.9272	0.9281	0.321	0.321	0.588
6	896.66	0.714	1.595	2.2480	0.086	0.817	0.9223	0.9281	0.321	0.321	0.630
7	863.44	0.757	1.471	2.3470	0.106	0.822	0.9130	0.9196	0.321	0.321	0.652
RADIAL POSITION	HEIGHT INCREASIN	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	LOSS COEFFICIENT	ADB EFFICIENCY	POLY MOMEN EFFICIENCY	RISE/MEAS T RISE	STAT PRESS RISE COEFF	CHS FACTOR
1	5.0000	1.871	1.255	1.883	1.233	0.233	0.7540	0.7748	0.321	0.321	0.443
2	10.0000	1.945	1.241	1.888	1.255	0.203	0.7810	0.7996	0.321	0.321	0.444
3	30.0000	1.870	1.204	1.851	1.225	0.182	0.8547	0.8667	0.321	0.321	0.493
4	50.0000	1.814	1.184	1.798	1.205	0.100	0.8912	0.8998	0.321	0.321	0.539
5	70.0000	1.766	1.168	1.756	1.188	0.070	0.9272	0.9281	0.321	0.321	0.588
6	90.0000	1.747	1.167	1.739	1.168	0.086	0.9223	0.9281	0.321	0.321	0.630
7	95.0000	1.821	1.183	1.741	1.188	0.106	0.9130	0.9196	0.321	0.321	0.652

OVERALL PERFORMANCE SUMMARY  
 STAGE DATA ROTOR DATA ROTOR DATA ROTOR DATA  
 FIXED INST. FIXED INST. TRAV. INST. TRAV. INST.  
 1.7876 1.8207 1.8373  
 0.8252 0.8535 0.9562  
 0.8369 0.8654 0.9598  
 Discharge Valve Setting= 6.0  
 Percent Design Speed = 100.1  
 Cor. Nozzle Weight Flow= 212.6

IE Check Flow/Noz.Flow = 1.0112  
 Assumed IE Flow Coeff. = 0.9890  
 IE Check Flow/Noz.Flow = 0.9859  
 Assumed IE Flow Coeff. = 0.9500



100970 TABLE XVII - TASK II STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

STATOR BLADE ROW - NASA TASK IV#9		BLADE ELEMENT PERFORMANCE RESULTS										ROTOR BLADE ROW - NASA TASK IV#9															
POINT NUMBER		25		25		25		25		25		25		25		25		25		25							
READING NUMBR		594		594		594		594		594		594		594		594		594		594							
DATE		18/ 7/1970		18/ 7/1970		18/ 7/1970		18/ 7/1970		18/ 7/1970		18/ 7/1970		18/ 7/1970		18/ 7/1970		18/ 7/1970		18/ 7/1970							
RADIAL POSITION	1	REL INLET FLOW ANG	54.24	ABS INLET FLOW ANG	46.10	CMBR LN LE ANGLE	31.47	INCID ANG	14.77	MN CMBR LN	39.11	INCID ANG	6.99	INCID ANG	37.01	SUCT SURF	746.37	INLET ABS VELOCITY	436.17	INLET AX VELOCITY	578.06	INLET ABS TANG VEL	600.59	INLET REL TANG VEL	605.65		
2	2	39.11	42.55	37.01	35.54	3.54	844.67	622.08	571.10	576.61	590.74	590.99	520.99	616.37	674.54	542.48	599.85	599.85	599.85	608.22	608.22	635.08	635.08	635.08	635.08	635.08	
3	3	43.95	45.04	40.86	48.21	42.22	831.75	831.75	831.75	831.75	831.75	831.75	831.75	831.75	831.75	831.75	831.75	831.75	831.75	831.75	831.75	831.75	831.75	831.75	831.75	831.75	
4	4	48.21	51.21	42.76	48.21	42.22	871.51	871.51	871.51	871.51	871.51	871.51	871.51	871.51	871.51	871.51	871.51	871.51	871.51	871.51	871.51	871.51	871.51	871.51	871.51	871.51	871.51
5	5	51.21																									
6	6																										
7	7																										
RADIAL POSITION	1	REL EXIT FLOW ANG	-0.53	ABS EXIT FLOW ANG	1.24	CMBR LN TE ANGLE	-1.13	DEV ANG TE	10.60	TURN ANGLE	54.77	EXIT ABS VELOCITY	599.88	EXIT AX VELOCITY	599.85	EXIT ABS TANG VEL	-5.50	EXIT AX VELOCITY	599.85	EXIT ABS TANG VEL	13.17	EXIT AX VELOCITY	13.17	EXIT ABS TANG VEL	13.17	EXIT AX VELOCITY	13.17
2	2	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	
3	3	-0.38	-2.17	-0.79	-3.24	-0.79	-3.24	-0.79	-3.24	-0.79	-3.24	-0.79	-3.24	-0.79	-3.24	-0.79	-3.24	-0.79	-3.24	-0.79	-3.24	-0.79	-3.24	-0.79	-3.24	-0.79	
4	4																										
5	5																										
6	6																										
7	7																										
RADIAL POSITION	1	ROTOR SPD AT INLET	0.615	INLET ABS MACH NO	0.698	INLET REL MACH NO	0.719	AXIAL VEL RATIO	1.375	DIFFUSION FACTOR	0.465	CH1	0.365														
2	2	0.719	0.719	0.719	0.719	0.719	0.719	0.719	0.719	0.719	0.719	0.719	0.719	0.719	0.719	0.719	0.719	0.719	0.719	0.719	0.719	0.719	0.719	0.719	0.719	0.719	
3	3	0.723	0.723	0.723	0.723	0.723	0.723	0.723	0.723	0.723	0.723	0.723	0.723	0.723	0.723	0.723	0.723	0.723	0.723	0.723	0.723	0.723	0.723	0.723	0.723	0.723	
4	4	0.719	0.719	0.719	0.719	0.719	0.719	0.719	0.719	0.719	0.719	0.719	0.719	0.719	0.719	0.719	0.719	0.719	0.719	0.719	0.719	0.719	0.719	0.719	0.719	0.719	
5	5	0.753	0.753	0.753	0.753	0.753	0.753	0.753	0.753	0.753	0.753	0.753	0.753	0.753	0.753	0.753	0.753	0.753	0.753	0.753	0.753	0.753	0.753	0.753	0.753	0.753	
6	6																										
7	7																										
RADIAL POSITION	1	ROTOR SPD AT EXIT	0.490	EXIT ABS MACH NO	0.528	EXIT REL MACH NO	0.501	SOLIDITY RATIO	1.5230	LOSS COEFFICIENT	0.129	TOT PRESS LOSS PARAM	0.842	POLY EFFICIENCY	1.0439	MEAS T RISE	0.344	STAT PRESS RISE COEFF	0.344								
2	2	0.528	0.528	0.528	0.528	0.528	0.528	0.528	0.528	0.528	0.528	0.528	0.528	0.528	0.528	0.528	0.528	0.528	0.528	0.528	0.528	0.528	0.528	0.528	0.528		
3	3	0.501	0.501	0.501	0.501	0.501	0.501	0.501	0.501	0.501	0.501	0.501	0.501	0.501	0.501	0.501	0.501	0.501	0.501	0.501	0.501	0.501	0.501	0.501	0.501		
4	4	0.435	0.435	0.435	0.435	0.435	0.435	0.435	0.435	0.435	0.435	0.435	0.435	0.435	0.435	0.435	0.435	0.435	0.435	0.435	0.435	0.435	0.435	0.435	0.435		
5	5	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281		
6	6	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284		
7	7																										
RADIAL POSITION	1	PERCENT DECELERATION	5.0000	TRAV TOT PRESS RATIO	0.994	FIXED TOT PRESS RATIO	0.971	TEMP RATIO	1.000	PERFORMANCE PARAMETERS	Total Pressure Ratio =	1.7876	STATOR DATA FIXED INST.	0.9694	STATOR DATA TRAV. INST.	0.9727											
2	2	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000		
3	3	30.0000	30.0000	30.0000	30.0000	30.0000	30.0000	30.0000	30.0000	30.0000	30.0000	30.0000	30.0000	30.0000	30.0000	30.0000	30.0000	30.0000	30.0000	30.0000	30.0000	30.0000	30.0000	30.0000	30.0000		
4	4	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000	50.0000		
5	5	70.0000	70.0000	70.0000	70.0000	70.0000	70.0000	70.0000	70.0000	70.0000	70.0000	70.0000	70.0000	70.0000	70.0000	70.0000	70.0000	70.0000	70.0000	70.0000	70.0000	70.0000	70.0000	70.0000	70.0000		
6	6	90.0000	90.0000	90.0000	90.0000	90.0000	90.0000	90.0000	90.0000	90.0000	90.0000	90.0000	90.0000	90.0000	90.0000	90.0000	90.0000	90.0000	90.0000	90.0000	90.0000	90.0000	90.0000	90.0000	90.0000		
7	7	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000	95.0000		

OVERALL PERFORMANCE SUMMARY

STAGE DATA STATOR DATA STATOR DATA  
 FIXED INST. FIXED INST. TRAV. INST.  
 Total Pressure Ratio = 1.7876 0.9618 0.9727  
 Polytropic Efficiency = 0.8389 0.9694 0.7952  
 Percent Design Speed = 100.1 Discharge Valve Setting=6.0  
 Cor. Nozzle Weight Flow= 212.6  
 IE Check Flow/Noz.Flow = 0.9959 TE Check Flow/Noz.Flow = 0.9836  
 Assumed IE Flow Coeff. = 0.9500 Assumed TE Flow Coeff. = 0.9550

TABLE XVII - TASK II STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

ROTOR BLADE ROW - NASA TASK IV-B		BLADE ELEMENT PERFORMANCE RESULTS		POINT NUMBER 26		READING NUMBER 595		DATE 10/ 7/1970	
RADIAL POSITION	RFL INLET FLOW ANG	ABS INLET FLOW ANG	CMBR LN LE ANGLE	INCID ANG MN CMBR LN	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL
1	65.86	-0.98	61.28	4.58	661.30	1607.98	656.85	-11.24	1465.75
2	64.80	-1.78	60.25	4.55	683.46	1599.58	680.59	-21.11	1448.37
3	58.94	-1.12	57.07	1.87	781.56	1514.67	781.40	-15.22	1297.55
4	55.47	-0.45	53.90	1.57	792.24	1394.82	789.74	-6.15	1149.00
5	52.78	-1.44	50.80	1.98	783.80	134.27	773.02	-19.44	1017.53
6	50.54	-3.76	48.58	1.96	761.63	1168.04	729.94	-47.97	886.86
7	50.84	-4.19	48.02	2.82	721.76	1108.97	684.70	-50.13	840.81
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMBR LN TE ANGLE	REL DEV ANGLE TE	REL TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL
1	61.89	49.01	57.52	3.57	4.77	742.41	1006.58	559.35	880.29
2	55.83	39.36	57.18	-1.35	8.97	795.48	1098.06	613.94	904.29
3	49.56	40.07	52.85	-3.29	9.38	829.58	978.73	533.56	744.85
4	45.24	41.06	46.10	-0.86	10.23	812.49	869.98	533.33	617.39
5	37.13	44.36	34.70	2.43	15.65	826.20	741.63	588.31	445.39
6	26.02	47.68	16.84	9.18	24.52	847.64	649.27	520.11	272.63
7	14.01	50.86	10.70	3.31	36.83	934.95	617.52	583.53	145.61
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	LOSS COEFFICIENT	TOT PRESS LOSS PARAM	ADB EFFICIENCY	POLY MOMEN RISE/ STAT PRESS EFFICIENCY	RISE COEFF
1	1454.51	0.610	0.838	1.4330	0.202	0.034	0.7650	0.7833	0.301
2	1425.27	0.631	0.928	1.4610	0.164	0.031	0.8043	0.8196	0.302
3	1282.83	0.731	0.838	1.6120	0.107	0.022	0.8710	0.8810	-0.368
4	1141.85	0.742	0.750	1.7750	0.090	0.018	0.8948	0.9029	0.451
5	998.10	0.733	1.202	1.9640	0.069	0.014	0.9235	0.9290	0.528
6	838.89	0.711	1.090	2.2480	0.087	0.017	0.9159	0.9219	0.602
7	790.67	0.671	1.030	2.3470	0.086	0.018	0.9245	0.9300	0.585
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	SOLIDITY RATIO	LOSS COEFFICIENT	TOT PRESS LOSS PARAM	ADB EFFICIENCY	POLY MOMEN RISE/ STAT PRESS EFFICIENCY	RISE COEFF
1	1439.64	0.618	0.838	1.4330	0.202	0.034	0.7650	0.7833	0.301
2	1407.85	0.674	0.928	1.4610	0.164	0.031	0.8043	0.8196	0.302
3	1278.80	0.710	0.838	1.6120	0.107	0.022	0.8710	0.8810	-0.368
4	1150.73	0.701	0.750	1.7750	0.090	0.018	0.8948	0.9029	0.451
5	1020.69	0.716	0.643	1.9640	0.069	0.014	0.9235	0.9290	0.528
6	895.74	0.738	0.558	2.2480	0.087	0.017	0.9159	0.9219	0.602
7	862.55	0.818	0.541	2.3470	0.086	0.018	0.9245	0.9300	0.585
RADIAL POSITION	PERCENT IMPERSON PRESS RATIO	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	OVERALL PERFORMANCE SUMMARY			
1	5.0000	1.787	1.229	1.786	1.236	STAGE DATA ROTOR DATA ROTOR DATA			
2	10.0000	1.838	1.201	1.790	1.225	FIXED INST. FIXED INST. TRAV. INST.			
3	30.0000	1.797	1.187	1.775	1.205	Total Pressure Ratio =			
4	50.0000	1.743	1.167	1.720	1.187	Adiabatic Efficiency =			
5	70.0000	1.728	1.160	1.698	1.177	Polytropic Efficiency =			
6	90.0000	1.710	1.158	1.694	1.178	Percent Design Speed = 100.1			
7	95.0000	1.793	1.176	1.710	1.179	Cor. Nozzle Weight Flow = 221.2			
DISCUSSION									
FACTOR									
0.497									
0.428									
0.474									
0.486									
0.531									
0.576									
0.583									
0.590									
0.544									
DISCHARGE VALVE SETTING=8.0									
LE Check Flow/Noz.Flow = 0.9956									
Assumed LE Flow Coeff. = 0.9850									
TE Check Flow/Noz.Flow = 0.9794									
Assumed TE Flow Coeff. = 0.9500									

TABLE XVII - TASK II STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

100670

		STATOR BLADE ROW - NASA TASK IV-B									
		BLADE ELEMENT PERFORMANCE RESULTS					POINT NUMBER 26				
		READING NUMBER 595					DATE 10/ 7/1970				
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCID ANG MN CHBR LN	INCID ANG SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	
1	50.55	40.37	39.47	11.08	727.51	780.25	561.74	462.28	561.74	561.74	
2	40.37	39.11	39.01	11.26	829.71	829.71	505.42	594.40	505.42	505.42	
3	39.94	40.24	39.80	0.44	816.72	816.72	532.47	636.03	532.47	532.47	
4	42.13	40.86	40.86	1.27	839.92	839.92	527.05	620.98	527.05	527.05	
5	44.46	42.22	42.22	2.24	860.20	860.20	598.38	609.67	598.38	598.38	
6	47.56	42.76	42.76	4.60	930.51	930.51	587.48	628.17	587.48	587.48	
7											
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	DEV ANG TE	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	
1	-0.48	0.39	-11.13	10.65	51.03	588.07	588.07	288.05	-4.94	-4.94	
2	0.39	0.39	-10.10	10.49	39.98	595.72	595.72	595.69	4.08	4.08	
3	-0.35	-0.17	-8.87	8.52	40.28	608.56	608.56	608.40	-3.70	-3.70	
4	-0.17	-0.13	-8.75	8.58	40.42	599.06	599.06	598.63	-1.82	-1.82	
5	-0.13	1.09	-9.10	8.97	42.26	594.44	594.44	593.49	-1.30	-1.30	
6	1.09	-2.33	-10.58	11.64	43.41	556.89	556.89	552.16	10.25	10.25	
7	-2.33		-12.36	10.03	49.90	490.26	490.26	488.14	-19.90	-19.90	
8											
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	DIFFUSION FACTOR						
1	0.605	0.660	0.711	1.272	0.447						
2	0.660	0.711	0.957	1.002	0.444						
3	0.711	0.705	0.941	0.957	0.464						
4	0.705	0.730	0.956	0.941	0.451						
5	0.730	0.750	0.911	0.956	0.469						
6	0.750	0.822	0.777	0.911	0.516						
7	0.822			0.777	0.654						
8											
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	TEMP RATIO	LOSS COEFFICIENT	TOT PRESS LOSS PARAM	ADB EFFICIENCY	POLY EFFICIENCY	POLY HOMOEN MEAS	STAT PRESS RISE COEFF	
1	0.485	0.495	0.510	1.5230	0.121	0.040	0.040	0.9822	0.9822	0.315	
2	0.495	0.510	0.505	1.5440	0.040	0.013	0.013	0.8079	0.8079	0.312	
3	0.510	0.505	0.502	1.6310	0.035	0.011	0.011	0.7767	0.7767	0.328	
4	0.505	0.470	0.470	1.7420	0.025	0.009	0.009	0.9239	0.9239	0.398	
5	0.502	0.411	0.411	1.8800	0.034	0.007	0.007	0.9195	0.9195	0.427	
6	0.470	0.411	0.411	2.0510	0.055	0.013	0.013	0.8327	0.8327	0.448	
7	0.411			2.0980	0.081	0.019	0.019	0.6741	0.6741	0.441	
8											
RADIAL POSITION	PERCENT DILUTION	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	OVERALL PERFORMANCE SUMMARY					
1	5.0000	0.998	0.998	0.974	1.000	STAGE DATA STATOR DATA STATOR DATA					
2	10.0000	0.976	0.976	0.990	1.000	FIXED INST. FIXED INST. TRAV. INST.					
3	30.0000	0.965	0.965	0.990	1.000	1.7222 0.9874 0.9754					
4	50.0000	0.986	0.986	0.993	1.000	0.9564 0.9772 0.8337					
5	70.0000	0.985	0.985	0.990	1.000	Discharge Valve Setting= 8.0					
6	90.0000	0.943	0.943	0.983	1.000	Percent Design Speed = 100.0					
7	95.0000	0.898	0.898	0.970	1.000	Cor. Nozzle Weight Flow= 221.2					
8						IE Check Flow/Noz.Flow = 0.9794 TE Check Flow/Noz.Flow = 0.9700					
						Assumed IE Flow Coeff. = 0.9500 Assumed TE Flow Coeff. = 0.9350					

TABLE XVII - TASK II STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

100970

ROTOR BLADE ROW - NASA TASK IV-B															
BLADE ELEMENT PERFORMANCE RESULTS DATE 10/ 7/1970															
POINT NUMBER 15 READING NUMBER 642															
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CMBR LN	INCID ANG	LE ANGLE	MN CMBR LN	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	REL TURN ANGLE	REL DEV ANG	REL INLET FLOW ANG	REL EXIT FLOW ANG
1	67.74	0.29	61.28	6.46	61.28	6.46	597.95	1569.44	594.01	2.99	1451.07	6.77	3.45	57.52	50.99
2	66.52	0.92	60.25	6.27	60.25	6.27	621.05	1554.14	618.73	0.17	1424.63	10.99	-1.65	57.18	43.68
3	63.13	0.58	57.07	6.06	57.07	6.06	646.16	1429.76	646.12	6.50	1275.43	12.19	-1.91	52.85	42.89
4	60.30	2.59	53.90	6.40	53.90	6.40	637.49	1262.17	634.85	28.67	1112.83	14.36	-0.10	46.10	44.83
5	58.66	-1.56	50.80	7.86	50.80	7.86	626.37	1176.22	617.72	28.67	1014.56	19.31	4.66	34.70	47.12
6	55.75	1.54	48.58	7.17	48.58	7.17	584.22	1009.64	560.84	15.05	823.58	28.35	10.55	16.84	50.45
7	57.61	0.42	48.02	8.99	48.02	8.99	537.07	952.55	510.72	3.71	786.72	36.71	9.60	10.70	53.46
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMBR LN	INCID ANG	TE ANGLE	MN CMBR LN	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	REL TURN ANGLE	REL DEV ANG	REL INLET FLOW ANG	REL EXIT FLOW ANG
1	60.97	50.99	57.52	3.45	57.52	3.45	753.82	979.16	474.69	583.93	855.27	10.99	6.77	57.18	50.99
2	55.53	43.68	57.18	3.45	57.18	3.45	808.19	1032.22	583.60	557.23	850.18	12.19	-1.65	52.85	42.89
3	50.94	42.89	52.85	-1.91	52.85	-1.91	807.38	938.76	591.47	549.47	728.92	14.36	-0.10	46.10	44.83
4	45.94	44.83	46.10	-0.10	46.10	-0.10	800.56	816.42	587.43	284.04	588.33	19.31	4.66	34.70	47.12
5	39.36	47.12	34.70	4.66	34.70	4.66	793.58	698.96	537.89	579.23	441.14	28.35	10.55	16.84	50.45
6	27.39	50.45	16.84	10.55	16.84	10.55	821.09	594.07	517.82	627.12	268.34	36.71	9.60	10.70	53.46
7	20.10	53.46	10.70	9.60	10.70	9.60	850.95	548.13	501.55	676.80	185.48				
RADIAL POSITION	ROTOR SPD AT INLET	INLET MACH NO	REL AXIAL VEL	DIFFUSION FACTOR	CH1										
1	1454.06	0.551	1.447	0.799	0.505										
2	1424.82	0.574	1.437	0.943	0.458										
3	1281.93	0.592	1.325	0.835	0.483										
4	1141.50	0.590	1.187	0.894	0.482										
5	997.79	0.579	1.103	0.871	0.542										
6	835.63	0.538	0.930	0.923	0.551										
7	790.43	0.492	0.873	0.982	0.582										
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT MACH NO	REL AXIAL VEL	POLY MOMEN RISEZ	STAT PRESS										
1	1439.19	0.622	1.4310	0.038	0.7815										
2	1407.41	0.678	1.4610	0.038	0.8042										
3	1278.40	0.686	1.6120	0.029	0.8535										
4	1150.37	0.685	1.7730	0.025	0.8850										
5	1020.57	0.683	1.9640	0.016	0.9260										
6	895.46	0.710	2.2480	0.020	0.9316										
7	862.28	0.739	2.5470	0.026	0.9201										
RADIAL POSITION	PERCENT DIMENSION	TRAV TOT PRESS RATIO	FIXED TOT PRESS RATIO	LOSS COEFFICIENT	TOT PRESS LOSS PARAM	EFFICIENCY	ADB EFFICIENCY	PERFORMANCE PARAMETERS							
1	5.0000	1.857	1.269	1.251	0.038	0.7815	0.7852	1.7783							
2	10.0000	1.915	1.244	1.880	0.038	0.8042	0.8042	1.8117							
3	30.0000	1.851	1.218	1.833	0.025	0.8752	0.8752	1.8117							
4	50.0000	1.796	1.200	1.785	0.016	0.9260	0.9260	0.8485							
5	70.0000	1.762	1.184	1.746	0.020	0.9316	0.9316	0.8337							
6	90.0000	1.760	1.183	1.746	0.026	0.9201	0.9201	0.8606							
7	95.0000	1.807	1.191	1.189	0.026	0.9201	0.9201	0.8938							

OVERALL PERFORMANCE SUMMARY

STAGE DATA ROTOR DATA ROTOR DATA  
 FIXED INST. FIXED INST. TRAV. INST.  
 1.7783 1.8117 1.8233  
 0.8485 0.8485 0.8504  
 0.8337 0.8606 0.8938  
 Discharge Valve Setting=6.0  
 Percent Design Speed = 99.9  
 Cor. Nozzle Weight Flow= 210.6  
 IE Check Flow/Noz.Flow = 0.9536 TE Check Flow/Noz.Flow = 0.9957  
 Assumed IE Flow Coeff. = 0.9850 Assumed TE Flow Coeff. = 0.9500

TABLE XVII - TASK II STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

100970		STATOR BLADE ROM - NASA TASK IV-B														
		BLADE ELEMENT PERFORMANCE RESULTS										DATE 10/ 7/1970				
		POINT NUMBER 15										READING NUMBER 642				
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CMR LN LE	CMR LN ANGLE	INCID ANG LN	INCID ANG SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	INLET AX TANG VEL	INLET ABS TANG VEL	INLET REL TANG VEL	INLET AX TANG VEL	
1	52.39	44.67	39.47	39.11	5.56	740.25	795.60	451.73	562.82	586.44	559.29	586.44	559.29	586.44	559.29	
2	42.76	44.03	39.80	39.01	3.75	807.25	807.25	592.53	576.66	547.96	576.66	547.96	576.66	547.96	576.66	
3	44.98	47.38	42.22	40.86	4.12	802.30	802.30	565.88	556.93	565.58	556.93	565.88	556.93	565.58	556.93	
4	47.38	50.41	42.76	42.76	7.65	847.78	847.78	536.67	605.15	605.15	536.67	605.15	605.15	536.67	605.15	
5	50.41															
6																
7																
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMR LN TE	CMR LN ANGLE	DEV ANG TE	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	EXIT AX TANG VEL	EXIT ABS TANG VEL	EXIT REL TANG VEL	EXIT AX TANG VEL	
1	0.14	1.40	-11.13	-11.13	11.27	52.25	602.70	602.69	602.69	1.52	1.52	602.69	1.52	1.52	602.69	
2	1.40	0.75	-10.10	-10.10	11.50	43.27	601.53	601.53	601.53	14.65	14.65	601.53	14.65	14.65	601.53	
3	0.75	-0.13	-8.75	-8.75	9.62	42.01	615.52	615.52	615.52	8.07	8.07	615.52	8.07	8.07	615.52	
4	-0.13	1.49	-9.10	-9.10	8.37	45.71	588.38	588.38	588.38	-1.38	-1.38	588.38	-1.38	-1.38	588.38	
5	1.49	-2.62	-10.58	-10.58	12.07	45.68	540.92	540.92	540.92	9.97	9.97	540.92	9.97	9.97	540.92	
6	-2.62		-12.36	-12.36	9.74	53.83	362.11	362.11	362.11	-16.49	-16.49	362.11	-16.49	-16.49	362.11	
7																
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	INLET ABS MACH NO	EXIT ABS MACH NO	EXIT REL MACH NO	LOSS SOLIDITY COEFFICIENT	LOSS PARAM	IOI PRESS EFFICIENCY	ADP PRESS EFFICIENCY	POLY MOMEN RISE/STAY PRESS	DIFFUSION FACTOR	CH4		
1	0.610	0.667	0.686	1.334	0.492	0.495	0.512	1.5230	0.151	0.049	1.0303	0.445	0.445	0.373		
2	0.667	0.687	0.691	1.063	0.495	0.512	0.491	1.5440	0.056	0.018	0.7640	0.465	0.465	0.326		
3	0.687	0.691	0.716	1.038	0.495	0.512	0.491	1.5440	0.056	0.017	0.7640	0.442	0.442	0.345		
4	0.691	0.716	0.732	1.020	0.495	0.512	0.491	1.7420	0.052	0.015	0.8230	0.466	0.466	0.436		
5	0.716	0.732		0.954	0.495	0.512	0.491	1.8800	0.058	0.015	0.9391	0.514	0.514	0.486		
6	0.732			0.687	0.495	0.512	0.491	2.0510	0.083	0.020	0.8910	0.708	0.708	0.518		
7				0.672	0.495	0.512	0.491	2.0980	0.102	0.024	0.6134	0.756	0.756	0.492		
RADIAL POSITION	PERCENT IMMERISION	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	LOSS COEFFICIENT	LOSS PARAM	IOI PRESS EFFICIENCY	ADP PRESS EFFICIENCY	POLY MOMEN RISE/STAY PRESS	DIFFUSION FACTOR	CH4				
1	5.0000	1.002	0.969	0.995	0.967	1.000	0.151	0.049	1.0303	0.445	0.445	0.373				
2	10.0000	0.976	0.985	1.001	0.985	1.000	0.056	0.018	0.7640	0.465	0.465	0.326				
3	30.0000	0.976	0.985	1.005	0.985	1.000	0.056	0.017	0.7640	0.442	0.442	0.345				
4	50.0000	0.980	0.984	1.006	0.984	1.000	0.052	0.015	0.8230	0.466	0.466	0.436				
5	70.0000	0.914	0.976	1.005	0.976	1.000	0.058	0.015	0.9391	0.514	0.514	0.486				
6	90.0000	0.832	0.999	1.005	0.976	1.000	0.083	0.020	0.8910	0.708	0.708	0.518				
7	95.0000	0.832	0.999	0.999	0.976	1.000	0.102	0.024	0.6134	0.756	0.756	0.492				

OVERALL PERFORMANCE SUMMARY

STAGE DATA STATOR DATA STATOR DATA  
 FIXED INST. FIXED INST. TRAV. INST.  
 PERFORMANCE PARAMETERS  
 Total Pressure Ratio = 1.7783 0.9616 0.9745  
 Polyropic Efficiency = 0.8337 0.9687 0.7626  
 Percent Design Speed = 99.9 Discharge Valve Setting= 6.0  
 Cor. Nozzle Weight Flow= 210.6  
 LE Check Flow/Noz. Flow = 0.9957 TE Check Flow/Noz. Flow = 0.9970  
 Assumed LE Flow Coeff. = 0.9500 Assumed TE Flow Coeff. = 0.9350

TABLE XVII - TASK II STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

100976

ROTOR BLADE ROW - NASA TASK IV-B														
BLADE ELEMENT PERFORMANCE RESULTS														
POINT NUMBER 16 READING NUMBER 643 DATE 10/ 7/1970														
RADIAL POSITION	REL T/LEFT FLOW ANG	ABS INLET FLOW ANG	CHMR LN LE ANGLE	INCID ANG MN CMR LN	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL
1	66.31	0.38	61.28	5.03	840.04	1584.30	635.81	4.18	149.27	730.42	501.19	522.31	289.27	916.94
2	65.22	-0.41	60.25	4.97	662.04	1374.86	659.155	-4.75	1428.93	784.51	610.91	489.86	531.77	746.08
3	61.92	0.29	57.07	4.85	681.77	1448.43	681.75	3.43	1277.94	825.57	631.41	531.77	746.08	924.94
4	59.29	1.41	53.90	5.39	670.32	1309.06	668.03	16.47	1124.53	794.22	593.06	522.93	522.93	824.94
5	56.43	3.09	50.80	5.63	648.72	1160.50	639.08	34.49	962.87	799.43	571.71	554.10	600.72	485.83
6	54.32	2.67	48.58	5.74	607.04	1012.77	582.135	27.14	811.13	817.09	627.23	600.72	294.35	197.32
7	54.23	1.90	48.02	6.21	584.80	968.05	555.84	18.42	771.67	872.07	598.13	664.59	664.59	197.32

RADIAL POSITION	REL T/LEFT FLOW ANG	ABS INLET FLOW ANG	CHMR LN LE ANGLE	INCID ANG MN CMR LN	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL
1	61.14	46.56	57.52	3.62	730.42	1039.29	501.19	522.31	289.27	784.51	610.91	489.86	531.77	746.08
2	56.33	38.72	57.18	-0.85	784.51	1102.94	610.91	489.86	531.77	825.57	631.41	531.77	746.08	924.94
3	49.76	40.10	52.85	-3.09	825.57	977.46	631.41	531.77	746.08	794.22	593.06	522.93	522.93	824.94
4	46.59	41.40	46.10	0.49	794.22	863.50	593.06	522.93	522.93	799.43	571.71	554.10	600.72	485.83
5	39.17	44.10	34.70	4.47	799.43	740.99	571.71	554.10	600.72	817.09	627.23	600.72	294.35	197.32
6	28.54	47.99	16.84	11.70	817.09	627.23	600.72	294.35	197.32	872.07	598.13	664.59	664.59	197.32
7	19.77	50.44	10.70	9.07	872.07	598.13	664.59	664.59	197.32					

RADIAL POSITION	ROTOR SPD AT EXIT	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	REL TURN ANGLE	REL DEV ANG TE	LOSS COEFFICIENT	LOSS ANGLE	LOSS ANGLE	LOSS ANGLE	LOSS ANGLE	LOSS ANGLE	LOSS ANGLE	LOSS ANGLE
1	1453.43	0.593	1.468	0.788	5.18	3.62	0.033	0.197	0.164	0.120	0.081	0.101	0.099	0.182
2	1424.21	0.615	1.462	0.926	8.90	-0.85	0.034	0.197	0.164	0.120	0.081	0.101	0.099	0.182
3	1281.38	0.635	1.348	0.926	12.16	-3.09	0.024	0.197	0.164	0.120	0.081	0.101	0.099	0.182
4	1141.01	0.653	1.217	0.888	12.70	0.49	0.024	0.197	0.164	0.120	0.081	0.101	0.099	0.182
5	997.35	0.601	1.076	0.895	17.25	4.47	0.016	0.197	0.164	0.120	0.081	0.101	0.099	0.182
6	838.27	0.560	0.935	0.929	25.78	11.70	0.020	0.197	0.164	0.120	0.081	0.101	0.099	0.182
7	780.09	0.539	0.892	0.988	34.47	9.07	0.020	0.197	0.164	0.120	0.081	0.101	0.099	0.182

RADIAL POSITION	ROTOR SPD AT EXIT	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	REL TURN ANGLE	REL DEV ANG TE	LOSS COEFFICIENT	LOSS ANGLE	LOSS ANGLE	LOSS ANGLE	LOSS ANGLE	LOSS ANGLE	LOSS ANGLE	LOSS ANGLE
1	1438.57	0.608	0.866	1.4310	5.18	3.62	0.033	0.197	0.164	0.120	0.081	0.101	0.099	0.182
2	1406.80	0.645	0.935	1.4610	8.90	-0.85	0.034	0.197	0.164	0.120	0.081	0.101	0.099	0.182
3	1277.85	0.706	0.836	1.6120	12.16	-3.09	0.024	0.197	0.164	0.120	0.081	0.101	0.099	0.182
4	1149.87	0.681	0.743	1.7730	12.70	0.49	0.024	0.197	0.164	0.120	0.081	0.101	0.099	0.182
5	1019.93	0.692	0.641	1.9640	17.25	4.47	0.016	0.197	0.164	0.120	0.081	0.101	0.099	0.182
6	895.07	0.709	0.544	2.2480	25.78	11.70	0.020	0.197	0.164	0.120	0.081	0.101	0.099	0.182
7	861.91	0.758	0.520	2.3470	34.47	9.07	0.020	0.197	0.164	0.120	0.081	0.101	0.099	0.182

RADIAL POSITION	PERCENT IMMERSE	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO
1	5.0000	1.774	1.774	1.233	1.233
2	10.0000	1.816	1.816	1.225	1.225
3	30.0000	1.786	1.786	1.186	1.186
4	50.0000	1.721	1.721	1.177	1.177
5	70.0000	1.720	1.720	1.179	1.179
6	90.0000	1.747	1.747	1.174	1.174
7	95.0000	1.787	1.787	1.186	1.186

OVERALL PERFORMANCE SUMMARY														
STAGE DATA ROTOR DATA ROTOR DATA														
PERFORMANCE PARAMETERS														
FIXED INST. FIXED INST. TRAV. INST.														
Total Pressure Ratio	=	1.7162	1.7389	1.7583										
Adiabatic Efficiency	=	0.8402	0.8623	0.8698										
Polytropic Efficiency	=	0.8519	0.8726	0.9010										
Percent Design Speed	=	99.9	Discharge Valve Setting=	8.0										
Cor. Nozzle Weight Flow	=	218.3												

LE Check Flow/Noz.Flow = 0.9446 TE Check Flow/Noz.Flow = 0.9818													
Assumed LE Flow Coeff. = 0.9850 Assumed TE Flow Coeff. = 0.9500													

TABLE XVII - TASK II STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

STATOR BLADE ROW - NASA TASK IV-B																				
BLADE ELEMENT PERFORMANCE RESULTS																				
POINT NUMBER 16										DATE 10/ 7/1970										
RADIAL POSITION	RFL INLET FLOW ANG	ARS INLET FLOW ANG	CHBR LN LE ANGLE	INCID ANG MN CHBR LN	INCID ANG SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	RADIAL POSITION	PEL EXIT FLOW ANG	ARS EXIT FLOW ANG	CHBR LN TE ANGLE	DEV ANG TE	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL
1	48.14	39.73	39.47	8.67	713.80	769.21	476.36	591.54	531.58	491.67	2	0.44	0.94	-11.13	11.27	47.69	594.35	594.33	4.58	4.58
2	39.73	39.73	39.11	0.62	825.68	825.68	632.60	591.54	530.30	491.67	3	0.14	-0.14	-8.87	8.73	36.79	602.92	602.93	9.92	9.92
3	39.97	39.80	39.81	0.80	795.01	795.01	603.01	603.01	516.77	516.77	4	-0.93	-0.14	-8.75	7.82	40.11	617.44	617.28	-1.46	-1.46
4	40.60	41.21	40.86	1.05	812.44	812.44	602.72	541.04	541.04	541.04	5	-0.80	-0.80	-9.10	8.30	41.53	585.08	584.58	-9.50	-9.50
5	44.84	42.22	42.22	2.62	874.62	874.62	582.99	582.99	579.67	579.67	6	1.48	1.48	-10.58	12.06	43.35	561.26	559.43	14.49	14.49
6	47.24	42.76	42.76	4.48			589.36	589.36	637.28	637.28	7	1.92	1.92	-12.36	10.44	42.16	472.68	472.68	-15.88	-15.88
7																				
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	SOLIDITY	COEFFICIENT	LOSS	TOT PRESS LOSS	PARAM EFFICIENCY	ADB EFFICIENCY	POLY MOMEN RISEZ	STAT PRESS RISE COEFF	DIFFUSION FACTOR	CH1			
1	5.0000	0.490	0.501	1.5230	5.0000	0.490	0.501	1.5230	0.127	0.042	0.042	0.042	1.0153	0.290	0.410	0.308				
2	10.0000	0.501	0.518	1.5440	10.0000	0.501	0.518	1.5440	0.038	0.012	0.012	0.012	0.8248	0.290	0.419	0.320				
3	30.0000	0.518	0.493	1.6310	30.0000	0.518	0.493	1.6310	0.038	0.008	0.008	0.008	0.7756	0.312	0.449	0.338				
4	50.0000	0.493	0.474	1.7420	50.0000	0.493	0.474	1.7420	0.027	0.008	0.008	0.008	0.9334	0.401	0.460	0.444				
5	70.0000	0.474	0.398	1.9800	70.0000	0.474	0.398	1.9800	0.037	0.010	0.010	0.010	0.3160	0.415	0.485	0.417				
6	90.0000	0.398	0.398	2.0510	90.0000	0.398	0.398	2.0510	0.059	0.014	0.014	0.014	0.7757	0.387	0.632	0.394				
7	95.0000	0.398	0.394	2.0980	95.0000	0.398	0.394	2.0980	0.098	0.023	0.023	0.023	0.5701	0.361						

OVERALL PERFORMANCE SUMMARY

STATOR DATA STATOR DATA STATOR DATA  
 FIXED INST. FIXED INST. TRAV. INST.  
 1.7162 0.9869 0.9764  
 0.8519 0.9744 0.8016  
 Discharge Valve Setting= 8.0

PERFORMANCE PARAMETERS  
 Total Pressure Ratio = 99.9  
 Polytropic Efficiency = 218.3  
 Percent Design Speed = 99.9  
 Cor. Nozzle Weight Flow = 0.9818  
 IE Check Flow/Noz.Flow = 0.9500  
 Assumed IE Flow Coeff. = 0.9350

