

NASA CR-135068
AiResearch 75-311305

COMPRESSOR BLADE SETTING ANGLE ACCURACY STUDY

(VOLUME II - DATA COMPILATION)

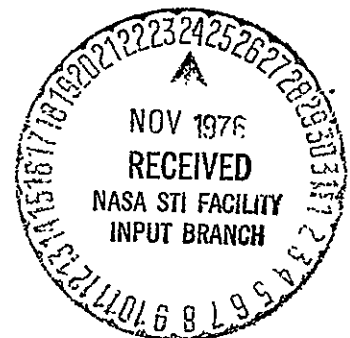
by F. F. Holman and J. R. Kidwell

AIRESEARCH MANUFACTURING COMPANY OF ARIZONA
A DIVISION OF
THE GARRETT CORPORATION
Phoenix, Arizona

Prepared for

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

Lewis Research Center
Contract NAS 3-18024



XX
 XX

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

94 PERCENT DESIGN SPEED - SCAN NO 2
 EQUIVALENT WEIGHT FLOW = 3.2625 LBH/SEC EQUIVALENT SPEED = 72254.844 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 89.0755 EQUIVALENT FLOW / INLET ANN AREA = 36.0333 LBH/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA CALCULATED AERODYNAMIC BLOCKAGE = .9898

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	VH1 (FT/SEC)	VZ1 (FT/SEC)	U1 (FT/SEC)
0.00	71.74	1569.12	1489.16	1.433	0.00	491.36	0.00	.449	491.36	475.53	1489.16
10.25	70.38	1580.93	1413.76	1.373	0.00	504.06	0.00	.461	504.06	487.56	1413.76
27.28	66.97	1400.09	1288.45	1.206	0.00	547.84	0.00	.503	547.84	537.77	1288.45
44.00	64.29	1293.42	1165.42	1.189	0.00	561.02	0.00	.516	561.02	559.21	1165.42
62.12	62.20	1166.88	1032.18	1.071	0.00	544.27	0.00	.500	544.27	544.08	1032.18
84.70	59.45	1005.61	866.06	.921	0.00	511.08	0.00	.468	511.08	504.22	866.06
100.00	56.89	899.53	753.47	.822	0.00	491.37	0.00	.449	491.37	474.67	753.47

EXIT VELOCITY DIAGRAM DATA CALCULATED AERODYNAMIC BLOCKAGE = .8834

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	VH2 (FT/SEC)	VZ2 (FT/SEC)	U2 (FT/SEC)
0.00	60.55	1129.66	983.67	.955	38.92	713.94	448.55	.603	555.44	537.56	1432.22
11.90	57.02	1067.38	895.34	.905	38.99	747.61	470.38	.634	581.08	568.39	1365.72
31.77	53.34	965.89	774.83	.824	39.76	750.22	479.84	.640	576.70	573.10	1254.67
50.75	46.84	884.89	645.44	.761	39.73	787.11	503.10	.677	605.34	605.30	1148.54
69.59	39.62	788.84	503.07	.682	41.64	812.98	540.15	.703	607.60	605.81	1043.22
89.51	22.24	773.11	292.63	.678	41.78	959.55	639.27	.842	715.59	703.83	931.90
100.00	14.92	741.21	190.80	.653	43.62	989.31	682.47	.872	716.23	691.89	873.27

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	SPAN FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	11.19	7.903	7.434	.3886	.2045	.0383	3.558	1.632	.7281	.7461
10.25	11.90	12.69	13.36	8.599	7.255	.4024	.2041	.0403	2.137	1.647	.7429	.7602
27.28	31.77	33.37	13.63	8.205	6.026	.4236	.1547	.0307	3.637	1.667	.8133	.8268
44.00	50.75	52.71	17.46	7.757	4.829	.4325	.1004	.0209	5.595	1.706	.8890	.8970
62.12	69.59	71.25	22.57	7.927	4.056	.4479	.0949	.0290	10.756	1.703	.9083	.9149
84.70	89.51	90.95	37.21	8.128	3.101	.3768	-.0268	-.0058	14.055	1.865	1.0189	1.0173
100.00	100.00	100.00	41.97	8.138	2.064	.3343	-.0321	-.0066	21.969	1.865	1.0189	1.0173

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8676 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8573 (ADIABATIC)

MOMENTUM AVG. ROTOR PRESS RATIO = 1.7049
 MASS AVERAGE TEMPERATURE RISE = 1.1917

ORIGINAL PAGE IS
 OF POOR QUALITY

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

94 PERCENT DESIGN SPEED - SCAN NO 2
 EQUIVALENT WEIGHT FLOW = 1.4798 KG/SEC EQUIVALENT SPEED = 72254.844 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 89.0755 EQUIVALENT FLOW / INLET ANN AREA = 175.9302 KG/SEC-SQ M

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9898

PERCENT SPAN FROM TIP (L. F.)	BETA*1 (DEG)	V*1 (M/SEC)	VU*1 (M/SEC)	M*1	BETA1 (DEG)	V1 (M/SEC)	VU1 (M/SEC)	M1	VM1 (M/SEC)	VZ1 (M/SEC)	U1 (M/SEC)
0.00	71.74	477.96	453.89	1.433	0.00	149.77	0.00	.449	149.77	144.94	453.89
10.25	70.38	457.48	430.91	1.373	0.00	153.64	0.00	.461	153.64	148.61	430.91
27.28	66.97	426.75	392.72	1.286	0.00	166.98	0.00	.503	166.98	163.91	392.72
44.00	64.29	394.23	355.22	1.189	0.00	171.00	0.00	.516	171.00	170.45	355.22
62.12	62.20	355.67	314.61	1.071	0.00	165.89	0.00	.500	165.89	165.84	314.61
84.70	59.45	306.51	263.97	.921	0.00	155.78	0.00	.468	155.78	153.69	263.97
100.00	56.89	274.18	229.66	.822	0.00	149.77	0.00	.449	149.77	144.68	229.66

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8834

PERCENT SPAN FROM TIP (T. F.)	BETA*2 (DEG)	V*2 (M/SEC)	VU*2 (M/SEC)	M*2	BETA2 (DEG)	V2 (M/SEC)	VU2 (M/SEC)	M2	VM2 (M/SEC)	VZ2 (M/SEC)	U2 (M/SEC)
0.00	60.55	344.32	299.82	.955	38.92	217.61	136.72	.603	169.30	163.85	436.54
11.90	57.02	325.34	272.90	.905	38.99	227.87	143.37	.634	177.11	173.24	416.27
31.77	53.34	294.40	236.17	.824	39.76	228.67	146.25	.640	175.78	174.68	382.42
50.75	46.84	269.71	196.73	.761	39.73	239.91	153.35	.677	184.51	184.50	350.08
69.59	39.62	240.44	153.34	.682	41.64	247.80	164.64	.703	185.20	184.65	317.97
89.51	22.24	235.64	89.19	.678	41.78	292.47	194.85	.842	218.11	214.53	284.04
100.00	14.92	225.92	58.16	.653	43.62	301.54	208.02	.872	218.31	210.89	266.17

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	Y FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	11.19	7.903	7.434	.3886	.2045	.0383	3.558	1.632	.7281	.7461
10.25	11.90	12.68	13.36	8.599	7.255	.4024	.2041	.0403	2.137	1.647	.7429	.7602
27.28	31.77	33.37	13.63	8.205	6.026	.4236	.1547	.0307	3.637	1.667	.8139	.8268
44.00	50.75	52.71	17.46	7.757	4.829	.4325	.1004	.0209	5.595	1.706	.8890	.8970
62.12	69.59	71.25	22.57	7.927	4.056	.4479	.0949	.0200	10.756	1.703	.9083	.9149
84.70	89.51	90.05	37.21	8.128	3.101	.3768	-.0268	-.0058	14.855	1.865	1.0189	1.0173
100.00	100.00	100.00	41.97	8.138	2.064	.3343	-.0321	-.0066	21.969	1.865	1.0189	1.0173

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8676 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8573 (ADIABATIC)

MOMENTUM AVG. ROTOR PRESS RATIO = 1.7049
 MASS AVERAGE TEMPERATURE RISE = 1.1917

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

94 PERCENT DESIGN SPEED - SCAN NO 2

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8039

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	33.60	834.54	461.86	.715	695.08	687.45	1390.92
11.32	34.59	847.41	481.09	.727	697.61	696.46	1335.34
30.44	34.35	859.44	484.96	.743	709.55	709.54	1241.43
49.02	34.38	889.81	502.41	.775	734.41	733.86	1150.13
67.99	36.26	901.43	533.11	.780	726.89	724.24	1056.99
88.60	37.67	1021.02	623.33	.904	808.67	797.81	955.73
100.00	38.96	1053.07	662.08	.937	818.91	796.28	899.75

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9263

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	-7.52	829.06	-108.50	.710	821.93	812.91	1380.83
11.01	-7.53	835.70	-109.57	.716	828.49	827.12	1334.38
29.50	-6.65	822.24	-95.27	.707	816.70	816.69	1256.34
47.63	-5.77	821.63	-82.59	.709	817.47	816.87	1179.78
66.31	-5.95	780.61	-79.59	.672	776.55	773.71	1100.97
87.78	-5.93	777.05	-80.32	.666	772.89	762.51	1010.32
100.00	-5.09	786.46	-69.80	.674	783.36	761.72	958.76

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING TRAILING EDGE EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00 0.00	0.00	41.12	-2.715	-6.637	.2544	.1314	.0469	13.409	1.570	1.2058	-7.2692
11.32 11.01	12.68	42.12	-1.585	-4.927	.2556	.1283	.0442	9.133	1.584	1.2058	-2.8241
30.44 29.50	33.37	41.01	-2.258	-5.558	.2631	.1338	.0437	6.946	1.599	1.1929	-2.868
49.02 47.63	52.71	40.15	-3.417	-6.400	.2744	.1508	.0460	6.476	1.622	1.1851	.1747
67.99 66.31	71.25	42.11	-3.368	-6.210	.3233	.2067	.0590	5.696	1.585	1.1805	.3272
88.60 87.78	90.05	43.56	-4.847	-7.704	.4135	.3656	.0962	5.643	1.584	1.1909	.2999
100.00 100.00	100.00	44.05	-5.677	-9.118	.4196	.3478	.0976	13.505	1.585	1.1909	.3775

MOMENTUM AVERAGE STAGE EFFICIENCY = .7580 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7417 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.5937
MASS AVERAGE TEMPERATURE RISE = 1.1917

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

94 PERCENT DESIGN SPEED - SCAN NO 2

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8839

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)
0.00	33.60	254.37	140.78	.715	211.86	209.53	423.95
11.32	34.59	258.29	146.64	.727	212.63	212.28	407.01
30.44	34.35	261.96	147.81	.743	216.27	216.27	378.39
49.02	34.38	271.21	153.13	.775	223.85	223.68	350.56
67.99	36.26	274.76	162.49	.788	221.56	220.75	322.17
88.60	37.63	311.21	189.99	.904	246.48	243.17	291.31
100.00	38.96	320.98	201.80	.937	249.60	242.71	274.24

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9263

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VM4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	-7.52	252.70	-33.07	.710	250.53	247.77	420.88
11.01	-7.53	254.72	-33.40	.716	252.52	252.10	406.72
29.50	-5.65	250.62	-29.04	.707	248.93	248.93	382.93
47.63	-5.77	250.43	-25.17	.709	249.17	248.98	359.60
66.31	-5.85	237.93	-24.25	.672	236.69	235.83	335.58
87.78	-5.93	236.84	-24.48	.666	235.58	232.41	307.95
100.00	-5.09	239.71	-21.27	.674	238.77	232.17	292.23

STATOR PERFORMANCE DATA

PERCENT LEADING EDGE	SPAN FROM TIP TRAILING EDGE	MASS FLOW (PC)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DFG)	D FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	41.12	-2.715	-6.637	.2544	.1314	.0469	13.409	1.570	1.2058	-7.2692
11.32	11.31	12.68	42.12	-1.585	-4.927	.2556	.1283	.0442	9.133	1.584	1.2058	-2.8241
30.44	29.50	33.37	41.01	-2.258	-5.553	.2631	.1338	.0437	6.946	1.599	1.1929	-.2868
49.02	47.63	52.71	40.15	-3.417	-6.400	.2744	.1508	.0460	6.476	1.622	1.1851	.1747
67.99	66.31	71.25	42.11	-3.368	-6.210	.3233	.2067	.0590	5.696	1.585	1.1805	.3272
88.60	87.78	90.05	43.56	-4.847	-7.704	.4135	.3656	.0962	5.643	1.584	1.1908	.2999
100.00	100.00	100.00	44.05	-5.677	-9.118	.4196	.3478	.0876	13.505	1.585	1.1909	.3775

MOMENTUM AVERAGE STAGE EFFICIENCY = .7580 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7417 (ADIABATIC)MOMENTUM AVG. STAGE PRESS RATIO = 1.5937
MASS AVERAGE TEMPERATURE RISE = 1.1917

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

94 PERCENT DESIGN SPEED - SCAN NO 3
 EQUIVALENT WEIGHT FLOW = 3.2214 LBM/SEC EQUIVALENT SPEED = 72302.200 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 87.9547 EQUIVALENT FLOW / INLET ANN AREA = 35.5860 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA CALCULATED AERODYNAMIC BLOCKAGE = .9962

PERCENT SPAN FROM TIP (L. E.)	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	72.01	1566.70	1490.13	1.431	0.00	483.81	0.00	.442	483.81	468.23	1490.13
10.03	70.70	1500.62	1416.27	1.372	0.00	496.02	0.00	.453	496.02	479.78	1416.27
26.80	67.39	1400.52	1292.86	1.285	0.00	538.47	0.00	.494	538.47	528.58	1292.86
43.29	64.80	1294.66	1171.44	1.189	0.00	551.24	0.00	.506	551.24	549.47	1171.44
61.34	62.76	1168.10	1038.55	1.072	0.00	534.68	0.00	.490	534.68	534.50	1038.55
84.30	60.02	1003.18	868.95	.918	0.00	501.30	0.00	.459	501.30	494.57	868.95
100.00	57.45	894.48	753.96	.817	0.00	481.29	0.00	.439	481.29	464.93	753.96

EXIT VELOCITY DIAGRAM DATA CALCULATED AERODYNAMIC BLOCKAGE = .9171

PERCENT SPAN FROM TIP (T. E.)	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	61.07	1103.03	965.36	.928	41.24	709.64	467.79	.597	533.63	516.44	1433.16
11.22	57.65	1043.02	881.17	.881	41.24	742.13	489.22	.627	558.05	545.86	1370.39
30.10	54.18	940.07	762.24	.798	42.41	745.20	502.59	.632	550.20	546.77	1264.83
48.24	48.09	863.24	646.07	.743	41.73	777.16	517.26	.665	580.03	579.99	1163.33
66.49	41.66	764.22	508.00	.657	44.10	795.07	553.31	.683	570.94	569.26	1061.31
87.66	25.65	666.21	288.40	.577	47.46	888.23	654.45	.769	600.55	590.68	942.85
100.00	15.59	624.22	167.71	.543	49.59	927.44	706.13	.807	601.27	500.84	873.84

ROTOR PERFORMANCE DATA

PERCENT LEADING EDGE	SPAN FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOP PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.03	10.95	8.176	7.708	.4097	.1993	.0367	4.077	1.683	.7449	.7628
10.03	11.22	12.42	13.04	8.876	7.544	.4234	.1999	.0388	2.634	1.697	.7581	.7753
26.80	30.10	32.82	13.21	8.548	6.400	.4485	.1638	.0519	3.878	1.711	.8126	.8262
43.29	48.24	51.96	16.72	8.167	5.279	.4508	.1058	.0215	5.647	1.740	.8879	.8963
61.34	66.48	70.52	21.10	8.406	4.563	.4751	.1143	.0233	10.293	1.725	.8942	.9020
84.38	87.66	89.75	34.37	8.656	3.630	.4873	.1344	.0283	15.624	1.783	.9070	.9142
100.00	100.00	100.00	41.86	8.696	2.622	.4669	.1643	.0337	22.637	1.783	.9070	.9143

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8521 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8403 (ADIABATIC)

MOMENTUM AVG. ROTOR PRESS RATIO = 1.7241
 MASS AVERAGE TEMPERATURE RISE = 1.2000

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

94 PERCENT DESIGN SPEED - SCAN NO 3
 EQUIVALENT WEIGHT FLOW = 1.4612 KG/SEC EQUIVALENT SPEED = 72302.200 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 87.9547 EQUIVALENT FLOW / INLET ANN AREA = 173.7166 KG/SEC-SQ M

 INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9962

PERCENT SPAN FROM TIP (L. E.)	BETA*1 (DEG)	V*1 (M/SEC)	VU*1 (M/SEC)	M*1	BETA1 (DEG)	V1 (M/SEC)	VU1 (M/SEC)	M1	VM1 (M/SEC)	VZ1 (M/SEC)	U1 (M/SEC)
0.00	72.01	477.53	454.19	1.431	0.00	147.46	0.00	.442	147.46	142.72	454.19
10.03	70.70	457.39	431.68	1.372	0.00	151.19	0.00	.453	151.19	146.24	431.68
26.80	67.39	426.88	394.06	1.285	0.00	164.13	0.00	.494	164.13	161.11	394.06
43.29	64.80	394.61	357.96	1.189	0.00	168.02	0.00	.506	168.02	167.48	357.06
61.34	62.76	356.04	316.55	1.072	0.00	162.97	0.00	.490	162.97	162.91	316.55
84.38	60.02	305.77	264.86	.918	0.00	152.80	0.00	.459	152.80	150.74	264.86
100.00	57.45	272.64	229.81	.817	0.00	146.70	0.00	.439	146.70	141.71	229.81

 EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9171

PERCENT SPAN FROM TIP (T. E.)	BETA*2 (DEG)	V*2 (M/SEC)	VU*2 (M/SEC)	M*2	BETA2 (DEG)	V2 (M/SEC)	VU2 (M/SEC)	M2	VM2 (M/SEC)	VZ2 (M/SEC)	U2 (M/SEC)
0.00	61.07	336.21	294.24	.928	41.24	216.30	142.58	.597	162.65	157.41	436.83
11.22	57.65	317.91	268.59	.881	41.24	226.20	149.11	.627	170.09	166.38	417.70
30.10	54.18	286.53	232.33	.798	42.41	227.14	153.19	.632	167.70	166.66	385.52
48.24	48.08	264.64	196.92	.743	41.73	236.88	157.66	.665	176.79	176.78	354.58
66.48	41.66	232.93	154.84	.657	44.10	242.34	168.65	.683	174.02	173.51	323.49
87.66	25.65	203.06	87.90	.577	47.46	270.73	199.48	.769	183.05	180.04	287.38
100.00	15.59	190.26	51.12	.543	49.59	282.68	215.23	.807	183.27	177.04	266.35

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	10.95	8.176	7.708	.4097	.1993	.0367	4.077	1.683	.7449	.7628
10.03	11.22	12.42	13.04	8.876	7.544	.4234	.1999	.0388	2.634	1.697	.7581	.7753
26.80	30.10	32.82	13.21	8.548	6.400	.4485	.1638	.0319	3.878	1.711	.8126	.8262
43.29	48.24	51.96	16.72	8.167	5.279	.4508	.1058	.0215	5.647	1.740	.8879	.8963
61.34	66.48	79.52	21.10	8.406	4.563	.4751	.1143	.0233	10.293	1.725	.8942	.9020
84.38	87.66	89.75	34.37	8.056	3.638	.4873	.1344	.0283	15.624	1.783	.9070	.9142
100.00	100.00	100.00	41.86	8.696	2.622	.4669	.1643	.0337	22.637	1.783	.9070	.9143

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8521 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8403 (ADIABATIC)

MOMENTUM AVG. ROTOR PRESS RATIO = 1.7241
 MASS AVERAGE TEMPERATURE RISE = 1.2000

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

ORIGINAL PAGE IS
OF POOR QUALITY

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

94 PERCENT DESIGN SPEED - SCAN NO 3

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9130

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	36.11	817.25	481.68	.696	660.21	652.96	1391.83
10.75	37.04	831.25	500.70	.709	663.53	662.43	1338.98
29.06	37.16	842.65	508.95	.723	671.59	671.58	1249.01
46.96	36.61	869.13	518.27	.752	697.69	697.18	1161.05
65.44	38.81	875.52	548.72	.760	682.23	679.74	1070.20
87.14	42.40	949.74	640.40	.829	701.35	691.93	963.52
100.00	43.70	991.61	685.13	.871	716.86	697.05	900.34

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9641

PERCENT SPAN FROM TIP (T. C.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	-8.44	687.65	-100.93	.577	680.20	672.73	1381.74
10.94	-8.46	695.59	-102.30	.584	688.03	686.88	1335.51
29.36	-7.43	689.82	-89.20	.582	684.03	684.02	1257.73
47.49	-6.57	688.78	-78.78	.584	684.26	683.76	1181.19
66.25	-6.62	668.83	-77.15	.567	664.36	661.93	1101.94
87.72	-5.73	677.74	-67.66	.573	674.36	665.30	1011.24
100.00	-4.59	687.59	-55.01	.582	685.39	666.45	959.39

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING TRAILING EDGE EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCTION SUR (DEG)	D FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00 0.00	0.00	44.55	-2.84	-4.126	.4172	.0754	.0269	12.489	1.640	1.2148	.7842
10.75 10.94	12.42	45.50	.876	-2.491	.4152	.0686	.0236	8.232	1.664	1.2148	.8099
29.06 29.36	32.82	44.59	.617	-2.724	.4136	.0618	.0202	6.188	1.680	1.2037	.8454
46.96 47.49	51.96	43.17	-1.008	-4.022	.4156	.0817	.0249	5.686	1.696	1.1928	.8205
65.44 66.25	70.52	45.43	-.488	-3.399	.4370	.0738	.0210	4.926	1.684	1.1881	.8556
87.14 87.72	89.75	48.13	.265	-2.668	.4763	.1342	.0353	5.846	1.696	1.1977	.7815
100.00 100.00	100.00	48.29	-.928	-4.370	.4851	.1249	.0315	14.007	1.696	1.1977	.8118

MOMENTUM AVERAGE STAGE EFFICIENCY = .8137 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7996 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.6823
MASS AVERAGE TEMPERATURE RISE = 1.2000

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

94 PERCENT DESIGN SPEED - SCAN NO 3

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9130

PERCENT SPAN FROM TIP (L. E.)	BETA 3 (DEG)	V3 (M/SEC)	VU3 (M/SEC)	M3	VN3 (M/SEC)	VZ3 (M/SEC)	U3 (M/SEC)
0.00	36.11	249.10	146.82	.696	201.23	199.02	424.23
10.75	37.04	253.36	152.61	.709	202.24	201.91	408.12
29.06	37.16	256.84	155.13	.723	204.70	204.70	380.70
46.96	36.61	264.91	157.97	.752	212.66	212.50	353.89
65.44	38.81	266.86	167.25	.760	207.95	207.19	326.20
87.14	+2.48	289.48	195.19	.829	213.77	210.90	293.68
100.00	43.70	302.24	208.83	.871	218.50	212.46	274.42

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9641

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VN4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	-8.44	209.60	-30.76	.577	207.33	205.05	421.15
10.94	-8.46	212.02	-31.18	.584	209.71	209.36	407.06
29.36	-7.43	210.26	-27.19	.582	208.49	208.49	383.36
47.49	-6.57	209.94	-24.01	.584	208.56	208.41	360.03
66.25	-6.62	203.86	-23.51	.567	202.50	201.76	335.87
87.72	-5.73	206.58	-20.62	.573	205.54	202.78	308.23
100.00	-4.59	209.58	-16.77	.582	208.91	203.13	292.42

STATOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCTION SUR (DEG)	γ FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	44.55	-1.204	-4.126	.4172	.0754	.0269	12.489	1.648	1.2148	.7842
10.75	10.94	12.42	45.50	.876	-2.491	.4152	.0686	.0236	8.232	1.664	1.2149	.8099
29.06	29.36	32.82	44.59	.617	-2.724	.4136	.0618	.0202	6.188	1.680	1.2037	.8454
46.96	47.49	51.96	43.17	-1.808	-4.022	.4156	.0817	.0249	5.686	1.696	1.1928	.8205
65.44	66.25	70.52	45.43	-1.488	-3.399	.4370	.0738	.0210	4.926	1.684	1.1881	.8556
87.14	87.72	89.75	48.13	.265	-2.668	.4763	.1342	.0353	5.846	1.696	1.1977	.7815
100.00	100.00	100.00	48.29	-.928	-4.370	.4851	.1249	.0315	14.007	1.696	1.1977	.8118

MOMENTUM AVERAGE STAGE EFFICIENCY = .8137 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7996 (ADIABATIC)MOMENTUM AVG. STAGE PRESS RATIO = 1.6823
MASS AVERAGE TEMPERATURE RISE = 1.2000

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

94 PERCENT DESIGN SPEED - SCAN NO 4
 EQUIVALENT HEIGHT FLOW = 3.1665 LBM/SEC EQUIVALENT SPEED = 72306.110 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 86.4544 EQUIVALENT FLOW / INLET ANN AREA = 34.9731 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0009

PERCENT SPAN FROM TIP (L. E.)	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	72.38	1563.59	1490.21	1.427	0.00	473.38	0.00	.432	473.38	458.13	1490.21
10.20	71.06	1496.05	1415.08	1.367	0.00	485.50	0.00	.444	485.50	469.61	1415.08
27.03	67.80	1394.63	1291.21	1.278	0.00	527.05	0.00	.483	527.05	517.36	1291.21
43.47	65.25	1288.59	1170.21	1.183	0.00	539.52	0.00	.495	539.52	537.79	1170.21
61.52	63.22	1161.93	1037.31	1.065	0.00	523.52	0.00	.480	523.52	523.34	1037.31
84.42	60.50	998.09	868.69	.912	0.00	491.48	0.00	.449	491.48	484.88	868.69
100.00	57.93	889.77	754.00	.812	0.00	472.42	0.00	.431	472.42	456.36	754.00

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9484

PERCENT SPAN FROM TIP (T. E.)	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	61.64	1071.27	942.66	.897	43.95	706.89	490.58	.592	508.95	492.56	1433.24
11.35	58.90	1000.15	856.44	.839	44.82	728.22	513.32	.611	516.54	505.25	1369.76
30.69	54.93	888.45	727.13	.749	46.31	739.11	534.47	.623	510.52	507.34	1261.59
48.84	48.30	831.61	620.94	.709	44.26	772.43	539.10	.659	553.19	553.16	1160.04
66.86	41.95	728.17	486.75	.624	46.59	788.10	572.52	.675	541.58	539.99	1059.27
87.79	25.27	631.04	269.34	.545	49.70	882.28	672.86	.761	570.68	561.30	942.20
100.00	14.60	590.36	148.84	.512	51.76	923.07	725.05	.801	571.29	551.87	873.89

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCTION SUR (DEG)	D FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	10.74	8.540	8.072	.4344	.2073	.0375	4.644	1.723	.7449	.7636
10.20	11.35	12.62	12.16	9.276	7.935	.4561	.2187	.0410	3.913	1.723	.7452	.7638
27.03	30.69	33.08	12.87	8.994	6.831	.4905	.1920	.0367	4.828	1.738	.7901	.8057
43.47	48.84	52.15	15.95	8.639	5.741	.4814	.1197	.0242	6.146	1.764	.8774	.8868
61.52	66.86	70.71	21.27	8.886	5.037	.5075	.1293	.0263	10.070	1.743	.8840	.8927
84.42	87.79	89.04	35.23	9.142	4.123	.5241	.1522	.0322	15.411	1.799	.8976	.9057
100.00	100.00	100.00	43.33	9.178	3.104	.5066	.1853	.0381	21.655	1.798	.8975	.9056

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8411 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8281 (ADIABATIC)
 MOMENTUM AVG. ROTOR PRESS RATIO = 1.7482
 MASS AVERAGE TEMPERATURE RISE = 1.2085

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

94 PERCENT DESIGN SPEED - SCAN NO 4
 EQUIVALENT WEIGHT FLOW = 1.4363 KG/SEC EQUIVALENT SPEED = 72306.110 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 86.4544 EQUIVALENT FLOW / INLET ANN AREA = 170.7534 KG/SEC-SQ M

 INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0009

PERCENT SPAN FROM TIP (L. E.)	BETA*1 (DEG)	V*1 (M/SEC)	VU*1 (M/SEC)	M*1	BETA1 (DEG)	V1 (M/SEC)	VU1 (M/SEC)	M1	VM1 (M/SEC)	VZ1 (M/SEC)	U1 (M/SEC)
0.00	72.38	476.58	454.22	1.427	0.00	144.29	0.00	.432	144.29	139.64	454.22
10.20	71.06	456.00	431.32	1.367	0.00	147.98	0.00	.444	147.98	143.14	431.32
27.03	67.80	425.08	393.56	1.278	0.00	160.64	0.00	.483	160.64	157.69	393.56
43.47	65.25	392.76	356.68	1.183	0.00	164.45	0.00	.495	164.45	163.92	356.68
61.52	63.22	354.16	316.17	1.065	0.00	159.57	0.00	.480	159.57	159.51	316.17
84.42	60.50	304.22	264.78	.912	0.00	149.80	0.00	.449	149.80	147.79	264.78
100.00	57.93	271.26	229.82	.812	0.00	143.99	0.00	.431	143.99	139.10	229.82

 EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9484

PERCENT SPAN FROM TIP (T. E.)	BETA*2 (DEG)	V*2 (M/SEC)	VU*2 (M/SEC)	M*2	BETA2 (DEG)	V2 (M/SEC)	VU2 (M/SEC)	M2	VM2 (M/SEC)	VZ2 (M/SEC)	U2 (M/SEC)
0.00	61.64	326.52	287.32	.897	43.95	215.46	149.53	.592	155.13	150.13	436.85
11.35	58.90	304.85	261.04	.839	44.82	221.96	156.46	.611	157.44	154.00	417.50
30.69	54.93	270.83	221.63	.749	46.31	225.28	162.91	.623	155.61	154.64	384.53
48.84	48.30	253.47	189.26	.709	44.26	235.44	164.32	.659	168.61	168.60	353.58
66.86	41.95	221.95	144.36	.624	46.59	240.21	174.51	.675	165.07	164.59	322.87
87.79	25.27	192.34	82.09	.545	49.70	268.92	205.09	.761	173.94	171.08	287.18
100.00	14.60	179.94	45.37	.512	51.76	281.35	220.99	.861	174.13	168.21	266.36

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCTION SUR (DEG)	D FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	10.74	8.540	8.072	.4344	.2073	.0375	4.644	1.723	.7449	.7636
10.20	11.35	12.62	12.16	9.276	7.935	.4561	.2187	.0410	3.913	1.723	.7452	.7638
27.03	30.69	33.08	12.87	8.994	6.831	.4905	.1920	.0367	4.828	1.738	.7901	.8057
43.47	48.84	52.15	16.95	8.639	5.741	.4814	.1197	.0242	6.146	1.764	.8774	.8868
61.52	66.86	70.71	21.27	8.886	5.037	.5075	.1293	.0263	10.870	1.743	.8840	.8927
84.42	97.79	99.84	35.23	9.142	4.123	.5241	.1522	.0322	15.411	1.799	.8976	.9057
100.00	100.00	100.00	43.33	9.178	3.104	.5066	.1853	.0391	21.655	1.798	.8975	.9056

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8411 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8281 (ADIABATIC)

MOMENTUM AVG. ROTOR PRESS RATIO = 1.7482
 MASS AVERAGE TEMPERATURE RISE = 1.2085

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

94 PERCENT DESIGN SPEED - SCAN NO 4

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9333

PERCENT SPAN FROM TIP (L. E.)	BETA 3 (DEG)	V3 (FT/SEC)	VU3 (FT/SEC)	H3	VM3 (FT/SEC)	VZ3 (FT/SEC)	U3 (FT/SEC)
0.00	38.80	806.20	505.15	.682	628.32	621.42	1391.91
10.92	40.33	811.90	525.41	.688	618.97	617.94	1338.24
29.58	40.69	829.69	540.94	.707	629.10	629.09	1246.50
47.49	39.03	857.20	539.81	.738	665.87	665.38	1158.51
65.83	41.17	862.32	567.67	.745	649.11	646.73	1068.33
87.36	44.57	938.58	658.66	.816	668.66	659.68	962.52
100.00	45.93	980.98	703.60	.858	683.50	664.62	900.39

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9794

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	H4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	-8.62	657.67	-98.57	.548	650.24	643.10	1381.81
10.99	-8.64	652.90	-98.04	.544	645.49	644.42	1335.39
29.58	-7.59	646.09	-85.31	.540	640.44	640.43	1256.89
47.66	-6.88	649.74	-77.87	.547	645.06	644.58	1180.52
66.34	-6.99	626.61	-75.17	.528	622.08	619.81	1101.63
87.79	-5.81	629.97	-63.74	.529	626.73	618.32	1011.01
100.00	-4.59	638.00	-51.06	.536	635.95	618.38	959.44

STATOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCTION SUR (DEG)	D FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	47.42	2.480	-1.442	.4559	.0615	.0219	12.309	1.694	1.2253	.8452
10.92	10.99	12.62	48.96	4.160	.800	.4625	.0581	.0199	8.036	1.696	1.2253	.8622
29.58	29.58	33.08	48.28	4.125	.800	.4677	.0605	.0197	6.002	1.708	1.2160	.8718
47.49	47.66	52.15	45.91	1.372	-1.634	.4599	.0673	.0205	5.361	1.728	1.2004	.8697
65.83	66.34	70.71	48.66	1.824	-1.078	.4825	.0546	.0156	4.657	1.714	1.1943	.9050
87.36	87.79	89.84	50.38	2.388	-.537	.5246	.1250	.0329	5.769	1.719	1.2031	.8168
100.00	100.00	100.00	50.42	1.201	-2.240	.5336	.1160	.0292	14.006	1.719	1.2030	.8413

MOMENTUM AVERAGE STAGE EFFICIENCY = .8098 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7949 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.7122
MASS AVERAGE TEMPERATURE RISE = 1.2085

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

94 PERCENT DESIGN SPEED - SCAN NO 4

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9333

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)
0.00	39.80	245.73	153.97	.682	191.51	189.41	424.25
10.92	40.33	247.47	160.14	.688	188.66	188.35	407.89
29.58	40.69	252.89	164.88	.707	191.75	191.75	379.93
47.49	39.03	261.27	164.54	.738	202.96	202.81	353.11
65.83	41.17	262.83	173.03	.745	197.85	197.12	325.63
87.36	44.57	286.08	208.76	.816	203.81	201.07	293.38
100.00	45.83	299.00	214.48	.858	208.33	202.58	274.44

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9794

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VM4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	-8.62	200.46	-30.04	.548	198.19	196.02	421.18
10.99	-8.64	199.00	-29.88	.544	196.75	196.42	407.03
29.58	-7.59	196.93	-26.00	.540	195.20	195.20	383.10
47.66	-6.88	198.04	-23.74	.547	196.61	196.47	359.82
66.34	-6.89	190.99	-22.91	.528	189.61	188.92	335.78
87.79	-5.81	192.01	-19.43	.529	191.03	188.46	308.16
100.00	-4.59	194.46	-15.56	.536	193.84	188.48	292.44

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING TRAILING EDGE EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCTION SUR (DEG)	0 FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00 0.00	0.00	47.42	2.480	-1.442	.4559	.0615	.0219	12.309	1.694	1.2253	.8452
10.92 10.99	12.62	48.96	4.160	.800	.4625	.0581	.0199	8.036	1.696	1.2253	.8622
29.58 29.58	33.98	48.28	4.125	.800	.4677	.0605	.0197	6.002	1.708	1.2160	.8718
47.49 47.66	52.15	45.91	1.372	-1.634	.4599	.0673	.0205	5.361	1.728	1.2004	.8697
65.83 66.34	70.71	48.06	1.824	-1.078	.4825	.0546	.0156	4.657	1.714	1.1943	.9050
87.36 87.79	89.84	50.38	2.388	-.537	.5246	.1250	.0329	5.769	1.719	1.2031	.8168
100.00 100.00	100.00	50.42	1.201	-2.240	.5336	.1160	.0292	14.006	1.719	1.2030	.8413

MOMENTUM AVERAGE STAGE EFFICIENCY = .8098 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7949 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.7122
MASS AVERAGE TEMPERATURE RISE = 1.2085

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

94 PERCENT DESIGN SPEED - SCAN NO 5
 EQUIVALENT WEIGHT FLOW = 3.1032 LBM/SEC EQUIVALENT SPEED = 72348.479 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 84.7270 EQUIVALENT FLOW / INLET ANN AREA = 34.2742 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0047

PERCENT SPAN FROM TIP (L. E.)	BETA*1 (DEG)	V*1 (FT/SEC)	VU*1 (FT/SEC)	M*1	BETA1 (DEG)	V1 (FT/SEC)	VU1 (FT/SEC)	M1	VH1 (FT/SEC)	VZ1 (FT/SEC)	U1 (FT/SEC)
0.00	72.83	1560.67	1491.09	1.423	0.00	460.81	0.00	.420	460.81	445.97	1491.09
10.39	71.52	1491.49	1414.57	1.361	0.00	472.79	0.00	.431	472.79	457.32	1414.57
27.36	68.29	1348.04	1289.57	1.271	0.00	513.46	0.00	.470	513.46	504.03	1289.57
43.73	65.79	1281.67	1168.94	1.175	0.00	525.60	0.00	.482	525.60	523.91	1168.94
61.69	63.80	1155.48	1036.67	1.058	0.00	510.18	0.00	.467	510.18	510.00	1036.67
84.52	61.12	991.83	868.49	.906	0.00	479.01	0.00	.437	479.01	472.58	868.49
100.00	58.62	803.75	754.44	.806	0.00	460.24	0.00	.420	460.24	444.60	754.44

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9453

PERCENT SPAN FROM TIP (T. E.)	BETA*2 (DEG)	V*2 (FT/SEC)	VU*2 (FT/SEC)	M*2	BETA2 (DEG)	V2 (FT/SEC)	VU2 (FT/SEC)	M2	VH2 (FT/SEC)	VZ2 (FT/SEC)	U2 (FT/SEC)
0.00	60.70	1056.14	921.01	.882	44.79	728.29	513.06	.608	516.89	500.25	1434.08
11.32	59.16	971.35	833.98	.812	47.15	732.20	536.77	.612	498.00	487.11	1370.75
31.22	54.87	860.74	703.37	.723	48.33	744.33	555.96	.626	494.91	491.82	1259.33
49.46	48.60	805.56	604.22	.685	46.07	767.90	553.01	.653	532.77	532.74	1157.24
67.61	41.79	706.40	470.74	.604	48.00	787.13	584.96	.673	526.69	525.14	1055.70
88.21	24.21	630.37	258.54	.544	49.86	891.86	681.83	.770	574.92	565.47	940.37
100.00	13.83	592.73	141.74	.514	51.85	931.68	732.66	.808	575.53	555.98	874.40

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCTION SUR (DEG)	D FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	12.13	8.990	8.522	.4485	.2062	.0384	3.707	1.777	.7562	.7750
10.39	11.32	12.42	12.36	9.770	8.417	.4794	.2337	.0434	4.158	1.755	.7380	.7578
27.36	31.22	33.41	13.42	9.541	7.358	.5134	.2024	.0387	4.965	1.767	.7861	.8025
43.73	49.46	52.39	17.19	9.216	6.303	.5018	.1293	.0260	6.730	1.779	.8705	.8806
61.69	67.61	70.82	22.01	9.480	5.625	.5258	.1316	.0268	11.289	1.760	.8844	.8932
84.52	88.21	89.87	36.91	9.774	4.752	.5234	.1247	.0266	14.956	1.832	.9180	.9246
100.00	100.00	100.00	44.78	9.863	3.789	.5023	.1514	.0313	20.886	1.832	.9179	.9246

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8425 (POLYTROPIC) MOMENTUM AVG. ROTOR PRESS RATIO = 1.7761
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8293 (ADIABATIC) MASS AVERAGE TEMPERATURE RISE = 1.2147

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

94 PERCENT DESIGN SPEED - SCAN NO 5
 EQUIVALENT WEIGHT FLOW = 1.4076 KG/SEC EQUIVALENT SPEED = 72348.479 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 84.7270 EQUIVALENT FLOW / INLET ANN AREA = 167.3415 KG/SEC-SQ M

 INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0047

PERCENT SPAN FROM TIP (L. E.)	BETA*1 (DEG)	V*1 (M/SEC)	VU*1 (M/SEC)	M*1	BETA1 (DEG)	V1 (M/SEC)	VU1 (M/SEC)	M1	VM1 (M/SEC)	VZ1 (M/SEC)	U1 (M/SEC)
0.00	72.83	475.60	454.48	1.423	0.00	140.46	0.00	.420	140.46	135.93	454.48
10.39	71.52	454.60	431.16	1.361	0.00	144.11	0.00	.431	144.11	139.39	431.16
27.36	68.29	423.07	393.06	1.271	0.00	156.50	0.00	.470	156.50	153.63	393.06
43.73	65.79	390.65	356.29	1.175	0.00	160.20	0.00	.482	160.20	159.69	356.29
61.69	63.80	352.17	315.98	1.058	0.00	155.50	0.00	.467	155.50	155.45	315.98
84.52	61.12	302.31	264.72	.906	0.00	146.00	0.00	.437	146.00	144.04	264.72
100.00	58.62	269.37	229.95	.806	0.00	140.28	0.00	.420	140.28	135.51	229.95

 EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9453

PERCENT SPAN FROM TIP (T. E.)	BETA*2 (DEG)	V*2 (M/SEC)	VU*2 (M/SEC)	M*2	BETA2 (DEG)	V2 (M/SEC)	VU2 (M/SEC)	M2	VM2 (M/SEC)	VZ2 (M/SEC)	U2 (M/SEC)
0.00	60.70	321.91	280.72	.882	44.79	221.98	156.38	.608	157.55	152.48	437.11
11.32	59.16	296.07	254.20	.812	47.15	223.18	163.61	.612	151.79	148.47	417.80
31.22	54.87	262.14	214.39	.723	48.33	226.87	169.46	.626	150.85	149.91	383.84
49.46	48.60	245.53	184.17	.695	46.07	234.05	168.56	.653	162.39	162.38	352.73
67.61	41.79	215.31	143.48	.604	48.00	239.92	178.30	.673	160.53	160.06	321.78
88.21	24.21	192.14	78.80	.544	49.86	271.84	207.82	.770	175.23	172.35	286.62
100.00	13.83	180.66	43.20	.514	51.85	283.98	223.32	.808	175.42	169.46	266.52

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	PERCENT SPAN FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	U FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	12.13	8.990	8.522	.4485	.2062	.0384	3.707	1.777	.7562	.7750
10.39	11.32	12.82	12.36	9.770	8.417	.4794	.2337	.0434	4.158	1.755	.7380	.7578
27.36	31.22	33.41	13.42	9.541	7.358	.5134	.2024	.0387	4.965	1.767	.7861	.8025
43.73	49.46	52.38	17.19	9.216	6.303	.5018	.1293	.0260	6.730	1.779	.8705	.8806
61.69	67.61	70.82	22.01	9.480	5.625	.5258	.1316	.0268	11.289	1.760	.8844	.8932
84.52	88.21	89.87	36.91	9.774	4.752	.5234	.1247	.0266	14.956	1.832	.9100	.9246
100.00	100.00	100.00	44.78	9.863	3.789	.5023	.1514	.0313	20.886	1.832	.9179	.9246

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8425 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8293 (ADIABATIC)

MOMENTUM AVG. ROTOR PRESS RATIO = 1.7761
 MASS AVERAGE TEMPERATURE RISE = 1.2147

ORIGINAL PAGE IS
OF POOR QUALITY

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

94 PERCENT DESIGN SPEED - SCAN NO 5

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9370

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	40.58	812.17	528.30	.685	616.86	610.09	1392.72
11.02	43.18	803.29	549.69	.676	585.75	584.78	1338.52
33.21	43.12	823.23	562.74	.698	600.86	600.85	1244.15
48.17	41.08	842.59	553.70	.723	635.11	634.65	1155.80
66.58	42.92	851.32	579.69	.733	623.46	621.18	1065.29
87.82	45.33	938.35	667.31	.815	659.70	650.84	960.83
100.00	46.56	979.62	711.33	.856	673.55	654.94	900.91

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9776

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	-9.36	648.08	-105.40	.537	639.45	632.43	1382.62
10.99	-9.37	638.36	-103.97	.529	629.83	628.79	1336.19
29.58	-8.44	624.76	-92.16	.519	617.93	617.92	1257.61
47.63	-7.68	622.99	-83.27	.522	617.40	616.95	1181.35
66.29	-7.62	602.30	-79.92	.506	596.98	594.79	1102.47
87.70	-6.64	605.66	-70.02	.507	601.60	593.52	1011.98
100.00	-5.51	614.79	-59.01	.515	611.95	595.64	960.01

STATOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCTION SUR (DEG)	D FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	49.94	4.259	.337	.4851	.0962	.0342	11.569	1.731	1.2357	.7762
11.02	10.99	12.82	52.55	7.012	3.658	.4878	.0575	.0197	7.300	1.728	1.2357	.8683
30.21	29.58	33.41	51.61	6.926	3.220	.5602	.0707	.0230	5.106	1.732	1.2243	.8598
48.17	47.63	52.38	48.76	3.364	.368	.4886	.0614	.0187	4.565	1.747	1.2050	.8876
66.58	66.29	70.82	50.54	3.476	.594	.5094	.0481	.0137	3.923	1.735	1.1978	.9206
87.82	87.70	89.87	51.97	3.046	.142	.5541	.1448	.0380	4.937	1.739	1.2054	.7987
100.00	100.00	100.00	52.07	1.931	-1.510	.5605	.1347	.0339	13.089	1.738	1.2052	.8234

MOMENTUM AVERAGE STAGE EFFICIENCY = .8088 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7935 (ADIABATIC)MOMENTUM AVG. STAGE PRESS RATIO = 1.7359
MASS AVERAGE TEMPERATURE RISE = 1.2147

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

STATOP PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

94 PERCENT DESIGN SPEED - SCAN NO 5

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9378

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)
0.00	40.58	247.55	161.03	.685	188.02	185.96	424.50
11.02	43.18	244.84	167.55	.676	178.54	178.24	407.98
30.21	43.12	250.92	171.52	.698	183.14	183.14	379.22
48.17	41.98	256.82	168.77	.723	193.58	193.44	352.29
66.58	42.92	259.48	176.69	.733	190.03	189.34	324.70
87.82	45.33	286.01	203.40	.815	201.08	198.38	292.86
100.00	46.56	298.59	216.81	.856	205.30	199.63	274.60

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9776

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VM4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	-9.36	197.54	-32.13	.537	194.91	192.76	421.42
10.99	-9.37	194.57	-31.69	.529	191.97	191.65	407.27
29.58	-8.48	190.43	-28.09	.519	188.34	188.34	383.32
47.63	-7.68	189.89	-25.38	.522	188.18	188.05	360.07
66.29	-7.62	183.58	-24.36	.506	181.96	181.29	336.03
87.70	-6.64	184.61	-21.34	.507	183.37	180.91	308.45
100.00	-5.51	187.39	-17.98	.515	186.52	181.37	292.61

STATOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUPT SUR (DEG)	D FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	49.94	4.259	.337	.4851	.0962	.0342	11.569	1.731	1.2357	.7762
11.02	10.99	12.82	52.55	7.012	3.658	.4878	.0575	.0197	7.300	1.728	1.2357	.8683
30.21	29.58	33.41	51.61	6.526	3.220	.5002	.0707	.0230	5.106	1.732	1.2243	.8598
48.17	47.63	52.38	48.76	3.364	.368	.4886	.0614	.0187	4.565	1.747	1.2050	.8876
66.58	66.29	70.82	50.54	3.476	.594	.5094	.0481	.0137	3.923	1.735	1.1978	.9206
87.82	87.70	89.87	51.97	3.046	.142	.5541	.1448	.0380	4.937	1.739	1.2054	.7987
100.00	100.00	100.00	52.07	1.931	-1.510	.5605	.1347	.0339	13.089	1.738	1.2052	.8234

MOMENTUM AVERAGE STAGE EFFICIENCY = .8098 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7935 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.7359
MASS AVERAGE TEMPERATURE RISE = 1.2147

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

94 PERCENT DESIGN SPEED - SCAN NO 6
 EQUIVALENT WEIGHT FLOW = 3.2618 LBM/SEC EQUIVALENT SPEED = 72326.460 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 89.0580 EQUIVALENT FLOW / INLET ANN AREA = 36.0263 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9964

