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SUPPLEMENT TO:

ADVANCED LAUNCH VEHICLE COMPUTER PROGRAMS FOR VERTICAL TAKEOFF TRAJECTORIES, HORIZONTAL TAKEOFF TRAJECTORIES, AND HORIZONTAL TAKEOFF TRAJECTORIES WITH SONIC BOOM CALCULATION

Prepared for:
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
GEORGE C. MARSHALL SPACE FLIGHT CENTER
Aero-Astrodynamics Laboratory

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SECTION I

INTRODUCTION

Since the publication of "Advanced Launch Vehicle Computer Programs for Vertical Takeoff Trajectories, Horizontal Takeoff Trajectories and Horizontal Takeoff with Sonic Boom Calculations" (TR-293-6-110), several additions and improvements have been made to both the Vertical Takeoff Program (VTO) and the Horizontal Takeoff Program (HTO) to increase the usefulness of these programs. This includes the addition of several calculation options, output options, input changes, and general program streamlining. These changes necessitated converting the HTO from the SDS 930 to the CDC 3200, and setting up two decks for the VTO - a skeletal one on the SDS 930 and an all option version for the CDC 3200. In addition, sketches of the vehicles for which these programs were written have been included.

SECTION II

DISCUSSION OF MODIFICATIONS

The modification to decks VTO - 930, VTO - 3200, and HTO - 3200 include:

A. The addition of two new options to all three decks. These options are: (1) Step throttling and (2) ISP degradation.

B. The addition of constant thrust-to-weight ratio to the HTO program.

C. The conversion of the old 930 sense switches to sense switch options.

D. The addition of two new options to the 3200 programs only. These options are: (1) Output option and (2) Payload option.

E. The ability to run existing vehicles on these programs.

These options and the use of the program to run existing vehicles are explained in the following paragraphs. The data needed is explained in Section III.

A.(1) A step throttling option has been added for the first stage to supplement the continuous throttling already programmed. The throttling can now be done as a certain number (XMOD) of discrete steps. A large number of steps closely approximates continuous throttling. For this option

$$THRI_{new} = THRI_{old} - THRI_{old}/XMOD$$

A.(2) Isp degradation for both stages is computed from an input table of engine throttling ratios vs specific impulse fractions. This table is described in the original report

With Isp degradation

$$Isp = Isp * Isp\ factor$$

Without Isp degradation

$$Isp = Isp\ from\ the\ table$$

B. A second stage lift-off with constant thrust-to-weight ratio, THR/WT, as described in the original report for the VTO, has been incorporated

into the HTO

Without constant THR/WT

THR2 = input value = constant thrust

With constant THR/WT

THR2 = TW2 * WT

Where TW2 is the input THR/WT ratio

C. The console sense switch options of the earlier versions have been converted to indicator options. Indicator ISW3 corresponds to Sense Switch 3. ISW2 corresponds to Sense Switch 2, as explained in the original report.

D.(1) The tabulated output option was incorporated to provide a faster, shortened output for use when a more detailed output is not needed, such as for publication of results. This option is illustrated in the HTØ sample run (Section VII).

D.(2) The payload recalculation option was added to allow iteration of the program on lift-off weight and trajectory to yield a specified payload. Recalculation of the trajectory with a successively improved initial weight value is attempted only if

$$\Delta PLD > .00001 \times PLD_{required}$$

or

$$\Delta PLD < 1000.\ lbs$$

where

$$\Delta PLD = PLD_{CALCULATED} - PLD_{required}$$

$$PLD = \text{payload}$$

If a recalculation is done

$$W\emptyset_{new} = W\emptyset_{old} + \text{Increment}$$

$$\text{if } PLD < PLD_{req}$$

$$W\emptyset_{new} = W\emptyset_{old} - \text{Increment}$$

$$\text{if } PLD > PLD_{req}$$

The increment used is determined by the size of ΔPLD, and the input value DWT is the minimum increment size.

Due to the non-linearity of WO vs PLD near the solution, if two solutions within 150 pounds of the required PLD value are found on opposite sides of the required value, linear interpolation is used to calculate a final WO value.

E. All three programs were originally written to calculate from a given total weight and some other known factors, as described in the report, the necessary breakdown of the weight components to be jettisoned at each stage, such as engine, tank, and equipment weights. These equations, used by both stages, are described in Section 3.1.4 of the original report. However, if complete weight data are available for an existing vehicle, this known data can be utilized and the breakdown bypassed.

For the first stage, from page 10 of the original report, everything dropped at staging will be included in W_{JET} where

$$W_{Jet} = W_{Stage} + W_{Build2} \quad \text{where } W_{Build2} = M_2 T_{Vac_2}$$

Instructions on inputting the correct data for W_{Stage} and W_{Build2} are in Section III.

The calculations for the first stage, using known data, assume no first stage reserves. Then the second stage weight is

$$WO2 = WT - W_{Jet}.$$

For the second stage, the payload T2 is

$$T2 = WT - W_{Jet}$$

where W_{Jet} is the total weight jettisoned, input is as described in Section III. If reserves are wanted for the second stage W_{Jet}, then Wres1 and Wres2 must be calculated.

Wres1 = V_F term in equation (25) of the original report, and

Wres2 = V_V term in equation (25). Delv2 and CEE2* are used to control these, as described in the Input.

*CEE and CEE2 are c from equation (27) of the original report, rather than the definitions given in the report. These are unitless factors.

Option	Value	Note
MAXL	1	The HTO - Maximum lift guidance profile is used (Sec. 3.2.2 in original report).
	0	The HTO - Linear Load profile is used (Sec. 3.2.1 in original report).
ITHROT	1	Continuous throttling of the first stage to prevent the total acceleration from exceeding the input ACLIM.
	0	First stage engines not throttled.
ISW3	1	Recalculation of the final trajectory with complete second by second printout.
	0	Skeletal output only.
ISW2	1	Continuous second by second printout during all calculations. This is primarily for debugging. Print out only at critical points during calculations.
ISTEP	1	Step throttling of the engines as described using input XMOD. Set ITHROT to 1 also.
	0	No step throttling.
ISPDEG	1	Isp degradation, both stages, using input RATAB table.
	0	No Isp degradation.
IPLD	1	Recalculation of the trajectory to achieve the desired payload. Used with inputs RPLD and DWT.
	0	No trajectory recalculation for payload.
JTAB	1	The final trajectory is recalculated giving second by second printout in tabulated form (one line per second).
	0	The final trajectory is not recalculated and tabulated. (ISW3 would recalculate and print standard output).

Also on this card is the number of data points in each table to be read in later. The same format is continued. These numbers are not printed with the options in the data output.

NTAB1 — Number of point sets in the Mach - aerodynamic coefficients table

NTAB1 = 16 sets for the HTØ sample case (Section VII).

NTAB2	Number of point sets in the first stage Altitude-Thrust-Isp table NTAB2 = 10 for the sample case
NTAB3	Number of point sets in the Throttling Ratio-Isp factor table NTAB3 = 11 for the sample case

This card image represents the option card used for the example.

```
 0  0  1  0  0  0  1  0  1 16 10 11
```

Single Point Data

This data is input 5 per card, 15 spaces each, as illustrated in the data card images for our sample run shown below (format 5E15.8). The last five spaces of each card may be used for numbering the data cards to facilitate data modifications. Each variable shown below is defined in the technical nomenclature given in the original report, Table 2, except those noted.

Card 3 XLAT AZ VO ALTO GAMO

```
2.85000000E 01 9.00000000E 01 6.50000000E 02          0              0
```

Card 4 ALPO WØ CØNAL ANMAX CØNST

```
1.40000000E 01 1.50000000E 06 2.50000000E-02 1.50000000E 00 4.02700000E-04
```

Card 5 ACLIM GAMEP TIMEP WW ENN

```
3.00000000E 00 6.50000000E 01 1.50000000E 03 6.00000000E 04 1.15000000E 00
```

Card 6 TW2 XMØD VSTAG PNT VM

```
1.00000000E 00     0.0          2.00000000E 04 8.18000000E-04 2.57600000E 04
```

Card 7 HM DELH XMGAM BETA DELT

```
3.03806000E 05 1.00000000E 03                0 1.00000000E 00 1.00000000E 00
```

Card 8 PTSTEP ENGF BUILD DECAY TNKF

```
8.80110000E 05 1.62840000E 05                0 1.20000000E-02 1.00000000E 00
```

Card 9 WP1 EQP DELVF CEE SCALE

```
600.          1.07086000E-02 9.46870000E-03 3.20423000E-03 1.70921000E-02
```

Card 10 CNTIN ENG2 BILD2 DKAY2 TNK2

```
1.00000000E 00 1.69023000E-02 7.34610000E-04 1.83650000E-04 3.28874000E-02
```

Card 11 WP2 EQP2 DELV2 CEE2 SCAL2

```
2.52000000E 05 4.31680000E 04 6.00000000E 02                0 1.00000000E 00
```

Card 12 CNTN2 XISP2 THR2 CKK AREA

```
1.0            4.55000000E 02 3.26700000E 05 1.09000000E 00 5.08300000E 03
```

Card 13 RPLD DWT

```
2.43622000E 04 5.00000000E 02
```

where RPLD is the required payload

DWT is the minimum weight increment some multiple of which is used to increment the initial weight. Both of these are used with IPLD = 1. Their value is unimportant for IPLD = 0, but the card must be present.

XMØD (on card 6) is the number of modules in which to step-throttle the first stage, used with ISTEP = 1.

Table Input

Three tables are read in. Each is read one complete set of points per card, 12 spaces for each piece of information (format E12.6 where n is 5 for the first table and 3 for the other two). These tables are described in the original report, Table 2.

Table 1

The mach number - aerodynamic coefficients table is input first. A maximum of 16 sets of points may be input.

XMACHT	is	XMACH	data
CLOTAB	is	CLO	data
CL1TAB	is	CL1	data
CL2TAB	is	CL2	data
CDOTAB	is	CDO	data

They are given as

XMACT(1)	CLOTAB(1)	CL1TAB(1)	CL2TAB(1)	CDOTAB(1)
XMACT(NTAB1)	CLOTAB(NTAB1)	CL1TAB(NTAB1)	CL2TAB(NTAB1)	CDOTAB(NTAB1)

where NTAB1 was input on the option card. There are NTAB1 number of cards for this table.

Table 2

Second is the table of altitude vs thrust and Isp. The maximum number of point sets is 10. They are input as

ALTAB(1)	THR1T(1)	BISPT(1)
ALTAB(NTAB2)	THR1T(NTAB2)	BISPT(NTAB2)

There are NTAB2 cards in this table.

Table 3

Last is the table of throttling ratios and Isp degradation factors. The form is

RATAB(1)	XISPF1(1)	XISPF2(1)
RATAB(NTAB3)	XISPF1(NTAB3)	XISPF2(NTAB3)

with NTAB3 data cards. The maximum number of point sets for this table is 11.

3.2 VTO INPUT

The input for VTO is only slightly different from HTO. Unless otherwise specified, this information applies to both the SDS 930 and the CDC 3200 VTO versions. All formats are the same as for HTO input.

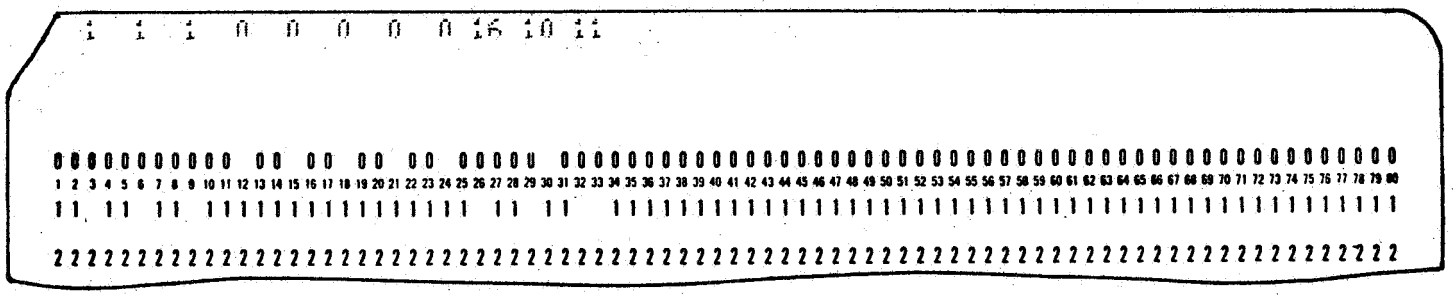
Card 1 Heading

Same form as HTO

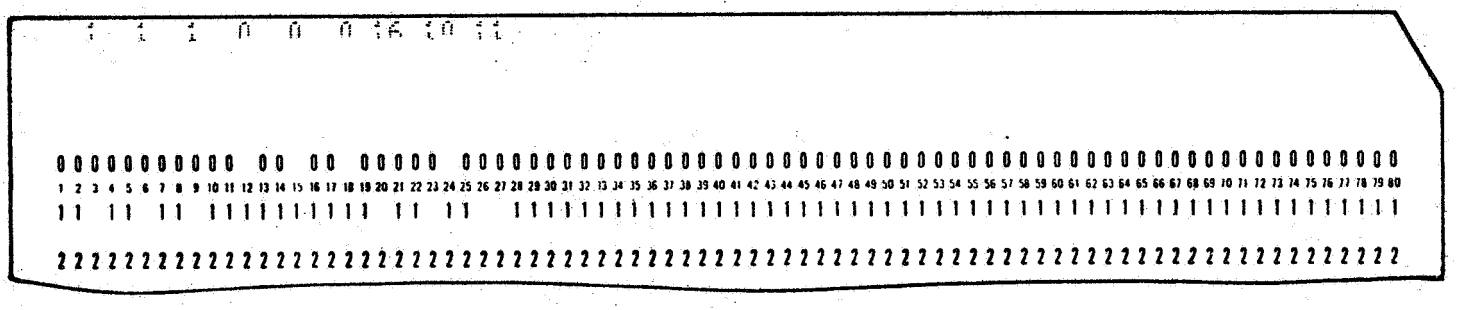
Card 2 Option Card

The definitions are the same as HTO. The order is:

ITW2 ITHROT ISW3 ISW2 ISTEP ISPDEG IPLD JTAB NTAB1 NTAB2 NTAB3.



JTAB and IPLD are only available on the 3200 version. The input space is not provided on the 930 version. The following example card is for the 930.



Single Point Data

CARD 3	XLAT	AZ	VO	ALTO	GAMO
CARD 4	ALPO	WØ	VKICK	GAMK	ACLIM
CARD 5	TW2	WW	ENN	XMØD	VSTAG
CARD 6	PØINT	VM	HM	DELH	XMGAM
CARD 7	BETA	DELT	PTSTEP	ENGF	BUILD
CARD 8	DECAY	TNKF	WP1	EQP	DELVF
CARD 9	CEE	SCALE	CNTIN	ENG2	BILD2
CARD 10	DKAY2	TNK2	WP2	EQP2	DELV2
CARD 11	CEE2	SCAL2	CNTN2	XISP2	THR2
CARD 12	AREA	CKK	RPLD	DWT	

XMØD, RPLD and DWT are defined in the HTO Input Section. RPLD and DWT are not used on the SDS 930 version. For the ~~903~~ 930 version

CARD 12 AREA CKK

Table Data

All table data are the same as the HTO Table data.

For all programs the input data, except NTABs, is printed out in the same order as it is read. However, only the four most important characters of each variable name are printed as identification (see Sections VII and IX).

All data must carefully adhere to the formats given and must be in the order specified. Refer to any standard Fortran II or Fortran IV manuals for explanations of A, I, and E formats if unfamiliar with their use.

Suggested reference manuals for the user are:

CONTROL DATA 3200 Computer System Fortran/Reference Manual

SDS 900 Series Fortran II Reference Manual.

For the calculation of the weights using known values, input WJET for the first stage in this manner:

Set $EQP = W_{Stage}$ The known value, including all applicable components as described in Section II.

SCALE = 1.0 CNTIN = 1.0

ENGF = 0.0 DELVF = 0.0

CEE = 0.0 DECAY = 0.0

ENG = 0.0 WW = 0.0

BILD2 = value needed as M_2 of the equation for W_{Build2} described,

TVAC2 = value needed.

For the second stage, input the weight jettisoned by:

Setting

EQP2 = WJET (without reserves)

SCAL2 = 1.0 CNTN2 = 1.0

ENG2 = 0.0 TNK2 = 0.0

DKAY2 = 0.0 BILD2 = 0.0

DELV2 = 0.0, unless reserves are desired. If they are, input the value needed from the equation previously discussed (Section II).

CEE2 = 0.0, unless reserves are desired. (See the above statement).

SECTION IV

PROGRAM UTILIZATION

For the CDC 3200, the following deck setup should be used by both the HTO and VTO - 3200.

```
7/9 SEQUENCE, 001, System Information
                   Charge number, etc.
                   This information varies with each
                   installation.

7/9 JOB,,,,ND
7/9 FORTRAN, L, X.
    If a binary is desired, use instead
7/9 FORTRAN, L, X, P.
        PROGRAM    NAME
                    Here use HTO or VTO
                    (Begins in column 7)
        MAIN PROGRAM SECTION

Blank card
FIRST SUBROUTINE

Blank card
SECOND SUBROUTINE
```

until all subroutines are included. Subroutines should be called prior to their position in the deck setup. Then

```
FINIS (begins in column 10)
7/9 LOAD, 56
7/9 RUN, 10
            maximum run time in minutes.
    Data in the order described
7/8
7/8   7/8
```

To use a CDC 3200 binary of the program, set up the deck in the following manner:

```
7/9 Sequence,001, etc.
7/9 JOB,,, ND
    Binary deck
7/9 RUN, 10
    DATA
7/8
7/8  7/8
```

The CDC 3200 is not usually a programmer operated machine, so operating instructions will not be given.

The facilities needed include the CDC Fortran Compiler on tape (a standard system feature), a reader, a printer, and for binaries, a punch.

As for computer time required, the sample HTO run with tabulated output ran in less than 4 minutes, including compile time. When several iterations are necessary to converge on the correct cutoff conditions, time goes up rapidly, approximately 1 minute per complete Newton-Raphson. Calculations are slowed down very much by use of ISW2 as the work is completely printer bound. (This is also true of the SDS 930 version).

For the VTO - 930 version, the deck setup and machine operating instructions are given in the original report, pages 34 - 35. Delete the sense switch information.

SECTION V

DESCRIPTION OF PROGRAM ROUTINES

I. The main section of all three programs is outlined as:

A. Data

- Input of data
- Print out of read in data
- Initialization of internal data
- Calculate table data for integration

B. ALPHA Control

- Acceleration or
- Calculus of variations

C. Integration

- Calculation of needed information
- Integration

D. Output - Choice of

- Skeletal
- Standard
- Tabulated

E. Option Control

F. Monitoring Cutoff Conditions

- First stage:WT or V
- Second stage: V

G. First stage weight breakdown

H. Second stage initialization

I. Final weight iteration

J. Newton-Raphson

- CONST - PNT or
- TIMEP - PNT

K. Weight breakout second stage

L. Payload option

2. Subroutine RUNKUT is a generalized four-part Runge-Kutta integration, first order only. The DEPVAR values calculated correspond to the integrated variables as shown in the main program common block.