TABLE XVII - TASK II STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

10997C		ROTOR BLADE ROW - NASA TASK IV-B														
		BLADE ELEMENT PERFORMANCE RESULTS										DATE 10/ 7/1970				
		POINT NUMBER 18										ROTOR BLADE ROW - NASA TASK IV-B				
		READING NUMBER 645										DATE 10/ 7/1970				
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCHD ANG MN CHBR LN	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	INLET AX TANG VEL	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	INLET AX TANG VEL
1	66.16	0.74	61.28	4.88	642.04	1579.52	637.75	8.27	637.75	8.27	637.75	1579.52	637.75	8.27	637.75	1579.52
2	65.10	-0.09	60.25	4.85	663.00	1570.10	660.53	-0.99	660.53	-0.99	660.53	1570.10	660.53	-0.99	660.53	1570.10
3	61.52	1.02	57.07	4.95	687.75	1441.95	687.63	12.19	687.63	12.19	687.63	1441.95	687.63	12.19	687.63	1441.95
4	54.56	2.46	53.90	4.46	686.82	1305.01	684.04	29.40	684.04	29.40	684.04	1305.01	684.04	29.40	684.04	1305.01
5	55.34	2.98	50.80	4.54	674.69	1173.99	664.74	34.61	664.74	34.61	664.74	1173.99	664.74	34.61	664.74	1173.99
6	53.09	2.88	48.58	4.51	631.66	1024.12	605.87	30.43	605.87	30.43	605.87	1024.12	605.87	30.43	605.87	1024.12
7	54.19	1.82	46.02	6.17	585.40	968.13	556.43	17.71	556.43	17.71	556.43	968.13	556.43	17.71	556.43	968.13
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	REL DEV ANG TE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	EXIT AX TANG VEL	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	EXIT AX TANG VEL
1	60.87	44.49	57.52	3.35	726.76	1043.93	517.35	508.14	517.35	508.14	517.35	1043.93	517.35	508.14	517.35	1043.93
2	56.24	35.66	57.18	-0.24	768.65	1143.68	623.27	447.20	623.27	447.20	623.27	1143.68	623.27	447.20	623.27	1143.68
3	51.63	39.20	52.85	-1.22	792.33	989.08	613.96	500.74	613.96	500.74	613.96	989.08	613.96	500.74	613.96	989.08
4	47.44	39.74	46.10	1.34	778.13	894.57	597.94	497.08	597.94	497.08	597.94	894.57	597.94	497.08	597.94	894.57
5	38.23	41.95	34.70	4.23	806.01	770.87	596.80	536.46	596.80	536.46	596.80	770.87	596.80	536.46	596.80	770.87
6	27.70	46.02	16.84	10.86	833.85	658.58	572.51	593.24	572.51	593.24	572.51	658.58	572.51	593.24	572.51	658.58
7	17.41	48.62	10.70	6.74	910.07	638.87	594.20	674.59	594.20	674.59	594.20	638.87	594.20	674.59	594.20	638.87
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	INLET ABS MACH NO	EXIT ABS MACH NO	EXIT REL MACH NO	SOLIDITY	COEFFICIENT	LOSS	TOT PRESS LOSS PARAM	ADB EFFICIENCY	POLY MOMEN RISE/ MEAS Y RISE	STAT PRESS RISE COEFF	CHI	
1	1451.44	0.595	1.463	0.811	0.890	0.890	0.890	1.4330	0.187	0.032	0.7732	0.7901	0.8061	0.287	0.403	
2	1422.24	0.616	1.458	0.944	0.654	0.973	0.973	1.4610	0.157	0.029	0.8061	0.8206	0.8061	0.289	0.409	
3	1275.62	0.641	1.343	0.893	0.679	0.847	0.847	1.6120	0.114	0.022	0.8627	0.8728	0.8627	0.346	0.419	
4	1139.45	0.640	1.215	0.874	0.671	0.763	0.763	1.7730	0.105	0.020	0.8797	0.8880	0.8797	0.432	0.500	
5	995.29	0.627	1.092	0.898	0.699	0.669	0.669	1.9680	0.079	0.016	0.9124	0.9250	0.9124	0.537	0.568	
6	837.12	0.585	0.948	0.945	0.727	0.574	0.574	2.2480	0.101	0.020	0.9179	0.9237	0.9179	0.648	0.592	
7	789.00	0.539	0.892	1.068	0.796	0.559	0.559	2.3470	0.090	0.018	0.9347	0.9395	0.9347	0.548	0.548	
RADIAL POSITION	PERCENT IMMERSION	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	LOSS	TOT PRESS LOSS PARAM	ADB EFFICIENCY	POLY MOMEN RISE/ MEAS Y RISE	STAT PRESS RISE COEFF	CHI	
1	5.0000	1.710	1.233	1.736	1.231	1.205	1.742	1.213	1.213	0.032	0.7732	0.7901	0.8061	0.287	0.403	
2	10.0000	1.763	1.205	1.716	1.213	1.195	1.716	1.177	1.177	0.029	0.8061	0.8206	0.8061	0.289	0.409	
3	30.0000	1.725	1.195	1.716	1.213	1.681	1.716	1.660	1.660	0.022	0.8627	0.8728	0.8627	0.346	0.419	
4	50.0000	1.699	1.176	1.666	1.171	1.699	1.171	1.664	1.664	0.020	0.8797	0.8880	0.8797	0.432	0.500	
5	70.0000	1.700	1.168	1.664	1.175	1.700	1.168	1.664	1.664	0.016	0.9124	0.9250	0.9124	0.537	0.568	
6	90.0000	1.779	1.175	1.664	1.175	1.779	1.175	1.664	1.664	0.020	0.9179	0.9237	0.9179	0.648	0.592	
7	95.0000	1.779	1.183	1.743	1.178	1.779	1.183	1.743	1.743	0.018	0.9347	0.9395	0.9347	0.548	0.548	
OVERALL PERFORMANCE SUMMARY																
BLADE DATA Rotor Data Rotor Data																
FIXED INST. FIXED INST. TRAV. INST.																
Total Pressure Ratio = 1.6796 1.6996 1.7180																
Adiabatic Efficiency = 0.8433 0.8641 0.8904																
Polytropic Efficiency = 0.8543 0.8738 0.8964																
Percent Design Speed = 99.7 Discharge Valve Setting= 9.0																
Cor. Nozzle Weight Flow= 220.7																
IE Check Flow/Noz.Flow = 0.9437 TE Check Flow/Noz.Flow = 0.9745																
Assumed IE Flow Coeff. = 0.9850 Assumed TE Flow Coeff. = 0.9500																



TABLE XVII - TASK II STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

100970		STATOR BLADE ROW - NASA TASK IV-B											
		BLADE ELEMENT PERFORMANCE RESULTS										DATE 10/ 7/1970	
		POINT NUMBER 18 READING NUMBER 645											
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCID ANG MN	INCID ANG CHBR LN	INCID ANG SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	INLET AX TANG VEL	
1	46.09	39.47	39.11	6.62	708.44	751.87	792.47	491.36	603.17	510.35	448.85	489.36	
2	36.65	39.07	39.01	0.06	782.55	822.82	849.00	608.02	615.08	491.23	523.82	499.36	
3	38.94	39.80	39.80	-1.13	822.82	849.00	917.55	618.56	640.42	572.45	646.68	646.68	
4	42.78	42.22	42.22	2.52									
5	45.28	42.76	42.76										
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	DEV ANG TE	TURN ANGLE	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	INLET AX TANG VEL		
1	-0.08	-11.13	-11.13	11.05	46.14	588.32	588.32	588.32	-0.80	-0.80	-0.80		
2	0.71	-10.10	-10.10	10.81	35.94	597.40	597.40	597.40	7.43	7.43	7.43		
3	-0.57	-8.87	-8.87	8.30	39.64	612.29	612.29	612.29	-6.09	-6.09	-6.09		
4	-1.30	-8.75	-8.75	7.45	40.23	588.40	588.40	588.40	-13.32	-13.32	-13.32		
5	0.99	-9.10	-9.10	8.37	40.47	598.20	598.20	598.20	-7.65	-7.65	-7.65		
6	0.99	-10.58	-10.58	11.57	41.80	614.52	614.52	614.52	10.56	10.56	10.56		
7	-1.32	-12.36	-12.36	11.04	46.80	535.36	535.36	535.36	-12.32	-12.32	-12.32		
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	DIFFUSION FACTOR	CHI							
1	0.591	0.591	1.197	1.197	0.406	0.285							
2	0.658	0.658	0.990	0.990	0.395	0.303							
3	0.679	0.679	0.995	0.995	0.422	0.313							
4	0.675	0.675	0.967	0.967	0.432	0.402							
5	0.715	0.715	0.948	0.948	0.443	0.422							
6	0.741	0.741	0.990	0.990	0.434	0.394							
7	0.803	0.803	0.833	0.833	0.584	0.375							
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	SOLIDITY RATIO	POLY MDHEN RISE/ EFFICIENCY	STAT PRESS RISE COEFF							
1	0.487	0.487	1.5230	1.5230	0.9335	0.268							
2	0.499	0.499	1.5440	1.5440	0.8220	0.289							
3	0.516	0.516	1.6310	1.6310	0.7864	0.289							
4	0.497	0.497	1.7420	1.7420	0.9231	0.375							
5	0.597	0.597	1.6800	1.6800	0.8265	0.392							
6	0.521	0.521	2.0510	2.0510	0.8270	0.363							
7	0.451	0.451	2.0980	2.0980	0.5819	0.340							
RADIAL POSITION	PERCENT IMMERSION	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	STATOR DATA STATOR DATA							
1	5.0000	0.995	0.994	0.974	1.000	FIXED INST. FIXED INST. TRAV. INST.							
2	10.0000	0.982	0.991	0.991	1.000	1.6796 0.9882 0.9774							
3	30.0000	0.973	0.995	0.990	1.000	0.8543 0.9759 0.8169							
4	50.0000	0.999	1.003	0.994	1.000								
5	70.0000	0.993	1.003	0.992	1.000								
6	90.0000	0.969	1.006	0.985	1.000								
7	95.0000	0.887	0.994	0.969	1.000	Discharge Valve Setting= 9.0							

OVERALL PERFORMANCE SUMMARY

STAGE DATA STATOR DATA STATOR DATA

FIXED INST. FIXED INST. TRAV. INST.

1.6796 0.9882 0.9774

0.8543 0.9759 0.8169

Percent Design Speed = 99.7

Cor. Nozzle Weight Flow = 250.7

Discharge Valve Setting= 9.0

IE Check Flow/Noz.Flow = 0.9745 TE Check Flow/Noz.Flow = 0.9621

Assumed IE Flow Coeff. = 0.9500 Assumed TE Flow Coeff. = 0.9350

TABLE XVII - TASK II STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Continued)

ROTOR BLADE ROW - NASA TASK IV-B		BLADE ELEMENT PERFORMANCE RESULTS		POINT NUMBER 19		READING NUMBER 646		DATE 10/ 7/1970	
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCID ANG MN CHBR LN	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL
1	65.94	0.33	61.28	4.66	650.95	1568.11	646.65	3.77	1448.57
2	64.76	0.23	60.25	4.51	672.20	1571.47	669.68	2.69	1420.45
3	61.90	-0.03	57.07	4.53	692.55	1456.03	692.54	-0.36	1280.78
4	58.69	1.82	53.90	4.79	682.87	1310.35	680.40	21.59	1118.96
5	55.90	3.08	50.80	4.70	670.52	1171.33	660.57	35.53	941.08
6	53.91	1.83	48.58	5.23	624.01	1029.07	598.95	19.13	818.52
7	53.53	0.83	48.02	5.51	607.23	989.36	577.39	8.36	781.14
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	REL DEV ANG TE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL
1	69.74	42.92	57.52	3.22	724.80	1084.40	529.53	492.46	945.04
2	54.78	34.79	57.18	-0.40	772.04	1155.98	632.74	435.59	966.17
3	50.98	37.74	52.85	-1.87	804.18	1010.07	635.89	492.18	784.71
4	47.04	37.87	46.10	0.94	786.80	911.13	620.63	482.65	666.56
5	38.94	40.97	34.70	4.24	808.84	785.33	607.92	527.97	491.19
6	28.17	44.75	16.84	11.33	834.73	676.67	585.80	580.75	313.66
7	18.85	47.18	10.70	8.15	803.84	656.95	606.28	654.34	286.93
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	LOSS COEFFICIENT	TOT PRESS LOSS PARAM	EFFICIENCY	POLY MOMEN RISE/ MEAS T RISE	STAY PRESS RISE COEFF
1	152.34	0.604	1.473	0.819	0.191	0.033	0.7596	0.7766	0.269
2	123.14	0.625	1.461	0.945	0.154	0.029	0.8031	0.8172	0.269
3	128.42	0.645	1.357	0.918	0.116	0.023	0.8536	0.8639	0.307
4	1140.15	0.636	1.220	0.912	0.106	0.020	0.8734	0.8818	0.392
5	996.61	0.623	1.089	0.920	0.088	0.017	0.9088	0.9150	0.510
6	837.64	0.577	0.952	0.978	0.105	0.021	0.9131	0.9192	0.613
7	789.50	0.560	0.913	1.050	0.089	0.018	0.9322	0.9371	0.627
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	SOLIDITY RATIO	LOSS COEFFICIENT	TOT PRESS LOSS PARAM	EFFICIENCY	POLY MOMEN RISE/ MEAS T RISE	STAY PRESS RISE COEFF
1	1437.50	0.608	0.909	1.4310	0.191	0.033	0.7596	0.7766	0.269
2	1405.75	0.660	0.988	1.4610	0.154	0.029	0.8031	0.8172	0.269
3	1276.69	0.692	0.869	1.6120	0.116	0.023	0.8536	0.8639	0.307
4	1149.01	0.681	0.788	1.7230	0.106	0.020	0.8734	0.8818	0.392
5	1112.17	0.703	0.683	1.6640	0.088	0.017	0.9088	0.9150	0.510
6	994.41	0.729	0.591	2.2480	0.105	0.021	0.9131	0.9192	0.613
7	861.27	0.790	0.574	2.3470	0.089	0.018	0.9322	0.9371	0.627
RADIAL POSITION	PERCENT IMMERSION	TRAV TOY PRESS RATIO	TRAV TOY TEMP RATIO	FIXED TOY PRESS RATIO	FIXED TOY TEMP RATIO	OVERALL PERFORMANCE SUMMARY			
1	5.0000	1.686	1.226	1.686	1.212	STAGE DATA ROTOR DATA ROTOR DATA			
2	10.0000	1.714	1.195	1.700	1.204	FIXED INST. FIXED INST. TRAV. INST.			
3	30.0000	1.679	1.188	1.673	1.186	Total Pressure Ratio =	1.0451	1.0644	1.0639
4	50.0000	1.645	1.171	1.624	1.170	Adiabatic Efficiency =	0.8369	0.8570	0.8501
5	70.0000	1.674	1.167	1.639	1.167	Polytropic Efficiency =	0.8479	0.8678	0.8886
6	90.0000	1.687	1.165	1.670	1.173	Percent Design Speed =	99.9	Discharge Valve Setting=	10.0
7	95.0000	1.766	1.162	1.700	1.176	Cor. Nozzle Weight Flow=	221.8		
IE Check Flow/Noz.Flow = 0.9404    TE Check Flow/Noz.Flow = 0.9750 Acruamed IE Flow Coeff. = 0.9850    Assumed TE Flow Coeff. = 0.9500									

TABLE XVII - TASK II STAGE UNDISTORTED INLET BLADE ELEMENT DATA (Concluded)

100970		STATOR BLADE ROW - NASA TASK IV-B											
POINT NUMBER 19		BLADE ELEMENT PERFORMANCE RESULTS										DATE 10/ 7/1970	
READING NUMBER 646													
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCID ANG MN CHBR LN	INCID ANG SUCT SURF	INLET-ARS VELOCITY	INLET REL VELOCITY	INLET-AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	INLET-ABS TANG VEL	INLET REL TANG VEL	
1	44.54	35.79	39.47	5.07	754.51	705.13	502.59	612.04	494.58	441.21	490.83	476.96	
2	37.61	39.01	39.11	-3.32	804.46	826.57	637.09	631.43	490.83	441.21	476.96	515.53	
3	37.07	39.80	40.86	-2.12	826.57	852.46	642.52	633.74	560.40	627.45	515.53	627.45	
4	38.74	41.49	42.22	-0.73	914.14	914.14	654.08	654.08	627.45	627.45	627.45	627.45	
5	41.49	43.81	42.76	1.05									
6													
7													
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	DEV ANG TE	TURN ANGLE	EXIT-ARS VELOCITY	EXIT REL VELOCITY	EXIT-AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	EXIT-ABS TANG VEL	EXIT REL TANG VEL	
1	-0.10	0.56	-11.13	11.03	44.64	587.25	587.25	587.25	-0.98	-0.98	587.25	587.25	
2	0.56	0.56	-10.10	10.66	35.23	605.02	605.02	605.02	5.89	5.89	605.02	605.02	
3	-0.69	8.18	-8.87	8.18	38.30	621.59	621.59	621.59	-7.48	-7.48	621.59	621.59	
4	-1.39	-8.75	-8.75	7.36	38.46	595.45	595.45	595.45	-14.46	-14.46	595.45	595.45	
5	-1.10	-9.10	-9.10	8.00	39.84	617.62	617.62	617.62	-11.79	-11.79	617.62	617.62	
6	0.45	-10.58	-10.58	11.03	41.03	659.54	659.54	659.54	5.22	5.22	659.54	659.54	
7	-1.41	-12.36	-12.36	10.92	45.12	588.55	588.55	588.55	-14.48	-14.48	588.55	588.55	
RADIAL POSITION	POTOR SPD AT INLET	INLET ARS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	DEV ANG TE	TURN ANGLE	EXIT-ARS VELOCITY	EXIT REL VELOCITY	EXIT-AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	EXIT-ABS TANG VEL	EXIT REL TANG VEL
1	0.590	0.643	0.692	0.975	11.03	44.64	587.25	587.25	587.25	-0.98	-0.98	587.25	587.25
2	0.590	0.643	0.692	0.975	10.66	35.23	605.02	605.02	605.02	5.89	5.89	605.02	605.02
3	0.590	0.643	0.692	0.975	8.18	38.30	621.59	621.59	621.59	-7.48	-7.48	621.59	621.59
4	0.590	0.643	0.692	0.975	7.36	38.46	595.45	595.45	595.45	-14.46	-14.46	595.45	595.45
5	0.590	0.643	0.692	0.975	8.00	39.84	617.62	617.62	617.62	-11.79	-11.79	617.62	617.62
6	0.590	0.643	0.692	0.975	11.03	41.03	659.54	659.54	659.54	5.22	5.22	659.54	659.54
7	0.590	0.643	0.692	0.975	10.92	45.12	588.55	588.55	588.55	-14.48	-14.48	588.55	588.55
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ARS MACH NO	EXIT REL MACH NO	LOSS COEFFICIENT	LOSS PARAM	ADR EFFICIENCY	POLY MOMEN RISE/ RISE	STAI PRESS RISE COEFF	DIFFUSION FACTOR	CH1			
1	0.489	0.508	0.526	0.037	0.042	0.8334	0.8334	0.248	0.398	0.264			
2	0.489	0.508	0.526	0.037	0.042	0.8334	0.8334	0.248	0.398	0.264			
3	0.489	0.508	0.526	0.037	0.042	0.8334	0.8334	0.248	0.398	0.264			
4	0.489	0.508	0.526	0.037	0.042	0.8334	0.8334	0.248	0.398	0.264			
5	0.489	0.508	0.526	0.037	0.042	0.8334	0.8334	0.248	0.398	0.264			
6	0.489	0.508	0.526	0.037	0.042	0.8334	0.8334	0.248	0.398	0.264			
7	0.489	0.508	0.526	0.037	0.042	0.8334	0.8334	0.248	0.398	0.264			
RADIAL POSITION	PERCENT IMMERSION	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	LOSS COEFF	LOSS PARAM	ADR EFFICIENCY	POLY MOMEN RISE/ RISE	STAI PRESS RISE COEFF			
1	5.0000	0.991	0.991	1.000	1.000	0.8334	0.8334	0.8334	0.248	0.248			
2	10.0000	0.983	0.983	1.000	1.000	0.8334	0.8334	0.8334	0.248	0.248			
3	30.0000	0.975	0.975	1.000	1.000	0.8334	0.8334	0.8334	0.248	0.248			
4	57.0000	0.968	0.968	1.000	1.000	0.8334	0.8334	0.8334	0.248	0.248			
5	70.0000	0.962	0.962	1.000	1.000	0.8334	0.8334	0.8334	0.248	0.248			
6	90.0000	0.975	0.975	1.000	1.000	0.8334	0.8334	0.8334	0.248	0.248			
7	92.0000	0.888	0.888	0.925	0.925	0.8334	0.8334	0.8334	0.248	0.248			

OVERALL PERFORMANCE SUMMARY  
 STAGE DATA STATOR DATA STATOR DATA  
 FIXED INST. FIXED INST. TRAV. INST.  
 PERFORMANCE PARAMETERS  
 Total Pressure Ratio = 1.6451 0.9884 0.9776  
 Polytropic Efficiency = 0.8479 0.9755 0.8067  
 Percent Design Speed = 99.9 Discharge Valve Setting= 10.0  
 Cor. Nozzle Weight Flow= 221.8

IE Check Flow/Noz.Flow = 0.9750 TE Check Flow/Noz.Flow = 0.9584  
 Assumed IE Flow Coeff. = 0.9500 Assumed TE Flow Coeff. = 0.9350

APPENDIX G

LISTING OF TASK II STAGE RADIAL  
DISTORTION BLADE ELEMENT DATA

TABLE XVIII - TASK 11 STAGE RADIAL DISTORTION BLADE ELEMENT DATA

INLET GUIDE VANES - NASA TASK IV-B		BLADE ELEMENT PERFORMANCE RESULTS									
		POINT NUMBER 22		SPACING NUMBER 439		DATE 9/29/1970					
PARTIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CMBR LN LE ANGLE	INCLD ANG HN CHBR LN	INCID ANG SUCT SUKE	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS YAWG VEL	INLET REL YAWG VEL	INLET REL ANG VEL
1	0.27	0.27	0.0	0.27	0.0	386.74	386.74	386.74	1.92	1.92	1.92
2	0.05	0.05	0.0	0.05	0.0	393.33	393.33	393.33	1.74	1.74	1.74
3	0.42	0.42	0.0	0.42	0.0	378.02	378.02	378.02	1.74	1.74	1.74
4	0.10	0.10	0.0	0.10	0.0	726.76	726.76	726.76	1.22	1.22	1.22
5	0.19	0.19	0.0	0.19	0.0	764.73	764.73	764.73	1.19	1.19	1.19
6	1.33	1.33	0.0	1.33	0.0	762.11	762.11	762.11	1.67	1.67	1.67
7	1.03	1.03	0.0	1.03	0.0	761.25	761.25	761.25	1.70	1.70	1.70
PARTIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMBR LN TE ANGLE	DEV ANG VE	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS YAWG VEL	EXIT REL YAWG VEL	EXIT REL ANG VEL
1	0.90	0.90	0.0	0.90	0.63	530.94	530.94	530.94	8.76	8.76	8.76
2	1.23	1.23	0.0	1.23	-1.28	535.22	535.22	535.22	11.0	11.0	11.0
3	1.98	1.98	0.0	1.98	-2.39	616.21	616.21	616.21	21.33	21.33	21.33
4	0.17	0.17	0.0	0.17	0.26	726.11	726.11	726.11	2.10	2.10	2.10
5	0.17	0.17	0.0	0.17	1.34	700.56	700.56	700.56	14.21	14.21	14.21
6	0.91	0.91	0.0	0.91	2.24	637.45	637.45	637.45	6.89	6.89	6.89
7	0.54	0.54	0.0	0.54	1.58	590.61	590.61	590.61	5.41	5.41	5.41
PARTIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	TRAV LOSS TR TL PRESS COEFFICIENT	LOSS PARAM	DIFFUSION FACTOR	MOMENT RISE/STAY PRESS MEAS Y RISE			
1	0.352	0.352	0.352	1.366	0.158	0.060	0.372	0.993			
2	0.357	0.357	0.357	1.358	0.113	0.043	0.372	0.989			
3	0.342	0.342	0.342	1.654	0.461	0.162	0.659	1.249			
4	0.680	0.680	0.680	0.996	-0.012	0.004	0.000	0.023			
5	0.719	0.719	0.719	0.968	0.084	0.001	0.091	0.171			
6	0.717	0.717	0.717	0.817	-0.011	0.001	0.114	0.314			
7	0.716	0.716	0.716	0.758	0.061	0.018	0.231	0.349			
PARTIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	SOLIDITY	TRAV TOT PRESS RATIO	FIXED TOT TEMP RATIO	OVERALL PERFORMANCE SUMMARY				
1	0.494	0.494	0.494	1.3050	1.011	0.978	STAGE DATA IGV DATA				
2	0.498	0.498	0.498	1.3178	1.000	0.997	FIXED INST. TRAV. INST.				
3	0.570	0.570	0.570	1.3610	1.000	0.998	Total Pressure Ratio = 1.3804				
4	0.676	0.676	0.676	1.4198	1.000	0.991	Polytropic Efficiency = 0.6753				
5	0.650	0.650	0.650	1.5028	1.000	0.991	Percent Design Speed = 99.9				
6	0.598	0.598	0.598	1.6460	1.000	0.991	Cor. Nozzle Weight Flow = 215.6				
7	0.543	0.543	0.543	1.7160	1.000	0.982	Discharge Valve Setting = 30.0				
PARTIAL POSITION	PERCENT IMAGINATION	PRESS RATIO	TRAV TOT PRESS RATIO	FIXED TOT TEMP RATIO	PERFORMANCE PARAMETERS						
1	5.0000	0.987	1.011	0.978	Total Pressure Ratio = 1.3804						
2	16.0000	0.990	1.009	0.997	Polytropic Efficiency = 0.6753						
3	30.0000	1.036	1.004	0.998	Percent Design Speed = 99.9						
4	50.0000	1.003	1.011	0.991	Cor. Nozzle Weight Flow = 215.6						
5	70.0000	1.001	1.009	0.991	Discharge Valve Setting = 30.0						
6	90.0000	1.003	1.007	0.991	IE Check Flow/Noz.Flow = 0.9488						
7	95.0000	0.982	1.005	0.982	Assumed IE Flow Coeff. = 0.9900						

IE Check Flow/Noz.Flow = 0.9488  
 Assumed IE Flow Coeff. = 0.9900

TABLE XVIII - TASK II STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

093070

ROTOR BLADE ROW - NASA TASK IVER																
BLADE ELEMENT PERFORMANCE RESULTS																
POINT NUMBER 22      READING NUMBER 439      DATE 9/29/1970																
PARTIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHRR LM LE ANGLE	INCLD ANG HM CHRR LM	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VFL	INLET REL TANG VFL	INLET AX TANG VFL	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VFL	EXIT REL TANG VFL	EXIT AX TANG VFL
1	67.82	0.82	61.28	6.54	593.42	1562.75	589.45	4.44	1448.70	4.44	1448.70	589.45	4.44	1448.70	589.45	4.44
2	67.04	1.11	60.23	6.79	601.28	1535.66	598.64	4.56	1413.33	4.56	1413.33	598.64	4.56	1413.33	598.64	4.56
3	68.27	1.69	57.07	3.20	720.20	1451.78	719.88	21.28	1260.72	21.28	1260.72	719.88	21.28	1260.72	719.88	21.28
4	58.05	0.13	53.90	-1.85	891.39	1446.74	884.61	2.06	1139.51	2.06	1139.51	884.61	2.06	1139.51	884.61	2.06
5	48.94	-0.91	50.80	30.46	862.05	1324.84	850.15	13.55	1014.57	13.55	1014.57	850.15	13.55	1014.57	850.15	13.55
6	47.05	-0.45	48.58	11.58	821.54	1180.34	798.87	24.88	847.57	24.88	847.57	798.87	24.88	847.57	798.87	24.88
7	47.27	-0.37	48.02	10.75	772.56	1104.60	734.65	44.71	795.10	44.71	795.10	734.65	44.71	795.10	734.65	44.71
PARTIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHRR LM TE ANGLE	REL DEV ANG TE	REL TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VFL	EXIT REL TANG VFL	EXIT AX TANG VFL	DIFFUSION FACTOR	GM1			
1	59.76	33.33	57.12	2.24	8.06	728.02	1205.61	606.44	398.82	606.44	398.82	0.315	0.289			
2	56.99	30.52	57.18	-0.19	18.04	789.19	1214.68	861.10	389.79	861.10	389.79	0.293	0.302			
3	51.46	29.44	52.88	13.39	6.82	804.85	1127.65	702.98	396.53	702.98	396.53	0.283	0.242			
4	46.41	24.27	48.10	10.69	6.64	862.06	1119.07	785.14	353.92	785.14	353.92	0.295	0.293			
5	43.18	33.02	34.70	8.48	6.71	770.53	834.81	642.50	417.53	642.50	417.53	0.218	0.135			
6	19.74	37.14	16.64	2.90	21.31	1019.08	865.67	798.30	609.00	798.30	609.00	0.237	0.233			
7	7.05	39.91	10.70	33.45	46.22	1189.76	930.47	898.30	734.30	898.30	734.30	0.312	0.160			
PARTIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VFL RATIO	SOLIDITY COEFFICIENT	LOSS PARAM	EFFICIENCY	POLY NOMEN RISEZ	HEAD Y RISE	RISE CBEFF						
1	1454.14	0.544	1.432	1.829	1.4310	0.045	0.19005	0.6799	3.7832	0.192						
2	1424.91	0.552	1.410	1.804	1.4618	0.032	0.12687	0.7801	3.801	0.201						
3	1262.00	0.672	1.378	0.976	-0.028	0.005	1.0423	1.0394	1.0423	0.255						
4	1141.57	0.849	1.378	0.844	0.136	0.027	0.7468	0.7572	0.7468	0.222						
5	997.84	0.818	1.261	0.756	0.205	0.038	0.6605	0.6734	0.6605	0.284						
6	838.68	0.776	1.115	1.012	0.147	0.031	0.4269	0.4365	0.4269	0.247						
7	790.47	0.725	1.041	1.228	0.183	0.039	0.4039	0.4136	0.4039	0.269						
PARTIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	TEMP RATIO	FIXED TOY PRESS RATIO	TEMP RATIO	PERFORMANCE PARAMETERS	OVERALL PERFORMANCE SUMMARY								
1	1439.28	0.618	1.022	1.187	1.520	1.195	STAGE DATA ROTOR DATA ROTOR DATA									
2	1407.49	0.666	1.052	1.158	1.528	1.183	FIXED INST. FIXED INST. TRAV. INST.									
3	1278.47	0.710	0.992	1.146	1.565	1.146	Total Pressure Ratio =	1.3804      1.4479      1.4618								
4	1150.44	0.776	1.006	1.149	1.542	1.119	Adiabatic Efficiency =	0.6602      0.7632      0.8876								
5	1020.43	0.684	0.785	1.135	1.515	1.123	Polytropic Efficiency =	0.6753      0.7752      0.8935								
6	895.51	0.922	0.783	1.147	1.478	1.147	Percent Design Speed =	99.9      Discharge Valve Setting= 30.0								
7	832.34	1.106	0.866	1.147	1.478	1.147	Cor. Nozzle Weight Flow =	215.6								

LE Check Flow/Noz.Flow = 0.9579      TE Check Flow/Noz.Flow = 0.9343  
 Assumed IE Flow Coeff. = 0.9850      Assumed TE Flow Coeff. = 0.9700

TABLE XVIII - TASK II STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

POINT NUMBER 22		CHBR LN		INCID ANGLE		INLET ABS		INLET REL		INLET AX		INLET ABS		INLET REL	
BLADE ELEMENT PERFORMANCE RESULTS		MN CHBR LN		SUCT SURE		VELOCITY		VELOCITY		VELOCITY		TANG VEL		TANG VEL	
DATE 9/29/1970		LE ANGLE		TE ANGLE		ANG-VE		TURN ANGLE		TBT PRESS		LOSS PARAM		EFFICIENCY	
PARTIAL POSITION	REL INLET FLOW AVG	ABS INLET FLOW AVG	INLET ANGLE	CHBR LN	INCID ANGLE	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL		
1	34.96	39.47	4.51	39.47	4.51	699.03	748.67	572.89	406.54	406.54	572.89	406.54	406.54		
2	31.51	37.11	5.60	37.11	5.60	807.61	872.61	638.30	395.44	395.44	638.30	395.44	395.44		
3	29.32	35.80	6.48	35.80	6.48	879.14	951.14	704.09	349.75	349.75	704.09	349.75	349.75		
4	30.88	40.88	9.99	40.88	9.99	797.52	881.52	805.05	487.68	487.68	805.05	487.68	487.68		
5	32.58	42.22	9.64	42.22	9.64	1101.80	1277.47	881.54	587.66	587.66	881.54	587.66	587.66		
6	34.76	42.76	8.00	42.76	8.00	1277.47	1837.91	1037.91	720.43	720.43	1037.91	720.43	720.43		
PARTIAL POSITION	REL EXIT FLOW AVG	ABS EXIT FLOW AVG	TE ANGLE	CHBR LN	DEV ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL		
1	34.59	31.13	14.72	31.13	14.72	668.79	667.47	667.47	41.87	41.87	667.47	41.87	41.87		
2	3.89	510.10	13.99	510.10	13.99	666.55	664.99	664.99	45.26	45.26	664.99	45.26	45.26		
3	1.37	58.87	10.24	58.87	10.24	713.35	712.87	712.87	17.00	17.00	712.87	17.00	17.00		
4	0.22	58.72	8.67	58.72	8.67	732.33	731.28	731.28	2.83	2.83	731.28	2.83	2.83		
5	51.72	59.18	7.38	59.18	7.38	782.69	731.19	731.19	21.97	21.97	731.19	21.97	21.97		
6	0.43	510.56	11.61	510.56	11.61	852.13	849.60	849.60	6.36	6.36	849.60	6.36	6.36		
7	52.55	512.38	9.51	512.38	9.51	782.81	756.48	756.48	33.73	33.73	756.48	33.73	33.73		
PARTIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO										DIFFUSION FACTOR	GM1
1	0.591	0.647	0.711	1.165										0.212	0.187
2	0.647	0.711	0.794	1.042										0.259	0.200
3	0.711	0.794	0.909	1.018										0.260	0.257
4	0.794	0.909	1.073	1.073										0.279	0.288
5	0.909	1.073	1.224	1.224										0.223	0.198
6	1.073	1.224	1.375	1.375										0.253	0.211
7	1.224	1.375	1.526	1.526										0.243	0.134
PARTIAL POSITION	PERCENT IMMERSION	TRAV TOT PRESS RATIO	EXIT REL MACH NO	SOLIDITY COEFFICIENT	LOSS	TBT PRESS LOSS	ABX EFFICIENCY	POLY EFFICIENCY	POLY MOMEN. RISE MEAS V RISE	STAT PRESS RISE COEFF					
1	5.0000	1.026	0.998	1.5230	0.108	0.108	0.1065	0.317	8.317	0.174					
2	10.0000	0.997	1.018	1.5448	0.104	0.104	0.1014	0.258	8.258	0.193					
3	30.0000	1.013	1.000	1.6318	0.072	0.072	0.1022	1.1691	1.1691	0.235					
4	50.0000	0.996	1.043	1.7428	0.109	0.109	0.1031	0.9123	0.9123	0.258					
5	70.0000	1.011	1.018	1.8800	0.085	0.085	0.1023	1.1888	1.1888	0.179					
6	90.0000	0.942	1.008	2.0510	0.116	0.116	0.1028	0.7882	0.7882	0.263					
7	95.0000	0.830	0.953	2.0388	0.093	0.093	0.1022	0.6948	0.6948	0.257					
OVERALL PERFORMANCE SUMMARY															
STAGE DATA. STATOR DATA STATOR DATA															
FIXED INST. FIXED INST. TRAV. INST.															
PERFORMANCE PARAMETERS															
Total Pressure Ratio = 1.3004 0.9687 0.9886															
Polytropic Efficiency = 0.6753 0.9143 0.7427															
Percent Design Speed = 99.9 Discharge Valve Settings= 30.0															
Cor. Nozzle Weight Flow= 215.6															
IE Check Flow/Noz.Flow = 0.9343 TE Check Flow/Noz.Flow = 0.9229															
Assumed IE Flow Coeff. = 0.9500 Assumed TE Flow Coeff. = 0.9350															

100170 TABLE XVIII - TASK II STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

INLET GUIDE VANES - NASA TASK IV#B														
BLADE ELEMENT PERFORMANCE RESULTS														
POINT NUMBER 23 READING NUMBER 440 DATE 9/29/1970														
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CMR LN LE ANGLE	INCID ANG MN	INCID ANG LN	INCID ANG SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	INLET AX TANG VEL	INLET ABS TANG VEL	INLET REL TANG VEL
1	0.13	0.13	0.	0.13	0.13	0.13	339.93	339.93	339.93	0.78	0.78	339.93	0.78	0.78
2	0.51	0.51	0.	0.51	0.51	0.51	353.21	353.21	353.19	3.13	3.13	353.19	3.13	3.13
3	0.07	0.07	0.	-0.07	-0.07	-0.07	395.08	395.08	395.03	0.45	0.45	395.03	0.45	0.45
4	-0.30	-0.30	0.	-0.30	-0.30	-0.30	640.26	640.26	639.97	-3.40	-3.40	639.97	-3.40	-3.40
5	0.10	0.10	0.	0.10	0.10	0.10	708.08	708.08	707.32	3.19	3.19	707.32	3.19	3.19
6	1.25	1.25	0.	1.25	1.25	1.25	698.11	698.11	696.96	15.15	15.15	696.96	15.15	15.15
7	0.77	0.77	0.	0.77	0.77	0.77	697.335	697.335	626.70	9.41	9.41	626.70	9.41	9.41

RADIAL POSITION	MEL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMR LN TE ANGLE	DEV ANGLE	TURN ANGLE	TRAV LOSS TR	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	INLET AX TANG VEL	INLET ABS TANG VEL	INLET REL TANG VEL
1	-5.48	-5.48	0.	-5.48	5.51	5.51	447.01	447.01	444.93	-42.71	-42.71	444.93	-42.71	-42.71
2	-3.24	-3.24	0.	-3.24	3.75	3.75	468.60	468.60	467.84	-26.49	-26.49	467.84	-26.49	-26.49
3	-0.45	-0.45	0.	-0.45	0.39	0.39	579.36	579.36	579.06	-4.58	-4.58	579.06	-4.58	-4.58
4	0.43	0.43	0.	0.43	-0.73	-0.73	664.85	664.85	662.82	4.93	4.93	662.82	4.93	4.93
5	-0.82	-0.82	0.	-0.82	0.92	0.92	681.60	681.60	675.23	-9.70	-9.70	675.23	-9.70	-9.70
6	-1.74	-1.74	0.	-1.74	2.98	2.98	621.47	621.47	606.00	-18.39	-18.39	606.00	-18.39	-18.39
7	-1.84	-1.84	0.	-1.84	2.61	2.61	581.64	581.64	563.15	-16.01	-16.01	563.15	-16.01	-16.01

RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL	TRAV LOSS TR	TL PRESS	LOSS PARAM	DIFFUSION CH1
1	0.307	1.309	0.229	0.087	0.087	0.087	0.087	0.914
2	0.319	1.325	0.178	0.067	0.067	0.067	0.067	0.266
3	0.358	1.466	-0.313	-0.115	-0.115	-0.115	-0.115	0.899
4	0.593	1.836	0.075	0.026	0.026	0.026	0.026	0.463
5	0.561	0.995	0.002	0.801	0.801	0.801	0.801	0.043
6	0.651	0.869	-0.005	-0.002	-0.002	-0.002	-0.002	0.043
7	0.650	0.805	0.054	0.016	0.016	0.016	0.016	0.124

RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	SOLIDITY
1	0.403	1.3090	1.000	1.3090
2	0.424	1.3170	1.000	1.3170
3	0.534	1.3610	1.000	1.3610
4	0.614	1.4190	1.000	1.4190
5	0.632	1.5020	1.000	1.5020
6	0.575	1.6460	1.000	1.6460
7	0.536	1.7160	1.000	1.7160

RADIAL POSITION	PERCENT DEFORMATION	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO
1	5.0000	0.985	0.997	1.000	1.000
2	10.0000	0.988	0.998	1.000	1.000
3	30.0000	1.027	0.997	1.000	1.000
4	50.0000	0.984	0.994	1.000	1.000
5	70.0000	1.000	0.992	1.000	1.000
6	90.0000	1.001	0.993	1.000	1.000
7	95.0000	0.987	0.993	1.000	1.000

OVERALL PERFORMANCE SUMMARY		
STAGE DATA	IGV DATA	
FIXED INST.	TRAV. INST.	
1.7326	0.9989	
0.7740		
Percent Design Speed = 99.9		
Cor. Nozzle Weight Flow= 204.1		
Discharge Valve Setting=6.0		

PERFORMANCE PARAMETERS		
Total Pressure Ratio =		
Polytropic Efficiency =		
TE Check Flow/Noz.Flow = 0.9488		
Assumed TE Flow Coeff. = 0.9850		
IE Check Flow/Noz.Flow = 0.9580		
Assumed IE Flow Coeff. = 0.9850		



100470

TABLE XVIII - TASK II STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

		ROTOR BLADE ROW - NASA TASK IVeB										
		BLADE ELEMENT PERFORMANCE RESULTS					ROTOR DATA					
		POINT NUMBER	23	READING NUMBER	440	DATE	9/29/1970					
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CMBR LN LE ANGLE	INCID ANG MN CMBR LN	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	INLET ABS TANG VEL	INLET REL TANG VEL	
1	71.93	-5.04	61.28	10.65	493.94	1573.79	488.139	43.10	1491.13	43.10	1491.13	
2	70.35	-2.94	60.25	10.10	520.94	1541.97	518.32	26.64	1451.44	26.64	1451.44	
3	62.59	-0.39	57.07	5.52	667.07	1449.13	667.05	4.57	1286.47	4.57	1286.47	
4	55.69	0.36	53.90	1.79	778.09	1477.46	775.65	4.82	1136.66	4.82	1136.66	
5	51.05	-0.65	50.80	0.25	855.24	1501.94	814.09	9.25	1007.02	9.25	1007.02	
6	48.41	-1.25	48.58	-0.17	790.65	1164.93	759.09	16.52	859.14	16.52	859.14	
7	48.27	-1.25	48.02	0.25	756.16	1103.13	718.92	15.68	806.09	15.68	806.09	
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMBR LN TE ANGLE	REL DEV ANG TE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	EXIT ABS TANG VEL	EXIT REL TANG VEL	
1	62.92	68.20	57.52	5.74	870.17	710.12	322.98	807.46	631.71	807.46	631.71	
2	57.83	61.44	57.18	0.65	859.63	771.91	410.62	754.54	652.85	754.54	652.85	
3	48.01	46.73	52.85	-4.84	858.19	879.35	588.23	624.81	653.57	624.81	653.57	
4	42.36	41.25	46.10	5.74	855.93	870.90	643.11	563.94	586.41	563.94	586.41	
5	36.74	42.97	34.70	2.04	834.54	762.72	608.08	566.39	453.96	566.39	453.96	
6	24.68	49.28	16.84	7.84	855.10	619.62	552.26	641.63	253.82	641.63	253.82	
7	16.62	51.06	10.70	5.92	903.26	601.17	561.38	694.67	167.60	694.67	167.60	
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	DIFFUSION FACTOR							
1	1454.03	0.446	1.425	0.661	0.737							
2	1424.80	0.473	1.399	0.792	0.672							
3	1281.91	0.621	1.349	0.882	0.528							
4	1141.48	0.729	1.291	0.829	0.483							
5	997.77	0.780	1.231	0.747	0.528							
6	838.62	0.746	1.199	0.726	0.598							
7	790.41	0.711	1.159	0.781	0.599							
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	AXIAL VEL RATIO	POLY MOREN RISE/STAY PRESS							
1	1439.17	0.690	1.563	1.410	0.7400							
2	1407.39	0.698	1.627	1.4610	0.7583							
3	1278.38	0.731	1.749	1.6120	0.9391							
4	1150.35	0.740	1.753	1.7730	0.8404							
5	1020.35	0.727	1.689	1.640	0.8875							
6	895.45	0.746	1.541	2.2480	0.8891							
7	852.27	0.790	1.526	2.3470	0.8918							
RADIAL POSITION	PERCENT IMMERSION	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO							
1	5.0000	2.178	1.172	2.036	1.331							
2	10.0000	2.152	1.116	2.040	1.308							
3	30.0000	1.958	1.129	1.992	1.233							
4	50.0000	1.755	1.180	1.706	1.199							
5	70.0000	1.649	1.162	1.664	1.181							
6	90.0000	1.637	1.172	1.642	1.172							
7	95.0000	1.668	1.181	1.648	1.172							

