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A Compendium of Controlled Diffusion Blades Generated by an Automated Inverse Design Procedure

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LIST OF CASES

*Experimental data exist

A COMPENDIUM OF CONTROLLED DIFFUSION BLADES GENERATED
BY AN AUTOMATED INVERSE DESIGN PROCEDURE

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SUMMARY

A set of sample cases has been produced to test an automated design procedure developed at the NASA Lewis Research Center for the design of controlled diffusion blades. The main objective of the report is to document the range of application of the automated design procedure. The results presented include characteristic compressor and turbine blade sections produced with the automated design code as well as various other airfoils produced with the base design method prior to the incorporation of the automated procedure.

INTRODUCTION

This report comprises a set of sample cases produced to validate a new automated design procedure for turbomachinery controlled diffusion blades that has recently being developed at the NASA Lewis Research Center.

The automated design procedure of reference 1, is used in conjunction with an Inverse Hodograph Code, (ref. 2) to produce blades with a prescribed solidity, inlet Mach number, inlet air angle and air flow turning. This code can be used to design turbomachinery blading for axial compressors and turbines.

Prior to the development of the automated procedure, the code has proven to be an excellent source of innovative designs. Reference 3 to 5 describe experimental results for three of these designs obtained at the NASA Ames Research Center, NASA Lewis and the Thermal Sciences and Propulsion Center of Purdue University. Various other designs have been described in reference 2 and elsewhere, and extensive comparison with analysis codes is present in the literature.

To further explore the range of applications of the code after the incorporation of the automated procedure, which might be of interest to the engine industry in the specific field of axial turbomachinery, a set of cases has been supplied by different companies to be tried at NASA Lewis with the automation procedure. The information supplied consists mainly of the corresponding velocity triangles for each test case.

These turbomachinery test cases include both axial compressor and turbine blading. As indicated in reference 1, and for the time being, the automation has been restricted to subsonic cases.

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The design characteristics needed to produce a blade are divided in two categories: design requirements that the automated design procedure will attempt to match exactly, and design environment conditions that are used to guide the design.

The design requirements for each cross section that comprises the objective of the automation procedure are:

(1) Inlet Mach number
(2) Inlet air flow angle
(3) Solidity
(4) Air flow turning
(5) Operating Reynolds number
(6) Trailing edge thickness

The additional information that defines the environment in which the blade will work are:

(7) Blade thickness constraints
(8) Range of operation for the inlet air flow angle
(9) Quality of flow, that can influence transition

The information in items number 1 to 6 form the input to the automation procedure and a successful run will match them exactly. The information in items number 7 to 9 is only used to guide the design procedure. It should be kept in mind that, in general, the blades designed with this procedure are thicker than the standard double circular arc blades. It still remains to assess the structural and aerodynamic benefits that may be derived of having thicker blades, or the restrictions that this may impose.

RESULTS

Part I. - Automated Design Cases

Eight cases have been included in this report. Cases one to three represent a turbine blade with an inlet air angle of 36°, a flow turning of near 100° at a solidity of 1.45 and with three different exit Mach numbers of 0.84, 0.78 and 0.63, respectively. Cases four and five correspond to a high and low pressure turbine blades and cases six to eight describe three compressor blade sections.

Part II. - Nonautomated Design Cases

Part II of this report contains the geometries corresponding to 14 other cases produced with the Inverse Design Code prior to the incorporation of the automated procedure. Reference is made to those design cases for which experimental data exit.

The nomenclature for the listing can be found in references 1 and 2. It will suffice to say here that the metal coordinates are expressed in a Cartesian coordinate system where the x-component represents the axial flow direction and the y-component the pitch direction. The next blade location can then be found at the coordinates (x, y + gap). All angles are measured respect to the axial direction.

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REFERENCES

1. Sanz, J.M.: Automated Design of Controlled Diffusion Blades. J. Turbomachinery, vol. 110, no. 4, Oct. 1988, pp. 540-544 (NASA TM-100251).

2. Sanz, J.M.: Lewis Inverse Design Code (LINDES): Users Manual. NASA TP-2676, 1987.

3. Sanz, J.M., et al.: Design and Performance of a Fixed, Nonaccelerating Guide Vane Cascade that Operates Over an Inlet Flow Angle Range of 60 Degrees. J. Eng. Gas Turbines Power, vol. 107, no. 2, Apr. 1985, pp 477-484 (NASA TM-83519).

4. Gelder, T.F., et al.: Wind Tunnel Turning Vanes of Modern Design. AIAA Paper 86-0044, Jan. 1986 (NASA TM-87146).

5. Neal, J.W., et al.: Loading Effects on the Aerodynamics of an Annular Cascade of Three-Dimensional Airfoils. Report ME-TSPC-TR-88-12, Purdue University, Mar. 1988.

FIGURES NOMENCLATURE

BET1, ANIN	inlet air angle, β_1
BET2, ANEX	exit air angle
DELB, TURN	air flow turning, $\Delta\beta$
DNTE, THTE	inviscid trailing edge thickness, dn_{te}
DSTE, DTE	inviscid streamwise trailing edge gap, ds_{te}
LOSS	loss coefficient
M1, MIN	inlet Mach number, M_1
M2, MEX	exit Mach number
SOL	solidity, σ
TEV	trailing edge thickness after boundary layer subtraction
THCR	maximum thickness to chord ratio
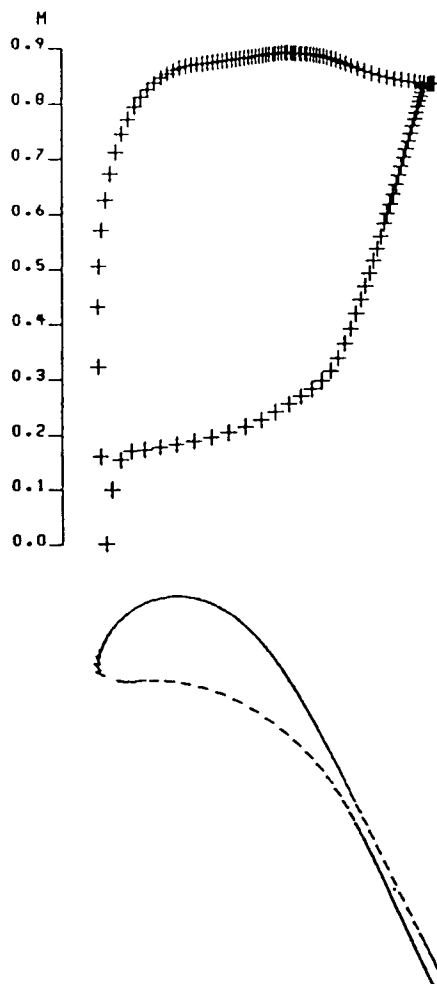
M1	0.337
BET1	36.38
M2	0.839
BET2	-61.01
OELB	97.38
SOL	1.45
THCR	0.224
ONTE	0.025
OSTE	-0.000
TEV	0.021
LOSS	0.005
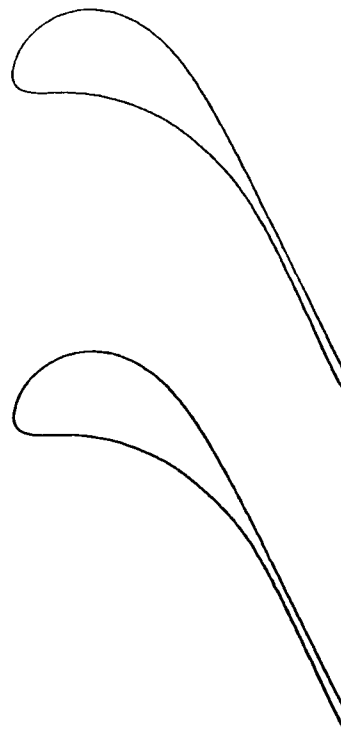
CASE 1. - TURBINE BLADE.

INVISCID COMPUTATION

INLET MACH NUMBER = 0.337   INLET FLOW ANGLE = 36.38

EXIT MACH NUMBER = 0.839   EXIT FLOW ANGLE = -61.01

TURNING = 97.38

GAP = 0.690   CHORD = 1.000   AXIAL CHORD = 0.754

GAP/CHORD = 0.690   SOLIDITY = 1.449   AXIAL SOLIDITY = 1.093

THICK/CHORD = 0.224,   DX= 0.0217; DY = 0.0121

THICK/CHORD AT TE = 0.025,   DTE= 0.000

N	X	Y	MACH	ANGL	CURVATURE
1	0.71677	-0.60824	0.8285	-61.19	0.00
2	0.71677	-0.60824	0.8285	-61.19	0.00
3	0.71638	-0.60752	0.8273	-61.32	2.74
4	0.71525	-0.60544	0.8244	-61.48	1.19
5	0.71350	-0.60221	0.8196	-61.65	0.81
6	0.71121	-0.59795	0.8134	-61.82	0.61
7	0.70846	-0.59281	0.8057	-61.99	0.49
8	0.70531	-0.58686	0.7970	-62.14	0.40
9	0.70181	-0.58022	0.7872	-62.28	0.33
10	0.69798	-0.57290	0.7765	-62.41	0.27
11	0.69386	-0.56500	0.7649	-62.53	0.23
12	0.68946	-0.55651	0.7527	-62.63	0.18
13	0.68480	-0.54751	0.7396	-62.72	0.15
14	0.67990	-0.53798	0.7259	-62.79	0.11
15	0.67475	-0.52796	0.7115	-62.84	0.08
16	0.66937	-0.51745	0.6965	-62.87	0.05
17	0.66374	-0.50647	0.6808	-62.89	0.03
18	0.65787	-0.49501	0.6647	-62.89	0.00
19	0.65176	-0.48306	0.6477	-62.87	-0.03
20	0.64537	-0.47061	0.6303	-62.81	-0.07
21	0.63870	-0.45766	0.6121	-62.72	-0.11
22	0.63173	-0.44419	0.5952	-62.57	-0.17
23	0.62450	-0.43022	0.5774	-62.70	0.15
24	0.61697	-0.41560	0.5538	-62.73	0.03
25	0.60901	-0.40027	0.5312	-62.39	-0.35
26	0.60059	-0.38426	0.5100	-62.12	-0.26
27	0.59168	-0.36752	0.4871	-61.82	-0.27
28	0.58219	-0.34995	0.4634	-61.44	-0.34
29	0.57204	-0.33148	0.4387	-60.93	-0.42
30	0.56107	-0.31201	0.4130	-60.23	-0.54
31	0.54908	-0.29145	0.3863	-59.25	-0.72
32	0.53579	-0.26969	0.3593	-57.81	-0.99
33	0.52079	-0.24677	0.3329	-55.68	-1.36
34	0.50359	-0.22288	0.3096	-52.73	-1.75
35	0.48388	-0.19855	0.2913	-49.24	-1.94

36	0.46167	-0.17433	0.2771	-45.81	-1.82
37	0.43716	-0.15047	0.2639	-42.67	-1.60
38	0.41031	-0.12705	0.2500	-39.53	-1.54
39	0.38096	-0.10426	0.2357	-36.06	-1.63
40	0.34885	-0.08253	0.2221	-32.05	-1.81
41	0.31402	-0.06257	0.2101	-27.52	-1.97
42	0.27683	-0.04514	0.2004	-22.68	-2.06
43	0.23805	-0.03085	0.1923	-17.77	-2.08
44	0.19858	-0.02004	0.1857	-12.89	-2.08
45	0.15961	-0.01279	0.1799	-8.16	-2.08
46	0.12232	-0.00893	0.1753	-3.72	-2.07
47	0.08821	-0.00784	0.1710	0.02	-1.91
48	0.05873	-0.00845	0.1685	1.59	-0.93
49	0.03505	-0.00829	0.1525	-3.79	3.97
50	0.01574	-0.00549	0.0987	-13.27	8.48
51	0.00198	-0.00089	0.0000	152.90	16.63
52	-0.00925	0.00748	0.1591	129.82	28.77
53	-0.01474	0.01822	0.3220	105.15	35.69
54	-0.01595	0.03156	0.4302	86.94	23.73
55	-0.01340	0.04684	0.5043	75.17	13.27
56	-0.00766	0.06299	0.5700	66.00	9.33
57	0.00089	0.07900	0.6247	58.07	7.63
58	0.01171	0.09416	0.6720	51.00	6.62
59	0.02424	0.10794	0.7107	44.53	6.06
60	0.03728	0.11924	0.7436	38.54	6.06
61	0.05173	0.12963	0.7700	32.91	5.52
62	0.06658	0.13829	0.7922	27.59	5.40
63	0.08158	0.14530	0.8098	22.53	5.34
64	0.09654	0.15077	0.8245	17.70	5.30
65	0.11134	0.15485	0.8360	13.06	5.27
66	0.12592	0.15763	0.8456	8.61	5.23
67	0.14021	0.15925	0.8528	4.33	5.19
68	0.15419	0.15981	0.8587	0.22	5.12
69	0.16785	0.15939	0.8627	-3.72	5.04
70	0.18117	0.15808	0.8658	-7.50	4.92
71	0.19415	0.15595	0.8676	-11.10	4.78
72	0.20679	0.15307	0.8689	-14.53	4.61
73	0.21908	0.14951	0.8700	-17.78	4.44
74	0.23101	0.14533	0.8712	-20.87	4.27
75	0.24257	0.14057	0.8721	-23.81	4.10
76	0.25377	0.13530	0.8733	-26.59	3.92
77	0.26461	0.12956	0.8742	-29.22	3.74
78	0.27508	0.12340	0.8753	-31.70	3.56
79	0.28520	0.11686	0.8761	-34.03	3.38
80	0.29497	0.10998	0.8771	-36.22	3.19
81	0.30441	0.10281	0.8780	-38.27	3.02
82	0.31352	0.09536	0.8789	-40.18	2.84
83	0.32232	0.08769	0.8797	-41.96	2.67
84	0.33083	0.07981	0.8806	-43.62	2.50
85	0.33905	0.07176	0.8814	-45.16	2.33
86	0.34701	0.06355	0.8821	-46.59	2.18
87	0.35472	0.05521	0.8827	-47.90	2.02
88	0.36219	0.04676	0.8836	-49.12	1.88
89	0.36945	0.03820	0.8843	-50.24	1.75
90	0.37651	0.02956	0.8849	-51.27	1.62
91	0.38339	0.02083	0.8854	-52.22	1.49
92	0.39011	0.01202	0.8860	-53.10	1.38
93	0.39668	0.00314	0.8863	-53.90	1.27

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94	0.40314	-0.00583	0.8866	-54.64	1.17
95	0.40948	-0.01490	0.8867	-55.32	1.07
96	0.41576	-0.02407	0.8863	-55.94	0.98
97	0.42199	-0.03339	0.8855	-56.50	0.86
98	0.42821	-0.04287	0.8852	-56.99	0.76
99	0.43443	-0.05253	0.8851	-57.45	0.70
100	0.44068	-0.06242	0.8849	-57.88	0.63
101	0.44701	-0.07257	0.8845	-58.26	0.57
102	0.45345	-0.08307	0.8842	-58.62	0.50
103	0.46006	-0.09396	0.8836	-58.95	0.45
104	0.46687	-0.10536	0.8830	-59.25	0.40
105	0.47397	-0.11735	0.8821	-59.53	0.35
106	0.48141	-0.13007	0.8810	-59.80	0.31
107	0.48929	-0.14367	0.8797	-60.04	0.27
108	0.49769	-0.15832	0.8780	-60.27	0.24
109	0.50673	-0.17421	0.8759	-60.49	0.21
110	0.51651	-0.19157	0.8734	-60.69	0.18
111	0.52717	-0.21063	0.8703	-60.87	0.15
112	0.53883	-0.23162	0.8666	-61.03	0.12
113	0.55160	-0.25476	0.8625	-61.17	0.09
114	0.56556	-0.28018	0.8580	-61.28	0.07
115	0.58070	-0.30785	0.8534	-61.36	0.04
116	0.59691	-0.33757	0.8490	-61.40	0.02
117	0.61395	-0.36883	0.8448	-61.42	0.01
118	0.63140	-0.40086	0.8412	-61.41	0.00
119	0.64875	-0.43266	0.8381	-61.38	-0.01
120	0.66538	-0.46312	0.8356	-61.34	-0.02
121	0.68076	-0.49122	0.8336	-61.29	-0.03
122	0.69444	-0.51618	0.8322	-61.24	-0.03
123	0.70618	-0.53754	0.8310	-61.19	-0.03
124	0.71588	-0.55516	0.8302	-61.15	-0.04
125	0.72359	-0.56915	0.8296	-61.12	-0.04
126	0.72946	-0.57978	0.8293	-61.09	-0.04
127	0.73368	-0.58742	0.8290	-61.08	-0.02
128	0.73645	-0.59245	0.8288	-61.09	0.02
129	0.73799	-0.59524	0.8287	-61.12	0.17
130	0.73848	-0.59612	0.8285	-61.19	1.27

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PRESSURE SIDE

N	X	Y	EM	DS	TH	SEP
51	0.00198	-0.00089	0.00003			
50	0.01574	-0.00549	0.09873			
49	0.03505	-0.00829	0.15249			
48	0.05873	-0.00845	0.16851			
47	0.08821	-0.00784	0.17096			
46	0.12232	-0.00893	0.17535			
45	0.15961	-0.01279	0.17991			
44	0.19858	-0.02004	0.18572			
43	0.23805	-0.03085	0.19226			
42	0.27699	-0.04475	0.20035	0.00042	0.00088	-0.21065
41	0.31460	-0.06147	0.21009	0.00125	0.00087	-0.00107
40	0.34948	-0.08152	0.22208	0.00119	0.00083	-0.00118
39	0.38163	-0.10334	0.23570	0.00114	0.00080	-0.00120
38	0.41100	-0.12621	0.25005	0.00109	0.00076	-0.00114
37	0.43788	-0.14969	0.26388	0.00106	0.00074	-0.00106
36	0.46242	-0.17360	0.27713	0.00104	0.00072	-0.00103
35	0.48465	-0.19789	0.29131	0.00101	0.00070	-0.00116
34	0.50434	-0.22231	0.30964	0.00095	0.00066	-0.00137
33	0.52150	-0.24628	0.33290	0.00087	0.00061	-0.00149
32	0.53646	-0.26927	0.35929	0.00079	0.00056	-0.00146
31	0.54972	-0.29107	0.38634	0.00074	0.00051	-0.00136
30	0.56168	-0.31166	0.41301	0.00071	0.00048	-0.00126
29	0.57264	-0.33115	0.43867	0.00068	0.00046	-0.00116
28	0.58278	-0.34963	0.46345	0.00067	0.00045	-0.00108
27	0.59226	-0.36720	0.48708	0.00066	0.00044	-0.00102
26	0.60117	-0.38395	0.50998	0.00066	0.00043	-0.00096
25	0.60960	-0.39996	0.53123	0.00066	0.00043	-0.00095
24	0.61755	-0.41530	0.55383	0.00065	0.00043	-0.00099
23	0.62508	-0.42992	0.57745	0.00065	0.00042	-0.00089
22	0.63233	-0.44388	0.59523	0.00067	0.00043	-0.00076
21	0.63931	-0.45734	0.61209	0.00068	0.00043	-0.00078
20	0.64598	-0.47030	0.63035	0.00069	0.00044	-0.00081
19	0.65237	-0.48274	0.64770	0.00069	0.00044	-0.00079
18	0.65850	-0.49469	0.66469	0.00070	0.00044	-0.00078
17	0.66438	-0.50615	0.68085	0.00071	0.00045	-0.00077
16	0.67001	-0.51713	0.69654	0.00072	0.00045	-0.00075
15	0.67540	-0.52763	0.71148	0.00073	0.00046	-0.00075
14	0.68056	-0.53764	0.72590	0.00074	0.00046	-0.00074
13	0.68547	-0.54716	0.73957	0.00075	0.00046	-0.00073
12	0.69013	-0.55616	0.75266	0.00076	0.00047	-0.00072
11	0.69454	-0.56464	0.76494	0.00077	0.00047	-0.00072
10	0.69867	-0.57254	0.77654	0.00078	0.00048	-0.00071
9	0.70250	-0.57985	0.78721	0.00079	0.00048	-0.00071
8	0.70601	-0.58649	0.79703	0.00079	0.00048	-0.00070
7	0.70917	-0.59243	0.80575	0.00080	0.00049	-0.00070
6	0.71192	-0.59757	0.81338	0.00081	0.00049	-0.00069
5	0.71421	-0.60182	0.81961	0.00081	0.00049	-0.00069
4	0.71597	-0.60505	0.82440	0.00082	0.00049	-0.00066
3	0.71710	-0.60713	0.82732	0.00082	0.00049	-0.00074
2	0.71749	-0.60784	0.82851	0.00082	0.00049	-0.00077
1	0.71749	-0.60784	0.82851	0.00082	0.00049	-0.00077

SUCTION SIDE

N	X	Y	EM	DS	TH	SEP
52	-0.00925	0.00748	0.15909			
53	-0.01474	0.01822	0.32196			
54	-0.01595	0.03156	0.43017			
55	-0.01340	0.04684	0.50425			
56	-0.00766	0.06299	0.56999			
57	0.00089	0.07900	0.62469			
58	0.01171	0.09416	0.67195			
59	0.02424	0.10794	0.71073			
60	0.03728	0.11924	0.74360			
61	0.05173	0.12963	0.77005			
62	0.06658	0.13829	0.79219			
63	0.08158	0.14530	0.80980			
64	0.09654	0.15077	0.82452			
65	0.11134	0.15485	0.83603			
66	0.12592	0.15763	0.84558			
67	0.14021	0.15925	0.85280			
68	0.15419	0.15981	0.85865			
69	0.16785	0.15939	0.86273			
70	0.18117	0.15808	0.86580			
71	0.19415	0.15595	0.86755			
72	0.20679	0.15307	0.86894			
73	0.21908	0.14951	0.86996			
74	0.23101	0.14533	0.87116			
75	0.24257	0.14057	0.87214			
76	0.25377	0.13530	0.87326			
77	0.26461	0.12956	0.87420			
78	0.27508	0.12340	0.87526			
79	0.28520	0.11686	0.87614			
80	0.29497	0.10998	0.87714			
81	0.30441	0.10281	0.87799			
82	0.31352	0.09536	0.87893			
83	0.32232	0.08769	0.87973			
84	0.33083	0.07981	0.88062			
85	0.33905	0.07176	0.88137			
86	0.34701	0.06355	0.88212			
87	0.35472	0.05521	0.88274			
88	0.36219	0.04676	0.88362			
89	0.36945	0.03820	0.88430			
90	0.37651	0.02956	0.88493			
91	0.38339	0.02083	0.88545			
92	0.39011	0.01202	0.88597			
93	0.39668	0.00314	0.88634			
94	0.40314	-0.00583	0.88664			
95	0.40948	-0.01490	0.88671			
96	0.41576	-0.02407	0.88633			
97	0.42176	-0.03354	0.88546	0.00028	0.00028	0.15374
98	0.42774	-0.04318	0.88519	0.00056	0.00031	0.00001
99	0.43392	-0.05286	0.88507	0.00061	0.00033	0.00000
100	0.44013	-0.06277	0.88487	0.00065	0.00036	0.00001
101	0.44641	-0.07294	0.88454	0.00070	0.00039	0.00001
102	0.45281	-0.08346	0.88416	0.00075	0.00042	0.00002
103	0.45937	-0.09437	0.88360	0.00080	0.00045	0.00002

104	0.46614	-0.10579	0.88296	0.00085	0.00048	0.00003
105	0.47319	-0.11781	0.88207	0.00091	0.00051	0.00003
106	0.48058	-0.13056	0.88104	0.00096	0.00054	0.00004
107	0.48840	-0.14418	0.87966	0.00102	0.00058	0.00005
108	0.49675	-0.15886	0.87802	0.00109	0.00062	0.00007
109	0.50572	-0.17478	0.87591	0.00116	0.00066	0.00008
110	0.51544	-0.19217	0.87339	0.00123	0.00070	0.00010
111	0.52602	-0.21127	0.87026	0.00132	0.00075	0.00011
112	0.53760	-0.23231	0.86664	0.00141	0.00081	0.00013
113	0.55028	-0.25549	0.86247	0.00151	0.00087	0.00014
114	0.56414	-0.28095	0.85803	0.00161	0.00093	0.00015
115	0.57918	-0.30868	0.85340	0.00173	0.00101	0.00015
116	0.59529	-0.33845	0.84896	0.00185	0.00108	0.00014
117	0.61221	-0.36977	0.84480	0.00197	0.00116	0.00013
118	0.62956	-0.40187	0.84119	0.00210	0.00124	0.00012
119	0.64680	-0.43372	0.83809	0.00221	0.00131	0.00011
120	0.66334	-0.46424	0.83562	0.00232	0.00138	0.00010
121	0.67863	-0.49239	0.83363	0.00242	0.00145	0.00009
122	0.69224	-0.51739	0.83217	0.00251	0.00150	0.00008
123	0.70392	-0.53879	0.83103	0.00258	0.00155	0.00007
124	0.71356	-0.55644	0.83024	0.00264	0.00158	0.00007
125	0.72124	-0.57045	0.82963	0.00269	0.00161	0.00006
126	0.72707	-0.58110	0.82926	0.00272	0.00164	0.00006
127	0.73127	-0.58875	0.82895	0.00275	0.00165	0.00005
128	0.73403	-0.59378	0.82880	0.00277	0.00166	0.00006
129	0.73556	-0.59658	0.82868	0.00278	0.00167	0.00007
130	0.73604	-0.59746	0.82851	0.00278	0.00167	0.00007

THICK/CHORD AT TE   0.021,   DTE = 0.000

CLOSS   =   0.00469
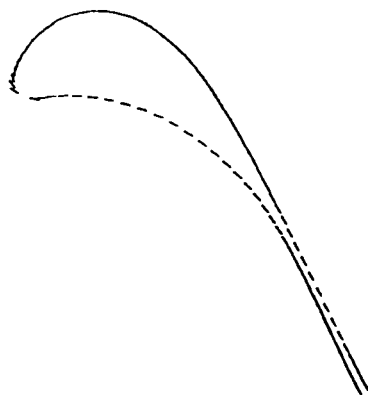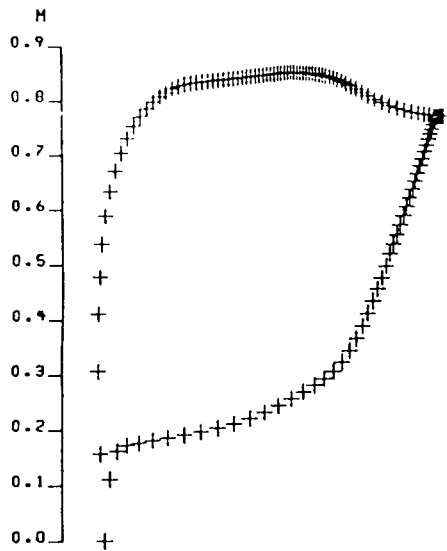
M1	0.337
BET1	36.39
M2	0.782
BET2	-61.06
DELB	97.44
SOL	1.45
THCR	0.224
DNTE	0.018
DSTE	-0.000
TEV	0.014
LOSS	0.005
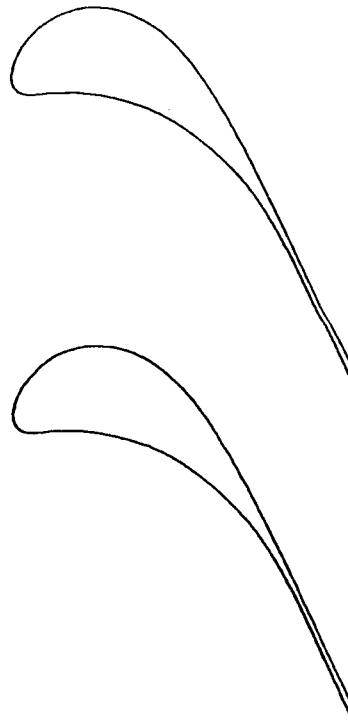
CASE 2. - TURBINE BLADE.

INVISCID   COMPUTATION

INLET MACH NUMBER = 0.337   INLET FLOW ANGLE =   36.39

EXIT MACH NUMBER = 0.782   EXIT FLOW ANGLE = -61.06

TURNING =   97.44

GAP   = 0.690   CHORD = 1.000   AXIAL CHORD = 0.772

GAP/CHORD = 0.690   SOLIDITY = 1.450   AXIAL SOLIDITY = 1.119

THICK/CHORD = 0.224,   DX= 0.0153; DY = 0.0085

THICK/CHORD AT TE = 0.018,   DTE= 0.000

N	X	Y	MACH	ANGL	CURVATURE
1	0.74315	-0.58667	0.7674	-61.15	0.00
2	0.74315	-0.58667	0.7674	-61.15	0.00
3	0.74251	-0.58550	0.7661	-61.29	1.84
4	0.74110	-0.58292	0.7630	-61.47	1.04
5	0.73904	-0.57912	0.7581	-61.65	0.74
6	0.73643	-0.57426	0.7517	-61.83	0.56
7	0.73333	-0.56846	0.7439	-61.99	0.44
8	0.72982	-0.56182	0.7351	-62.14	0.34
9	0.72592	-0.55443	0.7251	-62.27	0.27
10	0.72169	-0.54636	0.7144	-62.38	0.21
11	0.71714	-0.53765	0.7028	-62.47	0.16
12	0.71230	-0.52835	0.6905	-62.53	0.10
13	0.70718	-0.51849	0.6774	-62.57	0.07
14	0.70178	-0.50809	0.6637	-62.59	0.02
15	0.69612	-0.49718	0.6494	-62.58	-0.01
16	0.69019	-0.48575	0.6346	-62.54	-0.05
17	0.68399	-0.47383	0.6191	-62.48	-0.08
18	0.67750	-0.46139	0.6031	-62.38	-0.12
19	0.67071	-0.44845	0.5864	-62.25	-0.15
20	0.66360	-0.43499	0.5693	-62.08	-0.20
21	0.65615	-0.42099	0.5515	-61.86	-0.24
22	0.64832	-0.40644	0.5342	-61.56	-0.32
23	0.64012	-0.39135	0.5166	-61.45	-0.11
24	0.63152	-0.37558	0.4944	-61.26	-0.19
25	0.62236	-0.35907	0.4727	-60.64	-0.57
26	0.61256	-0.34187	0.4526	-60.04	-0.54
27	0.60208	-0.32393	0.4310	-59.37	-0.56
28	0.59078	-0.30517	0.4089	-58.50	-0.70
29	0.57851	-0.28555	0.3863	-57.38	-0.84
30	0.56502	-0.26505	0.3636	-55.92	-1.05
31	0.55007	-0.24370	0.3414	-53.98	-1.30
32	0.53330	-0.22166	0.3211	-51.44	-1.59
33	0.51449	-0.19927	0.3041	-48.44	-1.80
34	0.49357	-0.17695	0.2908	-45.32	-1.78
35	0.47069	-0.15498	0.2792	-42.41	-1.60
36	0.44592	-0.13344	0.2675	-39.63	-1.48

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37	0.41922	-0.11242	0.2552	-36.77	-1.47
38	0.39042	-0.09209	0.2428	-33.64	-1.55
39	0.35942	-0.07279	0.2305	-30.13	-1.68
40	0.32620	-0.05499	0.2194	-26.18	-1.83
41	0.29101	-0.03927	0.2099	-21.92	-1.93
42	0.25435	-0.02614	0.2021	-17.50	-1.98
43	0.21696	-0.01591	0.1955	-13.10	-1.98
44	0.17962	-0.00870	0.1899	-8.76	-1.99
45	0.14331	-0.00444	0.1846	-4.62	-1.98
46	0.10897	-0.00286	0.1801	-0.69	-1.99
47	0.07779	-0.00337	0.1753	2.57	-1.83
48	0.05087	-0.00516	0.1717	4.57	-1.29
49	0.02949	-0.00638	0.1610	0.34	3.45
50	0.01303	-0.00492	0.1108	-12.26	13.31
51	0.00144	-0.00039	0.0000	148.25	27.33
52	-0.00773	0.00770	0.1564	124.84	33.43
53	-0.01235	0.01829	0.3062	103.16	32.75
54	-0.01323	0.03116	0.4106	86.05	23.13
55	-0.01061	0.04592	0.4768	74.87	13.02
56	-0.00503	0.06174	0.5367	66.56	8.65
57	0.00316	0.07765	0.5878	59.24	7.14
58	0.01351	0.09295	0.6328	52.72	6.16
59	0.02555	0.10712	0.6705	46.65	5.69
60	0.03848	0.11910	0.7028	41.02	5.57
61	0.05257	0.13024	0.7293	35.68	5.19
62	0.06713	0.13976	0.7516	30.64	5.05
63	0.08194	0.14771	0.7695	25.82	5.01
64	0.09679	0.15417	0.7846	21.21	4.96
65	0.11156	0.15925	0.7966	16.77	4.96
66	0.12618	0.16307	0.8065	12.51	4.93
67	0.14057	0.16572	0.8142	8.39	4.91
68	0.15472	0.16731	0.8204	4.43	4.86
69	0.16859	0.16792	0.8249	0.61	4.80
70	0.18218	0.16763	0.8283	-3.06	4.71
71	0.19547	0.16651	0.8304	-6.59	4.61
72	0.20847	0.16461	0.8319	-9.95	4.47
73	0.22117	0.16201	0.8329	-13.17	4.33
74	0.23356	0.15876	0.8340	-16.24	4.18
75	0.24563	0.15491	0.8350	-19.18	4.05
76	0.25738	0.15049	0.8360	-21.98	3.89
77	0.26880	0.14557	0.8369	-24.65	3.75
78	0.27989	0.14018	0.8379	-27.19	3.59
79	0.29066	0.13436	0.8387	-29.60	3.44
80	0.30110	0.12814	0.8396	-31.89	3.28
81	0.31123	0.12157	0.8404	-34.05	3.13
82	0.32105	0.11467	0.8413	-36.09	2.97
83	0.33058	0.10747	0.8421	-38.02	2.81
84	0.33981	0.10001	0.8429	-39.83	2.66
85	0.34877	0.09231	0.8436	-41.52	2.51
86	0.35747	0.08439	0.8443	-43.11	2.36
87	0.36591	0.07628	0.8449	-44.60	2.21
88	0.37412	0.06798	0.8457	-45.99	2.07
89	0.38211	0.05952	0.8463	-47.28	1.95
90	0.38989	0.05091	0.8469	-48.49	1.81
91	0.39749	0.04215	0.8474	-49.62	1.69
92	0.40492	0.03326	0.8479	-50.66	1.57
93	0.41219	0.02422	0.8482	-51.63	1.46
94	0.41934	0.01505	0.8485	-52.54	1.36

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95	0.42637	0.00573	0.8486	−53.38	1.26
96	0.43332	−0.00376	0.8482	−54.16	1.16
97	0.44021	−0.01344	0.8474	−54.88	1.05
98	0.44708	−0.02333	0.8470	−55.52	0.93
99	0.45395	−0.03344	0.8468	−56.13	0.87
100	0.46085	−0.04383	0.8464	−56.69	0.79
101	0.46780	−0.05452	0.8459	−57.22	0.72
102	0.47487	−0.06560	0.8452	−57.72	0.66
103	0.48207	−0.07711	0.8443	−58.18	0.59
104	0.48948	−0.08916	0.8432	−58.61	0.54
105	0.49715	−0.10182	0.8418	−59.02	0.48
106	0.50514	−0.11524	0.8400	−59.41	0.43
107	0.51353	−0.12954	0.8378	−59.78	0.39
108	0.52241	−0.14489	0.8351	−60.12	0.34
109	0.53187	−0.16146	0.8318	−60.45	0.30
110	0.54201	−0.17946	0.8278	−60.76	0.26
111	0.55293	−0.19909	0.8230	−61.04	0.22
112	0.56475	−0.22056	0.8176	−61.28	0.17
113	0.57756	−0.24404	0.8116	−61.48	0.13
114	0.59140	−0.26960	0.8053	−61.64	0.09
115	0.60628	−0.29721	0.7990	−61.74	0.06
116	0.62207	−0.32663	0.7930	−61.78	0.02
117	0.63855	−0.35735	0.7875	−61.78	0.00
118	0.65537	−0.38867	0.7828	−61.75	−0.02
119	0.67204	−0.41965	0.7788	−61.68	−0.03
120	0.68804	−0.44930	0.7757	−61.60	−0.04
121	0.70286	−0.47666	0.7733	−61.51	−0.05
122	0.71610	−0.50100	0.7715	−61.41	−0.06
123	0.72750	−0.52188	0.7702	−61.32	−0.06
124	0.73695	−0.53913	0.7693	−61.24	−0.07
125	0.74447	−0.55282	0.7686	−61.17	−0.08
126	0.75018	−0.56318	0.7682	−61.12	−0.08
127	0.75425	−0.57054	0.7679	−61.08	−0.08
128	0.75686	−0.57526	0.7677	−61.07	−0.05
129	0.75821	−0.57771	0.7676	−61.08	0.11
130	0.75848	−0.57820	0.7674	−61.15	2.21

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PRESSURE SIDE

N	X	Y	EM	DS	TH	SEP
51	0.00144	-0.00039	0.00003			
50	0.01303	-0.00492	0.11079			
49	0.02949	-0.00638	0.16102			
48	0.05087	-0.00516	0.17168			
47	0.07779	-0.00337	0.17530			
46	0.10897	-0.00286	0.18012			
45	0.14331	-0.00444	0.18463			
44	0.17962	-0.00870	0.18985			
43	0.21696	-0.01591	0.19546			
42	0.25446	-0.02579	0.20211	0.00037	0.00085	-0.19351
41	0.29148	-0.03812	0.20991	0.00124	0.00085	-0.00089
40	0.32673	-0.05390	0.21945	0.00121	0.00084	-0.00101
39	0.36001	-0.07177	0.23053	0.00118	0.00082	-0.00109
38	0.39105	-0.09115	0.24277	0.00114	0.00080	-0.00110
37	0.41988	-0.11154	0.25523	0.00111	0.00077	-0.00106
36	0.44662	-0.13260	0.26749	0.00109	0.00076	-0.00099
35	0.47142	-0.15418	0.27918	0.00108	0.00075	-0.00095
34	0.49432	-0.17620	0.29083	0.00106	0.00074	-0.00099
33	0.51526	-0.19858	0.30413	0.00103	0.00072	-0.00114
32	0.53406	-0.22105	0.32110	0.00097	0.00069	-0.00132
31	0.55080	-0.24316	0.34140	0.00091	0.00064	-0.00140
30	0.56573	-0.26457	0.36360	0.00085	0.00060	-0.00137
29	0.57919	-0.28512	0.38628	0.00081	0.00056	-0.00131
28	0.59144	-0.30476	0.40892	0.00077	0.00053	-0.00123
27	0.60273	-0.32355	0.43100	0.00075	0.00051	-0.00115
26	0.61319	-0.34151	0.45258	0.00073	0.00050	-0.00107
25	0.62299	-0.35872	0.47270	0.00072	0.00049	-0.00105
24	0.63214	-0.37524	0.49439	0.00071	0.00048	-0.00108
23	0.64074	-0.39101	0.51659	0.00070	0.00046	-0.00097
22	0.64894	-0.40610	0.53419	0.00071	0.00047	-0.00085
21	0.65678	-0.42065	0.55145	0.00071	0.00047	-0.00086
20	0.66423	-0.43465	0.56929	0.00071	0.00047	-0.00087
19	0.67134	-0.44812	0.58640	0.00072	0.00047	-0.00084
18	0.67814	-0.46106	0.60309	0.00072	0.00047	-0.00083
17	0.68463	-0.47349	0.61907	0.00073	0.00047	-0.00081
16	0.69084	-0.48541	0.63458	0.00074	0.00047	-0.00080
15	0.69678	-0.49683	0.64942	0.00074	0.00047	-0.00078
14	0.70245	-0.50774	0.66375	0.00075	0.00048	-0.00077
13	0.70785	-0.51814	0.67739	0.00076	0.00048	-0.00076
12	0.71298	-0.52799	0.69045	0.00076	0.00048	-0.00075
11	0.71783	-0.53729	0.70277	0.00077	0.00049	-0.00074
10	0.72238	-0.54600	0.71439	0.00078	0.00049	-0.00074
9	0.72662	-0.55407	0.72515	0.00079	0.00049	-0.00073
8	0.73052	-0.56145	0.73505	0.00079	0.00050	-0.00072
7	0.73404	-0.56808	0.74390	0.00080	0.00050	-0.00071
6	0.73714	-0.57387	0.75165	0.00081	0.00050	-0.00070
5	0.73976	-0.57873	0.75805	0.00081	0.00050	-0.00068
4	0.74182	-0.58253	0.76299	0.00082	0.00050	-0.00065
3	0.74323	-0.58511	0.76612	0.00082	0.00051	-0.00060
2	0.74387	-0.58627	0.76745	0.00083	0.00051	-0.00059
1	0.74387	-0.58627	0.76745	0.00083	0.00051	-0.00059

SUCTION SIDE

N	X	Y	EM	DS	TH	SEP
52	-0.00773	0.00770	0.15640			
53	-0.01235	0.01829	0.30620			
54	-0.01323	0.03116	0.41064			
55	-0.01061	0.04592	0.47678			
56	-0.00503	0.06174	0.53669			
57	0.00316	0.07765	0.58777			
58	0.01351	0.09295	0.63282			
59	0.02555	0.10712	0.67050			
60	0.03848	0.11910	0.70284			
61	0.05257	0.13024	0.72927			
62	0.06713	0.13976	0.75157			
63	0.08194	0.14771	0.76955			
64	0.09679	0.15417	0.78462			
65	0.11156	0.15925	0.79658			
66	0.12618	0.16307	0.80651			
67	0.14057	0.16572	0.81418			
68	0.15472	0.16731	0.82039			
69	0.16859	0.16792	0.82489			
70	0.18218	0.16763	0.82831			
71	0.19547	0.16651	0.83039			
72	0.20847	0.16461	0.83188			
73	0.22117	0.16201	0.83291			
74	0.23356	0.15876	0.83403			
75	0.24563	0.15491	0.83498			
76	0.25738	0.15049	0.83603			
77	0.26880	0.14557	0.83692			
78	0.27989	0.14018	0.83789			
79	0.29066	0.13436	0.83873			
80	0.30110	0.12814	0.83965			
81	0.31123	0.12157	0.84044			
82	0.32105	0.11467	0.84130			
83	0.33058	0.10747	0.84205			
84	0.33981	0.10001	0.84286			
85	0.34877	0.09231	0.84356			
86	0.35747	0.08439	0.84428			
87	0.36591	0.07628	0.84488			
88	0.37412	0.06798	0.84566			
89	0.38211	0.05952	0.84631			
90	0.38989	0.05091	0.84688			
91	0.39749	0.04215	0.84738			
92	0.40492	0.03326	0.84787			
93	0.41219	0.02422	0.84822			
94	0.41934	0.01505	0.84851			
95	0.42614	0.00555	0.84856	0.00029	0.00027	-0.02024
96	0.43288	-0.00408	0.84823	0.00054	0.00030	0.00002
97	0.43973	-0.01378	0.84739	0.00059	0.00033	0.00002
98	0.44656	-0.02369	0.84700	0.00064	0.00036	0.00001
99	0.45338	-0.03383	0.84679	0.00069	0.00039	0.00001
100	0.46023	-0.04423	0.84643	0.00074	0.00042	0.00002
101	0.46714	-0.05495	0.84590	0.00079	0.00045	0.00002
102	0.47416	-0.06605	0.84523	0.00084	0.00048	0.00003
103	0.48132	-0.07758	0.84432	0.00089	0.00051	0.00004

104	0.48868	-0.08965	0.84320	0.00095	0.00054	0.00005
105	0.49629	-0.10234	0.84176	0.00100	0.00058	0.00006
106	0.50423	-0.11578	0.84001	0.00106	0.00061	0.00008
107	0.51256	-0.13011	0.83779	0.00113	0.00065	0.00010
108	0.52138	-0.14549	0.83510	0.00119	0.00069	0.00012
109	0.53076	-0.16209	0.83177	0.00127	0.00074	0.00015
110	0.54083	-0.18012	0.82779	0.00135	0.00079	0.00017
111	0.55167	-0.19979	0.82304	0.00144	0.00084	0.00020
112	0.56340	-0.22131	0.81764	0.00154	0.00090	0.00022
113	0.57611	-0.24483	0.81163	0.00165	0.00097	0.00024
114	0.58985	-0.27045	0.80533	0.00177	0.00104	0.00025
115	0.60461	-0.29811	0.79899	0.00189	0.00112	0.00025
116	0.62029	-0.32758	0.79299	0.00202	0.00120	0.00023
117	0.63666	-0.35837	0.78750	0.00215	0.00129	0.00022
118	0.65337	-0.38975	0.78278	0.00227	0.00137	0.00020
119	0.66994	-0.42079	0.77883	0.00239	0.00145	0.00017
120	0.68584	-0.45048	0.77571	0.00250	0.00152	0.00015
121	0.70058	-0.47790	0.77328	0.00260	0.00158	0.00013
122	0.71375	-0.50229	0.77150	0.00268	0.00164	0.00011
123	0.72509	-0.52320	0.77018	0.00275	0.00169	0.00010
124	0.73449	-0.54048	0.76928	0.00281	0.00173	0.00009
125	0.74198	-0.55419	0.76862	0.00285	0.00176	0.00008
126	0.74766	-0.56457	0.76821	0.00288	0.00178	0.00007
127	0.75170	-0.57195	0.76790	0.00291	0.00179	0.00007
128	0.75430	-0.57668	0.76773	0.00292	0.00180	0.00008
129	0.75564	-0.57913	0.76762	0.00293	0.00181	0.00008
130	0.75591	-0.57962	0.76745	0.00294	0.00181	0.00008