3. Subroutine OUT is a general output routine for floating point numbers and four character alphanumeric names. Up to five names and values may be printed with each call. An E12.5 format is the format used for most of the output. To change this, i.e., to increase the accuracy, only statement 20 in OUT need be changed.

4. Subroutine ATMOSP gives the speed of sound, gravitational attraction, and atmospheric density as a function of altitude. When the altitude factor exceeds the maximum value for which data are available, the maximum altitude data are used. No diagnostic is generated.

5. The trigonometric functions

   SIND(X)
   COSD(X)
   TAND(X) give the sin, cos, and tan, respectively, of the angle X input in degrees.

6. Function ARSIN(X) gives the arc sin of an angle X input in radians.

7. Function Y3 is a linear interpolation equation where Y3 is the unknown variable dependent on X3, a value for which is calculated from two sets of points Y2, X2 and Y1, X1.

8. Function ACCF calculates the acceleration. This was changed to a function to avoid duplication of the equation in the program. (VTO only).

Figures 5-1 and 5-2 show the Test Vehicle used for the sample run.

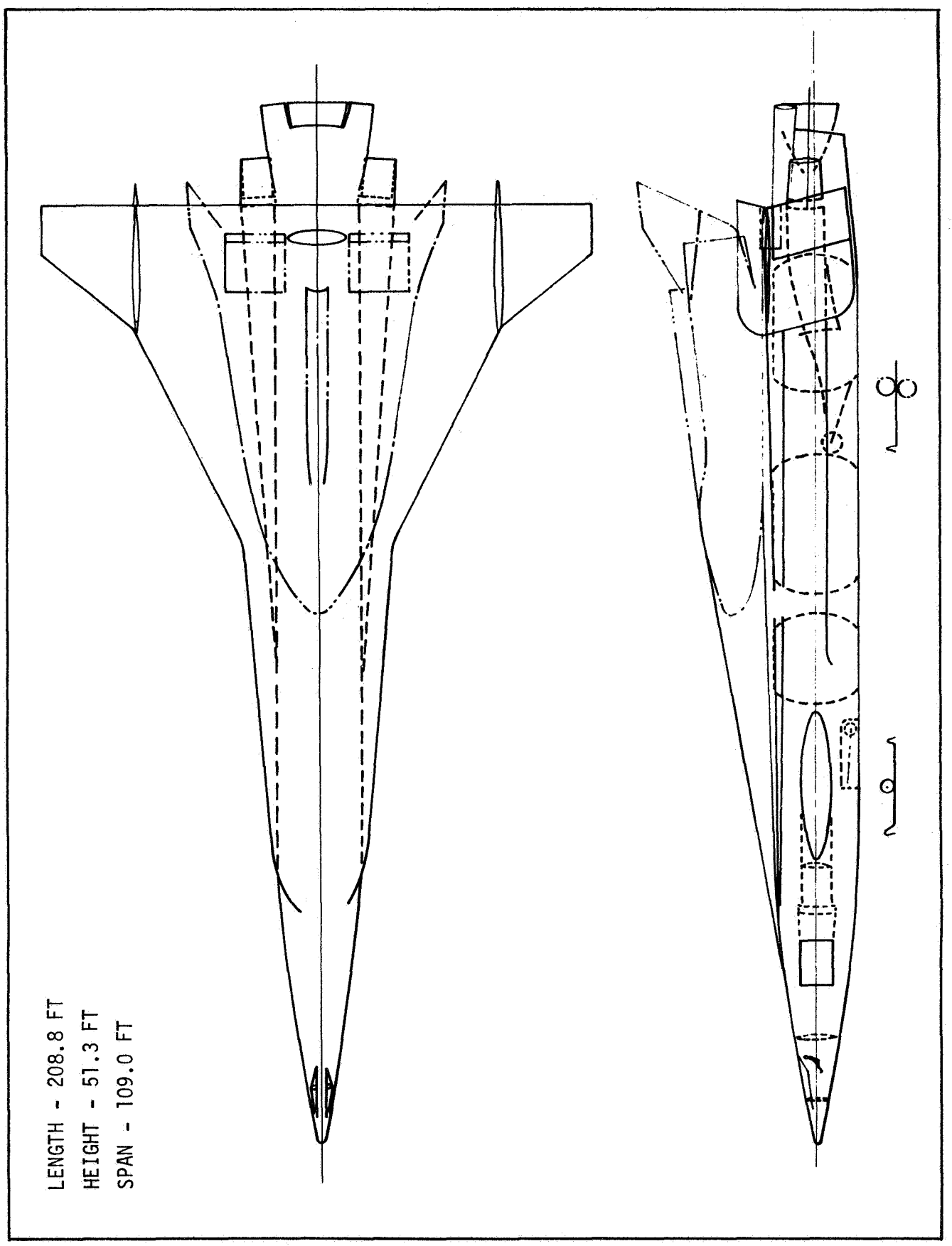


Figure 5-1. HTO SAMPLE RUN TEST VEHICLE

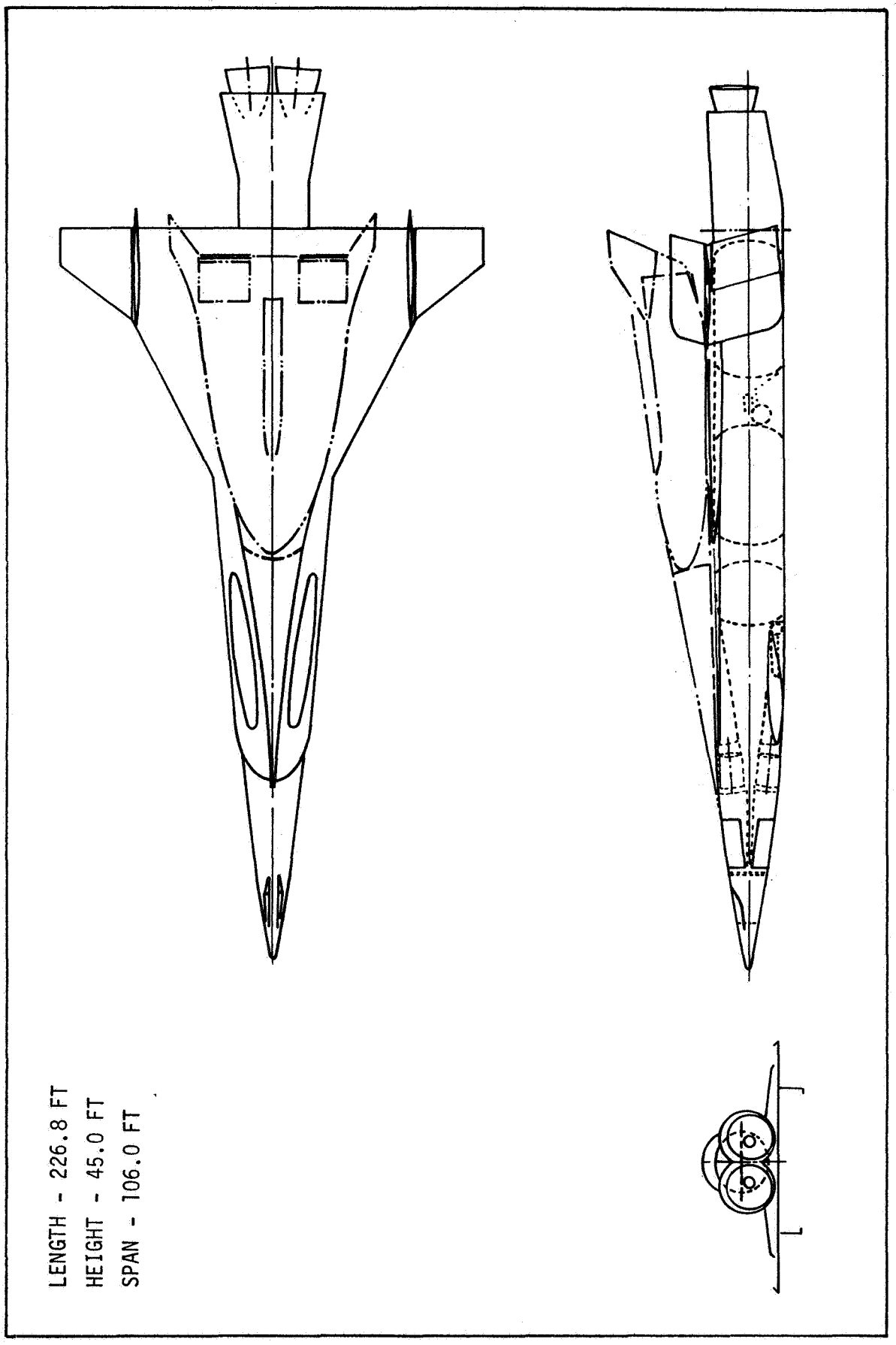


Figure 5-2. VTO SAMPLE RUN TEST VEHICLE

SECTION VI

HTO SOURCE LISTING

3200 FORTRAN (2.1.0)/(RTS) / /

```
      PROGRAM HTOT                                                      A    1
C     H TO PITCH PARAMETER REPORT TR-293-6-110     NORTHROP             A    2
C                                                                       A    3
      DIMENSION ANS(3), XMACHT(16), CL0TAB(16), CL1TAB(16), CL2TAB(16),  A    4
     1CD0TAB(16), ALTAB(10), THR1T(10), RATAB(11), XISPF1(11), XISPF2(11 A    5
     2), DERIV(9), CODE(9), BISPT(10), HH(3), ANG(3)                    A    6
      COMMON VI,GAMI,ALTI,WTI,VLD,VLG,VLT,VCHAR,RNGI                    A    7
      EQUIVALENCE (ANS(1),SOS), (ANS(2),GRAV), (ANS(3),DENS)            A    8
C       THIS IS EQUIVALENT TO DEPVAR                                    A    9
      COMMON XLIFT,DRAG,SALPH,CALPH                                     A   10
C     READING                                                           A   11
   12 READ 280, CODE                                                    A   12
      PRINT 310, CODE                                                   A   13
C                                                                       A   14
C     OPTIONS                                                           A   15
      READ 282, ITW2,MAXL,ITHROT,ISW3,ISW2,ISTEP,ISPDEG,IPLD,JTAB,NTAB1, A   16
     1NTAB2,NTAB3                                                       A   17
      PRINT 284, ITW2,MAXL,ITHROT,ISW3,ISW2,ISTEP,ISPDEG,IPLD,JTAB      A   18
C                                                                       A   19
C     SINGLE POINT INPUT AND PRINT                                      A   20
      READ 286, XLAT,AZ,V0,ALT0,GAM0,ALP0,WO,CONAL,ANMAX,CONST,ACLIM,GAM A   21
     1EP,TIMEP,WW,ENN,TW2,XMOD,VSTAG,PNT,VM,HM,DELH,XMGAM,BETA,DELT,PTST A   22
     2EP,ENGF,BUILD,DECAY,TNKF                                          A   23
      CALL OUT (4HYLAT,XLAT,2HAZ,AZ,2HV0,V0,4HALT0,ALT0,4HGAM0,GAM0)    A   24
      CALL OUT (4HALP0,ALP0,2HWO,WO,4HCONA,CONAL,4HANMA,ANMAX,4HCONS,CON A   25
     1ST)                                                               A   26
      CALL OUT (4HACLI,ACLIM,4HGAMP,GAMEP,4HTIMP,TIMEP,2HWW,WW,3HENN,ENN A   27
     1)                                                                 A   28
      CALL OUT (3HTW2,TW2,4HXMOD,XMOD,4HVSTA,VSTAG,3HPNT,PNT,2HVM,VM)   A   29
      CALL OUT (2HHM,HM,4HDELH,DELH,4HXMGA,XMGAM,4HBETA,BETA,4HDELT,DELT A   30
     1)                                                                 A   31
      CALL OUT (4HPTST,PTSTEP,4HENGF,ENGF,4HBUIL,BUILD,4HDECA,DECAY,4HTN A   32
     1KF,TNKF)                                                          A   33
      READ 286, WP1,EQP,DELVF,CEE,SCALE,CNTIN,ENG2,BILD2,DKAY2,TNK2,WP2, A   34
     1EQP2,DELV2,CEE2,SCAL2,CNTN2,XISP2,THR2,CKK,AREA,RPLD,DWT          A   35
      CALL OUT (3HWP1,WP1,3HEQP,EQP,4HDELV,DELVF,3HCEE,CEE,4HSCAL,SCALE) A   36
      CALL OUT (4HCNTI,CNTIN,4HENG2,ENG2,4HBLD2,BILD2,4HDKY2,DKAY2,4HTNK A   37
     12,TNK2)                                                           A   38
      CALL OUT (3HWP2,WP2,4HEQP2,EQP2,4HDLV2,DELV2,4HCEE2,CEE2,4HSCL2,SC A   39
     1AL2)                                                              A   40
      CALL OUT (4HCNT2,CNTN2,4HXSP2,XISP2,4HTHR2,THR2,3HCKK,CKK,4HAREA,A A   41
     1REA)                                                              A   42
      CALL OUT (4HRPLD,RPLD,3HDWT,DWT,4H    ,0.0,1H ,0..1H .0.0)        A   43
C                                                                       A   44
C     TABLE INPUT                                                       A   45
      READ 290, (XMACHT(I),CL0TAB(I),CL1TAB(I),CL2TAB(I),CD0TAB(I),I=1,N A   46
     1TAB1)                                                             A   47
      PRINT 292, (I,XMACHT(I),CL0TAB(I),CL1TAB(I),CL2TAB(I),CD0TAB(I),I= A   48
     11,NTAB1)                                                          A   49
      READ 288, (ALTAB(I),THR1T(I),BISPT(I),I=1,NTAB2)                  A   50
      PRINT 294, (I,ALTAB(I),THR1T(I),BISPT(I),I=1,NTAB2)               A   51
      READ 288, (RATAB(I),XISPF1(I),XISPF2(I),I=1,NTAB3)                A   52
      PRINT 296, (I,RATAB(I),XISPF1(I),XISPF2(I),I=1,NTAB3)             A   53
C                                                                       A   54
```

```
      RE=20902230.0                                                     A  55
      WOR=WO                                                            A  56
      GERO=32.174                                                       A  57
      ANGV=4.16666E-03                                                  A  58
      N1=NTAB1-1                                                        A  59
      N2=NTAB2-1                                                        A  60
      N3=NTAB3-1                                                        A  61
      RADIAN=57.295/795                                                 A  62
      DELT2=DELT                                                        A  63
      LAST=0                                                            A  64
      WOR=WO                                                            A  65
      ITAB=0                                                            A  66
      IPAG=1                                                            A  67
      LINE=61                                                           A  68
C        TURN OFF ALL FLAGS.  INITIALIZE ALL VARIABLES                  A  69
C        FOR NEW TRAJECTORY                                             A  70
   14 INT=0                                                             A  71
      DEC=.1                                                            A  72
   16 KOUNT=0                                                           A  73
      LAP=0                                                             A  74
      TWOK=0                                                            A  75
      ISTAGE=1                                                          A  76
      T=0.0                                                             A  77
      VLO=0.0                                                           A  78
      VLC=0.0                                                           A  79
      VLI=0.0                                                           A  80
      VCPAR=0.0                                                         A  81
      RNL=0.0                                                           A  82
      JBIT=0                                                            A  83
      NPSS=0                                                            A  84
      JASK=0                                                            A  85
      GAM=GAMO                                                          A  86
      ALPH=ALPO                                                         A  87
      V=0                                                               A  88
      ALT=ALTO                                                          A  89
      WT=WO                                                             A  90
      NORM=0                                                            A  91
      RATIO=1.0                                                         A  92
      PRI=0.000001                                                      A  93
      JAPR=1                                                            A  94
      UPL=0                                                             A  95
C                                                                       A  96
   18 CALL ATMOSP (ALT,ANS)                                             A  97
      XMACH=V/SOS                                                       A  98
C                                                                       A  99
C     TABLE DATA     FIRST STAGE                                        A 100
      IF (ISTAGE-1) 20,20,62                                            A 101
   20 DO 22 I=1,N2                                                      A 102
      IF (ALT-ALTAB(I)) 24,22,22                                        A 103
   22 IT=I                                                              A 104
   24 IT=IT+1                                                           A 105
      THRUST=Y3(THR1T(IT),THR1T(IT-1),ALT,ALTAB(IT),ALTAB(IT-1))        A 106
      ISP=Y3(BISPT(IT),BISPT(IT-1),ALT,ALTAB(IT),ALTAB(IT-1))           A 107
      IT=1                                                              A 108
      DO 26 I=1,N1                                                      A 109
      IF (XMACH-XMACHT(I)) 28,26,26                                     A 110
```

```
   20 IT=I                                                              A 111
   22 IT=IT+1                                                           A 112
      XM1=XMACHT(IT-1)                                                  A 113
      XM2=XMACHT(IT)                                                    A 114
      CD0=Y3(CD0TAB(IT),CD0TAB(IT-1),XMACH,XM2,XM1)                     A 115
      CL0=Y3(CL0TAB(IT),CL0TAB(IT-1),XMACH,XM2,XM1)                     A 116
      CL1=Y3(CL1TAB(IT),CL1TAB(IT-1),XMACH,XM2,XM1)                     A 117
      CL2=Y3(CL2TAB(IT),CL2TAB(IT-1),XMACH,XM2,XM1)                     A 118
C                                                                       A 119
      IF (UPD) 30,30,66                                                 A 120
   30 IF (ALPH) 46,46,32                                                A 121
   32 IF (MAXL) 34,34,36                                                A 122
   34 IF (CONST-.0000001) 36,36,44                                      A 123
   36 IF (TIMEP-T-.0000001) 46,46,38                                    A 124
   38 IF (TIMEP-(T+DELT2)) 40,42,42                                     A 125
   40 DELT=TIMEP-T                                                      A 126
   42 IF (MAXL) 48,48,64                                                A 127
C                                                                       A 128
C       DETERMINE ALPH FOR FTO L L                                      A 129
   44 IF (GAMEP-GAM) 46,46,48                                           A 130
   46 ALPH=0.0                                                          A 131
      GO TO 64                                                          A 132
   48 ALPH=ALPH+DELT                                                    A 133
      IF (ALPH-ALP0) 52,52,50                                           A 134
   50 ALPH=ALP0                                                         A 135
   52 ACCN=(THRI/WT)*SIND(ALPH)+(CL0+CL1*ALPH+CL2*ALPH**2)*AREA*(.5*DENS A 136
     1*V**2)/WT                                                         A 137
      IF (NOEM) 54,54,58                                                A 138
   54 IF (ANMAX-ACCN) 56,56,66                                          A 139
   56 NOEM=1                                                            A 140
      VR=V                                                              A 141
   58 IF (ANMAX-CONST*(V-VR)-ACCN) 60,66,66                             A 142
   60 ALPH=ALPH-CONAL                                                   A 143
      IF (ALPH) 46,64,52                                                A 144
C                                                                       A 145
C       SECOND STAGE GUIDANCE   CALCULUS OF VARIATIONS SOLUTION         A 146
   62 GAMAL=ATAN(TAND(ALPH2+GAM2)-PNT*(T-T2))*RADIAN                    A 147
      ALPH=GAMAL-GAM                                                    A 148
      THRI=THR2                                                         A 149
      XISP=XISP2                                                        A 150
      IF (UPD) 68,68,70                                                 A 151
C                                                                       A 152
C       PRE-INTEGRATION                                                 A 153
   64 ACCN=(THRI/WT)*SIND(ALPH)+(CL0+CL1*ALPH+CL2*ALPH**2)*AREA*(.5*DENS A 154
     1*V**2)/WT                                                         A 155
   66 CL=CL0+CL1*ALPH+CL2*ALPH**2                                       A 156
      CD=CD0+CKK*CL*TAND(ALPH)                                          A 157
      DYNP=0.5*DENS*V**2                                                A 158
      XLIFT=CL*DYNP*AREA                                                A 159
      DRAG=CD*DYNP*AREA                                                 A 160
      IF (UPD) 68,68,88                                                 A 161
   68 TI=T                                                              A 162
      VI=V                                                              A 163
      ALTI=ALT                                                          A 164
      RNGI=RNG                                                          A 165
      WTI=WT                                                            A 166
```

```
      GAMI=GAM                                                          A 167
   70 CALPH=COSD(ALPH)                                                  A 168
      SALPH=SIND(ALPH)                                                  A 169
      IF (OPTD) 90,90,88                                                A 170
C                                                                       A 171
   72 IF (JABR) 86,86,74                                                A 172
   74 CALPH=COSD(ALPH)                                                  A 173
C                                                                       A 174
C     TABULATION OPTION      JTAB=1                                    A 175
      IF (ITAB) 82,82,76                                                A 176
   76 IF (LINE-60) 80,80,78                                             A 177
   78 PRINT 274, COUF,IPAG                                              A 178
      IPAG=IPAG+1                                                       A 179
      PRINT 276                                                         A 180
      LINE=5                                                            A 181
   80 PRINT 278, T,ALPH,V,GAM,ALT,THRI,XLIFT,DRAG,XMACH,RNG,VCHAR       A 182
      LINE=LINE+1                                                       A 183
      GO TO 84                                                          A 184
C      OUTPUT      STANDARD FORM                                        A 185
   82 PRINT 71,T,ISTAGE,ALPH,V,CL
   71 FORMAT(5HOTIME,E15.5,3X,5HSTAGE,2X,I2,13X,4HALPH,E15.8,3X,1HV,E18.
     15,3X,2HCL,E17.5)
      CALL OUT (3HSOS,SOS,4HGRAV,GRAV,3HGAM,GAM,3HALT,ALT,4HLIFT,XLIFT)  A 189
      CALL OUT (4HMACH,XMACH,2HWT,WT,3HACC,ACC,4HTHRI,THRI,2HCD,CD)     A 190
      CALL OUT (4HDENS,DENS,4HXISP,XISP,4HACCN,ACCN,4HRATI,RATIO,4HDRAG, A 191
     1DRAG)                                                             A 192
      CALL OUT (4HDYNP,DYNP,3HRNG,RNG,3HVLD,VLD,3HVLG,VLG,3HVLT,VLT)    A 193
      CALL OUT (4HVCHR,VCHAR,4H    ,0.0,1H ,0.,1H ,0.,1H ,0.)           A 194
   84 JABR=0                                                            A 195
      IF (IVOK) 86,86,172                                               A 196
C                                                                       A 197
C        INTEGRATION                                                    A 198
   86 IND=1                                                             A 199
   88 SGAM=SIND(GAMI)                                                   A 200
      CGAM=COSD(GAMI)                                                   A 201
C     VDOT                                                              A 202
      DERIV(1)=GEE0/WTI*(THRI*CALPH-DRAG)-GRAV*SGAM                     A 203
C     HDOT                                                              A 204
      DERIV(2)=(GEE0/(WTI*VI)*(THRI*SALPH+XLIFT)+(VI/(RE+ALT)-GRAV/VI)*C A 205
     1OSGAM)*RADIAN                                                     A 206
C     ADOT                                                              A 207
      DERIV(3)=VI*SGAM                                                  A 208
C     XDOT                                                              A 209
      DERIV(4)=-THRI/XISP                                               A 210
C     VELOCITY COMPONENTS                                               A 211
      DERIV(5)=(DRAG*GRAV)/WTI                                          A 212
      DERIV(6)=GRAV*SGAM                                                A 213
      DERIV(7)=(GRAV*THRI/WTI)*(1-CALPH)                                A 214
      DERIV(8)=(THRI*GRAV)/WTI                                          A 215
      DERIV(9)=VI*RE*CGAM/(RE+ALT)                                      A 216
      CALL RUNKUT (TI,DERIV,DELT,IND)                                   A 217
      IND=IND+1                                                         A 218
      OPTD=1                                                            A 219
      IF (IND-4) 18,18,120                                              A 220
C                                                                       A 221
   90 ACC=ACCF(THRI)                                                    A 222
```

```
      THRX=THRI                                                         A 223
      IF (ACLIM-ACC) 92,72,72                                           A 224
   92 IF (ITHROT) 94,94,98                                              A 225
   94 IF (MESS) 96,96,72                                                A 226
   96 TEMP1=ACC/ACLIM                                                   A 227
      PRINT 312, TI,TEMP1                                               A 228
      GO TO 72                                                          A 229
C                                                                       A 230
C        THROTTLE                                                       A 231
   98 IF (ISTEP) 100,100,118                                            A 232
  100 THRT=DRAG*CALPH-XLIFT*SALPH+SQRT((ACLIM*WTI)**2-(XLIFT*CALPH+DRAG* A 233
     1SALPH)**2)                                                        A 234
      RATIO=THRT/THRI                                                   A 235
      THRI=THRI                                                         A 236
  102 IF (ISPDEG) 112,112,104                                           A 237
  104 DO 106 I=1,N3                                                     A 238
      IF (RATIO-RATAB(I)) 108,106,106                                   A 239
  106 IT=I                                                              A 240
  108 IT=IT+1                                                           A 241
