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Calculation of Two-Dimensional Inlet Flow Fields in a Supersonic Free Stream - Program Documentation and Test Cases

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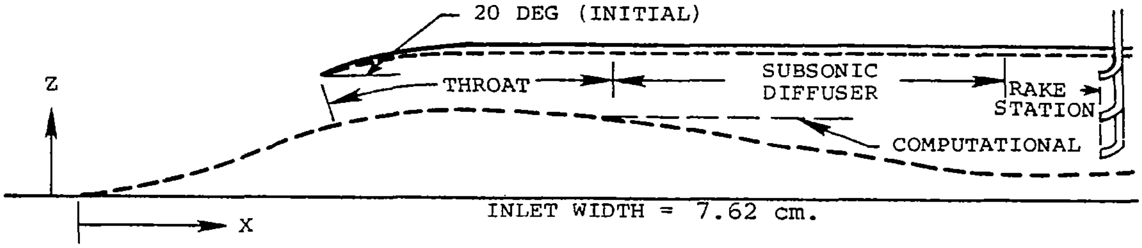
1. INTRODUCTION

In this report we present listings of the source listings and a number of test cases to exemplify the use of the computer codes employed to calculate flows about 2-D inlets in a supersonic free stream and to generate computational grids. The program that calculates 2-D inlets flow fields makes use of an implicit algorithm to solve the 2-D time-dependent Euler equations (ref. 1). The mesh generation program (ref. 2) uses the algorithm developed in reference 3 to generate nonorthogonal grids.

Problem formulation, mathematical framework and the overall logic of the programs are presented in a separate report (ref. 4). In the first part of this report we present the input data, specification of initial and boundary conditions, operating instructions and answer listings obtained from the 2-D Euler solver for a drooped-cowl inlet. The test case involves supercritical inlet operation at a subdesign Mach number, $M = 2.09$. In the second part of this report input data, boundary conditions and answer listings are presented for the mesh generation program. Complete listings of the codes are given in Appendices A and B.

2. THE CODE FOR THE CALCULATION OF 2-D INLET FLOW FIELDS (THE EULER CODE)

In this section we present the input data, specification of initial and boundary conditions and answer listings for the drooped-cowl inlet (fig. 1) for which the design Mach number is



INLET CAPTURE AREA = 58.1 cm^2

Figure 1.- Isentropic-compression, drooped-cowl inlet configuration.

M_∞ = 3.00. Free stream conditions at M_∞ = 2.09 are prescribed as initial conditions. The incident ramp shock is captured by starting the integration downstream of the ramp leading edge and placing six points on the inflow boundary downstream of the ramp-leading edge shock. Values of flow variables at these locations are found from oblique shock tables (ref. 5). Initialization of flow variables is done in SUB.INITIA.

The sample input data for the 46×22 grid is given in section 2.1. The output listings from the computer program are given in section 2.2 and contour plots (obtained via a library subroutine at NASA/Ames Research Center) are presented in section 2.3.

2.1 Program Use and Operation

In this section we give a detailed description of the input information required to run a typical test case, e.g., calculation of the drooped-cowl inlet. The initial field as well as values of various constants are evaluated in SUB.INITIA. This subroutine also reads the input data except for the last card, which specifies geometry and the type of duct-outflow boundary condition to be used. This last card is read by SUB.BC. We now list the input data cards in order:

Card No.	Format	Variables	
1	8I5	NMAX:	Maximum number of time steps
		JMAX:	Maximum number of points along ξ, where ξ is the coordinate along the body.
		KMAX:	Maximum number of points along η, where η is the coordinate that crosses ξ.
		NP:	Incremental number of time steps after which SUB.MAP is called. The function of SUB.MAP is described in reference 4.
		METH:	Flag for upwind differencing. If METH > 0, program skips upwind differencing.
		IREAD:	Option for grid system. If READ > 0, reads grid from disc (file number 3).
		INVIS:	If INVIS > 0, program accounts for viscous effects; if INVIS = 0, the calculation is inviscid
2	7I5	IREGO:	If IREGO > 0, reads initial field from disc, otherwise starts from free stream conditions.
		ISTORE:	If ISTORE > 0, solution data stored on disc (file number 4).
		JTAIL1:	First ξ-interior point, set to 1.
		JTAIL2:	Last ξ-interior point, set to JMAX-1
		IPLOT:	Index for calling plot routine. If set to zero it skips the plot routine. Otherwise calls the routine at the specified interval.
3	3I5	IUPWIND:	If IUPWIND > 0, skips upwind differencing.
		IOSCIL:	Not relevant to this implementation of this code. Set IOSCIL=0.
		LAMIN:	If LAMIN $\geq$ 0, calculates turbulent viscosity.
4	8F10.0	CNBR:	Courant number; set to about 10 (see ref. 4).

Card No.	Format	Variables	
4		DX:	x-increment used in SUB.GRID. For grid read off the disc set DX=0.
		DY:	y-increment, as above.
		FSMACH:	Free stream Mach number.
		SMU:	Pseudo viscosity coefficient. Set to about 10 times the time step.
		EPS:	Used in SUB.GRID. Here set EPS=0.
		RE:	Reynolds number. In case of inviscid calculation set to about 10^6.
		ALPHA:	Angle of attack.
5		XOSCIL VARA VARB VARC	Not relevant to this implentation of this code. For the inlet calculation set to zero.
6	2I2	LFAC:	If LFAC = 1 outflow is subsonic, otherwise it is supersonic.
		JAXI:	If JAXI = 0 flow is plane 2-D, If JAXI = 1 flow is axisymmetric.

Sample Input for Test Case

```
 500   46   22   10    0    1    0                                CARD 1
   1    1    0    0    2   45    0                                     2
   1    0   00                                                         3
10.000    .01       .01       2.090     .1000     0.0       100000.  4 0.0
1.0                                                                    5
   0          T F F F F F F F F F F F F F F F F F F F F F F T T        6
  1                                                                    7
  1                                                                    8
   1    0    0 T T T T T T T T T T T T T T T T T T T T T T T           9
 5 0                                                                  10
```

2.2 Output Listings

```
NMAX,JMAX, KMAX,NP,METH,IREAD,INVIS        10    46    [illegible]    10    0    1    0

IREGO,ISTORE,NF,NB,JTAIL1,JTAIL2,IPLOT      1    1    0    0    2    45    [illegible]

IUPWND,IOSCIL,LAMIN        1    0    0

CNBR,FSMACH,SMU,EPS,RE,ALPHA
10.0000000000   2.0[illegible]   .1000[illegible]   0.[illegible]   ***************   0.0000000000

XOSCIL
  .100000E+01
K=    1
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 .49477E+03  .49535E+03  .50757E+03  .52296E+03  .53764E+03  [illegible]  .56406E+03  .55301E+03
 .53864E+03  .86894E+03  .139[illegible]E+04  .17167E+04  .3571[illegible]E+04  [illegible]  .4550[illegible]E+04  .4525[illegible]E+04
 .47980E+04  .69937E+04  .115[illegible]E+05  .675[illegible]E+05  .8619[illegible]E+04  [illegible]  .65[illegible]E+04  .512[illegible]E+04
 .54838E+04  .65718E+04  .30[illegible]E+04  .119[illegible]E+04  .10[illegible]E+04  [illegible]  .47735E+03  .35718E+03
 .44553E+03  .36319E+03  .198[illegible]E+03  .15276E+03  .7540[illegible]E+02  [illegible]E+02
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 .32007E+03  .31770E+03  .317[illegible]E+03  .31911E+03  .3215[illegible]E+03  .32[illegible]E+03  .3252[illegible]E+03  .3237[illegible]E+03
 .32225E+03  .47316E+03  .739[illegible]E+03  .98[illegible]E+03  .14[illegible]E+04  [illegible]  .22[illegible]E+04  .25685E+04
 .31239E+04  .34674E+04  .325[illegible]E+04  .31[illegible]E+04  .26[illegible]E+04  [illegible]  .24[illegible]E+04  .2135[illegible]E+04
 .20230E+04  .19893E+04  .11[illegible]E+04  .54[illegible]E+03  .4[illegible]E+03  [illegible]  .21754E+03  .18011E+03
 .20131E+03  .15764E+03  .90[illegible]E+02  .71[illegible]E+02  .376[illegible]E+02  [illegible]
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 .22566E+03  .30474E+03  .44578E+03  .5940[illegible]E+03  .7868[illegible]E+03  .9[illegible]E+03  .11130E+04  .12[illegible]E+04
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 .60621E+02  .46523E+02  .29461E+02  .23598E+02  .1345[illegible]E+02  .[illegible]E+01
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 .73356E+02  .73398E+02  .70914E+02  .68[illegible]E+02  .66[illegible]E+02  .6[illegible]E+02  .67[illegible]E+02  .748[illegible]E+02
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.28362E+02	.26673E+02	.24709E+02	.2[illegible]E+02	.21944E+02	[illegible]	.1881[illegible]	.17694E+02
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.21037E+02	.19474E+02	.178[illegible]E+02	.16307E+02	.15[illegible]E+02	.14[illegible]E+02	.13517E+02	.12744E+02
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.17634E+02	.16211E+02	.148[illegible]E+02	.13631E+02	.12[illegible]E+02	[illegible]	.1195[illegible]E+02	.10962E+02
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.12440E+01	.10609E+01	.10043E+01	.99780E+00	.11548E+01	.1[illegible]51E+01		
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.10975E+02	.10[illegible]E+02	.95[illegible]11E+01	.9[illegible]E+01	.85[illegible]E+01	.7[illegible]E+01	[illegible]	.6[illegible]E+01
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.10363E+01	.92157E+00	.88561E+00	.88021E+00	.98855E+00	.1[illegible]E+01		
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.18139E+02	.16962E+02	.15792E+02	.1439[illegible]E+02	.14672E+02	.14[illegible]E+02	.144[illegible]E+02	.14157E+02
.13734E+02	.13185E+02	.125[illegible]E+02	.11775E+02	.111[illegible]E+02	.1[illegible]E+02	.92575E+01	.8278[illegible]E+01
.72748E+01	.62742E+01	.52758E+01	.436[illegible]E+01	.34[illegible]E+01	.2[illegible]E+01	.17115E+01	.1450[illegible]E+01
.97661E+00	.92461E+00	.90507E+00	.96208E+00	.95071E+00	.1[illegible]5E+01		
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.19269E+02	.18584E+02	.17789E+02	.17551E+02	.17[illegible]E+02	.1[illegible]E+02	.1[illegible]E+02	.120[illegible]E+02
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.41983E+02	.50324E+02	.49[illegible]E+02	.44434E+02	.3[illegible]E+02	[illegible]	.30[illegible]E+02	.2650[illegible]E+02
.27556E+02	.25766E+02	.239[illegible]E+02	.24671E+02	[illegible]	[illegible]	[illegible]	.30[illegible]E+02
.29176E+02	.28136E+02	.26[illegible]E+02	.27767E+02	.2877[illegible]E+02	[illegible]	[illegible]	.215[illegible]E+02
.18928E+02	.16413E+02	.1460[illegible]E+02	.12[illegible]E+02	.97140E+01	.77[illegible]E+01	.54977E+01	.3908[illegible]E+01
.17412E+01	.14234E+01	.133[illegible]E+01	.19324E+01	.12814E+01	.165[illegible]E+01		
K= 16							
.35262E+01	.48763E+01	.61401E+01	.87764E+01	.13835E+02	.20[illegible]E+02	.31302E+02	.41989E+02
.55045E+02	.66717E+02	.64592E+02	.57319E+02	.49211E+02	[illegible]	.4618[illegible]E+02	.3850[illegible]E+02
.37716E+02	.35133E+02	.32685E+02	.34845E+02	.375[illegible]E+02	[illegible]	[illegible]	.4790[illegible]E+02
.46218E+02	.44434E+02	.42516E+02	.46404E+02	.51471E+02	[illegible]	.4[illegible]E+02	.3879[illegible]E+02
.33847E+02	.29303E+02	.27357E+02	.25717E+02	.18[illegible]E+02	.1[illegible]E+02	.11445E+02	.82941E+01
.28293E+01	.20149E+01	.18981E+01	.30[illegible]E+01	.181[illegible]E+01	.214[illegible]E+01		
K= 17							
.43320E+01	.60178E+01	.75535E+01	.10742E+02	.16702E+02	.27[illegible]E+02	.39[illegible]E+02	.54879E+02
.75874E+02	.91785E+02	.87847E+02	.777[illegible]E+02	.6711[illegible]E+02	[illegible]	.56[illegible]E+02	.5[illegible]E+02
.54125E+02	.50304E+02	.468[illegible]E+02	.51[illegible]E+02	[illegible]	[illegible]	[illegible]	.781[illegible]E+02
.74874E+02	.71735E+02	.686[illegible]E+02	.7[illegible]E+02	[illegible]	[illegible]	[illegible]	.7[illegible]E+02
.61453E+02	.53073E+02	.5215[illegible]E+02	.4[illegible]E+02	.35[illegible]E+02	[illegible]	[illegible]	[illegible]
.46632E+01	.30543E+01	.29207E+01	.50[illegible]E+01	.27755E+01	[illegible]		
K= 18							
.54637E+01	.76223E+01	.95387E+01	.134[illegible]E+02	[illegible]	[illegible]	.5[illegible]E+02	.73610E+02
.10178E+03	.13015E+03	.12[illegible]E+03	.1[illegible]E+03	[illegible]	[illegible]	[illegible]	.8[illegible]E+02
.80315E+02	.74653E+02	.69[illegible]E+02	.781[illegible]E+02	.88[illegible]E+02	.1[illegible]E+03	[illegible]	.12[illegible]E+03

```
 .12241E+03  .11699E+03  .11186E+03  .13457E+03  .16[illegible]E+03  .15786E+03  .14137E+03  .13822E+03
 .11075E+03  .95428E+02  .98[illegible]E+02  .87[illegible]E+02  .65[illegible]E+02  .[illegible]110E+02  .53135E+02  .38356E+02
 .77997E+01  .48849E+01  .47307E+01  .64553E+01  .44157E+01  .[illegible]91E+01
K=   19
 .70423E+01  .98559E+01  .12[illegible]E+02  .172[illegible]E+02  .2[illegible]E+02  .[illegible]E+02  .68[illegible]E+02  .100[illegible]E+03
 .14265E+03  .18755E+03  .17[illegible]E+03  .15[illegible]E+03  .13771E+03  .1[illegible]E+03  .1[illegible]E+03  .120[illegible]E+03
 .12193E+03  .11349E+03  .10[illegible]E+03  .121[illegible]E+03  .138[illegible]E+03  .1[illegible]E+03  .2[illegible]E+03  .2112[illegible]E+03
 .20067E+03  .19158E+03  .18331E+03  .2277[illegible]E+03  .[illegible]E+03  .[illegible]E+03  .2[illegible]E+03  .2[illegible]E+03
 .19645E+03  .16903E+03  .18[illegible]E+03  .15[illegible]E+03  .12[illegible]E+03  .11[illegible]E+03  .10[illegible]E+03  .7777[illegible]E+02
 .13221E+02  .81010E+01  .79077E+01  .143[illegible]E+02  .717[illegible]E+01  .6[illegible]E+01
K=   20
 .92256E+01  .12950E+02  .161[illegible]E+02  .22[illegible]E+02  .3[illegible]E+02  .5[illegible]E+02  .91217E+02  .137[illegible]E+03
 .20179E+03  .27230E+03  .2[illegible]E+03  .2[illegible]E+03  .2[illegible]E+03  .1[illegible]E+03  .1851[illegible]E+03  .18476E+03
 .18792E+03  .17545E+03  .16[illegible]E+03  .19076E+03  .2[illegible]E+03  .[illegible]E+03  .3[illegible]E+03  .[illegible]E+03
 .32901E+03  .31421E+03  .3[illegible]E+03  .3[illegible]E+03  .5[illegible]E+03  .[illegible]E+03  .4572[illegible]E+03  .39[illegible]E+03
 .34290E+03  .29503E+03  .32[illegible]E+03  .27[illegible]E+03  .20[illegible]E+03  .[illegible]E+03  .21[illegible]E+03  .150[illegible]E+03
 .22633E+02  .13743E+02  .13469E+02  .24624E+02  .118[illegible]E+02  .11[illegible]E+02
K=   21
 .12241E+02  .17224E+02  .21407E+02  .2965[illegible]E+02  .44[illegible]E+02  .8[illegible]E+02  .125[illegible]E+03  .19081E+03
 .28675E+03  .39645E+03  .375[illegible]E+03  .33[illegible]E+03  .3[illegible]E+03  .5[illegible]E+03  .28[illegible]E+03  .285[illegible]E+03
 .29251E+03  .27419E+03  .259[illegible]E+03  .3[illegible]E+03  .7951[illegible]E+03  .[illegible]E+03  .605[illegible]E+03  .5683[illegible]E+03
 .53911E+03  .51550E+03  .495[illegible]E+03  .64[illegible]E+03  .8[illegible]E+03  .5[illegible]E+03  .7513[illegible]E+03  .68768E+03
 .59123E+03  .50910E+03  .571[illegible]E+03  .4861[illegible]E+03  .36[illegible]E+03  .3[illegible]E+03  .407[illegible]E+03  .28120E+03
 .39001E+02  .23637E+02  .23195E+02  .422[illegible]E+02  .1958[illegible]E+02  .17875E+02
K=   22
 .17181E+02  .24229E+02  .30057E+02  .41191E+02  .60[illegible]E+02  .116[illegible]E+03  .177[illegible]E+03  .28535E+03
 .44409E+03  .63112E+03  .599[illegible]E+03  .5473[illegible]E+03  .50[illegible]E+03  .51[illegible]E+03  .4851[illegible]E+03  .50285E+03
 .52037E+03  .49227E+03  .470[illegible]E+03  .55675E+03  .65[illegible]E+03  .8[illegible]E+03  .11[illegible]E+04  .10816E+04
 .10297E+04  .98990E+03  .95795E+03  .12[illegible]E+04  .18[illegible]E+04  .17[illegible]E+04  .15[illegible]E+04  .1[illegible]E+04
 .12278E+04  .10650E+04  .12235E+04  .10[illegible]E+04  .78[illegible]E+03  .8[illegible]E+03  .98117E+03  .715[illegible]E+03
 .85172E+02  .51513E+02  .502[illegible]E+02  .898[illegible]E+02  .39345E+02  .34[illegible]87E+02
     3.57500       3.55500       3.52826       3.4[illegible]58      3.[illegible]71      3.38754
     3.31342       3.223[illegible]1     3.11718       2.9[illegible]      2.8[illegible]      2.75058
     2.60745       2.48762       2.38179       2.2[illegible]8      2.21[illegible]      2.15829
     2.11212       2.07674       2.05000       2.05[illegible]
 J,K,DT,CNBR,      SMU,SMUIMP    40   21    .0076665278  10.[illegible]      .0917959334      .2243869868
JT,KT,CNBR1    40    21   .100[illegible]E+02
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000000000000000000000000000[illegible]
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0000000000000000000000000000000000[illegible]
000000000000000000000000000001191100[illegible]
```

J,X,Y,(Q ,N=1,4), P/PST AT K = 1

J	X	Y	Q1	Q2	Q3	Q4	P/PST
1	.17000E+02	.35750E+01	.18739E+01	[illegible]	0.	[illegible]	.27741E+00
2	.14000E+02	.35750E+01	[illegible]	[illegible]	0.	[illegible]	[illegible]
3	.12000E+02	.35750E+01	[illegible]	[illegible]	0.	[illegible]	[illegible]
4	.10000E+02	.35750E+01	[illegible]	[illegible]	0.	[illegible]	[illegible]
5	.90000E+01	.35750E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
6	.80000E+01	.35314E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
7	.75000E+01	.34704E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
8	.72500E+01	.34295E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
9	.71250E+01	.34071E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10	.70000E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
11	.68750E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
12	.67500E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
13	.66250E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
14	.65000E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
15	.63750E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
16	.62500E+01	.31988E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
17	.61250E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
18	.60000E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
19	.59500E+01	.31071E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
20	.59000E+01	.30908E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
21	.58720E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
22	.58580E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
23	.58440E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
24	.58300E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
25	.58160E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
26	.58080E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
27	.58000E+01	[illegible]	[illegible]	-.11805E+00	[illegible]	[illegible]	[illegible]
28	.57920E+01	[illegible]	[illegible]	0.	[illegible]	[illegible]	[illegible]
29	.58000E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
30	.58080E+01	.30629E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
31	.58160E+01	.30663E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
32	.58300E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
33	.58440E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
34	.58580E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
35	.58720E+01	.30901E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
36	.59600E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
37	.60000E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
38	.61600E+01	[illegible]	[illegible]	.43111E+01	[illegible]	[illegible]	[illegible]
39	.63000E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
40	.66000E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
41	.68000E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
42	.70000E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
43	.75000E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
44	.80000E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
45	.90000E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
46	.10120E+02	.36500E+01	.11179E+01	[illegible]	[illegible]	[illegible]	[illegible]

FREE STREAM QUANTITIES GIVEN TO OR COMPUTED BY OUTPUT SUBROUTINE [illegible]

FREE STREAM PRESSURE (PINF) = .714[illegible]E+00
FREE STREAM DENSITY (RINF) = .10000E+01
MAGNITUDE OF FREE STREAM VELOCITY (QINF) = [illegible]E+01
FREE STREAM TOTAL ENERGY (ETINF) = [illegible]E+01
FREE STREAM ENTROPY (SINF) = .714[illegible]
FREE STREAM TOTAL ENTHALPY (HTINF) = [illegible]E+01
FREE STREAM INTERNAL ENERGY (EIINF) = .178[illegible]E+01
FREE STREAM MACH NUMBER (AMINF) = .20[illegible]E+01

ITER= 0 TIME= 0.0000 DT= .0077
MAX. TOTAL ENTHALPY ERR.= 59.71% AT FIRST INDEX= [illegible], [illegible] ENTH. ERR. OVER ENTIRE FIELD= 3.97%.
LFAC= SJAX1= 0
MASS FLOW RATE, MDOT= .1164[illegible]E+01TIME [illegible] 1
CHECK ON MASS FLOW AT J=(.11[illegible]E+01 1
RESIDUAL= .15384E-01

```
   .9761700E-03   .1426853E-02   .5639415E-03   .3653180E-02   .2013979E+00   .1554260E-01
MASS FLOW RATE, MDOT=  .11642E+01TIME STEP    2
CHECK ON MASS FLOW AT J=6    .11247E+01       2
RESIDUAL=  .11647E-01
   .9762045E-03   .1426513E-02   .5659245E-03   .3653802E-02   .8971456E+01   .1164609E-01
MASS FLOW RATE, MDOT=  .11643E+01TIME STEP    3
CHECK ON MASS FLOW AT J=6    .11248E+01       3
RESIDUAL=  .11281E-01
   .9764437E-03   .1426524E-02   .5667338E-03   .3655175E-02   .9057717E+01   .1128158E-01
MASS FLOW RATE, MDOT=  .11644E+01TIME STEP    4
CHECK ON MASS FLOW AT J=6    .11248E+01       4
RESIDUAL=  .11190E-01
   .9768814E-03   .1426939E-02   .5678170E-03   .3657386E-02   .9118161E+01   .1119000E-01
MASS FLOW RATE, MDOT=  .11644E+01TIME STEP    5
CHECK ON MASS FLOW AT J=6    .11248E+01       5
RESIDUAL=  .11147E-01
   .9775334E-03   .1427855E-02   .5687714E-03   .3660687E-02   .9159559E+01   .1114721E-01
MASS FLOW RATE, MDOT=  .11645E+01TIME STEP    6
CHECK ON MASS FLOW AT J=6    .11249E+01       6
RESIDUAL=  .11119E-01
   .9783978E-03   .1429303E-02   .5693036E-03   .3665162E-02   .9186220E+01   .1111892E-01
MASS FLOW RATE, MDOT=  .11645E+01TIME STEP    7
CHECK ON MASS FLOW AT J=6    .11249E+01       7
RESIDUAL=  .11095E-01
   .9794441E-03   .1431245E-02   .5697154E-03   .3670676E-02   .9205804E+01   .1109551E-01
MASS FLOW RATE, MDOT=  .11646E+01TIME STEP    8
CHECK ON MASS FLOW AT J=6    .11249E+01       8
RESIDUAL=  .11075E-01
   .9806167E-03   .1433556E-02   .5699056E-03   .3676513E-02   .9222976E+01   .1107478E-01
MASS FLOW RATE, MDOT=  .11647E+01TIME STEP    9
CHECK ON MASS FLOW AT J=6    .11249E+01       9
RESIDUAL=  .11056E-01
   .9818467E-03   .1436081E-02   .5698791E-03   .3683966E-02   .9237680E+01   .1105573E-01
MASS FLOW RATE, MDOT=  .11647E+01TIME STEP   10
CHECK ON MASS FLOW AT J=6    .11251E+01      10
RESIDUAL=  .11038E-01
   .9830638E-03   .1438647E-02   .5696674E-03   .3689937E-02   .9253665E+01   .1107637E-01
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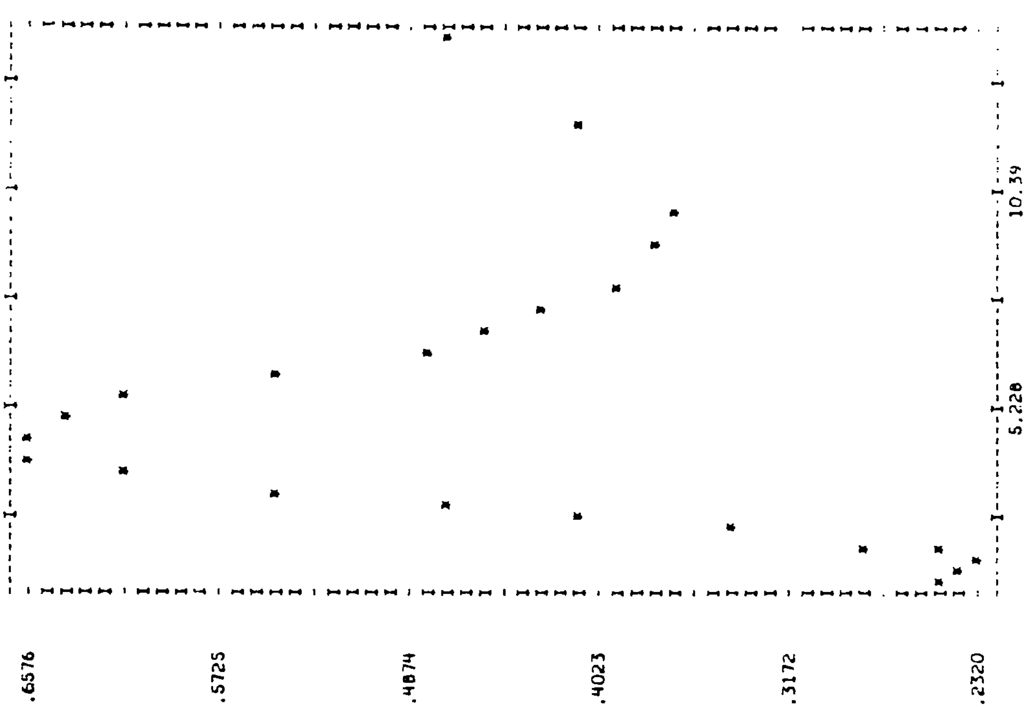
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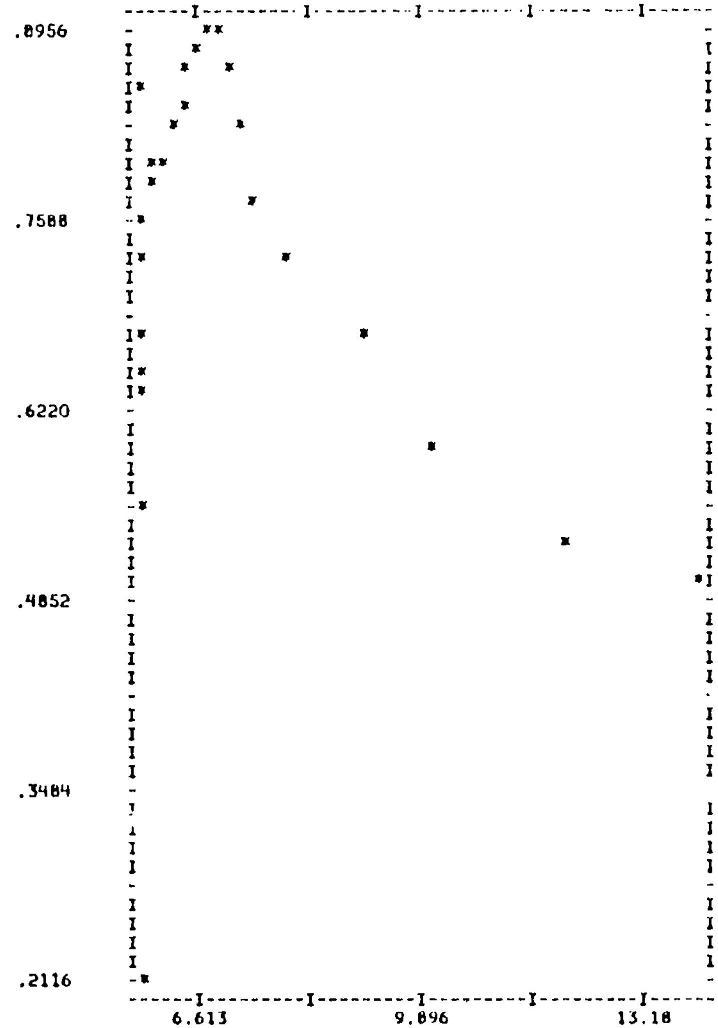
.4023
.3172
.2320
5.228
10.39



ITER= 1 TIME= .0767 DT= .0077
MAX. TOTAL ENTHALPY ERR.= 58.66% AT FIRST INDEX= 28. SECOND INDEX= 1. R.M.S. OF TOT. ENTH. ERR. OVER ENTIRE FIELD= 3.95%.

SECOND INDEX= 1

1ST	P/PINF	RHO/RINF	U/QINF	V/QINF	ET/ETINF	S/SINF	HT/HTINF	MACH	UBAR/QINF	VBAR/QINF	CP
1	.2508E+01	.1879E+01	.8022E+00	0.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-.4886E-14	.4931E+00
2	.2508E+01	.1879E+01	.8022E+00	0.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.	[illegible]
3	.2617E+01	.1935E+01	.7987E+00	0.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.	[illegible]
4	.2827E+01	.2010E+01	[illegible]	0.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.	[illegible]
5	.3059E+01	.2154E+01	.7749E+00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-.7751E+00	0.	.6733E+00

6	.3241E+01	.2243E+01	.7566E+00	.5270E-01	.2168E+01	.1046E+01	[illegible]	.1319E+01	-.7584E+00	-.9055E-15	.7328E+00
7	.3381E+01	.2314E+01	.7305E+00	.9884E-01	.2212E+01	.1070E+01	[illegible]	.1274E+01	-.7370E+00	-.9050E-15	.7786E+00
8	.3542E+01	.2397E+01	.7211E+00	.1217E+00	.2295E+01	[illegible]	[illegible]	[illegible]	-.7313E+00	0.	.8314E+00
9	.3664E+01	.2463E+01	.7065E+00	.1537E+00	.2392E+01	.1037E+01	[illegible]	[illegible]	-.7190E+00	0.	.8712E+00
10	.3722E+01	.2496E+01	.6901E+00	.1406E+00	.2451E+01	[illegible]	[illegible]	.1205E+01	-.7042E+00	.8610E-15	.8904E+00
11	.3739E+01	.2503E+01	.6774E+00	.1462E+00	.2545E+01	.1055E+01	[illegible]	.1167E+01	-.6925E+00	.1668E-14	.8956E+00
12	.3729E+01	.2498E+01	.6698E+00	.1546E+00	.2537E+01	.1035E+01	.1017E+01	.1174E+01	-.6874E+00	.8287E-15	.8924E+00
13	.3701E+01	.2484E+01	.6665E+00	.1634E+00	.2508E+01	.1034E+01	[illegible]	.1175E+01	-.6862E+00	0.	.8833E+00
14	.3653E+01	.2461E+01	.6657E+00	.1721E+00	.2484E+01	.1035E+01	.1013E+01	.1164E+01	-.6877E+00	-.8017E-15	.8675E+00
15	.3586E+01	.2429E+01	.6668E+00	.1866E+00	[illegible]	.1035E+01	.1011E+01	.1182E+01	-.6913E+00	-.7930E-15	.8456E+00
16	.3511E+01	.2394E+01	.6663E+00	.1924E+00	.2214E+01	.1054E+01	[illegible]	.1201E+01	-.6966E+00	-.1570E-14	.8212E+00
17	.3448E+01	.2366E+01	.6672E+00	.2030E+00	.2184E+01	.1051E+01	[illegible]	.1207E+01	-.6971E+00	0.	.8003E+00
18	.3422E+01	.2355E+01	.6660E+00	.2156E+00	.2315E+01	.1031E+01	.1018E+01	.1254E+01	-.7209E+00	0.	.7920E+00
19	.3428E+01	.2357E+01	.7202E+00	.2324E+00	.2365E+01	.1034E+01	.1047E+01	.1311E+01	-.7568E+00	-.1581E-14	.7941E+00
20	.3407E+01	.2353E+01	.7395E+00	.2426E+00	.2317E+01	.1038E+01	[illegible]	.1351E+01	-.7781E+00	.1679E-14	.7873E+00
21	.3337E+01	.2329E+01	.6977E+00	.2326E+00	.2194E+01	.1031E+01	.1017E+01	.1284E+01	-.7334E+00	0.	.7643E+00
22	.3221E+01	.2272E+01	.6755E+00	.2261E+00	.2066E+01	.1021E+01	[illegible]	.1247E+01	-.7104E+00	-.1622E-14	.7365E+00
23	.3086E+01	.2196E+01	.7700E+00	.2587E+00	.2185E+01	.1036E+01	.1058E+01	.1453E+01	-.8122E+00	0.	.6823E+00
24	.2995E+01	.2136E+01	.8755E+00	.2954E+00	.2350E+01	.1055E+01	.1146E+01	.1654E+01	-.9254E+00	.3408E-14	[illegible]
25	.2956E+01	.2116E+01	.7590E+00	.2708E+00	.2067E+01	.1055E+01	.1081E+01	.1807E+01	-.7552E+00	.9757E-15	.6597E+00
26	.2689E+01	.2145E+01	.3698E+00	.1259E+00	.1405E+01	.9258E+00	.7599E+00	.7187E+00	-.3855E+00	.4915E-15	.5525E+00
27	.3602E+01	.2152E+01	-.2407E-01	-.5871E-02	.1621E+01	.1253E+01	.8977E+00	.4035E-01	.2480E-01	-.5435E-16	.8504E+00
28	.1647E+01	.2139E+01	0.	.7106E-01	.7463E+00	.5681E+00	.9138E+00	.1691E+00	.7106E-01	0.	.2116E+00
29	.2550E+01	.2143E+01	.5593E+00	.2412E+00	.1585E+01	.8775E+00	.8091E+00	.1167E+01	.6091E+00	0.	.5071E+00
30	.2764E+01	.2188E+01	.6532E+00	.2691E+00	.1815E+01	.9256E+00	.8954E+00	.1279E+01	.6880E+00	0.	.5770E+00
31	.2851E+01	.2229E+01	.7766E+00	.3183E+00	.2154E+01	.9784E+00	.1014E+01	.1558E+01	.8431E+00	.1547E-14	.6053E+00
32	.2941E+01	.2268E+01	.8447E+00	.3554E+00	.2374E+01	.9343E+00	.1084E+01	.1685E+01	.9178E+00	0.	.6348E+00
33	.3025E+01	.2322E+01	.7600E+00	.3236E+00	.2231E+01	.9578E+00	.1019E+01	.1512E+01	.8257E+00	.1454E-14	.6621E+00
34	.3041E+01	.2366E+01	.6537E+00	.2778E+00	.2024E+01	.9107E+00	.9217E+00	.1307E+01	.7103E+00	-.1466E-14	.6675E+00
35	.3213E+01	.2460E+01	.7548E+00	.3202E+00	.2355E+01	.9115E+00	.1011E+01	.1500E+01	.8200E+00	.6169E-14	.7238E+00
36	.3505E+01	.2590E+01	.7823E+00	.3151E+00	.2503E+01	.9208E+00	.1051E+01	.1444E+01	.8064E+00	0.	.8192E+00
37	.3698E+01	.2671E+01	.7578E+00	.3212E+00	.2658E+01	.9591E+00	[illegible]	[illegible]	.8228E+00	0.	.8823E+00
38	.3672E+01	.2658E+01	.7801E+00	.3310E+00	.2624E+01	.9416E+00	.1070E+01	.1501E+01	.8475E+00	-.5756E-14	.8754E+00
39	.3316E+01	.2455E+01	.8018E+00	.3055E+00	.2477E+01	.9554E+00	.1071E+01	.1536E+01	.8588E+00	0.	.7574E+00
40	.2783E+01	.2131E+01	.8588E+00	.2592E+00	.2196E+01	.9651E+00	.1073E+01	.1641E+01	.8971E+00	.1379E-14	.5835E+00
41	.2307E+01	.1845E+01	.9390E+00	.2198E+00	.1982E+01	.9785E+00	.1106E+01	.1809E+01	.9679E+00	-.1382E-14	.4274E+00
42	.1908E+01	.1589E+01	.9824E+00	.1824E+00	.1731E+01	.9961E+00	.1103E+01	.1905E+01	.9992E+00	.4169E-14	.2970E+00
43	.1566E+01	.1369E+01	.1008E+01	.1210E+00	.1481E+01	.1006E+01	.1071E+01	.1984E+01	.1015E+01	.2063E-14	.1850E+00
44	.1328E+01	.1207E+01	.1008E+01	.6650E-01	.1275E+01	.1013E+01	.1045E+01	.2013E+01	.1010E+01	-.7101E-15	.1071E+00
45	.1204E+01	.1120E+01	.9956E+00	.2055E-01	.1154E+01	.1028E+01	.1070E+01	.2005E+01	.9938E+00	.1874E-15	.6672E-01
46	.1204E+01	.1120E+01	.9936E+00	.2053E-01	.1150E+01	.1028E+01	.1034E+01	.2003E+01	.9937E+00	.3577E-01	.6677E-01

1ST	JACOBIAN	X	Y	DX1/DT	DX1/DX	DX1/DY	DETA/DT	DETA/DX	DETA/DY	ETA/ETINF
1	.1718E+02	.1700E+02	.3575E+01	0.	-.2857E+00	.9766E-13	0.	-.5662E-12	-.6015E+02	.1335E+01
2	.2423E+02	.1400E+02	.3575E+01	0.	-.4000E+00	-.4774E-01	0.	0.	-.6057E+02	.1335E+01
3	.3007E+02	.1200E+02	.3575E+01	0.	-.5000E+00	[illegible]	0.	0.	-.6014E+02	.1353E+01
4	.4168E+02	.1000E+02	.3575E+01	0.	-.6667E+00	[illegible]	0.	0.	-.6252E+02	.1386E+01
5	.6001E+02	.9000E+01	.3575E+01	0.	-.9904E+00	-.1541E+00	0.	.1308E+01	-.6001E+02	.1420E+01
6	.1021E+03	.8000E+01	.3531E+01	0.	-.1255E+01	-.1148E+01	0.	.5359E+01	-.7657E+02	.1444E+01
7	.2132E+03	.7500E+01	.3476E+01	0.	-.2301E+01	-.2704E+01	0.	.1083E+02	-.7937E+02	.1461E+01
8	.3857E+03	.7250E+01	.3430E+01	0.	-.4593E+01	-.4388E+01	0.	.1221E+02	-.7232E+02	.1478E+01
9	.4948E+03	.7125E+01	.3407E+01	0.	-.7469E+01	-.2863E+01	0.	.1170E+02	-.6185E+02	.1488E+01
10	.4959E+03	.7000E+01	.3383E+01	0.	-.7688E+01	-.1541E+01	0.	.1256E+02	-.6194E+02	.1491E+01
11	.5074E+03	.6875E+01	.3356E+01	0.	-.7854E+01	[illegible]	0.	.1375E+02	-.6346E+02	.1495E+01
12	.5230E+03	.6750E+01	.3328E+01	0.	-.7966E+01	-.1468E+00	0.	.1509E+02	-.6537E+02	.1493E+01
13	.5396E+03	.6625E+01	.3299E+01	0.	-.8076E+01	.3088E+00	0.	.1651E+02	-.6745E+02	.1490E+01
14	.5554E+03	.6500E+01	.3267E+01	0.	-.8164E+01	.6259E+00	0.	.1792E+02	-.6942E+02	.1484E+01
15	.5647E+03	.6375E+01	.3234E+01	0.	-.8200E+01	.7312E+00	0.	.1931E+02	-.7059E+02	.1476E+01
16	.5630E+03	.6250E+01	.3199E+01	0.	-.8116E+01	.4059E+00	0.	[illegible]	-.7038E+02	.1466E+01
17	.5386E+03	.6125E+01	.3162E+01	0.	-.7498E+01	-.1174E+01	0.	[illegible]	-.6737E+02	.1457E+01
18	.8689E+03	.6000E+01	.3125E+01	0.	-.8057E+01	-.1077E+02	0.	.2581E+02	-.7605E+02	.1455E+01
19	.1390E+04	.5950E+01	.3107E+01	0.	-.1061E+02	-.1731E+02	0.	.2921E+02	-.6951E+02	.1452E+01
20	.1917E+04	.5900E+01	.3091E+01	0.	-.1704E+02	[illegible]	0.	.2955E+02	-.7475E+02	.1446E+01
21	.3391E+04	.5875E+01	.3081E+01	0.	[illegible]	.4060E+01	0.	.2574E+02	-.7124E+02	.1435E+01
22	.4652E+04	.5858E+01	.3077E+01	0.	[illegible]	[illegible]	0.	.2186E+02	-.6517E+02	.1418E+01
23	.4530E+04	.5844E+01	.3072E+01	0.	-.6948E+02	-.2551E+02	0.	.2129E+02	-.6545E+02	.1406E+01
24	.4326E+04	.5830E+01	.3067E+01	0.	-.6480E+02	-.1957E+02	0.	.2035E+02	-.6066E+02	.1402E+01

25	.4798E+04	.5816E+01	.3063E+01	0.	-.8192E+02	-.2638E+02	0.	.1799E+02	-.5278E+02	.1397E+01
26	.6994E+04	.5808E+01	.3060E+01	0.	-.1264E+[illegible]	.3849E+01	0.	.1923E+02	-.5595E+02	.1256E+01
27	.1150E+05	.5800E+01	.3057E+01	0.	-.1507E+03	.1055E+03	0.	[illegible]	-.9200E+02	.1674E+01
28	.6750E+05	.5792E+01	.3056E+01	0.	.2875E+03	[illegible]	0.	-.7765E+02	0.	.7701E+00
29	.8619E+04	.5800E+01	.3060E+01	0.	.9274E+02	.7601E+01	0.	-.2974E+02	.6890E+02	.1190E+01
30	.8214E+04	.5808E+01	.3063E+01	0.	.1080E+03	.4086E+01	0.	-.2795E+02	.6571E+02	.1262E+01
31	.6306E+04	.5816E+01	.3066E+01	0.	.8960E+02	.3100E+01	0.	-.2953E+02	.6936E+02	.1275E+01
32	.5129E+04	.5830E+01	.3072E+01	0.	.6925E+02	.5114E+01	0.	-.3053E+02	.7181E+02	.1296E+01
33	.5484E+04	.5844E+01	.3078E+01	0.	.7314E+02	-.4134E+01	0.	-.3265E+02	.7677E+02	.1300E+01
34	.6572E+04	.5858E+01	.3084E+01	0.	.8570E+02	-.2888E+01	0.	-.3910E+02	.9200E+02	.1285E+01
35	.3050E+04	.5872E+01	.3090E+01	0.	.3197E+02	-.2911E+01	0.	-.6605E+02	.1557E+03	.1300E+01
36	.1196E+04	.5960E+01	.3127E+01	0.	.1399E+02	-.7840E+01	0.	-.4775E+02	.1124E+03	.1353E+01
37	.1000E+04	.6060E+01	.3170E+01	0.	.1413E+02	-.4958E+01	0.	-.4245E+02	.1000E+03	.1384E+01
38	.8374E+03	.6160E+01	.3212E+01	0.	.9251E+01	-.6674E+01	0.	-.5530E+02	.1250E+03	.1332E+01
39	.4774E+03	.6360E+01	.3297E+01	0.	.5560E+01	-.2674E+01	0.	-.4003E+02	.1650E+03	.1363E+01
40	.3872E+03	.6600E+01	.3380E+01	0.	.4821E+01	-.9144E+00	0.	-.2571E+02	.8518E+02	.1306E+01
41	.4455E+03	.6800E+01	.3430E+01	0.	.5413E+01	-.1654E+01	0	-.2228E+02	.8911E+02	.1250E+01
42	.3632E+03	.7000E+01	.3480E+01	0.	.3456E+01	-.3117E+01	0.	-.2586E+02	.1271E+03	.1201E+01
43	.1980E+03	.7500E+01	.3560E+01	0.	.2153E+01	-.1277E+01	0.	-.1186E+02	.9901E+02	.1144E+01
44	.1528E+03	.8000E+01	.3600E+01	0.	.1418E+01	-.1403E+01	0.	-.6875E+01	.1146E+03	.1100E+01
45	.7540E+02	.9000E+01	.3650E+01	0.	.8381E+00	-.5556E+00	0.	-.1885E+01	.9124E+02	.1075E+01
46	.4546E+02	.1042E+02	.3650E+01	0.	.6135E+00	-.2584E-11	0.	.1136E+01	.7410E+02	.1075E+01

SECOND INDEX= 2

1ST	P/PINF	RHO/RINF	U/QINF	V/QINF	CT/CTINF	S/SINF	HT/HTINF	MACH	UBAR/QINF	VBAR/QINF	CP
1	.2508E+01	.1879E+01	.7996E+00	-.1371E-02	.1789E+01	.1037E+01	.1011E+01	.1447E+01	-.7996E+00	.1310E-02	.4933E+00
2	.2509E+01	.1880E+01	.7995E+00	-.1570E-02	.1790E+01	.1037E+01	.1011E+01	.1446E+01	-.7993E+00	.1379E-02	.4936E+00
3	.2618E+01	.1935E+01	.7963E+00	-.3073E-02	.1855E+01	.1054E+01	.1014E+01	.1431E+01	-.7962E+00	.2925E-02	.5291E+00
4	.2827E+01	.2041E+01	.7873E+00	.2319E-02	.1968E+01	.1071E+01	.1028E+01	.1398E+01	-.7880E+00	-.2493E-02	.5974E+00
5	.3054E+01	.2155E+01	.7726E+00	.2199E-01	.2084E+01	.1045E+01	.1037E+01	.1357E+01	-.7737E+00	-.6721E-02	.6719E+00
6	.3231E+01	.2244E+01	.7535E+00	.5506E-01	.2154E+01	.1048E+01	.1055E+01	.1316E+01	-.7591E+00	-.6639E-02	.7297E+00
7	.3364E+01	.2314E+01	.7323E+00	.9226E-01	.2207E+01	.1039E+01	.1054E+01	.1275E+01	-.7325E+00	.8665E-02	.7731E+00
8	.3521E+01	.2397E+01	.7127E+00	.1191E+00	.2272E+01	.1035E+01	.1027E+01	.1246E+01	-.7174E+00	.1005E-01	.8244E+00
9	.3646E+01	.2463E+01	.6954E+00	.1334E+00	.2270E+01	.1032E+01	.1024E+01	.1216E+01	-.7071E+00	.6067E-02	.8655E+00
10	.3710E+01	.2496E+01	.6814E+00	.1410E+00	.2354E+01	.1051E+01	.1014E+01	.1193E+01	-.6958E+00	-.2419E-02	.8864E+00
11	.3727E+01	.2504E+01	.6721E+00	.1479E+00	.2359E+01	.1051E+01	.1011E+01	.1179E+01	-.6878E+00	-.3263E-02	.8919E+00
12	.3718E+01	.2498E+01	.6675E+00	.1564E+00	.2318E+01	.1051E+01	.1014E+01	.1175E+01	-.6847E+00	-.3798E-02	.8888E+00
13	.3689E+01	.2484E+01	.6665E+00	.1661E+00	.2505E+01	.1051E+01	.1013E+01	.1178E+01	-.6857E+00	-.4513E-02	.8795E+00
14	.3641E+01	.2461E+01	.6682E+00	.1768E+00	.2284E+01	.1054E+01	.1011E+01	.1188E+01	-.6897E+00	-.4576E-02	.8636E+00
15	.3573E+01	.2430E+01	.6720E+00	.1873E+00	.2258E+01	.1051E+01	.1011E+01	.1211E+01	-.6946E+00	-.2958E-02	.8416E+00
16	.3499E+01	.2395E+01	.6780E+00	.1966E+00	.2274E+01	.1054E+01	.1011E+01	.1221E+01	-.7066E+00	.2005E-02	.8172E+00
17	.3438E+01	.2366E+01	.6855E+00	.2041E+00	.2214E+01	.1056E+01	.1014E+01	.1240E+01	-.7155E+00	.1655E-02	.7974E+00
18	.3413E+01	.2355E+01	.6925E+00	.2107E+00	.2219E+01	.1054E+01	.1018E+01	.1257E+01	-.7215E+00	.6193E-02	.7893E+00
19	.3416E+01	.2357E+01	.6939E+00	.2166E+00	.2214E+01	.1048E+01	.1014E+01	.1264E+01	-.7253E+00	.1065E-01	.7900E+00
20	.3408E+01	.2355E+01	.6878E+00	.2250E+00	.2213E+01	.1058E+01	.1017E+01	.1258E+01	-.7244E+00	-.1784E-02	.7675E+00
21	.3360E+01	.2352E+01	.6816E+00	.2394E+00	.2181E+01	.1027E+01	.1015E+01	.1258E+01	-.7223E+00	.4006E-02	.7718E+00
22	.3246E+01	.2274E+01	.6861E+00	.2581E+00	.2155E+01	.1028E+01	.1011E+01	.1284E+01	-.7289E+00	-.2469E-01	.7347E+00
23	.3096E+01	.2198E+01	.7009E+00	.2773E+00	.2079E+01	.1028E+01	.1011E+01	.1326E+01	-.7277E+00	-.7188E-01	.6859E+00
24	.2975E+01	.2139E+01	.7113E+00	.2910E+00	.2035E+01	.1024E+01	.1018E+01	.1360E+01	-.7124E+00	-.1048E+00	.6466E+00
25	.2916E+01	.2120E+01	.7160E+00	.3021E+00	.2016E+01	.1014E+01	.1016E+01	.1385E+01	-.6125E+00	-.2367E+00	.6257E+00
26	.2917E+01	.2146E-01	.7272E+00	.3149E+00	.2055E+01	.1004E+01	.1014E+01	.1420E+01	-.3061E+00	-.5593E+00	.6270E+00
27	.2853E+01	.2156E+01	.7565E+00	.3116E+00	.2077E+01	.9794E+00	.1018E+01	.1486E+01	.1678E+00	-.9151E+00	.6066E+00
28	.2729E+01	.2144E+01	.7810E+00	.3404E+00	.2084E+01	.9583E+00	.1018E+01	.1578E+01	.5538E+00	-.7713E+00	.5655E+00
29	.2728E+01	.2149E+01	.7870E+00	.3481E+00	.2104E+01	.9497E+00	.1014E+01	.1594E+01	.7777E+00	-.1970E+00	.5653E+00
30	.2621E+01	.2194E+01	.7793E+00	.3455E+00	.2146E+01	.9587E+00	.1015E+01	.1571E+01	.6420E+00	-.4087E-01	.5594E+00
31	.2894E+01	.2235E+01	.7744E+00	.3468E+00	.2181E+01	.9401E+00	.1024E+01	.1557E+01	.8458E+00	.1788E-01	.6193E+00
32	.2963E+01	.2270E+01	.7745E+00	.3785E+00	.2251E+01	.9406E+00	.1024E+01	.1564E+01	.8384E+00	.4147E-01	.6420E+00
33	3017E+01	.2322E+01	.7708E+00	.3365E+00	.2275E+01	.9374E+00	.1021E+01	.1574E+01	.8127E+00	.9011E-01	.6696E+00
34	.3038E+01	.2364E+01	.7547E+00	.3181E+00	.2275E+01	.9284E+00	.1011E+01	.1501E+01	.7334E+00	.1786E+00	.6862E+00
35	.3265E+01	.2457E+01	.7423E+00	.3107E+00	.2348E+01	.9279E+00	.1011E+01	.1404E+01	.7820E+00	.2356E-01	.7408E+00
36	.3529E+01	.2589E+01	.7315E+00	.3014E+00	.2475E+01	.9314E+00	.1011E+01	.1404E+01	.8104E+00	-.3407E-01	.8271E+00
37	.3705E+01	.2671E+01	.7326E+00	.3044E+00	[illegible]	[illegible]	[illegible]	.1407E+01	.7955E+00	-.1184E-02	.8848E+00
38	.3670E+01	.2638E+01	.7485E+00	.3066E+00	[illegible]	[illegible]	[illegible]	.1454E+01	.8195E+00	-.1340E-01	.8735E+00
39	.3322E+01	.2434E+01	.7834E+00	.2551E+00	[illegible]	[illegible]	[illegible]	.1497E+01	.8477E+00	-.1539E-01	.7594E+00
40	.2801E+01	.2131E+01	.8335E+00	.2664E+00	.2154E+01	.9715E+00	[illegible]	.1556E+01	.8695E+00	.1329E-01	.5870E+00
41	.2323E+01	.1845E+01	.8927E+00	.2278E+00	.1907E+01	.9854E+00	.1048E+01	.1716E+01	.9103E+00	.2155E-01	.4326E+00
42	.1911E+01	.1589E+01	.9415E+00	.1794E+00	.1667E+01	.9934E+00	.1077E+01	.1635E+01	.9525E+00	.1150E-01	.2979E+00

43	.1572E+01	.1369E+01	.9785E+00	.1212E+00	.1459E+01	.1013E+01	.1066E+01	.1923E+01	.9876E+00	.5674E-02	.1869E+00
44	.1329E+01	.1207E+01	.9907E+00	.6569E-01	.1251E+01	[illegible]	[illegible]	.1977E+01	.9859E+00	.9644E-02	.1078E+00
45	.1205E+01	.1120E+01	.9868E+00	.3115E-01	.1144E+01	[illegible]	[illegible]	[illegible]	.9815E+00	.1017E-01	.6697E-01
46	.1205E+01	.1120E+01	.9868E+00	.3115E-01	.1145E+01	[illegible]	[illegible]	.1969E+01	.9869E+00	.4415E-01	.6699E-01

1ST	JACOBIAN	X	Y	DXI/DT	DXI/DX	DXI/DY	DETA/DT	DETA/DX	DETA/DY	ET/ETINF
1	.1224E+02	.1700E+02	.3555E+01	0.	-.2861E+00	.1374E-11	0.	-.3245E-02	-.4279E+02	.1335E+01
2	.1722E+02	.1400E+02	.3555E+01	.3227E-04	-.4000E+00	-.4571E-01	[illegible]	-.2974E-04	-.4306E+02	.1335E+01
3	.2142E+02	.1200E+02	.3555E+01	[illegible]	-.5504E+00	[illegible]	[illegible]	-.7953E-02	-.4286E+02	.1353E+01
4	.2999E+02	.1001E+02	.3556E+01	.1055E-04	-.6673E+00	-.2006E+00	.1657E-04	-.3406E-02	-.4494E+02	.1385E+01
5	.4364E+02	.9003E+01	.3555E+01	.1394E-04	-.1061E+01	-.1514E+00	.9873E-05	.8624E+00	-.4348E+02	.1418E+01
6	.7136E+02	.8013E+01	.3516E+01	.4711E-05	-.1274E+01	-.1088E+01	.1392E-06	.3504E+01	-.5310E+02	.1446E+01
7	.1458E+03	.7515E+01	.3457E+01	.4775E-06	-.2327E+01	-.2517E+01	-.5071E-05	.7384E+01	-.5465E+02	.1454E+01
8	.2535E+03	.7263E+01	.3415E+01	.4338E-06	-.4513E+01	-.3954E+01	-.1231E-05	.8700E+01	-.4855E+02	.1469E+01
9	.3201E+03	.7132E+01	.3388E+01	.8481E-06	-.7174E+01	-.2634E+01	.6346E-08	.8335E+01	-.4156E+02	.1480E+01
10	.3177E+03	.7004E+01	.3363E+01	.1027E-05	.7544E+01	-.1444E+01	.5011E-06	.8290E+01	-.4054E+02	.1487E+01
11	.3175E+03	.6877E+01	.3336E+01	.9870E-06	-.7747E+01	.6465E+00	.2651E-06	.8663E+01	-.4026E+02	.1489E+01
12	.3191E+03	.6750E+01	.3308E+01	.1009E-05	-.7704E+01	.5105E-01	.5834E-06	.9214E+01	-.4031E+02	.1488E+01
13	.3215E+03	.6624E+01	.3279E+01	.1137E-05	-.8058E+01	.3989E+00	.6973E-06	.9838E+01	-.4019E+02	.1485E+01
14	.3236E+03	.6498E+01	.3247E+01	.1254E-05	-.8150E+01	.6964E+00	.9708E-06	.1018E+02	-.4062E+02	.1479E+01
15	.3252E+03	.6373E+01	.3214E+01	.1062E-05	-.8234E+01	.7696E+00	.6913E-06	.1115E+02	-.4055E+02	.1471E+01
16	.3238E+03	.6249E+01	.3179E+01	.4626E-06	-.8267E+01	.4065E+00	-.9032E-06	.1164E+02	-.3973E+02	.1461E+01
17	.3223E+03	.6128E+01	.3142E+01	-.2650E-06	-.8301E+01	-.1044E+01	-.5527E-05	.1130E+02	-.3785E+02	.1453E+01
18	.4732E+03	.6014E+01	.3108E+01	-.3663E-07	-.9605E+01	-.7495E+01	-.2454E-05	.1237E+02	-.3961E+02	.1449E+01
19	.7345E+03	.5960E+01	.3090E+01	.3010E-05	-.1695E+02	-.8593E+01	.5981E-06	.1219E+02	-.3716E+02	.1449E+01
20	.9846E+03	.5913E+01	.3075E+01	.2053E-05	-.2169E+02	-.1338E+02	.3361E-05	.1252E+02	-.3780E+02	.1447E+01
21	.1498E+04	.5883E+01	.3065E+01	.2126E-05	-.3505E+02	-.1637E+02	.3944E-05	.1303E+02	-.3658E+02	.1441E+01
22	.1980E+04	.5854E+01	.3058E+01	.1926E-05	-.5062E+02	-.8877E+01	.3856E-05	.1250E+02	-.3692E+02	.1428E+01
23	.2236E+04	.5846E+01	.3052E+01	.1807E-05	-.5706E+02	.2020E+01	.3881E-05	.1148E+02	-.3898E+02	.1405E+01
24	.2569E+04	.5829E+01	.3047E+01	.1707E-05	-.6441E+02	.1553E+02	.3654E-05	.1177E+02	-.4273E+02	.1391E+01
25	.3124E+04	.5813E+01	.3043E+01	.1574E-05	-.6986E+02	.3649E+02	.3016E-05	.7240E+01	-.4849E+02	.1376E+01
26	.3467E+04	.5798E+01	.3043E+01	.1424E-05	-.5644E+02	.6617E+02	.2354E-05	-.8256E+01	-.5178E+02	.1359E+01
27	.3235E+04	.5763E+01	.3046E+01	.1409E-05	-.1887E+02	.8604E+02	.1951E-05	-.3078E+02	-.4094E+02	.1324E+01
28	.3127E+04	.5773E+01	.3062E+01	.1732E-05	.2268E+02	.7934E+02	.2694E-05	-.3862E+02	.2755E+01	.1273E+01
29	.2624E+04	.5785E+01	.3072E+01	.3103E-05	.3983E+02	.5654E+02	.5504E-05	-.2374E+02	.3220E+02	.1269E+01
30	.2657E+04	.5797E+01	.3080E+01	.3028E-05	.5515E+02	.4332E+02	.5197E-05	-.1752E+02	.3441E+02	.1285E+01
31	.2406E+04	.5811E+01	.3086E+01	.2125E-05	.5860E+02	.2432E+02	.3561E-05	-.1456E+02	.3494E+02	.1296E+01
32	.2138E+04	.5826E+01	.3092E+01	.6604E-06	.5540E+02	.1764E+02	.1856E-05	-.1347E+02	.3542E+02	.1306E+01
33	.2023E+04	.5844E+01	.3098E+01	-.6127E-06	.5404E+02	.2114E+01	-.8643E-06	-.1175E+02	.3694E+02	.1313E+01
34	.1989E+04	.5863E+01	.3104E+01	-.1675E-05	.5209E+02	-.1122E+02	-.4516E-05	-.8577E+01	.4004E+02	.1311E+01
35	.1102E+04	.5884E+01	.3107E+01	-.2748E-05	.2537E+02	-.1617E+02	-.8634E-05	-.2326E+02	.5825E+02	.1329E+01
36	.5453E+03	.5969E+01	.3146E+01	-.2517E-05	.1358E+02	-.5874E+01	.5714E-05	-.2235E+02	.4986E+02	.1363E+01
37	.4540E+03	.6067E+01	.3189E+01	.6728E-06	.1161E+02	-.4056E+01	.1224E-05	-.1904E+02	.4576E+02	.1387E+01
38	.3627E+03	.6170E+01	.3230E+01	.2427E-05	.8681E+01	-.4837E+01	.1654E-05	-.2301E+02	.5460E+02	.1391E+01
39	.2175E+03	.6368E+01	.3316E+01	.2610E-05	.5502E+01	-.2275E+01	.1084E-05	-.1848E+02	.4714E+02	.1365E+01
40	.1801E+03	.6604E+01	.3400E+01	.1554E-06	.4841E+01	-.6224E+00	-.2911E-05	-.1102E+02	.3943E+02	.1315E+01
41	.2013E+03	.6806E+01	.3449E+01	-.7088E-06	.5258E+01	-.1598E+01	-.3551E-05	-.9631E+01	.4122E+02	.1259E+01
42	.1576E+03	.7013E+01	.3495E+01	-.6678E-06	.3399E+01	-.2796E+01	-.3874E-05	-.1010E+02	.5551E+02	.1203E+01
43	.9026E+02	.7510E+01	.3577E+01	-.9586E-06	.2145E+01	-.1253E+01	-.5674E-05	-.5381E+01	.4517E+02	.1148E+01
44	.7105E+02	.8014E+01	.3615E+01	-.1312E-05	.1411E+01	-.1323E+01	-.6075E-05	-.3178E+01	.5332E+02	.1102E+01
45	.3760E+02	.9011E+01	.3667E+01	-.2071E-05	.8438E+00	-.5443E+01	-.9367E-05	-.1042E+01	.4524E+02	.1076E+01
46	.2336E+02	.1042E+02	.3670E+01	0.	.6192E+00	.2656E-11	0.	.4969E+00	.3773E+02	.1076E+01

SECOND INDEX= 3

1ST	P/PINF	RHO/RINF	U/QINF	V/QINF	ET/ETINF	S/SINF	HT/HTINF	MACH	UBAR/QINF	VBAR/QINF	CP
1	.2511E+01	.1861E+01	.7970E+00	-.3141E-02	.1787E+01	.1056E+01	.1004E+01	.1442E+01	-.7970E+00	.3009E-02	.4940E+00
2	.2512E+01	.1882E+01	.7969E+00	-.3142E-02	.1787E+01	.1050E+01	.1005E+01	.1442E+01	-.7966E+00	.3160E-02	.4943E+00
3	.2615E+01	.1935E+01	.7937E+00	-.4890E-02	.1847E+01	.1036E+01	.1011E+01	.1427E+01	-.7936E+00	.4505E-02	.5281E+00
4	.2802E+01	.2030E+01	.7848E+00	.1606E-02	.1948E+01	.1040E+01	.1034E+01	.1394E+01	-.7853E+00	-.1902E-02	.5893E+00
5	.3015E+01	.2138E+01	.7702E+00	.2192E-01	.2055E+01	.1040E+01	.1049E+01	.1354E+01	-.7715E+00	-.8560E-02	.6590E+00
6	.3203E+01	.2235E+01	.7510E+00	.5420E-01	.2178E+01	.1039E+01	.1024E+01	.1314E+01	-.7585E+00	-.9734E-02	.7204E+00
7	.3360E+01	.2318E+01	.7296E+00	.8960E-01	.2266E+01	.1035E+01	.1034E+01	.1276E+01	-.7280E+00	.1146E-01	.7716E+00
8	.3502E+01	.2395E+01	.7079E+00	.1168E+00	.2259E+01	.1031E+01	.1024E+01	.1240E+01	-.7065E+00	.2272E-01	.8183E+00
9	.3612E+01	.2453E+01	.6903E+00	.1322E+00	.2272E+01	.1028E+01	.1016E+01	.1210E+01	-.7002E+00	.1769E-01	.8543E+00
10	.3676E+01	.2485E+01	.6780E+00	.1466E+00	.2304E+01	.1028E+01	.1014E+01	.1196E+01	-.6925E+00	.6894E-03	.8752E+00
11	.3699E+01	.2495E+01	.6710E+00	.1478E+00	.2313E+01	.1025E+01	.1011E+01	.1179E+01	-.6808E+00	-.1944E-02	.8827E+00
12	.3692E+01	.2490E+01	.6683E+00	.1565E+00	.2306E+01	.1025E+01	.1013E+01	.1178E+01	-.6857E+00	-.3133E-02	.8804E+00

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13	.3662E+01	.2476E+01	.6687E+00	.1668E+00	[illegible]	[illegible]	[illegible]	.1194E+01	-.6880E+00	-.3982E-02	.8707E+00
14	.3614E+01	.2453E+01	.6713E+00	.1777E+00	.2277E+01	[illegible]	[illegible]	[illegible]	-.6932E+00	-.3651E-02	.8550E+00
15	.3563E+01	.2424E+01	.6754E+00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-.7011E+00	-.6190E-04	.8349E+00
16	.3488E+01	.2393E+01	.6804E+00	.1974E+00	[illegible]	[illegible]	[illegible]	[illegible]	-.7112E+00	.8872E-02	.8135E+00
17	.3427E+01	.2363E+01	.6856E+00	.2047E+00	[illegible]	[illegible]	[illegible]	.1238E+01	-.7139E+00	.2378E-02	.7937E+00
18	.3373E+01	.2337E+01	.6814E+00	[illegible]	.2171E+01	[illegible]	[illegible]	[illegible]	-.7124E+00	.5261E-02	.7760E+00
19	.3312E+01	.2306E+01	.6743E+00	.2165E+00	.2127E+01	[illegible]	[illegible]	[illegible]	-.7030E+00	.1110E-01	.7561E+00
20	.3217E+01	.2257E+01	.6692E+00	.2349E+00	.2074E+01	[illegible]	[illegible]	.1241E+01	-.7087E+00	-.1298E-01	.7251E+00
21	.3071E+01	.2181E+01	.6731E+00	.2576E+00	.2005E+01	.1031E+01	.9957E+00	[illegible]	-.7161E+00	-.2106E-01	.6774E+00
22	.2892E+01	.2090E+01	.6791E+00	[illegible]	.1921E+01	[illegible]	[illegible]	[illegible]	[illegible]	-.9320E-01	.6189E+00
23	.2750E+01	.2017E+01	.6793E+00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-.1988E+00	.5725E+00
24	.2657E+01	.1966E+01	.6858E+00	[illegible]	[illegible]	.1031E+01	[illegible]	.1551E+01	[illegible]	-.3425E+00	[illegible]
25	.2550E+01	.1900E+01	.7195E+00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
26	.2331E+01	.1834E+01	.7936E+00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.1295E+00	-.9515E+00	.4353E+00
27	.1946E+01	.1785E+01	.8922E+00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.4735E+00	-.1154E+01	.3093E+00
28	.2009E+01	.1810E+01	.9405E+00	[illegible]	[illegible]	.8751E+00	[illegible]	[illegible]	.6204E+00	-.8862E+00	.3298E+00
29	.2304E+01	.1912E+01	.8976E+00	[illegible]	[illegible]	[illegible]	.1073E+01	[illegible]	.7731E+00	-.4038E+00	.4204E+00
30	.2574E+01	.2030E+01	[illegible]	[illegible]	[illegible]	.9557E+00	.1068E+01	[illegible]	.8527E+00	-.1989E+00	[illegible]
31	.2821E+01	.2146E+01	[illegible]	.3128E+00	[illegible]	[illegible]	[illegible]	[illegible]	.8635E+00	-.5812E-01	.5955E+00
32	.2995E+01	.2276E+01	.7818E+00	[illegible]	[illegible]	[illegible]	[illegible]	.1515E+01	[illegible]	.2582E-01	.6518E+00
33	.3123E+01	.2312E+01	.7665E+00	[illegible]	[illegible]	[illegible]	[illegible]	.1471E+01	[illegible]	.1252E+00	.6994E+00
34	.3271E+01	.2405E+01	[illegible]	.3177E+00	.2378E+01	[illegible]	.1040E+01	.1486E+01	.7326E+00	.2640E+00	.7429E+00
35	.3464E+01	.2508E+01	.7395E+00	.3039E+00	.2440E+01	[illegible]	[illegible]	.1422E+01	.7665E+00	.4667E-01	.8058E+00
36	.3642E+01	.2599E+01	.7268E+00	.2945E+00	.2501E+01	[illegible]	.1031E+01	.1378E+01	.8234E+00	-.6598E-01	.8642E+00
37	.3728E+01	.2645E+01	.7153E+00	.2948E+00	.2548E+01	[illegible]	.1031E+01	[illegible]	.7696E+00	.6335E-02	.8922E+00
38	.3629E+01	.2589E+0[illegible]	.7279E+00	[illegible]	.2512E+01	.9581E+00	.1056E+01	.1387E+01	.7945E+00	-.1162E-01	.8598E+00
39	.3308E+01	.2400E+01	.7602E+00	.2668E+00	.2360E+01	.9678E+00	[illegible]	.1449E+01	.8323E+00	-.2878E-01	.7549E+00
40	.2849E+01	.2141E+01	.8066E+00	.2661E+00	.2134E+01	.9814E+00	.1047E+01	.1559E+01	.8408E+00	.1818E-01	.6049E+00
41	.2371E+01	.1859E+01	.8589E+00	.2271E+00	.1879E+01	.9951E+00	.1043E+01	.1644E+01	.8616E+00	.5355E-01	.4482E+00
42	.1938E+01	.1594E+01	.9057E+00	.1769E+00	.1625E+01	.1004E+01	.1024E+01	.1757E+01	.9084E+00	.2454E-01	.3067E+00
43	.1586E+01	.1370E+01	.9480E+00	.1189E+00	.1401E+01	.1039E+01	.1021E+01	.1856E+01	.9500E+00	.8568E-02	.1916E+00
44	.1345E+01	.1212E+01	.9674E+00	[illegible]	.1252E+01	.1026E+01	.1031E+01	.1924E+01	.9615E+00	.1100E-01	.1129E+00
45	.1230E+01	.1132E+01	.9692E+00	[illegible]	.1139E+01	.1033E+01	.1018E+01	.1945E+01	.9655E+00	.7551E-02	.7523E-01
46	.1230E+01	.1132E+01	.9692E+00	[illegible]	.1139E+01	.1033E+01	.1018E+01	.1945E+01	.9693E+00	.4138E-01	.7517E-01

15T	JACOBIAN	X	Y	DX1/DT	DXI/DX	DXI/DY	DETA/DT	DETA/DX	DETA/DY	EI/EIINF
1	.9226E+01	.1700E+02	.3528E+01	0.	[illegible]	0.	0.	-.5348E-02	-.3226E+02	.1335E+01
2	.1295E+02	.1401E+02	[illegible]	.3512E-04	[illegible]	[illegible]	[illegible]	[illegible]	-.3237E+02	.1335E+01
3	.1613E+02	.1200E+02	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.1351E+01
4	.2275E+02	.1001E+02	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.1380E+01
5	.3343E+02	.9007E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-.3315E+02	.1410E+01
6	.5317E+02	.8050E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.1433E+01
7	.1062E+03	.7555E+01	.3458E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.1449E+01
8	.1770E+03	.7281E+01	.3394E+01	[illegible]	[illegible]	[illegible]	[illegible]	.6745E+01	[illegible]	.1462E+01
9	.2200E+03	.7141E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-.2993E+02	.1473E+01
10	.2190E+03	.7009E+01	.3355E+01	.6117E-06	[illegible]	[illegible]	[illegible]	.5787E+01	-.2873E+02	.1479E+01
11	.2162E+03	.6879E+01	.3306E+01	[illegible]	[illegible]	-.5715E+00	[illegible]	.6075E+01	-.2797E+02	.1483E+01
12	.2143E+03	.6750E+01	.3279E+01	.5621E-06	[illegible]	[illegible]	[illegible]	[illegible]	-.2749E+02	[illegible]
13	.2132E+03	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-.2718E+02	.1479E+01
14	.2125E+03	[illegible]	.3217E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
15	.2130E+03	.6370E-01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
16	.2146E+03	.6247E+01	.3148E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
17	.2257E+03	.6131E+01	.3111E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
18	.3047E+03	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
19	.4460E+03	.5973E+01	.3061E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.1436E+01
20	.5880E+03	.5927E+01	.3047E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
21	.7868E+03	.5894E+01	.3035E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-.2508E+02	.1408E+01
22	.9744E+03	.5867E+01	.3026E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-.2517E+02	[illegible]
23	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
24	[illegible]	.5818E+01	.3017E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
25	[illegible]	.5793E+01	.3018E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
26	[illegible]	.5770E+01	.3027E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.1271E+01
27	.1089E+04	.5751E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
28	.1045E+04	.5741E+01	.3071E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.1110E+01
29	[illegible]	.5757E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
30	.1015E+04	.5775E+01	.3104E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.1268E+01
31	[illegible]	.5796E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.1314E+01

32	.9285E+03	.5818E+01	.3124E+01	.1692E-05	.3866E+02	.1338E+02	.3850E-05	-.7626E+01	.2138E+02	.1339E+01
33	.8563E+03	.5842E+01	.3132E+01	-.9856E-06	.3777E+02	.4476E+01	.1719E-05	-.5302E+01	.2204E+02	.1351E+01
34	.7647E+03	.5869E+01	.3136E+01	-.3536E-05	.3596E+02	-.4030E+01	-.7645E-05	.1770E+01	.2273E+02	.1366E+01
35	.5174E+03	.5901E+01	.3136E+01	-.4584E-05	.2124E+02	-.9604E+01	[illegible]	-.1004E+02	.2900E+02	.1381E+01
36	.3140E+03	.5982E+01	.3177E+01	-.3755E-05	.1357E+02	-.4588E+01	.1164E-04	-.1335E+02	.2771E+02	.1401E+01
37	.2537E+03	.6078E+01	.3231E+01	-.2455E-06	.1112E+02	-.3386E+01	-.5971E-05	-.1032E+02	.2601E+02	.1405E+01
38	.1986E+03	.6187E+01	.3200E+01	.1347E-05	.8287E+01	-.4037E+01	.3087E-05	-.1259E+02	.3609E+02	.1403E+01
39	.1262E+03	.6381E+01	.3346E+01	.1974E-05	.5554E+01	-.2034E+01	-.3514E-05	-.1095E+02	.2670E+02	.1375E+01
40	.1048E+03	.6610E+01	.3454E+01	.1306E-05	.4870E+01	-.8746E+00	.4759E-05	-.7043E+01	.2275E+02	.1331E+01
41	.1113E+03	.6810E+01	.3483E+01	.7601E-06	.5017E+01	-.1521E+01	-.5171E-05	-.4994E+01	.2509E+02	.1275E+01
42	.8657E+02	.7035E+01	.3532E+01	.9354E-06	.3261E+01	-.2566E+01	.5420E-05	-.5426E+01	.3079E+02	.1215E+01
43	.5150E+02	.7527E+01	.3608E+01	.1455E-05	.2137E+01	-.1197E+01	.5243E-05	-.3024E+01	.2584E+02	.1157E+01
44	.4090E+02	.8037E+01	.3646E+01	.1764E-05	.1404E+01	-.1246E+01	-.3137E-05	-.1786E+01	.3071E+02	.1110E+01
45	.2273E+02	.9022E+01	.3695E+01	.9662E-05	.8553E+00	-.5318E+00	.7495E-06	-.7196E+00	.2708E+02	.1086E+01
46	.1442E+02	.1042E+02	.3703E+01	0.	.6286E+00	.8197E-12	0.	.2218E+00	.2294E+02	.1086E+01

SECOND INDEX= 4

1ST	P/PINF	RHO/RINF	U/QINF	V/QINF	ET/ETINF	S/SINF	HT/HTINF	MACH	UBAR/QINF	VBAR/QINF	CP
1	.2512E+01	.1884E+01	.7950E+00	-.5721E-02	.1785E+01	.1034E+01	.1006E+01	.1459E+01	-.7950E+00	.5105E-02	.4946E+00
2	.2513E+01	.1884E+01	.7949E+00	-.5522E-02	.1786E+01	.1035E+01	.1006E+01	.1435E+01	-.7943E+00	.5349E-02	.4950E+00
3	.2607E+01	.1933E+01	.7918E+00	-.6248E-02	.1844E+01	.1036E+01	.1011E+01	.1425E+01	-.7916E+00	.5497E-02	.5256E+00
4	.2776E+01	.2020E+01	.7830E+00	.1154E-02	.1950E+01	.1037E+01	.1019E+01	.1392E+01	-.7834E+00	-.1759E-02	.5807E+00
5	.2977E+01	.2123E+01	.7684E+00	.2172E-01	.2025E+01	.1038E+01	.1024E+01	.1357E+01	-.7700E+00	-.1031E-01	.6465E+00
6	.3171E+01	.2223E+01	.7492E+00	.5504E-01	.2117E+01	.1036E+01	.1024E+01	.1314E+01	-.7579E+00	-.1266E-01	.7101E+00
7	.3341E+01	.2314E+01	.7270E+00	.8727E-01	.2180E+01	.1034E+01	.1021E+01	.1275E+01	-.7243E+00	.1463E-01	.7656E+00
8	.3477E+01	.2387E+01	.7066E+00	.1145E+00	.2237E+01	.1028E+01	.1016E+01	.1240E+01	-.6990E+00	.3880E-01	.8100E+00
9	.3576E+01	.2440E+01	.6895E+00	.1304E+00	.2271E+01	.1026E+01	.1017E+01	.1213E+01	-.6978E+00	.3486E-01	.8426E+00
10	.3638E+01	.2470E+01	.6790E+00	.1403E+00	.2284E+01	.1024E+01	.1014E+01	.1194E+01	-.6937E+00	.9802E-02	.8629E+00
11	.3664E+01	.2482E+01	.6733E+00	.1481E+00	.2297E+01	.1027E+01	.1014E+01	.1184E+01	-.6901E+00	.4479E-02	.8714E+00
12	.3658E+01	.2477E+01	.6714E+00	.1575E+00	.2257E+01	.1027E+01	.1014E+01	.1184E+01	-.6900E+00	.1775E-02	.8691E+00
13	.3624E+01	.2460E+01	.6724E+00	.1681E+00	.2279E+01	.1028E+01	.1014E+01	.1195E+01	-.6926E+00	.1927E-03	.8580E+00
14	.3570E+01	.2434E+01	.6742E+00	.1778E+00	.2258E+01	.1027E+01	.1015E+01	.1207E+01	-.6977E+00	-.8162E-04	.8404E+00
15	.3504E+01	.2402E+01	.6766E+00	.1913E+00	.2254E+01	.1027E+01	[illegible]	.1217E+01	-.7051E+00	.4702E-02	.8168E+00
16	.3430E+01	.2366E+01	.6765E+00	.2270E+00	.2195E+01	.1024E+01	.1007E+01	.1225E+01	-.7137E+00	.1636E-01	.7946E+00
17	.3346E+01	.2324E+01	.6778E+00	.2127E+00	.2151E+01	.1024E+01	.1006E+01	.1237E+01	-.7119E+00	.5922E-02	.7674E+00
18	.3247E+01	.2274E+01	.6742E+00	.2245E+00	.2092E+01	.1028E+01	.9976E+00	.1247E+01	-.7104E+00	-.1239E-02	.7355E+00
19	.3126E+01	.2212E+01	.6713E+00	.2405E+00	.2025E+01	.1027E+01	.9919E+00	.1258E+01	-.7111E+00	-.7637E-02	.6953E+00
20	.2979E+01	.2156E+01	.6745E+00	.2605E+00	.1994E+01	.1025E+01	.9875E+00	.1284E+01	-.7051E+00	-.5002E-01	.6471E+00
21	.2820E+01	.2055E+01	.6646E+00	.2861E+00	.1887E+01	.1027E+01	.9876E+00	.1520E+01	-.6857E+00	-.1062E+00	.5954E+00
22	.2684E+01	.1985E+01	.6935E+00	.2530E+00	.1825E+01	.1028E+01	.9898E+00	.1536E+01	-.5796E+00	-.2584E+00	.5509E+00
23	.2597E+01	.1936E+01	.7027E+00	.2985E+00	.1784E+01	.1034E+01	[illegible]	.1578E+01	-.4497E+00	-.4076E+00	.5727E+00
24	.2527E+01	.1894E+01	.7125E+00	[illegible]	.1767E+01	.1034E+01	[illegible]	.1467E+01	-.2581E+00	-.6034E+00	.4995E+00
25	.2421E+01	.1831E+01	.7344E+00	.3192E+00	.1735E+01	.1038E+01	[illegible]	.1476E+01	.2910E-01	-.8187E+00	.4646E+00
26	.2250E+01	.1749E+01	.7737E+00	.3554E+00	.1692E+01	[illegible]	[illegible]	.1554E+01	.2733E+00	-.9646E+00	.4087E+00
27	.2065E+01	.1681E+01	.8246E+00	.3314E+00	.1661E+01	[illegible]	[illegible]	.1678E+01	.4537E+00	-.1001E+01	.3461E+00
28	.2044E+01	.1678E+01	.8613E+00	.3100E+00	.1695E+01	.9707E+00	.1071E+01	.1754E+01	.5415E+00	-.7960E+00	.3414E+00
29	.2172E+01	.1742E+01	.8624E+00	.2883E+00	.1768E+01	.9995E+00	[illegible]	.1755E+01	.6649E+00	-.4970E+00	.3831E+00
30	.2362E+01	.1837E+01	.8442E+00	.2670E+00	.1855E+01	[illegible]	[illegible]	.1654E+01	.7585E+00	-.3220E+00	.4457E+00
31	.2590E+01	.1954E+01	.8193E+00	.2570E+00	.1919E+01	.1014E+01	[illegible]	.1554E+01	.8741E+00	-.1695E+00	.5558E+00
32	.2814E+01	.2077E+01	.7815E+00	.2550E+00	.2057E+01	.1014E+01	[illegible]	.1475E+01	.8170E+00	-.4194E-01	.5937E+00
33	.3041E+01	.2200E+01	.7566E+00	.2641E+00	.2196E+01	[illegible]	[illegible]	.1467E+01	.7384E+00	.9064E-01	.6636E+00
34	.3304E+01	.2344E+01	.7394E+00	.2784E+00	[illegible]	[illegible]	[illegible]	[illegible]	.7488E+00	.2570E+00	.7154E+00
35	.3544E+01	.2478E+01	.7198E+00	[illegible]	.2465E+01	[illegible]	[illegible]	.1534E+01	.7456E+00	.5785E-01	.8577E+00
36	.3698E+01	.2561E+01	.7028E+00	.2851E+00	.2477E+01	.9327E+00	[illegible]	.1548E+01	.8051E+00	-.8144E-01	.8558E+00
37	.3733E+01	.2568E+01	.6979E+00	.2873E+00	.2470E+01	.9806E+00	[illegible]	.1534E+01	.7414E+00	.2594E-01	.8594E+00
38	.3601E+01	.2525E+01	.7087E+00	.2904E+00	.2151E+01	.9864E+00	[illegible]	.1540E+01	.7694E+00	-.5244E-02	.8506E+00
39	.3307E+01	.2368E+01	.7367E+00	.2855E+00	.2501E+01	.9687E+00	[illegible]	.1772E+01	.8172E+00	-.4392E-01	.7545E+00
40	.2900E+01	.2141E+01	.7789E+00	.2671E+00	.2103E+01	.9788E+00	[illegible]	.1472E+01	.8115E+00	.2530E-01	.6215E+00
41	.2442E+01	.1877E+01	.8280E+00	.2354E+00	.1862E+01	.1011E+01	[illegible]	.1575E+01	.8164E+00	.9826E-01	.4716E+00
42	.1959E+01	.1611E+01	.8761E+00	.1824E+00	.1605E+01	.1021E+01	[illegible]	.1674E+01	.8578E+00	.4998E-01	.3066E+00
43	.1631E+01	.1382E+01	.9148E+00	.1227E+00	.1481E+01	.1032E+01	[illegible]	.1776E+01	.9223E+00	.2420E-01	.2062E+00
44	.1583E+01	.1224E+01	.9368E+00	.6621E-01	.1214E+01	.1040E+01	[illegible]	.1847E+01	.9240E+00	.2355E-01	.1257E+00
45	.1272E+01	.1150E+01	.9417E+00	.3764E-01	.1154E+01	.1047E+01	[illegible]	.1872E+01	.9374E+00	.9385E-02	.8924E-01
46	.1272E+01	.1149E+01	.9417E+00	.3759E-01	.1154E+01	.1047E+01	[illegible]	.1872E+01	.9417E+00	.4144E-01	.8896E-01

1ST	JACOBIAN	X	Y	DX/DT	DY/DT	DX/DY	DETA/DT	DETA/DX	DETA/DY	ET/ETINF
1	.7092E+01	.1764E+02	.5994E+01	0.	-.2871E+00	.4695E-12	0.	.6570E-02	.2455E+02	.1339E+01

2	.9856E+01	.1401E+02	.3493E+01	.4728E-04	-.4001E+00	-.4167E-01	.4258E-04	-.6162E-04	-.2463E+02	.1334E+01
3	.1231E+02	.1200E+02	.3493E+01	.3386E-04	-.5017E+00	-.9633E-02	[illegible]	-.2331E-01	-.2453E+02	.1349E+01
4	.1746E+02	.1002E+02	.3497E+01	.1906E-04	-.6691E+00	-.1814E+00	.7710E-05	[illegible]	-.2610E+02	.1374E+01
5	.2597E+02	.9012E+01	.3495E+01	.9871E-05	-.1015E+01	-.1170E+00	[illegible]	.3827E+00	-.2559E+02	.1402E+01
6	.3994E+02	.8052E+01	.3468E+01	.5557E-05	-.1321E+01	-.9864E+00	[illegible]	.1645E+01	-.2901E+02	.1420E+01
7	.7757E+02	.7560E+01	.3413E+01	.2358E-05	-.2374E+01	-.2170E+01	-.1610E-05	.5967E+01	-.2903E+02	.1444E+01
8	.1235E+03	.7304E+01	.3365E+01	.1005E-05	-.4326E+01	-.3126E+01	.1866E-05	.5336E+01	-.2502E+02	.1456E+01
9	.1513E+03	.7154E+01	.3326E+01	.4069E-06	-.6404E+01	-.2253E+01	[illegible]	.5254E+01	-.2175E+02	.1464E+01
10	.1511E+03	.7016E+01	.3296E+01	.1474E-06	-.7076E+01	-.1224E+01	[illegible]	.4555E+01	-.2058E+02	.1473E+01
11	.1477E+03	.6882E+01	.3266E+01	.3301E-07	-.7411E+01	-.4525E+00	[illegible]	.4456E+01	-.1965E+02	.1477E+01
12	.1447E+03	.6750E+01	.3236E+01	.2265E-07	-.7657E+01	.1556E+00	.2151E-05	.4495E+01	-.1897E+02	.1477E+01
13	.1425E+03	.6620E+01	.3204E+01	.1315E-06	-.7871E+01	.5734E+00	.1857E-05	.4615E+01	-.1843E+02	.1473E+01
14	.1410E+03	.6491E+01	.3171E+01	.4155E-06	-.8017E+01	.8443E+00	-.1193E-05	.4771E+01	-.1790E+02	.1467E+01
15	.1420E+03	.6366E+01	.3136E+01	.8649E-06	-.8384E+01	.8747E+00	-.2605E-06	.5057E+01	-.1746E+02	.1459E+01
16	.1462E+03	.6245E+01	.3100E+01	.9877E-06	-.8885E+01	.5104E+00	.1177E-06	.5386E+01	-.1677E+02	.1450E+01
17	.1610E+03	.6136E+01	.3063E+01	.9801E-06	-.9563E+01	-.4851E+00	.1184E-05	.5149E+01	-.1597E+02	.1440E+01
18	.2046E+03	.6048E+01	.3036E+01	-.5805E-07	-.1256E+02	-.2195E+01	-.3096E-05	.5107E+01	-.1542E+02	.1428E+01
19	.2761E+03	.5986E+01	.3013E+01	-.1804E-06	-.1735E+02	-.1480E+01	-.3071E-05	.5351E+01	-.1545E+02	.1413E+01
20	.3458E+03	.5930E+01	.2997E+01	.4055E-07	-.2205E+02	.6304E+00	-.1048E-05	.4947E+01	-.1583E+02	.1394E+01
21	.4216E+03	.5894E+01	.2984E+01	.2046E-06	-.2648E+02	.5706E+01	.4851E-07	.4497E+01	-.1683E+02	.1372E+01
22	.4821E+03	.5856E+01	.2976E+01	.4806E-06	-.2841E+02	.1325E+02	.6775E-06	.2335E+01	-.1806E+02	.1353E+01
23	.5195E+03	.5819E+01	.2974E+01	.1003E-05	-.2664E+02	.2116E+02	.9451E-06	-.8484E+00	-.1884E+02	.1341E+01
24	.5204E+03	.5783E+01	.2979E+01	.1264E-05	-.2079E+02	.2784E+02	.1011E-05	-.4711E+01	-.1885E+02	.1334E+01
25	.5103E+03	.5748E+01	.2992E+01	.6757E-06	-.1277E+02	.3178E+02	.8085E-06	-.9435E+01	-.1648E+02	.1324E+01
26	.4714E+03	.5719E+01	.3016E+01	-.5996E-06	-.4366E+01	.3185E+02	.1188E-05	-.1319E+02	-.1177E+02	.1286E+01
27	.4338E+03	.5698E+01	.3048E+01	-.1493E-05	.2526E+01	.2986E+02	.3554E-05	-.1505E+02	-.6221E+01	.1229E+01
28	.4171E+03	.5690E+01	.3085E+01	-.7179E-06	.8146E+01	.2804E+02	.6745E-05	-.1413E+02	.2554E+01	.1218E+01
29	.4040E+03	.5710E+01	.3114E+01	.2101E-05	.1316E+02	.2537E+02	.1040E-04	-.1126E+02	.9193E+01	.1247E+01
30	.4063E+03	.5735E+01	.3141E+01	.4891E-05	.1853E+02	.2154E+02	.1164E-04	-.8135E+01	.1122E+02	.1286E+01
31	.3981E+03	.5765E+01	.3164E+01	.5950E-05	.2251E+02	.1774E+02	.9784E-05	-.6819E+01	.1259E+02	.1326E+01
32	.3796E+03	.5798E+01	.3175E+01	.3060E-05	.2461E+02	.1221E+02	.3561E-05	-.4971E+01	.1296E+02	.1357E+01
33	.3502E+03	.5833E+01	.3186E+01	-.1290E-05	.2485E+02	.6384E+01	-.5532E-05	-.3014E+01	.1332E+02	.1382E+01
34	.3103E+03	.5874E+01	.3192E+01	-.4587E-05	.2295E+02	.7634E+00	-.1287E-04	-.3725E+00	.1351E+02	.1407E+01
35	.2352E+03	.5920E+01	.3169E+01	-.5267E-05	.1719E+02	-.3404E+01	-.1626E-04	-.4646E+01	.1460E+02	.1430E+01
36	.1713E+03	.5998E+01	.3234E+01	-.3207E-05	.1281E+02	-.2506E+01	-.1396E-04	-.7502E+01	.1483E+02	.1444E+01
37	.1368E+03	.6094E+01	.3276E+01	-.6585E-06	.1030E+02	-.2386E+01	-.9158E-05	-.5564E+01	.1457E+02	.1443E+01
38	.1045E+03	.6211E+01	.3313E+01	.6991E-06	.7685E+01	-.2861E+01	-.6714E-05	-.6663E+01	.1602E+02	.1426E+01
39	.7219E+02	.6400E+01	.3404E+01	.2078E-05	.5562E+01	-.1924E+01	[illegible]	-.6474E+01	.1478E+02	.1397E+01
40	.6130E+02	.6670E+01	.3493E+01	.3417E-05	.4694E+01	-.8735E+00	[illegible]	-.4151E+01	.1327E+02	.1354E+01
41	.6062E+02	.6833E+01	.3559E+01	.3624E-05	.4677E+01	-.1995E+01	-.1753E-05	-.2568E+01	.1370E+02	.1301E+01
42	.4652E+02	.7072E+01	.3571E+01	.4524E-05	.3135E+01	[illegible]	[illegible]	-.2815E+01	.1683E+02	.1241E+01
43	.2946E+02	.7556E+01	.3666E+01	.6651E-05	.2121E+01	-.1154E+01	[illegible]	-.1656E+01	.1478E+02	.1186E+01
44	.2340E+02	.8076E+01	.3683E+01	.6910E-05	.1596E+01	-.1173E+01	[illegible]	-.9567E+00	.1756E+02	.1130E+01
45	.1386E+02	.9058E+01	.3742E+01	.1144E-04	.8697E+00	-.5109E+00	.1507E-04	.5115E+00	.1624E+02	.1107E+01
46	.9053E+01	.1042E+02	.3757E+01	0.	.6442E+00	0.	0.	.5745E-01	.1405E+02	.1107E+01

