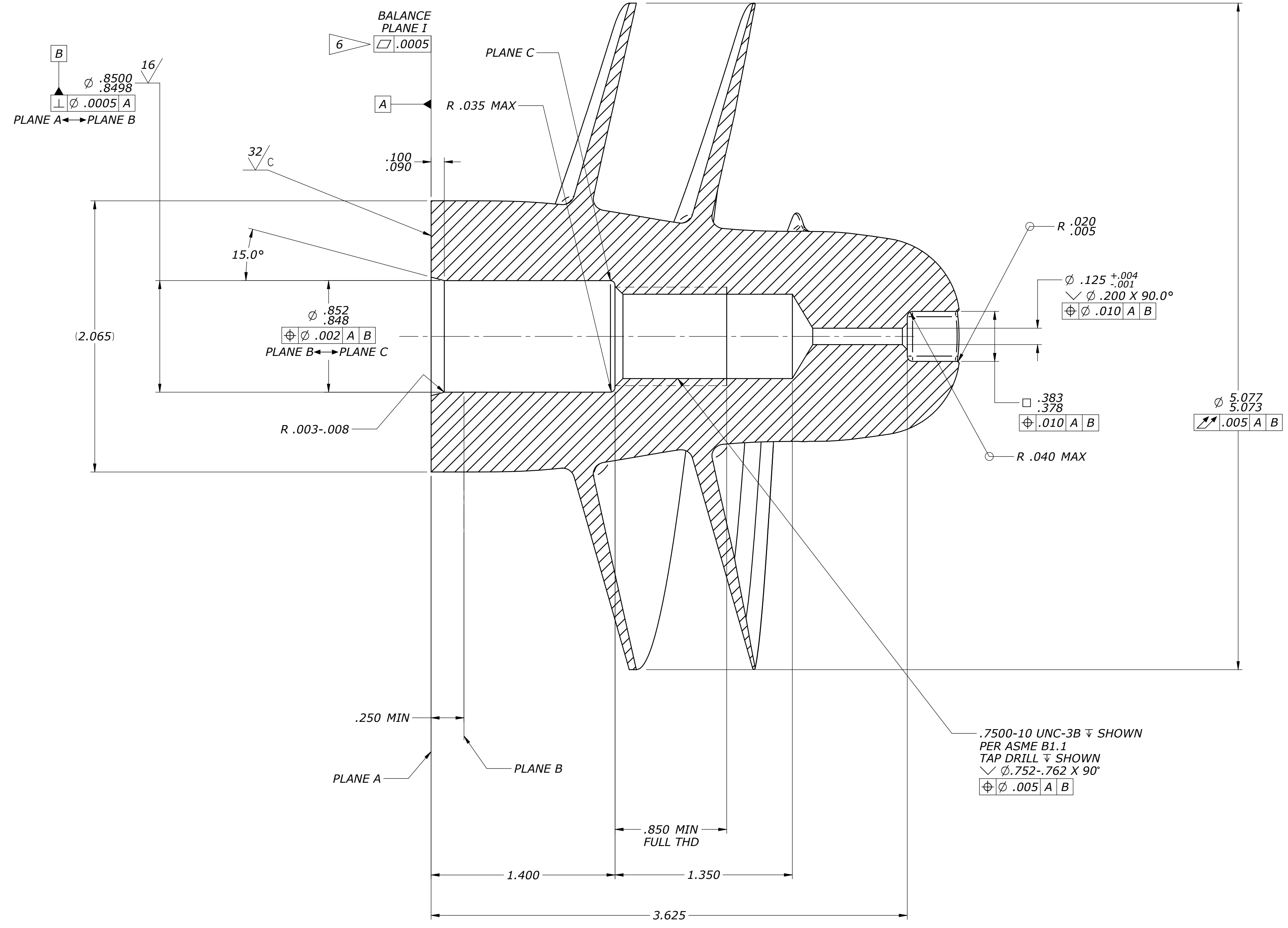


PART No.	M F	REVISIONS			DATE	APPROVAL
		ZONE	SYM	DESCRIPTION		

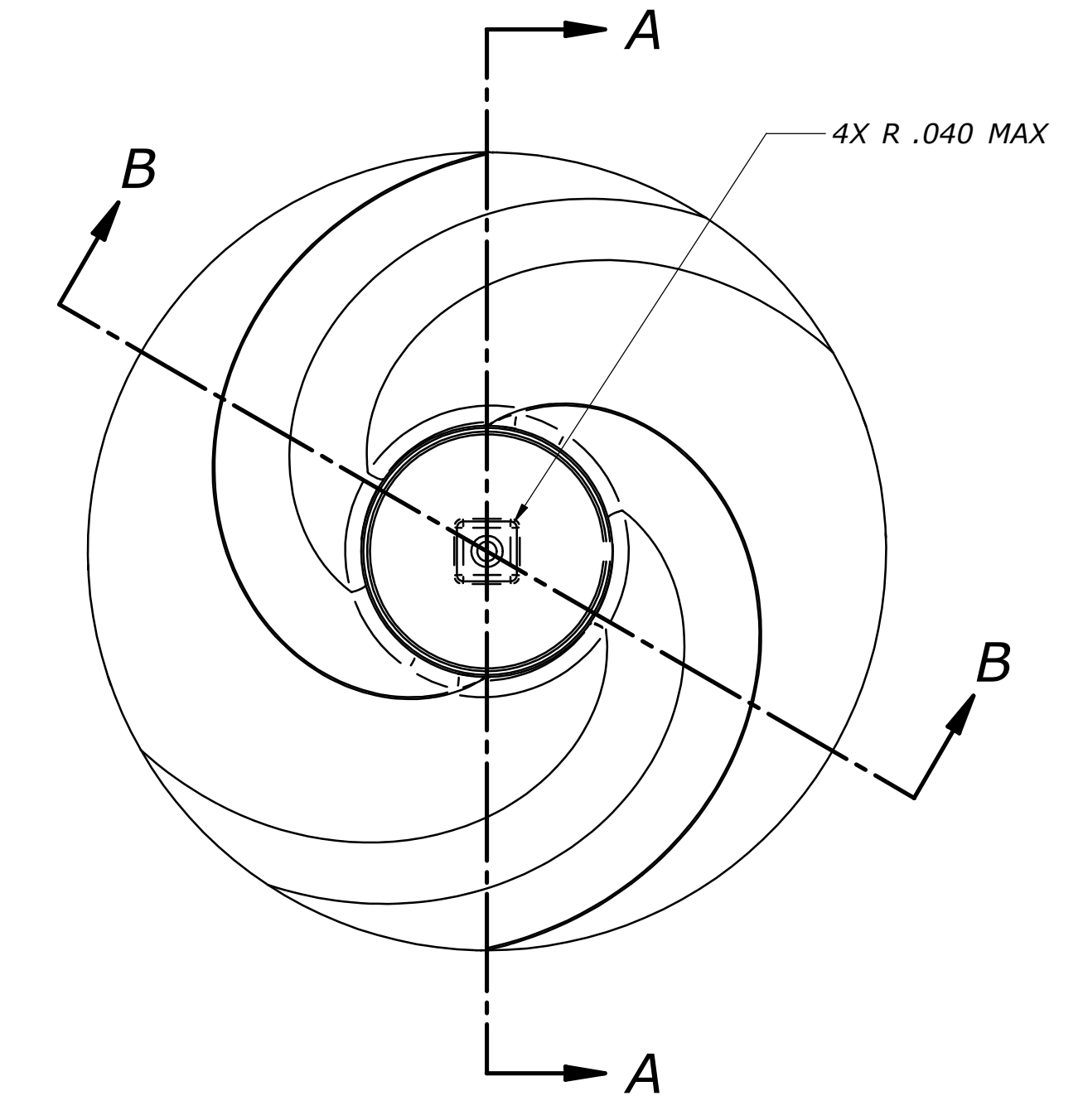
- NOTES: (UNLESS OTHERWISE SPECIFIED)**
- INTERPRET DRAWING PER ASME Y14.41M-2003.
 - UNLESS SEPARATE TOLERANCES ARE SHOWN, PERFECT ORIENTATION AT MMC FOR RELATED FEATURES IS REQUIRED.
 - GENERAL ANGULAR TOLERANCE DOES NOT APPLY TO IMPLIED 90 DEGREE ANGLES.
 - COMPLETE PRODUCT DEFINITION IS NOT CONTAINED IN THE DRAWING.
 - REFERENCE SOLID EDGE MODEL "MED03438-1_J-2X_SCALED_LOX_INDUCER.par."
 - ALL BASIC DIMENSIONS ARE MODELED AT MEAN VALUE.
 - MATERIAL: 15-5PH STAINLESS STEEL (UNS S15500), H1025, PER SAE AMS 5659.