      IF (ISTAGE-1) 110,110,114                                         A 242
  110 XISPF=Y3(XISPF1(IT),XISPF1(IT-1),RATIO,RATAB(IT),RATAB(IT-1))     A 243
      GO TO 116                                                         A 244
  112 XISPF=1.00                                                        A 245
      GO TO 116                                                         A 246
  114 XISPF=Y3(XISPF2(IT),XISPF2(IT-1),RATIO,RATAB(IT),RATAB(IT-1))     A 247
  116 XISP=XISP*XISPF                                                   A 248
      ACC=ACCF(THRI)                                                    A 249
      GO TO 72                                                          A 250
C                                                                       A 251
  118 THRO=TPX/XMOD                                                     A 252
      THRT=THRI-THRO                                                    A 253
      RATIO=THRT/THRX                                                   A 254
      THRI=THRT                                                         A 255
      ACC=ACCF(THRI)                                                    A 256
      IF (ACLIM-ACC) 118,102,102                                        A 257
C                                                                       A 258
  120 T=TI                                                              A 259
      UPD=0                                                             A 260
      PRT=PRT+DELT                                                      A 261
      V=VI                                                              A 262
      RNG=RNGI                                                          A 263
      ALT=ALTI                                                          A 264
      GAM=GAMI                                                          A 265
      WT=WTI                                                            A 266
      KOUNT=0                                                           A 267
      JUMP=0                                                            A 268
      IF (ISTAGE-1) 122,122,136                                         A 269
C     FIRST STAGE MONITORING                                            A 270
  122 IF (VSTAG-(V+DELT2*DERIV(1)*1.1)) 128,128,124                     A 271
  124 IF (WP1-(WO-WI)+DERIV(4)*DELT2) 128,128,126                       A 272
  126 DELT=DELT2                                                        A 273
      GO TO 146                                                         A 274
  128 DELT=DELT2/10.0                                                   A 275
      IF (VSTAG-V) 132,132,130                                          A 276
  130 IF (WP1-(WO-WI)+(DERIV(4)*0.6*DELT)) 134,146,146                  A 277
  132 JDELT=1                                                           A 278
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```
      GO TO 152
  134 JETT=2
      GO TO 152
C
C     SECOND STAGE MONITORING
  136 IF (LAP) 138,138,142
  138 IF (VM-(V+DELT*DERIV(1)*1.1)) 140,140,142
  140 DELT=DELT2/5.0
      LAP=1
  142 IF (VM-V) 144,144,146
  144 IVOK=1
      DELT=DELT2
      LAP=0
      PRI=0.0
      JAPR=1
      GO TO 18
C     I/O CHECK
  146 IF (PTSTEP-PRI) 150,150,148
  148 IF (ISW2) 154,154,152
  150 PRI=0.000001
  152 JAPR=1
  154 IF (IVOK) 156,156,172
  156 IF (JETT-1) 18,158,160
C
C        CALCULATE FIRST STAGE WEIGHTS
  158 PRINT 314
      JWHY=1
      GO TO 162
  160 PRINT 316
      LINE=LINE+2
      JWHY=2
      VROT=(ANGV/57.2957795)*RE*COSD(XLAT)*SIND(AZ)
      V2=SQRT(VROT**2+V**2+2.0*VROT*V*COSD(GAM))
      GAM2=(ARSIN((V/V2)*SIND(GAM)))*RADIAN
      RANG2=RNGI*V2*COSD(GAM2)/(V*COSD(GAM))
      RNGI=RANG2
      RNG=RANG2
  162 TVAC=THR1T(NTAB2)
C     LINE=LINE+2
      WSAVE=WT
      WENG=SCALE*CNTIN*ENGF*TVAC
      WEQP=SCALE*CNTIN*EQP
      WRES1=WT*(1.0-EXP(-DELVF/(GEE0*BISPT(NTAB2))))
      WRES2=WT*(1.0-EXP(-CEE*ALOG(WO/WT)))
      GAS=(WO-WT)+WRES1+WRES2+BUILD*TVAC+DECAY*TVAC
      GASO=DECAY*TVAC+SCALE*CNTIN*ENN*WW+WRES1+WRES2
      WTANK=SCALE*CNTIN*TNKF*GAS+GASO
  164 WJET=WTANK+WENG+WEQP+BILD2*THR2
      WT=WSAVE
      WO2=WT-WJET
      PROP1=WO-WT
      WT=WO2
      THR2=THR2
      DELT=DELT2
C      SECOND STAGE      BEGIN
      ISTAGE=2
```

```
      IF (ITW2) 170,170,166
  166 TW2=TW2*WT
      IF (THR2-TH2) 168,170,168
  168 IF (ABS(THR2-TH2)-THR2/1000.0) 170,170,164
  170 DRAG=0.0
      XLIFT=0.0
      GD=0.0
      CL=0.0
      VLDS=VLD
      VLGS=VLG
      VLTS=VLT
      VCHRS=VCHAR
      T2=T
      ALT2=ALT
      VROT=(ANGV/57.2957795)*RE*COSD(XLAT)*SIND(AZ)
      V2=SQRT(VROT**2+V**2+2.0*VROT*V*COSD(GAM))
      GAM2=(ARSIN((V/V2)*SIND(GAM)))*RADIAN
      ALPH2=ALPH
      V=V2
      JETT=0
      GAM=GAM2
      ACCN=0.0
      DEP=0.0
      RATIO=1.0
      GO TO 18
C
C     WEIGHT ITERATION
  172 IF (INT) 174,174,182
  174 IF (WT+WP2-WO2) 176,182,182
  176 IF (JWPY-1) 180,180,178
  178 WP1=WP1*1.0002+(WO2-WT-WP2)*1.25
      PRINT 338
      PRINT 318, WP1
      GO TO 16
  180 VSTAG=VSTAG*100
      PRINT 338
      PRINT 320
      GO TO 16
C
C     DEVION-RAPHSON GAM AND ALT CONVERGENCE
C
  182 DA=ALT-HM
      DG=GAM-XMGAM
      IF (ABS(DA)-DELH) 184,184,190
  184 IF (ABS(DG)-BETA) 186,186,190
  186 IF (INT) 228,228,188
  188 INT=0
      GO TO 174
  190 IF (INT-4) 202,196,192
  192 IF (ABS(DA)-ABS(DA1)) 196,196,194
  194 DA=DA1
      DG=DG1
      EOT=P1
      CONST=C1
      DEC=DEC*.5
      IF (DEC-.0001) 198,200,200
```

```
  196 DA1=DA                                                            A 391
      DG1=DG                                                            A 392
      C1=CONST                                                          A 393
      P1=PNT                                                            A 394
      INT=5                                                             A 395
      DEC=DEC*.5                                                        A 396
      IF (DEC-.0001) 198,200,200                                        A 397
  198 DEC=.0001                                                         A 398
  200 CONST=CONST+SIGN(DEC,DA)*CONST                                    A 399
      PNT=PNT+SIGN(DEC,DG)*PNT                                          A 400
      GO TO 222                                                         A 401
  202 INT=INT+1                                                         A 402
      DEC=.05                                                           A 403
      CALL OUT (3HALT,ALT,3HGAM,GAM,1HT,T,4HCONS,CONST,3HPNT,PNT)       A 404
      CALL OUT (2HWT,WT,3HWP2,WP2,3HWO2,WO2,4H     .0.0,1H ,.0)         A 405
      HH(INT)=ALT                                                       A 406
      ANG(INT)=GAM                                                      A 407
      IF (MAXL) 204,204,206                                             A 408
  204 IF (CONST-0.0000001) 206,206,212                                  A 409
C                                                                       A 410
C     CUTOFF CORRECTION(MAX LIFT)      NEWTON-RAPHSON                   A 411
  206 IF (INT-2) 214,208,210                                            A 412
  208 TIM1=TIMEP                                                        A 413
      DTIM=-TIMEP*SIGN(.015,GAM-XMGAM)                                  A 414
      TIMEP=TIMEP+DTIM                                                  A 415
      PNT=PNT1                                                          A 416
      PRINT 334, TIMEP,PNT                                              A 417
      GO TO 16                                                          A 418
  210 TIMEP=TIM1                                                        A 419
      GAMER=ANG(1)-XMGAM                                                A 420
      ALTER=HH(1)-HM                                                    A 421
      ALPNT=(HH(2)-HH(1))/DPNT                                          A 422
      ALTIM=(HH(3)-HH(1))/DTIM                                          A 423
      GMPNT=(ANG(2)-ANG(1))/DPNT                                        A 424
      GMTIM=(ANG(3)-ANG(1))/DTIM                                        A 425
      DETER=ALTIM*GMPNT-GMTIM*ALPNT                                     A 426
      TIMEP=(ALPNT*GAMER-GMPNT*ALTER)/DETER+TIMEP                       A 427
      PNT=(GMTIM*ALTER-ALTIM*GAMER)/DETER+PNT                           A 428
      INT=0                                                             A 429
      PRINT 336, TIMEP,PNT                                              A 430
      PRINT 338                                                         A 431
      GO TO 16                                                          A 432
  212 IF (INT-2) 214,218,224                                            A 433
  214 PNT1=PNT                                                          A 434
      DPNT=SIGN(.05,DA)*PNT                                             A 435
      PNT=PNT+DPNT                                                      A 436
      IF (PNT) 216,226,226                                              A 437
  216 PNT=0.0                                                           A 438
      DPNT=PNT-PNT1                                                     A 439
      GO TO 226                                                         A 440
  218 CONST1=CONST                                                      A 441
      DCON=SIGN(.012,DG)*CCNST                                          A 442
      CONST=CONST+DCON                                                  A 443
      PNT=PNT1                                                          A 444
      IF (CONST) 220,222,222                                            A 445
  220 CONST=0.0                                                         A 446
```

```
      DCON=CONST-CONST1
  222 PRINT 322, CONST,PNT
      CALL OPT (2HDA,DA,2HDG,DG,3HDEC,DEC,4H     ,0.0,1H ,0.0)
      PRINT 338
      GO TO 16
C     CALCULATE PARTIAL DERIVATIVES
  224 CONST=CONST1
      GAMER=ANG(1)-XMGAM
      ALTER=HH(1)-HM
      ALPNT=(HH(2)-HH(1))/DPNT
      ALCON=(HH(3)-HH(1))/DCON
      GMPNT=(ANG(2)-ANG(1))/DPNT
      GMCON=(ANG(3)-ANG(1))/DCON
      DETER=ALCON*GMPNT-GMCON*ALPNT
C      KEEP FACTOR = .7
      CONST=(ALPNT*GAMER-ALTER*GMPNT)/DETER*.7+CONST
      PNT=(GMCON*ALTER-ALCON*GAMER)/DETER+PNT
      INT=4
      PRINT 324, CONST,PNT
      PRINT 338
      GO TO 16
  226 T=T2
      JOKP=1
      WT=WO2
      V=V2
      VLDS=VLDS
      VLGS=VLGS
      VLT=VLTS
      VCHAR=VCHRS
      ALT=ALT2
      GAM=GAM2
      ALPH=ALPH2
      RATIO=1.0
      IVOK=0
      PRINT 326, CONST,PNT
      PRINT 338
      GO TO 62
C
C      FINAL PRINT
C
  228 IF (LAST) 230,230,238
  230 LAST=1
      IF (ISW3) 232,232,236
  232 IF (JTAB) 238,238,234
  234 ITAB=1
      ISW3=1
      ISW2=1
      GO TO 16
  236 ISW2=1
      PRINT 300
      GO TO 16
C
C      WEIGHT BREAKOUT        SECOND STAGE
C
  238 PRINT 328, WENG,WEOP,WTANK,WJET,PROP1,WO2,WRES1,WRES2,T2,ALT2,VROT
      WENG=SCAL2*CNIN2*ENG2*THR2
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```
      WEQP=SCAL2*CNTN2*EQP2                                             A 503
      WRES1=WT*(1.0-EXP(-DELV2/(GEEO*XISP2)))                           A 504
      WRES2=WT*(1.0-EXP(-CFE2*ALOG(WO2/WT)))                            A 505
      GAS=(WO2-WT)+WRES1+BILD2*THR2+WRES2+DKAY2*THR2                    A 506
      GASO=DKAY2*THR2+WRES1+WRES2                                       A 507
      WTANK=SCAL2*CNTN2*TNK2*GAS+GASO                                   A 508
      WJET=WTANK+WENG+WEQP                                              A 509
      PROP1=WO2-WT                                                      A 510
      T2=WT-WJET                                                        A 511
      PRINT 330, WENG,WEQP,WTANK,WJET,PROP1,WRES1,WRES2,T2,VLD,VLG,VLT,V A 512
     1CHAR                                                              A 513
      PRINT 332, PNT,CONST,GAMEP,TIMEP,VSTAG,WP1                        A 514
C     RETURN TO READ A NEW SET OF DATA      IPLD=0                      A 515
      IF (IPLD) 12,12,240                                               A 516
C                                                                       A 517
C      PAYLOAD RECALCULATION OPTION          IPLD=1                     A 518
C                                                                       A 519
  240 DPLD=T2-RPLD                                                      A 520
      PRINT 302, WO,DPLD                                                A 521
      PRINT 304                                                         A 522
      IF (ABS(DPLD)-.00001*RPLD) 12,12,242                              A 523
  242 IF (ABS(DPLD)-1000.) 246,246,244                                  A 524
  244 PRINT 306                                                         A 525
      GO TO 12                                                          A 526
  246 IF (IPLD-2) 248,252,268                                           A 527
  248 IPLD=2                                                            A 528
      SP1=SIGN(1.,DPLD)                                                 A 529
      SP2=SP1                                                           A 530
      GO TO 254                                                         A 531
  250 PLD1=T2                                                           A 532
      WOLD=WO                                                           A 533
      DPLD1=DPLD                                                        A 534
      GO TO 14                                                          A 535
  252 SP2=SIGN(1.,DPLD)                                                 A 536
      IF (SP1+SP2) 254,260,254                                          A 537
  254 IF (ABS(DPLD)-150.) 258,258,256                                   A 538
  256 WO=WO-DWT*DPLD/70.                                                A 539
      GO TO 250                                                         A 540
  258 WO=WO-DWT*SP2                                                     A 541
      GO TO 250                                                         A 542
  260 PLD2=T2                                                           A 543
      DPLD2=DPLD                                                        A 544
      IPLD=3                                                            A 545
      WOLD2=WO                                                          A 546
  262 DPDW=(PLD2-PLD1)/ABS(WOLD-WOLD2)                                  A 547
      PRINT 308, DPDW,WOLD,WOLD2                                        A 548
      IF (ABS(DPLD1)-ABS(DPLD2)) 264,264,266                            A 549
  264 DWD=ABS(DPLD1)/DPDW                                               A 550
      WO=WOLD+DWD                                                       A 551
      GO TO 14                                                          A 552
  266 DWD=ABS(DPLD2)/(-DPDW)                                            A 553
      WO=WOLD2+DWD                                                      A 554
      GO TO 14                                                          A 555
  268 SP3=SIGN(1.,DPLD)                                                 A 556
      IF (SP3+SP2) 270,272,270                                          A 557
  270 DPLD2=DPLD                                                        A 558
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      WO02=WO                                                           A 559
      PLO2=T2                                                           A 560
      GO TO 262                                                         A 561
  272 DPLD1=DPLD                                                        A 562
      WO01=WO                                                           A 563
      PL01=T2                                                           A 564
      GO TO 262                                                         A 565
                                                                        A 566
                                                                        A 567
                                                                        A 568
  274 FORMAT (1H1,9A6,5X,5HPAGE ,I3)                                    A 569
  276 FORMAT (7H0  TIME,5X,5HALPHA,3X,8HVELOCITY,4X,5HGAMMA,5X,8HALTITUD A 570
     1E7),6HTHRUST,9X,4HLIFT,10X,4HDRAG,7X,4HMACH,7X,5HRANGE,6X,5HVCHAR, A 571
     2//)                                                               A 572
  278 FORMAT (1H ,F7.1,3X,F6.2,3X,F8.1,3X,F6.2,4(3X,E11.4),3X,F6.2,3X,E1 A 573
     11.4,3X,F8.1)                                                      A 574
  280 FORMAT (9A6)                                                      A 575
  282 FORMAT (20I3)                                                     A 576
  284 FORMAT (8H OPTIONS/,4H TW2,3X,I3,3X,4HMAXL,I3,3X,5HTHROT,I4,3X,3HS A 577
     1W3,3X,I3,3X,3HSW2,3X,I3,3X,4HSTEP,I5,3X,6HISPDEG,I3,3X,3HPLD,3X,I3 A 578
     2,3X,3HTAB,3X,I3)                                                  A 579
  286 FORMAT (5E15.0,5X)                                                A 580
  288 FORMAT (3E12.0)                                                   A 581
  290 FORMAT (5E12.0)                                                   A 582
  292 FORMAT (1H0/9X,11HMACH NUMBER,9X,4HCL 0,12X,4HCL 1,12X,4HCL 2,12X, A 583
     14HCD 0//(I5,5E16.6))                                              A 584
  294 FORMAT (1H0,9X,8HALTITUDE,9X,6HTHRUST,12X,3HISP//(I5,3E16.6))     A 585
  296 FORMAT (1H0,11X,5HRATAB,11X,6HISP F1,10X,6HISP F2//(I5,3E16.6))   A 586
  300 FORMAT (34H1RECALCULATION OF FINAL TRAJECTORY)                    A 588
  302 FORMAT (3H WO,E15.5,3X,4HDPLD,E15.5)                              A 589
  304 FORMAT (1H1)                                                      A 590
  306 FORMAT (82H DIFFERENCE BETWEEN PAYLOAD CALC AND PAYLOAD DESIRED IS A 591
     1 GREATER THAN 1000. POUNDS)                                       A 592
  308 FORMAT (1H ,3(E15.5,3X))                                          A 593
  310 FORMAT (21H1HORIZONTAL TAKEOFF  ,10X,12A6,/)                      A 594
  312 FORMAT (5H0TIME,F12.2,2X,9HACC/ACLIM,E20.8)                       A 595
  314 FORMAT (14H0VSTAG REACHED)                                        A 596
  316 FORMAT (12H0WP1 REACHED)                                          A 597
  318 FORMAT (9H0NEW WP1=,E15.6)                                        A 598
  320 FORMAT (13H0IGNORE VSTAG,/)                                       A 599
  322 FORMAT (7H END II,5X,16HREFLY WITH CONST,E15.6,4X,5H PNT ,E15.6)  A 600
  324 FORMAT (15H NEWTON RAPHSON,5X,5HCONST,E15.6,5X,5HPOINT,E15.8)     A 601
  326 FORMAT (13H CUTOFF ERROR,5X,16HREFLY WITH CONST,E15.6,5X,4HPNT ,E1 A 602
     15.6)                                                              A 603
  328 FORMAT (28H1FIRST STAGE WEIGHTS   LBS. /1H0,6HENGINE,9X,E15.6,2X,9 A 604
     1HEQUIPMENT,6X,E15.6,2X,4HTANK,11X,E15.6,2X,8HJETTISON,7X,E15.6/1X, A 605
     215HUSED PROPELLANT,E15.6,2X,3HWO2,12X,E15.6,2X,14HFIXED RESERVES,1 A 606
     3X,E15.6,2X,13HVAR. RESERVES,2X,E15.6//1X,12HSTAGING TIME,3X,E15.6, A 607
     42X,8HALTITUDE,7X,E15.6,2X,10HV-ROTATION,5X,E15.6///1X)            A 608
  330 FORMAT (1H0/1H0/29H0SECOND STAGE WEIGHTS  (LBS.)//7H0ENGINE,9X,E15. A 609
     16,2X,9HEQUIPMENT,6X,E15.6,2X,4HTANK,11X,E15.6,2X,8HJETTISON,7X,E15 A 610
     2.6/11H PROPELLANT,5X,E15.6,2X,14HFIXED RESERVES,1X,E15.6,2X,13HVAR A 611
     3. RESERVES,2X,E15.6,2X,7HPAYLOAD,8X,E15.6//1X,////1X,4HVLD=,E13.6, A 612
     415X,4HVLG= E13.6,15X,4HVLT=,E13.6,15X,6HVCHAR=,E13.6)             A 613
  332 FORMAT (/,4H0PNT,4X,E14.6,2X,7HCONST  ,E14.6,2X,5HGAMEP,2X,E14.6,2 A 614
     1X,5HTIMEP,2X,E14.6,2X,/,8H VSTAG  ,E14.6,2X,4HWP1,4X,E14.6,///)   A 615
```

```
334 FORMAT (6H0ENDTI/7HTIMEP= ,E15.6,10X,4HPNT=,E15.6)
336 FORMAT (7H TIMEP=,E15.6,4X,6HPOINT=,E15.6)
338 FORMAT (120H ***********************************************************
   1*************************************************************************
   2)
    END
```