SECOND INDEX= 5

1ST	P/PINF	RHO/RINF	U/QINF	V/QINF	ET/ETINF	S/SINF	HT/HTINF	MACH	UBAR/QINF	VBAR/QINF	CP
1	.2513E+01	.1887E+01	.7939E+00	-.7782E-02	.1785E+01	.1033E+01	.1005E+01	.1438E+01	-.7939E+00	.7487E-02	.4948E+00
2	.2514E+01	.1887E+01	.7938E+00	-.7779E-02	.1785E+01	.1033E+01	.1005E+01	.1438E+01	-.7950E+00	.7814E-02	.4951E+00
3	.2597E+01	.1931E-01	.7907E+00	-.7462E-02	.1835E+01	.1034E+01	.1010E+01	.1425E+01	-.7906E+00	.6175E-02	.5223E+00
4	.2751E+01	.2010E+01	.7822E+00	.1112E-02	.1914E+01	.1035E+01	.1016E+01	.1397E+01	-.7827E+00	-.2335E-02	.5725E+00
5	.2947E+01	.2105E+01	.7678E+00	.2176E-01	.2008E+01	.1035E+01	.1014E+01	.1354E+01	-.7696E+00	-.1253E-01	.6351E+00
6	.3136E+01	.2205E+01	.7490E+00	.5190E-01	.2098E+01	.1039E+01	.1014E+01	.1317E+01	-.7585E+00	-.1530E-01	.6985E+00
7	.3308E+01	.2301E+01	.7284E+00	.8477E-01	.2161E+01	.1054E+01	.1018E+01	.1278E+01	-.7228E+00	.1955E-01	.7556E+00
8	.3443E+01	.2373E+01	.7085E+00	.1119E+00	[illegible]	.1027E+01	.1014E+01	[illegible]	-.6966E+00	.5825E-01	.7984E+00
9	.3536E+01	.2423E+01	.6930E+00	.1296E+00	.2257E+01	[illegible]	.1013E+01	[illegible]	-.7000E+00	.5746E-01	.8294E+00
10	.3592E+01	.2450E+01	.6850E+00	.1407E+00	.2271E+01	.1024E+01	[illegible]	[illegible]	-.6973E+00	.3044E-01	.8477E+00
11	.3612E+01	.2458E+01	.6777E+00	[illegible]	.2270E+01	[illegible]	[illegible]	[illegible]	-.6975E+00	.1736E-01	.8542E+00
12	.3595E+01	.2445E+01	.6754E+00	[illegible]	.2268E+01	[illegible]	[illegible]	[illegible]	-.6981E+00	.1161E-01	.8488E+00
13	.3546E+01	.2425E+01	.6764E+00	.1757E+00	[illegible]	[illegible]	[illegible]	[illegible]	-.7016E+00	.8065E-02	.8334E+00
14	.3479E+01	.2371E+01	.6775E+00	.1876E+00	[illegible]	[illegible]	[illegible]	[illegible]	-.7051E+00	.5353E-02	.8104E+00
15	.3396E+01	.2350E+01	.6788E+00	.2017E+00	.2176E+01	[illegible]	[illegible]	[illegible]	-.7104E+00	.1014E-01	.7857E+00
16	.3303E+01	.2304E+01	.6779E+00	.2154E+00	.2135E+01	[illegible]	[illegible]	[illegible]	-.7156E+00	.2387E-01	.7531E+00
17	.3197E+01	.2251E+01	.6791E+00	.2316E+00	.2075E+01	.1027E+01	[illegible]	.1358E+01	-.7211E+00	.9562E-02	.7183E+00
18	.3079E+01	.2191E+01	.6801E+00	.2478E+00	.2013E+01	.1022E+01	[illegible]	.1376E+01	-.7173E+00	-.1528E-01	.6800E+00
19	.2956E+01	.2124E+01	.6857E+00	.2613E+00	.1961E+01	.1014E+01	[illegible]	.1503E+01	-.7065E+00	-.5395E-01	.6396E+00

20	.2839E+01	.2069E+01	.6958E+00	.2784E+00	.1910E+01	.1026E+01	.9942E+00	.1337E+01	-.6609E+00	-.1437E+00	.6014E+00
21	.2744E+01	.2021E+01	.7090E+00	.2865E+00	.1886E+01	.1027E+01	.9774E+00	.1371E+01	-.5719E+00	-.2874E+00	.5703E+00
22	.2681E+01	.1987E+01	.7208E+00	.2871E+00	.1866E+01	.1025E+01	.1004E+01	.1394E+01	-.4193E+00	-.4415E+00	.5497E+00
23	.2639E+01	.1963E+01	.7294E+00	.2846E+00	.1844E+01	.1027E+01	.1005E+01	.1411E+01	-.2379E+00	-.6126E+00	.5361E+00
24	.2596E+01	.1935E+01	.7365E+00	.2811E+00	.1827E+01	.1034E+01	.1003E+01	.1402E+01	-.4581E-01	-.7591E+00	.5218E+00
25	.2535E+01	.1895E+01	.7431E+00	.2765E+00	.1794E+01	.1034E+01	.1008E+01	.1435E+01	.1345E+00	-.8628E+00	.5020E+00
26	.2459E+01	.1844E+01	.7509E+00	.2751E+00	.1751E+01	.1044E+01	.1010E+01	.1448E+01	.2746E+00	-.8964E+00	.4772E+00
27	.2387E+01	.1791E+01	.7608E+00	.2667E+00	.1714E+01	.1032E+01	.1015E+01	.1459E+01	.3787E+00	-.8678E+00	.4537E+00
28	.2329E+01	.1755E+01	.7741E+00	.2521E+00	.1688E+01	.1044E+01	.1017E+01	.1477E+01	.4478E+00	-.7139E+00	.4348E+00
29	.2313E+01	.1748E+01	.7871E+00	.2358E+00	.1693E+01	.1058E+01	.1021E+01	.1473E+01	.5489E+00	-.5217E+00	.4294E+00
30	.2352E+01	.1771E+01	.7910E+00	.2211E+00	.1716E+01	.1056E+01	.1025E+01	.1456E+01	.6407E+00	-.4006E+00	.4425E+00
31	.2455E+01	.1828E+01	.7830E+00	.2102E+00	.1767E+01	.1055E+01	.1024E+01	.1462E+01	.7129E+00	-.2678E+00	.4758E+00
32	.2619E+01	.1918E+01	.7640E+00	.2066E+00	.1854E+01	.1052E+01	.1021E+01	.1415E+01	.7555E+00	-.1378E+00	.5295E+00
33	.2850E+01	.2045E+01	.7397E+00	.2127E+00	.1944E+01	.1047E+01	.1020E+01	.1363E+01	.7708E+00	.7710E-02	.6051E+00
34	.3140E+01	.2201E+01	.7169E+00	.2291E+00	.2098E+01	.1040E+01	.1025E+01	.1317E+01	.7604E+00	.1601E+00	.6998E+00
35	.3406E+01	.2341E+01	.6965E+00	.2454E+00	.2235E+01	.1054E+01	.1051E+01	.1280E+01	.7271E+00	.4301E-01	.7868E+00
36	.3581E+01	.2436E+01	.6832E+00	.2597E+00	.2325E+01	.1054E+01	.1054E+01	.1256E+01	.7616E+00	-.7509E-01	.8442E+00
37	.3631E+01	.2472E+01	.6794E+00	.2725E+00	.2367E+01	.1024E+01	.1054E+01	.1247E+01	.7160E+00	.3564E-01	.8604E+00
38	.3524E+01	.2427E+01	.6898E+00	.2816E+00	.2326E+01	.1018E+01	.1054E+01	.1292E+01	.7498E+00	-.8873E-02	.8256E+00
39	.3278E+01	.2305E+01	.7146E+00	.2812E+00	.2222E+01	.1018E+01	.1054E+01	.1346E+01	.7995E+00	-.5819E-01	.7450E+00
40	.2930E+01	.2120E+01	.7526E+00	.2687E+00	.2064E+01	.1025E+01	.1055E+01	.1421E+01	.7804E+00	.4083E-01	.6311E+00
41	.2516E+01	.1888E+01	.7979E+00	.2402E+00	.1859E+01	.1054E+01	.1055E+01	.1597E+01	.7621E+00	.1483E+00	.4957E+00
42	.2090E+01	.1638E+01	.8422E+00	.1955E+00	.1614E+01	.1047E+01	.1054E+01	.1600E+01	.8120E+00	.8129E-01	.3564E+00
43	.1720E+01	.1415E+01	.8796E+00	.1387E+00	.1391E+01	.1018E+01	.1019E+01	.1688E+01	.8577E+00	.5856E-01	.2354E+00
44	.1465E+01	.1257E+01	.9019E+00	.8587E-01	.1226E+01	.1064E+01	.1005E+01	.1754E+01	.8686E+00	.5736E-01	.1520E+00
45	.1350E+01	.1183E+01	.9080E+00	.5673E-01	.1146E+01	.1067E+01	.9950E+00	.1780E+01	.8968E+00	.2533E-01	.1145E+00
46	.1350E+01	.1183E+01	.9081E+00	.5620E-01	.1146E+01	.1067E+01	.9956E+00	.1780E+01	.9081E+00	.5206E-01	.1144E+00

1ST	JACOBIAN	X	Y	DXI/DT	DXI/DX	DXI/DY	DETA/DT	DETA/DX	DETA/DY	EI/EIINF
1	.5466E+01	.1700E+02	.3447E+01	0.	-.2879E+00	0.	0.	-.7040E-02	-.1899E+02	.1332E+01
2	.7623E+01	.1401E+02	.3447E+01	.6011E-04	-.4002E+00	-.3871E-01	.5940E-04	-.6841E-02	-.1905E+02	.1332E+01
3	.9543E+01	.1200E+02	.3447E+01	.4550E-04	-.5026E+00	-.8784E-02	.5725E-04	-.3097E-01	-.1899E+02	.1345E+01
4	.1361E+02	.1005E+02	.3456E+01	.2474E-04	-.6704E+00	-.1671E+00	.1211E-04	-.3004E-01	-.2031E+02	.1368E+01
5	.2053E+02	.9018E+01	.3451E+01	.1245E-04	-.1003E+01	-.1425E+00	.7696E-06	.2492E+00	-.2007E+02	.1395E+01
6	.3046E+02	.8080E+01	.3430E+01	.6463E-05	-.1354E+01	-.9027E+00	-.2553E-05	.1125E+01	-.2174E+02	.1419E+01
7	.5725E+02	.7591E+01	.3377E+01	.2042E-05	-.2403E+01	-.1951E+01	.2254E-05	.2787E+01	-.2141E+02	.1438E+01
8	.8701E+02	.7332E+01	.3325E+01	.1119E-05	-.4146E+01	-.2044E+01	.2449E-05	.4553E+01	-.1825E+02	.1451E+01
9	.1046E+03	.7171E+01	.3278E+01	.4708E-06	-.5596E+01	-.1774E+01	-.2150E-05	.4374E+01	-.1607E+02	.1460E+01
10	.1047E+03	.7025E+01	.3247E+01	.1857E-06	-.6749E+01	-.1006E+01	-.2414E-05	.3675E+01	-.1497E+02	.1466E+01
11	.1016E+03	.6885E+01	.3207E+01	.7604E-07	-.7164E+01	-.2544E+00	[illegible]	.3474E+01	-.1402E+02	.1469E+01
12	.9867E+02	.6748E+01	.3173E+01	.9571E-07	-.7472E+01	.5096E+00	[illegible]	.3404E+01	-.1336E+02	.1468E+01
13	.9649E+02	.6614E+01	.3176E+01	.2608E-06	-.7762E+01	.7718E+00	[illegible]	.3429E+01	-.1277E+02	.1463E+01
14	.9533E+02	.6484E+01	.3102E+01	.6454E-06	-.8096E+01	.1054E+01	[illegible]	.3478E+01	-.1223E+02	.1455E+01
15	.9726E+02	.6356E+01	.3065E+01	.1201E-05	.8581E+01	.1194E+01	.1354E-05	.3684E+01	-.1183E+02	.1443E+01
16	.1030E+03	.6241E+01	.3026E+01	.1628E-05	-.9454E+01	.1079E+01	-.5081E-06	.3922E+01	-.1136E+02	.1434E+01
17	.1176E+03	.6137E+01	.2988E+01	.1515E-05	-.1034E+02	.8874E+00	.3567E-06	.3896E+01	-.1101E+02	.1420E+01
18	.1421E+03	.6055E+01	.2960E+01	.9748E-06	-.1394E+02	.1244E+01	.8141E-06	.3738E+01	-.1087E+02	.1405E+01
19	.1742E+03	.5984E+01	.2935E+01	.4656E-06	-.1655E+02	.5484E+01	-.9055E-06	.3541E+01	-.1125E+02	.1389E+01
20	.2012E+03	.5924E+01	.2919E+01	.1873E-06	-.1861E+02	.7094E+01	-.5604E-06	.2654E+01	-.1180E+02	.1372E+01
21	.2240E+03	.5867E+01	.2909E+01	.1193E-06	-.1916E+02	.1170E+02	-.1554E-06	.1283E+01	-.1286E+02	.1358E+01
22	.2354E+03	.5812E+01	.2906E+01	.3468E-06	-.1751E+02	.1651E+02	.4686E-06	-.1018E+01	-.1249E+02	.1349E+01
23	.2366E+03	.5761E+01	.2916E+01	.7510E-06	-.1406E+02	.2007E+02	.1174E-05	-.3517E+01	-.1181E+02	.1345E+01
24	.2293E+03	.5712E+01	.2938E+01	.9548E-06	-.9612E+01	.2207E+02	.1464E-05	-.5762E+01	-.1062E+02	.1341E+01
25	.2169E+03	.5668E+01	.2968E+01	.7585E-06	-.5037E+01	.2258E+02	.8604E-06	-.7753E+01	-.8402E+01	.1337E+01
26	.2013E+03	.5635E+01	.3009E+01	.3027E-06	-.1017E+01	.2178E+02	.7457E-06	-.8262E+01	-.5559E+01	.1334E+01
27	.1874E+03	.5613E+01	.3057E+01	.6594E-07	.2396E+01	.2054E+02	-.3483E-05	-.9135E+01	-.2621E+01	.1333E+01
28	.1795E+03	.5607E+01	.3110E+01	.6885E-06	.5286E+01	.1941E+02	[illegible]	.8781E+01	.1702E+01	.1327E+01
29	.1735E+03	.5632E+01	.3155E+01	.3401E-05	.8132E+01	.1770E+02	[illegible]	.7575E+01	.5101E+01	.1323E+01
30	.1714E+03	.5666E+01	.3195E+01	.6442E-05	.1104E+02	.1627E+02	[illegible]	.6357E+01	.6406E+01	.1326E+01
31	.1665E+03	.5707E+01	.3227E+01	.7487E-05	.1354E+02	.1578E+02	.8154E-05	[illegible]	.7565E+01	.1343E+01
32	.1585E+03	.5753E+01	.3254E+01	.5417E-05	.1553E+02	.1658E+02	.4194E-05	[illegible]	.7835E+01	.1365E+01
33	.1474E+03	.5805E+01	.3273E+01	.1655E-05	-.1078E+02	.7534E+01	[illegible]	[illegible]	.8168E+01	.1394E+01
34	.1338E+03	.5864E+01	.3284E+01	-.1046E-05	.1576E+02	.3744E+01	[illegible]	[illegible]	.8351E+01	.1427E+01
35	.1094E+03	.5930E+01	.3287E+01	-.1311E-05	.1546E+02	.5054E+00	[illegible]	-.2522E+01	.8018E+01	.1455E+01
36	.8773E+02	.6011E+01	.3327E+01	.2461E-06	.1116E+02	-.2854E+00	[illegible]	-.3026E+01	.8003E+01	.1470E+01
37	.7087E+02	.6113E+01	.3374E+01	[illegible]	.9056E+01	-.9654E+00	[illegible]	-.2897E+01	.8131E+01	.1465E+01
38	.5476E+02	.6240E+01	.3407E+01	[illegible]	.7034E+01	-.1447E+01	[illegible]	.3566E+01	.8516E+01	.1452E+01

39	.4093E+02	.6424E+01	.3502E+01	.4711E-05	.5455E+01	-.9223E+00	-.1794E-06	-.3808E+01	.8147E+01	.1422E+01
40	.3514E+02	.6638E+01	.3593E+01	.5923E-05	.4786E+01	-.7538E+00	.4170E-05	-.2304E+01	.7723E+01	.1382E+01
41	.3225E+02	.6863E+01	.3636E+01	.6294E-05	.4236E+01	-.1255E+01	.6628E-05	.1691E+01	.7928E+01	.1333E+01
42	.2424E+02	.7130E+01	.3657E+01	.7476E-05	.2966E+01	-.1687E+01	.8410E-05	-.1354E+01	.8981E+01	.1276E+01
43	.1679E+02	.7605E+01	.3752E+01	.9389E-05	.2091E+01	-.1047E+01	.1160E-04	-.8555E+00	.8459E+01	.1216E+01
44	.1324E+02	.8138E+01	.3759E+01	.1031E-04	.1387E+01	-.1050E+01	.1207E-04	-.4558E+00	.9918E+01	.1165E+01
45	.8556E+01	.9103E+01	.3828E+01	.1388E-04	.8994E+00	-.4761E+00	.1371E-04	-.3098E+00	.9764E+01	.1141E+01
46	.5837E+01	.1076E+02	.3845E+01	0.	.6656E+00	.1659E-12	0.	-.3975E-01	.8716E+01	.1141E+01

SECOND INDEX- 6

1ST	P/PINF	RHO/RINF	U/QINF	V/QINF	ET/ETINF	S/SINF	HT/HTINF	MACH	UBAR/QINF	VBAR/QINF	CP
1	.2511E+01	.1868E+01	.7946E+00	-.1035E-01	.1784E+01	.1031E+01	.1024E+01	.1439E+01	-.7946E+00	.1002E-01	.4940E+00
2	.2512E+01	.1869E+01	.7939E+00	-.1045E-01	.1785E+01	.1031E+01	.1024E+01	.1439E+01	-.7929E+00	.1042E-01	.4943E+00
3	.2584E+01	.1927E+01	.7907E+00	-.8886E-02	.1831E+01	.1034E+01	.1018E+01	.1427E+01	-.7907E+00	.6781E-02	.5162E+00
4	.2724E+01	.1999E+01	.7827E+00	.8541E-03	.1894E+01	.1035E+01	.1018E+01	.1401E+01	-.7855E+00	-.3034E-02	.5640E+00
5	.2901E+01	.2093E+01	.7689E+00	.2140E-01	.1988E+01	.1035E+01	.1017E+01	.1364E+01	.7707E+00	-.1564E-01	.6234E+00
6	.3095E+01	.2191E+01	.7510E+00	.5049E-01	.2075E+01	.1034E+01	.1018E+01	.1358E+01	-.7600E+00	-.1651E-01	.6858E+00
7	.3265E+01	.2281E+01	.7314E+00	.8221E-01	.2144E+01	.1030E+01	.1016E+01	.1296E+01	-.7238E+00	.2056E-01	.7407E+00
8	.3395E+01	.2351E+01	.7136E+00	.1095E+00	.2204E+01	.1026E+01	.1015E+01	.1255E+01	-.6988E+00	.8122E-01	.7832E+00
9	.3478E+01	.2395E+01	.6986E+00	.1291E+00	.2236E+01	.1024E+01	.1010E+01	.1233E+01	-.7087E+00	.6577E-01	.8105E+00
10	.3519E+01	.2415E+01	.6896E+00	.1435E+00	.2291E+01	.1024E+01	.1002E+01	.1219E+01	-.7108E+00	.5159E-01	.8238E+00
11	.3520E+01	.2414E+01	.6834E+00	.1555E+00	.2237E+01	.1025E+01	.1006E+01	.1214E+01	-.7113E+00	.3842E-01	.8243E+00
12	.3485E+01	.2395E+01	.6826E+00	.1695E+00	.2214E+01	.1022E+01	.1007E+01	.1218E+01	-.7127E+00	.2849E-01	.8120E+00
13	.3419E+01	.2362E+01	.6821E+00	.1856E+00	.2187E+01	.1026E+01	.1005E+01	.1228E+01	-.7162E+00	.2204E-01	.7912E+00
14	.3334E+01	.2320E+01	.6834E+00	.2025E+00	.2148E+01	.1026E+01	.1004E+01	.1240E+01	-.7200E+00	.1623E-01	.7633E+00
15	.3239E+01	.2274E+01	.6848E+00	.2191E+00	.2106E+01	.1026E+01	.1001E+01	.1253E+01	-.7289E+00	.1974E-01	.7323E+00
16	.3140E+01	.2225E+01	.6808E+00	.2354E+00	.2058E+01	.1025E+01	.9992E+00	.1277E+01	-.7422E+00	.2981E-01	.7000E+00
17	.3041E+01	.2175E+01	.6900E+00	.2516E+00	.2014E+01	.1025E+01	.9977E+00	.1298E+01	-.7325E+00	-.3212E-02	.6676E+00
18	.2949E+01	.2129E+01	.6945E+00	.2640E+00	.1977E+01	.1024E+01	.9981E+00	.1327E+01	-.7014E+00	-.6764E-01	.6375E+00
19	.2873E+01	.2091E+01	.7004E+00	.2735E+00	.1951E+01	.1023E+01	.1001E+01	.1354E+01	-.6578E+00	-.1653E+00	.6125E+00
20	.2818E+01	.2063E+01	.7171E+00	.2771E+00	.1934E+01	.1023E+01	.1004E+01	.1375E+01	-.5221E+00	-.3131E+00	.5945E+00
21	.2784E+01	.2045E+01	.7273E+00	.2743E+00	.1937E+01	.1022E+01	.1008E+01	.1393E+01	-.3783E+00	-.4694E+00	.5834E+00
22	.2763E+01	.2034E+01	.7350E+00	.2675E+00	.1928E+01	.1023E+01	.1010E+01	.1403E+01	-.2192E+00	-.6213E+00	.5767E+00
23	.2744E+01	.2022E+01	.7395E+00	.2593E+00	.1918E+01	.1024E+01	.1011E+01	.1407E+01	-.7360E-01	-.7368E+00	.5704E+00
24	.2718E+01	.2005E+01	.7419E+00	.2508E+00	.1894E+01	.1026E+01	.1006E+01	.1406E+01	.5492E-01	-.8136E+00	.5618E+00
25	.2686E+01	.1982E+01	.7405E+00	.2424E+00	.1876E+01	.1031E+01	.1006E+01	.1397E+01	.1615E+00	-.8492E+00	.5514E+00
26	.2652E+01	.1950E+01	.7362E+00	.2335E+00	.1853E+01	.1041E+01	.1004E+01	.1384E+01	.2444E+00	-.8412E+00	.5403E+00
27	.2611E+01	.1911E+01	.7317E+00	.2257E+00	.1791E+01	.1055E+01	.1005E+01	.1369E+01	.3134E+00	-.7993E+00	.5270E+00
28	.2557E+01	.1867E+01	.7342E+00	.2188E+00	.1748E+01	.1065E+01	.1006E+01	.1364E+01	.3723E+00	-.6817E+00	.5076E+00
29	.2487E+01	.1825E+01	.7376E+00	.2100E+00	.1711E+01	.1071E+01	.1009E+01	.1376E+01	.4567E+00	-.5427E+00	.4868E+00
30	.2444E+01	.1800E+01	.7472E+00	.1937E+00	.1691E+01	.1074E+01	.1008E+01	.1387E+01	.5383E+00	-.4515E+00	.4724E+00
31	.2448E+01	.1801E+01	.7505E+00	.1876E+00	.1694E+01	.1074E+01	.1008E+01	.1387E+01	.6127E+00	-.3491E+00	.4734E+00
32	.2518E+01	.1839E+01	.7441E+00	.1766E+00	.1724E+01	.1073E+01	.1008E+01	.1366E+01	.6724E+00	-.2379E+00	.4965E+00
33	.2670E+01	.1919E+01	.7274E+00	.1752E+00	.1794E+01	.1072E+01	.1008E+01	.1326E+01	.7161E+00	-.1035E+00	.5462E+00
34	.2890E+01	.2033E+01	.7057E+00	.1852E+00	.1894E+01	.1070E+01	.1007E+01	.1272E+01	.7437E+00	.6079E-01	.6181E+00
35	.3118E+01	.2149E+01	.6849E+00	.2031E+00	.2004E+01	.1068E+01	.1012E+01	.1240E+01	.7145E+00	-.6151E-02	.6926E+00
36	.3294E+01	.2241E+01	.6707E+00	.2248E+00	.2094E+01	.1064E+01	.1016E+01	.1219E+01	.7228E+00	-.7811E-01	.7503E+00
37	.3375E+01	.2289E+01	.6673E+00	.2455E+00	.2154E+01	.1063E+01	.1017E+01	.1274E+01	.7044E+00	.2587E-01	.7769E+00
38	.3327E+01	.2274E+01	.6755E+00	.2617E+00	.2156E+01	.1064E+01	[illegible]	[illegible]	.7594E+00	-.2692E-01	.7611E+00
39	.3158E+01	.2194E+01	.6975E+00	.2694E+00	.2097E+01	.1062E+01	.1029E+01	.1507E+01	.7758E+00	-.7164E-01	.7056E+00
40	.2891E+01	.2058E+01	.7310E+00	.2654E+00	.1984E+01	.1054E+01	.1035E+01	.1371E+01	.7558E+00	.6109E-01	.6184E+00
41	.2551E+01	.1874E+01	.7715E+00	.2457E+00	.1823E+01	.1057E+01	.1035E+01	.1494E+01	.7339E+00	.1632E+00	.5072E+00
42	.2177E+01	.1661E+01	.8120E+00	.2097E+00	.1632E+01	.1070E+01	.1018E+01	.1531E+01	.7775E+00	.1104E+00	.3851E+00
43	.1835E+01	.1466E+01	.8460E+00	.1614E+00	.1421E+01	.1084E+01	.1017E+01	.1605E+01	.8056E+00	.1094E+00	.2731E+00
44	.1587E+01	.1311E+01	.8672E+00	.1143E+00	.1264E+01	.1086E+01	.1005E+01	.1662E+01	.8116E+00	.1074E+00	.1919E+00
45	.1469E+01	.1239E+01	.8739E+00	.8704E-01	.1183E+01	.1088E+01	.9926E+00	.1686E+01	.8522E+00	.5508E-01	.1534E+00
46	.1469E+01	.1239E+01	.8740E+00	.8704E-01	.1187E+01	.1088E+01	.9926E+00	.1686E+01	.8741E+00	.7204E-01	.1534E+00

1ST	JACOBIAN	X	Y	DXI/DT	DXI/DX	DXI/DY	DETA/DT	DETA/DX	DETA/DY	E1/E1INF
1	.4333E+01	.1700E+02	.3388E+01	0.	-.2888E+00	-.4591E-12	0.	-.6971E-02	-.1500E+02	.1350E+01
2	.6018E+01	.1400E+02	.3388E+01	.7979E-04	-.4067E+00	-.5957E-01	.6538E-04	.7056E-04	-.1504E+02	.1350E+01
3	.7556E+01	.1200E+02	.3388E+01	.5531E-04	-.5036E+00	.8558E-02	[illegible]	-.1988E-01	-.1501E+02	.1341E+01
4	.1083E+02	.1005E+02	.3359E+01	.3316E-04	-.6721E+00	-.1494E+00	[illegible]	.3558E-01	-.1612E+02	.1363E+01
5	.1659E+02	.9026E+01	.3346E+01	.1726E-04	-.1037E+01	-.1594E+00	[illegible]	.1614E+00	-.1605E+02	.1388E+01
6	.2372E+02	.8112E+01	.3375E+01	.9096E-05	.1351E+01	.8034E+00	.1054E-05	.7703E+00	-.1656E+02	.1412E+01
7	.4300E+02	.7628E+01	.3354E+01	.7652E-05	.2053E+01	-.1688E+01	[illegible]	.2771E+01	-.1607E+02	.1431E+01
8	.6247E+02	.7365E+01	.3276E+01	.1841E-05	-.9611E+01	[illegible]	[illegible]	.3604E+01	.1363E+02	.1444E+01

9	.7336E+02	.7191E+01	.3210E+01	.1219E-05	-.5604E+01	-.1509E+01	-.1354E-05	.3784E+01	-.1207E+02	.1452E+01
10	.7340E+02	.7035E+01	.3167E+01	.1094E-05	-.6361E+01	-.6716E+00	.1845E-05	.3177E+01	-.1117E+02	.1457E+01
11	.7091E+02	.6887E+01	.3125E+01	.1057E-05	-.6864E+01	.5946E-01	[illegible]	[illegible]	-.1035E+02	.1456E+01
12	.6854E+02	.6743E+01	.3064E+01	.1180E-05	-.7248E+01	.6524E+00	-.1695E-05	[illegible]	-.9719E+01	.1455E+01
13	.6693E+02	.6604E+01	.3045E+01	.1441E-05	-.7637E+01	.1135E+01	-.1065E-05	.2785E+01	-.9177E+01	.1447E+01
14	.6653E+02	.6469E+01	.3001E+01	.1827E-05	-.8134E+01	.1518E+01	-.1718E-05	.2760E+01	-.8707E+01	.1437E+01
15	.6920E+02	.6342E+01	.2960E+01	.2209E-05	-.8848E+01	.1859E+01	.1030E-05	.2964E+01	-.8450E+01	.1425E+01
16	.7488E+02	.6225E+01	.2917E+01	.2422E-05	-.9734E+01	.2305E+01	-.5594E-06	.3154E+01	-.8765E+01	.1412E+01
17	.8540E+02	.6121E+01	.2871E+01	.2550E-05	-.1149E+02	[illegible]	[illegible]	.2977E+01	-.8551E+01	.1394E+01
18	.9713E+02	.6034E+01	.2840E+01	[illegible]	[illegible]	[illegible]	.7194E-06	[illegible]	-.8564E+01	.1384E+01
19	.1085E+03	.5946E+01	.2675E+01	.1810E-05	-.1364E+02	.7874E+01	.1147E-05	.1851E+01	-.8904E+01	.1374E+01
20	.1142E+03	.5866E+01	.2812E+01	.1614E-05	-.1394E+02	.1084E+02	.1250E-05	.5671E+00	-.8947E+01	.1366E+01
21	.1166E+03	.5789E+01	.2813E+01	.1524E-05	-.1195E+02	.1345E+02	.1050E-05	-.6742E+00	-.8774E+01	.1361E+01
22	.1149E+03	.5715E+01	.2827E+01	.1595E-05	-.9650E+01	.1554E+02	.1103E-05	-.2441E+01	-.7994E+01	.1359E+01
23	.1111E+03	.5650E+01	.2855E+01	.1631E-05	-.7112E+01	.1651E+02	.1310E-05	-.3786E+01	-.6932E+01	.1357E+01
24	.1056E+03	.5591E+01	.2895E+01	.1634E-05	-.4561E+01	.1656E+02	.8219E-06	-.4770E+01	-.5835E+01	.1355E+01
25	.9925E+02	.5539E+01	.2946E+01	.1921E-05	-.2230E+01	.1627E+02	-.3863E-06	-.5436E+01	-.4585E+01	.1355E+01
26	.9249E+02	.5502E+01	.3006E+01	.2693E-05	-.2325E+00	.1559E+02	-.2060E-05	-.5871E+01	-.2802E+01	.1360E+01
27	.8629E+02	.5479E+01	.3073E+01	.3739E-05	.1509E+01	.1477E+02	-.3659E-05	-.5970E+01	-.1234E+01	.1367E+01
28	.8201E+02	.5474E+01	.3144E+01	.4922E-05	.3121E+01	.1409E+02	-.3449E-05	-.5595E+01	.1018E+01	.1367E+01
29	.7877E+02	.5504E+01	.3210E+01	.6675E-05	.4786E+01	.1321E+02	.8080E-06	-.4932E+01	.2854E+01	.1363E+01
30	.7646E+02	.5546E+01	.3270E+01	.9077E-05	.6457E+01	.1222E+02	.6944E-05	-.4321E+01	.3663E+01	.1358E+01
31	.7336E+02	.5599E+01	.3323E+01	.1066E-04	.7997E+01	.1087E+02	.1079E-04	-.3597E+01	.4285E+01	.1359E+01
32	.6951E+02	.5663E+01	.3368E+01	.1035E-04	.9236E+01	.9145E+01	.1105E-04	-.2831E+01	.4720E+01	.1369E+01
33	.6498E+02	.5735E+01	.3404E+01	.8786E-05	.1011E+02	.7192E+01	.7058E-05	-.1956E+01	.5034E+01	.1391E+01
34	.6010E+02	.5818E+01	.3428E+01	.7226E-05	.1053E+02	.5101E+01	.1370E-05	-.9374E+00	.5258E+01	.1421E+01
35	.5139E+02	.5910E+01	.3435E+01	.6939E-05	.9856E+01	.2821E+01	-.2576E-05	-.1467E+01	.4795E+01	.1450E+01
36	.4336E+02	.6004E+01	.3485E+01	.7796E-05	.8777E+01	.1564E+01	-.2725E-05	-.7095E+01	.4568E+01	.1470E+01
37	.3604E+02	.6121E+01	.3552E+01	.9160E-05	.7526E+01	.5677E+00	-.2500E-06	-.1535E+01	.4673E+01	.1475E+01
38	.2889E+02	.6264E+01	.3570E+01	.1032E-04	.6224E+01	.1351E+00	.2703E-05	-.1994E+01	.4686E+01	.1464E+01
39	.2281E+02	.6445E+01	.3670E+01	.1107E-04	.5102E+01	.2119E+00	.4014E-05	-.2219E+01	.4558E+01	.1439E+01
40	.1929E+02	.6663E+01	.3765E+01	.1016E-04	.4404E+01	-.3937E+00	.5782E-05	-.1266E+01	.4492E+01	.1405E+01
41	.1680E+02	.6911E+01	.3802E+01	.9392E-05	.3727E+01	-.8472E+00	.6964E-05	-.4225E+00	.4604E+01	.1362E+01
42	.1262E+02	.7211E+01	.3815E+01	.9941E-05	.2756E+01	-.1134E+01	.8203E-05	-.6791E+00	.4862E+01	.1311E+01
43	.9450E+01	.7681E+01	.3909E+01	.1095E-04	.2026E+01	-.8583E+00	.8193E-05	-.3645E+00	.4819E+01	.1257E+01
44	.7509E+01	.8231E+01	.3892E+01	.1166E-04	.1266E+01	-.8357E+00	.5264E-05	-.1566E+00	.5583E+01	.1210E+01
45	.5408E+01	.9169E+01	.3951E+01	.1425E-04	.9319E+00	-.4171E+00	.6527E-06	-.2556E+00	.5918E+01	.1186E+01
46	.3918E+01	.1072E+02	.3987E+01	0.	.7105E+00	0.	0.	-.9469E-01	.5514E+01	.1186E+01

SECOND INDEX= 7

1ST	P/PINF	RHO/RINF	U/QINF	V/QINF	ET/ETINF	S/SINF	HT/HTINF	MACH	UBAR/QINF	VBAR/QINF	CP
1	.2505E+01	.1888E+01	.7953E+00	-.1305E-01	.1784E+01	.1029E+01	.1005E+01	.1449E+01	-.7953E+00	.1263E-01	.4923E+00
2	.2506E+01	.1889E+01	.7952E+00	-.1304E-01	.1784E+01	.1027E+01	.1003E+01	.1449E+01	-.7941E+00	.1309E-01	.4926E+00
3	.2570E+01	.1922E+01	.7925E+00	-.1094E-01	.1824E+01	.1050E+01	.1006E+01	.1453E+01	-.7924E+00	.7465E-02	.5135E+00
4	.2696E+01	.1987E+01	.7846E+00	-.5525E-04	.1884E+01	.1051E+01	.1011E+01	.1406E+01	-.7854E+00	-.3515E-02	.5547E+00
5	.2865E+01	.2075E+01	.7717E+00	.2047E-01	.1964E+01	.1052E+01	.1015E+01	.1373E+01	-.7733E+00	-.1347E-01	.6100E+00
6	.3045E+01	.2168E+01	.7550E+00	.4877E-01	.2054E+01	.1041E+01	.1017E+01	.1339E+01	-.7625E+00	-.1559E-01	.6689E+00
7	.3207E+01	.2253E+01	.7368E+00	.7993E-01	.2124E+01	.1034E+01	.1016E+01	.1298E+01	-.7277E+00	.3576E-01	.7219E+00
8	.3325E+01	.2317E+01	.7197E+00	.1081E+00	.2171E+01	.1032E+01	.1015E+01	.1270E+01	-.7097E+00	.1072E+00	.7605E+00
9	.3390E+01	.2355E+01	.7061E+00	.1306E+00	.2194E+01	.1034E+01	.1010E+01	.1256E+01	-.7272E+00	.1191E+00	.7815E+00
10	.3406E+01	.2360E-01	.6976E+00	.1489E+00	.2195E+01	.1034E+01	.1007E+01	.1240E+01	-.7325E+00	.8566E-02	.7869E+00
11	.3382E+01	.2347E+01	.6951E+00	.1666E+00	.2175E+01	.1034E+01	.1004E+01	.1255E+01	-.7363E+00	.6986E-01	.7791E+00
12	.3320E+01	.2318E+01	.6904E+00	.1839E+00	.2147E+01	.1035E+01	.1004E+01	.1247E+01	-.7395E+00	.5633E-01	.7608E+00
13	.3249E+01	.2279E+01	.6909E+00	.2026E+00	.2111E+01	.1025E+01	.1003E+01	.1260E+01	-.7455E+00	.4929E-01	.7359E+00
14	.3162E+01	.2236E+01	.6928E+00	.2203E+00	.2073E+01	.1025E+01	.1001E+01	.1278E+01	-.7480E+00	.3599E-01	.7070E+00
15	.3077E+01	.2195E+01	.6958E+00	.2377E+00	.2054E+01	.1029E+01	.1001E+01	.1298E+01	-.7524E+00	.2704E-01	.6793E+00
16	.3001E+01	.2157E+01	.7000E+00	.2518E+00	.2007E+01	.1029E+01	.1004E+01	.1318E+01	-.7488E+00	-.7015E-02	.6549E+00
17	.2939E+01	.2127E+01	.7059E+00	.2622E+00	.1986E+01	.1025E+01	.1007E+01	.1341E+01	-.6924E+00	-.8081E-01	.6342E+00
18	.2895E+01	.2105E+01	.7133E+00	.2675E+00	.1975E+01	.1024E+01	.1002E+01	.1354E+01	-.5979E+00	-.2047E+00	.6198E+00
19	.2869E+01	.2093E+01	.7213E+00	.2681E+00	.1977E+01	.1024E+01	.1004E+01	.1375E+01	-.4721E+00	-.3496E+00	.6111E+00
20	.2856E+01	.2085E+01	.7284E+00	.2634E+00	.1975E+01	.1026E+01	.1011E+01	.1384E+01	-.3262E+00	-.5045E+00	.6069E+00
21	.2848E+01	.2080E+01	.7335E+00	.2554E+00	.1974E+01	.1025E+01	.1011E+01	.1387E+01	-.1942E+00	-.6288E+00	.6044E+00
22	.2837E+01	.2074E+01	.7367E+00	.2461E+00	.1961E+01	.1025E+01	.1021E+01	.1386E+01	-.6585E-01	-.7221E+00	.6005E+00
23	.2818E+01	.2063E+01	.7380E+00	.2361E+00	.1944E+01	.1028E+01	.1004E+01	.1385E+01	.6556E-02	-.7797E+00	.5946E+00
24	.2791E+01	.2047E+01	.7372E+00	.2264E+00	.1927E+01	.1028E+01	.1001E+01	.1384E+01	.8104E-01	-.8109E+00	.5856E+00
25	.2759E+01	.2025E+01	.7356E+00	.2164E+00	.1897E+01	.1028E+01	.1004E+01	.1383E+01	.1417E+00	-.8176E+00	.5754E+00
26	.2726E+01	.1997E+01	.7276E+00	.2087E+00	.1854E+01	.1055E+01	.9987E+00	.1394E+01	.1934E+00	-.8014E+00	.5649E+00

27	.2686E+01	.1962E+01	.7215E+00	.2027E+00	.1814E+01	.1045E+01	.9925E+00	.1339E+01	.2424E+00	-.7675E+00	.5512E+00
28	.2632E+01	.1920E+01	.7167E+00	.1997E+00	.1779E+01	.1050E+01	.9013E+00	[illegible]	.2925E+00	-.6839E+00	.5337E+00
29	.2567E+01	.1873E+01	.7214E+00	.1960E+00	.1741E+01	[illegible]	.9918E+00	[illegible]	.3654E+00	-.5833E+00	.5124E+00
30	.2504E+01	.1851E+01	.7281E+00	.1887E+00	[illegible]	[illegible]	[illegible]	[illegible]	.4577E+00	-.5143E+00	.4916E+00
31	.2462E+01	.1803E+01	.7347E+00	.1776E+00	.1672E+01	[illegible]	[illegible]	.1354E+01	.5089E+00	-.4359E+00	.4781E+00
32	.2462E+01	.1800E+01	.7350E+00	.1656E+00	[illegible]	.1081E+01	[illegible]	[illegible]	.5744E+00	-.3477E+00	.4785E+00
33	.2521E+01	.1827E+01	.7274E+00	.1543E+00	[illegible]	.1089E+01	[illegible]	[illegible]	.6350E+00	[illegible]	.4974E+00
34	.2635E+01	.1862E+01	.7111E+00	.1540E+00	.1751E+01	[illegible]	.9941E+00	[illegible]	.6908E+00	-.9108E-01	.5348E+00
35	.2778E+01	.1956E+01	.6920E+00	.1644E+00	[illegible]	[illegible]	[illegible]	[illegible]	.6681E+00	-.1046E+00	.5814E+00
36	.2912E+01	.2015E+01	.6765E+00	.1841E+00	[illegible]	[illegible]	[illegible]	.1219E+01	.6934E+00	[illegible]	.6252E+00
37	.2995E+01	.2059E+01	.6607E+00	.2081E+00	[illegible]	.1091E+01	.1006E+01	.1219E+01	.7015E+00	-.2019E-01	.6556E+00
38	.3003E+01	.2065E+01	.6739E+00	.2301E+00	.1927E+01	.1088E+01	[illegible]	.1234E+01	[illegible]	-.6503E-01	.6550E+00
39	.2918E+01	.2028E+01	.6905E+00	.2456E+00	[illegible]	.1084E+01	.1018E+01	.1277E+01	.7570E+00	-.8990E-01	.6272E+00
40	.2749E+01	.1946E+01	.7182E+00	[illegible]	[illegible]	[illegible]	[illegible]	.1338E+01	.7457E+00	.7095E-01	.5721E+00
41	.2507E+01	.1818E+01	.7527E+00	[illegible]	.1753E+01	.1085E+01	[illegible]	.1408E+01	.7576E+00	.1927E+00	.4928E+00
42	.2217E+01	.1658E+01	.7880E+00	.2181E+00	.1667E+01	[illegible]	[illegible]	.1478E+01	.7651E+00	.1289E+00	.3982E+00
43	.1935E+01	.1498E+01	.8182E+00	.1820E+00	.1440E+01	[illegible]	.1017E+01	.1541E+01	.7725E+00	.1664E+00	.3057E+00
44	.1717E+01	.1372E+01	.8377E+00	.1448E+00	.1318E+01	.1105E+01	[illegible]	.1588E+01	.7714E+00	.1666E+00	.2345E+00
45	.1607E+01	.1307E+01	.8447E+00	.1218E+00	.1246E+01	.1105E+01	[illegible]	[illegible]	.8161E+00	.9306E-01	.1985E+00
46	.1607E+01	.1307E+01	.8448E+00	.1218E+00	.1246E+01	.1105E+01	.9960E+00	.1607E+01	.8455E+00	.9317E-01	.1985E+00

1ST	JACOBIAN	X	Y	DXI/DT	DXI/DX	DXI/DY	DETA/DT	DETA/DX	DETA/DY	EI/EIINF
1	.3526E+01	.1700E+02	.3313E+01	0.	-.2897E+00	.2004E-12	0.	-.6428E-02	-.1217E+02	.1327E+01
2	.4876E+01	.1403E+02	.3314E+01	.9073E-04	-.4004E+00	-.3030E-01	.7422E-04	-.6808E-04	-.1218E+02	.1327E+01
3	.6142E+01	.1200E+02	.3313E+01	.6777E-04	-.5046E+00	-.7616E-02	.5085E-04	-.4730E-01	-.1217E+02	.1337E+01
4	.8839E+01	.1006E+02	.3330E+01	.4148E-04	-.6740E+00	-.1293E+00	[illegible]	-.5801E-01	-.1315E+02	.1357E+01
5	.1375E+02	.9035E+01	.3327E+01	.2198E-04	-.1094E+01	[illegible]	.8479E-05	.1207E+00	-.1316E+02	.1381E+01
6	.1896E+02	.8148E+01	.3312E+01	.1241E-04	-.1435E+01	[illegible]	.9000E-06	.5930E+00	-.1274E+02	.1405E+01
7	.3310E+02	.7669E+01	.3264E+01	.5388E-05	-.2466E+01	-.1391E+01	-.1638E-05	.1711E+01	-.1237E+02	.1423E+01
8	.4613E+02	.7400E+01	.3197E+01	.3069E-05	-.3888E+01	-.1605E+01	-.1846E-05	.3215E+01	-.1054E+02	.1435E+01
9	.5292E+02	.7212E+01	.3125E+01	.2394E-05	-.5248E+01	-.1001E+01	.1611E-05	.3410E+01	-.9432E+01	.1441E+01
10	.5280E+02	.7044E+01	.3066E+01	.2284E-05	-.6011E+01	-.2149E+00	-.1407E-05	.2937E+01	-.8679E+01	.1443E+01
11	.5090E+02	.6884E+01	.3014E+01	.2432E-05	-.6541E+01	.5175E+00	[illegible]	.2701E+01	-.7995E+01	.1441E+01
12	.4920E+02	.6729E+01	.2962E+01	.2681E-05	-.7066E+01	.1160E+01	-.1094E-05	.2551E+01	-.7454E+01	.1435E+01
13	.4829E+02	.6581E+01	.2910E+01	.2982E-05	-.7497E+01	.1772E+01	-.8615E-06	.2509E+01	-.7034E+01	.1425E+01
14	.4856E+02	.6438E+01	.2856E+01	.3244E-05	-.8128E+01	.2413E+01	-.5229E-06	.2457E+01	-.6697E+01	.1414E+01
15	.5114E+02	.6305E+01	.2810E+01	.3307E-05	-.8911E+01	[illegible]	[illegible]	.2475E+01	-.6620E+01	.1403E+01
16	.5518E+02	.6179E+01	.2761E+01	.3164E-05	-.9804E+01	.4409E+01	[illegible]	.2475E+01	-.6739E+01	.1391E+01
17	.6042E+02	.6061E+01	.2720E+01	.2927E-05	-.1047E+02	.6125E+01	-.2650E-06	.2010E+01	-.6944E+01	.1382E+01
18	.6366E+02	.5949E+01	.2674E+01	.2832E-05	-.1040E+02	.8057E+01	-.2585E-07	.1262E+01	-.7040E+01	.1375E+01
19	.6494E+02	.5839E+01	.2680E+01	.2842E-05	-.9804E+01	.9999E+01	.9449E-06	.3429E+00	-.6974E+01	.1372E+01
20	.6351E+02	.5734E+01	.2684E+01	.2916E-05	-.8505E+01	.1142E+02	.4609E-06	-.7540E+00	-.6454E+01	.1370E+01
21	.6141E+02	.5636E+01	.2704E+01	.2976E-05	-.6901E+01	[illegible]	[illegible]	-.1701E+01	-.5819E+01	.1369E+01
22	.5845E+02	.5545E+01	.2759E+01	.3074E-05	.5403E+01	.1271E+02	.3139E-06	-.2498E+01	-.4941E+01	.1368E+01
23	.5549E+02	.5467E+01	.2790E+01	.2877E-05	-.4946E+01	.1271E+02	-.1280E-05	-.3104E+01	-.4062E+01	.1366E+01
24	.5243E+02	.5398E+01	.2851E+01	.2480E-05	-.2635E+01	[illegible]	[illegible]	-.3491E+01	-.3321E+01	.1364E+01
25	.4910E+02	.5340E+01	.2923E+01	.2056E-05	-.1407E+01	.1213E+02	-.3948E-05	-.3754E+01	-.2476E+01	.1363E+01
26	.4583E+02	.5298E+01	.3004E+01	.1975E-05	-.4307E+00	.1165E+02	[illegible]	-.3880E+01	-.1595E+01	.1365E+01
27	.4266E+02	.5271E+01	[illegible]	.2467E-05	.5100E+00	.1105E+02	-.7106E-06	-.3879E+01	-.7356E+00	.1369E+01
28	.4018E+02	.5265E+01	.3186E+01	.3649E-05	.1414E+01	.1066E+02	.3217E-05	-.3701E+01	.5205E+00	.1371E+01
29	.3826E+02	.5297E-01	.3276E+01	.5729E-05	.2413E+01	.1012E+02	.8197E-05	-.3403E+01	.1582E+01	.1370E+01
30	.3658E+02	.5346E+01	.3364E+01	.8974E-05	.3432E+01	.9519E+01	.1398E-04	-.3093E+01	.2081E+01	.1367E+01
31	.3467E+02	.5410E+01	.3445E+01	.1260E-04	.4414E+01	.8749E+01	.1881E-04	-.2703E+01	.2501E+01	.1365E+01
32	.3260E+02	.5490E+01	.3519E+01	.1518E-04	.5291E+01	.7774E+01	.2067E-04	-.2268E+01	.2829E+01	.1368E+01
33	.3037E+02	.5564E+01	.3585E+01	.1621E-04	.6033E+01	.6675E+01	.1878E-04	-.1746E+01	.3103E+01	.1380E+01
34	.2816E+02	.5695E+01	.3634E+01	.1607E-04	.6594E+01	.5412E+01	.1368E-04	-.1144E+01	.3331E+01	.1400E+01
35	.2463E+02	.5820E+01	.3666E+01	.1666E-04	.6654E+01	.5874E+01	.8614E-05	-.1197E+01	.3009E+01	.1424E+01
36	.2142E+02	.5939E+01	.3732E+01	.1779E-04	.6344E+01	.2807E+01	[illegible]	[illegible]	.2793E+01	.1445E+01
37	.1839E+02	.6081E+01	.3789E+01	.1937E-04	.5814E+01	.1814E+01	.4087E-05	-.9792E+00	.2858E+01	.1456E+01
38	.1513E+02	.6250E+01	.3838E+01	.2092E-04	.5097E+01	.9915E+00	[illegible]	-.1214E+01	.2732E+01	.1454E+01
[illegible]	.1225E+02	.6442E+01	.3950E+01	.2156E-04	.4530E+01	[illegible]	[illegible]	[illegible]	.2634E+01	.1439E+01
40	.1025E+02	.6680E+01	.4050E+01	.1998E-04	.3788E+01	.1764E+00	[illegible]	-.6684E+00	.2674E+01	.1415E+01
41	.8759E+01	.6964E+01	.4080E+01	.1759E-04	.3195E+01	-.2797E+00	.5274E-06	-.1895E+00	.2757E+01	.1379E+01
42	.6694E+01	.7309E+01	.4094E+01	.1675E-04	.2503E+01	[illegible]	.4310E-05	-.3350E+00	.2751E+01	.1337E+01
43	.5297E+01	.7786E+01	.4180E+01	.1614E-04	.1924E+01	-.5594E+00	.8740E-05	-.7933E-01	.2782E+01	.1292E+01
44	.4356E+01	.8360E+01	.4124E+01	.1626E-04	.1354E+01	-.5886E+00	.1295E-04	.3327E-01	.3703E+01	.1252E+01
45	.3554E+01	.9257E+01	.4105E+01	.1644E-04	.9647E+00	-.3208E+00	.1775E-04	-.1504E+00	.3661E+01	.1230E+01

46	.2777E+01	.1042E+02	.9208E+01	0.	.7719E+00	0.	0.	-.1218E+00	.3598E+01	.1230E+01

SECOND INDEX= 8

1ST	P/PINF	RHO/RINF	U/QINF	V/QINF	ET/ETINF	S/SINF	HT/HTINF	MACH	UBAR/QINF	VBAR/QINF	CP
1	.2497E+01	.1886E+01	.7978E+00	-.1574E-01	.1784E+01	.10[illegible]E+01	.10[illegible]E+01	.1450E+01	-.7978E+00	.1531E-01	.4895E+00
2	.2498E+01	.1887E+01	.7977E+00	-.1575E-01	.1784E+01	.10[illegible]E+01	.10[illegible]E+01	.1449E+01	-.7966E+00	.1574E-01	.4598E+00
3	.2553E+01	.1916E+01	.7950E+00	-.1[illegible]E-01	.1811E+01	.10[illegible]E+01	.10[illegible]E+01	.1440E+01	-.7949E+00	.8215E-02	.5078E+00
4	.2666E+01	.1974E+01	.7878E+00	-.1[illegible]E-02	.1873E+01	.10[illegible]E+01	.10[illegible]E+01	.1412E+01	-.7884E+00	-.3[illegible]E-02	.5499E+00
5	.2821E+01	.2053E+01	.7755E+00	.188[illegible]E-01	.1945E+01	.10[illegible]E+01	.1010E+01	.1384E+01	-.7771E+00	-.1131E-01	.5954E+00
6	.2986E+01	.2139E+01	.7605E+00	.4701E-01	.2[illegible]E+01	.10[illegible]E+01	.1010E+01	.13[illegible]E+01	-.7654E+00	-.1124E-01	.6495E+00
7	.3131E+01	.2215E+01	.7438E+00	.7869E-01	.2074E+01	.10[illegible]E+01	.101[illegible]E+01	.131[illegible]E+01	-.735[illegible]E+00	.4684E-01	.6968E+00
8	.3227E+01	.2268E+01	.7[illegible]E+00	.1088E+00	.212[illegible]E+01	.10[illegible]E+01	.101[illegible]E+01	.12[illegible]E+01	-.731[illegible]E+00	.155[illegible]E+00	.7[illegible]E+00
9	.3266E+01	.2290E+01	.71[illegible]E+00	.1751E+00	.213[illegible]E+01	.10[illegible]E+01	.10[illegible]E+01	.12[illegible]E+01	-.757[illegible]E+00	.156[illegible]E+00	.741[illegible]E+00
10	.3255E+01	.2285E+01	.7048E+00	.1[illegible]E+00	.2129E+01	.10[illegible]E+01	.10[illegible]E+01	.1268E+01	-.770[illegible]E+00	.1085E+00	.7375E+00
11	.3210E+01	.2263E+01	.7025E+00	.18[illegible]E+00	.2[illegible]E+01	.10[illegible]E+01	.10[illegible]E+01	.127[illegible]E+01	-.7793E+00	.1126E+00	.7229E+00
12	.3145E+01	.2230E+01	.7015E+00	.20[illegible]E+00	.20[illegible]E+01	.10[illegible]E+01	.100[illegible]E+01	.1284E+01	-.7851E+00	.9025E-01	.7016E+00
13	.3074E+01	.2194E+01	.7026E+00	.2[illegible]E+00	.2[illegible]E+01	.10[illegible]E+01	.1001E+01	.1302E+01	-.7923E+00	.8504E-01	.6782E+00
14	.3007E+01	.2162E+01	.7055E+00	.2377E+00	.2[illegible]E+01	.10[illegible]E+01	.1001E+01	.131[illegible]E+01	-.7793E+00	.4894E-01	.6565E+00
15	.2955E+01	.2137E+01	.709[illegible]E+00	.2[illegible]E+00	.1[illegible]E+01	.10[illegible]E+01	.10[illegible]E+01	.133[illegible]E+01	-.7455E+00	-.8720E-02	.6395E+00
16	.2921E+01	.2120E+01	.71[illegible]E+00	.2[illegible]E+00	.1986E+01	.10[illegible]E+01	.10[illegible]E+01	.13[illegible]E+01	-.6763E+00	-.1065E+00	.628[illegible]E+00
17	.2903E+01	.2111E+01	.718[illegible]E+00	.2[illegible]E+00	.1[illegible]E+01	.10[illegible]E+01	.10[illegible]E+01	.13[illegible]E+01	-.5973E+00	-.252[illegible]E+00	.622[illegible]E+00
18	.2897E+01	.2107E+01	.723[illegible]E+00	.2[illegible]E+00	.1988E+01	.10[illegible]E+01	.10[illegible]E+01	.1371E+01	-.415[illegible]E+00	-.3976E+00	.620[illegible]E+00
19	.2896E+01	.2106E+01	.7273E+00	.2559E+00	.1991E+01	.10[illegible]E+01	.1011E+01	.1374E+01	-.2860E+00	-.5367E+00	.620[illegible]E+00
20	.2893E+01	.2104E+01	.7302E+00	.2479E+00	.1989E+01	.10[illegible]E+01	.1011E+01	.1374E+01	-.1746E+00	-.6325E+00	.6189E+00
21	.2881E+01	.2096E+01	.7318E+00	.278[illegible]E+00	.1980E+01	.10[illegible]E+01	.10[illegible]E+01	.1372E+01	-.9265E-01	-.7029E+00	.6152E+00
22	.2858E+01	.2085E+01	.7327E+00	.2[illegible]E+00	.1[illegible]E+01	.10[illegible]E+01	.10[illegible]E+01	.1370E+01	-.3141E-01	-.7477E+00	.6076E+00
23	.2823E+01	.2066E+01	.73[illegible]E+00	.218[illegible]E+00	.1[illegible]E+01	.10[illegible]E+01	.10[illegible]E+01	.13[illegible]E+01	.1402E-01	-.7720E+00	.5963E+00
24	.2780E+01	.2041E+01	.7318E+00	.2[illegible]E+00	.1[illegible]E+01	.10[illegible]E+01	.9973E+00	.13[illegible]E+01	.5121E-01	-.7835E+00	.5823E+00
25	.2735E+01	.2011E+01	.72[illegible]E+00	.1[illegible]E+00	.186[illegible]E+01	.10[illegible]E+01	.9[illegible]E+00	.13[illegible]E+01	.8[illegible]E-01	-.78[illegible]E+00	.56[illegible]E+00
26	.268[illegible]E+01	.1977E+01	.72[illegible]E+00	.19[illegible]E+00	.18[illegible]E+01	.10[illegible]E+01	.98[illegible]E+00	.13[illegible]E+01	.11[illegible]E+00	-.77[illegible]E+00	.55[illegible]E+00
27	.263[illegible]E+01	.194[illegible]E+01	.72[illegible]E+00	.187[illegible]E+00	.17[illegible]E+01	.10[illegible]E+01	.98[illegible]E+00	.13[illegible]E+01	.1981E+00	-.75[illegible]E+00	.53[illegible]E+00
28	.2578E+01	.1899E+01	.7219E+00	.18[illegible]E+00	.17[illegible]E+01	.10[illegible]E+01	.98[illegible]E+00	.13[illegible]E+01	.1671E+00	-.7095E+00	.5161E+00
29	.2520E+01	.1855E+01	.72[illegible]E+00	.18[illegible]E+00	.1703E+01	.10[illegible]E+01	.98[illegible]E+00	.13[illegible]E+01	.2475E+00	-.6468E+00	.4969E+00
30	.2458E+01	.1811E+01	.73[illegible]E+00	.1763E+00	.1669E+01	.10[illegible]E+01	.987[illegible]E+00	.13[illegible]E+01	.30[illegible]E+00	-.6011E+00	.4768E+00
31	.2401E+01	.1772E+01	.738[illegible]E+00	.166[illegible]E+00	.1658E+01	.1078E+01	.99[illegible]E+00	.13[illegible]E+01	.37[illegible]E+00	-.54[illegible]E+00	.4582E+00
31											
32	.2361E+01	.1744E+01	.745[illegible]E+00	.1[illegible]E+00	.1619E+01	.10[illegible]E+01	.99[illegible]E+00	.13[illegible]E+01	.4407E+00	-.48[illegible]E+00	.445[illegible]E+00
33	.2350E+01	.1732E+01	.7418E+00	.1[illegible]E+00	.160[illegible]E+01	.10[illegible]E+01	.98[illegible]E+00	.13[illegible]E+01	.5101E+00	-.39[illegible]E+00	.4417E+00
34	.2374E+01	.1737E+01	.7325E+00	.1[illegible]E+00	.1597E+01	.10[illegible]E+01	.98[illegible]E+00	.13[illegible]E+01	.58[illegible]E+00	-.2791E+00	.4495E+00
35	.2428E+01	.1757E+01	.7175E+00	.131[illegible]E+00	.1607E+01	.11[illegible]E+01	.98[illegible]E+00	.12[illegible]E+01	.614[illegible]E+00	-.25[illegible]E+00	.4671E+00
36	.2499E+01	.1786E+01	.7018E+00	.14[illegible]E+00	.16[illegible]E+01	.11[illegible]E+01	.98[illegible]E+00	.1[illegible]E+01	.6[illegible]E+00	-.2[illegible]E+00	.490[illegible]E+00
37	.2565E+01	.1814E+01	.6911E+00	.16[illegible]E+00	.1657E+01	.11[illegible]E+01	.98[illegible]E+00	.1[illegible]E+01	.679[illegible]E+00	-.12[illegible]E+00	.5118E+00
38	.2598E+01	.1829E+01	.68[illegible]E+00	.1679E+00	.1682E+01	.111[illegible]E+01	.9[illegible]E+00	.12[illegible]E+01	.70[illegible]E+00	-.1470E+00	.52[illegible]E+00
39	.2581E+01	.1825E+01	.6987E+00	.20[illegible]E+00	.16[illegible]E+01	.111[illegible]E+01	.1[illegible]E+01	.1261E+01	.7325E+00	-.1395E+00	.5172E+00
40	.2507E+01	.1789E+01	.7186E+00	.2[illegible]E+00	.16[illegible]E+01	.111[illegible]E+01	.101[illegible]E+01	.13[illegible]E+01	.75[illegible]E+00	.5247E-01	.493[illegible]E+00
41	.2370E+01	.1719E+01	.7453E+00	.2[illegible]E+00	.1640E+01	.11[illegible]E+01	.101[illegible]E+01	.1387E+01	.7679E+00	.1685E+00	.4480E+00
42	.218[illegible]E+01	.162[illegible]E+01	.77[illegible]E+00	.215[illegible]E+00	.1557E+01	.111[illegible]E+01	.10[illegible]E+01	.1407E+01	.7781E+00	.1291E+00	.3867E+00
43	.19[illegible]E+01	.1510E+01	.79[illegible]E+00	.1[illegible]E+00	.14[illegible]E+01	.11[illegible]E+01	.10[illegible]E+01	.1[illegible]E+01	.7782E+00	.2287E+00	.3213E+00
44	.1817E+01	.1418E+01	.81[illegible]E+00	.1[illegible]E+00	.150[illegible]E+01	.111[illegible]E+01	.10[illegible]E+01	.15[illegible]E+01	.7643E+00	.24[illegible]E+00	.2[illegible]E+00
45	.1728E+01	.1507E+01	.8[illegible]E+00	.1[illegible]E+00	.1[illegible]E+01	.11[illegible]E+01	.10[illegible]E+01	.15[illegible]E+01	.79[illegible]E+00	.14[illegible]E+00	.2[illegible]E+00
46	.1728E+01	.1507E+01	.8[illegible]E+00	.1517E+00	.150[illegible]E+01	.11[illegible]E+01	.10[illegible]E+01	.1557E+01	.8249E+00	.108[illegible]E+00	.2[illegible]E+00

1ST	JACOBIAN	X	Y	DXI/DT	DXI/DX	DXI/DY	DETA/DT	DETA/DX	DETA/DY	ET/ETINF
1	.2963E+01	.1700E+02	.3225E+01	0.	-.2[illegible]E+00	0.	0.	-.5477E-02	-.1019E+02	.13[illegible]E+01
2	.4079E+01	.1403E+02	.32[illegible]E+01	.1051E-03	-.4[illegible]E+00	-.2[illegible]E-01	.835[illegible]E-04	-.6[illegible]E-04	-.1019E+02	.13[illegible]E+01
3	.5154E+01	.1201E+02	.32[illegible]E+01	.764[illegible]E-04	-.5[illegible]E+00	-.6[illegible]E-02	.5[illegible]E-04	-.5[illegible]E-01	-.1019E+02	.13[illegible]E+01
4	.7441E+01	.100[illegible]E+02	.3[illegible]E+01	.4[illegible]E-04	-.67[illegible]E+00	-.1[illegible]E+00	.[illegible]E-04	-.7[illegible]E-01	-.110[illegible]E+02	.1351E+01
5	.1176E+02	.9044E+01	.3[illegible]E+01	.2[illegible]E-04	-.1[illegible]E+01	.1[illegible]E+00	.1[illegible]E-04	.1[illegible]E+00	-.1112E+02	.1374E+01
6	.1569E+02	.8185E+01	.32[illegible]E+01	.15[illegible]E-04	.1475E+01	-.5[illegible]E+00	.[illegible]E-05	.4[illegible]E+00	-.1045E+02	.130[illegible]E+01
7	.2635E+02	.7712E+01	.3180E+01	.716[illegible]E-05	-.248[illegible]E+01	.10[illegible]E+01	.51[illegible]E-06	.10[illegible]E+01	-.9935E+01	.1412E+01
8	.3547E+02	.7434E+01	.310[illegible]E+01	.47[illegible]E-05	-.37[illegible]E+01	.10[illegible]E+01	.14[illegible]E-05	.2[illegible]E+01	-.8558E+01	.14[illegible]E+01
9	.3988E+02	.7229E+01	.3013E+01	.3[illegible]E-05	-.4[illegible]E+01	.4[illegible]E+00	.1[illegible]E-05	.2[illegible]E+01	-.7769E+01	.140[illegible]E+01
10	.3967E+02	.7044E+01	.27[illegible]E+01	.39[illegible]E-05	-.5[illegible]E+01	.4[illegible]E+00	.8[illegible]E-06	.[illegible]E+01	-.7190E+01	.142[illegible]E+01
11	.3830E+02	.6867E+01	.26[illegible]E+01	.33[illegible]E-05	-.6[illegible]E+01	.11[illegible]E+01	.[illegible]E-06	.[illegible]E+01	-.66[illegible]E+01	.1419E+01
12	.3725E+02	.6697E+01	.2[illegible]E+01	.4[illegible]E-05	.6[illegible]E+01	.1[illegible]E+01	.1[illegible]E-06	.2[illegible]E+01	-.6[illegible]E+01	.1411E+01
13	.3686E+02	.6530E+01	.27[illegible]E+01	.4[illegible]E-05	.7[illegible]E+01	.[illegible]E+01	.1[illegible]E-07	.2[illegible]E+01	-.6011E+01	.1401E+01
14	.3735E+02	.6370E+01	.2[illegible]E+01	.4[illegible]E-05	.78[illegible]E+01	.5[illegible]E+00	.[illegible]E-07	.2[illegible]E+01	-.58[illegible]E+01	.1391E+01
15	.3883E+02	.6217E+01	.2[illegible]E+01	.4[illegible]E-05	.85[illegible]E+01	.5[illegible]E+00	.[illegible]E-06	.2[illegible]E+01	-.57[illegible]E+01	.1364E+01

16	.4038E+02	.6065E+01	.2561E+01	.3960E-05	-.8528E+01	.6640E+01	-.6577E-06	.1665E+01	-.6032E+01	.1378E+01
17	.4127E+02	.5919E+01	.2529E+01	.3716E-05	-.8172E+01	.8077E+01	-.1155E-05	.9173E+00	-.5952E+01	.1376E+01
18	.4050E+02	.5777E+01	.2517E+01	.3672E-05	-.7386E+01	.9176E+01	-.1441E-05	.1624E+00	-.5688E+01	.1375E+01
19	.3885E+02	.5638E+01	.2521E+01	.3765E-05	-.6386E+01	.9940E+01	-.1524E-05	[illegible]	-.5261E+01	.1375E+01
20	.3642E+02	.5506E+01	.2544E+01	.3771E-05	-.5538E+01	.1047E+02	.1676E-05	-.1188E+01	-.4555E+01	.1375E+01
21	.3428E+02	.5389E+01	.2586E+01	.4183E-05	-.4594E+01	.1051E+02	.1767E-05	-.1679E+01	-.3865E+01	.1373E+01
22	.3219E+02	.5281E+01	.2644E+01	.4376E-05	-.3558E+01	.1049E+02	.2171E-05	-.2047E+01	-.3166E+01	.1371E+01
23	.3043E+02	.5192E+01	.2715E+01	[illegible]	-.2913E+01	[illegible]	[illegible]	-.2374E+01	-.2545E+01	.1367E+01
24	.2864E+02	.5113E+01	.2795E+01	.3784E-05	-.2162E+01	.9744E+01	.5874E-05	-.2475E+01	-.2068E+01	.1365E+01
25	.2681E+02	.5046E+01	.2886E+01	.2793E-05	-.1571E+01	.9418E+01	.4357E-05	-.2581E+01	-.1594E+01	[illegible]
26	.2494E+02	.4994E+01	.2987E+01	.1788E-05	-.1018E+01	[illegible]	.3757E-05	-.2653E+01	-.1067E+01	.1357E+01
27	.2312E+02	.4959E+01	.3077E+01	.7578E-06	-.4347E+00	.8677E+01	.1515E-05	-.2650E+01	-.5946E+00	.1357E+01
28	.2157E+02	.4943E+01	.3215E+01	.9215E-06	.2176E-01	.8377E+01	.2657E-05	-.2575E+01	.1710E+00	.1358E+01
29	.2036E+02	.4975E+01	.3358E+01	.2797E-05	.6403E+00	.8048E+01	.6195E-05	-.2468E+01	.8406E+00	.1356E+01
30	.1920E+02	.5026E+01	.3457E+01	.6428E-05	.1299E+01	.7644E+01	.1114E-04	-.2316E+01	.1153E+01	.1357E+01
31	.1797E+02	.5035E+01	.3577E+01	.1146E-04	.1950E+01	.7178E+01	.1604E-04	-.2111E+01	.1440E+01	.1355E+01
32	.1670E+02	.5186E+01	.3692E+01	.1618E-04	.2591E+01	.6641E+01	.1897E-04	-.1873E+01	.1675E+01	.1354E+01
33	.1541E+02	.5296E+01	.3801E+01	.1961E-04	.3171E+01	.5977E+01	.1966E-04	-.1572E+01	.1908E+01	.1357E+01
34	.1417E+02	.5433E+01	.3886E+01	.2178E-04	.3701E+01	.5186E+01	.1678E-04	-.1224E+01	.2112E+01	.1367E+01
35	.1247E+02	.5594E+01	.3974E+01	.2045E-04	.4006E+01	.4213E+01	[illegible]	-.1137E+01	.1926E+01	.1382E+01
36	.1098E+02	.5742E+01	.4077E+01	.2734E-04	.4023E+01	.3425E+01	.8355E-05	-.1045E+01	.1810E+01	.1399E+01
37	.9560E+01	.5924E+01	.4164E+01	.3050E-04	.4016E+01	.2574E+01	.5837E-05	-.7978E+00	.1869E+01	.1414E+01
38	.7979E+01	.6133E+01	.4244E+01	.3431E-04	.3756E+01	.1813E+01	.4755E-05	-.8762E+00	.1711E+01	.1420E+01
39	.6542E+01	.6353E+01	.4384E+01	.3724E-04	.3550E+01	.1265E+01	.4052E-05	-.6504E+00	.1624E+01	.1416E+01
40	.5510E+01	.6629E+01	.4504E+01	.3718E-04	.3020E+01	.8147E+00	.1850E-05	-.4035E+00	.1714E+01	.1402E+01
41	.4725E+01	.6975E+01	.4531E+01	.3439E-04	.2639E+01	.3171E+00	.3171E-05	-.1786E+00	.1777E+01	.1378E+01
42	.3687E+01	.7381E+01	.4563E+01	.3354E-04	.2188E+01	.1561E-01	-.1174E-04	-.1872E+00	.1687E+01	.1347E+01
43	.3070E+01	.7890E+01	.4634E+01	.2594E-04	.1777E+01	-.1794E+00	.2154E-04	.7526E-01	.1720E+01	.1313E+01
44	.2680E+01	.8502E+01	.4514E+01	.2701E-04	.1559E+01	-.5134E+00	[illegible]	.1742E+00	.1966E+01	.1285E+01
45	.2477E+01	.9353E+01	.4565E+01	.2608E-04	.1046E+01	-.2148E+00	.3407E-04	-.3584E-01	.2376E+01	.1264E+01
46	.2093E+01	.1042E+02	.4543E+01	0.	.8512E+00	[illegible]	0.	-.1279E+00	.2456E+01	.1264E+01

SECOND INDEX= 9

1ST	P/PINF	RHO/RINF	U/QINF	V/QINF	ET/ETINF	S/SINF	HT/HTINF	MACH	UBAR/QINF	VBAR/QINF	CP
1	.2485E+01	.1883E+01	.8015E+00	-.1830E-01	.1784E+01	.1025E+01	.1008E+01	.1458E+01	-.8015E+00	.1798E-01	.4858E+00
2	.2486E+01	.1883E+01	.8014E+00	-.1635E-01	.1784E+01	.1025E+01	.1008E+01	.1458E+01	-.8004E+00	.1837E-01	.4860E+00
3	.2554E+01	.1908E+01	.7988E+00	-.1497E-01	.1810E+01	[illegible]	.1007E+01	.1445E+01	-.7987E+00	.8874E-02	.5017E+00
4	.2634E+01	.1959E+01	.7928E+00	-.5098E-02	.1861E+01	.1027E+01	.1016E+01	.1418E+01	-.7927E+00	-.4335E-02	.5344E+00
5	.2770E+01	.2029E+01	.7813E+00	.1713E-01	.1926E+01	.1024E+01	.1014E+01	.1398E+01	-.7819E+00	-.7187E-02	.5790E+00
6	.2914E+01	.2103E+01	.7673E+00	.4590E-01	[illegible]	.1024E+01	.1015E+01	[illegible]	-.7695E+00	-.4042E-02	.6260E+00
7	.3034E+01	.2167E+01	[illegible]	.7066E-01	.2044E+01	.1028E+01	.1018E+01	.1374E+01	-.7477E+00	.5934E-01	.6651E+00
8	.3102E+01	.2205E+01	.7377E+00	.1124E+00	.2071E+01	[illegible]	[illegible]	.1315E+01	-.7644E+00	.1644E+00	.6876E+00
9	.3114E+01	.2214E+01	.7262E+00	.1427E+00	.2068E+01	[illegible]	[illegible]	[illegible]	-.8044E+00	.1974E+00	.6915E+00
10	.3064E+01	.2201E+01	.7187E+00	.1704E+00	[illegible]	[illegible]	[illegible]	.1504E+01	-.8273E+00	.1771E+00	.6816E+00
11	.3033E+01	.2176E+01	.7152E+00	.1955E+00	[illegible]	[illegible]	[illegible]	[illegible]	-.8418E+00	.1614E+00	.6647E+00
12	.2978E+01	.2149E+01	.7147E+00	.2175E+00	[illegible]	[illegible]	[illegible]	[illegible]	-.8428E+00	.1352E+00	.6468E+00
13	.2932E+01	.2127E+01	.7160E+00	.2457E+00	[illegible]	[illegible]	[illegible]	[illegible]	-.8522E+00	.9776E-01	.6320E+00
14	.2904E+01	.2113E+01	.7181E+00	.2488E+00	[illegible]	[illegible]	[illegible]	[illegible]	-.7621E+00	.2519E-02	.6228E+00
15	.2895E+01	.2105E+01	[illegible]	.2524E+00	[illegible]	[illegible]	[illegible]	[illegible]	-.6946E+00	-.1345E+00	.6197E+00
16	.2899E+01	.2111E+01	[illegible]	.2586E+00	[illegible]	[illegible]	[illegible]	[illegible]	-.5684E+00	-.2855E+00	.6211E+00
17	.2909E+01	.2115E+01	[illegible]	.2564E+00	[illegible]	[illegible]	[illegible]	[illegible]	-.3835E+00	-.4375E+00	.6244E+00
18	.2916E+01	.2118E+01	[illegible]	.2407E+00	[illegible]	[illegible]	[illegible]	[illegible]	-.2587E+00	-.5417E+00	[illegible]
19	.2912E+01	.2115E+01	.7267E+00	.2428E+00	[illegible]	[illegible]	[illegible]	[illegible]	-.1804E+00	-.6148E+00	.6258E+00
20	.2894E+01	.2104E+01	.7277E+00	.2358E+00	[illegible]	[illegible]	[illegible]	[illegible]	-.1217E+00	-.6657E+00	.6194E+00
21	.2860E+01	.2084E+01	.7280E+00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-.7037E+00	.6084E+00
22	.2813E+01	.2070E+01	.7297E+00	.2154E+00	[illegible]	[illegible]	[illegible]	[illegible]	-.5774E-01	-.7258E+00	.5904E+00
23	.2755E+01	[illegible]	.7310E+00	.2057E+00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-.7407E+00	.5741E+00
24	.2691E+01	[illegible]	.7321E+00	.1965E+00	[illegible]	[illegible]	[illegible]	[illegible]	-.2337E-01	-.7487E+00	.5572E+00
25	.2624E+01	.1951E+01	.7331E+00	.1874E+00	[illegible]	[illegible]	[illegible]	[illegible]	-.9785E-02	-.7554E+00	.5311E+00
26	.2556E+01	.1909E+01	.7335E+00	.1797E+00	.1749E+01	[illegible]	[illegible]	[illegible]	.4455E-02	-.7560E+00	.5085E+00
27	.2490E+01	.1865E+01	.7354E+00	.1734E+00	.1705E+01	.1001E+01	.9767E+00	[illegible]	.2135E-01	-.7575E+00	.4873E+00
28	.2420E+01	.1820E+01	.7378E+00	.1684E+00	.1665E+01	[illegible]	[illegible]	.1576E+01	.4298E-01	-.7502E+00	.4665E+00
29	.2364E+01	.1775E+01	.7426E+00	.1646E+00	.1628E+01	[illegible]	[illegible]	.1577E+01	.8527E-01	-.7307E+00	.4459E+00
30	.2298E+01	.1729E+01	.7500E+00	.1573E+00	.1571E+01	[illegible]	[illegible]	.1564E+01	.1291E+00	-.7117E+00	.4246E+00
31	.2231E+01	.1683E+01	.7588E+00	.1474E+00	.1554E+01	.1027E+01	[illegible]	.1403E+01	.1864E+00	-.6849E+00	.4027E+00
32	.2168E+01	.1640E+01	.7644E+00	.1358E+00	.1524E+01	[illegible]	[illegible]	.1414E+01	.2596E+00	-.6474E+00	.3919E+00
33	.2115E+01	.1605E+01	.7704E+00	.1190E+00	.1488E+01	.1071E+01	.9807E+00	.1412E+01	.3076E+00	-.5907E+00	.3648E+00

34	.2082E+01	.1580E+01	.7676E+00	.1062E+00	.1459E+01	.1098E+01	.9837E+00	.1411E+01	.3894E+00	-.5093E+00	.3540E+00
35	.2074E+01	.1567E+01	.7583E+00	.9962E-01	.1437E+01	.1106E+01	.9794E+00	.1393E+01	.4496E+00	-.4712E+00	.3513E+00
36	.2093E+01	.1568E+01	.7450E+00	.1031E+00	.1429E+01	.1115E+01	.9761E+00	.1361E+01	.5076E+00	-.4108E+00	.3574E+00
37	.2131E+01	.1580E+01	.7322E+00	.1172E+00	.1437E+01	.1123E+01	.9763E+00	.1334E+01	.5843E+00	-.3025E+00	.3699E+00
38	.2173E+01	.1596E+01	.7247E+00	.1380E+00	.1456E+01	.1129E+01	.9804E+00	.1322E+01	.6279E+00	-.2365E+00	.3835E+00
39	.2202E+01	.1610E+01	.7257E+00	.1637E+00	.1481E+01	.1131E+01	.9857E+00	.1329E+01	.6749E+00	-.2513E+00	.3932E+00
40	.2205E+01	.1611E+01	.7358E+00	.1856E+00	.1501E+01	.1134E+01	.9965E+00	.1356E+01	.7529E+00	-.2094E-01	.3935E+00
41	.2160E+01	.1591E+01	.7528E+00	.1994E+00	.1501E+01	.1137E+01	.1007E+01	.1397E+01	.7960E+00	.9360E-01	.3795E+00
42	.2073E+01	.1547E+01	.7732E+00	.2018E+00	.1476E+01	.1134E+01	.1013E+01	.1443E+01	.8056E+00	.9799E-01	.3509E+00
43	.1964E+01	.1490E+01	.7924E+00	.1943E+00	.1426E+01	.1136E+01	.1014E+01	.1485E+01	.8375E+00	.2951E+00	.3152E+00
44	.1863E+01	.1436E+01	.8062E+00	.1817E+00	.1377E+01	.1125E+01	.1011E+01	.1516E+01	.8118E+00	.3528E+00	.2821E+00
45	.1803E+01	.1403E+01	.8125E+00	.1720E+00	.1343E+01	.1124E+01	.1008E+01	.1531E+01	.7963E+00	.2168E+00	.2626E+00
46	.1803E+01	.1403E+01	.8126E+00	.1720E+00	.1343E+01	.1122E+01	.1008E+01	.1531E+01	.8146E+00	.1152E+00	.2626E+00

1ST	JACOBIAN	X	Y	DXI/DT	DXI/DX	DXI/DY	DETA/DT	DETA/DX	DETA/DY	EI/EIINF
1	.2565E+01	.1700E+02	.3117E+01	0.	-.2917E+00	-.1469E-12	0.	-.4183E-02	-.8863E+01	.1326E+01
2	.3544E+01	.1404E+02	.3118E+01	.1145E-03	-.4006E+00	-.1656E-01	.8700E-04	-.4890E-04	-.8848E+01	.1320E+01
3	.4490E+01	.1201E+02	.3117E+01	.8703E-04	-.5067E+00	-.5058E-02	.6009E-04	-.6746E-01	-.8863E+01	.1328E+01
4	.6498E+01	.1009E+02	.3148E+01	.5559E-04	-.6777E+00	-.7769E-01	.3178E-04	-.9604E-01	-.9593E+01	.1344E+01
5	.1041E+02	.9053E+01	.3147E+01	.2775E-04	-.1068E+01	-.8495E-01	.1249E-04	.1241E+00	-.9758E+01	.1365E+01
6	.1353E+02	.8219E+01	.3124E+01	.1741E-04	-.1519E+01	-.4113E+00	.4486E-05	.4817E+00	-.8812E+01	.1386E+01
7	.2202E+02	.7750E+01	.3076E+01	.8692E-05	-.2501E+01	-.7376E+00	.5609E-06	.1514E+01	-.8398E+01	.1400E+01
8	.2874E+02	.7461E+01	.2984E+01	.5659E-05	-.3667E+01	-.5571E+00	-.2655E-06	.2657E+01	-.7418E+01	.1407E+01
9	.3189E+02	.7234E+01	.2877E+01	.4706E-05	-.4673E+01	.1673E+00	-.1105E-06	.3217E+01	-.6938E+01	.1407E+01
10	.3175E+02	.7026E+01	.2783E+01	.4689E-05	-.5341E+01	.1036E+01	.3447E-06	.2984E+01	-.6520E+01	.1401E+01
11	.3088E+02	.6823E+01	.2689E+01	.4949E-05	-.5890E+01	.1965E+01	.7368E-06	.2817E+01	-.6181E+01	.1394E+01
12	.3030E+02	.6625E+01	.2606E+01	.5196E-05	-.6393E+01	.2981E+01	.8677E-06	.2634E+01	-.5973E+01	.1388E+01
13	.3010E+02	.6427E+01	.2519E+01	.5321E-05	-.6821E+01	.4157E+01	.7053E-06	.2475E+01	-.5919E+01	.1379E+01
14	.3020E+02	.6232E+01	.2436E+01	.5369E-05	-.7115E+01	.5548E+01	.2905E-06	.2035E+01	-.5830E+01	.1374E+01
15	.2999E+02	.6013E+01	.2381E+01	.5192E-05	-.6960E+01	.6758E+01	-.3008E-06	.1459E+01	-.5727E+01	.1373E+01
16	.2944E+02	.5850E+01	.2335E+01	.5072E-05	-.6546E+01	.7968E+01	.9601E-06	.8349E+00	-.5505E+01	.1374E+01
17	.2836E+02	.5669E+01	.2324E+01	.5036E-05	-.5855E+01	.8554E+01	-.1521E-05	.1222E+00	-.5022E+01	.1376E+01
18	.2667E+02	.5496E+01	.2330E+01	.5178E-05	-.5134E+01	.8656E+01	-.1807E-05	-.3729E+00	-.4559E+01	.1377E+01
19	.2480E+02	.5328E+01	.2352E+01	.5469E-05	-.4475E+01	.8914E+01	-.1981E-05	-.7531E+00	-.4041E+01	.1377E+01
20	.2286E+02	.5170E+01	.2391E+01	.5723E-05	-.3916E+01	.8894E+01	-.1904E-05	-.1102E+01	-.3353E+01	.1375E+01
21	.2134E+02	.5034E+01	.2448E+01	.6410E-05	-.3446E+01	.8676E+01	-.1638E-05	-.1366E+01	-.2789E+01	.1371E+01
22	.1991E+02	.4909E+01	.2518E+01	.6919E-05	-.3055E+01	.8413E+01	.1335E-05	-.1556E+01	-.2246E+01	.1366E+01
23	.1882E+02	.4808E+01	.2604E+01	.7196E-05	-.2694E+01	.8173E+01	.1184E-05	-.1711E+01	-.1795E+01	.1359E+01
24	.1769E+02	.4718E+01	.2706E+01	.7366E-05	-.2364E+01	.7918E+01	[illegible]	-.1787E+01	-.1513E+01	.1352E+01
25	.1654E+02	.4638E+01	.2808E+01	.7088E-05	-.2057E+01	.7648E+01	[illegible]	-.1856E+01	-.1210E+01	.1345E+01
26	.1536E+02	.4572E+01	.2929E+01	.6724E-05	-.1754E+01	.7378E+01	[illegible]	-.1876E+01	-.9034E+00	.1339E+01
27	.1419E+02	.4520E+01	.3049E+01	.6338E-05	-.1460E+01	.7069E+01	[illegible]	-.1859E+01	-.6026E+00	.1335E+01
28	.1313E+02	.4487E+01	.3188E+01	.6235E-05	-.1163E+01	.6618E+01	[illegible]	[illegible]	-.7993E-01	.1333E+01
29	.1229E+02	.4508E+01	.3340E+01	.6866E-05	-.7468E+00	.6572E+01	[illegible]	-.1912E+01	.3882E+00	.1332E+01
30	.1144E+02	.4550E+01	.3499E+01	.8764E-05	-.3045E+00	.6354E+01	.2515E-07	-.1844E+01	.5921E+00	.1330E+01
31	.1057E+02	.4611E+01	.3665E+01	.1207E-04	.1511E+00	.5546E+01	[illegible]	-.1743E+01	.7922E+00	.1326E+01
32	.9692E+01	.4700E+01	.3829E+01	.1611E-04	.6271E+00	.5619E+01	[illegible]	-.1617E+01	.9683E+00	.1322E+01
33	.8825E+01	.4811E+01	.3996E+01	.2018E-04	.1075E+01	.5218E+01	.9758E-05	-.1445E+01	.1155E+01	.1318E+01
34	.7989E+01	.4962E+01	.4157E+01	.2391E-04	.1564E+01	.4717E+01	.9948E-05	-.1270E+01	.1333E+01	.1318E+01
35	.6984E+01	.5145E+01	.4309E+01	.2874E-04	.1748E+01	.4060E+01	.9064E-05	-.1119E+01	.1235E+01	.1324E+01
36	.6141E+01	.5315E+01	.4477E+01	.3019E-04	.2191E+01	.3586E+01	.8264E-05	-.9786E+00	.1214E+01	.1335E+01
37	.5356E+01	.5540E+01	.4628E+01	.4061E-04	.2356E+01	.2918E+01	.9055E-05	-.7938E+00	.1287E+01	.1347E+01
38	.4476E+01	.5796E+01	.4775E+01	.4887E-04	.2373E+01	.2274E+01	.1103E-04	-.7796E+00	.1140E+01	.1361E+01
39	.3704E+01	.6056E+01	.4976E+01	.5671E-04	.2271E+01	.1776E+01	.1464E-04	-.6884E+00	.1085E+01	.1368E+01
40	.3163E+01	.6363E+01	.5147E+01	.6012E-04	.2186E+01	.1364E+01	.1464E-04	-.5467E+00	.1234E+01	.1367E+01
41	.2723E+01	.6830E+01	.5195E+01	.5917E-04	.2003E+01	.8176E+00	.8749E-05	-.1812E+00	.1272E+01	.1358E+01
42	.2166E+01	.7318E+01	.5280E+01	.5826E-04	.1468E+01	[illegible]	.4852E-05	-.1544E+00	.1168E+01	.1346E+01
43	.1930E+01	.7899E+01	.5338E+01	.4781E-04	.1578E+01	[illegible]	.2541E-04	.1534E+00	.1230E+01	.1316E+01
44	.1789E+01	.8595E+01	.5123E+01	.4624E-04	.1295E+01	[illegible]	[illegible]	[illegible]	.1367E+01	.1298E+01
45	.1839E+01	.9427E+01	.5607E+01	.3579E-04	.1091E+01	.8753E-01	[illegible]	[illegible]	.1679E+01	[illegible]
46	.1672E+01	.1042E+02	.5022E+01	0.	.9510E+00	0.	0.	-.1278E+00	.1795E+01	.1285E+01

SECOND INDEX= 10

1ST	P/PINF	RHO/RINF	U/QINF	V/QINF	ET/ETINF	S/SINF	HT/HTINF	MACH	UBAR/QINF	VBAR/QINF	CP
1	.2472E+01	.1878E+01	.8062E+00	-.2078E-01	.1784E+01	[illegible]	[illegible]	.1409E+01	-.8061E+00	.2053E-01	.4814E+00
2	.2473E+01	.1878E+01	.8061E+00	-.2077E-01	.1784E+01	[illegible]	[illegible]	.1404E+01	-.8053E+00	.2078E-01	.4816E+00
3	.2514E+01	.1809E+01	.8030E+00	[illegible]	.1804E+01	[illegible]	[illegible]	.1404E+01	-.8035E+00	.9253E-02	.4950E+00

4	.2599E+01	.1943E+01	.7974E+00	-.5733E-02	.1849E+01	.1026E+01	.1010E+01	.1441E+01	-.7978E+00	-.5374E-02	.5228E+00
5	.2713E+01	.2001E+01	.7875E+00	.1577E-01	.1909E+01	.1028E+01	.1019E+01	.1414E+01	-.7877E+00	-.1511E-02	.5603E+00
6	.2830E+01	.2061E+01	.7748E+00	.4598E-01	.1956E+01	.1028E+01	.1014E+01	.1406E+01	-.7756E+00	.5790E-02	.5986E+00
7	.2920E+01	.2109E+01	.7612E+00	.8157E-01	.1994E+01	.1027E+01	.1012E+01	.1400E+01	-.7652E+00	.7175E-01	.6279E+00
8	.2961E+01	.2134E+01	.7485E+00	.1181E+00	.2004E+01	.1025E+01	.1008E+01	.1394E+01	-.8081E+00	.1921E+00	.6415E+00
9	.2954E+01	.2134E+01	.7384E+00	.1526E+00	.1994E+01	.1022E+01	.1004E+01	.1359E+01	-.8695E+00	.2361E+00	.6391E+00
10	.2918E+01	.2119E+01	.7319E+00	.1856E+00	.1977E+01	.1020E+01	.1001E+01	.1390E+01	-.8969E+00	.2218E+00	.6274E+00
11	.2879E+01	.2101E+01	.7287E+00	.2104E+00	.1964E+01	.1018E+01	.9975E+00	.1390E+01	-.9069E+00	.1976E+00	.6144E+00
12	.2854E+01	.2089E+01	.7276E+00	.2314E+00	.1955E+01	.1017E+01	.1001E+01	.1386E+01	-.8796E+00	.1407E+00	.6058E+00
13	.2847E+01	.2087E+01	.7275E+00	.2456E+00	.1958E+01	.1017E+01	.1003E+01	.1374E+01	-.8075E+00	.4564E-01	.6044E+00
14	.2862E+01	.2094E+01	.7269E+00	.2541E+00	.1974E+01	.1017E+01	.1004E+01	.1377E+01	-.6535E+00	-.1272E+00	.6087E+00
15	.2887E+01	.2107E+01	.7260E+00	.2565E+00	.1986E+01	.1017E+01	.1008E+01	.1375E+01	-.4886E+00	-.3010E+00	.6173E+00
16	.2913E+01	.2119E+01	.7249E+00	.2544E+00	.1998E+01	.1018E+01	.1009E+01	.1369E+01	-.3557E+00	-.4355E+00	.6257E+00
17	.2928E+01	.2124E+01	.7239E+00	.2483E+00	.2003E+01	.1019E+01	.1003E+01	.1363E+01	-.2568E+00	-.5323E+00	.6304E+00
18	.2922E+01	.2120E+01	.7235E+00	.2413E+00	.1994E+01	.1020E+01	.1007E+01	.1358E+01	-.2059E+00	-.5797E+00	.6287E+00
19	.2895E+01	.2105E+01	.7242E+00	.2324E+00	.1973E+01	.1023E+01	.1008E+01	.1355E+01	-.1804E+00	-.6078E+00	.6198E+00
20	.2847E+01	.2078E+01	.7260E+00	.2233E+00	.1944E+01	.1024E+01	.1006E+01	.1356E+01	-.1571E+00	-.6355E+00	.6059E+00
21	.2782E+01	.2043E+01	.7290E+00	.2179E+00	.1900E+01	.1025E+01	.9937E+00	.1361E+01	-.1428E+00	-.6575E+00	.5828E+00
22	.2707E+01	.2005E+01	.7328E+00	.2035E+00	.1855E+01	.1026E+01	.9915E+00	.1367E+01	-.1396E+00	-.6784E+00	.5585E+00
23	.2626E+01	.1957E+01	.7371E+00	.1914E+00	.1807E+01	.1026E+01	.9872E+00	.1376E+01	-.1279E+00	-.6995E+00	.5319E+00
24	.2544E+01	.1910E+01	.7418E+00	.1851E+00	.1754E+01	.1028E+01	.9835E+00	.1385E+01	-.1290E+00	-.7094E+00	.5049E+00
25	.2461E+01	.1861E+01	.7465E+00	.1759E+00	.1709E+01	.1031E+01	.9798E+00	.1394E+01	-.1306E+00	-.7216E+00	.4777E+00
26	.2378E+01	.1811E+01	.7516E+00	.1670E+00	.1660E+01	.1035E+01	.9774E+00	.1404E+01	-.1326E+00	-.7362E+00	.4507E+00
27	.2296E+01	.1760E+01	.7574E+00	.1584E+00	.1613E+01	.1041E+01	.9757E+00	.1416E+01	-.1344E+00	-.7531E+00	.4240E+00
28	.2216E+01	.1708E+01	.7643E+00	.1499E+00	.1567E+01	.1048E+01	.9756E+00	.1429E+01	-.1378E+00	-.7929E+00	.3978E+00
29	.2136E+01	.1654E+01	.7728E+00	.1409E+00	.1523E+01	.1056E+01	.9771E+00	.1445E+01	-.1308E+00	-.8263E+00	.3717E+00
30	.2055E+01	.1599E+01	.7850E+00	.1306E+00	.1479E+01	.1065E+01	.9792E+00	.1464E+01	-.1117E+00	-.8346E+00	.3450E+00
31	.1972E+01	.1545E+01	.7943E+00	.1184E+00	.1435E+01	.1073E+01	.9824E+00	.1485E+01	-.8703E-01	-.8398E+00	.3181E+00
32	.1892E+01	.1493E+01	.8050E+00	.1043E+00	.1391E+01	.1084E+01	.9848E+00	.1507E+01	-.4915E-01	-.8348E+00	.2917E+00
33	.1819E+01	.1446E+01	.8130E+00	.8908E-01	.1350E+01	.1085E+01	.9855E+00	.1529E+01	-.4418E-03	-.8181E+00	.2678E+00
34	.1760E+01	.1408E+01	.8156E+00	.7475E-01	.1312E+01	.1091E+01	.9803E+00	.1551E+01	.7363E-01	-.7763E+00	.2487E+00
35	.1724E+01	.1381E+01	.8122E+00	.6449E-01	.1280E+01	.1096E+01	.9755E+00	.1524E+01	.1554E+00	-.7291E+00	.2366E+00
36	.1715E+01	.1370E+01	.8026E+00	.6262E-01	.1260E+01	.1106E+01	.9706E+00	.1504E+01	.2378E+00	-.6651E+00	.2339E+00
37	.1736E+01	.1374E+01	.7903E+00	.7026E-01	.1257E+01	.1113E+01	.9680E+00	.1475E+01	.3531E+00	-.5641E+00	.2406E+00
38	.1779E+01	.1391E+01	.7788E+00	.8824E-01	.1270E+01	.1119E+01	.9694E+00	.1448E+01	.4386E+00	-.5255E+00	.2549E+00
39	.1835E+01	.1416E+01	.7717E+00	.1134E+00	.1294E+01	.1118E+01	.9756E+00	.1453E+01	.5246E+00	-.4431E+00	.2731E+00
40	.1886E+01	.1441E+01	.7711E+00	.1406E+00	.1331E+01	.1112E+01	.9859E+00	.1453E+01	.6786E+00	-.1861E+00	.2899E+00
41	.1915E+01	.1456E+01	.7767E+00	.1635E+00	.1364E+01	.1115E+01	.9958E+00	.1446E+01	.7668E+00	-.5836E-01	.2992E+00
42	.1913E+01	.1456E+01	.7867E+00	.1786E+00	.1381E+01	.1131E+01	.1007E+01	.1472E+01	.8108E+00	.1256E-01	.2987E+00
43	.1886E+01	.1443E+01	.7977E+00	.1851E+00	.1381E+01	.1124E+01	.1011E+01	.1497E+01	.9414E+00	.3564E+00	.2899E+00
44	.1849E+01	.1423E+01	.8068E+00	.1848E+00	.1368E+01	.1128E+01	.1013E+01	.1518E+01	.9315E+00	.4893E+00	.2775E+00
45	.1821E+01	.1409E+01	.8115E+00	.1824E+00	.1355E+01	.1127E+01	.1014E+01	.1529E+01	.8304E+00	.3177E+00	.2686E+00
46	.1821E+01	.1409E+01	.8116E+00	.1820E+00	.1355E+01	.1127E+01	.1013E+01	.1529E+01	.8145E+00	.1128E+00	.2685E+00