THICK/CHORD AT TE 0.014,   DTE = 0.000
CLOSS = 0.00502

M

```
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
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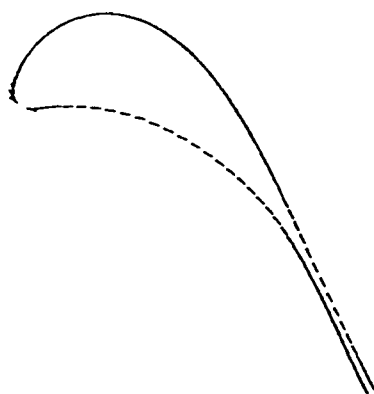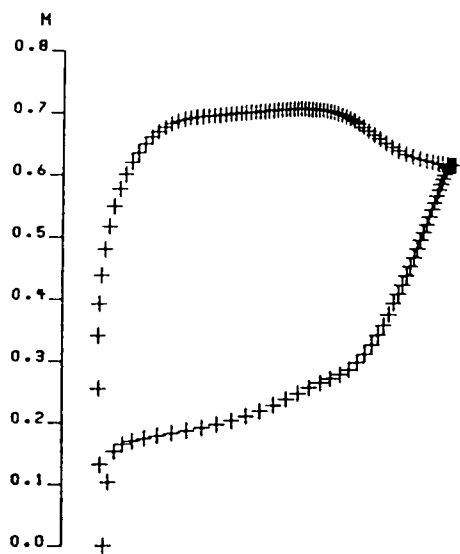
M1	0.301
BET1	36.41
M2	0.629
BET2	-61.14
DELB	97.55
SOL	1.45
THCR	0.239
DNTE	0.017
DSTE	-0.000
TEV	0.013
LOSS	0.006
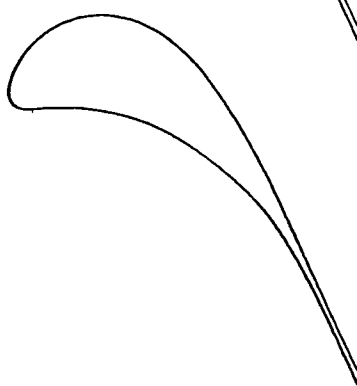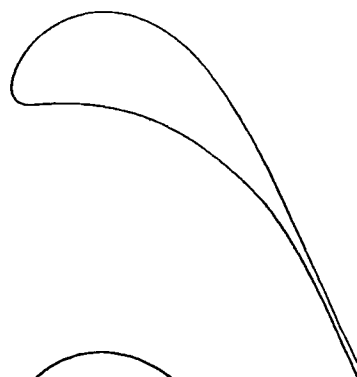
CASE 3. - TURBINE BLADE.

19

INVISCID   COMPUTATION

INLET MACH NUMBER = 0.301   INLET FLOW ANGLE =   36.41

EXIT MACH NUMBER = 0.629   EXIT FLOW ANGLE = -61.14

TURNING =   97.55

GAP   = 0.689   CHORD = 1.000   AXIAL CHORD = 0.795

GAP/CHORD = 0.689   SOLIDITY = 1.451   AXIAL SOLIDITY = 1.154

THICK/CHORD = 0.239,   DX= 0.0149; DY = 0.0082

THICK/CHORD AT TE = 0.017,   DTE= 0.000

N	X	Y	MACH	ANGL	CURVATURE
1	0.76833	-0.55843	0.6147	-61.21	0.00
2	0.76814	-0.55808	0.6145	-61.27	2.59
3	0.76709	-0.55616	0.6130	-61.45	1.47
4	0.76524	-0.55274	0.6099	-61.67	1.00
5	0.76272	-0.54804	0.6053	-61.90	0.73
6	0.75961	-0.54220	0.5994	-62.10	0.54
7	0.75600	-0.53535	0.5923	-62.28	0.41
8	0.75194	-0.52760	0.5843	-62.43	0.29
9	0.74748	-0.51903	0.5753	-62.54	0.20
10	0.74265	-0.50972	0.5656	-62.61	0.12
11	0.73747	-0.49973	0.5552	-62.64	0.05
12	0.73197	-0.48909	0.5442	-62.63	-0.02
13	0.72614	-0.47784	0.5325	-62.57	-0.08
14	0.71999	-0.46601	0.5204	-62.47	-0.14
15	0.71351	-0.45363	0.5077	-62.32	-0.19
16	0.70670	-0.44069	0.4946	-62.11	-0.25
17	0.69952	-0.42721	0.4810	-61.85	-0.30
18	0.69197	-0.41318	0.4670	-61.52	-0.36
19	0.68400	-0.39861	0.4525	-61.13	-0.41
20	0.67557	-0.38348	0.4376	-60.64	-0.49
21	0.66664	-0.36779	0.4224	-60.07	-0.55
22	0.65714	-0.35152	0.4073	-59.33	-0.68
23	0.64703	-0.33470	0.3924	-58.70	-0.56
24	0.63626	-0.31721	0.3743	-57.95	-0.64
25	0.62457	-0.29901	0.3565	-56.56	-1.13
26	0.61181	-0.28025	0.3411	-55.02	-1.18
27	0.59791	-0.26098	0.3253	-53.34	-1.24
28	0.58267	-0.24125	0.3101	-51.23	-1.47
29	0.56590	-0.22125	0.2964	-48.73	-1.67
30	0.54748	-0.20128	0.2852	-45.88	-1.83
31	0.52746	-0.18166	0.2771	-43.00	-1.80
32	0.50606	-0.16261	0.2709	-40.47	-1.54
33	0.48351	-0.14408	0.2640	-38.37	-1.26
34	0.45976	-0.12596	0.2555	-36.30	-1.21
35	0.43466	-0.10827	0.2462	-34.06	-1.28
36	0.40810	-0.09113	0.2366	-31.58	-1.37
37	0.37998	-0.07474	0.2269	-28.84	-1.47
38	0.35026	-0.05939	0.2177	-25.76	-1.61

39	0.31903	-0.04543	0.2093	-22.39	-1.72
40	0.28653	-0.03322	0.2021	-18.79	-1.81
41	0.25315	-0.02303	0.1960	-15.16	-1.82
42	0.21938	-0.01502	0.1908	-11.52	-1.83
43	0.18580	-0.00924	0.1862	-8.03	-1.79
44	0.15296	-0.00559	0.1820	-4.64	-1.79
45	0.12156	-0.00390	0.1778	-1.55	-1.72
46	0.09226	-0.00383	0.1737	1.25	-1.67
47	0.06587	-0.00489	0.1690	3.21	-1.29
48	0.04312	-0.00638	0.1638	3.90	-0.53
49	0.02495	-0.00706	0.1525	-1.42	5.11
50	0.01106	-0.00515	0.1028	-16.09	18.26
51	0.00091	-0.00022	0.0000	143.85	31.03
52	-0.00678	0.00760	0.1315	122.36	34.18
53	-0.01091	0.01773	0.2542	102.68	31.42
54	-0.01177	0.02989	0.3404	86.56	23.07
55	-0.00946	0.04394	0.3918	75.98	12.97
56	-0.00453	0.05927	0.4381	68.64	7.95
57	0.00273	0.07502	0.4797	62.08	6.61
58	0.01201	0.09052	0.5168	56.18	5.70
59	0.02296	0.10524	0.5489	50.57	5.33
60	0.03496	0.11827	0.5766	45.33	5.17
61	0.04819	0.13053	0.5998	40.30	4.87
62	0.06208	0.14134	0.6193	35.53	4.73
63	0.07639	0.15072	0.6354	30.93	4.69
64	0.09092	0.15868	0.6488	26.54	4.63
65	0.10553	0.16532	0.6597	22.29	4.62
66	0.12012	0.17070	0.6686	18.21	4.58
67	0.13462	0.17492	0.6757	14.26	4.57
68	0.14896	0.17806	0.6813	10.45	4.52
69	0.16313	0.18020	0.6856	6.77	4.49
70	0.17710	0.18142	0.6888	3.22	4.41
71	0.19085	0.18178	0.6909	-0.20	4.34
72	0.20437	0.18135	0.6923	-3.47	4.22
73	0.21767	0.18018	0.6932	-6.61	4.10
74	0.23072	0.17831	0.6942	-9.61	3.98
75	0.24352	0.17581	0.6950	-12.51	3.87
76	0.25606	0.17271	0.6958	-15.29	3.76
77	0.26833	0.16904	0.6966	-17.96	3.65
78	0.28032	0.16485	0.6974	-20.53	3.53
79	0.29205	0.16017	0.6981	-23.01	3.42
80	0.30350	0.15502	0.6989	-25.38	3.29
81	0.31468	0.14944	0.6996	-27.65	3.18
82	0.32558	0.14346	0.7002	-29.82	3.05
83	0.33623	0.13710	0.7009	-31.90	2.93
84	0.34661	0.13038	0.7015	-33.89	2.80
85	0.35673	0.12334	0.7021	-35.78	2.68
86	0.36661	0.11598	0.7027	-37.58	2.55
87	0.37625	0.10832	0.7032	-39.29	2.43
88	0.38567	0.10039	0.7039	-40.91	2.30
89	0.39486	0.09220	0.7044	-42.46	2.19
90	0.40386	0.08375	0.7049	-43.92	2.07
91	0.41266	0.07506	0.7053	-45.31	1.96
92	0.42130	0.06613	0.7056	-46.62	1.84
93	0.42977	0.05696	0.7059	-47.87	1.74
94	0.43811	0.04755	0.7061	-49.05	1.64
95	0.44633	0.03789	0.7059	-50.17	1.55
96	0.45445	0.02796	0.7053	-51.21	1.42

97	0.46251	0.01775	0.7048	−52.18	1.29
98	0.47053	0.00725	0.7045	−53.09	1.21
99	0.47853	−0.00357	0.7041	−53.97	1.14
100	0.48654	−0.01476	0.7034	−54.80	1.05
101	0.49460	−0.02635	0.7026	−55.59	0.98
102	0.50274	−0.03840	0.7014	−56.34	0.90
103	0.51100	−0.05098	0.7000	−57.05	0.83
104	0.51943	−0.06416	0.6982	−57.73	0.76
105	0.52809	−0.07805	0.6960	−58.38	0.70
106	0.53702	−0.09274	0.6932	−59.00	0.63
107	0.54629	−0.10836	0.6899	−59.59	0.57
108	0.55597	−0.12505	0.6860	−60.15	0.50
109	0.56615	−0.14296	0.6814	−60.67	0.44
110	0.57688	−0.16226	0.6761	−61.13	0.37
111	0.58827	−0.18310	0.6701	−61.54	0.30
112	0.60039	−0.20561	0.6637	−61.88	0.23
113	0.61328	−0.22988	0.6571	−62.14	0.17
114	0.62699	−0.25591	0.6504	−62.31	0.10
115	0.64147	−0.28357	0.6441	−62.41	0.05
116	0.65662	−0.31258	0.6382	−62.43	0.01
117	0.67223	−0.34246	0.6330	−62.39	−0.02
118	0.68799	−0.37255	0.6286	−62.30	−0.05
119	0.70352	−0.40205	0.6249	−62.18	−0.06
120	0.71837	−0.43011	0.6221	−62.03	−0.08
121	0.73214	−0.45595	0.6198	−61.88	−0.09
122	0.74446	−0.47893	0.6182	−61.72	−0.10
123	0.75509	−0.49864	0.6170	−61.58	−0.11
124	0.76393	−0.51492	0.6162	−61.45	−0.12
125	0.77095	−0.52780	0.6156	−61.34	−0.13
126	0.77624	−0.53746	0.6153	−61.25	−0.14
127	0.77993	−0.54418	0.6150	−61.18	−0.14
128	0.78218	−0.54827	0.6149	−61.15	−0.12
129	0.78317	−0.55005	0.6148	−61.17	0.16
130	0.78324	−0.55020	0.6147	−61.21	3.91

1

PRESSURE SIDE

N	X	Y	EM	DS	TH	SEP
51	0.00091	-0.00022	0.00003			
50	0.01106	-0.00515	0.10275			
49	0.02495	-0.00706	0.15253			
48	0.04312	-0.00638	0.16379			
47	0.06587	-0.00489	0.16902			
46	0.09226	-0.00383	0.17373			
45	0.12156	-0.00390	0.17780			
44	0.15296	-0.00559	0.18196			
43	0.18580	-0.00924	0.18619			
42	0.21938	-0.01502	0.19084			
41	0.25333	-0.02236	0.19602	0.00069	0.00076	-0.13740
40	0.28689	-0.03214	0.20211	0.00114	0.00078	-0.00073
39	0.31947	-0.04438	0.20928	0.00114	0.00079	-0.00084
38	0.35075	-0.05837	0.21766	0.00113	0.00079	-0.00093
37	0.38052	-0.07377	0.22690	0.00112	0.00078	-0.00096
36	0.40867	-0.09019	0.23657	0.00110	0.00077	-0.00096
35	0.43527	-0.10737	0.24619	0.00109	0.00076	-0.00092
34	0.46040	-0.12509	0.25555	0.00108	0.00075	-0.00086
33	0.48419	-0.14323	0.26404	0.00109	0.00075	-0.00074
32	0.50679	-0.16175	0.27089	0.00112	0.00077	-0.00064
31	0.52823	-0.18082	0.27709	0.00114	0.00079	-0.00071
30	0.54829	-0.20049	0.28521	0.00113	0.00079	-0.00094
29	0.56671	-0.22054	0.29637	0.00109	0.00077	-0.00116
28	0.58347	-0.24060	0.31007	0.00103	0.00073	-0.00128
27	0.59870	-0.26039	0.32526	0.00098	0.00070	-0.00130
26	0.61258	-0.27971	0.34108	0.00094	0.00066	-0.00125
25	0.62532	-0.29851	0.35646	0.00090	0.00064	-0.00127
24	0.63699	-0.31676	0.37426	0.00086	0.00060	-0.00131
23	0.64774	-0.33427	0.39242	0.00083	0.00058	-0.00116
22	0.65785	-0.35110	0.40727	0.00082	0.00056	-0.00103
21	0.66734	-0.36739	0.42236	0.00080	0.00055	-0.00103
20	0.67626	-0.38309	0.43763	0.00079	0.00054	-0.00101
19	0.68469	-0.39823	0.45248	0.00078	0.00053	-0.00097
18	0.69265	-0.41281	0.46697	0.00078	0.00053	-0.00094
17	0.70021	-0.42684	0.48099	0.00077	0.00052	-0.00092
16	0.70738	-0.44033	0.49460	0.00077	0.00052	-0.00089
15	0.71420	-0.45327	0.50773	0.00077	0.00052	-0.00087
14	0.72067	-0.46566	0.52040	0.00077	0.00052	-0.00085
13	0.72683	-0.47749	0.53254	0.00077	0.00051	-0.00084
12	0.73266	-0.48873	0.54417	0.00077	0.00051	-0.00082
11	0.73816	-0.49937	0.55521	0.00078	0.00051	-0.00081
10	0.74334	-0.50936	0.56562	0.00078	0.00052	-0.00079
9	0.74817	-0.51867	0.57532	0.00078	0.00052	-0.00078
8	0.75264	-0.52723	0.58426	0.00079	0.00052	-0.00077
7	0.75670	-0.53498	0.59231	0.00079	0.00052	-0.00075
6	0.76031	-0.54182	0.59938	0.00080	0.00052	-0.00073
5	0.76342	-0.54766	0.60530	0.00080	0.00052	-0.00071
4	0.76595	-0.55236	0.60993	0.00081	0.00052	-0.00066
3	0.76780	-0.55577	0.61302	0.00081	0.00053	-0.00057
2	0.76886	-0.55769	0.61447	0.00082	0.00053	-0.00053
1	0.76905	-0.55804	0.61466	0.00082	0.00053	-0.00053

SUCTION SIDE

N	X	Y	EM	DS	TH	SEP
52	-0.00678	0.00760	0.13148			
53	-0.01091	0.01773	0.25420			
54	-0.01177	0.02989	0.34040			
55	-0.00946	0.04394	0.39178			
56	-0.00453	0.05927	0.43805			
57	0.00273	0.07502	0.47972			
58	0.01201	0.09052	0.51682			
59	0.02296	0.10524	0.54894			
60	0.03496	0.11827	0.57655			
61	0.04819	0.13053	0.59978			
62	0.06208	0.14134	0.61930			
63	0.07639	0.15072	0.63543			
64	0.09092	0.15868	0.64882			
65	0.10553	0.16532	0.65972			
66	0.12012	0.17070	0.66862			
67	0.13462	0.17492	0.67571			
68	0.14896	0.17806	0.68134			
69	0.16313	0.18020	0.68562			
70	0.17710	0.18142	0.68879			
71	0.19085	0.18178	0.69091			
72	0.20437	0.18135	0.69228			
73	0.21767	0.18018	0.69324			
74	0.23072	0.17831	0.69415			
75	0.24352	0.17581	0.69500			
76	0.25606	0.17271	0.69584			
77	0.26833	0.16904	0.69663			
78	0.28032	0.16485	0.69741			
79	0.29205	0.16017	0.69814			
80	0.30350	0.15502	0.69887			
81	0.31468	0.14944	0.69956			
82	0.32558	0.14346	0.70025			
83	0.33623	0.13710	0.70089			
84	0.34661	0.13038	0.70154			
85	0.35673	0.12334	0.70215			
86	0.36661	0.11598	0.70273			
87	0.37625	0.10832	0.70325			
88	0.38567	0.10039	0.70386			
89	0.39486	0.09220	0.70442			
90	0.40386	0.08375	0.70487			
91	0.41266	0.07506	0.70527			
92	0.42112	0.06596	0.70564	0.00025	0.00026	0.09527
93	0.42940	0.05663	0.70590	0.00050	0.00029	-0.00001
94	0.43770	0.04719	0.70605	0.00055	0.00032	0.00000
95	0.44587	0.03751	0.70589	0.00060	0.00035	0.00002
96	0.45395	0.02756	0.70525	0.00065	0.00038	0.00002
97	0.46196	0.01733	0.70476	0.00069	0.00041	0.00002
98	0.46994	0.00681	0.70453	0.00074	0.00045	0.00002
99	0.47789	-0.00404	0.70407	0.00079	0.00048	0.00003
100	0.48585	-0.01524	0.70344	0.00084	0.00051	0.00004
101	0.49386	-0.02685	0.70256	0.00089	0.00054	0.00005
102	0.50195	-0.03893	0.70144	0.00095	0.00057	0.00007
103	0.51016	-0.05153	0.69999	0.00100	0.00061	0.00009
104	0.51854	-0.06473	0.69819	0.00106	0.00065	0.00011

24

105	0.52713	-0.07864	0.69596	0.00112	0.00068	0.00014
106	0.53600	-0.09335	0.69325	0.00119	0.00073	0.00017
107	0.54520	-0.10900	0.68995	0.00127	0.00077	0.00020
108	0.55481	-0.12572	0.68602	0.00135	0.00082	0.00024
109	0.56489	-0.14367	0.68139	0.00143	0.00088	0.00028
110	0.57554	-0.16300	0.67608	0.00153	0.00094	0.00032
111	0.58683	-0.18388	0.67013	0.00164	0.00101	0.00036
112	0.59884	-0.20644	0.66373	0.00175	0.00108	0.00038
113	0.61162	-0.23076	0.65707	0.00188	0.00116	0.00039
114	0.62521	-0.25684	0.65044	0.00201	0.00125	0.00039
115	0.63957	-0.28457	0.64408	0.00214	0.00134	0.00038
116	0.65460	-0.31364	0.63823	0.00227	0.00143	0.00035
117	0.67010	-0.34358	0.63303	0.00240	0.00152	0.00032
118	0.68575	-0.37373	0.62860	0.00253	0.00161	0.00029
119	0.70118	-0.40328	0.62495	0.00265	0.00169	0.00026
120	0.71594	-0.43140	0.62205	0.00275	0.00177	0.00022
121	0.72963	-0.45729	0.61983	0.00284	0.00183	0.00019
122	0.74189	-0.48031	0.61820	0.00292	0.00189	0.00016
123	0.75247	-0.50006	0.61702	0.00298	0.00194	0.00014
124	0.76126	-0.51637	0.61621	0.00303	0.00197	0.00012
125	0.76825	-0.52928	0.61565	0.00307	0.00200	0.00011
126	0.77352	-0.53896	0.61528	0.00310	0.00203	0.00010
127	0.77719	-0.54568	0.61503	0.00312	0.00204	0.00010
128	0.77943	-0.54978	0.61488	0.00315	0.00205	0.00013
129	0.78040	-0.55158	0.61479	0.00316	0.00205	0.00015
130	0.78048	-0.55172	0.61466	0.00316	0.00205	0.00015

THICK/CHORD AT TE   0.013,   DTE =   0.000

CLOSS   =   0.00558

M

0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
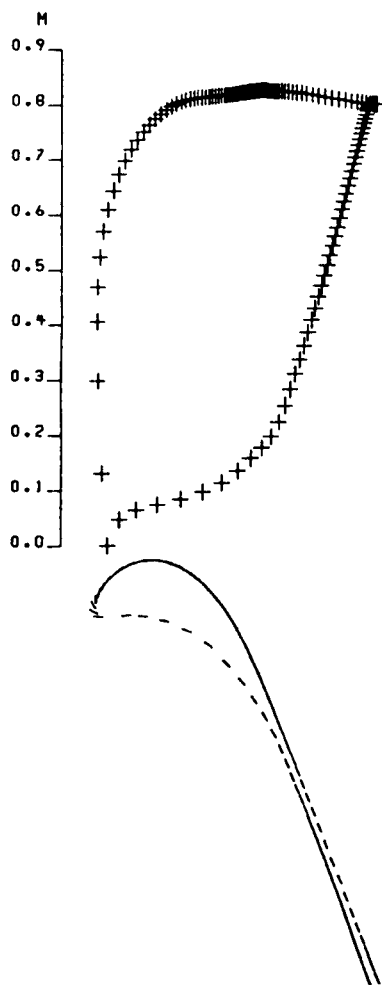
M1	0.253
BET1	32.49
M2	0.805
BET2	-66.74
DELB	99.23
SOL	1.43
THCR	0.186
DNTE	0.019
DSTE	-0.000
TEV	0.016
LOSS	0.003
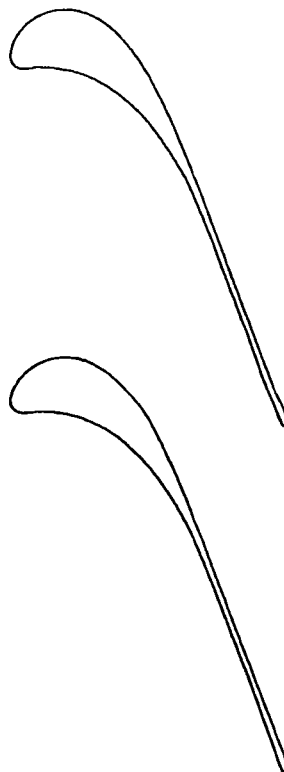
CASE 4. - HIGH PRESSURE TURBINE BLADE.

INVISCID   COMPUTATION

INLET MACH NUMBER = 0.253   INLET FLOW ANGLE =   32.49

EXIT MACH NUMBER = 0.805   EXIT FLOW ANGLE = -66.74

TURNING =   99.23

GAP   = 0.698   CHORD = 1.000   AXIAL CHORD = 0.626

GAP/CHORD = 0.698   SOLIDITY = 1.433   AXIAL SOLIDITY = 0.896

THICK/CHORD = 0.186,   DX= 0.0176; DY = 0.0076

THICK/CHORD AT TE = 0.019,   DTE= 0.000

N	X	Y	MACH	ANGL	CURVATURE
1	0.58368	-0.72906	0.7978	-67.01	0.00
2	0.58368	-0.72906	0.7978	-67.01	0.00
3	0.58332	-0.72821	0.7970	-67.14	2.42
4	0.58241	-0.72605	0.7947	-67.30	1.22
5	0.58106	-0.72278	0.7909	-67.48	0.87
6	0.57931	-0.71856	0.7857	-67.65	0.65
7	0.57725	-0.71352	0.7794	-67.81	0.52
8	0.57491	-0.70776	0.7721	-67.96	0.41
9	0.57233	-0.70136	0.7639	-68.09	0.34
10	0.56953	-0.69438	0.7549	-68.21	0.27
11	0.56654	-0.68689	0.7453	-68.31	0.21
12	0.56338	-0.67892	0.7351	-68.39	0.16
13	0.56005	-0.67051	0.7243	-68.45	0.12
14	0.55657	-0.66168	0.7129	-68.49	0.07
15	0.55294	-0.65247	0.7011	-68.51	0.04
16	0.54916	-0.64286	0.6889	-68.51	0.00
17	0.54524	-0.63290	0.6762	-68.50	-0.03
18	0.54116	-0.62257	0.6630	-68.46	-0.05
19	0.53694	-0.61188	0.6494	-68.41	-0.08
20	0.53256	-0.60083	0.6354	-68.34	-0.11
21	0.52801	-0.58942	0.6213	-68.22	-0.16
22	0.52330	-0.57764	0.6073	-68.18	-0.05
23	0.51843	-0.56548	0.5905	-68.16	-0.04
24	0.51335	-0.55287	0.5736	-67.93	-0.30
25	0.50805	-0.53986	0.5580	-67.74	-0.24
26	0.50252	-0.52640	0.5413	-67.59	-0.18
27	0.49676	-0.51249	0.5240	-67.42	-0.19
28	0.49073	-0.49806	0.5061	-67.25	-0.19
29	0.48443	-0.48310	0.4876	-67.09	-0.18
30	0.47783	-0.46754	0.4685	-66.92	-0.17
31	0.47090	-0.45134	0.4487	-66.77	-0.15
32	0.46361	-0.43441	0.4281	-66.63	-0.13
33	0.45593	-0.41668	0.4065	-66.51	-0.11
34	0.44780	-0.39803	0.3840	-66.40	-0.09
35	0.43917	-0.37833	0.3603	-66.31	-0.07

36	0.42996	-0.35738	0.3354	-66.19	-0.09
37	0.42004	-0.33499	0.3089	-66.02	-0.12
38	0.40920	-0.31082	0.2810	-65.65	-0.25
39	0.39711	-0.28453	0.2516	-64.83	-0.49
40	0.38307	-0.25574	0.2220	-63.00	-0.99
41	0.36607	-0.22449	0.1955	-59.72	-1.61
42	0.34521	-0.19152	0.1750	-55.74	-1.78
43	0.32063	-0.15757	0.1561	-52.65	-1.28
44	0.29188	-0.12208	0.1340	-49.04	-1.38
45	0.25681	-0.08564	0.1128	-42.76	-2.17
46	0.21380	-0.05146	0.0962	-34.00	-2.78
47	0.16430	-0.02389	0.0834	-24.05	-3.07
48	0.11226	-0.00633	0.0733	-13.05	-3.50
49	0.06458	0.00063	0.0638	-3.82	-3.34
50	0.02639	0.00098	0.0465	2.40	-2.84
51	0.00025	-0.00078	0.0000	177.79	3.07
52	-0.01341	0.00334	0.1303	151.38	32.32
53	-0.02154	0.01170	0.2978	117.55	50.63
54	-0.02437	0.02315	0.4053	92.54	36.98
55	-0.02292	0.03670	0.4683	76.70	20.30
56	-0.01796	0.05090	0.5222	65.26	13.28
57	-0.01006	0.06471	0.5685	55.53	10.68
58	0.00011	0.07735	0.6085	47.01	9.15
59	0.01195	0.08842	0.6425	39.21	8.41
60	0.02403	0.09677	0.6717	32.02	8.54
61	0.03760	0.10417	0.6964	25.25	7.64
62	0.05143	0.10978	0.7174	18.90	7.43
63	0.06529	0.11372	0.7351	12.87	7.31
64	0.07897	0.11614	0.7501	7.17	7.16
65	0.09236	0.11718	0.7627	1.76	7.04
66	0.10535	0.11699	0.7734	-3.36	6.87
67	0.11792	0.11572	0.7823	-8.20	6.69
68	0.13001	0.11348	0.7897	-12.76	6.47
69	0.14164	0.11038	0.7957	-17.06	6.24
70	0.15276	0.10653	0.8006	-21.08	5.96
71	0.16342	0.10201	0.8044	-24.85	5.68
72	0.17360	0.09691	0.8073	-28.36	5.37
73	0.18334	0.09128	0.8093	-31.62	5.07
74	0.19265	0.08520	0.8106	-34.64	4.73
75	0.20156	0.07872	0.8113	-37.42	4.41
76	0.21007	0.07189	0.8120	-39.98	4.08
77	0.21823	0.06476	0.8127	-42.33	3.79
78	0.22604	0.05737	0.8133	-44.49	3.51
79	0.23353	0.04975	0.8139	-46.48	3.26
80	0.24070	0.04195	0.8146	-48.31	3.01
81	0.24759	0.03397	0.8152	-49.99	2.78
82	0.25421	0.02586	0.8158	-51.53	2.56
83	0.26059	0.01763	0.8164	-52.94	2.37
84	0.26674	0.00929	0.8170	-54.23	2.18
85	0.27268	0.00086	0.8176	-55.42	2.01
86	0.27842	-0.00764	0.8181	-56.50	1.84
87	0.28399	-0.01622	0.8187	-57.49	1.69
88	0.28940	-0.02486	0.8194	-58.39	1.55
89	0.29467	-0.03356	0.8199	-59.22	1.42
90	0.29981	-0.04232	0.8204	-59.97	1.29
91	0.30484	-0.05115	0.8210	-60.66	1.18
92	0.30978	-0.06005	0.8215	-61.29	1.07
93	0.31464	-0.06903	0.8220	-61.86	0.98

94	0.31943	-0.07810	0.8225	-62.37	0.88
95	0.32419	-0.08728	0.8229	-62.85	0.80
96	0.32892	-0.09660	0.8234	-63.28	0.72
97	0.33366	-0.10608	0.8238	-63.67	0.65
98	0.33841	-0.11577	0.8241	-64.03	0.58
99	0.34322	-0.12571	0.8244	-64.36	0.52
100	0.34810	-0.13595	0.8245	-64.66	0.46
101	0.35310	-0.14657	0.8244	-64.94	0.42
102	0.35825	-0.15766	0.8237	-65.19	0.35
103	0.36362	-0.16931	0.8231	-65.39	0.27
104	0.36924	-0.18164	0.8230	-65.57	0.24
105	0.37518	-0.19477	0.8228	-65.74	0.21
106	0.38151	-0.20886	0.8227	-65.90	0.18
107	0.38830	-0.22410	0.8224	-66.05	0.16
108	0.39565	-0.24070	0.8221	-66.19	0.13
109	0.40365	-0.25889	0.8216	-66.32	0.11
110	0.41241	-0.27892	0.8210	-66.44	0.10
111	0.42203	-0.30106	0.8201	-66.56	0.08
112	0.43262	-0.32555	0.8190	-66.67	0.07
113	0.44425	-0.35257	0.8175	-66.77	0.06
114	0.45693	-0.38218	0.8157	-66.85	0.05
115	0.47063	-0.41427	0.8136	-66.93	0.04
116	0.48515	-0.44842	0.8113	-66.97	0.02
117	0.50022	-0.48390	0.8090	-67.00	0.01
118	0.51540	-0.51968	0.8069	-67.01	0.00
119	0.53019	-0.55453	0.8050	-67.00	0.00
120	0.54408	-0.58725	0.8034	-66.99	-0.01
121	0.55665	-0.61683	0.8021	-66.97	-0.01
122	0.56762	-0.64261	0.8010	-66.94	-0.02
123	0.57685	-0.66429	0.8001	-66.92	-0.02
124	0.58437	-0.68191	0.7994	-66.90	-0.02
125	0.59026	-0.69572	0.7989	-66.88	-0.02
126	0.59469	-0.70608	0.7985	-66.87	-0.01
127	0.59783	-0.71343	0.7982	-66.88	0.01
128	0.59985	-0.71819	0.7980	-66.90	0.06
129	0.60094	-0.72075	0.7979	-66.94	0.25
130	0.60124	-0.72144	0.7978	-67.01	1.73

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PRESSURE SIDE

N	X	Y	EM	DS	TH	SEP
51	0.00025	-0.00078	0.00002			
50	0.02639	0.00098	0.04654			
49	0.06458	0.00063	0.06380			
48	0.11226	-0.00633	0.07335			
47	0.16430	-0.02389	0.08339			
46	0.21380	-0.05146	0.09623			
45	0.25727	-0.08514	0.11276	0.00068	0.00134	-0.13017
44	0.29288	-0.12122	0.13402	0.00132	0.00106	-0.00308
43	0.32149	-0.15692	0.15611	0.00108	0.00078	-0.00218
42	0.34598	-0.19099	0.17500	0.00094	0.00066	-0.00171
41	0.36678	-0.22407	0.19546	0.00083	0.00058	-0.00168
40	0.38369	-0.25543	0.22199	0.00070	0.00049	-0.00167
39	0.39766	-0.28427	0.25160	0.00061	0.00042	-0.00151
38	0.40971	-0.31059	0.28099	0.00056	0.00038	-0.00133
37	0.42053	-0.33477	0.30895	0.00053	0.00036	-0.00119
36	0.43043	-0.35717	0.33537	0.00052	0.00035	-0.00109
35	0.43965	-0.37812	0.36031	0.00052	0.00034	-0.00102
34	0.44827	-0.39782	0.38400	0.00052	0.00034	-0.00096
33	0.45641	-0.41647	0.40651	0.00052	0.00034	-0.00092
32	0.46410	-0.43420	0.42806	0.00053	0.00035	-0.00088
31	0.47140	-0.45113	0.44868	0.00054	0.00035	-0.00086
30	0.47833	-0.46732	0.46852	0.00055	0.00036	-0.00083
29	0.48495	-0.48288	0.48763	0.00056	0.00036	-0.00081
28	0.49126	-0.49784	0.50611	0.00057	0.00037	-0.00080
27	0.49729	-0.51226	0.52397	0.00058	0.00038	-0.00078
26	0.50306	-0.52617	0.54129	0.00059	0.00038	-0.00077
25	0.50860	-0.53963	0.55797	0.00060	0.00039	-0.00074
24	0.51392	-0.55264	0.57358	0.00061	0.00039	-0.00076
23	0.51901	-0.56525	0.59048	0.00062	0.00040	-0.00080
22	0.52388	-0.57741	0.60729	0.00063	0.00040	-0.00074
21	0.52861	-0.58918	0.62130	0.00064	0.00041	-0.00069
20	0.53316	-0.60059	0.63540	0.00065	0.00041	-0.00071
19	0.53756	-0.61164	0.64943	0.00066	0.00042	-0.00071
18	0.54179	-0.62232	0.66301	0.00067	0.00042	-0.00070
17	0.54587	-0.63265	0.67617	0.00068	0.00043	-0.00070
16	0.54980	-0.64261	0.68888	0.00069	0.00044	-0.00069
15	0.55359	-0.65221	0.70114	0.00070	0.00044	-0.00068
14	0.55723	-0.66142	0.71295	0.00071	0.00045	-0.00068
13	0.56073	-0.67025	0.72425	0.00072	0.00045	-0.00067
12	0.56406	-0.67865	0.73506	0.00073	0.00045	-0.00067
11	0.56723	-0.68662	0.74530	0.00074	0.00046	-0.00067
10	0.57023	-0.69410	0.75493	0.00075	0.00046	-0.00066
9	0.57303	-0.70108	0.76387	0.00076	0.00047	-0.00065
8	0.57562	-0.70747	0.77207	0.00077	0.00047	-0.00065
7	0.57797	-0.71323	0.77938	0.00078	0.00047	-0.00064
6	0.58004	-0.71826	0.78572	0.00078	0.00048	-0.00062
5	0.58179	-0.72248	0.79089	0.00079	0.00048	-0.00060
4	0.58315	-0.72574	0.79472	0.00080	0.00048	-0.00054
3	0.58407	-0.72790	0.79696	0.00080	0.00048	-0.00048
2	0.58443	-0.72875	0.79776	0.00081	0.00049	-0.00046
1	0.58443	-0.72875	0.79776	0.00081	0.00049	-0.00046

SUCTION SIDE

N	X	Y	EM	DS	TH	SEP
52	-0.01341	0.00334	0.13033			
53	-0.02154	0.01170	0.29783			
54	-0.02437	0.02315	0.40525			
55	-0.02292	0.03670	0.46827			
56	-0.01796	0.05090	0.52220			
57	-0.01006	0.06471	0.56846			
58	0.00011	0.07735	0.60845			
59	0.01195	0.08842	0.64251			
60	0.02403	0.09677	0.67173			
61	0.03760	0.10417	0.69639			
62	0.05143	0.10978	0.71739			
63	0.06529	0.11372	0.73506			
64	0.07897	0.11614	0.75011			
65	0.09236	0.11718	0.76272			
66	0.10535	0.11699	0.77340			
67	0.11792	0.11572	0.78226			
68	0.13001	0.11348	0.78968			
69	0.14164	0.11038	0.79569			
70	0.15276	0.10653	0.80059			
71	0.16342	0.10201	0.80437			
72	0.17360	0.09691	0.80727			
73	0.18334	0.09128	0.80926			
74	0.19265	0.08520	0.81056			
75	0.20156	0.07872	0.81134			
76	0.21007	0.07189	0.81203			
77	0.21823	0.06476	0.81266			
78	0.22604	0.05737	0.81332			
79	0.23353	0.04975	0.81394			
80	0.24070	0.04195	0.81458			
81	0.24759	0.03397	0.81517			
82	0.25421	0.02586	0.81580			
83	0.26059	0.01763	0.81639			
84	0.26674	0.00929	0.81700			
85	0.27268	0.00086	0.81756			
86	0.27842	-0.00764	0.81811			
87	0.28399	-0.01622	0.81874			
88	0.28940	-0.02486	0.81938			
89	0.29467	-0.03356	0.81989			
90	0.29981	-0.04232	0.82045			
91	0.30484	-0.05115	0.82097			
92	0.30978	-0.06005	0.82150			
93	0.31464	-0.06903	0.82199			
94	0.31943	-0.07810	0.82249			
95	0.32419	-0.08728	0.82294			
96	0.32892	-0.09660	0.82338			
97	0.33366	-0.10608	0.82376			
98	0.33841	-0.11577	0.82412			
99	0.34322	-0.12571	0.82438			
100	0.34810	-0.13595	0.82455			
101	0.35310	-0.14657	0.82441			
102	0.35825	-0.15766	0.82366			
103	0.36362	-0.16931	0.82308			
104	0.36924	-0.18164	0.82300			

105	0.37518	-0.19477	0.82283		
106	0.38151	-0.20886	0.82266		
107	0.38830	-0.22410	0.82240		
108	0.39565	-0.24070	0.82207		
109	0.40365	-0.25889	0.82161		
110	0.41241	-0.27892	0.82100		
111	0.42186	-0.30113	0.82015	0.00019	0.00027	0.07602
112	0.43208	-0.32578	0.81903	0.00059	0.00033	0.00002
113	0.44360	-0.35284	0.81754	0.00070	0.00040	0.00003
114	0.45617	-0.38251	0.81572	0.00083	0.00048	0.00003
115	0.46975	-0.41464	0.81358	0.00096	0.00056	0.00004
116	0.48415	-0.44884	0.81130	0.00109	0.00064	0.00004
117	0.49910	-0.48438	0.80901	0.00122	0.00072	0.00005
118	0.51416	-0.52021	0.80689	0.00135	0.00080	0.00005
119	0.52883	-0.55511	0.80500	0.00148	0.00088	0.00005
120	0.54262	-0.58787	0.80339	0.00159	0.00095	0.00005
121	0.55509	-0.61749	0.80205	0.00170	0.00102	0.00005
122	0.56598	-0.64330	0.80098	0.00178	0.00107	0.00005
123	0.57515	-0.66502	0.80011	0.00186	0.00112	0.00004
124	0.58261	-0.68266	0.79945	0.00192	0.00115	0.00005
125	0.58846	-0.69649	0.79892	0.00196	0.00118	0.00005
126	0.59285	-0.70687	0.79854	0.00200	0.00120	0.00005
127	0.59597	-0.71423	0.79824	0.00202	0.00122	0.00005
128	0.59798	-0.71899	0.79804	0.00204	0.00123	0.00007
129	0.59906	-0.72155	0.79789	0.00205	0.00124	0.00007
130	0.59935	-0.72224	0.79776	0.00205	0.00124	0.00007

THICK/CHORD AT TE   0.016,   DTE = 0.000

CLOSS   =   0.00274
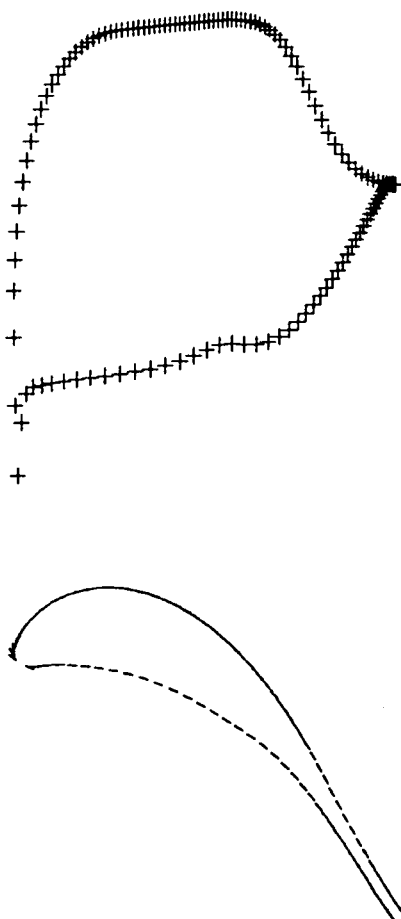
M1	0.345
BET1	23.53
M2	0.649
BET2	-52.72
DELB	76.26
SOL	1.06
THCR	0.192
DNTE	0.025
DSTE	0.000
TEV	0.019
LOSS	0.007
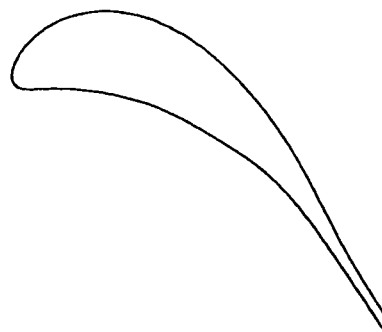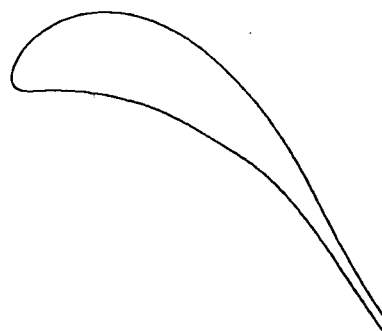
CASE 5. - LOW PRESSURE TURBINE BLADE.

INVISCID   COMPUTATION

INLET MACH NUMBER = 0.345   INLET FLOW ANGLE =   23.53

EXIT MACH NUMBER = 0.649   EXIT FLOW ANGLE = -52.72

TURNING =   76.26

GAP   = 0.941   CHORD = 1.000   AXIAL CHORD = 0.854

GAP/CHORD = 0.941   SOLIDITY = 1.063   AXIAL SOLIDITY = 0.908

THICK/CHORD = 0.192,   DX= 0.0199; DY = 0.0153

THICK/CHORD AT TE = 0.025,   DTE= 0.000

N	X	Y	MACH	ANGL	CURVATURE
1	0.82581	-0.50050	0.5811	-52.34	0.00
2	0.82581	-0.50050	0.5811	-52.34	0.00
3	0.82487	-0.49928	0.5800	-52.39	0.59
4	0.82296	-0.49680	0.5773	-52.51	0.69
5	0.82018	-0.49316	0.5730	-52.67	0.59
6	0.81660	-0.48846	0.5675	-52.83	0.50
7	0.81230	-0.48277	0.5606	-53.00	0.42
8	0.80732	-0.47614	0.5527	-53.17	0.34
9	0.80172	-0.46864	0.5437	-53.32	0.28
10	0.79552	-0.46030	0.5337	-53.45	0.22
11	0.78875	-0.45115	0.5228	-53.56	0.17
12	0.78143	-0.44122	0.5112	-53.64	0.11
13	0.77357	-0.43053	0.4987	-53.69	0.07
14	0.76515	-0.41908	0.4855	-53.70	0.01
15	0.75619	-0.40687	0.4716	-53.67	-0.03
16	0.74665	-0.39391	0.4571	-53.59	-0.09
17	0.73650	-0.38020	0.4419	-53.44	-0.15
18	0.72572	-0.36570	0.4262	-53.22	-0.21
19	0.71423	-0.35041	0.4096	-52.91	-0.28
20	0.70195	-0.33431	0.3924	-52.41	-0.44
21	0.68877	-0.31740	0.3756	-51.70	-0.58
22	0.67460	-0.29972	0.3591	-50.86	-0.64
23	0.65933	-0.28127	0.3422	-49.92	-0.69
24	0.64280	-0.26203	0.3243	-48.66	-0.87
25	0.62469	-0.24207	0.3069	-46.85	-1.17
26	0.60477	-0.22163	0.2911	-44.53	-1.42
27	0.58281	-0.20107	0.2774	-41.65	-1.67
28	0.55872	-0.18089	0.2671	-38.21	-1.91
29	0.53270	-0.16172	0.2617	-34.54	-1.98
30	0.50539	-0.14406	0.2618	-31.40	-1.69
31	0.47763	-0.12778	0.2638	-29.67	-0.94
32	0.44981	-0.11212	0.2610	-29.15	-0.28
33	0.42145	-0.09648	0.2514	-28.48	-0.36
34	0.39188	-0.08094	0.2397	-26.80	-0.88
35	0.36084	-0.06606	0.2290	-24.34	-1.25

36	0.32843	-0.05238	0.2204	-21.39	-1.47
37	0.29505	-0.04034	0.2139	-18.27	-1.53
38	0.26120	-0.03017	0.2088	-15.20	-1.52
39	0.22742	-0.02191	0.2045	-12.28	-1.47
40	0.19415	-0.01553	0.2006	-9.45	-1.46
41	0.16190	-0.01094	0.1968	-6.74	-1.45
42	0.13114	-0.00802	0.1932	-4.11	-1.48
43	0.10243	-0.00656	0.1895	-1.70	-1.46
44	0.07631	-0.00629	0.1861	0.46	-1.44
45	0.05343	-0.00676	0.1820	1.82	-1.04
46	0.03434	-0.00741	0.1785	1.52	0.27
47	0.01963	-0.00712	0.1648	-5.76	8.63
48	0.00853	-0.00466	0.1065	-20.55	22.72
49	0.00056	-0.00025	0.0000	141.77	33.88
50	-0.00528	0.00613	0.1405	121.30	41.31
51	-0.00816	0.01376	0.2782	100.54	44.41
52	-0.00841	0.02267	0.3727	84.14	32.13
53	-0.00635	0.03277	0.4342	73.88	17.38
54	-0.00239	0.04366	0.4918	66.47	11.17
55	0.00328	0.05486	0.5435	60.02	8.97
56	0.01050	0.06602	0.5911	54.32	7.48
57	0.01907	0.07685	0.6336	49.08	6.62
58	0.02858	0.08690	0.6720	44.26	6.08
59	0.03927	0.09652	0.7057	39.75	5.48
60	0.05072	0.10535	0.7358	35.55	5.07
61	0.06277	0.11334	0.7620	31.58	4.79
62	0.07525	0.12045	0.7851	27.85	4.54
63	0.08803	0.12670	0.8049	24.29	4.35
64	0.10101	0.13211	0.8222	20.93	4.18
65	0.11410	0.13669	0.8370	17.71	4.05
66	0.12723	0.14050	0.8497	14.63	3.92
67	0.14035	0.14356	0.8603	11.68	3.82
68	0.15343	0.14593	0.8693	8.85	3.72
69	0.16643	0.14764	0.8766	6.12	3.63
70	0.17934	0.14872	0.8826	3.49	3.54
71	0.19216	0.14922	0.8872	0.95	3.45
72	0.20486	0.14916	0.8908	-1.49	3.36
73	0.21746	0.14857	0.8931	-3.85	3.26
74	0.22995	0.14748	0.8947	-6.11	3.15
75	0.24234	0.14591	0.8959	-8.29	3.05
76	0.25462	0.14389	0.8971	-10.39	2.94
77	0.26677	0.14144	0.8981	-12.42	2.86
78	0.27879	0.13858	0.8993	-14.38	2.77
79	0.29067	0.13532	0.9003	-16.28	2.69
80	0.30242	0.13168	0.9014	-18.12	2.61
81	0.31403	0.12768	0.9024	-19.90	2.53
82	0.32550	0.12333	0.9035	-21.63	2.45
83	0.33684	0.11864	0.9044	-23.30	2.38
84	0.34805	0.11362	0.9055	-24.91	2.30
85	0.35914	0.10829	0.9064	-26.48	2.22
86	0.37010	0.10264	0.9073	-27.99	2.14
87	0.38095	0.09669	0.9082	-29.46	2.07
88	0.39170	0.09044	0.9091	-30.88	1.99
89	0.40236	0.08390	0.9099	-32.26	1.92
90	0.41293	0.07705	0.9108	-33.59	1.85
91	0.42342	0.06991	0.9115	-34.89	1.78
92	0.43385	0.06246	0.9123	-36.15	1.71
93	0.44424	0.05470	0.9129	-37.38	1.65

94	0.45458	0.04663	0.9135	-38.57	1.59
95	0.46491	0.03822	0.9139	-39.74	1.54
96	0.47523	0.02946	0.9141	-40.89	1.48
97	0.48556	0.02032	0.9138	-42.03	1.44
98	0.49595	0.01078	0.9128	-43.14	1.37
99	0.50640	0.00080	0.9117	-44.23	1.32
100	0.51693	-0.00965	0.9102	-45.33	1.29
101	0.52757	-0.02063	0.9076	-46.43	1.26
102	0.53836	-0.03219	0.9039	-47.54	1.22
103	0.54933	-0.04442	0.8986	-48.65	1.19
104	0.56052	-0.05739	0.8917	-49.78	1.15
105	0.57198	-0.07122	0.8827	-50.93	1.12
106	0.58374	-0.08602	0.8713	-52.10	1.08
107	0.59584	-0.10190	0.8570	-53.29	1.04
108	0.60832	-0.11901	0.8395	-54.48	0.98
109	0.62120	-0.13745	0.8185	-55.64	0.90
110	0.63452	-0.15735	0.7943	-56.73	0.80
111	0.64828	-0.17873	0.7675	-57.69	0.66
112	0.66251	-0.20158	0.7394	-58.45	0.49
113	0.67718	-0.22573	0.7116	-58.94	0.30
114	0.69226	-0.25090	0.6855	-59.14	0.12
115	0.70767	-0.27667	0.6622	-59.07	-0.04
116	0.72326	-0.30254	0.6424	-58.76	-0.18
117	0.73882	-0.32796	0.6262	-58.27	-0.29
118	0.75410	-0.35238	0.6134	-57.66	-0.37
119	0.76880	-0.37532	0.6035	-57.00	-0.43
120	0.78266	-0.39639	0.5963	-56.32	-0.47
121	0.79542	-0.41529	0.5911	-55.66	-0.50
122	0.80687	-0.43187	0.5875	-55.04	-0.53
123	0.81688	-0.44604	0.5850	-54.48	-0.57
124	0.82537	-0.45783	0.5835	-53.98	-0.61
125	0.83232	-0.46731	0.5825	-53.54	-0.66
126	0.83775	-0.47461	0.5819	-53.16	-0.73
127	0.84172	-0.47988	0.5816	-52.84	-0.84
128	0.84432	-0.48329	0.5814	-52.59	-1.03
129	0.84563	-0.48499	0.5813	-52.41	-1.45
130	0.84576	-0.48516	0.5811	-52.34	-5.80

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PRESSURE SIDE

N	X	Y	EM	DS	TH	SEP
49	0.00056	-0.00025	0.00003			
48	0.00853	-0.00466	0.10654			
47	0.01963	-0.00712	0.16480			
46	0.03434	-0.00741	0.17854			
45	0.05343	-0.00676	0.18204			
44	0.07631	-0.00629	0.18606			
43	0.10243	-0.00656	0.18949			
42	0.13114	-0.00802	0.19320			
41	0.16190	-0.01094	0.19678			
40	0.19415	-0.01553	0.20059			
39	0.22742	-0.02191	0.20449			
38	0.26130	-0.02980	0.20884	0.00038	0.00075	0.23056
37	0.29541	-0.03923	0.21389	0.00117	0.00079	-0.00061
36	0.32886	-0.05128	0.22044	0.00118	0.00081	-0.00078
35	0.36132	-0.06499	0.22905	0.00117	0.00081	-0.00096
34	0.39239	-0.07993	0.23968	0.00113	0.00079	-0.00106
33	0.42198	-0.09551	0.25143	0.00110	0.00077	-0.00098
32	0.45036	-0.11114	0.26102	0.00113	0.00077	-0.00057
31	0.47825	-0.12670	0.26377	0.00124	0.00082	-0.00003
30	0.50611	-0.14287	0.26177	0.00139	0.00092	0.00011
29	0.53354	-0.16051	0.26170	0.00147	0.00100	-0.00031
28	0.55961	-0.17976	0.26706	0.00144	0.00102	-0.00090
27	0.58371	-0.20005	0.27736	0.00136	0.00098	-0.00131
26	0.60565	-0.22073	0.29109	0.00126	0.00092	-0.00150
25	0.62555	-0.24126	0.30686	0.00117	0.00085	-0.00157
24	0.64361	-0.26131	0.32428	0.00109	0.00079	-0.00155
23	0.66012	-0.28061	0.34216	0.00102	0.00073	-0.00144
22	0.67536	-0.29911	0.35910	0.00098	0.00069	-0.00132
21	0.68951	-0.31682	0.37559	0.00094	0.00066	-0.00127
20	0.70266	-0.33376	0.39244	0.00090	0.00063	-0.00125
19	0.71492	-0.34989	0.40959	0.00087	0.00061	-0.00121
18	0.72640	-0.36519	0.42617	0.00085	0.00059	-0.00114
17	0.73717	-0.37970	0.44194	0.00083	0.00057	-0.00109
16	0.74731	-0.39343	0.45712	0.00082	0.00056	-0.00105
15	0.75684	-0.40639	0.47164	0.00081	0.00055	-0.00101
14	0.76580	-0.41860	0.48553	0.00080	0.00054	-0.00098
13	0.77421	-0.43005	0.49870	0.00080	0.00054	-0.00096
12	0.78207	-0.44075	0.51117	0.00080	0.00053	-0.00093
11	0.78939	-0.45068	0.52283	0.00079	0.00053	-0.00091
10	0.79616	-0.45983	0.53370	0.00079	0.00053	-0.00090
9	0.80236	-0.46817	0.54365	0.00079	0.00053	-0.00088
8	0.80796	-0.47567	0.55266	0.00079	0.00053	-0.00086
7	0.81293	-0.48229	0.56062	0.00079	0.00053	-0.00085
6	0.81724	-0.48798	0.56746	0.00080	0.00053	-0.00083
5	0.82081	-0.49268	0.57304	0.00080	0.00053	-0.00080
4	0.82359	-0.49631	0.57727	0.00080	0.00053	-0.00076
3	0.82551	-0.49879	0.57998	0.00081	0.00053	-0.00067
2	0.82645	-0.50001	0.58113	0.00081	0.00053	-0.00064
1	0.82645	-0.50001	0.58113	0.00081	0.00053	-0.00064

SUCTION SIDE

N	X	Y	EM	DS	TH	SEP
50	-0.00528	0.00613	0.14047			
51	-0.00816	0.01376	0.27823			
52	-0.00841	0.02267	0.37273			
53	-0.00635	0.03277	0.43424			
54	-0.00239	0.04366	0.49177			
55	0.00328	0.05486	0.54351			
56	0.01050	0.06602	0.59111			
57	0.01907	0.07685	0.63355			
58	0.02858	0.08690	0.67197			
59	0.03927	0.09652	0.70572			
60	0.05072	0.10535	0.73581			
61	0.06277	0.11334	0.76196			
62	0.07525	0.12045	0.78505			
63	0.08803	0.12670	0.80489			
64	0.10101	0.13211	0.82224			
65	0.11410	0.13669	0.83695			
66	0.12723	0.14050	0.84969			
67	0.14035	0.14356	0.86029			
68	0.15343	0.14593	0.86932			
69	0.16643	0.14764	0.87660			
70	0.17934	0.14872	0.88263			
71	0.19216	0.14922	0.88722			
72	0.20486	0.14916	0.89077			
73	0.21746	0.14857	0.89310			
74	0.22995	0.14748	0.89474			
75	0.24234	0.14591	0.89587			
76	0.25462	0.14389	0.89705			
77	0.26677	0.14144	0.89812			
78	0.27879	0.13858	0.89926			
79	0.29067	0.13532	0.90029			
80	0.30242	0.13168	0.90140			
81	0.31403	0.12768	0.90239			
82	0.32550	0.12333	0.90346			
83	0.33684	0.11864	0.90444			
84	0.34805	0.11362	0.90548			
85	0.35914	0.10829	0.90639			
86	0.37010	0.10264	0.90731			
87	0.38095	0.09669	0.90815			
88	0.39170	0.09044	0.90910			
89	0.40236	0.08390	0.90995			
90	0.41293	0.07705	0.91080			
91	0.42331	0.06975	0.91155	0.00019	0.00024	0.19800
92	0.43356	0.06206	0.91229	0.00050	0.00027	-0.00001
93	0.44390	0.05426	0.91291	0.00056	0.00030	-0.00001
94	0.45420	0.04615	0.91350	0.00061	0.00033	-0.00001
95	0.46449	0.03771	0.91390	0.00066	0.00036	-0.00001
96	0.47476	0.02892	0.91412	0.00071	0.00039	0.00000
97	0.48505	0.01975	0.91375	0.00077	0.00043	0.00002
98	0.49539	0.01018	0.91280	0.00082	0.00046	0.00003
99	0.50579	0.00017	0.91172	0.00088	0.00049	0.00004
100	0.51626	-0.01031	0.91024	0.00093	0.00052	0.00007

101	0.52685	-0.02131	0.90764	0.00099	0.00056	0.00011
102	0.53757	-0.03291	0.90389	0.00106	0.00059	0.00016
103	0.54848	-0.04516	0.89865	0.00113	0.00063	0.00023
104	0.55959	-0.05818	0.89173	0.00122	0.00068	0.00031
105	0.57096	-0.07205	0.88271	0.00131	0.00073	0.00041
106	0.58262	-0.08689	0.87132	0.00142	0.00079	0.00054
107	0.59459	-0.10283	0.85702	0.00155	0.00086	0.00071
108	0.60692	-0.12001	0.83950	0.00172	0.00094	0.00092
109	0.61961	-0.13854	0.81852	0.00193	0.00105	0.00116
110	0.63269	-0.15855	0.79432	0.00219	0.00117	0.00145
111	0.64615	-0.18008	0.76753	0.00252	0.00133	0.00174
112	0.66001	-0.20311	0.73944	0.00293	0.00152	0.00201
113	0.67427	-0.22748	0.71157	0.00339	0.00174	0.00223
114	0.68893	-0.25289	0.68546	0.00389	0.00199	0.00234
115	0.70393	-0.27890	0.66219	0.00436	0.00225	0.00235
116	0.71919	-0.30501	0.64238	0.00476	0.00251	0.00226
117	0.73449	-0.33063	0.62616	0.00509	0.00276	0.00208
118	0.74961	-0.35523	0.61335	0.00532	0.00298	0.00186
119	0.76422	-0.37830	0.60355	0.00547	0.00316	0.00160
120	0.77803	-0.39948	0.59630	0.00556	0.00331	0.00135
121	0.79078	-0.41846	0.59109	0.00561	0.00343	0.00111
122	0.80225	-0.43510	0.58748	0.00563	0.00352	0.00089
123	0.81229	-0.44932	0.58504	0.00564	0.00358	0.00071
124	0.82082	-0.46114	0.58348	0.00563	0.00363	0.00056
125	0.82780	-0.47065	0.58249	0.00562	0.00367	0.00043
126	0.83326	-0.47798	0.58190	0.00561	0.00369	0.00034
127	0.83726	-0.48327	0.58156	0.00561	0.00371	0.00028
128	0.83987	-0.48670	0.58138	0.00560	0.00372	0.00024
129	0.84118	-0.48842	0.58129	0.00561	0.00372	0.00024
130	0.84131	-0.48859	0.58113	0.00561	0.00372	0.00024

THICK/CHORD AT TE   0.019,   DTE =   0.000

CLOSS   =   0.00651
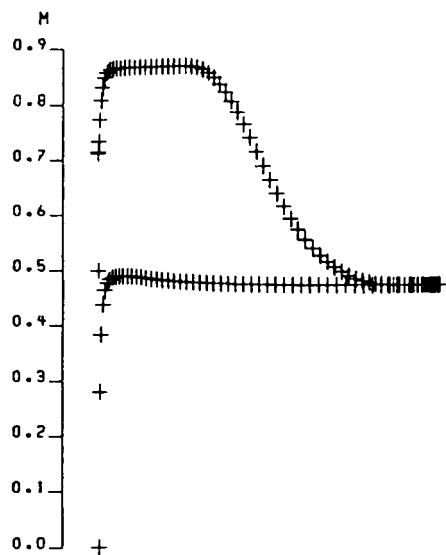
M1   0.670

BET1   52.02

M2   0.476

BET2   38.23

DELB   13.79

SOL   1.04

THCR   0.083

ONTE   0.020

OSTE -0.000

TEV   0.012

LOSS   0.025
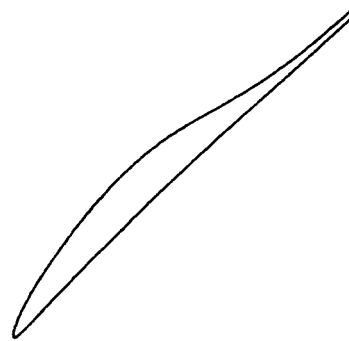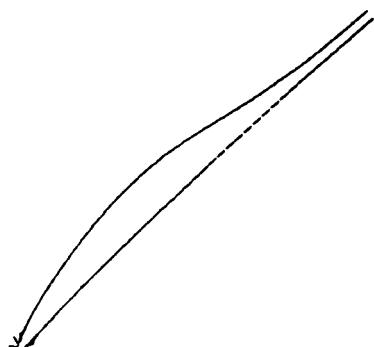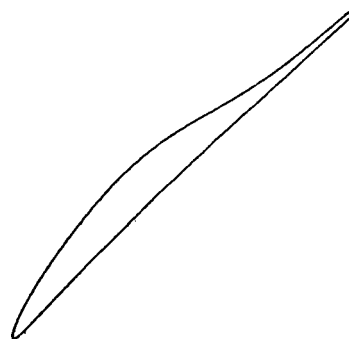
CASE 6. - COMPRESSOR ROTOR BLADE.

40

INVISCID   COMPUTATION

INLET MACH NUMBER = 0.670   INLET FLOW ANGLE =   52.02

EXIT MACH NUMBER = 0.476   EXIT FLOW ANGLE =   38.23

TURNING =   13.79

GAP   = 0.962   CHORD = 1.000   AXIAL CHORD = 0.766

GAP/CHORD = 0.963   SOLIDITY = 1.039   AXIAL SOLIDITY = 0.796

THICK/CHORD = 0.083,   DX= -0.0125; DY = 0.0158

THICK/CHORD AT TE = 0.020,   DTE= 0.000

N	X	Y	MACH	ANGL	CURVATURE
1	0.76340	0.64471	0.4696	37.62	0.00
2	0.76303	0.64442	0.4696	37.67	-2.23
3	0.76125	0.64305	0.4695	37.76	-0.63
4	0.75772	0.64031	0.4695	37.83	-0.30
5	0.75257	0.63631	0.4695	37.90	-0.19
6	0.74558	0.63086	0.4695	37.97	-0.14
7	0.73694	0.62410	0.4695	38.04	-0.11
8	0.72647	0.61590	0.4695	38.10	-0.08
9	0.71445	0.60647	0.4695	38.17	-0.07
10	0.70077	0.59570	0.4695	38.23	-0.06
11	0.68576	0.58386	0.4695	38.29	-0.06
12	0.66935	0.57089	0.4695	38.36	-0.05
13	0.65194	0.55710	0.4695	38.42	-0.05
14	0.63347	0.54244	0.4694	38.49	-0.05
15	0.61438	0.52723	0.4694	38.56	-0.05
16	0.59457	0.51142	0.4695	38.64	-0.05
17	0.57449	0.49535	0.4695	38.72	-0.05
18	0.55401	0.47891	0.4695	38.80	-0.06
19	0.53355	0.46243	0.4696	38.89	-0.06
20	0.51293	0.44578	0.4697	38.98	-0.06
21	0.49255	0.42925	0.4699	39.08	-0.06
22	0.47218	0.41269	0.4700	39.18	-0.07
23	0.45219	0.39637	0.4702	39.29	-0.07
24	0.43233	0.38008	0.4705	39.40	-0.08
25	0.41293	0.36412	0.4707	39.52	-0.08
26	0.39372	0.34824	0.4710	39.64	-0.09
27	0.37503	0.33272	0.4713	39.77	-0.09
28	0.35654	0.31729	0.4717	39.91	-0.10
29	0.33860	0.30225	0.4721	40.05	-0.11
30	0.32087	0.28730	0.4725	40.20	-0.11
31	0.30371	0.27276	0.4730	40.36	-0.12
32	0.28674	0.25830	0.4735	40.53	-0.13
33	0.27036	0.24425	0.4740	40.71	-0.14
34	0.25416	0.23027	0.4746	40.89	-0.15
35	0.23855	0.21670	0.4752	41.08	-0.16

36	0.22312	0.20321	0.4759	41.28	-0.17
37	0.20829	0.19014	0.4766	41.49	-0.18
38	0.19363	0.17713	0.4774	41.70	-0.19
39	0.17960	0.16458	0.4783	41.92	-0.20
40	0.16574	0.15208	0.4792	42.15	-0.21
41	0.15253	0.14008	0.4802	42.37	-0.22
42	0.13949	0.12814	0.4811	42.59	-0.22
43	0.12714	0.11674	0.4822	42.81	-0.23
44	0.11496	0.10542	0.4833	43.03	-0.23
45	0.10352	0.09470	0.4845	43.24	-0.23
46	0.09227	0.08409	0.4857	43.42	-0.20
47	0.08181	0.07417	0.4869	43.55	-0.17
48	0.07154	0.06438	0.4878	43.65	-0.12
49	0.06213	0.05540	0.4883	43.69	-0.06
50	0.05290	0.04658	0.4883	43.69	0.01
51	0.04463	0.03870	0.4879	43.61	0.11
52	0.03653	0.03100	0.4870	43.45	0.25
53	0.02955	0.02442	0.4857	43.08	0.67
54	0.02270	0.01808	0.4828	42.38	1.33
55	0.01715	0.01312	0.4766	41.10	3.00
56	0.01156	0.00840	0.4627	39.08	4.81
57	0.00762	0.00537	0.4373	35.77	11.63
58	0.00323	0.00244	0.3829	30.34	17.95
59	0.00151	0.00169	0.2798	20.44	92.12
60	-0.00008	0.00168	0.0001	171.33	318.96
61	-0.00213	0.00274	0.4983	122.58	368.51
62	-0.00299	0.00665	0.7116	90.86	138.28
63	-0.00267	0.00948	0.7149	79.44	70.09
64	-0.00128	0.01540	0.7329	74.85	13.18
65	0.00051	0.02132	0.7724	71.51	9.42
66	0.00332	0.02897	0.8069	68.30	6.87
67	0.00671	0.03691	0.8307	65.62	5.43
68	0.01114	0.04617	0.8477	63.28	3.97
69	0.01628	0.05594	0.8573	61.31	3.12
70	0.02249	0.06688	0.8625	59.61	2.36
71	0.02949	0.07846	0.8640	58.17	1.85
72	0.03753	0.09110	0.8648	56.93	1.44
73	0.04634	0.10434	0.8652	55.84	1.20
74	0.05605	0.11837	0.8657	54.84	1.02
75	0.06640	0.13282	0.8660	53.91	0.91
76	0.07747	0.14776	0.8663	53.03	0.82
77	0.08898	0.16379	0.8666	52.19	0.74
78	0.10106	0.17913	0.8669	51.38	0.73
79	0.11343	0.19439	0.8671	50.57	0.71
80	0.12611	0.20960	0.8673	49.78	0.70
81	0.13893	0.22454	0.8675	48.97	0.71
82	0.15189	0.23923	0.8677	48.16	0.73
83	0.16486	0.25350	0.8679	47.33	0.75
84	0.17785	0.26739	0.8681	46.46	0.79
85	0.19076	0.28076	0.8683	45.56	0.85
86	0.20363	0.29367	0.8680	44.58	0.93
87	0.21641	0.30603	0.8663	43.53	1.03
88	0.22918	0.31793	0.8624	42.42	1.11
89	0.24194	0.32936	0.8560	41.25	1.19
90	0.25479	0.34039	0.8472	40.03	1.26
91	0.26774	0.35103	0.8357	38.76	1.32
92	0.28088	0.36133	0.8215	37.47	1.36
93	0.29421	0.37131	0.8046	36.15	1.38

94	0.30782	0.38101	0.7850	34.83	1.38
95	0.32172	0.39045	0.7630	33.54	1.34
96	0.33597	0.39967	0.7390	32.31	1.26
97	0.35058	0.40871	0.7136	31.20	1.13
98	0.36556	0.41761	0.6875	30.23	0.97
99	0.38092	0.42641	0.6616	29.43	0.78
100	0.39662	0.43516	0.6364	28.84	0.58
101	0.41265	0.44391	0.6127	28.45	0.37
102	0.42894	0.45269	0.5907	28.27	0.18
103	0.44546	0.46157	0.5706	28.26	0.01
104	0.46212	0.47055	0.5523	28.43	-0.16
105	0.47889	0.47969	0.5363	28.80	-0.33
106	0.49563	0.48898	0.5230	29.28	-0.43
107	0.51231	0.49844	0.5117	29.79	-0.47
108	0.52882	0.50800	0.5021	30.35	-0.51
109	0.54517	0.51768	0.4937	30.95	-0.55
110	0.56122	0.52743	0.4866	31.60	-0.60
111	0.57699	0.53726	0.4811	32.27	-0.63
112	0.59234	0.54708	0.4768	32.92	-0.62
113	0.60731	0.55689	0.4737	33.55	-0.61
114	0.62175	0.56657	0.4715	34.14	-0.59
115	0.63572	0.57614	0.4703	34.69	-0.57
116	0.64907	0.58547	0.4699	35.16	-0.50
117	0.66188	0.59455	0.4698	35.54	-0.42
118	0.67400	0.60326	0.4698	35.85	-0.36
119	0.68552	0.61162	0.4698	36.11	-0.33
120	0.69627	0.61950	0.4697	36.34	-0.30
121	0.70634	0.62694	0.4697	36.55	-0.28
122	0.71552	0.63377	0.4697	36.73	-0.28
123	0.72390	0.64003	0.4697	36.89	-0.27
124	0.73124	0.64556	0.4696	37.03	-0.28
125	0.73763	0.65039	0.4696	37.17	-0.29
126	0.74280	0.65432	0.4696	37.29	-0.32
127	0.74684	0.65740	0.4696	37.39	-0.38
128	0.74948	0.65942	0.4696	37.50	-0.53
129	0.75080	0.66044	0.4696	37.59	-0.98
130	0.75089	0.66050	0.4696	37.62	-4.17

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PRESSURE SIDE

N	X	Y	EM	DS	TH	SEP
60	-0.00008	0.00168	0.00009			
59	0.00151	0.00169	0.27979			
58	0.00323	0.00244	0.38290			
57	0.00762	0.00537	0.43732			
56	0.01156	0.00840	0.46271			
55	0.01715	0.01312	0.47659			
54	0.02270	0.01808	0.48277			
53	0.02955	0.02442	0.48567			
52	0.03653	0.03100	0.48697			
51	0.04463	0.03870	0.48790			
50	0.05290	0.04658	0.48833			
49	0.06213	0.05540	0.48831			
48	0.07154	0.06438	0.48775			
47	0.08181	0.07417	0.48685			
46	0.09227	0.08409	0.48571			
45	0.10352	0.09470	0.48447			
44	0.11496	0.10542	0.48327			
43	0.12714	0.11674	0.48218			
42	0.13949	0.12814	0.48114			
41	0.15253	0.14008	0.48016			
40	0.16574	0.15208	0.47918			
39	0.17960	0.16458	0.47825			
38	0.19363	0.17713	0.47741			
37	0.20829	0.19014	0.47663			
36	0.22312	0.20321	0.47591			
35	0.23855	0.21670	0.47523			
34	0.25411	0.23032	0.47460	0.00007	0.00040	-0.58197
33	0.26988	0.24480	0.47402	0.00074	0.00046	0.00003
32	0.28621	0.25892	0.47348	0.00082	0.00052	0.00003
31	0.30312	0.27345	0.47298	0.00090	0.00057	0.00003
30	0.32023	0.28806	0.47251	0.00099	0.00063	0.00003
29	0.33791	0.30307	0.47208	0.00107	0.00069	0.00003
28	0.35580	0.31817	0.47169	0.00115	0.00074	0.00002
27	0.37424	0.33366	0.47134	0.00123	0.00080	0.00002
26	0.39288	0.34925	0.47101	0.00131	0.00085	0.00002
25	0.41205	0.36520	0.47072	0.00140	0.00091	0.00002
24	0.43139	0.38122	0.47046	0.00148	0.00097	0.00002
23	0.45121	0.39757	0.47024	0.00156	0.00102	0.00002
22	0.47115	0.41395	0.47004	0.00164	0.00108	0.00002
21	0.49147	0.43059	0.46987	0.00172	0.00113	0.00001
20	0.51180	0.44717	0.46974	0.00180	0.00119	0.00001
19	0.53237	0.46389	0.46963	0.00188	0.00124	0.00001
18	0.55279	0.48043	0.46955	0.00195	0.00130	0.00001
17	0.57322	0.49693	0.46949	0.00203	0.00135	0.00000
16	0.59326	0.51307	0.46945	0.00210	0.00140	0.00000
15	0.61302	0.52893	0.46944	0.00217	0.00145	0.00000
14	0.63208	0.54419	0.46944	0.00224	0.00150	0.00000
13	0.65051	0.55891	0.46945	0.00231	0.00154	0.00000

12	0.66788	0.57275	0.46946	0.00237	0.00159	0.00000
11	0.68426	0.58577	0.46947	0.00242	0.00163	0.00000
10	0.69923	0.59765	0.46948	0.00248	0.00166	0.00000
9	0.71290	0.60846	0.46949	0.00252	0.00170	0.00000
8	0.72489	0.61792	0.46950	0.00256	0.00172	0.00000
7	0.73533	0.62615	0.46951	0.00260	0.00175	0.00000
6	0.74396	0.63293	0.46952	0.00263	0.00177	0.00000
5	0.75094	0.63840	0.46953	0.00265	0.00179	0.00000
4	0.75608	0.64242	0.46954	0.00267	0.00180	-0.00001
3	0.75961	0.64517	0.46955	0.00268	0.00181	-0.00001
2	0.76139	0.64655	0.46956	0.00268	0.00181	-0.00002
1	0.76176	0.64684	0.46956	0.00269	0.00181	-0.00002

SUCTION SIDE

N	X	Y	EM	DS	TH	SEP
61	-0.00213	0.00274	0.49827			
62	-0.00299	0.00665	0.71156			
63	-0.00267	0.00948	0.71491			
64	-0.00128	0.01540	0.73290			
65	0.00051	0.02132	0.77241			
66	0.00332	0.02897	0.80693			
67	0.00671	0.03691	0.83073			
68	0.01114	0.04617	0.84766			
69	0.01628	0.05594	0.85726			
70	0.02249	0.06688	0.86246			
71	0.02949	0.07846	0.86402			
72	0.03753	0.09110	0.86481			
73	0.04634	0.10434	0.86518			
74	0.05605	0.11837	0.86568			
75	0.06640	0.13282	0.86597			
76	0.07747	0.14776	0.86634			
77	0.08898	0.16379	0.86656			
78	0.10106	0.17913	0.86686			
79	0.11343	0.19439	0.86706			
80	0.12611	0.20960	0.86731			
81	0.13893	0.22454	0.86749			
82	0.15189	0.23923	0.86771			
83	0.16486	0.25350	0.86789			
84	0.17785	0.26739	0.86809			
85	0.19076	0.28076	0.86826			
86	0.20363	0.29367	0.86802			
87	0.21641	0.30603	0.86629			
88	0.22918	0.31793	0.86237			
89	0.24194	0.32936	0.85604			

90	0.25489	0.34027	0.84721	0.00015	0.00028	-0.45594
91	0.26812	0.35056	0.83573	0.00060	0.00033	0.00029
92	0.28130	0.36078	0.82154	0.00069	0.00038	0.00042
93	0.29468	0.37066	0.80457	0.00080	0.00044	0.00058
94	0.30835	0.38025	0.78497	0.00092	0.00051	0.00078
95	0.32231	0.38956	0.76298	0.00107	0.00059	0.00101
96	0.33663	0.39863	0.73899	0.00124	0.00067	0.00128
97	0.35133	0.40747	0.71359	0.00145	0.00078	0.00159
98	0.36642	0.41614	0.68753	0.00170	0.00090	0.00190
99	0.38191	0.42466	0.66158	0.00201	0.00104	0.00222
100	0.39777	0.43307	0.63644	0.00238	0.00120	0.00253
101	0.41399	0.44143	0.61267	0.00282	0.00138	0.00280
102	0.43051	0.44978	0.59065	0.00331	0.00159	0.00302
103	0.44729	0.45816	0.57057	0.00387	0.00181	0.00322
104	0.46423	0.46665	0.55227	0.00443	0.00205	0.00332
105	0.48122	0.47544	0.53626	0.00486	0.00229	0.00323
106	0.49814	0.48449	0.52301	0.00515	0.00252	0.00304
107	0.51501	0.49372	0.51175	0.00543	0.00274	0.00288
108	0.53170	0.50307	0.50206	0.00571	0.00295	0.00273
109	0.54820	0.51262	0.49366	0.00591	0.00314	0.00254
110	0.56435	0.52234	0.48660	0.00597	0.00332	0.00223
111	0.58018	0.53222	0.48108	0.00596	0.00347	0.00185
112	0.59557	0.54210	0.47685	0.00593	0.00359	0.00148
113	0.61056	0.55199	0.47370	0.00588	0.00369	0.00113
114	0.62501	0.56177	0.47150	0.00580	0.00377	0.00077
115	0.63896	0.57147	0.47026	0.00569	0.00383	0.00037
116	0.65230	0.58087	0.46988	0.00562	0.00386	0.00010
117	0.66514	0.58998	0.46982	0.00562	0.00389	0.00002
118	0.67730	0.59868	0.46980	0.00565	0.00391	0.00002
119	0.68887	0.60703	0.46977	0.00568	0.00393	0.00002
120	0.69966	0.61490	0.46974	0.00571	0.00396	0.00002
121	0.70976	0.62233	0.46972	0.00574	0.00398	0.00002
122	0.71897	0.62914	0.46969	0.00577	0.00399	0.00002
123	0.72737	0.63540	0.46967	0.00579	0.00401	0.00002
124	0.73474	0.64092	0.46965	0.00581	0.00403	0.00002
125	0.74115	0.64574	0.46963	0.00583	0.00404	0.00002
126	0.74635	0.64967	0.46961	0.00585	0.00405	0.00003
127	0.75040	0.65275	0.46959	0.00586	0.00406	0.00003
128	0.75306	0.65476	0.46958	0.00588	0.00406	0.00006
129	0.75439	0.65577	0.46957	0.00589	0.00407	0.00007
130	0.75448	0.65584	0.46956	0.00589	0.00407	0.00007

THICK/CHORD AT TE   0.012,   DTE =   0.000

CLOSS   =   0.02534

CASE 7. - COMPRESSOR STATOR BLADE.
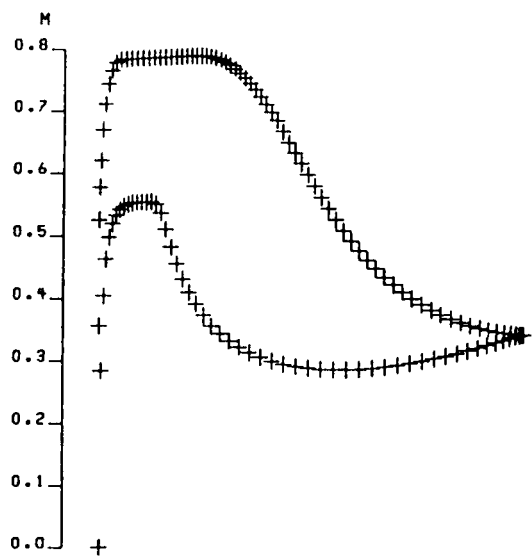
M1   0.600

BET1   51.01

M2   0.344

BET2   -3.95

DELB   54.96

SOL   1.70

THCR   0.112

ONTE   0.025

DSTE   -0.001

TEV   0.016

LOSS   0.055

47
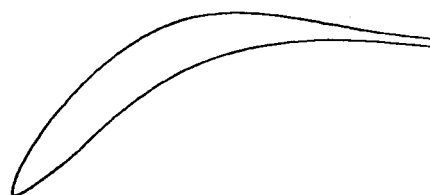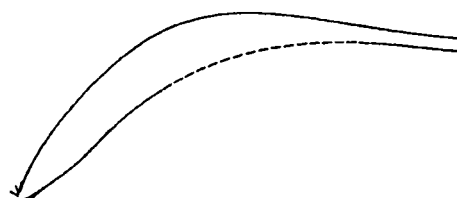
INVISCID   COMPUTATION

INLET MACH NUMBER = 0.600   INLET FLOW ANGLE =   51.01

EXIT MACH NUMBER   = 0.344   EXIT FLOW ANGLE   =   -3.95

TURNING =   54.96

GAP   = 0.588   CHORD = 1.000   AXIAL CHORD = 0.949

GAP/CHORD = 0.588   SOLIDITY = 1.700   AXIAL SOLIDITY = 1.613

THICK/CHORD = 0.112,   DX= 0.0017; DY =   0.0251

THICK/CHORD AT TE = 0.025,   DTE= -0.001

N	X	Y	MACH	ANGL	CURVATURE
1	0.94372	0.29381	0.3400	-5.02	0.00
2	0.94367	0.29382	0.3399	-5.01	-1.55
3	0.94165	0.29400	0.3396	-5.05	0.29
4	0.93589	0.29451	0.3386	-5.15	0.32
5	0.92688	0.29533	0.3367	-5.26	0.21
6	0.91468	0.29646	0.3341	-5.32	0.09
7	0.89988	0.29784	0.3310	-5.31	-0.02
8	0.88259	0.29943	0.3273	-5.19	-0.12
9	0.86338	0.30114	0.3233	-4.96	-0.21
10	0.84229	0.30291	0.3191	-4.60	-0.30
11	0.81982	0.30462	0.3147	-4.10	-0.39
12	0.79595	0.30620	0.3104	-3.45	-0.47
13	0.77109	0.30753	0.3061	-2.65	-0.56
14	0.74516	0.30852	0.3021	-1.70	-0.64
15	0.71854	0.30906	0.2982	-0.60	-0.72
16	0.69110	0.30905	0.2947	0.66	-0.80
17	0.66322	0.30840	0.2916	2.07	-0.88
18	0.63476	0.30698	0.2889	3.63	-0.96
19	0.60608	0.30474	0.2868	5.34	-1.04
20	0.57708	0.30156	0.2854	7.18	-1.10
21	0.54813	0.29741	0.2846	9.16	-1.18
22	0.51914	0.29220	0.2846	11.24	-1.24
23	0.49049	0.28594	0.2854	13.43	-1.30
24	0.46211	0.27857	0.2871	15.69	-1.35
25	0.43438	0.27018	0.2899	18.01	-1.40
26	0.40724	0.26074	0.2937	20.37	-1.43
27	0.38103	0.25039	0.2986	22.73	-1.47
28	0.35569	0.23916	0.3048	25.08	-1.48
29	0.33152	0.22724	0.3122	27.39	-1.49
30	0.30841	0.21470	0.3210	29.61	-1.47
31	0.28660	0.20176	0.3312	31.74	-1.47
32	0.26595	0.18849	0.3425	33.69	-1.39
33	0.24658	0.17507	0.3547	35.77	-1.54
34	0.22849	0.16154	0.3720	37.72	-1.51
35	0.21179	0.14833	0.3911	38.91	-0.97
36	0.19614	0.13546	0.4092	39.98	-0.93

37	0.18159	0.12303	0.4304	40.96	−0.89
38	0.16803	0.11113	0.4546	41.53	−0.55
39	0.15544	0.09994	0.4815	41.62	−0.09
40	0.14362	0.08952	0.5102	41.03	0.66
41	0.13244	0.08002	0.5360	39.59	1.71
42	0.12158	0.07133	0.5504	37.70	2.37
43	0.11085	0.06327	0.5535	36.22	1.93
44	0.10019	0.05560	0.5533	35.31	1.22
45	0.08971	0.04827	0.5530	34.65	0.90
46	0.07944	0.04125	0.5525	34.08	0.80
47	0.06946	0.03457	0.5515	33.50	0.84
48	0.05981	0.02826	0.5498	32.84	0.99
49	0.05054	0.02236	0.5467	32.02	1.30
50	0.04169	0.01694	0.5414	30.97	1.78
51	0.03331	0.01204	0.5328	29.55	2.56
52	0.02549	0.00777	0.5190	27.61	3.78
53	0.01824	0.00418	0.4972	24.87	5.92
54	0.01175	0.00142	0.4623	20.78	10.10
55	0.00611	−0.00040	0.4040	13.95	20.14
56	0.00135	−0.00106	0.2835	−1.04	54.47
57	−0.00102	−0.00019	0.0001	147.91	214.09
58	−0.00307	0.00187	0.3557	110.08	227.14
59	−0.00354	0.00714	0.5255	85.87	79.83
60	−0.00249	0.01312	0.5770	76.08	28.17
61	0.00013	0.02196	0.6197	71.66	8.37
62	0.00382	0.03205	0.6694	68.23	5.57
63	0.00897	0.04389	0.7108	64.88	4.53
64	0.01536	0.05661	0.7432	61.88	3.67
65	0.02319	0.07044	0.7652	59.13	3.02
66	0.03222	0.08481	0.7781	56.72	2.48
67	0.04250	0.09984	0.7830	54.61	2.02
68	0.05368	0.11508	0.7841	52.87	1.61
69	0.06568	0.13049	0.7845	51.35	1.36
70	0.07809	0.14562	0.7850	49.97	1.23
71	0.09082	0.16043	0.7854	48.66	1.17
72	0.10357	0.17460	0.7858	47.41	1.14
73	0.11633	0.18819	0.7862	46.18	1.15
74	0.12821	0.20147	0.7866	44.99	1.17
75	0.14064	0.21363	0.7870	43.79	1.20
76	0.15278	0.22503	0.7874	42.61	1.24
77	0.16474	0.23581	0.7877	41.42	1.29
78	0.17641	0.24590	0.7881	40.24	1.34
79	0.18792	0.25543	0.7884	39.04	1.40
80	0.19917	0.26436	0.7887	37.83	1.47
81	0.21030	0.27282	0.7889	36.60	1.53
82	0.22123	0.28075	0.7891	35.35	1.62
83	0.23210	0.28828	0.7888	34.05	1.71
84	0.24282	0.29535	0.7876	32.72	1.81
85	0.25356	0.30207	0.7855	31.36	1.88
86	0.26424	0.30840	0.7826	29.97	1.95
87	0.27500	0.31443	0.7787	28.54	2.01
88	0.28576	0.32011	0.7739	27.09	2.08
89	0.29668	0.32551	0.7680	25.60	2.14
90	0.30765	0.33059	0.7612	24.07	2.20
91	0.31884	0.33541	0.7532	22.51	2.25
92	0.33014	0.33991	0.7442	20.90	2.30
93	0.34172	0.34414	0.7341	19.26	2.33
94	0.35346	0.34805	0.7228	17.58	2.36

95	0.36554	0.35168	0.7104	15.87	2.37
96	0.37783	0.35498	0.6975	14.16	2.35
97	0.39048	0.35796	0.6842	12.32	2.47
98	0.40341	0.36056	0.6663	10.45	2.47
99	0.41685	0.36284	0.6481	8.82	2.09
100	0.43059	0.36477	0.6320	7.16	2.09
101	0.44480	0.36634	0.6146	5.46	2.08
102	0.45937	0.36752	0.5966	3.83	1.95
103	0.47447	0.36832	0.5784	2.26	1.81
104	0.48995	0.36873	0.5603	0.78	1.66
105	0.50602	0.36875	0.5423	-0.60	1.51
106	0.52249	0.36839	0.5248	-1.89	1.36
107	0.53957	0.36764	0.5077	-3.07	1.20
108	0.55707	0.36654	0.4912	-4.12	1.05
109	0.57521	0.36508	0.4755	-5.07	0.90
110	0.59377	0.36329	0.4605	-5.88	0.76
111	0.61298	0.36120	0.4463	-6.57	0.62
112	0.63260	0.35883	0.4330	-7.13	0.50
113	0.65284	0.35622	0.4206	-7.57	0.38
114	0.67345	0.35341	0.4091	-7.89	0.27
115	0.69463	0.35044	0.3986	-8.09	0.17
116	0.71608	0.34737	0.3890	-8.19	0.07
117	0.73797	0.34422	0.3804	-8.18	-0.01
118	0.75994	0.34108	0.3727	-8.07	-0.08
119	0.78211	0.33796	0.3659	-7.89	-0.14
120	0.80406	0.33497	0.3601	-7.65	-0.19
121	0.82581	0.33210	0.3552	-7.35	-0.23
122	0.84682	0.32945	0.3511	-7.03	-0.27
123	0.86701	0.32702	0.3478	-6.68	-0.30
124	0.88574	0.32488	0.3452	-6.34	-0.32
125	0.90282	0.32304	0.3433	-6.01	-0.33
126	0.91750	0.32153	0.3420	-5.71	-0.35
127	0.92957	0.32035	0.3410	-5.45	-0.37
128	0.93835	0.31953	0.3404	-5.24	-0.42
129	0.94375	0.31904	0.3401	-5.09	-0.49
130	0.94539	0.31890	0.3400	-5.02	-0.74

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PRESSURE SIDE

N	X	Y	EM	DS	TH	SEP
57	-0.00102	-0.00019	0.00007			
56	0.00135	-0.00106	0.28354			
55	0.00611	-0.00040	0.40396			
54	0.01175	0.00142	0.46230			
53	0.01824	0.00418	0.49723			
52	0.02549	0.00777	0.51904			
51	0.03331	0.01204	0.53278			
50	0.04169	0.01694	0.54144			
49	0.05054	0.02236	0.54671			
48	0.05981	0.02826	0.54983			
47	0.06946	0.03457	0.55154			
46	0.07944	0.04125	0.55246			
45	0.08971	0.04827	0.55295			
44	0.10019	0.05560	0.55331			
43	0.11085	0.06327	0.55351			
42	0.12158	0.07133	0.55042			
41	0.13244	0.08002	0.53602			
40	0.14362	0.08952	0.51018			
39	0.15544	0.09994	0.48149			
38	0.16803	0.11113	0.45458			
37	0.18159	0.12303	0.43043			
36	0.19614	0.13546	0.40918			
35	0.21179	0.14833	0.39113			
34	0.22849	0.16154	0.37203			
33	0.24658	0.17507	0.35469			
32	0.26570	0.18886	0.34247	0.00045	0.00047	0.73321
31	0.28610	0.20256	0.33122	0.00095	0.00058	0.00082
30	0.30785	0.21569	0.32100	0.00114	0.00071	0.00086
29	0.33091	0.22843	0.31221	0.00134	0.00084	0.00086
28	0.35505	0.24054	0.30475	0.00153	0.00097	0.00082
27	0.38037	0.25196	0.29860	0.00171	0.00110	0.00075
26	0.40659	0.26249	0.29365	0.00188	0.00122	0.00065
25	0.43376	0.27210	0.28986	0.00202	0.00133	0.00053
24	0.46153	0.28064	0.28712	0.00215	0.00143	0.00039
23	0.48997	0.28813	0.28538	0.00225	0.00152	0.00023
22	0.51868	0.29449	0.28456	0.00233	0.00159	0.00008
21	0.54775	0.29977	0.28458	0.00239	0.00165	-0.00008
20	0.57678	0.30397	0.28537	0.00243	0.00170	-0.00023
19	0.60586	0.30718	0.28685	0.00245	0.00173	-0.00037
18	0.63460	0.30944	0.28894	0.00246	0.00175	-0.00050
17	0.66313	0.31085	0.29159	0.00246	0.00177	-0.00061
16	0.69107	0.31150	0.29470	0.00245	0.00177	-0.00070
15	0.71856	0.31149	0.29821	0.00243	0.00176	-0.00079
14	0.74523	0.31092	0.30205	0.00240	0.00175	-0.00085
13	0.77120	0.30990	0.30614	0.00237	0.00173	-0.00091
12	0.79609	0.30854	0.31040	0.00234	0.00171	-0.00095
11	0.81999	0.30693	0.31474	0.00231	0.00169	-0.00098
10	0.84247	0.30518	0.31908	0.00228	0.00167	-0.00100

9	0.86357	0.30339	0.32331	0.00225	0.00165	-0.00101
8	0.88279	0.30165	0.32731	0.00223	0.00163	-0.00102
7	0.90009	0.30004	0.33096	0.00221	0.00162	-0.00101
6	0.91488	0.29865	0.33414	0.00219	0.00160	-0.00099
5	0.92708	0.29751	0.33671	0.00218	0.00159	-0.00095
4	0.93608	0.29669	0.33856	0.00219	0.00158	-0.00086
3	0.94184	0.29618	0.33959	0.00219	0.00158	-0.00079
2	0.94386	0.29600	0.33995	0.00219	0.00158	-0.00079
1	0.94391	0.29600	0.33996	0.00219	0.00158	-0.00079

SUCTION SIDE

N	X	Y	EM	DS	TH	SEP
58	-0.00307	0.00187	0.35568			
59	-0.00354	0.00714	0.52547			
60	-0.00249	0.01312	0.57699			
61	0.00013	0.02196	0.61974			
62	0.00382	0.03205	0.66939			
63	0.00897	0.04389	0.71085			
64	0.01536	0.05661	0.74318			
65	0.02319	0.07044	0.76522			
66	0.03222	0.08481	0.77813			
67	0.04250	0.09984	0.78301			
68	0.05368	0.11508	0.78412			
69	0.06568	0.13049	0.78454			
70	0.07809	0.14562	0.78501			
71	0.09082	0.16043	0.78541			
72	0.10357	0.17460	0.78584			
73	0.11633	0.18819	0.78622			
74	0.12821	0.20147	0.78662			
75	0.14064	0.21363	0.78698			
76	0.15278	0.22503	0.78737			
77	0.16474	0.23581	0.78771			
78	0.17641	0.24590	0.78807			
79	0.18792	0.25543	0.78838			
80	0.19917	0.26436	0.78869			
81	0.21030	0.27282	0.78895			
82	0.22123	0.28075	0.78911			

83	0.23210	0.28828	0.78876			
84	0.24282	0.29535	0.78761			
85	0.25356	0.30207	0.78554			
86	0.26424	0.30840	0.78258			
87	0.27500	0.31443	0.77868			
88	0.28576	0.32011	0.77385			
89	0.29668	0.32551	0.76801			
90	0.30765	0.33059	0.76116			
91	0.31884	0.33541	0.75322			
92	0.33014	0.33991	0.74423			
93	0.34172	0.34414	0.73406			
94	0.35346	0.34805	0.72282			
95	0.36554	0.35168	0.71042			
96	0.37783	0.35498	0.69751			
97	0.39048	0.35796	0.68416			
98	0.40341	0.36056	0.66630			
99	0.41691	0.36245	0.64811	0.00039	0.00028	-0.48354
100	0.43066	0.36419	0.63203	0.00058	0.00034	0.00064
101	0.44487	0.36565	0.61460	0.00069	0.00040	0.00080
102	0.45942	0.36671	0.59661	0.00081	0.00047	0.00097
103	0.47451	0.36737	0.57841	0.00095	0.00055	0.00114
104	0.48997	0.36762	0.56026	0.00110	0.00063	0.00131
105	0.50600	0.36747	0.54231	0.00128	0.00073	0.00150
106	0.52244	0.36690	0.52475	0.00149	0.00084	0.00169
107	0.53948	0.36592	0.50769	0.00172	0.00097	0.00188
108	0.55693	0.36455	0.49124	0.00199	0.00111	0.00207
109	0.57500	0.36279	0.47547	0.00230	0.00126	0.00226
110	0.59350	0.36066	0.46048	0.00265	0.00144	0.00244
111	0.61263	0.35818	0.44631	0.00304	0.00162	0.00261
112	0.63217	0.35539	0.43300	0.00347	0.00183	0.00276
113	0.65232	0.35231	0.42060	0.00394	0.00205	0.00288
114	0.67285	0.34903	0.40912	0.00443	0.00229	0.00297
115	0.69394	0.34556	0.39858	0.00493	0.00253	0.00302
116	0.71531	0.34201	0.38900	0.00542	0.00279	0.00302
117	0.73713	0.33841	0.38036	0.00586	0.00305	0.00298
118	0.75906	0.33488	0.37268	0.00626	0.00330	0.00288
119	0.78121	0.33145	0.36594	0.00658	0.00355	0.00274
120	0.80315	0.32821	0.36012	0.00682	0.00378	0.00256
121	0.82491	0.32517	0.35519	0.00699	0.00399	0.00233
122	0.84595	0.32240	0.35110	0.00711	0.00418	0.00209
123	0.86618	0.31990	0.34781	0.00717	0.00434	0.00183
124	0.88495	0.31774	0.34525	0.00719	0.00447	0.00158
125	0.90206	0.31590	0.34333	0.00718	0.00458	0.00134
126	0.91678	0.31441	0.34195	0.00715	0.00466	0.00113
127	0.92889	0.31325	0.34102	0.00713	0.00472	0.00096
128	0.93770	0.31243	0.34044	0.00713	0.00475	0.00086
129	0.94312	0.31193	0.34011	0.00714	0.00478	0.00083
130	0.94476	0.31177	0.33996	0.00715	0.00478	0.00083

THICK/CHORD AT TE   0.016,   DTE = -0.001

CLOSS   =   0.05453
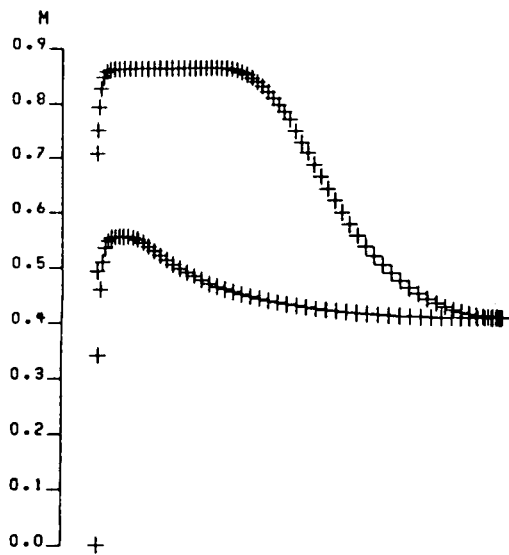
M1	0.680
BET1	47.09
M2	0.422
BET2	13.66
DELB	33.43
SOL	1.49
THCR	0.105
ONTE	0.025
OSTE	-0.000
TEV	0.010
LOSS	0.064
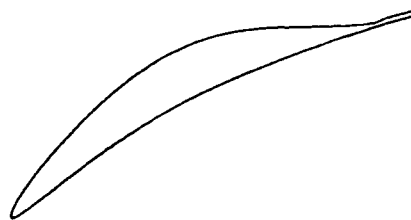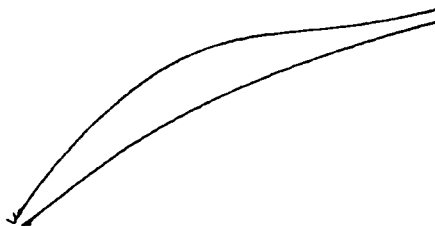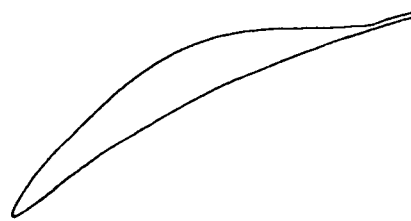
CASE 8. - COMPRESSOR STATOR BLADE.

INVISCID COMPUTATION

INLET MACH NUMBER = 0.680   INLET FLOW ANGLE = 47.09

EXIT MACH NUMBER = 0.422   EXIT FLOW ANGLE = 13.66

TURNING = 33.43

GAP = 0.670   CHORD = 1.000   AXIAL CHORD = 0.910

GAP/CHORD = 0.670   SOLIDITY = 1.492   AXIAL SOLIDITY = 1.358

THICK/CHORD = 0.105,   DX= -0.0059; DY = 0.0245

THICK/CHORD AT TE = 0.025,   DTE= 0.000

N	X	Y	MACH	ANGL	CURVATURE
1	0.90687	0.40447	0.4067	12.88	0.00
2	0.90552	0.40415	0.4067	13.15	-3.39
3	0.90090	0.40306	0.4067	13.43	-1.03
4	0.89309	0.40117	0.4067	13.70	-0.58
5	0.88217	0.39848	0.4067	13.97	-0.42
6	0.86848	0.39504	0.4068	14.24	-0.33
7	0.85229	0.39089	0.4069	14.52	-0.29
8	0.83404	0.38611	0.4070	14.81	-0.27
9	0.81406	0.38077	0.4073	15.11	-0.26
10	0.79275	0.37496	0.4076	15.43	-0.25
11	0.77041	0.36872	0.4081	15.77	-0.25
12	0.74735	0.36213	0.4087	16.13	-0.26
13	0.72378	0.35523	0.4094	16.50	-0.27
14	0.69991	0.34807	0.4102	16.90	-0.28
15	0.67588	0.34067	0.4112	17.32	-0.29
16	0.65182	0.33307	0.4123	17.76	-0.30
17	0.62783	0.32528	0.4136	18.22	-0.32
18	0.60395	0.31731	0.4150	18.71	-0.34
19	0.58028	0.30918	0.4166	19.22	-0.36
20	0.55681	0.30088	0.4183	19.75	-0.37
21	0.53364	0.29243	0.4202	20.31	-0.40
22	0.51072	0.28382	0.4223	20.89	-0.42
23	0.48815	0.27506	0.4246	21.50	-0.44
24	0.46587	0.26615	0.4271	22.13	-0.46
25	0.44398	0.25710	0.4298	22.79	-0.48
26	0.42241	0.24789	0.4327	23.46	-0.50
27	0.40127	0.23856	0.4358	24.16	-0.53
28	0.38047	0.22907	0.4392	24.87	-0.55
29	0.36014	0.21949	0.4428	25.61	-0.57
30	0.34016	0.20975	0.4467	26.35	-0.58
31	0.32068	0.19995	0.4509	27.10	-0.60
32	0.30158	0.19001	0.4553	27.86	-0.61
33	0.28302	0.18005	0.4600	28.61	-0.62
34	0.26484	0.16998	0.4645	29.35	-0.62
35	0.24721	0.15989	0.4694	30.24	-0.76
36	0.23003	0.14970	0.4767	31.07	-0.73

37	0.21351	0.13963	0.4837	31.68	-0.56
38	0.19739	0.12955	0.4900	32.34	-0.60
39	0.18191	0.11963	0.4971	32.99	-0.62
40	0.16686	0.10975	0.5047	33.58	-0.57
41	0.15248	0.10011	0.5127	34.09	-0.52
42	0.13852	0.09058	0.5210	34.51	-0.43
43	0.12525	0.08140	0.5295	34.82	-0.33
44	0.11237	0.07242	0.5376	34.98	-0.19
45	0.10018	0.06387	0.5448	35.01	-0.03
46	0.08831	0.05557	0.5504	34.92	0.11
47	0.07711	0.04778	0.5540	34.75	0.21
48	0.06619	0.04022	0.5554	34.58	0.23
49	0.05601	0.03322	0.5556	34.43	0.21
50	0.04613	0.02648	0.5553	34.24	0.28
51	0.03719	0.02043	0.5551	33.88	0.58
52	0.02863	0.01475	0.5539	33.14	1.27
53	0.02122	0.01002	0.5486	31.79	2.67
54	0.01416	0.00581	0.5352	29.66	4.51
55	0.00850	0.00278	0.5089	26.32	9.08
56	0.00325	0.00045	0.4597	20.41	17.96
57	-0.00034	-0.00046	0.3404	5.90	68.46
58	-0.00181	0.00013	0.0001	152.60	366.85
59	-0.00323	0.00166	0.4917	107.91	372.14
60	-0.00325	0.00701	0.7072	80.06	90.96
61	-0.00206	0.01108	0.7503	69.81	42.20
62	0.00104	0.01832	0.7925	64.45	11.89
63	0.00492	0.02573	0.8259	60.45	8.34
64	0.01054	0.03499	0.8461	57.34	5.01
65	0.01717	0.04484	0.8569	54.88	3.62
66	0.02543	0.05615	0.8604	52.91	2.45
67	0.03478	0.06814	0.8613	51.33	1.81
68	0.04552	0.08124	0.8614	50.00	1.37
69	0.05707	0.09472	0.8617	48.83	1.15
70	0.06960	0.10878	0.8619	47.77	0.99
71	0.08256	0.12281	0.8621	46.78	0.90
72	0.09607	0.13695	0.8622	45.84	0.84
73	0.10965	0.15071	0.8624	44.93	0.82
74	0.12344	0.16426	0.8625	44.05	0.80
75	0.13626	0.17807	0.8626	43.17	0.81
76	0.14988	0.19065	0.8627	42.30	0.82
77	0.16321	0.20260	0.8628	41.42	0.85
78	0.17643	0.21408	0.8629	40.54	0.88
79	0.18932	0.22493	0.8631	39.65	0.92
80	0.20208	0.23533	0.8631	38.75	0.96
81	0.21450	0.24515	0.8633	37.83	1.01
82	0.22681	0.25455	0.8633	36.90	1.05
83	0.23883	0.26342	0.8634	35.96	1.11
84	0.25075	0.27192	0.8635	34.99	1.15
85	0.26243	0.27994	0.8636	34.00	1.22
86	0.27406	0.28764	0.8636	32.97	1.29
87	0.28549	0.29490	0.8631	31.90	1.38
88	0.29693	0.30187	0.8616	30.80	1.44
89	0.30826	0.30847	0.8591	29.66	1.52
90	0.31967	0.31482	0.8556	28.48	1.57
91	0.33104	0.32084	0.8509	27.28	1.63
92	0.34256	0.32662	0.8451	26.05	1.67
93	0.35413	0.33212	0.8380	24.78	1.73
94	0.36590	0.33740	0.8296	23.49	1.75

95	0.37779	0.34240	0.8197	22.16	1.80
96	0.38996	0.34719	0.8086	20.81	1.80
97	0.40231	0.35171	0.7959	19.44	1.81
98	0.41498	0.35602	0.7836	18.07	1.79
99	0.42785	0.36003	0.7695	16.49	2.04
100	0.44119	0.36378	0.7478	14.97	1.93
101	0.45492	0.36728	0.7270	13.70	1.56
102	0.46914	0.37058	0.7079	12.38	1.58
103	0.48372	0.37360	0.6868	11.07	1.53
104	0.49885	0.37639	0.6649	9.86	1.38
105	0.51441	0.37894	0.6426	8.75	1.23
106	0.53056	0.38128	0.6204	7.77	1.05
107	0.54717	0.38342	0.5985	6.93	0.88
108	0.56439	0.38540	0.5772	6.24	0.69
109	0.58207	0.38724	0.5569	5.71	0.52
110	0.60033	0.38900	0.5377	5.34	0.35
111	0.61901	0.39071	0.5197	5.13	0.20
112	0.63821	0.39242	0.5031	5.07	0.05
113	0.65771	0.39416	0.4880	5.16	-0.08
114	0.67761	0.39599	0.4743	5.37	-0.19
115	0.69766	0.39793	0.4622	5.70	-0.29
116	0.71790	0.40003	0.4514	6.13	-0.37
117	0.73805	0.40228	0.4421	6.63	-0.43
118	0.75811	0.40471	0.4341	7.20	-0.49
119	0.77775	0.40729	0.4275	7.80	-0.53
120	0.79692	0.41002	0.4220	8.42	-0.56
121	0.81526	0.41284	0.4176	9.05	-0.59
122	0.83264	0.41570	0.4141	9.66	-0.61
123	0.84868	0.41852	0.4115	10.25	-0.63
124	0.86319	0.42121	0.4097	10.79	-0.65
125	0.87575	0.42366	0.4084	11.29	-0.69
126	0.88614	0.42578	0.4076	11.75	-0.75
127	0.89394	0.42743	0.4071	12.16	-0.89
128	0.89896	0.42853	0.4068	12.52	-1.24
129	0.90086	0.42895	0.4067	12.85	-2.95
130	0.90092	0.42897	0.4067	12.88	-7.82

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PRESSURE SIDE

N	X	Y	EM	DS	TH	SEP
58	-0.00181	0.00013	0.00010			
57	-0.00034	-0.00046	0.34042			
56	0.00325	0.00045	0.45967			
55	0.00850	0.00278	0.50893			
54	0.01416	0.00581	0.53515			
53	0.02122	0.01002	0.54864			
52	0.02863	0.01475	0.55386			
51	0.03719	0.02043	0.55512			
50	0.04613	0.02648	0.55531			
49	0.05601	0.03322	0.55557			
48	0.06619	0.04022	0.55536			
47	0.07711	0.04778	0.55395			
46	0.08831	0.05557	0.55040			
45	0.10018	0.06387	0.54482			
44	0.11237	0.07242	0.53757			
43	0.12525	0.08140	0.52947			
42	0.13852	0.09058	0.52101			
41	0.15248	0.10011	0.51271			
40	0.16686	0.10975	0.50466			
39	0.18191	0.11963	0.49711			
38	0.19739	0.12955	0.48996			
37	0.21351	0.13963	0.48368			
36	0.23003	0.14970	0.47665			
35	0.24721	0.15989	0.46937			
34	0.26480	0.17005	0.46451	0.00008	0.00040	-0.36679
33	0.28266	0.18071	0.46005	0.00075	0.00047	0.00023
32	0.30118	0.19077	0.45530	0.00085	0.00054	0.00026
31	0.32025	0.20080	0.45089	0.00096	0.00060	0.00027
30	0.33969	0.21070	0.44670	0.00106	0.00067	0.00028
29	0.35963	0.22054	0.44283	0.00116	0.00074	0.00028
28	0.37994	0.23022	0.43919	0.00127	0.00081	0.00029
27	0.40071	0.23981	0.43584	0.00137	0.00088	0.00029
26	0.42183	0.24924	0.43270	0.00147	0.00095	0.00028
25	0.44337	0.25855	0.42980	0.00157	0.00102	0.00028
24	0.46524	0.26770	0.42711	0.00168	0.00109	0.00028
23	0.48750	0.27672	0.42463	0.00178	0.00116	0.00027
22	0.51005	0.28557	0.42233	0.00187	0.00123	0.00026
21	0.53295	0.29428	0.42024	0.00197	0.00130	0.00025
20	0.55611	0.30282	0.41831	0.00207	0.00137	0.00024
19	0.57957	0.31122	0.41656	0.00216	0.00143	0.00023
18	0.60323	0.31945	0.41498	0.00226	0.00150	0.00021
17	0.62709	0.32751	0.41356	0.00235	0.00156	0.00020
16	0.65108	0.33539	0.41229	0.00243	0.00163	0.00018
15	0.67513	0.34308	0.41117	0.00252	0.00169	0.00017
14	0.69915	0.35056	0.41020	0.00260	0.00175	0.00015
13	0.72302	0.35780	0.40937	0.00268	0.00181	0.00013
12	0.74658	0.36478	0.40867	0.00276	0.00186	0.00012
11	0.76964	0.37144	0.40810	0.00283	0.00192	0.00010
10	0.79198	0.37775	0.40765	0.00290	0.00197	0.00008

9	0.81329	0.38363	0.40730	0.00296	0.00201	0.00007
8	0.83327	0.38903	0.40705	0.00301	0.00206	0.00005
7	0.85152	0.39386	0.40688	0.00306	0.00209	0.00004
6	0.86771	0.39805	0.40677	0.00311	0.00213	0.00003
5	0.88141	0.40153	0.40671	0.00314	0.00215	0.00002
4	0.89234	0.40425	0.40669	0.00317	0.00217	0.00001
3	0.90016	0.40616	0.40668	0.00319	0.00219	0.00000
2	0.90479	0.40727	0.40668	0.00320	0.00220	0.00000
1	0.90616	0.40759	0.40670	0.00320	0.00220	0.00000

SUCTION SIDE

N	X	Y	EM	DS	TH	SEP
59	-0.00323	0.00166	0.49173			
60	-0.00325	0.00701	0.70723			
61	-0.00206	0.01108	0.75029			
62	0.00104	0.01832	0.79248			
63	0.00492	0.02573	0.82593			
64	0.01054	0.03499	0.84611			
65	0.01717	0.04484	0.85689			
66	0.02543	0.05615	0.86037			
67	0.03478	0.06814	0.86127			
68	0.04552	0.08124	0.86140			
69	0.05707	0.09472	0.86174			
70	0.06960	0.10878	0.86186			
71	0.08256	0.12281	0.86212			
72	0.09607	0.13695	0.86221			
73	0.10965	0.15071	0.86241			
74	0.12344	0.16426	0.86250			
75	0.13626	0.17807	0.86261			
76	0.14988	0.19065	0.86269			
77	0.16321	0.20260	0.86284			
78	0.17643	0.21408	0.86292			
79	0.18932	0.22493	0.86306			
80	0.20208	0.23533	0.86314			
81	0.21450	0.24515	0.86326			
82	0.22681	0.25455	0.86334			
83	0.23883	0.26342	0.86344			
84	0.25075	0.27192	0.86351			
85	0.26243	0.27994	0.86359			
86	0.27406	0.28764	0.86357			
87	0.28549	0.29490	0.86306			
88	0.29693	0.30187	0.86162			
89	0.30826	0.30847	0.85914			
90	0.31967	0.31482	0.85560			

59

91	0.33104	0.32084	0.85091		
92	0.34256	0.32662	0.84508		
93	0.35418	0.33201	0.83796	0.00012	0.00027	0.04101
94	0.36613	0.33688	0.82959	0.00056	0.00031	0.00025
95	0.37803	0.34181	0.81971	0.00063	0.00035	0.00032
96	0.39021	0.34653	0.80861	0.00071	0.00039	0.00042
97	0.40257	0.35097	0.79591	0.00079	0.00044	0.00049
98	0.41525	0.35519	0.78363	0.00087	0.00049	0.00058
99	0.42813	0.35909	0.76953	0.00098	0.00054	0.00089
100	0.44148	0.36269	0.74781	0.00113	0.00061	0.00119
101	0.45522	0.36606	0.72699	0.00126	0.00069	0.00126
102	0.46944	0.36919	0.70789	0.00142	0.00077	0.00145
103	0.48403	0.37200	0.68675	0.00163	0.00087	0.00175
104	0.49917	0.37454	0.66493	0.00188	0.00099	0.00206
105	0.51474	0.37676	0.64263	0.00220	0.00112	0.00239
106	0.53091	0.37871	0.62039	0.00260	0.00128	0.00274
107	0.54755	0.38033	0.59847	0.00310	0.00146	0.00309
108	0.56481	0.38164	0.57723	0.00379	0.00168	0.00346
109	0.58255	0.38242	0.55689	0.00485	0.00193	0.00385
110	0.60094	0.38251	0.53767	0.00652	0.00224	0.00426
111	0.61974	0.38252	0.51971	0.00822	0.00262	0.00467
112	0.63905	0.38295	0.50314	0.00951	0.00304	0.00503
113	0.65869	0.38328	0.48800	0.01092	0.00351	0.00532
114	0.67878	0.38362	0.47434	0.01243	0.00400	0.00551
115	0.69905	0.38401	0.46216	0.01399	0.00452	0.00559
116	0.71957	0.38453	0.45143	0.01558	0.00505	0.00555
117	0.74003	0.38525	0.44211	0.01715	0.00557	0.00538
118	0.76044	0.38621	0.43414	0.01864	0.00606	0.00509
119	0.78047	0.38746	0.42746	0.02002	0.00652	0.00470
120	0.80003	0.38900	0.42196	0.02125	0.00694	0.00423
121	0.81821	0.39427	0.41755	0.01881	0.00729	0.00369
122	0.83518	0.40078	0.41411	0.01513	0.00753	0.00313
123	0.85119	0.40462	0.41153	0.01412	0.00771	0.00259
124	0.86571	0.40803	0.40966	0.01342	0.00785	0.00209
125	0.87828	0.41100	0.40838	0.01291	0.00794	0.00166
126	0.88869	0.41351	0.40756	0.01253	0.00801	0.00131
127	0.89652	0.41543	0.40707	0.01228	0.00805	0.00105
128	0.90162	0.41655	0.40680	0.01227	0.00807	0.00102
129	0.90360	0.41696	0.40670	0.01230	0.00808	0.00103
130	0.90367	0.41698	0.40670	0.01230	0.00808	0.00103

THICK/CHORD AT TE   0.010,   DTE = 0.000

CLOSS   =   0.06430
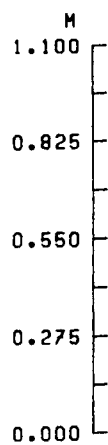
RUN	1023
MIN	0.655
ANIN	55.79
MEX	0.425
ANEX	-34.28
TURN	90.07
SOLD	1.64
THCR	0.241
THTE	0.044
DTE	0.005
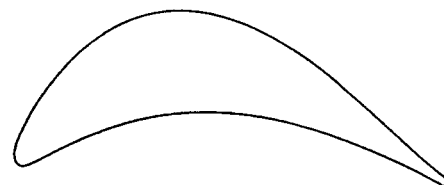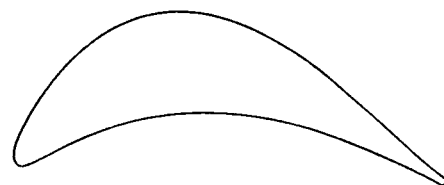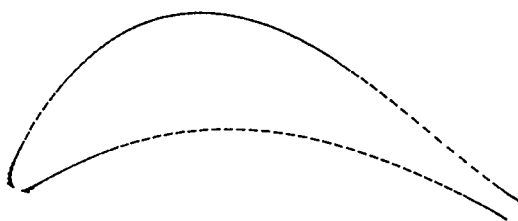
CASE 9. - AWT DIFFUSING TURNING VANES.

9. AWT1023