ULTRASONIC INSPECT RAW MATERIAL STOCK PER ASTM E114 WITH ACCEPTANCE CRITERIA PER MSFC-STD-1249, MINIMUM DETECTABILITY ASSUMPTIONS FOR UT-STD, CLASS A.
 - 63 MICROINCH ROUGHNESS FOR ALL MACHINED SURFACES.
 - REMOVE ALL BURRS AND BREAK ALL SHARP EDGES.
 - PASSIVATE PER SAE AMS-QQ-P-35, TYPE II.
 - BALANCE IN SINGLE PLANE PER ISO 1940/1-1986(E), TO A BALANCE QUALITY GRADE OF G2.5 AT A MAX SPEED OF 8000 RPM. REMOVE MATERIAL AS REQUIRED FOR BALANCING FROM THE SPECIFIED LOCATION (WITHIN THE DIMENSIONED AREA, REVOLVED ABOUT INDUCER CENTERLINE). R.10 MINIMUM ALLOWABLE FILLET. FLATNESS APPLIES PRIOR TO BALANCING.

AFTER BALANCING, DETERMINE AND RECORD THE AMOUNT OF DYNAMIC UNBALANCE PRESENT AT PLANE I.
 - CLEAN AND MAINTAIN PER JSC-SN-C-0005, VISUALLY CLEAN (VC).
 - THIS PART REPRESENTS A 70% SCALE OF FULL SIZE INDUCER.



SECTION A-A
SCALE 2/1



MED03438

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MED03438-1 SHOWN

TOLERANCE EXCEPT AS NOTED DIMENSIONS ARE IN INCHES		ORIGINAL DATE OF DRAWING 2008-12-10		GEORGE C. MARSHALL SPACE FLIGHT CENTER	
DECIMALS .XXX ±.010		ANGLES ± 2.0°		NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	
MATERIAL 2		CHECKER J FORBES		MARSHALL SPACE FLIGHT CENTER AL 35812	
HEAT TREAT NONE		SUBMITTED S SKELLEY		DWC D	
FINAL FINISH 5		APPROVED D WHITTEN		EST WEIGHT 3.3 LBS	
SEE ENGINEERING RECORDS		MFGG DA		SCALE 1/1 & NOTED	
MATERIAL J-2X WF		MATERIALS		CODE 339B2	
NEXT ASSY MED02301-1		APPLICATION		SHEET 1 OF 3	