1ST	JACOBIAN	X	Y	DXI/DT	DXI/DX	DXI/DY	DETA/DT	DETA/DX	DETA/DY	EI/EIINF
1	.2353E+01	.1700E+02	.2998E+01	0.	-.2024E+00	-.2675E-12	0.	-.2626E-02	-.8016E+01	.1316E+01
2	.3216E+01	.1404E+02	.2998E+01	.1167E-03	-.4004E+00	-.1129E-01	.8276E-04	-.3214E-04	-.8026E+01	.1316E+01
3	.4083E+01	.1201E+02	.2998E+01	.8714E-04	-.5075E+00	-.3174E-02	.5864E-04	-.8017E-01	-.8040E+01	.1351E+01
4	.5916E+01	.1010E+02	.3038E+01	.5598E-04	-.6790E+00	.4882E-01	.3154E-04	-.1213E+00	-.8721E+01	.1358E+01
5	.9576E+01	.9060E+01	.3052E+01	.2861E-04	-.1077E+01	-.5044E-01	.1549E-04	.1648E+00	-.8884E+01	.1355E+01
6	.1224E+02	.8245E+01	.3004E+01	.1870E-04	-.1545E+01	-.2514E+00	.6474E-05	.5246E+00	-.7838E+01	.1373E+01
7	.1939E+02	.7779E+01	.2953E+01	.9906E-05	-.2507E+01	-.3974E+00	.2411E-05	.1513E+01	-.7494E+01	.1385E+01
8	.2481E+02	.7473E+01	.2847E+01	.6808E-05	-.3557E+01	-.4363E-01	.1974E-05	.2888E+01	-.6949E+01	.1388E+01
9	.2739E+02	.7219E+01	.2720E+01	.5817E-05	-.4434E+01	.7874E+00	.1534E-05	.3311E+01	-.6766E+01	.1384E+01
10	.2750E+02	.6979E+01	.2603E+01	.5775E-05	-.5041E+01	.1764E+01	[illegible]	.3213E+01	-.6589E+01	.1377E+01
11	.2715E+02	.6739E+01	.2487E+01	.5933E-05	-.5546E+01	.2568E+01	.2267E-05	.3057E+01	-.6529E+01	.1370E+01
12	.2685E+02	.6459E+01	.2378E+01	.6048E-05	-.5925E+01	[illegible]	[illegible]	.2781E+01	-.6512E+01	.1364E+01
13	.2640E+02	.6234E+01	.2279E+01	.6064E-05	-.6075E+01	[illegible]	[illegible]	.2424E+01	-.6557E+01	.1364E+01
14	.2561E+02	.6005E+01	.2195E+01	.6104E-05	-.5964E+01	.6887E+01	[illegible]	.1642E+01	-.6246E+01	.1366E+01
15	.2410E+02	.5767E+01	.2147E+01	.6345E-05	-.5184E+01	.7588E+01	[illegible]	.9473E+00	-.5705E+01	.1371E+01
16	.2252E+02	.5529E+01	.2116E+01	.6435E-05	-.5065E+01	.8711E+01	[illegible]	.3534E+00	-.5067E+01	.1375E+01
17	.2104E+02	.5317E+01	.2116E+01	.6704E-05	-.4521E+01	.8154E+01	.1184E-05	.1678E+00	-.4358E+01	.1378E+01
18	.1947E+02	.5114E+01	.2137E+01	.7161E-05	-.4159E+01	.8074E+01	.1284E-05	.4083E+00	-.3875E+01	.1378E+01
19	.1787E+02	.4919E+01	.2160E+01	.7824E-05	.3817E+01	.7857E+01	[illegible]	-.6213E+00	-.3394E+01	.1378E+01
20	.1635E+02	.4734E+01	.2201E+01	.8671E-05	-.3574E+01	.7453E+01	[illegible]	-.8446E+00	-.2767E+01	.1370E+01
21	.1528E+02	.4560E+01	.2263E+01	.9414E-05	.3370E+01	.7484E+01	[illegible]	-.1025E+01	-.2284E+01	.1362E+01
22	.1424E+02	.4435E+01	.2321E+01	.1016E-04	.3203E+01	.7184E+01	.5507E-06	-.1125E+01	-.1852E+01	.1353E+01

23	.1352E+02	.4323E+01	.2427E+01	.1066E-04	-.3038E+01	.6976E+01	.1024E-05	-.1299E+01	-.1468E+01	.1342E+01
24	.1274E+02	.4218E+01	.2527E+01	.1122E-04	-.2879E+01	.6749E+01	.1247E-05	-.1341E+01	-.1282E+01	.1332E+01
25	.1194E+02	.4122E+01	.2637E+01	.1191E-04	-.2726E+01	.6527E+01	.1074E-05	-.1379E+01	-.1085E+01	.1322E+01
26	.1110E+02	.4037E+01	.2758E+01	.1274E-04	-.2564E+01	.6267E+01	.4159E-06	-.1409E+01	-.8837E+00	.1313E+01
27	.1025E+02	.3963E+01	.2891E+01	.1366E-04	-.2404E+01	.6013E+01	-.5774E-06	-.1430E+01	-.6854E+00	.1305E+01
28	.9427E+01	.3903E+01	.3038E+01	.1432E-04	-.2235E+01	.5785E+01	-.1415E-05	-.1523E+01	-.2769E+00	.1298E+01
29	.8763E+01	.3904E+01	.3214E+01	.1474E-04	-.1938E+01	.5724E+01	-.1474E-05	-.1605E+01	.9348E-01	.1292E+01
30	.8088E+01	.3924E+01	.3404E+01	.1528E-04	-.1613E+01	.5544E+01	-.4667E-06	-.1583E+01	.2285E+00	.1285E+01
31	.7376E+01	.3960E+01	.3606E+01	.1659E-04	-.1264E+01	.5276E+01	.1575E-05	-.1541E+01	.3768E+00	.1277E+01
32	.6669E+01	.4026E+01	.3824E+01	.1915E-04	-.8838E+00	.4615E+01	.5311E-05	-.1479E+01	.5049E+00	.1268E+01
33	.5982E+01	.4113E+01	.4074E+01	.2094E-04	-.4586E+00	.4531E+01	.5744E-05	-.1394E+01	.6704E+00	.1258E+01
34	.5312E+01	.4250E+01	.4288E+01	.2375E-04	-.6844E-01	.4165E+01	.7559E-05	-.1285E+01	.8191E+00	.1250E+01
35	.4578E+01	.4421E+01	.4532E+01	.2897E-04	.3354E+00	.3757E+01	.8975E-05	-.1150E+01	.7640E+00	.1248E+01
36	.3985E+01	.4584E+01	.4791E+01	.3597E-04	.6584E+00	.3371E+01	.1195E-04	-.1021E+01	.8222E+00	.1252E+01
37	.3423E+01	.4834E+01	.5045E+01	.4577E-04	.9408E+00	[illegible]	.1750E-04	-.8796E+00	.9113E+00	.1264E+01
38	.2839E+01	.5117E+01	.5304E+01	.5908E-04	.1154E+01	.2412E+01	.2574E-04	-.8028E+00	.7856E+00	.1280E+01
39	.2353E+01	.5586E+01	.5610E+01	.7268E-04	.1248E+01	.2015E+01	.3372E-04	-.6852E+00	.7819E+00	.1296E+01
40	.2023E+01	.5781E+01	.5887E+01	.8105E-04	.1350E+01	.1642E+01	.3557E-04	-.4117E+00	.9980E+00	.1303E+01
41	.1728E+01	.6375E+01	.6017E+01	.8390E-04	.1387E+01	.1152E+01	.2654E-04	-.2854E+00	.1012E+01	.1315E+01
42	.1431E+01	.6952E+01	.6217E+01	.6804E-04	.1363E+01	.8707E+00	.3504E-05	-.1968E+00	.9300E+00	.1314E+01
43	.1318E+01	.7673E+01	.6294E+01	.6739E-04	.1334E+01	.5534E+00	.3385E-04	.1654E+00	.1055E+01	.1308E+01
44	.1287E+01	.8553E+01	.5966E+01	.5021E-04	.1184E+01	.1851E+00	-.6671E-04	.3868E+00	.1142E+01	.1299E+01
45	.1432E+01	.9449E+01	.5691E+01	.3580E-04	.1076E+01	.2594E-01	-.7704E-04	.2213E+00	.1337E+01	.1293E+01
46	.1418E+01	.1042E+02	.5657E+01	0.	.9900E+00	.4029E-13	0.	-.1221E+00	.1431E+01	.1293E+01

SECOND INDEX= 11

1ST	P/PINF	RHO/RINF	U/QINF	V/QINF	ET/ETINF	S/SINF	HT/HTINF	MACH	UBAR/QINF	VBAR/QINF	CP
1	.2457E+01	.1872E+01	.8116E+00	-.2278E-01	.1784E+01	.1021E+01	.1009E+01	.1481E+01	-.8116E+00	.2269E-01	.4764E+00
2	.2458E+01	.1872E+01	.8115E+00	-.2277E-01	.1784E+01	.1021E+01	.1008E+01	.1481E+01	-.8112E+00	.2278E-01	.4767E+00
3	.2491E+01	.1889E+01	.8091E+00	-.1925E-01	.1803E+01	.1022E+01	.1009E+01	.1473E+01	-.8091E+00	.9050E-02	.4877E+00
4	.2560E+01	.1924E+01	.8035E+00	-.7354E-02	.1831E+01	.1024E+01	.1011E+01	.1456E+01	-.8036E+00	-.7252E-02	.5100E+00
5	.2650E+01	.1969E+01	.7943E+00	.1525E-01	.1876E+01	.1026E+01	.1015E+01	.1431E+01	-.7945E+00	.4852E-02	.5395E+00
6	.2737E+01	.2014E+01	.7840E+00	.4751E-01	.1915E+01	.1027E+01	.1017E+01	.1406E+01	-.7848E+00	.1690E-01	.5682E+00
7	.2798E+01	.2047E+01	.7710E+00	.8604E-01	.1937E+01	.1026E+01	.1010E+01	.1387E+01	-.7870E+00	.8227E-01	.5881E+00
8	.2819E+01	.2062E+01	.7599E+00	.1260E+00	.1941E+01	.1024E+01	.1007E+01	.1377E+01	-.8571E+00	.2143E+00	.5919E+00
9	.2806E+01	.2060E+01	.7510E+00	.1636E+00	.1932E+01	.1020E+01	.1004E+01	.1376E+01	-.9322E+00	.2645E+00	.5905E+00
10	.2781E+01	.2052E+01	.7449E+00	.1964E+00	.1921E+01	.1017E+01	.1004E+01	.1383E+01	-.9564E+00	.2465E+00	.5825E+00
11	.2770E+01	.2049E+01	.7408E+00	.2227E+00	.1924E+01	.1015E+01	.1001E+01	.1390E+01	-.9391E+00	.1953E+00	.5789E+00
12	.2784E+01	.2057E+01	.7376E+00	.2419E+00	.1934E+01	.1014E+01	.1003E+01	.1394E+01	-.8508E+00	.8271E-01	.5834E+00
13	.2821E+01	.2076E+01	.7342E+00	.2521E+00	.1957E+01	.1014E+01	.1000E+01	.1392E+01	-.7092E+00	-.7156E-01	.5955E+00
14	.2869E+01	.2100E+01	.7302E+00	.2561E+00	.1982E+01	.1015E+01	.1008E+01	.1384E+01	-.5256E+00	-.2602E+00	.6112E+00
15	.2912E+01	.2121E+01	.7261E+00	.2548E+00	.2001E+01	.1017E+01	.1004E+01	.1372E+01	-.3910E+00	-.3944E+00	.6254E+00
16	.2937E+01	.2131E+01	.7225E+00	.2498E+00	.2006E+01	.1018E+01	.1008E+01	.1361E+01	-.3096E+00	-.4737E+00	.6335E+00
17	.2934E+01	.2127E+01	.7205E+00	.2424E+00	.1997E+01	.1019E+01	.1005E+01	.1355E+01	-.2608E+00	-.5228E+00	.6324E+00
18	.2899E+01	.2107E+01	.7209E+00	.2335E+00	.1970E+01	.1021E+01	.1002E+01	.1350E+01	-.2528E+00	-.5315E+00	.6210E+00
19	.2835E+01	.2073E+01	.7236E+00	.2257E+00	.1931E+01	.1022E+01	.9977E+00	.1354E+01	-.2569E+00	-.5320E+00	.6003E+00
20	.2751E+01	.2027E+01	.7292E+00	.2135E+00	.1881E+01	.1023E+01	.9953E+00	.1363E+01	-.2487E+00	-.5541E+00	.5727E+00
21	.2654E+01	.1975E+01	.7364E+00	.2033E+00	.1824E+01	.1024E+01	.9896E+00	.1377E+01	-.2414E+00	-.5806E+00	.5411E+00
22	.2554E+01	.1920E+01	.7447E+00	.1943E+00	.1774E+01	.1025E+01	.9861E+00	.1394E+01	-.2377E+00	-.6129E+00	.5083E+00
23	.2456E+01	.1865E+01	.7532E+00	.1836E+00	.1721E+01	.1026E+01	.9870E+00	.1412E+01	-.2352E+00	-.6512E+00	.4761E+00
24	.2362E+01	.1812E-01	.7616E+00	.1740E+00	.1671E+01	.1028E+01	.9855E+00	.1430E+01	-.2486E+00	-.6624E+00	.4454E+00
25	.2271E+01	.1759E+01	.7699E+00	.1643E+00	.1621E+01	.1034E+01	.9785E+00	.1448E+01	-.2635E+00	-.6782E+00	.4158E+00
26	.2181E+01	.1705E+01	.7785E+00	.1541E+00	.1574E+01	.1034E+01	.9765E+00	.1466E+01	-.2799E+00	-.6985E+00	.3867E+00
27	.2087E+01	.1648E+01	.7880E+00	.1427E+00	.1524E+01	.1038E+01	.9752E+00	.1487E+01	-.2994E+00	-.7243E+00	.3556E+00
28	.1988E+01	.1586E+01	.7991E+00	.1298E+00	.1466E+01	.1042E+01	.9746E+00	.1511E+01	-.3370E+00	-.8205E+00	.3234E+00
29	.1884E+01	.1521E+01	.8120E+00	.1154E+00	.1410E+01	.1048E+01	.9748E+00	.1540E+01	-.3759E+00	-.9228E+00	.2892E+00
30	.1778E+01	.1454E+01	.8265E+00	.9917E-01	.1354E+01	.1054E+01	.9759E+00	.1573E+01	-.3926E+00	-.9564E+00	.2545E+00
31	.1675E+01	.1388E+01	.8418E+00	.8259E-01	.1300E+01	.1058E+01	.9771E+00	.1606E+01	-.4085E+00	-.9955E+00	.2209E+00
32	.1582E+01	.1329E+01	.8564E+00	.6624E-01	.1251E+01	.1062E+01	.9772E+00	.1641E+01	-.4072E+00	-.1023E+01	.1902E+00
33	.1502E+01	.1278E+01	.8684E+00	.5085E-01	.1208E+01	.1065E+01	.9778E+00	.1677E+01	-.4036E+00	-.1057E+01	.1642E+00
34	.1441E+01	.1239E+01	.8754E+00	.3724E-01	.1171E+01	.1067E+01	.9784E+00	.1698E+01	-.3610E+00	-.1059E+01	.1442E+00
35	.1402E+01	.1213E+01	.8761E+00	.2715E-01	.1149E+01	.1070E+01	.9750E+00	.1704E+01	-.2723E+00	-.1005E+01	.1315E+00
36	.1390E+01	.1202E+01	.8703E+00	.2319E-01	.1127E+01	.1074E+01	.9703E+00	.1692E+01	-.2002E+00	-.9763E+00	.1275E+00
37	.1407E+01	.1207E+01	.8592E+00	.2792E-01	.1124E+01	.1081E+01	.9664E+00	.1664E+01	-.5789E-01	-.8927E+00	.1330E+00
38	.1452E+01	.1227E+01	.8453E+00	.4394E-01	.1137E+01	.1094E+01	.9654E+00	.1616E+01	.8956E-01	-.6010E+00	.1477E+00
39	.1520E+01	.1260E+01	.8317E+00	.6638E-01	.1164E+01	.1104E+01	.9681E+00	.1588E+01	.2215E+00	-.7086E+00	.1699E+00
40	.1599E+01	.1298E+01	.8213E+00	.9204E-01	.1208E+01	.1114E+01	.9711E+00	.1557E+01	.4502E+00	-.4691E+00	.1960E+00

41	.1675E+01	.1335E+01	.8151E+00	.1252E+00	.1253E+01	.1117E+01	.9866E+00	.1539E+01	.6326E+00	-.2962E+00	.2207E+00
42	.1734E+01	.1364E+01	.8136E+00	.1508E+00	.1291E+01	.1135E+01	.9979E+00	.1534E+01	.7452E+00	-.1486E+00	.2401E+00
43	.1771E+01	.1381E+01	.8152E+00	.1695E+00	.1324E+01	.1147E+01	.1008E+01	.1537E+01	.1025E+01	.3403E+00	.2522E+00
44	.1786E+01	.1388E+01	.8182E+00	.1799E+00	.1334E+01	.1129E+01	.1014E+01	.1543E+01	.1085E+01	.5906E+00	.2571E+00
45	.1787E+01	.1388E+01	.8[illegible]	.1834E+00	.1344E+01	.1129E+01	.1017E+01	.1544E+01	.8987E+00	.4135E+00	.2574E+00
46	.1787E+01	.1388E+01	.8[illegible]	.1834E+00	.1344E+01	.1129E+01	.1017E+01	.1549E+01	.8240E+00	.1069E+00	.2573E+00

1ST	JACOBIAN	X	Y	DXI/DT	DXI/DX	DXI/DY	DETA/DT	DETA/DX	DETA/DY	ET/ETINF
1	.2243E+01	.1700E+02	.2869E+01	0.	-.2925E+00	-.2[illegible]E-13	0.	-.8493E-03	-.7656E+01	.1317E+01
2	.3060E+01	.1404E+02	.2869E+01	.1111E-03	-.4007E+00	-.3290E[illegible]	.7008E-04	-.1187E-04	-.7670E+01	.1313E+01
3	.3889E+01	.1201E+02	.2869E+01	.6319E-04	-.5074E+00	-.1618E[illegible]	.5016E-04	-.9[illegible]E-01	-.7657E+01	.1318E+01
4	.5636E+01	.1011E+02	.2918E+01	.5207E-04	-.6795E+00	-.1047E-01	.2851E-04	-.1546E+00	-.8297E+01	.1330E+01
5	.9182E+01	.9064E+01	.2972E+01	.2754E-04	-.1085E+01	-.2078E-01	.1551E-04	.2104E+00	-.8476E+01	.1346E+01
6	.1166E+02	.8260E+01	.2874E+01	.1890E-04	.1565E+01	.8944E-01	.8154E-05	.6108E+00	-.7415E+01	.1359E+01
7	.1814E+02	.7792E+01	.2817E+01	.1057E-04	-.2497E+01	-.6656E-01	.4504E-05	.1580E+01	-.7219E+01	.1367E+01
8	.2297E+02	.7464E+01	.2698E+01	.7573E-05	-.3094E+01	.4961E+00	.3532E-05	.3056E+01	-.7062E+01	.1367E+01
9	.2549E+02	.7177E+01	.2553E+01	.6941E-05	-.4221E+01	.1912E+01	.3359E-05	.3595E+01	-.7242E+01	.1362E+01
10	.2606E+02	.6896E+01	.2416E+01	.6373E-05	-.4752E+01	.2884E+01	.3585E-05	.3550E+01	-.7414E+01	.1356E+01
11	.2627E+02	.6608E+01	.2281E+01	.6358E-05	-.5171E+01	.3978E+01	.3541E-05	.3308E+01	-.7672E+01	.1352E+01
12	.2605E+02	.6312E+01	.2159E+01	.6324E-05	-.5371E+01	.5421E+01	.3095E-05	.2940E+01	-.7817E+01	.1353E+01
13	.2497E+02	.6008E+01	.2055E+01	.6417E-05	-.5274E+01	.6665E+01	.2376E-05	.2362E+01	-.7715E+01	.1359E+01
14	.2315E+02	.5694E+01	.1970E+01	.6653E-05	-.5007E+01	.7531E+01	.1502E-05	.1500E+01	-.6881E+01	.1366E+01
15	.2107E+02	.5413E+01	.1925E+01	.7027E-05	-.4621E+01	.7736E+01	.6113E-06	.7998E+00	-.5836E+01	.1375E+01
16	.1910E+02	.5134E+01	.1894E+01	.7524E-05	-.4533E+01	.7750E+01	.1087E-06	.2984E+00	-.4945E+01	.1378E+01
17	.1765E+02	.4896E+01	.1894E+01	.8038E-05	-.4092E+01	.7576E+01	.4057E-06	-.1005E+00	-.4117E+01	.1379E+01
18	.1621E+02	.4667E+01	.1904E+01	.8794E-05	-.3937E+01	.7361E+01	.4755E-06	-.2406E+00	-.3654E+01	.1376E+01
19	.1487E+02	.4445E+01	.1925E+01	.9606E-05	-.3828E+01	.7114E+01	-.1952E-06	-.3579E+00	-.3220E+01	.1368E+01
20	.1364E+02	.4234E+01	.1954E+01	.1054E-04	-.3755E+01	.6864E+01	.3902E-06	-.5618E+00	-.2606E+01	.1357E+01
21	.1285E+02	.4063E+01	.2007E+01	.1115E-04	-.3697E+01	.6670E+01	.9703E-06	-.7362E+00	-.2149E+01	.1344E+01
22	.1205E+02	.3900E+01	.2068E+01	.1172E-04	-.3656E+01	.6455E+01	.1498E-05	-.8888E+00	-.1728E+01	.1330E+01
23	.1154E+02	.3776E+01	.2155E+01	.1196E-04	-.3605E+01	.6280E+01	.1900E-05	-.1038E+01	-.1391E+01	.1317E+01
24	.1096E+02	.3659E+01	.2248E+01	.1228E-04	-.3561E+01	.6083E+01	.2251E-05	-.1065E+01	-.1259E+01	.1304E+01
25	.1035E+02	.3547E+01	.2345E+01	.1279E-04	-.3518E+01	.5670E+01	.2627E-05	-.1093E+01	-.1118E+01	.1292E+01
26	.9694E+01	.3443E+01	.2459E+01	.1359E-04	-.3467E+01	.5496E+01	.3108E-05	-.1121E+01	-.9714E+00	.1279E+01
27	.9002E+01	.3346E+01	.2580E+01	.1461E-04	-.3404E+01	.5404E+01	.3742E-05	-.1146E+01	-.8258E+00	.1267E+01
28	.8275E+01	.3259E+01	.2714E+01	.1573E-04	-.3308E+01	.5154E+01	.4559E-05	-.1314E+01	-.4555E+00	.1255E+01
29	.7682E+01	.3236E+01	.2898E+01	.1641E-04	-.3092E+01	.4974E+01	.5575E-05	-.1482E+01	-.1185E+00	.1239E+01
30	.7059E+01	.3228E+01	.3100E+01	.1681E-04	-.2826E+01	.4710E+01	.6293E-05	-.1484E+01	-.2385E-01	.1223E+01
31	.6381E+01	.3229E+01	.3318E+01	.1707E-04	-.2527E+01	.4465E+01	.7345E-05	-.1486E+01	.8895E-01	.1207E+01
32	.5691E+01	.3256E+01	.3564E+01	.1737E-04	-.2176E+01	.4197E+01	.8430E-05	-.1454E+01	.1901E+00	.1190E+01
33	.5035E+01	.3296E+01	.3829E+01	.1795E-04	-.1827E+01	.3946E+01	.9478E-05	-.1429E+01	.3303E+00	.1175E+01
34	.4389E+01	.3387E+01	.4131E+01	.1959E-04	-.1406E+01	.3607E+01	.1048E-04	-.1374E+01	.4556E+00	.1163E+01
35	.3720E+01	.3504E+01	.4456E+01	.2359E-04	-.9867E+00	.3356E+01	.1306E-04	-.1240E+01	.4208E+00	.1156E+01
36	.3179E+01	.3614E+01	.4798E+01	.2986E-04	-.6554E+00	.3057E+01	.1858E-04	-.1155E+01	.5358E+00	.1156E+01
37	.2649E+01	.3841E+01	.5182E+01	.4075E-04	-.1324E+00	.2679E+01	.2727E-04	-.1015E+01	.6399E+00	.1165E+01
38	.2150E+01	.4097E+01	.5586E+01	.5671E-04	.1004E+00	.2301E+01	.3959E-04	-.9114E+00	.5296E+00	.1183E+01
39	.1761E+01	.4333E+01	.6030E+01	.7458E-04	.3191E+00	.1997E+01	.5004E-04	-.7877E+00	.5837E+00	.1206E+01
40	.1498E+01	.4760E+01	.6481E+01	.8770E-04	.5799E+00	.1714E+01	.5206E-04	-.5768E+00	.8825E+00	.1232E+01
41	.1244E+01	.5512E+01	.6800E+01	.9648E-04	.7965E+00	.1252E+01	.5911E-04	-.4386E+00	.8721E+00	.1254E+01
42	.1061E+01	.6162E+01	.7186E+01	.9341E-04	.9037E+00	.1041E+01	.1801E-05	-.2976E+00	.8377E+00	.1272E+01
43	.1009E+01	.7091E-01	.7361E+01	.7338E-04	.1003E+01	.7610E+00	-.5108E-04	.1084E+00	.1083E+01	.1282E+01
44	.9978E+00	.8307E+01	.6971E+01	.5187E-04	.1003E+01	.3603E+00	.9[illegible]E-04	.4257E+00	.1147E+01	.1287E+01
45	.1158E+01	.9391E+01	.6513E+01	.3354E-04	.9764E+00	.1165E+00	-.1098E-03	.3194E+00	.1224E+01	.1288E+01
46	.1268E+01	.1092E+02	.6419E+01	0.	.9981E+00	.3600E-13	0.	-.1154E+00	.1271E+01	.1267E+01

SECOND INDEX= 12

1ST	P/PINF	RHO/RINF	U/QINF	V/QINF	ET/ETINF	S/SINF	HT/HTINF	MACH	UBAR/QINF	VBAR/QINF	CP
1	.2441E+01	.1866E+01	.8177E+00	-.2419E-01	.1785E+01	.1020E+01	.1010E+01	.1495E+01	-.8177E+00	.2423E-01	.4713E+00
2	.2442E+01	.1866E+01	.8176E+00	-.2413E-01	.1785E+01	.1020E+01	.1010E+01	.1494E+01	-.8177E+00	.2415E-01	.4715E+00
3	.2467E+01	.1878E+01	.8153E+00	-.2055E-01	.1797E+01	.1021E+01	.1011E+01	.1487E+01	-.8153E+00	.8117E-02	.4797E+00
4	.2517E+01	.1903E+01	.8098E+00	-.8205E-02	.1819E+01	.1025E+01	.1013E+01	.1472E+01	-.8098E+00	-.1004E-01	.4962E+00
5	.2582E+01	.1935E+01	.8016E+00	.1509E-01	.1846E+01	.1029E+01	.1015E+01	.1452E+01	-.8021E+00	.1081E-01	.5173E+00
6	.2642E+01	.1965E+01	.7915E+00	.5053E-01	.1864E+01	.1030E+01	.1021E+01	.1430E+01	-.7965E+00	.2738E-01	.5370E+00
7	.2680E+01	.1987E+01	.7809E+00	.9192E-01	.1881E+01	.1025E+01	.1018E+01	.1415E+01	-.8101E+00	.8874E-01	.5493E+00
8	.2690E+01	.1997E+01	.7710E+00	.1348E+00	.1885E+01	.1024E+01	.1016E+01	.1409E+01	-.9025E+00	.2264E+00	.5528E+00
9	.2684E+01	.1999E+01	.7627E+00	.1745E+00	.1881E+01	.1018E+01	.1014E+01	.1411E+01	-.9796E+00	.2733E+00	.5509E+00
10	.2686E+01	.2005E+01	.7557E+00	.2079E+00	.1886E+01	.1014E+01	.1014E+01	.1415E+01	-.9834E+00	.2375E+00	.5513E+00

11	.2713E+01	.2022E+01	.7495E+00	.2379E+00	.1906E+01	.1012E+01	.1003E+01	.1416E+01	-.9180E+00	.1462E+00	.5602E+00
12	.2769E+01	.2052E+01	.7430E+00	.2488E+00	.1939E+01	.1014E+01	.1006E+01	.1410E+01	-.7735E+00	-.1065E-01	.5785E+00
13	.2840E+01	.2088E+01	.7359E+00	.2563E+00	.1975E+01	.1013E+01	.1009E+01	.1392E+01	-.6188E+00	-.1665E+00	.6018E+00
14	.2905E+01	.2120E+01	.7287E+00	.2571E+00	.2003E+01	.1015E+01	.1011E+01	.1380E+01	-.4742E+00	-.3083E+00	.6232E+00
15	.2946E+01	.2139E+01	.7224E+00	.2531E+00	.2015E+01	.1016E+01	.1012E+01	.1363E+01	-.3940E+00	-.3945E+00	.6365E+00
16	.2950E+01	.2138E+01	.7185E+00	.2454E+00	.2005E+01	.1018E+01	.1015E+01	.1351E+01	-.3534E+00	-.4230E+00	.6378E+00
17	.2914E+01	.2117E+01	.7176E+00	.2368E+00	.1970E+01	.1020E+01	.1001E+01	.1344E+01	-.3288E+00	-.4495E+00	.6258E+00
18	.2839E+01	.2076E+01	.7210E+00	.2264E+00	.1929E+01	.1021E+01	.9961E+00	.1350E+01	-.3476E+00	-.4345E+00	.6015E+00
19	.2736E+01	.2030E+01	.7285E+00	.2150E+00	.1874E+01	.1024E+01	.9719E+00	.1364E+01	-.3717E+00	-.4195E+00	.5678E+00
20	.2616E+01	.1955E+01	.7395E+00	.2051E+00	.1810E+01	.1025E+01	.9885E+00	.1386E+01	-.3608E+00	-.4560E+00	.5286E+00
21	.2492E+01	.1888E+01	.7524E+00	.1926E+00	.1747E+01	.1025E+01	.9856E+00	.1415E+01	-.3513E+00	-.4879E+00	.4879E+00
22	.2373E+01	.1823E+01	.7659E+00	.1821E+00	.1689E+01	.1024E+01	.9857E+00	.1442E+01	-.3421E+00	-.5368E+00	.4490E+00
23	.2266E+01	.1763E+01	.7787E+00	.1724E+00	.1636E+01	.1024E+01	.9824E+00	.1471E+01	-.3369E+00	-.5956E+00	.4139E+00
24	.2171E+01	.1709E+01	.7904E+00	.1631E+00	.1588E+01	.1025E+01	.9813E+00	.1496E+01	-.3606E+00	-.6016E+00	.3828E+00
25	.2083E+01	.1658E+01	.8004E+00	.1537E+00	.1544E+01	.1026E+01	.9804E+00	.1520E+01	-.3835E+00	-.6135E+00	.3543E+00
26	.1996E+01	.1607E+01	.8110E+00	.1439E+00	.1497E+01	.1028E+01	.9771E+00	.1544E+01	-.4077E+00	-.6314E+00	.3256E+00
27	.1898E+01	.1549E+01	.8227E+00	.1304E+00	.1445E+01	.1029E+01	.9778E+00	.1572E+01	-.4361E+00	-.6558E+00	.2938E+00
28	.1786E+01	.1481E+01	.8370E+00	.1136E+00	.1365E+01	.1030E+01	.9762E+00	.1608E+01	-.4856E+00	-.8180E+00	.2570E+00
29	.1660E-01	.1405E+01	.8542E+00	.9344E-01	.1317E+01	.1031E+01	.9718E+00	.1652E+01	-.5929E+00	-.1006E+01	.2157E+00
30	.1529E+01	.1325E+01	.8738E+00	.7074E-01	.1248E+01	.1031E+01	.9741E+00	.1706E+01	-.6516E+00	-.1060E+01	.1722E+00
31	.1405E+01	.1249E+01	.8945E+00	.4816E-01	.1185E+01	.1030E+01	.9748E+00	.1765E+01	-.7195E+00	-.1132E+01	.1325E+00
32	.1301E+01	.1183E+01	.9130E+00	.2834E-01	.1124E+01	.1028E+01	.9767E+00	.1822E+01	-.7730E+00	-.1198E+01	.9844E-01
33	.1222E+01	.1132E+01	.9295E+00	.1269E-01	.1068E+01	.1027E+01	.9790E+00	.1870E+01	-.8389E+00	-.1297E+01	.7275E-01
34	.1171E+01	.1098E+01	.9392E+00	.1435E-02	.1060E+01	.1027E+01	.9803E+00	.1901E+01	-.8512E+00	-.1342E+01	.5583E-01
35	.1144E+01	.1079E+01	.9421E+00	-.5617E-02	.1041E+01	.1028E+01	.9796E+00	.1917E+01	-.7691E+00	-.1275E+01	.4713E-01
36	.1141E+01	.1075E+01	.9381E+00	-.7788E-02	.1034E+01	.1031E+01	.9768E+00	.1903E+01	-.7623E+00	-.1327E+01	.4615E-01
37	.1162E+01	.1086E+01	.9279E+00	-.3622E-02	.1037E+01	.1036E+01	.9728E+00	.1874E+01	-.6316E+00	-.1266E+01	.5305E-01
38	.1208E+01	.1110E+01	.9129E+00	.8513E-02	.1055E+01	.1044E+01	.9694E+00	.1829E+01	-.4201E+00	-.1105E+01	.6808E-01
39	.1278E+01	.1147E+01	.8954E+00	.2943E-01	.1081E+01	.1054E+01	.9688E+00	.1774E+01	-.2748E+00	-.1010E+01	.9097E-01
40	.1368E+01	.1193E+01	.8776E+00	.5795E-01	.1123E+01	.1068E+01	.9725E+00	.1717E+01	.4559E-02	-.8762E+00	.1202E+00
41	.1466E+01	.1241E+01	.8615E+00	.9055E-01	.1172E+01	.1084E+01	.9810E+00	.1666E+01	.3807E+00	-.5879E+00	.1524E+00
42	.1561E+01	.1284E+01	.8499E+00	.1236E+00	.1223E+01	.1100E+01	.9928E+00	.1628E+01	.5898E+00	-.3701E+00	.1835E+00
43	.1640E+01	.1319E+01	.8424E+00	.1508E+00	.1269E+01	.1113E+01	.1005E+01	.1604E+01	.1006E+01	.2096E+00	.2094E+00
44	.1692E+01	.1341E+01	.8390E+00	.1698E+00	.1302E+01	.1122E+01	.1015E+01	.1593E+01	.1209E+01	.6043E+00	.2263E+00
45	.1714E+01	.1350E+01	.8384E+00	.1785E+00	.1317E+01	.1126E+01	.1020E+01	.1590E+01	.9697E+00	.4560E+00	.2334E+00
46	.1714E+01	.1350E+01	.8385E+00	.1785E+00	.1317E+01	.1126E+01	.1020E+01	.1590E+01	.8408E+00	.1159E+00	.2334E+00

1ST	JACOBIAN	X	Y	DXI/DT	DXI/DX	DXI/DY	DETA/DT	DETA/DX	DETA/DY	EI/EIINF
1	.2242E+01	.1700E+02	.2736E+01	0.	-.2978E+00	.1275E-12	0.	.8839E-03	-.7658E+01	.1308E+01
2	.3060E+01	.1404E+02	.2736E+01	.9896E-04	-.4007E+00	.3865E-02	.5303E-04	.9561E-05	-.7634E+01	.1309E+01
3	.3889E+01	.1201E+02	.2736E+01	.7450E-04	-.5078E+00	.1251E-02	.3858E-04	-.1171E+00	-.7657E+01	.1313E+01
4	.5632E+01	.1011E+02	.2796E+01	.4732E-04	-.6789E+00	.1567E-01	.2551E-04	-.1869E+00	-.8291E+01	.1323E+01
5	.9188E+01	.9064E+01	.2803E+01	.2597E-04	-.1084E+01	.1451E-01	.1207E-04	.2604E+00	-.8483E+01	.1334E+01
6	.1172E+02	.8260E+01	.2735E+01	.1805E-04	-.1574E+01	.8855E-01	.5022E-05	.7335E+00	-.7490E+01	.1344E+01
7	.1808E+02	.7786E+01	.2678E+01	.1049E-04	-.2479E+01	.2724E+00	.5765E-05	.1704E+01	-.7466E+01	.1349E+01
8	.2285E+02	.7434E+01	.2547E+01	.7707E-05	-.3335E+01	.9078E+00	.4766E-05	.3296E+01	-.7748E+01	.1347E+01
9	.2578E+02	.7108E+01	.2389E+01	.6603E-05	-.4020E+01	.2030E+01	.4526E-05	.3980E+01	-.8424E+01	.1343E+01
10	.2716E+02	.6780E+01	.2238E+01	.6215E-05	-.4468E+01	.3419E+01	.4441E-05	.4032E+01	-.9117E+01	.1340E+01
11	.2812E+02	.6437E+01	.2093E+01	.5958E-05	-.4840E+01	.5047E+01	.4048E-05	.3651E+01	-.9804E+01	.1341E+01
12	.2762E+02	.6083E+01	.1966E+01	.5936E-05	-.4920E+01	.6447E+01	.3501E-05	.3263E+01	-.9889E+01	.1345E+01
13	.2572E+02	.5721E-01	.1857E+01	.6146E-05	-.4781E+01	.7364E+01	.2784E-05	.2613E+01	-.9404E+01	.1360E+01
14	.2282E+02	.5352E+01	.1763E+01	.6642E-05	-.4557E+01	.7675E+01	.1981E-05	.1650E+01	-.7855E+01	.1370E+01
15	.2032E+02	.5032E+01	.1709E+01	.7191E-05	-.4338E+01	.7535E+01	.1148E-05	.1014E+01	-.6444E+01	.1378E+01
16	.1818E+02	.4717E+01	.1663E+01	.7846E-05	-.4210E+01	.7322E+01	.4025E-06	.5216E+00	-.5224E+01	.1380E+01
17	.1689E+02	.4457E+01	.1651E+01	.8344E-05	-.4145E+01	.7141E+01	.1499E-06	.1462E+00	-.4317E+01	.1376E+01
18	.1565E+02	.4206E+01	.1646E+01	.8957E-05	-.4124E+01	.6925E+01	.1610E-06	.4612E-01	-.3877E+01	.1368E+01
19	.1449E+02	.3962E+01	.1645E+01	.9603E-05	-.4113E+01	.6711E+01	.4561E-06	-.3491E-01	-.3468E+01	.1354E+01
20	.1340E+02	.3728E+01	.1651E+01	.1021E-04	-.4104E+01	.6498E+01	.9309E-06	-.2870E+00	-.2810E+01	.1378E+01
21	.1280E+02	.3542E+01	.1688E+01	.1035E-04	-.4142E+01	.6304E+01	.1418E-05	-.4978E+00	-.2324E+01	.1340E+01
22	.1218E+02	.3364E+01	.1729E+01	.1035E-04	-.4197E+01	.6315E+01	.1851E-05	-.6216E+00	-.1878E+01	.1302E+01
23	.1184E+02	.3234E+01	.1802E+01	.1003E-04	-.4270E+01	.6087E+01	.2159E-05	-.8823E+00	-.1515E+01	.1288E+01
24	.1145E+02	.3109E+01	.1878E+01	.9713E-05	-.4354E+01	.5943E+01	.2418E-05	-.8914E+00	-.1413E+01	.1270E+01
25	.1097E+02	.2987E+01	.1957E+01	.9592E-05	-.4427E+01	.5760E+01	.2659E-05	-.9083E+00	-.1297E+01	.1256E+01
26	.1012E+02	.2872E+01	.2043E+01	.9740E-05	-.4474E+01	.5590E+01	.3121E-05	-.9500E+00	-.1174E+01	.1242E+01
27	.9806E+01	.2762E+01	.2136E+01	.1016E-04	-.4507E+01	.5516E+01	.4456E-05	-.9553E+00	-.1049E+01	.1226E+01
28	.9001E+01	.2658E+01	.2238E+01	.1092E-04	-.4438E+01	.4906E+01	.5781E-05	-.1231E+01	-.6445E+00	.1206E+01
29	.8304E+01	.2619E+01	.2409E+01	.1143E-04	-.4248E+01	.4678E+01	.7016E-05	-.1516E+01	-.2849E+00	.1181E+01

30	.7591E+01	.2590E+01	.2603E+01	.1164E-04	-.4007E+01	.4375E+01	.8053E-05	-.1534E+01	-.2194E+00	.1154E+01
31	.6839E+01	.2561E+01	.2814E+01	.1154E-04	-.3755E+01	.4073E+01	.8844E-05	-.1515E+01	-.1305E+00	.1125E+01
32	.6151E+01	.2551E+01	.3059E+01	.1105E-04	-.3454E+01	.3818E+01	.9270E-05	.1564E+01	-.4768E-01	.1100E+01
33	.5446E+01	.2545E+01	.3325E+01	.1055E-04	-.3115E+01	.3567E+01	.9764E-05	-.1601E+01	.8484E-01	.1079E+01
34	.4683E+01	.2583E+01	.3647E+01	.1064E-04	-.2657E+01	.3255E+01	.1071E-04	-.1589E+01	.1924E+00	.1066E+01
35	.3930E+01	.2628E+01	.4002E+01	.1264E-04	-.2354E+01	.2974E+01	.1307E-04	-.1437E+01	.1942E+00	.1064E+01
36	.3275E+01	.2661E+01	.4378E+01	.1664E-04	-.1812E+01	.2651E+01	.1784E-04	-.1419E+01	.3011E+00	.1061E+01
37	.2619E+01	.2811E+01	.4864E+01	.2544E-04	-.1266E+01	.2557E+01	.2764E-04	-.1356E+01	.4131E+00	.1070E+01
38	.2054E+01	.2976E+01	.5398E+01	.3963E-04	-.8574E+00	.2034E+01	.4084E-04	-.1133E+01	.3102E+00	.1086E+01
39	.1629E+01	.3116E+01	.5973E+01	.5785E-04	-.5081E+00	.1793E+01	.5515E-04	-.1029E+01	.4251E+00	.1114E+01
40	.1335E+01	.3498E+01	.6661E+01	.7464E-04	-.1042E+00	.1603E+01	.5764E-04	-.8846E+00	.8352E+00	.1146E+01
41	.1036E+01	.4359E+01	.7298E+01	.9084E-04	.3197E+00	.1194E+01	.4654E-04	-.6528E+00	.7925E+00	.1187E+01
42	.9216E+00	.5078E+01	.7921E+01	.8484E-04	.5184E+00	.1071E+01	-.2541E-05	-.4576E+00	.8326E+00	.1216E+01
43	.8856E+00	.6165E+01	.8251E+01	.6376E-04	.6563E+00	.6687E+00	-.6845E-04	-.2422E-01	.1241E+01	.1244E+01
44	.8802E+00	.7831E+01	.7976E+01	.4067E-04	.7356E+00	.4461E+00	-.1271E-03	.4017E+00	.1357E+01	.1262E+01
45	.9885E+00	.9244E+01	.7378E+01	.2372E-04	.8524E+00	.1721E+00	-.1429E-03	.3684E+00	.1284E+01	.1270E+01
46	.1210E+01	.1047E+02	.7231E+01	0.	.9524E+00	0.	0.	-.9461E-01	.1271E+01	.1270E+01

SECOND INDEX= 13

1ST	P/PINF	RHO/RINF	U/QINF	V/QINF	ET/ETINF	S/SINF	HT/HTINF	MACH	UBAR/QINF	VBAR/QINF	CP
1	.2425E+01	.1859E+01	.8242E+00	-.2467E-01	.1766E+01	.1018E+01	.1013E+01	.1509E+01	-.8242E+00	.2494E-01	.4662E+00
2	.2426E+01	.1859E+01	.8241E+00	-.2466E-01	.1767E+01	.1018E+01	.1013E+01	.1508E+01	-.8247E+00	.2468E-01	.4664E+00
3	.2442E+01	.1867E+01	.8218E+00	-.2116E-01	.1793E+01	.1017E+01	.1015E+01	.1502E+01	-.8219E+00	.6427E-02	.4715E+00
4	.2473E+01	.1881E+01	.8166E+00	-.8660E-02	.1803E+01	.1021E+01	.1014E+01	.1485E+01	-.8160E+00	-.1357E-01	.4817E+00
5	.2513E+01	.1904E+01	.8090E+00	.1707E-01	.1815E+01	.1025E+01	.1011E+01	.1470E+01	-.8103E+00	.1531E-01	.4949E+00
6	.2550E+01	.1918E+01	.7998E+00	.5400E-01	.1825E+01	.1025E+01	.1015E+01	.1455E+01	-.8105E+00	.3578E-01	.5069E+00
7	.2573E+01	.1932E+01	.7901E+00	.9845E-01	.1831E+01	.1025E+01	.1022E+01	.1442E+01	-.8308E+00	.8970E-01	.5144E+00
8	.2585E+01	.1943E+01	.7807E+00	.1438E+00	.1876E+01	.1024E+01	.1024E+01	.1439E+01	-.9353E+00	.2249E+00	.5183E+00
9	.2598E+01	.1956E+01	.7718E+00	.1847E+00	.1847E+01	.1015E+01	.1005E+01	.1439E+01	-.9598E+00	.2576E+00	.5227E+00
10	.2633E+01	.1980E+01	.7630E+00	.2175E+00	.1870E+01	.1017E+01	.1005E+01	.1438E+01	-.9693E+00	.1959E+00	.5342E+00
11	.2701E+01	.2018E+01	.7537E+00	.2414E+00	.1910E+01	.1011E+01	.1006E+01	.1430E+01	-.8634E+00	.7612E-01	.5562E+00
12	.2792E+01	.2066E+01	.7457E+00	.2544E+00	.1958E+01	.1011E+01	.1004E+01	.1417E+01	-.7073E+00	-.8165E-01	.5861E+00
13	.2884E+01	.2112E+01	.7351E+00	.2577E+00	.2001E+01	.1014E+01	.1011E+01	.1392E+01	-.5935E+00	-.1699E+00	.6161E+00
14	.2949E+01	.2144E+01	.7245E+00	.2561E+00	.2024E+01	.1014E+01	.1010E+01	.1370E+01	-.5047E+00	-.2722E+00	.6374E+00
15	.2971E+01	.2152E+01	.7179E+00	.2516E+00	.2031E+01	.1016E+01	.1007E+01	.1355E+01	-.4619E+00	-.3098E+00	.6445E+00
16	.2941E+01	.2134E+01	.7153E+00	.2477E+00	.1993E+01	.1018E+01	.1005E+01	.1344E+01	-.4317E+00	-.3358E+00	.6342E+00
17	.2864E+01	.2092E+01	.7178E+00	.2516E+00	.1933E+01	.1012E+01	.9981E+00	.1347E+01	-.4183E+00	-.3572E+00	.6097E+00
18	.2748E+01	.2029E+01	.7261E+00	.2185E+00	.1878E+01	.1022E+01	.9911E+00	.1362E+01	-.4594E+00	-.3265E+00	.5717E+00
19	.2607E+01	.1955E+01	.7397E+00	.2057E+00	.1864E+01	.1021E+01	.9874E+00	.1386E+01	-.4962E+00	-.3061E+00	.5256E+00
20	.2457E+01	.1872E+01	.7570E+00	.1948E+00	.1754E+01	.1021E+01	.9862E+00	.1428E+01	-.4744E+00	-.3437E+00	.4765E+00
21	.2313E+01	.1794E+01	.7761E+00	.1617E+00	.1667E+01	.1021E+01	.9863E+00	.1467E+01	-.4635E+00	-.3881E+00	.4293E+00
22	.2185E+01	.1723E+01	.7944E+00	.1707E+00	.1669E+01	.1020E+01	.9854E+00	.1508E+01	-.4456E+00	-.4526E+00	.3874E+00
23	.2078E+01	.1664E+01	.8105E+00	.1623E+00	.1628E+01	.1021E+01	.9854E+00	.1542E+01	-.4324E+00	-.5081E+00	.3527E+00
24	.1993E+01	.1615E+01	.8252E+00	.1594E+00	.1548E+01	.1016E+01	.9834E+00	.1575E+01	-.4612E+00	-.5257E+00	.3248E+00
25	.1921E+01	.1573E+01	.8353E+00	.1470E+00	.1484E+01	.1019E+01	.9834E+00	.1603E+01	-.4868E+00	-.5202E+00	.3011E+00
26	.1848E+01	.1534E+01	.8452E+00	.1364E+00	.1440E+01	.1014E+01	.9840E+00	.1625E+01	-.5113E+00	-.5547E+00	.2774E+00
27	.1761E+01	.1478E+01	.8548E+00	.1205E+00	.1390E+01	.1014E+01	.9834E+00	.1655E+01	-.5325E+00	-.5454E+00	.2487E+00
28	.1649E+01	.1412E+01	.8701E+00	.1084E+00	.1333E+01	.1017E+01	.9818E+00	.1696E+01	-.5740E+00	-.7874E+00	.2121E+00
29	.1513E+01	.1331E+01	.8858E+00	.8540E-01	.1276E+01	.1014E+01	.9774E+00	.1777E+01	-.7404E+00	-.1024E+01	.1676E+00
30	.1366E+01	.1242E+01	.9153E+00	.5778E-01	.1187E+01	.1024E+01	.9774E+00	.1846E+01	-.8402E+00	-.1151E+01	.1197E+00
31	.1226E+01	.1157E+01	.9387E+00	.2883E-01	.1115E+01	.1006E+01	.9770E+00	.1902E+01	-.9022E+00	-.1267E+01	.7404E-01
32	.1112E+01	.1086E+01	.9627E+00	.4630E-02	.1074E+01	.9917E+00	.9771E+00	.1987E+01	-.1067E+01	-.1358E+01	.3676E-01
33	.1034E+01	.1034E+01	.9815E+00	-.1208E-01	.1015E+01	.9878E+00	.9453E+00	.2051E+01	-.1207E+01	-.1511E+01	.1122E-01
34	.9916E+00	.1007E+01	.9928E+00	-.2131E-01	.9763E+00	.9866E+00	.9871E+00	.2088E+01	-.1286E+01	-.1619E+01	-.2755E-02
35	.9775E+00	.9911E+00	.9962E+00	-.2474E-01	.9810E+00	.9834E+00	.9842E+00	.2097E+01	-.1212E+01	-.1592E+01	-.7343E-02
36	.9849E+00	.9932E+00	.9927E+00	-.2017E-01	.9817E+00	.9944E+00	.9871E+00	.2086E+01	-.1317E+01	-.1674E+01	-.4935E-02
37	.1010E+01	.1008E+01	.9857E+00	-.1567E-01	.9907E+00	.9924E+00	[illegible]	.2055E+01	-.1251E+01	-.1673E+01	.3408E-02
38	.1054E+01	.1035E+01	.9686E+00	-.1055E-01	.1014E+01	.1027E+01	.9854E+00	.2004E+01	-.9926E+00	-.1457E+01	.1770E-01
39	.1117E+01	.1075E+01	.9507E+00	.6664E-02	.1046E+01	.1021E+01	.9764E+00	.1948E+01	-.8996E+00	-.1414E+01	.3856E-01
40	.1201E+01	.1123E+01	.9296E+00	.3150E-01	.1075E+01	.1031E+01	.9761E+00	.1884E+01	-.6747E+00	-.1398E+01	.6571E-01
41	.1302E+01	.1175E+01	.9085E+00	.6254E-01	.1124E+01	.1014E+01	.9754E+00	.1848E+01	.5163E-01	-.8779E+00	.9864E-01
42	.1410E+01	.1225E+01	.8896E+00	.9844E-01	.1174E+01	.1044E+01	.9854E+00	.1749E+01	.3536E+00	-.6050E+00	.1346E+00
43	.1509E+01	.1266E+01	.8750E+00	.1317E+00	.1234E+01	.1054E+01	.1003E+01	.1697E+01	.6902E+00	.1900E-01	.1665E+00
44	.1581E+01	.1293E+01	.8661E+00	.1571E+00	.1264E+01	.1108E+01	.1019E+01	.1664E+01	.1029E+01	.5694E+00	.1901E+00
45	.1615E+01	.1305E+01	.8629E+00	.1684E+00	.1281E+01	.1114E+01	.1031E+01	.1651E+01	.1019E+01	.4277E+00	.2012E+00
46	.1615E+01	.1305E+01	.8629E+00	.1684E+00	.1281E+01	.1115E+01	.1031E+01	.1654E+01	.8650E+00	.1457E+00	.2011E+00

IST	JACOBIAN	X	Y	DXI/DT	DXI/DX	DXI/DY	DETA/DT	DETA/DX	DETA/DY	EI/EIINF
1	.2353E+01	.1700E+02	.2607E+01	0.	-.2929E+00	0.	0.	.2606E-02	-.8046E+01	.1305E+01
2	.3216E+01	.1404E+02	.2607E+01	.8311E-04	-.4006E+00	.1134E-01	.3461E-04	[illegible]	-.8026E+01	.1305E+01
3	.4082E+01	.1201E+02	.2607E+01	.6314E-04	-.5579E+00	[illegible]	[illegible]	-.1419E+00	-.8045E+01	.1306E+01
4	.5901E+01	.1010E+02	.2677E+01	[illegible]	-.6779E+00	[illegible]	[illegible]	[illegible]	-.8097E+01	.1314E+01
5	.9596E+01	.9041E+01	.2688E+01	[illegible]	.1054E+01	[illegible]	[illegible]	[illegible]	-.8904E+01	[illegible]
6	.1245E+02	.8294E+01	.2604E+01	[illegible]	.1511E+01	[illegible]	[illegible]	.8568E+00	-.8076E+01	[illegible]
7	.1918E+02	.7764E+01	.2593E+01	.9704E-05	.2472E+01	[illegible]	[illegible]	.1859E+01	-.8056E+01	[illegible]
8	.2438E+02	.7385E+01	.2406E+01	.7194E-05	-.3379E+01	.1554E+01	[illegible]	.3680E+01	-.9073E+01	.1350E+01
9	.2828E+02	.7019E+01	.2241E+01	.6014E-05	-.3841E+01	.2634E+01	.4898E-05	.4533E+01	-.1047E+02	.1328E+01
10	.3105E+02	.6644E+01	.2085E+01	.5407E-05	-.4285E+01	.4204E+01	.4427E-05	.4735E+01	-.1197E+02	.1330E+01
11	.3298E+02	.6249E+01	.1936E+01	.5017E-05	-.4607E+01	.6074E+01	[illegible]	.4054E+01	-.1316E+02	.1338E+01
12	.3142E+02	.5845E+01	.1803E+01	[illegible]	-.4681E+01	.7204E+01	.3346E-05	.3976E+01	-.1276E+02	.1351E+01
13	.2775E+02	.5435E+01	.1683E+01	.5561E-05	[illegible]	.7447E+01	.2785E-05	.3225E+01	-.1143E+02	.1365E+01
14	.2417E+02	.5021E+01	.1571E+01	.6144E-05	-.4418E+01	.7481E+01	.2036E-05	.2235E+01	-.9227E+01	.1376E+01
15	.2151E+02	.4672E+01	.1498E+01	.6677E-05	-.4374E+01	.7177E+01	.1377E-05	.1504E+01	-.7452E+01	.1380E+01
16	.1934E+02	.4328E+01	.1431E+01	.7237E-05	-.4248E+01	[illegible]	[illegible]	.9163E+00	-.5937E+01	.1376E+01
17	.1819E+02	.4051E+01	.1403E+01	.7566E-05	-.4953E+01	.6760E+01	.5774E-06	.4688E+00	-.4952E+01	.1362E+01
18	.1696E+02	.3782E+01	.1379E+01	.7904E-05	-.4548E+01	.6558E+01	.6046E-06	.3910E+00	-.4515E+01	.1355E+01
19	.1579E+02	.3519E+01	.1357E+01	.8184E-05	-.4551E+01	.6468E+01	.8615E-06	.3017E+00	-.4093E+01	.1335E+01
20	.1499E+02	.3264E+01	.1341E+01	.8144E-05	-.4102E+01	.6366E+01	.1240E-05	-.1865E-01	-.3378E+01	.1313E+01
21	.1467E+02	.3068E+01	.1360E+01	.7674E-05	-.4570E+01	.6354E+01	.1597E-05	-.2787E+00	-.2824E+01	.1289E+01
22	.1442E+02	.2879E+01	.1379E+01	.7284E-05	-.4779E+01	.6375E+01	.1864E-05	-.5501E+00	-.2311E+01	.1268E+01
23	.1446E+02	.2748E+01	.1433E+01	.6276E-05	-.5045E+01	.6376E+01	.1906E-05	-.7843E+00	-.1868E+01	.1240E+01
24	.1417E+02	.2621E+01	.1487E+01	.5664E-05	-.5246E+01	.6255E+01	.2059E-05	.7715E+00	-.1777E+01	.1234E+01
25	.1373E+02	.2497E+01	.1592E+01	.5524E-05	-.5404E+01	.6047E+01	.2107E-05	-.7725E+00	-.1669E+01	.1221E+01
26	.1319E+02	.2378E+01	.1600E+01	.5029E-05	-.5500E+01	.5834E+01	.2474E-05	-.7830E+00	-.1550E+01	.1206E+01
27	.1255E+02	.2262E+01	.1661E+01	.5025E-05	-.5616E+01	.5484E+01	.3034E-05	-.8034E+00	-.1425E+01	.1191E+01
28	.1178E+02	.2150E+01	.1728E+01	.5144E-05	.5664E+01	.5274E+01	.3751E-05	-.1258E+01	-.8979E+00	.1165E+01
29	.1113E+02	.2109E+01	.1875E+01	.5114E-05	-.5640E+01	.4788E+01	.4364E-05	-.1766E+01	-.4165E+00	.1137E+01
30	.1023E+02	.2076E+01	.2044E+01	.4977E-05	-.5413E+01	.4597E+01	.4808E-05	-.1797E+01	-.3649E+00	.1100E+01
31	.9258E+01	.2038E+01	.2224E+01	.4613E-05	-.5172E+01	.4184E+01	.5149E-05	-.1864E+01	-.2807E+00	.1066E+01
32	.8278E+01	.2015E+01	.2447E+01	.4044E-05	-.4617E+01	.3807E+01	.5295E-05	-.1901E+01	-.2155E+00	.1025E+01
33	.7275E+01	.1986E+01	.2685E+01	.3434E-05	-.4472E+01	.3444E+01	.5505E-05	-.1998E+01	-.8841E-01	.1006E+01
34	.6274E+01	.1991E+01	.2956E+01	.3051E-05	-.3968E+01	.3114E+01	.5410E-05	-.2035E+01	.1540E-01	.9866E+00
35	.5275E+01	.1990E+01	.3334E+01	.3514E-05	-.3468E+01	.2774E+01	.6571E-05	-.1833E+01	-.5459E-01	.9663E+00
36	.4362E+01	.1970E+01	.3691E+01	.4901E-05	.2446E+01	.2451E+01	.8526E-05	-.1923E+01	.1179E+00	.9717E+00
37	.3425E+01	.2044E+01	.4215E+01	.9164E-05	.2244E+01	.2127E+01	.1989E-04	-.1873E+01	.2425E+00	.1002E+01
38	.2611E+01	.2112E+01	.4785E+01	.1784E-04	-.1648E+01	.1804E+01	.2568E-04	-.1550E+01	.1145E+00	.1018E+01
39	.1912E+01	.2132E+01	.5406E+01	.3276E-04	-.1220E+01	.1488E+01	.4415E-04	-.1478E+01	.2355E+00	.1040E+01
40	.1456E+01	.2358E+01	.6331E+01	.5604E-04	-.6874E+00	.1357E+01	.5697E-04	-.1464E+01	.7755E+00	.1069E+01
41	.9766E+00	.3197E+01	.7417E+01	.7024E-04	.2581E-01	.1624E+01	[illegible]	-.5674E+00	.7221E+00	.1106E+01
42	.9246E+00	.3837E+01	.8311E+01	.6744E-04	.2378E+00	.1014E+01	[illegible]	-.7012E+00	.8932E+00	.1151E+01
43	.9051E+00	.5124E+01	.8973E+01	.4629E-05	.9716E+00	.8753E+00	.6678E-08	-.2114E+00	.1513E+01	.1192E+01
44	.9621E+00	.7180E+01	.8779E+01	.2144E-04	.6312E+00	.4354E+00	-.1354E-03	.3654E+00	.1688E+01	.1223E+01
45	.9307E+00	.9015E+01	.8178E+01	.7644E-05	.6676E+00	.3076E+00	-.1644E-03	.3657E+00	.1506E+01	.1238E+01
46	.1262E+01	.1044E+02	.7995E+01	0.	.8815E+00	-.7177E-13	0.	-.3760E-01	.1431E+01	.1238E+01

SECOND INDEX= 14

IST	P/PINF	RHO/RINF	U/QINF	V/QINF	ET/ETINF	S/SINF	HT/HTINF	MACH	UBAR/QINF	VBAR/QINF	CP
1	.2411E+01	.1855E+01	.8507E+00	-.2446E-01	.1789E+01	.1017E+01	.1017E+01	.1529E+01	-.8507E+00	.2469E-01	.4616E+00
2	.2412E+01	.1855E+01	.8500E+00	-.2442E-01	.1787E+01	.1017E+01	.1013E+01	.1520E+01	-.8317E+00	.2430E-01	.4617E+00
3	.2417E+01	.1854E+01	.8284E+00	-.2081E-01	.1788E+01	.1014E+01	.1014E+01	.1517E+01	-.8286E+00	.4116E-02	.4632E+00
4	.2429E+01	.1859E+01	.8236E+00	-.7671E-02	.1786E+01	[illegible]	.1010E+01	.1500E+01	-.8220E+00	-.1744E-01	.4675E+00
5	.2447E+01	.1866E+01	.8165E+00	.1694E-01	.1783E+01	[illegible]	.1011E+01	.1490E+01	-.8185E+00	.1768E-01	.4734E+00
6	.2467E+01	.1875E+01	.8076E+00	.5815E-01	.1786E+01	[illegible]	.1014E+01	.1474E+01	-.8350E+00	.3950E-01	.4795E+00
7	.2484E+01	.1886E+01	.7960E+00	.1051E+00	.1774E+01	[illegible]	.1014E+01	.1466E+01	-.8492E+00	.8596E-01	.4856E+00
8	.2506E+01	.1903E+01	.7881E+00	.1534E+00	.1767E+01	.1014E+01	.1017E+01	.1461E+01	-.9502E+00	.2096E+00	.4925E+00
9	.2545E+01	.1936E+01	.7777E+00	.1944E+00	.1767E+01	.1014E+01	[illegible]	.1454E+01	-.9907E+00	.2211E+00	.5003E+00
10	.2615E+01	.1972E+01	.7662E+00	.2261E+00	.1767E+01	.1011E+01	[illegible]	.1454E+01	-.9280E+00	.1364E+00	.5280E+00
11	.2718E+01	.2026E+01	.7534E+00	[illegible]	.1765E+01	[illegible]	[illegible]	.1433E+01	-.8165E+00	.1810E-01	.5615E+00
12	.2834E+01	.2068E+01	.7408E+00	[illegible]	.1763E+01	.1011E+01	.1011E+01	.1404E+01	-.6942E+00	-.9334E-01	.5997E+00
13	.2931E+01	.2136E+01	.7290E+00	[illegible]	[illegible]	[illegible]	[illegible]	.1384E+01	-.6263E+00	-.1525E+00	.6316E+00
14	.2985E+01	.2161E+01	.7194E+00	.2561E+00	[illegible]	[illegible]	[illegible]	.1364E+01	-.5664E+00	-.2054E+00	.6484E+00
15	.2976E+01	.2156E+01	.7194E+00	.2497E+00	.2087E+01	[illegible]	[illegible]	.1377E+01	-.5388E+00	-.2274E+00	.6462E+00
16	.2909E+01	.2118E+01	.7155E+00	.2261E+00	.1978E+01	[illegible]	[illegible]	.1394E+01	-.5157E+00	-.2511E+00	.6243E+00
17	.2791E+01	.2069E+01	.7027E+00	.2247E+00	.1953E+01	[illegible]	[illegible]	.1357E+01	-.5076E+00	-.2673E+00	.5558E+00

18	.2637E+01	.1971E+01	.7367E+00	.2100E+00	.1835E+01	.1020E+01	.9875E+00	.1384E+01	-.5566E+00	-.2275E+00	.5353E+00
19	.2464E+01	.1879E+01	.7565E+00	.1953E+00	.1746E+01	.1014E+01	.9849E+00	.1476E+01	-.6006E+00	-.1991E+00	.4789E+00
20	.2293E+01	.1786E+01	.7800E+00	.1814E+00	.1662E+01	.1016E+01	.9844E+00	.1477E+01	-.5880E+00	-.2403E+00	.4229E+00
21	.2139E+01	.1702E+01	.8040E+00	.1704E+00	.1595E+01	.1014E+01	.9854E+00	.1552E+01	-.5796E+00	-.2838E+00	.3724E+00
22	.2011E+01	.1632E+01	.8254E+00	.1611E+00	.1540E+01	.1014E+01	.9876E+00	.1583E+01	-.5541E+00	-.3552E+00	.3306E+00
23	.1916E+01	.1578E+01	.8427E+00	.1544E+00	.1448E+01	.1014E+01	.9886E+00	.1624E+01	-.5256E+00	-.4444E+00	.2996E+00
24	.1850E+01	.1540E+01	.8536E+00	.1491E+00	.1468E+01	.1011E+01	.9916E+00	.1653E+01	-.5597E+00	-.4250E+00	.2779E+00
25	.1802E+01	.1511E+01	.8617E+00	.1453E+00	.1445E+01	.1011E+01	.9931E+00	.1672E+01	-.5856E+00	-.4216E+00	.2622E+00
26	.1755E+01	.1483E+01	.8686E+00	.1405E+00	.1421E+01	.1011E+01	.9926E+00	.1690E+01	-.6066E+00	-.4209E+00	.2469E+00
27	.1692E+01	.1445E+01	.8775E+00	.1348E+00	.1387E+01	.1011E+01	.9925E+00	.1714E+01	-.6277E+00	-.4236E+00	.2263E+00
28	.1599E+01	.1388E+01	.8906E+00	.1184E+00	.1336E+01	.1019E+01	.9911E+00	.1750E+01	-.6204E+00	-.7413E+00	.1960E+00
29	.1475E+01	.1313E+01	.9089E+00	.9674E-01	.1267E+01	.1008E+01	.9872E+00	.1802E+01	-.8535E+00	-.1104E+01	.1552E+00
30	.1328E+01	.1223E+01	.9325E+00	.6777E-01	.1185E+01	.1004E+01	.9865E+00	.1875E+01	-.9658E+00	-.1245E+01	.1073E+00
31	.1180E+01	.1132E+01	.9589E+00	.3567E-01	.1104E+01	.9918E+00	.9856E+00	.1964E+01	-.1124E+01	-.1376E+01	.5877E-01
32	.1053E+01	.1053E+01	.9855E+00	.6591E-02	.1036E+01	.9801E+00	.9867E+00	.2055E+01	-.1264E+01	-.1495E+01	.1744E-01
33	.9656E+00	.9955E+00	.1007E+01	-.1391E-01	.9898E+00	.9716E+00	.9901E+00	.2137E+01	-.1479E+01	-.1710E+01	-.1125E-01
34	.9194E+00	.9624E+00	.1020E+01	-.2433E-01	.9653E+00	.9764E+00	.9957E+00	.2183E+01	-.1619E+01	-.1859E+01	-.2635E-01
35	.9071E+00	.9502E+00	.1025E+01	-.2684E-01	.9580E+00	.9744E+00	.1000E+01	.2194E+01	-.1553E+01	-.1764E+01	-.3038E-01
36	.9175E+00	.9532E+00	.1023E+01	-.2494E-01	.9619E+00	.9811E+00	.1002E+01	.2180E+01	-.1810E+01	-.2055E+01	-.2699E-01
37	.9428E+00	.9680E+00	.1015E+01	-.2087E-01	.9751E+00	.9867E+00	.1001E+01	.2150E+01	-.1834E+01	-.2124E+01	-.1870E-01
38	.9800E+00	.9936E+00	.1005E+01	-.1433E-01	.9907E+00	.9884E+00	.9955E+00	.2111E+01	-.1536E+01	-.1812E+01	-.6534E-02
39	.1036E+01	.1031E+01	.9871E+00	-.3174E-02	.1016E+01	.9871E+00	.9878E+00	.2064E+01	-.1557E+01	-.1694E+01	.9837E-02
40	.1097E+01	.1079E+01	.9683E+00	.1533E-01	.1050E+01	.9884E+00	.9799E+00	.2007E+01	-.1530E+01	-.2056E+01	.3170E-01
41	.1184E+01	.1134E+01	.9470E+00	.4247E-01	.1093E+01	.9931E+00	.9763E+00	.1959E+01	-.3413E+00	-.1141E+01	.6008E-01
42	.1284E+01	.1186E+01	.9260E+00	.7619E-01	.1141E+01	.1011E+01	.9804E+00	.1866E+01	.1454E+00	-.8267E+00	.9303E-01
43	.1385E+01	.1228E+01	.9061E+00	.1114E+00	.1188E+01	.1034E+01	.9921E+00	.1801E+01	.7783E+00	-.1640E+00	.1259E+00
44	.1463E+01	.1253E+01	.8958E+00	.1391E+00	.1225E+01	.1064E+01	.1008E+01	.1754E+01	.1336E+01	.5233E+00	.1513E+00
45	.1499E+01	.1262E+01	.8905E+00	.1533E+00	.1241E+01	.1084E+01	.1016E+01	.1733E+01	.1049E+01	.3593E+00	.1633E+00
46	.1499E+01	.1262E+01	.8906E+00	.1532E+00	.1241E+01	.1082E+01	.1015E+01	.1733E+01	.8509E+00	.1779E+00	.1633E+00

1ST	JACOBIAN	X	Y	DXI/DT	DXI/DX	DXI/DY	DETA/DT	DETA/DX	DETA/DY	EI/EIINF
1	.2585E+01	.1700E+02	.2488E+01	0.	-.2917E+00	-.1469E-12	0.	.4158E-02	-.8663E+01	.1302E+01
2	.3544E+01	.1404E+02	.2487E+01	.6675E-04	-.4006E+00	.1841E-01	.1900E-04	.4522E-04	-.8648E+01	.1302E+01
3	.4490E+01	.1201E+02	.2488E+01	.5133E-04	-.5076E+00	.5167E-02	.1661E-04	-.1792E+00	-.8860E+01	.1303E+01
4	.6470E+01	.1009E+02	.2567E+01	.3399E-04	-.6745E+00	.7709E-01	.1364E-04	-.2909E+00	-.9554E+01	.1307E+01
5	.1044E+02	.9054E+01	.2578E+01	.1984E-04	-.1072E+01	.7960E-01	.5864E-05	.4373E+00	-.9778E+01	.1313E+01
6	.1396E+02	.8218E+01	.2483E+01	.1394E-04	-.1560E+01	[illegible]	.6849E-05	.1087E+01	-.9249E+01	.1316E+01
7	.2156E+02	.7729E+01	.2424E+01	.8494E-05	-.2422E+01	.8184E+00	.6495E-05	.2168E+01	-.9635E+01	.1317E+01
8	.2772E+02	.7324E+01	.2262E+01	.6247E-05	-.3140E+01	.1724E+01	.5403E-05	.4221E+01	-.1119E+02	.1317E+01
9	.3342E+02	.6922E+01	.2117E+01	.5053E-05	-.3704E+01	[illegible]	.4552E-05	.5543E+01	-.1569E+02	.1319E+01
10	.3858E+02	.6505E+01	.1962E+01	.4275E-05	.4187E+01	.5135E+01	.3792E-05	.5909E+01	-.1646E+02	.1326E+01
11	.4019E+02	.6069E+01	.1611E+01	.4054E-05	-.4557E+01	.6726E+01	[illegible]	.5919E+01	-.1765E+02	.1340E+01
12	.3697E+02	.5628E+01	.1668E+01	[illegible]	[illegible]	.7520E+01	[illegible]	.5168E+01	-.1635E+02	.1357E+01
13	.3151E+02	.5184E+01	.1530E+01	[illegible]	[illegible]	[illegible]	[illegible]	.4265E+01	-.1403E+02	.1371E+01
14	.2739E+02	.4737E+01	.1397E+01	[illegible]	[illegible]	[illegible]	.1217E-05	.3086E+01	-.1121E+02	.1380E+01
15	.2444E+02	.4305E+01	.1306E+01	[illegible]	[illegible]	[illegible]	.1387E-05	.2170E+01	-.9010E+01	.1386E+01
16	.2253E+02	.4000E+01	.1219E+01	[illegible]	[illegible]	[illegible]	[illegible]	.1451E+01	-.7369E+01	.1373E+01
17	.2146E+02	.3711E+01	.1177E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-.6132E+01	[illegible]
18	.2013E+02	.3428E+01	.1136E+01	[illegible]	[illegible]	[illegible]	[illegible]	.8035E+00	-.5642E+01	.1358E+01
19	.1877E+02	.3150E+01	.1097E+01	[illegible]	[illegible]	[illegible]	[illegible]	.6782E+00	-.5160E+01	[illegible]
20	.1852E+02	.2679E-01	.1064E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-.4365E+01	[illegible]
21	.1872E+02	.2677E+01	.1065E+01	.4701E-05	[illegible]	[illegible]	[illegible]	[illegible]	-.3727E+01	[illegible]
22	.1922E+02	.2486E+01	.1066E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-.3114E+01	[illegible]
23	.2015E+02	.2353E+01	.1101E+01	.2914E-05	[illegible]	[illegible]	[illegible]	[illegible]	-.2537E+01	.1215E+01
24	.1980E+02	[illegible]	.1134E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-.2457E+01	[illegible]
25	.1927E+02	.2107E+01	.1167E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-.2318E+01	[illegible]
26	.1859E+02	.1988E+01	.1206E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-.2184E+01	.1184E+01
27	.1779E+02	.1874E+01	.1239E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-.2015E+01	.1171E+01
28	.1735E+02	.1758E+01	.1272E+01	[illegible]	[illegible]	.5816E+01	[illegible]	[illegible]	[illegible]	.1156E+01
29	.1701E+02	.1727E+01	.1397E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-.5694E+00	[illegible]
30	.1566E+02	.1694E+01	.1545E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-.5178E+00	.1098E+01
31	.1417E+02	.1656E+01	.1696E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
32	.1268E+02	.1631E+01	.1896E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-.3659E+00	[illegible]
33	.1117E+02	.1599E+01	.2105E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.9699E+00
34	.9689E+01	.1591E+01	.2395E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
35	.8314E+01	.1575E+01	.2705E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-.2215E+00	.9547E+00
36	.6939E+01	.1538E+01	.3027E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-.6427E-02	.9625E+00

37	.5532E+01	.1573E+01	.3947E+01	.7229E-06	-.3331E+01	.2044E+01	.3506E-05	-.2959E+01	.1551E+00	.9740E+00
38	.4252E+01	.1594E+01	.4097E+01	.4164E-05	-.2642E+01	.1706E+01	.8955E-05	-.2493E+01	-.3040E-01	.9864E+00
39	.2947E+01	.1558E+01	.4696E+01	.1231E-04	-.1911E+01	.1279E+01	.2116E-04	-.2374E+01	.5987E-01	.9995E+00
40	.2068E+01	.1635E+01	.5722E+01	.2047E-04	-.1214E+01	.1119E+01	.3644E-04	-.2037E+01	.7175E+00	.1017E+01
41	.1139E+01	.2253E+01	.7246E+01	.5674E-04	-.2617E+00	.8613E+00	.6525E-04	-.1545E+01	.6809E+00	.1044E+01
42	.1077E+01	.2831E+01	.8433E+01	.5508E-04	.3147E-01	.9228E+00	.2741E-04	-.1127E+01	.1067E+01	.1083E+01
43	.1048E+01	.4235E+01	.9343E+01	.3507E-04	.3544E+00	.8101E+00	-.3849E-04	-.4499E+00	.1926E+01	.1128E+01
44	.1294E+01	.6511E+01	.9294E+01	.8196E-05	.5286E+00	.7806E+00	-.8756E-04	.3429E+00	.2954E+01	.1167E+01
45	.1014E+01	.8802E+01	.8813E+01	-.7767E-05	.5527E+00	.2413E+00	-.1582E-03	.3372E+00	.1981E+01	.1166E+01
46	.1400E+01	.1042E+02	.8628E+01	0.	.7801E+00	-.3980E-13	0.	.4982E-01	.1795E+01	.1188E+01

SECOND INDEX- 15

1ST	P/PINF	RHO/RINF	U/QINF	V/QINF	ET/ETINF	S/SINF	HT/HTINF	MACH	UBAR/QINF	VBAR/QINF	CP
1	.2400E+01	.1847E+01	.8368E+00	-.2309E-01	.1772E+01	.1016E+01	.1020E+01	.1535E+01	-.8368E+00	.2398E-01	.4579E+00
2	.2400E+01	.1847E+01	.8368E+00	-.2309E-01	.1792E+01	.1016E+01	.1020E+01	.1535E+01	-.8381E+00	.2308E-01	.4580E+00
3	.2393E+01	.1842E+01	.8348E+00	-.2004E-01	.1783E+01	.1017E+01	.1018E+01	.1551E+01	-.8350E+00	.1475E-02	.4556E+00
4	.2386E+01	.1836E+01	.8303E+00	-.6804E-02	.1770E+01	.1019E+01	.1015E+01	.1522E+01	-.8275E+00	-.2117E-01	.4534E+00
5	.2387E+01	.1833E+01	.8233E+00	.2092E-01	.1758E+01	.1022E+01	.1011E+01	.1508E+01	-.8260E+00	.1789E-01	.4537E+00
6	.2397E+01	.1837E+01	.8145E+00	.6234E-01	.1753E+01	.1023E+01	.1008E+01	.1495E+01	-.8345E+00	.3946E-01	.4569E+00
7	.2415E+01	.1849E+01	.8043E+00	.1113E+00	.1757E+01	.1021E+01	.1004E+01	.1485E+01	-.8542E+00	.7589E-01	.4629E+00
8	.2452E+01	.1875E+01	.7929E+00	.1595E+00	.1776E+01	.1017E+01	.1005E+01	.1478E+01	-.9493E+00	.1838E+00	.4748E+00
9	.2517E+01	.1915E+01	.7801E+00	.2007E+00	.1816E+01	.1013E+01	.1004E+01	.1465E+01	-.9599E+00	.1725E+00	.4961E+00
10	.2618E+01	.1973E+01	.7658E+00	.2324E+00	.1873E+01	.1011E+01	.1007E+01	.1452E+01	-.8855E+00	.8920E-01	.5291E+00
11	.2747E+01	.2043E+01	.7505E+00	.2527E+00	.1941E+01	.1010E+01	.1010E+01	.1428E+01	-.7951E+00	.1208E-02	.5712E+00
12	.2875E+01	.2110E+01	.7360E+00	.2626E+00	.2002E+01	.1011E+01	.1012E+01	.1395E+01	-.7063E+00	-.7725E-01	.6135E+00
13	.2968E+01	.2157E+01	.7242E+00	.2634E+00	.2040E+01	.1012E+01	.1011E+01	.1373E+01	-.6609E+00	-.1128E+00	.6438E+00
14	.3000E+01	.2172E+01	.7166E+00	.2577E+00	.2043E+01	.1013E+01	.1008E+01	.1354E+01	-.6234E+00	-.1428E+00	.6542E+00
15	.2962E+01	.2149E+01	.7147E+00	.2472E+00	.2009E+01	.1015E+01	.1002E+01	.1346E+01	-.6057E+00	-.1575E+00	.6418E+00
16	.2860E+01	.2094E+01	.7197E+00	.2337E+00	.1946E+01	.1017E+01	.9960E+00	.1353E+01	-.5888E+00	-.1778E+00	.6083E+00
17	.2707E+01	.2012E+01	.7320E+00	.2184E+00	.1863E+01	.1018E+01	.9905E+00	.1376E+01	-.5900E+00	-.1879E+00	.5583E+00
18	.2522E+01	.1913E+01	.7516E+00	.2018E+00	.1772E+01	.1017E+01	.9862E+00	.1416E+01	-.6469E+00	-.1441E+00	.4979E+00
19	.2328E+01	.1809E+01	.7767E+00	.1861E+00	.1682E+01	.1016E+01	.9845E+00	.1471E+01	-.6940E+00	-.1166E+00	.4344E+00
20	.2146E+01	.1710E+01	.8069E+00	.1724E+00	.1602E+01	.1012E+01	.9855E+00	.1535E+01	-.6900E+00	-.1508E+00	.3748E+00
21	.1992E+01	.1626E+01	.8309E+00	.1624E+00	.1537E+01	.1007E+01	.9881E+00	.1599E+01	-.6874E+00	-.1874E+00	.3243E+00
22	.1874E+01	.1559E+01	.8528E+00	.1548E+00	.1488E+01	.1006E+01	.9918E+00	.1652E+01	-.6601E+00	-.2540E+00	.2860E+00
23	.1797E+01	.1514E+01	.8664E+00	.1503E+00	.1455E+01	.1005E+01	.9954E+00	.1690E+01	-.6198E+00	-.3468E+00	.2606E+00
24	.1754E+01	.1488E+01	.8765E+00	.1484E+00	.1436E+01	.1008E+01	.9977E+00	.1711E+01	-.6534E+00	-.3262E+00	.2465E+00
25	.1732E+01	.1474E+01	.8805E+00	.1477E+00	.1426E+01	.1007E+01	.9971E+00	.1721E+01	-.6752E+00	-.3130E+00	.2395E+00
26	.1715E+01	.1463E+01	.8842E+00	.1475E+00	.1417E+01	.1007E+01	.9974E+00	.1728E+01	-.6910E+00	-.3063E+00	.2340E+00
27	.1686E+01	.1443E+01	.8875E+00	.1448E+00	.1400E+01	.1008E+01	.1000E+01	.1737E+01	-.7056E+00	-.3039E+00	.2242E+00
28	.1628E+01	.1407E+01	.8956E+00	.1371E+00	.1368E+01	.1010E+01	.1006E+01	.1760E+01	-.6418E+00	-.6940E+00	.2055E+00
29	.1535E+01	.1348E+01	.9088E+00	.1217E+00	.1314E+01	.1012E+01	.1004E+01	.1795E+01	-.9452E+00	-.1262E+01	.1751E+00
30	.1408E+01	.1267E+01	.9274E+00	.9794E-01	.1240E+01	.1011E+01	.9984E+00	.1849E+01	-.1070E+01	-.1355E+01	.1334E+00
31	.1260E+01	.1174E+01	.9510E+00	.6554E-01	.1154E+01	.1005E+01	.9964E+00	.1927E+01	-.1262E+01	-.1514E+01	.8510E-01
32	.1117E+01	.1085E+01	.9770E+00	.3185E-01	.1073E+01	.9978E+00	.9954E+00	.2013E+01	-.1440E+01	-.1658E+01	.3818E-01
33	.1004E+01	.1017E+01	.1001E+01	.3814E-02	.1010E+01	.9854E+00	.9967E+00	.2102E+01	-.1732E+01	-.1933E+01	.1225E-02
34	.9347E+00	.9673E+00	.1019E+01	-.1323E-01	.9742E+00	.9754E+00	.1000E+01	.2167E+01	-.1930E+01	-.2126E+01	-.2134E-01
35	.9083E+00	.9471E+00	.1028E+01	-.1893E-01	.9535E+00	.9804E+00	.1005E+01	.2194E+01	-.1896E+01	-.2057E+01	-.2998E-01
36	.9128E+00	.9459E+00	.1029E+01	-.1776E-01	.9614E+00	.9867E+00	.1004E+01	.2187E+01	-.2325E+01	-.2504E+01	-.2852E-01
37	.9341E+00	.9567E+00	.1025E+01	-.1374E-01	.9713E+00	.9745E+00	.1010E+01	.2164E+01	-.2399E+01	-.2614E+01	-.2156E-01
38	.9637E+00	.9750E+00	.1015E+01	-.1019E-01	.9868E+00	.9974E+00	.1007E+01	.2134E+01	-.2067E+01	-.2260E+01	-.1305E-01
39	.9987E+00	.1004E+01	.1004E+01	-.4623E-02	.1046E+01	.9954E+00	.1001E+01	.2104E+01	-.2255E+01	-.2496E+01	-.4375E-03
40	.1045E+01	.1042E+01	.9901E+00	.6914E-02	.1041E+01	.9775E+00	.9881E+00	.2073E+01	-.2739E+01	-.3048E+01	.1464E-01
41	.1108E+01	.1108E+01	.9751E+00	.2768E-01	.1076E+01	.9559E+00	.9744E+00	.2055E+01	-.8614E+00	-.1474E+01	.3537E-01
42	.1186E+01	.1167E+01	.9540E+00	.5675E-01	.1144E+01	.9553E+00	.9687E+00	.1983E+01	-.1168E+00	-.1059E+01	.6074E-01
43	.1269E+01	.1210E+01	.9371E+00	.8944E-01	.1161E+01	.9711E+00	.9727E+00	.1924E+01	.6775E+00	-.3156E+00	.8792E-01
44	.1337E+01	.1231E+01	.9240E+00	.1170E+00	.1169E+01	.1003E+01	.9848E+00	.1867E+01	.1325E+01	.4489E+00	.1102E+00
45	.1368E+01	.1231E+01	.9176E+00	.1302E+00	.1197E+01	.1022E+01	.9959E+00	.1637E+01	.1085E+01	.2835E+00	.1204E+00
46	.1368E+01	.1231E+01	.9177E+00	.1302E+00	.1197E+01	.1025E+01	.9955E+00	.1637E+01	.9187E+00	.1744E+00	.1203E+00

1ST	JACOBIAN	X	Y	DXI/DT	DXI/DX	DXI/DY	DETA/DT	DETA/DX	DETA/DY	FI/ETINF
1	.2963E+01	.1700E+02	.2387E+01	0.	-.2907E+00	0.	0.	.5447E-02	-.1019E+02	.1299E+01
2	.4079E+01	.1403E+02	.2381E+01	.5213E-04	-.4005E+00	.2477E-01	.6681E-05	.5846E-04	-.1019E+02	.1299E+01
3	.5153E+01	.1201E+02	.2387E+01	.4065E-04	.5002E+00	.2563E+00	.8786E-05	-.2259E+00	-.1019E+02	.1298E+01
4	.7398E+01	.1008E+02	.2469E+01	.2753E-04	.6721E+00	.1040E+00	.7571E-05	-.3671E+00	-.1095E+02	.1304E+01
5	.1181E+02	.9045E+01	.2481E+01	.1669E-04	.1401E+01	.1052E+00	.8111E-05	.5035E+00	-.1118E+02	.1302E+01
6	.1644E+02	.6183E+01	.2368E+01	.1197E-04	.1598E+01	.5331E+00	.7771E-05	.1356E+01	-.1116E+02	.1305E+01

7	.2547E+02	.7688E+01	.2319E+01	.7024E-05	-.2393E+01	.1050E+01	.6002E-05	.2546E+01	-.1176E+02	.1306E+01
8	.3334E+02	.7260E+01	.2180E+01	.5124E-05	-.3046E+01	.2067E+01	.4862E-05	.4981E+01	-.1436E+02	.1308E+01
9	.4198E+02	.6826E+01	.2020E+01	.3956E-05	-.3600E+01	.3708E+01	.3851E-05	.6604E+01	-.1851E+02	.1314E+01
10	.5032E+02	.6378E+01	.1868E+01	.3224E-05	-.4186E+01	.5870E+01	.2995E-05	.7760E+01	-.2296E+02	.1327E+01
11	.4998E+02	.5914E+01	.1711E+01	.3184E-05	-.4492E+01	.6901E+01	.2622E-05	.7830E+01	-.2322E+02	.1344E+01
12	.4443E+02	.5449E+01	.1555E+01	.3474E-05	-.4479E+01	.7084E+01	.2345E-05	.6840E+01	-.2073E+02	.1363E+01
13	.3800E+02	.4981E+01	.1403E+01	.3907E-05	-.4358E+01	.6804E+01	.2001E-05	.5753E+01	-.1783E+02	.1376E+01
14	.3385E+02	.4511E+01	.1252E+01	.4207E-05	-.4356E+01	.6704E+01	.1556E-05	.4369E+01	-.1450E+02	.1382E+01
15	.3028E+02	.4128E+01	.1145E+01	.4524E-05	-.4325E+01	.6356E+01	.1244E-05	.3147E+01	-.1161E+02	.1378E+01
16	.2851E+02	.3744E+01	.1044E+01	.4602E-05	-.4412E+01	.6321E+01	.1087E-05	.2217E+01	-.9643E+01	.1366E+01
17	.2750E+02	.3448E+01	.9830E+00	.4468E-05	-.4506E+01	.6257E+01	.1086E-05	.1498E+01	-.8091E+01	.1346E+01
18	.2577E+02	.3156E+01	.9354E+00	.4378E-05	-.4542E+01	.6025E+01	.1217E-05	.1350E+01	-.7465E+01	.1319E+01
19	.2399E+02	.2868E+01	.8842E+00	.4064E-05	-.4473E+01	.5807E+01	.1566E-05	.1154E+01	-.6866E+01	.1287E+01
20	.2467E+02	.2585E+01	.8594E+00	.3203E-05	-.4870E+01	.6211E+01	.1328E-05	.7033E+00	-.6017E+01	.1254E+01
21	.2581E+02	.2381E+01	.8272E+00	.2388E-05	-.5358E+01	.6551E+01	.1182E-05	.3298E+00	-.5218E+01	.1225E+01
22	.2780E+02	.2180E+01	.8138E+00	.1561E-05	-.6100E+01	.7111E+01	.9163E-06	-.7167E-01	-.4474E+01	.1202E+01
23	.3075E+02	.2059E+01	.8323E+00	.9084E-06	-.7200E+01	.7681E+01	.6554E-06	-.5326E+00	-.3702E+01	.1187E+01
24	.3006E+02	.1939E+01	.8485E+00	.5470E-06	-.7484E+01	.7354E+01	.4588E-06	-.4643E+00	-.3561E+01	.1179E+01
25	.2918E+02	.1822E+01	.8632E+00	.3181E-06	-.7705E+01	.7006E+01	.3187E-06	-.4247E+00	-.3401E+01	.1176E+01
26	.2814E+02	.1706E+01	.8776E+00	.1956E-06	-.7824E+01	.6654E+01	.2606E-06	-.4069E+00	-.3270E+01	.1173E+01
27	.2697E+02	.1592E+01	.8921E+00	.1241E-06	-.7970E+01	.6301E+01	.2427E-06	-.4096E+00	-.3050E+01	.1166E+01
28	.2777E+02	.1486E+01	.9084E+00	.4334E-07	-.8726E+01	.6451E+01	.2571E-06	-.1668E+01	-.1937E+01	.1157E+01
29	.2877E+02	.1453E+01	.1014E+01	-.5530E-07	-.9472E+01	.6424E+01	.1988E-06	-.3568E+01	-.7377E+00	.1139E+01
30	.2659E+02	.1429E+01	.1143E+01	-.1720E-06	-.9162E+01	.5758E+01	.1174E-06	-.3516E+01	-.6924E+00	.1111E+01
31	.2401E+02	.1401E+01	.1278E+01	-.3074E-06	-.8606E+01	.5011E+01	.1475E-09	-.3769E+01	-.5893E+00	.1073E+01
32	.2155E+02	.1380E+01	.1457E+01	-.4463E-06	-.8134E+01	.4354E+01	-.1425E-06	-.3940E+01	-.5223E+00	.1030E+01
33	.1893E+02	.1352E+01	.1644E+01	-.5903E-06	-.7500E+01	.3737E+01	.3064E-06	-.4357E+01	-.3525E+00	.9910E+00
34	.1641E+02	.1342E+01	.1918E+01	-.7477E-06	-.6730E+01	.3244E+01	-.4977E-06	-.4586E+01	-.2257E+00	.9664E+00
35	.1460E+02	.1325E+01	.2203E+01	-.9063E-06	-.6271E+01	.2876E+01	-.7174E-06	-.4242E+01	-.3830E+00	.9591E+00
36	.1224E+02	.1290E+01	.2492E+01	-.1122E-05	-.5550E+01	.2541E+01	-.9850E-06	-.4949E+01	-.1184E+00	.9650E+00
37	.9714E+01	.1305E+01	.3011E+01	-.1227E-05	-.4465E+01	.1991E+01	-.9799E-06	-.5068E+01	.8863E-01	.9767E+00
38	.7754E+01	.1308E+01	.3592E+01	-.5354E-06	-.3692E+01	.1684E+01	.4302E-06	-.4257E+01	-.1588E+00	.9879E+00
39	.5490E+01	.1264E+01	.4109E+01	.2426E-05	-.2774E+01	.1191E+01	.5894E-05	-.4432E+01	-.7735E-01	.9946E+00
40	.3908E+01	.1280E+01	.5157E+01	.1603E-04	-.1919E+01	.1001E+01	.2526E-04	-.5497E+01	.8204E+00	.9963E+00
41	.1741E+01	.1684E+01	.6922E+01	.3573E-04	-.5515E+00	.7673E+00	.6415E-04	-.2799E+01	.7331E+00	.1000E+01
42	.1423E+01	.2122E+01	.8372E+01	.4714E-04	-.1238E+00	.8315E+00	.5909E-04	-.1913E+01	.1351E+01	.1016E+01
43	.1335E+01	.3583E+01	.9610E+01	.3573E-04	.2884E+00	.7403E+00	.4465E-05	-.8170E+00	.2570E+01	.1048E+01
44	.1932E+01	.5973E+01	.9596E+01	.7124E-05	.4623E+00	.8821E+00	-.4042E-04	.3331E+00	.4815E+01	.1087E+01
45	.1281E+01	.8566E+01	.9265E+01	-.1125E-04	.4799E+00	.2741E+00	-.1144E-03	.3151E+00	.2849E+01	.1112E+01
46	.1657E+01	.1042E+02	.9107E+01	0.	.6746E+00	0.	0.	.1184E+00	.2458E+01	.1112E+01