3200 FORTRAN DIAGNOSTIC RESULTS - FOR HIOT

3200 FORTRAN (2.1.0)/(RTS) / /

```
      SUBROUTINE RUNKUT (T,DERIV,DELT,IND)
C     RUNGE-KUTTA INTEGRATION AND DIFFERENTIAL EQUATION
      DIMENSION DERIV(9), DEPVAR(9), AUX(9), SUM(9
      COMMON DEPVAR
      IF (IND-2) 2,6,8
    2 CONST1=DELT*0.5
      CONST3=0.5
      CONST4=1.0
      T=T+CONST1
      DO 4 I=1,9
      AUX(I)=DEPVAR(I)
    4 SUM(I)=0.0
      GO TO 12
    6 CONST4=2.0
      GO TO 12
    8 IF (IND-3) 10,10,16
   10 T=T+CONST1
      CONST3=1.0
   12 DO 14 I=1,9
      CONST2=DELT*DERIV(I)
      DEPVAR(I)=AUX(I)+CONST3*CONST2
   14 SUM(I)=SUM(I)+CONST4*CONST2
      RETURN
   16 DO 18 I=1,9
      SUM(I)=(SUM(I)+DELT*DERIV(I))/6.0
   18 DEPVAR(I)=AUX(I)+SUM(I)
      RETURN
      END
```

3200 FORTRAN DIAGNOSTIC RESULTS - FOR RUNKUT

NO ERRORS

3200 FORTRAN (2.1.0)/(RTS) / /

```
      SUBROUTINE OUT (I,A,I2,A2,I3,A3,I4,A4,I5,A5)
C     THE I S ARE HOLLERITE INFORMATION UP TO 4 CHAR PER NAME
      IF (I2-4H    ) 4,2,4
    2 PRINT 20, I,A
```

```
      GO TO 18                                                          C    5
    4 IF (I3-4H     ) 8,6,8                                             C    6
    6 PRINT 20, I,A,I2,A2                                               C    7
      GO TO 18                                                          C    8
    8 IF (I4-4H     ) 12,10,12                                          C    9
   10 PRINT 20, I,A,I2,A2,I3,A3                                         C   10
      GO TO 18                                                          C   11
   12 IF (I5-4H     ) 16,14,16                                          C   12
   14 PRINT 20, I,A,I2,A2,I3,A3,I4,A4                                   C   13
      GO TO 18                                                          C   14
   16 PRINT 20, I,A,I2,A2,I3,A3,I4,A4,I5,A5                             C   15
   18 RETURN                                                            C   16
                                                                        C   17
                                                                        C   18
   20 FORMAT (1H ,5(A4,3X,E12.5,3X))                                    C   19
      END                                                               C   20-
```

3200 FORTRAN DIAGNOSTIC RESULTS - FOR 00

3200 FORTRAN (2.1.0)/(RTS) / /

```
      SUBROUTINE ATMOSP (H,ANS)                                         D    1
      VTO     REVISED ATMOSP ROUTINE     1/68                           D    2
      ANS(1)=SOS,    ANS(2)=GRAV,    ANS(3)=DENS                       D    3
      DIMENSION ANS(3)                                                  D    4
      TMO=518.688                                                       D    5
      G=32.173984                                                       D    6
      ER=20855531.0                                                     D    7
      CO=1116.4551                                                      D    8
      ANS(2)=G*(ER/(ER+H))**2                                           D    9
      GPH=(ER*H)/(ER+H)                                                 D   10
      IF (GPH-154199.0) 2,2,14                                          D   11
    2 IF (GPH-36089.0) 4,4,6                                            D   12
    4 ANS1=-3.5662E-3*GPH+518.688                                       D   13
      ANS(3)=2.3769E-3*(1-6.8753E-6*GPH+1.0)**4.25612)                  D   14
      GO TO 12                                                          D   15
    6 IF (GPH-82021.0) 8,8,10                                           D   16
    8 ANS1=389.988                                                      D   17
      ANS(3)=7.0611E-4*(EXP(-4.8063E-5*GPH+1.734579))                   D   18
      GO TO 12                                                          D   19
   10 ANS1=1.6459E-3*GPH+254.988                                        D   20
      ANS(3)=7.7644E-5*(4.2204E-6*GPH+0.65384)**(-12.3883))             D   21
   12 ANS(1)=CO*SQRT(ANS1/TMO)                                          D   22
      RETURN                                                            D   23
      HIGH ALTITUDE                                                     D   24
   14 IF (GPH-173852.0) 16,16,18                                        D   25
   16 ANS1=508.788                                                      D   26
      ANS(3)=2.8803E-6*(EXP(-3.68409E-5*GPH+5.68043))                   D   27
      GO TO 12                                                          D   28
   18 IF (GPH-259180.0) 20,20,22                                        D   29
   20 ANS1=-2.4689E-3*GPH+938.088                                       D   30
```

```
      ANS(3)=1.3947E-6*((-4.8525E-6*GPH+1.843769)**6.59216)          D   31
      GO TO 12                                                       D   32
   22 IF (GPH-295276.0) 26,26,24                                     D   33
C     USE HIGH ALTITUDE                                              D   34
C      USE DATA FOR GPH=295276. WHEN GPH GREATER THAN 295276.        D   35
   24 CONTINUE                                                       D   36
   26 ANS(1)=298.188                                                 D   37
      ANS(3)=4.1188E-8*(EXP(-6.28597E-5*GPH+16.292376))              D   38
      GO TO 12                                                       D   39
      END                                                            D   40-
```

3200 FORTRAN DIAGNOSTIC RESULTS - FOR ATMOSP

3200 FORTRAN (2.1.0)/(RTS) / /

```
      FUNCTION SIND (X)                                              E   1
C     GIVES SIN(X) WHERE X IS IN DEGREES                             E   2
      SIND=SIN(X/57.2957795)                                         E   3
      RETURN                                                         E   4
      END                                                            E   5-
```

3200 FORTRAN DIAGNOSTIC RESULTS - FOR SIND

3200 FORTRAN (2.1.0)/(RTS) / /

```
      FUNCTION COSD (X)                                              F   1
C     GIVES COS(X) WHERE X IS IN DEGREES                             F   2
      COSD=COS(X/57.2957795)                                         F   3
      RETURN                                                         F   4
      END                                                            F   5-
```

3200 FORTRAN DIAGNOSTIC RESULTS - FOR COSD

3200 FORTRAN (2.1.0)/(RTS) / /

```
      FUNCTION TAND (X)                                              G   1
C     GIVES TAN(X) WHERE X IS IN DEGREES                             G   2
      TAND=SIND(X)/COSD(X)                                           G   3
      RETURN                                                         G   4
      END                                                            G   5-
```

3200 FORTRAN DIAGNOSTIC RESULTS - FOR TAND

```
                    3200  FORTRAN  (2.1.0)/(RTS)        /  /

      FUNCTION ARSIN (X)                                          H   1
      ARSIN=ATAN(X/SQRT(1.0-X**2))                                H   2
      RETURN                                                      H   3
      END                                                         H   4-

        3200 FORTRAN DIAGNOSTIC RESULTS - FOR   ARSIN
```

```
                    3200  FORTRAN  (2.1.0)/(RTS)        /  /

      FUNCTION Y3 (Y2,Y1,X3,X2,X1)                                I   1
      LINEAR INTERPOLATION BETWEEN POINTS                         I   2
      Y3=Y1+(Y1-Y2)*(X3-X1)/(X1-Y2)                               I   3
      RETURN                                                      I   4
      END                                                         I   5-

        3200 FORTRAN DIAGNOSTIC RESULTS - FOR   Y3
```

```
                    3200  FORTRAN  (2.1.0)/(RTS)        /  /

      FUNCTION ACCF (THRI)                                        J   1
      COMMON VI,GAMI,ALTI,WTI,VLDI,VLGI,VLTI,VCHARI,RNGI          J   2
      COMMON XLIFT,DRAG,SALPH,CALPH                               J   3
      ACCF=THRI/WTI*SQRT(1.0+(XLIFT**2+DRAG**2)/THRI**2+2.0/THRI*(XLIFT*  J   4
     1SALPH-DRAG*CALPH))                                          J   5
      RETURN                                                      J   6
      END                                                         J   7-

        3200 FORTRAN DIAGNOSTIC RESULTS - FOR   ACCF
```

```
NO ERRORS
LOAD,56
RUN,10
```

SUBP

60157	Q8QERROR	60435	FIXF	60504	FLOATF	60533	ABSF	60547	SQRTF	60660	SIGNF
60704	LOGF	61113	EXPF	61245	ASIN	61364	ATANF	61525	SINCOS	62036	POWRF
62406	XTOI	62632	Q1GADRI	63013	Q8QOUTTB	63014	CONTROL	63554	PAUSE	63634	FORMAT
64175	BCDOUT	65733	BCDINP	66730	TAND	66776	COSD	67040	SIND	67102	ATMOSP
67516	AMOD	67571	OUT	70050	Y3	70134	RUNKUT	70427	VTO		

ENTR

60435	XFIXF	60533	XABSF	60533	IABS	60533	ABSF	60547	SQRTF	60660	XSIGNF
60660	ISIGN	60660	SIGNF	60704	ALOG10	60713	LOGF	61113	EXPF	61364	ATANF
61525	COSF	61533	SINF	62036	POWRF	60504	FLOATF	62406	XTOI	60435	FIXF
62755	Q1QSTRX	62732	Q1GSTXR	62675	Q1QSBXR	62650	Q1GADXR	62726	Q1QSBRX	62706	Q1QADRX
62703	Q1QDVIR	62700	Q1GMUIR	62661	Q1QSBRI	62632	Q1GADRI	63113	Q8QIOTAB	63014	Q8QENTRY
63043	Q8QEXITS	63570	Q8GPAUSE	63013	Q8QOUTTB	63500	PWRTBL	64276	Q8QLGOTC	63634	Q8QIFRMT
63665	Q8GFORMT	63067	Q8GIOSET	63047	Q8QSENSE	63312	Q8GEDITS	60157	Q8QERROR	63476	PWRTBLO
63171	Q8QIOERR	66032	Q8GLGINC	61525	COS	61533	SIN	62036	Q1QEXRR	60435	IFIX
60504	FLOAT	63554	Q8GSTOP	62650	Q1QADIR	62665	Q1GMURI	62671	Q1QDVRI	62675	Q1QSBIR
62406	Q1QEXRI	62732	Q1GSTIR	62743	Q1QSTRI	64276	Q8QLGOTI	66032	Q8QLGINI	64746	Q8QENGOT
64303	Q8QLGOTR	64175	Q8GINGOT	66405	Q8QENGIN	66036	Q8GLGINR	63133	Q8QARRAY	65733	Q8QINGIN
60660	SIGN	61263	ASIN	60533	ABS	67520	AMOD	60713	ALOG	61113	EXP
60547	SQRT	70235	RUNKUT	67002	COSD	67044	SIND	66732	TAND	61364	ATAN
70052	Y3	67235	ATMOSP	67601	OUT	73173	VTO	03765	GOFLG	03767	FDPBOXS
05717	PIO	02432	EINT.	02416	DINT.	05710	BNO.	01756	LOC5	01757	CIT.RTM
05770	RDCKSUM	06041	START2	05476	ACCOUNTS	07135	LOADER	05543	RDCKF1	03767	ABNORMAL
00014	CIO	05535	MEMORY	04650	MIBUF	04674	MIBKADD	04675	MIFORADD	05313	EST
05243	UST	05505	CST	05456	BRHT	05436	RHT	02011	CIT	05374	AET