OVERALL PERFORMANCE SUMMARY

STAGE DATA	ROTOR DATA	ROTOR DATA
FIXED INST.	FIXED INST.	TRAV. INST.
Total Pressure Ratio =	1.7326	1.7984
Adiabatic Efficiency =	0.7599	0.8116
Polytropic Efficiency =	0.7740	0.8265
Percent Design Speed =	99.9	Discharge Valve Setting = 6.0
Cor. Nozzle Weight Flow =	204.1	

LE Check Flow/Noz.Flow = 0.9780  
 Assumed LE Flow Coeff. = 0.9850  
 TE Check Flow/Noz.Flow = 0.9247  
 Assumed TE Flow Coeff. = 0.9500

100170 **TABLE XVIII - TASK II STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)**

		STATOR BLADE ROW - NACA TASK IVeB											
		BLADE ELEMENT PERFORMANCE RESULTS											
		POINT NUMBER 23					READING NUMBER 440					DATE	
												9/29/1970	
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CMR LN LE ANGLE	INCID ANG	INCID ANG	SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	EXIT AX VELOCITY	EXIT ABS VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL
1	69.15	29.68	39.47	23.05	867.73	308.80	399.93	810.93	757.32	856.44	589.29	623.08	557.29
2	62.16	39.11	31.01	23.05	856.44	308.80	399.93	810.93	757.32	856.44	589.29	623.08	557.29
3	46.60	39.11	31.01	23.05	856.44	308.80	399.93	810.93	757.32	856.44	589.29	623.08	557.29
4	40.40	39.11	31.01	23.05	856.44	308.80	399.93	810.93	757.32	856.44	589.29	623.08	557.29
5	40.70	40.86	39.11	23.05	856.44	308.80	399.93	810.93	757.32	856.44	589.29	623.08	557.29
6	46.10	42.22	31.01	23.05	856.44	308.80	399.93	810.93	757.32	856.44	589.29	623.08	557.29
7	47.82	42.76	31.01	23.05	856.44	308.80	399.93	810.93	757.32	856.44	589.29	623.08	557.29
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMR LN TE ANGLE	DEV ANG TE	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	
1	11.79	11.13	11.13	0.66	80.94	545.07	504.21	504.21	105.20	504.21	105.20	105.20	
2	11.18	10.10	10.10	1.08	73.35	494.56	485.15	485.15	95.93	485.15	95.93	95.93	
3	9.60	8.67	8.67	0.93	42.99	512.94	512.75	512.75	5.39	512.75	5.39	5.39	
4	2.46	8.75	8.75	1.21	37.94	579.12	578.17	578.17	24.84	578.17	24.84	24.84	
5	0.73	9.10	9.10	0.83	39.98	593.37	592.37	592.37	7.52	592.37	7.52	7.52	
6	1.52	10.58	10.58	1.10	44.58	597.94	595.98	595.98	15.77	595.98	15.77	15.77	
7	0.65	12.56	12.56	1.71	48.47	507.42	505.61	505.61	9.70	505.61	9.70	9.70	
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	SOLIDITY RATIO	LOSS COEFFICIENT	POLY MOMEN MEAS 7	EFFICIENCY	RISE COEFF	STAT PRESS	DIFFUSION FACTOR	CH1	
1	0.688	0.411	0.411	1.230	1.230	0.175	0.357	0.357	0.197	0.197	0.1216	0.1216	
2	0.595	0.397	0.397	1.240	1.240	0.172	0.355	0.355	0.226	0.226	0.1248	0.1248	
3	0.751	0.423	0.423	1.530	1.530	0.110	0.034	0.034	0.396	0.396	0.622	0.622	
4	0.744	0.486	0.486	1.720	1.720	0.043	0.012	0.012	0.469	0.469	0.503	0.503	
5	0.743	0.502	0.502	1.800	1.800	0.036	0.010	0.010	0.471	0.471	0.471	0.471	
6	0.756	0.506	0.506	2.050	2.050	0.050	0.012	0.012	0.475	0.475	0.475	0.475	
7	0.792	0.427	0.427	2.090	2.090	0.092	0.022	0.022	0.613	0.613	0.613	0.613	
RADIAL POSITION	PERCENT IMMERSION	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	LOSS COEFFICIENT	POLY MOMEN MEAS 7	EFFICIENCY	RISE COEFF	STAT PRESS	DIFFUSION FACTOR	CH1	
1	5.000	0.879	0.934	0.950	1.000	0.175	0.357	0.357	0.197	0.197	0.1216	0.1216	
2	14.000	0.877	0.960	0.951	1.000	0.172	0.355	0.355	0.226	0.226	0.1248	0.1248	
3	30.000	0.827	1.000	0.967	1.000	0.110	0.034	0.034	0.396	0.396	0.622	0.622	
4	50.000	0.983	1.003	0.987	1.000	0.043	0.012	0.012	0.469	0.469	0.503	0.503	
5	70.000	0.995	1.009	0.989	1.000	0.036	0.010	0.010	0.471	0.471	0.471	0.471	
6	90.000	0.982	1.006	0.984	1.000	0.050	0.012	0.012	0.475	0.475	0.475	0.475	
7	95.000	0.915	0.996	0.968	1.000	0.092	0.022	0.022	0.613	0.613	0.613	0.613	

OVERALL PERFORMANCE SUMMARY

STAGE DATA STATOR DATA STATOR DATA  
 FIXED INST. FIXED INST. TRAV. INST.  
 PERFORMANCE PARAMETERS  
 Total Pressure Ratio = 1.7326 0.9734 0.9473  
 Polytropic Efficiency = 0.7740 0.9540 0.7863  
 Percent Design Speed = 99.9 Discharge Valve Setting = 6.0  
 Cor. Nozzle Weight Flow = 204.1  
 LE Check Flow/Noz.Flow = 0.9247 TE Check Flow/Noz.Flow = 0.9581  
 Assumed LE Flow Coeff. = 0.9500 Assumed TE Flow Coeff. = 0.9350

TABLE XVIII - TASK II STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

POINT NUMBER 24		BLADE ELEMENT PERFORMANCE RESULTS		INLET GUIDE VANES I		MASA TASK IV-B				
BLADING NUMBER 441		DATE 9/29/8970								
PARTIAL POSITION	REL INLET FLOW ANG	ARS INLET FLOW ANG	CMBR LM LE ANGLE	INCID ANG MN	INCID ANG CMBR LM	JNCID ANG SUCT SURR	INLET ABS VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL
1	0.44	0.44	0.0	0.44	0.44	0.44	375.06	375.06	2.87	2.87
2	0.39	0.39	0.0	0.39	0.39	0.39	383.16	383.16	2.61	2.61
3	0.67	0.67	0.0	0.67	0.67	0.67	381.46	381.39	2.48	2.48
4	0.06	0.06	0.0	0.06	0.06	0.06	694.24	694.24	7.70	7.70
5	0.19	0.19	0.0	0.19	0.19	0.19	765.35	764.33	8.55	8.55
6	1.32	1.32	0.0	1.32	1.32	1.32	748.46	747.28	8.17	8.17
7	0.82	0.82	0.0	0.82	0.82	0.82	745.02	744.32	8.06	8.06
PARTIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMBR LM TE ANGLE	DEV ANG TE	YURN ANGLE	TRAV LOSS TR YL PRESS COEFFICIENT LOSS PARAM	EXIT ABS VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL
1	1.78	1.78	0.0	1.78	1.38	0.174	487.25	486.87	4.12	4.12
2	1.71	1.71	0.0	1.71	1.32	0.174	499.30	499.30	4.92	4.92
3	1.97	1.97	0.0	1.97	1.64	0.174	603.98	603.24	6.72	6.72
4	0.52	0.52	0.0	0.52	0.58	0.174	716.85	714.45	8.14	8.14
5	0.14	0.14	0.0	0.14	0.33	0.174	700.25	693.77	8.52	8.52
6	0.83	0.83	0.0	0.83	2.15	0.174	685.24	619.61	8.99	8.99
7	1.48	1.48	0.0	1.48	2.30	0.174	588.52	567.89	8.46	8.46
PARTIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	TRAV LOSS TR YL PRESS COEFFICIENT LOSS PARAM	DIFFUSION FACTOR	EXIT ABS VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL
1	0.340	0.340	0.340	1.3090	0.174	0.066	487.25	486.87	4.12	4.12
2	0.347	0.347	0.347	1.3088	0.174	0.066	499.30	499.30	4.92	4.92
3	0.346	0.346	0.346	1.3170	0.174	0.066	603.98	603.24	6.72	6.72
4	0.347	0.347	0.347	1.3610	0.174	0.066	716.85	714.45	8.14	8.14
5	0.320	0.320	0.320	1.3190	0.174	0.066	700.25	693.77	8.52	8.52
6	0.702	0.702	0.702	1.5020	0.174	0.066	685.24	619.61	8.99	8.99
7	0.699	0.699	0.699	1.6460	0.174	0.066	588.52	567.89	8.46	8.46
PARTIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	SOL IDITY	MOMEN RISE/ MEAS V RISE	STAT PRESS RISE	EXIT ABS VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL
1	0.442	0.442	0.442	1.3090	0.220	0.329	487.25	486.87	4.12	4.12
2	0.454	0.454	0.454	1.3170	0.220	0.329	499.30	499.30	4.92	4.92
3	0.456	0.456	0.456	1.3610	0.220	0.329	603.98	603.24	6.72	6.72
4	0.469	0.469	0.469	1.3190	0.220	0.329	716.85	714.45	8.14	8.14
5	0.449	0.449	0.449	1.5020	0.220	0.329	700.25	693.77	8.52	8.52
6	0.895	0.895	0.895	1.6460	0.220	0.329	685.24	619.61	8.99	8.99
7	0.840	0.840	0.840	1.7160	0.220	0.329	588.52	567.89	8.46	8.46
PARTIAL POSITION	PERCENT DIMENSION	TRAV TOT PRESS RATIO	FIXED TOT PRESS RATIO	TEMP RATIO	FIXED TOT TEMP RATIO	PERFORMANCE PARAMETERS	STAGE DATA	IGV DATA	TRAV. INST.	TRAV. INST.
1	1.0000	0.987	1.012	0.997	1.000	1.6180	1.0025	1.0025	0.7786	0.0215
2	1.0000	0.990	1.011	0.998	1.000	0.7786	0.0215	0.0215	10.0	10.0
3	1.0000	1.034	1.004	0.998	1.000	1.6180	1.0025	1.0025	0.7786	0.0215
4	1.0000	0.993	1.011	0.992	1.000	0.7786	0.0215	0.0215	10.0	10.0
5	1.0000	1.002	1.012	0.991	1.000	1.6180	1.0025	1.0025	0.7786	0.0215
6	1.0000	1.003	1.011	0.991	1.000	0.7786	0.0215	0.0215	10.0	10.0
7	1.0000	0.993	1.008	0.992	1.000	1.6180	1.0025	1.0025	0.7786	0.0215

OVERALL PERFORMANCE SUMMARY  
 STAGE DATA  
 FIXED INST. = 1.6180  
 Total Pressure Ratio = 1.0025  
 Polytropic Efficiency = 0.7786  
 Percent Design Speed = 99.9  
 Discharge Valve Setting = 10.0  
 Cor. Nozzle Weight Flow = 212.3  
 IE Check Flow/Noz.Flow = 0.9559  
 Assumed LE Flow Coeff. = 0.9900  
 TE Check Flow/Noz.Flow = 0.9576  
 Assumed TE Flow Coeff. = 0.9850

TABLE XVIII - TASK II STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

093070		ROTOR BLADE BDN 2 NASA TASK IV-B										
		BLADE ELEMENT PERFORMANCE RESULTS										
		POINT NUMBER 24 SPADING NUMBER 441 DATE 9/29/1970										
PARTIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCID ANG	CHBR LN LE ANGLE	HN CHBR LN	INLET ARS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS VELOCITY	INLET REL YANG VEL	INLET ABS YANG VEL
1	69.93	61.63	61.25	8.46	540.92	1567.13	537.14	557.55	537.14	557.55	1469.83	1448.13
2	51.55	68.61	60.25	8.46	587.84	1543.54	557.84	557.84	557.84	557.84	1469.83	1448.13
3	60.99	61.69	57.07	3.92	698.94	1448.70	698.94	698.94	698.94	698.94	1261.70	1261.70
4	52.63	61.42	53.98	11.27	869.63	1430.38	867.09	867.09	867.09	867.09	1135.52	1135.52
5	49.66	58.11	50.88	11.14	866.60	1412.42	845.02	845.02	845.02	845.02	999.73	999.73
6	47.23	58.59	48.58	11.35	815.83	1175.98	783.48	783.48	783.48	783.48	847.00	847.00
7	47.74	51.00	48.02	10.28	767.71	1111.81	729.96	729.96	729.96	729.96	803.87	803.87
PARTIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	REL DIV ANGLE	REL TURN ANGLE	EXIT ARS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS VELOCITY	EXIT REL YANG VEL	EXIT ABS YANG VEL	
1	57.10	52.61	57.52	70.42	12.82	831.96	929.85	504.42	504.42	504.42	270.75	270.75
2	56.47	48.46	57.18	70.51	12.73	787.03	1037.05	370.33	370.33	370.33	267.39	267.39
3	49.35	33.58	52.85	11.64	11.64	883.38	987.68	842.28	842.28	842.28	747.94	747.94
4	44.87	34.99	46.18	11.28	7.72	829.20	958.33	828.78	828.78	828.78	678.47	678.47
5	39.04	39.92	34.70	5.24	9.72	798.73	798.73	805.68	805.68	805.68	518.51	518.51
6	24.50	48.73	16.84	7.66	25.74	902.42	747.71	864.69	864.69	864.69	302.89	302.89
7	9.95	45.75	10.70	10.75	37.73	804.60	748.25	733.38	733.38	733.38	625.17	625.17
PARTIAL POSITION	ROTOR SPD AT INLET	INLET REL MACH NO	AXIAL VEL RATIO	INLET REL MACH NO	REL DIV ANGLE	REL TURN ANGLE	EXIT ARS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS VELOCITY	EXIT REL YANG VEL	EXIT ABS YANG VEL
1	1454.57	0.493	1.427	0.939	70.42	12.82	831.96	929.85	504.42	504.42	504.42	270.75
2	1425.72	0.509	1.418	0.927	70.51	12.73	787.03	1037.05	370.33	370.33	370.33	267.39
3	1282.18	0.651	1.342	0.918	11.64	11.64	883.38	987.68	842.28	842.28	842.28	747.94
4	1141.90	0.826	1.358	0.783	11.28	7.72	829.20	958.33	828.78	828.78	828.78	678.47
5	998.14	0.815	1.250	0.718	5.24	9.72	798.73	798.73	805.68	805.68	805.68	518.51
6	838.03	0.768	1.107	0.848	7.66	25.74	902.42	747.71	864.69	864.69	864.69	302.89
7	790.71	0.719	1.041	0.977	10.70	37.73	804.60	748.25	733.38	733.38	733.38	625.17
PARTIAL POSITION	ROTOR SPD AT EXIT	EXIT REL MACH NO	INLET REL MACH NO	SOLIDITY COEFFICIENT	LOSS PERCENT	LOSS PERCENT	YBT PRESS LOSS PAHAM	EFFICIENCY	ADH EFFICIENCY	POLY MOMEN RISE/ RISE CPEFF	STAY PRESS	
1	1439.70	0.684	0.764	1.4316	0.259	0.259	0.049	0.7319	0.7543	-0.010	0.010	
2	1407.91	0.660	0.872	1.4610	0.210	0.210	0.039	0.7808	0.7996	0.131	0.131	
3	1278.45	0.717	0.839	1.6120	0.032	0.032	0.002	1.0134	1.0122	0.331	0.331	
4	1150.77	0.726	0.639	1.7730	0.158	0.158	0.030	0.7910	0.8032	0.370	0.370	
5	1020.73	0.698	0.698	1.9640	0.133	0.133	0.026	0.8282	0.8384	0.434	0.434	
6	895.78	0.798	0.659	2.2480	0.114	0.114	0.023	0.8785	0.8863	0.483	0.483	
7	862.59	0.931	0.668	2.5470	0.123	0.123	0.026	0.8785	0.8859	0.530	0.530	
PARTIAL POSITION	PERCENT IMPERSON PRESS RATIO	TRAV TOT PRESS RATIO	FIXED TOT PRESS RATIO	TEMP RATIO	FIXED TOT TEMP RATIO	PERFORMANCE PARAMETERS	Total Pressure Ratio	Adiabatic Efficiency	Polytropic Efficiency	Percent Design Speed	Cor. Nozzle Weight Flow	
1	5.0000	1.130	1.284	1.871	1.268	1.27	1.198	0.8163	0.8291	99.9	212.3	
2	10.0000	1.924	1.226	1.896	1.277	1.27	1.198	0.8163	0.8291	99.9	212.3	
3	30.0000	1.863	1.189	1.896	1.198	1.198	1.198	0.8163	0.8291	99.9	212.3	
4	50.0000	1.879	1.145	1.531	1.164	1.164	1.164	0.8163	0.8291	99.9	212.3	
5	70.0000	1.495	1.145	1.538	1.158	1.158	1.158	0.8163	0.8291	99.9	212.3	
6	90.0000	1.580	1.144	1.594	1.163	1.163	1.163	0.8163	0.8291	99.9	212.3	
7	95.0000	1.658	1.168	1.582	1.168	1.168	1.168	0.8163	0.8291	99.9	212.3	

OVERALL PERFORMANCE SUMMARY

STAGE DATA ROTOR DATA ROTOR DATA  
 FIXED INST. FIXED INST. TRAV. INST.  
 1.6180 1.6694 1.6402  
 0.7631 0.8163 0.8022  
 0.7786 0.8291 0.8714  
 Discharge Valve Setting= 10.0  
 IF Check Flow/Noz.Flow = 0.9575 TE Check Flow/Noz.Flow = 0.9559  
 Assumed LE Flow Coeff. = 0.9850 Assumed TE Flow Coeff. = 0.9500

TABLE XVIII - TASK II STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

STATOR BLADE BPH 5		NASA TASK IVOR									
POINT NUMBER 24		BLADE ELEMENT PERFORMANCE RESULTS									
BRADING NUMBER 441		DATE 9/29/57									
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCID ANG	INCID ANG	SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL
1	54.12	39.47	14.65	18.03	774.82	53.18	479.46	533.48	479.46	542.79	662.79
2	44.44	39.11	5.33	0.44	833.48	52.74	526.44	591.87	526.44	542.79	662.79
3	34.16	39.80	5.64	837.21	817.50	444.56	468.51	444.56	468.51	468.51	468.51
4	37.70	40.56	2.86	933.05	727.18	727.18	727.18	727.18	727.18	727.18	727.18
5	36.19	42.22	6.03	1065.47	787.11	787.11	787.11	787.11	787.11	787.11	787.11
6	42.04	42.76	0.72								
7											
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	DEV ANG TE	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	
1	50.84	51.13	10.32	54.93	592.13	592.13	592.13	592.13	592.13	592.13	
2	1.79	910.18	11.49	42.65	592.20	592.20	592.20	592.20	592.20	592.20	
3	1.69	58.87	10.58	37.76	617.58	617.58	617.58	617.58	617.58	617.58	
4	53.58	58.23	5.17	32.74	592.62	592.62	592.62	592.62	592.62	592.62	
5	11.25	59.18	7.45	38.95	631.07	631.07	631.07	631.07	631.07	631.07	
6	0.37	510.56	10.95	39.82	669.94	669.94	669.94	669.94	669.94	669.94	
7	52.02	512.16	10.29	48.11	603.92	603.92	603.92	603.92	603.92	603.92	
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VFL RATIO	DIFFUSION FACTOR	CM3					
1	0.671	0.649	0.718	1.235	0.745	2.253					
2	0.649	0.718	0.851	1.075	0.450	0.347					
3	0.734	0.734	0.977	0.857	0.445	0.378					
4	0.714	0.714	0.977	0.857	0.463	0.435					
5	0.829	0.829	0.919	0.919	0.393	0.482					
6	0.958	0.958	0.767	0.767	0.428	0.441					
7					0.593	0.486					
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	LOSS COEFFICIENT	LOSS	YBT PRESS LOSS	PARAM EFFICIENCY	ABR EFFICIENCY	POLY MOMEN RISEZ	STAY PRESS RISE	
1	0.484	0.484	0.968	1.5230	0.214	0.078	0.078	0.078	4.5859	2.579	
2	0.489	0.520	1.002	1.5448	0.086	0.012	0.012	0.012	0.6468	0.324	
3	0.506	0.540	1.006	1.6310	0.039	0.007	0.007	0.007	0.8449	0.350	
4	0.540	0.574	1.006	1.7428	0.055	0.015	0.015	0.015	0.8754	0.404	
5	0.574	0.574	1.001	1.8800	0.055	0.015	0.015	0.015	0.8883	0.452	
6	0.514	0.514	1.001	2.0318	0.059	0.014	0.014	0.014	0.9071	0.482	
7	0.514	0.514	1.001	2.0998	0.068	0.016	0.016	0.016	0.7334	0.434	
RADIAL POSITION	PERCENT IMMERION	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	LOSS	LOSS	LOSS	LOSS	LOSS	
1	5.0000	1.656	0.968	0.968	1.088	0.214	0.078	0.078	4.5859	2.579	
2	10.0000	0.982	1.002	1.002	1.088	0.086	0.012	0.012	0.6468	0.324	
3	30.0000	0.975	1.006	1.006	1.088	0.039	0.007	0.007	0.8449	0.350	
4	50.0000	0.977	1.006	1.006	1.088	0.055	0.015	0.015	0.8754	0.404	
5	70.0000	1.027	1.001	1.001	1.088	0.055	0.015	0.015	0.8883	0.452	
6	90.0000	0.979	1.008	1.008	1.088	0.059	0.014	0.014	0.9071	0.482	
7	95.0000	0.896	0.991	0.991	1.880	0.068	0.016	0.016	0.7334	0.434	
OVERALL PERFORMANCE SUMMARY											
STAGE DATA STATOR DATA STATOR DATA											
FIXED INST. FIXED INST. TRAV. INST.											
Total Pressure Ratio = 1.6180 0.9692 1.0346											
Polytropic Efficiency = 0.7786 0.9348											
Percent Design Speed = 99.9 Discharge Valve Setting= 10.0											
Cor. Nozzle Weight Flow= 212.3											
LE Check Flow/Noz.Flow = 0.9559 TE Check Flow/Noz.Flow = 0.9455											
Assumed LE Flow Coeff. = 0.9500 Assumed TE Flow Coeff. = 0.9350											

100770

TABLE XVIII - TASK II STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

		ROTOR BLADE ROW - NASA TASK IV-B									
		BLADE ELEMENT PERFORMANCE RESULTS									
		POINT NUMBER	26	READING NUMBER	561	DATE	10/ 6/1970				
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	MN CHBR LN ANCHR LN	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	INLET ABS TANG VEL	INLET REL TANG VEL
1	68.47	0.74	61.28	7.19	574.77	1557.18	570.94	7.41	1447.24	7.41	1447.24
2	67.71	0.38	60.25	7.46	585.00	1537.20	582.84	3.87	1421.54	3.87	1421.54
3	61.05	-0.13	57.07	3.98	710.39	1467.48	710.38	-1.63	1284.08	-1.63	1284.08
4	52.83	-0.36	53.90	-1.07	872.71	1441.55	869.97	-5.41	1147.37	-5.41	1147.37
5	50.26	-1.15	50.80	-0.54	855.85	1327.71	844.47	-17.00	1015.20	-17.00	1015.20
6	47.69	-1.99	48.58	-0.89	821.60	1171.71	788.54	-27.44	866.42	-27.44	866.42
7	48.68	-3.20	48.02	0.66	769.97	1132.60	731.17	-40.87	831.62	-40.87	831.62
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	REL DEV ANCHR LN	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	EXIT ABS TANG VEL	EXIT REL TANG VEL
1	60.42	34.56	57.52	2.90	715.59	1191.45	587.61	404.74	1035.04	404.74	1035.04
2	57.13	33.46	57.18	-0.05	766.07	1202.42	651.99	398.96	1009.02	398.96	1009.02
3	50.74	29.05	52.85	-2.11	822.38	1136.07	718.84	329.28	879.64	329.28	879.64
4	48.19	24.44	46.10	0.09	845.30	1111.19	768.78	349.41	801.43	349.41	801.43
5	41.87	32.49	34.70	7.57	793.77	898.10	665.79	423.93	596.85	423.93	596.85
6	22.22	35.18	16.84	5.18	999.84	886.65	804.53	567.12	328.71	567.12	328.71
7	14.05	39.65	10.70	3.35	1055.99	846.24	799.53	662.58	200.05	662.58	200.05
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	LOSS PARAM	AD8 EFFICIENCY	POLY MOMEN RISEZ	MEAS T RISE	STAT PRESS RISE COEFF	DIFFUSION FACTOR	CH1
1	1435.78	0.526	1.425	1.029	0.035	0.7322	0.7492	0.204	0.201	0.324	0.300
2	1425.40	0.536	1.409	1.119	0.027	0.8021	0.8150	0.204	0.204	0.305	0.305
3	1282.45	0.662	1.368	1.012	-0.002	1.0174	1.0162	0.245	0.245	0.310	0.332
4	1141.96	0.829	1.369	0.884	0.029	0.7267	0.7378	0.299	0.299	0.299	0.299
5	993.19	0.811	1.258	0.789	0.044	0.6141	0.6276	0.338	0.338	0.502	0.538
6	838.97	0.776	1.127	1.020	0.038	0.7785	0.7900	0.264	0.264	0.371	0.264
7	790.75	0.723	1.063	1.093	0.041	0.7815	0.7931	0.162	0.162	0.390	0.162
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	SOLIDITY RATIO	LOSS COEFFICIENT	AD8 EFFICIENCY	POLY MOMEN RISEZ	MEAS T RISE	STAT PRESS RISE COEFF	PERCENT EXCURSION	TRAV TOT
1	1435.78	0.696	1.009	1.4310	0.204	0.7322	0.7492	0.204	0.201	5.0000	1.189
2	1425.40	0.684	1.083	1.4610	0.146	0.8021	0.8150	0.204	0.204	10.0000	1.151
3	1278.92	0.726	1.002	1.6120	-0.012	1.0174	1.0162	0.245	0.245	30.0000	1.134
4	1150.84	0.758	0.997	1.7730	0.149	0.7267	0.7378	0.299	0.299	50.0000	1.099
5	1020.79	0.793	0.796	1.9680	0.230	0.6141	0.6276	0.338	0.338	70.0000	1.112
6	895.83	0.907	0.805	2.2480	0.184	0.7785	0.7900	0.272	0.272	90.0000	1.127
7	862.64	0.961	0.770	2.3470	0.199	0.7815	0.7931	0.208	0.208	95.0000	1.143
RADIAL POSITION	PERCENT EXCURSION	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	PERFORMANCE PARAMETERS	STAGE DATA	ROTOR DATA	ROTOR DATA	STAGE DATA	ROTOR DATA
1	5.0000	1.552	1.189	1.595	1.195	Total Pressure Ratio =	1.3842	1.4303	1.4826	1.4826	
2	10.0000	1.608	1.151	1.613	1.183	Adiabatic Efficiency =	0.6582	0.7280	0.9300	0.9300	
3	30.0000	1.586	1.134	1.653	1.152	Polytropic Efficiency =	0.6735	0.7414	0.9338	0.9338	
4	50.0000	1.369	1.099	1.342	1.121	Percent Design Speed =	100.0	Discharge Valve Setting =	30.0	30.0	
5	70.0000	1.322	1.112	1.286	1.147	Cor. Nozzle Weight Flow =	216.4				
6	90.0000	1.522	1.127	1.460	1.147	LE Check Flow/Noz.Flow =	0.9422	TE Check Flow/Noz.Flow =	0.9481	0.9481	
7	95.0000	1.555	1.143	1.471	1.149	Assumed LE Flow Coeff. =	0.9850	Assumed TE Flow Coeff. =	0.9500	0.9500	

TABLE XVIII - TASK II STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

3.00770		STATOR BLADE ROW - NASA TASK IV-8												
POINT NUMBER 26		BLADE ELEMENT PERFORMANCE RESULTS												
READING NUMBER 561		DATE 10/ 6/1970												
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCID ANG MN CHBR LN	INCID ANG SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	EXIT AX VELOCITY	EXIT ABS VELOCITY	INLET AX VELOCITY	INLET ABS VELOCITY	INLET REL VELOCITY	EXIT AX VELOCITY	EXIT ABS VELOCITY
1	36.18	32.45	39.47	-3.29	688.60	555.02	629.78	671.02	43.37	671.02	406.48	629.78	671.02	43.37
2	28.93	23.58	39.01	-6.66	823.44	720.45	787.22	720.45	38.48	720.45	398.18	720.45	38.48	
3	30.31	30.37	40.86	-10.08	823.56	708.12	737.69	737.69	17.67	737.69	443.22	737.69	17.67	
4	34.87	30.37	42.22	-10.55	1093.32	933.80	849.52	849.52	4.83	849.52	547.24	849.52	4.83	
5	34.87	34.87	42.76	-11.85	1123.61	911.76	741.07	741.07	-11.02	741.07	635.35	741.07	-11.02	
6	34.87	34.87	42.76	-7.89	1123.61	911.76	741.07	741.07	-35.03	741.07	635.35	741.07	-35.03	
7	34.87	34.87	42.76	-7.89	1123.61	911.76	741.07	741.07	-35.03	741.07	635.35	741.07	-35.03	
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	DEV ANG TE	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	TOT PRESS LOSS COEFF	ADB EFFICIENCY	POLY MOMEN RISE/ RISE	FIXED INST. TRAV. INST.	EXIT AX VELOCITY	EXIT ABS VELOCITY	
1	3.70	3.70	-11.13	14.83	32.48	671.02	671.02	0.240	0.079	3.0078	0.132	671.02	43.37	
2	3.28	3.28	-10.10	13.38	29.17	670.80	670.80	0.060	0.019	0.8700	0.158	670.80	38.48	
3	1.40	1.40	-8.97	10.27	27.52	720.70	720.70	0.069	0.021	0.9803	0.211	720.70	17.67	
4	0.37	0.37	-8.75	9.12	23.31	738.24	738.24	0.135	0.039	0.8312	0.201	738.24	4.83	
5	-0.85	-0.85	-9.10	8.25	31.17	740.72	740.72	0.073	0.019	0.8333	0.143	740.72	-11.02	
6	-0.17	-0.17	-10.58	10.41	30.54	852.02	852.02	2.0510	0.022	0.7476	0.249	852.02	-2.49	
7	-2.71	-2.71	-12.36	9.65	37.98	744.50	744.50	2.0980	0.028	0.5179	0.234	744.50	-35.03	
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	SOLIDITY	LOSS COEFF	FIXED TOT TEMP RATIO	PERCENT IMMERGION	TRAV TOT PRESS RATIO	TRAV TOT PRESS RATIO	PERCENT IMMERGION	TRAV TOT PRESS RATIO	TRAV TOT PRESS RATIO	
1	0.582	0.582	0.582	1.207	1.5230	0.240	1.000	5.0000	1.023	1.001	9.0000	1.023	1.001	
2	0.646	0.646	0.646	1.069	1.5440	0.060	0.953	10.0000	0.993	1.011	30.0000	0.993	1.011	
3	0.727	0.727	0.727	1.000	1.6310	0.069	0.986	50.0000	0.998	1.007	70.0000	0.998	1.007	
4	0.774	0.774	0.774	0.937	1.7420	0.135	0.955	90.0000	0.981	1.010	95.0000	0.981	1.010	
5	1.044	1.044	1.044	1.044	1.8600	0.073	0.978	95.0000	0.952	1.002	95.0000	0.952	1.002	
6	1.009	1.009	1.009	0.910	2.0510	0.092	0.954	95.0000	0.751	1.013	95.0000	0.751	1.013	
7	1.035	1.035	1.035	0.813	2.0980	0.120	0.938	95.0000	0.649	0.997	95.0000	0.649	0.997	
OVERALL PERFORMANCE SUMMARY														
STAGE DATA STATOR DATA STATOR DATA														
FIXED INST. FIXED INST. TRAV. INST.														
Total Pressure Ratio = 1.3842 0.9678 0.9778														
Polytropic Efficiency = 0.6735 0.9084 0.6441														
Percent Design Speed = 100.0 Discharge Valve Settings= 30.0														
Cor. Nozzle Weight Flow= 216.4														
IE Check Flow/Noz.Flow = 0.9481 TE Check Flow/Noz.Flow = 0.9214														
Assumed IE Flow Coeff. = 0.9500 Assumed TE Flow Coeff. = 0.9350														

TABLE XVIII - TASK II STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

		ROTOR BLADE ROW - NASA TASK IV-B												
		BLADE ELEMENT PERFORMANCE RESULTS					POINT NUMBER 27							
		READING NUMBER 362					DATE 10/ 6/1970							
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	MN CHBR LN INCID ANG	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS YANG VEL	INLET REL YANG VEL	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS YANG VEL	EXIT REL YANG VEL
1	70.11	-1.99	61.28	8.83	537.19	1568.85	533.33	-18.49	1474.13	766.87	989.64	494.22	584.58	856.17
2	68.57	-0.19	60.25	8.32	562.54	1535.02	560.44	-1.85	1428.22	799.00	1043.33	581.37	546.21	862.73
3	62.97	-0.28	57.07	5.90	656.37	1444.25	656.35	-3.17	1286.49	850.21	1009.33	669.21	524.20	755.50
4	54.36	-0.64	53.90	0.46	828.68	1418.99	824.05	-9.17	1151.91	814.67	988.56	673.84	456.66	694.96
5	50.86	-1.43	50.80	0.06	841.22	1311.62	841.22	-20.68	1019.54	792.31	800.74	606.39	504.16	517.32
6	47.88	-2.13	48.58	-0.70	818.52	1193.22	818.52	-29.16	868.71	910.44	754.40	674.85	593.12	503.32
7	47.93	-1.78	48.02	-0.09	772.94	1122.34	772.94	-22.80	814.08	965.17	724.72	676.02	669.49	493.73
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	REL DEV ANGLE TE	REL TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS YANG VEL	EXIT REL YANG VEL	DIFFUSION FACTOR	CHI		
1	60.00	49.79	57.52	2.48	10.11	766.87	989.64	494.22	584.58	856.17	0.503	0.437		
2	56.03	43.21	57.18	-1.15	12.55	799.00	1043.33	581.37	546.21	862.73	0.433	0.433		
3	48.47	34.98	52.85	-4.38	14.50	850.21	1009.33	669.21	524.20	755.50	0.414	0.451		
4	45.48	34.13	46.10	-0.22	8.47	814.67	988.56	673.84	456.66	694.96	0.410	0.421		
5	48.47	39.74	34.70	5.77	10.40	792.31	800.74	606.39	504.16	517.32	0.496	0.462		
6	24.29	41.31	16.84	7.36	23.68	910.44	754.40	674.85	593.12	503.32	0.487	0.457		
7	15.99	44.72	10.70	5.29	31.94	965.17	724.72	676.02	669.49	493.73	0.494	0.419		
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	LOSS COEFFICIENT	LOSS PARAM	ABD EFFICIENCY	POLY MOMEN RISE/ MEAS T RISE	STAT PRESS RISE COEFF					
1	1455.64	0.489	1.429	0.927	0.239	0.042	0.7543	0.7754	0.310					
2	1426.37	0.514	1.402	1.037	0.211	0.040	0.7828	0.8016	0.325					
3	1283.32	0.688	1.339	1.020	-0.015	-0.003	1.0170	1.0356	0.355					
4	1142.74	0.781	1.338	0.816	0.155	0.031	0.7808	0.7931	0.340					
5	998.87	0.795	1.250	0.731	0.164	0.032	0.7827	0.7947	0.304					
6	839.54	0.773	1.126	0.859	0.139	0.028	0.8489	0.8582	0.456					
7	791.29	0.726	1.054	0.920	0.136	0.028	0.8630	0.8715	0.451					
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	FIXED TOT PRESS. RATIO	LOSS COEFFICIENT	LOSS PARAM	ABD EFFICIENCY	POLY MOMEN RISE/ MEAS T RISE	STAT PRESS RISE COEFF					
1	1440.76	0.626	0.868	1.4310	0.239	0.042	0.7543	0.7754	0.310					
2	1408.94	0.673	0.877	1.4610	0.211	0.040	0.7828	0.8016	0.325					
3	1279.79	0.733	0.871	1.6120	-0.015	-0.003	1.0170	1.0356	0.355					
4	1151.62	0.714	0.849	1.7730	0.155	0.031	0.7808	0.7931	0.340					
5	1021.48	0.692	0.699	1.9640	0.164	0.032	0.7827	0.7947	0.304					
6	826.43	0.807	0.669	2.2480	0.139	0.028	0.8489	0.8582	0.456					
7	863.22	0.856	0.640	2.3470	0.136	0.028	0.8630	0.8715	0.451					
RADIAL POSITION	PERCENT DEPRESSION	TRAV TOT PRESS. RATIO	TRAV TOT TEMP. RATIO	FIXED TOT PRESS. RATIO	LOSS COEFFICIENT	LOSS PARAM	ABD EFFICIENCY	POLY MOMEN RISE/ MEAS T RISE	STAT PRESS RISE COEFF					
1	9.0000	1.900	1.283	1.906	0.239	0.042	0.7543	0.7754	0.310					
2	10.0000	1.937	1.221	1.916	0.211	0.040	0.7828	0.8016	0.325					
3	30.0000	1.873	1.192	1.899	-0.015	-0.003	1.0170	1.0356	0.355					
4	50.0000	1.550	1.136	1.504	0.155	0.031	0.7808	0.7931	0.340					
5	70.0000	1.491	1.141	1.493	0.164	0.032	0.7827	0.7947	0.304					
6	90.0000	1.604	1.146	1.573	0.139	0.028	0.8489	0.8582	0.456					
7	95.0000	1.659	1.163	1.574	0.136	0.028	0.8630	0.8715	0.451					

OVERALL PERFORMANCE SUMMARY

STAGE DATA		ROTOR DATA		ROTOR DATA	
FIXED INST.		FIXED INST.		TRAV. INST.	
Total Pressure Ratio	=	1.6119	1.6376	1.6989	
Adiabatic Efficiency	=	0.7580	0.7849	0.9387	
Polytropic Efficiency	=	0.7737	0.7993	0.9431	
Percent Design Speed	=	100.0	Discharge Valve Settings=	10.5	
Cor. Nozzle Weight Flow	=	213.7			

LE Check Flow/Hoz.Flow = 0.9373 TE Check Flow/Hoz.Flow = 0.9598  
 Assumed LE Flow Coeff. = 0.9850 Assumed TE Flow Coeff. = 0.9500