SECOND INDEX= 16

1ST	P/PINF	RHO/RINF	U/QINF	V/QINF	ET/ETINF	S/SINF	H/HTINF	MACH	UBAR/QINF	VBAR/QINF	CP
1	.2393E+01	.1843E+01	.8420E+00	-.2097E-01	.1796E+01	.1017E+01	.1024E+01	.1545E+01	-.8420E+00	.2141E-01	.4555E+00
2	.2393E+01	.1843E+01	.8419E+00	-.2096E-01	.1796E+01	.1017E+01	.1024E+01	.1545E+01	-.8434E+00	.2103E-01	.4556E+00
3	.2372E+01	.1831E+01	.8402E+00	-.1895E-01	.1776E+01	.1017E+01	.1021E+01	.1543E+01	-.8404E+00	-.1085E-02	.4487E+00
4	.2347E+01	.1814E+01	.8362E+00	-.6227E-02	.1754E+01	.1019E+01	.1016E+01	.1537E+01	-.8322E+00	-.2104E-01	.4405E+00
5	.2334E+01	.1804E+01	.8297E+00	.2256E-01	.1734E+01	.1020E+01	.1012E+01	.1525E+01	-.8326E+00	.1655E-01	.4364E+00
6	.2341E+01	.1806E+01	.8207E+00	.6610E-01	.1727E+01	.1024E+01	.1008E+01	.1512E+01	-.8423E+00	.3626E-01	.4385E+00
7	.2365E+01	.1822E+01	.8093E+00	.1170E+00	.1734E+01	.1023E+01	.1004E+01	.1500E+01	-.8568E+00	.6394E-01	.4465E+00
8	.2417E+01	.1856E+01	.7958E+00	.1658E+00	.1762E+01	.1017E+01	.1005E+01	.1489E+01	-.9359E+00	.1523E+00	.4635E+00
9	.2504E+01	.1908E+01	.7803E+00	.2066E+00	.1810E+01	.1014E+01	.1004E+01	.1473E+01	-.9225E+00	.1255E+00	.4919E+00
10	.2629E+01	.1978E+01	.7632E+00	.2367E+00	.1677E+01	.1011E+01	.1007E+01	.1449E+01	-.8534E+00	.5042E-01	.5327E+00
11	.2775E+01	.2057E+01	.7459E+00	.2556E+00	.1952E+01	.1011E+01	.1010E+01	.1419E+01	-.7888E+00	.3424E-03	.5805E+00
12	.2908E+01	.2127E+01	.7308E+00	.2640E+00	.2015E+01	.1011E+01	.1011E+01	.1389E+01	-.7188E+00	-.5987E-01	.6240E+00
13	.2992E+01	.2169E+01	.7200E+00	.2635E+00	.2047E+01	.1011E+01	.1010E+01	.1365E+01	-.6900E+00	-.7902E-01	.6514E+00
14	.3004E+01	.2174E+01	.7151E+00	.2564E+00	.2041E+01	.1013E+01	.1007E+01	.1351E+01	-.6714E+00	-.9138E-01	.6553E+00
15	.2939E+01	.2138E+01	.7171E+00	.2446E+00	.1977E+01	.1015E+01	.1003E+01	.1352E+01	-.6607E+00	-.1019E+00	.6341E+00
16	.2807E+01	.2067E+01	.7268E+00	.2293E+00	.1973E+01	.1016E+01	.9956E+00	.1367E+01	-.6502E+00	-.1193E+00	.5911E+00
17	.2628E+01	.1971E+01	.7443E+00	.2127E+00	.1867E+01	.1016E+01	.9918E+00	.1401E+01	-.6588E+00	-.1244E+00	.5323E+00
18	.2422E+01	.1862E+01	.7685E+00	.1955E+00	.1734E+01	.1015E+01	.9876E+00	.1453E+01	-.7190E+00	-.8186E-01	.4652E+00
19	.2217E+01	.1753E+01	.7970E+00	.1797E+00	.1641E+01	.1011E+01	.9864E+00	.1518E+01	-.7636E+00	-.5995E-01	.3980E+00
20	.2034E+01	.1653E+01	.8262E+00	.1673E+00	.1561E+01	.1009E+01	.9887E+00	.1588E+01	-.7688E+00	-.8555E-01	.3381E+00
21	.1887E+01	.1570E+01	.8521E+00	.1583E+00	.1496E+01	.1007E+01	.9917E+00	.1653E+01	-.7714E+00	-.1127E+00	.2907E+00
22	.1785E+01	.1510E+01	.8716E+00	.1527E+00	.1454E+01	.1007E+01	.9954E+00	.1701E+01	-.7477E+00	-.1685E+00	.2567E+00
23	.1727E+01	.1475E+01	.8833E+00	.1504E+00	.1428E+01	.1006E+01	.9972E+00	.1730E+01	-.7029E+00	-.2544E+00	.2378E+00
24	.1705E+01	.1460E+01	.8881E+00	.1504E+00	.1419E+01	.1006E+01	.1001E+01	.1741E+01	-.7318E+00	-.2305E+00	.2307E+00

25	.1706E+01	.1458E+01	.8884E+00	.1571E+00	.1419E+01	.1006E+01	.1003E+01	.1742E+01	-.7484E+00	-.2161E+00	.2308E+00
26	.1713E+01	.1462E+01	.8872E+00	.1566E+00	.1425E+01	.1007E+01	.1004E+01	.1739E+01	-.7582E+00	-.2085E+00	.2332E+00
27	.1714E+01	.1461E+01	.8869E+00	.1557E+00	.1425E+01	.1008E+01	.1004E+01	.1737E+01	-.7654E+00	-.2057E+00	.2336E+00
28	.1697E+01	.1448E+01	.8893E+00	.1541E+00	.1411E+01	.1010E+01	.1005E+01	.1743E+01	-.6481E+00	-.6515E+00	.2279E+00
29	.1648E+01	.1415E+01	.8964E+00	.1462E+00	.1368E+01	.1012E+01	.1006E+01	.1759E+01	-.1033E+01	-.1371E+01	.2118E+00
30	.1555E+01	.1354E+01	.9084E+00	.1307E+00	.1324E+01	.1017E+01	.1007E+01	.1790E+01	-.1168E+01	-.1478E+01	.1615E+00
31	.1419E+01	.1267E+01	.9269E+00	.1075E+00	.1245E+01	.1034E+01	.1004E+01	.1841E+01	-.1387E+01	-.1665E+01	.1372E+00
32	.1258E+01	.1165E+01	.9509E+00	.6713E-01	.1148E+01	.1017E+01	.1034E+01	.1917E+01	-.1602E+01	-.1837E+01	.8453E-01
33	.1107E+01	.1070E+01	.9772E+00	.2259E-01	.1064E+01	.1007E+01	.9978E+00	.2009E+01	-.1971E+01	-.2170E+01	.3486E-01
34	.9956E+00	.1000E+01	.1001E+01	.1174E-02	.9934E+00	.9754E+00	.9982E+00	.2077E+01	-.2235E+01	-.2411E+01	-.1425E-02
35	.9412E+00	.9648E+00	.1014E+01	-.1117E-01	.9716E+00	.9874E+00	.1001E+01	.2151E+01	-.2564E+01	-.2417E+01	-.1924E-01
36	.9348E+00	.9574E+00	.1021E+01	-.1035E-01	.9695E+00	.9954E+00	.1007E+01	.2159E+01	-.2903E+01	-.3044E+01	-.2131E-01
37	.9520E+00	.9638E+00	.1017E+01	-.6113E-02	.9771E+00	.1001E+01	.1010E+01	.2130E+01	-.3006E+01	-.3171E+01	-.1569E-01
38	.9744E+00	.9736E+00	.1011E+01	-.4177E-02	.9862E+00	.1011E+01	.1011E+01	.2113E+01	-.2697E+01	-.2843E+01	-.8367E-02
39	.9979E+00	.9892E+00	.1005E+01	-.2979E-02	.9984E+00	.1013E+01	.1003E+01	.2091E+01	-.3207E+01	-.3335E+01	-.6979E-03
40	.1027E+01	.1024E+01	.9975E+00	.2756E-02	.1021E+01	.9964E+00	.9924E+00	.2081E+01	-.4407E+01	-.4607E+01	.8837E-02
41	.1065E+01	.1088E+01	.9871E+00	.1736E-01	.1063E+01	.9865E+00	.9770E+00	.2084E+01	-.1351E+01	-.1804E+01	.2140E-01
42	.1112E+01	.1162E+01	.9735E+00	.3967E-01	.1107E+01	.9614E+00	.9537E+00	.2081E+01	-.3165E+00	-.1172E+01	.3677E-01
43	.1164E+01	.1215E+01	.9591E+00	.6606E-01	.1142E+01	.8818E+00	.9421E+00	.2053E+01	.5982E+00	-.4273E+00	.5364E-01
44	.1206E+01	.1234E+01	.9472E+00	.8646E-01	.1158E+01	.9001E+00	.9446E+00	.2003E+01	.1262E+01	.3432E+00	.6819E-01
45	.1227E+01	.1224E+01	.9408E+00	.9762E-01	.1154E+01	.9250E+00	.9524E+00	.1974E+01	.1061E+01	.2055E+00	.7435E-01
46	.1227E+01	.1224E+01	.9408E+00	.9762E-01	.1154E+01	.9250E+00	.9524E+00	.1974E+01	.9418E+00	.1365E+00	.7434E-01

1ST	JACOBIAN	X	Y	DXI/DT	DXI/DX	DXI/DY	DETA/DT	DETA/DX	DETA/DY	EI/EIINF
1	.3526E+01	.1700E+02	.2092E+01	0.	[illegible]	0.	0.	.6394E-02	-.1217E+02	.1298E+01
2	.4876E+01	.1403E+02	.2291E+01	.4011E-04	-.4034E+00	.3048E-01	.2010E-05	.6279E-04	-.1218E+02	.1298E+01
3	.6140E+01	.1200E+02	.2292E+01	.3167E-04	-.5045E+00	.7555E-02	.4427E-05	-.2901E+00	-.1217E+02	.1296E+01
4	.8776E+01	.1006E+02	.2385E+01	.2193E-04	-.6692E+00	.1265E+00	.6931E-05	-.4673E+00	-.1303E+02	.1294E+01
5	.1383E+02	.9036E+01	.2398E+01	.1368E-04	-.1056E+01	.1294E+00	.7419E-05	.5214E+00	-.1325E+02	.1297E+01
6	.2020E+02	.8146E+01	.2295E+01	.9114E-05	-.1530E+01	.7348E+00	.6952E-05	.1657E+01	-.1404E+02	.1296E+01
7	.3130E+02	.7646E+01	.2234E+01	.5651E-05	-.2369E+01	.1244E+01	.5265E-05	.3068E+01	-.1482E+02	.1298E+01
8	.4196E+02	.7199E+01	.2099E+01	.4054E-05	-.2979E+01	.2411E+01	.4115E-05	.6052E+01	-.1899E+02	.1303E+01
9	.5501E+02	.6741E+01	.1948E+01	.2970E-05	-.3556E+01	.4274E+01	.3047E-05	.8346E+01	-.2551E+02	.1312E+01
10	.6672E+02	.6272E+01	.1796E+01	.2460E-05	-.4204E+01	.6355E+01	.2295E-05	.1046E+02	-.3171E+02	.1329E+01
11	.6459E+02	.5791E+01	.1631E+01	.2427E-05	-.4486E+01	.7027E+01	.2007E-05	.1066E+02	-.3110E+02	.1349E+01
12	.5732E+02	.5309E+01	.1466E+01	.2653E-05	-.4451E+01	.6984E+01	.1756E-05	.9421E+01	-.2765E+02	.1367E+01
13	.4921E+02	.4826E+01	.1303E+01	.2906E-05	-.4285E+01	.6591E+01	.1464E-05	.8033E+01	-.2382E+02	.1379E+01
14	.4484E+02	.4341E+01	.1140E+01	.3115E-05	-.4377E+01	.6524E+01	.1146E-05	.6540E+01	-.1972E+02	.1382E+01
15	.4019E+02	.3947E+01	.1020E+01	.3325E-05	-.4335E+01	.6074E+01	.1011E-05	.4614E+01	-.1577E+02	.1375E+01
16	.3851E+02	.3556E+01	.9100E+00	.3285E-05	-.4456E+01	.6127E+01	.1017E-05	.3559E+01	-.1328E+02	.1358E+01
17	.3772E+02	.3257E+01	.8459E+00	.3068E-05	-.4653E+01	.6097E+01	.1177E-05	.2389E+01	-.1124E+02	.1333E+01
18	.3513E+02	.2960E+01	.7633E+00	.2908E-05	-.4586E+01	.5813E+01	[illegible]	.2133E+01	-.1037E+02	.1301E+01
19	.3268E+02	.2666E+01	.7240E+00	.2553E-05	-.4970E+01	.5561E+01	.1376E-05	.1813E+01	-.9568E+01	.1265E+01
20	.3464E+02	.2375E+01	.6723E+00	.1739E-05	-.4955E+01	.6137E+01	.1142E-05	.1290E+01	-.8635E+01	.1231E+01
21	.3760E+02	.2171E+01	.6500E+00	.1019E-05	-.5660E+01	.6615E+01	.6285E-06	.8566E+00	-.7636E+01	.1202E+01
22	.4237E+02	.1969E+01	.6271E+00	.4407E-06	-.6709E+01	.7471E+01	.4855E-06	.3045E+00	-.6722E+01	.1183E+01
23	.4947E+02	.1853E+01	.6328E+00	.8062E-07	-.8572E+01	.8471E+01	.2077E-06	-.2303E+00	-.5676E+01	.1171E+01
24	.4791E+02	.1739E+01	.6304E+00	-.1023E-06	-.8612E+01	.7967E+01	.4951E-07	-.1396E+00	-.5434E+01	.1168E+01
25	.4622E+02	.1626E+01	.6386E+00	-.1917E-06	-.8787E+01	.7484E+01	-.4599E-07	-.8609E-01	-.5186E+01	.1170E+01
26	.4443E+02	.1515E+01	.6402E+00	-.2223E-06	-.8916E+01	.7071E+01	-.8760E-07	-.6607E-01	-.4936E+01	.1172E+01
27	.4256E+02	.1404E+01	.6413E+00	-.2349E-06	-.9606E+01	.6565E+01	-.1086E-06	-.6196E-01	-.4683E+01	.1173E+01
28	.4646E+02	.1295E+01	.6431E+00	-.2237E-06	-.1035E+02	.7061E+01	[illegible]	-.2196E+01	-.2988E+01	.1171E+01
29	.5147E+02	.1270E+01	.7359E+00	-.2143E-06	-.1201E+02	.7444E+01	-.1441E-06	-.5419E+01	-.9266E+00	.1164E+01
30	.4773E+02	.1259E+01	.8536E+00	-.2383E-06	-.1161E+02	.6597E+01	-.1843E-06	-.5687E+01	-.8799E+00	.1148E+01
31	.4300E+02	.1239E+01	.9742E+00	-.2603E-06	-.1077E+02	.5625E+01	-.2254E-06	-.6177E+01	-.7562E+00	.1121E+01
32	.3874E+02	.1224E+01	.1141E+01	-.2714E-06	-.1027E+02	.4853E+01	-.2612E-06	-.6543E+01	-.6812E+00	.1081E+01
33	.3385E+02	.1204E+01	.1312E+01	-.2833E-06	-.9394E+01	.3992E+01	-.3003E-06	-.7347E+01	-.4771E+00	.1034E+01
34	.2930E+02	.1195E+01	.1575E+01	-.3043E-06	-.8387E+01	.3404E+01	-.3512E-06	-.7657E+01	-.3281E+00	.9952E+00
35	.2730E+02	.1181E+01	.1844E+01	-.3345E-06	-.8168E+01	.3008E+01	-.4112E-06	-.7465E+01	-.5466E+00	.9753E+00
36	.2302E+02	.1156E+01	.2121E+01	-.4714E-06	-.7236E+01	.2377E+01	-.6483E-06	-.9012E+01	-.2206E+00	.9764E+00
37	.1805E+02	.1162E+01	.2627E+01	-.7638E-06	-.5755E+01	.1977E+01	-.1104E-05	-.9246E+01	.3767E-01	.9877E+00
38	.1524E+02	.1160E+01	.3145E+01	[illegible]	-.5054E+01	.1714E+01	-.1423E-05	-.8057E+01	-.2858E+00	.1001E+01
39	.1145E+02	.1125E+01	.3085E+01	-.5784E-06	-.4030E+01	.1164E+01	-.3814E-06	-.9641E+01	-.2166E+00	.1005E+01
40	.8294E+01	.1122E+01	.4725E+01	.2715E-05	-.3014E+01	.9377E+00	.9258E-05	-.1215E+02	.1021E+01	.1003E+01
41	.2829E+01	.1371E+01	.6609E+01	.2216E-04	-.7770E+00	.6613E+00	.4078E-04	-.5003E+01	.7642E+00	.9790E+00
42	.2015E+01	.1662E+01	.8261E+01	.4443E-04	-.2607E+00	.7494E+00	.7124E-04	-.3189E+01	.1789E+01	.9576E+00
43	.1898E+01	.3147E+01	.9775E+01	.4205E-04	.2494E+00	.6734E+00	.5181E-04	-.1434E+01	.3735E+01	.9577E+00

44	.3040E+01	.5598E+01	.9772E+01	.1429E-04	.4211E+00	.9451E+00	.1271E-05	.3242E+00	.7946E+01	.9791E+00
45	.1816E+01	.8374E+01	.9562E+01	.2147E-05	.4355E+00	.3078E+00	-.4906E-04	.3000E+00	.4378E+01	.1003E+01
46	.2140E+01	.1042E+02	.9442E+01	0.	.5949E+00	.6008E-13	0.	.1565E+00	.3598E+01	.1003E+01

SECOND INDEX= 17

1ST	P/PINF	RHO/RINF	U/QINF	V/QINF	EI/EIINF	S/SINF	HT/HTINF	MACH	UBAR/QINF	VBAR/QINF	CP
1	.2390E+01	.1840E+01	.8455E+00	-.1822E-01	.1794E+01	.1018E+01	.1027E+01	.1551E+01	-.8455E+00	.1861E-01	.4546E+00
2	.2391E+01	.1840E+01	.8459E+00	-.1822E-01	.1794E+01	.1018E+01	.1027E+01	.1551E+01	-.8469E+00	.1829E-01	.4548E+00
3	.2353E+01	.1819E+01	.8441E+00	-.1806E-01	.1774E+01	.1018E+01	.1025E+01	.1551E+01	-.8443E+00	-.3116E-02	.4425E+00
4	.2310E+01	.1792E+01	.8409E+00	-.6605E-02	.1736E+01	.1016E+01	.1017E+01	.1548E+01	-.8359E+00	-.2539E-01	.4283E+00
5	.2289E+01	.1777E+01	.8351E+00	.2377E-01	.1714E+01	.1023E+01	.1013E+01	.1539E+01	-.8379E+00	.1470E-01	.4215E+00
6	.2298E+01	.1781E+01	.8261E+00	.6941E-01	.1707E+01	.1024E+01	.1005E+01	.1525E+01	-.8465E+00	.3082E-01	.4246E+00
7	.2332E+01	.1803E+01	.8157E+00	.1211E+00	.1720E+01	.1023E+01	.1004E+01	.1512E+01	-.8560E+00	.5095E-01	.4356E+00
8	.2396E+01	.1843E+01	.7981E+00	.1711E+00	.1755E+01	.1018E+01	.1005E+01	.1491E+01	-.9175E+00	.1206E+00	.4566E+00
9	.2498E+01	.1904E+01	.7791E+00	.2107E+00	.1807E+01	.1014E+01	.1005E+01	.1474E+01	-.8869E+00	.8465E-01	.4900E+00
10	.2640E+01	.1983E+01	.7603E+00	.2395E+00	.1881E+01	.1013E+01	.1007E+01	.1444E+01	-.8320E+00	.3611E-01	.5364E+00
11	.2798E+01	.2068E+01	.7414E+00	.2572E+00	.1959E+01	.1012E+01	.1009E+01	.1410E+01	-.7902E+00	.5604E-02	.5881E+00
12	.2931E+01	.2138E+01	.7262E+00	.2643E+00	.2021E+01	.1014E+01	.1010E+01	.1379E+01	-.7292E+00	-.4405E-01	.6314E+00
13	.3004E+01	.2175E+01	.7169E+00	.2618E+00	.2049E+01	.1014E+01	.1009E+01	.1358E+01	-.7126E+00	-.5241E-01	.6555E+00
14	.3001E+01	.2171E+01	.7147E+00	.2550E+00	.2038E+01	.1019E+01	.1006E+01	.1349E+01	-.7086E+00	-.5206E-01	.6543E+00
15	.2916E+01	.2125E+01	.7205E+00	.2431E+00	.1987E+01	.1015E+01	.1003E+01	.1356E+01	-.7021E+00	-.6117E-01	.6265E+00
16	.2762E+01	.2044E+01	.7349E+00	.2264E+00	.1907E+01	.1016E+01	.9971E+00	.1381E+01	-.6973E+00	-.7655E-01	.5764E+00
17	.2565E+01	.1939E+01	.7569E+00	.2050E+00	.1811E+01	.1017E+01	.9934E+00	.1427E+01	-.7136E+00	-.7844E-01	.5117E+00
18	.2349E+01	.1825E+01	.7846E+00	.1920E+00	.1711E+01	.1012E+01	.9912E+00	.1488E+01	-.7708E+00	-.4104E-01	.4411E+00
19	.2141E+01	.1713E+01	.8145E+00	.1772E+00	.1618E+01	.1008E+01	.9909E+00	.1556E+01	-.8093E+00	-.2740E-01	.3731E+00
20	.1962E+01	.1613E+01	.8426E+00	.1662E+00	.1538E+01	.1005E+01	.9925E+00	.1628E+01	-.8185E+00	-.4619E-01	.3147E+00
21	.1827E+01	.1537E+01	.8653E+00	.1588E+00	.1476E+01	.1001E+01	.9953E+00	.1686E+01	-.8261E+00	-.6322E-01	.2704E+00
22	.1740E+01	.1484E+01	.8804E+00	.1545E+00	.1435E+01	.1001E+01	.9964E+00	.1725E+01	-.8071E+00	-.1056E+00	.2421E+00
23	.1699E+01	.1457E+01	.8879E+00	.1527E+00	.1415E+01	.1004E+01	.1001E+01	.1743E+01	-.7672E+00	-.1736E+00	.2267E+00
24	.1693E+01	.1451E+01	.8894E+00	.1530E+00	.1411E+01	.1006E+01	.1003E+01	.1746E+01	-.7895E+00	-.1521E+00	.2266E+00
25	.1706E+01	.1457E+01	.8875E+00	.1550E+00	.1418E+01	.1007E+01	.1004E+01	.1740E+01	-.8008E+00	-.1395E+00	.2307E+00
26	.1726E+01	.1469E+01	.8845E+00	.1578E+00	.1428E+01	.1008E+01	.1005E+01	.1733E+01	-.8061E+00	-.1329E+00	.2374E+00
27	.1746E+01	.1480E+01	.8811E+00	.1603E+00	.1438E+01	.1008E+01	.1003E+01	.1725E+01	-.8078E+00	-.1312E+00	.2439E+00
28	.1758E+01	.1487E+01	.8792E+00	.1615E+00	.1444E+01	.1004E+01	.1004E+01	.1718E+01	-.6504E+00	-.6154E+00	.2479E+00
29	.1750E+01	.1480E+01	.8805E+00	.1602E+00	.1440E+01	.1010E+01	.1004E+01	.1720E+01	-.1127E+01	-.1460E+01	.2455E+00
30	.1700E+01	.1447E+01	.8877E+00	.1530E+00	.1411E+01	.1014E+01	.1006E+01	.1737E+01	-.1271E+01	-.1603E+01	.2290E+00
31	.1592E+01	.1375E+01	.9020E+00	.1316E+00	.1345E+01	.101 E+01	.1006E+01	.1771E+01	-.1510E+01	-.1812E+01	.1936E+00
32	.1424E+01	.1266E+01	.9239E+00	.1067E+00	.1242E+01	.1024E+01	.1005E+01	.1852E+01	-.1757E+01	-.2017E+01	.1387E+00
33	.1229E+01	.1143E+01	.9519E+00	.5516E-01	.1125E+01	.1019E+01	.9976E+00	.1922E+01	-.2191E+01	-.2401E+01	.7491E-01
34	.1062E+01	.1041E+01	.9816E+00	.1259E-01	.1030E+01	.1005E+01	.9947E+00	.2031E+01	-.2519E+01	-.2688E+01	.2010E-01
35	.9716E+00	.9844E+00	.1007E+01	-.8716E-02	.9834E+00	.9914E+00	.9972E+00	.2113E+01	-.2691E+01	-.2815E+01	-.9309E-02
36	.9560E+00	.9726E+00	.1012E+01	-.7895E-02	.9784E+00	.9937E+00	.1005E+01	.2134E+01	-.3504E+01	-.3622E+01	-.1439E-01
37	.9724E+00	.9799E+00	.1009E+01	-.2065E-02	.9862E+00	.1004E+01	.1004E+01	.2117E+01	-.3598E+01	-.3734E+01	-.9030E-02
38	.9901E+00	.9855E+00	.1004E+01	-.5028E-03	.9916E+00	.1011E+01	.1004E+01	.2093E+01	-.3383E+01	-.3509E+01	-.3304E-02
39	.1005E+01	.9866E+00	.1000E+01	-.1715E-02	.9950E+00	.1024E+01	.1010E+01	.2071E+01	-.4390E+01	-.4483E+01	.1587E-02
40	.1021E+01	.1004E+01	.9970E+00	.3088E-03	.1008E+01	.1017E+01	.1007E+01	.2065E+01	-.6456E+01	-.6560E+01	.6964E-02
41	.1043E+01	.1067E+01	.9924E+00	.1129E-01	.1047E+01	.9516E+00	.9806E+00	.2099E+01	-.1697E+01	-.2016E+01	.1395E-01
42	.1064E+01	.1164E+01	.9858E+00	.2719E-01	.1099E+01	.8601E+00	.9224E+00	.2152E+01	-.4459E+00	-.1222E+01	.2078E-01
43	.1084E+01	.1245E+01	.9750E+00	.4379E-01	.1137E+01	.7970E+00	.9067E+00	.2182E+01	.5389E+00	-.5070E+00	.2735E-01
44	.1102E+01	.1280E+01	.9632E+00	.5727E-01	.1151E+01	.7794E+00	.8933E+00	.2174E+01	.1178E+01	.2310E+00	.3320E-01
45	.1104E+01	.1273E-01	.9573E+00	.5869E-01	.1141E+01	.7879E+00	.8974E+00	.2152E+01	.1040E+01	.1309E+00	.3412E-01
46	.1104E+01	.1273E+01	.9574E+00	.5870E-01	.1141E+01	.7880E+00	.8941E+00	.2152E+01	.9578E+00	.8906E-01	.3412E-01

1ST	JACOBIAN	X	Y	DXI/DT	DXI/DX	DXI/DY	DETA/DT	DETA/DX	DETA/DY	FI/FIINF
1	.4335E+01	.1700E+02	.2217E+01	0.	-.2687E+00	.2965E-12	0.	.6937E-02	-.1500E+02	.1299E+01
2	.6018E+01	.1402E+02	.2217E+01	.3059E-04	-.4009E+00	.3986E-01	-.1210E-05	.6175E-04	-.1503E+02	.1299E+01
3	.7553E+01	.1200E+02	.2217E+01	.2991E-04	-.5059E+00	.8169E-02	.1969E-05	-.3762E+00	-.1500E+02	.1294E+01
4	.1074E+02	.1005E+02	.2316E+01	.1723E-04	-.6665E+00	.1491E+00	.5947E-05	-.6604E+00	-.1598E+02	.1289E+01
5	.1670E+02	.9027E+01	.2329E+01	.1107E-04	-.1035E+01	.1395E+00	.6360E-05	.7311E+00	-.1618E+02	.1288E+01
6	.2567E+02	.8110E+01	.2229E+01	.7095E-05	-.1507E+01	.8705E+00	.5649E-05	.2060E+01	-.1821E+02	.1292E+01
7	.3968E+02	.7608E+01	.2167E+01	.4435E-05	-.2345E+01	.1374E+01	.4495E-05	.3785E+01	-.1915E+02	.1294E+01
8	.5488E+02	.7145E+01	.2036E+01	.3071E-05	-.2938E+01	.2705E+01	.3357E-05	.7571E+01	-.2572E+02	.1300E+01
9	.7387E+02	.6671E+01	.1891E+01	.2159E-05	-.3528E+01	.4654E+01	.2363E-05	.1092E+02	-.3554E+02	.1312E+01
10	.9178E+02	.6188E+01	.1742E+01	.1730E-05	-.4279E+01	.6794E+01	.1692E-05	.1463E+02	-.4473E+02	.1331E+01
11	.8785E+02	.5697E+01	.1572E+01	.1766E-05	-.4545E+01	.7194E+01	.1449E-05	.1505E+02	-.4317E+02	.1355E+01
12	.7773E+02	.5205E+01	.1400E+01	.1930E-05	-.4459E+01	.6954E+01	.1219E-05	.1339E+02	-.3825E+02	.1371E+01
13	.6711E+02	.4713E+01	.1328E+01	.2141E-05	-.4275E+01	.6463E+01	.9790E-06	.1192E+02	-.3307E+02	.1381E+01

14	.6245E+02	.4220E+01	.1057E+01	.2190E-05	-.4395E+01	.6411E+01	.7364E-06	.9350E+01	-.2785E+02	.1382E+01
15	.5615E+02	.3821E+01	.9289E+00	.2375E-05	-.4335E+01	[illegible]	.7037E-06	[illegible]	-.2230E+02	.1372E+01
16	.5463E+02	.3426E+01	.8131E+00	[illegible]	-.4477E+01	[illegible]	[illegible]	[illegible]	-.1903E+02	.1353E+01
17	.5413E+02	.3125E+01	.7421E+00	.2041E-05	-.4715E+01	[illegible]	[illegible]	.3246E+01	-.1624E+02	.1323E+01
18	.5030E+02	.2826E+01	.6746E+00	.1851E-05	-.4603E+01	[illegible]	.1194E-05	.3316E+01	-.1505E+02	.1287E+01
19	.4683E+02	.2528E+01	.6107E+00	.1505E-05	[illegible]	[illegible]	.1187E-05	.2797E+01	-.1365E+02	.1250E+01
20	.5139E+02	.2232E+01	.5551E+00	.8878E-06	-.5034E+01	[illegible]	[illegible]	.2173E+01	-.1283E+02	.1215E+01
21	.5687E+02	.2029E+01	.5261E+00	.3778E-06	-.5868E+01	[illegible]	.5549E-06	.1650E+01	-.1154E+02	.1189E+01
22	.6652E+02	.1827E+01	.4971E+00	.3394E-07	-.7207E+01	[illegible]	.2194E-06	.1073E+01	-.1039E+02	.1173E+01
23	.8152E+02	.1716E+01	.4938E+00	-.1240E-06	-.9434E+01	[illegible]	.1715E-07	.3321E+00	-.8900E+01	.1166E+01
24	.7812E+02	.1607E+01	.4898E+00	-.1938E-06	-.9590E+01	.8514E+01	.7468E-07	.4250E+00	-.8524E+01	.1167E+01
25	.7487E+02	.1498E+01	.4827E+00	-.2041E-06	-.9690E+01	.7881E+01	.1107E-06	.4752E+00	-.8113E+01	.1171E+01
26	.7174E+02	.1390E+01	.4765E+00	-.1917E-06	-.9750E+01	[illegible]	.1169E-06	.4947E+00	-.7729E+01	.1175E+01
27	.6862E+02	.1283E+01	.4691E+00	-.1703E-06	-.9785E+01	[illegible]	-.1181E-06	.4785E+00	-.7346E+01	.1174E+01
28	.7904E+02	.1176E+01	.4624E+00	-.1257E-06	-.1184E+02	[illegible]	-.1029E-06	-.3070E+01	-.4710E+01	.1182E+01
29	.9364E+02	.1164E+01	.5408E+00	-.9107E-07	-.1462E+02	.8514E+01	-.8532E-07	-.9107E+01	-.1103E+01	.1182E+01
30	.8715E+02	.1152E+01	.6568E+00	-.8054E-07	-.1414E+02	.7488E+01	-.8457E-07	-.9655E+01	-.1054E+01	.1175E+01
31	.7826E+02	.1139E+01	.7684E+00	-.7059E-07	-.1526E+02	[illegible]	-.6184E-07	-.1059E+02	-.9075E+00	.1158E+01
32	.7077E+02	.1129E+01	.9271E+00	-.5653E-07	-.1441E+02	[illegible]	-.7415E-07	-.1134E+02	-.8234E+00	.1124E+01
33	.6145E+02	.1116E+01	.1087E+01	-.4176E-07	-.1125E+02	.4271E+01	-.6463E-07	-.1285E+02	-.5646E+00	.1075E+01
34	.5307E+02	.1110E+01	.1346E+01	-.2775E-07	-.9374E+01	.3576E+01	-.5511E-07	-.1371E+02	-.4135E+00	.1031E+01
35	.5215E+02	.1100E+01	.1663E+01	[illegible]	-.1018E+02	[illegible]	-.4171E-07	-.1367E+02	-.6963E+00	.9870E+00
36	.4397E+02	.1084E+01	.1870E+01	-.4035E-07	-.9005E+01	[illegible]	-.8160E-07	-.1687E+02	-.3112E+00	.9829E+00
37	.3395E+02	.1066E+01	.2375E+01	-.1564E-06	-.7064E+01	[illegible]	-.2531E-06	-.1718E+02	-.2713E-02	.9923E+00
38	.3052E+02	.1083E+01	.2881E+01	-.5241E-06	-.6554E+01	.1774E+01	-.7754E-06	-.1573E+02	-.4609E+00	.1035E+01
39	.2480E+02	.1060E+01	.3404E+01	-.6358E-06	-.5666E+01	.1168E+01	-.1172E-05	-.1920E+02	-.3640E+00	.1019E+01
40	.1806E+02	.1059E+01	.4436E+01	.2412E-06	-.4594E+01	.8795E+00	-.9419E-06	-.2683E+02	.1269E+01	.1019E+01
41	.4663E+01	.1201E+01	.6373E+01	.1231E-04	-.9195E+00	.6155E+00	.3401E-05	-.8764E+01	.7564E+00	.9767E+00
42	.3054E+01	.1378E+01	.8164E+01	.3847E-04	-.2528E+00	[illegible]	.4665E-04	-.5345E+01	.2554E+01	.9139E+00
43	.2921E+01	.2873E+01	.9873E+01	.4855E-04	.2271E+00	.6471E+00	.8658E-04	-.2496E+01	.5804E+01	.8701E+00
44	.5015E+01	.5353E+01	.9873E+01	.2417E-04	.3970E+00	.9776E+00	.3581E-04	.3210E+00	.1344E+02	.8604E+00
45	.2775E+01	.8233E+01	.9745E+01	.3056E-04	.4083E+00	[illegible]	.2256E-04	.2912E+00	.7032E+01	.8677E+00
46	.2996E+01	.1042E+02	.9665E+01	0.	.5434E+00	.8516E 13	0.	.1748E+00	.5514E+01	.8678E+00

SECOND INDEX= 18

1ST	P/PINF	RHO/RINF	U/QINF	V/QINF	ET/ETINF	S/SINF	HT/HTINF	MACH	UBAR/QINF	VBAR/QINF	CP
1	.2392E+01	.1839E+01	.8468E+00	-.1477E-01	.1803E+01	[illegible]	[illegible]	.1552E+01	-.8466E+00	.1523E-01	.4553E+00
2	.2393E+01	.1839E+01	.8467E+00	-.1497E-01	.1803E+01	[illegible]	[illegible]	.1550E+01	-.8481E+00	.1504E-01	.4555E+00
3	.2336E+01	.1807E+01	.8458E+00	-.1706E-01	.1764E+01	[illegible]	.1049E+01	.1555E+01	-.8460E+00	-.4325E-02	.4368E+00
4	.2273E+01	.1770E+01	.8459E+00	-.8088E-02	.1715E+01	[illegible]	.1017E+01	.1555E+01	-.8454E+00	-.2487E-01	.4164E+00
5	.2249E+01	.1753E+01	.8588E+00	.2098E-01	.1691E+01	[illegible]	.1017E+01	.1548E+01	-.8414E+00	.1324E-01	.4084E+00
6	.2268E+01	.1762E+01	.8506E+00	[illegible]	.1694E+01	[illegible]	[illegible]	.1550E+01	-.8482E+00	.2415E-01	.4146E+00
7	.2313E+01	.1790E+01	.8181E+00	.1374E+00	.1713E+01	[illegible]	[illegible]	.1555E+01	-.8534E+00	.3752E-01	.4293E+00
8	.2384E+01	.1855E+01	.8014E+00	.1766E+00	[illegible]	[illegible]	[illegible]	.1507E+01	-.8988E+00	.9072E-01	.4527E+00
9	.2495E+01	.1966E+01	.7814E+00	.2106E+00	.1868E+01	[illegible]	[illegible]	.1477E+01	-.8595E+00	.5780E-01	.4889E+00
10	.2650E+01	.1988E+01	.7581E+00	.2417E+00	.1888E+01	[illegible]	[illegible]	.1491E+01	-.8197E+00	.2374E-01	.5397E+00
11	.2818E+01	.2077E+01	.7784E+00	.2188E+00	.1967E+01	[illegible]	[illegible]	.1468E+01	-.7936E+00	.1157E-01	.5945E+00
12	.2946E+01	.2144E+01	.7231E+00	.2644E+00	.2034E+01	[illegible]	[illegible]	.1375E+01	-.7592E+00	-.5151E-01	.6364E+00
13	.3010E+01	.2177E+01	.7193E+00	.2619E+00	.2088E+01	[illegible]	[illegible]	.1354E+01	-.7291E+00	-.3505E-01	.6575E+00
14	.2998E+01	.2169E+01	.7142E+00	.2577E+00	.2058E+01	[illegible]	[illegible]	.1367E+01	-.7337E+00	-.2510E-01	.6534E+00
15	.2900E+01	.2116E+01	.7254E+00	.2805E+00	.1988E+01	[illegible]	[illegible]	.1356E+01	-.7297E+00	-.3401E-01	.6214E+00
16	.2731E+01	.2066E+01	.7411E+00	.2264E+00	.1897E+01	[illegible]	.9987E+00	.1358E+01	-.7258E+00	-.4754E-01	.5661E+00
17	.2522E+01	.1917E+01	.7665E+00	.2048E+00	.1800E+01	[illegible]	[illegible]	.1447E+01	-.7507E+00	-.4779E-01	.4978E+00
18	.2302E+01	.1800E+01	.7971E+00	.1954E+00	.1761E+01	[illegible]	[illegible]	.1515E+01	-.8041E+00	-.1738E-01	.4255E+00
19	.2097E+01	.1650E+01	.8276E+00	.1778E+00	.1604E+01	[illegible]	.9968E+00	.1568E+01	-.8356E+00	-.1233E-01	.3587E+00
20	.1924E+01	.1594E+01	.8557E+00	.1681E+00	[illegible]	[illegible]	.9970E+00	.1655E+01	-.8470E+00	-.2094E-01	.3025E+00
21	.1798E+01	.1520E+01	.8721E+00	.1616E+00	.1467E+01	[illegible]	.9968E+00	.1704E+01	-.8577E+00	-.3532E-01	.2611E+00
22	.1724E+01	.1473E+01	.8825E+00	.1574E+00	.1427E+01	[illegible]	[illegible]	.1751E+01	-.8434E+00	-.6423E-01	.2369E+00
23	.1696E+01	.1453E+01	.8860E+00	.1550E+00	.1404E+01	[illegible]	[illegible]	.1747E+01	-.8124E+00	-.1117E+00	.2276E+00
24	.1695E+01	.1452E+01	.8857E+00	.1549E+00	.1404E+01	[illegible]	[illegible]	.1752E+01	-.8268E+00	-.9410E-01	.2264E+00
25	.1716E+01	.1465E+01	.8824E+00	[illegible]	.1414E+01	[illegible]	[illegible]	.1729E+01	-.8354E+00	-.8381E-01	.2310E+00
26	.1738E+01	.1476E+01	.8790E+00	[illegible]	[illegible]	[illegible]	[illegible]	.1719E+01	-.8788E+00	-.7796E-01	.2419E+00
27	.1762E+01	.1491E+01	.8751E+00	.1561E+00	.1441E+01	[illegible]	[illegible]	.1716E+01	-.8376E+00	-.7676E-01	.2495E+00
28	.1766E+01	.1505E+01	.8715E+00	[illegible]	.1453E+01	[illegible]	[illegible]	.1704E+01	-.6544E+00	-.5667E+00	.2569E+00
29	.1801E+01	.1515E+01	.8697E+00	.1609E+00	.1464E+01	[illegible]	[illegible]	.1693E+01	-.1227E+01	-.1564E+01	.2619E+00
30	.1793E+01	.1507E+01	.8727E+00	.1611E+00	.1458E+01	[illegible]	[illegible]	.1703E+01	-.1379E+01	-.1721E+01	.2582E+00
31	.1723E+01	.1463E+01	.8839E+00	.1574E+00	.1425E+01	[illegible]	[illegible]	.1727E+01	-.1629E+01	-.1944E+01	.2365E+00

32	.1570E+01	.1362E+01	.9039E+00	.1274E+00	.1331E+01	.1019E+01	.1004E+01	.1777E+01	-.1898E+01	-.2182E+01	.1866E+00
33	.1341E+01	.1214E+01	.9340E+00	.78[illegible]E-01	.1190E+01	.10[illegible]E+01	.9921E+00	.1869E+01	-.2383E+01	-.2606E+01	.1116E+00
34	.1111E+01	.1071E+01	.9696E+00	.206[illegible]E-01	.1054E+01	.10[illegible]E+01	.9921E+00	[illegible]	-.2770E+01	-.2936E+01	.3625E-01
35	.9833E+00	.9925E+00	.1000E+01	-.971[illegible]E-02	.9864E+00	.9957E+00	.9952E+00	.2100E+01	-.3092E+01	-.3211E+01	-.5449E-02
36	.9669E+00	.9806E+00	.1002E+01	-.733[illegible]E-02	.9845E+00	.977[illegible]E+00	.1001E+01	.2124E+01	-.4008E+01	-.417[illegible]E+01	-.1082E-01
37	.9858E+00	.9926E+00	.1004E+01	-.5087E-03	.9749E+00	.9761E+00	.1001E+01	.2100E+01	-.4116E+01	-.4038E+01	-.4645E-02
38	.9977E+00	.9991E+00	.1000E+01	.5594E-03	.9987E+00	.9984E+00	.9994E+00	.2002E+01	-.4094E+01	-.4161E+01	-.7559E-03
39	.1006E+01	.9947E+00	.9983E+00	-.1415E-02	.9979E+00	.1019E+01	.1004E+01	.2075E+01	-.5715E+01	-.5792E+01	.1892E-02
40	.1021E+01	.9919E+00	.9961E+00	-.165[illegible]E-02	.1001E+01	.103[illegible]E+01	.1017E+01	.2052E+01	-.8570E+01	-.8652E+01	.6732E-02
41	.1043E+01	.1040E+01	.9928E+00	.641[illegible]E-02	.103[illegible]E+01	.9671E+00	.999[illegible]E+00	.2077E+01	-.1910E+01	-.2204E+01	.1422E-01
42	.1054E+01	.1165E+01	.9873E+00	.253[illegible]E-01	.1095E+01	.851[illegible]E+00	.9376E+00	.2170E+01	-.5176E+00	-.1294E+01	.1770E-01
43	.1045E+01	.1307E+01	.9792E+00	.3107E-01	.115[illegible]E+01	.726[illegible]E+00	.875[illegible]E+00	.2287E+01	.5034E+00	-.5518E+00	.1174E-01
44	.1028E+01	.1394E+01	.9710E+00	.35[illegible]E-01	.118[illegible]E+01	.645[illegible]E+00	.8358E+00	.2365E+01	.1108E+01	.1460E+00	.9113E-02
45	.1015E+01	.1444E+01	.9660E+00	.36[illegible]E-01	.119[illegible]E+01	.607[illegible]E+00	.8111E+00	.2407E+01	.1021E+01	.8221E-01	.5094E-02
46	.1015E+01	.1443E+01	.9660E+00	.36[illegible]E-01	.119[illegible]E+01	.607[illegible]E+00	.8112E+00	.2409E+01	.9662E+00	.5633E-01	.5059E-02

1ST	JACOBIAN	X	Y	DXI/DT	DXI/DX	DXI/DY	DETA/DT	DETA/DX	DETA/DY	EI/EIINF
1	.5466E+01	.1700E+02	.2156E+01	0.	-.2879E+00	0.	0.	.7010E-02	-.1699E+02	.1301E+01
2	.7622E+01	.1401E+02	.2156E+01	.2311E-04	-.4002E+00	.3858E-01	-.2645E-05	.6259E-04	-.1905E+02	.1301E+01
3	.9539E+01	.1200E+02	.2156E+01	.186[illegible]E-04	-.5024E+00	.859[illegible]E-02	.4915E-06	-.4933E+00	-.1898E+02	.1293E+01
4	.1349E+02	.1003E+02	.2261E+01	.133[illegible]E-04	-.6641E+00	.166[illegible]E+00	.3755E-05	-.7783E+00	-.2012E+02	.1284E+01
5	.2070E+02	.9019E+01	.2274E+01	.880[illegible]E-05	-.102[illegible]E+01	.147[illegible]E+00	.5519E-05	.8625E+00	-.202[illegible]E+02	.1285E+01
6	.3346E+02	.8078E+01	.2178E+01	.541[illegible]E-05	-.149[illegible]E+01	.98[illegible]E+00	.475[illegible]E-05	.2645E+01	-.2415E+02	.128[illegible]E+01
7	.5151E+02	.7576E+01	.2117E+01	.341[illegible]E-05	-.233[illegible]E+01	.15[illegible]E+01	.3645E-05	.4773E+01	-.2515E+02	.129[illegible]E+01
8	.7362E+02	.7100E+01	.199[illegible]E+01	.228[illegible]E-05	-.270[illegible]E+01	.296[illegible]E+01	.262[illegible]E-05	.9771E+01	-.3535E+02	.129[illegible]E+01
9	.1018E+03	.6615E+01	.1850E+01	.1570E-05	-.353[illegible]E+01	.500[illegible]E+01	.1762E-05	.1473E+02	-.4967E+02	.1313E+01
10	.1301E+03	.6124E+01	.1707E+01	.1211E-05	-.438[illegible]E+01	.72[illegible]E+01	.1211E-05	.2097E+02	-.6431E+02	.133[illegible]E+01
11	.1234E+03	.5627E+01	.1528E+01	.12[illegible]E-05	-.462[illegible]E+01	.737[illegible]E+01	.106[illegible]E-05	.2170E+02	-.6133E+02	.1357E+01
12	.1091E+03	.5130E+01	.1351E+01	.135[illegible]E-05	-.468[illegible]E+01	.695[illegible]E+01	.72[illegible]E-06	.192[illegible]E+02	-.54[illegible]E+02	.1374E+01
13	.9495E+02	.4633E+01	.1175E+01	.147[illegible]E-05	-.427[illegible]E+01	.63[illegible]E+01	.5771E-06	.1673E+02	-.4731E+02	.138[illegible]E+01
14	.9008E+02	.4136E+01	.998[illegible]E+00	.149[illegible]E-05	-.441[illegible]E+01	.63[illegible]E+01	.59[illegible]E-06	.135[illegible]E+02	-.404[illegible]E+02	.138[illegible]E+01
15	.8141E+02	.3735E+01	.865[illegible]E+00	.157[illegible]E-05	-.434[illegible]E+01	.581[illegible]E+01	.36[illegible]E-06	.10[illegible]E+02	-.3251E+02	.1370E+01
16	.8026E+02	.3337E+01	.7461E+00	.14[illegible]E-05	-.44[illegible]E+01	.58[illegible]E+01	.470[illegible]E-06	.779[illegible]E+01	-.2808E+02	.1348E+01
17	.8032E+02	.3036E+01	.6712E+00	.131[illegible]E-05	-.4757E+01	.59[illegible]E+01	.6[illegible]E-06	.5851E+01	-.2415E+02	.131[illegible]E+01
18	.7463E+02	.2736E+01	.660[illegible]E+00	.116[illegible]E-05	-.46[illegible]E+01	.55[illegible]E+01	.8[illegible]E-06	.5129E+01	-.223[illegible]E+02	.127[illegible]E+01
19	.6964E+02	.2437E+01	.5338E+00	.897[illegible]E-06	-.443[illegible]E+01	.52[illegible]E+01	.874[illegible]E-06	.4317E+01	-.2080E+02	.1241E+01
20	.7813E+02	.2138E+01	.4764E+00	.461[illegible]E-06	-.568[illegible]E+01	.60[illegible]E+01	.6[illegible]E-06	.3545E+01	-.1956E+02	.1207E+01
21	.8815E+02	.1936E+01	.443[illegible]E+00	.15[illegible]E-06	-.60[illegible]E+01	.67[illegible]E+01	.335[illegible]E-06	.290[illegible]E+01	-.1782E+02	.1185E+01
22	.1061E+03	.1734E+01	.410[illegible]E+00	-.56[illegible]E-07	-.756[illegible]E+01	.80[illegible]E+01	.86[illegible]E-07	.2215E+01	-.1636E+02	.1171E+01
23	.1352E+03	.1627E+01	.401[illegible]E+00	-.115[illegible]E-06	-.1031E+02	.961[illegible]E+01	-.35[illegible]E-07	.131[illegible]E+01	-.1437E+02	.1167E+01
24	.1284E+03	.1591E+01	[illegible]E+00	-.13[illegible]E-06	-.105[illegible]E+02	.87[illegible]	[illegible]E-07	.1376E+01	-.1356E+02	.1170E+01
25	.1224E+03	.1416E+01	.37[illegible]E+00	-.11[illegible]E-06	-.103[illegible]E+02	.81[illegible]	[illegible]E-07	.157[illegible]E+01	-.125[illegible]E+02	.117[illegible]E+01
26	.1170E+03	.1311E+01	.36[illegible]E+00	-.911[illegible]E-07	-.1[illegible]E+02	.75[illegible]	[illegible]E-07	.136[illegible]E+01	-.12[illegible]E+02	.117[illegible]E+01
27	.1119E+03	.1206E+01	.356[illegible]E+00	-.6[illegible]E-07	-.1[illegible]E+02	.6[illegible]	.6[illegible]E-07	.152[illegible]E+01	-.117[illegible]E+02	.118[illegible]E+01
28	.1345E+03	.110[illegible]E+01	.3[illegible]E+00	-.317[illegible]E-07	-.129[illegible]E+02	.8[illegible]	-.2[illegible]E-07	-.45[illegible]E+01	-.753[illegible]E+01	.118[illegible]E+01
29	.1691E+03	.10[illegible]E+01	.425[illegible]E+00	-.121[illegible]E-07	-.169[illegible]E+02	.9[illegible]	.13[illegible]E-07	.156[illegible]E+02	-.1226E+01	.116[illegible]E+01
30	.1579E+03	.1087E+01	.52[illegible]E+00	-.38[illegible]E-08	-.16[illegible]E+02	.8[illegible]	.6[illegible]E-08	-.167[illegible]E+02	-.1176E+01	.118[illegible]E+01
31	.1413E+03	.1075E+01	.635[illegible]E+00	.237[illegible]E-08	-.153[illegible]E+02	.68[illegible]	.6[illegible]E-09	.184[illegible]E+02	-.1011E+01	.1178E+01
32	.128[illegible]E+03	.1073E+01	.79[illegible]E+00	.8[illegible]E-08	-.143[illegible]E+02	.577[illegible]E+01	.5617E-08	-.15[illegible]E+02	-.919[illegible]E+00	.115[illegible]E+01
33	.1108E+03	.1065E+01	.945[illegible]E+00	.144[illegible]E-07	-.128[illegible]E+02	.4[illegible]	.1[illegible]E-07	-.2[illegible]E+02	-.65[illegible]E+00	.110[illegible]E+01
34	.9543E+02	.1061E+01	.119[illegible]E+01	.207[illegible]E-07	-.113[illegible]E+02	.371[illegible]E+01	.22[illegible]E-07	-.24[illegible]E+02	-.4[illegible]E+00	.105[illegible]E+01
35	.98[illegible]E+02	.105[illegible]E+01	.1459E+01	.26[illegible]E-07	-.1[illegible]E+02	[illegible]	.3111E-07	-.25[illegible]E+02	-.805[illegible]E+00	[illegible]
36	.8295E+02	.1045E+01	.1711E+01	.335[illegible]E-07	-.106[illegible]E+02	[illegible]	[illegible]E-07	-.31[illegible]E+02	-.3779E+00	[illegible]
37	.6307E+02	.1046E+01	.221[illegible]E+01	.3[illegible]E-07	-.815[illegible]E+01	[illegible]	.57[illegible]E-07	-.317[illegible]E+02	-.328[illegible]E-01	.9[illegible]E+00
38	.6011E+02	.1043E+01	.271[illegible]E+01	-.287[illegible]E-07	-.77[illegible]E+01	.18[illegible]	.715[illegible]E-07	-.30[illegible]E+02	-.4914E+00	.99[illegible]E+00
39	.5313E+02	.102[illegible]E+01	.32[illegible]E+01	-.22[illegible]E-06	-.7[illegible]E+01	.12[illegible]	.47[illegible]E-06	-.4[illegible]E+02	-.50[illegible]E+00	.1011E+01
40	.3834E+02	.102[illegible]E+01	.40[illegible]E+01	-.25[illegible]E-06	-.57[illegible]E+01	.81[illegible]	.151[illegible]E-06	-.57[illegible]E+02	.1490E+01	.102[illegible]E+01
41	.7800E+01	.1107E+01	.621[illegible]E+01	.51[illegible]E-05	-.106[illegible]E+01	[illegible]	.15[illegible]	.1[illegible]E+02	.715[illegible]E+00	.10[illegible]E+01
42	.4655E+01	.1205E+01	.80[illegible]E+01	.28[illegible]E-04	-.2[illegible]E+00	[illegible]	.8[illegible]E-05	[illegible]E+01	.53[illegible]E+01	.90[illegible]E+00
43	.4731E+01	.2707E+01	.9930E+01	.48[illegible]E-04	.219[illegible]E+00	.6[illegible]	.7[illegible]E-04	.4[illegible]E+01	.9[illegible]E+01	.80[illegible]E+00
44	.8456E+01	.5200E+01	.9931E+01	.3[illegible]E-04	.3[illegible]E+00	.10[illegible]E+01	[illegible]E-04	.31[illegible]E+00	.2[illegible]E+02	.73[illegible]E+00
45	.4416E+01	.8138E+01	.985[illegible]E+01	.67[illegible]E-04	.3[illegible]E+00	.3[illegible]	.11[illegible]E-03	.27[illegible]E+00	.1153E+02	.705[illegible]E+00
46	.4459E+01	.1042E+02	.980[illegible]E+01	0.	.511[illegible]E+00	[illegible]	0.	.1751E+00	.871[illegible]E+01	.703[illegible]E+00

SECOND INDEX= 19

1ST	P/PINF	RHO/RINF	U/QINF	V/QINF	EI/EIINF	S/SINF	HT/HTINF	MACH	UBAR/QINF	VBAR/QINF	CP
1	.2400E+01	.1841E+01	.845[illegible]E+00	-.11[illegible]E-01	.160[illegible]E+01	.10[illegible]E+01	.10[illegible]E+01	.154[illegible]E+01	-.8457E+00	.1177E-01	.4578E+00

2	.2400E+01	.1841E+01	.8450E+00	-.1154E-01	.1404E+01	.1022E+01	.1029E+01	.1548E+01	-.8468E+00	.1161E-01	.4579E+00
3	.2316E+01	.1793E+01	.8446E+00	-.1764E-01	.1764E+01	.1014E+01	.1022E+01	.1554E+01	-.8450E+00	-.4859E-02	.4303E+00
4	.2232E+01	.1743E+01	.8431E+00	-.1066E-01	.1686E+01	.1014E+01	.1015E+01	.1547E+01	-.8376E+00	-.2317E-01	.4029E+00
5	.2210E+01	.1726E+01	.8398E+00	.2174E-01	.1605E+01	.1016E+01	.1012E+01	.1552E+01	-.8422E+00	.1177E-01	.3959E+00
6	.2247E+01	.1747E+01	.8354E+00	.7484E-01	.1604E+01	.1015E+01	.1013E+01	.1542E+01	-.8478E+00	.1661E-01	.4078E+00
7	.2304E+01	.1783E+01	.8223E+00	.1317E+00	.1717E+01	.1015E+01	.1013E+01	.1531E+01	-.8506E+00	.2562E-01	.4265E+00
8	.2379E+01	.1831E+01	.8065E+00	.1874E+00	.1758E+01	.1014E+01	.1012E+01	.1515E+01	-.8826E+00	.6416E-01	.4509E+00
9	.2491E+01	.1892E+01	.7861E+00	.2171E+00	.1814E+01	.1017E+01	.1011E+01	.1487E+01	-.8432E+00	.2910E-01	.4875E+00
10	.2658E+01	.1988E+01	.7615E+00	.2441E+00	.1855E+01	.1015E+01	.1012E+01	.1446E+01	-.8146E+00	.1515E-01	.5422E+00
11	.2835E+01	.2084E+01	.7387E+00	.2614E+00	.1973E+01	.1014E+01	.1012E+01	.1404E+01	-.7973E+00	.1404E-01	.6000E+00
12	.2954E+01	.2147E+01	.7231E+00	.2644E+00	.2034E+01	.1014E+01	.1011E+01	.1372E+01	-.7484E+00	-.2225E-01	.6392E+00
13	.3012E+01	.2177E+01	.7137E+00	.2614E+00	.2047E+01	.1012E+01	.1016E+01	.1350E+01	-.7411E+00	-.1952E-01	.6581E+00
14	.2999E+01	.2168E+01	.7126E+00	.2524E+00	.2054E+01	.1014E+01	.1015E+01	.1343E+01	-.7474E+00	-.8810E-02	.6537E+00
15	.2892E+01	.2110E+01	.7227E+00	.2387E+00	.1973E+01	.1017E+01	.1011E+01	.1358E+01	-.7444E+00	-.1724E-01	.6168E+00
16	.2710E+01	.2013E+01	.7427E+00	.2217E+00	.1865E+01	.1017E+01	.9985E+00	.1397E+01	-.7489E+00	-.2828E-01	.5591E+00
17	.2494E+01	.1900E+01	.7717E+00	.2047E+00	.1788E+01	.1015E+01	.9978E+00	.1456E+01	-.7728E+00	-.2811E-01	.4887E+00
18	.2276E+01	.1785E+01	.8043E+00	.1908E+00	.1695E+01	.1011E+01	.9991E+00	.1530E+01	-.8222E+00	-.4974E-02	.4172E+00
19	.2073E+01	.1675E+01	.8561E+00	.1774E+00	.1606E+01	.1004E+01	.1001E+01	.1607E+01	-.8491E+00	-.6869E-02	.3509E+00
20	.1904E+01	.1581E+01	.8617E+00	.1704E+00	.1527E+01	.1003E+01	.1009E+01	.1673E+01	-.8631E+00	-.1753E-01	.2956E+00
21	.1785E+01	.1511E+01	.8771E+00	.1614E+00	.1465E+01	.1001E+01	.1002E+01	.1716E+01	-.8756E+00	-.1964E-01	.2567E+00
22	.1720E+01	.1469E+01	.8835E+00	.1578E+00	.1425E+01	.1004E+01	.1001E+01	.1734E+01	-.8668E+00	-.3753E-01	.2356E+00
23	.1701E+01	.1454E+01	.883[illegible]E+00	.1564E+00	.1404E+01	.1007E+01	.9938E+00	.1734E+01	-.8447E+00	-.6698E-01	.2291E+00
24	.1708E+01	.1457E+01	.8811E+00	.1514E+00	.1419E+01	.1006E+01	.9986E+00	.1727E+01	-.8541E+00	-.5342E-01	.2317E+00
25	.1727E+01	.1468E+01	.8776E+00	.1514E+00	.1418E+01	.1004E+01	.9981E+00	.1718E+01	-.8581E+00	-.4552E-01	.2377E+00
26	.1747E+01	.1481E+01	.8749E+00	.1545E+00	.1428E+01	.1006E+01	.9976E+00	.1709E+01	-.8599E+00	-.4063E-01	.2442E+00
27	.1766E+01	.1493E+01	.8725E+00	.1541E+00	.1439E+01	.1008E+01	.9975E+00	.1702E+01	-.8591E+00	-.3965E-01	.2504E+00
28	.1764E+01	.1504E+01	.8696E+00	.1544E+00	.1448E+01	.1007E+01	.9967E+00	.1695E+01	-.6621E+00	-.5687E+00	.2565E+00
29	.1801E+01	.1515E+01	.8669E+00	.1554E+00	.1457E+01	.1007E+01	.9961E+00	.1688E+01	-.1325E+01	-.1684E+01	.2620E+00
30	.1811E+01	.1522E+01	.866[illegible]E+00	.1587E+00	.1464E+01	.1006E+01	.9967E+00	.1687E+01	-.1485E+01	-.1829E+01	.2654E+00
31	.1789E+01	.1509E+01	.8720E+00	.1534E+00	.1457E+01	.1006E+01	.9972E+00	.1701E+01	-.1738E+01	-.2064E+01	.2582E+00
32	.1678E+01	.1435E+01	.8892E+00	.1456E+00	.1597E+01	.1014E+01	.1005E+01	.1743E+01	-.2014E+01	-.2315E+01	.2218E+00
33	.1434E+01	.1275E+01	.9226E+00	.9906E-01	.1249E+01	.1021E+01	.1042E+01	.1828E+01	-.2731E+01	-.2774E+01	.1420E+00
34	.1132E+01	.1084E+01	.9641E+00	.2515E-01	.1065E+01	.1011E+01	.9918E+00	.1975E+01	-.2974E+01	-.3140E+01	.4329E-01
35	.9785E+00	.9689E+00	.100[illegible]E+01	-.1018E-01	.9874E+00	.9964E+00	.9968E+00	.2106E+01	-.3445E+01	-.3560E+01	-.7019E-02
36	.9734E+00	.9831E+00	.1006E+01	-.5665E-02	.9877E+00	.9968E+00	.1024E+01	.2118E+01	-.4528E+01	-.4627E+01	-.8706E-02
37	.9942E+00	.9971E+00	.100[illegible]E+01	.1254E-03	.9982E+00	.9984E+00	.1004E+01	.2099E+01	-.4524E+01	-.4633E+01	-.1896E-02
38	.9981E+00	.1003E+01	.9999E+00	.4904E-03	.1001E+01	.9994E+00	.9975E+00	.2095E+01	-.4654E+01	-.4732E+01	-.6197E-03
39	.9987E+00	.1001E+01	.1000E+01	-.5923E-03	.9995E+00	.9974E+00	.9968E+00	.2092E+01	-.7027E+01	-.7090E+01	-.4397E-03
40	.1018E+01	.9925E+00	.997[illegible]E+00	-.2615E-02	.1001E+01	.1064E+01	.1011E+01	.2018E+01	-.1051E+02	-.1057E+02	.5771E-02
41	.1063E+01	.1008E+01	.9904E+00	.4577E-02	.1023E+01	.1051E+01	.1010E+01	.2014E+01	-.2034E+01	-.2188E+01	.2063E-01
42	.1099E+01	.1155E+01	.9844E+00	.2854E-01	.1111E+01	.8977E+00	[illegible]	.2110E+01	-.5402E+00	-.1304E+01	.3294E-01
43	.1068E+01	.1400E+01	.9796E+00	.4067E-01	.1375E+01	.6754E+00	[illegible]	.2537E+01	.5059E+00	-.5555E+00	.2898E-01
44	.1041E+01	.1616E+01	.9721E+00	.4654E-01	.1514E+01	.5514E+00	[illegible]	.2534E+01	.1111E+01	.1471E+00	.1335E-01
45	.1042E+01	.1840E+01	.9688E+00	.5877E-01	.2427E+01	.4456E+00	.7414E+00	.2696E+01	.1037E+01	.9959E-01	.1369E-01
46	.1042E+01	.1840E+01	.9684E+00	.5874E-01	.1422E+01	.4456E+00	.7416E+00	.2696E+01	.9669E+00	.6998E-01	.1369E-01

1ST	JACOBIAN	X	Y	DXI/DT	DXI/DX	DXI/DY	DETA/DT	DETA/DX	DETA/DY	FI/FIINF
1	.7042E+01	.1700E+02	.2112E+01	0.	-.2871E+00	.8[illegible]E 12	0.	.6517E-02	-.2453E+02	.1304E+01
2	.9856E+01	.1401E+02	.2112E+01	.1724E-04	-.4006E+00	.4[illegible]E-01	-.3787E-05	.5634E-04	-.2463E+02	.1308E+01
3	.1230E+02	.1200E+02	.2112E+01	.1404E-04	-.5015E+00	.8718E-02	-.4574E-06	-.6524E+00	-.2452E+02	.1297E+01
4	.1729E+02	.1002E+02	.2218E+01	.1025E-04	-.6021E+00	.16[illegible]E+00	[illegible]E-05	-.1017E+01	-.2585E+02	.128[illegible]E+01
5	.2621E+02	.9015E+01	.2234E+01	.6874E-05	-.1041E+01	.157[illegible]E+00	[illegible]E-05	.1062E+01	-.2583E+02	.1274E+01
6	.4442E+02	.8051E+01	.2134E+01	.4064E-05	-.1474E+01	.1[illegible]E+01	.3717E-05	.3905E+01	-.3251E+02	.1[illegible]E+01
7	.6809E+02	.7549E+01	.2077E+01	[illegible]E-05	-.23[illegible]E+01	.16[illegible]E+01	.2674E-05	.6194E+01	-.3341E+02	.1[illegible]E+01
8	.1003E+03	.7004E+01	.1959E+01	.1678E-05	-.2981E+01	.3184E+01	.2014E-05	.1281E+02	-.4896E+02	.1294E+01
9	.1427E+03	.6573E+01	.1821E+01	.1134E-05	-.3559E+01	.5354E+01	.1318E-05	.2028E+02	-.7046E+02	.1314E+01
10	.1875E+03	.6077E+01	.1675E+01	.8561E-06	-.4312E+01	.7687E+01	.8[illegible]E-06	.3041E+02	-.9330E+02	.1337E+01
11	.1770E+03	.5577E+01	.1497E+01	.8614E-06	-.4705E+01	.7[illegible]E+01	.6876E-06	.3162E+02	-.8657E+02	.1360E+01
12	.1567E+03	.5078E+01	.1317E+01	.9364E-06	-.4565E+01	.6564E+01	.4971E-06	.2837E+02	-.7822E+02	.1376E+01
13	.1377E+03	.4579E+01	.1138E+01	.1016E-05	-.4375E+01	.6574E+01	[illegible]E-06	.2448E+02	-.6678E+02	.1384E+01
14	.1331E+03	.4075E+01	.9596E+00	.1005E-05	-.4454E+01	.6[illegible]E+01	.1116E-06	.2104E+02	-.5991E+02	.1385E+01
15	.1211E+03	.3678E+01	.8[illegible]E+00	.1024E-05	-.4354E+01	.5784E+01	.6757E-07	.1541E+02	-.4846E+02	.1371E+01
16	.1208E+03	.3279E+01	.7011E+00	.9654E-06	-.4647E+01	.5[illegible]E+01	.1[illegible]E-06	.1198E+02	-.4234E+02	.1346E+01
17	.1219E+03	.2977E+01	.6234E+00	.87[illegible]E-06	-.4785E+01	.56[illegible]E+01	[illegible]E-06	.9141E+01	-.3667E+02	.1313E+01
18	.1135E+03	.2677E+01	.5511E+00	.7178E-06	-.4613E+01	.5[illegible]E+01	[illegible]E-06	.7358E+01	-.3466E+02	.1275E+01
19	.1063E+03	.2377E+01	.4531E+00	.5314E-06	-.4127E+01	.5171E+01	.5[illegible]E-06	.6704E+01	-.3184E+02	.1237E+01
20	.1213E+03	.2078E+01	.4294E+00	.2454E-06	-.5124E+01	.6077E+01	.3[illegible]E-06	.5716E+01	-.3038E+02	.1204E+01

21	.1388E+03	.1876E+01	.3890E+00	.4571E-07	-.6147E+01	.6754E+01	.1831E-06	.4904E+01	-.2797E+02	.1182E+01
22	.1707E+03	.1675E+01	.3543E+00	-.5661E-07	-.7841E+01	[illegible]	.3602E-07	.4070E+01	-.2603E+02	.1171E+01
23	.2238E+03	.1571E+01	.3413E+00	-.7[illegible]E-07	-.1026E+02	.10[illegible]E+02	-.30[illegible]E-07	[illegible]E+01	-.2321E+02	.1170E+01
24	.2112E+03	.1468E+01	.3276E+00	-.7534E-07	-.1024E+02	.9[illegible]E+01	-.5483E-07	.2945E+01	-.2184E+02	.1172E+01
25	.2007E+03	.1364E+01	.3154E+00	-.5554E-07	-.1086E+02	.8[illegible]E+01	-.4627E-07	.2885E+01	-.2071E+02	.1176E+01
26	.1916E+03	.1261E+01	.2967E+00	-.3540E-07	-.1081E+02	.7691E+01	-.2885E-07	.2508E+01	-.1973E+02	.1180E+01
27	.1833E+03	.1158E+01	.2841E+00	-.1462E-07	-.1074E+02	.7811E+01	-.1269E-07	.2680E+01	-.1884E+02	.1183E+01
28	.2277E+03	.1056E+01	.2656E+00	-.4854E-09	-.1381E+02	.8451E+01	-.1825E-09	-.7045E+01	-.1219E+02	.1186E+01
29	.2999E+03	.1051E+01	.3466E+00	.4058E-08	-.1820E+02	.10[illegible]E+02	.3875E-08	-.2685E+02	-.1245E+01	.1159E+01
30	.2807E+03	.1047E+01	.4487E+00	.5614E-08	-.1856E+02	.8[illegible]E+01	.5335E-08	-.2870E+02	-.1197E+01	.1190E+01
31	.2508E+03	.1045E+01	.5514E+00	.6038E-08	-.1695E+02	.7288E+01	.6005E-08	-.3203E+02	-.1027E+01	.1186E+01
32	.2282E+03	.1039E+01	.7041E+00	.597[illegible]E-08	-.1585E+02	.6184E+01	.6351E-08	-.3483E+02	-.9571E+00	.1174E+01
33	.1965E+03	.1034E+01	.8570E+00	.5915E-08	-.1468E+02	.4714E+01	.6776E-08	-.3971E+02	-.6693E+00	.1125E+01
34	.1690E+03	.1032E+01	.1108E+01	.5617E-08	-.1234E+02	.3854E+01	.7011E-08	-.4256E+02	-.4808E+00	.1045E+01
35	.1806E+03	.1029E+01	.1361E+01	.4425E-08	-.1355E+02	.3744E+01	.6021E-08	-.4566E+02	-.8403E+00	.9896E+00
36	.1528E+03	.1023E+01	.1614E+01	.6476E-08	-.1194E+02	.2574E+01	.1084E-07	-.5760E+02	-.4017E+00	.9901E+00
37	.1148E+03	.1024E+01	.2114E+01	.1710E-07	-.9010E+01	.1968E+01	.3542E-07	-.5751E+02	-.5161E-01	.9971E+00
38	.1147E+03	.1022E+01	.2617E+01	.2[illegible]E-07	-.9205E+01	.1911E+01	.5550E-07	-.5775E+02	-.5300E+00	.9952E+00
39	.1095E+03	.1014E+01	.31[illegible]E+01	-.2316E-07	-.9283E+01	.1255E+01	-.4470E-07	-.8298E+02	-.5943E+00	.9977E+00
40	.7777E+02	.1011E+01	.4134E+01	-.2264E-06	-.7041E+01	.7692E+00	.2871E-04	-.1164E+03	.1591E+01	.1025E+01
41	.1322E+02	.1055E+01	.6116E+01	.6564E-06	-.1056E+01	.5563E+00	.5614E-04	-.2593E+02	.6502E+00	.1055E+01
42	.8101E+01	.1110E+01	.8051E+01	.1764E-04	-.2856E+00	.6355E+00	.3166E-04	-.1559E+02	.6295E+01	.9511E+00
43	.7906E+01	.2609E+01	.9964E+01	.4414E-04	.2069E+00	.6135E+00	.5068E-04	-.7560E+01	.1581E+02	.7773E+00
44	.1440E+02	.5107E+01	.9964E+01	.3925E-04	.3739E+00	.1665E+01	.7461E-04	.2972E+00	.3936E+02	.6430E+00
45	.7175E+01	.8076E+01	.9922E+01	.1040E-03	.3812E+00	.3581E+00	.2069E-03	.2543E+00	.1906E+02	.5661E+00
46	.6918E+01	.1042E+02	.9893E+01	0.	.4923E+00	.1966E 12	0.	.1630E+00	.1405E+02	.5664E+00

SECOND INDEX= 20

1ST	P/PINF	RHO/RINF	U/QINF	V/QINF	ET/ETINF	S/SINF	HT/HTINF	MACH	UBAR/QINF	VBAR/QINF	CP
1	.2413E+01	.1845E+01	.8427E+00	-.8458E-02	.1807E+01	.1023E+01	.1029E+01	.1540E+01	-.8427E+00	.8597E-02	.4622E+00
2	.2414E+01	.1846E+01	.8426E+00	-.8457E-02	.1807E+01	.1024E+01	.1029E+01	.1540E+01	-.8435E+00	.8604E-02	.4624E+00
3	.2289E+01	.1775E+01	.8412E+00	-.1750E-01	.1721E+01	.10[illegible]E+01	.1018E+01	.1548E+01	-.8414E+00	-.5256E-02	.4214E+00
4	.2177E+01	.1709E+01	.8395E+00	-.1207E-01	.1642E+01	.1028E+01	.1008E+01	.1554E+01	-.8339E+00	-.2194E-01	.3851E+00
5	.2169E+01	.1701E+01	.8368E+00	.2171E-01	.1632E+01	.103[illegible]E+01	.1007E+01	.1549E+01	-.8368E+00	.9398E-02	.3824E+00
6	.2227E+01	.1733E+01	.8526E+00	.7787E-01	.1669E+01	.1054E+01	.1012E+01	.1542E+01	-.8418E+00	.7791E-02	.4014E+00
7	.2300E+01	.1778E+01	.8246E+00	.1361E+00	.1716E+01	.1037E+01	.1016E+01	.1536E+01	-.8458E+00	.1401E-01	.4251E+00
8	.2376E+01	.1829E+01	.8122E+00	.1845E+00	.1768E+01	.10[illegible]E+01	.1014E+01	.1527E+01	-.8694E+00	.4102E-01	.4507E+00
9	.2484E+01	.1890E+01	.7954E+00	.2294E+00	.1826E+01	.1018E+01	.1019E+01	.1505E+01	-.8368E+00	.1212E-01	.4852E+00
10	.2662E+01	.1988E+01	.7706E+00	.2402E+00	.1914E+01	.1017E+01	.1020E+01	.1462E+01	-.8169E+00	.7721E-02	.5436E+00
11	.2849E+01	.2090E+01	.7450E+00	.2661E+00	.2001E+01	.1019E+01	.1020E+01	.1417E+01	-.8036E+00	.1181E-01	.6048E+00
12	.2956E+01	.2147E+01	.7281E+00	.2668E+00	.2046E+01	.1015E+01	.1015E+01	.1381E+01	-.7604E+00	-.1509E-01	.6398E+00
13	.3012E+01	.2174E+01	.7147E+00	.2614E+00	.2074E+01	.1019E+01	.1017E+01	.1351E+01	-.7512E+00	-.1005E-01	.6579E+00
14	.3003E+01	.2168E+01	.7091E+00	.2518E+00	.2026E+01	.1017E+01	.1013E+01	.1336E+01	-.7570E+00	-.4721E-03	.6551E+00
15	.2886E+01	.2104E+01	.7174E+00	.2561E+00	.1[illegible]E+01	.1018E+01	.9979E+00	.1348E+01	-.7475E+00	-.8191E-02	.6169E+00
16	.2688E+01	.1994E+01	.7385E+00	.2184E+00	.1861E+01	.1019E+01	.9941E+00	.1388E+01	-.7546E+00	-.1691E-01	.5524E+00
17	.2470E+01	.1884E+01	.7693E+00	.2054E+00	.1767E+01	.1017E+01	.9947E+00	.1452E+01	-.7802E+00	-.1081E-01	.4808E+00
18	.2258E+01	.1772E+01	.8046E+00	.1506E+00	.1683E+01	.1015E+01	.9988E+00	.1531E+01	-.8268E+00	-.2752E-04	.4114E+00
19	.2054E+01	.1662E+01	.8394E+00	.1816E+00	.1599E+01	.1068E+01	.1004E+01	.1615E+01	-.8538E+00	-.6081E-02	.3447E+00
20	.1886E+01	.1569E+01	.8677E+00	.1750E+00	.1524E+01	.1064E+01	.1007E+01	.1686E+01	-.8734E+00	-.1305E-01	.2896E+00
21	.1776E+01	.1504E+01	.8834E+00	.1667E+00	.1468E+01	.10[illegible]E+01	.1007E+01	.1729E+01	-.8509E+00	-.9801E-02	.2539E+00
22	.1720E+01	.1468E+01	.8887E+00	.1618E+00	.1443E+01	.10[illegible]E+01	.1006E+01	.1748E+01	-.8871E+00	-.1946E-01	.2355E+00
23	.1706E+01	.1457E+01	.8865E+00	.1579E+00	.1417E+01	.10[illegible]E+01	.1009E+01	.1759E+01	-.8724E+00	-.3524E-01	.2310E+00
24	.1718E+01	.1463E+01	.8817E+00	.1544E+00	.1418E+01	.10[illegible]E+01	.10[illegible]E+01	.1726E+01	-.8757E+00	-.2557E-01	.2348E+00
25	.1737E+01	.1474E+01	.8772E+00	.1535E+00	.1[illegible]E+01	.10[illegible]E+01	.9284E+00	.1715E+01	-.8755E+00	-.2059E-01	.2410E+00
26	.1753E+01	.1484E+01	.8741E+00	.1532E+00	.1451E+01	.1068E+01	.9975E+00	.1707E+01	-.8750E+00	-.1747E-01	.2461E+00
27	.1765E+01	.1494E+01	.8722E+00	.1524E+00	.1478E+01	.1068E+01	.9972E+00	.170[illegible]E+01	-.8734E+00	-.1819E-01	.2501E+00
28	.1775E+01	.1498E+01	.8719E+00	.1524E+00	.1484E+01	.10[illegible]E+01	.9977E+00	.169[illegible]E+01	-.6684E+00	-.5624E+00	.2553E+00
29	.1782E+01	.1504E+01	.8704E+00	.1524E+00	.1497E+01	.10[illegible]E+01	.9975E+00	.1671E+01	-.1404E+01	-.1771E+01	.2559E+00
30	.1795E+01	.1511E+01	.8676E+00	.1544E+00	.1454E+01	.10[illegible]E+01	.99[illegible]E+00	.16[illegible]E+01	-.1580E+01	-.1924E+01	.2601E+00
31	.1804E+01	.1517E+01	.8672E+00	.1575E+00	.1[illegible]E+01	.10[illegible]E+01	.99[illegible]E+00	.1[illegible]E+01	.1851E+01	-.2157E+01	.2629E+00
32	.1750E+01	.1483E+01	.8764E+00	.155[illegible]E+00	.1[illegible]E+01	.1[illegible]E+01	.1[illegible]E+01	.1716E+01	-.20[illegible]E+01	-.24[illegible]E+01	.2455E+00
33	.1522E+01	.1335E+01	.9124E+00	.1194E+00	.1[illegible]E+01	.10[illegible]E+01	.1[illegible]E+01	.1779E+01	-.2629E+01	-.2684E+01	.1707E+00
34	.1125E+01	.1079E+01	.9656E+00	.2301E-01	.10[illegible]E+01	.1021E+01	.9921E+00	.1977E+01	-.3156E+01	-.3300E+01	.4103E-01
35	.9708E+00	.9831E+00	.1006E+01	-.9563E-02	.9[illegible]E+00	[illegible]	.9974E+00	.2117E+01	-.3714E+01	-.3851E+01	-.9564E-02
36	.9839E+00	.9893E+00	.1004E+01	-.1830E-02	.97[illegible]E+00	[illegible]	.10[illegible]E+01	.2102E+01	-.4851E+01	-.4942E+01	-.5271E-02
37	.1000E+01	.9998E+00	.1004E+01	.2[illegible]E-03	.1006E+01	.10[illegible]E+01	.10[illegible]E+01	.20[illegible]E+01	-.4805E+01	-.4908E+01	.9054E-04
38	.9986E+00	.1000E+01	.99[illegible]E+00	.9881E-04	.97[illegible]E+00	[illegible]	.99[illegible]E+00	.20[illegible]E+01	-.5071E+01	-.5104E+01	-.3778E-03

39	.9935E+00	.9997E+00	.1001E+01	.2008E-03	.9976E+00	.9939E+00	.9973E+00	.2098E+01	-.8125E+01	-.8184E+01	-.2119E-02
40	.1010E+01	.9969E+00	.9994E+00	-.1707E-02	.1005E+01	.1014E+01	.1006E+01	.2075E+01	-.1206E+02	-.1211E+02	.3193E-02
41	.1070E+01	.9834E+00	.9870E+00	-.3750E-02	.1008E+01	.1018E+01	.1056E+01	.1976E+01	-.2108E+01	-.2355E+01	.2305E-01
42	.1173E+01	.1121E+01	.9766E+00	.3475E-01	.1114E+01	.9973E+00	.1408E+01	.1777E+01	-.5547E+00	-.1504E+01	.5645E-01
43	.1251E+01	.1525E+01	.9737E+00	.7848E-01	.1369E+01	.6954E+00	.8826E+00	.2255E+01	.5458E+00	-.5098E+00	.6199E-01
44	.1247E+01	.2006E+01	.9706E+00	.8837E-01	.1605E+01	.4707E+00	.7748E+00	.2583E+01	.1244E+01	.2886E+00	.8078E-01
45	.1323E+01	.2488E+01	.9705E+00	.1197E+00	.1905E+01	.3754E+00	.7295E+00	.2802E+01	.1094E+01	.1774E+00	.1056E+00
46	.1323E+01	.2486E+01	.9705E+00	.1197E+00	.1905E+01	.3672E+00	.7256E+00	.2802E+01	.9704E+00	.1255E+00	.1055E+00

1ST	JACOBIAN	X	Y	DXI/DT	DXI/DX	DXI/DY	DETA/DT	DETA/DX	DETA/DY	EI/EIINF
1	.9226E+01	.1700E+02	.2077E+01	0.	-.8054E+00	0.	0.	.5517E-02	-.3258E+02	.1508E+01
2	.1295E+02	.1401E+02	.2076E+01	.1270E-04	-.9004E+00	.4550E-01	.4347E-05	.4518E-04	-.3257E+02	.1508E+01
3	.1613E+02	.1200E+02	.2077E+01	.1054E-04	-.5008E+00	.8834E-02	-.9378E-06	-.8705E+00	-.3318E+02	.1294E+01
4	.2251E+02	.1001E+02	.2184E+01	.7797E-05	-.6605E+00	.1914E+00	.2674E-05	-.1540E+01	-.3305E+02	.1274E+01
5	.3376E+02	.9008E+01	.2192E+01	.5315E-05	-.1019E+01	.1617E+00	.3318E-05	.1238E+01	-.3349E+02	.1275E+01
6	.5963E+02	.8030E+01	.2111E+01	.3008E-05	-.1467E+01	.1194E+01	.2765E-05	.4423E+01	-.4410E+02	.1285E+01
7	.9122E+02	.7526E+01	.2047E+01	.1919E-05	-.2314E+01	.1651E+01	.2177E-05	.8076E+01	-.4530E+02	.1293E+01
8	.1379E+03	.7037E+01	.1933E+01	.1211E-05	-.2867E+01	.3365E+01	.1494E-05	.1764E+02	-.6810E+02	.1300E+01
9	.2018E+03	.6541E+01	.1804E+01	.7981E-06	-.3571E+01	.5005E+01	.9543E-06	.2826E+02	-.1003E+03	.1314E+01
10	.2723E+03	.6042E+01	.1653E+01	.5745E-06	-.4627E+01	.6078E+01	.5878E-06	.4431E+02	-.1360E+03	.1335E+01
11	.2567E+03	.5542E+01	.1475E+01	.5914E-06	-.4773E+01	.7697E+01	.4518E-06	.4037E+02	-.1284E+03	.1365E+01
12	.2285E+03	.5042E+01	.1294E+01	.6378E-06	-.4554E+01	.6960E+01	.2845E-06	.4130E+02	-.1143E+03	.1377E+01
13	.2032E+03	.4541E+01	.1113E+01	.6816E-06	-.4270E+01	.6297E+01	.8651E-07	.3674E+02	-.1016E+03	.1385E+01
14	.1998E+03	.4041E+01	.9323E+00	.6582E-06	-.4444E+01	.6201E+01	-.7987E-07	.3194E+02	-.9000E+02	.1385E+01
15	.1832E+03	.3640E+01	.7933E+00	.6748E-06	-.4353E+01	.5636E+01	-.1002E-06	.2387E+02	-.7334E+02	.1371E+01
16	.1843E+03	.3240E+01	.6714E+00	.6052E-06	-.4514E+01	.5756E+01	-.1259E-06	.1855E+02	-.6474E+02	.1345E+01
17	.1879E+03	.2940E+01	.5927E+00	.5131E-06	-.4804E+01	.5834E+01	-.2866E-07	.1432E+02	-.5648E+02	.1311E+01
18	.1755E+03	.2639E+01	.5191E+00	.4764E-06	-.4619E+01	.5921E+01	.8355E-07	.1248E+02	-.5267E+02	.1274E+01
19	.1650E+03	.2339E+01	.4505E+00	.2967E-06	-.4416E+01	.5117E+01	.1604E-06	.1049E+02	-.4949E+02	.1236E+01
20	.1908E+03	.2039E+01	.3919E+00	.1708E-06	-.5191E+01	.5364E+01	.1372E-06	.9157E+01	-.4777E+02	.1204E+01
21	.2207E+03	.1838E+01	.3594E+00	.7941E-08	-.6216E+01	.6774E+01	.7069E-07	.8099E+01	-.4434E+02	.1181E+01
22	.2756E+03	.1638E+01	.3186E+00	-.4123E-07	-.8016E+01	.8354E+01	.4516E-08	.7056E+01	-.4172E+02	.1172E+01
23	.3689E+03	.1536E+01	.3032E+00	-.4705E-07	-.1143E+02	.1055E+02	-.2401E-07	.5718E+01	-.3760E+02	.1171E+01
24	.3468E+03	.1434E+01	.2876E+00	-.3782E-07	-.1130E+02	.9470E+01	-.3218E-07	.5502E+01	-.3530E+02	.1174E+01
25	.3290E+03	.1332E+01	.2715E+00	-.2522E-07	-.1119E+02	.8594E+01	-.2577E-07	.5300E+01	-.3345E+02	.1178E+01
26	.3142E+03	.1230E+01	.2555E+00	-.1234E-07	-.1104E+02	.7704E+01	-.1446E-07	.5106E+01	-.3192E+02	.1181E+01
27	.3012E+03	.1129E+01	.2390E+00	-.2996E-08	-.1039E+02	[illegible]	-.4478E-08	.4851E+01	-.3056E+02	.1183E+01
28	.3829E+03	.1028E+01	.2231E+00	.1268E-08	-.1439E+02	.8603E+01	.9990E-09	-.1123E+02	-.1985E+02	.1185E+01
29	.5217E+03	.1025E+01	.2977E+00	.1303E-08	-.2032E+02	.1088E+02	.1250E-08	-.4587E+02	-.1112E+01	.1187E+01
30	.4897E+03	.1023E+01	.3987E+00	.8439E-09	-.1964E+02	.9445E+01	.7866E-09	-.4963E+02	-.1070E+01	.1188E+01
31	.4373E+03	.1021E+01	.5063E+00	.4541E-09	-.1811E+02	.7634E+01	.4510E-09	-.5518E+02	-.9168E+00	.1189E+01
32	.3990E+03	.1019E+01	.6515E+00	.1858E-09	-.1692E+02	.6384E+01	[illegible]	-.6030E+02	-.8354E+00	.1180E+01
33	.3430E+03	.1017E+01	.8026E+00	-.4500E-10	-.1496E+02	.4848E+01	[illegible]	-.6890E+02	-.5975E+00	.1142E+01
34	.2950E+03	.1016E+01	.1055E+01	-.2077E-09	-.1305E+02	.3715E+01	.1514E-09	-.7397E+02	-.4303E+00	.1043E+01
35	.3243E+03	.1014E+01	.1304E+01	-.1579E-09	-.1406E+02	.3845E+01	-.8176E-10	-.8144E+02	-.7609E+00	.9875E+00
36	.2751E+03	.1011E+01	.1555E+01	-.3393E-09	-.1284E+02	.2615E+01	-.6165E-09	-.1054E+03	-.3726E+00	.9945E+00
37	.2049E+03	.1011E+01	.2055E+01	-.6613E-09	-.9606E+01	.1953E+01	[illegible]	-.1025E+03	-.5643E-01	.1000E+01
38	.2125E+03	.1010E+01	.2556E+01	.2861E-08	-.1011E+02	.1947E+01	.7242E-08	-.1064E+03	-.4906E+00	.9985E+00
39	.2155E+03	.1006E+01	.3058E+01	.7930E-08	-.1078E+02	.1265E+01	.2200E-07	-.1623E+03	-.5668E+00	.9938E+00
40	.1507E+03	.1005E+01	.4063E+01	-.1290E-06	-.8054E+01	.7140E+00	.5503E-05	-.2258E+03	.1470E+01	.1013E+01
41	.2263E+02	.1026E+01	.6056E+01	-.1159E-05	-.1076E+01	.5175E+00	.1122E-03	-.4464E+02	.5340E+00	.1090E+01
42	.1374E+02	.1052E+01	.8025E+01	.8258E-05	-.2918E+00	.6277E+00	.1868E-03	-.2698E+02	.1049E+02	.1046E+01
43	.1347E+02	.2552E+01	.9983E+01	.3680E-04	.2018E+00	.6075E+00	.9493E-04	-.1318E+02	.2694E+02	.8195E+00
44	.2462E+02	.5052E+01	.9983E+01	.4301E-04	.3687E+00	.1081E+01	.8420E-04	.2541E+00	.6754E+02	.6218E+00
45	.1181E+02	.8038E+01	.9962E+01	.1274E-03	.3750E+00	.3659E+00	.2483E-03	.2107E+00	.3169E+02	.5317E+00
46	.1103E+02	.1042E+02	.9947E+01	0.	.4807E+00	0.	0.	.1361E+00	.2294E+02	.5320E+00

SECOND INDEX= 21

1ST	P/PINF	RHO/RINF	U/QINF	V/QINF	ET/ETINF	S/SINF	HT/HTINF	MACH	UBAR/QINF	VBAR/QINF	CP
1	.2429E+01	.1853E+01	.8384E+00	-.5559E-02	.1818E+01	.1049E+01	.1048E+01	.1531E+01	-.8386E+00	.5617E-02	.4675E+00
2	.2430E+01	.1853E+01	.8385E+00	-.5551E-02	.1816E+01	[illegible]	.1048E+01	.1534E+01	-.8391E+00	.5589E-02	.4676E+00
3	.2258E+01	.1755E+01	.8355E+00	-.1784E-01	.1694E+01	.1027E+01	[illegible]	.1544E+01	-.8357E+00	-.4961E-02	.4114E+00
4	.2116E+01	.1672E+01	.8317E+00	-.1415E-01	.1588E+01	.1044E+01	.9761E+00	.1545E+01	-.8266E+00	-.1970E-01	.3651E+00
5	.2136E+01	.1678E+01	.8293E+00	.2551E-01	.1594E+01	[illegible]	.1055E+01	.1537E+01	-.8506E+00	.5199E-02	.3714E+00
6	.2206E+01	.1717E+01	.8265E+00	.8667E-01	.1644E+01	[illegible]	.1077E+01	.1531E+01	-.8295E+00	-.1290E-02	.3944E+00
7	.2295E+01	.1772E+01	.8277E+00	.1594E+00	.1711E+01	[illegible]	.1037E+01	.1537E+01	-.8372E+00	.3735E-02	.4224E+00
8	.2381E+01	.1829E+01	.8163E+00	.1873E+00	.1778E+01	[illegible]	[illegible]	.1534E+01	-.8561E+00	.2073E-01	.4517E+00