COMM

06277 06316

DATA

NONE

EXTA

NONE

SECTION VII

HTO SAMPLE RUN

HORIZONTAL TAKEOFF HTO SAMPLE RUN

OPTIONS

TW2	0	MAXL	0	THROT	1	SW3	0	SW2	0	STEP	0	ISPDEG	1
PLD	0	TAB	1										

XLAT	2.85000E 01	AZ	9.00000E 01	VO	6.50000E 02	ALTO	0	GAMO	0		
ALPO	1.40000E 01	WO	1.50000E 06	CONA	2.50000E-02	ANMA	1.50000E 00	CONS	4.02700E-04		
ACLI	3.00000E 00	GAMP	6.50000E 01	TIMP	1.50000E 03	WW	6.00000E 04	ENN	1.15000E 00		
TW2	1.00000E 00	XMOD	0	VSTA	2.00000E 04	PNT	8.18000E-04	VM	2.57600E 04		
HM	3.03806E 05	DELH	1.00000E 03	XMGA	0	BETA	1.00000E 00	DELT	1.00000E 00		
PTST	6.00000E 02	ENGF	1.07086E-02	BUIL	9.46870E-03	DECA	3.20423E-03	TNKF	1.70921E-02		
WP1	8.80110E 05	EQP	1.62840E 05	DELV	0	CEE	1.20000E-02	SCAL	1.00000E 00		
CNTI	1.00000E 00	ENG2	1.69023E-02	BLD2	7.34610E-04	DKY2	1.83650E-04	TNK2	3.28876E-02		
WP2	2.52000E 05	EQP2	4.31680E 04	DLV2	6.00000E 02	CEE2	0	SCL2	1.00000E 00		
CNT2	1.00000E 00	XSP2	4.55000E 02	THR2	3.26700E 05	CKK	1.09000E 00	AREA	5.08300E 03		
RPLD	2.43622E 04	DWT	5.00000E 02								

	MACH NUMBER	CL 0	CL 1	CL 2	CD 0
1	0	0	3.000000E-02	-2.400000E-04	4.320000E-02
2	2.500000E-01	0	4.000000E-02	-2.400000E-04	4.320000E-02
3	5.000000E-01	0	4.600000E-02	-2.400000E-04	4.320000E-02
4	7.500000E-01	0	4.900000E-02	-2.200000E-04	4.360000E-02
5	1.000000E 00	0	5.100000E-02	-1.000000E-04	8.670000E-02
6	1.250000E 00	0	5.100000E-02	0	7.900000E-02
7	1.500000E 00	0	4.650000E-02	6.000000E-05	7.100000E-02
8	1.750000E 00	0	4.200000E-02	9.000000E-05	6.350000E-02
9	2.000000E 00	0	3.750000E-02	.200000E-04	5.750000E-02
10	2.500000E 00	0	3.100000E-02	1.500000E-04	4.860000E-02
11	3.000000E 00	0	2.750000E-02	1.600000E-04	4.300000E-02
12	4.000000E 00	0	2.150000E-02	1.500000E-04	3.650000E-02
13	5.000000E 00	0	1.850000E-02	1.200000E-04	3.300000E-02
14	6.000000E 00	0	1.700000E-02	7.000000E-05	3.100000E-02
15	8.000000E 00	0	1.500000E-02	-7.000000E-05	2.950000E-02
16	1.000000E 01	0	1.300000E-02	-1.500000E-04	2.650000E-02

	ALTITUDE	THRUST	ISP
1	0	1.876000E 06	2.630300E 02
2	1.000000E 04	1.950600E 06	2.734900E 02
3	2.000000E 04	2.010000E 06	2.818200E 02
4	3.000000E 04	2.040000E 06	2.860300E 02
5	4.000000E 04	2.070000E 06	2.902400E 02
6	6.000000E 04	2.105000E 06	2.951400E 02
7	8.000000E 04	2.128000E 06	2.983700E 02
8	1.000000E 05	2.140000E 06	3.000500E 02
9	1.200000E 05	2.153400E 06	3.019300E 02
10	1.400000E 05	2.153400E 06	3.019300E 02

	RATAR	ISP F1	ISP F2
1	0	0	0
2	1.000000E-01	9.878000E-01	9.878000E-01
3	2.000000E-01	9.914000E-01	9.914000E-01
4	3.000000E-01	9.938000E-01	9.938000E-01
5	4.000000E-01	9.954000E-01	9.954000E-01
6	5.000000E-01	9.966000E-01	9.966000E-01
7	6.000000E-01	9.975000E-01	9.975000E-01
8	7.000000E-01	9.983000E-01	9.983000E-01
9	8.000000E-01	9.989000E-01	9.989000E-01
10	9.000000E-01	9.995000E-01	9.995000E-01
11	1.000000E 00	1.000000E 00	1.000000E 00

TIME	0	STAGE	1	ALPH	1.40000000E 01	V	6.50000E 02	CL	6.12058E-01
SOS	1.11646E 03	GRAV	3.21740E 01	GAM	0	ALT	0	LIFT	1.56214E 06
MACH	5.82200E-01	WT	1.50000E 06	ACC	1.59385E 00	THRI	1.87600E 06	CD	2.09669E-01
DENS	2.37690E-03	XISP	2.63030E 02	ACCN	1.34599E 00	RATI	1.00000E 00	DRAG	5.35134E 05
DYNP	5.02120E 02	RNG	0	VLD	0	VLG	0	VLT	0
VCHR	0								

WP1 REACHED

TIME	1.23500E 02	STAGE	2	ALPH	-1.39698386E-09	V	6.79700E 03	CL	0
SOS	1.09880E 03	GRAV	3.17118E 01	GAM	2.26144E 01	ALT	1.51421E 05	LIFT	0
MACH	6.18583E 00	WT	3.35913E 05	ACC	9.72573E-01	THRI	3.26700E 05	CD	0
DENS	3.36689E-06	XISP	4.55000E 02	ACCN	0	RATI	1.00000E 00	DRAG	0
DYNP	0	RNG	3.11283E 05	VLD	1.34679E 03	VLG	1.88221E 03	VLT	2.24213E 01
VCHR	8.14475E 03								

TIME	4.73700E 02	STAGE	2	ALPH	7.51004137E 00	V	2.57685E 04	CL	0
SOS	8.46512E 02	GRAV	3.12540E 01	GAM	-9.79920E-02	ALT	3.04712E 05	LIFT	0
MACH	3.04408E 01	WT	8.48988E 04	ACC	3.00000E 00	THRI	2.54696E 05	CD	0
DENS	3.10267E-09	XISP	4.54444E 02	ACCN	0	RATI	7.79603E-01	DRAG	0
DYNP	0	RNG	5.04264E 06	VLD	1.34679E 03	VLG	2.60774E 03	VLT	4.45738E 02
VCHR	2.76691E 04								

HTO SAMPLE RUN

TIME	ALPHA	VELOCITY	GAMMA	ALTITUDE	THRUST	LIFT	DRAG	MACH	RANGE	VCHAR
0	14.00	650.2	0	0	1.8760E 06	1.5621E 06	5.3513E 05	.58	0	0
1.0	14.01	677.4	.97	5.6561E 00	1.8766E 06	1.7086E 06	5.8453E 05	.61	6.6368E 02	40.3
2.0	13.43	703.6	2.18	2.4656E 01	1.8762E 06	1.7884E 06	5.9665E 05	.63	1.3537E 03	80.9
3.0	12.47	728.2	3.47	6.0003E 01	1.8764E 06	1.7948E 06	5.7175E 05	.65	2.0686E 03	121.6
4.0	11.53	753.4	4.71	1.1290E 02	1.8768E 06	1.7995E 06	5.5035E 05	.68	2.8076E 03	162.5
5.0	10.75	778.7	5.86	1.8362E 02	1.8774E 06	1.8003E 06	5.3112E 05	.70	3.5704E 03	203.7
6.0	10.01	804.3	7.00	2.7239E 02	1.8780E 06	1.7986E 06	5.1442E 05	.72	4.3568E 03	245.0
7.0	9.33	829.4	8.06	3.7943E 02	1.8788E 06	1.7960E 06	5.0057E 05	.74	5.1664E 03	286.6
8.0	8.76	854.7	9.08	5.0492E 02	1.8798E 06	1.7888E 06	5.0056E 05	.77	5.9991E 03	328.4
9.0	8.15	879.7	10.04	6.4898E 02	1.8808E 06	1.7823E 06	5.0956E 05	.79	6.8542E 03	370.4
10.0	7.65	904.6	10.97	8.1167E 02	1.8821E 06	1.7724E 06	5.2141E 05	.81	7.7312E 03	412.6
11.0	7.25	928.2	11.86	9.9301E 02	1.8834E 06	1.7667E 06	5.3787E 05	.83	8.6292E 03	455.1
12.0	6.88	951.5	12.71	1.1930E 03	1.8849E 06	1.7549E 06	5.5548E 05	.86	9.5475E 03	497.8
13.0	6.45	974.2	13.54	1.4117E 03	1.8865E 06	1.7445E 06	5.7591E 05	.88	1.0485E 04	540.8
14.0	6.05	996.2	14.33	1.6490E 03	1.8883E 06	1.7303E 06	5.9739E 05	.90	1.1441E 04	584.1
15.0	5.85	1017.5	15.10	1.9049E 03	1.8902E 06	1.7132E 06	6.1985E 05	.92	1.2415E 04	627.6
16.0	5.60	1038.6	15.83	2.1790E 03	1.8923E 06	1.7016E 06	6.4480E 05	.94	1.3406E 04	671.3
17.0	5.38	1058.0	16.55	2.4713E 03	1.8944E 06	1.6893E 06	6.7039E 05	.96	1.4412E 04	715.3
18.0	5.18	1077.1	17.24	2.7815E 03	1.8966E 06	1.6774E 06	6.9647E 05	.97	1.5433E 04	759.7
19.0	4.98	1095.9	17.92	3.1097E 03	1.8992E 06	1.6585E 06	7.2131E 05	.99	1.6469E 04	804.3
20.0	4.83	1113.0	18.58	3.4555E 03	1.9018E 06	1.6473E 06	7.3544E 05	1.01	1.7517E 04	849.1
21.0	4.68	1130.6	19.22	3.8188E 03	1.9045E 06	1.6293E 06	7.3712E 05	1.03	1.8578E 04	894.3
22.0	4.53	1147.6	19.84	4.1994E 03	1.9073E 06	1.6165E 06	7.3946E 05	1.04	1.9651E 04	939.8
23.0	4.43	1164.0	20.45	4.5975E 03	1.9103E 06	1.6005E 06	7.4090E 05	1.06	2.0736E 04	985.6
24.0	4.33	1180.7	21.05	5.0128E 03	1.9134E 06	1.5996E 06	7.4300E 05	1.08	2.1832E 04	1031.7
25.0	4.23	1197.0	21.64	5.4456E 03	1.9166E 06	1.5780E 06	7.4423E 05	1.09	2.2939E 04	1078.1
26.0	4.13	1213.6	22.22	5.8958E 03	1.9200E 06	1.5629E 06	7.4463E 05	1.11	2.4057E 04	1124.9
27.0	4.03	1230.6	22.79	6.3634E 03	1.9235E 06	1.5453E 06	7.4424E 05	1.13	2.5186E 04	1172.0
28.0	3.93	1246.6	23.34	6.8486E 03	1.9271E 06	1.5255E 06	7.4310E 05	1.14	2.6325E 04	1219.4
29.0	3.85	1263.0	23.87	7.3510E 03	1.9308E 06	1.5133E 06	7.4269E 05	1.16	2.7474E 04	1267.2
30.0	3.78	1279.5	24.40	7.8708E 03	1.9347E 06	1.4992E 06	7.4154E 05	1.18	2.8634E 04	1315.4
31.0	3.70	1295.8	24.92	8.4081E 03	1.9387E 06	1.4833E 06	7.3968E 05	1.20	2.9804E 04	1363.9
32.0	3.63	1312.2	25.43	8.9628E 03	1.9429E 06	1.4657E 06	7.3714E 05	1.21	3.0983E 04	1412.7
33.0	3.55	1328.6	25.92	9.5349E 03	1.9471E 06	1.4567E 06	7.3533E 05	1.23	3.2173E 04	1462.0
34.0	3.50	1345.4	26.42	1.0125E 04	1.9513E 06	1.4360E 06	7.3146E 05	1.25	3.3372E 04	1511.6
35.0	3.45	1362.2	26.89	1.0732E 04	1.9549E 06	1.4151E 06	7.2757E 05	1.27	3.4582E 04	1561.6
36.0	3.43	1379.2	27.35	1.1357E 04	1.9587E 06	1.4028E 06	7.2435E 05	1.29	3.5801E 04	1612.0
37.0	3.40	1396.2	27.81	1.1999E 04	1.9625E 06	1.3893E 06	7.2048E 05	1.31	3.7030E 04	1662.8
38.0	3.38	1413.4	28.26	1.2660E 04	1.9664E 06	1.3746E 06	7.1597E 05	1.32	3.8270E 04	1714.0
39.0	3.35	1430.9	28.70	1.3338E 04	1.9704E 06	1.3588E 06	7.1082E 05	1.34	3.9519E 04	1765.5
40.0	3.33	1448.5	29.13	1.4034E 04	1.9746E 06	1.3419E 06	7.0507E 05	1.36	4.0778E 04	1817.5
41.0	3.30	1466.4	29.56	1.4748E 04	1.9788E 06	1.3240E 06	6.9873E 05	1.39	4.2048E 04	1869.9
42.0	3.28	1484.6	29.97	1.5481E 04	1.9832E 06	1.3051E 06	6.9181E 05	1.41	4.3328E 04	1922.7
43.0	3.25	1503.0	30.37	1.6231E 04	1.9876E 06	1.2853E 06	6.8432E 05	1.43	4.4619E 04	1975.9
44.0	3.25	1521.9	30.76	1.7000E 04	1.9922E 06	1.2744E 06	6.7751E 05	1.45	4.5920E 04	2029.6
45.0	3.23	1541.0	31.14	1.7788E 04	1.9969E 06	1.2528E 06	6.6890E 05	1.47	4.7232E 04	2083.7
46.0	3.23	1560.6	31.51	1.8594E 04	2.0016E 06	1.2400E 06	6.6095E 05	1.50	4.8556E 04	2138.3
47.0	3.20	1580.0	31.88	1.9419E 04	2.0066E 06	1.2164E 06	6.5159E 05	1.52	4.9891E 04	2193.3
48.0	3.20	1601.0	32.23	2.0264E 04	2.0108E 06	1.2014E 06	6.4292E 05	1.55	5.1238E 04	2248.8
49.0	3.20	1621.6	32.57	2.1127E 04	2.0134E 06	1.1855E 06	6.3370E 05	1.57	5.2597E 04	2304.7
50.0	3.20	1643.1	32.90	2.2010E 04	2.0160E 06	1.1685E 06	6.2390E 05	1.60	5.3969E 04	2361.1
51.0	3.20	1664.7	33.23	2.2912E 04	2.0187E 06	1.1504E 06	6.1354E 05	1.62	5.5353E 04	2417.9
52.0	3.20	1686.9	33.54	2.3834E 04	2.0215E 06	1.1314E 06	6.0262E 05	1.65	5.6751E 04	2475.1
53.0	3.20	1709.0	33.84	2.4776E 04	2.0243E 06	1.1113E 06	5.9116E 05	1.68	5.8163E 04	2532.8
54.0	3.20	1732.6	34.13	2.5739E 04	2.0272E 06	1.0903E 06	5.7917E 05	1.71	5.9588E 04	2590.8
55.0	3.23	1756.5	34.41	2.6721E 04	2.0302E 06	1.0767E 06	5.6769E 05	1.74	6.1028E 04	2649.4
56.0	3.23	1780.6	34.68	2.7724E 04	2.0332E 06	1.0536E 06	5.5569E 05	1.77	6.2483E 04	2708.4
57.0	3.25	1805.8	34.94	2.8748E 04	2.0362E 06	1.0376E 06	5.4462E 05	1.81	6.3953E 04	2767.9
58.0	3.25	1831.3	35.19	2.9792E 04	2.0394E 06	1.0124E 06	5.3204E 05	1.84	6.5440E 04	2827.8
59.0	3.28	1857.4	35.42	3.0858E 04	2.0426E 06	9.9395E 05	5.1994E 05	1.87	6.6943E 04	2888.2
60.0	3.30	1884.2	35.64	3.1946E 04	2.0458E 06	9.7419E 05	5.0733E 05	1.91	6.8463E 04	2949.2
61.0	3.33	1911.7	35.85	3.3054E 04	2.0492E 06	9.5314E 05	4.9422E 05	1.95	7.0001E 04	3010.6
62.0	3.38	1939.9	36.05	3.4185E 04	2.0526E 06	9.3781E 05	4.8153E 05	1.99	7.1557E 04	3072.5
63.0	3.40	1968.0	36.25	3.5338E 04	2.0560E 06	9.1703E 05	4.6880E 05	2.03	7.3133E 04	3134.9
64.0	3.42	1998.5	36.43	3.6513E 04	2.0595E 06	8.9463E 05	4.5537E 05	2.06	7.4728E 04	3197.9
65.0	3.47	2028.9	36.59	3.7711E 04	2.0631E 06	8.7415E 05	4.4038E 05	2.10	7.6344E 04	3261.4
66.0	3.52	2060.6	36.75	3.8932E 04	2.0668E 06	8.5279E 05	4.2543E 05	2.13	7.7981E 04	3325.4
67.0	3.57	2092.4	36.89	4.0177E 04	2.0705E 06	8.3080E 05	4.1054E 05	2.16	7.9640E 04	3390.0
68.0	3.62	2125.4	37.03	4.1445E 04	2.0725E 06	8.0823E 05	3.9570E 05	2.20	8.1321E 04	3455.2
69.0	3.67	2159.3	37.15	4.2737E 04	2.0748E 06	7.8511E 05	3.8094E 05	2.23	8.3027E 04	3520.8
70.0	3.72	2194.0	37.25	4.4053E 04	2.0771E 06	7.6150E 05	3.6626E 05	2.27	8.4757E 04	3587.0
71.0	3.77	2229.7	37.35	4.5393E 04	2.0794E 06	7.3745E 05	3.5170E 05	2.30	8.6513E 04	3653.8
72.0	3.85	2266.6	37.43	4.6758E 04	2.0818E 06	7.1776E 05	3.3795E 05	2.34	8.8295E 04	3721.0
73.0	3.90	2303.7	37.50	4.8148E 04	2.0843E 06	6.9279E 05	3.2363E 05	2.38	9.0105E 04	3788.9
74.0	3.97	2342.1	37.56	4.9563E 04	2.0867E 06	6.7188E 05	3.1011E 05	2.42	9.1943E 04	3857.3
75.0	4.02	2381.4	37.60	5.1003E 04	2.0893E 06	6.4626E 05	2.9611E 05	2.46	9.3810E 04	3926.3
76.0	4.07	2421.7	37.64	5.2469E 04	2.0918E 06	6.2069E 05	2.8237E 05	2.50	9.5707E 04	3995.8
77.0	4.12	2462.9	37.66	5.3961E 04	2.0944E 06	5.9965E 05	2.7047E 05	2.54	9.7636E 04	4066.0
78.0	4.12	2505.1	37.67	5.5478E 04	2.0971E 06	5.7494E 05	2.5817E 05	2.59	9.9598E 04	4136.8
79.0	4.20	2548.3	37.66	5.7022E 04	2.0998E 06	5.5384E 05	2.4662E 05	2.63	1.0159E 05	4208.2
80.0	4.22	2592.5	37.64	5.8592E 04	2.1025E 06	5.2950E 05	2.3475E 05	2.68	1.0362E 05	4280.2
81.0	4.25	2637.7	37.62	6.0189E 04	2.1052E 06	5.0549E 05	2.2314E 05	2.72	1.0569E 05	4352.8
82.0	4.3	2683.9	37.58	6.1812E 04	2.1071E 06	4.8474E 05	2.1226E 05	2.77	1.0779E 05	4426.1
83.0	4.30	2731.0	37.52	6.3462E 04	2.1090E 06	4.6136E 05	2.0116E 05	2.82	1.0993E 05	4500.1
84.0	4.32	2779.6	37.46	6.5139E 04	2.1109E 06	4.3585E 05	1.8993E 05	2.87	1.1211E 05	4574.6
85.0	4.35	2828.9	37.38	6.6843E 04	2.1129E 06	4.1355E 05	1.7944E 05	2.92	1.1433E 05	4649.9
86.0	4.37	2878.7	37.30	6.8574E 04	2.1149E 06	3.9176E 05	1.6927E 05	2.97	1.1659E 05	4725.7
87.0	4.37	2930.0	37.20	7.0332E 04	2.1169E 06	3.6867E 05	1.5945E 05	3.03	1.1889E 05	4802.3
88.0	4.35	2982.4	37.09	7.2117E 04	2.1189E 06	3.4465E 05	1.5003E 05	3.08	1.2124E 05	4879.5
89.0	4.35	3035.9	36.97	7.3929E 04	2.1210E 06	3.2358E 05	1.4127E 05	3.14	1.2364E 05	4957.4
90.0	4.32	3090.4	36.83	7.5768E 04	2.1231E 06	3.0153E 05	1.3254E 05	3.19	1.2608E 05	5036.1