100770 TABLE XVIII - TASK II STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

POINT NUMBER		STATOR BLADE ROW - NASA TASK IV-B									
27		BLADE ELEMENT PERFORMANCE RESULTS DATE 10/ 6/1970									
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCID ANG MN CHBR LN	INCID ANG SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	
1	51.32	44.20	39.47	11.85		752.09	470.06	587.10	587.10	587.10	
2	37.94	33.31	39.01	-1.07		786.31	563.87	548.22	548.22	548.22	
3	33.31	37.93	39.60	-6.49		850.54	670.56	522.84	522.84	522.84	
4	37.93	37.93	40.86	-3.33		822.81	686.74	451.28	451.28	451.28	
5	41.87	37.73	42.22	-4.49		811.00	640.92	492.28	492.28	492.28	
6		41.87	42.76	-1.69		943.31	739.78	572.33	572.33	572.33	
7						986.27	736.84	641.97	641.97	641.97	
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	DEV ANGLE	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	
1	3.28	4.91	-11.13	14.41	48.04	595.24	504.37	504.37	34.04	34.04	
2	4.91	2.58	-10.10	15.01	39.29	586.29	584.12	584.12	50.21	50.21	
3	-1.17	0.30	-8.87	11.45	35.37	613.63	612.82	612.82	27.36	27.36	
4	0.30	0.72	-8.75	7.58	34.48	586.31	585.76	585.76	-11.97	-11.97	
5	0.72	0.71	-9.10	9.40	37.23	613.83	612.83	612.83	3.18	3.18	
6	2.16	0.84	-10.38	12.74	35.57	668.52	668.09	668.09	25.12	25.12	
7	-1.32	0.878	-12.36	11.04	42.39	599.71	597.45	597.45	-13.73	-13.73	
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	DIFFUSION FACTOR	CH1					
1	0.613	0.613	0.613	1.264	0.450	0.354					
2	0.661	0.661	0.661	1.036	0.459	0.372					
3	0.734	0.734	0.734	0.914	0.456	0.385					
4	0.722	0.722	0.722	0.853	0.448	0.471					
5	0.710	0.710	0.710	0.756	0.402	0.488					
6	0.840	0.840	0.840	0.900	0.430	0.412					
7	0.878	0.878	0.878	0.811	0.547	0.390					
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	SOLIDITY RATIO	LOSS COEFFICIENT	LOSS PARAM	TOY PRESS EFFICIENCY	ADD PRESS EFFICIENCY	POLY MOMEN RISE/ RISE	STAT PRESS RISE COEFF	
1	0.486	0.486	0.486	1.5230	0.154	0.050	1.0044	1.0044	0.334	0.334	
2	0.483	0.483	0.483	1.5440	0.065	0.021	0.8411	0.8411	0.355	0.355	
3	0.517	0.517	0.517	1.6310	0.045	0.014	0.8094	0.8094	0.440	0.440	
4	0.501	0.501	0.501	1.7420	0.018	0.005	0.9564	0.9564	0.457	0.457	
5	0.525	0.525	0.525	1.8800	0.043	0.012	1.1307	1.1307	0.372	0.372	
6	0.573	0.573	0.573	2.0510	0.052	0.013	0.8279	0.8279	0.348	0.348	
7	0.512	0.512	0.512	2.0980	0.072	0.017	0.6339	0.6339			
RADIAL POSITION	PERCENT IMMERGION	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	LOSS TOT	PERFORMANCE PARAMETERS				
1	5.0000	1.000	0.971	0.966	1.000	1.000	STAGE DATA STATOR DATA STATOR DATA - FIXED INST. FIXED INST. TRAV. INST.				
2	10.0000	0.979	1.001	0.984	1.000	1.000	Total Pressure Ratio = 1.6119 0.9843 0.9816				
3	30.0000	0.997	0.998	0.986	1.000	1.000	Polytropic Efficiency = 0.7737 0.9680 0.8623				
4	50.0000	0.992	1.003	0.994	1.000	1.000	Percent Design Speed = 100.0 Discharge Valve Settings= 10.5				
5	70.0000	1.019	1.004	0.988	1.000	1.000	Cor. Nozzle Weight Flow= 213.7				
6	90.0000	0.959	1.007	0.980	1.000	1.000	IE Check Flow/Noz.Flow = 0.9598 TE Check Flow/Noz.Flow = 0.9280				
7	95.0000	0.888	0.992	0.970	1.000	1.000	Assumed IE Flow Coeff. = 0.9500 Assumed TE Flow Coeff. = 0.9350				

OVERALL PERFORMANCE SUMMARY

STAGE DATA STATOR DATA STATOR DATA - FIXED INST. FIXED INST. TRAV. INST.  
 Total Pressure Ratio = 1.6119 0.9843 0.9816  
 Polytropic Efficiency = 0.7737 0.9680 0.8623  
 Percent Design Speed = 100.0 Discharge Valve Settings= 10.5  
 Cor. Nozzle Weight Flow= 213.7  
 IE Check Flow/Noz.Flow = 0.9598 TE Check Flow/Noz.Flow = 0.9280  
 Assumed IE Flow Coeff. = 0.9500 Assumed TE Flow Coeff. = 0.9350

108770

TABLE XVIII - TASK II STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

ROTOR BLADE ROW - NASA TASK IV-B		POINT NUMBER 26		BLADE ELEMENT PERFORMANCE RESULTS		READING NUMBER 563		DATE 10/ 6/1970		
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CMBR LN LE ANGLE	HN INCLD ANG	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	
1	71.85	-4.10	61.28	10.37	492.76	1568.53	488.28	-35.03	1489.53	
2	70.48	-2.76	60.25	10.37	516.56	1539.10	514.04	-24.78	1450.04	
3	63.27	-1.37	57.07	6.20	653.89	1453.30	653.69	-15.67	1297.98	
4	54.60	1.29	53.90	0.50	795.59	1377.00	792.91	-17.79	1124.05	
5	51.32	-1.49	50.80	0.52	827.43	1317.73	816.02	-21.26	1019.35	
6	48.27	-2.27	48.58	-0.31	808.32	1186.88	775.66	-30.74	869.63	
7	48.02	-1.59	48.02	0.00	767.38	1116.24	729.49	-20.12	810.88	
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMBR LN TE ANGLE	REL DEV ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	
1	60.23	63.99	57.52	2.71	865.25	764.22	370.09	776.99	662.64	
2	56.16	57.13	57.18	-1.02	854.27	832.70	403.25	716.85	690.99	
3	48.58	43.50	52.85	-4.62	846.65	926.32	614.12	282.71	696.07	
4	43.65	38.52	46.10	-2.45	841.06	909.42	657.59	523.36	627.36	
5	36.95	41.61	34.70	2.25	835.91	782.54	622.20	552.65	468.03	
6	25.76	45.90	16.84	8.92	859.63	669.26	581.44	610.33	285.40	
7	16.04	48.65	10.70	5.34	928.44	646.98	605.86	688.31	174.124	
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	DIFFUSION FACTOR	CHI				
1	1454.50	0.446	1.419	0.776	0.693	0.476				
2	1425.25	0.469	1.396	0.901	0.623	0.486				
3	1282.32	0.606	1.348	0.959	0.489	0.504				
4	1141.84	0.747	1.293	0.829	0.444	0.506				
5	998.09	0.782	1.241	0.782	0.516	0.523				
6	838.89	0.763	1.121	0.762	0.560	0.550				
7	790.67	0.722	1.050	0.831	0.561	0.525				
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	SOLIDITY COEFFICIENT	LOSS TOT PRESS LOSS PARAM EFFICIENCY	ADG EFFICIENCY	POLY MCHEN RISE/ MEAS Y RISE	STAY PRESS RISE COEFF		
1	1439.63	0.685	0.605	1.4310	0.059	0.6972	0.7261	0.357	0.366	
2	1407.84	0.697	0.680	1.4610	0.055	0.7389	0.7641	0.366	0.405	
3	1278.78	0.720	0.789	1.6120	0.010	0.9527	0.9572	0.467	0.529	
4	1150.72	0.731	0.791	1.7750	0.031	0.6237	0.8359	0.467	0.554	
5	1020.68	0.729	0.683	1.9640	0.025	0.8594	0.8689	0.467	0.554	
6	895.73	0.754	0.587	2.2480	0.024	0.8747	0.8829	0.467	0.554	
7	862.54	0.816	0.569	2.3470	0.027	0.8758	0.8840	0.467	0.551	
RADIAL POSITION	PERCENT IMMERSION	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	OVERALL PERFORMANCE SUMMARY				
1	5.0000	2.161	1.377	1.530	1.370	STAGE DATA ROTOR DATA ROTOR DATA				
2	10.0000	2.134	1.302	2.074	1.314	FIXED INST. FIXED INST. TRAV. INST.				
3	30.0000	1.977	1.225	2.024	1.214	Total Pressure Ratio = 1.7284 1.7727 1.8227				
4	50.0000	1.722	1.162	1.632	1.190	Adiabatic Efficiency = 0.7569 0.7949 0.9163				
5	70.0000	1.644	1.139	1.639	1.177	Polytropic Efficiency = 0.7748 0.8107 0.9230				
6	98.0000	1.418	1.137	1.618	1.169	Percent Design Speed = 100.0 Discharge Valve Setting= 6.5				
7	99.0000	1.715	1.176	1.624	1.170	Cor. Nozzle Weight Flow= 206.9				
						LE Check Flow/Noz.Flow = 0.9580 TE Check Flow/Noz.Flow = 0.9608				
						Assumed LE Flow Coeff. = 0.9850 Assumed TE Flow Coeff. = 0.9500				

100770 TABLE XVIII - TASK II STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

STATOR BLADE ROW - NASA TASK IV-B																				
BLADE ELEMENT PERFORMANCE RESULTS																				
POINT NUMBER 28		READING NUMBER 563		DATE 10/ 6/1970																
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCID ANG MN CMBR LN	INCID ANG SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL
1	65.11	57.53	39.47	25.44	860.31	860.31	361.99	361.99	780.33	780.33	849.03	849.03	450.74	450.74	719.49	531.90	531.90	531.90	-67.53	-67.53
2	43.36	39.01	39.11	18.82	846.50	846.50	615.26	615.26	581.11	581.11	847.20	847.20	669.75	669.75	517.19	526.15	526.15	526.15	-74.58	-74.58
3	37.68	39.80	40.86	-2.12	854.27	854.27	585.33	585.33	5.40	5.40	876.56	876.56	654.12	654.12	588.94	616.39	616.39	616.39	-2.49	-2.49
4	42.60	42.22	42.76	0.38	936.76	936.76	488.45	488.45	-0.20	-0.20						384.47	384.47	384.47		
5	45.26			2.50			490.77	490.77												
6																				
7																				

RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	DEV ANG TB	TURN ANGLE	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	POLY HOMOEN RISE/ RISE COEFF	STAT PRESS
1	-7.24	-8.19	-11.13	3.89	22.35	236.18	236.18	231.90	-67.53	-67.53	518.34	518.34	518.34	-74.58	-74.58	0.700	0.285
2	2.05	0.53	-8.87	10.92	41.31	526.15	526.15	526.15	5.40	5.40	585.33	585.33	585.33	-2.49	-2.49	0.686	0.311
3	-0.23	-0.02	-9.10	8.87	39.56	616.39	616.39	616.39	-2.49	-2.49	616.39	616.39	616.39	-2.49	-2.49	0.581	0.445
4	-3.67		-10.58	10.49	42.69	384.47	384.47	384.47			488.45	488.45	488.45			0.481	0.493
5			-12.36	8.69	48.93	490.77	490.77	490.77								0.446	0.490
6																0.494	0.459
7																0.649	0.469

RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	SOLIDITY	COEFFICIENT LOSS	TOT LOSS	ABR EFFICIENCY	POLY HOMOEN RISE/ RISE COEFF	STAT PRESS
1	0.681	0.681	0.681	1.469	1.5230	0.166	0.054	0.5003	0.263	0.263
2	0.692	0.692	0.692	1.150	1.5440	0.163	0.052	0.5231	0.286	0.286
3	0.720	0.720	0.720	0.854	1.5310	0.110	0.034	0.7344	0.414	0.414
4	0.737	0.737	0.737	0.874	1.7420	0.035	0.010	0.9412	0.461	0.461
5	0.747	0.747	0.747	0.934	1.6800	0.033	0.009	1.0357	0.457	0.457
6	0.771	0.771	0.771	0.910	2.0510	0.056	0.014	0.8275	0.424	0.424
7	0.825	0.825	0.825	0.746	2.0980	0.081	0.019	0.6502	0.429	0.429

RADIAL POSITION	PERCENT ILLUMINATION	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	LOSS COEFFICIENT	TOT LOSS	ABR EFFICIENCY	POLY HOMOEN RISE/ RISE COEFF	STAT PRESS
1	5.0000	0.912	0.931	0.955	1.000	0.166	0.054	0.5003	0.263	0.263
2	10.0000	0.910	0.961	0.955	1.000	0.163	0.052	0.5231	0.286	0.286
3	30.0000	0.944	0.995	0.968	1.000	0.110	0.034	0.7344	0.414	0.414
4	50.0000	0.988	1.008	0.990	1.000	0.035	0.010	0.9412	0.461	0.461
5	70.0000	1.003	1.006	0.990	1.000	0.033	0.009	1.0357	0.457	0.457
6	90.0000	0.962	1.007	0.981	1.000	0.056	0.014	0.8275	0.424	0.424
7	95.0000	0.894	0.993	0.970	1.000	0.081	0.019	0.6502	0.429	0.429

OVERALL PERFORMANCE SUMMARY			
STAGE DATA	STATOR DATA	STATOR DATA	STATOR DATA
FIXED INST.	FIXED INST.	TRAV. INST.	INST.
Total Pressure Ratio =	1.7284	0.9750	0.8469
Polytropic Efficiency =	0.7748	0.9557	0.9575
Percent Design Speed =	100.0	Discharge Valve Setting=	6.5
Cor. Nozzle Weight Flow=	206.9		
LE Check Flow/Noz.Flow =	0.9608	TE Check Flow/Noz.Flow =	0.9406
Assumed LE Flow Coeff. =	0.9500	Assumed TE Flow Coeff. =	0.9350

1.00778  
TABLE XVIII - TASK II STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

ROTOR BLADE ROW - NASA TASK IV-B		BLADE ELEMENT PERFORMANCE RESULTS									
		POINT NUMBER	7	READING NUMBER	576	DATE	10/ 7/1970				
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	MN CHBR LN INCID ANG	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET AX TANG VEL	INLET REL TANG VEL	
1	67.99	0.02	61.28	6.71	592.42	1572.02	588.51	0.16	1420.97	1456.12	
2	66.90	0.57	60.25	6.65	608.44	1545.74	606.15	6.03	1420.97	1420.97	
3	61.21	-0.65	57.07	4.14	710.05	1474.18	709.99	-8.05	1291.94	1291.94	
4	52.47	-0.84	53.90	-1.43	891.07	1459.70	888.18	-12.89	1158.24	1158.24	
5	50.02	-1.30	50.80	-0.78	866.14	1374.95	854.27	-19.32	1018.63	1018.63	
6	48.07	-2.55	48.58	-0.51	819.01	1197.94	785.77	-35.02	874.94	874.94	
7	48.19	-2.27	48.02	0.17	772.45	1126.66	734.04	-29.05	820.69	820.69	
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN LE ANGLE	REL DEV ANG-TE	REL TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	
1	59.59	34.37	57.52	1.07	9.41	754.79	1186.14	617.49	430.27	1011.12	
2	57.03	30.82	57.18	-0.15	9.86	769.28	1212.52	659.19	393.20	1016.37	
3	48.03	28.50	52.85	-4.82	13.18	880.65	1137.18	773.88	420.11	869.24	
4	46.31	23.90	46.10	0.21	6.16	846.64	1120.07	773.26	342.69	809.44	
5	41.59	32.43	34.70	6.89	8.42	799.55	901.29	671.09	426.31	595.62	
6	12.13	35.17	16.84	2.29	38.95	1059.88	921.78	852.94	601.00	395.81	
7	11.10	39.23	10.70	2.40	35.09	1080.87	867.90	823.12	672.09	191.51	
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	LOSS COEFFICIENT	TOT PRESS PARAM	ADB EFFICIENCY	POLY MOMEN RISE/ MEAS T RISE	STAT PRESS RISE COEFF	CHI FACTOR	
1	1456.25	0.544	1.443	1.049	0.175	0.032	0.7585	0.7755	0.191	0.341	0.289
2	1427.00	0.560	1.422	1.088	0.114	0.021	0.8393	0.8497	0.202	0.301	0.304
3	1287.89	0.662	1.375	1.090	-0.003	-0.001	1.0048	1.0045	0.231	0.305	0.316
4	1143.24	0.849	1.390	0.871	0.145	0.028	0.7298	0.7409	0.230	0.302	0.304
5	292.31	0.823	1.271	0.786	0.216	0.041	0.6238	0.6368	0.288	0.412	0.340
6	839.91	0.774	1.132	1.085	0.168	0.035	0.7930	0.8038	0.195	0.352	0.177
7	791.64	0.726	1.059	1.121	0.184	0.038	0.7976	0.8084	0.182	0.368	0.131
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	SOLIDITY RATIO	LOSS COEFFICIENT	TOT PRESS PARAM	ADB EFFICIENCY	POLY MOMEN RISE/ MEAS T RISE	STAT PRESS RISE COEFF	CHI FACTOR	
1	1441.39	0.647	1.018	1.4310	0.175	0.032	0.7585	0.7755	0.191	0.341	0.289
2	1407.56	0.668	1.053	1.4610	0.114	0.021	0.8393	0.8497	0.202	0.301	0.304
3	1287.35	0.740	1.024	1.6120	-0.003	-0.001	1.0048	1.0045	0.231	0.305	0.316
4	1152.13	0.760	1.005	1.7730	0.145	0.028	0.7298	0.7409	0.230	0.302	0.304
5	121.93	0.710	0.800	1.9640	0.216	0.041	0.6238	0.6368	0.288	0.412	0.340
6	896.53	0.971	0.834	2.2480	0.168	0.035	0.7930	0.8038	0.195	0.352	0.177
7	863.50	0.987	0.793	2.3470	0.184	0.038	0.7976	0.8084	0.182	0.368	0.131
RADIAL POSITION	WEIGHT INCREMENT	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	OVERALL PERFORMANCE SUMMARY					
1	5.0000	1.577	1.175	1.185	1.185	STAGE DATA ROTOR DATA ROTOR DATA					
2	10.0000	1.593	1.151	1.174	1.174	FIXED INST. FIXED INST. TRAV. INST.					
3	30.0000	1.645	1.146	1.154	1.154	Total Pressure Ratio = 1.3075 1.4292 1.4975					
4	50.0000	1.366	1.098	1.121	1.121	Adiabatic Efficiency = 0.6761 0.7404 0.9350					
5	70.0000	1.326	1.112	1.118	1.118	Polytropic Efficiency = 0.6907 0.7531 0.9414					
6	90.0000	1.525	1.140	1.144	1.144	Percent Design Speed = 100.1 Discharge Valve Setting= 30.0					
7	90.0000	1.559	1.145	1.148	1.148	Cor. Nozzle Weight Flow= 218.8					

IE Check Flow/Noz.Flow = 0.9383  
 Assumed IE Flow Coeff. = 0.9870  
 Assumed IE Flow Coeff. = 0.9500

100770 TABLE XVIII - TASK II STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

STATOR BLADE ROW		NASA TASK IV-B										
BLADE ELEMENT PERFORMANCE RESULTS												
POINT NUMBER	7	READING NUMBER	DATE									
		576	10/ 7/1970									
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CMBR LN LE ANGLE	INCID ANG MN CMBR LN	INCID ANG SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL		
1	36.56	39.47	-2.91	725.39	582.62	432.12	636.46	394.65				
2	31.80	39.11	-7.31	748.90	656.68	37.84	775.85	418.95				
3	29.37	39.01	-10.64	862.04	672.65	27.72	738.65	338.65				
4	23.15	39.80	-16.65	830.09	731.27	19.85	714.19	416.25				
5	30.24	40.86	-10.62	1208.62	730.74	1.55	1046.38	579.94				
6	29.00	42.22	-13.22	1174.33	751.49	-23.81	965.83	644.47				
7	33.71	42.76	-9.05									
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMBR LN TE ANGLE	DEV ANGLE	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL		
1	3.30	-11.13	14.43	33.26	656.78	37.84	656.68	656.68	37.84			
2	2.36	-10.10	12.46	29.44	673.24	27.72	672.65	672.65	27.72			
3	1.55	-8.87	10.42	26.81	731.27	19.85	731.27	731.27	19.85			
4	0.12	-8.75	8.87	23.03	730.74	1.55	730.74	730.74	1.55			
5	-1.06	-9.10	8.04	31.29	741.19	-13.64	739.88	739.88	-13.64			
6	-0.14	-10.58	10.44	29.13	854.90	-2.05	854.90	854.90	-2.05			
7	-1.81	-12.36	10.55	35.53	754.51	-23.81	751.49	751.49	-23.81			
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL. RATIO	DIFFUSION FACTOR							
1	0.620	0.649	1.052	1.125	0.273	0.273	0.273	0.273	0.273	0.273		
2	0.649	0.781	1.052	1.052	0.359	0.359	0.359	0.359	0.359	0.359		
3	0.781	0.776	0.923	0.923	0.309	0.309	0.309	0.309	0.309	0.309		
4	0.776	1.140	1.036	1.036	0.264	0.264	0.264	0.264	0.264	0.264		
5	1.140	1.092	0.815	0.815	0.244	0.244	0.244	0.244	0.244	0.244		
6	1.092		0.778	0.778	0.408	0.408	0.408	0.408	0.408	0.408		
7					0.491	0.491	0.491	0.491	0.491	0.491		
RADIAL POSITION	PERCENT IMMERSION	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	LOSS COEFFICIENT	LOSS PARAM	TOT PRESS	POLY MOMEN MEAS	ADB EFFICIENCY	RISE COEFF	STAT PRESS
1	5.0000	0.995	1.005	0.956	1.000	0.195	0.064	0.8951	0.8951	0.18	0.152	0.152
2	10.0000	1.003	1.012	0.987	1.000	0.056	0.018	1.0570	1.0570	0.18	0.196	0.196
3	30.0000	0.972	0.997	0.988	1.000	0.037	0.011	0.7811	0.7811	0.214	0.214	0.214
4	50.0000	0.974	1.010	0.953	1.000	0.142	0.041	0.7822	0.7822	0.142	0.142	0.142
5	70.0000	0.982	1.004	0.981	1.000	0.060	0.016	0.7746	0.7746	0.142	0.142	0.142
6	90.0000	0.932	1.011	0.959	1.000	0.071	0.017	0.8394	0.8394	0.350	0.350	0.350
7	95.0000	0.849	1.000	0.943	1.000	0.103	0.025	0.6466	0.6466	0.369	0.369	0.369
OVERALL PERFORMANCE SUMMARY												
STAGE DATA STATOR DATA STATOR DATA												
FIXED INST. FIXED INST. TRAV. INST.												
PERFORMANCE PARAMETERS												
Total Pressure Ratio = 1.3875 0.9708 0.9695												
Polytropic Efficiency = 0.6907 0.9171 0.6834												
Percent Design Speed = 100.1 Discharge Valve Setting= 30.0												
Cor. Nozzle Weight Flow= 218.8												
IE Check Flow/Noz.Flow = 0.9566 IE Check Flow/Noz.Flow = 0.9121												
Assumed IE Flow Coeff. = 0.9500 Assumed IE Flow Coeff. = 0.9350												

TABLE XVIII - TASK II STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

ROTOR BLADE ROW - NASA TASK IV-B											
BLADE ELEMENT PERFORMANCE RESULTS											
POINT NUMBER 8 READING NUMBER 577 DATE 10/ 7/1970											
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCLD ANG MN CHBR LN	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	INLET ABS TANG VEL	INLET REL TANG VEL
1	69.68	-2.34	61.28	8.38	551.39	1578.06	547.31	-22.37	1478.63	1435.01	1435.01
2	68.55	-1.01	60.25	8.30	565.94	1542.54	563.74	-9.98	1435.01	1301.66	1301.66
3	61.62	-1.59	57.07	4.55	703.38	1479.42	703.10	-19.55	1301.66	1113	1113
4	54.17	-0.78	53.90	0.27	818.88	1395.91	816.25	-11.13	1113	1008.53	1008.53
5	50.75	-0.74	50.80	-0.05	835.36	1389.52	824.05	-10.60	1008.53	871.38	871.38
6	48.07	-2.39	48.58	-0.51	815.57	1193.06	782.56	-32.63	871.38	731.95	731.95
7	48.41	-2.68	48.02	-0.39	770.47	1128.12	731.95	-34.21	731.95	664.55	664.55
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	REL DEV ANG-TE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL	EXIT ABS TANG VEL	EXIT REL TANG VEL
1	61.38	54.13	57.52	3.86	765.00	935.47	447.59	619.00	820.39	818.81	818.81
2	54.46	45.19	57.18	-2.72	831.27	1007.36	585.00	588.80	758.68	758.68	758.68
3	47.67	37.67	52.85	-5.18	863.89	1015.45	683.73	527.80	696.70	696.70	696.70
4	45.88	38.89	46.10	-0.22	814.59	971.08	675.65	453.83	504.66	504.66	504.66
5	40.26	39.64	34.70	5.56	794.81	801.97	609.20	589.42	306.17	306.17	306.17
6	24.23	40.90	16.84	7.39	912.37	760.75	680.41	589.42	197.85	197.85	197.85
7	14.32	44.52	10.70	5.62	961.63	722.67	675.85	664.55			
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	REL TURN ANGLE	LOSS COEFFICIENT	TOT PARAM LOSS	ADB EFFICIENCY	POLY MOMEN RISE/ RISE	STAT PRESS RISE COEFF	DIFFUSION FACTOR
1	1454.26	0.503	1.438	0.818	8.29	0.218	0.037	0.7685	0.7881	0.304	0.421
2	1425.02	0.517	1.410	1.038	14.10	0.164	0.033	0.8255	0.8407	0.315	0.479
3	1287.11	0.657	1.301	0.972	13.95	-0.012	-0.003	1.6141	1.0129	0.349	0.428
4	1141.66	0.772	1.316	0.828	8.129	0.163	0.032	0.7770	0.7836	0.358	0.394
5	397.93	0.723	1.243	0.739	10.49	0.154	0.030	0.7951	0.8064	0.408	0.482
6	535.75	0.774	1.132	0.869	23.85	0.124	0.025	0.8629	0.8714	0.449	0.444
7	790.54	0.727	1.084	0.923	32.09	0.119	0.024	0.8785	0.8841	0.450	0.497
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	FIXED TOT TEMP RATIO	LOSS COEFFICIENT	FIXED TOT TEMP RATIO	TOT PARAM LOSS	ADB EFFICIENCY	POLY MOMEN RISE/ RISE	STAT PRESS RISE COEFF	DIFFUSION FACTOR
1	1437.40	0.632	0.773	1.4310	0.218	0.128	0.037	0.7685	0.7881	0.304	0.421
2	1407.61	0.699	0.847	1.4610	0.164	0.164	0.033	0.8255	0.8407	0.315	0.479
3	1275.58	0.746	0.877	1.6120	-0.012	0.163	-0.003	1.6141	1.0129	0.349	0.428
4	1150.53	0.715	0.892	1.7730	0.163	0.154	0.032	0.7770	0.7836	0.358	0.394
5	1020.51	0.696	0.702	1.9640	0.154	0.124	0.030	0.7951	0.8064	0.408	0.482
6	895.59	0.811	0.676	2.2880	0.124	0.119	0.025	0.8629	0.8714	0.449	0.444
7	862.41	0.824	0.682	2.3470	0.119	0.119	0.024	0.8785	0.8841	0.450	0.497
RADIAL POSITION	PERCENT TRANSITION	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	LOSS COEFFICIENT	FIXED TOT TEMP RATIO	TOT PARAM LOSS	ADB EFFICIENCY	POLY MOMEN RISE/ RISE	STAT PRESS RISE COEFF	DIFFUSION FACTOR
1	5.0000	1.890	1.256	1.884	0.218	0.128	0.037	0.7685	0.7881	0.304	0.421
2	10.0000	1.964	1.232	1.920	0.164	0.164	0.033	0.8255	0.8407	0.315	0.479
3	30.0000	1.877	1.196	1.889	-0.012	0.163	-0.003	1.6141	1.0129	0.349	0.428
4	50.0000	1.569	1.138	1.513	0.163	0.154	0.030	0.7951	0.8064	0.408	0.482
5	70.0000	1.496	1.147	1.493	0.124	0.119	0.025	0.8629	0.8714	0.449	0.444
6	90.0000	1.605	1.153	1.570	0.119	0.119	0.024	0.8785	0.8841	0.450	0.497
7	95.0000	1.660	1.171	1.580	0.119	0.119	0.024	0.8785	0.8841	0.450	0.497

OVERALL PERFORMANCE SUMMARY

STAGE DATA ROTOR DATA ROTOR DATA  
 FIXED INST. FIXED INST. TRAV. INST.  
 PERFORMANCE PARAMETERS  
 Total Pressure Ratio = 1.6125 1.6379 1.7068  
 Adiabatic Efficiency = 0.7722 0.7993 0.9309  
 Polytropic Efficiency = 0.7870 0.8128 0.9359  
 Percent Design Speed = 99.9 Discharge Valve Setting= 10.5  
 Cor. Nozzle Weight Flow= 214.4

IE Check Flow/Moz.Flow = 0.9436 IE Check Flow/Moz.Flow = 0.9588  
 Assumed IE Flow Coeff. = 0.9850 Assumed IE Flow Coeff. = 0.9500

100770 TABLE XVIII - TASK II STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

STATOR BLADE ROW - NASA TASK IV-B		BLADE ELEMENT PERFORMANCE RESULTS											
		POINT NUMBER	8	READING NUMBER	577	DATE	10/7/1970						
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CMR LN LE ANGLE	MN CMR LN ANGLE	INCID ANG	INCID ANG	SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL	
1	55.56	46.18	39.47	16.09	7.07	819.08	753.82	567.12	426.35	623.66	590.97		
2	37.54	33.08	39.01	-1.47	864.28	822.87	688.61	685.15	644.15	526.44	448.48		
3	37.42	33.08	40.86	-3.44	913.87	946.89	813.87	644.15	492.76	568.76	492.76		
4	40.07	42.22	42.22	-4.93	983.12	983.12	736.55	637.24	637.24	637.24	637.24		
5													
6													
7													
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CMR LN IE ANGLE	DEV ANG TE	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL			
1	0.93	3.04	-11.13	12.06	54.63	581.21	581.13	581.13	9.42	9.42			
2	3.04	0.92	-10.10	13.14	43.14	593.56	592.71	592.71	31.45	31.45			
3	-3.71	-1.78	-8.67	-8.79	36.61	627.38	627.15	627.15	10.12	10.12			
4	-1.78	-0.48	-8.10	5.74	36.08	599.69	598.43	598.43	-31.46	-31.46			
5	-0.48	-2.13	-10.58	7.32	39.20	680.49	687.44	687.44	-19.45	-19.45			
6				11.06	16.81	640.26	637.58	637.58	5.79	5.79			
7				10.23	43.00				-23.77	-23.77			
RADIAL POSITION	HOIQR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	LOSS COEFFICIENT	LOSS PARAM	LOSS PARAM	POLY MOMEN RISE/ MEAS T RISE	STAT PRESS RISE COEFF				
1	0.622	0.476	0.476	1.363	0.131	0.043	0.8997	0.334	0.334				
2	0.658	0.470	0.470	1.5440	0.066	0.021	0.7585	0.328	0.328				
3	0.747	0.529	0.529	1.6310	0.048	0.015	0.7954	0.341	0.341				
4	0.723	0.512	0.512	1.7420	0.019	0.025	0.9481	0.417	0.417				
5	0.714	0.536	0.536	1.8000	0.039	0.010	1.1078	0.426	0.426				
6	0.846	0.593	0.593	2.0510	0.046	0.011	0.8557	0.364	0.364				
7	0.876	0.548	0.548	2.0980	0.073	0.017	0.6582	0.330	0.330				
RADIAL POSITION	PERCENT DIMENSION	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO	OVERALL PERFORMANCE SUMMARY							
1	5.0000	0.949	0.986	0.970	1.000								
2	10.0000	0.954	0.991	0.982	1.000	STAGE DATA STATOR DATA							
3	30.0000	0.964	0.996	0.985	1.000	FIXED INST. FIXED INST. TRAV. INST.							
4	50.0000	0.991	1.008	0.994	1.000	1.6125 0.9845 0.9781							
5	70.0000	1.015	1.076	1.009	1.000	0.7870 0.9683 0.8235							
6	90.0000	0.967	1.011	0.982	1.000	Discharge Valve Setting=10.5							
7	95.0000	0.993	0.996	0.970	1.000								
PERFORMANCE PARAMETERS											STATOR DATA		
Total Pressure Ratio =											1.6125		
Polytropic Efficiency =											0.9845		
Percent Design Speed =											99.9		
Cor. Nozzle Weight Flow =											214.4		
IE Check Flow/Noz.Flow =											0.9588		
Assumed IE Flow Coeff. =											0.9500		
WF Check Flow/Noz.Flow =											0.9305		
Assumed WF Flow Coeff. =											0.9350		

TABLE XVIII - TASK II STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Continued)

POINT NUMBER 9		ROTOR BLADE ROW - NASA TASK IV-B													
BLADE ELEMENT PERFORMANCE RESULTS		READING NUMBER 578 DATE 10/ 7/1970													
RADIAL POSITION	PEL INLET FLOW ANG	ARS INLET FLOW ANG	CMBR LN LE ANGLE	INCLD ANG MN CHBR LN	INLET VELOCITY	ARS VELOCITY	INLET VELOCITY	REL TURN ANGLE	REL DEV ANGLE	AXIAL VEL RATIO	INLET ABS MACH NO	ARS MACH NO	EXIT ABS MACH NO	THAY TOT TRAV RATIO	PERCENT DIMENSION
1	62.04	-0.27	61.28	7.76	561.18	561.18	557.48	8.06	3.47	1.4310	0.855	0.817	0.899	1.244	5.0000
2	64.07	-0.10	60.25	7.82	575.74	575.74	573.50	12.86	-1.97	1.4610	0.855	0.899	1.244	10.0000	
3	61.42	-0.65	57.07	4.35	702.33	702.33	702.28	13.07	-4.50	1.6120	0.855	0.903	1.215	30.0000	
4	53.09	-0.56	53.90	-0.81	865.85	865.85	863.41	6.54	0.45	1.7730	0.855	0.874	1.183	50.0000	
5	50.01	-1.31	50.80	-0.79	864.48	864.48	852.63	9.70	5.61	1.9640	0.855	0.726	1.135	70.0000	
6	47.96	-2.19	48.58	-0.62	815.56	815.56	782.65	25.51	5.61	2.2480	0.855	0.849	1.144	90.0000	
7	48.25	-2.01	48.02	0.23	765.79	765.79	727.82	31.83	5.73	2.3470	0.855	0.871	1.151	95.0000	
RADIAL POSITION	PEL EXIT FLOW ANG	ARS EXIT FLOW ANG	CMBR LN LE ANGLE	INCLD ANG MN CHBR LN	EXIT VELOCITY	ARS VELOCITY	EXIT VELOCITY	REL TURN ANGLE	REL DEV ANGLE	AXIAL VEL RATIO	INLET ABS MACH NO	ARS MACH NO	EXIT ABS MACH NO	THAY TOT TRAV RATIO	PERCENT DIMENSION
1	60.99	50.55	57.52	3.47	751.18	751.18	476.50	8.06	3.47	1.4310	0.855	0.817	0.899	1.244	5.0000
2	55.21	41.47	57.18	-1.97	809.36	809.36	605.41	12.86	-1.97	1.4610	0.855	0.899	1.244	10.0000	
3	42.35	35.86	52.85	-4.50	853.45	853.45	694.58	13.07	-4.50	1.6120	0.855	0.903	1.215	30.0000	
4	46.55	32.12	46.10	0.45	807.05	807.05	682.91	6.54	0.45	1.7730	0.855	0.874	1.183	50.0000	
5	40.51	37.87	34.70	5.61	798.40	798.40	627.15	9.70	5.61	1.9640	0.855	0.726	1.135	70.0000	
6	22.45	38.56	16.84	5.61	949.69	949.69	731.98	25.51	5.61	2.2480	0.855	0.849	1.144	90.0000	
7	16.43	42.92	10.70	5.73	975.52	975.52	703.56	31.83	5.73	2.3470	0.855	0.871	1.151	95.0000	
RADIAL POSITION	ROTOR SPD AT EXIT	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO	DIFFUSION FACTOR										
1	155.78	0.513	1.426	0.855	0.499										
2	142.87	0.527	1.408	1.055	0.428										
3	1281.07	0.655	1.370	0.985	0.398										
4	1140.74	0.824	1.369	0.791	0.395										
5	992.12	0.823	1.270	0.736	0.429										
6	35.07	0.774	1.130	0.922	0.451										
7	762.20	0.722	1.055	0.967	0.462										
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	AXIAL VEL RATIO	POLY MOMEN RISE/ STAT PRESS RISE COEFF										
1	1438.23	0.624	0.817	0.855	0.8019										
2	1405.47	0.685	0.899	0.855	0.8542										
3	1277.54	0.741	0.903	0.855	1.0452										
4	1149.60	0.710	0.874	0.855	0.7240										
5	1012.69	0.792	0.726	0.855	0.7790										
6	894.86	0.849	0.713	0.855	0.8626										
7	861.71	0.871	0.672	0.855	0.8858										
RADIAL POSITION	PERCENT DIMENSION	TRAV TOT PRESS RATIO	TRAV TOT TEMP RATIO	FIXED TOT PRESS RATIO	FIXED TOT TEMP RATIO										
1	5.0000	1.830	1.244	1.843	1.234										
2	10.0000	1.901	1.215	1.874	1.234										
3	30.0000	1.850	1.183	1.874	1.187										
4	50.0000	1.503	1.135	1.468	1.150										
5	70.0000	1.460	1.135	1.443	1.144										
6	90.0000	1.589	1.151	1.557	1.156										
7	95.0000	1.636	1.165	1.564	1.155										
OVERALL PERFORMANCE SUMMARY															
STAGE DATA		ROTOR DATA		ROTOR DATA											
FIXED INST. FIXED INST. TRAV. INST.		1.5754		1.6000											
Total Pressure Ratio =		0.7726		0.8007											
Adiabatic Efficiency =		0.7866		0.8335											
Polytropic Efficiency =		99.9		Discharge Valve Setting= 12.3											
Percent Design Speed =		216.9		Cor. Nozzle Weight Flow=											
Cor. Nozzle Weight Flow=		0.9395		TF Check Flow/Inst.Flow =											
Assumed LE Flow Coeff. =		0.9850		Assumed TE Flow Coeff. =											



TABLE XVII - TASK II STAGE RADIAL DISTORTION BLADE ELEMENT DATA (Concluded)

STATOR BLADE ROW - NASA TASK IV-B		BLADE ELEMENT PERFORMANCE RESULTS										
		POINT NUMBER	9	READING NUMBER	578	DATE	10/ 7/1970					
RADIAL POSITION	REL INLET FLOW ANG	ABS INLET FLOW ANG	CHBR LN LE ANGLE	INCID ANG MN CHBR LN	INCID ANG SUCT SURF	INLET ABS VELOCITY	INLET REL VELOCITY	INLET AX VELOCITY	INLET ABS TANG VEL	INLET REL TANG VEL		
1	52.06	39.47	3.38	12.59	732.36	581.58	453.38	586.36	537.04	581.58		
2	42.49	39.11	-3.28	39.01	853.99	498.58	693.03	498.58	498.58	498.58		
3	35.73	39.01	-8.48	39.80	816.13	423.71	664.19	476.19	476.19	476.19		
4	31.32	40.86	-5.22	42.22	995.00	800.69	770.91	627.41	627.41	627.41		
5	35.64	42.22	-6.51	42.76	1003.80							
6	35.71	42.76	-3.62									
7	39.14	42.76										
RADIAL POSITION	REL EXIT FLOW ANG	ABS EXIT FLOW ANG	CHBR LN TE ANGLE	DEV ANG TE	TURN ANGLE	EXIT ABS VELOCITY	EXIT REL VELOCITY	EXIT AX VELOCITY	EXIT ABS TANG VEL	EXIT REL TANG VEL		
1	1.55	11.13	12.68	50.51	598.50	598.27	598.27	16.15	16.15	16.15		
2	2.89	10.10	12.99	39.60	600.57	599.79	599.79	30.25	30.25	30.25		
3	0.25	8.87	34.98	644.41	644.41	644.41	644.41	8.44	8.44	8.44		
4	-2.98	8.75	5.77	618.94	617.66	617.66	617.66	-32.14	-32.14	-32.14		
5	-2.32	9.10	6.78	625.96	624.45	624.45	624.45	-25.26	-25.26	-25.26		
6	-0.98	10.58	11.56	713.87	713.87	713.87	713.87	12.11	12.11	12.11		
7	-1.45	12.36	10.91	662.21	662.21	662.21	662.21	-16.78	-16.78	-16.78		
RADIAL POSITION	ROTOR SPD AT INLET	INLET ABS MACH NO	INLET REL MACH NO	AXIAL VEL RATIO								
1	0.611	1.320	1.320	1.320								
2	0.672	1.023	1.023	1.023								
3	0.741	0.930	0.930	0.930								
4	0.719	0.887	0.887	0.887								
5	0.723	0.940	0.940	0.940								
6	0.896	0.899	0.899	0.899								
7	0.900	0.899	0.899	0.899								
RADIAL POSITION	ROTOR SPD AT EXIT	EXIT ABS MACH NO	EXIT REL MACH NO	SOLIDITY RATIO	LOSS COEFFICIENT	TOT PRESS LOSS PARAM	ADB EFFICIENCY	POLY EFFICIENCY	POLY MOMEN RISE/ MEAS Y RISE	STAT PRESS RISE COEFF		
1	0.492	0.499	0.499	1.5230	0.132	0.043	1.0141	0.319	0.319	0.319		
2	0.547	0.547	0.547	1.5440	0.051	0.017	0.7872	0.311	0.311	0.311		
3	0.532	0.532	0.532	1.6310	0.055	0.017	0.7865	0.306	0.306	0.306		
4	0.539	0.539	0.539	1.7420	0.022	0.006	0.9700	0.384	0.384	0.384		
5	0.616	0.616	0.616	1.8800	0.036	0.010	0.9938	0.387	0.387	0.387		
6	0.572	0.572	0.572	2.0510	0.045	0.011	0.8795	0.383	0.383	0.383		
7	0.572	0.572	0.572	2.0980	0.073	0.017	0.7156	0.350	0.350	0.350		
RADIAL POSITION	PERCENT DIMENSION	TRAV TOT PRESS RATIO	TRAV TOT PRESS RATIO	FIXED TOT PRESS RATIO	TEMP RATIO							
1	5.0000	1.001	0.991	0.971	1.000							
2	10.0000	0.972	0.997	0.987	1.000							
3	30.0000	0.966	0.998	0.983	1.000							
4	50.0000	0.995	1.005	0.994	1.000							
5	70.0000	0.999	1.005	0.999	1.000							
6	90.0000	0.968	1.009	0.981	1.000							
7	95.0000	0.917	0.996	0.989	1.000							

OVERALL PERFORMANCE SUMMARY

STATUS DATA STATOR DATA STATOR DATA  
 FIXED INST. FIXED INST. TRAV. INST.  
 PERFORMANCE PARAMETERS  
 Total Pressure Ratio = 1.5754 0.9846 0.9793  
 Polytropic Efficiency = 0.7866 0.9669 0.8196  
 Percent Design Speed = 99.9 Discharge Valve Setting = 12.3  
 Cor. Nozzle Weight Flow = 216.9  
 IE Check Flow/Noz.Flow = 0.9540 TE Check Flow/Noz.Flow = 0.9248  
 Assumed IE Flow Coeff. = 0.9500 Assumed TE Flow Coeff. = 0.9350