```
&DATA
NRN= 1023
R= 1.50
RA= 1.0
ANA= 0.0
RB= 1.0
ANB= -180.0
EMB= 0.6850
THB= 23.0
NI= 3
NF= 128
GRID= 0.60D-01
GRIDS= 0.30D-01
IRICHD= 1
IRICHS= 1
RELAX= 0.80
RELAQ= 0.80
CONE= 0.50
CTWO= 1.0
CTHR= -1.0
RN= 5000000.0
TRU= 0.20
TRL= 0.20
RTHO= 320.0
IGRPH= 1
ISVPLT= 1
&END
1
```

CARD	S-INPUT	Q-INPUT
1	-0.305000	-0.584000
2	-0.160000	-0.618000
3	0.090000	-0.613000
4	0.271800	-0.605000
5	0.430000	-0.608000
6	0.598000	-0.642000
7	0.755000	-0.692000
8	0.790000	-0.702000
9	0.815000	-0.708000
10	0.842000	-0.702000
11	0.855000	-0.690000
12	0.862000	-0.670000
13	0.871000	-0.600000

14	0.885000	0.000000
15	0.910700	0.900000
16	0.924000	1.143000
17	0.940000	1.220000
18	0.982000	1.266000
19	1.025000	1.298000
20	1.056000	1.316000
21	1.100000	1.340000
22	1.146397	1.355000
23	1.280000	1.378000
24	1.320000	1.381000
25	1.500000	1.310000
26	1.660000	1.106000
27	2.015000	0.758000
28	2.404000	0.584000

ITER	MIN	ANIN	TURN	GAP		RESID
1	0.65	55.95	85.50	0.63		-0.9154D-01
2	0.66	55.93	88.83	0.63		-0.1852D-01
3	0.66	55.79	90.07	0.63	61	-0.4174D-02

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INVISCID   COMPUTATION

INLET MACH NUMBER = 0.655   INLET FLOW ANGLE =   55.79

EXIT MACH NUMBER = 0.425   EXIT FLOW ANGLE = -34.28

TURNING = 90.066

GAP = 0.632   CHORD = 1.039   AXIAL CHORD = 1.037

GAP/CHORD = 0.609 SOLIDITY = 1.643   AXIAL SOLIDITY = 1.641

THICK/CHORD = 0.241,   DX = 0.0292; DY = 0.0361

THICK/CHORD AT TE = 0.044,   DEV = 0.005

N	X	Y	MACH	ANGL	CURVATURE
1	0.99315	-0.29869	0.3885	-32.81	0.00
2	0.99169	-0.29777	0.3887	-31.96	-8.65
3	0.98623	-0.29445	0.3902	-30.90	-2.88
4	0.97728	-0.28920	0.3926	-29.91	-1.67
5	0.96540	-0.28249	0.3957	-29.01	-1.16
6	0.95117	-0.27475	0.3991	-28.18	-0.89
7	0.93505	-0.26625	0.4026	-27.43	-0.72
8	0.91746	-0.25725	0.4058	-26.74	-0.61
9	0.89866	-0.24792	0.4086	-26.09	-0.55
10	0.87893	-0.23840	0.4110	-25.44	-0.51
11	0.85841	-0.22878	0.4126	-24.79	-0.51
12	0.83725	-0.21916	0.4137	-24.09	-0.52
13	0.81550	-0.20960	0.4141	-23.34	-0.55
14	0.79325	-0.20019	0.4140	-22.52	-0.60
15	0.77053	-0.19098	0.4134	-21.61	-0.65
16	0.74739	-0.18204	0.4125	-20.60	-0.71
17	0.72383	-0.17344	0.4113	-19.50	-0.77
18	0.69990	-0.16524	0.4099	-18.29	-0.83
19	0.67560	-0.15752	0.4085	-16.98	-0.90
20	0.65099	-0.15032	0.4072	-15.58	-0.96
21	0.62609	-0.14373	0.4060	-14.09	-1.01
22	0.60094	-0.13777	0.4050	-12.53	-1.05
23	0.57559	-0.13251	0.4041	-10.91	-1.09
24	0.55006	-0.12797	0.4034	-9.23	-1.14
25	0.52442	-0.12421	0.4027	-7.48	-1.18
26	0.49870	-0.12124	0.4022	-5.67	-1.22
27	0.47294	-0.11911	0.4018	-3.79	-1.27
28	0.44719	-0.11784	0.4017	-1.83	-1.32
29	0.42154	-0.11747	0.4020	0.20	-1.38
30	0.39604	-0.11802	0.4031	2.27	-1.42
31	0.37081	-0.11948	0.4046	4.34	-1.43
32	0.34588	-0.12183	0.4068	6.45	-1.47
33	0.32140	-0.12505	0.4098	8.53	-1.47
34	0.29740	-0.12909	0.4134	10.57	-1.46
35	0.27399	-0.13388	0.4175	12.55	-1.44
36	0.25118	-0.13936	0.4221	14.46	-1.42
37	0.22909	-0.14543	0.4271	16.27	-1.38
38	0.20768	-0.15204	0.4325	17.99	-1.34
39	0.18706	-0.15905	0.4378	19.59	-1.28
40	0.16717	-0.16642	0.4433	21.07	-1.22
41	0.14813	-0.17402	0.4483	22.41	-1.14
42	0.12984	-0.18180	0.4531	23.63	-1.07
43	0.11244	-0.18960	0.4572	24.70	-0.98
44	0.09584	-0.19741	0.4610	25.63	-0.88
45	0.08022	-0.20503	0.4642	26.35	-0.72
46	0.06550	-0.21239	0.4675	26.72	-0.39
47	0.05191	-0.21921	0.4680	26.50	0.25
48	0.03928	-0.22543	0.4659	25.75	0.93
49	0.02797	-0.23067	0.4590	23.76	2.78
50	0.01777	-0.23480	0.4448	19.61	6.60

51	0.00924	-0.23713	0.3977	9.12	20.69
52	0.00144	-0.23720	0.2479	-10.17	43.19
53	-0.00461	-0.23455	0.0001	145.35	64.65
54	-0.00933	-0.22997	0.2543	123.92	56.92
55	-0.01314	-0.22192	0.4843	108.05	31.10
56	-0.01495	-0.21212	0.7025	93.18	26.04
57	-0.01424	-0.20068	0.8500	80.67	19.04
58	-0.01107	-0.18798	0.8994	72.22	11.28
59	-0.00543	-0.17298	0.8963	67.17	5.49
60	0.00259	-0.15547	0.9013	63.84	3.02
61	0.01263	-0.13624	0.9087	61.17	2.15
62	0.02317	-0.11599	0.9194	58.90	1.73
63	0.03604	-0.09552	0.9291	56.82	1.51
64	0.04964	-0.07548	0.9401	54.85	1.42
65	0.06352	-0.05646	0.9483	52.90	1.44
66	0.07748	-0.03863	0.9549	50.99	1.47
67	0.09130	-0.02213	0.9594	49.08	1.54
68	0.10491	-0.00693	0.9641	47.18	1.63
69	0.11820	0.00693	0.9676	45.25	1.76
70	0.13116	0.01957	0.9716	43.30	1.88
71	0.14375	0.03104	0.9747	41.32	2.03
72	0.15603	0.04147	0.9782	39.33	2.16
73	0.16799	0.05093	0.9810	37.32	2.30
74	0.17967	0.05952	0.9841	35.31	2.42
75	0.19109	0.06731	0.9862	33.29	2.55
76	0.20230	0.07439	0.9884	31.27	2.66
77	0.21336	0.08084	0.9891	29.25	2.76
78	0.22433	0.08673	0.9912	27.23	2.82
79	0.23523	0.09210	0.9880	25.21	2.91
80	0.24614	0.09700	0.9864	23.19	2.95
81	0.25700	0.10143	0.9830	21.16	3.02
82	0.26795	0.10544	0.9792	19.13	3.04
83	0.27891	0.10903	0.9740	17.09	3.08
84	0.29001	0.11223	0.9682	15.05	3.09
85	0.30120	0.11502	0.9612	12.99	3.12
86	0.31258	0.11743	0.9535	10.91	3.11
87	0.32409	0.11943	0.9445	8.82	3.12
88	0.33583	0.12103	0.9346	6.72	3.10
89	0.34773	0.12221	0.9232	4.60	3.10
90	0.35989	0.12296	0.9111	2.47	3.04
91	0.37224	0.12327	0.8975	0.35	3.00
92	0.38483	0.12311	0.8855	-1.75	2.90
93	0.39753	0.12248	0.8730	-4.00	3.09
94	0.41063	0.12134	0.8516	-6.22	2.94
95	0.42397	0.11965	0.8323	-8.19	2.57
96	0.43756	0.11745	0.8163	-10.21	2.55
97	0.45134	0.11472	0.7985	-12.21	2.49
98	0.46539	0.11142	0.7809	-14.15	2.35
99	0.47963	0.10758	0.7633	-16.04	2.24
100	0.49413	0.10316	0.7460	-17.87	2.11
101	0.50882	0.09817	0.7289	-19.65	2.00
102	0.52376	0.09257	0.7121	-21.37	1.88
103	0.53889	0.08640	0.6956	-23.03	1.78

104	0.55429	0.07959	0.6793	-24.63	1.66
105	0.56991	0.07218	0.6633	-26.18	1.56
106	0.58581	0.06410	0.6475	-27.66	1.45
107	0.60197	0.05537	0.6319	-29.08	1.35
108	0.61846	0.04594	0.6166	-30.43	1.24
109	0.63528	0.03580	0.6014	-31.72	1.15
110	0.65251	0.02489	0.5864	-32.95	1.04
111	0.67015	0.01319	0.5716	-34.10	0.95
112	0.68832	0.00064	0.5569	-35.17	0.85
113	0.70703	-0.01280	0.5424	-36.16	0.75
114	0.72643	-0.02721	0.5280	-37.07	0.65
115	0.74652	-0.04262	0.5137	-37.87	0.56
116	0.76747	-0.05912	0.4995	-38.56	0.45
117	0.78930	-0.07671	0.4854	-39.13	0.35
118	0.81210	-0.09541	0.4716	-39.54	0.24
119	0.83585	-0.11510	0.4582	-39.78	0.14
120	0.86048	-0.13564	0.4454	-39.83	0.03
121	0.88572	-0.15664	0.4334	-39.67	-0.08
122	0.91116	-0.17761	0.4225	-39.30	-0.20
123	0.93606	-0.19780	0.4130	-38.73	-0.31
124	0.95954	-0.21639	0.4051	-37.98	-0.43
125	0.98046	-0.23248	0.3989	-37.10	-0.58
126	0.99783	-0.24540	0.3942	-36.14	-0.78
127	1.01080	-0.25471	0.3911	-35.12	-1.11
128	1.01896	-0.26035	0.3892	-34.08	-1.83
129	1.02222	-0.26252	0.3884	-33.03	-4.70
130	1.02236	-0.26261	0.3885	-32.81	-21.91

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BOUNDARY LAYER CORRECTION

rKESSURE SIDE

N	X	Y	EM	TH	SEP
53	-0.00461	-0.23455	0.00005		
52	0.00144	-0.23720	0.24790		
51	0.00924	-0.23713	0.39766		
50	0.01777	-0.23480	0.44481		
49	0.02797	-0.23067	0.45903		
48	0.03928	-0.22543	0.46589		
47	0.05191	-0.21921	0.46797		
46	0.06550	-0.21239	0.46750		
45	0.08022	-0.20503	0.46417		
44	0.09584	-0.19741	0.46101		
43	0.11244	-0.18960	0.45724		
42	0.12984	-0.18180	0.45313		
41	0.14813	-0.17402	0.44830		
40	0.16717	-0.16642	0.44325		
39	0.18706	-0.15905	0.43783		

38	0.20768	-0.15204	0.43246	0.00008	0.00008
37	0.22909	-0.14543	0.42712	0.00015	0.00009
36	0.25118	-0.13936	0.42214	0.00020	0.00011
35	0.27399	-0.13388	0.41751	0.00026	0.00013
34	0.29740	-0.12909	0.41339	0.00033	0.00013
33	0.32140	-0.12505	0.40978	0.00039	0.00013
32	0.34588	-0.12183	0.40684	0.00044	0.00011
31	0.37081	-0.11948	0.40465	0.00049	0.00009
30	0.39604	-0.11802	0.40312	0.00054	0.00007
29	0.42154	-0.11747	0.40204	0.00059	0.00004
28	0.44719	-0.11784	0.40171	0.00064	0.00001
27	0.47294	-0.11911	0.40182	0.00068	-0.00002
26	0.49870	-0.12124	0.40220	0.00072	-0.00003
25	0.52442	-0.12421	0.40273	0.00076	-0.00004
24	0.55006	-0.12797	0.40339	0.00080	-0.00005
23	0.57559	-0.13251	0.40415	0.00084	-0.00007
22	0.60094	-0.13777	0.40504	0.00088	-0.00008
21	0.62609	-0.14373	0.40605	0.00091	-0.00009
20	0.65099	-0.15032	0.40722	0.00095	-0.00011
19	0.67560	-0.15752	0.40851	0.00098	-0.00012
18	0.69990	-0.16524	0.40990	0.00101	-0.00013
17	0.72383	-0.17344	0.41126	0.00104	-0.00013
16	0.74739	-0.18204	0.41248	0.00107	-0.00011
15	0.77053	-0.19098	0.41343	0.00110	-0.00008
14	0.79325	-0.20019	0.41402	0.00113	-0.00004
13	0.81550	-0.20960	0.41412	0.00117	0.00002
12	0.83725	-0.21916	0.41370	0.00121	0.00009
11	0.85841	-0.22878	0.41265	0.00126	0.00018
10	0.87893	-0.23840	0.41097	0.00131	0.00028
9	0.89866	-0.24792	0.40864	0.00136	0.00040
8	0.91746	-0.25725	0.40580	0.00142	0.00052
7	0.93505	-0.26625	0.40256	0.00148	0.00065
6	0.95117	-0.27475	0.39912	0.00155	0.00077
5	0.96540	-0.28249	0.39570	0.00161	0.00088
4	0.97728	-0.28920	0.39261	0.00167	0.00097
3	0.98623	-0.29445	0.39016	0.00172	0.00099
2	0.99169	-0.29777	0.38871	0.00175	0.00099
1	0.99315	-0.29869	0.38847	0.00175	0.00099

SUCTION SIDE

N	X	Y	EM	TH	SEP
54	-0.00933	-0.22997	0.25426		
55	-0.01314	-0.22192	0.48429		
56	-0.01495	-0.21212	0.70254		
57	-0.01424	-0.20068	0.85000		
58	-0.01107	-0.18798	0.89942		
59	-0.00543	-0.17298	0.89632		
60	0.00259	-0.15547	0.90127		
61	0.01263	-0.13624	0.90868		

62	0.02317	-0.11599	0.91938		
63	0.03604	-0.09552	0.92910		
64	0.04964	-0.07548	0.94006		
65	0.06352	-0.05646	0.94825		
66	0.07748	-0.03863	0.95492		
67	0.09130	-0.02213	0.95938		
68	0.10491	-0.00693	0.96407		
69	0.11820	0.00693	0.96764		
70	0.13116	0.01957	0.97162		
71	0.14375	0.03104	0.97469		
72	0.15603	0.04147	0.97823		
73	0.16799	0.05093	0.98096		
74	0.17967	0.05952	0.98409		
75	0.19109	0.06731	0.98620		
76	0.20230	0.07439	0.98837	0.00005	0.00006
77	0.21336	0.08084	0.98909	0.00008	-0.00001
78	0.22433	0.08673	0.99124	0.00011	0.00001
79	0.23523	0.09210	0.98796	0.00014	0.00002
80	0.24614	0.09700	0.98637	0.00016	0.00003
81	0.25700	0.10143	0.98300	0.00018	0.00005
82	0.26795	0.10544	0.97916	0.00021	0.00007
83	0.27891	0.10903	0.97401	0.00023	0.00010
84	0.29001	0.11223	0.96825	0.00025	0.00013
85	0.30120	0.11502	0.96122	0.00028	0.00016
86	0.31258	0.11743	0.95351	0.00030	0.00020
87	0.32409	0.11943	0.94446	0.00033	0.00025
88	0.33583	0.12103	0.93461	0.00035	0.00030
89	0.34773	0.12221	0.92324	0.00038	0.00036
90	0.35989	0.12296	0.91113	0.00041	0.00043
91	0.37224	0.12327	0.89747	0.00045	0.00046
92	0.38483	0.12311	0.88553	0.00048	0.00047
93	0.39753	0.12248	0.87300	0.00052	0.00071
94	0.41063	0.12134	0.85165	0.00057	0.00093
95	0.42397	0.11965	0.83225	0.00062	0.00088
96	0.43756	0.11745	0.81626	0.00067	0.00091
97	0.45134	0.11472	0.79853	0.00072	0.00104
98	0.46539	0.11142	0.78094	0.00079	0.00113
99	0.47963	0.10758	0.76326	0.00085	0.00122
100	0.49413	0.10316	0.74596	0.00093	0.00131
101	0.50882	0.09817	0.72886	0.00100	0.00140
102	0.52376	0.09257	0.71210	0.00109	0.00149
103	0.53889	0.08640	0.69555	0.00118	0.00159
104	0.55429	0.07959	0.67931	0.00128	0.00170
105	0.56991	0.07218	0.66327	0.00139	0.00182
106	0.58581	0.06410	0.64749	0.00151	0.00194
107	0.60197	0.05537	0.63191	0.00164	0.00207
108	0.61846	0.04594	0.61656	0.00178	0.00221
109	0.63528	0.03580	0.60139	0.00194	0.00236
110	0.65251	0.02489	0.58642	0.00211	0.00252
111	0.67015	0.01319	0.57159	0.00230	0.00269
112	0.68832	0.00064	0.55694	0.00251	0.00287
113	0.70703	-0.01280	0.54240	0.00275	0.00307
114	0.72643	-0.02721	0.52800	0.00301	0.00329

115	0.74652	-0.04262	0.51368	0.00331	0.00352
116	0.76747	-0.05912	0.49949	0.00365	0.00378
117	0.78930	-0.07671	0.48544	0.00403	0.00404
118	0.81210	-0.09541	0.47165	0.00446	0.00430
119	0.83585	-0.11510	0.45823	0.00495	0.00455
120	0.86048	-0.13564	0.44542	0.00549	0.00476
121	0.88572	-0.15664	0.43342	0.00608	0.00492
122	0.91116	-0.17761	0.42255	0.00670	0.00500
123	0.93606	-0.19780	0.41304	0.00732	0.00499
124	0.95954	-0.21639	0.40512	0.00791	0.00488
125	0.98046	-0.23248	0.39886	0.00844	0.00471
126	0.99783	-0.24540	0.39424	0.00886	0.00453
127	1.01080	-0.25471	0.39109	0.00917	0.00442
128	1.01896	-0.26035	0.38922	0.00937	0.00470
129	1.02222	-0.26252	0.38842	0.00945	0.00482
130	1.02236	-0.26261	0.38847	0.00946	0.00482

BODY COORDINATES AFTER BOUNDARY LAYER SUBTRACTION

N	XV	YV
1	0.99455	-0.29651
2	0.99306	-0.29557
3	0.98755	-0.29224
4	0.97854	-0.28702
5	0.96658	-0.28037
6	0.95227	-0.27269
7	0.93608	-0.26427
8	0.91841	-0.25535
9	0.89955	-0.24610
10	0.87976	-0.23665
11	0.85919	-0.22710
12	0.83797	-0.21754
13	0.81617	-0.20803
14	0.79388	-0.19866
15	0.77112	-0.18949
16	0.74793	-0.18059
17	0.72433	-0.17201
18	0.70036	-0.16385
19	0.67602	-0.15615
20	0.65136	-0.14898
21	0.62642	-0.14242
22	0.60122	-0.13650
23	0.57582	-0.13127
24	0.55026	-0.12678
25	0.52458	-0.12306
26	0.49880	-0.12014
27	0.47301	-0.11806
28	0.44723	-0.11685

29	0.42154	-0.11655		82	0.26809	0.10504
30	0.39601	-0.11716		83	0.27905	0.10858
31	0.37075	-0.11867		84	0.29015	0.11174
32	0.34580	-0.12109		85	0.30133	0.11448
33	0.32130	-0.12439		86	0.31269	0.11684
34	0.29729	-0.12853		87	0.32419	0.11879
35	0.27388	-0.13340		88	0.33591	0.12034
36	0.25108	-0.13896		89	0.34779	0.12147
37	0.22899	-0.14511		90	0.35993	0.12216
38	0.20764	-0.15192		91	0.37224	0.12240
39	0.18706	-0.15905		92	0.38481	0.12219
40	0.16717	-0.16642		93	0.39746	0.12147
41	0.14813	-0.17402		94	0.41051	0.12024
42	0.12984	-0.18180		95	0.42380	0.11847
43	0.11244	-0.18960		96	0.43733	0.11618
44	0.09584	-0.19741		97	0.45104	0.11335
45	0.08022	-0.20503		98	0.46502	0.10995
46	0.06550	-0.21239		99	0.47917	0.10600
47	0.05191	-0.21921		100	0.49358	0.10146
48	0.03928	-0.22543		101	0.50817	0.09634
49	0.02797	-0.23067		102	0.52299	0.09062
50	0.01777	-0.23480		103	0.53800	0.08430
51	0.00924	-0.23713		104	0.55326	0.07735
52	0.00144	-0.23720		105	0.56872	0.06977
53	-0.00461	-0.23455		106	0.58445	0.06151
54	-0.00933	-0.22997		107	0.60042	0.05259
55	-0.01314	-0.22192		108	0.61670	0.04294
56	-0.01495	-0.21212		109	0.63328	0.03256
57	-0.01424	-0.20068		110	0.65024	0.02138
58	-0.01107	-0.18798		111	0.66757	0.00939
59	-0.00543	-0.17298		112	0.68540	-0.00351
60	0.00259	-0.15547		113	0.70372	-0.01733
61	0.01263	-0.13624		114	0.72265	-0.03220
62	0.02317	-0.11599		115	0.74223	-0.04815
63	0.03604	-0.09552		116	0.76256	-0.06528
64	0.04964	-0.07548		117	0.78368	-0.08361
65	0.06352	-0.05646		118	0.80566	-0.10321
66	0.07748	-0.03863		119	0.82846	-0.12397
67	0.09130	-0.02213		120	0.85204	-0.14577
68	0.10491	-0.00693		121	0.87611	-0.16823
69	0.11820	0.00693		122	0.90035	-0.19082
70	0.13116	0.01957		123	0.92409	-0.21273
71	0.14375	0.03104		124	0.94655	-0.23302
72	0.15603	0.04147		125	0.96671	-0.25066
73	0.16799	0.05093		126	0.98363	-0.26486
74	0.17967	0.05952		127	0.99645	-0.27511
75	0.19109	0.06731		128	1.00471	-0.28140
76	0.20235	0.07431		129	1.00830	-0.28394
77	0.21346	0.08065		130	1.00852	-0.28408
78	0.22445	0.08649				
79	0.23536	0.09182				
80	0.24628	0.09668		DXV = 0.0140;		DYV = 0.0124
81	0.25714	0.10106				

THICK/CHORD AT TE   0.017,   DEV = 0.005
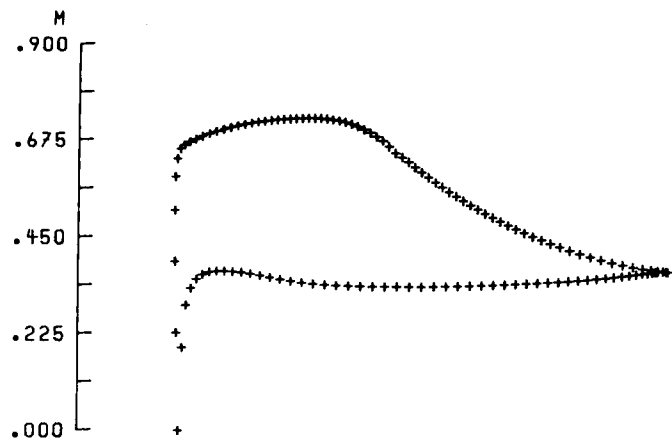
RUN	2020	
MIN	0.485	
ANIN	53.42	
MEX	0.386	
ANEX	-38.43	
TURN	91.85	
SOLD	1.74	
THCR	0.231	
THTE	0.041	
DTE	-0.006	
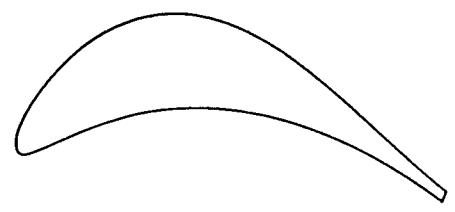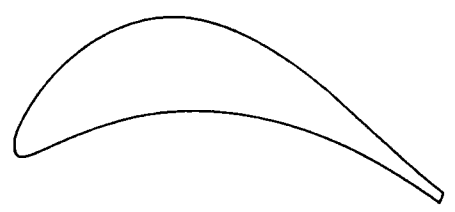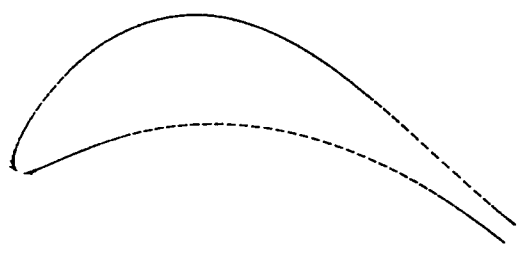
CASE 10. - AWT DIFFUSING TURNING VANES.

10. AWT2020