PERCENT SPAN FROM TIP (L. E.)	BETA*1 (DEG)	V*1 (FT/SEC)	VU*1 (FT/SEC)	M*1	BETA1 (DEG)	V1 (FT/SEC)	VU1 (FT/SEC)	M1	VH1 (FT/SEC)	VZ1 (FT/SEC)	U1 (FT/SEC)
0.00	71.75	1569.58	1490.63	1.434	0.00	491.51	0.00	.449	491.51	475.68	1490.63
10.14	70.40	1503.02	1415.97	1.375	0.00	504.08	0.00	.461	504.08	487.58	1415.97
26.97	67.94	1403.22	1292.05	1.239	0.00	547.39	0.00	.503	547.39	537.33	1292.05
43.48	64.42	1297.66	1170.42	1.193	0.00	560.39	0.00	.515	560.39	558.58	1170.42
61.58	62.35	1170.90	1037.18	1.075	0.00	543.39	0.00	.499	543.39	543.20	1037.18
84.53	59.60	1006.53	868.15	.921	0.00	509.33	0.00	.466	509.33	502.49	868.15
100.00	57.05	898.78	754.21	.821	0.00	488.83	0.00	.447	488.83	472.22	754.21

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8996

PERCENT SPAN FROM TIP (T. E.)	BETA*2 (DEG)	V*2 (FT/SEC)	VU*2 (FT/SEC)	M*2	BETA2 (DEG)	V2 (FT/SEC)	VU2 (FT/SEC)	M2	VH2 (FT/SEC)	VZ2 (FT/SEC)	U2 (FT/SEC)
0.00	60.34	1132.87	984.48	.958	38.71	718.28	449.16	.607	560.52	542.47	1433.64
11.31	57.19	1071.42	900.46	.908	38.98	746.94	469.90	.633	580.62	567.93	1370.36
30.43	53.94	961.00	776.90	.818	40.70	746.07	486.48	.635	565.64	562.12	1263.38
48.87	47.60	886.03	654.28	.761	40.26	782.91	505.95	.672	597.47	597.43	1160.23
67.44	41.34	776.46	512.82	.669	42.99	797.03	543.46	.687	583.01	581.29	1056.28
88.44	24.35	715.45	294.97	.623	44.65	916.19	643.86	.798	651.81	641.10	938.83
100.00	15.62	677.56	182.45	.533	46.67	950.90	691.68	.832	652.53	630.35	874.13

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING TRAILING EDGE EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCTION SUR (DEG)	D FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.30	0.05	11.41	7.914	7.446	.3872	.1831	.0345	3.354	1.665	.7750
10.14	11.31	12.55	13.22	8.604	7.266	.4007	.1858	.0365	2.185	1.675	.7841
26.97	30.43	33.01	13.10	8.227	6.068	.4307	.1545	.0302	3.756	1.688	.8309
43.48	48.87	52.15	16.82	7.808	4.909	.4353	.0960	.0197	5.454	1.726	.8958
61.58	67.44	70.72	21.01	8.021	4.170	.4628	.1102	.0226	10.708	1.706	.8953
84.53	88.44	99.85	35.25	8.255	3.233	.4368	.0671	.0143	15.408	1.811	.9528
100.00	100.30	109.06	41.43	8.299	2.225	.4067	.0825	.0169	22.673	1.811	.9529

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8639 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8532 (ADIABATIC)

MOMENTUM AVG. ROTOR PRESS RATIO = 1.7122
 MASS AVERAGE TEMPERATURE RISE = 1.1943

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

94 PERCENT DESIGN SPEED - SCAN NO 6
 EQUIVALENT FIGHT FLOW = 1.4795 KG/SEC EQUIVALENT SPEED = 72326.460 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 89.0580 EQUIVALENT FLOW / INLET ANN AREA = 175.8957 KG/SEC-SQ M

 INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9964

PERCENT SPAN FROM TIP (L. E.)	BETA*1 (DEG)	V*1 (M/SEC)	VU*1 (M/SEC)	M*1	BETA1 (DEG)	V1 (M/SEC)	VU1 (M/SEC)	M1	VM1 (M/SEC)	VZ1 (M/SEC)	U1 (M/SEC)
0.00	71.75	478.41	454.34	1.434	0.00	149.81	0.00	.449	149.81	144.99	454.34
10.14	70.40	458.12	431.59	1.375	0.00	153.64	0.00	.461	153.64	148.61	431.59
26.97	67.04	427.70	393.82	1.289	0.00	166.84	0.00	.503	166.84	163.78	393.82
43.48	64.42	395.53	356.74	1.193	0.00	170.81	0.00	.515	170.81	170.25	356.74
61.58	62.35	356.89	316.13	1.075	0.00	165.62	0.00	.499	165.62	165.57	316.13
84.53	59.60	306.79	264.61	.921	0.00	155.24	0.00	.466	155.24	153.16	264.61
100.00	57.05	273.95	229.88	.821	0.00	149.00	0.00	.447	149.00	143.93	229.88

 EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8996

PERCENT SPAN FROM TIP (T. E.)	BETA*2 (DEG)	V*2 (M/SEC)	VU*2 (M/SEC)	M*2	BETA2 (DEG)	V2 (M/SEC)	VU2 (M/SEC)	M2	VM2 (M/SEC)	VZ2 (M/SEC)	U2 (M/SEC)
0.00	60.34	345.30	300.07	.958	38.71	218.93	136.90	.607	170.85	165.34	436.97
11.31	57.19	326.57	274.46	.908	38.98	227.67	143.23	.633	176.97	173.11	417.69
30.43	53.94	292.91	236.80	.818	40.70	227.40	148.28	.635	172.41	171.33	385.08
48.87	47.60	270.05	199.42	.761	40.26	238.63	154.21	.672	182.11	182.10	353.64
67.44	41.34	236.67	156.31	.669	42.99	242.93	165.65	.687	177.70	177.18	321.96
88.44	24.35	218.07	89.91	.623	44.65	279.26	196.25	.798	198.67	195.41	286.16
100.00	15.62	206.52	55.61	.593	46.67	289.84	210.82	.832	198.89	192.13	266.44

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCTION SUR (DEG)	D FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	11.41	7.914	7.446	.3872	.1831	.0345	3.354	1.665	.7584	.7750
10.14	11.31	12.55	13.22	8.604	7.266	.4007	.1858	.0365	2.185	1.675	.7679	.7841
26.97	30.43	33.01	13.10	8.227	6.068	.4307	.1545	.0302	3.756	1.688	.8180	.8309
43.48	48.87	52.15	16.82	7.808	4.909	.4353	.0960	.0197	5.454	1.726	.8958	.9035
61.58	67.44	70.72	21.01	8.021	4.170	.4628	.1102	.0226	10.708	1.706	.8953	.9029
84.53	88.44	79.85	35.25	8.255	3.233	.4368	.0671	.0143	15.408	1.811	.9528	.9566
100.00	100.00	100.00	41.43	8.299	2.225	.4067	.0825	.0169	22.673	1.811	.9529	.9566

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8639 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8532 (ADIABATIC)
 MOMENTUM AVG. ROTOR PRESS RATIO = 1.7122
 MASS AVERAGE TEMPERATURE RISE = 1.1943

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

94 PERCENT DESIGN SPEED - SCAN NO 6

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8990

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	33.77	831.97	462.49	.712	691.58	683.98	1392.30
10.86	34.36	841.48	480.93	.721	690.50	689.36	1338.91
29.36	35.39	850.50	492.50	.733	693.40	693.39	1247.94
47.47	35.09	881.08	506.54	.765	720.92	720.38	1158.88
66.22	37.53	883.43	538.14	.769	700.60	698.04	1066.72
87.74	39.95	979.73	629.05	.861	751.12	741.03	960.94
100.00	41.26	1017.63	671.08	.899	765.00	743.86	900.64

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9480

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	-7.71	740.79	-99.38	.628	734.09	726.03	1382.20
10.97	-7.72	744.87	-100.05	.631	738.12	736.90	1335.84
29.43	-7.13	736.15	-91.34	.626	730.46	730.45	1257.87
47.54	-6.53	738.90	-83.98	.631	734.11	733.57	1181.36
66.24	-6.72	714.77	-83.67	.610	709.86	707.27	1102.33
87.70	-5.68	717.10	-70.98	.610	713.58	704.00	1011.69
100.00	-4.28	726.91	-54.21	.619	724.89	704.86	959.71

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING TRAILING EDGE EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	J FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00 0.00	9.00	41.48	-2.546	-6.468	.3546	.0862	.0308	13.219	1.624	1.2063	.6559
10.86 10.97	12.55	42.58	-1.308	-4.670	.3546	.0791	.0272	8.959	1.636	1.2063	.6991
29.36 29.43	33.01	42.51	-1.169	-4.501	.3588	.0744	.0243	6.481	1.650	1.1959	.7572
47.47 47.54	52.15	41.62	-2.565	-5.571	.3641	.0959	.0292	5.724	1.673	1.1881	.7379
66.22 66.24	70.72	44.25	-1.867	-4.759	.3883	.0899	.0256	4.827	1.657	1.1839	.7890
87.74 87.70	89.85	45.63	-2.318	-5.227	.4496	.2145	.0565	5.895	1.662	1.1936	.6314
100.00 100.00	100.00	45.53	-3.374	-6.815	.4561	.2015	.0508	14.320	1.662	1.1937	.6783

MOMENTUM AVERAGE STAGE EFFICIENCY = .8083 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7943 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.6540
MASS AVERAGE TEMPERATURE RISE = 1.1943

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

94 PERCENT DESIGN SPEED - SCAN NO 6

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8990

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)
0.00	33.77	253.59	140.97	.712	210.79	248.48	424.37
10.86	34.86	256.48	146.59	.721	210.47	210.12	408.10
29.36	35.39	259.23	150.11	.733	211.35	211.34	380.37
47.47	35.99	268.55	154.39	.765	219.74	219.57	353.23
66.22	37.53	269.27	164.03	.769	213.54	212.76	325.14
87.74	39.95	298.62	191.73	.861	228.94	225.87	292.89
100.00	41.26	310.17	204.54	.899	233.17	226.73	274.52

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9480

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VM4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	-7.71	225.79	-30.29	.628	223.75	221.29	421.29
10.97	-7.72	227.04	-30.50	.631	224.98	224.61	407.16
29.43	-7.13	224.38	-27.84	.626	222.64	222.64	383.40
47.54	-6.53	225.22	-25.60	.631	223.76	223.59	360.08
66.24	-6.72	217.86	-25.50	.610	216.37	215.57	335.99
87.70	-5.68	218.57	-21.64	.610	217.50	214.58	308.36
100.00	-4.28	221.56	-16.52	.619	220.95	214.84	292.52

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING TRAILING EDGE EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE ANGLE MEAN SUCT SUR (DEG) (DEG)	O FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF		
0.00	0.00	0.00	41.48	-2.546	-6.468	.3546	.0862	.0308	13.219	1.624	1.2063	.6559
10.86	10.97	12.55	42.58	-1.308	-4.670	.3546	.0791	.0272	8.959	1.636	1.2063	.6991
29.36	29.43	33.01	42.51	-1.169	-4.501	.3588	.0744	.0243	6.481	1.650	1.1969	.7572
47.47	47.54	52.15	41.62	-2.565	-5.571	.3641	.0959	.0292	5.724	1.673	1.1881	.7379
66.22	66.24	70.72	44.25	-1.867	-4.759	.3883	.0899	.0256	4.827	1.657	1.1839	.7890
87.74	87.70	89.85	45.63	-2.318	-5.227	.4496	.2145	.0565	5.895	1.662	1.1936	.6314
100.00	100.00	100.00	45.53	-3.374	-6.815	.4561	.2015	.0508	14.320	1.662	1.1937	.6783

MOMENTUM AVERAGE STAGE EFFICIENCY = .8083 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7943 (ADIABATIC)MOMENTUM AVG. STAGE PRESS RATIO = 1.6540
MASS AVERAGE TEMPERATURE RISE = 1.1943

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 1
 EQUIVALENT WEIGHT FLOW = 2.4218 LBM/SEC EQUIVALENT SPEED = 53603.673 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 66.1213 EQUIVALENT FLOW / INLET ANN AREA = 26.7478 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9933

PERCENT SPAN FROM TIP (L. F.)	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	72.58	1157.89	1104.76	1.048	0.00	346.73	0.00	.314	346.73	335.57	1104.76
9.23	71.41	1112.42	1054.41	1.007	0.00	354.54	0.00	.321	354.54	342.94	1054.41
24.85	68.46	1041.88	969.12	.945	0.00	382.51	0.00	.347	382.51	375.48	969.12
40.31	66.16	967.34	884.77	.878	0.00	391.04	0.00	.355	391.04	389.78	884.77
58.19	64.21	874.22	787.16	.793	0.00	380.32	0.00	.345	380.32	380.19	787.16
82.73	61.29	744.85	653.25	.674	0.00	357.86	0.00	.324	357.86	353.05	653.25
100.00	58.31	656.94	558.98	.594	0.00	345.13	0.00	.312	345.13	333.40	558.98

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9142

PERCENT SPAN FROM TIP (L. F.)	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	61.34	855.58	750.79	.743	37.23	515.28	311.73	.448	410.28	397.07	1062.52
11.21	57.53	817.02	690.06	.712	36.70	545.54	325.99	.475	437.43	427.87	1016.05
29.89	55.14	772.17	633.59	.677	34.64	536.47	304.96	.470	441.36	438.61	938.56
48.05	49.11	700.37	529.43	.615	36.06	567.17	333.85	.498	458.50	458.47	863.29
66.74	39.49	651.10	414.11	.575	36.49	624.96	371.65	.552	502.44	500.96	785.75
87.05	24.80	594.75	249.49	.527	39.78	702.57	449.58	.623	539.89	531.02	699.07
100.00	16.78	564.69	163.02	.502	41.88	726.20	484.83	.646	540.65	522.28	647.85

ROTOR PERFORMANCE DATA

PERCENT LEADING EDGE	SPAN FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUPT SUR (DEG)	D FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	11.23	8.738	8.270	.3636	.2084	.0380	4.354	1.269	.6628	.6739
9.23	11.21	11.43	13.79	9.424	8.144	.3720	.2023	.0393	2.606	1.282	.6914	.7020
24.85	29.89	30.61	13.32	9.292	7.267	.3567	.1198	.0228	4.772	1.287	.8134	.8199
40.31	48.05	48.89	17.05	9.120	6.394	.3811	.0969	.0193	6.567	1.310	.8668	.8718
58.19	66.74	67.74	24.72	9.497	5.795	.3714	.0495	.0104	8.332	1.345	.9436	.9460
82.73	87.65	98.61	36.48	9.731	4.758	.3419	.0297	.0063	14.756	1.389	.9765	.9775
100.00	100.00	100.00	41.53	9.555	3.481	.2944	.0366	.0074	23.831	1.389	.9764	.9775

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8479 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8419 (ADIABATIC)

 MOMENTUM AVG. ROTOR PRESS RATIO = 1.3174
 MASS AVERAGE TEMPERATURE RISE = 1.0972

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 1

EQUIVALENT WEIGHT FLOW = 1.0985 KG/SEC
PERCENT DESIGN EQUIVALENT FLOW = 66.1213EQUIVALENT SPEED = 53603.673 R.P.M.
EQUIVALENT FLOW / INLET ANN AREA = 130.5941 KG/SEC-SQ MINLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9933

PERCENT SPAN FROM TIP (L. E.)	BETA*1 (DEG)	V*1 (M/SEC)	VU*1 (M/SEC)	M*1	BETA1 (DEG)	V1 (M/SEC)	VU1 (M/SEC)	M1	VM1 (M/SEC)	VZ1 (M/SEC)	U1 (M/SEC)
0.00	72.58	352.93	336.73	1.048	0.00	105.68	0.00	.314	105.68	102.28	336.73
9.23	71.41	339.07	321.38	1.007	0.00	108.06	0.00	.321	108.06	104.53	321.38
24.85	68.46	317.56	295.39	.945	0.00	116.59	0.00	.347	116.59	114.45	295.39
40.31	66.16	294.84	269.68	.878	0.00	119.19	0.00	.355	119.19	118.81	269.68
58.19	64.21	266.46	239.93	.793	0.00	115.92	0.00	.345	115.92	115.88	239.93
82.73	61.29	227.03	199.11	.674	0.00	109.08	0.00	.324	109.08	107.61	199.11
100.00	58.31	200.23	170.38	.594	0.00	105.20	0.00	.312	105.20	101.52	170.38

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9142

PERCENT SPAN FROM TIP (T. E.)	BETA*2 (DEG)	V*2 (M/SEC)	VU*2 (M/SEC)	M*2	BETA2 (DEG)	V2 (M/SEC)	VU2 (M/SEC)	M2	VM2 (M/SEC)	VZ2 (M/SEC)	U2 (M/SEC)
0.00	61.34	260.78	228.84	.743	37.23	157.06	95.02	.448	125.05	121.03	323.86
11.21	57.63	249.03	210.33	.712	36.70	166.28	99.36	.475	133.33	130.41	309.69
29.89	55.14	235.36	193.12	.677	34.64	163.52	92.95	.470	134.53	133.69	286.07
48.05	49.11	213.47	161.37	.615	36.06	172.87	101.76	.498	139.75	139.74	263.13
66.74	39.49	198.46	126.22	.575	36.49	190.49	113.28	.552	153.14	152.69	239.50
87.65	24.80	181.28	76.05	.527	39.78	214.14	137.03	.623	164.56	161.85	213.08
100.00	16.78	172.12	49.69	.502	41.88	221.35	147.78	.646	164.79	159.19	197.46

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCTION SUR (DEG)	O FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.30	0.00	11.23	8.738	8.270	.3636	.2084	.0380	4.354	1.269	.6628	.6739
9.23	11.21	11.43	13.79	9.424	9.144	.3720	.2023	.0393	2.606	1.202	.6914	.7020
24.85	29.89	30.61	13.32	9.292	7.267	.3567	.1198	.0228	4.772	1.287	.8134	.8199
40.31	48.05	48.89	17.05	9.120	6.394	.3811	.0969	.0193	6.567	1.310	.8668	.8718
58.19	66.74	67.74	24.72	9.497	5.795	.3714	.0495	.0104	8.332	1.345	.9436	.9460
82.73	87.65	88.61	36.48	9.731	4.758	.3419	.0297	.0063	14.756	1.389	.9765	.9775
100.00	100.00	100.00	41.53	9.555	3.481	.2944	.0366	.0074	23.831	1.389	.9764	.9775

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8479 (POLYTROPIC)
MOMENTUM AVERAGE ROTOR EFFICIENCY = .8419 (ADIABATIC)MOMENTUM AVG. ROTOR PRESS RATIO = 1.3174
MASS AVERAGE TEMPERATURE RISE = 1.0972

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 1

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9023

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	32.10	604.04	320.99	.529	511.70	506.08	1031.88
10.58	32.60	618.88	333.44	.543	521.38	520.51	993.35
28.53	29.86	619.56	308.46	.547	537.31	537.31	927.93
46.20	31.05	647.16	333.76	.573	554.46	554.05	863.54
65.06	32.10	691.40	367.41	.614	585.70	583.56	794.81
86.96	35.62	754.68	439.54	.673	613.47	605.23	715.03
100.00	36.83	784.85	470.51	.703	628.18	610.82	667.50

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = 1.0051

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	-20.00	546.52	-186.92	.476	513.56	507.92	1024.40
10.89	-20.05	558.40	-191.44	.487	524.55	523.68	990.30
29.37	-17.09	555.15	-163.16	.487	530.63	530.62	932.43
47.50	-15.17	568.17	-148.71	.499	548.36	547.96	875.66
66.54	-12.74	599.67	-132.25	.528	584.91	582.77	816.05
87.79	-8.80	630.30	-96.42	.555	622.88	614.52	749.50
100.00	-7.03	639.46	-78.31	.563	634.65	617.11	711.28

STATOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	52.10	-4.218	-8.141	.3998	.0577	.0195	.929	1.256	1.1061	.7152
10.58	10.89	11.43	52.65	-3.558	-6.933	.3924	.0589	.0192	-3.342	1.268	1.1061	.7183
28.53	29.37	30.61	46.95	-6.655	-10.010	.3537	.0492	.0155	-3.476	1.275	1.0917	.7785
46.20	47.50	48.89	46.22	-6.505	-9.530	.3491	.0747	.0221	-2.921	1.290	1.0923	.7131
65.06	66.54	67.74	44.84	-7.147	-10.070	.3369	.0827	.0232	-1.202	1.320	1.0935	.7166
86.96	87.79	88.61	44.42	-6.473	-9.414	.3465	.1145	.0299	2.777	1.348	1.1007	.6786
100.00	100.00	100.00	43.87	-7.798	-11.239	.3532	.1067	.0268	11.562	1.347	1.1066	.7335

MOMENTUM AVERAGE STAGE EFFICIENCY = .9129 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .8058 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.3025
MASS AVERAGE TEMPERATURE RISE = 1.0972

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 1

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9023

PERCENT SPAN FROM TIP (L. F.)	BETA 3 (DEG)	V3 (M/SEC)	UO3 (M/SEC)	M3	VM3 (M/SEC)	VZ3 (M/SEC)	U3 (M/SEC)
0.00	32.10	184.11	97.84	.529	155.97	154.25	314.52
10.59	32.60	188.64	101.63	.543	158.92	158.65	302.77
28.53	29.86	188.84	94.02	.547	163.77	163.77	282.83
46.20	31.35	197.26	101.73	.573	169.00	168.87	263.21
65.16	32.10	210.74	111.99	.614	178.52	177.87	242.26
86.96	35.62	239.03	133.97	.673	186.99	184.47	217.94
100.00	36.83	239.22	143.41	.703	191.47	186.18	203.45

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = 1.0051

PERCENT SPAN FROM TIP (T. F.)	BETA 4 (DEG)	V4 (M/SEC)	UO4 (M/SEC)	M4	VM4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	-20.00	166.58	-56.97	.476	156.53	154.81	312.24
10.89	-20.05	170.20	-58.35	.487	159.88	159.62	301.84
29.37	-17.09	169.21	-49.73	.487	161.74	161.73	284.21
47.50	-15.17	173.18	-45.33	.499	167.14	167.02	266.90
66.54	-12.74	182.78	-40.31	.528	178.28	177.63	248.73
87.79	-8.80	192.12	-29.39	.555	189.85	187.31	228.45
100.00	-7.03	194.91	-23.87	.563	193.44	188.10	216.80

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING TRAILING EDGE EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCTION SUR (DEG)	D FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00 0.00	0.00	52.10	-4.218	-8.141	.3998	.0577	.0195	.929	1.256	1.1061	.7152
10.58 10.89	11.43	52.65	-3.558	-6.933	.3924	.0589	.0192	-3.342	1.268	1.1051	.7183
28.53 29.37	30.61	46.95	-6.655	-10.010	.3537	.0492	.0155	-3.476	1.275	1.0917	.7785
46.20 47.50	48.89	46.22	-6.505	-9.530	.3491	.0747	.0221	-2.921	1.290	1.0923	.7131
65.06 66.54	67.74	44.84	-7.147	-10.070	.3369	.0827	.0232	-1.202	1.320	1.0936	.7106
86.96 87.79	88.61	44.42	-6.473	-9.414	.3465	.1145	.0299	2.777	1.348	1.1007	.6786
100.00 100.00	100.00	43.87	-7.798	-11.239	.3532	.1067	.0268	11.562	1.347	1.1006	.7335

MOMENTUM AVERAGE STAGE EFFICIENCY = .8129 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .8058 (ADIABATIC)MOMENTUM AVG. STAGE PRESS RATIO = 1.3025
MASS AVERAGE TEMPERATURE RISE = 1.0972

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

POTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 2
 EQUIVALENT WEIGHT FLOW = 2.3623 LBM/SEC EQUIVALENT SPEED = 53569.214 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 64.4965 EQUIVALENT FLOW / INLET ANN AREA = 26.0905 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9915

PERCENT SPAN FROM TIP (L. E.)	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	73.01	1154.42	1104.05	1.044	0.00	337.30	0.00	.305	337.30	326.44	1104.05
9.19	71.98	1108.93	1053.94	1.003	0.00	344.85	0.00	.312	344.85	333.57	1053.94
24.75	69.00	1037.98	969.06	.941	0.00	371.93	0.00	.337	371.93	365.09	969.06
40.19	66.75	963.07	884.84	.873	0.00	380.22	0.00	.345	380.22	378.99	884.84
58.03	64.84	870.05	787.53	.798	0.00	369.86	0.00	.335	369.86	369.73	787.53
82.64	61.96	740.20	653.30	.670	0.00	348.00	0.00	.315	348.00	343.33	653.30
100.00	59.00	651.68	553.62	.589	0.00	335.61	0.00	.303	335.61	324.21	558.62

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8956

PERCENT SPAN FROM TIP (T. E.)	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	61.10	949.12	743.34	.737	37.81	519.51	318.50	.451	410.43	397.21	1061.04
11.05	57.56	809.50	683.21	.704	37.47	547.09	332.85	.476	434.18	424.70	1016.06
29.55	54.56	759.88	619.12	.665	36.01	544.66	320.24	.477	440.57	437.82	939.36
47.66	49.19	684.37	517.95	.600	37.75	565.74	346.37	.496	447.32	447.29	864.32
66.67	39.23	631.99	399.71	.557	38.25	623.32	385.86	.549	489.53	488.09	785.56
87.82	23.55	585.98	234.10	.519	40.81	709.70	463.79	.629	537.18	528.36	697.89
100.00	15.30	557.72	147.19	.495	42.92	734.59	500.24	.653	537.94	519.66	647.43

ROTOR PERFORMANCE DATA

PERCENT LEADING EDGE	SPAN FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	11.92	9.175	8.707	.3695	.1991	.0366	4.104	1.286	.6859	.6968
9.19	11.05	11.39	14.32	9.883	8.605	.3792	.1953	.0380	2.505	1.297	.7097	.7201
24.75	29.55	30.50	14.44	9.816	7.797	.3712	.1221	.0236	4.085	1.305	.8194	.8261
40.19	47.66	48.77	17.56	9.695	6.976	.3991	.1064	.0211	6.443	1.320	.8596	.8650
58.03	66.67	67.60	25.61	10.109	6.415	.3949	.0644	.0136	8.010	1.354	.9296	.9325
82.64	87.82	88.55	38.41	10.392	5.421	.3539	.0225	.0048	13.745	1.405	.9828	.9836
100.00	100.00	100.00	43.70	10.250	4.176	.3044	.0297	.0061	22.354	1.406	.9828	.9836

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8520 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8459 (ADIABATIC)

MOMENTUM AVG. ROTOR PRESS RATIO = 1.3314
 MASS AVERAGE TEMPERATURE RISE = 1.1005

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

EQUIVALENT WEIGHT FLOW = 1.0715 KG/SEC
 PERCENT DESIGN EQUIVALENT FLOW = 64.4965
 - 70 PERCENT DESIGN SPEED - SCAN NO 2
 EQUIVALENT SPEED = 53569.214 R.P.M.
 EQUIVALENT FLOW / INLET ANN AREA = 127.3850 KG/SEC-SQ M

 INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9915

PERCENT SPAN FROM TIP (L. F.)	BETA*1 (DEG)	V*1 (M/SEC)	VU*1 (M/SEC)	M*1	BETA1 (DEG)	V1 (M/SEC)	VU1 (M/SEC)	M1	VM1 (M/SEC)	VZ1 (M/SEC)	U1 (M/SEC)
0.00	73.01	351.87	336.51	1.044	0.00	102.81	0.00	.305	102.81	99.50	336.51
9.19	71.88	338.00	321.24	1.003	0.00	105.11	0.00	.312	105.11	101.67	321.24
24.75	69.00	316.38	295.37	.941	0.00	113.36	0.00	.337	113.36	111.28	295.37
40.19	66.75	293.54	269.70	.873	0.00	115.89	0.00	.345	115.89	115.52	269.70
58.03	64.84	265.19	240.04	.788	0.00	112.73	0.00	.335	112.73	112.69	240.04
82.64	61.96	225.61	199.12	.670	0.00	106.07	0.00	.315	106.07	104.65	199.12
100.00	59.00	198.63	170.27	.589	0.00	102.30	0.00	.303	102.30	98.82	170.27

 EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8956

PERCENT SPAN FROM TIP (T. E.)	BETA*2 (DEG)	V*2 (M/SEC)	VU*2 (M/SEC)	M*2	BETA2 (DEG)	V2 (M/SEC)	VU2 (M/SEC)	M2	VM2 (M/SEC)	VZ2 (M/SEC)	U2 (M/SEC)
0.00	61.10	258.81	226.57	.737	37.81	158.35	97.08	.451	125.10	121.07	323.65
11.05	57.56	246.74	208.24	.704	37.47	166.75	101.45	.476	132.34	129.45	309.69
29.55	54.56	231.61	188.71	.665	36.01	166.01	97.61	.477	134.29	133.45	286.32
47.66	49.19	208.60	157.87	.600	37.75	172.44	105.57	.496	136.34	136.33	263.44
66.67	39.23	192.63	121.83	.557	38.25	189.99	117.61	.549	149.21	148.77	239.44
87.82	23.55	178.61	71.35	.519	40.81	216.32	141.36	.629	163.73	161.04	212.72
100.00	15.30	169.99	44.86	.495	42.92	223.90	152.47	.653	163.96	158.39	197.34

ROTOR PERFORMANCE DATA

PERCNT LEADING EDGE	SPAN FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	11.92	9.175	8.707	.3695	.1991	.0366	4.104	1.286	.6859	.6968
9.19	11.35	11.39	14.32	9.883	8.605	.3792	.1953	.0380	2.505	1.297	.7097	.7201
24.75	29.55	30.50	14.44	9.816	7.797	.3712	.1221	.0236	4.085	1.305	.8194	.8261
40.19	47.66	48.77	17.56	9.695	6.976	.3991	.1064	.0211	6.443	1.320	.8596	.8650
58.03	66.67	67.60	25.61	10.109	6.415	.3949	.0644	.0136	8.010	1.354	.9295	.9325
82.64	87.82	88.55	38.41	10.392	5.421	.3539	.0225	.0048	13.745	1.405	.9828	.9836
100.00	100.00	100.00	43.70	10.250	4.176	.3044	.0297	.0061	22.354	1.406	.9828	.9836

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8523 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8459 (ADIABATIC)

MOMENTUM AVG. ROTOR PRESS RATIO = 1.3314
 MASS AVERAGE TEMPERATURE RISE = 1.1005

ORIGINAL PAGE IS
OF POOR QUALITY

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 2

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8986

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	33.51	594.07	327.96	.519	495.34	489.90	1031.22
10.51	34.10	607.56	340.59	.531	503.11	502.28	992.96
28.37	31.82	614.87	324.19	.541	522.46	522.46	927.92
46.02	33.09	634.93	346.64	.560	531.96	531.56	863.64
65.06	34.13	680.13	381.60	.603	562.99	560.93	794.31
87.05	37.04	752.41	453.18	.670	600.62	592.55	714.22
100.00	38.28	783.78	485.52	.700	615.29	598.29	667.07

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = 1.0009

PERCENT SPAN FROM TIP (T. F.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VH4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	-20.92	525.35	-187.59	.456	490.72	485.33	1023.74
10.92	-20.97	534.96	-191.44	.465	499.54	498.71	989.58
29.47	-18.02	535.50	-165.65	.468	509.24	509.23	931.51
47.63	-15.55	548.46	-147.06	.480	528.37	527.99	874.69
66.61	-13.11	579.18	-131.42	.508	564.07	562.01	815.31
87.88	-8.86	612.16	-94.30	.537	604.85	596.73	748.75
100.00	-6.57	621.82	-71.20	.546	617.73	600.66	710.82

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING TRAILING EDGE EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00 0.00	6.00	54.43	-2.810	-6.733	.4300	.0570	.0192	.009	1.273	1.1084	.7643
10.51 10.92	11.39	55.07	-2.059	-5.438	.4238	.0602	.0195	-4.270	1.283	1.1084	.7605
28.37 29.47	30.50	49.84	-4.691	-8.047	.3905	.0589	.0184	-4.416	1.292	1.0964	.7821
46.02 47.63	48.77	48.64	-4.446	-7.475	.3730	.0562	.0165	-3.307	1.306	1.0959	.8042
65.06 66.61	67.60	47.24	-5.116	-8.039	.3615	.0674	.0188	-1.578	1.334	1.0971	.7864
87.05 87.88	38.55	45.90	-5.079	-8.016	.3725	.1171	.0306	2.715	1.363	1.1037	.7044
100.00 100.00	100.00	44.85	-6.355	-9.796	.3771	.1089	.0274	12.021	1.363	1.1038	.7527

MOMENTUM AVERAGE STAGE EFFICIENCY = .8217 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .8147 (ADIABATIC)MOMENTUM AVG. STAGE PRESS RATIO = 1.3179
MASS AVERAGE TEMPERATURE RISE = 1.1005

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 2

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .0986

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)
0.00	33.51	181.07	99.96	.519	150.98	149.32	314.32
10.51	34.10	185.18	103.81	.531	153.35	153.09	302.65
28.37	31.92	187.41	96.81	.541	159.25	159.25	282.83
46.02	33.09	193.53	105.65	.560	162.14	162.02	263.24
65.06	34.13	207.30	116.31	.603	171.60	170.97	242.11
87.05	37.84	229.33	138.13	.670	183.07	180.61	217.69
100.00	39.28	238.90	147.99	.700	187.54	182.36	203.32

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = 1.0009

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VM4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	-20.92	160.13	-57.18	.456	149.57	147.93	312.04
10.92	-20.97	163.06	-58.35	.465	152.26	152.01	301.62
29.47	-18.92	163.22	-50.49	.468	155.21	155.21	283.92
47.63	-15.55	167.17	-44.82	.480	161.05	160.93	266.61
66.61	-13.11	176.53	-40.06	.508	171.93	171.30	248.51
87.88	-9.86	186.59	-28.74	.537	184.36	181.88	228.22
100.00	-6.57	189.53	-21.70	.546	188.28	183.08	216.66

STATOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCTION SUR (DEG)	D FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	54.43	-2.810	-6.733	.4300	.0570	.0192	.009	1.273	1.1084	.7643
10.51	10.92	11.39	55.07	-2.059	-5.438	.4238	.0602	.0195	-4.270	1.283	1.1084	.7605
28.37	29.47	10.50	49.84	-4.691	-8.047	.3905	.0589	.0184	-4.416	1.292	1.0964	.7821
46.02	47.63	48.77	48.64	-4.446	-7.475	.3730	.0562	.0166	-3.307	1.306	1.0959	.8042
65.06	66.61	67.60	47.24	-5.116	-8.039	.3615	.0674	.0188	-1.578	1.334	1.0971	.7864
87.05	87.88	98.55	45.90	-5.079	-8.016	.3725	.1171	.0306	2.715	1.363	1.1037	.7044
100.00	100.00	100.00	44.85	-6.355	-9.796	.3771	.1089	.0274	12.021	1.363	1.1038	.7527

MOMENTUM AVERAGE STAGE EFFICIENCY = .8217 (POLYTROPIC)

MOMENTUM AVERAGE STAGE EFFICIENCY = .8147 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.3179

MASS AVERAGE TEMPERATURE RISE = 1.1005

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 3
EQUIVALENT WEIGHT FLOW = 2.2611 LBM/SEC EQUIVALENT SPEED = 53592.696 R.P.M.
PERCENT DESIGN EQUIVALENT FLOW = 61.7346 EQUIVALENT FLOW / INLET ANN AREA = 24.9732 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9946

PERCENT SPAN FROM TIP (L. F.)	BETA*1 (DEG)	V*1 (FT/SEC)	VU*1 (FT/SEC)	M*1	BETA1 (DEG)	V1 (FT/SEC)	VU1 (FT/SEC)	M1	VN1 (FT/SEC)	VZ1 (FT/SEC)	U1 (FT/SEC)
0.00	73.79	1150.29	1104.53	1.039	0.00	321.19	0.00	.290	321.19	310.85	1104.53
9.29	72.69	1103.82	1053.82	.998	0.00	328.46	0.00	.297	328.46	317.78	1053.82
24.93	69.91	1031.26	968.48	.934	0.00	354.31	0.00	.321	354.31	347.81	968.48
40.31	67.73	955.86	884.58	.866	0.00	362.19	0.00	.328	362.19	361.03	884.58
58.11	65.89	862.71	787.47	.781	0.00	352.37	0.00	.319	352.37	352.25	787.47
82.64	63.10	732.87	653.56	.663	0.00	331.60	0.00	.300	331.60	327.15	653.56
100.00	60.23	643.84	559.86	.582	0.00	319.69	0.00	.289	319.69	308.83	558.86

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8931

PERCENT SPAN FROM TIP (L. F.)	BETA*2 (DEG)	V*2 (FT/SEC)	VU*2 (FT/SEC)	M*2	BETA2 (DEG)	V2 (FT/SEC)	VU2 (FT/SEC)	M2	VN2 (FT/SEC)	VZ2 (FT/SEC)	U2 (FT/SEC)
0.00	61.32	823.80	722.01	.712	40.74	521.38	340.29	.451	395.01	382.29	1062.30
11.13	58.27	776.45	660.40	.673	41.06	541.58	355.75	.469	408.36	399.43	1016.15
30.14	55.33	719.07	591.37	.626	40.22	535.77	345.97	.467	409.08	406.53	937.34
48.47	48.99	655.08	494.36	.573	40.49	565.19	367.00	.494	429.82	429.79	861.36
67.05	39.02	617.73	388.94	.543	39.48	621.79	395.36	.547	479.91	478.49	784.31
87.76	22.79	555.93	215.32	.491	43.31	704.34	483.12	.622	512.53	504.11	698.44
100.00	13.86	528.66	126.62	.468	45.43	731.43	521.10	.648	513.27	495.83	647.72

ROTOR PERFORMANCE DATA

PERCENT LEADING EDGE	SPAN FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	Q FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	12.47	9.949	9.481	.3972	.2069	.0378	4.326	1.311	.6939	.7053
9.29	11.13	11.51	14.42	10.712	9.427	.4137	.2126	.0405	3.230	1.316	.7036	.7148
24.93	30.14	30.70	14.58	10.749	8.719	.4147	.1533	.0290	5.042	1.310	.7892	.7973
40.31	48.47	48.89	18.74	10.697	7.972	.4314	.1192	.0237	6.668	1.337	.8517	.8576
58.11	67.05	67.67	26.87	11.167	7.469	.4090	.0542	.0115	8.095	1.369	.9428	.9453
82.64	87.76	88.57	40.31	11.534	6.563	.3947	.0536	.0116	12.902	1.414	.9611	.9630
100.00	100.00	100.00	46.37	11.476	5.402	.3478	.0691	.0143	20.909	1.414	.9611	.9629

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8426 (POLYTROPIC)
MOMENTUM AVERAGE ROTOR EFFICIENCY = .8359 (ADIABATIC)
MOMENTUM AVG. ROTOR PRESS RATIO = 1.3465
MASS AVERAGE TEMPERATURE RISE = 1.1059

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 3
 EQUIVALENT WEIGHT FLOW = 1.0256 KG/SEC EQUIVALENT SPEED = 53592.696 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 61.7346 EQUIVALENT FLOW / INLET ANN AREA = 121.9300 KG/SEC-SQ M

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9946

PERCENT SPAN FROM TIP (L. E.)	BETA*1 (DEG)	V*1 (M/SEC)	VU*1 (M/SEC)	M*1	BETA1 (DEG)	V1 (M/SEC)	VU1 (M/SEC)	M1	VM1 (M/SEC)	VZ1 (M/SEC)	U1 (M/SEC)
0.00	73.79	350.61	336.66	1.039	0.00	97.90	0.00	.290	97.90	94.75	336.66
9.29	72.69	336.45	321.21	.998	0.00	100.11	0.00	.297	100.11	96.84	321.21
24.93	69.91	314.33	295.19	.934	0.00	108.00	0.00	.321	108.00	106.01	295.19
40.31	67.73	291.35	269.62	.866	0.00	110.40	0.00	.328	110.40	110.04	269.62
58.11	65.89	262.96	240.02	.781	0.00	107.40	0.00	.319	107.40	107.37	240.02
82.64	63.10	223.38	199.21	.663	0.00	101.07	0.00	.300	101.07	99.71	199.21
100.00	60.23	196.24	170.34	.582	0.00	97.44	0.00	.289	97.44	94.13	170.34

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8931

PERCENT SPAN FROM TIP (T. F.)	BETA*2 (DEG)	V*2 (M/SEC)	VU*2 (M/SEC)	M*2	BETA2 (DEG)	V2 (M/SEC)	VU2 (M/SEC)	M2	VM2 (M/SEC)	VZ2 (M/SEC)	U2 (M/SEC)
0.00	61.32	250.85	220.07	.712	40.74	158.92	103.72	.451	120.40	116.52	323.79
11.13	59.27	236.66	201.29	.673	41.06	165.07	108.43	.469	124.47	121.75	309.72
30.14	55.33	219.17	180.25	.626	40.22	163.30	105.45	.467	124.69	123.91	285.70
48.47	48.99	199.67	150.68	.573	40.49	172.27	111.86	.494	131.01	131.00	262.54
67.05	39.02	188.28	118.55	.543	39.48	189.52	120.51	.547	146.28	145.85	239.06
87.76	22.79	169.45	65.63	.491	43.31	214.68	147.26	.622	156.22	153.65	212.89
100.00	13.96	161.14	38.59	.468	45.43	222.94	158.83	.648	156.45	151.13	197.42

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	PERCENT SPAN FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	12.47	9.949	9.481	.3972	.2069	.0378	4.326	1.311	.6939	.7053
9.29	11.13	11.51	14.42	10.712	9.427	.4137	.2126	.0405	3.230	1.316	.7036	.7148
24.93	30.14	30.70	14.58	10.749	8.719	.4147	.1533	.0290	5.042	1.318	.7892	.7973
40.31	48.47	48.89	18.74	10.697	7.972	.4314	.1192	.0237	6.668	1.337	.8517	.8576
58.11	67.05	67.67	26.87	11.167	7.469	.4090	.0542	.0115	8.095	1.369	.9428	.9453
82.64	87.76	88.57	40.31	11.534	6.563	.3947	.0536	.0116	12.902	1.414	.9611	.9630
100.00	100.00	100.00	46.37	11.476	5.402	.3478	.0691	.0143	20.909	1.414	.9611	.9629

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8426 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8359 (ADIABATIC)

MOMENTUM AVG. ROTOR PRESS RATIO = 1.3465
 MASS AVERAGE TEMPERATURE RISE = 1.1059

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TLMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 3

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9080

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	37.15	588.28	350.40	.505	462.55	457.47	1031.67
10.66	38.21	588.64	364.10	.512	462.51	461.75	992.83
28.96	36.22	592.58	350.15	.519	478.07	478.06	926.16
46.76	36.29	620.10	367.03	.545	499.81	499.45	861.31
65.44	35.97	665.48	390.90	.588	538.57	536.61	793.25
86.99	39.95	735.29	472.10	.652	563.71	556.15	714.75
100.00	41.23	766.95	505.47	.683	576.81	560.87	667.36

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9936

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	-21.47	502.74	-184.01	.434	467.86	462.72	1024.19
10.96	-21.52	507.56	-186.16	.439	472.19	471.40	989.88
29.62	-18.53	506.61	-161.03	.448	480.33	480.33	931.46
47.75	-16.21	517.09	-144.38	.456	496.52	496.16	874.70
66.72	-13.91	548.25	-131.78	.479	532.18	530.23	815.31
87.92	-10.21	578.63	-102.52	.505	569.48	561.83	748.95
100.00	-8.33	588.32	-85.23	.514	582.12	566.03	711.13

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING TRAILING EDGE EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	J FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00 0.00	0.00	58.62	.827	-3.095	.4673	.0562	.0188	-.541	1.300	1.1158	.7955
10.66 10.96	11.51	59.73	2.051	-1.320	.4625	.0501	.0162	-4.833	1.305	1.1158	.8233
28.96 29.62	30.70	54.75	-.315	-3.658	.4276	.0292	.0091	-4.950	1.312	1.1039	.9024
46.76 47.75	40.89	52.50	-1.308	-4.324	.4167	.0528	.0155	-3.974	1.324	1.1013	.8450
65.44 66.72	67.67	49.88	-3.325	-6.237	.3977	.0629	.0175	-2.375	1.351	1.0993	.8282
86.99 87.92	88.57	50.15	-2.156	-5.095	.4130	.1127	.0293	1.372	1.375	1.1081	.7454
100.00 100.00	100.00	49.56	-3.403	-6.044	.4179	.1045	.0261	10.267	1.375	1.1681	.7845

MOMENTUM AVERAGE STAGE EFFICIENCY = .8193 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .8118 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.3355
MASS AVERAGE TEMPERATURE RISE = 1.1059

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 3

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9080

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)
0.00	37.15	176.87	106.80	.505	140.98	139.44	314.45
10.66	38.21	179.42	110.98	.512	140.97	140.74	302.62
28.96	36.22	180.62	106.73	.519	145.71	145.71	282.29
46.76	36.29	189.01	111.87	.545	152.34	152.23	262.53
65.44	35.97	202.84	119.15	.588	164.16	163.56	241.78
86.99	39.95	224.12	143.90	.652	171.82	169.51	217.86
100.00	41.23	233.77	154.07	.683	175.81	170.95	203.41

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9936

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VM4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	-21.47	153.24	-56.09	.434	142.60	141.04	312.17
10.96	-21.52	154.70	-56.74	.439	143.92	143.68	301.71
29.62	-18.53	154.41	-49.08	.440	146.41	146.40	283.91
47.75	-16.21	157.61	-44.01	.450	151.34	151.23	266.61
66.72	-13.91	167.11	-40.17	.479	162.21	161.61	248.51
87.92	-10.21	176.37	-31.25	.505	173.58	171.25	228.28
100.00	-8.33	179.32	-25.98	.514	177.43	172.53	216.75

STATOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	58.62	.827	-3.095	.4673	.0562	.0188	-.541	1.300	1.1158	.7955
10.66	10.96	11.51	59.73	2.051	-1.320	.4625	.0501	.0162	-4.833	1.305	1.1158	.8233
28.96	29.62	30.70	54.75	-.315	-3.659	.4276	.0292	.0091	-4.950	1.312	1.1039	.9024
46.76	47.75	48.89	52.50	-1.308	-4.324	.4167	.0528	.0155	-3.974	1.324	1.1013	.8450
65.44	66.72	67.67	49.88	-3.325	-6.237	.3977	.0629	.0175	-2.375	1.351	1.0993	.8282
86.99	87.92	88.57	50.15	-2.156	-5.095	.4130	.1127	.0293	1.372	1.375	1.1081	.7454
100.00	100.00	100.00	49.56	-3.403	-6.844	.4179	.1045	.0261	10.267	1.375	1.1081	.7845

MOMENTUM AVERAGE STAGE EFFICIENCY = .8193 (POLYTROPIC)
 MOMENTUM AVERAGE STAGE EFFICIENCY = .8118 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.3355
 MASS AVERAGE TEMPERATURE RISE = 1.1059

ORIGINAL PAGE IS
OF POOR QUALITY

NASA SMALL AXIAL COMPRESSOR TFST 5 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 4
EQUIVALENT WEIGHT FLOW = 2.0664 LBM/SEC EQUIVALENT SPEED = 53559.373 R.P.M.
PERCENT DESIGN EQUIVALENT FLOW = 56.4200 EQUIVALENT FLOW / INLET ANN AREA = 22.8234 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = 1.0309

PERCENT SPAN FROM TIP (L. E.)	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	75.16	1141.95	1103.85	1.030	0.00	292.52	0.00	.264	292.52	283.10	1103.85
8.59	74.23	1099.38	1057.01	.991	0.00	298.60	0.00	.270	298.60	288.83	1057.01
23.61	71.76	1026.66	975.09	.928	0.00	321.31	0.00	.290	321.31	315.41	975.09
38.46	69.84	952.44	894.10	.861	0.00	328.20	0.00	.297	328.20	327.15	894.10
56.30	68.16	858.42	796.93	.776	0.00	319.30	0.00	.288	319.30	319.19	796.83
81.72	65.46	723.56	658.20	.653	0.00	300.51	0.00	.271	300.51	296.47	658.20
100.00	62.54	629.43	558.51	.568	0.00	290.25	0.00	.262	290.25	280.38	558.51

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8717

PERCENT SPAN FROM TIP (T. E.)	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	62.43	792.12	702.15	.683	44.43	513.50	359.50	.443	366.66	354.86	1061.64
10.40	59.99	743.46	643.82	.642	45.22	527.86	374.71	.456	371.79	363.67	1018.53
29.54	56.93	657.22	550.78	.569	47.29	528.68	388.49	.458	358.58	356.35	939.27
48.09	49.16	617.26	466.99	.538	44.41	565.85	395.41	.492	403.65	403.63	862.40
66.60	38.32	578.85	358.94	.507	43.22	623.17	426.75	.546	454.12	452.78	785.69
87.64	21.08	536.06	192.83	.473	45.31	711.27	505.70	.627	500.17	491.95	698.53
100.00	11.46	511.03	101.57	.452	47.46	740.73	545.75	.656	500.84	483.81	647.31