APPENDIX H

LISTING OF TASK II STAGE CIRCUMFERENTIAL  
DISTORTION FLOW SURVEY DATA



TABLE XIX - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; NEAR STALL;  
WITH INLET GUIDE VANES AND CASING TREATMENT (Continued)

PLANE NO. IMPRESSION NO.	$\alpha = 0.18$ 3	RADIUS = 13.300	SLOPE = -1.08				
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.
0.	14.00	11.52	518.69	1.34	581.37	581.21	0.535
15.00	13.93	11.51	518.69	1.44	575.92	575.74	0.530
30.00	13.94	11.48	518.69	1.87	580.18	579.87	0.534
45.00	13.94	11.44	518.69	2.29	584.26	583.79	0.538
60.00	13.94	11.37	518.69	2.35	593.44	592.94	0.547
75.00	13.95	11.30	518.69	2.41	603.39	602.86	0.557
90.00	14.04	11.20	518.69	3.00	625.29	624.43	0.578
105.00	13.94	11.09	518.69	3.60	628.22	626.99	0.581
120.00	13.89	11.06	518.69	3.29	625.96	624.93	0.579
135.00	11.99	11.04	518.69	2.99	381.34	380.82	0.346
150.00	11.98	11.00	518.69	0.75	387.23	387.20	0.351
165.00	11.97	10.97	518.69	-1.50	393.05	392.91	0.356
180.00	12.07	11.01	518.69	-4.07	402.13	401.12	0.365
195.00	11.98	11.05	518.69	-6.84	377.94	375.40	0.342
210.00	12.01	11.16	518.69	-7.14	359.83	357.04	0.326
225.00	12.00	11.27	518.69	-7.64	333.03	330.08	0.301
240.00	13.94	11.34	518.69	-5.96	597.00	594.57	0.551
255.00	13.94	11.41	518.69	-4.28	588.05	586.41	0.542
270.00	13.96	11.50	518.69	-3.05	579.67	578.85	0.534
285.00	13.97	11.58	518.69	-1.82	570.15	569.87	0.524
300.00	13.96	11.58	518.69	-0.72	569.24	569.20	0.523
315.00	13.93	11.58	518.69	0.39	565.97	565.94	0.520
330.00	13.94	11.56	518.69	0.81	570.51	570.46	0.525
345.00	13.90	11.54	518.69	1.23	568.95	568.82	0.523
CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL WT. FLOW
0.	1093.15	13.55	1079.60	61.70	1226.11	1.129	1.91
15.00	1093.15	14.45	1078.70	61.91	1222.73	1.125	1.89
30.00	1093.15	18.90	1074.25	61.64	1220.77	1.124	1.90
45.00	1093.15	23.40	1069.76	61.38	1218.68	1.122	1.91
60.00	1093.15	24.36	1068.79	60.98	1222.54	1.127	1.93
75.00	1093.15	25.38	1067.77	60.55	1226.20	1.132	1.96
90.00	1093.15	32.76	1060.39	59.51	1230.58	1.138	2.02
105.00	1093.15	39.40	1053.75	59.25	1226.17	1.134	2.01
120.00	1093.15	35.95	1057.20	59.41	1228.09	1.136	1.99
135.00	1093.15	19.88	1073.27	70.46	1138.83	1.032	1.16
150.00	1093.15	5.05	1088.10	70.41	1154.94	1.047	1.18
165.00	1093.15	-10.25	1103.41	70.40	1171.28	1.062	1.19
180.00	1093.15	-28.52	1121.67	70.32	1191.42	1.081	1.23
195.00	1093.15	-43.69	1136.85	71.73	1197.82	1.084	1.15
210.00	1093.15	-44.72	1137.87	72.58	1192.58	1.079	1.10
225.00	1093.15	-44.28	1137.43	73.82	1184.35	1.070	1.10
240.00	1093.15	-62.05	1155.20	62.77	1209.24	1.190	1.93
255.00	1093.15	-43.85	1137.00	62.72	1219.11	1.179	1.92
270.00	1093.15	-30.82	1123.97	62.75	1264.27	1.164	1.90
285.00	1093.15	-18.10	1111.25	62.85	1268.85	1.149	1.88
300.00	1093.15	-7.11	1100.26	62.65	1268.78	1.139	1.88
315.00	1093.15	3.82	1089.33	62.55	1227.98	1.129	1.87
330.00	1093.15	8.07	1085.08	62.27	1225.90	1.128	1.88
345.00	1093.15	12.25	1080.90	62.24	1221.43	1.123	1.87

TABLE XIX - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; NEAR STALL; WITH INLET GUIDE VANES AND CASING TREATMENT (Continued)

CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS. FLOW ANGLE	ABS. VELOCITY	AXIAL VELOCITY	ABS. MACH NO.	PLANE NO. = 0.18	
								RADIUS = 8.580	SLOPE = -0.33
IMMERSION NO. =									
	5								
0.	13.91	11.54	518.69	2.16	569.77	569.36	0.524		
15.00	13.94	11.51	518.69	2.86	576.24	575.92	0.530		
30.00	13.96	11.49	518.69	3.34	580.76	579.78	0.535		
45.00	13.94	11.46	518.69	3.81	583.12	581.63	0.537		
60.00	13.89	11.37	518.69	4.22	588.64	587.05	0.542		
75.00	13.94	11.28	518.69	4.62	604.84	602.88	0.558		
90.00	13.98	11.19	518.69	5.28	619.97	617.34	0.573		
105.00	13.94	11.10	518.69	5.93	626.84	623.48	0.580		
120.00	13.93	11.07	518.69	6.78	628.97	624.98	0.582		
135.00	12.08	11.05	518.69	7.62	398.20	391.74	0.858		
150.00	12.04	11.04	518.69	3.19	391.93	391.32	0.355		
165.00	12.04	11.02	518.69	-1.25	394.04	393.94	0.357		
180.00	12.12	11.04	518.69	-3.98	405.78	404.81	0.368		
195.00	12.07	11.06	518.69	-6.71	392.17	389.48	0.356		
210.00	12.13	11.17	518.69	-9.19	381.64	376.74	0.346		
225.00	12.21	11.28	518.69	*11.66	372.10	364.42	0.337		
240.00	13.95	11.33	518.69	-9.51	600.23	591.97	0.554		
255.00	13.94	11.37	518.69	-7.37	593.60	588.70	0.547		
270.00	14.10	11.47	518.69	-5.43	598.12	595.43	0.552		
285.00	14.04	11.57	518.69	-3.50	579.15	578.07	0.533		
300.00	13.99	11.58	518.69	-1.77	573.52	573.52	0.527		
315.00	13.97	11.58	518.69	-0.03	569.75	569.75	0.524		
330.00	14.01	11.57	518.69	0.72	575.86	575.86	0.530		
345.00	13.89	11.56	518.69	1.47	565.11	564.92	0.519		
CIRC. POSITION	WHEEL SPEED	ABS. TANG. VELOCITY	REL. TANG. VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL WT. FLOW		
0.	705.21	21.50	683.70	50.21	889.73	0.818	1.15		
15.00	705.21	28.73	676.47	49.61	888.17	0.817	1.16		
30.00	705.21	33.79	671.42	49.19	887.10	0.817	1.17		
45.00	705.21	38.78	666.43	48.88	884.68	0.815	1.17		
60.00	705.21	43.30	661.91	48.43	884.73	0.815	1.18		
75.00	705.21	48.75	658.46	47.44	891.29	0.823	1.20		
90.00	705.21	57.01	648.20	46.40	895.14	0.827	1.22		
105.00	705.21	64.75	640.46	45.77	893.82	0.827	1.23		
120.00	705.21	74.22	630.99	45.29	887.83	0.821	1.23		
135.00	705.21	82.43	622.77	59.03	761.28	0.690	0.74		
150.00	705.21	21.81	683.40	60.20	787.51	0.714	0.74		
165.00	705.21	-8.56	713.77	61.10	815.26	0.739	0.74		
180.00	705.21	-28.16	733.37	61.10	837.67	0.760	0.76		
195.00	705.21	-45.85	751.06	62.59	846.04	0.767	0.73		
210.00	705.21	-60.93	768.14	63.81	858.76	0.774	0.72		
225.00	705.21	-75.21	780.41	64.97	861.51	0.780	0.70		
240.00	705.21	-99.21	804.42	53.65	998.76	0.921	1.18		
255.00	705.21	-76.11	781.32	53.00	978.28	0.902	1.18		
270.00	705.21	-56.63	761.83	51.99	964.92	0.892	1.21		
285.00	705.21	-35.34	740.54	52.02	939.45	0.865	1.18		
300.00	705.21	-17.66	722.87	51.59	922.46	0.849	1.17		
315.00	705.21	-0.33	705.53	51.08	906.86	0.834	1.16		
330.00	705.21	7.21	697.99	50.48	904.88	0.833	1.17		
345.00	705.21	14.48	690.73	50.72	892.33	0.820	1.14		

**TABLE XIX - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; NEAR STALL;  
WITH INLET GUIDE VANES AND CASING TREATMENT (Continued)**

PLANE NO. IMMERISION NO. = 0.95	TOT. PRESSURE		STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.
	RADIUS = 17.420		SLOPE = -1.91					
CIPC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.	REL. MACH NO.
27.98	13.79	10.90	518.69	0.07	636.63	636.62	0.590	1.450
57.98	13.77	10.97	518.69	0.31	625.66	625.65	0.579	1.442
87.98	13.80	10.97	518.69	1.62	628.84	628.59	0.582	1.432
117.98	13.78	10.95	518.69	3.62	629.29	628.03	0.582	1.413
147.98	12.03	10.06	518.69	2.85	557.52	556.82	0.512	1.388
177.98	12.02	10.19	518.69	-1.38	536.54	536.39	0.492	1.413
207.98	12.01	10.51	518.69	-7.41	482.40	478.38	0.440	1.432
237.98	13.57	11.91	518.69	-6.68	478.35	475.11	0.436	1.425
267.98	13.64	11.85	518.69	-1.05	495.00	494.92	0.452	1.392
297.98	13.68	11.52	518.69	3.24	546.87	545.49	0.501	1.380
327.98	13.74	11.23	518.69	2.77	590.01	589.32	0.544	1.403
357.98	13.82	11.11	518.69	0.77	614.05	613.99	0.567	1.432
CIPC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL WT. FLOW	
27.98	1431.78	0.72	1431.06	66.02	1566.28	1.450	3.28	
57.98	1431.78	3.37	1428.44	66.35	1559.42	1.442	3.24	
87.98	1431.78	17.83	1413.95	66.03	1547.38	1.432	3.26	
117.98	1431.78	39.78	1392.01	65.72	1527.12	1.413	3.25	
147.98	1431.78	27.74	1404.04	68.37	1510.43	1.388	2.61	
177.98	1431.78	-12.92	1444.70	69.63	1541.06	1.413	2.53	
207.98	1431.78	-62.21	1493.99	72.24	1568.71	1.432	2.31	
237.98	1431.78	-55.62	1487.40	72.89	1561.44	1.425	2.60	
267.98	1431.78	-9.08	1440.86	71.04	1528.49	1.392	2.70	
297.98	1431.78	30.90	1400.88	68.72	1506.34	1.380	2.92	
327.98	1431.78	28.51	1403.27	67.82	1521.99	1.403	3.10	
357.98	1431.78	8.25	1423.53	66.67	1550.30	1.432	3.21	

TABLE XIX - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; NEAR STALL;  
WITH INLET GUIDE VANES AND CASING TREATMENT (Continued)

PLANE NO. IMMERSION NO.	$\alpha$	RADIUS	SLOPE	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.
	0.95	13.797	4.85				
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.
27.98	13.90	10.38	518.69	0.33	704.73	704.72	0.658
57.98	13.89	10.32	518.69	0.27	709.94	709.94	0.663
87.98	13.96	10.35	518.69	1.07	712.40	712.28	0.666
117.98	13.86	10.30	518.69	2.62	711.26	710.52	0.665
147.98	11.92	9.42	518.69	2.35	633.80	633.27	0.587
177.98	11.97	9.66	518.69	-7.40	606.80	601.26	0.560
207.98	11.92	10.19	518.69	-12.32	520.62	508.63	0.477
237.98	13.83	11.58	518.69	-7.32	553.69	549.18	0.509
267.98	13.91	11.28	518.69	-2.40	600.03	599.51	0.554
297.98	13.90	10.69	518.69	-0.94	645.62	645.53	0.599
327.98	13.90	10.66	518.69	0.46	672.70	672.68	0.626
357.98	13.94	10.47	518.69	1.47	697.23	697.00	0.650
CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL MACH NO.
27.98	1134.00	4.06	1129.94	58.05	1331.69	1.243	3.77
57.98	1134.00	3.32	1130.68	57.88	1335.09	1.247	3.78
87.98	1134.00	13.34	1120.66	57.56	1327.86	1.241	3.61
117.98	1134.00	32.46	1101.54	57.18	1310.81	1.225	3.78
147.98	1134.00	26.02	1107.98	60.25	1276.18	1.182	3.03
177.98	1134.00	-78.06	1212.06	63.62	1352.99	1.249	2.93
207.98	1134.00	-111.07	1245.07	67.78	1344.95	1.232	2.57
237.98	1134.00	-70.51	1204.51	65.49	1323.80	1.216	3.17
267.98	1134.00	-25.10	1159.10	62.65	1304.96	1.204	3.40
297.98	1134.00	-10.65	1144.65	60.58	1314.13	1.218	3.57
327.98	1134.00	5.39	1128.61	59.20	1313.87	1.222	3.67
357.98	1134.00	17.83	1116.18	58.02	1315.92	1.228	3.75

**TABLE XIX - TASK 11 STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; NEAR STALL;  
WITH INLET GUIDE VANES AND CASING TREATMENT (Continued)**

PLANE NO. IMMERISION NO.	$\alpha$	RADIUS	SLOPE	WHEEL SPEED	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	REL. MACH NO.	LOCAL WT. FLOW
27.98	0.95	9.910	15.45	814.52	13.91	10.47	518.69	-2.04	672.43	1.002	2.37
57.98				814.52	13.94	10.40	518.69	-2.10	661.92	1.009	2.39
87.98				814.52	13.97	10.44	518.69	-2.02	680.80	1.008	2.39
117.98				814.52	13.86	10.37	518.69	2.82	679.17	0.966	2.37
147.98				814.52	12.07	9.57	518.69	9.38	610.89	0.866	1.91
177.98				814.52	12.10	9.67	518.69	#12.65	600.40	1.029	1.87
207.98				814.52	12.07	10.25	518.69	#24.26	516.88	1.036	1.57
237.98				814.52	13.86	11.29	518.69	#15.67	576.57	1.031	2.06
267.98				814.52	14.00	11.20	518.69	#2.35	598.46	0.952	2.21
297.98				814.52	13.89	10.78	518.69	-2.81	636.99	0.953	2.29
327.98				814.52	13.91	10.68	518.69	-0.67	648.61	0.974	2.32
357.98				814.52	13.90	10.47	518.69	0.02	671.43	0.984	2.36
CIRC. POSITION				WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL WT. FLOW
27.98				814.52	-23.91	838.43	838.43	51.29	1074.50	1.002	2.37
57.98				814.52	-25.00	839.53	839.53	50.94	1081.17	1.009	2.39
87.98				814.52	-23.93	838.45	838.45	50.96	1079.47	1.008	2.39
117.98				814.52	33.44	781.08	781.08	49.03	1034.52	0.966	2.37
147.98				814.52	99.61	714.92	714.92	49.87	935.08	0.866	1.91
177.98				814.52	-131.52	946.05	946.05	58.23	1112.74	1.029	1.87
207.98				814.52	-212.39	1026.91	1026.91	65.35	1129.87	1.036	1.57
237.98				814.52	-155.75	970.27	970.27	60.22	1117.86	1.031	2.06
267.98				814.52	-24.54	839.06	839.06	54.52	1030.33	0.952	2.21
297.98				814.52	9.04	805.48	805.48	51.68	1026.63	0.953	2.29
327.98				814.52	-7.63	822.15	822.15	51.73	1047.17	0.974	2.32
357.98				814.52	0.18	814.35	814.35	50.49	1059.45	0.984	2.36



**TABLE XIX - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; NEAR STALL; WITH INLET GUIDE VANES AND CASING TREATMENT (Continued)**

PLANE NO. = 1.51		RADIUS = 17.881		SLOPE = -0.83			
IMMERSON NO. = 1							
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.
15.00	23.39	17.76	614.48	36.23	747.22	602.73	0.639
45.00	23.32	17.67	616.02	36.22	751.00	605.84	0.642
75.00	23.31	17.73	617.22	36.29	747.00	602.08	0.638
105.00	23.22	17.38	616.33	36.93	767.24	613.29	0.657
135.00	22.16	17.51	609.29	43.38	690.36	501.74	0.590
165.00	24.94	18.89	660.17	47.95	778.09	521.12	0.643
195.00	25.37	18.88	676.00	49.04	810.81	531.47	0.663
225.00	27.96	19.64	711.39	49.32	906.30	590.82	0.729
255.00	24.57	17.35	682.70	46.96	880.79	601.11	0.722
285.00	24.29	17.31	653.37	46.27	851.92	588.65	0.713
315.00	23.74	17.62	623.63	39.40	782.51	604.64	0.667
345.00	23.81	17.75	622.54	36.59	776.25	623.25	0.662
CIRC. POSITION	WHEEL SPEED	ABS TANG. VELOCITY	REL. TANG. VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL WT. FLOW
15.00	1403.92	441.65	962.27	57.94	1135.45	0.972	3.55
45.00	1403.92	443.80	969.12	57.75	1135.29	0.971	3.54
75.00	1403.92	442.16	961.76	57.95	1134.67	0.969	3.52
105.00	1403.92	461.01	942.91	56.96	1124.81	0.963	3.54
135.00	1403.92	474.18	929.74	61.65	1056.49	0.903	2.90
165.00	1403.92	577.51	826.11	57.76	974.74	0.807	3.04
195.00	1403.92	612.34	791.58	56.12	953.45	0.780	3.04
225.00	1403.92	687.26	716.66	50.50	928.80	0.747	3.40
255.00	1403.92	643.78	669.14	51.66	969.10	0.795	3.18
285.00	1403.92	615.29	788.62	53.26	984.09	0.824	3.23
315.00	1403.92	496.71	907.21	56.32	1090.24	0.929	3.50
345.00	1403.92	462.73	941.19	56.49	1128.84	0.962	3.64

TABLE XIX - TASK 11 STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; NEAR STALL;  
WITH INLET GUIDE VANES AND CASING TREATMENT (Continued)

PLANE NO., IMPRESSION NO. = 1.51 3	RADIUS = 14.056	SLOPE = 3.14												
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. MACH NO.	REL. MACH NO.	LOCAL WT. FLOW		
15.00	23.06	16.72	607.85	39.48	799.72	617.25	0.693							
45.00	23.10	16.73	609.15	39.32	802.80	621.10	0.695							
75.00	23.13	16.78	610.42	39.28	801.20	620.19	0.692							
105.00	23.03	16.59	609.84	39.58	808.81	623.39	0.700							
135.00	22.39	16.67	599.51	45.28	763.03	536.91	0.663							
165.00	23.52	17.37	630.16	50.24	792.71	507.00	0.673							
195.00	23.92	17.52	647.19	56.57	827.85	455.86	0.695							
225.00	26.33	18.20	666.27	55.17	895.88	511.28	0.746							
255.00	23.06	15.99	633.66	47.78	869.34	584.17	0.742							
285.00	22.75	16.27	613.13	44.53	819.64	584.28	0.708							
315.00	23.25	16.70	605.81	41.59	810.88	605.85	0.704							
345.00	23.20	16.72	607.94	40.52	807.52	613.86	0.700							
CIRC. POSITION	WHFEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. MACH NO.	REL. MACH NO.	LOCAL WT. FLOW							
15.00	1155.29	508.48	646.81	46.34	0.774	0.774	3.88							
45.00	1155.29	508.64	646.65	46.15	0.776	0.776	3.90							
75.00	1155.29	507.24	648.05	46.26	0.775	0.775	3.90							
105.00	1155.29	515.31	639.98	45.75	0.774	0.774	3.89							
135.00	1155.29	542.16	613.13	48.79	0.708	0.708	3.39							
165.00	1155.29	609.37	545.92	47.12	0.632	0.632	3.18							
195.00	1155.29	690.43	464.86	45.56	0.547	0.547	2.79							
225.00	1155.29	734.81	420.48	39.43	0.531	0.531	3.24							
255.00	1155.29	643.82	511.47	41.20	0.663	0.663	3.42							
285.00	1155.29	574.82	580.47	44.81	0.712	0.712	3.56							
315.00	1155.29	537.75	617.54	45.55	0.752	0.752	3.83							
345.00	1155.29	524.66	630.63	45.77	0.763	0.763	3.87							

TABLE XIX - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; NEAR STALL;  
WITH INLET GUIDE VANES AND CASING TREATMENT (Continued)

PLANE NO. IMMERSSION NO. #	1.51	5	RADIUS = 11.030		SLOPE = 11.17		
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.
15.00	23.17	16.03	599.80	44.89	840.32	595.30	0.738
45.00	23.01	15.96	600.14	44.65	837.96	594.07	0.735
75.00	23.06	16.07	600.62	45.01	833.12	586.98	0.730
105.00	22.91	15.84	599.94	44.80	841.02	596.77	0.738
135.00	22.22	15.85	592.71	49.17	803.37	525.26	0.706
165.00	23.13	16.69	614.38	58.52	806.95	421.16	0.695
195.00	23.00	16.75	624.39	64.96	804.05	340.29	0.687
225.00	24.90	16.98	644.81	60.34	891.97	441.45	0.757
255.00	23.34	15.84	612.68	45.23	870.57	613.09	0.758
285.00	23.40	16.06	601.13	46.16	850.52	589.08	0.747
315.00	23.09	16.00	598.88	45.90	838.69	583.69	0.737
345.00	23.26	16.02	599.80	45.12	845.19	596.50	0.742
CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL WT. FLOW
15.00	906.58	593.08	313.49	27.77	672.80	0.591	2.20
45.00	906.58	590.99	315.59	27.98	672.69	0.590	2.18
75.00	906.58	589.23	317.35	28.32	669.03	0.586	2.17
105.00	906.58	592.61	313.96	27.75	674.32	0.592	2.18
135.00	906.58	607.87	298.70	29.63	604.25	0.531	1.92
165.00	906.58	687.86	218.71	27.44	474.56	0.409	1.56
195.00	906.58	728.49	178.09	27.62	384.07	0.328	1.24
225.00	906.58	775.07	131.51	16.59	460.62	0.391	1.61
255.00	906.58	618.07	288.50	25.20	677.58	0.590	2.20
285.00	906.58	613.49	293.09	26.45	657.96	0.578	2.18
315.00	906.58	602.26	304.32	27.54	658.26	0.578	2.15
345.00	906.58	599.05	307.53	27.27	671.11	0.589	2.20

TABLE XIX - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; NEAR STALL;  
WITH INLET GUIDE VANES AND CASING TREATMENT (Continued)

PLANE NO. CORRECTION NO. = 1	CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.	RADIUS = 17.130	SLOPE = 0.24	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. MACH NO.	REL. VELOCITY	LOCAL WT. FLOW
	6.83	22.82	19.49	627.15	0.85	575.99	575.93	0.480			1407.95	8.53	1399.41	67.63	1.260	1518.29	3.25
	36.83	22.89	19.48	629.17	-0.11	583.83	583.83	0.486			1407.95	-1.09	1409.04	67.49	1.269	1525.21	3.29
	66.83	22.98	19.48	628.18	-0.45	590.40	590.39	0.492			1407.95	-4.63	1412.58	67.32	1.275	1530.99	3.33
	96.83	22.75	19.56	625.43	-0.09	564.32	564.32	0.470			1407.95	-0.85	1408.80	68.17	1.265	1517.62	3.20
	126.83	22.33	19.41	622.94	-1.02	542.11	542.02	0.452			1407.95	-9.68	1417.63	69.08	1.265	1517.71	3.05
	156.83	22.35	19.47	638.71	1.74	544.81	544.06	0.448			1407.95	16.56	1391.39	68.64	1.229	1493.98	3.00
	186.83	24.34	19.46	672.48	2.03	707.85	707.20	0.575			1407.95	25.09	1382.86	62.91	1.251	1558.20	3.79
	216.83	24.75	19.45	685.71	0.56	740.60	740.57	0.597			1407.95	7.21	1400.73	62.13	1.270	1584.45	3.91
	246.83	24.11	19.15	699.61	-0.67	731.95	731.50	0.583			1407.95	-8.57	1416.52	62.69	1.270	1594.24	3.71
	276.83	22.75	19.20	667.97	0.52	616.85	616.02	0.498			1407.95	5.61	1402.33	66.28	1.238	1533.67	3.23
	306.83	23.10	19.36	643.85	1.69	617.94	617.27	0.509			1407.95	18.27	1389.68	66.05	1.253	1528.60	3.39
	336.83	22.96	19.45	631.30	1.63	593.05	592.81	0.493			1407.95	16.85	1391.09	66.92	1.257	1514.14	3.33





TABLE XX - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; MAXIMUM FLOW;  
WITH INLET GUIDE VANES AND CASING TREATMENT

PLANE NO. 1 IMMERISION NO. 1		RADIUS R 17.415		SLOPE S 0.129			
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.
0.	13.75	11.48	518.69	-13.79	560.06	543.92	0.515
15.00	13.62	11.46	518.69	-12.94	547.83	533.43	0.502
30.00	13.73	11.44	518.69	-12.32	562.59	549.64	0.517
45.00	13.62	11.41	518.69	-11.70	554.64	543.11	0.509
60.00	13.67	11.37	518.69	-10.77	565.58	555.63	0.520
75.00	13.74	11.35	518.69	-9.83	578.33	565.83	0.532
90.00	13.78	11.18	518.69	-8.82	600.37	593.27	0.554
105.00	13.71	11.04	518.69	-7.81	611.90	606.23	0.565
120.00	13.73	10.73	518.69	-7.44	651.99	646.50	0.605
135.00	11.93	10.41	518.69	-7.07	488.06	484.35	0.446
150.00	11.67	10.40	518.69	-10.24	448.24	441.09	0.408
165.00	11.68	10.39	518.69	-13.42	451.77	439.44	0.411
180.00	11.74	10.37	518.69	-15.39	465.45	449.72	0.425
195.00	11.59	10.34	518.69	-17.36	447.80	427.40	0.408
210.00	11.60	10.42	518.69	-19.84	434.01	408.26	0.395
225.00	11.62	10.49	518.69	-22.32	423.24	391.54	0.385
240.00	13.71	10.70	518.69	-20.03	653.40	613.89	0.606
255.00	13.72	10.90	518.69	-17.74	630.66	600.68	0.584
270.00	13.77	11.09	518.69	-16.91	611.32	584.89	0.565
285.00	13.76	11.28	518.69	-16.08	586.34	563.40	0.540
300.00	13.71	11.31	518.69	-16.09	577.30	554.69	0.531
315.00	13.62	11.34	518.69	-16.10	564.40	542.27	0.519
330.00	13.70	11.41	518.69	-15.37	562.90	545.77	0.517
345.00	13.61	11.49	518.69	-14.64	543.33	525.68	0.498

CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH	LOCAL WT. FLOW
0.	1431.37	-133.49	1564.86	70.83	1656.70	1.522	1.61
15.00	1431.37	-122.55	1553.92	71.05	1642.93	1.508	1.58
30.00	1431.37	-120.04	1551.41	70.49	1645.89	1.513	1.63
45.00	1431.37	-112.48	1543.85	70.62	1632.60	1.503	1.60
60.00	1431.37	-105.65	1537.04	70.13	1634.38	1.503	1.63
75.00	1431.37	-98.78	1530.15	69.57	1632.81	1.503	1.67
90.00	1431.37	-92.05	1523.43	69.72	1634.87	1.508	1.73
105.00	1431.37	-85.11	1514.48	68.18	1631.31	1.507	1.75
120.00	1431.37	-84.41	1515.78	66.90	1641.90	1.529	1.83
135.00	1431.37	-60.09	1491.46	72.01	1568.13	1.432	1.29
150.00	1431.37	-79.71	1511.09	73.73	1574.15	1.433	1.16
165.00	1431.37	-104.82	1535.19	74.04	1597.81	1.455	1.16
180.00	1431.37	-123.78	1555.15	73.87	1618.87	1.476	1.19
195.00	1431.37	-133.63	1565.00	74.73	1622.31	1.477	1.12
210.00	1431.37	-147.29	1578.66	75.50	1630.60	1.483	1.08
225.00	1431.37	-160.70	1592.07	76.18	1633.51	1.480	1.04
240.00	1431.37	-223.76	1655.13	69.65	1765.31	1.688	1.73
255.00	1431.37	-192.14	1623.51	69.70	1731.07	1.662	1.72
270.00	1431.37	-177.61	1609.18	70.03	1712.18	1.651	1.69
285.00	1431.37	-162.41	1593.78	70.53	1690.43	1.637	1.65
300.00	1431.37	-159.99	1591.36	70.78	1689.26	1.631	1.63
315.00	1431.37	-156.49	1587.86	71.14	1677.90	1.622	1.59
330.00	1431.37	-149.19	1580.56	71.05	1671.16	1.616	1.60
345.00	1431.37	-137.33	1568.70	71.47	1654.44	1.598	1.58

TABLE XX - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; MAXIMUM FLOW;  
WITH INLET GUIDE VANES AND CASING TREATMENT (Continued)

PLANE NO. [MERSON NO. #	CIRC. POSITION	TOT. PRESSURE	TOT. TEMP.	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	SLOPE #	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.
0.	0.	13.74	518.69	11.06	518.69	-12.92	-1.08	611.91	596.40	0.565
15.00	15.00	13.74	518.69	11.07	518.69	-12.00		611.17	597.81	0.564
30.00	30.00	13.74	518.69	11.03	518.69	-10.99		615.47	604.38	0.569
45.00	45.00	13.73	518.69	11.00	518.69	-9.78		619.03	610.02	0.572
60.00	60.00	13.73	518.69	10.94	518.69	-8.89		620.01	620.01	0.581
75.00	75.00	13.72	518.69	10.88	518.69	-8.00		632.06	625.91	0.585
90.00	90.00	13.92	518.69	10.72	518.69	-6.52		668.76	664.42	0.622
105.00	105.00	13.73	518.69	10.57	518.69	-5.05		689.98	647.38	0.623
120.00	120.00	13.69	518.69	10.49	518.69	-5.43		675.88	622.85	0.629
135.00	135.00	13.69	518.69	10.42	518.69	-5.81		410.66	408.55	0.373
150.00	150.00	11.41	518.69	10.32	518.69	-9.39		420.30	414.66	0.382
165.00	165.00	11.40	518.69	10.23	518.69	-12.97		435.76	424.64	0.396
180.00	180.00	11.45	518.69	10.20	518.69	-16.07		449.22	431.67	0.409
195.00	195.00	11.40	518.69	10.17	518.69	-19.16		446.42	421.69	0.406
210.00	210.00	11.41	518.69	10.27	518.69	-22.93		429.67	395.73	0.391
225.00	225.00	11.36	518.69	10.36	518.69	-26.69		402.76	359.85	0.365
240.00	240.00	13.70	518.69	10.40	518.69	-22.56		687.63	635.00	0.640
255.00	255.00	13.72	518.69	10.44	518.69	-18.43		684.75	649.51	0.638
270.00	270.00	13.82	518.69	10.62	518.69	-17.51		671.62	640.49	0.624
285.00	285.00	13.74	518.69	10.81	518.69	-16.40		642.52	615.76	0.595
300.00	300.00	13.73	518.69	10.89	518.69	-15.72		631.54	607.91	0.585
315.00	315.00	13.72	518.69	10.97	518.69	-14.85		621.70	600.93	0.575
330.00	330.00	13.73	518.69	11.02	518.69	-14.35		616.88	597.64	0.570
345.00	345.00	13.71	518.69	11.06	518.69	-13.85		609.27	591.56	0.563
CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL WT. FLOW			
0.	1093.15	-136.87	1230.02	64.13	1366.98	1.263	1.90			
15.00	1093.15	-127.10	1230.25	63.90	1358.92	1.255	1.90			
30.00	1093.15	-116.32	1230.47	63.45	1352.07	1.249	1.92			
45.00	1093.15	-105.20	1198.86	63.02	1344.69	1.243	1.93			
60.00	1093.15	-97.61	1190.17	62.48	1341.98	1.242	1.96			
75.00	1093.15	-67.58	1181.13	62.08	1336.72	1.237	1.97			
90.00	1093.15	-75.98	1169.14	60.39	1344.74	1.250	2.08			
105.00	1071.15	-58.94	1152.09	59.92	1331.43	1.238	2.08			
120.00	1093.15	-63.55	1157.10	59.82	1338.51	1.245	2.06			
135.00	1093.15	-41.58	1134.73	70.20	1206.04	1.095	1.18			
150.00	1093.15	-68.59	1161.74	70.36	1233.53	1.120	1.19			
165.00	1093.15	-97.82	1190.90	70.38	1264.41	1.150	1.21			
180.00	1093.15	-124.33	1217.48	70.48	1291.74	1.176	1.23			
195.00	1093.15	-146.53	1239.68	71.21	1309.43	1.192	1.20			
210.00	1093.15	-167.37	1260.52	72.57	1321.18	1.201	1.13			
225.00	1093.15	-180.91	1274.06	74.23	1323.90	1.201	1.03			
240.00	1093.15	-263.63	1356.98	64.92	1498.20	1.396	1.93			
255.00	1093.15	-216.51	1309.15	63.62	1461.92	1.361	1.98			
270.00	1093.15	-202.12	1295.27	63.69	1444.97	1.343	1.98			
285.00	1093.15	-183.51	1276.66	64.25	1417.40	1.313	1.93			
300.00	1093.15	-171.13	1264.28	64.32	1402.84	1.298	1.91			
315.00	1093.15	-159.32	1252.47	64.37	1389.18	1.284	1.90			
330.00	1093.15	-152.67	1246.02	64.38	1381.94	1.277	1.90			
345.00	1093.15	-145.62	1238.97	64.48	1372.95	1.268	1.88			



TABLE XX - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; MAXIMUM FLOW;  
WITH INLET GUIDE VANES AND CASING TREATMENT (Continued)

PLANE NO. = 0.18		RADIUS = 8.580		SLOPE = 0.33			
IMMERISION NO. = 5							
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS. FLOW ANGLE	ABS. VELOCITY	AXIAL VELOCITY	ABS. MACH NO.
0.	13.70	11.05	518.69	-12.51	609.14	594.68	0.562
15.00	13.78	11.07	518.69	-11.09	615.12	603.64	0.568
30.00	13.76	11.02	518.69	-9.46	618.73	610.32	0.572
45.00	13.74	10.98	518.69	-7.83	622.77	616.97	0.576
60.00	13.71	10.92	518.69	-5.96	626.07	622.69	0.579
75.00	13.73	10.86	518.69	-4.08	635.31	633.69	0.588
90.00	13.82	10.69	518.69	-1.97	664.12	663.72	0.617
105.00	13.77	10.52	518.69	0.14	678.66	678.65	0.631
120.00	13.69	10.42	518.69	2.31	683.35	682.53	0.636
135.00	12.12	10.32	518.69	5.48	529.11	526.70	0.485
150.00	11.55	10.28	518.69	-2.86	451.72	451.15	0.411
165.00	11.50	10.24	518.69	-11.21	449.83	441.25	0.409
180.00	11.55	10.24	518.69	-14.92	459.37	443.89	0.418
195.00	11.53	10.23	518.69	-18.63	456.62	432.70	0.416
210.00	11.57	10.29	518.69	-24.21	453.12	413.28	0.413
225.00	11.59	10.35	518.69	-29.79	445.23	386.41	0.405
240.00	13.75	10.39	518.69	-26.29	693.01	621.33	0.646
255.00	13.69	10.43	518.69	-22.79	683.33	630.16	0.636
270.00	13.97	10.58	518.69	-20.84	690.11	644.97	0.643
285.00	13.92	10.73	518.69	-18.98	667.64	631.71	0.620
300.00	13.80	10.64	518.69	-17.72	644.35	613.79	0.597
315.00	13.81	10.95	518.69	-16.55	631.65	605.48	0.585
330.00	13.81	11.00	518.69	-15.24	626.39	604.35	0.579
345.00	13.74	11.04	518.69	-13.93	614.74	596.64	0.568

CIRC. POSITION	WHEEL SPEED	ABS. TANG. VELOCITY	REL. TANG. VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL WT. FLOW
0.	705.21	-131.96	837.17	54.61	1026.89	0.948	1.16
15.00	705.21	-118.30	823.50	53.76	1023.05	0.943	1.18
30.00	705.21	-101.68	806.88	52.90	1013.71	0.935	1.19
45.00	705.21	-84.83	790.04	52.01	1002.40	0.927	1.20
60.00	705.21	-64.97	770.18	51.04	990.41	0.916	1.21
75.00	705.21	-45.26	750.46	49.82	982.22	0.909	1.22
90.00	705.21	-22.64	728.05	47.55	985.18	0.915	1.22
105.00	705.21	1.69	703.51	46.03	977.50	0.910	1.28
120.00	705.21	33.52	671.68	44.54	957.60	0.892	1.28
135.00	705.21	50.54	654.67	51.18	840.24	0.770	0.95
150.00	705.21	-22.57	727.77	58.20	856.27	0.780	0.80
165.00	705.21	-87.43	792.64	60.90	907.16	0.826	0.78
180.00	705.21	-118.25	823.46	61.67	935.48	0.852	0.78
195.00	705.21	-145.64	851.04	63.05	954.73	0.870	0.76
210.00	705.21	-185.79	876.39	65.12	982.18	0.894	0.73
225.00	705.21	-221.18	926.39	67.36	1003.75	0.913	0.69
240.00	705.21	-306.94	1012.14	68.46	1187.64	1.107	1.16
255.00	705.21	-264.79	970.00	56.99	1156.72	1.077	1.18
270.00	705.21	-245.49	950.69	55.85	1146.83	1.070	1.23
285.00	705.21	-216.07	921.30	55.56	1117.05	1.038	1.22
300.00	705.21	-196.09	901.30	55.74	1090.45	1.011	1.19
315.00	705.21	-179.95	885.15	55.63	1072.43	0.993	1.18
330.00	705.21	-164.69	869.90	55.21	1059.22	0.980	1.18
345.00	705.21	-148.04	853.25	55.04	1043.16	0.962	1.17

TABLE XX - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; MAXIMUM FLOW;  
WITH INLET GUIDE VANES AND CASING TREATMENT (Continued)

CIRC. POSITION	WHEEL SPEED	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.	SLOPE = -1.91	
									RADIUS = 17.420	SLOPE = -1.91
27.98	1431.78	13.61	10.72	518.69	0.62	641.00	640.97	0.594		
57.98	1431.78	13.58	10.68	518.69	0.62	643.25	43.21	0.596		
87.98	1431.78	13.56	10.71	518.69	0.44	636.83	636.81	0.590		
117.98	1431.78	13.56	10.62	518.69	2.58	647.80	647.15	0.601		
147.98	1431.78	11.54	9.47	518.69	6.51	584.79	581.02	0.539		
177.98	1431.78	11.60	8.94	518.69	2.26	667.69	667.17	0.620		
207.98	1431.78	11.52	9.16	518.69	-1.27	628.22	628.06	0.581		
237.98	1431.78	13.56	10.26	518.69	-2.88	690.58	689.71	0.643		
267.98	1431.78	13.65	10.67	518.69	-0.62	650.49	650.45	0.603		
297.98	1431.78	13.60	10.59	518.69	-0.37	655.60	655.58	0.608		
327.98	1431.78	13.53	10.71	518.69	0.74	634.10	634.05	0.587		
357.98	1431.78	13.64	10.54	518.69	1.21	665.54	665.19	0.618		
CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL WT. FLOW			
27.98	1431.78	6.88	1424.90	65.78	1562.43	1.448	3.25			
57.98	1431.78	6.99	1424.79	65.70	1563.25	1.449	3.25			
87.98	1431.78	4.85	1426.94	65.95	1562.58	1.447	3.23			
117.98	1431.78	29.13	1402.66	65.23	1544.75	1.432	3.26			
147.98	1431.78	66.50	1365.48	66.95	1483.95	1.367	2.98			
177.98	1431.78	26.92	1405.46	66.61	1525.78	1.446	2.84			
207.98	1431.78	-13.90	1445.68	66.52	1576.22	1.458	2.72			
237.98	1431.78	-14.69	1466.47	64.81	1620.56	1.510	3.39			
267.98	1431.78	-7.82	1438.80	65.67	1579.00	1.465	3.29			
297.98	1431.78	-4.22	1436.00	65.46	1578.57	1.465	3.30			
327.98	1431.78	8.18	1423.60	65.99	1588.42	1.443	3.21			
357.98	1431.78	14.00	1417.78	64.87	1566.07	1.455	3.34			



**TABLE XX - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; MAXIMUM FLOW;  
WITH INLET GUIDE VANES AND CASING TREATMENT (Continued)**

CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.	SLOPE # 15.45	
								RADIUS # 9.910	SLOPE # 15.45
27.98	13.74	10.20	518.69	±1.57	686.87	686.61	0.642		
57.98	13.77	10.22	518.69	±1.56	687.08	686.82	0.642		
87.98	13.79	10.23	518.69	±0.97	687.66	687.57	0.643		
117.98	13.73	10.17	518.69	5.67	689.69	686.31	0.645		
147.98	11.64	9.24	518.69	18.93	610.21	577.20	0.565		
177.98	11.49	8.61	518.69	2.13	677.50	677.03	0.632		
207.98	11.62	8.62	518.69	±8.02	688.76	682.02	0.644		
237.98	13.65	9.87	518.69	±8.18	716.02	708.73	0.672		
267.98	13.70	10.15	518.69	±3.66	690.35	688.95	0.645		
297.98	13.74	10.18	518.69	±2.38	689.59	689.00	0.645		
327.98	13.74	10.19	518.69	±0.51	688.79	688.76	0.644		
357.98	13.68	10.20	518.69	±0.50	683.23	683.21	0.638		
CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL WT. FLOW		
27.98	814.52	-18.83	833.35	50.51	1079.78	1.009	2.37		
57.98	814.52	-18.70	833.23	50.50	1079.81	1.009	2.37		
87.98	814.52	-11.61	826.13	50.23	1074.82	1.004	2.38		
117.98	814.52	68.15	746.37	47.40	1013.95	0.948	2.36		
147.98	814.52	197.98	616.54	46.89	844.56	0.782	1.77		
177.98	814.52	25.13	789.39	49.38	1039.95	0.970	1.96		
207.98	814.52	-96.12	910.64	53.17	1137.72	1.063	1.99		
237.98	814.52	-101.85	916.37	52.28	1158.47	1.086	2.38		
267.98	814.52	-44.07	858.59	51.26	1100.83	1.029	2.36		
297.98	814.52	-28.65	843.17	50.75	1086.88	1.018	2.37		
327.98	814.52	-6.17	820.69	49.99	1071.41	1.001	2.37		
357.98	814.52	-6.00	820.52	50.22	1067.72	0.997	2.35		

**TABLE XX - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; MAXIMUM FLOW; WITH INLET GUIDE VANES AND CASING TREATMENT (Continued)**

PLANE NO. = 1.51  
 IMMERSION NO. = 1  
 RADIUS = 17.081  
 SLOPE = -0.83

CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.	REL. MACH NO.	LOCAL WT. FLOW
15.00	18.72	13.92	583.04	22.80	754.22	695.29	0.665	1.155	3.40
45.00	18.68	13.95	584.51	23.26	749.89	688.94	0.659	1.147	3.36
75.00	18.69	13.85	584.38	22.92	759.19	699.23	0.668	1.154	3.40
105.00	18.30	13.73	582.34	24.42	748.38	681.43	0.659	1.136	3.29
135.00	17.20	12.97	573.88	29.17	730.98	638.25	0.648	1.087	2.94
145.00	18.21	13.48	609.77	31.54	777.21	662.40	0.670	1.032	3.00
195.00	17.97	13.41	604.29	28.68	763.41	663.23	0.660	1.057	3.01
225.00	20.07	14.85	618.49	23.83	783.16	716.38	0.670	1.115	3.25
255.00	18.75	14.08	586.88	22.08	744.20	689.64	0.653	1.137	3.38
285.00	18.62	13.95	581.62	22.30	744.06	688.43	0.656	1.160	3.38
315.00	18.53	13.87	584.05	22.11	746.63	691.75	0.657	1.160	3.36
345.00	18.56	13.93	583.09	22.78	742.88	684.95	0.654	1.152	3.34

CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL WT. FLOW
15.00	1483.92	292.25	1111.67	57.98	1311.20	1.155	3.40
45.00	1483.92	296.14	1107.78	58.12	1304.54	1.147	3.36
75.00	1483.92	295.72	1108.20	57.75	1310.35	1.154	3.40
105.00	1483.92	309.38	1094.53	58.09	1289.32	1.136	3.29
135.00	1483.92	356.34	1047.58	58.95	1226.70	1.087	2.94
165.00	1483.92	406.54	997.38	56.41	1197.30	1.032	3.00
195.00	1483.92	378.05	1025.87	57.12	1221.59	1.057	3.01
225.00	1483.92	316.44	1087.48	56.82	1302.23	1.115	3.25
255.00	1483.92	279.70	1124.22	58.47	1318.89	1.137	3.38
285.00	1483.92	282.30	1121.62	58.46	1316.04	1.160	3.38
315.00	1483.92	280.96	1122.96	58.37	1318.92	1.160	3.36
345.00	1483.92	287.62	1116.30	58.47	1309.69	1.152	3.34



**TABLE XX - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; MAXIMUM FLOW;  
WITH INLET GUIDE VANES AND CASING TREATMENT (Continued)**

PLANE NO. = 1.51  
IMPRESSION NO. = 5  
RADIUS = 11.030  
SLOPE = 11.17

CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.
15.00	21.98	14.73	598.29	38.42	871.74	683.02	0.770
45.00	22.02	14.61	596.94	38.70	860.53	687.15	0.779
75.00	21.96	14.68	597.50	38.40	872.97	684.11	0.771
105.00	21.95	14.31	594.27	38.48	895.70	701.21	0.797
135.00	20.07	13.22	578.52	39.55	874.48	674.23	0.787
165.00	18.13	12.46	585.08	42.83	836.09	613.14	0.744
195.00	19.37	12.93	600.30	40.61	877.64	666.29	0.774
225.00	21.67	14.56	605.05	33.97	871.98	723.17	0.765
255.00	22.51	15.05	606.28	38.56	879.23	687.55	0.771
285.00	22.28	14.71	600.34	36.89	887.92	710.12	0.784
315.00	21.92	14.68	587.47	37.87	871.55	688.04	0.770
345.00	21.89	14.55	603.36	38.33	883.38	692.97	0.778

CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL WT. FLOW
15.00	906.58	541.68	364.89	28.11	774.38	0.684	2.34
45.00	906.58	550.61	355.97	27.39	773.88	0.685	2.35
75.00	906.58	542.28	364.30	28.04	775.06	0.685	2.34
105.00	906.58	557.31	349.27	26.48	783.38	0.697	2.37
135.00	906.58	556.88	349.69	27.41	759.52	0.684	2.16
165.00	906.58	568.41	338.16	28.88	700.21	0.623	1.81
195.00	906.58	571.24	335.34	26.72	745.92	0.658	2.00
225.00	906.58	487.21	419.36	30.11	835.97	0.734	2.42
255.00	906.58	548.00	358.57	27.94	775.44	0.680	2.38
285.00	906.58	533.04	373.54	27.53	802.37	0.709	2.43
315.00	906.58	534.99	371.59	28.37	781.97	0.691	2.36
345.00	906.58	547.86	358.71	27.37	780.31	0.687	2.33

**TABLE XX - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; MAXIMUM FLOW;  
WITH INLET GUIDE VANES AND CASING TREATMENT (Continued)**

PLANE NO. = 2.20  
IMMERSION NO. = 1  
RADIUS = 17.130 SLOPE = 0.24

CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS. FLOW ANGLE	ABS. VELOCITY	AXIAL VELOCITY	ABS. MACH NO.
6.83	18.49	14.22	585.24	0.59	707.42	707.38	0.619
36.83	18.39	14.34	586.12	0.72	694.64	694.59	0.606
66.83	18.45	14.44	587.47	0.93	692.27	692.18	0.603
96.83	18.54	14.54	586.48	1.82	687.76	687.41	0.600
126.83	17.92	14.80	581.19	3.53	609.32	608.16	0.530
156.83	17.12	14.77	595.61	0.67	544.14	544.10	0.464
186.83	17.62	14.49	609.82	1.39	631.21	631.02	0.536
216.83	18.03	14.50	616.05	0.48	672.02	671.99	0.570
246.83	18.59	14.35	592.76	0.52	719.68	719.65	0.626
276.83	18.34	14.17	587.62	0.28	708.20	708.19	0.618
306.83	18.38	14.17	587.41	0.39	711.15	711.13	0.621
336.83	18.45	14.15	587.36	0.59	718.10	718.06	0.628

CIRC. POSITION	WHEEL SPEED	ABS. TANG. VELOCITY	REL. TANG. VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL WT. FLOW
6.83	1407.95	-7.27	1415.21	63.44	1582.16	1.384	3.21
36.83	1407.95	-8.71	1416.66	63.88	1577.77	1.377	3.17
66.83	1407.95	-11.28	1419.22	64.00	1579.02	1.376	3.17
96.83	1407.95	-21.89	1429.83	64.32	1586.49	1.383	3.17
126.83	1407.95	-37.54	1445.49	67.16	1588.22	1.383	2.84
156.83	1407.95	-6.40	1414.34	68.26	1515.39	1.293	2.44
186.83	1407.95	15.36	1392.59	65.62	1528.89	1.298	2.75
216.83	1407.95	5.43	1402.32	64.40	1555.01	1.318	2.93
246.83	1407.95	6.47	1401.48	62.82	1575.45	1.370	3.26
276.83	1407.95	3.46	1404.48	63.24	1572.93	1.373	3.19
306.83	1407.95	-4.90	1412.85	63.28	1581.72	1.381	3.21
336.83	1407.95	-7.44	1415.39	63.10	1587.11	1.387	3.24



TABLE XX - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; MAXIMUM FLOW;  
WITH INLET GUIDE VANES AND CASING TREATMENT (Continued)

PLANE NO. IMMERSION NO. = 2.20	RADIUS = 14.420	SLOPE = 1.13												
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. MACH NO.	LOCAL WT. FLOW	
29.00	18.65	14.11	586.04	0.62	734.94	734.90	0.644							
54.00	18.83	14.21	586.74	0.44	738.75	738.73	0.648							
59.00	18.84	14.27	587.10	0.19	733.91	733.90	0.643							
119.00	18.77	14.48	583.84	0.49	708.17	708.15	0.620							
149.00	17.62	14.46	576.52	1.21	616.79	616.65	0.539							
178.00	17.49	14.09	598.46	2.09	656.59	656.16	0.565							
209.00	18.06	14.00	605.78	2.79	714.50	713.66	0.614							
239.00	17.60	14.04	612.93	1.38	818.34	818.10	0.707							
269.00	18.97	13.99	594.62	0.74	772.27	772.20	0.675							
299.00	18.59	13.96	587.93	0.74	745.39	745.33	0.653							
328.00	13.73	13.98	587.57	0.68	752.90	752.84	0.660							
359.00	13.73	14.04	587.78	0.63	750.18	750.13	0.658							
CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL WT. FLOW							
29.00	1185.21	7.93	1177.28	58.03	1387.82	1.216	3.62							
54.00	1185.21	5.64	1179.57	57.94	1391.80	1.220	3.67							
59.00	1185.21	2.40	1182.81	58.18	1391.99	1.219	3.66							
119.00	1185.21	6.04	1179.17	59.01	1375.47	1.205	3.58							
149.00	1185.21	13.04	1172.16	62.25	1324.47	1.157	3.10							
179.00	1185.21	23.93	1161.28	60.53	1333.83	1.147	3.11							
209.00	1185.21	34.73	1150.48	58.19	1353.85	1.163	3.36							
239.00	1185.21	19.74	1165.47	54.93	1423.94	1.230	3.90							
269.00	1185.21	10.04	1175.17	56.69	1400.17	1.228	3.75							
299.00	1185.21	9.60	1175.61	57.63	1391.96	1.220	3.64							
329.00	1185.21	8.87	1176.34	57.68	1396.62	1.225	3.69							
359.00	1185.21	8.22	1176.98	57.49	1395.71	1.224	3.68							

**TABLE XX - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; MAXIMUM FLOW;  
WITH INLET GUIDE VANES AND CASING TREATMENT (Concluded)**

CIRC. POSITION	TOT. PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.
15.56	17.67	601.68	5.21	820.64	819.36	0.716
48.56	14.91	599.97	-2.33	821.45	820.77	0.718
72.56	20.41	600.64	-2.00	834.24	833.74	0.730
102.56	20.65	597.68	-0.43	815.07	815.04	0.714
132.56	20.47	591.72	-0.27	777.30	777.29	0.681
162.56	17.47	585.13	3.94	647.65	646.12	0.563
192.56	18.15	606.61	2.30	741.19	740.60	0.638
222.56	18.40	615.11	1.30	788.35	788.15	0.677
252.56	17.65	611.90	-2.32	847.73	847.03	0.736
282.56	19.59	605.78	-2.96	840.96	839.73	0.733
312.56	18.42	602.04	-3.49	821.10	819.58	0.717
342.56	19.66	600.80	-3.48	845.20	843.64	0.741

CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. MACH NO.	LOCAL WT. FLOW
15.56	967.81	-45.89	1013.70	51.05	1.138	2.35
48.56	967.81	-33.41	1001.22	50.66	1.132	2.38
72.56	967.81	-29.09	996.90	50.09	1.138	2.46
102.56	967.81	-6.12	973.93	50.08	1.112	2.47
132.56	967.81	3.66	964.15	51.12	1.085	2.39
162.56	967.81	44.54	923.27	55.02	0.960	1.85
192.56	967.81	29.80	938.01	51.71	1.029	2.04
222.56	967.81	17.86	949.93	50.32	1.061	2.12
252.56	967.81	-34.27	1002.08	49.79	1.041	2.35
282.56	967.81	-43.39	1011.28	50.29	1.139	2.35
312.56	967.81	-49.93	1017.74	51.16	1.146	2.32
342.56	967.81	-51.35	1019.16	50.38	1.141	2.38



TABLE XXI - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 70% SPEED; INTERMEDIATE FLOW; WITH INLET GUIDE VANES AND CASING TREATMENT (Continued)

PLANE NO.	IMMERSION NO.	$r = 0.1R$	RADIUS	13.300	SLOPE	$\alpha = 1.08$	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	REL. TANG. VELOCITY	REL. TANG. VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL WT. FLOW	
0.	14.36	13.06	518.69	770.43	770.43	62.07	872.02	0.791	1.48	
15.00	14.35	13.06	518.69	768.55	768.55	62.18	869.51	0.789	1.47	
30.00	14.35	13.04	518.69	763.36	763.36	61.71	866.91	0.787	1.49	
45.00	14.36	13.01	510.69	757.73	757.73	61.20	864.68	0.785	1.51	
60.00	14.36	12.97	518.69	757.34	757.34	60.85	867.15	0.780	1.52	
75.00	14.37	12.93	518.69	755.91	755.91	60.42	870.31	0.791	1.55	
90.00	14.41	12.87	518.69	748.17	748.17	59.27	870.35	0.792	1.60	
105.00	14.37	12.81	518.69	739.55	739.55	58.83	864.33	0.787	1.60	
120.00	14.37	12.81	518.69	733.01	733.01	58.95	855.56	0.778	1.58	
135.00	14.37	12.75	518.69	740.82	740.82	60.47	790.85	0.713	0.97	
150.00	14.37	12.75	522.69	752.48	752.48	60.62	802.69	0.723	0.99	
165.00	14.41	12.87	518.69	764.42	764.42	60.47	816.27	0.736	1.00	
180.00	14.37	12.81	518.69	772.00	772.00	60.33	825.11	0.744	1.02	
195.00	14.37	12.75	518.69	779.79	779.79	60.28	833.69	0.752	1.03	
210.00	14.35	12.75	518.69	785.24	785.24	60.93	836.19	0.754	1.01	
225.00	14.35	12.62	518.69	788.59	788.59	71.56	831.60	0.749	0.92	
240.00	14.35	12.77	518.69	801.59	801.59	61.52	911.98	0.829	1.56	
255.00	14.35	12.73	518.69	798.09	798.09	61.66	907.22	0.825	1.55	
270.00	14.35	12.73	518.69	793.43	793.43	61.63	901.74	0.820	1.55	
285.00	14.35	12.73	518.69	787.83	787.83	62.19	890.74	0.809	1.50	
300.00	14.36	13.02	518.69	783.29	783.29	62.15	885.90	0.804	1.50	
315.00	14.37	13.04	518.69	778.81	778.81	62.08	881.38	0.800	1.50	
330.00	14.36	13.05	518.69	775.57	775.57	62.13	877.11	0.796	1.49	
345.00	14.35	13.06	518.69	771.97	771.97	62.19	872.75	0.792	1.48	



TABLE XXI - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA: 70% SPEED; INTERMEDIATE FLOW; WITH INLET GUIDE VANES AND CASING TREATMENT (Continued)

PLANE NO. IMPRESSION NO. #	0,95	1	RADIUS #	17,420	SLOPE #	11,91					
CIRC. POSITION	TOT. PRESSURE	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	REL. VELOCITY	ABS VELOCITY	REL. VELOCITY	ABS MACH NO.	LOCAL WT. FLOW
27,98	14,28	14,28	12,93	518,69	-6,20	418,62	416,17	416,17	416,17	0,380	
57,98	14,27	14,27	12,94	518,69	-7,06	430,07	426,80	426,80	426,80	0,391	
87,98	14,25	14,25	12,93	518,69	-5,45	413,51	411,64	411,64	411,64	0,375	
117,98	14,23	14,23	12,91	518,69	-3,53	413,54	412,73	412,73	412,73	0,375	
147,98	13,38	13,38	12,41	518,69	2,12	364,48	364,23	364,23	364,23	0,330	
177,98	13,37	13,37	12,38	518,69	-5,30	368,05	366,47	366,47	366,47	0,333	
207,98	13,36	13,36	12,53	518,69	-11,04	337,87	331,61	331,61	331,61	0,305	
237,98	14,17	14,17	13,00	518,69	-10,44	385,63	383,17	383,17	383,17	0,353	
267,98	14,26	14,26	12,97	518,69	-6,50	407,62	404,99	404,99	404,99	0,370	
297,98	14,26	14,26	12,96	518,69	-4,49	409,97	408,71	408,71	408,71	0,372	
327,98	14,31	14,31	12,95	518,69	-1,03	419,00	418,94	418,94	418,94	0,381	
357,98	14,28	14,28	12,95	518,69	-6,87	414,61	411,63	411,63	411,63	0,376	
CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	REL. MACH NO.	LOCAL WT. FLOW		
27,98	1002,25	-45,25	-45,25	1047,49	68,33	1127,14	1,024	1,024	2,45		
57,98	1002,25	-52,87	-52,87	1055,11	67,98	1138,17	1,035	1,035	2,50		
87,98	1002,25	-39,27	-39,27	1041,52	68,43	1119,92	1,017	1,017	2,42		
117,98	1002,25	-25,50	-25,50	1027,75	68,12	1107,53	1,006	1,006	2,42		
147,98	1002,25	13,51	13,51	988,73	69,70	1053,69	0,954	0,954	2,04		
177,98	1002,25	-34,01	-34,01	1035,26	70,52	1099,15	0,995	0,995	2,05		
207,98	1002,25	-64,71	-64,71	1066,96	72,73	1117,30	1,010	1,010	1,87		
237,98	1002,25	-70,62	-70,62	1072,86	70,35	1139,23	1,033	1,033	2,26		
267,98	1002,25	-46,16	-46,16	1049,40	68,88	1123,91	1,020	1,020	2,59		
297,98	1002,25	-32,12	-32,12	1034,36	68,44	1112,18	1,010	1,010	2,41		
327,98	1002,25	-7,51	-7,51	1003,76	67,47	1093,21	0,993	0,993	2,47		
357,98	1002,25	-49,62	-49,62	1051,87	68,63	1129,54	1,026	1,026	2,42		

TABLE XXI - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA: 70% SPEED; INTERMEDIATE FLOW; WITH INLET GUIDE VANES AND CASING TREATMENT (Continued)

PLANE NO. IMMERISION NO. #	0.95 3	RADIUS #		SLOPE #		4.85	
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.
27.98	14.35	12.28	518.69	+0.91	519.09	519.02	0.475
57.98	14.36	12.28	518.69	+0.43	519.85	519.84	0.476
87.98	14.36	12.34	518.69	0.04	511.67	511.67	0.468
117.98	14.34	12.29	518.69	1.46	516.18	516.01	0.472
147.98	13.35	11.90	518.69	6.27	446.88	444.21	0.407
177.98	13.35	11.96	518.69	+0.84	437.21	437.16	0.398
207.98	13.36	12.02	518.69	+6.02	429.30	427.01	0.390
237.98	14.34	12.51	518.69	+5.33	487.22	485.12	0.445
267.98	14.37	12.37	518.69	-1.04	509.68	509.59	0.466
297.98	14.36	12.35	518.69	+0.32	510.75	510.74	0.467
327.98	14.34	12.31	518.69	-1.09	513.84	513.74	0.470
357.98	14.36	12.30	518.69	+0.70	517.88	517.84	0.474
CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL MACH NO.
27.98	793.80	-8.27	802.07	57.09	955.35	0.875	3.16
57.98	793.80	-3.89	797.59	56.91	952.13	0.872	3.16
87.98	793.80	0.38	793.43	57.18	944.10	0.864	3.13
117.98	793.80	13.14	790.66	56.54	935.79	0.857	3.14
147.98	793.80	48.51	745.00	50.19	867.37	0.789	2.59
177.98	793.80	-6.44	800.24	61.35	911.86	0.829	2.56
207.98	793.80	-45.02	839.82	63.02	941.26	0.856	2.51
237.98	793.80	-45.28	839.08	59.97	949.22	0.885	2.99
267.98	793.80	-9.27	803.07	57.60	951.11	0.870	3.12
297.98	793.80	-2.84	796.64	57.34	946.51	0.866	3.12
327.98	793.80	-9.79	803.59	57.41	953.78	0.875	3.13
357.98	793.80	-6.34	800.15	57.09	953.09	0.873	3.15





TABLE XXI - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA: 70% SPEED; INTERMEDIATE FLOW; WITH INLET GUIDE VANES AND CASING TREATMENT (Continued)

PLANE NO. IMMERSION NO. #	1	RADIUS =	17.081	SLOPE =	-0.83				
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.	REL. MACH NO.	LOCAL WT. FLOW
15.00	18.00	15.60	561.30	30.12	519.79	449.59	0.457	0.747	2.45
45.00	18.02	15.70	562.44	30.48	511.63	440.93	0.449	0.743	2.41
75.00	18.06	15.72	563.03	30.54	513.71	442.46	0.450	0.742	2.42
105.00	18.03	15.58	562.57	31.43	526.17	448.97	0.462	0.736	2.44
135.00	17.45	15.40	557.04	38.80	484.39	377.48	0.426	0.683	2.03
165.00	17.90	15.52	576.75	41.51	527.12	394.74	0.457	0.647	2.08
195.00	17.99	15.57	578.27	39.99	530.55	406.48	0.459	0.658	2.15
225.00	18.64	15.58	584.32	33.77	591.70	491.86	0.512	0.708	2.60
255.00	18.14	15.55	565.37	31.62	540.20	460.02	0.474	0.734	2.49
285.00	18.04	15.68	563.22	30.72	515.13	442.85	0.452	0.741	2.42
315.00	18.00	15.68	561.92	30.46	510.55	440.07	0.448	0.743	2.40
345.00	18.03	15.55	562.63	30.15	529.95	458.27	0.465	0.747	2.49
CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL WT. FLOW		
15.00	982.74	260.86	721.88	58.09	850.44	0.747	2.45		
45.00	982.74	259.52	723.23	58.53	847.04	0.743	2.41		
75.00	982.74	261.02	721.72	58.49	846.55	0.742	2.42		
105.00	982.74	274.38	708.37	57.63	838.67	0.736	2.44		
135.00	982.74	303.54	679.20	60.94	777.05	0.683	2.03		
165.00	982.74	349.33	633.42	58.07	746.35	0.647	2.08		
195.00	982.74	340.96	641.78	57.65	759.58	0.658	2.15		
225.00	982.74	328.90	653.84	53.05	818.19	0.708	2.60		
255.00	982.74	283.20	699.54	56.67	837.24	0.734	2.49		
285.00	982.74	263.14	719.61	58.39	844.96	0.741	2.42		
315.00	982.74	258.85	723.90	50.70	847.16	0.743	2.40		
345.00	982.74	266.14	716.60	57.40	850.61	0.747	2.49		

TABLE XXI - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 70% SPEED; INTERMEDIATE FLOW; WITH INLET GUIDE VANES AND CASING TREATMENT (Continued)

PLANE NO.	IMMERSION NO.	CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	SLOPE #	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.	REL. FLOW ANGLE	REL. TANG VELOCITY	ABS TANG VELOCITY	WHEEL SPEED	CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. MACH NO.	LOCAL WT. FLOW	
	1.51						14.056				3.14											
		15.00	18.15	15.07	557.27	33.01		588.36	493.38	0.522					15.00	808.70	320.55	488.15	41.70	0.616	2.94	
		45.00	18.13	15.09	557.48	32.79		584.58	491.42	0.518					45.00	809.70	316.60	482.10	45.04	0.617	2.93	
		75.00	18.15	15.14	557.37	33.17		581.53	486.78	0.516					105.00	808.70	325.80	490.55	45.22	0.613	2.91	
		105.00	18.09	15.00	556.51	33.50		590.25	492.18	0.524					135.00	808.70	363.28	482.90	44.45	0.612	2.92	
		135.00	17.61	14.82	552.98	40.05		564.58	432.19	0.502					165.00	808.70	344.09	445.42	45.86	0.552	2.54	
		165.00	17.72	14.83	555.25	42.79		580.08	425.67	0.510					195.00	808.70	393.70	414.61	44.25	0.523	2.45	
		195.00	17.61	14.86	557.33	43.96		567.13	408.20	0.497					225.00	808.70	381.12	427.58	43.09	0.570	2.34	
		225.00	18.29	14.95	574.35	37.85		621.08	490.39	0.544					255.00	808.70	338.93	469.77	45.02	0.587	2.82	
		255.00	18.01	15.06	551.12	35.83		579.04	469.49	0.511					285.00	808.70	374.67	484.03	45.24	0.604	2.85	
		285.00	18.06	15.08	557.74	34.07		579.52	480.04	0.513					315.00	808.70	319.72	488.99	45.14	0.612	2.90	
		315.00	18.11	15.09	556.66	33.31		582.23	486.59	0.517					345.00	808.70	319.73	488.97	44.37	0.621	2.96	
		345.00	18.12	14.99	556.96	32.61		593.35	499.83	0.527												

TABLE XXI - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA: 70% SPEED; INTERMEDIATE FLOW; WITH INLET GUIDE VANES AND CASING TREATMENT (Continued)

PLANE NO. # 1.51		RADIUS # 11.030		SLOPE # 11.17			
IMMERSION NO. # 5							
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.
15.00	18.73	14.48	558.47	39.87	682.12	523.56	0.611
45.00	18.73	14.52	559.07	39.49	679.53	524.46	0.608
75.00	18.71	14.60	558.40	39.91	670.75	514.52	0.600
105.00	18.71	14.39	557.52	40.30	688.28	524.94	0.617
135.00	18.17	14.12	552.79	43.78	673.03	485.93	0.605
165.00	17.69	14.22	557.78	47.38	631.28	427.47	0.562
195.00	17.87	14.31	552.87	45.57	638.73	447.19	0.567
225.00	18.46	14.52	557.46	38.13	664.73	522.90	0.589
255.00	18.14	14.51	554.09	39.19	640.04	496.06	0.567
285.00	18.74	14.49	558.47	41.10	682.13	514.03	0.611
315.00	18.73	14.53	557.76	40.27	677.23	516.72	0.606
345.00	18.73	14.45	559.32	39.70	685.49	527.42	0.613
CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL WT. FLOW
15.00	634.60	437.23	197.87	20.66	559.52	0.501	1.82
45.00	634.60	432.10	202.51	21.11	562.19	0.503	1.82
75.00	634.60	430.31	204.29	21.66	553.59	0.495	1.79
105.00	634.60	445.15	193.45	19.84	558.08	0.500	1.82
135.00	634.60	465.87	168.94	19.17	514.46	0.463	1.66
165.00	634.60	464.53	170.08	21.70	480.06	0.410	1.44
195.00	634.60	456.08	178.52	21.76	481.49	0.427	1.51
225.00	634.60	410.42	224.19	23.21	568.93	0.504	1.78
255.00	634.60	404.43	230.17	24.89	546.86	0.485	1.69
285.00	634.60	448.42	186.19	19.81	546.91	0.489	1.78
315.00	634.60	437.77	195.83	20.45	552.94	0.495	1.80
345.00	634.60	437.87	196.73	20.46	562.91	0.504	1.82



TABLE XXI - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 70% SPEED; INTERMEDIATE FLOW; WITH INLET GUIDE VANES AND CASING TREATMENT (Continued)

PLANE NO. IMMERSION NO.	2.20 3	RADIUS	14.420	SLOPE	1.113		
CIRC. POSITION	TOT PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.
29.00	17.99	15.61	558.37	-0.59	516.17	516.14	0.455
59.00	17.99	15.65	558.58	-0.83	512.41	512.35	0.451
89.00	18.02	15.69	558.32	-0.02	510.15	510.10	0.449
119.00	17.90	15.73	557.17	-0.04	492.66	492.66	0.434
149.00	17.37	15.77	553.96	1.02	425.04	424.97	0.373
179.00	17.59	15.81	555.32	0.40	451.56	451.55	0.393
209.00	17.44	15.72	556.27	-0.17	445.58	445.58	0.387
239.00	17.99	15.64	571.80	-1.66	518.60	518.33	0.451
269.00	17.72	15.65	559.82	-1.91	484.21	483.94	0.425
299.00	17.90	15.66	557.90	-0.65	501.62	501.59	0.441
329.00	17.95	15.65	558.26	-0.35	508.11	508.10	0.447
359.00	17.99	15.62	558.26	-0.34	514.52	514.51	0.453
CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL WT. FLOW
29.00	829.64	-5.35	834.99	58.28	981.64	0.864	2.84
59.00	829.64	-7.47	837.11	58.53	981.46	0.864	2.83
89.00	829.64	-7.31	836.96	58.64	980.15	0.863	2.82
119.00	829.64	-0.35	829.99	59.31	985.19	0.849	2.73
149.00	829.64	7.58	822.07	62.66	925.42	0.813	2.35
179.00	829.64	3.17	826.47	61.35	941.78	0.820	2.46
209.00	829.64	-1.31	830.96	61.80	942.99	0.819	2.40
239.00	829.64	-15.02	848.66	58.46	991.05	0.862	2.79
269.00	829.64	-16.12	845.76	60.22	974.43	0.855	2.65
299.00	829.64	-5.67	855.31	59.02	977.34	0.857	2.77
329.00	829.64	-3.07	832.71	58.61	975.49	0.859	2.80
359.00	829.64	-3.02	832.67	58.29	978.81	0.862	2.84

TABLE XXI - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 70% SPEED; INTERMEDIATE FLOW; WITH INLET GUIDE VANES AND CASING TREATMENT (Concluded)

PLANE NO. IMMERSION NO.	2.20 5	RADIUS	11.775	SLOPE	1.14										
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS. FLOW ANGLE	ABS. VELOCITY	AXIAL VELOCITY	ABS MACH NO.							LOCAL WT. FLOW	
18.56	18.55	15.57	561.89	-0.38	573.27	573.25	0.506							1.87	
48.56	18.54	15.60	561.64	-1.09	570.06	569.95	0.503							1.86	
78.56	18.57	15.60	562.10	-1.01	573.20	573.11	0.505							1.87	
108.56	18.53	15.65	562.15	-1.37	563.84	563.68	0.497							1.84	
138.56	18.16	15.75	558.78	-0.71	517.17	517.13	0.455							1.70	
168.56	17.09	15.79	556.45	2.48	386.79	386.43	0.338							1.25	
198.56	17.37	15.68	565.73	0.97	442.70	442.63	0.385							1.41	
228.56	18.20	15.57	570.92	-0.04	547.35	547.35	0.478							1.75	
258.56	18.65	15.58	565.21	-0.08	583.55	583.55	0.514							1.69	
288.56	18.58	15.64	561.84	0.10	569.71	569.71	0.502							1.86	
318.56	18.57	15.63	561.74	-0.23	569.39	569.39	0.502							1.86	
348.56	18.54	15.58	561.79	-0.23	572.57	572.57	0.505							1.87	
CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.							LOCAL WT. FLOW		
18.56	677.47	-3.84	681.30	49.92	890.39	0.785							1.87		
48.56	677.47	-10.88	688.34	50.38	893.68	0.788							1.86		
78.56	677.47	-10.08	687.55	50.19	895.08	0.789							1.87		
108.56	677.47	-13.49	690.96	50.79	891.72	0.786							1.84		
138.56	677.47	-6.44	683.90	52.91	857.40	0.755							1.70		
168.56	677.47	16.77	660.70	59.68	765.41	0.669							1.25		
198.56	677.47	7.49	669.98	56.55	802.90	0.699							1.41		
228.56	677.47	-0.35	677.81	51.08	871.22	0.760							1.75		
258.56	677.47	-0.63	678.29	49.29	894.77	0.788							1.69		
288.56	677.47	0.95	676.51	49.90	884.44	0.780							1.86		
318.56	677.47	-2.33	678.60	50.05	886.75	0.782							1.86		
348.56	677.47	-2.27	679.74	49.89	888.75	0.784							1.87		

TABLE XXII - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; NEAR STALL;  
WITHOUT INLET GUIDE VANES; WITH CASING TREATMENT

PLANE NO. IMMERSION NO. =	0.95	RADIUS =	17.420	SLOPE =	-2.91		
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP,	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.
27.98	13.73	10.82	518.69	-0.32	639.80	639.79	0.593
57.98	13.69	10.84	518.69	-0.11	634.62	634.62	0.588
87.98	13.70	10.84	518.69	1.42	635.01	634.82	0.588
117.98	13.70	10.87	518.69	5.43	631.54	628.71	0.585
147.98	11.79	9.86	518.69	4.71	556.36	554.48	0.511
177.98	11.83	9.96	518.69	-2.02	545.91	545.57	0.501
207.98	11.75	10.13	518.69	-6.83	508.11	504.51	0.465
237.98	13.80	11.00	518.69	-7.73	625.21	619.52	0.578
267.98	13.80	10.93	518.69	-3.33	633.81	632.74	0.587
297.98	13.73	10.81	518.69	-1.73	640.92	640.62	0.594
327.98	13.70	10.83	518.69	-1.27	636.48	636.32	0.589
357.98	13.75	10.84	518.69	-2.04	639.87	639.46	0.593
CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL MACH WT. FLOW
27.98	1431.78	-3.63	1435.41	65.98	1571.54	1.456	3.28
57.98	1431.78	*1.21	1432.99	66.11	1567.23	1.451	3.25
87.98	1431.78	15.75	1416.03	65.85	1551.82	1.437	3.26
117.98	1431.78	59.78	1372.00	65.38	1509.19	1.397	3.23
147.98	1431.78	45.70	1386.08	68.80	1492.87	1.371	2.55
177.98	1431.78	-19.26	1451.04	69.39	1550.22	1.423	2.52
207.98	1431.78	-60.41	1492.19	71.32	1575.17	1.441	2.36
237.98	1431.78	-84.12	1515.90	67.77	1637.61	1.515	3.22
267.98	1431.78	-36.83	1468.61	66.69	1599.12	1.480	3.27
297.98	1431.78	-19.37	1451.15	66.18	1584.27	1.470	3.28
327.98	1431.78	-14.10	1445.88	66.25	1579.71	1.463	3.26
357.98	1431.78	-22.83	1454.62	66.27	1588.97	1.472	3.28

TABLE XXII - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; NEAR STALL;  
WITHOUT INLET GUIDE VANES; WITH CASING TREATMENT (Continued)

CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.	SLOPE = 4.85	
								RADIUS = 13.797	PLANE NO. = 0.95 IMMERISION NO. = 3
27.98	33.80	10.26	518.69	-0.46	709.07	709.04	0.662		
57.98	13.80	10.26	518.69	0.90	706.34	706.25	0.660		
87.98	13.89	10.36	518.69	3.02	704.91	703.93	0.658		
117.98	13.82	10.39	518.69	8.50	696.48	688.82	0.650		
147.98	11.62	9.35	518.69	8.99	610.48	602.97	0.564		
177.98	11.62	9.49	518.69	-7.82	590.01	584.52	0.544		
207.98	11.63	9.74	518.69	-12.80	558.23	544.36	0.513		
237.98	13.83	10.53	518.69	12.38	681.33	665.29	0.634		
267.98	13.87	10.34	518.69	-5.42	706.23	703.08	0.660		
297.98	13.82	10.19	518.69	-3.14	718.08	717.01	0.672		
327.98	13.81	10.21	518.69	-1.96	715.68	715.26	0.669		
357.98	13.85	10.25	518.69	-0.67	714.10	714.05	0.668		
CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL MACH NO.		
27.98	1134.00	5.71	1139.74	58.43	1342.26	1.254	3.75		
57.98	1134.00	11.08	1122.92	57.03	1326.55	1.239	3.74		
87.98	1134.00	37.09	1096.94	57.51	1303.36	1.217	3.76		
117.98	1134.00	102.98	1031.02	56.25	1239.95	1.157	3.68		
147.98	1134.00	95.44	1038.56	59.86	1200.91	1.109	3.84		
177.98	1134.00	-80.32	1214.32	64.30	1347.68	1.242	2.79		
207.98	1134.00	-123.67	1257.67	66.00	1370.42	1.259	2.64		
237.98	1134.00	-146.03	1280.03	62.54	1442.60	1.343	3.59		
267.98	1134.00	-66.65	1200.65	59.65	1391.36	1.299	3.75		
297.98	1134.00	-39.28	1173.28	58.57	1375.03	1.286	3.78		
327.98	1134.00	-24.48	1158.48	58.31	1361.49	1.273	3.77		
357.98	1134.00	-8.36	1142.36	57.99	1342.47	1.259	3.78		





TABLE XXII - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; NEAR STALL;  
WITHOUT INLET GUIDE VANES; WITH CASING TREATMENT (Continued)

PLANE NO. IMMERSION NO., #	#	RADIUS #	17,081	SLOPE #	-0,83		
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.
15.00	21.50	16.64	606.73	31.63	717.60	610.97	0.616
45.00	21.57	16.53	607.13	32.16	731.11	618.91	0.629
75.00	21.69	16.57	607.03	33.01	734.83	616.17	0.632
105.00	21.50	16.19	604.90	35.07	751.98	615.48	0.649
135.00	20.68	16.30	598.95	42.21	687.69	509.34	0.593
165.00	23.45	17.80	649.26	44.73	769.18	546.41	0.640
195.00	23.58	17.43	661.84	22.22	811.14	750.92	0.671
225.00	25.44	18.12	682.24	40.90	870.29	657.81	0.713
255.00	22.22	16.70	617.20	30.95	762.16	653.65	0.652
285.00	21.67	16.71	605.24	30.92	721.71	619.18	0.621
315.00	21.47	16.67	607.77	30.77	714.83	613.74	0.613
345.00	21.66	16.49	608.51	31.64	740.86	630.73	0.637
CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL WT. FLOW
15.00	1403.92	376.39	1027.53	59.26	1193.45	1.027	3.39
45.00	1403.92	389.19	1014.73	58.62	1186.58	1.022	3.42
75.00	1403.92	400.38	1003.54	58.45	1177.61	1.013	3.42
105.00	1403.92	432.04	971.88	57.65	1158.36	0.993	3.36
135.00	1403.92	462.05	941.87	61.60	1070.77	0.923	2.79
165.00	1403.92	541.36	862.56	57.65	1021.06	0.850	3.05
195.00	1403.92	306.69	1097.23	55.61	1329.58	1.100	4.06
225.00	1403.92	569.83	834.09	51.74	1068.27	0.871	3.62
255.00	1403.92	391.96	1011.96	57.14	1214.71	1.030	3.61
285.00	1403.92	370.79	1033.13	59.06	1204.46	1.036	3.47
315.00	1403.92	365.49	1038.43	59.42	1206.43	1.035	3.41
345.00	1403.92	388.65	1015.22	58.15	1195.24	1.027	3.48



TABLE XXII - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; NEAR STALL;  
WITHOUT INLET GUIDE VANES; WITH CASING TREATMENT (Continued)

PLANE NO, IMPRESSION NO. #	1.51	RADIUS #	11.030	SLOPE #	11.17		
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.
15.00	23.00	15.65	602.04	40.45	858.78	653.47	0.754
45.00	22.86	15.53	600.13	40.91	858.74	648.93	0.755
75.00	22.73	15.46	598.72	41.65	857.07	640.62	0.755
105.00	22.40	15.20	594.36	42.86	856.52	627.83	0.757
135.00	20.99	14.80	584.70	47.87	810.41	543.59	0.718
165.00	21.93	15.56	597.19	54.78	813.50	469.17	0.713
195.00	21.31	15.29	619.86	40.59	812.17	616.79	0.698
225.00	22.39	15.46	631.00	47.29	884.99	586.73	0.740
255.00	23.35	15.76	613.22	40.87	879.88	662.18	0.763
285.00	22.99	15.72	600.96	41.40	853.27	640.01	0.749
315.00	23.00	15.65	604.37	40.73	860.35	651.98	0.754
345.00	21.66	15.65	602.28	40.28	792.26	604.38	0.690
CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOR ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL MACH NO.
15.00	906.58	557.21	349.37	28.13	741.00	0.651	2.36
45.00	906.58	562.42	344.15	27.94	734.59	0.646	2.33
75.00	906.58	569.59	336.99	27.75	723.97	0.637	2.29
105.00	906.58	582.64	333.94	27.29	706.47	0.625	2.23
135.00	906.58	601.06	305.52	29.34	623.57	0.553	1.80
165.00	906.58	664.58	242.00	27.28	529.81	0.463	1.68
195.00	906.58	528.38	378.20	31.52	723.51	0.621	2.08
225.00	906.58	635.57	271.01	24.79	646.30	0.553	1.99
255.00	906.58	573.01	333.57	26.74	741.49	0.646	2.37
285.00	906.58	564.52	342.26	28.14	725.77	0.637	2.32
315.00	906.58	561.36	345.23	27.90	737.73	0.647	2.34
345.00	906.58	512.25	394.33	33.12	721.65	0.628	2.31

TABLE XXII - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; NEAR STALL;  
WITHOUT INLET GUIDE VANES; WITH CASING TREATMENT (Continued)

