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(NAS-CR-134827-Vol-2) SMALL AXIAL
COMPRESSOR TECHNOLOGY, VOLUME 2 Final
Report (AiResearch Mfg. Co., Phoenix, Ariz.)
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SMALL AXIAL COMPRESSOR TECHNOLOGY PROGRAM

(VOLUME II - DATA COMPILATION)

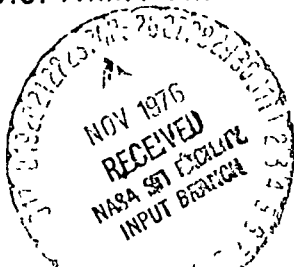
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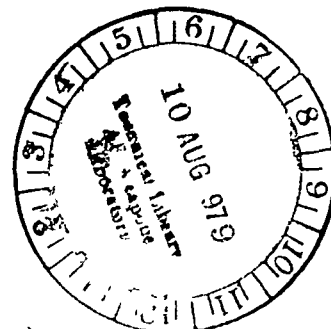
AIRESEARCH MANUFACTURING COMPANY OF ARIZONA
A DIVISION OF
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Phoenix, Arizona

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
AND
U.S. ARMY AIR MOBILITY RESEARCH AND DEVELOPMENT LABORATORY



Lewis Research Center
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FINAL REPORT
SMALL AXIAL COMPRESSOR
TECHNOLOGY PROGRAM

INTRODUCTION

This volume contains complete computer printout data supporting Tests 1, 2, 3, and 4 discussed in Volume I and referred to as Reference 6.

ORIGINAL PAGE IS
OF POOR QUALITY

NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 1974 (COMBINED TEMP.)

MOTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT WEIGHT FLOW = 3.5708 LBM/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 96.3463
 100 PERCENT DESIGN SPEED = 5000 RPM
 EQUIVALENT SPEED = 7881.610 R.P.M.
 INLET FLOW / INLET ANN AREA = 38.9746 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9700

PERCENT SPAN FROM TIP (I. F.)	HETA01 (DEG)	V01 (FT/SEC)	V0191 (FT/SEC)	M01 (DEG)	HETA1 (DEG)	V1 (FT/SEC)	V11 (FT/SEC)	M1 (DEG)	VM1 (FT/SEC)	V71 (FT/SEC)	U1 (FT/SEC)
0.00	70.96	1476.95	1583.07	1.574	0.00	547.00	0.00	.502	546.00	520.37	1583.07
10.00	69.45	1504.00	1504.00	1.477	0.00	541.04	0.00	.514	541.03	542.66	1504.00
20.00	66.05	1502.33	1372.94	1.303	0.00	609.84	0.00	.564	609.84	504.62	1372.94
30.00	63.71	1340.51	1241.22	1.246	0.00	624.53	0.00	.574	624.51	622.50	1241.22
40.00	61.12	1251.41	1095.71	1.146	0.00	604.47	0.00	.554	604.46	606.24	1095.71
50.00	58.30	1074.26	937.40	.992	0.00	564.53	0.00	.521	564.51	558.91	937.40
60.00	55.74	964.65	800.00	.889	0.00	544.68	0.00	.500	544.67	524.16	800.00

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8889

PERCENT SPAN FROM TIP (I. F.)	HETA02 (DEG)	V02 (FT/SEC)	V0292 (FT/SEC)	M02 (DEG)	HETA2 (DEG)	V2 (FT/SEC)	V21 (FT/SEC)	M2 (DEG)	VM2 (FT/SEC)	V72 (FT/SEC)	U2 (FT/SEC)
0.00	60.22	1177.14	1006.37	.964	42.04	771.80	514.17	.665	574.64	554.15	1522.34
10.00	58.50	1094.05	912.44	.915	41.07	810.79	542.17	.678	602.49	549.65	1455.12
20.00	52.54	1007.43	736.02	.847	41.01	819.04	545.97	.641	610.49	604.69	1342.40
30.00	46.01	897.46	652.46	.762	43.40	847.65	541.31	.710	614.80	614.36	1233.77
40.00	38.57	793.74	494.54	.674	45.23	880.58	624.11	.752	620.17	614.35	1114.70
50.00	27.09	729.41	283.74	.631	46.67	979.21	712.25	.847	671.94	640.90	995.59
60.00	13.70	642.04	161.04	.602	48.67	1018.09	744.44	.885	672.34	649.49	924.34

MOTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (I. F.)	DELTA FLOW (LBM/SEC)	DELTA HETA (DEG)	INCIDENCE ANGLE (DEG)	AVG SUCT SWIRL (DEG)	FACTOR	OMEGA0 (RPM)	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR POSSES RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	7.102	6.674	.6269	.1982	.0375	1.233	1.454	.7416	.7812
10.00	11.7	12.44	7.275	6.396	.6414	.1944	.0393	1.571	1.473	.7751	.7940
20.00	26.97	42.76	7.221	5.049	.6530	.1344	.0270	2.294	1.498	.8540	.8665
30.00	48.60	52.63	6.714	3.873	.6407	.1036	.0229	4.337	1.421	.8907	.9002
40.00	67.40	71.63	6.864	2.930	.6013	.0224	.0224	4.224	1.916	.9086	.9165
50.00	84.11	84.61	7.031	1.949	.4757	.0482	.0147	16.206	1.490	.9540	.9582
60.00	100.00	100.00	7.037	.964	.4592	.0430	.0172	20.740	1.490	.9539	.9582

MOMENTUM AVERAGE MOTOR EFFICIENCY = .8760 (POLYTROPIC)
 MOMENTUM AVERAGE MOTOR EFFICIENCY = .8643 (ADIABATIC)
 MOMENTUM AVG. ROTOR POSSES RATIO = 1.4909
 MASS AVERAGE TEMPERATURE RISE = 1.2345

NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 10 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METERIC UNITS)

EQUIVALENT WEIGHT FLOW = 1.6006 KG/SEC 100 PERCENT DESIGN SPEED = SCAN NO 2
PERCENT DESIGN EQUIVALENT FLOW = 96.3663 EQUIVALENT SPAN EQUVALENT FLOW / INLET ANN AREA = 7411.418 R.P.M.

Table with columns: PERCENT SPAN FROM TIP (I.F.), HETA01, HETA1, V1, V11, V12, V13, V14, V15, V16, V17, V18, V19, V20, V21, V22, V23, V24, V25, V26, V27, V28, V29, V30, V31, V32, V33, V34, V35, V36, V37, V38, V39, V40, V41, V42, V43, V44, V45, V46, V47, V48, V49, V50, V51, V52, V53, V54, V55, V56, V57, V58, V59, V60, V61, V62, V63, V64, V65, V66, V67, V68, V69, V70, V71, V72, V73, V74, V75, V76, V77, V78, V79, V80, V81, V82, V83, V84, V85, V86, V87, V88, V89, V90, V91, V92, V93, V94, V95, V96, V97, V98, V99, V100. Includes sub-headers for INLET VELOCITY DIAGRAM DATA and EXIT VELOCITY DIAGRAM DATA.

Table with columns: PERCENT SPAN FROM TIP (I.F.), DELTA, HETA02, HETA2, V02, V03, V04, V05, V06, V07, V08, V09, V10, V11, V12, V13, V14, V15, V16, V17, V18, V19, V20, V21, V22, V23, V24, V25, V26, V27, V28, V29, V30, V31, V32, V33, V34, V35, V36, V37, V38, V39, V40, V41, V42, V43, V44, V45, V46, V47, V48, V49, V50, V51, V52, V53, V54, V55, V56, V57, V58, V59, V60, V61, V62, V63, V64, V65, V66, V67, V68, V69, V70, V71, V72, V73, V74, V75, V76, V77, V78, V79, V80, V81, V82, V83, V84, V85, V86, V87, V88, V89, V90, V91, V92, V93, V94, V95, V96, V97, V98, V99, V100. Includes sub-headers for ROTOR PERFORMANCE DATA and MOMENTUM AVERAGE ROTOR EFFICIENCY.

Table with columns: PERCENT SPAN FROM TIP (I.F.), DELTA, HETA03, HETA3, V03, V04, V05, V06, V07, V08, V09, V10, V11, V12, V13, V14, V15, V16, V17, V18, V19, V20, V21, V22, V23, V24, V25, V26, V27, V28, V29, V30, V31, V32, V33, V34, V35, V36, V37, V38, V39, V40, V41, V42, V43, V44, V45, V46, V47, V48, V49, V50, V51, V52, V53, V54, V55, V56, V57, V58, V59, V60, V61, V62, V63, V64, V65, V66, V67, V68, V69, V70, V71, V72, V73, V74, V75, V76, V77, V78, V79, V80, V81, V82, V83, V84, V85, V86, V87, V88, V89, V90, V91, V92, V93, V94, V95, V96, V97, V98, V99, V100. Includes sub-headers for ROTOR PERFORMANCE DATA and MOMENTUM AVERAGE ROTOR EFFICIENCY.

MOMENTUM AVERAGE ROTOR EFFICIENCY = .9760 (POLYTROPIC)
MOMENTUM AVERAGE ROTOR EFFICIENCY = .8643 (ADIABATIC)

NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 10 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

100 PERCENT DESIGN SPEED - SCAN NO 2

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9045

PERCENT SPAN FROM TIP (I. F.)	DELTA 3 (DEG)	V3 (FT/SEC)	VU3 (FT/SEC)	M3	VM3 (FT/SEC)	VW3 (FT/SEC)	VZ3 (FT/SEC)	U3 (FT/SEC)
0.00	37.30	470.63	533.55	.741	698.04	698.04	698.37	1478.64
10.00	44.20	495.40	554.32	.757	702.76	702.76	701.60	1421.96
20.00	47.36	511.54	572.98	.778	724.71	724.71	724.70	1326.03
30.00	47.36	511.54	582.47	.803	732.06	732.06	731.52	1231.32
40.00	46.47	503.96	619.19	.823	725.54	725.54	722.99	1130.41
50.00	45.44	1031.77	694.22	.899	761.42	761.42	751.20	1014.92
100.00	43.75	1072.77	741.98	.941	774.85	774.85	753.44	956.49

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9341

PERCENT SPAN FROM TIP (I. F.)	DELTA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	VW4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	70	704.42	867	.587	709.35	709.35	709.35	1467.91
11.31	65	723.21	826	.599	723.14	723.14	723.05	1417.15
22.25	57.6	744.82	744.82	.623	744.79	744.79	744.44	1332.18
34.54	51.4	767.03	767.03	.645	767.01	767.01	766.22	1250.03
47.30	52	750.81	646	.639	750.84	750.84	748.42	1165.96
61.12	51	725.94	57	.608	725.93	725.93	723.27	1072.52
100.00	50.0	730.99	50	.613	730.97	730.97	720.97	1019.23

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP FROM TIP (I. F.)	DELTA (DEG)	INCIDENCE (DEG)	MEAN SUPT AIR (DEG)	INCIDENCE ANGLE (DEG)	D FACTOR	LOSS PARAMETER	DELTA LOSS (DEG)	LOSS PARAMETER	DELTA LOSS (DEG)	STAGE EFFICIENCY	STAGE LOSS RATIO	STATOR POLYTROPIC EFF
0.00	0.00	1.074	-2.868	.047	.4076	.0197	27.889	.0197	27.889	1.873	1.2528	.4715
10.00	11.31	2.176	-1.217	.0559	.4044	.0194	17.213	.0194	17.213	1.840	1.2528	.4696
22.25	22.25	3.792	-2.544	.0424	.3826	.0139	12.043	.0139	12.043	1.872	1.2744	.4821
34.54	34.54	4.432	-2.164	.0284	.3647	.0087	11.434	.0087	11.434	1.902	1.2208	.4315
47.30	47.30	1.019	-1.840	.0384	.3832	.0111	11.614	.0111	11.614	1.889	1.2242	.4374
61.12	59.12	42.63	-2.748	.1856	.4647	.0491	11.537	.0491	11.537	1.839	1.2273	.4133
100.00	100.00	53.76	-4.318	.1741	.4832	.0440	14.700	.0440	14.700	1.840	1.2274	.4317

MOMENTUM AVERAGE STAGE EFFICIENCY = .8454 (POLYTROPIC) MOMENTUM AVG. STAGE LOSS RATIO = 1.8673
 MOMENTUM AVERAGE STAGE EFFICIENCY = .8313 (ADIABATIC) MASS AVERAGE TEMPERATURE RISE = 1.2345

NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 1, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

100 PERCENT DESIGN SPEED - SCAN NO 2

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9045

PERCENT SPAN FROM TIP (I. C.)	BETA 3 (DEG)	V3 (M/SEC)	VU3 (M/SEC)	M3	VM3 (M/SEC)	V/A (M/SEC)	U3 (M/SEC)
0.00	17.39	267.81	162.63	.741	212.74	210.67	450.69
10.95	11.39	272.92	163.11	.757	214.20	213.86	434.41
20.23	17.14	277.86	164.52	.770	220.49	220.80	436.17
47.14	34.51	245.15	177.54	.803	223.13	222.97	375.31
64.42	47.67	240.77	184.73	.823	221.17	220.37	344.55
89.04	47.64	317.64	212.21	.899	232.04	220.47	310.57
100.00	41.75	326.94	224.13	.941	234.17	229.65	291.54

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9161

PERCENT SPAN FROM TIP (I. C.)	BETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VM4 (M/SEC)	V/A (M/SEC)	U4 (M/SEC)
0.00	.70	216.23	2.54	.587	214.21	216.21	447.42
11.31	.65	220.43	2.52	.599	220.41	220.29	411.95
30.25	-.34	227.02	-1.37	.623	227.01	224.91	406.05
48.54	-.16	233.79	-.54	.645	233.74	233.54	341.01
47.30	.52	231.31	2.09	.639	231.29	231.17	355.39
44.12	.11	221.27	.02	.608	221.26	220.45	326.90
100.00	-.00	222.81	-1.00	.613	222.80	222.80	310.66

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (I. C.)	INCIDENCE ANGLE (DEG)	MEAN SUCTION FACTOR	DELTA HETA (DEG)	MASS FLOW (CFI)	LOSS PARAMETER	DEFLECTION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMPERATURE RATIO	STATOR POLYTROPIC EFF
0.00	1.074	-2.548	36.69	0.10	.0547	22.890	1.829	1.2528	.8715
10.95	2.124	-1.237	37.54	12.44	.0559	17.213	1.840	1.2528	.8894
20.23	.792	-2.244	37.04	32.34	.0224	12.863	1.872	1.2528	.9041
47.14	.459	-2.149	38.66	52.73	.0285	11.934	1.902	1.2528	.9215
64.42	1.019	-1.940	39.34	71.52	.0384	11.414	1.899	1.2242	.9174
89.04	1.102	-2.248	42.44	72.12	.0454	11.537	1.839	1.2274	.7111
100.00	-.077	-4.318	43.74	100.00	.0440	14.700	1.840	1.2274	.7171

MOMENTUM AVERAGE STAGE EFFICIENCY = .9454 (POLYTROPIC) MOMENTUM AVG. STAGE LOSS RATIO = 1.8673
MOMENTUM AVERAGE STAGE EFFICIENCY = .9313 (ADIABATIC) MASS AVERAGE TEMPERATURE RATIO = 1.2345

NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 1, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT WEIGHT FLOW = 3.6727 LHM/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 94.8163
 100 PERCENT DESIGN SPEED = 5000 RPM
 EQUIVALENT SPEED = 7495.518 R.P.M.
 38.3556 LHM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC HLOSSAGE = .9700

PERCENT SPAN FROM TIP (I. F.)	HETA1 (DEG)	W01 (FT/SEC)	W101 (FT/SEC)	HETA1 (DEG)	V1 (FT/SEC)	W01 (FT/SEC)	W101 (FT/SEC)	W1 (FT/SEC)	W41 (FT/SEC)	W71 (FT/SEC)	W1 (FT/SEC)
0.00	71.43	1473.42	1585.94	0.00	533.92	0.00	0.00	.490	533.92	516.73	1585.94
10.14	70.02	1402.77	1506.50	0.00	547.75	0.00	0.00	.503	547.75	520.82	1506.50
27.11	68.55	1407.14	1373.53	1.381	505.70	0.00	0.00	.550	505.70	544.76	1373.53
44.07	63.42	1313.03	1241.20	1.274	470.09	0.00	0.00	.565	470.09	603.13	1241.20
62.43	51.54	1243.93	1095.23	1.147	541.89	0.00	0.00	.544	541.89	540.48	1095.23
82.33	59.73	1030.75	917.21	0.943	550.53	0.00	0.00	.504	550.53	543.14	917.21
100.00	56.77	939.14	802.44	.879	524.75	0.00	0.00	.482	524.75	507.40	802.44

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC HLOSSAGE = .8483

PERCENT SPAN FROM TIP (I. F.)	HETA2 (DEG)	W02 (FT/SEC)	W102 (FT/SEC)	BETA2 (DEG)	V2 (FT/SEC)	W02 (FT/SEC)	W102 (FT/SEC)	W2 (FT/SEC)	W42 (FT/SEC)	W72 (FT/SEC)	W2 (FT/SEC)
0.00	60.43	1123.95	977.59	44.64	774.49	547.73	0.00	.644	554.61	516.75	1525.32
11.45	58.04	1055.57	883.74	44.90	813.71	573.36	0.00	.677	577.30	544.77	1457.14
30.57	52.24	964.36	762.55	44.47	819.07	523.79	0.00	.689	544.51	540.86	1343.34
44.01	46.75	873.02	670.62	44.09	853.65	603.52	0.00	.722	603.72	603.49	1234.14
62.44	34.24	774.33	442.17	44.34	885.07	640.34	0.00	.755	610.20	609.19	1122.52
82.36	23.27	646.72	274.00	42.05	940.24	725.31	0.00	.821	629.43	619.09	999.91
100.00	13.42	547.57	150.28	51.07	1042.38	779.75	0.00	.888	629.40	608.40	930.03

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TRAILING EDGE	DELTA (DEG)	HETA0 (DEG)	INCIDENCE (DEG)	ANALF (DEG)	ETA FACTOR	HAR	OMEGA	LOSS	DEVIATION	ROTOR PRESS. RATIO	ADIABATIC EFF	ROTOR POLYTRM.PIC EFF
0.00	0.00	10.06	7.557	7.044	.4530	.2134	0.00	.0401	3.442	1.995	.7478	.7740
10.14	11.45	13.14	8.219	6.991	.4712	.2142	0.00	.0420	1.874	1.919	.7432	.7837
27.11	30.57	13.77	7.745	5.547	.4822	.1538	0.00	.0309	2.662	1.934	.8341	.8524
44.07	44.01	17.54	7.206	4.349	.4004	.1154	0.00	.0242	4.125	1.943	.8409	.8409
62.43	62.43	23.91	7.478	3.599	.4137	.1011	0.00	.0217	7.825	1.955	.9167	.9223
82.33	82.33	35.44	7.284	2.733	.4146	.1107	0.00	.0237	14.392	1.942	.9273	.9340
100.00	100.00	43.35	8.015	1.941	.4946	.1332	0.00	.0276	20.471	1.982	.9274	.9340

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8678 (POLYTRM.PIC)
 MASS AVERAGE ROTOR EFFICIENCY = .8450 (ADIABATIC)
 MOMENTUM AVG. ROTOR PRESS. RATIO = 1.9440
 MASS AVERAGE TEMPERATURE RISE = 1.2442

NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 1, 1974 (COMBINED TESTS)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIVALENT FLOW = 1.5742 KG/SEC 100 PERCENT DESIGN SPEED = SCALING FACTOR = 74951.518 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 94.8161 EQUIVALENT FLOW / INLET AIN AREA = 187.2685 M/SEC-50 M

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9700

PERCENT SPAN FROM TIP (I. F.)	HETA2 (DEG)	W1 (M/SEC)	HETA1 (DEG)	V1 (M/SEC)	W1 (M/SEC)	W2 (M/SEC)	V2 (M/SEC)	W3 (M/SEC)	V3 (M/SEC)	W4 (M/SEC)	V4 (M/SEC)	W5 (M/SEC)	V5 (M/SEC)
0.00	71.32	510.06	0.00	162.74	0.00	0.00	162.74	0.00	162.74	0.00	162.74	0.00	162.74
10.14	70.92	484.50	0.00	164.95	0.00	0.00	164.95	0.00	164.95	0.00	164.95	0.00	164.95
27.11	68.55	418.65	0.00	181.57	0.00	0.00	181.57	0.00	181.57	0.00	181.57	0.00	181.57
46.00	63.12	374.12	0.00	185.96	0.00	0.00	185.96	0.00	185.96	0.00	185.96	0.00	185.96
62.83	61.69	374.12	0.00	173.80	0.00	0.00	173.80	0.00	173.80	0.00	173.80	0.00	173.80
85.36	59.01	366.04	0.00	167.80	0.00	0.00	167.80	0.00	167.80	0.00	167.80	0.00	167.80
100.00	56.77	242.41	0.00	160.25	0.00	0.00	160.25	0.00	160.25	0.00	160.25	0.00	160.25

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8983

PERCENT SPAN FROM TIP (I. F.)	HETA2 (DEG)	W1 (M/SEC)	HETA1 (DEG)	V1 (M/SEC)	W1 (M/SEC)	W2 (M/SEC)	V2 (M/SEC)	W3 (M/SEC)	V3 (M/SEC)	W4 (M/SEC)	V4 (M/SEC)	W5 (M/SEC)	V5 (M/SEC)
0.00	60.41	342.50	0.00	237.59	0.00	0.00	237.59	0.00	237.59	0.00	237.59	0.00	237.59
11.45	56.74	321.77	0.00	238.02	0.00	0.00	238.02	0.00	238.02	0.00	238.02	0.00	238.02
30.57	52.74	264.50	0.00	249.65	0.00	0.00	249.65	0.00	249.65	0.00	249.65	0.00	249.65
44.01	46.24	260.10	0.00	260.19	0.00	0.00	260.19	0.00	260.19	0.00	260.19	0.00	260.19
67.64	40.21	237.24	0.00	261.77	0.00	0.00	261.77	0.00	261.77	0.00	261.77	0.00	261.77
84.26	33.57	204.11	0.00	292.71	0.00	0.00	292.71	0.00	292.71	0.00	292.71	0.00	292.71
100.00	13.42	197.78	0.00	305.53	0.00	0.00	305.53	0.00	305.53	0.00	305.53	0.00	305.53

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (I. F.)	HETA2 (DEG)	HETA1 (DEG)	INCIDENCE ANGLE (DEG)	INCIDENCE ANGLE (DEG)	INCIDENCE ANGLE (DEG)	INCIDENCE ANGLE (DEG)	INCIDENCE ANGLE (DEG)	INCIDENCE ANGLE (DEG)	INCIDENCE ANGLE (DEG)	INCIDENCE ANGLE (DEG)	INCIDENCE ANGLE (DEG)	INCIDENCE ANGLE (DEG)	INCIDENCE ANGLE (DEG)
0.00	0.00	0.00	7.557	7.019	6.530	6.041	5.542	5.043	4.544	4.045	3.546	3.047	2.548
10.14	11.45	13.18	8.219	6.891	6.472	6.053	5.634	5.215	4.796	4.377	3.958	3.539	3.120
27.11	30.57	33.23	7.765	5.537	5.118	4.700	4.281	3.862	3.443	3.024	2.605	2.186	1.767
44.01	44.01	44.01	7.286	4.359	4.000	3.641	3.282	2.923	2.564	2.205	1.846	1.487	1.128
67.64	67.64	67.64	7.474	3.589	3.170	2.751	2.332	1.913	1.494	1.075	0.656	0.237	0.000
85.36	85.36	85.36	7.704	2.711	2.146	1.581	1.016	0.451	0.000	0.000	0.000	0.000	0.000
100.00	100.00	100.00	8.015	1.941	1.146	0.351	0.000	0.000	0.000	0.000	0.000	0.000	0.000

MOMENTUM AVERAGE EFFICIENCY = .8478 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8550 (ADIABATIC)
 MOMENTUM AVG. ROTOR PRESS RATIO = 1.9440
 MASS AVERAGE TEMPERATURE RATIO = 1.2442

NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 19 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

100 PERCENT DESIGN SPEED - SCAN NO 7

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9119

PERCENT SPAN FROM TIP (I. F.)	HETA 3 (DEG)	V4 (FT/SEC)	V13 (FT/SEC)	M3	VW3 (FT/SEC)	U73 (FT/SEC)	U3 (FT/SEC)
0.00	40.31	815.39	543.99	.733	669.50	542.14	1401.33
10.00	41.14	891.30	580.73	.748	670.67	644.56	1423.89
20.55	39.96	906.51	580.05	.767	673.31	693.70	1376.77
47.67	40.33	936.15	606.59	.799	712.11	711.54	1211.95
62.68	41.41	951.91	646.57	.819	709.58	706.08	1142.73
87.70	48.66	1009.62	703.43	.875	717.98	708.34	1022.15
100.00	65.94	1052.55	756.61	.918	711.93	711.70	958.23

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9109

PERCENT SPAN FROM TIP (I. F.)	HETA 4 (DEG)	V4 (FT/SEC)	V14 (FT/SEC)	M4	VW4 (FT/SEC)	U74 (FT/SEC)	U4 (FT/SEC)
0.00	1.22	609.88	14.69	.566	609.68	589.68	1470.59
11.76	1.21	608.14	14.76	.574	607.98	597.89	1419.51
30.55	1.5	716.05	8.12	.595	715.00	715.69	1331.93
47.73	1.52	730.22	-6.70	.617	739.19	736.63	1251.57
67.62	1.45	724.21	-6.61	.606	724.20	723.40	1167.54
84.53	1.17	689.26	2.03	.574	689.26	694.76	1076.06
100.00	1.10	693.50	2.18	.578	693.30	693.33	1021.09

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP FROM LEADING EDGE	MASS FLOW (LBS/SEC)	DELTA (DEG)	INCIDENCE ANGLE (DEG)	REFL. SUPT 5 HR (DEG)	REFL. SUPT 5 HR (DEG)	LOSS PARAMETER	DI. ANGLE (DEG)	STATOR LOSS	STATOR TIME	STATOR POLYTRONIC EFF
0.00	0.00	30.84	3.793	-1.29	.639	.0567	23.490	1.873	1.2477	.8778
10.00	11.30	32.97	5.014	1.457	.545	.0617	17.759	1.882	1.2477	.8695
20.55	30.50	34.20	3.397	.971	.619	.0393	13.423	1.909	1.2469	.9151
47.67	44.74	40.84	2.657	-3.166	.6059	.0373	11.463	1.941	1.2386	.9315
62.68	67.62	42.15	2.347	-2.223	.6263	.0440	10.750	1.921	1.2303	.9043
87.70	88.22	44.89	2.306	-2.220	.6942	.1432	11.702	1.871	1.2323	.7494
100.00	100.00	45.76	1.310	-2.131	.5118	.1334	14.880	1.871	1.2323	.8186

MOMENTUM AVERAGE STAGE EFFICIENCY = .8409 (POLYTRONIC)

MOMENTUM AVERAGE STAGE EFFICIENCY = .8259 (ADIABATIC)

MOMENTUM AVG. STATOR LOSS RATIO = 1.9084

MASS AVERAGE TEMPERATURE RISE = 1.2662

NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 1, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR IMPETRIC UNITS)

100 PERCENT DESIGN SPEED - SCAL NO 3

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9119

PERCENT SPAN FROM TIP (I. P.)	WETA 1 (DEG)	V3 (M/SEC)	V13 (M/SEC)	W3	V13 (M/SEC)	W3	V23 (M/SEC)	W3	V23 (M/SEC)
0.00	30.11	266.42	171.20	.733	204.06		211.02		451.51
10.00	41.14	251.61	174.14	.744	204.42		204.00		414.00
20.00	49.20	234.70	177.07	.749	211.32		211.72		405.40
30.00	57.47	214.73	184.14	.749	217.05		214.00		375.50
40.00	61.91	200.14	191.42	.819	214.48		214.00		345.26
50.00	56.00	187.67	207.67	.875	214.84		214.00		311.55
100.00	55.94	320.62	320.62	.919	223.09		214.00		292.07

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9109

PERCENT SPAN FROM TIP (I. P.)	WETA 4 (DEG)	V4 (M/SEC)	V14 (M/SEC)	W4	V14 (M/SEC)	W4	V24 (M/SEC)	W4	V24 (M/SEC)
0.00	1.22	212.24	4.44	.560	210.21		210.21		444.24
10.00	1.21	212.70	4.50	.574	212.74		212.72		442.47
20.00	.63	214.25	2.44	.595	214.24		214.14		405.58
30.00	-0.22	225.71	-2.06	.617	225.11		224.07		341.44
40.00	-0.15	220.74	-1.14	.606	220.74		220.61		354.47
50.00	.17	210.02	.42	.574	210.04		209.72		327.11
100.00	.14	211.32	.56	.578	211.32		211.32		311.23

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (I. P.)	DELTA WETA (DEG)	INLET MEAN SUCTION (DEG)	W	WETA (DEG)	LOSS PARAMETER	REVIATION AUGM (DEG)	STAGE PRESS RATIO	STAGE WETA RATIO	STATOR POLYTROPIC EFF
0.00	38.49	3.793	.6309	.0563	.0203	21.400	1.473	1.2477	.4778
10.00	39.97	5.014	.6195	.0417	.0216	17.749	1.442	1.2477	.4494
20.00	34.31	3.347	.6149	.0393	.0129	13.423	1.009	1.2469	.9131
30.00	40.44	2.547	.6049	.0324	.0099	11.463	1.041	1.2304	.9315
40.00	42.15	2.317	.6243	.0490	.0141	10.750	1.021	1.2303	.9083
50.00	44.49	2.146	.6042	.0442	.0170	11.702	1.071	1.2159	.7844
100.00	45.74	1.310	.5118	.0330	.0334	14.840	1.041	1.2153	.8186

MOMENTUM AVERAGE STAGE EFFICIENCY = .8409 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .4459 (ADIABATIC)
MOMENTUM AVERAGE STAGE PRESS RATIO = 1.9044
MASS AVERAGE TEMPERATURE RISE = 1.2442

NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 10, 1974 (COMBINED TEMP.)

MOTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR METRIC UNITS

EQUIVALENT WEIGHT FLOW = 1.5422 KG/SEC
 EQUIVALENT DESIGN FLOW = 92.8246
 100 PERCENT DESIGN SPEED = SPAN NO 4
 EQUIVALENT SPEED = 74421.774 P.P.M.
 EQUIVALENT FLOW / INLET ANN AREA = 193.7629 KG/SEC-SQ M

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 0.9700

PERCENT SPAN FROM TIP (I. F.)	W1 (M/SEC)	W2 (M/SEC)	W3 (M/SEC)	W4 (M/SEC)	W5 (M/SEC)	W6 (M/SEC)	W7 (M/SEC)	W8 (M/SEC)	W9 (M/SEC)	W10 (M/SEC)
0.00	71.417	507.779	502.550	1.526	0.000	159.601	0.000	.475	150.001	152.002
10.00	70.411	485.770	457.842	1.461	0.000	152.110	0.000	.448	142.110	154.112
20.00	67.211	452.111	427.011	1.368	0.000	174.319	0.000	.531	174.319	174.319
30.00	62.511	417.011	376.011	1.245	0.000	180.445	0.000	.567	180.445	180.445
40.00	57.211	374.011	332.511	1.135	0.000	174.800	0.000	.528	174.800	174.800
50.00	50.517	323.335	270.011	.973	0.000	163.177	0.000	.493	163.177	163.177
100.00	57.217	240.127	240.127	.842	0.000	156.095	0.000	.472	156.095	156.095

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 0.9900

PERCENT SPAN FROM TIP (I. F.)	W1 (M/SEC)	W2 (M/SEC)	W3 (M/SEC)	W4 (M/SEC)	W5 (M/SEC)	W6 (M/SEC)	W7 (M/SEC)	W8 (M/SEC)	W9 (M/SEC)	W10 (M/SEC)
0.00	61.210	330.110	289.612	.892	47.74	275.278	174.451	.637	154.05	153.05
10.00	57.111	300.511	259.017	.837	47.55	244.211	183.115	.674	167.55	167.55
20.00	51.215	268.011	226.517	.765	46.13	253.735	162.613	.698	174.50	174.50
30.00	45.214	236.011	182.210	.664	47.10	261.648	131.619	.724	174.13	176.12
40.00	38.214	204.011	140.311	.543	46.05	273.119	109.612	.764	184.54	184.54
50.00	31.211	172.011	101.011	.412	50.42	297.010	230.000	.840	189.64	189.64
100.00	30.216	142.011	66.011	.247	52.49	311.12	266.016	.881	189.64	189.64

MOTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	W1 (M/SEC)	W2 (M/SEC)	W3 (M/SEC)	W4 (M/SEC)	W5 (M/SEC)	W6 (M/SEC)	W7 (M/SEC)	W8 (M/SEC)	W9 (M/SEC)	W10 (M/SEC)
0.00	0.00	10.57	13.34	13.34	13.34	13.34	13.34	13.34	13.34	13.34
10.00	12.04	12.04	12.04	12.04	12.04	12.04	12.04	12.04	12.04	12.04
20.00	11.54	11.54	11.54	11.54	11.54	11.54	11.54	11.54	11.54	11.54
30.00	9.78	9.78	9.78	9.78	9.78	9.78	9.78	9.78	9.78	9.78
40.00	8.04	8.04	8.04	8.04	8.04	8.04	8.04	8.04	8.04	8.04
50.00	6.41	6.41	6.41	6.41	6.41	6.41	6.41	6.41	6.41	6.41
100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

MOMENTUM AVERAGE MOTOR EFFICIENCY = 0.872
 MOMENTUM AVERAGE MOTOR EFFICIENCY = 0.870
 POLYTROPIC EFFICIENCY = 0.872
 POLYTROPIC EFFICIENCY = 0.870

NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 1, 1974 (COMBINED) TEMP. 1

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

100 PERCENT DESIGN SPEED - SCAM NO 4

INLET VELOCITY DIAGRAM DATA
CALCULATED, AERODYNAMIC BLOCKAGE = .9214

PERCENT SPAN FROM TIP (I. S.)	REF. 3 (O/F)	V3 (FT/SEC)	VU1 (FT/SEC)	W3 (FT/SEC)	VU3 (FT/SEC)	W3 (FT/SEC)	U3 (FT/SEC)
0.00	43.54	455.26	519.54	.711	619.58	612.77	1676.97
11.55	44.63	477.97	616.67	.711	626.87	624.93	1619.50
22.60	42.26	481.66	606.21	.761	667.15	667.14	1719.91
34.60	42.44	485.06	629.58	.787	677.74	677.74	1225.60
47.64	46.10	498.97	668.49	.815	692.92	692.92	1126.56
61.11	47.71	1013.59	737.42	.975	696.97	696.97	1018.73
100.00	47.97	1050.60	746.12	.921	708.75	679.17	956.61

EXIT VELOCITY DIAGRAM DATA
CALCULATED, AERODYNAMIC BLOCKAGE = .9209

PERCENT SPAN FROM TIP (I. S.)	REF. 4 (O/F)	V4 (FT/SEC)	VU4 (FT/SEC)	W4 (FT/SEC)	VU4 (FT/SEC)	W4 (FT/SEC)	U4 (FT/SEC)
0.00	-1	601.65	2.02	.546	681.68	681.68	1464.10
11.55	-1	590.39	-2.73	.545	680.34	680.30	1416.40
22.60	-1.33	608.04	-16.62	.768	688.78	688.44	1730.74
34.60	-1.20	715.77	-15.04	.596	715.21	714.67	1248.15
47.64	-1.54	677.67	-6.93	.502	697.86	697.47	1166.40
61.11	-1.54	654.11	-17.74	.566	648.87	656.66	1072.11
100.00	-1.57	663.67	-14.10	.550	663.42	679.47	1019.36

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (I. S.)	INCIDENTAL ANGLES (DEG)	MASS FLOW (LBS)	INCIDENTAL ANGLES (DEG)	SUCT SUP (DEG)	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE LOSS	STAGE LOSS	STATION POLYTROPIC EFF
0.00	43.75	0.10	7.250	3.117	.0072	22.010	1.907	1.2703	.9363
11.55	44.66	12.05	9.253	4.921	.0206	16.301	1.937	1.2703	.8778
22.60	43.74	11.61	5.650	2.841	.0234	11.771	1.424	1.2673	.8510
34.60	44.00	51.1	5.164	2.151	.0101	10.761	1.557	1.2672	.8350
47.64	43.63	71.26	3.564	.686	.0179	10.571	1.936	1.2763	.8924
61.11	48.76	10.79	4.301	1.475	.0460	4.900	1.882	1.2600	.7820
100.00	49.56	100.00	3.310	-8.113	.0351	17.110	1.893	1.2610	.8024

MOMENTUM AVERAGE STAGE EFFICIENCY = .8266 (POLYTROPIC)
 MASS AVERAGE TEMPERATURE RISE = 1.9214
 MASS AVERAGE TEMPERATURE RISE = 1.2528

NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 1, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

100 PERCENT DESIGN SPEED - SCAY NO 4

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9214

PERCENT SPAN FROM TIP (I. F.)	BETA 3 (DEG)	V3 (M/SEC)	V13 (M/SEC)	M3 (M/SEC)	V73 (M/SEC)	M3 (M/SEC)
0.00	41.24	209.64	179.69	144.05	186.77	450.75
11.55	46.43	267.54	187.34	191.07	190.75	432.36
30.65	42.25	274.74	186.77	203.35	213.75	402.29
49.60	42.83	241.94	191.89	206.54	206.42	373.56
67.44	43.10	209.25	197.63	211.20	210.63	343.37
85.11	44.71	308.96	226.89	211.83	208.98	310.51
100.00	47.47	322.66	239.67	216.03	208.04	291.58

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9099

PERCENT SPAN FROM TIP (I. F.)	BETA 4 (DEG)	V4 (M/SEC)	V14 (M/SEC)	M4 (M/SEC)	V74 (M/SEC)	M4 (M/SEC)
0.00	-1.17	207.77	-1.42	207.77	207.77	447.64
11.63	-1.27	207.30	-1.33	207.30	207.35	431.94
30.67	-1.34	210.00	-5.06	209.94	209.84	405.62
49.63	-1.29	210.06	-4.54	214.00	217.77	380.56
67.51	-1.53	212.72	-1.36	212.71	212.59	355.04
84.24	-1.54	210.90	-5.41	200.42	200.02	326.74
100.00	-1.67	202.29	-5.56	202.21	202.21	310.70

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	MASS FLOW (PCF)	DELTA BETA (DEG)	INCIDENCE ANGLE (DEG)	SUCT SWIRL (DEG)	DELTA FACTOR	DELTA OMEGA (DEG)	LOSS PARAMETER	DELTA ANGLE (DEG)	STAGE BPFSS RATIO	STAGE STAFF RATIO	STATOR POLYTROPIC EFF
0.00	0.00	43.74	7.53	3.37	.6562	.0201	.0072	22.010	1.909	1.2703	.943
11.63	12.05	44.56	8.253	4.331	.6644	-.0592	.0206	16.301	1.907	1.2703	.8774
30.65	33.61	43.64	5.070	2.353	.6662	.0711	.0236	11.771	1.923	1.2563	.8410
49.60	44.93	44.00	5.146	2.153	.6741	.0324	.0101	10.765	1.957	1.2172	.9750
67.44	71.26	43.63	3.543	.686	.6562	.0622	.0179	10.573	1.934	1.2740	.8925
85.11	90.56	40.26	4.361	1.875	.6380	.1664	.0440	9.930	1.892	1.2408	.7720
100.00	100.00	49.54	3.334	-.103	.5542	.1569	.0391	17.130	1.883	1.2410	.8029

MOMENTUM AVERAGE STAGE EFFICIENCY = .8266 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .8100 (ADIABATIC)

MOMENTUM AVG. STAGE BPFSS RATIO = 1.9214
MASS AVERAGE TEMPERATURE RISE = 1.2528

NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 1, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE: NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT FLIGHT FLOW = 3.3594 LHM/SEC
 EQUIVALENT FLOW / INLET ANN AREA = 76440.528 R.P.M.
 PERCENT OFSGEJ EQUIVALENT FLOW = 21.7204
 EQUIVALENT SPEED = 37.1033 LHM/SEC-SU FT

100 PERCENT DESIGN SPEED - SCAN NO 5

EQUIVALENT SPEED

EQUIVALENT FLOW / INLET ANN AREA = .9700

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9700

PERCENT SPAN FROM TIP (U. S.)	HEIGHT (IN)	V01 (FT/SEC)	V01E (FT/SEC)	W01 (DEG)	RETA1 (DEG)	V1 (FT/SEC)	V1E (FT/SEC)	W1 (DEG)	V04 (FT/SEC)	V04E (FT/SEC)	W4 (DEG)	V07 (FT/SEC)	V07E (FT/SEC)	W7 (DEG)
0.00	72.15	1607.76	1577.67	1.523	0.00	510.00	0.00	.667	510.00	0.00	.480	493.57	1593.67	.11
10.45	70.74	1510.50	1501.71	1.454	0.00	523.52	0.00	.480	523.52	0.00	.524	504.38	1501.91	.11
27.59	67.50	1401.66	1367.41	1.364	0.00	545.33	0.00	.524	545.33	0.00	.524	504.38	1367.91	.11
46.27	64.75	1327.07	1276.49	1.260	0.00	573.07	0.00	.524	573.07	0.00	.524	504.38	1276.49	.11
62.94	62.54	1274.36	1224.90	1.170	0.00	564.41	0.00	.519	564.41	0.00	.485	544.42	1090.90	.11
82.88	59.26	1046.70	976.46	.949	0.00	529.00	0.00	.485	529.00	0.00	.485	521.00	976.46	.11
100.00	57.67	940.29	801.29	.848	0.00	507.13	0.00	.464	507.13	0.00	.464	489.90	801.29	.11

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9079

PERCENT SPAN FROM TIP (U. S.)	HEIGHT (IN)	V02 (FT/SEC)	V02E (FT/SEC)	W02 (DEG)	RETA2 (DEG)	V2 (FT/SEC)	V2E (FT/SEC)	W2 (DEG)	V02 (FT/SEC)	V02E (FT/SEC)	W2 (DEG)	V07 (FT/SEC)	V07E (FT/SEC)	W7 (DEG)
0.00	61.35	1076.44	947.26	.894	48.37	775.74	579.86	.638	579.86	0.00	.638	498.71	1523.12	.12
12.61	58.61	987.45	840.01	.811	49.95	798.03	609.36	.654	609.36	0.00	.654	512.20	1449.37	.12
32.65	51.28	876.26	722.64	.775	46.30	838.73	606.41	.702	606.41	0.00	.702	575.82	129.05	.12
50.11	46.59	842.10	591.19	.711	46.60	872.75	634.04	.737	634.04	0.00	.737	599.66	125.27	.12
64.16	37.04	761.04	459.29	.649	47.31	896.08	654.66	.743	654.66	0.00	.743	604.79	117.44	.12
84.21	21.06	645.30	277.95	.553	51.75	948.85	780.84	.870	780.84	0.00	.870	589.97	99.80	.12
100.00	10.47	610.44	110.93	.527	53.72	1014.42	817.76	.876	817.76	0.00	.876	570.87	94.69	.12

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	HEIGHT (IN)	MASS FLOW (PCF)	DELTA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUIC SUM (DEG)	LOSS PARAMETER	OMEGA* (DEG)	HAH	FACTOR	OMEGA* (DEG)	LOSS PARAMETER	ANGLE SUIC SUM (DEG)	DELTA (DEG)	ROTOR ANTIADAPTIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	10.00	4.313	7.844	.0451	.2671	.4867	.4867	4.361	1.924	1.924	.7259	.7498	
10.45	12.61	12.93	12.16	9.047	7.690	.0499	.2642	.5199	.5199	3.853	1.914	1.914	.7201	.7443	
27.59	32.65	33.69	16.11	8.691	6.494	.0365	.1659	.5098	.5098	1.906	1.078	1.078	.4714	.4967	
46.27	50.11	53.04	20.16	8.265	5.318	.0290	.1297	.5236	.5236	3.028	2.003	2.003	.4802	.4912	
62.94	64.16	71.49	24.55	8.458	4.556	.0237	.1087	.5247	.5247	7.328	1.990	1.990	.5115	.5146	
84.21	84.21	90.57	34.32	8.736	3.891	.0166	.1086	.5456	.5456	12.372	1.994	1.994	.4847	.4943	
100.00	100.00	100.00	47.20	8.918	2.844	.0117	.2017	.5362	.5362	17.522	1.995	1.995	.4846	.4943	

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8694 (POLYTROPIC)

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8349 (ADIABATIC)

MOMENTUM AVE. ROTOR EFFSS RATIO = 1.9688

MASS AVERAGE TEMPERATURE RISE = 1.2552

NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 1, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIVALENT HEIGHT FLOW = 1.5219 KG/SEC 100 PERCENT DES.GN SPEED - SCAN NO 5
 PERCENT DESIGN EQUIVALENT FLOW = 91.7204 EQUIVALENT SPEED

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9700

PERCENT SPAN FROM TIP (I. F.)	WETA*1 (DEG)	V*1 (M/SEC)	HETA1 (DEG)	V1 (M/SEC)	M1	VU1 (M/SEC)	V*1 (M/SEC)	WETA1 (DEG)	V1 (M/SEC)	M1	VU1 (M/SEC)	V*1 (M/SEC)	WETA1 (DEG)	U1 (M/SEC)
0.00	72.15	507.11	482.70	0.00	155.65	0.00	0.00	0.00	155.65	.447	155.65	0.00	150.64	442.70
10.45	70.74	406.40	457.74	0.00	150.57	0.00	0.00	.440	150.57	.440	150.57	0.00	156.95	457.74
27.59	67.50	451.61	416.94	0.00	173.53	0.00	0.00	.524	173.53	.524	173.53	0.00	170.34	416.94
46.37	64.75	416.64	376.84	0.00	173.72	0.00	0.00	.537	173.72	.537	173.72	0.00	177.15	376.84
62.94	62.04	374.40	332.51	0.00	172.09	0.00	0.00	.519	172.09	.519	172.09	0.00	172.04	332.51
85.49	59.94	322.11	270.85	0.00	161.24	0.00	0.00	.485	161.24	.485	161.24	0.00	159.07	270.85
100.00	57.57	289.04	246.23	0.00	156.57	0.00	0.00	.464	156.57	.464	156.57	0.00	149.32	246.23

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9079

PERCENT SPAN FROM TIP (I. F.)	WETA*2 (DEG)	V*2 (M/SEC)	WETA2 (DEG)	V2 (M/SEC)	M2	VU2 (M/SEC)	V*2 (M/SEC)	WETA2 (DEG)	V2 (M/SEC)	M2	VU2 (M/SEC)	V*2 (M/SEC)	WETA2 (DEG)	U2 (M/SEC)
0.00	61.35	327.61	247.50	0.00	236.45	0.00	0.00	0.00	236.45	.638	236.45	0.00	152.01	464.25
12.41	59.63	299.84	256.03	0.00	242.63	0.00	0.00	.654	242.63	.654	242.63	0.00	152.71	441.77
32.15	51.28	242.12	220.26	0.00	255.65	0.00	0.00	.702	255.65	.702	255.65	0.00	175.51	405.09
50.11	44.57	254.67	180.20	0.00	264.01	0.00	0.00	.737	264.01	.737	264.01	0.00	182.70	373.46
61.14	37.09	212.15	130.99	0.00	273.13	0.00	0.00	.763	273.13	.763	273.13	0.00	186.44	340.75
84.21	21.54	196.69	72.53	0.00	295.30	0.00	0.00	.830	295.30	.830	295.30	0.00	170.82	304.43
100.00	10.47	146.04	33.81	0.00	309.20	0.00	0.00	.875	309.20	.875	309.20	0.00	176.75	293.06

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	DELTA WETA*0 (DEG)	MASS FLOW (PC)	INCIDENCE MEAN (DEG)	SUCT SIB (DEG)	OMEGA RAP	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR LOSS RATIO	ROTOR ANTIADIBATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	4.313	7.845	.2471	.0451	4.341	1.924	.7259	.7494
10.45	12.41	12.32	4.047	7.630	.2642	.0499	3.853	1.914	.7201	.7443
27.59	32.15	31.65	4.641	6.604	.1859	.0345	1.906	1.974	.6914	.8467
46.37	50.11	50.11	4.265	5.214	.1297	.0280	3.002	2.003	.4802	.8912
62.94	62.94	71.09	4.549	4.546	.1047	.0237	7.024	1.980	.9115	.9146
85.49	84.21	70.57	4.736	3.641	.1484	.0264	12.372	1.976	.4067	.9043
100.00	100.00	100.00	4.918	2.844	.2017	.0422	17.422	1.995	.0046	.9043

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8498 (POLYTROPIC)

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8349 (ADIABATIC)

MOMENTUM AVG. ROTOR LOSS RATIO = 1.9686

MASS AVERAGE TEMPERATURE RISE = 1.2552

NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 1, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

100 PERCENT DESIGN SPEED - SCAN NO 5

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9343

PERCENT SPAN FROM TIP (L. F.)	HETA 3 (DEG)	VJ (FT/SEC)	VII3 (FT/SEC)	M3	VM3 (FT/SEC)	U73 (FT/SEC)	U3 (FT/SEC)
0.00	44.71	848.66	597.98	.704	603.10	594.47	1479.20
11.88	46.84	853.81	623.21	.708	593.60	582.63	1417.16
31.41	42.80	902.05	612.84	.761	661.90	641.89	1315.10
44.84	42.90	932.39	634.69	.791	681.03	662.52	1224.10
67.24	43.77	943.66	652.30	.809	681.43	678.94	1127.98
87.89	44.04	1001.16	744.96	.862	668.84	659.85	1020.09
100.00	44.30	1046.57	793.42	.908	682.50	643.64	936.85

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9072

PERCENT SPAN FROM TIP (L. F.)	HETA 6 (DEG)	V4 (FT/SEC)	VII4 (FT/SEC)	M4	VM4 (FT/SEC)	U74 (FT/SEC)	U6 (FT/SEC)
0.00	-0.97	678.41	-10.30	.553	678.33	678.31	1468.47
11.41	-0.91	679.81	-10.74	.554	679.73	679.64	1417.26
30.48	-1.54	679.04	-14.23	.559	678.79	678.49	1331.65
44.45	-1.04	707.32	-12.44	.586	707.20	706.47	1269.21
67.47	-1.06	690.82	-12.54	.574	689.71	689.33	1165.63
88.17	-1.34	651.14	-15.70	.538	651.00	648.62	1072.73
100.00	-1.39	653.94	-15.47	.541	653.75	653.75	1019.61

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	MASS FLOW (LBT)	DELTA HETA (DEG)	INCIDENCE HETA (DEG)	ANGLE SUCT (DEG)	FACTOR 0	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAFF OFFSET RATIO	STAGE TEMPERATURE RATIO	STATOR POLYTROPIC EFF
0.00	0.00	45.59	4.334	4.472	.4605	.0224	.0081	21.310	1.913	1.2820	.9493
11.88	12.22	47.79	10.670	7.371	.4609	.0037	.0013	15.627	1.914	1.2820	.9319
31.41	33.63	44.33	6.134	2.865	.4737	.0941	.0309	11.627	1.918	1.2592	.8224
44.84	51.05	43.94	5.123	2.137	.4498	.0703	.0216	10.934	1.955	1.2489	.8473
67.24	71.79	44.81	4.244	1.391	.4650	.0662	.0190	10.058	1.934	1.2359	.8968
87.89	90.57	49.47	5.781	2.812	.5416	.1495	.0394	10.151	1.881	1.2435	.7944
100.00	100.00	50.63	4.666	1.225	.5594	.1389	.0351	17.310	1.880	1.2433	.8233

MOMENTUM AVERAGE STAFF EFFICIENCY = .8191 (POLYTROPIC) MOMENTUM AVG. STAGE PRESS RATIO = 1.9210
MOMENTUM AVERAGE STAGE EFFICIENCY = .8018 (ADIABATIC) MASS AVERAGE TEMPERATURE RISE = 1.2552

NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 1, 1974 (COMBINED TESTS)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

100 PERCENT DESIGN SPEED - SCAN NO 5

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9343

PERCENT SPAN FROM TIP (L. F.)	BETA 3 (DEG)	V3 (M/SEC)	V113 (M/SEC)	M3	V13 (M/SEC)	V173 (M/SEC)	W23 (M/SEC)	U13 (M/SEC)
0.00	44.71	251.67	181.99	.704	193.82	191.80	191.80	4.0.86
11.88	46.88	240.24	189.96	.708	177.88	177.59	177.59	4.3.94
31.41	42.70	274.96	186.79	.761	201.75	201.75	201.75	4.00.94
48.94	42.90	284.19	193.35	.793	208.19	208.03	208.03	3.73.11
67.24	41.77	287.63	198.97	.809	207.70	206.94	206.94	3.43.81
87.00	48.04	305.15	227.07	.862	203.86	201.12	201.12	3.10.92
100.00	49.30	310.99	241.83	.908	208.03	202.28	202.28	2.91.85

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9072

PERCENT SPAN FROM TIP (L. F.)	BETA 4 (DEG)	V4 (M/SEC)	V114 (M/SEC)	M4	V14 (M/SEC)	V174 (M/SEC)	U14 (M/SEC)	
0.00	-1.17	206.74	-3.14	.553	206.75	206.75	206.75	4.67.59
11.88	-1.01	207.21	-1.29	.554	207.18	207.15	207.15	4.31.98
31.41	-1.54	206.97	-5.56	.559	206.90	206.80	206.80	4.05.49
48.94	-1.04	215.59	-3.71	.586	215.54	215.33	215.33	3.80.76
67.47	-1.14	210.26	-3.82	.574	210.22	210.11	210.11	3.55.24
88.17	-1.30	198.48	-4.78	.538	198.42	197.70	197.70	3.26.97
100.00	-1.30	192.32	-4.84	.541	199.26	199.26	199.26	3.10.71

STATOR PERFORMANCE DATA

PERCENT LEADING EDGE FROM TIP	TRAILING EDGE	MASS FLOW (PCT)	DELTA HETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUPT SUR (DEG)	n FACTOR	OHFO4 BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STATOR PRESS RATIO	STATOR PRESS RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	45.50	8.396	4.772	.6605	.0224	.0081	21.310	1.013	1.2820	.9481
11.88	11.41	12.22	47.79	10.690	7.371	.6609	.0037	.0013	15.627	1.014	1.2829	.9919
31.41	30.40	17.59	44.33	6.134	2.865	.4737	.0941	.0309	11.627	1.019	1.2882	.8224
48.94	44.85	17.05	43.94	5.123	2.137	.6498	.0703	.0216	10.914	1.055	1.2689	.8473
67.24	67.47	71.94	44.81	4.244	1.381	.4650	.0662	.0190	10.050	1.034	1.2759	.8968
87.00	88.17	90.57	49.66	5.781	2.882	.5416	.1494	.0396	10.151	1.041	1.2435	.7264
100.00	100.00	100.00	50.69	4.666	1.225	.5594	.1304	.0351	17.310	1.800	1.7411	.8233

MOMENTUM AVERAGE STAGE EFFICIENCY = .8191 (POLYTROPIC)

MOMENTUM AVERAGE STAGE PRESS RATIO = 1.9210

MASS AVERAGE TEMPERATURE RISE = 1.2552

NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 1, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT WEIGHT FLOW = 3.5283 LAM/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 96.3332
 100 PERCENT DESIGN SPFFD = SCAM NO 4
 EQUIVALENT SPFD = 76987.33A R.P.M.
 EQUIVALENT FLOW / INLET ANN AREA = 39.9A93 LAM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOKAGE = .9610

PERCENT SPAN FROM TIP (L. F.)	RETA#1 (DEG)	V#1 (FT/SEC)	VI#1 (FT/SEC)	W#1 (DEG)	RETA1 (DEG)	V1 (FT/SEC)	VI1 (FT/SEC)	M1	VM (FT/SEC)	V71 (FT/SEC)	VI1 (FT/SEC)
0.00	70.99	1478.10	1584.61	1.541	0.00	544.51	0.00	.502	544.51	528.01	1544.61
10.03	69.61	1508.90	1507.98	1.479	0.00	560.57	0.00	.515	560.57	542.22	1507.98
24.04	64.10	1500.46	1475.43	1.390	0.00	604.59	0.00	.563	604.59	594.39	1375.43
43.87	63.33	1300.75	1242.74	1.287	0.00	424.33	0.00	.578	424.33	422.32	1242.74
62.60	61.14	1252.65	1097.52	1.157	0.00	403.80	0.00	.559	403.80	603.59	1097.52
85.10	58.47	1078.42	919.55	.992	0.00	544.16	0.00	.519	544.16	554.58	919.55
100.00	56.07	967.49	802.78	.888	0.00	534.98	0.00	.496	534.98	571.63	802.78

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOKAGE = .8529

PERCENT SPAN FROM TIP (L. F.)	RETA#2 (DEG)	V#2 (FT/SEC)	VI#2 (FT/SEC)	W#2 (DEG)	RETA2 (DEG)	V2 (FT/SEC)	VI2 (FT/SEC)	M2	VM2 (FT/SEC)	V72 (FT/SEC)	VI2 (FT/SEC)
0.00	60.66	1193.75	1040.63	1.000	37.68	760.04	485.32	.637	586.31	586.08	1525.95
11.70	55.79	1144.07	947.75	.966	38.28	820.89	508.53	.692	644.60	630.32	1456.28
30.45	52.12	1043.93	873.99	.896	39.02	825.01	519.44	.700	640.94	637.97	1363.92
49.63	45.74	938.85	672.80	.801	40.48	840.83	548.79	.735	654.05	654.78	1231.59
69.47	37.04	845.23	509.63	.727	42.07	908.32	608.57	.781	674.31	672.32	1118.20
88.73	22.59	786.97	302.35	.645	43.74	1005.59	695.20	.875	726.57	714.64	997.55
100.00	14.27	750.23	144.95	.657	45.72	1041.32	745.66	.911	727.00	702.37	940.41

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA META# (DEG)	INCIDENCE ANGLE (DEG)	SUCT SWIRL (DEG)	FACTOR	OMEGA# (HAM)	LOSS PARAMETER (DEG)	DEVIATION ANGLE (DEG)	RATOR PRESS RATIO	ADIBATIC EFF	POLYTROPIC EFF
0.00	0.00	0.00	10.33	7.157	6.689	.3988	.2084	.0381	3.670	1.764	.7487	.7600
10.03	0.00	12.66	13.82	7.785	6.654	.4212	.1820	.0371	.888	1.815	.7813	.7488
24.04	30.65	13.04	17.94	7.280	5.123	.4210	.1305	.0267	2.009	1.841	.8508	.8530
43.87	49.43	52.59	17.55	6.771	3.451	.4463	.1013	.0215	3.493	1.880	.8951	.9040
62.60	68.47	71.68	24.10	6.942	3.042	.4582	.0838	.0183	.271	1.904	.9251	.9316
85.10	88.73	90.28	35.88	7.195	2.154	.4789	.0692	.0085	14.069	1.996	.9731	.9756
100.00	100.00	100.00	41.80	7.321	1.247	.3853	.0477	.0094	21.324	1.997	.9731	.9756

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8799 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8689 (ADIABATIC)
 MOMENTUM AVG. ROTOR PRESS RATIO = 1.8692
 MASS AVERAGE TEMPERATURE RISE = 1.2240

NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 1, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIVALENT WEIGHT FLOW = 1.6004 KG/SEC 100 PERCENT DESIGN SPEED = 5041 NO ϕ = 7493.338 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 96.3372 EQUIVALENT SPEED = 190.2464 KG/SEC-50 M

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9610

PERCENT SPAN FROM TIP (I. F.)	RETAIN (DEG)	VEL (M/SEC)	VU*1 (M/SEC)	VU*1 RETAIN (DEG)	V1 (M/SEC)	VIII (M/SEC)	M1	VMI (M/SEC)	V71 (M/SEC)	UII (M/SEC)
0.00	70.99	511.64	483.60	1.541	0.00	166.58	.502	166.50	161.21	613.00
10.00	69.61	490.36	459.63	1.479	0.00	170.06	.515	170.04	165.27	599.63
20.00	66.10	458.56	414.23	1.390	0.00	185.80	.563	185.80	182.39	619.23
43.87	62.30	423.90	378.79	1.287	0.00	190.30	.578	190.30	189.68	718.79
62.60	61.14	381.81	336.52	1.157	0.00	186.04	.558	186.04	183.94	336.52
85.10	54.47	324.82	280.28	.902	0.00	171.46	.519	171.04	169.65	280.28
100.00	56.07	294.89	244.69	.888	0.00	166.59	.494	166.50	168.09	244.69

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8520

PERCENT SPAN FROM TIP (I. F.)	HETA*2 (DEG)	VE*2 (M/SEC)	VU*2 (M/SEC)	V*2 (M/SEC)	VU*2 (M/SEC)	V*2 (M/SEC)	M*2	VU*2 (M/SEC)	V*2 (M/SEC)	U*2 (M/SEC)
0.00	60.66	362.85	317.18	1.000	39.64	231.66	.637	174.20	172.54	465.11
11.70	55.79	349.52	288.87	.966	38.24	240.21	.692	194.61	192.12	443.64
30.65	52.12	314.19	251.15	.886	36.02	251.46	.700	195.37	196.15	409.48
40.63	45.78	285.07	205.07	.801	40.64	170.32	.735	199.50	199.50	371.39
68.47	37.18	257.63	155.34	.727	42.07	276.86	.781	206.53	206.92	340.83
88.73	22.59	238.87	92.16	.685	43.74	306.50	.876	221.88	217.02	306.05
100.00	14.27	228.67	56.37	.657	45.72	317.60	.911	221.61	216.18	283.59

ROTOR PERFORMANCE DATA

PERCENT LEADING EDGE FROM TIP	MASS FLOW (PCT)	DELTA HETA* (DEG)	INCIDENCE MEAN (DEG)	SUCT AIR (DEG)	FACTOR	OMEGA* (RPM)	PARAMETER	LOSS (DEG)	DEVIATION (DEG)	ROTOR ANTIADIBATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	10.33	7.157	7.689	.3988	27044	.0381	3.670	1.766	.7602	.7600
10.00	12.66	13.82	7.785	6.456	.6072	1820	.0371	.868	1.815	.7813	.7948
26.00	33.04	13.94	7.280	5.123	.4210	1305	.0267	2.009	1.641	.8508	.8630
43.87	52.59	17.55	6.771	3.851	.4463	1013	.0215	3.893	1.480	.8951	.9040
62.60	71.49	26.10	6.942	3.062	.4562	.0838	.0183	7.271	1.904	.9251	.9316
85.10	90.29	35.88	7.195	2.156	.4189	.0392	.0085	18.064	1.986	.9731	.9756
100.00	100.00	41.90	7.321	1.267	.3853	.0677	.0098	21.324	1.987	.9731	.9756

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8799 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8689 (ADIABATIC)

MOMENTUM AVG. ROTOR PRESS RATIO = 1.8692
 MASS AVERAGE TEMPERATURE RATIO = 1.2248

NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 1, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

100 PERCENT DESIGN SPEED - SCAN NO 6

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .0824

PERCENT SPAN FROM TIP (I. I.)	BETA 3 (DEG)	V3 (FT/SEC)	VIII (FT/SEC)	M3	VM3 (FT/SEC)	V73 (FT/SEC)	U3 (FT/SEC)
0.00	34.21	866.63	490.73	.735	708.04	700.24	1471.95
11.17	35.14	902.54	520.16	.749	737.62	736.40	1423.72
22.54	35.71	916.62	525.00	.747	750.50	750.57	1377.17
44.08	36.14	947.30	549.36	.818	764.53	743.96	1230.34
67.27	38.00	978.24	602.27	.849	770.05	748.04	1129.90
84.15	40.15	1053.77	679.66	.924	805.46	794.64	1020.60
100.00	41.50	1091.70	723.38	.963	817.64	795.05	958.63

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .08758

PERCENT SPAN FROM TIP (I. I.)	BETA 4 (DEG)	V4 (FT/SEC)	VIII (FT/SEC)	M4	VM4 (FT/SEC)	V74 (FT/SEC)	U4 (FT/SEC)
0.00	-1.92	879.10	-27.78	.700	828.64	828.64	1471.20
11.21	-1.87	853.64	-27.90	.723	853.19	853.04	1420.77
22.25	-1.88	867.64	-13.32	.740	867.59	867.70	1350.53
44.36	-1.75	844.14	-27.24	.767	893.72	892.80	1253.72
67.15	-2.78	872.95	-42.29	.747	871.93	871.45	1169.25
84.19	-1.77	842.72	-18.93	.727	852.52	849.40	1074.62
100.00	-1.22	860.12	-18.34	.734	859.93	859.93	1021.51

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (I. I.)	FRONT LOSS (PPT)	DELTA HEAT (DEG)	INCIDENCE HEAT (DEG)	SUCT 5/11 (DEG)	ANGLE F (DEG)	DELTA FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE LOSS RATIO	STAGE LOSS RATIO	STATOR POLYTROPIC EFF
0.00	0.00	37.13	-1.104	-5.024	.2643	.0499	.0242	.0242	20.260	1.724	1.2173	.3319
11.17	11.21	37.05	-1.440	-4.330	.2450	.0916	.0314	.0314	14.710	1.741	1.2373	.3054
22.54	22.25	35.84	-1.543	-4.314	.2450	.0891	.0293	.0293	12.339	1.796	1.2236	.3141
44.08	44.08	37.04	-1.520	-4.517	.2426	.0796	.0284	.0284	10.260	1.827	1.2205	.3336
67.27	67.27	40.78	-1.530	-4.302	.2911	.1411	.0462	.0462	8.324	1.789	1.2180	.3435
84.15	84.15	41.42	-2.212	-5.094	.3542	.2916	.0745	.0745	10.267	1.749	1.2222	.3554
100.00	100.00	42.72	-3.132	-4.574	.3741	.2660	.0673	.0673	17.474	1.749	1.2222	.4857

MOMENTUM AVERAGE STAGE EFFICIENCY = .8114 (POLYTROPIC) MOMENTUM AVG. STAGE LOSS RATIO = 1.7806
 MASS AVERAGE STAGE EFFICIENCY = .7958 (ADIABATIC) MASS AVERAGE TEMPERATURE RISE = 1.2248

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 OF POOR QUALITY

NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (MFRIC UNITS)

100 PERCENT DESIGN SPEED - SCAN NO 6

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8828

PERCENT SPAN FROM TIP (I. F.)	RETA 3 (DEG)	V1 (M/SEC)	V13 (M/SEC)	M13	V14 (M/SEC)	M14	V15 (M/SEC)	M15	V16 (M/SEC)	M16	V17 (M/SEC)	M17	V18 (M/SEC)	M18
0.00	45.21	264.15	152.12	.715	215.81	.715	215.81	.715	215.81	.715	213.44	.715	213.44	.715
11.13	45.19	275.11	150.55	.769	226.83	.769	226.83	.769	226.83	.769	224.45	.769	224.45	.769
22.50	35.01	279.33	160.26	.787	220.78	.787	220.78	.787	220.78	.787	218.77	.787	218.77	.787
40.00	34.14	288.74	170.44	.810	211.03	.810	211.03	.810	211.03	.810	209.44	.810	209.44	.810
57.27	34.00	298.17	183.57	.849	194.94	.849	194.94	.849	194.94	.849	193.10	.849	193.10	.849
84.15	40.15	321.19	202.10	.924	165.50	.924	165.50	.924	165.50	.924	162.21	.924	162.21	.924
100.00	41.50	332.75	220.44	.963	149.22	.963	149.22	.963	149.22	.963	142.11	.963	142.11	.963

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8759

PERCENT SPAN FROM TIP (I. F.)	RETA 4 (DEG)	V4 (M/SEC)	V16 (M/SEC)	M16	V14 (M/SEC)	M14	V15 (M/SEC)	M15	V16 (M/SEC)	M16	V17 (M/SEC)	M17	V18 (M/SEC)	M18
0.00	-1.22	252.71	-4.47	.700	252.57	.700	252.57	.700	252.57	.700	252.57	.700	252.57	.700
11.21	-1.27	260.19	-4.50	.723	260.05	.723	260.05	.723	260.05	.723	260.02	.723	260.02	.723
22.05	-.81	264.67	-4.74	.740	264.44	.740	264.44	.740	264.44	.740	264.32	.740	264.32	.740
40.14	-1.75	272.53	-4.30	.747	272.41	.747	272.41	.747	272.41	.747	272.13	.747	272.13	.747
57.15	-2.74	276.08	-12.49	.767	265.76	.767	265.76	.767	265.76	.767	265.62	.767	265.62	.767
84.10	-1.27	243.01	-5.74	.727	259.85	.727	259.85	.727	259.85	.727	258.00	.727	258.00	.727
100.00	-1.22	262.16	-5.69	.736	262.11	.736	262.11	.736	262.11	.736	262.11	.736	262.11	.736

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP FROM TREATING EDGE	DELTA HETA (DEG)	INCIDENCE MEAN (DEG)	MEAN SUCT S.M. (DEG)	OMEGA HAW	LOSS PARAMETER	REVIATION ANGLE (DEG)	STAGE LOSS RATIO	STAGE LOSS RATIO	STAGE LOSS RATIO	STATOR POLYTROPIC EFF
0.00	37.11	-2.104	-5.024	.0499	.0742	20.240	1.724	1.724	1.724	.3119
11.13	37.04	-2.940	-4.310	.0514	.0319	14.710	1.741	1.741	1.741	.3048
22.50	35.00	-1.553	-4.419	.0501	.0291	12.310	1.784	1.784	1.784	.3101
40.00	37.04	-1.529	-4.517	.0794	.0264	10.260	1.837	1.837	1.837	.3116
57.27	40.74	-1.510	-4.302	.1411	.0462	4.320	1.749	1.749	1.749	.3135
84.15	41.52	-2.212	-5.014	.2816	.0745	10.247	1.740	1.740	1.740	.3154
100.00	42.72	-3.132	-6.574	.2660	.0673	17.474	1.740	1.740	1.740	.3157

MOMENTUM AVERAGE STAGE EFFICIENCY = .8114 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7954 (ADIABATIC)
MOMENTUM AVG. STAGE LOSS RATIO = 1.7404
MASS AVERAGE TEMPERATURE RISE = 1.2248

NASA SMO, AXIAL COMPRESSOR TEST 1 MARCH 1, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

100 PERCENT DESIGN SPEED - SCAN NO 7

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCCAGE = .9003

PERCENT SPAN FROM TIP (I. F.)	BETA 1 (DEG)	V1 (FT/SEC)	VU1 (FT/SEC)	M1	VM1 (FT/SEC)	V73 (FT/SEC)	U2 (FT/SEC)
0.00	36.43	871.32	521.90	.736	697.73	600.06	1478.09
11.74	37.25	875.44	542.54	.750	712.45	711.47	1622.67
20.01	38.00	905.70	562.56	.774	725.32	725.31	1727.64
28.26	37.77	911.64	570.54	.801	736.23	735.69	1832.15
36.53	37.73	940.01	608.74	.819	748.42	748.42	1941.65
44.80	37.50	1027.12	649.70	.895	761.11	750.00	2059.70
100.00	43.50	1040.24	715.14	.937	774.06	753.65	2186.72

EXIT FLOW VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCCAGE = .9037

PERCENT SPAN FROM TIP (I. F.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	V74 (FT/SEC)	U4 (FT/SEC)
0.00	-1.57	722.06	-19.74	.600	721.79	721.79	1464.26
11.24	-1.57	743.02	-20.19	.618	742.74	742.65	1417.73
20.07	-1.74	763.95	-23.14	.642	743.60	743.26	1333.30
28.43	-1.57	744.03	-21.43	.662	743.74	752.93	1250.97
37.20	-1.22	773.70	-16.51	.654	773.52	773.10	1166.54
46.13	-1.39	744.87	-14.04	.626	744.65	741.93	1072.44
100.00	-1.19	750.24	-14.20	.631	750.02	750.02	1019.47

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	TRAILING EDGE	MASS FLOW (LBS)	DELTA WETA (DEG)	INCIDENCE MEAN (DEG)	SUCT SUR FANG (DEG)	INCIDENCE MEAN (DEG)	DELTA WETA (DEG)	LOSS PARAMETER	DELTA WETA (DEG)	STAGE PRESS RATIO	STAGE LOSS RATIO	STATOR POLYTROPIC EFF
0.00	0.01	11.00	34.37	.478	-1.444	.3970	.0526	.0190	20.010	1.800	1.2473	.4425
10.74	11.20	10.34	34.45	1.112	-2.253	.3690	.0543	.0206	14.009	1.826	1.2473	.4463
20.01	30.17	10.14	30.54	.250	-2.042	.3608	.0374	.0105	11.446	1.854	1.2307	.4114
28.26	44.82	9.60	30.36	.133	-2.474	.3502	.0287	.0048	10.436	1.886	1.2252	.4228
36.53	67.21	71.34	41.01	.356	-2.527	.3473	.0432	.0124	9.981	1.849	1.2104	.4044
44.80	80.11	50.23	43.57	-1.110	-3.026	.4490	.14.5	.0501	10.143	1.821	1.2253	.4074
100.00	100.00	100.00	44.811	-1.111	-2.573	.4658	.1777	.0449	17.310	1.823	1.2254	.4730

MOMENTUM AVERAGE STAGE EFFICIENCY = .4460 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .4331 (ADIABATIC)
MOMENTUM AVERAGE STAGE PRESS RATIO = 1.8506
MASS AVERAGE TEMPERATURE RISE = 1.2303

MASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 1, 1974 (CONTINUED TEMP.)

STATOR PERFORMANCE MASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

100 PERCENT DESIGN SPEED - SCAM NO 7

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9007

PERCENT SPAN FROM TIP (I. P.)	BETA 3 (DEG)	V3 (M/SEC)	V13 (M/SEC)	V3 (M/SEC)	V13 (M/SEC)	V73 (M/SEC)	U13 (M/SEC)
0.00	16.90	265.64	143.97	.716	212.67	210.73	650.90
10.74	17.27	271.08	165.87	.749	217.24	216.92	431.61
20.51	16.90	276.08	174.87	.774	221.04	221.07	406.62
47.26	17.77	281.08	173.10	.801	224.40	224.24	375.56
66.54	18.74	286.08	184.31	.819	227.02	227.21	366.47
87.26	19.14	291.07	210.22	.895	231.99	228.87	310.41
100.00	19.50	296.08	224.11	.937	236.18	220.62	241.61

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9077

PERCENT SPAN FROM TIP (I. P.)	BETA 4 (DEG)	V4 (M/SEC)	V14 (M/SEC)	U4 (M/SEC)	V74 (M/SEC)	U14 (M/SEC)
0.00	-1.57	220.00	-4.04	.600	220.00	647.53
13.74	-1.57	226.87	-6.22	.618	226.36	632.12
30.07	-1.74	232.84	-7.07	.642	232.74	606.79
62.62	-1.57	238.97	-6.53	.662	238.04	581.30
67.26	-1.22	245.82	-5.83	.654	245.77	555.40
88.13	-1.39	257.04	-5.50	.626	256.14	527.01
100.00	-1.33	268.67	-5.54	.631	260.61	510.73

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP FROM LEADING EDGE	DELTA (DEG)	INCIDENCE ANGLE (DEG)	INCIDENCE ANGLE SUPT 514 (DEG)	DELTA FACTOR	OMEGA HAR	LOSS PARAFIFTH	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMPR RATIO	STATOR POLYTROPIC EFF
0.00	19.37	-0.974	-3.644	.3970	.0524	.0130	20.610	1.400	1.2473	.4429
10.74	19.45	3.117	-2.253	.3990	.0493	.0206	14.992	1.024	1.2473	.4443
20.51	30.36	-2.00	-3.912	.3608	.0320	.0104	11.464	1.859	1.2307	.9114
47.26	39.36	1.133	-2.876	.3502	.0247	.0084	1.834	1.406	1.2262	.4224
66.54	41.01	3.366	-2.527	.3673	.0432	.0124	9.401	1.849	1.2109	.4944
87.26	43.57	-1.140	-3.024	.4490	.1494	.0501	10.143	1.823	1.2253	.6974
100.00	44.89	-1.113	-4.573	.4454	.1777	.0469	17.310	1.823	1.2254	.7320

MOMENTUM AVE AND STAGE EFFICIENCY = .8469 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .8131 (ADIABATIC)
MOMENTUM AVE. STAGE PRESS RATIO = 1.4506
MASS AVERAGE TEMPERATURE RISE = 1.2303

NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 10 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT WEIGHT FLOW = 3.6774 LBM/SEC 110 PERCENT DESIGN SPEED = SCAR NO 10 R0721.000 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 100.5173 EQUIVALENT SPFD EQUIVALENT FLOW / INLET ANN AREA = 40.4157 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9700

PERCENT SPA FROM TIP (L.F.)	HETA01 (DEG)	V01 (FT/SEC)	VU01 (FT/SEC)	HETA1 (DEG)	V1 (FT/SEC)	VU1 (FT/SEC)	Y1	VM1 (FT/SEC)	V71 (FT/SEC)	U11
0.00	71.25	1577.72	1746.09	0.00	502.59	0.00	.537	562.50	543.83	1746.09
5.73	70.23	1705.70	1661.66	0.00	507.40	0.00	.551	597.60	577.42	1561.66
20.37	66.04	1512.55	1516.62	0.00	642.16	0.00	.602	669.14	637.23	1516.62
43.10	64.14	1525.14	1473.63	0.00	664.64	0.00	.618	664.64	662.50	1373.63
62.56	62.09	1600.61	1210.07	0.00	641.09	0.00	.594	630.00	640.87	1210.07
85.25	59.83	1174.14	1010.93	0.00	507.17	0.00	.551	597.17	589.15	1010.93
100.00	57.13	601.51	483.67	0.00	570.78	0.00	.524	570.78	551.10	483.67

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8299

PERCENT SPA FROM TIP (L.F.)	HETA02 (DEG)	V02 (FT/SEC)	VU02 (FT/SEC)	HETA2 (DEG)	V2 (FT/SEC)	VU2 (FT/SEC)	Y2	VM2 (FT/SEC)	V72 (FT/SEC)	U2
0.00	61.25	1107.27	1044.61	48.76	444.31	636.92	.683	556.61	524.68	1579.33
11.65	55.07	1193.09	937.82	45.44	433.26	455.16	.763	655.04	640.74	1502.94
20.62	50.42	1177.09	914.09	45.24	443.58	470.51	.780	667.92	659.77	1485.20
47.67	43.04	954.14	654.12	45.91	900.01	709.21	.825	889.72	880.28	1347.53
65.20	36.20	475.14	514.27	45.84	1011.65	725.22	.854	706.31	702.23	1265.49
87.33	21.94	220.75	267.61	51.10	1070.66	439.42	.917	677.60	666.27	1107.07
100.00	0.11	601.52	556.66	53.25	1132.36	907.28	.971	677.55	666.53	1021.94

ROTOR PERFORMANCE DATA

PERCENT SPA FROM TIP	FWC TIP INLET FLOW (LBS)	UFLTA (DEG)	UFLTA0 (DEG)	INCIDENCE ANGLE (DEG)	SUCT SUR (DEG)	D FACTOR	HAR	OMEGA RPM	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADYBATIC EFF	POLYTROPIC EFF
0.00	0.00	0.00	0.00	7.712	7.264	.4884	.2863	2863	.0512	9.954	2.105	.8023	.7224
9.79	11.65	15.16	15.16	4.352	7.036	.4884	.2529	2529	.0525	.137	2.210	.7629	.7694
20.37	29.62	16.04	16.04	7.964	5.442	.4895	.2025	2025	.0424	.364	2.224	.8025	.8251
43.10	47.67	20.50	20.50	7.532	4.649	.5171	.1702	1702	.0374	.093	2.275	.8506	.8666
62.56	66.20	25.64	25.64	7.010	4.946	.5050	.1371	1371	.0302	4.809	2.240	.8024	.8034
85.25	87.33	17.47	17.47	5.170	3.124	.5454	.2277	2277	.0495	11.052	2.225	.8025	.8152
100.00	100.00	67.37	67.37	2.382	2.388	.5243	.2717	2717	.0570	14.921	2.224	.8023	.8150

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8198 (POLYTROPIC) MOMENTUM AVG. ROTOR PRESS RATIO = 2.2263
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8199 (ADIABATIC) MASS AVERAGE TEMPERATURE RISE = 1.3129

NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 1, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIVALENT DESIGN FLOW = 1.6480 KG/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 100.6033
 110 PERCENT DESIGN SPEED = 5040 RPM
 EQUIVALENT SPEED = 4472.100 RPM
 EQUIVALENT FLOW / INLET ANN AREA = 19.8033 KG/SEC-SQ M

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9700

PERCENT SPAN FROM TIP (I. F.)	HETA0 (DEG)	V01 (M/SEC)	V02 (M/SEC)	HETA1 (DEG)	V1 (M/SEC)	V03 (M/SEC)	HETA2 (DEG)	M1	V04 (M/SEC)	V05 (M/SEC)	V06 (M/SEC)	V07 (M/SEC)	U1 (M/SEC)
0.00	71.55	541.05	537.21	1.674	177.57	0.00	0.00	.537	177.57	177.57	177.57	171.06	532.21
0.70	70.23	534.21	506.67	1.670	162.09	0.00	0.00	.551	162.09	162.09	162.09	174.13	506.47
2.37	66.86	532.13	452.88	1.533	177.86	0.00	0.00	.602	177.86	177.86	177.86	174.23	462.88
4.14	56.18	465.12	418.84	1.414	202.58	0.00	0.00	.614	202.58	202.58	202.58	201.93	418.84
6.21	42.16	417.40	364.83	1.270	195.40	0.00	0.00	.594	195.40	195.40	195.40	195.34	364.83
85.22	52.43	357.89	304.13	1.084	182.02	0.00	0.00	.551	182.02	182.02	182.02	179.57	304.13
100.00	57.13	320.59	260.28	.944	173.98	0.00	0.00	.525	173.98	173.98	173.98	144.05	269.28

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8299

PERCENT SPAN FROM TIP (I. F.)	HETA0 (DEG)	V02 (M/SEC)	V03 (M/SEC)	HETA2 (DEG)	V2 (M/SEC)	V04 (M/SEC)	HETA3 (DEG)	M2	V05 (M/SEC)	V06 (M/SEC)	V07 (M/SEC)	U2 (M/SEC)
0.00	61.04	300.72	314.34	48.76	257.36	193.52	0.00	.693	193.52	193.52	144.19	511.86
11.43	55.97	304.67	285.85	45.64	280.55	202.74	0.00	.763	202.74	202.74	195.30	484.59
20.62	50.82	320.33	240.32	45.24	297.60	204.37	0.00	.780	204.37	204.37	201.10	452.89
27.57	43.68	291.53	200.66	45.81	301.45	216.17	0.00	.825	216.17	216.17	210.09	418.84
66.20	36.40	266.71	158.27	45.83	309.15	221.35	0.00	.854	221.35	221.35	214.04	379.63
87.32	27.58	211.58	81.58	51.10	328.77	255.86	0.00	.917	255.86	255.86	203.98	337.44
100.00	41.77	200.56	34.56	53.29	343.18	276.54	0.00	.971	276.54	276.54	199.40	312.10

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	HETA0 (DEG)	DELTA HETA0 (DEG)	MEAN (DEG)	INCIDENCE MEAN (DEG)	SUCT SWIP (DEG)	ANGLE (DEG)	LOSS PARAMETER	OMEGA HAR	OMEGA LOSS	DEVIATION ANGLE (DEG)	ROTOR EFF	ADIBATIC EFF	POLYTROPIC EFF
0.00	0.00	0.00	7.712	7.240	4.884	0.253	.0512	0.954	0.954	2.105	0.623	0.724	
2.70	11.63	15.16	6.352	7.076	4.888	0.259	.0525	0.137	0.137	2.210	0.749	0.7694	
24.37	29.62	32.43	7.373	5.822	4.895	0.205	.0426	0.344	0.344	2.224	0.804	0.8251	
43.18	47.57	20.50	7.532	4.565	3.171	0.170	.0374	0.931	0.931	2.275	0.804	0.8064	
62.16	64.29	7.818	3.971	5.059	1.371	0.032	.0302	4.864	4.864	2.260	0.824	0.8038	
85.22	87.22	37.87	8.170	3.134	4.458	0.275	.0485	11.052	11.052	2.225	0.805	0.8157	
100.00	100.00	47.37	8.342	2.308	4.263	0.2717	.0570	15.421	15.421	2.224	0.803	0.8750	

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8308 (POLYTROPIC)
 MASS AVERAGE ROTOR EFFICIENCY = .8199 (ADIBATIC)
 MOMENTUM AVERAGE ROTOR PRESS RATIO = 2.2263
 MASS AVERAGE TEMPERATURE RISE = 1.3128

NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 1, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

110 PERCENT DESIGN SPEED - SCAN NO 10

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9309

PERCENT SPAN FROM TIP (T. C.)	RFTA 3 (DEG)	V1 (M/SEC)	V103 (M/SEC)	M3	VM3 (M/SEC)	U3 (M/SEC)
0.00	44.71	245.22	109.27	.706	175.02	477.10
11.37	44.37	240.60	207.60	.770	197.91	477.15
20.00	44.03	243.10	207.41	.747	207.21	446.04
44.00	44.10	304.60	217.23	.841	214.50	414.79
65.65	45.24	303.88	220.06	.854	218.18	371.96
47.15	50.14	325.84	250.09	.907	207.92	344.12
100.00	51.54	342.43	268.34	.962	212.77	321.56

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9004

PERCENT SPAN FROM TIP (T. C.)	RFTA 4 (DEG)	V4 (M/SEC)	V104 (M/SEC)	M4	VM4 (M/SEC)	U4 (M/SEC)
0.00	-1.66	204.67	-13.05	.534	204.04	493.49
11.30	-3.67	200.60	-13.60	.548	209.17	476.65
20.00	-4.00	214.00	-15.04	.571	215.56	447.94
44.00	-2.72	225.12	-10.70	.598	224.86	420.20
67.00	.70	224.50	2.74	.602	224.48	371.85
84.00	.97	203.10	3.15	.553	208.07	360.63
100.00	.47	209.14	3.14	.556	209.16	342.65

STATOR PERFORMANCE DATA

PERCENT LEADING EDGE FROM TIP	THREATING ENF	MISS FLOW (PCT)	DELTA HFTA (DEG)	INCIDENCE ANGLE (DEG)	SUCT S/W (NEG)	FACTOR	OMEGA MAP	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE LOSS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	1.00	52.37	12.390	4.446	.5197	.0304	.0110	14.520	2.097	1.7414	.9374
11.37	11.30	12.24	50.04	10.191	6.841	.5765	.1433	.0497	12.896	2.107	1.7416	.7870
20.00	30.20	12.49	49.03	4.444	5.144	.5110	.1153	.0374	9.192	2.140	1.7190	.7362
44.00	44.54	11.44	47.82	7.457	4.473	.4908	.1104	.0338	4.265	2.182	1.7107	.8111
65.65	67.34	71.42	46.55	5.421	3.014	.4718	.0449	.0186	11.793	2.184	1.2888	.8960
87.15	84.00	20.43	49.44	8.215	5.242	.5539	.1339	.0354	12.399	2.102	1.2977	.8250
100.00	100.00	100.00	50.72	6.463	3.522	.5733	.1232	.0310	19.570	2.101	1.2976	.8521

MOMENTUM AVERAGE STAGE EFFICIENCY = .7986 (POLYTROPIC)
 MOMENTUM AVERAGE STAGE EFFICIENCY = .7762 (ADIABATIC)
 MOMENTUM AVG. STAGE PRESS RATIO = 2.1426
 MASS AVERAGE TEMPERATURE RISE = 1.3128

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NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 10 1974 (COMBINED TEMP.)

MOTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT WEIGHT FLOW = 3.7060 LHM/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 101.1436
 110 PERCENT DESIGN SPEED - SCAN NO 11
 EQUIVALENT SPEED
 FLOW/SEC = 40.9314 LHM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9700

PERCENT SPAN FROM TIP (I. F.)	HETA01 (DEG)	V01 (FT/SEC)	HETA1 (DEG)	V1 (FT/SEC)	V01 (FT/SEC)	M01	HETA1 (DEG)	V1 (FT/SEC)	M1	VM1 (FT/SEC)	V71 (FT/SEC)	U1 (FT/SEC)
0.00	71.26	143.35	174.22	1.699	0.00	0.00	0.00	591.76	.546	591.74	532.70	1744.21
0.50	64.36	170.39	1662.22	1.634	0.00	0.00	0.00	404.43	.560	404.43	504.44	1662.22
2.50	66.04	163.04	1522.97	1.541	0.00	0.00	0.00	457.47	.611	457.47	645.79	1522.97
4.20	63.42	153.21	1379.67	1.428	0.00	0.00	0.00	473.36	.627	473.36	671.17	1379.67
61.40	61.41	1377.45	1215.16	1.278	0.00	0.00	0.00	648.45	.602	648.45	648.45	1215.16
46.00	59.25	1178.43	1013.15	1.089	0.00	0.00	0.00	602.75	.557	602.75	594.66	1013.15
100.00	56.42	1053.10	802.52	.970	0.00	0.00	0.00	574.78	.529	574.78	544.25	802.52

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8114

PERCENT SPAN FROM TIP (I. F.)	HETA02 (DEG)	V02 (FT/SEC)	HETA2 (DEG)	V2 (FT/SEC)	V02 (FT/SEC)	M2	HETA2 (DEG)	V2 (FT/SEC)	M2	VM2 (FT/SEC)	V72 (FT/SEC)	U2 (FT/SEC)
0.00	60.41	1224.53	1063.08	.905	45.51	.614	45.51	861.39	.701	603.60	540.25	1577.53
11.26	52.76	1177.13	961.34	.967	43.41	.768	43.41	935.09	.768	679.22	664.54	1603.97
21.17	50.45	1081.57	834.17	.860	43.64	.836	43.64	882.17	.836	683.59	670.32	1486.56
47.00	43.42	1001.31	688.02	.777	43.15	.924	43.15	994.54	.866	727.08	727.08	1349.51
65.00	36.35	915.45	542.91	.644	43.72	.974	43.72	1020.73	.924	735.53	735.53	1248.38
84.07	21.45	756.04	281.40	.614	49.67	.974	49.67	1084.41	.974	701.70	690.25	1104.11
100.00	10.24	713.53	127.28	.614	51.90	.974	51.90	1137.96	.974	702.00	678.23	1022.04

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	TRAILING EDGE	MASS FLOW (LHM)	INCIDENCE ANGLE (DEG)	MEAN SUCTION ANGLE (DEG)	INCIDENCE ANGLE (DEG)	LOSS PARAMETER	04EGAS MAH	04EGAS MAH	DEVIATION ANGLE (DEG)	RATOR LOSS RATIO	RATOR LOSS RATIO	POLYTROPIC EFF
0.00	0.00	0.00	7.423	6.955	6.633	.2692	.2692	.2692	3.418	2.093	.7049	.7334
0.50	11.26	11.34	8.026	6.727	6.667	.2451	.2451	.2451	2.262	2.162	.7447	.7706
25.64	24.17	31.74	7.608	5.531	4.791	.1961	.1961	.1961	1.95	2.191	.8049	.8266
42.31	47.04	51.12	7.221	4.344	4.834	.1394	.1394	.1394	0.307	2.256	.8734	.8970
61.40	65.55	70.72	7.559	3.715	4.756	.1122	.1122	.1122	4.240	2.228	.9028	.9193
84.04	84.97	90.24	7.542	2.911	5.221	.2194	.2194	.2194	10.877	2.207	.8429	.8772
100.00	100.00	110.00	8.171	2.097	4.999	.2662	.2662	.2662	17.327	2.204	.8427	.8771

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8474 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8297 (ADIABATIC)
 MOMENTUM AVG. ROTOR LOSS RATIO = 2.1972
 MASS AVERAGE TEMPERATURE RISE = 1.3034

NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 1, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIVALENT WEIGHT FLOW = 1.6910 KG/SEC
 PERCENT HEIGHT FLOW EQUIVALENT FLOW = 1.011846
 110 PERCENT DESIGN SPEED = SCAN NO 11
 EQUIVALENT SPFD
 EQUIVALENT FLOW / INLET ANN AREA = 0.000000
 109.000000

INLET VELOCITY DIAGRAM DATA

PERCENT SPAN FROM TIP (I. I.)	W01 (M/SEC)	W02 (M/SEC)	W03 (M/SEC)	W04 (M/SEC)	W05 (M/SEC)	W06 (M/SEC)	W07 (M/SEC)	W08 (M/SEC)	W09 (M/SEC)	W10 (M/SEC)	W11 (M/SEC)	W12 (M/SEC)	W13 (M/SEC)	W14 (M/SEC)	W15 (M/SEC)	W16 (M/SEC)	W17 (M/SEC)	W18 (M/SEC)	W19 (M/SEC)	W20 (M/SEC)
0.00	571.64	571.64	571.64	571.64	571.64	571.64	571.64	571.64	571.64	571.64	571.64	571.64	571.64	571.64	571.64	571.64	571.64	571.64	571.64	571.64
0.52	505.66	505.66	505.66	505.66	505.66	505.66	505.66	505.66	505.66	505.66	505.66	505.66	505.66	505.66	505.66	505.66	505.66	505.66	505.66	505.66
2.60	464.20	464.20	464.20	464.20	464.20	464.20	464.20	464.20	464.20	464.20	464.20	464.20	464.20	464.20	464.20	464.20	464.20	464.20	464.20	464.20
4.70	420.52	420.52	420.52	420.52	420.52	420.52	420.52	420.52	420.52	420.52	420.52	420.52	420.52	420.52	420.52	420.52	420.52	420.52	420.52	420.52
7.10	370.70	370.70	370.70	370.70	370.70	370.70	370.70	370.70	370.70	370.70	370.70	370.70	370.70	370.70	370.70	370.70	370.70	370.70	370.70	370.70
9.60	300.81	300.81	300.81	300.81	300.81	300.81	300.81	300.81	300.81	300.81	300.81	300.81	300.81	300.81	300.81	300.81	300.81	300.81	300.81	300.81
100.00	258.99	258.99	258.99	258.99	258.99	258.99	258.99	258.99	258.99	258.99	258.99	258.99	258.99	258.99	258.99	258.99	258.99	258.99	258.99	258.99

EXIT VELOCITY DIAGRAM DATA

PERCENT SPAN FROM TIP (I. I.)	V01 (M/SEC)	V02 (M/SEC)	V03 (M/SEC)	V04 (M/SEC)	V05 (M/SEC)	V06 (M/SEC)	V07 (M/SEC)	V08 (M/SEC)	V09 (M/SEC)	V10 (M/SEC)	V11 (M/SEC)	V12 (M/SEC)	V13 (M/SEC)	V14 (M/SEC)	V15 (M/SEC)	V16 (M/SEC)	V17 (M/SEC)	V18 (M/SEC)	V19 (M/SEC)	V20 (M/SEC)
0.00	179.08	179.08	179.08	179.08	179.08	179.08	179.08	179.08	179.08	179.08	179.08	179.08	179.08	179.08	179.08	179.08	179.08	179.08	179.08	179.08
11.20	202.52	202.52	202.52	202.52	202.52	202.52	202.52	202.52	202.52	202.52	202.52	202.52	202.52	202.52	202.52	202.52	202.52	202.52	202.52	202.52
20.37	207.06	207.06	207.06	207.06	207.06	207.06	207.06	207.06	207.06	207.06	207.06	207.06	207.06	207.06	207.06	207.06	207.06	207.06	207.06	207.06
47.00	221.60	221.60	221.60	221.60	221.60	221.60	221.60	221.60	221.60	221.60	221.60	221.60	221.60	221.60	221.60	221.60	221.60	221.60	221.60	221.60
65.55	226.19	226.19	226.19	226.19	226.19	226.19	226.19	226.19	226.19	226.19	226.19	226.19	226.19	226.19	226.19	226.19	226.19	226.19	226.19	226.19
96.07	210.39	210.39	210.39	210.39	210.39	210.39	210.39	210.39	210.39	210.39	210.39	210.39	210.39	210.39	210.39	210.39	210.39	210.39	210.39	210.39
100.00	206.72	206.72	206.72	206.72	206.72	206.72	206.72	206.72	206.72	206.72	206.72	206.72	206.72	206.72	206.72	206.72	206.72	206.72	206.72	206.72

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (I. I.)	DELTA (DEG)	HETA0 (DEG)	HETA1 (DEG)	HETA2 (DEG)	HETA3 (DEG)	HETA4 (DEG)	HETA5 (DEG)	HETA6 (DEG)	HETA7 (DEG)	HETA8 (DEG)	HETA9 (DEG)	HETA10 (DEG)	HETA11 (DEG)	HETA12 (DEG)	HETA13 (DEG)	HETA14 (DEG)	HETA15 (DEG)	HETA16 (DEG)	HETA17 (DEG)	HETA18 (DEG)	HETA19 (DEG)	HETA20 (DEG)
0.00	10.85	10.85	10.85	10.85	10.85	10.85	10.85	10.85	10.85	10.85	10.85	10.85	10.85	10.85	10.85	10.85	10.85	10.85	10.85	10.85	10.85	10.85
9.50	15.20	15.20	15.20	15.20	15.20	15.20	15.20	15.20	15.20	15.20	15.20	15.20	15.20	15.20	15.20	15.20	15.20	15.20	15.20	15.20	15.20	15.20
25.60	15.84	15.84	15.84	15.84	15.84	15.84	15.84	15.84	15.84	15.84	15.84	15.84	15.84	15.84	15.84	15.84	15.84	15.84	15.84	15.84	15.84	15.84
47.30	20.57	20.57	20.57	20.57	20.57	20.57	20.57	20.57	20.57	20.57	20.57	20.57	20.57	20.57	20.57	20.57	20.57	20.57	20.57	20.57	20.57	20.57
61.60	25.56	25.56	25.56	25.56	25.56	25.56	25.56	25.56	25.56	25.56	25.56	25.56	25.56	25.56	25.56	25.56	25.56	25.56	25.56	25.56	25.56	25.56
84.00	37.60	37.60	37.60	37.60	37.60	37.60	37.60	37.60	37.60	37.60	37.60	37.60	37.60	37.60	37.60	37.60	37.60	37.60	37.60	37.60	37.60	37.60
100.00	46.65	46.65	46.65	46.65	46.65	46.65	46.65	46.65	46.65	46.65	46.65	46.65	46.65	46.65	46.65	46.65	46.65	46.65	46.65	46.65	46.65	46.65

MOMENTUM AVERAGE ROTOR EFFICIENCY = 0.4674 (POLYTROPIC)

MOMENTUM AVERAGE ROTOR EFFICIENCY = 0.4297 (ADIABATIC)

MASS AVERAGE TEMPERATURE RISE = 1.3034

MASS AVERAGE TEMPERATURE RISE = 1.3034

NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 10 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

110 PERCENT DESIGN SPEED - SCAN NO 11

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9107

PERCENT SPAN FROM TIP (L. S.)	BETA 3 (DEG)	V3 (FT/SEC)	VU3 (FT/SEC)	M3	VW3 (FT/SEC)	V73 (FT/SEC)	U3 (FT/SEC)
0.00	45.32	849.81	532.69	.727	625.67	518.80	1629.15
10.01	44.21	960.72	554.05	.776	676.64	675.32	1586.37
24.53	43.12	962.55	657.92	.801	702.60	752.59	1495.02
46.73	42.41	1015.14	684.57	.854	749.55	788.93	1363.21
65.88	43.12	1026.01	701.24	.871	747.96	746.22	1252.89
86.70	44.96	1076.52	810.55	.914	705.53	696.05	1130.34
100.00	50.25	1129.91	869.73	.970	722.50	702.54	1053.85

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9026

PERCENT SPAN FROM TIP (L. S.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VW4 (FT/SEC)	V74 (FT/SEC)	U4 (FT/SEC)
0.00	-1.16	669.71	-44.85	.535	668.20	644.20	1517.14
11.27	-1.04	686.74	-45.43	.549	685.25	684.17	1561.66
30.13	-1.30	709.67	-40.86	.574	708.49	706.19	1468.38
49.55	-2.54	746.11	-33.98	.617	755.37	754.59	1377.31
67.32	-1.87	760.92	-11.50	.625	760.84	740.42	1246.52
88.83	-2.25	711.47	-27.99	.579	711.32	708.72	1182.16
100.00	-2.27	716.14	-28.40	.583	715.58	715.54	1122.98

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	TRAILING EDGE	MASS FLOW (PCF)	DELTA HETA (DEG)	INCIDENCE HETA (DEG)	ANGLE SUCT 5-HR (DEG)	DELTA FACTOR	DELTA HAR	OMEGA HAR	LOSS PARAMETER	DEVIATION A-HLF (DEG)	STAGE LOSS RATIO	STAGE LOSS RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	49.16	9.001	5.079	.5238	.0470	.0470	.0241	14.360	2.042	1.3302	.8719
10.01	11.27	11.91	48.04	8.044	4.695	.5413	.1407	.1407	.0447	12.743	2.062	1.3102	.7568
24.53	30.13	31.74	46.62	6.605	3.250	.5005	.1133	.1133	.0372	9.899	2.094	1.3088	.7899
46.73	48.45	51.12	44.99	4.846	1.812	.4699	.1078	.1078	.0330	9.417	2.144	1.2990	.8105
65.88	67.32	70.72	43.99	3.892	0.613	.4536	.0613	.0613	.0176	10.224	2.175	1.2822	.8953
86.70	88.83	90.23	51.21	6.919	3.948	.5360	.1224	.1224	.0324	9.277	2.094	1.2915	.8327
100.00	100.00	105.00	52.52	5.619	2.177	.5556	.1126	.1126	.0245	16.424	2.094	1.2915	.8597

MOMENTUM AVERAGE STAGE EFFICIENCY = .8079 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7458 (ADIABATIC)

MOMENTUM AVG. STAGE LOSS RATIO = 2.1181
MASS AVERAGE TEMPERATURE RISE = 1.3034

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

110 PERCENT DESIGN SPEED - SCAN NO 11

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9107

PERCENT SPAN FROM TIP (L. F.)	BETA 3 (DEG)	V3 (M/SEC)	V13 (M/SEC)	W3	VW3 (M/SEC)	W77 (M/SEC)	U77 (M/SEC)
0.00	45.32	271.21	192.84	.727	190.70	198.41	496.57
10.01	44.21	247.04	200.57	.776	206.18	205.04	477.43
20.53	43.12	241.39	200.53	.801	216.15	214.15	466.54
46.23	42.41	309.63	208.49	.854	224.46	224.29	415.51
64.88	44.12	312.73	214.76	.871	224.24	227.45	382.81
86.70	44.96	317.51	247.73	.914	215.04	212.14	384.53
100.00	50.25	304.60	266.79	.970	220.22	214.13	321.21

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9024

PERCENT SPAN FROM TIP (L. F.)	HETA 4 (DEG)	V4 (M/SEC)	V14 (M/SEC)	W4	VW4 (M/SEC)	W74 (M/SEC)	U4 (M/SEC)
0.00	-3.84	206.13	-13.67	.535	203.67	203.67	492.94
11.27	-3.81	200.33	-13.97	.549	208.86	208.86	475.99
30.13	-3.30	216.31	-12.45	.574	215.95	215.95	447.56
44.55	-2.54	230.67	-10.37	.617	230.24	230.00	419.80
67.23	-1.87	231.93	-3.54	.625	231.90	231.74	391.52
81.03	-2.25	216.94	-4.53	.579	216.81	216.02	380.32
100.00	-2.27	218.24	-4.66	.583	214.11	214.11	342.24

STATOR PERFORMANCE DATA

PERCENT LEADING EDGE FROM TIP (PCT)	MASS FLOW (PCT)	DELTA HETA (DEG)	INLET MEAN (DEG)	DELTA SUPT SUH (DEG)	DELTA SUPT SUH (DEG)	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE LOSS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	49.16	9.001	5.079	0.024	0.024	14.340	2.062	1.3302	0.8719
10.01	11.13	48.09	8.064	4.685	0.027	0.027	12.763	2.062	1.3302	0.7564
20.53	31.74	46.42	6.005	3.250	0.030	0.030	9.809	2.006	1.3088	0.7994
46.23	51.12	44.90	4.456	1.412	0.030	0.030	4.617	2.144	1.2000	0.9105
64.88	70.72	43.94	3.842	0.944	0.036	0.036	10.226	2.175	1.2022	0.8953
86.70	90.24	51.21	6.919	3.348	0.024	0.024	4.277	2.006	1.2035	0.8127
100.00	100.00	52.52	5.619	2.177	0.025	0.025	16.674	2.006	1.2035	0.8597

MOMENTUM AVERAGE STAGE EFFICIENCY = 0.8079 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = 0.8088 (ADIABATIC)
MOMENTUM AVERAGE STAGE LOSS RATIO = 2.1181
MASS AVERAGE TEMPERATURE RATIO = 1.3036

QUALITY PAGE 18
 DR. FOUR QUALITY

NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 1, 1974 (COMBINED TEMP.)

MOTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT FLOW FROM TIP (I. F.) = 3.7061 LHM/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 101.1863
 110 PERCENT DESIGN SPEED = SCAN NO 12
 EQUIVALENT SPFFD
 EQUIVALENT FLOW / INLET ANN AREA = 84555.491 R.P.M.
 60.9375 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9700

PERCENT SPAN FROM TIP (I. F.)	RFTA#1 (DEG)	V01 (FT/SEC)	V01#1 (FT/SEC)	M01	RFTA1 (DEG)	V1	VU1 (FT/SEC)	M1	V41	V41#1 (FT/SEC)	M41	V71 (FT/SEC)	M71	U11 (FT/SEC)
0.00	71.23	1840.42	1742.67	1.638	0.00	592.11	0.00	.546	592.11	573.04	.573	573.04	.573	1742.67
0.76	69.95	1787.32	1662.11	1.634	0.00	606.54	0.00	.540	606.54	584.48	.584	584.48	.584	1662.11
2.14	66.60	1650.26	1524.14	1.562	0.00	657.63	0.00	.611	657.63	645.55	.645	645.55	.645	1524.14
42.00	64.00	1517.70	1380.51	1.473	0.00	773.13	0.00	.628	773.13	670.96	.670	670.96	.670	1380.51
61.30	61.31	1377.13	1216.93	1.274	0.00	840.40	0.00	.602	840.40	648.14	.648	648.14	.648	1216.93
84.79	59.24	1174.41	1012.65	1.068	0.00	602.66	0.00	.556	602.66	594.54	.594	594.54	.594	1012.65
100.00	56.70	1042.56	881.74	.949	0.00	574.81	0.00	.529	574.81	555.28	.555	555.28	.555	881.74

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8004

PERCENT SPAN FROM TIP (I. F.)	RFTA#2 (DEG)	V02 (FT/SEC)	V02#1 (FT/SEC)	M02	RFTA2 (DEG)	V2	VU2 (FT/SEC)	M02	V42	V42#1 (FT/SEC)	M42	V72 (FT/SEC)	M72	U12 (FT/SEC)
0.00	76.25	1230.13	1074.97	1.011	44.37	859.48	601.07	.702	614.14	594.56	.594	594.56	.594	1074.97
11.14	54.61	1195.41	976.82	.984	42.25	936.67	624.38	.770	691.92	676.80	.676	676.80	.676	976.82
24.04	50.48	1104.44	851.31	.919	42.99	946.97	636.70	.788	702.70	684.41	.684	684.41	.684	851.31
44.91	43.50	1017.31	701.05	.856	42.19	956.93	646.16	.837	737.10	737.15	.737	737.15	.737	701.05
65.75	31.15	932.04	542.86	.793	42.74	1025.60	646.46	.872	752.61	750.39	.750	750.39	.750	542.86
87.10	22.00	701.91	292.42	.684	44.29	1080.58	613.39	.932	724.97	713.06	.713	713.06	.713	292.42
100.00	11.04	730.02	141.53	.637	50.52	1140.71	610.41	.984	725.34	700.69	.700	700.69	.700	141.53

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE TRAILING EDGE	LEADING EDGE	TRAILING EDGE	MASS FLOW (LBM)	WFLYA (DEG)	RFTA# (DEG)	MEAN INCIDENCE (DEG)	INCIDENCE ANGLE (DEG)	SUCT SU1M (DEG)	FACTOR	OMEGA# HAP	LOSS PARAMETER	ANGLE (DEG)	ROTATION ANGLE (DEG)	ROTOR EFF	ADJ ADIABATIC EFF	POLYTROPIC EFF
0.00	0.00	0.00	0.00	10.96	7.397	6.929	.4517	.2472	.0504	.0504	3.262	2.047	2.047	.7025	.7306	
9.76	11.14	24.46	11.74	15.32	7.989	6.790	.4535	.2410	.0504	.0504	2.129	2.129	2.129	.7448	.7702	
25.24	24.46	44.91	31.91	16.14	7.582	5.524	.4670	.1847	.0391	.0391	2.161	2.161	2.161	.8133	.8323	
42.00	44.91	61.30	50.23	20.44	7.209	4.386	.4707	.1362	.0300	.0300	2.225	2.225	2.225	.8743	.8974	
61.30	61.30	65.75	70.64	25.76	7.553	3.713	.4619	.1061	.0234	.0234	2.212	2.212	2.212	.9136	.9227	
84.79	87.10	87.10	94.17	37.24	7.928	2.498	.4972	.0718	.0175	.0175	2.197	2.197	2.197	.9178	.9160	
100.00	100.00	100.00	100.00	45.86	8.147	2.073	.4724	.0246	.0104	.0104	2.196	2.196	2.196	.8726	.8658	

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8505 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8335 (ADIABATIC)
 MOMENTUM AVG. ROTOR PRESS RATIO = 2.1737
 MASS AVERAGE TEMPERATURE RISE = 1.2974

NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 1, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

130 PERCENT DESIGN SPEED - SCAN NO 12
 FORTIVALFENT FLOW = 1.6910 KG/SEC FORTIVALFENT SPEED = 0.6555,491 R.P.M.
 PERCENT DESIGN FORTIVALFENT FLOW = 101.1463 FORTIVALFENT FLOW / INLET ANN AREA = 199.8499 KG/SEC-SQ M

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9700

PERCENT SPAN FROM TIP (I. F.)	REF1#1 (DEG)	V01 (M/SEC)	V02 (M/SEC)	V03 (M/SEC)	V04 (M/SEC)	W1 (M/SEC)	V71 (M/SEC)	W2 (M/SEC)
0.00	71.23	540.99	377.34	320.02	264.75	180.47	174.66	531.17
9.34	62.95	510.27	377.12	320.02	264.75	180.47	174.66	506.41
25.78	66.66	500.04	376.67	319.99	264.72	180.44	174.63	506.41
42.90	64.00	464.19	370.72	314.81	260.51	175.17	170.51	420.72
61.33	61.91	414.75	370.31	314.81	260.51	175.17	170.51	370.31
80.70	59.24	350.19	304.66	183.49	0.00	183.49	181.22	304.66
100.00	56.90	320.02	264.75	175.20	0.00	175.20	180.25	264.75

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8004

PERCENT SPAN FROM TIP (I. F.)	REF1#2 (DEG)	W02 (M/SEC)	W03 (M/SEC)	W04 (M/SEC)	W05 (M/SEC)	W06 (M/SEC)	W07 (M/SEC)	W08 (M/SEC)	W09 (M/SEC)
0.00	60.25	177.34	127.64	1.011	44.37	261.97	103.21	.702	147.25
13.14	54.63	161.45	237.12	.925	42.25	206.49	191.53	.770	210.00
24.34	50.44	336.67	259.66	.919	42.09	206.44	193.46	.799	212.87
47.01	43.56	310.09	213.68	.856	42.19	203.24	203.66	.837	226.74
67.70	34.15	240.10	167.60	.703	42.74	212.54	217.28	.872	220.72
87.13	22.00	230.33	84.28	.669	40.29	222.11	267.92	.932	220.97
100.00	11.14	225.25	43.14	.637	50.52	246.69	244.35	.944	221.00

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	DELTA (DEG)	MASS FLOW (KG)	INCIDENCE ANGLE (DEG)	SUCT SHR (DEG)	OMEGA (RPM)	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ANTIADIBATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	7.397	6.324	4517	.2672	3.242	2.047	.7025	.7306
9.34	11.14	11.74	7.243	6.700	4515	.2610	-4.604	2.129	.7464	.7702
25.78	24.96	31.43	7.542	5.526	4430	.1847	-1.194	2.161	.4133	.4323
42.90	46.01	50.20	7.204	4.386	4707	.1362	.424	2.224	.0743	.0918
61.33	65.73	70.54	7.553	3.713	4619	.1061	4.175	2.212	.0136	.0227
80.70	87.10	90.17	7.928	2.928	4972	.2018	11.198	2.107	.0128	.0460
100.00	100.00	100.00	8.147	2.073	4724	.2424	19.092	2.106	.0726	.0858

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8505 (POLYTROPIC) MOMENTUM AVG. ROTOR PRESS RATIO = 2.1737
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8335 (ADIABATIC) MASS AVERAGE TEMPERATURE RISE = 1.2474

NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 1, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

110 PERCENT DESIGN SPEED - SCAN NO 12

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9004

PERCENT SPAN FROM TIP (I. F.)	HETA 3 (DEG)	V3 (FT/SEC)	V13 (FT/SEC)	M3	VM3 (FT/SEC)	U73 (FT/SEC)	U3 (FT/SEC)
0.00	44.26	887.15	614.02	.727	635.60	638.61	1627.71
10.00	43.00	961.00	643.67	.777	687.85	688.70	1465.62
20.00	41.41	966.00	644.04	.806	719.97	719.97	1465.05
40.00	41.26	1012.32	671.22	.844	757.75	757.10	1362.88
60.00	41.27	1024.97	692.17	.876	761.37	758.68	1256.00
80.00	47.72	1077.50	797.29	.920	724.96	715.22	1129.67
100.00	43.33	1131.17	856.13	.974	741.74	721.25	1052.92

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8994

PERCENT SPAN FROM TIP (I. F.)	HETA 4 (DEG)	V4 (FT/SEC)	V14 (FT/SEC)	M4	VM4 (FT/SEC)	U74 (FT/SEC)	U4 (FT/SEC)
0.00	-3.20	567.23	-42.69	.534	665.87	665.87	1615.91
11.20	-3.66	621.14	-46.00	.555	689.75	689.57	1560.45
30.00	-3.83	719.27	-51.74	.583	716.94	716.62	1467.71
50.00	-3.90	772.62	-53.14	.632	770.72	759.93	1376.45
67.27	-3.7	771.11	-48.16	.636	771.00	771.37	1293.66
88.00	-1.00	722.44	-27.07	.590	722.04	719.40	1140.00
100.00	-1.02	726.71	-26.36	.594	726.30	726.10	1121.99

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (I. F.)	INCIDENCE ANGLE (DEG)	MEAN SUCT SURF (DEG)	INCIDENCE ANGLE (DEG)	D FACTOR	HAR	OMEGA	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE LOSS	STAGE LOSS RATIO	STATOR POLYTROPIC EFF
0.00	0.00	1.920	3.938	.5186	.0470	.0470	.0241	12.520	2.007	1.3227	.8723
10.00	11.24	6.427	3.543	.5199	.1328	.1328	.0460	12.921	2.035	1.3227	.7547
20.00	30.01	3.305	1.969	.4899	.3140	.3140	.0377	4.2721	2.075	1.3023	.7338
40.00	43.64	3.997	.659	.6534	.6437	.6437	.0256	4.201	2.155	1.2931	.8442
60.00	67.27	3.031	.199	.4401	.0434	.0434	.0182	10.711	2.157	1.2701	.8449
80.00	14.03	5.652	2.798	.5213	.1318	.1318	.0349	3.624	2.074	1.2883	.4166
100.00	100.00	4.393	.962	.5427	.1217	.1217	.0308	16.777	2.074	1.2882	.8457

MOMENTUM AVERAGE STAGE EFFICIENCY = .8124 (POLYTROPIC)

MOMENTUM AVERAGE STAGE EFFICIENCY = .7921 (ADIABATIC)

MOMENTUM AVG. STAGE LOSS RATIO = 2.0995

MASS AVERAGE TEMPERATURE RISE = 1.2474

NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 1, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

110 PERCENT DESIGN SPEED - SCAN NO 12

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9004

PERCENT SPAN FROM TIP (T. C.)	DELTA 1 (CM)	V1 (M/SEC)	V11 (M/SEC)	M1	M11	V13 (M/SEC)	V13	V14 (M/SEC)	U3 (M/SEC)
0.00	45.29	270.40	190.45	.777	191.73	191.60			496.13
10.00	43.07	207.09	146.13	.777	209.66	209.31			477.20
20.00	41.31	206.46	196.70	.806	219.45	219.45			486.55
30.00	41.56	304.76	206.60	.856	330.99	270.79			615.40
40.00	42.27	313.63	210.37	.876	332.04	231.22			312.22
50.00	47.72	328.45	263.01	.920	220.97	218.00			386.02
100.00	63.14	366.74	260.31	.976	226.08	219.84			370.93

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8996

PERCENT SPAN FROM TIP (T. C.)	DELTA 4 (CM)	V4 (M/SEC)	V14 (M/SEC)	M4	M14	V44 (M/SEC)	V14	V14	U4 (M/SEC)
0.00	-1.66	203.37	-12.30	.514	202.96	202.96			492.53
10.00	-1.76	217.67	-13.44	.555	210.26	210.26			472.63
20.00	-1.99	218.93	-13.33	.543	210.52	214.61			447.36
30.00	-1.90	235.43	-15.59	.632	236.67	236.67			619.56
40.00	-2.17	235.25	-15.51	.636	235.26	235.11			391.26
50.00	-1.99	220.20	-15.31	.540	220.08	219.27			359.46
100.00	-1.12	221.50	-7.83	.596	221.38	221.14			341.98

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (T. C.)	DELTA 4 (CM)	MASS FLOW (KGS)	INCIDENCE ANGLE (DEG)	SUCT SURF (DEG)	FACTOR	MAP	DELTA P (KGS)	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	7.00	0.00	7.929	3.194	.5186	.0670	.0241	.0241	14.520	2.17	1.2227	.9123
10.00	11.21	11.26	6.927	3.563	.5199	.1324	.0460	.0460	12.921	2.17	1.2227	.7647
20.00	30.31	31.54	5.305	1.860	.4894	.1164	.0377	.0377	4.751	2	1.2023	.7938
30.00	30.43	30.30	3.937	.660	.4536	.0837	.0256	.0256	4.291	2.154	1.2023	.9462
40.00	67.27	71.06	3.013	1.199	.4601	.0616	.0182	.0182	14.733	2.157	1.2023	.8849
50.00	84.05	30.17	4.962	2.704	.5233	.1314	.0369	.0369	4.672	2.075	1.2043	.8166
100.00	100.00	100.00	6.393	.942	.5627	.1217	.0304	.0304	14.772	2.074	1.2043	.8457

MOMENTUM AVERAGE STAGE EFFICIENCY = .8126 (POLYTROPIC)
 MOMENTUM AVERAGE STAGE EFFICIENCY = .7923 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 2.0995
 MASS AVERAGE TEMPERATURE RISE = 1.2974

110 PERCENT DESIGN SPEED - SCAN NO 13

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8940

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9011

PERCENT SPAN FROM TIP (I. F.)	HETA 1 (DEG)	V3 (FT/SEC)	M3	V4 (FT/SEC)	M4	V5 (FT/SEC)	M5	V6 (FT/SEC)	M6	V7 (FT/SEC)	M7	V8 (FT/SEC)	M8	V9 (FT/SEC)	M9
0.00	40.00	838.75	.742	679.36	.568	674.17	.568	674.17	.568	674.17	.568	674.17	.568	674.17	.568
10.72	41.34	923.77	.770	698.95	.570	703.30	.570	703.30	.570	703.30	.570	703.30	.570	703.30	.570
24.00	43.76	961.66	.813	744.64	.614	747.58	.614	747.58	.614	747.58	.614	747.58	.614	747.58	.614
47.00	47.00	1011.71	.857	774.70	.655	792.73	.655	792.73	.655	792.73	.655	792.73	.655	792.73	.655
66.75	49.31	1046.93	.896	798.21	.668	804.86	.668	804.86	.668	804.86	.668	804.86	.668	804.86	.668
87.67	51.61	1127.02	.914	816.64	.634	770.71	.634	770.71	.634	770.71	.634	770.71	.634	770.71	.634
100.00	54.07	1174.19	1.022	830.69	.639	775.68	.639	775.68	.639	775.68	.639	775.68	.639	775.68	.639

PERCENT SPAN FROM TIP (I. F.)	HETA 2 (DEG)	V4 (FT/SEC)	M4	V5 (FT/SEC)	M5	V6 (FT/SEC)	M6	V7 (FT/SEC)	M7	V8 (FT/SEC)	M8	V9 (FT/SEC)	M9	V10 (FT/SEC)	M10
0.00	-3.14	679.19	.568	674.17	.568	674.17	.568	674.17	.568	674.17	.568	674.17	.568	674.17	.568
11.19	-3.11	704.53	.570	703.30	.570	703.30	.570	703.30	.570	703.30	.570	703.30	.570	703.30	.570
19.00	-2.61	750.36	.614	747.58	.614	747.58	.614	747.58	.614	747.58	.614	747.58	.614	747.58	.614
46.46	-1.63	794.35	.655	792.73	.655	792.73	.655	792.73	.655	792.73	.655	792.73	.655	792.73	.655
67.19	-1.76	805.24	.668	804.86	.668	804.86	.668	804.86	.668	804.86	.668	804.86	.668	804.86	.668
84.04	-2.04	770.80	.634	770.71	.634	770.71	.634	770.71	.634	770.71	.634	770.71	.634	770.71	.634
100.00	-2.47	775.77	.639	775.68	.639	775.68	.639	775.68	.639	775.68	.639	775.68	.639	775.68	.639

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (I. F.)	MASS FLOW (PCT)	DELTA HETA (DEG)	INCIDENCE ANGLE (DEG)	SUCT SWIR (DEG)	FACIOM	OMEGA HAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE DPFSS	STAGE DPFSS RATIO	STAGE DPFSS RATIO	STATOR POLYTROPIC EFF
0.00	0.00	44.04	4.578	0.456	0.970	0.994	0.214	14.040	1.920	1.3072	1.3072	0.8463
11.19	11.67	44.72	5.123	1.454	0.967	0.972	0.231	13.454	1.940	1.3072	1.3072	0.8710
24.00	29.09	45.37	3.225	-1.121	0.961	0.990	0.194	10.600	2.024	1.2904	1.2904	0.8934
47.00	49.43	43.26	1.287	-1.026	0.921	0.937	0.134	4.354	2.091	1.2805	1.2805	0.9121
66.75	67.17	42.08	0.916	-1.076	0.912	0.958	0.161	9.340	2.109	1.2709	1.2709	0.8950
87.67	89.04	44.64	1.370	-1.254	0.948	0.948	0.504	10.652	2.045	1.2805	1.2805	0.7304
100.00	100.00	45.85	0.340	-3.101	0.910	0.9780	0.452	17.831	2.045	1.2804	1.2804	0.7669

MOMENTUM AVERAGE STAGE EFFICIENCY = 0.8112 (POLYTROPIC)
 MOMENTUM AVERAGE STAGE EFFICIENCY = 0.7914 (ADIABATIC)
 MOMENTUM AVERAGE TEMPERATURE RISE = 2.0460
 MASS AVERAGE TEMPERATURE RISE = 1.2862

NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 1, 1974 (COMPRESSOR TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

110 PERCENT DESIGN SPEED - SPAN NO 15

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8940

PERCENT SPAN FROM TIP (I. F.)	HETA 3 (DEG)	V1 (M/SEC)	VIII3 (1/SEC)	W13	VM3 (M/SEC)	V73 (M/SEC)	U13 (M/SEC)
0.00	40.90	211.04	179.35	.742	207.07	204.79	494.72
10.72	41.14	244.07	146.40	.770	213.04	212.63	477.92
20.93	39.76	295.24	109.41	.813	226.98	226.09	444.05
47.01	39.61	304.06	104.39	.857	237.35	237.17	414.26
66.25	40.31	319.07	206.44	.896	243.29	242.40	385.52
87.62	43.61	343.76	237.10	.974	244.91	245.57	343.03
100.00	44.97	357.89	252.04	1.022	252.19	246.28	321.31

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9011

PERCENT SPAN FROM TIP (I. F.)	HETA 4 (DEG)	V4 (M/SEC)	VIII4 (1/SEC)	W4	VM4 (M/SEC)	V74 (M/SEC)	U4 (M/SEC)
0.00	-3.14	207.02	-11.74	.548	206.11	206.71	473.11
11.19	-3.13	214.76	-11.73	.570	214.42	214.79	476.25
20.93	-2.61	220.71	-10.43	.614	224.47	224.37	447.41
49.34	-3.65	242.12	-15.43	.655	241.63	241.74	420.25
67.19	-1.74	263.44	-7.55	.668	245.32	245.19	391.84
88.04	-0.88	274.94	-3.60	.634	244.91	244.04	360.42
100.00	-0.87	276.64	-3.54	.639	246.43	246.43	342.39

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	PERCENT SPAN FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA HETA (DEG)	INCIDENCE ANGLE (DEG)	MEAN SUCT SUR (DEG)	INCIDENCE ANGLE (DEG)	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE LOSS RATIO	STAGE LOSS RATIO	STAGE LOSS RATIO	STATOR POLYTROPIC EFF
0.00	0.00	11.00	44.04	4.578	.656	.6970	.0594	13.040	1.929	1.7072	1.7072	.4963
10.72	11.19	11.47	44.32	5.023	1.654	.6867	.0472	14.456	1.940	1.7072	1.7072	.4710
20.93	20.99	31.01	42.37	3.225	-2.121	.6461	.0590	10.600	2.026	1.7004	1.7004	.4934
47.01	48.34	50.42	43.26	1.987	-1.026	.6221	.0437	9.354	2.091	1.7005	1.7005	.49121
66.25	67.19	70.06	42.08	.914	-1.976	.6182	.0548	9.360	2.109	1.7009	1.7009	.49050
87.62	88.04	81.00	44.44	1.370	-1.544	.6938	.1406	10.652	2.065	1.7005	1.7005	.47104
100.00	100.00	109.00	45.86	.240	-3.101	.6101	.1749	17.831	2.064	1.7004	1.7004	.47569

MOMENTUM AVERAGE STAGE EFFICIENCY = .4112 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7914 (ADIABATIC)

MOMENTUM AVG. STAGE LOSS RATIO = 2.0460
MASS AVERAGE TEMPERATURE DISC = 1.2842

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OF POOR QUALITY

NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 10 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT FLIGHT FLOW = 7.7418 (M/SEC) 110 PERCENT DESIGN SPEED - SCAN NO. 4
PERCENT DESIGN EQUIVALENT FLOW = 102.1635 FLOW/INLET SP-FD
R4702-310 R.P.M. 41.327A LRM/SEC-SO FT
EQUIVALENT FLOW / INLET ANN AREA =

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9700

PERCENT SPAN FROM TIP (I. F.)	HETA#1 (DEG)	V#1 (FT/SEC)	V#1#1 (FT/SEC)	M#1	RETA1 (DEG)	V1 (FT/SEC)	V1#1 (FT/SEC)	M1	V#1 (FT/SEC)	V#1#1 (FT/SEC)	M1	V#1 (FT/SEC)	V#1#1 (FT/SEC)	M1	V#1 (FT/SEC)	V#1#1 (FT/SEC)	M1
0.00	71.02	1866.02	1745.70	1.704	0.00	600.30	541.77	.554	600.30	541.77	.554	600.30	541.77	.554	600.30	541.77	.554
0.20	69.74	1775.51	1665.65	1.641	0.00	614.86	566.53	.568	614.86	566.53	.568	614.86	566.53	.568	614.86	566.53	.568
25.44	64.14	1685.73	1526.08	1.564	0.00	667.37	614.55	.621	667.37	614.55	.621	667.37	614.55	.621	667.37	614.55	.621
42.25	63.68	1541.06	1391.36	1.436	0.00	683.17	666.52	.634	683.17	666.52	.634	683.17	666.52	.634	683.17	666.52	.634
61.04	61.63	1365.74	1219.30	1.247	0.00	658.48	715.60	.612	658.48	715.60	.612	658.48	715.60	.612	658.48	715.60	.612
80.52	58.36	1145.74	1016.81	1.097	0.00	112.00	812.70	.566	112.00	812.70	.566	112.00	812.70	.566	112.00	812.70	.566
100.00	56.51	1059.06	883.27	.976	0.00	606.33	848.10	.539	606.33	848.10	.539	606.33	848.10	.539	606.33	848.10	.539

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8072

PERCENT SPAN FROM TIP (I. F.)	HETA#2 (DEG)	V#2 (FT/SEC)	V#2#1 (FT/SEC)	M#2	RETA2 (DEG)	V2 (FT/SEC)	V2#1 (FT/SEC)	M2	V#2 (FT/SEC)	V#2#1 (FT/SEC)	M2	V#2 (FT/SEC)	V#2#1 (FT/SEC)	M2	V#2 (FT/SEC)	V#2#1 (FT/SEC)	M2
0.00	60.04	1711.40	1137.10	1.084	39.61	869.36	541.77	.702	869.36	541.77	.702	869.36	541.77	.702	869.36	541.77	.702
11.20	55.52	1261.50	1030.05	1.044	38.45	911.16	566.53	.750	911.16	566.53	.750	911.16	566.53	.750	911.16	566.53	.750
20.40	50.93	1157.91	897.62	.973	38.71	977.18	614.55	.824	977.18	614.55	.824	977.18	614.55	.824	977.18	614.55	.824
40.26	44.81	1061.29	764.17	.900	39.23	971.72	666.52	.869	971.72	666.52	.869	971.72	666.52	.869	971.72	666.52	.869
61.67	36.62	846.13	570.31	.817	40.94	1016.45	715.60	.908	1016.45	715.60	.908	1016.45	715.60	.908	1016.45	715.60	.908
80.41	23.70	905.92	324.27	.708	42.51	1167.43	812.70	.839	1167.43	812.70	.839	1167.43	812.70	.839	1167.43	812.70	.839
100.00	12.72	887.64	191.00	.760	44.54	1197.20	848.10	.802	1197.20	848.10	.802	1197.20	848.10	.802	1197.20	848.10	.802

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	TRAILING EDGE	MASS FLOW (MCF)	DELTA (DEG)	HETA (DEG)	INCIDENCE (DEG)	SUCT SUR (DEG)	FACTOR	MAP	OMEGA	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ANTIADAMIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	10.93	7.146	6.718	6.011	.2633	.0499	3.101	1.889	.6826	.7094		
9.28	11.20	11.85	16.22	7.700	6.476	4.060	.2465	.0706	4.93	1.943	.7154	.7608		
25.44	20.40	31.53	14.53	7.316	5.251	4.225	.1924	.0704	4.31	2.009	.7001	.4094		
42.25	40.26	51.06	14.86	6.714	4.040	4.324	.1507	.0724	2.401	2.052	.6844	.4029		
61.04	61.67	70.37	25.01	7.243	3.411	4.406	.1463	.0371	6.014	2.681	.6739	.4142		
80.52	80.41	99.92	37.44	7.510	2.548	3.876	.0916	.0200	11.994	2.228	.6307	.4461		
100.00	100.00	100.00	43.79	7.761	1.687	3.650	.1110	.0230	19.771	2.228	.6398	.4660		

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8365 (POLYTROPIC) MOMENTUM AVERAGE ROTOR EFFICIENCY = .8194 (ADIABATIC) ROTOR PRESS RATIO = 2.0414 MASS AVERAGE TEMPERATURE RISE = 1.2755

NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 10 1974 (COMBINED TEMP.)

MOTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIVALENT WEIGHT FLOW = 1.6973 KG/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 102.1635
 110 PERCENT DESIGN SPEED = 5000 RPM
 EQUIVALENT SPEED = 4670.710 R.P.M.
 FLOW / INLET AREA = 201.7700 KG/SEC-SQ M

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9700

PERCENT SPAN FROM TIP (I. F.)	HETA#1 (DEG)	V#1 (M/SEC)	HETA1 (DEG)	V1 (M/SEC)	VU1 (M/SEC)	M1	V#1 (M/SEC)	U1 (M/SEC)
0.00	71.02	562.67	1.704	182.97	0.00	.554	182.97	177.08
9.28	64.74	541.14	0.00	187.41	0.00	.568	187.41	141.28
25.44	66.38	507.64	465.14	203.42	0.00	.621	203.42	109.68
42.25	63.63	464.72	421.04	208.23	0.00	.634	208.23	207.54
61.04	61.07	422.17	371.64	200.70	0.00	.612	200.70	200.64
84.55	54.26	363.71	309.92	184.74	0.00	.566	184.74	184.03
100.00	56.91	322.80	269.22	178.10	0.00	.533	178.10	172.05

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9072

PERCENT SPAN FROM TIP (I. F.)	HETA#2 (DEG)	V#2 (M/SEC)	HETA2 (DEG)	V2 (M/SEC)	VU2 (M/SEC)	M2	V#2 (M/SEC)	U2 (M/SEC)
0.00	60.09	322.87	346.61	258.88	185.13	.702	185.13	102.04
11.20	54.52	384.20	316.70	277.72	172.68	.759	172.68	217.76
29.00	50.83	432.90	274.53	285.65	178.64	.787	178.64	222.90
48.26	46.83	473.48	30.23	296.14	187.31	.824	187.31	229.63
67.67	36.52	491.63	48.98	302.82	203.16	.869	203.16	233.01
88.63	25.28	476.10	42.51	340.74	230.34	.998	230.34	257.80
100.00	12.72	266.41	46.54	361.86	253.81	1.039	253.81	249.15

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	PERCENT SPAN FROM TIP TRAILING EDGE	MASS FLOW (G)	DELTA HETA# (DEG)	INCIDENCE MEAN (DEG)	ANAL SUCT (DEG)	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR STRESS RATIO	ROTOR ANTIAD. POLYTHROPIC EFF	ROTOR POLYTHROPIC EFF
0.00	0.00	0.00	10.93	7.146	6.718	.2633	.0609	3.101	1.889	.6826	.7094
9.28	11.20	11.66	14.22	7.760	6.476	.2405	.0506	.693	1.943	.7154	.7408
25.44	29.00	31.52	15.55	7.314	5.251	.1925	.0404	.431	2.002	.7001	.8045
42.25	48.26	51.06	18.86	6.911	4.000	.1507	.0324	.2401	2.052	.6684	.8629
61.04	67.67	70.37	25.01	7.283	2.411	.1463	.0321	6.014	2.069	.6719	.8842
84.55	84.54	89.92	37.94	7.610	2.544	.0914	.0200	11.994	2.228	.9307	.9461
100.00	100.00	100.00	43.79	7.761	1.687	.1110	.0230	19.771	2.228	.9306	.9460

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8365 (POLYTHROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8194 (ADIABATIC)
 MOMENTUM AVG. ROTOR STRESS RATIO = 2.0414
 MASS AVERAGE TEMPERATURE RISE = 1.2755

NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 1, 1974 (CONTINUED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

110 PERCENT DESIGN SPEED - SCAN NO 14

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8876

PERCENT SPAN FROM TIP (I. F.)	BETA 3 (DEG)	V3 (FT/SEC)	VU3 (FT/SEC)	M3	VM3 (FT/SEC)	VZ3 (FT/SEC)	U3 (FT/SEC)
0.00	30.03	905.54	557.86	.753	713.30	705.44	1630.54
10.75	37.35	962.97	574.97	.788	743.60	742.37	1508.66
20.00	37.27	900.71	593.32	.824	780.51	780.50	1404.13
27.10	37.57	1011.94	616.30	.863	802.67	802.08	1358.85
36.54	32.55	1040.35	650.98	.893	803.39	800.46	1247.21
47.00	41.20	1149.77	744.49	1.000	863.92	852.32	1123.88
100.00	42.71	1190.85	907.75	1.043	875.03	850.84	1056.75

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8830

PERCENT SPAN FROM TIP (I. F.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	-1.92	746.87	-25.92	.610	746.64	746.44	1618.71
11.12	-2.00	783.24	-27.28	.643	782.81	782.71	1563.66
20.76	-3.36	827.81	-34.39	.686	825.96	825.59	1471.49
24.16	-2.27	852.01	-33.92	.711	851.34	850.46	1400.43
27.10	-3.92	857.66	-21.81	.718	857.19	856.70	1246.71
40.14	.90	836.48	11.64	.694	834.40	831.35	1182.63
100.00	.97	840.65	12.70	.699	840.58	840.44	1123.93

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	TRAILING EDGE	MASS FLOW (PCT)	DELTA HETA (NEG)	INCIDENCE ANGLE (DEG)	SUCT SUR (DEG)	D FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TIP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	1.00	39.95	1.710	-2.212	.4089	.0509	.0183	20.260	1.850	1.2014	.8709
10.75	11.12	11.85	39.94	1.785	-1.542	.1931	.0548	.0190	14.607	1.907	1.2014	.8596
20.76	29.70	31.32	41.11	.737	-2.678	.3725	.0457	.0150	9.401	1.976	1.2784	.8764
27.10	44.10	51.16	39.74	-1.16	-3.127	.3522	.0462	.0142	8.741	2.014	1.2643	.8792
36.54	67.10	70.37	41.37	.005	-2.870	.3406	.0539	.0155	9.191	2.033	1.2641	.8736
47.00	88.14	33.03	40.49	-1.035	-1.939	.4381	.0417	.0639	12.331	1.974	1.2732	.6175
100.00	100.00	100.00	41.84	-1.922	-5.363	.4528	.0288	.0579	19.565	1.974	1.2731	.6664

MOMENTUM AVERAGE STAGE EFFICIENCY = .7990 (POLYTROPIC)

WORK AVERAGE STAGE EFFICIENCY = .7790 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.9770

MASS AVERAGE TEMPERATURE RISE = 1.2755

NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 1, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SEAL AXIAL COMPRESSOR (METRIC UNITS)

110 PERCENT DESIGN SPEED - SCAN NO 14

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8874

PERCENT SPAN FROM TIP (T. F.)	BETA 3 (DEG)	V3 (M/SEC)	V13 (M/SEC)	M3	VM3 (M/SEC)	V/3 (M/SEC)	J3 (M/SEC)
0.00	34.03	276.01	170.04	.753	217.41	215.03	476.99
10.75	37.95	287.62	174.74	.788	226.65	226.27	474.13
20.50	37.27	298.06	181.03	.824	237.90	237.00	466.27
30.25	37.52	308.45	187.85	.863	248.85	246.47	461.14
40.00	39.65	317.10	201.47	.903	264.47	243.28	460.15
47.50	41.24	340.65	231.25	1.000	283.22	259.79	442.56
100.00	42.71	362.97	266.20	1.043	266.71	259.34	421.49

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8430

PERCENT SPAN FROM TIP (T. F.)	BETA 4 (DEG)	V4 (M/SEC)	V14 (M/SEC)	M4	VM4 (M/SEC)	V/4 (M/SEC)	J4 (M/SEC)
0.00	-1.22	227.65	-7.63	.610	227.52	227.52	433.38
11.12	-2.00	240.74	-8.32	.643	238.60	238.57	476.60
20.274	-3.84	252.74	-16.44	.686	251.75	251.64	448.51
30.14	-2.27	259.69	-10.31	.711	259.49	259.22	420.76
47.10	-1.22	261.61	-4.74	.718	261.27	261.12	392.19
90.14	.80	264.35	3.55	.694	254.32	253.79	300.47
100.00	.87	256.23	3.87	.699	256.20	256.20	382.57

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	INCIDENCE ANGLE (DEG)	INCIDENCE ANGLE (DEG)	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE LOSS RATIO	STAGE LOSS RATIO	STATOR POLYTROPIC EFF
0.00	0.00	1.710	.0089	.0509	20.240	1.859	1.2014
10.75	11.12	1.745	.0931	.0544	16.607	1.907	1.2014
20.50	20.274	1.717	.1725	.0457	9.401	1.974	1.2746
30.25	30.14	1.116	.3522	.0462	3.741	2.014	1.2483
40.00	40.00	1.005	.3006	.0534	9.191	2.023	1.2461
47.50	47.50	1.035	.4519	.0417	12.331	1.974	1.2732
100.00	100.00	1.122	.4521	.0284	19.564	1.974	1.2731

MOENTUM AVERAGE STAGE EFFICIENCY = .7990 (POLYTROPIC)
 MOMENTUM AVERAGE STAGE EFFICIENCY = .7799 (ADIABATIC)
 MOMENTUM A.O. STAGE PRESS RATIO = 1.9770
 MASS AVERAGE TEMPERATURE RISE = 1.2755

11A5A SMALL AXIAL COMPRESSOR TEST 1 MARCH 1, 1974 (COMBINED TEST)

ROTOR PERFORMANCE VASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT HEIGHT FLOW = 2.9376 LRM/SEC 90 PERCENT DESIGN SPEED = SCAN NO 20
 PERCENT DESIGN EQUIVALENT FLOW = 80.0953 EQUIVALENT SPEED
 EQUIVALENT FLOW / INLET ANN AREA = 69284.8A1 R.P.M.
 32.600A LRM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC HLOSSAGE = .9971

PERCENT SPAN FROM TIP (I. F.)	HETA* (DEG)	V01 (FT/SEC)	V02 (FT/SEC)	V03 (FT/SEC)	HETA1 (DEG)	V1 (FT/SEC)	V04 (FT/SEC)	M1	V05 (FT/SEC)	V71 (FT/SEC)	U1 (FT/SEC)
0.00	73.26	1641.16	1627.94	1.356	0.00	429.56	0.00	.391	429.54	415.73	1427.94
10.00	71.94	1646.49	1356.62	1.297	0.00	440.66	0.00	.401	440.44	426.26	1356.62
20.00	68.02	1324.36	1224.91	1.200	0.00	478.41	0.00	.437	474.41	464.62	1224.91
30.00	66.35	1221.15	1114.61	1.116	0.00	484.81	0.00	.448	480.91	484.23	1114.61
40.00	64.32	1097.67	984.10	1.002	0.00	474.51	0.00	.434	475.51	474.35	984.10
50.00	61.65	941.25	828.36	.857	0.00	446.99	0.00	.407	446.99	440.99	828.36
60.00	59.27	846.54	722.50	.745	0.00	429.53	0.00	.391	429.53	414.33	722.50

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC HLOSSAGE = .9223

PERCENT SPAN FROM TIP (I. F.)	HETA*2 (DEG)	V02 (FT/SEC)	V03 (FT/SEC)	V04 (FT/SEC)	HETA2 (DEG)	V2 (FT/SEC)	V05 (FT/SEC)	M2	V06 (FT/SEC)	V72 (FT/SEC)	U2 (FT/SEC)
0.00	60.89	922.74	849.90	.813	47.49	705.62	523.45	.589	473.10	457.04	1373.35
10.00	58.05	835.68	759.79	.750	49.21	725.61	549.19	.607	473.92	463.57	1304.98
20.00	53.21	627.51	662.74	.700	47.39	732.01	534.74	.619	485.43	492.64	1201.52
30.00	48.94	441.16	542.57	.637	47.84	759.82	549.82	.643	506.24	506.21	1102.39
40.00	37.06	304.36	426.44	.607	45.13	806.65	578.55	.695	562.11	560.46	1002.99
50.00	21.47	204.27	221.07	.523	50.32	880.71	677.74	.743	542.30	543.14	895.45
60.00	11.07	573.63	110.15	.499	52.26	914.66	727.82	.801	562.98	563.82	937.37

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	DELTA HETA (DEG)	MASS FLOW (PCT)	INCIDENCE MEAN (DEG)	ANGUL SUPT SU3 (DEG)	D FACTOR	OMEGA* HAP	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	9.420	4.452	.4814	.2439	.0451	3.903	1.710	.7177	.7380
10.00	12.00	12.00	10.212	4.479	.5110	.2607	.0500	3.190	1.706	.7144	.7349
20.00	13.37	13.37	10.077	4.473	.5007	.1884	.0375	3.621	1.712	.7002	.7137
30.00	19.37	19.37	9.745	4.476	.5300	.1486	.0329	5.645	1.714	.6444	.6558
40.00	27.27	27.27	10.063	4.189	.4998	.0840	.0184	7.769	1.745	.9240	.9316
50.00	40.19	40.19	10.380	4.322	.5240	.1400	.0305	12.652	1.774	.9107	.9174
60.00	40.20	40.20	10.516	4.442	.4981	.1706	.0356	18.122	1.774	.9107	.9176

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8372 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8243 (ADIABATIC)
 MOMENTUM AVG. ROTOR PRESS RATIO = 1.7264
 MASS AVERAGE TEMPERATURE RISE = 1.2044

NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 1, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIVALENT FLIGHT FLOW = 1.3706 KG/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 00.0453
 90 PERCENT DESIGN SPEED - SCAN NO. 20
 EQUIVALENT SPEED = 69294.861 R.P.M.
 EQUIVALENT FLOW / INLET ANN AREA = 158.1974 KG/SEC-SQ M

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9971

PERCENT SPAN FROM TIP (U. S.)	RFTA01 (DEG)	V01 (M/SEC)	W101 (M/SEC)	M01	BETA1 (DEG)	V1 (M/SEC)	W11 (M/SEC)	M1	V41 (M/SEC)	V71 (M/SEC)	U1 (M/SEC)
0.00	73.74	654.50	475.24	1.356	0.00	170.93	0.00	.091	170.93	174.71	435.24
10.00	71.78	634.10	412.89	1.297	0.00	174.31	0.00	.091	174.31	170.92	412.49
27.34	68.82	613.66	374.40	1.209	0.00	145.82	0.00	.037	145.82	163.14	374.40
34.45	66.35	717.21	360.95	1.116	0.00	149.29	0.00	.049	149.29	149.01	340.95
42.21	64.12	334.71	301.48	1.002	0.00	144.24	0.00	.034	144.24	144.09	301.48
85.00	61.65	246.89	252.64	.857	0.00	176.24	0.00	.007	176.24	174.61	252.48
100.00	59.27	246.19	220.22	.765	0.00	130.92	0.00	.091	130.92	174.67	220.22

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9223

PERCENT SPAN FROM TIP (U. S.)	RFTA02 (DEG)	V02 (M/SEC)	W102 (M/SEC)	M02	BETA2 (DEG)	V2 (M/SEC)	W112 (M/SEC)	M2	V42 (M/SEC)	V72 (M/SEC)	U2 (M/SEC)
0.00	60.84	294.49	259.05	.813	47.49	215.07	159.55	.549	144.22	139.58	414.60
12.00	58.05	272.94	231.58	.750	44.21	221.10	167.39	.607	144.45	141.29	348.98
32.06	53.21	202.23	202.00	.700	47.33	223.12	164.22	.619	151.04	150.10	365.22
50.55	46.94	276.18	175.37	.637	47.88	230.05	170.63	.683	156.34	154.29	336.01
69.10	37.04	216.60	179.37	.607	45.83	244.87	174.34	.695	171.33	170.83	305.71
88.53	21.44	144.14	67.38	.523	50.32	249.44	206.59	.763	171.61	148.60	273.97
100.00	11.07	174.84	33.57	.699	52.26	240.31	21.66	.401	171.59	145.76	255.23

MOTOR PERFORMANCE DATA

PERCENT SPAN FROM LEADING EDGE	DELTA (DEG)	DELTA* (DEG)	INCIDENCE ANGLE (DEG)	SUCT SUR (DEG)	FACOR	OMEGA* (RPM)	LOSS PARAMETER (DEG)	DEVIATION ANGLE (DEG)	PICTOR PRESS RATIO	PICTOR ANTIADHATIC EFF	POLYTROPIC EFF
0.00	0.00	12.46	9.420	8.952	.5814	.2439	.0451	3.203	1.710	.7177	.7340
12.00	12.01	12.91	10.232	8.879	.5110	.2607	.0500	3.190	1.704	.7144	.7349
27.34	32.00	15.61	10.077	7.493	.5097	.1484	.0375	3.621	1.712	.7002	.8137
43.85	50.55	19.37	9.745	6.876	.5300	.1546	.0328	3.645	1.718	.6864	.8454
62.21	69.10	27.27	10.063	6.189	.4998	.0450	.0388	7.269	1.745	.9260	.9316
85.00	88.53	40.19	10.360	5.322	.5240	.1400	.0308	12.652	1.775	.9107	.9176
100.00	100.00	48.20	10.516	4.642	.4981	.1706	.0346	14.122	1.774	.9107	.9176

MOMENTUM AVERAGE MOTOR EFFICIENCY = .8372 (POLYTROPIC)
 MOMENTUM AVERAGE MOTOR EFFICIENCY = .8243 (ADIABATIC)
 MOMENTUM AVG. MOTOR PRESS RATIO = 1.7264
 MASS AVERAGE TEMPERATURE RISE = 1.2044

NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 1, 1974 (COMBINED TRMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 20

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9330

PERCENT SPAN FROM TIP (I. F.)	HETA 3 (DEG)	V3 (FT/SEC)	VII3 (FT/SEC)	M3	VM3 (FT/SEC)	V73 (FT/SEC)	U3 (FT/SEC)
0.00	44.02	775.57	539.00	.653	557.66	551.54	1333.75
11.58	45.97	781.67	561.98	.658	543.31	542.41	1279.20
30.08	41.20	796.14	566.96	.678	500.44	500.63	1157.85
40.15	36.31	816.30	559.39	.700	546.03	503.59	1102.24
67.00	27.01	855.12	572.28	.741	615.39	533.07	1013.96
88.11	26.64	915.24	661.10	.796	610.05	622.37	919.76
100.00	27.61	955.26	705.77	.836	643.75	655.96	867.76

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9141

PERCENT SPAN FROM TIP (I. F.)	HETA 4 (DEG)	V4 (FT/SEC)	VII4 (FT/SEC)	M4	VM4 (FT/SEC)	V74 (FT/SEC)	U4 (FT/SEC)
0.00	-1.72	626.04	-17.31	.518	626.00	626.00	1324.07
11.46	-1.22	616.00	-13.17	.511	616.66	616.59	1277.77
30.20	-1.61	625.64	-16.22	.524	625.66	625.14	1199.49
40.30	-2.01	643.40	-17.98	.546	647.57	646.90	1126.17
67.60	-1.92	653.11	-21.56	.545	662.75	662.60	1050.92
88.15	-2.30	622.69	-22.64	.524	622.28	620.00	967.33
100.00	-2.09	625.63	-22.92	.527	625.22	625.22	919.36

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP FROM TIP (I. F.)	INCIDENCE ANGLE (DEG)	MEAN SUCT SW (DEG)	FACTOR	OMEGA HAR	PARAMETER	DEFLECTION ANGLE (DEG)	STAGE PRESS RATIO	STAGE EFF	STATOR POLYTROPIC EFF
0.00	0.00	7.07	0.479	.0476	.0171	20.960	1.690	1.2303	.8965
11.58	11.44	9.715	0.460	.0542	.0202	15.303	1.641	1.2303	.8443
30.04	31.64	9.557	0.428	.0409	.0136	11.660	1.624	1.2074	.9101
40.15	44.90	5.500	0.235	-.0005	-.0001	4.044	1.719	1.1977	1.0010
67.00	67.64	2.395	0.406	.0591	.0170	4.179	1.714	1.1859	.8402
88.11	80.15	4.074	0.500	.1451	.0384	9.444	1.687	1.1952	.7795
100.00	100.00	3.000	0.570	.1349	.0341	16.610	1.684	1.1951	.8109

MOMENTUM AVERAGE STAGE EFFICIENCY = .8125 (POLYTROPIC) MOMENTUM AVG. STAGE PRESS RATIO = 1.6998
 MOMENTUM AVERAGE STAGE EFFICIENCY = .7980 (ADIABATIC) MASS AVERAGE TEMPERATURE RISE = 1.2044

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NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 10 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 20

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .0330

PERCENT SPAN FROM TIP (I. F.)	RFTA 3 (DEG)	V3 (M/SEC)	VII3 (M/SEC)	M3	VH3 (M/SEC)	V73 (M/SEC)	U3 (M/SEC)
0.00	44.02	276.30	164.24	.653	169.98	148.11	406.53
11.53	44.07	278.25	171.24	.658	175.60	145.33	389.90
20.99	43.20	262.64	166.11	.678	176.92	174.02	362.06
40.15	43.71	248.81	170.65	.700	171.06	180.91	335.46
67.20	42.01	240.66	174.43	.741	167.67	192.06	300.06
88.11	44.43	270.96	202.11	.796	192.28	199.70	280.04
100.00	47.63	291.16	215.12	.836	196.21	190.79	262.97

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .0314

PERCENT SPAN FROM TIP (I. F.)	RFTA 4 (DEG)	V4 (M/SEC)	VII4 (M/SEC)	M4	VH4 (M/SEC)	V74 (M/SEC)	U4 (M/SEC)
0.00	-1.22	190.48	-4.76	.518	190.44	190.44	403.58
11.64	-1.22	188.00	-4.91	.511	187.54	187.03	389.47
20.69	-1.42	190.70	-4.76	.524	190.03	190.54	365.73
40.00	2.91	197.63	-10.22	.546	197.38	197.18	343.26
67.60	-1.42	196.02	-4.57	.545	195.91	195.80	320.32
88.15	-2.07	199.80	-4.92	.526	199.67	199.08	294.84
100.00	-2.04	190.69	-4.96	.527	190.57	190.47	280.72

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	TRAILING EDGE	MASS FLOW (KGT)	DELTA P (DEG)	INCIDENCE ANGLE (DEG)	SUCT 5/8 FACTOR (DEG)	D FACTOR	LOSS PARAMETER	REVIATION ANGLE (DEG)	STAGE EFFICIENCY	STAGE LOSS RATIO	STAGE TEMPERATURE RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	45.24	7.707	3.284	.4528	.0171	20.960	1.690	1.2103	1.6945	.8545
11.58	11.44	12.40	47.19	9.785	6.454	.4660	.0202	14.705	1.681	1.2103	1.6893	.8593
30.99	30.69	33.17	44.66	6.557	3.274	.4628	.0144	11.660	1.676	1.2074	1.6910	.8610
40.15	44.40	52.44	46.21	5.900	2.919	.4235	-.0004	9.064	1.694	1.1977	1.0010	.8582
67.00	67.69	71.30	43.93	2.395	-4.488	.4406	.0591	4.179	1.714	1.1059	.8795	.8795
88.11	88.15	91.24	48.52	4.074	1.188	.5090	.0384	9.444	1.687	1.1052	1.1052	.8795
100.00	100.00	100.00	40.72	3.000	-2.441	.5270	.0341	14.610	1.684	1.1051	1.1051	.8795

MOMENTUM AVERAGE STAGE EFFICIENCY = .8125 (POLYTROPIC)
 MOMENTUM AVERAGE STAGE EFFICIENCY = .7980 (ADIABATIC)

MOMENTUM AVG. STAGE LOSS RATIO = 1.6988
 MASS AVERAGE TEMPERATURE RATIO = 1.2084

NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 1, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT WEIGHT FLOW = 3.0131 LBM/SEC
 PERCENT DISTOR EQUIVALENT FLOW = 0.24305
 90 PERCENT DEVIATION SPEED = 5044 RPM
 FORTVALFNT SPFD = 69331.211 R.P.M.
 FORTVALFNT FLOW / INLET ANGLE ANFA = 11.1663 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .09883

PERCENT SPAN FROM TIP (I. P.)	HETA01 (DEG)	V01 (FT/SEC)	V101 (FT/SEC)	HETA1 (DEG)	V1 (FT/SEC)	V11 (FT/SEC)	M1	V41 (FT/SEC)	V71 (FT/SEC)	U1 (FT/SEC)
0.00	72.70	1400.50	1420.00	0.00	664.07	0.00	.405	466.07	430.66	1624.00
10.22	71.41	1431.44	1350.73	0.00	656.30	0.00	.414	456.30	441.36	1356.79
27.13	69.14	1332.03	117.60	0.00	644.81	0.00	.453	444.81	400.31	1237.60
42.77	65.61	1223.65	1110.90	0.00	507.30	0.00	.464	507.30	505.67	1119.90
62.14	63.76	1105.05	942.76	0.00	492.16	0.00	.450	492.16	492.20	949.94
84.00	60.03	949.42	824.96	0.00	462.63	0.00	.422	462.63	456.62	924.96
100.00	54.42	804.50	722.98	0.00	464.50	0.00	.405	464.50	490.40	722.98

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .01463

PERCENT SPAN FROM TIP (I. P.)	HETA02 (DEG)	V02 (FT/SEC)	V102 (FT/SEC)	HETA2 (DEG)	V2 (FT/SEC)	V112 (FT/SEC)	M2	V42 (FT/SEC)	V72 (FT/SEC)	U2 (FT/SEC)
0.00	60.73	1000.10	874.54	45.44	702.32	500.72	.589	492.67	476.61	1374.27
11.73	57.91	931.40	780.64	46.21	726.87	524.74	.611	502.40	491.04	1311.37
31.10	52.21	871.66	695.20	44.23	733.65	511.74	.623	524.44	522.39	1205.98
49.50	47.65	770.66	576.22	45.40	750.71	534.55	.642	527.00	527.00	1104.77
64.60	39.64	712.07	446.99	45.13	700.77	502.60	.641	554.90	544.24	1007.39
84.54	22.50	627.06	240.00	44.04	877.34	644.60	.761	570.63	570.61	849.40
100.00	12.71	526.46	131.05	50.62	914.51	700.68	.794	540.22	540.50	837.93

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (I. P.)	DELTA HETA0 (DEG)	MASS FLOW (LBM)	INCIDENCE ANGLE (DEG)	DELTA ANGLE (DEG)	OMEGA MAP	LOSS PARAMETER	DEVIATION ANGLE (DEG)	DEVIATION RATIO	ROTOR ANTIADHATIC EFF	ROTOR POLYTHROPIC EFF
0.00	0.00	0.00	0.394	0.474	.2261	.0422	3.597	1.496	.7200	.7480
10.22	11.74	12.00	0.427	0.406	.2364	.0462	2.491	1.499	.7114	.7507
27.13	31.19	33.12	7.226	0.736	.1549	.0311	2.990	1.703	.6284	.8411
42.77	49.40	52.41	6.167	0.973	.1303	.0268	5.602	1.707	.6479	.9174
62.14	64.60	71.27	5.420	0.401	.0894	.0192	4.815	1.719	.0203	.9261
84.00	84.51	40.22	4.504	0.498	.1062	.0229	12.767	1.764	.0300	.9153
100.00	100.00	100.00	3.530	0.429	.1297	.0269	19.779	1.764	.0300	.9154

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8530 (POLYTHROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8415 (ADIABATIC)
 MOMENTUM AVG. ROTOR PRESS RATIO = 1.7117
 MASS AVERAGE TEMPERATURE RISE = 1.1969

NASA SMALL AXIAL COMPRESSOR TEST 1 M APR 1, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 21
 EQUIVALENT FLOW = 3.7624 M³/SEC EQUIVALENT FLOW / INLET ANN AREA = 69131.211 M³/SEC-M
 PERCENT DESIGN EQUIVALENT FLOW = 62.6305

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9883

PERCENT SPAN FROM TIP (I. F.)	REFLX1 (DEG)	V01 (M/SEC)	V101 (M/SEC)	HETA1 (DEG)	V1 (M/SEC)	V10 (M/SEC)	M1	V02 (M/SEC)	V21 (M/SEC)	U1 (M/SEC)
0.00	72.70	656.16	435.53	0.00	135.53	0.00	.605	135.53	131.26	435.53
10.25	71.41	436.41	413.55	0.00	172.08	0.00	.416	172.08	130.63	413.55
27.13	67.14	415.26	377.16	0.00	151.00	0.00	.453	151.00	149.23	377.16
43.77	65.63	178.77	341.75	0.00	154.62	0.00	.464	154.62	154.13	361.35
62.19	63.56	337.00	301.74	0.00	140.07	0.00	.450	140.07	150.02	301.74
86.00	60.83	200.35	252.67	0.00	141.01	0.00	.422	141.01	130.12	252.67
100.00	58.62	258.68	220.16	0.00	135.48	0.00	.405	135.48	130.88	220.16

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9143

PERCENT SPAN FROM TIP (I. F.)	M02	HETA2 (DEG)	V02 (M/SEC)	V2 (M/SEC)	HETA2 (DEG)	V02 (M/SEC)	M2	V02 (M/SEC)	V22 (M/SEC)	U2 (M/SEC)
0.00	60.53	260.26	65.64	214.07	152.62	65.64	.580	150.10	145.27	619.88
11.73	57.41	232.77	46.21	221.55	159.94	46.21	.611	153.31	169.06	399.71
31.10	52.91	211.90	46.23	223.62	155.99	46.23	.623	160.27	159.22	367.47
49.50	47.45	175.02	45.40	224.02	162.93	45.40	.642	160.64	160.65	337.95
68.60	38.01	170.04	45.33	241.03	171.42	45.33	.601	160.88	160.94	307.05
88.56	22.56	131.40	49.65	267.41	200.74	49.65	.761	176.67	173.77	274.18
100.00	12.73	39.94	50.62	274.74	215.46	50.62	.798	176.85	170.86	255.40

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	MASS FLOW (M ³ /SEC)	DELTA HETA0 (DEG)	INCIDENCE ANGLE (DEG)	SUCT SURF (DEG)	OMEGA0 (RPM)	LOSS PARAMETER	ANGLE OF ATTACK (DEG)	ROTOR EFFICIENCY	ROTOR POLYTROPIC EFFICIENCY
0.00	0.00	12.12	8.198	8.374	2241	.0622	3.537	1.606	.7940
11.73	12.00	14.01	8.285	8.306	2304	.0842	2.691	1.689	.7507
27.13	33.12	15.27	7.226	8.736	1569	.0311	2.990	1.703	.8411
43.77	49.50	10.14	6.162	6.973	1303	.0248	5.602	1.707	.8775
62.19	71.27	7.08	5.200	6.931	1099	.0192	4.815	1.719	.9261
86.00	111.54	34.24	4.508	6.988	1062	.0229	11.747	1.750	.9353
100.00	100.00	45.69	3.530	6.829	1297	.0269	14.779	1.758	.9354

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8530 (POLYTROPIC)

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8415 (ADIABATIC)

MOMENTUM AVG. ROTOR EFFICIENCY = 1.7117

MASS AVERAGE TEMPERATURE RISE = 1.1949

NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 1, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 21

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9256

PERCENT SPAN FROM TIP (I. F.)	RETA 3 (DEG)	V1 (FT/SEC)	VU3 (FT/SEC)	M3	VM3 (FT/SEC)	WZ3 (FT/SEC)	U3 (FT/SEC)
0.00	41.41	77.52	515.59	.659	549.66	574.23	1336.64
11.29	42.90	740.92	536.39	.660	577.96	577.00	1241.66
20.10	40.11	400.12	514.07	.644	614.90	614.90	1142.34
30.77	40.40	415.32	535.34	.706	620.24	619.74	1107.16
42.31	41.12	440.41	545.45	.735	637.96	635.63	1017.62
48.00	40.50	917.64	644.20	.801	653.21	646.73	919.50
100.00	45.02	956.66	686.07	.839	666.71	644.29	803.36

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9210

PERCENT SPAN FROM TIP (I. F.)	RETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	WZ4 (FT/SEC)	U4 (FT/SEC)
0.00	-0.70	630.14	-7.70	.525	610.09	620.09	1324.96
11.29	-0.71	613.32	-8.10	.524	633.26	623.19	1276.85
20.10	-1.00	646.57	-5.61	.545	646.30	646.10	1231.54
30.77	-1.22	660.05	-14.20	.566	667.91	672.22	1127.64
42.31	-1.74	659.67	-20.01	.581	659.33	654.64	1021.91
48.00	-0.99	640.47	-4.98	.561	640.39	634.05	967.66
100.00	-0.87	666.02	-4.74	.564	663.95	643.95	919.97

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP EDGE	FRONT TIP	MASS FLOW (LBS)	DELTA (DEG)	INCIDENCE ANGLE (DEG)	SUCT SUR (DEG)	DELTA FACTOR	DELTA (DEG)	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	62.11	5.090	1.148	.674	.674	.0450	.0162	21.480	1.667	1.2204	.4997
11.29	11.29	17.50	43.63	6.721	1.377	.670	.670	.0452	.0157	15.804	1.670	1.2204	.4925
20.10	20.10	33.12	41.49	3.514	.217	.611	.611	.0434	.0111	11.743	1.698	1.1979	.4906
30.77	30.77	42.41	62.02	1.071	.077	.484	.484	.0094	.0029	10.745	1.712	1.1809	1.0231
42.31	42.31	71.27	62.44	1.501	-1.240	.610	.610	.0314	.0091	4.361	1.702	1.1814	.9337
48.00	48.00	90.23	65.68	2.242	.042	.482	.482	.0410	.0039	10.660	1.674	1.1894	.7403
100.00	100.00	100.00	44.69	1.148	-2.243	.500	.500	.1107	.0356	17.810	1.674	1.1894	.7464

STATOR AVERAGE STAGE EFFICIENCY = .4314 (POLYTROPIC)

STATOR AVERAGE STAGE PRESS RATIO = 1.6890

STATOR AVERAGE STAGE TEMPERATURE RISE = 1.1969

NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 10 1974 (CONTINUED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

90 PERCENT DESIGN SPEED - SCAL NO 21

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9756

PERCENT SPAN FROM TIP (I. F.)	BETA 3 (DEG)	V3 (M/SEC)	V1/3 (M/SEC)	M3	V1/3 (M/SEC)	V1/3 (M/SEC)	U3 (M/SEC)
0.00	41.41	217.60	157.15	.449	178.20	178.25	406.90
11.20	42.90	240.44	163.67	.468	176.16	175.47	390.59
20.10	45.11	265.10	167.31	.489	187.65	187.45	383.42
40.27	40.90	269.73	163.17	.706	189.85	188.91	317.66
67.31	41.12	254.11	163.73	.715	196.45	193.74	310.11
88.08	46.50	270.70	136.15	.801	199.19	197.52	280.26
100.00	45.42	201.54	200.11	.819	203.21	197.40	263.15

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9210

PERCENT SPAN FROM TIP (I. F.)	BETA 6 (DEG)	V4 (M/SEC)	V1/4 (M/SEC)	M4	V1/4 (M/SEC)	V1/4 (M/SEC)	U4 (M/SEC)
0.00	-70	192.07	-2.35	.525	192.05	192.05	403.85
11.20	-71	193.03	-2.47	.520	193.02	193.00	399.79
20.10	-1.38	192.07	-6.76	.544	192.02	192.03	386.21
40.27	-1.22	203.63	-4.35	.566	203.58	203.37	343.56
67.31	-1.76	201.85	-6.10	.561	200.94	200.85	300.52
88.08	-0.89	195.22	-3.04	.541	195.19	195.08	246.94
100.00	-0.17	196.30	-2.04	.544	196.27	196.27	240.41

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP FROM LEADING EDGE	FRONT TIP FLOW	MASS FLOW (KGT)	DELTA HFTA (DEG)	INCIDENCE ANGLE (DEG)	SUCT SURF (DEG)	INCIDENCE ANGLE (DEG)	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF		
0.00	0.00	0.00	42.11	5.090	1.144	4.354	0.450	0.1162	21.590	1.667	1.2204	.9997
11.20	11.71	17.00	43.63	4.721	1.377	4.370	0.452	0.1157	15.900	1.670	1.2204	.9225
20.10	30.68	43.12	41.89	3.514	2.207	4.110	0.336	0.111	11.741	1.688	1.1079	.9204
40.27	47.76	52.41	42.02	3.071	3.377	3.864	-0.0094	-0.0029	10.255	1.712	1.1009	1.0231
67.31	67.42	71.27	42.95	1.581	-1.290	4.105	0.314	0.091	9.341	1.702	1.1015	.9317
88.08	88.23	90.22	45.48	2.242	2.666	4.020	0.349	0.039	10.640	1.676	1.1004	.7403
100.00	100.00	100.00	48.69	1.148	-2.253	4.001	0.350	0.030	17.830	1.674	1.1009	.7964

MOMENTUM AVERAGE STAGE EFFICIENCY = 0.9318 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = 0.9190 (ADIABATIC)
MOMENTUM AVG. STAGE PRESS RATIO = 1.6890
MASS AVERAGE TEMPERATURE RATIO = 1.1969

MASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 1, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE MASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIVALENT HEIGHT FLOW = 1.4136 KG/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 85.0871
 90 PERCENT DESIGN SPEED = 3500 RPM
 EQUIVALENT SPEED = 1492.645 R.P.M.
 EQUIVALENT FLOW / INLET ANN AREA = 149.0528 KG/SEC-SQ 1

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9817

PERCENT SPAN FROM TIP (I. F.)	HETA92 (DEG)	V92 (M/SEC)	V91 (M/SEC)	HETA1 (DEG)	V1 (M/SEC)	V11 (M/SEC)	M1	V41 (M/SEC)	V71 (M/SEC)	J1
0.00	72.14	457.40	141.20	0.00	0.00	0.00	.422	141.20	174.66	635.68
10.11	70.71	434.43	144.78	0.00	0.00	0.00	.434	144.78	140.04	613.71
20.22	67.30	405.05	157.16	0.00	0.00	0.00	.472	157.16	154.27	377.55
31.33	64.79	377.77	160.42	0.00	0.00	0.00	.484	160.42	140.60	341.79
42.44	62.68	360.07	156.10	0.00	0.00	0.00	.469	156.10	156.05	302.12
53.55	54.46	252.74	146.55	0.00	0.00	0.00	.439	146.55	144.58	252.78
64.66	57.63	261.67	140.77	0.00	0.00	0.00	.421	140.77	174.09	220.34

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8770

PERCENT SPAN FROM TIP (I. F.)	HETA92 (DEG)	V92 (M/SEC)	V2 (M/SEC)	HETA2 (DEG)	V2 (M/SEC)	M2	V42 (M/SEC)	V72 (M/SEC)	U2
0.00	59.44	280.29	215.68	32.72	137.84	.599	145.88	140.54	418.81
11.11	55.46	256.03	225.21	30.12	148.23	.628	172.37	140.10	600.27
22.22	52.41	225.25	227.92	27.92	143.86	.626	170.20	140.22	349.11
33.33	48.54	186.67	233.14	26.78	152.30	.558	176.57	174.56	338.76
44.44	38.67	150.12	241.26	24.43	158.06	.694	182.20	181.74	304.17
55.55	23.82	82.69	267.97	19.12	192.12	.766	186.81	183.74	274.61
66.66	14.50	48.72	278.72	17.85	206.65	.800	187.07	180.17	255.37

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	MASS FLOW (G)	HETA9 (DEG)	INCIDENCE ANGLE (DEG)	U FACTOR	U/FAC2	HAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR EFF	ROTOR POLYTROPIC EFF
0.00	0.00	12.53	7.740	.4019	.1433	.0355	2.454	1.641	.7426	.7785
10.11	12.69	14.76	7.571	.4146	.1436	.0373	.769	1.656	.7755	.7907
20.22	32.92	14.49	6.425	.4248	.1274	.0256	2.720	1.660	.8685	.8598
31.33	42.23	10.21	5.208	.4422	.0847	.0177	4.471	1.692	.9002	.9157
42.44	61.20	71.10	4.525	.4315	.0373	.0079	9.066	1.693	.9646	.9672
53.55	88.23	36.07	3.545	.4510	.0740	.0158	14.597	1.748	.9480	.9527
64.66	100.00	42.82	2.600	.4258	.0900	.0187	21.653	1.748	.9489	.9527

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8835 (POLYTROPIC)
 MASS AVERAGE ROTOR EFFICIENCY = .8747 (ADIABATIC)

MOMENTUM AVG. ROTOR PRESS. RATIO = 1.6815
 MASS AVERAGE TEMPERATURE DISC = 1.1827

NASA SHIFIL AXIAL COMPRESSOR TEST 1 MARCH 1, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 22

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8969

PERCENT SPAN FROM TIP (I. F.)	BETA 3 (DEG)	V3 (FT/SEC)	VIII3 (FT/SEC)	M3	VM3 (FT/SEC)	V73 (FT/SEC)	U3 (FT/SEC)
0.00	35.014	795.25	665.66	.680	644.66	677.59	1334.69
10.94	34.83	808.00	684.36	.692	646.72	645.65	1242.95
20.67	34.07	811.89	678.07	.701	656.21	656.20	1195.61
30.33	35.48	841.79	500.49	.731	676.84	676.84	1109.59
40.00	36.90	855.74	513.76	.748	684.34	681.88	1020.51
50.00	41.73	876.40	616.60	.812	691.39	602.11	920.97
100.00	43.00	964.69	657.92	.851	705.53	686.03	863.25

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9138

PERCENT SPAN FROM TIP (I. F.)	BETA 4 (DEG)	V4 (FT/SEC)	VIII4 (FT/SEC)	M4	VM4 (FT/SEC)	V74 (FT/SEC)	U4 (FT/SEC)
0.00	-1.04	661.56	-12.15	.565	649.45	649.45	1324.82
11.32	-1.12	681.61	-13.14	.576	681.48	681.39	1279.98
20.67	-2.55	695.23	-10.08	.592	694.54	694.24	1202.40
30.33	-1.22	717.03	-15.27	.614	716.86	716.13	1149.13
40.00	-1.22	711.98	-15.16	.612	711.78	711.38	1052.19
50.00	-1.54	695.00	-6.51	.593	694.97	692.43	987.71
100.00	-1.52	699.55	-6.35	.597	699.53	699.53	919.87

STATOR PERFORMANCE DATA

PERCENT SPAN FROM LEADING EDGE	MASS FLOW (LBS)	DELTA BETA (DEG)	INCIDENCE ANGLE (DEG)	MEAN SUCTION (DEG)	FACTOR	OMEGA HAP	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	36.88	-4.77	-4.319	.3762	.0475	.0171	21.140	1.621	1.1991	.8631
10.94	12.43	37.95	.665	-2.694	.3704	.0463	.0161	15.436	1.633	1.1991	.8561
20.67	30.21	38.63	-4.86	-4.814	.3483	.0190	.0062	10.526	1.651	1.1991	.8412
30.33	42.20	37.70	-1.189	-4.201	.3329	.0296	.009	10.772	1.677	1.1779	.8123
40.00	67.31	38.17	-2.552	-5.433	.3404	.0415	.0119	9.800	1.671	1.1680	.8906
50.00	84.18	42.26	-5.540	-3.468	.4199	.1706	.0451	10.095	1.643	1.1619	.6945
100.00	100.00	43.52	-1.612	-5.073	.6388	.1592	.0403	14.100	1.643	1.1820	.7335

MOMENTUM AVERAGE STAGE EFFICIENCY = .8554 (POLYTROPIC) MOMENTUM AVG. STAGE PRESS RATIO = 1.6540
 MASS FLOW AVERAGE STAGE EFFICIENCY = .8449 (ADIABATIC) MASS AVERAGE TEMPERATURE RISE = 1.1827

NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 1, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 22

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8959

PERCENT SPAN FROM TIP (F. F.)	HETA 3 (DEG)	V3 (M/SEC)	V13 (M/SEC)	M3	V43 (M/SEC)	V73 (M/SEC)	U3 (M/SEC)
0.00	35.84	242.39	141.03	.600	196.49	104.33	406.75
10.04	35.01	246.24	147.53	.642	197.12	106.74	371.04
20.67	34.07	247.60	145.71	.701	200.01	200.01	366.62
47.73	32.44	256.54	152.54	.731	206.30	206.15	339.20
67.63	30.90	250.84	146.59	.744	208.60	207.84	311.05
87.75	41.73	242.37	107.94	.812	210.74	207.91	280.71
100.00	43.00	294.04	297.53	.851	215.04	209.10	263.12

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9139

PERCENT SPAN FROM TIP (F. F.)	BETA 4 (DEG)	V4 (M/SEC)	V14 (M/SEC)	M4	V44 (M/SEC)	V74 (M/SEC)	U4 (M/SEC)
0.00	-1.04	204.04	-3.70	.565	204.05	204.05	413.80
11.32	-1.12	207.74	-4.07	.576	207.71	207.69	389.83
30.23	-2.55	211.91	-9.44	.592	211.70	211.60	367.49
48.57	-1.22	210.54	-4.65	.614	218.50	218.28	343.35
47.32	-1.22	217.00	-4.62	.612	216.95	216.83	320.71
88.19	-5.54	211.84	-1.94	.593	211.83	211.85	296.96
100.00	-5.52	213.22	-1.94	.597	213.22	213.22	280.38

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA HETA (DEG)	INCIDENCE HETA (DEG)	ANGL SUR (DEG)	D FACTOR	OMEGA RAR	LOSS PARAMETER	DEVIATION ANGL (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	36.88	-0.477	-4.394	.3762	.0475	.0171	21.140	1.621	1.1991	.8521
10.04	11.32	12.69	37.94	.665	-2.694	.3794	.0463	.0161	15.476	1.633	1.1991	.8461
29.47	30.23	32.92	38.63	-0.486	-3.814	.3683	.0190	.0067	10.636	1.651	1.1831	.9412
47.73	47.57	52.20	37.70	-1.199	-4.201	.3329	.0296	.0091	10.772	1.677	1.1779	.9123
66.63	67.32	71.10	38.12	-2.552	-5.433	.3404	.0414	.0119	0.800	1.671	1.1400	.8306
87.75	88.14	90.14	42.26	-0.340	-1.448	.4199	.3706	.0451	20.995	1.663	1.1414	.6465
100.00	100.00	100.00	43.52	-1.632	-5.073	.4388	.1592	.0403	14.180	1.643	1.1820	.7335

MOMENTUM AVERAGE STAGE EFFICIENCY = .8454 (POLYTROPIC) MOMENTUM AVG. STAGE PRESS RATIO = 1.6540
 MOMENTUM AVERAGE STAGE EFFICIENCY = .8449 (ADIABATIC) MASS AVERAGE TEMPERATURE RATIO = 1.1827

NASA SMALL AXIAL COMPRESSOR 1FST 1 MARCH 1, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 23

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8767

PERCENT SPAN FROM TIP (I. F.)	BETA 3 (DEG)	V3 (FT/SEC)	V113 (FT/SEC)	M3	V114 (FT/SEC)	V173 (FT/SEC)	U3 (FT/SEC)
0.00	32.05	800.36	436.18	.689	672.34	664.95	1336.07
10.06	33.24	823.46	451.63	.711	689.02	687.87	1384.47
20.20	33.88	827.73	451.74	.719	693.56	693.55	1447.89
30.58	34.58	840.27	482.14	.743	699.22	698.70	1510.15
42.25	34.59	844.03	501.92	.777	727.79	725.13	1618.78
55.05	38.46	956.72	595.87	.845	749.14	739.08	1920.66
100.00	39.73	990.78	633.28	.880	761.97	760.42	1864.27

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8979

PERCENT SPAN FROM TIP (I. F.)	BETA 4 (DEG)	V4 (FT/SEC)	V116 (FT/SEC)	M4	V114 (FT/SEC)	V174 (FT/SEC)	U4 (FT/SEC)
0.00	-2.03	721.51	-26.31	.616	721.03	721.03	1326.38
11.22	-2.09	743.94	-27.10	.636	743.45	743.45	1380.88
20.20	-1.92	754.55	-26.29	.649	753.12	752.79	1405.06
30.33	-2.27	745.90	-31.13	.680	785.28	784.47	1530.45
42.25	-2.27	776.88	-30.67	.671	773.67	773.25	1656.64
55.05	-2.23	760.59	-31.10	.655	760.58	757.91	1869.43
100.00	-2.17	765.40	-27.23	.653	765.40	765.40	1920.96

STATOR PERFORMANCE DATA

LEADING EDGE	PERCENT SPAN FROM TIP	TRAILING EDGE	MASS FLOW (LBS)	DELTA (DEG)	INFLUENCE (DEG)	MEAN SUCTION (DEG)	FACTORS	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	0.00	34.96	-3.465	-7.307	.3074	.0517	.0184	20.000	1.565	1.1859
10.06	11.22	11.22	12.17	35.33	-2.923	-6.292	.2988	.0571	.0098	14.493	1.521	1.1859
20.20	20.20	20.20	12.50	35.00	-3.471	-6.805	.2779	.0498	.0166	11.297	1.605	1.1734
30.33	30.33	30.33	12.50	34.85	-3.111	-6.111	.2568	.0115	.0036	9.734	1.665	1.1714
42.25	42.25	42.25	12.50	36.84	-4.941	-7.874	.2918	.1036	.0297	8.834	1.629	1.1870
55.05	55.05	55.05	12.50	38.70	-3.876	-6.766	.1628	.2355	.0637	11.297	1.602	1.1755
100.00	100.00	100.00	100.00	39.90	-4.902	-8.343	.3802	.2521	.0637	18.533	1.602	1.1754

MOMENTUM AVERAGE STAGE EFFICIENCY = .8474 (POLYTROPIC)
 MASS FLOW AVERAGE STAGE EFFICIENCY = .8370 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.6124
 MASS AVERAGE TEMPERATURE RISE = 1.1744

NASA 5-111 AXIAL COMPRESSOR TEST 1 MARCH 1, 1974 (COMBINED TEST)

STATOR PERFORMANCE NASA 5-111 AXIAL COMPRESSOR (METRIC UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 23

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8767

PERCENT SPA1 FLOW TIP (T. F.)	HETA 3 (NEG)	V3 (M/SEC)	VU3 (M/SEC)	MO	VW3 (M/SEC)	V73 (M/SEC)	U3 (M/SEC)
0.00	32.15	247.94	132.34	.689	204.93	202.68	407.23
10.00	33.24	251.11	137.66	.711	210.01	209.66	391.51
20.00	34.03	252.27	137.70	.719	211.40	211.39	385.12
47.00	34.54	250.86	144.94	.741	213.12	212.94	338.37
67.25	34.59	249.45	152.25	.777	221.43	221.02	310.53
89.65	34.46	241.41	181.18	.845	228.34	225.27	280.62
100.00	33.73	201.99	193.02	.880	232.25	225.83	263.43

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8979

PERCENT SPA1 FLOW TIP (T. F.)	HETA 4 (NEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VW4 (M/SEC)	V74 (M/SEC)	U4 (M/SEC)
0.00	-2.07	219.92	-0.02	.616	219.77	219.77	408.28
11.22	-2.09	226.75	-0.26	.636	226.60	226.57	390.41
29.02	-1.12	229.64	-7.71	.669	227.55	229.44	307.30
44.33	-2.27	219.54	-9.43	.680	239.34	239.11	344.50
57.08	-2.27	216.00	-0.35	.671	235.82	234.64	321.39
80.04	-0.21	211.81	-0.34	.655	231.83	230.84	295.48
100.00	-0.17	213.30	-0.58	.659	233.29	233.29	280.71

STATOR PERFORMANCE DATA

PERCENT SPA1 FLOW TIP (T. F.)	PERCENT SPA1 FLOW TIP (T. F.)	MASS FLOW (KGF)	DELTA HETA (MPA)	INCIDENCE ANGLE (DEG)	SUM SUH (DEG)	F FACTOR	OMEGA RAD	PARALLEL LOSS (KGF)	AVG. ANGLE (DEG)	STAGE LOSS RATIO	STAGE LOSS RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	34.94	-3.465	-7.307	.1074	.0417	.0184	20.000	1.444	1.1449	.7701
10.00	11.22	12.17	35.33	-2.923	-6.232	.2088	.0471	.0108	14.493	1.491	1.1049	.7857
20.00	29.02	32.43	35.00	-3.471	-6.805	.2779	.0494	.0144	11.297	1.495	1.1734	.7419
47.00	44.33	52.03	36.15	-4.111	-4.111	.2568	.0315	.0045	9.734	1.464	1.1714	.9359
67.25	67.04	71.01	36.04	-4.341	-7.804	.2918	.0336	.0207	8.814	1.459	1.1439	.8827
80.05	83.34	90.10	38.70	-3.876	-6.746	.3628	.0355	.0623	11.297	1.462	1.1454	.8464
100.00	100.00	100.00	39.00	-4.902	-8.343	.3802	.0221	.0562	14.533	1.462	1.1744	.5658

MOMENTUM AVERAGE STAGE EFFICIENCY = .8476 (POLYTROPIC)
 MOMENTUM AVERAGE STAGE EFFICIENCY = .8370 (ADIABATIC)
 MOMENTUM AVG. STAGE LOSS RATIO = 1.6124
 MASS AVERAGE TEMPERATURE RISE = 1.1744

NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 1, 1974 (COMBINED TEMP.)

MOTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT WEIGHT FLOW = 2.4567 LBM/SEC = 70 PERCENT DESIGN SPEED - SCAN NO 25
 PERCENT DESIGN EQUIVALENT FLOW = 67.0745 ERI VALUE-YT SPEED = 5393R.703 R.P.M.
 EQUIVALENT FLOW / INLET ANN AREA = 27.1334 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0001

PERCENT SPAN FROM TIP (I. S.)	W101 (INP)	RETA1 (INP)	V1 (FT/SEC)	VU1 (FT/SEC)	M1	V41 (FT/SEC)	V71 (FT/SEC)	U1 (FT/SEC)
0.00	72.46	1111.66	1.055	351.28	0.00	314	330.97	3111.66
9.59	71.25	1053.01	1.013	350.51	0.00	326	367.74	1059.01
25.67	68.22	971.75	0.949	349.23	0.00	352	381.10	971.75
41.63	65.91	884.29	0.880	347.14	0.00	360	395.47	884.29
59.65	63.71	784.04	0.793	344.13	0.00	350	384.00	784.04
83.60	60.88	652.51	0.677	343.55	0.00	329	358.67	652.51
100.00	58.09	562.64	0.600	350.31	0.00	317	334.40	562.64

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8557

PERCENT SPAN FROM TIP (I. S.)	W102 (INP)	HETA2 (INP)	V2 (FT/SEC)	VU2 (FT/SEC)	M2	V42 (FT/SEC)	V72 (FT/SEC)	U2 (FT/SEC)
0.00	60.51	794.61	0.798	31.49	0.00	448.13	431.70	1069.15
11.26	56.31	735.01	0.775	30.34	0.00	489.02	470.21	1022.18
24.70	52.07	650.67	0.706	28.94	0.00	471.54	444.40	945.31
44.61	47.71	535.51	0.637	26.14	0.00	518	407.12	865.31
67.07	44.14	413.16	0.601	24.50	0.00	573	372.10	744.97
84.61	40.91	287.52	0.544	22.17	0.00	576.01	346.54	700.26
100.00	17.54	142.46	0.440	19.14	0.00	574.73	317.13	651.49

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	DELTA HETA (INP)	INFLUENCE PLAN (INP)	SUCT SWIR (INP)	DELTA FACTOR	OMEGA HUB (INP)	LOSS PARAMETER	DEFLECTION ANGLE (INP)	MOTOR EFFICIENCY	POLYTROPIC EFF
0.00	0.00	4.627	4.159	0.3072	0.1360	0.0254	3.584	1.272	0.7634
9.53	11.20	4.333	4.030	0.3034	0.1104	0.0222	1.303	1.295	0.4207
25.47	20.70	4.159	7.034	0.3262	0.0773	0.0153	3.639	1.302	0.4401
41.40	40.61	4.027	4.141	0.3560	0.0476	0.0114	5.467	1.309	0.9240
59.65	67.07	4.463	5.466	0.3374	-0.0117	-0.0025	7.454	1.349	1.0124
83.60	84.61	4.422	4.425	0.2871	-0.0769	-0.0164	12.603	1.615	1.0593
100.00	100.00	4.053	3.259	0.2349	-0.0954	-0.0194	24.603	1.615	1.0533

MOMENTUM AVERAGE ROTOR EFFICIENCY = 0.9230 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = 0.9197 (ADIABATIC)
 MOMENTUM AVG. ROTOR BUCESS RATIO = 1.3342
 MASS AVERAGE TEMPERATURE RISE = 1.0432

NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 1, 1974 (COMBINED TEMP.)

MOTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIVALENT FLIGHT FLOW = 1.1143 KG/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 67.0745
 70 PERCENT DESIGN SPEED = SCAN NO 25
 EQUIVALENT SPEED = 53018.301 R.P.M.
 EQUIVALENT FLOW / INLET ANN AREA = 132.6767 KG/SEC-SQ M

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0001

PERCENT SPAN FROM TIP (I.F.)	REF101 (DEG)	VE1 (M/SEC)	VI1P1 (M/SEC)	REF101 (DEG)	VI (M/SEC)	VIU1 (M/SEC)	M1	VM1 (M/SEC)	V71 (M/SEC)	UI (M/SEC)
0.00	72.66	355.85	130.81	0.00	107.07	0.00	.319	107.07	103.67	338.83
0.10	71.25	340.00	122.79	0.00	103.58	0.00	.324	109.58	105.09	322.70
0.20	69.22	318.35	106.19	0.00	114.33	0.00	.352	108.33	116.16	315.19
0.30	65.41	295.67	88.0	0.00	121.05	0.00	.369	121.05	120.66	269.53
0.40	63.70	266.00	73.99	0.00	117.69	0.00	.350	117.69	117.65	234.99
0.50	60.88	227.87	198.89	0.00	110.41	0.00	.329	110.41	109.32	198.89
100.00	58.09	201.97	171.44	0.00	104.77	0.00	.317	106.77	103.15	171.44

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8557

PERCENT SPAN FROM TIP (I.F.)	VE2 (M/SEC)	VI2P2 (M/SEC)	REF102 (DEG)	VE2 (M/SEC)	VE2P2 (M/SEC)	M2	VM2 (M/SEC)	V72 (M/SEC)	UI2 (M/SEC)
0.00	60.54	242.20	31.49	160.18	83.68	.460	136.50	132.10	325.88
0.10	56.31	226.03	30.33	173.09	87.53	.488	140.33	146.06	311.56
0.20	54.07	193.32	31.99	163.46	89.78	.480	143.73	142.83	244.10
0.30	47.71	163.22	36.14	179.48	100.83	.519	148.00	148.67	266.05
0.40	46.15	127.76	34.50	197.34	111.80	.573	162.66	162.18	239.56
0.50	26.54	30.32	37.17	220.33	133.12	.643	175.57	172.44	213.64
100.00	17.56	55.61	31.16	224.66	143.04	.663	175.70	149.81	194.70

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP FROM LEADING EDGE	MASS FLOW (DFT)	DELTA HETA (DEG)	INCIDENCE MEAN (DEG)	ANGL F (DEG)	ETA FACTOR	OMEGA HAZ (DEG)	LOSS PARAMETER	DEFLECTION ANGL F (DEG)	STATOR LOSS FFF	ROTOR LOSS FFF	POLYTHROPIC EFF
0.00	0.70	0.00	8.627	8.159	.3072	.1360	.0254	3.500	1.272	.7556	.7638
0.50	11.16	14.93	9.333	8.030	.3036	.1106	.0222	1.303	1.205	.8141	.8207
25.47	31.26	14.15	9.159	7.095	.3262	.0743	.0153	4.639	1.302	.8755	.8401
61.60	41.10	14.11	8.427	6.161	.3568	.0576	.0114	5.447	1.329	.8209	.8240
53.65	67.87	25.63	9.237	5.666	.3374	-.0117	-.0025	7.856	1.368	1.0133	1.0124
81.60	83.76	36.23	9.422	4.425	.2871	-.0769	-.0154	14.603	1.415	1.0423	1.0593
100.00	100.00	40.53	9.333	3.259	.2369	-.0956	-.0194	26.604	1.615	1.0623	1.0593

MOMENTUM AVVERAGE WITHH EFFICIENCY = .9230 (POLYTHROPIC)
 MASS AVERAGE TEMPERATURE RATIO = 1.0342
 MASS AVERAGE TEMPERATURE RATIO = 1.0912

NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 1, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 25

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8614

PERCENT SPAN FROM TIP (U.S.)	WETA 3 (DEG)	V3 (FT/SEC)	V113 (FT/SEC)	M3	VM3 (FT/SEC)	W73 (FT/SEC)	U3 (FT/SEC)
0.00	27.26	613.14	282.70	.540	-44.09	538.10	1044.32
10.74	27.44	636.16	293.14	.563	565.03	644.03	948.96
20.61	27.89	637.67	298.26	.565	563.62	643.61	913.61
40.04	29.60	600.31	310.77	.593	580.65	600.22	866.07
60.30	30.55	713.27	362.54	.636	514.26	612.02	795.22
87.87	33.46	773.72	426.62	.693	665.47	676.91	714.98
100.00	34.65	801.36	453.64	.720	659.22	661.01	671.66

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9170

PERCENT SPAN FROM TIP (U.S.)	WETA 4 (DEG)	V4 (FT/SEC)	V114 (FT/SEC)	M4	VM4 (FT/SEC)	W74 (FT/SEC)	U4 (FT/SEC)
0.00	-1.06	545.61	-36.41	.479	565.34	565.34	1030.74
11.24	-1.06	566.96	-38.12	.497	565.18	565.11	945.37
21.03	-1.07	576.61	-40.76	.508	574.38	574.12	916.57
40.13	-1.41	614.55	-37.54	.546	617.61	616.74	878.33
67.17	-2.28	639.74	-25.67	.566	639.24	639.44	819.16
88.14	-2.90	654.63	-19.24	.578	654.55	652.14	751.07
100.00	-2.47	659.91	-19.00	.582	658.84	658.84	715.72

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP FROM TIP (U.S.)	LOSS FLUX (PCT)	DELTA INCIDENCE (DEG)	MEAN SUCT VIR (DEG)	DELTA FACTOR	OMEGA HAN	LOSS PARAFETER	DEVIATION ANGLE (DEG)	STAGE LOSS RATIO	STAGE TEMP DATA	STATOR POLYTROPIC EFF
0.00	0.00	31.30	-8.463	.2975	.0308	.0143	18.360	1.263	1.0060	.8774
10.74	11.14	31.36	-8.605	.2917	.0670	.0262	17.717	1.278	1.0060	.7043
20.61	31.26	32.96	-8.630	.2750	.0356	.0215	4.172	1.285	1.0092	.6927
40.04	42.10	33.16	-7.919	.2613	.0393	.0120	4.523	1.318	1.0014	.7516
60.30	69.02	32.94	-8.057	.2552	.1019	.0292	4.822	1.334	1.0024	.5525
87.87	89.24	34.16	-8.745	.2468	.1730	.0678	10.615	1.364	1.0080	.6551
100.00	107.00	35.52	-9.281	.2163	.1683	.0428	17.615	1.364	1.0080	.5561

MAINTAIN AVERAGE STAGE EFFICIENCY = .8723 (POLYTROPIC)
MAINTAIN AVERAGE STAGE EFFICIENCY = .8672 (ADIABATIC)
MOMENTUM AVERAGE STAGE LOSS RATIO = 1.3112
MASS AVERAGE TEMPERATURE DIST = 1.0932

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NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 1, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIVALENT HEIGHT FLOW = 1.0001 KG/SEC 70 PERCENT DESIGN SPEED = SCAN NO 26
 PERCENT DESIGN EQUIVALENT FLOW = 65.6145 EQUIVALENT SPEED
 FLOW/FLOW INLET ANGLE = 59004.323 R.P.M.
 FLOW/FLOW INLET ANGLE = 120.5071 KG/SEC-SU M

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = 1.0040

PERCENT SPAN FROM TIP (I. F.)	M01	HETA1 (DEG)	V01 (M/SEC)	V02 (M/SEC)	V03 (M/SEC)	V04 (M/SEC)	V05 (M/SEC)	M1	VM1 (M/SEC)	V71 (M/SEC)	U1 (M/SEC)
0.00	72.06	72.06	354.37	134.63	104.44	0.00	0.00	.310	104.44	101.08	374.63
0.61	71.07	71.07	319.12	122.57	106.49	0.00	0.00	.317	106.49	107.34	322.57
25.53	69.63	69.63	317.66	235.92	115.44	0.00	0.00	.343	115.44	117.71	295.92
41.66	66.32	66.32	271.06	269.30	114.09	0.00	0.00	.351	114.09	114.71	269.30
53.66	62.32	62.32	265.30	238.43	114.43	0.00	0.00	.341	114.43	114.79	238.43
67.50	61.16	61.16	224.23	104.74	104.12	0.00	0.00	.321	104.12	106.67	198.74
100.00	54.70	54.70	200.52	171.34	104.17	0.00	0.00	.309	104.17	100.63	171.34

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8662

PERCENT SPAN FROM TIP (I. F.)	M02	HETA2 (DEG)	V02 (M/SEC)	V03 (M/SEC)	V04 (M/SEC)	V05 (M/SEC)	M2	VM2 (M/SEC)	V72 (M/SEC)	U2 (M/SEC)
0.00	60.77	60.77	271.60	217.01	154.55	84.67	.457	132.64	128.37	325.68
11.23	56.78	56.78	261.39	214.68	170.60	92.74	.490	163.10	140.06	311.41
29.08	54.50	54.50	237.76	193.56	167.18	94.24	.481	138.07	137.23	287.40
48.74	47.78	47.78	216.01	159.09	178.30	104.77	.514	144.35	145.34	261.86
67.13	37.74	37.74	196.60	120.61	194.75	119.04	.564	155.35	150.93	239.67
84.60	24.04	24.04	186.39	75.93	214.69	137.28	.537	170.27	167.83	213.21
100.00	16.61	16.61	177.30	51.07	224.39	147.51	.658	170.62	144.63	198.58

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (I. F.)	LOSS FLOW (PCT)	DELTA HETA (DEG)	INCIDENCE ANGLE (DEG)	D FACTOR	OMEGA BAR	LOSS PARAMETER	REVIATION ANGLE (DEG)	WATER LOSS RATIO	ROTOR EFF	POLYTROPIC EFF
0.00	0.00	12.04	9.023	4.554	.3249	.1462	3.776	1.248	.7511	.7549
0.60	11.23	14.88	9.754	4.450	.3300	.1290	4.100	1.306	.7043	.7019
25.53	31.12	14.19	9.616	7.567	.3507	.0937	4.100	1.311	.6670	.6633
41.66	50.07	14.56	9.440	6.652	.3776	.0666	5.514	1.340	.6122	.6158
53.66	67.03	26.56	9.778	6.007	.3799	.0314	7.452	1.375	.5663	.5678
67.50	81.62	37.42	10.083	5.004	.3164	-.0494	15.174	1.419	1.0300	1.0371
100.00	100.00	47.02	9.948	3.874	.2663	-.0612	23.733	1.419	1.0300	1.0371

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8018 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8074 (ADIABATIC)
 MOMENTUM AVG. ROTOR PRESS RATIO = 1.3424
 MASS AVERAGE TEMPERATURE RISE = 1.0977

NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 1, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 26

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8751

PERCENT SPAN FROM TIP (1. - 5.)	BETA 3 (DEG)	V3 (FT/SEC)	VU3 (FT/SEC)	M3	V43 (FT/SEC)	V73 (FT/SEC)	U3 (FT/SEC)
0.00	10.00	509.14	209.56	.526	518.87	513.17	1037.71
10.75	70.20	618.96	311.74	.544	538.97	536.05	998.32
24.75	31.72	620.25	313.14	.547	535.41	535.60	932.15
47.06	31.60	656.72	343.90	.579	557.12	556.71	865.27
66.30	33.51	609.34	346.87	.621	583.16	581.03	748.77
87.60	35.33	760.52	430.79	.679	620.46	612.13	716.36
100.00	36.56	748.71	464.57	.700	633.69	616.19	671.20

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9410

PERCENT SPAN FROM TIP (1. - 5.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	V44 (FT/SEC)	V74 (FT/SEC)	U4 (FT/SEC)
0.00	36.64	266.64	-30.79	.458	523.77	523.77	1030.18
11.27	33.54	549.17	-31.67	.472	539.25	539.19	994.69
31.06	40.01	549.60	-34.60	.485	552.25	552.00	935.37
43.66	33.42	591.74	-33.61	.520	586.47	586.96	877.60
67.73	31.70	614.20	-34.13	.540	613.91	613.57	818.47
84.17	30.31	627.50	-40.95	.542	627.53	624.24	752.56
100.00	28.57	631.64	-46.73	.556	631.61	631.61	715.29

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (1. - 5.)	DELTA (DEG)	BETA (DEG)	INCIDENCE ANGLE (DEG)	EFFICIENCY ANGLE (DEG)	LOSS PARAMETER	REVIATION ANGLE (DEG)	STAGE EFFICIENCY RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	33.31	-0.319	-10.241	.0374	.0136	1.279	1.0006	.8547
10.75	11.27	33.54	-5.959	-9.126	.0652	.0226	1.200	1.0004	.7960
24.75	31.72	33.33	-6.203	-9.542	.0434	.0144	1.300	1.0034	.8092
47.06	44.60	35.51	-5.437	-8.929	.0733	.0116	1.329	1.0053	.8199
66.30	47.30	35.26	-5.900	-9.789	.0904	.0259	1.346	1.0073	.8385
87.60	44.17	35.86	-5.926	-9.815	.1470	.0442	1.0994	1.1009	.8527
100.00	33.00	37.06	-8.033	-11.516	.1766	.0396	1.180	1.1010	.8313

MOMENTUM AVERAGE STAGE EFFICIENCY = .8621 (POLYTROPIC)

MOMENTUM AVERAGE STATOR EFFICIENCY = .8465 (ADIABATIC)

MOMENTUM AVG. STAGE EFFICIENCY RATIO = 1.3253

MASS AVERAGE TEMPERATURE RATIO = 1.0977

NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 1, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 26

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8751

PERCENT SPAN FROM TIP (L. F.)	BETA 3 (DEG)	V3 (M/SEC)	V13 (M/SEC)	M3	V43 (M/SEC)	V73 (M/SEC)	U3 (M/SEC)
0.00	11.00	142.62	91.31	.525	159.15	156.62	316.21
10.75	10.29	140.66	94.31	.564	163.05	162.78	306.24
20.75	9.57	140.05	95.64	.579	163.19	163.19	286.18
47.05	8.69	139.56	106.92	.579	169.81	169.69	263.71
66.10	8.51	213.17	117.67	.621	177.75	177.10	242.25
87.65	8.43	211.81	136.05	.679	189.12	186.58	219.35
100.00	8.54	240.40	143.12	.706	193.15	187.81	200.50

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9410

PERCENT SPAN FROM TIP (L. F.)	BETA 4 (DEG)	V4 (M/SEC)	V14 (M/SEC)	M4	V44 (M/SEC)	V74 (M/SEC)	U4 (M/SEC)
0.00	-1.31	159.01	-3.73	.658	159.64	174.64	316.00
13.27	-3.36	166.66	-3.59	.672	168.36	164.36	303.18
30.04	-6.01	168.76	-11.74	.685	168.32	168.25	285.16
48.66	-8.42	140.34	-12.02	.620	179.94	179.73	267.49
67.23	-10.76	187.21	-5.74	.640	187.12	187.02	249.67
84.17	-8.53	191.28	-1.78	.652	191.27	190.57	229.37
100.00	-8.51	192.52	-1.74	.656	192.51	192.51	218.02

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP FROM TIP EDGE	MASS FLOW (PCF)	DELTA BETA (DEG)	INCIDENCE ANGLE (DEG)	SUCT SUR (DEG)	ANGLE (DEG)	LOSS PARAMETER	REVIATION ANGLE (DEG)	STARF PRESS RATIO	STARF T UP RATIO	STATOR EFF
0.70	0.00	33.31	-6.319	-10.241	.3242	.0136	14.870	1.279	1.0006	.9547
10.75	11.27	33.54	-5.949	-9.136	.3198	.0226	13.229	1.290	1.0006	.7550
20.75	30.04	36.33	-6.203	-9.552	.2931	.0164	9.201	1.300	1.0035	.4092
47.05	51.13	35.51	-5.917	-8.949	.2733	.0116	4.179	1.329	1.0053	.8199
66.10	69.15	35.24	-5.900	-8.789	.2816	.0259	4.365	1.366	1.0083	.6585
87.65	84.17	35.84	-6.924	-9.815	.2731	.0462	10.998	1.354	1.1000	.5527
100.00	100.00	37.06	-8.093	-11.534	.2627	.0396	18.140	1.356	1.1010	.6313

MOMENTUM AVERAGE STAGE EFFICIENCY = .8431 (POLYTROPIC)
MASS FLOW AVERAGE STAGE EFFICIENCY = .9565 (ADIABATIC)
MOMENTUM AVG. STAGE PRESS RATIO = 1.3253
MASS AVERAGE TEMPERATURE DISC = 1.0977

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NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 1, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT FLIGHT FLOW = 7.3496 LAM/SEC 70 PERCENT DESIGN SPEED = SCAN NO 27
 PERCENT DESIGN EQUIVALENT FLOW = 64.1522 EQUIVALENT SPEED
 EQUIVALENT FLOW / INLET ANGLE = 25.9512 LAM/SEC-50 FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0045

PERCENT SPAN FROM TIP (T. F.)	HETA01 (DEG)	V01 (FT/SEC)	VU01 (FT/SEC)	M01	HETA11 (DEG)	V11 (FT/SEC)	VU11 (FT/SEC)	M11	V04 (FT/SEC)	VU04 (FT/SEC)	M04	V07 (FT/SEC)	VU07 (FT/SEC)	M07	UI (FT/SEC)
0.00	73.74	1171.05	1111.06	1.050	0.00	134.03	0.00	.302	334.03	323.27	1111.96	323.27	1111.96	1111.96	
4.74	72.11	1112.16	1059.02	1.007	0.00	361.88	0.00	.309	361.88	330.69	1059.02	330.69	1059.02	1059.02	
75.53	69.13	1034.19	971.37	.962	0.00	363.27	0.00	.335	363.27	362.69	971.37	362.69	971.37	971.37	
61.51	66.06	901.24	843.31	.871	0.00	177.76	0.00	.342	177.76	377.74	843.91	377.74	843.91	843.91	
53.03	64.04	845.12	783.21	.784	0.00	347.29	0.00	.333	347.29	367.17	783.29	367.17	783.29	783.29	
43.74	62.05	737.42	651.75	.664	0.00	345.63	0.00	.313	345.63	345.43	651.75	345.43	651.75	651.75	
100.00	59.37	651.13	562.62	.591	0.00	333.10	0.00	.301	333.10	333.10	562.62	333.10	562.62	562.62	

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8636

PERCENT SPAN FROM TIP (T. F.)	HETA02 (DEG)	V02 (FT/SEC)	VU02 (FT/SEC)	M02	RETA2 (DEG)	V2 (FT/SEC)	VU2 (FT/SEC)	M2	V02 (FT/SEC)	VU02 (FT/SEC)	M02	V72 (FT/SEC)	VU72 (FT/SEC)	J2 (FT/SEC)
0.00	50.79	850.57	750.14	.745	36.30	525.88	311.31	.457	423.14	410.19	1069.44	410.19	1069.44	1069.44
11.36	57.17	820.94	690.40	.722	35.35	554.49	325.75	.404	449.22	439.40	1022.04	439.40	1022.04	1022.04
30.27	54.39	755.62	616.11	.660	34.77	543.26	324.74	.404	430.88	437.24	943.10	437.24	943.10	943.10
49.10	47.47	637.65	506.06	.603	37.57	584.70	357.74	.515	465.01	444.08	854.41	444.08	854.41	854.41
64.15	37.04	611.17	390.24	.556	38.78	646.25	404.78	.569	503.70	502.30	745.02	502.30	745.02	745.02
84.53	23.24	594.47	234.11	.531	40.15	719.43	463.85	.638	549.93	540.00	599.98	540.00	599.98	599.98
100.00	15.04	711.77	154.53	.508	42.11	742.01	497.54	.660	550.40	531.78	652.07	531.78	652.07	652.07

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	DELTA HETA0 (DEG)	MASS FLOW (PCF)	INCIDENCE ANGLE (DEG)	SUCT SURF (DEG)	LOSS PARAMETER	OMEGA0 BAR	DELTA FACTOR	ANGLE (DEG)	ROTOR EFF	ANTHRATIC EFF	POLYTROPIC EFF
0.00	0.00	0.70	4.443	8.975	.0301	.1622	.3540	3.002	1.305	.7403	.7499
7.74	11.35	11.49	10.203	8.477	.0305	.1550	.3617	2.182	1.318	.7471	.7760
27.59	39.27	31.43	10.142	8.070	.0217	.1171	.3704	4.149	1.324	.8191	.8453
41.51	49.04	50.10	9.987	7.195	.0151	.0736	.3971	5.419	1.352	.8066	.9105
59.81	68.15	69.22	10.344	6.575	.0077	.0353	.3970	6.974	1.388	.8636	.9653
84.74	88.53	89.34	10.615	5.613	-.0087	-.0207	.3340	14.423	1.429	1.0306	1.0291
100.00	100.00	100.00	10.620	4.545	-.0107	-.0525	.2943	22.732	1.429	1.0307	1.0231

MOMENTUM AVG. ROTOR EFFICIENCY = .8935 (POLYTROPIC) ROTOR EFFICIENCY = 1.3555
 MOMENTUM AVERAGE POLYTROPIC EFFICIENCY = .8957 (ADIABATIC) MASS AVERAGE TEMPERATURE RISE = 1.1023

NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 1, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

70 PERCENT DESIGN SPEED - SCAM NO 27
 EQUIVALENT FLOW 1.0650 KG/SEC
 EQUIVALENT FLOW / INLET ANN AREA = 53952.930 R.P.M.
 PERCENT DESIGN FLOW = 64.1522 EQUIVALENT FLOW / INLET ANN AREA = 126.7050 KG/SEC-SQ M

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0045

PERCENT SPAN FROM TIP (I.E.)	HETAO1 (DEF)	V01 (M/SEC)	VU01 (M/SEC)	M01	BETA1 (DEG)	V1 (M/SEC)	M1	VM1 (M/SEC)	V71 (M/SEC)	U1 (M/SEC)
0.00	71.24	353.00	314.92	1.050	0.00	101.81	.302	101.81	88.53	338.92
9.66	72.11	349.19	322.79	1.007	0.00	104.21	.302	104.21	100.80	322.79
25.59	69.13	316.75	296.07	.942	0.00	112.55	.315	112.55	110.49	296.07
41.51	66.06	282.93	269.61	.871	0.00	115.14	.342	115.14	116.77	269.61
59.83	66.88	263.69	233.76	.794	0.00	111.95	.313	111.95	111.95	233.76
81.78	62.05	226.99	198.65	.663	0.00	105.41	.313	105.41	103.99	198.65
100.00	59.37	199.39	171.63	.591	0.00	101.53	.301	101.53	98.08	171.63

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8636

PERCENT SPAN FROM TIP (I.E.)	HETAO2 (DEF)	V02 (M/SEC)	VU02 (M/SEC)	M2	BETA2 (DEG)	V2 (M/SEC)	M2	VM2 (M/SEC)	V72 (M/SEC)	U2 (M/SEC)
0.00	60.79	266.73	231.00	.755	36.30	160.27	.457	129.19	125.87	325.97
11.36	57.17	252.57	212.23	.722	35.95	161.13	.484	126.92	131.93	311.52
30.27	56.43	210.31	187.24	.660	36.77	167.41	.480	124.11	122.27	297.46
43.00	47.47	203.74	156.69	.603	37.57	178.82	.515	141.73	151.73	263.53
79.15	37.04	192.30	115.90	.554	38.78	194.98	.569	153.55	153.10	239.27
88.53	27.24	182.61	71.97	.531	40.15	219.28	.678	167.62	164.87	213.35
100.00	15.64	174.27	47.10	.508	42.11	226.16	.660	167.70	162.09	198.75

ROTOR PERFORMANCE DATA

PERCENT LEADING EDGE	SPAN FROM TIP	TRAILING EDGE	MASS FLOW (KGT)	INCIDENCE ANGLE (DEG)	AVG SURF SQR (DEG)	D FACTOR	OHFGAP (MM)	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR LOSS COEFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	9.423	8.975	8.975	.3540	.1422	.0301	3.802	1.305	.7499
9.66	11.36	30.27	11.19	10.203	8.937	.3617	.1550	.0305	2.142	1.318	.7760
25.59	30.27	69.04	11.14	10.142	8.870	.3784	.1121	.0217	4.149	1.324	.8391
41.51	69.04	108.51	10.10	9.947	7.135	.3971	.0730	.0151	5.419	1.352	.9105
59.83	108.51	148.00	9.222	10.354	4.574	.4970	.0353	.0077	6.974	1.388	.9651
81.78	148.00	188.53	8.330	10.615	5.613	.3340	-.0407	-.0087	16.423	1.429	1.0291
100.00	188.53	229.00	100.00	10.620	4.545	.2883	-.0525	-.0107	22.732	1.429	1.0291

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8405 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8457 (ADIABATIC)
 MOMENTUM AVG. ROTOR LOSS COEFF = 1.3555
 MASS AVERAGE TEMPERATURE RISE = 1.1023

NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 1, 1974 (CONTINUED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 27

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8804

PERCENT SPAN FROM TIP (I. F.)	BETA 3 (DEG)	V3 (FT/SEC)	VU3 (FT/SEC)	M3	VM3 (FT/SEC)	V73 (FT/SEC)	J3 (FT/SEC)
0.00	32.84	511.14	320.55	.517	496.68	401.22	1038.61
10.01	31.41	505.55	332.39	.530	505.51	504.44	998.60
20.24	32.04	511.55	332.33	.537	517.97	512.26	931.38
47.57	33.54	646.97	357.34	.571	530.93	518.53	864.14
64.74	35.14	746.71	400.13	.615	567.78	545.71	793.74
87.33	36.92	746.74	453.40	.672	607.37	505.27	716.10
100.00	38.10	787.20	482.67	.699	615.52	508.51	671.84

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9390

PERCENT SPAN FROM TIP (I. F.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	V74 (FT/SEC)	U4 (FT/SEC)
0.00	-2.04	508.20	-10.53	.441	507.84	507.84	1031.07
11.41	-2.21	518.95	-20.01	.451	514.50	514.50	995.41
30.10	-4.40	535.04	-41.07	.460	536.61	536.01	935.93
70.53	-2.93	570.21	-24.15	.499	565.44	548.90	878.01
77.34	-1.22	599.32	-12.79	.526	599.18	598.85	818.84
88.13	.10	598.74	1.44	.524	598.78	597.60	753.33
100.00	.14	601.77	1.91	.527	601.76	601.74	715.91

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (I. F.)	LEADING EDGE	TRAILING EDGE	MASS FLOW (LBS)	DELTA BETA (DEG)	TWIST ANGLE (DEG)	INCIDENCE ANGLE (DEG)	MEAN SUPT SIB (DEG)	D FACTOR	OMEGA BAR	LOSS PARAMETER	DELTA TATION AIGIF (DEG)	STAGE PRESS RATIO	STAGE TEMPR RATIO	STATOR POLYTROPIC EFF
0.00	7.00	7.00	0.00	14.93	-3.480	-7.643	.3485	.0377	.0377	.0136	20.090	1.297	1.1067	.8499
10.01	11.31	11.31	11.44	35.61	-2.761	-6.120	.3457	.0570	.0570	.0194	14.749	1.304	1.1067	.8074
20.24	30.14	30.14	31.44	37.64	-3.504	-6.094	.3240	.0311	.0311	.0102	4.702	1.317	1.0993	.8906
47.57	48.47	48.47	50.10	36.92	-4.076	-7.080	.2992	.0365	.0365	.0112	9.862	1.342	1.0991	.8561
64.74	67.33	67.33	69.22	36.41	-4.273	-7.155	.3031	.0756	.0756	.0217	9.877	1.345	1.1018	.7440
87.33	88.13	88.13	91.44	36.77	-5.348	-9.205	.3577	.1803	.1803	.0477	11.608	1.342	1.1040	.5916
100.00	100.00	100.00	100.00	37.92	-6.529	-9.971	.3769	.1691	.1691	.0428	10.842	1.362	1.1039	.6475

MOMENTUM AVERAGE STAGE EFFICIENCY = .8544 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .8482 (ADIABATIC)
MOMENTUM AVG. STAGE PRESS RATIO = 1.3389
MASS AVERAGE TEMPERATURE RISE = 1.1023

NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 1, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 27

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8804

PERCENT SPAN FROM TIP (I. P.)	BETA 3 (DEG)	V3 (M/SEC)	VIII3 (M/SEC)	M3	VM3 (M/SEC)	V73 (M/SEC)	U3 (M/SEC)
0.00	12.84	180.14	97.70	.517	151.39	149.72	316.57
10.11	33.41	146.57	101.62	.530	154.04	153.43	304.37
20.24	42.04	146.40	101.48	.537	156.35	156.35	283.88
47.57	33.59	197.20	109.10	.571	144.27	146.14	263.34
66.74	35.14	211.75	122.02	.615	173.06	172.43	241.93
87.93	36.92	230.04	134.50	.672	183.91	181.44	219.27
100.00	38.10	238.47	147.12	.699	187.61	182.43	204.78

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9190

PERCENT SPAN FROM TIP (T. C.)	BETA 4 (DEG)	V4 (M/SEC)	VIII4 (M/SEC)	M4	VM4 (M/SEC)	V74 (M/SEC)	U4 (M/SEC)
0.00	-2.79	154.90	-5.65	.441	154.80	154.80	314.27
11.71	-2.21	158.14	-6.10	.451	159.06	158.04	303.40
30.10	-1.40	163.74	-7.29	.468	162.44	162.77	285.27
48.57	-2.23	173.91	-8.84	.499	173.58	173.40	267.62
67.34	-1.22	182.67	-3.00	.526	182.63	182.53	249.58
88.13	.10	182.51	.50	.524	182.51	181.84	229.62
100.00	.18	183.42	.58	.527	183.42	183.42	218.21

STATOR PERFORMANCE DATA

PERCENT LEADING EDGE	SPAN FROM TIP TRAILING EDGE	MASS FLOW (KGT)	BETA (DEG)	INCIDENCE ANGLE (DEG)	SUCT ANGLE (DEG)	D FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMPRATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	16.93	-2.480	-7.443	.3485	.0377	.0174	20.000	1.297	1.1067	.8599
10.01	11.41	11.00	35.61	-2.741	-6.120	.3457	.0570	.0108	14.749	1.306	1.1067	.8074
21.74	10.13	11.14	37.64	-3.594	-6.819	.3240	.0311	.0102	9.702	1.317	1.0003	.8806
47.57	40.57	50.10	36.52	-4.076	-7.000	.2992	.0365	.0112	4.062	1.342	1.0001	.8561
66.74	67.74	61.22	34.41	-6.278	-7.155	.3031	.0756	.0217	4.477	1.355	1.1018	.7440
87.93	88.13	44.14	36.77	-5.348	-8.285	.3577	.1803	.0677	11.644	1.342	1.1060	.5916
100.00	100.00	100.00	37.92	-6.529	-9.971	.3769	.1691	.0628	14.882	1.362	1.1039	.6475

MOMENTUM AVERAGE STAGE EFFICIENCY = .8544 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .8482 (ADIABATIC)
MOMENTUM AVG. STAGE PRESS RATIO = 1.3389
MASS AVERAGE TEMPERATURE PIECE = 1.1023

NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 1, 1974 (COMBINED TEMP.)

MOTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIVALENT FLOW = 1.0264 KG/SEC 70 PERCENT DESIGN SPEED = SCAY NO 24
 PERCENT DESIGN EQUIVALENT FLOW = 61.6479 EQUIVALENT FLOW / INLET AVN AREA = 57992.710 R.P.M.
 EQUIVALENT FLOW / INLET AVN AREA = 121.8377 KG/SEC-SQ M

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0102

PERCENT SPAN FROM TIP (I. C.)	HETA90 (DEG)	V01 (M/SEC)	V01P1 (M/SEC)	HETA1 (DEG)	V1 (M/SEC)	V01P2 (M/SEC)	V1P1 (M/SEC)	Y1	V01P3 (M/SEC)	V1P2 (M/SEC)	V1P3 (M/SEC)
0.00	73.34	142.36	139.17	0.00	97.62	0.00	0.00	.209	97.13	06.64	331.17
0.53	72.43	134.79	123.20	0.00	99.49	0.00	0.00	.206	99.40	06.62	323.20
25.31	70.06	115.75	99.79	0.00	107.79	0.00	0.00	.320	107.79	105.01	246.79
41.14	67.81	97.81	77.02	0.00	119.26	0.00	0.00	.329	119.26	100.00	270.20
59.57	65.06	76.21	53.19	0.00	107.17	0.00	0.00	.319	107.17	107.14	279.19
82.73	63.10	53.10	33.01	0.00	100.90	0.00	0.00	.290	100.90	99.54	198.47
100.00	60.49	197.19	171.61	0.00	97.13	0.00	0.00	.289	97.13	97.83	171.61

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9023

PERCENT SPAN FROM TIP (I. C.)	HETA90 (DEG)	V02 (M/SEC)	V02P1 (M/SEC)	HETA2 (DEG)	V2 (M/SEC)	V02P2 (M/SEC)	V2P1 (M/SEC)	M2	V02P3 (M/SEC)	V2P2 (M/SEC)	V2P3 (M/SEC)
0.00	62.47	294.16	220.04	92.67	156.64	106.16	0.644	.464	115.10	111.47	326.20
11.74	59.61	231.77	199.47	61.52	161.98	111.27	.450	.450	117.17	114.61	311.24
31.27	56.14	210.14	176.47	43.59	161.49	111.16	.460	.460	117.13	114.60	295.63
50.30	46.25	193.85	166.09	57.2	181.16	117.46	.520	.520	137.91	137.91	281.53
74.47	36.31	143.31	104.90	61.17	196.89	122.62	.569	.569	144.21	147.77	238.52
90.76	22.46	100.63	65.39	63.01	214.36	167.84	.621	.621	155.22	152.67	213.23
100.00	14.57	160.52	40.48	64.50	221.95	154.51	.665	.665	155.33	153.08	194.90

MOTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP TRAILING EDGE	MASS FLOW (KGT)	DELTA HETA9 (DEG)	INCIDENCE ANGLE (DEG)	SUCT SUR (NEG)	FACTOR	WEGAP MAP	LOSS PARAMETER	DEVIATION ANGLE (DEG)	AVN PRESS RATIO	AVN POLYTROPIC EFF
0.00	0.00	11.57	10.109	9.634	.6109	.2057	.0363	5.381	1.326	.7120
0.53	11.77	13.19	10.899	9.599	.4341	.2161	.0396	4.725	1.327	.7154
25.31	31.06	17.91	10.966	9.833	.4511	.1693	.0314	6.662	1.330	.7137
41.14	44.77	21.55	10.882	9.110	.6374	.0935	.0175	5.033	1.376	.9001
59.57	69.12	29.56	11.422	7.551	.6316	.0469	.0107	6.832	1.606	.9561
82.73	43.50	40.24	11.661	6.660	.3976	.0291	.0063	14.341	1.424	.9402
100.00	100.00	45.92	11.738	5.664	.3537	.0370	.0076	21.623	1.476	.9402

MOMENTUM AVERAGE MOTOR EFFICIENCY = .8436 (POLYTROPIC) MOMENTUM AVG. MOTOR PRESS RATIO = 1.3674
 MASS AVERAGE MOTOR EFFICIENCY = .8470 (ADIABATIC) MASS AVERAGE TEMPERATURE DISC = 1.1102

NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 1, 1974 (COMBINED TEM.)

STATOR PERFORMANCE (NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS))

70 PERCENT DESIGN SPEED - SCAN NO 24
 INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9055

PERCENT SPAN FROM TIP (U. S.)	HETA 3 (DEG)	V3 (FT/SEC)	VIII (FT/SEC)	M3	VM3 (FT/SEC)	V73 (FT/SEC)	U3 (FT/SEC)
0.00	34.69	576.24	359.64	.500	451.04	666.08	1039.36
11.10	40.00	510.25	374.39	.504	465.06	644.72	948.29
22.20	45.31	444.26	349.23	.514	479.07	623.46	860.56
33.30	50.62	378.27	324.06	.520	492.03	602.20	772.89
44.40	55.93	312.28	298.89	.529	505.04	580.94	716.17
55.50	61.24	246.29	273.72	.532	518.05	559.68	672.34
100.00	63.30	764.78	504.90	.640	574.52	559.68	672.34

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9300

PERCENT SPAN FROM TIP (U. S.)	HETA 4 (DEG)	V4 (FT/SEC)	VIII4 (FT/SEC)	M4	VM4 (FT/SEC)	V74 (FT/SEC)	U4 (FT/SEC)
0.00	-1.04	481.64	-4.74	.415	481.36	691.76	1031.42
11.10	-1.10	417.94	-9.39	.420	487.45	670.70	946.02
22.20	-2.43	354.74	-21.64	.438	506.32	646.10	860.09
33.30	-2.23	291.33	-21.33	.477	547.31	626.75	774.00
44.40	-1.17	227.33	-24.73	.503	576.26	605.96	716.17
55.50	-2.70	163.74	-26.04	.495	567.70	584.63	672.34
100.00	-2.70	570.64	-26.38	.497	570.64	570.64	672.34

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	THAILING EDGE	MASS FLOW (LBS)	DELTA HETA (DEG)	INCIDENCE HETA (DEG)	ANGIF SUCT (DEG)	OMEGA HAR	LOSS PARAMETER	REVEALATION ANGIF (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	19.51	2.171	-1.751	.0402	.0145	21.140	1.317	1.1194	.8793
11.10	11.10	11.77	41.10	3.023	.475	.0272	.0095	15.447	1.321	1.1194	.9167
22.20	22.20	31.04	41.12	2.077	-1.226	-.0129	-.0042	10.743	1.333	1.1004	1.0436
33.30	33.30	43.77	30.51	-1.412	-4.600	.0414	.0120	9.747	1.365	1.1004	.8712
44.40	44.40	62.12	34.30	-2.004	-4.468	.0573	.0164	10.233	1.387	1.1064	.9364
55.50	55.50	82.40	40.91	-2.210	-5.119	.1366	.0361	10.932	1.377	1.1087	.7079
100.00	100.00	100.00	42.00	-3.328	-6.749	.1273	.0322	14.000	1.377	1.1087	.7548

MOMENTUM AVG. STAGE PRESS RATIO = 1.3581
 MASS AVERAGE TEMPERATURE RATIO = 1.1102

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NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 10 1974 (COMBINED TESTS)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 28

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9055

PERCENT SPAN FROM TIP (T. S.)	BETA 4 (DEG)	V3 (M/SEC)	VIII (M/SEC)	M3	VMI (M/SEC)	V73 (M/SEC)	U3 (M/SEC)
0.00	35.64	175.64	104.31	.500	177.48	175.97	716.90
11.10	30.00	177.07	173.81	.504	175.65	175.43	734.24
30.33	30.54	179.60	117.35	.514	140.20	170.20	242.87
48.72	36.43	177.57	117.11	.570	159.12	159.00	262.30
67.21	37.52	210.12	127.97	.609	165.66	166.05	241.61
88.04	40.11	224.15	166.81	.652	171.43	169.13	214.24
100.00	41.30	233.10	153.86	.680	175.11	170.27	206.93

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9300

PERCENT SPAN FROM TIP (T. S.)	BETA 4 (DEG)	V4 (M/SEC)	VII6 (M/SEC)	M4	V44 (M/SEC)	V74 (M/SEC)	U4 (M/SEC)
0.00	-1.06	145.74	-2.66	.415	146.72	146.72	314.50
11.10	-1.10	144.72	-2.06	.420	148.70	144.68	303.54
30.33	-2.63	141.06	-6.53	.438	153.72	153.65	285.37
48.77	-2.23	146.34	-6.50	.477	165.82	166.65	267.61
67.53	-2.57	175.64	-2.66	.503	175.66	175.55	249.54
88.33	-2.70	173.04	-2.12	.495	173.04	172.40	274.62
100.00	-2.70	173.94	-2.13	.497	173.93	173.93	219.37

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP FROM TIP FROM TIP	INCIDENCE ANGLE (DEG)	REFLECTIVITY (DEG)	INCIDENCE ANGLE (DEG)	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE EFFICIENCY RATIO	STATOR POLYTROPIC EFF
0.00	3.17	2.171	-1.741	.0402	21.140	1.117	.8743
11.10	11.77	3.023	.675	.0272	15.467	1.221	.9167
30.33	31.33	2.077	-1.226	-.0120	10.741	1.314	1.0035
48.72	42.77	-1.912	-4.600	.0414	7.747	1.365	.8713
67.21	67.53	-2.004	-4.854	.0573	10.233	1.387	.8368
88.04	88.27	-2.230	-5.119	.1364	10.032	1.377	.7079
100.00	100.00	-3.328	-4.744	.1273	14.000	1.377	.7548

MOMENTUM AVERAGE STAGE EFFICIENCY = .8369 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .8474 (ADIABATIC)
MOMENTUM AVG. STAGE LOSS RATIO = 1.3541
MASS AVERAGE TEMPERATURE DIFF = 1.1102

NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 1, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (CUBIC UNITS)

70 PERCENT DESIGN SPEED - SCAL NO 29

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8997

PERCENT SPAN FROM TIP (I. I.)	WETA 3 (DEG)	V3 (FT/SEC)	VU2 (FT/SEC)	H3	VM3 (FT/SEC)	V73 (FT/SEC)	U3 (FT/SEC)
0.00	42.68	511.72	347.56	.494	420.31	415.70	1039.69
11.41	44.67	574.67	403.08	.496	408.64	408.96	997.44
31.00	51.92	597.06	330.63	.520	444.85	444.78	925.97
49.73	54.25	649.11	410.73	.563	502.64	502.27	850.76
67.87	49.01	640.13	373.13	.606	534.72	532.76	790.68
84.85	42.20	744.64	500.24	.659	553.65	564.24	715.33
100.00	31.39	775.02	532.61	.688	563.21	547.64	672.55

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9300

PERCENT SPAN FROM TIP (I. I.)	WETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	H4	VM4 (FT/SEC)	V74 (FT/SEC)	U4 (FT/SEC)
0.00	-2.74	451.60	-5.52	.386	451.57	451.57	1032.14
11.41	-2.74	454.17	-5.06	.389	454.13	454.08	996.22
31.00	-1.57	471.34	-12.02	.406	471.21	471.01	935.94
49.73	-1.52	526.28	-13.34	.434	524.10	523.56	877.74
67.87	-2.10	540.84	-13.55	.478	549.88	549.58	816.94
84.85	3.35	533.72	3.22	.463	533.71	533.76	753.78
100.00	3.35	530.70	3.28	.465	536.64	526.69	710.66

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (I. I.)	FRONT TIP FLOW	MASS FLOW (PCF)	DELTA (DEG)	INCIDENCE ANGLE (DEG)	SUCT AIR (DEG)	W FACTOR	W OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STATOR POLYTROPIC EFF
0.00	0.00	1.00	43.34	6.360	2.638	.6598	.0481	.0173	21.480	1.1201	.8934
11.41	11.49	11.54	45.41	4.691	5.157	.6569	.0314	.0107	15.801	1.170	.9239
31.00	30.50	30.71	43.41	5.241	1.939	.6352	.0314	.0104	11.504	1.165	.9247
49.73	48.34	48.50	40.78	1.442	-1.538	.6884	.0257	.0079	10.484	1.305	.9346
67.87	67.54	67.11	39.17	-2.595	-3.441	.6760	.0396	.0113	10.940	1.405	.9053
84.85	84.25	84.65	41.86	-2.208	-3.040	.6514	.0486	.0420	11.879	1.389	.7173
100.00	100.00	100.00	43.04	-1.242	-4.683	.6699	.0477	.0374	14.050	1.147	.7569

MOMENTUM AVERAGE STAGE EFFICIENCY = .8193 (POLY ROTIC) MOMENTUM AVG. STAGE PRESS RATIO = 1.3747
 MOMENTUM AVERAGE STAGE EFFICIENCY = .8110 (ADIABATIC) MASS AVERAGE TEMPERATURE RISE = 1.1171

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NASA SMALL AXIAL COMPRESSOR TEST 1 MARCH 1, 1974 (COMBINED IMP.)

MOTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT WEIGHT FLOW = 2.0912 LHM/SEC 70 PERCENT DESIGN SPEED - SCAN NO 30
 PERFECT DESIGN EQUIVALENT FLOW = 57.0466 EQUIVALENT SPEED
 R.P.M. = 53975.608 R.P.M.
 INLET ANN AREA = 23.0970 LB4/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC HLOSSAGE = 1.0347

PERCENT SPAN FROM TIP (I. C.)	HETA01 (DEG)	V01 (FT/SEC)	H01 (DEG)	REF1 (DEG)	V1 (FT/SEC)	V01 (FT/SEC)	M1	V01 (FT/SEC)	V01 (FT/SEC)	U1 (FT/SEC)
0.00	75.20	1150.544	112.443	0.00	293.446	0.00	.265	293.446	293.446	1112.443
0.66	74.15	1101.110	105.232	0.00	300.731	0.00	.271	300.731	290.899	1059.327
25.30	71.76	1025.244	97.290	0.00	326.155	0.00	.293	326.155	310.399	972.940
43.17	69.08	949.603	88.645	0.00	331.722	0.00	.300	331.722	330.645	946.645
59.76	67.06	867.066	79.611	0.00	322.555	0.00	.291	322.555	322.444	784.111
83.06	64.46	710.466	65.113	0.00	304.114	0.00	.275	304.114	300.066	651.113
100.00	62.46	616.777	56.245	0.00	293.448	0.00	.265	293.448	293.448	562.445

EXIT VELOCITY DIAGRAM DATA

(CALCULATED AERODYNAMIC HLOSSAGE = .8650)

PERCENT SPAN FROM TIP (I. C.)	HETA02 (DEG)	V02 (FT/SEC)	H02 (DEG)	REF2 (DEG)	V2 (FT/SEC)	V02 (FT/SEC)	M2	V02 (FT/SEC)	V02 (FT/SEC)	U2 (FT/SEC)
0.00	61.61	772.40	66.4	46.70	309.97	309.97	.460	367.54	367.54	1064.00
11.00	62.07	714.11	61.1	40.12	540.09	408.04	.472	376.54	376.54	1020.54
31.95	62.73	666.77	57.14	47.67	650.71	611.78	.484	376.08	376.08	970.92
50.62	64.24	606.25	52.57	45.14	607.47	410.82	.520	428.81	428.81	454.35
64.72	65.13	567.29	48.33	43.34	651.36	487.37	.571	473.65	473.65	742.94
84.66	67.01	513.02	45.2	47.46	715.62	527.29	.630	473.65	473.65	694.70
100.00	68.11	422.00	43.5	49.45	746.99	500.03	.658	484.37	484.37	552.35

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (I. C.)	DELTA (DEG)	HETA0 (DEG)	INCIDENCE ANGLE (DEG)	U (FT/SEC)	W (FT/SEC)	W/U (DEG)	LOSS PARAMETER	DEVIATION ANGLE (DEG)	W/U LOSS RATIO	W/U LOSS RATIO	ROTOR POLYTROPIC EFF
0.00	0.00	13.60	11.367	10.000	6.573	.2333	.0422	6.615	1.365	6.067	.7078
0.66	11.00	15.08	12.252	10.763	6.070	.2511	.0468	6.175	1.343	6.009	.7040
25.30	31.95	17.34	12.444	10.626	5.049	.2043	.0605	6.554	1.369	7.551	.7657
43.17	50.62	24.50	12.554	9.704	4.964	.1429	.0377	3.576	1.390	4.473	.8544
59.76	64.72	32.11	13.106	9.331	6.579	.0163	.0163	1.730	1.418	0.227	.9360
83.06	84.66	46.15	13.568	8.562	6.545	.1072	.0236	10.900	1.462	9.106	.9341
100.00	100.00	52.36	13.709	7.675	6.110	.1372	.0287	17.154	1.442	9.106	.9341

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8263 (POLYTROPIC)

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8179 (ADIABATIC)

MOMENTUM AVG. ROTOR LOSS RATIO = 1.3942

MASS AVERAGE TEMPERATURE RISE = 1.1215

NASA SMALL AXIAL COMPRESSOR TEST 2 FEB. 20, 1974 (CONTINUED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIVALENT HEIGHT FLOW = 1.5075 KG/SEC 100 PERCENT DESIGN SPEED - SPAN NO. ?
 PERCENT DESIGN EQUIVALENT FLOW = 90.7380 EQUIVALENT SP. FLOW = 76603.647 R.P.M.
 EQUIVALENT FLOW / INLET ANN AREA = 179.2137 KG/SEC-30 M

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC LOSS COEFFICIENT = .189A

PERCENT SPAN FROM TIP (L. C.)	DELTA1 (DEG)	V*1 (M/SEC)	H*1 (M/SEC)	DELTA1 (DEG)	V1 (M/SEC)	H1 (M/SEC)	VM1 (M/SEC)	V/1 (M/SEC)	U1 (M/SEC)
0.00	72.34	505.04	491.21	1.536	0.00	152.25	0.00	152.25	601.21
10.29	71.00	481.98	456.76	1.451	0.00	157.24	0.00	157.24	457.76
27.19	67.70	450.25	418.58	1.358	0.00	173.81	0.00	173.81	418.58
51.86	65.11	415.56	376.55	1.255	0.00	174.90	0.00	174.90	376.55
70.95	61.91	373.25	337.60	1.125	0.00	169.17	0.00	169.17	337.60
89.45	58.13	320.45	278.45	.903	0.00	159.61	0.00	159.61	278.45
100.00	53.01	257.07	243.48	.861	0.00	152.06	0.00	152.06	243.48

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC LOSS COEFFICIENT = .9212

PERCENT SPAN FROM TIP (L. C.)	DELTA*2 (DEG)	V*2 (M/SEC)	H*2 (M/SEC)	DELTA*2 (DEG)	V2 (M/SEC)	H2 (M/SEC)	VM2 (M/SEC)	V/2 (M/SEC)	U2 (M/SEC)
0.00	90.72	315.11	274.84	.846	50.65	243.09	182.97	154.12	462.81
10.29	58.16	286.98	243.50	.770	57.59	248.38	192.44	151.02	448.74
31.51	52.50	257.59	204.61	.701	51.68	252.23	197.89	146.31	402.27
51.86	45.41	218.08	166.24	.660	45.48	267.12	203.39	171.69	367.50
70.95	38.96	174.47	130.58	.658	46.12	281.62	203.68	194.47	314.66
89.45	17.46	112.02	63.61	.600	49.60	312.06	237.64	202.24	301.25
100.00	9.02	70.44	28.51	.502	51.41	324.96	253.68	202.41	282.19

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (L. C.)	DELTA (DEG)	DELTA*1 (DEG)	DELTA*2 (DEG)	INCIDENCE ANGLE (DEG)	SUCT. SURF. (DEG)	LOSS PARAMETER (C-C)	CMFGA* (M/SEC)	DELTA (DEG)	DELTA*1 (DEG)	DELTA*2 (DEG)	LOSS PARAMETER (C-C)	CMFGA* (M/SEC)	DELTA (DEG)	DELTA*1 (DEG)	DELTA*2 (DEG)	LOSS PARAMETER (C-C)	CMFGA* (M/SEC)
0.00	0.00	11.62	9.499	6.031	5.117	.0513	.2758	3.727	1.067	3.061	.0513	.2758	3.727	1.067	3.061	.0513	.2758
10.29	12.72	12.84	9.234	7.803	5.552	.0518	.2971	3.211	1.066	2.671	.0518	.2971	3.211	1.066	2.671	.0518	.2971
27.19	13.51	15.12	8.929	6.756	5.727	.0482	.2785	3.544	1.048	2.628	.0482	.2785	3.544	1.048	2.628	.0482	.2785
51.86	52.49	21.70	8.532	5.633	5.838	.0381	.1729	6.215	1.087	2.159	.0381	.1729	6.215	1.087	2.159	.0381	.1729
70.95	71.52	22.05	8.286	4.801	5.107	.0178	.0788	6.202	2.007	2.153	.0178	.0788	6.202	2.007	2.153	.0178	.0788
89.45	90.45	42.87	9.075	4.026	5.082	.0217	.0817	9.791	2.084	2.084	.0217	.0817	9.791	2.084	2.084	.0217	.0817
100.00	100.00	50.00	9.262	3.188	4.772	.0235	.0815	15.069	2.084	2.084	.0235	.0815	15.069	2.084	2.084	.0235	.0815

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8368 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8182 (ADIABATIC)
 MOMENTUM AVERAGE TEMPERATURE RISE = 1.9870
 MASS AVERAGE TEMPERATURE RISE = 1.2644

NASA SMALL AXIAL COMPRESSOR TEST 2 FEB. 20, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

100 PERCENT DESIGN SPEED - SCRN NO. 2

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9575

PERCENT SPAN FROM TIP (L. L.)	BETA 3 (DEG)	V3 (FT/SEC)	VU3 (FT/SEC)	M3	VM3 (FT/SEC)	V73 (FT/SEC)	U3 (FT/SEC)
0.00	47.09	856.09	635.03	.705	574.10	567.90	1474.64
11.89	50.38	810.50	602.80	.709	549.67	567.76	1412.72
32.32	48.13	800.97	555.43	.730	507.92	587.91	1306.34
51.13	45.35	925.48	465.71	.783	643.61	642.93	1208.36
69.57	43.67	958.70	359.59	.824	695.77	693.23	1112.35
88.84	46.93	1042.29	261.45	.902	711.69	702.14	1012.00
100.00	48.15	1083.92	187.35	.944	723.19	703.71	933.90

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9300

PERCENT SPAN FROM TIP (L. L.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	V74 (FT/SEC)	U4 (FT/SEC)
0.00	2.02	643.54	29.69	.524	648.85	648.85	1483.94
11.89	2.02	653.65	29.87	.528	652.75	652.67	1413.73
30.39	2.06	652.85	30.79	.534	652.13	651.84	1327.96
48.77	3.45	682.00	45.83	.562	680.44	679.74	1245.72
67.42	4.36	677.20	50.77	.554	665.74	664.88	1142.74
88.13	5.84	639.55	65.35	.575	638.17	638.06	1069.56
100.00	5.93	640.34	66.15	.528	636.89	636.89	1016.47

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (L. L.)	PERCENT TRAILING EDGE	INCIDENCE ANGLE (DEG)	INCIDENT SURF AREA (SQ IN)	ORIFICE AREA (SQ IN)	ORIFICE AREA FACTOR	ORIFICE AREA LOSS PARAMETER (DEG)	DEVIATION ANGLE (DEG)	STAGE PRESS. RATIO	STATOR POLYTROPIC EFF.
0.00	0.00	45.24	11.566	7.644	.4082	.1130	24.800	1.899	.7745
11.89	12.72	42.76	10.146	10.075	.4953	.0792	19.114	1.902	.8416
32.32	30.30	45.47	11.417	8.177	.4876	.0702	15.834	1.906	.9714
51.13	52.49	42.10	7.967	5.017	.4614	.0642	15.833	1.904	.8869
69.57	67.44	39.11	3.628	.838	.4780	.1063	15.463	1.930	.8354
88.84	80.13	41.04	4.404	1.561	.5562	.2313	17.425	1.887	.7069
100.00	100.00	42.22	1.515	.074	.5710	.2171	24.630	1.887	.7407

MOMENTUM AVERAGE STAGE EFFICIENCY = .7893 (POLYTROPIC)
 MOMENTUM AVERAGE STAGE EFFICIENCY = .7631 (ADIABATIC)
 MOMENTUM AVG. STAGE PRESS. RATIO = 1.9140
 MASS AVERAGE TEMPERATURE RISE = 1.2644

DRIVE, 2 PIG. 4
 25 HOUR QUALITY

NASA SMALL AXIAL COMPRESSOR TEST 2 FEB. 20, 1974 (COMBINED TEST)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT FLOW = 3.0046 LHM/SEC 100 PERCENT DESIGN SPEED - SCAN NO 3
 R.P.M. = 76607.937
 PCXIRI DESIGN EQUIVALENT FLOW = 02.9556 LCUIVALENT FLOW / INLET ANN AREA = 37.6029 LHM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BUCKAGE = .9473

PERCENT SPAN FROM TIP (C.F.)	BETA*1 (DEG)	V*1 (FT/SEC)	*M1	BETA1 (DEG)	V1 (FT/SEC)	VU1 (FT/SEC)	M1	V*1 (FT/SEC)	VU1 (FT/SEC)	U1
0.50	71.80	1062.72	1.574	0.00	514.56	0.00	.476	514.56	502.83	1580.51
10.75	77.64	1497.57	1.460	0.00	533.12	0.00	.489	533.12	515.67	1500.40
27.25	77.05	1495.78	1.309	0.00	579.31	0.00	.536	579.31	568.67	1469.40
43.50	66.49	1572.01	1.266	0.00	575.20	0.00	.547	575.20	593.29	1237.81
62.77	62.27	1233.67	1.136	0.00	574.11	0.00	.529	574.11	573.97	1091.94
85.30	51.50	1000.73	0.973	0.00	537.45	0.00	.493	537.45	530.24	914.50
100.00	57.22	951.15	.871	0.00	514.95	0.00	.472	514.95	497.45	799.69

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BUCKAGE = .8765

PERCENT SPAN FROM TIP (C.F.)	BETA*2 (DEG)	V*2 (FT/SEC)	*M2	BETA2 (DEG)	V2 (FT/SEC)	VU2 (FT/SEC)	M2	V*2 (FT/SEC)	VU2 (FT/SEC)	U2
0.00	57.57	1074.05	0.885	47.46	805.11	593.17	.663	446.59	520.86	1570.08
11.81	57.66	1000.60	0.874	47.71	840.05	627.04	.697	466.71	553.62	1449.50
31.03	41.00	1132.76	0.703	47.60	837.55	616.47	.700	465.97	563.44	1372.42
50.57	46.03	938.67	0.703	46.54	808.42	610.97	.733	506.80	591.77	1270.11
61.82	35.74	785.11	0.679	45.50	803.88	648.98	.778	637.75	649.87	1108.27
89.03	39.13	717.74	0.616	44.36	1031.44	755.94	.874	672.55	661.50	931.94
100.00	9.84	683.25	0.594	50.26	1052.04	809.57	.915	673.11	670.24	926.84

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (C.F.)	BETA (DEG)	TIP SURFACE ANGLE (DEG)	U (FT/SEC)	OMEGA* (RPM)	LOSS FACTOR (DEG)	PAPAPETER (DEG)	DEVIATION (DEG)	W102 (RPM)	W102 (RPM)	W102 (RPM)
0.00	0.00	7.966	7.459	.4897	.2479	.0474	2.581	1.955	1.955	729.1
10.75	13.93	16.90	9.803	.5110	.2532	.0518	2.759	1.968	1.968	760.7
27.25	15.93	15.93	8.275	.5270	.1531	.0399	1.872	1.962	1.962	822.5
43.50	57.57	19.76	7.842	.5270	.1385	.0291	3.101	1.981	1.981	884.6
62.77	71.53	26.51	8.044	.5039	.0844	.0153	6.743	1.991	1.991	942.2
85.30	45.33	40.22	9.107	.4917	.0614	.0135	11.740	2.072	2.072	985.1
100.00	100.00	47.54	8.469	.4593	.0756	.0158	16.935	2.071	2.071	965.2

W102 (RPM) = 1.9814 (POLYTROPIC)
 W102 (RPM) = 1.9874 (ADIABATIC)

NASA SMALL AXIAL COMPRESSOR TEST 2 FLP 20, 1974 (COMBINED ICMPI)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (MFRIC UNITS)

EQUIVALENT HEIGHT FLOW = 1.5643 100 PERCENT DESIGN SPEED - SCAN NO 1
 EQUIVALENT FLOW / INLET ANN AREA = 76687.417 R.F.P.
 EQUIVALENT FLOW = 52.9356

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9873

PERCENT SPAN FROM TIP (U.F.)	DELTA 1 (DEG)	VU*1 (M/SEC)	M*1	PFIA1 (DEG)	V1 (M/SEC)	M1	VU1 (M/SEC)	VP1 (M/SEC)	V71 (M/SEC)	U1 (M/SEC)
0.00	71.80	537.10	4.9174	1.524	0.00	158.16	0.00	159.35	153.26	481.74
10.76	70.44	492.81	4.5737	1.440	0.00	167.50	0.00	162.50	157.18	457.12
27.16	67.05	452.33	4.1703	1.369	0.00	176.57	0.00	176.57	171.33	417.09
43.89	64.19	418.17	3.7729	1.266	0.00	180.41	0.00	180.41	180.23	377.29
61.17	62.27	376.07	3.3782	1.136	0.00	174.90	0.00	174.90	174.93	337.82
80.10	59.57	323.31	2.7874	.973	0.00	163.82	0.00	163.82	161.82	278.74
100.00	57.22	282.91	2.4375	.871	0.00	156.96	0.00	156.96	151.62	243.75

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8765

PERCENT SPAN FROM TIP (U.F.)	DELTA 2 (DEG)	VU*2 (M/SEC)	M*2	PFIA2 (DEG)	V2 (M/SEC)	M2	VU2 (M/SEC)	VP2 (M/SEC)	V72 (M/SEC)	U2 (M/SEC)
0.00	51.57	327.65	2.9257	.885	47.46	180.80	0.667	185.63	160.59	463.12
11.89	55.64	311.56	2.7123	.828	47.71	199.59	0.695	172.45	168.68	441.83
31.01	51.62	276.36	2.1922	.743	47.60	256.26	0.700	177.41	171.76	407.12
50.97	46.63	246.63	1.7910	.700	47.59	266.70	0.733	181.01	181.00	371.89
71.27	42.76	230.55	1.6009	.672	47.50	277.33	0.778	194.13	193.81	337.80
91.03	39.31	217.24	1.4192	.616	49.34	308.41	0.874	204.93	201.62	307.14
100.00	36.81	208.76	1.2875	.544	50.26	320.91	0.915	205.17	198.19	282.50

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (U.F.)	DELTA (DEG)	DELTA 1 (DEG)	DELTA 2 (DEG)	INCIDENCE ANGLE (DEG)	SUCT SUQ (DEG)	OPFG* BAR	PARAMETER	LOSS (DEG)	DEVIATION (DEG)	POIOT (DEG)	POICP (DEG)	POICP (EFF)	POICP (EFF)	POICP (EFF)
0.00	0.00	12.22	7.466	7.469	6.697	.2479	.0478	2.543	1.055	1.055	7.252	7.633	7.633	
19.29	11.09	14.00	8.003	7.319	5.114	.2512	.0518	2.510	1.050	1.050	7.171	7.607	7.607	
41.11	6.63	15.77	8.275	6.104	5.220	.1931	.0389	1.872	1.067	1.067	8.610	8.275	8.275	
63.89	50.57	19.70	7.847	4.921	5.276	.1365	.0241	1.401	1.481	1.481	9.750	8.946	8.946	
82.57	69.62	20.91	8.044	4.157	5.039	.0690	.0153	6.743	1.991	1.991	9.617	9.475	9.475	
95.13	49.03	40.72	8.307	3.259	4.917	.0614	.0135	11.240	2.072	2.072	9.616	9.651	9.651	
100.00	100.00	47.34	8.469	2.394	4.593	.0756	.0158	16.035	2.071	2.071	9.614	9.652	9.652	

MECHANICAL EFFICIENCY = .8614 (POLYTROPIC)
 MECHANICAL EFFICIENCY = .8674 (ADIABATIC)
 MECHANICAL EFFICIENCY = .8614 (POLYTROPIC)
 MASS AVERAGE TEMPERATURE RATIO = 1.9873
 MASS AVERAGE TEMPERATURE RATIO = 1.2553

NASA SMALL AXIAL COMPRESSOR TEST 2 FEB. 70, 1976 (COMBINED TRIP)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

100 PERCENT DESIGN SPEED - SCAN NO. 3

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9157

PERCENT SPAN FROM TIP (L. F.)	BETA 1 (DEG)	V3 (M/SEC)	VU3 (M/SEC)	M3	V43 (M/SEC)	V73 (M/SEC)	U7 (M/SEC)
0.00	46.17	266.66	106.17	.725	190.61	188.57	669.96
11.65	46.50	272.04	104.02	.742	190.67	190.50	631.75
30.37	47.34	276.09	98.17	.757	197.39	197.39	601.27
43.00	48.03	282.60	92.56	.788	206.70	206.67	471.79
63.13	48.20	300.76	85.60	.821	215.16	216.15	341.61
88.40	45.15	316.42	77.10	.900	227.37	219.39	309.50
100.00	46.61	329.15	69.35	.963	226.23	219.00	291.07