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	PERCENT SPAN FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	12.73	11.321	10.853	.4262	.2202	.0388	5.436	1.330	.6922	.7043
8.59	10.40	10.69	14.23	12.102	10.863	.4475	.2319	.0421	4.795	1.330	.6933	.7054
23.61	29.54	29.26	14.83	12.371	10.432	.4865	.2195	.0398	6.449	1.331	.7267	.7375
38.46	48.09	47.02	20.68	12.551	9.930	.4784	.1551	.0308	6.642	1.350	.8190	.8265
56.30	66.60	66.07	29.84	13.223	9.613	.4618	.1029	.0221	7.049	1.381	.8986	.9031
81.72	87.64	87.94	44.38	13.790	8.846	.4219	.0758	.0165	11.023	1.430	.9482	.9508
100.00	100.00	100.00	51.08	13.788	7.714	.3690	.0990	.0207	18.515	1.436	.9482	.9507

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8183 (POLYTROPIC) MOMENTUM AVG. ROTOR PRESS RATIO = 1.3623
MOMENTUM AVERAGE ROTOR EFFICIENCY = .8102 (ADIABATIC) MASS AVERAGE TEMPERATURE RISE = 1.1138

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 4
 EQUIVALENT WEIGHT FLOW = .9373 KG/SEC EQUIVALENT SPEED = 53559.373 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 56.4200 EQUIVALENT FLOW / INLET ANN AREA = 111.4334 KG/SEC-SQ M

 INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0309

PERCENT SPAN FROM TIP (L. E.)	BETA*1 (DEG)	V*1 (M/SEC)	VU*1 (M/SEC)	M*1	BETA1 (DEG)	V1 (M/SEC)	VU1 (M/SEC)	M1	VM1 (M/SEC)	VZ1 (M/SEC)	U1 (M/SEC)
0.00	75.16	348.07	336.45	1.030	0.00	89.16	0.00	.264	89.16	86.29	336.45
8.59	74.23	334.79	322.18	.991	0.00	91.01	0.00	.270	91.01	88.03	322.18
23.61	71.76	312.93	297.21	.928	0.00	97.93	0.00	.290	97.93	96.14	297.21
38.46	69.84	290.32	272.52	.861	0.00	100.04	0.00	.297	100.04	99.71	272.52
56.30	68.16	261.65	242.87	.776	0.00	97.32	0.00	.288	97.32	97.29	242.87
81.72	65.46	220.54	200.62	.653	0.00	91.59	0.00	.271	91.59	90.36	200.62
100.00	62.54	191.85	170.23	.568	0.00	88.47	0.00	.262	88.47	85.46	170.23

 EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8717

PERCENT SPAN FROM TIP (T. E.)	BETA*2 (DEG)	V*2 (M/SEC)	VU*2 (M/SEC)	M*2	BETA2 (DEG)	V2 (M/SEC)	VU2 (M/SEC)	M2	VM2 (M/SEC)	VZ2 (M/SEC)	U2 (M/SEC)
0.00	62.43	241.44	214.01	.683	44.43	156.51	109.57	.443	111.76	108.16	323.59
10.40	59.99	226.61	196.24	.642	45.22	160.89	114.21	.456	113.32	110.85	310.45
29.54	56.93	200.32	167.88	.569	47.29	161.14	118.41	.458	109.30	108.62	286.29
48.09	49.16	188.14	142.34	.538	44.41	172.23	120.52	.492	123.03	123.03	262.86
66.60	38.32	176.43	109.40	.507	43.22	189.94	130.07	.546	138.42	138.01	239.48
87.64	21.08	163.39	58.78	.473	45.31	216.79	154.14	.627	152.45	149.95	212.91
100.00	11.46	155.76	30.96	.452	47.46	225.77	166.34	.656	152.65	147.47	197.30

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	U FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	12.73	11.321	10.853	.4262	.2202	.0388	5.436	1.330	.6922	.7043
8.59	10.40	16.69	14.23	12.102	10.863	.4475	.2319	.0421	4.795	1.330	.6933	.7054
23.61	29.54	29.26	14.83	12.371	10.432	.4865	.2195	.0398	6.449	1.331	.7267	.7375
38.46	48.09	47.02	20.68	12.551	9.930	.4784	.1551	.0308	6.642	1.356	.8190	.8265
56.30	66.60	66.07	29.84	13.223	9.613	.4618	.1029	.0221	7.049	1.381	.8986	.9031
81.72	87.64	87.94	44.38	13.790	8.846	.4219	.0758	.0165	11.023	1.430	.9482	.9508
100.00	100.00	100.00	51.88	13.788	7.714	.3690	.0990	.0207	18.515	1.430	.9482	.9507

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8183 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8102 (ADIABATIC)

MOMENTUM AVG. ROTOR PRESS RATIO = 1.3623
 MASS AVERAGE TEMPERATURE RISE = 1.1138

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 4

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8995

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	41.80	555.37	370.17	.486	414.01	409.46	1031.03
10.07	43.20	560.70	383.83	.485	408.74	408.06	994.35
28.51	43.62	570.40	393.53	.495	412.90	412.89	927.22
46.47	40.97	604.73	395.68	.529	457.31	456.97	861.83
65.16	40.26	653.63	422.39	.575	498.82	497.00	793.81
87.08	42.63	730.53	494.74	.646	537.50	530.28	714.00
100.00	43.91	764.28	530.02	.678	550.64	535.43	666.94

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = 1.0007

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	-31.93	458.48	-242.48	.394	389.11	384.84	1023.55
10.94	-32.04	459.53	-243.79	.395	389.53	388.88	989.31
30.18	-24.32	455.57	-187.61	.392	415.15	415.14	929.13
48.15	-19.66	474.02	-159.46	.410	446.39	446.07	872.92
66.94	-16.80	519.52	-150.13	.451	497.35	495.54	814.12
87.96	-12.40	549.52	-118.03	.477	536.70	529.49	748.36
100.00	-10.05	557.94	-97.38	.485	549.38	534.20	710.69

STATOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCY)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCTION SUR (DEG)	J FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	73.73	5.482	1.560	.5740	.0708	.0217	-11.001	1.316	1.1223	.7961
10.07	10.94	10.69	75.24	7.051	3.654	.5697	.0696	.0205	-15.352	1.316	1.1223	.8057
28.51	30.18	29.26	67.94	7.111	3.755	.5352	.0729	.0218	-10.806	1.316	1.1169	.8164
46.47	48.15	47.02	60.53	3.293	.272	.4952	.0831	.0240	-7.437	1.331	1.1093	.8055
65.16	66.94	66.07	57.05	.997	-1.923	.4525	.0581	.0160	-5.272	1.365	1.1074	.8607
87.08	87.96	37.94	55.03	.509	-2.428	.4624	.1195	.0309	-.826	1.388	1.1132	.7618
100.00	100.00	100.00	53.96	-.725	-4.166	.4673	.1101	.0274	8.545	1.388	1.1132	.7988

MOMENTUM AVERAGE STAGE EFFICIENCY = .7903 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7813 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.3480
MASS AVERAGE TEMPERATURE RISE = 1.1138

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

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 4

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8995

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)
0.00	41.80	169.28	112.83	.480	126.19	124.80	314.26
10.07	43.20	170.90	116.99	.485	124.58	124.38	303.08
28.51	43.62	173.86	119.95	.495	125.85	125.85	282.62
46.47	40.87	184.32	120.60	.529	139.39	139.29	262.69
65.16	40.26	199.23	128.74	.575	152.04	151.48	241.95
87.08	42.63	222.67	150.80	.646	163.83	161.63	217.63
100.00	43.91	232.95	161.55	.678	167.84	163.20	203.20

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = 1.0007

PERCENT SPAN FROM TIP (T. F.)	BETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VM4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	-31.93	139.75	-73.91	.394	118.60	117.30	311.98
10.94	-32.94	140.07	-74.31	.395	118.73	118.53	301.54
30.18	-24.32	138.86	-57.18	.392	126.54	126.54	283.20
48.15	-19.66	144.48	-48.60	.410	136.06	135.96	266.06
66.94	-16.80	158.35	-45.76	.451	151.59	151.04	248.14
87.96	-12.40	167.49	-35.99	.477	163.59	161.39	228.10
100.00	-10.05	170.06	-29.68	.485	167.45	162.82	216.62

STATOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	Q FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	73.73	5.482	1.560	.5740	.0708	.0217	-11.001	1.316	1.1223	.7961
10.07	10.94	10.69	75.24	7.051	3.654	.5697	.0696	.0205	-15.352	1.316	1.1223	.8057
28.51	30.18	29.26	67.94	7.111	3.755	.5352	.0729	.0218	-10.806	1.316	1.1169	.8164
46.47	48.15	47.02	60.53	3.293	.272	.4952	.0831	.0240	-7.437	1.331	1.1093	.8055
65.16	66.94	66.07	57.05	.997	-1.923	.4525	.0581	.0160	-5.272	1.365	1.1074	.8607
87.08	87.96	87.94	55.03	.509	-2.428	.4624	.1195	.0309	-.826	1.388	1.1132	.7618
100.00	100.00	100.00	53.96	-.725	-4.166	.4673	.1101	.0274	8.545	1.388	1.1132	.7988

MOMENTUM AVERAGE STAGE EFFICIENCY = .7903 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7813 (ADIABATIC)MOMENTUM AVG. STAGE PRESS RATIO = 1.3480
MASS AVERAGE TEMPERATURE RISE = 1.1138

ORIGINAL PAGE IS
OF POOR QUALITY

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 5
EQUIVALENT WEIGHT FLOW = 2.1551 LBM/SEC EQUIVALENT SPEED = 53636.919 R.P.M.
PERCENT DESIGN EQUIVALENT FLOW = 58.8399 EQUIVALENT FLOW / INLET ANN AREA = 23.8023 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = 1.0165

PERCENT SPAN FROM TIP (L. E.)	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	74.54	1146.93	1105.44	1.035	0.30	305.67	0.00	.276	305.67	295.83	1105.44
9.15	73.51	1100.76	1055.48	.994	0.00	312.46	0.00	.282	312.46	302.23	1055.48
24.45	70.90	1024.54	971.93	.930	0.00	336.50	0.00	.304	336.50	330.32	971.93
39.44	68.88	954.13	890.04	.863	0.00	343.80	0.00	.311	343.80	342.69	890.04
57.27	67.13	860.31	792.67	.778	0.00	334.37	0.00	.302	334.37	334.25	792.67
82.21	64.41	727.93	656.50	.657	0.00	314.46	0.00	.284	314.46	310.24	656.50
100.00	61.55	636.13	559.32	.574	0.00	303.02	0.00	.274	303.02	292.72	559.32

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8793

PERCENT SPAN FROM TIP (L. E.)	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	61.32	809.09	709.84	.699	42.30	524.98	353.34	.453	388.27	375.76	1063.18
10.86	59.04	756.95	649.12	.654	43.46	536.43	368.98	.464	389.38	380.87	1018.10
29.95	55.94	681.90	564.92	.592	44.40	534.53	373.99	.464	381.91	379.53	938.91
48.25	49.08	632.46	477.92	.552	42.91	565.56	385.05	.493	414.24	414.22	862.97
66.87	38.51	592.48	368.88	.520	41.96	623.48	416.85	.547	463.64	462.27	785.73
87.76	21.55	541.75	198.95	.478	44.78	709.92	500.07	.626	503.90	495.62	699.03
100.00	12.17	516.21	108.81	.457	46.91	738.67	539.44	.654	504.61	487.46	648.25

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING TRAILING EDGE EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	Q FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	13.22	10.706	10.238	.4119	.2032	.0371	4.332	1.334	.7226
9.15	10.86	11.36	14.47	11.503	10.227	.4343	.2177	.0406	3.944	1.332	.7195
24.45	29.95	30.20	14.96	11.664	9.665	.4585	.1867	.0348	5.591	1.334	.7700
39.44	48.25	43.04	19.80	11.724	9.048	.4600	.1331	.0265	6.652	1.351	.8481
57.27	66.87	66.97	28.62	12.304	8.647	.4437	.0770	.0165	7.436	1.383	.9227
82.21	87.76	88.30	42.86	12.791	7.833	.4156	.0581	.0126	11.658	1.430	.9596
100.00	100.00	100.00	49.38	12.800	6.726	.3655	.0758	.0158	19.220	1.431	.9596

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8360 (POLYTROPIC)
MOMENTUM AVERAGE ROTOR EFFICIENCY = .8287 (ADIABATIC)

MOMENTUM AVG. ROTOR PRESS RATIO = 1.3628
MASS AVERAGE TEMPERATURE RISE = 1.1114

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 5
 EQUIVALENT WEIGHT FLOW = .9775 KG/SEC EQUIVALENT SPEED = 53636.919 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 58.8399 EQUIVALENT FLOW / INLET ANN AREA = 116.2128 KG/SEC-SQ M

 INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0165

PERCENT SPAN FROM TIP (L. F.)	BETA*1 (DEG)	V*1 (M/SEC)	VU*1 (M/SEC)	M*1	BETA1 (DEG)	V1 (M/SEC)	VU1 (M/SEC)	M1	VM1 (M/SEC)	VZ1 (M/SEC)	U1 (M/SEC)
0.00	74.54	349.58	336.94	1.035	0.00	93.17	0.00	.276	93.17	90.17	336.94
9.15	73.51	335.51	321.71	.994	0.00	95.24	0.00	.282	95.24	92.12	321.71
24.45	70.90	313.50	296.25	.930	0.00	102.57	0.00	.304	102.57	100.68	296.25
39.44	68.88	290.92	271.23	.863	0.00	104.79	0.00	.311	104.79	104.45	271.28
57.27	67.13	262.22	241.61	.778	0.00	101.92	0.00	.302	101.92	101.88	241.61
82.21	64.41	221.87	200.10	.657	0.00	95.85	0.00	.284	95.85	94.56	200.10
100.00	61.55	193.89	170.48	.574	0.00	92.36	0.00	.274	92.36	89.22	170.48

 EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8793

PERCENT SPAN FROM TIP (T. E.)	BETA*2 (DEG)	V*2 (M/SEC)	VU*2 (M/SEC)	M*2	BETA2 (DEG)	V2 (M/SEC)	VU2 (M/SEC)	M2	VM2 (M/SEC)	VZ2 (M/SEC)	U2 (M/SEC)
0.00	61.32	246.61	216.36	.699	42.30	160.01	107.70	.453	118.34	114.53	324.06
10.86	59.04	230.72	197.85	.654	43.46	163.50	112.47	.464	118.68	116.09	310.32
29.95	55.94	207.84	172.19	.592	44.40	162.93	113.99	.464	116.41	115.68	286.18
48.25	49.08	192.77	145.67	.552	42.91	172.38	117.36	.493	126.26	126.25	263.03
66.87	38.51	180.59	112.43	.520	41.96	190.04	127.06	.547	141.32	140.90	239.49
87.76	21.55	165.13	60.64	.478	44.78	216.38	152.42	.626	153.59	151.06	213.06
100.00	12.17	157.34	33.16	.457	46.91	225.15	164.42	.654	153.80	148.58	197.59

ROTOR PERFORMANCE DATA

PERCENT LEADING EDGE	SPAN FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA ETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	13.22	10.706	10.238	.4119	.2032	.0371	4.332	1.334	.7111	.7226
9.15	10.86	11.36	14.47	11.503	10.227	.4343	.2177	.0406	3.944	1.332	.7080	.7195
24.45	29.95	30.20	14.96	11.564	9.665	.4585	.1867	.0348	5.591	1.334	.7604	.7700
39.44	48.25	48.04	19.80	11.724	9.048	.4600	.1331	.0265	6.652	1.351	.8415	.8481
57.27	66.87	66.97	28.62	12.304	8.647	.4437	.0770	.0165	7.436	1.383	.9227	.9261
82.21	87.76	88.31	42.86	12.791	7.833	.4156	.0581	.0126	11.658	1.430	.9596	.9616
100.00	100.00	100.00	49.38	12.800	6.726	.3655	.0758	.0158	19.220	1.431	.9596	.9616

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8360 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8287 (ADIABATIC)

MOMENTUM AVG. ROTOR PRESS RATIO = 1.3628
 MASS AVERAGE TEMPERATURE RISE = 1.1114

ORIGINAL PAGE IS
OF POOR QUALITY

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 5

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9021

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	39.44	572.77	363.83	.497	442.37	437.52	1032.52
10.51	41.15	574.21	377.85	.498	432.37	431.66	994.20
28.90	40.60	581.93	378.74	.507	441.82	441.82	927.14
46.65	39.07	611.32	385.29	.535	474.62	474.27	862.43
65.38	38.72	659.33	412.44	.581	514.40	512.52	794.13
87.10	41.75	734.27	488.95	.650	547.79	540.43	714.93
100.00	42.99	767.90	523.60	.682	561.71	546.19	667.91

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = 1.0056

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	-25.69	474.86	-205.85	.409	427.92	423.22	1025.03
11.01	-25.75	472.27	-205.18	.406	425.37	424.66	990.55
29.91	-21.49	464.65	-170.21	.401	432.35	432.34	931.32
48.04	-18.62	486.67	-155.42	.422	461.18	460.84	874.52
66.91	-15.86	524.18	-143.29	.456	504.22	502.38	815.39
87.99	-11.37	552.50	-108.90	.480	541.66	534.39	749.35
100.00	-9.12	562.00	-89.08	.489	554.89	539.56	711.72

STATOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCTION SUR (DEG)	D FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS. RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	65.13	3.117	-8.05	.5312	.0701	.0228	-4.761	1.319	1.1204	.7958
10.51	11.01	11.36	66.90	4.994	1.616	.5303	.0631	.0197	-9.084	1.319	1.1204	.8224
28.90	29.91	30.20	62.09	4.072	.727	.5104	.0703	.0215	-7.942	1.318	1.1125	.8240
46.65	48.04	48.04	57.69	1.480	-1.537	.4727	.0602	.0175	-6.398	1.337	1.1065	.8522
65.38	66.91	66.97	54.59	-.567	-3.480	.4428	.0592	.0163	-4.338	1.366	1.1049	.8583
87.10	87.99	88.33	53.12	-.374	-3.309	.4558	.1226	.0318	.210	1.387	1.1120	.7559
100.00	100.00	100.00	52.11	-1.643	-5.084	.4598	.1131	.0282	9.476	1.387	1.1120	.7924

MOMENTUM AVERAGE STAGE EFFICIENCY = .8093 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .8000 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.3489
MASS AVERAGE TEMPERATURE RISE = 1.1114

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 5

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9021

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)
0.00	39.44	174.58	110.89	.497	134.84	133.35	314.71
10.51	41.15	175.02	115.17	.498	131.79	131.57	303.03
28.90	40.63	177.37	115.44	.507	134.67	134.67	282.59
46.65	39.07	186.33	117.44	.535	144.66	144.56	262.87
65.38	38.72	200.96	125.71	.581	156.79	156.22	242.05
87.10	41.75	223.80	149.03	.650	166.97	164.72	217.91
100.00	42.99	234.05	159.59	.682	171.21	166.48	203.58

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = 1.0056

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VM4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	-25.69	144.74	-62.74	.409	130.43	129.00	312.43
11.01	-25.75	143.95	-62.54	.406	129.65	129.44	301.92
29.91	-21.49	141.62	-51.88	.401	131.78	131.78	283.87
48.04	-18.62	148.34	-47.37	.422	140.57	140.46	266.55
66.91	-15.86	159.77	-43.68	.456	153.69	153.12	248.53
87.99	-11.37	168.40	-33.19	.480	165.10	162.88	228.40
100.00	-9.12	171.30	-27.15	.489	169.13	164.46	216.93

STATOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	65.13	3.117	-1.805	.5312	.0701	.0228	-4.761	1.319	1.1204	.7958
10.51	11.01	11.36	66.90	4.994	1.616	.5303	.0631	.0197	-9.084	1.319	1.1204	.8224
28.90	29.91	30.29	62.09	4.072	.727	.5104	.0703	.0215	-7.942	1.318	1.1125	.8240
46.65	48.04	48.04	57.69	1.480	-1.537	.4727	.0602	.0175	-6.398	1.337	1.1065	.8522
65.38	66.91	60.97	54.59	-.567	-3.480	.4428	.0592	.0163	-4.338	1.366	1.1049	.8583
87.10	87.99	88.36	53.12	-.374	-3.309	.4558	.1226	.0318	.210	1.387	1.1120	.7559
100.00	100.00	100.00	52.11	-1.643	-5.084	.4598	.1131	.0282	9.476	1.387	1.1120	.7924

MOMENTUM AVERAGE STAGE EFFICIENCY = .8003 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .8000 (ADIABATIC)MOMENTUM AVG. STAGE PRESS RATIO = 1.3489
MASS AVERAGE TEMPERATURE RISE = 1.1114

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 6
 EQUIVALENT HEIGHT FLOW = 2.3317 LBH/SEC EQUIVALENT SPEED = 53614.105 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 63.6630 EQUIVALENT FLOW / INLET ANN AREA = 25.7533 LBH/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9994

PERCENT SPAN FROM TIP (L. E.)	BETA*1 (DEG)	V*1 (FT/SEC)	VU*1 (FT/SEC)	M*1	BETA1 (DEG)	V1 (FT/SEC)	VU1 (FT/SEC)	M1	VH1 (FT/SEC)	VZ1 (FT/SEC)	U1 (FT/SEC)
0.00	73.25	1153.90	1104.97	1.043	0.00	332.46	0.00	.301	332.46	321.75	1104.97
9.16	72.14	1108.35	1054.95	1.032	0.00	339.88	0.00	.307	339.88	328.75	1054.95
24.73	69.30	1036.91	969.95	.939	0.00	366.58	0.00	.332	366.58	359.85	969.95
40.12	67.07	961.96	885.97	.872	0.00	374.73	0.00	.340	374.73	373.52	885.97
58.01	65.19	868.48	788.30	.787	0.00	364.48	0.00	.330	364.48	364.36	788.30
82.62	62.32	738.47	653.98	.668	0.00	342.99	0.00	.310	342.99	338.39	653.98
100.00	59.39	649.60	559.08	.587	0.00	330.76	0.00	.299	330.76	319.52	559.08

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8929

PERCENT SPAN FROM TIP (T. E.)	BETA*2 (DEG)	V*2 (FT/SEC)	VU*2 (FT/SEC)	M*2	BETA2 (DEG)	V2 (FT/SEC)	VU2 (FT/SEC)	M2	VH2 (FT/SEC)	VZ2 (FT/SEC)	U2 (FT/SEC)
0.00	61.05	841.73	736.57	.730	38.67	521.96	326.15	.453	407.51	394.38	1062.73
11.01	57.91	799.06	676.27	.694	38.68	545.25	340.80	.474	425.62	416.32	1017.07
29.75	54.80	745.31	609.04	.651	37.56	541.89	330.30	.473	429.60	426.92	939.34
47.91	48.90	676.59	509.88	.593	38.53	568.51	354.13	.498	444.74	444.72	864.01
66.74	38.75	629.47	393.99	.554	38.60	628.20	391.95	.553	490.93	489.48	785.93
87.65	23.18	578.75	227.81	.512	41.54	710.81	471.37	.629	532.03	523.29	699.18
100.00	14.69	550.73	139.64	.489	43.66	736.35	508.34	.654	532.73	514.63	647.98

ROTOR PERFORMANCE DATA

PERCENT LEADING EDGE	SPAN FROM TIP TRAILING EDGE	MASS FLOW {PCT}	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.30	12.21	9.418	8.950	.3781	.1996	.0368	4.056	1.296	.6921	.7032
9.16	11.01	11.36	14.33	10.139	8.862	.3909	.2009	.0388	2.748	1.304	.7079	.7186
24.73	29.75	30.48	14.49	10.107	8.089	.3878	.1348	.0258	4.308	1.310	.8068	.8133
40.12	47.91	48.70	18.17	10.012	7.297	.4089	.1082	.0216	6.292	1.328	.8602	.8657
58.01	66.74	67.58	26.44	10.449	6.756	.3985	.0586	.0125	7.580	1.364	.9371	.9398
82.62	87.65	98.54	39.14	10.757	5.787	.3648	.0310	.0067	13.141	1.411	.9768	.9778
100.00	100.00	100.00	44.70	10.639	4.565	.3155	.0385	.0079	21.740	1.411	.9767	.9778

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8504 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8441 (ADIABATIC)

MOMENTUM AVG. ROTOR PRESS RATIO = 1.3388
 MASS AVERAGE TEMPERATURE RISE = 1.1028

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 6
 EQUIVALENT WEIGHT FLOW = 1.0577 KG/SEC EQUIVALENT SPEED = 53614.105 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 63.6630 EQUIVALENT FLOW / INLET ANN AREA = 125.7387 KG/SEC-SQ M

 INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9994

PERCENT SPAN FROM TIP (L. E.)	BETA*1 (DEG)	V*1 (M/SEC)	VU*1 (M/SEC)	M*1	BETA1 (DEG)	V1 (M/SEC)	VU1 (M/SEC)	M1	VM1 (M/SEC)	VZ1 (M/SEC)	J1 (M/SEC)
0.00	73.25	351.71	336.80	1.043	0.00	101.33	0.00	.301	101.33	98.07	336.80
9.16	72.14	317.82	321.55	1.002	0.00	103.60	0.00	.307	103.60	100.20	321.55
24.73	69.30	316.05	295.64	.939	0.00	111.73	0.00	.332	111.73	109.68	295.64
40.12	67.07	293.21	270.04	.872	0.00	114.22	0.00	.340	114.22	113.85	270.04
58.01	65.19	264.71	240.27	.787	0.00	111.09	0.00	.330	111.09	111.06	240.27
82.62	62.32	225.08	199.33	.668	0.00	104.54	0.00	.310	104.54	103.14	199.33
100.00	59.39	198.00	170.41	.587	0.00	100.81	0.00	.299	100.81	97.39	170.41

 EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8929

PERCENT SPAN FROM TIP (T. E.)	BETA*2 (DEG)	V*2 (M/SEC)	VU*2 (M/SEC)	M*2	BETA2 (DEG)	V2 (M/SEC)	VU2 (M/SEC)	M2	VM2 (M/SEC)	VZ2 (M/SEC)	U2 (M/SEC)
0.00	61.05	256.58	224.51	.730	38.67	159.09	99.41	.453	124.21	120.21	323.92
11.01	57.81	243.55	206.13	.694	38.68	166.19	103.87	.474	129.73	126.90	310.00
29.75	54.90	227.17	185.64	.651	37.56	165.17	100.67	.473	130.94	130.12	286.31
47.91	48.90	206.22	155.41	.593	38.53	173.28	107.94	.498	135.56	135.55	263.35
66.74	38.75	191.86	120.09	.554	38.60	191.47	119.46	.553	149.63	149.19	239.55
87.65	23.18	176.40	69.44	.512	41.54	216.65	143.68	.629	162.16	159.50	213.11
100.00	14.69	167.86	42.56	.489	43.66	224.44	154.94	.654	162.38	156.86	197.50

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	12.21	9.418	8.950	.3781	.1996	.0368	4.056	1.296	.6921	.7032
9.16	11.01	11.36	14.33	10.139	9.862	.3909	.2009	.0388	2.748	1.304	.7079	.7186
24.73	29.75	30.48	14.49	10.107	8.089	.3878	.1348	.0258	4.388	1.310	.8060	.8133
40.12	47.91	48.70	18.17	10.012	7.297	.4089	.1082	.0216	6.292	1.328	.8602	.8657
58.01	66.74	67.58	26.44	10.449	6.756	.3985	.0586	.0125	7.580	1.364	.9371	.9398
82.62	87.65	88.54	39.14	10.757	5.787	.3648	.0310	.0067	13.141	1.411	.9768	.9778
100.00	100.00	100.00	44.70	10.639	4.565	.3155	.0385	.0079	21.740	1.411	.9767	.9778

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8504 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8441 (ADIABATIC)

MOMENTUM AVG. ROTOR PRESS RATIO = 1.3388
 MASS AVERAGE TEMPERATURE RISE = 1.1028

ORIGINAL PAGE IS
OF POOR QUALITY

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 6

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9053

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	34.90	587.04	335.84	.512	481.48	476.19	1032.08
10.52	35.74	597.15	348.80	.521	484.69	483.89	993.74
28.61	33.64	603.65	334.40	.530	502.56	502.55	927.80
46.33	34.32	628.69	354.45	.554	519.24	518.86	863.23
65.27	34.98	676.49	387.87	.599	554.26	552.23	794.19
87.08	38.17	746.17	461.12	.663	586.63	578.75	714.73
100.00	39.39	777.53	493.41	.694	600.92	584.31	667.63

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = 1.0108

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	-22.39	510.92	-194.61	.443	472.40	467.22	1024.60
10.96	-22.45	517.89	-197.75	.449	478.65	477.86	990.27
29.67	-18.68	518.73	-166.11	.452	491.41	491.41	931.67
47.78	-16.45	533.80	-151.21	.466	511.94	511.56	874.97
66.76	-13.77	564.87	-134.45	.495	548.64	546.63	815.52
87.90	-9.67	595.79	-100.11	.521	587.32	579.43	749.31
100.00	-7.94	604.87	-83.56	.530	599.07	582.51	711.42

STATOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	U FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	57.29	-1.422	-5.344	.4570	.0578	.0193	-1.461	1.284	1.1110	.7848
10.52	10.96	11.36	58.19	-.417	-3.794	.4507	.0570	.0183	-5.765	1.291	1.1110	.7929
28.61	29.67	30.48	52.32	-2.878	-6.231	.4125	.0489	.0152	-5.100	1.299	1.0994	.8324
46.33	47.78	48.70	50.77	-3.244	-6.266	.3956	.0547	.0161	-4.216	1.315	1.0980	.8257
65.27	66.76	67.58	48.75	-4.291	-7.207	.3829	.0738	.0206	-2.238	1.342	1.0987	.7869
87.08	87.90	88.54	47.84	-3.950	-6.887	.3939	.1196	.0312	1.904	1.368	1.1056	.7173
100.00	100.00	130.90	47.33	-5.243	-8.684	.4004	.1111	.0278	10.655	1.367	1.1055	.7623

MOMENTUM AVERAGE STAGE EFFICIENCY = .8213 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .8140 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.3254
MASS AVERAGE TEMPERATURE RISE = 1.1028

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 6

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9053

PERCENT SPAN FROM TIP (L. E.)	BETA 3 (DEG)	V3 (M/SEC)	VU3 (M/SEC)	M3	VH3 (M/SEC)	VZ3 (M/SEC)	U3 (M/SEC)
0.00	34.90	178.93	102.36	.512	146.76	145.14	314.58
10.52	35.74	182.01	106.31	.521	147.73	147.49	302.89
28.61	33.64	183.99	101.93	.530	153.18	153.10	282.79
46.33	34.32	191.62	108.04	.554	158.27	158.15	263.11
65.27	34.98	206.20	118.22	.599	168.94	168.32	242.07
87.08	38.17	227.43	140.55	.663	178.80	176.40	217.85
100.00	39.39	236.99	150.39	.694	183.16	178.10	203.49

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = 1.0108

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VH4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	-22.39	155.73	-59.32	.443	143.99	142.41	312.30
10.96	-22.45	157.85	-60.28	.449	145.89	145.65	301.83
29.67	-18.68	158.11	-50.63	.452	149.78	149.78	283.97
47.78	-16.45	162.70	-46.09	.466	156.04	155.92	266.69
66.76	-13.77	172.17	-40.98	.495	167.22	166.61	248.57
87.99	-9.67	181.60	-30.51	.521	179.01	176.61	228.39
100.00	-7.94	184.36	-25.47	.530	182.60	177.55	216.84

STATOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	57.29	-1.422	-5.344	.4570	.0578	.0193	-1.461	1.284	1.1110	.7848
10.52	10.96	11.36	58.19	-.417	-3.794	.4507	.0570	.0183	-5.765	1.291	1.1110	.7929
28.61	29.67	30.48	52.32	-2.878	-6.231	.4125	.0489	.0152	-5.100	1.299	1.0994	.8324
46.33	47.78	48.70	50.77	-3.244	-6.266	.3956	.0547	.0161	-4.216	1.315	1.0980	.8257
65.27	66.76	67.58	48.75	-4.291	-7.207	.3829	.0738	.0206	-2.238	1.342	1.0987	.7869
87.08	87.90	88.54	47.84	-3.950	-6.887	.3939	.1196	.0312	1.904	1.368	1.1056	.7173
100.00	100.00	100.00	47.33	-5.243	-8.684	.4004	.1111	.0278	10.655	1.367	1.1055	.7623

MOMENTUM AVERAGE STAGE EFFICIENCY = .8213 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .8140 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.3254
MASS AVERAGE TEMPERATURE RISE = 1.1028

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 8
 EQUIVALENT WEIGHT FLOW = 3.0843 LBM/SEC EQUIVALENT SPEED = 68978.587 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 84.2096 EQUIVALENT FLOW / INLET ANN AREA = 34.0649 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9877

PERCENT SPAN FROM TIP (L. E.)	BETA*1 (DEG)	V*1 (FT/SEC)	VU*1 (FT/SEC)	M*1	BETA1 (DEG)	V1 (FT/SEC)	VU1 (FT/SEC)	H1	VM1 (FT/SEC)	VZ1 (FT/SEC)	U1 (FT/SEC)
0.00	72.14	1493.59	1421.63	1.361	0.00	458.00	0.00	.417	458.00	443.25	1421.63
10.10	70.83	1430.01	1350.72	1.395	0.00	469.56	0.00	.428	469.56	454.19	1350.72
26.85	67.55	1334.19	1233.06	1.221	0.00	509.52	0.00	.466	509.52	500.16	1233.06
43.20	65.00	1233.88	1118.25	1.131	0.00	521.53	0.00	.478	521.53	519.85	1118.25
61.10	62.97	1114.25	992.55	1.020	0.00	506.37	0.00	.463	506.37	506.20	992.55
84.17	60.21	956.96	830.47	.873	0.00	475.50	0.00	.434	475.50	469.11	830.47
100.00	57.56	852.32	719.30	.777	0.00	457.22	0.00	.417	457.22	441.68	719.30

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8916

PERCENT SPAN FROM TIP (T. E.)	BETA*2 (DEG)	V*2 (FT/SEC)	VU*2 (FT/SEC)	M*2	BETA2 (DEG)	V2 (FT/SEC)	VU2 (FT/SEC)	H2	VM2 (FT/SEC)	VZ2 (FT/SEC)	U2 (FT/SEC)
0.00	60.08	1082.58	938.29	.920	38.46	689.65	428.99	.586	539.99	522.60	1367.28
11.40	56.84	1024.34	857.47	.873	38.70	718.04	448.96	.612	560.37	548.12	1306.44
30.57	53.52	928.61	746.64	.796	39.64	717.04	457.49	.614	552.13	548.69	1204.13
48.87	47.40	856.46	630.43	.739	39.39	750.14	476.07	.647	579.72	579.69	1106.50
67.27	40.73	758.89	495.21	.657	41.74	770.68	513.09	.667	575.05	573.36	1008.30
88.22	24.10	693.58	283.21	.606	44.09	881.48	613.33	.770	633.12	622.72	896.55
100.00	15.34	657.24	173.82	.577	46.15	914.96	659.85	.803	633.83	612.29	833.67

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	PERCENT SPAN FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCTION SURFACE (DEG)	Q FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	12.06	8.306	7.838	.3846	.1902	.0361	3.089	1.581	.7425	.7586
10.10	11.40	12.48	14.00	9.021	7.686	.3977	.1927	.0382	1.855	1.591	.7536	.7691
26.85	30.57	32.86	14.03	8.717	6.565	.4182	.1493	.0295	3.379	1.605	.8185	.8301
43.20	48.97	51.86	17.60	8.351	5.468	.4228	.0942	.0194	5.257	1.637	.8946	.9017
61.10	67.27	70.31	22.24	8.591	4.757	.4441	.1003	.0208	9.975	1.630	.9025	.9090
84.17	88.22	89.63	36.11	8.819	3.806	.4235	.0721	.0154	14.849	1.719	.9487	.9525
100.00	100.00	100.00	42.22	8.806	2.732	.3964	.0896	.0184	22.387	1.720	.9487	.9525

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8594 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8495 (ADIABATIC)

MOMENTUM AVG. ROTOR PRESS RATIO = 1.6280
 MASS AVERAGE TEMPERATURE RISE = 1.1755

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 8
 EQUIVALENT WEIGHT FLOW = 1.3990 KG/SEC EQUIVALENT SPEED = 68978.587 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 84.2096 EQUIVALENT FLOW / INLET ANN AREA = 166.3196 KG/SEC-SQ M

 INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9877

PERCENT SPAN FROM TIP (L. E.)	BETA*1 (DEG)	V*1 (M/SEC)	VU*1 (M/SEC)	M*1	BETA1 (DEG)	V1 (M/SEC)	VU1 (M/SEC)	M1	VM1 (M/SEC)	VZ1 (M/SEC)	U1 (M/SEC)
0.00	72.14	455.25	433.31	1.361	0.00	139.60	0.00	.417	139.60	135.10	433.31
10.10	70.83	435.87	411.70	1.305	0.00	143.12	0.00	.428	143.12	138.44	411.70
26.85	67.55	406.66	375.84	1.221	0.00	155.30	0.00	.466	155.30	152.45	375.84
43.20	65.00	376.09	340.84	1.131	0.00	158.96	0.00	.478	158.96	158.45	340.84
61.10	62.97	339.62	302.53	1.020	0.00	154.34	0.00	.463	154.34	154.29	302.53
84.17	60.21	291.64	253.13	.873	0.00	144.93	0.00	.434	144.93	142.99	253.13
100.00	57.56	259.79	219.24	.777	0.00	139.36	0.00	.417	139.36	134.62	219.24

 EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8916

PERCENT SPAN FROM TIP (T. E.)	BETA*2 (DEG)	V*2 (M/SEC)	VU*2 (M/SEC)	M*2	BETA2 (DEG)	V2 (M/SEC)	VU2 (M/SEC)	M2	VM2 (M/SEC)	VZ2 (M/SEC)	U2 (M/SEC)
0.00	60.08	329.97	285.99	.920	38.46	210.21	130.75	.586	164.59	159.29	416.75
11.40	56.84	312.22	261.36	.873	38.70	213.86	136.84	.612	170.80	167.07	398.20
30.57	53.52	283.04	227.58	.796	39.64	218.55	139.44	.614	168.29	167.24	367.02
48.87	47.40	261.05	192.16	.739	39.39	224.64	145.11	.647	176.70	176.69	337.26
67.27	40.73	231.31	150.94	.657	41.74	234.90	156.39	.667	175.28	174.76	307.33
84.22	24.10	211.40	86.32	.606	44.09	268.68	186.94	.770	192.97	189.80	273.27
100.00	15.34	200.33	52.98	.577	46.15	278.88	201.12	.803	193.19	186.63	254.10

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCTION SUR (DEG)	O FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	12.06	8.306	7.838	.3846	.1902	.0361	3.089	1.581	.7426	.7586
10.10	11.40	12.48	14.00	9.021	7.686	.3977	.1927	.0382	1.855	1.591	.7535	.7691
26.85	30.57	32.86	14.03	8.717	6.565	.4182	.1493	.0295	3.379	1.605	.8185	.8301
43.20	48.87	51.86	17.60	8.351	5.468	.4228	.0942	.0194	5.257	1.637	.8946	.9017
61.10	67.27	70.31	22.24	8.591	4.757	.4441	.1003	.0208	9.975	1.630	.9025	.9090
84.17	88.22	89.63	36.11	8.019	3.806	.4235	.0721	.0154	14.849	1.719	.9487	.9525
100.00	100.00	100.00	42.22	8.806	2.732	.3904	.0896	.0184	22.387	1.720	.9487	.9525

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8594 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8495 (ADIABATIC)

MOMENTUM AVG. ROTOR PRESS RATIO = 1.6280
 MASS AVERAGE TEMPERATURE RISE = 1.1755

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 8

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8926

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	33.65	797.25	441.72	.685	663.70	656.41	1327.85
10.92	34.71	806.92	459.44	.695	663.35	662.25	1276.65
29.46	34.58	815.79	463.03	.707	671.65	671.64	1189.73
47.43	34.39	843.58	476.52	.736	696.10	695.59	1105.44
66.00	36.60	852.12	508.02	.745	684.12	681.62	1018.36
87.53	39.52	941.92	599.37	.830	726.61	716.85	917.43
100.00	40.82	979.45	640.29	.868	741.18	720.71	858.95

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9507

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	-8.99	710.44	-111.01	.605	701.71	694.00	1318.22
10.96	-9.00	714.79	-111.78	.609	706.00	704.83	1274.08
29.39	-8.59	706.97	-105.61	.605	699.04	699.03	1199.80
47.49	-7.53	701.88	-91.99	.602	695.82	695.31	1126.88
66.27	-7.16	687.95	-85.75	.590	682.59	680.09	1051.18
87.7*	-6.15	703.95	-75.45	.602	699.89	690.49	964.74
100.00	-5.12	713.91	-63.68	.611	711.86	691.42	915.29

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING TRAILING EDGE EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00 0.00	0.00	42.64	-2.672	-6.595	.3603	.0711	.0253	11.939	1.551	1.1879	.7114
10.92 10.96	12.48	43.70	-1.459	-4.819	.3600	.0652	.0224	7.688	1.562	1.1879	.7477
29.46 29.39	32.86	43.17	-1.977	-5.307	.3612	.0630	.0205	5.022	1.576	1.1765	.7904
47.43 47.49	51.86	41.93	-3.261	-6.267	.3719	.1029	.0313	4.721	1.586	1.1688	.7248
66.00 66.27	70.31	43.76	-2.771	-5.669	.3882	.0965	.0275	4.388	1.582	1.1657	.7725
87.53 87.73	99.63	45.67	-2.698	-5.617	.4349	.1885	.0496	5.422	1.602	1.1762	.6565
100.00 100.00	100.00	45.94	-3.809	-7.250	.4432	.1765	.0445	13.478	1.602	1.1762	.7028

MOMENTUM AVERAGE STAGE EFFICIENCY = .8071 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7943 (ADIABATIC)MOMENTUM AVG. STAGE PRESS RATIO = 1.5804
MASS AVERAGE TEMPERATURE RISE = 1.1755

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METPIC UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 9

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8926

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)
0.00	33.65	243.00	134.64	.685	202.29	200.07	404.73
10.92	34.71	245.95	140.04	.695	202.19	201.85	389.12
29.46	34.58	248.65	141.13	.707	204.72	204.72	362.63
47.43	34.39	257.12	145.24	.736	212.17	212.02	336.94
66.00	36.60	259.73	154.84	.745	208.52	207.76	310.40
87.53	39.52	287.10	182.69	.830	221.47	218.50	279.63
100.00	40.82	298.54	195.16	.868	225.91	219.67	261.81

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9507

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VM4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	-8.99	216.54	-33.84	.605	213.88	211.53	401.79
10.96	-9.00	217.87	-34.07	.609	215.19	214.83	388.34
29.39	-8.59	215.48	-32.19	.605	213.07	213.06	365.70
47.49	-7.53	213.93	-28.04	.602	212.09	211.93	343.47
66.27	-7.16	209.69	-26.14	.590	208.05	207.29	320.40
87.73	-6.15	214.56	-23.80	.602	213.33	210.46	294.05
100.00	-5.12	217.60	-19.41	.611	216.73	210.74	278.98

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING TRAILING EDGE EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	O FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00 0.00	0.00	42.64	-2.672	-6.595	.3603	.0711	.0253	11.939	1.551	1.1879	.7114
10.92 10.96	12.48	43.79	-1.459	-4.819	.3600	.0652	.0224	7.688	1.562	1.1879	.7477
29.46 29.39	32.86	43.17	-1.977	-5.307	.3612	.0630	.0205	5.022	1.576	1.1765	.7904
47.43 47.49	51.86	41.93	-3.261	-6.267	.3719	.1029	.0313	4.721	1.586	1.1688	.7248
66.00 66.27	70.31	43.76	-2.771	-5.669	.3882	.0965	.0275	4.388	1.582	1.1657	.7725
87.53 87.73	89.63	45.67	-2.698	-5.617	.4349	.1885	.0496	5.422	1.602	1.1762	.6565
100.00 100.00	100.00	45.94	-3.809	-7.250	.4432	.1765	.0445	13.478	1.682	1.1762	.7028

MOMENTUM AVERAGE STAGE EFFICIENCY = .8071 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7943 (ADIABATIC)MOMENTUM AVG. STAGE PRESS RATIO = 1.5804
MASS AVERAGE TEMPERATURE RISE = 1.1755

NASA SMALL AXIAL COMPRESSOR TEST > DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 9
 EQUIVALENT WEIGHT FLOW = 3.0490 LBM/SEC EQUIVALENT SPEED = 68941.356 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 83.2477 EQUIVALENT FLOW / INLET ANN AREA = 33.6758 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9912

PERCENT SPAN FROM TIP (L. E.)	BETA*1 (DEG)	V*1 (FT/SEC)	VU*1 (FT/SEC)	M*1	BETA1 (DEG)	V1 (FT/SEC)	VU1 (FT/SEC)	M1	VH1 (FT/SEC)	VZ1 (FT/SEC)	U1 (FT/SEC)
0.00	72.36	1490.98	1420.87	1.358	0.00	451.85	0.00	.412	451.85	437.30	1420.87
10.09	71.06	1427.30	1350.04	1.302	0.00	463.23	0.00	.422	463.23	448.07	1350.04
26.79	67.82	1331.26	1232.78	1.218	0.00	502.49	0.00	.460	502.49	493.26	1232.78
43.04	65.31	1231.28	1118.74	1.127	0.00	514.27	0.00	.471	514.27	512.61	1118.74
60.89	63.31	1111.92	993.45	1.017	0.00	499.43	0.00	.457	499.43	499.26	993.45
84.02	60.55	954.40	831.11	.871	0.00	469.19	0.00	.428	469.19	462.89	831.11
100.00	57.87	848.90	718.92	.773	0.00	451.43	0.00	.411	451.43	436.09	718.92

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9133

PERCENT SPAN FROM TIP (T. E.)	BETA*2 (DEG)	V*2 (FT/SEC)	VU*2 (FT/SEC)	M*2	BETA2 (DEG)	V2 (FT/SEC)	VU2 (FT/SEC)	M2	VH2 (FT/SEC)	VZ2 (FT/SEC)	U2 (FT/SEC)
0.00	60.44	1065.90	927.18	.904	39.88	685.21	439.36	.581	525.82	508.88	1366.54
11.19	57.67	1002.91	847.46	.852	40.58	706.19	459.42	.600	536.32	524.60	1306.88
30.29	54.25	897.93	728.75	.766	42.23	708.51	476.23	.604	524.58	521.32	1204.98
48.52	48.32	830.34	620.11	.714	41.45	736.71	487.66	.633	552.20	552.17	1107.77
66.89	41.48	731.51	484.56	.631	43.79	759.09	525.27	.655	548.00	546.39	1009.83
87.97	24.57	659.05	274.09	.574	46.12	864.71	623.30	.753	599.36	589.51	897.39
100.00	15.10	621.50	161.85	.544	48.21	900.44	671.37	.788	600.05	579.66	833.22

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING TRAILING EDGE EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	11.92	8.522	8.054	.3973	.1828	.0343	3.451	1.612	.7741
10.09	11.19	12.49	13.39	9.251	7.916	.4143	.1916	.0372	2.645	1.614	.7763
26.79	30.29	32.81	13.57	8.982	6.835	.4448	.1622	.0315	4.019	1.627	.8223
43.04	48.52	51.72	17.00	8.646	5.771	.4458	.1031	.0208	6.013	1.650	.8950
60.89	66.89	70.15	21.83	8.909	5.082	.4708	.1094	.0224	10.428	1.644	.9032
84.02	87.97	89.55	35.90	9.148	4.140	.4608	.0938	.0199	14.974	1.721	.9393
100.00	100.00	100.00	42.78	9.121	3.047	.4329	.1160	.0238	22.147	1.721	.9392

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8563 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8459 (ADIABATIC)

MOMENTUM AVG. ROTOR PRESS RATIO = 1.6444
 MASS AVERAGE TEMPERATURE RISE = 1.1802

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 9
 EQUIVALENT WEIGHT FLOW = 1.3830 KG/SEC EQUIVALENT SPEED = 68941.356 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 83.2477 EQUIVALENT FLOW / INLET ANN AREA = 164.4199 KG/SEC-SQ M

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9912

PERCENT SPAN FROM TIP (L. E.)	BCTA*1 (DEG)	V*1 (M/SEC)	VU*1 (M/SEC)	M*1	BETA1 (DEG)	V1 (M/SEC)	VO1 (M/SEC)	M1	VM1 (M/SEC)	VZ1 (M/SEC)	U1 (M/SEC)
0.00	72.36	454.45	433.08	1.358	0.00	137.72	0.00	.412	137.72	133.29	433.08
10.09	71.06	435.04	411.49	1.302	0.00	141.19	0.00	.422	141.19	136.57	411.49
26.79	67.82	405.77	375.75	1.218	0.00	153.16	0.00	.460	153.16	150.35	375.75
43.04	65.31	375.29	340.99	1.127	0.00	156.75	0.00	.471	156.75	156.24	340.99
60.89	63.31	338.91	302.80	1.017	0.00	152.23	0.00	.457	152.23	152.17	302.80
84.02	60.55	290.90	253.32	.871	0.00	143.01	0.00	.428	143.01	141.09	253.32
100.00	57.87	258.74	219.13	.773	0.00	137.60	0.00	.411	137.60	132.92	219.13