9	.2472E+01	.1884E+01	.8016E+00	.2251E+00	.1854E+01	.1019E+01	.1026E+01	.1523E+01	-.8349E+00	-.4053E-04	.4814E+00
10	.2674E+01	.1994E+01	.7866E+00	.2546E+00	.1955E+01	.1018E+01	.1034E+01	.1493E+01	-.8351E+00	.8459E-02	.5474E+00
11	.2879E+01	.2104E+01	.7628E+00	.2750E+00	.2055E+01	.1021E+01	.1036E+01	.1448E+01	-.8271E+00	.1724E-01	.6144E+00
12	.2955E+01	.2145E+01	.7387E+00	.2708E+00	.2053E+01	.1011E+01	.1024E+01	.1400E+01	-.7790E+00	-.7659E-02	.6395E+00
13	.3010E+01	.2172E+01	.7180E+00	.2617E+00	.2054E+01	.1021E+01	.1012E+01	.1357E+01	-.7606E+00	-.3743E-02	.6572E+00
14	.3010E+01	.2170E+01	.7053E+00	.2513E+00	.2034E+01	.1018E+01	.1004E+01	.1350E+01	-.7520E+00	.2844E-02	.6574E+00
15	.2876E+01	.2096E+01	.7077E+00	.2390E+00	.1954E+01	[illegible]	.9711E+00	.1330E+01	-.7329E+00	-.5825E-02	.6134E+00
16	.2659E+01	.1981E+01	.7260E+00	.2143E+00	.1834E+01	.1011E+01	.9837E+00	.1365E+01	-.7457E+00	-.1265E-01	.5426E+00
17	.2443E+01	.1866E+01	.7585E+00	.1958E+00	.1750E+01	[illegible]	.9855E+00	.1433E+01	-.7727E+00	-.1284E-01	.4718E+00
18	.2243E+01	.1761E+01	.7981E+00	[illegible]	.1661E+01	.1016E+01	.9940E+00	.1519E+01	-.8138E+00	-.8636E-03	.4066E+00
19	.2034E+01	.1648E+01	.8574E+00	.1816E+00	.1564E+01	.1011E+01	.1001E+01	.1614E+01	-.8506E+00	-.7522E-03	.3387E+00
20	.1867E+01	.1555E+01	.8714E+00	.1741E+00	.1515E+01	.1014E+01	.1009E+01	.1694E+01	-.8796E+00	-.1061E-01	.2835E+00
21	.1771E+01	.1506E+01	.8578E+00	.1785E+00	.1476E+01	.1008E+01	.1015E+01	.1748E+01	-.9055E+00	-.3634E-02	.2522E+00
22	.1722E+01	.1469E+01	.9006E+00	.1633E+00	.1452E+01	.1001E+01	.1016E+01	.1767E+01	-.9095E+00	-.6902E-02	.2362E+00
23	.1711E+01	.1466E+01	.8979E+00	.1584E+00	.1458E+01	.1007E+01	.1013E+01	.1760E+01	-.9015E+00	-.1318E-01	.2326E+00
24	.1727E+01	.1469E+01	.8968E+00	.1555E+00	.1437E+01	.1008E+01	.1004E+01	.1743E+01	-.8985E+00	-.7498E-02	.2377E+00
25	.1745E+01	.1480E+01	.8856E+00	.1537E+00	.1440E+01	.1008E+01	.1007E+01	.1720E+01	-.8925E+00	-.5553E-02	.2458E+00
26	.1757E+01	.1487E+01	.8785E+00	.1525E+00	.1441E+01	.1008E+01	.1001E+01	.1715E+01	-.8884E+00	-.4667E-02	.2479E+00
27	.1762E+01	.1490E+01	.8754E+00	.1526E+00	.1440E+01	.1008E+01	.9991E+00	.1708E+01	-.8836E+00	-.7384E-02	.2491E+00
28	.1769E+01	.1494E+01	.8737E+00	.1538E+00	.1443E+01	.1014E+01	.9988E+00	.1704E+01	-.6716E+00	-.5619E+00	.2516E+00
29	.1771E+01	.1495E+01	.8732E+00	.1540E+00	.1444E+01	.1008E+01	.9988E+00	.1703E+01	-.1467E+01	-.1835E+01	.2525E+00
30	.1777E+01	.1499E+01	.8717E+00	.1554E+00	.1445E+01	.1004E+01	.9981E+00	.1699E+01	-.1652E+01	-.1998E+01	.2541E+00
31	.1792E+01	.1508E+01	.8684E+00	.1542E+00	.1453E+01	.1008E+01	.9969E+00	.1692E+01	-.1908E+01	-.2233E+01	.2585E+00
32	.1788E+01	.1507E+01	.8706E+00	.1567E+00	.1455E+01	.1007E+01	.9980E+00	.1698E+01	-.2156E+01	-.2468E+01	.2577E+00
33	.1628E+01	.1402E+01	.8966E+00	.1377E+00	.1367E+01	.1019E+01	.1003E+01	.1759E+01	-.2655E+01	-.2930E+01	.2055E+00
34	.1084E+01	.1053E+01	.9756E+00	.1344E-01	.1035E+01	.1008E+01	.9931E+00	.2010E+01	-.3287E+01	-.3440E+01	.2759E-01
35	.9749E+00	.9846E+00	.1007E+01	-.5654E-02	.9878E+00	.9948E+00	.1001E+01	.2115E+01	-.3892E+01	-.4011E+01	-.8199E-02
36	.9959E+00	.9975E+00	.1001E+01	-.2761E-03	.9984E+00	.9978E+00	.1000E+01	.2094E+01	-.5061E+01	-.5157E+01	-.1333E-02
37	.1002E+01	.1002E+01	.9995E+00	.6702E-05	.1001E+01	.9975E+00	.9996E+00	.2089E+01	-.4995E+01	-.5034E+01	.5340E-03
38	.1001E+01	.1001E+01	.9998E+00	-.1118E-03	.1004E+01	.9778E+00	.9998E+00	.2090E+01	-.5371E+01	-.5461E+01	.1811E-03
39	.9968E+00	.1000E+01	.9996E+00	.4055E-04	.9984E+00	.9948E+00	.9981E+00	.2093E+01	-.8937E+01	-.8991E+01	-.1057E-02
40	.1003E+01	.9993E+00	.1001E+01	-.1960E-03	.1003E+01	.1004E+01	.1003E+01	.2087E+01	-.1315E+02	-.1319E+02	.1115E-02
41	.1038E+01	.9834E+00	.9915E+00	-.8000E-02	.9990E+00	.1044E+01	.1052E+01	.2017E+01	-.2165E+01	-.2378E+01	.1256E-01
42	.1171E+01	.1055E+01	.9749E+00	.2377E-01	.1079E+01	.1066E+01	.1056E+01	.1935E+01	-.5801E+00	-.1310E+01	.5592E-01
43	.1411E+01	.1533E+01	.9691E+00	.1147E+00	.1438E+01	.7756E+00	.9551E+00	.2126E+01	.5882E+00	-.4659E+00	.1343E+00
44	.1650E+01	.2403E+01	.9721E+00	.1664E+00	.2028E+01	.4838E+00	.8202E+00	.2487E+01	.1476E+01	.5311E+00	.2127E+00
45	.1741E+01	.2853E+01	.9739E+00	.1780E+00	.2322E+01	.4012E+00	.7837E+00	.2649E+01	.1154E+01	.2553E+00	.2422E+00
46	.1740E+01	.2851E+01	.9730E+00	.1780E+00	.2321E+01	.4014E+00	.7828E+00	.2649E+01	.9740E+00	.1802E+00	.2421E+00

1ST	JACOBIAN	X	Y	DXI/DT	DXI/DX	DXI/DY	DETA/DT	DETA/DX	DETA/DY	EI/EIINF
1	.1224E+02	.1700E+02	.2050E+01	0.	-.2861E+00	.2057E-11	0.	.3234E-02	-.4279E+02	.1311E+01
2	.1722E+02	.1400E+02	.2050E+01	.1268E-04	-.4006E+00	[illegible]	[illegible]	.2727E-04	-.4300E+02	.1311E+01
3	.2141E+02	.1200E+02	.2050E+01	.1015E-04	-.5001E+00	[illegible]	.1647E-05	-.1169E+01	-.4278E+02	.1266E+01
4	.2965E+02	.1001E+02	.2150E+01	.7646E-05	-.6597E+00	[illegible]	.1888E-05	-.1775E+01	-.4444E+02	.1266E+01
5	.4409E+02	.9003E+01	.2170E+01	.5236E-05	-.1009E+01	[illegible]	.3111E-05	.1517E+01	-.4394E+02	.1273E+01
6	.8066E+02	.8013E+01	.2096E+01	.2647E-05	-.1456E+01	.1205E+01	.2501E-05	.5803E+01	-.6014E+02	.1285E+01
7	.1234E+03	.7512E+01	.2076E+01	.1818E-05	-.2308E+01	.1794E+01	.1963E-05	.1066E+02	-.6151E+02	[illegible]
8	.1908E+03	.7016E+01	.1910E+01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
9	.2868E+03	.6517E+01	.1785E+01	[illegible]	-.5621E+01	[illegible]	[illegible]	[illegible]	-.1451E+03	[illegible]
10	.3965E+03	.6017E+01	.1641E+01	.5095E-06	-.4724E+01	[illegible]	.3778E-06	.6461E+02	-.1962E+03	.1341E+01
11	.3751E+03	.5517E+01	.1460E+01	.5224E-06	-.4835E+01	.7811E+01	.2142E-06	.6808E+02	-.1877E+03	.1368E+01
12	.3365E+03	.5017E+01	.1278E+01	.5552E-06	-.4536E+01	.6973E+01	.2160E-07	.6112E+02	-.1683E+03	.1378E+01
13	.3033E+03	.4517E+01	.1096E+01	.5835E-06	-.4278E+01	.6277E+01	-.2179E-06	.5509E+02	-.1517E+03	.1385E+01
14	.3031E+03	.4016E+01	.9145E+00	.5566E-06	-.4452E+01	.6248E+01	-.4076E-06	.4675E+02	-.1365E+03	.1367E+01
15	.2803E+03	.3616E+01	.7746E+00	.5592E-06	-.4356E+01	.5667E+01	-.5272E-06	.3676E+02	-.1122E+03	.1374E+01
16	.2856E+03	.3216E+01	.6552E+00	.4667E-06	-.4519E+01	.5774E+01	-.5025E-06	.2884E+02	-.1006E+03	.1397E+01
17	.2925E+03	.2915E+01	.5727E+00	.3955E-06	-.4816E+01	.5604E+01	.4051E-06	.2248E+02	-.8783E+02	.1304E+01
18	.2742E+03	.2615E+01	.4985E+00	.3124E-06	-.4616E+01	.5544E+01	-.3030E-06	.1961E+02	-.8230E+02	.1274E+01
19	.2591E+03	.2315E+01	.4296E+00	.2007E-06	-.4413E+01	.5064E+01	.1784E-06	.1654E+02	-.7775E+02	.1254E+01
20	.3027E+03	.2015E+01	.3710E+00	.6755E-07	-.5159E+01	[illegible]	[illegible]	.1967E+02	-.7575E+02	[illegible]
21	.3532E+03	.1815E+01	.3527E+00	-.9073E-08	-.6264E+01	.6787E+01	.1615E-07	.1529E+02	-.7077E+02	.1181E+01
22	.4461E+03	.1614E+01	.2961E+00	-.3550E-07	-.8154E+01	.8404E+01	-.8027E-08	.1185E+02	-.6716E+02	.1172E+01
23	.6056E+03	.1514E+01	.2794E+00	-.2588E-07	-.1173E+02	.1061E+02	.1113E-07	.1018E+02	-.6103E+02	.1172E+01
24	.5683E+03	.1413E+01	.2622E+00	-.2462E-07	-.1154E+02	.9611E+01	.1524E-07	.9656E+01	-.5724E+02	.1176E+01
25	.5391E+03	.1312E+01	.2954E+00	-.1500E-07	-.1194E+02	.8651E+01	.1314E-07	.9316E+01	-.5427E+02	.1179E+01
26	.5156E+03	.1212E+01	.2685E+00	-.7370E-08	-.1127E+02	.7854E+01	.7935E-08	.8851E+01	-.5188E+02	.1181E+01
27	.4954E+03	.1111E+01	.2111E+00	-.2405E-08	-.1115E+02	.7168E+01	-.2805E-08	.8570E+01	-.4983E+02	.1182E+01

28	.6405E+03	.1010E+01	.1945E+00	-.5728E-09	-.1477E+02	.8813E+01	-.5508E-09	-.1823E+02	-.3249E+02	.1184E+01
29	.8937E+03	.1010E+01	.2681E+00	-.51[illegible]E-09	-.2150E+02	.11[illegible]E+02	-.4235E-09	-.7776E+02	-.7386E+00	.1185E+01
30	.8410E+03	.1009E+01	.3685E+00	-.6043E-09	-.2058E+02	.9704E+01	-.4854E-09	-.8442E+02	-.7116E+00	.1186E+01
31	.7513E+03	.1008E+01	.4690E+00	-.4503E-09	-.1871E+02	.7834E+01	-.3159E-09	-.9422E+02	-.6098E+00	.1188E+01
32	.6877E+03	.1007E+01	.6193E+00	-.1776E-09	-.1765E+02	.6[illegible]E+01	-.5480E-10	-.1054E+03	-.5558E+00	.1186E+01
33	.5912E+03	.1006E+01	.7697E+00	.9676E-10	-.1550E+02	.4941E+01	.1980E-09	-.1184E+03	-.3983E+00	.1161E+01
34	.5091E+03	.1006E+01	.1050E+01	.3372E-09	-.1351E+02	.3441E+01	.4887E-09	-.1274E+03	-.2875E+00	.1033E+01
35	.5710E+03	.1005E+01	.1270E+01	.5553E-09	-.1544E+02	.3559E+01	.9471E-09	-.1430E+03	-.5118E+00	.9900E+00
36	.4861E+03	.1004E+01	.1521E+01	.1300E-08	-.1347E+02	.2041E+01	.2340E-08	-.1824E+03	-.2550E+00	.9994E+00
37	.3603E+03	.1004E+01	.2001E+01	.2942E-08	-.9992E+01	.1597E+01	.3947E-08	-.1807E+03	-.4290E-01	.1006E+01
38	.3830E+03	.1004E+01	.2511E+01	.9803E-09	-.1073E+02	.1979E+01	.6904E-09	-.1917E+03	-.3348E+00	.1000E+01
39	.4070E+03	.1003E+01	.3024E+01	.2047E-08	-.1190E+02	.1311E+01	.1518E-08	-.3057E+03	-.4185E+00	.9966E+00
40	.2812E+03	.1002E+01	.4035E+01	-.3651E-07	-.8767E+01	.6877E+00	-.3977E-08	-.4217E+03	.1003E+01	.1004E+01
41	.3900E+02	.1009E+01	.6021E+01	-.1015E-05	-.1091E+01	.5065E+00	-.4815E-08	-.7773E+02	.3371E+00	.1056E+01
42	.2364E+02	.1019E+01	.8009E+01	.1788E-05	-.9511E+00	.6151E+00	.2560E-08	-.4690E+02	.1784E+02	.1109E+01
43	.2319E+02	.2519E+01	.9994E+01	.2450E-08	.2004E+00	.6037E+00	.8566E-08	-.2301E+02	.4639E+02	.9200E+00
44	.4220E+02	.5019E+01	.9994E+01	.3395E-08	.3655E+00	.1033E+01	.6656E-08	.1661E+00	.1160E+03	.6869E+00
45	.1956E+02	.8014E+01	.9986E+01	.1010E-03	.3712E+00	.3697E+00	.1973E-03	.1330E+00	.5288E+02	.6101E+00
46	.1787E+02	.1042E+02	.9980E+01	0.	.4737E+00	-.2034E-11	0.	.6654E-01	.3773E+02	.6104E+00

SECOND INDEX= 22

1ST	P/PINF	RHO/RINF	U/QINF	V/QINF	EI/ETINF	S/SINF	HT/HTINF	MACH	UBAR/QINF	VBAR/QINF	CP
1	.2429E+01	.1853E+01	.8348E+00	0.	.1803E+01	.1024E+01	.1025E+01	.1524E+01	-.8348E+00	.3390E-14	.4673E+00
2	.2429E+01	.1853E+01	.8348E+00	0.	.1803E+01	.1024E+01	.1025E+01	.1524E+01	-.8348E+00	0.	.4673E+00
3	.2256E+01	.1755E+01	.8297E+00	-.2282E-01	.1680E+01	.1026E+01	.1007E+01	.1530E+01	-.8300E+00	0.	.4108E+00
4	.2118E+01	.1672E+01	.8186E+00	-.3274E-01	.1570E+01	.1033E+01	.9891E+00	.1521E+01	-.8192E+00	0.	.3657E+00
5	.2143E+01	.1678E+01	.8210E+00	.2608E-01	.1587E+01	.1038E+01	.9963E+00	.1519E+01	-.8215E+00	-.1143E-15	.3737E+00
6	.2212E+01	.1717E+01	.8115E+00	.7578E-01	.1623E+01	.1034E+01	.9977E+00	.1502E+01	-.8155E+00	-.4525E-15	.3963E+00
7	.2304E+01	.1772E+01	.8158E+00	.1387E+00	.1704E+01	.1034E+01	.1013E+01	.1517E+01	-.8275E+00	-.9007E-15	.4263E+00
8	.2384E+01	.1829E+01	.8186E+00	.1924E+00	.1784E+01	.1028E+01	.1025E+01	.1539E+01	-.8409E+00	.1790E-14	.4525E+00
9	.2470E+01	.1883E+01	.8021E+00	.2158E+00	.1826E+01	.1018E+01	.1023E+01	.1518E+01	-.8317E+00	-.3525E-14	.4808E+00
10	.2669E+01	.1994E+01	.8104E+00	.2642E+00	.1998E+01	.1011E+01	.1053E+01	.1540E+01	-.8524E+00	-.6902E-14	.5460E+00
11	.2875E+01	.2104E+01	.7994E+00	.2911E+00	.2131E+01	.1015E+01	.1067E+01	.1521E+01	-.8507E+00	.6753E-14	.6133E+00
12	.2953E+01	.2145E+01	.7465E+00	.2725E+00	.2077E+01	.1013E+01	.1031E+01	.1419E+01	-.7966E+00	0.	.6388E+00
13	.3008E+01	.2172E+01	.7230E+00	.2632E+00	.2001E+01	.1015E+01	.1015E+01	.1366E+01	-.7694E+00	.6520E-14	.6568E+00
14	.3011E+01	.2170E+01	.7075E+00	.2536E+00	.2024E+01	.1018E+01	.1004E+01	.1334E+01	-.7516E+00	.3212E-14	.6576E+00
15	.2878E+01	.2096E+01	.6955E+00	.2287E+00	.1913E+01	.10[illegible]E+01	.9827E+00	.1306E+01	-.7320E+00	0.	.6143E+00
16	.2663E+01	.1980E+01	.7066E+00	.2045E+00	.1784E+01	.1025E+01	.9761E+00	.1326E+01	-.7356E+00	.3153E-14	.5440E+00
17	.2448E+01	.1866E+01	.7410E+00	.1907E+00	.1704E+01	.1024E+01	.9733E+00	.1394E+01	-.7657E+00	0.	.4735E+00
18	.2248E+01	.1761E+01	.7962E+00	.1882E+00	.1651E+01	.1014E+01	.9894E+00	.1503E+01	-.8125E+00	-.3119E-14	.4083E+00
19	.2038E+01	.1647E+01	.8278E+00	.1759E+00	.1566E+01	.1019E+01	.9942E+00	.1590E+01	-.8463E+00	0.	.3395E+00
20	.1871E+01	.1555E+01	.8681E+00	.1691E+00	.1511E+01	.1008E+01	.1007E+01	.1685E+01	-.8844E+00	0.	.2849E+00
21	.1774E+01	.1500E+01	.9043E+00	.1714E+00	.1497E+01	.1001E+01	.1026E+01	.1769E+01	-.9204E+00	-.1532E-14	.2530E+00
22	.1722E+01	.1469E+01	.9177E+00	.1667E+00	.1478E+01	.1004E+01	.1031E+01	.1800E+01	-.9327E+00	.1526E-14	.2362E+00
23	.1710E+01	.1460E+01	.9184E+00	.1616E+00	.1468E+01	.1004E+01	.1030E+01	.1801E+01	-.9325E+00	0.	.2320E+00
24	.1725E+01	.1469E+01	.9095E+00	.1605E+00	.1465E+01	.1007E+01	.1025E+01	.1781E+01	-.9236E+00	0.	.2371E+00
25	.1744E+01	.1480E+01	.8985E+00	.1586E+00	.1462E+01	.1007E+01	.1017E+01	.1757E+01	-.9124E+00	0.	.2432E+00
26	.1755E+01	.1487E+01	.8901E+00	.1567E+00	.1458E+01	.1007E+01	.1011E+01	.1739E+01	-.9038E+00	.3038E-14	.2468E+00
27	.1758E+01	.1490E+01	.8875E+00	.1527E+00	.1448E+01	.1007E+01	.1005E+01	.1724E+01	-.8956E+00	0.	.2476E+00
28	.1775E+01	.1498E+01	.8720E+00	.1538E+00	.1445E+01	.1008E+01	.9980E+00	.1700E+01	-.6731E+00	-.5604E+00	.2535E+00
29	.1775E+01	.1498E-01	.8720E+00	.1538E+00	.1445E+01	.1008E+01	.9980E+00	.1700E+01	-.1514E+01	-.1882E+01	.2535E+00
30	.1775E+01	.1498E+01	.8720E+00	.1538E+00	.1445E+01	.1008E+01	.9780E+00	.1700E+01	-.1710E+01	-.2057E+01	.2535E+00
31	.1775E+01	.1498E+01	.8720E+00	.1538E+00	.1445E+01	.1008E+01	.9980E+00	.1700E+01	-.1986E+01	-.2310E+01	.2535E+00
32	.1775E+01	.1498E+01	.8720E+00	.1538E+00	.1445E+01	.1008E+01	.9980E+00	.1700E+01	-.2245E+01	-.2552E+01	.2575E+00
33	.1775E+01	.1498E+01	.8720E+00	.1538E+00	.1445E+01	.1008E+01	.9980E+00	.1700E+01	-.2662E+01	-.2918E+01	.2535E+00
34	.1000E+01	.1000E+01	.1000E+01	0.	.1000E+01	.1000E+01	.1000E+01	.2090E+01	-.3510E+01	-.3650E+01	-.9107E-13
35	.1000E+01	.1000E+01	.1000E+01	0.	.1000E+01	.1000E+01	.1000E+01	.2090E+01	-.4055E+01	-.4177E+01	.1796E-11
36	.1000E+01	.1000E+01	.1000E+01	0.	.1000E+01	.1000E+01	.1000E+01	.2090E+01	-.5351E+01	-.5443E+01	.1301E-12
37	.1000E+01	.1000E+01	.1000E+01	0.	.1000E+01	.1000E+01	.1000E+01	.2090E+01	-.5276E+01	-.5369E+01	.2207E-11
38	.1000E+01	.1000E+01	.1000E+01	0.	.1000E+01	.1000E+01	.1000E+01	.2090E+01	-.5766E+01	-.5856E+01	.3026E-12
39	.1000E+01	.1000E+01	.1000E+01	0.	.1000E+01	.1000E+01	.1000E+01	.2090E+01	-.1017E+02	-.1022E+02	.6344E-13
40	.1000E+01	.1000E+01	.1000E+01	0.	.1000E+01	.1000E+01	.1000E+01	.2090E+01	-.1568E+02	-.1572E+02	.1627E-13
41	.1000E+01	.1000E+01	.1000E+01	0.	.1000E+01	.1000E+01	.1000E+01	.2090E+01	-.2263E+01	-.2474E+01	.2115E-13
42	.1000E+01	.1000E+01	.1000E+01	0.	.1000E+01	.1000E+01	.1000E+01	.2090E+01	-.6481E+00	-.1369E+01	.4880E-14
43	.1000E+01	.1000E+01	.1000E+01	0.	.1000E+01	.1000E+01	.1000E+01	.2090E+01	.4437E+00	-.6350E+00	.3584E-11
44	.1000E+01	.1000E+01	.1000E+01	0.	.1000E+01	.1000E+01	.1000E+01	.2090E+01	.1000E+01	0.	-.4880E-14
45	.1000E+01	.1000E+01	.1000E+01	0.	.1000E+01	.1000E+01	.1000E+01	.2090E+01	.1000E+01	.3004E-13	.1854E-12

46 .1000E+01 .1000E+01 .1000E+01 0. .1000E+01 .1000E+01 .1000E+01 .2090E+01 .1000E+01 .1067E-12 .1822E-12

IST	JACOBIAN	X	Y	DXI/DT	DXI/DX	DXI/DY	DETA/DT	DETA/DX	DETA/DY	EI/EIINF
1	.1718E+02	.1700E+02	.2030E+01	0.	-.2857E+00	[illegible]	0.	.2442E-12	-.6013E+02	.1311E+01
2	.2425E+02	.1400E+02	.2050E+01	0.	-.4000E+00	.4760E-01	0.	0.	-.6057E+02	.1311E+01
3	.3006E+02	.1200E+02	.2070E+01	0.	-.4900E+00	[illegible]	0.	-.1653E+01	-.6011E+02	[illegible]
4	.4119E+02	.1000E+02	.2190E+01	0.	-.6563E+00	[illegible]	0.	-.2471E+01	-.6179E+02	[illegible]
5	.6068E+02	.9000E+01	.2150E+01	0.	-.1086E+01	[illegible]	0.	.1972E+01	-.6068E+02	.1277E+01
6	.1164E+03	.8000E+01	.2075E+01	0.	-.1455E+01	[illegible]	0.	.8146E+01	[illegible]	.1296E+01
7	.1776E+03	.7500E+01	.2010E+01	0.	-.2314E+01	.1854E+01	0.	.1512E+02	[illegible]	.1300E+01
8	.2854E+03	.7000E+01	.1952E+01	0.	-.2873E+01	.3714E+01	0.	.3353E+02	-.1427E+03	.1305E+01
9	.4441E+03	.6500E+01	.1775E+01	0.	-.3694E+01	[illegible]	0.	.6084E+02	-.2220E+03	.1312E+01
10	.6311E+03	.6000E+01	.1651E+01	0.	-.4852E+01	.8751E+01	0.	.1029E+03	-.3156E+03	.1339E+01
11	.5999E+03	.5500E+01	.1445E+01	0.	-.4885E+01	[illegible]	0.	.1092E+03	-.3000E+03	.1367E+01
12	.5475E+03	.5000E+01	.1267E+01	0.	-.4594E+01	[illegible]	0.	.9962E+02	-.2737E+03	.1377E+01
13	.5043E+03	.4500E+01	.1085E+01	0.	-.4269E+01	.6255E+01	0.	.9176E+02	-.2521E+03	.1384E+01
14	.5167E+03	.4000E+01	[illegible]	0.	-.4445E+01	[illegible]	0.	.8335E+02	-.2325E+03	.1388E+01
15	.4851E+03	.3600E+01	[illegible]	0.	[illegible]	[illegible]	0.	[illegible]	-.1991E+03	[illegible]
16	[illegible]	.3200E+01	[illegible]	0.	-.4513E+01	[illegible]	0.	[illegible]	[illegible]	[illegible]
17	[illegible]	.2900E+01	[illegible]	0.	-.4815E+01	[illegible]	0.	.4017E+02	-.1561E+03	[illegible]
18	.4923E+03	.2600E+01	[illegible]	0.	-.4614E+01	[illegible]	0.	.3530E+02	-.1477E+03	.1277E+01
19	.4700E+03	.2300E+01	.4164E+00	0.	-.4404E+01	[illegible]	0.	.2996E+02	-.1410E+03	.1237E+01
20	.5568E+03	.2000E+01	.3579E+00	0.	-.5157E+01	[illegible]	0.	.2711E+02	-.1592E+03	.1205E+01
21	.6556E+03	.1800E+01	.3190E+00	0.	[illegible]	[illegible]	0.	.2465E+02	-.1311E+03	[illegible]
22	.8379E+03	.1600E+01	.2821E+00	0.	-.8196E+01	[illegible]	0.	.2283E+02	-.1257E+03	.1172E+01
23	.1151E+04	.1500E+01	[illegible]	0.	[illegible]	[illegible]	0.	.2025E+02	-.1151E+03	.1171E+01
24	.1082E+04	.1400E+01	.2469E+00	0.	-.1170E+02	[illegible]	0.	.1903E+02	-.1082E+03	.1174E+01
25	.1030E+04	.1300E+01	[illegible]	0.	[illegible]	[illegible]	0.	.1817E+02	-.1030E+03	.1176E+01
26	[illegible]	.1200E+01	[illegible]	0.	[illegible]	[illegible]	0.	[illegible]	[illegible]	[illegible]
27	[illegible]	.1100E+01	[illegible]	0.	[illegible]	[illegible]	0.	[illegible]	[illegible]	[illegible]
28	.1261E+04	.1000E+01	.1770E+00	0.	[illegible]	[illegible]	0.	[illegible]	[illegible]	[illegible]
29	.1803E+04	.1000E+01	[illegible]	0.	-.2211E+02	[illegible]	0.	-.1560E+03	0.	.1185E+01
30	.1707E+04	.1000E+01	[illegible]	0.	-.2137E+02	[illegible]	0.	-.1707E+03	0.	.1185E+01
31	.1535E+04	.1000E+01	[illegible]	0.	[illegible]	[illegible]	0.	-.1919E+03	0.	.1185E+01
32	.1416E+04	.1000E+01	.6000E+00	0.	-.1859E+02	[illegible]	0.	-.2124E+03	0.	.1185E+01
33	.1228E+04	.1000E+01	.7500E+00	0.	-.1619E+02	[illegible]	0.	-.2456E+03	0.	.1155E+01
34	.1065E+04	.1000E+01	.1000E+01	0.	-.1404E+02	[illegible]	0.	-.2663E+03	0.	[illegible]
35	.1225E+04	.1000E+01	.1250E+01	0.	[illegible]	[illegible]	0.	-.3056E+03	0.	[illegible]
36	.1059E+04	.1000E+01	.1500E+01	0.	[illegible]	[illegible]	0.	[illegible]	0.	[illegible]
37	.7876E+03	.1000E+01	.2000E+01	0.	[illegible]	[illegible]	0.	[illegible]	0.	[illegible]
38	.8614E+03	.1000E+01	[illegible]	0.	[illegible]	[illegible]	[illegible]	[illegible]	0.	[illegible]
39	.9842E+03	.1000E+01	.3000E+01	0.	[illegible]	[illegible]	[illegible]	-.7381E+03	0.	.1000E+01
40	.7157E+03	.1000E+01	.4000E+01	0.	[illegible]	[illegible]	[illegible]	[illegible]	0.	.1000E+01
41	.8517E+02	.1000E+01	.6000E+01	0.	[illegible]	[illegible]	[illegible]	-.1703E+03	0.	.1000E+01
42	.5151E+02	.1000E+01	.8000E+01	0.	[illegible]	[illegible]	0.	[illegible]	.3863E+02	.1000E+01
43	[illegible]	.2500E+01	.1000E+02	0.	[illegible]	[illegible]	0.	-.5020E+02	[illegible]	.1000E+01
44	[illegible]	.5000E+01	.1000E+02	0.	[illegible]	[illegible]	0.	0.	.2470E+03	.1000E+01
45	[illegible]	.8000E+01	.1000E+02	0.	[illegible]	[illegible]	0.	[illegible]	.1066E+03	.1000E+01
46	[illegible]	.1000E+02	.1000E+02	0.	[illegible]	[illegible]	0.	[illegible]	[illegible]	.1000E+01

J,X,Y,(Q ,N=1,4), P/PST AT K = 1

1	.17000E+02	.35750E+01	.18788E+01	.31500E+01	0.	.71168E+01	.27855E+00
2	.14000E+02	.35750E+01	.18793E+01	.31507E+01	0.	.71205E+01	.27862E+00
3	.12000E+02	.35750E+01	.19398E+01	.32295E+01	0.	.73685E+01	.29068E+00
4	.10000E+02	.35750E+01	.20404E+01	.33717E+01	0.	.78348E+01	.31405E+00
5	.90000E+01	.35750E+01	.21594E+01	.34884E+01	[illegible]	[illegible]	.33974E+00
6	.80000E+01	.35314E+01	.22435E+01	.34748E+01	.24173E+00	.86418E+01	.35994E+00
7	.75000E+01	.34704E+01	.23138E+01	.35316E+01	.47797E+00	.87810E+01	.37551E+00
8	.72500E+01	.34239E+01	.23974E+01	.36127E+01	[illegible]	.91263E+01	.39346E+00
9	.71250E+01	.34071E+01	.24036E+01	.36358E+01	[illegible]	.93238E+01	.40697E+00
10	.70000E+01	.33816E+01	.24958E+01	.35974E+01	[illegible]	.93501E+01	.41347E+00
11	.68750E+01	.33564E+01	.2507[illegible]E+01	.35494E+01	[illegible]	.93014E+01	.41523E+00
12	.67500E+01	.33284E+01	.24979E+01	.34967E+01	.80707E+00	.92363E+01	.41417E+00
13	.66250E+01	.32987E+01	.24854E+01	.34684E+01	.84704E+00	.91620E+01	.41106E+00
14	.65000E+01	.32672E+01	.24604E+01	.34238E+01	.88747E+00	.90648E+01	.40572E+00
15	.63750E+01	.32354E+01	.24259E+01	.35054E+01	[illegible]	.87384E+01	.39828E+00
16	.62500E+01	.31988E+01	.23904E+01	.35971E+01	[illegible]	.88054E+01	.38998E+00
17	.61250E+01	.31619E+01	.23667E+01	.35977E+01	.99714E+00	.86684E+01	.38296E+00
18	.60000E+01	.31231E+01	.23554E+01	.35865E+01	.1060[illegible]E+01	.87855E+01	.38607E+00
19	.59500E+01	.31071E+01	.2550[illegible]E+01	.35475E+01	.119[illegible]E+01	.90696E+01	.38077E+00
20	.59000E+01	.30908E+01	.2553[illegible]E+01	.36357E+01	.11953E+01	.91961E+01	.37847E+00
21	.58720E+01	.30619E+01	.23293E+01	.33965E+01	.113[illegible]E+01	.87123E+01	.37064E+00
22	.58580E+01	.30768E+01	.22719E+01	.31973E+01	.10754E+01	.82564E+01	.35781E+00
23	.58440E+01	.30721E+01	.21953E+01	.35330E+01	.11863E+01	.86751E+01	.34281E+00
24	.58300E+01	.30674E+01	.21364E+01	.39591E+01	.151[illegible]E+01	.93081E+01	.33270E+00
25	.58160E+01	.30077E+01	.21161E+01	.35538E+01	.115[illegible]E+01	.85[illegible]E+01	.32635E+00
26	.58080E+01	.30599E+01	.2142[illegible]E+01	.16317E+01	.50075E+00	.54906E+01	.29871E+00
27	.58000E+01	.30574E+01	.21519E+01	-.10858E+00	-.25410E-01	.64348E+01	.40603E+00
28	.57920E+01	.30560E+01	.21388E+01	0.	.31748E+00	.29664E+01	.18230E+00
29	.58000E+01	.30595E+01	.21468E+01	.25016E+01	.1[illegible]E+01	.62[illegible]E+01	.25[illegible]E+00
30	.58080E+01	.30629E+01	.21882E+01	.28957E+01	.1[illegible]E+01	.71984E+01	.30[illegible]E+00
31	.58160E+01	.30663E+01	.22[illegible]E+01	.[illegible]6175E+01	.1[illegible]E+01	.8551[illegible]E+01	.31[illegible]E+00
32	.58300E+01	.30723E+01	.22084E+01	.40045E+01	.17017E+01	.94248E+01	.32666E+00
33	.58440E+01	.30784E+01	.23229E+01	.37845E+01	.15626E+01	.88594E+01	.33596E+00
34	.58580E+01	.30841E+01	.23661E+01	.3[illegible]E+01	.13795E+01	.80377E+01	.35779E+00
35	.58720E+01	.30901E+01	.24597E+01	.38848E+01	.16475E+01	.95429E+01	.35689E+00
36	.59600E+01	.31274E+01	.25897E+01	.40176E+01	.170[illegible]E+01	.97568E+01	.38531E+00
37	.60600E+01	.31692E+01	.26704E+01	.42274E+01	.17947E+01	.10552E+02	.41070E+00
38	.61600E+01	.32123E+01	.26376E+01	.43061E+01	.18348E+01	.10495E+02	.40788E+00
39	.63600E+01	.32972E+01	.24535E+01	.40776E+01	[illegible]	.98537E+01	.36831E+00
40	.66000E+01	.33860E+01	.21311E+01	.38231E+01	.11[illegible]E+01	.87160E+01	.30917E+00
41	.68000E+01	.34368E+01	.18451E+01	.36211E+01	[illegible]	.7[illegible]E+01	.25625E+00
42	.70000E+01	.34804E+01	.15887E+01	.35614E+01	[illegible]	.68715E+01	.21196E+00
43	.75000E+01	.35[illegible]E+01	.15684E+01	.28842E+01	.50111E+00	.58774E+01	.17594E+00
44	.80000E+01	.36[illegible]E+01	.12[illegible]E+01	.25[illegible]E+01	[illegible]	.50[illegible]E+01	.14746E+00
45	.90000E+01	.36504E+01	.11198E+01	.25[illegible]E+01	.48[illegible]E-01	.45[illegible]E+01	.13375E+00
46	.10120E+02	.36504E+01	.11194E+01	.25250E+01	.48[illegible]E-01	.45660E+01	.13375E+00

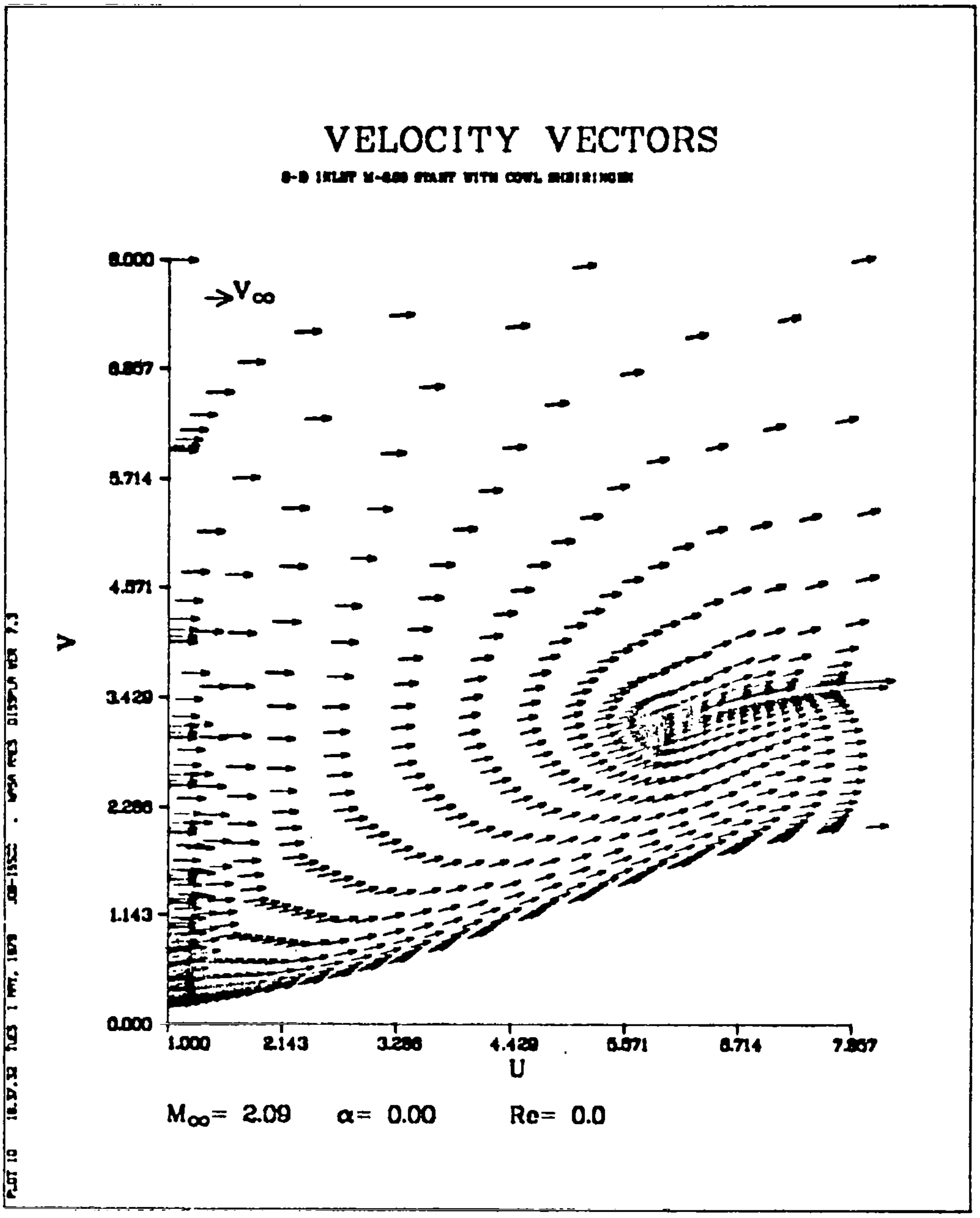
J,X,Y,(Q ,N=1,4), P/PST AT K = 22

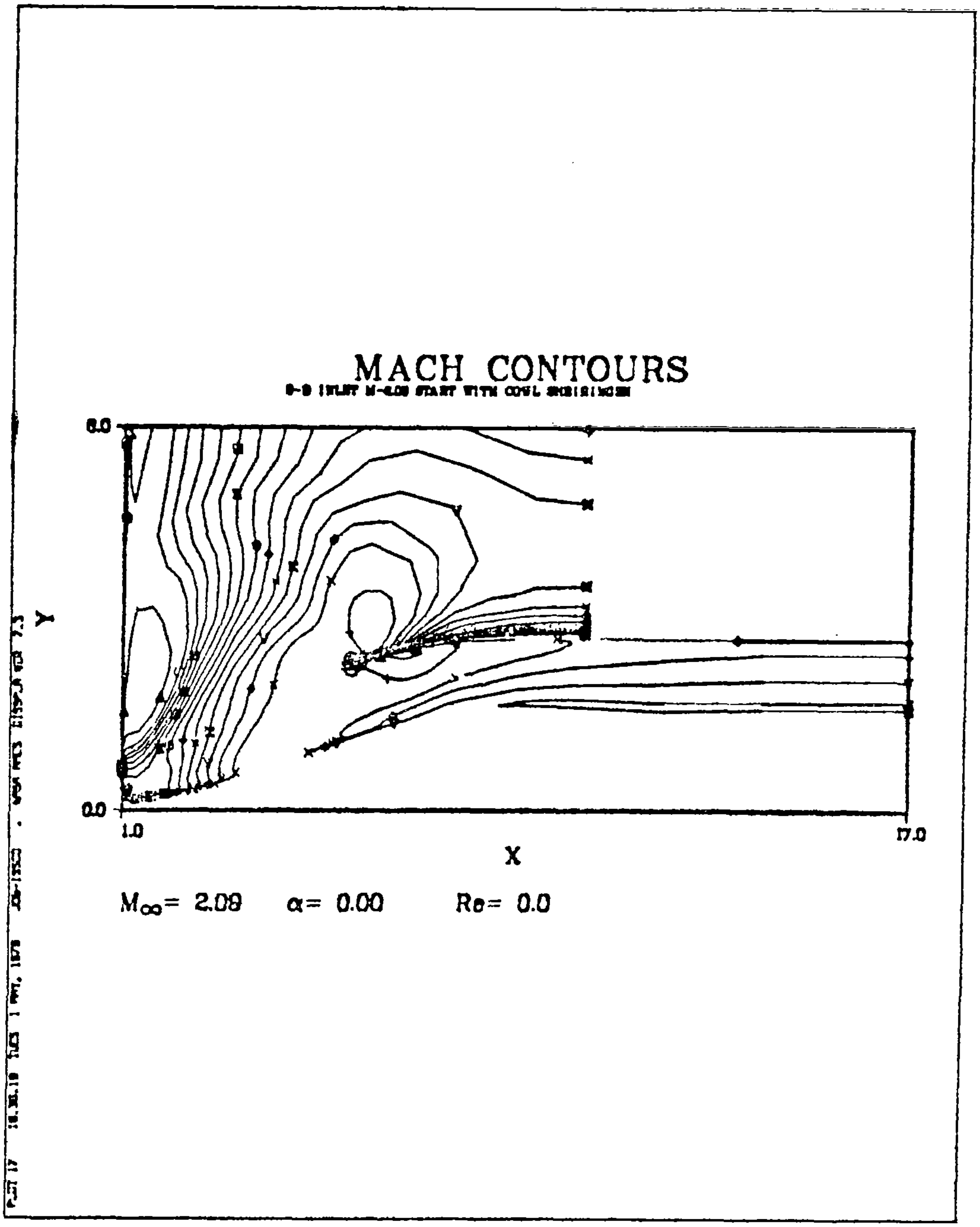
J	X	Y	Q1	Q2	Q3	Q4	P/PST
1	.17000E+02	.20500E+01	.18529E+01	.32327E+01	0.	.71572E+01	.26978E+00
2	.14000E+02	.20500E+01	.18529E+01	.32329E+01	0.	.71576E+01	.26978E+00
3	.12000E+02	.20300E+01	.17559E+01	.30437E+01	-.857[illegible]-01	.66698E+01	.25060E+00
4	.10000E+02	.21400E+01	.16719E+01	.28609E+01	-.11941E+00	.62332E+01	.23526E+00
5	.90000E+01	.21500E+01	.16776E+01	.28754E+01	.9[illegible]E-01	.62989E+01	.23800E+00
6	.80000E+01	.20750E+01	.17167E+01	.29131E+01	.27184E+00	.64420E+01	.24560E+00
7	.75000E+01	.20100E+01	.17729E+01	.30219E+01	.51574E+00	.67444E+01	.25586E+00
8	.70000E+01	.19050E+01	.18[illegible]E+01	.31288E+01	.7[illegible]	.70407E+01	.26470E+00
9	.65000E+01	.17750E+01	.18135E+01	.31571E+01	.86[illegible]	.72263E+01	.27437E+00
10	.60000E+01	.16310E+01	.19937E+01	.33764E+01	.11[illegible]E+01	.79506E+01	.29651E+00
11	.55000E+01	.14490E+01	.21057E+01	.35148E+01	.12797E+01	.84575E+01	.31955E+00
12	.50000E+01	.12669E+01	.21447E+01	.35555E+01	.12[illegible]E+01	.82460E+01	.32802E+00
13	.45000E+01	.10850E+01	.21722E+01	.32[illegible]E+01	.11[illegible]E+01	.81807E+01	.33416E+00
14	.40000E+01	.90294E+00	.21697E+01	.3[illegible]87E+01	.11[illegible]E+01	.80558E+01	.33493E+00
15	.36000E+01	.76[illegible]E+00	.20961E+01	.30[illegible]E+01	.10[illegible]E+01	.75731E+01	.31972E+00
16	.32000E+01	.63981E+00	.19804E+01	.2[illegible]E+01	.8[illegible]E+00	.70[illegible]E+01	.29584E+00
17	.29000E+01	.55984E+00	.18658E+01	.288[illegible]E+01	.743[illegible]E+00	.67571E+01	.27190E+00
18	.26000E+01	.46594E+00	.1760[illegible]E+01	.2[illegible]E+01	.6[illegible]E+00	.65532E+01	.24975E+00
19	.23000E+01	.41640E+00	.1647[illegible]E+01	.2850[illegible]E+01	.6[illegible]E+00	.62165E+01	.22638E+00
20	.20000E+01	.35790E+00	.155[illegible]E+01	.2821[illegible]E+01	.5[illegible]E+00	.59[illegible]E+01	.20782E+00
21	.18000E+01	.31900E+00	.15004E+01	.28[illegible]E+01	.55[illegible]E+00	.59[illegible]E+01	.19702E+00
22	.16000E+01	.28214E+00	.14694E+01	.28179E+01	.51171E+00	.58668E+01	.19129E+00
23	.15000E+01	.26450E+00	.14604E+01	.28051E+01	.4[illegible]E+00	.58261E+01	.18988E+00
24	.14000E+01	.24690E+00	.14688E+01	.27921E+01	.49[illegible]81E+00	.58170E+01	.19161E+00
25	.13000E+01	.22920E+00	.14804E+01	.27795E+01	.490[illegible]E+00	.58047E+01	.19368E+00
26	.12000E+01	.21160E+00	.14875E+01	.27667E+01	.486[illegible]E+00	.57865E+01	.19490E+00
27	.11000E+01	.19400E+00	.14903E+01	.27487E+01	.475[illegible]E+00	.57434E+01	.195[illegible]E+00
28	.10000E+01	.17700E+00	.14984E+01	.27301E+01	.481[illegible]E+00	.57549E+01	.19716E+00
29	.10000E+01	.25000E+00	.14984E+01	.27301E+01	.481[illegible]E+00	.57544E+01	.19716E+00
30	.10000E+01	.35000E+00	.14984E+01	.27301E+01	.481[illegible]E+00	.57549E+01	.19716E+00
31	.10000E+01	.45000E+00	.14984E+01	.27301E+01	.48154E+00	.57549E+01	.19716E+00
32	.10000E+01	.60000E+00	.14984E+01	.27301E+01	.48154E+00	.57544E+01	.19716E+00
33	.10000E+01	.75000E+00	.14984E+01	.27301E+01	.48154E+00	.57542E+01	.19716E+00
34	.10000E+01	.10000E+01	.10000E+01	.20904E+01	0.	.39698E+01	.11107E+00
35	.10000E+01	.12500E+01	.10000E+01	.20904E+01	0.	.39698E+01	.11107E+00
36	.10000E+01	.15000E+01	.10000E+01	.20904E+01	0.	.39698E+01	.11107E+00
37	.10000E+01	.20000E+01	.10000E+01	.20904E+01	0.	.39698E+01	.11107E+00
38	.10000E+01	.25000E+01	.10000E+01	.20904E+01	0.	.39698E+01	.11107E+00
39	.10000E+01	.30000E+01	.10000E+01	.20904E+01	0.	.39698E+01	.11107E+00
40	.10000E+01	.40000E+01	.10000E+01	.20904E+01	0.	.39698E+01	.11107E+00
41	.10000E+01	.60000E+01	.10000E+01	.20904E+01	0.	.39698E+01	.11107E+00
42	.10000E+01	.80000E+01	.10000E+01	.20904E+01	0.	.39698E+01	.11107E+00
43	.25000E+01	.10000E+02	.10000E+01	.20904E+01	0.	.39698E+01	.11107E+00
44	.50000E+01	.10000E+02	.10000E+01	.20904E+01	0.	.39698E+01	.11107E+00
45	.80000E+01	.10000E+02	.10000E+01	.20904E+01	0.	.39698E+01	.11107E+00
46	.10420E+02	.10000E+02	.10000E+01	.20904E+01	0.	.39698E+01	.11107E+00

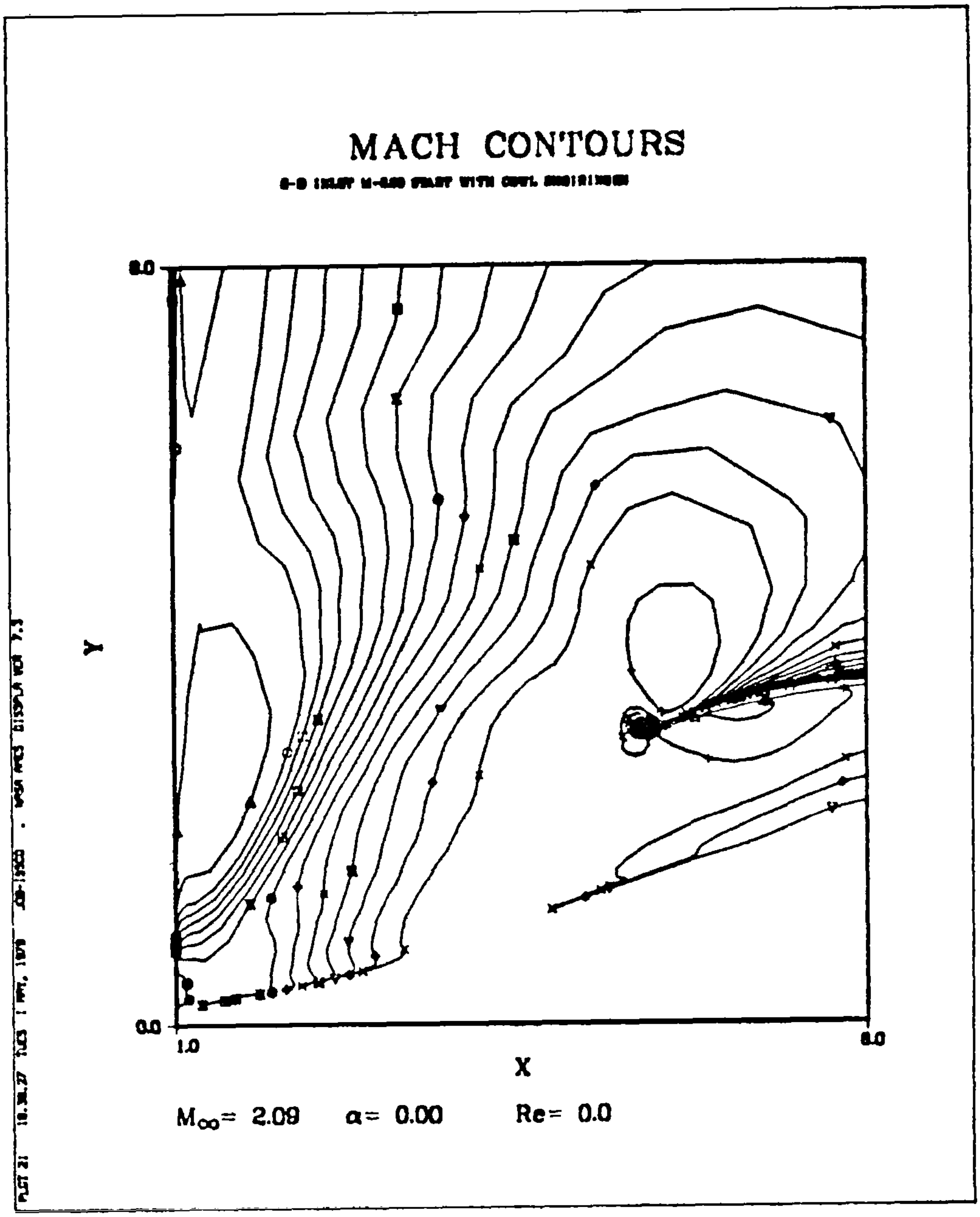
FORCE AND MOMENT COEFFS...CN,CC,CMLE,CM[illegible],CL,CD

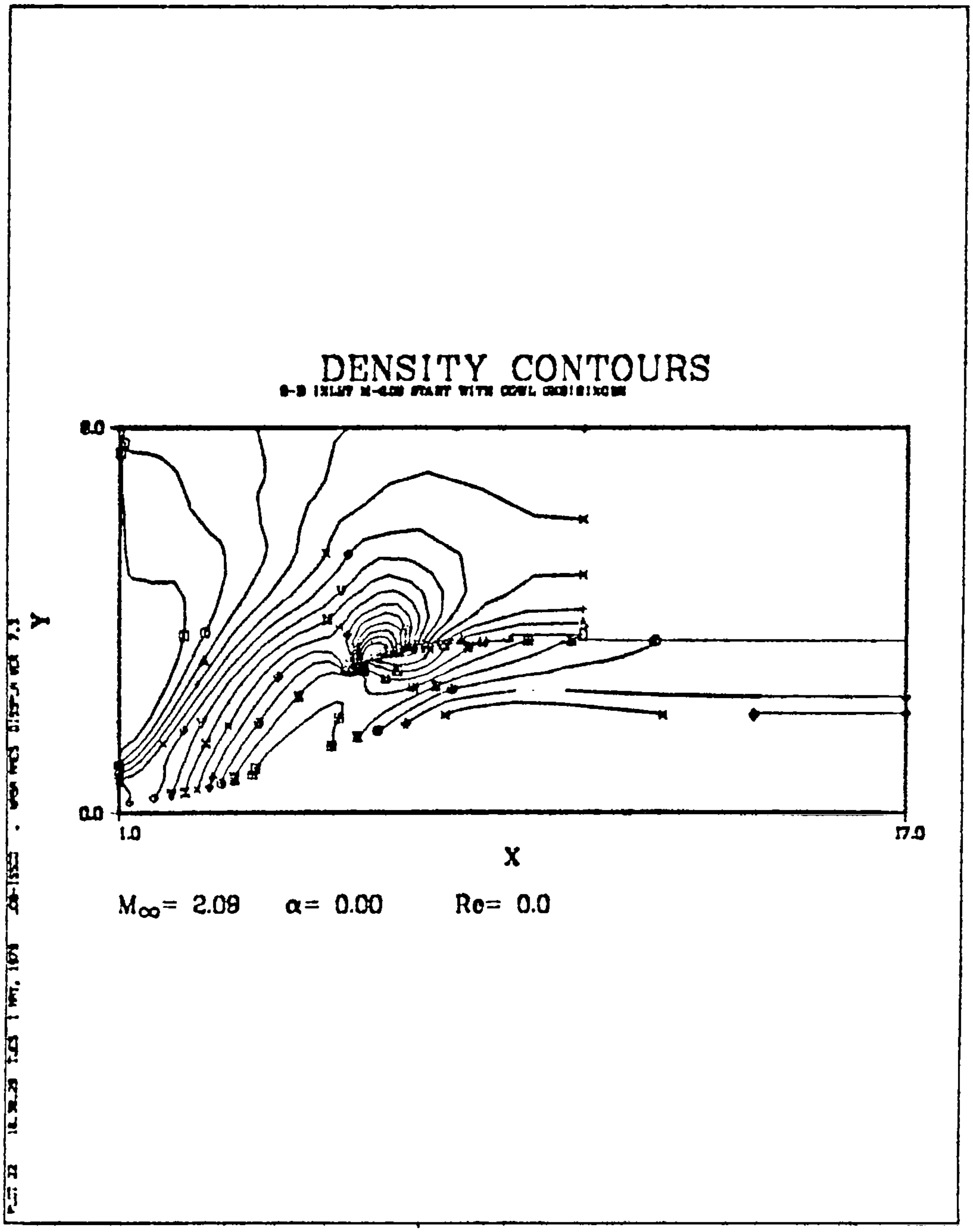
-.359419	.106627	.792084	.703[illegible]	-.359419	.106627

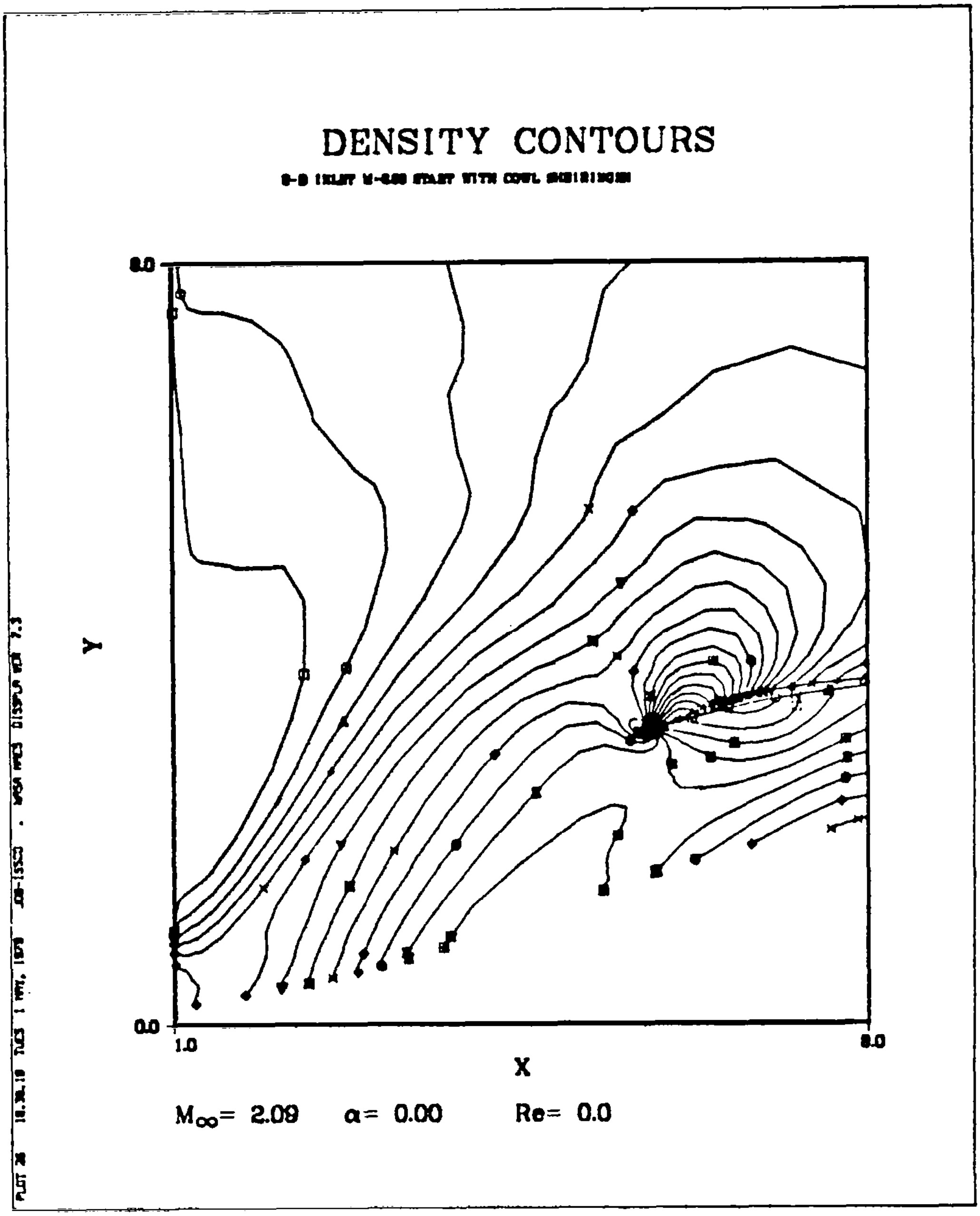
2.3 Contour Plots of Velocity, Mach Number, Density, and Pressure

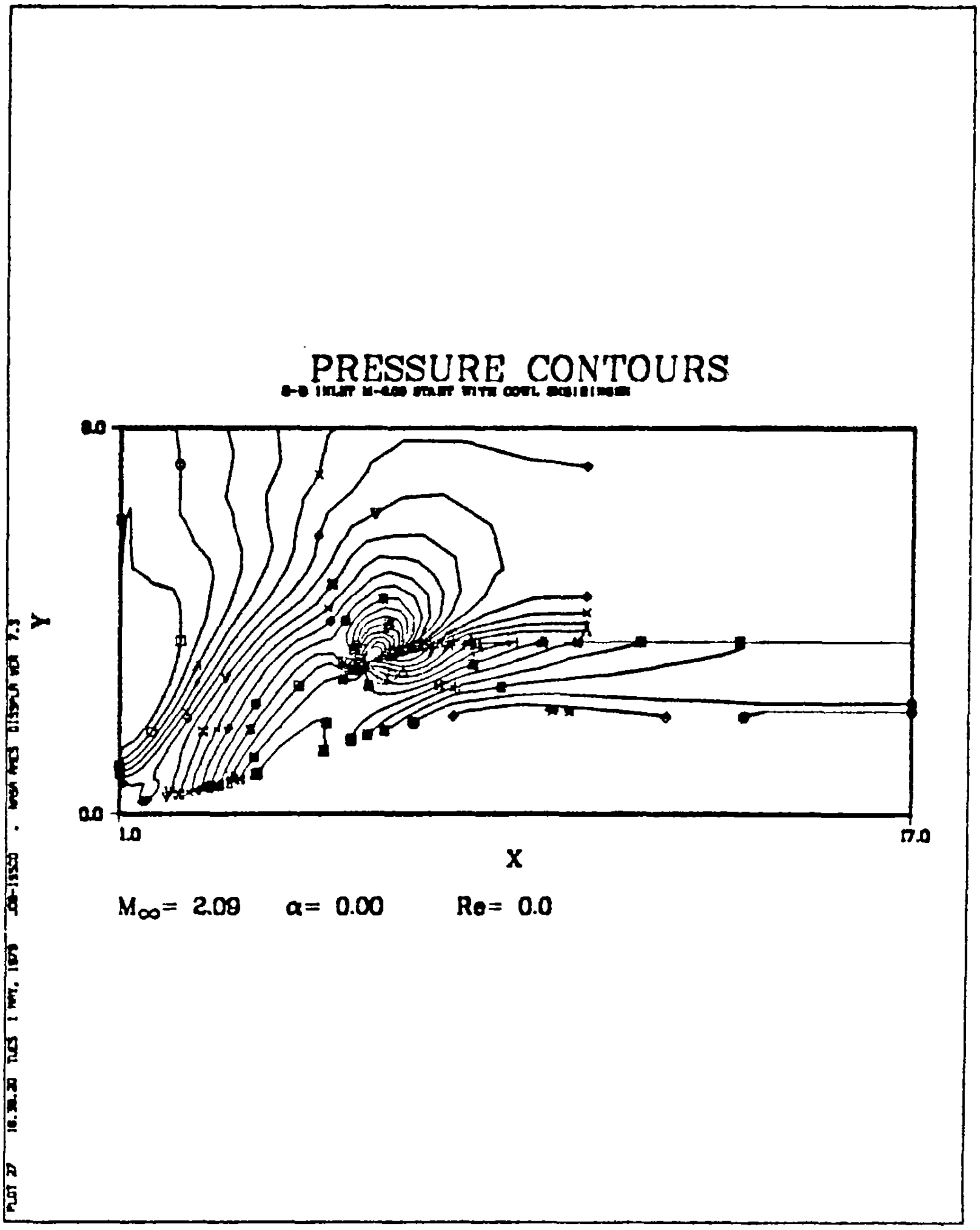


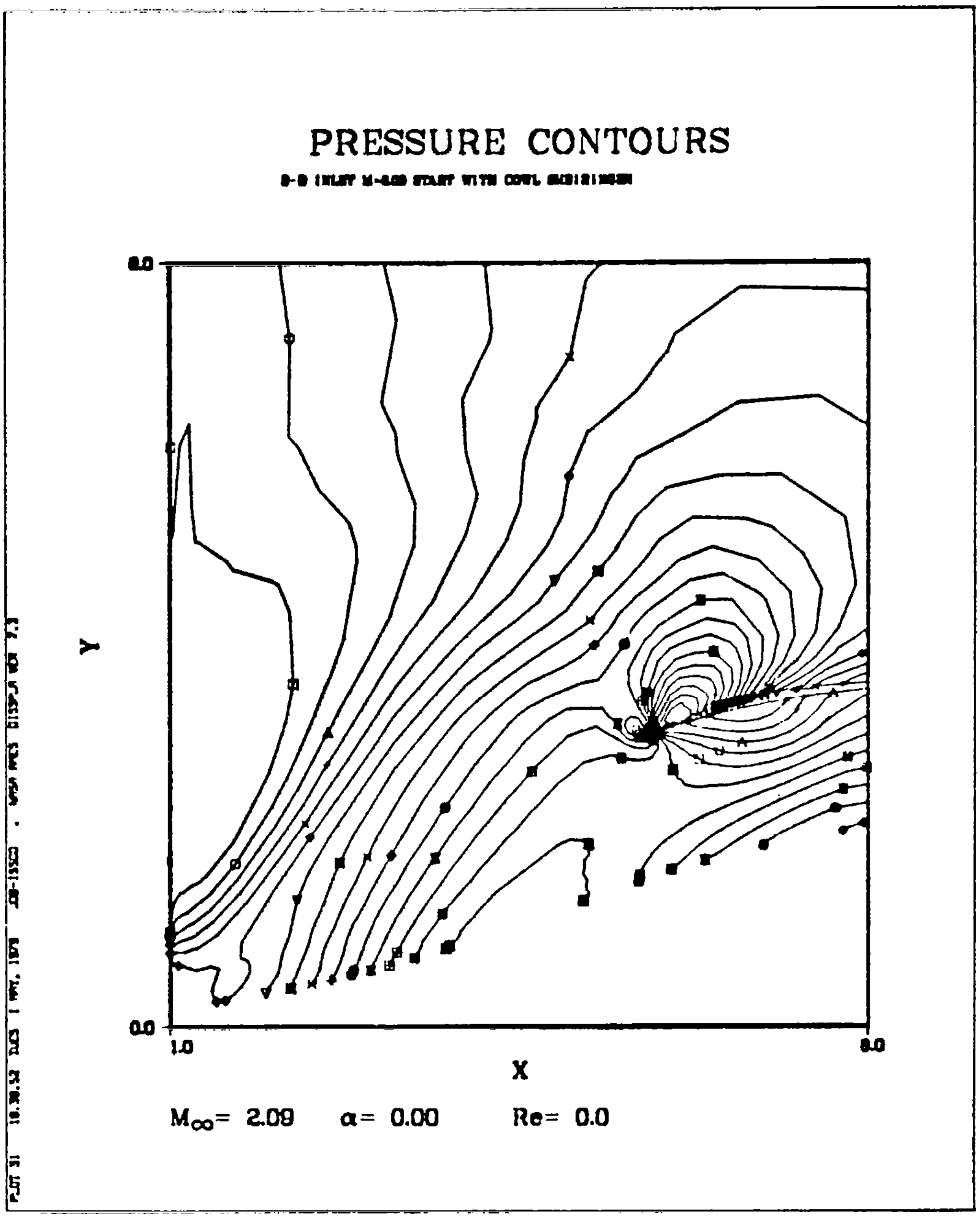

MACH CONTOURS
8.0
0.0
Y
1.0
17.0
X
M∞= 2.09
α= 0.00
Re= 0.0


MACH CONTOURS
8.0
0.0
1.0
8.0
Y
X
M∞= 2.09 α= 0.00 Re= 0.0


DENSITY CONTOURS
8.0
0.0
Y
1.0
17.0
X
M∞= 2.09 α= 0.00 Re= 0.0


DENSITY CONTOURS
8.0
0.0
1.0
8.0
Y
X
M_∞= 2.09 α= 0.00 Re= 0.0


PRESSURE CONTOURS
8.0
0.0
1.0
17.0
X
Y
M∞= 2.09 α= 0.00 Re= 0.0


PRESSURE CONTOURS
8.0
0.0
Y
1.0
8.0
X
M_∞= 2.09 α= 0.00 Re= 0.0

3. THE MESH GENERATION CODE

In This section we present the input data, answer listings and plots for the inlet geometry shown in figure 1. The computational grid is generated as a 46×22 mesh.

3.1 Program Use and Operation

In this section we give a description of the input information required to run a typical test case, e.g., the calculation of a nonorthogonal grid for the drooped-cowl inlet. Various subroutines have been modified to accommodate a flexibility for input data for the present calculations.

Input data is read by PROGRAM.MAIN in the following order:

Card No.	Format	Variables	
1	3I5	JWAKE:	Number of grid points in the x-direction in the wake including the trailing edge point. Set to 1 for the present calculations.
		KMAX:	Number of grid points in the y-direction.
		MAXIT:	Number of iterations to be used in creating the unclustered grid.
2	8F10.0	XGMX:	x-direction coordinate of rearward boundary.
		XGMN:	x-direction coordinates of front boundary.
		YMAX:	y-direction coordinate of top boundary.
		YMIN:	y-direction coordinate of bottom boundary.
		XNOSE:	x-direction coordinate of leading edge of cowl.
		XTAIL:	x-direction coordinate of trailing edge of cowl.

Card No.	Format	Variables
		XRAMP: x-direction coordinate of leading edge of ramp.
3	F10.0	DX1: Minimum y-increment on rearward boundary for initial conditions.
4	4F10.0	XORG: Location on the x-axis of the special clustering origin.
		YORG: Location on the y-axis of the special clustering origin.
		ETAC: Angle (in degrees), about which angular clustering is done.
		BETA: Parameter determining the strength of angular clustering. For equal-angular distribution set to zero. Otherwise values in the range 1 to 5.
5	F10.0	OMEGA: Parameter for Thompson solver, values between 0 to 2 recommended.
6	F10.0	DY2: Minimum y-direction spacing for final clustering.
7	A71	Title on each SC4020 plot resulting from each run.
8	A80	Description of the cowl.
9 10 . . . 54	2F10.0	Cards 9, 10, ... - All cards following card 9 contain in columns 1 to 10 and 11 to 20 two floating-point numbers, x and y, respectively, which are coordinates of points on the cowl surface defining the airfoil shape. The points should be ordered counterclockwise.
55 . . . 82	2F10.0	Cards 55, 56, ... - Coordinates of the ramp, inflow boundary and outer boundary.

It should be noted that the number of points in the ξ-direction (along the body) is specified in PROGRAM.MAIN by assigning an integer value to the variable NBOD. We have further modified

SUB.OUTER such that it allows the boundary points along the ramp, inflow boundary and the outer boundary to be specified point by point. For each different geometry, these boundary points must be prescribed in SUB.OUTER.

Sample Input for Test Case

Card data							Card
1	22 1000						CARD 1
17.	1.	10.	.14	5.792	17.	0.	2
0.02							3
5.792	3.056	270.	0.				4
1.18							5
0.02							6
S.H. BIRINGEN	NEAR						7
2-D INLET							8
17.	3.575						9
14.	3.575						10
12.	3.575						11
10.	3.575						12
9.	3.575						13
8.	3.5314						14
7.5	3.4704						15

		CARD
7.25	3.4299	16
7.125	3.4071	17
7.	3.3826	18
6.875	3.3564	19
6.75	3.3284	20
6.625	3.2987	21
6.5	3.2672	22
6.375	3.2339	23
6.25	3.1988	24
6.125	3.1619	25
6.	3.1231	26
5.95	3.1071	27
5.9	3.0908	28
5.872	3.0815	29
5.858	3.0768	30
5.844	3.0721	31
5.83	3.0674	32

5.816	3.0627	CARD 33
5.808	3.0599	34
5.8	3.0572	35
5.792	3.056	36
5.8	3.0595	37
5.808	3.0629	38
5.816	3.0663	39
5.83	3.0722	40
5.844	3.0782	41
5.858	3.0841	42
5.872	3.0901	43
5.96	3.1274	44
6.06	3.1699	45
6.16	3.2123	46
6.36	3.2972	47
6.6	3.38	48
6.8	3.43	49

7.	3.48	CARD 50
7.5	3.56	51
8.	3.6	52
9.	3.65	53
10.42	3.65	54
1.	.177	55
1.1	.194	56
1.2	.2116	57
1.3	.2292	58
1.4	.2469	59
1.5	.2645	60
1.6	.2821	61
1.8	.319	62
2.	.3579	63
2.3	.4164	64
2.6	.4854	65
2.9	.5598	66

		CARD
3.2	.6398	67
3.6	.7624	68
4.	.9029	69
4.5	1.085	70
5.	1.2669	71
5.5	1.449	72
6.	1.631	73
6.5	1.775	74
7.	1.905	75
7.5	2.01	76
8.	2.075	77
9.	2.15	78
10.	2.14	79
12.	2.03	80
14.	2.03	81
17.	2.03	82