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9354

PERCENT SPAN FROM TIP (L. F.)	BETA 6 (DEG)	V6 (M/SEC)	VU6 (M/SEC)	M6	VH6 (M/SEC)	V76 (M/SEC)	U4 (M/SEC)
0.00	3.86	262.07	13.51	.538	201.57	271.57	646.70
11.37	3.43	263.84	13.81	.543	203.78	273.36	631.17
30.37	3.28	273.57	11.29	.548	201.23	273.14	609.23
43.76	4.15	284.07	10.16	.580	212.65	272.74	330.13
67.40	4.01	297.99	14.55	.569	207.68	297.37	364.67
88.14	5.54	300.35	19.14	.539	197.43	176.71	324.36
100.00	5.58	333.78	19.41	.547	198.04	130.33	310.16

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	MASS FLOW (G)	BETA (DEG)	INCIDENCE ANGLE (DEG)	DELTA BETA (DEG)	INCIDENCE ANGLE (DEG)	SUCT SUP (DEG)	LOSS PARAMETER (L/S)	DEVIATION ANGLE (DEG)	STATOR EFF.	STATOR POLYTROPIC EFF.
0.00	0.00	40.68	8.005	4.041	4.772	.1128	.0405	26.020	1.800	1.2889
11.65	11.71	41.67	9.116	5.980	4.607	.1193	.0411	20.122	1.806	1.2889
30.37	33.23	40.75	7.113	4.019	4.691	.0907	.0327	10.156	1.800	1.2612
43.76	27.55	38.58	6.120	2.133	4.516	.0592	.0181	16.531	1.807	1.2416
67.40	71.13	38.71	2.626	-2.111	4.564	.0767	.0277	15.111	1.823	1.2324
88.14	10.37	39.81	2.325	0.57	5.163	.2293	.0605	17.068	1.877	1.2402
100.00	100.00	41.03	1.907	-1.453	5.514	.4154	.0542	24.000	1.878	1.2404

MOMENTUM AVERAGE STAGE EFFICIENCY = .8093 (POLYTROPIC) MOMENTUM AVG. STAGE PRESS. RATIO = 1.2074
 MASS AVERAGE STAGE EFFICIENCY = .7019 (ADIABATIC) MASS AVERAGE TEMPERATURE PISE = 1.2553

NASA SMALL AXIAL COMPRESSOR TEST 2 FEB. 20, 1974 (CONTINUED TEST 2)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT WEIGHT FLOW = 3.4502 100 PERCENT DESIGN SPEED - SCAN NO 4
 PERCENT DESIGN EQUIVALENT FLOW = 94.4466 EQUIVALENT FLOW / INLET ANN AREA = 76575.052 R.P.M.
 CALCULATED AERODYNAMIC BLOCKAGE = .9847

INLET VELOCITY DIAGRAM DATA

PERCENT SPAN FROM TIP (L. L.)	BETA*1 (DEG)	V*1 (FT/SEC)	BETA1 (DEG)	V1 (FT/SEC)	M1	BETA1 (DEG)	V1 (FT/SEC)	M1	VM1 (FT/SEC)	V71 (FT/SEC)	UI (FT/SEC)
0.00	71.47	165.18	1528.19	1.577	0.00	511.14	0.00	.487	531.14	516.04	1578.19
10.06	73.04	156.61	1499.74	1.565	0.00	504.71	0.00	.500	544.71	526.55	1499.74
20.70	68.61	1491.04	1368.48	1.375	0.00	592.00	0.00	.546	592.00	581.12	1368.48
43.72	63.90	1377.85	1247.71	1.273	0.00	606.24	0.00	.560	606.24	604.29	1237.81
62.40	61.75	1259.27	1091.69	1.142	0.00	586.51	0.00	.541	586.51	586.31	1091.69
75.24	60.02	1065.55	915.57	.979	0.00	548.43	0.00	.504	548.43	541.07	915.57
100.00	56.67	952.08	798.52	.876	0.00	525.06	0.00	.481	525.06	507.21	798.52

EXIT VELOCITY DIAGRAM DATA

PERCENT SPAN FROM TIP (L. L.)	BETA*2 (DEG)	V*2 (FT/SEC)	BETA2 (DEG)	V2 (FT/SEC)	M2	BETA2 (DEG)	V2 (FT/SEC)	M2	VM2 (FT/SEC)	VZ2 (FT/SEC)	U2 (FT/SEC)
0.00	59.20	1101.91	949.70	.935	45.11	802.02	508.15	.663	566.07	547.84	1517.85
11.52	58.66	1064.74	861.87	.871	44.51	808.97	595.14	.706	606.44	592.21	1449.01
30.71	53.06	904.23	739.31	.810	44.04	882.90	585.73	.708	605.95	602.17	1335.94
43.46	50.10	871.96	671.14	.743	44.28	914.70	603.74	.733	619.03	619.00	1224.88
63.14	46.48	807.70	477.37	.688	44.44	904.71	633.93	.775	645.47	643.17	1111.26
80.79	20.49	743.05	460.34	.645	44.39	1010.27	731.52	.876	696.40	685.35	931.86
100.00	13.49	711.57	341.69	.620	48.34	1049.08	793.79	.915	697.32	673.62	925.48

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	PERCENT SPAN FROM TIP	DELTA (DEG)	DELTA (DEG)	INCIDENCE ANGLE (DEG)	SUCI SUR (DEG)	FACTOR	OMEGA* PAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	POTOP PRESS RATIO	RCTOR ANTIADIBATIC LFF	ROTOR POLYTROPIC EFF
0.00	0.00	12.20	7.562	7.094	4.660	.2293	.0447	2.212	1.923	.7419	.7633	
10.06	12.44	15.17	8.220	6.887	4.793	.2279	.0467	2.274	1.954	.7621	.7813	
20.70	15.45	15.54	7.783	6.629	4.941	.2348	.0324	4.941	1.974	.8302	.8536	
43.72	18.81	18.81	7.121	4.509	4.956	.2262	.0229	1.220	1.965	.8967	.9050	
62.40	21.43	21.43	7.513	3.632	4.899	.2610	.0134	6.313	1.971	.8479	.9228	
80.79	28.74	30.13	7.766	2.720	4.598	.3176	.0039	12.058	2.065	.8885	.9887	
100.00	100.00	45.19	7.921	1.847	4.424	.0208	.0043	18.537	2.065	.9886	.9857	

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8829 (POLYTROPIC) MOMENTUM AVG. ROTOR PRESS RATIO = 1.9736
 MACHINERY AVERAGE ROTOR EFFICIENCY = .8711 (ADIABATIC) MASS AVERAGE TEMPERATURE RISE = 1.2456

NASA SMALL AXIAL COMPRESSOR TEST 2 FEB. 20, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (POLYTRIC UNITS)

EQUIVALENT WEIGHT FLOW = 1.5661 KG/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 94.4466
 10% PERCENT DESIGN SPEED - SCAN NO. 4
 EQUIVALENT SPEED = 76575.052 R.P.M.
 EQUIVALENT FLOW / INLET ANN AREA = 106.5384 KG/SEC-SQ M

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9847

PERCENT SPAN FROM TIP (L. L.)	U*1 (M/SEC)	V*1 (M/SEC)	U*2 (M/SEC)	V*2 (M/SEC)	U*3 (M/SEC)	V*3 (M/SEC)	U*4 (M/SEC)	V*4 (M/SEC)
0.00	71.40	507.25	401.03	1.427	0.00	161.80	4.87	161.80
10.00	70.04	491.54	457.12	1.415	0.00	166.07	5.00	160.81
20.00	66.61	446.42	417.11	1.375	0.00	170.44	5.46	177.11
30.72	61.50	415.97	377.13	1.273	0.00	174.78	5.60	184.19
42.40	61.25	377.73	332.25	1.147	0.00	179.77	5.41	178.71
55.24	57.02	324.78	278.46	0.979	0.00	177.11	5.04	164.92
100.00	54.67	291.20	243.39	0.876	0.00	173.04	4.81	154.60

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8927

PERCENT SPAN FROM TIP (L. L.)	U*2 (M/SEC)	V*2 (M/SEC)	U*3 (M/SEC)	V*3 (M/SEC)	U*4 (M/SEC)	V*4 (M/SEC)	U*5 (M/SEC)	V*5 (M/SEC)
0.00	53.20	336.99	249.47	0.715	65.11	244.45	173.17	663
11.42	54.66	310.04	260.20	0.871	64.51	258.77	181.60	706
30.71	51.00	293.10	250.00	0.810	64.03	250.92	174.19	704
41.46	46.10	267.09	189.37	0.743	64.21	243.54	164.02	733
55.44	46.68	246.69	145.60	0.694	64.68	225.70	133.22	775
80.77	40.43	211.27	74.15	0.645	61.34	207.91	72.97	876
100.00	31.49	211.19	43.13	0.620	60.34	219.91	238.90	915

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (L. L.)	DELTA T (C)	INCIDENCE ANGLE (DEG)	SUCT SUR (DEG)	LOSS PARAMETER (CFC)	DEVIATION ANGLE (CFC)	ROTOR POLYTROPIC EFF
0.00	0.00	7.562	7.094	0.460	2.112	7643
10.00	11.17	8.220	6.887	0.473	2.774	7433
20.00	16.54	7.793	5.628	0.486	3.974	6932
30.72	19.80	4.603	4.958	0.495	4.278	6060
42.40	25.77	7.513	3.632	0.489	6.913	6479
55.24	28.54	7.766	2.729	0.459	12.058	5807
100.00	45.19	7.921	1.847	0.426	18.537	5886

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8929 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8711 (ADIABATIC)
 MOMENTUM AVG. ROTOR PRESS RATIO = 1.9716
 MASS AVERAGE TEMPERATURE RISE = 1.2456

NASA SMALL AXIAL COMPRESSOR TEST 2 FEB. 20, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

100 PERCENT DESIGN SPEED - SCAN NO. 4

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .0967

PERCENT SPAN FROM TIP (L. S.)	DELTA S (DEG)	V5 (FT/SEC)	VU5 (FT/SEC)	M5	VW5 (FT/SEC)	VZ5 (FT/SEC)	U5 (FT/SEC)
0.00	41.97	874.77	585.02	.710	640.37	643.21	1474.09
11.19	42.47	907.01	609.09	.755	665.31	664.21	1415.86
24.22	40.09	905.53	593.52	.768	665.11	665.30	1318.85
40.29	40.79	925.80	604.79	.791	700.95	700.43	1222.76
67.57	41.26	951.71	627.67	.820	715.19	712.77	1122.35
88.27	43.52	1038.50	715.14	.904	753.04	742.92	1014.58
100.00	46.80	1070.85	760.20	.945	765.52	744.37	951.55

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9300

PERCENT SPAN FROM TIP (L. S.)	PETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VW4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	3.14	671.02	45.07	.550	671.51	671.51	1463.39
11.19	3.41	685.19	45.86	.560	683.64	683.76	1412.74
30.25	3.68	695.79	44.63	.576	694.36	694.05	1328.07
46.62	4.18	721.62	52.53	.602	719.90	719.16	1241.90
67.57	4.65	765.59	65.13	.632	705.15	704.76	1162.22
88.27	5.11	821.75	74.13	.663	675.62	673.15	1068.99
100.00	5.51	880.54	79.23	.697	673.40	673.43	1016.09

STATOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	PERCENT SPAN TRAILING EDGE	WASS FLOW (PCT)	DELTA PETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCTION SUR (DEG)	Q FACTOR	OMEGA PAR	LOSS PARAMETER	STATOR DIVERTION ANGLE (DEG)	STATOR PRESS RATIO	STATOR TEMP RATIO	POLYTROPIC EFF
0.00	0.00	0.00	38.13	5.654	1.732	4.550	.1119	.0402	26.020	1.859	1.2773	.7710
11.19	11.19	12.1	38.64	6.101	2.953	4.569	.1331	.0461	20.393	1.872	1.2763	.7403
29.52	30.25	32.55	37.22	4.317	5.99	4.296	.0999	.0128	18.865	1.891	1.2508	.8020
46.28	46.62	42.34	36.61	5.068	8.05	4.993	.0574	.0175	17.161	1.927	1.2369	.8431
67.57	67.57	71.63	37.60	1.693	-1.160	4.265	.0639	.0269	16.761	1.907	1.2257	.8738
88.27	88.17	90.33	40.21	1.129	-1.768	5.119	.2377	.0628	14.847	1.863	1.2327	.6728
100.00	100.00	100.00	41.49	3.168	-3.271	5.277	.2234	.0564	22.010	1.863	1.2324	.7124

MOMENTUM AVERAGE STAGE EFFICIENCY = .8275 (POLYTROPIC)
MOMENTUM AV. RUFF STAGE EFFICIENCY = .8114 (ADJ ADIABATIC)

MOMENTUM AVG. STATOR PRESS RATIO = 1.8917
MASS AVERAGE TEMPERATURE RISE = 1.2456

NASA SMALL AXIAL COMPRESSOR TEST 2 FEB. 20, 1974 (CONTINUED) (P.P.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

100 PERCENT DESIGN SPEED - SCAN NO. 6

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8967

PERCENT SPAN FROM TIP (I. E.)	BETA 3 (DEG)	V3 (M/SEC)	M3	VN3 (M/SEC)	V72 (M/SEC)	U3 (M/SEC)
0.00	61.97	266.67	0.710	194.23	196.76	469.30
11.19	62.47	274.93	0.755	207.79	202.65	431.55
29.82	40.09	276.33	0.768	200.88	208.08	401.99
48.28	40.79	282.19	0.791	213.69	213.69	372.70
67.57	43.26	290.08	0.820	218.05	217.25	342.09
88.27	43.52	316.54	0.904	229.53	226.64	308.24
100.00	44.80	328.84	0.945	233.33	226.24	290.64

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9300

PERCENT SPAN FROM TIP (I. E.)	DELTA 4 (DEG)	V4 (M/SEC)	M4	VN4 (M/SEC)	V74 (M/SEC)	U4 (M/SEC)
0.00	3.04	205.14	0.550	204.68	274.68	646.04
11.32	3.96	208.90	0.560	203.44	208.41	410.60
30.25	1.68	212.04	0.576	211.64	211.55	404.79
48.62	4.18	220.01	0.602	219.42	219.20	379.75
67.33	3.56	235.37	0.592	216.93	214.81	354.24
88.17	3.31	255.27	0.563	205.93	205.18	325.83
100.00	3.31	257.43	0.567	207.08	207.08	300.70

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	TRAILING EDGE	MASS FLOW (PCF)	DELTA BETA (DEG)	INCIDENCE ANGLE (DEG)	SUCT SUR (DEG)	FACTOR	OMEGA BAR	L 1/3 AMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	38.13	5.654	1.732	0.4550	0.1119	0.0402	26.020	1.859	1.2763	0.7719
11.19	11.32	12.64	38.64	6.301	2.951	0.4560	0.1331	0.0461	20.393	1.872	1.2763	0.7403
29.82	18.25	32.95	37.22	4.717	0.993	0.4270	0.0999	0.0328	16.865	1.891	1.2763	0.8020
48.28	48.62	52.34	36.61	3.060	0.066	0.3991	0.0574	0.0175	16.164	1.927	1.2369	0.8431
67.57	67.33	71.43	37.60	1.693	-1.160	0.4269	0.0539	0.0279	14.761	1.907	1.2257	0.8138
88.27	68.17	90.37	40.21	1.129	-1.740	0.5116	0.2377	0.0628	14.847	1.863	1.2375	0.7228
100.00	100.00	100.00	41.40	0.168	-3.273	0.5277	0.2234	0.0564	22.010	1.863	1.232	0.7124

MOMENTUM AVERAGE STAGE EFFICIENCY = .8275 (POLYTROPIC)

MOMENTUM AVERAGE STAGE EFFICIENCY = .8114 (ADIABATIC)

MOMENTUM AVERAGE STAGE PRESS RATIO = 1.8913

MASS AVERAGE TEMPERATURE RISE = 1.2456

NASA SMALL AXIAL COMPRESSOR TEST 2 FEB. 20, 1974 (COMBINED IMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT FLIGHT FLOW = 3.5162 LHM/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 96.0023
 100 PERCENT DESIGN SPEED - SCAN NO 6
 EQUIVALENT SPEED R.P.M. = 76634.428
 EQUIVALENT FLOW / INLET ANN APFA = 38.8354 LHM/SEC-SC FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9774

PERCENT SPAN FROM TIP (L. L.)	DELTA*1 (DEG)	V*1 (FT/SEC)	M*1	UETA1 (DEG)	V1 (FT/SEC)	M1	VU1 (FT/SEC)	M1	VU1 (FT/SEC)	M1	VZ1 (FT/SEC)	U1 (FT/SEC)
0.00	71.00	1670.41	1579.42	1.534	0.00	0.00	543.00	0.00	0.00	0.00	543.80	1579.42
9.81	69.65	1602.94	1502.89	1.473	0.00	0.00	527.45	0.00	0.00	0.00	557.45	1502.89
26.61	66.17	1499.04	1371.75	1.381	0.00	0.00	605.97	0.00	0.00	0.00	605.97	1371.75
43.06	61.19	1385.55	1239.74	1.262	0.00	0.00	620.70	0.00	0.00	0.00	620.70	1239.74
62.40	61.21	1246.01	1092.54	1.151	0.00	0.00	600.12	0.00	0.00	0.00	600.32	1092.54
83.22	58.46	1072.91	914.43	0.987	0.00	0.00	563.19	0.00	0.00	0.00	563.19	914.43
100.00	56.07	963.09	799.14	0.884	0.00	0.00	537.51	0.00	0.00	0.00	537.51	799.14

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8317

PERCENT SPAN FROM TIP (L. L.)	DELTA*2 (DEG)	V*2 (FT/SEC)	M*2	DELTA2 (DEG)	V2 (FT/SEC)	M2	VU2 (FT/SEC)	M2	VU2 (FT/SEC)	M2	VZ2 (FT/SEC)	U2 (FT/SEC)
0.00	58.98	1168.27	1001.19	0.976	40.70	0.00	794.12	0.00	517.84	0.663	602.05	1519.03
11.24	58.08	1124.55	910.79	0.946	39.39	0.00	851.53	0.00	541.60	0.718	650.64	1452.19
25.80	51.18	1042.94	804.76	0.876	39.68	0.00	841.33	0.00	517.13	0.713	647.55	1341.90
49.80	45.69	978.88	671.85	0.802	40.39	0.00	861.03	0.00	557.90	0.735	655.84	1229.75
68.19	37.53	863.07	513.50	0.726	41.93	0.00	809.27	0.00	600.86	0.724	660.07	1114.76
89.71	22.04	717.87	295.60	0.686	63.68	0.00	1008.91	0.00	697.53	0.800	730.31	993.13
100.00	13.74	752.40	178.70	0.659	45.64	0.00	1045.43	0.00	747.50	0.916	738.87	926.20

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (L. L.)	DELTA (DEG)	INCIDENCE ANGLE (DEG)	MEAN SUCT SU ² (DEG)	0 FACTOR	OMEGA* BAR	LOSS PARAMETER ANGLT (DEG)	DEVIATION ANGLT (DEG)	POTOP POTSS RATIO	ROTOR EFF	ADIANATIC EFF	POLYTROPIC EFF	HOIOP FFF
0.00	0.00	12.02	7.164	0.695	4.187	0.2055	1.980	1.838	0.7523	0.7523	0.7523	0.7523
9.81	11.24	12.56	7.789	0.662	4.212	0.1946	1.931	1.889	0.7495	0.7495	0.7495	0.7495
26.61	7.94	14.99	7.295	0.559	4.300	0.2339	1.891	1.891	0.7479	0.7479	0.7479	0.7479
43.06	6.80	17.65	6.802	0.494	4.444	0.2773	1.814	1.814	0.7207	0.7207	0.7207	0.7207
62.40	6.819	23.69	6.972	0.453	4.534	0.3544	1.818	1.918	0.7514	0.7514	0.7514	0.7514
83.22	6.871	36.43	7.203	0.357	4.153	0.4066	1.816	2.025	0.9514	0.9514	0.9514	0.9514
100.00	100.00	42.34	7.322	1.248	3.807	0.0031	20.791	2.024	1.0044	1.0044	1.0044	1.0044

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8997 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8992 (ADIADATIC)

MOMENTUM AVG. ROTOR EFFSS RATIO = 1.9148
 MASS AVERAGE TEMPERATURE RISE = 1.2287

NASA SMALL AXIAL COMPRESSOR TEST 2 FED. 20, 1974 (COMBINED TYP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIVALENT HEIGHT FLOW = 1.5949 KG/SEC 100 PERCENT DESIGN SPEED - SCAN NO 6
 EQUIVALENT FLOW / INLET ANN AREA = 189.6111 KG/SEC-SQ M R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 96.0023

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9774

PERCENT SPAN FROM TIP (L. C.)	BETA*1 (DEG)	V*1 (M/SEC)	M*1	BETA1 (DEG)	VI (M/SEC)	VU1 (M/SEC)	H1	VNI (M/SEC)	VZ1 (M/SEC)	UI (M/SEC)
0.00	71.00	500.14	401.41	1.534	0.00	155.75	0.00	165.75	160.41	461.41
9.81	69.65	488.58	458.08	1.473	0.00	169.91	0.00	179.91	154.35	458.08
26.61	68.17	452.09	418.11	1.305	0.00	184.70	0.00	184.70	191.31	418.11
43.66	63.59	422.11	377.57	1.287	0.00	189.16	0.00	189.16	189.58	377.57
62.40	61.21	376.97	331.01	1.151	0.00	182.98	0.00	182.98	182.91	331.01
85.22	58.46	327.02	278.72	.907	0.00	171.05	0.00	171.05	188.75	278.72
100.00	56.07	293.55	243.58	.836	0.00	161.83	0.00	161.83	158.27	243.58

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8317

PERCENT SPAN FROM TIP (L. C.)	BETA*2 (DEG)	V*2 (M/SEC)	M*2	BETA2 (DEG)	V2 (M/SEC)	VU2 (M/SEC)	H2	VM2 (M/SEC)	VZ2 (M/SEC)	U2 (M/SEC)
0.00	58.98	356.09	305.16	.976	40.70	242.05	157.84	183.50	177.60	463.00
11.24	54.98	342.78	277.61	.946	30.39	260.16	165.08	201.07	196.68	442.69
29.88	51.18	314.44	245.29	.876	39.68	256.44	163.72	197.37	191.14	409.01
48.80	45.64	281.17	204.79	.802	40.39	262.44	170.05	199.90	190.89	374.83
60.12	37.53	252.14	156.44	.726	41.93	274.10	183.14	203.91	201.71	339.78
88.71	22.04	240.14	98.10	.686	43.60	307.02	212.61	222.00	213.94	302.71
100.00	13.74	225.13	54.47	.659	45.64	318.65	227.84	222.77	215.20	282.11

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	MASS FLOW (PC)	DELTA UFA* (DEG)	INCIDENCE ANGLE (DEG)	SUCT SUR (DEG)	DELTA OMEGA* (DEG)	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR EFF	ROTOR POLYTROPIC EFF
0.00	0.00	12.02	7.164	6.096	.4187	.0403	1.989	1.838	.7523	.7724
9.81	11.24	15.56	7.780	6.462	.4212	.0191	-.931	1.889	.7895	.8074
26.61	19.89	14.59	7.295	5.157	.4309	.0258	.807	1.891	.8632	.8749
43.66	48.80	17.60	6.802	3.894	.4444	.0164	3.514	1.908	.8207	.9277
62.40	68.19	21.69	6.972	3.092	.4514	.0504	7.496	1.718	.9514	.7556
85.22	88.71	36.43	7.203	2.157	.4153	-.0056	13.485	2.025	1.0044	1.0040
100.00	100.00	42.34	7.322	1.249	.3807	-.0091	20.791	2.024	1.0044	1.0040

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8977 (POLYTROPIC) MOMENTUM AVG. ROTOR PRESS RATIO = 1.9148
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8902 (ADIABATIC) MASS AVERAGE TEMPERATURE RISE = 1.2207

NASA SMALL AXIAL COMPRESSOR TEST 2 FEB. 20, 1974 (COMBINED_TFMP.1)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

100 PERCENT DESIGN SPEED - SCAN NO 6

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8824

PERCENT SPAN FROM TIP (L. L.)	BETA 3 (DEG)	V3 (FT/SEC)	VU3 (FT/SEC)	M3	VH3 (FT/SEC)	VZ3 (FT/SEC)	U3 (FT/SEC)
0.00	37.75	871.05	533.22	.734	648.78	691.21	1475.23
10.82	37.66	907.48	554.39	.768	718.46	717.26	1418.84
29.89	36.86	907.64	544.50	.776	726.18	726.17	1323.74
47.75	37.19	925.41	559.40	.797	737.20	736.65	1226.46
67.26	38.84	949.41	595.47	.822	739.45	716.75	1124.85
88.27	41.00	1040.00	682.26	.910	784.93	774.39	1015.37
100.00	42.30	1077.19	725.10	.949	796.86	774.85	954.28

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9131

PERCENT SPAN FROM TIP (L. L.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	H4	VH4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	3.49	709.32	43.12	.540	707.00	707.00	1464.53
11.20	3.48	730.79	44.89	.513	717.42	717.44	1414.41
29.89	3.31	761.56	43.97	.640	760.29	759.95	1330.74
43.29	3.31	778.84	44.93	.659	777.59	776.79	1248.35
67.14	4.00	764.46	53.36	.647	762.60	762.18	1113.94
88.14	3.50	779.68	44.43	.613	728.32	728.66	1069.96
100.00	3.49	733.89	44.63	.617	732.53	732.53	1016.88

STATOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MACH'S FLCH (PPT)	DELTA CETA (DEG)	INCIDENCE ANGLE (DEG)	MEAN SUPT SUR (DEG)	D FACTOR	OMFGA BAP	LOSS PARAMETER	DEVIATION ANGLE (D. C)	STAGE PRESS RATIO	STATOR TEMP POLYTROPIC EFF
0.00	0.00	6.00	34.26	1.427	-2.495	.3913	.1047	.0176	25.070	1.740	1.2520
10.82	11.20	12.19	34.17	1.432	-1.872	.3811	.1178	.0408	20.870	1.817	1.2520
29.89	29.89	31.65	31.55	3.23	-3.017	.3410	.0617	.0202	10.534	1.853	1.2409
47.75	48.29	52.16	33.88	-4.91	-3.492	.3255	.0445	.0136	15.322	1.879	1.2198
67.26	67.14	71.47	34.84	-6.95	-3.547	.3528	.0893	.0256	15.107	1.957	1.2146
88.27	88.14	90.36	37.50	-1.396	-4.272	.4524	.2151	.0700	15.027	1.802	1.2219
100.00	100.00	100.00	38.81	-2.372	-5.773	.4605	.2503	.0632	22.191	1.807	1.2218

MOMENTUM AVERAGE STAGE EFFICIENCY = .8645 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .8307 (ADIABATIC)
MOMENTUM AVG. STAGE PRESS RATIO = 1.8401
MACH'S AVERAGE TEMPERATURE RISE = 1.2287

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OF POOR QUALITY

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

100 PERCENT DESIGN SPFD. - SCAN NO. 6

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .0824

PERCENT SPAN FROM TIP (L. F.)	BETA 3 (DEG)	V3 (M/SEC)	VU3 (M/SEC)	M3	VN3 (M/SEC)	VZ3 (M/SEC)	U3 (M/SEC)
0.00	37.75	267.50	167.57	.734	209.94	207.63	449.65
10.82	37.66	276.60	164.98	.768	218.99	218.62	432.47
29.08	36.86	276.65	165.96	.777	221.34	221.74	403.48
47.77	37.19	287.07	170.50	.797	224.70	224.53	373.83
67.26	38.94	289.38	181.50	.822	225.39	224.56	342.85
84.27	41.00	316.99	207.95	.910	239.25	236.03	309.68
100.00	42.30	328.39	221.01	.949	242.80	236.17	290.87

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .0131

PERCENT SPAN FROM TIP (L. F.)	BETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VN4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	3.49	215.90	13.14	.586	215.69	215.69	446.39
11.20	3.48	225.18	13.68	.613	224.77	224.74	421.11
29.89	3.31	232.12	13.40	.640	231.74	231.63	405.61
48.20	3.31	237.41	13.71	.659	237.01	236.77	380.50
67.14	4.00	243.01	16.26	.647	232.44	237.31	354.78
84.14	3.50	222.41	13.56	.613	221.99	221.18	324.12
100.00	3.49	223.69	13.62	.617	223.28	223.28	309.94

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	TRAILING EDGE	MASS FLOW (PCT)	DLTA OFTA (DEG)	INCIDENCE MEAN (DEG)	ANGL SUCT (DEG)	FACIOR D	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PPTS RATIO	STATOR TEMP RATIO	POLYTROPIC EFF
0.00	0.00	0.00	34.25	1.627	-2.495	.3913	.1047	.0175	25.670	1.780	1.2520	.7448
10.82	11.20	12.19	34.17	1.692	-1.872	.3411	.1178	.0409	20.970	1.817	1.2420	.7157
29.08	29.89	37.65	33.55	.323	-3.017	.3410	.0517	.0202	16.534	1.853	1.2309	.9310
47.75	48.29	52.16	31.80	-.691	-7.692	.3255	.0465	.0136	15.322	1.979	1.2190	.9795
67.26	67.14	71.47	34.84	-.685	-3.587	.3529	.0993	.0256	15.107	1.877	1.2146	.7918
84.27	84.14	90.35	37.50	-1.396	-4.272	.4524	.2651	.0700	15.027	1.907	1.2219	.5871
100.00	100.00	100.00	38.81	-2.332	-5.773	.4685	.2503	.0632	22.191	1.802	1.2218	.6582

MOMENTUM AVERAGE STAGE EFFICIENCY = .8445 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .8307 (ADIABATIC)
MOMENTUM AVG. STAGE PPTS RATIO = 1.8401
MASS AVERAGE TEMPERATURE RISE = 1.2287

NASA SMALL AXIAL COMPRESSOR TEST 2 FEB. 20, 1974 (UNHEIRED ICRP)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT WEIGHT FLOW = 2.8211 LB4/SEC 90 PERCENT DESIGN SPEED - SCAN NC 8
 PERCENT DESIGN EQUIVALENT FLOW = 77.0248 EQUIVALENT SPEED
 EQUIVALENT FLOW / INLET ANN AREA = 68919.280 R.F.P.
 = 31.1585 LBM/SEC-50 FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0179

PERCENT SPAN FROM TIP (L.C.)	PETA*1 (DEG)	V*1 (FT/SEC)	M*1 (DEG)	BETA1 (DEG)	VI (FT/SEC)	VUI (FT/SEC)	M1	VM1 (FT/SEC)	V71 (FT/SEC)	U1 (FT/SEC)
0.00	73.88	1478.54	1420.41	1.343	0.00	410.50	.373	410.50	397.28	1420.41
10.12	72.00	1412.15	137.98	1.284	0.00	420.99	.383	420.99	407.21	1347.08
27.03	69.65	1312.63	1230.73	1.196	0.00	456.40	.414	456.40	448.01	1230.73
41.14	67.32	1211.35	1117.70	1.105	0.00	467.04	.426	467.04	465.64	1117.70
61.43	65.37	1088.32	989.31	1.092	0.00	451.55	.413	451.55	453.39	989.31
84.62	62.71	940.18	826.61	.846	0.00	426.55	.388	426.55	420.82	826.61
100.00	60.28	827.50	718.69	.752	0.00	410.30	.373	410.30	395.36	718.69

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9813

PERCENT SPAN FROM TIP (T.I.)	V*2 (FT/SEC)	M*2 (DEG)	PETA2 (DEG)	V2 (FT/SEC)	VU2 (FT/SEC)	M2	VM2 (FT/SEC)	VZ2 (FT/SEC)	U2 (FT/SEC)
0.00	62.09	894.97	790.65	741	54.59	.580	407.83	394.70	1366.10
12.76	60.72	801.13	698.80	664	56.83	.594	391.76	383.20	1248.09
34.52	53.40	711.03	578.82	605	54.52	.622	429.04	427.27	1132.07
51.35	44.76	655.79	461.73	556	53.09	.657	465.60	465.67	1001.69
71.44	36.25	616.83	375.29	574	47.90	.707	551.20	540.57	983.21
89.60	16.63	603.77	172.76	523	51.05	.790	578.52	569.02	888.39
100.00	6.86	583.26	69.69	508	52.81	.835	579.09	559.41	832.95

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	MA'S FLCH (PCT)	DELTA BETA* (DEG)	INCIDENCE ANGLE MEAN (DEG)	SUCT SUR ANGLE (DEG)	OMEGA BAR	LOSS PARAMETER	LEVITATION ANGLE (DEG)	POTOR PRESS RATIO	POTOR EFF	POTICR POLYTROPIC EFF
0.00	0.00	10.99	10.044	9.570	.5414	.293J	.3509	5.900	1.737	.6801
10.12	12.76	11.93	10.893	9.544	.5859	.3177	.3563	6.024	1.719	.6940
27.03	34.52	10.26	10.071	9.689	.6010	.2613	.3519	4.758	1.725	.7367
41.14	53.35	11.74	10.669	7.789	.6102	.2279	.3680	4.875	1.734	.7911
61.43	71.44	11.027	11.027	7.182	.5358	.1108	.3268	7.029	1.751	.8937
84.62	89.60	11.370	11.370	6.345	.5270	.1525	.3119	9.374	1.819	.9134
100.00	100.00	11.525	11.525	5.451	.4877	.1770	.3174	13.914	1.819	.9133

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8027 (POLYTROPIC) MOMENTUM AVG. ROTOR PRESS RATIO = 1.7456
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .7868 (ADIABATIC) MASS AVERAGE TEMPERATURE RISE = 1.2189

NASA SMALL AXIAL COMPRESSOR TEST 2, FEB. 20, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIVALENT WEIGHT FLOW = 1.2796 KG/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 77.3248
 90 PERCENT DESIGN SPEED - SCAN NO. 8
 EQUIVALENT SPFO
 EQUIVALENT FLOW / INLET ANH AREA = 6.9919, 280 R.F.M.
 192.1292 K7/SEC-50 M

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = 1.0179

PERCENT SPAN FROM TIP (L.F.)	9TA*1 (DEG)	V*1 (M/SEC)	M*1	9TA1 (DEG)	V1 (M/SEC)	M1	V*1 (M/SEC)	M1	9TA1 (DEG)	V1 (M/SEC)	M1	V*1 (M/SEC)	M1	9TA1 (DEG)	V1 (M/SEC)	M1
0.00	73.88	450.66	432.64	1.343	0.00	125.12	0.00	173	125.12	121.09	0.173	121.09	0.173	121.09	0.173	417.04
10.32	72.66	410.44	410.84	1.284	0.00	128.32	0.00	383	128.32	124.12	0.383	124.12	0.383	124.12	0.383	410.87
27.03	69.65	400.09	375.13	1.96	0.00	139.11	0.00	416	139.11	136.55	0.416	136.55	0.416	136.55	0.416	375.11
43.14	67.32	366.22	340.67	1.105	0.00	142.35	0.00	426	142.35	141.90	0.426	141.90	0.426	141.90	0.426	340.67
61.43	65.37	311.72	301.54	0.992	0.00	138.24	0.00	413	138.24	138.19	0.413	138.19	0.413	138.19	0.413	301.54
84.62	62.71	281.52	251.75	0.846	0.00	130.01	0.00	388	130.01	128.27	0.388	128.27	0.388	128.27	0.388	251.95
100.00	60.28	252.24	219.06	0.752	0.00	125.04	0.00	373	125.04	125.06	0.373	125.06	0.373	125.06	0.373	219.06

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9813

PERCENT SPAN FROM TIP (L.F.)	9TA*2 (DEG)	V*2 (M/SEC)	M*2	9TA2 (DEG)	V2 (M/SEC)	M2	V*2 (M/SEC)	M2	9TA2 (DEG)	V2 (M/SEC)	M2	V*2 (M/SEC)	M2	9TA2 (DEG)	V2 (M/SEC)	M2
0.00	62.89	272.79	242.82	0.741	54.19	213.49	173.57	0.560	124.31	120.30	0.560	120.30	0.560	120.30	0.560	416.39
12.76	60.72	244.18	211.00	0.664	56.83	218.23	182.66	0.594	119.41	115.80	0.594	115.80	0.594	115.80	0.594	395.66
34.52	53.40	216.77	176.43	0.605	54.52	225.70	183.87	0.627	131.05	130.23	0.627	130.23	0.627	130.23	0.627	350.30
53.35	44.76	194.99	140.74	0.556	53.09	236.34	188.96	0.657	141.04	141.94	0.657	141.94	0.657	141.94	0.657	328.70
71.44	34.75	203.25	114.19	0.574	47.90	250.57	185.90	0.707	168.01	167.51	0.707	167.51	0.707	167.51	0.707	300.79
89.60	16.61	184.03	54.16	0.523	51.05	280.49	218.13	0.798	176.33	173.44	0.798	173.44	0.798	173.44	0.798	270.79
100.00	6.86	177.78	21.24	0.508	52.81	292.02	232.64	0.835	176.51	170.51	0.835	170.51	0.835	170.51	0.835	253.88

POTOP PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	IP	MASS FLOW (PCT)	DELTA 9TA* (DEG)	INCIDENCE ANGLE MEAN (DEG)	SUCT SUR (DEG)	D FACTOR	OMEGA* BAR	LOSS PARAMETER (DEG)	DEVIATION ANGLE (DEG)	POTOP PRESS RATIO	ROTOR ANADIATIC EFF	POTOP POLYTROPIC EFF
0.00	0.03	0.00	10.99	10.044	9.574	0.544	0.2933	0.0509	6.900	1.717	0.6801	0.7036
10.32	17.76	12.72	11.93	10.993	9.544	0.544	0.3177	0.0563	6.024	1.719	0.6701	0.6940
27.03	34.52	31.01	16.21	10.851	0.680	0.600	0.2613	0.0518	6.758	1.725	0.7167	0.7520
43.14	53.35	51.74	27.57	10.669	7.783	0.6102	0.2229	0.0480	6.875	1.734	0.7011	0.8066
61.43	71.44	70.60	31.12	11.027	7.182	0.5358	0.1180	0.0268	7.029	1.751	0.8907	0.9073
84.62	89.60	89.95	46.00	11.370	6.345	0.5270	0.1425	0.0119	9.174	1.819	0.9134	0.9203
100.00	100.00	100.00	51.42	11.525	5.451	0.4877	0.1770	0.0174	11.914	1.819	0.9133	0.9203

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8027 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .7864 (ADIABATIC)
 MOMENTUM AVG. ROTOP PRESS RATIO = 1.7456
 MASS AVERAGE TEMPERATURE RISE = 1.2189

NASA SMALL AXIAL COMPRESSOR TEST 2 FEB. 20, 1974 (COMBINFID. I.F.M.P.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 8

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9331

PERCENT SPAN FROM TIP (L. E.)	BETA 3 (DEG)	V3 (FT/SEC)	VU3 (FT/SEC)	M3	VM3 (FT/SEC)	VZ3 (FT/SEC)	U3 (FT/SEC)
0.00	49.08	766.84	586.36	.639	494.10	494.77	1326.71
12.11	52.61	770.99	617.56	.643	468.18	467.40	1259.94
32.41	49.58	797.82	607.43	.674	517.26	517.26	1171.95
50.96	48.20	826.84	616.34	.705	551.12	550.71	1073.96
69.42	44.20	850.70	600.03	.744	617.07	614.82	1001.46
88.73	47.63	944.81	698.06	.822	636.69	628.34	913.76
100.00	48.01	984.18	740.66	.861	648.11	630.20	858.21

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9300

PERCENT SPAN FROM TIP (L. E.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	3.11	587.53	33.92	.482	546.55	544.55	1317.09
11.42	3.30	582.16	33.51	.477	581.20	511.13	1271.11
30.57	58.13	58.43	29.43	.481	580.39	530.13	1144.02
48.82	60.65	57.02	50.0	.500	601.95	601.31	1120.53
67.52	41.76	59.72	59.72	.517	610.84	610.51	1045.28
87.16	58.00	63.42	63.42	.500	594.63	592.46	362.17
100.00	60.52	63.97	63.97	.506	598.11	534.11	914.50

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (L. E.)	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGL SUCT SUR (DEG)	D FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGL (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	46.57	13.558	9.636	.4956	.1107	.0198	25.490	1.685	1.2492	.7479
12.11	11.42	49.31	16.414	13.103	.5048	.0525	.0321	19.833	1.680	1.2492	.4142
32.41	30.57	46.68	12.854	9.624	.5047	.0568	.0318	16.059	1.682	1.2285	.8241
50.96	51.74	42.79	10.228	7.276	.4692	.0580	.0177	17.387	1.706	1.2148	.8955
69.42	67.52	38.63	6.375	1.591	.4588	.0606	.0173	16.645	1.718	1.1925	.8986
88.73	88.16	41.54	5.117	2.270	.5350	.1876	.0493	17.670	1.697	1.2037	.7647
100.00	109.00	42.71	4.181	.740	.5514	.175	.0460	24.800	1.697	1.2017	.7763

MOMENTUM AVERAGE STAGE EFFICIENCY = .7615 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7432 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS. RATIO = 1.6964
MASS AVERAGE TEMPERATURE RISE = 1.2189

NASA SMALL AXIAL COMPRESSOR TEST 2 FCU, 20, 1374 (COMBINED I.F.M.P.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

20 PERCENT DESIGN SPEED - SCAN NO. 8

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9731

PERCENT SPAN FROM TIP (L. E.)	DELTA 3 (DEG)	V3 (M/SEC)	VU3 (M/SEC)	M3	VM3 (M/SEC)	V33 (M/SEC)	U3 (M/SEC)
0.00	49.98	233.73	178.72	.639	150.63	149.97	404.38
12.11	52.61	235.00	186.71	.643	162.70	162.46	387.09
12.61	49.58	243.18	185.14	.674	157.66	157.66	357.82
20.96	48.20	252.02	187.87	.705	167.86	167.86	331.61
69.42	44.20	262.34	182.89	.744	188.08	187.40	305.24
88.78	47.63	287.98	212.77	.822	194.06	191.46	277.60
100.00	48.81	299.98	225.75	.861	197.54	197.08	261.58

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9100

PERCENT SPAN FROM TIP (L. E.)	DELTA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VM4 (M/SEC)	V44 (M/SEC)	L4 (M/SEC)
0.00	3.31	173.08	10.34	.482	178.74	178.74	401.45
11.42	5.30	177.64	10.21	.477	177.14	177.13	387.43
10.57	2.90	177.13	8.97	.481	176.90	171.82	383.94
48.87	5.41	184.10	17.38	.504	183.48	181.29	341.54
67.52	5.98	187.07	18.29	.517	186.18	186.08	318.60
88.16	8.09	182.27	19.31	.500	181.24	180.58	293.27
100.00	6.10	183.34	19.49	.504	182.31	182.31	278.74

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	MASS FLCH (PCI)	OFLTA DELTA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SURT (DEG)	U FACTOR	OMEGA GAP	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	POLYTROPIC EFF
0.00	0.00	46.57	13.558	9.636	.4958	.1107	.0198	25.490	1.685	1.2492	.7679
12.11	11.42	49.31	16.414	13.103	.5048	.0975	.0121	19.813	1.680	1.2432	.8142
12.61	10.57	46.68	12.854	9.624	.5067	.0968	.0318	16.059	1.682	1.2285	.8241
20.96	49.82	42.79	10.220	7.276	.4692	.0580	.0177	17.187	1.706	1.2148	.8955
69.42	67.52	38.61	6.175	1.581	.4588	.0606	.0171	16.685	1.718	1.1925	.8886
88.78	88.16	41.54	5.117	2.270	.5350	.1876	.0493	17.620	1.697	1.2037	.7847
100.00	100.00	42.71	4.181	.740	.5514	.1751	.0440	24.800	1.697	1.2037	.7763

MOMENTUM AVERAGE STAGE EFFICIENCY = .7615 (POLYTROPIC)

MOMENTUM AVERAGE STAGE EFFICIENCY = .7432 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.6964

MASS AVERAGE TEMPERATURE RISE = 1.2189

NASA SMALL AXIAL COMPRESSOR TEST 2-FEU-20-1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT WEIGHT FLOW = 2.9210 LBM/SEC 90 PERCENT DESIGN SPEED - SCAN NO. 9
 EQUIVALENT SPEED = 68947.760 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 79.7518 EQUIVALENT FLOW / INLET ANGLE AREA = 32.2617 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0101

PERCENT SPAN FROM TIP (L.F.)	BETA*1 (DEG)	V*1 (FT/SEC)	M*1	BETA1 (DEG)	V1 (FT/SEC)	M1	VH1 (FT/SEC)	VZ1 (FT/SEC)	UI (FT/SEC)
0.00	71.76	1487.89	1.350	0.00	427.43	0.00	399	427.43	413.66
10.24	77.00	1418.53	1.291	0.00	438.30	0.00	399	479.30	423.95
27.08	68.87	1315.59	1.204	0.00	475.58	0.00	434	475.59	468.85
43.50	66.42	1217.72	1.112	0.00	486.87	0.00	445	486.87	485.30
61.95	64.39	1097.49	0.998	0.00	472.66	0.00	431	472.66	472.49
84.87	61.68	931.05	0.873	0.00	444.41	0.00	405	444.41	438.45
100.00	53.27	811.41	0.761	0.00	427.19	0.00	309	427.19	412.86

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9487

PERCENT SPAN FROM TIP (L.F.)	BETA*2 (DEG)	V*2 (FT/SEC)	M*2	BETA2 (DEG)	V2 (FT/SEC)	M2	VP2 (FT/SEC)	VZ2 (FT/SEC)	U2 (FT/SEC)
0.00	61.20	910.17	0.774	50.91	710.69	0.591	449.15	431.72	1366.47
12.32	58.94	842.27	0.702	54.13	724.20	0.603	434.56	424.06	1300.95
31.58	52.75	760.26	0.647	51.09	740.20	0.624	464.97	462.97	1187.58
52.22	46.30	717.95	0.613	48.65	778.81	0.663	514.54	514.51	1088.15
70.13	35.61	692.49	0.597	46.28	815.07	0.702	563.20	561.6	992.60
89.11	19.47	610.40	0.529	50.08	846.90	0.778	475.58	566.04	891.37
100.00	9.60	584.24	0.509	51.94	944.48	0.815	576.05	556.47	811.30

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	TRAILING EDGE	MASS FLOW (PCT)	DELTA U/LTA* (D/G)	INCIDENCE ANGLE (DEG)	MEAN SUCT SUP (DEG)	FACTOR	OMEGA* UAR	PARAMETER	LOTS ANGLE (DEG)	DEVIATION	ROTOR PRIEST	ADIABATIC EFF	POLYTROPIC EFF
0.00	0.00	0.60	12.06	9.422	8.954	0.5147	0.721	0.0499	4.207	1.774	0.660	0.660	0.7182
10.24	12.32	12.61	17.06	10.222	8.879	0.5540	0.261	0.054	4.149	1.711	0.693	0.693	0.7080
27.08	31.58	33.05	16.12	10.081	7.915	0.5612	0.203	0.064	3.744	1.718	0.7013	0.7013	0.7787
43.50	52.22	52.10	22.04	9.818	6.916	0.5516	0.1649	0.058	3.991	1.741	0.808	0.808	0.8527
61.95	70.13	71.05	20.78	10.102	6.238	0.5101	0.0915	0.063	7.214	1.748	0.815	0.815	0.9274
84.87	89.11	90.11	42.71	10.183	5.347	0.5170	0.1271	0.0280	11.502	1.790	0.9109	0.9109	0.9262
100.00	100.00	100.00	49.67	10.519	4.445	0.4851	0.1560	0.0327	16.656	1.790	0.9199	0.9199	0.9262

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8235 (POLYTROPIC) MOMENTUM AVG. ROTOR PRESS. RATIO = 1.7376
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8095 (ADIABATIC) MASS AVERAGE TEMPERATURE RISE = 1.2109

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NASA SMALL AXIAL COMPRESSOR TEST 2 FEB. 20, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIVALENT HEIGHT FLOW = 1.1249 KG/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 79.7518
 90 PERCENT DESIGN SPEED - SCAN NO. 9
 EQUIVALENT SPEED = 68947.760 R.F.M.
 EQUIVALENT FLOW / INLET ANN AREA = 157.5153 KG/SEC-SQ M

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0101

PERCENT SPAN FROM TIP (L. E.)	V*1 (M/SEC)	M*1	DELTA1 (DEG)	V1 (M/SEC)	M1	VH1 (M/SEC)	V71 (M/SEC)	U1 (M/SEC)
0.00	73.26	1.300	0.00	130.28	0.00	389	130.28	126.08
10.24	72.00	1.291	0.00	133.59	0.00	399	133.59	170.22
27.08	69.87	1.274	0.00	144.96	0.00	414	144.96	170.22
43.50	66.62	1.250	0.00	168.40	0.00	445	168.40	147.57
61.55	64.39	1.221	0.00	194.07	0.00	491	194.07	146.02
80.97	61.68	1.183	0.00	251.46	0.00	605	251.46	133.64
100.00	59.27	1.135	0.00	330.27	0.00	889	330.27	125.84
0.00	73.26	1.300	0.00	130.28	0.00	389	130.28	433.12
10.24	72.00	1.291	0.00	133.59	0.00	399	133.59	411.21
27.08	69.87	1.274	0.00	144.96	0.00	414	144.96	375.19
43.50	66.62	1.250	0.00	168.40	0.00	445	168.40	340.04
61.55	64.39	1.221	0.00	194.07	0.00	491	194.07	300.52
80.97	61.68	1.183	0.00	251.46	0.00	605	251.46	251.31
100.00	59.27	1.135	0.00	330.27	0.00	889	330.27	219.15

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9487

PERCENT SPAN FROM TIP (L. E.)	DELTA*2 (DEG)	V*2 (M/SEC)	M*2	DELTA2 (DEG)	V2 (M/SEC)	M2	VH2 (M/SEC)	V/2 (M/SEC)	U/2 (M/SEC)
0.00	61.20	281.52	1.774	50.91	218.62	1.6812	591	176.60	132.20
17.32	58.54	254.72	1.707	53.13	220.76	1.7641	611	172.45	120.56
33.58	52.75	234.17	1.647	51.09	225.63	1.7517	624	161.72	140.84
52.22	46.19	210.43	1.5347	48.65	237.38	1.7820	663	158.83	156.92
70.11	34.61	211.19	1.5298	46.28	248.43	1.7915	702	171.49	171.19
93.11	19.47	194.05	1.523	50.08	273.37	2.0948	778	175.41	172.53
100.00	9.60	178.08	1.509	51.94	284.83	2.2478	815	175.58	169.61
0.00	61.20	281.52	1.774	50.91	218.62	1.6812	591	176.60	132.20
17.32	58.54	254.72	1.707	53.13	220.76	1.7641	611	172.45	120.56
33.58	52.75	234.17	1.647	51.09	225.63	1.7517	624	161.72	140.84
52.22	46.19	210.43	1.5347	48.65	237.38	1.7820	663	158.83	156.92
70.11	34.61	211.19	1.5298	46.28	248.43	1.7915	702	171.49	171.19
93.11	19.47	194.05	1.523	50.08	273.37	2.0948	778	175.41	172.53
100.00	9.60	178.08	1.509	51.94	284.83	2.2478	815	175.58	169.61

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (L. E.)	DELTA TRAILING EDGE (DEG)	MASS FLOW (PCT)	INCIDENCE ANGLE (DEG)	SUCT SUR (DEG)	DELTA ANGLE (DEG)	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR POLYTROPIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	9.422	8.954	5147	2721	0.0499	4.207	1.774	0.690
10.24	12.01	17.61	11.06	8.879	5540	2961	0.0564	4.149	1.711	0.653
27.08	33.05	16.12	10.881	7.915	5612	2303	0.0664	3.744	1.718	0.787
43.50	52.22	52.10	9.818	6.919	5516	1649	0.159	3.891	1.741	0.827
61.55	70.13	71.03	10.102	6.238	5101	10915	0.203	7.214	1.748	0.915
80.97	80.11	90.19	10.343	5.347	5170	1871	0.280	11.562	1.700	0.922
100.00	100.00	100.00	10.519	4.445	4851	1560	0.327	16.656	1.790	0.9262

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8235 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8093 (ADIABATIC)
 MOMENTUM AVG. ROTOR PRESS. RATIO = 1.7376
 MASS AVERAGE TEMPERATURE RISE = 1.2109

NASA SMALL AXIAL COMPRESSOR TEST 2 FEB. 20, 1974 (COMBINED TEST)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

90 PERCENT DESIGN SPEED - SCAN NO. 9

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9556

PERCENT SPAN FROM TIP (L. E.)	BETA 3 (DEG)	V2 (FT/SEC)	VU3	M3	VM3 (FT/SEC)	VZ3 (FT/SEC)	U3 (FT/SEC)
0.00	46.90	777.89	567.95	.652	531.54	525.70	1327.26
11.79	44.50	779.36	592.44	.651	506.15	505.11	1271.98
31.02	46.52	800.87	591.09	.679	551.13	551.12	1177.20
50.28	44.29	834.63	582.80	.716	597.45	597.45	1091.59
68.57	42.59	858.99	581.34	.744	632.18	630.07	1005.87
88.48	46.49	926.55	671.91	.807	637.97	629.40	912.57
100.00	47.69	965.54	711.99	.846	620.00	632.84	858.57

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9422

PERCENT SPAN FROM TIP (L. E.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	4.53	555.19	47.01	.490	593.33	573.33	1317.63
11.40	4.52	506.11	47.02	.491	594.26	574.18	1271.74
30.50	4.24	603.84	44.63	.502	602.19	601.93	1104.79
48.78	5.19	620.81	50.21	.521	618.26	617.63	1121.17
67.53	4.36	624.58	47.44	.528	622.78	622.41	1045.66
88.23	4.36	567.22	45.40	.501	595.49	593.12	962.30
100.00	4.33	600.62	45.66	.504	598.88	598.88	914.88

STATOR PERFORMANCE DATA

PERCENT SPAN LEADING TOG	PERCENT SPAN FROM TIP TRAILING (DEG)	MASS FLOW (PPH)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCTY (DEG)	ANGLE SUR (DEG)	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS. RATIO	STATOR EFFICIENCY
0.00	0.00	0.00	42.37	10.579	6.656	.4782	.0379	26.710	1.679	1.2415
11.79	11.40	17.01	44.98	13.313	9.990	.4776	.0256	21.063	1.679	1.2415
32.02	30.50	33.05	42.28	9.820	6.571	.4620	.0701	17.402	1.690	1.2191
50.28	48.78	52.10	39.09	6.381	3.418	.4437	.0196	17.123	1.709	1.2038
68.57	67.53	71.05	38.23	2.888	.065	.4438	.0176	15.465	1.715	1.1873
88.48	88.23	90.19	42.13	4.043	1.179	.4250	.0659	15.891	1.682	1.1964
100.00	100.00	100.00	43.33	3.054	-.387	.5419	.0409	23.060	1.682	1.1964

MOMENTUM AVERAGE STAGE EFFICIENCY = .7862 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7693 (ADIABATIC)
MOMENTUM AVG. STAGE PRESS. RATIO = 1.6947
MASS AVERAGE TEMPERATURE RISE = 1.2109

NASA SMALL AXIAL COMPRESSOR TEST 2 FEB. 20, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 9

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9556

PERCENT SPAN FROM TIP (L.F.)	BETA 3 (DEG)	V3 (M/SEC)	VU3 (M/SEC)	M3	VW3 (M/SEC)	V73 (M/SEC)	U3 (M/SEC)
0.00	46.90	237.10	173.11	.652	162.01	160.23	404.75
11.79	49.50	237.54	180.66	.653	154.27	174.07	377.70
32.02	46.57	264.11	177.11	.679	167.98	167.08	354.81
50.28	44.79	254.59	177.64	.716	182.10	191.97	332.72
60.57	42.29	261.87	177.19	.744	182.75	172.05	306.59
88.48	36.49	287.41	204.80	.807	194.45	171.84	278.15
100.00	47.69	296.30	217.62	.846	198.12	172.64	251.69

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9427

PERCENT SPAN FROM TIP (L.F.)	BETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VW4 (M/SEC)	V74 (M/SEC)	U4 (M/SEC)
0.00	44.51	191.41	14.31	.490	183.85	180.85	401.61
11.40	44.52	181.70	14.33	.491	181.13	181.11	337.63
30.50	44.24	184.05	13.67	.502	181.55	181.87	364.17
48.78	5.19	189.22	17.13	.521	180.45	188.25	341.73
67.53	4.16	190.37	14.47	.528	189.82	189.72	318.72
88.23	4.36	182.03	13.84	.501	181.51	180.84	293.31
100.00	4.16	181.07	13.92	.504	182.54	182.54	278.96

STATOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE FROM TIP	MASS FLOW (PCT)	OFLTA (DEG)	INCIDENCE ANGLE (DEG)	D FACTOR	OMEGA BAR	LOSS PAPER AFTER	DEVIATION ANGLE (DEG)	STAGE EFFICIENCY	STAGE TEMPERATURE RATIO	STATOR POLYTROPIC EFFICIENCY
0.00	0.00	42.37	10.570	.4782	.1057	.0179	26.710	1.679	1.2416	.7804
11.79	12.71	44.54	13.313	.4776	.0740	.0256	21.071	1.679	1.2416	.8170
32.02	33.03	42.28	9.820	.4620	.0612	.0201	17.492	1.690	1.2151	.8881
50.28	57.10	39.09	6.181	.4437	.0643	.0186	17.273	1.709	1.2038	.8803
68.57	71.05	38.21	2.818	.4430	.0614	.0176	15.461	1.716	1.1873	.8929
88.48	88.23	42.13	4.043	.5250	.1741	.0459	15.893	1.682	1.1914	.7562
100.00	100.00	43.33	3.054	.5419	.1624	.0409	23.060	1.687	1.1914	.7871

MOMENTUM AVERAGE STAGE EFFICIENCY = .7867 (POLYTROPIC)
 MOMENTUM AVERAGE STAGE EFFICIENCY = .7699 (ADIABATIC)
 MOMENTUM AVG. STAGE TEMPERATURE RATIO = 1.6947
 MASS AVERAGE TEMPERATURE RISE = 1.2109

NASA SMALL AXIAL COMPRESSOR TEST 2 FEB 20 1974 (COMBINED IMP-1)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT HEIGHT FLOW = 2.9698 LDM/SEC 90 PERCENT DESIGN SPEED - SCAN NO. 10
 EQUIVALENT FLOW = 81.0847 EQUIVALENT SPEED R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 81.0847 EQUIVALENT FLOW / INLET ANN AREA = 32.8009 LDM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AEROYNAMIC BLOCKAGE = .9971

PERCENT SPAN FROM TIP (L. L.)	BETA*1 (DEG)	V*1 (FT/SEC)	BETA1 (DEG)	V1 (FT/SEC)	VU1 (FT/SEC)	M1	VM1 (FT/SEC)	VZ1 (FT/SEC)	U1 (FT/SEC)
0.00	72.91	1485.54	1470.70	1.353	0.00	436.83	422.76	1420.70	
10.14	71.64	1421.71	1343.54	1.295	0.00	447.85	431.19	1349.54	
26.89	68.48	1324.28	1231.95	1.210	0.00	455.81	476.89	1231.95	
43.34	65.99	1228.28	1115.52	1.118	0.00	472.34	495.74	1116.52	
61.74	63.94	1099.11	987.37	1.004	0.00	482.86	482.70	987.17	
84.74	61.19	943.00	825.64	.859	0.00	456.24	448.14	825.94	
100.00	58.68	861.61	718.83	.766	0.00	437.42	422.46	718.83	

TIPT VELOCITY DIAGRAM DATA
 CALCULATED AEROYNAMIC BLOCKAGE = .9957

PERCENT SPAN FROM TIP (T. F.)	BETA*2 (DEG)	V*2 (FT/SEC)	BETA2 (DEG)	V2 (FT/SEC)	VU2 (FT/SEC)	M2	VM2 (FT/SEC)	VZ2 (FT/SEC)	U2 (FT/SEC)
0.00	59.99	965.76	833.16	.804	932.72	400	401.58	666.08	1366.18
11.09	56.70	885.88	741.16	.749	958.87	622	488.51	477.83	1402.84
32.76	51.87	812.91	630.17	.687	959.19	633	501.64	448.51	1194.36
46.97	46.90	716.97	519.08	.626	775.37	663	541.86	541.86	1074.94
69.17	36.64	716.19	424.21	.617	572.23	700	574.51	572.86	996.43
89.04	19.92	644.89	220.44	.563	671.14	786	608.16	598.17	891.59
100.00	10.64	619.37	116.38	.542	718.74	827	508.72	588.03	833.12

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE TO TIP	MASS FLOW (LBS)	DELTA BETA* (DEG)	INCIDENCE ANGLE (DEG)	MEAN SUCTION ANGLE (DEG)	DELTA FACTOR	OMEGA* BAR	LOSS PARAMETER (LFC)	DEVIATION ANGLE (LFC)	POTR PRESS RATIO	POTR ADIABATIC EFF	POTR POLYTROPIC EFF
0.00	0.00	12.92	9.872	8.804	.688	.2486	.0471	2.195	1.718	.7156	.7167
10.14	11.99	14.95	9.841	8.503	.9166	.2617	.0521	1.934	1.718	.7160	.7367
26.89	32.88	16.60	9.556	7.791	.6250	.1994	.0410	2.376	1.723	.7900	.8053
43.34	51.99	21.09	9.364	6.472	.9101	.1223	.0243	3.458	1.738	.8781	.8874
61.74	70.02	27.50	9.629	5.772	.8899	.0855	.0144	7.164	1.765	.9425	.9469
84.74	89.04	41.27	9.870	4.842	.8774	.0583	.0128	11.845	1.811	.9624	.9654
100.00	100.00	49.04	9.932	3.653	.8421	.0732	.0163	17.654	1.811	.9624	.9654

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8525 (POLYTROPIC) MOMENTUM AVG. ROTOR PRESS. RATIO = 1.7419
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8406 (ADIABATIC) MASS AVERAGE TEMPERATURE RISE = 1.2040

NASA SMALL AXIAL COMPRESSOR TEST 2 FFD. 201 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIVALENT WEIGHT FLOW = 1.1471 KG/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 81.0847
 90 PERCENT DESIGN SPEED - SCAN NO 19
 EQUIVALENT SPEED = 60933-145 R.P.M.
 EQUIVALENT FLOW / INLET ANN AREA = 160.1479 KG/SEC-SQ M

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9971

PERCENT SPAN FROM TIP (L. S.)	UETA*1 (DEG)	V*1 (M/SEC)	M*1	UETA1 (DEG)	V1 (M/SEC)	M1	UETA2 (DEG)	V2 (M/SEC)	M2	UETA3 (DEG)	V3 (M/SEC)	M3
0.00	72.91	453.04	1.353	0.00	133.15	0.00	0.00	133.15	0.398	128.86	0.413	0.31
10.14	71.64	433.70	1.295	0.00	136.50	0.00	0.00	136.50	0.409	132.04	0.411	0.34
26.89	68.48	403.64	1.210	0.00	148.08	0.00	0.00	148.08	0.446	145.76	0.437	0.50
43.34	65.99	375.50	1.118	0.00	151.59	0.00	0.00	151.59	0.455	151.10	0.440	0.32
61.74	63.06	340.32	1.034	0.00	147.18	0.00	0.00	147.18	0.441	147.13	0.440	0.95
84.74	61.19	287.11	0.859	0.00	138.45	0.00	0.00	138.45	0.414	136.59	0.414	0.75
100.00	58.68	256.46	0.766	0.00	131.10	0.00	0.00	131.10	0.398	128.77	0.398	0.10

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8957

PERCENT SPAN FROM TIP (L. S.)	UETA*2 (DEG)	V*2 (M/SEC)	M*2	UETA2 (DEG)	V2 (M/SEC)	M2	UETA3 (DEG)	V3 (M/SEC)	M3	UETA4 (DEG)	V4 (M/SEC)	M4
0.00	59.99	293.45	0.804	47.89	218.80	0.608	0.00	162.17	0.608	146.71	0.608	0.47
11.59	56.70	271.17	0.745	48.84	226.26	0.627	0.00	170.36	0.627	148.08	0.627	0.94
32.26	51.87	247.65	0.687	47.90	238.07	0.633	0.00	169.22	0.633	152.90	0.633	0.94
50.97	46.90	232.16	0.656	45.67	236.33	0.663	0.00	169.04	0.663	165.16	0.663	0.71
69.37	46.84	217.68	0.617	44.88	247.16	0.700	0.00	171.41	0.700	175.12	0.700	0.71
89.04	49.92	197.17	0.563	47.82	276.06	0.788	0.00	204.56	0.788	185.37	0.788	0.75
100.00	48.64	188.78	0.542	49.74	287.08	0.824	0.00	219.07	0.824	185.54	0.824	0.94

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	TRAILING EDGE	MASS FLOW (PCT)	FLTA (DEG)	UETA* (DEG)	INCIDENCE ANGLE (DEG)	SUCT SUR (DEG)	OMEGA* PAR (DEG)	LOSS PARAMETER (DEG)	DEVIATION (DEG)	ROTOR PRESS. RATIO	ROTOR EFFICIENCY
0.00	0.00	0.00	12.97	9.872	8.604	4.988	0.473	0.0473	2.995	1.718	0.7166
10.14	11.99	12.52	14.95	9.841	8.503	5.166	0.467	0.0521	1.844	1.718	0.7160
26.89	32.27	32.88	16.60	9.654	7.499	5.250	0.464	0.0410	2.351	1.723	0.7900
43.34	50.97	51.99	21.00	9.364	6.472	5.101	0.423	0.0263	3.278	1.738	0.8783
61.74	69.37	70.92	27.50	9.629	5.772	4.999	0.455	0.0144	3.166	1.745	0.9425
84.74	87.74	90.00	41.27	9.870	4.847	4.774	0.583	0.0128	11.955	1.811	0.9654
100.00	100.00	100.00	49.04	9.932	3.858	4.421	0.732	0.0153	17.634	1.811	0.9624

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8525 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8406 (ADIABATIC)
 MOMENTUM AVG. ROTOR PRESS. RATIO = 1.7419
 MASS AVERAGE TEMPERATURE RISE = 1.2040

NASA SMALL AXIAL COMPRESSOR TFST 2 FEB. 20, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 10

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9175

PERCENT SPAN FROM TIP (L. L.)	BETA 3 (DEG)	V3 (FT/SEC)	VU3 (FT/SEC)	M3	VM3 (FT/SEC)	VZ3 (FT/SEC)	U3 (FT/SEC)
0.00	44.21	786.42	548.54	.662	563.19	557.20	1176.98
11.52	45.92	796.00	571.79	.670	553.78	552.86	1271.01
31.04	43.83	810.35	561.23	.690	584.55	584.54	1101.51
49.37	41.03	838.10	554.08	.718	621.07	621.01	1055.61
68.01	41.26	857.50	565.49	.745	644.69	642.14	1008.31
88.39	44.63	936.50	655.55	.818	668.80	659.82	912.80
100.00	45.66	975.17	697.50	.857	681.50	662.67	818.38

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9366

PERCENT SPAN FROM TIP (L. L.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	5.06	606.34	51.43	.501	603.98	603.98	1317.35
11.37	4.90	609.29	52.97	.504	606.98	606.91	1271.55
30.45	3.71	619.39	40.00	.517	618.09	617.82	1154.74
60.73	4.53	638.10	50.40	.538	636.10	635.45	1121.13
67.43	4.53	638.95	50.45	.542	637.95	638.00	1045.84
88.19	4.02	618.95	43.47	.522	617.83	615.17	962.26
100.00	4.01	623.23	43.59	.525	621.70	521.70	914.69

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	TRAILING EDGE	YAW	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	FACTOR	OMEGA BAR	LOSS PARAMETER	ROTATION ANGLE (DEG)	STAGE PRESS RATIO	STATOR EFFICIENCY
0.00	0.00	0.00	39.17	7.917	3.994	.4577	.1055	.0379	27.240	1.672	1.2332
11.52	11.37	17.52	40.93	9.736	6.402	.4606	.0994	.0346	-1.512	1.674	1.2332
31.04	10.45	17.84	40.12	7.192	3.912	.4430	.0702	.0210	16.878	1.687	1.2124
49.37	9.81	51.94	37.10	3.803	.825	.4153	.0573	.0175	16.517	1.709	1.1945
68.01	6.43	70.95	30.73	1.628	-1.213	.4206	.0638	.0183	15.678	1.711	1.1827
88.39	8.19	70.09	40.40	2.006	-0.863	.5031	.1955	.0516	15.555	1.685	1.1917
100.00	100.00	100.00	41.65	1.033	-2.409	.5198	.1826	.0461	22.713	1.685	1.1913

MOMENTUM AVERAGE STAGE EFFICIENCY = .8085 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7939 (ADIABATIC)
MOMENTUM AVG. STAGE PRESS RATIO = 1.6927
MASS AVERAGE TEMPERATURE RISE = 1.2040

NASA SMALL AXIAL COMPRESSOR TEST 2 FEB. 20, 1974 (COMBINED TRHP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

90 PERCENT DESIGN SPFD. - SCAN NO. 10

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9175

PERCENT SPAN FROM TIP (L. C.)	BETA 3 (DEG)	V3 (M/SEC)	VU3 (M/SEC)	M3	VM3 (M/SEC)	V73 (M/SEC)	U3 (M/SEC)
0.00	44.23	230.67	167.19	.662	171.72	150.84	494.44
11.52	45.92	267.62	174.28	.670	168.79	148.51	488.01
31.04	43.31	247.00	171.06	.690	170.17	149.17	480.13
49.37	41.81	254.23	168.83	.718	190.03	180.89	511.94
68.01	41.26	261.38	172.35	.745	196.50	195.76	507.33
89.39	44.41	285.45	194.01	.810	203.85	201.11	528.22
100.00	45.86	297.73	217.60	.857	207.72	201.98	561.64

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9355

PERCENT SPAN FROM TIP (L. C.)	BETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VM4 (M/SEC)	V74 (M/SEC)	U4 (M/SEC)
0.00	5.06	186.81	16.30	.501	186.09	186.09	401.53
11.37	4.99	185.71	16.15	.504	185.01	184.98	387.57
30.45	3.71	188.79	12.22	.517	188.39	184.31	364.16
50.73	4.53	184.69	15.36	.538	193.88	193.68	341.72
67.43	4.51	186.75	15.38	.542	194.14	194.04	318.77
88.19	4.82	189.66	13.23	.522	188.19	187.50	271.30
100.00	4.81	189.96	13.28	.525	189.49	189.49	278.49

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	TRAILING EDGE	MASS FLOW (PCT)	DELTA PETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	FACTOR 0	OMEGA BAR	LOSS PARAMETER (PCT)	DEVIATION ANGLE (DEG)	STAGE EFFICIENCY	STATOR POLYTROPIC EFFICIENCY
0.00	0.00	0.00	39.17	7.917	3.994	.4577	.1055	.0179	27.240	1.672	1.2312
11.52	11.37	12.57	40.93	9.716	6.402	.4606	.0594	.0344	21.572	1.674	1.2332
31.04	30.45	32.34	40.12	7.192	3.917	.4439	.0762	.0250	16.878	1.687	1.2124
49.37	48.73	51.91	37.10	3.803	.825	.4152	.0573	.0175	16.512	1.709	1.1945
68.01	67.43	70.92	36.73	1.628	-1.213	.4206	.0628	.0183	15.678	1.711	1.1827
88.19	88.19	90.09	60.40	2.006	-1.861	.5031	.1959	.0516	15.554	1.685	1.1917
100.00	100.00	100.00	41.65	1.013	-2.409	.5198	.1826	.0461	22.710	1.685	1.1918

MOMENTUM AVERAGE STAGE EFFICIENCY = .8095 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7919 (ADIABATIC)
MOMENTUM AVG. STAGE PRESS RATIO = 1.6927
MASS AVERAGE TEMPERATURE RISE = 1.2040

NASA SMALL AXIAL COMPRESSOR TEST 2 FEB. 20, 1974 (CONTINUED, IMP. 1)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT HEIGHT FLOW = 3.0453 LBM/SEC 90 PERCENT DESIGN SPEED -- SCAN NO. 11
 PERCENT DESIGN EQUIVALENT FLOW = 84.3475 EQUIVALENT SPEED
 EQUIVALENT FLOW / INLET ANN AREA = 6.0861,735 R.P.M.
 14.1207 LBM/SEC-SC FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0034

PERCENT SPAN FROM TIP (L. E.)	PETA*1 (DEG)	V*1 (FT/SEC)	M*1	BETA1 (DEG)	V1 (FT/SEC)	M1	VH1 (EI/SEC)	VZ1 (FT/SEC)	U1 (FT/SEC)
0.00	72.10	1431.44	1.359	0.00	458.34	0.00	.418	458.34	1419.27
9.91	79.81	1420.14	1.394	0.00	469.59	0.00	.429	469.59	1349.75
26.59	67.54	1333.97	1.221	0.00	509.57	0.00	.466	509.57	1332.80
43.73	64.95	1232.11	1.129	0.00	521.76	0.00	.478	521.76	1116.19
61.74	62.84	1108.67	1.014	0.00	506.17	0.00	.463	506.17	986.39
84.79	60.05	951.33	.869	0.00	475.31	0.00	.434	475.31	874.78
100.00	57.55	853.00	.776	0.00	450.64	0.00	.416	450.64	718.11

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8771

PERCENT SPAN FROM TIP (L. E.)	PLTA*2 (DEG)	V*2 (FT/SEC)	M*2	BETA2 (DEG)	V2 (FT/SEC)	M2	VP2 (EI/SEC)	VZ2 (FT/SEC)	U2 (FT/SEC)
0.00	58.90	1018.72	.858	43.12	720.80	.607	526.22	509.28	1165.00
11.39	55.74	960.06	.811	43.29	752.04	.635	547.41	515.47	1104.42
30.90	52.13	872.33	.743	43.68	737.59	.628	533.41	530.09	1200.42
49.99	45.60	616.75	.702	42.03	769.35	.661	571.46	571.41	1098.68
68.80	37.30	748.19	.648	42.46	806.32	.692	594.35	593.10	998.47
83.07	21.34	690.66	.604	44.85	907.64	.793	643.32	632.75	891.58
100.00	12.80	660.32	.580	46.81	940.86	.826	643.97	622.04	832.28

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	PCY TIP TRAILING FUGI	MACS (PCY)	DELTA BETA* (DEG)	INCIDENCE ANGLE (DEG)	MEAN SUCT SUR (DEG)	U FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PITCH ANGLE	PITCH ANGLE	ROTOR EFF
0.00	0.00	0.00	13.20	8.206	7.799	.6428	.2150	.0423	1.908	1.079	.7390	.7572
9.91	11.39	12.15	15.58	8.966	7.642	.6592	.2181	.0451	.253	1.690	.7492	.7669
26.59	30.90	32.54	15.21	8.668	6.532	.6726	.1651	.0316	2.311	1.681	.8148	.8277
49.99	51.85	51.85	19.35	8.305	5.420	.6630	.0950	.0100	3.988	1.704	.9103	.9168
68.80	70.87	70.87	25.48	8.524	4.667	.6571	.0421	.0091	7.825	1.721	.9613	.9641
83.07	88.87	90.04	38.71	8.731	3.701	.6292	.0020	.0004	11.017	1.801	.5686	.9987
100.00	100.00	100.00	44.75	8.795	2.721	.6923	.0029	.0006	19.848	1.801	.6986	.9987

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8792 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8698 (ADIABATIC)
 MOMENTUM AVERAGE ROTOR PRESS RISE = 1.7131
 MASS AVERAGE TEMPERATURE RISE = 1.1908

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NASA SMALL AXIAL COMPRESSOR TEST 2, FEB. 20, 1974 (COMBINED ICPP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIVALENT HEIGHT FLOW = 1.4013 KG/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 84.1475
 30 PERCENT DESIGN SPEED - SCAN NO. 11
 EQUIVALENT SPEED / INFLY ANN AREA = 68667.735 R.F.P.M.
 EQUIVALENT FLOW / INFLY ANN AREA = 166.5920 KG/SEC-SQ M

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0034

PERCENT SPAN FROM TIP (L. L.)	DELTA1 (DEG)	V*1 (M/SEC)	H*1 (M/SEC)	DELTA1 (DEG)	V1 (M/SEC)	U*1 (M/SEC)	M1	VM1 (M/SEC)	VZ1 (M/SEC)	U1 (M/SEC)
0.00	72.10	454.59	412.59	1.359	139.70	0.00	0.00	137.70	135.20	432.59
9.91	70.81	411.60	411.40	1.304	143.10	0.00	0.00	143.10	137.40	411.49
26.59	67.54	401.59	375.76	1.221	153.32	0.00	0.00	153.32	152.46	375.76
43.23	64.95	375.55	340.21	1.129	159.03	0.00	0.00	159.03	153.52	340.21
61.74	62.84	317.02	300.05	1.014	154.28	0.00	0.00	154.28	154.23	300.05
84.79	60.05	290.15	251.39	0.869	144.87	0.00	0.00	144.87	142.93	251.39
100.00	57.55	250.38	219.88	0.776	139.15	0.00	0.00	139.15	134.46	219.88

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8771

PERCENT SPAN FROM TIP (L. L.)	DELTA*2 (DEG)	V*2 (M/SEC)	H*2 (M/SEC)	DELTA*2 (DEG)	V2 (M/SEC)	U*2 (M/SEC)	M2	VM2 (M/SEC)	VZ*2 (M/SEC)	U*2 (M/SEC)
0.00	58.90	310.51	265.87	0.858	219.73	150.18	0.607	160.39	155.23	416.05
11.19	55.74	297.01	243.49	0.811	229.22	157.17	0.635	175.85	163.21	397.56
30.90	52.33	261.07	210.62	0.743	224.82	155.27	0.620	162.59	161.17	365.89
49.99	45.60	248.94	177.87	0.702	234.50	152.01	0.661	174.17	174.16	334.88
68.80	37.36	228.11	130.42	0.648	245.77	165.72	0.698	181.31	180.78	304.33
88.87	21.34	210.51	70.60	0.604	276.65	195.15	0.793	195.08	192.86	271.75
100.00	12.80	201.26	44.58	0.580	286.78	209.10	0.826	195.27	189.60	251.68

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FRONT TIP	FRM TIP	DELTA (DEG)	INCIDENCE MEAN (DEG)	ANGL SUCT SHR (DEG)	D FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGL (DEG)	POTOP PRESS RATIO	ROTOR POLYTRPIC EFF
0.00	0.00	0.00	11.20	8.266	7.794	0.428	0.2150	0.0423	1.908	1.679	0.7572
9.91	11.39	12.27	15.58	8.956	7.642	0.492	0.2181	0.0451	2.53	1.690	0.7659
26.59	10.90	15.21	15.21	7.668	6.532	0.426	0.1651	0.0136	2.311	1.681	0.8777
43.23	19.09	19.35	19.35	8.305	5.420	0.4630	0.0850	0.0100	3.948	1.709	0.9168
61.74	64.80	70.87	25.48	8.524	4.667	0.4571	0.0421	0.0091	7.825	1.721	0.9641
84.79	88.87	90.04	38.71	8.731	3.701	0.292	0.0020	0.0004	13.016	1.801	0.9986
100.00	100.00	100.00	44.75	8.795	2.721	0.1923	0.0029	0.0006	17.848	1.801	0.9987

MOMENTUM AVERAGE ROTOR EFFICIENCY = 0.8792 (POLYTRPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = 0.8698 (ADIABATIC)
 MOMENTUM AVG. ROTOR PRESS RATIO = 1.7111
 MASS AVERAGE TEMPERATURE RISE = 1.1908

NASA SMALL AXIAL COMPRESSOR TEST 2 FEB 20 1974 (COMBINED TEMP)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 11

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9123

PERCENT SPAN FROM TIP (L. F.)	BETA 3 (DEG)	V3 (FT/SEC)	VU3 (FT/SEC)	M3	VM3 (FT/SEC)	V73 (FT/SEC)	U3 (FT/SEC)
0.00	40.03	709.96	507.35	.669	604.07	537.43	1325.64
11.01	41.03	803.16	577.06	.682	605.31	604.32	1274.12
24.96	40.70	800.96	515.07	.686	612.71	612.70	1185.19
40.65	39.40	829.97	515.50	.718	650.28	649.80	1077.88
67.12	39.08	824.42	538.61	.745	663.27	660.85	1009.10
88.30	41.80	938.71	625.73	.824	699.74	690.35	912.31
100.00	43.06	975.02	665.66	.861	712.43	697.74	857.52

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9450

PERCENT SPAN FROM TIP (L. F.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	5.23	621.20	50.61	.518	613.67	618.67	1316.03
11.30	5.18	634.91	57.35	.530	632.31	632.24	1270.58
30.22	4.01	654.47	45.72	.552	652.87	652.59	1154.48
48.51	3.83	671.76	44.88	.572	670.26	669.57	1120.88
67.28	2.61	669.85	30.73	.572	664.15	668.78	1045.40
88.09	5.15	672.05	58.56	.554	650.26	647.88	961.68
100.00	5.23	677.13	59.91	.558	654.39	654.39	913.77

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	TRAILING EDGE	MASS FLOW (PCF)	DELTA P/F1 (DEG)	INCIDENCE ANGLE (DEG)	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	POLYTROPIC EFF
0.00	0.00	0.00	34.80	3.708	.214	.1072	27.410	1.632	1.2155	.7591
11.01	11.30	12.25	35.91	4.921	1.566	.0992	21.745	1.645	1.2155	.7758
29.96	10.22	12.54	36.05	3.511	.197	.0267	17.197	1.669	1.1959	.8227
48.05	48.51	51.84	34.57	6.65	-2.344	.3604	15.920	1.670	1.1813	.9111
67.62	67.28	70.87	36.45	-6.98	3.150	.0625	11.730	1.687	1.1741	.8672
88.30	88.09	90.04	36.51	-5.94	-3.463	.2129	16.677	1.663	1.1829	.8142
100.00	100.00	100.00	37.83	-1.575	-5.017	.1997	23.931	1.663	1.1829	.7072

MOMENTUM AVERAGE STAGE EFFICIENCY = .8373 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .8252 (ADIABATIC)
MOMENTUM AVG. STAGE PRESS RATIO = 1.6697
MASS AVERAGE TEMPERATURE RISE = 1.1908

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

90 PERCENT DESIGN SPEED - SCAN NO. 11

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9123

PERCENT SPAN FROM TIP (L. E.)	V1 (M/SEC)	VU3 (M/SEC)	M3	VH3 (M/SEC)	V73 (M/SEC)	U3 (M/SEC)
0.00	240.44	154.64	.669	184.12	192.10	404.06
11.01	244.80	160.83	.682	184.50	194.20	398.35
29.96	246.13	157.26	.690	186.75	196.75	381.31
48.65	242.93	157.12	.718	193.20	198.06	334.63
67.62	200.43	164.17	.745	202.17	201.43	307.57
83.30	286.12	190.72	.824	213.28	210.42	278.07
100.00	297.18	202.09	.861	217.15	211.15	261.37

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9450

PERCENT SPAN FROM TIP (L. E.)	V4 (M/SEC)	VU4 (M/SEC)	M4	VH4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	189.16	17.26	.518	188.57	188.57	401.12
11.30	193.52	17.48	.530	192.73	192.71	387.27
30.22	199.48	15.93	.552	193.00	198.91	346.08
48.51	204.75	13.68	.572	204.29	204.08	141.64
67.28	204.17	9.37	.572	203.96	211.94	310.64
88.09	190.00	17.85	.554	198.20	197.47	263.12
100.00	200.29	18.26	.558	199.46	199.46	278.52

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	WASS FLOW (KGS)	DELTA FLOW (KGS)	INCIDENCE ANGLE (DEG)	SUCT SURF ANGLE (DEG)	D FACTOR	CHGGA RAD	LOSS PAIRLETTER (KFC)	DEVIATION ANGLE (KFC)	STAGE PRESS RATIO	STATOR POLYTROPIC EFF
0.00	0.00	34.80	3.708	-2.14	.8202	.0172	.0185	27.418	1.617	1.2114
11.01	11.70	37.91	4.921	1.569	.8130	.0992	.0363	21.265	1.645	1.2155
29.96	30.22	32.54	3.511	.197	.7718	.0267	.0087	17.197	1.669	1.1950
48.65	48.51	34.57	3.645	-2.344	.8604	.0372	.0114	15.826	1.690	1.1813
67.62	67.28	36.45	-4.698	-3.350	.8405	.0225	.0179	13.740	1.687	1.1741
88.09	88.09	30.04	-5.94	-3.469	.8556	.0229	.0561	16.677	1.663	1.1829
100.00	100.00	37.83	-1.575	-5.017	.8729	.0197	.0503	23.931	1.603	1.1829

MOMENTUM AVERAGE STAGE EFFICIENCY = .8373 (POLYTROPIC)
 MOMENTUM AVERAGE STAGE EFFICIENCY = .8252 (ADIABATIC)

MOMENTUM AVG. STATOR PRESS RATIO = 1.6697
 MASS AVERAGE TEMPERATURE RISE = 1.1908

NASA SMALL AXIAL COMPRESSOR TEST 2 FEB. 20, 1974 (COMBINED I.C.P.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT WEIGHT FLOW = 3.16C7 LBM/SEC [EQUIVALENT SPEED - SCAN NO 12] = 68902.068 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 86.4613 EQUIVALENT FLOW / INLET ANN AREA = 34.9758 LOP/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9960

PERCENT SPAN FROM TIP (L. L.)	PETA*1 (DEG)	V*1 (FT/SEC)	M*1	DETA1 (DEG)	V1 (FT/SEC)	M1	VU1 (FT/SEC)	MU1	VMI (FT/SEC)	VZ1 (FT/SEC)	UI (FT/SEC)
0.00	71.59	1490.02	1.166	0.00	472.54	0.00	0.00	0.00	472.54	457.34	1420.06
10.02	70.26	1434.00	1.110	0.00	484.43	0.00	0.00	0.00	484.43	460.44	1349.76
20.81	66.88	1335.53	1.228	0.00	525.90	0.00	0.00	0.00	525.90	516.24	1231.98
43.47	64.22	1238.31	1.136	0.00	538.50	0.00	0.00	0.00	538.50	516.76	1115.10
61.89	67.89	1115.57	0.985	0.00	522.21	0.00	0.00	0.00	522.21	522.03	985.86
84.47	59.29	955.16	0.876	0.00	489.81	0.00	0.00	0.00	489.81	483.23	824.66
100.00	56.81	820.57	0.783	0.00	470.00	0.00	0.00	0.00	470.00	454.02	718.51

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8607

PERCENT SPAN FROM TIP (L. L.)	PETA*2 (DEG)	V*2 (FT/SEC)	M*2	PETA2 (DEG)	V2 (FT/SEC)	M2	VU2 (FT/SEC)	MU2	VM2 (FT/SEC)	VZ2 (FT/SEC)	U2 (FT/SEC)
0.00	59.26	1071.14	0.909	39.11	705.70	0.00	445.16	0.00	547.59	529.95	1365.76
11.57	54.19	1021.59	0.871	38.58	747.69	0.00	466.22	0.00	580.53	571.75	1304.06
30.68	51.64	939.57	0.806	38.59	746.13	0.00	465.41	0.00	583.18	570.55	1232.22
49.37	46.52	860.13	0.743	38.95	781.11	0.00	478.58	0.00	591.80	591.85	1102.59
63.49	33.14	780.53	0.678	40.19	803.13	0.00	518.64	0.00	613.47	612.06	1000.72
88.81	27.79	723.14	0.634	42.55	805.22	0.00	612.31	0.00	666.71	655.76	892.38
100.00	14.79	690.74	0.604	44.53	836.19	0.00	656.55	0.00	667.38	644.70	832.75

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FRONT TIP (DEG)	MACH FLOW (MACH)	DELTA (DEG)	DELTA* (DEG)	MEAN ANGLE (DEG)	INCIDENCE ANGLE (DEG)	SUCT SUR (DEG)	ANGLE (DEG)	LOSS PARAMETER (DEG)	OMEGA* BAR	FACTOR	DEVIATION ANGLE (DEG)	POTIOR PRESS RATIO	ROTOR ADIABATIC EFF	POTIOR POLYTROPIC EFF
0.00	0.00	0.00	12.34	7.57	7.289	7.289	7.289	7.289	0.165	1.074	1.976	2.765	1.616	0.7534	0.7604
10.02	11.57	12.34	15.16	8.43	7.101	7.101	7.101	7.101	0.169	1.172	4.056	1.154	1.649	0.7709	0.7346
26.81	10.68	32.70	15.25	8.065	5.896	5.896	5.896	5.896	0.231	1.119	6.231	1.518	1.659	0.8610	0.752
43.47	44.37	52.10	17.71	7.015	4.716	4.716	4.716	4.716	0.125	0.997	4.716	1.608	1.671	0.833	0.9380
61.89	68.49	70.94	23.95	7.794	3.933	3.933	3.933	3.933	0.259	0.857	4.259	1.548	1.694	0.9751	0.9789
84.47	84.41	90.07	36.51	7.987	2.955	2.955	2.955	2.955	0.3930	0.857	3.930	1.483	1.778	1.0102	1.0177
100.00	100.30	100.00	42.02	8.058	1.984	1.984	1.984	1.984	0.3556	0.8319	3.556	2.1441	1.779	1.0191	1.0176

MOMENTUM AVERAGE ROTOR EFFICIENCY = .9850 (POLYTROPIC) MOMENTUM AVG. ROTOR PRESS. RATIO = 1.6786
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8967 (ADIABATIC) MASS AVERAGE TEMPERATURE RISE = 1.1775

NASA SMALL AXIAL COMPRESSOR TEST 2, FEB. 20, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (INTRIC UNITS)

EQUIVALENT WEIGHT FLOW = 1.4364 KG/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 86.4(13)
 90 PERCENT DESIGN SPEED - SCAN NO. 12
 EQUIVALENT SPEED = 68902.0 RPM R.P.M.
 EQUIVALENT FLOW / INLET ANN AREA = 170.7669 KG/SEC-SQ M

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9960

PERCENT SPAN FROM TIP (I. F.)	BETA*1 (DEG)	V*1 (M/SEC)	M*1	BETA1 (DEG)	V1 (M/SEC)	M1	VU1 (M/SEC)	HI	VH1 (M/SEC)	V71 (M/SEC)	UI (M/SEC)
0.00	71.59	456.17	4.17.03	1.366	0.00	144.03	0.00	.431	174.03	139.40	437.83
10.02	70.26	447.10	4.11.41	1.310	0.00	147.66	0.00	.462	147.62	142.82	411.41
20.81	66.88	408.29	3.75.51	1.278	0.00	160.29	0.00	.482	160.29	157.35	375.51
43.47	66.22	377.44	3.39.88	1.136	0.00	164.13	0.00	.496	164.13	163.40	339.88
61.83	62.09	356.04	3.00.49	1.022	0.00	159.17	0.00	.479	159.17	159.49	300.49
88.87	58.29	292.35	2.51.36	.876	0.00	149.29	0.00	.448	149.29	147.29	251.35
100.00	56.81	261.69	2.19.80	.747	0.00	143.25	0.00	.429	143.25	138.39	219.80

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8607

PERCENT SPAN FROM TIP (I. F.)	BETA*2 (DEG)	V*2 (M/SEC)	M*2	BETA2 (DEG)	V2 (M/SEC)	M2	VU2 (M/SEC)	HI	VH2 (M/SEC)	V72 (M/SEC)	UI (M/SEC)
0.00	59.26	326.49	2.90.60	.709	30.11	245.10	135.69	.599	160.97	161.53	416.28
11.57	56.10	311.10	2.75.37	.871	30.58	227.86	142.11	.637	173.16	174.27	397.48
30.78	51.64	281.41	2.24.58	.806	31.59	277.42	141.86	.640	177.76	178.65	366.44
49.37	46.52	262.17	1.90.27	.743	38.95	231.95	145.95	.657	180.41	180.40	336.07
68.49	44.14	247.91	1.66.96	.678	40.19	244.95	158.00	.698	187.11	187.11	305.02
88.81	42.79	220.41	1.52.36	.634	42.56	279.91	186.63	.794	203.21	190.47	277.00
100.00	44.79	210.39	1.53.70	.608	44.53	285.35	200.12	.825	203.47	196.50	251.82

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING TOOT	FRONT TIP (DEG)	TRAILING TIP (DEG)	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE ANGLE MEAN (DEG)	SUCTI SUR (DEG)	FACTOP	OMEGA* PAR (DEG)	LOTS PARAFLEW (DEG)	DEVIATION (DEG)	ROTOR EFF	ADIAUATIC EFF	POLYTROPIC EFF	ROTC7
0.00	0.00	0.00	0.00	12.34	7.57	7.28	.3976	.1074	.0365	2.765	1.634	.714	.7694	.7694
10.02	11.57	15.10	15.10	8.432	8.045	7.101	.405C	.1772	.0368	1.94	1.642	.7709	.7846	.7846
20.81	17.91	30.68	32.78	15.77	8.896	6.452	.4152	.1119	.0731	1.538	1.659	.8160	.8752	.8752
43.47	46.17	52.10	52.10	17.71	7.015	6.716	.4271	.0597	.0729	1.600	1.671	.8331	.9380	.9380
61.83	68.49	70.97	70.97	21.95	7.795	6.933	.4257	.0259	.0056	1.638	1.676	.8751	.9769	.9769
88.87	88.81	90.07	90.07	36.51	7.987	2.955	.4930	.0098	.0008	14.383	1.778	1.0197	1.0177	1.0177
100.00	100.00	100.00	100.00	42.02	8.058	1.984	.3556	.00319	.0066	21.861	1.779	1.0191	1.0176	1.0176

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8040 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8967 (ADIAUATIC)
 MOMENTUM AVG. ROTOR PRESS RATIO = 1.6786
 MASS AVERAGE TEMPERATURE RISE = 1.1775

NASA SMALL AXIAL COMPRESSOR TEST 2 FEB. 20, 1974 (COMBINED IMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

90 PERCENT DESIGN SPEED - SCAN NO. 12

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8974

PERCENT SPAN FROM TIP (L. E.)	BETA 3 (DEG)	V3 (FT/SEC)	M3	VMS (FT/SEC)	V/3 (FT/SEC)	U3 (FT/SEC)
0.00	39.00	783.57	.671	635.50	623.52	1326.38
11.12	36.51	805.78	.691	649.34	644.26	1274.27
29.74	35.25	816.69	.707	666.94	665.93	1187.07
44.12	35.23	830.75	.724	678.62	678.12	1101.01
57.29	36.65	859.42	.753	689.95	687.42	1011.21
88.15	39.36	943.17	.832	729.25	719.45	913.51
100.00	40.64	977.78	.867	741.96	721.46	858.00

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9100

PERCENT SPAN FROM TIP (L. E.)	BETA 4 (DEG)	V4 (FT/SEC)	M4	VH4 (FT/SEC)	V/4 (FT/SEC)	U4 (FT/SEC)
0.00	3.66	670.23	.567	668.87	668.87	1316.76
11.27	3.06	689.53	.583	687.13	687.05	1271.41
30.07	3.50	702.52	.600	701.21	700.90	1165.72
44.42	3.94	720.17	.619	718.70	717.96	1121.88
57.21	3.06	710.11	.616	714.65	714.26	1046.27
88.17	3.54	707.64	.601	700.96	698.40	961.91
100.00	3.84	707.54	.600	705.95	705.95	914.28

STATOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	PERCENT SPAN TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE ANGLE (DEG)	HEAR SUPT SUR (DEG)	D FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAFF P2-SS RATIO	STAGE TEMPERATURE RATIO	STATOR POLYTROPIC EFF.
0.00	0.00	0.00	32.14	-5.16	-4.439	.3374	.0374	.0134	25.840	1.601	1.1948	.8828
11.12	11.27	17.34	32.65	.137	-3.213	.3322	.0480	.0169	20.227	1.620	1.1948	.8684
29.74	10.07	32.71	31.75	-1.121	-4.644	.3106	.0432	.0142	19.702	1.638	1.1793	.8610
48.12	48.42	52.10	31.30	-2.487	-5.483	.2887	.0216	.0066	15.839	1.661	1.1690	.9289
67.29	57.21	70.94	32.90	-2.807	-5.749	.3178	.0259	.0217	14.743	1.653	1.1673	.7987
88.15	88.17	90.07	35.52	-1.003	-5.887	.4013	.2279	.0602	15.370	1.630	1.1750	.5852
100.00	100.00	100.00	36.80	-3.992	-7.433	.4191	.2166	.0541	22.540	1.631	1.1752	.6413

MOMENTUM AVERAGE STAGE EFFICIENCY = .8623 (POLYTROPIC)

MOMENTUM AVERAGE STAGE EFFICIENCY = .8524 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.6390

MASS AVERAGE TEMPERATURE RISE = 1.1775

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 12

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8974

PERCENT SPAN FROM TIP (L. L.)	BETA 3 (DEG)	V3 (M/SEC)	VU3 (M/SEC)	M3	VM3 (M/SEC)	V73 (M/SEC)	U3 (M/SEC)
0.00	75.80	238.83	159.71	.671	193.70	191.57	404.20
11.12	36.31	245.60	145.43	.691	197.07	197.59	388.40
23.74	35.25	249.93	143.67	.707	203.28	203.74	361.82
48.12	35.23	251.21	140.06	.724	206.84	206.69	335.59
67.29	36.65	247.10	156.44	.753	210.30	209.53	308.22
88.15	39.34	287.48	187.31	.832	222.27	219.29	278.44
100.00	40.54	299.03	194.11	.857	226.11	219.90	261.52

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9300

PERCENT SPAN FROM TIP (L. L.)	BETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VM4 (M/SEC)	V74 (M/SEC)	U4 (M/SEC)
0.00	3.66	204.79	13.04	.567	203.87	213.87	401.35
11.27	3.56	209.87	13.33	.583	209.94	209.41	387.51
40.07	3.50	214.13	13.06	.600	213.71	213.51	364.45
48.42	3.46	219.55	14.63	.619	219.06	213.84	341.95
57.21	3.66	238.27	13.93	.616	217.83	212.71	318.90
88.17	3.94	234.13	14.13	.601	213.65	212.87	281.19
100.00	3.94	235.66	14.44	.606	215.17	215.17	278.67

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	MASS FLOW (MCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUPT (DEG)	LOSS FACTOR	OMEGA BAR	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STATOR POLYTROPIC EFF
0.00	0.00	32.14	-0.516	-4.430	.3374	.0174	25.840	1.601	1.1948
11.12	11.77	32.05	.137	-1.713	.3322	.0409	20.727	1.620	1.1448
23.74	10.07	31.75	-1.323	-0.644	.3106	.0432	16.707	1.639	1.1791
48.12	49.42	31.35	-2.487	-5.483	.2887	.0216	15.839	1.661	1.1690
67.29	67.71	32.96	-2.087	-5.749	.178	.0759	16.763	1.653	1.1663
88.15	88.17	35.52	-3.003	-5.887	.4018	.0279	15.370	1.630	1.1750
100.00	100.00	36.80	-3.992	-7.433	.6101	.0541	22.540	1.631	1.1757

MOMENTUM AVERAGE STAGE EFFICIENCY = .8623 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .8524 (ADIABATIC)
MOMENTUM AVG. STAGE PRESS RATIO = 1.6390
MASS AVERAGE TEMPERATURE RISE = 1.1775

NASA SMALL AXIAL COMPRESSOR TEST 2 FEB. 29, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT WEIGHT FLOW = 3.1679 LBM/SEC 90 PERCENT DESIGN SPEED - SCAL. NO. 13
 PERCENT DESIGN EQUIVALENT FLOW = 86.4932 EQUIVALENT SPEED = 68898.110 R.P.M.
 EQUIVALENT FLOW / INLET ANN AREA = 34.987 LDM/SEC-SC FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9300

PERCENT FROM TIP (L. L.)	BETA*1 (DEG)	V*1 (FT/SEC)	M*1	BETA1	V1 (FT/SEC)	M1	V*1 (FT/SEC)	M1	V*1 (FT/SEC)	M1	V*1 (FT/SEC)	M1
0.00	71.59	1496.60	1419.07	1.366	0.00	472.75	0.00	472.75	0.471	472.75	0.471	1419.07
10.07	70.25	1434.90	1349.62	1.310	0.00	484.65	0.00	484.65	0.443	484.65	0.443	1349.62
26.82	66.87	1339.51	1231.86	1.278	0.00	526.12	0.00	526.12	0.482	526.12	0.482	1231.86
43.49	64.21	1238.21	1114.87	1.136	0.00	538.73	0.00	538.73	0.494	538.73	0.494	1114.87
61.94	67.07	1115.80	985.47	1.022	0.00	522.42	0.00	522.42	0.479	522.42	0.479	985.49
84.88	59.28	959.16	824.53	0.876	0.00	490.04	0.00	490.04	0.468	490.04	0.468	824.53
100.00	56.00	857.05	718.46	0.783	0.00	470.20	0.00	470.20	0.429	470.20	0.429	718.46

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8495

PERCENT FROM TIP (L. L.)	BETA*2 (DEG)	V*2 (FT/SEC)	M*2	BETA2	V2 (FT/SEC)	M2	V*2 (FT/SEC)	M2	V*2 (FT/SEC)	M2	V*2 (FT/SEC)	M2
0.00	59.03	1086.70	931.80	0.924	37.81	707.76	433.88	0.702	559.17	0.591	541.16	1365.68
11.18	56.03	1016.74	849.54	0.866	37.41	744.08	454.42	0.709	594.24	0.594	581.26	1303.95
10.82	51.78	944.44	745.88	0.916	37.79	743.37	455.51	0.639	507.45	0.513	581.78	1201.41
40.54	45.70	878.51	628.51	0.760	37.65	774.61	473.14	0.711	611.37	0.613	613.78	1101.65
63.46	39.29	782.22	498.37	0.606	38.63	801.32	512.41	0.692	614.69	0.614	614.69	1000.78
84.89	22.53	738.01	281.07	0.649	41.75	914.39	608.84	0.803	682.22	0.711	671.01	891.91
100.00	14.79	706.24	189.25	0.623	43.69	944.47	652.44	0.833	682.90	0.659	659.89	832.70

ROTOR PERFORMANCE DATA

PERCENT LEADING EDGE	SPAN FROM TIP (DEG)	MACS FLOW (PPT)	DELTA BETA* (DEG)	INCIDENCE ANGLE (DEG)	SUCT SUR (DEG)	FACTOR	OMEGA* (RPM)	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	12.55	7.749	7.281	0.843	0.1784	0.3349	2.042	1.605	0.7607	0.7760
10.03	11.58	12.71	15.22	9.423	7.097	0.320	0.1689	0.051	0.084	1.628	0.7860	0.8002
26.82	30.82	12.71	15.10	9.035	5.886	0.404	0.1080	0.222	1.776	1.643	0.8882	0.8771
43.49	45.54	52.12	19.51	7.603	4.704	0.4061	0.0414	0.089	1.870	1.679	0.9534	0.9567
61.94	63.46	71.02	23.79	7.781	3.917	0.722	0.0262	0.056	8.472	1.683	0.9746	0.9764
84.88	84.89	10.04	16.74	7.973	2.840	0.758	0.0447	0.097	14.264	1.786	1.0318	1.0293
100.00	100.00	100.00	42.01	8.044	1.970	0.360	0.0537	0.101	21.838	1.784	1.0317	1.0293

MOMENTUM AVERAGE ROTOR EFFICIENCY = 0.9113 (POLYTROPIC) MOMENTUM AVG. ROTOR PRESS RATIO = 1.6726
 MOMENTUM AVERAGE ROTOR EFFICIENCY = 0.9047 (ADIABATIC) MASS AVERAGE TEMPERATURE RISE = 1.1747

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NASA SMALL AXIAL COMPRESSOR TEST 2-EE-1-20-1974 (COMBINED IMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

90 PERCENT DESIGN SPEED - SCAN NO. 11

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8656

PERCENT SPAN FROM TIP (L. F.)	BETA 3 (DEG)	V3 (FT/SEC)	VU3 (FT/SEC)	M3	VW3 (FT/SEC)	VZ3 (FT/SEC)	U3 (FT/SEC)
0.00	34.50	768.74	446.76	.677	450.06	642.02	1326.30
11.17	35.10	808.97	465.04	.696	461.76	650.67	1274.17
29.85	34.31	817.39	461.25	.709	474.80	676.71	1196.51
48.25	34.05	846.09	471.72	.719	481.05	700.51	1100.11
67.50	36.03	817.32	507.19	.756	607.40	694.86	1011.04
88.76	30.58	953.93	594.87	.843	747.77	735.75	912.94
100.00	39.86	987.98	632.99	.877	753.18	757.23	857.95

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9197

PERCENT SPAN FROM TIP (L. F.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VW4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	4.37	689.68	52.47	.586	607.58	677.58	1316.68
11.17	4.33	709.02	53.57	.593	707.00	706.91	1271.39
29.85	3.67	720.87	66.16	.618	719.39	719.08	1156.01
48.25	4.00	743.27	51.91	.641	741.42	749.55	1121.89
67.50	7.66	735.56	66.90	.635	734.06	733.55	1047.36
88.76	4.01	723.29	50.54	.621	721.52	718.89	981.96
100.00	4.01	748.52	50.94	.626	728.74	726.74	914.72

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP	TRAILING EDGE	MASS FLOW (LBS)	DELTA (DEG)	INCIDENCE ANGLE (DEG)	MEAN SUCTION SURFACE ANGLE (DEG)	LOSS PARAMETER (DEG)	DEVIATION ANGLE (DEG)	STAGE EFFICIENCY	STATOR POLYTROPIC EFFICIENCY
0.00	0.00	0.00	30.14	-1.819	-5.791	.0154	26.340	1.687	.8482
11.17	11.75	12.39	39.77	-1.075	-4.425	.0169	21.102	1.608	.8147
29.85	30.03	32.79	30.60	-2.225	-5.43	.020	13.991	1.624	.8444
48.25	48.40	42.12	30.04	-3.677	-6.672	.021	13.008	1.652	.8131
67.50	67.17	71.02	32.17	-3.500	-6.387	.021	14.744	1.660	.7557
88.76	88.14	100.00	34.47	-5.813	-8.090	.021	15.548	1.617	.5220
100.00	100.00	100.00	35.85	-6.774	-8.215	.021	22.710	1.38	.5865

MOMENTUM AVERAGE STAGE EFFICIENCY = .8610 (POLYTROPIC) MOMENTUM AVG. STAGE PRESS. RATIO = 1.6265
 MOMENTUM AVERAGE STAGE EFFICIENCY = .8520 (ADIABATIC) MASS AVERAGE TEMPERATURE RISE = 1.1747

NASA SMALL AXIAL COMPRESSOR TEST 2 FEB. 20, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

90 PERCENT DESIGN SPEED - SCAN NO. 11

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .0056

PERCENT SPAN FROM TIP (L. F.)	BETA 3 (DEG)	V1 (M/SEC)	VU3 (M/SEC)	M3	VW3 (M/SEC)	V73 (M/SEC)	U3 (M/SEC)
0.00	34.50	240.42	136.17	.67	194.14	115.96	404.26
11.13	34.10	246.53	141.74	.696	201.71	211.17	394.17
29.05	34.15	243.14	140.59	.709	205.68	214.06	341.65
48.26	34.05	257.99	146.39	.730	213.68	213.22	315.34
67.30	34.03	272.04	154.59	.756	222.57	211.79	308.18
89.26	34.54	290.76	181.39	.843	227.31	224.26	278.26
100.00	39.46	301.05	197.94	.877	231.09	274.71	251.50

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .0197

PERCENT SPAN FROM TIP (L. F.)	BETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VW4 (M/SEC)	V24 (M/SEC)	U4 (M/SEC)
0.00	4.36	210.18	15.99	.586	203.57	209.47	404.33
11.25	4.33	216.11	16.31	.603	215.49	215.47	387.52
30.03	3.67	219.72	14.07	.618	219.27	219.17	364.48
48.40	4.00	276.54	15.82	.641	225.98	225.75	341.95
67.17	3.66	224.70	14.31	.635	223.74	223.62	318.93
88.14	4.01	220.44	15.40	.621	219.92	219.12	293.21
100.00	4.01	222.05	15.51	.626	221.51	221.51	278.66

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (L. F.)	TRAILING EDGE	FLCH (%)	MACS	CILTA (DEG)	UETA (DEG)	TRAILING MEAN (DEG)	INFLUENCE MEAN (DEG)	SUCT SUR (DEG)	ANGLL (DEG)	D FACTOR	OHCGA (DEG)	UAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PERF5 PATTN	STAGE PERF6 PATTN	STATOR POLYTROPIC EFF
0.00	0.00		0.00	30.14		-1.419	-5.741			.3076	.0420	.0154	26.540	1.587	1.1890	.8402	
11.13	11.25		12.39	30.77		-1.075	-4.425			.3001	.0461	.0160	20.902	1.609	1.1898	.8347	
29.05	30.03		37.73	30.68		-2.275	-5.543			.2832	.0420	.0130	16.891	1.624	1.1753	.8444	
48.26	48.40		52.12	30.04		-3.672	-6.672			.2711	.0426	.0163	16.008	1.652	1.1670	.8131	
67.30	67.17		71.02	32.17		-3.503	-6.363			.2947	.0421	.0235	14.764	1.640	1.1643	.7667	
88.26	88.14		90.04	34.57		-3.813	-6.690			.3849	.2513	.0663	15.538	1.617	1.1740	.5220	
100.00	100.00		100.00	35.85		-4.774	-8.215			.4018	.2371	.0598	22.710	1.610	1.1741	.5665	

MOMENTUM AVERAGE STAGE EFFICIENCY = .8518 (POLYTROPIC)
 MOMENTUM AVERAGE STAGE EFFICIENCY = .8520 (ADIABATIC)
 MOMENTUM AVG. STAGE PRESS. RATIO = 1.6765
 MASS AVERAGE TEMPERATURE RISE = 1.1747

NASA SMALL AXIAL COMPRESSOR TEST 2 FEB. 20, 1974 (CONDITIO TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIVALENT HEIGHT FLOW = 1.5019 KG/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 95.2173
 100 PERCENT DESIGN SPEED - SCAR NO 14
 EQUIVALENT SPEED = 76,711.188 R.P.M.
 EQUIVALENT FLOW / INLET ANN AREA = 189.0607 KG/SEC-50 H

INLET VELOCITY DIAGRAM DATA
 CALCULATED AEROYNAMIC BLOCKAGE = .9804

PERCENT SPAN FROM TIP (L. F.)	UETA*1 (DEG)	V*1 (M/SEC)	U*1 (M/SEC)	M*1	UETA1 (DEG)	V1 (M/SEC)	U1 (M/SEC)	M1	U*2 (M/SEC)	V*2 (M/SEC)	U*2 (M/SEC)	M*2	UETA2 (DEG)	V2 (M/SEC)	U2 (M/SEC)	M2
0.00	71.22	508.74	481.65	1.531	0.00	153.73	151.79	.493	0.00	0.00	151.79	0.493	0.00	151.79	170.42	0.500
9.89	69.87	487.13	458.12	1.471	0.00	167.93	162.44	.506	0.00	0.00	162.44	.506	0.00	162.44	185.78	0.512
20.65	66.43	456.31	418.24	1.382	0.00	182.47	179.12	.531	0.00	0.00	179.12	.531	0.00	179.12	193.61	0.524
43.54	63.70	421.71	378.05	1.279	0.00	196.87	186.27	.557	0.00	0.00	186.27	.557	0.00	186.27	208.71	0.537
62.23	61.55	379.39	333.57	1.148	0.00	200.75	180.69	.587	0.00	0.00	180.69	.587	0.00	180.69	212.34	0.545
85.15	58.81	321.20	279.05	.983	0.00	178.93	165.66	.593	0.00	0.00	165.66	.593	0.00	165.66	208.71	0.545
100.00	56.44	292.45	243.70	.880	0.00	161.67	156.18	.686	0.00	0.00	156.18	.686	0.00	156.18	208.71	0.545

FIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8446

PERCENT SPAN FROM TIP (L. F.)	BETA*2 (DEG)	V*2 (M/SEC)	U*2 (M/SEC)	M*2	BETA*2 (DEG)	V2 (M/SEC)	U2 (M/SEC)	M2	BETA*2 (DEG)	V2 (M/SEC)	U2 (M/SEC)	M2
0.00	59.34	345.47	297.19	.941	47.11	242.08	166.05	.660	47.11	242.08	166.05	.660
11.40	59.76	325.16	268.86	.902	43.46	257.44	173.78	.705	43.46	257.44	173.78	.705
30.31	51.52	302.48	236.78	.817	42.17	246.74	171.06	.705	42.17	246.74	171.06	.705
48.11	45.50	276.23	197.82	.771	42.53	267.63	177.84	.770	42.53	267.63	177.84	.770
68.27	37.34	246.58	151.30	.702	43.57	273.64	188.42	.770	43.57	273.64	188.42	.770
88.66	21.40	231.86	84.59	.650	45.33	307.07	218.17	.875	45.33	307.07	218.17	.875
100.00	12.62	221.40	40.36	.634	47.29	318.55	234.09	.913	47.29	318.55	234.09	.913

ROTOR PERFORMANCE DATA

PERCENT LEADING EDGE	SPAN FRM TIP TRAILING EDGE	MAS FLCH (PCT)	DELTA UETA* (DEG)	INCIDENCE MEAN (DEG)	SUCT SUR (DEG)	ANGL F	D FACTOR	ORFCA* BAR	LOSS PARAMETER	DEVIATION ANGL (DEG)	POTOP PRESS RATIO	POTOP ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	11.80	7.382	6.914	4.452	.2149	.0417	.0417	2.353	1.030	.7508	.7719
9.89	11.40	12.78	15.11	0.016	6.634	4.547	.2035	.0426	.0426	2.221	1.928	.7762	.7958
26.65	30.31	32.67	14.91	7.563	5.425	4.626	.1387	.0287	.0287	1.291	.928	.817	.8547
43.54	49.11	57.21	19.20	7.097	4.195	4.723	.0847	.0180	.0180	3.465	1.950	.9158	.9234
62.23	68.27	71.28	24.21	7.290	3.415	4.761	.0531	.0115	.0115	7.372	1.954	.9537	.9579
85.15	88.66	90.24	37.41	7.541	2.498	4.434	-.0005	-.0001	-.0001	12.771	2.056	1.0001	1.0003
100.00	100.00	100.00	43.82	7.687	1.611	4.100	-.0017	-.0004	-.0004	19.868	2.055	1.0003	1.0003

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8953 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8840 (ADIABATIC)
 MOMENTUM AVG. ROTOP PRESS RATIO = 1.9532
 MASS AVERAGE TEMPERATURE RISE = 1.2380

NASA SMALL AXIAL COMPRESSOR TEST 2 FEB. 20, 1974 (COMBINED I.F.P.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

100 PERCENT DESIGN SPEED - SCAN NO. 14

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8868

PERCENT SPAN FROM TIP (L. F.)	BETA 3 (DEG)	V3 (FT/SEC)	V13 (FT/SEC)	M3	VH3 (FT/SEC)	VZ3 (FT/SEC)	U3 (FT/SEC)
0.00	34.99	872.92	560.35	.732	668.82	661.47	1475.98
10.96	40.29	902.34	581.57	.759	688.17	697.10	1418.86
29.42	39.10	904.69	570.51	.749	702.06	702.05	1322.63
47.95	36.77	927.58	583.17	.796	721.21	720.68	1226.08
67.25	40.15	947.66	612.54	.820	725.88	723.23	1125.46
88.19	42.37	1037.72	700.64	.907	718.20	757.88	1016.34
100.00	43.56	1079.16	745.00	.948	780.74	759.17	944.77

EXII VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9218

PERCENT SPAN FROM TIP (L. F.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VH4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	3.84	681.12	45.61	.559	679.79	579.79	1465.27
11.28	3.84	700.47	46.91	.576	693.90	698.81	1414.77
30.13	3.84	721.19	48.55	.600	719.56	719.25	1330.33
48.48	4.17	742.80	54.01	.623	740.83	740.07	1248.16
67.24	2.61	728.65	31.44	.613	727.88	727.48	1174.10
88.14	3.81	702.52	46.90	.587	700.96	698.60	1070.53
100.00	3.84	706.19	47.30	.591	704.81	704.81	1017.40

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (L. F.)	FRONT TRAILING EDGE	MASS FLOW (LBS)	DELTA (DEG)	INCIDENCE ANGLE (DEG)	SUCT SUR (DEG)	D FACTOR	OMEGA CAR	LOSS PARAMETER (L/G)	DEVIATION ANGLE (DEG)	STAGE PRESS. RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	36.15	1.659	-2.51	.4740	.1108	.0198	26.020	1.428	1.2653
10.96	1.78	12.28	36.45	4.123	-2.65	.4304	.1277	.0443	20.408	1.850	1.2653
29.42	30.13	32.67	35.26	2.545	-2.85	.3911	.0750	.0246	17.044	1.881	1.2653
47.95	68.48	52.21	34.80	1.268	-1.731	.3707	.0567	.0173	16.168	1.912	1.2291
67.25	67.24	71.28	37.52	2.622	-2.241	.4018	.0382	.0251	13.732	1.493	1.2208
88.19	88.14	90.24	38.54	-0.005	-2.886	.4823	.2403	.0634	15.159	1.852	1.2281
100.00	100.00	103.00	39.82	-0.974	-4.415	.4986	.2262	.0571	22.540	1.851	1.2280

MOMENTUM AVERAGE STAGE EFFICIENCY = .8407 (POLYTROPIC)
 MOMENTUM AVERAGE STAGE EFFICIENCY = .8260 (ADIABATIC)
 MOMENTUM AVG. STAGE PRESS. RATIO = 1.8762
 MASS AVERAGE TEMPERATURE RISE = 1.2300

NASA SMALL AXIAL COMPRESSOR TEST 2 FEB. 20, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

100 PERCENT UFSION SPEED - SCAN NO 14

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8860

PERCENT SPAN FROM TIP (L. E.)	BETA 3 (DEG)	V1 (M/SEC)	VU1 (M/SEC)	M3	VM1 (M/SEC)	V73 (M/SEC)	U3 (M/SEC)
0.00	39.99	266.06	170.98	.732	203.06	231.62	449.08
10.96	40.29	275.05	177.86	.759	209.80	239.45	432.47
29.42	39.10	275.75	173.92	.769	213.97	213.98	403.14
47.95	38.97	282.73	177.80	.796	219.82	219.66	373.71
67.25	40.15	289.45	180.64	.820	221.25	220.46	361.04
88.19	42.37	316.91	213.56	.907	234.15	231.00	309.78
100.00	43.56	320.93	227.97	.948	237.97	231.40	291.01

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9218

PERCENT SPAN FROM TIP (L. E.)	BETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VM4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	3.86	207.67	13.91	.550	207.20	207.20	446.62
11.28	3.84	213.50	14.30	.576	213.02	213.00	431.22
30.13	3.84	219.82	14.74	.600	219.32	219.23	405.49
48.48	4.17	226.41	16.46	.623	225.81	225.57	390.44
67.24	2.63	222.09	10.13	.613	221.86	221.74	374.82
80.14	3.03	216.13	14.23	.587	213.65	212.87	326.30
100.00	3.04	215.31	14.42	.591	214.83	214.83	310.10

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	MASS FLOW (PCT)	DELTA ANGLE (DEG)	INCIDENCE ANGLE (DEG)	SUCT SUR (DEG)	FACTOP	OMEGA PAR	LOSS PARAM	DEVIATION ANGLE (NEG)	STAGE PFSST RATIO	STAGE PFMF RATIO	STATOR POLYTROPIC EFF
0.00	0.00	36.15	3.669	-2.51	4.140	.1100	.0198	26.020	1.828	1.2653	.7647
10.96	11.78	36.45	4.123	-2.51	4.104	.1277	.0443	20.408	1.850	1.2653	.7160
29.42	10.13	35.26	2.545	-7.85	3.911	.0750	.0246	17.046	1.881	1.2418	.9316
47.95	48.48	34.80	1.268	-1.731	3.707	.0567	.0173	16.168	1.912	1.2291	.8741
67.25	67.24	37.52	.622	-2.241	4.018	.0882	.0253	13.732	1.891	1.2208	.8101
88.19	88.14	38.54	-0.005	-2.886	4.623	.2403	.0634	15.359	1.852	1.2281	.6511
100.00	100.00	39.82	-0.974	-0.415	4.986	.2262	.0571	22.540	1.851	1.2200	.6940

MOMENTUM AVERAGE STAGE EFFICIENCY = .9407 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .8200 (ADIABATIC)
MOMENTUM AVG. STAGE PFSST RATIO = 1.8762
MASS AVERAGE TEMPERATURE RISE = 1.2380

NASA SMALL AXIAL COMPRESSOR TEST 2 FEB. 20, 1974 (COMBINED IMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT WEIGHT FLOW = 2.4176 LBM/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 66.0027
 70 PERCENT DESIGN SPEED - SCAN NO. 16
 EQUIVALENT SPEED
 EQUIVALENT FLOW / INLET ANN AREA = 51491.600 R.F.W.
 26.7814 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0025

PERCENT SPAN FROM TIP (L. E.)	BETA*1 (DEG)	V*1 (FT/SEC)	M*1	BETA1 (DEG)	V1 (FT/SEC)	M*1	VU1 (FT/SEC)	P1	VM1 (FT/SEC)	V71 (FT/SEC)	U1 (FT/SEC)
0.00	72.61	1155.25	1.045	0.00	345.2	0.00	0.00	.312	345.25	334.14	1102.45
9.59	71.40	1102.05	1.001	0.00	353.55	0.00	0.00	.320	353.55	341.79	1050.20
25.45	68.41	1036.61	.940	0.00	381.47	0.00	0.00	.346	381.47	374.46	961.86
41.23	66.04	968.68	.872	0.00	390.16	0.00	0.00	.354	390.16	384.91	877.88
59.52	64.01	885.83	.785	0.00	379.30	0.00	0.00	.344	379.30	379.26	778.29
81.54	61.09	736.61	.670	0.00	357.56	0.00	0.00	.324	357.56	352.76	647.83
100.00	59.71	655.92	.593	0.00	345.08	0.00	0.00	.312	345.08	333.35	557.81

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8533

PERCENT SPAN FROM TIP (L. E.)	DELTA*2 (DEG)	V*2 (FT/SEC)	M*2	DELTA2 (DEG)	V2 (FT/SEC)	M*2	VU2 (FT/SEC)	M*2	VM*2 (FT/SEC)	V72 (FT/SEC)	U2 (FT/SEC)
0.00	59.98	805.09	.762	31.98	531.55	0.00	293.98	.464	462.86	428.60	1060.30
11.11	55.91	842.37	.746	37.71	567.95	0.00	307.55	.447	477.49	467.04	1013.52
21.94	51.63	778.07	.683	33.09	555.82	0.00	309.42	.488	461.39	428.52	936.43
48.00	47.26	718.99	.633	34.16	509.68	0.00	311.13	.519	467.91	487.90	859.21
67.73	38.35	610.43	.584	35.56	630.67	0.00	370.27	.563	517.41	517.41	780.03
88.51	23.98	524.78	.555	37.67	720.57	0.00	440.31	.641	570.39	561.02	694.04
100.00	16.90	596.48	.532	39.63	741.53	0.00	472.98	.661	571.10	551.69	646.50

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FRCH TRAILING EDGE	FRCH FLOW (PCT)	DELTA (DEG)	DELTA* (DEG)	MEAN ANGLE (DEG)	SUCT SUR (DEG)	INCIDENCE ANGLE (DEG)	OMEGA* PAR FACTOR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	POINP PRESS RATIO	POINP ADIABATIC EFF	POICP POLYTROPIC EFF
0.00	0.00	0.00	12.63	8.774	8.306	8.306	3308	.1514	.0288	2.986	1.286	.7449	.7538
9.59	11.51	11.50	15.48	9.490	8.186	8.186	3316	.1340	.0772	.926	1.306	.7884	.7982
25.45	29.96	31.27	14.78	9.339	7.277	7.277	3497	.0932	.1084	3.277	1.309	.8584	.8640
41.23	48.00	44.83	18.77	9.128	6.351	6.351	3562	.0375	.0077	4.994	1.319	.5489	.9509
59.52	67.73	68.95	25.66	9.453	5.689	5.689	3533	-.0041	-.0009	7.946	1.365	1.0046	1.0046
81.54	89.51	99.21	37.11	9.629	4.674	4.674	2934	-.0930	-.0199	15.147	1.420	1.0740	1.0705
100.00	100.00	100.00	41.31	9.505	3.431	3.431	2405	-.1156	-.0215	23.952	1.420	1.0740	1.0704

MOMENTUM AVERAGE ROTOR EFFICIENCY = .9210 (POLYTROPIC) MOMENTUM AVG. ROTOR PRESS. RATIO = 1.3408
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .9176 (ADIABATIC) MASS AVERAGE TEMPERATURE RISE = 1.0951

NASA SMALL AXIAL COMPRESSOR IFSI 2 FED. 20, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIVALENT FIGHT FLOW = 1.0965 KG/SEC 70 PERCENT DESIGN SPEED - SCAN NO 16
 PERCENT DESIGN EQUIVALENT FLOW = 66.00E7 EQUIVALENT SPEED
 EQUIVALENT FLOW / INLET ANN AREA = 53491.600 P.F.P.
 = 130.3676 KG/SEC-50 M

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = 1.0025

PERCENT SPAN FROM TIP (L. E.)	BETA*1 (DEG)	V*1 (M/SEC)	WU*1 (M/SEC)	H*1	BETA1 (DEG)	VI (M/SEC)	VUI (M/SEC)	H1	VM*1 (M/SEC)	V71 (M/SEC)	U1 (M/SEC)
0.00	72.11	52.12	336.03	1.045	0.00	105.23	0.00	.112	105.23	101.84	336.03
9.59	71.40	51.71	330.10	1.001	0.00	107.70	0.00	.120	107.70	104.17	320.10
25.45	68.41	315.96	231.79	.940	0.00	116.27	0.00	.166	116.27	114.14	293.79
41.23	66.04	292.81	267.58	.872	0.00	118.92	0.00	.154	118.92	118.54	267.58
59.52	64.01	263.91	237.22	.785	0.00	115.64	0.00	.164	115.64	115.60	237.22
83.54	61.09	225.41	197.34	.670	0.00	104.98	0.00	.124	104.98	107.52	197.34
100.00	58.26	105.92	170.02	.593	0.00	105.18	0.00	.112	105.14	101.61	170.02