PLANE NO. = 2.20 IMMERSION NO. = 1		RADIUS = 17.430		SLOPE = 0.24			
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.
6.83	21.26	18.09	613.76	1.14	576.90	576.79	0.486
36.83	21.16	18.06	612.62	0.86	570.89	570.32	0.481
66.83	21.12	18.10	612.05	0.89	562.97	562.93	0.474
96.83	21.02	18.16	610.86	0.82	547.61	547.55	0.461
126.83	20.59	18.19	607.80	1.23	504.39	504.27	0.425
156.83	21.10	18.29	627.46	2.44	549.94	549.44	0.457
186.83	23.09	18.25	644.13	2.72	720.41	719.60	0.590
216.83	23.33	18.37	675.44	1.89	731.93	731.53	0.594
246.83	22.94	18.13	652.15	1.34	714.10	713.91	0.590
276.83	21.61	18.00	622.79	1.10	617.65	617.53	0.518
306.83	21.38	18.00	615.99	1.50	595.93	595.73	0.502
336.83	21.25	18.02	613.45	1.27	582.84	582.70	0.491
CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOR ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL WT. FLOW
6.83	1407.95	11.46	1396.49	67.56	1510.92	1.273	3.09
36.83	1407.95	8.52	1399.83	67.83	1511.18	1.274	3.05
66.83	1407.95	6.79	1401.16	68.11	1510.01	1.272	3.02
96.83	1407.95	7.85	1400.10	68.64	1503.36	1.267	2.95
126.83	1407.95	10.79	1397.15	70.15	1485.37	1.251	2.72
156.83	1407.95	23.40	1384.55	88.36	1489.58	1.238	2.90
186.83	1407.95	34.19	1373.75	62.35	1550.81	1.269	3.67
216.83	1407.95	24.20	1383.75	62.14	1565.22	1.271	3.70
246.83	1407.95	16.66	1391.29	62.84	1563.76	1.291	3.69
276.83	1407.95	11.90	1386.04	68.14	1528.53	1.280	3.27
306.83	1407.95	15.60	1392.35	68.84	1514.44	1.275	3.17
336.83	1407.95	12.94	1395.04	67.33	1511.82	1.274	3.11

TABLE XXII - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; NEAR STALL;  
WITHOUT INLET GUIDE VANES; WITH CASING TREATMENT (Continued)

PLANE NO. IMMERSION NO., #	#	RADIUS =	14.420	SLOPE =	1.33											
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.					ABS MACH NO.				
								REL. MACH NO.	LOCAL MACH NO.	REL. MACH NO.	LOCAL MACH NO.	REL. MACH NO.	LOCAL MACH NO.	REL. MACH NO.	LOCAL MACH NO.	
29.00	21.41	17.53	603.70	-0.74	634.35	634.30	0.542	1.154	1.154	1.154	1.154	1.154	1.154	1.154	1.154	
59.00	21.39	17.50	603.08	-1.29	635.88	635.72	0.543	1.154	1.154	1.154	1.154	1.154	1.154	1.154	1.154	
89.00	21.25	17.56	601.52	-1.43	619.62	619.43	0.529	1.154	1.154	1.154	1.154	1.154	1.154	1.154	1.154	
119.00	21.11	17.60	599.08	-0.70	603.62	603.78	0.516	1.143	1.143	1.143	1.143	1.143	1.143	1.143	1.143	
149.00	19.85	17.69	590.99	-1.74	479.75	479.52	0.409	1.102	1.102	1.102	1.102	1.102	1.102	1.102	1.102	
179.00	20.71	17.64	618.33	-4.88	576.37	574.28	0.484	1.142	1.142	1.142	1.142	1.142	1.142	1.142	1.142	
209.00	20.92	17.45	632.49	-3.98	619.96	618.46	0.516	1.191	1.191	1.191	1.191	1.191	1.191	1.191	1.191	
239.00	22.86	17.33	652.67	-1.83	771.07	770.68	0.640	1.148	1.148	1.148	1.148	1.148	1.148	1.148	1.148	
269.00	21.16	17.33	610.03	-0.61	637.46	637.42	0.542	1.150	1.150	1.150	1.150	1.150	1.150	1.150	1.150	
299.00	21.48	17.47	609.93	-0.15	648.14	648.14	0.551	1.150	1.150	1.150	1.150	1.150	1.150	1.150	1.150	
329.00	21.50	17.50	608.16	-0.07	645.98	645.98	0.550	1.150	1.150	1.150	1.150	1.150	1.150	1.150	1.150	
359.00	21.47	17.56	604.48	-0.51	637.26	637.23	0.544	1.153	1.153	1.153	1.153	1.153	1.153	1.153	1.153	
CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. MACH NO.	LOCAL MACH NO.	REL. MACH NO.	LOCAL MACH NO.	REL. MACH NO.	LOCAL MACH NO.	REL. MACH NO.	LOCAL MACH NO.	REL. MACH NO.	LOCAL MACH NO.	REL. MACH NO.	LOCAL MACH NO.
29.00	1185.21	-8.18	1193.39	62.01	1.154	1.154	1.154	1.154	1.154	1.154	1.154	1.154	1.154	1.154	1.154	1.154
59.00	1185.21	-14.28	1199.49	62.08	1.154	1.154	1.154	1.154	1.154	1.154	1.154	1.154	1.154	1.154	1.154	1.154
89.00	1185.21	-15.51	1200.72	62.71	1.154	1.154	1.154	1.154	1.154	1.154	1.154	1.154	1.154	1.154	1.154	1.154
119.00	1185.21	7.42	1192.63	63.15	1.143	1.143	1.143	1.143	1.143	1.143	1.143	1.143	1.143	1.143	1.143	1.143
149.00	1185.21	-14.28	1199.78	68.21	1.102	1.102	1.102	1.102	1.102	1.102	1.102	1.102	1.102	1.102	1.102	1.102
179.00	1185.21	-49.07	1234.27	65.05	1.142	1.142	1.142	1.142	1.142	1.142	1.142	1.142	1.142	1.142	1.142	1.142
209.00	1185.21	-43.06	1228.26	63.27	1.191	1.191	1.191	1.191	1.191	1.191	1.191	1.191	1.191	1.191	1.191	1.191
239.00	1185.21	-24.68	1205.88	57.50	1.148	1.148	1.148	1.148	1.148	1.148	1.148	1.148	1.148	1.148	1.148	1.148
269.00	1185.21	-6.74	1191.94	61.86	1.150	1.150	1.150	1.150	1.150	1.150	1.150	1.150	1.150	1.150	1.150	1.150
299.00	1185.21	-1.65	1186.85	61.36	1.150	1.150	1.150	1.150	1.150	1.150	1.150	1.150	1.150	1.150	1.150	1.150
329.00	1185.21	-0.77	1185.98	61.42	1.150	1.150	1.150	1.150	1.150	1.150	1.150	1.150	1.150	1.150	1.150	1.150
359.00	1185.21	-5.63	1190.83	61.85	1.153	1.153	1.153	1.153	1.153	1.153	1.153	1.153	1.153	1.153	1.153	1.153

TABLE XXI) - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; NEAR STALL;  
WITHOUT INLET GUIDE VANES; WITH CASING TREATMENT (Concluded)

PLANE NO. IMMERSION NO. #	#	RADIUS #	11.775	SLOPE #	1.14				
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.	REL. MACH NO.	LOCAL WT. FLOW
18.56	22.20	17.45	605.88	0.67	695.18	695.14	0.596	1.016	2.40
48.56	22.09	17.43	603.49	0.23	689.00	688.99	0.592	1.018	2.38
78.56	22.00	17.48	602.61	-0.29	678.92	678.91	0.583	1.017	2.35
108.56	21.81	17.55	599.55	-0.00	658.13	658.13	0.565	1.005	2.29
138.56	20.84	17.52	593.79	2.72	587.85	587.19	0.504	0.951	2.04
168.56	18.53	18.02	581.55	4.34	235.05	234.38	0.200	0.831	0.82
198.56	18.19	17.88	613.82	-5.26	191.44	190.64	0.158	0.890	0.62
228.56	20.27	17.76	634.82	3.02	531.72	530.98	0.439	1.041	2.54
258.56	22.91	17.42	624.92	-0.11	752.21	752.21	0.638	1.032	2.46
288.56	22.46	17.44	608.11	-0.14	713.63	713.63	0.612	1.033	2.46
318.56	22.40	17.36	606.76	0.04	715.56	715.56	0.614	1.033	2.46
348.56	22.32	17.45	606.61	0.25	704.06	704.06	0.604	1.024	2.43
CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. VELOCITY	REL. MACH NO.	REL. MACH NO.	LOCAL WT. FLOW
18.56	967.81	8.12	959.69	54.08	1189.00	1189.00	1.016	1.016	2.40
48.56	967.81	2.79	965.02	54.47	1185.74	1185.74	1.018	1.018	2.38
78.56	967.81	-3.42	971.23	55.05	1184.99	1184.99	1.017	1.017	2.35
108.56	967.81	-0.03	967.83	55.78	1170.40	1170.40	1.005	1.005	2.29
138.56	967.81	27.85	939.96	58.01	1108.30	1108.30	0.951	0.951	2.04
168.56	967.81	17.80	950.01	76.14	978.50	978.50	0.831	0.831	0.82
198.56	967.81	-17.55	985.35	79.05	1003.63	1003.63	0.828	0.828	0.62
228.56	967.81	28.05	939.76	60.53	1079.59	1079.59	0.890	0.890	1.72
258.56	967.81	-1.48	969.29	52.19	1226.92	1226.92	1.041	1.041	2.54
288.56	967.81	-1.73	969.54	53.65	1203.86	1203.86	1.032	1.032	2.46
318.56	967.81	0.49	967.32	53.51	1200.21	1200.21	1.033	1.033	2.46
348.56	967.81	3.04	964.80	53.88	1196.57	1196.57	1.024	1.024	2.43

TABLE XXIII - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; MAXIMUM FLOW; WITHOUT INLET GUIDE VANES; WITH CASING TREATMENT

FLANE NO. IMMERISION NO.	$\alpha$	RADIUS	SLOPE	ABS. FLOW ANGLE	ABS. VELOCITY	AXIAL VELOCITY	ABS. MACH NO.
	0.95	17.420	-1.91				
	1						
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS. FLOW ANGLE	ABS. VELOCITY	AXIAL VELOCITY	ABS. MACH NO.
27.98	13.61	10.62	518.69	-1.45	653.48	653.27	0.606
57.98	13.58	10.69	518.69	-0.05	642.28	642.28	0.595
87.98	13.60	10.71	518.69	1.80	641.20	640.88	0.594
117.98	13.58	10.70	518.69	5.93	639.96	636.53	0.593
147.98	11.52	9.68	518.69	7.01	549.24	545.13	0.504
177.98	11.55	9.47	518.69	3.58	584.91	585.74	0.541
207.98	11.49	9.23	518.69	-3.11	615.93	615.03	0.569
237.98	13.71	10.13	518.69	-9.32	718.05	708.57	0.671
267.98	13.71	10.47	518.69	-5.37	680.38	677.20	0.633
297.98	13.63	10.50	518.69	-4.67	668.30	666.08	0.621
327.98	13.58	10.59	518.69	-3.23	653.42	652.38	0.606
357.98	13.65	10.66	518.69	-1.92	651.60	651.23	0.604
CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL WT. FLOW
27.98	1431.78	-16.57	1448.35	65.72	1588.86	1.474	3.29
57.98	1431.78	-0.55	1432.33	65.85	1569.75	1.455	3.25
87.98	1431.78	20.19	1411.60	65.58	1550.27	1.436	3.25
117.98	1431.78	66.12	1365.67	65.01	1506.72	1.396	3.22
147.98	1431.78	67.08	1364.70	68.23	1469.55	1.349	2.45
177.98	1431.78	36.66	1395.12	67.22	1513.11	1.394	2.60
207.98	1431.78	-33.46	1465.24	67.23	1589.08	1.468	2.67
237.98	1431.78	116.24	1548.02	65.40	1702.48	1.592	3.46
267.98	1431.78	-63.60	1495.38	65.64	1641.57	1.526	3.39
297.98	1431.78	-54.43	1486.22	65.86	1628.65	1.514	3.33
327.98	1431.78	-36.86	1468.64	66.05	1607.02	1.491	3.28
357.98	1431.78	-21.79	1453.57	65.87	1592.76	1.477	3.29



TABLE XX111 - TASK 11 STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; MAXIMUM FLOW; WITHOUT INLET GUIDE VANES; WITH CASING TREATMENT (Continued)

PLANE NO. IMMERSION NO., #	0.95	RADIUS #	13.797	SLOPE #	4.85		
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP,	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.
27.98	13.69	10.11	518.69	-0.51	716.86	716.83	0.670
57.98	13.72	10.17	518.69	2.28	712.27	711.71	0.666
87.98	13.79	10.26	518.69	3.27	707.98	706.83	0.661
117.98	13.73	10.29	518.69	9.11	699.71	690.87	0.653
147.98	11.37	9.20	518.69	15.97	603.20	579.92	0.557
177.98	11.30	8.87	518.69	1.79	643.31	642.99	0.598
207.98	11.32	8.68	518.69	-6.26	672.43	668.41	0.625
237.98	13.73	9.67	518.69	12.22	767.90	750.52	0.723
267.98	13.81	9.91	518.69	-7.02	748.49	742.89	0.703
297.98	13.72	9.97	518.69	-4.05	734.12	732.29	0.688
327.98	13.69	10.04	518.69	-3.53	727.46	726.08	0.681
357.98	13.76	10.10	518.69	-1.61	722.89	722.60	0.676
CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL WT. FLOW
27.98	1134.00	-6.39	1140.39	57.85	1344.98	1.260	3.75
57.98	1134.00	28.32	1105.68	57.23	1314.93	1.529	3.74
87.98	1134.00	40.38	1093.62	57.12	1302.15	1.516	3.74
117.98	1134.00	110.83	1023.17	55.97	1234.58	1.152	3.66
147.98	1134.00	185.98	968.02	59.08	1128.44	1.041	2.69
177.98	1134.00	20.12	1113.88	60.00	1286.15	1.192	2.90
207.98	1134.00	-73.34	1207.35	61.03	1380.02	1.283	2.97
237.98	1134.00	-162.47	1296.47	59.93	1498.04	1.410	3.80
267.98	1134.00	-91.44	1225.44	58.77	1433.03	1.346	3.84
297.98	1134.00	-51.90	1185.90	58.10	1393.77	1.306	3.79
327.98	1134.00	-44.79	1178.79	58.37	1384.46	1.296	3.77
357.98	1134.00	-20.35	1154.35	57.95	1361.87	1.274	3.78

TABLE XXIII - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; MAXIMUM FLOW; WITHOUT INLET GUIDE VANES; WITH CASING TREATMENT (Continued)

PLANE NO. IMMERSION NO. #	0.95	RADIUS #	9.910	SLOPE #	15.45		
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.
27.98	13.73	10.20	518.69	-1.70	686.67	686.37	0.642
57.98	13.74	10.26	518.69	0.37	681.14	681.13	0.636
87.98	13.82	10.34	518.69	4.88	679.33	676.87	0.634
117.98	13.58	10.37	518.69	13.37	656.63	638.83	0.611
147.98	13.36	9.80	518.69	30.21	707.04	610.99	0.662
177.98	11.35	8.74	518.69	7.40	646.28	640.89	0.601
207.98	11.63	8.75	518.69	21.47	673.60	652.25	0.628
237.98	13.66	9.76	518.69	17.60	731.13	696.92	0.687
267.98	13.70	10.01	518.69	11.78	705.16	690.32	0.660
297.98	13.72	10.07	518.69	7.91	700.26	693.60	0.655
327.98	13.73	10.10	518.69	-6.89	697.67	692.63	0.653
357.98	13.68	10.17	518.69	-3.67	686.29	684.88	0.641
CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL WT. FLOW
27.98	814.52	-20.32	834.84	50.57	1080.77	1.010	2.36
57.98	814.52	4.40	810.12	49.94	1058.41	0.988	2.36
87.98	814.52	57.75	756.72	48.19	1015.31	0.948	2.36
117.98	814.52	151.85	662.67	46.05	920.46	0.857	2.22
147.98	814.52	355.80	458.72	36.90	764.02	0.715	2.03
177.98	814.52	83.23	731.29	48.77	972.39	0.904	1.87
207.98	814.52	-168.27	982.79	56.43	1179.54	1.100	1.92
237.98	814.52	-221.02	1035.54	56.06	1248.22	1.173	2.32
267.98	814.52	-143.95	958.47	54.24	1181.19	1.106	2.34
297.98	814.52	-96.32	910.84	52.71	1144.67	1.071	2.37
327.98	814.52	-83.68	898.20	52.36	1134.24	1.061	2.37
357.98	814.52	-43.89	858.41	51.42	1098.15	1.026	2.35

TABLE XXIII - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; MAXIMUM FLOW; WITHOUT INLET GUIDE VANES; WITH CASING TREATMENT (Continued)

PLANE NO. IMMERSION NO.	1 1	1.51	RADIUS = 17.881		SLOPE = -0.83		
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.
15.00	19.10	14.12	591.56	23.02	766.91	705.49	0.671
45.00	18.98	14.10	587.98	23.45	757.98	695.38	0.665
75.00	18.79	13.88	585.97	23.81	764.05	699.02	0.672
105.00	18.36	13.63	582.16	25.59	755.96	681.84	0.667
135.00	17.04	13.25	571.75	33.55	691.06	575.92	0.611
165.00	18.82	13.88	615.41	36.30	784.96	632.58	0.674
195.00	18.87	14.07	610.32	33.10	768.58	643.85	0.662
225.00	20.95	15.59	629.26	22.87	782.71	721.17	0.664
255.00	19.70	14.74	596.38	21.10	755.88	704.74	0.658
285.00	19.40	14.40	595.22	21.38	763.99	711.43	0.666
315.00	19.20	14.27	594.44	21.61	761.64	708.11	0.665
345.00	19.07	14.19	590.73	22.12	758.60	702.74	0.664
CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL WT. FLOW
15.00	1403.92	299.71	1104.24	57.43	1310.34	1.147	3.45
45.00	1403.92	301.64	1102.28	57.75	1303.29	1.144	3.42
75.00	1403.92	308.45	1095.47	57.46	1299.49	1.143	3.40
105.00	1403.92	326.46	1077.46	57.67	1278.07	1.125	3.27
135.00	1403.92	381.93	1021.99	60.60	1173.09	1.037	2.70
165.00	1403.92	464.76	939.16	56.04	1132.33	0.972	2.93
195.00	1403.92	419.72	984.20	56.81	1176.09	1.012	3.04
225.00	1403.92	304.23	1099.69	56.74	1315.06	1.115	3.66
255.00	1403.92	271.90	1132.02	58.10	1333.47	1.151	3.56
285.00	1403.92	278.48	1125.44	57.70	1331.45	1.161	3.53
315.00	1403.92	280.49	1123.43	57.78	1327.97	1.159	3.48
345.00	1403.92	285.70	1118.22	57.65	1328.71	1.156	3.46

TABLE XXIII - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; MAXIMUM FLOW; WITHOUT INLET GUIDE VANES; WITH CASING TREATMENT (Continued)

PLANE NO. IMMERSION NO. #	1.51 3	RADIUS #	14.056	SLOPE #	3.14										
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL WT. FLOW			
15.00	20.28	14.35	588.86	28.21	815.01	718.20	0.720								
45.00	20.09	14.14	584.75	28.53	818.48	719.09	0.726								
75.00	19.84	13.99	581.45	28.59	814.34	714.39	0.724								
105.00	19.34	13.52	577.47	30.12	821.17	710.29	0.734								
135.00	17.61	12.74	561.99	37.69	771.65	610.64	0.695								
165.00	17.68	12.87	591.39	42.43	785.15	579.51	0.689								
195.00	18.47	13.05	600.10	36.07	824.51	666.43	0.721								
225.00	21.04	14.98	624.71	31.24	832.18	711.49	0.713								
255.00	21.59	15.46	600.45	27.25	809.52	719.50	0.706								
285.00	20.30	14.45	592.79	27.09	811.79	722.70	0.714								
315.00	20.35	14.52	590.42	27.62	807.29	715.32	0.711								
345.00	20.33	14.34	589.02	27.61	818.83	725.55	0.723								
CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL WT. FLOW								
15.00	1155.29	385.26	770.03	46.99	1052.98	0.930	4.03								
45.00	1155.29	390.91	764.38	46.75	1049.46	0.931	4.01								
75.00	1155.29	390.89	764.40	46.94	1046.26	0.930	3.96								
105.00	1155.29	412.07	743.24	46.30	1028.05	0.918	3.84								
135.00	1155.29	471.77	683.52	48.22	916.56	0.826	3.17								
165.00	1155.29	529.74	625.55	47.19	852.73	0.748	2.88								
195.00	1155.29	485.47	669.82	45.15	944.87	0.827	3.34								
225.00	1155.29	431.64	723.05	45.44	1014.83	0.869	3.92								
255.00	1155.29	370.55	784.74	47.48	1064.66	0.929	4.25								
285.00	1155.29	369.73	785.56	47.39	1067.43	0.939	4.05								
315.00	1155.29	374.21	781.07	47.52	1059.13	0.933	4.04								
345.00	1155.29	379.54	775.75	46.92	1062.18	0.938	4.07								

TABLE XXIII - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; MAXIMUM FLOW; WITHOUT INLET GUIDE VANES; WITH CASING TREATMENT (Continued)

PLANE NO. = 1.51		RADIUS = 11.030		SLOPE = 11.17					
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.	REL. MACH NO.	LOCAL WT. FLOW
15.00	22.61	15.07	600.45	37.98	878.82	692.30	0.775	0.691	2.42
45.00	22.37	14.88	596.99	38.41	877.72	687.74	0.777	0.687	2.39
75.00	22.07	14.65	593.58	38.61	877.63	685.79	0.779	0.687	2.36
105.00	21.54	14.21	589.24	39.40	880.90	680.70	0.785	0.684	2.30
135.00	19.69	13.82	574.48	42.51	868.54	640.11	0.784	0.646	2.03
165.00	18.60	12.50	571.53	45.64	851.27	595.23	0.769	0.601	1.81
195.00	19.06	12.95	600.63	42.70	860.85	632.34	0.757	0.625	1.89
225.00	21.71	14.99	619.41	30.54	852.89	734.55	0.737	0.555	2.46
255.00	22.83	15.48	614.69	39.20	870.83	674.84	0.757	0.663	2.36
285.00	23.02	15.34	607.25	37.13	863.10	704.04	0.774	0.699	2.48
315.00	22.65	15.18	603.52	37.20	874.99	696.92	0.769	0.697	2.44
345.00	22.58	15.04	601.02	37.88	879.34	694.10	0.775	0.692	2.42

TABLE XXIII - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; MAXIMUM FLOW; WITHOUT INLET GUIDE VANES; WITH CASING TREATMENT (Continued)

PLANE NO. IMMERISION NO. #	2.20 1	RADIUS #	17.430	SLOPE #	0.24										
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL MACH NO.			
6.83	18.58	14.48	588.04	0.56	697.22	697.18	0.608	1401.09	63.55	1564.96	1.364	3.20			
36.83	18.49	14.55	586.22	0.65	682.95	682.91	0.595	1400.19	64.00	1557.85	1.358	3.15			
66.83	18.46	14.69	585.34	0.59	667.48	667.44	0.581	1401.07	64.53	1551.93	1.352	3.10			
96.83	18.27	14.87	583.06	0.34	632.71	632.70	0.550	1404.18	65.74	1540.14	1.340	2.97			
126.83	17.83	15.13	579.43	1.74	565.09	564.83	0.490	1390.74	67.90	1501.07	1.302	2.68			
156.83	17.21	15.12	576.70	2.03	510.98	510.66	0.435	1389.84	69.83	1480.69	1.259	2.33			
186.83	18.11	15.23	618.90	2.26	598.80	598.33	0.503	1384.28	66.62	1509.06	1.267	2.69			
216.83	18.46	15.18	620.92	1.74	637.83	637.53	0.537	1388.68	65.34	1527.96	1.286	2.86			
246.83	19.48	14.81	600.69	1.08	737.53	737.40	0.638	1394.68	62.12	1577.07	1.365	3.41			
276.83	19.08	14.52	596.54	0.92	733.90	733.41	0.637	1396.21	62.29	1577.11	1.369	3.35			
306.83	18.93	14.39	592.81	0.50	733.19	733.16	0.639	1581.71	62.39	1581.71	1.378	3.34			
336.83	18.73	14.36	590.68	0.30	719.84	719.83	0.627	1404.18	62.66	1577.94	1.375	3.28			

TABLE XXIII - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; MAXIMUM FLOW; WITHOUT INLET GUIDE VANES; WITH CASING TREATMENT (Continued)

PLANE NO. = 2.20		RADIUS = 14.420		SLOPE = 1.13			
IMMERSION NO. = 3							
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.
29.00	18.94	14.40	593.02	-0.36	732.65	732.64	0.638
59.00	19.01	14.47	589.80	-0.53	729.43	729.39	0.637
89.00	18.90	14.52	587.31	-0.27	715.41	715.40	0.625
119.00	18.66	14.73	583.21	0.19	676.30	676.30	0.591
149.00	17.25	14.72	571.54	0.16	551.37	551.37	0.481
179.00	17.64	14.53	599.50	-0.16	623.14	623.13	0.534
209.00	18.33	14.62	606.92	0.60	675.12	675.08	0.577
239.00	20.17	14.68	625.75	1.11	807.135	807.20	0.689
269.00	19.74	14.57	607.07	0.06	778.25	778.25	0.673
299.00	19.17	14.20	598.15	-0.16	768.21	768.21	0.669
329.00	19.15	14.27	596.54	-0.40	759.83	759.81	0.662
359.00	19.09	14.29	595.92	-0.35	753.77	753.75	0.656
CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL WT. FLOW
29.00	1185.21	-4.62	1189.88	58.36	1397.30	1.217	3.64
59.00	1185.21	-6.76	1191.97	58.54	1397.43	1.220	3.66
89.00	1185.21	-3.35	1188.55	58.96	1387.25	1.212	3.61
119.00	1185.21	2.29	1182.91	60.24	1382.59	1.190	3.46
149.00	1185.21	1.52	1183.69	65.02	1309.80	1.139	2.81
179.00	1185.21	-1.69	1186.90	62.30	1340.53	1.148	3.02
209.00	1185.21	7.11	1178.10	60.19	1357.81	1.161	3.28
239.00	1185.21	15.43	1169.58	55.39	1421.08	1.212	3.93
269.00	1185.21	0.84	1184.36	56.69	1417.18	1.225	3.86
299.00	1185.21	-2.19	1187.40	57.30	1414.24	1.231	3.76
329.00	1185.21	-5.29	1190.50	57.45	1412.31	1.230	3.74
359.00	1185.21	-4.60	1189.81	57.65	1408.47	1.226	3.72

TABLE XXIII - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; MAXIMUM FLOW; WITHOUT INLET GUIDE VANES; WITH CASING TREATMENT (Concluded)

PLANE NO. IMMERSION NO.	2.20 5	RADIUS	11.775	SLOPE	1.14										
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.					REL. MACH NO.	LOCAL WT. FLOW		
18.56	19.89	13.72	607.28	-5.88	857.26	852.75	0.748					1.184	2.40		
48.56	20.17	14.36	602.97	-4.86	818.77	815.83	0.714					1.150	2.39		
78.56	20.74	14.56	599.66	-3.44	832.37	830.87	0.729					1.151	2.50		
108.56	20.76	15.03	594.78	-1.28	793.71	793.51	0.695					1.108	2.46		
138.56	19.72	15.15	584.61	0.49	713.74	713.71	0.625					1.049	2.23		
168.56	16.83	14.55	566.93	5.17	526.82	524.67	0.461					0.926	1.57		
198.56	17.91	14.26	603.49	2.86	676.18	675.34	0.580					0.989	1.90		
228.56	18.71	13.61	619.57	2.53	804.98	804.20	0.690					1.056	2.16		
258.56	20.69	13.89	627.41	-4.76	900.64	897.53	0.776					1.186	2.49		
288.56	19.82	12.88	615.11	-6.38	923.20	919.46	0.809					1.234	2.44		
318.56	19.55	13.07	610.29	-6.31	892.79	887.37	0.781					1.213	2.38		
348.56	19.80	13.54	607.07	-6.69	866.63	860.74	0.757					1.199	2.39		
CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL WT. FLOW								
18.56	967.81	-87.79	1055.60	51.07	1357.01	1.184	2.40								
48.56	967.81	-69.35	1037.16	51.81	1319.58	1.150	2.39								
78.56	967.81	-49.97	1017.77	50.77	1313.85	1.151	2.50								
108.56	967.81	-17.77	985.58	51.16	1265.32	1.108	2.46								
138.56	967.81	6.07	961.74	53.42	1197.64	1.049	2.23								
168.56	967.81	47.51	920.30	60.31	1059.35	0.926	1.57								
198.56	967.81	33.73	934.08	54.13	1152.65	0.989	1.90								
228.56	967.81	35.57	932.23	49.22	1231.18	1.056	2.16								
258.56	967.81	-74.78	1042.59	49.28	1375.70	1.186	2.49								
288.56	967.81	102.86	1070.67	49.34	1411.29	1.234	2.44								
318.56	967.81	-98.17	1065.97	50.22	1384.99	1.213	2.38								
348.56	967.81	100.95	1068.76	51.15	1372.26	1.199	2.39								



TABLE XXIV - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 70% SPEED; INTERMEDIATE FLOW; WITHOUT INLET GUIDE VANES; WITH CASING TREATMENT

PLANE NO. = 0.95 IMPRESSION NO. = 1		RADIUS = 17.420		SLOPE = -1.91			
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.
27.98	14.29	12.95	518.69	-6.70	415.99	413.15	0.378
57.98	14.32	12.93	518.69	1.97	422.93	422.68	0.384
87.98	13.45	12.60	518.69	-5.69	339.43	337.76	0.307
117.98	14.27	13.00	518.69	-14.88	405.80	391.70	0.368
147.98	14.31	12.94	518.69	-9.49	419.82	413.49	0.381
177.98	14.33	12.96	518.69	-7.61	420.33	416.45	0.382
207.98	14.30	12.95	518.69	-5.20	417.35	415.63	0.379
237.98	13.45	12.51	518.69	3.25	356.93	356.35	0.323
267.98	13.45	12.63	518.69	-11.32	332.52	326.05	0.300
297.98	14.31	12.96	518.69	-10.64	416.27	409.11	0.378
327.98	14.29	12.96	518.69	-9.42	414.42	408.83	0.376
357.98	14.31	12.95	518.69	-8.61	419.97	415.24	0.381

CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL WT. FLOW
27.98	1002.25	-48.54	1050.79	66.54	1129.09	1.029	2.43
57.98	1002.25	14.55	987.70	66.83	1074.34	0.976	2.49
87.98	1002.25	-33.66	1035.94	71.94	1089.58	0.985	1.92
117.98	1002.25	110.11	1106.36	70.50	1173.65	1.065	2.31
147.98	1002.25	-69.08	1071.33	68.90	1148.36	1.043	2.44
177.98	1002.25	-55.60	1057.85	68.51	1136.87	1.033	2.46
207.98	1002.25	-37.86	1040.11	68.22	1120.08	1.017	2.45
237.98	1002.25	20.24	982.04	70.06	1044.67	0.945	2.01
267.98	1002.25	-65.28	1067.53	73.02	1116.21	1.008	1.85
297.98	1002.25	-76.87	1079.11	69.24	1154.06	1.048	2.41
327.98	1002.25	-67.83	1070.07	69.09	1149.51	1.040	2.41
357.98	1002.25	-62.84	1065.09	68.70	1140.17	1.038	2.45



TABLE XXIV - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 70% SPEED; INTERMEDIATE FLOW; WITHOUT INLET GUIDE VANES; WITH CASING TREATMENT (Continued)

PLANE NO. IMMERSED NO. # 0.95 5	RADIUS = 9.910		SLOPE = 15.45				
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.
27.98	14.39	12.54	518.69	0.09	472.16	472.16	0.431
57.98	14.38	12.64	518.69	12.94	458.92	447.26	0.419
87.98	13.36	12.20	518.69	-0.57	384.23	384.23	0.349
117.98	14.35	12.31	518.69	-19.83	500.72	471.04	0.458
147.98	14.36	12.44	518.69	-5.88	482.02	479.48	0.441
177.98	14.40	12.50	518.69	-2.22	479.12	478.76	0.438
207.98	14.40	12.60	518.69	3.55	465.16	464.37	0.425
237.98	13.97	12.30	518.69	27.08	457.28	407.13	0.417
267.98	13.51	12.14	518.69	-17.03	417.66	399.35	0.380
297.98	14.37	12.43	518.69	-10.31	485.68	477.84	0.444
327.98	14.38	12.47	518.69	4.57	481.32	479.92	0.440
357.98	14.36	12.47	518.69	-3.15	478.03	477.31	0.437

CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL MACH NO.
27.98	570.16	0.73	569.44	50.34	739.73	0.675	1.91
57.98	570.16	102.76	467.41	46.26	646.93	0.590	1.82
87.98	570.16	-2.51	572.67	56.14	689.63	0.626	1.49
117.98	570.16	-169.83	739.99	57.52	877.19	0.803	1.88
147.98	570.16	-49.41	619.58	52.26	783.44	0.716	1.93
177.98	570.16	-18.58	588.74	50.88	758.83	0.693	1.93
207.98	570.16	27.18	542.98	49.46	714.47	0.652	1.89
237.98	570.16	208.20	361.97	41.64	544.77	0.497	1.61
267.98	570.16	-122.29	692.46	60.03	799.36	0.727	1.55
297.98	570.16	-86.88	657.05	53.97	812.43	0.743	1.92
327.98	570.16	-36.67	606.83	51.66	773.67	0.707	1.93
357.98	570.16	-26.27	596.43	51.33	763.91	0.698	1.92

TABLE XXIV - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 70% SPEED; INTERMEDIATE FLOW; WITHOUT INLET GUIDE VANES; WITH CASING TREATMENT (Continued)

PLANE NO, IMMERISION NO., #	CIRC. POSITION	TOT. PRESSURE	TOT. PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	REL. MACH NO.	ABS MACH NO.	SLOPE #	RADIUS #	
										17,081	-0.83
15.00	18.12	15.76	562.55	30.61	513.85	442.32	0.451				
45.00	17.51	15.57	558.02	41.43	471.21	353.30	0.414				
75.00	18.28	15.64	581.19	41.20	551.21	414.77	0.477				
105.00	18.32	15.76	567.46	28.29	536.02	472.00	0.469				
135.00	18.10	15.69	563.17	28.58	519.87	456.53	0.456				
165.00	18.09	15.76	562.20	29.50	510.91	444.70	0.448				
195.00	17.97	15.64	562.54	32.96	512.45	429.96	0.449				
225.00	18.20	15.67	578.10	42.35	539.59	398.78	0.468				
255.00	18.68	15.75	587.38	33.25	579.61	484.91	0.500				
285.00	18.15	15.77	565.72	28.34	518.13	456.03	0.453				
315.00	18.09	15.75	563.69	28.48	512.85	450.34	0.449				
345.00	18.07	15.75	563.10	28.93	510.33	446.64	0.447				
CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL WT. FLOW				
15.00	982.74	261.72	721.02	58.47	845.88	0.742	2.43				
45.00	982.74	311.79	670.95	62.23	758.28	0.666	1.92				
75.00	982.74	363.04	619.71	56.21	745.70	0.649	2.20				
105.00	982.74	254.02	728.72	57.07	868.23	0.759	2.57				
135.00	982.74	248.69	734.05	58.12	864.44	0.758	2.49				
165.00	982.74	251.56	731.19	58.69	853.80	0.751	2.44				
195.00	982.74	278.82	703.92	58.58	824.84	0.723	2.34				
225.00	982.74	363.49	619.25	57.22	736.55	0.638	2.12				
255.00	982.74	317.88	664.86	53.90	822.91	0.710	2.57				
285.00	982.74	245.97	736.78	58.24	866.49	0.758	2.49				
315.00	982.74	244.33	738.44	58.62	866.90	0.758	2.46				
345.00	982.74	246.88	735.87	58.74	860.81	0.754	2.44				

TABLE XXIV - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 70% SPEED; INTERMEDIATE FLOW; WITHOUT INLET GUIDE VANES; WITH CASING TREATMENT (Continued)

PLANE NO. = 1.51 IMMERISION NO. = 3		RADIUS = 14.926		SLOPE = 3.14			
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.
15.00	18.27	15.19	557.61	33.31	590.55	493.51	0.524
45.00	17.55	14.95	551.94	42.76	544.92	400.06	0.484
75.00	17.77	14.91	568.71	44.86	577.65	409.45	0.506
105.00	18.20	15.20	565.06	33.53	583.60	486.52	0.514
135.00	18.32	15.14	558.27	31.44	595.66	508.20	0.528
165.00	18.26	15.16	557.23	32.39	587.72	496.28	0.521
195.00	18.11	15.02	557.24	35.23	589.68	481.65	0.523
225.00	17.83	14.88	567.92	44.78	585.75	415.80	0.514
255.00	18.48	15.14	575.67	37.50	618.54	490.71	0.541
285.00	18.25	15.19	559.45	32.28	585.26	494.79	0.518
315.00	18.34	15.17	559.15	31.54	594.94	507.04	0.527
345.00	18.30	15.19	558.22	31.64	589.25	500.56	0.522
CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL, TANG VELOCITY	REL, FLOW ANGLE	REL, VELOCITY	REL, MACH NO.	LOCAL WT. FLOW
15.00	808.70	324.35	484.36	44.46	693.48	0.613	2.95
45.00	808.70	359.98	438.72	47.64	593.74	0.527	2.37
75.00	808.70	407.46	401.24	44.42	573.27	0.503	2.35
105.00	808.70	322.32	486.38	44.99	687.94	0.606	2.87
135.00	808.70	310.72	497.98	44.42	711.52	0.631	3.04
165.00	808.70	344.84	493.86	44.86	700.14	0.621	2.97
195.00	808.70	340.19	468.52	44.21	674.94	0.596	2.86
225.00	808.70	412.57	396.13	43.61	574.29	0.504	2.39
255.00	808.70	376.56	432.14	41.37	653.87	0.572	2.85
285.00	808.70	342.59	496.14	45.08	700.66	0.620	2.95
315.00	808.70	311.24	497.47	44.45	719.32	0.629	3.03
345.00	808.70	340.89	497.81	44.84	705.96	0.626	3.00

TABLE XXIV - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 70% SPEED; INTERMEDIATE FLOW; WITHOUT INLET GUIDE VANES; WITH CASING TREATMENT (Continued)

CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.	PLANE NO. = 1.51	
								RADIUS = 11.030	SLOPE = 11.17
								REL. MACH NO.	LOCAL WT. FLOW
15.00	18.72	14.56	558.29	40.11	674.77	516.05	0.604	0.495	1.80
45.00	17.90	14.32	550.15	46.49	633.40	436.07	0.569	0.422	1.50
75.00	18.06	14.28	563.26	46.91	657.02	448.85	0.584	0.422	1.51
105.00	19.46	14.82	568.37	36.63	705.86	566.43	0.628	0.538	1.98
135.00	19.01	14.55	559.26	38.66	695.13	542.83	0.623	0.518	1.89
165.00	18.84	14.59	558.00	39.45	679.20	524.42	0.608	0.504	1.83
195.00	17.97	14.38	557.65	41.44	635.53	476.44	0.567	0.466	1.63
225.00	17.65	14.25	553.81	50.76	623.66	394.59	0.557	0.378	1.34
255.00	18.83	14.75	570.90	38.09	671.39	542.53	0.593	0.524	1.87
285.00	19.19	14.69	561.68	38.84	696.65	542.59	0.623	0.516	1.90
315.00	19.05	14.56	563.01	38.51	698.73	546.77	0.624	0.520	1.90
345.00	18.91	14.60	560.93	38.92	685.17	533.11	0.612	0.510	1.86
CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL WT. FLOW		
15.00	634.60	434.75	199.85	21.17	553.39	0.495	1.80		
45.00	634.60	459.38	175.22	21.89	469.96	0.422	1.50		
75.00	634.60	479.80	154.80	19.03	474.79	0.422	1.51		
105.00	634.60	421.19	213.41	20.64	605.30	0.538	1.98		
135.00	634.60	434.21	200.40	20.26	578.64	0.518	1.89		
165.00	634.60	431.61	202.99	21.16	562.34	0.504	1.83		
195.00	634.60	420.60	214.00	24.19	522.50	0.466	1.63		
225.00	634.60	482.99	131.61	21.02	422.68	0.378	1.34		
255.00	634.60	395.51	239.09	23.78	592.87	0.524	1.87		
285.00	634.60	436.94	197.66	20.02	577.47	0.516	1.90		
315.00	634.60	435.05	199.56	20.05	582.85	0.520	1.90		
345.00	634.60	430.41	204.20	20.96	570.87	0.510	1.86		

TABLE XXIV - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 70% SPEED; INTERMEDIATE FLOW; WITHOUT INLET GUIDE VANES; WITH CASIR<sup>®</sup> TREATMENT (Continued)