HTO SAMPLE RUN

TIME	ALPHA	VELOCITY	GAMMA	ALTITUDE	THRUST	LIFT	DRAG	MACH	RANGE	VCHAR
91.0	4.27	3146.0	36.69	7.7634E 04	2.1753E 06	2.7884E 05	1.2389E 05	3.25	1.2857E 05	5115.4
92.0	4.22	3242.7	36.53	7.9527E 04	2.1775E 06	2.5740E 05	1.1565E 05	3.31	1.3111E 05	5195.5
93.0	4.17	3260.2	36.37	8.1447E 04	2.1769E 06	2.3719E 05	1.0779E 05	3.37	1.3370E 05	5276.4
94.0	4.11	3319.3	36.19	8.3394E 04	2.1700E 06	2.1625E 05	9.9813E 04	3.42	1.3634E 05	5358.0
95.0	4.02	3379.2	36.00	8.5367E 04	2.1612E 06	1.9649E 05	9.2124E 04	3.47	1.3903E 05	5440.3
96.0	3.93	3440.7	35.80	8.7366E 04	2.1524E 06	1.7718E 05	8.4810E 04	3.52	1.4178E 05	5523.3
97.0	3.81	3503.1	35.59	8.9392E 04	2.1336E 06	1.5847E 05	7.7890E 04	3.57	1.4459E 05	5607.1
98.0	3.65	3566.6	35.38	9.1444E 04	2.1149E 06	1.4050E 05	7.1376E 04	3.62	1.4746E 05	5691.7
99.0	3.5	3631.3	35.15	9.3522E 04	2.1061E 06	1.2426E 05	6.5396E 04	3.67	1.5038E 05	5777.1
100.0	3.31	3697.1	34.91	9.5625E 04	2.1374E 06	1.0795E 05	5.9700E 04	3.72	1.5337E 05	5863.3
101.0	3.07	3764.1	34.66	9.7753E 04	2.1387E 06	9.2605E 04	5.4424E 04	3.77	1.5642E 05	5950.3
102.0	2.82	3832.3	34.40	9.9906E 04	2.1395E 06	7.8253E 04	4.9563E 04	3.82	1.5954E 05	6038.1
103.0	2.57	3901.7	34.13	1.0208E 05	2.1414E 06	6.5562E 04	4.5171E 04	3.87	1.6272E 05	6126.8
104.0	2.27	3972.4	33.86	1.0428E 05	2.1429E 06	5.3188E 04	4.1100E 04	3.93	1.6596E 05	6216.4
105.0	1.95	4044.2	33.57	1.0651E 05	2.1444E 06	4.1827E 04	3.7412E 04	3.98	1.6928E 05	6306.8
106.0	1.55	4117.3	33.28	1.0876E 05	2.1459E 06	3.2116E 04	3.4223E 04	4.04	1.7267E 05	6398.2
107.0	1.25	4191.6	32.98	1.1103E 05	2.1474E 06	2.2806E 04	3.1374E 04	4.09	1.7613E 05	6490.5
108.0	.85	4267.2	32.66	1.1332E 05	2.1489E 06	1.4310E 04	2.8832E 04	4.15	1.7967E 05	6583.7
109.0	.45	4344.0	32.34	1.1563E 05	2.1505E 06	6.9887E 03	2.6585E 04	4.20	1.8328E 05	6677.9
110.0	.02	4422.1	32.02	1.1797E 05	2.1520E 06	3.5803E 02	2.4597E 04	4.26	1.8697E 05	6773.1
111.0	0	4501.4	31.68	1.2032E 05	2.1478E 06	0	2.2805E 04	4.32	1.9074E 05	6869.2
112.0	0	4582.0	31.35	1.2270E 05	2.1247E 06	0	2.1141E 04	4.38	1.9459E 05	6966.4
113.0	0	4663.7	31.02	1.2509E 05	2.1018E 06	0	1.9595E 04	4.44	1.9852E 05	7064.3
114.0	0	4746.4	30.70	1.2750E 05	2.0791E 06	0	1.8159E 04	4.50	2.0253E 05	7163.0
115.0	0	4830.2	30.38	1.2994E 05	2.0565E 06	0	1.6824E 04	4.56	2.0663E 05	7262.6
116.0	0	4915.1	30.07	1.3239E 05	2.0340E 06	0	1.5585E 04	4.62	2.1081E 05	7363.0
117.0	0	5001.0	29.77	1.3486E 05	2.0117E 06	0	1.4435E 04	4.68	2.1508E 05	7464.3
118.0	0	5088.1	29.47	1.3735E 05	1.9894E 06	0	1.3368E 04	4.74	2.1944E 05	7566.5
119.0	0	5176.3	29.17	1.3987E 05	1.9673E 06	0	1.2377E 04	4.80	2.2389E 05	7669.5
120.0	0	5265.7	28.88	1.4240E 05	1.9453E 06	0	1.1458E 04	4.86	2.2842E 05	7773.5
121.0	0	5356.2	28.59	1.4495E 05	1.9234E 06	0	1.0606E 04	4.93	2.3304E 05	7878.4
122.0	0	5447.8	28.31	1.4752E 05	1.9016E 06	0	9.8154E 03	4.99	2.3776E 05	7984.2
123.0	0	5540.7	28.03	1.5012E 05	1.8799E 06	0	9.1047E 03	5.05	2.4257E 05	8091.0
123.1	0	5550.0	28.00	1.5038E 05	1.8777E 06	0	9.0369E 03	5.06	2.4306E 05	8101.7
123.2	0	5559.4	27.97	1.5064E 05	1.8756E 06	0	8.9696E 03	5.07	2.4354E 05	8112.5
123.3	0	5568.8	27.94	1.5090E 05	1.8734E 06	0	8.9027E 03	5.07	2.4403E 05	8123.2
123.4	0	5578.1	27.92	1.5116E 05	1.8713E 06	0	8.8364E 03	5.08	2.4452E 05	8134.0
P1 REACHED										
123.5	-0.03	6797.4	22.61	1.5142E 05	3.2670E 05	0	0	6.19	3.1128E 05	8144.7
124.5	.19	6816.2	22.38	1.5403E 05	3.2670E 05	0	0	6.18	3.1753E 05	8175.6
125.5	.32	6835.0	22.16	1.5661E 05	3.2670E 05	0	0	6.18	3.2380E 05	8206.6
126.5	.56	6853.1	21.93	1.5918E 05	3.2670E 05	0	0	6.20	3.3009E 05	8237.5
127.5	.75	6874.9	21.70	1.6173E 05	3.2670E 05	0	0	6.22	3.3642E 05	8268.6
128.5	.93	6894.8	21.48	1.6427E 05	3.2670E 05	0	0	6.24	3.4277E 05	8299.7
129.5	1.12	6914.9	21.26	1.6678E 05	3.2670E 05	0	0	6.25	3.4915E 05	8330.9
130.5	1.3	6935.2	21.04	1.6928E 05	3.2670E 05	0	0	6.27	3.5556E 05	8362.1
131.5	1.48	6955.7	20.81	1.7176E 05	3.2670E 05	0	0	6.29	3.6199E 05	8393.4
132.5	1.66	6976.4	20.60	1.7422E 05	3.2670E 05	0	0	6.31	3.6846E 05	8424.8
133.5	1.84	6997.2	20.38	1.7667E 05	3.2670E 05	0	0	6.35	3.7495E 05	8456.2
134.5	2.01	7018.3	20.16	1.7910E 05	3.2670E 05	0	0	6.40	3.8147E 05	8487.6
135.5	2.19	7039.5	19.95	1.8151E 05	3.2670E 05	0	0	6.46	3.8801E 05	8519.2
136.5	2.35	7060.9	19.73	1.8390E 05	3.2670E 05	0	0	6.52	3.9459E 05	8550.8
137.5	2.53	7082.5	19.52	1.8628E 05	3.2670E 05	0	0	6.58	4.0119E 05	8582.4
138.5	2.70	7104.2	19.31	1.8863E 05	3.2670E 05	0	0	6.64	4.0782E 05	8614.2
139.5	2.87	7126.2	19.10	1.9097E 05	3.2670E 05	0	0	6.70	4.1448E 05	8645.9
140.5	3.04	7148.3	18.89	1.9330E 05	3.2670E 05	0	0	6.76	4.2117E 05	8677.8
141.5	3.23	7170.6	18.68	1.9560E 05	3.2670E 05	0	0	6.82	4.2788E 05	8709.7
142.5	3.37	7193.0	18.48	1.9789E 05	3.2670E 05	0	0	6.89	4.3463E 05	8741.7
143.5	3.54	7215.7	18.27	2.0016E 05	3.2670E 05	0	0	6.95	4.4140E 05	8773.7
144.5	3.70	7238.5	18.07	2.0242E 05	3.2670E 05	0	0	7.01	4.4820E 05	8805.8
145.5	3.86	7261.2	17.87	2.0465E 05	3.2670E 05	0	0	7.08	4.5503E 05	8838.0
146.5	4.02	7284.0	17.67	2.0687E 05	3.2670E 05	0	0	7.15	4.6189E 05	8870.2
147.5	4.18	7308.0	17.47	2.0907E 05	3.2670E 05	0	0	7.21	4.6878E 05	8902.5
148.5	4.34	7331.5	17.27	2.1126E 05	3.2670E 05	0	0	7.28	4.7570E 05	8934.9
149.5	4.49	7355.2	17.08	2.1343E 05	3.2670E 05	0	0	7.35	4.8264E 05	8967.3
150.5	4.65	7379.1	16.88	2.1558E 05	3.2670E 05	0	0	7.42	4.8962E 05	8999.9
151.5	4.81	7403.1	16.69	2.1771E 05	3.2670E 05	0	0	7.49	4.9662E 05	9032.4
152.5	4.95	7427.3	16.49	2.1983E 05	3.2670E 05	0	0	7.57	5.0365E 05	9065.1
153.5	5.10	7451.7	16.30	2.2193E 05	3.2670E 05	0	0	7.64	5.1072E 05	9097.8
154.5	5.25	7476.2	16.11	2.2401E 05	3.2670E 05	0	0	7.71	5.1781E 05	9130.5
155.5	5.40	7500.9	15.92	2.2608E 05	3.2670E 05	0	0	7.79	5.2493E 05	9163.4
156.5	5.55	7525.6	15.74	2.2813E 05	3.2670E 05	0	0	7.87	5.3208E 05	9196.3
157.5	5.69	7550.4	15.55	2.3016E 05	3.2670E 05	0	0	7.94	5.3926E 05	9229.3
158.5	5.84	7576.1	15.37	2.3218E 05	3.2670E 05	0	0	8.02	5.4647E 05	9262.3
159.5	5.98	7601.9	15.18	2.3418E 05	3.2670E 05	0	0	8.10	5.5371E 05	9295.4
160.5	6.12	7627.1	15.00	2.3616E 05	3.2670E 05	0	0	8.18	5.6098E 05	9328.6
161.5	6.25	7652.8	14.82	2.3813E 05	3.2670E 05	0	0	8.26	5.6828E 05	9361.9
162.5	6.42	7678.7	14.64	2.4008E 05	3.2670E 05	0	0	8.35	5.7561E 05	9395.2
163.5	6.54	7704.8	14.46	2.4201E 05	3.2670E 05	0	0	8.43	5.8297E 05	9428.6
164.5	6.67	7731.3	14.29	2.4392E 05	3.2670E 05	0	0	8.52	5.9037E 05	9462.1
165.5	6.81	7757.9	14.11	2.4582E 05	3.2670E 05	0	0	8.60	5.9779E 05	9495.6
166.5	6.94	7784.8	13.94	2.4771E 05	3.2670E 05	0	0	8.69	6.0524E 05	9529.3
167.5	7.07	7811.7	13.76	2.4957E 05	3.2670E 05	0	0	8.78	6.1272E 05	9563.0
168.5	7.20	7837.8	13.59	2.5142E 05	3.2670E 05	0	0	8.87	6.2023E 05	9596.7
169.5	7.33	7864.3	13.42	2.5326E 05	3.2670E 05	0	0	8.96	6.2778E 05	9630.6
170.5	7.46	7891.8	13.25	2.5507E 05	3.2670E 05	0	0	9.06	6.3535E 05	9664.5
171.5	7.59	7919.2	13.08	2.5687E 05	3.2670E 05	0	0	9.15	6.4295E 05	9698.5
172.5	7.71	7946.8	12.92	2.5866E 05	3.2670E 05	0	0	9.25	6.5059E 05	9732.5
173.5	7.84	7974.5	12.75	2.6043E 05	3.2670E 05	0	0	9.34	6.5826E 05	9766.7
174.5	7.96	8002.3	12.59	2.6218E 05	3.2670E 05	0	0	9.44	6.6595E 05	9800.9
175.5	8.09	8030.4	12.42	2.6391E 05	3.2670E 05	0	0	9.49	6.7368E 05	9835.2