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9531

PERCENT SPAN FROM TIP (L. E.)	BETA*2 (DEG)	V*2 (M/SEC)	WU*2 (M/SEC)	H*2	BETA2 (DEG)	V2 (M/SEC)	VU*2 (M/SEC)	H2	VM*2 (M/SEC)	V72 (M/SEC)	U2 (M/SEC)
0.00	59.90	260.77	213.57	.772	33.58	162.02	89.61	.456	136.08	130.14	323.18
11.31	55.93	259.77	215.18	.746	32.79	173.11	93.74	.497	145.51	142.15	309.92
29.94	51.63	237.16	190.05	.683	33.89	169.41	94.46	.480	143.41	139.76	285.42
48.60	47.26	210.15	160.96	.613	34.16	179.73	100.91	.519	143.72	149.71	261.89
67.73	38.35	201.30	124.00	.584	35.56	194.06	112.86	.563	157.87	157.60	237.75
86.51	23.98	190.24	77.34	.555	37.67	219.63	134.21	.641	173.86	171.00	211.14
100.00	16.90	181.93	52.89	.532	39.63	226.02	144.16	.661	174.07	168.16	197.05

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	SPAN FROM 4 TIP TRAILING EDGE	MASS FLOW (MG)	DELTA DELTA* (DEG)	INCIDENCE ANGLE (DEG)	PLAN SUCT SUR (DEG)	FACTOR	OMEGA* PAR (RPM)	LOSS PARAMETER (DEG)	DEVIATION ANGLE (DEG)	POTOR P.T.55 RATIO	PC12R ADIABATIC EFF	POTCP POLYTROPIC EFF
0.00	0.00	0.00	12.63	8.774	8.305	.3308	.1514	.0298	2.986	1.286	.7409	.7538
9.59	11.11	11.86	15.48	9.490	8.186	.3316	.1340	.0272	3.920	1.704	.7884	.7962
25.45	28.94	31.24	14.78	9.139	7.277	.3493	.0332	.0194	3.277	1.109	.9588	.8649
41.23	48.60	49.83	18.77	9.128	6.351	.3562	.0375	.0077	4.394	1.318	.6489	.9509
59.52	67.73	68.95	25.66	9.453	5.689	.3533	-.0041	-.0009	7.946	1.166	1.0041	1.0044
83.54	86.51	89.73	37.11	9.629	4.634	.2934	-.0930	-.0199	15.147	1.420	1.0740	1.0745
100.00	100.00	100.00	41.36	9.505	3.431	.2405	-.1156	-.0235	23.952	1.620	1.0740	1.0740

MOMENTUM AVERAGE ROTOR EFFICIENCY = .9210 (POLYTROPIC) MOMENTUM AVG. ROTOR PRESS RATIO = 1.3408
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .9176 (ADIABATIC) MASS AVERAGE TEMPERATURE RISE = 1.0951

NASA SMALL AXIAL COMPRESSOR TEST 2 FEB. 20, 1974 (CONTINUED IFMP.1)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 16

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8700

PERCENT SPAN FROM TIP (L. E.)	BETA 3 (DEG)	V3 (FT/SEC)	VU3 (FT/SEC)	M3	VM3 (FT/SEC)	V73 (FT/SEC)	U3 (FT/SEC)
0.00	10.04	604.63	302.71	.531	523.40	517.55	1029.73
10.81	30.27	624.41	314.75	.549	539.28	517.31	990.33
20.81	30.13	625.27	313.86	.552	540.79	540.66	924.66
47.07	10.27	657.41	313.38	.583	567.78	557.36	858.56
66.11	11.30	603.09	306.24	.616	588.43	546.28	708.61
87.82	34.34	762.50	430.17	.682	629.58	621.12	710.40
100.00	35.53	790.96	459.09	.709	642.99	625.22	666.10

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9376

PERCENT SPAN FROM TIP (L. E.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	4.19	532.86	38.93	.665	531.44	531.43	1022.26
11.26	4.13	518.01	39.47	.679	546.59	546.52	947.06
30.02	2.82	554.96	25.34	.687	554.38	554.14	928.45
48.46	2.45	596.86	25.46	.524	574.31	533.70	870.85
67.23	4.00	629.01	43.83	.556	627.48	627.13	812.19
89.04	5.38	634.28	59.49	.559	631.48	629.10	747.18
100.00	5.41	638.60	60.23	.563	635.75	635.75	702.79

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	TRAILING EDGE	MASS FLOW (PCF)	DILTA PETA (DEG)	INCIDENCE ANGLE (DEG)	MEAN SUCT SUR (DEG)	D FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STATOR PRESS RATIO	STATOR TEMP RATIO	POLYTROPIC EFF
0.00	0.00	0.00	25.85	-6.275	-10.197	.2773	.0286	.0103	26.370	1.280	1.0999	.8855
10.83	11.26	11.16	26.11	-5.894	-9.257	.2756	.0576	.0199	20.701	1.290	1.0999	.7771
28.49	30.02	31.24	27.51	-6.401	-9.747	.2613	.0555	.0182	15.828	1.296	1.0930	.7681
67.07	48.46	49.81	27.82	-7.155	-10.366	.2356	.0387	.0118	14.432	1.327	1.0911	.8135
66.11	67.23	68.93	27.90	-7.509	-10.398	.2217	.0340	.0097	15.098	1.355	1.0925	.8344
87.82	88.04	89.21	28.96	-7.939	-10.843	.2099	.0676	.0442	16.912	1.356	1.0979	.5358
100.00	100.00	100.00	30.11	-9.106	-12.547	.3107	.1574	.0396	24.112	1.357	1.0980	.6171

MOMENTUM AVERAGE STAGE EFFICIENCY = .8668 (POLYTROPIC)

MOMENTUM AVERAGE STAGE EFFICIENCY = .8822 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.3262

MASS AVERAGE TEMPERATURE RISE = 1.0991

ORIGINAL PAGE IS OF POOR QUALITY

NASA SMALL AXIAL COMPRESSOR TEST 2 FEB. 20, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

70 PERCENT DESIGN SPEED - SCAN NO. 16

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8700

PERCENT SPAN FROM TIP (L. L.)	BETA 1 (DEG)	V3 (M/SEC)	VU3 (M/SEC)	H3	VM3 (M/SEC)	V73 (M/SEC)	U3 (M/SEC)
0.00	10.04	184.79	92.27	.531	159.53	157.70	313.86
10.87	30.27	150.12	95.94	.549	164.37	166.10	301.95
24.87	30.17	180.58	95.66	.552	164.83	166.83	281.84
47.07	30.27	201.18	101.00	.583	173.06	172.93	261.69
66.31	31.90	211.25	111.63	.616	179.35	178.70	240.37
87.82	34.34	232.41	131.12	.682	191.89	189.32	216.53
100.00	35.53	240.81	139.97	.709	195.98	190.57	203.03

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9176

PERCENT SPAN FROM TIP (L. L.)	BETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	H4	VM4 (M/SEC)	V74 (M/SEC)	U4 (M/SEC)
0.00	4.19	162.42	11.87	.465	161.98	161.98	311.58
11.26	4.13	167.03	12.03	.479	166.00	166.68	300.86
30.02	2.62	167.15	7.72	.487	168.90	168.90	292.99
48.45	2.45	181.31	7.76	.524	181.15	180.96	265.54
67.23	4.00	191.72	13.16	.556	191.25	191.15	247.55
88.04	5.38	193.33	18.13	.559	192.48	191.77	227.74
100.00	5.41	194.65	18.36	.563	193.78	193.78	216.34

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	FRCH TRAILING EDGE	MASS FLUX (G/CM ²)	DILTA U*TA (M/SEC)	INCIDENCE ANGLE (DEG)	SUCT SUR (DEG)	FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS. RATIO	STAGE POLYTROPIC EFF
0.00	0.00	0.00	25.85	-6.275	-10.197	.2713	.0286	.0103	26.170	1.200	1.0999
10.93	11.26	11.06	26.14	-5.894	-9.257	.2740	.0376	.0199	20.701	1.200	1.0999
28.99	39.02	11.24	27.51	-6.401	-9.747	.2633	.0555	.0182	15.828	1.294	1.0910
47.07	68.46	49.81	27.82	-7.355	-10.366	.2356	.0387	.0118	14.452	1.327	1.0911
66.31	67.23	68.95	27.90	-7.509	-10.393	.2217	.0340	.0097	15.098	1.351	1.0912
87.82	88.04	89.23	28.90	-7.939	-10.843	.2899	.0676	.0447	16.912	1.356	1.0970
100.00	100.00	100.00	30.11	-9.106	-12.547	.3107	.1574	.0396	24.112	1.357	1.0986

MOMENTUM AVERAGE STAGE EFFICIENCY = .8663 (POLYTROPIC)

MOMENTUM AVERAGE STAGE EFFICIENCY = .8822 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS. RATIO = 1.3262

MASS AVERAGE TEMPERATURE RISE = 1.0951

NASA SMALL AXIAL COMPRESSOR TEST 2 FEB 1971 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT WEIGHT FLOW = 2.3541 LBM/SEC 70 PERCENT DESIGN SPEED - SCAN NO. 17
 PERCENT DESIGN EQUIVALENT FLOW = 44.2751 EQUIVALENT FLOW / INLET ANN AREA = 53580.729 R.P.M.
 = 26.0009 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0130

PERCENT SPAN FROM TIP (U. L.)	BETA*1 (DEG)	V*1 (FT/SEC)	VU*1 (FT/SEC)	M*1	BETA1 (DEG)	V1 (FT/SEC)	VU1 (FT/SEC)	M1	VM1 (FT/SEC)	VZ1 (FT/SEC)	U1 (FT/SEC)
0.00	73.12	1154.00	1104.29	1.047	0.00	335.05	0.00	0.00	335.05	324.76	1104.29
9.48	71.36	1107.98	1052.57	1.001	0.00	742.90	0.00	0.00	742.90	711.58	1052.57
25.24	69.06	1034.96	966.59	.938	0.00	369.94	0.00	0.00	369.94	363.14	966.59
41.04	66.74	958.74	880.37	.869	0.00	378.37	0.00	0.00	378.37	377.15	880.37
59.40	64.76	862.63	730.24	.781	0.00	367.90	0.00	0.00	367.90	367.77	780.24
83.98	61.87	735.12	645.32	.665	0.00	346.53	0.00	0.00	346.53	341.88	648.32
100.00	59.11	651.04	559.74	.585	0.00	334.16	0.00	0.00	334.16	322.81	558.74

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8712

PERCENT SPAN FROM TIP (U. L.)	BETA*2 (DEG)	V*2 (FT/SEC)	VU*2 (FT/SEC)	M*2	BETA2 (DEG)	V2 (FT/SEC)	VU2 (FT/SEC)	M2	VM2 (FT/SEC)	VZ2 (FT/SEC)	U2 (FT/SEC)
0.00	69.62	849.90	740.59	.738	37.63	526.50	321.47	.457	416.56	411.53	1067.07
11.40	57.19	807.21	678.19	.702	37.56	551.48	316.44	.480	437.47	427.91	1014.82
30.87	55.27	720.33	599.41	.636	38.85	533.53	334.69	.466	415.49	412.90	934.10
50.16	46.81	697.05	501.49	.606	36.66	590.85	352.75	.519	474.00	473.57	654.24
68.70	37.29	644.03	389.56	.569	37.09	642.95	387.76	.568	512.86	511.34	777.32
80.84	23.20	606.28	292.41	.538	30.21	718.86	454.42	.630	557.01	547.85	691.84
101.00	16.04	510.22	160.28	.517	41.15	740.55	487.29	.659	557.64	548.89	647.97

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (U. L.)	TRAILING EDGE	FLCH (PC1)	HMCS	DELTA (DEG)	BETA* (DEG)	INFLDNCE (DEG)	MEAN (DEG)	SUCT SUR (DEG)	ANGLF (DEG)	LOSS PARAMETER	OMEGA* (RPM)	QAR	FACTOR	DEVIATION ANGLF (DEG)	POTOR PRESS RATIO	POTOR ADIABATIC EFF	POTOR POLYTROPIC EFF
0.00	0.00	0.00	12.56	9.295	8.817	3.696	.1910	.0118	3.629	1.104	.7181			1.104	.7181	.7284	
9.48	11.40	11.71	14.78	10.023	8.726	3.811	.1788	.0351	2.202	1.313	.7180			1.313	.7180	.7479	
25.24	30.87	30.29	31.70	9.953	7.904	4.028	.1423	.0270	5.240	1.304	.7095			1.304	.7095	.8041	
41.04	50.16	49.61	20.13	9.807	7.041	3.908	.0525	.0101	5.072	1.354	.6319			1.354	.6319	.9148	
59.40	68.70	68.81	27.54	10.182	6.423	3.747	-.0068	-.0015	7.508	1.385	1.0073			1.385	1.0073	1.0070	
83.98	80.84	80.22	39.12	10.419	5.423	3.177	-.0824	-.0177	14.894	1.430	1.0632			1.430	1.0632	1.0601	
100.00	100.00	100.00	41.08	10.365	4.291	2.650	-.1023	-.0209	23.086	1.430	1.0632			1.430	1.0632	1.0601	

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8951 (POLYTROPIC) MOMENTUM AVE. ROTOR PRESS RATIO = 1.3522
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8905 (ADIABATIC) MASS AVERAGE TEMPERATURE RISE = 1.1009

NASA SMALL AXIAL COMPRESSOR TEST 2 FEB. 20, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (MFRIC UNITS)

EQUIVALENT WEIGHT FLOW = 1.0678 KG/SEC 70 PERCENT DESIGN SPEED - SCAN NO. 17
 EQUIVALENT FLOW / INLET ANN AREA = 53580.729 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 64.2751 EQUIVALENT FLOW / INLET ANN AREA = 126.9477 KG/SEC-SQ M

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC OLCCKAGE = 1.0190

PERCENT SPAN FROM TIP (I. I.)	ETA1*1 (DEG)	V*1 (M/SEC)	ETA1A1 (DEG)	V1 (M/SEC)	VU1 (M/SEC)	M1	VM1 (M/SEC)	V71 (M/SEC)	UI (M/SEC)
0.00	71.12	351.74	1.043	192.12	0.00	.303	102.12	98.83	336.59
9.40	71.06	337.61	1.001	104.48	0.00	.310	104.48	101.66	320.82
25.24	69.00	315.66	.938	112.76	0.00	.335	112.76	110.69	294.62
41.04	66.74	292.07	.859	115.33	0.00	.343	115.33	110.56	268.34
57.40	64.76	267.93	.781	112.14	0.00	.333	112.14	112.10	237.82
83.58	61.87	224.06	.665	105.62	0.00	.314	105.62	104.21	197.61
100.00	59.12	198.44	.589	101.85	0.00	.302	101.85	98.39	170.30

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC OLCCKAGE = .8712

PERCENT SPAN FROM TIP (I. I.)	ETA1*2 (DEG)	V*2 (M/SEC)	ETA1A2 (DEG)	V2 (M/SEC)	VU2 (M/SEC)	M2	VM2 (M/SEC)	V72 (M/SEC)	U2 (M/SEC)
0.00	60.62	259.05	.739	37.63	160.48	.457	127.03	121.00	323.72
11.40	57.19	241.36	.702	37.56	168.21	.480	131.36	130.43	309.32
30.87	55.37	221.30	.636	38.85	162.52	.466	126.66	125.85	284.72
50.14	56.61	210.32	.606	36.66	140.06	.510	144.47	144.47	260.37
68.70	57.32	191.10	.569	37.89	145.97	.568	156.32	155.86	236.93
88.84	53.76	184.79	.518	35.21	219.11	.638	169.78	166.69	211.48
100.00	56.04	176.85	.517	41.15	225.72	.650	169.97	164.19	197.18

ROTOR PERFORMANCE DATA

PERCENT LEADING EDGE	SPAN FROM TIP (DEG)	MASS FLOW (PC)	DELTA (DEG)	INCIDENCE ANGLE (DEG)	SUCT SUR (DEG)	D FACTOR	OMEGA* (RPM)	PARALLEL (M/SEC)	PERCENT ANGLE (DEG)	ROTOR POLYTROPIC EFF
0.00	0.00	11.71	12.50	9.245	8.817	.3696	1410	.1130	3.620	1.304
9.40	11.40	10.97	14.78	10.073	8.725	.3811	1709	.0351	2.202	1.713
25.24	10.37	10.40	13.79	9.995	7.804	.4020	1423	.0770	5.260	1.309
41.04	9.014	9.911	20.13	9.807	7.041	.3908	0.25	.0109	5.072	1.354
57.40	68.70	88.41	27.54	10.182	6.423	.3747	-.0068	-.0015	7.588	1.185
83.58	88.46	89.21	14.62	10.439	5.423	.3177	-.0829	-.0177	14.496	1.430
100.00	100.00	100.00	41.08	10.345	4.291	.2650	-.1023	-.0209	23.088	1.430

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8951 (POLYTROPIC) MULENTUM AVG. ROTOR PRESS RATIO = 1.3522
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8705 (ADIABATIC) MASS AVERAGE TEMPERATURE RISE = 1.1009

NASA SMALL AXIAL COMPRESSOR TEST 2 FEB. 20, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

70 PERCENT DESIGN SPEED - SCAN NO. 17

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC LOSSAGE = .0933

PERCENT SPAN FROM TIP (L. L.)	BETA 1 (DEG)	V3 (FT/SEC)	VU3 (FT/SEC)	M3	VMS (FT/SEC)	V73 (FT/SEC)	U3 (FT/SEC)
0.00	34.41	505.75	131.07	.512	483.75	477.94	1011.44
10.00	35.18	502.62	146.45	.522	480.44	487.63	991.52
21.22	34.05	502.58	130.65	.520	486.28	486.77	923.20
48.36	33.33	505.31	252.32	.571	541.83	541.44	855.29
67.14	33.84	607.82	303.04	.610	571.29	569.21	786.91
84.09	30.22	750.92	443.71	.669	605.80	597.67	710.59
100.00	37.41	774.52	472.96	.696	618.38	601.10	667.21

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC LOSSAGE = .0985

PERCENT SPAN FROM TIP (L. L.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	V74 (FT/SEC)	U4 (FT/SEC)
0.00	4.71	504.42	41.47	.447	502.71	502.71	1023.96
11.30	4.07	515.02	41.90	.447	513.51	513.25	998.60
30.19	3.28	531.04	30.36	.463	530.17	533.94	929.46
44.57	2.17	549.77	21.02	.490	568.38	567.79	871.95
67.32	4.18	604.08	44.06	.531	602.48	602.14	813.26
84.04	4.53	605.03	47.73	.532	603.74	601.54	748.27
100.00	4.53	609.69	48.10	.535	607.79	607.79	710.97

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (L. L.)	MASS FLOW (LBS/SEC)	DELTA TRAILING EDGE (IN)	DELTA TRAILING EDGE (IN)	INCIDENCE ANGLE (DEG)	MEAN SUCTION ANGLE (DEG)	LOSS PARAMETER	OMEGA BAR	DELTA ANGLE (DEG)	STAGE PRESSURE RATIO	STATOR POLYTROPIC EFF
0.00	0.00	29.70	0.00	-1.90A	-5.839	.0111	.0109	26.890	1.297	1.1054
10.00	11.71	10.52	11.71	-2.986	-4.181	.0137	.0196	71.229	1.104	1.1004
30.19	30.93	11.58	30.93	-1.719	-5.040	.0232	.0317	16.472	1.116	1.1002
48.36	49.61	10.42	49.61	-4.201	-7.694	.0299	.0299	14.110	1.145	1.0965
67.14	58.81	9.66	58.81	-5.672	-8.539	.0373	.0373	15.283	1.171	1.0966
84.09	99.22	11.69	99.22	-6.128	-9.015	.0417	.1581	16.057	1.371	1.1010
100.00	100.00	32.88	100.00	-7.222	-10.663	.0374	.1483	23.230	1.372	1.1011

MOMENTUM AVERAGE STAGE EFFICIENCY = .8760 (POLYTROPIC)
 MOMENTUM AVERAGE STAGE EFFICIENCY = .8707 (ADIABATIC)
 MOMENTUM AVG. STAGE PRESSURE RATIO = 1.3435
 MASS AVERAGE TEMPERATURE RISE = 1.1009

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

70 PERCENT DESIGN SPEED - SCAN NO. 17

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9933

PERCENT SPAN FROM TIP (%)	BETA 3 (DEG)	V3 (M/SEC)	VU3 (M/SEC)	M3	VH3 (M/SEC)	V73 (M/SEC)	U3 (M/SEC)
0.00	76.41	178.54	100.89	.511	147.29	146.68	314.38
10.96	35.18	182.15	104.95	.522	148.80	146.81	302.21
29.72	34.85	180.62	103.22	.520	148.22	144.27	281.39
45.36	33.03	197.90	107.38	.571	165.15	165.03	260.69
67.14	33.94	209.65	116.75	.610	176.13	173.69	236.85
88.09	36.22	228.88	135.24	.669	184.65	182.17	216.59
100.00	37.41	237.29	144.36	.696	188.48	183.20	203.37

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9385

PERCENT SPAN FROM TIP (%)	BETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VH4 (M/SEC)	V74 (M/SEC)	U4 (M/SEC)
0.00	4.71	153.75	12.62	.437	153.23	154.23	312.10
11.30	4.67	150.98	12.77	.447	156.46	156.44	301.33
10.19	3.28	161.86	9.25	.463	161.60	161.52	293.30
49.57	2.17	173.36	6.41	.499	173.24	171.06	265.77
67.32	4.10	184.12	13.43	.531	183.53	183.53	247.88
88.08	4.53	184.60	14.57	.532	184.87	183.15	228.87
100.00	4.51	185.83	14.68	.535	185.25	185.25	216.70

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (%)	DELTA (DEG)	DELTA (DEG)	INCIDENCE MEAN (DEG)	ANGLT (DEG)	SUCT SUR (DEG)	LOSS PARAMETER	DEVIATION ANGL (DEG)	STAGE LOSS RATIO	STAGE LOSS RATIO	STATOR POLYTROPIC EFF
0.00	0.00	29.70	-1.900	-5.830	.318F	.0302	26.390	1.297	1.1094	.8918
10.96	11.30	30.52	-0.984	-4.741	.3181	.0396	21.229	1.104	1.1094	.8670
29.72	30.19	11.58	-1.719	-5.048	.2733	-.0317	16.472	1.116	1.1062	1.1712
49.57	49.61	30.02	-4.701	-7.694	.2738	.0299	14.110	1.145	1.0765	.8841
67.14	67.32	29.66	-5.672	-8.532	.2582	.0373	15.283	1.177	1.0916	.8500
88.09	88.08	31.60	-6.128	-9.615	.3256	.1581	16.057	1.371	1.1010	.6318
100.00	100.00	32.88	-7.222	-10.663	.3458	.1483	23.230	1.372	1.1011	.6749

MOMENTUM AVERAGE STAGE EFFICIENCY = .8760 (POLYTROPIC) MOMENTUM AVG. STAGE LOSS RATIO = 1.1435
 MOMENTUM AVERAGE STAGE EFFICIENCY = .8707 (ADIABATIC) MASS AVERAGE TEMPERATURE RISE = 1.1003

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NASA SMALL AXIAL COMPRESSOR TEST 2 FEB. 20, 1974 (COMBINED, I.P.P.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT WEIGHT FLOW = 2.2294 LBM/SEC 70 PERCENT DESIGN SPEED = 3400 RPM 18 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 60.8685 EQUIVALENT TIP SPEED = 24.6229 LBM/SEC-SQ FT

INLET VELOCITY DIAPHRAGM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 0.0074

PERCENT SPAN FROM TIP	BETA*1	V*1	VU*1	M*1	BETA1	V1	W	P1	VM1	V71	U1
(L...E...)	(DEG)	(FT/SEC)	(FT/SEC)	(M)	(DEG)	(FT/SEC)	(FT/SEC)	(FT/SEC)	(FT/SEC)	(FT/SEC)	(FT/SEC)
0.00	74.07	1150.07	1105.49	1.039	0.00	315.71	0.00	.285	315.71	305.54	1105.89
9.19	73.00	1107.85	1055.65	.999	0.00	322.76	0.00	.292	322.76	312.20	1055.65
26.71	70.28	1031.46	970.87	.933	0.00	347.96	0.00	.315	347.96	341.57	970.87
40.62	68.07	952.95	883.98	.863	0.00	355.92	0.00	.322	355.92	354.78	883.98
54.26	66.13	855.22	782.10	.774	0.00	366.01	0.00	.313	366.01	345.89	782.10
63.62	63.36	724.10	649.06	.650	0.00	375.94	0.00	.295	375.94	321.56	649.06
100.00	60.69	641.72	559.54	.580	0.00	314.15	0.00	.284	314.15	303.51	559.54

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .0042

PERCENT SPAN FROM TIP	BETA*2	V*2	VU*2	M*2	BETA2	V2	W	P2	VM2	V72	U2
(L...E...)	(DEG)	(FT/SEC)	(FT/SEC)	(M)	(DEG)	(FT/SEC)	(FT/SEC)	(FT/SEC)	(FT/SEC)	(FT/SEC)	(FT/SEC)
0.00	61.57	790.71	695.31	.691	44.17	526.68	368.29	.454	776.00	164.18	1063.60
11.71	59.51	730.04	629.67	.630	41.17	534.95	385.92	.461	770.45	162.15	1014.99
17.23	54.13	671.42	544.04	.583	44.44	550.50	385.76	.478	793.47	150.27	929.84
50.87	45.21	654.15	474.27	.573	40.11	602.55	388.20	.527	460.81	450.81	852.47
68.51	36.06	612.67	412.67	.540	40.00	647.67	416.31	.570	496.03	496.03	777.55
88.73	21.69	560.46	207.11	.496	43.15	713.92	488.18	.631	520.79	512.24	695.29
100.00	13.50	536.18	125.21	.475	45.11	718.68	523.30	.655	521.35	503.63	648.51

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	TRAILING EDGE	MASS FLOW (PCT)	DELTA P/TOT (C/G)	INCIDENCE ANGLE (DEG)	MEAN SUCTION ANGLE (DEG)	DELTA P/TOT (C/G)	LOSS PARAMETER	LOSS PARAMETER RATIO	DEVIATION ANGLE (DEG)	POLYTRIC PCT	POLYTRIC EFF
0.00	0.00	0.00	12.50	10.230	9.762	.4344	.2289	.0415	4.575	1.334	.6435
9.19	11.71	11.37	13.49	11.002	9.723	.4654	.2487	.0454	4.550	1.329	.6741
26.71	32.23	10.13	16.15	11.089	9.073	.4727	.1855	.0167	4.599	1.161	.7617
40.62	50.87	49.17	22.86	11.079	8.332	.4358	.0779	.0167	4.028	1.340	.9074
54.26	68.51	68.72	30.07	11.545	7.762	.4136	.0211	.0047	6.618	1.404	.9800
63.62	83.62	49.26	41.55	11.894	6.886	.3834	.0039	.0003	13.116	1.435	.9972
100.00	100.00	100.00	47.18	11.913	5.079	.3346	.0047	.0010	20.557	1.445	.9973

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8552 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8486 (ADIABATIC)
 MOMENTUM AVG. ROTOR PRESS RATIO = 1.1744
 MASS AVERAGE TEMPERATURE RISE = 1.1119

NASA SMALL AXIAL COMPRESSOR TEST 2, SEP. 20, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIVALENT HEIGHT FLOW = 1.0112 KG/SEC 70 PERCENT OF SIGN SPEED - SCAN NO. 18
 EQUIVALENT FLOW = 53698.241 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 60.8685 EQUIVALENT FLOW INLET ANGLE = 120.7194 KG/SEC-SO M

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0274

PERCENT SPAN FROM TIP (I. F.)	BETA*1 (DEG)	V*1 (M/SEC)	H*1 (M)	DRIFT1 (DEG)	V1 (M/SEC)	VUI (M/SEC)	HI (M)	VHI (M/SEC)	VZI (M/SEC)	UI (M/SEC)
0.00	74.07	350.54	1.039	0.00	96.23	0.00	.285	95.53	91.13	317.07
9.19	73.00	310.47	.998	0.00	98.32	0.00	.292	98.38	95.16	321.76
24.71	70.29	314.55	.933	0.00	106.0F	0.00	.315	106.05	104.11	295.92
40.62	66.07	290.46	.863	0.00	108.46	0.00	.322	108.46	108.14	269.44
50.26	66.13	260.57	.774	0.00	105.46	0.00	.313	105.45	105.43	218.38
83.62	63.34	221.30	.656	0.00	99.15	0.00	.295	99.15	98.01	197.83
100.00	60.69	195.10	.580	0.00	95.77	0.00	.284	95.77	92.51	170.55

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8842

PERCENT SPAN FROM TIP (I. F.)	BETA*2 (DEG)	V*2 (M/SEC)	H*2 (M)	DRIFT2 (DEG)	V2 (M/SEC)	VU2 (M/SEC)	M2 (M)	VM2 (M/SEC)	V72 (M/SEC)	U7 (M/SEC)
0.00	61.57	241.01	.681	64.37	160.52	112.25	.454	114.75	111.06	324.19
11.71	59.51	222.52	.630	61.17	163.05	117.63	.461	112.91	110.44	309.37
32.23	56.13	204.65	.583	64.44	167.94	117.58	.478	119.91	113.17	283.41
50.07	45.21	190.38	.441	60.11	181.66	118.37	.527	140.45	140.45	259.83
68.91	36.06	187.05	.340	60.00	197.39	126.89	.570	151.70	150.16	237.00
89.73	21.69	170.93	.246	63.15	217.57	148.80	.611	158.74	156.13	211.92
100.00	13.50	163.43	.175	65.11	225.15	159.50	.655	158.91	153.51	197.67

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	DELTA (DEG)	ETA* (DEG)	MASS FLOW (PCT)	INCIDENCE ANGLE (DEG)	SUCT SUP (DEG)	FACTOR	OMEGA* PAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	RTOP PRESS RATIO	PCICP ADIABATIC EFF	ROICP POLYTROPIC EFF
0.00	0.00	12.50	0.00	10.240	9.762	.4344	.2289	.0415	4.575	1.134	.8815	.6961
9.19	11.71	17.49	11.37	11.902	9.723	.4654	.2487	.0454	4.590	1.129	.8741	.6969
24.71	32.23	15.15	10.39	11.079	9.073	.4727	.1955	.3162	4.599	1.163	.7617	.7733
40.62	10.87	22.86	49.17	11.075	8.337	.4358	.0775	.0167	4.028	1.100	.8074	.9115
59.26	63.91	30.07	68.77	11.545	7.797	.4136	.0211	.0047	6.618	1.406	.8789	.9800
83.62	88.73	41.64	89.76	11.884	6.886	.3834	.0039	.0009	13.156	1.436	.9072	.9973
100.00	100.00	47.10	100.00	11.913	5.853	.3346	.0047	.0010	20.557	1.486	.9972	.9973

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8572 (POLYTROPIC) MOMENTUM AVG. ROTOP PRESS RATIO = 1.3744
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8046 (ADIABATIC) MASS AVERAGE TEMPERATURE RISE = 1.1119

NASA SMALL AXIAL COMPRESSOR TFST 2 FEB. 20, 1974 (CONTINUED, ILPP₂)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 10

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9088

PERCENT SPAN FROM TIP (L. L.)	BETA 3 (DEG)	V3 (FT/SEC)	VU3 (FT/SEC)	M3	VM3 (FT/SEC)	VZ3 (FT/SEC)	U3 (FT/SEC)
0.00	41.24	575.31	179.27	.498	432.64	477.89	1072.93
11.21	41.50	573.65	194.85	.496	416.14	414.45	992.06
30.77	40.68	597.69	309.58	.521	453.28	453.28	920.71
49.00	36.83	646.26	387.42	.568	517.29	514.88	854.19
67.43	37.10	681.97	411.32	.602	543.96	541.97	796.99
84.15	40.33	737.15	477.12	.653	561.91	554.37	711.42
100.00	41.51	746.33	507.93	.682	573.87	557.95	668.18

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9191

PERCENT SPAN FROM TIP (L. L.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	V74 (FT/SEC)	U4 (FT/SEC)
0.00	5.59	455.01	44.24	.390	452.85	452.85	1025.44
11.27	5.54	468.02	44.11	.402	465.84	457.78	990.12
30.15	4.14	492.78	37.27	.426	491.17	471.15	930.95
48.51	3.51	513.04	32.17	.464	532.04	511.47	873.12
67.20	2.40	567.16	23.38	.495	564.64	564.33	814.53
84.02	5.76	586.23	55.78	.484	553.43	551.41	749.56
100.00	5.76	559.34	56.14	.487	556.52	556.52	712.00

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (L. L.)	MASS FLOW (LBS/SEC)	DELTA U/FI (DEG)	INCIDENCE ANGLE (DEG)	DELTA U/FI (DEG)	MEAN SUCT SUR ANGLE (DEG)	FACTOR	OMEGA UAP	LOSS PARAMETER	DIVISION ANGLE (DEG)	STAGE PRESS RATIO	STATOR POLYTROPIC EFF
0.00	0.00	35.68	4.918	0.995	0.995	.4208	.0946	.0339	27.760	1.315	1.1255
11.27	11.37	37.95	7.323	3.970	3.970	.3957	.0170	.0116	27.111	1.313	1.1255
30.77	10.15	36.34	4.051	7.61	7.61	.3668	.0166	.0054	17.535	1.319	1.1149
48.00	49.17	33.32	-4.959	-3.942	-3.942	.3394	.0407	.0124	15.508	1.369	1.1060
67.43	67.29	31.60	-7.656	-5.316	-5.316	.3132	.0271	.0077	16.501	1.345	1.1037
84.15	84.02	34.58	-2.027	-4.911	-4.911	.3880	.1440	.0379	17.286	1.383	1.1087
100.00	100.00	35.75	-3.118	-6.559	-6.559	.4093	.1343	.0130	24.461	1.383	1.1087

MOMENTUM AVERAGE STAGE EFFICIENCY = .8345 (POLYTROPIC)

MOMENTUM AVERAGE STAGE EFFICIENCY = .8271 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.3638

MASS AVERAGE TEMPERATURE RISE = 1.1119

NASA SMALL AXIAL COMPRESSOR TEST 2 FEB. 20, 1974 (COMBINED I.E.P.P.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

70 PERCENT DESIGN SPEED - SCAN NO. 18

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9088

PERCENT SPAN FROM TIP (L. L.)	BETA 3 (DEG)	V3 (M/SEC)	VU3 (M/SEC)	H3	VM3 (M/SEC)	V77 (M/SEC)	U3 (M/SEC)
0.00	41.74	175.15	115.59	.498	131.87	130.62	314.84
11.21	43.50	174.05	120.35	.96	126.84	126.61	302.38
30.77	40.68	182.10	114.74	.521	138.16	138.16	233.63
49.00	36.83	190.98	118.09	.568	157.56	157.56	240.36
67.43	37.10	207.86	125.37	.602	165.80	165.19	219.87
80.15	40.33	224.68	145.42	.653	171.27	170.97	216.84
100.00	41.51	231.58	154.82	.662	174.90	170.07	203.56

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9393

PERCENT SPAN FROM TIP (L. L.)	BETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	H4	VM4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	5.58	139.69	13.63	.390	139.03	139.03	312.55
11.27	5.54	142.65	13.28	.402	141.99	141.47	301.79
30.15	4.34	150.20	11.35	.426	149.77	149.77	293.75
43.53	3.51	162.47	9.95	.464	152.17	152.00	246.19
67.29	5.40	172.87	14.27	.492	172.10	172.01	248.27
80.02	5.76	180.54	17.00	.484	168.69	168.17	229.47
100.00	5.76	170.49	17.11	.487	169.63	169.63	217.02

STATOR PERFORMANCE DATA

PERCENT LEADING EDGE	SPAN FROM TRAILING EDGE	MASC FLCH (PCT)	DELTA UCLM (DEG)	INCIDENCE ANGLE (DEG)	SUCT SUR (DEG)	FACTON	OMEGA BAR	LOTS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STATOR POLYTROPIC EFF.
0.00	0.00	0.00	35.67	4.718	.995	.4208	.0746	.0339	27.740	1.115	1.1255
11.21	11.27	11.37	37.95	7.323	3.976	.3954	.0129	.0114	22.111	1.323	1.1255
30.77	30.15	30.39	36.34	4.051	.761	.3666	.0166	.0054	17.535	1.174	1.1149
49.00	48.51	49.17	33.37	-1.959	-3.942	.3394	.0407	.0124	15.508	1.169	1.1620
67.43	67.29	68.72	11.60	-2.456	-5.314	.3133	.0271	.0077	16.501	1.194	1.1037
80.15	80.02	89.26	34.58	-2.027	-4.911	.3886	.1440	.0379	17.286	1.301	1.1087
100.00	100.00	100.00	35.75	-3.118	-6.559	.4092	.1343	.0338	24.461	1.303	1.1087

MEANIMUM AVERAGE STAGE EFFICIENCY = .6345 (POLYTROPIC)
 MEANIMUM AVERAGE STAGE EFFICIENCY = .0271 (ADIABATIC)

MEANIMUM AVG. STAGE PRESS RATIO = 1.1639
 MASS AVERAGE TEMPERATURE RISE = 1.1119

NASA SMALL AXIAL COMPRESSOR TEST 2 FEB. 20, 1974 (COORDINATED) (REP. 1)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT WEIGHT FLOW = 2.0516 LBM/SEC 70 PERCENT DESIGN SPEED - SCAN NO 19
 EQUIVALENT FLOW / INLET ANN AREA = 22.6587 LBM/SEC-SC FT R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 56.0154

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0461

PERCENT SPAN FROM TIP (L. E.)	V*1 (FT/SEC)	M*1	DELTA1 (DEG)	V1 (FT/SEC)	M1	VW1 (FT/SEC)	VZ1 (FT/SEC)	U1 (FT/SEC)			
0.00	75.72	1135.50	1102.30	1.028	0.00	288.78	0.00	.261	288.78	270.40	1107.30
4.61	74.24	1090.74	1049.05	.984	0.00	295.51	0.00	.267	295.51	285.84	1049.95
25.17	71.74	1011.47	965.24	.918	0.00	318.47	0.00	.288	318.47	312.52	965.24
40.60	69.72	972.45	881.23	.844	0.00	325.57	0.00	.294	325.57	325.57	881.23
54.16	67.92	841.98	780.55	.761	0.00	316.44	0.00	.286	316.44	316.37	780.25
81.54	65.29	712.04	647.39	.643	0.00	297.91	0.00	.269	297.91	293.91	647.19
100.00	62.78	627.17	557.73	.566	0.00	286.84	0.00	.259	286.84	277.00	557.73

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8710

PERCENT SPAN FROM TIP (L. E.)	V*2 (FT/SEC)	M*2	DELTA2 (DEG)	V2 (FT/SEC)	M2	VW2 (FT/SEC)	VZ2 (FT/SEC)	U2 (FT/SEC)			
0.00	61.19	745.23	652.99	.639	48.59	542.92	407.17	.466	359.13	147.56	1050.16
11.93	54.99	681.04	581.71	.585	50.59	575.77	427.07	.475	350.09	343.72	1010.78
17.57	54.02	603.97	498.67	.571	50.90	562.70	436.71	.485	354.84	352.53	925.38
41.46	41.77	501.54	402.58	.506	66.66	611.83	444.95	.532	419.95	419.93	867.22
69.35	33.96	500.75	329.93	.519	67.22	668.60	443.47	.581	449.20	447.85	771.20
88.61	18.23	511.38	160.18	.451	47.84	721.75	533.34	.636	486.74	478.29	693.52
100.00	8.68	492.96	74.36	.435	49.60	751.22	572.05	.664	486.91	470.37	646.41

ROTOR PERFORMANCE DATA

PERCENT LEADING EDGE FROM TIP	MASS FLOW (PCF)	DELTA (DEG)	INCIDENCE ANGLE (DEG)	SUCT SUR (DEG)	DELTA (DEG)	LOSS FACTOR	OMEGA* (DEG)	GAR	P*AMPLIP	DEVIATION ANGLE (DEG)	ROTOR F*LOSS RATIO	ROTOR POLYTROPIC EFF
0.00	0.00	14.13	11.483	11.015	.4821	.2563	.2563	4.200	.0470	4.200	1.169	.6775
9.61	11.93	15.28	12.371	11.000	.5174	.2798	.2798	4.117	.0523	4.117	1.163	.6824
24.17	10.94	17.72	12.625	10.580	.5477	.2496	.2496	4.617	.0408	4.617	1.165	.7179
40.00	69.19	25.95	12.726	9.985	.5227	.1630	.1630	2.888	.0371	2.888	1.394	.8226
54.14	69.37	33.99	13.321	9.574	.4413	.0499	.0499	4.865	.0111	4.865	1.419	.9567
83.54	89.10	47.00	13.828	8.833	.4543	.1142	.1142	9.543	.0254	9.543	1.461	.9107
100.00	100.00	54.10	14.031	7.957	.4050	.1451	.1451	15.734	.0305	15.734	1.461	.9307

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8137 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8047 (ADIABATIC)
 MOMENTUM AVG. ROTOR POLYSS. RATIO = 1.3941
 MASS AVERAGE TEMPERATURE RISE = 1.1235

NASA SMALL AXIAL COMPRESSOR TEST 2 FEB. 20, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (IMPERIC UNITS)

EQUIVALENT WEIGHT FLOW = 9.9106 KG/SEC 70 PERCENT DESIGN SPEED - SCAN NO. 19
 PERCENT DESIGN EQUIVALENT FLOW = 56.0154 EQUIVALENT SPEED
 EQUIVALENT FLOW / INLET ANN AREA = 53.696 516 P.P.P.
 = 110.6342 KG/SEC-SO M

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0461

PERCENT SPAN FROM TIP (L. E.)	DELTA*1 (DEG)	V*1 (M/SEC)	DELTA1 (DEG)	V1 (M/SEC)	M1	DELTA2 (DEG)	V2 (M/SEC)	M2	DELTA3 (DEG)	V3 (M/SEC)	M3	DELTA4 (DEG)	V4 (M/SEC)	M4
0.00	75.37	347.32	335.09	1.028	0.00	88.02	0.19	0.261	83.02	85.14	335.09			
9.61	74.78	332.40	320.02	0.984	0.00	90.07	0.00	0.267	80.07	87.12	320.02			
25.17	71.74	309.81	294.20	0.918	0.00	97.07	0.09	0.288	97.07	95.27	294.20			
40.60	69.72	286.34	268.70	0.849	0.00	99.23	0.20	0.294	99.23	98.92	268.70			
50.14	67.92	258.63	237.82	0.761	0.00	96.45	0.00	0.286	96.45	96.42	237.82			
83.54	65.29	117.21	137.77	0.643	0.00	90.80	0.00	0.269	90.80	86.58	137.32			
100.00	62.78	191.16	170.00	0.566	0.00	87.42	0.00	0.259	87.42	84.46	170.00			

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8710

PERCENT SPAN FROM TIP (L. E.)	DELTA*2 (DEG)	V*2 (M/SEC)	DELTA2 (DEG)	V2 (M/SEC)	M2	DELTA3 (DEG)	V3 (M/SEC)	M3	DELTA4 (DEG)	V4 (M/SEC)	M4	DELTA5 (DEG)	V5 (M/SEC)	M5
0.00	61.19	227.14	199.03	0.630	48.59	165.48	124.11	0.666	103.40	105.94	323.14			
11.91	53.99	207.58	177.82	0.595	50.59	169.47	131.17	0.675	105.01	104.61	300.09			
35.57	50.02	184.07	148.05	0.521	50.90	171.51	133.11	0.685	108.16	107.48	282.06			
51.46	47.77	177.75	122.61	0.506	46.66	186.40	135.62	0.732	128.07	127.09	258.23			
69.36	44.94	174.75	100.35	0.518	42.22	201.38	135.32	0.781	149.14	148.70	235.83			
88.61	48.23	156.05	88.02	0.551	47.64	219.99	162.56	0.836	148.27	145.78	211.39			
100.00	46.68	150.13	22.60	0.435	40.60	228.97	174.36	0.864	148.41	143.37	197.03			

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING TRAILING EDGE	FRCH TIP	MASS FLOW (PGT)	DELTA (DEG)	INCIDENCE ANGLE (DEG)	SUCT SUR (DEG)	DELTA (DEG)	LOSS PARAMETER (DEG)	DEVIATION ANGLE (DEG)	POTOP PRESS (WATIO)	ROTOR ANTIANATIC (CF)	POTOP POLYTROPIC (FFF)
0.00	0.10	0.00	16.13	11.483	11.015	4.921	0.070	4.200	1.369	0.775	0.6014
9.61	11.93	11.89	15.25	12.171	11.065	5.174	0.052	4.117	1.363	0.693	0.6924
25.17	32.57	30.94	17.77	12.625	10.580	5.677	0.048	4.617	1.366	0.719	0.7100
40.60	51.46	49.19	25.95	12.726	9.985	5.227	0.037	2.888	1.394	0.826	0.8308
50.14	69.36	68.67	33.99	13.321	9.574	4.613	0.040	4.885	1.419	0.957	0.9569
81.54	88.61	89.30	47.06	14.878	8.811	4.561	0.025	9.541	1.441	0.871	0.9107
100.00	100.00	100.00	54.10	14.031	7.457	4.050	0.051	15.734	1.441	0.920	0.9107

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8137 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8047 (ADIABATIC)
 MOMENTUM AVG. POTOP PRESS RATIO = 1.3941
 MASS AVERAGE TEMPERATURE RISE = 1.1235

NASA SMALL AXIAL COMPRESSOR TEST 2, FEB. 20, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

70 PERCENT DESIGN SPEED - SCAN NO. 19

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9110

PERCENT SPAN FROM TIP (L. F.)	BETA 3 (DEG)	V3 (FT/SEC)	VU3 (FT/SEC)	M3	VH3 (FT/SEC)	VZ3 (FT/SEC)	U3 (FT/SEC)
0.00	46.92	576.90	419.26	.496	396.13	391.78	1026.59
11.23	49.13	578.23	437.22	.497	378.39	377.76	987.29
13.53	47.81	575.09	441.69	.516	400.31	400.30	914.97
49.89	43.74	642.07	444.44	.561	464.47	464.13	848.19
80.07	39.97	681.22	438.92	.602	523.58	521.67	782.09
88.17	45.26	734.44	521.63	.648	516.95	510.00	709.01
100.00	40.48	765.89	555.35	.678	527.41	512.84	666.01

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9157

PERCENT SPAN FROM TIP (L. F.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VH4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	2.96	442.77	22.86	.177	442.18	442.18	1027.12
11.36	2.98	442.11	22.97	.177	441.91	441.46	986.64
30.36	3.90	446.58	30.41	.182	445.55	445.34	927.26
48.75	5.59	491.10	47.85	.423	488.76	488.26	869.80
67.50	5.93	532.84	55.06	.403	529.98	529.69	811.24
88.04	6.10	517.05	54.93	.447	514.12	512.24	747.07
100.00	6.10	519.63	55.22	.449	516.69	516.69	709.70

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	MASS FLOW (LBS/SEC)	DELTA DFLX (IN/IN)	INCIDENCE MEAN (DEG)	ANGLE SUCT (DEG)	FACTOR	D	OMEGA PAR	LOSS PARAMETER	DEFLECTION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR FOLY TROPIC EFF
0.00	0.00	61.66	10.307	6.384	.4821	.0977	.0751	25.140	1.444	1.1383	.7876	
11.23	11.38	66.15	12.962	9.613	.4877	.0743	.0754	19.526	1.468	1.1341	.8170	
31.23	30.94	41.91	11.145	7.873	.4738	.0675	.0221	17.081	1.500	1.1795	.8605	
49.89	49.13	38.13	5.866	2.896	.4197	.0525	.0160	17.572	1.480	1.1708	.8876	
67.50	69.67	34.04	.337	-2.502	.3748	.0254	.0073	17.032	1.411	1.1100	.9433	
88.17	89.04	19.16	2.894	.011	.4552	.1279	.0336	17.620	1.396	1.1185	.7799	
100.00	100.00	40.38	1.846	-1.595	.4758	.1186	.0298	21.800	1.416	1.1185	.8118	

MOMENTUM AVERAGE STAGE EFFICIENCY = .7875 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7777 (ADIABATIC)
MOMENTUM AVG. STAGE PRESS RATIO = 1.3793
MASS AVERAGE TEMPERATURE RISE = 1.1235

NASA SMALL AXIAL COMPRESSOR TEST 2 FEB. 20, 1974 (COMBINED TEPP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

70 PERCENT DESIGN SPEED - SCAN NO. 19

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC LOSSAGE = .9110

PERCENT SPAN FROM TIP (L. E.)	DELTA 3 (DEG)	V1 (M/SEC)	VU3 (M/SEC)	M3	VM3 (M/SEC)	V73 (M/SEC)	U*
0.00	45.62	175.91	127.77	.496	120.74	119.42	312.82
11.63	49.13	176.24	133.27	.497	117.51	115.14	300.93
31.53	47.81	181.69	136.67	.516	122.01	122.01	278.88
49.87	43.74	195.74	135.47	.561	141.57	141.67	258.53
68.07	39.97	200.25	133.78	.607	159.59	159.00	238.38
88.17	45.26	223.86	159.01	.648	157.56	157.45	216.11
100.00	45.48	233.44	169.27	.678	160.75	156.31	203.00

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC LOSSAGE = .9157

PERCENT SPAN FROM TIP (L. E.)	DELTA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VM4 (M/SEC)	VZ4 (M/SEC)	U4
0.00	2.36	136.96	6.97	.377	136.78	136.79	311.54
11.36	2.98	136.75	7.00	.377	135.57	136.56	300.73
30.36	3.98	136.12	9.27	.382	135.80	135.76	292.63
48.75	5.59	149.69	14.53	.423	148.97	148.87	265.12
77.50	5.93	162.41	16.78	.463	161.56	161.45	247.27
88.04	6.10	157.66	16.74	.447	156.70	156.13	227.71
100.00	6.10	158.38	16.83	.449	157.69	157.49	216.32

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (L. E.)	DELTA (DEG)	INCIDENCE (DEG)	ANGL SURT (DEG)	FACTOR	OMEGA (RPM)	PARAMETER	DEVIATION ANGLE (DEG)	STAGE EFF.	STAGE POLYTROPIC EFF.
0.00	0.00	10.307	6.384	.4821	.0977	.0351	25.140	1.349	1.1303
11.63	11.86	12.047	9.613	.4837	.0763	.0258	19.526	1.360	1.1383
31.53	10.94	11.145	7.873	.4738	.0672	.0221	17.081	1.350	1.1295
49.87	6.97	5.866	2.896	.4197	.0525	.0169	17.972	1.300	1.1208
68.07	67.00	3.337	-2.507	.3748	.0254	.0073	17.932	1.411	1.1100
88.17	88.06	2.894	.011	.4592	.1279	.0336	17.629	1.596	1.1105
100.00	100.00	1.846	-1.595	.4758	.1186	.0297	24.800	1.396	1.1185

MOMENTUM AVERAGE STAGE EFFICIENCY = .7875 (POLYTROPIC) MOMENTUM AVG. STAGE LOSSAGE RATIO = 1.3793
 MOMENTUM AVERAGE STAGE EFFICIENCY = .7777 (ADIABATIC) MASS AVERAGE TEMPERATURE RISE = 1.1235

NASA SMALL AXIAL COMPRESSOR TEST 3 JUNE 25, 1974 (COMBINED TEMP.)

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ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT WEIGHT FLOW = 3.2234 LBM/SEC EQUIVALENT SPEED = 76709.012 R.P.M.
 PERCENT DISTORT EQUIVALENT FLOW = 80.0000 EQUIVALENT FLOW / INLET ANN AREA = 35.6015 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9927

PERCENT SPAN FROM TIP (L. T.)	BETA ₁ (DEG)	V ₀₁ (FT/SEC)	VU ₁ (FT/SEC)	BETA ₁ (DEG)	V ₁ (FT/SEC)	VU ₁ (FT/SEC)	M1	VM1 (FT/SEC)	VZ1 (FT/SEC)	UI (FT/SEC)
0.00	72.92	1623.96	1580.76	0.00	485.83	0.00	.484	485.81	470.17	1580.96
4.31	71.76	1598.10	1508.22	0.00	497.19	0.00	.455	497.14	440.90	1508.22
7.216	68.76	1445.18	1184.43	0.00	537.60	0.00	.493	537.59	527.71	1384.43
8.100	65.21	1367.74	1254.28	0.00	550.35	0.00	.506	550.34	544.56	1254.28
14.600	61.00	1270.11	1194.55	0.00	532.91	0.00	.489	532.88	532.71	1194.55
18.600	61.21	1299.04	920.03	0.00	499.37	0.00	.457	499.34	492.65	920.03
19.000	59.04	432.36	799.92	0.00	474.95	0.00	.437	474.94	462.66	799.92

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .7366

PERCENT SPAN FROM TIP (L. T.)	BETA ₂ (DEG)	V ₀₂ (FT/SEC)	VU ₂ (FT/SEC)	BETA ₂ (DEG)	V ₂ (FT/SEC)	VU ₂ (FT/SEC)	M2	VM2 (FT/SEC)	VZ2 (FT/SEC)	U2 (FT/SEC)
0.00	57.00	1214.60	1019.47	1.023	630.27	501.04	.699	667.03	640.71	1520.51
11.44	57.04	1100.45	927.80	.942	677.22	524.54	.734	696.45	641.62	1452.41
30.51	48.20	1091.66	617.68	.934	691.72	521.43	.763	723.34	718.43	1334.01
49.12	41.07	1030.80	677.26	.892	953.84	551.74	.825	777.04	777.01	1224.00
68.05	33.12	653.53	520.47	.842	949.79	540.22	.874	806.44	804.57	1110.89
84.44	21.16	900.84	327.31	.802	1077.99	668.38	.953	845.73	831.44	945.89
100.00	13.31	871.55	209.44	.775	1109.41	717.66	.986	845.94	817.23	927.10

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (L. T.)	DELTA ₁ (DEG)	DELTA ₂ (DEG)	DELTA ₃ (DEG)	INCIDENCE ANGLE (DEG)	SUCT SUR (DEG)	U FACTOR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	WOTON PRESS RATIO	WOTON ADIABATIC EFF	WOTON POLYTROPIC EFF
0.00	0.00	15.92	9.041	4.613	4.804	.2749	.0578	.010	1.677	.6509	.6751
9.31	11.44	14.66	9.703	4.497	.3442	.2777	.0605	-1.871	1.694	.6676	.6912
25.16	30.51	20.24	9.062	7.617	.4419	.1900	.0619	-1.635	1.757	.7799	.7966
41.00	43.12	9.00	9.404	4.671	.3694	.1121	.0257	-.951	1.850	.8831	.8927
61.00	61.07	7.005	9.025	6.025	.1445	.0726	.0166	2.973	1.841	.9341	.9405
84.44	40.44	40.35	10.174	5.149	.2811	.0379	.0083	12.224	1.934	.9744	.9766
100.00	100.00	45.14	10.537	4.753	.2758	.0460	.0095	20.957	1.934	.9744	.9766

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8444 (POLYTROPIC) MOMENTUM AVG. WOTON PRESS RATIO = 1.8118
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8313 (ADIABATIC) MASS AVERAGE TEMPERATURE RISE = 1.2222

NASA SMALL AXIAL COMPRESSOR (ST 3 JUNE 25, 1974 (COMBINED TEMP.))

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

100 PERCENT DESIGN SPEED - SLASH NO 2

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .0760

PERCENT SPAN FROM TIP (L. T.)	WETA J (DEG)	V3 (FT/SEC)	VU3 (FT/SEC)	M3	VM3 (FT/SEC)	VZ3 (FT/SEC)	VJ3 (FT/SEC)
0.00	40.70	790.21	513.91	.662	598.53	591.45	1470.66
11.50	41.67	812.10	531.06	.682	608.53	607.52	1410.40
30.72	43.21	857.40	530.35	.731	673.66	673.65	1310.65
49.05	40.25	824.01	555.42	.797	730.42	737.04	1250.07
67.41	37.43	957.64	597.10	.832	750.23	753.67	1122.53
85.83	34.97	1014.23	655.13	.893	811.67	811.17	1010.83
100.00	41.27	1055.00	690.26	.930	893.38	893.46	935.21

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .0819

PERCENT SPAN FROM TIP (L. T.)	WETA V (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	VJ4 (FT/SEC)
0.00	-4.12	605.05	-49.27	.508	604.06	604.06	1405.95
11.50	-4.06	670.12	-49.48	.579	670.34	670.25	1410.81
30.72	-2.33	740.03	-29.09	.614	740.20	724.04	1331.23
49.05	-1.60	801.20	-23.19	.681	801.62	800.79	1248.52
67.41	-3.21	744.29	-44.48	.675	792.95	792.51	1164.90
85.83	-4.11	761.19	-54.33	.644	759.21	756.44	1071.11
100.00	-4.12	760.39	-53.67	.649	764.38	744.38	1017.07

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	FROM TIP (L. T.)	WETA FLOW (DEG)	INCIDENCE ANGLE (DEG)	MEAN SUCTION ANGLE (DEG)	U FACTOR	WETA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMPERATURE RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	42.442	32.0	.3917	.0672	.0109	10.060	1.657	1.2441	.8388
11.50	11.50	14.74	52.291	12.759	.3911	.0671	.0214	12.524	1.670	1.2441	.8021
30.72	30.72	30.43	1.500	-1.703	.3597	.0801	.0243	10.078	1.712	1.2237	.7811
49.05	49.05	50.46	-3.067	-3.829	.3199	.0678	.0208	10.318	1.807	1.2172	.7928
67.41	67.41	70.24	-1.789	-4.632	.3537	.1252	.0359	7.893	1.735	1.2112	.8439
85.83	85.83	87.71	-2.450	-5.321	.4247	.2481	.0555	7.423	1.744	1.2132	.8377
100.00	100.00	100.00	-3.302	-6.003	.4442	.2306	.0592	14.579	1.744	1.2132	.8155

MU IF PLUS AVERAGE STAGE EFFICIENCY = .7932 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7764 (ADIABATIC)
MOMENTUM AVG. STAGE PRESS RATIO = 1.7472
MASS AVERAGE TEMPERATURE RATIO = 1.2222

NASA SMALL AXIAL COMPRESSOR TEST 3 JUNE 25, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

100 PERCENT DESIGN SPEED - SCAN NO 2

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC MLOCKAGE = .8760

PERCENT SPAN FROM TIP (L. S.)	BETA 3 (DEG)	V3 (M/SEC)	VU3 (M/SEC)	M3	VM3 (M/SEC)	VZ3 (M/SEC)	U3 (M/SEC)
0.00	90.70	260.00	157.25	.662	102.43	140.43	420.00
11.50	41.47	267.95	151.94	.602	145.48	145.17	431.72
30.72	38.21	261.33	161.05	.731	205.33	205.33	401.27
49.05	30.95	261.04	167.24	.797	227.07	224.90	372.12
67.31	37.83	261.81	174.50	.837	230.50	229.66	342.15
85.30	37.77	310.47	192.00	.893	230.25	235.05	309.02
100.00	41.27	321.75	212.22	.930	241.82	235.14	291.15

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC MLOCKAGE = .8819

PERCENT SPAN FROM TIP (L. S.)	BETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VM4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	-4.12	209.05	-15.02	.568	209.50	209.50	448.82
11.14	-4.06	212.79	-15.04	.579	212.24	212.22	431.54
30.07	-2.33	222.76	-7.05	.614	222.57	222.47	405.76
49.52	-1.06	264.44	-7.07	.681	264.33	264.04	380.55
67.19	-2.21	262.10	-13.56	.675	261.69	261.54	355.06
85.17	-2.11	242.01	-16.02	.644	231.41	230.56	325.53
100.00	-4.12	233.59	-14.79	.649	233.98	232.98	310.25

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP FROM TIP (L. S.)	DELTA FLUX (DEG)	DELTA FLUX (DEG)	INCIDENCE ANGLE (DEG)	SUCT NUM (DEG)	FACTOR	OMEGA UAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE PRESS RATIO	STATOR POLYTROPIC EFF
0.00	0.20	44.04	4.442	0.20	.3917	.0472	.0169	16.060	1.657	1.2441	.8398
11.50	11.20	45.54	5.291	1.209	.4911	.0817	.0214	12.524	1.670	1.2441	.8021
30.72	40.24	40.54	1.584	-1.703	.3597	.0401	.0203	10.878	1.712	1.2237	.7411
49.05	50.45	38.61	-2.447	-3.129	.3199	.0674	.0208	10.334	1.807	1.2172	.7428
67.31	70.24	41.04	-1.789	-4.632	.3537	.1252	.0359	7.803	1.795	1.2112	.6934
85.30	84.91	44.04	-2.450	-5.121	.4297	.2401	.0625	7.423	1.744	1.2132	.5577
100.00	100.00	45.33	-3.362	-6.403	.4442	.2346	.0592	14.579	1.744	1.2132	.6155

MOMENTUM AVERAGE STAGE EFFICIENCY = .7932 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7764 (ADIABATIC)
MOMENTUM AVE. STAGE PRESS RATIO = 1.7472
MASS AVERAGE TEMPERATURE RISE = 1.2222

NASA SMALL AXIAL COMPRESSOR TEST 3 JUNE 25, 1974 (COMBINED TEMP.)

MOTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT WEIGHT FLOW = 3.2426 LBM/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 80.5361
 100 PERCENT DESIGN SPEED = SCAN NO 3
 EQUIVALENT SPEED = 76662.603 RPM
 EQUIVALENT FLOW / INLET ANN AREA = 35.6143 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9889

PERCENT SPAN FROM TIP (L. T.)	HF (LBS)	V01 (FT/SEC)	V02 (FT/SEC)	W01 (DEG)	W02 (DEG)	VI (FT/SEC)	VU1 (FT/SEC)	M1	V01 (FT/SEC)	V02 (FT/SEC)	U1 (FT/SEC)
0.00	72.78	1074.14	1580.00	0.00	0.00	489.09	0.00	.447	489.09	473.92	1590.00
4.43	71.00	1507.47	1506.78	0.00	0.00	501.24	0.00	.450	501.24	446.43	1506.78
25.49	64.57	1404.45	1401.92	0.00	0.00	545.38	0.00	.498	545.38	537.41	1381.82
42.16	60.16	1304.04	1250.91	0.00	0.00	555.34	0.00	.510	555.34	553.55	1250.91
61.40	53.77	1224.02	1101.68	0.00	0.00	577.44	0.00	.444	537.44	537.76	1101.68
84.71	61.21	1040.31	799.43	0.00	0.00	504.02	0.00	.462	504.02	440.04	918.77
100.00	58.73	934.14	799.43	0.00	0.00	485.18	0.00	.443	485.18	464.69	799.43

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .7330

PERCENT SPAN FROM TIP (L. T.)	HF (LBS)	V02 (FT/SEC)	V03 (FT/SEC)	W02 (DEG)	W03 (DEG)	V02 (FT/SEC)	VU2 (FT/SEC)	M2	V02 (FT/SEC)	V03 (FT/SEC)	U2 (FT/SEC)
0.00	56.55	1225.44	1022.45	34.35	434.69	477.14	.707	.707	675.47	653.72	1519.59
11.33	57.02	1171.47	930.92	34.20	441.38	520.52	.747	.747	711.27	695.72	1451.34
30.67	48.63	1107.05	823.52	34.77	401.70	514.16	.774	.774	740.74	734.13	1337.08
44.17	40.42	1043.04	694.73	34.54	450.00	543.47	.832	.832	789.65	749.61	1228.00
64.14	32.57	963.02	518.00	34.11	1007.70	560.70	.881	.881	817.04	409.65	1115.50
84.56	20.75	717.15	327.78	37.44	1095.20	600.39	.961	.961	856.50	442.43	944.37
100.00	13.08	612.37	211.60	39.45	1115.77	714.94	.993	.993	856.62	427.51	928.54

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	W01 (DEG)	W02 (DEG)	W03 (DEG)	W04 (DEG)	W05 (DEG)	W06 (DEG)	W07 (DEG)	W08 (DEG)	W09 (DEG)	W10 (DEG)	W11 (DEG)	W12 (DEG)	W13 (DEG)	W14 (DEG)	W15 (DEG)	W16 (DEG)	W17 (DEG)	W18 (DEG)	W19 (DEG)	W20 (DEG)	W21 (DEG)	W22 (DEG)	W23 (DEG)	W24 (DEG)	W25 (DEG)	W26 (DEG)	W27 (DEG)	W28 (DEG)	W29 (DEG)	W30 (DEG)	W31 (DEG)	W32 (DEG)	W33 (DEG)	W34 (DEG)	W35 (DEG)	W36 (DEG)	W37 (DEG)	W38 (DEG)	W39 (DEG)	W40 (DEG)	W41 (DEG)	W42 (DEG)	W43 (DEG)	W44 (DEG)	W45 (DEG)	W46 (DEG)	W47 (DEG)	W48 (DEG)	W49 (DEG)	W50 (DEG)	W51 (DEG)	W52 (DEG)	W53 (DEG)	W54 (DEG)	W55 (DEG)	W56 (DEG)	W57 (DEG)	W58 (DEG)	W59 (DEG)	W60 (DEG)	W61 (DEG)	W62 (DEG)	W63 (DEG)	W64 (DEG)	W65 (DEG)	W66 (DEG)	W67 (DEG)	W68 (DEG)	W69 (DEG)	W70 (DEG)	W71 (DEG)	W72 (DEG)	W73 (DEG)	W74 (DEG)	W75 (DEG)	W76 (DEG)	W77 (DEG)	W78 (DEG)	W79 (DEG)	W80 (DEG)	W81 (DEG)	W82 (DEG)	W83 (DEG)	W84 (DEG)	W85 (DEG)	W86 (DEG)	W87 (DEG)	W88 (DEG)	W89 (DEG)	W90 (DEG)	W91 (DEG)	W92 (DEG)	W93 (DEG)	W94 (DEG)	W95 (DEG)	W96 (DEG)	W97 (DEG)	W98 (DEG)	W99 (DEG)	W100 (DEG)	W101 (DEG)	W102 (DEG)	W103 (DEG)	W104 (DEG)	W105 (DEG)	W106 (DEG)	W107 (DEG)	W108 (DEG)	W109 (DEG)	W110 (DEG)	W111 (DEG)	W112 (DEG)	W113 (DEG)	W114 (DEG)	W115 (DEG)	W116 (DEG)	W117 (DEG)	W118 (DEG)	W119 (DEG)	W120 (DEG)	W121 (DEG)	W122 (DEG)	W123 (DEG)	W124 (DEG)	W125 (DEG)	W126 (DEG)	W127 (DEG)	W128 (DEG)	W129 (DEG)	W130 (DEG)	W131 (DEG)	W132 (DEG)	W133 (DEG)	W134 (DEG)	W135 (DEG)	W136 (DEG)	W137 (DEG)	W138 (DEG)	W139 (DEG)	W140 (DEG)	W141 (DEG)	W142 (DEG)	W143 (DEG)	W144 (DEG)	W145 (DEG)	W146 (DEG)	W147 (DEG)	W148 (DEG)	W149 (DEG)	W150 (DEG)	W151 (DEG)	W152 (DEG)	W153 (DEG)	W154 (DEG)	W155 (DEG)	W156 (DEG)	W157 (DEG)	W158 (DEG)	W159 (DEG)	W160 (DEG)	W161 (DEG)	W162 (DEG)	W163 (DEG)	W164 (DEG)	W165 (DEG)	W166 (DEG)	W167 (DEG)	W168 (DEG)	W169 (DEG)	W170 (DEG)	W171 (DEG)	W172 (DEG)	W173 (DEG)	W174 (DEG)	W175 (DEG)	W176 (DEG)	W177 (DEG)	W178 (DEG)	W179 (DEG)	W180 (DEG)	W181 (DEG)	W182 (DEG)	W183 (DEG)	W184 (DEG)	W185 (DEG)	W186 (DEG)	W187 (DEG)	W188 (DEG)	W189 (DEG)	W190 (DEG)	W191 (DEG)	W192 (DEG)	W193 (DEG)	W194 (DEG)	W195 (DEG)	W196 (DEG)	W197 (DEG)	W198 (DEG)	W199 (DEG)	W200 (DEG)	W201 (DEG)	W202 (DEG)	W203 (DEG)	W204 (DEG)	W205 (DEG)	W206 (DEG)	W207 (DEG)	W208 (DEG)	W209 (DEG)	W210 (DEG)	W211 (DEG)	W212 (DEG)	W213 (DEG)	W214 (DEG)	W215 (DEG)	W216 (DEG)	W217 (DEG)	W218 (DEG)	W219 (DEG)	W220 (DEG)	W221 (DEG)	W222 (DEG)	W223 (DEG)	W224 (DEG)	W225 (DEG)	W226 (DEG)	W227 (DEG)	W228 (DEG)	W229 (DEG)	W230 (DEG)	W231 (DEG)	W232 (DEG)	W233 (DEG)	W234 (DEG)	W235 (DEG)	W236 (DEG)	W237 (DEG)	W238 (DEG)	W239 (DEG)	W240 (DEG)	W241 (DEG)	W242 (DEG)	W243 (DEG)	W244 (DEG)	W245 (DEG)	W246 (DEG)	W247 (DEG)	W248 (DEG)	W249 (DEG)	W250 (DEG)	W251 (DEG)	W252 (DEG)	W253 (DEG)	W254 (DEG)	W255 (DEG)	W256 (DEG)	W257 (DEG)	W258 (DEG)	W259 (DEG)	W260 (DEG)	W261 (DEG)	W262 (DEG)	W263 (DEG)	W264 (DEG)	W265 (DEG)	W266 (DEG)	W267 (DEG)	W268 (DEG)	W269 (DEG)	W270 (DEG)	W271 (DEG)	W272 (DEG)	W273 (DEG)	W274 (DEG)	W275 (DEG)	W276 (DEG)	W277 (DEG)	W278 (DEG)	W279 (DEG)	W280 (DEG)	W281 (DEG)	W282 (DEG)	W283 (DEG)	W284 (DEG)	W285 (DEG)	W286 (DEG)	W287 (DEG)	W288 (DEG)	W289 (DEG)	W290 (DEG)	W291 (DEG)	W292 (DEG)	W293 (DEG)	W294 (DEG)	W295 (DEG)	W296 (DEG)	W297 (DEG)	W298 (DEG)	W299 (DEG)	W300 (DEG)	W301 (DEG)	W302 (DEG)	W303 (DEG)	W304 (DEG)	W305 (DEG)	W306 (DEG)	W307 (DEG)	W308 (DEG)	W309 (DEG)	W310 (DEG)	W311 (DEG)	W312 (DEG)	W313 (DEG)	W314 (DEG)	W315 (DEG)	W316 (DEG)	W317 (DEG)	W318 (DEG)	W319 (DEG)	W320 (DEG)	W321 (DEG)	W322 (DEG)	W323 (DEG)	W324 (DEG)	W325 (DEG)	W326 (DEG)	W327 (DEG)	W328 (DEG)	W329 (DEG)	W330 (DEG)	W331 (DEG)	W332 (DEG)	W333 (DEG)	W334 (DEG)	W335 (DEG)	W336 (DEG)	W337 (DEG)	W338 (DEG)	W339 (DEG)	W340 (DEG)	W341 (DEG)	W342 (DEG)	W343 (DEG)	W344 (DEG)	W345 (DEG)	W346 (DEG)	W347 (DEG)	W348 (DEG)	W349 (DEG)	W350 (DEG)	W351 (DEG)	W352 (DEG)	W353 (DEG)	W354 (DEG)	W355 (DEG)	W356 (DEG)	W357 (DEG)	W358 (DEG)	W359 (DEG)	W360 (DEG)	W361 (DEG)	W362 (DEG)	W363 (DEG)	W364 (DEG)	W365 (DEG)	W366 (DEG)	W367 (DEG)	W368 (DEG)	W369 (DEG)	W370 (DEG)	W371 (DEG)	W372 (DEG)	W373 (DEG)	W374 (DEG)	W375 (DEG)	W376 (DEG)	W377 (DEG)	W378 (DEG)	W379 (DEG)	W380 (DEG)	W381 (DEG)	W382 (DEG)	W383 (DEG)	W384 (DEG)	W385 (DEG)	W386 (DEG)	W387 (DEG)	W388 (DEG)	W389 (DEG)	W390 (DEG)	W391 (DEG)	W392 (DEG)	W393 (DEG)	W394 (DEG)	W395 (DEG)	W396 (DEG)	W397 (DEG)	W398 (DEG)	W399 (DEG)	W400 (DEG)	W401 (DEG)	W402 (DEG)	W403 (DEG)	W404 (DEG)	W405 (DEG)	W406 (DEG)	W407 (DEG)	W408 (DEG)	W409 (DEG)	W410 (DEG)	W411 (DEG)	W412 (DEG)	W413 (DEG)	W414 (DEG)	W415 (DEG)	W416 (DEG)	W417 (DEG)	W418 (DEG)	W419 (DEG)	W420 (DEG)	W421 (DEG)	W422 (DEG)	W423 (DEG)	W424 (DEG)	W425 (DEG)	W426 (DEG)	W427 (DEG)	W428 (DEG)	W429 (DEG)	W430 (DEG)	W431 (DEG)	W432 (DEG)	W433 (DEG)	W434 (DEG)	W435 (DEG)	W436 (DEG)	W437 (DEG)	W438 (DEG)	W439 (DEG)	W440 (DEG)	W441 (DEG)	W442 (DEG)	W443 (DEG)	W444 (DEG)	W445 (DEG)	W446 (DEG)	W447 (DEG)	W448 (DEG)	W449 (DEG)	W450 (DEG)	W451 (DEG)	W452 (DEG)	W453 (DEG)	W454 (DEG)	W455 (DEG)	W456 (DEG)	W457 (DEG)	W458 (DEG)	W459 (DEG)	W460 (DEG)	W461 (DEG)	W462 (DEG)	W463 (DEG)	W464 (DEG)	W465 (DEG)	W466 (DEG)	W467 (DEG)	W468 (DEG)	W469 (DEG)	W470 (DEG)	W471 (DEG)	W472 (DEG)	W473 (DEG)	W474 (DEG)	W475 (DEG)	W476 (DEG)	W477 (DEG)	W478 (DEG)	W479 (DEG)	W480 (DEG)	W481 (DEG)	W482 (DEG)	W483 (DEG)	W484 (DEG)	W485 (DEG)	W486 (DEG)	W487 (DEG)	W488 (DEG)	W489 (DEG)	W490 (DEG)	W491 (DEG)	W492 (DEG)	W493 (DEG)	W494 (DEG)	W495 (DEG)	W496 (DEG)	W497 (DEG)	W498 (DEG)	W499 (DEG)	W500 (DEG)	W501 (DEG)	W502 (DEG)	W503 (DEG)	W504 (DEG)	W505 (DEG)	W506 (DEG)	W507 (DEG)	W508 (DEG)	W509 (DEG)	W510 (DEG)	W511 (DEG)	W512 (DEG)	W513 (DEG)	W514 (DEG)	W515 (DEG)	W516 (DEG)	W517 (DEG)	W518 (DEG)	W519 (DEG)	W520 (DEG)	W521 (DEG)	W522 (DEG)	W523 (DEG)	W524 (DEG)	W525 (DEG)	W526 (DEG)	W527 (DEG)	W528 (DEG)	W529 (DEG)	W530 (DEG)	W531 (DEG)	W532 (DEG)	W533 (DEG)	W534 (DEG)	W535 (DEG)	W536 (DEG)	W537 (DEG)	W538 (DEG)	W539 (DEG)	W540 (DEG)	W541 (DEG)	W542 (DEG)	W543 (DEG)	W544 (DEG)	W545 (DEG)	W546 (DEG)	W547 (DEG)	W548 (DEG)	W549 (DEG)	W550 (DEG)	W551 (DEG)	W552 (DEG)	W553 (DEG)	W554 (DEG)	W555 (DEG)	W556 (DEG)	W557 (DEG)	W558 (DEG)	W559 (DEG)	W560 (DEG)	W561 (DEG)	W562 (DEG)	W563 (DEG)	W564 (DEG)	W565 (DEG)	W566 (DEG)	W567 (DEG)	W568 (DEG)	W569 (DEG)	W570 (DEG)	W571 (DEG)	W572 (DEG)	W573 (DEG)	W574 (DEG)	W575 (DEG)	W576 (DEG)	W577 (DEG)	W578 (DEG)	W579 (DEG)	W580 (DEG)	W581 (DEG)	W582 (DEG)	W583 (DEG)	W584 (DEG)	W585 (DEG)	W586 (DEG)	W587 (DEG)	W588 (DEG)	W589 (DEG)	W590 (DEG)	W591 (DEG)	W592 (DEG)	W593 (DEG)	W594 (DEG)	W595 (DEG)	W596 (DEG)	W597 (DEG)	W598 (DEG)	W599 (DEG)	W600 (DEG)	W601 (DEG)	W602 (DEG)	W603 (DEG)	W604 (DEG)	W605 (DEG)	W606 (DEG)	W607 (DEG)	W608 (DEG)	W609 (DEG)	W610 (DEG)	W611 (DEG)	W612 (DEG)	W613 (DEG)	W614 (DEG)	W615 (DEG)	W616 (DEG)	W617 (DEG)	W618 (DEG)	W619 (DEG)	W620 (DEG)	W621 (DEG)	W622 (DEG)	W623 (DEG)	W624 (DEG)	W625 (DEG)	W626 (DEG)	W627 (DEG)	W628 (DEG)	W629 (DEG)	W630 (DEG)	W631 (DEG)	W632 (DEG)	W633 (DEG)	W634 (DEG)	W635 (DEG)	W636 (DEG)	W637 (DEG)	W638 (DEG)	W639 (DEG)	W640 (DEG)	W641 (DEG)	W642 (DEG)	W643 (DEG)	W644 (DEG)	W645 (DEG)	W646 (DEG)	W647 (DEG)	W648 (DEG)	W649 (DEG)	W650 (DEG)	W651 (DEG)	W652 (DEG)	W653 (DEG)	W654 (DEG)	W655 (DEG)	W656 (DEG)	W657 (DEG)	W658 (DEG)	W659 (DEG)	W660 (DEG)	W661 (DEG)	W662 (DEG)	W663 (DEG)	W664 (DEG)	W665 (DEG)	W666 (DEG)	W667 (DEG)	W668 (DEG)	W669 (DEG)	W670 (DEG)	W671 (DEG)	W672 (DEG)	W673 (DEG)	W674 (DEG)	W675 (DEG)	W676 (DEG)	W677 (DEG)	W678 (DEG)	W679 (DEG)	W680 (DEG)	W681 (DEG)	W682 (DEG)	W683 (DEG)	W684 (DEG)	W685 (DEG)	W686 (DEG)	W687 (DEG)	W688 (DEG)	W689 (DEG)	W690 (DEG)	W691 (DEG)	W692 (DEG)	W693 (DEG)	W694 (DEG)	W695 (DEG)	W696 (DEG)	W697 (DEG)	W698 (DEG)	W699 (DEG)	W700 (DEG)	W701 (DEG)	W702 (DEG)	W703 (DEG)	W704 (DEG)	W705 (DEG)	W706 (DEG)	W707 (DEG)	W708 (DEG)	W709 (DEG)	W710 (DEG)	W711 (DEG)	W712 (DEG)	W713 (DEG)	W714 (DEG)	W715 (DEG)	W716 (DEG)	W717 (DEG)	W718 (DEG)	W719 (DEG)	W720 (DEG)	W721 (DEG)	W722 (DEG)	W723 (DEG)	W724 (DEG)	W725 (DEG)	W726 (DEG)	W727 (DEG)	W728 (DEG)	W729 (DEG)	W730 (DEG)	W731 (DEG)	W732 (DEG)	W733 (DEG)	W734 (DEG)	W735 (DEG)	W736 (DEG)	W737 (DEG)	W738 (DEG)	W739 (DEG)	W740 (DEG)	W741 (DEG)	W742 (DEG)	W743 (DEG)	W744 (DEG)	W745 (DEG)	W746 (DEG)	W747 (DEG)	W748 (DEG)	W749 (DEG)	W750 (
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NASA SMALL AXIAL COMPRESSOR TEST 3 JUNE 25, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

100 PERCENT DESIGN SPEED - SCAN NO 3

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8700

PERCENT SPAN FROM TIP (L. S.)	DELTA 3 (DEG)	V3 (FT/SEC)	V13 (FT/SEC)	M3	VM3 (FT/SEC)	VZ3 (FT/SEC)	U3 (FT/SEC)
0.00	33.85	794.21	511.90	.670	512.45	605.72	1475.77
11.57	41.83	819.59	523.73	.690	622.00	620.97	1412.46
30.74	37.14	862.94	527.08	.740	700.25	690.24	1312.10
44.00	30.15	927.31	547.07	.801	749.75	744.20	1219.42
60.00	30.07	962.55	543.74	.836	757.60	754.13	1121.06
80.06	33.55	1024.36	653.00	.898	700.74	774.15	1013.82
100.00	40.45	1057.33	694.29	.934	800.09	777.94	954.64

PERCENT SPAN FROM TIP (L. S.)	DELTA 4 (DEG)	V4 (FT/SEC)	V14 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	4.12	673.36	17.05	.577	674.33	694.34	1462.07
11.57	7.92	710.35	36.14	.591	709.43	709.37	1414.76
30.74	-2.35	740.24	-30.05	.629	745.61	745.24	1330.17
44.00	-2.53	812.26	-33.79	.691	811.47	810.63	1247.60
60.00	-2.17	893.53	-30.44	.681	802.95	802.51	1164.04
80.06	-2.00	761.92	-26.01	.645	761.46	754.67	1070.60
100.00	-2.00	760.93	-26.76	.650	766.66	766.66	1017.25

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8415

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP FROM LEADING EDGE	DELTA (DEG)	DELTA (DEG)	INCIDENCE ANGLE (DEG)	U FACTOR	O-4EGA HAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATION POLYTROPIC EFF
0.00	0.00	35.77	3.571	.1647	.0592	.0209	25.300	1.651	1.2420	.7364
11.57	11.57	37.71	4.449	.3437	.0652	.0226	14.474	1.667	1.2420	.7910
30.74	30.74	39.50	5.317	.3958	.0673	.0287	10.867	1.715	1.2204	.7226
44.00	44.00	38.64	-1.040	.3127	.0692	.0212	9.467	1.805	1.2138	.7537
60.00	60.00	40.26	-1.249	.3451	.1328	.0341	8.929	1.749	1.2132	.6557
80.06	80.06	41.65	-2.335	.4236	.2609	.0706	9.529	1.727	1.2123	.5271
100.00	100.00	42.95	-3.042	.4384	.2527	.0639	16.700	1.727	1.2122	.5375

MOMENTUM AVERAGE STAGE EFFICIENCY = .7934 (POLYTROPIC)
 MOMENTUM AVERAGE STAGE EFFICIENCY = .7768 (ADIABATIC)
 MOMENTUM AVG. STAGE PRESS RATIO = 1.7417
 MASS AVERAGE TEMPERATURE RISE = 1.2207

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OF POOR QUALITY

NASA SMALL AXIAL COMPRESSOR TEST 3 JUNE 25, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

100 PERCENT U₂ SPEED - SCALING 3

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8700

PERCENT SPAN FROM TIP (L. F.)	DELTA 3 (DEG)	V3 (M/SEC)	VU3 (M/SEC)	M3	VU3 (M/SEC)	VZ3 (M/SEC)	U3 (M/SEC)
0.00	37.47	243.29	158.03	.670	146.69	194.62	449.82
11.57	41.53	249.41	162.07	.690	149.59	199.27	451.43
30.79	37.14	243.96	157.37	.740	150.39	210.33	400.93
49.01	35.13	242.66	160.75	.801	228.22	228.05	371.83
68.05	31.07	243.34	140.97	.836	230.97	230.97	361.70
88.06	34.65	312.22	199.22	.898	240.41	237.19	309.01
100.00	40.75	322.49	211.62	.934	243.87	237.13	290.97

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8015

PERCENT SPAN FROM TIP (L. F.)	DELTA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VU4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	3.12	211.99	11.54	.577	211.63	211.63	446.55
11.57	2.77	210.57	11.02	.591	216.24	216.24	451.22
30.79	-2.35	227.45	-9.34	.629	227.26	227.16	405.44
49.01	-2.53	247.59	-10.91	.691	247.34	247.04	300.27
67.22	-2.17	244.92	-9.29	.683	244.74	244.61	354.90
88.06	-2.00	322.23	-8.11	.845	237.09	231.24	326.32
100.00	-2.00	332.76	-8.16	.850	233.62	233.62	310.06

STATOR PERFORMANCE DATA

LEADING EDGE	PERCENT SPAN FROM TIP	TRAILING EDGE	MASS FLOW (KGF)	DELTA (DEG)	INCIDENCE ANGLE (DEG)	SUPT NUM (DEG)	U FACTOR	W AN	OMEGA	LOSS PARAMETER	DEFIATION ANGLE (DEG)	STAGE PRESS RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	0.00	35.77	3.571	-3.321	.3447	.0582	.0709	25.300	1.651	1.2420	.7884
11.57	11.57	11.57	11.06	37.71	4.449	1.114	.3437	.0652	.0726	19.694	1.657	1.2420	.7410
30.79	30.79	30.79	31.25	33.50	.517	-2.772	.3454	.0473	.0247	10.847	1.715	1.2204	.7276
49.01	44.59	44.59	50.34	38.68	-1.646	-4.628	.3127	.0692	.0212	1.867	1.805	1.2138	.6557
68.10	67.22	67.22	70.54	40.26	-1.549	-4.188	.3451	.1328	.0381	4.929	1.749	1.2132	.6557
88.06	88.07	88.07	90.07	41.65	-2.435	-5.689	.4236	.2869	.0706	9.529	1.727	1.2123	.6271
100.00	100.00	100.00	100.00	42.95	-3.682	-7.123	.4384	.2527	.0639	16.700	1.727	1.2122	.5375

MOMENTUM AVERAGE STAGE EFFICIENCY = .7934 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7768 (ADIABATIC)
MOMENTUM AVG. STAGE PRESS RATIO = 1.7417
MASS AVERAGE TEMPERATURE RISE = 1.2207

NASA SMALL AXIAL COMPRESSOR TEST 3 JUNE 25, 1974 (COMBINED TEMP.)

MOTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT FLIGHT FLOW = 3.2759 LBM/SEC
 PERCENT DENSITY EQUIVALENT FLOW = 89.4329
 100 PERCENT DESIGN SPEED = SCAR NO 4
 EQUIVALENT SPEED = 76727.266 R.P.M.
 EQUIVALENT FLOW / INLET ANN AREA = 36.1779 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9836

PERCENT SPAN FROM TIP (L. T.)	HEADING (DEG)	V01 (FT/SEC)	VU01 (FT/SEC)	P.T.01 (DEG)	V1 (FT/SEC)	VU1 (FT/SEC)	M1	V41 (FT/SEC)	VZ1 (FT/SEC)	U1 (FT/SEC)
0.00	72.07	1057.00	1311.33	0.00	400.03	0.00	.453	495.03	474.04	1591.03
2.50	71.41	1540.22	1455	0.00	505.95	0.00	.464	505.85	490.26	1507.29
5.00	70.75	1435.00	1370.64	0.00	544.03	0.00	.504	549.03	534.95	1380.64
7.50	69.75	1097.22	1443.44	0.00	567.27	0.00	.517	567.27	560.46	1288.44
10.00	69.00	1276.00	1099.33	0.00	544.52	0.00	.500	544.52	544.33	1099.33
12.50	68.72	1050.15	1177.75	0.00	510.43	0.00	.467	510.43	503.58	917.75
15.00	71.53	930.10	1000.11	0.00	484.75	0.00	.440	489.75	473.11	800.11

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .7327

PERCENT SPAN FROM TIP (L. T.)	HEADING (DEG)	V02 (FT/SEC)	VU02 (FT/SEC)	HEAT02 (DEG)	V2 (FT/SEC)	VU2 (FT/SEC)	M2	V42 (FT/SEC)	VZ2 (FT/SEC)	U2 (FT/SEC)
0.00	56.37	1235.01	1020.76	35.72	142.94	492.11	.712	684.34	667.34	1520.87
2.50	52.35	1103.09	936.68	35.49	187.08	515.42	.754	722.72	705.93	1426.10
5.00	47.77	1110.60	823.12	34.13	404.00	504.44	.781	751.59	747.01	1337.57
7.50	46.07	1003.37	692.96	33.55	967.81	535.86	.842	806.54	806.54	1227.82
10.00	32.96	975.44	530.65	33.58	1006.82	555.80	.882	814.82	815.41	1110.70
12.50	21.25	914.04	332.75	37.74	1042.71	622.68	.959	856.23	842.16	925.63
15.00	14.16	843.24	216.10	39.71	1113.21	711.22	.991	896.40	877.29	927.32

ROTOR PERFORMANCE DATA

PERCENT LEADING EDGE	SPIN FROM TIP (L. T.)	TRAILING EDGE	INCIDENCE ANGLE (DEG)	SUCT SUM (DEG)	INCIDENCE ANGLE (DEG)	DELTA (DEG)	MEAN (DEG)	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	16.25	8.313	3674	3674	.0364	.0364	7.024	1.675	.6610	.6845
2.50	11.59	11.59	14.07	8.179	3736	3736	.0345	.0345	-2.595	1.694	.6801	.7028
5.00	30.41	30.41	20.54	7.209	3613	3613	.0369	.0369	-2.254	1.766	.6065	.5213
7.50	49.37	49.37	25.09	6.179	3414	3414	.0372	.0372	-1.264	1.862	.6210	.6202
10.00	61.70	61.70	30.69	5.436	3336	3336	.0371	.0371	2.147	1.874	.6162	.6416
12.50	68.44	68.44	34.67	4.567	3207	3207	.0385	.0385	12.307	1.927	.6737	.6760
15.00	100.00	100.00	44.37	3.702	2167	2167	.0401	.0401	21.214	1.927	.6737	.6760

MOMENTUM AVERAGE ROTOR EFFICIENCY = .6580 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .6457 (ADIABATIC)
 MOMENTUM AVG. ROTOR PRESS RATIO = 1.8115
 MASS AVERAGE TEMPERATURE RISE = 1.2184

NASA SMALL AXIAL COMPRESSOR TEST 3 JUNE 25, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

100 PERCENT DESIGN SPEED - SCAN NO 4

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8660

PERCENT SPAN FROM TIP (L. F.)	HETA 3 (DEG)	V3 (FT/SEC)	VU3 (FT/SFC)	M3	VM3 (FT/SEC)	VZ3 (FT/SEC)	U3 (FT/SEC)
0.00	30.91	800.67	506.72	.670	627.66	670.76	1477.02
11.24	32.00	830.91	527.35	.697	638.70	677.66	1416.56
30.05	36.20	874.96	517.76	.749	705.33	705.32	1316.09
49.14	39.97	940.15	537.98	.813	768.57	740.00	1220.71
67.09	37.29	981.49	507.57	.836	764.70	747.10	1123.00
84.50	34.50	1021.41	644.75	.892	788.10	777.52	1013.42
100.00	30.91	1050.63	690.54	.932	799.76	777.66	955.44

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8777

PERCENT SPAN FROM TIP (L. F.)	HETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SFC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	-1.70	719.82	-47.20	.600	718.28	718.28	1486.30
11.24	-1.70	734.20	-48.12	.613	732.70	732.61	1415.92
30.14	-3.51	773.98	-48.34	.655	772.47	772.13	1330.99
49.02	-2.26	830.69	-37.76	.710	830.04	829.19	1243.38
67.10	1.52	814.11	21.35	.694	813.82	813.37	1184.67
84.22	-1.92	776.00	-12.45	.659	776.56	773.72	1070.89
100.00	-1.94	781.84	-12.78	.664	781.73	781.73	1019.11

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (L. F.)	MASS FLOW (PCF)	DELTA HETA (DEG)	INCIDENCE MEAN (DEG)	SUCTI SUM (DEG)	DELTA FACTOR	OMEGA (RPM)	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS. RATIO	STAGE TEMP. RATIO	STATOR POLYTROPIC EFF
0.00	0.00	42.67	2.596	-1.320	.359	.0560	.0201	12.470	1.630	1.2398	.7590
11.24	11.77	43.36	3.410	.085	.352	.0677	.0235	12.819	1.666	1.2398	.7396
30.05	31.30	37.85	-3.330	-3.637	.3255	.0410	.0266	9.613	1.721	1.2183	.6775
49.14	48.62	37.25	-2.012	-5.774	.2970	.0976	.0776	9.724	1.803	1.2104	.6726
67.09	70.05	35.78	-2.310	-5.161	.3147	.1450	.0918	12.018	1.774	1.2096	.5957
84.50	93.15	40.42	-2.742	-5.406	.4030	.2703	.0715	10.614	1.716	1.2114	.4928
100.00	100.00	41.74	-3.024	-7.205	.4187	.2557	.0547	17.763	1.716	1.2113	.5609

MOMENTUM AVERAGE STAGE EFFICIENCY = .7969 (POLYTROPIC) MOMENTUM AVG. STAGE PRESS. RATIO = 1.7365
 MASS AVERAGE STAGE EFFICIENCY = .7807 (ADIABATIC) MASS AVERAGE TEMPERATURE RISE = 1.2184

NASA SMALL AXIAL COMPRESSOR TEST 3 JUN 25 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

100 PERCENT DESIGN SPEED - SCAN NO 4

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8660

PERCENT SPAN FROM TIP (L. E.)	BETA 3 (DEG)	V3 (M/SEC)	V113 (M/SFC)	M3	V43 (M/SEC)	V23 (M/SEC)	U3 (M/SEC)
0.00	33.91	245.417	194.95	.678	191.31	149.21	650.19
11.24	39.60	252.65	191.04	.693	194.68	194.35	431.77
30.85	38.24	266.69	197.81	.749	214.98	214.98	461.14
49.14	34.94	245.95	163.94	.813	234.26	234.09	372.07
67.81	37.29	233.06	177.57	.836	233.14	232.29	342.29
84.50	34.50	311.33	198.04	.896	240.41	236.93	309.51
100.00	40.81	322.06	210.44	.932	243.77	237.03	291.22

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8777

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (M/SEC)	V114 (M/SFC)	M4	V44 (M/SEC)	V24 (M/SEC)	U4 (M/SEC)
0.00	33.76	219.40	-14.39	.600	218.93	218.93	446.93
11.24	39.76	233.41	-14.67	.613	233.33	223.10	431.57
30.85	38.50	235.91	-14.73	.655	235.45	235.35	405.59
49.14	37.25	243.19	-9.39	.710	253.00	252.74	380.51
67.81	35.20	240.14	0.27	.694	246.05	247.92	354.99
84.50	34.92	236.72	-3.80	.659	236.69	235.43	326.41
100.00	33.74	238.30	-3.90	.664	238.27	238.27	310.32

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (L. E.)	MASS FLOW (KG)	DELTA PETA (N/CM ²)	INCIDENCE ANGLE (DEG)	SUCT SUR (IN/IN)	FACTOR	WREGA MAP	LOSS PARAMETER	DEVIATION ANGLE (IN/IN)	STAGE PRESS RATIO	STAGE POLYTROPIC EFF	
0.00	0.00	42.47	2.596	-1.126	.369	.0560	.0201	48.420	1.650	1.2394	.7596
11.24	11.77	43.36	3.416	.005	.342	.0677	.0235	12.819	1.666	1.2394	.7396
30.85	31.76	42.86	-3.350	-3.637	.3255	.0810	.0266	4.811	1.721	1.2183	.6375
49.14	51.26	37.25	-2.812	-5.794	.2970	.0900	.0276	3.724	1.403	1.2104	.6720
67.81	70.89	35.74	-2.310	-5.161	.3147	.1456	.0414	12.614	1.774	1.2096	.5352
84.50	90.15	40.42	-2.142	-4.806	.4030	.2703	.0715	10.614	1.716	1.2114	.6928
100.00	100.00	41.74	-3.424	-1.265	.4187	.2557	.0647	17.763	1.716	1.2113	.5509

MOMENTUM AVERAGE STAGE EFFICIENCY = .7969 (POLYTROPIC) MOMENTUM AVG. STAGE PRESS RATIO = 1.7365
 MOMENTUM AVERAGE STAGE EFFICIENCY = .7807 (ADIABATIC) MASS AVERAGE TEMPERATURE RISE = 1.2184

NASA SMALL AXIAL COMPRESSOR TEST 3 JUNE 25, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT FLIGHT FLOW = 3.0269 LBM/SEC 100 PERCENT DESIGN SPEED = SCAN NO 5
 PERCENT DESIGN FLOW = 90.0153 EQUIVALENT SPEED
 EQUIVALENT FLOW / INLET AREA = 76791.679 R.P.M.
 36.4135 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9792

PERCENT SPAN FROM TIP (I. P.)	BETA1 (DEG)	VU1 (FT/SEC)	VI (FT/SEC)	VU1 (FT/SEC)	M1	VU1 (FT/SEC)	V1 (FT/SEC)	U1 (FT/SEC)
0.00	72.23	1582.85	0.00	494.08	0.00	494.08	482.04	1582.65
4.71	71.29	1406.75	0.00	510.26	0.00	510.26	493.54	1506.75
26.21	68.10	1277.09	1.364	554.71	0.00	554.71	547.53	1377.09
43.15	65.44	1200.72	1.268	567.20	0.00	567.20	565.37	1243.69
62.12	63.37	1093.41	1.126	549.37	0.00	549.37	549.16	1095.41
85.21	60.66	1051.21	0.983	515.07	0.00	515.07	509.10	916.41
100.00	58.23	800.78	0.863	493.57	0.00	493.57	477.18	900.78

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .7349

PERCENT SPAN FROM TIP (I. P.)	BETA2 (DEG)	VU2 (FT/SEC)	V2 (FT/SEC)	VU2 (FT/SEC)	M2	VU2 (FT/SEC)	V2 (FT/SEC)	U2 (FT/SEC)
0.00	55.99	1035.19	0.5128	488.95	0.21	488.95	696.61	1322.14
11.71	71.22	942.15	0.9748	510.31	0.764	510.31	738.25	1322.14
31.45	71.06	829.32	1.1101	508.59	0.785	508.59	757.17	1335.92
50.05	68.29	694.65	1.1099	520.15	0.846	520.15	813.47	1244.80
68.76	62.57	573.97	1.0116	584.73	0.885	584.73	817.74	1113.70
88.01	58.37	429.21	1.0003	604.92	0.974	604.92	877.33	994.13
100.00	53.23	216.07	1.1295	712.03	1.009	712.03	847.34	928.10

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (I. P.)	DELTA (DEG)	INCIDENCE ANGLE (DEG)	MEAN SUCTION SUM (DEG)	U (FT/SEC)	FACUM (FT/SEC)	RAM (FT/SEC)	OMEGA (RPM)	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ADJACENT RATIO	ROTOR POLYTROPIC EFF
0.00	0.00	0.094	0.226	0.191	0.2639	0.2639	0.000	0.0562	-1.005	1.664	0.6628	0.880
4.71	11.75	0.401	0.009	0.109	0.2607	0.2607	0.000	0.0583	-2.994	1.693	0.8824	0.7049
26.21	31.33	0.170	7.054	0.454	0.1691	0.1691	0.000	0.0380	-2.280	1.753	0.8011	0.8162
43.15	50.05	0.039	5.488	0.342	0.0737	0.0737	0.000	0.0170	-1.089	1.450	0.4217	0.9281
62.12	68.76	0.117	0.239	0.353	0.0891	0.0891	0.000	0.0205	3.000	1.660	0.9202	0.9289
85.21	88.01	0.403	4.238	0.290	0.0180	0.0180	0.000	0.0039	12.269	1.946	0.9477	0.9888
100.00	100.00	0.577	3.505	0.1975	0.0214	0.0214	0.000	0.0044	20.886	1.446	0.9477	0.9888

MOMENTUM AVG. ROTOR PRESS RATIO = 1.8066
 MASS AVERAGE TEMPERATURE RISE = 1.2175

NASA SMALL AXIAL COMPRESSOR TEST 3 JUNE 25, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

100 PERCENT DESIGN SPEED - SCAN NO 5

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8658

PERCENT SPAN FROM TIP (U. S.)	BETA 3 (DEG)	V3 (FT/SEC)	VU3 (FT/SEC)	M3	VM3 (FT/SEC)	VZ3 (FT/SEC)	U3 (FT/SEC)
0.00	37.83	417.50	501.41	.689	645.08	676.59	1475.25
11.70	36.50	419.13	523.01	.709	646.20	645.11	1417.20
31.25	35.82	417.27	514.82	.754	712.94	712.93	1315.07
49.74	34.90	422.00	527.94	.818	776.74	776.17	1218.39
68.23	34.40	426.94	546.13	.834	766.59	743.79	1120.53
86.80	34.82	434.60	621.72	.914	810.03	799.16	1014.26
100.00	35.13	442.50	691.32	.948	820.03	797.37	956.24

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8633

PERCENT SPAN FROM TIP (U. S.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	2.06	779.94	24.04	.655	779.48	774.44	1467.53
11.23	1.86	743.50	26.04	.667	743.13	743.01	1417.17
30.16	-3.04	613.04	-44.99	.710	632.42	632.06	1322.24
48.53	-4.41	475.68	-67.40	.753	473.06	472.16	1249.82
67.29	-4.43	442.40	-64.40	.730	452.37	451.91	1155.72
86.22	-1.11	415.24	-15.05	.695	415.09	412.11	1071.80
100.00	-1.12	421.35	-16.05	.701	421.20	421.20	1018.96

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP FROM LEAD TO TRAILING EDGE	MASS FLOW (PLT)	DELTA DELTA (DEG)	INCIDENCE ANGLE (DEG)	FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE POLYTROPIC EFF
0.00	0.00	35.71	1.513	.563	.0482	.0204	24.260	1.643	1.2375
11.70	12.03	36.67	2.371	.575	.0495	.0241	10.462	1.660	1.2375
31.25	30.10	38.92	-0.31	.582	.0594	.0195	10.104	1.721	1.2180
49.74	41.54	38.97	-3.506	.614	.0971	.0297	7.500	1.786	1.2080
68.23	67.27	37.83	-2.247	.604	.1694	.0684	10.670	1.743	1.2104
86.22	85.22	39.93	-3.722	.574	.3236	.0856	10.414	1.683	1.2118
100.00	100.00	41.25	-4.949	.5914	.3076	.0774	17.501	1.683	1.2117

MOMENTUM AVERAGE STAGE EFFICIENCY = .7847 (POLYTROPIC) MOMENTUM AVERAGE STAGE PRESS RATIO = 1.7184
 MOMENTUM AVERAGE STAGE EFFICIENCY = .7678 (ADIABATIC) MASS AVERAGE TEMPERATURE RISE = 1.2175

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NASA SMALL AXIAL COMPRESSOR TEST 3 JUNE 25, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

100 PERCENT DESIGN SPEED - SCAN NO 5

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .065P

PERCENT SPAN FROM TIP (L. F.)	BETA 3 (DEG)	VJ (M/SEC)	VU3 (M/SEC)	M3	VH3 (M/SEC)	VZ3 (M/SEC)	UJ (M/SEC)
0.00	37.83	249.17	152.83	.689	196.80	196.64	450.57
11.70	39.56	255.77	159.41	.709	200.01	194.68	431.96
31.27	35.82	263.00	156.06	.754	217.31	217.30	400.83
49.71	34.46	287.17	162.44	.818	236.75	236.54	371.37
66.53	37.40	298.13	178.05	.839	233.66	232.80	341.54
80.00	44.82	316.89	198.64	.914	246.90	243.54	309.15
100.00	40.13	326.97	210.72	.946	249.94	243.04	291.60

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .066J3

PERCENT SPAN FROM TIP (L. F.)	BETA 4 (DEG)	V4 (M/SEC)	VU (M/SEC)	M4	VH4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	27.06	237.74	14.55	.655	237.59	237.59	447.30
11.23	1.44	241.80	7.95	.667	241.75	241.72	431.95
30.16	-3.09	254.09	-13.71	.710	253.72	253.61	405.07
48.53	-4.41	266.50	-20.54	.753	266.11	265.94	380.94
67.20	-7.43	279.81	-1.95	.730	259.80	259.66	355.31
84.22	-1.11	260.40	-4.83	.695	248.44	247.53	326.69
100.00	-1.12	250.35	-4.89	.701	250.30	250.30	310.58

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (L. F.)	DELTA (DEG)	DELTA (DEG)	INCIDENCE ANGLE (DEG)	SUCI ANGLE (DEG)	FACTOR	OMEGA	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	35.77	1.513	-2.409	.2563	.0582	.0207	24.240	1.644	1.2775	.4624
11.70	11.70	36.67	2.371	-3.950	.2595	.0695	.0241	18.862	1.660	1.2775	.4594
31.26	31.26	38.92	-0.931	-4.105	.2592	.0594	.0195	10.106	1.721	1.2168	.5289
49.70	49.70	30.87	-3.406	-6.378	.2614	.0371	.0297	7.580	1.746	1.2080	.4627
66.53	66.53	37.81	-2.297	-5.121	.2664	.1699	.0648	10.670	1.743	1.2104	.3924
80.00	80.00	39.91	-3.722	-6.563	.2774	.3236	.0956	10.419	1.683	1.2118	.3347
100.00	100.00	41.25	-4.499	-7.440	.3914	.3076	.0776	17.581	1.643	1.2117	.4214

MOMENTUM AVERAGE STAGE EFFICIENCY = .707 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7570 (ADIABATIC)
MOMENTUM AVERAGE STAGE PRESS RATIO = 1.2184
MASS AVERAGE TEMPERATURE RISE = 1.2175

NASA SMALL AXIAL COMPRESSOR TEST 3 JUNE 25, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIVALENT FLOW = 1.5174 KG/SEC 100 PERCENT DESIGN SPEED = 5644 RPM
 PERCENT DESIGN & EQUIVALENT FLOW = 91.3307 EQUIVALENT SPEED
 ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS) = 76/43.7/5 R.P.M.
 180.6001 KG/SEC-SU M

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9850

PERCENT SPAN FROM TIP (L. F.)	SPAN (MM)	W1 (M/SEC)	W2 (M/SEC)	W3 (M/SEC)	W4 (M/SEC)	W5 (M/SEC)	W6 (M/SEC)	W7 (M/SEC)	W8 (M/SEC)	W9 (M/SEC)	W10 (M/SEC)	W11 (M/SEC)	W12 (M/SEC)
0.00	72.64	507.47	406.34	1.521	154.47	0.00	0.00	0.00	0.00	154.47	154.47	154.47	482.34
2.00	70.74	505.41	405.74	1.459	154.14	0.00	0.00	0.00	0.00	154.14	154.14	154.14	450.73
26.75	67.06	472.50	410.61	1.360	172.04	0.00	0.00	0.00	0.00	172.04	172.04	172.04	418.61
44.00	64.37	446.50	377.44	1.253	174.28	0.00	0.00	0.00	0.00	174.28	174.28	174.28	377.44
62.00	62.02	373.77	332.50	1.124	170.73	0.00	0.00	0.00	0.00	170.73	170.73	170.73	332.50
80.00	60.15	321.48	274.82	0.967	160.61	0.00	0.00	0.00	0.00	160.61	160.61	160.61	274.82
100.00	57.06	250.23	244.05	0.865	153.35	0.00	0.00	0.00	0.00	153.35	153.35	153.35	244.05

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .7406

PERCENT SPAN FROM TIP (L. F.)	SPAN (MM)	V1 (M/SEC)	V2 (M/SEC)	V3 (M/SEC)	V4 (M/SEC)	V5 (M/SEC)	V6 (M/SEC)	V7 (M/SEC)	V8 (M/SEC)	V9 (M/SEC)	V10 (M/SEC)	V11 (M/SEC)	V12 (M/SEC)
0.00	56.71	301.77	317.18	1.057	34.16	190.73	0.13	0.13	210.64	203.49	203.49	203.49	463.90
12.00	51.33	300.00	280.13	1.040	33.92	193.96	0.772	0.772	224.92	224.92	224.92	224.92	442.09
31.66	47.03	344.79	253.73	0.979	33.07	193.35	0.745	0.745	235.94	235.94	235.94	235.94	400.58
50.00	40.17	329.56	212.57	0.945	32.44	190.08	0.55	0.55	251.45	251.45	251.45	251.45	372.65
68.45	32.47	297.46	159.93	0.87	30.43	179.14	0.87	0.87	251.34	251.34	251.34	251.34	339.07
88.00	19.34	282.36	94.50	0.832	34.01	204.45	0.942	0.942	264.25	264.25	264.25	264.25	302.95
100.00	12.49	275.03	59.67	0.808	34.75	223.18	1.025	1.025	269.29	269.29	269.29	269.29	282.85

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (L. F.)	SPAN (MM)	DELTA (MM)	INCIDENCE ANGLE (DEG)	QUICK SURF (DEG)	FACTOR	MAH	MAH	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS LOSS (MM)	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	15.86	7.937	0.495	0.495	0.694	0.567	0.0567	-0.583	1.647	0.912	0.746
2.00	12.04	14.63	7.704	0.506	0.506	0.251	0.0566	0.0566	-1.316	1.695	0.916	0.735
26.75	31.66	20.50	6.685	0.442	0.442	0.154	0.0359	0.0359	-2.060	1.759	0.913	0.823
44.00	50.00	24.00	5.502	0.244	0.244	0.0617	0.0141	0.0141	-1.244	1.453	0.912	0.900
62.00	64.37	30.35	4.734	0.317	0.317	0.0926	0.0214	0.0214	3.054	1.451	0.919	0.923
80.00	60.15	40.41	3.401	0.2614	0.2614	0.0395	0.0087	0.0087	11.064	1.462	0.9735	0.959
100.00	100.00	45.34	3.029	0.2046	0.2046	0.0471	0.0098	0.0098	14.546	1.962	0.9735	0.959

MOMENTUM AVERAGE ROTOR EFFICIENCY = 0.8575 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = 0.8452 (ADIABATIC)
 MOMENTUM AVERAGE ROTOR PRESS LOSS = 1.8052
 MASS AVERAGE TEMPERATURE RISE = 1.2171

NASA SMALL AXIAL COMPRESSOR TEST 1 JUN 25 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

100 PERCENT DESIGN SPEED - SCAN NO 6

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8700

PERCENT SPAN FROM TIP (I. F.)	ETA 3 (0.25)	V3 (FT/SEC)	VU3 (FT/SEC)	M3	VM3 (FT/SEC)	VZ3 (FT/SEC)	U3 (FT/SEC)
0.00	17.70	1110.50	495.00	.683	641.34	674.29	1474.10
11.23	17.55	1092.14	517.50	.719	673.39	672.27	1413.25
31.46	31.01	970.30	510.70	.765	729.10	724.24	1313.00
50.00	33.75	844.01	527.00	.820	769.25	766.97	1217.03
65.00	37.23	705.77	541.00	.891	769.31	766.50	1119.11
84.00	37.44	554.90	574.24	.927	814.72	803.78	1011.74
100.00	40.70	404.83	719.70	.962	824.73	811.44	1015.05

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8678

PERCENT SPAN FROM TIP (I. F.)	ETA 4 (0.25)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	-4.1	814.42	-5.06	.691	814.40	814.40	1407.38
11.23	-5.3	833.60	-7.70	.705	833.57	833.46	1417.06
31.46	-1.59	857.88	-54.44	.745	867.78	871.39	1332.17
50.00	-3.60	808.01	-36.40	.785	906.22	905.29	1249.57
67.23	-6.12	869.55	-57.40	.787	867.30	866.83	1105.82
84.21	-4.03	842.37	-64.02	.718	839.62	836.55	1071.74
100.00	-4.55	847.27	-68.02	.725	846.49	846.49	1015.05

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP FROM TIP (I. F.)	MASS FLOW (LBS)	DELTA HETA (0.25)	INCIDENCE ANGLE (DEG)	U FACTOR	GRCLA HAN	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STATOR PRESS RATIO	STATOR POLYTROPIC EFF
0.00	0.00	39.11	1.361	0.2150	0.160	0.060	21.770	1.639	1.7347
11.23	11.23	38.68	1.354	0.2126	0.121	0.240	15.049	1.659	1.7347
31.46	31.46	38.61	-1.053	0.2091	0.143	0.244	9.806	1.717	1.7150
50.00	50.00	37.34	-2.009	0.2080	0.189	0.333	8.396	1.740	1.7057
67.23	67.23	41.31	-2.510	0.2451	0.200	0.586	6.947	1.711	1.7095
84.21	84.21	44.07	-3.007	0.1743	0.369	0.752	6.001	1.661	1.7174
100.00	100.00	45.40	-3.671	0.3914	0.340	0.865	14.060	1.660	1.7177

MOMENTUM AVERAGE STAGE EFFICIENCY = .7751 (POLYTROPIC)

MOMENTUM AVERAGE STAGE EFFICIENCY = .7576 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.7056

MASS AVERAGE TEMPERATURE RISE = 1.2171

NASA SMALL AXIAL COMPRESSOR TEST 3 JUNE 65, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

100 PERCENT DESIGN SPEED - SCAN NO 6

INLET VELOCITY DIAGRAM DATA
CALCULATED HYDRODYNAMIC BLOCKAGE = .0700

PERCENT STATOR FLOW TIP (L. F.)	WETA 3 (DEG)	V3 (M/SEC)	V03 (M/SEC)	M3	V43 (M/SEC)	VZ3 (M/SEC)	U3 (M/SEC)
0.00	37.30	247.00	151.00	.643	197.40	193.33	430.52
11.00	37.50	249.80	157.70	.719	205.25	205.91	431.60
31.00	37.01	249.30	155.00	.765	222.20	222.20	400.48
50.00	31.70	249.60	160.00	.820	240.05	240.40	370.95
66.00	37.20	248.30	177.00	.841	238.40	233.63	341.32
84.00	37.60	241.50	204.00	.927	248.33	248.93	309.12
100.00	40.70	241.00	230.00	.962	251.40	248.63	291.43

EXIT VELOCITY DIAGRAM DATA
CALCULATED HYDRODYNAMIC BLOCKAGE = .0678

PERCENT STATOR FLOW TIP (L. F.)	WETA 4 (DEG)	V4 (M/SEC)	V04 (M/SEC)	M4	V44 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	-4.1	243.40	-1.70	.691	249.65	249.45	447.20
11.00	-5.3	254.00	-2.35	.705	254.07	254.04	431.90
30.14	-3.50	265.02	-16.50	.745	264.50	264.39	406.05
43.50	-3.00	276.76	-17.30	.785	276.22	275.43	380.47
67.23	-4.10	265.00	-19.02	.747	264.35	264.21	355.34
88.21	-4.63	250.75	-20.73	.718	255.92	254.94	325.67
100.00	-4.64	248.86	-20.94	.725	258.01	258.01	310.55

STATOR PERFORMANCE DATA

PERCENT STATOR FLOW TIP (L. F.)	PERCENT STATOR FLOW TIP (L. F.)	DELTA RETR (DEG)	INCIDENCE MEAN (DEG)	SUCT SUR (DEG)	DELTA ACTOR (DEG)	OMEGA HAR	LOYS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	30.11	1.30	-2.54	2150	.0108	.0060	21.770	1.639	1.2747	1.7004
11.00	11.00	30.00	1.30	-1.90	2326	.0721	.0250	16.040	1.650	1.2767	1.6016
31.00	30.14	30.60	-1.00	-6.20	2291	.0743	.0244	4.000	1.717	1.2750	1.2753
50.00	43.50	37.30	-6.13	-7.00	2280	.1080	.0333	8.196	1.740	1.2057	1.0163
66.00	67.23	41.31	-2.31	-5.30	2151	.2046	.0586	6.947	1.711	1.2095	1.1473
84.00	88.21	44.07	-3.00	-7.00	1743	.3000	.0952	6.901	1.661	1.2174	1.2107
100.00	100.00	45.40	-3.07	-7.31	1914	.3430	.0965	14.050	1.660	1.2177	1.3186

PERCENT STATOR AVERAGE STAGE EFFICIENCY = .7751 (POLYTROPIC)
PERCENT STATOR AVERAGE STAGE EFFICIENCY = .7576 (ADIABATIC)
MOMENTUM AVG. STAGE PRESS RATIO = 1.7056
MASS AVERAGE TEMPERATURE RISE = 1.2171

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIVALENT FLOW = 1.2922 KU/SFC
 PERCENT DESIGN EQUIVALENT FLOW = 77.7747

90 PERCENT DESIGN SPEED = SCAN NO 8
 EQUIVALENT SPEED
 EQUIVALENT FLOW / INLET ANN AREA = 69178.476 R.P.M.
 153.4207 K0/SEC-SU M

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0036

PERCENT SPAN FROM TIP (L. F.)	RETA1 (DEG)	VI (M/SEC)	VIU1 (M/SEC)	MI	V41 (M/SEC)	V71 (M/SEC)	U1 (M/SEC)
0.00	73.27	434.47	171.35	0.30	127.34	123.25	434.57
4.31	72.75	434.47	130.28	0.00	130.28	126.02	414.53
24.92	67.73	406.18	140.59	0.00	140.59	134.61	381.08
41.41	61.48	346.52	141.03	0.00	143.43	143.37	366.52
54.11	65.44	306.02	137.56	0.00	134.54	137.51	306.02
61.34	62.72	254.12	131.17	0.00	131.17	129.41	254.32
100.00	60.14	214.09	126.24	0.00	126.24	121.53	214.48

EXIT VELOCITY DIAGRAM 'A A
 CALCULATED AERODYNAMIC BLOCKAGE = 0.7612

PERCENT SPAN FROM TIP (L. F.)	RETA2 (DEG)	V2 (M/SEC)	VUP (M/SEC)	M2	V42 (M/SEC)	V72 (M/SEC)	U2 (M/SEC)
0.00	57.97	310.41	273.23	0.62	175.47	164.42	417.46
11.63	54.91	311.02	231.12	0.64	181.71	171.74	394.31
30.52	50.14	274.74	234.21	0.66	187.69	181.52	360.14
42.70	47.40	277.03	242.20	0.71	202.42	202.41	334.35
61.21	34.11	204.83	272.44	0.78	221.73	221.27	308.33
87.56	28.89	224.44	290.48	0.86	214.93	211.40	275.13
100.00	11.01	214.75	309.49	0.87	215.20	207.44	254.84

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (L. F.)	DELTA (DEG)	RETA0 (DEG)	INCIDENCE ANGLE (DEG)	SUCT SURF (DEG)	FACTON	UARG#	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR AERODYNAMIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	15.76	9.402	9.402	0.3844	0.2886	0.543	0.11	1.530	0.681	0.884
9.31	11.43	14.26	9.276	4.013	0.403	0.274	0.578	0.459	1.513	0.674	0.776
24.92	30.52	10.591	8.562	3.907	0.483	0.1483	0.621	0.020	1.575	0.759	0.747
41.41	41.41	24.55	7.153	3.827	0.209	0.0249	0.249	0.731	1.640	0.647	0.757
54.11	61.21	31.34	7.146	1.309	0.224	0.0224	0.051	4.238	1.706	0.790	0.805
83.46	87.56	42.23	6.249	3.564	0.1474	0.0224	0.023	10.324	1.717	0.919	0.901
100.00	100.00	48.44	5.313	0.3083	0.1424	0.1424	0.031	14.744	1.717	0.919	0.901

MOMENTUM AVERAGE ROTOR EFFICIENCY = 0.1291 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = 0.1170 (ADIABATIC)
 MOMENTUM AVG. ROTOR PRESS RATIO = 1.6258
 MASS AVERAGE TEMPERATURE RISE = 1.1820

NASA SMALL AXIAL COMPRESSOR TEST 3 JUNE 25, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

90 PERCENT UPSILON SPEED - SCAN NO 8

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9060

PERCENT SPAN FROM TIP (L. F.)	ETA A (DEG)	V3 (FT/SEC)	VU3 (FT/SEC)	M3	VM3 (FT/SEC)	VZ3 (FT/SEC)	U3 (FT/SEC)
0.00	41.90	697.98	466.15	.591	519.50	513.79	1331.71
11.61	43.03	712.37	486.86	.604	520.77	519.91	1277.11
30.85	37.67	750.19	478.97	.643	577.42	577.42	1166.53
48.91	37.89	809.67	495.04	.701	640.70	640.23	1101.71
67.14	36.30	867.89	518.22	.760	647.68	625.13	1015.99
87.50	43.38	913.18	676.92	.798	663.98	655.07	920.25
100.00	44.81	953.34	869.54	.838	678.85	649.90	861.44

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9082

PERCENT SPAN FROM TIP (L. F.)	ETA A (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	27.88	594.40	-24.87	.498	513.65	513.65	1322.05
11.27	27.87	602.83	-30.20	.500	602.07	602.00	1278.51
30.20	27.35	626.67	-27.71	.531	626.15	626.47	1177.99
48.53	27.30	648.11	-13.58	.588	647.29	646.58	1125.52
67.15	1.07	706.36	21.10	.607	705.98	705.59	1044.84
87.14	3.42	696.55	46.38	.593	695.01	692.47	985.69
100.00	2.43	700.94	46.79	.597	699.38	699.38	917.95

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (L. F.)	DELTA (DEG)	DELTA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT (DEG)	FACTOR	OMEGA (RPM)	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TFRP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	44.74	5.584	1.682	.4064	.0477	.0172	14.300	1.514	1.1949	.8683
11.61	11.36	45.90	6.844	3.514	.4850	.0512	.0174	13.694	1.521	1.1949	.8631
30.85	30.59	42.02	3.041	-2.748	.3829	.0765	.0251	10.842	1.544	1.1821	.8729
48.91	41.82	40.44	-0.942	-3.877	.3482	.0630	.0195	7.140	1.610	1.1767	.9043
67.14	67.27	34.67	-3.815	-5.881	.3438	.1376	.0315	12.473	1.631	1.1680	.8560
87.50	88.30	39.54	1.145	-1.774	.3974	.1807	.0477	15.350	1.611	1.1848	.8679
100.00	100.00	40.79	-0.019	-3.480	.4194	.1680	.0424	22.528	1.611	1.1848	.8777

MOMENTUM AVERAGE STAGE EFFICIENCY = .8780 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7728 (ADIABATIC)
MOMENTUM AVERAGE STAGE PRESS RATIO = 1.5862
MOMENTUM AVERAGE TEMPERATURE RISE = 1.1820

NASA SMALL AXIAL COMPRESSOR TEST 3 JUN 25 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

90 PERCENT DESIGN SPEED - SCAN NO B

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9060

PERCENT SPAN FROM TIP (L. T.)	HETA J (DEG)	VJ (M/SEC)	VUJ (M/SEC)	MJ	VMJ (M/SEC)	VZJ (M/SEC)	UJ (M/SEC)
0.00	41.90	212.74	142.00	.591	154.34	140.60	402.90
11.01	43.03	217.13	144.14	.604	158.73	144.67	397.26
20.05	44.07	220.66	145.97	.643	170.00	176.00	361.69
44.21	47.09	246.79	150.89	.701	195.29	195.14	335.90
67.14	50.50	266.53	157.34	.760	212.65	211.47	309.67
87.50	54.30	278.34	191.09	.790	207.30	199.66	280.69
100.00	44.51	270.50	204.00	.834	206.05	201.14	262.57

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9082

PERCENT SPAN FROM TIP (L. T.)	HETA K (DEG)	VK (M/SEC)	VUK (M/SEC)	MK	VMK (M/SEC)	VZK (M/SEC)	UK (M/SEC)
0.00	-2.09	181.17	-9.10	.498	180.94	180.94	402.96
11.01	-2.07	183.74	-9.20	.506	183.51	183.49	397.00
20.05	-2.15	191.01	-7.04	.531	190.05	190.77	363.76
44.21	-2.00	209.74	-10.24	.588	203.99	209.27	343.06
67.14	1.17	215.30	7.04	.607	215.14	215.06	320.00
87.50	3.00	212.31	14.14	.593	211.84	211.01	294.34
100.00	4.03	213.65	14.26	.597	213.17	213.11	274.79

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (L. T.)	DELTA HETA (DEG)	INCIDENCE ANGLE MEAN (DEG)	SUCT SUR (DEG)	U FACTOR	U AREA	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS. RATIO	STAGE POLYTROPIC EFF
0.00	44.70	4.504	1.602	.4004	.0477	.0172	17.700	1.514	.9483
11.01	45.90	6.044	4.514	.4050	.0512	.0174	13.641	1.521	.9431
20.05	42.00	3.041	-2.246	.3829	.0765	.0251	10.442	1.506	.9429
44.21	44.63	4.049	-3.077	.3662	.0636	.0195	9.190	1.610	.8093
67.14	67.53	3.667	-5.881	.3438	.1376	.0395	12.973	1.631	.6560
87.50	84.10	1.145	-1.774	.3474	.1407	.0477	13.350	1.611	.6479
100.00	100.00	-0.017	-3.460	.4194	.1680	.0574	22.524	1.611	.7077

MOMENTUM AVERAGE STAGE EFFICIENCY = .7870 (POLYTROPIC)
 MOMENTUM AVERAGE STAGE EFFICIENCY = .7728 (ADIABATIC)
 MOMENTUM AVG. STAGE PRESS RATIO = 1.5862
 MASS AVERAGE TEMPERATURE RISE = 1.1820

NASA SMALL AXIAL COMPRESSOR TEST 3 JUNE 25, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 9

INLET VELOCITY DIAPHRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9042

PERCENT SPAN FROM TIP (I. I.)	BETA 3 (DEG)	V3 (FT/SEC)	V03 (FT/SEC)	M3	VM3 (FT/SEC)	VZ3 (FT/SEC)	U3 (FT/SEC)
0.00	41.54	699.08	453.54	.592	527.26	517.51	1331.05
11.46	42.71	712.00	482.78	.604	523.14	522.27	1277.64
30.55	38.74	750.72	423.00	.650	570.20	540.14	1146.97
44.02	36.57	815.39	415.77	.708	654.89	654.41	1142.53
66.32	39.37	862.74	511.00	.752	694.68	692.14	1016.50
87.54	42.59	919.24	622.21	.805	676.83	677.75	919.57
100.00	43.85	954.84	684.22	.844	671.47	672.34	861.02

EXIT VELOCITY DIAPHRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9151

PERCENT SPAN FROM TIP (I. I.)	BETA 4 (DEG)	V4 (FT/SEC)	V04 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	42.23	590.43	-125.07	.495	577.03	577.03	1321.40
11.46	41.51	600.47	-120.21	.509	589.25	584.14	1275.73
30.55	37.22	633.06	-24.26	.537	632.55	632.27	1195.82
44.02	37.00	695.43	-34.73	.596	694.56	694.44	1124.54
66.32	42.21	710.24	12.12	.611	709.81	709.42	1049.23
87.54	43.24	703.34	80.91	.600	702.22	694.65	985.10
100.00	43.10	712.84	40.74	.604	706.67	706.67	917.50

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (I. I.)	DELTA BETA (DEG)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	SUCT SUM (DEG)	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS. RATIO	STAGE TEMP. RATIO	POLYTROPIC EFF
0.00	0.00	53.77	5.222	1.300	.0493	9.950	1.505	1.1977	.6496
11.46	12.11	56.23	6.537	3.177	.0474	4.943	1.513	1.1977	.6576
30.55	36.14	36.57	2.124	-1.109	.0745	15.607	1.545	1.1401	.7978
44.02	48.73	37.43	-3.191	-3.100	.0611	4.187	1.612	1.1716	.8143
66.32	67.00	33.78	-3.115	-5.408	.1166	13.649	1.629	1.1666	.7035
87.54	64.21	37.44	-3.72	-2.545	.0847	14.427	1.611	1.1433	.6341
100.00	100.00	40.54	-3.774	-3.220	.0943	21.909	1.611	1.1433	.6345

MOMENTUM AVERAGE STAGE EFFICIENCY = .7936 (POLYTROPIC)
 MOMENTUM AVERAGE STAGE EFFICIENCY = .7795 (ADIABATIC)
 MOMENTUM AVG. STAGE PRESS. RATIO = 1.5850
 MASS AVERAGE TEMPERATURE RISE = 1.1001

NASA SMALL AXIAL COMPRESSOR TEST 3 JUNE 25, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT FLOW HEIGHT FLUX = 2.9158 LBM/SEC
 PERCENT DESIGN FLOW = 79.0093
 ROTOR PERCENT DESIGN SPEED = SCAN NO 10
 EQUIVALENT SPEED = 69101.200 R.P.M.
 EQUIVALENT FLOW / INLET ANN AREA = 32.2040 LBM/SEC-SQ FT

INLET VELOCITY DIAPHRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0070

PERCENT SPAN FROM TIP (L. F.)	RELATIVE HEIGHT (INCH)	V01 (FT/SEC)	W01 (DEG)	W1 (DEG)	V01 (FT/SEC)	V02 (FT/SEC)	V03 (FT/SEC)	V04 (FT/SEC)	V05 (FT/SEC)	V06 (FT/SEC)	V07 (FT/SEC)	V08 (FT/SEC)	V09 (FT/SEC)	V10 (FT/SEC)	V11 (FT/SEC)	V12 (FT/SEC)	V13 (FT/SEC)	V14 (FT/SEC)	V15 (FT/SEC)	V16 (FT/SEC)	V17 (FT/SEC)	V18 (FT/SEC)	V19 (FT/SEC)	V20 (FT/SEC)
0.00	71.21	1007.54	1474.10	1.553	0.00	427.60	0.00	0.31	479.60	415.77	1424.16													
2.50	72.07	1027.07	1391.32	1.500	0.00	439.57	0.00	0.00	439.57	425.14	1359.32													
5.00	68.18	1035.02	1257.40	1.210	0.00	474.01	0.00	0.33	474.01	465.09	1247.40													
7.50	65.01	1033.30	1133.73	1.127	0.00	487.03	0.00	0.44	487.03	484.06	1133.73													
10.00	61.00	1001.42	1001.42	1.000	0.00	471.22	0.00	0.30	471.22	471.06	1001.42													
12.50	54.00	943.02	843.18	0.859	0.00	442.99	0.00	0.03	442.99	437.05	933.18													
15.00	52.38	837.37	720.50	0.762	0.00	424.50	0.00	0.38	424.50	412.00	720.50													

EXIT VELOCITY DIAPHRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 0.7756

PERCENT SPAN FROM TIP (L. F.)	RELATIVE HEIGHT (INCH)	V21 (FT/SEC)	W21 (DEG)	W2 (DEG)	V21 (FT/SEC)	V22 (FT/SEC)	V23 (FT/SEC)	V24 (FT/SEC)	V25 (FT/SEC)	V26 (FT/SEC)	V27 (FT/SEC)	V28 (FT/SEC)	V29 (FT/SEC)	V30 (FT/SEC)	V31 (FT/SEC)	V32 (FT/SEC)	V33 (FT/SEC)	V34 (FT/SEC)	V35 (FT/SEC)	V36 (FT/SEC)	V37 (FT/SEC)	V38 (FT/SEC)	V39 (FT/SEC)	V40 (FT/SEC)
0.00	57.73	1000.70	922.06	37.72	34.09	730.72	447.05	0.21	570.01	559.40	1354.71													
2.50	58.00	1010.73	890.10	38.09	34.57	754.70	460.06	0.07	597.11	544.06	1308.22													
5.00	50.14	909.79	744.09	35.57	35.25	673.22	400.70	0.06	620.40	617.12	1205.39													
7.50	43.14	821.79	631.70	32.01	35.25	627.01	470.47	0.19	676.24	674.21	1108.25													
10.00	35.10	660.72	470.33	27.00	33.44	518.75	511.70	0.37	708.44	708.45	1004.25													
12.50	29.44	566.74	370.74	21.41	31.59	453.59	637.04	0.61	716.71	704.35	994.79													
15.00	24.12	431.43	254.16	14.70	24.20	381.01	801.01	0.75	717.54	691.15	835.15													

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	DELTA HEIGHT (INCH)	MASS FLOW (LBS)	INCIDENCE ANGLE (DEG)	SUCT SUM (INCH)	FACTOR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	9.377	0.909	0.025	0.2014	0.728	0.944	1.527	0.639
2.50	11.70	11.02	10.105	0.816	0.170	0.2670	0.262	-0.301	1.536	0.610
5.00	30.70	10.07	10.042	0.804	0.085	0.1415	0.347	0.000	1.574	0.740
7.50	44.91	9.71	9.129	0.719	0.0915	0.0915	0.203	1.013	1.041	0.903
10.00	67.32	6.750	10.307	0.516	0.3433	0.0407	0.091	4.401	1.078	0.763
12.50	87.41	0.256	10.593	0.502	0.3445	0.1053	0.231	10.799	1.130	0.530
15.00	100.00	100.00	10.024	0.549	0.2933	0.1300	0.272	19.175	1.170	0.427

MOMENTUM AVERAGE ROTOR EFFICIENCY = 0.639 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = 0.4270 (ADIABATIC)
 MOMENTUM AVG. ROTOR PRESS RATIO = 1.6212
 MASS AVERAGE TEMPERATURE RISE = 1.1185

NASA SMALL AXIAL COMPRESSOR TEST 3 JUNE 25 1974 (COMBINED TEMP.)

MOTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIVALENT FLOW FROM TIP = 1.0226 KG/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 77.00033
 40 PERCENT DESIGN SPEED = SCAM NO. 3
 EQUIVALENT SPEED
 EQUIVALENT FLOW / INLET ANN AREA = 69101.200 K.G./SEC-SQ M
 157.2374

INLET VELOCITY DYNAMIC DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0070

PERCENT SPAN FROM TIP (T. P.)	DELTA (DEG)	V01 (M/SEC)	DELTA1 (DEG)	V1 (M/SEC)	V01 (M/SEC)	MI	V01 (M/SEC)	V02 (M/SEC)	U1 (M/SEC)
0.00	73.21	453.40	0.00	130.94	0.00	.371	130.94	174.73	434.08
4.16	72.07	437.17	0.00	134.98	0.00	.400	134.98	179.59	414.01
25.07	67.14	406.91	0.00	144.56	0.00	.433	144.56	184.00	390.33
41.20	60.91	375.87	0.00	149.02	0.00	.444	149.02	187.54	365.56
60.04	64.00	347.14	0.00	144.63	0.00	.430	144.63	183.54	305.23
74.00	62.00	297.02	0.00	135.02	0.00	.403	135.02	174.21	253.95
100.00	59.38	233.23	0.00	130.02	0.00	.384	130.02	175.60	219.63

EXIT VELOCITY DYNAMIC DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .7756

PERCENT SPAN FROM TIP (T. P.)	DELTA (DEG)	V02 (M/SEC)	DELTA2 (DEG)	V2 (M/SEC)	V02 (M/SEC)	M2	V02 (M/SEC)	V03 (M/SEC)	U2 (M/SEC)
0.00	57.93	296.03	37.72	222.72	130.26	.621	176.14	170.50	417.49
11.50	54.00	314.17	34.04	231.24	142.67	.647	147.00	174.02	398.75
40.70	30.14	295.59	36.57	235.08	140.44	.666	149.24	144.10	367.45
61.31	43.14	241.63	34.25	251.65	145.23	.719	205.51	205.50	337.79
67.34	35.16	263.93	35.04	266.38	155.94	.767	215.91	215.94	307.75
87.91	20.44	233.20	41.41	241.26	192.65	.841	218.45	214.86	274.26
100.00	12.12	223.09	43.50	201.53	207.57	.875	218.70	211.27	254.55

COMBINED PERFORMANCE DATA

PERCENT SPAN FROM TIP (T. P.)	DELTA (DEG)	LOSS FLUID (KG)	INCIDENCE ANGLE (DEG)	SUCT SUM (DEG)	FACTOR	DELTA (DEG)	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ADJUST CORR CORR	ADJ ADJ ADJ	POLYTROPIC EFF
0.00	7.00	0.00	9.377	0.909	.3425	.2614	.0528	.944	1.527	.4434	.6737
4.16	11.00	11.00	10.103	0.816	.3770	.2676	.0762	-.361	1.514	.4620	.6016
25.07	30.70	30.70	10.004	0.806	.3845	.1413	.0347	.090	1.574	.4762	.7900
41.20	41.01	41.01	9.708	7.124	.3679	.0915	.0203	1.014	1.641	.4948	.9037
60.04	67.43	67.43	10.307	6.516	.3433	.0407	.0091	4.401	1.674	.4610	.9638
74.00	67.91	67.91	10.593	5.505	.3645	.1053	.0231	10.795	1.730	.4927	.9340
100.00	100.00	100.00	47.25	4.549	.2933	.1308	.0272	19.175	1.730	.4927	.9340

MOMENTUM AVERAGE MOTOR EFFICIENCY = .8389 (POLYTROPIC)
 MOMENTUM AVERAGE MOTOR EFFICIENCY = .4276 (ADIABATIC)
 MOMENTUM AVG. ROTOR PRESS RATIO = 1.6212
 MASS AVERAGE TEMPERATURE RISE = 1.1785

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NASA SMALL AXIAL COMPRESSOR TEST 3 JUNIF 25, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

90 PERCENT DESIGN SPEED = SCAN NO 10

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9055

PERCENT SPAN FROM TIP (I, I)	BETA 3 (DEG)	V3 (FT/SEC)	V13 (FT/SEC)	M3	VM3 (FT/SEC)	V23 (FT/SEC)	U3 (FT/SEC)
0.00	1.12	711.37	460.33	.604	547.35	576.19	1330.21
11.30	1.25	723.53	477.07	.615	541.47	560.54	1274.97
30.76	1.70	761.00	468.31	.655	549.86	549.15	1185.82
49.70	3.28	818.75	479.41	.712	663.71	663.22	1101.45
77.05	39.42	857.40	504.47	.751	684.47	687.65	1015.19
87.75	71.95	928.47	614.54	.813	689.33	691.07	917.75
100.00	13.21	985.14	660.03	.851	703.49	644.05	860.48

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9205

PERCENT SPAN FROM TIP (I, I)	BETA 4 (DEG)	V4 (FT/SEC)	V14 (FT/SEC)	M4	VM4 (FT/SEC)	V24 (FT/SEC)	U4 (FT/SEC)
0.00	2.00	605.20	30.41	.509	604.51	604.51	1320.50
11.30	2.00	613.90	31.00	.510	613.19	613.11	1274.97
30.76	1.97	630.74	20.34	.543	630.47	630.14	1198.37
49.70	2.04	701.11	15.30	.602	700.21	699.43	1124.00
67.10	4.11	717.47	33.05	.613	710.81	710.02	1048.87
84.14	3.11	784.47	40.09	.601	703.84	701.07	964.61
100.00	3.30	709.41	40.85	.600	704.23	704.73	910.72

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (I, I)	DELTA T (DEG)	DELTA T (DEG)	INCIDENCE ANGLE MEAN (DEG)	FACTOR	WASH LOSS PARAMETER	DELTA T (DEG)	STAGE PRESS. RATIO	STATOR POLYTROPIC EFF
0.00	0.00	43.20	4.005	.1946	.0180	17.300	1.1942	.8422
11.30	11.07	44.41	5.308	.1901	.0170	15.700	1.1942	.8490
30.76	31.27	37.41	1.433	.1692	.0253	11.361	1.1779	.7777
49.70	41.79	30.74	-1.923	.1376	.0193	9.091	1.1642	.8051
67.10	67.31	32.01	-3.087	.1050	.0300	15.435	1.1445	.7275
84.14	84.10	38.84	-3.323	.1968	.0343	14.442	1.1622	.8039
100.00	100.00	39.91	-1.423	.4172	.0484	27.001	1.1422	.8670

MOMENTUM AVERAGE STAGE EFFICIENCY = .7963 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7423 (ADIABATIC)

MOMENTUM AVERAGE STAGE PRESS. RATIO = 1.15819
MASS AVERAGE TEMPERATURE RISE = 1.1185

NASA SMALL AXIAL COMPRESSOR TEST 3 JUN 25 1974 (COMBINED TEMP.)

MOTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT FLOW $\dot{m} = 2.9182$ LBM/SEC
 PERCENT DELTA EQUIVALENT FLOW $\Delta = 79.8745$
 90 PERCENT DESIGN SPEED = SLAN NO 11
 EQUIVALENT SPEED
 EQUIVALENT FLOW / INLET ANN AREA = 69004.845 H₂O-M.
 32-2504 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0010

PERCENT SPAN FLOW (%)	delta (deg)	V01 (FT/SEC)	VUPT (FT/SEC)	W01 (deg)	WETA1 (deg)	W1 (deg)	VU1 (FT/SEC)	M1	VM1 (FT/SEC)	V71 (FT/SEC)	W11 (deg)	
0.00	73.14	1403.00	1422.15	0.00	0.00	0.00	0.00	0.00	429.74	414.44	0.00	1422.15
4.00	72.01	1423.67	1350.14	0.00	0.00	0.00	0.00	0.00	439.70	424.39	0.00	1350.14
8.00	69.14	1332.74	1245.20	0.00	0.00	0.00	0.00	0.00	475.07	460.29	0.00	1245.20
12.00	66.75	1231.11	1131.07	0.00	0.00	0.00	0.00	0.00	486.07	464.51	0.00	1131.07
16.00	64.72	1109.61	994.80	0.00	0.00	0.00	0.00	0.00	471.04	471.04	0.00	994.80
20.00	61.73	942.13	831.43	0.00	0.00	0.00	0.00	0.00	443.41	437.46	0.00	831.43
24.00	59.32	830.03	719.57	0.00	0.00	0.00	0.00	0.00	426.42	412.41	0.00	719.57

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 0.7735

PERCENT SPAN FLOW (%)	V02 (FT/SEC)	VU02 (FT/SEC)	W02 (deg)	WETA2 (deg)	W2 (deg)	VU2 (FT/SEC)	M2	VM2 (FT/SEC)	V72 (FT/SEC)	W12 (deg)	
0.00	1022.28	924.43	0.00	0.00	0.00	443.34	0.00	443.34	443.34	0.00	1022.28
4.00	1034.15	842.00	0.00	0.00	0.00	404.23	0.00	404.23	404.23	0.00	1034.15
8.00	970.24	748.55	0.00	0.00	0.00	352.09	0.00	352.09	352.09	0.00	970.24
12.00	931.10	680.01	0.00	0.00	0.00	300.47	0.00	300.47	300.47	0.00	931.10
16.00	873.02	500.72	0.00	0.00	0.00	277.45	0.00	277.45	277.45	0.00	873.02
20.00	761.66	273.05	0.00	0.00	0.00	220.17	0.00	220.17	220.17	0.00	761.66
24.00	727.14	159.00	0.00	0.00	0.00	180.73	0.00	180.73	180.73	0.00	727.14

ROTOR PERFORMANCE DATA

PERCENT SPAN FLOW (%)	delta (deg)	W01 (deg)	W02 (deg)	delta (deg)	W03 (deg)	W04 (deg)	W05 (deg)	W06 (deg)	W07 (deg)	W08 (deg)	W09 (deg)	W10 (deg)	W11 (deg)	W12 (deg)
0.00	11.53	11.53	11.53	15.37	15.37	15.37	15.37	15.37	15.37	15.37	15.37	15.37	15.37	15.37
4.00	11.53	11.53	11.53	15.37	15.37	15.37	15.37	15.37	15.37	15.37	15.37	15.37	15.37	15.37
8.00	11.53	11.53	11.53	15.37	15.37	15.37	15.37	15.37	15.37	15.37	15.37	15.37	15.37	15.37
12.00	11.53	11.53	11.53	15.37	15.37	15.37	15.37	15.37	15.37	15.37	15.37	15.37	15.37	15.37
16.00	11.53	11.53	11.53	15.37	15.37	15.37	15.37	15.37	15.37	15.37	15.37	15.37	15.37	15.37
20.00	11.53	11.53	11.53	15.37	15.37	15.37	15.37	15.37	15.37	15.37	15.37	15.37	15.37	15.37
24.00	11.53	11.53	11.53	15.37	15.37	15.37	15.37	15.37	15.37	15.37	15.37	15.37	15.37	15.37

MOMENTUM AVERAGE MOTOR EFFICIENCY = 0.8634 (POLYTROPIC)
 MOMENTUM AVERAGE MOTOR EFFICIENCY = 0.8327 (ADIABATIC)
 MOMENTUM AVERAGE MOTOR PRESS RATIO = 1.6179
 MASS AVERAGE TEMPERATURE RISE = 1.1166

UNDA SMALL AXIAL COMPRESSION TEST 3 JULIF 29 1974 (CONTINUED TEMP.)

STATOR PERFORMANCE UNDER SMALL AXIAL COMPRESSION (ENGLISH UNITS)

90 PERCENT DESIGN SPEED - SERIAL NO 11

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .900H

PERCENT SPAN FROM TIP (L. S.)	DELTA S (IN)	V3 (FT/SEC)	V33 (FT/SEC)	M3	V43 (FT/SEC)	V43 (FT/SEC)	U3 (FT/SEC)
0.00	39.77	711.00	916.21	.809	543.58	547.55	1324.34
11.50	31.05	724.89	925.23	.810	545.77	545.47	1274.13
23.00	22.25	738.30	934.01	.811	548.47	548.16	1167.09
34.50	13.45	751.20	942.58	.814	551.39	549.50	1100.20
46.00	4.65	763.70	950.94	.815	554.12	549.57	1014.48
57.50	-4.15	775.80	959.11	.815	556.18	547.01	917.35
69.00	-13.00	787.50	967.11	.814	557.66	544.19	824.27

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9140

PERCENT SPAN FROM TIP (L. S.)	DELTA S (IN)	V4 (FT/SEC)	V44 (FT/SEC)	M4	V44 (FT/SEC)	V44 (FT/SEC)	U4 (FT/SEC)
0.00	-7.50	615.30	-77.19	.514	615.30	615.49	1319.70
11.50	-7.53	624.11	-77.52	.520	623.50	623.43	1273.20
23.00	-7.55	633.00	-77.80	.526	632.81	632.53	1176.70
34.50	-7.57	641.85	-78.02	.531	642.17	641.84	1122.31
46.00	-7.59	650.65	-78.19	.536	651.52	651.19	1047.15
57.50	-7.60	659.40	-78.32	.540	660.79	660.46	953.18
69.00	-7.61	668.10	-78.41	.544	670.00	669.69	853.63

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (L. S.)	SPAN FROM TIP (IN)	INCIDENCE ANGLE (DEG)	MEAN SUCT SURF (DEG)	D FACTOR	DELTA HAZ	DELTA HAZ	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATION POLYTROPIC EFF
0.00	0.00	3.848	-8.74	.1831	.0499	.0479	.0179	19.650	1.507	1.1943	.8305
11.50	11.29	4.256	-8.56	.1795	.0479	.0479	.0166	19.037	1.514	1.1943	.8403
23.00	22.27	3.760	-8.07	.1770	.0471	.0471	.0260	10.833	1.542	1.1755	.7562
34.50	33.67	3.264	-7.58	.1723	.0476	.0476	.0219	9.201	1.606	1.1468	.7577
46.00	45.17	2.768	-7.09	.1676	.0472	.0472	.0172	7.624	1.618	1.1144	.6750
57.50	56.67	2.272	-6.60	.1630	.0468	.0468	.0154	6.048	1.594	1.1804	.6037
69.00	68.17	1.776	-6.11	.1583	.0462	.0462	.0126	4.472	.597	1.1803	.5703

MOMENTUM AVERAGE STAGE EFFICIENCY = .7989 (POLYTROPIC)

MOMENTUM AVERAGE STAGE EFFICIENCY = .7856 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.5771

MASS AVERAGE TEMPERATURE RISE = 1.1766

NASA SMALL AXIAL COMPRESSOR TEST 3 JUNE 25, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 11

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC HLOSSAGE = .9008

PERCENT SPAN FROM TIP (T. P.)	BETA 3 (DEG)	V1 (M/SEC)	V13 (M/SEC)	M3	VM3 (M/SEC)	VZ1 (M/SEC)	U3 (M/SEC)
0.00	37.77	217.53	137.14	.606	167.21	145.37	604.98
11.75	41.99	220.45	133.05	.610	166.95	146.34	309.35
30.75	37.65	212.74	141.00	.624	165.46	138.64	350.71
48.00	33.24	220.02	146.25	.711	206.21	206.98	335.37
66.31	32.46	222.51	146.15	.755	212.40	211.71	304.21
84.52	41.25	212.47	147.14	.805	208.23	205.44	274.61
100.00	43.23	241.61	133.62	.843	212.54	206.71	261.90

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC HLOSSAGE = .9140

PERCENT SPAN FROM TIP (T. P.)	BETA 4 (DEG)	V4 (M/SEC)	V14 (M/SEC)	M4	VM4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	-2.53	147.73	-0.27	.515	147.54	147.54	601.74
11.75	-2.73	140.23	-4.34	.520	140.04	140.02	348.07
30.75	-2.35	139.23	-0.14	.554	144.06	147.40	354.75
48.00	-2.63	15.25	-10.15	.609	215.61	215.34	342.14
66.31	-1.67	212.50	-5.03	.621	214.43	214.31	314.17
84.52	2.00	216.90	1.12	.607	216.22	215.43	273.50
100.00	2.77	217.64	10.50	.611	217.44	217.44	272.04

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP FROM LEADING EDGE	LOSS FLOW (M/F)	DELTA WTA (M/F)	DELTA WTA (M/F)	INCIDENCE WTA (DEG)	SJCT SUM (DEG)	FACTUM WTA	OMEGA WTA	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	42.30	42.30	3.444	-4.74	.9411	.0444	.0177	14.640	1.507	1.1061	.8705
11.75	11.06	43.56	43.56	4.456	1.474	.8744	.0444	.0168	14.037	1.514	1.1063	.8603
30.75	30.77	37.50	37.50	.614	-2.671	.8570	.0791	.0260	10.833	1.542	1.1755	.7552
48.00	70.00	37.93	37.93	-2.521	-5.411	.8223	.0710	.0219	9.291	1.004	1.1644	.7477
66.31	62.02	37.64	37.64	-3.524	-6.147	.8344	.1112	.0362	4.624	1.514	1.1444	.6758
84.52	44.02	44.02	44.02	-1.710	-3.205	.8463	.1960	.0319	14.212	1.514	1.1406	.6037
100.00	100.00	40.64	40.64	-1.443	-4.875	.8773	.1420	.0262	21.465	1.507	1.1403	.6703

MOMENTUM AVERAGE STAGE EFFICIENCY = .7919 (POLYTROPIC)

MOMENTUM AVERAGE STAGE EFFICIENCY = .7436 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.5771

MASS AVERAGE TEMPERATURE RISE = 1.1766

NASA SMALL AXIAL COMPRESSOR TEST 3 JUNE 25, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT WEIGHT FLOW = 2.9710 LBM/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 0.13716
 70 PERCENT DESIGN SPEED = SC4V NO 12
 EQUIVALENT SPEED = 6914.901 RPM
 EQUIVALENT FLOW / INLET ANN AREA = 32.8360 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9995

PERCENT SPAN FROM TIP (L. F.)	HEIGHT (INCH)	V01 (FT/SEC)	W01 (INCH)	V1 (FT/SEC)	VU1 (FT/SEC)	M1	V41 (FT/SEC)	V21 (FT/SEC)	U1 (FT/SEC)
0.00	72.00	1471.13	1425.06	433.96	0.00	4.00	478.94	424.82	1125.06
9.40	71.71	1431.18	1351.05	1.304	0.00	4.09	449.22	434.51	1128.85
25.34	69.71	1337.70	1246.60	1.222	0.00	4.44	445.73	476.40	1248.40
41.02	65.25	1255.13	1130.65	1.123	0.00	4.55	497.14	495.56	1130.65
64.21	64.21	1100.70	999.27	1.013	0.00	4.41	482.37	482.20	929.27
84.30	61.43	967.08	811.45	0.843	0.00	4.13	453.31	447.22	811.45
100.00	58.03	842.70	721.04	0.747	0.00	4.97	436.17	421.35	721.04

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .7700

PERCENT SPAN FROM TIP (L. F.)	HEIGHT (INCH)	V02 (FT/SEC)	W02 (INCH)	V2 (FT/SEC)	VU2 (FT/SEC)	M2	V42 (FT/SEC)	V22 (FT/SEC)	U2 (FT/SEC)
0.00	57.83	1100.37	930.17	16.71	434.41	0.27	593.34	574.25	1370.58
11.54	53.27	1052.02	853.71	16.23	424.91	0.29	620.94	607.38	1304.82
31.74	49.45	1001.15	780.70	16.39	407.45	0.32	650.84	644.43	1206.15
44.04	43.11	950.37	643.12	13.44	359.12	0.27	694.22	694.19	1109.04
67.37	37.05	880.50	505.60	11.74	304.62	0.23	720.84	714.74	1010.22
87.74	21.18	792.25	382.03	10.25	217.57	0.43	729.42	717.64	900.20
100.00	13.15	744.73	270.15	9.232	165.03	0.76	730.24	705.44	835.69

ROTOR PERFORMANCE DATA

PERCENT LEADING EDGE	SPAN FROM TIP (INCH)	TIP TRAILING EDGE	INCIDENCE ANGLE (DEG)	SUCT SURF (DEG)	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS. RATIO	ROTOR AUTARATIC PFF	POLYTROPIC EFF
0.00	0.00	0.00	4.043	4.575	0.1676	0.62	1.515	0.6593	0.786
9.40	11.55	11.55	4.174	4.482	0.176	-0.974	1.510	0.6740	0.847
25.34	30.7	31.21	4.029	4.571	0.1674	-0.61	1.511	0.7107	0.825
41.02	49.07	50.23	4.433	4.025	0.1477	0.135	1.061	0.7248	0.745
60.02	67.37	67.16	4.779	3.979	0.0274	4.361	1.077	0.731	0.750
84.30	87.74	87.75	10.031	3.015	0.142	11.537	1.127	0.442	0.404
100.00	100.00	100.00	10.077	4.003	0.125	20.705	1.122	0.622	0.464

ROTOR TIP AVERAGE ROTOR EFFICIENCY = 0.973 (POLYTROPIC)
 ROTOR AVERAGE ROTOR EFFICIENCY = 0.8471 (ADIABATIC)
 MOMENTUM AVG. ROTOR PRESS. RATIO = 1.6190
 MASS AVERAGE TEMPERATURE RISE = 1.1338

NASA SMALL AXIAL COMPRESSOR TEST 3 JUNE 25, 1974 (COMBINED TEMP.)

MOTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIV LEAF FLOW TIP = 1.5485 KG/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 41.1716
 90 PERCENT DESIGN SPEED = SCAR NO 12
 EQUIVALENT SPEED = 69144.901 R.P.M.
 EQUIVALENT FLOW / INLET ANN AREA = 160.3194 KG/SEC-SQ M

INLET VELOCITY DIAGRAM DATA

PERCENT SPAN FROM TIP (r, %)	V01 (M/SEC)	V01 (M/SEC)	UETA1 (DEG)	V1 (M/SEC)	V21 (M/SEC)	U1 (DEG)	V41 (M/SEC)	V71 (M/SEC)	U1 (M/SEC)
0.00	22.04	434.16	1.357	0.00	131.79	0.00	0.00	113.70	179.49
2.00	71.71	416.18	1.304	0.00	136.92	0.00	0.00	136.92	172.44
25.00	94.71	374.90	1.222	0.00	161.05	0.00	0.00	144.05	145.33
41.17	98.26	344.62	1.129	0.00	151.56	0.00	0.00	151.56	151.05
60.00	99.21	337.81	1.013	0.00	147.03	0.00	0.00	147.03	147.03
75.00	91.49	288.67	0.863	0.00	131.17	0.00	0.00	131.17	131.17
100.00	50.04	250.05	0.707	0.00	120.94	0.00	0.00	120.94	120.94

EXIT VELOCITY DIAGRAM DATA

PERCENT SPAN FROM TIP (r, %)	V02 (M/SEC)	UETA2 (DEG)	V2 (M/SEC)	V02 (M/SEC)	M2 (DEG)	V42 (M/SEC)	V72 (M/SEC)	U2 (M/SEC)
0.00	437.33	2.1514	224.14	137.41	0.27	140.84	175.03	417.75
11.55	53.90	260.27	21.02	130.66	0.59	149.27	145.13	328.93
30.75	61.45	211.40	240.40	135.77	0.82	194.34	197.15	357.61
60.00	61.11	170.10	251.69	134.94	0.72	211.60	211.59	318.04
67.17	34.05	159.11	264.49	123.81	0.73	219.72	219.07	307.91
77.76	21.10	105.15	291.31	148.23	0.63	222.33	214.67	274.38
100.00	13.15	220.58	320.01	202.70	0.74	222.50	215.02	254.72

MOTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (r, %)	DELTA TETA (DEG)	INCIDENCE ANGLE (DEG)	FACTUM (DEG)	OMEGA BAR (DEG)	LOSS PARAMETER (DEG)	DEVIATION ANGLE (DEG)	MOTION RATIO	ADIABATIC EFF	POLYTROPIC EFF
0.00	0.00	4.043	41.575	0.676	0.512	0.662	1.515	0.593	0.616
2.00	11.55	4.754	44.402	0.370	0.535	-0.974	1.530	0.640	0.647
25.00	30.75	4.021	45.571	0.624	0.325	-0.631	1.591	0.607	0.625
41.17	40.00	4.433	46.225	0.627	0.135	0.000	1.641	0.298	0.345
60.00	67.17	4.774	45.403	0.245	0.062	0.361	1.677	0.431	0.750
75.00	77.76	4.022	45.015	0.251	0.037	11.537	1.721	0.422	0.404
100.00	100.00	45.606	40.077	0.248	0.025	20.205	1.722	0.422	0.404

MOMENTUM AVERAGE MOTOR EFFICIENCY = 0.6574 (POLYTROPIC)
 MOMENTUM AVERAGE MOTOR EFFICIENCY = 0.6073 (ADIABATIC)
 MOMENTUM AVG. MOTOR PRESS RATIO = 1.6140
 MASS AVERAGE TEMPERATURE RISE = 1.1738

NASA SMALL AXIAL COMPRESSOR TEST 3 JUNE 25 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

90 PERCENT DESIGN SPEED - SCAM NO 12

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8906

PERCENT SPAN FROM TIP (L. T.)	DELTA S (IN)	V1 (FT/SEC)	V01 (FT/SEC)	M1	M01	V03 (FT/SEC)	V04 (FT/SEC)	U3	U4
0.00	0.00	777.22	647.31	.615	.615	567.02	567.02	1331.05	1331.05
11.21	2.210	734.30	606.60	.611	.611	573.83	576.48	1276.96	1276.96
22.42	4.420	701.55	627.33	.676	.676	637.16	647.17	1197.27	1197.27
33.63	6.630	674.55	661.01	.774	.774	689.25	688.74	1103.05	1103.05
44.84	8.840	660.00	701.04	.760	.760	706.72	706.14	1015.22	1015.22
56.05	11.050	674.76	687.31	.817	.817	703.65	696.14	918.42	918.42
67.26	13.260	688.59	688.32	.854	.854	714.62	699.74	861.02	861.02

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9076

PERCENT SPAN FROM TIP (L. T.)	DELTA S (IN)	V4 (FT/SEC)	V04 (FT/SEC)	M4	M04	V06 (FT/SEC)	V07 (FT/SEC)	U6	U7
0.00	0.00	662.03	-60.71	.542	.542	640.77	640.77	1321.40	1321.40
11.21	2.210	633.71	-10.44	.553	.553	652.46	672.30	1275.91	1275.91
22.42	4.420	604.01	-17.02	.590	.590	686.24	647.93	1199.30	1199.30
33.63	6.630	717.14	-41.25	.637	.637	736.03	735.27	1125.37	1125.37
44.84	8.840	745.84	-14.04	.645	.645	745.67	745.26	1041.26	1041.26
56.05	11.050	732.82	10.12	.628	.628	732.75	730.07	965.74	965.74
67.26	13.260	737.89	10.73	.633	.633	737.11	737.41	917.50	917.50

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (L. T.)	DELTA S (IN)	INCIDENCE ANGLE (DEG)	FACTOR	O/FGA	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS. RATIO	STAGE EFF.	STATOR POLYTROPIC EFF.
0.00	0.00	1.951	.3500	.0490	.0176	18.590	1.498	1.1907	.7981
11.21	2.210	2.214	.3535	.0503	.0202	13.072	1.509	1.1907	.7712
22.42	4.420	-1.235	.3201	.0775	.0254	10.978	1.569	1.1721	.7073
33.63	6.630	-3.236	.2937	.0733	.0274	8.747	1.605	1.1641	.7191
44.84	8.840	-4.125	.3054	.1200	.0347	4.962	1.613	1.1633	.6213
56.05	11.050	-3.243	.3734	.0200	.0266	12.722	1.514	1.1741	.6289
67.26	13.260	-2.748	.3031	.0200	.0223	19.534	1.547	1.1740	.6057

STATOR AVERAGE STAGE EFFICIENCY = .6086 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7937 (ADIABATIC)
MOMENTUM AVG. STAGE PRESS. RATIO = 1.5733
MASS AVERAGE TEMPERATURE RISE = 1.1738

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NASA SMALL AXIAL COMPRESSOR ILSI 3 JUNE 23 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 12

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8906

PERCENT SPAN FROM TIP (T. I.)	UETA 1 (DEG)	VJ (M/SEC)	VJ3 (M/SEC)	MJ	VM3 (M/SEC)	VJ4 (M/SEC)	UJ (M/SEC)
0.00	11.27	229.13	130.34	.615	172.93	170.91	405.71
11.51	11.10	225.10	127.12	.631	174.90	174.61	399.22
30.53	10.53	219.21	121.93	.676	176.21	174.81	391.88
44.51	9.83	212.45	115.70	.724	210.04	209.93	336.21
66.96	8.37	204.10	107.90	.760	215.41	214.62	309.74
87.73	6.62	213.87	111.30	.817	215.08	217.17	279.94
100.00	4.16	214.22	110.69	.854	219.34	213.24	262.64

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9076

PERCENT SPAN FROM TIP (T. I.)	UETA 4 (DEG)	V4 (M/SEC)	V43 (M/SEC)	M4	VM4 (M/SEC)	V44 (M/SEC)	U4 (M/SEC)
0.00	-1.57	175.69	-17.25	.542	195.31	195.31	402.76
11.51	-3.55	177.23	-17.16	.553	190.07	190.45	389.20
30.53	-2.71	210.01	-17.96	.590	204.77	204.64	355.57
44.51	-4.21	214.59	-12.57	.637	224.34	224.11	343.01
67.73	-1.14	227.33	-4.52	.645	227.28	227.14	320.00
86.15	.7	223.36	3.09	.628	223.34	222.53	296.36
100.00	.83	224.74	3.27	.633	224.76	224.76	274.65

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (T. I.)	INCIDENCE ANGLE (DEG)	INCIDENCE ANGLE SUCT SUR (DEG)	INCIDENCE ANGLE STAG SUR (DEG)	INCIDENCE ANGLE STAG LE (DEG)	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAG PRESS RATIO	STAG TEMP RATIO	STATION POLYTROPIC EFF
0.00	41.06	1.951	-1.971	.350	.0470	14.570	1.428	1.1907	.7941
11.51	42.66	2.914	-2.20	.353	.0513	13.022	1.509	1.1907	.7712
30.53	40.10	-1.235	-6.530	.371	.0775	10.474	1.569	1.1721	.7073
44.51	37.02	-3.336	-6.927	.3937	.0733	8.787	1.605	1.1631	.7141
66.96	46.51	-6.125	-6.970	.4054	.0447	9.962	1.613	1.1633	.6213
87.73	39.44	-1.053	-4.550	.3734	.0209	12.322	1.588	1.1781	.5254
100.00	41.05	-2.748	-6.189	.3931	.0200	19.534	1.597	1.1780	.6057

MOMENTUM AVERAGE STAGE EFFICIENCY = .9084 (POLYTROPIC)
 MASS AVERAGE TEMPERATURE RISE = 1.5733
 MASS AVERAGE TEMPERATURE RISE = 1.1738

NASA SMALL AXIAL COMPRESSOR TEST 3 JUIF 25 1974 (COMBINED TEMP.)

MOTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT FLOW (CFM) = 2.9922 LBM/SEC EQUIVALENT SPEED = SCAN NO J3
 EQUIVALENT FLOW / INLET AREA = 69147.619 MM.M.
 EQUIVALENT FLOW / INLET AREA = 33.0485 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9945

PERCENT SPEED (U.S.)	U1 (FT/SEC)	U2 (FT/SEC)	U3 (FT/SEC)	U4 (FT/SEC)	U5 (FT/SEC)	U6 (FT/SEC)	U7 (FT/SEC)	U8 (FT/SEC)	U9 (FT/SEC)	U10 (FT/SEC)	U11 (FT/SEC)	U12 (FT/SEC)	U13 (FT/SEC)	U14 (FT/SEC)	U15 (FT/SEC)	U16 (FT/SEC)	U17 (FT/SEC)	U18 (FT/SEC)	U19 (FT/SEC)	U20 (FT/SEC)
0.00	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82
2.5	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82
5.0	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82
7.5	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82
10.0	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82	1477.82

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .7634

PERCENT SPEED (U.S.)	U1 (FT/SEC)	U2 (FT/SEC)	U3 (FT/SEC)	U4 (FT/SEC)	U5 (FT/SEC)	U6 (FT/SEC)	U7 (FT/SEC)	U8 (FT/SEC)	U9 (FT/SEC)	U10 (FT/SEC)	U11 (FT/SEC)	U12 (FT/SEC)	U13 (FT/SEC)	U14 (FT/SEC)	U15 (FT/SEC)	U16 (FT/SEC)	U17 (FT/SEC)	U18 (FT/SEC)	U19 (FT/SEC)	U20 (FT/SEC)
0.00	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34
2.5	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34
5.0	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34
7.5	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34
10.0	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34	57.34

MOTOR PERFORMANCE DATA

PERCENT SPEED (U.S.)	U1 (FT/SEC)	U2 (FT/SEC)	U3 (FT/SEC)	U4 (FT/SEC)	U5 (FT/SEC)	U6 (FT/SEC)	U7 (FT/SEC)	U8 (FT/SEC)	U9 (FT/SEC)	U10 (FT/SEC)	U11 (FT/SEC)	U12 (FT/SEC)	U13 (FT/SEC)	U14 (FT/SEC)	U15 (FT/SEC)	U16 (FT/SEC)	U17 (FT/SEC)	U18 (FT/SEC)	U19 (FT/SEC)	U20 (FT/SEC)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

MOTOR AVERAGE EFFICIENCY = 0.4015 (POLYTROPIC)
 MOTOR AVERAGE TEMPERATURE RISE = 0.0040 (ADIABATIC)

MOMENTUM AVG. MOTOR PRESS RATIO = 1.0620
 MASS AVERAGE TEMPERATURE RISE = 1.1128

HASA SMALL AXIAL COMPRESSOR TEST 3 JUN 25, 1974 (COMBINED TEMP.)

MOTOR PERFORMANCE HASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIVALENT FLOW = 1.0573 KMG/SEC
PERCENT EFFICIENCY = 81.0249
MOTOR EFFICIENCY = 81.0249
MOTOR SPEED = 5917.619 RPM
EQUIVALENT FLOW / INLET AREA = 161.3449 KG/SEC-SQ M

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .1445

PERCENT SPAN FROM TIP (L. I.)	W	W/SEC	W/SEC	W/SEC	W/SEC	W/SEC	W/SEC	W/SEC	W/SEC	W/SEC	W/SEC	W/SEC
0.01	7.27	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
0.45	71.10	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005
2.50	600.00	0.0023	0.0023	0.0023	0.0023	0.0023	0.0023	0.0023	0.0023	0.0023	0.0023	0.0023
5.16	600.00	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049
8.82	600.00	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
10.48	600.00	0.0101	0.0101	0.0101	0.0101	0.0101	0.0101	0.0101	0.0101	0.0101	0.0101	0.0101
10.90	600.00	0.0127	0.0127	0.0127	0.0127	0.0127	0.0127	0.0127	0.0127	0.0127	0.0127	0.0127

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .1634

PERCENT SPAN FROM TIP (L. I.)	W	W/SEC	W/SEC	W/SEC	W/SEC	W/SEC	W/SEC	W/SEC	W/SEC	W/SEC	W/SEC	W/SEC
0.00	57.12	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
1.50	58.27	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005
3.00	600.00	0.0023	0.0023	0.0023	0.0023	0.0023	0.0023	0.0023	0.0023	0.0023	0.0023	0.0023
4.50	600.00	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049
6.00	600.00	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
7.50	600.00	0.0101	0.0101	0.0101	0.0101	0.0101	0.0101	0.0101	0.0101	0.0101	0.0101	0.0101
9.00	600.00	0.0127	0.0127	0.0127	0.0127	0.0127	0.0127	0.0127	0.0127	0.0127	0.0127	0.0127
10.00	600.00	0.0153	0.0153	0.0153	0.0153	0.0153	0.0153	0.0153	0.0153	0.0153	0.0153	0.0153

MOTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (L. I.)	W	W/SEC	W/SEC	W/SEC	W/SEC	W/SEC	W/SEC	W/SEC	W/SEC	W/SEC	W/SEC	W/SEC
0.01	0.10	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
0.45	11.20	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005
2.50	30.00	0.0023	0.0023	0.0023	0.0023	0.0023	0.0023	0.0023	0.0023	0.0023	0.0023	0.0023
5.16	40.00	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049
8.82	60.00	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
10.48	60.00	0.0101	0.0101	0.0101	0.0101	0.0101	0.0101	0.0101	0.0101	0.0101	0.0101	0.0101
10.90	60.00	0.0127	0.0127	0.0127	0.0127	0.0127	0.0127	0.0127	0.0127	0.0127	0.0127	0.0127

MOMENTUM AVERAGE MOTOR EFFICIENCY = 0.015 (POLYTROPIC)
MOTOR EFFICIENCY AVERAGE MOTOR EFFICIENCY = 0.0540 (ADIABATIC)

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OF POOR QUALITY

NASA SMALL AXIAL COMPRESSOR TEST 3 JUN 25 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

90 PERCENT DESIGN SPEED - SCAL NO 13

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8851

PERCENT SPAN FROM TIP (L. 1)	ETA 3 (DEG)	V3 (FT/SEC)	VU3 (FT/SEC)	M3	VM3 (FT/SEC)	VZ3 (FT/SEC)	U3 (FT/SEC)
10.0	17.44	726.79	441.83	.620	577.08	570.74	1331.88
11.5	14.14	745.07	440.52	.637	585.50	585.44	1277.91
13.0	10.84	742.30	440.45	.607	654.56	654.53	1108.50
14.5	7.54	816.06	451.49	.730	697.40	697.45	1104.85
16.0	4.24	872.05	501.39	.765	712.09	709.47	1017.07
17.5	0.94	928.27	502.18	.810	706.48	696.99	918.97
19.0	-1.71	985.07	542.12	.853	720.45	700.55	801.55

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9042

PERCENT SPAN FROM TIP (L. 1)	ETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
10.0	-1.61	674.09	-31.09	.554	622.73	622.73	1322.22
11.5	-2.37	666.77	-37.14	.565	665.42	665.34	1276.08
13.0	-3.13	714.01	-31.30	.605	704.16	703.87	1200.00
14.5	-2.37	740.70	-39.09	.650	744.01	744.02	1125.92
16.0	0.94	757.05	27.22	.655	756.49	756.07	1050.34
17.5	4.24	735.74	4.27	.631	735.76	733.07	966.08
19.0	7.54	740.94	6.06	.630	740.01	740.01	918.00

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (L. 1)	SPR COR	SPR FROM TIP COR	INCIDENCE ANGLE (DEG)	U FACTOR	OMEGA HAM	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATION POLYTROPIC EFF
10.0	0.00	0.00	1.121	.1404	.0491	.0177	18.770	1.496	1.1845	.7763
11.5	11.27	11.71	1.901	.1384	.0521	.0215	14.700	1.504	1.1845	.7360
13.0	30.27	31.33	-2.315	.1063	.0789	.0289	10.644	1.552	1.1700	.6661
14.5	48.27	50.75	-4.415	.2800	.0749	.0229	9.022	1.007	1.1622	.6791
16.0	67.27	70.25	-4.229	.2829	.1205	.0289	1.313	1.011	1.1460	.5764
17.5	86.27	89.17	-1.736	.1695	.0299	.0208	12.020	1.576	1.1773	.4972
19.0	100.00	100.00	-2.122	.1373	.0254	.0254	14.169	1.575	1.1773	.5918

MOMENTUM AVG. STAGE EFFICIENCY = .8813 (POLYTROPIC)
 MASS AVERAGE TEMPERATURE RISE = 1.1268

NASA SMALL AXIAL COMPRESSOR TEST 3 JUNE 25, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

90 PERCENT DESIGN SPEED - SERIAL NO 13

INLET VELOCITY DIAPHRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8851

PERCENT SPAN FROM TIP (I. I.)	W1 (M/SEC)	V1 (M/SEC)	VU1 (M/SEC)	W2 (M/SEC)	V2 (M/SEC)	VU2 (M/SEC)	U3 (M/SEC)
0.00	177.73	192.67	136.00	175.89	173.94	136.00	402.94
11.50	227.24	241.49	136.00	174.75	174.64	136.00	349.48
31.50	261.49	273.40	136.00	199.50	199.50	136.00	362.25
47.50	273.40	285.40	136.00	217.59	217.59	136.00	336.64
66.50	285.40	297.40	136.00	216.05	216.05	136.00	310.01
87.50	297.40	309.40	136.00	215.33	215.33	136.00	280.10
100.00	309.40	321.40	136.00	219.59	219.59	136.00	262.60

EXIT VELOCITY DIAPHRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9042

PERCENT SPAN FROM TIP (I. I.)	W4 (M/SEC)	V4 (M/SEC)	VU4 (M/SEC)	W5 (M/SEC)	V5 (M/SEC)	VU5 (M/SEC)	U4 (M/SEC)
0.00	192.67	211.04	148.95	198.95	194.05	148.95	403.01
11.50	241.49	241.49	202.82	202.82	202.79	202.82	399.13
31.50	273.40	273.40	218.63	218.63	218.54	218.63	362.76
47.50	285.40	285.40	224.51	224.51	224.27	224.51	343.18
66.50	297.40	297.40	230.58	230.58	230.45	230.58	320.14
87.50	309.40	309.40	226.26	226.26	226.04	226.26	298.46
100.00	321.40	321.40	225.74	225.74	225.74	225.74	279.83

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (I. I.)	DELTA (DEG)	INCIDENCE ANGLE (DEG)	SUCTION ANGLE (DEG)	FACTUM	DELTA HAM	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS. RATIO	STATOR POLYTROPIC EFF.
0.00	40.28	1.121	-2.802	.1404	.0491	.0177	14.770	1.494	1.1885
11.50	41.51	1.291	-1.174	.1304	.0621	.0215	13.200	1.504	1.1725
31.50	36.94	-7.215	-7.913	.1023	.0931	.0289	10.644	1.552	1.1700
47.50	30.27	-4.413	-7.404	.0764	.0764	.0229	9.022	1.507	1.1622
66.50	14.04	-4.724	-7.101	.0724	.1285	.0309	13.313	1.611	1.1440
87.50	42.95	-1.834	-4.739	.1695	.2239	.0509	12.020	1.574	1.1773
100.00	41.24	-2.222	-6.363	.1493	.2154	.0545	14.169	1.575	1.1773

STATOR AVERAGE STAGE EFFICIENCY = .8083 (POLYTROPIC)
 MOMENTUM AVERAGE STAGE EFFICIENCY = .7997 (ADIABATIC)
 MOMENTUM AVG. STAGE PRESS. RATIO = 1.5709
 MASS AVERAGE TEMPERATURE RISE = 1.1728

NASA SMALL AXIAL COMPRESSOR TEST 3 JUNE 25, 1974 (COMBINED TEMP.)

MOTOR PERFORMANCE DATA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIVALENT WEIGHT FLOW = 1.0000 KG/SEC = 2.2046 LBS/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 1.0000
 90 PERCENT DESIGN SPEED - SCALING 14
 FLOW/ALENT SPEED
 EQUIVALENT FLOW / INLET ANN AREA = 69163.455 (K.P.M.)
 166.5407 KG/SEC-SQ M

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9905

PERCENT SPAN FROM TIP (I. F.)	W1 (M/SEC)	BETA1 (DEG)	V1 (M/SEC)	VU1 (M/SEC)	M1	VW1 (M/SEC)	V71 (M/SEC)	U1
0.00	425.63	1.262	137.23	0.00	.410	137.23	137.41	439.47
4.87	436.55	1.306	147.01	0.00	.421	140.61	140.81	443.28
9.74	447.47	1.351	156.85	0.00	.434	152.05	149.85	376.18
14.61	458.39	1.396	166.74	0.00	.447	162.34	154.44	340.56
19.48	469.31	1.441	176.63	0.00	.455	171.73	151.68	300.28
24.35	480.23	1.486	186.56	0.00	.462	181.24	148.54	261.33
29.22	491.15	1.531	196.53	0.00	.469	190.87	144.85	224.83
34.09	502.07	1.576	206.54	0.00	.476	200.62	140.65	191.83

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .7639

PERCENT SPAN FROM TIP (I. F.)	W2 (M/SEC)	BETA2 (DEG)	V2 (M/SEC)	VU2 (M/SEC)	M2	VW2 (M/SEC)	V72 (M/SEC)	U2
0.00	144.76	1.112	227.36	125.33	.646	192.04	145.90	417.86
4.87	147.94	1.134	243.46	131.37	.641	205.57	201.04	398.65
9.74	151.11	1.155	259.72	137.44	.709	219.74	209.04	356.74
14.61	154.28	1.176	276.19	143.55	.781	234.04	219.73	300.61
19.48	157.45	1.197	292.84	149.71	.854	248.94	220.34	307.49
24.35	160.62	1.218	309.61	155.92	.931	264.44	231.05	272.48
29.22	163.79	1.239	326.54	162.17	.981	280.64	241.05	254.78
34.09	166.96	1.260	343.61	168.46	1.001	297.54	251.05	234.78

MOTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (I. F.)	W1 (M/SEC)	BETA1 (DEG)	V1 (M/SEC)	VU1 (M/SEC)	M1	VW1 (M/SEC)	V71 (M/SEC)	U1
0.00	425.63	1.262	137.23	0.00	.410	137.23	137.41	439.47
4.87	436.55	1.306	147.01	0.00	.421	140.61	140.81	443.28
9.74	447.47	1.351	156.85	0.00	.434	152.05	149.85	376.18
14.61	458.39	1.396	166.74	0.00	.447	162.34	154.44	340.56
19.48	469.31	1.441	176.63	0.00	.455	171.73	151.68	300.28
24.35	480.23	1.486	186.56	0.00	.462	181.24	148.54	261.33
29.22	491.15	1.531	196.53	0.00	.469	190.87	144.85	224.83
34.09	502.07	1.576	206.54	0.00	.476	200.62	140.65	191.83

MOMENTUM AVGS. MOTOR PRESS. RATIO = 1.0025
 MASS AVERAGE TEMPERATURE RISE = 1.1060

NASA SMALL AXIAL COMPRESSOR TEST 3 JUNE 25, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

YU PERCENT DESIGN SPEED - SERIAL NO 14
 INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .0700

PERCENT TIP SPEED (U.S. FT/S)	DELTA 3 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VM4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	34.30	279.04	174.04	.647	170.15	149.06	405.41
11.00	14.45	217.07	134.36	.672	146.15	105.41	309.14
30.00	31.93	240.71	131.61	.711	211.03	211.01	301.60
49.00	31.22	250.83	134.17	.740	221.34	221.14	335.24
68.00	30.42	267.07	153.13	.771	219.36	218.54	309.14
87.00	30.13	276.06	171.95	.834	229.61	226.53	278.62
100.00	30.00	290.02	182.50	.864	233.03	226.44	262.51

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .0904

PERCENT TIP SPEED (U.S. FT/S)	DELTA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VM4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	34.30	279.04	174.04	.647	170.15	149.06	405.41
11.00	14.45	217.07	134.36	.672	146.15	105.41	309.14
30.00	31.93	240.71	131.61	.711	211.03	211.01	301.60
49.00	31.22	250.83	134.17	.740	221.34	221.14	335.24
68.00	30.42	267.07	153.13	.771	219.36	218.54	309.14
87.00	30.13	276.06	171.95	.834	229.61	226.53	278.62
100.00	30.00	290.02	182.50	.864	233.03	226.44	262.51

STATOR PERFORMANCE DATA

PERCENT TIP SPEED (U.S. FT/S)	DELTA (DEG)	INCIDENCE ANGLE (DEG)	OMEGA (RPM)	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE LOSS	STATION POLYTROPIC EFF
0.00	34.30	-2.125	2514	.0500	17.710	1.477	1.1400
11.00	14.45	-1.733	2436	.0570	12.141	1.899	1.1406
30.00	31.93	-6.079	2190	.0706	4.177	1.544	1.1441
49.00	31.22	-6.347	2047	.0420	8.054	1.541	1.1541
68.00	30.42	-4.730	2302	.1673	9.816	1.557	1.1427
87.00	30.13	-5.432	2321	.1242	11.702	1.501	1.1452
100.00	30.00	-6.256	2494	.3114	14.003	1.501	1.1452

MOY. TIP AVERAGE STATOR EFFICIENCY = .7909 (POLYTROPIC)
 MOMENTUM AVERAGE STATOR EFFICIENCY = .7143 (ADIABATIC)
 MOMENTUM AVG. STAGE PRESS. RATIO = 1.5459
 MASS AVERAGE TEMPERATURE RISE = 1.1060

NASA SMALL AXIAL COMPRESSOR TEST 3 JUN 25, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIVALENT WEIGHT FLOW = 1.1012 KG/SEC 70 PERCENT DESIGN SPEED - SCAN NO 15
 PERCENT DESIGN EQUIVALENT FLOW = 66.2824 EQUIVALENT SPEED
 EQUIVALENT FLOW / INLET ANN AREA = 53345.3/4 R.P.M.
 130.9173 KG/SEC-SQ M

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0244

PERCENT SPAN FROM TIP (L. S.)	V01 (M/SEC)	V091 (M/SEC)	M01	BETA1 (DEG)	V1 (M/SEC)	VUI (M/SEC)	M1	V01 (M/SEC)	VMI (M/SEC)	V71 (M/SEC)	U1 (M/SEC)
0.00	72.04	30.88	1.054	0.00	105.70	0.00	.314	105.70	105.70	102.29	335.04
0.31	71.31	323.25	1.012	0.00	100.11	0.00	.321	104.11	104.11	104.57	323.25
25.05	54.57	276.04	.949	0.00	114.67	0.00	.347	116.67	116.67	114.53	276.04
41.04	62.17	275.19	.873	0.00	114.35	0.00	.355	119.35	119.35	114.97	275.19
54.34	60.15	259.46	.792	0.00	116.04	0.00	.365	116.04	116.04	114.00	234.46
64.52	27.07	197.06	.575	0.00	107.26	0.00	.325	107.26	107.26	107.79	197.06
100.00	201.22	171.46	.597	0.00	105.31	0.00	.313	105.31	105.31	101.73	171.46

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8041

PERCENT SPAN FROM TIP (T. S.)	V02 (M/SEC)	VU02 (M/SEC)	M02	BETA2 (DEG)	V2 (M/SEC)	VU2 (M/SEC)	M2	V02 (M/SEC)	VU2 (M/SEC)	V72 (M/SEC)	U2 (M/SEC)
0.00	54.42	240.01	.805	30.71	164.25	05.91	.483	164.04	164.04	140.00	325.92
11.12	54.01	221.08	.786	27.72	141.31	09.80	.523	157.44	157.44	156.02	311.53
24.00	51.35	205.26	.769	24.14	132.15	05.92	.524	140.61	140.61	154.61	286.17
41.16	46.06	172.42	.699	20.47	140.47	47.26	.554	166.63	166.63	166.62	265.17
60.67	37.26	131.22	.631	32.30	109.53	109.91	.594	172.40	172.40	171.94	241.12
87.09	23.40	79.73	.540	36.10	73.09	134.39	.667	184.23	184.23	141.27	214.12
100.00	16.24	53.91	.544	38.12	73.50	144.61	.684	184.54	184.54	174.27	194.72

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING TRAILING EDGE	LOSS FLOW (PCF)	DELTA (DEG)	INCIDENCE ANGLE (DEG)	SUCT SUR (DEG)	U FACTOR	OMEGA (RPM)	PARAMETER	LOSS ANGLE (DEG)	DEVIATION ANGLE (DEG)	WOTON PRESS (MM Hg)	ADJARIATIC FFF	ROTOR POLYTRMOPIC EFF
0.00	2.00	17.75	4.040	4.112	.3027	.1490	.0371	.0371	1.931	1.244	.6653	.5755
9.33	11.52	16.90	4.340	4.252	.2981	.1659	.0344	.0344	.300	1.267	.7241	.7332
25.05	24.74	17.00	4.414	7.377	.2406	.0709	.0147	.0147	1.109	1.270	.8425	.8467
41.04	47.76	20.11	4.229	6.404	.2422	.0113	.0036	.0036	3.364	1.319	.9766	.9756
54.34	60.57	26.84	4.570	5.412	.2493	.0215	.0045	.0045	6.033	1.369	.9764	.9774
64.52	87.44	37.84	4.775	4.740	.2530	.0143	-.0031	-.0031	13.684	1.324	1.0114	1.0109
100.00	100.00	42.16	4.690	3.610	.1947	-.0116	-.0036	-.0036	23.336	1.344	1.0114	1.0109

MULTIPLIER AVERAGE ROTOR EFFICIENCY = .4964 (POLYTRMOPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .4923 (ADIABATIC)
 MOMENTUM AVG. ROTOR PRESS RATIO = 1.3173
 MASS AVERAGE TEMPERATURE RISE = 1.0917

NASA SMALL AXIAL COMPRESSOR TEST 3 JUNE 25, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

70 PERCENT DESIGN SPEED - SCAM NO 15

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8919

PERCENT SPAN FROM TIP (L. F.)	HETA 3 (DEG)	V3 (FT/SEC)	VJ3 (FT/SEC)	M3	VM3 (FT/SEC)	VZ3 (FT/SEC)	VJ4 (FT/SEC)
0.00	33.76	508.44	241.24	.499	488.76	443.33	1038.46
11.00	33.42	596.65	302.07	.524	514.33	513.68	931.74
22.00	27.67	617.08	302.07	.546	548.76	546.75	891.52
40.00	27.00	648.47	304.02	.576	572.78	572.36	808.17
67.00	31.42	606.81	358.05	.611	588.10	543.46	746.68
87.00	34.44	733.67	431.08	.673	617.80	609.51	717.54
100.00	38.13	781.67	460.90	.708	631.33	613.49	671.75

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9443

PERCENT SPAN FROM TIP (L. F.)	HETA 4 (DEG)	V4 (FT/SEC)	V'4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	VJ4 (FT/SEC)
0.00	35.17	529.42	47.71	.463	527.27	527.27	1030.93
11.00	35.18	546.75	49.32	.473	544.52	544.46	992.44
30.00	37.51	571.50	54.90	.504	568.86	548.81	936.18
40.00	40.47	611.58	47.04	.541	604.72	609.09	878.23
67.00	47.23	639.29	47.84	.566	637.49	637.14	819.08
87.00	50.21	653.25	37.15	.577	652.19	649.41	753.20
100.00	54.48	677.38	39.85	.588	656.17	646.17	712.81

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP FROM EDGE	INLET FLUX (PLF)	DELTA HETA (DEG)	INCIDENCE ANGLE (DEG)	SUCT SUM (DEG)	LOSS PARAMETER	REVIATION ANGLE (DEG)	STAGE MASS FLOW RATE	STAGE TANGENTIAL VELOCITY	STATOR POLYTROPIC EFF
0.00	0.00	35.07	-3.015	-4.538	.0034	17.010	1.243	1.0966	.9772
11.00	11.00	35.59	-5.754	-7.106	.0350	11.395	1.255	1.0966	.8977
22.00	30.00	33.13	-8.924	-12.701	.0647	7.694	1.275	1.0854	.8758
40.00	40.00	32.44	-9.638	-12.671	.0165	7.531	1.307	1.0844	.8230
67.00	67.00	35.71	-7.334	-10.438	.0273	6.411	1.324	1.0914	.8322
87.00	87.00	31.84	-7.271	-10.109	.0448	14.792	1.336	1.0992	.8175
100.00	100.00	32.66	-8.501	-11.942	.0401	22.175	1.336	1.0992	.8416

MOMENTUM AVERAGE STATOR EFFICIENCY = .8581 (POLYTROPIC)
 MOMENTUM AVERAGE STAGE EFFICIENCY = .8527 (ADIABATIC)
 MOMENTUM AVG. STAGE PRESS RATIO = 1.3019
 MASS AVERAGE TEMPERATURE RISE = 1.0917

NASA SMALL AXIAL COMPRESSOR TEST 3 JUNE 29, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 15

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8919

PERCENT SPAN FROM TIP (L. E.)	BETA 3 (DEG)	V3 (M/SEC)	VU3 (M/SEC)	M3	VM3 (M/SEC)	VZ3 (M/SEC)	U3 (M/SEC)
0.10	3.070	173.20	88.47	.498	149.97	167.11	316.52
11.11	30.42	141.46	97.07	.523	156.83	156.57	308.13
29.16	27.57	144.09	97.20	.546	166.65	146.65	283.93
46.94	27.46	147.65	92.87	.576	174.58	174.45	256.01
63.93	31.42	209.34	107.13	.611	174.64	177.93	242.83
81.51	35.94	279.72	131.58	.673	183.31	185.78	218.71
100.00	36.13	238.25	140.48	.760	192.43	197.11	204.75

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9443

PERCENT SPAN FROM TIP (L. E.)	BETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VM4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	-5.17	161.37	-14.54	.463	140.71	140.71	318.73
11.25	-5.19	166.65	-15.03	.478	165.97	165.97	303.41
30.97	-5.51	174.19	-16.73	.504	173.34	173.31	295.35
47.46	-4.47	186.41	-14.52	.541	185.84	185.65	267.68
67.23	-4.27	194.85	-14.58	.566	194.31	194.20	249.66
84.11	3.26	174.11	11.32	.577	198.79	198.09	244.59
100.00	3.43	200.37	12.15	.500	200.00	200.00	218.18

STATOR PERFORMANCE DATA

PERCENT LEADING EDGE	SPAN FROM TIP (M)	TRAILING EDGE	INCIDENCE ANGLE (DEG)	SUCT SUR (DEG)	INCIDENCE ANGLE (DEG)	FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION (DEG)	STAGE PRESS. RATIO	STAGE EFF	STATION POLYTROPIC EFF
0.00	0.00	0.00	-5.615	-4.538	2443	.0034	.0012	17.619	1.243	1.0966	.4772	
11.09	11.26	11.54	-7.754	-4.106	2090	.0456	.0192	11.395	1.255	1.0966	.6197	
29.16	30.07	30.74	-8.424	-12.701	2545	.0647	.0212	7.633	1.275	1.0966	.2950	
46.94	46.43	47.00	-9.658	-12.671	2711	.0474	.0145	7.531	1.307	1.0966	.6256	
63.93	67.23	69.41	-9.939	-10.438	2349	.0723	.0207	6.911	1.324	1.0966	.5322	
81.51	84.11	84.16	-7.271	-10.184	2651	.1696	.0948	14.792	1.334	1.0992	.6175	
100.00	100.00	100.00	-8.501	-11.942	2464	.1584	.0901	22.175	1.336	1.0992	.5816	

MOMENTUM AVERAGE STAGE EFFICIENCY = .8581 (POLYTROPIC)
 MOMENTUM AVERAGE STAGE EFFICIENCY = .8527 (ADIABATIC)
 MOMENTUM AVERAGE STAGE PRESS. RATIO = 1.3019
 MASS AVERAGE TEMPERATURE RISE = 1.0917

NASA SMALL AXIAL COMPRESSOR TEST 3 JUNE 29, 1974 (COMBINED TEMP.)

MOTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT WEIGHT FLOW = 2.1550 LBM/SEC
 EQUIVALENT FLOW = 50.8309
 70 PERCENT DESIGN SPEED = SCRU NO 16
 EQUIVALENT SPEED
 EQUIVALENT FLOW / INLET ANN AREA = 539AS-954 R.P.M.
 23.4010 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0478

PERCENT SPAN FROM TIP (I. S.)	DELTA TIP (INCH)	W1 (FT/SEC)	VUW1 (FT/SEC)	BETA1 (DEG)	V1 (FT/SEC)	WU1 (FT/SEC)	M1	V41 (FT/SEC)	VZ1 (FT/SEC)	U1 (FT/SEC)
0.00	7.004	115.021	1110.73	1.041	0.000	304.72	.275	304.72	294.91	1110.23
9.45	73.07	1105.15	1080.78	0.999	0.000	311.72	.282	311.72	301.51	1080.24
24.74	71.72	1030.13	970.05	0.933	0.000	335.51	.303	335.51	314.00	970.03
41.07	67.02	977.00	913.86	0.874	0.000	343.81	.310	343.81	311.00	913.80
58.00	61.00	920.70	850.70	0.817	0.000	348.02	.313	348.02	308.31	850.70
73.74	54.74	850.06	770.06	0.757	0.000	348.05	.313	348.05	308.31	770.06
88.00	47.00	760.00	670.00	0.688	0.000	348.00	.313	348.00	308.31	670.00
100.00	37.00	650.00	550.00	0.600	0.000	348.00	.313	348.00	308.31	550.00

3000 RPM AVERAGE MOTOR DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0478

PERCENT SPAN FROM TIP (I. S.)	DELTA TIP (INCH)	W2 (FT/SEC)	VUW2 (FT/SEC)	BETA2 (DEG)	V2 (FT/SEC)	WU2 (FT/SEC)	M2	V42 (FT/SEC)	VZ2 (FT/SEC)	U2 (FT/SEC)
0.00	37.00	847.09	710.18	0.613	57.51	353.52	.496	450.32	415.42	1084.70
11.60	56.74	773.97	652.12	0.676	40.04	365.53	.490	427.71	414.37	1022.10
31.13	52.11	731.04	577.19	0.810	36.04	362.44	.503	444.35	414.08	919.08
47.02	44.78	676.30	470.33	0.811	37.15	374.56	.544	446.27	494.24	905.07
67.33	34.76	604.34	411.65	0.942	36.51	405.95	.605	549.05	544.23	780.00
77.00	20.02	575.91	204.70	0.909	42.00	490.44	.649	530.30	524.46	703.14
100.00	11.04	511.11	114.42	0.884	44.93	537.01	.674	537.10	520.70	652.23

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	DELTA TIP (INCH)	MASS FLOW (LBM)	INCIDENCE ANGLE (DEG)	SUCT SUR (DEG)	W FACTOR	DELTA HAM	OMEGA HAM	LOSS PARAMETER	DEVIATION ANGLE (DEG)	MOTOR PRESS RATIO	MOTOR ANTIADABATIC EFF	POLYTROPIC EFF
0.00	0.00	0.00	10.041	10.173	0.432	0.224	0.950	0.950	0.448	1.321	0.021	0.943
9.45	11.40	11.70	11.074	10.374	0.459	0.254	0.915	0.915	1.259	1.304	0.444	0.927
24.74	31.30	30.70	11.043	9.023	0.479	0.182	0.908	0.908	2.154	1.323	0.404	0.770
41.07	64.02	44.74	11.048	4.174	0.497	0.105	0.919	0.919	2.707	1.357	0.400	0.800
58.00	67.33	60.30	12.451	8.721	0.440	0.158	0.935	0.935	4.052	1.042	0.441	0.854
73.74	87.00	84.10	12.073	7.002	0.467	0.157	0.921	0.921	10.940	1.015	0.471	0.930
100.00	100.00	100.00	12.400	6.042	0.432	0.130	0.903	0.903	14.035	1.016	0.472	0.930

MOMENTUM AVERAGE MOTOR EFFICIENCY = 0.830 (POLYTROPIC)
 MOMENTUM AVERAGE MOTOR EFFICIENCY = 0.825 (ADIABATIC)
 MOMENTUM AVG. MOTOR PRESS RATIO = 1.3566
 MASS AVERAGE TEMPERATURE RISE = 1.1101

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OF POOR QUALITY

NASA SMALL AXIAL COMPRESSOR TEST 1 JUNE 25, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 16

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC LOSSAGE = .9416

PERCENT SPA / FROM TIP (L. F.)	HE1A 3 (UEN)	V1 (FT/SEC)	VU3 (FT/SEC)	M3	VM3 (FT/SEC)	V23 (FT/SEC)	U3 (FT/SEC)
0.00	41.70	547.22	30.002	.473	408.58	408.10	1033.06
11.71	43.74	579.77	374.72	.658	369.41	369.40	975.90
31.31	41.02	563.01	369.54	.690	424.76	424.75	921.94
49.27	30.10	612.69	377.90	.537	441.97	441.92	826.10
67.57	31.13	613.84	405.55	.543	535.68	535.72	741.32
87.77	41.27	713.21	408.90	.629	519.27	512.10	710.97
100.00	44.69	745.02	521.98	.660	531.59	516.90	672.01

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC LOSSAGE = .9375

PERCENT SPA / FROM TIP (L. F.)	HE1A 4 (UEN)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	V24 (FT/SEC)	U4 (FT/SEC)
0.00	22.53	455.21	-20.09	.391	454.76	454.76	1031.32
11.71	22.58	471.64	-20.32	.393	451.18	451.17	975.35
31.31	25.79	460.16	-20.01	.378	459.26	459.05	925.01
49.27	26.32	435.91	-31.08	.449	514.94	514.41	876.88
67.57	26.08	440.15	-40.03	.487	558.11	557.40	818.00
87.77	30.73	544.47	30.24	.642	553.24	551.27	753.20
100.00	30.83	558.09	37.27	.685	556.84	556.84	716.09

STATOR PERFORMANCE DATA

PERCENT SPA / FROM TIP (L. F.)	MASS FLOW (LBS)	DELTA PETA (DLE)	INCIDENCE ANGLE (DEG)	SUCT SUM (LBS)	FACTON	HAN	OMEGA	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	44.23	7.300	1.458	.4230	.0725		.0225	17.650	1.304	1.1212	.8130
11.71	11.71	44.37	4.603	6.77	.4091	-.0141		-.0064	11.957	1.307	1.1212	1.0476
31.31	30.75	46.26	4.336	1.082	.4114	.0508		.0167	9.568	1.313	1.1091	.8503
49.27	44.74	41.87	2.268	-7.210	.3540	.0241		.0086	8.446	1.350	1.1038	.9130
67.57	67.57	37.81	-2.429	-7.205	.3147	.0676		.0194	10.422	1.342	1.1028	.8091
87.77	87.77	34.53	1.003	-1.904	.3023	.1194		.0315	15.260	1.376	1.1123	.7375
100.00	100.00	40.45	-1.154	-3.593	.4050	.1103		.0278	22.524	1.376	1.1124	.7941

MOMENTUM AVERAGE STAGE EFFICIENCY = .8179 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .8100 (ADIABATIC)

MOMENTUM AVO. STAGE PRESS RATIO = 1.3491
MASS AVERAGE TEMPERATURE RISE = 1.1101

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

70 PERCENT DESIGN SPEED - SLASH NO 16

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9416

PERCENT SPAN FROM TIP (U.S.)	WETA 3 (DEG)	V7 (M/SEC)	V03 (M/SEC)	M3	V43 (M/SEC)	VZ3 (M/SEC)	U3 (M/SEC)
0.00	1.70	146.79	110.75	.673	174.56	173.17	316.64
11.71	47.77	161.67	115.74	.650	117.60	117.41	303.55
31.17	91.02	171.61	117.69	.690	179.87	179.86	281.01
49.67	33.10	186.68	115.18	.537	146.90	146.40	261.33
67.67	37.13	206.77	171.61	.593	163.28	162.68	241.20
87.77	43.27	217.37	149.02	.679	158.27	158.15	218.50
100.00	66.94	227.08	159.10	.660	162.03	157.55	206.63

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9375

PERCENT SPAN FROM TIP (U.S.)	WETA 4 (DEG)	V4 (M/SEC)	V04 (M/SEC)	M4	V44 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	72.53	138.75	86.17	.791	144.61	138.61	318.35
11.61	72.58	137.06	86.19	.380	137.52	137.50	303.34
31.57	31.57	140.25	88.78	.198	139.94	139.32	286.99
49.67	31.52	157.25	91.05	.647	156.95	156.74	267.27
67.67	31.60	170.12	72.02	.487	170.12	170.02	249.33
87.77	37.75	169.00	11.04	.482	168.64	168.03	224.57
100.00	31.63	170.11	11.36	.485	169.73	169.73	218.26

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP FROM TRAILING EDGE	MASS FLOW (MG)	DELTA WETA (DEG)	INCIDENCE ANGLE (DEG)	U FACTOR	HAWK	OMEGA HAW	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS. RATIO	STATOR POLYTROPIC EFF
0.00	0.01	44.24	5.480	1.454	.420	.0625	.0275	19.451	1.309	1.1217
11.71	11.79	44.37	4.803	1.277	.401	-.0191	-.0049	13.957	1.307	1.1217
31.17	30.73	44.61	4.316	1.002	.414	.0508	.0167	4.544	1.313	1.1217
49.67	49.74	41.62	2.710	1.540	.424	.0041	.0046	8.446	1.350	1.1014
67.67	64.30	37.61	-2.427	1.585	.437	.0676	.0194	10.472	1.342	1.1024
87.77	89.19	39.53	1.003	1.464	.482	.1194	.0215	25.280	1.376	1.1123
100.00	100.00	40.65	-3.154	1.355	.495	.1193	.0278	22.524	1.376	1.1124

MOMENTUM AVERAGE STAGE EFFICIENCY = .8179 (POLYTROPIC)
 MASS AVERAGE STAGE EFFICIENCY = .8100 (ADIABATIC)

MOMENTUM AVERAGE STAGE PRESS. RATIO = 1.3491
 MASS AVERAGE TEMPERATURE WISE = 1.1101

MOTOR PERFORMANCE YASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT FLOW = 2.1974 LBM/SEC EQUIVALENT SPEED = 53933.917 RPM
 PERCENT DESIGN FLOW = 53.8588 EQUIVALENT FLOW / INLET ANN AREA = 24.2146 LBM/SEC-INCH FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0461

PERCENT SPAN FROM TIP (T. P.)	WET AREA (SQ IN)	WET PERIM (IN)	WET VEL (FT/SEC)	WET AREA (SQ IN)	WET PERIM (IN)	WET VEL (FT/SEC)	WET AREA (SQ IN)	WET PERIM (IN)	WET VEL (FT/SEC)
0.00	74.93	1174.07	1111.57	1.042	0.00	310.31	0.00	0.00	310.31
9.47	73.37	1106.09	1059.26	0.994	0.00	317.45	0.00	0.00	317.45
24.90	70.07	1033.77	974.84	0.734	0.00	341.76	0.00	0.00	341.76
40.37	66.35	930.17	869.87	0.665	0.00	347.59	0.00	0.00	347.59
54.73	62.07	828.07	787.43	0.778	0.00	337.79	0.00	0.00	337.79
68.86	57.99	727.44	673.25	0.657	0.00	320.07	0.00	0.00	320.07
82.80	54.24	641.53	582.82	0.579	0.00	304.03	0.00	0.00	304.03

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 0.7862

PERCENT SPAN FROM TIP (T. P.)	WET AREA (SQ IN)	WET PERIM (IN)	WET VEL (FT/SEC)	WET AREA (SQ IN)	WET PERIM (IN)	WET VEL (FT/SEC)	WET AREA (SQ IN)	WET PERIM (IN)	WET VEL (FT/SEC)
0.00	57.77	851.94	720.45	0.734	37.57	572.26	304.03	0.00	0.00
11.27	55.47	796.27	671.26	0.643	34.43	581.58	304.03	0.00	0.00
20.41	52.14	744.00	607.92	0.550	37.04	577.07	304.03	0.00	0.00
28.57	48.06	688.74	500.45	0.671	30.25	611.88	304.03	0.00	0.00
37.00	43.21	613.32	388.29	0.590	30.07	640.06	304.03	0.00	0.00
47.76	37.20	505.74	211.86	0.717	41.46	734.45	304.03	0.00	0.00
60.00	32.58	388.39	127.02	0.428	44.09	761.48	304.03	0.00	0.00

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (T. P.)	DELTA HETAP (IN)	DELTA HETAP (IN)	DELTA HETAP (IN)	DELTA HETAP (IN)	DELTA HETAP (IN)	DELTA HETAP (IN)	DELTA HETAP (IN)	DELTA HETAP (IN)	DELTA HETAP (IN)
0.00	0.00	16.61	10.505	10.097	0.173	0.2174	0.0442	0.03	1.317
9.47	11.74	17.30	11.302	10.088	0.301	0.2364	0.0447	0.14	1.313
24.90	30.27	18.47	11.508	9.480	0.341	0.1842	0.0345	1.991	1.321
40.37	48.57	23.47	11.525	8.796	0.370	0.0999	0.0191	2.747	1.355
54.73	67.08	31.47	12.064	8.107	0.424	0.0107	0.0074	3.297	1.394
68.86	87.70	42.07	12.427	7.436	0.515	0.012	0.0177	11.305	1.414
82.80	100.00	48.07	12.992	6.418	0.2988	0.1038	0.0215	19.679	1.416

MOMENTUM AVERAGE MOTOR EFFICIENCY = 0.654 (POLYTROPIC)
 MOMENTUM AVERAGE MOTOR EFFICIENCY = 0.3886 (ADIABATIC)
 MOMENTUM AVE. ROTOR PRESS RATIO = 1.1361
 MASS AVERAGE TEMPERATURE RISE = 1.1082

NASA SMALL AXIAL COMPRESSOR TEST 3 JUNE 25, 1974 (CONTINUED) (IMP.)

MOTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIVALENT WEIGHT FLOW 70 PERCENT DESIGN SPEED - SCAM NO 17
 PERCENT DESIGN EQUIVALENT FLOW = 59.0544 EQUIVALENT SPEED
 EQUIVALENT FLOW / INLET AREA = 5993.517 R.P.M.
 118.251 KG/SEC-SU M

INLET VELOCITY/DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0461

PERCENT SPAN FROM TIP (I. F.)	W1*	V1*	BETA1	VI	VU1	M1	V41	V71	J1
(DEG)	(M/SEC)	(DEG)	(M/SEC)	(M/SEC)	(M/SEC)		(M/SEC)	(M/SEC)	(M/SEC)
0.00	76.40	334.01	1.062	94.58	0.00	.286	96.54	91.54	330.81
4.47	74.17	337.14	.999	94.76	0.00	.287	96.74	93.59	322.95
24.41	70.07	277.13	.944	104.23	0.00	.309	104.23	104.31	297.13
40.37	63.55	271.41	.885	100.55	0.00	.316	100.55	106.21	271.23
54.04	60.07	260.16	.776	103.57	0.00	.307	103.57	103.57	260.16
64.44	63.70	221.72	.657	97.56	0.00	.289	97.56	94.25	199.11
100.00	61.24	171.43	.579	94.07	0.00	.279	94.07	90.87	171.43

EXIT VELOCITY/DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .7462

PERCENT SPAN FROM TIP (I. F.)	M2*	BETA2	V2	VU2	M2	V42	V72	J2
(DEG)	(M/SEC)	(DEG)	(M/SEC)	(M/SEC)		(M/SEC)	(M/SEC)	(M/SEC)
0.00	57.74	37.53	173.42	106.26	.496	134.32	133.87	325.85
11.27	55.42	35.43	177.27	111.16	.505	134.04	134.07	311.49
40.61	276.40	37.06	174.07	100.01	.504	134.05	134.19	257.14
44.57	45.00	36.25	184.63	111.55	.544	152.11	152.11	266.09
67.04	35.21	36.07	207.53	122.20	.602	157.74	167.24	260.25
87.76	21.60	41.36	224.86	147.08	.650	164.84	164.73	214.25
100.00	17.24	44.09	212.10	141.49	.676	160.71	161.04	198.86

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (I. F.)	MASS FLOW (G)	DELTA PETA* (DEG)	INCIDENCE ANGLE (DEG)	SUCT SUCTION (DEG)	FACTUM (DEG)	OMP 34*	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ADIABATIC EFF	POLYTROPIC EFF
0.00	0.00	16.41	10.565	19.097	.3773	.2174	.0447	.803	1.317	.8943
9.67	11.27	17.90	11.302	10.086	.3981	.2309	.0407	.914	1.313	.8745
26.40	30.52	14.89	11.508	9.480	.3941	.1642	.0345	1.491	1.321	.7720
40.37	40.57	23.47	11.525	8.746	.4770	.0890	.0191	2.797	1.355	.4900
54.04	67.04	31.47	12.094	8.407	.4424	.0107	.0024	4.237	1.314	.4491
67.04	87.76	42.69	12.427	7.434	.4715	.0412	.0177	11.305	1.416	.4431
100.00	100.00	44.67	12.442	6.434	.4988	.1038	.0215	14.624	1.414	.4459

MOMENTUM AVERAGE MOTOR EFFICIENCY = .8954 (POLYTROPIC)
 MOMENTUM AVERAGE MOTOR EFFICIENCY = .8388 (ADIABATIC)
 MOMENTUM AVG. MOTOR PRESS. RATIO = 1.3501
 MASS AVERAGE TEMPERATURE RISE = 1.1082

NASA SMALL AXIAL COMPRESSOR TEST 3 JUN 25, 1976 (COMBINED TESTS)

STATION PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 17

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9300

PERCENT SPAN FROM TIP (I. P.)	HETA 5 (DEG)	V3 (FT/SEC)	VU3	M3	VM3 (FT/SEC)	V23 (FT/SEC)	J3 (FT/SEC)
0.00	40.01	547.20	350.97	0.70	417.72	411.16	1034.24
11.41	43.04	544.21	370.10	0.75	400.00	400.00	415.04
30.07	37.70	544.00	360.42	0.72	431.50	431.50	425.05
41.77	37.00	612.00	367.00	0.77	404.25	404.25	439.37
67.00	36.02	667.49	370.30	0.81	377.34	377.34	712.25
87.77	40.33	715.00	481.04	0.82	374.34	374.34	710.51
100.00	41.50	740.35	510.32	0.82	340.04	325.70	671.01

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9450

PERCENT SPAN FROM TIP (I. P.)	HETA 4 (DEG)	V4 (FT/SEC)	VU4	M4	VM4 (FT/SEC)	V74 (FT/SEC)	J4 (FT/SEC)
0.00	20.35	400.61	180.97	0.340	400.22	440.22	1030.71
11.41	20.92	437.10	170.34	0.39	457.75	477.10	416.70
30.07	18.74	407.52	170.00	0.40	404.52	440.31	430.67
41.77	18.37	514.20	180.35	0.52	514.46	517.93	470.43
67.00	18.20	763.07	181.74	0.64	503.75	543.64	811.51
87.77	40.26	559.82	180.35	0.60	557.24	555.25	752.03
100.00	40.10	562.34	170.75	0.64	500.71	540.71	712.00

STATION PERFORMANCE DATA

PERCENT SPAN FROM TIP (I. P.)	ANX (DEG)	HETA (DEG)	INCIDENCE ANGLE (DEG)	U FACTOR	UEMA (IAM)	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS. RATIO	STAGE TRIP	STATION POLYTROPIC EFF.
0.00	0.00	43.16	4.472	0.112	0.530	0.015	14.810	1.300	1.1194	0.153
11.41	11.71	40.40	0.042	0.131	0.454	0.016	14.114	1.304	1.1194	0.527
30.07	30.72	43.52	3.167	0.330	0.400	0.017	9.414	1.312	1.1070	0.554
41.77	41.71	40.45	-0.572	0.475	0.354	0.010	0.525	1.304	1.1010	0.834
67.00	60.47	37.02	-2.007	0.707	0.027	0.010	4.405	1.374	1.1014	0.110
87.77	87.14	30.11	0.12	0.734	0.124	0.034	15.770	1.372	1.1100	0.704
100.00	100.00	39.20	-1.072	0.460	0.120	0.030	23.000	1.372	1.1100	0.700

MOMENTUM AVERAGE STAGE EFFICIENCY = 0.704 (POLYTROPIC)
 MASS AVERAGE STAGE EFFICIENCY = 0.169 (ADAPTATIC)
 MOMENTUM AVERAGE STAGE PRESS. RATIO = 1.1359
 MASS AVERAGE TEMPERATURE RISE = 1.1082

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 17

INLET VELOCITY DIAPHRAM DATA

CALCULATED AERODYNAMIC LOSS COEFF = .9370

PERCENT SPAJ FROM TIP (I. P.)	BETA 3 (DEG)	V3 (M/SEC)	V(U)	M3	VM3 (M/SEC)	VZ3 (M/SEC)	J3 (M/SEC)
0.00	90.01	127.41	104.91	.470	126.71	125.32	316.45
11.51	91.04	127.10	114.05	.475	122.12	121.92	303.59
20.87	92.74	121.94	114.05	.492	122.14	122.13	291.96
31.73	95.04	116.54	112.97	.537	118.02	118.71	281.93
47.03	98.62	104.06	121.72	.591	113.78	113.14	241.88
67.72	97.35	217.53	146.82	.63	161.05	148.89	219.82
100.00	93.56	227.45	156.77	.662	164.45	140.29	204.71

EXIT VELOCITY DIAPHRAM DATA

CALCULATED AERODYNAMIC LOSS COEFF = .9456

PERCENT SPAJ FROM TIP (I. P.)	BETA 4 (DEG)	V4 (M/SEC)	V(U)	M4	VM4 (M/SEC)	VZ4 (M/SEC)	J4 (M/SEC)
0.00	72.35	140.34	75.74	.740	140.28	140.24	314.10
11.51	72.42	139.65	75.84	.746	139.52	139.51	303.21
20.87	74.74	133.11	74.35	.800	142.80	142.74	284.73
31.73	78.37	120.30	74.31	.852	144.03	144.00	267.15
47.03	81.20	121.97	73.59	.893	171.83	171.74	244.14
67.72	84.20	170.33	120.66	.880	164.86	164.24	224.80
100.00	83.30	171.40	130.03	.889	170.41	170.41	219.13

STATOR PERFORMANCE DATA

PERCENT SPAJ FROM TIP LEADING EDGE	TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE ANGLE (DEG)	U FACTOR	OMEGA PARAMETER	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE LOSS RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	43.16	4.442	.4112	.0536	.0215	19.430	1.206	1.1194	.8153
11.51	11.51	11.71	45.46	6.002	.4131	.0489	.0144	19.114	1.104	1.1174	.8227
30.87	30.87	30.02	41.52	3.197	.3930	.0688	.0147	9.414	1.312	1.1070	.8329
47.03	47.03	41.71	40.45	-2.674	.3875	.0359	.0110	4.575	1.346	1.1016	.8454
67.03	67.03	60.41	37.42	-5.755	.3717	.0627	.0140	4.905	1.174	1.1014	.8110
87.72	87.72	87.14	38.11	-2.817	.3736	.1326	.0349	15.776	1.172	1.1124	.7839
100.00	100.00	100.00	39.20	-1.072	.3950	.1226	.0309	23.060	1.172	1.1106	.7560

MOMENTUM AVERAGE STAGE EFFICIENCY = .8264 (POLYTROPIC) MOMENTUM AVG. STAGE PRESS RATIO = 1.3459
 MOMENTUM AVERAGE STAGE EFFICIENCY = .8169 (ADIABATIC) MASS AVERAGE TEMPERATURE RISE = 1.1042

NASA SMALL AXIAL COMPRESSOR IFS1 3 JUNE 25, 1974 (COMBINED TEMP.)

ORIGINAL PAGE IS
OF POOR QUALITY

MOTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

DESIGN POINT FLOW = 2.2173 LBM/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 60.5370
 70 PERCENT DESIGN SPEED = 5041.00 RPM
 EQUIVALENT FLOW / INLET ANN AREA = 24.4890 LBM/SEC-SQ FT
 53805.007 W.P.M.

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0426

PERCENT SPAN FROM TIP (I. P.)	V01 (FT/SEC)	V02 (FT/SEC)	V03 (FT/SEC)	V04 (FT/SEC)	V05 (FT/SEC)	V06 (FT/SEC)	V07 (FT/SEC)	V08 (FT/SEC)	V09 (FT/SEC)	V10 (FT/SEC)	V11 (FT/SEC)	V12 (FT/SEC)	V13 (FT/SEC)	V14 (FT/SEC)	V15 (FT/SEC)	V16 (FT/SEC)	V17 (FT/SEC)	V18 (FT/SEC)	V19 (FT/SEC)	V20 (FT/SEC)
0.00	7.20	1120.40	1100.41	1090.41	1080.41	1070.41	1060.41	1050.41	1040.41	1030.41	1020.41	1010.41	1000.41	990.41	980.41	970.41	960.41	950.41	940.41	930.41
4.00	7.31	1124.10	1097.12	1087.12	1077.12	1067.12	1057.12	1047.12	1037.12	1027.12	1017.12	1007.12	997.12	987.12	977.12	967.12	957.12	947.12	937.12	927.12
7.00	7.43	1127.80	1093.80	1083.80	1073.80	1063.80	1053.80	1043.80	1033.80	1023.80	1013.80	1003.80	993.80	983.80	973.80	963.80	953.80	943.80	933.80	923.80
10.00	7.55	1131.50	1089.50	1079.50	1069.50	1059.50	1049.50	1039.50	1029.50	1019.50	1009.50	999.50	989.50	979.50	969.50	959.50	949.50	939.50	929.50	919.50
13.00	7.67	1135.20	1085.20	1075.20	1065.20	1055.20	1045.20	1035.20	1025.20	1015.20	1005.20	995.20	985.20	975.20	965.20	955.20	945.20	935.20	925.20	915.20
16.00	7.79	1138.90	1080.90	1070.90	1060.90	1050.90	1040.90	1030.90	1020.90	1010.90	1000.90	990.90	980.90	970.90	960.90	950.90	940.90	930.90	920.90	910.90
19.00	7.91	1142.60	1076.60	1066.60	1056.60	1046.60	1036.60	1026.60	1016.60	1006.60	996.60	986.60	976.60	966.60	956.60	946.60	936.60	926.60	916.60	906.60
22.00	8.03	1146.30	1072.30	1062.30	1052.30	1042.30	1032.30	1022.30	1012.30	1002.30	992.30	982.30	972.30	962.30	952.30	942.30	932.30	922.30	912.30	902.30
25.00	8.15	1150.00	1068.00	1058.00	1048.00	1038.00	1028.00	1018.00	1008.00	998.00	988.00	978.00	968.00	958.00	948.00	938.00	928.00	918.00	908.00	898.00
28.00	8.27	1153.70	1063.70	1053.70	1043.70	1033.70	1023.70	1013.70	1003.70	993.70	983.70	973.70	963.70	953.70	943.70	933.70	923.70	913.70	903.70	893.70
31.00	8.39	1157.40	1059.40	1049.40	1039.40	1029.40	1019.40	1009.40	999.40	989.40	979.40	969.40	959.40	949.40	939.40	929.40	919.40	909.40	899.40	889.40
34.00	8.51	1161.10	1055.10	1045.10	1035.10	1025.10	1015.10	1005.10	995.10	985.10	975.10	965.10	955.10	945.10	935.10	925.10	915.10	905.10	895.10	885.10
37.00	8.63	1164.80	1050.80	1040.80	1030.80	1020.80	1010.80	1000.80	990.80	980.80	970.80	960.80	950.80	940.80	930.80	920.80	910.80	900.80	890.80	880.80
40.00	8.75	1168.50	1046.50	1036.50	1026.50	1016.50	1006.50	996.50	986.50	976.50	966.50	956.50	946.50	936.50	926.50	916.50	906.50	896.50	886.50	876.50
43.00	8.87	1172.20	1042.20	1032.20	1022.20	1012.20	1002.20	992.20	982.20	972.20	962.20	952.20	942.20	932.20	922.20	912.20	902.20	892.20	882.20	872.20
46.00	8.99	1175.90	1037.90	1027.90	1017.90	1007.90	997.90	987.90	977.90	967.90	957.90	947.90	937.90	927.90	917.90	907.90	897.90	887.90	877.90	867.90
49.00	9.11	1179.60	1033.60	1023.60	1013.60	1003.60	993.60	983.60	973.60	963.60	953.60	943.60	933.60	923.60	913.60	903.60	893.60	883.60	873.60	863.60
52.00	9.23	1183.30	1029.30	1019.30	1009.30	999.30	989.30	979.30	969.30	959.30	949.30	939.30	929.30	919.30	909.30	899.30	889.30	879.30	869.30	859.30
55.00	9.35	1187.00	1025.00	1015.00	1005.00	995.00	985.00	975.00	965.00	955.00	945.00	935.00	925.00	915.00	905.00	895.00	885.00	875.00	865.00	855.00
58.00	9.47	1190.70	1020.70	1010.70	1000.70	990.70	980.70	970.70	960.70	950.70	940.70	930.70	920.70	910.70	900.70	890.70	880.70	870.70	860.70	850.70
61.00	9.59	1194.40	1016.40	1006.40	996.40	986.40	976.40	966.40	956.40	946.40	936.40	926.40	916.40	906.40	896.40	886.40	876.40	866.40	856.40	846.40
64.00	9.71	1198.10	1012.10	1002.10	992.10	982.10	972.10	962.10	952.10	942.10	932.10	922.10	912.10	902.10	892.10	882.10	872.10	862.10	852.10	842.10
67.00	9.83	1201.80	1007.80	997.80	987.80	977.80	967.80	957.80	947.80	937.80	927.80	917.80	907.80	897.80	887.80	877.80	867.80	857.80	847.80	837.80
70.00	9.95	1205.50	1003.50	993.50	983.50	973.50	963.50	953.50	943.50	933.50	923.50	913.50	903.50	893.50	883.50	873.50	863.50	853.50	843.50	833.50
73.00	10.07	1209.20	999.20	989.20	979.20	969.20	959.20	949.20	939.20	929.20	919.20	909.20	899.20	889.20	879.20	869.20	859.20	849.20	839.20	829.20
76.00	10.19	1212.90	994.90	984.90	974.90	964.90	954.90	944.90	934.90	924.90	914.90	904.90	894.90	884.90	874.90	864.90	854.90	844.90	834.90	824.90
79.00	10.31	1216.60	990.60	980.60	970.60	960.60	950.60	940.60	930.60	920.60	910.60	900.60	890.60	880.60	870.60	860.60	850.60	840.60	830.60	820.60
82.00	10.43	1220.30	986.30	976.30	966.30	956.30	946.30	936.30	926.30	916.30	906.30	896.30	886.30	876.30	866.30	856.30	846.30	836.30	826.30	816.30
85.00	10.55	1224.00	982.00	972.00	962.00	952.00	942.00	932.00	922.00	912.00	902.00	892.00	882.00	872.00	862.00	852.00	842.00	832.00	822.00	812.00
88.00	10.67	1227.70	977.70	967.70	957.70	947.70	937.70	927.70	917.70	907.70	897.70	887.70	877.70	867.70	857.70	847.70	837.70	827.70	817.70	807.70
91.00	10.79	1231.40	973.40	963.40	953.40	943.40	933.40	923.40	913.40	903.40	893.40	883.40	873.40	863.40	853.40	843.40	833.40	823.40	813.40	803.40
94.00	10.91	1235.10	969.10	959.10	949.10	939.10	929.10	919.10	909.10	899.10	889.10	879.10	869.10	859.10	849.10	839.10	829.10	819.10	809.10	799.10
97.00	11.03	1238.80	964.80	954.80	944.80	934.80	924.80	914.80	904.80	894.80	884.80	874.80	864.80	854.80	844.80	834.80	824.80	814.80	804.80	794.80
100.00	11.15	1242.50	960.50	950.50	940.50	930.50	920.50	910.50	900.50	890.50	880.50	870.50	860.50	850.50	840.50	830.50	820.50	810.50	800.50	790.50

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 0.7858

PERCENT SPAN FROM TIP (I. P.)	V21 (FT/SEC)	V22 (FT/SEC)	V23 (FT/SEC)	V24 (FT/SEC)	V25 (FT/SEC)	V26 (FT/SEC)	V27 (FT/SEC)	V28 (FT/SEC)	V29 (FT/SEC)	V30 (FT/SEC)	V31 (FT/SEC)	V32 (FT/SEC)	V33 (FT/SEC)	V34 (FT/SEC)	V35 (FT/SEC)	V36 (FT/SEC)	V37 (FT/SEC)	V38 (FT/SEC)	V39 (FT/SEC)	V40 (FT/SEC)
0.00	7.70	1120.40	1100.41	1090.41	1080.41	1070.41	1060.41	1050.41	1040.41	1030.41	1020.41	1010.41	1000.41	990.41	980.41	970.41	960.41	950.41	940.41	930.41
4.00	7.81	1124.10	1097.12	1087.12	1077.12	1067.12	1057.12	1047.12	1037.12	1027.12	1017.12	1007.12	997.12	987.12	977.12	967.12	957.12	947.12	937.12	927.12
7.00	7.93	1127.80	1093.80	1083.80	1073.80	1063.80	1053.80	1043.80	1033.80	1023.80	1013.80	1003.80	993.80	983.80	973.80	963.80	953.80	943.80	933.80	923.80
10.00	8.05	1131.50	1089.50	1079.50	1069.50	1059.50	1049.50	1039.50	1029.50	1019.50	1009.50	999.50	989.50	979.50	969.50	959.50	949.50	939.50	929.50	919.50
13.00	8.17	1135.20	1085.20	1075.20	1065.20	1055.20	1045.20	1035.20	1025.20	1015.20	1005.20	995.20	985.20	975.20	965.20	955.20	945.20	935.20	925.20	915.20
16.00	8.29	1138.90	1080.90	1070.90	1060.90	1050.90	1040.90	1030.90	1020.90	1010.90	1000.90	990.90	980.90	970.90	960.90	950.90	940.90	930.90	920.90	910.90
19.00	8.41	1142.60	1076.60	1066.60	1056.60	1046.60	1036.60	1026.60	1016.60	1006.60	996.60	986.60	976.60	966.60	956.60	946.60	936.60	926.60	916.60	906.60
22.00	8.53	1146.30	1072.30	1062.30	1052.30	1042.30	1032.30	1022.30	1012.30	1002.30	992.30	982.30	972.30	962.30	952.30	942.30	932.30	922.30	912.30	902.30
25.00	8.65	1150.00	1068.00	1058.00	1048.00	1038.00	1028.00	1018.00	1008.00	998.00	988.00	978.00	968.00	958.00	948.00	938.00	928.00	918.00	908.00	898.00
28.00	8.77	1153.70	1063.70	1053.70	1043.70	1033.70	1023.70	1013.70	1003.70	993.70	983.70	973.70	963.70	953.70	943.70	933.70	923.70	913.70	903.70	893.70
31.00	8.89	1157.40	1059.40	1049.40	1039.40	1029.40	1019.40	1009.40	999.40	989.40	979.40	969.40	959.40	949.40	939.40	929.40	919.40	909.40	899.40	889.40
34.00	9.01	1161.10	1055.10	1045.10	1035.10	1025.10	1015.10	1005.10	995.10	985.10	975.10	965.10	955.10	945.10	935.10	925.10	915.10	905.10	895.10	885.10
37.00	9.13	1164.80	1050.80	1040.80	1030.80	1020.80	1010.80	1000.80	990.80	980.80	970.80	960.80	950.80	940.80	930.80	920.80	910.80	900.80	890.80	880.80
40.00	9.25	1168.50	1046.50	1036.50	10															

NASA SMALL AXIAL COMPRESSOR TEST 3 JUNE 25, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

PERCENT SPAN FROM TIP (L. F.)	PERCENT SPAN FROM TIP (R. F.)	PERCENT DESIGN EQUIVALENT FLOW = 60.4376	EQUIVALENT FLOW = 1.0057 KG/SEC	PERCENT DESIGN SPEED = SCAR NO 14	EQUIVALENT SPEED	INLET VELOCITY DIAGRAM DATA	INLET ANGLE	INLET AREA	ROTOR EFFICIENCY = 0.544 (POLYTROPIC)	ROTOR PRESS RATIO = 1.3517
PERCENT SPAN FROM TIP (L. F.)	PERCENT SPAN FROM TIP (R. F.)	VELOCITY (M/SEC)	VELOCITY (M/SEC)	VELOCITY (M/SEC)	VELOCITY (M/SEC)	VELOCITY (M/SEC)	ANGLE (DEG)	AREA (M ²)	EFFICIENCY	PRESS RATIO
0.00	74.20	351.27	338.00	0.00	97.50	0.00	.283	97.04	0.495	1.304
9.65	73.11	331.74	322.21	0.00	97.06	0.00	.290	97.04	.504	1.309
25.03	70.20	314.43	296.20	0.00	105.20	0.00	.313	105.20	.509	1.319
40.65	64.23	290.27	270.13	0.00	107.87	0.00	.320	107.87	.541	1.340
54.14	60.32	271.14	239.16	0.00	104.86	0.00	.311	104.86	.603	1.395
67.27	63.23	221.08	194.65	0.00	94.80	0.00	.293	94.80	.650	1.413
87.05	60.28	195.76	171.02	0.00	91.27	0.00	.282	91.27	.675	1.413
100.00										

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC HLOSSAGE = .7458

PERCENT SPAN FROM TIP (L. F.)	PERCENT SPAN FROM TIP (R. F.)	VELOCITY (M/SEC)	VELOCITY (M/SEC)	VELOCITY (M/SEC)	VELOCITY (M/SEC)	VELOCITY (M/SEC)	VELOCITY (M/SEC)	VELOCITY (M/SEC)	VELOCITY (M/SEC)	VELOCITY (M/SEC)
0.00	57.03	251.18	221.09	174.63	103.98	0.495	139.05	136.57	375.07	375.07
11.20	55.11	235.25	201.98	177.97	104.77	.504	140.84	137.78	310.75	310.75
40.33	51.74	215.27	180.03	177.39	105.48	.541	161.88	160.99	246.52	246.52
67.65	49.36	211.66	175.95	187.63	104.40	.603	152.15	151.14	203.35	203.35
87.27	35.17	206.14	174.17	207.69	120.26	.650	164.11	164.61	239.73	239.73
100.00	21.03	181.44	165.87	224.26	146.74	.675	168.64	168.84	213.62	213.62
	13.32	173.57	162.98	231.44	148.23		168.90	163.16	198.21	198.21

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	PERCENT SPAN FROM TIP TRAILING EDGE	MASS FLOW (G)	DELTA VELOCITY (M/SEC)	INCIDENCE ANGLE (DEG)	SUCT SURF (DEG)	FACTOR	PARAMETER	LOSS	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	10.36	9.093	0.00	0.162	0.434	0.0474	0.433	1.304	0.495
9.65	11.20	11.04	14.00	9.063	0.00	0.162	0.471	0.0471	0.103	1.309	0.495
25.03	36.19	30.75	18.64	9.221	0.00	0.162	0.509	0.0311	1.559	1.319	0.495
40.65	44.02	42.19	22.39	8.947	0.00	0.162	0.541	0.0165	3.033	1.340	0.495
54.14	67.27	63.34	31.15	7.977	0.00	0.162	0.603	0.0022	4.408	1.395	0.495
67.27	87.05	84.22	41.91	7.081	0.00	0.162	0.650	0.0128	11.866	1.413	0.495
100.00	100.00	100.00	47.56	6.052	0.00	0.162	0.675	0.0156	20.369	1.413	0.495

MOMENTUM AVERAGE ROTOR EFFICIENCY = 0.544 (POLYTROPIC)
MOMENTUM AVERAGE ROTOR EFFICIENCY = 0.491 (ADIABATIC)

NASA SMALL AXIAL COMPRESSOR TEST 3 JUNE 25, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

70 PERCENT UPSIDE SPEED - SCAN NO 18

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9164

PERCENT SPAN FROM TIP (L. E.)	BETA 3 (DEG)	V3 (FT/SEC)	V113 (FT/SEC)	M3	VM3 (FT/SEC)	VZ3 (FT/SEC)	U3 (FT/SEC)
0.00	39.44	552.90	371.27	.480	127.00	422.34	1035.76
11.42	41.13	550.49	366.04	.483	419.16	418.46	993.98
30.73	38.26	578.13	355.52	.501	450.82	450.81	923.73
48.54	37.70	613.84	334.18	.540	498.50	498.13	857.86
67.11	37.70	674.57	333.05	.597	547.80	547.80	790.31
87.74	41.00	718.27	472.01	.636	541.40	534.13	714.54
100.00	47.22	744.60	503.87	.665	553.91	534.61	670.00

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9430

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (FT/SEC)	V114 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	-2.00	466.80	-16.29	.402	469.57	466.57	1028.25
11.42	-2.00	470.12	-16.42	.405	469.81	464.76	992.49
30.73	-1.03	490.39	-10.81	.422	495.47	495.20	912.59
48.54	-4.23	527.44	-30.96	.461	526.55	526.01	814.05
67.11	-4.03	572.25	-5.80	.501	572.21	571.90	815.79
87.74	2.27	585.44	27.03	.493	563.55	761.79	751.26
100.00	5.41	567.56	53.74	.497	567.02	567.02	713.95

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	TRAILING EDGE	MASS FLOW (LBS)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	SUCI SUM (DEG)	FACTOR	OMEGA VAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	41.44	3.119	-8.03	.3971	.0542	.0210	20.140	1.297	1.1166	.9166
11.42	11.38	11.84	43.19	4.951	1.614	.3939	.0489	.0170	14.481	1.299	1.1166	.8491
30.73	30.43	30.75	41.89	3.840	-1.854	.3714	.0424	.0139	9.538	1.310	1.1052	.8642
48.54	48.80	49.14	39.93	-2.061	-5.050	.3345	.0326	.0100	7.745	1.340	1.0944	.8440
67.11	67.60	68.04	36.34	-3.808	-6.675	.3168	.0227	.0209	10.421	1.373	1.0997	.7733
87.74	88.13	87.22	35.41	-1.182	-4.090	.2949	.0143	.0177	10.806	1.365	1.1081	.6718
100.00	100.00	100.00	36.08	-2.341	-5.762	.2813	.0124	.0134	24.114	1.365	1.1082	.7292

MOMENTUM AVERAGE STAGE EFFICIENCY = .8096 (POLYTROPIC)
 MOMENTUM AVERAGE STAGE EFFICIENCY = .8224 (ADIABATIC)
 MOMENTUM AVG. STAGE PRESS RATIO = 1.1400
 MASS AVERAGE TEMPERATURE RISE = 1.1058

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 18

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9164

PERCENT SPAN FROM TIP (L. T.)	BETA 3 (DEG)	V3 (M/SEC)	V113 (M/SEC)	M3	VM3 (M/SEC)	VZ3 (M/SEC)	J3 (M/SEC)
0.00	39.64	160.55	107.07	.480	130.17	174.74	315.70
11.47	41.13	169.62	111.57	.483	127.76	171.55	302.96
30.64	38.26	175.00	104.36	.501	137.41	177.41	281.55
44.64	35.70	187.10	109.17	.540	151.94	181.83	261.68
67.11	35.70	205.61	114.94	.597	167.97	186.36	240.19
87.74	41.04	218.93	144.07	.616	165.02	182.80	217.88
100.00	47.24	228.21	153.59	.665	169.83	184.17	204.22

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9430

PERCENT SPAN FROM TIP (L. T.)	BETA 4 (DEG)	V4 (M/SEC)	V04 (M/SEC)	M4	VM4 (M/SEC)	VZ4 (M/SEC)	J4 (M/SEC)
0.00	-2.00	162.30	-4.77	.402	142.21	182.21	313.91
11.38	-2.06	163.24	-5.16	.405	143.20	183.14	302.51
30.64	-3.63	168.23	-9.39	.422	147.94	187.89	284.25
44.80	-6.23	168.94	-11.00	.461	160.94	186.33	255.60
67.60	-8.68	174.42	-12.07	.501	174.41	176.32	245.65
88.13	5.27	172.50	14.86	.493	171.77	171.14	228.94
100.00	5.81	173.60	16.38	.497	172.83	172.83	217.61

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (DEG)	MASS FLOW (KG)	DELTA P18 (DEG)	INCIDENCE ANGLE (DEG)	FAC TOR	ORIGA DIA	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS (ATM)	STAGE STATOR POLYTROPIC EFF
0.00	0.00	41.04	3.114	.3971	.0502	.0210	20.180	1.297	1.1180
11.47	1.04	43.17	4.551	.3939	.0489	.0170	18.481	1.299	1.1148
30.64	30.75	41.04	4.714	.3714	.0624	.0139	9.548	1.310	1.1052
44.80	47.19	37.93	-2.061	.3385	.0326	.0100	7.745	1.340	1.0984
67.11	69.54	36.34	-3.808	.3168	.0727	.0209	10.421	1.373	1.0937
87.74	87.22	35.41	-1.182	.3589	.1431	.0377	16.806	1.343	1.1081
100.00	100.00	36.88	-2.311	.3813	.1320	.0334	24.114	1.365	1.1002

MOMENTUM AVERAGE STAGE EFFICIENCY = .8294 (POLYTROPIC)
 MOMENTUM AVERAGE STAGE EFFICIENCY = .8224 (ADIABATIC)
 MOMENTUM AVG. STAGE PRESS RATIO = 1.3400
 MASS AVERAGE TEMPERATURE RISE = 1.1058

NASA SMALL AXIAL COMPRESSOR TEST 3 JUNE 25, 1974 (COMBINED TEMP.)

MOTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT WEIGHT FLOW = 2.2615 LBM/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 0.17471
 /U PERCENT DESIGN SPEED - SCALING IN
 EQUIVALENT SPEED
 EQUIVALENT FLOW / INLET ANN AREA = 53905.692 R.P.M.
 28.9783 LBM/SEC-SQ FT

INLET VELOCITY DIAPHRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0369

PERCENT SPAW FROM TIP (L. E.)	W01 (OZ)	VU01 (FT/SEC)	V01 (FT/SEC)	M01 (MFL)	V1 (F1/F2)	VU1 (FT/SEC)	M1 (MFL)	V01 (FT/SEC)	V01 (FT/SEC)	J1 (FT/SEC)
0.00	73.70	1170.35	1110.98	1.045	0.00	0.00	0.00	0.00	320.72	1110.98
4.47	72.79	1100.00	1059.03	1.007	0.00	0.00	0.00	0.00	328.11	1059.03
7.91	70.03	1025.00	973.45	0.917	0.00	0.00	0.00	0.00	353.79	1025.00
11.34	67.02	950.00	887.46	0.860	0.00	0.00	0.00	0.00	361.77	950.00
14.77	63.74	875.00	801.47	0.780	0.00	0.00	0.00	0.00	351.72	875.00
18.20	60.04	800.00	715.48	0.692	0.00	0.00	0.00	0.00	331.35	800.00
21.63	56.34	725.00	629.49	0.594	0.00	0.00	0.00	0.00	319.57	725.00

EXIT VELOCITY DIAPHRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 0.7954

PERCENT SPAW FROM TIP (L. E.)	M02 (OZ)	VU02 (FT/SEC)	V02 (FT/SEC)	BETA2 (DEG)	V2 (FT/SEC)	VU2 (FT/SEC)	M2 (MFL)	V02 (FT/SEC)	V02 (FT/SEC)	U2 (FT/SEC)
0.00	57.01	807.00	733.48	35.41	570.07	124.53	0.496	461.59	466.73	1088.51
11.34	55.13	810.00	671.51	36.79	500.37	349.94	0.509	468.00	457.77	1021.45
14.77	51.94	763.00	601.41	38.06	500.98	340.36	0.504	470.04	467.91	941.77
18.20	45.10	727.00	519.00	34.19	610.44	340.71	0.563	510.30	510.27	465.71
21.63	35.77	687.00	401.25	30.77	677.31	387.42	0.602	558.01	558.01	788.07
25.06	22.10	609.00	277.57	40.29	730.07	475.23	0.652	560.53	551.32	702.80
28.49	13.42	570.00	139.15	42.34	759.44	512.35	0.676	561.25	562.18	651.50

MOTOR PERFORMANCE DATA

PERCENT SPAW FROM TIP (L. E.)	MASS FLOW (LBS)	DELTA HFL04 (OZ)	INCLUDE ANGLE (DEG)	SUCT SUR (OZ)	LOSS PARAMETER	DEVIATION ANGLE (DEG)	MOTOR PRESS RATIO	MOTOR PRESS ADIABATIC EFF	MOTOR POLYTROPIC EFF
0.00	0.00	16.06	10.061	9.573	0.425	0.44	1.303	0.841	0.857
4.47	11.70	17.66	10.046	9.550	0.461	0.120	1.303	0.841	0.857
7.91	30.01	18.08	10.044	8.855	0.315	1.763	1.311	0.841	0.857
11.34	40.03	22.34	10.043	8.034	0.142	3.273	1.363	0.841	0.857
14.77	67.11	36.18	11.238	7.549	0.001	4.832	1.388	0.841	0.857
18.20	87.70	40.98	11.017	6.562	0.030	12.119	1.409	0.841	0.857
21.63	100.00	46.66	11.623	5.555	0.138	20.976	1.409	0.841	0.857

MOMENTUM AVERAGE MOTOR EFFICIENCY = 0.577 (POLYTROPIC)
 MOMENTUM AVERAGE MOTOR EFFICIENCY = 0.516 (ADIABATIC)

(NASA SMALL AXIAL COMPRESSOR TEST) / JUNE 25, 1976 (COMBINED TEMP.)

MOTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIVALENT WEIGHT FLOW = 1.0228 KG/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 61.7471
 70 PERCENT DESIGN SFFD = SCAM H0 19
 EQUIVALENT SPEED = 53905.897 R.P.M.
 EQUIVALENT FLOW / INLET ANN AREA = 121.9548 KG/SEC-SQ M

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0369

PERCENT SPAN FROM TIP (T. P.)	HELEA1 (DEG)	VE1 (M/SEC)	WU1 (M/SEC)	VI (M/SEC)	WU1 (M/SEC)	WU2 (M/SEC)	WU2 (M/SEC)	WU2 (M/SEC)	WU2 (M/SEC)	WU2 (M/SEC)	WU2 (M/SEC)	WU2 (M/SEC)	WU2 (M/SEC)
0.00	73.90	357.66	130.63	1.045	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9.47	72.79	337.93	322.79	1.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25.04	70.03	315.07	296.56	0.937	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40.73	67.87	292.11	270.50	0.860	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
54.14	65.90	268.91	239.63	0.780	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
67.52	63.08	223.08	198.90	0.662	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	60.34	197.07	171.34	0.544	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 0.7954

PERCENT SPAN FROM TIP (T. P.)	HELEA2 (DEG)	VE2 (M/SEC)	WU2 (M/SEC)	V2 (M/SEC)	WU2 (M/SEC)	WU2 (M/SEC)	WU2 (M/SEC)	WU2 (M/SEC)	WU2 (M/SEC)	WU2 (M/SEC)	WU2 (M/SEC)	WU2 (M/SEC)	WU2 (M/SEC)
0.00	57.81	266.28	223.72	174.76	101.96	0.496	0.496	0.496	0.496	0.496	0.496	0.496	0.496
11.20	55.13	249.08	204.68	174.11	100.60	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500
40.40	51.74	232.01	183.31	171.48	103.74	0.563	0.563	0.563	0.563	0.563	0.563	0.563	0.563
48.63	45.48	221.85	159.19	171.4	102.68	0.602	0.602	0.602	0.602	0.602	0.602	0.602	0.602
67.11	35.72	202.49	122.30	170.65	114.08	0.652	0.652	0.652	0.652	0.652	0.652	0.652	0.652
77.70	22.10	184.39	64.36	224.79	144.85	0.676	0.676	0.676	0.676	0.676	0.676	0.676	0.676
100.00	13.92	176.25	42.41	231.63	176.16	0.676	0.676	0.676	0.676	0.676	0.676	0.676	0.676

MOTOR PERFORMANCE DATA

PERCENT LEADING EDGE FROM TIP TRAILING EDGE	INCIDENCE ANGLE (DEG)	SUCT SUM (DEG)	FACTOR	OMEGA MAP	LOSS PARAMETER	DEVIATION ANGLE (DEG)	WU2 (M/SEC)	WU2 (M/SEC)	WU2 (M/SEC)	WU2 (M/SEC)	WU2 (M/SEC)	WU2 (M/SEC)	WU2 (M/SEC)
0.00	0.00	10.001	0.593	0.369	0.0425	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9.47	11.29	10.806	0.550	0.364	0.0461	0.120	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25.04	30.47	10.094	0.495	0.372	0.0315	1.743	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40.73	49.63	10.843	0.494	0.367	0.0147	3.237	0.00	0.00	0.00	0.00	0.00	0.00	0.00
54.14	67.11	11.274	0.549	0.366	-0.0001	0.037	0.00	0.00	0.00	0.00	0.00	0.00	0.00
67.52	87.70	11.617	0.622	0.343	0.0116	12.119	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	100.00	11.627	0.555	0.271	0.0134	20.976	0.00	0.00	0.00	0.00	0.00	0.00	0.00

MOMENTUM AVERAGE MOTOR EFFICIENCY = 0.4577 (POLYTROPIC)
 MOMENTUM AVERAGE MOTOR EFFICIENCY = 0.4516 (ADIABATIC)
 MOMENTUM AVG. MOTOR PRESS RATIO = 1.0462
 MASS AVERAGE TEMPERATURE RISE = 1.1039

NASA SMALL AXIAL COMPRESSOR TEST 3 JUNE 25, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 19

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9219

PERCENT SPAN FROM TIP (L. E.)	BETA 3 (DEG)	V3 (FT/SEC)	VU3 (FT/SEC)	M3	VM3 (FT/SEC)	VZ3 (FT/SEC)	U3 (FT/SEC)
0.00	51.30	547.24	144.46	.484	438.02	473.21	1037.70
11.36	34.86	549.86	158.85	.486	429.73	429.02	925.08
30.51	37.00	575.22	148.19	.503	459.73	459.14	925.91
44.51	34.44	616.52	144.04	.543	508.20	507.42	834.93
66.91	35.54	673.11	147.54	.596	551.76	544.74	746.50
87.67	40.74	720.12	166.19	.638	548.66	541.49	716.43
100.00	41.54	750.00	197.31	.666	561.42	545.90	671.26

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9481

PERCENT SPAN FROM TIP (L. E.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	-2.00	477.39	-16.66	.412	477.10	477.10	1030.17
11.36	-2.00	480.11	-17.26	.414	474.80	474.74	944.34
30.51	-4.64	497.88	-31.57	.433	496.88	496.66	934.30
44.51	-4.61	519.88	-41.51	.472	534.28	537.73	876.54
66.91	-1.08	578.58	-10.90	.507	578.48	578.16	817.54
87.67	3.21	570.46	32.51	.507	574.55	577.43	752.64
100.00	4.31	543.40	33.65	.510	582.51	542.51	713.29

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP FROM TRAILING EDGE	MASS FLOW (LBS)	DELTA (DEG)	INCIDENCE ANGLE (DEG)	FACTOR	OMEGA (1/AM)	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE POLYTROPIC EFF
0.00	0.00	40.14	1.863	.3786	.0546	.0197	20.180	1.292	1.1145
11.36	11.79	41.92	3.087	.3725	.0463	.0161	19.483	1.274	1.1144
30.51	30.41	40.64	.368	.3479	.0307	.0101	9.532	1.306	1.102
44.51	41.27	36.44	-3.266	.3150	.0280	.0086	7.764	1.317	1.0962
66.91	69.82	36.02	-4.540	.3045	.0730	.0210	10.021	1.346	1.0979
87.67	84.14	37.13	-1.905	.3456	.1351	.0357	14.743	1.364	1.1070
100.00	100.00	38.23	-3.097	.3645	.1255	.0317	22.006	1.164	1.1069

MOMENTUM AVERAGE STAGE EFFICIENCY = .8352 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .8283 (ADIABATIC)
MOMENTUM AVG. STAGE PRESS RATIO = 1.13357
MASS AVERAGE TEMPERATURE RISE = 1.1039

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STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 19

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9219

PERCENT SPAN FROM TIP (L. F.)	BETA 3 (DEG)	V3 (M/SEC)	VU3 (M/SEC)	M3	VM3 (M/SEC)	VZ3 (M/SEC)	U3 (M/SEC)
0.00	34.18	149.85	104.99	.686	133.51	174.04	316.29
11.34	34.86	170.64	107.36	.686	130.98	140.76	303.50
30.51	37.00	175.33	105.52	.503	140.02	140.02	282.22
46.51	34.68	147.91	107.39	.543	154.90	146.74	262.11
66.91	36.34	205.17	117.51	.590	166.18	147.56	241.55
87.67	40.38	219.49	142.09	.638	167.24	145.05	219.37
100.00	41.54	228.60	151.58	.666	171.12	146.39	206.60

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9481

PERCENT SPAN FROM TIP (L. F.)	BETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VM4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	-2.00	145.51	-5.04	.412	145.82	145.42	314.00
11.34	-2.06	146.34	-5.26	.414	146.24	146.22	303.08
30.51	-3.04	141.75	-9.02	.433	151.45	151.34	284.77
46.51	-3.41	144.56	-12.05	.472	154.97	143.40	257.17
66.91	-1.01	176.35	-3.37	.507	176.32	176.22	249.19
87.67	3.21	176.92	9.91	.507	176.65	176.00	224.40
100.00	4.41	177.44	10.26	.510	177.55	177.55	218.02

STATOR PERFORMANCE DATA

PERCENT LEADING EDGE	SPAN FROM TRAILING EDGE	MASS FLOW (KGF)	DELTA P (DEG)	INCIDENCE MEAN (DEG)	SUCT SUR (DEG)	ANGLE (DEG)	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STATOR PRESS RATIO	STAGE PRESS RATIO	STATION POLYTROPIC EFF
0.00	0.00	0.00	40.14	1.863	-2.059	.576	.0596	20.180	1.242	1.1145	8122
11.34	11.14	11.70	41.92	3.097	.487	.375	.0463	14.484	1.274	1.1145	3607
30.51	30.42	30.31	40.66	3.888	-2.910	.3474	.0307	4.532	1.304	1.1027	8476
46.51	44.74	47.27	38.49	-3.266	-6.257	.190	.0290	7.564	1.317	1.0942	8430
66.91	67.53	69.62	36.02	-4.540	-7.413	.3045	.0730	10.021	1.146	1.0979	7580
87.67	88.14	87.10	37.13	-1.029	-4.817	.3456	.1351	14.743	1.344	1.1070	6454
100.00	100.00	100.00	38.23	-3.097	-6.538	.3685	.1255	22.006	1.364	1.1069	7275

MOMENTUM AVERAGE STAGE EFFICIENCY = .4352 (POLYTROPIC) MOMENTUM AVG. STAGE PRESS RATIO = 1.1357
 MOMENTUM AVERAGE STAGE EFFICIENCY = .4203 (ADIABATIC) MASS AVERAGE TEMPERATURE RISE = 1.1039

NASA SMALL AXIAL COMPRESSOR TEST 3 JULIF 25, 1974 (COMBINED TEMP.)

MOTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT WEIGHT FLOW = 2.2941 LBM/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 62.7440
 70 PERCENT DESIGN SPEED = SCAN 40 20
 EQUIVALENT FLOW / INLET ANN AREA = 5391.076 M.P.M.
 25.3415 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0331

PERCENT SPAN FROM TIP (L. F.)	W*1 (OLES)	V*1 (FT/SEC)	V*2 (FT/SEC)	W*1 (OLES)	W*2 (OLES)	W*1 (OLES)	W*2 (OLES)	W*1 (OLES)	W*2 (OLES)	W*1 (OLES)	W*2 (OLES)	W*1 (OLES)	W*2 (OLES)	W*1 (OLES)	W*2 (OLES)
0.00	73.94	1111.09	1111.09	1.047	0.00	375.25	0.00	.295	326.24	315.74	1111.09	1111.09	1111.09	1111.09	1111.09
2.44	72.51	1110.53	1059.18	1.004	0.00	331.77	0.00	.295	333.77	327.84	1059.18	1059.18	1059.18	1059.18	1059.18
4.88	69.70	1037.53	973.17	.940	0.00	360.01	0.00	.326	360.01	351.40	973.17	973.17	973.17	973.17	973.17
7.32	67.44	932.73	880.50	.870	0.00	461.21	0.00	.334	341.21	347.02	880.50	880.50	880.50	880.50	880.50
9.76	65.41	802.71	719.43	.811	0.00	357.97	0.00	.324	357.97	357.97	719.43	719.43	719.43	719.43	719.43
12.20	63.66	731.93	671.47	.864	0.00	337.28	0.00	.305	337.28	337.28	671.47	671.47	671.47	671.47	671.47
14.64	62.24	649.51	565.18	.837	0.00	423.30	0.00	.294	325.30	316.24	565.18	565.18	565.18	565.18	565.18

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .7956

PERCENT SPAN FROM TIP (L. F.)	W*1 (OLES)	V*1 (FT/SEC)	V*2 (FT/SEC)	W*1 (OLES)	W*2 (OLES)	W*1 (OLES)	W*2 (OLES)	W*1 (OLES)	W*2 (OLES)	W*1 (OLES)	W*2 (OLES)	W*1 (OLES)	W*2 (OLES)	W*1 (OLES)	W*2 (OLES)
0.00	57.74	670.05	747.93	.763	34.77	571.09	325.68	.497	464.13	454.02	1068.01	1068.01	1068.01	1068.01	1068.01
11.32	55.10	829.74	880.85	.723	37.66	585.49	340.74	.509	474.09	464.51	1021.39	1021.39	1021.39	1021.39	1021.39
22.64	51.04	774.40	807.30	.679	34.77	582.48	331.75	.510	476.77	475.74	941.05	941.05	941.05	941.05	941.05
33.96	45.15	739.41	526.35	.633	33.03	670.08	337.98	.547	519.88	519.85	864.33	864.33	864.33	864.33	864.33
45.28	35.81	690.18	403.85	.612	34.46	674.30	382.83	.601	554.94	554.29	786.67	786.67	786.67	786.67	786.67
56.60	27.01	625.54	234.41	.550	34.82	748.36	463.80	.662	575.44	570.44	701.00	701.00	701.00	701.00	701.00
67.92	14.44	594.70	149.59	.535	43.84	767.62	501.97	.664	540.74	541.01	551.56	551.56	551.56	551.56	551.56

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	INCIDENCE ANGLE (DEG)	SUCT SUM (OLES)	ANNULL (OLES)	LOSS PARAMETER	DEVIATION ANGLE (DEG)	AVG. PRESS. RATIO	MOTOR EFF	POLYTROPIC EFF
0.00	4.00	15.91	9.79	.3493	.739	1.294	.6844	.6844
9.46	11.22	17.41	9.272	.3141	.699	1.294	.6844	.6844
24.13	30.39	17.88	8.534	.3397	1.707	1.307	.7941	.7941
40.42	48.79	22.07	7.491	.3893	3.264	1.342	.9361	.9361
56.60	61.3	23.64	7.153	.4360	5.294	1.341	1.0032	1.0032
73.00	64.27	40.64	6.177	.4949	12.656	1.414	.9991	.9991
100.00	100.00	45.59	5.118	.6360	21.496	1.616	.9991	.9991

MOMENTUM AVERAGE MOTOR EFFICIENCY = .4701 (POLYTROPIC)
 MOMENTUM AVERAGE MOTOR EFFICIENCY = .6646 (ADIABATIC)
 MOMENTUM AVG. MOTOR PRESS. RATIO = 1.3431
 MASS AVERAGE TEMPERATURE RISE = 1.1015

ROTOR PERFORMANCE: NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIVALENT FLOW HEIGHT FLOW = 1.0476 KG/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 62.7660
 70 PERCENT DESIGN SUFFIX = SCALING 20
 EQUIVALENT SPEED
 EQUIVALENT FLOW / INLET ANN AREA = 53311.076 R.P.M.
 123.9236 KG/SEC-SQ M

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0331

PERCENT SPAN FROM TIP (I. I.)	REF. ANG. (DEG)	V01 (M/SEC)	V02 (M/SEC)	VI (M/SEC)	VU1 (M/SEC)	M1	VW1 (M/SEC)	V71 (M/SEC)	U1 (M/SEC)
0.00	73.09	370.15	330.00	0.00	0.00	0.295	99.66	96.24	338.66
1.66	72.71	330.44	322.46	0.00	0.00	0.302	101.74	98.40	322.84
25.13	69.74	316.27	293.62	0.00	0.00	0.426	109.73	107.72	298.62
40.92	67.89	272.93	270.21	0.00	0.00	0.434	112.23	111.87	270.21
54.42	63.83	262.45	234.25	0.00	0.00	0.524	109.11	109.07	239.21
61.66	58.04	223.71	198.67	0.00	0.00	0.305	102.80	101.62	198.67
100.00	54.74	197.37	171.35	0.00	0.00	0.294	99.15	94.78	171.35

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 0.7954

PERCENT SPAN FROM TIP (I. I.)	REF. ANG. (DEG)	V02 (M/SEC)	V01 (M/SEC)	V7 (M/SEC)	VU2 (M/SEC)	M2	VW2 (M/SEC)	V72 (M/SEC)	U2 (M/SEC)
0.00	57.73	267.41	220.66	174.07	99.27	0.497	147.40	134.34	325.71
11.32	55.11	222.97	207.60	170.15	103.86	0.509	144.75	141.54	311.32
10.54	51.94	230.12	195.71	177.58	101.12	0.510	145.97	145.02	280.43
40.94	45.35	225.49	160.43	161.00	103.02	0.547	158.64	154.65	263.45
67.60	35.40	210.63	123.09	200.74	116.69	0.601	170.67	170.17	239.74
84.15	22.01	170.07	71.65	226.40	142.22	0.662	176.77	173.47	214.07
100.00	14.44	140.77	65.00	233.91	153.00	0.664	172.01	171.00	199.60

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (I. I.)	LEADING EDGE	TRAILING EDGE	INCIDENCE ANGLE (DEG)	MEAN SUCT. ANGLE (DEG)	FACTOR	OMEGA (1/SEC)	UAH	PARAMETER	DEVIATION ANGLE (DEG)	MOTION PRESS. RATIO	MOTION ADIABATIC EFF.	ROTOR POLYTROPIC EFF.
0.00	0.00	0.00	15.91	4.151	0.1693	0.2060	0.0414	0.714	1.294	0.0448	0.0448	0.6900
9.46	11.32	11.32	17.41	9.272	0.1641	0.2167	0.0450	0.709	1.294	0.0444	0.0444	0.6756
25.13	30.53	30.53	17.06	4.536	0.1647	0.1636	0.0495	1.707	1.107	0.0441	0.0441	0.6017
40.92	40.94	40.94	22.09	7.732	0.1660	0.0455	0.1066	3.264	1.342	0.0411	0.0411	0.5307
54.42	67.60	67.60	29.06	10.713	0.1203	-0.0030	-0.0007	5.200	1.384	1.0073	1.0073	1.0032
61.66	84.15	84.15	40.64	11.170	0.2349	0.0012	0.0003	12.656	1.414	0.991	0.991	0.991
100.00	100.00	100.00	45.50	11.172	0.2380	0.0015	0.0003	21.496	1.414	0.991	0.991	0.991

MOMENTUM AVERAGE ROTOR EFFICIENCY = 0.701 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = 0.664 (ADIABATIC)
 MOMENTUM AVG. ROTOR PRESS. RATIO = 1.3431
 MASS AVERAGE TEMPERATURE RISE = 1.0103

HASA SMALL AXIAL COMPRESSOR TEST 4 JUNE 25, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 20

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9097

PERCENT SPAN FROM TIP (L. F.)	WETA J (DEG)	VJ (FT/SEC)	VUJ (FT/SEC)	MJ	VMJ (FT/SEC)	VZJ (FT/SEC)	VZJ (FT/SEC)
0.00	30.00	504.07	335.35	.491	411.58	444.60	1037.90
11.16	30.15	505.00	335.37	.492	411.80	444.00	990.17
30.59	30.31	503.50	335.20	.511	470.17	470.16	925.69
48.72	30.05	498.09	335.04	.533	526.45	526.00	859.25
67.20	30.11	494.74	334.82	.501	501.97	500.92	791.23
88.01	30.02	495.97	335.30	.554	576.53	576.79	715.20
100.00	30.00	496.50	335.20	.581	588.09	577.61	671.32

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9513

PERCENT SPAN FROM TIP (L. F.)	WETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	VZ4 (FT/SEC)
0.00	-2.00	486.09	-10.00	.420	445.74	445.74	1030.27
11.17	-2.12	489.83	-10.14	.424	449.49	449.43	994.65
30.54	-0.61	512.35	-41.33	.446	510.71	510.49	934.41
48.70	-0.19	542.70	-60.42	.485	541.30	540.73	870.63
67.24	-0.20	549.30	-71.02	.517	549.30	548.05	817.59
88.20	2.73	540.51	77.92	.513	545.05	543.71	752.51
100.00	2.77	549.77	78.51	.510	549.08	549.08	715.36

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP FROM TIP (L. F.)	MASS FLOW (WCF)	WETA (DEG)	INCIDENCE ANGLE (DEG)	SUIT SUM (DEG)	LOSS FACTOR	UMENA HAR	UMENA HAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	30.00	.157	-3.703	.3651	.0561	.0561	.0202	20.180	1.243	1.1112	.8019
11.16	11.00	30.17	1.171	-1.109	.3513	.0437	.0437	.0152	18.622	1.246	1.1115	.8015
30.59	30.34	30.04	-1.309	-0.604	.3328	.0275	.0275	.0090	8.563	1.301	1.1000	.8323
48.72	48.74	30.05	-0.713	-0.900	.3005	.0402	.0402	.0123	7.785	1.331	1.0916	.8399
67.20	67.54	30.31	-0.422	-0.704	.2498	.0401	.0401	.0230	10.904	1.354	1.0945	.7192
88.01	88.27	30.07	-3.908	-0.800	.3497	.1422	.1422	.0441	14.261	1.353	1.1048	.5570
100.00	100.00	30.00	-0.030	-0.471	.3706	.1702	.1702	.0530	21.470	1.353	1.1048	.6394

MOMENTUM AVERAGE STAGE EFFICIENCY = .8371 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .8308 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.0282
MASS AVERAGE TEMPERATURE RISE = 1.1015

STATOR PERFORMANCE MASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

70 PERCENT DESIGN SPEED - SCAL NO 20

INLET VELOCITY DIAPHRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9097

PERCENT SPAN FROM TIP (L. F.)	HETA 3 (DEG)	V3 (M/SEC)	V13 (M/SEC)	M3	VM3 (M/SEC)	VZ3 (M/SEC)	U3 (M/SEC)
0.00	35.69	171.93	102.22	.691	130.25	136.73	315.32
11.16	34.14	172.40	105.59	.692	135.54	135.15	204.63
10.53	35.31	177.45	107.00	.511	145.14	145.14	212.15
48.72	32.05	191.01	103.02	.553	160.66	160.36	261.90
67.00	34.11	206.80	110.01	.601	171.29	170.64	241.17
80.11	34.42	224.29	117.38	.651	174.73	173.17	219.01
100.00	33.00	242.90	124.20	.631	179.49	174.53	206.62

EXIT VELOCITY DIAPHRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9513

PERCENT SPAN FROM TIP (L. F.)	HETA 4 (DEG)	V4 (M/SEC)	V14 (M/SEC)	M4	VM4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	27.00	169.10	73.17	.620	144.05	148.05	316.03
11.16	27.12	167.30	75.23	.626	147.20	149.19	203.11
30.53	28.03	156.17	77.00	.446	157.66	154.60	204.91
48.72	28.17	148.49	77.32	.405	168.04	167.86	267.20
67.00	28.20	179.14	80.7	.517	179.34	179.24	244.20
80.11	27.73	174.77	82.1	.413	178.57	177.91	224.37
100.00	27.77	179.76	81.09	.516	174.55	174.55	218.09

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (L. F.)	DELTA (DEG)	DELTA (DEG)	INCIDENCE ANGLE (DEG)	SUCT ANGLE (DEG)	FACTOR	OMEGA HAR	LOSS PARAMETER	OBVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	34.48	-1.17	-1.763	.3851	.0591	.0022	21.188	1.201	1.1113	.9019
11.16	11.37	30.27	1.771	-1.309	.3393	.0637	.012	14.427	1.244	1.1115	.8915
30.53	30.53	39.94	-1.307	-4.004	.275	.0275	.0000	9.543	1.311	1.1000	.8423
48.72	42.72	37.05	-4.713	-7.900	.2002	.0402	.0123	7.785	1.331	1.0916	.8399
67.00	67.00	34.31	-5.422	-4.284	.2401	.0230	.0230	10.904	1.344	1.0945	.7192
80.11	80.11	35.69	-3.208	-6.700	.3497	.1422	.0481	14.261	1.353	1.1048	.5570
100.00	100.00	46.43	-5.030	-8.971	.3706	.1702	.0430	21.470	1.353	1.1048	.6334

MOMENTUM AVERAGE STAGE EFFICIENCY = .9371 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .8304 (ADIABATIC)
MOMENTUM AVG. STAGE PRESS RATIO = 1.3282
MASS AVERAGE TEMPERATURE RISE = 1.1015

MOTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIVALENT WEIGHT FLOW = 1.0444 KG/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 64.0444
 10 PERCENT DESIGN SPEED = 5000 RPM
 EQUIVALENT SPEED = 57902.672 R.P.M.
 EQUIVALENT FLOW / INLET ANN AREA = 126.5881 KG/SEC-SQ M

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0330

PERCENT SPAN FROM TIP (I. I.)	V01 (M/SEC)	V02 (M/SEC)	DELTA (DEG)	W1 (M/SEC)	VU1 (M/SEC)	M1	V41 (M/SEC)	V71 (M/SEC)	U1 (M/SEC)
0.00	314.50	130.01	0.00	101.06	0.00	.307	101.06	91.54	130.01
5.00	319.23	130.07	0.00	104.20	0.00	.309	104.20	100.79	122.82
10.00	317.19	129.55	0.00	112.42	0.00	.316	112.42	110.30	116.55
15.00	313.77	127.05	0.00	114.99	0.00	.317	114.99	114.62	114.62
20.00	308.09	123.21	0.00	111.82	0.00	.313	111.82	111.70	111.70
25.00	302.13	120.91	0.00	107.44	0.00	.313	107.44	104.03	104.03
30.00	294.30	118.33	0.00	101.82	0.00	.307	101.82	94.36	111.33

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .7977

PERCENT SPAN FROM TIP (I. I.)	V02 (M/SEC)	V01 (M/SEC)	DELTA (DEG)	V2 (M/SEC)	VU2 (M/SEC)	M2	V72 (M/SEC)	U2 (M/SEC)
0.00	172.00	230.27	31.34	173.39	97.39	.578	140.77	140.11
5.00	170.94	211.92	31.04	174.07	94.82	.513	144.84	145.19
10.00	168.35	190.71	31.06	174.20	90.17	.516	150.05	149.09
15.00	165.74	168.74	31.09	184.88	94.22	.567	160.77	140.72
20.00	163.17	145.25	31.54	114.37	114.37	.807	172.89	171.49
25.00	160.56	123.71	31.56	134.84	134.84	.871	182.09	174.01
30.00	158.51	102.19	31.54	150.38	150.38	.892	182.24	174.05

MOTOR PERFORMANCE DATA

PERCENT LEADING EDGE	SPAN FROM TIP (I. I.)	FLUX (M/T)	DELTA (DEG)	INCIDENCE ANGLE (DEG)	FACTOR	ORANGE	LOSS PARAMETER	DEVIATION ANGLE (DEG)	PERCENT LOSS	ROTOR POLYTROPIC EFF
0.00	0.00	0.50	15.82	8.533	.373	.194	.039	.051	1.282	.892
9.44	11.23	11.07	16.22	8.470	.365	.207	.042	.101	1.285	.845
25.14	30.52	31.40	16.14	8.475	.354	.191	.029	1.057	1.300	.819
40.44	45.73	45.37	21.31	7.271	.319	.141	.007	1.511	1.316	.950
50.82	67.71	65.37	24.36	6.515	.310	.000	.001	1.561	1.376	1.000
63.51	88.22	84.22	30.00	5.613	.216	.000	.000	1.793	1.422	1.025
100.00	100.00	100.00	44.47	4.451	.218	.000	.000	21.462	1.422	1.025

MOMENTUM AVERAGE MOTOR EFFICIENCY = .8847 (POLYTROPIC)
 MOMENTUM AVERAGE MOTOR EFFICIENCY = .8499 (ADIABATIC)
 MOMENTUM AVERAGE ROTOR LOSS PERCENT RATIO = 1.3374
 MASS AVERAGE TEMPERATURE RISE = 1.0983

NASA SMALL AXIAL COMPRESSOR TEST 3 JUNE 25, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

70 PERCENT UPSILON SPEED - SCAN NO 21

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9024

PERCENT SPAN FROM TIP (L. E.)	WETA 3 (DEG)	V3 (FT/SEC)	V33 (FT/SEC)	M3	V34 (FT/SEC)	V23 (FT/SEC)	U3 (FT/SEC)
0.00	545.18	322.26	496	467.94	462.10	1030.11	
11.35	574.10	335.00	501	465.01	455.06	994.37	
30.36	541.23	320.54	520	446.76	440.75	928.63	
44.51	631.47	327.20	554	540.09	539.09	859.00	
57.74	603.58	472.70	607	573.47	571.14	791.26	
69.08	594.70	444.93	665	544.56	540.57	715.18	
100.00	776.33	474.79	693	611.11	566.22	671.22	

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9517

PERCENT SPAN FROM TIP (L. E.)	WETA 4 (DEG)	V4 (FT/SEC)	V44 (FT/SEC)	M4	V45 (FT/SEC)	V26 (FT/SEC)	U4 (FT/SEC)
0.00	499.54	222.05	433	499.05	494.15	1030.11	
11.35	507.80	233.44	441	507.26	507.19	994.37	
30.36	530.46	245.06	464	524.94	524.73	928.63	
44.51	560.76	261.98	500	567.21	566.42	859.00	
57.74	603.94	257.6	532	603.94	603.83	791.26	
69.08	607.47	232.5	533	604.57	602.98	728.63	
100.00	611.74	252.24	537	608.25	604.25	715.25	

STATOR PERFORMANCE DATA

PERCENT LEADING EDGE FROM TIP	DELTA FLUX (DEG)	DELTA FLUX (DEG)	INCIDENCE ANGLE (DEG)	SUCT SURF (DEG)	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	37.04	-1.764	-5.600	.340	19.650	1.272	1.1071	.8041
11.35	11.07	33.47	-1.70	-3.40	.376	13.904	1.277	1.1071	.8260
30.36	30.40	37.41	-3.172	-7.075	.3036	6.203	1.294	1.0941	.8557
44.51	47.57	35.44	-6.539	-9.530	.2753	7.750	1.323	1.0901	.7970
57.74	67.40	33.57	-6.501	-9.164	.2708	16.542	1.350	1.0945	.6502
69.08	60.13	30.93	-5.426	-8.319	.3164	17.503	1.350	1.1030	.6390
100.00	100.00	31.44	-6.554	-9.475	.3375	24.422	1.350	1.1030	.6340

MOMENTUM AVG. STAGE EFFICIENCY = .8464 (POLYTROPIC)
 MASS AVERAGE TEMPERATURE RISE = 1.0943 (ADIABATIC)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 21

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9024

PERCENT SPAN FROM TIP (L. E.)	DELTA 3 (DEG)	V3 (M/SEC)	W3 (M/SEC)	M3	VM3 (M/SEC)	VZ3 (M/SEC)	U3 (M/SEC)
0.00	34.52	173.18	94.23	.496	142.63	141.06	316.27
11.32	37.74	175.01	102.11	.501	141.98	141.74	703.63
30.45	32.53	180.20	97.70	.520	151.41	151.41	202.38
48.51	33.21	192.47	94.73	.554	164.62	164.50	252.10
67.26	33.03	203.44	113.52	.607	174.79	174.16	241.18
84.00	34.70	224.15	134.34	.666	182.44	179.99	217.94
100.00	33.64	236.83	147.33	.693	185.25	181.12	204.54

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9517

PERCENT SPAN FROM TIP (T. P.)	DELTA 4 (DEG)	V4 (M/SEC)	W4 (M/SEC)	M4	VM4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	22.53	152.20	66.72	.433	152.11	152.11	313.98
11.35	22.65	154.78	71.14	.441	154.01	154.59	303.04
30.36	24.98	161.88	74.04	.464	161.23	161.16	286.86
48.70	24.23	173.16	72.80	.500	172.58	172.71	267.24
67.44	24.52	184.04	71.76	.532	184.04	183.84	244.21
84.13	24.97	195.31	79.28	.533	184.30	183.63	224.40
100.00	24.12	186.46	77.49	.537	185.40	185.40	215.01

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (FRONT EDGE)	MASS FLOW (PU)	DELTA WETA (DEG)	INCIDENCE ANGLE (DEG)	SUCT SUM (DEG)	FACTOR	W	OMEGA HAV	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	37.04	-1.764	-5.686	.3408	.0490	.0176	.0176	14.650	1.272	1.1071	.8041
11.32	11.57	38.42	-1.394	-3.740	.3326	.0424	.0147	.0147	13.904	1.277	1.1071	.8240
30.36	30.34	37.81	-3.772	-7.075	.3036	.0290	.0094	.0094	8.203	1.294	1.0951	.8577
48.51	48.70	35.44	-6.539	-9.536	.2753	.0433	.0133	.0133	7.750	1.323	1.0901	.7470
67.44	67.40	33.57	-6.501	-8.104	.2708	.0871	.0250	.0250	10.552	1.350	1.0945	.6502
84.00	84.13	30.93	-5.426	-8.119	.3169	.1973	.0519	.0519	17.503	1.350	1.1030	.6996
100.00	100.00	31.40	-6.554	-9.995	.3375	.1848	.0465	.0465	24.422	1.350	1.1030	.5940

MOMENTUM AVERAGE STAGE EFFICIENCY = .8466 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .8407 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.3207
MASS AVERAGE TEMPERATURE RISE = 1.0963

NASA SMALL AXIAL COMPRESSOR TEST 3 JUNE 25, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 22

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8960

PERCENT SPAN FROM TIP (L. E.)	BETA 3 (DEG)	V3 (FT/SEC)	VU3 (FT/SEC)	M3	VM3 (FT/SEC)	VZ3 (FT/SEC)	U3 (FT/SEC)
0.00	33.02	570.40	310.06	.499	478.26	473.00	1036.70
11.22	34.91	580.24	323.08	.506	481.57	480.78	995.68
24.06	36.74	590.05	335.57	.527	514.04	514.04	927.00
40.02	38.02	614.57	347.71	.562	544.24	546.49	860.75
60.41	38.51	642.02	366.05	.606	575.67	573.57	791.79
87.71	38.01	755.41	444.17	.673	611.03	602.83	714.66
100.00	37.17	782.92	473.22	.700	623.72	606.49	670.65

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9484

PERCENT SPAN FROM TIP (L. E.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	-.88	509.74	-25.01	.443	509.10	509.10	1029.24
11.13	-2.98	518.90	-26.96	.452	518.26	518.20	993.61
30.24	-5.00	544.62	-47.45	.478	542.55	542.31	933.96
40.63	-4.27	542.51	-43.32	.513	580.90	580.30	876.20
67.40	-2.16	614.01	-23.22	.542	614.47	614.13	817.21
88.17	2.49	622.62	27.04	.547	622.23	619.96	751.85
100.00	2.59	678.68	78.33	.551	675.64	625.84	714.04

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (L. E.)	MASS FLOW (PLF)	DELTA BETA (DEG)	INCIDENCE ANGLE (DEG)	SUCT SURF (DEG)	U FACTOR	OMEGA HAH	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMPERATURE RATIO	STATOR POLYTROPIC EFF
0.00	0.00	35.70	-3.275	-7.217	.1205	.0452	.0163	14.300	1.247	1.1033	.7962
11.22	11.33	36.80	-7.207	-5.813	.1153	.0524	.0162	13.578	1.264	1.1013	.7636
29.76	30.20	35.72	-5.059	-4.172	.1017	.0394	.0124	8.187	1.287	1.0907	.7936
40.02	44.03	34.31	-7.000	-10.658	.2536	.0428	.0121	7.724	1.316	1.0876	.7598
60.41	67.40	34.67	-6.376	-9.849	.2505	.0818	.0235	6.935	1.341	1.0931	.6220
87.71	84.17	33.53	-6.308	-9.202	.1114	.2059	.0544	14.020	1.344	1.1017	.6465
100.00	100.00	34.60	-7.444	-10.805	.1345	.1932	.0488	21.292	1.344	1.1017	.6468

MOMENTUM AVERAGE STAGE EFFICIENCY = .8431 (POLYTROPIC) MOMENTUM AVG. STAGE PRESS RATIO = 1.1313
 MOMENTUM AVERAGE STAGE EFFICIENCY = .8453 (ADIABATIC) MASS AVERAGE TEMPERATURE RATIO = 1.0956

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 22

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8960

PERCENT SPAN FROM TIP (L.F.)	BETA 3 (DEG)	VJ (M/SEC)	VU3 (M/SEC)	M3	VM3 (M/SEC)	VZ3 (M/SEC)	UJ (M/SEC)
0.00	33.02	173.86	94.75	.499	145.77	144.17	316.00
11.22	33.91	176.86	10.06	.508	146.74	146.54	303.48
29.96	30.73	182.24	93.14	.527	156.59	156.69	282.57
48.02	30.05	193.41	96.04	.562	177.42	177.30	262.42
66.91	32.51	208.14	111.82	.606	175.46	174.82	241.34
87.04	30.01	210.25	135.38	.673	186.24	183.74	217.83
100.00	37.14	238.63	144.24	.700	190.11	184.86	206.41

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9484

PERCENT SPAN FROM TIP (L.F.)	BETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VM4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	-2.88	155.37	-7.81	.443	155.17	155.17	313.71
11.33	-6.27	158.14	-11.22	.452	157.97	157.95	302.85
30.24	-5.00	166.00	-14.96	.478	165.37	165.30	284.67
48.53	-4.27	177.55	-13.20	.513	177.06	176.88	267.08
67.60	-2.16	187.42	-7.04	.542	187.29	187.19	249.04
88.17	2.44	189.84	4.24	.547	189.66	188.96	229.16
100.00	2.54	190.95	4.04	.551	190.76	190.76	217.82

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (L.F.)	FRADING LOSS (%)	MASS FLOW (%)	DELTA (DEG)	DELTA (DEG)	INCIDENCE ANGLE (DEG)	SUCT SURF (DEG)	FACTOR	OMEGA (H/M)	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STATION POLYTROPIC EFF
0.00	0.00	0.00	35.90	35.90	-3.275	-7.217	.3705	.0452	.0164	14.300	1.1013	.7862
11.22	11.33	11.04	36.74	36.74	-2.267	-5.413	.4153	.0524	.0142	13.578	1.1031	.7436
29.96	30.21	30.43	35.72	35.72	-5.890	-9.112	.4417	.0394	.0129	8.187	1.0007	.7936
48.02	44.63	44.27	34.31	34.31	-7.660	-10.828	.2526	.0428	.0131	7.723	1.0116	.7590
66.91	67.40	61.91	36.67	36.67	-6.976	-9.444	.2585	.0818	.0235	6.935	1.0731	.6229
87.04	84.17	44.20	33.53	33.53	-6.304	-4.202	.4144	.2054	.0544	14.020	1.1017	.8655
100.00	100.00	100.00	34.60	34.60	-7.444	-10.485	.3345	.1932	.0448	21.292	1.1017	.5828

MOMENTUM AVERAGE STATOR EFFICIENCY = .4511 (POLYTROPIC)
 MOMENTUM AVERAGE STATOR EFFICIENCY = .4453 (ADIABATIC)
 MOMENTUM AVG. STAGE PRESS RATIO = 1.1013
 MASS AVERAGE TEMPERATURE RISE = 1.0456

**ORIGINAL PAGE IS
OF POOR QUALITY**

DATA SMALL AXIAL COMPRESSOR TEST 3 JUNE 20, 1974 (COMBINED TEMP.)

MOTOR PERFORMANCE DATA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT FLOW FROM 100 PERCENT DESIGN SPEED - SCAN NO 23
 EQUIVALENT FLOW / INLET ANN AREA = 76.875, 6.464 H.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 89.3343

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9941

PERCENT SPAN FROM TIP (L. F.)	WETTING ANGLE (DEG)	V01 (FT/SEC)	W1 (LBS)	W2 (LBS)	W3 (LBS)	W4 (LBS)	W5 (LBS)	W6 (LBS)	W7 (LBS)	W8 (LBS)	W9 (LBS)	W10 (LBS)
0.00	72.07	1634.76	1.517	0.00	494.48	0.00	0.00	457	494.48	470.55	1554.39	1554.39
4.16	71.44	1571.07	1.450	0.00	500.13	0.00	0.00	463	500.13	449.56	1511.16	1511.16
25.51	64.70	1404.24	1.368	0.00	744.17	0.00	0.00	503	744.17	546.17	1304.88	1304.88
42.72	57.46	1371.71	1.261	0.00	561.44	0.00	0.00	516	561.44	554.43	1231.5	1231.5
61.74	44.72	1277.70	1.177	0.00	544.02	0.00	0.00	494	544.02	543.02	1100.74	1100.74
85.05	30.74	1051.56	0.962	0.00	507.85	0.00	0.00	406	507.85	509.64	718.66	718.66
100.00	54.07	734.04	0.658	0.00	484.03	0.00	0.00	447	484.03	477.41	401.65	401.65

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .7400

PERCENT SPAN FROM TIP (L. F.)	WETTING ANGLE (DEG)	V02 (FT/SEC)	W1 (LBS)	W2 (LBS)	W3 (LBS)	W4 (LBS)	W5 (LBS)	W6 (LBS)	W7 (LBS)	W8 (LBS)	W9 (LBS)	W10 (LBS)
0.00	70.43	1275.01	1.032	36.04	831.19	477.29	702	664.51	644.98	644.98	1523.81	1523.81
11.50	70.71	1174.27	0.996	36.14	801.28	520.67	747	711.90	696.35	696.35	1425.41	1425.41
30.68	47.71	1110.26	0.953	34.81	906.47	517.50	774	744.25	734.81	734.81	1341.37	1341.37
44.30	41.77	1047.07	0.908	34.41	957.99	542.76	831	789.41	749.31	749.31	1230.64	1230.64
64.27	32.76	977.19	0.851	33.43	1006.7	589.05	840	815.72	813.32	813.32	1117.96	1117.96
80.52	21.44	907.97	0.798	34.43	1072.64	660.73	848	840.24	826.45	826.45	997.37	997.37
100.00	14.26	867.21	0.770	40.41	1103.80	715.51	880	840.40	811.93	811.93	924.11	924.11

MOTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (L. F.)	WETTING ANGLE (DEG)	WETTING ANGLE (DEG)	WETTING ANGLE (DEG)	WETTING ANGLE (DEG)	WETTING ANGLE (DEG)	WETTING ANGLE (DEG)	WETTING ANGLE (DEG)	WETTING ANGLE (DEG)	WETTING ANGLE (DEG)	WETTING ANGLE (DEG)	WETTING ANGLE (DEG)	WETTING ANGLE (DEG)
0.00	0.00	15.74	0.030	8.362	0.376	0.276	0.0577	-0.064	1.671	0.646	0.678	0.678
4.16	11.50	18.74	0.029	8.413	0.413	0.270	0.0595	-2.252	1.701	0.739	0.739	0.739
25.51	30.68	20.50	0.026	7.274	0.402	0.175	0.0391	-2.196	1.772	0.949	0.949	0.949
42.72	42.72	24.77	0.023	6.257	0.303	0.0976	0.0223	-0.476	1.852	0.975	0.975	0.975
61.74	61.74	30.75	0.011	5.523	0.177	0.0645	0.0159	2.968	1.843	0.940	0.940	0.940
85.05	85.05	39.50	0.008	4.654	0.208	0.0640	0.0139	17.661	1.916	0.944	0.944	0.944
100.00	100.00	44.36	0.004	3.709	0.235	0.074	0.0160	21.311	1.916	0.944	0.944	0.944

MOMENTUM AVERAGE MOTOR EFFICIENCY = 0.479 (POLY IOPIC)
 MOMENTUM AVERAGE MOTOR EFFICIENCY = 0.434 (ADIABATIC)
 MOMENTUM AVG. MOTOR PRESS RATIO = 1.8108
 MASS AVERAGE TEMPERATURE RISE = 1.2211

NASA SMALL AXIAL COMPRESSOR TEST 3 JULY 25, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

100 PERCENT DESIGN SPEED - SCAN NO 23

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8760

PERCENT SPAN FROM TIP (L. F.)	BETA J (DEG)	VJ (FT/SEC)	VIIJ (FT/SEC)	MJ	VMJ (FT/SEC)	VZJ (FT/SEC)	UJ (FT/SEC)
0.00	39.90	790.47	512.00	.609	610.70	604.00	1479.07
11.54	40.12	824.93	533.78	.694	629.02	627.95	1417.65
30.65	39.70	870.77	520.00	.747	648.96	628.95	1319.70
47.06	35.91	930.03	545.09	.804	752.97	742.41	1223.57
67.96	37.40	963.90	555.89	.830	763.80	743.00	1124.75
80.14	40.11	1013.93	653.20	.807	775.49	745.07	1019.03
100.00	41.60	1059.52	674.11	.824	787.22	745.46	957.29

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8888

PERCENT SPAN FROM TIP (L. F.)	BETA 4 (DEG)	V4 (FT/SEC)	VII4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	33.91	694.77	470.74	.577	693.13	693.13	1469.14
11.20	34.90	715.21	480.01	.595	713.55	713.47	1418.87
30.06	32.04	750.92	480.26	.640	757.95	757.02	1334.14
47.29	31.20	817.07	470.09	.696	815.66	811.42	1251.37
67.21	30.06	860.06	453.37	.681	794.95	790.41	1107.34
80.14	32.23	920.91	590.25	.637	752.34	749.59	1073.50
100.00	32.24	957.01	710.63	.641	757.23	747.23	1020.08

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (L. F.)	DELTA (DEG)	DELTA (DEG)	INCIDENCE ANGLE (DEG)	SUCT SURF (DEG)	FACTOR	WAM	WIEGA	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS. RATIO	STAGE TEMP. RATIO	STATOR POLYTROPIC EFF
0.00	0.00	43.92	3.001	-.201	.3832	.0528	.0528	.0201	14.240	1.667	1.7428	.8061
11.54	11.02	44.21	4.136	-.303	.4778	.0674	.0674	.0215	12.640	1.664	1.7428	.7722
30.65	31.30	37.05	3.943	-2.921	.3420	.0819	.0819	.0267	10.317	1.727	1.7224	.7321
47.06	51.17	39.30	-1.053	4.836	.1142	.0665	.0665	.0203	9.637	1.804	1.2140	.7708
67.96	70.75	30.44	-2.221	5.003	.1471	.0422	.0422	.0422	12.000	1.741	1.2110	.8274
80.14	90.24	37.80	-2.310	5.100	.4121	.2600	.2600	.0703	13.757	1.712	1.2130	.8293
100.00	100.00	39.16	-3.223	6.669	.4242	.2513	.2513	.0635	20.941	1.712	1.2130	.8300

MOMENTUM AVERAGE STAGE EFFICIENCY = .7914 (POLYTROPIC)
 MOMENTUM AVERAGE STAGE EFFICIENCY = .7746 (ADIABATIC)
 MOMENTUM AVG. STAGE PRESS. RATIO = 1.7406
 MASS AVERAGE TEMPERATURE RISE = 1.2211

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

100 PERCENT DESIGN SPEED - SCAN NO 23

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8760

PERCENT SPAN FROM TIP (I. F.)	HETA 1 (DEG)	V3 (M/SEC)	V14 (M/SEC)	M3	VM3 (M/SEC)	VZ3 (M/SEC)	U3 (M/SEC)
0.01	34.70	242.42	150.08	.669	184.14	144.10	451.07
11.53	41.12	251.45	162.70	.674	191.73	171.41	452.71
30.65	34.90	266.62	160.32	.747	213.04	213.04	402.25
49.04	32.94	283.47	166.34	.804	224.50	224.50	372.44
67.36	37.40	293.82	170.46	.838	233.41	232.56	342.52
80.40	40.11	307.09	172.20	.887	236.37	233.19	310.30
100.00	41.43	314.89	171.57	.924	239.44	233.31	291.70

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8888

PERCENT SPAN FROM TIP (I. F.)	HETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VM4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.10	31.94	211.77	-14.55	.577	211.76	211.26	447.74
11.20	23.00	210.00	-14.02	.595	217.49	217.49	432.97
30.06	22.01	231.32	-11.06	.640	231.02	230.72	405.65
48.29	23.16	244.04	-14.00	.696	248.61	244.36	381.42
67.21	24.96	243.80	4.07	.661	243.83	243.63	352.41
80.03	22.23	229.49	4.91	.637	229.31	228.48	327.23
100.00	24.24	240.98	4.03	.641	230.80	230.40	310.92

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (I. F.)	HETA 5 (DEG)	INCIDENCE ANGLE (DEG)	SUPT SUM (DEG)	FACTON	OMEGA MAX	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STATOR PRESS RATIO	STAGE TEMP RATIO	STATION POLYTROPIC EFF
0.00	0.00	43.72	-4.00	.4932	.0558	.0201	14.740	1.647	1.2424	.8041
11.53	11.02	44.21	4.146	.4778	.0679	.0234	14.690	1.664	1.2424	.7722
30.65	11.36	39.05	-3.43	.4420	.0814	.0267	10.317	1.727	1.2224	.7421
49.04	51.17	37.30	-4.436	.4132	.0665	.0203	8.637	1.409	1.2140	.7708
67.21	70.75	36.44	-2.221	.3343	.1471	.0420	14.060	1.741	1.2110	.6275
80.40	80.24	37.04	-2.310	.4121	.2640	.0703	13.757	1.712	1.2130	.5283
100.00	100.00	39.14	-3.220	.4242	.2513	.0635	20.941	1.712	1.2130	.5300

MOMENTUM AVERAGE STAGE EFFICIENCY = .7914 (POLYTROPIC)
 MOMENTUM AVERAGE STAGE EFFICIENCY = .7746 (ADIABATIC)
 MOMENTUM AVG. STAGE PRESS RATIO = 1.7406
 MASS AVERAGE TEMPERATURE RISE = 1.2211

NASA SMALL AXIAL COMPRESSOR TEST 3 JUNE 25, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT FLOW FROM TIP = 3.2621 LBM/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 89.0641
 100 PERCENT DESIGN SPEED - (CAL) NO 24
 EQUIVALENT SPEED
 EQUIVALENT FLOW / INLET ANN AREA = 76931.953 LBM/SEC-SQ FT
 36.0277

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0001

PERCENT SPAN FROM TIP (L. F.)	WETA0 (DEG)	V01 (FT/SEC)	BETA1 (DEG)	V1 (FT/SEC)	M1	V01 (FT/SEC)	M1	V01 (FT/SEC)	U1
0.00	72.71	1580.55	0.00	493.92	0.00	493.92	0.451	493.92	1505.55
9.95	71.31	1576.40	0.00	493.04	0.00	493.04	0.452	493.04	1512.50
25.24	68.22	1471.07	0.00	466.20	0.00	466.20	0.514	466.20	1387.85
41.95	66.02	1375.74	0.00	544.19	0.00	544.19	0.497	544.19	1255.95
61.23	63.91	1230.23	0.00	541.24	0.00	541.24	0.497	541.24	1105.53
84.86	61.15	1021.31	0.00	507.33	0.00	507.33	0.454	507.33	920.21
100.00	58.75	730.93	0.00	506.09	0.00	506.09	0.445	470.35	902.24

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 0.7449

PERCENT SPAN FROM TIP (L. F.)	WETA2 (DEG)	V02 (FT/SEC)	BETA2 (DEG)	V2 (FT/SEC)	M2	V02 (FT/SEC)	M2	V02 (FT/SEC)	U2
0.00	57.03	1260.78	37.01	671.99	0.700	500.70	0.700	671.99	1524.93
11.71	54.13	1105.08	36.07	674.78	0.739	524.33	0.739	694.94	1476.64
30.64	48.02	1070.35	35.06	691.95	0.763	514.92	0.763	724.74	1342.56
49.218	41.12	1037.14	34.14	695.64	0.824	5	0.824	781.42	1232.23
72.004	33.17	973.11	33.03	1005.75	0.880	500.72	0.880	815.46	1114.76
88.88	21.24	875.07	32.77	1088.45	0.943	664.05	0.943	814.76	949.01
100.00	14.23	830.71	30.77	1100.27	0.976	718.45	0.976	833.33	929.79

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (L. F.)	INCIDENCE ANGLE (DEG)	SUCT SUM (DEG)	FACIOM	U	UHFRA0	LOSS PARAMETER	DEVIATION ANGLE (DEG)	MOTOM PRESS RATIO	MOTOM AUTOMATIC EFF	ROTOR POLYTRMOPIC EFF
0.00	0.00	0.00	0.797	0.409	0.278	0.577	-0.37	1.074	0.603	0.676
9.95	11.64	0.309	0.806	0.400	0.278	0.604	-1.024	1.094	0.604	0.693
25.24	30.84	0.414	0.813	0.304	0.109	0.816	-1.645	1.751	0.797	0.764
41.95	49.10	0.500	0.870	0.104	0.104	0.827	-0.801	1.855	0.870	0.846
61.23	68.00	0.533	0.888	0.273	0.022	0.822	2.042	1.907	0.844	0.891
84.86	80.44	0.542	0.892	0.409	0.072	0.855	12.645	1.916	0.855	0.922
100.00	100.00	0.551	0.896	0.436	0.066	0.879	21.203	1.915	0.856	0.958

MOMENTUM AVERAGE ROTOR EFFICIENCY = 0.827 (POLYTRMOPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = 0.829 (AVERAGE)

MOMENTUM AVG. ROTOM PRESS RATIO = 1.8105
 MASS AVERAGE TEMPERATURE RISE = 1.2225

NASA SMALL AXIAL COMPRESSOR TEST 3 JUNE 25, 1976 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

100 PERCENT DESIGN SPEED - SCALD NO 24

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .0852

PERCENT SPAN FROM TIP (I. I.)	W13 (OZ)	V3 (FT/SEC)	W14 (OZ)	M3	V13 (FT/SEC)	W15 (OZ)	M4	V4 (FT/SEC)	W16 (OZ)	M5	V14 (FT/SEC)	W17 (OZ)	M6	V5 (FT/SEC)	W18 (OZ)	M7	V6 (FT/SEC)	W19 (OZ)	M8	V7 (FT/SEC)	W20 (OZ)	M9	V8 (FT/SEC)	W21 (OZ)	M10	V9 (FT/SEC)	W22 (OZ)	M11	V10 (FT/SEC)	W23 (OZ)	M12	V11 (FT/SEC)	W24 (OZ)	M13	V12 (FT/SEC)	W25 (OZ)	M14	V13 (FT/SEC)	W26 (OZ)	M15	V14 (FT/SEC)	W27 (OZ)	M16	V15 (FT/SEC)	W28 (OZ)	M17	V16 (FT/SEC)	W29 (OZ)	M18	V17 (FT/SEC)	W30 (OZ)	M19	V18 (FT/SEC)	W31 (OZ)	M20	V19 (FT/SEC)	W32 (OZ)	M21	V20 (FT/SEC)	W33 (OZ)	M22	V21 (FT/SEC)	W34 (OZ)	M23	V22 (FT/SEC)	W35 (OZ)	M24	V23 (FT/SEC)	W36 (OZ)	M25	V24 (FT/SEC)	W37 (OZ)	M26	V25 (FT/SEC)	W38 (OZ)	M27	V26 (FT/SEC)	W39 (OZ)	M28	V27 (FT/SEC)	W40 (OZ)	M29	V28 (FT/SEC)	W41 (OZ)	M30	V29 (FT/SEC)	W42 (OZ)	M31	V30 (FT/SEC)	W43 (OZ)	M32	V31 (FT/SEC)	W44 (OZ)	M33	V32 (FT/SEC)	W45 (OZ)	M34	V33 (FT/SEC)	W46 (OZ)	M35	V34 (FT/SEC)	W47 (OZ)	M36	V35 (FT/SEC)	W48 (OZ)	M37	V36 (FT/SEC)	W49 (OZ)	M38	V37 (FT/SEC)	W50 (OZ)	M39	V38 (FT/SEC)	W51 (OZ)	M40	V39 (FT/SEC)	W52 (OZ)	M41	V40 (FT/SEC)	W53 (OZ)	M42	V41 (FT/SEC)	W54 (OZ)	M43	V42 (FT/SEC)	W55 (OZ)	M44	V43 (FT/SEC)	W56 (OZ)	M45	V44 (FT/SEC)	W57 (OZ)	M46	V45 (FT/SEC)	W58 (OZ)	M47	V46 (FT/SEC)	W59 (OZ)	M48	V47 (FT/SEC)	W60 (OZ)	M49	V48 (FT/SEC)	W61 (OZ)	M50	V49 (FT/SEC)	W62 (OZ)	M51	V50 (FT/SEC)	W63 (OZ)	M52	V51 (FT/SEC)	W64 (OZ)	M53	V52 (FT/SEC)	W65 (OZ)	M54	V53 (FT/SEC)	W66 (OZ)	M55	V54 (FT/SEC)	W67 (OZ)	M56	V55 (FT/SEC)	W68 (OZ)	M57	V56 (FT/SEC)	W69 (OZ)	M58	V57 (FT/SEC)	W70 (OZ)	M59	V58 (FT/SEC)	W71 (OZ)	M60	V59 (FT/SEC)	W72 (OZ)	M61	V60 (FT/SEC)	W73 (OZ)	M62	V61 (FT/SEC)	W74 (OZ)	M63	V62 (FT/SEC)	W75 (OZ)	M64	V63 (FT/SEC)	W76 (OZ)	M65	V64 (FT/SEC)	W77 (OZ)	M66	V65 (FT/SEC)	W78 (OZ)	M67	V66 (FT/SEC)	W79 (OZ)	M68	V67 (FT/SEC)	W80 (OZ)	M69	V68 (FT/SEC)	W81 (OZ)	M70	V69 (FT/SEC)	W82 (OZ)	M71	V70 (FT/SEC)	W83 (OZ)	M72	V71 (FT/SEC)	W84 (OZ)	M73	V72 (FT/SEC)	W85 (OZ)	M74	V73 (FT/SEC)	W86 (OZ)	M75	V74 (FT/SEC)	W87 (OZ)	M76	V75 (FT/SEC)	W88 (OZ)	M77	V76 (FT/SEC)	W89 (OZ)	M78	V77 (FT/SEC)	W90 (OZ)	M79	V78 (FT/SEC)	W91 (OZ)	M80	V79 (FT/SEC)	W92 (OZ)	M81	V80 (FT/SEC)	W93 (OZ)	M82	V81 (FT/SEC)	W94 (OZ)	M83	V82 (FT/SEC)	W95 (OZ)	M84	V83 (FT/SEC)	W96 (OZ)	M85	V84 (FT/SEC)	W97 (OZ)	M86	V85 (FT/SEC)	W98 (OZ)	M87	V86 (FT/SEC)	W99 (OZ)	M88	V87 (FT/SEC)	W100 (OZ)	M89	V88 (FT/SEC)	W101 (OZ)	M90	V89 (FT/SEC)	W102 (OZ)	M91	V90 (FT/SEC)	W103 (OZ)	M92	V91 (FT/SEC)	W104 (OZ)	M93	V92 (FT/SEC)	W105 (OZ)	M94	V93 (FT/SEC)	W106 (OZ)	M95	V94 (FT/SEC)	W107 (OZ)	M96	V95 (FT/SEC)	W108 (OZ)	M97	V96 (FT/SEC)	W109 (OZ)	M98	V97 (FT/SEC)	W110 (OZ)	M99	V98 (FT/SEC)	W111 (OZ)	M100	V99 (FT/SEC)	W112 (OZ)	M101	V100 (FT/SEC)	W113 (OZ)	M102	V101 (FT/SEC)	W114 (OZ)	M103	V102 (FT/SEC)	W115 (OZ)	M104	V103 (FT/SEC)	W116 (OZ)	M105	V104 (FT/SEC)	W117 (OZ)	M106	V105 (FT/SEC)	W118 (OZ)	M107	V106 (FT/SEC)	W119 (OZ)	M108	V107 (FT/SEC)	W120 (OZ)	M109	V108 (FT/SEC)	W121 (OZ)	M110	V109 (FT/SEC)	W122 (OZ)	M111	V110 (FT/SEC)	W123 (OZ)	M112	V111 (FT/SEC)	W124 (OZ)	M113	V112 (FT/SEC)	W125 (OZ)	M114	V113 (FT/SEC)	W126 (OZ)	M115	V114 (FT/SEC)	W127 (OZ)	M116	V115 (FT/SEC)	W128 (OZ)	M117	V116 (FT/SEC)	W129 (OZ)	M118	V117 (FT/SEC)	W130 (OZ)	M119	V118 (FT/SEC)	W131 (OZ)	M120	V119 (FT/SEC)	W132 (OZ)	M121	V120 (FT/SEC)	W133 (OZ)	M122	V121 (FT/SEC)	W134 (OZ)	M123	V122 (FT/SEC)	W135 (OZ)	M124	V123 (FT/SEC)	W136 (OZ)	M125	V124 (FT/SEC)	W137 (OZ)	M126	V125 (FT/SEC)	W138 (OZ)	M127	V126 (FT/SEC)	W139 (OZ)	M128	V127 (FT/SEC)	W140 (OZ)	M129	V128 (FT/SEC)	W141 (OZ)	M130	V129 (FT/SEC)	W142 (OZ)	M131	V130 (FT/SEC)	W143 (OZ)	M132	V131 (FT/SEC)	W144 (OZ)	M133	V132 (FT/SEC)	W145 (OZ)	M134	V133 (FT/SEC)	W146 (OZ)	M135	V134 (FT/SEC)	W147 (OZ)	M136	V135 (FT/SEC)	W148 (OZ)	M137	V136 (FT/SEC)	W149 (OZ)	M138	V137 (FT/SEC)	W150 (OZ)	M139	V138 (FT/SEC)	W151 (OZ)	M140	V139 (FT/SEC)	W152 (OZ)	M141	V140 (FT/SEC)	W153 (OZ)	M142	V141 (FT/SEC)	W154 (OZ)	M143	V142 (FT/SEC)	W155 (OZ)	M144	V143 (FT/SEC)	W156 (OZ)	M145	V144 (FT/SEC)	W157 (OZ)	M146	V145 (FT/SEC)	W158 (OZ)	M147	V146 (FT/SEC)	W159 (OZ)	M148	V147 (FT/SEC)	W160 (OZ)	M149	V148 (FT/SEC)	W161 (OZ)	M150	V149 (FT/SEC)	W162 (OZ)	M151	V150 (FT/SEC)	W163 (OZ)	M152	V151 (FT/SEC)	W164 (OZ)	M153	V152 (FT/SEC)	W165 (OZ)	M154	V153 (FT/SEC)	W166 (OZ)	M155	V154 (FT/SEC)	W167 (OZ)	M156	V155 (FT/SEC)	W168 (OZ)	M157	V156 (FT/SEC)	W169 (OZ)	M158	V157 (FT/SEC)	W170 (OZ)	M159	V158 (FT/SEC)	W171 (OZ)	M160	V159 (FT/SEC)	W172 (OZ)	M161	V160 (FT/SEC)	W173 (OZ)	M162	V161 (FT/SEC)	W174 (OZ)	M163	V162 (FT/SEC)	W175 (OZ)	M164	V163 (FT/SEC)	W176 (OZ)	M165	V164 (FT/SEC)	W177 (OZ)	M166	V165 (FT/SEC)	W178 (OZ)	M167	V166 (FT/SEC)	W179 (OZ)	M168	V167 (FT/SEC)	W180 (OZ)	M169	V168 (FT/SEC)	W181 (OZ)	M170	V169 (FT/SEC)	W182 (OZ)	M171	V170 (FT/SEC)	W183 (OZ)	M172	V171 (FT/SEC)	W184 (OZ)	M173	V172 (FT/SEC)	W185 (OZ)	M174	V173 (FT/SEC)	W186 (OZ)	M175	V174 (FT/SEC)	W187 (OZ)	M176	V175 (FT/SEC)	W188 (OZ)	M177	V176 (FT/SEC)	W189 (OZ)	M178	V177 (FT/SEC)	W190 (OZ)	M179	V178 (FT/SEC)	W191 (OZ)	M180	V179 (FT/SEC)	W192 (OZ)	M181	V180 (FT/SEC)	W193 (OZ)	M182	V181 (FT/SEC)	W194 (OZ)	M183	V182 (FT/SEC)	W195 (OZ)	M184	V183 (FT/SEC)	W196 (OZ)	M185	V184 (FT/SEC)	W197 (OZ)	M186	V185 (FT/SEC)	W198 (OZ)	M187	V186 (FT/SEC)	W199 (OZ)	M188	V187 (FT/SEC)	W200 (OZ)	M189	V188 (FT/SEC)	W201 (OZ)	M190	V189 (FT/SEC)	W202 (OZ)	M191	V190 (FT/SEC)	W203 (OZ)	M192	V191 (FT/SEC)	W204 (OZ)	M193	V192 (FT/SEC)	W205 (OZ)	M194	V193 (FT/SEC)	W206 (OZ)	M195	V194 (FT/SEC)	W207 (OZ)	M196	V195 (FT/SEC)	W208 (OZ)	M197	V196 (FT/SEC)	W209 (OZ)	M198	V197 (FT/SEC)	W210 (OZ)	M199	V198 (FT/SEC)	W211 (OZ)	M200	V199 (FT/SEC)	W212 (OZ)	M201	V200 (FT/SEC)	W213 (OZ)	M202	V201 (FT/SEC)	W214 (OZ)	M203	V202 (FT/SEC)	W215 (OZ)	M204	V203 (FT/SEC)	W216 (OZ)	M205	V204 (FT/SEC)	W217 (OZ)	M206	V205 (FT/SEC)	W218 (OZ)	M207	V206 (FT/SEC)	W219 (OZ)	M208	V207 (FT/SEC)	W220 (OZ)	M209	V208 (FT/SEC)	W221 (OZ)	M210	V209 (FT/SEC)	W222 (OZ)	M211	V210 (FT/SEC)	W223 (OZ)	M212	V211 (FT/SEC)	W224 (OZ)	M213	V212 (FT/SEC)	W225 (OZ)	M214	V213 (FT/SEC)	W226 (OZ)	M215	V214 (FT/SEC)	W227 (OZ)	M216	V215 (FT/SEC)	W228 (OZ)	M217	V216 (FT/SEC)	W229 (OZ)	M218	V217 (FT/SEC)	W230 (OZ)	M219	V218 (FT/SEC)	W231 (OZ)	M220	V219 (FT/SEC)	W232 (OZ)	M221	V220 (FT/SEC)	W233 (OZ)	M222	V221 (FT/SEC)	W234 (OZ)	M223	V222 (FT/SEC)	W235 (OZ)	M224	V223 (FT/SEC)	W236 (OZ)	M225	V224 (FT/SEC)	W237 (OZ)	M226	V225 (FT/SEC)	W238 (OZ)	M227	V226 (FT/SEC)	W239 (OZ)	M228	V227 (FT/SEC)	W240 (OZ)	M229	V228 (FT/SEC)	W241 (OZ)	M230	V229 (FT/SEC)	W242 (OZ)	M231	V230 (FT/SEC)	W243 (OZ)	M232	V231 (FT/SEC)	W244 (OZ)	M233	V232 (FT/SEC)	W245 (OZ)	M234	V233 (FT/SEC)	W246 (OZ)	M235	V234 (FT/SEC)	W247 (OZ)	M236	V235 (FT/SEC)	W248 (OZ)	M237	V236 (FT/SEC)	W249 (OZ)	M238	V237 (FT/SEC)	W250 (OZ)	M239	V238 (FT/SEC)	W251 (OZ)	M240	V239 (FT/SEC)	W252 (OZ)	M241	V240 (FT/SEC)	W253 (OZ)	M242	V241 (FT/SEC)	W254 (OZ)	M243	V242 (FT/SEC)	W255 (OZ)	M244	V243 (FT/SEC)	W256 (OZ)	M245	V244 (FT/SEC)	W257 (OZ)	M246	V245 (FT/SEC)	W258 (OZ)	M247	V246 (FT/SEC)	W259 (OZ)	M248	V247 (FT/SEC)	W260 (OZ)	M249	V248 (FT/SEC)	W261 (OZ)	M250	V249 (FT/SEC)	W262 (OZ)	M251	V250 (FT/SEC)	W263 (OZ)	M252	V251 (FT/SEC)	W264 (OZ)	M253	V252 (FT/SEC)	W265 (OZ)	M254	V253 (FT/SEC)	W266 (OZ)	M255	V254 (FT/SEC)	W267 (OZ)	M256	V255 (FT/SEC)	W268 (OZ)	M257	V256 (FT/SEC)	W269 (OZ)	M258	V257 (FT/SEC)	W270 (OZ)	M259	V258 (FT/SEC)	W271 (OZ)	M260	V259 (FT/SEC)	W272 (OZ)	M261	V260 (FT/SEC)	W273 (OZ)	M262	V261 (FT/SEC)	W274 (OZ)	M263	V262 (FT/SEC)	W275 (OZ)	M264	V263 (FT/SEC)	W276 (OZ)	M265	V264 (FT/SEC)	W277 (OZ)	M266	V265 (FT/SEC)	W278 (OZ)	M267	V266 (FT/SEC)	W279 (OZ)	M268	V267 (FT/SEC)	W280 (OZ)	M269	V268 (FT/SEC)	W281 (OZ)	M270	V269 (FT/SEC)	W282 (OZ)	M271	V270 (FT/SEC)	W283 (OZ)	M272	V271 (FT/SEC)	W284 (OZ)	M273	V272 (FT/SEC)	W285 (OZ)	M274	V273 (FT/SEC)	W286 (OZ)	M275	V274 (FT/SEC)	W287 (OZ)	M276	V275 (FT/SEC)	W288 (OZ)	M277	V276 (FT/SEC)	W289 (OZ)	M278	V277 (FT/SEC)	W290 (OZ)	M279	V278 (FT/SEC)	W291 (OZ)	M280	V279 (FT/SEC)	W292 (OZ)	M281	V280 (FT/SEC)	W293 (OZ)	M282	V281 (FT/SEC)	W294 (OZ)	M283	V282 (FT/SEC)	W295 (OZ)	M284	V283 (FT/SEC)	W296 (OZ)	M285	V284 (FT/SEC)	W297 (OZ)	M286	V285 (FT/SEC)	W298 (OZ)	M287	V286 (FT/SEC)	W299 (OZ)	M288	V287 (FT/SEC)	W300 (OZ)	M289	V288 (FT/SEC)	W301 (OZ)	M290	V289 (FT/SEC)	W302 (OZ)	M291	V290 (FT/SEC)	W303 (OZ)	M292	V291 (FT/SEC)	W304 (OZ)	M293	V292 (FT/SEC)	W305 (OZ)	M294	V293 (FT/SEC)	W306 (OZ)	M295	V294 (FT/SEC)	W307 (OZ)	M296	V295 (FT/SEC)	W308 (OZ)	M297	V296 (FT/SEC)	W309 (OZ)	M298	V297 (FT/SEC)	W310 (OZ)	M299	V298 (FT/SEC)	W311 (OZ)	M300	V299 (FT/SEC)	W312 (OZ)	M301	V300 (FT/SEC)	W313 (OZ)	M302	V301 (FT/SEC)	W314 (OZ)	M303	V302 (FT/SEC)	W315 (OZ)	M304	V303 (FT/SEC)	W316 (OZ)	M305	V304 (FT/SEC)	W317 (OZ)	M306	V305 (FT/SEC)	W318 (OZ)	M307	V306 (FT/SEC)	W319 (OZ)	M308	V307 (FT/SEC)	W320 (OZ)	M309	V308 (FT/SEC)	W321 (OZ)	M310	V309 (FT/SEC)	W322 (OZ)	M311	V310 (FT/SEC)	W323 (OZ)	M312	V311 (FT/SEC)	W324 (OZ)	M313	V312 (FT/SEC)	W325 (OZ)	M314	V313 (FT/SEC)	W326 (OZ)	M315	V314 (FT/SEC)	W327 (OZ)	M316	V315 (FT/SEC)	W328 (OZ)	M317	V316 (FT/SEC)	W329 (OZ)	M318	V317 (FT/SEC)	W330 (OZ)	M319	V318 (FT/SEC)	W331 (OZ)	M320	V319 (FT/SEC)	W332 (OZ)	M321	V320 (FT/SEC)	W333 (OZ)	M322	V321 (FT/SEC)	W334 (OZ)	M323	V322 (FT/SEC)	W335 (OZ)	M324	V323 (FT/SEC)	W336 (OZ)	M325	V324 (FT/SEC)	W337 (OZ)	M326	V325 (FT/SEC)	W338 (OZ)	M327	V326 (FT/SEC)	W339 (OZ)	M328	V327 (FT/SEC)	W340 (OZ)	M329	V328 (FT/SEC)	W341 (OZ)	M330	V329 (FT/SEC)	W342 (OZ)	M331	V330 (FT/SEC)	W343 (OZ)	M332	V331 (FT/SEC)	W344 (OZ)	M333	V332 (FT/SEC)	W345 (OZ)	M334	V333 (FT/SEC)	W346 (OZ)	M335	V334 (FT/SEC)	W347 (OZ)	M336	V335 (FT/SEC)	W348 (OZ)	M337	V336 (FT/SEC)	W349 (OZ)	M338	V337 (FT/SEC)	W350 (OZ)	M339	V338 (FT/SEC)	W351 (OZ)	M340	V339 (FT/SEC)	W352 (OZ)	M341	V340 (FT/SEC)	W353 (OZ)	M342	V341 (FT/SEC)	W354 (OZ)	M343	V342 (FT/SEC)	W355 (OZ)	M344	V343 (FT/SEC)	W356 (OZ)	M345	V344 (FT/SEC)	W357 (OZ)	M346	V345 (FT/SEC)	W358 (OZ)	M347	V346 (FT/SEC)	W359 (OZ)	M348	V347 (FT/SEC)	W360 (OZ)	M349	V348 (FT/SEC)	W361 (OZ)	M350	V349 (FT/SEC)	W362 (OZ)	M351	V350 (FT/SEC)	W363 (OZ)	M352	V351 (FT/SEC)	W364 (OZ)	M353	V352 (FT/SEC)	W365 (OZ)	M354	V353 (FT/SEC)	W36
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STATOR PERFORMANCE NASA 5 ALL AXIAL COMPRESSOR (METRIC UNITS)

100 PERCENT DESIGN SPEED - SCAN NO 24

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .0052

PERCENT SPAN FROM TIP (L. F.)	DELTA 3 (DEG)	V3 (M/SEC)	V13 (M/SEC)	M3	VM3 (M/SEC)	V23 (M/SEC)	U3 (M/SEC)
0.00	40.57	241.66	177.17	.666	142.57	141.56	451.34
11.29	41.31	249.23	187.07	.686	146.46	146.15	456.95
30.76	38.03	261.59	191.16	.731	206.05	206.05	482.39
49.07	36.63	267.60	194.74	.740	226.69	226.69	373.18
67.49	37.42	293.69	178.46	.738	233.26	233.26	343.18
86.56	40.99	307.75	149.82	.693	216.03	216.03	310.59
100.00	41.77	319.85	127.44	.620	217.73	217.73	291.94

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .0061

PERCENT SPAN FROM TIP (L. F.)	DELTA 4 (DEG)	V4 (M/SEC)	V14 (M/SEC)	M4	VM4 (M/SEC)	V24 (M/SEC)	U4 (M/SEC)
0.00	7.00	207.47	-11.04	.566	207.17	207.17	448.12
11.29	7.05	211.07	-11.24	.577	211.37	211.55	432.73
30.76	7.06	214.36	-9.77	.610	221.12	221.73	408.85
49.07	7.06	244.27	-12.61	.680	243.95	243.64	301.53
67.49	7.21	292.87	4.15	.677	282.29	282.16	325.94
86.56	1.14	277.21	6.74	.630	277.16	276.11	377.68
100.00	1.16	228.69	6.70	.634	228.64	228.64	311.15

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (L. F.)	DELTA 5 (DEG)	DELTA 6 (DEG)	INCIDENCE ANGLE MEAN (DEG)	SUCT SURF (DEG)	IP FACTOR	U/DEN	MAX	PARAMETER	LOSS	DEVIATION ANGLE (DEG)	STAGE LOSS	STATION POLYTROPIC EFF
0.00	0.00	43.81	4.251	3.29	.3942	.0740	.0740	.0194	19.120	1.655	1.7447	.8265
11.29	11.54	46.36	5.120	1.747	.3410	.0622	.0622	.0216	13.523	1.670	1.7447	.8081
30.76	31.07	40.56	1.404	-3.080	.3660	.0491	.0491	.0203	10.649	1.711	1.7235	.7852
49.07	45.60	39.62	-2.114	-2.282	.3282	.0686	.0686	.0203	4.070	1.811	1.7171	.7463
67.49	70.21	35.21	-2.193	-4.037	.3336	.1307	.1307	.0314	13.312	1.801	1.7112	.6784
86.56	90.11	34.31	-1.913	-4.765	.4212	.2470	.2470	.0643	12.721	1.727	1.7140	.5586
100.00	100.00	40.61	-2.043	-6.284	.4376	.2330	.2330	.0589	19.873	1.727	1.7140	.6259

MOMENTUM AVERAGE STAGE EFFICIENCY = .7913 (POLYTROPIC)
 MASS AVERAGE STAGE PRESS RATIO = 1.7460
 MASS AVERAGE TEMPERATURE RISE = 1.2425

NASA SMALL AXIAL COMPRESSOR TEST 4 JUNE 28, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT FLIGHT FLOW = 3.1677 LPH/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 91.9475
 100 PERCENT DESIGN SPEED = SCAN NO 2
 EQUIVALENT SPEED
 EQUIVALENT FLOW / INLET ANN AREA = 76798.174 R.P.M.
 37.1951 LBM/SEC-SU FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9862

PERCENT SPAN FROM TIP (L. F.)	RETA#1 (DEG)	V01 (FT/SEC)	VU01 (FT/SFC)	BETA1 (DEG)	V1 (FT/SEC)	VU1 (FT/SEC)	M1	V41 (FT/SEC)	V71 (FT/SEC)	U1 (FT/SEC)
0.00	72.04	661.40	1582.40	0.00	517.68	0.00	.469	517.67	496.16	1582.40
9.99	70.74	1593.93	1504.71	0.00	525.66	0.00	.482	525.65	504.64	1504.71
26.55	67.44	1484.41	1375.21	0.00	570.29	0.00	.525	570.27	559.79	1375.21
43.27	64.86	1376.64	1244.42	0.00	543.93	0.00	.534	543.91	547.03	1244.42
62.21	62.73	1233.45	1096.37	0.00	565.07	0.00	.520	565.05	566.46	1096.37
85.23	60.00	1054.13	916.37	0.00	527.01	0.00	.485	527.00	521.89	916.37
100.00	57.67	947.79	800.45	0.00	506.88	0.00	.466	506.86	489.64	800.45

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .7889

PERCENT SPAN FROM TIP (L. F.)	RETA#2 (DEG)	V#2 (FT/SEC)	VU#2 (FT/SFC)	BETA#2 (DEG)	V2 (FT/SEC)	VU2 (FT/SEC)	M2	V#P (FT/SEC)	V7#P (FT/SEC)	U2 (FT/SEC)
0.00	57.24	1107.43	928.47	39.16	824.92	523.41	.694	642.74	622.04	1522.28
11.77	53.41	1120.02	903.77	34.67	853.40	548.60	.722	661.49	647.03	1452.34
31.23	49.67	1063.38	793.33	31.69	865.17	540.79	.735	675.30	671.09	1336.12
49.77	43.29	987.47	677.09	37.40	904.77	549.51	.778	718.74	719.70	1224.61
64.39	35.17	907.52	522.67	38.65	949.44	593.27	.824	751.84	749.68	1115.95
84.54	22.54	819.32	316.57	42.02	1018.28	641.58	.890	756.50	744.07	996.14
100.00	14.54	742.06	196.37	44.03	1052.91	731.80	.925	756.40	731.25	928.18

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM LEADING EDGE	TRAILING EDGE	MASS FLOW (PCT)	DELTA HETA# (DEG)	INCIDENCE ANGLE (DEG)	MEAN SUCTION SURFACE (DEG)	FACTORS	OMEGA HAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	MOTOR PRESS RATIO	ADIBATIC EFF	POLYTROPIC EFF
0.00	0.00	0.00	14.01	7.768	6.059	.2432	.0501	.0501	.244	1.790	.7078	.7305
9.99	11.77	12.34	16.04	7.583	.4721	.2516	.0539	.0539	-1.104	1.795	.7116	.7345
26.55	31.23	32.53	17.01	6.462	.6197	.1677	.0361	.0361	-1.07	1.830	.6120	.6280
43.27	49.77	51.91	21.57	5.340	.4022	.0776	.0172	.0172	1.569	1.687	.6195	.6263
62.21	64.39	71.27	27.57	4.600	.3940	.0462	.0133	.0133	5.294	1.914	.6589	.6625
85.23	84.56	90.32	37.42	3.698	.3741	.0542	.0124	.0124	13.914	1.944	.6599	.6635
100.00	100.00	100.00	43.13	2.844	.3360	.0725	.0149	.0149	21.594	1.945	.6400	.6405

MOMENTUM AVERAGE MOTOR EFFICIENCY = .8663 (POLYTROPIC)
 MOMENTUM AVERAGE MOTOR EFFICIENCY = .8544 (ADIBATIC)
 MOMENTUM AVG. MOTOR PRESS RATIO = 1.8634
 MASS AVERAGE TEMPERATURE RISE = 1.2274

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIVALENT W/FIGHT FLOW = 1.5275 100 PERCENT DESIGN S/FLOW = SCAN NO 2
 PERCENT DESIGN EQUIVALENT FLOW = 91.9475 KG/SFC EQUIVALENT SPEED
 R.P.M. = 76790.324 R.P.M.
 INLET ANN AREA = 1A1.407A K3/SEC-50 M

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9862

PERCENT SPAN FROM TIP (L. F.)	BETA*1 (DEG)	V01 (M/SEC)	VU01 (M/SEC)	BETA1 (DEG)	V1 (M/SEC)	VU1 (M/SEC)	M1	M2	V41 (M/SEC)	V71 (M/SEC)	U1 (M/SEC)
0.00	72.05	507.13	0.00	0.00	156.26	0.00	.669		156.26	151.23	482.44
5.99	70.74	485.83	1.461	0.00	140.22	0.00	.682		140.22	150.97	458.64
26.55	67.48	451.79	1.370	0.00	173.82	0.00	.525		173.82	170.62	419.16
43.27	64.86	414.99	1.267	0.00	177.98	0.00	.520		177.98	172.09	379.10
62.21	62.73	375.76	1.135	0.00	172.23	0.00	.520		172.23	172.17	334.17
85.23	60.00	322.52	0.970	0.00	161.24	0.00	.685		161.24	150.07	279.31
100.00	57.67	248.09	0.847	0.00	154.50	0.00	.664		154.50	149.24	244.10

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .7889

PERCENT SPAN FROM TIP (L. F.)	BETA*2 (DEG)	V02 (M/SEC)	VU02 (M/SEC)	BETA2 (DEG)	V2 (M/SEC)	VU2 (M/SEC)	M2	V42 (M/SEC)	V72 (M/SEC)	U2 (M/SEC)
0.00	57.24	302.05	0.995	39.16	252.66	159.54	.694	195.91	199.60	663.99
11.77	53.80	341.38	0.941	39.67	261.94	167.21	.722	201.62	197.21	442.69
31.33	49.67	314.02	0.887	38.59	263.70	164.83	.735	205.83	204.55	407.25
49.77	43.29	300.08	0.850	37.40	275.77	167.49	.778	219.07	219.06	373.87
68.19	35.17	274.61	0.787	38.65	289.54	180.83	.824	226.12	225.05	340.14
88.54	27.58	244.73	0.716	42.02	310.37	207.74	.890	230.59	226.79	303.62
100.00	14.54	248.37	0.687	44.03	320.93	223.05	.925	230.73	222.60	282.91

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	DELTA BETA* (DEG)	MASS FLOW (PCT)	INCIDENCE ANGLE (DEG)	SUCT SUR (DEG)	DELTA ANGLE (DEG)	LOSS PARAMETER	DEVIATION ANGLE (DEG)	RATIO	WROTOR ANTIADIBATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	14.81	7.748	6.059	.2432	.249	1.790	.7078	.7105
9.99	11.77	12.34	14.94	7.583	.4221	.2516	-1.106	1.795	.7116	.7142
26.55	31.33	32.57	17.81	6.462	.4197	.0361	-.197	1.830	.9128	.8240
43.27	49.77	51.41	21.57	5.340	.4072	.0776	1.569	1.887	.9145	.8263
62.21	68.19	71.27	27.57	4.600	.3940	.0462	5.296	1.914	.9589	.9625
85.23	88.54	90.32	37.42	3.698	.3741	.0592	13.814	1.944	.9500	.9635
100.00	100.00	100.00	43.13	2.844	.3360	.0725	21.594	1.945	.9400	.9635

MO-MENTUM AVERAGE ROTOR EFFICIENCY = .8663 (POLYTROPIC) MO-MENTUM AVG. ROTOR PRESS RATIO = 1.8634
 MASS AVERAGE ROTOR EFFICIENCY = .8561 (ADIABATIC) MASS AVERAGE TEMPERATURE RISE = 1.2274

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

100 PERCENT DESIGN SPEED - SCAN NO 2

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8874

PERCENT SPAN FROM TIP (T. F.)	BETA 3 (DEG)	V3 (FT/SEC)	VU3 (FT/SEC)	M3	VM3 (FT/SEC)	V73 (FT/SEC)	U3 (FT/SEC)
0.00	34.43	818.64	538.45	.712	655.50	648.30	1478.38
11.52	40.87	858.52	561.81	.721	649.15	648.07	1419.24
30.76	38.37	883.28	548.31	.752	692.45	672.44	1317.79
48.94	36.66	923.27	551.19	.796	740.66	740.11	1255.87
67.65	38.05	954.73	588.38	.829	751.84	749.09	1125.23
88.15	41.48	1006.80	666.81	.878	754.28	744.16	1019.20
100.00	42.78	1045.16	709.82	.917	767.10	745.91	956.33

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8999

PERCENT SPAN FROM TIP (T. F.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	V74 (FT/SEC)	U4 (FT/SEC)
0.00	-41	710.59	-5.08	.588	710.56	710.56	1467.66
11.52	-47	714.05	-5.91	.591	714.00	713.91	1416.40
30.76	-1.83	728.81	-23.25	.610	728.42	728.10	1330.56
48.94	-1.99	779.05	-27.09	.660	778.55	777.75	1217.89
67.65	-1.47	771.16	-14.08	.654	770.90	770.47	1164.55
88.15	3.71	730.10	47.22	.615	728.55	725.89	1072.02
100.00	3.83	735.39	44.16	.620	733.72	733.72	1019.05

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	TRAILING EDGE	MASS FLOW (PCT)	DELTA HEAT (DEG)	INCIDENCE ANGLE (DEG)	SUCT SUR (DEG)	ANGLE (DEG)	LOSS PARAMETER	OMEGA BAR	HAR	FACTOR	DEVIATION ANGLE (DEG)	STAGE PERFSS RATIO	STAGE TRUP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	32.84	3.102	-4.13		.0221	.0613		.3955	21.770	1.759	1.2553	.8100
11.52	11.43	12.34	41.35	4.644	1.100		.0220	.0633		.3976	16.058	1.762	1.2553	.8105
30.76	30.57	32.54	40.20	1.747	-1.543		.0255	.0775		.3849	11.328	1.786	1.2115	.8025
48.94	48.94	51.91	38.65	-1.130	-4.114		.0139	.0655		.3442	9.972	1.858	1.2154	.8755
67.65	67.57	71.27	39.46	-1.234	-4.385		.0228	.1003		.3689	9.683	1.846	1.2121	.7730
88.15	88.19	90.12	37.77	-1.844	-3.768		.0257	.2109		.4294	15.241	1.793	1.2175	.6481
100.00	100.00	100.00	38.95	-1.853	-5.294		.0501	.1984		.4461	22.533	1.783	1.2176	.6353

MOMENTUM AVERAGE STAGE EFFICIENCY = .8232 (POLYTROPIC)
 MOMENTUM AVERAGE STAGE EFFICIENCY = .8080 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.8067
 MASS AVERAGE TEMPERATURE RISE = 1.2274

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 OF POOR QUALITY

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

100 PERCENT DESIGN SPEED - SCAN NO 2

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8874

PERCENT SPAN FROM TIP (L. F.)	BETA 3 (DEG)	V3 (M/SEC)	VU3 (M/SEC)	M3	VM3 (M/SEC)	VZ3 (M/SEC)	U3 (M/SEC)
0.00	39.43	258.67	144.27	.712	199.89	197.60	450.51
11.52	40.97	261.64	171.24	.721	197.85	197.53	432.28
30.74	38.37	269.22	167.10	.752	211.06	211.06	401.66
48.94	36.66	281.41	164.00	.796	225.75	225.59	372.73
67.65	38.05	291.00	179.34	.829	229.16	229.32	342.97
88.15	41.48	306.47	203.24	.878	229.91	229.91	310.35
100.00	42.78	318.56	214.35	.917	233.81	227.15	291.49

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8985

PERCENT SPAN FROM TIP (L. F.)	BETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VM4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	-0.41	216.59	-1.55	.588	216.59	216.59	447.34
11.43	-0.47	217.64	-1.80	.591	217.63	217.60	431.72
30.57	-1.03	222.14	-7.09	.610	222.02	221.92	405.55
48.90	-1.90	237.65	-8.21	.660	237.30	237.06	380.36
67.57	-1.42	235.05	-5.82	.654	234.97	234.84	354.76
88.19	3.71	222.53	14.39	.615	222.06	221.24	326.75
100.00	3.83	224.15	14.94	.620	223.64	223.64	310.61

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	SUCT SUR (DEG)	ANGLE (DEG)	FACTOR	D	OMEGA RAP	PARAMETER	LOIS	DEVIATION ANGLE (DEG)	STAGE LOSS RATIO	STAGE LOSS RATIO	STAGE LOSS RATIO	POLYTROPIC EFF
0.00	0.00	0.00	39.84	3.109	-0.813	.3955	.3955	.0613	.0721	.0721	21.770	1.759	1.2557	1.2557	.8300	
11.52	11.43	12.38	41.35	4.694	1.760	.3976	.3976	.0633	.0220	.0220	15.054	1.762	1.2553	1.2553	.8305	
30.74	30.57	32.73	40.20	1.747	-1.543	.3849	.3849	.0775	.0255	.0255	14.328	1.784	1.2115	1.2115	.8025	
48.94	48.99	51.91	38.65	-1.130	-0.114	.3442	.3442	.0455	.0139	.0139	9.972	1.844	1.2149	1.2149	.8755	
67.65	67.57	71.27	39.44	-1.534	-0.385	.3689	.3689	.1003	.0288	.0288	9.683	1.844	1.2121	1.2121	.7730	
88.15	88.19	90.32	37.77	-0.844	-2.768	.4294	.4294	.2109	.0557	.0557	15.241	1.783	1.2175	1.2175	.6491	
100.00	100.00	100.00	38.95	-1.853	-5.294	.4461	.4461	.1984	.0501	.0501	22.533	1.783	1.2176	1.2176	.6953	

MOMENTUM AVERAGE STAGE EFFICIENCY = .8232 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .8080 (ADIABATIC)
MOMENTUM AVG. STAGE PRESS RATIO = 1.8067
MASS AVERAGE TEMPERATURE RISE = 1.2274

NASA SMALL AXIAL COMPRESSOR TEST 4 JUNF 28 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT WEIGHT FLOW = 3.3259 LHM/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 90.8040
 100 PERCENT DESIGN SPEED = SCAN NO 3
 EQUIVALENT SPEED = 76733.817 RPM
 EQUIVALENT FLOW / INLET AREA = 36.7334 LHM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9887

PERCENT SPAN FROM TIP (L. F.)	HETA*1 (DEG)	VE*1 (FT/SEC)	VU*1 (FT/SEC)	W*1 (DEG)	BETA1 (DEG)	V1 (FT/SEC)	WU1 (FT/SEC)	M1	V41 (FT/SEC)	V71 (FT/SEC)	U1 (FT/SEC)
0.00	72.30	1660.09	1581.47	1.519	0.00	504.85	0.00	.462	504.85	488.59	1581.47
9.42	71.02	1591.20	1504.73	1.447	0.00	517.39	0.00	.474	517.39	500.45	1504.73
26.16	67.84	1406.87	1377.09	1.367	0.00	560.72	0.00	.516	560.72	550.42	1377.09
42.82	65.28	1372.69	1246.89	1.264	0.00	574.06	0.00	.529	574.06	545.28	1246.89
61.84	63.17	1230.76	1098.28	1.131	0.00	555.47	0.00	.511	555.47	545.28	1098.28
85.08	60.45	1053.84	916.73	0.965	0.00	519.81	0.00	.476	519.81	512.83	916.73
100.00	58.11	942.41	800.17	0.862	0.00	497.85	0.00	.455	497.85	480.94	800.17

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .7836

PERCENT SPAN FROM TIP (L. F.)	HETA*2 (DEG)	VE*2 (FT/SEC)	VU*2 (FT/SEC)	W*2 (DEG)	BETA2 (DEG)	V2 (FT/SEC)	WU2 (FT/SEC)	M2	V42 (FT/SEC)	V72 (FT/SEC)	U2 (FT/SEC)
0.00	57.98	1174.03	915.10	.981	40.17	814.77	525.62	.681	622.54	602.51	1521.00
11.72	54.50	1106.36	900.65	.928	40.40	846.31	550.81	.710	642.54	628.50	1651.45
31.19	50.21	1030.75	792.04	.874	39.50	854.90	543.83	.725	659.63	655.52	1335.87
49.67	43.63	973.14	671.51	.836	38.22	894.49	554.64	.770	704.42	704.29	1226.15
64.74	35.14	903.19	519.94	.783	38.47	948.85	595.42	.823	738.77	736.60	1115.35
88.44	22.51	807.11	308.83	.704	42.75	1013.46	686.98	.845	745.64	733.19	945.91
100.00	14.25	769.84	189.46	.676	44.68	1049.43	737.94	.921	746.17	720.81	927.40

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	TRAILING EDGE	MASS FLOW (P.T)	DELTA HETA* (DEG)	INCIDENCE MEAN (DEG)	SUCT SUR (DEG)	ANGLE (DEG)	OMEGA* (RPM)	HAR	FACTOR	LOSS PARAMETER	DEVIATION ANGLF (DEG)	RATOR PRESS RATIO	ROTOR ANTIADIBATIC EFF	POLYTROPIC EFF
0.00	0.00	0.00	14.32	8.458	7.990	.4134	.2491	.0503	.986	1.785	.7016	.7247	.7247	
9.42	11.72	12.19	16.53	9.158	7.840	.4302	.2559	.0539	-.421	1.793	.7074	.7302	.7302	
25.16	31.19	32.10	17.63	8.897	6.790	.4283	.1734	.0369	.295	1.828	.8069	.8225	.8225	
42.82	49.67	51.47	21.65	8.583	5.720	.4170	.0869	.0191	1.866	1.888	.9102	.9179	.9179	
61.84	68.14	70.47	28.03	8.072	5.011	.3945	.0384	.0086	5.220	1.924	.9640	.9696	.9696	
85.08	88.46	90.22	37.94	9.168	4.128	.3845	.0662	.0143	13.596	1.948	.9657	.9657	.9657	
100.00	100.00	100.00	43.86	9.358	3.284	.3665	.0810	.0167	21.299	1.948	.9657	.9657	.9657	

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8637 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8513 (ADIABATIC)
 MOMENTUM AVG. ROTOR PRESS RATIO = 1.8651
 MASS AVERAGE TEMPERATURE RISE = 1.2288

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIVALENT WEIGHT FLOW = 1.5086 KG/SEC 100 PERCENT DESIGN SPEED - SCAN NO 3
 PERCENT DESIGN EQUIVALENT FLOW = 90.0040 EQUIVALENT SPEED
 FLOW/ALENT FLOW / INLET ANGLE = 76733.917 R.P.M.
 = 179.1680 KG/SEC-50 M

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9887

PERCENT SPAN FROM TIP (L. F.)	RETA#1 (DEG)	VE1 (M/SEC)	VU*1 (M/SEC)	HE1A1 (DEG)	V1 (M/SEC)	VU1 (M/SEC)	M1	V41 (M/SEC)	V71 (M/SEC)	J1
0.00	72.30	506.00	482.03	0.00	153.88	0.00	.462	153.88	148.02	692.03
4.82	71.02	485.00	458.64	0.00	157.70	0.00	.474	157.70	152.54	658.64
26.16	67.84	453.20	419.74	0.00	170.91	0.00	.516	170.91	147.77	419.74
42.82	65.28	418.40	380.05	0.00	174.97	0.00	.529	174.97	174.41	380.05
61.84	63.17	375.14	334.76	0.00	169.31	0.00	.511	169.31	164.25	334.76
85.88	60.45	321.21	279.42	0.00	158.44	0.00	.476	158.44	154.91	279.42
100.00	58.11	287.25	243.89	0.00	151.75	0.00	.455	151.75	146.59	243.89

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .7896

PERCENT SPAN FROM TIP (T. F.)	RETA#2 (DEG)	VE2 (M/SEC)	VU*2 (M/SEC)	BETA2 (DEG)	V2 (M/SEC)	VU2 (M/SEC)	M2	V42 (M/SEC)	V72 (M/SEC)	U2
0.00	57.98	357.85	303.19	40.17	248.34	160.21	.681	189.74	183.64	653.60
11.72	54.50	337.22	276.52	40.80	257.96	167.89	.710	195.45	191.57	642.40
31.19	50.21	314.17	241.41	37.50	260.57	165.76	.725	201.64	199.80	407.17
49.47	43.63	296.61	204.68	38.22	273.25	169.05	.770	214.68	214.67	373.73
44.34	35.14	275.35	158.68	34.87	282.21	181.48	.823	225.10	224.51	339.76
88.45	22.51	246.01	94.16	42.65	309.03	209.39	.885	227.27	221.54	303.55
100.00	14.25	234.65	57.75	44.68	319.87	224.92	.921	227.63	219.70	292.67

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	TRAILING EDGE	MASS FLOW (PC)	DELTA HFLA# (DEG)	INCIDENCE ANGLE (DEG)	MEAN SUCT ANGLE (DEG)	LOSS PARAMETER	DEVIATION ANGLE (DEG)	WOTOR PRESS RATIO	ADARIATIC EFF	POLYTROPIC EFF
0.00	0.00	0.00	14.32	8.458	7.130	.6503	.986	1.785	.7016	.7247
9.82	11.72	12.19	16.53	9.154	7.440	.6539	-.421	1.793	.7074	.7302
26.16	31.19	32.10	17.61	8.897	6.770	.6283	.295	1.829	.8069	.8225
42.82	49.67	51.47	21.65	8.583	5.720	.6191	1.866	1.884	.9102	.9179
61.84	68.34	70.97	28.01	8.872	5.011	.6086	5.220	1.926	.9640	.9690
85.88	88.40	90.22	37.94	9.168	4.828	.6143	13.596	1.949	.9557	.9597
100.00	100.00	100.00	43.86	9.358	3.284	.6010	21.299	1.948	.9557	.9597

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8637 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8513 (ADIABATIC)
 MOMENTUM AVERAGE ROTOR PRESS RATIO = 1.8651
 MASS AVERAGE TEMPERATURE RATIO = 1.2285

NASA SMALL AXIAL COMPRESSOR TEST 4 JUNE 28, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

100 PERCENT DESIGN SPEED - SCAN NO 3

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8856

PERCENT SPAN FROM TIP (L. F.)	BETA 3 (DEG)	V3 (FT/SEC)	VII3 (FT/SEC)	M3	VH3 (FT/SEC)	U23 (FT/SEC)	U3 (FT/SEC)
0.00	40.35	836.01	541.23	.700	637.17	630.17	1477.14
11.47	41.69	848.17	504.08	.712	633.41	627.36	1417.30
30.62	39.07	874.84	551.43	.744	679.17	679.16	1317.44
48.85	37.36	916.89	556.36	.789	728.80	728.26	1222.35
67.59	38.16	955.70	590.54	.829	751.41	748.66	1124.57
88.07	42.00	1004.62	672.23	.875	746.56	740.54	1017.75
100.00	44.30	1043.80	735.81	.915	759.70	738.71	955.52

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8982

PERCENT SPAN FROM TIP (L. F.)	BETA 4 (DEG)	V4 (FT/SEC)	VII4 (FT/SEC)	M4	VH4 (FT/SEC)	U24 (FT/SEC)	U4 (FT/SEC)
0.00	.12	689.33	1.44	.569	689.33	689.33	1466.43
11.46	-2.02	694.40	-2.24	.573	694.40	694.32	1415.53
30.39	-2.82	710.99	-3.03	.594	710.13	709.42	1330.22
48.83	-1.82	765.65	-24.32	.647	765.26	764.47	1247.58
67.44	-1.80	760.54	-21.94	.644	760.17	759.75	1184.16
88.14	1.33	718.23	41.73	.604	717.02	714.40	1071.37
100.00	3.47	723.18	43.80	.608	721.85	721.85	1018.20

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (L. F.)	LOADING	SPAN FROM TIP (INCH)	MASS FLOW (PCF)	DELTA HPTA (DEG)	INCIDENCE MEAN (DEG)	SUCT SUM (INCH)	ANGLE (DEG)	FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	0.00	40.23	4.027	.105	.105	.4100	.0599	.0216	22.300	1.755	1.2561
11.47	11.36	11.36	12.19	41.71	5.507	2.171	2.171	.4120	.0631	.0219	16.525	1.740	1.2561
30.62	30.39	30.39	32.10	41.90	2.455	-.839	-.839	.4050	.0764	.0251	10.350	1.745	1.2327
48.85	48.41	48.41	51.47	39.18	-.420	-3.605	-3.605	.3551	.0390	.0120	10.155	1.841	1.2179
67.59	67.44	67.44	70.97	39.97	-1.409	-6.262	-6.262	.3828	.1052	.0302	9.296	1.852	1.2128
88.07	88.14	88.14	90.22	38.67	-3.343	-8.231	-8.231	.4629	.2075	.0548	14.863	1.789	1.2192
100.00	100.00	100.00	100.00	39.82	-1.336	-4.777	-4.777	.4597	.1949	.0492	22.113	1.790	1.2193

MOMENTUM AVERAGE STAGE EFFICIENCY = .8222 (POLYTROPIC)

MOMENTUM AVERAGE STAGE EFFICIENCY = .8069 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.8101

MASS AVERAGE TEMPERATURE RISE = 1.2285

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

100 PERCENT DESIGN SPEED - SCAN NO 3

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8856

PERCENT SPAN FROM TIP (L. F.)	BETA 3 (DEG)	V3 (M/SEC)	V1/3 (M/SEC)	M3	VM3 (M/SEC)	V2/3 (M/SEC)	U3 (M/SEC)
0.00	40.35	154.82	164.97	.700	194.21	192.04	450.23
11.47	41.69	250.52	171.93	.712	193.04	192.74	431.94
30.62	39.07	266.65	169.04	.744	207.01	207.01	401.55
40.85	37.36	279.47	169.58	.789	222.14	221.97	372.57
67.50	34.16	291.20	180.00	.829	229.03	224.10	342.77
88.07	42.00	306.21	204.90	.875	227.55	224.50	310.21
100.00	43.30	318.15	218.18	.915	231.56	225.14	291.24

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8982

PERCENT SPAN FROM TIP (L. F.)	BETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VM4 (M/SEC)	V7/4 (M/SEC)	U4 (M/SEC)
0.00	12	210.11	.44	.569	210.11	210.11	446.97
11.36	-0.2	211.65	-0.09	.573	211.65	211.63	411.45
30.39	-2.82	216.71	-10.68	.594	216.45	216.35	405.45
40.83	-1.82	233.37	-7.41	.647	233.25	233.01	380.26
67.44	-1.80	241.81	-7.30	.644	231.70	231.57	354.54
88.14	3.13	248.92	12.72	.604	248.55	247.75	326.55
100.00	3.47	220.42	13.35	.628	220.02	220.02	310.35

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	FACTOP	DELTA	OMEGA	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE HPFSS RATIO	STAGE TFMF RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	40.23	4.027	1.05	.4100	.7599	.0216	22.300	1.755	1.2541	1.2541	.8442
11.47	11.36	12.19	41.71	5.507	2.171	.4120	.0431	.0219	16.525	1.746	1.2541	1.2541	.8412
30.62	30.39	32.10	41.90	7.455	-0.839	.4150	.0764	.0251	10.350	1.795	1.2327	1.2327	.8158
40.85	40.83	51.47	39.19	-4.20	-1.405	.3451	.0390	.0120	10.155	1.861	1.2179	1.2179	.8978
67.50	67.44	70.97	39.47	-1.409	-4.262	.3828	.1052	.0302	9.296	1.452	1.2124	1.2124	.7737
88.07	88.14	90.22	38.67	-2.343	-3.231	.4629	.2075	.0544	14.863	1.749	1.2192	1.2192	.6437
100.00	100.00	100.00	39.82	-1.336	-4.777	.4537	.1049	.0492	22.173	1.790	1.2143	1.2143	.7084

MOMENTUM AVERAGE STAGE EFFICIENCY = .8222 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .8069 (ADIABATIC)
MOMENTUM AVG. STAGE PRESS RATIO = 1.8101
MASS AVERAGE TEMPERATURE RISE = 1.2285

NASA SMALL AXIAL COMPRESSOR TEST 4 JUN 28 1974 (COMBINED TEMP.)

MOTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT FLIGHT FLOW = 3.4239 LBM/SEC 100 PERCENT DESIGN SPEED - SCAN NO 4
 PERCENT DESIGN EQUIVALENT FLOW = 93.4433 EQUIVALENT SPEED
 EQUIVALENT FLOW / INLET ANN AREA = 76772.51A R.P.M.
 37.8164 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC HLOSSAGE = .9842

PERCENT SPAN FROM TIP (I. F.)	HETA*1 (DEG)	V*1 (FT/SEC)	HETA1 (DEG)	V1 (FT/SEC)	M1	V*1 (FT/SEC)	V1 (FT/SEC)	U1 (FT/SEC)
0.00	71.09	1666.64	1582.26	1.527	0.00	523.69	523.60	506.82
10.16	70.13	1545.97	1505.43	1.444	0.00	477.24	477.24	477.24
27.02	66.74	1490.16	1371.04	1.373	0.00	583.72	583.72	573.00
43.86	64.25	1374.04	1239.40	1.270	0.00	597.80	597.80	594.87
60.71	62.11	1224.19	1092.72	1.149	0.00	574.47	574.47	578.27
77.57	45.37	1063.14	914.94	0.976	0.00	541.44	541.44	534.17
100.00	57.04	923.97	800.58	0.874	0.00	519.78	519.78	501.15

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC HLOSSAGE = .7826

PERCENT SPAN FROM TIP (I. F.)	HETA*2 (DEG)	V*2 (FT/SEC)	HETA2 (DEG)	V2 (FT/SEC)	M2	V*2 (FT/SEC)	V2 (FT/SEC)	J2 (FT/SEC)
0.00	55.70	1220.10	1010.36	1.027	0.00	654.02	683.97	661.94
11.69	52.72	1150.72	916.56	0.971	0.00	877.66	695.10	674.91
23.38	48.95	1085.27	802.19	0.909	0.00	840.62	751.00	694.55
35.07	42.92	1004.57	685.46	0.859	0.00	913.62	737.11	737.07
46.76	36.72	913.89	523.31	0.798	0.00	949.17	750.32	743.09
58.45	22.42	843.34	321.54	0.739	0.00	1030.15	770.42	788.82
100.00	14.76	806.65	205.47	0.711	0.00	1063.17	780.04	753.53

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (I. F.)	DELTA HETA* (DEG)	INCIDENCE ANGLE (DEG)	MEAN SUCT S/D (DEG)	FACTON	OMEGA* BAH	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR LOSS RATIO	ROTOR POLYTHROPIC EFF
0.00	0.00	15.78	7.850	7.382	0.348	0.468	-1.087	1.801	0.730
10.16	11.68	12.57	8.533	7.174	0.410	0.514	-2.099	1.774	0.725
27.02	31.60	33.07	8.134	5.972	0.438	0.340	-0.945	1.871	0.854
43.86	49.93	52.51	7.694	4.775	0.467	0.166	1.274	1.890	0.930
60.71	68.57	27.30	7.488	3.944	0.466	0.107	4.993	1.907	0.975
77.57	88.71	30.44	8.143	3.525	0.379	0.082	13.865	1.946	0.970
100.00	100.00	42.10	8.304	0.312	0.467	0.096	21.809	1.946	0.763

MOMENTUM AVERAGE MOTOR EFFICIENCY = .8762 (POLYTHROPIC) MOMENTUM AVERAGE ROTOR LOSS RATIO = 1.8808
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8649 (ADIABATIC) MASS AVERAGE TEMPERATURE RISE = 1.2240

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIVALENT WEIGHT FLOW = 1.5531 KG/SEC EQUIVALENT SPEED = 76777.510 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 93.6873 EQUIVALENT FLOW / INLET AIN AREA = 144.6150 KG/SEC-SQ M

100 PERCENT DESIGN SPEED - SCAN NO 4

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9842

PERCENT SPAN FROM TIP (I. F.)	RETAE1 (DEG)	VE1 (M/SEC)	VU01 (M/SEC)	W01 (INFO)	V1 (M/SEC)	VU1 (M/SEC)	M1	V41 (M/SEC)	V71 (M/SEC)	U1 (M/SEC)
0.00	71.69	508.00	407.27	0.00	153.62	0.00	.680	150.62	154.48	682.27
10.14	70.31	404.45	454.06	0.00	163.74	0.00	.673	163.74	154.39	658.06
27.02	68.93	454.20	417.90	0.00	171.92	0.00	.530	177.92	176.65	617.70
43.84	64.25	414.62	377.77	0.00	182.21	0.00	.552	182.21	141.62	377.77
62.63	62.10	376.85	333.86	0.00	176.32	0.00	.533	176.32	176.26	333.06
84.37	59.38	324.05	278.97	0.00	165.03	0.00	.497	165.03	142.82	278.87
100.00	57.06	290.77	244.02	0.00	154.12	0.00	.475	154.12	152.75	244.02

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .7826

PERCENT SPAN FROM TIP (I. F.)	RETAE2 (DEG)	VE2 (M/SEC)	VU02 (M/SEC)	W02 (INFO)	V2 (M/SEC)	VU2 (M/SEC)	M2	V42 (M/SEC)	V72 (M/SEC)	U2 (M/SEC)
0.00	55.90	371.89	307.96	1.027	36.79	155.88	.719	208.67	201.74	463.83
11.60	52.82	350.62	274.37	.971	37.63	161.32	.741	211.47	207.24	442.69
31.40	48.45	324.69	244.51	.909	37.26	167.49	.751	213.66	212.31	407.00
40.23	42.92	306.40	208.3	.849	36.22	164.53	.768	226.67	224.66	373.45
64.57	34.72	286.08	159.61	.798	34.05	180.14	.833	230.22	220.54	339.70
84.71	22.42	257.05	98.02	.739	40.42	205.23	.907	237.63	237.73	303.25
100.00	14.76	245.87	62.63	.711	62.80	220.19	.937	237.74	239.68	242.81

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	PERCENT SPAN FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA WETA* (DEG)	INCIDENCE ANGLE (DEG)	SUCT SURF (INFO)	INCIDENCE ANGLE (DEG)	LOSS PARAMETER (INFO)	DEVIATION ANGLE (DEG)	MOTOR EFF	POLYTROPIC EFF
0.00	0.00	0.03	15.70	7.850	7.382	.3868	.2193	-1.087	1.801	.7310
10.14	11.64	12.50	17.50	8.523	7.194	.4010	.2366	-2.093	1.784	.7459
27.02	31.40	33.07	18.09	8.134	5.972	.4038	.1553	-.945	1.831	.8376
43.84	49.93	52.73	21.33	7.694	4.775	.3887	.0657	1.274	1.880	.9304
62.63	68.57	71.65	27.39	7.488	3.999	.3856	.0474	4.093	1.907	.9612
84.37	88.71	90.44	36.97	8.143	3.042	.3525	.0379	13.845	1.844	.9763
100.00	100.00	100.00	42.30	8.304	2.230	.3124	.0467	21.809	1.944	.9740

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8762 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8649 (ADIABATIC)
 MOMENTUM AVG. ROTOR EFFSS RATIO = 1.8608
 MASS AVERAGE TEMPERATURE RISE = 1.2240

NASA SMALL AXIAL COMPRESSOR TEST 4 JUNE 28, 1973 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

100 PERCENT DESIGN SPEED - SCAN NO 4

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8828

PERCENT SPAN FROM TIP (L. F.)	BETA 3 (DEG)	V3 (FT/SEC)	VIII (FT/SEC)	M3	VM3 (FT/SEC)	VZ3 (FT/SEC)	U3 (FT/SEC)
0.00	37.14	872.17	526.59	.736	695.26	687.62	1477.89
11.67	38.96	872.69	548.74	.736	678.54	677.46	1418.24
20.83	37.04	896.46	540.50	.766	715.19	715.19	1317.00
49.12	35.61	929.00	541.42	.804	756.03	755.47	1224.53
67.05	37.59	911.23	586.30	.835	761.72	758.06	1123.80
88.32	40.45	1015.36	654.74	.888	772.65	762.27	1016.97
100.00	61.76	1052.25	700.87	.926	784.86	783.19	956.00

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8882

PERCENT SPAN FROM TIP (L. F.)	BETA 4 (DEG)	V4 (FT/SEC)	VIII (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	-1.12	748.24	-15.02	.641	769.14	748.14	1467.17
11.34	-1.13	745.81	-15.07	.638	765.66	745.57	1416.14
20.53	-1.27	784.32	-17.66	.661	786.12	793.78	1330.20
48.87	-1.71	819.56	-18.53	.694	819.35	816.51	1248.19
67.41	-1.67	806.67	-20.66	.685	804.41	803.97	1166.84
88.14	-1.47	766.31	-19.61	.647	766.06	741.26	1071.89
100.00	-1.47	770.12	-19.76	.652	769.87	749.87	1018.71

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	TRAILING EDGE	MASS FLOW (PLT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT (DEG)	D FACTOR	OMEGA HAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PPFSS MATIO	STAGE TFMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	38.26	.822	-3.100	.3466	.0718	.0249	21.060	1.762	1.2403	.7386
11.43	11.34	12.59	40.09	2.762	-5.555	.3465	.0661	.0230	15.416	1.754	1.2493	.7555
20.83	20.53	13.07	38.37	.650	-2.838	.3271	.0715	.0235	11.070	1.740	1.2281	.7550
49.12	48.87	12.51	36.90	-2.194	-5.175	.2942	.0543	.0166	10.680	1.845	1.2119	.8096
67.05	67.41	71.65	39.68	-2.021	-4.866	.3381	.1263	.0362	9.529	1.818	1.2111	.8485
88.32	88.14	40.44	41.92	-1.953	-4.827	.4159	.2438	.0645	10.062	1.755	1.2146	.8553
100.00	100.00	100.00	43.23	-2.868	-6.309	.4314	.2300	.0581	17.230	1.756	1.2147	.8160

MOMENTUM AVERAGE STAGE EFFICIENCY = .824 (POLYTROPIC)
 MOMENTUM AVERAGE STAGE EFFICIENCY = .8091 (ADIABATIC)
 MOMENTUM AVG. STAGE PRESS RATIO = 1.7434
 MASS AVERAGE TEMPERATURE RISE = 1.2240

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

100 PERCENT DESIGN SPEED - SCAN NO 4

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8828

PERCENT SPAN FROM TIP (L. F.)	BETA 3 (DEG)	V7 (M/SEC)	VII3 (M/SEC)	M3	V43 (M/SEC)	VZ3 (M/SEC)	U3 (M/SEC)
0.00	37.14	245.84	160.51	.736	211.91	209.59	450.86
11.43	38.96	266.00	167.26	.736	206.83	209.59	432.28
30.83	37.08	273.24	166.75	.766	217.99	217.99	401.82
49.12	35.61	283.43	165.03	.804	230.44	230.27	372.37
67.45	37.59	292.98	174.70	.835	232.17	231.72	362.53
88.12	40.45	309.48	200.78	.880	235.50	232.34	303.97
100.00	41.76	320.72	211.62	.926	239.23	232.62	291.19

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8882

PERCENT SPAN FROM TIP (T. F.)	BETA 4 (DEG)	V4 (M/SEC)	VII4 (M/SEC)	M4	V44 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	-1.12	239.17	-4.58	.641	234.13	234.13	447.19
11.34	-1.13	233.42	-4.59	.630	233.37	233.15	431.64
30.53	-1.29	239.86	-5.38	.661	239.00	238.90	405.86
49.03	-1.30	249.80	-5.65	.699	249.74	249.48	380.45
67.41	-1.47	265.26	-6.29	.685	245.14	245.05	355.04
88.14	-1.47	272.96	-6.78	.647	232.88	232.83	326.71
100.00	-1.47	236.73	-6.02	.652	234.66	234.66	310.30

STATOR PERFORMANCE DATA

PERCENT LEADING EDGE	PERCENT SPAN FROM TIP TRAILING EDGE	MASS FLOW (KGF)	DELTA WETA (DEG)	INCIDENCE MEAN (DEG)	SUCT SUR ANGLE (DEG)	INCIDENCE FACTOR	OMEGA HAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATION POLYTROPIC EFF
0.00	0.00	0.00	38.26	.822	-3.109	.3446	.0718	.0259	21.060	1.762	1.2493	.7384
11.43	11.34	12.59	40.09	2.782	-5.55	.3465	.0661	.0230	15.414	1.758	1.2493	.7455
30.83	30.53	31.07	38.37	.450	-2.838	.3271	.0715	.0235	11.070	1.749	1.2281	.7550
49.12	48.83	32.53	36.90	-2.194	-5.175	.2992	.0543	.0166	10.690	1.865	1.2119	.8044
67.45	67.41	71.65	39.06	-2.021	-6.866	.3381	.1263	.0362	9.624	1.810	1.2111	.8485
88.12	88.14	90.44	41.92	-1.453	-6.827	.4159	.2438	.0645	10.062	1.755	1.2166	.8553
100.00	100.00	100.00	43.23	-2.868	-6.309	.4314	.2300	.0581	17.230	1.756	1.2187	.8160

MOMENTUM AVERAGE STAGE EFFICIENCY = .8261 (POLYTROPIC)
 MOMENTUM AVERAGE STAGE EFFICIENCY = .8091 (ADIABATIC)
 MOMENTUM AVG. STAGE PRESS RATIO = 1.7434
 MASS AVERAGE TEMPERATURE RISE = 1.2260

NASA SMALL AXIAL COMPRESSOR TEST 4 JUNE 28, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT W/FIGHT FLOW PERCENT DESIGN EQUIVALENT FLOW = 3.2952 LHM/SEC
 EQUIVALENT SPEED EQUIVALENT FLOW / INLET ANN ARFA = 74771.414 R.P.M.
 100 PERCENT DESIGN SPEED - SCAN NO 5
 EQUIVALENT SPEED EQUIVALENT FLOW / INLET ANN ARFA = 36.3946 LHM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9969

PERCENT SPAN FROM TIP (I. F.)	HETA#1 (DEG)	VO1 (FT/SEC)	VU*1 (FT/SFC)	MO1	HETA1 (DEG)	VI (FT/SEC)	VU1 (FT/SEC)	M1	V41 (FT/SFC)	V71 (FT/SFC)	U1 (FT/SEC)
0.00	72.97	1659.33	1582.24	1.518	0.00	491.65	0.00	.457	499.89	481.79	1582.24
4.67	71.23	1591.29	1506.64	1.457	0.00	512.10	0.00	.469	512.10	495.34	1506.64
25.85	64.11	1487.43	1380.20	1.367	0.00	554.52	0.00	.510	554.52	544.74	1380.20
42.45	65.54	1373.23	1250.40	1.264	0.00	567.67	0.00	.522	567.67	545.84	1250.40
61.67	63.49	1231.25	1101.77	1.131	0.00	544.61	0.00	.505	544.61	549.43	1101.77
84.84	60.73	1053.91	917.39	.965	0.00	515.22	0.00	.472	515.22	508.70	917.39
100.00	58.24	941.07	800.57	.860	0.00	494.68	0.00	.452	494.68	477.87	800.57

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .7997

PERCENT SPAN FROM TIP (I. F.)	HETA#2 (DEG)	VO2 (FT/SEC)	UO2 (FT/SEC)	MO2	HETA2 (DEG)	V2 (FT/SEC)	VU2 (FT/SEC)	M2	V42 (FT/SEC)	V72 (FT/SFC)	U2 (FT/SEC)
0.00	54.88	1154.77	992.86	.647	41.42	794.38	524.88	.664	599.41	590.10	1321.75
13.67	55.24	1091.12	870.29	.615	41.66	833.69	554.13	.694	622.40	600.27	1452.42
31.07	50.94	1014.86	749.68	.641	40.52	842.88	547.61	.713	640.75	634.76	1337.20
49.44	43.49	966.11	664.91	.628	38.74	899.04	563.10	.771	700.48	700.86	1228.01
67.74	35.44	898.25	521.76	.673	37.26	944.72	597.87	.818	731.47	724.31	1119.23
84.04	23.04	774.47	304.68	.677	44.10	997.56	494.23	.867	714.37	704.40	998.91
100.00	14.13	734.21	180.46	.646	46.20	1075.61	747.40	.905	714.86	692.49	927.85

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	TRAILING EDGE	MASS FLOW (PCT)	DELTA HETA# (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT (DEG)	DELTA FACTOR	OMEGA HAN	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS. RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	13.59	8.640	8.142	.4224	.2600	.0511	1.889	1.775	.6894	.7132
9.67	11.67	12.07	15.97	9.370	8.021	.4333	.2641	.0544	.778	1.747	.6985	.7219
25.85	31.07	31.79	17.17	9.111	7.023	.4347	.1837	.0789	.982	1.810	.7933	.8097
42.45	49.45	51.14	22.09	8.437	5.944	.4203	.0930	.0205	1.622	1.498	.9448	.9130
61.67	67.74	70.71	28.01	4.148	5.301	.4020	.0463	.0103	5.114	1.927	.6503	.9629
84.84	88.04	90.12	37.69	4.421	4.491	.4138	.1175	.0253	13.535	1.922	.9217	.9285
100.00	100.00	100.00	44.16	9.535	3.461	.3802	.1431	.0295	21.181	1.922	.9216	.9286

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8425 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8392 (ADIABATIC)
 MOMENTUM AVG. ROTOR PRESS. RATIO = 1.8602
 MASS AVERAGE TEMPERATURE DISC = 1.2308

NASA SMALL AXIAL COMPRESSOR TEST 4 JUNE 28, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

100 PERCENT DESIGN SPEED - SCAN NO 5

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8974

PERCENT SPAN FROM TIP (L. F.)	BETA 3 (NEG)	V3 (FT/SEC)	VU3 (FT/SEC)	M3	VM3 (FT/SEC)	VZ3 (FT/SEC)	U3 (FT/SEC)
0.00	41.70	418.64	544.59	.684	611.22	604.50	1477.87
11.45	42.83	434.88	547.54	.644	623.30	611.29	1418.09
30.55	40.14	461.52	545.41	.731	634.5	654.54	1318.43
48.60	37.97	418.05	565.05	.789	723.56	723.03	1223.77
67.11	34.63	950.64	593.41	.824	742.69	734.97	1127.64
87.75	43.46	948.45	670.43	.858	717.44	707.81	1019.91
100.00	44.75	1030.21	725.26	.900	31.66	711.44	955.99

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9040

PERCENT SPAN FROM TIP (L. F.)	BETA 4 (NEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	-1.47	667.16	-17.12	.769	666.94	666.94	1467.15
11.42	-1.47	677.71	-17.34	.598	677.49	677.40	1416.39
30.27	-1.47	734.20	-17.81	.578	693.97	693.66	1331.40
48.73	-1.50	753.10	-19.65	.635	752.85	752.07	1248.61
67.14	-2.53	748.09	-33.04	.633	741.26	747.05	1165.17
88.08	-2.70	711.13	-33.48	.596	710.34	707.74	1072.14
100.00	-2.70	715.67	-33.72	.601	714.88	714.88	1018.70

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	TRAILING EDGE	MASS FLOW (PCT)	DELTA HFTA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCTION (DEG)	D FACTOR	OMEGA HAP	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE HPFSS RATIO	STAGE HPFSS RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	43.17	5.382	1.460	.4342	.0657	.0237	20.710	1.743	1.2578	.8355
11.45	11.32	12.02	44.30	6.048	3.117	.4312	.0656	.0234	15.087	1.754	1.2578	.8372
30.55	30.27	31.79	41.61	3.526	.230	.4104	.0752	.0247	11.716	1.778	1.2366	.8232
48.60	48.73	51.14	39.64	.224	-2.764	.3710	.0642	.0197	10.486	1.857	1.2215	.8336
67.11	67.34	70.71	41.15	-.884	-3.752	.3957	.1101	.0316	8.571	1.850	1.2144	.7706
87.75	88.08	90.12	46.16	1.195	-1.713	.4634	.1746	.0461	8.833	1.744	1.2222	.7126
100.00	100.00	100.00	47.45	.116	-3.325	.4812	.1629	.0412	16.000	1.794	1.2222	.7554

MOMENTUM AVERAGE STAGE EFFICIENCY = .9127 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7965 (ADIABATIC)
MOMENTUM AVG. STAGE HPFSS RATIO = 1.0070
MASS AVERAGE TEMPERATURE RISE = 1.2308

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

100 PERCENT DESIGN SPEED - SCAN NO 5

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8974

PERCENT SPAN FROM TIP (L. F.)	BETA 3 (DEG)	V3 (M/SEC)	VIII3 (M/SEC)	V3	VM3 (M/SEC)	V/3 (M/SEC)	U3 (M/SEC)
0.00	41.70	249.52	165.99	.684	186.30	184.25	450.45
11.55	42.83	254.67	172.99	.699	186.63	186.32	442.23
30.55	40.14	262.59	169.29	.731	200.74	200.74	401.86
48.60	37.99	279.42	172.23	.719	220.54	220.54	373.01
67.11	34.63	289.76	180.87	.824	226.37	227.54	343.70
87.75	43.46	301.28	207.24	.858	214.68	215.74	310.87
100.00	44.75	314.01	221.06	.900	223.01	216.85	291.39

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9040

PERCENT SPAN FROM TIP (L. F.)	BETA 4 (DEG)	V4 (M/SEC)	VIII4 (M/SEC)	V4	VM4 (M/SEC)	V/4 (M/SEC)	U4 (M/SEC)
0.00	-1.47	203.35	-5.27	.549	203.28	203.24	447.19
11.52	-1.47	206.57	-5.30	.558	206.50	206.47	441.71
30.27	-1.47	211.59	-5.43	.578	211.52	211.43	405.91
48.77	-1.50	229.55	-5.92	.635	229.47	229.23	340.50
67.14	-2.51	224.29	-10.07	.633	228.07	227.94	355.14
87.68	-2.70	216.75	-10.20	.596	216.51	215.72	326.74
100.00	-2.70	210.14	-10.28	.601	217.89	217.89	310.50

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	TRAILING EDGE	MASS FLOW (PCT)	DELTA HETA (DEG)	INCIDENCE ANGLE (DEG)	MEAN SUCT SUR (DEG)	FACTUR N	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	43.17	5.382	1.460	.4342	.0657	.0237	20.710	1.743	1.2574	.8355
11.52	31.32	12.92	44.30	6.648	3.312	.4312	.0656	.0228	15.087	1.755	1.2578	.8392
30.55	30.27	31.74	41.61	3.525	.230	.4104	.0752	.0247	11.715	1.778	1.2366	.8232
48.60	48.73	51.14	39.60	.274	-2.764	.3710	.0642	.0197	10.686	1.857	1.2215	.8436
67.11	67.14	70.71	41.15	-.887	-3.752	.3957	.1101	.0316	8.571	1.850	1.2144	.7700
87.75	88.08	90.12	46.16	1.191	-1.713	.4634	.1746	.0461	8.833	1.794	1.2222	.7128
100.00	100.00	100.00	47.45	.116	-1.125	.4812	.1629	.0412	16.000	1.794	1.2222	.7154

MOMENTUM AVERAGE STAGE EFFICIENCY = .8127 (POLYTROPIC)
 MOMENTUM AVERAGE STAGE EFFICIENCY = .7965 (ADIABATIC)
 MOMENTUM AVG. STAGE PRESS RATIO = 1.6070
 MASS AVERAGE TEMPERATURE RISE = 1.2308

ORIGINAL PAGE IS
OF POOR QUALITY

NASA SMALL AXIAL COMPRESSOR TEST 4 JUN 28, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT FLIGHT FLOW = 3.2453 LBM/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 80.1520
 100 PERCENT DESIGN SPEED = SCAN NO 6
 EQUIVALENT SPEED = 76731.330 R.P.M.
 EQUIVALENT FLOW / INLET ANN AREA = 36.0043 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA

PERCENT SPAN FROM TIP (L. F.)	HETA*1 (DEG)	W*1 (FT/SEC)	VU*1 (FT/SEC)	BETA1 (DEG)	V1 (FT/SEC)	VU1 (FT/SEC)	M1	VW4 (FT/SEC)	VZ1 (FT/SEC)	U1 (FT/SEC)
0.00	72.57	1657.07	1581.42	0.00	494.81	0.00	.457	494.81	474.87	1591.42
9.52	71.47	1565.40	1407.00	0.00	506.68	0.00	.464	506.68	470.10	1507.00
25.49	68.37	1486.96	1342.25	0.00	543.11	0.00	.507	543.11	534.04	1382.25
41.96	65.89	1373.40	1253.40	0.00	560.99	0.00	.516	560.99	559.18	1253.60
61.00	63.82	1231.16	1104.85	0.00	543.19	0.00	.499	543.19	543.01	1104.85
84.58	61.05	1052.08	920.61	0.00	509.26	0.00	.466	509.26	502.53	920.61
100.00	54.56	937.06	800.15	0.00	489.23	0.00	.447	489.23	472.60	800.15

EXIT VELOCITY DIAGRAM DATA

PERCENT SPAN FROM TIP (L. F.)	HETA*2 (DEG)	W*2 (FT/SEC)	VU*2 (FT/SEC)	HETA*2 (DEG)	V2 (FT/SEC)	VU2 (FT/SEC)	M2	VW2 (FT/SEC)	VZ2 (FT/SEC)	U2 (FT/SEC)
0.00	59.44	1150.83	990.99	47.17	789.44	429.96	.657	585.12	566.27	1520.95
11.02	55.82	1043.45	896.27	42.37	823.96	555.30	.649	608.74	505.44	1451.57
31.13	51.43	1004.25	788.27	41.07	831.89	547.87	.705	624.74	424.74	1336.14
49.46	43.24	964.01	660.46	38.42	907.52	566.93	.776	702.23	702.19	1227.38
67.66	35.54	895.90	521.33	39.34	542.59	594.02	.816	728.50	726.45	1114.35
84.01	22.86	781.00	303.45	44.01	1000.50	695.07	.870	719.64	707.41	988.52
100.00	13.98	747.08	174.22	44.09	1038.40	748.15	.908	720.11	694.64	927.37

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	DELTA HETA* (DEG)	MASS FLOW (PCT)	INCIDENCE ANGLE MEAN (DEG)	SUCT SUR (DEG)	FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	HATOR PRESS RATIO	ROTOR ADIABATIC EFF	POLYTROPIC EFF
0.00	0.00	0.00	8.784	4.321	.273	.2684	.0520	2.450	1.741	.8786	.7029
9.52	11.64	11.46	9.488	4.188	.452	.2726	.0555	.895	1.774	.8881	.7120
25.49	31.13	31.41	9.309	7.244	.444	.1944	.0403	1.491	1.805	.7825	.7597
41.96	49.46	50.66	9.079	6.264	.4228	.0952	.0210	1.375	1.707	.8028	.9111
61.00	67.66	70.32	9.429	5.549	.4040	.0514	.0114	5.125	1.921	.8547	.9587
84.58	84.01	90.00	9.709	4.686	.4106	.1137	.0255	13.326	1.926	.9244	.9310
100.00	100.00	100.00	44.58	3.731	.3752	.1285	.0286	21.027	1.925	.9243	.9309

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8482 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8345 (ADIABATIC)
 MOMENTUM AVG. ROTOR PRESS RATIO = 1.8554
 MASS AVERAGE TEMPERATURE RISE = 1.2310

ROTOR PERFORMANCE VASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIVALENT WEIGHT FLOW = 1.4911 K(M/SEC) 100 PERCENT DESIGN SPEED - SCAN NO 6
 PERCENT DESIGN EQUIVALENT FLOW = 89.520 EQUIVALENT SPEED
 R.P.M. = 76731.339 R.P.M. = 178.0812 K0/SEC-SR M

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9978

PERCENT SPAN FROM TIP (L. F.)	BETA01 (DEG)	V01 (M/SEC)	W01 (M/SEC)	BETA1 (DEG)	V1 (M/SEC)	VU1 (M/SEC)	M1	VU1 (M/SEC)	V71 (M/SEC)	U1 (M/SEC)
0.00	72.67	505.06	482.02	0.00	150.2	0.00	.652	150.82	165.96	682.02
9.52	71.42	484.00	459.33	0.00	154.44	0.00	.664	154.44	169.78	659.33
25.47	68.37	453.23	421.31	0.00	167.07	0.00	.503	167.07	164.00	621.31
41.94	65.89	418.61	382.10	0.00	170.99	0.00	.516	170.99	170.44	582.10
61.00	63.42	375.26	336.76	0.00	165.57	0.00	.499	165.57	165.51	536.76
84.58	61.05	320.67	280.60	0.00	155.22	0.00	.466	155.22	153.14	280.60
100.00	58.56	285.86	243.89	0.00	142.12	0.00	.447	142.12	144.05	243.89

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8004

PERCENT SPAN FROM TIP (L. F.)	BETA02 (DEG)	V02 (M/SEC)	W02 (M/SEC)	BETA2 (DEG)	V2 (M/SEC)	VU2 (M/SEC)	M2	VU2 (M/SEC)	V72 (M/SEC)	U2 (M/SEC)
0.00	59.44	370.77	302.05	42.17	240.62	161.53	.657	178.34	172.40	663.59
11.65	55.82	330.24	273.18	42.37	251.14	162.25	.689	185.54	181.49	642.44
31.13	51.43	307.32	240.27	41.07	254.17	165.99	.705	171.61	190.42	607.26
49.44	43.24	293.83	201.30	38.97	275.09	172.80	.774	214.04	214.03	574.10
67.66	35.58	273.07	159.90	39.38	287.30	142.28	.816	222.09	221.42	541.18
84.01	27.86	238.05	92.49	44.01	304.95	211.86	.870	219.34	215.74	504.35
100.00	13.98	226.18	54.43	46.09	315.51	224.04	.908	219.49	212.03	502.66

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	MASS FLOW (KGT)	DELTA BETA0 (DEG)	INCIDENCE ANGLE (DEG)	SUCT SUR (DEG)	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ADIABATIC EFF	POLYTROPIC EFF
0.00	0.00	0.00	8.789	8.321	.4773	2.450	1.741	.4746	.7029
9.52	11.44	15.60	9.488	8.188	.4452	.895	1.774	.6801	.7120
25.47	31.13	16.94	9.307	7.244	.4444	1.491	1.805	.7825	.7997
41.94	50.66	22.55	9.079	6.264	.4228	2.210	1.902	.8028	.9111
61.00	70.32	28.23	9.429	5.599	.4040	5.125	1.921	.8547	.9587
84.58	90.00	38.10	9.709	4.606	.4106	13.326	1.926	.8244	.9310
100.00	100.00	44.58	9.805	3.731	.3752	21.027	1.925	.8243	.9309

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8482 (POLYTROPIC) MOMENTUM AVG. ROTOR PRESS RATIO = 1.8554
 MASS AVERAGE ROTOR EFFICIENCY = .8345 (ADIABATIC) MASS AVERAGE TEMPERATURE RISE = 1.2310

NASA SMALL AXIAL COMPRESSOR TEST 4 JUNE 28, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

100 PERCENT DESIGN SPEED - SCAN NO 6

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8975

PERCENT SPAN FROM TIP (Y. F.)	BETA 3 (DEG)	V3 (FT/SEC)	VU3 (FT/SEC)	M3	VM3 (FT/SEC)	VZ3 (FT/SEC)	U3 (FT/SEC)
0.00	42.43	908.75	544.70	.675	596.90	590.35	1477.09
11.47	41.52	825.95	568.74	.640	598.93	597.94	1417.24
30.61	40.65	852.95	555.66	.723	667.13	667.13	1317.42
44.69	38.12	921.62	568.89	.792	725.08	724.54	1223.14
47.01	34.74	968.70	593.65	.822	749.01	737.31	1127.59
47.74	43.37	941.58	680.81	.861	720.84	711.16	1017.31
100.00	44.64	1133.02	725.96	.903	734.92	714.62	955.49

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9020

PERCENT SPAN FROM TIP (Y. F.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	-2.17	655.04	-26.80	.538	654.57	654.57	1466.38
11.31	-2.17	665.33	-25.14	.547	664.85	664.77	1415.69
30.27	-2.17	694.60	-25.86	.570	694.11	693.81	1330.72
44.73	-2.00	746.59	-26.06	.628	746.14	745.37	1247.96
47.34	-2.00	750.64	-26.18	.634	750.18	749.77	1164.35
48.13	.76	712.84	9.40	.598	712.82	710.22	1071.35
100.00	.83	717.03	10.40	.602	716.96	716.96	1018.16

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	MAS3 FLOW (PCT)	DELTA HETA (DEG)	INCIDENCE ANGLE MFAN (DEG)	SUCT SUR ANGLE (DEG)	OMEGA HAP	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TFMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	44.60	0.116	2.194	.4462	.0632	20.010	1.742	1.2542	.8447
11.47	11.41	45.69	7.339	4.004	.4438	.0654	14.789	1.743	1.2582	.8436
30.61	30.27	42.82	4.042	7.38	.4188	.0641	11.021	1.760	1.2345	.8417
44.69	48.73	40.12	.354	-2.634	.3838	.0818	9.982	1.849	1.2229	.8098
47.01	70.32	40.74	-1.759	-3.624	.3909	.0967	9.100	1.855	1.2144	.7957
47.74	90.00	42.61	1.097	-1.810	.4521	.1731	12.287	1.798	1.2223	.7162
100.00	100.00	43.82	.017	-1.425	.4706	.0409	19.531	1.788	1.2223	.7591

MOMENTUM AVERAGE STAGE EFFICIENCY = .8094 (POLYTROPIC)
 MOMENTUM AVERAGE STAGE EFFICIENCY = .7930 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.8038
 MASS AVERAGE TEMPR. AVE RISE = 1.2310

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

100 PERCENT DESIGN SPEED - SCAN NO 6

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8975

PERCENT SPAN FROM TIP (I. F.)	HETA 3 (DEG)	V3 (M/SEC)	VII3 (M/SEC)	M3	VM3 (M/SEC)	V73 (M/SEC)	U3 (M/SEC)
0.00	42.43	240.51	166.33	.675	181.94	179.94	450.22
11.67	43.52	251.75	177.35	.690	187.55	182.75	431.97
20.61	40.65	259.98	169.36	.723	197.24	197.24	401.55
48.69	38.12	240.91	174.40	.792	221.00	220.84	372.91
67.01	34.74	249.16	180.94	.822	225.50	224.73	343.69
87.74	43.37	302.23	207.54	.861	219.71	216.76	310.69
100.00	44.67	314.86	221.27	.903	224.00	217.81	291.23

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9020

PERCENT SPAN FROM TIP (I. F.)	HETA 4 (DEG)	V4 (M/SEC)	VII4 (M/SEC)	M4	VM4 (M/SEC)	V24 (M/SEC)	U4 (M/SEC)
0.00	-2.17	149.06	-7.56	.538	199.51	194.51	446.75
11.11	-2.17	202.74	-7.64	.547	202.65	202.62	431.50
20.27	-2.17	208.67	-7.88	.570	208.52	208.42	405.60
48.73	-2.00	227.50	-7.94	.620	227.42	227.19	380.38
67.38	-2.00	228.79	-7.98	.634	228.66	228.53	354.89
88.13	.76	217.29	2.86	.598	217.27	216.47	325.55
100.00	.83	218.55	3.17	.602	218.53	218.53	310.34

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	TRAILING EDGE	MASS FLOW (PCT)	DELTA HETA (DEG)	INCIDENCE ANGLE (DEG)	MEAN SUCTION ANGLE (DEG)	FACTOR N	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	44.60	6.116	2.194	.4462	.0632	.0228	20.010	1.732	1.2582	.8647
11.47	11.11	11.44	45.69	7.339	4.004	.4438	.0654	.0227	14.389	1.743	1.2582	.8636
20.61	20.27	31.41	42.82	4.032	.738	.4188	.0681	.0224	11.021	1.740	1.2745	.8617
48.69	48.73	50.86	40.12	3.54	-2.634	.3838	.0818	.0251	9.982	1.849	1.2229	.8098
67.01	67.38	70.32	40.74	-1.759	-3.629	.3908	.0967	.0277	9.100	1.855	1.2144	.7957
87.74	88.13	90.00	42.61	1.097	-1.810	.4521	.1731	.0458	12.287	1.798	1.2223	.7162
100.00	100.00	100.00	43.82	.017	-3.425	.4706	.1616	.0409	19.531	1.798	1.2223	.7159

MOMENTUM AVERAGE STAGE EFFICIENCY = .8094 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7930 (ADIABATIC)
MOMENTUM AVG. STAGE PRESS RATIO = 1.8038
MASS AVERAGE TEMPERATURE RISE = 1.2310

NASA SMALL AXIAL COMPRESSOR TEST 4 JUNE 24, 1974 (COMBINED TEMP.)

MOTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT WEIGHT FLOW = 3.2232 LHM/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 80.0011
 100 PERCENT DESIGN SPEED - SCAN NO 7
 EQUIVALENT SPEED
 EQUIVALENT FLOW / INLET ANN ARFA = 74683.478 R.P.M.
 35.5995 LHM/SEC-SU FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9965

PERCENT SPAN FROM TIP (I. F.)	BETA*1 (DEG)	V*1 (FT/SEC)	VU*1 (FT/SEC)	M*1	BETA1 (DEG)	V1 (FT/SEC)	VU1 (FT/SEC)	M1	V*2 (FT/SEC)	VU*2 (FT/SEC)	M*2	BETA2 (DEG)	V*3 (FT/SEC)	VU*3 (FT/SEC)	M*3
0.00	72.89	1657.57	1580.43	1.511	0.00	486.36	0.00	.444	480.34	470.70	1590.43	0.00	480.34	470.70	1590.43
9.45	71.71	1586.81	1508.67	1.441	0.00	477.91	0.00	.455	497.91	481.61	1506.67	0.00	497.91	481.61	1506.67
25.13	68.72	1483.76	1382.63	1.362	0.00	451.39	0.00	.494	538.39	524.50	1382.63	0.00	538.39	524.50	1382.63
41.77	66.24	1370.00	1254.31	1.254	0.00	451.02	0.00	.506	551.02	549.24	1254.31	0.00	551.02	549.24	1254.31
60.06	66.23	1227.27	1107.22	1.126	0.00	433.57	0.00	.489	533.57	533.39	1105.22	0.00	533.57	533.39	1105.22
84.54	61.47	1047.21	920.05	.958	0.00	500.15	0.00	.457	500.15	493.43	920.05	0.00	500.15	493.43	920.05
100.00	49.01	932.76	799.65	.852	0.00	480.21	0.00	.438	480.21	483.89	799.65	0.00	480.21	483.89	799.65

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .7964

PERCENT SPAN FROM TIP (I. F.)	BETA*2 (DEG)	V*2 (FT/SEC)	VU*2 (FT/SEC)	M*2	BETA2 (DEG)	V2 (FT/SEC)	VU2 (FT/SEC)	M2	V*3 (FT/SEC)	VU*3 (FT/SEC)	M*3	BETA3 (DEG)	V*4 (FT/SEC)	VU*4 (FT/SEC)	M*4
0.00	60.01	1141.94	989.08	.950	42.93	779.51	530.92	.648	570.75	552.37	1520.00	42.93	570.75	552.37	1520.00
11.74	56.09	1077.09	893.91	.900	42.80	819.94	556.42	.684	600.89	547.75	1450.36	42.80	600.89	547.75	1450.36
31.20	51.79	1000.44	780.06	.845	41.57	827.18	548.86	.699	618.84	615.00	1334.92	41.57	618.84	615.00	1334.92
49.70	41.26	953.03	653.06	.816	39.50	899.48	572.10	.770	694.10	594.06	1225.16	39.50	694.10	594.06	1225.16
64.05	35.42	890.73	516.20	.771	39.54	941.83	600.09	.815	725.90	723.76	1116.30	39.54	725.90	723.76	1116.30
84.26	27.18	792.85	299.36	.691	43.51	1017.36	697.05	.882	734.17	727.11	996.41	43.51	734.17	727.11	996.41
100.00	19.61	755.91	177.86	.642	45.55	1044.12	748.93	.919	734.68	709.72	926.79	45.55	734.68	709.72	926.79

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	MASS FLOW (PC)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCTION SUR (DEG)	OMEGA* BAN (RPM)	LOSS PARAMETER (DEG)	DEVIATION ANGLE (DEG)	MATCH LOSS (DEG)	ROTOR EFFICIENCY	ROTOR POLYTROPIC EFFICIENCY
0.00	0.00	12.84	9.058	0.590	.4317	.2787	3.022	1.747	.6670	.6919
9.45	11.75	15.62	9.768	8.474	.4483	.2785	1.181	1.764	.6815	.7057
25.13	31.20	16.94	9.637	7.581	.4486	.2036	1.875	1.793	.7720	.7899
41.77	44.70	23.01	9.446	6.641	.4304	.1093	1.502	1.893	.8887	.9082
60.06	70.17	28.81	9.820	6.000	.4065	.0575	5.273	1.914	.9493	.9537
84.54	89.95	39.29	10.131	5.104	.3967	.0917	12.948	1.944	.9497	.9450
100.00	100.00	45.41	10.262	4.188	.3571	.1112	20.661	1.945	.9196	.9450

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8437 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8297 (ADIABATIC)
 MOMENTUM AVERAGE ROTOR PRESS RATIO = 1.8512
 MASS AVERAGE TEMPERATURE RISE = 1.2314

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIVALENT W/FIGHT FLOW = 1.4620 KG/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 88.0031
 100 PERCENT DESIGN SPEED = SCAN NO 7
 EQUIVALENT SPEED / INLET ANGLE = 76493.478 R.P.M.
 (73.8120 KG/SEC-50 M

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9965

PERCENT SPAN FROM TIP (L. F.)	RETA*1 (DEG)	VE1 (M/SEC)	VU*1 (M/SEC)	W*1 (M/SEC)	VI (M/SEC)	VU1 (M/SEC)	MI	V*1 (M/SEC)	V*2 (M/SEC)	U1 (M/SEC)
0.00	72.89	504.01	491.71	1.511	0.00	149.24	.644	140.24	140.24	140.24
0.45	71.71	473.66	459.23	1.451	0.00	151.76	.455	151.74	151.74	151.74
25.13	68.72	452.25	421.63	1.362	0.00	164.10	.494	164.10	164.10	164.10
41.77	66.28	417.54	382.31	1.259	0.00	167.95	.504	167.95	167.95	167.95
64.05	64.23	374.07	336.87	1.126	0.00	162.63	.489	162.63	162.63	162.63
86.58	61.47	319.19	280.43	.958	0.00	152.46	.457	152.46	152.46	152.46
100.00	59.01	284.30	243.73	.852	0.00	146.37	.438	146.37	146.37	146.37

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .7964

PERCENT SPAN FROM TIP (L. F.)	RETA*2 (DEG)	VE*2 (M/SEC)	VU*2 (M/SEC)	W*2 (M/SEC)	V2 (M/SEC)	VU2 (M/SEC)	W2	V*2 (M/SEC)	V*3 (M/SEC)	U2 (M/SEC)
0.00	60.01	348.06	301.47	.950	42.93	277.59	.649	161.83	173.94	168.16
11.74	56.09	324.30	272.46	.900	42.40	249.61	.644	169.60	183.15	179.14
31.70	51.79	304.93	237.53	.845	41.57	225.13	.699	167.29	188.63	187.65
49.70	47.26	280.48	199.05	.816	39.50	274.16	.770	174.29	211.54	211.54
64.05	35.26	271.49	157.34	.771	39.59	247.07	.815	142.91	221.25	220.60
84.26	22.18	241.66	91.25	.691	43.51	309.57	.882	212.46	223.77	220.10
100.00	13.61	230.40	54.21	.662	45.55	319.77	.919	228.27	223.93	216.12

ROTOR PERFORMANCE DATA

PERCENT LEADING EDGE	SPAN FROM TIP (L. F.)	WASH FLOW (PCT)	DELTA (DEG)	DELTA (DEG)	INCIDENCE ANGLE (DEG)	SUCT SUM (DEG)	FACTOR	BETA (DEG)	OMEGA* (RPM)	MAP	PARAMETER	LOSS (DEG)	DEVIATION ANGLE (DEG)	HATTO	ADJ HATTO	ROTOR EFF	POLYTROPIC EFF
0.00	0.00	0.00	12.88	15.62	9.058	4.590	.4317	.2787	.2787	.0530	.0530	3.022	1.767	1.767	.6670	.6918	
0.45	11.74	11.75	15.62	16.94	9.768	4.474	.4483	.2785	.2785	.0563	.0563	1.181	1.766	1.766	.6615	.7057	
25.13	31.20	31.20	16.94	16.94	9.637	7.581	.4486	.2036	.2036	.0419	.0419	1.875	1.793	1.793	.6720	.7199	
41.77	49.70	50.47	23.07	23.07	9.446	6.641	.4304	.1093	.1093	.0242	.0242	1.502	1.801	1.801	.6887	.8042	
64.05	64.05	70.17	28.91	28.91	4.826	6.000	.4065	.0575	.0575	.0129	.0129	5.273	1.914	1.914	.9493	.9537	
86.58	86.26	89.95	39.29	39.29	10.131	5.108	.3967	.0917	.0917	.0198	.0198	12.998	1.946	1.946	.9307	.9450	
100.00	100.00	100.00	45.41	45.41	10.262	4.188	.3571	.1112	.1112	.0230	.0230	20.661	1.945	1.945	.9306	.9450	

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8637 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8297 (ADIABATIC)
 MOMENTUM AVG. ROTOR PRESS RATIO = 1.8512
 MASS AVERAGE TEMPERATURE RISE = 1.2314

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

100 PERCENT INFSIGN SPEED = SCAN NO 7

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8955

PERCENT SPAN FROM TIP (I. F.)	BETA 3 (DEG)	V3 (FT/SEC)	V1/3 (FT/SEC)	M3	VM3 (FT/SEC)	V7/1 (FT/SEC)	U3 (FT/SEC)
0.00	43.42	795.32	546.64	.662	577.63	571.29	1476.17
11.57	44.16	818.07	546.97	.683	586.84	585.47	1415.98
30.76	41.32	843.41	546.42	.714	633.48	623.47	1315.93
49.01	38.80	916.32	574.21	.786	714.09	713.57	1220.67
67.27	34.83	946.04	594.74	.819	734.91	722.22	1124.46
84.06	32.94	1001.16	642.86	.871	732.41	722.58	1017.13
100.00	44.26	1041.21	724.69	.911	745.68	725.07	924.90

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9009

PERCENT SPAN FROM TIP (I. F.)	BETA 4 (DEG)	V4 (FT/SEC)	V1/4 (FT/SEC)	M4	VM4 (FT/SEC)	V7/4 (FT/SEC)	J4 (FT/SEC)
0.00	-2.70	642.77	-30.28	.527	642.05	642.05	1465.47
11.20	-2.71	657.40	-31.04	.540	646.87	646.79	1414.96
30.14	-2.89	675.98	-34.03	.562	675.12	674.82	1320.45
49.61	-3.05	738.71	-39.35	.621	737.67	736.91	1247.62
67.36	-2.88	746.91	-37.53	.631	745.99	745.58	1153.46
84.09	-3.06	707.72	-37.76	.593	706.72	704.13	1070.86
100.00	-3.06	711.56	-37.99	.597	710.55	710.55	1017.53

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	PERCENT SPAN FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	SUCT SUR (DEG)	ANGLE (DEG)	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE POLYTROPIC EFF
0.00	0.00	0.00	46.12	7.105	3.183	.4552	.0222	19.480	1.719	1.2585
11.57	11.20	11.75	46.87	7.482	4.651	.4508	.0274	13.062	1.734	1.2585
30.76	30.14	31.20	46.20	6.684	1.394	.4260	.0214	10.313	1.759	1.2347
49.01	48.63	50.43	41.85	1.011	-1.972	.3948	.0267	8.935	1.838	1.2246
67.47	67.14	70.17	41.91	-5.27	-3.384	.3967	.0277	8.219	1.850	1.2146
84.06	84.09	83.45	46.05	.653	-2.236	.4753	.0537	4.473	1.792	1.2225
100.00	100.00	100.00	47.32	-3.371	-3.812	.4920	.0581	15.640	1.791	1.2224

MOMENTUM AVERAGE STAGE EFFICIENCY = .8028 (POLYTROPIC)
 MOMENTUM AVERAGE STAGE EFFICIENCY = .7881 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.7957
 MASS AVERAGE TEMPERATURE RISE = 1.2314

FINAL PAGE IS POOR QUALITY

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

100 PERCENT DESIGN SPEED - SCAN NO 7

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .0955

PERCENT SPAN FROM TIP (I. F.)	BETA 3 (DEG)	V3 (M/SEC)	V13 (M/SEC)	M3	VM3 (M/SEC)	VZ3 (M/SEC)	U3 (M/SEC)
0.00	47.42	262.41	166.63	.662	176.05	176.13	449.34
11.57	44.16	249.35	173.73	.643	174.87	174.57	431.56
30.74	41.32	247.07	169.72	.714	193.0A	193.0A	401.07
60.01	38.40	249.29	175.02	.746	217.6A	217.6A	372.05
67.67	39.03	248.35	181.59	.819	224.00	223.1A	342.73
88.04	42.99	305.21	204.13	.871	223.2A	220.2A	310.02
100.00	44.25	317.36	221.49	.911	227.2A	221.00	291.05

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .0909

PERCENT SPAN FROM TIP (I. F.)	BETA 4 (DEG)	V4 (M/SEC)	V14 (M/SEC)	M4	VM4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	-2.70	195.92	-9.23	.627	195.70	195.70	446.67
11.29	-1.71	200.44	-9.46	.540	207.21	200.19	411.24
30.14	-2.49	205.04	-17.37	.662	205.7A	205.6A	403.52
48.63	-3.05	225.16	-11.99	.621	225.4A	224.61	380.27
67.34	-2.44	227.66	-11.44	.631	227.3A	221.25	374.74
88.00	-3.06	215.71	-11.51	.593	215.41	214.52	326.40
100.00	-3.06	216.44	-11.54	.597	214.5A	214.5A	310.14

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	TRAILING EDGE	MASS FLOW (PCT)	DELTA HETA (DEG)	INCIDENCE ANGLE (DEG)	MEAN SUCTION (DEG)	INCIDENCE ANGLE (DEG)	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE PRESS RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	46.12	7.105	3.143	.6542	.0222	14.600	1.710	1.2585	.8818
11.57	11.24	11.75	46.87	7.942	4.051	.4508	.0476	13.462	1.734	1.2585	.8391
30.74	30.14	31.20	44.20	4.649	1.399	.6260	.0214	10.313	1.750	1.2747	.8484
48.01	48.63	50.63	41.46	1.011	-1.977	.7948	.0453	8.935	1.838	1.2266	.8035
67.67	67.34	70.17	41.91	-2.527	-3.744	.3967	.0277	8.219	1.850	1.2146	.7371
88.04	88.09	89.35	46.05	.653	-2.236	.4753	.0333	4.473	1.792	1.2225	.6774
100.00	100.00	100.00	47.32	-2.371	-3.112	.4920	.0417	15.640	1.791	1.2224	.7217

MOENTUM AVERAGE STAGE EFFICIENCY = .8020 (POLYTROPIC)
MASS AVERAGE STAGE EFFICIENCY = .7851 (ADIABATIC)
MOENTUM AVG. STAGE PRESS RATIO = 1.7457
MASS AVERAGE TEMPERATURE RISE = 1.2314

NASA SMALL AXIAL COMPRESSOR TEST 4 JUNE 28, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT FLIGHT FLOW = 3.2032 LHM/SEC 100 PERCENT DESIGN SPEED = SCARI NO R
 PERCENT DESIGN EQUIVALENT FLOW = 87.6575 EQUIVALENT FLOW / INLET ANN AREA = 76633.69A R.P.M.
 35.37AA LBM/SEC-SU FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9984

PERCENT SPAN FROM TIP (L.F.)	HETA*1 (DEG)	V*1 (FT/SEC)	VU*1 (FT/SEC)	BETA1 (DEG)	V1 (FT/SEC)	VU1 (FT/SEC)	M1	V*41 (FT/SEC)	V71 (FT/SEC)	U1 (FT/SEC)
0.00	73.00	1651.56	1579.40	0.00	482.85	0.00	.441	482.85	467.70	1579.40
9.33	71.44	1585.59	1506.61	0.00	494.15	0.00	.452	494.15	477.97	1506.61
25.10	68.84	1483.05	1383.55	0.00	536.07	0.00	.490	536.07	464.25	1383.55
41.40	66.48	1369.40	1255.47	0.00	546.55	0.00	.502	546.55	454.74	1255.47
60.61	64.44	1226.58	1106.51	0.00	529.27	0.00	.485	529.27	449.09	1106.51
84.47	61.97	1045.51	920.30	0.00	497.11	0.00	.444	497.11	444.65	920.30
100.00	59.20	930.13	799.13	0.00	476.41	0.00	.435	476.41	440.22	799.13

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8025

PERCENT SPAN FROM TIP (L.F.)	HETA*2 (DEG)	V*2 (FT/SEC)	VU*2 (FT/SEC)	HETA2 (DEG)	V2 (FT/SEC)	VU2 (FT/SEC)	M2	V*42 (FT/SEC)	V72 (FT/SEC)	U2 (FT/SEC)
0.00	60.04	1132.17	986.95	43.74	764.96	532.07	.639	555.14	537.28	1514.01
11.00	56.81	1065.05	891.74	43.73	806.90	557.74	.673	582.97	570.23	1449.08
31.25	51.06	948.88	783.49	41.61	828.68	550.27	.700	619.68	615.74	1333.77
48.68	43.28	845.24	647.96	40.02	894.62	577.84	.769	688.29	688.16	1225.40
67.72	35.42	731.25	515.99	39.66	942.41	601.53	.815	725.64	727.32	1117.53
88.03	27.40	773.94	294.98	44.46	1002.41	702.14	.871	715.52	703.70	977.12
100.00	13.39	734.08	170.41	46.54	1041.14	755.78	.910	716.00	691.75	926.19

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP FROM LEADING EDGE	DELTA (DEG)	INCIDENCE MEAN (DEG)	ANGL SUR (DEG)	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	POLYTROPIC EFF
0.00	0.00	4.104	8.646	.4371	.0535	3.651	1.735	.6470
9.33	11.40	9.872	8.585	.4558	.0571	1.914	1.752	.6467
25.10	31.25	9.766	7.725	.4647	.0418	1.764	1.794	.7791
41.40	49.46	9.603	6.812	.4373	.0267	1.407	1.490	.8880
60.61	67.72	10.006	6.114	.4072	.0135	5.015	1.917	.9513
84.47	88.03	10.319	5.249	.4152	.0281	12.097	1.924	.9147
100.00	100.00	10.446	4.372	.3783	.0330	20.434	1.924	.9147

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8356 (POLYTROPIC) MOMENTUM AVG. ROTOR PRESS RATIO = 1.8449
 MEDIUM AVERAGE ROTOR EFFICIENCY = .8209 (ADIABATIC) MASS AVERAGE TEMPERATURE RISE = 1.2325

NASA SMALL AXIAL COMPRESSOR TEST 4 JUNE 28, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIVALENT WEIGHT FLOW = 1.4530 KG/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 87.4575
 100 PERCENT DESIGN SPEED = SCAN NO A
 EQUIVALENT SPEED
 EQUIVALENT FLOW / INLET ANN AREA = 7.6633*4.9A R.P.4.
 = 172.7366 KG/SEC*50 M

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9984

PERCENT SPAN FROM TIP (L. F.)	HETA*1 (DEG)	VE1 (M/SEC)	VU*1 (M/SEC)	M*1	RETA1 (DEG)	V1 (M/SEC)	VU1 (M/SEC)	M1	V41 (M/SEC)	V71 (M/SEC)	U1 (M/SEC)
0.00	73.00	503.39	441.40	1.508	0.00	147.17	0.00	.441	167.17	147.43	491.40
9.17	71.84	443.29	454.22	1.449	0.00	150.62	0.00	.452	150.62	145.69	459.22
25.10	68.89	452.03	421.71	1.360	0.00	162.78	0.00	.490	162.78	150.79	421.71
41.49	66.44	417.41	382.73	1.258	0.00	166.59	0.00	.502	166.59	144.05	382.73
50.61	64.44	373.86	337.27	1.125	0.00	161.32	0.00	.485	161.32	141.27	337.27
64.47	61.67	314.87	280.51	.956	0.00	151.21	0.00	.454	151.21	140.19	280.51
100.00	59.20	243.57	243.57	.649	0.00	145.21	0.00	.435	145.21	140.27	243.57

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8025

PERCENT SPAN FROM TIP (L. F.)	HETA*2 (DEG)	VE*2 (M/SEC)	VU*2 (M/SEC)	M*2	RETA*2 (DEG)	V*2 (M/SEC)	VU*2 (M/SEC)	M*2	V4*2 (M/SEC)	V7*2 (M/SEC)	U*2 (M/SEC)
0.00	60.64	345.15	300.82	.940	43.74	236.39	162.17	.639	169.21	153.76	493.00
11.00	54.81	324.69	271.68	.888	43.74	245.91	170.00	.673	177.60	173.01	491.68
31.25	51.66	304.66	238.41	.844	41.61	252.50	167.72	.700	188.85	187.68	406.53
49.46	47.24	248.11	197.50	.808	40.02	273.90	176.13	.769	209.74	209.75	373.62
67.72	35.42	271.35	157.27	.770	39.66	287.25	143.35	.815	221.12	220.47	340.42
88.13	22.40	235.90	117.91	.673	44.66	305.56	214.01	.871	218.07	216.51	303.42
100.00	17.39	224.36	51.94	.643	46.54	317.34	230.36	.910	218.24	210.46	292.30

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (L. F.)	MASS FLOW (PCF)	DELTA HETA* (DEG)	MEAN INCIDENCE ANGLE (DEG)	SUCT SUR (DEG)	DELTA ANGLE (DEG)	OMEGA GAP (RPM)	LOSS PARAMETER	DEVIATION ANGLE (DEG)	WATER PRESS RATIO	ROTOR ADIABATIC EFF	POLYTROPIC EFF
0.00	0.00	12.36	9.104	4.414	.871	.2870	.0535	3.451	1.735	.6570	.6023
9.17	11.61	15.03	9.872	4.445	.858	.2814	.0571	1.914	1.752	.6604	.6047
25.10	30.94	17.23	4.766	7.725	.867	.2026	.0418	1.763	1.796	.6731	.6009
41.49	50.15	23.20	4.003	6.412	.873	.1209	.0267	1.407	1.890	.6775	.6000
60.61	67.34	29.01	10.004	4.149	.8072	.0404	.0135	5.015	1.917	.6666	.6513
84.47	47.87	39.27	10.319	5.299	.8152	.1300	.0281	12.897	1.924	.6147	.6222
100.00	100.00	45.81	10.446	4.372	.8783	.1592	.0330	20.438	1.924	.6147	.6222

MOMENTUM AVERAGE ROTOR EFFICIENCY = .6356 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .6209 (ADIABATIC)
 MOMENTUM AVG. ROTOR PRESS RATIO = 1.8649
 MASS AVERAGE TEMPERATURE RISE = 1.2375

NASA SMALL AXIAL COMPRESSOR TEST 4 JUN 24, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

100 PERCENT DESIGN SPEED - SCAN NO 8

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9019

PERCENT SPAN FROM TIP (I. F.)	BETA J (DEG)	V3 (FT/SEC)	V113 (FT/SEC)	M3	VM3 (FT/SEC)	V173 (FT/SEC)	J3 (FT/SEC)
0.00	44.21	785.71	547.86	.654	563.19	557.01	1475.21
11.60	45.02	807.68	571.27	.674	570.46	570.02	1414.77
30.76	43.24	845.84	544.14	.716	635.55	635.54	1314.98
44.71	39.27	916.08	579.40	.785	709.17	708.65	1221.45
67.07	34.02	947.24	597.11	.820	735.34	732.65	1125.91
87.74	41.86	992.45	647.70	.861	715.56	705.95	1018.04
100.00	45.14	1034.47	733.24	.903	729.71	709.55	956.27

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9032

PERCENT SPAN FROM TIP (I. F.)	BETA 4 (DEG)	V4 (FT/SEC)	V114 (FT/SEC)	M4	VM4 (FT/SEC)	V174 (FT/SEC)	J4 (FT/SEC)
0.00	-7.23	631.24	-34.57	.117	630.28	630.28	1464.51
11.27	-3.20	644.36	-36.00	.124	643.36	643.24	1414.04
30.10	-2.53	669.86	-29.57	.157	664.21	664.91	1324.35
44.65	-2.53	732.74	-12.55	.185	732.07	731.32	1246.75
67.16	-2.53	745.42	-32.40	.179	744.70	744.20	1162.97
84.10	-2.53	706.72	-31.20	.192	706.03	707.44	1070.13
100.00	-2.53	710.97	-31.38	.196	710.27	710.27	1016.87

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE ANGLE (DEG)	MEAN SUEY SUR (DEG)	DELTA FACTOR	DELTA RAB	DELTA RAB	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE PRESS RATIO	STATOR POLYTROPIC EFF
0.00	0.00	47.44	7.891	3.469	.4561	.0577	.0208	.0208	18.950	1.710	1.2589	.8412
11.27	11.61	44.22	4.832	5.502	.4628	.0644	.0271	.0271	13.366	1.723	1.2589	.8501
30.76	30.14	43.82	4.663	1.373	.4316	.0798	.0262	.0262	10.664	1.755	1.2551	.8221
44.71	44.65	41.41	1.508	-1.440	.4009	.0922	.0243	.0243	9.657	1.832	1.2269	.7338
67.07	67.46	41.61	-4.227	-1.296	.3483	.0970	.0278	.0278	8.569	1.850	1.2154	.7984
87.74	84.10	46.39	1.594	-1.313	.4714	.1780	.0471	.0471	9.001	1.792	1.2263	.7134
100.00	100.00	47.47	.506	-2.935	.4491	.1662	.0420	.0420	16.170	1.792	1.2242	.7553

MOMENTUM AVERAGE STAGE EFFICIENCY = .7459 (POLYTROPIC)
 MOMENTUM AVERAGE STAGE EFFICIENCY = .7786 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.7921
 MASS AVERAGE TEMPERATURE RISE = 1.2325

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

100 PERCENT DESIGN SPEED - SCAN NO 8

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9019

PERCENT SPAN FROM TIP (L. F.)	BETA 3 (DEG)	V3 (M/SEC)	VIII (M/SEC)	M3	VM3 (M/SEC)	V73 (M/SEC)	U3 (M/SEC)
0.00	44.21	239.48	166.99	.654	171.66	159.78	449.64
11.60	45.02	246.18	174.12	.674	174.03	173.74	431.22
30.75	41.29	247.81	170.12	.716	193.72	197.71	400.41
48.71	37.27	272.22	175.75	.785	216.16	216.00	372.30
67.07	38.04	288.72	182.00	.820	224.13	223.31	343.15
87.74	43.84	302.50	209.61	.861	218.10	215.17	310.30
100.00	45.14	315.31	223.49	.903	222.42	216.27	290.86

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9032

PERCENT SPAN FROM TIP (L. F.)	BETA 4 (DEG)	V4 (M/SEC)	VIII (M/SEC)	M4	VM4 (M/SEC)	V74 (M/SEC)	U4 (M/SEC)
0.00	-3.27	192.62	-10.84	.517	192.11	192.11	445.38
11.27	-3.20	196.40	-10.97	.529	196.10	196.07	431.00
30.10	-2.53	204.17	-9.01	.547	203.97	203.84	405.19
48.65	-2.53	223.35	-9.86	.615	223.14	222.91	380.01
67.4	-2.53	227.21	-10.07	.629	226.94	226.84	356.47
88.10	-2.53	215.41	-9.51	.592	215.20	214.41	326.19
100.00	-2.53	216.70	-9.57	.596	216.49	216.49	309.94

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	TRAILING EDGE	MASS FLOW (PCT)	DELTA (DEG)	INCIDENCE MEAN (DEG)	SUCT SUR (DEG)	ANGLE (DEG)	DEVIATION ANGLE (DEG)	LOSS PARAFETER	OMEGA BAR	FACTOR	D	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	47.44	7.891	3.969	.4651	14.950	.0208	.0577	.4651	14.950	1.710	1.2849	.8412
11.60	11.27	11.71	48.22	8.832	5.502	.4628	13.366	.0223	.0644	.4628	13.366	1.723	1.2589	.8501
30.75	30.10	10.94	43.82	4.663	1.373	.4336	10.664	.0262	.0794	.4336	10.664	1.744	1.2351	.8221
48.71	48.65	50.17	41.80	1.504	-1.480	.4009	9.447	.0222	.0922	.4009	9.447	1.812	1.2269	.7934
67.07	67.16	69.94	41.61	-1.427	-3.296	.3983	8.569	.0278	.0970	.3983	8.569	1.850	1.2146	.7884
87.74	88.10	89.87	46.39	1.594	-1.313	.4714	9.001	.0471	.1780	.4714	9.001	1.792	1.2263	.7136
100.00	100.00	100.00	47.67	.506	-2.935	.4891	16.170	.0420	.1652	.4891	16.170	1.792	1.2282	.7553

MOMENTUM AVERAGE STAGE EFFICIENCY = .7959 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7786 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.7921
MASS AVERAGE TEMPERATURE RISE = 1.2325

ORIGINAL PAGE IS
OF POOR QUALITY

NASA SMALL AXIAL COMPRESSOR TEST 4 JUNE 28, 1974 (COMBINED TEST P.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT WEIGHT FLOW = 3.2026 LRM/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 87.4308
 100 PERCENT DESIGN SPEED = SCAN NO 9
 EQUIVALENT SPEED
 EQUIVALENT FLOW / INLET ANN AREA = 76634.777 R.P.M.
 35.3717 LRM/SEC-50 FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0037

PERCENT SPAN FROM TIP (L. F.)	HETA*1 (INLU)	V*1 (FT/SEC)	VU*1 (FT/SEC)	BETA1 (DEG)	V1 (FT/SEC)	VU1 (FT/SEC)	M1	VM	V71 (FT/SEC)	U1 (FT/SEC)
0.00	73.00	1621.55	1579.63	0.00	482.75	0.00	.441	482.75	467.21	1579.63
9.33	71.04	1585.54	1506.59	0.00	476.06	0.00	.452	494.04	477.89	1506.59
25.04	68.90	1483.18	1383.76	0.00	533.88	0.00	.490	533.88	524.07	1383.76
41.87	66.49	1362.52	1255.82	0.00	546.35	0.00	.502	546.35	546.59	1255.82
60.65	64.44	1226.20	1106.21	0.00	529.64	0.00	.485	529.64	528.86	1106.21
84.51	61.67	1044.14	920.00	0.00	495.92	0.00	.453	495.92	489.26	920.00
100.00	59.21	930.27	799.14	0.00	476.21	0.00	.435	476.21	468.03	799.14

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .7980

PERCENT SPAN FROM TIP (L. F.)	HETA*2 (INLU)	V*2 (FT/SEC)	VU*2 (FT/SEC)	BETA2 (DEG)	V2 (FT/SEC)	VU2 (FT/SEC)	M2	VM2 (FT/SEC)	V72 (FT/SEC)	U2 (FT/SEC)
0.00	60.05	1133.53	987.99	43.70	768.33	531.05	.638	555.87	537.78	1519.04
11.06	56.81	1064.69	891.08	43.67	806.41	556.83	.673	589.31	570.56	1448.71
31.24	51.29	1003.14	787.73	41.24	836.92	550.87	.706	627.40	623.49	1333.60
49.33	43.19	955.74	656.63	34.14	898.45	569.97	.769	694.51	694.47	1228.01
67.54	35.45	892.80	517.80	29.45	943.22	600.58	.816	727.30	725.16	1118.38
87.08	22.53	772.76	296.09	44.50	1000.71	701.39	.869	713.78	702.06	917.47
100.00	13.46	734.52	170.97	46.59	1033.55	755.24	.909	714.35	698.07	826.20

ROTOR PERFORMANCE DATA

PERCENT LEADING EDGE	SPAN FROM TRAILING EDGE	MASS FLOW (PCT)	DELTA HETA*0 (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCTION (DEG)	FA - OR (DEG)	OMEGA*0 BAR	LOSS PARAMETER	DEVIATION ANGLE (NEG)	MOTOR LOSS RATIO	ROTOR ADIABATIC EFF	POLYTROPIC EFF
0.00	0.00	0.00	12.36	9.167	8.679	4.361	.2861	.0534	3.655	1.734	.6576	.6828
9.33	11.86	11.62	15.03	9.876	8.508	4.551	.2870	.0570	1.929	1.751	.6705	.6952
25.04	31.24	30.92	17.62	9.771	7.732	4.470	.1973	.1411	1.400	1.805	.7794	.7968
41.47	49.33	50.13	23.09	9.611	6.821	4.280	.1073	.0237	1.464	1.892	.8905	.8999
60.65	67.58	69.98	28.99	10.012	6.196	4.048	.0572	.0127	4.931	1.319	.9498	.9542
84.51	87.98	89.90	39.14	10.325	5.304	4.169	.1321	.0285	12.442	1.921	.9133	.9210
100.00	100.00	100.00	45.75	10.457	4.382	3.798	.1616	.0334	20.511	1.521	.9134	.9209

MOMENTUM AVERAGE ROTOR EFFICIENCY = .6395 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8252 (ADIABATIC)
 MOMENTUM AVG. ROTOR PRESS RATIO = 1.8471
 MASS AVERAGE TEMPERATURE RISE = 1.2318

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIVALENT WEIGHT FLOW = 1.4527 KG/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 87.4308
 100 PERCENT DESIGN SPEED = SCAN NO 9
 EQUIVALENT SPEED = 76634.777 R.P.M.
 EQUIVALENT FLOW / INLET ANN AREA = 177.6995 KG/SEC-SQ M

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0037

PERCENT SPAN FROM TIP (L. E.)	HETA01 (DEG)	W01 (M/SEC)	M*1	BETA1 (DEG)	V1 (M/SEC)	W11 (M/SEC)	M1	V41 (M/SEC)	W71 (M/SEC)	J1 (M/SEC)
0.00	73.00	503.39	1.508	0.00	147.14	0.00	.441	147.14	142.40	481.41
0.33	71.84	483.27	1.469	0.00	150.59	0.00	.452	150.59	145.66	459.21
25.00	69.90	442.07	1.360	0.00	162.73	0.00	.490	162.73	145.74	421.77
41.67	65.49	417.43	1.258	0.00	166.53	0.00	.502	166.53	145.99	392.77
60.65	64.44	373.75	1.124	0.00	161.25	0.00	.485	161.25	141.20	337.17
84.51	61.67	314.56	0.946	0.00	151.16	0.00	.453	151.16	140.13	280.41
100.00	59.21	243.55	0.849	0.00	145.15	0.00	.435	145.15	140.22	243.58

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .7980

PERCENT SPAN FROM TIP (L. E.)	HETA02 (DEG)	W02 (M/SEC)	M*2	BETA2 (DEG)	V2 (M/SEC)	W12 (M/SEC)	M2	V42 (M/SEC)	W72 (M/SEC)	J2 (M/SEC)
0.00	60.65	345.50	0.942	43.70	234.28	161.86	.638	169.37	143.91	663.00
11.94	56.81	326.12	0.899	43.67	245.80	169.72	.673	177.79	173.91	641.57
31.20	51.29	305.74	0.848	41.28	254.66	167.91	.706	191.23	190.04	605.69
49.34	43.33	291.32	0.819	39.38	273.05	173.73	.769	211.60	211.60	473.87
67.58	35.45	272.12	0.772	39.55	287.49	183.06	.816	221.60	221.03	340.88
87.98	22.53	235.54	0.671	44.50	305.02	213.78	.869	217.54	213.99	304.03
100.00	13.36	223.88	0.642	46.59	316.85	230.20	.909	217.74	210.33	282.31

ROTOR PERFORMANCE DATA

PERCENT LEADING EDGE	SPAN FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA HETA0 (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	FACTOP	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	WOTOR PREFSS RATIO	WOTOR ANTIADAPTIC EFF	WOTOR POLYTROPIC EFF
0.00	0.00	0.00	12.34	9.167	8.699	.4361	.2861	.0534	3.655	1.734	.6576	.6828
9.33	11.85	11.62	15.03	9.876	8.588	.4551	.2870	.0570	1.924	1.751	.6705	.6952
25.00	31.20	30.92	17.62	9.771	7.732	.4470	.1973	.0411	1.403	1.805	.7794	.7968
41.67	43.33	50.13	23.00	9.611	6.821	.4280	.1073	.0237	1.464	1.892	.8905	.9599
60.65	67.58	69.98	28.99	10.012	6.196	.4048	.0572	.0127	4.931	1.919	.9408	.9542
84.51	87.98	83.30	39.14	10.325	5.304	.4160	.1321	.0285	12.942	1.921	.9134	.9210
100.00	100.00	100.00	45.75	10.457	4.382	.3788	.1616	.0334	20.511	1.921	.9134	.9209

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8395 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8052 (ADIABATIC)
 MOMENTUM AVG. ROTOR PREFSS RATIO = 1.8471
 MASS AVERAGE TEMPERATURE RISE = 1.2318

NASA SMALL AXIAL COMPRESSOR TEST 4 JUNE 28, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

100 PERCENT DESIGN SPEED - SCAN NO 9

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8991

PERCENT SPAN FROM TIP (L. F.)	BETA 3 (DEG)	V3 (FT/SEC)	VU3 (FT/SEC)	M3	VM3 (FT/SEC)	U23 (FT/SEC)	U3 (FT/SEC)
0.00	44.25	783.68	566.82	.652	561.38	555.22	1475.24
11.68	45.07	805.61	570.34	.672	569.00	548.05	1414.41
30.80	41.07	850.50	558.77	.720	641.19	641.19	1314.76
48.80	38.73	914.46	572.10	.785	713.39	712.87	1222.04
66.05	39.05	946.54	594.26	.819	735.13	732.45	1126.47
87.70	43.98	989.29	687.01	.858	711.83	702.28	1018.34
100.00	45.26	1031.57	732.72	.901	726.12	706.06	954.29

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9040

PERCENT SPAN FROM TIP (L. F.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	U24 (FT/SEC)	U4 (FT/SEC)
0.00	.47	630.04	5.17	.516	630.02	630.02	1404.54
11.28	.47	642.58	5.27	.527	642.56	642.44	1414.05
30.19	.46	666.40	5.35	.553	666.37	666.08	1329.39
48.67	.12	732.29	1.55	.615	732.28	731.53	1246.65
67.37	.30	744.42	3.90	.628	744.61	746.00	1162.95
88.11	.82	703.90	10.04	.590	703.83	701.25	1070.10
100.00	.93	708.08	10.26	.593	708.00	708.00	1016.88

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	MASS FLOW (LBS)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA HAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STATOR POLYTROPIC EFF
0.00	0.00	43.78	7.929	4.007	.4471	.0503	.0210	22.650	1.2884	.8593
11.68	11.62	44.60	6.883	5.555	.4454	.0659	.0229	17.037	1.2584	.8467
30.80	30.92	40.61	4.442	1.153	.4275	.1023	.0336	13.654	1.251	.7793
48.80	53.14	38.61	.972	-2.018	.3865	.0936	.0287	12.106	1.2260	.7901
66.05	67.97	38.75	-4.43	-3.315	.3876	.1022	.0293	11.399	1.1850	.7878
87.70	89.90	43.17	1.727	-1.183	.4613	.1795	.0475	12.348	1.2241	.7110
100.00	100.00	44.43	.627	-2.814	.4801	.1674	.0423	19.530	1.2241	.7536

MOMENTUM AVERAGE STAGE EFFICIENCY = .7971 (POLYTROPIC)

MOMENTUM AVERAGE STAGE EFFICIENCY = .7799 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.7908

MASS AVERAGE TEMPERATURE RISE = 1.2318

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

100 PERCENT DESIGN SPEED - SCAN NO 9

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8961

PERCENT SPAN FROM TIP (L. F.)	BETA 3 (DEG)	V3 (M/SEC)	VIII3 (M/SEC)	W3	VM3 (M/SEC)	V73 (M/SEC)	U3 (M/SEC)
0.00	44.25	218.87	166.67	.652	171.11	169.23	449.65
11.68	45.07	245.56	173.84	.672	173.43	173.14	431.11
30.00	41.07	250.23	170.31	.720	195.44	195.63	400.74
48.60	34.73	278.73	174.31	.785	217.44	217.28	372.48
66.95	39.05	288.51	181.74	.819	226.07	223.25	343.35
87.70	43.98	301.54	209.40	.858	216.97	214.05	310.39
100.00	45.26	314.62	223.35	.901	221.32	215.21	280.87

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9040

PERCENT SPAN FROM TIP (L. F.)	BETA 4 (DEG)	V4 (M/SEC)	VIII4 (M/SEC)	W4	VM4 (M/SEC)	V74 (M/SEC)	U4 (M/SEC)
0.00	.47	192.04	1.58	.516	192.03	192.03	446.39
11.28	.47	195.86	1.61	.527	195.85	195.83	431.00
30.10	.46	203.12	1.63	.553	203.11	203.02	402.20
48.67	.12	223.20	.47	.615	223.20	223.07	373.98
67.37	.30	226.90	1.19	.628	226.90	226.77	354.47
88.11	.82	214.55	3.05	.590	214.53	213.74	325.17
100.00	.83	215.82	3.13	.593	215.80	215.80	309.45

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP FROM TIP (L. F.)	LEADING EDGE	TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	SUCI SUR (DEG)	ANGLE (DEG)	n FACTOR	OMEGA HAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE T, MP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	0.00	43.78	7.929	4.007	4.471	.0533	.0210	.0210	22.650	1.709	1.2584	.8593
11.68	11.68	11.68	11.62	44.60	8.883	5.555	4.654	.0659	.0229	.0229	17.037	1.721	1.2584	.8657
30.00	30.00	30.10	30.92	40.61	4.442	1.153	4.275	.1023	.0336	.0336	13.654	1.751	1.2584	.7793
48.60	48.60	48.67	50.13	38.61	-972	-2.018	3.865	.0916	.0287	.0287	12.106	1.833	1.2240	.7201
66.95	66.95	67.37	68.98	38.75	-443	-3.315	3.876	.1022	.0293	.0293	11.399	1.850	1.2152	.7878
87.70	87.70	88.11	88.98	33.17	1.727	-1.183	4.613	.1795	.0475	.0475	12.368	1.790	1.2241	.7110
100.00	100.00	100.00	100.00	44.43	.627	-2.814	4.801	.1674	.0423	.0423	19.530	1.790	1.2241	.8536

MOMENTUM AVERAGE STAGE EFFICIENCY = .7971 (POLYTROPIC) MOMENTUM AVG. STAGE PRESS RATIO = 1.7908
 MOMENTUM AVERAGE STAGE EFFICIENCY = .7799 (ADIABATIC) MASS AVERAGE TEMPERATURE RISE = 1.2318

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 11
 EQUIVALENT SPEED = 3.0936 LHM/SEC
 EQUIVALENT FLOW = 84.6638
 90 PERCENT DESIGN SPEED - SCAN NO 11
 EQUIVALENT SPEED = 69090.732 R.P.M.
 EQUIVALENT FLOW / INLET ANN AREA = 36.1678 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9942

PERCENT SPAN FROM TIP (L. F.)	BETA*1 (DEG)	V*1 (FT/SEC)	VU*1 (FT/SEC)	VI (FT/SEC)	VU1 (FT/SEC)	M1	M2	M3	V71 (FT/SEC)	V72 (FT/SEC)	J1
0.00	72.14	1496.01	1423.94	1.364	459.73	0.00	.419	.419	459.73	443.96	1423.94
10.04	70.06	1437.71	1353.34	1.307	470.24	0.00	.429	.429	470.24	454.45	1353.34
26.79	67.56	1336.71	1215.46	1.224	510.31	0.00	.457	.457	510.31	500.94	1232.46
43.42	64.96	1234.55	1134.52	1.131	522.52	0.00	.479	.479	522.52	520.84	1114.52
61.84	62.06	1111.32	988.97	1.017	506.93	0.00	.464	.464	506.93	506.76	988.97
84.45	60.09	954.21	827.08	.871	475.87	0.00	.434	.434	475.87	449.48	927.08
100.00	57.61	853.21	720.47	.778	457.03	0.00	.417	.417	457.03	441.50	720.47

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .7863

PERCENT SPAN FROM TIP (L. F.)	BETA*2 (DEG)	V*2 (FT/SEC)	VU*2 (FT/SEC)	V2 (FT/SEC)	VU2 (FT/SEC)	M2	M3	M4	V77 (FT/SEC)	V78 (FT/SEC)	U2
0.00	57.51	1124.10	937.51	.961	755.85	0.00	.457	.457	755.85	620.23	1369.50
11.67	53.10	1004.57	854.50	.917	784.20	0.00	.479	.479	784.20	641.62	1307.11
31.17	49.31	928.57	757.11	.864	789.09	0.00	.499	.499	789.09	651.10	1202.90
49.59	46.17	837.00	656.64	.818	807.30	0.00	.504	.504	807.30	670.38	1104.43
64.24	43.70	755.02	590.96	.780	859.03	0.00	.553	.553	859.03	692.29	1096.75
84.52	41.12	700.55	539.68	.740	932.82	0.00	.584	.584	932.82	711.29	996.40
100.00	38.76	654.16	500.88	.699	941.13	0.00	.593	.593	941.13	701.13	935.03

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	DELTA (DEG)	INCIDENCE ANGLE (DEG)	SUCT SUR (DEG)	FACTOR	OMEGA* (RPM)	LOSS PARAMETER (DEG)	AVIATION ANGLE (DEG)	KATOR LOSS RATIO	ROTOR POLYTROPIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	8.306	7.838	.3586	.1968	.0413	-.474	1.579	.7366	.7511
10.04	11.67	9.017	7.686	.3687	.2004	.0436	-1.827	1.598	.7440	.7600
26.79	31.17	8.715	6.567	.3637	.1104	.0239	-.614	1.624	.6430	.6720
43.42	43.42	8.344	5.449	.3510	.0302	.0066	2.514	1.650	.6648	.6872
61.84	61.84	8.560	4.700	.3535	.0084	.0019	5.709	1.690	.6918	.6924
84.45	60.09	8.778	3.746	.3154	-.0207	-.0045	14.294	1.739	1.0150	1.0139
100.00	100.00	8.858	2.784	.2702	-.0244	-.0050	22.815	1.740	1.0150	1.0139

MOMENTUM AVERAGE ROTOR EFFICIENCY = .9021 (POLYTROPIC);

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8950 (ADIABATIC)

MOMENTUM AVG. ROTOR PRESS RATIO = 1.6478

MASS AVERAGE TEMPERATURE RISE = 1.1710

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIVALENT FLIGHT FLOW = 1.4072 KG/SFC
 PERCENT DESIGN EQUIVALENT FLOW = 84.4638
 90 PERCENT DESIGN SPEED - SCAN NO 11
 EQUIVALENT SPEED
 EQUIVALENT FLOW / INLET ANN AREA = 69090.722 R.P.M.
 166.8217 KG/SEC-SQ M

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9942

PERCENT SPAN FROM TIP (L. F.)	HETA#1 (DEG)	V#1 (M/SEC)	V#1 (M/SEC)	BETA1 (DEG)	V1 (M/SEC)	M1	V#1 (M/SEC)	V#1 (M/SEC)	U1
0.00	72.14	455.98	434.02	0.00	139.02	0.00	0.00	139.02	434.02
1.04	70.34	436.60	412.50	0.00	143.33	0.00	0.00	143.33	412.50
2.07	67.56	407.43	376.57	0.00	154.54	0.00	0.00	154.54	376.57
4.14	64.96	376.29	340.42	0.00	159.26	0.00	0.00	159.26	340.42
6.18	62.46	341.73	301.44	0.00	154.51	0.00	0.00	154.51	301.44
8.24	60.09	290.84	252.09	0.00	145.05	0.00	0.00	145.05	252.09
100.00	57.61	240.06	219.60	0.00	139.30	0.00	0.00	139.30	219.60

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .7863

PERCENT SPAN FROM TIP (T. F.)	HETA#2 (DEG)	V#2 (M/SEC)	V#2 (M/SEC)	HETA2 (DEG)	V2 (M/SEC)	M2	V#2 (M/SEC)	V#2 (M/SEC)	U2
0.00	54.51	342.63	285.75	34.06	230.38	0.64	131.67	149.05	417.42
1.04	53.10	325.70	260.45	35.20	232.33	0.64	137.96	195.57	374.41
2.07	49.31	304.37	230.77	36.40	240.51	0.63	135.88	194.44	365.64
4.14	44.59	285.60	199.53	33.86	246.06	0.64	137.10	204.32	330.63
6.18	44.70	240.61	152.08	36.07	261.83	0.75	154.17	211.63	305.25
8.24	23.12	240.35	94.39	38.97	284.32	0.82	174.83	221.04	271.22
100.00	15.76	222.87	62.45	40.97	292.97	0.83	192.07	221.22	254.52

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	MASS FLOW (PCT)	DELTA HETA# (DEG)	INCIDENCE MEAN ANGLE (DEG)	SUCT SUR ANGLE (DEG)	INCIDENCE ANGLE (DEG)	OMEGA HAW (RPM)	FACTOR	LOSS PARAMETER (MFG)	DEVIATION ANGLE (DEG)	HOTOR PRESS RATIO	ROTOR ANTIADABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	15.63	4.306	7.838	7.838	1960	0.3586	0.0413	-1.474	1.579	0.7464	0.7511
10.04	12.39	17.74	4.017	7.686	7.686	2004	0.3637	0.0436	-1.427	1.588	0.7440	0.7600
26.79	32.75	18.25	4.715	6.567	6.567	1104	0.1637	0.0239	-0.614	1.424	0.8130	0.8720
43.42	52.02	20.64	4.344	5.449	5.449	0.502	0.0502	0.0066	2.514	1.650	0.8448	0.9472
61.83	70.92	27.14	4.560	4.760	4.760	0.094	0.0094	0.0019	5.709	1.690	0.9918	0.9924
84.85	90.05	36.94	4.778	3.746	3.746	-0.207	-0.0207	-0.0045	14.298	1.739	1.0150	1.0139
100.00	100.00	41.85	4.858	2.784	2.784	-0.244	-0.0244	-0.0050	27.815	1.740	1.0150	1.0139

MOMENTUM AVERAGE ROTOR EFFICIENCY = .9021 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8950 (ADIABATIC)
 MOMENTUM AVG. ROTOR PRESS RATIO = 1.6479
 MASS AVERAGE TEMPERATURE RISE = 1.1710

NASA SMALL AXIAL COMPRESSOR TEST 4 JUNE 28, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 11

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8740

PERCENT SPAN FROM TIP (L. F.)	BETA 3 (DEG)	V3 (FT/SEC)	VI,3 (FT/SEC)	M3	VM3 (FT/SEC)	VZ3 (FT/SEC)	U3 (FT/SEC)
0.00	34.61	742.04	444.42	.671	644.18	677.11	1330.01
11.40	35.43	791.77	463.47	.680	641.95	640.94	1276.49
30.53	31.66	815.40	451.40	.708	678.72	678.71	1186.63
44.70	32.68	835.37	451.08	.731	703.12	702.60	1101.30
57.41	34.98	874.82	501.44	.769	716.82	714.20	1013.40
88.05	37.94	933.42	573.86	.825	736.18	726.29	916.48
100.00	39.22	966.68	611.21	.858	748.92	728.23	860.35

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8986

PERCENT SPAN FROM TIP (L. F.)	BETA 4 (DEG)	V4 (FT/SEC)	VI,4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	-1.06	711.85	-38.00	.606	710.84	710.84	1320.36
11.37	-1.07	718.64	-38.44	.612	717.61	717.52	1274.64
30.43	-1.40	742.66	-44.04	.634	741.35	741.02	1197.55
44.70	-3.06	763.65	-40.76	.663	762.56	761.77	1123.80
67.30	-3.06	764.63	-40.82	.663	763.54	763.12	1044.43
88.18	-2.06	752.64	-40.18	.650	751.61	748.87	984.50
100.00	-1.06	758.38	-40.48	.655	757.30	757.30	916.78

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA HETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUPT SUR (DEG)	D FACTOR	OMEGA HAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	37.69	-1.64	-5.615	.3146	.0665	.0239	14.120	1.552	1.1445	.6772
11.40	11.37	12.33	38.89	-1.350	-3.688	.3122	.0688	.0239	13.680	1.559	1.1495	.6731
30.53	30.43	12.74	37.04	-2.958	-6.255	.2849	.0715	.0235	9.770	1.591	1.1718	.6536
44.70	44.70	12.03	35.74	-5.083	-8.071	.2629	.0621	.0190	8.923	1.614	1.1591	.6325
67.41	67.30	70.32	38.04	-4.573	-7.431	.2985	.1364	.0391	8.039	1.616	1.1428	.5311
88.05	88.18	90.05	41.00	-4.401	-7.291	.3602	.2321	.0613	8.472	1.594	1.1485	.6435
100.00	100.00	100.00	42.28	-5.413	-8.855	.3766	.2188	.0553	15.640	1.595	1.1484	.5476

MOMENTUM AVERAGE STAGE EFFICIENCY = .8630 (POLYTROPIC)

MOMENTUM AVERAGE STAGE EFFICIENCY = .8324 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.5947

MASS AVERAGE TEMPERATURE RISE = 1.1710

ORIGINAL PAGE IS OF POOR QUALITY

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (MFRIC UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 11

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8740

PERCENT SPAN FROM TIP (I. F.)	BETA 3 (DEG)	V3 (M/SEC)	VH3 (M/SEC)	M3	VM3	U3 (M/SEC)
0.00	34.53	270.61	135.54	.671	196.35	405.39
11.40	35.43	241.33	120.67	.680	195.67	349.07
30.53	37.66	244.53	122.27	.708	206.87	361.69
48.70	37.68	254.62	127.31	.731	214.31	335.68
67.41	34.99	246.65	123.33	.769	218.49	303.94
88.05	37.94	246.51	123.26	.825	224.39	279.34
100.00	39.22	244.64	122.32	.850	228.27	262.23

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8984

PERCENT SPAN FROM TIP (I. F.)	BETA 4 (DEG)	V4 (M/SEC)	VH4 (M/SEC)	M4	VM4	U4 (M/SEC)
0.00	-1.06	216.97	-11.54	.606	216.66	402.65
11.37	-1.07	219.04	-11.72	.612	218.73	388.47
30.43	-1.40	226.36	-13.62	.639	225.96	365.01
48.70	-1.06	232.76	-12.43	.663	232.43	342.53
67.39	-1.06	237.06	-12.44	.663	232.73	319.56
88.19	-1.06	229.42	-12.25	.650	229.09	293.98
100.00	-3.06	231.16	-12.34	.655	230.83	279.83

STATOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE FROM TIP	TRAILING EDGE	MASS FLOW (PCT)	DELTA HFTA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	DELTA FACTOR	DELTA OMEGA HAR	LOSS PARAMETER	DEVIATION AVG. F (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	37.60	-1.693	-5.415	.7146	.0655	.0239	14.120	1.552	1.1895	.6772
11.40	11.37	12.33	30.00	-2.350	-7.688	.7122	.0688	.0230	13.480	1.549	1.1895	.6731
30.53	30.43	12.75	37.06	-2.940	-4.255	.7069	.0715	.0235	9.770	1.571	1.1714	.6536
48.70	48.70	52.03	35.74	-4.043	-8.071	.7029	.0621	.0190	8.923	1.614	1.1501	.6225
67.41	67.39	70.42	34.04	-4.573	-7.431	.7045	.1366	.0391	4.034	1.614	1.1428	.5911
88.05	88.19	90.05	41.00	-4.401	-7.291	.7002	.1362	.0613	8.472	1.594	1.1405	.4435
100.00	100.00	100.00	42.28	-5.413	-8.855	.7066	.2188	.0553	15.640	1.595	1.1486	.5476

MOMENTUM AVERAGE STAGE EFFICIENCY = .8430 (POLYTROPIC)
 MOMENTUM AVERAGE STAGE EFFICIENCY = .8324 (ADIABATIC)
 MOMENTUM AVG. STAGE PRESS RATIO = 1.5947
 MASS AVERAGE TEMPERATURE RATIO = 1.1710

NASA SMALL AXIAL COMPRESSOR TEST 4 JUNE 28, 1974 (COMBINED TEMP.)

MOTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT HEIGHT FLOW = 3.0269 LHM/SEC
 EQUIVALENT FLOW = 82.6432
 ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)
 '0 PERCENT DESIGN SPEED = SCAN NO 12
 EQUIVALENT SPEED = 69052.710 R.P.M.
 EQUIVALENT FLOW / INLET ANN AREA = 33.6317 LB4/SEC-50 FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC HLOSSAGE = .9483

PERCENT SPAN FROM TIP (I. P.)	W1 (OLE)	VW1 (FT/SEC)	BETA1 (DEG)	V1 (FT/SEC)	VU1 (FT/SEC)	M1	VM1 (FT/SEC)	V7 (FT/SEC)	J1 (FT/SEC)
0.00	72.52	1492.05	1421.16	1.359	0.00	0.00	448.14	477.71	1423.16
9.87	71.77	1424.93	1354.23	1.303	0.00	0.00	459.09	444.06	1354.23
26.10	68.13	1335.09	1234.02	1.221	0.00	0.00	497.30	488.16	1234.02
42.53	65.82	1233.39	1123.44	1.121	0.00	0.00	509.04	507.40	1123.44
61.10	63.58	1109.65	993.60	1.014	0.00	0.00	494.04	497.87	993.60
84.18	60.77	950.94	829.87	.867	0.00	0.00	464.34	454.11	829.87
100.00	58.18	847.46	720.08	.772	0.00	0.00	446.84	431.67	720.08

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC HLOSSAGE = .7951

PERCENT SPAN FROM TIP (I. P.)	W2 (OLE)	VW2 (FT/SEC)	BETA2 (DEG)	V2 (FT/SEC)	VU2 (FT/SEC)	M2	VM2 (FT/SEC)	V77 (FT/SEC)	U2 (FT/SEC)
0.00	57.85	1090.67	923.67	.928	37.50	.627	445.24	461.63	1358.75
11.70	54.57	1010.49	819.68	.879	37.00	.647	460.50	484.31	1306.27
31.10	50.12	948.49	746.15	.836	36.30	.663	455.97	414.15	1202.12
49.67	46.03	910.32	641.82	.791	35.63	.690	462.65	465.57	1104.87
67.53	35.95	842.09	494.84	.738	36.03	.746	452.50	482.35	1005.87
84.18	23.99	754.11	306.59	.663	40.63	.798	491.10	481.97	997.69
100.00	16.05	717.56	194.18	.614	42.60	.829	436.18	464.16	934.57

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP (I. P.)	MASS FLOW (PCT)	DELTA HETA (DEG)	INCIDENCE ANGLE (DEG)	SUCT SUM (DEG)	OMEGA BAR	LOSS PARAMETER	NEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR POLYTROPIC EFF
0.00	0.00	14.67	4.684	4.216	.2134	.0432	.664	1.505	.7188
9.80	12.14	16.70	4.403	4.086	.2194	.0461	-.368	1.591	.7254
26.14	32.12	17.81	4.189	3.879	.1873	.0259	.406	1.624	.7504
42.53	49.47	20.79	4.203	4.050	.0421	.0091	2.072	1.662	.9519
61.10	70.16	27.61	4.183	4.344	-.0054	-.0013	5.707	1.711	1.0051
84.18	84.83	36.74	4.404	4.341	.0084	.0019	14.690	1.728	.9934
100.00	100.00	42.13	4.425	4.399	.0120	.0024	23.101	1.729	.9941

MOMENTUM AVERAGE MOTOR EFFICIENCY = .8934 (POLYTROPIC)
 MOMENTUM AVERAGE MOTOR EFFICIENCY = .8856 (ADIABATIC)

MOMENTUM AVG. ROTOR PRESS RATIO = 1.6369
 MASS AVERAGE TEMPERATURE RISE = 1.1745

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIVALENT FLOW = 1.3710 KG/SEC
 PERCENT OF STAGN EQUIVALENT FLOW = 82.8472
 90 PERCENT DESIGN SPEED - SCAN NO 12
 EQUIVALENT SLEFD
 FLOW INLET FLOW / INLET ANN AREA = 69052.710 H.P.M.
 163.2220 KG/SEC-SO M

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9583

PERCENT SPAN FROM TIP (L. F.)	HETA#1 (DEG)	V#1 (M/SEC)	VU#1 (M/SEC)	HFT#1 (DEG)	V1 (M/SEC)	VU1 (M/SEC)	M1	V#2 (M/SEC)	VU#2 (M/SEC)	HFT#2 (DEG)	V2 (M/SEC)	VU2 (M/SEC)	M2	V#P (M/SEC)	VU#P (M/SEC)	HFT#P (DEG)	V#71 (M/SEC)	VU#71 (M/SEC)	HFT#71 (DEG)	V#J1 (M/SEC)	VU#J1 (M/SEC)	HFT#J1 (DEG)
0.00	72.52	456.78	433.74	1.359	0.00	176.59	0.00	.408	136.50	132.19	132.19	132.19	.433	176.59	132.19	132.19	171.14	132.19	132.19	171.14	132.19	132.19
9.40	71.27	416.84	416.77	1.303	0.00	139.93	0.00	.418	136.93	135.15	135.15	135.15	.418	136.93	135.15	135.15	171.14	135.15	135.15	171.14	135.15	135.15
27.10	68.13	406.94	377.65	1.221	0.00	151.54	0.00	.455	151.54	144.79	144.79	144.79	.455	151.54	144.79	144.79	171.14	144.79	144.79	171.14	144.79	144.79
42.63	65.07	375.94	342.33	1.129	0.00	155.16	0.00	.466	155.16	156.66	156.66	156.66	.466	155.16	156.66	156.66	171.14	156.66	156.66	171.14	156.66	156.66
61.10	63.50	330.22	302.85	1.014	0.00	150.58	0.00	.452	150.58	150.58	150.58	150.58	.452	150.58	150.58	150.58	171.14	150.58	150.58	171.14	150.58	150.58
84.10	60.77	289.05	252.94	.887	0.00	141.53	0.00	.423	141.53	141.53	141.53	141.53	.423	141.53	141.53	141.53	171.14	141.53	141.53	171.14	141.53	141.53
100.00	58.14	258.31	219.48	.772	0.00	136.20	0.00	.407	136.20	136.20	136.20	136.20	.407	136.20	136.20	136.20	171.14	136.20	136.20	171.14	136.20	136.20

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .7051

PERCENT SPAN FROM TIP (L. F.)	HETA#2 (DEG)	V#2 (M/SEC)	VU#2 (M/SEC)	HFT#2 (DEG)	V2 (M/SEC)	VU2 (M/SEC)	M2	V#P (M/SEC)	VU#P (M/SEC)	HFT#P (DEG)	V2 (M/SEC)	VU2 (M/SEC)	M2	V#P (M/SEC)	VU#P (M/SEC)	HFT#P (DEG)	V#77 (M/SEC)	VU#77 (M/SEC)	HFT#77 (DEG)	V#J2 (M/SEC)	VU#J2 (M/SEC)	HFT#J2 (DEG)
0.00	57.85	332.44	281.47	.920	37.50	222.95	135.72	.622	176.80	171.14	171.14	171.14	.622	176.80	171.14	171.14	171.14	171.14	171.14	171.14	171.14	171.14
11.70	54.57	315.09	255.74	.879	37.94	231.03	142.21	.647	182.00	174.10	174.10	174.10	.647	182.00	174.10	174.10	171.14	174.10	174.10	171.14	174.10	174.10
31.10	50.32	271.50	227.43	.816	36.78	236.34	138.98	.667	188.67	187.50	187.50	187.50	.667	188.67	187.50	187.50	171.14	187.50	187.50	171.14	187.50	187.50
49.47	46.83	277.47	235.63	.791	35.63	242.08	141.02	.690	196.77	196.77	196.77	196.77	.690	196.77	196.77	196.77	171.14	196.77	196.77	171.14	196.77	196.77
67.93	45.75	256.91	230.83	.788	36.83	257.84	155.76	.746	207.90	207.90	207.90	207.90	.746	207.90	207.90	207.90	171.14	207.90	207.90	171.14	207.90	207.90
84.10	43.93	229.85	203.45	.663	40.63	276.69	180.17	.798	210.00	206.55	206.55	206.55	.798	210.00	206.55	206.55	171.14	206.55	206.55	171.14	206.55	206.55
100.00	42.05	214.71	200.47	.614	42.69	285.97	193.91	.829	210.19	201.05	201.05	201.05	.829	210.19	201.05	201.05	171.14	201.05	201.05	171.14	201.05	201.05

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	MASS FLOW (PCT)	DELTA HETA# (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT (DEG)	LOSS PARAMETR (DEG)	OMEGA* BAR (DEG)	DEVATION ANGLE (DEG)	ROTOR ANTIADABATIC F-F	ROTOR ANTIADABATIC POLYTROPIC EFF
0.00	0.00	14.57	8.684	8.216	.0432	.2135	.864	1.585	.7188
9.40	12.14	16.70	9.403	8.086	.0661	.2194	-.368	1.531	.7254
26.10	32.12	17.01	9.189	7.079	.0259	.1221	.406	1.629	.8404
42.63	49.47	20.79	8.903	6.051	.0091	.0091	2.072	1.662	.9552
61.10	67.93	27.61	9.183	5.149	-.0013	-.0013	5.207	1.711	1.0051
84.10	84.10	36.79	9.409	4.391	.0049	.0049	14.590	1.728	.9941
100.00	100.00	42.13	9.425	3.351	.0029	.0029	23.101	1.728	.9941

MOMENTUM AVG. ROTOR PRESS RATIO = 1.0349
 MASS AVERAGE TEMPERATURE RISE = 1.1745

MOMENTUM AVG. ROTOR PRESS RATIO = 1.0349
 MASS AVERAGE TEMPERATURE RISE = 1.1745

NASA SMALL AXIAL COMPRESSOR TEST 4 JUN 28 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 12

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8756

PERCENT SPAN FROM TIP (L. F.)	BETA 3 (DEG)	V3 (FT/SEC)	VIII3 (FT/SEC)	M3	VM3 (FT/SEC)	V/3 (FT/SEC)	U3 (FT/SEC)
0.00	36.50	743.58	458.50	.652	610.60	603.90	1329.28
11.41	34.23	772.08	477.75	.660	609.52	605.52	1275.73
30.50	35.26	800.53	462.13	.673	653.67	653.66	1186.10
49.52	36.11	827.12	464.49	.722	686.79	686.24	1161.51
67.08	35.48	873.05	506.73	.766	710.95	708.35	1016.41
87.76	35.76	914.15	578.45	.805	707.86	698.76	917.32
100.00	41.54	949.85	617.37	.840	721.85	701.90	859.87

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8982

PERCENT SPAN FROM TIP (L. F.)	BETA 4 (DEG)	V4 (FT/SEC)	VIII4 (FT/SEC)	M4	VM4 (FT/SEC)	V/4 (FT/SEC)	U4 (FT/SEC)
0.00	-0.06	644.76	-1.70	.561	666.36	644.76	1719.64
11.37	-0.06	671.01	-1.70	.567	671.01	670.93	1273.79
30.44	-0.06	695.17	-1.73	.594	695.17	694.86	1146.47
48.74	-0.06	729.05	-1.74	.629	729.05	728.70	1123.03
67.30	-0.12	733.67	1.56	.633	733.66	733.06	1047.41
84.20	-0.64	725.92	8.09	.624	725.87	723.22	963.86
100.00	-0.65	731.17	8.30	.629	731.13	731.13	916.27

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	MASS FLOW (PCF)	DELTA HFTA (DEG)	INCIDENCE MEAN (DEG)	ANGLF SUCT (INFG)	DELTA ANGLF (INFG)	LOSS PARAMETER	OMEGA HAR	INCIDENCE ANGLF (DEG)	INCIDENCE ANGLF (INFG)	OMEGA HAR	LOSS PARAMETER	DEVIATION ANGLF (INFG)	STAGE PROFFS RATIO	STAGE TEMPO RATIO	STATOR POLYTROPIC EFF
0.00	0.00	36.96	-3.05	-3.337	.7443	.0217	.0603	36.96	36.96	.0603	.0217	22.120	1.461	1.1963	.7491
11.41	11.37	35.29	2.049	-1.289	.7658	.0203	.0504	35.29	35.29	.0504	.0203	16.486	1.468	1.1943	.7381
30.50	30.44	35.72	-1.353	-4.051	.7194	.0232	.0706	35.72	35.72	.0706	.0232	11.109	1.538	1.1766	.7504
49.52	48.74	34.17	-3.034	-6.425	.6449	.0338	.0449	34.17	34.17	.0449	.0338	11.923	1.640	1.1637	.8351
67.08	67.30	35.36	-4.026	-6.494	.7208	.0302	.1262	35.36	35.36	.1262	.0302	11.219	1.642	1.1667	.6711
87.76	84.20	38.62	-3.015	-5.922	.7635	.0447	.1691	38.62	38.62	.1691	.0447	12.171	1.627	1.1709	.6300
100.00	100.00	39.89	-4.093	-7.536	.7327	.0401	.1585	39.89	39.89	.1585	.0401	19.350	1.628	1.1701	.6311

MOMENTUM AVERAGE STAGE EFFICIENCY = .8493 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .8388 (ADIABATIC)

MOMENTUM AVO. STAGE PROFFS RATIO = 1.6183
MASS AVERAGE TEMPERATURE RISE = 1.1745

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 12

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8756

PERCENT SPAN FROM TIP (U. S.)	BETA J (DEG)	V3 (M/SEC)	VU3 (M/SEC)	M3	VU3 (M/SEC)	VU3 (M/SEC)	U3 (M/SEC)
0.00	36.90	232.74	134.75	.652	186.11	186.07	405.16
11.41	40.23	235.73	145.62	.660	194.87	194.56	389.84
30.50	35.26	244.00	140.86	.693	199.26	199.24	361.52
48.52	34.11	252.11	141.39	.722	206.72	206.67	335.74
67.00	35.04	266.11	154.45	.766	216.70	216.01	309.19
87.74	39.26	278.63	176.31	.805	215.76	212.86	277.60
100.00	~0.54	284.51	188.17	.840	220.02	213.94	262.09

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8982

PERCENT SPAN FROM TIP (U. S.)	BETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VU4 (M/SEC)	VU4 (M/SEC)	U4 (M/SEC)
0.00	-0.6	202.50	-.21	.561	202.50	202.50	402.23
11.37	-0.6	204.52	-.21	.567	204.52	204.50	389.25
30.64	-0.6	211.42	-.22	.594	211.89	211.79	366.41
48.74	-0.6	222.21	-.23	.629	222.21	221.98	342.30
67.30	.12	227.56	.47	.633	223.56	223.44	319.37
84.20	.04	221.26	2.47	.624	221.25	220.64	293.79
100.00	.65	222.86	2.53	.629	222.85	222.85	279.28

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	MASS FLOW (GPM)	DELTA HETA (MER)	INCIDENCE ANGLE MEAN (DEG)	SUCT SUR (DEG)	FACTOR	OMEGA MAP	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	34.94	.585	-3.337	.74M3	.0603	.0217	22.120	1.561	1.1843	.7991
11.41	11.37	34.20	2.049	-1.289	.745M	.0544	.0203	16.486	1.568	1.1847	.7981
30.50	32.17	35.72	-1.353	-4.651	.7194	.0706	.0272	11.109	1.538	1.1754	.7504
48.52	44.74	36.17	-3.634	-6.625	.7273	.0449	.0178	11.923	1.640	1.1437	.8352
67.04	67.33	35.36	-4.026	-4.894	.7208	.1262	.0362	11.219	1.642	1.1467	.8511
87.74	88.27	38.62	-3.015	-5.922	.7635	.1691	.0447	12.171	1.627	1.1700	.8100
100.00	100.00	39.89	-4.093	-7.534	.7827	.1585	.0401	19.350	1.628	1.1701	.8711

MOMENTUM AVERAGE STAGE EFFICIENCY = .8493 (POLYTROPIC)

MOMENTUM AVERAGE STAGE EFFICIENCY = .8388 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.6143

MASS AVERAGE TEMPERATURE RISE = 1.1745

NASA SMALL AXIAL COMPRESSOR TEST 4 JUN 28, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT WEIGHT FLOW = 2.49064 LBM/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 01.0116
 40 PERCENT DESIGN SPEED = SCAN 1.0 17
 EQUIVALENT SPEED
 EQUIVALENT FLOW / INLET ANN AREA = 69049.715 R.P.M.
 33.0449 LHM/SEC-SU FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0002

PERCENT SPAN FROM TIP (L. F.)	W1 (DEG)	W1P1 (FT/SEC)	W1P2 (FT/SEC)	W1 (DEG)	V1 (FT/SEC)	V1P1 (FT/SEC)	V1P2 (FT/SEC)	M1	V41 (FT/SEC)	V42 (FT/SEC)	U1 (FT/SEC)
0.00	72.72	1470.16	1423.17	1.357	0.00	442.69	0.00	.403	442.69	474.44	1623.10
9.48	71.50	1424.04	1355.05	1.302	0.00	453.75	0.00	.413	453.75	434.52	1355.05
25.48	68.43	1336.61	1241.14	1.220	0.00	490.67	0.00	.444	490.67	441.65	1241.14
42.20	65.06	1232.72	1124.77	1.124	0.00	502.22	0.00	.459	502.22	500.61	1125.77
60.05	63.91	1104.17	995.26	1.012	0.00	487.34	0.00	.465	487.34	487.17	995.26
74.12	61.13	964.17	830.71	.864	0.00	457.83	0.00	.417	457.83	451.68	930.31
100.00	58.76	843.96	720.05	.748	0.00	440.24	0.00	.401	440.24	474.24	720.05

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8097

PERCENT SPAN FROM TIP (L. F.)	H1A#2 (DEG)	V0#2 (FT/SEC)	H1A#2 (DEG)	V2 (FT/SEC)	H1A#2 (DEG)	V2 (FT/SEC)	H1A#2 (DEG)	V2 (FT/SEC)	M2	V4P (FT/SEC)	V7P (FT/SEC)	J2 (FT/SEC)
0.00	59.14	1064.34	913.63	.902	34.81	710.77	435.06	.602	565.00	574.42	1768.69	
11.45	55.00	1001.35	824.24	.851	40.29	737.81	477.13	.627	562.77	550.67	1305.37	
31.52	51.15	945.48	736.66	.813	39.01	752.99	463.67	.647	593.30	589.60	1200.33	
49.73	44.05	896.59	632.37	.774	34.52	790.88	470.65	.684	636.40	634.50	1103.02	
64.00	38.52	826.66	491.07	.722	37.70	830.66	513.91	.733	664.33	662.37	1005.47	
84.23	24.12	734.53	301.79	.648	41.44	899.49	595.60	.790	676.05	662.94	947.39	
100.00	14.02	701.94	193.68	.619	43.53	930.53	640.85	.821	674.60	651.76	934.53	

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING TRAILING EDGE	DELTA (DEG)	MEAN INCIDENCE ANGLE (DEG)	SUCT SUR (DEG)	INCIDENCE ANGLE (DEG)	DELTA (DEG)	OMEGA# BAR	OMEGA# BAR	LOSS PARAMETER	DEVIATION (DEG)	WATER LOSS (DEG)	ROTOR EFF	POLYTROPIC EFF
0.00	0.00	13.58	8.883	4.415	.6021	.2312	.0451	.0451	2.146	1.581	.6909	.7195
9.48	11.45	15.70	9.605	4.296	.4202	.2369	.0483	.0483	.917	1.589	.7071	.7254
25.48	31.52	17.24	9.645	7.345	.4065	.1754	.0284	.0284	1.347	1.627	.6347	.8456
42.20	49.73	21.10	9.190	6.356	.3879	.0435	.0094	.0094	3.117	1.673	.9504	.9542
60.05	64.00	27.30	9.505	5.681	.3794	.0021	.0005	.0005	6.331	1.709	.6904	.9002
74.12	84.23	37.01	9.757	4.741	.3663	.0137	.0029	.0029	14.880	1.732	.9902	.9910
100.00	100.00	42.54	9.806	3.732	.3267	.0181	.0037	.0037	23.068	1.732	.9902	.9909

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8465 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8760 (ADIABATIC)
 MOMENTUM AVG. ROTOR PRESS RATIO = 1.6565
 MASS AVERAGE TEMPERATURE RISE = 1.1767

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIVALENT WRIGHT FLOW = 1.3592 K0/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 81.8116
 90 PERCENT DESIGN SPEED = SCAN NO 17
 EQUIVALENT SPEED = 69009.715 R.P.M.
 EQUIVALENT FLOW / INLET ANN AREA = 161.9074 K0/SEC-SQ M

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0002

PERCENT SPAN FROM TIP (L. F.)	HETA*1 (DEG)	V01 (M/SEC)	VU01 (M/SEC)	M01	HETA1 (DEG)	V1 (M/SEC)	VU1 (M/SEC)	M1	V01 (M/SEC)	V71 (M/SEC)	U1 (M/SEC)
0.00	72.72	454.26	413.76	1.357	0.00	134.93	0.00	.403	134.93	134.93	433.76
0.48	71.50	435.52	413.02	1.332	0.00	134.18	0.00	.411	134.18	134.18	413.02
25.00	68.44	404.79	374.40	1.220	0.00	149.26	0.00	.448	149.26	149.26	378.30
42.72	65.96	375.73	343.13	1.128	0.00	153.08	0.00	.459	153.08	153.08	343.13
60.85	63.91	337.71	303.35	1.012	0.00	144.54	0.00	.445	144.54	144.54	303.35
84.32	61.13	289.00	253.08	.864	0.00	139.51	0.00	.417	139.51	139.51	253.08
100.00	58.56	257.24	219.47	.768	0.00	134.19	0.00	.401	134.19	134.19	219.47

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8097

PERCENT SPAN FROM TIP (L. F.)	HETA*2 (DEG)	V02 (M/SEC)	VU02 (M/SEC)	M02	HETA2 (DEG)	V2 (M/SEC)	VU2 (M/SEC)	M2	V02 (M/SEC)	V72 (M/SEC)	U2 (M/SEC)
0.00	59.14	324.41	278.47	.902	39.81	215.64	134.70	.602	166.62	141.05	417.19
11.85	55.80	305.21	252.45	.851	40.29	224.89	145.43	.627	171.53	147.73	397.88
31.52	41.15	248.30	224.54	.813	39.01	229.51	141.33	.647	140.44	175.71	355.86
49.73	44.85	273.28	192.75	.778	34.52	241.06	143.46	.686	193.79	193.72	336.20
68.00	30.52	251.97	149.95	.722	37.70	255.23	150.52	.733	202.45	201.49	305.47
88.23	24.12	224.10	11.99	.648	41.44	274.17	181.54	.790	205.45	202.08	273.53
100.00	16.02	213.95	59.03	.614	43.53	283.63	193.33	.821	205.64	198.65	254.34

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	DELTA BETA* (DEG)	MASS FLOW (PCT)	INCIDENCE MEAN (DEG)	ANGLE SUCT (DEG)	OMEGA* (HAR)	LOSS PARAMETER	DEVIATION ANGLE (DEG)	RATOR PRESS RATIO	RATOR ANTIADAPTIC EFF	POLYTHROPIC EFF
0.20	0.00	0.00	8.843	8.415	.4021	.0451	2.146	1.581	.6009	.7185
0.48	11.85	11.98	9.605	8.294	.4202	.0484	.717	1.599	.5071	.7254
25.00	31.52	31.76	9.435	7.945	.4359	.0284	1.357	1.627	.4317	.8454
42.72	44.73	50.93	9.190	6.456	.4879	.0094	3.117	1.673	.0504	.9542
60.85	68.00	70.12	9.505	5.681	.4794	.0005	5.331	1.709	.0940	.9982
84.32	88.23	89.74	9.757	4.741	.4663	.0029	14.869	1.732	.9902	.9910
100.00	100.00	100.00	9.606	3.732	.4181	.0037	23.068	1.732	.9902	.9909

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8445 (POLYTHROPIC) MOMENTUM AVG. ROTOR PRESS RATIO = 1.6565
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8760 (ADIABATIC) MASS AVERAGE TEMPERATURE RISE = 1.1707

NASA SMALL AXIAL COMPRESSOR TEST 4 JUNE 28, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

90 PERCENT DESIGN SPEED - SCAM NO 13

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8873

PERCENT SPAN FROM TIP (I. F.)	BETA 3 (DEG)	V3 (FT/SEC)	VU3 (FT/SEC)	M3	VM3 (FT/SEC)	VZ3 (FT/SEC)	U3 (FT/SEC)
0.00	34.98	744.84	464.57	.633	578.99	572.67	1329.22
11.54	40.29	745.45	464.47	.643	576.27	574.72	1275.07
30.75	46.66	746.72	464.71	.679	631.11	631.10	1184.99
48.69	34.87	825.03	471.65	.719	676.92	676.42	1100.18
67.07	36.19	861.98	504.98	.745	645.67	643.11	1014.42
87.74	39.92	907.84	542.62	.798	696.24	696.89	917.39
100.00	41.20	913.77	621.67	.834	710.09	690.47	859.84

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9108

PERCENT SPAN FROM TIP (I. F.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	1.18	636.51	13.11	.535	636.38	626.74	1319.58
11.54	1.16	641.22	13.04	.540	641.09	641.71	1273.43
30.75	.83	666.97	9.66	.568	666.90	665.60	1196.91
48.69	.91	708.14	10.27	.609	708.57	707.84	1123.05
67.07	.81	710.45	10.29	.611	710.37	709.94	1064.00
87.74	.83	705.01	10.21	.605	704.94	702.74	963.97
100.00	.81	709.99	10.28	.609	709.92	709.92	916.24

STATOR PERFORMANCE-NCF DATA

PERCENT SPAN FROM TIP FROM CHAILING ENCF	MASS FLOW (PCT)	DELTA HEAT (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCTION (DEG)	OMEGA HAP	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE EFF	STATOR POLYTROPIC EFF
0.00	0.00	37.80	2.665	-1.257	.3676	.0197	23.760	1.541	1.1995	.8263
11.54	11.14	39.12	4.105	.772	.3694	.0210	17.717	1.565	1.1995	.8145
30.75	30.41	35.83	.033	-3.247	.7419	.0236	14.002	1.594	1.1783	.7849
48.69	48.72	34.04	-2.696	-5.804	.3088	.0179	12.412	1.645	1.1663	.8163
67.07	67.33	35.74	-3.113	-6.181	.3366	.0343	11.930	1.644	1.1654	.6945
87.74	84.17	39.09	-2.741	-5.250	.3826	.0442	12.362	1.633	1.1712	.8583
100.00	100.00	40.17	-3.430	-6.872	.4017	.0398	14.570	1.633	1.1713	.7125

MOMENTUM AVERAGE STAGE EFFICIENCY = .8418 (POLYTROPIC)
 MOMENTUM AVERAGE STAGE EFFICIENCY = .8307 (ADIABATIC)
 MOMENTUM AVG. STAGE PRESS RATIO = 1.6166
 MASS AVERAGE TEMPERATURE RISE = 1.1767

ORIGINAL PAGE IS OF POOR QUALITY

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 13

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8873

PERCENT SPAN FROM TIP (I. F.)	BETA 3 (DEG)	V3 (M/SEC)	VIII3 (M/SEC)	M3	VM3 (M/SEC)	V73 (M/SEC)	U3 (M/SEC)
0.00	30.98	227.03	142.42	.633	176.48	174.54	409.15
11.54	40.24	230.26	148.69	.643	175.65	175.36	398.64
30.75	36.66	239.79	163.17	.679	192.36	192.36	361.15
44.69	34.97	251.47	143.76	.719	206.33	206.17	335.49
67.07	36.19	262.73	155.14	.755	212.04	211.27	309.20
87.74	40.92	276.71	177.58	.798	212.21	209.36	279.62
100.00	41.20	287.66	189.49	.834	216.44	210.46	262.08

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9108

PERCENT SPAN FROM TIP (I. F.)	BETA 4 (DEG)	V4 (M/SEC)	VIII4 (M/SEC)	M4	VM4 (M/SEC)	V74 (M/SEC)	U4 (M/SEC)
0.00	1.14	194.01	4.00	.535	193.97	193.97	402.21
11.34	1.14	195.65	3.97	.540	195.60	195.38	399.26
30.41	.83	203.29	2.94	.568	203.27	203.18	364.32
40.72	.83	215.99	3.13	.609	215.97	215.75	342.31
67.33	.83	218.54	3.14	.611	216.52	216.40	319.43
88.17	.83	214.89	3.11	.605	214.87	214.08	293.42
100.00	.83	216.41	3.13	.609	216.38	215.38	279.27

STATOR PERFORMANCE DATA

PERCENT LEADING EDGE FROM TRAILING EDGE	MASS FLOW (PCT)	DELTA HFTA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT (DEG)	FACTORS	OMEGA RAP	LOSS PARAMETER	DEVIATION ANGLE (NEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	37.80	2.665	-1.257	.3476	.0546	.0197	23.360	1.561	1.1905	.8263
11.54	11.34	39.12	4.105	.772	.3694	.0606	.0210	17.717	1.565	1.1905	.8145
30.75	30.41	35.83	.633	-1.257	.3419	.0714	.0236	14.002	1.596	1.1783	.7849
44.69	44.72	34.04	-2.896	-5.884	.3028	.0585	.0179	12.812	1.645	1.1463	.8153
67.07	67.33	35.36	-3.313	-6.181	.3366	.1196	.0343	11.930	1.644	1.1454	.6965
87.74	88.17	39.09	-2.341	-5.250	.3826	.1671	.0492	12.362	1.633	1.1712	.6583
100.00	100.00	40.37	-3.430	-6.872	.4017	.1565	.0366	19.570	1.633	1.1713	.7125

MOMENTUM AVERAGE STAGE EFFICIENCY = .8418 (POLYTROPIC) MOMENTUM AVG. STAGE PRESS RATIO = 1.6166
 MASS AVERAGE STAGE EFFICIENCY = .8307 (ADIABATIC) MASS AVERAGE TEMPERATURE RISE = 1.1767

NASA SMALL AXIAL COMPRESSOR TEST 4 JUNE 24, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT WEIGHT FLOW = 2.9706 LBM/SEC 90 PERCENT DESIGN SPEED - SCAN NO 14
 PERCENT DESIGN EQUIVALENT FLOW = 81.1069 LBM/SEC EQUIVALENT SPEED
 EQUIVALENT FLOW / INLET ANN AREA = 69066.688 R.P.M.
 32.8098 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0003

PERCENT SPAN FROM TIP (I. E.)	HETA*1 (DEG)	V*1 (FT/SEC)	W*1 (LBM/SEC)	U*1 (INFG)	V*1 (FT/SEC)	W*1 (LBM/SEC)	M1	V*1 (FT/SEC)	W*1 (LBM/SEC)	U*1 (FT/SEC)
0.00	72.89	1489.39	1423.45	0.00	438.25	0.00	.399	438.25	424.14	1423.45
9.60	71.69	1428.27	1355.96	0.00	448.70	0.00	.409	448.70	436.02	1355.96
25.70	68.66	1334.14	1242.70	0.00	445.41	0.00	.443	445.41	476.49	1242.70
42.07	66.22	1237.22	1127.63	0.00	436.81	0.00	.454	436.81	495.21	1127.63
60.72	64.18	1106.90	996.82	0.00	422.05	0.00	.440	422.05	441.89	996.82
84.32	61.40	945.92	830.47	0.00	452.86	0.00	.413	452.86	446.78	830.47
100.00	58.44	841.65	720.22	0.00	435.50	0.00	.396	435.50	420.70	720.22

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8161

PERCENT SPAN FROM TIP (I. E.)	HETA*2 (DEG)	V*2 (FT/SEC)	W*2 (LBM/SEC)	U*2 (INFG)	V*2 (FT/SEC)	W*2 (LBM/SEC)	M2	V*2 (FT/SEC)	W*2 (LBM/SEC)	U*2 (FT/SEC)
0.00	59.80	1051.56	908.08	41.02	701.03	460.15	.593	528.88	511.85	1369.03
11.47	58.23	970.24	823.22	41.23	732.02	492.50	.621	550.50	530.47	1305.61
31.41	51.50	937.04	737.79	38.69	747.77	474.39	.642	583.73	580.07	1201.18
49.71	45.60	879.98	628.75	37.63	777.42	476.69	.673	615.63	615.63	1103.44
64.21	38.49	822.04	488.81	37.37	819.35	515.76	.732	660.92	658.98	1004.56
84.31	27.93	730.68	296.23	41.97	898.29	600.76	.788	757.85	656.88	897.19
100.00	15.76	694.61	188.71	44.02	929.63	646.02	.819	668.49	645.77	834.73

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE (I. E.)	MASS FLOW (LBM/SEC)	DELTA HETA* (DEG)	INCIDENCE MEAN (DEG)	SUCT SUR ANGLE (DEG)	LOSS PARAMETER	OMEGA HAR (INFG)	DEVIATION ANGLE (INFG)	MOTOR PRESS RATIO	ADIABATIC EFF	POLYTROPIC EFF
0.00	0.00	13.04	9.051	8.582	.0464	.2426	2.814	1.577	.6873	.7065
9.60	11.89	15.46	9.777	8.472	-.0494	.2453	1.141	1.588	.6900	.7178
25.70	31.41	17.16	9.639	7.560	.0292	.1444	1.666	1.625	.6253	.8308
42.07	50.70	20.62	9.425	6.604	.0142	.0666	3.852	1.658	.9248	.9300
60.72	70.01	27.70	9.764	5.944	.0008	.0034	6.470	1.710	.9983	.9986
84.32	84.75	37.44	10.026	5.010	.0052	.0243	14.416	1.733	.9829	.9841
100.00	100.00	43.04	10.047	4.013	.0063	.0309	22.816	1.733	.9829	.9842

MOMENTUM AVERAGE MOTOR EFFICIENCY = .8749 (POLYTROPIC) MOMENTUM AVG. MOTOR PRESS RATIO = 1.6536
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8057 (ADIABATIC) MASS AVERAGE TEMPERATURE RISE = 1.1782

MOTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIVALENT WEIGHT FLOW FROM TIP (L. E.) = 1.3475 KG/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 81.1049
 90 PERCENT DESIGN SPEED - SCAL: NO 14
 EQUIVALENT SPEED = 62066 RPM R.P.M.
 EQUIVALENT FLOW / INLET ANN AREA = 160.1014 KG/SEC-SQ M

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0003

PERCENT SPAN FROM TIP (L. E.)	HETA01 (DEG)	V01 (M/SEC)	VU01 (M/SEC)	M01	HETA1 (DEG)	V1 (M/SEC)	VU1 (M/SEC)	M1	V04 (M/SEC)	V71 (M/SEC)	U1 (M/SEC)
0.00	72.89	453.96	433.47	1.356	0.00	133.58	0.00	.392	133.50	129.20	633.87
9.60	71.89	435.34	413.30	1.301	0.00	136.77	0.00	.409	136.77	132.29	613.30
25.70	68.66	406.65	374.74	1.219	0.00	147.95	0.00	.443	147.95	145.24	378.78
42.07	66.22	375.58	343.70	1.127	0.00	151.43	0.00	.454	151.43	150.94	363.70
60.72	64.14	337.34	303.71	1.011	0.00	146.93	0.00	.440	146.93	146.88	303.71
84.32	61.40	244.32	253.13	.842	0.00	134.03	0.00	.413	134.03	134.11	253.13
100.00	54.84	256.54	213.52	.746	0.00	132.74	0.00	.396	132.74	128.23	219.52

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8161

PERCENT SPAN FROM TIP (L. E.)	HETA02 (DEG)	V02 (M/SEC)	VU02 (M/SEC)	M02	HETA2 (DEG)	V2 (M/SEC)	VU2 (M/SEC)	M2	V02 (M/SEC)	V72 (M/SEC)	U2 (M/SEC)
0.00	50.90	320.51	277.03	.809	41.02	213.68	140.25	.591	161.20	156.01	417.28
11.87	54.23	301.42	250.83	.840	41.23	223.12	147.07	.621	167.70	146.13	397.95
31.41	51.50	245.79	223.66	.805	38.69	227.02	147.46	.642	177.91	176.80	366.12
49.71	45.80	264.22	161.64	.742	37.63	236.96	146.69	.673	187.65	187.64	316.33
68.21	36.49	250.56	148.99	.714	37.97	255.53	157.20	.732	201.45	200.86	306.19
84.31	23.43	222.71	90.35	.641	41.07	274.80	183.11	.788	203.54	200.22	273.46
100.00	15.76	211.72	57.52	.612	44.02	283.35	186.91	.819	203.74	196.83	256.83

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	FLTA (DEG)	HETA0 (DEG)	MASS FLOW (KPT)	INCIDENCE ANGLE (DEG)	SUCT SUR (DEG)	OMEGA HAP	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROFESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	0.00	9.051	8.582	.2426	.0464	2.814	1.577	.6073	.7065
9.60	11.87	15.14	11.89	9.777	8.672	.2453	.0496	1.361	1.588	.6000	.7174
25.70	31.41	17.14	31.56	9.639	7.560	.1444	.0292	1.666	1.625	.4253	.9368
42.07	49.71	20.62	50.70	9.425	6.604	.0660	.0142	3.852	1.650	.2248	.9300
60.72	68.21	27.70	70.01	9.764	5.944	.0038	.0008	6.470	1.710	.0643	.9966
84.32	88.31	37.66	83.75	10.026	5.010	.0243	.0052	14.816	1.733	.9829	.9841
100.00	100.00	43.08	100.00	10.087	4.013	.0709	.0063	22.814	1.733	.9829	.9842

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8749 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8657 (ADIABATIC)
 MOMENTUM AVG. ROTOR PRESS RATIO = 1.6535
 MASS AVERAGE TEMPERATURE RISE = 1.1782

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 14

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8931

PERCENT SPAN FROM TIP (L. F.)	BETA 3 (DEG)	V3 (FT/SEC)	VU3 (FT/SEC)	M3	VM3 (FT/SEC)	V73 (FT/SEC)	U3 (FT/SEC)
0.00	40.17	734.52	473.41	.623	561.27	555.11	1324.55
11.56	41.22	749.60	493.48	.637	563.81	562.88	1275.27
30.49	37.35	780.63	473.58	.672	620.58	620.57	1185.68
48.71	35.91	811.23	475.80	.705	657.04	656.56	1100.46
67.32	36.46	840.24	511.23	.753	691.86	689.33	1013.46
87.40	40.43	906.49	587.84	.796	690.05	690.78	916.90
100.00	41.69	942.52	624.92	.832	703.76	684.34	860.05

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9100

PERCENT SPAN FROM TIP (L. F.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	-94	624.28	-10.24	.524	624.20	624.20	1319.91
11.92	-94	633.61	-10.36	.532	633.53	633.45	1274.22
31.33	-76	656.83	-8.76	.558	656.77	656.48	1197.56
49.74	-94	689.23	-11.47	.600	689.14	688.42	1123.63
67.47	-94	708.42	-11.62	.609	708.33	707.94	1047.99
88.24	-71.12	695.43	-13.55	.595	695.29	692.75	963.90
100.00	-71.12	700.14	-13.88	.600	700.00	700.00	916.46

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	TRAILING EDGE	MASS FLOW (PCT)	DELTA WETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SURF (DEG)	D FACTOR	O MEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	41.11	3.452	-0.070	.7894	.0556	.0200	21.240	1.557	1.2018	.8277
11.56	11.47	11.39	42.16	5.041	1.709	.7880	.0609	.0212	15.619	1.565	1.2018	.8170
30.49	30.73	31.56	38.11	.726	-2.567	.7592	.0753	.0247	12.416	1.593	1.1709	.7923
48.71	48.73	50.70	36.45	-1.855	-4.843	.7144	.0356	.0109	11.044	1.642	1.1678	.8956
67.32	67.40	70.01	37.40	-3.076	-5.937	.7454	.1114	.0320	10.159	1.651	1.1660	.7169
87.40	88.24	89.75	41.54	-1.871	-4.773	.6006	.1741	.0461	10.417	1.670	1.1727	.6555
100.00	100.00	100.00	42.81	-2.938	-6.379	.4192	.1630	.0412	17.580	1.630	1.1728	.7090

MOMENTUM AVERAGE STAGE EFFICIENCY = .8350 (POLYTROPIC)
 MOMENTUM AVERAGE STAGE EFFICIENCY = .8235 (ADIABATIC)
 MOMENTUM AVG. STAGE PRESS RATIO = 1.6161
 MASS AVERAGE TEMPERATURE RISE = 1.1782

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 14

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8931

PERCENT SPAN FROM TIP (T. F.)	BETA 1 (DEG)	V3 (M/SEC)	V1/3 (M/SEC)	M3	VM3 (M/SEC)	V7/3 (M/SEC)	U3 (M/SEC)
0.00	40.17	223.88	144.42	.623	171.09	149.20	405.25
11.54	41.27	228.48	150.56	.637	171.45	171.56	388.70
30.50	37.35	237.94	144.35	.672	149.15	149.15	361.33
44.71	35.91	247.26	145.02	.705	200.27	200.12	335.54
67.32	36.40	262.70	155.42	.751	210.44	210.11	309.90
87.00	40.43	276.30	173.14	.796	210.33	207.50	279.47
100.00	41.59	287.28	191.09	.832	214.51	200.59	262.14

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9100

PERCENT SPAN FROM TIP (T. F.)	BETA 4 (DEG)	V4 (M/SEC)	V1/4 (M/SEC)	M4	VM4 (M/SEC)	V7/4 (M/SEC)	U4 (M/SEC)
0.00	-0.94	190.24	-3.12	.574	190.25	190.25	402.31
11.32	-0.94	193.12	-3.14	.532	193.10	171.08	388.14
30.33	-0.76	200.20	-2.67	.558	200.14	200.10	365.02
44.70	-0.94	213.13	-3.50	.600	213.10	212.44	342.42
67.50	-0.94	215.93	-3.54	.609	215.90	215.78	319.43
84.24	-1.12	211.97	-4.13	.595	211.93	211.15	293.90
100.00	-1.12	213.40	-4.17	.600	213.36	213.14	279.34

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP FROM TRAILING EDGE	MASS FLOW (PCT)	DELTA HFA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	DELTA ANGLE (DEG)	LOSS PARAMETER	OMEGA HAR	DELTA FACTOR	DELTA ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATION POLYTROPIC EFF
0.00	0.00	41.11	3.852	-0.70	.3894	.0200	.0554	.3894	21.240	1.557	1.2018	.8777
11.54	11.32	42.16	5.041	1.709	.3480	.0212	.0609	.3480	15.619	1.565	1.2018	.8170
30.50	30.33	38.11	7.25	-2.567	.7542	.0253	.0753	.7542	12.414	1.593	1.1709	.7923
44.71	44.70	36.85	-1.055	-4.043	.3144	.0156	.0156	.3144	11.044	1.642	1.1478	.8450
67.32	67.32	37.40	-3.076	-5.937	.3454	.0320	.1114	.3454	10.159	1.651	1.1460	.7169
87.00	84.24	41.54	-1.873	-4.773	.4005	.0461	.1741	.4005	10.417	1.630	1.1727	.6555
100.00	100.00	42.81	-2.930	-6.379	.4192	.0630	.1630	.4192	17.500	1.630	1.1728	.6090

MOMENTUM AVERAGE STAGE EFFICIENCY = .8350 (POLYTROPIC)
 MOMENTUM AVERAGE STAGE EFFICIENCY = .8235 (ADIABATIC)
 MOMENTUM AVG. STAGE PRESS RATIO = 1.6161
 MASS AVERAGE TEMPERATURE RISE = 1.1792

AI P-10: IS
FOR QUALITY

NASA SMALL AXIAL COMPRESSOR TEST 4 JUNE 28, 1974 (COMBINED TEMP.)

MOTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT WEIGHT FLOW = 2.9145 LHM/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 79.5735
 90 PERCENT DESIGN SPEED - SCAN NO 15
 EQUIVALENT SPEED = 60032.759 R.P.M.
 EQUIVALENT FLOW / INLET ANN AREA = 32.1895 LHM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9994

PERCENT SPAN FROM TIP (I. F.)	HETA#1 (DEG)	V#1 (FT/SEC)	V#1#1 (FT/SEC)	HETA1 (DEG)	V1 (FT/SEC)	VU1 (FT/SEC)	M1	V#1#1 (FT/SEC)	V#1 (FT/SEC)	U1 (FT/SEC)
0.00	71.23	1405.04	1422.75	1.342	424.79	0.00	.390	424.79	414.94	1422.75
9.44	72.07	1425.49	1356.26	0.00	434.85	0.00	.399	434.85	424.48	1356.26
25.15	69.14	1331.46	1244.56	1.216	474.25	0.00	.431	474.25	444.54	1244.56
41.66	64.76	1230.07	1130.29	0.00	484.31	0.00	.443	484.31	464.74	1130.29
58.27	64.76	1104.55	999.11	1.004	474.56	0.00	.430	474.56	470.79	999.11
74.87	61.94	947.23	831.47	.854	447.49	0.00	.403	447.49	474.55	831.47
100.00	59.41	834.28	719.47	.740	424.62	0.00	.387	424.62	411.16	719.47

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8269

PERCENT SPAN FROM TIP (I. F.)	HETA#2 (DEG)	V#2 (FT/SEC)	V#2#1 (FT/SEC)	HETA2 (DEG)	V2 (FT/SEC)	VU2 (FT/SEC)	M2	V#2#1 (FT/SEC)	V#2 (FT/SEC)	U2 (FT/SEC)
0.00	90.26	1032.68	902.47	42.444	684.06	465.48	.577	465.48	484.11	1368.35
11.93	57.32	904.97	816.41	42.444	716.02	444.22	.606	444.22	512.71	1304.63
31.50	52.34	914.94	727.50	40.049	733.90	472.65	.628	472.65	557.94	1200.14
49.67	45.27	804.20	621.14	38.446	774.84	481.96	.670	481.96	606.47	1103.11
64.65	37.24	801.00	484.12	49.20	422.48	519.42	.716	519.42	574.50	1004.94
84.29	21.88	723.55	291.99	42.42	804.74	604.47	.786	604.47	411.15	996.86
100.00	15.55	647.40	184.33	44.44	924.22	644.99	.817	644.99	644.12	934.32

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	MASS FLOW (LHM)	DELTA (DEG)	HETA# (DEG)	INCIDENCE ANGLE (DEG)	SUCT SUR (DEG)	FACTOR	OMEGA# (RPM)	LOSS PARAMETER	DEVIATION ANGLE (DEG)	MOTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	12.27	9.391	4.423	4.244	.2545	.0477	.0477	3.971	1.547	.8491	.8894
9.44	11.93	14.74	10.174	4.434	4.436	.2609	.0511	.0511	2.447	1.579	.8491	.7014
25.15	31.17	16.80	10.056	7.499	4.277	.1630	.0331	.0331	2.539	1.613	.8494	.8162
41.61	44.27	21.00	4.404	7.107	4.124	.0749	.0170	.0170	3.905	1.644	.8167	.9104
58.27	64.05	27.49	10.290	4.491	4.022	.0381	.0043	.0043	7.128	1.649	.8494	.9064
74.87	84.29	34.10	10.591	5.541	.3805	.0338	.0072	.0072	14.652	1.733	.9744	.9741
100.00	100.00	43.86	10.654	4.540	.3397	.0414	.0045	.0045	22.597	1.732	.9744	.9741

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8587 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8484 (ADIABATIC)
 MOMENTUM AVG. ROTOR PRESS RATIO = 1.6454
 MASS AVERAGE TEMPERATURE RISE = 1.1799

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIVALENT FLIGHT FLOW = 1.3220 KG/SEC 90 PERCENT DESIGN SPEED - SCAN NO 15
 PERCENT DESIGN EQUIVALENT FLOW = 79.5735 EQUIVALENT SPEED

R.P.M. = 69032.749
 INLET ANN AREA = 157.1631 KG/SEC-SQ M

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9994

PERCENT SPAN FROM TIP (I. F.)	RETA*1 (DEG)	V*1 (M/SEC)	W*1 (M/SEC)	VI (M/SEC)	M1	V*1 (M/SEC)	W*1 (M/SEC)	V71 (M/SEC)	U1 (M/SEC)
0.00	73.23	652.92	433.65	170.70	0.00	170.70	0.00	170.70	433.65
9.56	72.07	434.49	413.39	131.76	0.00	131.76	0.00	131.76	413.39
25.35	69.14	405.95	379.34	146.55	0.00	146.55	0.00	146.55	379.34
41.61	66.76	374.93	344.51	167.92	0.00	167.92	0.00	167.92	344.51
60.27	64.76	335.67	304.53	183.55	0.00	183.55	0.00	183.55	304.53
82.07	61.99	287.19	253.55	194.87	0.00	194.87	0.00	194.87	253.55
100.00	59.41	244.90	214.42	199.73	0.00	199.73	0.00	199.73	214.42

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8769

PERCENT SPAN FROM TIP (I. F.)	RETA*2 (DEG)	V*2 (M/SEC)	W*2 (M/SEC)	V2 (M/SEC)	M2	V*2 (M/SEC)	W*2 (M/SEC)	V42 (M/SEC)	U2 (M/SEC)
0.00	60.76	314.76	275.19	200.50	0.00	200.50	141.88	157.79	417.07
11.93	57.32	294.65	244.84	214.24	0.00	214.24	144.81	159.64	397.65
31.50	52.34	280.10	221.74	221.69	0.00	221.69	144.06	171.17	365.80
49.67	48.67	264.65	189.32	216.17	0.00	216.17	146.90	184.42	336.23
68.05	47.24	244.14	147.87	250.69	0.00	250.69	154.44	194.27	306.31
84.29	43.90	220.54	89.00	273.33	0.00	273.33	184.37	201.79	273.36
100.00	45.55	200.64	56.18	282.92	0.00	282.92	198.12	201.97	254.30

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	TRAILING EDGE	MASS FLOW (KGT)	INCIDENCE ANGLE (DEG)	SUCT SUR (DEG)	FACTOR	OMEGA* (RPM)	LOSS PARAMETER	DEVIATION ANGLE (DEG)	RATOR PRESS RATIO	RATOR ADIABATIC EFF	RATOR POLYTROPIC EFF
0.00	0.00	0.00	9.391	8.923	4244	25494	0.677	3.971	1.567	0.693	0.796
9.56	11.93	11.73	10.124	8.833	4436	2609	0.511	2.447	1.579	0.617	0.704
25.35	31.50	31.17	10.056	7.999	4277	1430	0.171	2.539	1.613	0.636	0.8162
41.61	49.67	50.24	9.904	7.107	4124	0.799	0.170	3.205	1.650	0.170	0.9168
60.27	68.05	69.52	10.290	6.491	4022	0.381	0.083	7.124	1.699	0.639	0.664
84.27	84.29	89.57	10.591	5.581	3805	0.334	0.085	14.652	1.731	0.976	0.761
100.00	100.00	100.00	10.654	4.580	3397	0.414	0.085	22.597	1.732	0.976	0.9781

MOMENTUM AVERAGE ROTOR EFFICIENCY = 0.8587 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = 0.8484 (ADIABATIC)
 MASS AVERAGE TEMPERATURE RISE = 1.6454
 MASS AVERAGE TEMPERATURE RISE = 1.1799

NASA SMALL AXIAL COMPRESSOR TEST 4 JUN 28 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 15

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9021

PERCENT SPAN FROM TIP (I. P.)	ETA 3 (DEG)	V3 (FT/SEC)	VIII (FT/SEC)	M3	VM3 (FT/SEC)	VZ3 (FT/SEC)	U3 (FT/SEC)
0.00	51.90	717.68	479.71	.607	534.16	574.30	1724.90
11.51	42.80	724.74	490.80	.623	548.59	577.69	1774.39
20.75	38.66	765.57	474.85	.659	598.54	574.54	1744.60
44.67	36.74	807.69	443.10	.701	647.29	646.91	1700.51
67.20	37.63	864.26	515.47	.737	688.67	646.23	1613.53
87.25	40.87	904.94	542.11	.794	684.33	674.14	916.14
100.00	47.11	940.56	630.74	.830	697.73	678.45	859.63

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9118

PERCENT SPAN FROM TIP (I. P.)	ETA 4 (DEG)	V4 (FT/SEC)	VIIA (FT/SEC)	M4	VM4 (FT/SEC)	V/4 (FT/SEC)	U4 (FT/SEC)
0.00	-9.96	602.24	-9.88	.504	602.19	602.19	1319.26
11.51	-9.75	612.30	-10.12	.513	612.22	612.14	1273.54
20.75	-10.12	635.56	-12.42	.539	635.44	625.14	1197.21
44.67	-10.12	683.86	-13.37	.585	683.73	683.01	1123.04
67.20	-10.12	694.21	-13.57	.596	693.98	693.59	1047.69
84.22	-10.12	687.53	-13.44	.588	687.39	684.88	983.50
100.00	-10.12	691.49	-13.52	.592	691.36	691.36	916.01

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP FROM TRAIL IN LEAF	LEADING EDGE (DEG)	TRAIL IN LEAF (DEG)	INCIDENCE ANGLE (DEG)	MEAN SUCTION ANGLE (DEG)	DELTA (DEG)	ETA (DEG)	FLUX (PCT)	PERCENT SPAN FROM TIP	INCIDENCE ANGLE (DEG)	MEAN SUCTION ANGLE (DEG)	DELTA (DEG)	ETA (DEG)	FLUX (PCT)	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE LOSS RATIO	STAGE LOSS RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	5.543	1.661	42.84	43.41	0.00	0.00	4.043	0.735	0.03	21.240	1.544	1.2041	1.544	1.2041	1.2041	.8627
11.51	11.51	11.51	6.670	1.348	43.41	43.41	11.73	11.73	4.072	0.604	0.210	15.914	1.557	1.2041	1.557	1.2041	1.2041	.8746
20.75	20.75	20.75	2.035	-1.255	39.74	39.74	11.17	11.17	3.749	0.723	0.238	12.066	1.541	1.1817	1.541	1.1817	1.1817	.8830
44.67	44.67	44.67	-1.026	-4.014	37.86	37.86	20.24	20.24	3.379	0.465	0.142	10.466	1.636	1.1703	1.636	1.1703	1.1703	.8440
67.20	67.20	67.20	-1.446	-4.761	34.75	34.75	69.62	69.62	3.521	0.434	0.239	9.979	1.667	1.1674	1.667	1.1674	1.1674	.7987
87.25	87.25	87.25	-1.446	-4.342	41.90	41.90	89.57	89.57	4.044	1.174	0.443	10.813	1.634	1.1734	1.634	1.1734	1.1734	.6774
100.00	100.00	100.00	-2.519	-5.960	43.23	43.23	100.00	100.00	4.281	0.1503	0.396	17.580	1.636	1.1737	1.636	1.1737	1.1737	.7258

MOMENTUM AVG. STAGE LOSS RATIO = .8234 (POLYTROPIC)
MASS AVERAGE TEMPERATURE RISE = .8112 (ADIABATIC)

MOMENTUM AVG. STAGE LOSS RATIO = 1.0122
MASS AVERAGE TEMPERATURE RISE = 1.1799

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

90 PERCENT DESIGN SPEED = SCAN NO 15

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9021

PERCENT SPAN FROM TIP (I. F.)	BETA 3 (DEG)	V3 (M/SEC)	VU3 (M/SEC)	M3	VM3 (M/SEC)	VU3 (M/SEC)	U3 (M/SEC)
0.00	41.90	214.75	146.09	.607	162.41	141.02	405.05
11.61	42.86	223.06	152.34	.623	164.16	143.49	388.43
30.75	34.56	213.63	145.95	.659	162.44	102.63	351.06
44.67	34.74	245.18	147.25	.701	197.29	107.15	315.44
62.00	37.63	257.33	157.10	.737	203.41	203.07	308.22
87.95	40.47	275.42	180.48	.794	208.57	204.78	279.25
100.00	42.11	286.64	192.25	.830	212.67	206.79	262.01

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9118

PERCENT SPAN FROM TIP (I. F.)	BETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VM4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	-7.4	113.57	-3.01	.504	117.55	113.55	402.11
11.73	-9.5	116.63	-3.09	.513	116.60	116.57	389.22
30.27	-1.12	131.72	-3.79	.539	143.68	103.60	304.91
44.65	-1.12	208.64	-4.07	.585	208.40	208.19	342.30
62.35	-1.12	211.56	-4.14	.596	211.52	211.61	319.34
84.22	-1.12	209.56	-4.10	.588	209.52	209.25	293.68
100.00	-1.12	210.77	-4.12	.592	210.73	210.72	279.20

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	TRAILING EDGE	MASS FLOW (PCT)	DELTA MEAN (DEG)	INCIDENCE MEAN (DEG)	SUCT ANGLE (DEG)	ANGLE SUR (DEG)	OMF/A RATIO	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	POLYTROPIC EFF
0.00	0.00	0.00	42.84	5.583	1.661	4.083	.0533	.073	21.260	1.548	1.2041	.8627
11.61	11.30	11.73	43.91	6.678	3.368	.6072	.0504	.0210	15.614	1.557	1.2041	.8996
30.75	30.27	31.17	34.70	2.045	-1.255	.3749	.0723	.0238	12.066	1.503	1.1017	.9030
44.67	44.66	50.26	37.84	-1.026	-4.014	.3379	.0465	.0162	10.866	1.636	1.1703	.4540
62.20	62.35	62.52	38.75	-1.416	-4.761	.3521	.0034	.0239	9.979	1.647	1.1674	.7497
87.95	84.22	84.57	41.99	-1.446	-4.342	.4094	.1474	.0843	10.413	1.534	1.1738	.6774
100.00	100.00	100.00	43.23	-2.519	-5.960	.4241	.1568	.0396	17.580	1.636	1.1737	.7268

MOMENTUM AVERAGE STAGE EFFICIENCY = .8234 (POLYTROPIC)
 MASS AVERAGE STAGE EFFICIENCY = .8112 (ADIABATIC)
 MOMENTUM AVG. STAGE PRESS RATIO = 1.6122
 MASS AVERAGE TEMPERATURE RISE = 1.1799

NASA SMALL AXIAL COMPRESSOR TEST 4 JUN 28, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 16

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCCAGE = .9104

PERCENT SPAN FROM TIP (I. E.)	BETA 3 (DEG)	V3 (FT/SEC)	VIII3 (FT/SEC)	M3	VM3 (FT/SEC)	V73 (FT/SEC)	U3 (FT/SEC)
0.00	42.94	709.74	413.44	.600	519.62	513.91	1329.01
11.79	41.73	729.70	506.45	.618	527.25	526.37	1273.70
30.25	34.16	769.27	485.80	.660	596.41	596.40	1193.74
48.80	31.61	805.17	491.44	.698	637.80	637.33	1099.99
67.23	31.45	847.04	521.09	.749	680.43	677.94	1013.22
87.79	41.44	902.06	596.17	.791	676.27	677.19	917.01
100.00	42.68	938.25	636.01	.827	681.79	670.73	859.70

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCCAGE = .9300

PERCENT SPAN FROM TIP (I. E.)	BETA 4 (DEG)	V4 (FT/SEC)	VIII4 (FT/SEC)	M4	VM4 (FT/SEC)	V74 (FT/SEC)	U4 (FT/SEC)
0.00	-9.94	586.29	-9.62	.490	516.21	586.21	1319.37
11.71	-9.94	597.44	-9.80	.499	507.35	597.24	1273.75
30.27	-9.94	618.24	-10.14	.523	618.15	617.88	1197.32
48.60	-9.94	667.75	-10.95	.570	667.66	666.97	1123.03
67.39	-1.74	683.31	-11.21	.585	683.22	682.84	1047.60
88.23	-1.29	674.44	-15.09	.576	674.21	671.80	963.55
100.00	-1.29	677.82	-15.25	.579	677.64	677.64	916.09

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE ANGLE (DEG)	SUCT SURF (NEG)	INCIDENCE ANGLE (NEG)	IS FACTOR	OMEGA MAP	LOSS PARAMETER	DEVIATION ANGLE (NEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	43.88	9.617	2.695	4262	.0485	.0485	.0175	21.240	1.548	1.2058	.8470
11.71	11.71	44.67	7.547	4.224	4254	.0597	.0597	.0207	15.619	1.554	1.2058	.8429
30.27	31.07	40.10	2.527	-1.757	4054	.0981	.0981	.0322	12.246	1.581	1.1842	.7533
48.60	53.05	38.55	-1.158	-3.145	3879	.0538	.0538	.0165	11.045	1.634	1.1732	.8564
67.29	49.48	38.39	-2.087	-6.949	3754	.1175	.1175	.0337	10.158	1.650	1.1692	.7345
87.79	49.36	42.72	-2.643	-3.746	4240	.1537	.1537	.0433	10.251	1.635	1.1744	.6970
100.00	100.00	43.97	-1.955	-5.496	4430	.1531	.1531	.0387	17.410	1.636	1.1742	.7431

MOMENTUM AVERAGE STAGE EFFICIENCY = .6152 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .8023 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.6124
MASS AVERAGE TEMPERATURE RISE = 1.1819

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (MFRIC UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 16

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9104

PERCENT SPAN FROM TIP (I. F.)	BETA 3 (DEG)	V3 (M/SEC)	V1/3 (M/SEC)	M3	VM3 (M/SEC)	V2/3 (M/SEC)	U3 (M/SEC)
0.00	42.94	215.33	147.36	.600	149.34	156.64	405.04
11.79	43.71	222.41	153.76	.614	160.70	160.64	389.23
30.94	39.10	236.46	148.07	.660	181.79	181.70	360.90
49.00	37.61	245.82	143.74	.698	194.40	194.26	335.28
67.79	37.65	261.23	144.43	.749	207.39	206.64	304.83
87.70	41.64	276.94	141.95	.791	206.13	203.34	279.20
100.00	47.68	285.98	141.85	.827	210.25	204.44	262.04

E I T VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9300

PERCENT SPAN FROM TIP (I. F.)	BETA 4 (DEG)	V4 (M/SEC)	V1/4 (M/SEC)	M4	VM4 (M/SEC)	V2/4 (M/SEC)	U4 (M/SEC)
0.00	-2.94	178.70	-2.93	.490	178.68	178.68	402.15
11.31	-2.94	182.10	-2.99	.494	182.07	182.05	388.24
30.27	-2.94	188.44	-3.09	.523	188.41	188.33	364.94
49.50	-2.94	203.53	-3.34	.570	203.50	203.22	342.30
67.39	-2.94	208.27	-3.42	.585	208.25	208.13	319.31
84.73	-1.28	205.57	-4.60	.576	205.52	204.77	293.69
100.00	-1.29	205.60	-4.65	.579	206.55	206.54	279.22

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	PERCENT SPAN FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE ANGLE (DEG)	SUCT SUH (DEG)	ANGLE (DEG)	LOSS PARAMETER	DEVIATION (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	43.88	6.617	2.695	.4262	.0685	21.240	1.548	1.2048	.8570
11.79	11.31	1.70	44.67	7.547	4.224	.4254	.0597	15.619	1.559	1.2058	.8429
30.94	30.27	3.17	40.10	2.527	-7.57	.4054	.0441	12.246	1.581	1.1842	.7437
49.00	49.64	50.14	38.55	-2.150	-3.145	.3779	.0538	11.065	1.676	1.1712	.8564
67.79	67.39	69.44	38.33	-2.087	-4.949	.3754	.1175	10.150	1.650	1.1492	.7365
87.70	84.73	81.54	42.72	-1.840	-3.746	.4240	.1637	10.251	1.634	1.1754	.6270
100.00	100.00	100.00	43.97	-1.955	-5.386	.4230	.1531	11.410	1.634	1.1742	.7431

MOMENTUM AVERAGE STAGE EFFICIENCY = .8152 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .8021 (ADIABATIC)
MOMENTUM AVG. STAGE PRESS RATIO = 1.6124
MASS AVERAGE TEMPERATURE RISE = 1.1819

NASA SMALL AXIAL COMPRESSOR TEST 4 JUNF 28 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIVALENT WEIGHT FLOW = 1.3062 KG/SEC 90 PERCENT DESIGN SPEED = SC4V NO 17 R.P.M. 49023.410
 PERCENT DESIGN EQUIVALENT FLOW = 78.6239 EQUIVALENT SPEED / INLET ANGLE AREA = 185.2874 KG/SEC-50 M

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = 1.0150

PERCENT SPAN FROM TIP (I. F.)	RETA#1 (DEG)	V#1 (M/SEC)	WU#1 (M/SEC)	WV#1 (M/SEC)	WZ#1 (M/SEC)	M#1	WU#1 (M/SEC)	WV#1 (M/SEC)	WZ#1 (M/SEC)
0.00	73.44	452.16	433.60	128.95	0.00	.385	128.95	128.95	128.95
9.41	72.30	413.99	413.46	131.95	0.00	.394	131.95	131.95	131.95
25.10	69.42	405.51	379.64	142.52	0.00	.427	142.52	142.52	142.52
41.28	67.10	374.70	345.17	145.80	0.00	.437	145.80	145.80	145.80
59.92	65.13	336.44	305.24	141.50	0.00	.423	141.50	141.50	141.50
81.93	62.36	286.52	253.82	132.92	0.00	.397	132.92	132.92	132.92
100.00	59.76	253.93	219.39	127.47	0.00	.381	127.47	127.47	127.47

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8795

PERCENT SPAN FROM TIP (I. F.)	RETA#2 (DEG)	V#2 (M/SEC)	WU#2 (M/SEC)	WV#2 (M/SEC)	WZ#2 (M/SEC)	M#2	WU#2 (M/SEC)	WV#2 (M/SEC)	WZ#2 (M/SEC)
0.00	62.08	307.45	272.02	204.46	145.00	.564	145.00	144.15	139.51
12.20	54.44	287.64	244.91	214.05	152.25	.592	152.25	150.44	147.17
31.02	52.20	273.88	216.39	224.24	148.67	.628	148.67	147.88	146.83
49.71	45.46	258.13	183.08	236.50	152.14	.669	152.14	141.04	141.05
67.76	36.76	244.25	146.18	251.17	160.64	.721	160.64	145.68	145.68
87.84	24.13	209.74	85.73	268.53	188.32	.769	188.32	191.42	188.32
100.00	14.99	198.37	51.31	279.12	202.96	.803	202.96	191.62	191.62

ROTOR PERFORMANCE DATA

PERCENT LEADING EDGE	PERCENT SPAN FROM TIP	MASS FLOW (PCT)	DELTA BETA# (DEG)	INCIDENCE MEAN (DEG)	SUCT SUR ANGLE (DEG)	LOSS PARAMETER	DELTA ANGLE (DEG)	DEVATION ANGLE (DEG)	RATON PFCSS	ADIABATIC EFF	POLYTROPIC EFF
0.00	0.00	0.00	11.36	9.601	9.133	.4415	.2714	5.089	1.549	.4577	.4785
9.41	12.20	11.67	13.84	10.347	9.055	.4546	.2753	3.619	1.580	.4685	.4891
25.10	31.02	31.00	17.23	10.312	8.266	.4460	.1731	2.552	1.627	.4955	.4970
41.28	49.71	49.90	21.64	10.196	7.417	.4337	.0993	3.707	1.649	.4917	.4942
59.92	67.76	69.32	28.37	10.617	6.834	.4035	.0280	6.344	1.711	.4738	.4757
87.93	87.84	89.48	38.23	10.943	5.938	.4204	.0970	14.348	1.714	.4335	.4384
100.00	100.00	100.00	44.77	11.012	4.938	.3856	.1203	22.062	1.714	.4335	.4384

MOMENTUM AVERAGE ROTOR EFFICIENCY = .9465 (POLYTROPIC) MOMENTUM AVG. ROTOR PRESS RATIO = 1.6523
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8353 (ADIABATIC) MASS AVERAGE TEMPERATURE RISE = 1.1844

NASA SMALL AXIAL COMPRESSOR TEST 4 JUNE 28, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 17

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9126

PERCENT SPAN FROM TIP (I. F.)	BETA 3 (DEG)	V3 (FT/SEC)	VU3 (FT/SEC)	M3	VM3 (FT/SEC)	VZ3 (FT/SEC)	U3 (FT/SEC)
0.00	41.94	705.89	489.84	.595	504.27	502.68	1328.72
11.83	44.95	723.51	511.19	.611	512.01	511.16	1273.22
31.06	39.97	768.80	493.82	.659	548.23	509.22	1183.00
44.60	38.19	808.82	506.08	.700	635.69	635.22	1100.70
66.79	37.81	852.16	522.47	.744	673.21	670.75	1015.37
87.46	42.82	898.07	604.94	.778	652.89	664.12	918.34
100.00	44.08	928.77	646.07	.816	667.25	648.81	859.51

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9222

PERCENT SPAN FROM TIP (I. F.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	-1.12	540.02	-11.36	.484	579.91	579.91	1319.08
11.31	-1.10	549.86	-11.33	.492	589.75	589.68	1273.48
30.27	-1.58	611.71	-6.20	.516	611.68	611.41	1197.03
48.66	-2.41	647.93	-4.71	.560	657.91	657.24	1122.90
67.39	-2.41	678.73	-4.86	.581	678.72	678.34	1017.38
88.19	-2.59	671.17	-6.86	.572	671.13	664.68	923.49
100.00	-2.59	615.09	-6.95	.575	675.05	675.05	855.89

STATOR PERFORMANCE DATA

PERCENT LEADING EDGE	PERCENT SPAN FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA HETA (DFG)	INCIDENCE MEAN (DFG)	ANGLE SUCT (INER)	D FACTOR	OMEGA HAR	LOSS PARAMETER	DEVIATION ANGLE (DFG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	45.06	7.624	3.702	.6361	.0491	.0177	21.060	1.553	1.2085	.8578
11.83	11.31	11.97	46.05	8.786	5.444	.4349	.0543	.0189	15.460	1.561	1.2085	.8592
31.06	30.27	31.00	40.55	3.323	.043	.4151	.1030	.0339	12.605	1.594	1.1972	.7595
48.66	48.66	49.90	38.60	4.36	-2.553	.3740	.0769	.0236	11.576	1.633	1.1763	.9100
66.79	67.39	69.32	38.22	-1.652	-6.529	.3759	.1048	.0301	10.689	1.656	1.1700	.7660
87.46	88.19	89.48	43.40	.614	-2.307	.4200	.1281	.0339	10.947	1.642	1.1740	.7578
100.00	100.00	100.00	44.67	-0.556	-3.997	.4406	.1191	.0301	18.110	1.642	1.1740	.7978

MOMENTUM AVERAGE STAGE EFFICIENCY = .8096 (POLYTROPIC) MOMENTUM AVG. STAGE PRESS RATIO = 1.6165
 MASS AVERAGE STAGE EFFICIENCY = .7963 (ADIABATIC) MASS AVERAGE TEMPERATURE RISE = 1.1844

NASA SMALL AXIAL COMPRESSOR TEST 4 JUNE 28, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE (NASA SMALL AXIAL COMPRESSOR (METRIC UNITS))

90 PERCENT DESIGN SPEED - SCAY NO 17

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9126

PERCENT SPAN FROM TIP (L. F.)	BETA 3 (DEG)	V3 (M/SEC)	V113 (M/SEC)	M3	VM3 (M/SEC)	V173 (M/SEC)	U3 (M/SEC)
0.00	43.94	215.15	149.30	.595	144.92	153.22	404.99
11.71	44.95	220.51	155.41	.611	156.06	155.30	348.08
31.06	39.37	234.33	150.52	.659	179.60	179.59	760.58
48.60	34.19	246.53	152.43	.700	193.76	173.61	335.49
66.74	37.41	259.74	159.25	.744	205.19	204.44	309.49
87.46	42.82	271.24	184.39	.778	199.00	194.33	279.91
100.00	44.08	283.04	196.42	.816	203.38	197.74	261.94

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9222

PERCENT SPAN FROM TIP (L. F.)	BETA 4 (DEG)	V4 (M/SEC)	V114 (M/SEC)	M4	VM4 (M/SEC)	V174 (M/SEC)	U4 (M/SEC)
0.00	-1.12	176.79	-3.46	.484	176.74	176.74	402.06
11.71	-1.10	179.79	-3.45	.492	179.74	179.73	348.16
31.06	-1.50	186.45	-1.89	.516	186.44	186.36	364.05
48.60	-1.41	200.56	-1.44	.560	200.53	200.33	342.26
67.39	-1.4	206.88	-1.48	.581	206.87	206.76	319.24
88.19	-1.59	204.57	-2.09	.572	204.56	203.01	293.67
100.00	-1.59	205.77	-2.12	.575	205.76	205.76	279.16

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	TRAILING EDGE	MASS FLOW (LBS)	DELTA BETA (DEG)	INCIDENCE ANGLE (DEG)	MFAN SUCT SUR (DEG)	INCIDENCE ANGLE (DEG)	DEVIATION ANGLE (DEG)	LOSS PARAMETER	OMEGA BAR	DELTA FACTOR	INCIDENCE ANGLE (DEG)	STAGE PRFSS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	45.04	7.624	3.702	.4361	21.060	.0177	.0491	.4361	21.060	1.553	1.2045	.8478
11.71	11.71	11.67	46.05	8.766	5.444	.4369	12.460	.0149	.0543	.4369	12.460	1.561	1.2045	.8592
31.06	31.06	31.00	40.55	3.323	.043	.4151	12.605	.0334	.1030	.4151	12.605	1.584	1.1872	.7595
48.60	48.60	47.30	38.60	.436	-2.553	.3740	11.576	.0769	.0769	.3740	11.576	1.633	1.1743	.8100
66.74	67.39	69.32	38.22	-1.652	-4.529	.3759	10.689	.0301	.1044	.3759	10.689	1.654	1.1700	.7440
87.46	88.19	89.48	43.40	.614	-2.307	.4200	10.947	.0339	.1281	.4200	10.947	1.642	1.1740	.7528
100.00	100.00	100.00	44.67	-1.556	-3.997	.4406	10.110	.0301	.1191	.4406	10.110	1.642	1.1740	.7478

MOMENTUM AVERAGE STAGE EFFICIENCY = .8096 (POLYTROPIC)

MOMENTUM AVERAGE STAGE EFFICIENCY = .7963 (ADIABATIC)

MOMENTUM AVG. STAGE PRFSS RATIO = 1.6165

MASS AVERAGE TEMPERATURE RISE = 1.1844

NASA SMALL AXIAL COMPRESSOR TEST 4 JUNE 29, 1974 (COMBINED TEMP.)

MOTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT WEIGHT FLOW = 2.8740 LHM/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 77.3754
 90 PERCENT DESIGN SPEED = SCAN NO 18
 EQUIVALENT SPEED = 69042.777 R.P.M.
 EQUIVALENT FLOW / INLET ANN AREA = 31.0003 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = 1.0251

PERCENT SPAN FROM TIP (L. F.)	BETA#1 (DEG)	V#1 (FT/SEC)	HETA1 (DEG)	V1 (FT/SEC)	U1 (FT/SEC)	M1	VM1 (FT/SEC)	V71 (FT/SEC)	U1 (IFT/SEC)
0.00	77.75	1422.96	0.00	414.56	0.00	.377	414.56	401.21	1422.96
9.58	72.62	1355.60	0.00	424.38	0.00	.386	424.38	410.40	1355.60
25.53	65.75	1243.50	0.00	450.63	0.00	.414	450.63	450.21	1243.50
41.41	67.46	1224.44	0.00	469.24	0.00	.428	469.24	447.73	1130.42
60.29	65.50	1094.11	0.00	455.42	0.00	.415	455.42	415.26	999.22
84.17	62.76	914.96	0.00	427.95	0.00	.389	427.95	422.20	831.27
100.00	60.24	824.35	0.00	411.66	0.00	.374	411.66	197.67	719.97

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8452

PERCENT SPAN FROM TIP (T. E.)	BETA#2 (DEG)	V#2 (FT/SEC)	BETA2 (DEG)	V2 (FT/SEC)	U2 (FT/SEC)	M2	VM2 (FT/SEC)	V72 (FT/SEC)	U2 (IFT/SEC)
0.00	62.15	994.92	46.12	673.32	485.35	.565	466.68	451.66	1368.55
12.29	58.67	928.49	46.56	702.12	509.80	.591	482.78	472.23	1302.90
32.19	52.13	877.77	47.07	737.58	503.70	.623	538.81	535.45	1196.63
49.94	45.34	827.46	41.43	775.66	513.24	.667	581.59	581.56	1101.83
67.73	36.29	797.03	39.79	836.10	535.08	.727	642.44	660.57	1006.78
87.61	21.46	646.56	47.82	886.15	664.07	.779	601.74	591.85	900.61
100.00	11.08	613.99	49.94	936.17	716.68	.818	602.55	582.08	834.45

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	PERCENT SPAN FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA HETA# (DEG)	INCIDENCE ANGLE (DEG)	SUCT SUR (DEG)	LOSS PARAMETER (DEG)	DEVIATION ANGLE (DEG)	ROTOR POLY TROPIC EFF	ROTOR POLY TROPIC EFF
0.00	0.00	0.00	11.61	9.452	.4507	.0491	5.157	.6581	.6793
9.58	12.29	11.87	13.95	9.397	.2832	.0514	3.872	.6654	.6861
25.53	32.19	31.37	17.62	8.633	.1908	.0390	2.584	.7808	.7954
41.41	49.94	50.23	22.11	7.801	.1201	.0256	3.781	.8724	.8812
60.29	67.73	69.63	29.21	7.227	.0302	.0067	5.887	.9724	.9765
84.17	87.61	89.66	41.30	6.360	.1793	.0390	11.362	.8846	.8932
100.00	100.00	100.00	49.16	5.414	.4339	.0463	18.129	.8845	.8930

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8302 (POLY TROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8176 (ADIABATIC)
 MOMENTUM AVG. ROTOR PRESS RATIO = 1.6621
 MASS AVERAGE TEMPERATURE RISE = 1.1907

NASA SMALL AXIAL COMPRESSOR TEST & JUNF 28, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIVALENT WEIGHT FLOW FROM TIP (L. F.) = 0.00
 PERCENT DESIGN EQUIVALENT FLOW = 1.2815 KG/S-C
 90 PERCENT DESIGN SPEED = SCAN NO 1A
 EQUIVALENT SPEED = 152.8216 KG/SEC-SO M
 INLET VFLOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOKAGE = 1.0251

PERCENT SPAN FROM TIP (L. F.)	V*1 (M/SEC)	VU*1 (M/SEC)	W*1 (DEG)	VI (M/SEC)	VU1 (M/SEC)	M1	V*1 (M/SEC)	VU1 (M/SEC)	U1
0.00	73.76	433.72	0.00	176.36	0.00	.377	126.36	172.29	633.72
9.58	72.62	413.19	0.00	174.35	0.00	.386	129.35	175.12	613.19
25.53	69.75	374.02	0.00	173.79	0.00	.418	129.79	177.22	374.02
41.61	67.46	344.55	0.00	143.02	0.00	.428	143.02	182.56	344.55
60.28	65.50	334.70	0.00	138.81	0.00	.415	138.81	178.76	304.56
84.17	62.76	253.37	0.00	130.66	0.00	.389	130.66	128.69	253.37
100.00	60.24	219.45	0.00	125.47	0.00	.374	125.47	121.21	219.45

EXIT VFLOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOKAGE = .6452

PERCENT SPAN FROM TIP (L. F.)	W*2 (DEG)	VU*2 (M/SEC)	W*2 (DEG)	V2 (M/SEC)	VU2 (M/SEC)	M2	V*2 (M/SEC)	VU2 (M/SEC)	U2
0.00	62.15	269.20	66.12	205.23	147.93	.565	162.25	177.66	417.17
12.29	58.67	241.74	64.56	214.01	155.39	.591	147.15	163.94	397.13
32.19	52.13	211.21	63.07	224.81	153.53	.629	164.27	157.21	364.77
49.94	45.34	179.40	61.43	236.42	156.43	.657	177.27	177.26	335.84
67.77	36.29	143.77	60.79	254.84	163.09	.727	195.82	195.24	305.87
87.61	21.46	72.10	67.82	273.15	206.41	.779	183.41	190.80	274.51
100.00	11.08	35.96	69.94	285.34	218.38	.819	193.64	177.42	234.34

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP	THAILING EDGE	MASS FLOW (PCT)	DELTA HFTAO (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT (DEG)	D FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	WATOP PRESS RATIO	POLYTROPIC EFF
0.00	0.00	0.00	0.00	11.61	9.920	9.452	.4507	.2763	.0491	5.157	1.583	.6793
9.58	12.29	32.19	11.87	13.95	10.700	9.797	.4762	.2832	.0534	3.872	1.593	.6863
25.53	32.19	67.73	31.37	17.62	16.700	8.633	.4636	.1908	.0390	2.588	1.616	.7454
41.61	49.94	100.00	50.23	22.11	10.5	7.801	.4503	.1201	.0256	3.703	1.673	.9412
60.28	67.73	100.00	64.63	29.21	11.021	7.227	.4063	.0302	.0067	5.887	1.723	.9724
84.17	87.61	100.00	89.66	41.30	11.372	6.380	.4736	.1793	.0390	11.362	1.731	.8932
100.00	100.00	100.00	100.00	49.14	11.488	5.414	.4399	.2215	.0463	18.129	1.731	.8930

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8102 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8176 (ADIABATIC)
 MOMENTUM AVG. ROTOR PRESS RATIO = 1.6621
 MASS AVERAGE TEMPERATURE RISE = 1.1907

NASA SMALL AXIAL COMPRESSOR TEST 4 JUNE 28, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 10

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9213

PERCENT SPAN FROM TIP (L. F.)	BETA 3 (DEG)	V3 (FT/SEC)	V1/3 (FT/SEC)	M3	VM3 (FT/SEC)	V2/3 (FT/SEC)	U3 (FT/SEC)
0.00	45.16	764.74	499.76	.593	496.96	491.50	1329.09
11.97	46.42	720.35	521.81	.607	496.60	495.77	1272.91
31.42	41.66	767.44	510.09	.656	573.39	573.74	1181.64
44.97	39.69	805.35	514.35	.695	619.71	619.25	1099.46
66.91	34.39	854.54	530.72	.745	669.76	647.31	1015.06
87.36	46.13	902.50	650.66	.785	625.41	617.01	918.17
100.00	47.37	944.98	695.24	.827	640.92	622.33	859.75

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9300

PERCENT SPAN FROM TIP (L. F.)	BETA 4 (DEG)	V4 (FT/SEC)	V1/4 (FT/SEC)	M4	VM4 (FT/SEC)	V2/4 (FT/SEC)	U4 (FT/SEC)
0.00	-94	569.00	-9.31	.473	568.92	544.92	1319.45
11.36	-95	577.02	-9.60	.480	576.94	574.47	1273.70
30.36	-1.30	593.53	-13.44	.499	593.38	573.12	1147.10
44.73	-1.44	635.13	-16.35	.539	634.92	624.27	1122.90
67.68	-1.64	659.09	-14.96	.562	658.82	648.45	1047.28
88.20	-1.64	645.87	-14.48	.546	645.60	643.24	963.75
100.00	-1.64	649.25	-14.58	.549	648.99	648.99	916.14

STATOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA HETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT (DEG)	D FACTOR	OMEGA RAN	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STATION POLYTROPIC EFF	
0.00	0.00	0.00	46.10	4.843	4.920	.4550	.0510	.0184	21.240	1.566	1.2128	.8720
11.97	11.34	11.87	47.97	10.226	6.411	.4543	.0516	.0179	15.599	1.573	1.2128	.8748
31.42	30.36	31.37	42.55	4.994	1.725	.4474	.1120	.0368	11.882	1.590	1.1931	.7405
44.97	44.73	50.23	41.17	1.407	-1.077	.4091	.0874	.0268	10.506	1.612	1.1726	.8056
66.91	67.44	64.53	40.03	-1.090	-3.963	.4079	.1213	.0368	9.460	1.658	1.1726	.7524
87.36	88.20	89.66	47.77	3.957	1.032	.4724	.1653	.0427	9.893	1.616	1.1916	.7220
100.00	100.00	100.00	49.01	2.736	-7.05	.4930	.1527	.0386	17.060	1.616	1.1915	.7673

MOMENTUM AVERAGE STAGE EFFICIENCY = .7870 (POLYTROPIC)
 MOMENTUM AVERAGE STAGE EFFICIENCY = .7721 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.6188
 MASS AVERAGE TEMPERATURE RISE = 1.1407

ORIGINAL PHOTO COPY
 OF POOR QUALITY

NASA SMALL AXIAL COMPRESSOR TEST 4 JUN 28, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 1A

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9213

PERCENT SPAN FROM TIP (L. F.)	BETA 3 (DEG)	V3 (M/SEC)	VH3 (M/SEC)	M3	VM3 (M/SEC)	V73 (M/SEC)	U3 (M/SEC)
0.00	5.16	214.02	152.33	.593	151.47	149.81	405.14
11.97	46.42	219.56	159.05	.507	151.36	151.11	387.98
31.42	41.66	233.92	155.47	.656	174.77	174.77	360.16
44.93	34.69	245.47	154.77	.495	148.89	148.75	335.11
66.91	38.39	260.46	161.76	.745	204.14	203.40	309.39
87.34	46.13	275.08	198.32	.785	190.62	188.04	280.16
100.00	47.37	288.03	211.91	.827	195.08	189.49	261.35

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9300

PERCENT SPAN FROM TIP (L. F.)	BETA 4 (DEG)	V4 (M/SEC)	VH4 (M/SEC)	M4	VM4 (M/SEC)	V74 (M/SEC)	U4 (M/SEC)
0.00	-0.94	173.43	-2.85	.473	173.41	173.41	402.17
11.34	-0.95	175.88	-2.93	.480	175.85	175.83	388.22
30.34	-1.30	180.91	-4.10	.499	180.86	180.78	364.97
44.73	-1.49	193.59	-4.98	.539	193.52	193.32	342.26
67.48	-1.64	200.89	-5.75	.562	200.81	200.70	319.21
88.20	-1.64	196.86	-5.63	.546	196.78	196.76	293.75
100.00	-1.64	197.89	-5.66	.549	197.81	197.81	279.24

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	FROM TIP TRAILING ED C	MASS FLOW (PCT)	DELTA HETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	FACTOR O	OMEGA HIR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STATOR PRESS RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	46.10	8.843	4.920	.4550	.0510	.0194	21.240	1.566	1.2128
11.97	11.34	11.37	47.37	10.226	6.911	.4543	.0516	.0179	15.599	1.573	1.2128
31.42	30.34	31.37	42.95	4.994	1.725	.4474	.1120	.0368	11.882	1.590	1.1931
48.93	44.73	50.23	41.17	1.907	-1.077	.4991	.0874	.0268	10.506	1.632	1.1812
66.91	67.48	69.03	40.03	-1.090	-3.963	.4079	.1213	.0368	9.460	1.658	1.1726
87.34	88.20	89.66	47.77	3.957	-1.032	.4724	.1453	.0437	9.893	1.636	1.1916
100.00	100.00	100.00	49.01	2.736	-2.705	.4930	.1527	.0386	17.060	1.636	1.1915

MOMENTUM AVERAGE STAGE EFFICIENCY = .7870 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7721 (ADIABATIC)
MOMENTUM AVG. STAGE PRESS RATIO = 1.6188
MASS AVERAGE TEMPERATURE RISE = 1.1907

NASA SMALL AXIAL COMPRESSOR TEST 4 JUNE 28, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT WEIGHT FLOW = 2.8790 LBM/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 78.6059
 90 PERCENT DESIGN SPEED - SCAN NO 19
 EQUIVALENT SPEED
 EQUIVALENT FLOW / INLET ANN AREA = 69037.431 R.P.M.
 31.79A1 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0220

PERCENT SPAN FROM TIP (I. E.)	HETA*1 (DEG)	V*1 (FT/SEC)	VU1*1 (FT/SEC)	W*1 (DEG)	WU1 (FT/SEC)	M1	V*1 (FT/SEC)	VU1 (FT/SEC)	M1	V*1 (FT/SEC)	VU1 (FT/SEC)	M1	V*1 (FT/SEC)	VU1 (FT/SEC)	M1	U1 (FT/SEC)
0.00	73.45	1414.34	1422.85	0.00	422.79	0.00	422.79	0.00	.384	422.79	422.79	0.00	422.79	422.79	0.00	1422.85
9.47	72.30	1423.61	1356.26	0.00	432.71	0.00	432.71	0.00	.394	432.71	432.71	0.00	432.71	432.71	0.00	1356.26
25.29	69.42	1329.95	1265.11	0.00	467.40	0.00	467.40	0.00	.426	467.40	467.40	0.00	467.40	467.40	0.00	1265.11
41.37	67.10	1229.89	1132.04	0.00	474.19	0.00	474.19	0.00	.437	474.19	474.19	0.00	474.19	474.19	0.00	1132.04
60.11	65.12	1102.70	1000.33	0.00	463.98	0.00	463.98	0.00	.427	463.98	463.98	0.00	463.98	463.98	0.00	1000.33
84.09	62.34	939.03	831.74	0.00	437.89	0.00	437.89	0.00	.397	437.89	437.89	0.00	437.89	437.89	0.00	831.74
100.00	59.78	833.13	719.92	0.00	419.30	0.00	419.30	0.00	.381	419.30	419.30	0.00	419.30	419.30	0.00	719.92

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8503

PERCENT SPAN FROM TIP (I. E.)	HETA*2 (DEG)	V*2 (FT/SEC)	VU2*2 (FT/SEC)	W*2 (DEG)	WU2 (FT/SEC)	M2	V*2 (FT/SEC)	VU2 (FT/SEC)	M2	V*2 (FT/SEC)	VU2 (FT/SEC)	M2	V*2 (FT/SEC)	VU2 (FT/SEC)	M2	U2 (FT/SEC)
0.00	62.22	1005.37	889.49	45.63	670.06	0.00	670.06	478.97	.563	670.06	478.97	.563	670.06	478.97	.563	1364.45
12.24	58.67	937.07	800.09	45.88	700.69	0.00	700.69	502.99	.590	700.69	502.99	.590	700.69	502.99	.590	1303.08
32.02	52.42	888.50	764.18	42.30	732.83	0.00	732.83	493.24	.625	732.83	493.24	.625	732.83	493.24	.625	1197.47
49.88	45.58	836.40	597.35	40.77	772.98	0.00	772.98	504.72	.666	772.98	504.72	.666	772.98	504.72	.666	1102.07
67.70	36.27	808.37	476.99	34.16	839.46	0.00	839.46	529.43	.730	839.46	529.43	.730	839.46	529.43	.730	1006.42
87.66	21.88	694.34	243.19	47.04	897.81	0.00	897.81	657.10	.781	897.81	657.10	.781	897.81	657.10	.781	900.29
100.00	11.58	625.42	125.54	49.18	936.93	0.00	936.93	704.84	.800	936.93	704.84	.800	936.93	704.84	.800	834.39

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA HETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCTION (DEG)	DELTA FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PROFSS HATIO	ROTOR ATTARATIC EFF	ROTOR POLYTHROPIC EFF
0.00	0.00	0.00	11.23	9.614	9.146	.4456	.2749	.0488	5.229	1.572	.6555	.6765
9.47	12.24	11.75	13.68	10.366	9.070	.4696	.2795	.0528	3.821	1.592	.6652	.6800
25.29	32.02	31.10	17.01	10.329	8.277	.4546	.1835	.0372	2.809	1.625	.7448	.7798
41.37	49.88	49.39	21.52	10.209	7.425	.4432	.1122	.0238	3.908	1.665	.8784	.8858
60.11	67.71	69.44	28.85	10.626	6.834	.3949	.0174	.0079	5.908	1.723	.9875	.9887
84.09	87.56	89.50	40.66	10.946	5.936	.4614	.1606	.0349	11.047	1.732	.8951	.9029
100.00	100.00	100.00	48.20	11.030	4.956	.4268	.1985	.0414	18.631	1.732	.8951	.9029

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8357 (POLYTHROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8236 (ADIABATIC)
 MOMENTUM AVG. ROTOR PRESS RATIO = 1.6564
 MASS AVERAGE TEMPERATURE RISE = 1.1880

NASA SMALL AXIAL COMPRESSOR TEST 4 JUNE 28, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIVALENT FLIGHT FLOW = 1.3059 KG/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 78.6059
 90 PERCENT DFCION SPEED = SCAN NO 19
 FOUIVALENT SPEED
 EQUIVALENT FLOW / INLET ANN AREA = 69037.011 R.P.M.
 155.2520 KG/SEC-SQ M

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0220

PERCENT SPAN FROM TIP (L. F.)	HETA01 (DEG)	V01 (M/SEC)	V1101 (M/SEC)	BETA1 (DEG)	V1 (M/SEC)	VU1 (M/SEC)	M1	V41 (M/SEC)	V71 (M/SEC)	U1 (M/SEC)
0.00	77.45	452.43	473.69	1.350	128.87	0.00	.354	128.87	124.72	433.69
9.47	72.30	433.92	413.39	1.295	131.49	0.00	.394	131.49	127.57	413.39
24.20	63.42	405.37	379.51	1.213	142.46	0.00	.426	142.46	129.85	379.51
41.37	61.10	374.57	345.05	1.172	145.75	0.00	.437	145.75	145.28	345.05
60.11	65.12	336.10	304.90	1.086	141.42	0.00	.423	141.42	141.77	304.90
84.09	62.34	286.22	253.51	.855	132.86	0.00	.397	132.86	131.07	253.51
100.00	59.78	253.94	219.43	.757	127.80	0.00	.381	127.80	123.46	219.43

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8503

PERCENT SPAN FROM TIP (L. F.)	HETA02 (DEG)	V02 (M/SEC)	VU02 (M/SEC)	HETA2 (DEG)	V2 (M/SEC)	VU2 (M/SEC)	M2	V42 (M/SEC)	V72 (M/SEC)	U2 (M/SEC)
0.00	62.22	306.44	271.12	.844	204.23	145.99	.563	145.99	138.23	417.10
12.24	58.63	285.52	243.47	.749	211.57	153.31	.570	149.67	145.44	397.18
32.42	52.42	271.85	214.63	.758	221.37	150.34	.625	165.20	144.17	346.47
46.84	45.54	254.94	182.07	.720	235.60	153.84	.666	174.44	138.63	335.91
47.70	36.27	245.78	145.39	.742	255.56	161.37	.730	198.17	197.54	306.76
87.66	21.64	200.66	74.12	.573	273.65	200.29	.741	180.47	187.41	276.41
100.00	11.58	190.63	34.26	.547	289.58	216.06	.820	180.75	180.40	216.06

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	MASS FLOW (PCT)	DELTA HETA0 (DEG)	INCIDENCE MEAN (DEG)	SUCT SUR (DEG)	ANGLE (DEG)	LOSS PARAMETER	OMEGA RAV	DEVIATION ANGLE (DEG)	HOTAP PRESS RATIO	POLYTROPIC EFF
0.00	0.00	11.23	9.614	9.146	.4456	.2749	5.229	1.572	.6555	.6765
9.47	11.75	13.64	10.366	9.070	.4606	.2795	3.821	1.542	.6452	.6860
25.24	32.07	17.01	10.324	4.277	.4546	.1435	2.409	1.625	.7848	.7990
41.37	49.99	21.52	10.209	7.425	.4432	.0234	3.904	1.645	.8784	.9409
60.11	69.48	28.84	10.626	6.474	.3949	.0079	5.904	1.723	.9035	.9847
84.09	87.66	40.64	10.946	5.916	.4614	.1606	11.047	1.732	.8951	.9029
100.00	100.00	48.20	11.030	4.956	.4268	.1985	14.631	1.712	.8951	.9029

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8357 (POLYTROPIC)
 MASS AVERAGE ROTOR EFFICIENCY = .8236 (ADIABATIC)
 MOMENTUM AVERAGE ROTOR PRESS RATIO = 1.6564
 MASS AVERAGE ROTOR PRESS RATIO = 1.1480

NASA SMALL AXIAL COMPRESSOR TEST 4 JUN 28, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 19

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCCAGE = .9246

PERCENT SPAN FROM TIP (I. F.)	HETA 3 (DEG)	V3 (FT/SEC)	V113 (FT/SEC)	M3	V43 (FT/SEC)	V73 (FT/SEC)	U3 (FT/SEC)
0.00	44.48	707.86	493.19	.593	592.19	496.67	1328.99
11.40	45.56	720.97	514.80	.609	504.75	503.92	1273.20
21.19	40.76	764.92	499.43	.655	579.37	579.37	1182.60
48.80	34.92	804.94	505.04	.696	626.27	626.27	1099.98
66.90	37.68	858.81	524.94	.750	619.70	677.22	1015.04
87.34	44.73	905.87	643.65	.789	637.43	628.87	919.11
100.00	46.52	947.83	687.77	.831	652.19	644.17	859.69

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCCAGE = .9300

PERCENT SPAN FROM TIP (I. F.)	BETA 4 (DEG)	V4 (FT/SEC)	V114 (FT/SEC)	M4	V44 (FT/SEC)	V74 (FT/SEC)	U4 (FT/SEC)
0.00	-1.64	579.23	-16.58	.483	518.99	578.99	1319.35
11.30	-1.64	588.75	-16.82	.491	588.51	588.43	1273.90
21.27	-1.47	605.36	-15.57	.510	605.16	604.89	1197.47
48.64	-1.64	652.84	-18.68	.555	652.57	651.90	1123.19
67.41	-1.64	675.62	-19.34	.578	675.34	674.47	1047.52
84.19	-1.64	663.48	-18.99	.562	663.21	660.78	963.71
100.00	-1.64	667.18	-19.09	.565	666.91	666.91	916.08

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT (DEG)	D FACTOR	OMEGA PAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE POLYSS RATIO	STAGE TEMPERATURE RATIO	STATOR POLYTHROPIC EFF
0.00	0.00	46.12	8.164	4.242	.4400	.0496	.0178	20.540	1.555	1.2100	.8555
11.30	11.75	47.20	9.375	6.056	.4387	.0527	.0183	14.926	1.563	1.2100	.8524
31.22	31.10	42.24	4.112	.836	.4267	.1073	.0352	11.717	1.581	1.1002	.7534
49.80	49.73	40.56	1.146	-1.841	.3845	.0755	.0231	10.347	1.630	1.1782	.8151
66.90	69.64	39.32	-1.803	-4.676	.3899	.1260	.0361	9.459	1.456	1.1707	.7277
87.34	89.60	46.92	3.102	1.177	.4531	.1695	.0468	9.892	1.633	1.1895	.7005
100.00	100.00	48.16	1.889	-1.552	.4739	.1570	.0397	17.060	1.633	1.1895	.7593

MOMENTUM AVERAGE STAGE EFFICIENCY = .7927 (POLYTHROPIC) MOMENTUM AVG. STAGE PRESS RATIO = 1.6139
 MOMENTUM AVERAGE STAGE EFFICIENCY = .7783 (ADIABATIC) MASS AVERAGE TEMPERATURE RATIO = 1.1880

ORIGINAL PAGE IS OF POOR QUALITY

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 19

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9246

PERCENT SPAN FROM TIP (I. F.)	AFT A 3 (DEG)	V3 (M/SEC)	VH3 (M/SFC)	M3	VM3 (M/SEC)	VZ3 (M/SEC)	U3 (M/SEC)
0.00	44.48	214.54	150.32	.593	153.07	151.33	405.08
11.89	45.56	214.74	154.91	.609	153.65	153.59	388.07
31.19	40.76	213.15	152.23	.655	176.59	176.59	360.46
44.80	33.92	245.35	154.13	.696	190.89	190.75	335.27
66.90	37.68	261.76	160.00	.750	207.17	206.42	309.38
87.74	45.28	276.11	196.18	.789	194.29	191.68	280.15
100.00	46.52	288.90	209.63	.831	198.79	193.29	262.03

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9300

PERCENT SPAN FROM TIP (I. F.)	AFT A 4 (DEG)	V4 (M/SEC)	VH4 (M/SFC)	M4	VM4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	-1.64	176.54	-5.05	.483	176.49	176.48	402.14
11.30	-1.64	179.25	-5.13	.491	179.38	179.35	388.25
30.22	-1.47	184.51	-4.74	.510	184.45	184.37	364.99
44.64	-1.64	198.90	-5.69	.555	198.90	198.70	342.35
67.61	-1.64	205.93	-5.89	.578	205.84	205.73	319.29
88.19	-1.64	202.23	-5.79	.562	202.15	201.41	293.74
100.00	-1.64	203.36	-5.82	.565	203.27	203.27	279.22

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP TO TIP	MASS FLOW (PCT)	DELTA (DEG)	INCIDENCE ANGLE (DEG)	MEAN SUCT SIB (DEG)	FACTOR	OMEGA	MAH	PARAMETER	LOSS	DEVIATION (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	46.12	8.164	4.242	.4400	.0696	.0178	20.540	.1555	20.540	1.2100	1.2100	.8455
11.89	11.75	47.20	9.375	6.056	.4787	.0527	.0143	14.926	.1543	14.926	1.2100	1.2100	.8424
31.19	31.10	42.24	4.112	4.35	.4267	.1073	.0352	11.717	1.501	11.717	1.1992	1.1992	.8534
44.80	49.39	40.56	1.146	-1.841	.3845	.0755	.0231	10.347	1.630	10.347	1.1782	1.1782	.8151
66.90	67.48	39.32	-1.803	-4.676	.3489	.1260	.0361	9.459	1.654	9.459	1.1707	1.1707	.7277
87.74	89.50	46.92	3.102	-1.77	.4531	.1695	.0448	9.992	1.633	9.992	1.1895	1.1895	.7005
100.00	100.00	48.16	1.889	-1.552	.4139	.1570	.0397	17.060	1.633	17.060	1.1895	1.1895	.7503

MOMENTUM AVERAGE STAGE EFFICIENCY = .7927 (POLYTROPIC)

MOMENTUM AVERAGE STAGE EFFICIENCY = .7783 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.0139

MASS AVERAGE TEMPERATURE RISE = 1.1880

NASA SMALL AXIAL COMPRESSOR TEST 4 JUNE 28, 1974 (COMBINED TEMP.)

MOTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT WEIGHT FLOW = 2.3508 LRM/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 64.1850
 70 PERCENT DESIGN SPEED = SCAN NO 20
 EQUIVALENT SPEED
 EQUIVALENT FLOW / INLET ANN AREA = 53712.636 R.P.M.
 = 25.9665 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC HLOSSAGE = 1.0192

PERCENT SPAN FROM TIP (I. E.)	HETA*1 (DEG)	V*1 (FT/SEC)	VU*1 (FT/SFC)	W*1 (DEG)	BETA1 (DEG)	V1 (FT/SEC)	VU1 (FT/SEC)	M1	VM1 (FT/SEC)	V71 (FT/SFC)	U1 (FT/SEC)
0.00	73.20	1156.38	1107.01	1.046	0.00	334.29	0.00	.302	334.29	323.53	1107.01
9.43	72.05	1109.46	1055.44	1.004	0.00	341.98	0.00	.309	341.98	330.79	1055.44
25.26	69.14	1036.82	969.86	.939	0.00	369.22	0.00	.335	369.22	362.43	969.86
41.22	66.01	959.08	881.58	.869	0.00	377.11	0.00	.342	377.11	376.50	881.58
59.59	64.82	863.18	781.14	.782	0.00	367.29	0.00	.333	367.29	367.17	781.14
81.67	61.95	735.82	649.41	.666	0.00	345.97	0.00	.313	345.97	341.33	649.41
100.00	59.23	651.20	560.11	.589	0.00	333.55	0.00	.302	333.55	322.21	560.11

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC HLOSSAGE = .8308

PERCENT SPAN FROM TIP (I. E.)	HETA*2 (DEG)	V*2 (FT/SEC)	VU*2 (FT/SFC)	W*2 (DEG)	HETA2 (DEG)	V2 (FT/SEC)	VU2 (FT/SEC)	M2	VM2 (FT/SEC)	V72 (FT/SFC)	U2 (FT/SEC)
0.00	59.86	869.00	751.50	.756	35.67	537.12	313.18	.467	436.31	422.32	1066.68
11.51	58.13	829.79	688.26	.724	35.34	566.94	321.91	.495	462.40	452.78	1016.87
30.37	52.94	742.39	624.96	.696	32.71	572.82	309.55	.503	481.88	474.97	978.51
44.42	47.16	738.90	541.44	.652	32.63	596.53	321.64	.526	502.30	502.36	963.67
67.09	37.70	676.32	413.60	.598	34.83	651.90	372.33	.577	535.11	533.54	785.93
87.88	23.88	601.91	243.67	.534	39.63	714.54	455.84	.634	550.39	541.34	599.51
100.00	15.99	573.37	157.97	.510	41.71	738.29	491.20	.657	551.14	532.45	549.17

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	TRAILING EDGE	MASS FLOW (PCT)	DELTA HETA2 (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT (DEG)	DELTA ANGLE (DEG)	LOSS PARAMETER	OMEGA H-R	H-R	FACT	OMEGA* H-R	PARA	LOSS	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	13.34	9.360	4.892	.4517	.0377	.1974	.1974	.3517	.1974	.0377	2.867	1.280	.6839	.6947	
9.43	11.51	11.64	15.92	10.099	4.805	.3593	.0386	.1910	.1910	.3533	.1910	.0386	1.169	1.293	.7123	.7225	
25.26	30.37	31.00	16.60	10.039	7.488	.3353	.0177	.0874	.0874	.3315	.0874	.0177	2.328	1.313	.8675	.8725	
41.22	44.42	44.79	19.64	9.495	7.119	.3315	.0050	.0244	.0244	.3315	.0244	.0050	4.617	1.335	.8662	.9676	
59.59	67.09	68.98	27.12	10.265	6.497	.3360	-.0062	-.0062	-.0062	.3360	-.0062	-.0062	6.798	1.372	1.0069	1.0065	
87.88	87.88	89.28	38.07	10.508	5.509	.3257	.0020	.0120	.0120	.3257	.0120	.0020	14.161	1.402	.9908	.9913	
100.00	100.00	100.00	43.23	10.474	4.400	.2777	.0031	.0150	.0150	.2777	.0150	.0031	23.044	1.402	.9309	.9912	

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8917 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8871 (ADIABATIC)
 MOMENTUM AVG. ROTOR PRESS RATIO = 1.3366
 MASS AVERAGE TEMPERATURE RISE = 1.0973

NASA SMALL AXIAL COMPRESSOR TEST 4 JUN 28, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE VASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIVALENT FLIGHT FLOW = 1.0643 KG/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 64.1850

70 PERCENT DESIGN SPEED = SCAN NO 20
 EQUIVALENT SPEED = 53712.676 R.P.M.
 EQUIVALENT FLOW / INLET ANN AREA = 176.7493 KG/SEC-SQ M

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0192

PERCENT SPAN FROM TIP (L. F.)	HETA*1 (DEG)	V*1 (M/SEC)	V*1 (M/SEC)	RETA1 (DEG)	V1 (M/SEC)	VU1 (M/SEC)	M1	V*1 (M/SEC)	V*1 (M/SEC)	U1 (M/SEC)
0.00	73.20	352.46	337.42	0.00	101.89	0.00	.302	101.89	94.61	337.42
9.43	72.05	334.16	321.70	0.00	104.24	0.00	.309	104.24	100.82	321.70
25.26	69.14	316.02	295.31	0.00	93.9	0.00	.335	112.54	110.67	295.31
41.22	66.01	292.33	264.70	0.00	115.13	0.00	.342	115.13	114.76	264.70
59.59	64.82	263.10	234.09	0.00	111.55	0.00	.331	111.55	111.91	234.09
83.67	61.94	224.24	197.94	0.00	105.45	0.00	.313	105.45	106.04	197.94
100.00	59.23	194.70	170.72	0.00	101.66	0.00	.302	101.66	94.21	170.72

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8304

PERCENT SPAN FROM TIP (T. F.)	HETA*2 (DEG)	V*2 (M/SEC)	V*2 (M/SEC)	RETA2 (DEG)	V2 (M/SEC)	VU2 (M/SEC)	M2	V*2 (M/SEC)	V*2 (M/SEC)	U2 (M/SEC)
0.00	59.86	264.47	229.06	35.67	143.72	95.46	.457	133.01	124.72	229.06
11.51	56.13	252.92	209.99	35.34	172.00	99.95	.495	140.94	137.44	209.99
30.17	52.54	241.52	191.71	32.71	174.59	94.35	.507	145.99	145.99	191.71
44.62	47.16	225.22	165.15	32.63	141.82	94.03	.526	153.12	153.12	165.15
67.09	37.70	204.14	126.06	34.83	194.70	113.49	.577	163.10	162.62	126.06
87.88	27.84	141.46	74.27	39.63	217.82	138.94	.634	167.74	165.00	74.27
100.00	15.94	174.76	43.15	41.71	225.03	149.72	.657	164.00	162.29	43.15

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	TRAILING EDGE	MASS FLOW (PCT)	DELTA HETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA* (RPM)	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR EFF	POLYTROPIC EFF
0.00	0.00	0.00	13.74	4.360	4.892	.3517	.1974	.0377	2.867	1.280	.6470	.6947
9.43	11.51	11.64	15.92	10.059	8.405	.3593	.1910	.0386	1.165	1.273	.7123	.7225
25.26	30.17	31.00	16.60	10.034	7.984	.3353	.0874	.0177	2.328	1.313	.6475	.6725
41.22	44.42	44.79	19.64	4.095	7.119	.3315	.0244	.0050	4.817	1.315	.6462	.6676
59.59	67.09	64.94	27.12	10.265	6.497	.3340	-.0062	-.0012	6.798	1.372	1.0064	1.0065
83.67	87.88	84.24	30.07	10.508	5.509	.3257	.0120	.0026	14.141	1.402	.9908	.9913
100.00	100.00	100.00	43.23	10.474	4.400	.2777	.0150	.0031	23.044	1.402	.9909	.9912

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8917 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8071 (ADIABATIC)
 MOMENTUM AVG. ROTOR PRESS RATIO = 1.3366
 MASS AVERAGE TEMPERATURE RISE = 1.0073

NASA SMALL AXIAL COMPRESSOR TEST 4 JUNE 28, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 20

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8928

BETA 3 (NEG)	V3 (FT/SEC)	VII3 (FT/SEC)	M3	VH3 (FT/SEC)	V73 (FT/SEC)	U3 (FT/SEC)
0.00	571.31	322.48	.499	471.59	446.41	1033.98
11.10	587.75	335.75	.514	482.41	461.61	993.11
20.66	608.03	314.43	.536	520.78	520.77	925.70
47.63	614.07	322.64	.561	545.84	545.44	860.79
66.10	640.60	369.34	.604	571.43	549.15	792.29
87.40	712.69	446.27	.651	581.10	571.70	714.52
100.00	761.91	476.64	.680	596.42	577.99	608.85

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9369

BETA 4 (NEG)	V4 (FT/SEC)	VII4 (FT/SEC)	M4	VH4 (FT/SEC)	V74 (FT/SEC)	U4 (FT/SEC)
0.00	507.63	-13.02	.441	507.47	507.47	1026.48
11.70	520.91	-13.31	.453	520.74	520.68	931.01
30.21	544.12	-12.20	.477	543.98	543.74	931.70
48.56	577.83	-11.29	.509	577.71	577.12	874.17
67.32	609.04	-11.90	.537	608.92	608.58	815.26
86.12	615.25	-12.01	.560	615.13	612.80	760.00
100.00	618.82	-12.10	.544	618.70	618.70	712.72

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	PERCENT SPAN FROM TIP TRAILING EDGE	MASS FLOW (PC)	DELTA HETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT (DEG)	REACTOR FACTOR	OMEGA HAR	LOSS PARAMETER	REVEATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	35.44	- .953	-5.875	.7247	.0420	.0151	20.710	1.272	1.1066	.8191
11.10	11.30	11.64	36.10	-1.336	-4.683	.3198	.0574	.0194	15.096	1.281	1.1068	.7587
20.66	30.21	31.00	32.74	-5.493	-8.419	.2799	.0596	.0146	11.908	1.290	1.0911	.7327
47.63	48.54	49.79	31.71	-7.069	-10.075	.2615	.0391	.0120	10.874	1.324	1.0820	.7966
66.10	67.32	68.48	34.00	-6.516	-9.609	.2615	.0738	.0217	9.980	1.349	1.0938	.8589
87.40	88.12	89.28	38.44	-4.606	-7.606	.3188	.1479	.0391	10.412	1.351	1.1022	.8478
100.00	100.00	100.00	39.84	-5.907	-9.344	.3407	.1379	.0349	17.580	1.351	1.1022	.8552

MOMENTUM AVERAGE STAGE EFFICIENCY = .8589 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .8533 (ADIABATIC)
MOMENTUM AVG. STAGE PRESS RATIO = 1.3225
MASS AVERAGE TEMPERATURE RISE = 1.0973

NASA SMALL AXIAL COMPRESSOR TEST 4 JUN 28, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 20

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8928

PERCENT SPAN FROM TIP (I. F.)	BETA 3 (DEG)	V3 (M/SEC)	V113 (M/SEC)	M3	V43 (M/SEC)	V173 (M/SEC)	U3 (M/SEC)
0.00	34.37	174.14	98.29	.499	143.74	142.16	315.16
11.19	34.84	179.15	102.34	.514	147.04	146.90	302.79
22.66	31.07	185.33	98.64	.536	149.73	149.73	282.15
47.43	39.59	193.26	94.34	.561	164.37	174.25	262.37
64.19	37.88	207.39	112.57	.604	174.17	173.56	241.49
87.49	37.52	223.32	136.07	.651	177.12	176.74	217.79
100.00	34.72	232.23	145.28	.680	181.18	176.17	203.87

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9369

PERCENT SPAN FROM TIP (I. F.)	BETA 4 (DEG)	V4 (M/SEC)	V114 (M/SEC)	M4	V144 (M/SEC)	V174 (M/SEC)	U4 (M/SEC)
0.00	-1.47	154.73	-3.97	.441	154.68	154.61	312.97
11.19	-1.46	154.77	-4.06	.453	154.72	154.70	302.06
22.66	-1.29	165.85	-4.72	.477	165.81	165.73	293.98
44.54	-1.12	176.12	-3.44	.509	176.09	175.91	286.45
67.32	-1.12	185.63	-3.63	.537	185.60	185.50	289.49
89.12	-1.12	187.53	-3.67	.548	187.49	186.81	284.60
100.00	-1.12	198.62	-3.69	.544	188.58	188.58	277.24

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP FROM TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE ANGLE (DEG)	MEAN SUCTION ANGLE (DEG)	D FACTOR	OMEGA HAP	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STATOR PRESS RATIO	STATOR POLYTROPIC EFF
0.00	0.00	35.84	-1.953	-5.875	.3247	.0420	.0151	20.710	1.272	1.1048
11.19	11.64	36.70	-1.316	-4.483	.3198	.0574	.0199	15.094	1.281	1.1049
22.66	31.50	32.36	-5.445	-8.819	.2799	.0396	.0196	11.908	1.299	1.0931
47.43	49.79	31.71	-7.068	-10.075	.2477	.0391	.0270	10.874	1.325	1.0890
64.19	68.98	34.00	-6.516	-9.409	.2615	.0758	.0217	9.940	1.349	1.0938
87.49	84.28	38.64	-4.646	-7.606	.3148	.1479	.0391	0.412	1.351	1.1022
100.00	100.00	39.84	-5.907	-9.349	.3407	.1374	.0369	17.580	1.351	1.1022

MOMENTUM AVERAGE STAGE EFFICIENCY = .8589 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .8537 (ADIABATIC)
MOMENTUM AVG. STATOR PRESS RATIO = 1.3225
MASS AVERAGE TEMPERATURE RISE = 1.0973

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NASA SMALL AXIAL COMPRESSOR TEST 4 JUNE 28, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT WINGT FLOW = 2.0551 LHM/SEC
 70 PERCENT DESIGN FLOW = 56.1093
 70 PERCENT DESIGN SPEED = SCAN NO 21
 EQUIVALENT SP/CD
 EQUIVALENT FLOW / INLET ANN AREA = 53744.604 R.P.M.
 22.6977 LHM/SEC-SO FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.9523

PERCENT SPAN FROM TIP (L. F.)	BETA#1 (DEG)	V#1 (FT/SEC)	WU#1 (FT/SFC)	HFTA1 (DEG)	VI (FT/SEC)	WU#1 (FT/SEC)	M1	VM1 (FT/SEC)	V71 (FT/SFC)	UI (FT/SEC)
0.00	75.39	1144.70	1107.66	1.073	289.81	0.00	.261	288.81	279.51	1107.66
0.68	74.34	1095.32	1054.68	.988	295.60	0.00	.267	295.60	285.92	1054.68
25.31	71.40	1020.21	969.18	.922	314.63	0.00	.288	314.63	312.77	969.18
40.77	69.78	942.63	884.56	.852	325.75	0.00	.294	325.75	324.70	884.56
59.33	67.98	844.63	782.99	.763	316.73	0.00	.286	316.73	316.62	782.99
83.74	65.30	714.78	649.41	.645	298.63	0.00	.270	298.63	294.62	649.41
100.00	62.78	630.24	560.44	.569	288.28	0.00	.260	288.28	278.49	560.44

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8715

PERCENT SPAN FROM TIP (L. F.)	BETA#2 (DEG)	V#2 (FT/SEC)	WU#2 (FT/SFC)	HFTA2 (DEG)	V2 (FT/SEC)	WU#2 (FT/SEC)	M2	VM2 (FT/SEC)	V72 (FT/SFC)	J2 (FT/SEC)
0.01	63.47	756.11	676.49	.649	515.01	388.82	.442	337.72	326.84	1065.31
12.40	50.10	698.07	605.14	.600	536.71	408.60	.461	368.01	340.40	1013.74
32.65	55.33	637.44	524.25	.551	443.84	405.30	.470	362.62	360.16	929.55
51.05	45.79	605.40	473.94	.527	419.84	419.07	.518	422.15	422.13	953.01
68.90	35.24	590.32	363.18	.518	448.48	435.68	.569	480.32	478.91	778.85
88.44	21.11	507.36	182.75	.447	494.30	514.78	.615	477.31	465.53	697.54
100.00	11.55	483.63	91.85	.427	728.01	552.71	.643	473.84	467.73	649.55

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	DELTA (DEG)	MEAN INCIDENCE (DEG)	SUCT ANGLE (DEG)	SUM ANGLE (DEG)	OMEGA* (DEG)	HAR	LOSS PARAMETER (DEG)	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ADJARIATIC EFF	POLYTRAPIC EFF
0.00	0.00	11.549	11.001	.4688	.2471	.0820	6.600	1.352	.6761	.6845	
0.68	12.40	11.448	11.138	.4975	.2575	.0566	5.721	1.355	.6822	.6955	
25.31	32.65	12.709	10.656	.5063	.2044	.0387	5.961	1.358	.7546	.7650	
40.77	51.05	12.810	10.059	.4910	.1246	.0274	4.704	1.389	.8578	.8643	
59.33	68.90	13.394	9.638	.4401	.0385	.0086	6.091	1.418	.9639	.9657	
83.74	88.44	13.867	8.866	.4566	.1015	.0221	12.204	1.430	.9331	.9305	
100.00	100.00	14.027	7.453	.4156	.1285	.0268	18.603	1.430	.9332	.9305	

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8313 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8234 (ADIABATIC)
 MOMENTUM AVG. ROTOR PRESS RATIO = 1.3861
 MASS AVERAGE TEMPERATURE RISE = 1.1185

NASA SMALL AXIAL COMPRESSOR TEST 4 JUNE 28, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 21

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9250

PERCENT SPAN FROM TIP (I. F.)	BETA 3 (NEG)	V3 (FT/SEC)	VU3 (FT/SEC)	M3	VM3 (FT/SEC)	VZ3 (FT/SEC)	U3 (FT/SEC)
0.00	47.35	544.37	400.37	.468	368.44	344.79	1034.60
12.07	44.07	550.92	414.14	.480	367.40	347.19	990.52
31.73	45.78	572.24	410.10	.496	399.11	309.10	914.67
49.72	47.34	621.75	414.11	.543	459.27	454.93	852.95
67.79	40.26	667.29	431.21	.587	509.24	507.39	786.93
88.05	45.26	709.07	503.68	.625	490.08	492.34	712.91
100.00	46.44	740.28	536.41	.654	510.17	496.04	669.25

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9180

PERCENT SPAN FROM TIP (I. F.)	BETA 4 (NEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	-1.12	444.70	-4.69	.380	444.61	444.61	1027.09
11.41	-1.12	441.70	-4.61	.377	441.62	441.56	991.27
30.52	-1.95	444.98	-7.42	.382	444.92	444.72	931.28
44.93	-1.28	490.19	-10.96	.423	490.07	490.57	873.49
67.64	-1.12	513.00	-10.42	.463	532.90	532.60	816.74
88.14	-1.12	517.46	-10.11	.468	517.36	515.47	750.37
100.00	-1.12	519.88	-10.16	.450	519.78	519.76	713.15

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DFG)	ANGLE SUCT (DEG)	D FACTOR	OALPHA HAP	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	48.47	11.029	7.107	.4560	.0641	.0231	21.064	1.1339	1.1327	.8228
12.07	11.41	11.95	49.78	12.473	4.161	.4721	.0497	.0311	15.419	1.1317	1.1327	.7781
31.73	30.52	31.06	46.73	9.038	5.144	.4542	.0439	.0276	12.206	1.1340	1.1327	.8061
49.72	44.93	49.31	43.66	4.526	1.552	.4184	.0773	.0237	10.688	1.1360	1.1345	.8171
67.79	67.64	64.77	41.34	6.57	-2.190	.3849	.0583	.0167	9.982	1.1401	1.1047	.8584
88.05	88.14	89.36	46.34	2.924	.035	.4533	.1309	.0346	10.412	1.1347	1.1150	.7548
100.00	100.00	100.00	47.56	1.804	-1.637	.4736	.1210	.0306	17.580	1.1347	1.1150	.7935
MOMENTUM AVERAGE STAGE EFFICIENCY = .8001 (POLYTROPIC)										MOMENTUM AVG. STAGE PRESS RATIO = 1.3692		
MOMENTUM AVERAGE STAGE EFFICIENCY = .7910 (ADIABATIC)										MASS AVERAGE TEMPERATURE RISE = 1.1185		

NASA SMALL AXIAL COMPRESSOR TEST 4 JUN 28 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 21

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9250

PERCENT SPAN FROM TIP (L. F.)	BETA 3 (DEG)	V3 (M/SEC)	VH3 (M/SEC)	M3	VM3 (M/SEC)	V73 (M/SEC)	U3 (M/SEC)
0.00	47.35	165.92	122.03	.468	112.42	111.19	315.34
12.07	48.67	169.75	127.46	.480	112.11	111.92	301.91
31.73	45.78	174.42	124.00	.496	121.65	121.65	280.01
49.72	42.38	189.51	127.74	.543	139.98	139.98	259.98
67.79	40.26	203.39	131.43	.587	155.22	154.65	239.86
89.05	45.26	216.12	153.52	.625	152.12	150.08	217.30
100.00	46.44	225.64	163.50	.654	155.50	151.20	203.99

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9180

PERCENT SPAN FROM TIP (L. F.)	BETA 4 (DEG)	V4 (M/SEC)	VH4 (M/SEC)	M4	VM4 (M/SEC)	V74 (M/SEC)	U4 (M/SEC)
0.00	-1.12	135.54	-2.65	.180	135.52	135.52	313.06
11.41	-1.12	134.63	-2.62	.177	134.61	134.59	302.14
30.52	-0.95	135.93	-2.76	.182	135.61	134.55	293.85
49.03	-1.24	149.91	-3.34	.423	149.37	149.22	266.74
67.64	-1.12	162.46	-3.18	.463	162.43	162.34	248.33
84.14	-1.12	157.72	-3.08	.468	157.69	157.12	228.71
100.00	-1.12	158.46	-3.10	.450	158.43	158.41	217.37

STATOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	PERCENT SPAN FROM TIP	MASS FLOW (KGT)	DELTA BETA (DEG)	INCIDENCE ANGLE (DEG)	MEAN SUCT ANGLE (DEG)	INCIDENCE ANGLE (DEG)	OMFRA HAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE LOSS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	48.47	11.029	7.107	4.560	.0641	.0231	21.060	1.319	1.1227	.8228
12.07	11.41	11.95	49.78	12.473	9.161	.4721	.0897	.0311	15.419	1.337	1.1227	.7781
31.73	30.52	31.06	46.77	9.098	5.840	.4502	.0819	.0276	12.206	1.340	1.1207	.8061
49.72	48.93	49.31	43.64	4.526	1.554	.4184	.0773	.0237	10.688	1.349	1.1145	.8171
67.79	67.64	68.77	41.38	.657	-2.150	.3849	.0583	.0167	9.982	1.401	1.1087	.8584
84.05	84.14	89.36	46.38	2.924	.035	.4533	.1309	.0346	10.412	1.387	1.1150	.7548
100.00	100.00	100.00	47.56	1.804	-1.637	.4736	.1210	.0306	17.580	1.387	1.1150	.7935

MOENTUM AVERAGE STAGE EFFICIENCY = .4001 (POLYTROPIC)
MOENTUM AVERAGE STAGE EFFICIENCY = .7910 (ADIABATIC)

MOENTUM AVG. STAGE EFF RATIO = 1.3692
MASS AVERAGE TEMPERATURE RATIO = 1.1185

NASA SMALL AXIAL COMPRESSOR TEST 4 JUNE 28, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT WEIGHT FLOW = 2.0660 LHM/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 56.40%
 70 PERCENT DESIGN SPEED - SCAN NO 22
 EQUIVALENT SPEED
 EQUIVALENT FLOW / INLET ANN AREA = 53743.472 R.P.M.
 22.8187 LHM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0493

PERCENT SPAN FROM TIP (I. F.)	HETA*1 (DEG)	V*1 (FT/SEC)	VU*1 (FT/SEC)	H*1 (INFG)	V1 (FT/SEC)	VU1 (FT/SEC)	M1	V*1 (FT/SEC)	VU1 (FT/SEC)	M1	V*1 (FT/SEC)	VU1 (FT/SEC)	M1	V*1 (FT/SEC)	VU1 (FT/SEC)	M1
0.00	75.31	1145.06	1107.64	0.00	290.33	0.00	.262	290.33	290.33	.262	290.33	290.33	.262	290.33	290.33	.262
9.72	74.26	1075.50	1054.43	0.00	297.18	0.00	.268	297.18	297.18	.268	297.18	297.18	.268	297.18	297.18	.268
25.39	71.70	1020.33	968.73	0.00	320.38	0.00	.289	320.38	320.38	.289	320.38	320.38	.289	320.38	320.38	.289
40.93	69.66	942.41	883.65	0.00	327.58	0.00	.296	327.58	327.58	.296	327.58	327.58	.296	327.58	327.58	.296
59.62	67.83	843.81	781.41	0.00	314.46	0.00	.288	314.46	314.46	.288	314.46	314.46	.288	314.46	314.46	.288
77.94	65.15	715.50	648.32	0.00	300.32	0.00	.271	300.32	300.32	.271	300.32	300.32	.271	300.32	300.32	.271
100.00	62.65	630.97	560.43	0.00	299.89	0.00	.262	299.89	299.89	.262	299.89	299.89	.262	299.89	299.89	.262

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8761

PERCENT SPAN FROM TIP (I. F.)	HETA*2 (DEG)	V*2 (FT/SEC)	VU*2 (FT/SEC)	H*2 (INFG)	V2 (FT/SEC)	VU2 (FT/SEC)	M2	V*2 (FT/SEC)	VU2 (FT/SEC)	M2	V*2 (FT/SEC)	VU2 (FT/SEC)	M2	V*2 (FT/SEC)	VU2 (FT/SEC)	M2
0.00	63.11	701.15	674.85	0.00	517.55	386.44	.644	517.55	386.44	.644	517.55	386.44	.644	517.55	386.44	.644
12.74	60.14	700.72	604.03	0.00	534.91	405.98	.660	534.91	405.98	.660	534.91	405.98	.660	534.91	405.98	.660
17.60	59.45	640.49	527.56	0.00	541.65	401.83	.669	541.65	401.83	.669	541.65	401.83	.669	541.65	401.83	.669
51.08	45.89	612.48	439.74	0.00	593.69	413.17	.518	593.69	413.17	.518	593.69	413.17	.518	593.69	413.17	.518
68.80	35.53	546.20	346.43	0.00	650.71	432.82	.571	650.71	432.82	.571	650.71	432.82	.571	650.71	432.82	.571
84.76	20.50	492.53	172.51	0.00	699.19	525.41	.615	699.19	525.41	.615	699.19	525.41	.615	699.19	525.41	.615
100.00	10.39	444.60	84.67	0.00	729.68	564.87	.644	729.68	564.87	.644	729.68	564.87	.644	729.68	564.87	.644

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	DELTA HETA* (DEG)	MASS FLOW (PCT)	INCIDENCE ANGLE (DEG)	SUCT SUR (DEG)	LOSS PARAMETER	OMEGA* HAR	DEVIATION ANGLE (DEG)	ROTOR ANTIADIBATIC FFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	11.476	11.007	.0417	.2425	6.119	.6805	.6937
9.72	12.14	11.99	12.374	11.061	.0463	.2564	5.406	.6814	.6966
25.39	32.69	31.13	12.621	10.563	.0511	.2621	6.100	.7557	.7680
40.93	51.08	49.46	12.709	9.944	.0254	.1200	6.412	.8669	.8729
59.62	68.80	69.02	13.279	9.509	.0064	.0287	5.989	.9730	.9744
87.94	88.16	89.50	13.731	8.725	.0303	.1384	11.460	.9105	.9149
100.00	100.00	100.00	13.897	7.823	.0369	.1763	17.439	.9105	.9149

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8301 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8221 (ADIABATIC)
 MOMENTUM AVG. ROTOR PRESS RATIO = 1.3844
 MASS AVERAGE TEMPERATURE RISE = 1.1182

ORIGINAL
 12-2000

NASA SMALL AXIAL COMPRESSOR TEST 4 JUNE 28, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIVALENT FLIGHT FLOW HETA*1 (DEG) V01 (M/SEC) VU*1 (M/SEC) M*1 BETA1 (DEG) V1 (M/SEC) VU1 (M/SEC) M1 V71 (M/SEC) U1 (M/SEC)
 PERCENT DESIGN EQUIVALENT FLOW = 56.4086 70 PERCENT DESIGN SPEED - SCAN NO. 22 EQUIVALENT SPEED R.P.M. 51743.472
 PERCENT DESIGN EQUIVALENT FLOW = 56.4086 EQUIVALENT FLOW / INLET ANN AREA = 111.4107 KG/SEC-SQ M

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0493

PERCENT SPAN FROM TIP (L. E.)	HETA*1 (DEG)	V01 (M/SEC)	VU*1 (M/SEC)	M*1	BETA1 (DEG)	V1 (M/SEC)	VU1 (M/SEC)	M1	V71 (M/SEC)	U1 (M/SEC)
0.00	75.31	349.09	337.61	1.073	0.00	88.49	0.00	.262	88.49	337.61
9.72	74.26	333.91	321.39	.989	0.00	90.58	0.00	.268	90.58	321.39
25.39	71.70	311.00	295.27	.922	0.00	97.65	0.00	.289	97.65	295.27
40.07	69.06	287.25	269.74	.852	0.00	99.85	0.00	.296	99.85	269.74
59.62	67.83	257.19	238.17	.762	0.00	97.07	0.00	.296	97.07	238.17
83.96	65.15	217.78	197.61	.665	0.00	91.54	0.00	.271	91.54	197.61
100.00	62.65	143.32	170.92	.569	0.00	88.36	0.00	.262	88.36	170.92

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8761

PERCENT SPAN FROM TIP (T. F.)	HETA*2 (DEG)	V*2 (M/SEC)	VU*2 (M/SEC)	M*2	BETA2 (DEG)	V2 (M/SEC)	VU2 (M/SEC)	M2	V72 (M/SEC)	U2 (M/SEC)
0.00	67.11	232.00	206.91	.654	49.30	157.75	117.79	.444	104.93	174.70
12.34	60.19	213.54	185.33	.602	49.31	163.04	123.74	.460	106.31	163.04
32.69	55.45	194.22	160.80	.554	47.49	165.09	127.48	.465	110.70	155.01
51.08	45.89	180.68	136.03	.534	44.10	180.96	125.94	.518	120.94	129.94
68.80	35.53	181.72	105.59	.524	41.73	178.18	131.92	.571	147.90	147.46
88.16	20.50	150.12	52.58	.473	48.72	173.11	160.14	.615	140.61	174.30
100.00	10.39	143.14	25.81	.414	50.73	222.41	172.17	.644	140.70	147.98

ROTOR PERFORMANCE DATA

PERCENT LEADING EDGE	SPAN FROM TIP (DEG)	DELTA HETA*0 (DEG)	MASS FLOW (KG)	INCIDENCE ANGLE (DEG)	SUCT SUR (DEG)	OMEGA* RMP	LOSS PARAMETER	DEVIATION ANGLE (DEG)	WOTOR P/FSS RATIO	WOTOR P/FSS RATIO	POLYTROPIC EFF
0.00	0.10	12.20	0.00	11.476	11.007	.4639	.0417	6.119	1.352	.885	.6937
5.72	12.34	14.07	11.09	12.374	11.061	.4944	.0451	5.404	1.352	.885	.6937
25.39	32.69	16.25	31.13	12.621	10.563	.5022	.0381	6.100	1.355	.7457	.7660
40.07	51.08	23.77	43.46	12.709	9.949	.4815	.0254	4.812	1.387	.8649	.8729
59.62	68.80	32.30	69.02	13.279	9.509	.4317	.0084	5.989	1.420	.9730	.9744
83.96	88.16	44.84	84.50	13.731	8.725	.4806	.0303	11.450	1.420	.9105	.9149
100.00	100.00	52.26	100.00	13.897	7.423	.4426	.0369	17.439	1.420	.9105	.9149

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8301 (POLYTROPIC) MOMENTUM AVG. RD P/FSS RATIO = 1.3844
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8221 (ADIABATIC) MASS AVERAGE TEMPERATURE RISE = 1.1182

NASA SMALL AXIAL COMPRESSOR TEST 4 JUNE 28, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 22

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9263

PERCENT SPAN FROM TIP (L. F.)	BETA 3 (DEG)	V3 (FT/SEC)	VU3	M3	VM3 (FT/SEC)	VU3	U3 (FT/SEC)
0.00	46.47	548.79	397.92	.472	377.94	373.74	1034.57
11.03	44.24	546.94	415.49	.480	370.94	370.32	990.42
31.68	45.29	571.86	406.44	.496	402.29	402.29	918.44
49.65	41.60	622.09	417.04	.546	465.19	464.45	853.20
67.63	46.72	678.22	428.23	.590	515.52	513.64	787.44
87.91	46.36	710.20	513.99	.625	490.10	491.52	713.42
100.00	47.55	743.08	548.30	.656	501.53	487.67	669.24

PERCENT SPAN FROM TIP (L. F.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4	M4	VM4 (FT/SEC)	VU4	U4 (FT/SEC)
0.00	-1.12	450.20	-4.40	.385	450.11	450.11	1027.07
11.42	-1.12	444.20	-4.64	.379	444.11	444.06	991.22
30.59	-1.12	448.44	-4.77	.385	448.35	444.14	911.04
48.09	-1.12	497.24	-4.72	.430	497.14	496.63	873.28
67.66	-1.12	537.18	-10.52	.467	517.08	516.74	814.67
88.14	-1.24	516.21	-11.58	.450	516.08	514.20	750.38
100.00	-1.29	519.17	-11.69	.449	519.03	519.03	713.13

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9184

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP FROM TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT (DEG)	INCIDENCE ANGLE (DEG)	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STATOR POLYTROPIC EFF
0.00	0.00	47.59	10.157	6.234	.4488	.0635	21.060	1.140	.8214
11.54	11.99	49.36	12.050	8.734	.4661	.0841	15.413	1.376	.7976
31.68	31.13	46.41	8.618	5.357	.4506	.0758	12.035	1.339	.8205
49.65	49.46	42.72	7.752	.779	.4040	.0640	10.845	1.371	.8418
67.63	69.02	40.44	4.142	-2.710	.3803	.0636	9.980	1.401	.8437
87.91	87.50	47.65	4.059	1.160	.4602	.1405	10.246	1.382	.7390
100.00	100.00	48.84	2.419	-5.522	.4809	.1794	17.410	1.382	.7414

MOMENTUM AVERAGE STAGE EFFICIENCY	STAGE PRESS RATIO
.7995	1.3679
.7904	1.1182

NASA SMALL AXIAL COMPRESSOR TEST 4 JUNE 28, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 22

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9263

PERCENT SPAN FROM TIP (L. F.)	BETA 3 (DEG)	V3 (M/SEC)	VU3 (M/SEC)	M3	V43 (M/SEC)	VZ3 (M/SEC)	U3 (M/SEC)
0.00	46.67	167.27	121.28	.472	115.20	113.93	315.34
11.04	48.24	169.77	126.64	.480	113.06	112.87	302.00
31.64	47.29	174.30	123.04	.496	122.62	122.62	280.04
49.65	41.60	189.61	125.89	.544	141.79	141.69	260.05
67.63	34.72	208.28	130.54	.590	157.13	156.56	240.03
87.91	46.36	216.47	156.66	.625	149.38	147.38	217.65
100.00	47.55	226.49	167.12	.656	152.87	148.64	203.98

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9184

PERCENT SPAN FROM TIP (L. E.)	BETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VH4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	-1.12	137.22	-2.68	.385	137.20	137.20	313.05
11.02	-1.12	135.34	-2.65	.379	135.37	135.35	302.12
30.50	-1.12	136.68	-2.67	.385	136.65	136.60	283.78
48.00	-1.12	151.56	-2.96	.430	151.53	151.37	256.18
67.66	-1.12	163.73	-3.21	.467	163.70	163.61	249.31
88.16	-1.29	157.36	-3.53	.466	157.30	156.73	224.72
100.00	-1.29	158.26	-3.56	.469	158.20	158.20	211.36

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	MASS FLOW (KGT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCTION (DEG)	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STATOR PRESS RATIO	STATOR TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	47.50	10.157	6.234	.0229	21.060	1.760	1.1319	.8214
11.04	11.99	49.36	12.050	8.734	.0292	15.613	1.314	1.1319	.7476
31.64	31.13	46.41	8.618	5.357	.0249	12.035	1.319	1.1196	.8205
49.65	43.46	42.72	3.752	.774	.0196	10.445	1.371	1.1329	.8418
67.63	69.02	40.84	.142	-2.710	.0636	9.890	1.401	1.1080	.8637
87.91	89.50	47.65	6.059	1.160	.0372	10.246	1.392	1.1175	.7390
100.00	100.00	48.94	2.919	-5.22	.0327	17.610	1.382	1.1175	.7914

MOMENTUM AVERAGE STAGE EFFICIENCY = .7995 (POLYTROPIC)
 MOMENTUM AVERAGE STAGE EFFICIENCY = .7904 (ADIABATIC)
 MOMENTUM AVG. STAGE PRESS RATIO = 1.3079
 MASS AVERAGE TEMPERATURE RISE = 1.1182

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NASA SMALL AXIAL COMPRESSOR TEST 4 JUN 28 1974 (COMBINED TEMP.)

MOTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT FLIGHT FLOW = 4.0860 LHM/SEC 70 PERCENT DESIGN SPEED = SCAN NO 23
 PERCENT DESIGN EQUIVALENT FLOW = 56.9546 EQUIVALENT SPEED R.P.M.
 EQUIVALENT FLOW / INLET ANN AREA = 23.0396 LHM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = 1.0466

PERCENT SPAN FROM TIP (I. F.)	BETA*1 (DEG)	V*1 (FT/SEC)	M*1	BETA1 (DEG)	V1 (FT/SEC)	M1	V*2 (FT/SEC)	M*2	BETA2 (DEG)	V2 (FT/SEC)	M2	V*3 (FT/SEC)	M*3	BETA3 (DEG)	V3 (FT/SEC)	M3
0.00	75.13	1144.34	1.073	0.00	293.69	0.265	0.00	0.00	0.00	293.69	0.265	0.00	0.00	293.69	0.265	0.00
9.73	74.06	1094.43	1.052	0.00	300.63	0.271	0.00	0.00	0.00	300.63	0.271	0.00	0.00	300.63	0.271	0.00
25.44	71.67	1014.91	967.01	0.00	324.21	0.293	0.00	0.00	0.00	324.21	0.293	0.00	0.00	324.21	0.293	0.00
40.07	69.41	942.41	882.18	0.00	331.49	0.300	0.00	0.00	0.00	331.49	0.300	0.00	0.00	331.49	0.300	0.00
59.62	67.57	844.16	780.28	0.00	322.13	0.291	0.00	0.00	0.00	322.13	0.291	0.00	0.00	322.13	0.291	0.00
78.91	64.71	715.04	647.54	0.00	303.26	0.274	0.00	0.00	0.00	303.26	0.274	0.00	0.00	303.26	0.274	0.00
100.00	62.45	631.14	559.62	0.00	291.93	0.263	0.00	0.00	0.00	291.93	0.263	0.00	0.00	291.93	0.263	0.00

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = 0.8768

PERCENT SPAN FROM TIP (I. F.)	BETA*2 (DEG)	V*2 (FT/SEC)	M*2	BETA2 (DEG)	V2 (FT/SEC)	M*2	V*3 (FT/SEC)	M*3	BETA3 (DEG)	V3 (FT/SEC)	M*3	V*4 (FT/SEC)	M*4	BETA4 (DEG)	V4 (FT/SEC)	M*4
0.00	62.77	766.85	601.86	47.42	514.61	0.444	341.83	0.444	47.42	514.61	0.444	341.83	0.444	47.42	514.61	0.444
12.29	60.05	705.42	611.58	48.70	533.01	0.459	401.12	0.459	48.70	533.01	0.459	401.12	0.459	48.70	533.01	0.459
32.66	55.11	648.35	531.83	48.40	542.77	0.470	394.34	0.470	48.40	542.77	0.470	394.34	0.470	48.40	542.77	0.470
50.94	46.14	617.17	445.04	43.00	590.50	0.515	407.24	0.515	43.00	590.50	0.515	407.24	0.515	43.00	590.50	0.515
64.74	35.04	600.39	349.91	41.24	649.27	0.571	424.39	0.571	41.24	649.27	0.571	424.39	0.571	41.24	649.27	0.571
84.78	21.07	624.43	174.48	42.21	695.17	0.611	514.34	0.611	42.21	695.17	0.611	514.34	0.611	42.21	695.17	0.611
100.00	11.15	472.69	91.37	50.23	724.97	0.640	557.22	0.640	50.23	724.97	0.640	557.22	0.640	50.23	724.97	0.640

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	DELTA HETA* (DEG)	MASS FLOW (PCT)	INCIDENCE MEAN (DEG)	ANGLE SUCTION (DEG)	O OMEGA* HAK	LOSS PARAMETER	DEVIATION ANGLE (NEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	11.292	10.824	0.4570	0.0414	5.778	1.348	0.678	0.6069
9.73	17.24	12.02	12.179	10.866	0.4879	0.0459	5.254	1.348	0.678	0.6155
25.44	32.66	31.24	12.396	10.334	0.4225	0.0364	5.746	1.353	0.674	0.7132
40.07	50.44	49.56	12.460	9.694	0.4747	0.0443	6.996	1.383	0.705	0.8762
59.62	64.74	69.10	13.019	9.250	0.0222	0.0409	6.076	1.417	0.900	0.8800
78.91	88.70	89.54	13.487	8.482	0.4733	0.0284	12.055	1.423	0.917	0.9189
100.00	100.00	100.00	13.699	7.625	0.4353	0.0346	18.197	1.423	0.917	0.9188

MOMENTUM AVERAGE ROTOR EFFICIENCY = 0.8341 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = 0.8263 (ADIABATIC)
 MOMENTUM AVG. ROTOR PRESS RATIO = 1.3806
 MASS AVERAGE TEMPERATURE RISE = 1.1166

NASA SMALL AXIAL COMPRESSOR TEST 4 JUNE 28, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIVALENT FLIGHT FLOW = 0.9442 KG/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 56.9546
 70 PERCENT DESIGN SPEED = SCAN NO 73
 EQUIVALENT SPEED = 53665.293 R.P.M.
 EQUIVALENT FLOW / INLET ANN AREA = 112.6003 KG/SEC-SQ M

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0466

PERCENT SPAN FROM TIP (L. F.)	HETA#1 (DEG)	VE1 (M/SEC)	VU#1 (M/SEC)	M#1	BETA1 (DEG)	V1 (M/SEC)	VU#1 (M/SEC)	M1	V#1 (M/SEC)	VU#1 (M/SEC)	U1 (M/SEC)
0.00	75.13	344.90	337.12	1.033	0.00	92.52	0.00	.265	89.52	86.63	337.12
9.73	74.06	337.73	320.91	.988	0.00	91.63	0.00	.271	91.67	88.63	320.91
25.44	71.47	316.47	294.74	.922	0.00	91.82	0.00	.293	91.82	97.00	294.74
40.97	69.41	297.25	268.89	.852	0.00	101.04	0.00	.300	101.04	100.71	268.89
59.62	67.57	257.30	237.83	.763	0.00	98.19	0.00	.291	98.19	98.15	237.83
83.91	64.91	217.94	197.37	.645	0.00	92.43	0.00	.274	92.43	91.19	197.37
100.00	62.45	192.38	170.57	.569	0.00	89.98	0.00	.263	89.98	85.96	170.57

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8768

PERCENT SPAN FROM TIP (L. F.)	HETA#2 (DEG)	VE2 (M/SEC)	VU#2 (M/SEC)	M#2	BETA2 (DEG)	V2 (M/SEC)	VU#2 (M/SEC)	M2	V#2 (M/SEC)	VU#2 (M/SEC)	U2 (M/SEC)
0.00	62.77	233.74	207.83	.659	47.42	154.07	116.40	.446	106.95	107.51	324.23
12.29	60.05	215.13	186.41	.607	49.70	162.74	122.26	.459	107.40	105.05	308.67
32.66	54.11	197.62	162.10	.561	46.90	165.44	120.80	.470	113.02	112.33	282.91
50.04	46.18	189.11	135.45	.538	43.60	179.98	124.13	.515	130.37	130.33	259.28
64.76	34.05	183.00	106.05	.528	41.28	197.20	130.57	.571	148.71	148.27	237.23
84.78	21.07	151.31	54.40	.437	48.21	211.49	157.99	.611	141.12	141.87	212.39
100.00	11.15	144.08	27.45	.417	50.73	220.97	149.84	.640	141.34	139.56	197.69

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	TRAILING EDGE	MASS FLOW (PCT)	DELTA HETA# (DEG)	INCIDENCE ANGLE (DEG)	MEAN SUCT SUR (DEG)	D FACTOR	OMEGA* HAH	LOSS PARAMETER	DEVIATION ANGLF (DEG)	ROTOR POLY TROPIC EFF	ROTOR POLY TROPIC EFF
0.00	0.00	0.00	12.34	11.292	10.824	.4570	.2376	.0414	5.778	1.748	.6418
9.73	12.29	12.02	14.01	12.179	10.866	.4879	.2534	.0459	5.254	1.748	.6955
25.44	32.66	31.24	14.35	12.394	10.334	.4925	.1936	.0348	5.746	1.353	.7732
40.97	50.94	44.56	27.26	12.440	9.698	.747	.1154	.0243	4.996	1.191	.8762
59.62	58.62	64.10	31.92	13.019	9.250	.4256	.0222	.0049	6.076	1.417	.9800
83.91	84.38	89.56	43.83	13.487	8.442	.4733	.1300	.0284	12.055	1.423	.9189
100.00	100.00	100.00	51.31	13.699	7.625	.4353	.1660	.0344	18.197	1.423	.9188

MOMENTUM AVERAGE ROTOR EFFICIENCY = .9341 (POLYTROPIC)
 MASS AVERAGE ROTOR EFFICIENCY = .8263 (ADIABATIC)
 MOMENTUM AVG. ROTOR PRESS RATIO = 1.3806
 MASS AVERAGE TEMPERATURE RISE = 1.1166

NASA SMALL AXIAL COMPRESSOR TEST 4 JUNE 24, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 23

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9277

PERCENT SPAN FROM TIP (L. F.)	BETA 3 (DEG)	V3 (FT/SEC)	VU3 (FT/SEC)	M3	VM3 (FT/SEC)	VZ3 (FT/SEC)	VJ3 (FT/SEC)
0.00	45.65	569.91	493.22	.674	314.42	300.20	1023.07
11.95	47.60	555.06	410.54	.674	374.91	374.29	949.48
31.67	44.37	573.34	400.93	.698	403.84	409.44	917.54
49.54	41.09	619.60	407.21	.542	466.99	466.65	852.35
67.61	39.27	669.79	423.46	.590	518.53	516.64	786.43
87.93	45.85	706.73	507.09	.622	492.27	485.64	712.28
100.00	47.04	739.08	540.49	.653	503.66	489.75	668.76

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9300

PERCENT SPAN FROM TIP (L. F.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VW4 (FT/SEC)	VZ4 (FT/SEC)	VJ4 (FT/SEC)
0.00	-1.12	648.45	-8.77	.383	448.36	448.36	1025.58
11.65	-1.12	643.01	-8.69	.379	442.92	442.87	969.69
30.47	-1.24	648.51	-10.04	.386	444.40	444.20	929.44
49.07	-1.12	692.52	-9.63	.426	492.43	491.92	871.74
67.82	-1.12	510.51	-10.53	.469	530.40	528.11	813.03
87.23	-1.12	511.98	-10.01	.443	511.88	510.01	749.00
100.00	-1.12	514.99	-10.07	.445	514.89	514.89	714.10

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP TO TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE ANGLE (DEG)	MEAN SUCTION ANGLE (DEG)	INCIDENCE ANGLE (DEG)	LOSS PARAMETER	OMEGA BAR	FACTOR	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STATOR POLYTROPIC EFF
0.00	0.00	46.77	9.330	5.667	.4499	.0221	.0414	.0221	21.060	1.337	.9317
11.95	12.02	48.72	11.806	8.001	.4642	.0257	.0742	.0257	15.403	1.333	.8140
31.67	31.24	45.65	7.694	4.433	.4495	.0244	.0744	.0244	11.803	1.337	.8252
49.54	49.36	42.21	3.642	2.74	.4664	.0202	.0660	.0202	10.840	1.366	.8192
67.61	69.10	40.39	-3.305	-3.158	.3761	.0166	.0579	.0166	9.945	1.400	.8504
87.93	89.56	46.97	3.539	6.42	.4605	.0375	.1416	.0375	10.413	1.377	.7384
100.00	100.00	48.15	2.609	-1.032	.4808	.0330	.1305	.0330	17.580	1.377	.7901

MOMENTUM AVERAGE STAGE EFFICIENCY = .8043 (POLYTROPIC)
 MOMENTUM AVERAGE STAGE EFFICIENCY = .7955 (ADIABATIC)
 MOMENTUM AVG. STAGE PRESS RATIO = 1.3680
 MASS AVERAGE TEMPERATURE RISE = 1.1166

NASA SMALL AXIAL COMPRESSOR TEST 4 JUNF 28 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 23

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9277

PERCENT SPAN FROM TIP (I. F.)	BETA 3 (DEG)	V3 (M/SEC)	V1/3 (M/SEC)	M3	VM3 (M/SEC)	U/23 (M/SEC)	U3 (M/SEC)
0.00	45.65	167.61	119.85	.474	117.17	115.89	314.99
11.95	47.60	169.46	125.13	.479	114.27	114.04	301.59
31.67	44.17	174.75	127.20	.498	124.92	124.92	279.67
49.54	41.09	188.85	124.12	.542	142.34	142.34	259.90
67.61	39.27	204.15	129.22	.590	159.05	157.47	239.70
87.93	45.85	215.41	154.54	.622	150.04	148.93	217.10
100.00	47.04	225.27	164.86	.653	153.52	149.27	203.69

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9300

PERCENT SPA FROM TIP (I. F.)	BETA 4 (DEG)	V4 (M/SEC)	V1/4 (M/SEC)	M4	VM4 (M/SEC)	U/24 (M/SEC)	U4 (M/SEC)
0.00	-1.12	136.69	-2.67	.383	136.66	136.66	312.60
11.45	-1.12	135.03	-2.65	.379	135.00	136.99	301.66
30.67	-1.24	136.71	-3.06	.386	136.67	136.61	283.29
49.07	-1.12	150.12	-2.93	.426	140.09	149.94	265.71
67.80	-1.12	164.14	-2.21	.469	164.11	164.01	247.81
88.23	-1.12	156.05	-3.05	.443	156.02	154.45	228.29
100.00	-1.12	156.97	-3.07	.445	156.94	156.94	217.05

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	FACTOR	OMEGA RAR	LOSS PARAMETER	DEVIATION A-ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	46.77	9.330	5.407	.4499	.0614	.0221	21.060	1.377	1.1701	.8717
11.95	11.45	12.02	48.72	11.406	4.049	.4642	.0742	.0257	15.403	1.373	1.1301	.8140
31.67	30.67	31.24	45.65	7.694	4.433	.4495	.0744	.0244	11.863	1.377	1.1179	.8252
49.54	49.07	49.56	42.21	3.249	.274	.4064	.0660	.0202	10.840	1.366	1.1112	.8392
67.61	67.80	69.10	40.39	-3.305	-3.158	.3761	.0579	.0166	9.905	1.400	1.1049	.8564
87.93	88.23	89.54	46.97	3.539	.642	.4605	.1416	.0375	10.413	1.377	1.1157	.8344
100.00	100.00	100.00	48.14	2.409	-1.032	.4808	.1365	.0330	17.580	1.377	1.1158	.7901

MOMENTUM AVERAGE STAGE EFFICIENCY = .7954 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7955 (ADIABATIC)
MOMENTUM AVG. STAGE PRESS RATIO = 1.3648
MASS AVERAGE TEMPERATURE DISF = 1.1166

NASA SMALL AXIAL COMPRESSOR TEST 4 JUNE 28, 1974 (COMBINED TEMP.)

MOTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT WEIGHT FLOW = 7.1028 LBM/SEC 70 PERCENT DESIGN SPEED - SCAM NO 24
 EQUIVALENT FLOW = 57.4125 EQUIVALENT FLOW / INLET ANN AREA = 53732.621 R.P.M.
 EQUIVALENT FLOW / INLET ANN AREA = 23.2248 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0384

PERCENT SPAN FROM TIP (T. F.)	HETA*1 (DEG)	V*1 (FT/SEC)	VI*1 (FT/SEC)	HTA1 (DEG)	VI (FT/SEC)	M1	VM1 (FT/SEC)	V1 (FT/SEC)	U1 (FT/SEC)
0.00	75.02	114.39	1107.42	0.00	294.39	0.00	296.34	296.84	1107.42
5.64	73.45	1077.16	1054.61	0.00	303.33	0.00	303.33	293.41	1054.61
25.26	71.36	1022.48	969.21	0.00	326.98	0.00	326.98	320.97	969.21
40.82	69.27	945.21	886.11	0.00	334.33	0.00	334.33	333.25	886.11
50.43	67.44	847.07	782.27	0.00	328.92	0.00	328.92	326.81	782.27
62.77	64.77	717.40	644.34	0.00	305.92	0.00	305.92	303.02	644.34
100.00	62.27	633.02	560.32	0.00	294.54	0.00	294.54	294.53	560.32

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8686

PERCENT SPAN FROM TIP (T. F.)	HETA*2 (DEG)	V*2 (FT/SEC)	VI*2 (FT/SEC)	HTA2 (DEG)	VI2 (FT/SEC)	M2	VM2 (FT/SEC)	V2 (FT/SEC)	U2 (FT/SEC)
0.00	42.97	774.69	684.94	46.68	519.27	.466	355.59	346.14	1065.08
12.99	54.24	720.40	619.12	47.05	540.60	.466	368.32	340.27	1014.83
31.90	55.43	660.99	544.10	45.99	532.73	.468	375.02	372.64	932.47
50.39	46.71	620.66	454.34	42.62	586.71	.513	411.74	431.72	855.61
64.39	36.16	604.08	356.24	40.96	646.64	.568	480.36	484.90	740.81
81.18	21.33	508.66	184.80	47.35	694.49	.615	473.27	444.48	544.52
100.00	11.50	484.67	96.92	49.38	727.87	.643	473.64	447.76	649.41

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	DELTA HETA* (DEG)	MASS FLOW (PCT)	INCIDENCE MEAN (DEG)	ANGLF SUCT (DEG)	LOSS PARAMETER	OMEGA* HAZ	DEVIATION ANGLE (DEG)	MOTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	11.180	10.712	.0413	.2366	5.678	1.343	.6811	.6941
9.44	12.04	11.93	12.052	10.744	.0454	.2459	4.411	1.347	.6896	.7054
25.26	21.90	31.04	12.258	10.207	.0359	.1900	5.782	1.347	.7639	.7736
40.82	50.34	44.61	12.319	9.565	.0224	.1076	5.292	1.377	.8747	.8821
50.43	68.33	68.93	12.874	9.114	.0054	.0245	6.288	1.413	.8765	.8776
81.18	88.18	89.42	13.315	8.314	.0248	.1140	12.032	1.425	.9244	.9282
100.00	100.00	100.00	13.518	7.444	.0201	.1443	18.611	1.425	.9244	.9281

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8377 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8303 (ADIABATIC)
 MOMENTUM AVG. ROTOR PRESS RATIO = 1.3773
 MASS AVERAGE TEMPERATURE RATIO = 1.1151

NASA SMALL AXIAL COMPRESSOR TEST 4 JUN 24 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIVALENT WEIGHT FLOW = 0.9578 KG/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 57.4125
 70 PERCENT DESIGN SPEED = SCAN NO 24
 EQUIVALENT SPEED R.P.M.
 EQUIVALENT FLOW / INLET ANN AREA = 53732.423 KG/SEC-SQ M
 113.7934

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = 1.0384

PERCENT SPAN FROM TIP (L. F.)	RETA#1 (DEG)	V#1 (M/SEC)	M#1	BETA#1 (DEG)	V1 (M/SEC)	M1	V#1 (M/SEC)	M1	V#1 (M/SEC)	U1 (M/SEC)	
0.00	75.02	344.42	1.035	0.00	90.34	0.00	0.00	0.267	90.34	87.43	337.56
9.65	71.95	314.48	0.971	0.00	92.45	0.00	0.00	0.274	92.45	89.43	321.44
25.26	71.36	295.41	0.925	0.00	93.66	0.00	0.00	0.296	93.66	97.83	295.41
40.82	69.79	284.10	0.885	0.00	101.90	0.00	0.00	0.302	101.90	101.58	264.44
50.43	67.44	254.19	0.768	0.00	93.04	0.00	0.00	0.294	93.04	99.00	230.44
61.73	64.77	214.78	0.648	0.00	93.25	0.00	0.00	0.276	93.25	91.99	197.92
100.00	62.27	192.94	0.571	0.00	82.78	0.00	0.00	0.266	82.78	84.73	170.79

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = 0.6886

PERCENT SPAN FROM TIP (T. F.)	RETA#2 (DEG)	V#2 (M/SEC)	M#2	BETA#2 (DEG)	V2 (M/SEC)	M2	V#2 (M/SEC)	M2	V#2 (M/SEC)	U2 (M/SEC)	
0.00	67.67	236.07	0.666	46.68	157.97	0.466	114.92	0.446	108.38	104.09	324.64
12.00	59.25	219.58	0.621	47.05	144.77	0.466	120.61	0.466	112.24	109.81	309.32
21.00	55.43	201.47	0.573	45.99	144.51	0.568	118.31	0.568	114.30	113.59	284.22
30.10	46.71	191.92	0.550	42.62	178.83	0.512	121.09	0.512	131.44	131.59	260.79
40.19	36.16	184.37	0.532	40.96	177.09	0.568	129.20	0.568	148.84	148.41	237.99
48.18	21.33	154.46	0.447	47.15	212.90	0.615	156.58	0.615	144.25	141.88	212.91
100.00	11.56	147.42	0.427	49.38	221.85	0.643	168.40	0.643	144.43	139.53	197.94

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	TRAILING EDGE	MASS FLOW (KGF)	DELTA HETA# (DEG)	INCIDENCE MEAN (DEG)	SUCT SUR (DEG)	FACTOR	OMEGA* HAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ANTIADIBATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	12.35	11.180	10.712	0.447	0.2366	0.0413	5.478	1.347	0.601	0.6941
9.65	12.09	11.94	14.70	12.052	10.744	0.474	0.2449	0.0454	4.411	1.347	0.606	0.7024
25.26	31.90	31.04	15.62	12.258	10.207	0.474	0.1900	0.0359	5.782	1.347	0.7439	0.7736
40.82	50.19	49.41	22.57	12.319	9.565	0.4603	0.1076	0.0224	5.202	1.377	0.4767	0.821
57.43	68.19	68.94	31.20	12.874	9.114	0.4212	0.0245	0.0054	6.288	1.413	0.2765	0.9776
61.73	88.18	87.42	43.44	13.315	8.134	0.4579	0.1140	0.0240	12.037	1.425	0.244	0.9282
100.00	100.00	100.00	50.71	13.518	7.444	0.4180	0.1443	0.0301	18.411	1.425	0.244	0.9281

MOMENTUM AVERAGE ROTOR EFFICIENCY = 0.8377 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = 0.8303 (ADIABATIC)
 MOMENTUM AVG. ROTOR PRESS RATIO = 1.3773
 MASS AVERAGE TEMPERATURE RISE = 1.1151

NASA SMALL AXIAL COMPRESSOR TEST 4 JUNE 28, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

70 PERCENT DESIGN SPEED - SCAM NO 24

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9187

PERCENT SPAN FROM TIP (I. F.)	BETA 3 (DEG)	V3 (FT/SEC)	VII3	M3	VM3 (FT/SEC)	VZ3 (FT/SEC)	U3 (FT/SEC)
0.00	44.83	550.64	380.24	.475	390.49	396.20	1034.30
11.75	46.00	563.06	405.04	.486	391.13	390.48	991.45
31.00	43.44	571.49	392.95	.497	414.96	414.96	921.12
49.00	40.09	617.23	397.51	.500	472.19	471.84	855.11
67.32	34.89	668.59	419.75	.509	520.41	518.50	788.49
87.41	44.99	711.24	502.86	.627	507.06	496.30	713.61
100.00	46.17	743.29	536.25	.657	514.70	500.68	694.10

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9300

PERCENT SPAN FROM TIP (I. F.)	BETA 4 (DEG)	V4 (FT/SEC)	VII4	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
9.00	-1.12	450.73	-8.81	.386	450.65	450.65	1026.86
11.65	-1.12	444.30	-8.66	.380	444.27	444.22	990.93
30.69	-.94	452.14	-7.44	.389	452.08	451.98	930.53
49.10	-1.12	501.95	-9.81	.435	501.85	501.33	872.75
67.74	-1.12	540.43	-10.56	.471	540.33	540.03	814.24
84.24	-1.12	524.63	-10.25	.454	524.53	522.41	749.88
100.00	-1.12	526.99	-10.30	.456	526.89	526.49	712.99

STATOR PERFORMANCE DATA

PERCENT LEADING EDGE	PERCENT SPAN FROM TIP TRAILING EDGE	MASS FLOW (PCF)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCTION (DEG)	FACTOR 0	OMEGA HAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE EFFICIENCY	STATOR POLYTROPIC EFF
0.00	0.00	0.00	45.95	8.516	4.594	.4433	.0585	.0211	21.060	1.371	1.1287
11.75	11.45	11.73	47.17	9.814	6.490	.4654	.1000	.0347	15.411	1.327	1.1287
31.00	30.67	31.04	44.39	6.799	3.517	.4360	.0676	.0222	12.197	1.373	1.1287
49.00	49.61	49.61	41.21	2.295	-.068	.3846	.0433	.0133	10.836	1.366	1.1089
67.32	67.74	69.93	40.01	-.647	-3.509	.3706	.0617	.0177	9.984	1.394	1.1060
87.41	88.24	89.42	46.11	2.707	-1.197	.4651	.1391	.0368	19.413	1.379	1.1150
100.00	100.00	100.00	47.29	1.562	-1.899	.4662	.1283	.0324	17.580	1.379	1.1149

MOMENTUM AVERAGE STAGE EFFICIENCY = .8088 (POLYTROPIC) MOMENTUM AVG. STAGE PRESSURE RATIO = 1.3622
 MOMENTUM AVERAGE STAGE EFFICIENCY = .8003 (ADIABATIC) MASS AVERAGE TEMPERATURE RATIO = 1.1151

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 OF POOR QUALITY

NASA SMALL AXIAL COMPRESSOR TEST 4 JUNE 29, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 24

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9187

PERCENT SPAN FROM TIP (I. F.)	BETA 3 (DEG)	V3 (M/SEC)	VIII (M/SEC)	M3	VM3 (M/SEC)	V7/4 (M/SEC)	U3 (M/SEC)
0.00	44.83	167.44	118.33	.675	119.02	117.71	315.27
11.75	46.00	171.42	123.46	.486	119.22	119.02	302.19
31.00	47.44	174.19	119.77	.447	126.48	126.48	240.76
49.00	48.00	168.13	121.16	.540	143.92	143.92	260.64
67.75	34.89	203.79	127.94	.584	158.62	158.62	240.33
87.81	44.99	216.80	153.27	.627	153.33	151.27	217.51
100.00	46.17	226.55	163.45	.657	156.88	152.55	203.94

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9300

PERCENT SPAN FROM TIP (I. F.)	BETA 4 (DEG)	V4 (M/SEC)	VIII4 (M/SEC)	M4	VM4 (M/SEC)	V1/4 (M/SEC)	U4 (M/SEC)
0.00	-1.12	127.38	-2.69	.386	137.76	127.36	312.99
11.45	-1.12	135.44	-2.64	.380	135.41	135.40	302.04
30.60	-1.95	127.81	-2.74	.389	137.79	127.73	283.63
49.10	-1.12	152.99	-2.99	.435	152.96	127.41	266.02
67.74	-1.12	164.72	-3.22	.371	164.69	144.60	248.16
88.24	-1.12	159.85	-3.12	.454	159.81	159.23	228.56
100.00	-1.12	160.63	-3.14	.456	160.60	140.60	217.32

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	TRAILING EDGE	MASS FLOW (KGT)	DELTA (DEG)	INCIDENCE ANGLE (DEG)	SUCT SUR (DEG)	FACTOR	OMEGA (RPM)	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	45.95	0.516	4.594	.4433	.0585	.0211	21.060	1.331	1.1287	.8372
11.75	11.45	11.93	47.12	9.814	6.490	.4654	.1000	.0347	15.411	1.327	1.1287	.7512
31.00	30.60	31.04	44.39	6.799	7.517	.4360	.0676	.0222	12.197	1.333	1.1340	.6354
49.00	49.10	49.41	41.21	2.295	-0.688	.3846	.0433	.0133	10.878	1.366	1.1059	.8957
67.33	67.74	69.93	40.01	-0.647	-3.509	.3706	.0617	.0177	9.994	1.394	1.1060	.8438
87.81	88.24	89.42	46.11	2.707	-1.197	.4451	.1391	.0367	10.413	1.379	1.1150	.7333
100.00	100.00	100.00	47.29	1.542	-1.899	.4662	.1283	.0324	17.580	1.379	1.1149	.7770

MOMENTUM AVERAGE STAGE EFFICIENCY = .8088 (POLYTROPIC)
 MOMENTUM AVERAGE STAGE EFFICIENCY = .8003 (ADIABATIC)
 MOMENTUM AVG. STAGE PRESS RATIO = 1.3622
 MASS AVERAGE TEMPERATURE RISE = 1.1151

NASA SMALL AXIAL COMPRESSOR TEST 4 JUNE 28, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT W/FIGHT FLOW = 2.1573 LBM/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 58.9000
 70 PERCENT DESIGN SPEED - SCAN NO 25
 EQUIVALENT SPEED = 53717.786 R.P.M.
 EQUIVALENT FLOW / INLET ANN AREA = 23.8744 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC HLOSSAGE = 1.0389

PERCENT SPAN FROM TIP (I. F.)	HETA*1 (DEG)	V*1 (FT/SEC)	VU*1 (FT/SEC)	M*1	BETA1 (DEG)	V1 (FT/SEC)	VU1 (FT/SEC)	M1	V*41 (FT/SEC)	VU*41 (FT/SEC)	M1	V*71 (FT/SEC)	VU*71 (FT/SEC)	M1	V*U1 (FT/SEC)	VU*U1 (FT/SEC)	M1
0.00	74.63	1148.14	1107.10	1.037	0.00	304.38	0.00	.275	704.38	294.58	.275	1107.10	1107.10	.275	304.38	0.00	.275
0.62	73.54	1094.55	1054.50	.993	0.00	311.49	0.00	.281	311.60	301.29	.281	1054.50	1054.50	.281	311.60	0.00	.281
2.53	70.87	1025.29	964.69	.927	0.00	335.74	0.00	.304	335.94	320.76	.304	964.69	964.69	.304	335.94	0.00	.304
4.10	68.73	947.16	882.66	.857	0.00	343.56	0.00	.311	343.54	322.46	.311	882.66	882.66	.311	343.54	0.00	.311
5.47	66.84	840.91	780.68	.768	0.00	333.91	0.00	.302	333.91	323.80	.302	780.68	780.68	.302	333.91	0.00	.302
6.92	64.12	724.81	648.13	.651	0.00	314.50	0.00	.284	314.50	316.27	.284	648.13	648.13	.284	314.50	0.00	.284
100.00	61.60	636.82	560.16	.575	0.00	302.92	0.00	.273	302.92	292.62	.273	560.16	560.16	.273	302.92	0.00	.273

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC HLOSSAGE = .8696

PERCENT SPAN FROM TIP (I. F.)	HETA*2 (DEG)	V*2 (FT/SEC)	VU*2 (FT/SEC)	M*2	HETA*2 (DEG)	V2 (FT/SEC)	VU*2 (FT/SEC)	M2	V*72 (FT/SEC)	VU*72 (FT/SEC)	M2	V*U2 (FT/SEC)	VU*U2 (FT/SEC)	M2	V*U2 (FT/SEC)	VU*U2 (FT/SEC)	M2
0.00	61.79	795.71	701.17	.686	44.03	523.19	263.60	.451	376.19	364.08	.451	701.17	701.17	.451	376.19	0.00	.451
1.43	59.24	737.25	633.87	.636	45.37	535.80	341.35	.462	376.50	364.28	.462	633.87	633.87	.462	376.50	0.00	.462
3.00	55.25	682.88	561.08	.593	43.60	537.54	370.72	.467	380.25	364.83	.467	561.08	561.08	.467	380.25	0.00	.467
4.47	48.82	627.26	475.60	.571	40.37	548.87	374.66	.513	446.38	446.35	.513	475.60	475.60	.513	446.38	0.00	.513
6.43	36.21	620.50	366.51	.546	37.58	649.82	413.90	.572	500.88	499.21	.572	366.51	366.51	.572	500.88	0.00	.572
8.19	27.12	520.07	195.85	.458	44.20	496.11	502.44	.613	481.79	473.87	.613	195.85	195.85	.613	481.79	0.00	.613
100.00	12.72	494.61	108.89	.437	48.24	724.39	540.33	.640	482.48	466.08	.640	108.89	108.89	.640	482.48	0.00	.640

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	DELTA HETA* (DEG)	MASS FLOW (PCT)	INCIDENCE MEAN (DEG)	ANGLE SUCT (DEG)	DELTA FACTOR	OMEGA* HAH	LOSS PARA* TER	LOSS TER (DEG)	DEVIATION ANGLE (DEG)	ROTOR PRFSS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTHIOPIC EFF
0.00	0.00	0.00	10.790	10.722	.4276	.2234	.0403	4.795	1.373	.8883	.7007	.7007
0.62	11.93	11.87	11.634	10.729	.4551	.2399	.0444	4.617	1.371	.8753	.6978	.6978
2.53	12.00	31.06	11.782	9.724	.4536	.1714	.0126	5.634	1.375	.7749	.7858	.7858
4.10	50.47	49.61	11.795	9.030	.4318	.0025	.0171	5.473	1.369	.9015	.9057	.9057
5.47	64.43	69.14	12.301	8.527	.4008	.0056	.0012	6.763	1.410	.9945	.9948	.9948
8.19	88.19	89.51	12.699	7.693	.4395	.0999	.0216	12.837	1.418	.9321	.9354	.9354
100.00	100.00	100.00	12.845	6.770	.4004	.1256	.0261	19.770	1.418	.9321	.9354	.9354

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8479 (POLYTHIOPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8910 (ADIABATIC)
 MOMENTUM AVG. ROTOR PRFSS RATIO = 1.3681
 MASS AVERAGE TEMPERATURE RISE = 1.1112

NASA SMALL AXIAL COMPRESSOR TEST 4 JUN 29, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

70 PERCENT DESIGN SPEED - SCAM NO 25

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9266

PERCENT SPAN FROM TIP (T. F.)	BETA 3 (DEG)	V3 (FT/SEC)	VU3 (FT/SEC)	M3	VM3 (FT/SEC)	VZ3 (FT/SEC)	U3 (FT/SEC)
0.00	42.72	551.84	374.40	.77	405.47	401.02	1034.07
11.44	46.71	555.10	39.50	.480	394.52	303.87	991.43
31.24	41.38	568.02	375.47	.495	426.23	426.22	920.00
49.32	38.08	616.08	374.94	.541	444.94	444.62	853.97
67.49	37.65	671.37	410.13	.592	531.54	530.59	787.61
87.00	43.95	708.90	421.98	.625	510.40	503.54	713.14
100.00	45.13	740.08	524.51	.655	522.12	507.69	688.91

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9300

PERCENT SPAN FROM TIP (T. F.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	-1.12	462.67	-9.04	.397	462.58	442.54	1026.57
11.41	-1.12	461.06	-8.94	.396	460.97	440.91	990.77
30.55	-1.05	471.54	-7.79	.408	471.49	471.24	930.71
48.95	-1.12	520.56	-10.14	.452	520.44	519.92	872.96
67.61	-1.10	555.88	-10.64	.485	555.74	555.47	814.42
84.15	.78	577.65	7.31	.467	577.60	575.64	747.98
100.00	.83	540.17	7.05	.469	540.11	540.11	712.79

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP FROM TIP	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT (DEG)	FACTOR	OMEGA RAR	LOSS PARAMETER	DEVIATION AIGLF (DEG)	STAGE LOSS RATIO	STATOR POLYTROPIC EFF
0.00	0.00	43.84	6.400	2.478	.4140	.0476	.0208	21.060	1.322	1.1240
11.41	11.87	45.42	8.522	5.195	.4188	.0551	.0192	11.420	1.320	1.1240
31.24	31.06	42.32	4.725	1.450	.3884	.0365	.0120	12.212	1.328	1.1107
49.32	49.61	39.20	-1.256	-2.722	.3447	.0273	.0084	10.847	1.342	1.1039
67.49	67.61	30.75	-1.906	-4.762	.3461	.0210	.0204	10.005	1.389	1.1035
87.00	87.51	43.17	1.645	-1.252	.4143	.1439	.0381	12.311	1.371	1.1124
100.00	100.00	44.30	.499	-2.942	.4361	.1331	.0337	19.533	1.311	1.1124

MOMENTUM AVERAGE STAGE EFFICIENCY = .8239 (POLYTROPIC) MOMENTUM AVG. STAGE PRESS RATIO = 1.3560
 MOMENTUM AVERAGE STAGE EFFICIENCY = .8162 (AD/ABATIC) MASS AVERAGE TEMPERATURE RISE = 1.1112

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 25

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9266

PERCENT SPAN FROM TIP (I. F.)	BETA 3 (DEG)	V3 (M/SEC)	V113 (M/SEC)	M3	V117 (M/SEC)	V173 (M/SEC)	U3 (M/SEC)
0.00	42.72	148.22	114.12	.477	123.59	122.21	315.18
11.65	44.71	149.20	119.03	.480	120.25	120.05	302.19
31.24	41.38	173.13	114.44	.495	129.91	129.91	280.42
49.12	38.08	187.78	115.41	.541	147.82	147.71	260.29
67.49	37.65	204.63	125.01	.502	162.01	161.42	240.06
87.89	43.95	216.07	149.95	.625	155.57	153.48	217.17
100.00	45.13	225.58	159.87	.655	159.14	154.74	203.88

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9300

PERCENT SPAN FROM TIP (I. F.)	BETA 4 (DEG)	V4 (M/SEC)	V114 (M/SEC)	M4	V116 (M/SEC)	V174 (M/SEC)	U4 (M/SEC)
0.00	-1.12	141.02	-2.76	.397	140.99	140.99	312.90
11.41	-1.12	140.53	-2.74	.396	140.50	140.49	301.99
30.55	-0.95	143.73	-2.37	.408	143.71	143.65	283.58
48.95	-1.12	148.67	-3.10	.453	154.64	148.47	266.08
67.61	-1.10	149.43	-3.74	.485	149.40	149.31	248.24
86.15	.78	143.88	2.23	.467	143.86	143.26	228.60
100.00	.83	144.64	2.39	.469	144.63	144.63	217.26

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	OFLTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLF SUCT (DEG)	D FACTOR	OMEGA HAR	LOSS PARAMETER	DEVIATION ANGLF (DEG)	STAGE POEFFS RATIO	STAGE TFMF RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	43.84	6.800	2.478	.4140	.0574	.0208	21.060	1.322	1.1260	.8273
11.64	11.41	11.47	45.82	8.522	5.195	.4188	.0554	.0192	15.420	1.320	1.1260	.8166
31.24	30.55	31.06	42.32	4.725	1.450	.3884	.0365	.0120	12.212	1.324	1.1107	.8330
49.12	48.95	49.51	39.20	.246	-2.722	.3447	.0273	.0044	10.847	1.362	1.1039	.9150
67.49	67.61	69.15	38.75	-1.906	-4.762	.3461	.0710	.0204	10.005	1.384	1.1035	.8817
87.89	88.15	94.51	43.17	1.648	-1.252	.4141	.1439	.0381	12.311	1.371	1.1124	.7935
100.00	100.00	100.00	44.31	.699	-2.842	.4361	.1331	.0337	19.533	1.371	1.1124	.7537

MOMENTUM AVERAGE STAGE EFFICIENCY = .8239 (POLYTROPIC)
 MOMENTUM AVERAGE STAGE EFFICIENCY = .8162 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.3460
 MASS AVERAGE TEMPERATURE DISF = 1.1112

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NASA SMALL AXIAL COMPRESSOR TEST 4 JUNF 28, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT WEIGHT FLOW = 2.2448 LBM/SEC 70 PERCENT DESIGN SPEED = SCAN NO 26
 PERCENT DESIGN EQUIVALENT FLOW = 61.2892 EQUIVALENT FLOW / INLET ANN AREA = 53723.201 R.P.M.
 26.7931 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0329

PERCENT SPAN FROM TIP (L. F.)	HETA1 (DEG)	V01 (FT/SEC)	VU01 (FT/SEC)	BETA1 (DEG)	V1 (FT/SEC)	VU1 (FT/SEC)	M1	V41 (FT/SEC)	V71 (FT/SEC)	U1 (FT/SEC)
0.00	73.99	1151.93	1107.22	1.041	0.00	0.00	.287	317.80	307.57	1107.22
9.45	72.88	1104.47	1055.54	.998	0.00	0.00	.296	325.11	114.47	1055.54
25.20	70.11	1030.03	969.40	.933	0.00	0.00	.314	350.81	344.37	969.40
41.02	67.08	952.96	882.83	.863	0.00	0.00	.325	358.82	357.67	952.83
54.52	65.94	855.96	781.64	.775	0.00	0.00	.316	348.84	348.76	781.64
83.75	63.15	727.51	649.09	.658	0.00	0.00	.297	328.57	328.15	649.09
100.00	60.52	643.52	560.22	.581	0.00	0.00	.286	314.65	305.89	560.22

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .8532

PERCENT SPAN FROM TIP (L. F.)	HETA2 (DEG)	V02 (FT/SEC)	VU2 (FT/SEC)	HETA2 (DEG)	V2 (FT/SEC)	VU2 (FT/SEC)	M2	V42 (FT/SEC)	V72 (FT/SEC)	U2 (FT/SEC)
0.00	60.93	826.75	722.63	40.44	527.69	767.26	.457	401.64	391.71	1064.89
11.48	58.00	774.61	657.77	41.11	445.43	758.60	.473	410.98	302.00	1016.37
31.28	53.79	724.90	585.66	39.14	543.07	349.22	.482	424.87	426.20	936.88
49.53	47.11	693.04	507.73	34.88	588.17	351.31	.514	471.75	471.70	853.04
67.73	36.81	646.32	387.22	37.44	651.74	396.21	.575	517.48	515.96	783.42
87.95	23.21	557.77	219.81	43.09	701.96	479.54	.620	512.63	504.21	694.36
100.00	14.53	530.29	133.08	45.16	724.00	516.22	.645	513.32	494.88	664.29

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	DELTA HETA (DEG)	MASS FLOW (PCT)	INCIDENCE MEAN (DEG)	ANGLE SURF SUM (DEG)	LOSS PARAMETER (DEG)	OMEGA HAP (DEG)	DEVIATION ANGLE (DEG)	MOTOR PRESS RATIO	ROTOR ANTIADIBATIC EFF	POLYTROPIC EFF
0.00	0.00	0.00	10.148	9.480	.0399	.2158	3.944	1.304	.819	.6937
9.45	11.68	11.67	10.937	9.642	.0432	.2248	3.078	1.311	.6875	.6992
25.20	31.28	30.93	10.995	8.948	.0290	.1478	3.903	1.324	.7977	.8056
41.02	49.53	49.59	10.942	8.177	.0116	.0564	5.271	1.352	.9278	.9109
54.52	67.73	68.94	11.389	7.624	.0003	.0014	6.401	1.394	.9986	.9986
83.75	87.05	89.36	11.716	6.715	.0136	.0674	13.589	1.408	.9545	.9586
100.00	100.00	100.00	11.771	5.697	.0162	.0787	21.585	1.408	.9544	.9586

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8605 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8546 (ADIABATIC)

MOMENTUM AVG. ROTOR PRESS RATIO = 1.3525
 MASS AVERAGE TEMPERATURE RISE = 1.1952

NASA SMALL AXIAL COMPRESSOR TEST 4 JUNE 28, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIVALENT HEIGHT FLOW = 1.0182 70 PERCENT DESIGN SPEED = SCAN NO 26
 PERCENT DESIGN EQUIVALENT FLOW = 61.2492 EQUIVALENT SPEED
 EQUIVALENT FLOW / INLET ANN AREA = 51771.201 R.P.M.
 121.0504 KG/SEC-SQ M

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0329

PERCENT SPAN FROM TIP (L. F.)	HETA*1 (DEG)	V*1 (M/SEC)	VU*1 (M/SEC)	BETA1 (DEG)	V1 (M/SEC)	M1	V*2 (M/SEC)	VU*2 (M/SEC)	BETA2 (DEG)	V2 (M/SEC)	M2	V*3 (M/SEC)	VU*3 (M/SEC)	BETA3 (DEG)	V3 (M/SEC)	M3
0.00	73.49	351.11	337.48	1.041	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.45	72.88	336.64	324.73	0.900	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25.20	70.11	314.23	295.47	0.843	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41.02	67.44	290.46	269.09	0.843	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
59.52	65.95	270.90	238.24	0.775	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73.75	63.15	221.74	197.84	0.658	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.70	60.52	196.14	170.76	0.581	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 0.8532

PERCENT SPAN FROM TIP (L. F.)	HETA*2 (DEG)	V*2 (M/SEC)	VU*2 (M/SEC)	BETA2 (DEG)	V2 (M/SEC)	M2	V*3 (M/SEC)	VU*3 (M/SEC)	BETA3 (DEG)	V3 (M/SEC)	M3	V*4 (M/SEC)	VU*4 (M/SEC)	BETA4 (DEG)	V4 (M/SEC)	M4
0.00	60.93	251.99	220.26	0.715	40.44	160.84	104.32	104.32	457	122.42	118.48	122.42	122.42	118.48	122.42	118.48
11.68	59.00	236.41	200.49	0.672	41.11	164.25	104.30	104.30	473	125.27	122.53	125.27	125.27	122.53	125.27	122.53
31.28	57.74	221.25	178.51	0.633	39.16	168.58	106.44	106.44	482	130.72	129.20	130.72	130.72	129.20	130.72	129.20
49.53	67.11	211.24	154.75	0.609	36.68	174.27	107.08	107.08	516	133.70	142.77	133.70	133.70	142.77	133.70	142.77
67.73	30.41	197.00	114.02	0.570	37.44	199.65	120.76	120.76	575	157.28	157.28	157.28	157.28	157.28	157.28	157.28
87.94	27.21	170.01	67.00	0.493	43.09	219.66	144.16	144.16	620	194.28	184.68	194.28	194.28	184.68	194.28	184.68
100.00	14.93	161.63	49.56	0.470	46.14	231.40	157.34	157.34	644	196.65	151.14	196.65	196.65	151.14	196.65	151.14

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	MASS FLOW (MCT)	DELTA HETA*0 (DEG)	INCIDENCE MEAN (DEG)	SUCT SUH (INFG)	ANGLF (INFG)	DELTA FACTOR	OMEGA HAZ	LOSS PARAMETER	DEVIATION ANGLF (INFG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	13.04	10.148	9.680	0.3955	0.1955	0.2158	0.0399	3.944	1.308	0.8914	0.8937
9.45	11.67	14.68	10.937	9.642	0.4155	0.2244	0.2244	0.0432	3.078	1.311	0.8875	0.8912
25.20	30.93	16.32	10.995	8.948	0.4084	0.1474	0.1474	0.0290	3.903	1.324	0.7977	0.8076
41.02	49.53	20.70	10.942	8.177	0.3841	0.0564	0.0564	0.0114	5.271	1.352	0.9278	0.9309
59.52	67.73	25.14	11.389	7.624	0.3705	0.0014	0.0014	0.0003	6.401	1.397	0.9866	0.9886
73.75	87.95	35.94	11.716	6.715	0.3861	0.0634	0.0634	0.0136	13.507	1.408	0.9545	0.9566
100.00	100.00	45.99	11.771	5.697	0.3433	0.0787	0.0787	0.0162	21.585	1.404	0.9545	0.9566

MOMENTUM AVERAGE ROTOR EFFICIENCY = 0.8605 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = 0.8544 (ADIABATIC)
 MOMENTUM AVG. ROTOR PRESS RATIO = 1.3525
 MASS AVERAGE TEMPERATURE RISE = 1.1052

NASA SMALL AXIAL COMPRESSOR TEST 4 JUNF 28, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 26

INLET VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9134

PERCENT SPAN FROM TIP (L. F.)	BETA 3 (DEG)	V3 (FT/SEC)	VU3 (FT/SEC)	M3	VM3 (FT/SEC)	VZ3 (FT/SEC)	U3 (FT/SEC)
0.00	33.16	559.12	352.42	.684	432.78	428.03	1034.18
11.40	40.55	548.07	347.20	.490	429.24	420.53	992.56
30.55	37.22	545.04	343.06	.512	465.48	445.08	922.63
48.47	34.56	621.02	352.00	.547	511.57	511.20	857.16
64.84	35.55	675.69	392.87	.598	549.74	547.73	790.08
87.66	40.97	716.43	469.69	.634	540.98	533.72	714.03
100.00	42.16	746.47	501.00	.663	553.36	538.07	668.98

EXIT VELOCITY DIAGRAM DATA

CALCULATED AERODYNAMIC BLOCKAGE = .9300

PERCENT SPAN FROM TIP (T. F.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	.83	480.34	6.96	.414	480.29	480.29	1026.68
11.34	.84	486.95	7.12	.420	486.90	486.84	991.11
30.35	1.00	508.65	8.88	.442	508.57	508.75	931.84
48.60	1.00	542.60	9.47	.475	542.51	541.96	873.91
67.60	1.00	581.67	10.15	.510	581.59	581.27	814.87
84.10	1.00	573.68	10.01	.501	573.59	571.49	744.92
100.00	1.00	576.42	10.06	.503	576.33	574.33	712.86

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	TRAILING EDGE	MASS FLOW (PCT)	DELTA HETA (DFG)	INCIDENCE ANGLE (DEG)	SUCT SUH (DEG)	D FACTOR	OMEGA HAH	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TFRP RATIO	STATION POLYTHROPIC EFF
0.00	0.00	0.00	38.33	2.838	-1.084	.7642	.0499	.0140	23.010	1.298	1.1148	.8252
11.40	11.34	11.67	39.71	4.368	1.029	.3591	.0423	.0147	17.391	1.303	1.1148	.8703
30.55	30.35	30.33	36.22	6.03	-2.693	.3220	.0295	.0097	14.178	1.318	1.1046	.8913
48.47	48.60	49.50	33.54	-3.207	-6.149	.2919	.0323	.0099	12.945	1.343	1.0847	.8791
64.84	67.43	68.34	34.55	-3.923	-6.798	.2967	.0681	.0195	12.100	1.373	1.0994	.7709
87.66	98.19	89.30	39.97	-1.282	-4.194	.3613	.1350	.0357	12.537	1.363	1.1074	.6730
100.00	100.00	100.00	41.14	-2.475	-5.916	.3861	.1254	.0317	19.700	1.363	1.1074	.6732

MOMENTUM AVERAGE STAGE EFFICIENCY = .8379 (POLYTHROPIC) MOMENTUM AVG. STAGE PRESS RATIO = 1.3418
 MOMENTUM AVERAGE STAGE EFFICIENCY = .8310 (ADIABATIC) MASS AVERAGE TEMPERATURE PISF = 1.1052

NASA SMALL AXIAL COMPRESSOR TEST 4 JUNE 28, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 76
 INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9134

PERCENT SPAN FROM TIP (L. F.)	BETA 3 (DEG)	V3 (M/SEC)	V1/3 (M/SEC)	M3	V4/3 (M/SEC)	V7/3 (M/SEC)	U3 (M/SEC)
0.00	39.16	170.12	107.42	.484	131.91	170.44	315.22
11.40	40.55	172.17	111.92	.490	130.83	170.62	302.53
30.55	37.22	178.32	107.46	.512	142.00	172.00	281.22
48.47	34.54	189.29	107.91	.547	155.93	154.81	261.26
66.84	35.55	205.95	114.75	.598	167.56	146.95	240.92
87.66	40.97	218.37	163.16	.634	164.89	142.48	217.58
100.00	42.16	227.52	152.71	.663	168.67	144.00	203.91

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9300

PERCENT SPAN FROM TIP (L. F.)	BETA 4 (DEG)	V4 (M/SEC)	V1/4 (M/SEC)	M4	V4/4 (M/SEC)	V7/4 (M/SEC)	U4 (M/SEC)
0.00	.83	146.41	2.12	.414	146.39	146.39	312.93
11.31	.84	149.42	2.17	.420	148.41	148.39	302.09
30.35	1.00	155.04	2.21	.442	155.01	154.94	287.90
48.68	1.00	165.34	2.89	.475	165.36	165.14	266.37
67.49	1.00	177.29	3.09	.510	177.27	177.17	248.37
88.19	1.00	174.96	3.05	.501	174.83	174.19	228.58
100.00	1.00	175.69	3.07	.503	175.67	175.67	217.28

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGL SUR (DEG)	D FACTOR	OMEGA HAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	38.33	2.838	-1.084	.3682	.0499	.0180	23.010	1.298	1.1148	.8952
11.40	11.34	11.67	39.71	4.368	1.029	.3591	.0423	.0147	17.301	1.303	1.1148	.8503
30.55	30.35	30.93	36.22	.603	-2.693	.3220	.0295	.0097	14.178	1.318	1.1046	.8213
48.47	48.68	47.59	33.54	-3.207	-4.199	.2919	.0321	.0099	12.985	1.343	1.0947	.8191
66.84	67.49	68.94	34.55	-3.923	-6.798	.2967	.0481	.0195	12.100	1.373	1.0994	.7708
87.66	88.19	87.16	39.97	-1.282	-4.194	.3613	.1350	.0357	12.532	1.343	1.1074	.6730
100.00	100.00	100.00	41.16	-2.475	-5.916	.3841	.1254	.0317	19.700	1.361	1.1074	.7332

MOMENTUM AVERAGE STAGE EFFICIENCY = .8370 (POLYTROPIC)
 MOMENTUM AVERAGE STAGE EFFICIENCY = .8310 (ADIABATIC)
 MOMENTUM AVG. STAGE PRESS RATIO = 1.3418
 MASS AVERAGE TEMPERATURE RISE = 1.1052