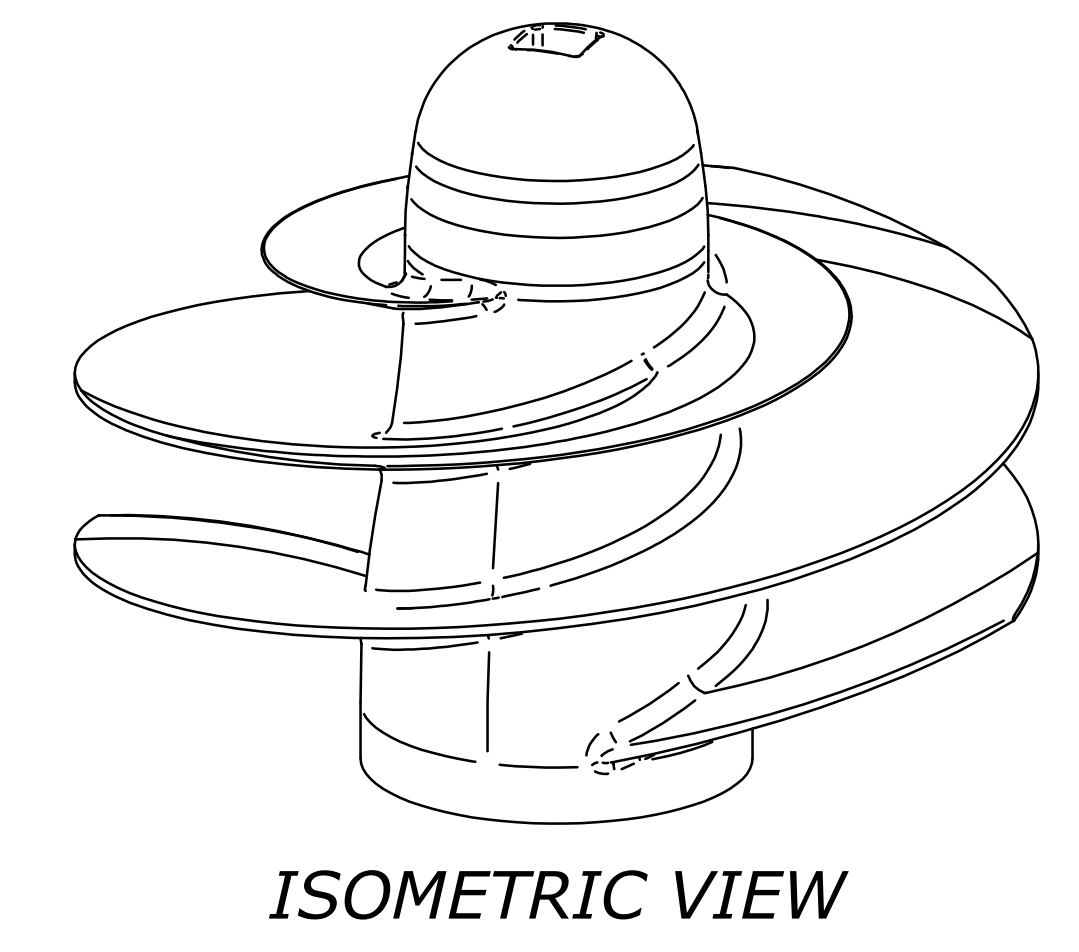
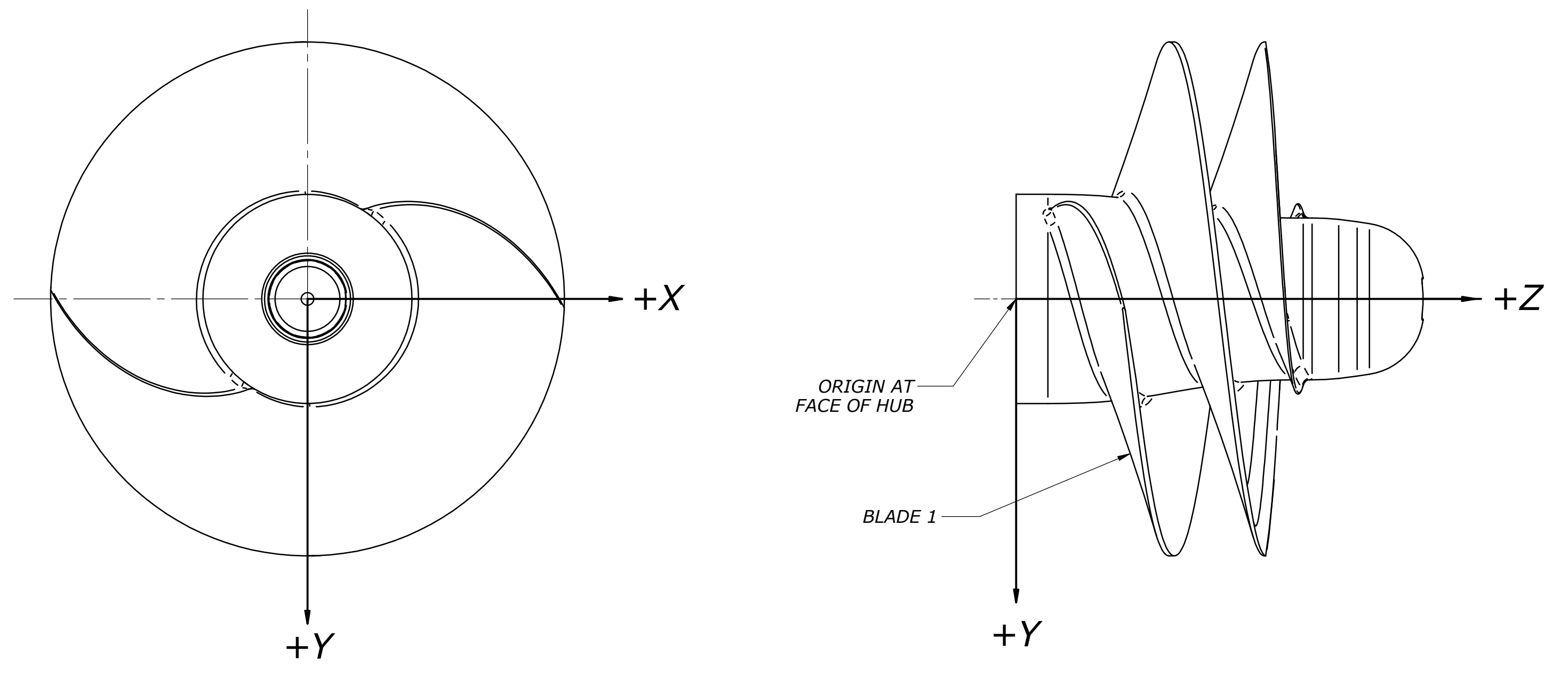