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9133

PERCENT SPAN FROM TIP (T. E.)	BETA*2 (DEG)	V*2 (M/SEC)	VU*2 (M/SEC)	M*2	BETA2 (DEG)	V2 (M/SEC)	VO2 (M/SEC)	M2	VM2 (M/SEC)	VZ2 (M/SEC)	U2 (M/SEC)
0.00	60.44	324.89	282.61	.904	39.88	208.85	133.92	.581	160.27	155.11	416.52
11.19	57.67	305.69	258.31	.852	40.58	215.25	140.03	.600	163.47	159.90	398.34
30.29	54.25	273.69	222.12	.766	42.23	215.95	145.15	.604	159.89	158.90	367.28
48.52	48.32	253.89	189.01	.714	41.45	224.55	148.64	.633	168.31	168.30	337.65
66.89	41.48	222.96	147.69	.631	43.79	231.37	160.10	.655	167.03	166.54	307.79
87.97	24.57	200.88	83.54	.574	46.12	263.56	189.98	.753	182.68	179.68	273.52
100.00	15.10	189.43	49.33	.544	48.21	274.45	204.63	.788	182.90	176.68	253.97

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	11.92	8.522	8.054	.3973	.1828	.0343	3.451	1.612	.7585	.7741
10.09	11.19	12.48	13.39	9.251	7.916	.4143	.1916	.0372	2.645	1.614	.7608	.7763
26.79	30.29	32.81	13.57	8.982	6.835	.4448	.1622	.0315	4.019	1.627	.8097	.8223
43.04	48.52	51.72	17.00	8.646	5.771	.4458	.1031	.0208	6.013	1.650	.8874	.8950
60.89	66.89	70.15	21.83	8.909	5.082	.4708	.1094	.0224	10.428	1.644	.8962	.9032
84.02	87.97	89.55	35.98	9.148	4.140	.4608	.0938	.0199	14.974	1.721	.9344	.9393
100.00	100.00	100.00	42.78	9.121	3.047	.4329	.1160	.0238	22.147	1.721	.9344	.9392

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8563 (POLYTROPIC) MOMENTUM AVG. ROTOR PRESS RATIO = 1.6444
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8459 (ADIABATIC) MASS AVERAGE TEMPERATURE RISE = 1.1802

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 9

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9065

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	35.11	786.51	452.40	.674	643.37	636.31	1327.14
10.78	36.48	790.98	470.31	.678	635.97	634.91	1276.61
29.27	36.93	802.60	482.24	.692	641.58	641.57	1189.97
47.17	36.24	826.14	488.41	.718	666.31	665.82	1106.06
65.72	38.44	837.11	520.46	.729	655.65	653.26	1019.16
87.38	41.32	923.22	609.55	.810	693.39	684.08	917.63
100.00	42.61	962.56	651.63	.850	708.45	688.88	858.49

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9691

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	-8.99	662.25	-103.48	.560	654.11	646.93	1317.51
10.96	-9.00	663.75	-103.83	.562	655.58	654.49	1273.37
29.43	-8.42	657.92	-96.29	.558	650.83	650.83	1198.98
47.51	-7.87	653.68	-89.50	.557	647.53	647.05	1126.17
66.33	-7.40	642.80	-82.79	.548	637.44	635.11	1050.41
87.78	-6.19	662.86	-71.52	.564	658.99	650.15	964.01
100.00	-5.28	672.78	-61.90	.573	669.93	651.42	914.80

STATOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCTION SUR (DEG)	D FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	44.10	-1.204	-5.127	.4143	.0692	.0246	11.939	1.583	1.1923	.7992
10.78	10.96	12.48	45.48	.321	-3.045	.4130	.0537	.0184	7.684	1.591	1.1923	.8474
29.27	29.43	32.81	45.35	.380	-2.954	.4159	.0512	.0166	5.192	1.604	1.1838	.8696
47.17	47.51	51.72	44.11	-1.391	-4.402	.4206	.0755	.0229	4.382	1.614	1.1731	.8323
65.72	66.33	70.15	45.84	-.890	-3.795	.4346	.0650	.0185	4.146	1.612	1.1699	.8691
87.38	87.78	89.55	47.51	-.867	-3.791	.4698	.1430	.0376	5.382	1.635	1.1792	.7617
100.00	100.00	100.00	47.89	-2.024	-5.465	.4785	.1332	.0335	13.318	1.635	1.1792	.7937

MOMENTUM AVERAGE STAGE EFFICIENCY = .8200 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .8076 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.6102
MASS AVERAGE TEMPERATURE RISE = 1.1802

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 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 = .9065

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)
0.00	35.11	239.73	137.89	.674	196.10	193.95	404.51
10.78	36.48	241.09	143.35	.678	193.84	193.52	389.11
29.27	36.93	244.63	146.99	.692	195.55	195.55	362.70
47.17	36.24	251.81	148.87	.718	203.09	202.94	337.13
65.72	38.44	255.15	158.64	.729	199.84	199.11	318.64
87.38	41.32	251.40	185.79	.810	211.34	208.51	279.69
100.00	42.61	293.39	198.62	.850	215.94	209.97	261.67

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9691

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VM4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	-8.99	201.85	-31.54	.560	199.37	197.18	401.58
10.96	-9.00	202.31	-31.65	.562	199.82	199.49	388.12
29.43	-8.42	200.53	-29.35	.558	198.37	198.37	365.45
47.51	-7.87	199.24	-27.28	.557	197.37	197.22	343.26
66.33	-7.40	195.92	-25.23	.548	194.29	193.58	320.16
87.78	-6.19	202.04	-21.80	.564	200.86	198.16	293.83
100.00	-5.28	205.06	-18.87	.573	204.19	198.55	278.83

STATOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	J FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	44.10	-1.204	-5.127	.4143	.0692	.0246	11.939	1.583	1.1923	.7992
10.78	10.96	12.48	45.48	.321	-3.045	.4130	.0537	.0184	7.684	1.591	1.1923	.8474
29.27	29.43	32.81	45.35	.390	-2.954	.4159	.0512	.0166	5.192	1.604	1.1838	.8696
47.17	47.51	51.72	44.11	-1.391	-4.402	.4206	.0755	.0229	4.382	1.614	1.1731	.8323
65.72	66.33	70.15	45.84	-.890	-3.795	.4346	.0650	.0185	4.146	1.612	1.1699	.8691
87.38	87.78	89.55	47.51	-.867	-3.791	.4698	.1430	.0376	5.382	1.635	1.1792	.7617
100.00	100.00	100.00	47.89	-2.024	-5.465	.4785	.1332	.0335	13.318	1.635	1.1792	.7937

MOMENTUM AVERAGE STAGE EFFICIENCY = .8200 (POLYTROPIC)
 MOMENTUM AVERAGE STAGE EFFICIENCY = .8076 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.6102
 MASS AVERAGE TEMPERATURE RISE = 1.1802

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

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 10

EQUIVALENT WEIGHT FLOW = 2.9290 LBM/SEC EQUIVALENT SPEED = 69002.413 R.P.M.
PERCENT DESIGN EQUIVALENT FLOW = 79.9694 EQUIVALENT FLOW / INLET ANN AREA = 32.3497 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9920

PERCENT SPAN FROM TIP (L. E.)	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	73.19	1485.64	1422.12	1.351	0.00	429.74	0.00	.391	429.74	415.90	1422.12
10.25	71.92	1420.19	1350.08	1.293	0.00	440.69	0.00	.401	440.69	426.26	1350.08
27.01	68.80	1321.84	1232.39	1.207	0.00	477.99	0.00	.436	477.99	469.20	1232.39
43.10	66.40	1221.49	1119.29	1.116	0.00	489.11	0.00	.447	489.11	487.54	1119.29
60.91	64.45	1101.89	994.17	1.006	0.00	475.16	0.00	.434	475.16	474.99	994.17
84.09	61.76	943.61	831.31	.859	0.00	446.47	0.00	.407	446.47	440.47	831.31
100.00	59.17	837.93	719.55	.762	0.00	423.39	0.00	.391	429.39	414.80	719.55

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9270

PERCENT SPAN FROM TIP (T. F.)	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	60.58	1028.69	896.01	.867	43.03	691.31	471.74	.583	505.34	489.07	1367.75
11.23	59.09	949.28	814.43	.800	45.33	693.72	493.37	.585	487.68	477.02	1307.80
31.02	54.93	938.97	686.63	.711	46.92	705.84	515.54	.598	482.10	479.10	1202.17
49.27	49.16	784.09	593.15	.671	44.93	724.35	511.58	.620	512.80	512.77	1104.73
67.48	41.25	698.30	460.39	.601	46.18	758.33	547.18	.652	525.04	523.49	1007.57
88.08	24.07	620.83	253.19	.538	48.66	858.23	644.39	.744	566.85	557.54	897.58
100.00	13.91	584.67	140.58	.510	50.70	896.02	693.38	.781	567.52	548.23	833.96

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCTION SUR (DEG)	Q FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	12.61	9.349	8.881	.4285	.1903	.0356	3.587	1.672	.7639	.7803
10.25	11.23	12.66	12.84	10.146	8.801	.4578	.2173	.0405	4.069	1.652	.7448	.7622
27.01	31.02	33.02	13.87	9.995	7.834	.4949	.1911	.0365	4.948	1.667	.7899	.8044
43.10	49.27	51.74	17.24	9.737	6.859	.4847	.1204	.0239	7.200	1.674	.8739	.8827
60.91	67.48	70.14	23.21	10.056	6.229	.5011	.1083	.0222	10.645	1.679	.9017	.9086
84.09	88.08	89.57	17.69	10.365	5.355	.5002	.1067	.0228	14.625	1.745	.9288	.9341
100.00	100.00	100.00	45.26	10.421	4.347	.4749	.1316	.0272	20.964	1.745	.9288	.9341

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8484 (POLYTROPIC)
MOMENTUM AVERAGE ROTOR EFFICIENCY = .8370 (ADIABATIC)

MOMENTUM AVG. ROTOR PRESS RATIO = 1.6793
MASS AVERAGE TEMPERATURE RISE = 1.1904

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

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 10
 EQUIVALENT WEIGHT FLOW = 1.3286 KG/SEC EQUIVALENT SPEED = 69002.413 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 79.9694 EQUIVALENT FLOW / INLET ANN AREA = 157.9450 KG/SEC-SQ M

 INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9920

PERCENT SPAN FROM TIP (L. E.)	BETA*1 (DEG)	V*1 (M/SEC)	VU*1 (M/SEC)	M*1	BETA1 (DEG)	V1 (M/SEC)	VU1 (M/SEC)	M1	VM1 (M/SEC)	VZ1 (M/SEC)	U1 (M/SEC)
0.00	73.19	452.82	433.46	1.351	0.00	130.99	0.00	.391	130.99	126.77	433.46
10.25	71.92	432.87	411.51	1.293	0.00	134.32	0.00	.401	134.32	129.93	411.51
27.01	68.80	402.90	375.63	1.207	0.00	145.69	0.00	.436	145.69	143.01	375.63
43.10	66.40	372.31	341.16	1.116	0.00	149.08	0.00	.447	149.08	148.60	341.16
60.91	64.45	335.86	303.02	1.006	0.00	144.83	0.00	.434	144.83	144.78	303.02
84.09	61.76	287.61	253.38	.859	0.00	136.08	0.00	.407	136.08	134.26	253.38
100.00	59.17	255.40	219.32	.762	0.00	130.88	0.00	.391	130.88	126.43	219.32

 EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9270

PERCENT SPAN FROM TIP (T. E.)	BETA*2 (DEG)	V*2 (M/SEC)	VU*2 (M/SEC)	M*2	BETA2 (DEG)	V2 (M/SEC)	VU2 (M/SEC)	M2	VM2 (M/SEC)	VZ2 (M/SEC)	U2 (M/SEC)
0.00	60.58	313.55	273.10	.867	43.03	210.71	143.79	.583	154.03	149.07	416.89
11.23	59.09	289.74	248.24	.800	45.33	211.44	150.38	.585	148.65	145.40	398.62
31.02	54.93	255.72	209.28	.711	46.92	215.14	157.14	.598	146.94	146.03	366.42
49.27	49.16	238.99	180.79	.671	44.93	220.78	155.93	.620	156.30	156.29	336.72
67.48	41.25	212.84	140.33	.601	46.18	231.14	166.78	.652	160.03	159.56	307.11
88.08	24.07	189.23	77.17	.538	48.66	261.59	196.41	.744	172.78	169.94	273.58
100.00	13.91	178.21	42.85	.510	50.70	273.11	211.34	.781	172.98	167.10	254.19

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	SPAN FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	12.61	9.349	8.881	.4285	.1903	.0356	3.587	1.672	.7639	.7803
10.25	11.23	12.66	12.84	10.146	8.801	.4578	.2173	.0405	4.069	1.652	.7448	.7622
27.01	31.02	33.02	13.87	9.995	7.834	.4949	.1911	.0365	4.948	1.667	.7899	.8044
43.10	49.27	51.74	17.24	9.737	6.859	.4847	.1204	.0239	7.200	1.674	.8739	.8827
60.91	67.48	70.14	23.21	10.056	6.229	.5011	.1083	.0222	10.645	1.679	.9017	.9086
84.09	88.08	99.57	37.69	10.365	5.355	.5002	.1067	.0228	14.625	1.745	.9288	.9341
100.00	100.00	100.00	45.26	10.421	4.347	.4749	.1316	.0272	20.964	1.745	.9288	.9341

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8484 (POLYTROPIC) MOMENTUM AVG. ROTOR PRESS RATIO = 1.6793
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8370 (ADIABATIC) MASS AVERAGE TEMPERATURE RISE = 1.1904

ORIGINAL PAGE IS
OF POOR QUALITY

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 10

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9118

PERCENT SPAN FROM TIP (L. E.)	BETA 3 (DEG)	V3 (FT/SEC)	VU3 (FT/SEC)	M3	VH3 (FT/SEC)	VZ3 (FT/SEC)	U3 (FT/SEC)
0.00	38.50	780.23	485.75	.664	610.58	603.87	1328.31
10.90	41.00	770.07	505.19	.654	581.20	580.23	1277.18
29.89	41.33	789.85	521.64	.675	593.08	593.07	1188.10
47.77	39.51	804.48	511.80	.695	620.69	620.23	1104.25
66.18	40.94	826.56	541.63	.717	624.37	622.09	1017.89
87.51	43.88	909.10	630.17	.794	655.25	646.45	917.85
100.00	45.13	949.61	672.98	.834	669.97	651.45	859.25

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9653

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VH4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	-9.72	629.74	-106.32	.528	620.70	613.88	1318.68
10.99	-9.73	618.63	-104.59	.518	609.72	608.71	1274.39
29.62	-8.83	610.36	-93.66	.512	603.13	603.12	1199.31
47.62	-8.34	606.04	-87.90	.513	599.63	599.19	1126.75
66.38	-7.98	600.10	-83.26	.508	594.30	592.13	1051.13
87.78	-6.24	615.12	-66.88	.520	611.47	603.26	964.87
100.00	-4.81	624.70	-52.42	.528	622.50	605.30	915.61

STATOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	PERCENT SPAN FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	48.22	2.186	-1.737	.4681	.0802	.0285	11.209	1.638	1.2067	.8043
10.90	10.99	12.66	50.73	4.832	1.472	.4717	.0459	.0157	6.940	1.633	1.2067	.8898
29.89	29.62	33.02	50.16	4.752	1.436	.4813	.0580	.0189	4.758	1.641	1.1985	.8781
47.77	47.62	51.74	47.85	1.824	-1.177	.4719	.0491	.0149	3.906	1.651	1.1811	.9048
66.18	66.38	70.14	48.92	1.550	-1.342	.4860	.0525	.0149	3.570	1.653	1.1766	.9077
87.51	87.78	89.57	50.12	1.669	-1.249	.5183	.1281	.0337	5.334	1.669	1.1853	.8075
100.00	100.00	100.00	49.94	.497	-2.944	.5248	.1189	.0300	13.782	1.669	1.1853	.8325

MOMENTUM AVERAGE STAGE EFFICIENCY = .8191 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .8060 (ADIABATIC)MOMENTUM AVG. STAGE PRESS RATIO = 1.6494
MASS AVERAGE TEMPERATURE RISE = 1.1904

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 10

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9118

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)
0.00	38.50	237.81	148.06	.664	186.10	184.06	404.87
10.90	41.00	234.72	153.98	.654	177.15	176.86	389.29
29.89	41.33	240.75	159.00	.675	180.77	180.77	362.13
47.77	39.51	245.21	156.00	.695	189.19	189.05	336.58
66.18	40.94	251.94	165.09	.717	190.31	189.61	310.25
87.51	43.98	277.09	192.07	.794	199.72	197.04	279.76
100.00	45.13	289.44	205.12	.834	204.21	198.56	261.90

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9653

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VM4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	-9.72	191.95	-32.41	.528	189.19	187.11	401.93
10.99	-9.73	188.56	-31.88	.518	185.84	185.54	388.43
29.62	-8.83	186.04	-28.55	.512	183.83	183.83	365.55
47.62	-8.34	184.72	-26.79	.513	182.77	182.63	343.43
66.38	-7.98	182.91	-25.38	.508	181.14	180.48	320.39
87.78	-6.24	187.49	-20.39	.520	186.38	183.87	294.09
100.00	-4.91	190.41	-15.98	.528	189.74	184.49	279.88

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING TRAILING EDGE EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00 0.00	0.00	48.22	2.186	-1.737	.4681	.0802	.0285	11.209	1.638	1.2067	.8043
10.90 10.99	12.66	50.73	4.832	1.472	.4717	.0459	.0157	6.940	1.633	1.2057	.8898
29.89 29.62	33.02	50.16	4.752	1.436	.4813	.0580	.0199	4.758	1.641	1.1985	.8781
47.77 47.62	51.74	47.85	1.824	-1.177	.4719	.0491	.0149	3.906	1.651	1.1811	.9048
66.18 66.38	70.14	48.92	1.550	-1.342	.4860	.0525	.0149	3.570	1.653	1.1765	.9077
87.51 87.78	89.57	50.12	1.669	-1.249	.5183	.1281	.0337	5.334	1.669	1.1853	.8075
100.00 100.00	100.00	49.94	.497	-2.944	.5248	.1189	.0300	13.782	1.669	1.1853	.8325

MOMENTUM AVERAGE STAGE EFFICIENCY = .8191 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .8060 (ADIABATIC)MOMENTUM AVG. STAGE PRESS RATIO = 1.6494
MASS AVERAGE TEMPERATURE RISE = 1.1904

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

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 11
 EQUIVALENT WEIGHT FLOW = 2.9138 LBM/SEC EQUIVALENT SPEED = 68960.886 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 79.5563 EQUIVALENT FLOW / INLET ANN AREA = 32.1826 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA CALCULATED AERODYNAMIC BLOCKAGE = .9950

PERCENT SPAN FROM TIP (L. E.)	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	73.27	1484.08	1421.27	1.350	0.00	427.20	0.00	.389	427.20	413.44	1421.27
10.24	72.01	1418.72	1349.40	1.291	0.00	438.06	0.00	.399	438.06	423.72	1349.40
26.94	68.92	1320.48	1232.09	1.205	0.00	475.02	0.00	.434	475.02	466.29	1232.09
42.99	66.53	1220.36	1119.39	1.115	0.00	486.05	0.00	.444	486.05	484.48	1119.39
60.79	64.60	1100.83	994.42	1.005	0.00	472.19	0.00	.431	472.19	472.03	994.42
84.03	61.91	942.23	831.23	.858	0.00	443.68	0.00	.404	443.68	437.72	831.23
100.00	59.31	836.20	719.12	.760	0.00	426.73	0.00	.388	426.73	412.23	719.12

EXIT VELOCITY DIAGRAM DATA CALCULATED AERODYNAMIC BLOCKAGE = .9328

PERCENT SPAN FROM TIP (T. E.)	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	61.18	1015.50	889.76	.854	44.27	683.57	477.17	.575	489.46	473.70	1366.93
11.34	59.28	938.97	807.18	.791	46.14	692.38	499.26	.583	479.71	469.22	1306.44
31.14	55.35	825.95	679.44	.699	47.99	701.70	521.36	.594	469.65	466.72	1200.79
49.49	49.13	778.63	588.76	.666	45.26	723.88	514.18	.619	509.54	509.51	1102.94
67.54	41.26	693.65	457.49	.597	46.48	757.22	549.12	.651	521.39	519.86	1006.61
88.09	24.14	616.37	252.06	.534	48.91	855.76	644.94	.742	562.48	553.24	897.00
100.00	13.92	580.17	139.58	.506	50.94	893.63	693.87	.779	563.12	543.99	833.46

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	Q FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	12.09	9.434	8.966	.4382	.1994	.0366	4.194	1.671	.7545	.7716
10.24	11.34	12.64	12.74	10.234	8.891	.4659	.2212	.0410	4.283	1.658	.7425	.7601
26.94	31.14	32.95	13.57	10.100	7.943	.5056	.1992	.0377	5.413	1.667	.7824	.7975
42.99	49.49	51.63	17.40	9.856	6.984	.4892	.1195	.0238	7.270	1.678	.8752	.8839
60.79	67.54	70.03	23.33	10.188	6.365	.5053	.1074	.0221	10.715	1.682	.9029	.9097
84.03	88.09	89.53	37.77	10.505	5.496	.5043	.1058	.0226	14.706	1.746	.9295	.9348
100.00	100.00	100.00	45.39	10.562	4.488	.4793	.1305	.0270	20.973	1.746	.9295	.9348

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8466 (POLYTROPIC) MOMENTUM AVG. ROTOR PRESS RATIO = 1.6819
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8350 (ADIABATIC) MASS AVERAGE TEMPERATURE RISE = 1.1915

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

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 11
 EQUIVALENT W/FIGHT FLOW = 1.3217 KG/SEC EQUIVALENT SPEED = 68960.886 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 79.5563 EQUIVALENT FLOW / INLET ANN AREA = 157.1292 KG/SEC-SQ M

 INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9950

PERCENT SPAN FROM TIP (L. E.)	BETA*1 (DEG)	V*1 (M/SEC)	VU*1 (M/SEC)	M*1	BETA1 (DEG)	V1 (M/SEC)	VU1 (M/SEC)	M1	VM1 (M/SEC)	VZ1 (M/SEC)	U1 (M/SEC)
0.00	73.27	452.35	433.20	1.350	0.00	139.21	0.00	.389	130.21	126.02	433.20
10.24	72.01	432.43	411.30	1.291	0.00	133.52	0.00	.399	133.52	129.15	411.30
26.94	68.92	402.48	375.54	1.205	0.00	144.79	0.00	.434	144.79	142.13	375.54
42.99	66.53	371.97	341.19	1.115	0.00	148.15	0.00	.444	148.15	147.67	341.19
60.79	64.60	335.53	303.10	1.005	0.00	143.92	0.00	.431	143.92	143.88	303.10
84.03	61.91	287.19	253.36	.858	0.00	135.23	0.00	.404	135.23	133.42	253.36
100.00	59.31	254.87	219.19	.760	0.00	130.07	0.00	.388	130.07	125.65	219.19

 EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9328

PERCENT SPAN FROM TIP (T. E.)	BETA*2 (DEG)	V*2 (M/SEC)	VU*2 (M/SEC)	M*2	BETA2 (DEG)	V2 (M/SEC)	VU2 (M/SEC)	M2	VM2 (M/SEC)	VZ2 (M/SEC)	U2 (M/SEC)
0.00	61.18	309.52	271.20	.854	44.27	208.35	145.44	.575	149.19	144.38	416.64
11.34	59.28	286.20	246.03	.791	46.14	211.64	152.18	.583	146.21	143.02	398.20
31.14	55.35	251.75	207.09	.699	47.99	213.88	158.91	.594	143.15	142.26	366.00
49.49	49.13	237.33	179.45	.666	45.26	220.64	156.72	.619	155.31	155.30	336.18
67.54	41.26	211.42	139.44	.597	46.48	230.80	167.37	.651	158.92	158.45	306.81
88.09	24.14	197.87	76.83	.534	48.91	266.84	196.58	.742	171.44	168.63	273.41
100.00	13.92	176.83	42.54	.506	50.94	272.38	211.49	.779	171.64	165.81	254.04

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	PERCENT SPAN FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUGT SUR (DEG)	Q FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	12.09	9.434	8.966	.4382	.1994	.0366	4.194	1.671	.7545	.7716
10.24	11.34	12.64	12.74	10.234	8.891	.4659	.2212	.0410	4.283	1.658	.7425	.7601
26.94	31.14	32.95	13.57	10.100	7.943	.5056	.1992	.0377	5.413	1.667	.7824	.7975
42.99	49.49	51.63	17.40	9.856	6.984	.4892	.1195	.0238	7.270	1.678	.8752	.8839
60.79	67.54	70.03	23.33	10.188	6.365	.5053	.1074	.0221	10.715	1.682	.9028	.9097
84.03	88.09	89.53	37.77	10.505	5.496	.5043	.1058	.0226	14.706	1.746	.9295	.9348
100.00	100.00	100.00	45.39	10.562	4.488	.4793	.1305	.0270	20.973	1.746	.9295	.9348

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8466 (POLYTROPIC) MOMENTUM AVG. ROTOR PRESS RATIO = 1.6819
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8350 (ADIABATIC) MASS AVERAGE TEMPERATURE RISE = 1.1915

NASA SMALL AXIAL COMPRESSOR TEST 3 DECEMBER, 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 = .9151

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	39.50	772.47	491.34	.656	596.07	589.52	1327.51
10.97	41.71	768.22	511.13	.652	573.51	572.56	1276.11
29.95	42.22	784.79	527.37	.670	581.19	581.18	1187.10
47.88	39.84	802.43	514.11	.692	616.10	615.65	1103.07
66.19	41.25	824.10	543.40	.714	619.57	617.30	1017.21
87.51	44.14	905.60	630.69	.790	649.88	641.15	917.27
100.00	45.39	946.14	673.50	.831	664.51	646.15	858.73

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9690

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	-10.09	622.09	-108.99	.520	612.47	605.74	1317.88
10.97	-10.10	612.13	-107.39	.512	602.63	601.63	1273.72
29.54	-9.20	601.52	-96.18	.504	593.78	593.78	1198.87
47.55	-8.70	597.29	-90.39	.505	590.41	589.98	1126.32
66.33	-8.34	593.19	-85.99	.502	586.92	584.78	1050.71
87.75	-6.52	608.11	-69.09	.513	604.17	596.06	964.39
100.00	-5.01	617.64	-53.92	.522	615.28	598.28	915.06

STATOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.03	49.59	3.181	-7.42	.4766	.0699	.0248	10.839	1.642	1.2090	.8303
10.97	10.97	12.64	51.81	5.541	2.184	.4829	.0484	.0166	6.578	1.638	1.2090	.8869
29.95	29.54	32.95	51.42	5.636	2.322	.4926	.0545	.0177	4.392	1.644	1.2006	.8881
47.88	47.55	51.63	48.55	2.151	-8.49	.4832	.0529	.0160	3.546	1.653	1.1817	.9003
66.19	66.33	70.03	49.59	1.860	-1.032	.4944	.0510	.0145	3.211	1.657	1.1771	.9118
87.51	87.75	89.53	50.67	1.928	-.991	.5250	.1245	.0327	5.052	1.673	1.1853	.8151
100.00	100.00	100.00	50.39	.753	-2.608	.5311	.1155	.0291	13.588	1.672	1.1853	.8389

MOMENTUM AVERAGE STAGE EFFICIENCY = .8181 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .8049 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.6528
MASS AVERAGE TEMPERATURE RISE = 1.1915

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 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 = .9151

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	39.50	235.45	149.76	.656	181.68	179.69	404.63
10.97	41.71	234.15	155.79	.652	174.81	174.52	388.96
29.95	42.22	239.21	160.74	.670	177.15	177.14	361.83
47.88	39.84	244.58	156.70	.692	187.79	187.65	336.22
66.19	41.25	251.19	165.63	.714	188.84	188.15	310.05
87.51	44.14	276.03	192.23	.790	198.08	195.42	279.58
100.00	45.39	288.38	205.28	.831	202.54	196.95	261.74

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9690

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VM4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	-10.09	189.61	-33.22	.520	186.68	184.63	401.69
10.97	-10.10	186.58	-32.73	.512	183.68	183.38	388.23
29.54	-9.20	183.34	-29.32	.504	180.99	180.98	365.42
47.55	-8.70	182.05	-27.55	.505	179.96	179.83	343.30
66.33	-8.34	180.80	-26.21	.502	178.89	178.24	320.26
87.75	-6.52	185.35	-21.06	.513	184.15	181.68	293.95
100.00	-5.01	188.26	-16.43	.522	187.54	182.36	278.91

STATOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.90	49.59	3.181	-1.742	.4766	.0699	.0248	10.839	1.642	1.2090	.8303
10.97	10.97	12.64	51.81	5.541	2.184	.4828	.0484	.0166	6.578	1.638	1.2090	.8869
29.95	29.54	32.95	51.42	5.636	2.322	.4926	.0545	.0177	4.392	1.644	1.2006	.8881
47.88	47.55	51.63	48.55	2.151	-1.849	.4832	.0529	.0160	3.546	1.653	1.1817	.9003
66.19	66.33	70.03	49.59	1.860	-1.032	.4944	.0510	.0145	3.211	1.657	1.1771	.9118
87.51	87.75	89.53	50.67	1.928	-1.991	.5250	.1245	.0327	5.052	1.673	1.1853	.8151
100.00	100.00	100.00	50.39	.753	-2.688	.5311	.1155	.0291	13.588	1.672	1.1853	.8389

MOMENTUM AVERAGE STAGE EFFICIENCY = .8181 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .8049 (ADIABATIC)MOMENTUM AVG. STAGE PRESS RATIO = 1.6528
MASS AVERAGE TEMPERATURE RISE = 1.1915

NASA SMALL AXIAL COMPRESSOR TFST 5 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 7
 EQUIVALENT WEIGHT FLOW = 3.1033 LBH/SEC EQUIVALENT SPEED = 69066.823 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = .847281 EQUIVALENT FLOW / INLET ANN AREA = 34.2747 LBH/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9964

PERCENT SPAN FROM TIP (L. E.)	BETA*1 (DEG)	V*1 (FT/SEC)	VU*1 (FT/SEC)	M*1	BETA1 (DEG)	V1 (FT/SEC)	VU1 (FT/SEC)	H1	VM1 (FT/SEC)	VZ1 (FT/SEC)	U1 (FT/SEC)
0.00	72.05	1496.29	1423.45	1.364	0.00	461.17	0.00	.420	461.17	446.32	1423.45
10.07	70.73	1432.09	1352.63	1.308	0.00	472.79	0.00	.431	472.79	457.31	1352.63
26.82	67.44	1337.17	1234.82	1.224	0.00	513.07	0.00	.470	513.07	503.65	1234.82
43.20	64.87	1236.72	1119.67	1.133	0.00	525.18	0.00	.481	525.18	523.49	1119.67
61.15	62.84	1116.60	993.45	1.022	0.00	509.76	0.00	.467	509.76	509.59	993.45
84.26	60.07	959.75	830.90	.875	0.00	478.33	0.00	.437	478.33	471.91	830.90
100.00	57.46	854.33	720.22	.779	0.00	459.51	0.00	.419	459.51	443.90	720.22

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9151

PERCENT SPAN FROM TIP (T. E.)	BETA*2 (DEG)	V*2 (FT/SEC)	VU*2 (FT/SEC)	M*2	BETA2 (DEG)	V2 (FT/SEC)	VU2 (FT/SEC)	H2	VM2 (FT/SEC)	VZ2 (FT/SEC)	U2 (FT/SEC)
0.00	60.61	1078.69	939.90	.916	39.03	681.41	429.13	.579	529.31	512.26	1369.03
11.31	57.67	1017.40	859.69	.866	39.53	705.40	448.94	.600	544.10	532.21	1308.62
30.51	54.16	917.11	743.48	.784	40.74	708.73	462.56	.606	536.96	533.61	1206.04
48.88	48.37	841.49	628.98	.724	40.59	736.07	478.88	.634	559.00	558.97	1107.86
67.59	41.81	738.53	492.33	.638	43.12	754.21	515.57	.652	550.48	548.86	1007.90
88.56	23.89	690.35	279.63	.603	44.31	882.11	616.22	.771	631.18	620.81	895.85
100.00	15.32	655.22	173.13	.575	46.31	914.91	661.61	.803	631.93	610.46	834.74

ROTOR PERFORMANCE DATA

PERCENT LEADING EDGE	SPAN FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	11.44	8.212	7.744	.3883	.1831	.0342	3.623	1.591	.7525	.7661
10.07	11.31	12.45	13.06	8.919	7.586	.4038	.1888	.0366	2.669	1.597	.7587	.7740
26.82	30.51	32.82	13.27	8.600	6.451	.4294	.1509	.0294	4.000	1.613	.8179	.8297
43.20	48.88	51.83	16.50	8.226	5.343	.4369	.1000	.0202	6.233	1.637	.8883	.8958
61.15	67.59	70.32	21.03	8.462	4.627	.4638	.1092	.0222	11.296	1.626	.8936	.9006
84.26	88.56	89.64	36.18	8.695	3.680	.4282	.0479	.0102	15.133	1.739	.9661	.9686
100.00	100.00	100.00	42.14	8.709	2.635	.3947	.0597	.0123	22.373	1.739	.9661	.9686

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8619 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8520 (ADIABATIC)

MOMENTUM AVG. ROTOR PRESS RATIO = 1.6344
 MASS AVERAGE TEMPERATURE RISE = 1.1765

NASA SMALL AXIAL COMPRESSOR TEST 5 DUCAMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 7
 EQUIVALENT WEIGHT FLOW = 1.4076 KG/SEC EQUIVALENT SPEED = 69066.823 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 84.7281 EQUIVALENT FLOW / INLET ANN AREA = 167.3437 KG/SEC-SQ M

 INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9964

PERCENT SPAN FROM TIP (L. E.)	BETA*1 (DEG)	V*1 (M/SEC)	VU*1 (M/SEC)	M*1	BETA1 (DEG)	V1 (M/SEC)	VU1 (M/SEC)	M1	VN1 (M/SEC)	VZ1 (M/SEC)	U1 (M/SEC)
0.00	72.05	456.07	433.87	1.364	0.00	140.56	0.00	.420	140.56	136.04	433.87
10.07	70.73	436.74	412.28	1.308	0.00	144.10	0.00	.431	144.10	139.39	412.28
26.82	67.44	407.57	376.37	1.224	0.00	156.38	0.00	.470	156.38	153.51	376.37
43.20	64.87	376.95	341.20	1.133	0.00	160.07	0.00	.481	160.07	159.56	341.28
61.15	62.84	340.34	302.80	1.022	0.00	155.37	0.00	.467	155.37	155.32	302.80
84.26	60.07	292.23	253.26	.875	0.00	145.80	0.00	.437	145.80	143.84	253.26
100.00	57.46	260.40	219.52	.779	0.00	140.06	0.00	.419	140.06	135.30	219.52

 EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9151

PERCENT SPAN FROM TIP (T. E.)	BETA*2 (DEG)	V*2 (M/SEC)	VU*2 (M/SEC)	M*2	BETA2 (DEG)	V2 (M/SEC)	VU2 (M/SEC)	M2	VN2 (M/SEC)	VZ2 (M/SEC)	U2 (M/SEC)
0.00	60.61	328.79	286.48	.916	39.03	207.69	130.80	.579	161.33	156.14	417.28
11.31	57.67	310.10	262.03	.866	39.53	215.01	136.84	.600	165.84	162.22	398.87
30.51	54.16	279.53	226.61	.784	40.74	216.02	140.99	.606	163.67	162.65	367.60
48.88	48.37	256.49	191.71	.724	40.59	224.36	145.96	.634	170.38	170.37	337.68
67.59	41.81	225.10	150.06	.638	43.12	229.88	157.14	.652	167.79	167.29	307.21
88.56	23.89	210.42	85.23	.603	44.31	268.87	187.82	.771	192.38	189.22	273.05
100.00	15.32	199.71	52.77	.575	46.31	278.86	201.66	.803	192.61	186.07	254.43

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	PERCENT SPAN FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	η FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	11.44	8.212	7.744	.3883	.1831	.0342	3.623	1.591	.7525	.7681
10.07	11.31	12.45	13.06	8.919	7.586	.4038	.1888	.0366	2.669	1.597	.7587	.7740
26.82	30.51	32.82	13.27	8.600	6.451	.4294	.1509	.0294	4.000	1.613	.8179	.8297
43.20	48.88	51.83	16.50	8.226	5.343	.4369	.1000	.0202	6.233	1.637	.8883	.8958
61.15	67.59	70.32	21.03	8.462	4.627	.4638	.1092	.0222	11.296	1.626	.8936	.9006
84.26	88.56	89.64	36.18	8.695	3.680	.4282	.0479	.0102	15.133	1.739	.9661	.9686
100.00	100.00	100.00	42.14	8.709	2.635	.3947	.0597	.0123	22.373	1.739	.9661	.9686

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8619 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8520 (ADIABATIC)

MOMENTUM AVG. ROTOR PRESS RATIO = 1.6344
 MASS AVERAGE TEMPERATURE RISE = 1.1765

ORIGINAL PAGE IS
OF POOR QUALITY

STATOP PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 7

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9027

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	33.80	794.39	441.87	.683	660.16	652.90	1329.55
10.84	35.01	800.83	459.46	.689	655.92	654.83	1278.66
29.38	35.16	812.97	469.16	.703	664.64	664.63	1191.62
47.42	35.01	835.36	479.28	.728	684.18	683.68	1106.92
66.23	37.30	841.86	510.15	.735	669.68	667.23	1018.60
87.70	39.47	946.51	601.72	.834	730.62	720.81	917.43
100.00	40.77	983.16	642.02	.871	744.59	724.01	860.05

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9633

PERCENT SPAN FROM TIP (T. P.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	-9.17	694.60	-110.70	.591	685.73	678.20	1319.91
10.96	-9.18	698.91	-111.55	.594	689.95	688.81	1275.69
29.42	-8.29	694.04	-100.04	.593	686.79	686.78	1201.20
47.50	-7.78	691.85	-93.69	.593	685.48	684.97	1128.28
66.27	-7.50	675.39	-88.20	.579	669.60	667.15	1052.53
87.74	-6.06	691.35	-72.96	.591	687.49	678.26	965.91
100.00	-4.79	701.32	-58.57	.600	698.87	679.56	916.46

STATOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TPAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	42.97	-2.522	-6.444	.3779	.0778	.0277	11.759	1.558	1.1882	.7226
10.84	10.96	12.45	44.19	-1.154	-4.517	.3749	.0627	.0215	7.499	1.570	1.1882	.7801
29.38	29.42	32.82	43.45	-1.395	-4.726	.3747	.0618	.0201	5.322	1.585	1.1787	.8106
47.42	47.50	51.83	42.80	-2.642	-5.648	.3794	.0792	.0241	4.469	1.599	1.1700	.7922
66.23	66.27	70.32	44.80	-2.097	-4.989	.3971	.0714	.0203	4.045	1.591	1.1665	.8353
87.78	87.74	89.64	45.53	-2.800	-5.706	.4507	.2015	.0530	5.518	1.610	1.1769	.6518
100.00	100.00	100.00	45.56	-3.862	-7.304	.4572	.1891	.0477	13.805	1.611	1.1769	.6954

MOMENTUM AVERAGE STAGE EFFICIENCY = .8132 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .8007 (ADIABATIC)MOMENTUM AVG. STAGE PRESS RATIO = 1.5897
MASS AVERAGE TEMPERATURE RISE = 1.1765

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 7

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9027

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)
0.00	33.80	242.13	134.68	.683	201.22	199.01	405.25
10.84	35.01	244.09	140.04	.689	199.93	199.59	389.74
29.38	35.16	247.79	142.70	.703	202.58	202.58	363.21
47.42	35.31	254.62	146.09	.728	208.54	208.39	337.39
66.23	37.30	256.60	155.49	.735	204.12	203.37	310.47
87.78	39.47	288.50	183.41	.834	222.69	219.70	279.63
100.00	40.77	299.67	195.69	.871	226.95	220.68	262.14

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9633

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VM4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	-9.17	211.72	-33.74	.591	209.01	206.71	402.31
10.96	-9.18	213.03	-34.00	.594	210.30	209.95	388.83
29.42	-8.29	211.54	-30.49	.593	209.33	209.33	366.13
47.50	-7.78	210.88	-28.56	.593	208.93	208.78	343.90
66.27	-7.50	205.86	-26.88	.579	204.09	203.35	320.81
87.74	-6.06	210.72	-22.24	.591	209.55	206.73	294.41
100.00	-4.79	213.76	-17.85	.600	213.02	207.13	279.34

STATOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCTION SUR (DEG)	0 FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	42.97	-2.522	-6.444	.3779	.0778	.0277	11.759	1.558	1.1882	.7226
10.84	10.96	12.45	44.19	-1.154	-4.517	.3749	.0627	.0215	7.499	1.570	1.1882	.7801
29.38	29.42	32.82	43.45	-1.395	-4.726	.3747	.0618	.0201	5.322	1.585	1.1787	.8106
47.42	47.50	51.83	42.80	-2.642	-5.648	.3794	.0792	.0241	4.469	1.599	1.1700	.7922
66.23	66.27	70.32	44.80	-2.097	-4.989	.3971	.0714	.0203	4.045	1.591	1.1665	.8353
87.78	87.74	89.64	45.53	-2.800	-5.706	.4507	.2015	.0530	5.518	1.610	1.1769	.6518
100.00	100.00	100.00	45.56	-3.862	-7.304	.4572	.1891	.0477	13.805	1.611	1.1769	.6954

MOMENTUM AVERAGE STAGE EFFICIENCY = .8132 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .8007 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.5897
MASS AVERAGE TEMPERATURE RISE = 1.1765

NASA SMALL AXIAL COMPRESSOR TEST 6 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 1
 EQUIVALENT WEIGHT FLOW = 2.4153 LBM/SEC EQUIVALENT SPEED = 53681.033 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 65.9447 EQUIVALENT FLOW / INLET ANN AREA = 26.6763 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9901

PERCENT SPAN FROM TIP (L. E.)	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	72.65	1159.11	1106.35	1.049	0.00	345.61	0.00	.313	345.60	334.47	1106.35
9.21	71.50	1113.59	1056.00	1.008	0.00	353.39	0.00	.320	353.38	341.81	1056.00
24.81	68.56	1042.96	970.77	.946	0.00	381.21	0.00	.346	381.20	374.19	970.77
40.27	66.26	966.17	886.24	.878	0.00	389.72	0.00	.354	389.70	388.45	886.24
58.22	64.32	874.52	788.14	.793	0.00	378.93	0.00	.344	378.91	378.78	788.14
82.84	61.41	744.36	653.56	.674	0.00	356.23	0.00	.322	356.22	351.44	653.56
100.00	58.49	656.59	559.78	.594	0.00	343.13	0.00	.310	343.12	331.46	559.78

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8812

PERCENT SPAN FROM TIP (T. E.)	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	60.72	872.76	761.21	.760	35.35	523.41	302.84	.456	426.88	413.14	1064.05
11.10	56.70	839.26	701.40	.733	34.49	559.08	316.56	.488	460.81	450.74	1017.96
29.57	54.45	785.27	638.86	.689	33.52	547.68	302.41	.480	456.59	453.75	941.27
47.86	48.41	711.64	532.25	.626	35.19	577.98	333.06	.508	472.35	472.32	865.32
66.78	39.21	666.50	421.32	.589	35.28	632.63	365.40	.559	516.41	514.89	786.72
87.88	24.34	613.85	252.95	.545	38.58	715.46	446.16	.635	559.29	550.10	699.11
100.00	16.67	584.68	167.70	.521	40.66	738.36	481.69	.657	560.09	541.06	648.78

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	11.94	9.815	8.347	.3460	.1989	.0370	3.726	1.264	.6702	.6809
9.21	11.10	11.42	14.80	9.505	8.225	.3497	.1859	.0370	1.649	1.281	.7099	.7198
24.81	29.57	30.55	14.11	9.384	7.362	.3441	.1172	.0227	3.971	1.286	.8165	.8229
40.27	47.86	48.84	17.85	9.223	6.499	.3698	.0962	.0194	5.773	1.310	.8677	.8726
58.22	66.78	67.75	25.11	9.611	5.908	.3520	.0379	.0080	8.077	1.344	.9563	.9581
82.84	87.88	88.67	37.07	9.866	4.890	.3145	.0036	.0008	14.614	1.395	.9971	.9973
100.00	100.00	100.00	41.83	9.742	3.667	.2624	.0057	.0012	23.720	1.396	.9971	.9972

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8590 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8534 (ADIABATIC)
 MOMENTUM AVG. ROTOR PRESS RATIO = 1.3180
 MASS AVERAGE TEMPERATURE RISE = 1.0960

NASA SMALL AXIAL COMPRESSOR TEST 6 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 1
 EQUIVALENT FIGHT FLOW = 1.0956 KG/SEC EQUIVALENT SPEED = 53681.033 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 65.9447 EQUIVALENT FLOW / INLET ANN AREA = 130.2452 KG/SEC-SQ M

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9901

PERCENT SPAN FROM TIP (L. E.)	BETA*1 (DEG)	V*1 (M/SEC)	VU*1 (M/SEC)	M*1	BETA1 (DEG)	V1 (M/SEC)	VU1 (M/SEC)	M1	VM1 (M/SEC)	VZ1 (M/SEC)	U1 (M/SEC)
0.00	72.65	353.30	337.22	1.049	0.00	105.34	0.00	.313	105.34	101.95	337.22
9.21	71.50	339.42	321.87	1.008	0.00	107.71	0.00	.320	107.71	104.18	321.87
24.81	68.56	317.90	295.89	.946	0.00	116.19	0.00	.346	116.19	114.05	295.89
40.27	66.26	295.10	270.13	.878	0.00	118.79	0.00	.354	118.78	118.40	270.13
58.22	64.32	266.55	240.23	.793	0.00	115.50	0.00	.344	115.49	115.45	240.23
82.84	61.41	226.88	199.20	.674	0.00	109.58	0.00	.322	108.58	107.12	199.20
100.00	58.49	200.13	170.62	.594	0.00	104.58	0.00	.310	104.58	101.03	170.62

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8812

PERCENT SPAN FROM TIP (T. F.)	BETA*2 (DEG)	V*2 (M/SEC)	VU*2 (M/SEC)	M*2	BETA2 (DEG)	V2 (M/SEC)	VU2 (M/SEC)	M2	VM2 (M/SEC)	VZ2 (M/SEC)	U2 (M/SEC)
0.00	60.72	266.02	232.02	.760	35.35	159.54	92.31	.456	130.11	125.92	324.32
11.10	56.70	255.81	213.79	.733	34.49	170.41	96.49	.488	140.46	137.39	310.27
29.57	54.45	239.35	194.72	.689	33.52	166.93	92.18	.480	139.17	138.30	286.90
47.86	48.41	216.91	162.23	.626	35.19	176.17	101.52	.508	143.97	143.96	263.75
66.78	39.21	203.15	128.42	.589	35.28	192.82	111.37	.559	157.40	156.94	239.79
87.88	24.34	187.10	77.10	.545	38.58	218.07	135.99	.635	170.47	167.67	213.09
100.00	16.67	178.21	51.11	.521	40.66	225.05	146.64	.657	170.72	164.91	197.75

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	PERCENT SPAN FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	11.94	8.815	8.347	.3466	.1989	.0370	3.726	1.264	.6702	.6809
9.21	11.10	11.42	14.80	9.505	8.225	.3497	.1859	.0370	1.649	1.281	.7099	.7198
24.81	29.57	30.55	14.11	9.384	7.362	.3441	.1172	.0227	3.971	1.286	.8165	.8229
40.27	47.86	48.84	17.85	9.223	6.499	.3698	.0962	.0194	5.773	1.310	.8677	.8726
58.22	66.78	67.75	25.11	9.611	5.908	.3520	.0379	.0080	8.077	1.344	.9563	.9581
82.84	87.88	88.67	37.07	9.866	4.890	.3145	.0036	.0008	14.614	1.395	.9971	.9973
100.00	100.00	100.05	41.83	9.742	3.667	.2624	.0057	.0012	23.720	1.396	.9971	.9972

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8590 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8534 (ADIABATIC)