```
&DATA
NRN= 2020
R= 1.520
EMACH= 0.530
THETA= 19.0
NI= 3
NF= 128
GRID= 0.60D-01
GRIDS= 0.30D-01
IRICHD= 1
IRICHS= 1
RN= 1000000.0
TRU= 0.20
TRL= 0.20
RTHO= 320.0
IGRPH= 1
ISVPLT= 1
CHDU= 1.0
&END
1
```

CARD	S-INPUT	Q-INPUT
1	-0.300000	-0.703000
2	-0.160000	-0.675000
3	0.090000	-0.650000
4	0.271800	-0.642000
5	0.430000	-0.646000
6	0.598000	-0.672000
7	0.755000	-0.732000
8	0.790000	-0.742000
9	0.815000	-0.748000
10	0.842000	-0.742000
11	0.855000	-0.730000
12	0.862000	-0.710000
13	0.871000	-0.640000
14	0.885000	0.000000
15	0.915300	0.860000
16	0.942700	1.105000
17	0.967300	1.186000
18	1.003000	1.235000
19	1.037600	1.264000
20	1.062700	1.280000
21	1.102600	1.297000

22	1.147397	1.311000
23	1.280000	1.331000
24	1.360000	1.334000
25	1.500200	1.294000
26	1.618800	1.156200
27	1.816000	0.954500
28	2.014800	0.823000
29	2.210000	0.741000
30	2.398000	0.703000

ITER	MIN	ANIN	TURN	GAP	RESID
1	0.48	53.48	91.46	0.59	-0.7557D-01
2	0.48	53.44	91.73	0.59	-0.1508D-01
3	0.48	53.42	91.85	0.59	-0.3067D-02

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INVISCID   COMPUTATION

INLET MACH NUMBER = 0.485   INLET FLOW ANGLE =   53.42

EXIT MACH NUMBER = 0.386   EXIT FLOW ANGLE = -38.43

TURNING =   91.849

GAP = 0.590   CHORD = 1.028   AXIAL CHORD = 1.021

GAP/CHORD = 0.574   SOLIDITY = 1.742   AXIAL SOLIDITY = 1.730

THICK/CHORD = 0.231,   DX = 0.0212; DY = 0.0374

THICK/CHORD AT TE = 0.041,   DEV = -0.006

N	X	Y	MACH	ANGL	CURVATURE
1	0.95885	-0.37635	0.3675	-37.93	0.00
2	0.95795	-0.37565	0.3673	-37.61	-4.76

73

3	0.95405	-0.37267	0.3669	-37.24	-1.34
4	0.94742	-0.36766	0.3661	-36.88	-0.76
5	0.93848	-0.36100	0.3649	-36.48	-0.62
6	0.92755	-0.35299	0.3633	-36.03	-0.58
7	0.91496	-0.34392	0.3614	-35.50	-0.59
8	0.90092	-0.33401	0.3594	-34.89	-0.62
9	0.88564	-0.32349	0.3573	-34.20	-0.65
10	0.86926	-0.31252	0.3552	-33.42	-0.69
11	0.85193	-0.30127	0.3532	-32.56	-0.73
12	0.83372	-0.28985	0.3512	-31.62	-0.77
13	0.81475	-0.27840	0.3493	-30.60	-0.80
14	0.79506	-0.26701	0.3476	-29.50	-0.84
15	0.77473	-0.25578	0.3459	-28.34	-0.87
16	0.75379	-0.24477	0.3444	-27.11	-0.90
17	0.73233	-0.23408	0.3430	-25.83	-0.94
18	0.71034	-0.22375	0.3418	-24.48	-0.97
19	0.68790	-0.21386	0.3406	-23.08	-1.00
20	0.66501	-0.20445	0.3395	-21.63	-1.03
21	0.64173	-0.19557	0.3384	-20.11	-1.06
22	0.61806	-0.18727	0.3374	-18.55	-1.09
23	0.59406	-0.17959	0.3365	-16.92	-1.13
24	0.56973	-0.17258	0.3356	-15.23	-1.16
25	0.54514	-0.16628	0.3349	-13.48	-1.20
26	0.52029	-0.16073	0.3343	-11.68	-1.24
27	0.49526	-0.15598	0.3338	-9.82	-1.27
28	0.47005	-0.15204	0.3336	-7.91	-1.31
29	0.44477	-0.14897	0.3337	-5.96	-1.34
30	0.41943	-0.14675	0.3340	-4.02	-1.33
31	0.39412	-0.14541	0.3342	-2.04	-1.36
32	0.36884	-0.14496	0.3347	-0.02	-1.40
33	0.34371	-0.14540	0.3353	2.03	-1.42
34	0.31874	-0.14673	0.3362	4.10	-1.45
35	0.29405	-0.14896	0.3374	6.21	-1.48
36	0.26967	-0.15207	0.3390	8.33	-1.50
37	0.24574	-0.15602	0.3413	10.45	-1.52
38	0.22232	-0.16078	0.3442	12.52	-1.51
39	0.19954	-0.16626	0.3478	14.50	-1.48
40	0.17745	-0.17236	0.3522	16.33	-1.39
41	0.15616	-0.17893	0.3568	17.98	-1.29
42	0.13566	-0.18587	0.3613	19.40	-1.14
43	0.11602	-0.19303	0.3654	20.61	-1.01
44	0.09720	-0.20030	0.3688	21.59	-0.85
45	0.07925	-0.20755	0.3709	22.38	-0.71
46	0.06217	-0.21469	0.3720	22.92	-0.51
47	0.04605	-0.22155	0.3718	23.20	-0.29
48	0.03094	-0.22801	0.3701	22.91	0.31
49	0.01695	-0.23381	0.3638	22.00	1.05
50	0.00410	-0.23879	0.3529	20.11	2.39
51	-0.00739	-0.24264	0.3315	16.59	5.07
52	-0.01739	-0.24506	0.2924	9.25	12.46
53	-0.02575	-0.24541	0.1936	-6.58	33.00
54	-0.03207	-0.24327	0.0000	148.93	64.13
55	-0.03731	-0.23867	0.2280	122.06	67.22

56	-0.04028	-0.23095	0.3946	102.62	41.04
57	-0.04130	-0.22082	0.5133	89.84	21.89
58	-0.04007	-0.20834	0.5903	79.63	14.21
59	-0.03636	-0.19382	0.6321	72.31	8.53
60	-0.03012	-0.17731	0.6549	66.66	5.58
61	-0.02146	-0.15923	0.6644	62.46	3.66
62	-0.01068	-0.13999	0.6711	59.15	2.62
63	0.00141	-0.12059	0.6772	56.39	2.10
64	0.01498	-0.10114	0.6844	53.83	1.88
65	0.02926	-0.08246	0.6905	51.39	1.82
66	0.04392	-0.06487	0.6959	49.00	1.82
67	0.05867	-0.04857	0.7006	46.68	1.84
68	0.07336	-0.03361	0.7051	44.36	1.93
69	0.08785	-0.01999	0.7089	42.06	2.02
70	0.10211	-0.00763	0.7123	39.75	2.13
71	0.11611	0.00355	0.7151	37.46	2.23
72	0.12987	0.01366	0.7177	35.16	2.34
73	0.14339	0.02279	0.7197	32.89	2.43
74	0.15672	0.03105	0.7216	30.63	2.52
75	0.16987	0.03849	0.7230	28.38	2.59
76	0.18289	0.04520	0.7243	26.14	2.67
77	0.19578	0.05122	0.7253	23.92	2.73
78	0.20859	0.05660	0.7260	21.70	2.79
79	0.22132	0.06139	0.7265	19.48	2.84
80	0.23401	0.06561	0.7267	17.27	2.89
81	0.24667	0.06927	0.7266	15.05	2.94
82	0.25930	0.07241	0.7261	12.81	3.00
83	0.27193	0.07502	0.7249	10.56	3.04
84	0.28457	0.07712	0.7222	8.30	3.09
85	0.29723	0.07871	0.7206	6.02	3.12
86	0.30992	0.07979	0.7172	3.72	3.15
87	0.32266	0.08036	0.7127	1.42	3.16
88	0.33544	0.08042	0.7072	-0.90	3.17
89	0.34830	0.07996	0.7002	-3.22	3.14
90	0.36123	0.07897	0.6921	-5.52	3.10
91	0.37426	0.07745	0.6827	-7.77	3.00
92	0.38739	0.07539	0.6734	-10.05	2.99
93	0.40063	0.07277	0.6597	-12.36	2.99
94	0.41408	0.06958	0.6445	-14.26	2.40
95	0.42767	0.06589	0.6346	-16.08	2.26
96	0.44136	0.06169	0.6237	-18.05	2.40
97	0.45516	0.05694	0.6115	-19.89	2.20
98	0.46909	0.05166	0.5997	-21.65	2.06
99	0.48315	0.04583	0.5880	-23.32	1.92
100	0.49734	0.03948	0.5768	-24.93	1.80
101	0.51166	0.03258	0.5657	-26.46	1.68
102	0.52612	0.02515	0.5550	-27.93	1.58
103	0.54073	0.01717	0.5445	-29.33	1.47
104	0.55548	0.00865	0.5343	-30.67	1.37
105	0.57042	-0.00043	0.5242	-31.94	1.27
106	0.58554	-0.01009	0.5145	-33.14	1.17
107	0.60089	-0.02033	0.5049	-34.28	1.07
108	0.61648	-0.03117	0.4955	-35.34	0.98

109	0.63237	-0.04265	0.4863	-36.34	0.89
110	0.64858	-0.05479	0.4773	-37.27	0.80
111	0.66519	-0.06762	0.4684	-38.12	0.71
112	0.68223	-0.08119	0.4597	-38.90	0.62
113	0.69980	-0.09554	0.4512	-39.60	0.54
114	0.71794	-0.11072	0.4428	-40.22	0.46
115	0.73673	-0.12677	0.4346	-40.75	0.38
116	0.75625	-0.14371	0.4265	-41.19	0.30
117	0.77653	-0.16157	0.4185	-41.53	0.22
118	0.79758	-0.18030	0.4108	-41.75	0.14
119	0.81935	-0.19978	0.4035	-41.85	0.06
120	0.84169	-0.21979	0.3965	-41.83	-0.01
121	0.86430	-0.23998	0.3902	-41.68	-0.09
122	0.88671	-0.25985	0.3845	-41.42	-0.16
123	0.90826	-0.27874	0.3797	-41.04	-0.23
124	0.92817	-0.29594	0.3757	-40.59	-0.30
125	0.94561	-0.31076	0.3727	-40.09	-0.39
126	0.95985	-0.32263	0.3705	-39.56	-0.50
127	0.97040	-0.33127	0.3690	-39.03	-0.67
128	0.97704	-0.33661	0.3681	-38.53	-1.04
129	0.97985	-0.33884	0.3675	-38.05	-2.33
130	0.98001	-0.33896	0.3675	-37.93	-10.28

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BOUNDARY LAYER CORRECTION

PRESSURE SIDE

N	X	Y	EM	TH	SEP
54	-0.03207	-0.24327	0.00005		
53	-0.02575	-0.24541	0.19359		
52	-0.01739	-0.24506	0.29240		
51	-0.00739	-0.24264	0.33153		
50	0.00410	-0.23879	0.35287		
49	0.01695	-0.23381	0.36383		
48	0.03094	-0.22801	0.37009		
47	0.04605	-0.22155	0.37177		
46	0.06217	-0.21469	0.37200		
45	0.07925	-0.20755	0.37093		
44	0.09720	-0.20030	0.36877		
43	0.11602	-0.19303	0.36538		
42	0.13566	-0.18587	0.36134		
41	0.15616	-0.17893	0.35676		
40	0.17745	-0.17236	0.35218		
39	0.19954	-0.16626	0.34784		
38	0.22232	-0.16078	0.34420	0.00039	0.00009
37	0.24574	-0.15602	0.34125	0.00048	0.00016
36	0.26967	-0.15207	0.33904	0.00055	0.00013
35	0.29405	-0.14896	0.33737	0.00062	0.00011

34	0.31874	-0.14673	0.33620	0.00069	0.00009
33	0.34371	-0.14540	0.33532	0.00076	0.00007
32	0.36884	-0.14496	0.33467	0.00083	0.00006
31	0.39412	-0.14541	0.33421	0.00089	0.00004
30	0.41943	-0.14675	0.33399	0.00095	0.00003
29	0.44477	-0.14897	0.33371	0.00102	0.00002
28	0.47005	-0.15204	0.33362	0.00107	-0.00001
27	0.49526	-0.15598	0.33384	0.00113	-0.00004
26	0.52029	-0.16073	0.33428	0.00118	-0.00007
25	0.54514	-0.16628	0.33488	0.00123	-0.00010
24	0.56973	-0.17258	0.33563	0.00128	-0.00012
23	0.59406	-0.17959	0.33648	0.00132	-0.00014
22	0.61806	-0.18727	0.33744	0.00136	-0.00016
21	0.64173	-0.19557	0.33844	0.00140	-0.00017
20	0.66501	-0.20445	0.33950	0.00144	-0.00018
19	0.68790	-0.21386	0.34060	0.00148	-0.00020
18	0.71034	-0.22375	0.34178	0.00152	-0.00022
17	0.73233	-0.23408	0.34305	0.00155	-0.00025
16	0.75379	-0.24477	0.34444	0.00158	-0.00027
15	0.77473	-0.25578	0.34593	0.00161	-0.00030
14	0.79506	-0.26701	0.34756	0.00163	-0.00034
13	0.81475	-0.27840	0.34930	0.00165	-0.00038
12	0.83372	-0.28985	0.35118	0.00167	-0.00041
11	0.85193	-0.30127	0.35316	0.00169	-0.00045
10	0.86926	-0.31252	0.35523	0.00170	-0.00048
9	0.88564	-0.32349	0.35732	0.00171	-0.00051
8	0.90092	-0.33401	0.35941	0.00172	-0.00053
7	0.91496	-0.34392	0.36141	0.00172	-0.00055
6	0.92755	-0.35299	0.36326	0.00173	-0.00055
5	0.93848	-0.36100	0.36486	0.00173	-0.00054
4	0.94742	-0.36766	0.36612	0.00174	-0.00048
3	0.95405	-0.37267	0.36693	0.00174	-0.00038
2	0.95795	-0.37565	0.36730	0.00175	-0.00035
1	0.95885	-0.37635	0.36747	0.00175	-0.00035

SUCTION SIDE

N	X	Y	EM	TH	SEP
55	-0.03731	-0.23867	0.22803		
56	-0.04028	-0.23095	0.39462		
57	-0.04130	-0.22082	0.51333		
58	-0.04007	-0.20834	0.59030		
59	-0.03636	-0.19382	0.63212		
60	-0.03012	-0.17731	0.65493		
61	-0.02146	-0.15923	0.66440		
62	-0.01068	-0.13999	0.67114		
63	0.00141	-0.12059	0.67725		
64	0.01498	-0.10114	0.68442		
65	0.02926	-0.08246	0.69050		
66	0.04392	-0.06487	0.69593		

67	0.05867	-0.04857	0.70058		
68	0.07336	-0.03361	0.70511		
69	0.08785	-0.01999	0.70889		
70	0.10211	-0.00763	0.71234		
71	0.11611	0.00355	0.71514		
72	0.12987	0.01366	0.71769		
73	0.14339	0.02279	0.71973		
74	0.15672	0.03105	0.72158		
75	0.16987	0.03849	0.72303		
76	0.18289	0.04520	0.72432		
77	0.19578	0.05122	0.72525		
78	0.20859	0.05660	0.72602	0.00022	0.00007
79	0.22132	0.06139	0.72646	0.00026	-0.00001
80	0.23401	0.06561	0.72672	0.00030	-0.00000
81	0.24667	0.06927	0.72657	0.00033	0.00001
82	0.25930	0.07241	0.72605	0.00036	0.00003
83	0.27193	0.07502	0.72490	0.00040	0.00006
84	0.28457	0.07712	0.72317	0.00043	0.00010
85	0.29723	0.07871	0.72058	0.00046	0.00014
86	0.30992	0.07979	0.71720	0.00050	0.00020
87	0.32266	0.08036	0.71270	0.00053	0.00028
88	0.33544	0.08042	0.70717	0.00057	0.00037
89	0.34830	0.07996	0.70022	0.00062	0.00049
90	0.36123	0.07897	0.69213	0.00066	0.00061
91	0.37426	0.07745	0.68270	0.00072	0.00070
92	0.38739	0.07539	0.67345	0.00077	0.00095
93	0.40063	0.07277	0.65966	0.00084	0.00131
94	0.41408	0.06958	0.64450	0.00092	0.00122
95	0.42767	0.06589	0.63458	0.00099	0.00110
96	0.44136	0.06169	0.62367	0.00103	0.00132
97	0.45516	0.05694	0.61147	0.00115	0.00148
98	0.46909	0.05166	0.59968	0.00124	0.00156
99	0.48315	0.04583	0.58804	0.00134	0.00165
100	0.49734	0.03948	0.57679	0.00145	0.00173
101	0.51166	0.03258	0.56574	0.00156	0.00181
102	0.52612	0.02515	0.55502	0.00167	0.00190
103	0.54073	0.01717	0.54450	0.00180	0.00199
104	0.55548	0.00865	0.53427	0.00193	0.00208
105	0.57042	-0.00043	0.52424	0.00207	0.00217
106	0.58554	-0.01009	0.51445	0.00222	0.00226
107	0.60089	-0.02033	0.50486	0.00253	0.00235
108	0.61648	-0.03117	0.49548	0.00255	0.00245
109	0.63237	-0.04265	0.48627	0.00273	0.00254
110	0.64858	-0.05479	0.47726	0.00293	0.00263
111	0.66519	-0.06762	0.46840	0.00314	0.00272
112	0.68223	-0.08119	0.45973	0.00336	0.00281
113	0.69980	-0.09554	0.45119	0.00360	0.00290
114	0.71794	-0.11072	0.44281	0.00386	0.00299
115	0.73673	-0.12677	0.43456	0.00414	0.00307
116	0.75625	-0.14371	0.42647	0.00444	0.00315
117	0.77653	-0.16157	0.41853	0.00476	0.00322
118	0.79758	-0.18030	0.41084	0.00510	0.00326
119	0.81935	-0.19978	0.40346	0.00545	0.00327

120	0.84169	-0.21979	0.39654	0.00582	0.00323
121	0.86430	-0.23998	0.39016	0.00619	0.00315
122	0.88671	-0.25985	0.38451	0.00654	0.00302
123	0.90826	-0.27874	0.37966	0.00687	0.00285
124	0.92817	-0.29594	0.37572	0.00715	0.00265
125	0.94561	-0.31076	0.37268	0.00738	0.00244
126	0.95985	-0.32263	0.37048	0.00755	0.00227
127	0.97040	-0.33127	0.36898	0.00767	0.00222
128	0.97704	-0.33661	0.36805	0.00775	0.00273
129	0.97985	-0.33884	0.36754	0.00779	0.00294
130	0.98001	-0.33896	0.36747	0.00779	0.00294

BODY COORDINATES AFTER BOUNDARY LAYER SUBTRACTION

METAL COORDINATES IN INCHES

THE CHORD IS   1.000 INCHES

THE GAP IS   0.574 INCHES

N	XV	YV
1	0.93393	-0.36409
2	0.93304	-0.36340
3	0.92924	-0.36049
4	0.92278	-0.35562
5	0.91406	-0.34914
6	0.90342	-0.34134
7	0.89115	-0.33251
8	0.87748	-0.32286
9	0.86259	-0.31262
10	0.84664	-0.30194
11	0.82975	-0.29098
12	0.81200	-0.27986
13	0.79351	-0.26872
14	0.77431	-0.25763
15	0.75449	-0.24671
16	0.73407	-0.23601
17	0.71314	-0.22562
18	0.69169	-0.21559
19	0.66980	-0.20599
20	0.64747	-0.19686
21	0.62477	-0.18825
22	0.60168	-0.18020
23	0.57828	-0.17277
24	0.55455	-0.16598
25	0.53056	-0.15990
26	0.50633	-0.15455
27	0.48191	-0.14998

28	0.45734	-0.14621
29	0.43269	-0.14329
30	0.40799	-0.14121
31	0.38332	-0.13999
32	0.35869	-0.13963
33	0.33420	-0.14014
34	0.30988	-0.14153
35	0.28584	-0.14379
36	0.26210	-0.14691
37	0.23882	-0.15087
38	0.21606	-0.15575
39	0.19405	-0.16168
40	0.17257	-0.16761
41	0.15186	-0.17401
42	0.13193	-0.18076
43	0.11283	-0.18771
44	0.09452	-0.19479
45	0.07707	-0.20184
46	0.06045	-0.20877
47	0.04478	-0.21545
48	0.03009	-0.22173
49	0.01648	-0.22737
50	0.00399	-0.23221
51	-0.00719	-0.23596
52	-0.01691	-0.23831
53	-0.02505	-0.23865
54	-0.03118	-0.23657
55	-0.03628	-0.23210
56	-0.03917	-0.22459
57	-0.04017	-0.21474
58	-0.03896	-0.20261
59	-0.03536	-0.18849
60	-0.02929	-0.17243
61	-0.02087	-0.15485
62	-0.01038	-0.13614
63	0.00137	-0.11727
64	0.01457	-0.09835
65	0.02845	-0.08019
66	0.04271	-0.06308
67	0.05706	-0.04723
68	0.07134	-0.03268
69	0.08543	-0.01944
70	0.09930	-0.00742
71	0.11291	0.00345
72	0.12629	0.01328
73	0.13945	0.02217
74	0.15241	0.03019
75	0.16520	0.03743
76	0.17785	0.04395
77	0.19039	0.04981
78	0.20299	0.05468
79	0.21540	0.05921
80	0.22774	0.06325

81	0.24004	0.06676
82	0.25231	0.06975
83	0.26458	0.07224
84	0.27685	0.07422
85	0.28914	0.07571
86	0.30145	0.07670
87	0.31380	0.07719
88	0.32619	0.07717
89	0.33864	0.07664
90	0.35117	0.07559
91	0.36378	0.07403
92	0.37647	0.07192
93	0.38926	0.06923
94	0.40225	0.06601
95	0.41539	0.06231
96	0.42859	0.05810
97	0.44189	0.05335
98	0.45531	0.04807
99	0.46885	0.04226
100	0.48250	0.03592
101	0.49627	0.02906
102	0.51016	0.02167
103	0.52417	0.01374
104	0.53832	0.00527
105	0.55263	-0.00376
106	0.56711	-0.01335
107	0.58178	-0.02353
108	0.59667	-0.03431
109	0.61183	-0.04572
110	0.62729	-0.05779
111	0.64310	-0.07056
112	0.65932	-0.08407
113	0.67601	-0.09837
114	0.69323	-0.11351
115	0.71106	-0.12953
116	0.72955	-0.14646
117	0.74877	-0.16433
118	0.76871	-0.18307
119	0.78936	-0.20257
120	0.81057	-0.22261
121	0.83209	-0.24282
122	0.85349	-0.26267
123	0.87416	-0.28151
124	0.89334	-0.29862
125	0.91022	-0.31331
126	0.92408	-0.32506
127	0.93440	-0.33360
128	0.94095	-0.33889
129	0.94379	-0.34113
130	0.94396	-0.34126

THICK/CHORD AT TE   0.024,   DEV = -0.006

M
.700

.525

.350

.175

.000
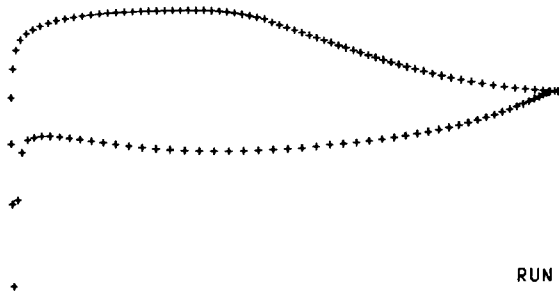
RUN	3019
MIN	0.352
ANIN	44.89
MEX	0.389
ANEX	-45.61
TURN	90.50
SOLD	1.89
THCR	0.196
THTE	0.026
DTE	-0.001
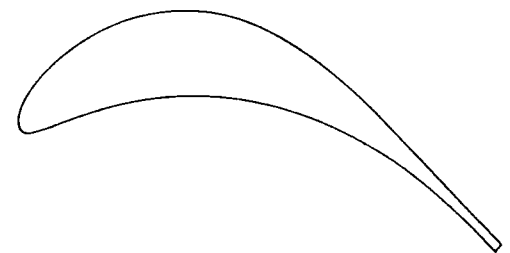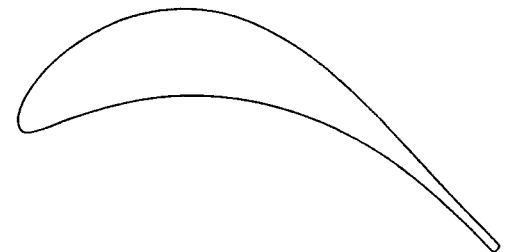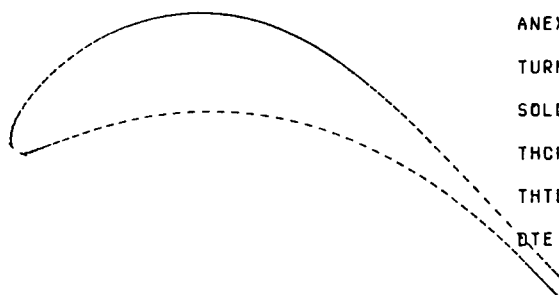
CASE 11. - AWT TURNING VANES. (REF. 4.)

11. AWT3019

```
&DATA
NRN= 3019
R= 1.520
RA= 1.0
ANA= 0.0
RB= 1.0
ANB= -180.0
EMB= 0.4020
THB= 14.30
NI= 3
NF= 128
GRID= 0.60D-01
GRIDS= 0.30D-01
IRICHD= 1
IRICHS= 1
RELAX= 0.80
RELAQ= 0.80
CONE= 0.50
CTWO= 1.0
CTHR= -1.0
RN= 1000000.0
TRU= 0.20
TRL= 0.0
RTHO= 320.0
IGRPH= 1
ISVPLT= 1
CHDU= 4.20
&END
1
```

CARD	S-INPUT	Q-INPUT
1	-0.367000	-0.950000
2	-0.160000	-0.812000
3	0.090000	-0.721000
4	0.271800	-0.684000
5	0.430000	-0.672000
6	0.598000	-0.691000
7	0.755000	-0.742000
8	0.790000	-0.752000
9	0.815000	-0.758000
10	0.842000	-0.752000
11	0.855000	-0.740000
12	0.862000	-0.720000

13	0.871000	-0.650000
14	0.885000	0.000000
15	0.915300	0.881000
16	0.942700	1.126000
17	0.967300	1.207000
18	1.003000	1.256000
19	1.037600	1.283000
20	1.062700	1.301000
21	1.102600	1.318000
22	1.147397	1.332000
23	1.280000	1.352000
24	1.360000	1.355000
25	1.500200	1.337000
26	1.619800	1.259000
27	2.014800	1.035100
28	2.385000	0.950000

ITER	MIN	ANIN	TURN	GAP	RESID
1	0.35	44.92	89.60	0.55	0.1502D 00
2	0.35	44.90	90.25	0.55	0.2997D-01
3	0.35	44.89	90.50	0.69	0.5950D-02

1

INVISCID COMPUTATION

INLET MACH NUMBER = 0.352   INLET FLOW ANGLE =   44.89

EXIT MACH NUMBER = 0.389   EXIT FLOW ANGLE = -45.61

TURNING = 90.500

GAP = 0.693   CHORD = 1.307   AXIAL CHORD = 1.261

GAP/CHORD = 0.530   SOLIDITY = 1.886   AXIAL SOLIDITY = 1.819

THICK/CHORD = 0.196,   DX = 0.0227; DY = 0.0246

THICK/CHORD AT TE = 0.026,   DEV = -0.001

N	X	Y	MACH	ANGL	CURVATURE
1	1.13406	-0.63968	0.3811	-45.85	0.00
2	1.13406	-0.63968	0.3811	-45.85	0.00
3	1.13129	-0.63681	0.3801	-45.96	0.47
4	1.12596	-0.63130	0.3779	-46.07	0.25
5	1.11847	-0.62351	0.3749	-46.13	0.09
6	1.10913	-0.61379	0.3710	-46.11	-0.03
7	1.09819	-0.60244	0.3666	-45.99	-0.13
8	1.08584	-0.58970	0.3618	-45.76	-0.22
9	1.07222	-0.57580	0.3567	-45.43	-0.30
10	1.05745	-0.56092	0.3514	-44.97	-0.38
11	1.04160	-0.54524	0.3460	-44.40	-0.45
12	1.02472	-0.52890	0.3405	-43.71	-0.51
13	1.00685	-0.51205	0.3351	-42.90	-0.57
14	0.98800	-0.49481	0.3298	-41.97	-0.63
15	0.96819	-0.47731	0.3247	-40.94	-0.69
16	0.94743	-0.45966	0.3197	-39.79	-0.73
17	0.92573	-0.44198	0.3150	-38.55	-0.78
18	0.90309	-0.42436	0.3105	-37.21	-0.81
19	0.87952	-0.40692	0.3063	-35.78	-0.85
20	0.85503	-0.38975	0.3023	-34.28	-0.88
21	0.82964	-0.37295	0.2985	-32.69	-0.91
22	0.80335	-0.35661	0.2949	-31.04	-0.93
23	0.77619	-0.34081	0.2915	-29.32	-0.96
24	0.74817	-0.32565	0.2883	-27.53	-0.98
25	0.71932	-0.31120	0.2853	-25.66	-1.01
26	0.68966	-0.29756	0.2824	-23.70	-1.05
27	0.65924	-0.28486	0.2803	-21.65	-1.09
28	0.62820	-0.27313	0.2785	-19.79	-0.98
29	0.59650	-0.26231	0.2752	-17.83	-1.02
30	0.56405	-0.25259	0.2726	-15.50	-1.20
31	0.53104	-0.24415	0.2711	-13.20	-1.17
32	0.49758	-0.23701	0.2697	-10.89	-1.18
33	0.46377	-0.23122	0.2687	-8.54	-1.20
34	0.42972	-0.22682	0.2680	-6.17	-1.21
35	0.39556	-0.22385	0.2677	-3.77	-1.22
36	0.36142	-0.22232	0.2678	-1.36	-1.23
37	0.32745	-0.22222	0.2684	1.05	-1.24
38	0.29380	-0.22354	0.2694	3.45	-1.24
39	0.26065	-0.22623	0.2711	5.80	-1.24
40	0.22814	-0.23019	0.2734	8.09	-1.22
41	0.19646	-0.23531	0.2763	10.24	-1.17
42	0.16574	-0.24142	0.2797	12.22	-1.10
43	0.13611	-0.24832	0.2834	13.99	-1.01
44	0.10765	-0.25583	0.2871	15.52	-0.91
45	0.08043	-0.26373	0.2905	16.82	-0.80
46	0.05450	-0.27184	0.2937	17.88	-0.68
47	0.02997	-0.27995	0.2962	18.69	-0.55
48	0.00694	-0.28787	0.2989	19.18	-0.35

49	-0.01441	-0.29529	0.3007	19.06	0.10
50	-0.03395	-0.30192	0.3010	18.20	0.73
51	-0.05146	-0.30737	0.2983	16.19	1.91
52	-0.06667	-0.31129	0.2936	11.85	4.82
53	-0.07917	-0.31287	0.2683	0.57	15.63
54	-0.08930	-0.31130	0.1725	-20.36	35.62
55	-0.09689	-0.30580	0.0000	132.34	50.85
56	-0.10171	-0.29807	0.1642	109.62	43.53
57	-0.10419	-0.28607	0.2855	95.12	20.65
58	-0.10388	-0.27152	0.3786	82.98	14.55
59	-0.10023	-0.25474	0.4380	73.15	10.00
60	-0.09314	-0.23620	0.4754	65.42	6.80
61	-0.08270	-0.21642	0.4956	59.33	4.75
62	-0.06932	-0.19595	0.5080	54.56	3.41
63	-0.05359	-0.17543	0.5160	50.63	2.65
64	-0.03681	-0.15559	0.5232	47.24	2.28
65	-0.01825	-0.13661	0.5295	44.06	2.09
66	0.00099	-0.11895	0.5343	41.05	2.01
67	0.02060	-0.10272	0.5376	38.21	1.94
68	0.04032	-0.08793	0.5406	35.52	1.91
69	0.06000	-0.07455	0.5431	32.90	1.92
70	0.07956	-0.06250	0.5453	30.35	1.94
71	0.09893	-0.05172	0.5470	27.85	1.96
72	0.11813	-0.04209	0.5484	25.42	1.98
73	0.13715	-0.03354	0.5494	23.03	2.00
74	0.15599	-0.02597	0.5503	20.68	2.01
75	0.17469	-0.01934	0.5509	18.38	2.03
76	0.19326	-0.01358	0.5514	16.10	2.04
77	0.21171	-0.00864	0.5518	13.86	2.05
78	0.23007	-0.00449	0.5521	11.64	2.06
79	0.24833	-0.00109	0.5523	9.43	2.07
80	0.26651	0.00157	0.5525	7.23	2.08
81	0.28461	0.00352	0.5526	5.04	2.10
82	0.30263	0.00476	0.5527	2.85	2.12
83	0.32057	0.00531	0.5526	0.65	2.14
84	0.33844	0.00516	0.5522	-1.56	2.16
85	0.35622	0.00434	0.5516	-3.78	2.17
86	0.37392	0.00282	0.5505	-6.00	2.18
87	0.39154	0.00062	0.5489	-8.22	2.18
88	0.40908	-0.00226	0.5468	-10.43	2.17
89	0.42654	-0.00582	0.5441	-12.63	2.15
90	0.44393	-0.01006	0.5406	-14.77	2.09
91	0.46125	-0.01497	0.5374	-16.86	2.02
92	0.47846	-0.02055	0,5336	-19.06	2.12
93	0.49562	-0.02683	0.5269	-21.13	1.98
94	0.51278	-0.03378	0.5208	-22.94	1.71
95	0.52990	-0.04135	0.5157	-24.75	1.69
96	0.54696	-0.04954	0.5101	-26.50	1.61
97	0.56399	-0.05834	0.5047	-28.16	1.52
98	0.58098	-0.06775	0.4992	-29.76	1.43
99	0.59794	-0.07775	0.4939	-31.28	1.35
100	0.61486	-0.08833	0.4886	-32.74	1.27
101	0.63177	-0.09950	0.4834	-34.13	1.20

102	0.64869	-0.11125	0.4783	-35.45	1.12
103	0.66562	-0.12359	0.4732	-36.70	1.04
104	0.68260	-0.13652	0.4681	-37.88	0.97
105	0.69965	-0.15006	0.4632	-39.00	0.89
106	0.71681	-0.16422	0.4582	-40.04	0.82
107	0.73413	-0.17903	0.4533	-41.02	0.75
108	0.75165	-0.19453	0.4485	-41.93	0.68
109	0.76944	-0.21074	0.4437	-42.77	0.61
110	0.78756	-0.22774	0.4389	-43.54	0.54
111	0.80609	-0.24556	0.4341	-44.24	0.48
112	0.82512	-0.26430	0.4294	-44.87	0.41
113	0.84473	-0.28402	0.4247	-45.42	0.35
114	0.86504	-0.30480	0.4201	-45.91	0.29
115	0.88612	-0.32673	0.4155	-46.32	0.24
116	0.90807	-0.34985	0.4111	-46.65	0.18
117	0.93093	-0.37418	0.4067	-46.90	0.13
118	0.95470	-0.39967	0.4025	-47.08	0.09
119	0.97928	-0.42615	0.3985	-47.17	0.04
120	1.00444	-0.45330	0.3949	-47.18	0.01
121	1.02979	-0.48063	0.3916	-47.12	-0.03
122	1.05470	-0.50741	0.3888	-47.00	-0.06
123	1.07843	-0.53278	0.3864	-46.83	-0.08
124	1.10009	-0.55580	0.3847	-46.64	-0.11
125	1.11887	-0.57562	0.3833	-46.44	-0.13
126	1.13412	-0.59160	0.3824	-46.24	-0.15
127	1.14548	-0.60343	0.3818	-46.07	-0.18
128	1.15289	-0.61110	0.3815	-45.93	-0.23
129	1.15652	-0.61485	0.3813	-45.84	-0.29
130	1.15674	-0.61507	0.3811	-45.85	0.80

1

BOUNDARY LAYER CORRECTION

PRESSURE SIDE

N	X	Y	EM	TH	SEP
55	-0.09689	-0.30580	0.00004		
54	-0.08930	-0.31130	0.17253		
53	-0.07917	-0.31287	0.26829		
52	-0.06667	-0.31129	0.29356		
51	-0.05146	-0.30737	0.29835		
50	-0.03395	-0.30192	0.30105		
49	-0.01441	-0.29529	0.30068		
48	0.00694	-0.28787	0.29892	0.00039	0.00009
47	0.02997	-0.27995	0.29625	0.00047	0.00018
46	0.05450	-0.27184	0.29371	0.00056	0.00022
45	0.08043	-0.26373	0.29053	0.00065	0.00028
44	0.10765	-0.25583	0.28711	0.00074	0.00034
43	0.13611	-0.24832	0.28335	0.00085	0.00039

42	0.16574	-0.24142	0.27971	0.00095	0.00041
41	0.19646	-0.23531	0.27625	0.00106	0.00039
40	0.22814	-0.23019	0.27338	0.00117	0.00035
39	0.26065	-0.22623	0.27108	0.00127	0.00028
38	0.29380	-0.22354	0.26945	0.00136	0.00021
37	0.32745	-0.22222	0.26836	0.00145	0.00013
36	0.36142	-0.22232	0.26782	0.00153	0.00005
35	0.39556	-0.22385	0.26771	0.00160	-0.00002
34	0.42972	-0.22682	0.26801	0.00166	-0.00009
33	0.46377	-0.23122	0.26868	0.00172	-0.00016
32	0.49758	-0.23701	0.26970	0.00177	-0.00023
31	0.53104	-0.24415	0.27109	0.00181	-0.00028
30	0.56405	-0.25259	0.27259	0.00185	-0.00040
29	0.59650	-0.26231	0.27519	0.00186	-0.00059
28	0.62820	-0.27313	0.27855	0.00186	-0.00051
27	0.65924	-0.28486	0.28032	0.00189	-0.00039
26	0.68966	-0.29756	0.28240	0.00192	-0.00051
25	0.71932	-0.31120	0.28530	0.00193	-0.00061
24	0.74817	-0.32565	0.28832	0.00193	-0.00064
23	0.77619	-0.34081	0.29155	0.00193	-0.00068
22	0.80335	-0.35661	0.29492	0.00193	-0.00071
21	0.82964	-0.37295	0.29849	0.00192	-0.00076
20	0.85503	-0.38975	0.30227	0.00191	-0.00080
19	0.87952	-0.40692	0.30628	0.00190	-0.00084
18	0.90309	-0.42436	0.31053	0.00188	-0.00089
17	0.92573	-0.44198	0.31501	0.00186	-0.00093
16	0.94743	-0.45966	0.31973	0.00183	-0.00098
15	0.96819	-0.47731	0.32468	0.00181	-0.00102
14	0.98800	-0.49481	0.32982	0.00178	-0.00105
13	1.00685	-0.51205	0.33512	0.00175	-0.00108
12	1.02472	-0.52890	0.34052	0.00172	-0.00110
11	1.04160	-0.54524	0.34597	0.00169	-0.00112
10	1.05745	-0.56092	0.35139	0.00166	-0.00114
9	1.07222	-0.57580	0.35671	0.00163	-0.00114
8	1.08584	-0.58970	0.36183	0.00161	-0.00115
7	1.09819	-0.60244	0.36665	0.00158	-0.00115
6	1.10913	-0.61379	0.37104	0.00156	-0.00115
5	1.11847	-0.62351	0.37486	0.00155	-0.00114
4	1.12596	-0.63130	0.37794	0.00153	-0.00111
3	1.13129	-0.63681	0.38009	0.00153	-0.00105
2	1.13406	-0.63968	0.38113	0.00152	-0.00102
1	1.13406	-0.63968	0.38113	0.00152	-0.00102

SUCTION SIDE

N	X	Y	EM	TH	SEP
56	-0.10171	-0.29807	0.16422		
57	-0.10419	-0.28607	0.28547		
58	-0.10388	-0.27152	0.37857		
59	-0.10023	-0.25474	0.43797		

60	-0.09314	-0.23620	0.47539		
61	-0.08270	-0.21642	0.49559		
62	-0.06932	-0.19595	0.50804		
63	-0.05359	-0.17543	0.51600		
64	-0.03681	-0.15559	0.52325		
65	-0.01825	-0.13661	0.52946		
66	0.00099	-0.11895	0.53428		
67	0.02060	-0.10272	0.53757		
68	0.04032	-0.08793	0.54064		
69	0.06000	-0.07455	0.54315		
70	0.07956	-0.06250	0.54535		
71	0.09893	-0.05172	0.54699		
72	0.11813	-0.04209	0.54840		
73	0.13715	-0.03354	0.54941		
74	0.15599	-0.02597	0.55029		
75	0.17469	-0.01934	0.55089		
76	0.19326	-0.01358	0.55143		
77	0.21171	-0.00864	0.55178	0.00023	0.00008
78	0.23007	-0.00449	0.55211	0.00029	-0.00001
79	0.24833	-0.00109	0.55232	0.00034	-0.00001
80	0.26651	0.00157	0.55253	0.00038	-0.00001
81	0.28461	0.00352	0.55265	0.00043	-0.00000
82	0.30263	0.00476	0.55272	0.00047	0.00000
83	0.32057	0.00531	0.55259	0.00051	0.00001
84	0.33844	0.00516	0.55225	0.00056	0.00003
85	0.35622	0.00434	0.55157	0.00060	0.00005
86	0.37392	0.00282	0.55050	0.00064	0.00008
87	0.39154	0.00062	0.54895	0.00068	0.00013
88	0.40908	-0.00226	0.54681	0.00073	0.00018
89	0.42654	-0.00582	0.54408	0.00078	0.00024
90	0.44393	-0.01006	0.54062	0.00083	0.00028
91	0.46125	-0.01497	0.53742	0.00088	0.00031
92	0.47846	-0.02055	0.53362	0.00093	0.00050
93	0.49562	-0.02683	0.52685	0.00100	0.00065
94	0.51278	-0.03378	0.52081	0.00107	0.00060
95	0.52990	-0.04135	0.51572	0.00114	0.00061
96	0.54696	-0.04954	0.51014	0.00121	0.00067
97	0.56399	-0.05834	0.50468	0.00128	0.00070
98	0.58098	-0.06775	0.49925	0.00136	0.00073
99	0.59794	-0.07775	0.49391	0.00144	0.00076
100	0.61486	-0.08833	0.48863	0.00152	0.00079
101	0.63177	-0.09950	0.48343	0.00160	0.00082
102	0.64869	-0.11125	0.47828	0.00169	0.00085
103	0.66562	-0.12359	0.47318	0.00178	0.00088
104	0.68260	-0.13652	0.46815	0.00187	0.00091
105	0.69965	-0.15006	0.46316	0.00197	0.00094
106	0.71681	-0.16422	0.45822	0.00207	0.00097
107	0.73413	-0.17903	0.45332	0.00217	0.00099
108	0.75165	-0.19453	0.44847	0.00228	0.00102
109	0.76944	-0.21074	0.44365	0.00239	0.00104
110	0.78756	-0.22774	0.43888	0.00251	0.00106
111	0.80609	-0.24556	0.43413	0.00263	0.00108
112	0.82512	-0.26430	0.42942	0.00276	0.00109

113	0.84473	-0.28402	0.42474	0.00290	0.00110
114	0.86504	-0.30480	0.42012	0.00304	0.00111
115	0.88612	-0.32673	0.41554	0.00318	0.00110
116	0.90807	-0.34985	0.41106	0.00334	0.00109
117	0.93093	-0.37418	0.40669	0.00350	0.00107
118	0.95470	-0.39967	0.40249	0.00366	0.00104
119	0.97928	-0.42615	0.39852	0.00382	0.00099
120	1.00444	-0.45330	0.39486	0.00398	0.00093
121	1.02979	-0.48063	0.39158	0.00414	0.00086
122	1.05470	-0.50741	0.38877	0.00428	0.00078
123	1.07843	-0.53278	0.38645	0.00441	0.00069
124	1.10009	-0.55580	0.38465	0.00451	0.00060
125	1.11887	-0.57562	0.38333	0.00460	0.00052
126	1.13412	-0.59160	0.38243	0.00466	0.00045
127	1.14548	-0.60343	0.38184	0.00470	0.00040
128	1.15289	-0.61110	0.38150	0.00473	0.00036
129	1.15652	-0.61485	0.38135	0.00474	0.00035
130	1.15674	-0.61507	0.38113	0.00474	0.00035

BODY COORDINATES AFTER BOUNDARY LAYER SUBTRACTION

METAL COORDINATES IN INCHES

THE CHORD IS   4.200 INCHES

THE GAP IS   2.227 INCHES

N	XV	YV
1	3.64853	-2.05078
2	3.64857	-2.05078
3	3.63963	-2.04159
4	3.62255	-2.02387
5	3.59851	-1.99883
6	3.56852	-1.96757
7	3.53340	-1.93103
8	3.49376	-1.89001
9	3.45006	-1.84524
10	3.40265	-1.79732
11	3.35175	-1.74679
12	3.29755	-1.69415
13	3.24014	-1.63983
14	3.17959	-1.58426
15	3.11594	-1.52782
16	3.04921	-1.47091
17	2.97943	-1.41387
18	2.90661	-1.35706
19	2.83079	-1.30081
20	2.75198	-1.24544

21	2.67024	-1.19125
22	2.58560	-1.13855
23	2.49814	-1.08762
24	2.40790	-1.03873
25	2.31497	-0.99217
26	2.21941	-0.94822
27	2.12137	-0.90729
28	2.02133	-0.86957
29	1.91918	-0.83479
30	1.81462	-0.80341
31	1.70821	-0.77622
32	1.60034	-0.75331
33	1.49135	-0.73477
34	1.38159	-0.72076
35	1.27149	-0.71138
36	1.16147	-0.70668
37	1.05201	-0.70666
38	0.94360	-0.71123
39	0.83680	-0.72024
40	0.73215	-0.73342
41	0.63021	-0.75036
42	0.53142	-0.77052
43	0.43619	-0.79325
44	0.34475	-0.81789
45	0.25732	-0.84375
46	0.17409	-0.87026
47	0.09536	-0.89678
48	0.02163	-0.92307
49	-0.04629	-0.94881
50	-0.10908	-0.97008
51	-0.16534	-0.98762
52	-0.21422	-1.00021
53	-0.25437	-1.00529
54	-0.28694	-1.00025
55	-0.31130	-0.98257
56	-0.32681	-0.95773
57	-0.33478	-0.91918
58	-0.33379	-0.87241
59	-0.32204	-0.81849
60	-0.29926	-0.75893
61	-0.26571	-0.69536
62	-0.22274	-0.62959
63	-0.17219	-0.56368
64	-0.11826	-0.49991
65	-0.05864	-0.43895
66	0.00318	-0.38220
67	0.06617	-0.33005
68	0.12956	-0.28251
69	0.19280	-0.23952
70	0.25562	-0.20083
71	0.31789	-0.16617
72	0.37957	-0.13524
73	0.44066	-0.10775
74	0.50122	-0.08346
75	0.56130	-0.06215
76	0.62096	-0.04363
77	0.68056	-0.02900
78	0.73959	-0.01622
79	0.79824	-0.00555
80	0.85660	0.00279
81	0.91469	0.00882
82	0.97251	0.01261
83	1.03006	0.01416
84	1.08735	0.01350
85	1.14435	0.01063
86	1.20108	0.00556
87	1.25752	-0.00172
88	1.31369	-0.01119
89	1.36959	-0.02286
90	1.42524	-0.03670
91	1.48064	-0.05268
92	1.53565	-0.07089
93	1.59047	-0.09137
94	1.64530	-0.11397
95	1.69997	-0.13855
96	1.75448	-0.16513
97	1.80883	-0.19367
98	1.86305	-0.22415
99	1.91714	-0.25652
100	1.97113	-0.29078
101	2.02506	-0.32692
102	2.07897	-0.36493
103	2.13293	-0.40483
104	2.18702	-0.44665
105	2.24134	-0.49041
106	2.29600	-0.53620
107	2.35113	-0.58408
108	2.40692	-0.63416
109	2.46354	-0.68658
110	2.52121	-0.74152
111	2.58018	-0.79916
112	2.64072	-0.85973
113	2.70314	-0.92349
114	2.76775	-0.99069
115	2.83486	-1.06158
116	2.90473	-1.13633
117	2.97755	-1.21499
118	3.05331	-1.29738
119	3.13172	-1.38296
120	3.21205	-1.47070
121	3.29302	-1.55894
122	3.37273	-1.64540
123	3.44869	-1.72724
124	3.51813	-1.80147
125	3.57838	-1.86534
126	3.62735	-1.91684

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127    3.66387    -1.95494
128    3.68770    -1.97962
129    3.69942    -1.99167
130    3.70011    -1.99237
```

DXV = 0.0161;   DYV = 0.0182

THICK/CHORD AT TE   0.018,   DEV = -0.001
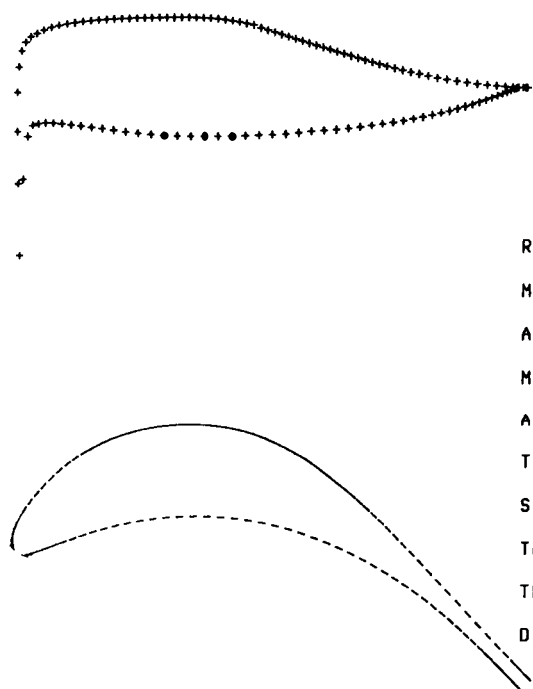
RUN	4005
MIN	0.265
ANIN	45.54
MEX	0.290
ANEX	-46.03
TURN	91.57
SOLD	1.92
THCR	0.198
THTE	0.026
DTE	-0.000
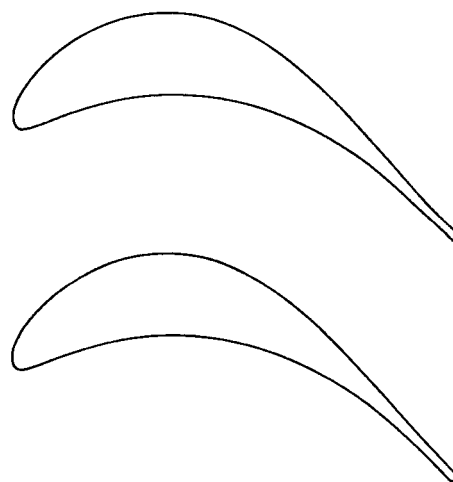
CASE 12. - AWT TURNING VANES. (REF. 4.)

12. AWT4005

```
&DATA
NRN= 4005
R= 1.5220
EMACH= 0.30
THETA= 14.20
NI= 3
NF= 128
GRID= 0.60D-01
GRIDS= 0.30D-01
IRICHD= 1
IRICHS= 1
RN= 1000000.0
TRU= 0.20
TRL= 0.0
RTHO= 320.0
IGRPH= 1
ISVPLT= 1
CHDU= 4.20
&END
1
```

CARD	S-INPUT	Q-INPUT
1	-0.362000	-0.950000
2	-0.160000	-0.824000
3	0.090000	-0.733000
4	0.271800	-0.696000
5	0.430000	-0.684000
6	0.598000	-0.700000
7	0.755000	-0.751000
8	0.790000	-0.760000
9	0.815000	-0.766000
10	0.842000	-0.760000
11	0.855000	-0.748000
12	0.862000	-0.728000
13	0.871000	-0.658000
14	0.885000	0.000000
15	0.915300	0.881000
16	0.942700	1.126000
17	0.967300	1.207000
18	1.003000	1.256000
19	1.037600	1.283000
20	1.062700	1.301000
21	1.102600	1.318000

22	1.147397	1.332000
23	1.280000	1.352000
24	1.360000	1.355000
25	1.500200	1.337000
26	1.619800	1.262000
27	2.014800	1.037100
28	2.388000	0.950000

ITER	MIN	ANIN	TURN	GAP	RESID
1	0.26	45.56	90.70	0.54	0.1756D 00
2	0.26	45.54	91.35	0.54	0.3509D-01
3	0.27	45.54	91.57	0.64	0.7006D-02

1

INVISCID   COMPUTATION

INLET MACH NUMBER = 0.265   INLET FLOW ANGLE =   45.54

EXIT MACH NUMBER = 0.290   EXIT FLOW ANGLE = -46.03

TURNING =   91.572

GAP = 0.635   CHORD = 1.218   AXIAL CHORD = 1.173

GAP/CHORD = 0.522   SOLIDITY = 1.917   AXIAL SOLIDITY = 1.847

THICK/CHORD = 0.198,   DX = 0.0224; DY = 0.0216

THICK/CHORD AT TE = 0.026,   DEV = -0.000

N	X	Y	MACH	ANGL	CURVATURE
1	1.05206	-0.59919	0.2847	-46.22	0.00
2	1.05164	-0.59876	0.2845	-46.23	0.09
3	1.04881	-0.59579	0.2837	-46.31	0.34
4	1.04363	-0.59036	0.2822	-46.38	0.17

5	1.03645	-0.58282	0.2800	-46.40	0.03
6	1.02756	-0.57350	0.2773	-46.34	-0.08
7	1.01720	-0.56267	0.2743	-46.19	-0.18
8	1.00554	-0.55057	0.2710	-45.93	-0.27
9	0.99272	-0.53741	0.2674	-45.56	-0.35
10	0.97884	-0.52337	0.2638	-45.08	-0.42
11	0.96397	-0.50861	0.2601	-44.49	-0.49
12	0.94816	-0.49326	0.2563	-43.78	-0.56
13	0.93144	-0.47747	0.2525	-42.96	-0.62
14	0.91384	-0.46134	0.2489	-42.03	-0.68
15	0.89536	-0.44498	0.2453	-40.99	-0.73
16	0.87602	-0.42851	0.2418	-39.85	-0.78
17	0.85583	-0.41201	0.2384	-38.61	-0.83
18	0.83477	-0.39560	0.2352	-37.28	-0.87
19	0.81288	-0.37935	0.2322	-35.86	-0.91
20	0.79014	-0.36336	0.2293	-34.35	-0.94
21	0.76656	-0.34772	0.2265	-32.77	-0.98
22	0.74217	-0.33251	0.2239	-31.11	-1.01
23	0.71697	-0.31782	0.2214	-29.38	-1.04
24	0.69097	-0.30372	0.2190	-27.57	-1.07
25	0.66420	-0.29029	0.2167	-25.68	-1.10
26	0.63668	-0.27764	0.2146	-23.69	-1.15
27	0.60845	-0.26587	0.2132	-21.59	-1.20
28	0.57967	-0.25503	0.2120	-19.75	-1.05
29	0.55030	-0.24502	0.2095	-17.78	-1.10
30	0.52023	-0.23605	0.2076	-15.42	-1.32
31	0.48965	-0.22828	0.2066	-13.11	-1.28
32	0.45868	-0.22172	0.2056	-10.80	-1.27
33	0.42739	-0.21641	0.2050	-8.46	-1.29
34	0.39590	0.21239	0.2045	-6.10	-1.30
35	0.36431	-0.20967	0.2042	-3.72	-1.31
36	0.33272	-0.20828	0.2042	-1.32	-1.33
37	0.30127	-0.20822	0.2044	1.10	-1.34
38	0.27010	-0.20948	0.2051	3.53	-1.36
39	0.23935	-0.21202	0.2062	5.93	-1.36
40	0.20920	-0.21578	0.2078	8.27	-1.34
41	0.17982	-0.22063	0.2100	10.48	-1.30
42	0.15134	-0.22643	0.2126	12.51	-1.22
43	0.12389	-0.23298	0.2154	14.30	-1.11
44	0.09753	-0.24009	0.2183	15.84	-0.99
45	0.07232	-0.24755	0.2208	17.13	-0.86
46	0.04832	-0.25521	0.2231	18.19	-0.73
47	0.02559	-0.26286	0.2249	19.02	-0.60
48	0.00426	-0.27034	0.2268	19.55	-0.41
49	-0.01551	-0.27737	0.2282	19.47	0.07
50	-0.03359	-0.28365	0.2286	18.64	0.76
51	-0.04978	-0.28883	0.2269	16.65	2.04
52	-0.06378	-0.29255	0.2243	12.20	5.36
53	-0.07528	-0.29403	0.2053	0.41	17.75
54	-0.08456	-0.29253	0.1313	-20.85	39.49
55	-0.09175	-0.28728	0.0000	132.31	52.62
56	-0.09635	-0.27994	0.1234	110.25	44.45
57	-0.09883	-0.26879	0.2135	96.13	21.58

58	-0.09881	-0.25512	0.2815	84.30	15.10
59	-0.09577	-0.23929	0.3254	74.59	10.51
60	-0.08954	-0.22173	0.3531	66.78	7.32
61	-0.08018	-0.20295	0.3681	60.59	5.15
62	-0.06804	-0.18349	0.3773	55.70	3.72
63	-0.05365	-0.16398	0.3833	51.68	2.90
64	-0.03804	-0.14528	0.3887	48.20	2.49
65	-0.02092	-0.12721	0.3932	44.94	2.28
66	-0.00311	-0.11038	0.3967	41.84	2.21
67	0.01509	-0.09490	0.3991	38.94	2.12
68	0.03345	-0.08078	0.4013	36.18	2.08
69	0.05181	-0.06800	0.4031	33.49	2.09
70	0.07008	-0.05650	0.4047	30.88	2.11
71	0.08822	-0.04619	0.4058	28.34	2.13
72	0.10621	-0.03699	0.4068	25.85	2.15
73	0.12405	-0.02881	0.4075	23.41	2.17
74	0.14175	-0.02158	0.4082	21.02	2.18
75	0.15933	-0.01523	0.4086	18.67	2.20
76	0.17680	-0.00972	0.4090	16.35	2.21
77	0.19417	-0.00500	0.4092	14.07	2.22
78	0.21145	-0.00103	0.4094	11.80	2.23
79	0.22866	0.00221	0.4096	9.55	2.24
80	0.24579	0.00476	0.4097	7.31	2.26
81	0.26285	0.00661	0.4098	5.08	2.27
82	0.27985	0.00778	0.4098	2.84	2.29
83	0.29677	0.00829	0.4097	0.59	2.32
84	0.31362	0.00814	0.4093	-1.66	2.33
85	0.33039	0.00732	0.4088	-3.92	2.35
86	0.34709	0.00584	0.4080	-6.18	2.36
87	0.36371	0.00371	0.4068	-8.44	2.35
88	0.38026	0.00092	0.4052	-10.69	2.34
89	0.39672	-0.00252	0.4031	-12.92	2.31
90	0.41312	-0.00661	0.4006	-15.09	2.24
91	0.42943	-0.01133	0.3984	-17.20	2.16
92	0.44563	-0.01670	0.3957	-19.44	2.30
93	0.46178	-0.02274	0.3908	-21.55	2.14
94	0.47791	-0.02941	0.3865	-23.36	1.81
95	0.49399	-0.03667	0.3829	-25.19	1.80
96	0.51001	-0.04451	0.3789	-26.95	1.72
97	0.52598	-0.05292	0.3751	-28.63	1.62
98	0.54190	-0.06191	0.3712	-30.24	1.54
99	0.55778	-0.07145	0.3674	-31.78	1.45
100	0.57362	-0.08155	0.3636	-33.25	1.37
101	0.58943	-0.09220	0.3599	-34.66	1.29
102	0.60523	-0.10340	0.3561	-35.99	1.20
103	0.62104	-0.11516	0.3524	-37.26	1.12
104	0.63688	-0.12747	0.3488	-38.46	1.04
105	0.65278	-0.14036	0.3451	-39.59	0.96
106	0.66877	-0.15384	0.3415	-40.64	0.88
107	0.68491	-0.16794	0.3379	-41.63	0.81
108	0.70122	-0.18268	0.3343	-42.55	0.73
109	0.71777	-0.19811	0.3307	-43.40	0.65
110	0.73463	-0.21427	0.3271	-44.18	0.58

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111	0.75185	-0.23122	0.3236	-44.88	0.51
112	0.76953	-0.24902	0.3200	-45.51	0.44
113	0.78775	-0.26776	0.3165	-46.06	0.37
114	0.80660	-0.28749	0.3131	-46.54	0.31
115	0.82616	-0.30828	0.3097	-46.94	0.24
116	0.84651	-0.33019	0.3063	-47.26	0.19
117	0.86769	-0.35321	0.3031	-47.50	0.13
118	0.88969	-0.37729	0.2999	-47.65	0.08
119	0.91242	-0.40226	0.2970	-47.72	0.04
120	0.93565	-0.42781	0.2943	-47.71	-0.01
121	0.95900	-0.45344	0.2919	-47.62	-0.04
122	0.98191	-0.47848	0.2899	-47.47	-0.08
123	1.00365	-0.50212	0.2883	-47.28	-0.10
124	1.02344	-0.52347	0.2870	-47.07	-0.13
125	1.04052	-0.54177	0.2861	-46.85	-0.15
126	1.05432	-0.55643	0.2855	-46.64	-0.18
127	1.06451	-0.56719	0.2851	-46.46	-0.22
128	1.07104	-0.57404	0.2849	-46.31	-0.27
129	1.07410	-0.57724	0.2848	-46.22	-0.35
130	1.07442	-0.57758	0.2847	-46.22	0.10