3.2 Output Listings

```
PARAMETERS AS READ IN:

CARD NO. 1:  JWAKE, NUMBER OF POINTS IN EACH SIDE OF WAKE =     1
             KMAX, NUMBER OF POINTS IN ETA DIRECTION =   22
             MAXIT, MAXIMUM NUMBER OF ITERATIONS IN MAKING UN-CLUSTERED GRID = 1000
CARD NO. 2:  XGMX, X-DIRECTION COORDINATE OF DOWNSTREAM BOUNDARY =        [illegible]
             XGMN, X-DIRECTION COORDINATE OF UPSTREAM BOUNDARY =        [illegible]
             YMAX, Y-DIRECTION COORDINATE OF UPPER BOUNDARY =        [illegible]
             YMIN, Y-DIRECTION COORDINATE OF LOWER BOUNDARY =        [illegible]
             XNOSE, X-DIRECTION COORDINATE OF LEADING EDGE OF AIRFOIL =        5.79[illegible]
             XTAIL, X-DIRECTION COORDINATE OF TRAILING EDGE OF AIRFOIL =        17.0[illegible]
             X-COORDINATE LOCATION OF LEADING EDGE OF RAMP =        [illegible]
CARD NO. 3:  DY1, MINIMUM Y-INCREMENT ON FORWARD BOUNDARY FOR INITIAL CONDITIONS =        .0200000[illegible]
CARD NO. 4:  XORG, X-DIRECTION LOCATION OF ORIGIN FOR ANGULAR CLUSTERING =        5.792[illegible]
             YORG, Y-DIRECTION LOCATION OF ORIGIN FOR ANGULAR CLUSTERING =        3.05[illegible]
             ETAC, ANGLE (IN DEGREES) ABOUT WHICH ANGULAR CLUSTERING IS DONE =  [illegible]
             BETA, ANGULAR CLUSTERING PARAMETER =        [illegible]
CARD NO. 5:  OMEGA, PARAMETER FOR THOMPSON SOLVER =        1.1[illegible]
CARD NO. 6:  DY2, MINIMUM ETA-DIRECTION SPACING FOR FINAL CLUSTERING =        .0[illegible]
CARD NO. 8:  PLOT TITLE:          S.H. BIRINGEN     NEAR
CARD NO. 9:  AIRFICL DESCRIPTION:          2-D INLET

AIRFOIL POINTS AS READ IN.
N=  1     XB=  .17000E+02     YB=  .35750E+01
N=  2     XB=  .14000E+02     YB=  .3575[illegible]+01
N=  3     XB=  .12000E+02     YB=  .3575[illegible]+01
N=  4     XB=  .10000E+02     YB=  .3575[illegible]+01
N=  5     XB=  .90000E+01     YB=  .3575[illegible]+01
N=  6     XB=  .80000E+01     YB=  .3531[illegible]+01
N=  7     XB=  .75000E+01     YB=  .3470[illegible]+01
N=  8     XB=  .72500E+01     YB=  .34[illegible]+01
N=  9     XB=  .71250E+01     YB=  .3407[illegible]+01
N= 10     XB=  .70000E+01     YB=  .338[illegible]+01
N= 11     XB=  .68750E+01     YB=  .33[illegible]+01
N= 12     XB=  .67500E+01     YB=  .33[illegible]+01
N= 13     XB=  .66250E+01     YB=  .3[illegible]+01
N= 14     XB=  .65000E+01     YB=  .3[illegible]+01
N= 15     XB=  .63750E+01     YB=  .3[illegible]+01
N= 16     XB=  .62500E+01     YB=  .31[illegible]+01
N= 17     XB=  .61250E+01     YB=  .3161[illegible]+01
N= 18     XB=  .60000E+01     YB=  .31[illegible]+01
N= 19     XB=  .59500E+01     YB=  .310[illegible]+01
N= 20     XB=  .59000E+01     YB=  .309[illegible]+01
N= 21     XB=  .58720E+01     YB=  .308[illegible]+01
N= 22     XB=  .58580E+01     YB=  .30[illegible]+01
N= 23     XB=  .58440E+01     YB=  .30[illegible]+01
N= 24     XB=  .58300E+01     YB=  .30[illegible]+01
N= 25     XB=  .58160E+01     YB=  .30[illegible]+01
N= 26     XB=  .58080E+01     YB=  .30[illegible]+01
N= 27     XB=  .58000E+01     YB=  .3057[illegible]+01
N= 28     XB=  .57920E+01     YB=  .305[illegible]+01
N= 29     XB=  .58000E+01     YB=  .305[illegible]+01
N= 30     XB=  .58080E+01     YB=  .306[illegible]+01
N= 31     XB=  .58160E+01     YB=  .30[illegible]+01
N= 32     XB=  .58300E+01     YB=  .307[illegible]+01
N= 33     XB=  .58440E+01     YB=  .307[illegible]+01
N= 34     XB=  .58580E+01     YB=  .308[illegible]+01
N= 35     XB=  .58720E+01     YB=  .30[illegible]+01
N= 36     XB=  .59600E+01     YB=  .312[illegible]+01
N= 37     XB=  .60600E+01     YB=  .316[illegible]+01
N= 38     XB=  .61600E+01     YB=  .321[illegible]+01
N= 39     XB=  .63600E+01     YB=  .3[illegible]+01
N= 40     XB=  .66000E+01     YB=  .33[illegible]+01
N= 41     XB=  .68000E+01     YB=  .34[illegible]+01
N= 42     XB=  .70000E+01     YB=  .[illegible]+01
N= 43     XB=  .75000E+01     YB=  .[illegible]+01
N= 44     XB=  .80000E+01     YB=  .3[illegible]+01
```

```
N= 45     XB=  .90000E+01     YB=  .36500E+01
N= 46     XB=  .10420E+02     YB=  .36500E+01

AIRFOIL POINTS AFTER RESCALING.
N=  1     XB=   17.00000     YB=     3.57500
N=  2     XB=   14.00000     YB=     3.57500
N=  3     XB=   12.00000     YB=     3.57500
N=  4     XB=   10.00000     YB=     3.57500
N=  5     XB=    9.00000     YB=     3.57500
N=  6     XB=    8.00000     YB=     3.55140
N=  7     XB=    7.50000     YB=     3.47040
N=  8     XB=    7.25000     YB=     3.42990
N=  9     XB=    7.12500     YB=     3.40710
N= 10     XB=    7.00000     YB=     3.38760
N= 11     XB=    6.87500     YB=     3.35640
N= 12     XB=    6.75000     YB=     3.32840
N= 13     XB=    6.62500     YB=     3.29870
N= 14     XB=    6.50000     YB=     3.26720
N= 15     XB=    6.37500     YB=     3.23390
N= 16     XB=    6.25000     YB=     3.19880
N= 17     XB=    6.12500     YB=     3.16190
N= 18     XB=    6.00000     YB=     3.12310
N= 19     XB=    5.95000     YB=     3.10710
N= 20     XB=    5.90000     YB=     3.09080
N= 21     XB=    5.87200     YB=     3.08150
N= 22     XB=    5.85800     YB=     3.07680
N= 23     XB=    5.84400     YB=     3.07210
N= 24     XB=    5.83000     YB=     3.06740
N= 25     XB=    5.81600     YB=     3.06270
N= 26     XB=    5.80800     YB=     3.05790
N= 27     XB=    5.80000     YB=     3.05720
N= 28     XB=    5.79200     YB=     3.05600
N= 29     XB=    5.80000     YB=     3.05950
N= 30     XB=    5.80800     YB=     3.06290
N= 31     XB=    5.81600     YB=     3.06630
N= 32     XB=    5.83000     YB=     3.07220
N= 33     XB=    5.84400     YB=     3.07820
N= 34     XB=    5.85800     YB=     3.08410
N= 35     XB=    5.87200     YB=     3.09010
N= 36     XB=    5.96000     YB=     3.12740
N= 37     XB=    6.06000     YB=     3.16530
N= 38     XB=    6.16000     YB=     3.21230
N= 39     XB=    6.36000     YB=     3.29720
N= 40     XB=    6.60000     YB=     3.38400
N= 41     XB=    6.80000     YB=     3.45000
N= 42     XB=    7.00000     YB=     3.48000
N= 43     XB=    7.50000     YB=     3.56000
N= 44     XB=    8.00000     YB=     3.60000
N= 45     XB=    9.00000     YB=     3.65000
N= 46     XB=   10.42000     YB=     3.65000

BOUNDARY ON WAKE AND AIRFOIL:
X(  1,  1)=    17.00000     Y(  1,  1)=      3.57500
X(  2,  1)=    14.00000     Y(  2,  1)=      3.57500
X(  3,  1)=    12.00000     Y(  3,  1)=      3.57500
X(  4,  1)=    10.00000     Y(  4,  1)=      3.57500
X(  5,  1)=     9.00000     Y(  5,  1)=      3.57500
X(  6,  1)=     8.00000     Y(  6,  1)=      3.55140
X(  7,  1)=     7.50000     Y(  7,  1)=      3.47040
X(  8,  1)=     7.25000     Y(  8,  1)=      3.42990
X(  9,  1)=     7.12500     Y(  9,  1)=      3.40710
X( 10,  1)=     7.00000     Y( 10,  1)=      3.38760
X( 11,  1)=     6.87500     Y( 11,  1)=      3.35640
X( 12,  1)=     6.75000     Y( 12,  1)=      3.32840
X( 13,  1)=     6.62500     Y( 13,  1)=      3.29870
X( 14,  1)=     6.50000     Y( 14,  1)=      3.26720
X( 15,  1)=     6.37500     Y( 15,  1)=      3.23390
```

```
X( 16,  1)=     6.25000     Y( 16,  1)=     3.19880
X( 17,  1)=     6.12500     Y( 17,  1)=     3.16190
X( 18,  1)=     6.00000     Y( 18,  1)=     3.13310
X( 19,  1)=     5.95000     Y( 19,  1)=     3.10710
X( 20,  1)=     5.90000     Y( 20,  1)=     3.09680
X( 21,  1)=     5.87200     Y( 21,  1)=     3.08110
X( 22,  1)=     5.85800     Y( 22,  1)=     3.07480
X( 23,  1)=     5.84400     Y( 23,  1)=     3.07110
X( 24,  1)=     5.83000     Y( 24,  1)=     3.06740
X( 25,  1)=     5.81600     Y( 25,  1)=     3.06370
X( 26,  1)=     5.80800     Y( 26,  1)=     3.05990
X( 27,  1)=     5.80000     Y( 27,  1)=     3.05720
X( 28,  1)=     5.79200     Y( 28,  1)=     3.05660
X( 29,  1)=     5.80000     Y( 29,  1)=     3.05950
X( 30,  1)=     5.80800     Y( 30,  1)=     3.06290
X( 31,  1)=     5.81600     Y( 31,  1)=     3.06630
X( 32,  1)=     5.83000     Y( 32,  1)=     3.07220
X( 33,  1)=     5.84400     Y( 33,  1)=     3.07850
X( 34,  1)=     5.85800     Y( 34,  1)=     3.08410
X( 35,  1)=     5.87200     Y( 35,  1)=     3.09010
X( 36,  1)=     5.96000     Y( 36,  1)=     3.12740
X( 37,  1)=     6.06000     Y( 37,  1)=     3.16990
X( 38,  1)=     6.16000     Y( 38,  1)=     3.21250
X( 39,  1)=     6.36000     Y( 39,  1)=     3.29720
X( 40,  1)=     6.60000     Y( 40,  1)=     3.38000
X( 41,  1)=     6.80000     Y( 41,  1)=     3.43000
X( 42,  1)=     7.00000     Y( 42,  1)=     3.48000
X( 43,  1)=     7.50000     Y( 43,  1)=     3.56000
X( 44,  1)=     8.00000     Y( 44,  1)=     3.60000
X( 45,  1)=     9.00000     Y( 45,  1)=     3.65000
X( 46,  1)=    10.42000     Y( 46,  1)=     3.65000

EPSIL=     1.00956     AND F=      .00000     AFTER    3 ITERATIONS.

EPSIL=     1.08197     AND F=      .00000     AFTER    5 ITERATIONS.

LOWER PART OF REARWARD BOUNDARY:
X(  1,  1)=    17.00000     Y(  1,  1)=     3.57500
X(  1,  2)=    17.00000     Y(  1,  2)=     3.55500
X(  1,  3)=    17.00000     Y(  1,  3)=     3.52863
X(  1,  4)=    17.00000     Y(  1,  4)=     3.49425
X(  1,  5)=    17.00000     Y(  1,  5)=     3.45601
X(  1,  6)=    17.00000     Y(  1,  6)=     3.39411
X(  1,  7)=    17.00000     Y(  1,  7)=     3.32525
X(  1,  8)=    17.00000     Y(  1,  8)=     3.24203
X(  1,  9)=    17.00000     Y(  1,  9)=     3.14551
X(  1, 10)=    17.00000     Y(  1, 10)=     3.03752
X(  1, 11)=    17.00000     Y(  1, 11)=     2.92176
X(  1, 12)=    17.00000     Y(  1, 12)=     2.80534
X(  1, 13)=    17.00000     Y(  1, 13)=     2.68748
X(  1, 14)=    17.00000     Y(  1, 14)=     2.57949
X(  1, 15)=    17.00000     Y(  1, 15)=     2.48297
X(  1, 16)=    17.00000     Y(  1, 16)=     2.39995
X(  1, 17)=    17.00000     Y(  1, 17)=     2.33081
X(  1, 18)=    17.00000     Y(  1, 18)=     2.27493
X(  1, 19)=    17.00000     Y(  1, 19)=     2.23075
X(  1, 20)=    17.00000     Y(  1, 20)=     2.19637
X(  1, 21)=    17.00000     Y(  1, 21)=     2.17000
X(  1, 22)=    17.00000     Y(  1, 22)=     2.15000

UPPER PART OF REARWARD BOUNDARY:
X( 46,  1)=    10.42000     Y( 46,  1)=     3.65000
X( 46,  2)=    10.42000     Y( 46,  2)=     3.67000
X( 46,  3)=    10.42000     Y( 46,  3)=     3.70501
X( 46,  4)=    10.42000     Y( 46,  4)=     3.75719
X( 46,  5)=    10.42000     Y( 46,  5)=     3.84549
X( 46,  6)=    10.42000     Y( 46,  6)=     3.98604
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X( 46,  7)-    10.42000     Y( 46,  7)-     4.208[illegible]
X( 46,  8)-    10.42000     Y( 46,  8)-     4.54[illegible]
X( 45,  9)-    10.42000     Y( 46,  9)-     5.02153
X( 46, 10)-    10.42000     Y( 46, 10)-     5.656[illegible]
X( 46, 11)-    10.42000     Y( 46, 11)-     6.41505
X( 46, 12)-    10.42000     Y( 46, 12)-     7.2[illegible]
X( 46, 13)-    10.42000     Y( 46, 13)-     7.99[illegible]1
X( 46, 14)-    10.42000     Y( 46, 14)-     8.6[illegible]
X( 46, 15)-    10.42000     Y( 46, 15)-     9.16743
X( 46, 16)-    10.42000     Y( 46, 16)-     9.44197
X( 46, 17)-    10.42000     Y( 46, 17)-     9.66356
X( 46, 18)-    10.42000     Y( 46, 18)-     9.80[illegible]8
X( 46, 19)-    10.42000     Y( 46, 19)-     9.89281
X( 46, 20)-    10.42000     Y( 46, 20)-     9.94697
X( 46, 21)-    10.42000     Y( 46, 21)-     9.98[illegible]
X( 46, 22)-    10.42000     Y( 46, 22)-    10 00000

CLUSTR-F     ETARU-    56.32     ETARL-    10.39     ANG1-  124.01     ANG2-  211.32     XORGIN- 5.79200     YORGIN- 3.05600
    ANG3-       -I     ANG4-        -I     ANG5-        -I

OUTER BOUNDARY ON TOP, FRONT, AND BOTTOM:
X( 45, 22)-     8.00000     Y( 45, 22)-    10.00000     ETA-   64.07     PHI-   64.07     NSIDE=1
X( 44, 22)-     5.00000     Y( 44, 22)-    10.00000     ETA-   71.81     PHI-   71.81     NSIDE=1
X( 43, 22)-     2.50000     Y( 43, 22)-    10.00000     ETA-   79.56     PHI-   79.56     NSIDE=1
X( 42, 22)-     1.00000     Y( 42, 22)-     8.00000     ETA-   87.31     PHI-   87.31     NSIDE=2
X( 41, 22)-     1.00000     Y( 41, 22)-     6.00000     ETA-   95.06     PHI-   95.06     NSIDE=2
X( 40, 22)-     1.00000     Y( 40, 22)-     4.00000     ETA-  102.80     PHI-  102.80     NSIDE=2
X( 39, 22)-     1.00000     Y( 39, 22)-     3.00000     ETA-  110.55     PHI-  110.55     NSIDE=2
X( 38, 22)-     1.00000     Y( 38, 22)-     2.50000     ETA-  118.30     PHI-  118.30     NSIDE=2
X( 37, 22)-     1.00000     Y( 37, 22)-     2.00000     ETA-  126.05     PHI-  126.05     NSIDE=2
X( 36, 22)-     1.00000     Y( 36, 22)-     1.50000     ETA-  133.79     PHI-  133.79     NSIDE=2
X( 35, 22)-     1.00000     Y( 35, 22)-     1.25000     ETA-  141.54     PHI-  141.54     NSIDE=2
X( 34, 22)-     1.00000     Y( 34, 22)-     1.00000     ETA-  149.29     PHI-  149.29     NSIDE=2
X( 33, 22)-     1.00000     Y( 33, 22)-      .75000     ETA-  157.04     PHI-  157.04     NSIDE=2
X( 32, 22)-     1.00000     Y( 32, 22)-      .60000     ETA-  164.78     PHI-  164.78     NSIDE=2
X( 31, 22)-     1.00000     Y( 31, 22)-      .45000     ETA-  172.53     PHI-  172.53     NSIDE=2
X( 30, 22)-     1.00000     Y( 30, 22)-      .35000     ETA-  18[illegible]     PHI-  180.[illegible]8     NSIDE=2
X( 29, 22)-     1.00000     Y( 29, 22)-      .25000     ETA-  188.03     PHI-  188.03     NSIDE=2
X( 28, 22)-     1.00000     Y( 28, 22)-      .17700     ETA-  195.77     PHI-  195.77     NSIDE=4
X( 27, 22)-     1.10000     Y( 27, 22)-      .19400     ETA-  203.52     PHI-  203.52     NSIDE=4
X( 26, 22)-     1.20000     Y( 26, 22)-      .21160     ETA-  211.27     PHI-  211.27     NSIDE=4
X( 25, 22)-     1.30000     Y( 25, 22)-      .22920     ETA-  219.02     PHI-  219.02     NSIDE=4
X( 24, 22)-     1.40000     Y( 24, 22)-      .24690     ETA-  226.76     PHI-  226.76     NSIDE=4
X( 23, 22)-     1.50000     Y( 23, 22)-      .26450     ETA-  234.51     PHI-  234.51     NSIDE=4
X( 22, 22)-     1.60000     Y( 22, 22)-      .28210     ETA-  242.26     PHI-  242.26     NSIDE=4
X( 21, 22)-     1.80000     Y( 21, 22)-      .31900     ETA-  250.01     PHI-  250.01     NSIDE=4
X( 20, 22)-     2.00000     Y( 20, 22)-      .35790     ETA-  257.75     PHI-  257.75     NSIDE=4
X( 19, 22)-     2.30000     Y( 19, 22)-      .41640     ETA-  265.50     PHI-  265.50     NSIDE=4
X( 18, 22)-     2.60000     Y( 18, 22)-      .48590     ETA-  273.25     PHI-  273.25     NSIDE=4
X( 17, 22)-     2.90000     Y( 17, 22)-      .55980     ETA-  281.00     PHI-  281.00     NSIDE=4
X( 16, 22)-     3.20000     Y( 16, 22)-      .63980     ETA-  288.74     PHI-  288.74     NSIDE=4
X( 15, 22)-     3.60000     Y( 15, 22)-      .76240     ETA-  296.49     PHI-  296.49     NSIDE=4
X( 14, 22)-     4.00000     Y( 14, 22)-      .90290     ETA-  304.24     PHI-  304.24     NSIDE=4
X( 13, 22)-     4.50000     Y( 13, 22)-     1.08500     ETA-  311.99     PHI-  311.99     NSIDE=4
X( 12, 22)-     5.00000     Y( 12, 22)-     1.26690     ETA-  319.73     PHI-  319.73     NSIDE=4
X( 11, 22)-     5.50000     Y( 11, 22)-     1.44900     ETA-  327.48     PHI-  327.48     NSIDE=4
X( 10, 22)-     6.00000     Y( 10, 22)-     1.63100     ETA-  335.23     PHI-  335.23     NSIDE=4
X(  9, 22)-     6.50000     Y(  9, 22)-     1.77500     ETA-  342.98     PHI-  342.98     NSIDE=4
X(  8, 22)-     7.00000     Y(  8, 22)-     1.90500     ETA-  350.72     PHI-  350.72     NSIDE=4
X(  7, 22)-     7.50000     Y(  7, 22)-     2.01600     ETA-  358.47     PHI-  358.47     NSIDE=4
X(  6, 22)-     8.00000     Y(  6, 22)-     2.07500     ETA-  366.22     PHI-  366.22     NSIDE=4
X(  5, 22)-     9.00000     Y(  5, 22)-     2.15000     ETA-  373.97     PHI-  373.97     NSIDE=4
X(  4, 22)-    10.00000     Y(  4, 22)-     2.14000     ETA-  381.71     PHI-  381.71     NSIDE=4
X(  3, 22)-    12.00000     Y(  3, 22)-     2.03000     ETA-  389.46     PHI-  389.46     NSIDE=4
X(  2, 22)-    14.00000     Y(  2, 22)-     2.03000     ETA-  397.21     PHI-  397.21     NSIDE=4
X(  1, 22)-    17.00000     Y(  1, 22)-     2.05000     ETA-  404.96     PHI-  404.96     NSIDE=4
SUM OF RESIDUALS =      747.7725317031 AFTER     1 ITERATIONS.
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SUM OF RESIDUALS = 9[illegible] AFTER 2 ITERATIONS.
SUM OF RESIDUALS = 66.0[illegible] AFTER 3 ITERATIONS.
SUM OF RESIDUALS = 53.1[illegible] AFTER 4 ITERATIONS.
SUM OF RESIDUALS = 45.9[illegible] AFTER 5 ITERATIONS.
SUM OF RESIDUALS = 41.118[illegible] AFTER 6 ITERATIONS.
SUM OF RESIDUALS = 37.6[illegible] AFTER 7 ITERATIONS.
SUM OF RESIDUALS = 34.661[illegible] AFTER 8 ITERATIONS.
SUM OF RESIDUALS = 32.18[illegible] AFTER 9 ITERATIONS.
SUM OF RESIDUALS = 29.97[illegible] AFTER 10 ITERATIONS.
SUM OF RESIDUALS = 27.9881[illegible] AFTER 11 ITERATIONS.
SUM OF RESIDUALS = 26.16[illegible] AFTER 12 ITERATIONS.
SUM OF RESIDUALS = 24.57[illegible] AFTER 13 ITERATIONS.
SUM OF RESIDUALS = 23.0144[illegible] AFTER 14 ITERATIONS.
SUM OF RESIDUALS = 21.62[illegible] AFTER 15 ITERATIONS.
SUM OF RESIDUALS = 20.3[illegible] AFTER 16 ITERATIONS.
SUM OF RESIDUALS = 19.1578[illegible] AFTER 17 ITERATIONS.
SUM OF RESIDUALS = 18.05[illegible] AFTER 18 ITERATIONS.
SUM OF RESIDUALS = 17.0[illegible] AFTER 19 ITERATIONS.
SUM OF RESIDUALS = 16.09[illegible] AFTER 20 ITERATIONS.
SUM OF RESIDUALS = 15.21[illegible] AFTER 21 ITERATIONS.
SUM OF RESIDUALS = 14.5[illegible] AFTER 22 ITERATIONS.
SUM OF RESIDUALS = 13.6[illegible] AFTER 23 ITERATIONS.
SUM OF RESIDUALS = 12.9[illegible] AFTER 24 ITERATIONS.
SUM OF RESIDUALS = 12.2[illegible] AFTER 25 ITERATIONS.
SUM OF RESIDUALS = 11.61[illegible] AFTER 26 ITERATIONS.
SUM OF RESIDUALS = 11.0[illegible] AFTER 27 ITERATIONS.
SUM OF RESIDUALS = 10.4[illegible] AFTER 28 ITERATIONS.
SUM OF RESIDUALS = 9.9[illegible] AFTER 29 ITERATIONS.
SUM OF RESIDUALS = 9.4[illegible] AFTER 30 ITERATIONS.
SUM OF RESIDUALS = 9.01[illegible] AFTER 31 ITERATIONS.
SUM OF RESIDUALS = 8.581[illegible] AFTER 32 ITERATIONS.
SUM OF RESIDUALS = 8.1[illegible] AFTER 33 ITERATIONS.
SUM OF RESIDUALS = 7.76[illegible] AFTER 34 ITERATIONS.
SUM OF RESIDUALS = 7.4[illegible] AFTER 35 ITERATIONS.
SUM OF RESIDUALS = 7.0[illegible] AFTER 36 ITERATIONS.
SUM OF RESIDUALS = 6.75[illegible] AFTER 37 ITERATIONS.
SUM OF RESIDUALS = 6.4[illegible] AFTER 38 ITERATIONS.
SUM OF RESIDUALS = 6.15[illegible] AFTER 39 ITERATIONS.
SUM OF RESIDUALS = 5.88[illegible] AFTER 40 ITERATIONS.
SUM OF RESIDUALS = 5.6[illegible] AFTER 41 ITERATIONS.
SUM OF RESIDUALS = 5.3[illegible] AFTER 42 ITERATIONS.
SUM OF RESIDUALS = 5.1[illegible] AFTER 43 ITERATIONS.
SUM OF RESIDUALS = 4.91[illegible] AFTER 44 ITERATIONS.
SUM OF RESIDUALS = 4.7[illegible] AFTER 45 ITERATIONS.
SUM OF RESIDUALS = 4.4[illegible] AFTER 46 ITERATIONS.
SUM OF RESIDUALS = 4.30[illegible] AFTER 47 ITERATIONS.
SUM OF RESIDUALS = 4.125[illegible] AFTER 48 ITERATIONS.
SUM OF RESIDUALS = 3.9[illegible] AFTER 49 ITERATIONS.
SUM OF RESIDUALS = 3.78[illegible] AFTER 50 ITERATIONS.
SUM OF RESIDUALS = 3.6[illegible] AFTER 51 ITERATIONS.
SUM OF RESIDUALS = 3.47[illegible] AFTER 52 ITERATIONS.
SUM OF RESIDUALS = 3.3[illegible] AFTER 53 ITERATIONS.
SUM OF RESIDUALS = 3.1912[illegible] AFTER 54 ITERATIONS.
SUM OF RESIDUALS = 3.0[illegible] AFTER 55 ITERATIONS.
SUM OF RESIDUALS = 2.9[illegible] AFTER 56 ITERATIONS.
SUM OF RESIDUALS = 2.81[illegible] AFTER 57 ITERATIONS.
SUM OF RESIDUALS = 2.70[illegible] AFTER 58 ITERATIONS.
SUM OF RESIDUALS = 2.5[illegible] AFTER 59 ITERATIONS.
SUM OF RESIDUALS = 2.4[illegible] AFTER 60 ITERATIONS.
SUM OF RESIDUALS = 2.3[illegible] AFTER 61 ITERATIONS.
SUM OF RESIDUALS = 2.2[illegible] AFTER 62 ITERATIONS.
SUM OF RESIDUALS = 2.19[illegible] AFTER 63 ITERATIONS.
SUM OF RESIDUALS = 2.111[illegible] AFTER 64 ITERATIONS.
SUM OF RESIDUALS = 2.0[illegible] AFTER 65 ITERATIONS.
SUM OF RESIDUALS = 1.9[illegible] AFTER 66 ITERATIONS.
SUM OF RESIDUALS = 1.871[illegible] AFTER 67 ITERATIONS.
SUM OF RESIDUALS = 1.7[illegible] AFTER 68 ITERATIONS.
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SUM OF RESIDUALS = 1.7274950[illegible] AFTER 69 ITERATIONS.
SUM OF RESIDUALS = 1.660[illegible] AFTER 70 ITERATIONS.
SUM OF RESIDUALS = 1.5553797[illegible] AFTER 71 ITERATIONS.
SUM OF RESIDUALS = 1.5539115[illegible] AFTER 72 ITERATIONS.
SUM OF RESIDUALS = 1.4739870110 AFTER 73 ITERATIONS.
SUM OF RESIDUALS = 1.416[illegible] AFTER 74 ITERATIONS.
SUM OF RESIDUALS = 1.36[illegible] AFTER 75 ITERATIONS.
SUM OF RESIDUALS = 1.3[illegible]557615 AFTER 76 ITERATIONS.
SUM OF RESIDUALS = 1.2596914[illegible] AFTER 77 ITERATIONS.
SUM OF RESIDUALS = 1.2114574[illegible] AFTER 78 ITERATIONS.
SUM OF RESIDUALS = 1.16516[illegible] AFTER 79 ITERATIONS.
SUM OF RESIDUALS = 1.1[illegible] AFTER 80 ITERATIONS.
SUM OF RESIDUALS = 1.0[illegible] AFTER 81 ITERATIONS.
SUM OF RESIDUALS = 1.0[illegible] AFTER 82 ITERATIONS.
SUM OF RESIDUALS = .99[illegible] AFTER 83 ITERATIONS.
SUM OF RESIDUALS = .9[illegible] AFTER 84 ITERATIONS.
SUM OF RESIDUALS = .9[illegible] AFTER 85 ITERATIONS.
SUM OF RESIDUALS = .88[illegible] AFTER 86 ITERATIONS.
SUM OF RESIDUALS = .85[illegible] AFTER 87 ITERATIONS.
SUM OF RESIDUALS = .825[illegible] AFTER 88 ITERATIONS.
SUM OF RESIDUALS = .795[illegible] AFTER 89 ITERATIONS.
SUM OF RESIDUALS = .76[illegible]871 AFTER 90 ITERATIONS.
SUM OF RESIDUALS = .734[illegible] AFTER 91 ITERATIONS.
SUM OF RESIDUALS = .707[illegible] AFTER 92 ITERATIONS.
SUM OF RESIDUALS = .681[illegible] AFTER 93 ITERATIONS.
SUM OF RESIDUALS = .655[illegible] AFTER 94 ITERATIONS.
SUM OF RESIDUALS = .631661[illegible] AFTER 95 ITERATIONS.
SUM OF RESIDUALS = .60[illegible] AFTER 96 ITERATIONS.
SUM OF RESIDUALS = .58[illegible] AFTER 97 ITERATIONS.
SUM OF RESIDUALS = .56[illegible] AFTER 98 ITERATIONS.
SUM OF RESIDUALS = .54[illegible] AFTER 99 ITERATIONS.
SUM OF RESIDUALS = .52[illegible] AFTER 100 ITERATIONS.
SUM OF RESIDUALS = .50[illegible] AFTER 101 ITERATIONS.
SUM OF RESIDUALS = .4851[illegible] AFTER 102 ITERATIONS.
SUM OF RESIDUALS = .46[illegible] AFTER 103 ITERATIONS.
SUM OF RESIDUALS = .45[illegible] AFTER 104 ITERATIONS.
SUM OF RESIDUALS = .4345[illegible] AFTER 105 ITERATIONS.
SUM OF RESIDUALS = .4185[illegible] AFTER 106 ITERATIONS.
SUM OF RESIDUALS = .403[illegible] AFTER 107 ITERATIONS.
SUM OF RESIDUALS = .38[illegible] AFTER 108 ITERATIONS.
SUM OF RESIDUALS = .37[illegible] AFTER 109 ITERATIONS.
SUM OF RESIDUALS = .36[illegible] AFTER 110 ITERATIONS.
SUM OF RESIDUALS = .3478[illegible] AFTER 111 ITERATIONS.
SUM OF RESIDUALS = .33[illegible] AFTER 112 ITERATIONS.
SUM OF RESIDUALS = .3231[illegible] AFTER 113 ITERATIONS.
SUM OF RESIDUALS = .3114597[illegible] AFTER 114 ITERATIONS.
SUM OF RESIDUALS = .300227[illegible] AFTER 115 ITERATIONS.
SUM OF RESIDUALS = .28[illegible] AFTER 116 ITERATIONS.
SUM OF RESIDUALS = .27[illegible] AFTER 117 ITERATIONS.
SUM OF RESIDUALS = .26[illegible] AFTER 118 ITERATIONS.
SUM OF RESIDUALS = .25[illegible] AFTER 119 ITERATIONS.
SUM OF RESIDUALS = .24[illegible] AFTER 120 ITERATIONS.
SUM OF RESIDUALS = .24103[illegible] AFTER 121 ITERATIONS.
SUM OF RESIDUALS = .232[illegible] AFTER 122 ITERATIONS.
SUM OF RESIDUALS = .2240[illegible] AFTER 123 ITERATIONS.
SUM OF RESIDUALS = .216[illegible] AFTER 124 ITERATIONS.
SUM OF RESIDUALS = .2083517[illegible] AFTER 125 ITERATIONS.
SUM OF RESIDUALS = .20091[illegible] AFTER 126 ITERATIONS.
SUM OF RESIDUALS = .19375[illegible] AFTER 127 ITERATIONS.
SUM OF RESIDUALS = .18[illegible] AFTER 128 ITERATIONS.
SUM OF RESIDUALS = .18[illegible] AFTER 129 ITERATIONS.
SUM OF RESIDUALS = .17[illegible] AFTER 130 ITERATIONS.
SUM OF RESIDUALS = .16[illegible] AFTER 131 ITERATIONS.
SUM OF RESIDUALS = .16[illegible] AFTER 132 ITERATIONS.
SUM OF RESIDUALS = .15[illegible] AFTER 133 ITERATIONS.
SUM OF RESIDUALS = .15[illegible] AFTER 134 ITERATIONS.
SUM OF RESIDUALS = .14[illegible] AFTER 135 ITERATIONS.

SUM OF RESIDUALS = .13[illegible]358097 AFTER 136 ITERATIONS.
SUM OF RESIDUALS = .1[illegible]885218 AFTER 137 ITERATIONS.
SUM OF RESIDUALS = .130[illegible] AFTER 138 ITERATIONS.
SUM OF RESIDUALS = .125[illegible] AFTER 139 ITERATIONS.
SUM OF RESIDUALS = .1211[illegible] AFTER 140 ITERATIONS.
SUM OF RESIDUALS = .11691[illegible] AFTER 141 ITERATIONS.
SUM OF RESIDUALS = .1127[illegible] AFTER 142 ITERATIONS.
SUM OF RESIDUALS = .1088[illegible]5972 AFTER 143 ITERATIONS.
SUM OF RESIDUALS = .104999[illegible] AFTER 144 ITERATIONS.
SUM OF RESIDUALS = .1013[illegible] AFTER 145 ITERATIONS.
SUM OF RESIDUALS = .0[illegible]750165[illegible] AFTER 146 ITERATIONS.
SUM OF RESIDUALS = .0943[illegible] AFTER 147 ITERATIONS.
SUM OF RESIDUALS = .0916101[illegible] AFTER 148 ITERATIONS.
SUM OF RESIDUALS = .0878[illegible] AFTER 149 ITERATIONS.
SUM OF RESIDUALS = .0847[illegible] AFTER 150 ITERATIONS.
SUM OF RESIDUALS = .0817774401 AFTER 151 ITERATIONS.
SUM OF RESIDUALS = .0789[illegible] AFTER 152 ITERATIONS.
SUM OF RESIDUALS = .0761581261 AFTER 153 ITERATIONS.
SUM OF RESIDUALS = .07349740[illegible] AFTER 154 ITERATIONS.
SUM OF RESIDUALS = .0709311179[illegible] AFTER 155 ITERATIONS.
SUM OF RESIDUALS = .0684[illegible] AFTER 156 ITERATIONS.
SUM OF RESIDUALS = .06[illegible] AFTER 157 ITERATIONS.
SUM OF RESIDUALS = .0637[illegible] AFTER 158 ITERATIONS.
SUM OF RESIDUALS = .0615[illegible] AFTER 159 ITERATIONS.
SUM OF RESIDUALS = .05[illegible] AFTER 160 ITERATIONS.
SUM OF RESIDUALS = .05[illegible] AFTER 161 ITERATIONS.
SUM OF RESIDUALS = .0553[illegible] AFTER 162 ITERATIONS.
SUM OF RESIDUALS = .0534[illegible] AFTER 163 ITERATIONS.
SUM OF RESIDUALS = .0515611110 AFTER 164 ITERATIONS.
SUM OF RESIDUALS = .0497[illegible] AFTER 165 ITERATIONS.
SUM OF RESIDUALS = .048[illegible] AFTER 166 ITERATIONS.
SUM OF RESIDUALS = .0465[illegible] AFTER 167 ITERATIONS.
SUM OF RESIDUALS = .04[illegible] AFTER 168 ITERATIONS.
SUM OF RESIDUALS = .04[illegible] AFTER 169 ITERATIONS.
SUM OF RESIDUALS = .041[illegible] AFTER 170 ITERATIONS.
SUM OF RESIDUALS = .0402[illegible] AFTER 171 ITERATIONS.
SUM OF RESIDUALS = .0388[illegible] AFTER 172 ITERATIONS.
SUM OF RESIDUALS = .0375[illegible] AFTER 173 ITERATIONS.
SUM OF RESIDUALS = .036[illegible] AFTER 174 ITERATIONS.
SUM OF RESIDUALS = .0[illegible] AFTER 175 ITERATIONS.
SUM OF RESIDUALS = .0[illegible] AFTER 176 ITERATIONS.
SUM OF RESIDUALS = .0[illegible] AFTER 177 ITERATIONS.
SUM OF RESIDUALS = .0[illegible] AFTER 178 ITERATIONS.
SUM OF RESIDUALS = .0[illegible] AFTER 179 ITERATIONS.
SUM OF RESIDUALS = .02[illegible] AFTER 180 ITERATIONS.
SUM OF RESIDUALS = .0285[illegible] AFTER 181 ITERATIONS.
SUM OF RESIDUALS = .0273[illegible] AFTER 182 ITERATIONS.
SUM OF RESIDUALS = .026[illegible] AFTER 183 ITERATIONS.
SUM OF RESIDUALS = .0[illegible] AFTER 184 ITERATIONS.
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SUM OF RESIDUALS = .0237879[illegible] AFTER 186 ITERATIONS.
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SUM OF RESIDUALS =          .0000000590 AFTER   567 ITERATIONS.
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SUM OF RESIDUALS =          .0000000552 AFTER   569 ITERATIONS.
SUM OF RESIDUALS =          .0000000534 AFTER   570 ITERATIONS.
SUM OF RESIDUALS =          .0000000517 AFTER   571 ITERATIONS.
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SUM OF RESIDUALS =          .0000000468 AFTER   574 ITERATIONS.
SUM OF RESIDUALS =          .0000000452 AFTER   575 ITERATIONS.
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SUM OF RESIDUALS =          .0000000423 AFTER   577 ITERATIONS.
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SUM OF RESIDUALS =          .0000000370 AFTER   581 ITERATIONS.
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SUM OF RESIDUALS =          .0000000324 AFTER   585 ITERATIONS.
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SUM OF RESIDUALS =          .0000000293 AFTER   588 ITERATIONS.
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SUM OF RESIDUALS =          .0000000274 AFTER   590 ITERATIONS.
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SUM OF RESIDUALS =          .0000000248 AFTER   593 ITERATIONS.
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SUM OF RESIDUALS =          .0000000225 AFTER   596 ITERATIONS.
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SUM OF RESIDUALS =          .0000000178 AFTER   603 ITERATIONS.
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SUM OF RESIDUALS =          .0000000001 AFTER    959 ITERATIONS.
SUM OF RESIDUALS =          .0000000001 AFTER    960 ITERATIONS.
SUM OF RESIDUALS =          .0000000001 AFTER    961 ITERATIONS.
SUM OF RESIDUALS =          .0000000001 AFTER    962 ITERATIONS.
SUM OF RESIDUALS =          .0000000001 AFTER    963 ITERATIONS.
SUM OF RESIDUALS =          .0000000001 AFTER    964 ITERATIONS.
SUM OF RESIDUALS =          .0000000001 AFTER    965 ITERATIONS.
SUM OF RESIDUALS =          .0000000001 AFTER    966 ITERATIONS.
SUM OF RESIDUALS =          .0000000001 AFTER    967 ITERATIONS.
SUM OF RESIDUALS =          .0000000001 AFTER    968 ITERATIONS.
SUM OF RESIDUALS =          .0000000001 AFTER    969 ITERATIONS.
SUM OF RESIDUALS =          .0000000001 AFTER    970 ITERATIONS.
SUM OF RESIDUALS =          .0000000001 AFTER    971 ITERATIONS.
SUM OF RESIDUALS =          .0000000001 AFTER    972 ITERATIONS.
SUM OF RESIDUALS =          .0000000001 AFTER    973 ITERATIONS.
SUM OF RESIDUALS =          .0000000001 AFTER    974 ITERATIONS.
SUM OF RESIDUALS =          .0000000001 AFTER    975 ITERATIONS.
SUM OF RESIDUALS =          .0000000001 AFTER    976 ITERATIONS.
SUM OF RESIDUALS =          .0000000001 AFTER    977 ITERATIONS.
SUM OF RESIDUALS =          .0000000001 AFTER    978 ITERATIONS.
SUM OF RESIDUALS =          .0000000001 AFTER    979 ITERATIONS.
SUM OF RESIDUALS =          .0000000001 AFTER    980 ITERATIONS.
SUM OF RESIDUALS =          .0000000001 AFTER    981 ITERATIONS.
SUM OF RESIDUALS =          .0000000001 AFTER    982 ITERATIONS.
SUM OF RESIDUALS =          .0000000001 AFTER    983 ITERATIONS.
SUM OF RESIDUALS =          .0000000001 AFTER    984 ITERATIONS.
SUM OF RESIDUALS =          .0000000001 AFTER    985 ITERATIONS.
SUM OF RESIDUALS =          .0000000001 AFTER    986 ITERATIONS.
SUM OF RESIDUALS =          .0000000001 AFTER    987 ITERATIONS.
SUM OF RESIDUALS =          .0000000001 AFTER    988 ITERATIONS.
SUM OF RESIDUALS =          .0000000001 AFTER    989 ITERATIONS.
SUM OF RESIDUALS =          .0000000001 AFTER    990 ITERATIONS.
SUM OF RESIDUALS =          .0000000001 AFTER    991 ITERATIONS.
SUM OF RESIDUALS =          .0000000001 AFTER    992 ITERATIONS.
SUM OF RESIDUALS =          .0000000001 AFTER    993 ITERATIONS.
SUM OF RESIDUALS =          .0000000001 AFTER    994 ITERATIONS.
SUM OF RESIDUALS =          .0000000001 AFTER    995 ITERATIONS.
SUM OF RESIDUALS =          .0000000001 AFTER    996 ITERATIONS.
SUM OF RESIDUALS =          .0000000001 AFTER    997 ITERATIONS.
SUM OF RESIDUALS =          .0000000001 AFTER    998 ITERATIONS.
SUM OF RESIDUALS =          .0000000001 AFTER    999 ITERATIONS.
SUM OF RESIDUALS =          .0000000001 AFTER   1000 ITERATIONS.

AFTER THOMPSON-SOLVER, BEFORE FINAL CLUSTERING:

( S FOR CONSTANT XI LINE AT J=    1
 .170000E+02  .170000E+02  .170000E+02  .170000E+02  .170000E+02  .170000E+02  .170000E+02  .170000E+02  .170000E+02  .170000E+02
 .170000E+02  .170000E+02  .170000E+02  .170000E+02  .170000E+02  .170000E+02  .170000E+02  .170000E+02  .170000E+02  .170000E+02
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.170000E+02  .170000E+02

Y S FOR CONSTANT XI LINE AT J=    1
 .357500E+01  .355500E+01  .352863E+01  .349425E+01  .345001E+01  .339411E+01  .332505E+01  .324203E+01  .314551E+01  .303752E+01
 .292176E+01  .280324E+01  .268748E+01  .257949E+01  .248297E+01  .239995E+01  .233089E+01  .227499E+01  .223075E+01  .219637E+01
 .217000E+01  .203000E+01

X S FOR CONSTANT XI LINE AT J=   11
 .687500E+01  .688068E+01  .688485E+01  .688692E+01  .688641E+01  .688291E+01  .687604E+01  .686547E+01  .685085E+01  .683178E+01
 .680782E+01  .677842E+01  .674285E+01  .670018E+01  .664910E+01  .658780E+01  .651357E+01  .642222E+01  .630677E+01  .615434E+01
 .593666E+01  .550000E+01

Y S FOR CONSTANT XI LINE AT J=   11
 .335640E+01  .328551E+01  .321491E+01  .314441E+01  .307386E+01  .300313E+01  .293213E+01  .286073E+01  .278883E+01  .271630E+01
 .264298E+01  .256869E+01  .249318E+01  .241612E+01  .233706E+01  .225535E+01  .217001E+01  .207944E+01  .198072E+01  .186779E+01
 .172512E+01  .144900E+01

X S FOR CONSTANT XI LINE AT J=   21
 .587200E+01  .588946E+01  .589603E+01  .589342E+01  .588216E+01  .586228E+01  .583351E+01  .579533E+01  .574693E+01  .568725E+01
 .561435E+01  .552793E+01  .542417E+01  .530067E+01  .515374E+01  .497866E+01  .476920E+01  .451676E+01  .420827E+01  .381983E+01
 .328773E+01  .180000E+01

Y S FOR CONSTANT XI LINE AT J=   21
 .308150E+01  .305189E+01  .301740E+01  .298016E+01  .294119E+01  .290113E+01  .286034E+01  .281904E+01  .277731E+01  .273506E+01
 .269204E+01  .264770E+01  .260106E+01  .255058E+01  .249376E+01  .242674E+01  .234357E+01  .223485E+01  .208522E+01  .186694E+01
 .151541E+01  .319000E+00

X S FOR CONSTANT XI LINE AT J=   31
 .581600E+01  .580920E+01  .579348E+01  .576787E+01  .573069E+01  .568036E+01  .561538E+01  .553423E+01  .543536E+01  .531706E+01
 .517750E+01  .501467E+01  .482644E+01  .461056E+01  .436480E+01  .408704E+01  .377550E+01  .342878E+01  .304520E+01  .261964E+01
 .212816E+01  .100000E+01

Y S FOR CONSTANT XI LINE AT J=   31
 .306630E+01  .308973E+01  .311924E+01  .315668E+01  .320178E+01  .325341E+01  .331009E+01  .337013E+01  .343161E+01  .349229E+01
 .354948E+01  .359986E+01  .363930E+01  .366254E+01  .366281E+01  .363127E+01  .355625E+01  .342200E+01  .320608E+01  .287197E+01
 .233688E+01  .450000E+00

X S FOR CONSTANT XI LINE AT J=   41
 .680000E+01  .685128E+01  .690621E+01  .694925E+01  .697506E+01  .698123E+01  .696609E+01  .692789E+01  .686466E+01  .677410E+01
 .665355E+01  .649986E+01  .630912E+01  .607598E+01  .579266E+01  .544736E+01  .502188E+01  .448868E+01  .380938E+01  .294641E+01
 .192478E+01  .100000E+01

Y S FOR CONSTANT XI LINE AT J=   41
 .343000E+01  .359946E+01  .378352E+01  .397930E+01  .418502E+01  .439971E+01  .462284E+01  .485401E+01  .509265E+01  .533783E+01
 .558815E+01  .584178E+01  .609654E+01  .634999E+01  .659925E+01  .684032E+01  .706625E+01  .726261E+01  .739671E+01  .739334E+01
 .708931E+01  .600000E+01

EPSIL=     1.07191     AND F=     .00000     AFTER    5 ITERATIONS.

EPSIL=     1.07165     AND F=     .00000     AFTER    6 ITERATIONS.

EPSIL=     1.07190     AND F=     .00000     AFTER    5 ITERATIONS.

EPSIL=     1.07910     AND F=     .00000     AFTER    6 ITERATIONS.

EPSIL=     1.08128     AND F=     .00000     AFTER    6 ITERATIONS.

EPSIL=     1.06928     AND F=     .00000     AFTER    6 ITERATIONS.

EPSIL=     1.06724     AND F=     .00000     AFTER    5 ITERATIONS.

EPSIL=     1.06021     AND F=     .00000     AFTER    5 ITERATIONS.

EPSIL=     1.05090     AND F=     .00000     AFTER    6 ITERATIONS.

EPSIL=     1.04168     AND F=     .00000     AFTER    4 ITERATIONS.
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EPSIL=     1.03399     AND F=     .00000     AFTER   4 ITERATIONS.
EPSIL=     1.02824     AND F=     .00000     AFTER   4 ITERATIONS.
EPSIL=     1.02391     AND F=     .00000     AFTER   4 ITERATIONS.
EPSIL=     1.02057     AND F=     .00000     AFTER   4 ITERATIONS.
EPSIL=     1.01863     AND F=     .00000     AFTER   4 ITERATIONS.
EPSIL=     1.01701     AND F=     .00000     AFTER   4 ITERATIONS.
EPSIL=     1.01610     AND F=     .00000     AFTER   4 ITERATIONS.
EPSIL=     1.01519     AND F=     .00000     AFTER   4 ITERATIONS.
EPSIL=     1.01432     AND F=     .00000     AFTER   3 ITERATIONS.
EPSIL=     1.01349     AND F=     .00000     AFTER   3 ITERATIONS.
EPSIL=     1.01300     AND F=     .00000     AFTER   3 ITERATIONS.
EPSIL=     1.01248     AND F=     .00000     AFTER   3 ITERATIONS.
EPSIL=     1.01221     AND F=     .00000     AFTER   3 ITERATIONS.
EPSIL=     1.01188     AND F=     .00000     AFTER   3 ITERATIONS.
EPSIL=     1.01152     AND F=     .00000     AFTER   3 ITERATIONS.
EPSIL=     1.01110     AND F=     .00000     AFTER   3 ITERATIONS.
EPSIL=     1.01065     AND F=     .00000     AFTER   3 ITERATIONS.
EPSIL=     1.01016     AND F=     .00000     AFTER   2 ITERATIONS.
EPSIL=     1.00987     AND F=     .00000     AFTER   2 ITERATIONS.
EPSIL=     1.00958     AND F=     .00000     AFTER   3 ITERATIONS.
EPSIL=     1.00922     AND F=     .00000     AFTER   3 ITERATIONS.
EPSIL=     1.00888     AND F=     .00000     AFTER   3 ITERATIONS.
EPSIL=     1.00848     AND F=     .00000     AFTER   3 ITERATIONS.
EPSIL=     1.00815     AND F=     .00000     AFTER   3 ITERATIONS.
EPSIL=     1.00772     AND F=     .00000     AFTER   3 ITERATIONS.
EPSIL=     1.00728     AND F=     .00000     AFTER   3 ITERATIONS.
EPSIL=     1.00702     AND F=     .00000     AFTER   3 ITERATIONS.
EPSIL=     1.00662     AND F=     .00000     AFTER   3 ITERATIONS.
EPSIL=     1.00614     AND F=     .00000     AFTER   4 ITERATIONS.
EPSIL=     1.00587     AND F=     .00000     AFTER   4 ITERATIONS.
EPSIL=     1.00597     AND F=     .00000     AFTER   4 ITERATIONS.
EPSIL=     1.00552     AND F=     .00000     AFTER   4 ITERATIONS.
EPSIL=     1.00570     AND F=     .00000     AFTER   4 ITERATIONS.
EPSIL=     1.00681     AND F=     .00000     AFTER   3 ITERATIONS.
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EPSIL=     1.00878      AND F=      .00000      AFTER    3 ITERATIONS.

EPSIL=     1.00956      AND F=      .00000      AFTER    3 ITERATIONS.

AFTER FINAL CLUSTERING:

X S FOR CONSTANT XI LINE AT J=    1
 .170000E+02  .170000E+02  .170000E+02  .170000E+02  .170000E+02  .170000E+02  .170000E+02  .170000E+02  .170000E+02  .170000E+02
 .170000E+02  .170000E+02  .170000E+02  .170000E+02  .170000E+02  .170000E+02  .170000E+02  .170000E+02  .170000E+02  .170000E+02
 .170000E+02  .170000E+02

Y S FOR CONSTANT XI LINE AT J=    1
 .357500E+01  .355500E+01  .352826E+01  .349288E+01  .344671E+01  .338754E+01  .331342E+01  .322321E+01  .311718E+01  .299755E+01
 .286862E+01  .273638E+01  .260745E+01  .248782E+01  .238179E+01  .229158E+01  .221746E+01  .215829E+01  .211212E+01  .207674E+01
 .205000E+01  .203000E+01

X S FOR CONSTANT XI LINE AT J=    2
 .140000E+02  .140023E+02  .140053E+02  .140091E+02  .140138E+02  .140193E+02  .140254E+02  .140317E+02  .140375E+02  .140420E+02
 .140445E+02  .140445E+02  .140420E+02  .140375E+02  .140316E+02  .140253E+02  .140192E+02  .140137E+02  .140091E+02  .140053E+02
 .140023E+02  .140000E+02

Y S FOR CONSTANT XI LINE AT J=    2
 .357500E+01  .355513E+01  .352855E+01  .349335E+01  .344736E+01  .338835E+01  .331434E+01  .322414E+01  .311800E+01  .299811E+01
 .286882E+01  .273618E+01  .260690E+01  .248701E+01  .238086E+01  .229067E+01  .221666E+01  .215764E+01  .211165E+01  .207645E+01
 .204987E+01  .203000E+01

X S FOR CONSTANT XI LINE AT J=    3
 .120000E+02  .120004E+02  .120009E+02  .120015E+02  .120023E+02  .120033E+02  .120045E+02  .120058E+02  .120071E+02  .120081E+02
 .120086E+02  .120086E+02  .120080E+02  .120070E+02  .120057E+02  .120044E+02  .120032E+02  .120022E+02  .120014E+02  .120008E+02
 .120004E+02  .120000E+02

Y S FOR CONSTANT XI LINE AT J=    3
 .357500E+01  .355500E+01  .352827E+01  .349289E+01  .344673E+01  .339756E+01  .331345E+01  .322324E+01  .311721E+01  .299757E+01
 .286863E+01  .273638E+01  .260744E+01  .248779E+01  .238176E+01  .229156E+01  .221744E+01  .215827E+01  .211211E+01  .207673E+01
 .205000E+01  .203000E+01

X S FOR CONSTANT XI LINE AT J=    4
 .100000E+02  .100059E+02  .100134E+02  .100228E+02  .100341E+02  .100473E+02  .100618E+02  .100766E+02  .100901E+02  .101005E+02
 .101063E+02  .101064E+02  .101007E+02  .100904E+02  .100769E+02  .100622E+02  .100476E+02  .100344E+02  .100229E+02  .100135E+02
 .100059E+02  .100000E+02

Y S FOR CONSTANT XI LINE AT J=    4
 .357500E+01  .355588E+01  .353050E+01  .349714E+01  .345385E+01  .339863E+01  .332974E+01  .324613E+01  .314805E+01  .303753E+01
 .291849E+01  .279643E+01  .267739E+01  .256685E+01  .246877E+01  .238516E+01  .231627E+01  .226107E+01  .221781E+01  .218447E+01
 .215911E+01  .214000E+01

X S FOR CONSTANT XI LINE AT J=    5
 .900000E+01  .900303E+01  .900696E+01  .901200E+01  .901828E+01  .902586E+01  .903451E+01  .904371E+01  .905251E+01  .905963E+01
 .906380E+01  .906416E+01  .906064E+01  .905397E+01  .904539E+01  .903617E+01  .902733E+01  .901947E+01  .901286E+01  .900750E+01
 .900328E+01  .900000E+01

Y S FOR CONSTANT XI LINE AT J=    5
 .357500E+01  .355523E+01  .352914E+01  .349505E+01  .345114E+01  .339555E+01  .332671E+01  .324376E+01  .314705E+01  .303857E+01
 .292206E+01  .280274E+01  .268623E+01  .257772E+01  .248099E+01  .239804E+01  .232923E+01  .227367E+01  .222981E+01  .219578E+01
 .216973E+01  .215000E+01

X S FOR CONSTANT XI LINE AT J=    6
 .800000E+01  .801324E+01  .803048E+01  .805243E+01  .807957E+01  .811171E+01  .814762E+01  .818469E+01  .821891E+01  .824547E+01
 .825999E+01  .825979E+01  .824488E+01  .821791E+01  .818337E+01  .814613E+01  .811025E+01  .807830E+01  .805160E+01  .802989E+01
 .801297E+01  .800000E+01

Y S FOR CONSTANT XI LINE AT J=    6
 .353140E+01  .351635E+01  .349574E+01  .346767E+01  .342957E+01  .337874E+01  .331219E+01  .322758E+01  .312422E+01  .300394E+01
 .287180E+01  .273538E+01  .260329E+01  .248311E+01  .237983E+01  .229531E+01  .222873E+01  .217774E+01  .213949E+01  .211114E+01
 .209028E+01  .207500E+01
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X S FOR CONSTANT XI LINE AT J=    7
 .750000E+01  .751496E+01  .753453E+01  .755956E+01  .759070E+01  .762772E+01  .766918E+01  .771179E+01  .775038E+01  .777878E+01
 .779158E+01  .778612E+01  .776364E+01  .772877E+01  .768776E+01  .764630E+01  .760831E+01  .757580E+01  .754929E+01  .752836E+01
 .751222E+01  .750000E+01

Y S FOR CONSTANT XI LINE AT J=    7
 .347040E+01  .345702E+01  .343847E+01  .341279E+0.  .337726E+01  .332888E+01  .326417E+01  .318020E+01  .307587E+01  .295301E+01
 .281735E+01  .267757E+01  .254316E+01  .242196E+01  .231852E+01  .223399E+01  .216716E+01  .211561E+01  .207658E+01  .204743E+01
 .202585E+01  .201000E+01

X S FOR CONSTANT XI LINE AT J=    8
 .725000E+01  .726349E+01  .728119E+01  .730385E+01  .733180E+01  .736454E+01  .740002E+01  .743415E+01  .746071E+01  .747261E+01
 .746418E+01  .743376E+01  .738472E+01  .732413E+01  .726001E+01  .719893E+01  .714504E+01  .710023E+01  .706446E+01  .703672E+01
 .701569E+01  .700000E+01

Y S FOR CONSTANT XI LINE AT J=    8
 .342990E+01  .341505E+01  .339430E+01  .336539E+01  .332517E+01  .327023E+01  .319674E+01  .310164E+01  .298400E+01  .284686E+01
 .269762E+01  .254693E+01  .240569E+01  .228202E+01  .217987E+01  .209931E+01  .203794E+01  .199240E+01  .195909E+01  .193494E+01
 .191752E+01  .190500E+01

X S FOR CONSTANT XI LINE AT J=    9
 .712500E+01  .713195E+01  .714146E+01  .715441E+01  .717125E+01  .719140E+01  .721240E+01  .722922E+01  .723419E+01  .721873E+01
 .717671E+01  .710798E+01  .701928E+01  .692169E+01  .682644E+01  .674144E+01  .667114E+01  .661545E+01  .657272E+01  .654070E+01
 .651713E+01  .650000E+01

Y S FOR CONSTANT XI LINE AT J=    9
 .340710E+01  .338834E+01  .336227E+01  .332640E+01  .327752E+01  .321170E+01  .312476E+01  .301337E+01  .287704E+01  .272024E+01
 .255304E+01  .238910E+01  .224123E+01  .211745E+01  .201972E+01  .194568E+01  .189051E+01  .185016E+01  .182106E+01  .180026E+01
 .178547E+01  .177500E+01

X S FOR CONSTANT XI LINE AT J=   10
 .700000E+01  .700383E+01  .700908E+01  .701622E+01  .702526E+01  .703538E+01  .704356E+01  .704352E+01  .702552E+01  .697864E+01
 .689604E+01  .678036E+01  .664427E+01  .650539E+01  .637820E+01  .627211E+01  .618817E+01  .612415E+01  .607666E+01  .604216E+01
 .601748E+01  .600000E+01

Y S FOR CONSTANT XI LINE AT J=   10
 .338260E+01  .336297E+01  .333511E+01  .329594E+01  .324151E+01  .316707E+01  .306764E+01  .293938E+01  .278223E+01  .260292E+01
 .241560E+01  .223822E+01  .208517E+01  .196227E+01  .186813E+01  .179608E+01  .174224E+01  .170296E+01  .167479E+01  .165483E+01
 .164080E+01  .163100E+01

X S FOR CONSTANT XI LINE AT J=   11
 .687500E+01  .687675E+01  .687907E+01  .688204E+01  .688520E+01  .688708E+01  .688364E+01  .686674E+01  .682345E+01  .673947E+01
 .660769E+01  .643665E+01  .624864E+01  .606852E+01  .591410E+01  .579075E+01  .569654E+01  .562700E+01  .557698E+01  .554165E+01
 .551702E+01  .550000E+01

Y S FOR CONSTANT XI LINE AT J=   11
 .335640E+01  .333647E+01  .330760E+01  .326611E+01  .320723E+01  .312513E+01  .301364E+01  .286810E+01  .268906E+01  .248661E+01
 .228061E+01  .209296E+01  .193630E+01  .181114E+01  .171052E+01  .163137E+01  .157163E+01  .152794E+01  .149672E+01  .147477E+01
 .145951E+01  .144900E+01

X S FOR CONSTANT XI LINE AT J=   12
 .675000E+01  .675022E+01  .675032E+01  .675003E+01  .674845E+01  .674335E+01  .672941E+01  .669585E+01  .662523E+01  .649907E+01
 .631208E+01  .608293E+01  .584521E+01  .562807E+01  .544888E+01  .530928E+01  .520531E+01  .513046E+01  .507788E+01  .504156E+01
 .501677E+01  .500000E+01

Y S FOR CONSTANT XI LINE AT J=   12
 .332840E+01  .330840E+01  .327886E+01  .323560E+01  .317301E+01  .308415E+01  .296152E+01  .279960E+01  .260014E+01  .237800E+01
 .215922E+01  .196567E+01  .180292E+01  .166769E+01  .155481E+01  .146606E+01  .139951E+01  .135135E+01  .131738E+01  .129387E+01
 .127779E+01  .126690E+01

X S FOR CONSTANT XI LINE AT J=   13
 .662500E+01  .662409E+01  .662252E+01  .661974E+01  .661447E+01  .660375E+01  .658061E+01  .653037E+01  .642916E+01  .625450E+01
 .600762E+01  .572056E+01  .543510E+01  .518406E+01  .498086E+01  .482588E+01  .471293E+01  .463332E+01  .457851E+01  .454139E+01
 .451653E+01  .450000E+01

Y S FOR CONSTANT XI LINE AT J=   13
 .329870E+01  .327872E+01  .324870E+01  .320397E+01  .313814E+01  .304308E+01  .290992E+01  .273256E+01  .251521E+01  .227943E+01
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 .205495E+01  .185668E+01  .168322E+01  .153044E+01  .140266E+01  .130266E+01  .122836E+01  .117527E+01  .113837E+01  .111321E+01
 .109629E+01  .108500E+01

X S FOR CONSTANT XI LINE AT J=   14
 .650000E+01  .649836E+01  .649570E+01  .649134E+01  .648372E+01  .646911E+01  .643809E+01  .636971E+01  .623198E+01  .600232E+01
 .569405E+01  .535178E+01  .502147E+01  .473716E+01  .451074E+01  .434113E+01  .421979E+01  .413582E+01  .407903E+01  .404122E+01
 .401630E+01  .400000E+01

Y S FOR CONSTANT XI LINE AT J=   14
 .326720E+01  .324727E+01  .321685E+01  .317091E+01  .310193E+01  .300092E+01  .285760E+01  .266616E+01  .243583E+01  .219508E+01
 .196997E+01  .176254E+01  .157066E+01  .139693E+01  .125206E+01  .113961E+01  .105706E+01  .998872E+00  .959025E+00  .932271E+00
 .914543E+00  .902900E+00

X S FOR CONSTANT XI LINE AT J=   15
 .637500E+01  .637317E+01  .637027E+01  .636574E+01  .635795E+01  .634213E+01  .630479E+01  .621728E+01  .604306E+01  .576666E+01
 .541327E+01  .503222E+01  .467157E+01  .436515E+01  .412438E+01  .394654E+01  .382106E+01  .373536E+01  .367812E+01  .364044E+01
 .361590E+01  .360000E+01

Y S FOR CONSTANT XI LINE AT J=   15
 .323390E+01  .321398E+01  .318328E+01  .313627E+01  .306518E+01  .295985E+01  .280971E+01  .261140E+01  .238066E+01  .214733E+01
 .192534E+01  .170861E+01  .149829E+01  .130556E+01  .114453E+01  .101989E+01  .928940E+00  .865345E+00  .822187E+00  .793484E+00
 .774650E+00  .762400E+00

X S FOR CONSTANT XI LINE AT J=   16
 .625000E+01  .624901E+01  .624749E+01  .624536E+01  .624051E+01  .622530E+01  .617899E+01  .606549E+01  .585013E+01  .552883E+01
 .513414E+01  .471742E+01  .432843E+01  .399984E+01  .374375E+01  .355638E+01  .342551E+01  .333704E+01  .327853E+01  .324010E+01
 .321579E+01  .320000E+01

Y S FOR CONSTANT XI LINE AT J=   16
 .319880E+01  .317882E+01  .314773E+01  .309965E+01  .302620E+01  .291653E+01  .276089E+01  .256105E+01  .233853E+01  .211632E+01
 .189403E+01  .166273E+01  .143075E+01  .121935E+01  .104420E+01  .909983E+00  .813086E+00  .746067E+00  .701066E+00  .671444E+00
 .652198E+00  .639800E+00

X S FOR CONSTANT XI LINE AT J=   17
 .612500E+01  .612771E+01  .613148E+01  .613636E+01  .613746E+01  .612126E+01  .606055E+01  .591855E+01  .566911E+01  .531664E+01
 .489577E+01  .445737E+01  .405145E+01  .371102E+01  .344784E+01  .325687E+01  .312455E+01  .303575E+01  .297743E+01  .293968E+01
 .291545E+01  .290000E+01

Y S FOR CONSTANT XI LINE AT J=   17
 .316190E+01  .314208E+01  .311100E+01  .306256E+01  .298769E+01  .287563E+01  .271999E+01  .252895E+01  .232394E+01  .211605E+01
 .189410E+01  .165121E+01  .140334E+01  .117672E+01  .988961E+00  .845443E+00  .742247E+00  .671222E+00  .623783E+00  .592726E+00
 .572658E+00  .559800E+00

X S FOR CONSTANT XI LINE AT J=   18
 .600000E+01  .601411E+01  .603167E+01  .604770E+01  .605312E+01  .603017E+01  .594914E+01  .577705E+01  .549601E+01  .511449E+01
 .466717E+01  .420636E+01  .378237E+01  .342844E+01  .315648E+01  .296048E+01  .282560E+01  .273570E+01  .267705E+01  .263932E+01
 .261526E+01  .260000E+01

Y S FOR CONSTANT XI LINE AT J=   18
 .312310E+01  .310831E+01  .308250E+01  .303592E+01  .295991E+01  .284634E+01  .269436E+01  .251684E+01  .232991E+01  .213189E+01
 .190539E+01  .164613E+01  .137906E+01  .113584E+01  .935447E+00  .783281E+00  .674631E+00  .600373E+00  .551112E+00  .519073E+00
 .498501E+00  .485400E+00

X S FOR CONSTANT XI LINE AT J=   19
 .595000E+01  .596028E+01  .597340E+01  .598559E+01  .598412E+01  .594554E+01  .583938E+01  .563763E+01  .532767E+01  .491868E+01
 .444517E+01  .396198E+01  .351904E+01  .315039E+01  .286842E+01  .266632E+01  .252810E+01  .243654E+01  .237718E+01  .233922E+01
 .231516E+01  .230000E+01

Y S FOR CONSTANT XI LINE AT J=   19
 .310710E+01  .308980E+01  .306096E+01  .301264E+01  .293522E+01  .282290E+01  .268033E+01  .252098E+01  .235191E+01  .216004E+01
 .192477E+01  .164532E+01  .135724E+01  .109688E+01  .884167E+00  .724035E+00  .610652E+00  .533772E+00  .483160E+00  .450454E+00
 .429598E+00  .416400E+00

X S FOR CONSTANT XI LINE AT J=   20
 .590000E+01  .591293E+01  .592717E+01  .593577E+01  .592352E+01  .586584E+01  .573437E+01  .550622E+01  .517009E+01  .473418E+01
 .423410E+01  .372774E+01  .326399E+01  .287853E+01  .258466E+01  .237500E+01  .223237E+01  .213845E+01  .207791E+01  .203944E+01
 .201519E+01  .200000E+01
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Y S FOR CONSTANT XI LINE AT J=   20
 .309080E+01  .307511E+01  .304675E+01  .299716E+01  .291926E+01  .281208E+01  .268380E+01  .254423E+01  .239065E+01  .220140E+01
 .195351E+01  .165085E+01  .134085E+01  .106357E+01  .839399E+00  .672339E+00  .555162E+00  .476394E+00  .424937E+00  .391944E+00
 .371042E+00  .357900E+00

X S FOR CONSTANT XI LINE AT J=   21
 .587200E+01  .588349E+01  .589385E+01  .589405E+01  .586679E+01  .578881E+01  .563611E+01  .538856E+01  .503436E+01  .458028E+01
 .406308E+01  .354247E+01  .306835E+01  .267692E+01  .238061E+01  .217065E+01  .202871E+01  .193576E+01  .187615E+01  .183843E+01
 .181477E+01  .180000E+01

Y S FOR CONSTANT XI LINE AT J=   21
 .308150E+01  .306477E+01  .303464E+01  .298403E+01  .290903E+01  .281297E+01  .270407E+01  .258625E+01  .244831E+01  .226333E+01
 .200715E+01  .168817E+01  .135976E+01  .106526E+01  .827154E+00  .649992E+00  .526063E+00  .443028E+00  .388977E+00  .354448E+00
 .332653E+00  .319000E+00

X S FOR CONSTANT XI LINE AT J=   22
 .585800E+01  .586409E+01  .586697E+01  .585564E+01  .581208E+01  .571536E+01  .554487E+01  .528052E+01  .490874E+01  .443550E+01
 .389976E+01  .336441E+01  .287910E+01  .248037E+01  .218024E+01  .196879E+01  .182663E+01  .173402E+01  .167493E+01  .163770E+01
 .161445E+01  .160000E+01

Y S FOR CONSTANT XI LINE AT J=   22
 .307680E+01  .305763E+01  .302666E+01  .297582E+01  .290779E+01  .282707E+01  .273919E+01  .264219E+01  .251810E+01  .233528E+01
 .206805E+01  .172865E+01  .137884E+01  .106592E+01  .813841E+00  .627121E+00  .497125E+00  .410440E+00  .354274E+00  .318554E+00
 .296104E+00  .282100E+00

X S FOR CONSTANT XI LINE AT J=   23
 .584400E+01  .584619E+01  .584219E+01  .581914E+01  .576072E+01  .564972E+01  .546701E+01  .519173E+01  .480848E+01  .432301E+01
 .377638E+01  .323411E+01  .274792E+01  .235295E+01  .205876E+01  .185335E+01  .171626E+01  .162748E+01  .157108E+01  .153569E+01
 .151366E+01  .150000E+01

Y S FOR CONSTANT XI LINE AT J=   23
 .307210E+01  .305214E+01  .302026E+01  .297434E+01  .291768E+01  .285544E+01  .278957E+01  .271320E+01  .260407E+01  .242688E+01
 .215463E+01  .180175E+01  .143326E+01  .110110E+01  .832310E+00  .633786E+00  .493817E+00  .401207E+00  .341279E+00  .303229E+00
 .279360E+00  .264500E+00

X S FOR CONSTANT XI LINE AT J=   24
 .583000E+01  .582923E+01  .581786E+01  .578318E+01  .571225E+01  .559054E+01  .539845E+01  .511329E+01  .471793E+01  .421835E+01
 .365865E+01  .310850E+01  .262069E+01  .222854E+01  .193940E+01  .173932E+01  .160678E+01  .152146E+01  .146753E+01  .143383E+01
 .141292E+01  .140000E+01

Y S FOR CONSTANT XI LINE AT J=   24
 .306740E+01  .304736E+01  .301725E+01  .297908E+01  .293752E+01  .289525E+01  .285111E+01  .279467E+01  .269990E+01  .252744E+01
 .224809E+01  .187771E+01  .148732E+01  .113436E+01  .848483E+00  .636428E+00  .488974E+00  .390925E+00  .327633E+00  .287551E+00
 .262473E+00  .246900E+00

X S FOR CONSTANT XI LINE AT J=   25
 .581600E+01  .581292E+01  .579268E+01  .574755E+01  .566810E+01  .553936E+01  .534024E+01  .504590E+01  .463754E+01  .412174E+01
 .354663E+01  .298737E+01  .249702E+01  .210677E+01  .182187E+01  .162650E+01  .149805E+01  .141589E+01  .136423E+01  .133209E+01
 .131223E+01  .130000E+01

Y S FOR CONSTANT XI LINE AT J=   25
 .306270E+01  .304298E+01  .301797E+01  .299224E+01  .296793E+01  .294580E+01  .292281E+01  .288603E+01  .280562E+01  .263736E+01
 .234892E+01  .195745E+01  .154217E+01  .116675E+01  .863195E+00  .638613E+00  .482938E+00  .379768E+00  .313395E+00  .271500E+00
 .245373E+00  .229200E+00

X S FOR CONSTANT XI LINE AT J=   26
 .580800E+01  .579818E+01  .576983E+01  .571856E+01  .563478E+01  .550211E+01  .529770E+01  .499443E+01  .457160E+01  .403658E+01
 .344266E+01  .287208E+01  .237764E+01  .198795E+01  .170629E+01  .151489E+01  .139007E+01  .131075E+01  .126116E+01  .123046E+01
 .121158E+01  .120000E+01

Y S FOR CONSTANT XI LINE AT J=   26
 .305990E+01  .304273E+01  .302734E+01  .301606E+01  .300882E+01  .300600E+01  .300380E+01  .298720E+01  .292219E+01  .275847E+01
 .245935E+01  .204324E+01  .159981E+01  .119987E+01  .877597E+00  .640153E+00  .476282E+00  .368152E+00  .298880E+00  .255334E+00
 .228282E+00  .211600E+00

X S FOR CONSTANT XI LINE AT J=   27
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 .880000E+01  .878304E+01  .878084E+01  .869763E+01  .861806E+01  .847877E+01  .827063E+01  .498870E+01  .481993E+01  .394283E+01
 .334621E+01  .276198E+01  .226192E+01  .187161E+01  .159232E+01  .140431E+01  .128270E+01  .120897E+01  .118830E+01  .112894E+01
 .111097E+01  .110000E+01

Y S FOR CONSTANT XI LINE AT J=   27
 .306720E+01  .304773E+01  .304863E+01  .304822E+01  .306718E+01  .307319E+01  .309218E+01  .309710E+01  .304936E+01  .289124E+01
 .258016E+01  .213893E+01  .166103E+01  .123432E+01  .892119E+00  .641317E+00  .469146E+00  .366126E+00  .284078E+00  .238997E+00
 .211118E+00  .194000E+00

X S FOR CONSTANT XI LINE AT J=   28
 .879200E+01  .877287E+01  .874125E+01  .868988E+01  .860680E+01  .847358E+01  .826322E+01  .494299E+01  .448661E+01  .390290E+01
 .328922E+01  .268813E+01  .215049E+01  .178808E+01  .148010E+01  .129481E+01  .117894E+01  .110187E+01  .106864E+01  .102782E+01
 .101040E+01  .100000E+01

Y S FOR CONSTANT XI LINE AT J=   28
 .306400E+01  .306176E+01  .307080E+01  .308847E+01  .310964E+01  .314437E+01  .318867E+01  .321476E+01  .318769E+01  .303760E+01
 .271404E+01  .223806E+01  .172789E+01  .127169E+01  .907976E+00  .643068E+00  .462334E+00  .344403E+00  .269948E+00  .223119E+00
 .194491E+00  .177000E+00

X S FOR CONSTANT XI LINE AT J=   29
 .880000E+01  .878482E+01  .878691E+01  .870984E+01  .863183E+01  .880388E+01  .829683E+01  .497468E+01  .480778E+01  .390378E+01
 .323411E+01  .261877E+01  .210942E+01  .172238E+01  .148277E+01  .127871E+01  .116361E+01  .109391E+01  .108124E+01  .102827E+01
 .100982E+01  .100000E+01

Y S FOR CONSTANT XI LINE AT J=   29
 .308980E+01  .307244E+01  .308968E+01  .311898E+01  .318802E+01  .320968E+01  .327630E+01  .333681E+01  .339017E+01  .321427E+01
 .289781E+01  .240934E+01  .187470E+01  .139868E+01  .101373E+01  .738934E+00  .848834E+00  .423761E+00  .348960E+00  .297676E+00
 .268060E+00  .260000E+00

X S FOR CONSTANT XI LINE AT J=   30
 .880600E+01  .879741E+01  .877839E+01  .873639E+01  .868860E+01  .884899E+01  .834894E+01  .802880E+01  .484979E+01  .392414E+01
 .322838E+01  .280962E+01  .207863E+01  .169160E+01  .142082E+01  .126880E+01  .118242E+01  .108707E+01  .104732E+01  .102324E+01
 .100874E+01  .100000E+01

Y S FOR CONSTANT XI LINE AT J=   30
 .306290E+01  .307988E+01  .310442E+01  .314091E+01  .319462E+01  .324989E+01  .336369E+01  .348720E+01  .349806E+01  .340398E+01
 .309996E+01  .260332E+01  .204423E+01  .184288E+01  .114348E+01  .883617E+00  .686046E+00  .829171E+00  .448718E+00  .398940E+00
 .360494E+00  .360000E+00

X S FOR CONSTANT XI LINE AT J=   31
 .881600E+01  .881072E+01  .879884E+01  .876811E+01  .870669E+01  .869940E+01  .841030E+01  .809470E+01  .461182E+01  .396039E+01
 .322936E+01  .264097E+01  .203819E+01  .168422E+01  .140069E+01  .123804E+01  .113932E+01  .107901E+01  .104270E+01  .102090E+01
 .100783E+01  .100000E+01

Y S FOR CONSTANT XI LINE AT J=   31
 .306630E+01  .308863E+01  .311619E+01  .316026E+01  .322748E+01  .332267E+01  .344847E+01  .387706E+01  .366281E+01  .340664E+01
 .331836E+01  .281363E+01  .222617E+01  .169844E+01  .127838E+01  .974202E+00  .768389E+00  .638339E+00  .861818E+00  .800348E+00
 .468980E+00  .460000E+00

X S FOR CONSTANT XI LINE AT J=   32
 .883000E+01  .882648E+01  .881781E+01  .879764E+01  .878347E+01  .866282E+01  .849021E+01  .818884E+01  .469969E+01  .402631E+01
 .328427E+01  .285136E+01  .201499E+01  .163118E+01  .137974E+01  .122363E+01  .112923E+01  .107277E+01  .103911E+01  .101907E+01
 .100712E+01  .100000E+01

Y S FOR CONSTANT XI LINE AT J=   32
 .307220E+01  .309191E+01  .312403E+01  .317817E+01  .328367E+01  .334768E+01  .381940E+01  .369229E+01  .382873E+01  .382187E+01
 .358367E+01  .305938E+01  .244708E+01  .189549E+01  .145739E+01  .114088E+01  .927472E+00  .790036E+00  .704096E+00  .681336E+00
 .619309E+00  .600000E+00
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X S FOR CONSTANT XI LINE AT J=   33
 .584400E+01  .584385E+01  .584191E+01  .583340E+01  .580548E+01  .573822E+01  .558309E+01  .529874E+01  .481108E+01  .411301E+01
 .329617E+01  .254547E+01  .198612E+01  .159851E+01  .135223E+01  .120367E+01  .111606E+01  .106464E+01  .103449E+01  .101671E+01
 .100621E+01  .100000E+01

Y S FOR CONSTANT XI LINE AT J=   33
 .307820E+01  .309823E+01  .313161E+01  .318448E+01  .327380E+01  .340413E+01  .358461E+01  .380141E+01  .399612E+01  .404923E+01
 .382942E+01  .332348E+01  .268541E+01  .210610E+01  .164402E+01  .131196E+01  .108894E+01  .945949E+00  .854955E+00  .802575E+00
 .769719E+00  .750000E+00

X S FOR CONSTANT XI LINE AT J=   34
 .585400E+01  .585302E+01  .584928E+01  .587372E+01  .584432E+01  .581777E+01  .569158E+01  .543340E+01  .496241E+01  .428043E+01
 .338747E+01  .258281E+01  .199069E+01  .159122E+01  .134280E+01  .119544E+01  .111020E+01  .106092E+01  .103230E+01  .101858E+01
 .100577E+01  .100000E+01

Y S FOR CONSTANT XI LINE AT J=   34
 .308410E+01  .310356E+01  .313647E+01  .319230E+01  .328437E+01  .342791E+01  .363447E+01  .389627E+01  .418701E+01  .428793E+01
 .413125E+01  .364724E+01  .299441E+01  .239610E+01  .191780E+01  .157601E+01  .134862E+01  .119918E+01  .110836E+01  .105311E+01
 .101987E+01  .100000E+01

X S FOR CONSTANT XI LINE AT J=   35
 .587200E+01  .588411E+01  .590135E+01  .592048E+01  .593030E+01  .591020E+01  .582080E+01  .560392E+01  .514477E+01  .442143E+01
 .350376E+01  .262782E+01  .199039E+01  .157621E+01  .132473E+01  .118128E+01  .110048E+01  .105404E+01  .102880E+01  .101380E+01
 .100508E+01  .100000E+01

Y S FOR CONSTANT XI LINE AT J=   35
 .309010E+01  .310685E+01  .313613E+01  .318608E+01  .326830E+01  .343853E+01  .366806E+01  .397422E+01  .430808E+01  .453243E+01
 .446554E+01  .400153E+01  .333393E+01  .270326E+01  .220278E+01  .184443E+01  .160671E+01  .145406E+01  .136068E+01  .130400E+01
 .127013E+01  .125000E+01

X S FOR CONSTANT XI LINE AT J=   36
 .596000E+01  .598870E+01  .600163E+01  .599780E+01  .601088E+01  .600437E+01  .593894E+01  .574232E+01  .531537E+01  .458419E+01
 .361372E+01  .266034E+01  .196999E+01  .153793E+01  .129004E+01  .115552E+01  .108380E+01  .104482E+01  .102299E+01  .101089E+01
 .100396E+01  .100000E+01

Y S FOR CONSTANT XI LINE AT J=   36
 .312740E+01  .314870E+01  .317780E+01  .323190E+01  .332868E+01  .348499E+01  .373164E+01  .407703E+01  .447744E+01  .479080E+01
 .479766E+01  .437791E+01  .369121E+01  .302730E+01  .249874E+01  .212071E+01  .186980E+01  .171119E+01  .161394E+01  .155541E+01
 .152059E+01  .150000E+01

X S FOR CONSTANT XI LINE AT J=   37
 .606000E+01  .606694E+01  .607787E+01  .609368E+01  .611278E+01  .613009E+01  .608128E+01  .592363E+01  .554086E+01  .483408E+01
 .384065E+01  .281173E+01  .204443E+01  .157270E+01  .130838E+01  .116211E+01  .108632E+01  .104573E+01  .102360E+01  .101108E+01
 .100404E+01  .100000E+01

Y S FOR CONSTANT XI LINE AT J=   37
 .314990E+01  .318378E+01  .322104E+01  .327648E+01  .337163E+01  .353194E+01  .379023E+01  .416424E+01  .462768E+01  .504468E+01
 .510207E+01  .464889E+01  .421840E+01  .384676E+01  .301110E+01  .262747E+01  .237300E+01  .221248E+01  .211438E+01  .205548E+01
 .202067E+01  .200000E+01

X S FOR CONSTANT XI LINE AT J=   38
 .614000E+01  .617030E+01  .618467E+01  .621084E+01  .624036E+01  .626370E+01  .624971E+01  .613287E+01  .579690E+01  .511663E+01
 .409484E+01  .297441E+01  .211161E+01  .169400E+01  .130829E+01  .115949E+01  .108334E+01  .104347E+01  .102209E+01  .101034E+01
 .100378E+01  .100000E+01

Y S FOR CONSTANT XI LINE AT J=   38
 .321230E+01  .322979E+01  .326010E+01  .331322E+01  .340738E+01  .357014E+01  .383014E+01  .424399E+01  .477464E+01  .530441E+01
 .558525E+01  .539769E+01  .478490E+01  .409497E+01  .354228E+01  .314464E+01  .288163E+01  .271646E+01  .261899E+01  .255406E+01
 .252071E+01  .250000E+01
```

```
X S FOR CONSTANT XI LINE AT J=  39
 .636000E+01  .636804E+01  .638098E+01  .640027E+01  .642388E+01  .644833E+01  .644242E+01  .638282E+01  .604986E+01  .538611E+01
 .433347E+01  .311840E+01  .213212E+01  .155840E+01  .124441E+01  .112484E+01  .106006E+01  .102938E+01  .101424E+01  .100646E+01
 .100229E+01  .100000E+01

Y S FOR CONSTANT XI LINE AT J=  39
 .329720E+01  .331849E+01  .334784E+01  .340381E+01  .350193E+01  .367037E+01  .394971E+01  .438390E+01  .497878E+01  .541028E+01
 .602984E+01  .597262E+01  .540614E+01  .469548E+01  .410914E+01  .368488E+01  .340394E+01  .322803E+01  .312189E+01  .306848E+01
 .302181E+01  .300000E+01

X S FOR CONSTANT XI LINE AT J=  40
 .640000E+01  .640344E+01  .640991E+01  .642044E+01  .643842E+01  .644338E+01  .647968E+01  .642098E+01  .638342E+01  .578113E+01
 .478978E+01  .349820E+01  .235796E+01  .163463E+01  .128011E+01  .112194E+01  .108399E+01  .102484E+01  .101124E+01  .100489E+01
 .100169E+01  .100000E+01

Y S FOR CONSTANT XI LINE AT J=  40
 .338000E+01  .339944E+01  .343378E+01  .349260E+01  .359341E+01  .376470E+01  .408038E+01  .460400E+01  .514442E+01  .588678E+01
 .648090E+01  .646084E+01  .633081E+01  .572178E+01  .518494E+01  .472460E+01  .443019E+01  .424341E+01  .412978E+01  .406234E+01
 .402289E+01  .400000E+01

X S FOR CONSTANT XI LINE AT J=  41
 .680000E+01  .680532E+01  .681888E+01  .683314E+01  .686380E+01  .691094E+01  .696936E+01  .697483E+01  .682993E+01  .637270E+01
 .551164E+01  .436922E+01  .319702E+01  .228242E+01  .168424E+01  .137109E+01  .120060E+01  .110710E+01  .105516E+01  .102597E+01
 .100943E+01  .100000E+01

Y S FOR CONSTANT XI LINE AT J=  41
 .343000E+01  .344913E+01  .348223E+01  .353928E+01  .363649E+01  .380161E+01  .408017E+01  .483148E+01  .519804E+01  .601722E+01
 .679981E+01  .729778E+01  .741689E+01  .724602E+01  .692204E+01  .660912E+01  .637203E+01  .621478E+01  .611574E+01  .605597E+01
 .602064E+01  .600000E+01

X S FOR CONSTANT XI LINE AT J=  42
 .700000E+01  .701316E+01  .703847E+01  .707230E+01  .713014E+01  .721148E+01  .730938E+01  .738123E+01  .731790E+01  .698208E+01
 .616190E+01  .502746E+01  .363671E+01  .283063E+01  .212223E+01  .166216E+01  .137839E+01  .120890E+01  .110840E+01  .104208E+01
 .101898E+01  .100000E+01

Y S FOR CONSTANT XI LINE AT J=  42
 .348000E+01  .349835E+01  .352849E+01  .357072E+01  .366710E+01  .381800E+01  .409367E+01  .484867E+01  .580020E+01  .621699E+01
 .718411E+01  .792070E+01  .831118E+01  .843808E+01  .837218E+01  .824108E+01  .814404E+01  .809553E+01  .805168E+01  .802497E+01
 .800919E+01  .800000E+01

X S FOR CONSTANT XI LINE AT J=  43
 .760000E+01  .781006E+01  .782789E+01  .788446E+01  .760462E+01  .760117E+01  .778426E+01  .788978E+01  .789898E+01  .767290E+01
 .702040E+01  .614487E+01  .812904E+01  .423530E+01  .350262E+01  .314688E+01  .287298E+01  .270720E+01  .260921E+01  .255207E+01
 .251903E+01  .250000E+01

Y S FOR CONSTANT XI LINE AT J=  43
 .356000E+01  .357733E+01  .360783E+01  .366018E+01  .378181E+01  .390910E+01  .410028E+01  .463408E+01  .533834E+01  .629237E+01
 .734091E+01  .829080E+01  .893368E+01  .934269E+01  .961006E+01  .977484E+01  .987301E+01  .993038E+01  .996340E+01  .998272E+01
 .999370E+01  .100000E+02

X S FOR CONSTANT XI LINE AT J=  44
 .800000E+01  .801391E+01  .803784E+01  .807880E+01  .813784E+01  .823130E+01  .838973E+01  .880164E+01  .880488E+01  .868349E+01
 .830702E+01  .783125E+01  .717976E+01  .681054E+01  .597319E+01  .559758E+01  .538254E+01  .519973E+01  .810708E+01  .806177E+01
 .801918E+01  .800000E+01

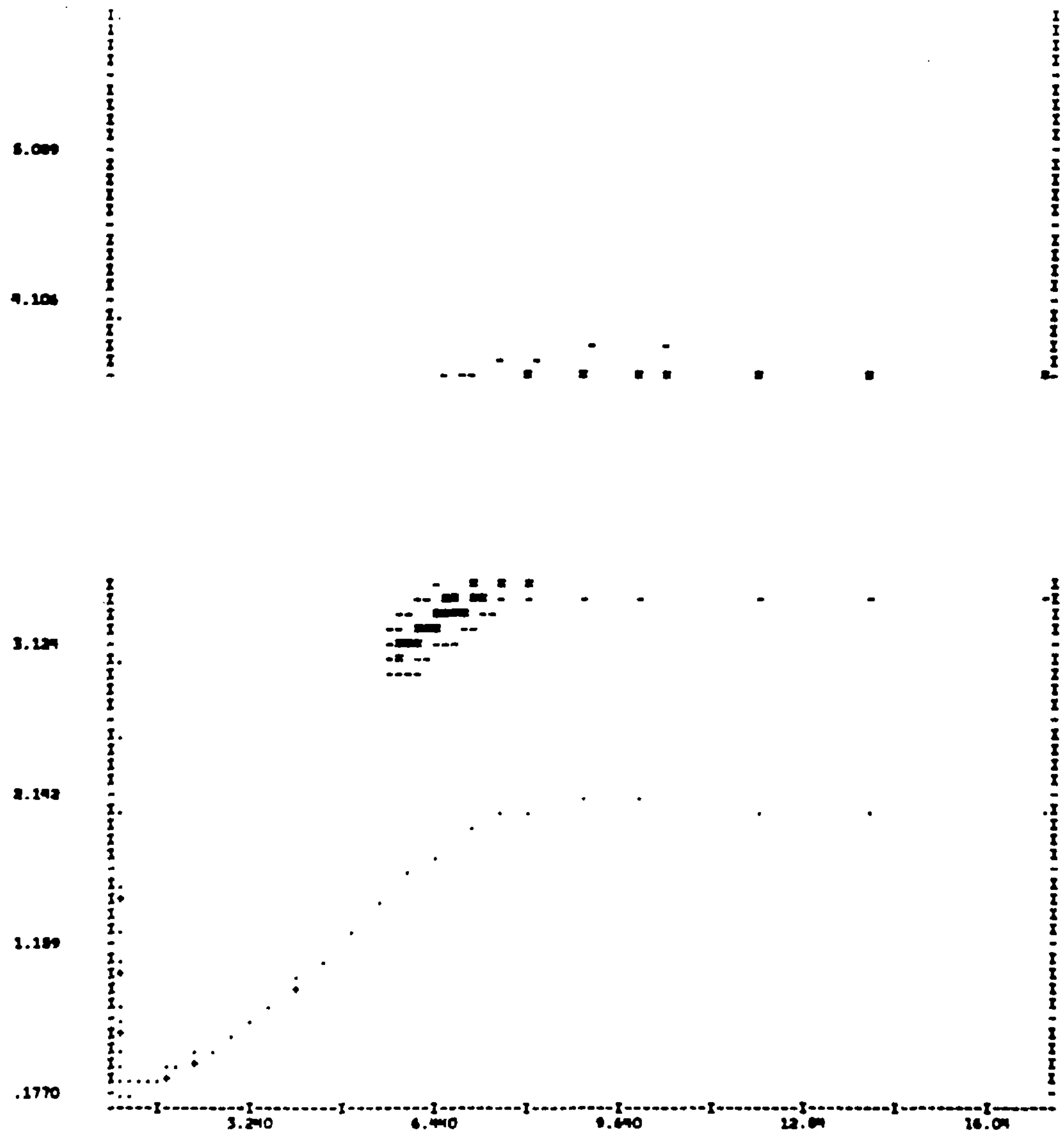
Y S FOR CONSTANT XI LINE AT J=  44
 .360000E+01  .361487E+01  .363973E+01  .368330E+01  .378906E+01  .389210E+01  .412382E+01  .481363E+01  .512298E+01  .596806E+01
 .697130E+01  .797564E+01  .877916E+01  .929398E+01  .959621E+01  .977243E+01  .987322E+01  .993074E+01  .996370E+01  .998268E+01
 .999364E+01  .100000E+02
```

```
X S FOR CONSTANT XI LINE AT J=   46
 .900000E+01  .901099E+01  .902898E+01  .906779E+01  .910270E+01  .916908E+01  .926716E+01  .938301E+01  .942705E+01  .944062E+01
 .939080E+01  .924762E+01  .904271E+01  .880170E+01  .856647E+01  .837391E+01  .823302E+01  .813787E+01  .807612E+01  .803778E+01
 .801426E+01  .800000E+01

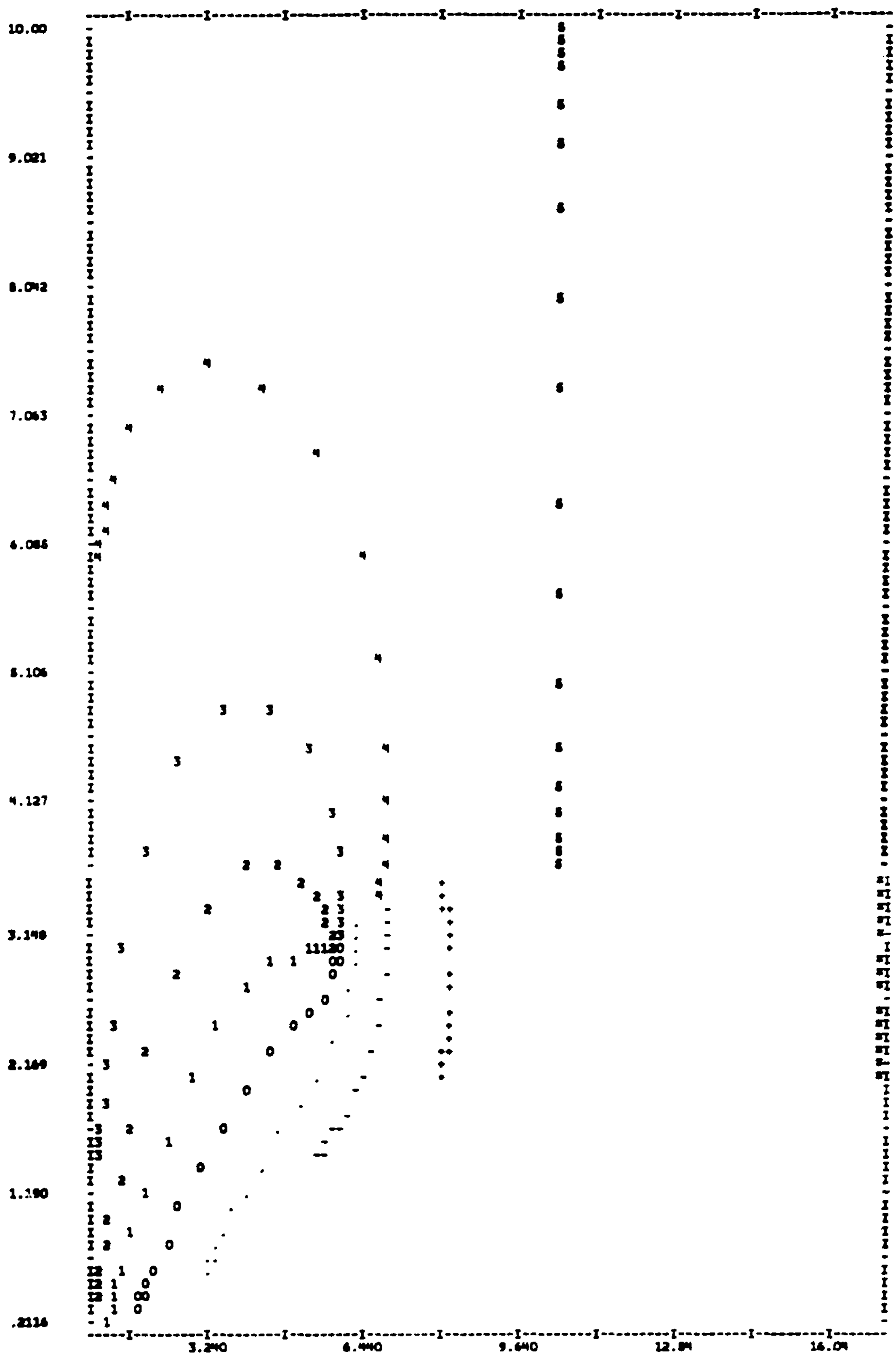
Y S FOR CONSTANT XI LINE AT J=   46
 .365000E+01  .366478E+01  .369488E+01  .374109E+01  .382038E+01  .396092E+01  .416497E+01  .480477E+01  .500940E+01  .569098E+01
 .651162E+01  .737803E+01  .817480E+01  .881263E+01  .926534E+01  .956162E+01  .974800E+01  .985882E+01  .992232E+01  .996209E+01
 .998683E+01  .100000E+02

X S FOR CONSTANT XI LINE AT J=   46
 .104200E+02  .104200E+02  .104200E+02  .104200E+02  .104200E+02  .104200E+02  .104200E+02  .104200E+02  .104200E+02  .104200E+02
 .104200E+02  .104200E+02  .104200E+02  .104200E+02  .104200E+02  .104200E+02  .104200E+02  .104200E+02  .104200E+02  .104200E+02
 .104200E+02  .104200E+02

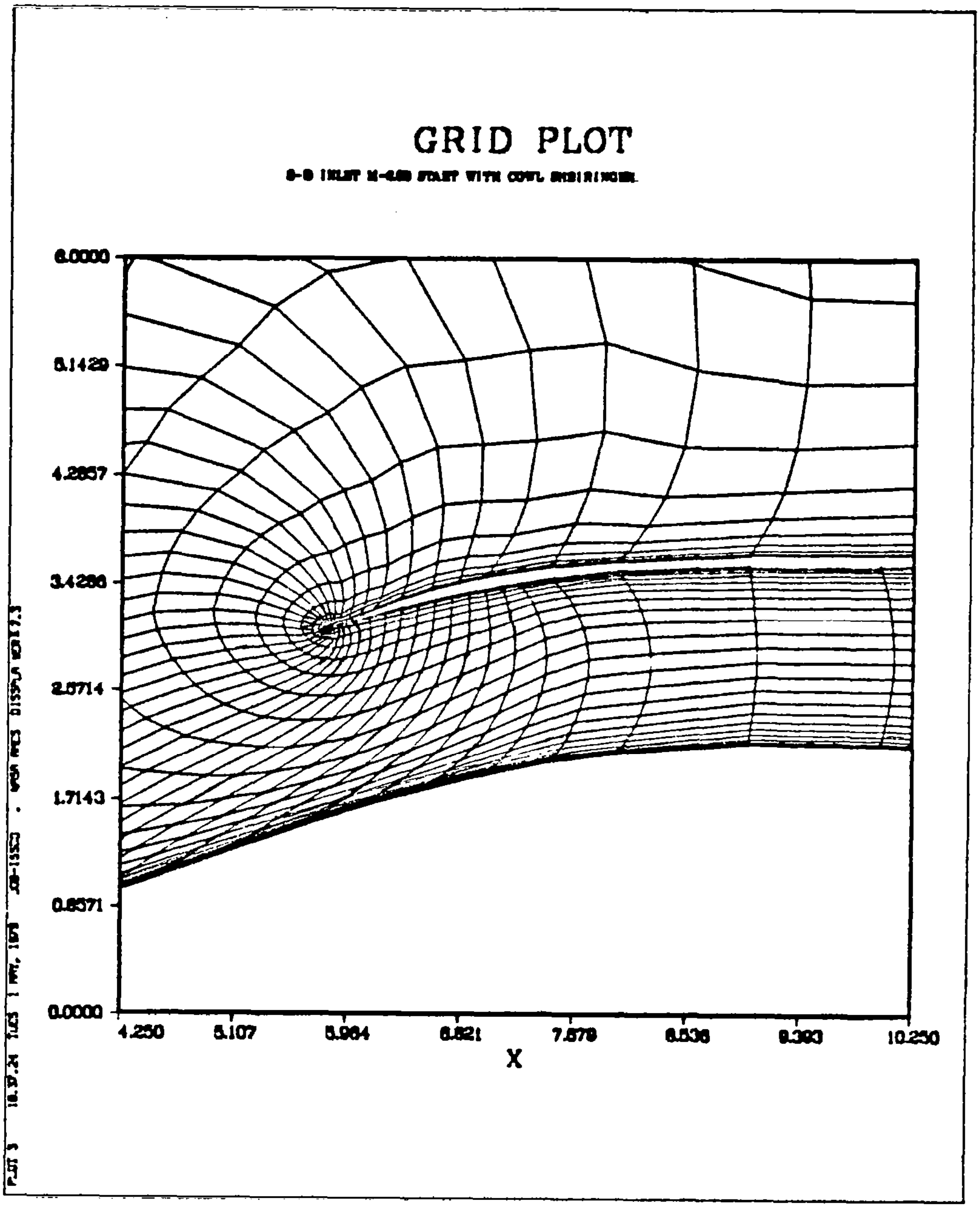
Y S FOR CONSTANT XI LINE AT J=   46
 .365000E+01  .367000E+01  .370301E+01  .378719E+01  .384532E+01  .398664E+01  .420803E+01  .484287E+01  .502183E+01  .568479E+01
 .641903E+01  .723097E+01  .799321E+01  .862847E+01  .910743E+01  .944197E+01  .966334E+01  .980468E+01  .989281E+01  .994699E+01
 .998000E+01  .100000E+02
```

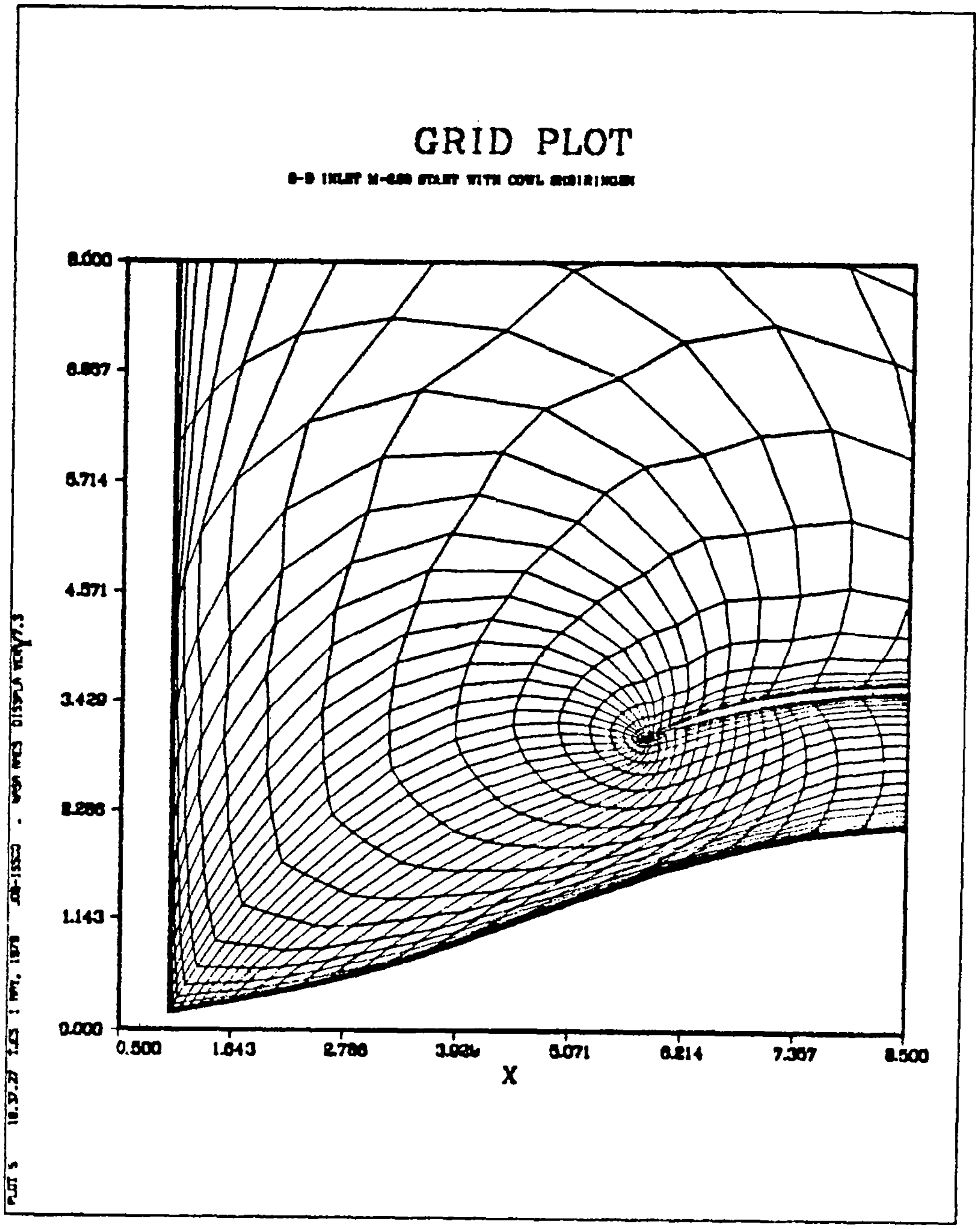


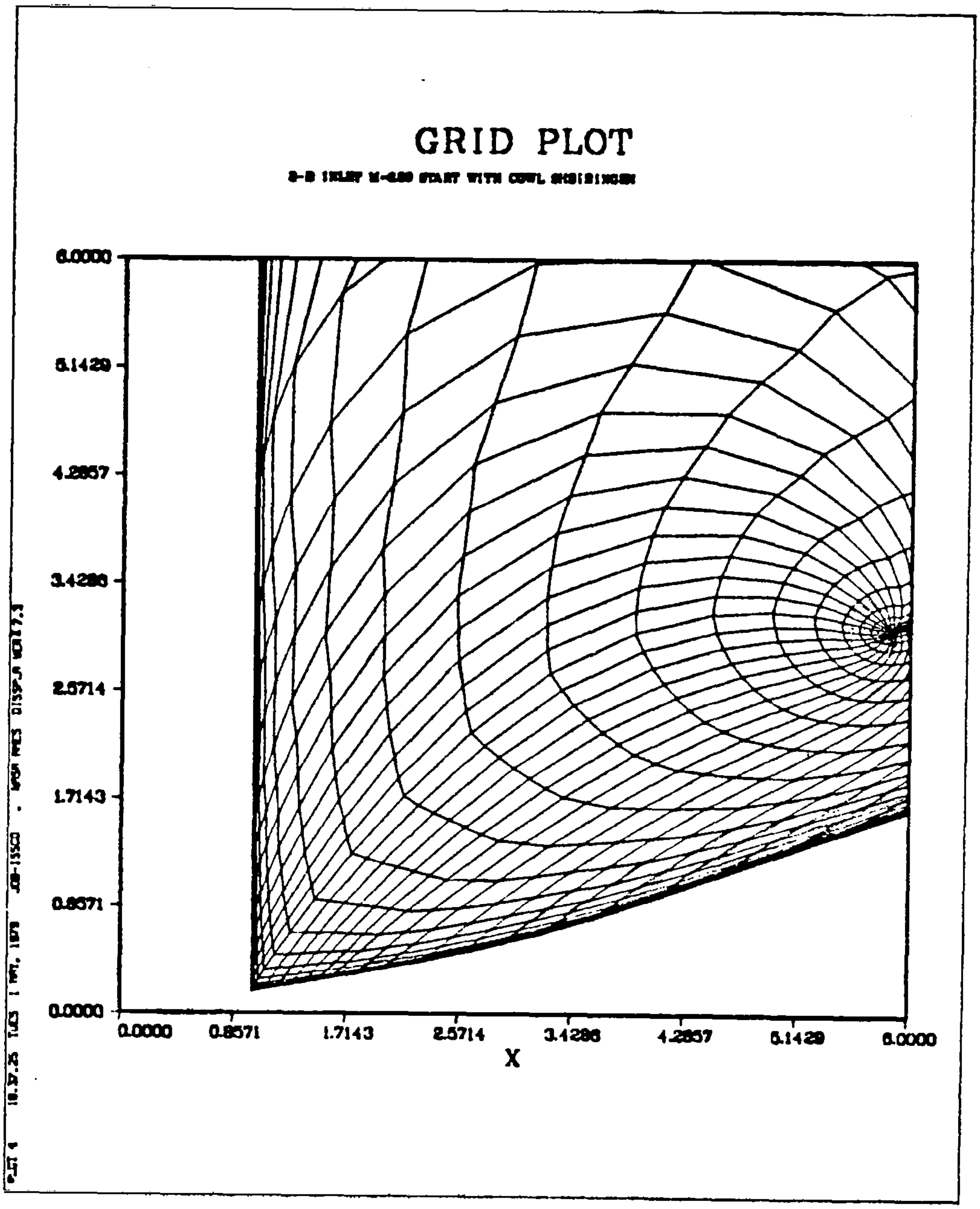
5.089
4.106
3.124
2.142
1.159
.1770
3.240
6.440
9.640
12.84
16.04


10.00
9.021
8.042
7.063
6.085
5.106
4.127
3.148
2.169
1.190
.2116
3.240
6.440
9.640
12.84
16.04

3.3 Plots of the Generated Mesh




GRID PLOT
8.000
6.857
5.714
4.571
3.429
2.286
1.143
0.000
0.500
1.643
2.786
3.929
5.071
6.214
7.357
8.500
X


GRID PLOT
6.0000
5.1429
4.2857
3.4286
2.5714
1.7143
0.8571
0.0000
0.0000
0.8571
1.7143
2.5714
3.4286
4.2857
5.1429
6.0000
X

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2. Sorenson, R. L.; and Steger, J. L.: Simplified Clustering of Nonorthogonal Grids Generated by Elliptic Partial Differential Equations. NASA TM-73252, 1977.

3. Thames, F. C.; Thompson, J. F.; and Mastin, C. W.: Numerical Solution of the Navier-Stokes Equations for Arbitrary Two-Dimensional Airfoils. NASA SP-347, 1975, pt. 4, pp. 469-530.

4. Biringen, S. H.; and McMillan, O. J.: Calculation of Two-Dimensional Inlet Flow Fields in a Supersonic Free Stream by an Implicit Marching Code With Nonorthogonal Mesh Generation - User's Manual. NASA CR-3222, 1980.