MOMENTUM AVG. ROTOR PRESS RATIO = 1.3180
 MASS AVERAGE TEMPERATURE RISE = 1.0960

NASA SMALL AXIAL COMPRESSOR TEST 6 DECEMBER, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 1

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8962

PERCENT SPAN FROM TIP (L. C.)	BETA 3 (DEG)	V3 (FT/SEC)	VU3 (FT/SEC)	M3	VM3 (FT/SEC)	VZ3 (FT/SEC)	U3 (FT/SEC)
0.00	31.51	596.60	311.84	.523	508.59	503.01	1033.37
10.57	31.70	616.49	323.93	.541	524.50	523.63	994.79
28.43	29.75	617.01	306.20	.545	535.65	535.64	929.62
46.23	31.07	645.87	333.32	.572	553.20	552.79	864.66
65.23	31.67	688.39	361.44	.612	585.84	583.70	795.34
87.12	35.15	757.25	435.97	.676	619.14	610.82	715.45
100.00	36.38	787.19	466.86	.705	633.78	616.27	668.46

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9646

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	-19.70	539.94	-173.11	.471	511.42	511.42	1025.88
11.20	-18.60	561.04	-178.95	.490	531.72	531.66	990.76
29.96	-15.57	572.91	-153.73	.504	551.88	551.64	931.94
48.21	-14.37	598.26	-148.50	.527	579.51	578.92	874.71
67.15	-10.95	637.76	-121.16	.564	626.13	625.78	815.31
88.10	-5.49	667.77	-63.85	.590	664.69	662.26	749.63
100.00	-5.35	672.47	-62.71	.594	669.52	669.52	712.30

STATOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	50.21	-4.804	-8.727	.3894	.0590	.0201	3.480	1.252	1.1032	.7078
10.57	11.20	11.42	50.30	-4.459	-7.834	.3733	.0688	.0226	-2.015	1.266	1.1032	.6430
28.43	29.96	30.55	45.32	-6.757	-10.113	.3159	.0557	.0176	-2.349	1.273	1.0912	.6418
46.23	48.21	48.84	45.44	-6.484	-9.509	.3007	.0766	.0228	-2.359	1.290	1.0923	.5251
65.23	67.15	67.75	42.62	-7.597	-10.515	.2714	.0765	.0216	.153	1.321	1.0921	.5330
87.12	88.10	88.67	40.64	-6.978	-9.913	.2865	.1379	.0363	6.044	1.345	1.0999	.4742
100.00	100.00	100.00	41.73	-8.255	-11.696	.3071	.1287	.0324	13.349	1.345	1.1000	.6012

MOMENTUM AVERAGE STAGE EFFICIENCY = .8201 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .8133 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.3017
MASS AVERAGE TEMPERATURE RISE = 1.0960

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 1

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8962

PERCENT SPAN FROM TIP (L. E.)	BETA 3 (DEG)	V3 (M/SEC)	VU3 (M/SEC)	H3	VM3 (M/SEC)	VZ3 (M/SEC)	U3 (M/SEC)
0.00	31.51	181.84	95.05	.523	155.02	153.32	314.97
10.57	31.70	187.90	98.73	.541	159.87	159.60	303.21
28.43	29.75	188.07	93.33	.545	163.27	163.26	283.35
46.23	31.07	196.86	101.59	.572	168.62	168.49	263.55
65.23	31.67	209.82	110.17	.612	178.57	177.91	242.42
87.12	35.15	230.81	132.88	.676	188.71	186.18	218.07
100.00	36.38	239.94	142.30	.705	193.18	187.84	203.75

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9646

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	H4	VM4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	-18.70	164.57	-52.76	.471	155.88	155.88	312.69
11.20	-18.60	171.01	-54.55	.490	162.07	162.05	301.98
29.96	-15.57	174.62	-46.86	.504	168.21	168.14	284.06
48.21	-14.37	182.35	-45.26	.527	176.64	176.45	266.61
67.15	-10.95	194.39	-36.93	.564	190.84	190.74	248.51
88.10	-5.49	203.54	-19.46	.598	202.60	201.86	228.49
100.00	-5.35	204.97	-19.12	.594	204.07	204.07	217.11

STATOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCTION SUR (DEG)	D FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	50.21	-4.804	-8.727	.3894	.0590	.0201	3.480	1.252	1.1032	.7078
10.57	11.20	11.42	50.30	-4.459	-7.834	.3733	.0688	.0226	-2.015	1.266	1.1032	.6430
28.43	29.96	30.55	45.32	-6.757	-10.113	.3159	.0557	.0176	-2.349	1.273	1.0912	.6418
46.23	48.21	48.84	45.44	-6.484	-9.509	.3007	.0766	.0228	-2.359	1.290	1.0923	.5251
65.23	67.15	67.75	42.62	-7.597	-10.515	.2714	.0765	.0216	.153	1.321	1.0921	.5330
87.12	88.10	88.67	40.64	-6.978	-9.913	.2865	.1379	.0363	6.044	1.345	1.0999	.4742
100.00	100.00	100.00	41.73	-8.255	-11.696	.3071	.1287	.0324	13.349	1.345	1.1000	.6012

MOMENTUM AVERAGE STAGE EFFICIENCY = .8201 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .8133 (ADIABATIC)MOMENTUM AVG. STAGE PRESS RATIO = 1.3017
MASS AVERAGE TEMPERATURE RISE = 1.0960

NASA SMALL AXIAL COMPRESSOR TEST 6 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 2

EQUIVALENT W/FIGHT FLOW = 2.3673 LBM/SEC EQUIVALENT SPEED = 53638.569 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 64.6350 EQUIVALENT FLOW / INLET ANN AREA = 26.1465 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0003

PERCENT SPAN FROM TIP (L. E.)	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	72.98	1156.11	1105.48	1.046	0.00	338.37	0.00	.306	338.37	327.48	1105.48
9.12	71.86	1110.91	1055.69	1.005	0.00	345.90	0.00	.313	345.90	334.57	1055.69
24.65	68.98	1040.03	970.84	.942	0.00	373.02	0.00	.338	373.02	366.16	970.84
40.10	66.72	965.02	886.48	.875	0.00	381.33	0.00	.346	381.33	380.11	886.48
57.97	64.81	871.76	788.88	.790	0.00	371.00	0.00	.336	371.00	370.88	788.88
82.58	61.91	741.90	654.48	.671	0.00	349.38	0.00	.316	349.38	344.69	654.48
100.00	58.90	653.23	559.34	.591	0.00	337.41	0.00	.305	337.41	325.95	559.34

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8808

PERCENT SPAN FROM TIP (T. E.)	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	60.37	855.73	743.84	.743	37.05	530.06	319.37	.461	423.04	409.42	1063.21
10.96	57.09	814.90	684.12	.709	37.00	554.40	333.64	.483	442.77	433.09	1017.75
29.60	54.30	765.61	621.71	.670	35.50	548.83	318.69	.480	446.82	444.03	940.40
47.83	48.52	691.72	518.23	.607	37.10	574.46	346.53	.504	458.17	458.14	864.76
66.74	39.01	650.51	409.47	.574	36.70	630.46	376.81	.556	505.46	503.97	786.28
87.79	23.65	596.55	239.27	.529	40.07	714.10	459.69	.633	546.47	537.49	698.95
100.00	15.56	568.08	152.35	.505	42.18	738.55	495.92	.657	547.27	528.68	648.27

ROTOR PERFORMANCE DATA

PERCENT LEADING EDGE	SPAN FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	12.61	9.144	8.676	.3650	.2005	.0377	3.381	1.286	.6841	.6951
9.12	10.96	11.31	14.77	9.845	8.572	.3757	.1999	.0394	2.010	1.295	.7028	.7135
24.65	29.60	30.41	14.69	9.778	7.766	.3664	.1244	.0241	3.830	1.302	.8148	.8216
40.10	47.83	48.71	18.20	9.660	6.946	.3927	.1049	.0211	5.864	1.321	.8613	.8667
57.97	66.74	67.58	25.80	10.071	6.380	.3719	.0407	.0086	7.844	1.355	.9545	.9564
82.58	87.79	88.56	38.26	10.334	5.365	.3399	.0122	.0026	13.790	1.406	.9906	.9911
100.00	100.00	100.00	43.34	10.148	4.074	.2888	.0165	.0034	22.607	1.406	.9906	.9910

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8561 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8502 (ADIABATIC)

MOMENTUM AVG. ROTOR PRESS RATIO = 1.3312
 MASS AVERAGE TEMPERATURE RISE = 1.1000

NASA SMALL AXIAL COMPRESSOR TEST 6 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 2
 EQUIVALENT WEIGHT FLOW = 1.0738 KG/SEC EQUIVALENT SPEED = 53630.569 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 64.6350 EQUIVALENT FLOW / INLET ANN AREA = 127.6584 KG/SEC-SQ M

 INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0003

PERCENT SPAN FROM TIP (L. F.)	BETA*1 (DEG)	V*1 (M/SEC)	VU*1 (M/SEC)	M*1	BETA1 (DEG)	V1 (M/SEC)	VU1 (M/SEC)	M1	VM1 (M/SEC)	VZ1 (M/SEC)	U1 (M/SEC)
0.00	72.98	352.38	336.95	1.046	0.00	103.14	0.00	.306	103.14	99.81	336.95
9.12	71.86	338.61	321.78	1.075	0.00	105.43	0.00	.313	105.43	101.98	321.78
24.65	68.98	317.00	295.91	.942	0.00	113.70	0.00	.338	113.70	111.61	295.91
40.10	66.72	294.14	270.20	.875	0.00	116.23	0.00	.346	116.23	115.66	270.20
57.97	64.81	265.71	240.45	.790	0.00	113.08	0.00	.336	113.08	113.04	240.45
82.58	61.91	226.13	199.49	.671	0.00	106.49	0.00	.316	106.49	105.06	199.49
100.00	58.90	199.10	170.49	.591	0.00	102.84	0.00	.305	102.84	99.35	170.49

 EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8808

PERCENT SPAN FROM TIP (L. F.)	BETA*2 (DEG)	V*2 (M/SEC)	VU*2 (M/SEC)	M*2	BETA2 (DEG)	V2 (M/SEC)	VU2 (M/SEC)	M2	VM2 (M/SEC)	VZ2 (M/SEC)	U2 (M/SEC)
0.00	60.37	260.83	226.72	.743	37.05	161.56	97.34	.461	128.94	124.79	324.07
10.96	57.09	248.38	208.52	.709	37.00	168.98	101.69	.483	134.96	132.01	310.21
29.60	54.30	233.36	189.50	.670	35.50	167.28	97.14	.480	136.19	135.34	286.63
47.83	48.52	210.84	157.96	.607	37.10	175.09	105.62	.504	139.65	139.64	263.58
66.74	39.01	198.27	124.81	.574	36.70	192.16	114.85	.556	154.06	153.51	239.66
87.79	23.65	181.93	72.93	.529	40.07	217.66	140.11	.633	166.56	163.83	213.84
100.00	15.56	173.15	46.44	.505	42.18	225.11	151.16	.657	166.81	161.14	197.59

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	SPAN FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	O FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	12.61	9.144	8.676	.3650	.2005	.0377	3.381	1.286	.6841	.6951
9.12	10.96	11.31	14.77	9.845	8.572	.3757	.1999	.0394	2.010	1.295	.7028	.7135
24.65	29.60	30.41	14.69	9.778	7.766	.3664	.1244	.0241	3.830	1.302	.8148	.8216
40.10	47.83	48.71	18.20	9.660	6.946	.3927	.1049	.0211	5.864	1.321	.8613	.8667
57.97	66.74	67.58	25.80	10.071	6.380	.3719	.0407	.0086	7.844	1.355	.9545	.9564
82.58	87.79	98.56	38.26	10.334	5.365	.3399	.0122	.0026	13.790	1.406	.9906	.9911
100.00	100.00	130.00	43.34	10.148	4.074	.2888	.0165	.0034	22.607	1.406	.9906	.9910

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8561 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8502 (ADIABATIC)

MOMENTUM AVG. ROTOR PRESS RATIO = 1.3312
 MASS AVERAGE TEMPERATURE RISE = 1.1060

ORIGINAL PAGE IS
OF POOR QUALITY

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 2

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9076

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	33.99	588.24	328.85	.514	487.74	482.38	1032.55
10.53	34.74	599.37	341.55	.524	492.53	491.71	994.18
28.59	32.21	605.68	322.84	.533	512.46	512.46	928.31
46.37	33.36	631.11	347.05	.557	527.12	526.73	863.47
65.33	33.49	676.05	372.99	.599	563.84	561.78	794.34
87.12	36.99	746.95	449.44	.665	596.60	588.59	714.89
100.00	38.23	777.88	481.33	.695	611.08	594.20	667.93

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9748

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	-20.43	513.21	-179.14	.445	480.93	480.93	1025.06
11.24	-20.30	530.98	-184.23	.461	497.99	497.93	989.85
30.14	-16.40	546.72	-154.36	.479	524.47	524.24	930.62
48.36	-14.53	569.01	-142.74	.499	550.81	550.25	873.55
67.22	-11.96	609.18	-126.29	.536	595.95	595.62	814.44
88.11	-7.38	641.34	-82.34	.564	636.03	633.70	748.98
100.00	-7.26	645.88	-81.66	.569	640.69	640.69	711.74

STATOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	U FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	54.42	-2.329	-6.251	.4404	.0743	.0251	1.750	1.270	1.1088	.7197
10.53	11.24	11.31	55.04	-1.417	-4.795	.4188	.0619	.0202	-3.725	1.281	1.1088	.7418
28.59	30.14	30.41	48.61	-4.307	-7.660	.3555	.0484	.0153	-3.201	1.291	1.0960	.7668
46.37	48.36	48.71	47.89	-4.206	-7.228	.3344	.0633	.0188	-2.523	1.305	1.0960	.7006
65.33	67.22	67.58	45.45	-5.798	-8.713	.3072	.0666	.0187	-.062	1.336	1.0949	.6923
87.12	88.11	88.56	44.37	-5.137	-8.072	.3232	.1266	.0332	4.155	1.360	1.1029	.5891
100.00	100.00	100.00	45.49	-6.405	-9.846	.3436	.1177	.0295	11.436	1.360	1.1030	.6810

MOMENTUM AVERAGE STAGE EFFICIENCY = .8257 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .8187 (ADIABATIC)MOMENTUM AVG. STAGE PRESS RATIO = 1.3177
MASS AVERAGE TEMPERATURE RISE = 1.1000

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 2

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9076

PERCENT SPAN FROM TIP (L. E.)	BETA 3 (DEG)	V3 (M/SEC)	VU3 (M/SEC)	M3	VH3 (M/SEC)	VZ3 (M/SEC)	U3 (M/SEC)
0.00	33.99	179.30	100.23	.514	148.66	147.03	314.72
10.53	34.74	182.69	104.10	.524	150.12	149.87	303.03
28.59	32.21	184.61	98.40	.533	156.20	156.20	282.95
46.37	33.36	192.36	105.78	.557	160.67	160.55	263.18
65.33	33.49	206.06	113.69	.599	171.86	171.23	242.11
87.12	36.99	227.67	136.99	.665	181.84	179.40	217.90
100.00	38.23	237.10	146.71	.695	186.26	181.11	203.59

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9748

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VH4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	-20.43	156.43	-54.60	.445	146.59	146.59	312.44
11.24	-20.30	161.84	-56.15	.461	151.79	151.77	301.71
30.14	-16.40	166.64	-47.05	.479	159.86	159.79	283.65
48.36	-14.53	173.43	-43.51	.499	167.89	167.72	266.26
67.22	-11.96	185.68	-38.49	.536	181.64	181.54	248.24
88.11	-7.38	195.48	-25.10	.564	193.86	193.15	228.29
100.00	-7.26	196.86	-24.89	.569	195.28	195.28	216.94

STATOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	PERCENT SPAN FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	54.42	-2.329	-6.251	.4484	.0743	.0251	1.750	1.270	1.1088	.7197
10.53	11.24	11.31	55.04	-1.417	-4.795	.4188	.0619	.0202	-3.725	1.281	1.1088	.7418
28.59	30.14	30.41	48.61	-4.307	-7.660	.3555	.0484	.0153	-3.201	1.291	1.0960	.7668
46.37	48.36	48.71	47.89	-4.206	-7.228	.3344	.0633	.0188	-2.523	1.305	1.0960	.7806
65.33	67.22	67.58	45.45	-5.798	-8.713	.3072	.0666	.0187	-0.862	1.336	1.0949	.6923
87.12	88.11	48.56	44.37	-5.137	-8.072	.3232	.1266	.0332	4.155	1.360	1.1029	.5891
100.00	100.00	100.00	45.49	-6.405	-9.846	.3436	.1177	.0295	11.436	1.360	1.1030	.6810

MOMENTUM AVERAGE STAGE EFFICIENCY = .8257 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .8187 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.3177
MASS AVERAGE TEMPERATURE RISE = 1.1000

NASA SMALL AXIAL COMPRESSOR TEST 6 DECEMBER, 1974 (COMBINED TAMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 3
 EQUIVALENT WEIGHT FLOW = 2.2945 LBM/SEC EQUIVALENT SPEED = 53636.154 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 62.6473 EQUIVALENT FLOW / INLET ANN AREA = 25.3425 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9991

PERCENT SPAN FROM TIP (L. E.)	DETA*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	73.54	1152.66	1105.43	1.042	0.00	326.56	0.00	.295	326.56	316.04	1105.43
9.17	72.45	1106.92	1055.37	1.031	0.00	333.85	0.00	.302	333.85	322.92	1055.37
24.71	69.65	1035.10	970.48	.937	0.00	360.01	0.00	.326	360.01	353.40	970.48
40.11	67.45	959.74	886.38	.869	0.00	368.02	0.00	.333	368.02	366.83	886.38
57.95	65.59	866.39	788.95	.784	0.00	358.04	0.00	.324	358.04	357.91	788.95
82.61	62.75	735.98	654.31	.666	0.00	336.97	0.00	.305	336.97	332.45	654.31
100.00	59.84	646.92	559.31	.585	0.00	325.07	0.00	.294	325.07	314.02	559.31

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8867

PERCENT SPAN FROM TIP (T. E.)	DETA*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	60.79	828.96	723.53	.718	40.01	528.23	339.63	.457	404.57	391.54	1063.16
10.97	57.50	785.92	662.81	.682	40.04	551.59	354.83	.479	422.32	413.09	1017.64
29.66	54.57	731.94	596.39	.638	39.01	546.06	343.70	.476	424.33	421.69	940.09
47.70	48.25	675.24	503.74	.591	38.80	576.96	361.51	.505	449.65	449.63	865.25
66.03	38.81	630.62	395.21	.555	38.72	629.85	393.97	.554	491.42	489.97	789.17
87.17	23.90	555.30	224.94	.490	43.19	695.32	476.55	.615	507.70	499.36	701.49
100.00	14.63	525.45	132.69	.465	45.40	724.07	515.55	.641	508.42	491.14	648.24

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	12.75	9.705	9.237	.3930	.2113	.0392	3.797	1.307	.6857	.6974
9.17	10.97	11.36	14.95	10.443	9.166	.4066	.2137	.0416	2.421	1.314	.7005	.7118
24.71	29.66	39.45	15.08	10.453	8.437	.4040	.1508	.0291	4.125	1.318	.7910	.7990
40.11	47.70	48.69	19.21	10.389	7.675	.4114	.1060	.0214	5.523	1.339	.8665	.8719
57.95	66.03	67.52	26.78	10.847	7.156	.3969	.0550	.0117	7.089	1.369	.9418	.9443
82.61	87.17	88.53	38.86	11.183	6.213	.3966	.0840	.0179	13.186	1.399	.9381	.9409
100.00	100.00	100.00	45.21	11.083	5.009	.3541	.1065	.0219	21.679	1.399	.9380	.9408

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8403 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8335 (ADIABATIC)

MOMENTUM AVG. ROTOR PRESS RATIO = 1.3436
 MASS AVERAGE TEMPERATURE RISE = 1.1054

NASA SMALL AXIAL COMPRESSOR TFST 6 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 3
 EQUIVALENT WEIGHT FLOW = 1.0408 KG/SEC EQUIVALENT SPEED = 53636.154 R.P.M.
 PERCENT OFSIGN EQUIVALENT FLOW = 62.6473 EQUIVALENT FLOW / INLET ANN AREA = 123.7327 KG/SEC-SQ M

 INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9991

PERCENT SPAN FROM TIP (L. E.)	BETA*1 (DEG)	V*1 (M/SEC)	VU*1 (M/SEC)	M*1	BETA1 (DEG)	V1 (M/SEC)	VU1 (M/SEC)	M1	VM1 (M/SEC)	VZ1 (M/SEC)	U1 (M/SEC)
0.00	73.54	351.33	336.93	1.042	0.00	99.54	0.00	.295	99.54	96.33	336.93
9.17	72.45	337.39	321.68	1.001	0.00	101.76	0.00	.302	101.76	98.43	321.68
24.71	69.65	315.50	295.80	.937	0.00	109.73	0.00	.326	109.73	107.71	295.80
40.11	67.45	292.53	270.17	.869	0.00	112.17	0.00	.333	112.17	111.81	270.17
57.95	65.59	264.07	240.47	.784	0.00	109.13	0.00	.324	109.13	109.09	240.47
82.61	62.75	224.33	199.43	.666	0.00	102.71	0.00	.305	102.71	101.33	199.43
100.00	59.84	197.18	170.48	.585	0.00	99.08	0.00	.294	99.08	95.71	170.48

 EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8867

PERCENT SPAN FROM TIP (T. E.)	BETA*2 (DEG)	V*2 (M/SEC)	VU*2 (M/SEC)	M*2	BETA2 (DEG)	V2 (M/SEC)	VU2 (M/SEC)	M2	VM2 (M/SEC)	VZ2 (M/SEC)	U2 (M/SEC)
0.00	60.79	252.67	220.53	.718	40.01	161.00	103.52	.457	123.31	119.34	324.05
10.97	57.50	239.55	202.03	.682	40.04	168.12	108.15	.479	128.72	125.91	310.18
29.66	54.57	223.10	181.78	.638	39.01	166.44	104.76	.476	129.34	128.53	286.54
47.70	48.25	205.81	153.54	.591	38.80	175.86	110.19	.505	137.05	137.05	263.73
66.03	38.81	192.21	120.46	.555	38.72	191.98	120.08	.554	149.79	149.34	240.54
87.17	23.90	169.25	88.56	.490	43.19	212.24	145.25	.615	154.75	152.20	213.81
100.00	14.63	160.16	40.44	.465	45.40	220.70	157.14	.641	154.97	149.70	197.58

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	SPAN FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	12.75	9.705	9.237	.3930	.2113	.0392	3.797	1.307	.6857	.6974
9.17	10.97	11.36	14.95	10.443	9.166	.4066	.2137	.0416	2.421	1.314	.7005	.7118
24.71	29.66	33.45	15.08	10.453	8.437	.4040	.1508	.0291	4.125	1.318	.7910	.7990
40.11	47.70	48.69	19.21	10.389	7.675	.4114	.1060	.0214	5.523	1.339	.8665	.8719
57.95	66.03	67.52	26.78	10.847	7.156	.3969	.0550	.0117	7.089	1.369	.9418	.9443
82.61	87.17	98.53	38.86	11.183	6.213	.3966	.0840	.0179	13.186	1.399	.9381	.9409
100.00	109.00	100.00	45.21	11.083	5.809	.3541	.1065	.0219	21.679	1.399	.9380	.9408

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8403 (POLYTROPIC) MOMENTUM AVG. ROTOR PRESS RATIO = 1.3436
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8335 (ADIABATIC) MASS AVERAGE TEMPERATURE RISE = 1.1054

ORIGINAL PAGE IS
OF POOR QUALITY

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 3

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9181

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	37.17	578.79	349.72	.503	461.19	456.12	1032.51
10.57	38.01	589.94	363.28	.513	464.82	464.05	993.97
28.70	35.81	595.19	348.23	.521	482.69	482.68	927.86
46.34	35.41	625.12	362.22	.550	509.48	509.10	863.54
64.84	35.77	668.08	390.54	.590	542.04	540.06	796.11
86.72	40.15	723.73	466.68	.641	553.17	545.74	716.33
100.00	41.40	756.73	500.43	.673	567.64	551.95	667.90

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9740

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	-21.29	492.40	-178.79	.425	458.80	458.80	1025.02
11.29	-21.14	506.12	-182.55	.437	472.05	472.00	989.64
30.30	-17.08	519.82	-132.68	.452	496.90	496.68	930.08
48.50	-15.56	544.25	-145.96	.475	524.31	523.77	873.06
67.31	-12.99	580.21	-130.44	.508	565.35	565.04	814.14
88.20	-7.39	613.45	-78.87	.537	608.36	606.14	748.67
100.00	-7.27	617.19	-78.86	.541	612.23	612.23	711.71

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING TRAILING EDGE EDGE	PERCENT SPAN FROM TIP LEADING TRAILING EDGE EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCTION SUR (DEG)	0 FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	58.46	.854	-3.068	.4801	.0654	.0219	.890	1.293	1.1157	.7856
10.57	11.29	11.36	59.15	1.851	-1.524	.4634	.0618	.0200	-4.579	1.301	1.1157	.7884
28.70	30.30	31.45	52.89	-.714	-4.065	.4022	.0405	.0127	-3.897	1.309	1.1035	.8468
46.34	48.50	48.69	50.97	-2.152	-5.174	.3765	.0584	.0173	-3.560	1.325	1.1002	.7853
64.84	67.31	67.52	48.76	-3.445	-6.375	.3518	.0670	.0187	-1.892	1.350	1.0996	.7615
86.72	88.20	88.53	47.54	-1.891	-4.841	.3451	.0727	.0191	4.146	1.374	1.1071	.7787
100.00	100.00	109.03	48.67	-3.233	-6.674	.3680	.0671	.0168	11.433	1.374	1.1071	.8306

MOMENTUM AVERAGE STAGE EFFICIENCY = .8211 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .8136 (ADIABATIC)MOMENTUM AVG. STAGE PRESS RATIO = 1.3346
MASS AVERAGE TEMPERATURE RISE = 1.1054

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 3

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9181

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	37.17	176.42	106.59	.503	140.57	139.03	314.71
10.57	38.01	179.81	110.73	.513	141.68	141.44	302.96
20.70	35.81	181.41	106.14	.521	147.12	147.12	282.81
46.34	35.41	190.54	110.41	.550	155.29	155.17	263.21
64.84	35.77	203.63	119.04	.590	165.22	164.61	242.65
86.72	40.15	220.59	142.24	.641	168.61	166.34	218.34
100.00	41.44	230.65	152.53	.673	173.02	168.24	203.58

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9740

PERCENT SPAN FROM TIP (T. F.)	BETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VM4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	-21.29	150.08	-54.49	.425	139.84	139.84	312.43
11.29	-21.14	154.27	-55.64	.437	143.88	143.86	301.64
30.30	-17.08	158.44	-46.54	.452	151.45	151.39	283.49
49.50	-15.56	165.89	-44.49	.475	159.81	159.64	266.11
67.31	-12.99	176.85	-39.76	.508	172.32	172.22	248.15
88.20	-7.39	186.98	-24.04	.537	185.43	184.75	228.20
100.00	-7.27	188.12	-23.79	.541	186.61	186.61	216.93

STATOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCTION SUR (DEG)	Q FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	58.46	.854	-3.068	.4801	.0654	.0219	.890	1.293	1.1157	.7856
10.57	11.29	11.36	59.15	1.851	-1.524	.4634	.0618	.0200	-4.579	1.301	1.1157	.7884
20.70	30.30	30.45	52.89	-.714	-4.065	.4022	.0405	.0127	-3.897	1.309	1.1035	.8468
46.34	48.50	48.69	50.97	-2.152	-5.174	.3765	.0584	.0173	-3.560	1.325	1.1002	.7853
64.84	67.31	67.52	48.76	-3.445	-6.375	.3518	.0670	.0187	-1.892	1.350	1.0996	.7615
86.72	88.20	88.53	47.54	-1.891	-4.841	.3451	.0727	.0191	4.146	1.374	1.1071	.7787
100.00	100.00	100.00	48.67	-3.233	-6.674	.3680	.0671	.0168	11.433	1.374	1.1171	.8306

MOMENTUM AVERAGE STAGE EFFICIENCY = .8211 (POLYTROPIC)

MOMENTUM AVERAGE STAGE EFFICIENCY = .8136 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.3346

MASS AVERAGE TEMPERATURE RISE = 1.1054

NASA SMALL AXIAL COMPRESSOR TLST 6 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 4
EQUIVALENT WEIGHT FLOW = 2.2083 LBM/SEC EQUIVALENT SPEED = 53599.361 R.P.M.
PERCENT DESIGN EQUIVALENT FLOW = 60.2943 EQUIVALENT FLOW / INLET ANN AREA = 24.3906 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = 1.0016

PERCENT SPAN FROM TIP (L. E.)	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	74.17	1148.23	1104.67	1.037	0.00	313.27	0.00	.283	313.27	303.18	1104.67
9.11	73.12	1102.46	1054.94	.996	0.00	320.20	0.00	.289	320.20	309.72	1054.94
24.59	70.42	1030.04	970.48	.932	0.00	345.18	0.00	.312	345.18	338.84	970.48
39.84	68.32	954.80	887.23	.864	0.00	352.79	0.00	.319	352.79	351.65	887.23
57.70	66.51	861.13	789.78	.779	0.00	343.21	0.00	.310	343.21	343.09	789.78
82.47	63.74	729.94	654.59	.660	0.00	323.00	0.00	.292	323.00	318.66	654.59
100.00	60.87	639.88	558.93	.578	0.00	311.52	0.00	.281	311.52	300.93	558.93

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8727

PERCENT SPAN FROM TIP (T. E.)	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	60.60	807.96	703.92	.698	42.11	534.64	358.52	.462	396.61	383.84	1062.43
10.85	57.47	762.76	643.07	.660	42.39	555.36	374.37	.480	410.20	401.24	1017.44
29.68	54.49	697.30	567.60	.606	42.55	549.79	371.78	.478	405.03	402.50	939.39
47.71	47.60	658.70	486.38	.576	40.41	583.41	378.22	.510	444.20	444.18	864.60
65.83	39.39	613.43	380.97	.539	40.35	630.90	408.50	.554	480.79	479.37	789.48
87.10	23.00	535.25	289.15	.472	44.97	696.37	492.13	.614	492.69	484.60	701.28
100.00	13.10	506.55	114.78	.448	47.21	726.31	533.01	.642	493.37	476.61	647.80

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCTION SUR (DEG)	Q FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	13.57	10.331	9.862	.4153	.2198	.0410	3.611	1.328	.6897	.7018
9.11	10.85	11.30	15.65	11.101	9.828	.4317	.2261	.0441	2.365	1.332	.6991	.7110
24.59	29.68	36.32	15.93	11.206	9.198	.4438	.1838	.0355	4.050	1.333	.7629	.7723
39.84	47.71	48.41	20.72	11.216	8.516	.4310	.1138	.0233	4.879	1.355	.8632	.8690
57.70	65.83	60.30	28.12	11.738	8.060	.4180	.0687	.0147	6.518	1.380	.9303	.9334
82.47	87.10	89.44	40.74	12.153	7.187	.4242	.1089	.0234	12.201	1.406	.9229	.9265
100.00	100.00	100.00	47.77	12.115	6.040	.3822	.1404	.0291	20.149	1.406	.9229	.9265

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8307 (POLYTROPIC)
MOMENTUM AVERAGE ROTOR EFFICIENCY = .8232 (ADIABATIC)
MOMENTUM AVG. ROTOR PRESS RATIO = 1.3576
MASS AVERAGE TEMPERATURE RISE = 1.1107

NASA SMALL AXIAL COMPRESSOR TEST 6 DECEMBER, 1974 (COMBINED TEMP.)

POTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 4

EQUIVALENT HEIGHT FLOW = 1.0017 KG/SEC
PERCENT DESIGN EQUIVALENT FLOW = 60.2943EQUIVALENT SPEED = 53599.361 R.P.M.
EQUIVALENT FLOW / INLET ANN AREA = 119.0854 KG/SEC-SQ MINLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = 1.0016

PERCENT SPAN FROM TIP (L. E.)	BETA*1 (DEG)	V*1 (M/SEC)	VU*1 (M/SEC)	M*1	BETA1 (DEG)	V1 (M/SEC)	VU1 (M/SEC)	M1	VM1 (M/SEC)	VZ1 (M/SEC)	U1 (M/SEC)
0.00	74.17	349.98	336.70	1.037	0.00	95.48	0.00	.283	95.48	92.41	336.70
9.11	73.12	336.03	321.55	.996	0.00	97.60	0.00	.289	97.60	94.40	321.55
24.59	70.42	313.96	295.80	.932	0.00	105.21	0.00	.312	105.21	103.28	295.80
39.84	68.32	291.02	270.43	.864	0.00	107.53	0.00	.319	107.53	107.18	270.43
57.70	66.51	262.47	240.72	.779	0.00	104.61	0.00	.310	104.61	104.57	240.72
82.47	63.74	222.49	199.52	.660	0.00	98.45	0.00	.292	98.45	97.13	199.52
100.00	60.87	195.04	170.36	.578	0.00	94.95	0.00	.281	94.95	91.72	170.36

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8727

PERCENT SPAN FROM TIP (T. E.)	BETA*2 (DEG)	V*2 (M/SEC)	VU*2 (M/SEC)	M*2	BETA2 (DEG)	V2 (M/SEC)	VU2 (M/SEC)	M2	VM2 (M/SEC)	VZ2 (M/SEC)	U2 (M/SEC)
0.00	60.60	246.27	214.55	.698	42.11	162.96	109.28	.462	120.89	116.99	323.83
10.85	57.47	232.49	196.01	.660	42.39	169.27	114.11	.480	125.03	122.30	310.12
29.68	54.49	212.54	173.01	.606	42.55	167.58	113.32	.478	123.45	122.68	286.33
47.71	47.60	200.77	148.25	.576	40.41	177.82	115.28	.510	135.39	135.39	263.53
65.83	38.39	186.97	116.12	.539	40.35	192.30	124.51	.554	146.54	146.11	240.63
87.10	23.00	163.14	63.75	.472	44.97	212.25	150.00	.614	150.17	147.71	213.75
100.00	13.10	154.40	34.99	.448	47.21	221.38	162.46	.642	150.38	145.27	197.45

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	SPAN FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	Q FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	9.00	13.57	10.331	9.862	.4153	.2198	.0410	3.611	1.328	.6897	.7018
9.11	10.85	11.30	15.65	11.101	9.828	.4317	.2261	.0441	2.365	1.332	.6991	.7110
24.59	29.68	30.32	15.93	11.206	9.193	.4438	.1838	.0355	4.050	1.333	.7629	.7723
39.84	47.71	48.41	20.72	11.216	8.516	.4310	.1138	.0233	4.879	1.355	.8632	.8690
57.70	65.83	67.30	28.12	11.738	8.060	.4180	.0687	.0147	6.518	1.380	.9303	.9334
82.47	87.10	88.44	40.74	12.153	7.187	.4242	.1089	.0234	12.201	1.406	.9229	.9265
100.00	100.00	100.00	47.77	12.115	6.040	.3822	.1484	.0291	20.149	1.406	.9229	.9265

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8307 (POLYTROPIC)
MOMENTUM AVERAGE ROTOR EFFICIENCY = .8232 (ADIABATIC)MOMENTUM AVG. ROTOR PRESS RATIO = 1.3576
MASS AVERAGE TEMPERATURE RISE = 1.1107

NASA SMALL AXIAL COMPRESSOR TEST 6 DECEMBER, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 4

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9184

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	40.03	573.95	369.16	.497	439.48	434.65	1031.80
10.51	41.03	584.00	383.40	.507	440.52	439.79	993.49
28.78	39.76	589.12	376.78	.514	452.88	452.88	926.93
46.38	37.55	621.85	379.03	.546	493.01	492.65	862.82
64.62	37.81	660.55	404.98	.582	521.84	519.93	796.34
86.52	42.32	715.32	481.63	.632	528.88	521.78	716.57
100.00	43.65	749.13	517.09	.664	542.05	527.07	667.44

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9726

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	-24.41	475.41	-196.47	.409	432.91	432.91	1024.32
11.34	-24.19	486.11	-199.21	.418	443.41	443.36	988.80
30.52	-18.64	494.00	-157.91	.427	468.08	467.87	928.77
48.72	-16.97	521.55	-151.83	.454	498.97	498.45	871.78
67.45	-14.35	559.73	-138.69	.489	542.27	541.97	813.13
88.24	-8.93	589.80	-91.59	.515	582.65	580.52	748.03
100.00	-8.83	593.88	-91.15	.518	586.85	586.85	711.22

STATOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	Q FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	64.44	3.712	-.210	.5287	.0762	.0250	-2.230	1.312	1.1220	.7793
10.51	11.34	11.30	65.23	4.877	1.499	.5142	.0738	.0234	-7.641	1.317	1.1220	.7821
28.78	30.52	30.32	58.40	3.233	-.115	.4585	.0600	.0187	-5.480	1.320	1.1119	.8172
46.38	48.72	48.41	54.47	-.016	-3.038	.4207	.0702	.0206	-4.942	1.337	1.1048	.7888
64.62	67.45	67.30	52.16	-1.376	-4.312	.3853	.0564	.0157	-3.247	1.364	1.1033	.8243
86.52	88.24	88.44	51.26	.322	-2.637	.3806	.0657	.0172	2.600	1.384	1.1106	.8234
100.00	100.00	100.00	52.48	-.982	-4.423	.4024	.0604	.0151	9.871	1.384	1.1106	.8619

MOMENTUM AVERAGE STAGE EFFICIENCY = .8101 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .8019 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.3474
MASS AVERAGE TEMPERATURE RISE = 1.1107

NASA SMALL AXIAL COMPRESSOR TEST 6 DECEMBER, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 4

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9184

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	40.03	174.94	112.52	.497	133.95	132.48	314.49
10.51	41.03	178.00	116.86	.507	134.27	134.05	302.82
28.78	39.76	179.57	114.84	.514	138.04	138.04	282.53
46.38	37.55	189.54	115.52	.546	150.27	150.16	262.99
64.62	37.81	201.34	123.44	.582	159.06	158.48	242.73
86.52	42.12	218.03	146.80	.632	161.20	159.04	218.41
100.00	43.65	228.33	157.61	.664	165.22	160.65	203.44

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9726

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VM4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	-24.41	144.90	-59.88	.409	131.95	131.95	312.21
11.34	-24.19	148.17	-60.72	.418	135.15	135.14	301.39
30.52	-18.64	150.57	-48.13	.427	142.67	142.61	283.09
48.72	-16.92	158.97	-46.28	.454	152.08	151.93	265.72
67.45	-14.35	170.60	-42.27	.489	165.28	165.19	247.84
88.24	-8.93	179.77	-27.92	.515	177.59	176.94	228.00
100.00	-8.83	181.02	-27.78	.518	178.87	178.87	216.78

STATOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	γ FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	64.44	3.712	-2.210	.5287	.0762	.0250	-2.230	1.312	1.1220	.7793
10.51	11.34	11.30	65.23	4.877	1.499	.5142	.0738	.0234	-7.641	1.317	1.1220	.7821
28.78	30.52	30.32	58.40	3.233	-1.115	.4585	.0600	.0187	-5.480	1.320	1.1119	.8172
46.38	48.72	48.41	54.47	-0.016	-3.038	.4207	.0702	.0206	-4.942	1.337	1.1048	.7888
64.62	67.45	67.30	52.16	-1.376	-4.312	.3853	.0564	.0157	-3.247	1.364	1.1033	.8243
86.52	88.24	88.44	51.26	.322	-2.637	.3806	.0657	.0172	2.600	1.384	1.1106	.8234
100.00	100.00	100.00	52.48	-.982	-4.423	.4024	.0604	.0151	9.871	1.384	1.1106	.8619

MOMENTUM AVERAGE STAGE EFFICIENCY = .8101 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .8019 (ADIABATIC)MOMENTUM AVG. STAGE PRESS RATIO = 1.3474
MASS AVERAGE TEMPERATURE RISE = 1.1107

ORIGINAL PAGE IS
OF POOR QUALITY

NASA SMALL AXIAL COMPRESSOR TEST 6 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

EQUIVALENT WEIGHT FLOW = 2.0703 LBM/SEC 70 PERCENT DESIGN SPEED - SCAN NO 5
PERCENT DESIGN EQUIVALENT FLOW = 56.5260 EQUIVALENT SPEED = 53660.777 R.P.M.
EQUIVALENT FLOW / INLET ANN AREA = 22.8662 LBH/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = 1.0324

PERCENT SPAN FROM TIP (L. F.)	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	75.15	1144.15	1105.94	1.032	0.00	293.25	0.00	.265	293.25	283.89	1105.94
8.47	74.23	1101.12	1059.67	.994	0.00	299.26	0.00	.270	299.26	289.46	1059.67
23.49	71.77	1029.31	977.62	.930	0.00	322.08	0.00	.291	322.08	316.16	977.62
38.39	69.84	954.66	896.18	.863	0.00	329.01	0.00	.297	329.01	327.95	896.18
56.32	68.16	859.99	798.25	.777	0.00	319.97	0.00	.289	319.97	319.86	798.25
81.72	65.48	724.81	659.44	.654	0.00	300.82	0.00	.272	300.82	296.78	659.44
100.00	62.61	630.23	559.57	.569	0.00	289.95	0.00	.262	289.95	280.10	559.57

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8335

PERCENT SPAN FROM TIP (T. F.)	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	60.26	787.29	683.59	.678	44.22	544.95	380.06	.469	390.55	377.97	1063.65
10.10	57.44	742.81	626.07	.641	44.71	562.44	395.66	.485	399.74	391.01	1021.73
28.75	54.43	663.10	539.40	.574	46.39	559.21	404.93	.484	385.68	383.28	944.33
47.01	47.55	631.45	465.92	.550	43.37	586.27	402.58	.511	426.20	426.18	868.50
65.57	37.53	596.53	363.37	.523	42.14	633.03	428.11	.560	473.08	471.69	791.48
87.05	20.76	538.44	190.81	.475	45.45	717.73	511.50	.633	503.50	495.23	702.31
100.00	10.64	513.93	94.76	.454	47.68	743.93	553.78	.663	504.21	487.07	648.54

ROTOR PERFORMANCE DATA

PERCENT LEADING EDGE	SPAN FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	14.89	11.312	10.844	.4384	.2360	.0445	3.269	1.347	.6848	.6978
8.47	10.10	10.55	16.79	12.081	10.851	.4566	.2460	.0480	2.177	1.350	.6892	.7020
23.49	28.75	29.12	17.33	12.350	10.421	.4880	.2289	.0443	3.690	1.348	.7258	.7371
38.39	47.01	46.97	22.29	12.538	9.922	.4678	.1552	.0318	4.466	1.362	.8228	.8304
56.32	65.57	66.12	30.63	13.218	9.608	.4435	.0966	.0209	5.450	1.389	.9059	.9102
81.72	87.05	87.97	44.72	13.808	8.864	.4222	.1016	.0222	9.880	1.429	.9314	.9347
100.00	100.00	100.06	51.96	13.856	7.782	.3693	.1320	.0276	17.695	1.429	.9313	.9347

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8161 (POLYTROPIC)
MOMENTUM AVERAGE ROTOR EFFICIENCY = .8077 (ADIABATIC)

MOMENTUM AVG. ROTOR PRESS RATIO = 1.3739
MASS AVERAGE TEMPERATURE RISE = 1.1174

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 5
 EQUIVALENT WEIGHT FLOW = .9391 KG/SEC EQUIVALENT SPEED = 53660.777 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 56.5260 EQUIVALENT FLOW / INLET ANN AREA = 111.6426 KG/SEC-SQ M

 INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0324

PERCENT SPAN FROM TIP (L. E.)	BETA*1 (DEG)	V*1 (M/SEC)	VU*1 (M/SEC)	M*1	BETA1 (DEG)	V1 (M/SEC)	VU1 (M/SEC)	M1	VM1 (M/SEC)	VZ1 (M/SEC)	U1 (M/SEC)
0.00	75.15	348.74	337.09	1.032	0.00	89.38	0.00	.265	89.38	86.56	337.09
8.47	74.23	335.62	322.99	.994	0.00	91.21	0.00	.270	91.21	88.23	322.99
23.49	71.77	313.73	297.98	.930	0.00	98.17	0.00	.291	98.17	96.37	297.98
38.39	69.84	290.98	273.16	.863	0.00	100.28	0.00	.297	100.28	99.96	273.16
56.32	68.16	262.12	243.31	.777	0.00	97.53	0.00	.289	97.53	97.49	243.31
81.72	65.48	220.92	201.00	.654	0.00	91.69	0.00	.272	91.69	90.46	201.00
100.00	62.61	192.09	170.56	.569	0.00	89.38	0.00	.262	88.38	85.37	170.56

 EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8335

PERCENT SPAN FROM TIP (T. E.)	BETA*2 (DEG)	V*2 (M/SEC)	VU*2 (M/SEC)	M*2	BETA2 (DEG)	V2 (M/SEC)	VU2 (M/SEC)	M2	VM2 (M/SEC)	VZ2 (M/SEC)	U2 (M/SEC)
0.00	60.26	239.97	208.36	.678	44.22	166.10	115.84	.469	119.04	115.21	324.20
10.10	57.44	226.41	190.83	.641	44.71	171.43	120.60	.485	121.84	119.18	311.42
28.75	54.43	202.11	164.41	.574	46.39	170.45	123.42	.484	117.56	116.82	287.83
47.01	47.55	192.47	142.01	.550	43.37	178.70	122.71	.511	129.91	129.90	264.72
65.57	37.53	181.82	110.76	.523	42.14	194.47	130.49	.560	144.20	143.77	241.24
87.05	20.76	164.12	58.16	.475	45.45	218.77	155.91	.633	153.47	150.94	214.06
100.00	10.64	156.37	28.88	.454	47.68	228.27	168.79	.663	153.68	148.46	197.67

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	PERCENT SPAN FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	J FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	14.89	11.312	10.844	.4384	.2360	.0445	3.269	1.347	.6848	.6978
8.47	10.10	10.55	16.79	12.081	10.851	.4566	.2460	.0480	2.177	1.350	.6892	.7020
23.49	28.75	29.12	17.33	12.350	13.421	.4880	.2289	.0443	3.690	1.348	.7258	.7371
38.39	47.01	46.97	22.29	12.538	9.922	.4678	.1552	.0318	4.466	1.362	.8228	.8304
56.32	65.57	66.12	30.63	13.218	9.608	.4435	.0966	.0209	5.450	1.389	.9059	.9102
81.72	87.05	87.97	44.72	13.808	8.864	.4222	.1016	.0222	9.880	1.429	.9314	.9347
100.00	100.00	100.00	51.96	13.856	7.782	.3693	.1320	.0276	17.695	1.429	.9313	.9347

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8161 (POLYTROPIC) MOMENTUM AVG. ROTOR PRESS RATIO = 1.3739
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8077 (ADIABATIC) MASS AVERAGE TEMPERATURE RISE = 1.1174

NASA SMALL AXIAL COMPRESSOR TEST 6 DECEMBER, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 5

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9008

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	43.54	568.06	391.35	.490	411.75	407.22	1032.98
9.93	44.70	576.63	405.57	.498	409.89	409.21	996.74
28.22	44.70	584.56	411.15	.507	415.53	415.52	930.05
46.08	41.33	612.18	404.25	.535	459.73	459.39	864.91
64.69	40.36	656.44	425.14	.577	500.16	498.33	797.00
86.72	43.65	726.25	531.26	.641	525.53	518.47	716.66
100.00	44.93	761.13	537.54	.675	538.86	523.97	668.21

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9822

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	-34.63	453.43	-257.67	.388	373.10	373.10	1025.49
11.36	-34.29	460.68	-259.55	.394	380.60	380.55	989.89
31.03	-24.50	467.43	-193.81	.402	425.36	425.17	928.24
49.03	-19.90	488.75	-166.39	.423	459.55	459.08	871.80
67.71	-15.93	540.07	-147.32	.470	519.59	519.31	813.23
88.25	-11.16	567.62	-109.83	.493	556.89	554.86	748.87
100.00	-11.08	571.37	-109.80	.497	560.72	560.72	712.04

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING TRAILING EDGE EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	Q FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00 0.00	0.00	78.17	7.227	3.304	.6155	.1078	.0319	-12.450	1.325	1.1295	.7277
9.93 11.36	10.55	78.99	8.544	5.148	.6022	.1113	.0319	-17.744	1.326	1.1295	.7186
28.22 31.03	29.12	69.19	8.189	4.833	.5394	.1038	.0311	-11.384	1.326	1.1225	.7378
46.08 49.03	46.97	61.23	3.786	.758	.4851	.1018	.0293	-7.941	1.338	1.1120	.7471
64.69 67.71	66.12	56.19	1.166	-1.768	.4237	.0607	.0168	-4.726	1.372	1.1086	.8344
86.72 88.25	87.97	54.80	1.603	-1.343	.4339	.1133	.0294	.376	1.390	1.1151	.7481
100.00 100.00	100.00	56.01	.298	-3.143	.4540	.1041	.0258	7.620	1.390	1.1151	.7963