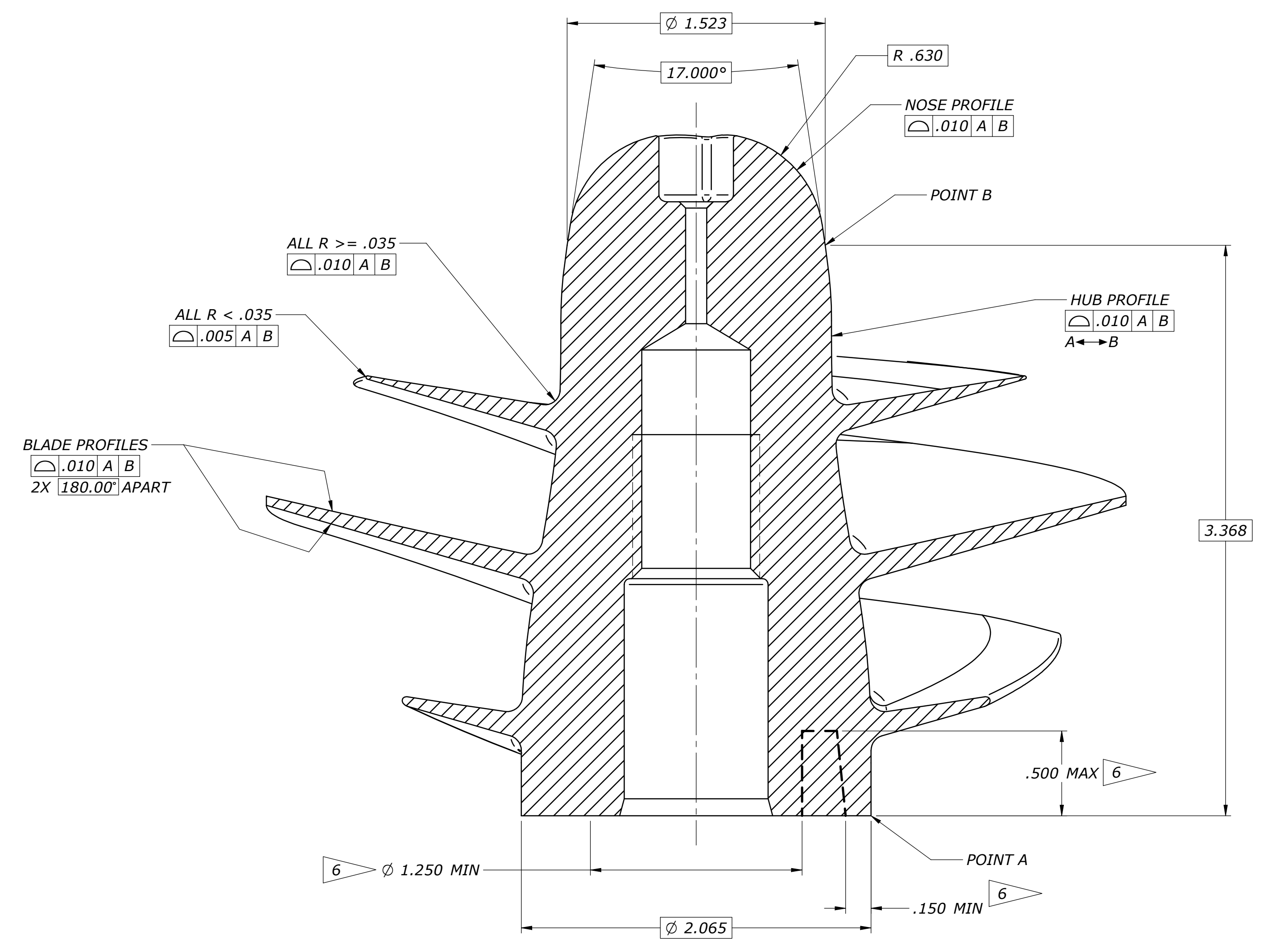
**J-2X SCALED
LOX INDUCER**