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TIME	ALPHA	VELOCITY	GAMMA	ALTITUDE	THRUST	LIFT	DRAG	MACH	RANGE	VGMAR
176.5	8.20	8058.0	12.26	2.6563E 05	3.2670E 05	0	0	9.52	6.8144E 05	9869.6
177.5	8.42	8086.9	12.10	2.6734E 05	3.2670E 05	0	0	9.55	6.8924E 05	9904.0
178.5	8.46	8115.4	11.94	2.6902E 05	3.2670E 05	0	0	9.59	6.9706E 05	9938.5
179.5	8.58	8144.1	11.78	2.7070E 05	3.2670E 05	0	0	9.62	7.0492E 05	9973.1
180.5	8.67	8172.9	11.63	2.7235E 05	3.2670E 05	0	0	9.65	7.1280E 05	10007.8
181.5	8.79	8201.9	11.47	2.7399E 05	3.2670E 05	0	0	9.69	7.2072E 05	10042.6
182.5	8.90	8231.1	11.32	2.7561E 05	3.2670E 05	0	0	9.72	7.2867E 05	10077.4
183.5	9.01	8260.4	11.16	2.7722E 05	3.2670E 05	0	0	9.76	7.3665E 05	10112.4
184.5	9.12	8289.8	11.01	2.7881E 05	3.2670E 05	0	0	9.79	7.4467E 05	10147.4
185.5	9.23	8319.5	10.86	2.8039E 05	3.2670E 05	0	0	9.83	7.5271E 05	10182.4
186.5	9.34	8349.3	10.71	2.8195E 05	3.2670E 05	0	0	9.86	7.6079E 05	10217.6
187.5	9.45	8379.2	10.56	2.8349E 05	3.2670E 05	0	0	9.90	7.6890E 05	10252.9
188.5	9.55	8409.3	10.42	2.8502E 05	3.2670E 05	0	0	9.93	7.7705E 05	10288.2
189.5	9.66	8439.6	10.27	2.8653E 05	3.2670E 05	0	0	9.97	7.8522E 05	10323.6
190.5	9.76	8470.0	10.13	2.8803E 05	3.2670E 05	0	0	10.01	7.9343E 05	10359.1
191.5	9.86	8500.6	9.98	2.8951E 05	3.2670E 05	0	0	10.04	8.0167E 05	10394.7
192.5	9.97	8531.3	9.84	2.9098E 05	3.2670E 05	0	0	10.08	8.0995E 05	10430.3
193.5	10.07	8562.2	9.70	2.9243E 05	3.2670E 05	0	0	10.11	8.1825E 05	10466.1
194.5	10.16	8593.2	9.56	2.9386E 05	3.2670E 05	0	0	10.15	8.2659E 05	10501.9
195.5	10.26	8624.4	9.42	2.9528E 05	3.2670E 05	0	0	10.19	8.3497E 05	10537.8
196.5	10.36	8655.8	9.28	2.9668E 05	3.2670E 05	0	0	10.23	8.4337E 05	10573.8
197.5	10.45	8687.3	9.14	2.9807E 05	3.2670E 05	0	0	10.26	8.5181E 05	10609.9
198.5	10.55	8719.0	9.01	2.9944E 05	3.2670E 05	0	0	10.30	8.6029E 05	10646.1
199.5	10.64	8750.8	8.87	3.0080E 05	3.2670E 05	0	0	10.34	8.6879E 05	10682.4
200.5	10.73	8782.8	8.74	3.0214E 05	3.2670E 05	0	0	10.38	8.7733E 05	10718.7
201.5	10.82	8814.9	8.61	3.0347E 05	3.2670E 05	0	0	10.41	8.8591E 05	10755.2
202.5	10.91	8847.2	8.48	3.0478E 05	3.2670E 05	0	0	10.45	8.9452E 05	10791.7
203.5	11.00	8879.6	8.35	3.0608E 05	3.2670E 05	0	0	10.49	9.0316E 05	10828.3
204.5	11.09	8912.2	8.22	3.0736E 05	3.2670E 05	0	0	10.53	9.1184E 05	10865.0
205.5	11.17	8945.0	8.09	3.0863E 05	3.2670E 05	0	0	10.57	9.2055E 05	10901.8
206.5	11.26	8977.9	7.96	3.0988E 05	3.2670E 05	0	0	10.61	9.2929E 05	10938.7
207.5	11.34	9010.9	7.84	3.1111E 05	3.2670E 05	0	0	10.64	9.3807E 05	10975.7
208.5	11.42	9044.2	7.71	3.1234E 05	3.2670E 05	0	0	10.68	9.4688E 05	11012.8
209.5	11.51	9077.5	7.59	3.1354E 05	3.2670E 05	0	0	10.72	9.5573E 05	11049.9
210.5	11.59	9111.1	7.47	3.1473E 05	3.2670E 05	0	0	10.76	9.6461E 05	11087.2
211.5	11.67	9144.7	7.35	3.1591E 05	3.2670E 05	0	0	10.80	9.7353E 05	11124.5
212.5	11.75	9178.6	7.23	3.1707E 05	3.2670E 05	0	0	10.84	9.8248E 05	11162.0
213.5	11.82	9212.6	7.11	3.1822E 05	3.2670E 05	0	0	10.88	9.9147E 05	11199.5
214.5	11.90	9246.7	6.99	3.1935E 05	3.2670E 05	0	0	10.92	1.0005E 06	11237.2
215.5	11.97	9281.0	6.87	3.2047E 05	3.2670E 05	0	0	10.96	1.0096E 06	11274.9
216.5	12.05	9315.5	6.75	3.2157E 05	3.2670E 05	0	0	11.00	1.0186E 06	11312.7
217.5	12.12	9350.1	6.64	3.2266E 05	3.2670E 05	0	0	11.05	1.0278E 06	11350.7
218.5	12.19	9384.8	6.53	3.2373E 05	3.2670E 05	0	0	11.09	1.0369E 06	11388.7
219.5	12.26	9419.7	6.41	3.2479E 05	3.2670E 05	0	0	11.13	1.0461E 06	11426.8
220.5	12.33	9454.8	6.30	3.2584E 05	3.2670E 05	0	0	11.17	1.0554E 06	11465.1
221.5	12.40	9490.0	6.19	3.2687E 05	3.2670E 05	0	0	11.21	1.0646E 06	11503.4
222.5	12.47	9525.4	6.08	3.2789E 05	3.2670E 05	0	0	11.25	1.0740E 06	11541.8
223.5	12.54	9561.0	5.97	3.2889E 05	3.2670E 05	0	0	11.29	1.0833E 06	11580.3
224.5	12.60	9596.6	5.86	3.2987E 05	3.2670E 05	0	0	11.34	1.0927E 06	11618.9
225.5	12.67	9632.5	5.75	3.3085E 05	3.2670E 05	0	0	11.38	1.1021E 06	11657.7
226.5	12.73	9668.5	5.65	3.3181E 05	3.2670E 05	0	0	11.42	1.1115E 06	11696.5
227.5	12.80	9704.6	5.54	3.3275E 05	3.2670E 05	0	0	11.46	1.1210E 06	11735.4
228.5	12.86	9740.9	5.44	3.3368E 05	3.2670E 05	0	0	11.51	1.1306E 06	11774.5
229.5	12.92	9777.4	5.34	3.3460E 05	3.2670E 05	0	0	11.55	1.1401E 06	11813.6
230.5	12.98	9814.0	5.23	3.3550E 05	3.2670E 05	0	0	11.59	1.1497E 06	11852.9
231.5	13.04	9850.8	5.13	3.3639E 05	3.2670E 05	0	0	11.64	1.1594E 06	11892.2
232.5	13.10	9887.7	5.03	3.3726E 05	3.2670E 05	0	0	11.68	1.1690E 06	11931.7
233.5	13.15	9924.8	4.93	3.3812E 05	3.2670E 05	0	0	11.72	1.1787E 06	11971.2
234.5	13.21	9962.1	4.83	3.3897E 05	3.2670E 05	0	0	11.77	1.1885E 06	12010.9
235.5	13.26	9999.5	4.74	3.3980E 05	3.2670E 05	0	0	11.81	1.1983E 06	12050.7
236.5	13.32	10037.0	4.64	3.4062E 05	3.2670E 05	0	0	11.86	1.2081E 06	12090.6
237.5	13.37	10074.7	4.55	3.4143E 05	3.2670E 05	0	0	11.90	1.2180E 06	12130.6
238.5	13.42	10112.5	4.45	3.4222E 05	3.2670E 05	0	0	11.95	1.2279E 06	12170.7
239.5	13.47	10150.6	4.36	3.4300E 05	3.2670E 05	0	0	11.99	1.2378E 06	12210.9
240.5	13.57	10188.8	4.26	3.4376E 05	3.2670E 05	0	0	12.04	1.2478E 06	12251.2
241.5	13.57	10227.1	4.17	3.4451E 05	3.2670E 05	0	0	12.08	1.2578E 06	12291.7
242.5	13.62	10265.6	4.08	3.4525E 05	3.2670E 05	0	0	12.13	1.2679E 06	12332.2
243.5	13.67	10304.3	3.99	3.4597E 05	3.2670E 05	0	0	12.17	1.2780E 06	12372.9
244.5	13.72	10343.1	3.90	3.4668E 05	3.2670E 05	0	0	12.22	1.2881E 06	12413.7
245.5	13.76	10382.1	3.81	3.4738E 05	3.2670E 05	0	0	12.26	1.2983E 06	12454.6
246.5	13.81	10421.2	3.73	3.4806E 05	3.2670E 05	0	0	12.31	1.3085E 06	12495.6
247.5	13.85	10460.5	3.64	3.4873E 05	3.2670E 05	0	0	12.36	1.3187E 06	12536.7
248.5	13.90	10499.9	3.55	3.4939E 05	3.2670E 05	0	0	12.40	1.3290E 06	12578.0
249.5	13.94	10539.5	3.47	3.5003E 05	3.2670E 05	0	0	12.45	1.3393E 06	12619.3
250.5	13.98	10579.3	3.38	3.5066E 05	3.2670E 05	0	0	12.50	1.3497E 06	12660.8
251.5	14.02	10619.2	3.30	3.5128E 05	3.2670E 05	0	0	12.54	1.3601E 06	12702.4
252.5	14.06	10659.3	3.22	3.5189E 05	3.2670E 05	0	0	12.59	1.3705E 06	12744.1
253.5	14.10	10699.5	3.14	3.5248E 05	3.2670E 05	0	0	12.64	1.3810E 06	12786.0
254.5	14.14	10740.0	3.06	3.5306E 05	3.2670E 05	0	0	12.69	1.3916E 06	12827.9
255.5	14.17	10780.5	2.98	3.5362E 05	3.2670E 05	0	0	12.74	1.4021E 06	12870.0
256.5	14.21	10821.3	2.90	3.5418E 05	3.2670E 05	0	0	12.78	1.4127E 06	12912.2
257.5	14.24	10862.2	2.82	3.5472E 05	3.2670E 05	0	0	12.83	1.4234E 06	12954.6
258.5	14.28	10903.2	2.74	3.5525E 05	3.2670E 05	0	0	12.88	1.4341E 06	12997.0
259.5	14.31	10944.4	2.66	3.5576E 05	3.2670E 05	0	0	12.93	1.4448E 06	13039.6
260.5	14.35	10985.8	2.59	3.5626E 05	3.2670E 05	0	0	12.98	1.4556E 06	13082.3
261.5	14.38	11027.4	2.51	3.5675E 05	3.2670E 05	0	0	13.03	1.4664E 06	13125.2
262.5	14.41	11069.1	2.44	3.5723E 05	3.2670E 05	0	0	13.08	1.4772E 06	13168.2
263.5	14.44	11111.0	2.37	3.5770E 05	3.2670E 05	0	0	13.13	1.4881E 06	13211.3
264.5	14.47	11153.0	2.29	3.5815E 05	3.2670E 05	0	0	13.18	1.4991E 06	13254.5
265.5	14.50	11195.2	2.22	3.5859E 05	3.2670E 05	0	0	13.23	1.5100E 06	13297.8
266.5	14.53	11237.6	2.15	3.5902E 05	3.2670E 05	0	0	13.28	1.5211E 06	13341.3

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TIME	ALPHA	VELOCITY	GAMMA	ALTITUDE	THRUST	LIFT	DRAG	MACH	RANGE	VCHAR
267.5	14.59	11280.2	2.08	3.5943E 05	3.2670E 05	0	0	13.33	1.5321E 06	13385.0
268.5	14.58	11322.9	2.01	3.5984E 05	3.2670E 05	0	0	13.38	1.5432E 06	13428.7
269.5	14.61	11365.7	1.94	3.6023E 05	3.2670E 05	0	0	13.43	1.5544E 06	13472.6
270.5	14.64	11408.6	1.87	3.6061E 05	3.2670E 05	0	0	13.48	1.5656E 06	13516.6
271.5	14.65	11452.0	1.81	3.6097E 05	3.2670E 05	0	0	13.53	1.5768E 06	13560.8
272.5	14.68	11495.4	1.74	3.6133E 05	3.2670E 05	0	0	13.58	1.5881E 06	13605.1
273.5	14.70	11539.0	1.68	3.6167E 05	3.2670E 05	0	0	13.63	1.5994E 06	13649.5
274.5	14.72	11582.7	1.61	3.6200E 05	3.2670E 05	0	0	13.68	1.6107E 06	13694.1
275.5	14.74	11626.6	1.55	3.6232E 05	3.2670E 05	0	0	13.73	1.6221E 06	13738.8
276.5	14.76	11670.7	1.48	3.6263E 05	3.2670E 05	0	0	13.79	1.6336E 06	13783.6
277.5	14.78	11714.9	1.42	3.6293E 05	3.2670E 05	0	0	13.84	1.6451E 06	13828.6
278.5	14.80	11759.3	1.36	3.6321E 05	3.2670E 05	0	0	13.89	1.6566E 06	13873.8
279.5	14.82	11803.9	1.30	3.6349E 05	3.2670E 05	0	0	13.94	1.6682E 06	13919.1
280.5	14.84	11848.7	1.24	3.6375E 05	3.2670E 05	0	0	14.00	1.6798E 06	13964.5
281.5	14.85	11893.7	1.18	3.6400E 05	3.2670E 05	0	0	14.05	1.6915E 06	14010.1
282.5	14.87	11938.5	1.12	3.6424E 05	3.2670E 05	0	0	14.10	1.7032E 06	14055.8
283.5	14.88	11984.1	1.06	3.6446E 05	3.2670E 05	0	0	14.16	1.7149E 06	14101.6
284.5	14.90	12029.9	1.00	3.6468E 05	3.2670E 05	0	0	14.21	1.7267E 06	14147.6
285.5	14.91	12075.2	.95	3.6489E 05	3.2670E 05	0	0	14.26	1.7386E 06	14193.8
286.5	14.92	12121.0	.89	3.6508E 05	3.2670E 05	0	0	14.32	1.7505E 06	14240.1
287.5	14.94	12167.0	.83	3.6526E 05	3.2670E 05	0	0	14.37	1.7624E 06	14286.6
288.5	14.95	12213.2	.78	3.6543E 05	3.2670E 05	0	0	14.43	1.7744E 06	14333.2
289.5	14.96	12259.8	.73	3.6559E 05	3.2670E 05	0	0	14.48	1.7864E 06	14380.0
290.5	14.97	12306.2	.67	3.6574E 05	3.2670E 05	0	0	14.54	1.7985E 06	14426.9
291.5	14.98	12352.9	.62	3.6588E 05	3.2670E 05	0	0	14.59	1.8106E 06	14474.0
292.5	14.99	12399.8	.57	3.6601E 05	3.2670E 05	0	0	14.65	1.8228E 06	14521.2
293.5	14.99	12446.9	.52	3.6613E 05	3.2670E 05	0	0	14.70	1.8350E 06	14568.6
294.5	15.00	12494.2	.47	3.6624E 05	3.2670E 05	0	0	14.76	1.8472E 06	14616.1
295.5	15.01	12541.7	.42	3.6633E 05	3.2670E 05	0	0	14.82	1.8595E 06	14663.8
296.5	15.01	12589.4	.37	3.6642E 05	3.2670E 05	0	0	14.87	1.8719E 06	14711.7
297.5	15.02	12637.2	.32	3.6649E 05	3.2670E 05	0	0	14.93	1.8843E 06	14759.7
298.5	15.02	12685.3	.27	3.6656E 05	3.2670E 05	0	0	14.99	1.8967E 06	14807.9
299.5	15.03	12733.5	.22	3.6661E 05	3.2670E 05	0	0	15.04	1.9092E 06	14856.3
300.5	15.03	12781.9	.18	3.6666E 05	3.2670E 05	0	0	15.10	1.9217E 06	14904.8
301.5	15.03	12830.5	.13	3.6669E 05	3.2670E 05	0	0	15.16	1.9343E 06	14953.5
302.5	15.03	12879.4	.08	3.6671E 05	3.2670E 05	0	0	15.21	1.9470E 06	15002.4
303.5	15.03	12928.4	.04	3.6673E 05	3.2670E 05	0	0	15.27	1.9596E 06	15051.4
304.5	15.03	12977.6	-0.00	3.6673E 05	3.2670E 05	0	0	15.33	1.9724E 06	15100.6
305.5	15.03	13026.9	-0.05	3.6673E 05	3.2670E 05	0	0	15.39	1.9852E 06	15150.0
306.5	15.03	13076.5	-0.09	3.6671E 05	3.2670E 05	0	0	15.45	1.9980E 06	15199.6
307.5	15.03	13126.3	-0.13	3.6669E 05	3.2670E 05	0	0	15.51	2.0109E 06	15249.3
308.5	15.03	13176.3	-0.17	3.6665E 05	3.2670E 05	0	0	15.57	2.0238E 06	15299.2
309.5	15.03	13226.5	-0.22	3.6661E 05	3.2670E 05	0	0	15.62	2.0368E 06	15349.2
310.5	15.02	13276.9	-0.26	3.6655E 05	3.2670E 05	0	0	15.68	2.0498E 06	15399.5
311.5	15.02	13327.5	-0.30	3.6649E 05	3.2670E 05	0	0	15.74	2.0628E 06	15449.9
312.5	15.01	13378.2	-0.33	3.6641E 05	3.2670E 05	0	0	15.80	2.0760E 06	15500.5
313.5	15.01	13429.2	-0.37	3.6633E 05	3.2670E 05	0	0	15.86	2.0891E 06	15551.3
314.5	15.00	13480.4	-0.41	3.6624E 05	3.2670E 05	0	0	15.92	2.1024E 06	15602.3
315.5	15.00	13531.8	-0.45	3.6614E 05	3.2670E 05	0	0	15.99	2.1156E 06	15653.5
316.5	14.99	13583.4	-0.48	3.6603E 05	3.2670E 05	0	0	16.05	2.1290E 06	15704.8
317.5	14.98	13635.3	-0.52	3.6591E 05	3.2670E 05	0	0	16.11	2.1423E 06	15756.4
318.5	14.97	13687.3	-0.56	3.6578E 05	3.2670E 05	0	0	16.17	2.1558E 06	15808.1
319.5	14.96	13739.5	-0.59	3.6564E 05	3.2670E 05	0	0	16.23	2.1692E 06	15860.0
320.5	14.95	13792.0	-0.63	3.6550E 05	3.2670E 05	0	0	16.29	2.1828E 06	15912.1
321.5	14.94	13844.7	-0.66	3.6534E 05	3.2670E 05	0	0	16.35	2.1963E 06	15964.4
322.5	14.93	13897.5	-0.69	3.6518E 05	3.2670E 05	0	0	16.42	2.2100E 06	16016.9
323.5	14.92	13950.6	-0.72	3.6500E 05	3.2670E 05	0	0	16.48	2.2237E 06	16069.6
324.5	14.91	14004.0	-0.76	3.6482E 05	3.2670E 05	0	0	16.54	2.2374E 06	16122.5
325.5	14.90	14057.5	-0.79	3.6463E 05	3.2670E 05	0	0	16.61	2.2512E 06	16175.6
326.5	14.88	14111.2	-0.82	3.6444E 05	3.2670E 05	0	0	16.67	2.2650E 06	16228.9
327.5	14.87	14165.2	-0.85	3.6423E 05	3.2670E 05	0	0	16.73	2.2789E 06	16282.4
328.5	14.85	14219.4	-0.88	3.6402E 05	3.2670E 05	0	0	16.80	2.2929E 06	16336.1
329.5	14.84	14273.8	-0.91	3.6380E 05	3.2670E 05	0	0	16.86	2.3069E 06	16390.0
330.5	14.82	14328.5	-0.94	3.6357E 05	3.2670E 05	0	0	16.93	2.3209E 06	16444.1
331.5	14.81	14383.4	-0.96	3.6333E 05	3.2670E 05	0	0	16.99	2.3350E 06	16498.4
332.5	14.79	14438.5	-0.99	3.6308E 05	3.2670E 05	0	0	17.06	2.3492E 06	16553.0
333.5	14.77	14493.8	-1.02	3.6283E 05	3.2670E 05	0	0	17.12	2.3634E 06	16607.7
334.5	14.75	14549.4	-1.04	3.6257E 05	3.2670E 05	0	0	17.19	2.3777E 06	16662.7
335.5	14.74	14605.2	-1.07	3.6230E 05	3.2670E 05	0	0	17.25	2.3920E 06	16717.9
336.5	14.72	14661.2	-1.10	3.6202E 05	3.2670E 05	0	0	17.32	2.4064E 06	16773.3
337.5	14.70	14717.5	-1.12	3.6174E 05	3.2670E 05	0	0	17.39	2.4208E 06	16828.9
338.5	14.68	14774.0	-1.14	3.6145E 05	3.2670E 05	0	0	17.45	2.4353E 06	16884.7
339.5	14.66	14830.8	-1.17	3.6115E 05	3.2670E 05	0	0	17.52	2.4499E 06	16940.8
340.5	14.63	14887.7	-1.19	3.6084E 05	3.2670E 05	0	0	17.59	2.4645E 06	16997.0
341.5	14.61	14945.1	-1.21	3.6053E 05	3.2670E 05	0	0	17.65	2.4791E 06	17053.5
342.5	14.59	15002.5	-1.24	3.6021E 05	3.2670E 05	0	0	17.72	2.4939E 06	17110.3
343.5	14.57	15060.2	-1.26	3.5988E 05	3.2670E 05	0	0	17.79	2.5086E 06	17167.2
344.5	14.54	15118.2	-1.28	3.5955E 05	3.2670E 05	0	0	17.86	2.5235E 06	17224.4
345.5	14.52	15176.4	-1.30	3.5921E 05	3.2670E 05	0	0	17.93	2.5383E 06	17281.9
346.5	14.50	15234.9	-1.32	3.5886E 05	3.2670E 05	0	0	18.00	2.5533E 06	17339.5
347.5	14.47	15293.6	-1.34	3.5851E 05	3.2670E 05	0	0	18.07	2.5683E 06	17397.4
348.5	14.44	15352.6	-1.36	3.5815E 05	3.2670E 05	0	0	18.14	2.5834E 06	17455.4
349.5	14.42	15411.8	-1.37	3.5778E 05	3.2670E 05	0	0	18.21	2.5985E 06	17514.0
350.5	14.39	15471.3	-1.39	3.5741E 05	3.2670E 05	0	0	18.28	2.6136E 06	17572.6
351.5	14.36	15531.1	-1.41	3.5703E 05	3.2670E 05	0	0	18.35	2.6289E 06	17631.5
352.5	14.34	15591.1	-1.43	3.5664E 05	3.2670E 05	0	0	18.42	2.6442E 06	17690.6
353.5	14.31	15651.4	-1.44	3.5625E 05	3.2670E 05	0	0	18.49	2.6595E 06	17750.0
354.5	14.28	15711.9	-1.46	3.5586E 05	3.2670E 05	0	0	18.56	2.6749E 06	17809.6
355.5	14.25	15772.8	-1.47	3.5545E 05	3.2670E 05	0	0	18.63	2.6904E 06	17869.5
356.5	14.22	15833.9	-1.49	3.5505E 05	3.2670E 05	0	0	18.70	2.7060E 06	17929.6
357.5	14.19	15895.2	-1.50	3.5463E 05	3.2670E 05	0	0	18.78	2.7216E 06	17990.0