MOMENTUM AVERAGE STAGE EFFICIENCY = .7801 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7705 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.3548
MASS AVERAGE TEMPERATURE RISE = 1.1174

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 5

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9008

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)
0.00	43.54	173.14	119.28	.490	125.50	124.12	314.85
9.93	44.70	175.76	123.62	.498	124.93	124.73	303.81
28.22	44.70	178.17	125.32	.507	126.65	126.65	283.48
46.08	41.33	186.59	123.22	.535	140.13	140.62	263.62
64.69	40.36	200.08	129.58	.577	152.45	151.89	242.93
86.72	43.65	221.36	152.78	.641	160.18	158.03	218.44
100.00	44.93	231.99	163.84	.675	164.24	159.71	203.67

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9822

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VM4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	-34.63	138.20	-78.54	.388	113.72	113.72	312.57
11.36	-34.29	140.41	-79.11	.394	116.01	115.99	301.72
31.03	-24.50	142.47	-59.07	.402	129.65	129.59	282.93
49.03	-19.90	148.97	-50.72	.423	140.07	139.93	265.72
67.71	-15.83	164.61	-44.90	.470	158.37	158.28	247.87
88.25	-11.16	173.01	-33.48	.493	169.74	169.12	228.26
100.00	-11.08	174.15	-33.47	.497	170.91	170.91	217.03

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING TRAILING EDGE EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	Ø FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	78.17	7.227	3.304	.6155	.1078	.0319	-12.450	1.325	1.1295	.7277
9.93	11.36	78.99	8.544	5.148	.6022	.1113	.0319	-17.744	1.326	1.1295	.7186
28.22	31.03	69.19	8.189	4.833	.5394	.1038	.0311	-11.384	1.326	1.1225	.7378
46.08	49.03	61.23	3.786	.758	.4851	.1018	.0293	-7.941	1.338	1.1120	.7471
64.69	67.71	56.19	1.166	-1.768	.4237	.0607	.0168	-4.726	1.372	1.1086	.8344
86.72	88.25	54.80	1.603	-1.348	.4339	.1133	.0294	.376	1.390	1.1151	.7481
100.00	100.00	56.01	.298	-3.143	.4540	.1041	.0258	7.620	1.390	1.1151	.7963

MOMENTUM AVERAGE STAGE EFFICIENCY = .7801 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7705 (ADIABATIC)MOMENTUM AVG. STAGE PRESS RATIO = 1.3548
MASS AVERAGE TEMPERATURE RISE = 1.1174

NASA SMALL AXIAL COMPRESSOR TEST 6 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 6
 EQUIVALENT WEIGHT FLOW = 1.9860 LBM/SEC EQUIVALENT SPEED = 53586.391 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 54.2445 EQUIVALENT FLOW / INLET ANN AREA = 21.9433 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0307

PERCENT SPAN FROM TIP (L. E.)	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	75.72	1139.81	1184.40	1.028	0.00	281.09	0.00	.253	281.09	272.04	1104.40
7.76	74.91	1100.01	1062.08	.992	0.00	286.35	0.00	.258	286.35	276.98	1062.08
22.45	72.59	1029.08	981.93	.929	0.00	307.94	0.00	.278	307.94	302.28	981.93
37.18	70.77	954.82	901.54	.862	0.00	314.48	0.00	.284	314.48	313.47	901.54
55.16	69.16	859.73	803.46	.776	0.00	305.91	0.00	.276	305.91	305.80	803.46
81.14	66.49	721.95	661.67	.651	0.00	287.78	0.00	.260	287.78	283.92	661.67
100.00	63.55	624.15	558.79	.563	0.00	278.05	0.00	.251	278.05	268.60	558.79

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8182

PERCENT SPAN FROM TIP (T. E.)	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	60.66	781.73	681.48	.673	44.83	540.02	380.76	.465	383.00	370.66	1062.18
9.10	57.55	746.21	629.73	.644	44.60	562.21	394.72	.485	400.34	391.59	1024.45
27.08	55.47	648.88	534.25	.560	48.46	555.34	415.67	.479	368.26	365.97	949.93
45.59	48.39	619.00	462.86	.539	44.94	580.87	410.32	.505	411.14	411.12	873.18
64.28	37.48	587.55	357.50	.515	43.22	634.87	438.20	.561	466.27	464.90	795.71
86.33	20.98	517.37	185.27	.455	47.06	709.06	519.06	.624	483.07	475.13	704.33
100.00	9.75	490.82	83.12	.434	49.41	743.42	564.52	.657	483.73	467.29	647.64

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCTION SURFACE (DEG)	O FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	15.06	11.884	11.416	.4413	.2347	.0438	3.673	1.349	.6886	.7014
7.76	9.10	9.69	17.36	12.614	11.433	.4532	.2380	.0463	2.077	1.356	.7005	.7131
22.45	27.08	27.95	17.17	12.974	11.127	.5063	.2514	.0475	4.147	1.350	.7069	.7191
37.18	45.59	45.70	22.38	13.295	10.749	.4843	.1773	.0358	4.576	1.361	.8014	.8098
55.16	64.28	65.06	31.68	14.078	10.525	.4581	.1161	.0252	4.432	1.394	.8896	.8946
81.14	86.33	87.54	45.51	14.758	9.830	.4522	.1528	.0334	9.133	1.420	.8988	.9037
100.00	100.00	100.00	53.80	14.793	8.719	.4024	.2011	.0422	16.802	1.420	.8988	.9037

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8043 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .7953 (ADIABATIC)
 MOMENTUM AVG. ROTOR PRESS RATIO = 1.3751
 MASS AVERAGE TEMPERATURE RISE = 1.1196

NASA SMALL AXIAL COMPRESSOR TEST 6 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 6
 EQUIVALENT WEIGHT FLOW = .9012 KG/SEC EQUIVALENT SPEED = 53586.391 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 54.2445 EQUIVALENT FLOW / INLET ANN AREA = 107.1366 KG/SEC-SQ M

 INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = 1.0307

PERCENT SPAN FROM TIP (L. E.)	BETA*1 (DEG)	V*1 (M/SEC)	VU*1 (M/SEC)	M*1	BETA1 (DEG)	V1 (M/SEC)	VU1 (M/SEC)	M1	VM1 (M/SEC)	VZ1 (M/SEC)	U1 (M/SEC)
0.00	75.72	347.35	336.62	1.028	0.00	85.68	0.00	.253	85.68	82.92	336.62
7.76	74.91	335.29	323.72	.992	0.00	87.28	0.00	.258	87.28	84.42	323.72
22.45	72.59	313.66	299.29	.929	0.00	93.86	0.00	.278	93.86	92.14	299.29
37.18	70.77	291.93	274.79	.862	0.00	95.85	0.00	.284	95.85	95.55	274.79
55.16	69.16	262.04	244.90	.776	0.00	93.24	0.00	.276	93.24	93.21	244.90
81.14	66.49	219.97	201.68	.651	0.00	87.72	0.00	.260	87.72	86.54	201.68
100.00	63.55	190.24	170.32	.563	0.00	84.75	0.00	.251	84.75	81.67	170.32

 EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8182

PERCENT SPAN FROM TIP (T. E.)	BETA*2 (DEG)	V*2 (M/SEC)	VU*2 (M/SEC)	M*2	BETA2 (DEG)	V2 (M/SEC)	VU2 (M/SEC)	M2	VM2 (M/SEC)	VZ2 (M/SEC)	U2 (M/SEC)
0.00	60.66	238.27	207.71	.673	44.83	164.60	116.04	.465	116.74	112.98	323.75
9.10	57.55	227.45	191.94	.644	44.60	171.36	120.31	.485	122.02	119.36	312.25
27.08	55.42	197.78	162.84	.560	48.46	169.27	126.70	.479	112.25	111.55	289.54
45.59	48.39	188.70	141.08	.539	44.94	177.05	125.07	.505	125.32	125.31	266.15
64.28	37.48	179.09	108.97	.515	43.22	195.03	133.56	.561	142.12	141.70	242.53
86.33	20.98	157.76	56.47	.455	47.06	216.12	158.21	.624	147.24	144.82	214.68
100.00	9.75	149.60	25.34	.434	49.41	226.59	172.07	.657	147.44	142.43	197.40

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCTION SUR (DEG)	U FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	15.06	11.884	11.416	.4413	.2347	.0438	3.673	1.349	.6886	.7014
7.76	9.10	9.69	17.36	12.614	11.433	.4532	.2380	.0463	2.877	1.356	.7005	.7131
22.45	27.08	27.95	17.17	12.974	11.127	.5063	.2514	.0475	4.147	1.350	.7069	.7191
37.18	45.59	45.70	22.38	13.295	10.749	.4843	.1773	.0358	4.576	1.361	.8014	.8098
55.16	64.28	65.36	31.68	14.078	10.525	.4581	.1161	.0252	4.432	1.394	.8896	.8946
81.14	86.33	87.54	45.51	14.758	9.830	.4522	.1528	.0334	9.133	1.420	.8988	.9037
100.00	100.00	100.00	53.80	14.793	9.719	.4024	.2011	.0422	16.802	1.420	.8988	.9037

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8043 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .7953 (ADIABATIC)

MOMENTUM AVG. ROTOR PRESS RATIO = 1.3751
 MASS AVERAGE TEMPERATURE RISE = 1.1196

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 6

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8854

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	44.23	562.00	392.00	.485	402.71	398.28	1031.55
8.96	44.68	575.71	404.81	.497	409.36	408.69	998.93
26.61	46.80	579.55	422.49	.501	396.70	396.70	934.60
44.69	42.93	605.54	412.41	.528	443.39	443.07	868.77
63.43	41.51	657.22	435.59	.577	492.14	490.34	800.48
86.03	45.22	717.18	509.06	.632	505.18	498.40	718.16
100.00	46.52	755.31	548.10	.668	519.69	505.33	667.28

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9896

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	-42.77	446.15	-302.96	.382	327.51	327.51	1024.07
11.37	-42.33	451.10	-303.75	.386	333.51	333.47	988.48
31.69	-28.52	461.76	-220.46	.396	405.73	405.55	924.87
49.42	-22.50	479.91	-183.64	.414	443.39	442.93	869.37
67.97	-17.27	535.43	-158.92	.465	511.30	511.02	811.31
88.33	-11.67	566.18	-114.57	.491	554.47	552.44	747.57
100.00	-11.60	570.17	-114.63	.495	558.52	558.52	711.05

STATOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	87.00	7.910	3.988	.6538	.1206	.0319	-20.590	1.325	1.1296	.7006
8.96	11.17	9.69	87.01	8.495	5.100	.6452	.1544	.0396	-25.781	1.324	1.1296	.6332
26.61	31.69	27.95	75.32	10.323	6.971	.5680	.1288	.0372	-15.470	1.323	1.1265	.6775
44.69	49.42	45.70	65.42	5.507	2.450	.5079	.1237	.0350	-10.561	1.332	1.1148	.6989
63.43	67.97	65.06	58.78	2.476	-.495	.4419	.0896	.0246	-6.159	1.369	1.1117	.7645
86.03	88.33	87.54	56.89	3.321	.342	.4338	.0945	.0245	-.140	1.389	1.1171	.7828
100.00	100.00	100.00	58.12	1.892	-1.549	.4563	.0861	.0213	7.101	1.389	1.1171	.8295

MOMENTUM AVERAGE STAGE EFFICIENCY = .7629 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7526 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.3528
MASS AVERAGE TEMPERATURE RISE = 1.1196

NASA SMALL AXIAL COMPRESSOR TEST 6 DECEMBER, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

70 PERCENT DESIGN SPEED - SCAN NO 6

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8854

PERCENT SPAN FROM TIP (L. E.)	BETA 3 (DEG)	V3 (M/SEC)	VU3 (M/SEC)	43	VH3 (M/SEC)	VZ3 (M/SEC)	U3 (M/SEC)
0.00	44.23	171.30	119.48	.485	122.75	121.40	314.42
8.96	44.68	175.48	123.33	.497	124.77	124.57	304.47
26.61	46.80	176.65	128.78	.501	120.92	120.91	284.87
44.69	42.93	184.57	125.70	.528	135.15	135.05	264.80
63.43	41.51	200.32	132.77	.577	150.00	149.45	243.99
86.03	45.22	218.60	155.16	.632	153.98	151.91	218.90
100.00	46.52	230.22	167.06	.668	158.40	154.02	203.39

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9896

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VH4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	-42.77	135.99	-92.34	.382	99.83	99.83	312.14
11.37	-42.33	137.50	-92.58	.386	101.65	101.64	301.29
31.69	-28.52	140.74	-67.20	.396	123.67	123.61	281.90
49.42	-22.50	146.28	-55.97	.414	135.14	135.01	264.99
67.97	-17.27	163.20	-48.44	.465	155.85	155.76	247.29
88.33	-11.67	172.57	-34.92	.491	169.00	168.38	227.86
100.00	-11.60	173.79	-34.94	.495	170.24	170.24	216.73

STATOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	87.00	7.910	3.988	.6538	.1206	.0319	-20.590	1.325	1.1296	.7006
8.96	11.37	9.69	87.01	8.495	5.100	.6452	.1544	.0396	-25.781	1.324	1.1296	.6332
26.61	31.69	27.95	75.32	10.323	6.971	.5680	.1288	.0372	-15.470	1.323	1.1265	.6775
44.69	49.42	45.70	65.42	5.507	2.450	.5079	.1237	.0350	-10.561	1.332	1.1148	.6989
63.43	67.97	65.06	58.78	2.476	-1.495	.4419	.0896	.0246	-5.159	1.369	1.1117	.7645
86.03	88.33	87.54	56.89	3.321	.342	.4330	.0945	.0245	-1.140	1.389	1.1171	.7828
100.00	100.00	100.00	58.12	1.892	-1.549	.4563	.0861	.0213	7.101	1.389	1.1171	.8295

MOMENTUM AVERAGE STAGE EFFICIENCY = .7629 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7526 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.3528
MASS AVERAGE TEMPERATURE RISE = 1.1196

NASA SMALL AXIAL COMPRESSOR TEST 6 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 8
 EQUIVALENT HEIGHT FLOW = 3.1042 LBM/SEC EQUIVALENT SPEED = 68949.732 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 84.7537 EQUIVALENT FLOW / INLET ANN AREA = 34.2851 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9956

PERCENT SPAN FROM TIP (L. E.)	BETA*1 (DEG)	V*1 (FT/SEC)	VU*1 (FT/SEC)	M*1	BETA1 (DEG)	V1 (FT/SEC)	VU1 (FT/SEC)	M1	VH1 (FT/SEC)	VZ1 (FT/SEC)	U1 (FT/SEC)
0.00	72.02	1493.96	1421.04	1.362	0.00	461.04	0.00	.420	461.04	446.19	1421.04
9.97	70.72	1431.30	1351.05	1.306	0.00	472.54	0.00	.431	472.54	457.07	1351.05
26.74	67.42	1335.71	1233.30	1.223	0.00	512.91	0.00	.470	512.91	503.48	1233.30
43.31	64.82	1234.26	1116.98	1.131	0.00	525.14	0.00	.481	525.14	523.45	1116.98
61.40	62.76	1113.49	990.00	1.019	0.00	509.68	0.00	.467	509.68	509.50	990.00
84.42	60.00	956.54	828.38	.873	0.00	478.28	0.00	.437	478.28	471.86	828.38
100.00	57.43	853.15	719.00	.778	0.00	459.24	0.00	.419	459.24	443.63	719.00

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8783

PERCENT SPAN FROM TIP (T. E.)	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	59.38	1372.89	923.31	.911	39.06	703.69	443.39	.597	546.43	520.83	1366.71
11.44	55.43	1021.94	841.54	.871	38.68	742.68	464.12	.633	579.79	567.12	1305.67
30.40	52.12	950.17	749.89	.816	37.93	739.66	454.67	.635	583.41	579.77	1204.55
48.56	46.51	877.03	636.30	.759	37.99	765.85	471.41	.662	603.57	603.54	1107.72
67.05	39.64	771.57	492.24	.669	41.02	787.50	516.83	.683	594.17	592.41	1009.07
88.06	24.11	706.95	288.74	.619	43.31	895.79	608.27	.776	645.30	634.70	897.01
100.00	15.46	670.19	178.69	.589	45.38	919.66	654.63	.808	645.93	623.98	833.32

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	PERCENT SPAN FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	1.00	12.64	8.188	7.720	.3949	.2214	.0429	2.392	1.569	.7057	.7237
9.97	11.44	12.32	15.29	8.887	7.559	.4037	.2166	.0445	.464	1.590	.7282	.7453
26.74	30.40	32.71	15.30	8.568	6.424	.4021	.1446	.0295	1.920	1.605	.8232	.8345
43.31	48.56	51.94	18.31	8.190	5.300	.4053	.0927	.0194	4.225	1.632	.8957	.9027
61.40	67.05	70.54	23.12	8.412	4.568	.4333	.1148	.0242	8.709	1.625	.8893	.8966
84.42	88.06	89.75	35.89	8.640	3.622	.4081	.0924	.0197	14.634	1.699	.9339	.9386
100.00	100.00	100.00	41.97	8.680	2.606	.3746	.1131	.0232	22.515	1.699	.9338	.9386

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8492 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8386 (ADIABATIC)
 MOMENTUM AVG. ROTOR PRESS RATIO = 1.6221
 MASS AVERAGE TEMPERATURE RISE = 1.1764

NASA SMALL AXIAL COMPRESSOR TEST 6 DECEMBER, 1974 (COMBINED TCHP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 8
 EQUIVALENT HEIGHT FLOW = 1.4090 KG/SEC EQUIVALENT SPEED = 68949.702 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 84.7537 EQUIVALENT FLOW / INLET ANN AREA = 167.3944 KG/SEC-SQ M

 INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9956

PERCENT SPAN FROM TIP (L. E.)	BETA*1 (DEG)	V*1 (M/SEC)	VU*1 (M/SEC)	M*1	BETA1 (DEG)	V1 (M/SEC)	VU1 (M/SEC)	M1	VM1 (M/SEC)	VZ1 (M/SEC)	U1 (M/SEC)
0.00	72.02	455.36	433.13	1.362	0.00	140.53	0.00	.420	140.53	136.60	433.13
9.97	70.72	436.26	411.80	1.306	0.00	144.03	0.00	.431	144.03	139.31	411.80
26.74	67.42	407.12	375.91	1.223	0.00	156.33	0.00	.470	156.33	153.45	375.91
43.31	64.82	376.20	340.45	1.131	0.00	163.06	0.00	.481	160.06	159.55	340.45
61.40	62.76	339.39	301.75	1.019	0.00	155.35	0.00	.467	155.35	155.30	301.75
84.42	60.00	291.55	252.49	.873	0.00	145.78	0.00	.437	145.78	143.82	252.49
100.00	57.43	260.04	219.15	.778	0.00	139.98	0.00	.419	139.98	135.22	219.15

 EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8783

PERCENT SPAN FROM TIP (T. E.)	BETA*2 (DEG)	V*2 (M/SEC)	VU*2 (M/SEC)	M*2	BETA2 (DEG)	V2 (M/SEC)	VU2 (M/SEC)	M2	VM2 (M/SEC)	VZ2 (M/SEC)	U2 (M/SEC)
0.00	59.38	127.02	281.43	.911	39.06	214.48	135.15	.597	166.55	161.19	416.57
11.44	55.43	311.49	256.50	.871	38.68	226.37	141.46	.633	176.72	172.86	397.97
30.40	52.12	289.59	228.57	.816	37.93	225.45	138.58	.635	177.82	176.72	367.15
48.56	46.51	267.32	193.95	.759	37.99	233.43	143.69	.662	183.97	183.96	337.63
67.05	39.64	235.18	150.03	.669	41.02	240.83	157.53	.683	181.10	180.57	307.56
88.76	24.11	215.48	88.01	.619	43.31	270.29	185.40	.776	196.69	193.46	273.41
100.00	15.46	204.27	54.46	.589	45.38	280.31	199.53	.808	196.88	190.19	254.00

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING TRAILING EDGE EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCTION SUR (DEG)	O FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	12.64	8.188	7.720	.3949	.2214	.0429	2.392	1.569	.7237
9.97	11.44	12.32	15.29	8.887	7.559	.4037	.2166	.0445	.464	1.590	.7453
26.74	30.40	12.71	15.30	8.568	6.424	.4021	.1446	.0295	1.920	1.605	.8345
43.31	48.56	11.94	18.31	8.190	5.300	.4053	.0927	.0194	4.225	1.632	.8957
61.40	67.05	70.54	23.12	8.412	4.568	.4333	.1148	.0242	8.709	1.625	.8966
84.42	88.06	89.75	35.89	8.640	3.622	.4081	.0924	.0197	14.634	1.699	.9386
100.00	100.00	100.00	41.97	8.680	2.606	.3746	.1131	.0232	22.515	1.699	.9386

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8492 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8386 (ADIABATIC)

MOMENTUM AVG. ROTOR PRESS RATIO = 1.6221
 MASS AVERAGE TEMPERATURE RISE = 1.1764

ORIGINAL PAGE IS
OF POOR QUALITY

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 8

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9056

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	35.24	791.20	456.56	.678	646.18	639.08	1327.30
10.97	35.89	810.23	474.96	.696	656.43	655.34	1275.88
29.43	34.25	818.22	460.48	.709	676.34	676.33	1189.35
47.38	34.16	841.38	472.48	.734	696.19	695.67	1105.21
66.06	37.00	851.42	512.45	.744	679.94	677.45	1017.69
87.58	39.67	932.28	595.13	.821	717.60	707.97	916.80
100.00	40.95	969.26	635.31	.858	732.01	711.79	858.59

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9259

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	-9.52	704.91	-116.59	.598	695.20	695.20	1317.67
11.25	-9.47	726.98	-119.60	.618	717.08	716.99	1272.37
30.04	-7.94	738.03	-131.92	.634	730.96	730.63	1196.68
48.38	-7.10	750.10	-92.74	.648	744.34	743.57	1122.81
67.14	-7.44	744.24	-96.32	.642	737.99	737.58	1047.26
88.23	-5.92	757.94	-78.14	.653	753.90	751.15	962.33
100.00	-5.88	763.42	-78.25	.658	759.39	759.39	914.91

STATOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	SPAN FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCTION SUR (DEG)	J FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	44.76	-1.075	-4.997	.3718	.0852	.0303	12.660	1.533	1.1941	.6523
10.97	11.25	12.32	45.36	-.280	-3.637	.3575	.0759	.0260	7.105	1.557	1.1941	.6761
29.43	30.04	32.71	42.19	-2.309	-5.639	.3225	.0715	.0233	5.271	1.572	1.1755	.6835
47.38	48.38	51.94	41.27	-3.487	-6.494	.3117	.0920	.0280	4.902	1.586	1.1673	.6330
66.06	67.14	70.54	44.44	-2.370	-5.267	.3265	.1001	.0285	3.669	1.575	1.1671	.6536
87.58	88.23	99.75	45.59	-2.558	-5.474	.3707	.1088	.0497	5.616	1.585	1.1748	.5529
100.00	100.00	100.00	46.84	-3.677	-7.119	.3888	.1768	.0445	12.017	1.584	1.1748	.6330

MOMENTUM AVERAGE STAGE EFFICIENCY = .7955 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7821 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.5733
MASS AVERAGE TEMPERATURE RISE = 1.1764

NASA SMALL AXIAL COMPRESSOR TEST 6 DECEMBER, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 8

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9056

PERCENT SPAN FROM TIP (L. E.)	BETA 3 (DFG)	V3 (M/SEC)	VU3 (M/SEC)	M3	VM3 (M/SEC)	VZ3 (M/SEC)	U3 (M/SEC)
0.00	35.24	241.16	139.16	.678	196.95	194.79	404.56
10.97	35.89	246.96	144.77	.696	200.08	199.75	388.89
29.43	34.25	249.39	140.35	.709	206.15	206.15	362.51
47.38	34.16	256.45	144.01	.734	212.20	212.04	336.87
66.06	37.00	259.51	156.20	.744	207.24	206.49	310.19
87.58	39.67	284.16	181.40	.821	218.73	215.79	279.44
100.00	40.95	295.43	193.64	.858	223.12	216.95	261.70

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9259

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VM4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	-9.52	214.86	-35.54	.598	211.90	211.90	401.63
11.25	-9.47	221.58	-36.46	.618	218.56	218.54	387.82
30.04	-7.94	224.95	-31.07	.634	222.80	222.70	364.75
48.38	-7.10	228.63	-28.27	.648	226.87	226.64	342.23
67.14	-7.44	226.85	-29.36	.642	224.94	224.81	319.20
88.23	-5.92	231.02	-23.82	.653	229.79	228.95	293.32
100.00	-5.98	232.69	-23.85	.658	231.46	231.46	278.86

STATOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCTION SUR (DEG)	D FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	44.76	-1.075	-4.997	.3718	.0852	.0303	12.660	1.533	1.1941	.6523
10.97	11.25	12.32	45.36	-.280	-3.637	.3575	.0759	.0260	7.105	1.557	1.1941	.6761
29.43	30.04	32.71	42.19	-2.309	-5.639	.3225	.0715	.0233	5.271	1.572	1.1755	.6835
47.38	40.38	51.94	41.27	-3.487	-6.494	.3117	.0920	.0280	4.902	1.586	1.1673	.6330
66.06	67.14	70.54	44.44	-2.370	-5.267	.3265	.1001	.0285	3.669	1.575	1.1671	.6536
87.58	88.23	89.75	45.59	-2.558	-5.474	.3707	.1088	.0497	5.616	1.585	1.1748	.5529
100.00	100.00	100.00	46.84	-3.677	-7.119	.3888	.1768	.0445	12.817	1.584	1.1748	.6330

MOMENTUM AVERAGE STAGE EFFICIENCY = .7955 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7821 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.5733
MASS AVERAGE TEMPERATURE RISE = 1.1764

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 9
 EQUIVALENT WEIGHT FLOW = 3.0196 LBM/SEC EQUIVALENT SPEED = 68892.608 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 82.4442 EQUIVALENT FLOW / INLET ANN AREA = 33.3508 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9882

PERCENT SPAN FROM TIP (L. E.)	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	72.55	1488.34	1419.86	1.355	0.00	446.28	0.00	.406	446.28	431.90	1419.86
9.98	71.28	1425.24	1349.86	1.299	0.00	457.38	0.00	.417	457.38	442.41	1349.86
26.66	68.08	1328.91	1232.83	1.215	0.00	496.11	0.00	.454	496.11	487.00	1232.83
43.01	65.57	1228.05	1118.14	1.124	0.00	507.81	0.00	.465	507.81	506.17	1118.14
60.96	63.57	1108.11	992.29	1.013	0.00	493.23	0.00	.451	493.23	493.06	992.29
84.07	60.82	950.83	830.16	.867	0.00	463.58	0.00	.423	463.58	457.36	830.16
100.00	58.16	845.65	718.41	.770	0.00	446.10	0.00	.406	446.10	430.94	718.41

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8742

PERCENT SPAN FROM TIP (T. E.)	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	59.39	1046.72	900.86	.885	41.09	707.12	464.71	.598	532.97	515.81	1365.57
11.44	56.15	995.08	818.15	.835	41.56	733.23	486.44	.622	548.64	536.66	1304.58
30.73	52.41	910.49	721.51	.778	40.85	734.21	480.27	.628	555.34	551.88	1201.78
48.87	46.95	846.07	618.25	.729	40.13	755.42	486.89	.651	577.58	577.55	1105.14
67.31	40.12	750.70	483.71	.650	42.34	776.68	523.12	.672	574.08	572.39	1006.83
88.21	23.44	689.99	274.47	.603	44.45	886.77	620.97	.775	633.05	622.65	895.45
100.00	14.56	654.78	164.57	.575	46.51	921.85	668.07	.808	633.76	612.22	832.63

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCTION SUR (DEG)	D FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	13.16	8.715	8.247	.4156	.2208	.0428	2.400	1.614	.7191	.7373
9.98	11.44	12.34	15.13	9.448	8.120	.4327	.2280	.0460	1.184	1.620	.7254	.7433
26.66	30.73	32.65	15.66	9.216	7.077	.4351	.1595	.0324	2.333	1.635	.8137	.8261
43.01	48.07	51.68	18.63	8.905	6.031	.4312	.0968	.0201	4.803	1.653	.8942	.9014
60.96	67.31	70.20	23.45	9.175	5.347	.4508	.0997	.0208	9.389	1.646	.9053	.9117
84.07	88.21	89.58	37.38	9.426	4.411	.4254	.0650	.0139	14.184	1.734	.9547	.9581
100.00	100.00	100.00	43.61	9.409	3.335	.3905	.0811	.0167	21.608	1.735	.9547	.9581

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8543 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8436 (ADIABATIC)

MOMENTUM AVG. ROTOR PRESS RATIO = 1.6512
 MASS AVERAGE TEMPERATURE RISE = 1.1823

NASA SMALL AXIAL COMPRESSOR TEST 6 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 9
 EQUIVALENT FLOW FLOW = 1.3697 KG/SEC EQUIVALENT SPEED = 68892.608 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 82.4442 EQUIVALENT FLOW / INLET ANN AREA = 162.8328 KG/SEC-SQ M

 INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9882

PERCENT SPAN FROM TIP (L. E.)	BETA*1 (DEG)	V*1 (M/SEC)	VU*1 (M/SEC)	M*1	BETA1 (DEG)	V1 (M/SEC)	VU1 (M/SEC)	M1	VM1 (M/SEC)	VZ1 (M/SEC)	U1 (M/SEC)
0.00	72.55	453.65	432.77	1.355	0.00	136.02	0.00	.406	136.02	131.64	432.77
9.98	71.28	434.41	411.44	1.299	0.00	139.41	0.00	.417	139.41	134.85	411.44
26.66	68.08	405.05	375.77	1.215	0.00	151.21	0.00	.454	151.21	148.44	375.77
43.01	65.57	374.31	340.81	1.124	0.00	154.78	0.00	.465	154.78	154.28	340.81
60.96	63.57	337.75	302.45	1.013	0.00	150.34	0.00	.451	150.34	150.28	302.45
84.07	60.82	299.81	253.03	.867	0.00	141.30	0.00	.423	141.30	139.40	253.03
100.00	58.16	257.75	218.97	.770	0.00	135.97	0.00	.406	135.97	131.35	218.97

 EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8742

PERCENT SPAN FROM TIP (T. E.)	BETA*2 (DEG)	V*2 (M/SEC)	VU*2 (M/SEC)	M*2	BETA2 (DEG)	V2 (M/SEC)	VU2 (M/SEC)	M2	VM2 (M/SEC)	VZ2 (M/SEC)	U2 (M/SEC)
0.00	59.39	319.04	274.58	.885	41.09	215.53	141.64	.598	162.45	157.22	416.23
11.44	56.15	330.25	249.37	.835	41.56	223.49	148.27	.622	167.23	163.57	397.64
30.73	52.41	277.52	219.92	.778	40.85	223.79	146.39	.628	169.27	168.21	366.30
48.87	46.95	257.86	188.44	.729	40.13	230.25	148.40	.651	176.05	176.04	336.85
67.31	40.12	228.81	147.44	.650	42.34	236.73	159.45	.672	174.98	174.46	306.88
88.21	23.44	210.31	83.66	.603	44.45	270.29	189.27	.775	192.95	189.78	272.93
100.00	14.56	199.58	50.16	.575	46.51	280.68	203.63	.808	193.17	186.61	253.79

ROTOR PERFORMANCE DATA

PERCENT LEADING EDGE	SPAN FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DFG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	13.16	8.715	8.247	.4156	.2208	.0428	2.400	1.614	.7191	.7373
9.98	11.44	12.34	15.13	9.448	8.120	.4327	.2280	.0460	1.184	1.620	.7254	.7433
26.66	30.73	32.65	15.66	9.216	7.077	.4351	.1595	.0324	2.333	1.635	.8137	.8261
43.01	48.87	51.68	18.63	8.905	6.031	.4312	.0968	.0201	4.803	1.653	.8942	.9014
60.96	67.31	70.24	23.45	9.175	5.347	.4508	.0997	.0208	9.389	1.646	.9053	.9117
84.07	88.21	89.58	37.38	9.420	4.411	.4254	.0650	.0139	14.184	1.734	.9547	.9581
100.00	100.00	100.00	43.61	9.409	3.335	.3905	.0811	.0167	21.608	1.735	.9547	.9581

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8543 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOP EFFICIENCY = .8436 (ADIABATIC)

MOMENTUM AVG. ROTOR PRESS RATIO = 1.6512
 MASS AVERAGE TEMPERATURE RISE = 1.1823

ORIGINAL PAGE IS
OF POOR QUALITY

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 9

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9068

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	37.92	778.57	478.51	.663	614.17	607.42	1326.20
11.05	39.19	797.99	497.93	.672	610.73	609.71	1274.46
29.81	37.41	800.74	486.41	.690	636.07	636.06	1186.60
47.69	36.50	820.29	487.89	.712	659.42	658.94	1102.88
66.26	38.61	830.87	518.44	.724	649.28	646.91	1015.91
87.65	41.12	923.39	607.22	.811	695.66	686.32	915.73
100.00	42.40	961.42	648.27	.849	709.99	690.37	857.88

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9300

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	-10.04	650.64	-113.43	.547	640.68	640.68	1316.58
11.32	-9.96	666.83	-115.36	.562	656.77	656.69	1271.01
30.24	-8.12	676.70	-95.62	.575	669.91	669.61	1194.89
48.53	-7.96	688.46	-95.34	.589	681.82	681.12	1121.26
67.24	-7.96	687.25	-95.17	.589	680.63	680.25	1045.98
88.23	-6.27	710.19	-77.54	.607	705.94	703.36	961.50
100.00	-6.23	715.34	-77.64	.612	711.11	711.11	914.15

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING TRAILING EDGE EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00 0.00	0.00	47.96	1.605	-2.318	.4401	.0865	.0307	12.140	1.578	1.2033	.7563
11.05 11.32	12.34	49.15	3.821	-3.332	.4239	.0628	.0215	6.594	1.593	1.2033	.8131
29.81 30.24	32.65	45.53	.829	-2.490	.3919	.0645	.0210	5.066	1.606	1.1849	.8111
47.69 48.53	51.68	44.46	-1.180	-4.182	.3756	.0698	.0212	4.034	1.620	1.1724	.8043
66.26 67.24	70.20	46.57	-.793	-3.684	.3799	.0617	.0175	3.142	1.616	1.1687	.8088
87.65 88.23	89.58	47.39	-1.126	-4.040	.4195	.1623	.0427	5.265	1.636	1.1781	.6796
100.00 100.00	100.00	48.63	-2.234	-5.675	.4369	.1516	.0381	12.469	1.636	1.1782	.7311

MOMENTUM AVERAGE STAGE EFFICIENCY = .8146 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .8017 (ADIABATIC)MOMENTUM AVG. STAGE PRESS RATIO = 1.6132
MASS AVERAGE TEMPERATURE RISE = 1.1823

NASA SMALL AXIAL COMPRESSOR TEST 6 DECEMBER, 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 = .9068

PERCENT SPAN FROM TIP (L. E.)	BETA 3 (DEG)	V3 (M/SEC)	VU3 (M/SEC)	M3	V43 (M/SEC)	VZ3 (M/SEC)	U3 (M/SEC)
0.00	37.92	237.31	145.85	.663	187.20	185.14	404.22
11.05	39.19	240.18	151.77	.672	186.15	185.84	388.46
29.81	37.41	244.06	148.26	.690	193.87	193.87	361.68
47.69	36.50	250.02	148.71	.712	200.99	200.84	336.16
66.26	38.61	253.25	158.02	.724	197.90	197.18	309.65
87.65	41.12	281.45	185.08	.811	212.04	209.19	279.11
100.00	42.40	293.04	197.59	.849	216.40	210.43	261.48

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9300

PERCENT SPAN FROM TIP (T. F.)	BETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VW4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	-10.94	198.31	-34.57	.547	195.28	195.28	401.29
11.32	-9.96	203.25	-35.16	.562	200.18	200.16	387.40
30.24	-8.12	206.26	-29.14	.575	204.19	204.10	364.20
48.53	-7.96	209.84	-29.06	.589	207.82	207.61	341.76
67.24	-7.36	209.47	-29.01	.589	207.45	207.34	318.81
88.23	-6.27	216.47	-23.63	.607	215.17	214.39	293.07
100.00	-6.23	218.04	-23.67	.612	216.75	216.75	278.63

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING TRAILING EDGE EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	47.96	1.605	-2.318	.4401	.0865	.0307	12.140	1.578	1.2033	.7563
11.05	11.32	49.15	3.021	-.332	.4239	.0628	.0215	6.594	1.593	1.2033	.8131
29.81	30.24	45.53	.829	-2.490	.3919	.0645	.0210	5.066	1.606	1.1849	.8111
47.69	48.53	44.46	-1.180	-4.182	.3756	.0698	.0212	4.034	1.620	1.1724	.8043
66.26	67.24	46.57	-.793	-3.684	.3799	.0617	.0175	3.142	1.616	1.1687	.8388
87.65	88.23	47.39	-1.126	-4.040	.4195	.1623	.0427	5.265	1.636	1.1781	.6796
100.00	100.00	48.63	-2.234	-5.675	.4369	.1516	.0381	12.469	1.636	1.1782	.7311

MOMENTUM AVERAGE STAGE EFFICIENCY = .8146 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .8017 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.6132
MASS AVERAGE TEMPERATURE RISE = 1.1823

NASA SMALL AXIAL COMPRESSOR TEST 6 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 10
 EQUIVALENT WEIGHT FLOW = 2.7946 LBM/SEC EQUIVALENT SPEED = 68969.729 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 76.3004 EQUIVALENT FLOW / INLET ANN AREA = 30.8655 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9968

PERCENT SPAN FROM TIP (L. E.)	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	74.04	1478.41	1421.45	1.343	0.00	406.42	0.00	.369	406.42	393.33	1421.45
10.35	72.83	1411.69	1348.75	1.283	0.00	416.82	0.00	.379	416.82	403.18	1348.75
27.85	69.85	1311.77	1231.50	1.195	0.00	451.84	0.00	.412	451.84	443.53	1231.50
42.85	67.58	1212.09	1120.51	1.105	0.00	462.19	0.00	.421	462.19	460.71	1120.51
60.63	65.72	1092.27	995.66	.995	0.00	449.14	0.00	.409	449.14	448.99	995.66
83.99	63.08	932.68	831.62	.848	0.00	422.26	0.00	.384	422.26	416.59	831.62
100.00	60.54	826.06	719.21	.750	0.00	406.33	0.00	.369	406.33	392.52	719.21

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8993

PERCENT SPAN FROM TIP (T. E.)	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	60.39	990.81	861.43	.831	45.93	703.80	505.67	.590	489.53	473.76	1367.10
11.15	57.31	925.54	778.91	.778	46.60	727.62	528.68	.612	499.92	489.00	1307.60
30.43	54.71	782.59	638.79	.658	51.38	724.38	565.97	.609	452.10	449.28	1204.77
49.23	47.48	747.71	551.11	.637	47.60	749.37	553.35	.639	505.33	505.30	1104.45
67.39	39.59	676.79	431.32	.581	47.85	777.21	576.24	.667	521.54	520.00	1007.56
88.10	22.29	610.06	231.38	.529	49.70	872.77	665.65	.756	564.48	555.20	897.03
100.00	11.71	576.98	117.08	.503	51.74	912.44	716.48	.795	564.97	545.77	833.56

ROTOR PERFORMANCE DATA

PERCENT LEADING EDGE	SPAN FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	13.65	10.207	9.739	.4601	.2216	.0417	3.401	1.702	.7397	.7583
10.35	11.15	12.76	15.52	11.070	9.720	.4805	.2336	.0457	2.272	1.705	.7422	.7608
27.05	30.43	33.06	15.14	11.053	8.889	.5472	.2548	.0490	4.523	1.692	.7412	.7595
42.85	49.23	51.47	20.10	10.893	8.029	.5212	.1685	.0346	5.504	1.700	.8349	.8468
60.63	67.39	69.88	26.13	11.290	7.474	.5237	.1465	.0309	8.921	1.695	.8735	.8825
83.99	88.10	89.50	40.79	11.672	6.665	.5111	.1439	.0311	12.879	1.753	.9078	.9147
100.00	100.00	100.00	48.83	11.783	5.708	.4825	.1797	.0374	18.759	1.753	.9078	.9148

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8244 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8108 (ADIABATIC)

MOMENTUM AVG. ROTOR PRESS RATIO = 1.7074
 MASS AVERAGE TEMPERATURE RISE = 1.2033

NASA SMALL AXIAL COMPRESSOR TEST 6 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 10
 EQUIVALENT HEIGHT FLOW = 1.2676 KG/SEC EQUIVALENT SPEED = 68969.729 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 76.3004 EQUIVALENT FLOW / INLET ANN AREA = 150.6985 KG/SEC-SQ M

 INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9968

PERCENT SPAN FROM TIP (L. F.)	BETA*1 (DEG)	V*1 (M/SEC)	VU*1 (M/SEC)	M*1	BETA1 (DEG)	V1 (M/SEC)	VU1 (M/SEC)	M1	VM1 (M/SEC)	VZ1 (M/SEC)	U1 (M/SEC)
0.00	74.04	450.62	433.26	1.343	0.00	123.88	0.00	.369	123.88	119.89	433.26
10.35	72.83	430.28	411.10	1.283	0.00	127.05	0.00	.379	127.05	122.89	411.10
27.05	69.85	399.83	375.36	1.195	0.00	137.72	0.00	.412	137.72	135.19	375.36
42.85	67.58	369.45	341.53	1.105	0.00	140.88	0.00	.421	140.88	140.42	341.53
60.63	65.72	332.93	303.48	.995	0.00	136.90	0.00	.409	136.90	136.85	303.48
83.99	63.08	284.28	253.48	.848	0.00	128.71	0.00	.384	128.71	126.98	253.48
100.00	60.54	251.78	219.22	.750	0.00	123.85	0.00	.369	123.85	119.64	219.22

 EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8993

PERCENT SPAN FROM TIP (T. F.)	BETA*2 (DEG)	V*2 (M/SEC)	VU*2 (M/SEC)	M*2	BETA2 (DEG)	V2 (M/SEC)	VU2 (M/SEC)	M2	VM2 (M/SEC)	VZ2 (M/SEC)	U2 (M/SEC)
0.00	60.39	302.00	262.56	.831	45.93	214.52	154.13	.590	149.21	144.40	416.69
11.15	57.31	282.11	237.41	.778	46.60	221.78	161.14	.612	152.38	149.05	398.56
30.43	54.71	238.53	194.70	.658	51.38	220.79	172.51	.609	137.80	136.94	367.21
49.23	47.48	227.90	167.98	.637	47.60	229.41	168.66	.639	154.02	154.02	336.64
67.39	39.59	206.29	131.47	.581	47.85	236.89	175.64	.667	158.97	158.50	307.10
88.10	22.29	185.95	70.52	.529	49.70	266.02	202.89	.756	172.05	169.23	273.42
100.00	11.71	175.86	35.69	.503	51.74	278.11	218.38	.795	172.20	166.35	254.07

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	13.65	10.207	9.739	.4601	.2216	.0417	3.401	1.702	.7397	.7583
10.35	11.15	12.76	15.52	11.070	9.720	.4805	.2336	.0457	2.272	1.705	.7422	.7608
27.05	30.43	33.06	15.14	11.053	8.889	.5472	.2548	.0490	4.523	1.692	.7412	.7595
42.85	49.23	51.47	20.10	10.893	8.029	.5212	.1685	.0346	5.504	1.700	.8349	.8468
60.63	67.39	69.88	26.13	11.290	7.474	.5237	.1465	.0309	8.921	1.695	.8735	.8825
83.99	88.10	89.50	40.79	11.672	6.665	.5111	.1439	.0311	12.879	1.753	.9078	.9147
100.00	100.00	100.00	48.83	11.783	5.788	.4825	.1797	.0374	18.759	1.753	.9078	.9148

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8244 (POLYTROPIC) MOMENTUM AVG. ROTOR PRESS RATIO = 1.7074
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8108 (ADIABATIC) MASS AVERAGE TEMPERATURE RISE = 1.2033

ORIGINAL PAGE IS
OF POOR QUALITY

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 10

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9240

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	43.04	762.94	520.68	.644	557.65	551.52	1327.68
10.91	44.48	772.92	541.56	.653	551.46	550.55	1276.51
29.69	47.39	779.58	573.72	.660	527.82	527.81	1188.50
47.95	43.77	801.06	554.14	.687	578.48	578.05	1102.88
66.26	44.20	818.92	570.88	.707	587.13	584.99	1017.01
87.58	46.35	899.80	651.10	.783	621.05	612.71	917.09
100.00	47.58	941.89	695.33	.824	635.35	617.80	858.84

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	-12.98	595.59	-133.78	.495	580.37	580.37	1318.05
11.44	-12.90	593.08	-132.39	.492	578.12	578.04	1271.96
30.58	-11.04	589.50	-112.88	.490	578.60	578.34	1194.84
48.81	-10.37	597.82	-107.61	.502	588.05	587.45	1121.40
67.50	-9.33	615.73	-99.84	.520	607.58	607.24	1046.11
88.24	-6.80	627.91	-74.35	.530	623.49	621.21	962.55
100.00	-6.75	632.00	-74.28	.533	627.62	627.62	915.17

STATOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	56.02	6.719	2.796	.5304	.1027	.0360	9.200	1.660	1.2215	.7731
10.91	11.44	12.76	57.38	8.315	4.955	.5354	.1161	.0393	3.630	1.656	1.2215	.7566
29.69	30.58	33.06	58.43	10.815	7.493	.5311	.0995	.0321	2.116	1.650	1.2184	.8007
47.95	48.81	51.47	54.14	6.070	3.071	.5031	.0876	.0264	1.806	1.660	1.1958	.8326
66.26	67.50	69.88	53.53	4.795	1.904	.4777	.0372	.0105	1.768	1.677	1.1860	.9287
87.58	88.24	89.50	53.15	4.125	1.209	.5071	.1162	.0305	4.733	1.685	1.1913	.8152
100.00	100.00	100.00	54.33	2.949	-.493	.5247	.1074	.0270	11.951	1.686	1.1913	.8437

MOMENTUM AVERAGE STAGE EFFICIENCY = .7868 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7710 (ADIABATIC)MOMENTUM AVG. STAGE PRESS RATIO = 1.6662
MASS AVERAGE TEMPERATURE RISE = 1.2033

NASA SMALL AXIAL COMPRESSOR TEST 6 DECEMBER, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 10

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9249

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	43.04	232.54	158.70	.644	169.97	168.10	404.68
10.91	44.48	235.58	165.07	.653	168.09	167.81	389.08
29.69	47.39	237.62	174.87	.660	160.88	160.88	362.25
47.95	43.77	244.16	168.90	.687	176.32	176.19	336.16
66.26	44.20	249.61	174.01	.707	178.96	178.30	309.99
87.58	46.35	274.26	198.45	.783	189.30	186.76	279.53
100.00	47.58	287.09	211.94	.824	193.66	188.30	261.77

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9300

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VM4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	-12.98	181.54	-40.77	.495	176.90	176.90	401.74
11.44	-12.90	180.77	-40.35	.492	176.21	176.19	387.69
30.58	-11.74	179.68	-34.41	.490	176.36	176.28	364.19
48.81	-10.37	182.21	-32.80	.502	179.24	179.05	341.80
67.50	-9.33	187.67	-30.43	.520	185.19	185.09	318.85
88.24	-6.80	191.39	-22.66	.530	190.04	189.35	293.39
100.00	-6.75	192.63	-22.64	.533	191.30	191.30	278.94

STATOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (GCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCTION SUR (DEG)	U FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	56.02	6.719	2.796	.5304	.1027	.0360	9.200	1.660	1.2215	.7731
10.91	11.44	12.76	57.38	8.315	4.955	.5354	.1161	.0393	3.633	1.656	1.2215	.7566
29.69	30.58	33.06	58.43	10.815	7.493	.5311	.0995	.0321	2.116	1.650	1.2184	.8007
47.95	48.81	51.47	54.14	6.070	3.071	.5031	.0876	.0264	1.606	1.660	1.1958	.8326
66.26	67.50	69.82	53.53	4.795	1.904	.4777	.0372	.0105	1.768	1.677	1.1860	.9287
87.58	88.24	89.50	53.15	4.125	1.209	.5071	.1162	.0305	4.733	1.685	1.1913	.8152
100.00	100.00	100.00	54.33	2.949	-.493	.5247	.1074	.0270	11.951	1.686	1.1913	.8437

MOMENTUM AVERAGE STAGE EFFICIENCY = .7868 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7710 (ADIABATIC)MOMENTUM AVG. STAGE PRESS RATIO = 1.6662
MASS AVERAGE TEMPERATURE RISE = 1.2033