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BOUNDARY LAYER CORRECTION

PRESSURE SIDE

N	X	Y	EM	TH	SEP
55	-0.09175	-0.28728	0.00003		
54	-0.08456	-0.29253	0.13129		
53	-0.07528	-0.29403	0.20535		
52	-0.06378	-0.29255	0.22425		
51	-0.04978	-0.28883	0.22692		
50	-0.03359	-0.28365	0.22862		
49	-0.01551	-0.27737	0.22817		
48	0.00426	-0.27034	0.22684	0.00039	0.00009
47	0.02559	-0.26286	0.22490	0.00047	0.00018
46	0.04832	-0.25521	0.22315	0.00055	0.00022
45	0.07232	-0.24755	0.22085	0.00063	0.00028
44	0.09753	-0.24009	0.21830	0.00072	0.00035
43	0.12389	-0.23298	0.21544	0.00082	0.00041
42	0.15134	-0.22643	0.21264	0.00092	0.00043
41	0.17982	-0.22063	0.20999	0.00102	0.00041
40	0.20920	-0.21578	0.20783	0.00112	0.00035
39	0.23935	-0.21202	0.20618	0.00122	0.00027
38	0.27010	-0.20948	0.20509	0.00130	0.00018
37	0.30127	-0.20822	0.20443	0.00138	0.00010
36	0.33272	-0.20828	0.20418	0.00145	0.00003
35	0.36431	-0.20967	0.20421	0.00152	-0.00004
34	0.39590	-0.21239	0.20448	0.00158	-0.00009

N	X	Y	EM	TH	SEP
33	0.42739	-0.21641	0.20496	0.00163	-0.00015
32	0.45868	-0.22172	0.20564	0.00168	-0.00021
31	0.48965	-0.22828	0.20659	0.00172	-0.00026
30	0.52023	-0.23605	0.20760	0.00176	-0.00039
29	0.55030	-0.24502	0.20950	0.00177	-0.00060
28	0.57967	-0.25503	0.21204	0.00177	-0.00050
27	0.60845	-0.26587	0.21321	0.00181	-0.00035
26	0.63668	-0.27764	0.21461	0.00183	-0.00049
25	0.66420	-0.29029	0.21674	0.00184	-0.00061
24	0.69097	-0.30372	0.21897	0.00184	-0.00065
23	0.71697	-0.31782	0.22136	0.00184	-0.00069
22	0.74217	-0.33251	0.22385	0.00184	-0.00072
21	0.76656	-0.34772	0.22649	0.00183	-0.00076
20	0.79014	-0.36336	0.22926	0.00183	-0.00080
19	0.81288	-0.37935	0.23217	0.00181	-0.00084
18	0.83477	-0.39560	0.23524	0.00180	-0.00087
17	0.85583	-0.41201	0.23844	0.00178	-0.00091
16	0.87602	-0.42851	0.24179	0.00176	-0.00095
15	0.89536	-0.44498	0.24527	0.00174	-0.00098
14	0.91384	-0.46134	0.24886	0.00171	-0.00101
13	0.93144	-0.47747	0.25255	0.00169	-0.00104
12	0.94816	-0.49326	0.25629	0.00166	-0.00106
11	0.96397	-0.50861	0.26005	0.00164	-0.00108
10	0.97884	-0.52307	0.26379	0.00161	-0.00109
9	0.99272	-0.53741	0.26745	0.00159	-0.00110
8	1.00554	-0.55057	0.27098	0.00157	-0.00110
7	1.01720	-0.56267	0.27429	0.00155	-0.00111
6	1.02756	-0.57350	0.27733	0.00153	-0.00110
5	1.03645	-0.58282	0.27999	0.00152	-0.00110
4	1.04363	-0.59030	0.28215	0.00150	-0.00108
3	1.04881	-0.59579	0.28370	0.00150	-0.00105
2	1.05164	-0.59876	0.28452	0.00149	-0.00104
1	1.05206	-0.59919	0.28465	0.00149	-0.00104

SUCTION SIDE

N	X	Y	EM	TH	SEP
56	-0.09635	-0.27994	0.12341		
57	-0.09883	-0.26879	0.21346		
58	-0.09881	-0.25512	0.28149		
59	-0.09577	-0.23929	0.32537		
60	-0.08954	-0.22173	0.35307		
61	-0.08018	-0.20295	0.36809		
62	-0.06804	-0.18349	0.37733		
63	-0.05365	-0.16398	0.38330		
64	-0.03804	-0.14528	0.38868		
65	-0.02092	-0.12721	0.39323		
66	-0.00311	-0.11038	0.39671		
67	0.01509	-0.09490	0.39909		
68	0.03345	-0.08078	0.40131		

69	0.05181	-0.06800	0.40311		
70	0.07008	-0.05650	0.40467		
71	0.08822	-0.04619	0.40584		
72	0.10621	-0.03699	0.40683		
73	0.12405	-0.02881	0.40754		
74	0.14175	-0.02158	0.40815		
75	0.15933	-0.01523	0.40858		
76	0.17680	-0.00972	0.40895		
77	0.19417	-0.00500	0.40921		
78	0.21145	-0.00103	0.40944	0.00023	0.00008
79	0.22866	0.00221	0.40958	0.00028	-0.00001
80	0.24579	0.00476	0.40972	0.00033	-0.00000
81	0.26285	0.00661	0.40979	0.00037	-0.00000
82	0.27985	0.00778	0.40980	0.00041	0.00000
83	0.29677	0.00829	0.40966	0.00046	0.00002
84	0.31362	0.00814	0.40935	0.00050	0.00003
85	0.33039	0.00732	0.40879	0.00054	0.00006
86	0.34709	0.00584	0.40795	0.00058	0.00009
87	0.36371	0.00371	0.40677	0.00062	0.00013
88	0.38026	0.00092	0.40515	0.00067	0.00018
89	0.39672	-0.00252	0.40313	0.00071	0.00024
90	0.41312	-0.00661	0.40060	0.00076	0.00027
91	0.42943	-0.01133	0.39839	0.00081	0.00029
92	0.44563	-0.01670	0.39574	0.00086	0.00049
93	0.46178	-0.02274	0.39079	0.00093	0.00064
94	0.47791	-0.02941	0.38647	0.00100	0.00058
95	0.49399	-0.03667	0.38286	0.00106	0.00059
96	0.51001	-0.04451	0.37892	0.00113	0.00065
97	0.52598	-0.05292	0.37506	0.00120	0.00068
98	0.54190	-0.06191	0.37120	0.00127	0.00071
99	0.55778	-0.07145	0.36740	0.00134	0.00074
100	0.57362	-0.08155	0.36361	0.00142	0.00078
101	0.58943	-0.09220	0.35986	0.00150	0.00081
102	0.60523	-0.10340	0.35614	0.00158	0.00084
103	0.62104	-0.11516	0.35244	0.00166	0.00088
104	0.63688	-0.12747	0.34876	0.00175	0.00091
105	0.65278	-0.14036	0.34511	0.00185	0.00094
106	0.66877	-0.15384	0.34147	0.00194	0.00098
107	0.68491	-0.16794	0.33786	0.00204	0.00101
108	0.70122	-0.18268	0.33426	0.00215	0.00104
109	0.71777	-0.19811	0.33068	0.00226	0.00106
110	0.73463	-0.21427	0.32712	0.00237	0.00109
111	0.75185	-0.23122	0.32357	0.00249	0.00111
112	0.76953	-0.24902	0.32005	0.00262	0.00113
113	0.78775	-0.26776	0.31654	0.00275	0.00114
114	0.80660	-0.28749	0.31307	0.00289	0.00114
115	0.82616	-0.30828	0.30965	0.00303	0.00114
116	0.84651	-0.33019	0.30630	0.00318	0.00113
117	0.86769	-0.35321	0.30305	0.00333	0.00110
118	0.88969	-0.37729	0.29994	0.00349	0.00106
119	0.91242	-0.40226	0.29701	0.00365	0.00101
120	0.93565	-0.42781	0.29433	0.00380	0.00095
121	0.95900	-0.45344	0.29194	0.00395	0.00087

122	0.98191	-0.47848	0.28992	0.00408	0.00078
123	1.00365	-0.50212	0.28827	0.00420	0.00068
124	1.02344	-0.52347	0.28701	0.00430	0.00059
125	1.04052	-0.54177	0.28610	0.00438	0.00050
126	1.05432	-0.55643	0.28548	0.00443	0.00043
127	1.06451	-0.56719	0.28510	0.00447	0.00038
128	1.07104	-0.57404	0.28488	0.00450	0.00039
129	1.07410	-0.57724	0.28476	0.00451	0.00040
130	1.07442	-0.57758	0.28465	0.00451	0.00040

BODY COORDINATES AFTER BOUNDARY LAYER SUBTRACTION

METAL COORDINATES IN INCHES

THE CHORD IS   4.200 INCHES

THE GAP IS   2.191 INCHES

N	XV	YV
1	3.63362	-2.06202
2	3.63219	-2.06053
3	3.62242	-2.05031
4	3.60456	-2.03157
5	3.57983	-2.00554
6	3.54921	-1.97334
7	3.51351	-1.93592
8	3.47335	-1.89411
9	3.42917	-1.84862
10	3.38133	-1.80007
11	3.33007	-1.74902
12	3.27556	-1.69594
13	3.21790	-1.64129
14	3.15718	-1.58546
15	3.09344	-1.52886
16	3.02669	-1.47183
17	2.95697	-1.41474
18	2.88428	-1.35791
19	2.80865	-1.30167
20	2.73009	-1.24632
21	2.64863	-1.19217
22	2.56432	-1.13952
23	2.47720	-1.08865
24	2.38731	-1.03984
25	2.29474	-0.99338
26	2.19954	-0.94959
27	2.10188	-0.90890
28	2.00232	-0.87148
29	1.90070	-0.83697

30	1.79667	-0.80586		83	1.02364	0.02592
31	1.69085	-0.77899		84	1.08164	0.02517
32	1.58365	-0.75642		85	1.13937	0.02214
33	1.47538	-0.73820		86	1.19683	0.01685
34	1.36640	-0.72446		87	1.25399	0.00928
35	1.25708	-0.71527		88	1.31087	-0.00056
36	1.14780	-0.71068		89	1.36746	-0.01265
37	1.03900	-0.71072		90	1.42378	-0.02697
38	0.93117	-0.71537		91	1.47982	-0.04347
39	0.82486	-0.72451		92	1.53542	-0.06225
40	0.72066	-0.73790		93	1.59079	-0.08338
41	0.61914	-0.75514		94	1.64613	-0.10666
42	0.52083	-0.77569		95	1.70128	-0.13194
43	0.42611	-0.79883		96	1.75620	-0.15924
44	0.33520	-0.82387		97	1.81094	-0.18852
45	0.24830	-0.85011		98	1.86548	-0.21976
46	0.16558	-0.87696		99	1.91986	-0.25293
47	0.08728	-0.90382		100	1.97409	-0.28801
48	0.01397	-0.93046		101	2.02822	-0.32499
49	-0.05351	-0.95669		102	2.08229	-0.36388
50	-0.11585	-0.97834		103	2.13637	-0.40468
51	-0.17168	-0.99623		104	2.19055	-0.44743
52	-0.21999	-1.00906		105	2.24491	-0.49216
53	-0.25966	-1.01417		106	2.29959	-0.53894
54	-0.29165	-1.00899		107	2.35471	-0.58785
55	-0.31645	-0.99088		108	2.41045	-0.63901
56	-0.33231	-0.96556		109	2.46698	-0.69254
57	-0.34087	-0.92711		110	2.52454	-0.74862
58	-0.34082	-0.87995		111	2.58337	-0.80745
59	-0.33032	-0.82534		112	2.64374	-0.86925
60	-0.30885	-0.76478		113	2.70595	-0.93427
61	-0.27654	-0.70001		114	2.77031	-1.00276
62	-0.23467	-0.63290		115	2.83712	-1.07495
63	-0.18506	-0.56558		116	2.90664	-1.15099
64	-0.13120	-0.50109		117	2.97904	-1.23090
65	-0.07217	-0.43877		118	3.05430	-1.31447
66	-0.01074	-0.38071		119	3.13209	-1.40110
67	0.05205	-0.32731		120	3.21169	-1.48969
68	0.11537	-0.27862		121	3.29178	-1.57855
69	0.17869	-0.23455		122	3.37044	-1.66533
70	0.24171	-0.19488		123	3.44520	-1.74718
71	0.30427	-0.15932		124	3.51330	-1.82110
72	0.36632	-0.12758		125	3.57215	-1.88439
73	0.42787	-0.09936		126	3.61971	-1.93510
74	0.48893	-0.07442		127	3.65487	-1.97228
75	0.54956	-0.05254		128	3.67744	-1.99598
76	0.60981	-0.03353		129	3.68803	-2.00701
77	0.66972	-0.01724		130	3.68916	-2.00818
78	0.72960	-0.00480				
79	0.78899	0.00583				
80	0.84804	0.01436				
81	0.90683	0.02053				
82	0.96537	0.02438				

THICK/CHORD AT TE   0.018,   DEV = -0.000

CASE 13. - LEWIS 1 TURNING VANES. (REF. 3.)

13. VAN4006

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&DATA
NRN= 4006
R= 1.730
RA= 1.0
ANA= 0.0
RB= 1.0
ANB= -180.0
EMB= 0.240
THB= -9.40
NI= 1
NF= 128
GRID= 0.60D-01
GRIDS= 0.40D-01
IRICHD= 0
IRICHS= 0
RELAX= 0.80
RELAQ= 0.80
CONE= 0.50
CTWO= 1.0
CTHR= -1.0
RN= 6000000.0
TRU= 0.460
TRL= 0.280
RTHO= 320.0
IGRPH= 1
ISVPLT= 1
&END
```
1

CARD	S-INPUT	Q-INPUT
1	-1.431000	-0.760000
2	-1.229000	-0.850000
3	-1.028000	-1.000000
4	-0.927300	-1.095000
5	-0.814100	-1.178000
6	-0.663500	-1.236000
7	-0.571900	-1.248000
8	-0.430300	-1.251000
9	-0.300600	-1.248000
10	-0.169400	-1.232000
11	-0.050400	-1.118000
12	-0.005000	-0.950000
13	0.009000	-0.830000

14	0.025000	-0.634400
15	0.043000	0.000000
16	0.069000	0.590000
17	0.078000	0.630000
18	0.086000	0.670000
19	0.109200	0.816000
20	0.141600	0.930000
21	0.212100	1.045000
22	0.305800	1.121000
23	0.437200	1.205000
24	0.567800	1.246000
25	0.711500	1.277000
26	0.878700	1.275100
27	1.060000	1.177000
28	1.287000	0.942000
29	1.480000	0.790000
30	1.555000	0.760000

ITER	MIN	ANIN	TURN	GAP	RESID
1	C.20	-25.47	1.16	0.61	-0.1508D 00

1

INVISCID   COMPUTATION

INLET MACH NUMBER = 0.198   INLET FLOW ANGLE = -25.47

EXIT MACH NUMBER = 0.208   EXIT FLOW ANGLE = -26.64

TURNING =   1.163

GAP = 0.615   CHORD = 1.011   AXIAL CHORD = 0.968

GAP/CHORD = 0.608   SOLIDITY = 1.644   AXIAL SOLIDITY = 1.574

THICK/CHORD = 0.209,   DX = 0.0138; DY = 0.0168

THICK/CHORD AT TE = 0.021,   DEV = 0.005

N	X	Y	MACH	ANGL	CURVATURE

1	0.95879	-0.28905	0.1821	-25.73	0.00
2	0.95806	-0.28871	0.1820	-24.87	-18.74
3	0.95433	-0.28703	0.1821	-23.57	-5.56
4	0.94762	-0.28419	0.1826	-22.27	-3.11
5	0.93824	-0.28047	0.1835	-20.97	-2.24
6	0.92653	-0.27614	0.1846	-19.69	-1.80
7	0.91284	-0.27141	0.1861	-18.41	-1.54
8	0.89749	-0.26649	0.1880	-17.15	-1.37
9	0.88078	-0.26153	0.1902	-15.91	-1.24
10	0.86299	-0.25667	0.1927	-14.70	-1.14
11	0.84435	-0.25198	0.1955	-13.53	-1.06
12	0.82509	-0.24755	0.1987	-12.41	-0.99
13	0.80538	-0.24340	0.2022	-11.34	-0.93
14	0.78538	-0.23958	0.2060	-10.34	-0.86
15	0.76523	-0.23607	0.2100	-9.39	-0.81
16	0.74504	-0.23289	0.2144	-8.51	-0.75
17	0.72489	-0.23003	0.2191	-7.71	-0.69
18	0.70487	-0.22744	0.2241	-6.99	-0.62
19	0.68504	-0.22513	0.2293	-6.35	-0.56
20	0.66546	-0.22304	0.2349	-5.83	-0.47
21	0.64617	-0.22114	0.2408	-5.41	-0.38
22	0.62721	-0.21939	0.2470	-5.16	-0.23
23	0.60859	-0.21773	0.2533	-5.06	-0.09
24	0.59033	-0.21609	0.2595	-5.17	0.10
25	0.57239	-0.21443	0.2654	-5.40	0.22
26	0.55462	-0.21266	0.2709	-5.85	0.44
27	0.53727	-0.21080	0.2754	-6.38	0.52
28	0.52010	-0.20874	0.2783	-7.30	0.93
29	0.50289	-0.20653	0.2752	-7.31	0.01
30	0.48570	-0.20457	0.2819	-5.73	-1.59
31	0.46908	-0.20273	0.2964	-6.92	1.23
32	0.45288	-0.20047	0.2972	-8.92	2.14
33	0.43669	-0.19784	0.2966	-9.53	0.65
34	0.42050	-0.19502	0.2977	-10.21	0.72
35	0.40433	-0.19202	0.2985	-10.81	0.64
36	0.38817	-0.18884	0.2992	-11.47	0.70
37	0.37202	-0.18547	0.2996	-12.09	0.65
38	0.35585	-0.18192	0.3000	-12.73	0.68
39	0.33967	-0.17817	0.3002	-13.37	0.67
40	0.32346	-0.17421	0.3003	-14.05	0.71
41	0.30722	-0.17004	0.3003	-14.75	0.72
42	0.29107	-0.16568	0.3002	-15.49	0.77
43	0.27473	-0.16103	0.3001	-16.26	0.80
44	0.25834	-0.15612	0.2999	-17.09	0.84
45	0.24190	-0.15092	0.2996	-17.97	0.89
46	0.22540	-0.14542	0.2994	-18.92	0.95
47	0.20887	-0.13959	0.2993	-19.95	1.03
48	0.19233	-0.13340	0.2992	-21.08	1.12
49	0.17580	-0.12682	0.2992	-22.36	1.25
50	0.15935	-0.11980	0.2991	-23.81	1.42
51	0.14302	-0.11231	0.2988	-25.48	1.62
52	0.12689	-0.10430	0.2980	-27.37	1.83
53	0.11105	-0.09572	0.2965	-29.52	2.08

54	0.09559	-0.08654	0.2938	-31.89	2.30
55	0.08065	-0.07677	0.2900	-34.51	2.57
56	0.06640	-0.06644	0.2848	-37.36	2.82
57	0.05302	-0.05564	0.2782	-40.52	3.21
58	0.04087	-0.04447	0.2701	-44.05	3.73
59	0.03004	-0.03319	0.2605	-48.34	4.79
60	0.02096	-0.02196	0.2470	-53.90	6.72
61	0.01387	-0.01089	0.2244	-61.17	9.65
62	0.00883	-0.00019	0.1902	-69.04	11.60
63	0.00585	0.00978	0.1485	-78.88	16.53
64	0.00500	0.01870	0.0861	-94.46	30.33
65	0.00697	0.02592	0.0000	65.33	47.17
66	0.01127	0.03201	0.0852	44.29	49.22
67	0.01836	0.03680	0.1421	27.87	33.50
68	0.02746	0.04049	0.1703	17.21	18.95
69	0.03855	0.04344	0.1829	12.80	6.71
70	0.05112	0.04613	0.2000	11.39	1.91
71	0.06447	0.04846	0.2181	8.57	3.64
72	0.07841	0.05019	0.2300	5.66	3.61
73	0.09294	0.05134	0.2385	3.42	2.68
74	0.10777	0.05082	0.2455	1.71	2.01
75	0.12315	0.05108	0.2516	0.24	1.66
76	0.13882	0.05098	0.2566	-0.97	1.35
77	0.15470	0.05057	0.2610	-2.01	1.14
78	0.17075	0.04988	0.2648	-2.86	0.92
79	0.18692	0.04898	0.2683	-3.56	0.76
80	0.20316	0.04788	0.2716	-4.13	0.61
81	0.21943	0.04664	0.2750	-4.63	0.53
82	0.23569	0.04525	0.2785	-5.10	0.50
83	0.25190	0.04374	0.2821	-5.59	0.53
84	0.26805	0.04208	0.2855	-6.11	0.56
85	0.28413	0.04028	0.2886	-6.67	0.60
86	0.30013	0.03833	0.2914	-7.26	0.64
87	0.31606	0.03621	0.2939	-7.86	0.65
88	0.33192	0.03394	0.2959	-8.46	0.66
89	0.34774	0.03150	0.2976	-9.04	0.64
90	0.36352	0.02894	0.2992	-9.64	0.65
91	0.37924	0.02619	0.3005	-10.22	0.63
92	0.39494	0.02326	0.3014	-10.90	0.75
93	0.41066	0.02018	0.3003	-11.29	0.42
94	0.42638	0.01706	0.3032	-11.19	-0.10
95	0.44191	0.01385	0.3089	-12.10	1.00
96	0.45728	0.01038	0.3095	-13.37	1.41
97	0.47261	0.00662	0.3094	-14.21	0.92
98	0.48794	0.00261	0.3098	-15.09	0.97
99	0.50324	-0.00165	0.3099	-16.02	1.02
100	0.51853	-0.00618	0.3098	-17.03	1.10
101	0.53381	-0.01102	0.3093	-18.07	1.14
102	0.54911	-0.01617	0.3084	-19.17	1.19
103	0.56444	-0.02167	0.3070	-20.30	1.21
104	0.57981	-0.02753	0.3053	-21.47	1.24
105	0.59525	-0.03379	0.3031	-22.67	1.26
106	0.61064	-0.04046	0.3005	-23.91	1.28

107	0.62628	-0.04760	0.2974	-25.17	1.28
108	0.64204	-0.05522	0.2938	-26.45	1.28
109	0.65797	-0.06337	0.2896	-27.74	1.26
110	0.67409	-0.07208	0.2850	-29.04	1.24
111	0.69043	-0.08138	0.2796	-30.32	1.19
112	0.70702	-0.09133	0.2737	-31.56	1.12
113	0.72392	-0.10195	0.2672	-32.73	1.02
114	0.74117	-0.11326	0.2602	-33.81	0.91
115	0.75879	-0.12527	0.2528	-34.75	0.77
116	0.77681	-0.13796	0.2450	-35.53	0.62
117	0.79526	-0.15127	0.2370	-36.10	0.44
118	0.81410	-0.16509	0.2290	-36.43	0.25
119	0.83329	-0.17927	0.2212	-36.50	0.05
120	0.85267	-0.19355	0.2138	-36.29	-0.15
121	0.87202	-0.20764	0.2070	-35.80	-0.36
122	0.89117	-0.22135	0.2009	-35.04	-0.56
123	0.90937	-0.23388	0.1957	-34.06	-0.78
124	0.92622	-0.24503	0.1914	-32.89	-1.01
125	0.94117	-0.25446	0.1880	-31.59	-1.28
126	0.95364	-0.26193	0.1856	-30.24	-1.63
127	0.96317	-0.26734	0.1839	-28.87	-2.18
128	0.96945	-0.27070	0.1828	-27.52	-3.32
129	0.97232	-0.27216	0.1822	-26.19	-7.21
130	0.97254	-0.27226	0.1821	-25.73	-33.23

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BOUNDARY LAYER CORRECTION

PRESSURE SIDE

N	X	Y	EM	TH	SEP
65	0.00697	0.02592	0.00002		
64	0.00500	0.01870	0.08612		
63	0.00585	0.00978	0.14853		
62	0.00883	-0.00019	0.19025		
61	0.01387	-0.01089	0.22440		
60	0.02096	-0.02196	0.24697		
59	0.03004	-0.03319	0.26053		
58	0.04087	-0.04447	0.27013		
57	0.05302	-0.05564	0.27821		
56	0.06640	-0.06644	0.28477		
55	0.08065	-0.07677	0.29000		
54	0.09559	-0.08654	0.29384		
53	0.11105	-0.09572	0.29647		
52	0.12689	-0.10430	0.29803		
51	0.14302	-0.11231	0.29884		
50	0.15935	-0.11980	0.29912		
49	0.17580	-0.12682	0.29917		
48	0.19233	-0.13340	0.29917		

N	X	Y	EM	TH	SEP
47	0.20887	-0.13959	0.29926		
46	0.22540	-0.14542	0.29943		
45	0.24190	-0.15092	0.29964		
44	0.25834	-0.15612	0.29987		
43	0.27473	-0.16103	0.30006		
42	0.29107	-0.16568	0.30022	0.00004	0.00009
41	0.30722	-0.17004	0.30028	0.00009	-0.00000
40	0.32346	-0.17421	0.30028	0.00013	0.00000
39	0.33967	-0.17817	0.30016	0.00016	0.00001
38	0.35585	-0.18192	0.29998	0.00019	0.00001
37	0.37202	-0.18547	0.29962	0.00023	0.00002
36	0.38817	-0.18884	0.29922	0.00026	0.00003
35	0.40433	-0.19202	0.29848	0.00029	0.00005
34	0.42050	-0.19502	0.29774	0.00032	0.00006
33	0.43669	-0.19784	0.29662	0.00035	0.00002
32	0.45288	-0.20047	0.29720	0.00038	0.00001
31	0.46908	-0.20273	0.29637	0.00041	0.00076
30	0.48570	-0.20457	0.28193	0.00050	0.00113
29	0.50289	-0.20653	0.27517	0.00057	0.00021
28	0.52010	-0.20874	0.27834	0.00057	0.00000
27	0.53727	-0.21080	0.27540	0.00061	0.00050
26	0.55462	-0.21266	0.27085	0.00067	0.00073
25	0.57239	-0.21443	0.26536	0.00074	0.00092
24	0.59033	-0.21609	0.25950	0.00082	0.00109
23	0.60859	-0.21773	0.25327	0.00090	0.00125
22	0.62721	-0.21939	0.24701	0.00100	0.00139
21	0.64617	-0.22114	0.24082	0.00111	0.00150
20	0.66546	-0.22304	0.23493	0.00122	0.00159
19	0.68504	-0.22513	0.22933	0.00135	0.00166
18	0.70487	-0.22744	0.22406	0.00147	0.00173
17	0.72489	-0.23003	0.21909	0.00160	0.00180
16	0.74504	-0.23289	0.21442	0.00174	0.00186
15	0.76523	-0.23607	0.21004	0.00189	0.00191
14	0.78538	-0.23958	0.20597	0.00203	0.00195
13	0.80538	-0.24340	0.20218	0.00218	0.00198
12	0.82509	-0.24755	0.19869	0.00233	0.00200
11	0.84435	-0.25198	0.19552	0.00248	0.00199
10	0.86299	-0.25667	0.19267	0.00262	0.00197
9	0.88078	-0.26153	0.19015	0.00276	0.00192
8	0.89749	-0.26649	0.18797	0.00288	0.00185
7	0.91284	-0.27141	0.18613	0.00299	0.00176
6	0.92653	-0.27614	0.18463	0.00309	0.00165
5	0.93824	-0.28047	0.18346	0.00317	0.00151
4	0.94762	-0.28419	0.18263	0.00322	0.00131
3	0.95433	-0.28703	0.18213	0.00326	0.00086
2	0.95806	-0.28871	0.18198	0.00327	0.00066
1	0.95879	-0.28905	0.18211	0.00328	0.00066

SUCTION SIDE

N	X	Y	EM	TH	SEP

66	0.01127	0.03201	0.08517		
67	0.01836	0.03680	0.14208		
68	0.02746	0.04049	0.17033		
69	0.03855	0.04344	0.18293		
70	0.05112	0.04613	0.19995		
71	0.06447	0.04846	0.21810		
72	0.07841	0.05019	0.23001		
73	0.09294	0.05134	0.23849		
74	0.10777	0.05082	0.24551		
75	0.12315	0.05108	0.25156		
76	0.13882	0.05098	0.25661		
77	0.15470	0.05057	0.26100		
78	0.17075	0.04988	0.26478		
79	0.18692	0.04898	0.26826		
80	0.20316	0.04788	0.27160		
81	0.21943	0.04664	0.27504		
82	0.23569	0.04525	0.27855		
83	0.25190	0.04374	0.28206		
84	0.26805	0.04208	0.28545		
85	0.28413	0.04028	0.28862		
86	0.30013	0.03833	0.29144		
87	0.31606	0.03621	0.29386		
88	0.33192	0.03394	0.29591		
89	0.34774	0.03150	0.29764		
90	0.36352	0.02894	0.29919		
91	0.37924	0.02619	0.30049		
92	0.39494	0.02326	0.30135		
93	0.41066	0.02018	0.30033		
94	0.42638	0.01706	0.30321		
95	0.44191	0.01385	0.30887		
96	0.45728	0.01038	0.30952		
97	0.47261	0.00662	0.30936	0.00004	0.00009
98	0.48794	0.00261	0.30976	0.00008	-0.00001
99	0.50324	-0.00165	0.30992	0.00012	-0.00000
100	0.51853	-0.00618	0.30980	0.00015	0.00001
101	0.53381	-0.01102	0.30927	0.00018	0.00003
102	0.54911	-0.01617	0.30838	0.00022	0.00005
103	0.56444	-0.02167	0.30705	0.00026	0.00008
104	0.57981	-0.02753	0.30530	0.00029	0.00012
105	0.59525	-0.03379	0.30311	0.00032	0.00016
106	0.61064	-0.04046	0.30047	0.00036	0.00021
107	0.62628	-0.04760	0.29737	0.00040	0.00027
108	0.64204	-0.05522	0.29377	0.00044	0.00034
109	0.65797	-0.06337	0.28965	0.00049	0.00043
110	0.67409	-0.07208	0.28495	0.00054	0.00053
111	0.69043	-0.08138	0.27965	0.00060	0.00066
112	0.70702	-0.09133	0.27374	0.00067	0.00081
113	0.72392	-0.10195	0.26725	0.00075	0.00098
114	0.74117	-0.11326	0.26025	0.00084	0.00117
115	0.75879	-0.12527	0.25280	0.00095	0.00139
116	0.77681	-0.13796	0.24501	0.00107	0.00163
117	0.79526	-0.15127	0.23702	0.00122	0.00188

118	0.81410	-0.16509	0.22903	0.00139	0.00214
119	0.83329	-0.17927	0.22123	0.00158	0.00238
120	0.85267	-0.19355	0.21384	0.00178	0.00259
121	0.87202	-0.20764	0.20701	0.00201	0.00276
122	0.89117	-0.22135	0.20091	0.00224	0.00287
123	0.90937	-0.23388	0.19567	0.00247	0.00292
124	0.92622	-0.24503	0.19138	0.00268	0.00288
125	0.94117	-0.25446	0.18803	0.00286	0.00276
126	0.95364	-0.26193	0.18557	0.00301	0.00265
127	0.96317	-0.26734	0.18387	0.00312	0.00262
128	0.96945	-0.27070	0.18279	0.00319	0.00307
129	0.97232	-0.27216	0.18219	0.00323	0.00327
130	0.97254	-0.27226	0.18211	0.00323	0.00327

BODY COORDINATES AFTER BOUNDARY LAYER SUBTRACTION

N	XV	YV
1	0.96103	-0.28440
2	0.96024	-0.28402
3	0.95640	-0.28228
4	0.94958	-0.27940
5	0.94008	-0.27568
6	0.92824	-0.27138
7	0.91440	-0.26673
8	0.89890	-0.26192
9	0.88204	-0.25711
10	0.86410	-0.25241
11	0.84533	-0.24793
12	0.82593	-0.24371
13	0.80611	-0.23979
14	0.78600	-0.23620
15	0.76575	-0.23293
16	0.74547	-0.22999
17	0.72525	-0.22735
18	0.70517	-0.22500
19	0.68529	-0.22290
20	0.66567	-0.22102
21	0.64634	-0.21933
22	0.62736	-0.21776
23	0.60872	-0.21627
24	0.59044	-0.21479
25	0.57250	-0.21327
26	0.55473	-0.21162
27	0.53737	-0.20986
28	0.52022	-0.20786
29	0.50300	-0.20571
30	0.48578	-0.20377
31	0.46916	-0.20203

32	0.45297	-0.19990	85	0.28413	0.04028
33	0.43678	-0.19731	86	0.30013	0.03833
34	0.42058	-0.19452	87	0.31606	0.03621
35	0.40441	-0.19157	88	0.33192	0.03394
36	0.38825	-0.18844	89	0.34774	0.03150
37	0.37209	-0.18512	90	0.36352	0.02894
38	0.35593	-0.18159	91	0.37924	0.02619
39	0.33974	-0.17788	92	0.39494	0.02326
40	0.32352	-0.17398	93	0.41066	0.02018
41	0.30727	-0.16985	94	0.42638	0.01706
42	0.29109	-0.16562	95	0.44191	0.01385
43	0.27473	-0.16103	96	0.45728	0.01038
44	0.25834	-0.15612	97	0.47260	0.00656
45	0.24190	-0.15092	98	0.48789	0.00243
46	0.22540	-0.14542	99	0.50318	-0.00187
47	0.20887	-0.13959	100	0.51845	-0.00645
48	0.19233	-0.13340	101	0.53371	-0.01132
49	0.17580	-0.12682	102	0.54899	-0.01651
50	0.15935	-0.11980	103	0.56430	-0.02205
51	0.14302	-0.11231	104	0.57964	-0.02797
52	0.12689	-0.10430	105	0.59505	-0.03427
53	0.11105	-0.09572	106	0.61041	-0.04099
54	0.09559	-0.08654	107	0.62601	-0.04817
55	0.08065	-0.07677	108	0.64173	-0.05585
56	0.06640	-0.06644	109	0.65761	-0.06405
57	0.05302	-0.05564	110	0.67367	-0.07283
58	0.04087	-0.04447	111	0.68994	-0.08222
59	0.03004	-0.03319	112	0.70646	-0.09226
60	0.02096	-0.02196	113	0.72326	-0.10298
61	0.01387	-0.01089	114	0.74039	-0.11442
62	0.00883	-0.00019	115	0.75788	-0.12658
63	0.00585	0.00978	116	0.77575	-0.13945
64	0.00500	0.01870	117	0.79401	-0.15297
65	0.00697	0.02592	118	0.81266	-0.16705
66	0.01127	0.03201	119	0.83162	-0.18153
67	0.01836	0.03680	120	0.85076	-0.19615
68	0.02746	0.04049	121	0.86988	-0.21060
69	0.03855	0.04344	122	0.88882	-0.22471
70	0.05112	0.04613	123	0.90683	-0.23763
71	0.06447	0.04846	124	0.92356	-0.24915
72	0.07841	0.05019	125	0.93844	-0.25889
73	0.09294	0.05134	126	0.95091	-0.26661
74	0.10777	0.05082	127	0.96049	-0.27220
75	0.12315	0.05108	128	0.96684	-0.27570
76	0.13882	0.05098	129	0.96983	-0.27723
77	0.15470	0.05057	130	0.97008	-0.27735
78	0.17075	0.04988			
79	0.18692	0.04898			
80	0.20316	0.04788			
81	0.21943	0.04664			
82	0.23569	0.04525			
83	0.25190	0.04374			
84	0.26805	0.04208			

DXV = 0.0091; DYV = 0.0070

THICK/CHORD AT TE 0.010, DEV = 0.005
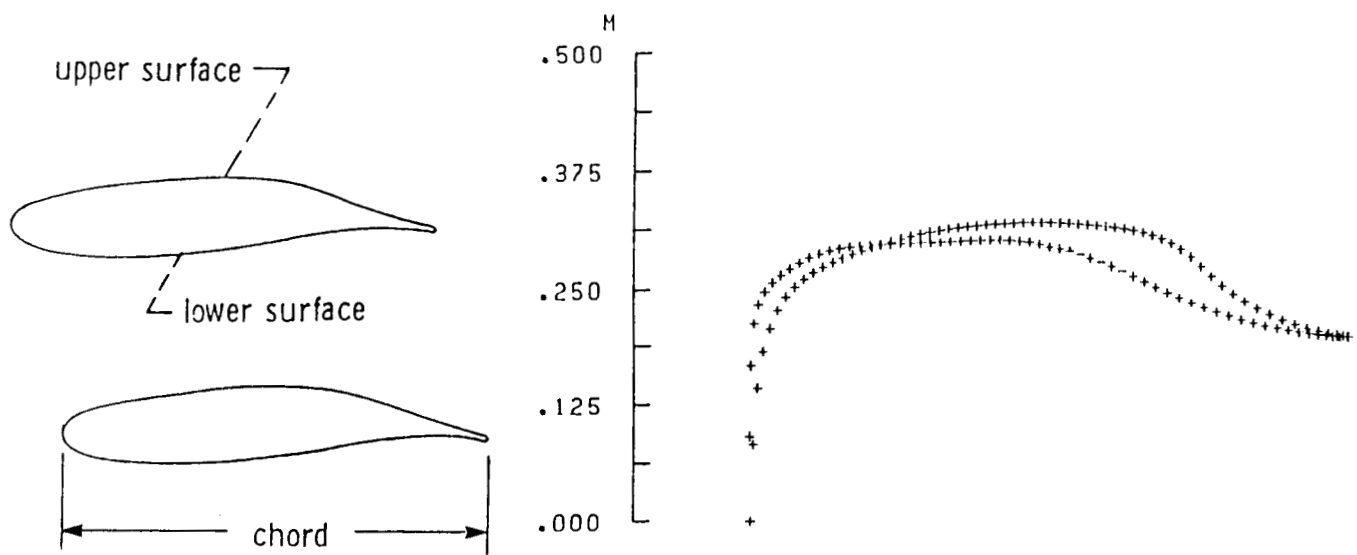
CASE 14. - LEWIS 3 TURNING VANES. (REF. 3.)

14. VAN6038

```
&DATA
NRN= 6038
R= 1.5870
RA= 1.0
ANA= 0.0
RB= 1.0
ANB= -180.0
EMB= 0.2550
THB= -5.0
NI= 3
NF= 128
GRID= 0.60D-01
GRIDS= 0.40D-01
IRICHD= 1
IRICHS= 0
RELAX= 0.80
RELAQ= 0.80
CONE= 0.50
CTWO= 1.0
CTHR= -1.0
RN= 6000000.0
TRU= 0.280
TRL= 0.150
RTHO= 320.0
IGRPH= 1
ISVPLT= 1
&END
1
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CARD	S-INPUT	Q-INPUT
1	-1.426000	-0.760000
2	-1.229000	-0.815000
3	-1.028000	-0.943000
4	-0.927300	-1.033000
5	-0.814100	-1.111000
6	-0.663500	-1.170000
7	-0.571900	-1.176000
8	-0.430300	-1.167000
9	-0.300600	-1.158000
10	-0.171000	-1.118000
11	-0.078400	-1.041000
12	-0.011000	-0.925000
13	0.008000	-0.815000

14	0.020000	-0.629400
15	0.043000	0.000000
16	0.074500	0.595000
17	0.078000	0.630000
18	0.083500	0.665000
19	0.109200	0.816000
20	0.141600	0.930000
21	0.212100	1.043000
22	0.305800	1.118000
23	0.437200	1.191000
24	0.567800	1.228000
25	0.711500	1.242000
26	0.878700	1.227000
27	1.000000	1.196000
28	1.100000	1.126000
29	1.200000	0.990000
30	1.314000	0.875000
31	1.490000	0.778000
32	1.565000	0.760000

ITER	MIN	ANIN	TURN	GAP	RESID
1	0.18	-16.41	8.71	0.52	0.1255D 00
2	0.19	-16.40	8.84	0.52	0.2509D-01
3	0.19	-16.40	8.90	0.54	0.5019D-02

1

INVISCID COMPUTATION

INLET MACH NUMBER = 0.187   INLET FLOW ANGLE = -16.40

EXIT MACH NUMBER = 0.212   EXIT FLOW ANGLE = -25.30

TURNING = 8.903

GAP = 0.544   CHORD = 1.058   AXIAL CHORD = 1.029

GAP/CHORD = 0.514   SOLIDITY = 1.945   AXIAL SOLIDITY = 1.892

THICK/CHORD = 0.191,   DX = 0.0138; DY = 0.0244

THICK/CHORD AT TE = 0.026,   DEV = 0.002

N	X	Y	MACH	ANGL	CURVATURE
1	1.01443	-0.27389	0.1933	-24.32	0.00
2	1.01312	-0.27331	0.1933	-23.52	-9.72
3	1.00817	-0.27121	0.1935	-22.51	-3.26
4	0.99986	-0.26786	0.1939	-21.48	-2.01
5	0.98864	-0.26357	0.1945	-20.41	-1.56
6	0.97497	-0.25864	0.1954	-19.30	-1.34
7	0.95928	-0.25333	0.1967	-18.14	-1.21
8	0.94197	-0.24785	0.1983	-16.96	-1.13
9	0.92337	-0.24239	0.2003	-15.77	-1.08
10	0.90379	-0.23709	0.2027	-14.57	-1.03
11	0.88350	-0.23204	0.2055	-13.38	-0.99
12	0.86271	-0.22732	0.2087	-12.22	-0.95
13	0.84160	-0.22297	0.2123	-11.09	-0.91
14	0.82034	-0.21901	0.2163	-10.01	-0.87
15	0.79906	-0.21545	0.2208	-8.99	-0.82
16	0.77788	-0.21228	0.2256	-8.06	-0.76
17	0.75688	-0.20947	0.2309	-7.21	-0.70
18	0.73614	-0.20698	0.2366	-6.48	-0.61
19	0.71573	-0.20477	0.2427	-5.90	-0.50
20	0.69569	-0.20278	0.2490	-5.49	-0.35
21	0.67602	-0.20093	0.2553	-5.26	-0.20
22	0.65674	-0.19917	0.2613	-5.20	-0.06
23	0.63780	-0.19744	0.2668	-5.25	0.05
24	0.61917	-0.19571	0.2717	-5.37	0.11
25	0.60081	-0.19396	0.2762	-5.54	0.16
26	0.58270	-0.19218	0.2803	-5.73	0.19
27	0.56481	-0.19034	0.2840	-5.96	0.22
28	0.54711	-0.18846	0.2874	-6.23	0.26
29	0.52958	-0.18649	0.2900	-6.57	0.33
30	0.51216	-0.18445	0.2919	-6.73	0.16
31	0.49487	-0.18240	0.2951	-6.90	0.17
32	0.47775	-0.18025	0.2976	-7.38	0.48
33	0.46071	-0.17798	0.2987	-7.80	0.43
34	0.44373	-0.17560	0.2996	-8.18	0.38
35	0.42678	-0.17310	0.3000	-8.55	0.38
36	0.40984	-0.17050	0.3002	-8.91	0.36
37	0.39290	-0.16780	0.3001	-9.25	0.35
38	0.37593	-0.16498	0.2999	-9.58	0.34
39	0.35893	-0.16206	0.2995	-9.91	0.34
40	0.34190	-0.15903	0.2991	-10.25	0.34
41	0.32481	-0.15589	0.2986	-10.61	0.36
42	0.30768	-0.15262	0.2981	-11.00	0.39
43	0.29049	-0.14921	0.2976	-11.43	0.43
44	0.27326	-0.14565	0.2972	-11.93	0.49
45	0.25598	-0.14191	0.2968	-12.51	0.58

46	0.23866	-0.13796	0.2964	-13.20	0.68
47	0.22130	-0.13377	0.2959	-14.01	0.79
48	0.20392	-0.12928	0.2952	-14.97	0.93
49	0.18651	-0.12445	0.2943	-16.08	1.07
50	0.16911	-0.11922	0.2931	-17.37	1.24
51	0.15172	-0.11354	0.2914	-18.86	1.42
52	0.13440	-0.10734	0.2890	-20.56	1.61
53	0.11718	-0.10055	0.2859	-22.47	1.80
54	0.10016	-0.09315	0.2817	-24.59	1.99
55	0.08343	-0.08509	0.2765	-26.89	2.16
56	0.06719	-0.07641	0.2706	-29.43	2.41
57	0.05170	-0.06717	0.2641	-32.31	2.79
58	0.03734	-0.05747	0.2567	-35.88	3.60
59	0.02455	-0.04746	0.2472	-40.50	4.96
60	0.01382	-0.03732	0.2336	-46.78	7.42
61	0.00571	-0.02728	0.2118	-56.34	12.93
62	0.00072	-0.01744	0.1665	-71.03	23.23
63	-0.00102	-0.00783	0.0911	-89.10	32.29
64	0.00059	0.00141	0.0000	71.25	36.59
65	0.00496	0.00973	0.0831	53.12	33.68
66	0.01226	0.01723	0.1430	39.35	22.96
67	0.02194	0.02375	0.1809	29.41	14.86
68	0.03361	0.02944	0.2059	23.19	8.36
69	0.04667	0.03438	0.2269	18.34	6.06
70	0.06077	0.03846	0.2415	14.10	5.05
71	0.07571	0.04174	0.2521	10.84	3.72
72	0.09128	0.04434	0.2603	8.22	2.89
73	0.10751	0.04620	0.2669	6.12	2.25
74	0.12386	0.04769	0.2724	4.39	1.84
75	0.14042	0.04875	0.2772	2.97	1.49
76	0.15712	0.04944	0.2814	1.76	1.26
77	0.17389	0.04980	0.2853	0.75	1.06
78	0.19068	0.04988	0.2890	-0.14	0.92
79	0.20745	0.04973	0.2925	-0.94	0.83
80	0.22416	0.04934	0.2959	-1.68	0.78
81	0.24081	0.04875	0.2991	-2.39	0.74
82	0.25738	0.04796	0.3020	-3.07	0.72
83	0.27387	0.04698	0.3046	-3.74	0.70
84	0.29027	0.04581	0.3069	-4.39	0.69
85	0.30661	0.04447	0.3090	-5.02	0.67
86	0.32288	0.04295	0.3107	-5.63	0.65
87	0.33908	0.04127	0.3122	-6.21	0.63
88	0.35523	0.03943	0.3134	-6.79	0.62
89	0.37134	0.03743	0.3146	-7.35	0.61
90	0.38739	0.03528	0.3155	-7.91	0.61
91	0.40340	0.03298	0.3163	-8.48	0.62
92	0.41937	0.03051	0.3170	-9.07	0.63
93	0.43530	0.02788	0.3175	-9.68	0.66
94	0.45122	0.02508	0.3177	-10.28	0.65
95	0.46711	0.02211	0.3180	-10.89	0.66
96	0.48297	0.01896	0.3181	-11.57	0.73
97	0.49883	0.01562	0.3180	-12.26	0.75
98	0.51467	0.01207	0.3176	-12.98	0.77

99	0.53052	0.00831	0.3171	-13.73	0.80
100	0.54638	0.00432	0.3165	-14.51	0.83
101	0.56225	0.00010	0.3158	-15.32	0.86
102	0.57813	-0.00438	0.3150	-16.18	0.91
103	0.59404	-0.00913	0.3140	-17.09	0.95
104	0.60997	-0.01417	0.3130	-18.06	1.02
105	0.62592	-0.01954	0.3117	-19.11	1.09
106	0.64191	-0.02525	0.3103	-20.25	1.17
107	0.65794	-0.03136	0.3085	-21.48	1.25
108	0.67402	-0.03790	0.3063	-22.81	1.34
109	0.69018	-0.04493	0.3035	-24.26	1.43
110	0.70642	-0.05252	0.2999	-25.82	1.53
111	0.72279	-0.06074	0.2952	-27.50	1.60
112	0.73935	-0.06968	0.2889	-29.24	1.61
113	0.75620	-0.07945	0.2808	-30.92	1.50
114	0.77346	-0.09010	0.2712	-32.36	1.24
115	0.79130	-0.10165	0.2606	-33.42	0.87
116	0.80985	-0.11405	0.2502	-34.03	0.48
117	0.82920	-0.12719	0.2406	-34.25	0.16
118	0.84933	-0.14089	0.2321	-34.19	-0.04
119	0.87017	-0.15498	0.2245	-33.92	-0.19
120	0.89156	-0.16924	0.2178	-33.45	-0.31
121	0.91324	-0.18340	0.2118	-32.80	-0.44
122	0.93481	-0.19709	0.2067	-31.96	-0.57
123	0.95573	-0.20990	0.2025	-30.98	-0.70
124	0.97530	-0.22140	0.1992	-29.90	-0.83
125	0.99273	-0.23121	0.1968	-28.78	-0.98
126	1.00725	-0.23901	0.1952	-27.67	-1.18
127	1.01822	-0.24463	0.1941	-26.58	-1.54
128	1.02521	-0.24806	0.1936	-25.53	-2.35
129	1.02807	-0.24940	0.1933	-24.52	-5.62
130	1.02820	-0.24946	0.1933	-24.32	-24.49

1

BOUNDARY LAYER CORRECTION

PRESSURE SIDE

N	X	Y	EM	TH	SEP
64	0.00059	0.00141	0.00002		
63	-0.00102	-0.00783	0.09112		
62	0.00072	-0.01744	0.16654		
61	0.00571	-0.02728	0.21179		
60	0.01382	-0.03732	0.23362		
59	0.02455	-0.04746	0.24716		
58	0.03734	-0.05747	0.25670		
57	0.05170	-0.06717	0.26411		
56	0.06719	-0.07641	0.27058		
55	0.08343	-0.08509	0.27654		

54	0.10016	-0.09315	0.28165		
53	0.11718	-0.10055	0.28586		
52	0.13440	-0.10734	0.28904		
51	0.15172	-0.11354	0.29143	0.00004	0.00009
50	0.16911	-0.11922	0.29312	0.00009	-0.00003
49	0.18651	-0.12445	0.29434	0.00014	-0.00003
48	0.20392	-0.12928	0.29521	0.00017	-0.00003
47	0.22130	-0.13377	0.29587	0.00020	-0.00002
46	0.23866	-0.13796	0.29638	0.00024	-0.00002
45	0.25598	-0.14191	0.29681	0.00028	-0.00002
44	0.27326	-0.14565	0.29720	0.00031	-0.00002
43	0.29049	-0.14921	0.29762	0.00034	-0.00003
42	0.30768	-0.15262	0.29807	0.00037	-0.00003
41	0.32481	-0.15589	0.29857	0.00040	-0.00004
40	0.34190	-0.15903	0.29907	0.00042	-0.00004
39	0.35893	-0.16206	0.29952	0.00045	-0.00004
38	0.37593	-0.16498	0.29989	0.00047	-0.00003
37	0.39290	-0.16780	0.30014	0.00050	-0.00002
36	0.40984	-0.17050	0.30021	0.00053	0.00001
35	0.42678	-0.17310	0.30003	0.00055	0.00004
34	0.44373	-0.17560	0.29956	0.00058	0.00008
33	0.46071	-0.17798	0.29867	0.00061	0.00012
32	0.47775	-0.18025	0.29755	0.00065	0.00023
31	0.49487	-0.18240	0.29505	0.00069	0.00039
30	0.51216	-0.18445	0.29193	0.00074	0.00037
29	0.52958	-0.18649	0.28998	0.00078	0.00035
28	0.54711	-0.18846	0.28741	0.00082	0.00049
27	0.56481	-0.19034	0.28404	0.00088	0.00062
26	0.58270	-0.19218	0.28034	0.00094	0.00074
25	0.60081	-0.19396	0.27624	0.00100	0.00087
24	0.61917	-0.19571	0.27175	0.00108	0.00104
23	0.63780	-0.19744	0.26677	0.00117	0.00126
22	0.65674	-0.19917	0.26126	0.00127	0.00151
21	0.67602	-0.20093	0.25528	0.00139	0.00177
20	0.69569	-0.20278	0.24901	0.00153	0.00200
19	0.71573	-0.20477	0.24271	0.00168	0.00218
18	0.73614	-0.20698	0.23663	0.00184	0.00229
17	0.75688	-0.20947	0.23093	0.00202	0.00235
16	0.77788	-0.21228	0.22564	0.00220	0.00239
15	0.79906	-0.21545	0.22077	0.00238	0.00240
14	0.82034	-0.21901	0.21632	0.00257	0.00239
13	0.84160	-0.22297	0.21228	0.00276	0.00235
12	0.86271	-0.22732	0.20867	0.00294	0.00228
11	0.88350	-0.23204	0.20546	0.00312	0.00219
10	0.90379	-0.23709	0.20266	0.00328	0.00206
9	0.92337	-0.24239	0.20027	0.00344	0.00191
8	0.94197	-0.24785	0.19828	0.00357	0.00172
7	0.95928	-0.25333	0.19668	0.00369	0.00153
6	0.97497	-0.25864	0.19544	0.00378	0.00132
5	0.98864	-0.26357	0.19453	0.00385	0.00113
4	0.99986	-0.26786	0.19390	0.00390	0.00095
3	1.00817	-0.27121	0.19351	0.00394	0.00078
2	1.01312	-0.27331	0.19332	0.00396	0.00072

1   1.01443   -0.27389   0.19332   0.00396   0.00072

SUCTION SIDE

N	X	Y	EM	TH	SEP
65	0.00496	0.00973	0.08312		
66	0.01226	0.01723	0.14295		
67	0.02194	0.02375	0.18093		
68	0.03361	0.02944	0.20595		
69	0.04667	0.03438	0.22687		
70	0.06077	0.03846	0.24153		
71	0.07571	0.04174	0.25212		
72	0.09128	0.04434	0.26031		
73	0.10751	0.04620	0.26692		
74	0.12386	0.04769	0.27237		
75	0.14042	0.04875	0.27717		
76	0.15712	0.04944	0.28139		
77	0.17389	0.04980	0.28530		
78	0.19068	0.04988	0.28897		
79	0.20745	0.04973	0.29253		
80	0.22416	0.04934	0.29591		
81	0.24081	0.04875	0.29909		
82	0.25738	0.04796	0.30201		
83	0.27387	0.04698	0.30464		
84	0.29027	0.04581	0.30695	0.00004	0.00009
85	0.30661	0.04447	0.30896	0.00008	-0.00004
86	0.32288	0.04295	0.31067	0.00012	-0.00004
87	0.33908	0.04127	0.31216	0.00015	-0.00004
88	0.35523	0.03943	0.31344	0.00018	-0.00005
89	0.37134	0.03743	0.31455	0.00022	-0.00005
90	0.38739	0.03528	0.31551	0.00025	-0.00005
91	0.40340	0.03298	0.31634	0.00028	-0.00004
92	0.41937	0.03051	0.31702	0.00031	-0.00003
93	0.43530	0.02788	0.31747	0.00033	-0.00002
94	0.45122	0.02508	0.31769	0.00036	-0.00002
95	0.46711	0.02211	0.31799	0.00038	-0.00002
96	0.48297	0.01896	0.31812	0.00041	0.00000
97	0.49883	0.01562	0.31795	0.00043	0.00002
98	0.51467	0.01207	0.31762	0.00046	0.00004
99	0.53052	0.00831	0.31714	0.00049	0.00005
100	0.54638	0.00432	0.31653	0.00052	0.00007
101	0.56225	0.00010	0.31580	0.00054	0.00008
102	0.57813	-0.00438	0.31495	0.00057	0.00010
103	0.59404	-0.00913	0.31402	0.00060	0.00012
104	0.60997	-0.01417	0.31296	0.00063	0.00014
105	0.62592	-0.01954	0.31175	0.00067	0.00017
106	0.64191	-0.02525	0.31028	0.00070	0.00022
107	0.65794	-0.03136	0.30849	0.00074	0.00028
108	0.67402	-0.03790	0.30627	0.00078	0.00037
109	0.69018	-0.04493	0.30349	0.00082	0.00050

110	0.70642	-0.05252	0.29990	0.00088	0.00069
111	0.72279	-0.06074	0.29517	0.00095	0.00098
112	0.73935	-0.06968	0.28890	0.00104	0.00141
113	0.75620	-0.07945	0.28082	0.00116	0.00194
114	0.77346	-0.09010	0.27115	0.00131	0.00250
115	0.79130	-0.10165	0.26062	0.00151	0.00296
116	0.80985	-0.11405	0.25020	0.00174	0.00322
117	0.82920	-0.12719	0.24063	0.00200	0.00331
118	0.84933	-0.14089	0.23212	0.00227	0.00334
119	0.87017	-0.15498	0.22453	0.00256	0.00337
120	0.89156	-0.16924	0.21775	0.00287	0.00339
121	0.91324	-0.18340	0.21177	0.00318	0.00335
122	0.93481	-0.19709	0.20665	0.00349	0.00321
123	0.95573	-0.20990	0.20246	0.00377	0.00298
124	0.97530	-0.22140	0.19920	0.00401	0.00267
125	0.99273	-0.23121	0.19681	0.00421	0.00234
126	1.00725	-0.23901	0.19518	0.00435	0.00202
127	1.01822	-0.24463	0.19415	0.00444	0.00177
128	1.02521	-0.24806	0.19357	0.00449	0.00178
129	1.02807	-0.24940	0.19332	0.00452	0.00181
130	1.02820	-0.24946	0.19332	0.00452	0.00181

BODY COORDINATES AFTER BOUNDARY LAYER SUBTRACTION

N	XV	YV
1	1.01704	-0.26812
2	1.01564	-0.26750
3	1.01060	-0.26534
4	1.00219	-0.26193
5	0.99086	-0.25761
6	0.97706	-0.25267
7	0.96123	-0.24739
8	0.94375	-0.24199
9	0.92499	-0.23666
10	0.90524	-0.23154
11	0.88477	-0.22672
12	0.86380	-0.22226
13	0.84253	-0.21820
14	0.82113	-0.21456
15	0.79971	-0.21134
16	0.77841	-0.20850
17	0.75731	-0.20603
18	0.73650	-0.20387
19	0.71602	-0.20197
20	0.69593	-0.20027
21	0.67623	-0.19868
22	0.65692	-0.19715
23	0.63797	-0.19561

24	0.61932	-0.19404		77	0.17389	0.04980
25	0.60096	-0.19243		78	0.19068	0.04988
26	0.58284	-0.19076		79	0.20745	0.04973
27	0.56494	-0.18903		80	0.22416	0.04934
28	0.54724	-0.18723		81	0.24081	0.04875
29	0.52971	-0.18534		82	0.25738	0.04796
30	0.51229	-0.18338		83	0.27387	0.04698
31	0.49499	-0.18138		84	0.29027	0.04575
32	0.47787	-0.17931		85	0.30659	0.04428
33	0.46083	-0.17710		86	0.32285	0.04272
34	0.44385	-0.17476		87	0.33905	0.04100
35	0.42690	-0.17231		88	0.35520	0.03912
36	0.40996	-0.16975		89	0.37129	0.03710
37	0.39302	-0.16707		90	0.38734	0.03491
38	0.37605	-0.16429		91	0.40334	0.03256
39	0.35905	-0.16141		92	0.41929	0.03005
40	0.34201	-0.15841		93	0.43522	0.02738
41	0.32492	-0.15530		94	0.45112	0.02455
42	0.30779	-0.15207		95	0.46700	0.02155
43	0.29060	-0.14870		96	0.48285	0.01837
44	0.27336	-0.14519		97	0.49869	0.01499
45	0.25607	-0.14151		98	0.51452	0.01141
46	0.23874	-0.13761		99	0.53035	0.00761
47	0.22139	-0.13343		100	0.54619	0.00359
48	0.20400	-0.12898		101	0.56204	-0.00067
49	0.18658	-0.12421		102	0.57790	-0.00519
50	0.16917	-0.11902		103	0.59378	-0.00998
51	0.15174	-0.11348		104	0.60968	-0.01506
52	0.13440	-0.10734		105	0.62561	-0.02046
53	0.11718	-0.10055		106	0.64156	-0.02622
54	0.10016	-0.09315		107	0.65755	-0.03237
55	0.08343	-0.08509		108	0.67358	-0.03896
56	0.06719	-0.07641		109	0.68967	-0.04606
57	0.05170	-0.06717		110	0.70584	-0.05372
58	0.03734	-0.05747		111	0.72212	-0.06204
59	0.02455	-0.04746		112	0.73855	-0.07113
60	0.01382	-0.03732		113	0.75522	-0.08109
61	0.00571	-0.02728		114	0.77226	-0.09200
62	0.00072	-0.01744		115	0.78983	-0.10389
63	-0.00102	-0.00783		116	0.80807	-0.11669
64	0.00059	0.00141		117	0.82708	-0.13029
65	0.00496	0.00973		118	0.84686	-0.14452
66	0.01226	0.01723		119	0.86734	-0.15919
67	0.02194	0.02375		120	0.88838	-0.17406
68	0.03361	0.02944		121	0.90974	-0.18883
69	0.04667	0.03438		122	0.93105	-0.20311
70	0.06077	0.03846		123	0.95181	-0.21644
71	0.07571	0.04174		124	0.97130	-0.22835
72	0.09128	0.04434		125	0.98876	-0.23843
73	0.10751	0.04620		126	1.00338	-0.24640
74	0.12386	0.04769		127	1.01448	-0.25211
75	0.14042	0.04875		128	1.02162	-0.25558
76	0.15712	0.04944		129	1.02462	-0.25695

130   1.02478   -0.25702

DXV = 0.0077;   DYV = 0.0111

THICK/CHORD AT TE   0.013,   DEV = 0.002

M
.300

.225

.150

.075

.000
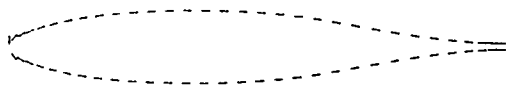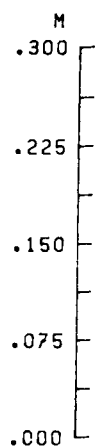
RUN	3010
MIN	0.125
ANIN	-0.00
MEX	0.127
ANEX	0.00
TURN	-0.00
SOLD	1.11
THCR	0.150
THTE	0.013
DTE	0.000

CASE 15. - IRT SPRAY BARS.