MED03438

PART No.	M F	REVISIONS		DATE	APPROVAL
		ZONE	SYM	DESCRIPTION	

BLADE 1 PROFILE BASIC COORDINATES												
POINTS	PRESSURE SIDE						SUCTION SIDE					
	NEAR HUB			NEAR TIP			NEAR HUB			NEAR TIP		
	X	Y	Z	X	Y	Z	X	Y	Z	X	Y	Z
1	0.8263	-0.9162	0.4194	2.4503	-0.0400	1.0082	0.8207	-0.9212	0.4923	2.4504	-0.0330	1.0394
2	1.1255	-0.5054	0.5407	2.3804	0.5822	1.0829	1.1157	-0.5268	0.6664	2.3800	0.5841	1.1395
3	1.2338	-0.0088	0.6620	2.1551	1.1664	1.1578	1.2333	-0.0352	0.7950	2.1552	1.1664	1.2174
4	1.1327	0.4892	0.7830	1.7892	1.6743	1.2334	1.1430	0.4645	0.9157	1.7904	1.6733	1.2928
5	0.8394	0.9040	0.9054	1.3068	2.0731	1.3102	0.8593	0.8853	1.0375	1.3093	2.0714	1.3694
6	0.4048	1.1654	1.0310	0.7392	2.3365	1.3885	0.4309	1.1561	1.1624	0.7435	2.3351	1.4475
7	-0.0976	1.2299	1.1594	0.1235	2.4475	1.4679	-0.0695	1.2318	1.2899	0.1296	2.4472	1.5266
8	-0.5835	1.0871	1.2881	-0.5001	2.3991	1.5478	-0.5582	1.1003	1.4175	-0.4927	2.4006	1.6063
9	-0.9712	0.7609	1.4155	-1.0912	2.1944	1.6274	-0.9532	0.7833	1.5437	-1.0831	2.1983	1.6856
10	-1.1953	0.3059	1.5414	-1.6112	1.8465	1.7065	-1.1877	0.3340	1.6684	-1.6033	1.8534	1.7645
11	-1.2173	-0.2010	1.6658	-2.0262	1.3783	1.7850	-1.2217	-0.1720	1.7917	-2.0195	1.3882	1.8427
12	-1.0332	-0.6743	1.7887	-2.3092	0.8202	1.8629	-1.0491	-0.6493	1.9135	-2.3046	0.8329	1.9204
13	-0.6738	-1.0335	1.9103	-2.4417	0.2086	1.9402	-0.6988	-1.0169	2.0340	-2.4404	0.2235	1.9975
14	-0.1998	-1.2175	2.0305	-2.4149	-0.4168	2.0169	-0.2298	-1.2122	2.1534	-2.4177	-0.4005	2.0739
15	0.3084	-1.1945	2.1496	-2.2304	-1.0150	2.0930	0.2784	-1.2020	2.2718	-2.2379	-0.9986	2.1499
16	0.7643	-0.9683	2.2677	-1.9005	-1.5471	2.1685	0.7400	-0.9872	2.3862	-1.9128	-1.5319	2.2248
17	1.0904	-0.5774	2.3850	-1.4465	-1.9782	2.2435	1.0773	-0.6014	2.4843	-1.4628	-1.9661	2.2936
18	1.2307	-0.0879	2.5017	-0.8980	-2.2802	2.3180	1.2288	-0.1111	2.5789	-0.9175	-2.2724	2.3606
19	1.1613	0.4167	2.6180	-0.2907	-2.4333	2.3920	1.1673	0.3997	2.6654	-0.3118	-2.4307	2.4220
20	0.8940	0.8504	2.7339	0.3355	-2.4275	2.4655	0.9027	0.8410	2.7517	0.3144	-2.4304	2.4830