NASA SMALL AXIAL COMPRESSOR TEST 6 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 11
 EQUIVALENT FLOW = 2.9297 LBM/SEC EQUIVALENT SPEED = 68945.585 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 79.9902 EQUIVALENT FLOW / INLET ANN AREA = 32.3581 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9903

PERCENT SPAN FROM TIP (L. E.)	BETA*1 (DEG)	V*1 (FT/SEC)	VU*1 (FT/SEC)	M*1	BETA1 (DEG)	V1 (FT/SEC)	VU1 (FT/SEC)	M1	VN1 (FT/SEC)	VZ1 (FT/SEC)	U1 (FT/SEC)
0.00	73.17	1484.50	1420.95	1.350	0.00	429.91	0.00	.391	429.91	416.07	1420.95
10.35	71.89	1418.58	1349.30	1.291	0.00	440.97	0.00	.401	440.97	426.54	1348.30
27.20	68.74	1319.77	1229.98	1.205	0.00	478.48	0.00	.437	478.48	469.69	1229.98
43.31	66.33	1219.54	1116.93	1.114	0.00	489.63	0.00	.447	489.63	488.06	1116.93
61.09	64.38	1100.27	992.08	1.004	0.00	475.78	0.00	.434	475.78	475.62	992.08
84.11	61.68	943.44	830.52	.859	0.00	447.56	0.00	.408	447.56	441.55	830.52
100.00	59.05	838.28	718.96	.763	0.00	431.06	0.00	.392	431.06	416.41	718.96

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9016

PERCENT SPAN FROM TIP (T. E.)	BETA*2 (DEG)	V*2 (FT/SEC)	VU*2 (FT/SEC)	M*2	BETA2 (DEG)	V2 (FT/SEC)	VU2 (FT/SEC)	M2	VN2 (FT/SEC)	VZ2 (FT/SEC)	U2 (FT/SEC)
0.00	59.28	1021.33	878.06	.860	43.12	714.73	488.57	.602	521.67	504.87	1366.62
11.28	57.05	947.95	795.43	.799	44.74	726.01	511.06	.612	515.66	504.39	1306.48
30.80	53.45	841.89	676.36	.713	46.37	726.61	525.97	.616	501.32	498.19	1202.33
48.92	47.72	801.03	592.66	.687	43.59	744.05	513.04	.638	538.89	538.86	1105.70
66.94	41.03	712.66	467.82	.614	45.22	763.27	541.80	.658	537.61	536.03	1009.62
87.82	24.08	625.15	255.02	.542	48.42	859.95	643.23	.746	570.76	561.39	898.25
100.00	13.76	588.30	139.93	.513	50.51	898.46	693.34	.784	571.41	551.99	833.27

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	PERCENT SPAN FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCTION SUR (DEG)	D FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	13.88	9.330	8.862	.4374	.2079	.0404	2.294	1.683	.7482	.7658
10.35	11.28	12.77	14.84	10.132	8.782	.4626	.2296	.0453	2.037	1.671	.7375	.7556
27.20	30.80	33.25	15.29	9.970	7.796	.4947	.2026	.0401	3.398	1.674	.7814	.7966
43.31	48.92	51.97	18.61	9.698	6.809	.4706	.1157	.0236	5.601	1.682	.8801	.8885
61.09	66.94	70.33	23.35	9.999	6.165	.4864	.1105	.0228	10.011	1.671	.8996	.9066
84.11	87.82	89.63	37.60	10.285	5.275	.4955	.1253	.0267	14.263	1.732	.9162	.9224
100.00	100.00	101.00	45.29	10.303	4.228	.4708	.1548	.0320	20.812	1.732	.9161	.9223

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8435 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8316 (ADIABATIC)

MOMENTUM AVG. ROTOR PRESS RATIO = 1.6839
 MASS AVERAGE TEMPERATURE RISE = 1.1927

NASA SMALL AXIAL COMPRESSOR TEST 6 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 11
 EQUIVALENT WEIGHT FLOW = 1.3289 KG/SEC EQUIVALENT SPEED = 68945.585 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 79.9902 EQUIVALENT FLOW / INLET ANN AREA = 157.9860 KG/SEC-SQ M

 INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9903

PERCENT SPAN FROM TIP (L. E.)	BETA*1 (DEG)	V*1 (M/SEC)	VU*1 (M/SEC)	M*1	BETA1 (DEG)	V1 (M/SEC)	VU1 (M/SEC)	M1	VM1 (M/SEC)	VZ1 (M/SEC)	U1 (M/SEC)
0.00	73.17	452.50	433.11	1.350	0.00	131.04	0.00	.391	131.04	126.82	433.11
10.35	71.89	432.38	410.96	1.291	0.00	134.41	0.00	.401	134.41	130.01	410.96
27.20	68.74	402.26	374.90	1.205	0.00	145.84	0.00	.437	145.84	143.16	374.90
43.31	66.33	371.71	340.44	1.114	0.00	149.24	0.00	.447	149.24	148.76	340.44
61.09	64.38	335.36	302.39	1.004	0.00	145.02	0.00	.434	145.02	144.97	302.39
84.11	61.68	287.56	253.14	.859	0.00	136.42	0.00	.408	136.42	134.58	253.14
100.00	59.05	255.51	219.14	.763	0.00	131.39	0.00	.392	131.39	126.92	219.14

 EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9016

PERCENT SPAN FROM TIP (T. E.)	BETA*2 (DEG)	V*2 (M/SEC)	VU*2 (M/SEC)	M*2	BETA2 (DEG)	V2 (M/SEC)	VU2 (M/SEC)	M2	VM2 (M/SEC)	VZ2 (M/SEC)	U2 (M/SEC)
0.00	59.28	311.30	267.63	.860	43.12	217.85	148.92	.602	159.00	153.88	416.55
11.28	57.05	288.93	242.45	.799	44.74	221.29	155.77	.612	157.17	153.74	398.22
30.80	53.45	256.61	206.15	.713	46.37	221.47	160.32	.616	152.80	151.83	366.47
48.92	47.72	244.15	180.64	.697	43.59	226.79	156.37	.638	164.25	164.25	337.02
66.94	41.03	217.22	142.59	.614	45.22	232.64	165.14	.658	163.86	163.38	307.73
87.82	24.08	190.54	77.73	.542	48.42	262.11	196.86	.746	173.97	171.11	273.79
100.00	13.76	179.31	42.65	.513	50.51	273.85	211.33	.784	174.17	168.25	253.98

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	13.88	9.330	8.862	.4374	.2079	.0404	2.294	1.683	.7482	.7658
10.35	11.28	12.77	14.84	10.132	8.782	.4626	.2296	.0453	2.037	1.671	.7375	.7556
27.20	30.80	33.25	15.29	9.970	7.796	.4947	.2026	.0401	3.398	1.674	.7814	.7966
43.31	48.92	51.97	18.61	9.698	6.809	.4706	.1157	.0236	5.601	1.682	.8801	.8885
61.09	66.94	70.33	23.35	9.999	6.165	.4864	.1105	.0228	10.011	1.671	.8996	.9066
84.11	87.82	89.63	37.60	10.285	5.275	.4955	.1253	.0267	14.263	1.732	.9162	.9224
100.00	100.00	100.00	45.29	10.303	4.228	.4708	.1548	.0320	20.812	1.732	.9161	.9223

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8435 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8316 (ADIABATIC)

MOMENTUM AVG. ROTOR PRESS RATIO = 1.6839
 MASS AVERAGE TEMPERATURE RISE = 1.1927

ORIGINAL PAGE IS
OF POOR QUALITY

NASA SMALL AXIAL COMPRESSOR TEST 6 DECEMBER, 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 = .9230

PERCENT SPAN FROM TIP (I. C.)	BETA 3 (DEG)	V3 (FT/SEC)	VU3 (FT/SEC)	M3	VM3 (FT/SEC)	VZ3 (FT/SEC)	U3 (FT/SEC)
0.00	40.08	781.36	503.08	.663	597.86	591.29	1327.22
11.02	42.24	778.67	523.44	.660	576.49	575.54	1275.59
30.01	42.41	790.29	532.95	.674	583.54	583.53	1186.58
47.82	39.67	805.48	514.24	.695	619.96	619.51	1103.11
66.02	41.26	814.94	537.46	.706	612.59	610.35	1017.78
87.43	44.56	896.02	629.76	.781	637.38	628.82	917.45
100.00	45.91	937.05	673.05	.822	651.96	633.95	858.54

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9300

PERCENT SPAN FROM TIP (I. C.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	-10.21	630.54	-111.77	.527	620.56	620.56	1317.59
11.39	-10.12	633.24	-111.32	.529	623.38	623.30	1271.73
30.42	-8.31	629.95	-91.05	.529	623.34	623.06	1195.06
48.67	-8.31	637.86	-92.17	.541	631.17	630.52	1121.57
67.32	-8.13	640.70	-90.62	.545	634.26	633.92	1046.46
88.21	-6.27	660.41	-72.15	.560	656.45	654.05	962.32
100.00	-6.23	664.57	-72.12	.564	660.65	660.65	914.85

STATOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	Y FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	50.29	3.761	-1.161	.4784	.0921	.0326	11.970	1.643	1.2139	.7749
11.02	11.39	12.77	52.36	6.070	2.715	.4697	.0622	.0213	6.416	1.645	1.2139	.8437
30.01	30.42	33.25	50.72	5.819	2.506	.4601	.0747	.0243	4.861	1.641	1.2025	.8264
47.82	48.67	51.97	47.98	1.987	-1.014	.4354	.0644	.0195	3.677	1.653	1.1817	.8554
66.02	67.32	70.33	49.39	1.891	-1.006	.4300	.0351	.0100	2.969	1.654	1.1752	.9235
87.43	88.21	89.63	50.93	2.460	-1.462	.4622	.1090	.0287	5.260	1.669	1.1851	.8060
100.00	100.00	100.00	52.14	1.280	-2.161	.4812	.1009	.0254	12.470	1.669	1.1851	.8382

MOMENTUM AVERAGE STAGE EFFICIENCY = .8129 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7992 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.6524
MASS AVERAGE TEMPERATURE RISE = 1.1927

NASA SMALL AXIAL COMPRESSOR TEST 6 DECEMBER, 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 = .9230

PERCENT SPAN FROM TIP (L. E.)	BETA 3 (DEG)	V3 (M/SEC)	VU3 (M/SEC)	M3	VH3 (M/SEC)	VZ3 (M/SEC)	U3 (M/SEC)
0.00	40.08	238.16	153.34	.663	182.23	180.22	404.54
11.02	42.24	237.34	159.54	.660	175.72	175.42	388.80
30.01	42.41	240.88	162.44	.674	177.86	177.86	361.67
47.82	39.67	245.51	156.74	.695	188.96	188.83	336.23
66.02	41.26	248.39	163.82	.706	186.72	186.64	318.22
87.43	44.66	273.11	191.95	.781	194.27	191.66	279.64
100.00	45.91	285.61	205.15	.822	198.72	193.23	261.68

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9300

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VH4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	-10.21	192.19	-34.07	.527	189.15	189.15	401.60
11.39	-10.12	193.01	-33.93	.529	190.01	189.98	387.62
30.42	-8.31	192.01	-27.75	.529	189.99	189.91	364.26
48.67	-8.31	194.42	-28.09	.541	192.38	192.18	341.85
67.32	-8.13	195.29	-27.62	.545	193.32	193.22	318.96
88.21	-6.27	201.29	-21.99	.560	200.09	199.36	293.32
100.00	-6.23	202.56	-21.98	.564	201.36	201.36	278.85

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING TRAILING EDGE EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00 0.00	0.00	50.29	3.761	-1.161	.4784	.0921	.0326	11.970	1.643	1.2139	.7749
11.02 11.39	12.77	52.36	6.070	2.715	.4697	.0622	.0213	6.416	1.645	1.2139	.8437
30.01 30.42	33.25	50.72	5.819	2.506	.4601	.0747	.0243	4.861	1.641	1.2026	.8264
47.82 48.67	51.97	47.98	1.987	-1.014	.4354	.0644	.0195	3.677	1.653	1.1817	.8554
66.02 67.32	70.33	49.39	1.891	-1.006	.4300	.0351	.0100	2.969	1.654	1.1752	.9235
87.43 88.21	99.63	50.93	2.460	-.462	.4622	.1090	.0287	5.260	1.669	1.1851	.8060
100.00 100.00	100.00	52.14	1.280	-2.161	.4812	.1009	.0254	12.470	1.669	1.1851	.8382

MOMENTUM AVERAGE STAGE EFFICIENCY = .8129 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7992 (ADIABATIC)MOMENTUM AVG. STAGE PRESS RATIO = 1.6524
MASS AVERAGE TEMPERATURE RISE = 1.1927

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 12
 EQUIVALENT WEIGHT FLOW = 3.1422 LBM/SEC EQUIVALENT SPEED = 68975.570 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 85.7921 EQUIVALENT FLOW / INLET ANN AREA = 34.7051 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA CALCULATED AERODYNAMIC BLOCKAGE = .9933

PERCENT SPAN FROM TIP (L. F.)	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	71.81	1496.35	1421.57	1.365	0.00	467.11	0.00	.426	467.11	452.07	1421.57
10.22	70.46	1432.29	1349.79	1.308	0.00	479.07	0.00	.437	479.07	463.39	1349.79
27.29	67.05	1335.59	1229.91	1.224	0.00	520.70	0.00	.477	520.70	511.13	1229.91
44.06	64.34	1233.36	1112.11	1.131	0.00	533.28	0.00	.489	533.28	531.56	1112.11
62.21	62.28	1112.35	984.66	1.019	0.00	517.47	0.00	.474	517.47	517.29	984.66
84.84	59.54	957.96	825.74	.875	0.00	485.63	0.00	.444	485.63	479.11	825.74
100.00	57.06	857.02	719.27	.782	0.00	465.98	0.00	.425	465.98	450.14	719.27

EXIT VELOCITY DIAGRAM DATA CALCULATED AERODYNAMIC BLOCKAGE = .8676

PERCENT SPAN FROM TIP (T. E.)	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	59.60	1092.34	942.16	.930	37.56	697.28	425.05	.593	552.75	534.95	1367.22
11.95	55.44	1041.42	857.61	.890	37.04	740.16	445.85	.633	590.81	577.90	1303.46
31.59	52.03	959.56	756.50	.826	36.83	737.54	442.15	.635	590.31	586.63	1198.65
50.57	46.08	968.74	625.74	.752	38.05	765.27	471.66	.662	602.63	602.60	1097.40
69.73	38.74	780.94	488.67	.679	39.74	792.20	506.47	.689	609.15	607.35	995.15
89.62	21.67	781.35	288.55	.690	39.59	942.23	600.46	.832	726.12	714.19	889.01
100.00	14.87	751.92	193.01	.667	41.40	963.77	640.62	.859	726.72	702.03	833.63

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCTION SUR (DEG)	0 FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	12.21	7.973	7.505	.3782	.2167	.0417	2.610	1.538	.7015	.7189
10.22	11.95	12.60	15.02	8.675	7.333	.3856	.2076	.0427	.569	1.563	.7302	.7465
27.29	31.59	33.30	15.02	8.295	6.116	.3913	.1395	.0286	2.267	1.583	.8241	.8351
44.06	50.57	52.68	18.30	7.852	4.921	.4104	.1060	.0223	4.745	1.611	.8789	.8868
62.21	69.73	71.24	23.54	8.017	4.142	.4197	.0951	.0203	9.987	1.613	.9051	.9113
84.84	89.62	90.03	37.87	8.231	3.200	.3278	-.0600	-.0130	14.451	1.770	1.0433	1.0399
100.00	100.00	100.00	42.19	8.310	2.236	.2786	-.0728	-.0150	21.926	1.779	1.0432	1.0398

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8670 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8577 (ADIABATIC)

MOMENTUM AVG. ROTOR PRESS RATIO = 1.6179
 MASS AVERAGE TEMPERATURE RISE = 1.1715

NASA SMALL AXIAL COMPRESSOR TEST 6 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 12
 EQUIVALENT WEIGHT FLOW = 1.4253 KG/SEC EQUIVALENT SPEED = 68975.570 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 85.7921 EQUIVALENT FLOW / INLET ANN AREA = 169.4452 KG/SEC-SQ M

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9933

PERCENT SPAN FROM TIP (L. F.)	BETA*1 (DEG)	V*1 (M/SEC)	VU*1 (M/SEC)	M*1	BETA1 (DEG)	V1 (M/SEC)	VU1 (M/SEC)	M1	VM1 (M/SEC)	VZ1 (M/SEC)	U1 (M/SEC)
0.00	71.81	456.09	433.29	1.365	0.00	142.37	0.00	.426	142.37	137.79	433.29
10.22	70.46	436.56	411.42	1.308	0.00	146.02	0.00	.437	146.02	141.24	411.42
27.29	67.05	407.09	374.88	1.224	0.00	158.71	0.00	.477	158.71	155.79	374.88
44.06	64.38	375.93	338.97	1.131	0.00	162.54	0.00	.489	162.54	162.02	338.97
62.21	62.28	339.05	300.12	1.019	0.00	157.72	0.00	.474	157.72	157.67	300.12
84.84	59.54	291.99	251.68	.875	0.00	148.02	0.00	.444	148.02	146.03	251.68
100.00	57.06	261.22	219.23	.782	0.00	142.03	0.00	.425	142.03	137.20	219.23

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8676

PERCENT SPAN FROM TIP (T. E.)	BETA*2 (DEG)	V*2 (M/SEC)	VU*2 (M/SEC)	M*2	BETA2 (DEG)	V2 (M/SEC)	VU2 (M/SEC)	M2	VM2 (M/SEC)	VZ2 (M/SEC)	U2 (M/SEC)
0.00	59.60	332.95	287.17	.930	37.56	212.53	129.56	.593	168.48	163.05	416.73
11.95	55.44	317.42	261.40	.890	37.04	225.60	139.89	.633	180.08	176.14	397.29
31.59	52.03	292.47	230.58	.826	36.83	224.80	134.77	.635	179.93	178.80	365.35
50.57	46.08	264.79	190.72	.752	38.05	233.25	143.76	.662	183.68	183.67	334.49
69.73	38.74	238.63	148.95	.679	39.74	241.46	154.37	.689	185.67	185.12	303.32
89.62	21.67	238.16	87.95	.690	39.59	287.19	183.02	.832	221.32	217.68	270.97
100.00	14.87	229.18	58.83	.667	41.40	295.28	195.26	.859	221.50	213.98	254.09

ROTOR PERFORMANCE DATA

PERCENT LEADING EDGE	SPAN FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	J FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.30	0.00	12.21	7.973	7.505	.3782	.2167	.0417	2.610	1.538	.7015	.7189
10.22	11.95	12.60	15.02	8.675	7.333	.3856	.2076	.0427	.569	1.563	.7302	.7465
27.29	31.59	33.30	15.02	8.295	6.116	.7913	.1395	.0286	2.267	1.583	.8241	.8351
44.06	50.57	52.68	18.30	7.852	4.921	.4104	.1060	.0223	4.745	1.611	.8789	.8868
62.21	69.73	71.24	23.54	8.017	4.142	.4197	.0951	.0203	9.987	1.613	.9051	.9113
84.84	89.62	90.03	37.87	9.231	3.200	.3278	-.0600	-.0130	14.451	1.778	1.0433	1.0399
100.00	100.00	100.00	42.19	8.310	2.236	.2786	-.0728	-.0150	21.926	1.779	1.0432	1.0398

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8670 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8577 (ADIABATIC)

MOMENTUM AVG. ROTOR PRESS RATIO = 1.6179
 MASS AVERAGE TEMPERATURE RISE = 1.1715

ORIGINAL PAGE IS
OF POOR QUALITY

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

90 PERCENT DESIGN SPEED - SCAN NO 12

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8888

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	33.34	796.35	437.68	.685	665.29	657.98	1327.79
11.42	33.91	817.49	456.07	.705	678.45	677.32	1274.24
30.50	32.74	827.04	447.32	.720	695.63	695.62	1184.80
49.14	33.62	851.83	471.66	.745	709.33	708.80	1097.40
68.35	35.32	865.47	500.34	.760	706.18	703.60	1007.34
88.85	36.26	990.62	585.85	.882	798.82	788.09	911.17
100.00	37.56	1019.93	621.68	.912	808.56	786.22	858.91

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9080

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	-8.31	816.87	-118.06	.705	808.29	808.29	1318.16
11.21	-8.25	835.72	-119.93	.723	827.07	826.97	1273.01
29.97	-6.58	841.40	-96.35	.734	835.87	835.50	1197.42
48.29	-6.23	857.52	-93.11	.751	852.45	851.58	1123.50
66.96	-7.92	837.11	-115.39	.732	829.12	828.66	1048.38
87.99	-7.29	842.11	-106.69	.734	835.32	832.27	963.65
100.00	-7.27	850.23	-107.58	.742	843.40	843.40	915.25

STATOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	41.65	-2.979	-6.901	.2273	.1263	.0450	13.870	1.486	1.1862	3.0099
11.42	11.21	12.60	42.16	-2.269	-5.606	.2220	.1250	.0430	8.333	1.508	1.1862	3.2832
30.50	29.97	73.30	39.32	-3.870	-7.168	.1966	.1380	.0451	6.641	1.519	1.1698	4.2401
49.14	48.29	52.68	39.85	-4.182	-7.163	.1927	.1451	.0442	5.777	1.539	1.1658	9.7655
68.35	66.96	71.24	43.24	-4.355	-7.185	.2310	.2048	.0582	3.186	1.508	1.1615	-1.5949
88.85	87.99	90.03	43.54	-6.277	-9.119	.3272	.3887	.1020	4.251	1.504	1.1710	-.1345
100.00	100.00	100.00	44.82	-7.076	-10.517	.3382	.3705	.0930	11.431	1.504	1.1711	.0326

MOMENTUM AVERAGE STAGE EFFICIENCY = .7477 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7326 (ADIABATIC)MOMENTUM AVG. STAGE PRESS RATIO = 1.5143
MASS AVERAGE TEMPERATURE RISE = 1.1715

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 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 = .8888

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)
0.00	33.34	242.73	133.40	.685	202.78	200.55	404.71
11.42	33.91	249.17	139.01	.705	206.79	206.45	388.39
30.50	32.74	252.08	136.34	.720	212.03	212.03	361.13
49.14	33.62	259.64	143.76	.745	216.20	216.04	334.49
68.35	35.32	263.79	152.50	.760	215.24	214.46	307.04
88.85	36.26	301.94	178.57	.882	243.48	240.21	277.73
100.00	37.56	310.88	189.49	.912	246.45	239.64	261.80

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9080

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VM4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	-8.31	248.98	-35.98	.705	246.37	246.37	401.78
11.21	-8.25	254.73	-36.56	.723	252.09	252.06	388.01
29.97	-6.58	256.46	-29.37	.734	254.77	254.66	364.97
48.29	-6.23	261.37	-28.38	.751	259.83	259.56	342.47
66.96	-7.92	255.15	-35.17	.732	252.72	252.58	319.55
87.99	-7.28	256.67	-32.52	.734	254.61	253.68	293.72
100.00	-7.27	259.15	-32.79	.742	257.07	257.07	278.97

STATOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	SPAN FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	0 FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	41.65	-2.979	-6.901	.2273	.1263	.0450	13.870	1.486	1.1862	3.0099
11.42	11.21	12.60	42.16	-2.269	-5.606	.2220	.1250	.0430	8.333	1.508	1.1062	3.2832
30.50	29.97	33.30	39.32	-3.870	-7.168	.1966	.1380	.0451	6.641	1.519	1.1698	4.2401
49.14	48.29	52.68	39.85	-4.182	-7.163	.1927	.1451	.0442	5.777	1.539	1.1658	9.7655
68.35	66.96	71.24	43.24	-4.355	-7.185	.2310	.2048	.0582	3.186	1.508	1.1615	-1.5949
88.85	87.99	90.03	43.54	-6.277	-9.119	.3272	.3887	.1020	4.251	1.504	1.1710	-1.1345
100.00	100.00	100.00	44.82	-7.076	-10.517	.3382	.3705	.0930	11.431	1.504	1.1711	.0326

MOMENTUM AVERAGE STAGE EFFICIENCY = .7477 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7326 (ADIABATIC)MOMENTUM AVG. STAGE PRESS RATIO = 1.5143
MASS AVERAGE TEMPERATURE RISE = 1.1715

NASA SMALL AXIAL COMPRESSOR TEST 6 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

94 PERCENT DESIGN SPEED - SCAN NO 14
 EQUIVALENT HEIGHT FLOW = 3.2397 LBM/SEC EQUIVALENT SPEED = 72103.806 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 88.4546 EQUIVALENT FLOW / INLET ANN AREA = 35.7822 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9834

PERCENT SPAN FROM TIP (L. E.)	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	71.89	1563.51	1486.04	1.428	0.00	486.05	0.00	.444	486.05	470.40	1486.04
10.17	70.55	1496.85	1411.41	1.369	0.00	498.49	0.00	.456	498.49	482.17	1411.41
27.16	67.17	1396.03	1286.63	1.281	0.00	541.75	0.00	.497	541.75	531.80	1286.63
43.95	64.50	1288.92	1163.40	1.185	0.00	554.82	0.00	.510	554.82	553.04	1163.40
62.23	62.40	1161.28	1029.15	1.066	0.00	537.97	0.00	.494	537.97	537.79	1029.15
84.94	59.68	999.11	862.44	.914	0.00	504.41	0.00	.461	504.41	497.63	862.44
100.00	57.24	894.08	751.89	.817	0.00	483.77	0.00	.442	483.77	467.33	751.89

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8571

PERCENT SPAN FROM TIP (T. E.)	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	59.25	1132.09	972.91	.958	38.25	737.07	456.31	.624	578.84	560.20	1429.23
11.79	55.65	1072.09	885.15	.910	38.34	771.15	478.32	.655	604.88	591.66	1363.47
31.52	52.03	982.27	774.31	.840	38.40	771.24	479.08	.660	604.40	600.63	1253.40
50.38	45.69	903.30	646.43	.779	38.50	806.16	501.80	.695	630.95	630.91	1148.23
69.36	38.49	801.10	498.56	.694	40.93	829.99	543.77	.719	627.05	625.21	1042.33
89.44	21.59	796.83	293.15	.701	40.69	977.24	637.17	.860	740.94	728.77	930.32
100.00	14.47	765.80	191.41	.677	42.52	1006.10	680.03	.889	741.49	716.29	871.44

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCTION SUR (DEG)	Q FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	12.64	8.051	7.583	.3871	.2198	.0426	2.259	1.626	.7121	.7310
10.17	11.79	12.56	14.89	8.752	7.413	.3996	.2198	.0450	.752	1.641	.7263	.7446
27.16	31.52	33.18	15.14	8.386	6.215	.4102	.1575	.0322	2.233	1.662	.8188	.8239
43.95	50.38	52.58	18.81	7.959	5.034	.4162	.1031	.0219	4.268	1.701	.8865	.8947
62.23	69.36	71.27	23.91	8.145	4.270	.4357	.1109	.0237	9.423	1.695	.8940	.9016
84.94	89.44	90.11	38.09	8.383	3.348	.3486	-.0301	-.0065	14.102	1.862	1.0211	1.0193
100.00	100.00	100.00	42.77	8.490	2.416	.3022	-.0374	-.0077	21.526	1.861	1.0211	1.0193

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8613 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8505 (ADIABATIC)
 MOMENTUM AVG. ROTOR PRESS RATIO = 1.7003
 MASS AVERAGE TEMPERATURE RISE = 1.1922

NASA SMALL AXIAL COMPRESSOR TEST 6 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

94 PERCENT DESIGN SPEED - SCAN NO 14
 EQUIVALENT WEIGHT FLOW = 1.4695 KG/SEC EQUIVALENT SPEED = 72103.806 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 88.4546 EQUIVALENT FLOW / INLET ANN AREA = 174.7040 KG/SEC-SQ M

 INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9834

PERCENT SPAN FROM TIP (I. E.)	BETA*1 (DEG)	V*1 (M/SEC)	VU*1 (M/SEC)	M*1	BETA1 (DEG)	V1 (M/SEC)	VU1 (M/SEC)	M1	VM1 (M/SEC)	VZ1 (M/SEC)	U1 (M/SEC)
0.00	71.89	476.56	452.95	1.428	0.00	148.15	0.00	.444	148.15	143.38	452.95
10.17	70.55	456.24	430.20	1.369	0.00	151.94	0.00	.456	151.94	146.97	430.20
27.16	67.17	425.51	392.16	1.281	0.00	165.13	0.00	.497	165.13	162.09	392.16
43.95	64.50	392.86	354.60	1.185	0.00	169.11	0.00	.510	169.11	168.57	354.60
62.23	62.40	353.96	313.69	1.066	0.00	163.97	0.00	.494	163.97	163.92	313.69
84.94	59.68	304.53	262.87	.914	0.00	153.74	0.00	.461	153.74	151.68	262.87
100.00	57.24	272.52	229.18	.817	0.00	147.45	0.00	.442	147.45	142.44	229.18

 EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8571

PERCENT SPAN FROM TIP (I. E.)	BETA*2 (DEG)	V*2 (M/SEC)	VU*2 (M/SEC)	M*2	BETA2 (DEG)	V2 (M/SEC)	VU2 (M/SEC)	M2	VM2 (M/SEC)	VZ2 (M/SEC)	U2 (M/SEC)
0.00	59.25	345.06	296.54	.958	38.25	224.66	139.08	.624	176.43	170.75	435.63
11.79	55.65	326.77	269.79	.910	38.34	235.05	145.79	.655	184.37	180.34	415.59
31.52	52.03	299.40	236.01	.840	38.40	235.07	146.02	.660	184.22	183.07	382.03
50.38	45.69	275.33	197.03	.779	38.50	245.72	152.95	.695	192.31	192.30	349.98
69.36	38.49	244.17	151.96	.694	40.93	252.98	165.74	.719	191.13	190.56	317.70
89.44	21.59	242.87	89.35	.701	40.69	297.86	194.21	.860	225.84	222.13	283.56
100.00	14.47	233.41	58.34	.677	42.52	306.66	207.27	.889	226.01	218.32	265.62

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCTION SUR (DEG)	D FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	12.64	8.051	7.583	.3871	.2190	.0426	2.259	1.626	.7121	.7310
10.17	11.79	12.56	14.89	8.752	7.413	.3996	.2198	.0450	.752	1.641	.7263	.7446
27.16	31.52	33.18	15.14	8.386	6.215	.4102	.1575	.0322	2.233	1.662	.8108	.8239
43.95	50.38	52.54	18.81	7.959	5.034	.4162	.1031	.0219	4.268	1.701	.8865	.8947
62.23	69.36	71.27	23.91	8.145	4.270	.4357	.1109	.0237	9.423	1.695	.8940	.9016
84.94	89.44	90.11	38.09	8.383	3.348	.3486	-.0301	-.0065	14.102	1.862	1.0211	1.0193
100.00	100.00	100.00	42.77	8.490	2.416	.3022	-.0374	-.0077	21.526	1.861	1.0211	1.0193

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8613 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8505 (ADIABATIC)

MOMENTUM AVG. ROTOR PRESS RATIO = 1.7003
 MASS AVERAGE TEMPERATURE RISE = 1.1922

NASA SMALL AXIAL COMPRESSOR TEST 6 DECEMBER, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

94 PERCENT DESIGN SPEED - SCAN NO 14

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8847

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	34.37	832.31	469.86	.712	687.01	679.46	1388.01
11.30	35.37	845.48	489.38	.724	689.45	688.31	1332.65
30.42	34.42	857.54	484.67	.741	707.43	707.42	1238.93
48.97	34.41	888.11	501.90	.774	732.69	732.15	1148.01
68.08	36.75	898.55	537.58	.785	720.61	717.38	1054.34
88.76	37.53	1021.20	622.02	.905	809.90	799.02	952.98
100.00	38.84	1051.96	659.69	.937	819.40	796.76	897.87

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8972

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	-8.13	823.65	-116.48	.704	815.37	815.37	1377.95
11.22	-8.07	841.29	-118.10	.720	832.96	832.86	1330.69
30.01	-6.39	848.97	-94.56	.733	843.69	843.32	1251.53
48.35	-6.07	867.90	-91.76	.754	863.04	862.15	1174.30
67.04	-7.59	850.43	-112.27	.738	842.99	842.53	1095.59
88.04	-6.25	844.99	-91.94	.730	839.97	836.90	1007.12
100.00	-6.23	852.43	-92.48	.737	847.40	847.40	956.76

STATOR PERFORMANCE DATA

PERCENT LEADING SPAN FROM TIP EDGE	SPAN FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	U FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	42.50	-1.949	-5.871	.2659	.1439	.0513	14.050	1.559	1.2089	-4.7397
11.30	11.22	12.56	43.44	-.808	-4.151	.2542	.1237	.0425	8.511	1.581	1.2089	-9.2554
30.42	30.91	33.18	40.81	-2.193	-5.493	.2298	.1321	.0432	6.817	1.595	1.1924	-4.4017
48.97	48.35	52.58	40.48	-3.377	-6.361	.2238	.1419	.0433	5.937	1.622	1.1846	-1.5281
68.08	67.04	71.27	44.33	-2.891	-5.729	.2551	.1789	.0509	3.521	1.593	1.1816	-.3800
88.76	88.04	90.11	43.77	-4.984	-7.832	.3496	.3740	.0984	5.284	1.575	1.1899	.0504
100.00	100.00	100.00	45.07	-5.795	-9.236	.3612	.3564	.0896	12.472	1.575	1.1898	.1831

MOMENTUM AVERAGE STAGE EFFICIENCY = .7543 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7378 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.5919
MASS AVERAGE TEMPERATURE RISE = 1.1922

NASA SMALL AXIAL COMPRESSOR TEST 6 DECEMBER, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

94 PERCENT DESIGN SPEED - SCAN NO 14

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8847

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	34.37	253.69	143.21	.712	209.40	207.10	423.07
11.30	35.37	257.70	149.16	.724	210.14	209.80	406.19
30.42	34.42	261.38	147.73	.741	215.62	215.62	377.63
48.97	34.41	270.70	152.98	.774	223.33	223.16	349.91
68.08	36.75	273.88	163.85	.785	219.46	218.66	321.36
88.76	37.53	311.26	189.59	.905	246.86	243.54	290.47
100.00	38.84	320.64	201.07	.937	249.75	242.85	273.67

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8972

PERCENT SPAN FROM TIP (T. F.)	BETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VM4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	-8.13	251.05	-35.50	.704	248.53	248.53	420.00
11.22	-8.07	256.43	-36.00	.720	253.89	253.86	405.59
30.01	-6.39	258.77	-28.82	.733	257.16	257.04	381.47
48.35	-6.07	264.54	-27.97	.754	263.05	262.78	357.93
67.04	-7.59	259.21	-34.22	.738	256.94	256.80	333.93
88.04	-6.25	257.55	-28.02	.730	256.02	255.69	306.97
100.00	-6.23	259.82	-28.19	.737	258.29	258.29	291.62

STATOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	0 FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	42.50	-1.949	-5.071	.2659	.1439	.0513	14.050	1.559	1.2089	-4.7397
11.30	11.22	12.56	43.44	-1.808	-4.151	.2542	.1237	.0425	8.511	1.581	1.2089	-9.2554
30.42	30.01	33.18	40.81	-2.193	-5.493	.2298	.1321	.0432	6.817	1.595	1.1924	-4.4017
48.97	48.35	52.58	40.48	-3.377	-6.361	.2238	.1419	.0433	5.937	1.622	1.1846	-1.5281
68.08	67.04	71.27	44.33	-2.891	-5.729	.2551	.1789	.0509	3.521	1.593	1.1816	-.3800
88.76	88.04	90.11	43.77	-4.984	-7.832	.3496	.3740	.0984	5.284	1.575	1.1899	.0504
100.00	100.00	100.00	45.07	-5.795	-9.236	.3612	.3564	.0896	12.472	1.575	1.1898	.1831

MOMENTUM AVERAGE STAGE EFFICIENCY = .7543 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7378 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.5919
MASS AVERAGE TEMPERATURE RISE = 1.1922

ORIGINAL PAGE IS
OF POOR QUALITY

NASA SMALL AXIAL COMPRESSOR TEST 6 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

94 PERCENT DESIGN SPEED - SCAN NO 15
EQUIVALENT WEIGHT FLOW = 3.2278 LBM/SEC EQUIVALENT SPEED = 72144.309 R.P.M.
PERCENT DESIGN EQUIVALENT FLOW = 98.1273 EQUIVALENT FLOW / INLET ANN AREA = 35.6498 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9849

PERCENT SPAN FROM TIP (L. E.)	BETA*1 (DEG)	V*1 (FT/SEC)	VU*1 (FT/SEC)	M*1	BETA1 (DEG)	V1 (FT/SEC)	VU1 (FT/SEC)	M1	VH1 (FT/SEC)	VZ1 (FT/SEC)	U1 (FT/SEC)
0.00	71.94	1563.91	1486.88	1.428	0.00	484.77	0.00	.443	484.77	469.15	1486.88
9.97	70.63	1498.41	1413.61	1.370	0.00	496.93	0.00	.454	496.93	480.66	1413.61
26.70	67.32	1398.94	1290.76	1.284	0.00	539.39	0.00	.495	539.39	529.48	1290.76
43.30	64.71	1292.71	1169.81	1.188	0.00	552.25	0.00	.507	552.25	550.48	1168.81
61.49	62.65	1165.54	1035.22	1.069	0.00	535.54	0.00	.491	535.54	535.36	1035.22
84.51	59.90	1001.07	866.12	.916	0.00	501.98	0.00	.459	501.98	495.24	866.12
100.00	57.38	893.25	752.32	.816	0.00	481.59	0.00	.440	481.59	465.22	752.32

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8758

PERCENT SPAN FROM TIP (T. F.)	BETA*2 (DEG)	V*2 (FT/SEC)	VU*2 (FT/SEC)	M*2	BETA2 (DEG)	V2 (FT/SEC)	VU2 (FT/SEC)	M2	VH2 (FT/SEC)	VZ2 (FT/SEC)	U2 (FT/SEC)
0.00	59.13	1117.71	959.34	.943	39.38	741.95	470.69	.626	573.53	555.06	1430.03
11.31	55.72	1058.26	874.47	.896	39.56	773.12	492.43	.655	596.01	582.99	1366.89
30.37	52.44	973.35	771.62	.831	39.49	768.79	488.90	.656	593.31	589.62	1260.52
48.60	45.30	905.95	654.96	.780	38.83	803.49	503.81	.692	625.91	625.88	1158.77
66.99	39.85	797.46	511.05	.689	41.68	819.72	545.13	.708	612.19	610.38	1056.18
88.04	24.10	721.27	294.49	.628	44.37	921.12	644.17	.803	658.42	647.60	938.66
100.00	15.14	682.81	178.28	.598	46.46	956.87	693.65	.838	659.13	636.73	871.93

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCTION SUR (DEG)	D FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	12.82	8.106	7.638	.3999	.2212	.0432	2.137	1.655	.7165	.7358
9.97	11.31	12.35	14.91	8.797	7.469	.4131	.2247	.0459	.723	1.666	.7272	.7459
26.70	30.37	32.69	14.88	8.463	6.321	.4207	.1643	.0333	2.236	1.679	.8068	.8204
43.30	48.60	51.95	18.41	8.078	5.189	.4174	.0994	.0208	4.034	1.718	.8921	.9000
61.49	66.99	70.63	22.79	8.309	4.461	.4431	.1198	.0251	8.875	1.701	.8872	.8953
84.51	88.04	89.81	35.81	8.556	3.535	.4284	.1125	.0240	14.603	1.778	.9212	.9273
100.00	100.00	100.00	42.24	8.623	2.549	.3976	.1380	.0283	22.107	1.779	.9213	.9274

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8449 (POLYTROPIC)
MOMENTUM AVERAGE ROTOR EFFICIENCY = .8329 (ADIABATIC)

MOMENTUM AVG. ROTOR PRESS RATIO = 1.7008
MASS AVERAGE TEMPERATURE RISE = 1.1964

NASA SMALL AXIAL COMPRESSOR TEST 6 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

94 PERCENT DESIGN SPEED - SCAN NO 15
 EQUIVALENT WEIGHT FLOW = 1.4641 KG/SEC EQUIVALENT SPEED = 72144.309 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 88.1273 EQUIVALENT FLOW / INLET ANN AREA = 174.0574 KG/SEC-SQ M

 INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9849

PERCENT SPAN FROM TIP (L. F.)	BETA*1 (DEG)	V*1 (M/SEC)	VU*1 (M/SEC)	M*1	BETA1 (DEG)	V1 (M/SEC)	VU1 (M/SEC)	M1	VH1 (M/SEC)	VZ1 (M/SEC)	U1 (M/SEC)
0.00	71.94	476.68	453.20	1.428	0.00	147.76	0.00	.443	147.76	143.00	453.20
9.97	71.63	456.72	430.87	1.370	0.00	151.46	0.00	.454	151.46	146.51	430.87
26.70	67.32	426.40	393.42	1.284	0.00	164.41	0.00	.495	164.41	161.39	393.42
43.30	64.71	394.02	356.25	1.188	0.00	169.33	0.00	.507	168.33	167.79	356.25
61.49	62.65	355.26	315.54	1.069	0.00	163.23	0.00	.491	163.23	163.18	315.54
84.51	59.90	305.13	263.99	.916	0.00	153.00	0.00	.459	153.00	150.95	263.99
100.00	57.38	272.26	229.31	.816	0.00	146.79	0.00	.440	146.79	141.80	229.31

 EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8750

PERCENT SPAN FROM TIP (L. F.)	BETA*2 (DEG)	V*2 (M/SEC)	VU*2 (M/SEC)	M*2	BETA2 (DEG)	V2 (M/SEC)	VU2 (M/SEC)	M2	VH2 (M/SEC)	VZ2 (M/SEC)	U2 (M/SEC)
0.00	59.13	340.68	292.41	.943	39.38	226.14	143.47	.626	174.81	169.18	435.87
11.31	55.72	322.56	266.54	.895	39.56	235.65	150.09	.655	181.66	177.69	416.63
30.37	52.44	296.68	235.19	.831	39.49	234.33	149.02	.656	180.84	179.71	384.21
48.60	46.30	276.13	199.63	.780	38.83	244.90	153.56	.692	190.78	190.77	353.19
66.99	39.85	243.07	155.77	.689	41.68	249.85	166.16	.708	186.60	186.05	321.92
88.04	24.10	219.84	89.76	.628	44.37	280.76	196.34	.803	200.69	197.39	286.10
100.00	15.14	204.12	54.34	.598	46.46	291.65	211.42	.838	200.90	194.07	265.76

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	PERCENT SPAN FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	12.82	8.106	7.638	.3999	.2212	.0432	2.137	1.655	.7165	.7358
9.97	11.31	12.35	14.91	8.797	7.469	.4131	.2247	.0459	.723	1.666	.7272	.7459
26.70	30.37	32.69	14.88	8.463	6.321	.4207	.1643	.0333	2.236	1.679	.8068	.8204
43.30	48.60	51.95	18.41	8.078	5.189	.4174	.0994	.0208	4.034	1.718	.8921	.9080
61.49	66.99	70.63	22.79	8.309	4.461	.4431	.1198	.0251	8.875	1.701	.8872	.8953
84.51	88.04	89.81	35.81	8.556	3.535	.4284	.1125	.0240	14.603	1.778	.9212	.9273
100.00	100.00	100.00	42.24	8.623	2.549	.3976	.1380	.0283	22.187	1.779	.9213	.9274

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8449 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8329 (ADIABATIC)

MOMENTUM AVG. ROTOR PRESS RATIO = 1.7008
 MASS AVERAGE TEMPERATURE RISE = 1.1964

ORIGINAL PAGE IS
OF POOR QUALITY

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

94 PERCENT DESIGN SPEED - SCAN NO 15

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9047

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	35.66	831.34	484.66	.709	675.44	668.03	1388.79
10.87	36.71	843.20	504.00	.720	675.99	674.87	1335.51
29.36	35.60	850.40	495.08	.733	691.42	691.42	1244.79
47.35	34.96	880.79	504.76	.766	721.82	721.29	1156.60
65.92	37.61	885.34	540.36	.771	701.31	698.75	1065.51
87.45	40.62	967.50	629.89	.849	734.36	724.50	959.94
100.00	41.94	1006.77	672.81	.888	748.94	728.24	898.37

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9133

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	-7.79	732.99	-99.35	.618	726.23	726.23	1378.72
11.22	-7.77	751.74	-101.61	.635	744.84	744.75	1331.42
29.99	-7.09	763.92	-94.33	.651	758.08	757.74	1252.34
48.30	-6.75	782.38	-91.97	.672	776.95	776.15	1175.16
66.98	-7.58	771.62	-101.78	.663	764.88	764.46	1096.45
88.04	-5.61	781.57	-76.42	.669	777.82	774.98	1007.70
100.00	-5.54	787.78	-76.01	.675	784.11	784.11	957.30

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING TRAILING EDGE EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	U FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00 0.00	0.00	43.45	-6.57	-4.579	.3731	.1081	.0386	14.390	1.604	1.2156	.5960
10.87 11.22	12.35	44.48	.542	-2.819	.3579	.0850	.0292	8.812	1.625	1.2156	.6588
29.36 29.99	32.69	42.70	-.951	-4.283	.3281	.0707	.0231	6.121	1.644	1.1974	.7012
47.35 48.30	51.95	41.72	-2.683	-5.691	.3167	.0898	.0273	5.259	1.668	1.1870	.6573
65.92 66.98	70.63	45.19	-1.744	-4.644	.3321	.0917	.0261	3.529	1.651	1.1844	.6933
87.45 88.04	89.81	46.23	-1.579	-4.500	.3779	.1855	.0488	5.919	1.655	1.1937	.5773
100.00 100.00	100.00	47.47	-2.697	-6.138	.3957	.1737	.0437	13.163	1.655	1.1938	.6524

MOMENTUM AVERAGE STAGE EFFICIENCY = .7934 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7785 (ADIABATIC)MOMENTUM AVG. STAGE PRESS RATIO = 1.6467
MASS AVERAGE TEMPERATURE RISE = 1.1964

NASA SMALL AXIAL COMPRESSOR TEST 6 DECEMBER, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

94 PERCENT DESIGN SPEED - SCAN NO 15

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9047

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)
0.00	35.66	253.39	147.73	.709	205.88	203.61	423.30
10.87	36.71	257.01	153.62	.720	206.04	205.70	407.06
29.36	35.60	259.20	150.90	.733	210.75	210.74	379.41
47.35	34.96	268.47	153.85	.766	220.01	219.85	352.53
65.92	37.61	269.85	164.70	.771	213.76	212.98	324.77
87.45	40.62	294.89	191.99	.849	223.83	220.83	292.59
100.00	41.94	306.86	205.07	.888	228.28	221.97	273.82

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9133

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VM4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	-7.79	223.42	-30.28	.618	221.35	221.35	420.23
11.22	-7.77	229.13	-30.97	.635	227.03	227.00	405.82
29.99	-7.09	232.84	-28.75	.651	231.06	230.96	381.71
48.30	-6.75	238.47	-28.03	.672	236.82	236.57	358.19
66.98	-7.58	235.19	-31.02	.663	233.13	233.01	334.20
88.04	-5.61	238.22	-23.29	.669	237.08	236.21	307.15
100.00	-5.54	240.12	-23.17	.675	239.00	239.00	291.78

STATOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	PERCENT SPAN FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	43.45	-1.657	-4.579	.3731	.1081	.0386	14.390	1.604	1.2155	.5960
10.87	11.22	12.35	44.48	.542	-2.819	.3579	.0850	.0292	8.812	1.625	1.2155	.6588
29.36	29.99	32.69	42.70	-1.951	-4.283	.3281	.0707	.0231	6.121	1.644	1.1974	.7012
47.35	48.30	51.95	41.72	-2.683	-5.691	.3167	.0898	.0273	5.259	1.668	1.1870	.6573
65.92	66.98	70.63	45.19	-1.744	-4.644	.3321	.0917	.0261	3.529	1.651	1.1844	.6933
87.45	88.04	89.81	46.23	-1.579	-4.500	.3779	.1855	.0488	5.919	1.655	1.1937	.5773
100.00	100.00	100.00	47.47	-2.697	-6.138	.3957	.1737	.0437	13.163	1.655	1.1938	.6524

MOMENTUM AVERAGE STAGE EFFICIENCY = .7934 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7785 (ADIABATIC)MOMENTUM AVG. STAGE PRESS RATIO = 1.6467
MASS AVERAGE TEMPERATURE RISE = 1.1964

NASA SMALL AXIAL COMPRESSOR TEST 6 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

94 PERCENT DESIGN SPEED - SCAN NO 16
 EQUIVALENT WEIGHT FLOW = 3.1863 LBM/SEC EQUIVALENT SPEED = 72102.879 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 96.9948 EQUIVALENT FLOW / INLET ANN AREA = 35.1916 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9395

PERCENT SPAN FROM TIP (L. E.)	BETA*1 (DEG)	V*1 (FT/SEC)	VU*1 (FT/SEC)	M*1	BETA1 (DEG)	V1 (FT/SEC)	VU1 (FT/SEC)	H1	VH1 (FT/SEC)	VZ1 (FT/SEC)	U1 (FT/SEC)
0.00	72.20	1560.78	1486.02	1.425	0.00	477.24	0.00	.436	477.24	461.88	1486.02
9.97	70.90	1495.10	1412.81	1.366	0.00	489.20	0.00	.447	489.20	473.18	1412.81
26.61	67.65	1395.53	1290.68	1.280	0.00	530.71	0.00	.487	530.71	520.96	1290.68
43.05	65.09	1209.98	1170.01	1.194	0.00	543.24	0.00	.499	543.24	541.49	1170.01
61.12	63.07	1163.51	1037.33	1.067	0.00	526.98	0.00	.483	526.98	526.80	1037.33
84.26	60.33	998.36	867.43	.913	0.00	494.14	0.00	.452	494.14	487.51	867.43
100.00	57.75	889.03	751.88	.811	0.00	474.40	0.00	.433	474.40	458.27	751.88

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8757

PERCENT SPAN FROM TIP (T. E.)	BETA*2 (DEG)	V*2 (FT/SEC)	VU*2 (FT/SEC)	M*2	BETA2 (DEG)	V2 (FT/SEC)	VU2 (FT/SEC)	H2	VH2 (FT/SEC)	VZ2 (FT/SEC)	U2 (FT/SEC)
0.00	59.36	1094.07	941.28	.920	41.18	740.97	487.93	.623	557.65	539.69	1429.21
11.33	56.13	1030.39	855.55	.869	41.64	768.33	510.49	.648	574.23	561.68	1366.04
30.54	52.65	936.88	744.72	.796	42.13	766.46	514.12	.651	568.45	564.91	1258.84
48.88	46.53	878.15	637.30	.753	40.68	796.62	519.24	.683	604.14	604.11	1156.54
67.28	40.04	779.01	501.16	.671	42.83	813.19	552.79	.701	596.40	594.64	1053.95
88.19	22.74	712.78	275.58	.621	45.19	932.72	661.71	.812	657.35	646.55	937.29
100.00	13.63	677.23	159.62	.593	47.24	969.45	711.81	.849	658.15	635.78	871.43

ROTOR PERFORMANCE DATA

PERCENT LEADING EDGE	SPAN FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	12.84	8.358	7.890	.4181	.2199	.0425	2.365	1.695	.7270	.7464
9.97	11.33	12.35	14.77	9.066	7.739	.4348	.2269	.0453	1.134	1.702	.7329	.7520
26.61	30.54	32.60	15.00	8.776	6.640	.4514	.1777	.0359	2.497	1.712	.7991	.8136
43.05	48.88	51.70	18.56	8.429	5.554	.4412	.1022	.0214	4.393	1.742	.8915	.8996
61.12	67.28	70.31	23.03	8.691	4.857	.4596	.1055	.0221	9.284	1.725	.9018	.9091
84.26	88.19	89.65	37.59	8.954	3.940	.4393	.0776	.0167	13.459	1.831	.9472	.9515
100.00	100.00	100.00	44.12	8.998	2.924	.4053	.0956	.0198	20.684	1.831	.9472	.9515

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8523 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8405 (ADIABATIC)
 MOMENTUM AVG. ROTOR PRESS RATIO = 1.7351
 MASS AVERAGE TEMPERATURE RISE = 1.2025

NASA SMALL AXIAL COMPRESSOR TEST 6 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

94 PERCENT DESIGN SPEED - SCAN NO 16
 EQUIVALENT WEIGHT FLOW = 1.4453 KG/SEC EQUIVALENT SPEED = 72102.879 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 86.9948 EQUIVALENT FLOW / INLET ANN AREA = 171.8206 KG/SEC-SQ M

 INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9895

PERCENT SPAN FROM TIP (L. F.)	BETA*1 (DEG)	V*1 (M/SEC)	VU*1 (M/SEC)	M*1	BETA1 (DEG)	V1 (M/SEC)	VU1 (M/SEC)	M1	VM1 (M/SEC)	VZ1 (M/SEC)	U1 (M/SEC)
0.00	72.20	475.73	452.94	1.425	0.00	145.46	0.00	.436	145.46	140.78	452.94
9.97	70.90	455.71	430.62	1.366	0.00	149.11	0.00	.447	149.11	144.23	430.62
26.61	67.65	425.36	393.40	1.280	0.00	161.76	0.00	.487	161.76	158.79	393.40
43.05	65.09	393.19	356.62	1.184	0.00	165.58	0.00	.499	165.58	165.05	356.62
61.12	63.07	354.64	316.18	1.067	0.00	160.62	0.00	.483	160.62	160.57	316.18
84.26	60.33	324.28	264.39	.913	0.00	150.62	0.00	.452	150.62	148.59	264.39
100.00	57.75	270.98	229.17	.814	0.00	144.60	0.00	.433	144.60	139.68	229.17

 EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8757

PERCENT SPAN FROM TIP (L. F.)	BETA*2 (DEG)	V*2 (M/SEC)	VU*2 (M/SEC)	M*2	BETA2 (DEG)	V2 (M/SEC)	VU2 (M/SEC)	M2	VM2 (M/SEC)	VZ2 (M/SEC)	U2 (M/SEC)
0.00	59.36	333.47	286.90	.920	41.18	225.85	148.72	.623	169.97	164.50	435.62
11.33	56.13	314.06	260.77	.869	41.64	234.19	155.68	.648	175.83	171.20	416.37
30.54	52.65	285.56	226.99	.796	42.13	233.62	156.70	.651	173.26	172.18	383.69
48.88	46.53	267.66	194.25	.753	40.68	242.81	158.26	.683	184.14	184.13	352.51
67.28	40.04	237.44	152.75	.671	42.83	247.86	168.49	.701	181.78	181.25	321.25
88.19	22.74	217.26	84.00	.621	45.19	284.29	201.69	.812	200.36	197.07	285.69
100.00	13.63	206.42	48.65	.593	47.24	295.49	216.96	.849	200.60	193.79	265.61

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	12.84	8.358	7.890	.4181	.2199	.0426	2.365	1.695	.7270	.7464
9.97	11.33	12.35	14.77	9.066	7.739	.4348	.2269	.0458	1.134	1.702	.7329	.7520
26.61	30.54	32.62	15.00	8.776	6.640	.4514	.1777	.0359	2.497	1.712	.7991	.8136
43.05	48.88	51.70	18.56	8.429	5.554	.4412	.1022	.0214	4.393	1.742	.8915	.8996
61.12	67.28	70.31	23.03	8.691	4.857	.4596	.1055	.0221	9.284	1.725	.9018	.9091
84.26	88.19	89.65	37.59	8.954	3.940	.4393	.0776	.0167	13.459	1.831	.9472	.9515
100.00	100.00	100.00	44.12	8.998	2.924	.4053	.0956	.0198	20.684	1.831	.9472	.9515

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8523 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8405 (ADIABATIC)

MOMENTUM AVG. ROTOR PRESS RATIO = 1.7351
 MASS AVERAGE TEMPERATURE RISE = 1.2025

NASA SMALL AXIAL COMPRESSOR TEST 6 DECEMBER, 1974 (COMBINED TEMP.)