PLANE NO, IMMERSION NO. #	2.20	1	RADIUS = 17.130		SLOPE = 0.24		
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.
5.83	17.99	16.18	564.80	2.40	449.34	448.95	0.391
36.83	17.97	16.18	565.27	1.98	448.04	447.78	0.390
66.83	17.83	16.22	564.13	1.74	425.74	425.55	0.371
96.83	17.69	16.28	570.45	1.59	401.92	401.77	0.347
126.83	18.13	16.26	585.50	2.62	464.80	464.31	0.398
156.83	18.17	16.22	568.95	3.02	467.81	467.16	0.407
186.83	18.01	16.19	566.30	2.43	451.30	450.89	0.393
216.83	17.98	16.20	564.95	2.22	444.10	443.76	0.387
246.83	17.55	16.22	561.58	1.85	387.90	387.69	0.338
276.83	17.96	16.27	582.18	2.96	440.23	439.65	0.377
306.83	18.15	16.27	575.28	3.59	460.69	459.79	0.398
336.83	17.99	16.21	565.53	3.07	445.98	445.34	0.388
CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL WT. FLOW
6.83	985.56	18.85	966.71	65.09	1065.87	0.929	2.30
36.83	985.56	15.48	970.68	65.22	1068.44	0.930	2.29
66.83	985.56	12.89	972.67	66.37	1061.69	0.924	2.18
96.83	985.56	11.13	974.43	67.59	1054.01	0.911	2.04
126.83	985.56	21.26	964.34	64.29	1070.27	0.916	2.31
156.83	985.56	24.67	960.90	64.07	1068.44	0.928	2.39
186.83	985.56	19.14	966.42	64.99	1060.43	0.928	2.31
216.83	985.56	17.19	968.37	65.38	1065.21	0.927	2.28
246.83	985.56	12.51	973.06	68.28	1047.45	0.912	1.99
276.83	985.56	22.71	962.85	65.46	1058.47	0.907	2.19
306.83	985.56	28.88	956.68	64.33	1061.44	0.917	2.33
336.83	985.56	23.88	961.69	65.15	1059.80	0.922	2.28

TABLE XXIV - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 70% SPEED; INTERMEDIATE FLOW; WITHOUT INLET GUIDE VANES; WITH CASING TREATMENT (Continued)

PLANE NO. = 2.20 IMMERISION NO. = 3		RADIUS = 14.420		SLOPE = 1.13			
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.
29.00	18.19	15.67	575.07	-1.18	536.10	535.99	0.466
59.00	18.02	15.70	559.72	-1.63	508.99	508.78	0.447
89.00	18.09	15.76	560.75	-2.10	510.06	509.72	0.448
119.00	18.07	15.84	560.55	-1.41	497.84	497.69	0.437
149.00	17.80	15.83	556.60	0.12	468.93	468.93	0.412
179.00	17.62	15.70	566.04	-0.60	470.84	470.81	0.410
209.00	17.58	15.69	570.56	-1.57	468.70	468.53	0.407
239.00	17.85	15.70	562.98	-1.40	493.32	493.17	0.432
269.00	18.10	15.79	559.98	-1.41	506.74	506.59	0.445
299.00	18.09	15.88	559.35	-0.39	495.69	495.68	0.435
329.00	18.01	15.79	558.94	0.14	497.98	497.98	0.438
359.00	17.30	15.69	553.49	-0.92	427.50	427.45	0.376

CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL HT. FLOW
29.00	829.64	-11.06	840.74	5.148	997.03	0.866	2.88
59.00	829.64	-14.51	844.16	58.92	985.63	0.866	2.81
89.00	829.64	-18.70	848.34	59.00	989.70	0.869	2.82
119.00	829.64	-12.22	841.86	59.41	977.97	0.858	2.76
149.00	829.64	0.97	828.68	60.50	952.16	0.837	2.61
179.00	829.64	-4.95	834.59	60.57	958.23	0.835	2.55
209.00	829.64	-12.80	842.45	60.92	963.97	0.836	2.52
239.00	829.64	-12.09	841.74	59.63	975.57	0.854	2.70
269.00	829.64	-12.48	842.12	58.97	982.75	0.864	2.81
299.00	829.64	-3.37	833.01	59.25	969.34	0.852	2.76
329.00	829.64	1.23	828.42	58.99	964.57	0.850	2.76
359.00	829.64	-6.85	836.49	62.93	939.38	0.826	2.36





TABLE XXV - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; NEAR STALL;  
WITHOUT INLET GUIDE VANES; WITHOUT CASING TREATMENT

PLANE NO. = 0.95		RADIUS = 17.420		SLOPE = 1.91			
IMMERSION NO. = 1							
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.
27.98	13.75	10.86	518.69	-1.27	636.55	636.40	0.589
57.98	13.71	10.89	518.69	-0.45	629.96	629.94	0.583
87.98	13.73	10.87	518.69	0.88	634.61	634.53	0.586
117.98	13.71	10.89	518.69	5.20	629.42	626.84	0.582
147.98	11.88	9.87	518.69	5.22	567.14	564.79	0.521
177.98	11.93	9.92	518.69	-3.12	566.73	565.89	0.521
207.98	11.81	10.34	518.69	-11.93	481.91	471.50	0.440
237.98	13.71	11.72	518.69	-10.72	522.62	514.17	0.479
267.98	13.67	11.31	518.69	-1.11	573.40	573.30	0.528
297.98	13.73	10.95	518.69	-1.11	624.14	624.02	0.577
327.98	13.75	10.94	518.69	-1.33	626.96	626.79	0.580
357.98	13.78	10.89	518.69	-1.38	636.45	636.25	0.589
CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL WT. FLOW
27.98	1431.78	-14.06	1445.85	66.24	1579.71	1.463	3.27
57.98	1431.78	-4.97	1436.75	66.33	1568.78	1.452	3.24
87.98	1431.78	9.76	1422.02	65.95	1557.17	1.442	3.26
117.98	1431.78	57.01	1374.77	65.49	1510.93	1.398	3.22
147.98	1431.78	51.62	1380.16	67.74	1491.25	1.371	2.60
177.98	1431.78	-30.88	1462.67	68.85	1568.32	1.442	2.62
207.98	1431.78	-93.62	1531.40	72.89	1602.34	1.462	2.24
237.98	1431.78	-93.59	1525.37	71.37	1609.70	1.474	2.79
267.98	1431.78	-11.06	1442.84	68.33	1552.156	1.428	3.03
297.98	1431.78	-12.07	1443.85	66.63	1572.193	1.455	3.22
327.98	1431.78	-14.51	1446.29	66.57	1576.127	1.458	3.24
357.98	1431.78	-15.35	1447.13	66.27	1580.183	1.464	3.28

TABLE XXV - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; NEAR STALL;  
WITHOUT INLET GUIDE VANES; WITHOUT CASING TREATMENT (Continued)

PLATE NO. IMPRESSION NO.	3 0.95	RADIUS =	13.797	SLOPE =	4.85		
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.
27.98	13.82	10.31	518.69	-0.03	705.21	705.21	0.658
57.98	13.81	10.32	518.69	0.52	703.42	703.39	0.657
87.98	13.91	10.39	518.69	3.24	703.64	702.51	0.657
117.98	13.52	10.40	518.69	7.31	695.05	689.39	0.648
147.98	11.82	9.40	518.69	5.76	626.98	623.82	0.580
177.98	11.83	9.64	518.69	-9.59	593.26	585.04	0.547
207.98	11.72	9.87	518.69	-15.17	545.63	526.62	0.501
237.98	13.81	10.87	518.69	-13.57	639.48	621.64	0.593
267.98	13.81	10.58	518.69	-5.90	674.03	670.45	0.627
297.98	13.82	10.36	518.69	-1.23	699.94	699.78	0.653
327.98	13.84	10.33	518.69	-1.35	704.54	704.34	0.658
357.98	13.85	10.29	518.69	0.11	710.28	710.27	0.664
CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL MT. FLOW
27.98	1134.00	-0.38	1134.38	58.13	1335.72	1.247	3.75
57.98	1134.00	6.35	1127.65	50.05	1329.04	1.241	3.74
87.98	1134.00	39.78	1094.22	57.30	1300.32	1.214	3.76
117.98	1134.00	88.50	1045.50	56.60	1252.33	1.168	3.69
147.98	1134.00	62.95	1071.05	59.78	1239.48	1.147	3.97
177.98	1134.00	-98.43	1232.43	64.61	1364.24	1.258	2.83
207.98	1134.00	-142.78	1276.78	67.59	1361.12	1.268	2.59
237.98	1134.00	-150.00	1284.00	64.17	1426.57	1.322	3.43
267.98	1134.00	-69.33	1203.33	60.87	1377.50	1.281	3.63
297.98	1134.00	-15.02	1149.03	58.66	1345.34	1.255	3.73
327.98	1134.00	-16.64	1150.64	50.53	1349.10	1.260	3.75
357.98	1134.00	1.43	1132.58	57.91	1336.87	1.249	3.77

TABLE XXV - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; NEAR STALL;  
WITHOUT INLET GUIDE VANES; WITHOUT CASING TREATMENT (Continued)

PLANE NO. IMPRESSION NO.	PLANE NO. = 0,95	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ARS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.
27,98	13,82	10,34	518,69	-0,96	678,57	678,47	0,633	
57,98	13,83	10,38	518,69	-1,01	675,79	675,68	0,630	
87,98	13,94	10,43	518,69	2,84	678,61	677,78	0,633	
117,98	13,81	10,48	518,69	10,92	664,12	652,09	0,619	
147,98	12,64	9,70	518,69	23,51	654,49	600,18	0,609	
177,98	11,93	9,60	518,69	-12,50	592,31	578,27	0,547	
207,98	12,57	9,91	518,69	-28,22	622,55	548,54	0,577	
237,98	13,76	10,63	518,69	-18,25	645,81	613,33	0,600	
267,98	13,99	10,62	518,69	-8,64	655,07	647,63	0,610	
297,98	13,77	10,38	518,69	-4,56	670,00	667,88	0,625	
327,98	13,83	10,40	518,69	-2,56	673,25	672,58	0,628	
357,98	13,74	10,34	518,69	-3,35	675,93	674,77	0,631	

CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL WT. FLOW
27,98	814,52	-11,39	825,91	50,60	1068,86	0,998	2,36
57,98	814,52	-11,92	826,45	50,73	1067,50	0,996	2,36
87,98	814,52	33,68	780,84	49,04	1033,97	0,965	2,38
117,98	814,52	125,83	688,69	46,56	948,43	0,883	2,29
147,98	814,52	261,24	553,48	42,68	816,43	0,759	1,95
177,98	814,52	-128,21	342,73	58,48	1105,95	1,022	1,83
207,98	814,52	-294,41	1108,93	63,68	1237,18	1,146	1,80
237,98	814,52	-202,24	1016,77	58,90	1187,43	1,103	2,18
267,98	814,52	-98,38	912,91	54,65	1119,30	1,042	2,30
297,98	814,52	-53,23	867,75	52,42	1095,02	1,021	2,33
327,98	814,52	-30,13	844,65	51,47	1079,72	1,007	2,35
357,98	814,52	-39,45	853,97	51,69	1088,39	1,015	2,35

TABLE XXV - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; NEAR STALL;  
WITHOUT INLET GUIDE VANES; WITHOUT CASING TREATMENT (Continued)

CIRC. POSITION	TOT. PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.	SLOPE = -0.83			
							RADIUS = 17.081	PLANE NO. = 1.51		
							REL. FLOW ANGLE	REL. FLOW VELOCITY	REL. MACH NO.	LOCAL WT. FLOW
15.00	22.29	608.31	32.77	733.49	616.74	0.630				
45.00	22.44	609.49	33.41	758.17	632.90	0.652				
75.00	22.49	610.94	33.75	752.05	625.29	0.646				
105.00	22.24	608.53	35.64	752.94	611.89	0.648				
135.00	21.25	599.78	42.44	676.85	495.52	0.582				
165.00	24.60	633.05	44.57	792.36	564.47	0.659				
195.00	24.66	668.19	48.01	832.91	557.27	0.687				
225.00	25.23	700.36	48.03	883.92	591.14	0.715				
255.00	21.53	667.78	50.05	785.18	504.21	0.645				
285.00	22.70	627.08	38.40	797.58	625.09	0.679				
315.00	22.33	610.06	34.07	738.35	611.65	0.633				
345.00	22.34	610.13	33.85	742.27	616.44	0.637				
CIRC. POSITION	WHEEL SPEED	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. FLOW VELOCITY	REL. MACH NO.	LOCAL WT. FLOW				
15.00	1403.92	397.05	58.51	1180.74	1.014	3.51				
45.00	1403.92	417.45	57.32	1172.04	1.009	3.58				
75.00	1403.92	417.85	57.62	1167.61	1.003	3.55				
105.00	1403.92	438.77	57.63	1142.77	0.984	3.44				
135.00	1403.92	456.73	62.19	1070.83	0.921	2.83				
165.00	1403.92	556.06	847.86	1018.57	0.847	3.25				
195.00	1403.92	619.32	784.90	965.61	0.795	3.11				
225.00	1403.92	657.17	746.75	952.41	0.771	3.14				
255.00	1403.92	601.90	802.02	947.35	0.778	2.51				
285.00	1403.92	495.38	908.54	1102.80	0.939	3.42				
315.00	1403.92	413.59	990.33	1163.99	0.998	3.47				
345.00	1403.92	413.48	990.44	1166.60	1.002	3.49				

**TABLE XXV - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; NEAR STALL;  
WITHOUT INLET GUIDE VANES; WITHOUT CASING TREATMENT (Continued)**

PLANE NO. = 1.51		RADIUS = 14.056		SLOPE = 3.14			
IMMERISION NO. = 3							
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.
15.00	22.08	16.14	602.64	36.44	786.68	632.89	0.683
45.00	21.89	16.01	600.24	36.41	784.74	631.54	0.683
75.00	21.72	16.04	600.48	36.68	773.17	620.11	0.672
105.00	21.42	15.79	596.27	38.25	772.95	607.05	0.674
135.00	20.52	16.10	588.54	46.01	687.97	477.83	0.599
165.00	22.47	16.87	623.07	49.43	766.66	498.57	0.653
195.00	22.29	16.63	640.46	55.64	786.36	443.87	0.661
225.00	24.17	16.93	657.93	46.61	874.46	600.71	0.732
255.00	22.19	16.08	617.91	36.93	807.47	645.43	0.694
285.00	22.55	16.29	606.29	37.98	803.75	633.55	0.697
315.00	22.39	16.28	603.47	36.34	793.97	639.59	0.690
345.00	22.36	16.16	602.94	36.60	800.85	642.97	0.697
CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL WT. FLOW
15.00	1155.29	467.26	688.03	47.39	934.83	0.812	3.87
45.00	1155.29	465.80	609.49	47.51	935.01	0.814	3.84
75.00	1155.29	461.79	593.50	48.20	930.31	0.808	3.77
105.00	1155.29	478.49	676.80	48.11	909.16	0.793	3.66
135.00	1155.29	494.96	660.33	54.11	815.08	0.709	2.92
165.00	1155.29	582.41	572.88	48.97	759.45	0.646	3.06
195.00	1155.29	649.11	506.18	48.75	673.23	0.566	2.61
225.00	1155.29	635.47	519.82	40.87	794.39	0.665	3.57
255.00	1155.29	485.20	570.09	46.07	930.37	0.799	3.84
285.00	1155.29	494.61	660.68	48.20	915.36	0.794	3.90
315.00	1155.29	470.43	684.86	46.96	937.08	0.814	3.94
345.00	1155.29	477.44	677.85	46.51	934.28	0.813	3.95







TABLE XXV - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; NEAR STALL;  
WITHOUT INLET GUIDE VANES; WITHOUT CASING TREATMENT (Continued)

CIRC. POSITION	TOT. PRESSURE	TOT. TEMP.	STATIC PRESSURE	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.	LOCAL WT. FLOW
29.00	21.56	604.01	17.99	-0.99	604.90	604.81	0.515	
59.00	21.52	604.01	18.05	-1.70	596.87	596.60	0.508	
89.00	21.55	603.91	18.10	-1.89	594.30	593.97	0.506	
119.00	21.22	600.90	18.18	-2.07	565.77	565.57	0.481	
149.00	20.25	574.42	18.17	-4.59	465.22	464.92	0.395	
179.00	21.54	622.53	18.17	-4.93	579.63	577.77	0.485	
209.00	21.02	633.11	17.96	-4.93	579.13	576.99	0.480	
239.00	23.48	655.67	18.01	-3.53	758.44	757.00	0.627	
269.00	21.23	621.49	18.13	-2.19	574.25	573.82	0.480	
299.00	21.93	611.22	18.07	-1.86	628.72	628.39	0.533	
329.00	22.03	609.87	18.09	-0.67	633.31	633.26	0.538	
359.00	21.67	606.40	18.04	-0.69	609.73	609.69	0.518	
CIRC. POSITION	WHEEL SPEED	REL. TANG VELOCITY	ABS TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL WT. FLOW	
29.00	1185.21	1195.64	-19.43	63.17	1339.90	1.141	3.59	
59.00	1185.21	1202.95	-17.74	63.62	1342.77	1.143	3.55	
89.00	1185.21	1204.84	-19.63	63.76	1343.29	1.143	3.54	
119.00	1185.21	1199.96	-14.76	64.76	1326.57	1.129	3.37	
149.00	1185.21	1201.99	-16.79	60.85	1288.77	1.095	2.78	
179.00	1185.21	1231.56	-46.36	64.87	1360.35	1.138	3.34	
209.00	1185.21	1234.93	-49.73	64.96	1363.08	1.130	3.24	
239.00	1185.21	1231.94	-46.73	59.43	1445.93	1.196	4.24	
269.00	1185.21	1207.18	-21.97	64.58	1336.62	1.118	3.31	
299.00	1185.21	1205.63	-20.43	62.47	1359.57	1.153	3.72	
329.00	1185.21	1192.62	-7.41	62.03	1350.32	1.147	3.76	
359.00	1185.21	1192.59	-7.39	62.92	1339.40	1.139	3.62	

PLATE NO. = 2.20 RADIUS = 14.420 SLOPE = 1.13

TABLE XXV - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; NEAR STALL;  
WITHOUT INLET GUIDE VANES; WITHOUT CASING TREATMENT (Concluded)

PLANE NO., IMPRESSION NO.,	■ 2.20 ■ 5	RADIUS = 11.775	SLOPE = 1.14										
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.	ABS MACH NO.	REL. YACH NO.	LOCAL MT. FLOW			
18.56	22.38	17.89	604.17	0.17	670.78	670.78	0.575	0.575	1.007	2.37			
48.56	22.39	17.91	603.03	0.17	669.19	669.19	0.574	0.574	1.007	2.37			
78.56	22.35	17.97	602.46	0.06	655.22	655.22	0.561	0.561	1.001	2.32			
108.56	22.33	18.08	600.95	0.72	636.58	636.58	0.545	0.545	0.986	2.27			
138.56	21.27	17.97	599.14	3.26	580.22	579.29	0.497	0.497	0.942	2.05			
168.56	19.01	18.51	584.20	6.80	230.77	229.38	0.195	0.195	0.822	0.82			
198.56	18.75	18.36	614.96	11.57	209.51	205.26	0.173	0.173	0.350	0.69			
228.56	20.91	18.16	636.74	18.05	550.14	544.72	0.454	0.454	0.972	1.81			
258.56	23.12	18.02	624.29	11.82	717.51	717.15	0.607	0.607	1.034	2.49			
288.56	23.02	18.08	610.18	10.27	699.36	699.36	0.598	0.598	1.023	2.48			
318.56	22.67	17.96	604.89	10.06	683.92	683.92	0.586	0.586	1.017	2.43			
348.56	22.48	17.91	603.86	10.15	675.39	675.38	0.579	0.579	1.013	2.39			
CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. YACH NO.	LOCAL MT. FLOW						
18.56	967.81	1.95	965.86	55.22	1175.94	1.007	2.37						
48.56	967.81	1.94	965.87	55.28	1175.04	1.007	2.37						
78.56	967.81	0.66	967.15	55.88	1168.00	1.001	2.32						
108.56	967.81	8.05	959.76	56.45	1151.95	0.986	2.27						
138.56	967.81	32.97	934.84	58.21	1099.77	0.942	2.05						
168.56	967.81	25.32	942.49	76.32	970.00	0.822	0.82						
198.56	967.81	-42.03	1009.83	78.51	1030.98	0.350	0.69						
228.56	967.81	-77.03	1044.84	62.46	1178.31	0.972	1.81						
258.56	967.81	-22.81	990.62	54.10	1222.96	1.034	2.49						
288.56	967.81	-3.25	971.06	54.24	1196.69	1.023	2.48						
318.56	967.81	-0.95	968.76	54.78	1165.85	1.017	2.43						
348.56	967.81	-1.78	969.88	55.14	1181.62	1.013	2.39						

TABLE XXVI - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA: 100% SPEED; MAXIMUM FLOW; WITHOUT INLET GUIDE VANES; WITHOUT CAJING TREATMENT

PLANE NO. IMMERSED NO. #	0.95	RADIUS =	17.420	SLOPE =	-1.91		
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.
27.98	13.59	10.69	518.69	-1.05	642.67	642.56	0.596
57.98	13.57	10.67	518.69	-0.34	643.18	643.16	0.596
87.98	13.59	10.74	518.69	1.68	636.67	636.59	0.590
117.98	13.57	10.73	518.69	7.39	634.94	629.67	0.588
147.98	11.50	9.60	518.69	10.96	559.67	549.46	0.514
177.98	11.52	9.36	518.69	2.86	599.75	599.00	0.553
207.98	11.49	9.22	518.69	-3.46	616.03	614.91	0.569
237.98	13.63	10.22	518.69	-5.33	701.54	692.27	0.655
267.98	13.62	10.48	518.69	-5.84	669.87	666.39	0.623
297.98	13.57	10.58	518.69	-3.73	654.14	652.76	0.607
327.98	13.55	10.61	518.69	-2.16	648.78	648.32	0.602
357.98	13.63	10.67	518.69	-2.42	648.77	648.20	0.602
CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL WT. FLOW
27.98	1431.78	-11.81	1443.59	66.01	1580.14	1.464	3.25
57.98	1431.78	-3.82	1435.60	65.87	1573.09	1.458	3.25
87.98	1431.78	18.63	1413.16	65.75	1549.92	1.435	3.23
117.98	1431.78	61.65	1350.14	65.00	1469.75	1.379	3.20
147.98	1431.78	106.42	1325.37	67.48	1434.75	1.318	2.46
177.98	1431.78	29.88	1401.90	66.66	1524.51	1.406	2.63
207.98	1431.78	-37.17	1468.95	67.29	1592.46	1.471	2.67
237.98	1431.78	113.69	1545.47	65.87	1693.43	1.580	3.40
267.98	1431.78	-68.21	1499.99	66.05	1641.36	1.526	3.33
297.98	1431.78	-42.51	1474.29	66.12	1612.34	1.496	3.28
327.98	1431.78	-24.44	1456.22	66.00	1594.02	1.478	3.26
357.98	1431.78	-27.35	1459.13	66.05	1596.63	1.481	3.28

TABLE XXVI - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; MAXIMUM FLOW;  
WITHOUT INLET GUIDE VANES; WITHOUT CASING TREATMENT (Continued)

PLANE NO. IMMERISION NO. #	0.95	RADIUS #	13.797	SLOPE #	4.85		
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.
27.98	13.66	10.15	518.69	-0.71	710.22	710.16	0.664
97.98	13.67	10.20	518.69	1.44	704.75	704.53	0.658
87.98	13.74	10.29	518.69	2.92	700.81	699.90	0.654
117.98	13.69	10.30	518.69	9.51	695.80	685.74	0.648
147.98	11.37	9.25	518.69	14.60	596.16	576.91	0.550
177.98	11.36	8.83	518.69	2.33	654.72	654.18	0.608
207.98	11.32	8.70	518.69	-7.04	669.38	664.34	0.622
237.98	13.68	9.67	518.69	±11.72	764.21	748.28	0.719
267.98	13.69	9.89	518.69	-6.76	740.66	735.51	0.695
297.98	13.68	10.00	518.69	-5.15	728.00	725.06	0.682
327.98	13.67	10.05	518.69	-3.46	721.71	720.39	0.675
357.98	13.71	10.12	518.69	-0.64	717.27	717.23	0.671
CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL MACH NO.
27.98	1134.00	-8.81	1142.84	58.14	1345.49	1.257	3.72
97.98	1134.00	17.66	1116.34	57.74	1320.06	1.233	3.70
87.98	1134.00	35.70	1098.30	57.49	1302.35	1.215	3.71
117.98	1134.00	114.59	1039.11	56.06	1228.34	1.146	3.63
147.98	1134.00	150.29	983.74	59.61	1140.39	1.052	2.68
177.98	1134.00	26.62	1107.38	59.43	1286.18	1.194	2.94
207.98	1134.00	-82.01	1216.01	61.35	1385.65	1.288	2.95
237.98	1134.00	±155.16	1289.19	58.87	1490.62	1.403	3.79
267.98	1134.00	-87.24	1221.24	58.194	1423.62	1.337	3.78
297.98	1134.00	-65.41	1199.41	58.85	1401.54	1.312	3.76
327.98	1134.00	-43.59	1177.59	58.54	1380.47	1.292	3.75
357.98	1134.00	-7.96	1141.96	57.87	1348.52	1.261	3.75

TABLE XXVI - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; MAXIMUM FLOW;  
WITHOUT INLET GUIDE VANES; WITHOUT CASING TREATMENT (Continued)

PLANE NO, IMMERSION NO, #	α	RADIUS #	SLOPE #	CIRC, POSITION	TOT, PRESSURE	STATIC PRESSURE	TOT, TEMP,	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.
27.98	0.95	9.910	15.45	27.98	13.68	10.21	518.69	-2.22	661.79	681.28	0.637
57.98				57.98	13.70	10.24	518.69	0.17	679.31	679.31	0.634
87.98				87.98	13.78	10.36	518.69	3.53	673.47	672.20	0.628
117.98				117.98	13.70	10.38	518.69	13.13	665.84	648.43	0.620
147.98				147.98	13.41	9.92	518.69	29.47	697.85	607.10	0.652
177.98				177.98	11.45	8.75	518.69	6.42	654.47	650.38	0.609
207.98				207.98	11.88	8.86	518.69	18.17	685.48	651.30	0.640
237.98				237.98	13.61	9.76	518.69	16.32	726.85	697.55	0.683
267.98				267.98	13.63	9.99	518.69	12.48	685.87	685.87	0.658
297.98				297.98	13.67	10.06	518.69	-8.29	697.09	689.80	0.652
327.98				327.98	13.69	10.12	518.69	-5.49	692.71	689.53	0.648
357.98				357.98	13.62	10.16	518.69	-4.27	682.25	680.36	0.637

CIRC, POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL, TANG VELOCITY	REL, FLOW ANGLE	REL, VELOCITY	REL, MACH NO.	LOCAL WT. FLOW.
27.98	814.52	-26.41	840.93	50.99	1082.27	1.010	2.35
57.98	814.52	2.03	812.49	50.10	1059.06	0.989	2.34
87.98	814.52	41.42	773.10	48.99	1024.47	0.956	2.34
117.98	814.52	151.25	663.27	45.65	927.57	0.864	2.26
147.98	814.52	343.10	471.42	37.83	768.64	0.719	2.04
177.98	814.52	73.12	741.40	48.74	986.23	0.918	1.91
207.98	814.52	-213.75	1028.27	57.65	1217.18	1.137	1.95
237.98	814.52	1204.28	1016.80	55.60	1234.72	1.159	2.32
267.98	814.52	1151.65	966.37	54.64	1185.03	1.109	2.32
297.98	814.52	510.57	915.09	52.99	1145.96	1.072	2.35
327.98	814.52	-66.25	880.77	51.94	1118.58	1.046	2.36
357.98	814.52	-50.80	865.32	51.82	1101.75	1.028	2.33

**TABLE XXVI - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; MAXIMUM FLOW; WITHOUT INLET GUIDE VANES; WITHOUT CASING TREATMENT (Continued)**

PLANE NO. IMPRESSION NO.	PLANE NO. IMPRESSION NO.	RADIUS	SLOPE	TOT. PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.
15100	1	17.081	-0.83	14.25	586.32	21.81	754.11	700.16	0.662
15100	2	17.081	-0.83	14.24	586.38	22.69	746.40	688.64	0.655
15100	3	17.081	-0.83	14.07	582.58	23.78	751.49	687.71	0.662
15100	4	17.081	-0.83	13.78	579.79	24.81	741.13	672.71	0.654
15100	5	17.081	-0.83	13.32	567.77	32.49	667.17	562.71	0.591
15100	6	17.081	-0.83	13.89	612.08	35.92	764.30	618.99	0.657
15100	7	17.081	-0.83	14.09	613.15	34.13	764.42	632.79	0.656
15100	8	17.081	-0.83	15.62	631.25	24.07	792.67	723.72	0.672
15100	9	17.081	-0.83	14.95	594.64	20.86	734.34	686.22	0.639
15100	10	17.081	-0.83	14.53	590.05	20.02	757.30	711.55	0.663
15100	11	17.081	-0.83	14.52	591.53	21.67	752.14	699.00	0.657
15100	12	17.081	-0.83	14.46	588.45	35.64	745.42	605.80	0.653

CIPC POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	ABS TAIG VELOCITY	REL. TAIG VELOCITY	ABS FLOW ANGLE	REL. FLOW ANGLE	ABS VELOCITY	REL. VELOCITY	REL. MACH NO.	LOCAL WT. FLOW
15100	1403.92	280.12	1123.80	280.12	1123.80	58.08	58.08	1324.07	1324.07	1.163	3.48
15100	1403.92	287.91	1116.01	287.91	1116.01	58.32	58.32	1311.37	1311.37	1.151	3.42
15100	1403.92	302.96	1100.96	302.96	1100.96	58.01	58.01	1298.10	1298.10	1.144	3.40
15100	1403.92	311.62	1092.90	311.62	1092.90	58.39	58.39	1283.34	1283.34	1.132	3.27
15100	1403.92	356.42	1045.50	356.42	1045.50	61.71	61.71	1187.31	1187.31	1.051	2.66
15100	1403.92	488.34	955.58	488.34	955.58	57.07	57.07	1136.55	1136.55	0.978	2.87
15100	1403.92	428.65	975.07	428.65	975.07	57.02	57.02	1162.40	1162.40	0.998	2.97
15100	1403.92	323.34	1080.58	323.34	1080.58	56.19	56.19	1300.55	1300.55	1.102	3.68
15100	1403.92	261.44	1142.48	261.44	1142.48	59.01	59.01	1332.73	1332.73	1.159	3.51
15100	1403.92	259.25	1144.67	259.25	1144.67	58.13	58.13	1347.80	1347.80	1.150	3.59
15100	1403.92	277.69	1126.23	277.69	1126.23	58.17	58.17	1325.52	1325.52	1.158	3.51
15100	1403.92	434.35	969.57	434.35	969.57	58.00	58.00	1143.27	1143.27	1.001	3.04

**TABLE XXVI - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; MAXIMUM FLOW;  
WITHOUT INLET GUIDE VANES; WITHOUT CASI-3 TREATMENT (Continued)**

PLANE NO. IMMERSION NO. #	1.51	RADIUS = 14.056		SLOPE = 3.14			
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.
15.00	19.13	14.22	583.17	27.89	753.76	666.18	0.664
45.00	19.04	13.99	579.84	28.04	765.93	676.01	0.678
75.00	19.00	13.85	580.12	28.84	775.35	679.17	0.687
105.00	18.58	13.44	576.54	30.42	781.55	673.96	0.695
135.00	17.26	12.84	562.50	37.78	739.87	584.78	0.664
165.00	17.57	12.98	590.75	41.36	766.84	575.57	0.672
195.00	18.48	13.25	600.16	35.72	807.55	655.67	0.705
225.00	20.74	15.01	623.26	31.28	812.94	694.80	0.696
255.00	21.11	14.98	597.93	23.19	817.86	754.78	0.716
285.00	19.27	14.11	593.70	28.02	778.31	687.08	0.681
315.00	19.26	14.46	588.84	28.00	744.73	657.58	0.652
345.00	19.20	14.20	586.71	35.64	762.52	619.69	0.670
CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL WT. FLOW
15.00	1155.29	352.65	802.64	50.31	1043.08	0.919	3.69
45.00	1155.29	360.08	795.21	49.63	1043.72	0.924	3.72
75.00	1155.29	374.02	781.26	49.00	1035.20	0.917	3.70
105.00	1155.29	395.73	759.56	48.42	1015.46	0.903	3.60
135.00	1155.29	453.26	702.03	50.21	913.68	0.820	3.03
165.00	1155.29	506.72	648.57	48.41	867.13	0.760	2.88
195.00	1155.29	471.42	683.87	46.21	947.40	0.827	3.32
225.00	1155.29	422.05	733.24	46.54	1010.14	0.864	3.83
255.00	1155.29	322.07	833.22	47.94	1122.24	0.983	4.34
285.00	1155.29	365.64	789.65	48.97	1046.72	0.916	3.73
315.00	1155.29	345.58	805.74	50.78	1039.99	0.910	3.66
345.00	1155.29	444.32	710.96	48.92	943.12	0.829	3.41

**TABLE XXVI - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; MAXIMUM FLOW; WITHOUT INLET GUIDE VANES; WITHOUT CASING TREATMENT (Continued)**

PLANE NO. IMMERSION NO.	$\alpha$	RADIUS	$\theta$	SLOPE	$\phi$		
	1.51	11.030		11.17			
CIRC. POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP.	ABS. FLOW ANGLE	ABS. VELOCITY	AXIAL VELOCITY	ABS. MACH NO.
15.00	22.47	15.17	598.54	36.90	863.34	690.40	0.761
45.00	22.15	14.84	594.12	37.41	868.26	689.68	0.769
75.00	21.80	14.72	592.87	37.89	859.42	678.26	0.761
105.00	21.24	14.15	588.09	39.03	869.92	675.79	0.775
135.00	19.51	13.00	574.26	41.52	860.18	644.01	0.776
165.00	18.67	12.59	575.57	43.83	849.31	612.70	0.764
195.00	19.40	13.16	604.46	42.52	864.09	636.89	0.758
225.00	22.48	15.33	623.25	31.58	869.52	740.61	0.750
255.00	22.95	15.66	615.34	35.72	863.40	700.97	0.750
285.00	23.30	15.42	607.14	35.14	889.66	727.50	0.781
315.00	22.96	15.58	606.25	36.88	864.08	691.16	0.757
345.00	22.61	15.22	600.03	37.10	867.46	691.91	0.764
CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL WT. FLOW
15.00	906.58	518.36	388.24	29.35	792.06	0.698	2.43
45.00	906.58	527.47	379.11	28.80	787.00	0.697	2.40
75.00	906.58	527.78	378.79	29.18	776.87	0.688	2.34
105.00	906.58	547.79	358.79	27.96	765.13	0.682	2.27
135.00	906.58	570.23	336.35	27.58	726.55	0.655	2.03
165.00	906.58	588.16	318.42	27.46	690.50	0.621	1.86
195.00	906.58	583.97	322.61	26.86	713.93	0.626	1.93
225.00	906.58	455.20	451.38	31.36	867.32	0.748	2.53
255.00	906.58	504.09	402.49	29.86	808.30	0.702	2.47
285.00	906.58	512.09	394.48	28.47	827.57	0.727	2.58
315.00	906.58	518.60	387.98	29.31	792.61	0.694	2.47
345.00	906.58	523.21	383.36	28.99	791.02	0.697	2.44





TABLE XXVI - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; MAXIMUM FLOW;  
WITHOUT INLET GUIDE VANES; WITHOUT CASING TREATMENT (Continued)

PLANE NO, IMMERISION NO, #	#	RADIUS =	SLOPE #	1.13			
CIPC, POSITION	TOT. PRESSURE	STATIC PRESSURE	TOT. TEMP,	ABS FLOW ANGLE	ABS VELOCITY	AXIAL VELOCITY	ABS MACH NO.
29.00	18.29	14.08	587.67	-1.31	713.60	713.42	0.623
59.00	18.31	14.20	586.38	-1.56	702.09	701.83	0.613
89.00	18.49	13.38	584.61	-1.49	767.90	787.63	0.696
119.00	16.30	13.11	580.52	-1.16	796.79	796.62	0.707
149.00	17.05	14.63	572.27	-1.45	542.63	542.45	0.473
179.00	17.62	14.47	577.42	-1.47	626.11	625.90	0.537
209.00	18.03	14.56	607.90	0.06	658.10	658.10	0.561
239.00	20.06	14.48	622.74	0.54	816.20	816.16	0.699
269.00	19.10	14.25	605.67	0.19	764.61	764.61	0.661
299.00	18.53	13.89	596.65	0.25	752.96	752.95	0.655
329.00	18.43	13.97	592.03	-0.37	735.90	735.88	0.642
359.00	18.34	14.01	589.85	-1.05	724.43	724.31	0.632
CIPC, POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	REL. VELOCITY	REL. MACH NO.	LOCAL WT. FLOW
29.00	1185.21	-16.35	1201.55	59.30	1397.39	1.220	3.49
59.00	1185.21	-19.17	1204.38	59.77	1393.95	1.217	3.46
89.00	1185.21	-20.49	1205.70	56.85	1440.16	1.272	3.74
119.00	1185.21	-16.09	1201.30	56.45	1441.43	1.280	3.74
149.00	1185.21	-13.69	1198.90	65.66	1315.91	1.147	2.74
179.00	1185.21	-16.10	1201.31	62.48	1354.58	1.162	3.04
209.00	1185.21	0.68	1184.33	60.94	1353.06	1.156	3.17
239.00	1185.21	7.66	1177.55	59.27	1432.74	1.227	3.94
269.00	1185.21	2.60	1182.61	57.12	1408.26	1.217	3.70
299.00	1185.21	3.29	1181.92	57.50	1401.38	1.219	3.60
329.00	1185.21	-4.81	1180.04	58.27	1399.16	1.220	3.56
359.00	1185.21	-13.30	1198.31	58.65	1400.36	1.222	3.52

TABLE XXVI - TASK II STAGE CIRCUMFERENTIAL DISTORTION FLOW SURVEY DATA; 100% SPEED; MAXIMUM FLOW;  
WITHOUT INLET GUIDE VANES; WITHOUT CASING TREATMENT (Concluded)

CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	ABS FLOW ANGLE	ABS VELOCITY	REL. VELOCITY	REL. MACH NO.	ABS MACH NO.	CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	ABS FLOW ANGLE	ABS VELOCITY	REL. VELOCITY	REL. MACH NO.	ABS MACH NO.	CIRC. POSITION	WHEEL SPEED	ABS TANG VELOCITY	REL. TANG VELOCITY	REL. FLOW ANGLE	ABS FLOW ANGLE	ABS VELOCITY	REL. VELOCITY	REL. MACH NO.	ABS MACH NO.
18.56	967.81	-76.25	1044.06	51.46	-5.24	835.05	1334.75	1.165	0.729	18.56	967.81	-76.25	1044.06	51.46	-5.24	835.05	1334.75	1.165	0.729	18.56	967.81	-76.25	1044.06	51.46	-5.24	835.05	1334.75	1.165	0.729
48.56	967.81	-50.20	1018.01	51.85	-3.59	801.29	1294.56	1.129	0.699	48.56	967.81	-50.20	1018.01	51.85	-3.59	801.29	1294.56	1.129	0.699	48.56	967.81	-50.20	1018.01	51.85	-3.59	801.29	1294.56	1.129	0.699
78.56	967.81	-23.81	991.62	50.47	-1.67	818.56	1285.61	1.126	0.717	78.56	967.81	-23.81	991.62	50.47	-1.67	818.56	1285.61	1.126	0.717	78.56	967.81	-23.81	991.62	50.47	-1.67	818.56	1285.61	1.126	0.717
108.56	967.81	-24.69	992.50	44.63	-1.41	1005.80	1412.83	1.277	0.909	108.56	967.81	-24.69	992.50	44.63	-1.41	1005.80	1412.83	1.277	0.909	108.56	967.81	-24.69	992.50	44.63	-1.41	1005.80	1412.83	1.277	0.909
138.56	967.81	7.24	960.57	53.56	0.58	709.88	1194.10	1.046	0.622	138.56	967.81	7.24	960.57	53.56	0.58	709.88	1194.10	1.046	0.622	138.56	967.81	7.24	960.57	53.56	0.58	709.88	1194.10	1.046	0.622
168.56	967.81	25.88	941.93	60.92	2.83	524.56	1077.83	0.943	0.459	168.56	967.81	25.88	941.93	60.92	2.83	524.56	1077.83	0.943	0.459	168.56	967.81	25.88	941.93	60.92	2.83	524.56	1077.83	0.943	0.459
198.56	967.81	34.03	933.78	53.85	2.86	682.95	1156.38	0.993	0.586	198.56	967.81	34.03	933.78	53.85	2.86	682.95	1156.38	0.993	0.586	198.56	967.81	34.03	933.78	53.85	2.86	682.95	1156.38	0.993	0.586
228.56	967.81	50.86	916.95	48.27	2.86	817.97	1228.77	1.056	0.704	228.56	967.81	50.86	916.95	48.27	2.86	817.97	1228.77	1.056	0.704	228.56	967.81	50.86	916.95	48.27	2.86	817.97	1228.77	1.056	0.704
258.56	967.81	-76.54	1044.35	49.62	3.56	819.55	1370.98	1.185	0.770	258.56	967.81	-76.54	1044.35	49.62	3.56	819.55	1370.98	1.185	0.770	258.56	967.81	-76.54	1044.35	49.62	3.56	819.55	1370.98	1.185	0.770
288.56	967.81	-115.82	1083.63	50.16	-4.93	891.50	1411.18	1.232	0.795	288.56	967.81	-115.82	1083.63	50.16	-4.93	891.50	1411.18	1.232	0.795	288.56	967.81	-115.82	1083.63	50.16	-4.93	891.50	1411.18	1.232	0.795
318.56	967.81	-98.29	1066.10	50.71	-7.30	911.57	1377.53	1.202	0.766	318.56	967.81	-98.29	1066.10	50.71	-7.30	911.57	1377.53	1.202	0.766	318.56	967.81	-98.29	1066.10	50.71	-7.30	911.57	1377.53	1.202	0.766
348.56	967.81	-87.20	1059.01	52.04	-6.43	872.88	1338.09	1.163	0.720	348.56	967.81	-87.20	1059.01	52.04	-6.43	872.88	1338.09	1.163	0.720	348.56	967.81	-87.20	1059.01	52.04	-6.43	872.88	1338.09	1.163	0.720

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