123

15. ICE3010

```
&DATA
NRN= 3010
R= 2.4310
EMACH= 0.150
THETA= 0.0
NI= 3
NF= 64
GRID= 0.60D-01
GRIDS= 0.40D-01
IRICHD= 1
IRICHS= 0
RN= 1000000.0
TRU= 0.30
TRL= 0.30
RTHO= 320.0
IGRPH= 1
ISVPLT= 1
CHDU= 20.0
&END
1
```

N	S-INPUT	Q-INPUT
1	-1.522000	-0.771000
2	-1.447000	-0.782100
3	-1.271000	-0.832000
4	-1.157000	-0.880000
5	-1.057000	-0.937000
6	-0.957000	-1.013000
7	-0.835700	-1.047000
8	-0.668500	-1.065000
9	-0.524800	-1.070000
10	-0.294200	-1.060000
11	-0.158800	-1.016800
12	-0.074710	-0.923000
13	-0.038600	-0.815000
14	-0.028200	-0.736000
15	-0.017000	-0.650000
16	-0.013000	-0.620000
17	-0.010000	-0.580000
18	0.000000	0.000000
19	0.010000	0.580000
20	0.013000	0.620000

21	0.017000	0.650000
22	0.028200	0.736000
23	0.038600	0.815000
24	0.074710	0.923000
25	0.158800	1.016800
26	0.294200	1.060000
27	0.524800	1.070000
28	0.668500	1.065000
29	0.835700	1.047000
30	0.957000	1.013000
31	1.057000	0.937000
32	1.157000	0.880000
33	1.271000	0.832000
34	1.447000	0.782100
35	1.522000	0.771000

ITER	MIN	ANIN	TURN	GAP	RESID
1	0.12	0.00	0.00	0.90	-0.3949D-01
2	0.12	0.00	-0.00	0.90	-0.7898D-02
3	0.12	-0.00	-0.00	0.90	-0.1580D-02

1

INVISCID   COMPUTATION

INLET MACH NUMBER = 0.125   INLET FLOW ANGLE =   -0.00

EXIT MACH NUMBER = 0.127   EXIT FLOW ANGLE =   0.00

TURNING =   -0.000

GAP   = 0.898   CHORD = 0.999   AXIAL CHORD = 0.999

GAP/CHORD = 0.899 SOLIDITY = 1.112   AXIAL SOLIDITY = 1.112

THICK/CHORD = 0.150,   DX = 0.0000; DY = 0.0134

THICK/CHORD AT TE = 0.013,   DEV = 0.000

N	X	Y	MACH	ANGL	CURVATURE
1	1.00000	-0.00668	0.1156	0.00	0.00
2	1.00000	-0.00668	0.1156	0.00	0.00
3	0.99542	-0.00674	0.1157	1.19	-4.53
4	0.98197	-0.00718	0.1161	2.42	-1.59
5	0.96051	-0.00834	0.1168	3.70	-1.04
6	0.93229	-0.01050	0.1181	5.01	-0.81
7	0.89880	-0.01383	0.1199	6.31	-0.67
8	0.86152	-0.01836	0.1224	7.52	-0.56
9	0.82182	-0.02399	0.1255	8.57	-0.46
10	0.78082	-0.03049	0.1293	9.41	-0.35
11	0.73940	-0.03760	0.1337	10.05	-0.26
12	0.69828	-0.04505	0.1392	10.40	-0.15
13	0.65807	-0.05235	0.1458	10.00	0.17
14	0.61892	-0.05880	0.1518	8.56	0.63
15	0.58043	-0.06395	0.1553	6.70	0.83
16	0.54217	-0.06789	0.1571	5.11	0.72
17	0.50400	-0.07086	0.1582	3.80	0.60
18	0.46595	-0.07298	0.1591	2.62	0.54
19	0.42804	-0.07434	0.1598	1.49	0.52
20	0.39033	-0.07496	0.1603	0.36	0.52
21	0.35285	-0.07482	0.1605	-0.80	0.54
22	0.31566	-0.07392	0.1605	-1.98	0.55
23	0.27884	-0.07226	0.1602	-3.20	0.58
24	0.24254	-0.06982	0.1599	-4.50	0.62
25	0.20699	-0.06658	0.1594	-5.96	0.71
26	0.17251	-0.06246	0.1589	7.74	0.89
27	0.13950	-0.05733	0.1577	-10.03	1.20
28	0.10834	-0.05105	0.1549	-12.87	1.56
29	0.07944	-0.04363	0.1498	-15.96	1.81
30	0.05344	-0.03542	0.1439	-19.30	2.14
31	0.03143	-0.02671	0.1360	-24.39	3.76
32	0.01440	-0.01775	0.1226	-32.12	7.01
33	0.00362	-0.00895	0.0927	-50.72	23.33
34	0.00132	-0.00000	0.0000	90.00	74.22
35	0.00362	0.00895	0.0927	50.72	74.18
36	0.01440	0.01775	0.1226	32.12	23.33
37	0.03143	0.02671	0.1360	24.39	7.01
38	0.05344	0.03542	0.1439	19.30	3.76
39	0.07944	0.04363	0.1498	15.96	2.14
40	0.10834	0.05105	0.1549	12.87	1.81
41	0.13950	0.05733	0.1577	10.03	1.56
42	0.17251	0.06246	0.1589	7.74	1.20
43	0.20699	0.06658	0.1594	5.96	0.89
44	0.24254	0.06982	0.1599	4.50	0.71
45	0.27884	0.07226	0.1602	3.20	0.62
46	0.31566	0.07392	0.1605	1.98	0.58
47	0.35285	0.07482	0.1605	0.80	0.55
48	0.39033	0.07496	0.1603	-0.36	0.54
49	0.42804	0.07434	0.1598	-1.49	0.52

50	0.46595	0.07298	0.1591	-2.62	0.52
51	0.50400	0.07086	0.1582	-3.80	0.54
52	0.54217	0.06789	0.1571	-5.11	0.60
53	0.58043	0.06395	0.1553	-6.70	0.72
54	0.61892	0.05880	0.1518	-8.56	0.83
55	0.65807	0.05235	0.1458	-10.00	0.63
56	0.69828	0.04505	0.1392	-10.40	0.17
57	0.73940	0.03760	0.1337	-10.05	-0.15
58	0.78082	0.03049	0.1293	-9.41	-0.26
59	0.82182	0.02399	0.1255	-8.57	-0.35
60	0.86152	0.01836	0.1224	-7.52	-0.46
61	0.89880	0.01383	0.1199	-6.31	-0.56
62	0.93229	0.01050	0.1181	-5.01	-0.67
63	0.96051	0.00834	0.1168	-3.70	-0.81
64	0.98197	0.00718	0.1161	-2.42	-1.04
65	0.99542	0.00674	0.1157	-1.19	-1.59
66	1.00000	0.00668	0.1156	0.00	-4.53

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BOUNDARY LAYER CORRECTION

PRESSURE SIDE

N	X	Y	EM	TH	SEP
34	0.00132	-0.00000	0.00001		
33	0.00362	-0.00895	0.09266		
32	0.01440	-0.01775	0.12255		
31	0.03143	-0.02671	0.13598		
30	0.05344	-0.03542	0.14391		
29	0.07944	-0.04363	0.14981		
28	0.10834	-0.05105	0.15488		
27	0.13950	-0.05733	0.15770		
26	0.17251	-0.06246	0.15890		
25	0.20699	-0.06658	0.15944		
24	0.24254	-0.06982	0.15987		
23	0.27884	-0.07226	0.16025		
22	0.31566	-0.07392	0.16048	0.00025	0.00009
21	0.35285	-0.07482	0.16052	0.00036	0.00001
20	0.39033	-0.07496	0.16029	0.00047	0.00003
19	0.42804	-0.07434	0.15978	0.00056	0.00006
18	0.46595	-0.07298	0.15910	0.00066	0.00009
17	0.50400	-0.07086	0.15822	0.00076	0.00014
16	0.54217	-0.06789	0.15706	0.00086	0.00022
15	0.58043	-0.06395	0.15533	0.00097	0.00047
14	0.61892	-0.05880	0.15177	0.00113	0.00101
13	0.65807	-0.05235	0.14579	0.00136	0.00161
12	0.69828	-0.04505	0.13917	0.00164	0.00185
11	0.73940	-0.03760	0.13370	0.00193	0.00180
10	0.78082	-0.03049	0.12931	0.00222	0.00177

9	0.82182	-0.02399	0.12555	0.00250	0.00176
8	0.86152	-0.01836	0.12240	0.00278	0.00170
7	0.89880	-0.01383	0.11991	0.00303	0.00156
6	0.93229	-0.01050	0.11808	0.00323	0.00136
5	0.96051	-0.00834	0.11684	0.00339	0.00114
4	0.98197	-0.00718	0.11609	0.00349	0.00094
3	0.99542	-0.00674	0.11570	0.00355	0.00081
2	1.00000	-0.00668	0.11559	0.00356	0.00079
1	1.00000	-0.00668	0.11559	0.00356	0.00079

SUCTION SIDE

N	X	Y	EM	TH	SEP
35	0.00362	0.00895	0.09266		
36	0.01440	0.01775	0.12255		
37	0.03143	0.02671	0.13598		
38	0.05344	0.03542	0.14391		
39	0.07944	0.04363	0.14981		
40	0.10834	0.05105	0.15488		
41	0.13950	0.05733	0.15770		
42	0.17251	0.06246	0.15890		
43	0.20699	0.06658	0.15944		
44	0.24254	0.06982	0.15987		
45	0.27884	0.07226	0.16025		
46	0.31566	0.07392	0.16048	0.00025	0.00009
47	0.35285	0.07482	0.16052	0.00036	0.00001
48	0.39033	0.07496	0.16029	0.00047	0.00003
49	0.42804	0.07434	0.15978	0.00056	0.00006
50	0.46595	0.07298	0.15910	0.00066	0.00009
51	0.50400	0.07086	0.15822	0.00076	0.00014
52	0.54217	0.06789	0.15706	0.00086	0.00022
53	0.58043	0.06395	0.15533	0.00097	0.00047
54	0.61892	0.05880	0.15177	0.00113	0.00101
55	0.65807	0.05235	0.14579	0.00136	0.00161
56	0.69828	0.04505	0.13917	0.00164	0.00185
57	0.73940	0.03760	0.13370	0.00193	0.00180
58	0.78082	0.03049	0.12931	0.00222	0.00177
59	0.82182	0.02399	0.12555	0.00250	0.00176
60	0.86152	0.01836	0.12240	0.00278	0.00170
61	0.89880	0.01383	0.11991	0.00303	0.00156
62	0.93229	0.01050	0.11808	0.00323	0.00136
63	0.96051	0.00834	0.11684	0.00339	0.00114
64	0.98197	0.00718	0.11609	0.00349	0.00094
65	0.99542	0.00674	0.11570	0.00355	0.00088
66	1.00000	0.00668	0.11559	0.00356	0.00088

BODY COORDINATES AFTER BOUNDARY LAYER SUBTRACTION

METAL COORDINATES IN INCHES

THE CHORD IS 20.000 INCHES

THE GAP IS 17.987 INCHES

N	XV	YV
1	20.02647	-0.02200
2	20.02647	-0.02200
3	19.93235	-0.02289
4	19.66063	-0.03143
5	19.22839	-0.05550
6	18.66099	-0.10114
7	17.98821	-0.17216
8	17.24025	-0.26925
9	16.44450	-0.38989
10	15.62361	-0.52928
11	14.79502	-0.68197
12	13.97310	-0.84203
13	13.17010	-0.99908
14	12.38872	-1.13764
15	11.62008	-1.24772
16	10.85514	-1.33097
17	10.09162	-1.39356
18	9.33021	-1.43909
19	8.57160	-1.46901
20	7.81680	-1.48395
21	7.06663	-1.48385
22	6.32188	-1.47240
23	5.58422	-1.44706
24	4.85725	-1.39824
25	4.14526	-1.33329
26	3.45474	-1.25083
27	2.79360	-1.14813
28	2.16968	-1.02233
29	1.59092	-0.87375
30	1.07015	-0.70929
31	0.62943	-0.53496
32	0.28840	-0.35546
33	0.07259	-0.17917
34	0.02647	-0.00002
35	0.07259	0.17917
36	0.28840	0.35546
37	0.62943	0.53496
38	1.07015	0.70929
39	1.59091	0.87375
40	2.16968	1.02233
41	2.79360	1.14813
42	3.45474	1.25084
43	4.14526	1.33329
44	4.85725	1.39824
45	5.58422	1.44706
46	6.32188	1.47240
47	7.06663	1.48384
48	7.81680	1.48395
49	8.57160	1.46901
50	9.33021	1.43909
51	10.09162	1.39356
52	10.85514	1.33097
53	11.62008	1.24772
54	12.38872	1.13764
55	13.17010	0.99908
56	13.97310	0.84203
57	14.79502	0.68196
58	15.62361	0.52927
59	16.44450	0.38988
60	17.24025	0.26925
61	17.98821	0.17216
62	18.66099	0.10114
63	19.22839	0.05550
64	19.66063	0.03143
65	19.93235	0.02284
66	20.02647	0.02189

THICK/CHORD AT TE   0.002,   DEV = 0.000

M
1.300

0.975

0.650

0.325

0.000
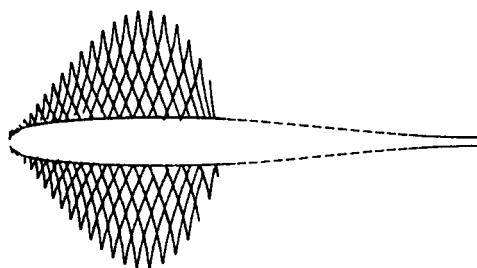
RUN	1038
MIN	0.780
ANIN	0.00
MEX	0.793
ANEX	0.01
TURN	-0.00
SOLD	0.30
THCR	0.106
THTE	0.019
DTE	0.000

CASE 16. - ACOUSTIC STRUT.

130

16. STR3906

&DATA NRN = 1039, R = 3.95, EMACH = 0.61, THETA = 0.,
NI = 3, NF = 128, GRID = 6.E-2, GRIDS = 4.E-2, IRICHD =
  IRICHS = 1, RN = 1000000., TRU = 0.3, TRL = 0.3, RTHO
= 320., IGRPH = 1, ISVPLT = 1, CHDU = 2.6433, &END
1

N	S-INPUT	Q-INPUT
1	-1.068577	-1.147000
2	-0.865591	-1.225000
3	-0.749681	-1.315000
4	-0.632770	-1.425000
5	-0.556687	-1.520000
6	-0.480603	-1.615000
7	-0.404519	-1.690000
8	-0.359966	-1.700000
9	-0.315412	-1.700000
10	-0.266876	-1.700000
11	-0.219339	-1.700000
12	-0.154987	-1.700000
13	-0.126917	-1.700000
14	-0.104371	-1.695000
15	-0.079048	-1.680000
16	-0.053734	-1.650000
17	-0.043209	-1.620000
18	-0.033000	-1.560000
19	-0.021000	-1.280000
20	-0.015000	-0.996473
21	-0.010000	-0.572142
22	0.000000	0.000000
23	0.010000	0.572142
24	0.015000	0.996473
25	0.021000	1.280000
26	0.033000	1.560000
27	0.043209	1.620000
28	0.053734	1.650000
29	0.079048	1.680000
30	0.104371	1.695000
31	0.126917	1.700000
32	0.154987	1.700000
33	0.219339	1.700000
34	0.266876	1.700000
35	0.315412	1.700000

36	0.359966	1.700000
37	0.404519	1.690000
38	0.480603	1.615000
39	0.556687	1.520000
40	0.632770	1.425000
41	0.749681	1.315000
42	0.865591	1.225000
43	1.068577	1.147000

ITER	MIN	ANIN	TURN	GAP	RESID
1	0.71	0.04	0.00	3.00	-0.1324E+00

1

INVISCID COMPUTATION

INLET MACH NUMBER = 0.780   INLET FLOW ANGLE = 0.00

EXIT MACH NUMBER = 0.793   EXIT FLOW ANGLE = 0.01

TURNING = -0.005

GAP = 3.457   CHORD = 1.028   AXIAL CHORD = 1.028

GAP/CHORD = 3.363   SOLIDITY = 0.297   AXIAL SOLIDITY = 0.297

THICK/CHORD = 0.105,   DX= 0.0000; DY = 0.0189

THICK/CHORD AT TE = 0.018,   DTE= 0.000

N	X	Y	MACH	ANGL	CURVATURE
1	1.03056	-0.00939	0.7081	0.01	0.00
2	1.03056	-0.00939	0.7081	0.01	-8.67
3	1.02939	-0.00940	0.7082	0.34	-4.93
4	1.02562	-0.00943	0.7084	0.68	-1.55
5	1.01957	-0.00952	0.7090	1.02	-0.99
6	1.01099	-0.00970	0.7098	1.37	-0.72
7	1.00023	-0.01000	0.7110	1.74	-0.60
8	0.98706	-0.01044	0.7127	2.12	-0.51
9	0.97190	-0.01106	0.7151	2.52	-0.45
10	0.95454	-0.01188	0.7183	2.92	-0.41
11	0.93544	-0.01293	0.7225	3.33	-0.38
12	0.91440	-0.01423	0.7278	3.74	-0.34

13	0.89195	-0.01578	0.7344	4.14	-0.31
14	0.86789	-0.01760	0.7424	4.52	-0.27
15	0.84280	-0.01966	0.7520	4.86	-0.24
16	0.81645	-0.02197	0.7632	5.16	-0.19
17	0.78948	-0.02447	0.7760	5.39	-0.15
18	0.76163	-0.02714	0.7902	5.54	-0.10
19	0.73353	-0.02988	0.8056	5.62	-0.05
20	0.70484	-0.03271	0.8218	5.62	0.00
21	0.67625	-0.03551	0.8387	5.56	0.04
22	0.64726	-0.03831	0.8566	5.45	0.07
23	0.61872	-0.04099	0.8761	5.29	0.10
24	0.59003	-0.04359	0.8975	5.05	0.14
25	0.56236	-0.04596	0.9211	4.73	0.20
26	0.53496	-0.04813	0.9461	4.30	0.27
27	0.50961	-0.04993	0.9708	3.81	0.34
28	0.48550	-0.05113	0.9940	3.31	0.36
29	0.46535	-0.05129	1.0302	2.70	0.53
30	0.44789	-0.05202	1.0559	2.08	0.61
31	0.42967	-0.05260	1.0702	1.60	0.46
32	0.41036	-0.05307	1.0788	1.18	0.38
33	0.39068	-0.05341	1.0842	0.81	0.33
34	0.37110	-0.05363	1.0879	0.46	0.31
35	0.35202	-0.05373	1.0906	0.14	0.30
36	0.33329	-0.05372	1.0928	-0.18	0.29
37	0.31519	-0.05362	1.0945	-0.48	0.29
38	0.29818	-0.05343	1.0959	-0.77	0.30
39	0.28168	-0.05316	1.0971	-1.06	0.31
40	0.26591	-0.05283	1.0982	-1.35	0.32
41	0.25133	-0.05245	1.0992	-1.64	0.34
42	0.23780	-0.05203	1.1002	-1.91	0.35
43	0.22532	-0.05159	1.1010	-2.18	0.37
44	0.21353	-0.05111	1.1019	-2.44	0.39
45	0.20248	-0.05062	1.1027	-2.71	0.42
46	0.19204	-0.05010	1.1035	-2.98	0.45
47	0.18198	-0.04955	1.1042	-3.26	0.48
48	0.17240	-0.04898	1.1050	-3.54	0.51
49	0.16304	-0.04838	1.1059	-3.84	0.56
50	0.15406	-0.04775	1.1067	-4.15	0.59
51	0.14539	-0.04710	1.1077	-4.47	0.64
52	0.13693	-0.04641	1.1086	-4.81	0.70
53	0.12884	-0.04571	1.1095	-5.16	0.76
54	0.12088	-0.04496	1.1105	-5.54	0.83
55	0.11321	-0.04419	1.1114	-5.94	0.91
56	0.10574	-0.04339	1.1120	-6.37	0.99
57	0.09841	-0.04254	1.1128	-6.85	1.13
58	0.09141	-0.04167	1.1133	-7.35	1.25
59	0.08456	-0.04075	1.1136	-7.92	1.43
60	0.07802	-0.03980	1.1132	-8.53	1.62
61	0.07175	-0.03883	1.1100	-9.16	1.71
62	0.06562	-0.03779	1.1076	-9.91	2.11
63	0.05975	-0.03673	1.1052	-10.73	2.41
64	0.05432	-0.03564	1.1034	-11.77	3.27
65	0.04829	-0.03432	1.1056	-13.04	3.59

66	0.04140	-0.03263	1.1068	-14.52	3.63
67	0.03609	-0.03115	1.1126	-16.61	6.65
68	0.01314	-0.01760	0.8686	-36.40	12.96
69	0.00732	-0.01182	0.6159	-54.48	38.48
70	0.00284	-0.00281	0.2902	-74.81	35.24
71	0.00258	0.00000	0.0001	90.01	93.91
72	0.00284	0.00281	0.2902	74.82	94.01
73	0.00732	0.01183	0.6159	54.49	35.24
74	0.01314	0.01761	0.8686	36.41	38.48
75	0.03609	0.03116	1.1126	16.62	12.96
76	0.04139	0.03264	1.1068	14.53	6.65
77	0.04828	0.03433	1.1056	13.05	3.63
78	0.05431	0.03565	1.1034	11.78	3.59
79	0.05974	0.03674	1.1052	10.74	3.27
80	0.06561	0.03780	1.1076	9.92	2.41
81	0.07174	0.03884	1.1100	9.17	2.11
82	0.07802	0.03982	1.1132	8.54	1.71
83	0.08456	0.04076	1.1136	7.93	1.62
84	0.09141	0.04168	1.1133	7.36	1.43
85	0.09841	0.04255	1.1128	6.85	1.25
86	0.10573	0.04340	1.1120	6.38	1.13
87	0.11320	0.04421	1.1114	5.95	0.99
88	0.12088	0.04498	1.1105	5.55	0.91
89	0.12884	0.04573	1.1095	5.17	0.83
90	0.13692	0.04643	1.1086	4.82	0.76
91	0.14538	0.04712	1.1077	4.47	0.70
92	0.15405	0.04777	1.1067	4.15	0.64
93	0.16303	0.04840	1.1059	3.85	0.59
94	0.17239	0.04901	1.1050	3.55	0.56
95	0.18198	0.04958	1.1042	3.27	0.51
96	0.19203	0.05013	1.1035	2.99	0.48
97	0.20247	0.05065	1.1027	2.72	0.45
98	0.21353	0.05115	1.1019	2.45	0.42
99	0.22532	0.05162	1.1010	2.18	0.39
100	0.23780	0.05207	1.1002	1.92	0.37
101	0.25132	0.05249	1.0992	1.64	0.35
102	0.26590	0.05287	1.0982	1.36	0.34
103	0.28167	0.05321	1.0971	1.07	0.32
104	0.29817	0.05347	1.0959	0.78	0.31
105	0.31518	0.05366	1.0945	0.49	0.30
106	0.33328	0.05377	1.0928	0.19	0.29
107	0.35201	0.05378	1.0906	-0.13	0.29
108	0.37109	0.05368	1.0879	-0.46	0.30
109	0.39067	0.05347	1.0842	-0.80	0.31
110	0.41035	0.05313	1.0788	-1.17	0.33
111	0.42966	0.05266	1.0702	-1.59	0.38
112	0.44788	0.05209	1.0559	-2.08	0.46
113	0.46534	0.05136	1.0302	-2.69	0.61
114	0.48549	0.05121	0.9940	-3.30	0.53
115	0.50960	0.05001	0.9708	-3.80	0.36
116	0.53495	0.04821	0.9461	-4.29	0.34
117	0.56236	0.04605	0.9211	-4.72	0.27
118	0.59002	0.04368	0.8975	-5.04	0.20

119	0.61871	0.04108	0.8761	-5.28	0.14
120	0.64725	0.03840	0.8566	-5.44	0.10
121	0.67624	0.03561	0.8387	-5.55	0.07
122	0.70484	0.03281	0.8218	-5.61	0.04
123	0.73353	0.02999	0.8056	-5.61	0.00
124	0.76162	0.02725	0.7902	-5.53	-0.05
125	0.78948	0.02458	0.7760	-5.38	-0.10
126	0.81645	0.02210	0.7632	-5.15	-0.15
127	0.84279	0.01979	0.7520	-4.85	-0.19
128	0.86789	0.01773	0.7424	-4.51	-0.24
129	0.89195	0.01591	0.7344	-4.13	-0.27
130	0.91440	0.01437	0.7278	-3.74	-0.31
131	0.93544	0.01307	0.7225	-3.33	-0.34
132	0.95454	0.01202	0.7183	-2.91	-0.38
133	0.97190	0.01120	0.7151	-2.51	-0.41
134	0.98706	0.01059	0.7127	-2.11	-0.45
135	1.00022	0.01015	0.7110	-1.73	-0.51
136	1.01099	0.00986	0.7098	-1.36	-0.60
137	1.01957	0.00968	0.7090	-1.01	-0.72
138	1.02562	0.00959	0.7084	-0.67	-0.99
139	1.02939	0.00955	0.7082	-0.33	-1.55
140	1.03056	0.00955	0.7081	0.00	-4.93

1

BOUNDARY LAYER CORRECTION

PRESSURE SIDE

N	X	Y	EM	TH	SEP
71	0.00258	0.00000	0.00006		
70	0.00284	-0.00281	0.29016		
69	0.00732	-0.01182	0.61590		
68	0.01314	-0.01760	0.86858		
67	0.03609	-0.03115	1.11264		
66	0.04140	-0.03263	1.10685		
65	0.04829	-0.03432	1.10565		
64	0.05432	-0.03564	1.10340		
63	0.05975	-0.03673	1.10521		
62	0.06562	-0.03779	1.10763		
61	0.07175	-0.03883	1.11001		
60	0.07802	-0.03980	1.11318		
59	0.08456	-0.04075	1.11355		
58	0.09141	-0.04167	1.11328		
57	0.09841	-0.04254	1.11277		
56	0.10574	-0.04339	1.11200		
55	0.11321	-0.04419	1.11139		
54	0.12088	-0.04496	1.11046		
53	0.12884	-0.04571	1.10950		
52	0.13693	-0.04641	1.10863		

51	0.14539	-0.04710	1.10765		
50	0.15406	-0.04775	1.10675		
49	0.16304	-0.04838	1.10588		
48	0.17240	-0.04898	1.10500		
47	0.18198	-0.04955	1.10421		
46	0.19204	-0.05010	1.10347		
45	0.20248	-0.05062	1.10271		
44	0.21353	-0.05111	1.10191		
43	0.22532	-0.05159	1.10104		
42	0.23780	-0.05203	1.10015		
41	0.25133	-0.05245	1.09921		
40	0.26591	-0.05283	1.09821		
39	0.28168	-0.05316	1.09710		
38	0.29818	-0.05343	1.09588		
37	0.31519	-0.05362	1.09450	0.00029	0.00006
36	0.33329	-0.05372	1.09279	0.00033	0.00003
35	0.35202	-0.05373	1.09064	0.00038	0.00004
34	0.37110	-0.05363	1.08794	0.00043	0.00006
33	0.39068	-0.05341	1.08425	0.00048	0.00009
32	0.41036	-0.05307	1.07880	0.00053	0.00015
31	0.42967	-0.05260	1.07016	0.00058	0.00029
30	0.44789	-0.05202	1.05591	0.00063	0.00060
29	0.46535	-0.05129	1.03017	0.00071	0.00099
28	0.48550	-0.05113	0.99401	0.00081	0.00098
27	0.50961	-0.04993	0.97080	0.00090	0.00080
26	0.53496	-0.04813	0.94608	0.00100	0.00089
25	0.56236	-0.04596	0.92115	0.00112	0.00096
24	0.59003	-0.04359	0.89749	0.00124	0.00100
23	0.61872	-0.04099	0.87607	0.00137	0.00101
22	0.64726	-0.03831	0.85662	0.00150	0.00103
21	0.67625	-0.03551	0.83875	0.00163	0.00107
20	0.70484	-0.03271	0.82181	0.00177	0.00113
19	0.73353	-0.02988	0.80563	0.00191	0.00120
18	0.76163	-0.02714	0.79022	0.00205	0.00126
17	0.78948	-0.02447	0.77600	0.00220	0.00128
16	0.81645	-0.02197	0.76318	0.00234	0.00127
15	0.84280	-0.01966	0.75200	0.00248	0.00122
14	0.86789	-0.01760	0.74242	0.00261	0.00115
13	0.89195	-0.01578	0.73442	0.00272	0.00106
12	0.91440	-0.01423	0.72781	0.00282	0.00097
11	0.93544	-0.01293	0.72248	0.00291	0.00087
10	0.95454	-0.01188	0.71829	0.00298	0.00076
9	0.97190	-0.01106	0.71511	0.00304	0.00066
8	0.98706	-0.01044	0.71271	0.00309	0.00057
7	1.00023	-0.01000	0.71098	0.00313	0.00049
6	1.01099	-0.00970	0.70976	0.00316	0.00042
5	1.01957	-0.00952	0.70895	0.00318	0.00036
4	1.02562	-0.00943	0.70844	0.00320	0.00031
3	1.02939	-0.00940	0.70817	0.00320	0.00032
2	1.03056	-0.00939	0.70807	0.00321	0.00033
1	1.03056	-0.00939	0.70807	0.00321	0.00033

SUCTION SIDE

N	X	Y	EM	TH	SEP
72	0.00284	0.00281	0.29016		
73	0.00732	0.01183	0.61590		
74	0.01314	0.01761	0.86858		
75	0.03609	0.03116	1.11264		
76	0.04139	0.03264	1.10685		
77	0.04828	0.03433	1.10565		
78	0.05431	0.03565	1.10340		
79	0.05974	0.03674	1.10521		
80	0.06561	0.03780	1.10763		
81	0.07174	0.03884	1.11001		
82	0.07802	0.03982	1.11318		
83	0.08456	0.04076	1.11355		
84	0.09141	0.04168	1.11328		
85	0.09841	0.04255	1.11277		
86	0.10573	0.04340	1.11200		
87	0.11320	0.04421	1.11139		
88	0.12088	0.04498	1.11046		
89	0.12884	0.04573	1.10950		
90	0.13692	0.04643	1.10863		
91	0.14538	0.04712	1.10765		
92	0.15405	0.04777	1.10675		
93	0.16303	0.04840	1.10588		
94	0.17239	0.04901	1.10500		
95	0.18198	0.04958	1.10421		
96	0.19203	0.05013	1.10347		
97	0.20247	0.05065	1.10271		
98	0.21353	0.05115	1.10191		
99	0.22532	0.05162	1.10104		
100	0.23780	0.05207	1.10015		
101	0.25132	0.05249	1.09921		
102	0.26590	0.05287	1.09821		
103	0.28167	0.05321	1.09710		
104	0.29817	0.05347	1.09588		
105	0.31518	0.05366	1.09450	0.00029	0.00006
106	0.33328	0.05377	1.09279	0.00033	0.00003
107	0.35201	0.05378	1.09064	0.00038	0.00004
108	0.37109	0.05368	1.08794	0.00043	0.00006
109	0.39067	0.05347	1.08425	0.00048	0.00009
110	0.41035	0.05313	1.07880	0.00053	0.00015
111	0.42966	0.05266	1.07016	0.00058	0.00029
112	0.44788	0.05209	1.05591	0.00063	0.00060
113	0.46534	0.05136	1.03017	0.00071	0.00099
114	0.48549	0.05121	0.99401	0.00081	0.00098
115	0.50960	0.05001	0.97080	0.00090	0.00080
116	0.53495	0.04821	0.94608	0.00100	0.00089
117	0.56236	0.04605	0.92115	0.00112	0.00096
118	0.59002	0.04368	0.89749	0.00124	0.00100
119	0.61871	0.04108	0.87607	0.00137	0.00101

120	0.64725	0.03840	0.85662	0.00150	0.00103
121	0.67624	0.03561	0.83875	0.00163	0.00107
122	0.70484	0.03281	0.82181	0.00177	0.00113
123	0.73353	0.02999	0.80563	0.00191	0.00120
124	0.76162	0.02725	0.79022	0.00205	0.00126
125	0.78948	0.02458	0.77600	0.00220	0.00128
126	0.81645	0.02210	0.76318	0.00234	0.00127
127	0.84279	0.01979	0.75200	0.00248	0.00122
128	0.86789	0.01773	0.74242	0.00261	0.00115
129	0.89195	0.01591	0.73442	0.00272	0.00106
130	0.91440	0.01437	0.72781	0.00282	0.00097
131	0.93544	0.01307	0.72248	0.00291	0.00087
132	0.95454	0.01202	0.71829	0.00298	0.00076
133	0.97190	0.01120	0.71511	0.00304	0.00066
134	0.98706	0.01059	0.71271	0.00309	0.00057
135	1.00022	0.01015	0.71098	0.00313	0.00049
136	1.01099	0.00986	0.70976	0.00316	0.00042
137	1.01957	0.00968	0.70895	0.00318	0.00036
138	1.02562	0.00959	0.70844	0.00320	0.00031
139	1.02939	0.00955	0.70817	0.00320	0.00029
140	1.03056	0.00955	0.70807	0.00321	0.00029

BODY COORDINATES AFTER BOUNDARY LAYER SUBTRACTION

METAL COORDINATES IN INCHES

THE CHORD IS   2.943 INCHES

THE GAP IS   8.889 INCHES

N	XV	YV
1	2.64994	-0.00976
2	2.64993	-0.00976
3	2.64684	-0.00977
4	2.63707	-0.00984
5	2.62142	-0.01008
6	2.59926	-0.01056
7	2.57150	-0.01135
8	2.53756	-0.01255
9	2.49848	-0.01423
10	2.45374	-0.01649
11	2.40453	-0.01937
12	2.35037	-0.02298
13	2.29256	-0.02730
14	2.23064	-0.03239
15	2.16607	-0.03817
16	2.09832	-0.04466
17	2.02898	-0.05167

18	1.95738	-0.05918		71	0.00664	0.00000
19	1.88520	-0.06690		72	0.00731	0.00722
20	1.81149	-0.07481		73	0.01883	0.03041
21	1.73803	-0.08264		74	0.03379	0.04527
22	1.66356	-0.09041		75	0.09280	0.08012
23	1.59025	-0.09789		76	0.10643	0.08393
24	1.51655	-0.10513		77	0.12416	0.08827
25	1.44550	-0.11179		78	0.13965	0.09167
26	1.37512	-0.11792		79	0.15362	0.09447
27	1.31003	-0.12310		80	0.16872	0.09721
28	1.24811	-0.12670		81	0.18448	0.09987
29	1.19637	-0.12760		82	0.20061	0.10238
30	1.15154	-0.13003		83	0.21743	0.10481
31	1.10473	-0.13191		84	0.23504	0.10718
32	1.05511	-0.13340		85	0.25304	0.10942
33	1.00454	-0.13453		86	0.27187	0.11161
34	0.95421	-0.13533		87	0.29108	0.11368
35	0.90515	-0.13583		88	0.31082	0.11566
36	0.85702	-0.13605		89	0.33128	0.11758
37	0.81048	-0.13629		90	0.35208	0.11940
38	0.76673	-0.13739		91	0.37383	0.12117
39	0.72430	-0.13671		92	0.39612	0.12285
40	0.68375	-0.13585		93	0.41921	0.12446
41	0.64625	-0.13487		94	0.44328	0.12602
42	0.61148	-0.13380		95	0.46792	0.12748
43	0.57939	-0.13265		96	0.49378	0.12889
44	0.54907	-0.13143		97	0.52062	0.13023
45	0.52064	-0.13015		98	0.54905	0.13151
46	0.49380	-0.12882		99	0.57937	0.13274
47	0.46794	-0.12741		100	0.61146	0.13389
48	0.44330	-0.12595		101	0.64623	0.13497
49	0.41923	-0.12440		102	0.68373	0.13595
50	0.39614	-0.12279		103	0.72428	0.13681
51	0.37385	-0.12111		104	0.76671	0.13750
52	0.35210	-0.11934		105	0.81046	0.13641
53	0.33130	-0.11753		106	0.85700	0.13618
54	0.31083	-0.11562		107	0.90513	0.13596
55	0.29109	-0.11363		108	0.95419	0.13547
56	0.27189	-0.11156		109	1.00452	0.13468
57	0.25305	-0.10938		110	1.05509	0.13356
58	0.23506	-0.10714		111	1.10471	0.13208
59	0.21744	-0.10478		112	1.15152	0.13020
60	0.20062	-0.10235		113	1.19636	0.12778
61	0.18449	-0.09984		114	1.24809	0.12689
62	0.16873	-0.09718		115	1.31001	0.12329
63	0.15363	-0.09445		116	1.37511	0.11813
64	0.13967	-0.09165		117	1.44549	0.11201
65	0.12417	-0.08825		118	1.51653	0.10535
66	0.10645	-0.08391		119	1.59023	0.09812
67	0.09281	-0.08010		120	1.66354	0.09066
68	0.03379	-0.04527		121	1.73802	0.08290
69	0.01883	-0.03040		122	1.81148	0.07508
70	0.00731	-0.00722		123	1.88519	0.06719

124	1.95737	0.05947
125	2.02897	0.05198
126	2.09831	0.04497
127	2.16607	0.03849
128	2.23064	0.03272
129	2.29256	0.02764
130	2.35036	0.02333
131	2.40453	0.01973
132	2.45374	0.01686
133	2.49848	0.01460
134	2.53755	0.01293
135	2.57149	0.01173
136	2.59926	0.01094
137	2.62142	0.01047
138	2.63707	0.01024
139	2.64684	0.01016
140	2.64993	0.01016

THICK/CHORD AT TE   0.008,   DTE = 0.000
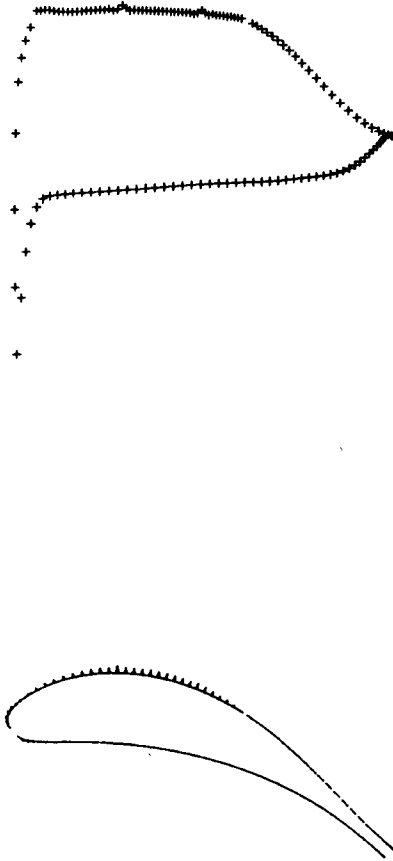
RUN	1033
MIN	0.504
ANIN	28.07
MEX	0.715
ANEX	-40.68
TURN	68.75
SOLD	1.41
THCR	0.185
THTE	0.029
DTE	0.005

CASE 17. - THRUST REVERSER.

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17. BRK33

```
&DATA
NRN= 1033
R= 1.60
EMACH= 0.5650
THETA= 12.0
NI= 3
NF= 128
GRID= 0.60D-01
GRIDS= 0.40D-01
IRICHD= 1
IRICHS= 1
RN= 1000000.0
TRU= 0.650
TRL= 0.50
RTHO= 320.0
IGRPH= 1
ISVPLT= 1
CHDU= 1.0
&END
```
1

N	S-INPUT	Q-INPUT
1	-1.368000	-1.150000
2	-1.184000	-0.980000
3	-1.018000	-0.945000
4	-0.927300	-0.932000
5	-0.814100	-0.924000
6	-0.663500	-0.916000
7	-0.571900	-0.908000
8	-0.390300	-0.889000
9	-0.090600	-0.867000
10	-0.010400	-0.625000
11	0.002900	-0.466000
12	0.015000	-0.238000
13	0.022000	-0.124400
14	0.030000	0.000000
15	0.081000	1.200000
16	0.096890	1.335000
17	0.123000	1.465000
18	0.174600	1.590000
19	0.231000	1.650000
20	0.305800	1.691000

21	0.437200	1.730000
22	0.567800	1.735000
23	0.711500	1.728000
24	0.878700	1.701000
25	1.042000	1.632000
26	1.318000	1.391000
27	1.426000	1.286000
28	1.681000	1.150000

ITER	MIN	ANIN	TURN	GAP	RESID
1	0.48	29.00	69.51	0.76	0.1589D 00
2	0.50	28.44	68.97	0.69	0.2747D-01
3	0.50	28.07	68.75	0.57	-0.5266D-02

1

INVISCID   COMPUTATION

INLET MACH NUMBER = 0.504   INLET FLOW ANGLE = 28.07

EXIT MACH NUMBER = 0.715   EXIT FLOW ANGLE = -40.68

TURNING = 68.754

GAP = 0.575   CHORD = 0.808   AXIAL CHORD = 0.770

GAP/CHORD = 0.711   SOLIDITY = 1.407   AXIAL
SOLIDITY = 1.340

THICK/CHORD = 0.185,   DX = 0.0181; DY = 0.0154

THICK/CHORD AT TE = 0.029,   DEV = 0.005

N	X	Y	MACH	ANGL	CURVATURE
1	0.89872	-0.43357	0.6562	-40.46	0.00
2	0.89837	-0.43327	0.6556	-40.34	-4.53

3	0.89621	-0.43144	0.6525	-40.25	-0.52
4	0.89275	-0.42852	0.6465	-40.18	-0.29
5	0.88775	-0.42430	0.6382	-40.05	-0.35
6	0.88177	-0.41930	0.6283	-39.82	-0.52
7	0.87451	-0.41328	0.6171	-39.46	-0.65
8	0.86649	-0.40673	0.6054	-38.97	-0.83
9	0.85733	-0.39940	0.5935	-38.32	-0.96
10	0.84752	-0.39176	0.5820	-37.52	-1.13
11	0.83668	-0.38358	0.5712	-36.56	-1.23
12	0.82528	-0.37529	0.5616	-35.47	-1.36
13	0.81294	-0.36669	0.5534	-34.25	-1.41
14	0.80016	-0.35820	0.5469	-32.96	-1.47
15	0.78655	-0.34959	0.5420	-31.65	-1.43
16	0.77264	-0.34124	0.5384	-30.35	-1.40
17	0.75804	-0.33290	0.5358	-29.09	-1.31
18	0.74326	-0.32489	0.5335	-27.89	-1.25
19	0.72789	-0.31695	0.5313	-26.73	-1.17
20	0.71239	-0.30934	0.5287	-25.58	-1.17
21	0.69633	-0.30186	0.5259	-24.39	-1.17
22	0.68017	-0.29474	0.5235	-23.17	-1.21
23	0.66350	-0.28782	0.5217	-21.92	-1.20
24	0.64678	-0.28130	0.5203	-20.70	-1.19
25	0.62962	-0.27502	0.5194	-19.49	-1.15
26	0.61247	-0.26014	0.5187	-18.35	-1.09
27	0.59494	-0.26351	0.5174	-17.25	-1.05
28	0.57742	-0.25826	0.5160	-16.10	-1.09
29	0.55954	-0.25329	0.5150	-15.00	-1.04
30	0.54170	-0.24869	0.5136	-13.92	-1.02
31	0.52353	-0.24437	0.5120	-12.85	-1.00
32	0.50541	-0.24041	0.5101	-11.78	-1.00
33	0.48698	-0.23675	0.5082	-10.71	-0.99
34	0.46860	-0.23345	0.5060	-9.64	-1.00
35	0.44996	-0.23046	0.5038	-8.57	-0.99
36	0.43139	-0.22784	0.5016	-7.51	-0.99
37	0.41261	-0.22554	0.4994	-6.46	-0.97
38	0.39395	-0.22360	0.4972	-5.43	-0.96
39	0.37517	-0.22198	0.4951	-4.42	-0.93
40	0.35657	-0.22070	0.4931	-3.47	-0.89
41	0.33797	-0.21972	0.4911	-2.57	-0.84
42	0.31964	-0.21903	0.4892	-1.77	-0.76
43	0.30147	-0.21853	0.4873	-1.08	-0.66
44	0.28371	-0.21833	0.4853	-0.55	-0.52
45	0.26632	-0.21822	0.4832	-0.23	-0.32
46	0.24956	-0.21816	0.4809	-0.23	-0.00
47	0.23361	-0.21883	0.4784	-0.69	0.50
48	0.21848	-0.21850	0.4749	-1.99	1.50
49	0.20448	-0.21772	0.4666	-4.75	3.44
50	0.19169	-0.21616	0.4419	-9.58	6.54
51	0.18024	-0.21357	0.3921	-16.45	10.22
52	0.17008	-0.20963	0.3062	-26.79	16.57
53	0.16170	-0.20411	0.1699	-39.87	22.74
54	0.15409	-0.19615	0.0000	126.90	20.97
55	0.14907	-0.18730	0.2013	112.02	25.52

56	0.14692	-0.17848	0.4343	94.48	33.74
57	0.14774	-0.16892	0.6635	76.16	33.33
58	0.15139	-0.15981	0.8170	61.11	26.76
59	0.15762	-0.15067	0.8909	51.14	15.73
60	0.15556	-0.14199	0.9421	44.24	10.24
61	0.17538	-0.13357	0.9825	38.84	7.29
62	0.18780	-0.12516	1.0346	33.28	6.46
63	0.19588	-0.12014	1.0349	30.40	5.29
64	0.20469	-0.11525	1.0377	27.76	4.57
65	0.21363	-0.11078	1.0373	25.41	4.11
66	0.22268	-0.10669	1.0347	23.26	3.77
67	0.23192	-0.10291	1.0328	21.26	3.49
68	0.24127	-0.09945	1.0318	19.38	3.29
69	0.25074	-0.09629	1.0317	17.59	3.14
70	0.26024	-0.09344	1.0325	15.86	3.04
71	0.26976	-0.09089	1.0336	14.19	2.95
72	0.27916	-0.08865	1.0343	12.59	2.89
73	0.28862	-0.08667	1.0363	11.02	2.83
74	0.29788	-0.08500	1.0364	9.54	2.76
75	0.30712	-0.08357	1.0381	8.06	2.75
76	0.31632	-0.08238	1.0389	6.65	2.66
77	0.32522	-0.08145	1.0383	5.30	2.64
78	0.33440	-0.08071	1.0411	3.92	2.60
79	0.34308	-0.08021	1.0364	2.71	2.44
80	0.35200	-0.07990	1.0405	1.39	2.59
81	0.36167	-0.07979	1.0533	-0.04	2.57
82	0.36931	-0.07986	1.0447	-1.11	2.46
83	0.37679	-0.08008	1.0364	-2.18	2.48
84	0.38569	-0.08051	1.0393	-3.37	2.35
85	0.39406	-0.08109	1.0375	-4.48	2.29
86	0.40237	-0.08182	1.0372	-5.58	2.32
87	0.41081	-0.08273	1.0374	-6.68	2.25
88	0.41894	-0.08375	1.0360	-7.73	2.24
89	0.42722	-0.08496	1.0363	-8.79	2.21
90	0.43534	-0.08629	1.0353	-9.82	2.18
91	0.44343	-0.08776	1.0349	-10.84	2.17
92	0.45151	-0.08939	1.0345	-11.85	2.14
93	0.45949	-0.09113	1.0337	-12.84	2.12
94	0.46746	-0.09302	1.0332	-13.83	2.09
95	0.47537	-0.09504	1.0328	-14.80	2.08
96	0.48325	-0.09720	1.0320	-15.76	2.05
97	0.49105	-0.09947	1.0311	-16.71	2.04
98	0.49891	-0.10190	1.0310	-17.65	2.01
99	0.50650	-0.10438	1.0269	-18.52	1.91
100	0.51442	-0.10711	1.0306	-19.50	2.03
101	0.52271	-0.11013	1.0383	-20.52	2.02
102	0.52933	-0.11266	1.0297	-21.31	1.95
103	0.53620	-0.11540	1.0237	-22.14	1.96
104	0.54419	-0.11872	1.0260	-23.06	1.86
105	0.55144	-0.12187	1.0226	-23.89	1.83
106	0.55891	-0.12525	1.0222	-24.76	1.86
107	0.56638	-0.12876	1.0213	-25.61	1.79
108	0.57353	-0.13225	1.0185	-26.43	1.80

109	0.58100	-0.13604	1.0186	-27.27	1.76
110	0.58810	-0.13976	1.0156	-28.07	1.73
111	0.59535	-0.14370	1.0141	-28.89	1.73
112	0.60257	-0.14774	1.0127	-29.69	1.69
113	0.62412	-0.16043	0.9975	-32.10	1.69
114	0.63372	-0.16703	0.9900	-33.13	1.54
115	0.64390	-0.17362	0.9799	-34.16	1.48
116	0.65438	-0.18088	0.9692	-35.18	1.40
117	0.66505	-0.18857	0.9576	-36.21	1.36
118	0.67635	-0.19700	0.9447	-37.23	1.26
119	0.68794	-0.20597	0.9304	-38.24	1.21
120	0.70028	-0.21588	0.9145	-39.24	1.11
121	0.71304	-0.22649	0.8968	-40.23	1.04
122	0.72670	-0.23824	0.8771	-41.19	0.93
123	0.74089	-0.25086	0.8557	-42.10	0.84
124	0.75605	-0.26477	0.8323	-42.94	0.71
125	0.77175	-0.27958	0.8074	-43.66	0.58
126	0.78836	-0.29559	0.7816	-44.21	0.42
127	0.80528	-0.31216	0.7560	-44.53	0.24
128	0.82267	-0.32930	0.7324	-44.60	0.05
129	0.83967	-0.34602	0.7120	-44.43	-0.13
130	0.85621	-0.36214	0.6952	-44.07	-0.28
131	0.87128	-0.37661	0.6821	-43.57	-0.42
132	0.88480	-0.38935	0.6725	-43.00	-0.54
133	0.89592	-0.39961	0.6659	-42.41	-0.68
134	0.90485	-0.40769	0.6615	-41.84	-0.82
135	0.91106	-0.41321	0.6588	-41.33	-1.08
136	0.91510	-0.41673	0.6573	-40.89	-1.44
137	0.91667	-0.41809	0.6566	-40.54	-2.92
138	0.91682	-0.41822	0.6562	-40.46	-7.43

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BOUNDARY LAYER CORRECTION

PRESSURE SIDE

N	X	Y	EM	TH	SEP
54	0.15409	-0.19615	0.00004		
53	0.16170	-0.20411	0.16987		
52	0.17008	-0.20963	0.30619		
51	0.18024	-0.21357	0.39211		
50	0.19169	-0.21616	0.44191		
49	0.20448	-0.21772	0.46662		
48	0.21848	-0.21850	0.47489		
47	0.23361	-0.21883	0.47843		
46	0.24956	-0.21816	0.48093		
45	0.26632	-0.21822	0.48325		
44	0.28371	-0.21833	0.48527		
43	0.30147	-0.21858	0.48727		

N	X	Y	EM	TH	SEP
42	0.31964	-0.21903	0.48917		
41	0.33797	-0.21972	0.49112		
40	0.35657	-0.22070	0.49307		
39	0.37517	-0.22198	0.49511		
38	0.39395	-0.22360	0.49720		
37	0.41261	-0.22554	0.49939		
36	0.43139	-0.22784	0.50160		
35	0.44996	-0.23046	0.50385		
34	0.46860	-0.23345	0.50603		
33	0.48698	-0.23675	0.50816		
32	0.50541	-0.24041	0.51015	0.00036	0.00008
31	0.52353	-0.24437	0.51200	0.00042	-0.00008
30	0.54170	-0.24869	0.51361	0.00046	-0.00007
29	0.55954	-0.25329	0.51500	0.00051	-0.00006
28	0.57742	-0.25826	0.51604	0.00056	-0.00007
27	0.59494	-0.26351	0.51737	0.00060	-0.00008
26	0.61247	-0.26914	0.51871	0.00064	-0.00007
25	0.62962	-0.27502	0.51940	0.00068	-0.00006
24	0.64678	-0.28130	0.52030	0.00072	-0.00009
23	0.66350	-0.28782	0.52167	0.00076	-0.00013
22	0.68017	-0.29474	0.52352	0.00080	-0.00018
21	0.69633	-0.30186	0.52595	0.00083	-0.00022
20	0.71239	-0.30934	0.52865	0.00085	-0.00024
19	0.72789	-0.31695	0.33125	0.00088	-0.00023
18	0.74326	-0.32489	0.53353	0.00091	-0.00022
17	0.75804	-0.33290	0.53576	0.00094	-0.00024
16	0.77264	-0.34124	0.53842	0.00096	-0.00032
15	0.78655	-0.34959	0.54201	0.00098	-0.00045
14	0.80016	-0.35820	0.54690	0.00099	-0.00062
13	0.81294	-0.36669	0.55341	0.00099	-0.00081
12	0.82528	-0.37529	0.56157	0.00098	-0.00100
11	0.83668	-0.38358	0.57121	0.00096	-0.00116
10	0.84752	-0.39176	0.58198	0.00095	-0.00129
9	0.85733	-0.39940	0.59352	0.00092	-0.00139
8	0.86649	-0.40673	0.60538	0.00090	-0.00147
7	0.87451	-0.41328	0.61712	0.00088	-0.00151
6	0.88177	-0.41930	0.62825	0.00086	-0.00155
5	0.88775	-0.42430	0.63824	0.00084	-0.00154
4	0.89275	-0.42852	0.64652	0.00083	-0.00153
3	0.89621	-0.43144	0.65249	0.00082	-0.00138
2	0.89837	-0.43327	0.65565	0.00082	-0.00129
1	0.89872	-0.43357	0.65619	0.00082	-0.00129

SUCTION SIDE

N	X	Y	EM	TH	SEP
55	0.14907	-0.18730	0.20131		
56	0.14692	-0.17848	0.43430		
57	0.14774	-0.16892	0.66350		
58	0.15139	-0.15981	0.81703		

59	0.15762	-0.15067	0.89087
60	0.16556	-0.14199	0.94208
61	0.17538	-0.13357	0.98251
62	0.18780	-0.12516	1.03455
63	0.19588	-0.12014	1.03486
64	0.20469	-0.11525	1.03771
65	0.21363	-0.11078	1.03729
66	0.22268	-0.10669	1.03468
67	0.23192	-0.10291	1.03284
68	0.24127	-0.09945	1.03181
69	0.25074	-0.09629	1.03166
70	0.26024	-0.09344	1.03251
71	0.26976	-0.09089	1.03360
72	0.27916	-0.08865	1.03426
73	0.28862	-0.08667	1.03632
74	0.29788	-0.08500	1.03641
75	0.30712	-0.08357	1.03809
76	0.31632	-0.08238	1.03888
77	0.32522	-0.08145	1.03827
78	0.33440	-0.08071	1.04106
79	0.34308	-0.08021	1.03645
80	0.35200	-0.07990	1.04051
81	0.36167	-0.07979	1.05329
82	0.36931	-0.07986	1.04471
83	0.37679	-0.08008	1.03639
84	0.38569	-0.08051	1.03927
85	0.39406	-0.08109	1.03753
86	0.40237	-0.08182	1.03717
87	0.41081	-0.08273	1.03736
88	0.41894	-0.08375	1.03597
89	0.42722	-0.08496	1.03626
90	0.43534	-0.08629	1.03533
91	0.44343	-0.08776	1.03486
92	0.45151	-0.08939	1.03449
93	0.45949	-0.09113	1.03373
94	0.46746	-0.09302	1.03316
95	0.47537	-0.09504	1.03281
96	0.48325	-0.09720	1.03198
97	0.49105	-0.09947	1.03107
98	0.49891	-0.10190	1.03096
99	0.50650	-0.10438	1.02688
100	0.51442	-0.10711	1.03058
101	0.52271	-0.11013	1.03834
102	0.52933	-0.11266	1.02969
103	0.53620	-0.11540	1.02365
104	0.54419	-0.11872	1.02604
105	0.55144	-0.12187	1.02260
106	0.55891	-0.12525	1.02218
107	0.56638	-0.12876	1.02129
108	0.57353	-0.13225	1.01846
109	0.58100	-0.13604	1.01857
110	0.58810	-0.13976	1.01561
111	0.59535	-0.14370	1.01413

112	0.60257	-0.14774	1.01272		
113	0.62412	-0.16043	0.99754		
114	0.63372	-0.16703	0.98995		
115	0.64390	-0.17362	0.97990		
116	0.65438	-0.18088	0.96915	0.00025	0.00006
117	0.66505	-0.18857	0.95760	0.00030	0.00025
118	0.67635	-0.19700	0.94473	0.00034	0.00031
119	0.68794	-0.20597	0.93044	0.00039	0.00038
120	0.70028	-0.21588	0.91450	0.00044	0.00046
121	0.71304	-0.22649	0.89677	0.00050	0.00055
122	0.72670	-0.23824	0.87715	0.00057	0.00066
123	0.74089	-0.25086	0.85567	0.00064	0.00079
124	0.75605	-0.26477	0.83233	0.00073	0.00094
125	0.77175	-0.27958	0.80743	0.00083	0.00110
126	0.78836	-0.29559	0.78156	0.00094	0.00126
127	0.80528	-0.31216	0.75605	0.00107	0.00138
128	0.82267	-0.32930	0.73245	0.00121	0.00143
129	0.83967	-0.34602	0.71199	0.00135	0.00142
130	0.85621	-0.36214	0.69519	0.00147	0.00135
131	0.87128	-0.37661	0.68212	0.00159	0.00124
132	0.88480	-0.38935	0.67251	0.00168	0.00111
133	0.89592	-0.39961	0.66585	0.00175	0.00097
134	0.90485	-0.40769	0.66149	0.00180	0.00086
135	0.91106	-0.41321	0.65881	0.00184	0.00077
136	0.91510	-0.41673	0.65730	0.00186	0.00085
137	0.91667	-0.41809	0.65658	0.00187	0.00090
138	0.91682	-0.41822	0.65619	0.00187	0.00090

BODY COORDINATES AFTER BOUNDARY LAYER SUBTRACTION

METAL COORDINATES IN INCHES

THE CHORD IS   1.000 INCHES

THE GAP IS   0.711 INCHES

N	XV	YV
1	1.11276	-0.53522
2	1.11233	-0.53486
3	1.10966	-0.53259
4	1.10538	-0.52897
5	1.09920	-0.52374
6	1.09182	-0.51753
7	1.08285	-0.51005
8	1.07294	-0.50191
9	1.06162	-0.49279
10	1.04950	-0.48328
11	1.03610	-0.47309

12	1.02201	-0.46278	65	0.26427	-0.13704
13	1.00673	-0.45209	66	0.27547	-0.13199
14	0.99089	-0.44153	67	0.28691	-0.12731
15	0.97402	-0.43086	68	0.29847	-0.12303
16	0.95677	-0.42051	69	0.31018	-0.11912
17	0.93866	-0.41021	70	0.32194	-0.11559
18	0.92033	-0.40031	71	0.33371	-0.11243
19	0.90125	-0.39052	72	0.34535	-0.10967
20	0.88203	-0.38113	73	0.35705	-0.10722
21	0.86211	-0.37190	74	0.36850	-0.10515
22	0.84207	-0.36312	75	0.37993	-0.10338
23	0.82140	-0.35459	76	0.39132	-0.10191
24	0.80066	-0.34657	77	0.40233	-0.10076
25	0.77938	-0.33886	78	0.41368	-0.09985
26	0.75811	-0.33166	79	0.42442	-0.09923
27	0.73638	-0.32476	80	0.43546	-0.09884
28	0.71465	-0.31833	81	0.44741	-0.09871
29	0.69249	-0.31225	82	0.45687	-0.09880
30	0.67038	-0.30664	83	0.46612	-0.09906
31	0.64787	-0.30137	84	0.47713	-0.09960
32	0.62539	-0.29666	85	0.48749	-0.10031
33	0.60244	-0.29288	86	0.49777	-0.10122
34	0.57970	-0.28880	87	0.50820	-0.10234
35	0.55664	-0.28510	88	0.51827	-0.10361
36	0.53366	-0.28185	89	0.52851	-0.10510
37	0.51044	-0.27901	90	0.53856	-0.10675
38	0.48735	-0.27661	91	0.54856	-0.10857
39	0.46412	-0.27461	92	0.55856	-0.11058
40	0.44110	-0.27302	93	0.56843	-0.11274
41	0.41809	-0.27181	94	0.57828	-0.11508
42	0.39542	-0.27095	95	0.58808	-0.11758
43	0.37294	-0.27040	96	0.59782	-0.12024
44	0.35097	-0.27009	97	0.60747	-0.12305
45	0.32947	-0.26995	98	0.61720	-0.12606
46	0.30873	-0.26988	99	0.62658	-0.12912
47	0.28899	-0.27071	100	0.63639	-0.13250
48	0.27027	-0.27031	101	0.64663	-0.13624
49	0.25296	-0.26934	102	0.65482	-0.13936
50	0.23714	-0.26741	103	0.66333	-0.14275
51	0.22297	-0.26420	104	0.67320	-0.14687
52	0.21040	-0.25933	105	0.68218	-0.15077
53	0.20004	-0.25250	106	0.69142	-0.15494
54	0.19062	-0.24266	107	0.70066	-0.15929
55	0.18442	-0.23170	108	0.70950	-0.16361
56	0.18176	-0.22080	109	0.71875	-0.16829
57	0.18277	-0.20897	110	0.72754	-0.17290
58	0.18728	-0.19770	111	0.73650	-0.17777
59	0.19499	-0.18639	112	0.74543	-0.18277
60	0.20481	-0.17565	113	0.77209	-0.19846
61	0.21696	-0.16524	114	0.78397	-0.20663
62	0.23233	-0.15483	115	0.79656	-0.21479
63	0.24232	-0.14863	116	0.80917	-0.22428
64	0.25322	-0.14257	117	0.82222	-0.23396

```
118    0.83611   -0.24448
119    0.85036   -0.25566
120    0.86554   -0.26800
121    0.88122   -0.28123
122    0.89798   -0.29588
123    0.91538   -0.31162
124    0.93397   -0.32898
125    0.95320   -0.34747
126    0.97352   -0.36747
127    0.99422   -0.38818
128    1.01551   -0.40961
129    1.03634   -0.43051
130    1.05665   -0.45064
131    1.07519   -0.46869
132    1.09186   -0.48457
133    1.10559   -0.49735
134    1.11664   -0.50740
135    1.12434   -0.51426
136    1.12936   -0.51864
137    1.13133   -0.52033
138    1.13152   -0.52050
```

THICK/CHORD AT TE   0.023,   DEV = 0.005

M

.500

.375

.250

.125

.000
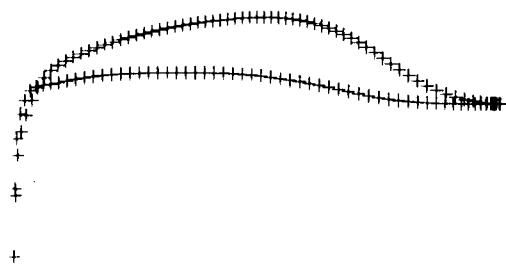
RUN	1007
MIN	0.175
ANIN	-0.02
MEX	0.211
ANEX	-30.02
TURN	30.00
SOLD	1.70
THCR	0.179
THTE	0.018
DTE	0.000
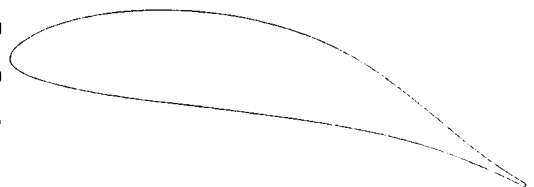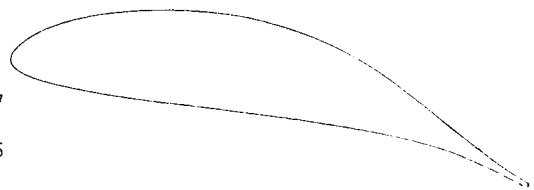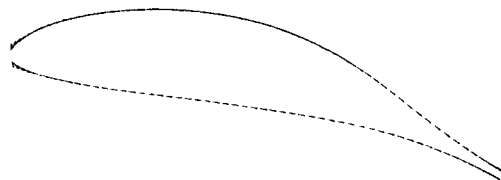
CASE 18. - VIGV. TIP SECTION. (REF. 5.)