ORIGINAL PAGE IS
OF POOR QUALITY

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

94 PERCENT DESIGN SPEED - SCAN NO 16

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9083

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	37.91	817.78	502.41	.694	645.24	638.16	1388.00
10.93	39.16	827.54	522.58	.703	641.66	640.60	1334.42
29.60	38.44	837.52	520.71	.717	655.97	655.96	1242.91
47.65	36.99	864.53	520.19	.748	690.52	690.61	1154.42
66.21	39.03	870.07	547.85	.755	675.93	673.46	1063.46
87.64	41.81	970.68	647.09	.850	723.53	713.81	958.46
100.00	43.13	1010.73	690.64	.890	737.97	717.58	897.86

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9300

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	-8.65	670.60	-100.86	.560	662.97	662.97	1377.93
11.31	-8.60	687.57	-102.81	.575	679.84	679.75	1330.31
30.17	-7.25	695.99	-87.82	.587	690.43	690.13	1250.87
48.52	-6.75	714.68	-84.05	.608	709.72	708.99	1173.56
67.19	-7.77	707.50	-95.67	.603	701.00	700.61	1094.98
88.23	-5.60	727.79	-70.98	.618	724.32	721.67	1006.31
100.00	-5.54	732.90	-70.78	.623	729.47	729.47	956.75

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING TRAILING EDGE EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCTION SUR (DEG)	D FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00 0.00	0.00	46.56	1.587	-2.335	.4476	.0968	.0345	13.530	1.650	1.2234	.7515
10.93 11.31	12.35	47.76	2.994	-.365	.4316	.0720	.0247	7.961	1.667	1.2234	.8064
29.60 30.17	32.63	45.69	1.876	-1.449	.4061	.0666	.0217	5.948	1.679	1.2073	.8219
47.65 48.52	51.70	43.75	-.682	-3.685	.3845	.0722	.0220	5.242	1.703	1.1924	.8140
66.21 67.19	70.31	46.80	-.370	-3.262	.3942	.0606	.0172	3.332	1.693	1.1867	.8550
87.64 88.23	89.65	47.41	-.432	-3.346	.4382	.1768	.0466	5.936	1.709	1.1987	.6791
100.00 100.00	100.00	48.64	-1.530	-4.971	.4553	.1654	.0416	13.158	1.709	1.1987	.7284

MOMENTUM AVERAGE STAGE EFFICIENCY = .8106 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7961 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.6888
MASS AVERAGE TEMPERATURE RISE = 1.2025

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

94 PERCENT DESIGN SPEED - SCAN NO 16

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9083

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)
0.00	37.91	249.26	153.14	.694	196.67	194.51	423.06
10.93	39.16	252.23	159.28	.703	195.58	195.25	406.73
29.60	38.44	255.28	158.71	.717	199.94	199.94	378.84
47.65	36.99	263.51	158.55	.748	210.47	210.32	351.87
66.21	39.03	265.20	166.99	.755	206.02	205.27	324.14
87.64	41.81	295.86	197.23	.850	220.53	217.57	292.14
100.00	43.10	308.07	210.51	.890	224.93	218.72	273.67

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9300

PERCENT SPAN FROM TIP (T. F.)	BETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VM4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	-8.65	204.40	-30.74	.560	202.07	202.07	419.99
11.31	-8.60	209.57	-31.34	.575	207.21	207.19	405.48
30.17	-7.25	212.14	-26.77	.587	210.44	210.35	381.26
48.52	-6.75	217.83	-25.62	.608	216.32	216.10	357.70
67.18	-7.77	215.64	-29.16	.603	213.66	213.55	333.75
88.23	-5.60	221.83	-21.64	.618	220.77	219.97	306.72
100.00	-5.54	223.39	-21.57	.623	222.34	222.34	291.62

STATOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	SPAN FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCTION SUR (DEG)	D FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	46.56	1.587	-2.335	.4476	.0968	.0345	13.530	1.650	1.2234	.7515
10.93	11.31	12.35	47.76	2.994	-.365	.4316	.0720	.0247	7.961	1.667	1.2234	.8064
29.60	30.17	32.60	45.69	1.876	-1.449	.4061	.0666	.0217	5.949	1.679	1.2073	.8219
47.65	48.52	51.70	43.75	-.682	-3.685	.3845	.0722	.0220	5.242	1.703	1.1924	.8140
66.21	67.18	70.31	46.80	-.370	-3.262	.3942	.0606	.0172	3.332	1.693	1.1867	.8550
87.64	88.23	89.65	47.41	-.432	-3.346	.4382	.1768	.0466	5.936	1.709	1.1987	.6791
100.00	100.00	100.00	48.64	-1.530	-4.971	.4553	.1654	.0416	13.158	1.709	1.1987	.7284

MOMENTUM AVERAGE STAGE EFFICIENCY = .8106 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7961 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.6888
MASS AVERAGE TEMPERATURE RISE = 1.2025

NASA SMALL AXIAL COMPRESSOR TEST 6 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

94 PERCENT DESIGN SPEED - SCAN NO 17
 EQUIVALENT WEIGHT FLOW = 3.1109 LBM/SEC EQUIVALENT SPEED = 72113.458 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 34.9367 EQUIVALENT FLOW / INLET ANN AREA = 34.3591 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9893

PERCENT SPAN FROM TIP (L. E.)	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	72.72	1556.47	1486.24	1.419	0.00	462.26	0.00	.421	462.26	447.37	1486.24
10.27	71.42	1488.36	1410.81	1.358	0.00	474.15	0.00	.433	474.15	458.63	1410.81
27.10	68.21	1386.35	1287.29	1.269	0.00	514.62	0.00	.471	514.62	505.17	1287.29
43.45	65.71	1280.55	1167.19	1.174	0.00	526.76	0.00	.483	526.76	525.06	1167.19
61.47	63.71	1154.27	1034.90	1.057	0.00	511.20	0.00	.468	511.20	511.02	1034.90
84.45	61.02	990.18	866.18	.904	0.00	479.78	0.00	.438	479.78	473.34	866.18
100.00	58.50	881.96	751.99	.804	0.00	460.82	0.00	.429	460.82	445.16	751.99

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9082

PERCENT SPAN FROM TIP (T. E.)	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	59.81	1366.94	922.18	.893	43.39	738.39	507.24	.618	536.60	519.32	1429.42
11.26	57.29	993.58	836.04	.833	44.66	754.81	530.55	.633	536.88	525.15	1366.59
30.67	53.75	881.99	711.26	.744	46.37	755.84	547.07	.637	521.54	518.29	1258.33
48.80	46.97	845.47	618.07	.722	43.06	789.61	539.14	.675	576.90	576.87	1157.21
66.62	41.08	738.02	484.93	.633	45.84	798.54	572.85	.685	556.34	554.70	1057.78
87.70	24.31	643.72	265.05	.556	49.01	894.37	675.11	.773	586.62	576.98	940.16
100.00	13.73	604.62	143.47	.525	51.11	935.46	728.08	.813	587.35	567.39	871.56

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING TRAILING EDGE EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE ANGLE MEAN SUCT SUR (DEG) (DEG)	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.30	0.00	8.886 8.419	.4386 .2152	.0412 2.815	1.747	.7425	.7618
10.27	11.26	12.69	9.651 8.305	.4619 .2327	.0456 2.281	1.740	.7366	.7562
27.10	30.67	33.11	9.419 7.252	.4952 .2067	.0407 3.643	1.743	.7788	.7953
43.45	48.80	52.08	9.099 6.202	.4673 .1098	.0228 4.796	1.774	.8885	.8971
61.47	66.62	70.59	9.373 5.526	.4960 .1290	.0266 9.816	1.744	.8854	.8940
84.45	87.70	89.76	9.662 4.643	.5081 .1505	.0321 14.344	1.803	.9002	.9081
100.00	100.00	100.00	9.748 3.674	.4867 .1839	.0380 20.778	1.803	.9002	.9081

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8403 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8272 (ADIABATIC)
 MOMENTUM AVG. ROTOR PRESS RATIO = 1.7577
 MASS AVERAGE TEMPERATURE RISE = 1.2110

NASA SMALL AXIAL COMPRESSOR TEST 6 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

94 PERCENT DESIGN SPEED ~ SCAN NO 17
 EQUIVALENT FLOW FLOW = 1.4111 KG/SEC EQUIVALENT SPEED = 72113.458 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 84.9367 EQUIVALENT FLOW / INLET ANN AREA = 167.7557 KG/SEC-SQ M

 INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9893

PERCENT SPAN FROM TIP (L. E.)	BETA*1 (DEG)	V*1 (M/SEC)	VU*1 (M/SEC)	M*1	BETA1 (DEG)	V1 (M/SEC)	VU1 (M/SEC)	M1	VM1 (M/SEC)	VZ1 (M/SEC)	U1 (M/SEC)
0.00	72.72	474.41	453.01	1.419	0.00	140.90	0.00	.421	140.90	136.36	453.01
10.27	71.42	453.65	430.02	1.358	0.00	144.52	0.00	.433	144.52	139.79	430.02
27.10	68.21	422.56	392.37	1.269	0.00	156.86	0.00	.471	156.86	153.97	392.37
43.45	65.71	390.31	355.76	1.174	0.00	160.56	0.00	.483	160.56	160.04	355.76
61.47	63.71	351.87	315.44	1.057	0.00	155.81	0.00	.468	155.81	155.76	315.44
84.45	61.02	301.81	264.01	.904	0.00	146.24	0.00	.438	146.24	144.27	264.01
100.00	58.50	268.82	229.21	.804	0.00	140.46	0.00	.420	140.46	135.68	229.21

 EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9082

PERCENT SPAN FROM TIP (T. E.)	BETA*2 (DEG)	V*2 (M/SEC)	VU*2 (M/SEC)	M*2	BETA2 (DEG)	V2 (M/SEC)	VU2 (M/SEC)	M2	VM2 (M/SEC)	VZ2 (M/SEC)	U2 (M/SEC)
0.00	59.81	325.20	281.08	.893	43.39	225.06	154.61	.618	163.55	158.29	435.69
11.26	57.29	302.84	254.82	.833	44.66	230.07	161.71	.633	163.64	160.07	416.54
30.67	53.75	268.83	216.79	.744	46.37	230.38	166.75	.637	158.97	157.98	383.54
48.80	46.97	257.70	188.39	.722	43.06	240.67	164.33	.675	175.84	175.83	352.72
66.62	41.08	224.95	147.81	.633	45.84	243.39	174.60	.685	169.57	169.07	322.41
87.70	24.31	196.21	80.79	.556	49.01	272.60	205.77	.773	178.80	175.86	286.56
100.00	13.73	184.29	43.73	.525	51.11	285.13	221.92	.813	179.02	172.94	265.65

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCTION SUR (DEG)	Q FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	12.92	8.886	8.418	.4386	.2152	.0412	2.815	1.747	.7425	.7618
10.27	11.26	12.69	14.13	9.651	8.305	.4619	.2327	.0456	2.281	1.740	.7366	.7562
27.10	30.67	33.11	14.46	9.419	7.252	.4952	.2067	.0407	3.643	1.743	.7708	.7953
43.45	48.80	52.08	18.74	9.099	6.202	.4673	.1098	.0228	4.796	1.774	.8885	.8971
61.47	66.62	70.59	22.64	9.373	5.526	.4960	.1290	.0266	9.816	1.744	.8854	.8940
84.45	87.70	89.76	36.70	9.662	4.643	.5081	.1505	.0321	14.344	1.803	.9002	.9081
100.00	100.00	100.00	44.77	9.748	3.674	.4867	.1839	.0380	20.778	1.803	.9002	.9081

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8403 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8272 (ADIABATIC)

MOMENTUM AVG. ROTOR PRESS RATIO = 1.7577
 MASS AVERAGE TEMPERATURE RISE = 1.2110

ORIGINAL PAGE IS
OF POOR QUALITY

NASA SMALL AXIAL COMPRESSOR TEST 6 DECEMBER, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

94 PERCENT DESIGN SPEED - SCAN NO 17

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9230

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	39.75	816.75	522.30	.690	627.92	621.02	1388.20
10.94	41.62	817.96	543.29	.691	611.47	610.46	1334.56
29.76	41.94	829.17	554.13	.705	616.82	616.81	1242.30
47.62	39.01	858.42	540.29	.740	667.06	666.57	1154.74
65.75	41.51	857.82	568.50	.741	642.39	640.64	1065.88
87.34	44.88	936.88	661.13	.814	663.83	654.91	960.04
100.00	46.14	980.15	706.78	.857	679.09	660.33	897.99

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9300

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	-8.13	647.75	-91.61	.538	641.24	641.24	1378.13
11.39	-8.10	656.54	-92.47	.545	650.00	649.92	1330.14
30.37	-7.44	656.50	-85.01	.548	650.97	650.69	1250.18
48.74	-7.62	675.03	-89.50	.570	669.07	668.38	1172.81
67.35	-8.13	667.25	-94.35	.564	660.54	660.18	1094.41
88.31	-5.93	682.64	-70.48	.576	678.99	676.51	1006.15
100.00	-5.38	686.62	-70.38	.579	683.00	683.00	956.89

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING TRAILING EDGE EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	Q FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	47.88	3.435	-4.87	.4796	.0950	.6339	14.050	1.702	1.2323	.7841
10.94	11.39	49.72	5.454	2.096	.4672	.0623	.0214	8.443	1.710	1.2323	.8531
29.76	30.37	49.38	5.361	2.041	.4596	.0669	.0218	5.735	1.710	1.2205	.8504
47.62	48.74	46.62	1.335	-1.669	.4353	.0726	.0221	4.362	1.735	1.1999	.8437
65.75	67.35	49.64	2.171	-7.33	.4391	.0377	.0107	2.970	1.724	1.1941	.9222
87.34	88.31	50.81	2.706	-2.19	.4700	.1063	.0280	5.608	1.735	1.2033	.8188
100.00	100.00	52.03	1.512	-1.929	.4893	.0987	.0248	12.817	1.735	1.2033	.8482

MOMENTUM AVERAGE STAGE EFFICIENCY = .9098 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7948 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.7220
MASS AVERAGE TEMPERATURE RISE = 1.2110

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

94 PERCENT DESIGN SPEED - SCAN NO 17

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9230

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)
0.00	39.75	248.95	159.20	.690	191.39	189.29	423.12
10.94	41.62	249.31	165.59	.691	186.38	186.07	406.77
29.76	41.34	252.73	168.90	.705	188.01	188.00	378.65
47.62	39.01	261.65	164.68	.740	203.32	203.17	351.96
65.75	41.51	261.46	173.23	.741	195.80	195.08	324.88
87.34	44.88	285.56	201.51	.814	202.33	199.62	292.62
100.00	46.14	298.75	215.43	.857	206.99	201.27	273.71

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9300

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VM4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	-8.13	197.44	-27.92	.538	195.45	195.45	420.05
11.39	-8.13	200.11	-28.18	.545	198.12	198.10	405.43
30.37	-7.44	200.10	-25.91	.548	198.42	198.33	381.06
48.74	-7.62	205.75	-27.28	.570	203.93	203.72	357.47
67.35	-8.13	203.38	-28.76	.564	201.33	201.22	333.58
88.31	-5.33	208.07	-21.48	.576	206.96	206.20	306.67
100.00	-5.88	209.28	-21.45	.579	208.18	208.18	291.66

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING TRAILING EDGE EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE ANGLE MEAN SUCT SUR (DEG) (DEG)	1 FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00 0.00	0.00	47.88	3.435 -4.87	.4796	.0950	.0339	14.050	1.702	1.2323	.7841
10.94 11.39	12.69	49.72	5.454 2.096	.4672	.0623	.0214	8.443	1.710	1.2323	.8531
29.76 30.37	13.11	49.38	5.361 2.041	.4596	.0669	.0218	5.735	1.710	1.2205	.8504
47.62 48.74	52.08	46.62	1.335 -1.669	.4353	.0726	.0221	4.362	1.735	1.1999	.8437
65.75 67.35	79.59	49.64	2.171 -0.733	.4391	.0377	.0107	2.970	1.724	1.1941	.9222
87.34 88.31	99.76	50.81	2.706 -0.219	.4700	.1063	.0280	5.608	1.735	1.2033	.8188
100.00 100.00	100.15	52.03	1.512 -1.929	.4893	.0987	.0248	12.817	1.735	1.2033	.8482

MOMENTUM AVERAGE STAGE EFFICIENCY = .8098 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7948 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.7220
MASS AVERAGE TEMPERATURE RISE = 1.2110

NASA SMALL AXIAL COMPRESSOR TEST 6 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

94 PERCENT DESIGN SPEED - SCAN NO 18
 EQUIVALENT HEIGHT FLOW = 2.9298 LBM/SEC EQUIVALENT SPEED = 72228.376 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 79.9932 EQUIVALENT FLOW / INLET ANN AREA = 32.3593 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9890

PERCENT SPAN FROM TIP (L. E.)	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	73.91	1549.32	1488.61	1.409	0.00	429.46	0.00	.391	429.46	415.63	1488.61
10.51	72.66	1478.52	1411.32	1.346	0.00	440.67	0.00	.401	440.67	426.25	1411.32
27.44	69.61	1372.83	1286.83	1.253	0.00	473.28	0.00	.437	478.28	469.49	1286.83
43.49	67.28	1267.10	1168.77	1.158	0.00	489.40	0.00	.447	489.40	487.83	1168.77
61.28	65.39	1141.61	1037.92	1.042	0.00	475.41	0.00	.434	475.41	475.25	1037.92
84.32	62.78	976.66	868.49	.889	0.00	446.75	0.00	.407	446.75	440.76	868.49
100.00	60.30	867.10	753.19	.789	0.00	429.61	0.00	.391	429.61	415.01	753.19

EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9091

PERCENT SPAN FROM TIP (T. E.)	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)	J2 (FT/SEC)
0.00	61.13	1919.84	893.10	.848	47.57	729.74	538.59	.607	492.38	476.53	1431.70
11.29	57.48	954.90	805.17	.797	47.66	762.23	563.43	.636	513.36	502.15	1368.59
30.70	55.50	796.77	656.67	.665	53.21	751.54	603.49	.629	451.25	448.44	1260.16
50.02	47.17	763.48	559.96	.647	48.77	787.45	592.22	.667	518.99	518.96	1152.18
68.05	39.65	688.91	439.60	.588	49.08	809.76	611.85	.691	530.43	528.86	1051.45
88.45	21.67	626.50	231.37	.541	50.49	915.19	706.12	.790	582.22	572.65	937.49
100.00	11.12	593.85	114.51	.515	52.47	956.44	758.44	.830	582.70	562.90	872.95

ROTOR PERFORMANCE DATA

PERCENT LEADING EDGE	SPAN FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	12.78	10.671	9.603	.4741	.2339	.0430	4.141	1.794	.7339	.7547
10.51	11.29	12.95	15.18	10.936	9.576	.4925	.2406	.0469	2.475	1.806	.7431	.7634
27.44	30.70	33.49	14.11	10.877	8.688	.5659	.2698	.0508	5.410	1.780	.7339	.7545
43.49	50.02	52.12	20.13	10.673	7.774	.5382	.1775	.0366	5.576	1.796	.8316	.8448
61.28	68.05	70.46	25.74	11.031	7.190	.5415	.1582	.0333	9.505	1.779	.8667	.8771
84.32	88.45	89.73	41.11	11.409	6.392	.5254	.1486	.0323	12.751	1.853	.9065	.9143
100.00	100.00	100.00	49.18	11.548	5.473	.4977	.1845	.0385	18.169	1.853	.9065	.9143

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8220 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8067 (ADIABATIC)
 MOMENTUM AVG. ROTOR PRESS RATIO = 1.8009
 MASS AVERAGE TEMPERATURE RISE = 1.2265

NASA SMALL AXIAL COMPRESSOR TEST 6 DECEMBER, 1974 (COMBINED TEMP.)

/ ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

94 PERCENT DESIGN SPEED - SCAN NO 18
 EQUIVALENT WEIGHT FLOW = 1.3289 KG/SEC EQUIVALENT SPEED = 72228.376 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 79.9932 EQUIVALENT FLOW / INLET ANN AREA = 157.9920 KG/SEC-SQ M

 INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9880

PERCENT SPAN FROM TIP (L. E.)	BETA*1 (DEG)	V*1 (M/SEC)	VU*1 (M/SEC)	M*1	BETA1 (DEG)	V1 (M/SEC)	VU1 (M/SEC)	M1	VM1 (M/SEC)	VZ1 (M/SEC)	U1 (M/SEC)
0.00	73.91	472.23	453.73	1.409	0.00	130.90	0.00	.391	130.90	126.68	453.73
10.51	72.66	450.65	430.17	1.346	0.00	134.32	0.00	.401	134.32	129.92	430.17
27.44	69.61	418.44	392.22	1.253	0.00	145.78	0.00	.437	145.78	143.10	392.22
43.49	67.28	386.21	356.24	1.158	0.00	143.17	0.00	.447	149.17	148.69	356.24
61.28	65.39	347.96	316.36	1.042	0.00	144.91	0.00	.434	144.91	144.86	316.36
84.32	62.78	297.69	264.72	.889	0.00	135.17	0.00	.407	136.17	134.34	264.72
100.00	60.30	264.29	229.57	.789	0.00	130.95	0.00	.391	130.95	126.50	229.57

 EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9091

PERCENT SPAN FROM TIP (T. E.)	BETA*2 (DEG)	V*2 (M/SEC)	VU*2 (M/SEC)	M*2	BETA2 (DEG)	V2 (M/SEC)	VU2 (M/SEC)	M2	VM2 (M/SEC)	VZ2 (M/SEC)	U2 (M/SEC)
0.00	61.13	310.85	272.22	.848	47.57	222.43	164.16	.607	150.08	145.25	436.38
11.29	57.48	291.05	245.41	.797	47.66	232.33	171.73	.636	156.47	153.05	417.15
30.70	55.50	242.86	200.15	.665	53.21	229.68	183.94	.629	137.54	136.68	384.10
50.02	47.17	232.71	170.68	.647	48.77	240.01	180.51	.667	158.19	158.18	351.19
68.05	39.65	209.98	133.99	.588	49.08	246.81	186.49	.691	161.67	161.20	320.48
88.45	21.67	190.96	70.52	.541	50.49	278.95	215.22	.790	177.46	174.54	285.75
100.00	11.12	181.07	34.90	.515	52.47	291.52	231.17	.830	177.61	171.57	266.07

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCTION SUR (DEG)	D FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	12.78	10.071	9.603	.4741	.2339	.0430	4.141	1.794	.7339	.7547
10.51	11.29	12.95	15.18	10.936	9.576	.4925	.2406	.0469	2.475	1.806	.7431	.7634
27.44	30.70	33.49	14.11	10.877	8.688	.5659	.2698	.0508	5.410	1.780	.7339	.7545
43.49	50.02	52.12	20.10	10.673	7.774	.5382	.1775	.0366	5.576	1.796	.8316	.8448
61.28	68.05	70.46	25.74	11.031	7.190	.5415	.1582	.0333	9.505	1.779	.8667	.8771
84.32	88.45	89.73	41.11	11.409	6.392	.5254	.1486	.0323	12.751	1.853	.9066	.9143
100.00	100.00	100.00	49.18	11.548	5.473	.4977	.1845	.0395	18.169	1.853	.9066	.9143

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8220 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8067 (ADIABATIC)

MOMENTUM AVG. ROTOR PRESS RATIO = 1.8009
 MASS AVERAGE TEMPERATURE RISE = 1.2265

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

ORIGINAL PAGE IS
OF POOR QUALITY

STATOP PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

94 PERCENT DESIGN SPEED - SCAN NO 18

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9357

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	44.69	788.56	554.58	.660	560.59	554.44	1390.41
11.07	45.69	806.50	577.14	.676	563.33	562.40	1336.06
30.02	49.23	807.84	611.82	.678	527.51	527.51	1243.01
48.75	45.88	837.16	592.81	.713	591.12	590.68	1151.04
66.97	45.50	849.58	606.01	.729	595.43	593.25	1061.58
87.98	47.31	939.60	690.67	.814	637.04	628.49	958.45
100.00	40.54	982.58	736.33	.856	650.60	632.62	899.42

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9127

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	-9.00	619.77	-96.95	.510	612.14	612.14	1380.33
11.45	-8.98	620.65	-96.89	.511	613.04	612.96	1332.01
30.53	-8.45	616.24	-90.60	.508	609.54	609.28	1251.50
48.83	-7.95	621.87	-86.06	.518	615.88	615.25	1174.30
67.49	-7.77	628.25	-84.98	.527	622.48	622.13	1095.56
88.28	-5.24	639.81	-58.44	.535	637.13	634.80	1007.85
100.00	-5.19	643.81	-58.24	.539	641.17	641.17	958.41

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	PERCENT SPAN FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE ANGLE (DEG)	ANGLE SUCT SUR (DEG)	D FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	53.69	8.373	4.451	.5138	.1037	.0369	13.180	1.746	1.2470	.7677
11.07	11.45	12.95	54.68	9.524	6.171	.5205	.1248	.0428	7.544	1.746	1.2470	.7388
30.02	30.53	33.49	57.69	12.644	9.332	.5204	.0064	.0281	4.706	1.740	1.2436	.8245
48.75	48.83	52.12	53.04	7.313	4.326	.5011	.0910	.0276	4.020	1.749	1.2186	.8299
66.97	67.49	70.46	53.28	6.013	3.142	.4877	.0434	.0123	3.326	1.756	1.2061	.9208
87.98	88.28	89.73	52.55	4.992	2.098	.5211	.1354	.0357	6.293	1.764	1.2121	.7962
100.00	100.00	100.00	53.73	3.905	.464	.5382	.1255	.0316	13.510	1.764	1.2121	.8260

MOMENTUM AVERAGE STAGE EFFICIENCY = .7828 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7651 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.7511
MASS AVERAGE TEMPERATURE RISE = 1.2265

NASA SMALL AXIAL COMPRESSOR TEST 6 DECEMBER, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

94 PERCENT DESIGN SPEED - SCAN NO 18

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9357

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)
0.00	44.69	240.35	169.04	.660	170.87	168.99	423.80
11.07	45.69	245.82	175.91	.676	171.70	171.42	407.23
30.02	49.23	246.23	186.48	.678	160.79	160.78	378.87
48.75	45.08	255.17	180.69	.713	180.17	180.04	350.84
66.97	45.50	258.95	184.71	.729	181.49	180.82	323.57
87.98	47.31	286.39	210.52	.814	194.17	191.56	292.14
100.00	48.54	299.49	224.43	.856	198.30	192.82	274.14

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9127

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VM4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	-9.00	188.91	-29.55	.510	186.58	186.58	420.72
11.45	-8.90	189.17	-29.53	.511	186.85	186.83	406.00
30.53	-8.45	187.83	-27.61	.508	185.79	185.71	381.46
48.83	-7.95	189.55	-26.23	.518	187.72	187.53	357.93
67.49	-7.77	191.49	-25.90	.527	189.73	189.63	333.93
88.28	-5.24	195.01	-17.81	.535	194.20	193.49	307.19
100.00	-5.19	196.23	-17.75	.539	195.43	195.43	292.12

STATOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	O FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	53.69	8.373	4.451	.5138	.1037	.0369	13.180	1.746	1.2470	.7677
11.07	11.45	12.95	54.68	9.524	6.171	.5205	.1248	.0428	7.544	1.746	1.2470	.7388
30.02	30.53	33.49	57.69	12.644	9.332	.5204	.0864	.0281	4.706	1.740	1.2436	.8245
48.75	48.83	52.12	53.04	7.313	4.326	.5011	.0910	.0276	4.020	1.749	1.2186	.8299
66.97	67.49	70.46	53.28	6.013	3.142	.4877	.0434	.0123	3.326	1.756	1.2061	.9208
87.98	88.28	89.73	52.55	4.992	2.098	.5211	.1354	.0357	6.293	1.764	1.2121	.7962
100.00	100.00	100.00	53.73	3.905	.464	.5382	.1255	.0316	13.510	1.764	1.2121	.8260

MOMENTUM AVERAGE STAGE EFFICIENCY = .7928 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7651 (ADIABATIC)MOMENTUM AVG. STAGE PRESS RATIO = 1.7511
MASS AVERAGE TEMPERATURE RISE = 1.2265

ORIGINAL PAGE IS
OF POOR QUALITY

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

94 PERCENT DESIGN SPEED - SCAN NO 19
 EQUIVALENT WEIGHT FLOW = 3.0390 LBM/SEC EQUIVALENT SPEED = 72217.074 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 82.9738 EQUIVALENT FLOW / INLET ANN AREA = 33.5651 LBM/SEC-SQ FT

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9908

PERCENT SPAN FROM TIP (L. E.)	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	73.20	1554.75	1488.38	1.416	0.00	449.43	0.00	.409	449.43	434.96	1488.38
10.47	71.90	1484.82	1411.38	1.354	0.00	461.18	0.00	.420	461.18	446.09	1411.38
27.43	68.74	1380.70	1286.71	1.263	0.00	500.70	0.00	.458	500.70	491.50	1286.71
43.62	65.30	1275.12	1167.62	1.167	0.00	512.43	0.00	.469	512.43	510.78	1167.62
61.45	64.35	1149.80	1036.52	1.051	0.00	497.67	0.00	.455	497.67	497.50	1036.52
84.31	61.69	986.42	868.43	.990	0.00	467.82	0.00	.427	467.82	461.54	868.43
100.00	59.13	877.40	753.07	.799	0.00	450.24	0.00	.410	450.24	434.94	753.07

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .8959

PERCENT SPAN FROM TIP (T. E.)	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	59.79	1046.93	904.77	.874	45.00	744.91	526.70	.622	526.75	509.79	1431.47
11.20	56.24	984.03	818.12	.824	45.21	776.11	550.78	.650	546.81	534.86	1368.90
30.33	54.17	844.10	684.40	.708	49.46	760.12	577.65	.638	494.07	490.99	1262.05
49.18	47.02	805.08	589.00	.685	45.97	789.64	567.72	.671	548.84	548.81	1156.72
67.27	40.40	719.85	466.51	.616	47.06	804.76	589.14	.689	548.23	546.62	1055.65
88.02	22.67	640.72	246.92	.554	49.52	910.79	692.81	.787	591.23	581.52	939.73
100.00	12.12	605.31	127.08	.526	51.56	952.03	745.73	.827	591.82	571.71	872.81

ROTOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING TRAILING EDGE EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCTION SUR (DEG)	D FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	13.41	9.361	8.893	.4557	.2193	.0420	2.802	1.787	.7656
10.47	11.20	12.93	15.66	10.173	8.815	.4720	.2256	.0454	1.218	1.799	.7737
27.43	30.33	33.51	14.56	10.001	7.813	.5281	.2364	.0460	3.953	1.773	.7779
43.62	49.18	52.39	19.28	9.716	6.810	.5033	.1444	.0299	5.022	1.791	.8592
61.45	67.27	70.65	23.96	10.011	6.165	.5131	.1324	.0276	9.635	1.767	.8851
84.31	88.02	39.78	39.02	10.317	5.301	.5131	.1351	.0292	13.141	1.842	.9128
100.00	100.00	100.00	47.01	10.374	4.300	.4875	.1660	.0345	19.170	1.842	.9127

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8380 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8242 (ADIABATIC)

MOMENTUM AVG. ROTOR PRESS RATIO = 1.7925
 MASS AVERAGE TEMPERATURE RISE = 1.2197

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

ROTOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

94 PERCENT DESIGN SPEED - SCAN NO 19
 EQUIVALENT WEIGHT FLOW = 1.3785 KG/SEC EQUIVALENT SPEED = 72217.074 R.P.M.
 PERCENT DESIGN EQUIVALENT FLOW = 82.9738 EQUIVALENT FLOW / INLET ANN AREA = 163.8790 KG/SEC-SQ M

 INLET VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .9908

PERCENT SPAN FROM TIP (L. E.)	BETA*1 (DEG)	V*1 (M/SEC)	VU*1 (M/SEC)	M*1	BETA1 (DEG)	V1 (M/SEC)	VU1 (M/SEC)	M1	VM1 (M/SEC)	VZ1 (M/SEC)	U1 (M/SEC)
0.00	73.20	473.89	453.66	1.416	0.00	136.99	0.00	.409	136.99	132.58	453.66
10.47	71.90	452.57	430.19	1.354	0.00	140.57	0.00	.420	140.57	135.97	430.19
27.43	68.74	420.84	392.19	1.263	0.00	152.61	0.00	.458	152.61	149.81	392.19
43.62	65.30	388.66	355.89	1.167	0.00	156.19	0.00	.469	156.19	155.69	355.89
61.45	64.35	350.46	315.93	1.051	0.00	151.69	0.00	.455	151.69	151.64	315.93
84.31	61.69	300.66	264.70	.900	0.00	142.59	0.00	.427	142.59	140.68	264.70
100.00	59.13	267.43	229.54	.799	0.00	137.23	0.00	.410	137.23	132.57	229.54

 EXIT VELOCITY DIAGRAM DATA
 CALCULATED AERODYNAMIC BLOCKAGE = .8959

PERCENT SPAN FROM TIP (T. E.)	BETA*2 (DEG)	V*2 (M/SEC)	VU*2 (M/SEC)	M*2	BETA2 (DEG)	V2 (M/SEC)	VU2 (M/SEC)	M2	VM2 (M/SEC)	VZ2 (M/SEC)	U2 (M/SEC)
0.00	59.79	319.11	275.77	.874	45.00	227.05	160.54	.622	160.55	155.38	436.31
11.20	56.24	299.93	249.36	.824	45.21	236.56	167.88	.650	166.67	163.02	417.24
30.33	54.17	257.28	208.60	.708	49.46	231.68	176.87	.638	150.99	149.65	384.67
49.18	47.02	245.39	179.53	.685	45.97	240.68	173.04	.671	167.29	167.28	352.57
67.27	40.40	219.41	142.19	.616	47.06	245.29	179.57	.689	167.10	166.61	321.76
88.02	22.67	195.29	75.26	.554	49.52	277.61	211.17	.787	180.21	177.25	286.43
100.00	12.12	184.50	38.73	.526	51.56	290.18	227.30	.827	180.39	174.26	266.03

ROTOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA* (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	O FACTOR	OMEGA* BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	ROTOR PRESS RATIO	ROTOR ADIABATIC EFF	ROTOR POLYTROPIC EFF
0.00	0.00	0.00	13.41	9.361	8.893	.4557	.2193	.0420	2.802	1.787	.7459	.7656
10.47	11.20	12.93	15.66	10.173	8.815	.4720	.2256	.0454	1.218	1.799	.7544	.7737
27.43	30.33	33.51	14.56	10.001	7.813	.5281	.2364	.0460	3.953	1.773	.7594	.7779
43.62	49.18	52.30	19.28	9.716	6.810	.5033	.1444	.0299	5.022	1.791	.8592	.8702
61.45	67.27	70.65	23.96	10.011	6.165	.5131	.1324	.0276	9.635	1.767	.8851	.8940
84.31	88.02	89.78	39.02	10.317	5.301	.5131	.1351	.0292	13.141	1.842	.9128	.9199
100.00	100.00	100.00	47.01	10.374	4.300	.4875	.1660	.0345	19.170	1.842	.9127	.9199

MOMENTUM AVERAGE ROTOR EFFICIENCY = .8380 (POLYTROPIC)
 MOMENTUM AVERAGE ROTOR EFFICIENCY = .8242 (ADIABATIC)

MOMENTUM AVG. ROTOR PRESS RATIO = 1.7925
 MASS AVERAGE TEMPERATURE RISE = 1.2197

NASA SMALL AXIAL COMPRESSOR TEST 6 DECEMBER, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (ENGLISH UNITS)

94 PERCENT DESIGN SPEED - SCAN NO 19

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9195

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	41.87	812.54	542.34	.683	605.05	598.40	1390.19
10.96	42.95	828.07	564.18	.697	606.14	605.13	1336.40
29.66	45.34	823.57	585.75	.696	578.94	578.93	1244.59
48.05	42.07	849.09	568.90	.727	630.33	629.87	1154.32
66.33	43.15	854.17	584.20	.736	623.15	620.87	1064.56
87.62	45.97	943.12	678.14	.818	655.44	646.64	960.07
100.00	47.29	985.09	723.89	.860	668.12	649.66	899.28

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9227

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (FT/SEC)	VU4 (FT/SEC)	M4	VM4 (FT/SEC)	VZ4 (FT/SEC)	U4 (FT/SEC)
0.00	-8.31	639.36	-92.41	.528	632.65	632.65	1380.11
11.42	-8.26	643.93	-92.50	.532	637.25	637.17	1331.92
30.44	-7.27	636.88	-80.63	.520	631.75	631.48	1251.68
48.77	-7.45	647.99	-83.99	.543	642.52	641.86	1174.37
67.38	-7.79	644.09	-87.29	.542	638.15	637.80	1095.87
88.24	-5.59	660.31	-64.34	.554	657.17	654.77	1007.88
100.00	-5.54	664.10	-64.10	.558	661.00	661.00	958.26

STATOR PERFORMANCE DATA

PERCENT SPAN LEADING EDGE	FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCTION SUR (DEG)	D FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	50.18	5.554	1.631	.4965	.1048	.0374	13.870	1.737	1.2415	.7666
10.96	11.42	12.93	51.21	6.779	3.422	.4977	.1152	.0396	8.273	1.741	1.2415	.7540
29.66	30.44	33.51	52.61	8.766	5.443	.4906	.0819	.0267	5.895	1.733	1.2336	.8289
48.05	48.77	52.30	49.51	4.360	1.362	.4688	.0794	.0241	4.532	1.748	1.2104	.8425
66.33	67.38	70.65	50.94	3.743	.854	.4661	.0433	.0123	3.309	1.744	1.1992	.9174
87.62	88.24	89.78	51.57	3.738	.824	.4998	.1313	.0346	5.941	1.756	1.2085	.7929
100.00	100.00	100.00	52.83	2.662	-.779	.5173	.1220	.0307	13.161	1.756	1.2085	.8239

MOMENTUM AVERAGE STAGE EFFICIENCY = .7988 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7826 (ADIABATIC)

MOMENTUM AVG. STAGE PRESS RATIO = 1.7443
MASS AVERAGE TEMPERATURE RISE = 1.2197

NASA SMALL AXIAL COMPRESSOR TEST 5 DECEMBER, 1974 (COMBINED TEMP.)

STATOR PERFORMANCE NASA SMALL AXIAL COMPRESSOR (METRIC UNITS)

94 PERCENT DESIGN SPEED - SCAN NO 19

INLET VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9195

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	41.87	247.66	165.31	.683	184.42	182.39	423.73
10.96	42.95	252.40	171.96	.697	184.75	184.44	407.33
29.66	45.34	251.03	178.54	.696	176.46	176.46	379.35
48.05	42.07	258.80	173.40	.727	192.12	191.98	351.04
66.33	43.15	260.35	178.06	.736	189.94	189.24	324.48
87.62	45.97	287.46	206.70	.818	199.78	197.10	292.63
100.00	47.29	300.26	220.64	.860	203.64	198.02	274.10

EXIT VELOCITY DIAGRAM DATA
CALCULATED AERODYNAMIC BLOCKAGE = .9227

PERCENT SPAN FROM TIP (T. E.)	BETA 4 (DEG)	V4 (M/SEC)	VU4 (M/SEC)	M4	VM4 (M/SEC)	VZ4 (M/SEC)	U4 (M/SEC)
0.00	-8.31	194.88	-28.17	.528	192.83	192.83	420.66
11.42	-8.26	196.27	-28.19	.532	194.23	194.21	405.97
30.44	-7.27	194.12	-24.58	.528	192.56	192.47	381.51
48.77	-7.45	197.51	-25.60	.543	195.84	195.64	357.95
67.38	-7.79	196.32	-26.61	.542	194.51	194.40	334.02
88.24	-5.59	201.26	-19.61	.554	200.31	199.57	307.20
100.00	-5.54	202.42	-19.54	.558	201.47	201.47	292.08

STATOR PERFORMANCE DATA

PERCENT SPAN FROM TIP LEADING EDGE	PERCENT SPAN FROM TIP TRAILING EDGE	MASS FLOW (PCT)	DELTA BETA (DEG)	INCIDENCE MEAN (DEG)	ANGLE SUCT SUR (DEG)	Q FACTOR	OMEGA BAR	LOSS PARAMETER	DEVIATION ANGLE (DEG)	STAGE PRESS RATIO	STAGE TEMP RATIO	STATOR POLYTROPIC EFF
0.00	0.00	0.00	50.18	5.554	1.631	.4965	.1048	.0374	13.870	1.737	1.2415	.7666
10.96	11.42	12.93	51.21	6.779	3.422	.4977	.1152	.0396	8.273	1.741	1.2415	.7540
29.66	30.44	33.51	52.61	8.766	5.443	.4906	.0819	.0267	5.895	1.733	1.2336	.8289
48.05	48.77	52.30	49.51	4.360	1.362	.4688	.0794	.0241	4.532	1.748	1.2104	.8425
66.33	67.38	70.65	50.94	3.743	.854	.4661	.0433	.0123	3.309	1.744	1.1992	.9174
87.62	88.24	89.78	51.57	3.738	.824	.4998	.1313	.0346	5.941	1.756	1.2085	.7929
100.00	100.00	100.00	52.83	2.662	-.779	.5173	.1220	.0307	13.161	1.756	1.2085	.8239

MOMENTUM AVERAGE STAGE EFFICIENCY = .7988 (POLYTROPIC)
MOMENTUM AVERAGE STAGE EFFICIENCY = .7826 (ADIABATIC)MOMENTUM AVG. STAGE PRESS RATIO = 1.7443
MASS AVERAGE TEMPERATURE RISE = 1.2197