5. Staff of Ames Research Center: Equations, Tables and Charts for Compressible Flow. NACA Report R-1135, 1953.

APPENDIX A

SOURCE LISTING OF THE 2-D INLET CALCULATION PROGRAM

```
            PROGRAM CODE1(INPUT,OUTPUT,TAPE5=INPUT,TAPE6=OUTPUT,TAPE3,TAPE4,    IMPLI      2
           1 TAPE8,TAPE48)                                                      IMPLI      3
            COMMON/BASE/NMAX,JMAX,KMAX,JM,KM,DT,FSMACH,EPS,GAMMA,GAMI,SMU,HD,   BASE       2
           1  FV(4),FD(4),RE,PI,Z(80),NP,METH,ALPHA,INVIS,IPLOT,RESID           BASE       3
           2, CNBR,IREGO,ISTORE,NF,NB,JTAIL1,JTAIL2,IOSCIL,XOSCIL,IUPWND        BASE       4
           3 , LAMIN,SMUIM,VARA,VARB,VARC                                       BASE       5
            COMMON/VARS/ Q(78,36,4),XY(78,36,4),P(78,36)                        VARS       2
            COMMON/LARGE/X(78,36),Y(78,36),S(78,36,4),XIT(78,36),ETT(78,36)     VARS       3
            LEVEL 2,X,Y,S,XIT,ETT                                               VARS       4
            COMMON/BTRID/ A(80,4,4),B(80,4,4),C(80,4,4),D(80,4,4),DU(80,4,4),   IMPLI      6
           1   F(80,4)                                                          IMPLI      7
            DIMENSION XP(78,20),YP(78,20),NR(20)                                INLET      1
            COMMON/ZAM/NTIME                                                    INLET      2
      C                                                                         IMPLI      8
      C   INITIALIZE VARIABLES                                                  IMPLI      9
      C                                                                         IMPLI     10
            CALL INITIA                                                         IMPLI     11
            CALL EIGEN(0)                                                       INLET      3
      C   PRINTER MAP OF JACOBIAN                                               IMPLI     12
            IF( IPLOT .LE.0) IPLOT = 4*NMAX                                     IMPLI     13
            CALL MAP(JMAX,KMAX,P)                                               IMPLI     14
            CALL OUTPT(1,0)                                                     IMPLI     15
            N =0.                                                               IMPLI     16
            NTIME=N                                                             INLET      4
      C   CFD COMMON OUTPUT ROUTINE                                             IMPLI     17
            EINF =  .5*FSMACH**2 + 1./( GAMMA*GAMI)                             IMPLI     18
            CALL HARVIO(Q(1,1,1),Q(1,1,2),Q(1,1,3),Q(1,1,4),P,X,Y,S,XY,XY(1,1,  IMPLI     19
           12),S(1,1,2),XY(1,1,3),XY(1,1,4),1./GAMMA,1.,FSMACH,EINF,N*DT,DT     IMPLI     20
           2 ,GAMMA,JMAX,KMAX,78,2)                                             IMPLI     21
      C    INITIALIZE PLOT ROUTINE                                              IMPLI     22
            IF(IPLOT .LE.NMAX) CALL READIN                                      IMPLI     23
      C.... .THIS VARIABLE IS NOW CALCULATED IN EIGEN                           INLET      5
      C     HD=0.5*DT                                                           INLET      6
      C                                                                         IMPLI     25
      C   MAIN LOOP                                                             IMPLI     26
            DO 10 N=1,NMAX                                                      IMPLI     27
            NTIME=N                                                             INLET      7
            CALL STEP                                                           IMPLI     28
      C   OUTPUT DIAGNOSTICS, HERE TO END OF LOOP 10                            IMPLI     29
            IF(N-(N/25 )*25  .EQ  0)CALL CLCD(0)                                INLET      8
            IF((N-(N/20)*20).EQ 0)CALL EIGEN(N)                                 INLET      9
            IF((N-(N/100)*100)  .EQ. 0)GO TO 5                                  INLET     10
            JL = JMAX/2                                                         IMPLI     32
            SHEAR = ((Q(JL,2,2)/Q(JL,2,1)) -(Q(JL,1,2)/Q(JL,1,1)))*XY(JL,1,4)   IMPLI     33
            WRITE(6,601) ( Q(JL,2,M), M=1,4), SHEAR,RESID                       IMPLI     34
        5   CONTINUE                                                            INLET     11
            IF( N - (N/IPLOT)*IPLOT .EQ. 0) CALL CPPLOT                         IMPLI     35
            IF(N-(N/NP)*NP) 40,40,41                                            IMPLI     36
      C                                                                         IMPLI     37
      C   OPTION TO PRINTER MAP PRESSURE.  STORE IN JACOBIAN LOCATION,MAP,      IMPLI     38
      C   AND RECOMPUTE JACOBIAN AND PLACE IN P ARRAY                           IMPLI     39
         40 DO 20 J = 1,JMAX                                                    IMPLI     40
            DO 20 K = 1,KMAX                                                    IMPLI     41
            PP=GAMMA*GAMI*(Q(J,K,4)-.5*(Q(J,K,2)**2+Q(J,K,3)**2)/Q(J,K,1))      IMPLI     42
         20 P(J,K) = PP*P(J,K)                                                  IMPLI     43
            CALL MAP(JMAX,KMAX,P)                                               IMPLI     44
            CALL XYMETS                                                         IMPLI     45
```

```
      CC=2 /GAMMA/FSMACH**2                                           INLET      12
      IOPT=4                                                          INLET      13
      LWID=50                                                         INLET      14
      LENG=50                                                         INLET      15
      NDP=78                                                          INLET      16
      NC=1                                                            INLET      17
      J1=JTAIL1                                                       INLET      18
      J2=JTAIL2                                                       INLET      19
      J3=34                                                           INLET      20
      J3P1=J3+1                                                       INLET      21
      NR(1)=J3-J1+1                                                   INLET      22
      K=KMAX                                                          INLET      23
      I=0                                                             INLET      24
      DO 50 J=J1,J3                                                   INLET      25
      PP=P(J,K)*GAMMA*GAMI*(Q(J,K,4)- 5*(Q(J,K,2)**2+Q(J,K,3)**2)/    INLET      26
     *Q(J,K,1))                                                       INLET      27
      I=I+1                                                           INLET      28
      XP(I,1)=X(J,K)                                                  INLET      29
      YP(I,1)=CC*PP-CC                                                INLET      30
   50 CONTINUE                                                        INLET      31
      CALL PLOTA2(XP,YP,IOPT,NR,NDP,NC,LWID,LENG)                     INLET      32
      K=1                                                             INLET      33
      NR(1)=J3P1-J1+1                                                 INLET      34
      I=0                                                             INLET      35
      DO 55 J=J1,J3P1                                                 INLET      36
      PP=P(J,K)*GAMMA*GAMI*(Q(J,K,4)- 5*(Q(J,K,2)**2+Q(J,K,3)**2)/    INLET      37
     *Q(J,K,1))                                                       INLET      38
      I=I+1                                                           INLET      39
      XP(I,1)=X(J,K)                                                  INLET      40
      YP(I,1)=CC*PP-CC                                                INLET      41
   55 CONTINUE                                                        INLET      42
      CALL PLOTA2(XP,YP,IOPT,NR,NDP,NC,LWID,LENG)                     INLET      43
   41 CONTINUE                                                        IMPLI      46
  601 FORMAT(1H ,6E15 7)                                              IMPLI      47
   10 CONTINUE                                                        IMPLI      48
C   FINAL OUTPUT                                                      IMPLI      49
      N = NMAX                                                        IMPLI      50
      CALL HARVIO(Q(1,1,1),Q(1,1,2),Q(1,1,3),Q(1,1,4),P,X,Y,S,XY,XY(1,1,  IMPLI  51
     12),S(1,1,2),XY(1,1,3),XY(1,1,4),1 /GAMMA,1 ,FSMACH,EINF,N*DT,DT     IMPLI  52
     2 ,GAMMA,JMAX,KMAX,78,2)                                         IMPLI      53
C                                                                     IMPLI      54
C  UNSCALE BY JACOBIAN                                                IMPLI      55
      DO 45 N=1,4                                                     IMPLI      56
      DO 45 K=1,KMAX                                                  IMPLI      57
      DO 45 J=1,JMAX                                                  IMPLI      58
   45 Q(J,K,N) = Q(J,K,N)*P(J,K)                                      IMPLI      59
      CALL OUTPT(1,1)                                                 IMPLI      60
      CALL OUTPT(KMAX,1)                                              INLET      44
C   OPTIONAL STORE OF SOLUTION DATA                                   IMPLI      61
      IF( ISTORE GT 0) WRITE(4)(((Q(J,K,M),J=1,JMAX),K=1,KMAX),M=1,4)   IMPLI    62
      CALL CLCD(1)                                                    IMPLI      63
C                                                                     IMPLI      64
      IF(IPLOT  LE NMAX) CALL EOFTV                                   IMPLI      65
      STOP                                                            IMPLI      66
      END                                                             IMPLI      67
```

```
      SUBROUTINE INITIA                                                 INITIA     2
      COMMON/BASE/NMAX,JMAX,KMAX,JM,KM,DT,FSMACH,EPS,GAMMA,GAMI,SMU,HD, BASE       2
     1 FV(4),FD(4),RE,PI,Z(80),NP,METH,ALPHA,INVIS,IPLOT,RESID          BASE       3
     2, CNBR,IREGO,ISTORE,NF,NB,JTAIL1,JTAIL2,IOSCIL,XOSCIL,IUPWND       BASE       4
     3 , LAMIN,SMUIM,VARA,VARB,VARC                                     BASE       5
      COMMON/VARS/ Q(78,36,4),XY(78,36,4),P(78,36)                      VARS       2
      COMMON/LARGE/X(78,36),Y(78,36),S(78,36,4),XIT(78,36),ETT(78,36)   VARS       3
      LEVEL 2,X,Y,S,XIT,ETT                                             VARS       4
      COMMON/ARRAY/ ALPX(80),ALPY(80),BETX(80),BETY(80)                 INITIA     5
      COMMON/UPWND/EB(80),EF(80)                                        INITIA     6
      DATA EB,EF/80*0 ,80*0./                                           INITIA     7
C                                                                       INITIA     8
      PI=3 14159265                                                     INITIA     9
C****THIS SUBROUTINE READS FLOW PARAMETERS AND THE INITIAL FIELD.       INLET     45
C****FIRST INPUT CARD (7I5)                                             INLET     46
C    NMAX, MAX NO  OF TIME STEPS                                        INLET     47
C    JMAX, MAX NO  OF POINTS IN XI-DIRECTION                            INLET     48
C    KMAX, MAX NO  OF POINTS IN ETA DIRECTION                           INLET     49
C    NP, NUMBER OF TIME-STEPS FOR CALLING MAP ROUTINE                   INLET     50
C    METH, IF METH GREATER THAN 0, SKIPS UPWIND FIFF                    INLET     51
C    IREAD, IF IREAD GR  THAN 0, READS GRID FROM DISC                   INLET     52
C    INVIS, IF INVIS GR  THAN 0 ACCOUNTS FOR VISCOUS EFFECTS            INLET     53
C****SECOND INPUT CARD (7I5)                                            INLET     54
C    IREGO, IF IREGO GR  THAN 0, READS INITIAL FIELD FROM DISC          INLET     55
C          OTHERWISE STARTS WITH FREE STERAM CONDITIONS                 INLET     56
C    ISTORE, IF ISTORE GR THAN 0, SOLUTION DATA STORED ON DISC          INLET     57
C    NF,                                                                INLET     58
C    NB.                                                                INLET     59
C    JTAIL1, FIRST INTERIOR POINT, SET TO 1                             INLET     60
C    JTAIL2, LAST XI-INTERIOR POINT , SET TO JMAX-1                     INLET     61
C    IPLOT, INDEX FOR CALLING CPPLOT ROUTUNE                            INLET     62
C****THIRD INPUT CARD (3I5)                                             INLET     63
C    IUPWIND, IF IUPWIND GR THAN 0,SKIPS UPWIND DIFFERENCING            INLET     64
C    IOSCIL, FOR STATIONARY AIRFOIL SET TO 0                            INLET     65
C    LAMIN, IF LAMIN GR  THAN ZERO OR LAMIN=0, CALCULATES TURB. VISCOSIT INLET     66
C****FOURTH DATA CARD (8F10 0)                                          INLET     67
C    CNBR, COURANT NO  SET TO ABOUT 10                                  INLET     68
C    DX, USED IN GRID SUBROUTINE IF GRID READ FROM DISC SET DX=0        INLET     69
C    DY, USED IN GRID SUBROUTINE  AS ABOVE                              INLET     70
C    FSMACH, FREE STREAM MACH NUMBER                                    INLET     71
C    SMU PSEUDO VISCOSITY COEFFICIENT  FOR CNBR ABOUT 10 SET TO 0.1     INLET     72
C    EPS, USED IN GRID SUBROUTINE  SET TO ZERO.                         INLET     73
C    RE, REYNOLDS NUMBER                                                INLET     74
C    ALPHA, ANGLE OF ATTACK                                             INLET     75
C****FIFTH DATA CARD (8F10 0)                                           INLET     76
C    XOSCIL, VARA,VARB,VARC , VARIABLES REQUIRED FOR OSCILLATING AIRFOIL INLET    77
C               SET TO ZERO                                             INLET     78
      READ(5,100) NMAX,JMAX,KMAX,NP,METH,IREAD,INVIS                    INITIA    10
      READ(5,100) IREGO,ISTORE,NF,NB,JTAIL1,JTAIL2,IPLOT                INITIA    11
      READ(5,100) IUPWND,IOSCIL,LAMIN                                   INITIA    12
      READ(5,101)CNBR,DX,DY,FSMACH,SMU,EPS,RE,ALPHA                     INLET     79
      READ(5,101) XOSCIL,VARA,VARB,VARC                                 INITIA    14
C    STHETA IS SHOCK ANGLE IN DEGREES                                   INLET     80
      STHETA=38                                                         INLET     81
      IF( FSMACH  GT 1 0) IUPWND = 1                                    INITIA    15
  100 FORMAT(8I5)                                                       INITIA    16
  101 FORMAT(8F10.0)                                                    INITIA    17
```

```
      WRITE(6,600) NMAX,JMAX,KMAX,NP,METH,IREAD,INVIS                    INITIA    18
  600 FORMAT(1H1, 39H NMAX,JMAX, KMAX,NP,METH,IREAD,INVIS      ,8I6)     INITIA    19
      WRITE(6,601) IREGO,ISTORE,NF,NB,JTAIL1,JTAIL2,IPLOT                INITIA    20
  601 FORMAT(1H0, 39H IREGO,ISTORE,NF,NB,JTAIL1,JTAIL2,IPLOT      ,8I6)  INITIA    21
      WRITE(6,603) IUPWND,IOSCIL,LAMIN                                   INITIA    22
  603 FORMAT(1H0, 22H IUPWND,IOSCIL,LAMIN      ,8I6)                     INITIA    23
      WRITE(6,602)CNBR,FSMACH,SMU,EPS,RE,ALPHA                           INLET     82
  602 FORMAT(1H0,36H CNBR,FSMACH,SMU,EPS,RE,ALPHA         ,/,8F15.10)    INLET     83
      WRITE(6,604) XOSCIL                                                INITIA    26
  604 FORMAT(1H0, 20H XOSCIL                     ,/,4E15.6)              INITIA    27
C                                                                        INITIA    28
C       COMPUTE VARIOUS CONSTANTS                                        INITIA    29
C       RESCALE RE FOR SPEED OF SOUND REFERENCE NUMBER                   INITIA    30
      RE = RE/FSMACH                                                     INITIA    31
      GAMMA = 1.4                                                        INITIA    32
      GAMI = GAMMA -1                                                    INITIA    33
      RESID = 0                                                          INITIA    35
C     SMUIM IS THE IMPLICIT PORTION OF PSEUDO VISCOSITY                  INLET     84
      SMUIM=3.2*SMU                                                      INLET     85
      JM = JMAX-1                                                        INITIA    37
      KM = KMAX-1                                                        INITIA    38
      COSANG = COS( PI*ALPHA/180 )                                       INITIA    39
      SINANG = SIN(PI*ALPHA/180 )                                        INITIA    40
C     LOAD FREE STREAM AT ANGLE OF ATTACK ALPHA                          INITIA    41
      DO 20 J=1,JMAX                                                     INITIA    42
      DO 20 K=1,KMAX                                                     INITIA    43
      Q(J,K,1) = 1.                                                      INITIA    44
      Q(J,K,2) = FSMACH*COSANG                                           INITIA    45
      Q(J,K,3) = FSMACH*SINANG                                           INITIA    46
      Q(J,K,4) = 1./(GAMMA*GAMI) + .5*FSMACH**2                          INITIA    47
C       ZERO OUT XIT AND ETAT                                            INITIA    48
      XIT(J,K) = 0.                                                      INITIA    49
      ETT(J,K) = 0.                                                      INITIA    50
      DO 21 N=1,4                                                        INITIA    51
   21 S(J,K,N) = 0.                                                      INITIA    52
   20 CONTINUE                                                           INITIA    53
C     INITIALIZE THE FIELD BY CAPTURING THE FIRST SHOCKAT  THE RAMP      INLET     86
C     VALUES FROM 2-D WEDGE THEORY                                       INLET     87
C     CALCULATION OF FIELD VARIABLES                                     INLET     88
      STHETA=STHETA*3.1415926/180                                        INLET     89
         FAC1=FSMACH*FSMACH*(SIN(STHETA)**2)                             INLET     90
      FAC2=(FAC1-1.)*5./(6.*FSMACH**2)                                   INLET     91
      Q1=(1.-FAC2)*FSMACH                                                INLET     92
      Q2=(FAC2*COS(STHETA)/SIN(STHETA))*FSMACH                           INLET     93
      Q3=6.*FAC1/(FAC1+5.)                                               INLET     94
      Q4=(7.*FAC1-1.)/6.                                                 INLET     95
      Q4=Q4*.71429/.4                                                    INLET     96
      FAC3=Q1*Q1+Q2*Q2                                                   INLET     97
      FAC3=FAC3*Q3*.5                                                    INLET     98
      Q4=Q4+FAC3                                                         INLET     99
      K=KMAX                                                             INLET    100
      DO 31 J=35,40                                                      INLET    101
      Q(J,K,1)=Q3                                                        INLET    102
      Q(J,K,2)=Q1*Q3                                                     INLET    103
      Q(J,K,3)=Q2*Q3                                                     INLET    104
      Q(J,K,4)=Q4                                                        INLET    105
   31 CONTINUE                                                           INLET    106
```

```
            Q5=Q1*Q3                                                     INLET      107
            Q6=Q2*Q3                                                     INLET      108
            WRITE(6,50)Q5,Q6,Q3,Q4                                       INLET      109
         50 FORMAT(10X,*U,V,RHO,EN*,4E12.5)                              INLET      110
      C                                                                  INITIA      54
      C      RESTART CAPABILITY .. READ VARIABLES FROM DISC, OVERLOADING FREE  INITIA  55
      C      STREAM, ALL OTHER QUANTITIES COMPUTED AS IF INITIAL START UP INITIA      56
            IF( IREGO .GT.0) READ(3) (((Q(J,K,M),J=1,JMAX),K=1,KMAX),M=1,4)  INITIA  57
            CALL GRID(IREAD,DX,DY)                                       INITIA      58
            CALL XYMETS                                                  INITIA      59
      C                                                                  INITIA      60
      C      SCALE VARIABLES BY JACOBIAN STORED BY XYMETS IN P(J,K)      INITIA      61
            DO 10 N=1,4                                                  INITIA      62
            DO 10 K=1,KMAX                                               INITIA      63
            DO 10 J=1,JMAX                                               INITIA      64
         10 Q(J,K,N) = Q(J,K,N)/P(J,K)                                   INITIA      65
      C                                                                  INITIA      66
            WRITE(6,610) ( Y(1,K), K=1,KMAX)                             INITIA      67
        610 FORMAT(1H , 6F13.5)                                          INITIA      68
            DO 40 J=1,JMAX                                               INITIA      69
            ALPX(J) = 0.                                                 INITIA      70
         40 BETX(J) = 1.                                                 INITIA      71
            DO 42 K=1,KMAX                                               INITIA      72
            ALPY(K) = 0.                                                 INITIA      73
         42 BETY(K) = 1.                                                 INITIA      74
            RETURN                                                       INITIA      75
            END                                                          INITIA      76
```

```
      SUBROUTINE GRID( IREAD,DX,DY)                                      GRID     2
      COMMON/BASE/NMAX,JMAX,KMAX,JM,KM,DT,FSMACH,EPS,GAMMA,GAMI,SMU,HD,  BASE     2
     1 FV(4),FD(4),RE,PI,Z(80),NP,METH,ALPHA,INVIS,IPLOT,RESID           BASE     3
     2, CNBR,IREGO,ISTORE,NF,N9,JTAIL1,JTAIL2,IOSCIL,XOSCIL,IUPWND       BASE     4
     3 , LAMIN,SMUIM,VARA,VARB,VARC                                      BASE     5
      COMMON/VARS/ Q(78,36,4),XY(78,36,4),P(78,36)                       VARS     2
      COMMON/LARGE/X(78,36),Y(78,36),S(78,36,4),XIT(78,36),ETT(78,36)    VARS     3
      LEVEL 2,X,Y,S,XIT,ETT                                              VARS     4
C                                                                        GRID     5
C     EITHER COMPUTE A SIMPLE STRETCHED GRID FOR FLAT PLATE, OR          GRID     6
C      IF IREAD GT  0, READ GENERAL GRID OFF FROM DISC STORE             GRID     7
C                                                                        GRID     8
C   WEDGE FLOW                                                           GRID     9
      ALP =15                                                            GRID    10
      TANT =  TAN(ALP*PI/180 )                                           GRID    11
      IF( IREAD  GT.0) GO TO 19                                          GRID    12
      DO 9 K=1,KMAX                                                      GRID    13
      X(1,K) = 0.                                                        GRID    14
      DO 10 J=2,JMAX                                                     GRID    15
   10 X(J,K) = X(J-1,K) + DX                                             GRID    16
    9 CONTINUE                                                           GRID    17
      DO 12 J=1,JMAX                                                     GRID    18
      Y(J,1) = 0                                                         GRID    19
      JWEDG = JMAX/2                                                     GRID    20
      IF( J GT JWEDG) Y(J,1) = Y(J-1,1) + DX*TANT                        GRID    21
      DS = DY                                                            GRID    22
      EPP = EPS                                                          GRID    23
      DO 13 K=2,KMAX                                                     GRID    24
      KCMAX =  8*KMAX                                                    GRID    25
      IF( K GT KCMAX) EPP = 0                                            GRID    26
      DS = DS*( 1  +EPP*( SIN((K-2)*PI/(KCMAX-1))))                      GRID    27
   13 Y(J,K) = Y(J,K-1) + DS                                             GRID    28
   12 CONTINUE                                                           GRID    29
      GO TO 20                                                           GRID    30
C                                                                        GRID    31
   19 READ(8)((X(J,K),J=1,JMAX),K=1,KMAX),((Y(J,K),J=1,JMAX),K=1,KMAX)   GRID    32
   20 CONTINUE                                                           GRID    33
      RETURN                                                             GRID    34
      END                                                                GRID    35
```

```
      SUBROUTINE OUTPT(K,NSCAL)                                          OUTPT      2
      COMMON/BASE/NMAX,JMAX,KMAX,JM,KM,DT,FSMACH,EPS,GAMMA,GAMI,SMU,HD,  BASE       2
     1 FV(4),FD(4),RE,PI,Z(80),NP,METH,ALPHA,INVIS,IPLOT,RESID           BASE       3
     2, CNBR,IREGO,ISTORE,NF,NB,JTAIL1,JTAIL2,IOSCIL,XOSCIL,IUPWND       BASE       4
     3 , LAMIN,SMUIM,VARA,VARB,VARC                                      BASE       5
      COMMON/VARS/ Q(78,36,4),XY(78,36,4),P(78,36)                       VARS       2
      COMMON/LARGE/X(78,36),Y(78,36),S(78,36,4),XIT(78,36),ETT(78,36)    VARS       3
      LEVEL 2,X,Y,S,XIT,ETT                                              VARS       4
C****OUTPUTS THE NONDIM  VARIABLES AND P/PST AT K                        INLET    111
      WRITE(6,600) K                                                     OUTPT      6
  600 FORMAT(1H1, 32H J,X,Y,(Q ,N=1,4), P/PST AT K =       ,I5)          OUTPT      7
      PT = (1 + 5*GAMI*FSMACH**2)                                        OUTPT      8
      GG = GAMMA/GAMI                                                    OUTPT      9
      PT = 1 /(PT**GG)                                                   OUTPT     10
      DO 10 J=1,JMAX                                                     OUTPT     11
      PP= GAMMA*GAMI*( Q(J,K,4) - 5*(Q(J,K,2)**2+Q(J,K,3)**2)/Q(J,K,1))  OUTPT     12
      PP = PP*PT                                                         OUTPT     13
      R` = 1.                                                            OUTPT     14
      IF( NSCAL) 15,15,16                                                OUTPT     15
   15 RD = P(J,K)                                                        OUTPT     16
   16 CONTINUE                                                           OUTPT     17
      Q1 = Q(J,K,1)*RD                                                   OUTPT     18
      Q2 = Q(J,K,2)*RD                                                   OUTPT     19
      Q3 = Q(J,K,3)*RD                                                   OUTPT     20
      Q4 = Q(J,K,4)*RD                                                   OUTPT     21
      PP = PP*RD                                                         OUTPT     22
      WRITE(6,601) J,X(J,K),Y(J,K),Q1,Q2,Q3,Q4,PP                        OUTFT     23
  601 FORMAT(1H , I5,7E13.5)                                             OUTPT     24
   10 CONTINUE                                                           OUTPT     25
      RETURN                                                             OUTPT     26
      END                                                                OUTPT     27
```

```
      SUBROUTINE XYMETS                                                 XYMETS     2
      COMMON/ZAM/NTIME                                                  INLET    112
      COMMON/BASE/NMAX,JMAX,KMAX,JM,KM,DT,FSMACH,EPS,GAMMA,GAMI,SMU,HD, BASE       2
     1 FV(4),FD(4),RE,PI,Z(80),NP,METH,ALPHA,INVIS,IPLOT,RESID          BASE       3
     2, CNBR,IREGO,ISTORE,NF,NB,JTAIL1,JTAIL2,IOSCIL,XOSCIL,IUPWND       BASE       4
     3 , LAMIN,SMUIM,VARA,VARB,VARC                                     BASE       5
      COMMON/VARS/ Q(78,36,4),XY(78,36,4),P(78,36)                      VARS       2
      COMMON/LARGE/X(78,36),Y(78,36),S(78,36,4),XIT(78,36),ETT(78,36)   VARS       3
      LEVEL 2,X,Y,S,XIT,ETT                                             VARS       4
C****THIS SUBROUTINE CALCULATES THE METRIC COEFFICIENTS ACCORDING TO     INLET    113
C    THE GRID SYSTEM FORMS THE JACOBIAN                                 INLET    114
C    XY4=DX/DXI,  XY3=DY/DXI                                            INLET    115
      DO 11 K=1,KMAX                                                    XYMETS     6
      DO 10 J=2,JM                                                      XYMETS     7
      XY(J,K,4) = ( X(J+1,K) - X(J-1,K))* 5                             XYMETS     8
   10 XY(J,K,3) = ( Y(J+1,K) - Y(J-1,K))* 5                             XYMETS     9
      XY(1,K,4) =  5*( -3 *X(1,K) +4 *X(2,K) - X(3,K))                  XYMETS    10
      XY(1,K,3) =  5*( -3 *Y(1,K) +4 *Y(2,K) - Y(3,K))                  XYMETS    11
      XY(JMAX,K,4) = ( 3 *X(JMAX,K) -4 *X(JM,K)+X(JM-1,K))* 5           XYMETS    12
      XY(JMAX,K,3) = (3 *Y(JMAX,K) -4 *Y(JM,K) + Y(JM-1,K))* 5          XYMETS    13
   11 CONTINUE                                                          XYMETS    14
C    XY2=DX/DETA,  XY1=DY/DETA                                          INLET    116
      DO 21 J=1,JMAX                                                    XYMETS    16
      DO 20 K=2,KM                                                      XYMETS    17
      XY(J,K,2) = ( X(J,K+1) - X(J,K-1))* 5                             XYMETS    18
   20 XY(J,K,1) = ( Y(J,K+1) - Y(J,K-1))* 5                             XYMETS    19
      XY(J,1,2) = ( -3 *X(J,1) +4 *X(J,2) - X(J,3))* 5                  XYMETS    20
      XY(J,1,1) = ( -3 *Y(J,1) +4 *Y(J,2) -Y(J,3))* 5                   XYMETS    21
      XY(J,KMAX,2) = ( 3 *X(J,KMAX) -4 *X(J,KM) +X(J,KM-1))* 5          XYMETS    22
      XY(J,KMAX,1) = ( 3 *Y(J,KMAX) -4 *Y(J,KM) + Y(J,KM-1))* 5         XYMETS    23
   21 CONTINUE                                                          XYMETS    24
C   A SPATIALLY AVERAGED JACOBIAN IS NECESSARY FOR TIME ACCURATE FLOW   XYMETS    25
      DO 30 J=1,JMAX                                                    XYMETS    26
      JP = J + 1                                                        XYMETS    27
      JR = J -1                                                         XYMETS    28
      IF( J  EQ  1  OR  J  EQ  JMAX) JP = JR = J                        XYMETS    29
      DO 30 K=1,KMAX                                                    XYMETS    30
      KP = K +1                                                         XYMETS    31
      KR = K -1                                                         XYMETS    32
      IF( K  EQ  1  OR  K  EQ  KMAX) KP = KR = K                        XYMETS    33
      DINV = 4 /( (XY(J,KP,4) + XY(J,KR,4))*( XY(JP,K,1)+XY(JR,K,1))    XYMETS    34
     1 - ( XY(J,KP,3)+ XY(J,KR,3))*(XY(JP,K,2)+ XY(JR,K,2)))            XYMETS    35
C......THIS IS A NON SPATIALLY AVERAGED JACOBIAN SINCE SOLUTION  IS TO B INLET    117
C        A STEADY STATE ANSWER                                          INLET    118
      DINV=1./(XY(J,K,4)*XY(J,K,1)-XY(J,K,2)*XY(J,K,3))                 INLET    119
      P(J,K) = DINV                                                     XYMETS    36
   30 CONTINUE                                                          XYMETS    37
      DO 32 J=1,JMAX                                                    XYMETS    38
      DO 32 K=1,KMAX                                                    XYMETS    39
      DINV = P(J,K)                                                     XYMETS    40
C P(J,K) IS THE JACOBIAN  XY1=DXI/DX,  XY2=DXI/DY,                      INLET    120
C    XY3=DETA/DX,  XY4=DETA/DY                                          INLET    121
      XY(J,K,1) = XY(J,K,1)*DINV                                        XYMETS    42
      XY(J,K,2) = - XY(J,K,2)*DINV                                      XYMETS    43
      XY(J,K,3) = - XY(J,K,3)*DINV                                      XYMETS    44
   32 XY(J,K,4) = XY(J,K,4)*DINV                                        XYMETS    45
      IF(NTIME GT 1)GO TO 63                                            INLET    122
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```
      DO 64 K=1,KMAX                                              INLET     123
      WRITE(6,101)K                                               INLET     124
      WRITE(6,102)(P(J,K),J=1,JMAX)                               INLET     125
   64 CONTINUE                                                    INLET     126
   63 CONTINUE                                                    INLET     127
  101 FORMAT(1X,*K=*,I5)                                          INLET     128
  102 FORMAT(1X,8E12.5)                                           INLET     129
    3 RETURN                                                      XYMETS     46
      END                                                         XYMETS     47
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```
               SUBROUTINE SMOOTH                                                  SMOOTH       2
               COMMON/BASE/NMAX,JMAX,KMAX,JM,KM,DT,FSMACH,EPS,GAMMA,GAMI,SMU,HD,  BASE         2
              1 FV(4),FD(4),RE,PI,Z(80),NP,METH,ALPHA,INVIS,IPLOT,RESID           BASE         3
              2, CNBR,IREGO,ISTORE,NF,NB,JTAIL1,JTAIL2,IOSCIL,XOSCIL,IUPWND       BASE         4
              3 , LAMIN,SMUIM,VARA,VARB,VARC                                      BASE         5
               COMMON/VARS/ Q(78,36,4),XY(78,36,4),P(78,36)                       VARS         2
               COMMON/LARGE/X(78,36),Y(78,36),S(78,36,4),XIT(78,36),ETT(78,36)    VARS         3
               LEVEL 2,X,Y,S,XIT,ETT                                              VARS         4
               COMMON/BTRID/ A(80,4,4),B(80,4,4),C(80,4,4),D(80,4,4),DU(80,4,4),  SMOOTH       5
              1   F(80,4)                                                         SMOOTH       6
               COMMON/UPWND/ EB(80),EF(80)                                        SMOOTH       7
C****THIS SUBROUTINE ADDS FOURTH -ORDER SMOOTHING IMPLICITLY TO THE               INLET      130
C     RHS  ADJACENT TO BOUNDARIES SECOND SECOND ORDER SMOOTHING                   INLET      131
C     IS ADDED EXPLICITLY WITH 0 5 OF SMU                                         INLET      132
C    FOURTH ORDER SMOOTHING, ADDED EXPLICITLY TO RHS                              SMOOTH       9
C    SECONT ORDER AT FRINGES WITH  5 OF SMU                                       SMOOTH      10
               JMM = JM -1                                                        SMOOTH      11
               KMM = KM-1                                                         SMOOTH      12
               SDT = SMU*DT                                                       SMOOTH      13
C               XI DIRECTION SMOOTHING                                            SMOOTH      14
               DO 40 K=2,KM                                                       SMOOTH      15
               IF( IUPWND GT 0 ) GO TO 49                                         SMOOTH      16
               DO 43 J=1,JMAX                                                     SMOOTH      17
               RINV = 1 /Q(J,K,1)                                                 SMOOTH      18
               U = XIT(J,K) + RINV*( XY(J,K,1)*Q(J,K,2)+ XY(J,K,2)*Q(J,K,3))      SMOOTH      19
               PP= GAMI*( Q(J,K,4) - 5*(Q(J,K,2)**2+Q(J,K,3)**2)*RINV)            SMOOTH      20
               CC = SQRT( GAMMA*PP*( XY(J,K,1)**2+XY(J,K,2)**2)*RINV)             SMOOTH      21
               UMC = U - CC                                                       SMOOTH      22
               UPC = U + CC                                                       SMOOTH      23
               EB(J) =  5 + SIGN( 5,UMC)                                          SMOOTH      24
               EF(J) =  5 - SIGN( 5,UPC)                                          SMOOTH      25
            43 CONTINUE                                                           SMOOTH      26
C              ADJUST SHOCK POINT OPERATOR                                        SMOOTH      27
               CALL SHCKOP(2,JM)                                                  SMOOTH      28
            49 CONTINUE                                                           SMOOTH      29
               DO 42 N=1,4                                                        SMOOTH      30
               DO 41 J=1,JMAX                                                     SMOOTH      31
            41 Z(J) = P(J,K)*Q(J,K,N)                                             SMOOTH      32
               J = 2                                                              SMOOTH      33
               S(J,K,N) = S(J,K,N) - 5*SMU*(-Z(J-1) +2 *Z(J) -Z(J+1))/P(J,K)      SMOOTH      34
               J = JM                                                             SMOOTH      35
               S(J,K,N) = S(J,K,N) - 5*SMU*(-Z(J-1) +2 *Z(J) -Z(J+1))/P(J,K)      SMOOTH      36
               DO 42 J=3,JMM                                                      SMOOTH      37
               EP = 1. - EB(J) - EF(J+1)                                          SMOOTH      38
               EM = 1  - EB(J-1) - EF(J)                                          SMOOTH      39
               S(J,K,N) = S(J,K,N) - SMU*( EP*Z(J+2) - (3 *EP + EM)*Z(J+1) +      SMOOTH      40
              1  3 *(EP +EM)*Z(J) -(EP +3 *EM)*Z(J-1) + EM*Z(J-2)) /P(J,K)        SMOOTH      41
            42 CONTINUE                                                           SMOOTH      42
            40 CONTINUE                                                           SMOOTH      43
C                                                                                 SMOOTH      44
C    ETA DIRECTION SMOOTHING                                                      SMOOTH      45
               DO 50 J=2,JM                                                       SMOOTH      46
               DO 51 K=1,KMAX                                                     SMOOTH      47
            51 Z(K) = P(J,K)                                                      SMOOTH      48
               DO 52 N=1,4                                                        SMOOTH      49
                K = KM                                                            SMOOTH      50
               S(J,K,N) = S(J,K,N) -SMU* 5*( -Z(K-1)*Q(J,K-1,N) +2 *Z(K)*Q(J,K,N) SMOOTH      51
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     1 - Z(K+1)*Q(J,K+1,N))/Z(K)                                        SMOOTH     52
      K = 2                                                             SMOOTH     53
      S(J,K,N) = S(J,K,N) -SMU* 5*( -Z(K-1)*Q(J,K-1,N) +2 *Z(K)*Q(J,K,N) SMOOTH     54
     1 - Z(K+1)*Q(J,K+1,N))/Z(K)                                        SMOOTH     55
      DO 52 K=3,KMM                                                     SMOOTH     56
   52 S(J,K,N) = S(J,K,N) -SMU*( Z(K-2)*Q(J,K-2,N) +Z(K+2)*Q(J,K+2,N)    SMOOTH     57
     1  +6 *Z(K)*Q(J,K,N) -4 *( Z(K-1)*Q(J,K-1,N) +Z(K+1)*Q(J,K+1,N)))   SMOOTH     58
     2 / Z(K)                                                           SMOOTH     59
   50 CONTINUE                                                          SMOOTH     60
      RETURN                                                            SMOOTH     61
      END                                                               SMOOTH     62
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      SUBROUTINE BC                                                     BC         2
      COMMON/ZAMPA/NTSG                                                 INLET    133
      COMMON/ZAM/NTIME                                                  INLET    134
      COMMON/IKI/JINPL                                                  INLET    135
      COMMON/BIR/NCRIT                                                  INLET    136
      COMMON/FINN/VV(50)                                                INLET    137
      LEVEL 2,VV                                                        INLET    138
      COMMON/BASE/NMAX,JMAX,KMAX,JM,KM,DT,FSMACH,EPS,GAMMA,GAMI,SMU,HD, BASE       2
     1 FV(4),FD(4),RE,PI,Z(80),NP,METH,ALPHA,INVIS,IPLOT,RESID          BASE       3
     2, CNBR,IREGO,ISTORE,NF,NB,JTAIL1,JTAIL2,IOSCIL,XOSCIL,IUPWND      BASE       4
     3 , LAMIN,SMUIM,VARA,VARB,VARC                                     BASE       5
      COMMON/VARS/ Q(78,36,4),XY(78,36,4),P(78,36)                      VARS       2
      COMMON/LARGE/X(78,36),Y(78,36),S(78,36,4),XIT(78,36),ETT(78,36)   VARS       3
      LEVEL 2,X,Y,S,XIT,ETT                                             VARS       4
      COMMON/AXI/JAXI                                                   INLET    139
      DIMENSION DETAS(80),DETAS1(80),A(80),B(80),C(80),F(80)            INLET    140
      DIMENSION UD(3,80),VD(3,80),EN(3,80),PPB(3,80),DEN(3,80)          INLET    141
      DIMENSION VV(50)                                                  INLET    142
      DATA INIT,NN/0,0/                                                 BC         6
C****THIS SUBROUTNE EVALUATES BOUNDARY CONDITIONS AT THE SOLID WALLS AND INLET    143
C    INLOW-OUTFLOW SECTIONS                                             INLET    144
C    SET JINPL TO THE J-INDEX CORRESPONDING TO FIRST MESH ON RAMP       INLET    145
      IF( INIT .GT. 0) GO TO 9                                          BC         7
      READ(5,101)LFAC,JAXI                                              INLET    146
  101 FORMAT(2I2)                                                       INLET    147
C    IF LFAC=1 OUTFLOW IS SUBSONIC OTHERWISE SUPERSONIC                 INLET    148
      WRITE(6,4)LFAC,JAXI                                               INLET    149
    4 FORMAT(1X,*LFAC=*,I2,*JAXI=*,I2)                                  INLET    150
      KMAXM1=KMAX-1                                                     INLET    151
C    IF JAXI =1 FLOW IS AXISYMM  IF JAXI=0 PLANE FLOW                   INLET    152
      JINPL=34                                                          INLET    153
      RINF=1.0                                                          INLET    154
      PINF=1./GAMMA                                                     INLET    155
      QINF=FSMACH                                                       INLET    156
      HTINF=GAMMA/GAMI*PINF/RINF+QINF**2*0.5                            INLET    157
      INIT = 1                                                          BC         8
      J1 = JTAIL1                                                       BC         9
      J2 = JTAIL2                                                       BC        10
      J3=JINPL                                                          INLET    158
      J1P = J1 + 1                                                      BC        11
      J2R = J2 -1                                                       BC        12
      J1R = J1 -1                                                       BC        13
      J2P = J2 +1                                                       BC        14
      K = 1                                                             BC        15
      DO 90 J=J1,J2                                                     BC        16
      DETAS(J) = ETT(J,K)                                               BC        17
      DETAS1(J)=ETT(J,KMAX)                                             INLET    159
   90 CONTINUE                                                          BC        18
C    FOSO =0  FOR FIRST ORDER AND =1  FOR SECOND ORDER ACCURACY         BC        19
C      IN THE EVALUATION OF DPDETA                                      BC        20
      FOSO = 0                                                          BC        21
C                                                                       BC        22
    9 NN = NN +1                                                        BC        23
C    BODY INFLATED OVER 150 ITERATIONS                                  INLET    160
      T = ( NN -1.)/36                                                  BC        24
      IF( T .GT. 1 ) T = 1                                              BC        25
      SCAL = (10. -15 *T + 6 *T*T) *T**3                                BC        26
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           IF( IREGO .GT.0) SCAL=1.                                      BC        27
           SCAL1=SCAL                                                    INLET    161
      C                                                                  INLET    162
      C  NCRIT IS NTIME WHEN SHOCK IS AT LIP IN SUBCRIT  OUTFLOW         INLET    163
           NCRIT=2500                                                    INLET    164
      C                                                                  INLET    165
           NNE=1                                                         INLET    166
           IF(NN LT NNE)GO TO 60                                         INLET    167
           T=(NN-NNE)/40                                                 INLET    168
           IF(T GT 1.)T=1                                                INLET    169
           SCAL=(10 -15 *T+6 *T*T)*T**3                                  INLET    170
           IF(IREGO GT 0)SCAL=1                                          INLET    171
      C                                                                  BC        28
      C OBTAIN U AND V ON BODY VIA TANGENCY AND EXTRAPOLATION OF UCAP    BC        29
      C     THIS SECTION FOR COWL WALLS                                  INLET    172
           DO 52 J=J1, J2                                                BC        31
           UEXT = 2 *( XIT(J,2) +XY(J,2,1)*Q(J,2,2)/Q(J,2,1) + XY(J,2,2)*  BC      32
          1  Q(J,2,3)/Q(J,2,1))  -( XIT(J,3) + XY(J,3,1)*Q(J,3,2)/Q(J,3,1)  BC      33
          2  + XY(J,3,2) *Q(J,3,3)/Q(J,3,1))                             BC        34
           IF( INVIS .GT  0) UEXT = 0                                    BC        35
           U1 = ( XY(J,1,4)*(UEXT - XIT(J,1)) + XY(J,1,2)*ETT(J,1))/P(J,1)  BC      36
           V1 = ( - XY(J,1,3)*( UEXT - XIT(J,1)) -XY(J,1,1)*ETT(J,1))/P(J,1)  BC    37
           U1 = ( 1. - SCAL)*Q(J,1,2)/Q(J,1,1) + SCAL*U1                 BC        38
           V1 = ( 1  - SCAL)*Q(J,1,3)/Q(J,1,1) + SCAL*V1                 BC        39
      C     Q2 AND Q3 NOW SATIFY TANGENCY     INDEPENTLY OF WHETHER      BC        40
      C                 DENSITY IS LAGGED                                BC        41
           Q(J,1,2) = U1*Q(J,1,1)                                        BC        42
           Q(J,1,3) = V1*Q(J,1,1)                                        BC        43
        52 CONTINUE                                                      BC        44
       60  CONTINUE                                                      INLET    173
           K=1                                                           INLET    174
           SCAL=SCAL1                                                    INLET    175
           IF(NN GE NNE)GO TO 61                                         INLET    176
           DO 62 I=1,4                                                   INLET    177
           DO 67 J=J1,J2                                                 INLET    178
           Q(J,K,I)=Q(J,K+1,I)*P(J,K+1)/P(J,K)                           INLET    179
        67 CONTINUE                                                      INLET    180
        62 CONTINUE                                                      INLET    181
        61 CONTINUE                                                      INLET    182
      C                                                                  INLET    183
      C     THIS SECTION FOR BODY + RAMP WALLS                           INLET    184
           K=KMAX                                                        INLET    185
           KMM=KM-1                                                      INLET    186
           DO 53 J=J1,J3                                                 INLET    187
           UEXT=2 *(XIT(J,KM)+XY(J,KM,1)*Q(J,KM,2)/Q(J,KM,1)+XY(J,KM,2)*  INLET   188
          <Q(J,KM,3)/Q(J,KM,1))-(XIT(J,KMM)+XY(J,KMM,1)*Q(J,KMM,2)/Q(J,KMM,1)  INLET  189
          <+XY(J,KMM,2)*Q(J,KMM,3)/Q(J,KMM,1))                           INLET    190
           IF(INVIS  GT  0)UEXT=0 0                                      INLET    191
           U2=(XY(J,K,4)*(UEXT-XIT(J,K))+XY(J,K,2)*ETT(J,K))/P(J,K)      INLET    192
           V2=(-XY(J,K,3)*(UEXT-XIT(J,K))-XY(J,K,1)*ETT(J,K))/P(J,K)     INLET    193
           U2=(1 -SCAL)*Q(J,K,2)/Q(J,K,1)+SCAL*U2                        INLET    194
           V2=(1 -SCAL)*Q(J,K,3)/Q(J,K,1)+SCAL*V2                        INLET    195
      C     Q2 AND Q3 NOW SATISFY TANGENCY     INDEPENDTLY OF WHETHER    INLET    196
      C               DENSITY IS LAGGED                                  INLET    197
           Q(J,K,2)=U2*Q(J,K,1)                                          INLET    198
           Q(J,K,3)=V2*Q(J,K,1)                                          INLET    199
       53  CONTINUE                                                      INLET    200
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      55   CONTINUE                                                    INLET   201
      C                                                                BC       45
      C                                                                BC       46
             IF(LFAC NE 1)GO TO 1                                      INLET   202
             GO TO 2                                                   INLET   203
           1 CONTINUE                                                  INLET   204
      C     SUPERCRITICAL OUTFLOW B C                                  INLET   205
      C     VARIABLES EXTRAPOLATED                                     INLET   206
             DO 999 K=1,KMAX                                           INLET   207
             J=1                                                       INLET   208
             Q(J,K,1)=Q(J+1,K,1)*P(J+1,K)/P(J,K)                       INLET   209
             Q(J,K,2)=Q(J+1,K,2)*P(J+1,K)/P(J,K)                       INLET   210
             Q(J,K,3)=Q(J+1,K,3)*P(J+1,K)/P(J,K)                       INLET   211
             Q(J,1,3)=0                                                INLET   212
             Q(J,KMAX,3)=0                                             INLET   213
             Q(J,K,4)=Q(J+1,K,4)*P(J+1,K)/P(J,K)                       INLET   214
         999 CONTINUE                                                  INLET   215
             GO TO 63                                                  INLET   216
           2 CONTINUE                                                  INLET   217
      C     OUTFLOW BOUNDARY                                           INLET   218
      C     IF LFAC=1, OUTFLOW IS SUBSONIC OTHERWISE SUPERSONIC        INLET   219
      C   TEST IF UPSTREAM OR DOWNSTREAM IS REFLECTED                  BC       47
      C     SUBCRITICAL OUTFLOW B C                                    INLET   220
             DO 11 K=1,KMAX                                            INLET   221
             PPB(1,K)=6 4                                              INLET   222
             UD(2,K)=Q(2,K,2)/Q(2,K,1)                                 INLET   223
             VD(1,K)=0                                                 INLET   224
             UD(1,K)=UD(2,K)                                           INLET   225
             DEN(2,K)=Q(2,K,1)*P(2,K)                                  INLET   226
             DEN(1,K)=DEN(2,K)                                         INLET   227
          11 CONTINUE                                                  INLET   228
      C     SETS WALL PRESSURE                                         INLET   229
             PPB(1,1)=                PPB(1,2)                         INLET   230
             PPB(1,KMAX)=                    PPB(1,KM)                 INLET   231
      C     NOW CALCULATES ENERGY                                      INLET   232
             DO 17 K=1,KMAX                                            INLET   233
             RAP1=DEN(1,K)*0 5*(UD(1,K)**2)                            INLET   234
             EN(1,K)=RAP1+(1 / 4)*PPB(1,K)                             INLET   235
          17 CONTINUE                                                  INLET   236
      C     CALCULATES FLUX VARIABLES, FORMS Q-HAT                     INLET   237
             DO 19 K=1,KMAX                                            INLET   238
             SOS=SQRT(ABS(1 4*PPB(1,K)/DEN(1,K)))                      INLET   239
             Q(1,K,1)=DEN(1,K)/P(1,K)                                  INLET   240
             Q(1,K,2)=(DEN(1,K)*UD(1,K))/P(1,K)                        INLET   241
             Q(1,K,3)=(DEN(1,K)*VD(1,K))/P(1,K)                        INLET   242
             Q(1,K,4)=EN(1,K)/P(1,K)                                   INLET   243
             IF(UD(1,K) LT SOS)GO TO 209                               INLET   244
             Q(1,K,1)=Q(2,K,1)*P(2,K)/P(1,K)                           INLET   245
             Q(1,K,2)=Q(2,K,2)*P(2 K)/P(1 K)                           INLET   246
             Q(1,K,3)=Q(2,K,3)*P(2 K)/P(1 K)                           INLET   247
         209 CONTINUE                                                  INLET   248
          19 CONTINUE                                                  INLET   249
          63 CONTINUE                                                  INLET   250
             KDUP=1                                                    INLET   251
             J=2                                                       INLET   252
          77 FLR=0                                                     INLET   253
             DO 76 K=1,KMAXM1                                          INLET   254
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      PA1=Q(J,K,2)*P(J,K)+Q(J,K+1,2)*P(J,K+1)                          INLET   255
      PA2=Y(J,K+1)-Y(J,K)                                               INLET   256
      FLR=FLR+PA1*PA2*.5                                                INLET   257
   76 CONTINUE                                                          INLET   258
      FLR=-FLR*.5/RINF/QINF                                             INLET   259
      WRITE(6,137)FLR,NN,J                                              INLET   260
  137 FORMAT(1X,*MDOT=*,E12.5,*TIME STEP*,I5,*JINDEX=*,I5)              INLET   261
      KDUP=KDUP+1                                                       INLET   262
      J=J+5                                                             INLET   263
      IF(KDUP.LE.4)GO TO 77                                             INLET   264
C     END OF SHB METHOD                                                 INLET   265
      J = JMAX                                                          BC       55
      DO 20 K=1,KMAX                                                    BC       56
      DO 21 N=1,4                                                       BC       57
   21 Q(J,K,N) = Q(J-1,K,N)*P(J-1,K)/P(J,K)                             BC       58
   20 CONTINUE                                                          BC       59
   29 CONTINUE                                                          BC       60
C                                                                       BC       61
C  SATISFY MOMENTUM RELATION FOR NORMAL PRESSURE DERIVATION             BC       62
C              THIS SECTION FOR COWL WALLS                              INLET   266
      K = 1                                                             BC       63
      IF(NN.LE.NNE)GO TO 73                                             INLET   267
      DO 30 J=J1,J2                                                     BC       64
      RHO = Q(J,K,1)*P(J,K)                                             BC       65
      UU = ( XY(J,K,1)*Q(J,K,2) + XY(J,K,2)*Q(J,K,3))/Q(J,K,1)          BC       66
     1 + XIT(J,K)                                                       BC       67
      UXI = .5*( Q(J+1,K,2)/Q(J+1,K,1) - Q(J-1,K,2)/Q(J-1,K,1))         BC       68
      VXI = .5*( Q(J+1,K,3)/Q(J+1,K,1) - Q(J-1,K,3)/Q(J-1,K,1))         BC       69
      FF = RHO*UU*( XY(J,K,3)*UXI+XY(J,K,4)*VXI) -RHO*(ETT(J,K) -       BC       70
     1    DETAS(J))/DT                                                  BC       71
C****AXISYMMETRIC OPTION                                                INLET   268
      AX1=(Q(J,K,2)/Q(J,K,1))*XY(J,K,3)                                 INLET   269
      AX2=(Q(J,K,3)/Q(J,K,1))*XY(J,K,4)                                 INLET   270
      AX3=AX1+AX2                                                       INLET   271
      AX4=RHO*(Q(J,K,3)/Q(J,K,1))/Y(J,K)                                INLET   272
      FF=FF+AX3*AX4*JAXI                                                INLET   273
      DETAS(J) = ETT(J,K)                                               BC       72
      C1 = XY(J,K,3)*XY(J,K,1) + XY(J,K,2)*XY(J,K,4)                    BC       73
      C2 = XY(J,K,3)**2 + XY(J,K,4)**2                                  BC       74
      P2 = GAMI*( Q(J,2,4) - .5*(Q(J,2,2)**2+Q(J,2,3)**2) /Q(J,2,1) )   BC       75
      P3 = GAMI*( Q(J,3,4) - .5*(Q(J,3,2)**2+Q(J,3,3)**2) /Q(J,3,1) )   BC       76
      F(J) = -FF+C2*(-(1.+FOSO)*P2*P(J,K+1)+.5*FOSO*P3*P(J,K+2))        BC       77
      A(J) = -.5*C1                                                     BC       78
      C(J) = .5*C1                                                      BC       79
      B(J) = -(1.+.5*FOSO)*C2                                           BC       80
   30 CONTINUE                                                          BC       81
      JJ = J1-1                                                         BC       82
      PBC = GAMI*( Q(JJ,K,4) - .5*( Q(JJ,K,2)**2 +Q(JJ,K,3)**2)/Q(JJ,K,1) BC    83
     1 )                                                                BC       84
      F(J1) = F(J1) - A(J1)*PBC*P(JJ,K)                                 BC       85
      JJ = J2+1                                                         BC       86
      PBC = GAMI*( Q(JJ,K,4) - .5*( Q(JJ,K,2)**2 +Q(JJ,K,3)**2)/Q(JJ,K,1) BC    87
     1 )                                                                BC       88
      F(J2) = F(J2) - C(J2)*PBC*P(JJ,K)                                 BC       89
      CALL TRIB(A,B,C,Z,F,J1,J2)                                        BC       90
      DO 31 J=J1,J2                                                     BC       91
      F1=F(J)/P(J,1)                                                    INLET   274
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      BETA=0                                                            INLET  275
      NTSG=300                                                          INLET  276
      IF(NTIME GE NTSG)GO TO 161                                        INLET  277
      IF(J LT 10)BETA= 1                                                INLET  278
  161 CONTINUE                                                          INLET  279
      IF(LFAC NE 1)GO TO 33                                             INLET  280
      IF(NTIME LT NCRIT)GO TO 33                                        INLET  281
C     CHANGE THIS CARD FOR EACH NEW GEOMETRY                            INLET  282
      IF(J GE 30 AND J LE 38)BETA= 1                                    INLET  283
   33 CONTINUE                                                          INLET  284
      IF(J GE J1+1 AND J LE J2-1)                                       INLET  285
     *F1=((1 -2 *BETA)*F(J)+BETA*(F(J-1)+F(J+1)))/P(J,K)                INLET  286
C RESCALE Q2 AND Q3 TO NEW DENSITY SUCH THAT WHEN REFORMING PRESSURE    BC      93
C      FROM Q1 TO Q4, THE NORMAL DERIVATIVE OF PRESSURE IS SATIFIED     BC      94
      RHO = Q(J,K,1)                                                    BC      95
      Q(J,K,1) = Q(J,2,1)*P(J,2)/P(J,1)                                 BC      96
      Q(J,K,2) = Q(J,K,2)*Q(J,K,1)/RHO                                  BC      97
      Q(J,K,3) = Q(J,K,3)*Q(J,K,1)/RHO                                  BC      98
      Q(J,K,4)=F1/GAMI+0 5*(Q(J,K,2)**2+Q(J,K,3)**2)/Q(J,K,1)           INLET  287
   31 CONTINUE                                                          BC     100
   73 CONTINUE                                                          INLET  288
C                                                                       BC     101
 65   CONTINUE                                                          INLET  289
C           THIS SECTION FOR BODY + RAMP WALLS                          INLET  290
      K=KMAX                                                            INLET  291
      DO 40 J=J1,J3                                                     INLET  292
      RHO=Q(J,K,1)*P(J,K)                                               INLET  293
      UU=(XY(J,K,1)*Q(J,K,2)+XY(J,K,2)*Q(J,K,3))/Q(J,K,1)+XIT(J,K)      INLET  294
      UXI=0 5*(Q(J+1,K,2)/Q(J+1,K,1)-Q(J-1,K,2)/Q(J-1,K,1))             INLET  295
      VXI=0 5*(Q(J+1,K,3)/Q(J+1,K,1)-Q(J-1,K,3)/Q(J-1,K,1))             INLET  296
      IF(J NE J3)GO TO 45                                               INLET  297
      UXI=0 5*(3 *Q(J,K,2)/Q(J,K,1)-4 *Q(J-1,K,2)/Q(J-1,K,1)+Q(J-2,K,2)/ INLET  298
     *Q(J-2,K,1))                                                       INLET  299
      VXI=0 5*(3 *Q(J,K,3)/Q(J,K,1)-4 *Q(J-1,K,3)/Q(J-1,K,1)+Q(J-2,K,3)/ INLET  300
     *Q(J-2,K,1))                                                       INLET  301
 45   CONTINUE                                                          INLET  302
      FF=RHO*UU*(XY(J,K,3)*UXI+XY(J,K,4)*VXI)-RHO*(ETT(J,K)-DETAS1(J))  INLET  303
     */DT                                                               INLET  304
C****AXISYMMETRIC OPTION                                                INLET  305
      AX1=(Q(J,K,2)/Q(J,K,1))*XY(J,K,3)                                 INLET  306
      AX2=(Q(J,K,3)/Q(J,K,1))*XY(J,K,4)                                 INLET  307
      AX3=AX1+AX2                                                       INLET  308
      AX4=RHO*(Q(J,K,3)/Q(J,K,1))/Y(J,K)                                INLET  309
      FF=FF+AX3*AX4*JAX1                                                INLET  310
      DETAS1(J)=ETT(J,K)                                                INLET  311
      C1=XY(J,K,3)*XY(J,K,1)+XY(J,K,2)*XY(J,K,4)                        INLET  312
      C2=XY(J,K,3)**2+XY(J,K,4)**2                                      INLET  313
      P2=GAMI*(Q(J,KM,4)-0 5*(Q(J,KM,2)**2+Q(J,KM,3)**2)/Q(J,KM,1))     INLET  314
      P3=GAMI*(Q(J,KMM,4)-0 5*(Q(J,KMM,2)**2+Q(J,KMM,3)**2)/Q(J,KMM,1)) INLET  315
      F(J)=-FF+C2*(-(1 +FOSO)*P2*P(J,KM)+0 5*FOSO*P3*P(J,KMM))          INLET  316
      A(J)=- 5*C1                                                       INLET  317
      B(J)=-(1 +0 5*FOSO)*C2                                            INLET  318
      C(J)=0 5*C1                                                       INLET  319
 40   CONTINUE                                                          INLET  320
      JJ=J1-1                                                           INLET  321
      PBC=GAMI*(Q(JJ,K,4)-0 5*(Q(JJ,K,2)**2+Q(JJ,K,3)**2)/Q(JJ,K,1))    INLET  322
      F(J1)=F(J1)-A(J1)*PBC*P(JJ,K)                                     INLET  323
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```
          JJ=J3+1                                                           INLET    324
          PBC=GAM1*(Q(JJ,K,4)-0 5*(Q(JJ,K,2)**2+Q(JJ,K,3)**2)/Q(JJ,K,1))    INLET    325
          F(J3)=F(J3)-C(J3)*PBC*P(JJ,K)                                     INLET    326
          CALL TRIB(A,B,C,Z,F,J1,J3)                                        INLET    327
          DO 41 J=J1,J3                                                     INLET    328
          F1  =F(J)/P(J,KMAX)                                               INLET    329
          BETA=0                                                            INLET    330
          IF(NTIME GE NTSG)GO TO 162                                        INLET    331
          IF(J LT 10)BETA= 1                                                INLET    332
  162     CONTINUE                                                          INLET    333
          IF(J  GE  J1+1  AND   J  LE  J3-1)                                INLET    334
         *F1=((1 -2 *BETA)*F(J)+BETA*(F(J-1)+F(J+1)))/P(J,KMAX)             INLET    335
C RESCALE Q2 AND Q3 TO NEW DENSITY SUCH THAT WHEN REFORMING PRESSURE         INLET    336
C       FROM Q1 TO Q4 THE NORMAL DERIVATIVE OF PRESSURE IS SATISFIED        INLET    337
          RHO=Q(J,K,1)                                                      INLET    338
          Q(J,K,1)=Q(J,KM,1)*P(J,KM)/P(J,KMAX)                              INLET    339
          Q(J,K,2)=Q(J,K,2)*Q(J,K,1)/RHO                                    INLET    340
          Q(J,K,3)=Q(J,K,3)*Q(J,K,1)/RHO                                    INLET    341
          Q(J,K,4)=F1/GAM1+0 5*(Q(J,K,2)**2+Q(J,K,3)**2)/Q(J,K,1)           INLET    342
   41     CONTINUE                                                          INLET    343
          RETURN                                                            BC       117
          END                                                               BC       118
```

```
      SUBROUTINE RHS                                                    RHS        2
      COMMON/BASE/NMAX,JMAX,KMAX,JM,KM,DT,FSMACH,EPS,GAMMA,GAMI,SMU,HD, BASE       2
     1 FV(4),FD(4),RE,PI,Z(80),NP,METH,ALPHA,INVIS,IPLOT,RESID          BASE       3
     2, CNBR,IREGO,ISTORE,NF,NB,JTAIL1,JTAIL2,IOSCIL,XOSCIL,IUPWND      BASE       4
     3 , LAMIN,SMUIM,VARA,VARB,VARC                                     BASE       5
      COMMON/VARS/ Q(78,36,4),XY(78,36,4),P(78,36)                      VARS       2
      COMMON/LARGE/X(78,36),Y(78,36),S(78,36,4),XIT(78,36),ETT(78,36)   VARS       3
      LEVEL 2,X,Y,S,XIT,ETT                                             VARS       4
      COMMON/BTRID/ A(80,4,4),B(80,4,4),C(80,4,4),D(80,4,4),DU(80,4,4), RHS        5
     1   F(80,4)                                                        RHS        6
      COMMON/UPWND/ EB(80),EF(80)                                       RHS        7
      COMMON/AVERM/ SS(80),SXP(80),SYP(80),SXN(80),SYN(80),SF(80)       RHS        8
      DIMENSION VP(80,4),VN(80,4),G(80,4)                               RHS        9
      COMMON/AXI/JAXI                                                   INLET    344
      COMMON/AXISYM/FAXI(4)                                             INLET    345
      COMMON/SYM/HAXI(80,50)                                            INLET    346
      LEVEL 2,HAXI                                                      INLET    347
C                                                                       RHS       10
C                                                                       RHS       11
C****THIS SUBROUTE CALCULATES THE RHS OF THE  FINITE DIFF  EQN IN DELTA INLET    348
C    FORM ALGORITHM                                                     INLET    349
C    FOR 2ND ORDER IN TIME SET RO=-0.5*DT                               INLET    350
C    FOR FIRST ORDER IN TIME SET RO=-DT                                 INLET    351
C      CENTRAL DIFFERENCING USED IN ETA DIRECTION                       RHS       12
      DO 29 J=2,JM                                                      RHS       13
      DO 20 K=1,KMAX                                                    RHS       14
      R1 = XY(J,K,3)                                                    RHS       15
      R2 = XY(J,K,4)                                                    RHS       16
      R4 = ETT(J,K)                                                     RHS       17
      CALL FLUXVE(J,K,R1,R2,0.,R4)                                      RHS       18
      DO 22 N=1,4                                                       RHS       19
   22 F(K,N) = FV(N)                                                    RHS       20
   20 CONTINUE                                                          RHS       21
      RO = - .5*DT                                                      RHS       22
      CALL DIFFER(F,FV,FD,RO,2,KM)                                      RHS       23
      DO 24 N=1,4                                                       RHS       24
      DO 24 K=2,KM                                                      RHS       25
   24 S(J,K,N) = F(K,N)                                                 RHS       26
   29 CONTINUE                                                          RHS       27
C                                                                       RHS       28
       IF( INVIS.GT 0) CALL VISRHS                                      RHS       29
C                                                                       RHS       30
C       CENTRAL/UPWIND DIFFERENCING USED IN XI                          RHS       31
C     COMPUTE FLUX VECTORS AND UPWIND SWITCHING PARAMETERS              RHS       32
      DO 19 K=2,KM                                                      RHS       33
      DO 10 J=1,JMAX                                                    RHS       34
      R1 = XY(J,K,1)                                                    RHS       35
      R2 = XY(J,K,2)                                                    RHS       36
      R3 = XIT(J,K)                                                     RHS       37
      CALL FLUXVE(J,K,R1,R2,R3,0.)                                      RHS       38
      IF( IUPWND GT 0 ) GO TO 49                                        RHS       39
      RINV = 1./Q(J,K,1)                                                RHS       40
      U = XIT(J,K) + RINV*( XY(J,K,1)*Q(J,K,2)+ XY(J,K,2)*Q(J,K,3))     RHS       41
      PP= GAMI*( Q(J,K,4) - .5*(Q(J,K,2)**2+Q(J,K,3)**2)*RINV)          RHS       42
      CC = SQRT( GAMMA*PP*( XY(J,K,1)**2+XY(J,K,2)**2)*RINV)            RHS       43
      UMC = U - CC                                                      RHS       44
      UPC = U + CC                                                      RHS       45
```

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      EB(J) = .5 + SIGN(.5,UMC)                                           RHS       46
      EF(J) = .5 - SIGN(.5,UPC)                                           RHS       47
   49 CONTINUE                                                            RHS       48
      DO 12 N=1,4                                                         RHS       49
      HAXI(J,N)=FAXI(N)                                                   INLET    352
   12 F(J,N) = FV(N)                                                      RHS       50
   10 CONTINUE                                                            RHS       51
C     ADJUST SHOCK POINT OPERATOR                                         RHS       52
      IF( IUPWND.LE.0) CALL SHCKOP(2,JM)                                  RHS       53
      RO = - .5*DT                                                        RHS       54
      DO 18 N=1,4                                                         RHS       55
      DO 18 J=2,JM                                                        RHS       56
      G(J,N) = RO*( (1. -EB(J) +EF(J+1))*F(J+1,N) + ( EB(J-1) + EB(J) -  RHS       57
     1 EF(J+1) -EF(J))*F(J,N) -(1. +EB(J-1) -EF(J))*F(J-1,N))             RHS       58
   18 CONTINUE                                                            RHS       59
      DO 17 N=1,4                                                         RHS       60
      DO 17 J=2,JM                                                        RHS       61
   17 F(J,N) = G(J,N) +.5*( EB(J-1)*S(J-1,K,N)+(2 -EB(J)-EF(J))*S(J,K,N) RHS       62
     1    + EF(J+1)*S(J+1,K,N))                                           RHS       63
      DO 14 N=1,4                                                         RHS       64
      DO 14 J=2,JM                                                        RHS       65
   14 S(J,K,N) = F(J,N)                                                   RHS       66
C****AXISYMMETRIC OPTION                                                  INLET    353
      DO 8 N=1,4                                                          INLET    354
      DO 8 J=2,JM                                                         INLET    355
      S(J,K,N)=S(J,K,N)+HAXI(J,N)*JAXI*RO                                 INLET    356
    8 CONTINUE                                                            INLET    357
   19 CONTINUE                                                            RHS       67
      GO TO 9                                                             RHS       68
C                                                                         RHS       69
C                                                                         RHS       70
    9 CONTINUE                                                            RHS       71
      RETURN                                                              RHS       72
      END                                                                 RHS       73
```

```
      SUBROUTINE FLUXVE(J,K,  R1,R2,R3,R4)                          FLUXVE     2
      COMMON/AXISYM/FAXI(4)                                         INLET    358
      COMMON/ZAMPA/NTSG                                             INLET    359
      COMMON/BIR/NCRIT                                              INLET    360
      COMMON/ZAM/NTIME                                              INLET    361
      COMMON/BASE/NMAX,JMAX,KMAX,JM,KM,DT,FSMACH,EPS,GAMMA,GAMI,SMU,HD, BASE   2
     1 FV(4),FD(4),RE,PI,Z(80),NP,METH,ALPHA,INVIS,IPLOT,RESID      BASE       3
     2, CNBR,IREGO,ISTORE,NF,NB,JTAIL1,JTAIL2,IOSCIL,XOSCIL,IUPWND  BASE       4
     3 , LAMIN,SMUIM,VARA,VARB,VARC                                 BASE       5
      COMMON/VARS/ Q(78,36,4),XY(78,36,4),P(78,36)                  VARS       2
      COMMON/LARGE/X(78,36),Y(78,36),S(78,36,4),XIT(78,36),ETT(78,36)  VARS    3
      LEVEL 2,X,Y,S,XIT,ETT                                         VARS       4
      RR = 1./Q(J,K,1)                                              FLUXVE     5
      U = Q(J,K,2)*RR                                               FLUXVE     6
      V = Q(J,K,3)*RR                                               FLUXVE     7
      RO = R3 + R4                                                  FLUXVE     8
      QS = RO +R1*U + R2*V                                          FLUXVE     9
C****THIS SUBROUTINE COMPUTES THE VECTOR OF UNKNOWNS IN THE TRANSFORMED  INLET  362
C... . SMOOTHING OF THE PRESSURE FIELD                              INLET    363
      BETA=0.0                                                      INLET    364
      PPJP1=0.0                                                     INLET    365
      PPJM1=0.0                                                     INLET    366
      PINF=1.0/GAMMA                                                INLET    367
      RINF=1.0                                                      INLET    368
      QINF=FSMACH                                                   INLET    369
      HTINF=GAMMA/GAMI*PINF/RINF+QINF**2*0.5                        INLET    370
      BETA1=0.0                                                     INLET    371
      IF(K .EQ. 1 .OR. K .EQ. KMAX)GO TO 5                          INLET    372
      IF(J .EQ. 1 .OR. J .EQ. JMAX)GO TO 5                          INLET    373
      BETA=0                                                        INLET    374
      IF(NTIME.LT.NCRIT)GO TO 20                                    INLET    375
C   CHANGE THIS CARD FOR EACH NEW GEOMETRY                          INLET    376
      IF(K.GT.4)GO TO 20                                            INLET    377
      IF(J.GE.30.AND.J.LE.38)BETA=.1                                INLET    378
      BETA1=BETA                                                    INLET    379
   20 CONTINUE                                                      INLET    380
      KMAXM6=KMAX-6                                                 INLET    381
      JMAXM6=JMAX-6                                                 INLET    382
      IF(K.GE.KMAXM6.AND.J.GE.JMAXM6)BETA=.1                        INLET    383
C    SUBCRITICAL CASE                                               INLET    384
      IF(NTIME.GE.NTSG)GO TO 31                                     INLET    385
      IF(J.LT.10)BETA=.1                                            INLET    386
      BETA1=BETA                                                    INLET    387
   31 CONTINUE                                                      INLET    388
      RRP=1./Q(J+1,K,1)                                             INLET    389
      RRM=1./Q(J-1,K,1)                                             INLET    390
      UP=Q(J+1,K,2)*RRP                                             INLET    391
      VP=Q(J+1,K,3)*RRP                                             INLET    392
      UM=Q(J-1,K,2)*RRM                                             INLET    393
      VM=Q(J-1,K,3)*RRM                                             INLET    394
      PPJP1=GAMI*(Q(J+1,K,4)*P(J+1,K)-0.5*Q(J+1,K,1)*P(J+1,K)*(UP*UP+VP  INLET  395
     <*VP))                                                         INLET    396
      PPJM1=GAMI*(Q(J-1,K,4)*P(J-1,K)-0.5*Q(J-1,K,1)*P(J-1,K)*(UM*UM+VM  INLET  397
     <*VM))                                                         INLET    398
    5 PPJ=GAMI*(Q(J,K,4)*P(J,K)-0.5*Q(J,K,1)*P(J,K)*(U*U+V*V))      INLET    399
      PP=((1.-2.*BETA)*PPJ+BETA*(PPJP1+PPJM1))/P(J,K)               INLET    400
C****AXISYMMETRUC OPTION                                            INLET    401
```

```
      C     CONSTRUCT THE H-VECTOR                                       INLET     402
              FAXI(1)=Q(J,K,1)*V/P(J,K)                                  INLET     403
              FAXI(2)=Q(J,K,1)*V*U/P(J,K)                                INLET     404
              FAXI(3)=FAXI(1)*V                                          INLET     405
              FAXI(4)=((Q(J,K,4)/P(J,K))+PP)*V                           INLET     406
              DO 46 N=1,4                                                INLET     407
              FAXI(N)=FAXI(N)/(Y(J,K)*P(J,K))                            INLET     408
           46 CONTINUE                                                   INLET     409
              Q(J,K,4)=PP/GAMI+0.5*(Q(J,K,2)**2+Q(J,K,3)**2)/Q(J,K,1)    INLET     410
              Q(J,K,1)=(Q(J,K,4)+PP)/HTINF*BETA1+Q(J,K,1)*(1 -BETA1)     INLET     411
              FV(1)= Q(J,K,1)*QS                                         FLUXVE     11
              FV(2)= Q(J,K,2)*QS + R1*PP                                 FLUXVE     12
              FV(3)= Q(J,K,3)*QS + R2*PP                                 FLUXVE     13
              FV(4) = QS*( Q(J,K,4) + PP) - PP*RO                        FLUXVE     14
              RETURN                                                     FLUXVE     15
              END                                                        FLUXVE     16
```

```
          SUBROUTINE DIFFER(F,FV,FD,RO,I1,I2)                          DIFFER      2
          DIMENSION F(80,4),FV(4),FD(4)                                DIFFER      3
C****THIS SUBROUTINE TIME-DIFFERENCES  IF RO=-0 5DT SECOND ORDER        INLET     412
C    IF RO=-DT FIRST ORDER                                              INLET     413
          DO 12 N=1,4                                                  DIFFER      4
       12 FD(N) = F(I1-1,N)                                            DIFFER      5
          DO 10 I=I1,I2                                                DIFFER      6
          IP = I +1                                                    DIFFER      7
          DO 10 N=1,4                                                  DIFFER      8
          FV(N) = ( F(IP,N) - FD(N))*RO                                DIFFER      9
          FD(N) = F(I,N)                                               DIFFER     10
       10 F(I,N) = FV(N)                                               DIFFER     11
          RETURN                                                       DIFFER     12
          END                                                          DIFFER     13
```

SUBROUTINE STEP   76/76   OPT=2 TRACE   FTN 4.6+460   01/09/80 11.58.39   PAGE   1

```
      SUBROUTINE STEP                                                   STEP       2
      COMMON/BASE/NMAX,JMAX,KMAX,JM,KM,DT,FSMACH,EPS,GAMMA,GAMI,SMU,HD, BASE       2
     1 FV(4),FD(4),RE,PI,Z(80),NP,METH,ALPHA,INVIS,IPLOT,RESID          BASE       3
     2, CNBR,IREGO,ISTORE,NF,NB,JTAIL1,JTAIL2,IOSCIL,XOSCIL,IUPWND      BASE       4
     3 , LAMIN,SMUIM,VARA,VARB,VARC                                     BASE       5
      COMMON/VARS/ Q(78,36,4),XY(78,36,4),P(78,36)                      VARS       2
      COMMON/LARGE/X(78,36),Y(78,36),S(78,36,4),XIT(78,36),ETT(78,36)   VARS       3
      LEVEL 2,X,Y,S,XIT,ETT                                             VARS       4
      COMMON/BTRID/ A(80,4,4),B(80,4,4),C(80,4,4),D(80,4,4),DU(80,4,4), STEP       5
     1   F(80,4)                                                        STEP       6
      COMMON/AVERM/ SS(80),SXP(80),SYP(80),SXN(80),SYN(80),SF(80)       STEP       7
      COMMON/UPWND/EB(80),EF(80)                                        STEP       8
C                                                                       STEP       9
C****THIS SUBROUTINE CONSTITUTES THE MAIN STEP IN THE  INTEGRATION PROCE INLET    414
      CALL BC                                                           STEP      10
      CALL RHS                                                          STEP      11
      CALL SMOOTH                                                       STEP      12
C       COMPUTE L2 RESIDUAI                                             STEP      13
      KHM = KM/2                                                        STEP      14
      RESID = 0.                                                        STEP      15
      DO 15 N=1,4                                                       STEP      16
      DO 15 K=2,KHM                                                     STEP      17
      DO 15 J=2,JM                                                      STEP      18
   15 RESID = RESID + S(J,K,N)**2                                       STEP      19
      RESID = RESID/( (JM-1)*(KHM-1))                                   STEP      20
      RESID = SQRT(RESID)/( DT + 00005)                                 STEP      21
C                                                                       STEP      22
C      CENTRAL SCHEME WITH UPWIND                                       STEP      23
      DO 10 K=2,KM                                                      STEP      24
      CALL FILTRX(K,1,JMAX)                                             STEP      25
C   S   MUST BE ZERO ON B C                                             STEP      26
      CALL BTRI(2,JM)                                                   STEP      27
      DO 11 J=2,JM                                                      STEP      28
      DO 11 N=1,4                                                       STEP      29
   11 S(J,K,N) = F(J,N)                                                 STEP      30
   10 CONTINUE                                                          STEP      31
      DO 20 J=2,JM                                                      STEP      32
      CALL FILTRY(J,1,KMAX)                                             STEP      33
      CALL BTRI(2,KM)                                                   STEP      34
      DO 21 K=2,KM                                                      STEP      35
      DO 21 N=1,4                                                       STEP      36
   21 Q(J,K,N) = F(K,N) + Q(J,K,N)                                      STEP      37
   20 CONTINUE                                                          STEP      38
      GO TO 9                                                           STEP      39
C                                                                       STEP      40
C                                                                       STEP      41
    9 CONTINUE                                                          STEP      42
      WRITE(6,101) RESID                                                INLET    415
  101 FORMAT(1X,*RESIDUAL=*,E12.5)                                      INLET    416
      RETURN                                                            STEP      43
      END                                                               STEP      44
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      SUBROUTINE FILTRX(K,J1,J2)                                        FILTRX     2
      COMMON/BASE/NMAX,JMAX,KMAX,JM,KM,DT,FSMACH,EPS,GAMMA,GAMI,SMU,HD, BASE       2
     1 FV(4),FD(4),RE,PI,Z(80),NP,METH,ALPHA,INVIS,IPLOT,RESID          BASE       3
     2, CNBR,IREGO,ISTORE,NF,NB,JTAIL1,JTAIL2,IOSCIL,XOSCIL,IUPWND      BASE       4
     3 , LAMIN,SMUIM,VARA,VARB,VARC                                     BASE       5
      COMMON/VARS/ Q(78,36,4),XY(78,36,4),P(78,36)                      VARS       2
      COMMON/LARGE/X(78,36),Y(78,36),S(78,36,4),XIT(78,36),ETT(78,36)   VARS       3
      LEVEL 2,X,Y,S,XIT,ETT                                             VARS       4
      COMMON/ARRAY/ ALPX(80),ALPY(80),BETX(80),BETY(80)                 FILTRX     5
      COMMON/BTRID/ A(80,4,4),B(80,4,4),C(80,4,4),D(80,4,4),DU(80,4,4), FILTRX     6
     1   F(80,4)                                                        FILTRX     7
      COMMON/UPWND/ EB(80),EF(80)                                       FILTRX     8
      DIMENSION E(4,4)                                                  FILTRX     9
C****THIS SUBROUTINE MAKES THE FIRST IMPLICVIT SWEEP IN THE XI-DIR      INLET    417
C      ALSO APPLIES  APPLIES THE PSEUDO-IMPLICUT SMOOTHING IN TH XI-DIR INLET    418
      JA = J1+1                                                         FILTRX    10
      JB = J2 -1                                                        FILTRX    11
      DO 10 J=J1,J2                                                     FILTRX    12
      R1 = XY(J,K,1)*HD                                                 FILTRX    13
      R2 = XY(J,K,2)*HD                                                 FILTRX    14
      CALL AMATRX(E,J,K,R1,R2)                                          FILTRX    15
      IF( IUPWND GT 0 ) GO TO 49                                        FILTRX    16
C      COMPUTE SWITCHING PARAMETERS FO R UPWIND DIFFERENCING            FILTRX    17
      RINV = 1 /Q(J,K,1)                                                FILTRX    18
      U = XIT(J,K) + RINV*( XY(J,K,1)*Q(J,K,2)+ XY(J,K,2)*Q(J,K,3))     FILTRX    19
      PP= GAMI*( Q(J,K,4) - 5*(Q(J,K,2)**2+Q(J,K,3)**2)*RINV)           FILTRX    20
      CC = SQRT( GAMMA*PP*( XY(J,K,1)**2+XY(J,K,2)**2)*RINV)            FILTRX    21
      UMC = U - CC                                                      FILTRX    22
      UPC = U + CC                                                      FILTRX    23
      EB(J) = .5 + SIGN( 5,UMC)                                         FILTRX    24
      EF(J) = .5 - SIGN( 5,UPC)                                         FILTRX    25
   49 CONTINUE                                                          FILTRX    26
      DO 11 N=1,4                                                       FILTRX    27
      DO 12 M=1,4                                                       FILTRX    28
   12 D(J,N,M) = E(N,M)                                                 FILTRX    29
   11 D(J,N,N) = D(J,N,N) + HD*XIT(J,K)                                 FILTRX    30
   10 CONTINUE                                                          FILTRX    31
      IF( IUPWND.LE.0) CALL SHCKOP(2,JM)                                FILTRX    32
      DO 20 J=JA,J:                                                     FILTRX    33
      DO 21 N=1,4                                                       FILTRX    34
      DO 22 M=1,4                                                       FILTRX    35
      A(J,N,M) = -(1  +EB(J-1) -EF(J))*D(J-1,N,M)                       FILTRX    36
      B(J,N,M) = ( EB(J-1) + EB(J) - EF(J) -EF(J+1))*D(J,N,M)           FILTRX    37
      C(J,N,M) = (1  - EB(J) + EF(J+1))*D(J+1,N,M)                      FILTRX    38
   22 CONTINUE                                                          FILTRX    39
      F(J,N) = S(J,K,N)                                                 FILTRX    40
      A(J,N,N) = A(J,N,N) + EB(J-1)* 5                                  FILTRX    41
      B(J,N,N) = B(J,N,N) +1  -  5*( EB(J) + EF(J))                     FILTRX    42
      C(J,N,N) = C(J,N,N) + EF(J+1)* 5                                  FILTRX    43
      EP=SMUIM/P(J,K)                                                   FILTRX    44
      A(J,N,N) = A(J,N,N) - EP*P(J-1,K)                                 FILTRX    45
      B(J,N,N) = B(J,N,N) +2 *SMUIM                                     FILTRX    46
      C(J,N,N) = C(J,N,N) -EP*P(J+1,K)                                  FILTRX    47
   21 CONTINUE                                                          FILTRX    48
   20 CONTINUE                                                          FILTRX    49
      RETURN                                                            FILTRX    50
      END                                                               FILTRX    51
```

```
      SUBROUTINE FILTRY(J,K1,K2)                                         FILTRY     2
      COMMON/BASE/NMAX,JMAX,KMAX,JM,KM,DT,FSMACH,EPS,GAMMA,GAMI,SMU,HD,  BASE       2
     1 FV(4),FD(4),RE,PI,Z(80),NP,METH,ALPHA,INVIS,IPLOT,RESID           BASE       3
     2, CNBR,IREGO,ISTORE,NF,NB,JTAIL1,JTAIL2,IOSCIL,XOSCIL,IUPWND       BASE       4
     3 , LAMIN,SMUIM,VARA,VARB,VARC                                      BASE       5
      COMMON/VARS/ Q(78,36,4),XY(78,36,4),P(78,36)                       VARS       2
      COMMON/LARGE/X(78,36),Y(78,36),S(78,36,4),XIT(78,36),ETT(78,36)    VARS       3
      LEVEL 2,X,Y,S,XIT,ETT                                              VARS       4
      COMMON/ARRAY/ ALPX(80),ALPY(80),BETX(80),BETY(80)                  FILTRY     5
      COMMON/BTRID/ A(80,4,4),B(80,4,4),C(80,4,4),D(80,4,4),DU(80,4,4),  FILTRY     6
     1  F(80,4)                                                          FILTRY     7
      DIMENSION E(4,4)                                                   FILTRY     8
      KA = K1 +1                                                         FILTRY     9
C****THIS SUBROUTINE MAKES THE SECOND IMPLICIT SWEEP IN THE ETA-DIR.      INLET    419
C    ALSO APPLIES PSEUDO -IMPLICIT SMOOTHING IN THIS DIR.                 INLET    420
      KB = K2 -1                                                         FILTRY    10
      DO 10 K=K1,K2                                                      FILTRY    11
      R1 = XY(J,K,3) *HD                                                 FILTRY    12
      R2 = XY(J,K,4)*HD                                                  FILTRY    13
      CALL AMATRX(E,J,K,R1,R2)                                           FILTRY    14
      DO 11 N=1,4                                                        FILTRY    15
      DO 12 M=1,4                                                        FILTRY    16
   12 D(K,N,M) = E(N,M)                                                  FILTRY    17
   11 D(K,N,N) = D(K,N,N) + HD*ETT(J,K)                                  FILTRY    18
   10 CONTINUE                                                           FILTRY    19
      DO 20 K=KA,KB                                                      FILTRY    20
      DO 21 N=1,4                                                        FILTRY    21.
      DO 22 M=1,4                                                        FILTRY    22
      A(K,N,M) = - D(K-1,N,M)                                            FILTRY    23
      B(K,N,M) = 0.                                                      FILTRY    24
   22 C(K,N,M) = D(K+1,N,M)                                              FILTRY    25
      F(K,N) = S(J,K,N)                                                  FILTRY    26
      EP = SMUIM/P(J,K)                                                  FILTRY    27
      A(K,N,N) = A(K,N,N) -EP*P(J,K-1)                                   FILTRY    28
      B(K,N,N) = B(K,N,N) +1. +2 *SMUIM                                  FILTRY    29
      C(K,N,N) = C(K,N,N) -EP*P(J,K+1)                                   FILTRY    30
   21 CONTINUE                                                           FILTRY    31
   20 CONTINUE                                                           FILTRY    32
      IF( INVIS .GT 0) CALL VISMAT(J)                                    FILTRY    33
      RETURN                                                             FILTRY    34
      END                                                                FILTRY    35
```

```
      SUBROUTINE AMATRX(A,J,K,R1,R2)                                    AMATRX    2
      COMMON/BASE/NMAX,JMAX,KMAX,JM,KM,DT,FSMACH,EPS,GAMMA,GAMI,SMU,HO, BASE      2
     1 FV(4),FD(4),RE,PI,Z(80),NP,METH,ALPHA,INVIS,IPLOT,RESID           BASE      3
     2. CNPR,IREGO,ISTORE,NF,NB,JTAIL1,JTAIL2,IOSCIL,XOSCIL,IUPWND       BASE      4
     3 , LAMIN,SMUIM,VARA,VARB,VARC                                     BASE      5
      COMMON/VARS/ Q(78,36,4),XY(78,36,4),P(78,36)                      VARS      2
      COMMON/LARGE/X(78,36),Y(78,36),S(78,36,4),XIT(78,36),ETT(78,36)   VARS      3
      LEVEL 2,X,Y,S,XIT,ETT                                             VARS      4
      DIMENSION A( ,4)                                                  AMATRX    5
C****THIS SUBROUTINE CALCULATES THE JACOBIAN MATRICES USED THE LINEARIZA INLET   421
      GAMI = GAMMA -1                                                   AMATRX    6
      RR = 1  / Q(J,K,1)                                                AMATRX    7
      U = Q(J,K,2)*RR                                                   AMATRX    8
      V = Q(J,K,3)*RR                                                   AMATRX    9
      UT = U*U + V*V                                                    AMATRX   10
      C1 = GAMI *UT* 5                                                  AMATRX   11
      C2 = Q(J,K,4)*RR*GAMMA                                            AMATRX   12
      A(1,1) = 0                                                        AMATRX   13
      A(1,2) = R1                                                       AMATRX   14
      A(1,3) = R2                                                       AMATRX   15
      A(1,4) = 0                                                        AMATRX   16
      A(2,1) = ( -U*U +C1)*R1   -U*V*R2                                 AMATRX   17
      A(2,2) = - ( GAMMA -3 )*U*R1 + V *R2                              AMATRX   18
      A(2,3) = - GAMI*V*R1 + U*R2                                       AMATRX   19
      A(2,4) = GAMI*R1                                                  AMATRX   20
      A(3,1) = - U*V*R1 + ( -V*V +C1)*R2                                AMATRX   21
       A(3,2) = V*R1 - GAMI*U*R2                                        AMATRX   22
      A(3,3) = U*R1 +(3 -GAMMA)*V*R2                                    AMATRX   23
      A(3,4) = GAMI*R2                                                  AMATRX   24
      QS = U*R1 + V*R2                                                  AMATRX   25
      A(4,1) = ( - C2 + C1*2 )*QS                                       AMATRX   26
      A(4,2) = ( C2 -C1)*R1 - GAMI*U*QS                                 AMATRX   27
      A(4,3) = ( C2 - C1)*R2 - GAMI*V*QS                                AMATRX   28
      A(4,4) = GAMMA*QS                                                 AMATRX   29
      RETURN                                                            AMATRX   30
      END                                                               AMATRX   31
```

```
            SUBROUTINE MAP (IM,JM,U)                                    MAP          2
            DIMENSION U(78,36), NN(80)                                  MAP          3
            DATA ISL,IBL/1H/,1H /                                       MAP          4
      C****THIS SUBROUTINE MAPS THE QUANTITY U (TRANSFORMATION JACOBIAN) NORMA INLET  422
      C    ON THE MAX AND MIN VALUES                                    INLET      423
      C     ESTABLISH MAX AND MIN                                       MAP          5
            VARMX = 0                                                   MAP          6
            VARMN = 1000000.                                            MAP          7
            DO 10 J=1,JM                                                MAP          8
            DO 10 I=1,IM                                                MAP          9
            VTEST = ABS(U(I,J))                                         MAP         10
            IF(VTEST-VARMX) 12,12,13                                    MAP         11
      13    VARMX = VTEST                                               MAP         12
         12 IF( VTEST - VARMN)14,10,10                                  MAP         13
      14    VARMN = VTEST                                               MAP         14
      10    CONTINUE                                                    MAP         15
      C                                                                 MAP         16
            DEL = (VARMX-VARMN)                                         MAP         17
            IF(DEL-.0001) 99,11,11                                      MAP         18
      11    DEL = .1001*DEL                                             MAP         19
      C                                                                 MAP         20
            DO 15 JJ=1,JM                                               MAP         21
            J = JM+1-JJ                                                 MAP         22
            DO 16 I=1,IM                                                MAP         23
            AVAR = ABS(U(I,J))-VARMN                                    MAP         24
      16    NN(I) = AVAR/DEL                                            MAP         25
            WRITE(6,100) (NN(I),I=1,IM )                                MAP         26
      100   FORMAT(1H ,119I1)                                           MAP         27
            DO 17 I=1,IM                                                MAP         28
            NN(I) = IBL                                                 MAP         29
         17 IF(U(I,J) LT 0 0) NN(I) = ISL                               MAP         30
            WRITE(6,101) ( NN(I), I=1,IM )                              MAP         31
        101 FORMAT(1H+,119A1)                                           MAP         32
      15    CONTINUE                                                    MAP         33
      99    RETURN                                                      MAP         34
            END                                                         MAP         35
```

```
      SUBROUTINE VISRHS                                                 VISRHS     2
      COMMON/BASE/NMAX,JMAX,KMAX,JM,KM,DT,FSMACH,EPS,GAMMA,GAMI,SMU,HD,  BASE       2
     1 FV(4),FD(4),RE,PI,Z(80),NP,METH,ALPHA,INVIS,IPLOT,RESID          BASE       3
     2, CNBR,IREGO,ISTORE,NF,NB,JTAIL1,JTAIL2,IOSCIL,XOSCIL,IUPWND      BASE       4
     3 , LAMIN,SMUIM,VARA,VARB,VARC                                     BASE       5
      COMMON/VARS/ Q(78,36,4),XY(78,36,4),P(78,36)                      VARS       2
      COMMON/LARGE/X(78,36),Y(78,36),S(78,36,4),XIT(78,36),ETT(78,36)   VARS       3
      LEVEL 2,X,Y,S,XIT,ETT                                             VARS       4
      COMMON/BTRID/ A(80,4,4),B(80,4,4),C(80,4,4),D(80,4,4),DU(80,4,4), VISRHS     5
     1   F(80,4)                                                        VISRHS     6
      COMMON/ VISC/ U(80),V(80),C1(80),C2(80),C3(80),C4(80),TC(80)      VISRHS     7
      COMMON/MUTUR/ TURMU(78,36),SNOR(80),DELST(80),TMO(80),TM1(80)     VISRHS     8
      COMMON/ KINMU/ FMU(80)                                            VISRHS     9
      DATA FMU /80*1 0/                                                 VISRHS    10
      DATA PR,PRTR,FRT/ 72, 8,1 333333/                                 VISRHS    11
      DATA TURMU/2808*0 /                                               VISRHS    12
C****THIS SUBROUTINE CALCULATES THE VISCOUS TERMS IN THE RHS OF THE FINI INLET    424
C    EQUATION IN DELTA FORM  ALGORITHM                                  INLET    425
      HRE = .5*DT/RE                                                    VISRHS    13
      GPR = GAMMA/PR                                                    VISRHS    14
      IF( LAMIN  GE 0) CALL MUTUR                                       VISRHS    15
C                                                                       VISRHS    16
      DO 30 J=2,JM                                                      VISRHS    17
      CALL MUKIN(J)                                                     VISRHS    18
C                                                                       VISRHS    19
      DO 31 K=1,KMAX                                                    VISRHS    20
      RR = 1./Q(J,K,1)                                                  VISRHS    21
      EXS = XY(J,K,3)**2                                                VISRHS    22
      EYS = XY(J,K,4)**2                                                VISRHS    23
      EXY = XY(J,K,3)*XY(J,K,4)* 3333333                                VISRHS    24
      TURM = TURMU(J,K)                                                 VISRHS    25
      VNU = FMU(K) + TURM                                               VISRHS    26
      GKAP = FMU(K) + PRTR*TURM                                         VISRHS    27
      U(K) = Q(J,K,2)*RR                                                VISRHS    28
      V(K) = Q(J,K,3)*RR                                                VISRHS    29
      DJAC = HRE/P(J,K)                                                 VISRHS    30
      VNUJAC = VNU*DJAC                                                 VISRHS    31
      C1(K) = VNUJAC*( FRT*EXS + EYS)                                   VISRHS    32
      C2(K) = VNUJAC*EXY                                                VISRHS    33
      C3(K) = VNUJAC*( EXS + FRT*EYS)                                   VISRHS    34
      C4(K) = GPR*DJAC*( EXS + EYS)*GKAP                                VISRHS    35
      TC(K) = Q(J,K,4)*RR - 5*( U(K)**2 + V(K)**2)                      VISRHS    36
   31 CONTINUE                                                          VISRHS    37
C                                                                       VISRHS    38
      K = 1                                                             VISRHS    39
      KP = K +1                                                         VISRHS    40
      S1 = ( C1(KP)+C1(K))*( U(KP) -U(K))                               VISRHS    41
      SS = C2(KP) + C2(K)                                               VISRHS    42
      S2 = SS*( V(KP) - V(K))                                           VISRHS    43
      S3 = SS*( U(KP) - U(K))                                           VISRHS    44
      S4 = ( C3(KP) + C3(K))*( V(KP) - V(K))                            VISRHS    45
      R2 = S1 + S2                                                      VISRHS    46
      R3 = S3 + S4                                                      VISRHS    47
      R4 = ( C4(KP) + C4(K))*( TC(KP) - TC(K)) + 5*( S1*(U(KP)+U(K))    VISRHS    48
     1  + S4*( V(KP)+V(K))) + U(KP)*S2 + V(K)*S3                        VISRHS    49
      DO 32 K=2,KM                                                      VISRHS    50
      KP = K + 1                                                        VISRHS    51
```