18. IGVT7

&DATA   NRN = 1007,   R = 1.73,   EMACH = 0.24,   THETA = 0.,
NI = 3,   NF = 128,   GRID = 6.E-2,   GRIDS = 4.E-2,   IRICHD =
   IRICHS = 0,   RN = 1000000.,   TRU = 0.47,   TRL = 0.3,   RTHO
= 320.,   IGRPH = 1,   ISVPLT = 1,   CHDU = 1.,   &END
1

N	S-INPUT	Q-INPUT
1	-1.391000	-0.812000
2	-1.229000	-0.816000
3	-1.028000	-0.852000
4	-0.927300	-0.893000
5	-0.814100	-0.935000
6	-0.663500	-0.974000
7	-0.571900	-0.985000
8	-0.430300	-0.988000
9	-0.300600	-0.985000
10	-0.169400	-0.960000
11	-0.050400	-0.920000
12	-0.005000	-0.842000
13	0.009000	-0.768000
14	0.025000	-0.604400
15	0.043000	0.000000
16	0.069000	0.590000
17	0.075000	0.630000
18	0.081000	0.670000
19	0.108900	0.816000
20	0.140600	0.930000
21	0.212100	1.045000
22	0.305800	1.121000
23	0.437200	1.195000
24	0.567800	1.246000
25	0.711500	1.276000
26	0.878700	1.272300
27	1.060000	1.173000
28	1.287000	0.948000
29	1.480000	0.831900
30	1.585000	0.812000

ITER	MIN	ANIN	TURN	GAP	RESID
1	0.17	-0.02	29.51	0.59	0.6342E-01

```
    2      0.17    -0.02      29.86      0.59      0.1268E-01


    3      0.17    -0.02      30.00      0.61      0.2535E-02
```

1

<p align="center">INVISCID   COMPUTATION</p>

INLET MACH NUMBER = 0.175   INLET FLOW ANGLE =   -0.02

EXIT MACH NUMBER = 0.211   EXIT FLOW ANGLE = -30.02

<p align="center">TURNING =   29.999</p>

GAP = 0.606   CHORD = 1.034   AXIAL CHORD = 1.006

GAP/CHORD = 0.587   SOLIDITY = 1.705   AXIAL SOLIDITY = 1.658

THICK/CHORD = 0.179,   DX= 0.0091; DY = 0.0161

THICK/CHORD AT TE = 0.018,   DTE= 0.000

N	X	Y	MACH	ANGL	CURVATURE
1	0.98487	-0.31673	0.1945	-29.16	0.00
2	0.98371	-0.31609	0.1945	-28.60	-7.36
3	0.97984	-0.31402	0.1945	-27.98	-2.50
4	0.97347	-0.31068	0.1944	-27.34	-1.55
5	0.96485	-0.30629	0.1944	-26.68	-1.19
6	0.95425	-0.30104	0.1944	-25.99	-1.02
7	0.94193	-0.29513	0.1945	-25.26	-0.93
8	0.92810	-0.28872	0.1946	-24.49	-0.88
9	0.91299	-0.28197	0.1948	-23.69	-0.85
10	0.89677	-0.27499	0.1950	-22.84	-0.84
11	0.87960	-0.26792	0.1954	-21.95	-0.83
12	0.86161	-0.26084	0.1959	-21.02	-0.84
13	0.84294	-0.25384	0.1965	-20.04	-0.86
14	0.82368	-0.24701	0.1973	-19.02	-0.88
15	0.80394	-0.24041	0.1984	-17.95	-0.89
16	0.78382	-0.23410	0.1997	-16.87	-0.90
17	0.76341	-0.22812	0.2014	-15.78	-0.90
18	0.74281	-0.22251	0.2035	-14.71	-0.87

19	0.72212	-0.21727	0.2060	-13.71	-0.82
20	0.70141	-0.21239	0.2088	-12.82	-0.73
21	0.68075	-0.20784	0.2117	-12.05	-0.63
22	0.66018	-0.20358	0.2147	-11.40	-0.54
23	0.63971	-0.19956	0.2174	-10.84	-0.47
24	0.61937	-0.19575	0.2201	-10.36	-0.41
25	0.59913	-0.19213	0.2225	-9.93	-0.37
26	0.57902	-0.18868	0.2248	-9.55	-0.32
27	0.55900	-0.18538	0.2267	-9.21	-0.29
28	0.53907	-0.18221	0.2285	-8.83	-0.33
29	0.51925	-0.17920	0.2307	-8.50	-0.28
30	0.49955	-0.17628	0.2326	-8.35	-0.13
31	0.47995	-0.17342	0.2337	-8.22	-0.11
32	0.46039	-0.17063	0.2347	-8.06	-0.14
33	0.44088	-0.16789	0.2355	-7.92	-0.13
34	0.42141	-0.16520	0.2362	-7.79	-0.11
35	0.40196	-0.16256	0.2366	-7.67	-0.10
36	0.38252	-0.15997	0.2369	-7.56	-0.10
37	0.36309	-0.15740	0.2370	-7.46	-0.09
38	0.34366	-0.15487	0.2371	-7.38	-0.07
39	0.32424	-0.15237	0.2371	-7.32	-0.05
40	0.30483	-0.14988	0.2371	-7.29	-0.02
41	0.28545	-0.14740	0.2371	-7.33	0.03
42	0.26610	-0.14489	0.2371	-7.44	0.10
43	0.24679	-0.14234	0.2369	-7.63	0.17
44	0.22754	-0.13972	0.2366	-7.91	0.25
45	0.20835	-0.13699	0.2361	-8.28	0.34
46	0.18925	-0.13414	0.2353	-8.75	0.43
47	0.17026	-0.13112	0.2343	-9.32	0.52
48	0.15142	-0.12791	0.2330	-10.00	0.61
49	0.13277	-0.12450	0.2313	-10.77	0.72
50	0.11439	-0.12086	0.2295	-11.66	0.83
51	0.09637	-0.11698	0.2274	-12.67	0.95
52	0.07888	-0.11286	0.2254	-13.85	1.14
53	0.06211	-0.10851	0.2234	-15.31	1.48
54	0.04633	-0.10392	0.2221	-17.33	2.14
55	0.03188	-0.09901	0.2203	-20.43	3.55
56	0.01906	-0.09367	0.2152	-25.16	5.94
57	0.00806	-0.08781	0.2028	-31.18	8.42
58	-0.00091	-0.08160	0.1856	-39.02	12.55
59	-0.00736	-0.07514	0.1530	-52.70	26.14
60	-0.01103	-0.06828	0.0881	-72.24	43.85
61	-0.01168	-0.06084	0.0000	85.00	53.19
62	-0.00978	-0.05367	0.0792	64.79	47.58
63	-0.00492	-0.04620	0.1318	50.43	28.13
64	0.00252	-0.03871	0.1623	41.08	15.44
65	0.01216	-0.03112	0.1836	35.92	7.35
66	0.02337	-0.02361	0.2031	31.72	5.43
67	0.03582	-0.01651	0.2192	27.79	4.78
68	0.04928	-0.00997	0.2322	24.07	4.35
69	0.06358	-0.00409	0.2412	20.73	3.76
70	0.07862	0.00109	0.2478	17.95	3.05
71	0.09421	0.00579	0.2530	15.68	2.43

72	0.11019	0.00998	0.2578	13.77	2.02
73	0.12642	0.01370	0.2622	12.06	1.79
74	0.14280	0.01696	0.2665	10.50	1.64
75	0.15926	0.01979	0.2704	9.04	1.53
76	0.17574	0.02221	0.2740	7.66	1.44
77	0.19221	0.02423	0.2773	6.36	1.37
78	0.20863	0.02589	0.2804	5.13	1.30
79	0.22500	0.02718	0.2833	3.95	1.25
80	0.24129	0.02815	0.2860	2.82	1.21
81	0.25750	0.02879	0.2885	1.72	1.18
82	0.27362	0.02912	0.2909	0.65	1.16
83	0.28965	0.02915	0.2931	-0.41	1.15
84	0.30559	0.02889	0.2953	-1.46	1.15
85	0.32143	0.02834	0.2972	-2.50	1.15
86	0.33718	0.02751	0.2990	-3.54	1.15
87	0.35284	0.02640	0.3006	-4.58	1.16
88	0.36843	0.02501	0.3021	-5.63	1.16
89	0.38393	0.02334	0.3034	-6.67	1.17
90	0.39935	0.02139	0.3045	-7.73	1.18
91	0.41471	0.01916	0.3054	-8.79	1.19
92	0.43001	0.01665	0.3063	-9.83	1.17
93	0.44524	0.01387	0.3072	-10.89	1.20
94	0.46040	0.01080	0.3080	-12.02	1.27
95	0.47550	0.00742	0.3084	-13.18	1.30
96	0.49055	0.00374	0.3087	-14.35	1.32
97	0.50555	-0.00027	0.3087	-15.55	1.36
98	0.52051	-0.00460	0.3086	-16.79	1.39
99	0.53543	-0.00929	0.3081	-18.07	1.43
100	0.55034	-0.01434	0.3074	-19.39	1.46
101	0.56524	-0.01978	0.3062	-20.73	1.48
102	0.58014	-0.02563	0.3046	-22.10	1.50
103	0.59507	-0.03190	0.3027	-23.50	1.50
104	0.61003	-0.03863	0.3002	-24.91	1.50
105	0.62507	-0.04584	0.2974	-26.33	1.49
106	0.64019	-0.05356	0.2940	-27.75	1.46
107	0.65542	-0.06182	0.2901	-29.17	1.43
108	0.67080	-0.07065	0.2856	-30.58	1.39
109	0.68637	-0.08011	0.2805	-31.96	1.32
110	0.70216	-0.09022	0.2748	-33.28	1.23
111	0.71824	-0.10103	0.2685	-34.51	1.11
112	0.73466	-0.11255	0.2618	-35.61	0.96
113	0.75147	-0.12482	0.2545	-36.57	0.80
114	0.76874	-0.13781	0.2470	-37.32	0.61
115	0.78652	-0.15151	0.2394	-37.85	0.41
116	0.80485	-0.16584	0.2320	-38.12	0.20
117	0.82372	-0.18065	0.2249	-38.11	-0.01
118	0.84307	-0.19577	0.2184	-37.84	-0.19
119	0.86275	-0.21094	0.2127	-37.36	-0.34
120	0.88253	-0.22586	0.2078	-36.69	-0.47
121	0.90205	-0.24020	0.2038	-35.88	-0.58
122	0.92088	-0.25360	0.2007	-34.98	-0.68
123	0.93851	-0.26572	0.1983	-34.04	-0.77
124	0.95440	-0.27627	0.1967	-33.10	-0.86

125	0.96804	-0.28502	0.1956	-32.21	-0.96
126	0.97902	-0.29183	0.1950	-31.37	-1.12
127	0.98706	-0.29665	0.1947	-30.61	-1.42
128	0.99200	-0.29954	0.1946	-29.90	-2.15
129	0.99386	-0.30060	0.1945	-29.24	-5.39
130	0.99393	-0.30064	0.1945	-29.16	-18.84

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BOUNDARY LAYER CORRECTION

PRESSURE SIDE

N	X	Y	EM	TH	SEP
61	-0.01168	-0.06084	0.00002		
60	-0.01103	-0.06828	0.08806		
59	-0.00736	-0.07514	0.15297		
58	-0.00091	-0.08160	0.18563		
57	0.00806	-0.08781	0.20275		
56	0.01906	-0.09367	0.21519		
55	0.03188	-0.09901	0.22027		
54	0.04633	-0.10392	0.22209		
53	0.06211	-0.10851	0.22343		
52	0.07888	-0.11286	0.22536		
51	0.09637	-0.11698	0.22736		
50	0.11439	-0.12086	0.22948		
49	0.13277	-0.12450	0.23134		
48	0.15142	-0.12791	0.23299		
47	0.17026	-0.13112	0.23427		
46	0.18925	-0.13414	0.23532		
45	0.20835	-0.13699	0.23606		
44	0.22754	-0.13972	0.23660		
43	0.24679	-0.14234	0.23690		
42	0.26610	-0.14489	0.23707		
41	0.28545	-0.14740	0.23711		
40	0.30483	-0.14988	0.23712	0.00026	0.00009
39	0.32424	-0.15237	0.23710	0.00032	0.00000
38	0.34366	-0.15487	0.23708	0.00037	0.00000
37	0.36309	-0.15740	0.23700	0.00042	0.00001
36	0.38252	-0.15997	0.23687	0.00047	0.00002
35	0.40196	-0.16256	0.23658	0.00053	0.00004
34	0.42141	-0.16520	0.23616	0.00058	0.00007
33	0.44088	-0.16789	0.23553	0.00063	0.00010
32	0.46039	-0.17063	0.23471	0.00068	0.00013
31	0.47995	-0.17342	0.23374	0.00073	0.00018
30	0.49955	-0.17628	0.23256	0.00079	0.00027
29	0.51925	-0.17920	0.23066	0.00085	0.00039
28	0.53907	-0.18221	0.22852	0.00092	0.00040
27	0.55900	-0.18538	0.22671	0.00099	0.00041
26	0.57902	-0.18868	0.22477	0.00105	0.00050

25	0.59913	-0.19213	0.22250	0.00113	0.00060
24	0.61937	-0.19575	0.22007	0.00121	0.00069
23	0.63971	-0.19956	0.21745	0.00130	0.00080
22	0.66018	-0.20358	0.21468	0.00139	0.00091
21	0.68075	-0.20784	0.21175	0.00150	0.00101
20	0.70141	-0.21239	0.20880	0.00161	0.00107
19	0.72212	-0.21727	0.20599	0.00172	0.00106
18	0.74281	-0.22251	0.20349	0.00182	0.00098
17	0.76341	-0.22812	0.20139	0.00192	0.00066
16	0.78382	-0.23410	0.19970	0.00201	0.00073
15	0.80394	-0.24041	0.19835	0.00209	0.00061
14	0.82368	-0.24701	0.19731	0.00216	0.00049
13	0.84294	-0.25384	0.19649	0.00222	0.00040
12	0.86161	-0.26084	0.19588	0.00228	0.00032
11	0.87960	-0.26792	0.19541	0.00232	0.00026
10	0.89677	-0.27499	0.19505	0.00237	0.00021
9	0.91299	-0.28197	0.19478	0.00241	0.00016
8	0.92810	-0.28872	0.19460	0.00244	0.00011
7	0.94193	-0.29513	0.19449	0.00247	0.00007
6	0.95425	-0.30104	0.19444	0.00249	0.00003
5	0.96485	-0.30629	0.19443	0.00251	-0.00001
4	0.97347	-0.31068	0.19444	0.00253	-0.00004
3	0.97984	-0.31402	0.19447	0.00254	-0.00006
2	0.98371	-0.31609	0.19449	0.00254	-0.00007
1	0.98487	-0.31673	0.19450	0.00254	-0.00007

SUCTION SIDE

N	X	Y	EM	TH	SEP
62	-0.00978	-0.05367	0.07918		
63	-0.00492	-0.04620	0.13178		
64	0.00252	-0.03871	0.16230		
65	0.01216	-0.03112	0.18355		
66	0.02337	-0.02361	0.20313		
67	0.03582	-0.01651	0.21919		
68	0.04928	-0.00997	0.23216		
69	0.06358	-0.00409	0.24120		
70	0.07862	0.00109	0.24783		
71	0.09421	0.00579	0.25297		
72	0.11019	0.00998	0.25780		
73	0.12642	0.01370	0.26224		
74	0.14280	0.01696	0.26649		
75	0.15926	0.01979	0.27036		
76	0.17574	0.02221	0.27400		
77	0.19221	0.02423	0.27730		
78	0.20863	0.02589	0.28041		
79	0.22500	0.02718	0.28326		
80	0.24129	0.02815	0.28597		
81	0.25750	0.02879	0.28848		
82	0.27362	0.02912	0.29090		

83	0.28965	0.02915	0.29314		
84	0.30559	0.02889	0.29527		
85	0.32143	0.02834	0.29721		
86	0.33718	0.02751	0.29902		
87	0.35284	0.02640	0.30063		
88	0.36843	0.02501	0.30210		
89	0.38393	0.02334	0.30339		
90	0.39935	0.02139	0.30454		
91	0.41471	0.01916	0.30545		
92	0.43001	0.01665	0.30627		
93	0.44524	0.01387	0.30718		
94	0.46040	0.01080	0.30796		
95	0.47550	0.00742	0.30839	0.00021	0.00009
96	0.49055	0.00374	0.30866	0.00025	-0.00001
97	0.50555	-0.00027	0.30874	0.00029	0.00000
98	0.52051	-0.00460	0.30858	0.00033	0.00002
99	0.53543	-0.00929	0.30812	0.00037	0.00005
100	0.55034	-0.01434	0.30735	0.00042	0.00009
101	0.56524	-0.01978	0.30619	0.00046	0.00013
102	0.58014	-0.02563	0.30465	0.00050	0.00019
103	0.59507	-0.03190	0.30266	0.00055	0.00025
104	0.61003	-0.03863	0.30025	0.00060	0.00033
105	0.62507	-0.04584	0.29736	0.00065	0.00042
106	0.64019	-0.05356	0.29399	0.00071	0.00053
107	0.65542	-0.06182	0.29008	0.00078	0.00066
108	0.67080	-0.07065	0.28562	0.00086	0.00083
109	0.68637	-0.08011	0.28053	0.00094	0.00102
110	0.70216	-0.09022	0.27484	0.00105	0.00125
111	0.71824	-0.10103	0.26855	0.00116	0.00150
112	0.73466	-0.11255	0.26175	0.00130	0.00179
113	0.75147	-0.12482	0.25453	0.00147	0.00210
114	0.76874	-0.13781	0.24704	0.00166	0.00243
115	0.78652	-0.15151	0.23943	0.00188	0.00274
116	0.80485	-0.16584	0.23196	0.00214	0.00299
117	0.82372	-0.18065	0.22488	0.00242	0.00314
118	0.84307	-0.19577	0.21843	0.00272	0.00319
119	0.86275	-0.21094	0.21272	0.00303	0.00314
120	0.88253	-0.22586	0.20784	0.00333	0.00298
121	0.90205	-0.24020	0.20382	0.00360	0.00272
122	0.92088	-0.25360	0.20067	0.00384	0.00238
123	0.93851	-0.26572	0.19831	0.00403	0.00199
124	0.95440	-0.27627	0.19668	0.00417	0.00158
125	0.96804	-0.28502	0.19563	0.00427	0.00120
126	0.97902	-0.29183	0.19502	0.00433	0.00088
127	0.98706	-0.29665	0.19470	0.00436	0.00063
128	0.99200	-0.29954	0.19456	0.00438	0.00055
129	0.99386	-0.30060	0.19451	0.00438	0.00054
130	0.99393	-0.30064	0.19450	0.00438	0.00054

BODY COORDINATES AFTER BOUNDARY LAYER SUBTRACTION

METAL COORDINATES IN INCHES

THE CHORD IS   1.000 INCHES

THE GAP IS   0.587 INCHES

N	XV	YV
1	0.95442	-0.30331
2	0.95326	-0.30268
3	0.94950	-0.30065
4	0.94329	-0.29740
5	0.93492	-0.29314
6	0.92462	-0.28806
7	0.91265	-0.28233
8	0.89924	-0.27613
9	0.88456	-0.26959
10	0.86882	-0.26285
11	0.85214	-0.25601
12	0.83468	-0.24918
13	0.81654	-0.24244
14	0.79784	-0.23586
15	0.77867	-0.22952
16	0.75912	-0.22348
17	0.73929	-0.21779
18	0.71928	-0.21247
19	0.69918	-0.20754
20	0.67906	-0.20297
21	0.65901	-0.19874
22	0.63905	-0.19477
23	0.61921	-0.19104
24	0.59948	-0.18749
25	0.57987	-0.18412
26	0.56038	-0.18090
27	0.54099	-0.17781
28	0.52169	-0.17485
29	0.50249	-0.17202
30	0.48342	-0.16931
31	0.46444	-0.16663
32	0.44551	-0.16400
33	0.42662	-0.16143
34	0.40777	-0.15890
35	0.38894	-0.15642
36	0.37013	-0.15397
37	0.35132	-0.15156
38	0.33252	-0.14918
39	0.31373	-0.14683
40	0.29493	-0.14459
41	0.27613	-0.14258
42	0.25741	-0.14016
43	0.23873	-0.13769
44	0.22011	-0.13516
45	0.20155	-0.13252
46	0.18307	-0.12976
47	0.16470	-0.12684
48	0.14647	-0.12374
49	0.12843	-0.12043
50	0.11065	-0.11691
51	0.09323	-0.11316
52	0.07630	-0.10918
53	0.06008	-0.10497
54	0.04481	-0.10052
55	0.03083	-0.09578
56	0.01844	-0.09062
57	0.00780	-0.08495
58	-0.00088	-0.07894
59	-0.00712	-0.07269
60	-0.01067	-0.06605
61	-0.01130	-0.05885
62	-0.00946	-0.05192
63	-0.00476	-0.04469
64	0.00244	-0.03744
65	0.01176	-0.03010
66	0.02261	-0.02284
67	0.03465	-0.01597
68	0.04767	-0.00965
69	0.06151	-0.00396
70	0.07605	0.00106
71	0.09113	0.00560
72	0.10659	0.00966
73	0.12229	0.01325
74	0.13814	0.01641
75	0.15406	0.01915
76	0.17000	0.02149
77	0.18593	0.02344
78	0.20182	0.02504
79	0.21765	0.02630
80	0.23341	0.02723
81	0.24909	0.02785
82	0.26469	0.02817
83	0.28019	0.02820
84	0.29561	0.02795
85	0.31093	0.02742
86	0.32617	0.02661
87	0.34132	0.02554
88	0.35639	0.02419
89	0.37139	0.02258
90	0.38631	0.02069
91	0.40117	0.01853
92	0.41596	0.01611
93	0.43070	0.01342
94	0.44536	0.01045
95	0.45990	0.00687
96	0.47441	0.00318

97	0.48890	-0.00074
98	0.50335	-0.00499
99	0.51776	-0.00958
100	0.53214	-0.01452
101	0.54651	-0.01983
102	0.56089	-0.02554
103	0.57528	-0.03167
104	0.58970	-0.03825
105	0.60418	-0.04529
106	0.61874	-0.05283
107	0.63340	-0.06091
108	0.64818	-0.06956
109	0.66312	-0.07882
110	0.67827	-0.08875
111	0.69365	-0.09937
112	0.70934	-0.11073
113	0.72536	-0.12285
114	0.74179	-0.13573
115	0.75866	-0.14936
116	0.77603	-0.16365
117	0.79389	-0.17848
118	0.81223	-0.19363
119	0.83092	-0.20884
120	0.84976	-0.22377
121	0.86845	-0.23807
122	0.88657	-0.25137
123	0.90362	-0.26332
124	0.91906	-0.27365
125	0.93236	-0.28216
126	0.94310	-0.28877
127	0.95099	-0.29344
128	0.95588	-0.29624
129	0.95776	-0.29729
130	0.95783	-0.29733

THICK/CHORD AT TE   0.007,   DTE =   0.000
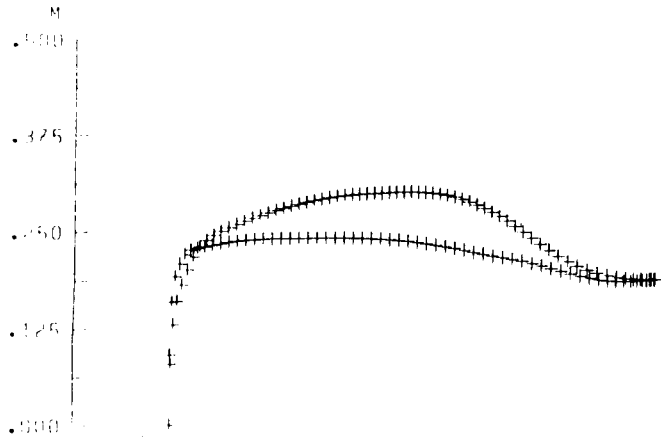
RUN	2002
MIN	0.176
ANIN	-0.02
MEX	0.202
ANEX	-24.45
TURN	24.44
SOLD	1.73
THCR	0.174
THTE	0.018
DTE	-0.000
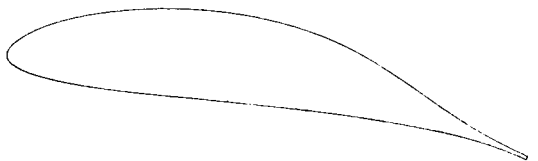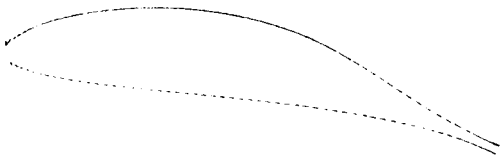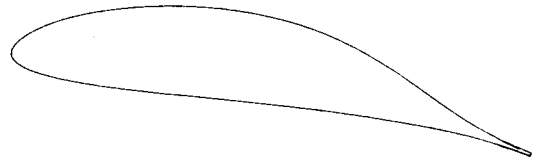
CASE 19. - VIGV. TIP-MEAN SECTION. (REF. 5.)

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19. IGHT2

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NI = 3,  NF = 128,  GRID = 6.E-2,  GRIDS = 4.E-2,  IRICHD =
  IRICHS = 0,  RN = 1000000.,  TRU = 0.47,  TRL = 0.3,  RTHO
= 320.,  IGRPH = 1,  ISVPLT = 1,  CHDU = 1.,  &END
1
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1	-1.411000	-0.790000
2	-1.229000	-0.792000
3	-1.028000	-0.882000
4	-0.927300	-0.914000
5	-0.814100	-0.955000
6	-0.663500	-0.993000
7	-0.571900	-1.004000
8	-0.430300	-1.007000
9	-0.300600	-1.004000
10	-0.169400	-0.988000
11	-0.050400	-0.946000
12	-0.005000	-0.868000
13	0.009000	-0.800000
14	0.025000	-0.638400
15	0.043000	0.000000
16	0.069000	0.580000
17	0.075000	0.620000
18	0.081000	0.660000
19	0.108900	0.806000
20	0.140600	0.920000
21	0.212100	1.035000
22	0.305800	1.111000
23	0.437200	1.185000
24	0.567800	1.232000
25	0.711500	1.251000
26	0.878700	1.243300
27	1.060000	1.128000
28	1.287000	0.892000
29	1.480000	0.797000
30	1.587000	0.790000

ITER	MIN	ANIN	TURN	GAP	RESID
1	0.17	-0.02	23.95	0.58	0.6287E-01

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         2     0.18    -0.02    24.30    0.58     0.1257E-01


         3     0.18    -0.02    24.44    0.59     0.2513E-02
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1

INVISCID   COMPUTATION

INLET MACH NUMBER =   0.176   INLET FLOW ANGLE =   -0.02

EXIT MACH NUMBER =   0.202   EXIT FLOW ANGLE = -24.45

TURNING =   24.435

GAP = 0.589   CHORD = 1.021   AXIAL CHORD = 1.004

GAP/CHORD = 0.577   SOLIDITY = 1.734   AXIAL SOLIDITY = 1.705

THICK/CHORD = 0.174,   DX= 0.0073; DY = 0.0170

THICK/CHORD AT TE = 0.018,   DTE= 0.000

N	X	Y	MACH	ANGL	CURVATURE
1	0.98877	-0.25801	0.1891	-23.86	0.00
2	0.98798	-0.25766	0.1891	-23.55	-6.23
3	0.98438	-0.25611	0.1887	-23.11	-1.96
4	0.97803	-0.25344	0.1882	-22.60	-1.29
5	0.96921	-0.24982	0.1875	-21.99	-1.12
6	0.95817	-0.24544	0.1868	-21.25	-1.09
7	0.94519	-0.24051	0.1864	-20.38	-1.09
8	0.93052	-0.23520	0.1862	-19.39	-1.11
9	0.91441	-0.22971	0.1864	-18.29	-1.13
10	0.89711	-0.22419	0.1871	-17.11	-1.13
11	0.87883	-0.21877	0.1885	-15.91	-1.10
12	0.85981	-0.21356	0.1904	-14.72	-1.05
13	0.84026	-0.20863	0.1930	-13.61	-0.96
14	0.82035	-0.20400	0.1960	-12.63	-0.84
15	0.80025	-0.19965	0.1993	-11.80	-0.70
16	0.78005	-0.19555	0.2027	-11.13	-0.57
17	0.75983	-0.19168	0.2061	-10.59	-0.45
18	0.73965	-0.18799	0.2092	-10.17	-0.36

19	0.71950	-0.18444	0.2120	-9.81	-0.30
20	0.69939	-0.18102	0.2143	-9.45	-0.31
21	0.67932	-0.17775	0.2165	-9.05	-0.35
22	0.65928	-0.17464	0.2186	-8.59	-0.40
23	0.63932	-0.17171	0.2209	-8.12	-0.41
24	0.61945	-0.16896	0.2234	-7.69	-0.37
25	0.59971	-0.16636	0.2260	-7.33	-0.31
26	0.58011	-0.16389	0.2284	-7.05	-0.25
27	0.56064	-0.16152	0.2307	-6.84	-0.19
28	0.54129	-0.15923	0.2325	-6.67	-0.15
29	0.52203	-0.15701	0.2342	-6.45	-0.20
30	0.50287	-0.15488	0.2361	-6.26	-0.17
31	0.48383	-0.15280	0.2378	-6.21	-0.04
32	0.46487	-0.15075	0.2388	-6.17	-0.04
33	0.44596	-0.14872	0.2396	-6.09	-0.07
34	0.42709	-0.14671	0.2404	-6.02	-0.06
35	0.40826	-0.14474	0.2410	-5.97	-0.05
36	0.38945	-0.14278	0.2413	-5.92	-0.04
37	0.37067	-0.14084	0.2416	-5.89	-0.03
38	0.35189	-0.13890	0.2417	-5.87	-0.02
39	0.33312	-0.13698	0.2418	-5.86	-0.01
40	0.31436	-0.13505	0.2417	-5.87	0.01
41	0.29562	-0.13312	0.2417	-5.91	0.04
42	0.27689	-0.13117	0.2416	-6.00	0.08
43	0.25818	-0.12918	0.2415	-6.14	0.13
44	0.23952	-0.12714	0.2413	-6.34	0.19
45	0.22092	-0.12503	0.2411	-6.63	0.27
46	0.20239	-0.12282	0.2408	-7.01	0.36
47	0.18396	-0.12047	0.2404	-7.50	0.47
48	0.16568	-0.11797	0.2398	-8.13	0.59
49	0.14756	-0.11526	0.2389	-8.89	0.72
50	0.12967	-0.11232	0.2376	-9.79	0.86
51	0.11207	-0.10913	0.2361	-10.82	1.01
52	0.09485	-0.10566	0.2341	-11.99	1.17
53	0.07814	-0.10191	0.2322	-13.36	1.39
54	0.06213	-0.09787	0.2301	-15.01	1.75
55	0.04707	-0.09354	0.2284	-17.20	2.43
56	0.03326	-0.08888	0.2260	-20.42	3.85
57	0.02099	-0.08377	0.2203	-25.10	6.14
58	0.01043	-0.07819	0.2082	-30.92	8.52
59	0.00187	-0.07231	0.1923	-38.99	13.57
60	-0.00419	-0.06617	0.1589	-53.40	29.14
61	-0.00753	-0.05961	0.0909	-73.68	48.08
62	-0.00792	-0.05243	0.0000	83.02	56.56
63	-0.00584	-0.04560	0.0793	62.80	49.41
64	-0.00083	-0.03837	0.1303	49.10	27.18
65	0.00668	-0.03105	0.1604	40.44	14.42
66	0.01629	-0.02361	0.1819	35.58	6.98
67	0.02742	-0.01623	0.2016	31.53	5.29
68	0.03974	-0.00924	0.2176	27.71	4.71
69	0.05303	-0.00279	0.2305	24.08	4.29
70	0.06716	0.00303	0.2394	20.85	3.69
71	0.08201	0.00820	0.2459	18.18	2.96

72	0.09739	0.01292	0.2511	16.02	2.34
73	0.11316	0.01717	0.2559	14.20	1.95
74	0.12916	0.02097	0.2604	12.57	1.72
75	0.14531	0.02435	0.2646	11.08	1.58
76	0.16153	0.02733	0.2685	9.70	1.47
77	0.17778	0.02991	0.2722	8.39	1.39
78	0.19400	0.03212	0.2755	7.15	1.32
79	0.21019	0.03399	0.2786	5.98	1.26
80	0.22632	0.03551	0.2814	4.85	1.21
81	0.24239	0.03672	0.2841	3.76	1.18
82	0.25837	0.03762	0.2866	2.70	1.15
83	0.27427	0.03823	0.2889	1.66	1.14
84	0.29009	0.03855	0.2911	0.64	1.13
85	0.30583	0.03858	0.2930	-0.39	1.13
86	0.32149	0.03834	0.2947	-1.40	1.13
87	0.33708	0.03782	0.2962	-2.42	1.13
88	0.35260	0.03703	0.2974	-3.42	1.13
89	0.36806	0.03597	0.2984	-4.42	1.12
90	0.38347	0.03464	0.2992	-5.41	1.11
91	0.39884	0.03305	0.2999	-6.39	1.11
92	0.41417	0.03121	0.3004	-7.36	1.10
93	0.42945	0.02910	0.3008	-8.31	1.08
94	0.44470	0.02674	0.3013	-9.29	1.10
95	0.45990	0.02412	0.3018	-10.31	1.16
96	0.47506	0.02121	0.3020	-11.37	1.20
97	0.49019	0.01802	0.3021	-12.47	1.24
98	0.50528	0.01453	0.3020	-13.63	1.30
99	0.52034	0.01071	0.3016	-14.83	1.35
100	0.53538	0.00655	0.3008	-16.09	1.41
101	0.55043	0.00202	0.2996	-17.39	1.45
102	0.56549	-0.00289	0.2979	-18.74	1.48
103	0.58058	-0.00821	0.2957	-20.11	1.49
104	0.59573	-0.01396	0.2930	-21.49	1.49
105	0.61096	-0.02018	0.2897	-22.88	1.48
106	0.62630	-0.02687	0.2859	-24.28	1.45
107	0.64177	-0.03408	0.2815	-25.66	1.42
108	0.65743	-0.04184	0.2765	-27.03	1.36
109	0.67329	-0.05016	0.2708	-28.35	1.29
110	0.68942	-0.05910	0.2646	-29.60	1.19
111	0.70588	-0.06867	0.2577	-30.75	1.05
112	0.72271	-0.07890	0.2504	-31.75	0.85
113	0.74000	-0.08977	0.2427	-32.56	0.69
114	0.75781	-0.10129	0.2348	-33.15	0.48
115	0.77621	-0.11338	0.2269	-33.46	0.25
116	0.79524	-0.12597	0.2194	-33.46	0.00
117	0.81488	-0.13889	0.2124	-33.16	-0.23
118	0.83508	-0.15196	0.2064	-32.59	-0.41
119	0.85567	-0.16493	0.2014	-31.83	-0.55
120	0.87637	-0.17756	0.1973	-30.93	-0.65
121	0.89683	-0.18959	0.1942	-29.96	-0.71
122	0.91662	-0.20077	0.1920	-28.97	-0.76
123	0.93521	-0.21086	0.1905	-28.02	-0.79
124	0.95207	-0.21967	0.1896	-27.13	-0.82

125	0.96670	-0.22704	0.1891	-26.32	-0.86
126	0.97866	-0.23287	0.1890	-25.61	-0.93
127	0.98761	-0.23710	0.1890	-25.00	-1.08
128	0.99337	-0.23976	0.1891	-24.46	-1.48
129	0.99590	-0.24089	0.1892	-23.99	-3.00
130	0.99606	-0.24096	0.1891	-23.86	-12.89

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BOUNDARY LAYER CORRECTION

PRESSURE SIDE

N	X	Y	EM	TH	SEP
62	-0.00792	-0.05243	0.00002		
61	-0.00753	-0.05961	0.09094		
60	-0.00419	-0.06617	0.15894		
59	0.00187	-0.07231	0.19232		
58	0.01043	-0.07819	0.20820		
57	0.02099	-0.08377	0.22030		
56	0.03326	-0.08888	0.22604		
55	0.04707	-0.09354	0.22842		
54	0.06213	-0.09787	0.23011		
53	0.07814	-0.10191	0.23216		
52	0.09485	-0.10566	0.23413		
51	0.11207	-0.10913	0.23608		
50	0.12967	-0.11232	0.23764		
49	0.14756	-0.11526	0.23890		
48	0.16568	-0.11797	0.23976		
47	0.18396	-0.12047	0.24039		
46	0.20239	-0.12282	0.24077		
45	0.22092	-0.12503	0.24107		
44	0.23952	-0.12714	0.24127		
43	0.25818	-0.12918	0.24145		
42	0.27689	-0.13117	0.24157		
41	0.29562	-0.13312	0.24167		
40	0.31436	-0.13505	0.24173	0.00025	0.00009
39	0.33312	-0.13698	0.24176	0.00031	0.00000
38	0.35189	-0.13890	0.24172	0.00036	0.00001
37	0.37067	-0.14084	0.24160	0.00041	0.00002
36	0.38945	-0.14278	0.24134	0.00046	0.00003
35	0.40826	-0.14474	0.24095	0.00051	0.00006
34	0.42709	-0.14671	0.24038	0.00056	0.00008
33	0.44596	-0.14872	0.23964	0.00061	0.00011
32	0.46487	-0.15075	0.23879	0.00066	0.00014
31	0.48383	-0.15280	0.23775	0.00071	0.00022
30	0.50287	-0.15488	0.23609	0.00077	0.00031
29	0.52203	-0.15701	0.23417	0.00083	0.00034
28	0.54129	-0.15923	0.23251	0.00089	0.00035
27	0.56064	-0.16152	0.23066	0.00095	0.00045

26	0.58011	-0.16389	0.22841	0.00102	0.00055
25	0.59971	-0.16636	0.22596	0.00110	0.00063
24	0.61945	-0.16896	0.22341	0.00118	0.00068
23	0.63932	-0.17171	0.22092	0.00126	0.00070
22	0.65928	-0.17464	0.21861	0.00134	0.00069
21	0.67932	-0.17775	0.21647	0.00142	0.00070
20	0.69939	-0.18102	0.21434	0.00151	0.00079
19	0.71950	-0.18444	0.21199	0.00160	0.00097
18	0.73965	-0.18799	0.20923	0.00170	0.00120
17	0.75983	-0.19168	0.20610	0.00183	0.00145
16	0.78005	-0.19555	0.20273	0.00197	0.00165
15	0.80025	-0.19965	0.19930	0.00212	0.00179
14	0.82035	-0.20400	0.19597	0.00227	0.00184
13	0.84026	-0.20863	0.19296	0.00243	0.00176
12	0.85981	-0.21356	0.19041	0.00257	0.00154
11	0.87883	-0.21877	0.18846	0.00269	0.00120
10	0.89711	-0.22419	0.18714	0.00278	0.00081
9	0.91441	-0.22971	0.18640	0.00284	0.00040
8	0.93052	-0.23520	0.18618	0.00287	0.00000
7	0.94519	-0.24051	0.18636	0.00288	-0.00037
6	0.95817	-0.24544	0.18684	0.00288	-0.00069
5	0.96921	-0.24982	0.18749	0.00286	-0.00095
4	0.97803	-0.25344	0.18815	0.00284	-0.00115
3	0.98438	-0.25611	0.18872	0.00282	-0.00127
2	0.98798	-0.25766	0.18906	0.00281	-0.00130
1	0.98877	-0.25801	0.18914	0.00280	-0.00130

SUCTION SIDE

N	X	Y	EM	TH	SEP
63	-0.00584	-0.04560	0.07930		
64	-0.00023	-0.03837	0.13035		
65	0.00668	-0.03105	0.16041		
66	0.01629	-0.02361	0.18190		
67	0.02742	-0.01623	0.20158		
68	0.03974	-0.00924	0.21765		
69	0.05303	-0.00279	0.23048		
70	0.06716	0.00303	0.23938		
71	0.08201	0.00820	0.24593		
72	0.09739	0.01292	0.25107		
73	0.11316	0.01717	0.25591		
74	0.12916	0.02097	0.26038		
75	0.14531	0.02435	0.26464		
76	0.16153	0.02733	0.26852		
77	0.17778	0.02991	0.27216		
78	0.19400	0.03212	0.27547		
79	0.21019	0.03399	0.27859		
80	0.22632	0.03551	0.28143		
81	0.24239	0.03672	0.28412		
82	0.25837	0.03762	0.28659		

83	0.27427	0.03823	0.28893		
84	0.29009	0.03855	0.29105		
85	0.30583	0.03858	0.29300		
86	0.32149	0.03834	0.29470		
87	0.33708	0.03782	0.29619		
88	0.35260	0.03703	0.29741		
89	0.36806	0.03597	0.29843		
90	0.38347	0.03464	0.29923		
91	0.39884	0.03305	0.29989		
92	0.41417	0.03121	0.30037		
93	0.42945	0.02910	0.30081		
94	0.44470	0.02674	0.30131		
95	0.45990	0.02412	0.30176		
96	0.47506	0.02121	0.30201	0.00021	0.00009
97	0.49019	0.01802	0.30211	0.00025	0.00000
98	0.50528	0.01453	0.30199	0.00029	0.00002
99	0.52034	0.01071	0.30159	0.00033	0.00004
100	0.53538	0.00655	0.30081	0.00038	0.00008
101	0.55043	0.00202	0.29962	0.00042	0.00013
102	0.56549	-0.00289	0.29793	0.00046	0.00020
103	0.58058	-0.00821	0.29572	0.00051	0.00028
104	0.59573	-0.01396	0.29297	0.00057	0.00037
105	0.61096	-0.02018	0.28970	0.00062	0.00048
106	0.62630	-0.02687	0.28586	0.00068	0.00061
107	0.64177	-0.03408	0.28146	0.00076	0.00076
108	0.65743	-0.04184	0.27646	0.00084	0.00095
109	0.67329	-0.05016	0.27083	0.00093	0.00117
110	0.68942	-0.05910	0.26456	0.00104	0.00144
111	0.70588	-0.06867	0.25772	0.00117	0.00175
112	0.72271	-0.07890	0.25039	0.00132	0.00209
113	0.74000	-0.08977	0.24269	0.00150	0.00246
114	0.75781	-0.10129	0.23479	0.00172	0.00283
115	0.77621	-0.11338	0.22692	0.00197	0.00317
116	0.79524	-0.12597	0.21936	0.00226	0.00340
117	0.81488	-0.13889	0.21243	0.00257	0.00345
118	0.83508	-0.15196	0.20640	0.00289	0.00332
119	0.85567	-0.16493	0.20136	0.00320	0.00305
120	0.87637	-0.17756	0.19731	0.00347	0.00266
121	0.89683	-0.18959	0.19422	0.00371	0.00221
122	0.91662	-0.20077	0.19198	0.00389	0.00172
123	0.93521	-0.21086	0.19048	0.00402	0.00124
124	0.95207	-0.21967	0.18958	0.00411	0.00079
125	0.96670	-0.22704	0.18913	0.00416	0.00039
126	0.97866	-0.23287	0.18900	0.00418	0.00004
127	0.98761	-0.23710	0.18904	0.00419	-0.00021
128	0.99337	-0.23976	0.18912	0.00419	-0.00035
129	0.99590	-0.24089	0.18917	0.00419	-0.00038
130	0.99606	-0.24096	0.18914	0.00419	-0.00038

BODY COORDINATES AFTER BOUNDARY LAYER SUBTRACTION

METAL COORDINATES IN INCHES

THE CHORD IS   1.000 INCHES

THE GAP IS   0.577 INCHES

N	XV	YV
1	0.96960	-0.24890
2	0.96881	-0.24855
3	0.96526	-0.24700
4	0.95903	-0.24432
5	0.95038	-0.24070
6	0.93956	-0.23632
7	0.92682	-0.23139
8	0.91241	-0.22610
9	0.89658	-0.22066
10	0.87954	-0.21523
11	0.86154	-0.20997
12	0.84280	-0.20499
13	0.82353	-0.20034
14	0.80392	-0.19603
15	0.78413	-0.19203
16	0.76426	-0.18829
17	0.74440	-0.18474
18	0.72457	-0.18135
19	0.70480	-0.17806
20	0.68507	-0.17488
21	0.66538	-0.17181
22	0.64573	-0.16889
23	0.62615	-0.16613
24	0.60667	-0.16356
25	0.58732	-0.16114
26	0.56811	-0.15884
27	0.54903	-0.15663
28	0.53007	-0.15449
29	0.51120	-0.15241
30	0.49243	-0.15041
31	0.47378	-0.14847
32	0.45520	-0.14654
33	0.43668	-0.14462
34	0.41820	-0.14274
35	0.39976	-0.14087
36	0.38134	-0.13902
37	0.36294	-0.13719
38	0.34455	-0.13536
39	0.32617	-0.13355
40	0.30779	-0.13182
41	0.28940	-0.13032
42	0.27106	-0.12841
43	0.25275	-0.12646
44	0.23448	-0.12447
45	0.21627	-0.12240
46	0.19813	-0.12023
47	0.18010	-0.11794
48	0.16219	-0.11548
49	0.14446	-0.11284
50	0.12694	-0.10996
51	0.10971	-0.10683
52	0.09285	-0.10343
53	0.07649	-0.09976
54	0.06082	-0.09581
55	0.04608	-0.09158
56	0.03256	-0.08701
57	0.02054	-0.08201
58	0.01021	-0.07654
59	0.00183	-0.07079
60	-0.00410	-0.06478
61	-0.00737	-0.05836
62	-0.00776	-0.05133
63	-0.00572	-0.04464
64	-0.00081	-0.03756
65	0.00654	-0.03040
66	0.01595	-0.02311
67	0.02684	-0.01589
68	0.03890	-0.00905
69	0.05192	-0.00273
70	0.06575	0.00297
71	0.08029	0.00803
72	0.09535	0.01265
73	0.11078	0.01681
74	0.12645	0.02053
75	0.14226	0.02384
76	0.15814	0.02675
77	0.17404	0.02928
78	0.18992	0.03145
79	0.20577	0.03327
80	0.22156	0.03477
81	0.23729	0.03595
82	0.25294	0.03683
83	0.26850	0.03743
84	0.28399	0.03774
85	0.29940	0.03777
86	0.31473	0.03753
87	0.32999	0.03702
88	0.34518	0.03625
89	0.36032	0.03521
90	0.37541	0.03391
91	0.39045	0.03236
92	0.40545	0.03055
93	0.42042	0.02849
94	0.43535	0.02618
95	0.45023	0.02361
96	0.46501	0.02045

97	0.47978	0.01720
98	0.49453	0.01372
99	0.50925	0.00993
100	0.52395	0.00580
101	0.53864	0.00131
102	0.55334	-0.00356
103	0.56808	-0.00883
104	0.58286	-0.01454
105	0.59771	-0.02070
106	0.61266	-0.02734
107	0.62773	-0.03450
108	0.64296	-0.04221
109	0.65837	-0.05051
110	0.67403	-0.05943
111	0.68996	-0.06902
112	0.70624	-0.07929
113	0.72292	-0.09026
114	0.74006	-0.10194
115	0.75772	-0.11427
116	0.77597	-0.12716
117	0.79483	-0.14043
118	0.81428	-0.15383
119	0.83418	-0.16709
120	0.85430	-0.17990
121	0.87430	-0.19198
122	0.89372	-0.20308
123	0.91203	-0.21301
124	0.92869	-0.22160
125	0.94317	-0.22874
126	0.95501	-0.23436
127	0.96389	-0.23844
128	0.96962	-0.24101
129	0.97215	-0.24212
130	0.97232	-0.24219

THICK/CHORD AT TE   0.007,   DTE = 0.000

M
.500

.375

.250

.125

.000

RUN	3005
MIN	0.179
ANIN	-0.01
MEX	0.199
ANEX	-20.22
TURN	20.21
SOLD	1.74
THCR	0.176
THTE	0.020
DTE	0.000
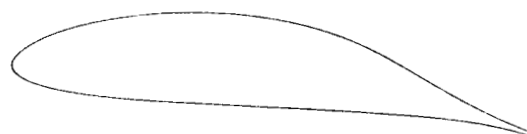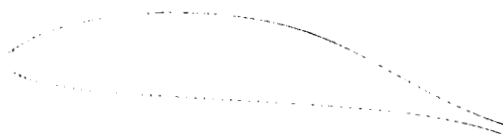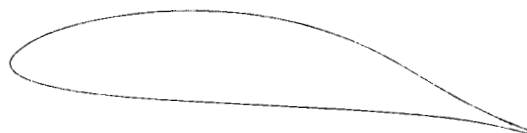
CASE 20. - VIGV. MEAN SECTION. (REF. 5.)

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20. IGVM5

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&DATA  NRN = 3005,   R = 1.73,   EMACH = 0.24,   THETA = 0.,
NI = 3,   NF = 128,   GRID = 6.E-2,   GRIDS = 4.E-2,   IRICHD =
   IRICHS = 0,   RN = 1000000.,   TRU = 0.47,   TRL = 0.3,   RTHO
= 320.,   IGRPH = 1,   ISVPLT = 1,   CHDU = 1.,   &END
1
```

N	S-INPUT	Q-INPUT
1	-1.418000	-0.766000
2	-1.229000	-0.801000
3	-1.028000	-0.906000
4	-0.927300	-0.947000
5	-0.814100	-0.989000
6	-0.663500	-1.027000
7	-0.571900	-1.039000
8	-0.430300	-1.042000
9	-0.300600	-1.039000
10	-0.169400	-1.023000
11	-0.050400	-0.981000
12	-0.005000	-0.892000
13	0.009000	-0.813000
14	0.025000	-0.638400
15	0.043000	0.000000
16	0.069000	0.580000
17	0.075000	0.620000
18	0.081000	0.660000
19	0.108900	0.806000
20	0.140600	0.920000
21	0.212100	1.035000
22	0.305800	1.111000
23	0.437200	1.185000
24	0.567800	1.232000
25	0.711500	1.251000
26	0.878700	1.243300
27	1.060000	1.128000
28	1.287000	0.888000
29	1.480000	0.790000
30	1.582000	0.766000

ITER	MIN	ANIN	TURN	GAP	RESID
1	0.18	-0.01	19.76	0.58	0.6365E-01