HUB PROFILE BASIC COORDINATES			
POINTS	X	Y	Z
1	0.8263	-0.9162	0.4194
2	1.1255	-0.5054	0.5407
3	1.2338	-0.0088	0.6620
4	1.1327	0.4892	0.7830
5	0.8394	0.9040	0.9054
6	0.4048	1.1654	1.0310
7	-0.0976	1.2299	1.1594
8	-0.5835	1.0871	1.2881
9	-0.9712	0.7609	1.4155
10	-1.1953	0.3059	1.5414
11	-1.2173	-0.2010	1.6658
12	-1.0332	-0.6743	1.7887
13	-0.6738	-1.0335	1.9103
14	-0.1998	-1.2175	2.0305
15	0.3084	-1.1945	2.1496
16	0.7643	-0.9683	2.2677
17	1.0904	-0.5774	2.3850
18	1.2307	-0.0879	2.5017
19	1.1613	0.4167	2.6180
20	0.8940	0.8504	2.7339



MED03438

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NATIONAL AERONAUTICS
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MARSHALL SPACE FLIGHT CENTER
AL 35812

DMC
SIZE
D MED03438
SHEET 2 OF 3

PART No.	M F	REVISIONS			DATE	APPROVAL
		ZONE	SYM	DESCRIPTION		

ANGLE		BLADE 1 PROFILE BASIC COORDINATES: SUCTION SIDE														
REL TO LE	POINTS	R1 = 1.0600			R2 = 1.4077			R3 = 1.7553			R4 = 2.1029			R5 = 2.4506		
		X	Y	Z	X	Y	Z	X	Y	Z	X	Y	Z	X	Y	Z
0	1	0.9798	0.4046	2.6533	1.3670	-0.3361	2.5725	1.1293	-1.3438	2.4905	0.1515	-2.0974	2.4069	-1.2778	-2.0911	2.3182
2	2	0.9408	0.4884	2.6710	1.3911	-0.2157	2.5907	1.2421	-1.2403	2.5095	0.3337	-2.0762	2.4268	-1.0907	-2.1945	2.3417
4	3	0.8946	0.5686	2.6887	1.4046	-0.0937	2.6090	1.3455	-1.1273	2.5284	0.5134	-2.0393	2.4466	-0.8953	-2.2812	2.3629
6	4	0.8417	0.6444	2.7065	1.4074	0.0291	2.6272	1.4386	-1.0057	2.5473	0.6892	-1.9868	2.4664	-0.6930	-2.3506	2.3839
8	5	0.7823	0.7153	2.7242	1.3995	0.1517	2.6454	1.5208	-0.8765	2.5662	0.8597	-1.9191	2.4861	-0.4855	-2.4020	2.4048
10	6	0.7569	0.7421	2.7312	1.3934	0.2004	2.6527	1.5504	-0.8229	2.5738	0.9262	-1.8880	2.4940	-0.4014	-2.4175	2.4132
12	7	0.7305	0.7681	2.7383	1.3855	0.2489	2.6600	1.5782	-0.7683	2.5813	0.9915	-1.8545	2.5019	-0.3168	-2.4300	2.4215
14	8	0.7032	0.7931	2.7454	1.3760	0.2971	2.6673	1.6041	-0.7128	2.5888	1.0556	-1.8187	2.5098	-0.2318	-2.4396	2.4299
16	9	0.6751	0.8172	2.7525	1.3648	0.3450	2.6745	1.6280	-0.6564	2.5963	1.1185	-1.7808	2.5176	-0.1465	-2.4462	2.4382
18	10	0.6462	0.8402	2.7595	1.3519	0.3924	2.6818	1.6499	-0.5991	2.6039	1.1799	-1.7407	2.5255	-0.0611	-2.4498	2.4465
20	11	0.6165	0.8623	2.7666	1.3374	0.4393	2.6891	1.6698	-0.5412	2.6114	1.2400	-1.6984	2.5333	0.0245	-2.4505	2.4548
25	12	0.5860	0.8833	2.7737	1.3212	0.4857	2.6963	1.6877	-0.4826	2.6189	1.2985	-1.6541	2.5412	0.1100	-2.4481	2.4631
30	13	0.5548	0.9032	2.7807	1.3035	0.5315	2.7036	1.7035	-0.4234	2.6264	1.3554	-1.6078	2.5490	0.1953	-2.4428	2.4714
35	14	0.4905	0.9397	2.7826	1.2632	0.6212	2.7062	1.7289	-0.3035	2.6296	1.4643	-1.5093	2.5529	0.3653	-2.4232	2.4761
40	15	0.5230	0.9220	2.7878	1.2841	0.5767	2.7109	1.7172	-0.3637	2.6339	1.4107	-1.5595	2.5568	0.2805	-2.4345	2.4797