```
      S1 = ( C1(KP)+C1(K))*( U(KP) -U(K))
      SS = C2(KP) + C2(K)
      S2 = SS*( V(KP) - V(K))
      S3 = SS*( U(KP) - U(K))
      S4 = ( C3(KP) + C3(K))*( V(KP) - V(K))
      F2 = S1 + S2
      F3 = S3 + S4
      F4 = ( C4(KP) + C4(K))*( TC(KP) - TC(K)) + .5*( S1*(U(KP)+U(K))
     1 + S4*( V(KP)+V(K))) + U(KP)*S2 + V(K)*S3
      F(K,1) = 0.
      F(K,2) = F2 - R2
      F(K,3) = F3 - R3
      F(K,4) = F4 - R4
      R2 = F2
      R3 = F3
      R4 = F4
   32 CONTINUE
C
      DO 33 K=2,KM
      DO 33 N=1,4
   33 S(J,K,N) = S(J,K,N) + F(K,N)
   30 CONTINUE
      RETURN
      END
```

```
      SUBROUTINE VISMAT(J)                                               VISMAT    2
      COMMON/BASE/NMAX,JMAX,KMAX,JM,KM,DT,FSMACH,EPS,GAMMA,GAMI,SMU,HD,  BASE      2
     1 FV(4),FD(4),RE,PI,Z(80),NP,METH,ALPHA,INVIS,IPLOT,RESID          BASE      3
     2, CNBR,IREGO,ISTORE,NF,NB,JTAIL1,JTAIL2,IOSCIL,XOSCIL,IUPWND       BASE      4
     3 , LAMIN,SMUIM,VARA,VARB,VARC                                      BASE      5
      COMMON/VARS/ Q(78,36,4),XY(78,36,4),P(78,36)                       VARS      2
      COMMON/LARGE/X(78,36),Y(78,36),S(78,36,4),XIT(78,36),ETT(78,36)    VARS      3
      LEVEL 2,X,Y,S,XIT,ETT                                              VARS      4
      COMMON/BTRID/ A(80,4,4),B(80,4,4),C(80,4,4),D(80,4,4),DU(80,4,4),  VISMAT    5
     1   F(80,4)                                                         VISMAT    6
      COMMON/ VISC/ U(80),V(80),C1(80),C2(80),C3(80),C4(80),TC(80)       VISMAT    7
      COMMON/MUTUR/ TURMU(78,36),SNOR(80),DELST(80),TMO(80),TM1(80)      VISMAT    8
      COMMON/ KINMU/ FMU(80)                                             VISMAT    9
      DIMENSION RR(80)                                                   VISMAT   10
C****CALCULATES THE JACOBIAN MATRICES FOR VISCOUS FLOW IN THE Y-SWEEP     INLET   426
C    OF THE INTEGRATION PROCESS                                          INLET   427
      DATA PR,PRTR,FRT/.72, 8,1 333333/                                  VISMAT   11
      CALL MUKIN(J)                                                      VISMAT   12
C                                                                        VISMAT   13
      HRE = HD/RE                                                        VISMAT   14
      GPR = GAMMA/PR                                                     VISMAT   15
      DO 10 K=1,KMAX                                                     VISMAT   16
      R1 = 1./Q(J,K,1)                                                   VISMAT   17
      EXS = XY(J,K,3)**2                                                 VISMAT   18
      EYS = XY(J,K,4)**2                                                 VISMAT   19
      EXY = XY(J,K,3)*XY(J,K,4)* 3333333                                 VISMAT   20
      TURM = TURMU(J,K)                                                  VISMAT   21
      VNU = FMU(K) + TURM                                                VISMAT   22
      GKAP = FMU(K) + PRTR*TURM                                          VISMAT   23
      DJAC = HRE/P(J,K)                                                  VISMAT   24
      VNUJAC = VNU*DJAC                                                  VISMAT   25
      C1(K) = VNUJAC*( FRT*EXS + EYS)                                    VISMAT   26
                                                                         VISMAT   27
      C1(K) = VNUJAC*( FRT*EXS + EYS)                                    VISMAT   28
      C2(K) = VNUJAC*EXY                                                 VISMAT   29
      C3(K) = VNUJAC*( EXS + FRT*EYS)                                    VISMAT   30
      C4(K) = GPR*DJAC*( EXS + EYS)*GKAP                                 VISMAT   31
      RR(K) = R1                                                         VISMAT   32
      U(K) = R1*Q(J,K,2)                                                 VISMAT   33
      V(K) = R1*Q(J,K,3)                                                 VISMAT   34
      TC(K) = Q(J,K,4)*R1 - ( U(K)**2 + V(K)**2)                         VISMAT   35
   10 CONTINUE                                                           VISMAT   36
      DO 20 K=2,KMAX                                                     VISMAT   37
      KR = K -1                                                          VISMAT   38
      CC1 = C1(KR) + C1(K)                                               VISMAT   39
      CC2 = C2(KR)+ C2(K)                                                VISMAT   40
      CC3 =  C3(KR)+ C3(K)                                               VISMAT   41
      CC4 = C4(KR)+ C4(K)                                                VISMAT   42
      D(K,2,1) = - ( CC1*U(KR) + CC2*V(KR)) *RR(KR)                      VISMAT   43
      DU(K,2,1) = -( CC1*U(K) + CC2*V(K))*RR(K)                          VISMAT   44
      D(K,2,2) = CC1*RR(KR)                                              VISMAT   45
      DU(K,2,2) = CC1*RR(K)                                              VISMAT   46
      D(K,2,3) = CC2*RR(KR)                                              VISMAT   47
      DU(K,2,3) = CC2*RR(K)                                              VISMAT   48
      D(K,2,4) = 0                                                       VISMAT   49
      DU(K,2,4) = 0                                                      VISMAT   50
      D(K,3,1) = - ( CC2*U(KR) + CC3*V(KR))*RR(KR)                       VISMAT   51
```

```
      DU(K,3,1) = - ( CC2*U(K) + CC3*V(K))*RR(K)                        VISMAT   52
      D(K,3,2) = CC2*RR(KR)                                             VISMAT   53
      DU(K,3,2) = CC2*RR(K)                                             VISMAT   54
      D(K,3,3) = CC3*RR(KR)                                             VISMAT   55
      DU(K,3,3) = CC3*RR(K)                                             VISMAT   56
      D(K,3,4) = 0                                                      VISMAT   57
      DU(K,3,4) = 0.                                                    VISMAT   58
      D(K,4,1) = -( CC4*TC(KR) +CC1*U(KR)**2 +2.*CC2*U(KR)*V(KR) +      VISMAT   59
     1   CC3*V(KR)**2)*RR(KR)                                           VISMAT   60
      DU(K,4,1) = - (CC4*TC(K) + CC1*U(K)**2 +2 *CC2*U(K)*V(K) +        VISMAT   61
     1  CC3*V(K)**2) *RR(K)                                             VISMAT   62
      D(K,4,2) = -CC4*U(KR)*RR(KR) - D(K,2,1)                           VISMAT   63
      DU(K,4,2) = -CC4*U(K)*RR(K) - DU(K,2,1)                           VISMAT   64
      D(K,4,3) = -CC4*V(KR)*RR(KR) - D(K,3,1)                           VISMAT   65
      DU(K,4,3)= -CC4*V(K)*RR(K) -DU(K,3,1)                             VISMAT   66
      D(K,4,4) = CC4*RR(KR)                                             VISMAT   67
      DU(K,4,4) = CC4 *RR(K)                                            VISMAT   68
   20 CONTINUE                                                          VISMAT   69
      DO 30 K=2,KM                                                      VISMAT   70
      KP = K+1                                                          VISMAT   71
      DO 31 N=2,4                                                       VISMAT   72
      DO 31 M=1,4                                                       VISMAT   73
      A(K,N,M) = A(K,N,M) - D(K,N,M)                                    VISMAT   74
      B(K,N,M) = B(K ,N,M)   +D(KP,N,M) +DU(K,N,M)                      VISMAT   75
      C(K,N,M) = C(K,N,M) - DU(KP,N,M)                                  VISMAT   76
   31 CONTINUE                                                          VISMAT   77
   30 CONTINUE                                                          VISMAT   78
      RETURN                                                            VISMAT   79
      END                                                               VISMAT   80
```

```
      SUBROUTINE EIGEN(N)                                                   INLET   428
      COMMON/BASE/NMAX,JMAX,KMAX,JM,KM,DT,FSMACH,EPS,GAMMA,GAMI,SMU,HD,     BASE      2
     1 FV(4),FD(4),RE,PI,Z(80),NP,METH,ALPHA,INVIS,IPLOT,RESID              BASE      3
     2, CNBR,IREGO,ISTOPE,NF,NB,JTAIL1,JTAIL2,IOSCIL,XOSCIL,IUPWND          BASE      4
     3 , LAMIN,SMUIM,VARA,VARB,VARC                                         BASE      5
      COMMON/VARS/ Q(78,36,4),XY(78,36,4),P(78,36)                          VARS      2
      COMMON/LARGE/X(78,36),Y(78,36),S(78,36,4),XIT(78,36),ETT(78,36)       VARS      3
      LEVEL 2,X,Y,S,XIT,ETT                                                 VARS      4
      JT = 1                                                                EIGEN     5
C****THIS SUBROUTINE CALCULATES THE EIGENVALUES OF K1*A+K2*B  TO FIND       INLET   429
C     ALLOWABLE TIME STEP FOR GIVEN COURANT NUMBER                          INLET   430
      KT = 1                                                                EIGEN     6
      SIGMAX = 0.                                                           EIGEN     7
      DO 1 K=2,KM                                                           EIGEN     8
      DO 1 J=2,JM                                                           EIGEN     9
      RI = 1./Q(J,K,1)                                                      EIGEN    10
      U = Q(J,K,2)*RI                                                       EIGEN    11
      V = Q(J,K,3)*RI                                                       EIGEN    12
      ROOT=GAMI*GAMMA*(Q(J,K,4)*RI-0.5*(U*U+V*V))                           INLET   431
      IF(ROOT .LT. 0.0)ROOT=0.0                                             INLET   432
      SNDSP=SQRT(ROOT)                                                      INLET   433
      SIGA=ABS(U*XY(J,K,1)+V*XY(J,K,2)) +SNDSP*SQRT(XY(J,K,1)**2+           EIGEN    14
     1 XY(J,K,2)**2)                                                        EIGEN    15
      SIGB = ABS(U*XY(J,K,3) +V*XY(J,K,4)) + SNDSP*SQRT(XY(J,K,3)**2        EIGEN    16
     1 + XY(J,K,4)**2)                                                      EIGEN    17
C     NOTE XIT AND ETT NOT IN CALCULATION                                   EIGEN    18
      SIGAB = AMAX1(SIGA,SIGB)                                              EIGEN    19
      IF( SIGAB - SIGMAX)1,1,3                                              EIGEN    20
    3 JT = J                                                                EIGEN    21
      KT = K                                                                EIGEN    22
      SIGMAX = SIGAB                                                        EIGEN    23
    1 CONTINUE                                                              EIGEN    24
      NNCR=10000                                                            INLET   434
      IF(N.GE.NNCR)CNBR= 9                                                  INLET   435
      DT=CNBR/SIGMAX                                                        INLET   436
      HD=.5*DT                                                              INLET   437
      SMU=DT*12.                                                            INLET   438
      SMUIM=3.2*SMU                                                         INLET   439
      WRITE(6,600)JT,KT,DT,CNBR,       SMU,SMUIM                            INLET   440
  600 FORMAT(1H ,29H J,K,DT,CNBR,       SMU,SMUIMP,2I5,5F15.10)             INLET   441
      CNBRI=DT*SIGMAX                                                       INLET   442
      WRITE(6,601)JT,KT,CNBRI                                               INLET   443
  601 FORMAT(1X,*JT,KT,CNBRI*,2I5,E12.5)                                    INLET   444
      RETURN                                                                EIGEN    28
      END                                                                   EIGEN    29
```

```
      SUBROUTINE CPPLOT                                                CPPLOT     2
      COMMON/BASE/NMAX,JMAX,KMAX,JM,KM,DT,FSMACH,EPS,GAMMA,GAMI,SMU,HD, BASE       2
     1 FV(4),FD(4),RE,PI,Z(80),NP,METH,ALPHA,INVIS,IPLOT,RESID          BASE       3
     2, CNBR,IREGO,ISTORE,NF,NB,JTAIL1,JTAIL2,IOSCIL,XOSCIL,IUPWND      BASE       4
     3 , LAMIN,SMUIM,VARA,VARB,VARC                                     BASE       5
      COMMON/VARS/ Q(78,36,4),XY(78,36,4),P(78,36)                      VARS       2
      COMMON/LARGE/X(78,36),Y(78,36),S(78,36,4),XIT(78,36),ETT(78,36)   VARS       3
      LEVEL 2,X,Y,S,XIT,ETT                                             VARS       4
      DIMENSION XX(120)                                                 CPPLOT     5
C****THIS SUBROUTINE PLOTS THE NORMALIZED PRESSURE COEFF                INLET    445
      CPMAX =-1000000                                                   CPPLOT     6
      CPMIN = 1000000                                                   CPPLOT     7
      DO 10  J = JTAIL1,JTAIL2                                          CPPLOT     8
      JJ=  J + 1 - JTAIL1                                               CPPLOT     9
      K = 1                                                             CPPLOT    10
      PP = P(J,K)*GAMMA*GAMI*(Q(J,K,4)-.5*(Q(J,K,2)**2+Q(J,K,3)**2)     CPPLOT    11
     1  /Q(J,K,1))                                                      CPPLOT    12
C       CHANGE SIGN OF CP TO PLOT NEGATIVE UPWARD                       CPPLOT    13
      CP = -(PP-1.)/( .5*GAMMA*FSMACH**2)                               CPPLOT    14
      IF( CP .GT. CPMAX) CPMAX = CP                                     CPPLOT    15
      IF( CP .LT. CPMIN) CPMIN = CP                                     CPPLOT    16
      XX(JJ) = X(J,K) + XOSCIL                                          CPPLOT    17
   10 Z(JJ)=CP                                                          CPPLOT    18
      IIMIN = 11.2*CPMIN                                                CPPLOT    19
      IIMAX = 11.2*CPMAX                                                CPPLOT    20
      CPMAX = IIMAX* 1                                                  CPPLOT    21
      CPMIN = IIMIN* 1                                                  CPPLOT    22
      CPT = 1.8                                                         CPPLOT    23
      CPN = 1.2 + CPMIN                                                 CPPLOT    24
      IF( CPN.GT.0.) CPMIN = -1.2                                       CPPLOT    25
      IF(CPMAX.LT.CPT) CPMAX = CPT                                      CPPLOT    26
      CALL AXIS( 0.,1.,CPMIN,CPMAX,10,10)                               CPPLOT    27
      CALL LABEL(1HX,1,2HCP,2)                                          CPPLOT    28
      JNBR = JTAIL2 - JTAIL1 +1                                         CPPLOT    29
      CALL PLOT(XX,Z,JNBR,0)                                            CPPLOT    30
C     PLOT AIRFOIL ON BOTTOM OF PLOT                                    CPPLOT    31
      YMIN = 1000                                                       CPPLOT    32
      DO 20 J = JTAIL1,JTAIL2                                           CPPLOT    33
      JJ = J + 1 - JTAIL1                                               CPPLOT    34
      Z(JJ) = Y(J,1)                                                    CPPLOT    35
      IF( Z(JJ) .LT. YMIN) YMIN = Z(JJ)                                 CPPLOT    36
   20 CONTINUE                                                          CPPLOT    37
      DO 22 J = JTAIL1, JTAIL2                                          CPPLOT    38
C SCALE Y TO GIVE TRUE AIRFOIL SHAPE ON STRETCHED COOR...CHORD IS 1     CPPLOT    39
      JJ = J + 1 - JTAIL1                                               CPPLOT    40
   22 Z(JJ)= CPMIN +(Z(JJ)-YMIN)*( CPMAX-CPMIN)                         CPPLOT    41
      CALL PLOT(XX,Z,JNBR,0)                                            CPPLOT    42
      RETURN                                                            CPPLOT    43
      END                                                               CPPLOT    44
```

```
          SUBROUTINE  CLCD(NSCAL)                                          CLCD      2
          COMMON/BASE/NMAX,JMAX,KMAX,JM,KM,DT,FSMACH,EPS,GAMMA,GAMI,SMU,HD,  BASE      2
         1  FV(4),FD(4),RE,PI,Z(80),NP,METH,ALPHA,INVIS,IPLOT,RESID        BASE      3
         2, CNBR,IREGO,ISTORE,NF,NB,JTAIL1,JTAIL2,IOSCIL,XOSCIL,IUPWND     BASE      4
         3 , LAMIN,SMUIM,VARA,VARB,VARC                                    BASE      5
          COMMON/VARS/ Q(78,36,4),XY(78,36,4),P(78,36)                     VARS      2
          COMMON/LARGE/X(78,36),Y(78,36),S(78,36,4),XIT(78,36),ETT(78,36)  VARS      3
          LEVEL 2,X,Y,S,XIT,ETT                                            VARS      4
C                                                                          CLCD      5
C   ROUTINE SUPPLIES FORCE AND MOMENT COEFFS  ON AIRFOIL SURFACE           CLCD      6
          CPC = 2./(GAMMA*FSMACH**2)                                       CLCD      7
C    COMPUTE CP AT GRID POINTS AND STORE IN Z ARRAY                        CLCD      8
          DO 10 J=JTAIL1,JTAIL2                                            CLCD      9
          PP = GAMI*( Q(J,1,4)-.5*(Q(J,1,2)**2+Q(J,1,3)**2)/Q(J,1,1))      CLCD     10
          IF( NSCAL .EQ.0) PP = PP*P(J,1)                                  CLCD     11
       10 Z(J) =  (PP*GAMMA -1.)*CPC                                       CLCD     12
C         COMPUTE NORMAL FORCE COEFFICIENT AND CHORD DIRECTED FORCE COEFF  CLCD     13
C    CHORD TAKEN AS ONE IN ALL CASES                                       CLCD     14
          CN = 0                                                           CLCD     15
          CC = 0                                                           CLCD     16
          CMLE = 0                                                         CLCD     17
          SREF=3.056                                                       INLET   446
          ALREF=3.056                                                      INLET   447
          JTP=35                                                           INLET   448
          DO 11 J=JTP,JTAIL2                                               CLCD     19
          CPAV = ( Z(J) + Z(J-1))*.5                                       CLCD     20
          CN=CN-CPAV*(X(J,1)-X(J-1,1))/SREF                                INLET   449
          CC=CC+CPAV*(Y(J,1)-Y(J-1,1))/SREF                                INLET   450
          CMLE=CMLE+CPAV*(X(J,1)+X(J-1,1))*0.5*(X(J,1)-X(J-1,1)) /SREF/ALREF INLET 451
       11 CONTINUE                                                         CLCD     24
          CL = CN*COS(ALPHA*PI/180.)-CC*SIN(ALPHA*PI/180.)                 CLCD     25
          CD = CN*SIN(ALPHA*PI/180.) + CC*COS(ALPHA*PI/180.)               CLCD     26
          CMQC = CMLE + .25*CN                                             CLCD     27
          WRITE(6,600)                                                     CLCD     28
      600 FORMAT(1HO, 48H FORCE AND MOMENT COEFFS . CN,CC,CMLE,CMQC,CL,CD ) CLCD    29
          WRITE(6,602) CN,CC,CMLE,CMQC,CL,CD                               CLCD     30
      602 FORMAT(1HO, 6F16.6)                                              CLCD     31
          RETURN                                                           CLCD     32
          END                                                              CLCD     33
```

```
               SUBROUTINE SHCKOP(IA,IB)                                  SHCKOP     2
               COMMON/UPWND/ EB(80),EF(80)                               SHCKOP     3
          C                                                              SHCKOP     4
          C     SUBSONIC FREE STREAM ASSUMED                             SHCKOP     5
          C                                                              SHCKOP     6
          C     ADJUST SHOCK POINT OPERATORS                             SHCKOP     7
               DO 10 I=IA,IB                                             SHCKOP     8
               EB(I) = EB(I)*EB(I+1)                                     SHCKOP     9
               M = IA + IB - I                                           SHCKOP    10
            10 EF(M) = EF(M)*EF(M-1)                                     SHCKOP    11
          C     TURN OFF MOST EPS FLAG SAVE JUST BEFORE SHOCK            SHCKOP    12
               IFLG = 0                                                  SHCKOP    13
               DO 20 I=IA,IB                                             SHCKOP    14
               J = IA+IB -I                                              SHCKOP    15
               IF( EB(J)) 22,22,21                                       SHCKOP    16
            21 IFLG = IFLG +1                                            SHCKOP    17
               IF( IFLG GT 3  ) EB(J) = 0                                SHCKOP    18
               GO TO 20                                                  SHCKOP    19
            22 IFLG = 0                                                  SHCKOP    20
            20 CONTINUE                                                  SHCKOP    21
               RETURN                                                    SHCKOP    22
               END                                                       SHCKOP    23
```

```
      SUBROUTINE MUKIN(J)                                                  MUKIN     2
C****CALCULATES LAMINAR VISCOSITY VIA SUTHERLAND EQUATION                  INLET   452
      COMMON/IKI/JINPL                                                     INLET   453
      COMMON/BASE/NMAX,JMAX,KMAX,JM,KM,DT,FSMACH,EPS,GAMMA,GAMI,SMU,HD,    BASE      2
     1 FV(4),FD(4),RE,PI,Z(80),NP,METH,ALPHA,INVIS,IPLOT,RESID             BASE      3
     2, CNBR,IREGO,ISTORE,NF,NB,JTAIL1,JTAIL2,IOSCIL,XOSCIL,IUPWND         BASE      4
     3 , LAMIN,SMUIM,VARA,VARB,VARC                                        BASE      5
      COMMON/VARS/ Q(78,36,4),XY(78,36,4),P(78,36)                         VARS      2
      COMMON/LARGE/X(78,36),Y(78,36),S(78,36,4),XIT(78,36),ETT(78,36)      VARS      3
      LEVEL 2,X,Y,S,XIT,ETT                                                VARS      4
      COMMON/ KINMU/ FMU(80)                                               MUKIN     5
      DATA INIT/0/                                                         MUKIN     6
C                                                                          MUKIN     7
C     SUTHERLAND EQUATION                                                  MUKIN     8
      KEDGE=KMAX                                                           INLET   454
      IF(J GE JINPL)KEDGE=KMAX-3                                           INLET   455
      IF( INIT  GT  0) GO TO 9                                             MUKIN    10
    8 INIT = 10                                                            MUKIN    11
      TINF=560 /(1 +GAMI* 5*FSMACH**2)                                     INLET   456
      C2B = 198 6/TINF                                                     MUKIN    13
      C2BP = C2B + 1.                                                      MUKIN    14
    9 CONTINUE                                                             MUKIN    15
C                                                                          MUKIN    16
      DO 10 K=1,KEDGE                                                      MUKIN    17
      RINV = 1 /Q(J,K,1)                                                   MUKIN    18
      QSQR = ( Q(J,K,2)**2 + Q(J,K,3)**2)*RINV                             MUKIN    19
      TT = GAMMA*GAMI*( Q(J,K,4) - 5*QSQR)*RINV                            MUKIN    20
      IF(TT .LT  0 0)TT=0 0                                                INLET   457
      FMU(K) = C2BP*TT**1 5/( C2B+TT)                                      MUKIN    21
   10 CONTINUE                                                             MUKIN    22
      IF(J LT JINPL)GO TO 30                                               INLET   458
      KE = KEDGE +1                                                        MUKIN    23
      DO 20 K=KE,KMAX                                                      MUKIN    24
   20 FMU(K) = FMU(K-1)                                                    MUKIN    25
   30 CONTINUE                                                             INLET   459
      RETURN                                                               MUKIN    26
      END                                                                  MUKIN    27
```

```
            SUBROUTINE TRIB(A,B,C,X,F,NL,NU)                          TRIB      2
            DIMENSION A(2),B(2),C(2),X(2),F(2)                        TRIB      3
      C****INVERTS TRIDIAGONAL MATRICES                               INLET   460
            X(NL)=C(NL)/B(NL)                                         TRIB      4
            F(NL)=F(NL)/B(NL)                                         TRIB      5
            NLP1 = NL +1                                              TRIB      6
            DO 1 J=NLP1,NU                                            TRIB      7
            Z=1./(B(J)-A(J)*X(J-1))                                   TRIB      8
            X(J)=C(J)*Z                                               TRIB      9
          1 F(J)=(F(J)-A(J)*F(J-1))*Z                                 TRIB     10
            NUPNL=NU+NL                                               TRIB     11
            DO 2 J1=NLP1,NU                                           TRIB     12
            J=NUPNL-J1                                                TRIB     13
          2 F(J)=F(J)-X(J)*F(J+1)                                     TRIB     14
            RETURN                                                    TRIB     15
            END                                                       TRIB     16
```

```
      SUBROUTINE MUTUR                                                   MUTUR     2
      COMMON/BASE/NMAX,JMAX,KMAX,JM,KM,DT,FSMACH,EPS,GAMMA,GAMI,SMU,HD,  MUTUR     3
     1 FV(4),FD(4),RE,PI,Z(80),NP,METH,ALPHA,INVIS,IPLOT,RESID          MUTUR     4
     2, CNBR,IREGO,ISTORE,NF,NB,JTAIL1,JTAIL2,IOSCIL,XOSCIL,IUPWND       MUTUR     5
     3 , LAMIN,SMUIM,VARA,VARB,VARC                                      MUTUR     6
      COMMON/VARS/ Q(78,36,4),XY(78,36,4),P(78,36)                       MUTUR     7
      COMMON/LARGE/X(78,36),Y(78,36),S(78,36,4),XIT(78,36),ETT(78,36)    MUTUR     8
      LEVEL 2,X,Y,S,XIT,ETT                                              MUTUR     9
      COMMON/MUTUR/ TURMU(78,36),SNOR(80),DELST(80),TMO(80),TM1(80)      MUTUR    10
      COMMON /KINMU/ FMU(80)                                             MUTUR    11
      DIMENSION UU(80)                                                   MUTUR    12
      DIMENSION TAS(80)                                                  MUTUR    13
      DATA TURMU/ 2808*0 /                                               MUTUR    14
      DATA F27,KEDGE /1 6,25/                                            MUTUR    15
      DATA FK,FKK,YDUMF /0 4,0 0168,1 0/                                 MUTUR    16
      DATA FKLEB /0 3/                                                   MUTUR    17
C                                                                        MUTUR    18
C****THIS SUBROUTINE CALCULATES TURBULENT VISCOSITY FROM CEBECI-BALDWIN  INLET   461
C  NOTE P(J,K) STORES TRANSFORM JACOBIAN BY WHICH DEP VARS ARE DIVIDED   MUTUR    19
      DO 80 J = 2,JM                                                     MUTUR    20
C                                                                        MUTUR    21
C     FIND VORTICITY TAS(K) AND TOTAL VELOCITY UTOT(K)                   MUTUR    22
      DO 11 K = 1,KM                                                     MUTUR    23
      TAU = .5*(XY(J,K,4)+XY(J,K+1,4))*(Q(J,K+1,2)/Q(J,K+1,1)-Q(J,K,2)   MUTUR    24
     1 /Q(J,K,1))-0 5*(XY(J,K,3)+XY(J,K+1,3))*(Q(J,K+1,3)/Q(J,K+1,1)     MUTUR    25
     2 -Q(J,K,3)/Q(J,K,1))                                               MUTUR    26
      TAX1= 5*XY(J,K  ,2)*(Q(J+1,K  ,2)/Q(J+1,K  ,1) -Q(J-1,K  ,2)       MUTUR    27
     1 /Q(J-1,K,1))                                                      MUTUR    28
     2    - 5*XY(J,K  ,1)*(Q(J+1,K  ,3)/Q(J+1,K  ,1) -Q(J-1,K  ,3)       MUTUR    29
     1 /Q(J-1,K,1))                                                      MUTUR    30
      TAX2= .5*XY(J,K+1,2)*(Q(J+1,K+1,2)/Q(J+1,K+1,1) -Q(J-1,K+1,2)      MUTUR    31
     1 /Q(J-1,K+1,1))                                                    MUTUR    32
     2    - .5*XY(J,K+1,1)*(Q(J+1,K+1,3)/Q(J+1,K+1,1) -Q(J-1,K+1,3)      MUTUR    33
     1 /Q(J-1,K+1,1))                                                    MUTUR    34
      TAX1 = 0 5*(TAX1 + TAX2)                                           MUTUR    35
      TAS(K) = TAU + TAX1                                                MUTUR    36
      UTOT = Q(J,K,2)**2 + Q(J,K,3)**2                                   MUTUR    37
      UTOT = SQRT(UTOT)/Q(J,K,1)                                         MUTUR    38
      UU(K) = UTOT                                                       MUTUR    39
      TURMU(J,K) = 0 0                                                   MUTUR    40
   11 CONTINUE                                                           MUTUR    41
C                                                                        MUTUR    42
C      COMPUTE RA                                                        MUTUR    43
      K=1                                                                MUTUR    44
      WMU =  5*( FMU(1) + FMU(2))                                        MUTUR    45
      TAU = ABS(TAS(K))                                                  MUTUR    46
      RA = SQRT( RE*P(J,K)*Q(J,K,1)*TAU/WMU)/26                          MUTUR    47
      IF(J  LT. JTAIL1  OR  J  GT  JTAIL2) RA = 1000 *RA                 MUTUR    48
C                                                                        MUTUR    49
C      COMPUTE NORMAL DISTANCE SNOR(K) AND Y*DUDY                        MUTUR    50
      SNOR(1) = 0.                                                       MUTUR    51
      YDUM = 0 0                                                         MUTUR    52
      UMIN = UU(1)                                                       MUTUR    53
      YDUS = 0 0                                                         MUTUR    54
      DO 20 K = 2,KM                                                     MUTUR    55
      IF(UU(K)  LT  UMIN) UMIN = UU(K)                                   MUTUR    56
      SCIS = ABS(XY(J,K-1,3)*XY(J,K,3)+XY(J,K-1,4)*XY(J,K,4))            MUTUR    57
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```
      SCAL = 1.0/SQRT(SCIS)                                         MUTUR  58
      SNOR(K) = SNOR(K-1) + SCAL                                    MUTUR  59
      IF(K GT. 2) GO TO 18                                          MUTUR  60
      KM2 = 1                                                       MUTUR  61
      YDUM = 1 E-3                                                  MUTUR  62
      UM = YDUM                                                     MUTUR  63
      YM = 0 5*SNOR(2)                                              MUTUR  64
   18 CONTINUE                                                      MUTUR  65
      SNORA = 0 5*(SNOR(K) + SNOR(K-1))                             MUTUR  66
      YDU = SNORA*ABS(TAS(K-1))*(1 -EXP(-RA*SNORA))                 MUTUR  67
      IF(K GT KEDGE) GO TO 20                                       MUTUR  68
      IF(YDU LT YDUM) GO TO 20                                      MUTUR  69
      KM2 = K - 1                                                   MUTUR  70
      YDUM = YDU                                                    MUTUR  71
      UM = 0 5*(UU(K-1) + UU(K))                                    MUTUR  72
      YM = SNORA                                                    MUTUR  73
   20 CONTINUE                                                      MUTUR  74
C                                                                   MUTUR  75
C      INTERPOLATE TO FIND YM, YDUM, AND UM                         MUTUR  76
      IF(KM2 LT 2 OR KM2 GT KEDGE-1) GO TO 22                       MUTUR  77
      YM3 = 0 5*(SNOR(KM2+1) + SNOR(KM2+2))                         MUTUR  78
      YM1 = 0 5*(SNOR (KM2-1) + SNOR (KM2))                         MUTUR  79
      YDUM1 = YM1*ABS(TAS(KM2-1))*(1 0 - EXP(-RA*YM1))              MUTUR  80
      YDUM3 = YM3*ABS(TAS(KM2+1))*(1 0 - EXP(-RA*YM3))              MUTUR  81
      C2 = YDUM - YDUM1                                             MUTUR  82
      C3 = YDUM3 - YDUM                                             MUTUR  83
      DY1 = YM - YM1                                                MUTUR  84
      DY3 = YM3 - YM                                                MUTUR  85
      AM = (DY3*DY3*C2 + DY1*DY1*C3)/(DY1*DY3*(DY1*DY3))            MUTUR  86
      BM = (DY1*C3 - DY3*C2)/(DY1*DY3*(DY1 + DY3))                  MUTUR  87
      IF(BM GE 0 ) GO TO 22                                         MUTUR  88
      YMM = YM - 0 5*AM/BM                                          MUTUR  89
      YDU  = YDUM - 0 25*AM*AM/BM                                   MUTUR  90
      YMM = YM - 0 5*AM/BM                                          MUTUR  91
      IF(YDU LT YDUM OR YMM LT YM1 OR YMM GT YM3) GO TO 22          MUTUR  92
      YDUM = YDU                                                    MUTUR  93
      YM = YMM                                                      MUTUR  94
      IF(YM GT SNOR(KM2+1)) KM2 = KM2 + 1                           MUTUR  95
      IF(YM LT SNOR(KM2)) KM2 = KM2 - 1                             MUTUR  96
      UM = ((SNOR(KM2+1) - YM)*UU(KM2)+(YM-SNOR(KM2))*UU(KM2+1))    MUTUR  97
     1 /(SNOR(KM2+1) - SNOR(KM2))                                   MUTUR  98
   22 CONTINUE                                                      MUTUR  99
C                                                                   MUTUR 100
C       COMPUTE OUTER EDDY VISCOSITY                                MUTUR 101
      DO 25 K=1,KEDGE                                               MUTUR 102
      SNOR(K) = 0 5*(SNOR(K) + SNOR(K+1))                           MUTUR 103
      FFC = FKK*F27*RE*Q(J,K,1)*P(J,K)                              MUTUR 104
      TMO(K) = FFC*YM*YDUM                                          MUTUR 105
      FFCWK = YDUMF*YDUMF*FFC                                       MUTUR 106
      UDIFF = ABS(UM - UMIN)                                        MUTUR 107
      IF(YDUM GT UDIFF*YDUMF) TMO(K) = FFCWK*YM*UDIFF*UDIFF/YDUM    MUTUR 108
      FIA = FKLEB*SNOR(K)/YM                                        MUTUR 109
      IF(FIA GT 1 E5) FIA = 1 E5                                    MUTUR 110
      FI = 1 0 + 5 5*FIA**6                                         MUTUR 111
      TMO(K) = TMO(K)/FI                                            MUTUR 112
      TMO(K) = ABS(TMO(K))                                          MUTUR 113
   25 CONTINUE                                                      MUTUR 114
```

```
      C                                                                 MUTUR   115
      C     COMPUTE INNNER EDDY VISCOSITY                               MUTUR   116
            DO 30 K=1,KEDGE                                             MUTUR   117
            TAU = ABS(TAS(K))                                           MUTUR   118
            TMI(K) =P(J,K)*Q(J,K,1)*RE*TAU*(FK*SNOR(K)*(1 -EXP(-RA      MUTUR   119
           1  *SNOR(K))))**2                                            MUTUR   120
            TMI(K) = ABS(TMI(K))                                        MUTUR   121
         30 CONTINUE                                                    MUTUR   122
      C                                                                 MUTUR   123
      C     LOAD VISCOSITY COEFFS  INTO ARRAY. USE INNER VALUE UNTIL    MUTUR   124
      C     MATCH POINT IS REACHED                                      MUTUR   125
            K = 1                                                       MUTUR   126
         40 TURMU(J,K) = TMI(K)                                         MUTUR   127
            K = K +1                                                    MUTUR   128
            IF( K GT  KEDGE) GO TO 10                                   MUTUR   129
            IF( TMI(K)  LE  TMO(K)) GO TO 40                            MUTUR   130
         41 TURMU(J,K) = TMO(K)                                         MUTUR   131
            K = K +1                                                    MUTUR   132
            IF( K LE  KEDGE) GO TO 41                                   MUTUR   133
         10 CONTINUE                                                    MUTUR   134
      C                                                                 MUTUR   135
      C     REARRANGE TURMU(K) SUCH THAT WHEN AVERAGED AT K AND K+1     MUTUR   136
      C        THE CORRECT MIDWAY VALUE WILL BE OBTAINED                MUTUR   137
            SMP = TURMU(J,1)                                            MUTUR   138
            DO 60 K = 2,KMAX                                            MUTUR   139
            TURMS = TURMU(J,K)                                          MUTUR   140
            TURMU(J,K) = 2 0*SMP - TURMU(J,K-1)                         MUTUR   141
         60 SMP = TURMS                                                 MUTUR   142
         80 CONTINUE                                                    MUTUR   143
            RETURN                                                      MUTUR   144
            END                                                         MUTUR   145
```

APPENDIX B

SOURCE LISTING OF THE GRID GENERATION PROGRAM

PROGRAM MAIN 76/76 OPT=2 TRACE FTN 4 6+460 01/10/80 14 12 48 PAGE 1

```
      PROGRAM MAIN(INPUT,TAPE5=INPUT,OUTPUT,TAPE6=OUTPUT,TAPE48,TAPE8)  MAIN       2
C                                                                       MAIN       3
C        LOGICAL UNIT NUMBERS USED IN THIS PROGRAM                      MAIN       4
C                                                                       MAIN       5
C        5  -  READ INPUT DATA CARDS                                    MAIN       6
C        6  -  WRITE PRINTER OUTPUT                                     MAIN       7
C        8  -  UNFORMATTED WRITE OF FINAL SOLUTION GRID                 MAIN       8
C        48 -  SC4020 PLOTTER DATA                                      MAIN       9
C                                                                       MAIN      10
      COMMON/TCOM/ITITLE(8)                                             MAIN      11
C                                                                       MAIN      12
      DIMENSION XB(140),YB(140),X(140,80),Y(140,80)                     MAIN      13
      DIMENSION LINE(8)                                                 MAIN      14
      DIMENSION XP(140,80),YP(140,80)                                   INLET78    1
      DIMENSION NP(140)                                                 INLET78    2
C                                                                       MAIN      15
C        GRIDS ARE PRESENTLY LIMITED BY DIMENSION SIZE TO 140 POINTS    MAIN      16
C        IN XI DIRECTION AND 60 POINTS IN ETA DIRECTION   THESE         MAIN      17
C        DIMENSION SIZES ARE FOUND IN SUBROUTINES INNER, OUTER,         MAIN      18
C        RELAX, CLUSTR, EPSIL, AND PLAWT AS WELL AS HERE IN THE         MAIN      19
C        MAIN PROGRAM                                                   MAIN      20
C                                                                       MAIN      21
      DATA PI/3.141592654/                                              MAIN      22
C                                                                       MAIN      23
C        READ IN PARAMETERS                                             MAIN      24
      READ(5,101) JWAKE,KMAX,MAXIT,IDSPLY                               INLET78    3
      READ(5,102)XGMX,XGMN,YMAX,YMIN,XNOSE,XTAIL,XRAMP                  INLET78    4
      READ(5,102)  DY1                                                  MAIN      27
      READ(5,102)  XORG,YORG,ETACD,BETA                                 INLET78    5
      READ(5,102)  OMEGA                                                MAIN      29
      READ(5,102)  DY2                                                  MAIN      30
      IF(IDSPLY .EQ. 1)CALL READIN                                      INLET78    6
      READ(5,100)ITITLE                                                 MAIN      32
      READ(5,100)  LINE                                                 MAIN      33
C                                                                       MAIN      34
      WRITE(6,112)JWAKE,KMAX,MAXIT,XGMX,XGMN,YMAX,YMIN,XNOSE,XTAIL,     INLET78    7
     *XRAMP                                                             INLET78    8
      WRITE(6,113) DY1,XORG,YORG,ETACD,BETA,OMEGA,DY2                   INLET78    9
      WRITE(6,137)ITITLE                                                MAIN      37
      WRITE(6,109)  LINE                                                MAIN      38
      ETAC=ETACD*PI/180                                                 MAIN      39
C                                                                       MAIN      40
C        READ IN AIRFIOL SHAPE                                          MAIN      41
      NBOD=70                                                           INLET78   10
      DO 2 N=1,NBOD                                                     INLET78   11
      READ(5,102)XB(N),YB(N)                                            INLET78   12
    2 CONTINUE                                                          INLET78   13
      WRITE(6,103)                                                      MAIN      47
      WRITE(6,104)   (N,XB(N),YB(N),N=1,NBOD)                           MAIN      48
C                                                                       MAIN      49
C        DISTRIBUTE POINTS ON INNER AND REAR BOUNDARIES                 MAIN      50
      CALL INNER(NBOD,JWAKE,KMAX,XB,YB,XNOSE,XTAIL,XGMX,YMAX,YMIN,      MAIN      51
     1 DY1,JMAX,X,Y)                                                    MAIN      52
C                                                                       MAIN      53
C        DISTRIBUTE POINTS ON BOTTOM-FRONT-TOP BOUNDARY                 MAIN      54
      CALL OUTER(XGMX,XGMN,YMAX,YMIN,XORG,YORG,ETAC,BETA,JMAX,KMAX,X,Y, INLET78   14
     *XRAMP)                                                            INLET78   15
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C       FILL-IN BETWEEN ETA-MAX AND ETA-MIN BOUNDARIES.                 MAIN      56
   34  JMM = JMAX -1                                                    MAIN      57
       KMM = KMAX-1                                                     MAIN      58
       RKMM=1.0/KMM                                                     MAIN      59
C                                                                       MAIN      60
       DO 13 J=2,JMM                                                    MAIN      61
       DELX=(X(J,KMAX)-X(J,1))*RKMM                                     MAIN      62
       DELY=(Y(J,KMAX)-Y(J,1))*RKMM                                     MAIN      63
C                                                                       MAIN      64
       DO 13 K=2,KMM                                                    MAIN      65
       X(J,K) = X(J,1) + ( K-1)*DELX                                    MAIN      66
   13  Y(J,K) = Y(J,1) + ( K-1)*DELY                                    MAIN      67
C                                                                       MAIN      68
C       PLOT INITIAL CONDITIONS                                         MAIN      69
       IF((DSPLY .EQ. 1)CALL PLAWT(JMAX,KMAX,X,Y,XGMX,XGMN,YMAX,YMIN)   MAIN      70
C                                                                       INLET78   16
C       GENERATE UN-CLUSTERED GRID                                      MAIN      72
       CALL RELAX(JMAX,KMAX,X,Y,OMEGA,MAXIT)                            MAIN      73
C                                                                       MAIN      74
C       PLOT UN-CLUSTERED GRID                                          MAIN      75
       IF((DSPLY .EQ. 1)CALL PLAWT(JMAX,KMAX,X,Y,XGMX,XGMN,YMAX,YMIN)   MAIN      76
C                                                                       INLET78   17
C       APPLY EXPONENTIAL CLUSTERING                                    MAIN      78
       CALL CLUSTR(JMAX,X,Y,DY2,KMAX)                                   MAIN      79
C                                                                       MAIN      80
C       PLOT EXPONENTIALLY CLUSTERED GRID                               MAIN      81
       IF((DSPLY .EQ. 1)CALL PLAWT(JMAX,KMAX,X,Y,XGMX,XGMN,YMAX,YMIN)   MAIN      82
C                                                                       INLET78   18
C       WRITE FINAL SOLUTION                                            MAIN      84
       WRITE(8) ((X(J,K),J=1,JMAX),K=1,KMAX),((Y(J,K),J=1,JMAX),K=1,KMAX) MAIN    85
C.....DISPLAY INNER AND OUTER BOUNDARIES USING J  MULLEN'S PRINTER PLOT  MAIN     86
       IOPT=3                                                           INLET78   19
       IOPT=4                                                           INLET78   20
       LWID=100                                                         INLET78   21
       LENG=100                                                         INLET78   22
       NDP=140                                                          INLET78   23
       NC=4                                                             INLET78   24
       NP(1)=JMAX                                                       INLET78   25
       NP(2)=JMAX                                                       INLET78   26
       NP(3)=JMAX                                                       INLET78   27
       NP(4)=JMAX                                                       INLET78   28
       DO 40 J=1,JMAX                                                   INLET78   29
       XP(J,1)=X(J,1)                                                   INLET78   30
       YP(J,1)=Y(J,1)                                                   INLET78   31
       XP(J,2)=X(J,KMAX)                                                INLET78   32
       YP(J,2)=Y(J,KMAX)                                                INLET78   33
       XP(J,3)=X(J,5)                                                   INLET78   34
       YP(J,3)=Y(J,5)                                                   INLET78   35
       XP(J,4)=X(J,KMM)                                                 INLET78   36
       YP(J,4)=Y(J,KMM)                                                 INLET78   37
   40  CONTINUE                                                         INLET78   38
       CALL PLOTA2(XP,YP,IOPT,NP,NDP,NC,LWID,LENG)                      INLET78   39
       GO TO 555                                                        INLET78   40
C..... DISPLAY ALL GRID LINES                                           INLET78   41
       NC=JMAX/5+1                                                      INLET78   42
       N=0                                                              INLET78   43
                                                                        INLET78   44
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      JMM3=67                                                   INLET78   45
      DO 45 J=1,JMM3,6                                          INLET78   46
      N=N+1                                                     INLET78   47
   45 NP(N)=KMAX                                                INLET78   48
      N=0                                                       INLET78   49
      DO 50 J=1,JMM3,6                                          INLET78   50
      N=N+1                                                     INLET78   51
      DO 50 K=1,KMAX                                            INLET78   52
      XP(K,N)=X(J,K)                                            INLET78   53
   50 YP(K,N)=Y(J,K)                                            INLET78   54
      CALL PLOTA2(XP,YP,IOPT,NP,NDP,NC,LWID,LENG)               INLET78   55
  555 CONTINUE                                                  INLET78   56
C                                                               MAIN      87
C        PLOT BLOW-UP OF INNERMOST 10 LINES.                    MAIN      88
      NJW=JWAKE/4                                               MAIN      89
      NJM=NBOD+2*NJW                                            MAIN      90
      JJJ=JWAKE-NJW-1                                           MAIN      91
      XMAX=X(JWAKE,1)                                           MAIN      92
      XMIN=XMAX                                                 MAIN      93
      YMAX=Y(JWAKE,1)                                           MAIN      94
      YMIN=YMAX                                                 MAIN      95
C                                                               MAIN      96
      DO 35 K=1,10                                              MAIN      97
      DO 35 J=1,NJM                                             MAIN      98
      JJ=JJJ+J                                                  MAIN      99
      XX=X(JJ,K)                                                MAIN     100
      YY=Y(JJ,K)                                                MAIN     101
      IF(XX.GT.XMAX)  XMAX=XX                                   MAIN     102
      IF(XX.LT.XMIN)  XMIN=XX                                   MAIN     103
      IF(YY.GT.YMAX)  YMAX=YY                                   MAIN     104
      IF(YY.LT.YMIN)  YMIN=YY                                   MAIN     105
      X(J,K)=XX                                                 MAIN     106
   35 Y(J,K)=YY                                                 MAIN     107
C                                                               MAIN     108
      IF(IDSPLY.EQ.1)CALL PLAWT(NJM,10,X,Y,XMAX,XMIN,YMAX,YMIN) INLET78   57
      IF(IDSPLY.EQ.1)CALL EOFTV                                 INLET78   58
C                                                               MAIN     111
      STOP                                                      MAIN     112
C                                                               MAIN     113
  100 FORMAT(8A10)                                              MAIN     114
  101 FORMAT(16I5)                                              MAIN     115
  102 FORMAT(8F10.0)                                            MAIN     116
  103 FORMAT(/27H AIRFOIL POINTS AS READ IN )                   MAIN     117
  104 FORMAT(3H N=,I3,5X,3HXB=,E12.5,5X,3HYB=,E12.5)            MAIN     118
  109 FORMAT(34H CARD NO. 9.   AIRFIOL DESCRIPTION.,10X,8A10)   MAIN     119
  112 FORMAT(24H1 PARAMETERS AS READ IN.//                      MAIN     120
     1 60H CARD NO. 1.  JWAKE. NUMBER OF POINTS IN EACH SIDE OF WAKE =,  MAIN 121
     2 I5/14X,41HKMAX. NUMBER OF POINTS IN ETA DIRECTION =,I5/  MAIN     122
     3 14X,57HMAXIT. MAXIMUM NUMBER OF ITERATIONS IN MAKING UN-CLUSTERE, MAIN 123
     4 8HD GRID =,I5/                                           MAIN     124
     5 57H CARD NO. 2.  XGMX. X-DIRECTION COORDINATE OF DOWNSTREAM ,     MAIN 125
     6 10HBOUNDARY =,F20.10/14X,32HXGMN. X-DIRECTION COORDINATE OF ,     MAIN 126
     7 19HUPSTREAM BOUNDARY =,F20.10/14X,25HYMAX. Y-DIRECTION COORDIN,   MAIN 127
     8 23HATE OF UPPER BOUNDARY =,F20.10/14X,23HYMIN. Y-DIRECTION COORD, MAIN 128
     9 25HINATE OF LOWER BOUNDARY =,F20.10/14X,19HXNOSE. X-DIRECTION ,   MAIN 129
     A 39HCOORDINATE OF LEADING EDGE OF AIRFOIL =,F20.10/14X,            MAIN 130
     B 59HXTAIL. X-DIRECTION COORDINATE OF TRAILING EDGE OF AIRFOIL =,   MAIN 131
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              CF20.10/14X,48HX-COORDINATE LOCATION OF LEADING EDGE OF RAMP = ,    INLET78    59
              DF20.10)                                                            INLET78    60
         113   FORMAT(51H CARD NO. 3,  DY1, MINIMUM Y-INCREMENT ON REARWARD ,     MAIN      133
              1 33HBOUNDARY FOR INITIAL CONDITIONS =,F20 10/14H CARD NO  4   ,    MAIN      134
              2 61HXORG, X-DIRECTION LOCATION OF ORIGIN FOR ANGULAR CLUSTERING =, MAIN      135
              3F20 10/14X,61HYORG, Y-DIRECTION LOCATION OF ORGIN FOR ANGULAR CLUS INLET78    61
              <TERING = ,F20.10/14X,45HETAC, ANGLE (IN DEGREES) ABOUT WHICH ANGUL INLET78    62
              <AR ,                                                               INLFT78    63
              4 20HCLUSTERING IS DONE =,F8 2/14X,25HBETA, ANGULAR CLUSTERING ,    MAIN      137
              5 11HPARAMETER =,F20 10/35H CARD NO  5,  OMEGA, PARAMETER FOR ,     MAIN      138
              6 17HTHOMPSON SOLVER =,F20 10/31H CARD NO  6,  DY2, MINIMUM ETA-,   MAIN      139
              7 40HDIRECTION SPACING FOR FINAL CLUSTERING =,F20 10)               MAIN      140
         137   FORMAT(25H CARD NO  8,  PLOT TITLE ,10X,8A10)                      MAIN      141
        C                                                                         MAIN      142
               END                                                                MAIN      143
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      SUBROUTINE INNER(NBOD,JWAKE,KMAX,XB,YB,XNOSE,XTAIL,XGMX,YMAX,YMIN, INNER      2
     1  DYI,JMAX,X,Y)                                                   INNER      3
C                                                                       INNER      4
C        THIS SUBROUTINE DISTRIBUTES POINTS ON THE ETA-MIN (AIRFOIL-    INNER      5
C        WAKE, INNER) BOUNDARY AND THE REAR (OUTFLOW) BOUNDARY          INNER      6
C                                                                       INNER      7
      DIMENSION XB(1),YB(1),X(140,80),Y(140,80)                         INNER      8
C                                                                       INNER      9
C        SHIFT AND SCALE AIRFOIL POIMTS.                                INNER     10
      XMIN = XB(1)                                                      INNER     11
      XMAX = XB(1)                                                      INNER     12
      DO 3 N=2,NBOD                                                     INNER     13
      IF( XB(N) .LT. XMIN) XMIN = XB(N)                                 INNER     14
    3 IF( XB(N) .GT. XMAX) XMAX = XB(N)                                 INNER     15
C                                                                       INNER     16
      SCALE = (XTAIL-XNOSE)/( XMAX - XMIN)                              INNER     17
      DO 4 N=1,NBOD                                                     INNER     18
      XB(N) = ( XB(N) - XM.N)*SCALE+XNOSE                               INNER     19
    4 YB(N) = YB(N)*SCALE                                               INNER     20
      WRITE(6,105)                                                      INNER     21
      WRITE(6,106)   (N,XB(N),YB(N),N=1,NBOD)                           INNER     22
C                                                                       INNER     23
      JWT = JWAKE + NBOD -1                                             INNER     24
      N = 0                                                             INNER     25
      DO 5 J = JWAKE,JWT                                                INNER     26
      N = N +1                                                          INNER     27
      X(J,1) = XB(N)                                                    INNER     28.
    5 Y(J,1) = YB(N)                                                    INNER     29
C......TEST FOR NO WAKE                                                 INLET78   64
      YY1=-YB(1)                                                        INLET78   65
      YY2=YB(NBOD)                                                      INLET78   66
      IF(JWAKE .EQ. 1)GO TO 10                                          INLET78   67
C                                                                       INNER     30
C        DISTRIBUTE POINTS ON WAKE BOUNDARY.                            INNER     31
      DXO = (X(JWT,1) - X(JWT-1,1) +X(JWAKE,1) -X(JWAKE+1,1))*.5        INNER     32
      N = -1                                                            INNER     33
      JMAX = NBOD +2*JWAKE -2                                           INNER     34
      JWTP = JWT + 1                                                    INNER     35
      XX = ( X(JWT,1) + X(JWAKE,1))*.5                                  INNER     36
      YY = (Y(JWT,1) + Y(JWAKE,1))*.5                                   INNER     37
      EPSW=EPSIL(XGMX,XX,DXO,JMAX-JWT+1,0.001,100,2,1)                  INNER     38
C                                                                       INNER     39
      DO 6 J=JWTP,JMAX                                                  INNER     40
      N = N +1                                                          INNER     41
      JJ = JWAKE -1 -N                                                  INNER     42
      XX=XX+DXO*(1.0+EPSW/SQRT(FLOAT(N+1)))**N                          INNER     43
      X(J,1) = XX                                                       INNER     44
      X(JJ,1) = XX                                                      INNER     45
      Y(J,1) = YY                                                       INNER     46
    6 Y(JJ,1) = YY                                                      INNER     47
      YY1=-YY                                                           INLET78   68
      YY2=YY                                                            INLET78   69
   10 CONTINUE                                                          INLET78   70
      JMAX=NBOD+2*JWAKE-2                                               INLET78   71
      NONE=1                                                            INNER     48
      WRITE(6,107)                                                      INNER     49
      WRITE(6,108)   (J,NONE,X(J,1),J,NONE,Y(J,1),J=1,JMAX)             INNER     50
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C                                                                     INNER      51
C        DISTRIBUTE POINTS IN Y DIRECTION ON REARWARD BOUNDARY.       INNER      52
      N=-1                                                            INNER      53
      YYMIN=-2.15                                                     INLET78    72
      BETAT=EPSIL(YMAX,YY2,DY1,KMAX,1.E-6,100,1,1)                    INLET78    73
      BETAB=EPSIL(YYMIN,YY1,DY1,KMAX,1.E-6,100,1,1)                   INLET78    74
C                                                                     INNER      56
      DO 8 K=2,KMAX                                                   INNER      57
      A1=0.5                                                          INLET78    75
      Z=(K-1.)/(KMAX-1.)                                              INLET78    76
      A2=-(Z-A1)/A1                                                   INLET78    77
      Y(JMAX,K)=Y(JMAX,  1)+(YMAX-YY2)*(((BETAT+1.)-(BETAT-1.)*((BETAT+ INLET78  78
     <1.)/(BETAT-1.))**A2)/((2.*A1+1.)*(1.+((BETAT+1.)/(BETAT-1.))**A2)) INLET78  79
     <)                                                               INLET78    80
      Y(1,K)=Y(1,  1)+(YY1-YYMIN)     *(((BETAB+1.)-(BETAB-1.)*((BETAB+ INLET78  81
     <1.)/(BETAB-1.))**A2)/((2.*A1+1.)*(1.+((BETAB+1.)/(BETAB-1.))**A2)) INLET78  82
     <)                                                               INLET78    83
      X(JMAX,K)=XGMX                                                  INNER      61
      X(JMAX,K)=XB(NBOD)                                              INLET78    84
    8 X(1,K)=XGMX                                                     INNER      62
C                                                                     INNER      63
      WRITE(6,110)                                                    INNER      64
      WRITE(6,108)  (NONE,K,X(1,K),NONE,K,Y(1,K),K=1,KMAX)            INNER      65
      WRITE(6,111)                                                    INNER      66
      WRITE(6,108)  (JMAX,K,X(JMAX,K),JMAX,K,Y(JMAX,K),K=1,KMAX)      INNER      67
C                                                                     INNER      68
      RETURN                                                          INNER      69
C                                                                     INNER      70
  105 FORMAT(/32H AIRFOIL POINTS AFTER RESCALING.)                    INNER      71
  106 FORMAT(3H N=,I3,5X,3HXB=,F12.5,5X,3HYB=,F12.5)                  INNER      72
  107 FORMAT(/30H BOUNDARY ON WAKE AND AIRFOIL.)                      INNER      73
  108 FORMAT(3H X(,I3,1H,,I3,2H)=,F12.5,5X,2HY(,I3,1H,,I3,2H)=,F12.5) INNER      74
  110 FORMAT(/33H LOWER PART OF REARWARD BOUNDARY.)                   INNER      75
  111 FORMAT(/33H UPPER PART OF REARWARD BOUNDARY.)                   INNER      76
C                                                                     INNER      77
      END                                                             INNER      78
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      SUBROUTINE OUTER(XMAX,XMIN,YMAX,YMIN,XORG,YORG,ETAC,BETA,JMAX,KMAX INLET78   85
     <,X,Y,XRAMP)                                                      INLET78   86
C                                                                      OUTER      3
C        THIS SUBROUTINE PLACES POINTS ON BOTTOM-FRONT-TOP BOUNDARY IN OUTER      4
C        ANGULAR FASHION                                               OUTER      5
C                                                                      OUTER      6
      DIMENSION X(140,80),Y(140,80)                                    OUTER      7
C                                                                      OUTER      8
      LOGICAL CLUSTR                                                   OUTER      9
C                                                                      OUTER     10
      DATA PI/3.141592654/                                             OUTER     11
C                                                                      OUTER     12
      SINH(X)=0.5*(EXP(X)-EXP(-X))                                     OUTER     13
C                                                                      OUTER     14
C......TEST CASE FOR CREATING INLET GRID                               INLET78   87
      ETARU=ATAN2(YMAX-YORG,X(JMAX,KMAX)-XORG)                         INLET78   88
      ETARL=ATAN2(YORG-1.,XMAX-XORG)                                   INLET78   89
      DETA=(2.0*PI-(ETARU+ETARL))/(JMAX-1)                             OUTER     17
      DETA=.13522                                                      INLET78   90
      CLUSTR = .FALSE.                                                 OUTER     18
      IF( BETA.GT.0.0) CLUSTR = .TRUE.                                 OUTER     19
      IF(.NOT. CLUSTR) GO TO 14                                        OUTER     20
      FACT=PI/(2.0*PI-(ETARU+ETARL))                                   OUTER     21
      FACTR=1.0/FACT                                                   OUTER     22
      ETACT=(ETAC-ETARU)*FACT                                          OUTER     23
      B=0.5*ALOG((1.+(EXP(BETA)-1.)*ETACT/PI)/(1.+(EXP(-BETA)-1.)*     OUTER     24
     1  ETACT/PI))                                                     OUTER     25
      RSB = 1./SINH(B)                                                 OUTER     26
   14 ETA=ETARU                                                        OUTER     27
      ANG1=ATAN2(YMAX-YORG,XMIN-XORG)                                  INLET78   91
      ANG2=ATAN2(YMIN-YORG,XMIN-XORG)+2.0*PI                           INLET78   92
      ANG3=-ATAN2(XRAMP-XORG,YMIN-YORG)+.5*PI                          INLET78   93
      NSIDE = 1                                                        OUTER     30
C                                                                      OUTER     31
      ETARUD=ETARU*180./PI                                             OUTER     32
      ETARLD=ETARL*180./PI                                             OUTER     33
      ANG1D=ANG1*180./PI                                               OUTER     34
      ANG2D=ANG2*180./PI                                               OUTER     35
      WRITE(6,109) CLUSTR,ETARUD,ETARLD,ANG1D,ANG2D,XORG,YORG,ANG3D,   INLET78   94
     <ANG4D,ANG5D                                                      INLET78   95
      IF(CLUSTR.AND.ETAC.LT.ETARU.OR.CLUSTR.AND.ETAC.GT.(2.0*PI-ETARL)) OUTER    37
     1  GO TO 22                                                       OUTER     38
C                                                                      OUTER     39
      DO 9 JJ=2,JMAX                                                   OUTER     40
      J=JMAX+1-JJ                                                      OUTER     41
      ETA = ETA + DETA                                                 OUTER     42
      IF(.NOT.CLUSTR)  GO TO 26                                        OUTER     43
      ETAT=(ETA-ETARU)*FACT                                            OUTER     44
      PHIT=ETACT*(SINH(BETA*ETAT/PI-B)*RSB+1.)                         OUTER     45
      PHI=ETARU+PHIT*FACTR                                             OUTER     46
      GO TO 27                                                         OUTER     47
   26 PHI=ETA                                                          OUTER     48
C                                                                      OUTER     49
   27 CONTINUE                                                         INLET78   96
      ANG=270.*PI/180.-PHI                                             INLET78   97
      IF((PHI*180./PI).GT. 270.)ANG=-PHI+270.*PI/180.                  INLET78   98
      GO TO(1,3,3,6),NSIDE                                             INLET78   99
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      1 IF(J.LT.67)NSIDE=2                                    INLET78   100
        GO TO 6                                               INLET78   101
C                                                             OUTER      54
      3 IF(J.LT.50)NSIDE=4                                    INLET78   102
 6      GO TO(10,11,12,13),NSIDE                              INLET78   103
     10 Y(J,KMAX) = YMAX                                      OUTER      56
        X(J,KMAX)=(YMAX-YORG)/TAN(PHI)+XORG                   INLET78   104
        X(67,KMAX)=4.9                                        INLET78   105
        X(68,KMAX)=6.4                                        INLET78   106
        X(69,KMAX)=8.3                                        INLET78   107
        GO TO 21                                              OUTER      58
     11 X(J,KMAX) = XMIN                                      OUTER      59
        Y(J,KMAX)=(XMIN-XORG)*TAN(PHI)+YORG                   INLET78   108
        Y(50,KMAX)=.25                                        INLET78   109
        Y(51,KMAX)=.35                                        INLET78   110
        Y(52,KMAX)=.45                                        INLET78   111
        Y(53,KMAX)=.6                                         INLET78   112
        Y(54,KMAX)=.75                                        INLET78   113
        Y(55,KMAX)=1.                                         INLET78   114
        Y(56,KMAX)=1.25                                       INLET78   115
        Y(57,KMAX)=1.5                                        INLET78   116
        Y(58,KMAX)=2.                                         INLET78   117
        Y(59,KMAX)=2.5                                        INLET78   118
        Y(60,KMAX)=3.                                         INLET78   119
        Y(61,KMAX)=4.                                         INLET78   120
        Y(62,KMAX)=5.                                         INLET78   121
        Y(63,KMAX)=6.                                         INLET78   122
        Y(64,KMAX)=7.5                                        INLET78   123
        Y(65,KMAX)=9.                                         INLET78   124
        Y(66,KMAX)=9.6                                        INLET78   125
        X(64,KMAX)=1.5                                        INLET78   126
        X(65,KMAX)=2.6                                        INLET78   127
        X(66,KMAX)=3.7                                        INLET78   128
        GO TO 21                                              OUTER      61
 12     X(J,KMAX)=XORG+(YMIN-YORG)/TAN(PHI)                   INLET78   129
        Y(J,KMAX)=YMIN                                        OUTER      63
        GO TO 21                                              INLET78   130
 13     CONTINUE                                              INLET78   131
        READ(5,100)X(J,KMAX),Y(J,KMAX)                        INLET78   132
100     FORMAT(2F10.5)                                        INLET78   133
21      CONTINUE                                              OUTER      64
C                                                             OUTER      65
        ETAD=ETA*180./PI                                      OUTER      66
        PHID=PHI*180./PI                                      OUTER      67
        WRITE(6,113)  J,KMAX,X(J,KMAX),J,KMAX,Y(J,KMAX),ETAD,PHID,NSIDE   OUTER      68
      9 CONTINUE                                              OUTER      69
C                                                             OUTER      70
        RETURN                                                OUTER      71
C                                                             OUTER      72
22      WRITE(6,114)                                          OUTER      73
        STOP                                                  OUTER      74
C                                                             OUTER      75
109     FORMAT(/8H CLUSTR=,L1,5X,6HETARU=,F8.2,5X,6HETARL=,F8.2,5X,   OUTER      76
       15HANG1=,F8.2,5X,5HANG2=,F8.2,5X,7HXORGIN=,F8.5,5X,7HYORGIN=,F8.5/   INLET78   134
       <5X,5HANG3=,F8.2,5X,5HANG4=,F8.2,5X,5HANG5=,F8.2//     INLET78   135
       <24H OUTER BOUNDARY ON TOP,                            INLET78   136
       2 18HFRONT, AND BOTTOM )                               OUTER      78
```

```
          113  FORMAT(3H X(,I3,1H,,I3,2H)=,F12.5,5X,2HY(,I3,1H,,I3,2H)=,F12.5,     OUTER       79
              1  5X,4HETA=,F8.2,5X,4HPHI=,F8.2,5X,6HNSIDE=,I1)                     OUTER       80
          114  FORMAT(/23H ERROR EXIT.   BAD ETAC.)                                OUTER       81
          C                                                                        OUTER       82
               END                                                                 OUTER       83
```

```
      SUBROUTINE RELAX(JMAX,KMAX,X,Y,OMEGA,MAXIT)                       RELAX     2
C                                                                       RELAX     3
C        THIS SUBROUTINE SOLVES BY SLOR THE DIFFERENTIAL EQUATIONS      RELAX     4
C        THAT CONSTITUTE THOMPSON-THAMES-MASTIN S METHOD OF GENERATING  RELAX     5
C        GRIDS.                                                         RELAX     6
C                                                                       RELAX     7
      DIMENSION X(140,80),Y(140,80)                                     RELAX     8
      DIMENSION A(140),B(140),C(140),D(140),F(140),G(140)               RELAX     9
C                                                                       RELAX    10
      KMM=KMAX-1                                                        RELAX    11
      JMM=JMAX-1                                                        RELAX    12
      ICOUNT=0                                                          RELAX    13
C                                                                       RELAX    14
    2 ICOUNT=ICOUNT+1                                                   RELAX    15
      RSUM=0.                                                           RELAX    16
C                                                                       RELAX    17
      DO 1 K=2,KMM                                                      RELAX    18
C                                                                       RELAX    19
      DO 3 J=2,JMM                                                      RELAX    20
      XXD=(X(J+1,K)-X(J-1,K))*0.5                                       RELAX    21
      XED=(X(J,K+1)-X(J K-1))*0.5                                       RELAX    22
      YXD=(Y(J+1,K)-Y(J-1,K))*0.5                                       RELAX    23
      YED=(Y(J,K+1)-Y(J,K-1))*0 5                                       RELAX    24
      AD=XED**2+YED**2                                                  RELAX    25
      BD=XXD*XED+YXD*YED                                                RELAX    26
      GD=XXD**2+YXD**2                                                  RELAX    27
      XXED=(X(J+1,K+1)-X(J+1,K-1)-X(J-1,K+1)+X(J-1,K-1))*0.25           RELAX    28
      YXED=(Y(J+1,K+1)-Y(J+1,K-1)-Y(J-1,K+1)+/(J-1,K-1))*0.25           RELAX    29
      BD=-2.0*BD                                                        RELAX    30
      A(J)=AD                                                           RELAX    31
      B(J)=-AD-AD-GD-GD                                                 RELAX    32
      C(J)=AD                                                           RELAX    33
      F(J)=-BD*XXED-GD*(X(J,K+1)+X(J,K-1))                              RELAX    34
    3 G(J)=-BD*YXED-GD*(Y(J,K+1)+Y(J,K-1))                              RELAX    35
C                                                                       RELAX    36
      F(2)=F(2)-A(2)*X(1,K)                                             RELAX    37
      G(2)=G(2)-A(2)*Y(1,K)                                             RELAX    38
      F(JMM)=F(JMM)-C(JMM)*X(JMAX,K)                                    RELAX    39
      G(JMM)=G(JMM)-C(JMM)*Y(JMAX,K)                                    RELAX    40
C                                                                       RELAX    41
      CALL TRIB(A,B,C,D,F,2,JMM)                                        RELAX    42
      CALL TRIB(A,B,C,D,G,2,JMM)                                        RELAX    43
C                                                                       RELAX    44
      DO 4 J=2,JMM                                                      RELAX    45
      XC=OMEGA*(F(J)-X(J,K))                                            RELAX    46
      YC=OMEGA*(G(J)-Y(J,K))                                            RELAX    47
      RSUM=RSUM+ABS(XC)+ABS(YC)                                         RELAX    48
      X(J,K)=X(J,K)+XC                                                  RELAX    49
    4 Y(J,K)=Y(J,K)+YC                                                  RELAX    50
    1 CONTINUE                                                          RELAX    51
C                                                                       RELAX    52
      WRITE(6,100)RSUM,ICOUNT                                           RELAX    53
      IF(ICOUNT.LT.MAXIT)  GO TO  2                                     RELAX    54
C                                                                       RELAX    55
      WRITE(6,121)                                                      RELAX    56
      DO 24 J=1,JMAX,10                                                 RELAX    57
      WRITE(6,115)J                                                     RELAX    58
```

```
      WRITE(6,117)  (X(J,K),K=1,KMAX)
      WRITE(6,116)J
   24 WRITE(6,117)  (Y(J,K),K=1,KMAX)
C
      RETURN
C
  100 FORMAT(20H SUM OF RESIDUALS = ,F20.10,
     1 7H AFTER ,I5,12H ITERATIONS.)
  115 FORMAT(/31H X S FOR CONSTANT XI LINE AT J=,I5)
  116 FORMAT(/31H Y S FOR CONSTANT XI LINE AT J=,I5)
  117 FORMAT(10E13.6)
  121 FORMAT(/48H AFTER THOMPSON-SOLVER, BEFORE FINAL CLUSTERING.)
      END
```

```
              SUBROUTINE CLUSTR(JJ,X,Y,DD,KK)                                       INLET78   137
        C                                                                           CLUSTR      3
        C        THIS SUBROUTINE APPLIES TNE EXPONENTIAL CLUSTERING                 CLUSTR      4
        C        TO THE LINES OF CONSTANT XI.                                       CLUSTR      5
        C                                                                           CLUSTR      6
              DIMENSION X(140,80),Y(140,80)                                         CLUSTR      7
              DIMENSION T(80),S(80),XXX(80),YYY(80)                                 CLUSTR      8
        C                                                                           CLUSTR      9
              A1=0.5                                                                INLET78   138
              JMAX=JJ                                                               INLET78   139
              KMAX=KK                                                               INLET78   140
              DY2=DD                                                                INLET78   141
              KMM = KMAX-1                                                          CLUSTR     11
        C                                                                           CLUSTR     12
              DO 20 J=1,JMAX                                                        CLUSTR     13
        C                                                                           CLUSTR     14
              T(1) = 0.                                                             CLUSTR     15
              DO 16 K=2,KMAX                                                        CLUSTR     16
           16 T(K) = T(K-1) + SQRT( ( X(J,K) -X(J,K-1))**2 +( Y(J,K)-Y(J,K-1))      CLUSTR     17
             1  **2)                                                                CLUSTR     18
        C                                                                           CLUSTR     19
              BETA2=EPSIL(T(KMAX),0 0,DY2,KMAX,1.E-6,100,1,J)                       INLET78   142
        C                                                                           CLUSTR     21
              S(1)=0.0                                                              CLUSTR     22
              N=-1                                                                  CLUSTR     23
              DO 15 K=2,KMAX                                                        CLUSTR     24
              Z=(K-1.)/(KMAX-1.)                                                    INLET78   143
              A2=-(Z-A1)/A1                                                         INLET78   144
           15 S(K)=S(  1)+(T(KMAX)-T(1))*(((BETA2+1.)-(BETA2-1.)*((BETA2+1.)/       INLET78   145
             *(BETA2-1.))**A2)/((2 *A1+1.)*(1.+((BETA2+1.)/(BETA2-1.))**A2)))       INLET78   146
        C                                                                           CLUSTR     27
              DO 17 K=1,KMAX                                                        CLUSTR     28
              XXX(K) = X(J,K)                                                       CLUSTR     29
           17 YYY(K) = Y(J,K)                                                       CLUSTR     30
        C                                                                           CLUSTR     31
              PTL = 0.                                                              CLUSTR     32
              DO 18 K=2,KMM                                                         CLUSTR     33
           18 CALL TAINT(T,XXX,S(K),X(J,K),KMAX,2,NER,PTL)                          CLUSTR     34
        C                                                                           CLUSTR     35
              PTL  = 0.                                                             CLUSTR     36
              DO 19 K=2,KMM                                                         CLUSTR     37
           19 CALL TAINT(T,YYY,S(K),Y(J,K),KMAX,2,NER,PTL)                          CLUSTR     38
        C                                                                           CLUSTR     39
           20 CONTINUE                                                              CLUSTR     40
        C                                                                           CLUSTR     41
              WRITE(6,120)                                                          CLUSTR     42
              DO 23 J=1,JMAX                                                        CLUSTR     43
              WRITE(6,115)J                                                         CLUSTR     44
              WRITE(6,117)  (X(J,K),K=1,KMAX)                                       CLUSTR     45
              WRITE(6,116)J                                                         CLUSTR     46
        23    WRITE(6,117)  (Y(J,K),K=1,KMAX)                                       CLUSTR     47
              RETURN                                                                CLUSTR     48
        C                                                                           CLUSTR     49
        120   FORMAT(/24H AFTER FINAL CLUSTERING.)                                  CLUSTR     50
        115   FORMAT(/31H X S FOR CONSTANT XI LINE AT J=,I5)                        CLUSTR     51
        116   FORMAT(/31H Y S FOR CONSTANT XI LINE AT J=,I5)                        CLUSTR     52
        117   FORMAT(10E13.6)                                                       CLUSTR     53
        C                                                                           CLUSTR     54
              END                                                                   CLUSTR     55
```

```
      FUNCTION EPSIL(FMX,FMIN,DFM,NPT,FPCC,ICC,KEY,NCALL)                 EPSIL       2
C                                                                         EPSIL       3
C        THIS SUBROUTINE APPLIES A NEWTON-RAPHSON ROOT-FINDING            EPSIL       4
C        TECHNIQUE TO FIND A VALUE OF EPSILON FOR A PARTICULAR USE        EPSIL       5
C        OF THE EXPONENTIAL STRECHING TRANSFORMATION.                     EPSIL       6
C                                                                         EPSIL       7
      DIMENSION R(140)                                                    EPSIL       8
C                                                                         EPSIL       9
      F(A)=(A+1.)-(A-1.)*((A+1.)/(A-1.))**A2                              INLET78   147
      G(A)=(1.+((A+1.)/(A-1.))**A2)*(2.*A1+1.)                            INLET78   148
      FP(A)=1.-((A+1.)/(A-1.))**A2-A2*(A-1.)*(-2./(A-1.)**2)*((A+1.)/(A-  INLET78   149
     <1.))**A3                                                            INLET78   150
      GP(A)=A2*(2.*A1+1.)*(-2./(A-1.)**2)*((A+1.)/(A-1.))**A3             INLET78   151
      FMXL=FMX                                                            EPSIL      10
      FMINL=FMIN                                                          EPSIL      11
      DFML=DFM                                                            EPSIL      12
      FPCCL=FPCC                                                          EPSIL      13
      ICCL=ICC                                                            EPSIL      14
      C=1.0                                                               INLET78   152
      A1=0.5                                                              INLET78   153
      SMAX=FMX-FMIN                                                       INLET78   154
      ETAOC=DFM                                                           INLET78   155
      COSMAX=C/SMAX                                                       INLET78   156
      Z1=1./(NPT-1.)                                                      INLET78   157
      CONST1=ETAOC*COSMAX                                                 INLET78   158
      A2=-(Z1-A1)/A1                                                      INLET78   159
      A3=-Z1/A1                                                           INLET78   160
      BNEW=1.01                                                           INLET78   161
C                                                                         EPSIL      15
      GO TO (1,2),KEY                                                     EPSIL      16
C                                                                         EPSIL      17
1     FNPTM2=NPT-2                                                        EPSIL      18
      IF(NCALL .EQ. 1)BNEW=1.005                                          INLET78   162
      IF(NCALL .EQ. 1)BNEW=1.0001                                         INLET78   163
      IF(NCALL .EQ. 1)BNEW=1.01                                           INLET78   164
C                                                                         EPSIL      20
      DO 3 NIT=1,ICCL                                                     EPSIL      21
      BETA=BNEW                                                           INLET78   165
      F1=CONST1-F(BETA)/G(BETA)                                           INLET78   166
      FP1=(-G(BETA)*FP(BETA)+F(BETA)*GP(BETA))/G(BETA)**2                 INLET78   167
      BNEW=BETA-F1/FP1                                                    INLET78   168
      IF(ABS(BNEW-BETA) .LE. FPCCL)GO TO 4                                INLET78   169
3     CONTINUE                                                            EPSIL      31
      GO TO 5                                                             EPSIL      32
C                                                                         EPSIL      33
2     NPTM=NPT-1                                                          EPSIL      34
      IF(NCALL.EQ.1)                                                      EPSIL      35
     1 EPS=((FMXL/DFML)**(1.0/(NPT-2))-1.0)*SQRT(FLOAT(NPTM))             EPSIL      36
      DO 6 L=1,NPTM                                                       EPSIL      37
6     R(L)=1.0/SQRT(FLOAT(L))                                             EPSIL      38
C                                                                         EPSIL      39
      DO 7 NIT=1,ICCL                                                     EPSIL      40
      SUM1=0.0                                                            EPSIL      41
      SUM2=0.0                                                            EPSIL      42
      DO 8 L=1,NPTM                                                       EPSIL      43
      FLM2=L-2                                                            EPSIL      44
      FACT1=1.0+EPS*R(L)                                                  EPSIL      45
```

```
          FACT2=FACT1**FLM2                                              EPSIL       46
          SUM1=SUM1+FACT2*FACT1                                          EPSIL       47
    8     SUM2=SUM2+(L-1)*FACT2*R(L)                                     EPSIL       48
          F2=FMXL-FMINL-DFML*SUM1                                        INLET78    170
          IF(ABS(F2) .LT. FPCCL)GO TO 4                                  INLET78    171
          FPN=DFML*SUM2                                                  EPSIL       51
          EPS=EPS+F2/FPN                                                 INLET78    172
    7     CONTINUE                                                       EPSIL       53
    C                                                                    EPSIL       54
     5    EPSIL=BNEW                                                     INLET78    173
          WRITE(6,100)                                                   EPSIL       56
          RETURN                                                         EPSIL       57
    C                                                                    EPSIL       58
     4    EPSIL=BNEW                                                     INLET78    174
          WRITE(6,101)EPSIL,F1,NIT                                       INLET78    175
          RETURN                                                         EPSIL       61
    C                                                                    EPSIL       62
    100   FORMAT(/42H EXCEEDED MAX. NO. OF ITERATIONS IN EPSIL.)         EPSIL       63
    101   FORMAT(/7H EPSIL=,F12 5,5X,7H AND F=,F12.5,5X,7H AFTER ,I3,    EPSIL       64
         *  12H ITERATIONS.)                                             EPSIL       65
    C                                                                    EPSIL       66
          END                                                            EPSIL       67
```

```
      SUBROUTINE TAINT(XTAB,FTAB,X,FX,N,K,NER, MON)              TAINT   2
C                                                                TAINT   3
C        SYSTEM LIBRARY SUBROUTINE TAINT FOR POLYNOMIAL INTERPOLATION TAINT   4
C        OF A TABULATED FUNCTION.                                TAINT   5
C                                                                TAINT   6
      DIMENSION XTAB(1),FTAB(1),T(10),C(10)                      TAINT   7
CPS0400  TAINT SUBROUTINE- IN FORTRAN II.                        TAINT   8
      IF (N - K) 1,1,2                                           TAINT   9
    1 NER=2                                                      TAINT  10
      RETURN                                                     TAINT  11
    2 IF (K-9) 3,3,1                                             TAINT  12
    3 IF ( MON) 4,4,5                                            TAINT  13
    5 IF ( MON-2) 6,7,4                                          TAINT  14
    4 J=0                                                        TAINT  15
      NM1=N-1                                                    TAINT  16
      DO 8 I=1,NM1                                               TAINT  17
      IF (XTAB(I)-XTAB(I+1)) 9,11,10                             TAINT  18
   11 NER=3                                                      TAINT  19
      RETURN                                                     TAINT  20
    9 J=J-1                                                      TAINT  21
      GO TO 8                                                    TAINT  22
   10 J=J+1                                                      TAINT  23
    8 CONTINUE                                                   TAINT  24
      MON=1                                                      TAINT  25
      IF (J) 12,6,6                                              TAINT  26
   12 MON=2                                                      TAINT  27
    7 DO 13 I=1,N                                                TAINT  28
      IF (X-XTAB(I)) 14,14,13                                    TAINT  29
   14 J=I                                                        TAINT  30
      GO TO 18                                                   TAINT  31
   13 CONTINUE                                                   TAINT  32
      GO TO 15                                                   TAINT  33
    6 DO 16 I=1,N                                                TAINT  34
      IF (X-XTAB(I)) 16,17,17                                    TAINT  35
   17 J=I                                                        TAINT  36
      GO TO 18                                                   TAINT  37
   16 CONTINUE                                                   TAINT  38
   15 J=N                                                        TAINT  39
   18 J=J-(K+1)/2                                                TAINT  40
      IF (J) 19,19,20                                            TAINT  41
   19 J=1                                                        TAINT  42
   20 M=J+K                                                      TAINT  43
      IF (M-N) 21,21,22                                          TAINT  44
   22 J=J-1                                                      TAINT  45
      GO TO 20                                                   TAINT  46
   21 KP1=K+1                                                    TAINT  47
      JSAVE=J                                                    TAINT  48
   26 DO 23 L=1,KP1                                              TAINT  49
      C(L)=X-XTAB(J)                                             TAINT  50
      T(L)=FTAB(J)                                               TAINT  51
   23 J=J+1                                                      TAINT  52
      DO 24 J=1,K                                                TAINT  53
      I=J+1                                                      TAINT  54
   25 T(I)=(C(J)*T(I)-C(I)*T(J))/(C(J)-C(I))                     TAINT  55
      I=I+1                                                      TAINT  56
      IF (I-KP1) 25,25 ,24                                       TAINT  57
   24 CONTINUE                                                   TAINT  58
```

```
                 FX=T(KP1)                                              TAINT     59
                 NER=1                                                  TAINT     60
   60            RETURN                                                 TAINT     61
                 END                                                    TAINT     62
```

```
SUBROUTINE TRIB        76/76    OPT=2 TRACE                    FTN 4.6+430        01/10/80  14.12.48        PAGE     1

                  SUBROUTINE TRIB(A,B,C,X,F,NL,NU)                                TRIB       2
                  DIMENSION A(2),B(2),C(2),X(2),F(2)                              TRIB       3
            C                                                                     TRIB       4
            C        THIS SUBROUTINE SOLVES A TRI-DIAGONAL SYSTEM OF LINEAR       TRIB       5
            C        EQUATIONS.                                                   TRIB       6
            C                                                                     TRIB       7
                  X(NL)=C(NL)/B(NL)                                               TRIB       8
                  F(NL)=F(NL)/B(NL)                                               TRIB       9
                  NLP1 = NL +1                                                    TRIB      10
                  DO 1 J=NLP1,NU                                                  TRIB      11
                  Z=1./(B(J)-A(J)*X(J-1))                                         TRIB      12
                  X(J)=C(J)*Z                                                     TRIB      13
                1 F(J)=(F(J)-A(J)*F(J-1))*Z                                       TRIB      14
                  NUPNL=NU+NL                                                     TRIB      15
                  DO 2 J1=NLP1,NU                                                 TRIB      16
                  J=NUPNL-J1                                                      TRIB      17
                2 F(J)=F(J)-X(J)*F(J+1)                                           TRIB      18
                  RETURN                                                          TRIB      19
                  END                                                             TRIB      20
```

```
      SUBROUTINE PLAWT(N,M,X,Y,XMAX,XMIN,YMAX,YMIN)                 PLAWT     2
C                                                                   PLAWT     3
C        THIS SUBROUTINE IS ONE OF THE SUBROUTINES THAT PLOTS GRIDS PLAWT     4
C        ON THE SC4020 PLOTTER.                                     PLAWT     5
C                                                                   PLAWT     6
      DIMENSION X(140,80),Y(140,80),XX(80),YY(80)                   PLAWT     7
      COMMON/TCOM/ITITLE(8)                                         PLAWT     8
C                                                                   PLAWT     9
C        READJUST PLOT LIMITS SO AS TO AVIOD A STRECHED PLOT.       PLAWT    10
      XDIF=XMAX-XMIN                                                PLAWT    11
      YDIF=YMAX-YMIN                                                PLAWT    12
      IF(XDIF.LT.YDIF)  GO TO 4                                     PLAWT    13
      XDIFH=XDIF*0.5                                                PLAWT    14
      YMID=(YMAX+YMIN)*0.5                                          PLAWT    15
      YMX=YMID+XDIFH                                                PLAWT    16
      YMN=YMID-XDIFH                                                PLAWT    17
      XMX=XMAX                                                      PLAWT    18
      XMN=XMIN                                                      PLAWT    19
      GO TO 5                                                       PLAWT    20
    4 YDIFH=YDIF*0.5                                                PLAWT    21
      XMID=(XMAX+XMIN)*0.5                                          PLAWT    22
      XMX=XMID+YDIFH                                                PLAWT    23
      XMN=XMID-YDIFH                                                PLAWT    24
      YMX=YMAX                                                      PLAWT    25
      YMN=YMIN                                                      PLAWT    26
    5 CONTINUE                                                      PLAWT    27
C                                                                   PLAWT    28
C        PLOT THE LINES                                             PLAWT    29
      CALL AXIS(XMN,XMX,YMN,YMX,0,0)                                PLAWT    30
      CALL TITLE(ITITLE,80)                                         PLAWT    31
      DO1J=1,M                                                      PLAWT    32
    1 CALL PLOT(X(1,J),Y(1,J),N,0)                                  PLAWT    33
      DO2I=1,N                                                      PLAWT    34
      DO3J=1,M                                                      PLAWT    35
      XX(J)=X(I,J)                                                  PLAWT    36
    3 YY(J)=Y(I,J)                                                  PLAWT    37
    2 CALL PLOT(XX,YY,M,0)                                          PLAWT    38
      RETURN                                                        PLAWT    39
      END                                                           PLAWT    40
```

```
      SUBROUTINE AXIS(XMIN,XMAX,YMIN,YMAX,NXINTS,NYINTS)               AXIS   2
C                                                                      AXIS   3
C        THIS SUBROUTINE IS ONE OF THOSE THAT PLOTS GRIDS              AXIS   4
C        ON THE SC4020 PLOTTER.                                        AXIS   5
C                                                                      AXIS   6
C     THIS SUBROUTINE DRAWS THE X AND Y AXES, MARKS OFF THE            AXIS   7
C     INTERVALS, SETS THE SCALE VALUES, AND MOVES THE FILM TO A NEW    AXIS   8
C     FRAME.                                                           AXIS   9
C                                                                      AXIS  10
C     XMIN IS THE MINIMUM VALUE OF THE X (HORIZONTAL) VARIABLE.        AXIS  11
C     XMAX IS THE MAXIMUM VALUE OF THE X VARIABLE.                     AXIS  12
C     YMIN IS THE MINIMUM VALUE OF THE Y (VERTICAL) VARIABLE.          AXIS  13
C     YMAX IS THE MAXIMUM VALUE OF THE Y VARIABLE.                     AXIS  14
C     NXINTS IS THE NUMBER OF INTERVALS INTO WHICH THE X AXIS IS TO    AXIS  15
C          BE DIVIDED                                                  AXIS  16
C     NYINTS IS THE NUMBER OF INTERVALS INTO WHICH THE Y AXIS IS TO    AXIS  17
C          BE DIVIDED.                                                 AXIS  18
C                                                                      AXIS  19
C     DO INITIALIZATION                                                AXIS  20
      CALL CAMRAV(35)                                                  AXIS  21
      CALL SMALLV                                                      AXIS  22
      CALL FRAMEV(0)                                                   AXIS  23
      NX=NXINTS                                                        AXIS  24
      NY=NYINTS                                                        AXIS  25
C     IF NX OR NY .LE. 0 MAKE THEM EQUAL TO 1                          AXIS  26
      IF (NX .LE. 0) NX=1                                              AXIS  27
      IF (NY .LE. 0) NY=1                                              AXIS  28
C     SET UP VALUES TO BE USED FOR MARGINS                             AXIS  29
      ML=123                                                           AXIS  30
      MR=923                                                           AXIS  31
      MB=123                                                           AXIS  32
      MT=923                                                           AXIS  33
C     DRAW X AXIS                                                      AXIS  34
      CALL LINEV(ML,MB,MR,MB)                                          AXIS  35
C     DRAW Y AXIS                                                      AXIS  36
      CALL LINEV(ML,MB,ML,MT)                                          AXIS  37
C     DETERMINE INCREMENTS FOR TIC MARKS                               AXIS  38
      DX=(XMAX-XMIN)/NX                                                AXIS  39
      DY=(YMAX-YMIN)/NY                                                AXIS  40
C     SCALE X AND Y VALUES                                             AXIS  41
      CALL XSCALV(XMIN,XMAX,ML,100)                                    AXIS  42
      CALL YSCALV(YMIN,YMAX,MB,100)                                    AXIS  43
C     DRAW TIC MARKS ON THE X AXIS                                     AXIS  44
      CALL LINRV(1,MB-20,MB-5,MB+5,XMIN,XMAX,DX,0,-1,-3,8)             AXIS  45
C     DRAW TIC MARKS ON Y AXIS                                         AXIS  46
      CALL LINRV(2,ML- 90,ML-5,ML+5,YMIN,YMAX,DY,0,-1,-3,10)           AXIS  47
      RETURN                                                           AXIS  48
      END                                                              AXIS  49
```

```
      SUBROUTINE LABEL(IXLABL,NX,IYLABL,NY)                             LABEL      2
C                                                                       LABEL      3
C        THIS SUBROUTINE IS ONE OF THOSE THAT PLOTS GRIDS               LABEL      4
C        ON THE SC4020 PLOTTER.                                         LABEL      5
C                                                                       LABEL      6
C     THE MAXIMUM NUMBER OF CHARACTERS ALLOWED FOR THE X LABEL IS 54.   LABEL      7
C     THE MAXIMUM NUMBER OF CHARACTERS ALLOWED FOR THE Y LABEL IS 38.   LABEL      8
      INX=IABS(NX)                                                      LABEL      9
      INY=IABS(NY)                                                      LABEL     10
      IF (INX .GT. 54) INX=54                                           LABEL     11
      IF (INY .GT. 38) INY=38                                           LABEL     12
      IX=500-(INX/2)*18                                                 LABEL     13
      IY=510+(INY/2)*26                                                 LABEL     14
C     LABEL THE X AXIS                                                  LABEL     15
      CALL RITE2V(IX,60,1000,90,1,INX,1,IXLABL,NLAST)                   LABEL     16
C     LABEL THE Y AXIS                                                  LABEL     17
      DO 100 I=1,INY                                                    LABEL     18
           ITEMP=IY-26*(I-1)                                            LABEL     19
           CALL RITE2V(10,ITEMP,50,90,1,1,1,IYLABL, NLAST)              LABEL     20
  100 CONTINUE                                                          LABEL     21
      RETURN                                                            LABEL     22
      END                                                               LABEL     23
```

```
SUBROUTINE PLOT        76/76    OPT=2 TRACE                    FTN 4.6+460        01/10/80  14.12.48        PAGE     1

                SUBROUTINE PLOT(X,Y,NBR,NSYM)                                   PLOT       2
          C                                                                     PLOT       3
          C        THIS SUBROUTINE IS ONE OF THOSE THAT PLOTS GRIDS             PLOT       4
          C        ON THE SC4020 PLOTTER.                                       PLOT       5
          C                                                                     PLOT       6
                DIMENSION X(1),Y(1),MARKPT(5)                                   PLOT       7
                DATA MARKPT /42,16,55,38,44/                                    PLOT       8
          C     SYMBOLS ARE, IN ORDER.     + X O *                              PLOT       9
                IF (NSYM .GT. 0 .AND. NSYM .LE. 5) GO TO 100                    PLOT      10
                J=IABS(NBR)-1                                                   PLOT      11
                DO 110 I=1,J                                                    PLOT      12
                   CALL LINEV( IXV(X(I)), IYV(Y(I)), IXV(X(I+1)),IYV(Y(I+1)) )  PLOT      13
            110 CONTINUE                                                        PLOT      14
                RETURN                                                          PLOT      15
            100 CALL APLOTV(NBR,X,Y,1,1,1,MARKPT(NSYM))                         PLOT      16
                RETURN                                                          PLOT      17
                END                                                             PLOT      18
```

```
      SUBROUTINE TITLE(ITITLE,NCHARS)                                   TITLE      2
C                                                                       TITLE      3
C        THIS SUBROUTINE IS ONE OF THOSE THAT PLOTS GRIDS               TITLE      4
C        ON THE SC4020 PLOTTER.                                         TITLE      5
C                                                                       TITLE      6
C     THE MAXIMUM NUMBER OF CHARACTERS ALLOWED IN THE TITLE IS 108.     TITLE      7
C                                                                       TITLE      8
      ICHARS=IABS(NCHARS)                                               TITLE      9
      IF (ICHARS .GT. 108) ICHARS=108                                   TITLE     10
      IF (ICHARS .GT. 54) IX=14                                         TITLE     11
      IF (ICHARS .LE. 54) IX=510-(ICHARS/2)*18                          TITLE     12
      IY=990                                                            TITLE     13
      CALL RITE2V(IX,IY,1010,90,1,ICHARS,1,ITITLE,NLAST)                TITLE     14
      RETURN                                                            TITLE     15
      END                                                               TITLE     16
```

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15. Supplementary Notes

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Final Report

16. Abstract

The use of a computer code for the calculation of 2-D inlet flow fields in a supersonic free stream and a nonorthogonal mesh-generation code are illustrated by specific examples. Input, output and program operation and use are given and explained for the case of supercritical inlet operation at a subdesign Mach number ($M_\infty = 2.09$) for an isentropic-compression, drooped-cowl inlet. Source listings of the computer codes are also provided.

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