```
2    0.18    -0.01    20.08    0.58    0.1273E-01

3    0.18    -0.01    20.21    0.58    0.2545E-02
```

1

INVISCID   COMPUTATION

INLET MACH NUMBER = 0.179   INLET FLOW ANGLE = -0.01

EXIT MACH NUMBER = 0.199   EXIT FLOW ANGLE = -20.22

TURNING = 20.208

GAP   = 0.585   CHORD = 1.016   AXIAL CHORD
= 1.006

GAP/CHORD = 0.575   SOLIDITY = 1.738   AXIAL
SOLIDITY = 1.720

THICK/CHORD = 0.176,   DX= 0.0074; DY = 0.0194

THICK/CHORD AT TE = 0.020,   DTE= 0.000

N	X	Y	MACH	ANGL	CURVATURE
1	0.99382	-0.20720	0.1834	-19.49	0.00
2	0.99382	-0.20720	0.1834	-19.49	0.00
3	0.99126	-0.20631	0.1834	-18.77	-4.66
4	0.98563	-0.20445	0.1833	-18.03	-2.19
5	0.97721	-0.20177	0.1833	-17.23	-1.57
6	0.96631	-0.19848	0.1834	-16.37	-1.33
7	0.95325	-0.19477	0.1838	-15.42	-1.21
8	0.93835	-0.19080	0.1844	-14.41	-1.14
9	0.92193	-0.18674	0.1855	-13.35	-1.09
10	0.90427	-0.18273	0.1870	-12.26	-1.05
11	0.88565	-0.17887	0.1890	-11.18	-1.00
12	0.86631	-0.17523	0.1915	-10.12	-0.93
13	0.84648	-0.17187	0.1946	-9.15	-0.84
14	0.82633	-0.16878	0.1980	-8.30	-0.73
15	0.80603	-0.16595	0.2017	-7.58	-0.61
16	0.78569	-0.16336	0.2056	-7.00	-0.49
17	0.76539	-0.16095	0.2095	-6.55	-0.38
18	0.74517	-0.15869	0.2132	-6.22	-0.29

19	0.72506	-0.15654	0.2167	-5.97	-0.21
20	0.70506	-0.15449	0.2198	-5.76	-0.18
21	0.68517	-0.15252	0.2226	-5.56	-0.18
22	0.66539	-0.15063	0.2253	-5.34	-0.19
23	0.64573	-0.14884	0.2279	-5.11	-0.20
24	0.62620	-0.14713	0.2305	-4.89	-0.19
25	0.60680	-0.14550	0.2331	-4.71	-0.16
26	0.58753	-0.14394	0.2355	-4.56	-0.13
27	0.56841	-0.14243	0.2378	-4.46	-0.10
28	0.54940	-0.14096	0.2398	-4.39	-0.07
29	0.53051	-0.13952	0.2415	-4.33	-0.05
30	0.51170	-0.13811	0.2431	-4.21	-0.11
31	0.49299	-0.13676	0.2449	-4.12	-0.09
32	0.47439	-0.13541	0.2465	-4.15	0.03
33	0.45587	-0.13406	0.2475	-4.19	0.04
34	0.43739	-0.13270	0.2483	-4.20	0.01
35	0.41897	-0.13135	0.2491	-4.22	0.02
36	0.40058	-0.12999	0.2496	-4.26	0.03
37	0.38222	-0.12861	0.2500	-4.30	0.04
38	0.36388	-0.12722	0.2502	-4.35	0.05
39	0.34556	-0.12582	0.2503	-4.41	0.06
40	0.32723	-0.12439	0.2503	-4.48	0.07
41	0.30892	-0.12294	0.2502	-4.58	0.09
42	0.29063	-0.12146	0.2502	-4.70	0.12
43	0.27235	-0.11993	0.2500	-4.87	0.16
44	0.25410	-0.11835	0.2499	-5.09	0.21
45	0.23590	-0.11668	0.2497	-5.38	0.28
46	0.21775	-0.11491	0.2495	-5.75	0.36
47	0.19967	-0.11302	0.2492	-6.22	0.45
48	0.18170	-0.11097	0.2488	-6.80	0.56
49	0.16386	-0.10874	0.2481	-7.51	0.68
50	0.14619	-0.10628	0.2472	-8.34	0.82
51	0.12875	-0.10357	0.2460	-9.32	0.97
52	0.11159	-0.10059	0.2445	-10.45	1.13
53	0.09481	-0.09730	0.2426	-11.73	1.31
54	0.07855	-0.09371	0.2407	-13.24	1.58
55	0.06299	-0.08980	0.2387	-15.07	1.99
56	0.04837	-0.08555	0.2369	-17.47	2.75
57	0.03498	-0.08092	0.2342	-20.95	4.30
58	0.02309	-0.07581	0.2277	-25.96	6.75
59	0.01288	-0.07016	0.2138	-32.11	9.21
60	0.00457	-0.06419	0.1955	-40.26	13.88
61	-0.00134	-0.05796	0.1604	-54.40	28.76
62	-0.00459	-0.05135	0.0915	-74.38	47.35
63	-0.00491	-0.04416	0.0000	82.55	55.95
64	-0.00277	-0.03732	0.0798	62.44	49.04
65	0.00229	-0.03012	0.1311	48.78	27.08
66	0.00985	-0.02282	0.1612	40.20	14.25
67	0.01951	-0.01539	0.1827	35.44	6.81
68	0.03068	-0.00801	0.2024	31.48	5.16
69	0.04305	-0.00100	0.2185	27.72	4.62
70	0.05639	0.00548	0.2312	24.16	4.19
71	0.07057	0.01137	0.2400	21.01	3.57

72	0.08548	0.01662	0.2465	18.45	2.83
73	0.10091	0.02145	0.2516	16.39	2.23
74	0.11672	0.02584	0.2565	14.65	1.84
75	0.13278	0.02980	0.2610	13.11	1.63
76	0.14897	0.03336	0.2652	11.69	1.49
77	0.16524	0.03653	0.2691	10.38	1.38
78	0.18153	0.03933	0.2728	9.15	1.30
79	0.19780	0.04178	0.2761	7.98	1.23
80	0.21404	0.04389	0.2792	6.88	1.18
81	0.23022	0.04569	0.2820	5.83	1.13
82	0.24634	0.04719	0.2847	4.81	1.09
83	0.26238	0.04841	0.2872	3.83	1.07
84	0.27835	0.04934	0.2895	2.86	1.06
85	0.29423	0.05000	0.2916	1.90	1.05
86	0.31005	0.05039	0.2935	0.95	1.05
87	0.32578	0.05052	0.2952	0.00	1.05
88	0.34146	0.05039	0.2966	-0.94	1.05
89	0.35708	0.05001	0.2978	-1.87	1.04
90	0.37264	0.04938	0.2987	-2.79	1.03
91	0.38817	0.04850	0.2995	-3.70	1.02
92	0.40366	0.04737	0.3001	-4.60	1.01
93	0.41912	0.04601	0.3006	-5.49	1.01
94	0.43454	0.04440	0.3010	-6.38	1.00
95	0.44994	0.04256	0.3015	-7.29	1.02
96	0.46530	0.04047	0.3019	-8.25	1.08
97	0.48062	0.03811	0.3021	-9.26	1.13
98	0.49593	0.03547	0.3021	-10.31	1.18
99	0.51121	0.03254	0.3018	-11.41	1.24
100	0.52648	0.02930	0.3012	-12.57	1.29
101	0.54175	0.02572	0.3002	-13.78	1.35
102	0.55704	0.02180	0.2988	-15.03	1.39
103	0.57236	0.01749	0.2968	-16.32	1.41
104	0.58775	0.01280	0.2943	-17.64	1.43
105	0.60322	0.00768	0.2913	-18.97	1.43
106	0.61879	0.00212	0.2877	-20.31	1.42
107	0.63450	-0.00391	0.2835	-21.65	1.39
108	0.65038	-0.01043	0.2787	-22.99	1.35
109	0.66647	-0.01747	0.2733	-24.29	1.30
110	0.68281	-0.02506	0.2672	-25.55	1.21
111	0.69945	-0.03323	0.2605	-26.71	1.10
112	0.71646	-0.04199	0.2533	-27.74	0.94
113	0.73390	-0.05134	0.2456	-28.61	0.76
114	0.75183	-0.06126	0.2377	-29.26	0.56
115	0.77032	-0.07171	0.2297	-29.66	0.33
116	0.78941	-0.08262	0.2219	-29.77	0.09
117	0.80910	-0.09385	0.2147	-29.57	-0.15
118	0.82934	-0.10523	0.2083	-29.11	-0.35
119	0.84999	-0.11658	0.2030	-28.46	-0.48
120	0.87082	-0.12770	0.1986	-27.69	-0.57
121	0.89153	-0.13838	0.1950	-26.86	-0.62
122	0.91174	-0.14843	0.1921	-26.02	-0.65
123	0.93101	-0.15766	0.1897	-25.17	-0.69
124	0.94885	-0.16589	0.1878	-24.33	-0.75

125	0.96476	-0.17295	0.1863	-23.49	-0.84
126	0.97825	-0.17870	0.1852	-22.66	-0.99
127	0.98888	-0.18305	0.1843	-21.84	-1.25
128	0.99635	-0.18599	0.1838	-21.03	-1.76
129	1.00045	-0.18754	0.1835	-20.24	-3.12
130	1.00118	-0.18780	0.1834	-19.49	-17.00

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BOUNDARY LAYER CORRECTION

PRESSURE SIDE

N	X	Y	EM	TH	SEP
63	-0.00491	-0.04416	0.00002		
62	-0.00459	-0.05135	0.09151		
61	-0.00134	-0.05796	0.16039		
60	0.00457	-0.06419	0.19554		
59	0.01288	-0.07016	0.21383		
58	0.02309	-0.07581	0.22771		
57	0.03498	-0.08092	0.23424		
56	0.04837	-0.08555	0.23692		
55	0.06299	-0.08980	0.23865		
54	0.07855	-0.09371	0.24070		
53	0.09481	-0.09730	0.24259		
52	0.11159	-0.10059	0.24446		
51	0.12875	-0.10357	0.24597		
50	0.14619	-0.10628	0.24723		
49	0.16386	-0.10874	0.24810		
48	0.18170	-0.11097	0.24877		
47	0.19967	-0.11302	0.24919		
46	0.21775	-0.11491	0.24953		
45	0.23590	-0.11668	0.24974		
44	0.25410	-0.11835	0.24993		
43	0.27235	-0.11993	0.25004		
42	0.29063	-0.12146	0.25016		
41	0.30892	-0.12294	0.25022	0.00024	0.00009
40	0.32723	-0.12439	0.25028	0.00030	0.00000
39	0.34556	-0.12582	0.25027	0.00035	0.00000
38	0.36388	-0.12722	0.25019	0.00040	0.00001
37	0.38222	-0.12861	0.24998	0.00044	0.00003
36	0.40058	-0.12999	0.24963	0.00049	0.00005
35	0.41897	-0.13135	0.24907	0.00054	0.00008
34	0.43739	-0.13270	0.24835	0.00059	0.00010
33	0.45587	-0.13406	0.24750	0.00064	0.00013
32	0.47439	-0.13541	0.24649	0.00069	0.00020
31	0.49299	-0.13676	0.24489	0.00074	0.00028
30	0.51170	-0.13811	0.24308	0.00080	0.00030
29	0.53051	-0.13952	0.24154	0.00086	0.00031
28	0.54940	-0.14096	0.23984	0.00092	0.00039

27	0.56841	-0.14243	0.23779	0.00098	0.00048
26	0.58753	-0.14394	0.23552	0.00105	0.00056
25	0.60680	-0.14550	0.23307	0.00112	0.00064
24	0.62620	-0.14713	0.23053	0.00120	0.00070
23	0.64573	-0.14884	0.22792	0.00128	0.00076
22	0.66539	-0.15063	0.22532	0.00137	0.00083
21	0.68517	-0.15252	0.22265	0.00146	0.00093
20	0.70506	-0.15449	0.21982	0.00156	0.00108
19	0.72506	-0.15654	0.21669	0.00167	0.00130
18	0.74517	-0.15869	0.21323	0.00179	0.00154
17	0.76539	-0.16095	0.20950	0.00194	0.00178
16	0.78569	-0.16336	0.20563	0.00210	0.00199
15	0.80603	-0.16595	0.20175	0.00227	0.00215
14	0.82633	-0.16878	0.19801	0.00245	0.00224
13	0.84648	-0.17187	0.19455	0.00263	0.00222
12	0.86631	-0.17523	0.19153	0.00281	0.00208
11	0.88565	-0.17887	0.18900	0.00297	0.00185
10	0.90427	-0.18273	0.18700	0.00310	0.00157
9	0.92193	-0.18674	0.18550	0.00321	0.00126
8	0.93835	-0.19080	0.18445	0.00330	0.00093
7	0.95325	-0.19477	0.18378	0.00336	0.00062
6	0.96631	-0.19848	0.18343	0.00339	0.00033
5	0.97721	-0.20177	0.18330	0.00342	0.00009
4	0.98563	-0.20445	0.18331	0.00343	-0.00010
3	0.99126	-0.20631	0.18336	0.00343	-0.00028
2	0.99382	-0.20720	0.18341	0.00343	-0.00033
1	0.99382	-0.20720	0.18341	0.00343	-0.00033

SUCTION SIDE

N	X	Y	EM	TH	SEP
64	-0.00277	-0.03732	0.07981		
65	0.00229	-0.03012	0.13114		
66	0.00985	-0.02282	0.16120		
67	0.01951	-0.01539	0.18269		
68	0.03068	-0.00801	0.20242		
69	0.04305	-0.00100	0.21848		
70	0.05639	0.00548	0.23121		
71	0.07057	0.01137	0.23998		
72	0.08548	0.01662	0.24645		
73	0.10091	0.02145	0.25160		
74	0.11672	0.02584	0.25647		
75	0.13278	0.02980	0.26096		
76	0.14897	0.03336	0.26524		
77	0.16524	0.03653	0.26913		
78	0.18153	0.03933	0.27278		
79	0.19780	0.04178	0.27610		
80	0.21404	0.04389	0.27921		
81	0.23022	0.04569	0.28205		
82	0.24634	0.04719	0.28474		

83	0.26238	0.04841	0.28721		
84	0.27835	0.04934	0.28954		
85	0.29423	0.05000	0.29163		
86	0.31005	0.05039	0.29355		
87	0.32578	0.05052	0.29520		
88	0.34146	0.05039	0.29663		
89	0.35708	0.05001	0.29779		
90	0.37264	0.04938	0.29875		
91	0.38817	0.04850	0.29950		
92	0.40366	0.04737	0.30012		
93	0.41912	0.04601	0.30058		
94	0.43454	0.04440	0.30100		
95	0.44994	0.04256	0.30148		
96	0.46530	0.04047	0.30188		
97	0.48062	0.03811	0.30206	0.00021	0.00009
98	0.49593	0.03547	0.30207	0.00025	0.00001
99	0.51121	0.03254	0.30180	0.00029	0.00003
100	0.52648	0.02930	0.30122	0.00034	0.00006
101	0.54175	0.02572	0.30023	0.00038	0.00010
102	0.55704	0.02180	0.29878	0.00042	0.00016
103	0.57236	0.01749	0.29681	0.00047	0.00023
104	0.58775	0.01280	0.29432	0.00052	0.00031
105	0.60322	0.00768	0.29127	0.00057	0.00041
106	0.61879	0.00212	0.28768	0.00063	0.00053
107	0.63450	-0.00391	0.28349	0.00070	0.00068
108	0.65038	-0.01043	0.27872	0.00077	0.00085
109	0.66647	-0.01747	0.27330	0.00086	0.00106
110	0.68281	-0.02506	0.26722	0.00096	0.00132
111	0.69945	-0.03323	0.26051	0.00108	0.00162
112	0.71646	-0.04199	0.25326	0.00122	0.00196
113	0.73390	-0.05134	0.24558	0.00139	0.00233
114	0.75183	-0.06126	0.23765	0.00159	0.00271
115	0.77032	-0.07171	0.22967	0.00183	0.00307
116	0.78941	-0.08262	0.22191	0.00210	0.00335
117	0.80910	-0.09385	0.21469	0.00239	0.00346
118	0.82934	-0.10523	0.20835	0.00270	0.00338
119	0.84999	-0.11658	0.20298	0.00301	0.00317
120	0.87082	-0.12770	0.19856	0.00329	0.00290
121	0.89153	-0.13838	0.19497	0.00355	0.00262
122	0.91174	-0.14843	0.19207	0.00377	0.00237
123	0.93101	-0.15766	0.18972	0.00397	0.00218
124	0.94885	-0.16589	0.18783	0.00414	0.00204
125	0.96476	-0.17295	0.18631	0.00428	0.00191
126	0.97825	-0.17870	0.18516	0.00439	0.00179
127	0.98888	-0.18305	0.18432	0.00448	0.00169
128	0.99635	-0.18599	0.18378	0.00453	0.00162
129	1.00045	-0.18754	0.18350	0.00456	0.00161
130	1.00118	-0.18780	0.18341	0.00457	0.00161

BODY COORDINATES AFTER BOUNDARY LAYER SUBTRACTION

METAL COORDINATES IN INCHES

THE CHORD IS   1.000 INCHES

THE GAP IS   0.575 INCHES

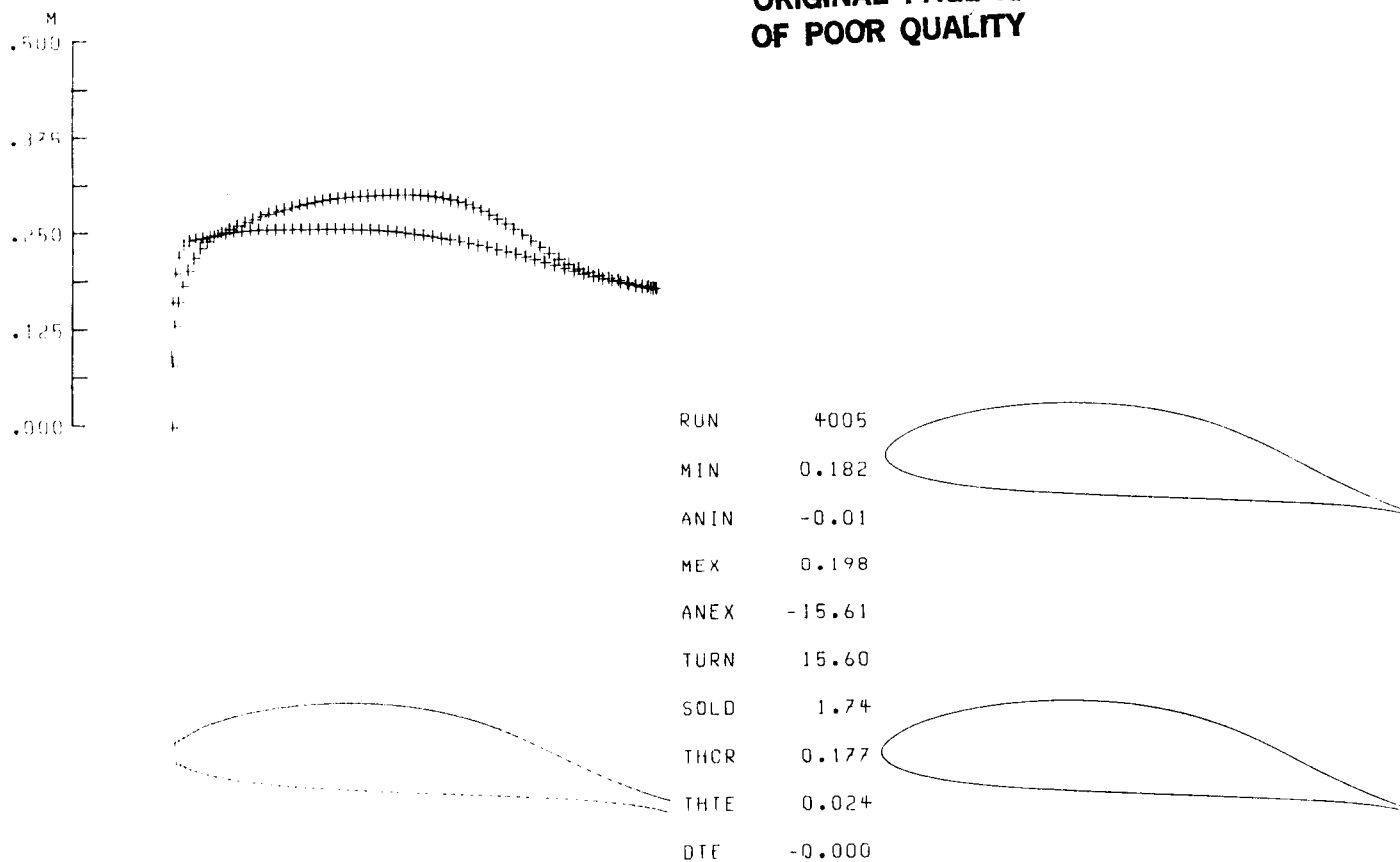| N	XV	YV
1	0.97971	-0.19888
2	0.97971	-0.19888
3	0.97714	-0.19797
4	0.97154	-0.19608
5	0.96320	-0.19339
6	0.95240	-0.19010
7	0.93947	-0.18640
8	0.92472	-0.18248
9	0.90845	-0.17851
10	0.89095	-0.17465
11	0.87249	-0.17101
12	0.85332	-0.16766
13	0.83368	-0.16462
14	0.81374	-0.16191
15	0.79367	-0.15946
16	0.77357	-0.15723
17	0.75353	-0.15517
18	0.73358	-0.15322
19	0.71376	-0.15134
20	0.69405	-0.14953
21	0.67445	-0.14776
22	0.65497	-0.14606
23	0.63560	-0.14443
24	0.61635	-0.14288
25	0.59725	-0.14140
26	0.57828	-0.13999
27	0.55944	-0.13861
28	0.54074	-0.13727
29	0.52213	-0.13595
30	0.50362	-0.13465
31	0.48520	-0.13339
32	0.46689	-0.13216
33	0.44866	-0.13091
34	0.43048	-0.12964
35	0.41234	-0.12838
36	0.39424	-0.12711
37	0.37617	-0.12582
38	0.35812	-0.12452
39	0.34008	-0.12320
40	0.32205	-0.12187
41	0.30402	-0.12060
42	0.28598	-0.11952
43	0.26800	-0.11802
44	0.25004	-0.11646
45	0.23213	-0.11482
46	0.21427	-0.11308
47	0.19648	-0.11121
48	0.17880	-0.10920
49	0.16124	-0.10700
50	0.14386	-0.10458
51	0.12669	-0.10192
52	0.10980	-0.09898
53	0.09330	-0.09575
54	0.07730	-0.09221
55	0.06198	-0.08836
56	0.04759	-0.08419
57	0.03442	-0.07963
58	0.02272	-0.07460
59	0.01267	-0.06904
60	0.00449	-0.06316
61	-0.00132	-0.05703
62	-0.00451	-0.05053
63	-0.00483	-0.04345
64	-0.00273	-0.03673
65	0.00225	-0.02964
66	0.00969	-0.02246
67	0.01920	-0.01514
68	0.03019	-0.00788
69	0.04236	-0.00098
70	0.05549	0.00540
71	0.06944	0.01119
72	0.08411	0.01636
73	0.09930	0.02111
74	0.11486	0.02542
75	0.13066	0.02932
76	0.14659	0.03282
77	0.16260	0.03594
78	0.17863	0.03870
79	0.19464	0.04111
80	0.21062	0.04319
81	0.22655	0.04496
82	0.24241	0.04644
83	0.25819	0.04763
84	0.27390	0.04855
85	0.28953	0.04920
86	0.30509	0.04959
87	0.32058	0.04971
88	0.33600	0.04959
89	0.35137	0.04921
90	0.36669	0.04859
91	0.38197	0.04772
92	0.39721	0.04662
93	0.41242	0.04527
94	0.42760	0.04370
95	0.44275	0.04188
96	0.45787	0.03982

97	0.47289	0.03718
98	0.48792	0.03445
99	0.50294	0.03151
100	0.51794	0.02826
101	0.53294	0.02469
102	0.54795	0.02076
103	0.56300	0.01646
104	0.57810	0.01177
105	0.59327	0.00665
106	0.60854	0.00109
107	0.62393	-0.00494
108	0.63948	-0.01147
109	0.65521	-0.01854
110	0.67118	-0.02618
111	0.68741	-0.03442
112	0.70398	-0.04329
113	0.72093	-0.05280
114	0.73833	-0.06295
115	0.75622	-0.07372
116	0.77468	-0.08500
117	0.79372	-0.09667
118	0.81333	-0.10850
119	0.83341	-0.12026
120	0.85373	-0.13171
121	0.87401	-0.14264
122	0.89386	-0.15285
123	0.91283	-0.16219
124	0.93042	-0.17048
125	0.94614	-0.17757
126	0.95949	-0.18333
127	0.97006	-0.18769
128	0.97750	-0.19062
129	0.98166	-0.19217
130	0.98247	-0.19246

THICK/CHORD AT TE   0.007,   DTE = 0.000

M
.500

.375

.250

.125

.000

RUN	4005
MIN	0.182
ANIN	-0.01
MEX	0.198
ANEX	-15.61
TURN	15.60
SOLD	1.74
THCR	0.177
THTE	0.024
DTE	-0.000

CASE 21. - VIGV. MEAN-HUB SECTION. (REF. 5.)

21. IGMH5

&DATA NRN = 4005, R = 1.73, EMACH = 0.24, THETA = 0.,
NI = 3, NF = 128, GRID = 6.E-2, GRIDS = 4.E-2, IRICHD =
  IRICHS = 0, RN = 1000000., TRU = 0.47, TRL = 0.3, RTHO
= 320., IGRPH = 1, ISVPLT = 1, CHDU = 1., &END
1

N	S-INPUT	Q-INPUT
1	-1.423000	-0.746000
2	-1.229000	-0.825000
3	-1.028000	-0.934000
4	-0.927300	-0.978000
5	-0.814100	-1.020000
6	-0.663500	-1.059000
7	-0.571900	-1.071000
8	-0.430300	-1.074000
9	-0.300600	-1.071000
10	-0.169400	-1.055000
11	-0.050400	-1.013000
12	-0.005000	-0.924000
13	0.009000	-0.834000
14	0.025000	-0.638400
15	0.043000	0.000000
16	0.069000	0.580000
17	0.075000	0.620000
18	0.081000	0.660000
19	0.108900	0.806000
20	0.140600	0.920000
21	0.212100	1.035000
22	0.305800	1.111000
23	0.437200	1.185000
24	0.567800	1.232000
25	0.711500	1.251000
26	0.878700	1.241300
27	1.060000	1.125000
28	1.283000	0.887000
29	1.480000	0.780700
30	1.572000	0.746000

ITER	MIN	ANIN	TURN	GAP	RESID
1	0.18	-0.01	15.14	0.58	0.6436E-01

```
2      0.18   -0.01    15.47    0.58    0.1287E-01


3      0.18   -0.01    15.60    0.58    0.2574E-02
```

1

INVISCID   COMPUTATION

INLET MACH NUMBER = 0.182   INLET FLOW ANGLE =   -0.01

EXIT MACH NUMBER = 0.198   EXIT FLOW ANGLE = -15.61

TURNING =   15.602

GAP = 0.581   CHORD = 1.010   AXIAL CHORD
= 1.005

GAP/CHORD = 0.575   SOLIDITY = 1.738   AXIAL
SOLIDITY = 1.730

THICK/CHORD = 0.177,   DX= 0.0061; DY = 0.0233

THICK/CHORD AT TE = 0.024,   DTE= 0.000

N	X	Y	MACH	ANGL	CURVATURE
1	0.99587	-0.15927	0.1787	-15.00	0.00
2	0.99436	-0.15889	0.1788	-14.01	-11.15
3	0.98953	-0.15774	0.1793	-12.94	-3.77
4	0.98162	-0.15600	0.1802	-11.88	-2.28
5	0.97098	-0.15387	0.1814	-10.84	-1.67
6	0.95800	-0.15151	0.1830	-9.84	-1.34
7	0.94309	-0.14905	0.1849	-8.86	-1.13
8	0.92660	-0.14662	0.1872	-7.93	-0.98
9	0.90890	-0.14430	0.1898	-7.05	-0.86
10	0.89028	-0.14214	0.1927	-6.23	-0.76
11	0.87099	-0.14016	0.1959	-5.48	-0.68
12	0.85125	-0.13839	0.1993	-4.81	-0.59
13	0.83124	-0.13681	0.2030	-4.23	-0.50
14	0.81109	-0.13540	0.2069	-3.76	-0.41
15	0.79091	-0.13415	0.2108	-3.38	-0.32
16	0.77077	-0.13301	0.2147	-3.10	-0.25
17	0.75072	-0.13196	0.2184	-2.89	-0.18
18	0.73078	-0.13098	0.2220	-2.75	-0.12

19	0.71098	-0.13004	0.2254	-2.66	-0.09
20	0.69132	-0.12915	0.2285	-2.58	-0.07
21	0.67179	-0.12828	0.2314	-2.50	-0.07
22	0.65240	-0.12745	0.2342	-2.42	-0.07
23	0.63314	-0.12664	0.2368	-2.35	-0.06
24	0.61403	-0.12587	0.2394	-2.29	-0.05
25	0.59506	-0.12512	0.2419	-2.25	-0.04
26	0.57622	-0.12438	0.2442	-2.23	-0.02
27	0.55752	-0.12365	0.2463	-2.22	0.00
28	0.53893	-0.12293	0.2483	-2.24	0.02
29	0.52045	-0.12220	0.2499	-2.27	0.03
30	0.50206	-0.12148	0.2514	-2.24	-0.02
31	0.48376	-0.12076	0.2532	-2.24	0.00
32	0.46557	-0.12003	0.2547	-2.36	0.11
33	0.44745	-0.11927	0.2557	-2.48	0.12
34	0.42938	-0.11847	0.2564	-2.57	0.08
35	0.41136	-0.11765	0.2571	-2.66	0.09
36	0.39337	-0.11679	0.2575	-2.77	0.10
37	0.37540	-0.11591	0.2578	-2.88	0.11
38	0.35745	-0.11499	0.2580	-3.00	0.11
39	0.33951	-0.11403	0.2581	-3.12	0.12
40	0.32158	-0.11303	0.2581	-3.26	0.14
41	0.30366	-0.11198	0.2580	-3.42	0.16
42	0.28576	-0.11088	0.2579	-3.62	0.19
43	0.26787	-0.10972	0.2577	-3.85	0.23
44	0.25002	-0.10847	0.2576	-4.14	0.28
45	0.23220	-0.10713	0.2574	-4.49	0.35
46	0.21444	-0.10567	0.2573	-4.93	0.43
47	0.19677	-0.10406	0.2570	-5.47	0.54
48	0.17920	-0.10228	0.2567	-6.15	0.66
49	0.16176	-0.10028	0.2560	-6.95	0.80
50	0.14449	-0.09803	0.2551	-7.90	0.95
51	0.12744	-0.09550	0.2536	-8.99	1.10
52	0.11066	-0.09267	0.2518	-10.20	1.24
53	0.09423	-0.08952	0.2496	-11.54	1.39
54	0.07830	-0.08605	0.2476	-13.05	1.62
55	0.06306	-0.08227	0.2456	-14.89	2.04
56	0.04875	-0.07816	0.2444	-17.34	2.88
57	0.03570	-0.07366	0.2423	-21.02	4.65
58	0.02416	-0.06864	0.2360	-26.38	7.44
59	0.01429	-0.06304	0.2211	-33.05	10.26
60	0.00629	-0.05703	0.2002	-41.62	14.95
61	0.00060	-0.05072	0.1621	-55.69	28.90
62	-0.00252	-0.04405	0.0919	-75.27	46.41
63	-0.00276	-0.03685	0.0000	82.01	55.03
64	-0.00056	-0.03000	0.0802	62.07	48.41
65	0.00455	-0.02281	0.1317	48.48	26.89
66	0.01216	-0.01553	0.1618	39.99	14.06
67	0.02187	-0.00810	0.1834	35.32	6.66
68	0.03309	-0.00072	0.2031	31.43	5.06
69	0.04549	0.00631	0.2192	27.72	4.53
70	0.05888	0.01282	0.2318	24.23	4.10
71	0.07311	0.01876	0.2405	21.17	3.46

72	0.08807	0.02409	0.2469	18.69	2.72
73	0.10355	0.02902	0.2520	16.72	2.12
74	0.11941	0.03353	0.2570	15.06	1.76
75	0.13551	0.03764	0.2615	13.59	1.55
76	0.15175	0.04136	0.2658	12.24	1.41
77	0.16805	0.04471	0.2697	10.99	1.31
78	0.18438	0.04771	0.2733	9.83	1.22
79	0.20070	0.05037	0.2766	8.73	1.16
80	0.21698	0.05272	0.2797	7.70	1.10
81	0.23321	0.05477	0.2826	6.71	1.05
82	0.24937	0.05654	0.2853	5.76	1.02
83	0.26546	0.05803	0.2877	4.84	0.99
84	0.28148	0.05926	0.2900	3.94	0.98
85	0.29742	0.06023	0.2921	3.04	0.98
86	0.31329	0.06095	0.2940	2.16	0.97
87	0.32909	0.06143	0.2956	1.28	0.97
88	0.34484	0.06166	0.2970	0.41	0.97
89	0.36053	0.06165	0.2981	-0.46	0.96
90	0.37618	0.06141	0.2990	-1.31	0.95
91	0.39180	0.06094	0.2997	-2.15	0.94
92	0.40739	0.06024	0.3003	-2.98	0.93
93	0.42294	0.05932	0.3008	-3.81	0.93
94	0.43848	0.05817	0.3012	-4.64	0.93
95	0.45399	0.05679	0.3016	-5.50	0.96
96	0.46947	0.05518	0.3018	-6.40	1.02
97	0.48494	0.05331	0.3019	-7.35	1.06
98	0.50039	0.05119	0.3017	-8.35	1.12
99	0.51583	0.04877	0.3013	-9.40	1.17
100	0.53128	0.04606	0.3004	-10.50	1.22
101	0.54676	0.04304	0.2992	-11.65	1.27
102	0.56227	0.03967	0.2974	-12.84	1.31
103	0.57784	0.03595	0.2951	-14.06	1.33
104	0.59349	0.03185	0.2923	-15.30	1.34
105	0.60926	0.02735	0.2890	-16.55	1.33
106	0.62515	0.02244	0.2851	-17.81	1.32
107	0.64122	0.01708	0.2805	-19.07	1.30
108	0.65748	0.01126	0.2754	-20.31	1.26
109	0.67398	0.00495	0.2696	-21.52	1.19
110	0.69077	-0.00187	0.2631	-22.66	1.10
111	0.70790	-0.00920	0.2561	-23.69	0.96
112	0.72544	-0.01706	0.2486	-24.57	0.80
113	0.74343	-0.02543	0.2407	-25.26	0.61
114	0.76195	-0.03426	0.2328	-25.72	0.39
115	0.78101	-0.04350	0.2249	-25.91	0.16
116	0.80065	-0.05303	0.2175	-25.81	-0.08
117	0.82083	-0.06271	0.2108	-25.45	-0.29
118	0.84142	-0.07239	0.2050	-24.88	-0.44
119	0.86223	-0.08190	0.2001	-24.19	-0.52
120	0.88302	-0.09107	0.1960	-23.44	-0.58
121	0.90345	-0.09977	0.1926	-22.66	-0.61
122	0.92313	-0.10783	0.1896	-21.87	-0.65
123	0.94164	-0.11511	0.1869	-21.06	-0.71
124	0.95849	-0.12146	0.1846	-20.20	-0.83

125	0.97318	-0.12674	0.1826	-19.29	-1.03
126	0.98523	-0.13085	0.1809	-18.30	-1.35
127	0.99422	-0.13373	0.1797	-17.26	-1.92
128	0.99983	-0.13542	0.1790	-16.19	-3.21
129	1.00190	-0.13601	0.1787	-15.09	-8.86
130	1.00195	-0.13602	0.1787	-15.00	-27.47

1

BOUNDARY LAYER CORRECTION

PRESSURE SIDE

N	X	Y	EM	TH	SEP
63	-0.00276	-0.03685	0.00002		
62	-0.00252	-0.04405	0.09191		
61	0.00060	-0.05072	0.16215		
60	0.00629	-0.05703	0.20019		
59	0.01429	-0.06304	0.22108		
58	0.02416	-0.06864	0.23597		
57	0.03570	-0.07366	0.24235		
56	0.04875	-0.07816	0.24439		
55	0.06306	-0.08227	0.24564		
54	0.07830	-0.08605	0.24755		
53	0.09423	-0.08952	0.24960		
52	0.11066	-0.09267	0.25178		
51	0.12744	-0.09550	0.25360		
50	0.14449	-0.09803	0.25506		
49	0.16176	-0.10028	0.25601		
48	0.17920	-0.10228	0.25666		
47	0.19677	-0.10406	0.25702		
46	0.21444	-0.10567	0.25728		
45	0.23220	-0.10713	0.25744		
44	0.25002	-0.10847	0.25762		
43	0.26787	-0.10972	0.25775		
42	0.28576	-0.11088	0.25789		
41	0.30366	-0.11198	0.25798	0.00024	0.00009
40	0.32158	-0.11303	0.25806	0.00029	0.00000
39	0.33951	-0.11403	0.25807	0.00034	0.00000
38	0.35745	-0.11499	0.25802	0.00039	0.00001
37	0.37540	-0.11591	0.25785	0.00043	0.00002
36	0.39337	-0.11679	0.25755	0.00048	0.00004
35	0.41136	-0.11765	0.25707	0.00052	0.00007
34	0.42938	-0.11847	0.25643	0.00057	0.00009
33	0.44745	-0.11927	0.25565	0.00062	0.00012
32	0.46557	-0.12003	0.25470	0.00067	0.00019
31	0.48376	-0.12076	0.25317	0.00072	0.00026
30	0.50206	-0.12148	0.25141	0.00078	0.00028
29	0.52045	-0.12220	0.24991	0.00083	0.00029
28	0.53893	-0.12293	0.24826	0.00088	0.00036

27	0.55752	-0.12365	0.24630	0.00095	0.00043
26	0.57622	-0.12438	0.24417	0.00101	0.00050
25	0.59506	-0.12512	0.24185	0.00108	0.00057
24	0.61403	-0.12587	0.23941	0.00115	0.00065
23	0.63314	-0.12664	0.23684	0.00123	0.00072
22	0.65240	-0.12745	0.23418	0.00131	0.00081
21	0.67179	-0.12828	0.23140	0.00140	0.00090
20	0.69132	-0.12915	0.22849	0.00149	0.00103
19	0.71098	-0.13004	0.22536	0.00160	0.00119
18	0.73078	-0.13098	0.22201	0.00171	0.00139
17	0.75072	-0.13196	0.21841	0.00184	0.00159
16	0.77077	-0.13301	0.21465	0.00198	0.00181
15	0.79091	-0.13415	0.21078	0.00214	0.00202
14	0.81109	-0.13540	0.20688	0.00231	0.00221
13	0.83124	-0.13681	0.20304	0.00250	0.00237
12	0.85125	-0.13839	0.19934	0.00269	0.00249
11	0.87099	-0.14016	0.19586	0.00289	0.00257
10	0.89028	-0.14214	0.19266	0.00308	0.00262
9	0.90890	-0.14430	0.18976	0.00328	0.00264
8	0.92660	-0.14662	0.18717	0.00346	0.00264
7	0.94309	-0.14905	0.18491	0.00364	0.00262
6	0.95800	-0.15151	0.18299	0.00379	0.00258
5	0.97098	-0.15387	0.18141	0.00393	0.00253
4	0.98162	-0.15600	0.18018	0.00404	0.00248
3	0.98953	-0.15774	0.17931	0.00412	0.00241
2	0.99436	-0.15889	0.17880	0.00417	0.00239
1	0.99587	-0.15927	0.17867	0.00418	0.00239

SUCTION SIDE

N	X	Y	EM	TH	SEP
64	-0.00056	-0.03000	0.08017		
65	0.00455	-0.02281	0.13172		
66	0.01216	-0.01553	0.16182		
67	0.02187	-0.00810	0.18337		
68	0.03309	-0.00072	0.20315		
69	0.04549	0.00631	0.21920		
70	0.05888	0.01282	0.23182		
71	0.07311	0.01876	0.24048		
72	0.08807	0.02409	0.24690		
73	0.10355	0.02902	0.25205		
74	0.11941	0.03353	0.25695		
75	0.13551	0.03764	0.26147		
76	0.15175	0.04136	0.26576		
77	0.16805	0.04471	0.26965		
78	0.18438	0.04771	0.27331		
79	0.20070	0.05037	0.27663		
80	0.21698	0.05272	0.27974		
81	0.23321	0.05477	0.28258		
82	0.24937	0.05654	0.28527		

83	0.26546	0.05803	0.28773		
84	0.28148	0.05926	0.29004		
85	0.29742	0.06023	0.29211		
86	0.31329	0.06095	0.29399		
87	0.32909	0.06143	0.29561		
88	0.34484	0.06166	0.29699		
89	0.36053	0.06165	0.29811		
90	0.37618	0.06141	0.29903		
91	0.39180	0.06094	0.29975		
92	0.40739	0.06024	0.30034		
93	0.42294	0.05932	0.30077		
94	0.43848	0.05817	0.30115		
95	0.45399	0.05679	0.30155		
96	0.46947	0.05518	0.30183		
97	0.48494	0.05331	0.30189	0.00021	0.00009
98	0.50039	0.05119	0.30173	0.00025	0.00002
99	0.51583	0.04877	0.30126	0.00030	0.00004
100	0.53128	0.04606	0.30044	0.00034	0.00008
101	0.54676	0.04304	0.29917	0.00038	0.00013
102	0.56227	0.03967	0.29742	0.00043	0.00019
103	0.57784	0.03595	0.29514	0.00048	0.00027
104	0.59349	0.03185	0.29233	0.00053	0.00036
105	0.60926	0.02735	0.28897	0.00059	0.00046
106	0.62515	0.02244	0.28505	0.00065	0.00060
107	0.64122	0.01708	0.28053	0.00072	0.00075
108	0.65748	0.01126	0.27539	0.00080	0.00095
109	0.67398	0.00495	0.26959	0.00089	0.00119
110	0.69077	-0.00187	0.26314	0.00100	0.00147
111	0.70790	-0.00920	0.25609	0.00113	0.00179
112	0.72544	-0.01706	0.24858	0.00128	0.00215
113	0.74343	-0.02543	0.24074	0.00146	0.00253
114	0.76195	-0.03426	0.23277	0.00168	0.00291
115	0.78101	-0.04350	0.22491	0.00193	0.00323
116	0.80065	-0.05303	0.21746	0.00221	0.00342
117	0.82083	-0.06271	0.21075	0.00250	0.00343
118	0.84142	-0.07239	0.20498	0.00280	0.00331
119	0.86223	-0.08190	0.20011	0.00309	0.00313
120	0.88302	-0.09107	0.19602	0.00337	0.00296
121	0.90345	-0.09977	0.19255	0.00362	0.00285
122	0.92313	-0.10783	0.18957	0.00386	0.00284
123	0.94164	-0.11511	0.18692	0.00409	0.00293
124	0.95849	-0.12146	0.18459	0.00431	0.00308
125	0.97318	-0.12674	0.18256	0.00451	0.00323
126	0.98523	-0.13085	0.18093	0.00467	0.00336
127	0.99422	-0.13373	0.17971	0.00480	0.00346
128	0.99983	-0.13542	0.17895	0.00489	0.00366
129	1.00190	-0.13601	0.17866	0.00492	0.00373
130	1.00195	-0.13602	0.17867	0.00492	0.00373

BODY COORDINATES AFTER BOUNDARY LAYER SUBTRACTION

METAL COORDINATES IN INCHES
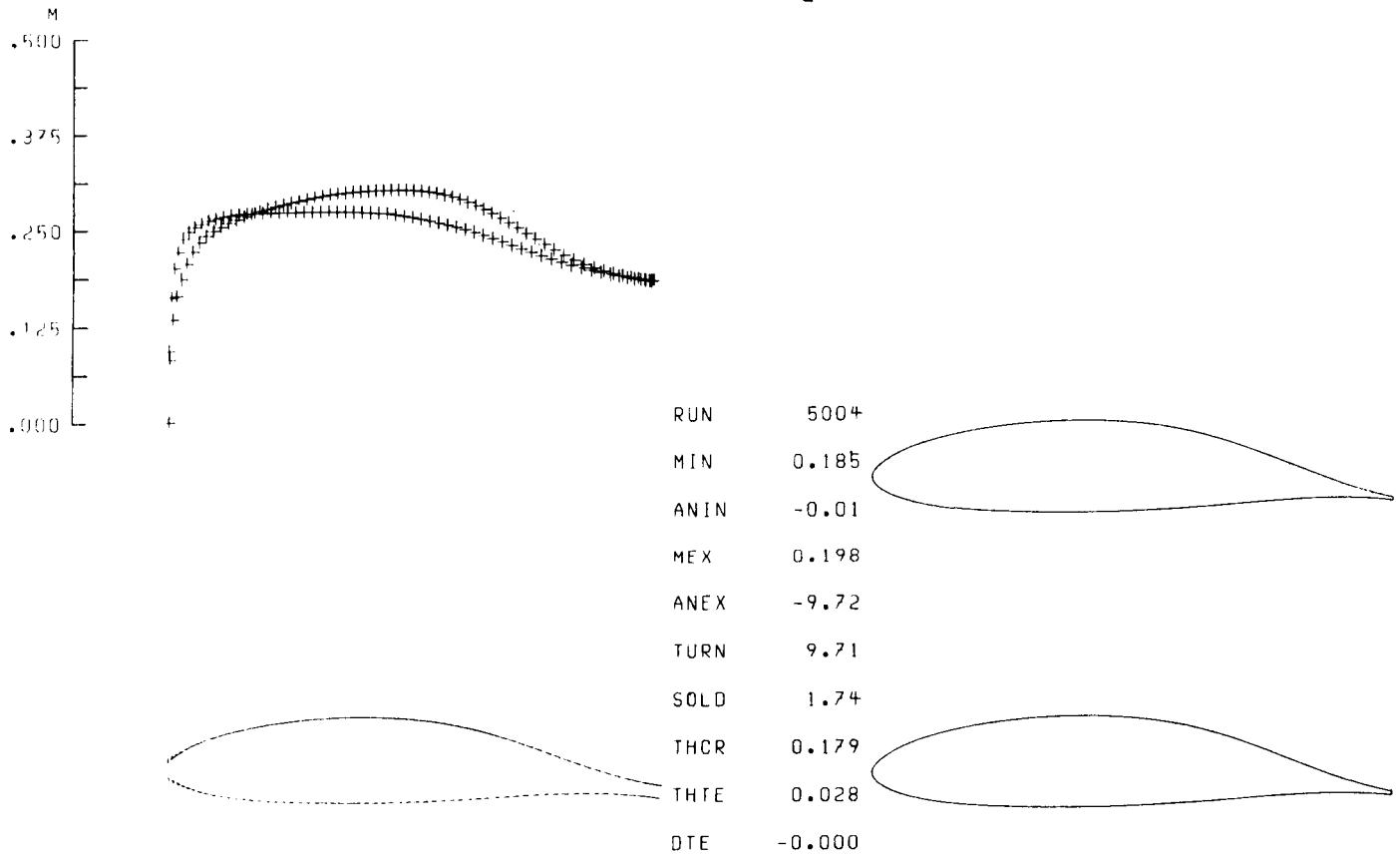
THE CHORD IS   1.000 INCHES

THE GAP IS   0.575 INCHES

N	XV	YV
1	0.98837	-0.15069
2	0.98674	-0.15028
3	0.98183	-0.14914
4	0.97384	-0.14748
5	0.96314	-0.14550
6	0.95013	-0.14335
7	0.93520	-0.14116
8	0.91872	-0.13905
9	0.90105	-0.13708
10	0.88247	-0.13530
11	0.86326	-0.13373
12	0.84361	-0.13235
13	0.82371	-0.13117
14	0.80370	-0.13014
15	0.78366	-0.12924
16	0.76367	-0.12842
17	0.74379	-0.12766
18	0.72402	-0.12693
19	0.70439	-0.12622
20	0.68490	-0.12552
21	0.66554	-0.12483
22	0.64633	-0.12415
23	0.62725	-0.12349
24	0.60831	-0.12285
25	0.58951	-0.12222
26	0.57085	-0.12161
27	0.55231	-0.12099
28	0.53390	-0.12037
29	0.51559	-0.11974
30	0.49736	-0.11910
31	0.47924	-0.11847
32	0.46122	-0.11783
33	0.44327	-0.11715
34	0.42537	-0.11643
35	0.40751	-0.11568
36	0.38969	-0.11490
37	0.37189	-0.11409
38	0.35411	-0.11324
39	0.33634	-0.11236
40	0.31858	-0.11143
41	0.30082	-0.11055
42	0.28306	-0.10984
43	0.26534	-0.10868
44	0.24766	-0.10745
45	0.23001	-0.10612
46	0.21242	-0.10467
47	0.19491	-0.10308
48	0.17751	-0.10131
49	0.16024	-0.09933
50	0.14313	-0.09711
51	0.12624	-0.09460
52	0.10961	-0.09179
53	0.09334	-0.08867
54	0.07756	-0.08524
55	0.06246	-0.08150
56	0.04829	-0.07743
57	0.03536	-0.07297
58	0.02393	-0.06799
59	0.01415	-0.06244
60	0.00623	-0.05649
61	0.00059	-0.05024
62	-0.00250	-0.04364
63	-0.00274	-0.03650
64	-0.00056	-0.02972
65	0.00450	-0.02260
66	0.01205	-0.01538
67	0.02167	-0.00802
68	0.03278	-0.00071
69	0.04506	0.00625
70	0.05832	0.01270
71	0.07242	0.01858
72	0.08724	0.02387
73	0.10258	0.02875
74	0.11828	0.03322
75	0.13423	0.03728
76	0.15031	0.04097
77	0.16647	0.04429
78	0.18264	0.04726
79	0.19881	0.04990
80	0.21493	0.05222
81	0.23101	0.05425
82	0.24702	0.05600
83	0.26295	0.05748
84	0.27882	0.05870
85	0.29461	0.05966
86	0.31033	0.06038
87	0.32599	0.06085
88	0.34158	0.06107
89	0.35713	0.06107
90	0.37263	0.06083
91	0.38810	0.06036
92	0.40354	0.05967
93	0.41895	0.05876
94	0.43434	0.05762
95	0.44971	0.05626
96	0.46504	0.05466

97	0.48032	0.05249
98	0.49560	0.05024
99	0.51088	0.04779
100	0.52616	0.04505
101	0.54146	0.04199
102	0.55680	0.03859
103	0.57219	0.03483
104	0.58766	0.03069
105	0.60323	0.02615
106	0.61892	0.02118
107	0.63476	0.01576
108	0.65079	0.00986
109	0.66705	0.00346
110	0.68356	-0.00349
111	0.70040	-0.01100
112	0.71760	-0.01907
113	0.73522	-0.02772
114	0.75332	-0.03692
115	0.77194	-0.04660
116	0.79111	-0.05664
117	0.81082	-0.06687
118	0.83098	-0.07708
119	0.85142	-0.08708
120	0.87188	-0.09669
121	0.89202	-0.10577
122	0.91146	-0.11418
123	0.92975	-0.12181
124	0.94643	-0.12849
125	0.96101	-0.13409
126	0.97300	-0.13847
127	0.98201	-0.14155
128	0.98771	-0.14336
129	0.98994	-0.14400
130	0.99001	-0.14402

THICK/CHORD AT TE   0.007,   DTE = 0.000

M

.500

.375

.250

.125

.000

RUN	5004
MIN	0.185
ANIN	-0.01
MEX	0.198
ANEX	-9.72
TURN	9.71
SOLD	1.74
THCR	0.179
THTE	0.028
DTE	-0.000

CASE 22. - VIGV. HUB SECTION. (REF. 5.)

22. IGVH4

&DATA NRN = 5004,   R = 1.73,   EMACH = 0.24,   THETA = 0.,
NI = 3,   NF = 128,   GRID = 6.E-2,   GRIDS = 4.E-2,   IRICHD =
   IRICHS = 0,   RN = 1000000.,   TRU = 0.45,   TRL = 0.15,
RTHO = 320.,   IGRPH = 1,   ISVPLT = 1,   CHDU = 1.,   &END
1

N	S-INPUT	Q-INPUT
1	-1.429000	-0.752000
2	-1.229000	-0.820000
3	-1.028000	-0.935000
4	-0.927300	-1.003000
5	-0.814100	-1.060000
6	-0.663500	-1.115000
7	-0.571900	-1.127000
8	-0.430300	-1.131000
9	-0.300600	-1.127000
10	-0.169400	-1.114000
11	-0.050400	-1.040800
12	-0.005000	-0.910000
13	0.009000	-0.826000
14	0.025000	-0.634400
15	0.043000	0.000000
16	0.069000	0.590000
17	0.075000	0.630000
18	0.081000	0.670000
19	0.108900	0.816000
20	0.140600	0.927000
21	0.212100	1.040000
22	0.305800	1.115000
23	0.437200	1.181000
24	0.567800	1.227000
25	0.711500	1.247000
26	0.878700	1.231000
27	1.060000	1.111000
28	1.287000	0.882000
29	1.480000	0.772800
30	1.555000	0.752000

ITER	MIN	ANIN	TURN	GAP	RESID
1	0.18	-0.01	9.35	0.58	0.6518E-01

C-3

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        2    0.18   -0.01   9.61   0.58        0.1304E-01


        3    0.18   -0.01   9.71   0.58  9     0.2607E-02
```

1

<h2 style="text-align:center">INVISCID   COMPUTATION</h2>

```
     INLET MACH NUMBER =  0.185      INLET FLOW ANGLE =   -0.01

     EXIT MACH NUMBER  =  0.198      EXIT FLOW ANGLE  =   -9.72

                    TURNING =    9.712

   GAP  =  0.578     CHORD =  1.006      AXIAL CHORD =  1.006

     GAP/CHORD = 0.575   SOLIDITY = 1.740    AXIAL
SOLIDITY =  1.739

     THICK/CHORD =  0.179,   DX=  0.0045; DY =  0.0279

     THICK/CHORD AT TE =  0.028,    DTE=  0.000
```

N	X	Y	MACH	ANGL	CURVATURE
1	1.00081	-0.08971	0.1801	-9.40	0.00
2	0.99989	-0.08957	0.1801	-8.73	-12.59
3	0.99564	-0.08895	0.1805	-7.78	-3.86
4	0.98810	-0.08799	0.1811	-6.83	-2.18
5	0.97761	-0.08683	0.1820	-5.88	-1.57
6	0.96457	-0.08560	0.1832	-4.93	-1.26
7	0.94940	-0.08442	0.1848	-4.00	-1.07
8	0.93249	-0.08337	0.1867	-3.09	-0.94
9	0.91424	-0.08253	0.1889	-2.20	-0.85
10	0.89496	-0.08193	0.1914	-1.35	-0.77
11	0.87495	-0.08160	0.1943	-0.55	-0.70
12	0.85446	-0.08154	0.1974	0.20	-0.64
13	0.83367	-0.08174	0.2009	0.89	-0.58
14	0.81275	-0.08218	0.2046	1.51	-0.52
15	0.79184	-0.08284	0.2086	2.06	-0.46
16	0.77102	-0.08367	0.2128	2.53	-0.40
17	0.75037	-0.08466	0.2173	2.92	-0.33
18	0.72996	-0.08576	0.2219	3.22	-0.26
19	0.70981	-0.08693	0.2266	3.41	-0.17

20	0.68995	-0.08813	0.2314	3.49	-0.06
21	0.67039	-0.08931	0.2360	3.44	0.04
22	0.65111	-0.09045	0.2403	3.31	0.12
23	0.63208	-0.09152	0.2441	3.12	0.17
24	0.61327	-0.09251	0.2476	2.92	0.18
25	0.59466	-0.09343	0.2508	2.73	0.18
26	0.57624	-0.09428	0.2537	2.56	0.17
27	0.55799	-0.09507	0.2566	2.37	0.17
28	0.53990	-0.09579	0.2593	2.17	0.20
29	0.52197	-0.09643	0.2618	1.92	0.24
30	0.50419	-0.09698	0.2639	1.64	0.27
31	0.48651	-0.09745	0.2658	1.41	0.23
32	0.46894	-0.09785	0.2678	1.15	0.26
33	0.45148	-0.09814	0.2693	0.77	0.37
34	0.43408	-0.09832	0.2701	0.43	0.34
35	0.41672	-0.09841	0.2706	0.16	0.28
36	0.39938	-0.09842	0.2711	-0.09	0.25
37	0.38207	-0.09835	0.2714	-0.34	0.25
38	0.36477	-0.09821	0.2717	-0.59	0.25
39	0.34749	-0.09800	0.2718	-0.84	0.26
40	0.33022	-0.09771	0.2719	-1.11	0.27
41	0.31297	-0.09733	0.2719	-1.40	0.29
42	0.29573	-0.09686	0.2718	-1.72	0.32
43	0.27849	-0.09629	0.2717	-2.06	0.35
44	0.26128	-0.09561	0.2715	-2.44	0.39
45	0.24409	-0.09482	0.2713	-2.87	0.44
46	0.22694	-0.09388	0.2710	-3.37	0.50
47	0.20984	-0.09279	0.2709	-3.94	0.59
48	0.19282	-0.09152	0.2706	-4.63	0.70
49	0.17592	-0.09003	0.2704	-5.45	0.85
50	0.15915	-0.08829	0.2698	-6.43	1.01
51	0.14255	-0.08626	0.2690	-7.57	1.19
52	0.12619	-0.08390	0.2677	-8.89	1.39
53	0.11011	-0.08117	0.2661	-10.41	1.63
54	0.09440	-0.07804	0.2637	-12.17	1.91
55	0.07917	-0.07449	0.2608	-14.19	2.26
56	0.06458	-0.07048	0.2569	-16.54	2.71
57	0.05080	-0.06604	0.2526	-19.39	3.44
58	0.03810	-0.06112	0.2467	-23.12	4.78
59	0.02673	-0.05571	0.2370	-28.12	6.92
60	0.01689	-0.04979	0.2203	-34.18	9.22
61	0.00885	-0.04356	0.1992	-42.11	13.60
62	0.00309	-0.03714	0.1619	-55.67	27.44
63	-0.00008	-0.03041	0.0923	-74.96	45.24
64	-0.00036	-0.02320	0.0000	82.36	54.83
65	0.00179	-0.01634	0.0813	62.27	48.78
66	0.00687	-0.00916	0.1337	48.50	27.33
67	0.01447	-0.00191	0.1641	39.93	14.24
68	0.02417	0.00549	0.1857	35.22	6.74
69	0.03540	0.01285	0.2054	31.29	5.11
70	0.04784	0.01986	0.2210	27.63	4.47
71	0.06128	0.02639	0.2333	24.24	3.95
72	0.07558	0.03237	0.2419	21.31	3.30

73	0.09060	0.03779	0.2483	18.94	2.58
74	0.10615	0.04283	0.2534	17.05	2.02
75	0.12207	0.04747	0.2584	15.46	1.67
76	0.13823	0.05172	0.2628	14.04	1.48
77	0.15453	0.05560	0.2670	12.75	1.35
78	0.17092	0.05913	0.2707	11.56	1.24
79	0.18734	0.06233	0.2740	10.47	1.14
80	0.20378	0.06521	0.2769	9.47	1.05
81	0.22019	0.06781	0.2797	8.55	0.97
82	0.23658	0.07015	0.2822	7.70	0.90
83	0.25291	0.07224	0.2846	6.90	0.85
84	0.26918	0.07410	0.2869	6.14	0.82
85	0.28538	0.07573	0.2891	5.39	0.80
86	0.30152	0.07715	0.2911	4.64	0.80
87	0.31758	0.07835	0.2930	3.90	0.81
88	0.33357	0.07933	0.2947	3.15	0.81
89	0.34951	0.08011	0.2961	2.40	0.82
90	0.36540	0.08067	0.2973	1.66	0.82
91	0.38126	0.08103	0.2982	0.92	0.82
92	0.39707	0.08118	0.2990	0.18	0.81
93	0.41287	0.08113	0.2996	-0.56	0.82
94	0.42864	0.08087	0.3000	-1.31	0.83
95	0.44440	0.08041	0.3003	-2.06	0.83
96	0.46014	0.07973	0.3005	-2.85	0.87
97	0.47588	0.07884	0.3005	-3.68	0.92
98	0.49162	0.07771	0.3003	-4.55	0.96
99	0.50736	0.07633	0.2998	-5.47	1.02
100	0.52313	0.07468	0.2989	-6.44	1.07
101	0.53893	0.07270	0.2977	-7.46	1.11
102	0.55479	0.07053	0.2959	-8.51	1.15
103	0.57073	0.06799	0.2936	-9.60	1.17
104	0.58678	0.06512	0.2908	-10.69	1.18
105	0.60295	0.06191	0.2874	-11.80	1.17
106	0.61928	0.05833	0.2836	-12.90	1.15
107	0.63579	0.05438	0.2792	-14.00	1.13
108	0.65251	0.05004	0.2743	-15.07	1.09
109	0.66948	0.04530	0.2689	-16.12	1.03
110	0.68674	0.04015	0.2629	-17.11	0.96
111	0.70432	0.03459	0.2564	-18.01	0.86
112	0.72227	0.02860	0.2496	-18.81	0.73
113	0.74064	0.02223	0.2424	-19.46	0.59
114	0.75946	0.01548	0.2351	-19.94	0.42
115	0.77875	0.00842	0.2277	-20.22	0.24
116	0.79852	0.00112	0.2205	-20.27	0.04
117	0.81875	-0.00631	0.2136	-20.07	-0.16
118	0.83935	-0.01376	0.2074	-19.65	-0.33
119	0.86018	-0.02108	0.2019	-19.05	-0.48
120	0.88102	-0.02814	0.1971	-18.31	-0.59
121	0.90160	-0.03478	0.1931	-17.46	-0.68
122	0.92155	-0.04088	0.1897	-16.54	-0.77
123	0.94045	-0.04633	0.1869	-15.58	-0.86
124	0.95782	-0.05101	0.1847	-14.59	-0.96
125	0.97316	-0.05486	0.1830	-13.59	-1.10

126	0.98595	-0.05784	0.1817	-12.59	-1.32
127	0.99575	-0.05995	0.1808	-11.61	-1.72
128	1.00220	-0.06122	0.1803	-10.64	-2.57
129	1.00509	-0.06174	0.1801	-9.68	-5.70
130	1.00528	-0.06177	0.1801	-9.40	-26.14

1

BOUNDARY LAYER CORRECTION

PRESSURE SIDE

N	X	Y	EM	TH	SEP
64	-0.00036	-0.02320	0.00002		
63	-0.00008	-0.03041	0.09230		
62	0.00309	-0.03714	0.16188		
61	0.00885	-0.04356	0.19917		
60	0.01689	-0.04979	0.22029		
59	0.02673	-0.05571	0.23697		
58	0.03810	-0.06112	0.24669		
57	0.05080	-0.06604	0.25263		
56	0.06458	-0.07048	0.25694		
55	0.07917	-0.07449	0.26076		
54	0.09440	-0.07804	0.26370		
53	0.11011	-0.08117	0.26607		
52	0.12619	-0.08390	0.26774		
51	0.14255	-0.08626	0.26901		
50	0.15915	-0.08829	0.26980	0.00023	0.00009
49	0.17592	-0.09003	0.27036	0.00028	-0.00003
48	0.19282	-0.09152	0.27065	0.00032	-0.00002
47	0.20984	-0.09279	0.27087	0.00037	-0.00002
46	0.22694	-0.09388	0.27104	0.00041	-0.00002
45	0.24409	-0.09482	0.27126	0.00045	-0.00002
44	0.26128	-0.09561	0.27145	0.00049	-0.00002
43	0.27849	-0.09629	0.27166	0.00053	-0.00002
42	0.29573	-0.09686	0.27180	0.00057	-0.00002
41	0.31297	-0.09733	0.27191	0.00061	-0.00001
40	0.33022	-0.09771	0.27190	0.00065	0.00000
39	0.34749	-0.09800	0.27184	0.00069	0.00002
38	0.36477	-0.09821	0.27167	0.00072	0.00003
37	0.38207	-0.09835	0.27142	0.00076	0.00005
36	0.39938	-0.09842	0.27106	0.00080	0.00007
35	0.41672	-0.09841	0.27062	0.00084	0.00009
34	0.43408	-0.09832	0.27006	0.00088	0.00013
33	0.45148	-0.09814	0.26928	0.00093	0.00023
32	0.46894	-0.09785	0.26777	0.00098	0.00037
31	0.48651	-0.09745	0.26579	0.00104	0.00043
30	0.50419	-0.09698	0.26394	0.00110	0.00047
29	0.52197	-0.09643	0.26183	0.00116	0.00059
28	0.53990	-0.09579	0.25930	0.00123	0.00070

N	X	Y	EM	TH	SEP
27	0.55799	-0.09507	0.25658	0.00131	0.00080
26	0.57624	-0.09428	0.25372	0.00139	0.00088
25	0.59466	-0.09343	0.25075	0.00147	0.00099
24	0.61327	-0.09251	0.24758	0.00157	0.00115
23	0.63208	-0.09152	0.24413	0.00168	0.00136
22	0.65111	-0.09045	0.24027	0.00180	0.00164
21	0.67039	-0.08931	0.23599	0.00194	0.00194
20	0.68995	-0.08813	0.23137	0.00211	0.00224
19	0.70981	-0.08693	0.22660	0.00229	0.00248
18	0.72996	-0.08576	0.22186	0.00249	0.00267
17	0.75037	-0.08466	0.21726	0.00271	0.00282
16	0.77102	-0.08367	0.21284	0.00294	0.00296
15	0.79184	-0.08284	0.20864	0.00318	0.00308
14	0.81275	-0.08218	0.20465	0.00344	0.00319
13	0.83367	-0.08174	0.20091	0.00370	0.00326
12	0.85446	-0.08154	0.19744	0.00396	0.00330
11	0.87495	-0.08160	0.19427	0.00423	0.00331
10	0.89496	-0.08193	0.19141	0.00449	0.00328
9	0.91424	-0.08253	0.18887	0.00474	0.00322
8	0.93249	-0.08337	0.18666	0.00497	0.00312
7	0.94940	-0.08442	0.18478	0.00518	0.00300
6	0.96457	-0.08560	0.18323	0.00536	0.00286
5	0.97761	-0.08683	0.18201	0.00551	0.00273
4	0.98810	-0.08799	0.18110	0.00562	0.00259
3	0.99564	-0.08895	0.18048	0.00570	0.00250
2	0.99989	-0.08957	0.18014	0.00574	0.00248
1	1.00081	-0.08971	0.18010	0.00575	0.00248

SUCTION SIDE

N	X	Y	EM	TH	SEP
65	0.00179	-0.01634	0.08133		
66	0.00687	-0.00916	0.13370		
67	0.01447	-0.00191	0.16408		
68	0.02417	0.00549	0.18574		
69	0.03540	0.01285	0.20538		
70	0.04784	0.01986	0.22103		
71	0.06128	0.02639	0.23334		
72	0.07558	0.03237	0.24185		
73	0.09060	0.03779	0.24825		
74	0.10615	0.04283	0.25344		
75	0.12207	0.04747	0.25837		
76	0.13823	0.05172	0.26284		
77	0.15453	0.05560	0.26701		
78	0.17092	0.05913	0.27067		
79	0.18734	0.06233	0.27400		
80	0.20378	0.06521	0.27694		
81	0.22019	0.06781	0.27968		
82	0.23658	0.07015	0.28218		
83	0.25291	0.07224	0.28460		

198

84	0.26918	0.07410	0.28689		
85	0.28538	0.07573	0.28911		
86	0.30152	0.07715	0.29115		
87	0.31758	0.07835	0.29304		
88	0.33357	0.07933	0.29468		
89	0.34951	0.08011	0.29610		
90	0.36540	0.08067	0.29726		
91	0.38126	0.08103	0.29822		
92	0.39707	0.08118	0.29896		
93	0.41287	0.08113	0.29955		
94	0.42864	0.08087	0.29995		
95	0.44440	0.08041	0.30027		
96	0.46014	0.07973	0.30049	0.00021	0.00009
97	0.47588	0.07884	0.30051	0.00025	0.00001
98	0.49162	0.07771	0.30030	0.00030	0.00002
99	0.50736	0.07633	0.29982	0.00034	0.00005
100	0.52313	0.07468	0.29895	0.00038	0.00009
101	0.53893	0.07276	0.29767	0.00043	0.00014
102	0.55479	0.07053	0.29588	0.00047	0.00021
103	0.57073	0.06799	0.29360	0.00052	0.00029
104	0.58678	0.06512	0.29077	0.00058	0.00039
105	0.60295	0.06191	0.28744	0.00063	0.00050
106	0.61928	0.05833	0.28357	0.00070	0.00062
107	0.63579	0.05438	0.27920	0.00077	0.00078
108	0.65251	0.05004	0.27429	0.00085	0.00095
109	0.66948	0.04530	0.26886	0.00094	0.00117
110	0.68674	0.04015	0.26289	0.00105	0.00142
111	0.70432	0.03459	0.25645	0.00117	0.00171
112	0.72227	0.02860	0.24958	0.00132	0.00203
113	0.74064	0.02223	0.24242	0.00149	0.00238
114	0.75946	0.01548	0.23506	0.00169	0.00275
115	0.77875	0.00842	0.22768	0.00192	0.00312
116	0.79852	0.00112	0.22046	0.00218	0.00344
117	0.81875	-0.00631	0.21363	0.00247	0.00365
118	0.83935	-0.01376	0.20740	0.00279	0.00374
119	0.86018	-0.02108	0.20190	0.00311	0.00373
120	0.88102	-0.02814	0.19712	0.00343	0.00363
121	0.90160	-0.03478	0.19306	0.00373	0.00348
122	0.92155	-0.04088	0.18967	0.00402	0.00328
123	0.94045	-0.04633	0.18690	0.00427	0.00306
124	0.95782	-0.05101	0.18469	0.00449	0.00284
125	0.97316	-0.05486	0.18298	0.00467	0.00262
126	0.98595	-0.05784	0.18171	0.00481	0.00241
127	0.99575	-0.05995	0.18084	0.00490	0.00225
128	1.00220	-0.06122	0.18031	0.00496	0.00212
129	1.00509	-0.06174	0.18009	0.00499	0.00208
130	1.00528	-0.06177	0.18010	0.00499	0.00209

BODY COORDINATES AFTER BOUNDARY LAYER SUBTRACTION

METAL COORDINATES IN INCHES

THE CHORD IS   1.000 INCHES

THE GAP IS   0.575 INCHES

N	XV	YV
1	0.99636	-0.07826
2	0.99532	-0.07809
3	0.99091	-0.07747
4	0.98323	-0.07656
5	0.97261	-0.07553
6	0.95946	-0.07451
7	0.94419	-0.07363
8	0.92720	-0.07297
9	0.90889	-0.07259
10	0.88958	-0.07251
11	0.86957	-0.07275
12	0.84909	-0.07328
13	0.82835	-0.07408
14	0.80751	-0.07511
15	0.78668	-0.07633
16	0.76596	-0.07771
17	0.74544	-0.07920
18	0.72515	-0.08076
19	0.70514	-0.08236
20	0.68542	-0.08394
21	0.66601	-0.08547
22	0.64687	-0.08689
23	0.62798	-0.08820
24	0.60931	-0.08940
25	0.59084	-0.09048
26	0.57254	-0.09148
27	0.55442	-0.09241
28	0.53646	-0.09325
29	0.51865	-0.09401
30	0.50099	-0.09467
31	0.48343	-0.09523
32	0.46598	-0.09571
33	0.44864	-0.09609
34	0.43136	-0.09635
35	0.41411	-0.09650
36	0.39689	-0.09657
37	0.37969	-0.09656
38	0.36250	-0.09648
39	0.34534	-0.09632
40	0.32818	-0.09608
41	0.31104	-0.09576
42	0.29391	-0.09535
43	0.27678	-0.09484
44	0.25968	-0.09422
45	0.24260	-0.09348
46	0.22556	-0.09261
47	0.20857	-0.09159
48	0.19167	-0.09038
49	0.17487	-0.08897
50	0.15819	-0.08738
51	0.14166	-0.08572
52	0.12540	-0.08337
53	0.10942	-0.08066
54	0.09381	-0.07755
55	0.07868	-0.07402
56	0.06417	-0.07004
57	0.05048	-0.06562
58	0.03786	-0.06074
59	0.02656	-0.05536
60	0.01679	-0.04948
61	0.00879	-0.04329
62	0.00307	-0.03691
63	-0.00008	-0.03022
64	-0.00036	-0.02305
65	0.00178	-0.01623
66	0.00683	-0.00910
67	0.01438	-0.00190
68	0.02402	0.00546
69	0.03518	0.01277
70	0.04754	0.01974
71	0.06090	0.02623
72	0.07511	0.03217
73	0.09004	0.03756
74	0.10548	0.04257
75	0.12130	0.04718
76	0.13736	0.05140
77	0.15357	0.05526
78	0.16985	0.05876
79	0.18617	0.06194
80	0.20251	0.06481
81	0.21882	0.06739
82	0.23510	0.06971
83	0.25133	0.07179
84	0.26750	0.07364
85	0.28360	0.07526
86	0.29963	0.07667
87	0.31559	0.07786
88	0.33149	0.07884
89	0.34733	0.07961
90	0.36312	0.08017
91	0.37887	0.08052
92	0.39459	0.08067
93	0.41029	0.08062
94	0.42596	0.08036
95	0.44162	0.07990
96	0.45725	0.07890
97	0.47288	0.07788

98	0.48850	0.07669
99	0.50414	0.07526
100	0.51979	0.07356
101	0.53547	0.07158
102	0.55121	0.06930
103	0.56702	0.06670
104	0.58293	0.06377
105	0.59897	0.06048
106	0.61515	0.05682
107	0.63150	0.05278
108	0.64806	0.04833
109	0.66485	0.04345
110	0.68190	0.03814
111	0.69927	0.03237
112	0.71699	0.02614
113	0.73509	0.01946
114	0.75361	0.01233
115	0.77257	0.00480
116	0.79200	-0.00306
117	0.81186	-0.01114
118	0.83211	-0.01929
119	0.85261	-0.02733
120	0.87316	-0.03509
121	0.89351	-0.04238
122	0.91330	-0.04903
123	0.93210	-0.05492
124	0.94943	-0.05994
125	0.96478	-0.06402
126	0.97764	-0.06714
127	0.98753	-0.06931
128	0.99411	-0.07061
129	0.99715	-0.07114
130	0.99738	-0.07117

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15. Supplementary Notes

16. Abstract

A set of sample cases has been produced to test an automated design procedure developed at the NASA Lewis Research Center for the design of controlled diffusion blades. The main objective of the report is to document the range of application of the automated design procedure. The results presented include characteristic compressor and turbine blade sections produced with the automated design code as well as various other airfoils produced with the base design method prior to the incorporation of the automated procedure.

17. Key Words (Suggested by Author(s)) Design; Controlled diffusion; Airfoils; Cascade; Compression; Turbines; Automation	18. Distribution Statement Unclassified – Unlimited Subject Category 07

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