ANGLE		BLADE 1 PROFILE BASIC COORDINATES: PRESSURE SIDE														
REL TO LE	POINTS	R1 = 1.0600			R2 = 1.4077			R3 = 1.7553			R4 = 2.1029			R5 = 2.4506		
		X	Y	Z	X	Y	Z	X	Y	Z	X	Y	Z	X	Y	Z
0	1	0.9798	0.4046	2.5813	1.3670	-0.3361	2.5040	1.1293	-1.3438	2.4260	0.1515	-2.0974	2.3472	-1.2778	-2.0911	2.2677
2	2	0.9408	0.4884	2.6056	1.3911	-0.2157	2.5284	1.2421	-1.2403	2.4506	0.3337	-2.0762	2.3722	-1.0907	-2.1945	2.2930
4	3	0.8946	0.5686	2.6300	1.4046	-0.0937	2.5529	1.3455	-1.1273	2.4753	0.5134	-2.0393	2.3971	-0.8953	-2.2812	2.3183
6	4	0.8417	0.6444	2.6543	1.4074	0.0291	2.5773	1.4386	-1.0057	2.4999	0.6892	-1.9868	2.4220	-0.6930	-2.3506	2.3436
8	5	0.7823	0.7153	2.6786	1.3995	0.1517	2.6018	1.5208	-0.8765	2.5245	0.8597	-1.9191	2.4468	-0.4855	-2.4020	2.3688
10	6	0.7569	0.7421	2.6884	1.3934	0.2004	2.6115	1.5504	-0.8229	2.5343	0.9262	-1.8880	2.4568	-0.4014	-2.4175	2.3789
12	7	0.7305	0.7681	2.6981	1.3855	0.2489	2.6213	1.5782	-0.7683	2.5441	0.9915	-1.8545	2.4667	-0.3168	-2.4300	2.3889
14	8	0.7032	0.7931	2.7078	1.3760	0.2971	2.6310	1.6041	-0.7128	2.5540	1.0556	-1.8187	2.4766	-0.2318	-2.4396	2.3990
16	9	0.6751	0.8172	2.7175	1.3648	0.3450	2.6408	1.6280	-0.6564	2.5638	1.1185	-1.7808	2.4865	-0.1465	-2.4462	2.4090
18	10	0.6462	0.8402	2.7272	1.3519	0.3924	2.6505	1.6499	-0.5991	2.5736	1.1799	-1.7407	2.4964	-0.0611	-2.4498	2.4190
20	11	0.6165	0.8623	2.7369	1.3374	0.4393	2.6603	1.6698	-0.5412	2.5834	1.2400	-1.6984	2.5063	0.0245	-2.4505	2.4291
25	12	0.5860	0.8833	2.7467	1.3212	0.4857	2.6700	1.6877	-0.4826	2.5932	1.2985	-1.6541	2.5162	0.1100	-2.4481	2.4391
30	13	0.5548	0.9032	2.7564	1.3035	0.5315	2.6797	1.7035	-0.4234	2.6030	1.3554	-1.6078	2.5261	0.1953	-2.4428	2.4491
35	14	0.5230	0.9220	2.7661	1.2841	0.5767	2.6895	1.7172	-0.3637	2.6127	1.4107	-1.5595	2.5359	0.2805	-2.4345	2.4591
40	15	0.4905	0.9397	2.7826	1.2632	0.6212	2.7062	1.7289	-0.3035	2.6296	1.4643	-1.5093	2.5529	0.3653	-2.4232	2.4761

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SHEET 3 OF 3