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TIME	ALPHA	VELOCITY	GAMMA	ALTITUDE	THRUST	LIFT	DRAG	MACH	RANGE	VCHAR
358.5	14.1[illegible]	15956.9	-1.51	3.5421E 05	3.2670E 05	0	0	18.85	2.7372E 06	18050.7
359.5	14.1[illegible]	16018.6	-1.53	3.5379E 05	3.2670E 05	0	0	18.92	2.7529E 06	18111.6
360.5	14.0[illegible]	16081.0	-1.54	3.5336E 05	3.2670E 05	0	0	19.00	2.7687E 06	18172.8
361.5	14.0[illegible]	16143.9	-1.55	3.5293E 05	3.2670E 05	0	0	19.07	2.7845E 06	18234.3
362.5	14.0[illegible]	16206.4	-1.56	3.5249E 05	3.2670E 05	0	0	19.14	2.8004E 06	18296.0
363.5	14.0[illegible]	16269.3	-1.58	3.5204E 05	3.2670E 05	0	0	19.22	2.8164E 06	18358.0
364.5	13.9[illegible]	16332.6	-1.59	3.5159E 05	3.2670E 05	0	0	19.29	2.8324E 06	18420.3
365.5	13.9[illegible]	16396.3	-1.60	3.5114E 05	3.2670E 05	0	0	19.37	2.8485E 06	18482.8
366.5	13.8[illegible]	16460.2	-1.61	3.5068E 05	3.2670E 05	0	0	19.44	2.8647E 06	18545.7
367.5	13.8[illegible]	16524.4	-1.61	3.5021E 05	3.2670E 05	0	0	19.52	2.8809E 06	18608.8
368.5	13.8[illegible]	16588.9	-1.62	3.4975E 05	3.2670E 05	0	0	19.60	2.8972E 06	18672.2
369.5	13.7[illegible]	16653.6	-1.63	3.4927E 05	3.2670E 05	0	0	19.67	2.9135E 06	18735.9
370.5	13.7[illegible]	16718.4	-1.64	3.4880E 05	3.2670E 05	0	0	19.75	2.9299E 06	18799.8
371.5	13.7[illegible]	16784.3	-1.65	3.4832E 05	3.2670E 05	0	0	19.83	2.9464E 06	18864.1
372.5	13.[illegible]	16850.1	-1.65	3.4783E 05	3.2670E 05	0	0	19.91	2.9629E 06	18928.7
373.5	13.6[illegible]	16916.1	-1.66	3.4734E 05	3.2670E 05	0	0	19.98	2.9795E 06	18993.6
374.5	13.5[illegible]	16982.2	-1.67	3.4685E 05	3.2670E 05	0	0	20.06	2.9962E 06	19058.7
375.5	13.5[illegible]	17049.2	-1.67	3.4636E 05	3.2670E 05	0	0	20.14	3.0129E 06	19124.2
376.5	13.5[illegible]	17116.2	-1.68	3.4586E 05	3.2670E 05	0	0	20.22	3.0297E 06	19190.0
377.5	13.47	17183.2	-1.68	3.4534E 05	3.2670E 05	0	0	20.30	3.0466E 06	19256.1
378.5	13.4[illegible]	17251.1	-1.68	3.4485E 05	3.2670E 05	0	0	20.38	3.0635E 06	19322.5
379.5	13.3[illegible]	17319.1	-1.69	3.4434E 05	3.2670E 05	0	0	20.46	3.0805E 06	19389.2
380.5	13.3[illegible]	17387.4	-1.69	3.4383E 05	3.2670E 05	0	0	20.54	3.0976E 06	19456.2
381.5	13.3[illegible]	17456.0	-1.69	3.4332E 05	3.2670E 05	0	0	20.62	3.1147E 06	19523.6
382.5	13.2[illegible]	17525.0	-1.70	3.4280E 05	3.2670E 05	0	0	20.70	3.1319E 06	19591.3
383.5	13.2[illegible]	17594.3	-1.70	3.4228E 05	3.2670E 05	0	0	20.78	3.1492E 06	19659.3
384.5	13.1[illegible]	17664.0	-1.70	3.4176E 05	3.2670E 05	0	0	20.87	3.1665E 06	19727.6
385.5	13.1[illegible]	17734.9	-1.70	3.4123E 05	3.2670E 05	0	0	20.95	3.1839E 06	19796.3
386.5	13.0[illegible]	17804.4	-1.70	3.4071E 05	3.2670E 05	0	0	21.03	3.2014E 06	19865.3
387.5	13.04	17875.1	-1.70	3.4018E 05	3.2670E 05	0	0	21.12	3.2189E 06	19934.7
388.5	13.0[illegible]	17946.1	-1.70	3.3965E 05	3.2670E 05	0	0	21.20	3.2365E 06	20004.4
389.5	12.95	18017.6	-1.70	3.3911E 05	3.2670E 05	0	0	21.28	3.2542E 06	20074.5
390.5	12.9[illegible]	18089.3	-1.70	3.3858E 05	3.2670E 05	0	0	21.37	3.2720E 06	20144.9
391.5	12.86	18161.2	-1.69	3.3804E 05	3.2670E 05	0	0	21.45	3.2898E 06	20215.6
392.5	12.81	18234.0	-1.69	3.3750E 05	3.2670E 05	0	0	21.54	3.3077E 06	20286.7
393.5	12.76	18306.9	-1.69	3.3697E 05	3.2670E 05	0	0	21.63	3.3257E 06	20358.2
394.5	12.71	18380.2	-1.69	3.3643E 05	3.2670E 05	0	0	21.71	3.3437E 06	20430.1
395.5	12.66	18453.8	-1.68	3.3588E 05	3.2670E 05	0	0	21.80	3.3618E 06	20502.3
396.5	12.61	18527.7	-1.68	3.3534E 05	3.2670E 05	0	0	21.89	3.3800E 06	20574.9
397.5	12.55	18602.3	-1.67	3.3480E 05	3.2670E 05	0	0	21.98	3.3983E 06	20647.8
398.5	12.51	18677.1	-1.67	3.3426E 05	3.2670E 05	0	0	22.06	3.4166E 06	20721.2
399.5	12.46	18752.3	-1.66	3.3371E 05	3.2670E 05	0	0	22.15	3.4350E 06	20794.9
400.5	12.41	18827.9	-1.66	3.3317E 05	3.2670E 05	0	0	22.24	3.4535E 06	20869.0
401.5	12.36	18903.9	-1.65	3.3263E 05	3.2670E 05	0	0	22.33	3.4721E 06	20943.5
402.5	12.31	18980.4	-1.64	3.3208E 05	3.2670E 05	0	0	22.42	3.4907E 06	21018.5
403.5	12.26	19057.2	-1.63	3.3154E 05	3.2670E 05	0	0	22.51	3.5094E 06	21093.8
404.5	12.2[illegible]	19134.3	-1.63	3.3099E 05	3.2670E 05	0	0	22.60	3.5282E 06	21169.5
405.5	12.15	19212.1	-1.62	3.3045E 05	3.2670E 05	0	0	22.70	3.5471E 06	21245.6
406.5	12.09	19290.2	-1.61	3.2991E 05	3.2670E 05	0	0	22.79	3.5660E 06	21322.2
407.5	12.04	19368.8	-1.60	3.2937E 05	3.2670E 05	0	0	22.88	3.5851E 06	21399.1
408.5	11.99	19447.7	-1.59	3.2883E 05	3.2670E 05	0	0	22.97	3.6042E 06	21476.5
409.5	11.93	19527.1	-1.58	3.2829E 05	3.2670E 05	0	0	23.07	3.6233E 06	21554.3
410.5	11.87	19607.0	-1.57	3.2775E 05	3.2670E 05	0	0	23.16	3.6426E 06	21632.6
411.5	11.82	19687.3	-1.56	3.2721E 05	3.2670E 05	0	0	23.26	3.6619E 06	21711.3
412.5	11.76	19768.0	-1.55	3.2668E 05	3.2670E 05	0	0	23.35	3.6814E 06	21790.4
413.5	11.70	19849.2	-1.54	3.2614E 05	3.2670E 05	0	0	23.45	3.7009E 06	21870.0
414.5	11.65	19930.9	-1.53	3.2561E 05	3.2670E 05	0	0	23.54	3.7204E 06	21950.0
415.5	11.59	20013.0	-1.51	3.2508E 05	3.2670E 05	0	0	23.64	3.7401E 06	22030.5
416.5	11.53	20095.6	-1.50	3.2455E 05	3.2670E 05	0	0	23.74	3.7598E 06	22111.4
417.5	11.47	20178.7	-1.49	3.2403E 05	3.2670E 05	0	0	23.84	3.7797E 06	22192.9
418.5	11.41	20262.3	-1.47	3.2351E 05	3.2670E 05	0	0	23.94	3.7996E 06	22274.8
419.5	11.35	20346.4	-1.46	3.2299E 05	3.2670E 05	0	0	24.04	3.8195E 06	22357.1
420.5	11.29	20430.9	-1.44	3.2247E 05	3.2670E 05	0	0	24.14	3.8396E 06	22440.0
421.5	11.23	20516.0	-1.43	3.2196E 05	3.2670E 05	0	0	24.24	3.8598E 06	22523.3
422.5	11.17	20601.6	-1.41	3.2145E 05	3.2670E 05	0	0	24.34	3.8800E 06	22607.2
423.5	11.11	20687.6	-1.40	3.2094E 05	3.2670E 05	0	0	24.44	3.9003E 06	22691.5
424.5	11.05	20774.3	-1.38	3.2044E 05	3.2670E 05	0	0	24.54	3.9208E 06	22776.4
425.5	10.99	20861.4	-1.36	3.1994E 05	3.2670E 05	0	0	24.64	3.9412E 06	22861.7
426.5	10.92	20949.0	-1.35	3.1945E 05	3.2670E 05	0	0	24.75	3.9618E 06	22947.6
427.5	10.86	21037.2	-1.33	3.1896E 05	3.2670E 05	0	0	24.85	3.9825E 06	23034.1
428.5	10.80	21126.0	-1.31	3.1847E 05	3.2670E 05	0	0	24.96	4.0033E 06	23121.0
429.5	10.73	21215.3	-1.29	3.1799E 05	3.2670E 05	0	0	25.06	4.0241E 06	23208.5
430.5	10.67	21305.1	-1.27	3.1751E 05	3.2670E 05	0	0	25.17	4.0450E 06	23296.5
431.5	10.6[illegible]	21395.5	-1.26	3.1704E 05	3.2670E 05	0	0	25.27	4.0661E 06	23385.1
432.5	10.54	21486.5	-1.24	3.1657E 05	3.2670E 05	0	0	25.38	4.0872E 06	23474.3
433.5	10.47	21578.1	-1.22	3.1611E 05	3.2670E 05	0	0	25.49	4.1084E 06	23564.0
434.5	10.41	21670.3	-1.20	3.1566E 05	3.2670E 05	0	0	25.60	4.1297E 06	23654.3
435.5	10.34	21763.0	-1.17	3.1521E 05	3.2670E 05	0	0	25.71	4.1511E 06	23745.1
436.5	10.27	21856.4	-1.15	3.1477E 05	3.2670E 05	0	0	25.82	4.1726E 06	23836.6
437.5	10.2[illegible]	21950.3	-1.13	3.1433E 05	3.2670E 05	0	0	25.93	4.1941E 06	23928.7
438.5	10.14	22044.9	-1.11	3.1390E 05	3.2670E 05	0	0	26.04	4.2158E 06	24021.3
439.5	10.07	22140.1	-1.09	3.1348E 05	3.2670E 05	0	0	26.15	4.2376E 06	24114.6
440.5	10.00	22235.9	-1.06	3.1306E 05	3.2490E 05	0	0	26.27	4.2594E 06	24208.5

HTO SAMPLE RUN PAGE 9

TIME	ALPHA	VELOCITY	GAMMA	ALTITUDE	THRUST	LIFT	DRAG	MACH	RANGE	VCHAR
441.5	9.93	22332.5	-1.04	3.1265E 05	3.2275E 05	0	0	26.38	4.2814E 06	24302.9
442.5	9.86	22429.2	-1.02	3.1225E 05	3.2660E 05	0	0	26.50	4.3034E 06	24397.9
443.5	9.79	22526.7	-0.99	3.1186E 05	3.1845E 05	0	0	26.61	4.3256E 06	24493.4
444.5	9.72	22624.7	-0.97	3.1147E 05	3.1631E 05	0	0	26.73	4.3478E 06	24589.4
445.5	9.65	22723.3	-0.94	3.1109E 05	3.1416E 05	0	0	26.84	4.3701E 06	24686.0
446.5	9.58	22822.5	-0.92	3.1072E 05	3.1202E 05	0	0	26.96	4.3926E 06	24783.2
447.5	9.51	22922.2	-0.89	3.1036E 05	3.0989E 05	0	0	27.08	4.4151E 06	24880.9
448.5	9.45	23022.5	-0.87	3.1001E 05	3.0775E 05	0	0	27.20	4.4377E 06	24979.2
449.5	9.37	23123.3	-0.84	3.0966E 05	3.0562E 05	0	0	27.32	4.4605E 06	25078.0
450.5	9.29	23225.0	-0.81	3.0933E 05	3.0349E 05	0	0	27.44	4.4833E 06	25177.5
451.5	9.22	23327.1	-0.79	3.0900E 05	3.0136E 05	0	0	27.56	4.5062E 06	25277.5
452.5	9.15	23429.9	-0.76	3.0869E 05	2.9923E 05	0	0	27.68	4.5293E 06	25378.2
453.5	9.07	23533.2	-0.73	3.0838E 05	2.9711E 05	0	0	27.80	4.5524E 06	25479.4
454.5	9.00	23637.2	-0.70	3.0809E 05	2.9498E 05	0	0	27.92	4.5757E 06	25581.3
455.5	8.92	23741.8	-0.68	3.0780E 05	2.9287E 05	0	0	28.05	4.5990E 06	25683.8
456.5	8.85	23847.1	-0.65	3.0753E 05	2.9075E 05	0	0	28.17	4.6224E 06	25787.0
457.5	8.77	23953.0	-0.62	3.0726E 05	2.8863E 05	0	0	28.30	4.6460E 06	25890.7
458.5	8.7	24059.6	-0.59	3.0701E 05	2.8652E 05	0	0	28.42	4.6697E 06	25995.2
459.5	8.62	24166.9	-0.56	3.0677E 05	2.8441E 05	0	0	28.55	4.6934E 06	26100.2
460.5	8.55	24274.8	-0.53	3.0654E 05	2.8230E 05	0	0	28.68	4.7173E 06	26206.0
461.5	8.47	24383.5	-0.50	3.0632E 05	2.8020E 05	0	0	28.80	4.7413E 06	26312.4
462.5	8.40	24492.6	-0.47	3.0611E 05	2.7809E 05	0	0	28.93	4.7653E 06	26419.5
463.5	8.32	24602.9	-0.44	3.0592E 05	2.7599E 05	0	0	29.06	4.7895E 06	26527.3
464.5	8.24	24713.7	-0.40	3.0574E 05	2.7389E 05	0	0	29.19	4.8138E 06	26635.9
465.5	8.16	24825.2	-0.37	3.0557E 05	2.7180E 05	0	0	29.33	4.8382E 06	26745.1
466.5	8.08	24937.4	-0.34	3.0541E 05	2.6970E 05	0	0	29.46	4.8628E 06	26855.1
467.5	8.01	25050.4	-0.31	3.0527E 05	2.6761E 05	0	0	29.59	4.8874E 06	26965.8
468.5	7.93	25164.2	-0.27	3.0514E 05	2.6552E 05	0	0	29.73	4.9121E 06	27077.2
469.5	7.85	25278.8	-0.24	3.0503E 05	2.6344E 05	0	0	29.86	4.9370E 06	27189.4
470.5	7.77	25394.1	-0.21	3.0493E 05	2.6135E 05	0	0	30.00	4.9620E 06	27302.4
471.5	7.69	25510.2	-0.17	3.0485E 05	2.5927E 05	0	0	30.14	4.9871E 06	27416.1
472.5	7.61	25627.2	-0.14	3.0478E 05	2.5719E 05	0	0	30.27	5.0122E 06	27530.7
472.7	7.59	25650.0	-0.13	3.0476E 05	2.5677E 05	0	0	30.30	5.0173E 06	27553.7
472.9	7.57	25674.2	-0.13	3.0475E 05	2.5636E 05	0	0	30.33	5.0224E 06	27576.7
473.1	7.56	25697.7	-0.12	3.0474E 05	2.5594E 05	0	0	30.36	5.0274E 06	27599.7
473.3	7.54	25721.5	-0.11	3.0473E 05	2.5553E 05	0	0	30.38	5.0325E 06	27622.8
473.5	7.53	25744.9	-0.10	3.0472E 05	2.5511E 05	0	0	30.41	5.0376E 06	27646.0
473.7	7.51	25768.5	-0.10	3.0471E 05	2.5470E 05	0	0	30.44	5.0426E 06	27669.1

FIRST STAGE WEIGHTS LBS.

ENGINE	2.305990E 04	EQUIPMENT	1.626400E 05	TANK	9.805575E 04	JETTISON	2.841956E 05
USED PROPELLANT	8.798912E 05	WC2	3.359132E 05	FIXED RESERVES	0	VAR. RESERVES	6.538380E 03
STAGING TIME	1.235000E 02	ALTITUDE	1.514206E 05	V-ROTATION	1.335847E 03		

SECOND STAGE WEIGHTS (LBS.)

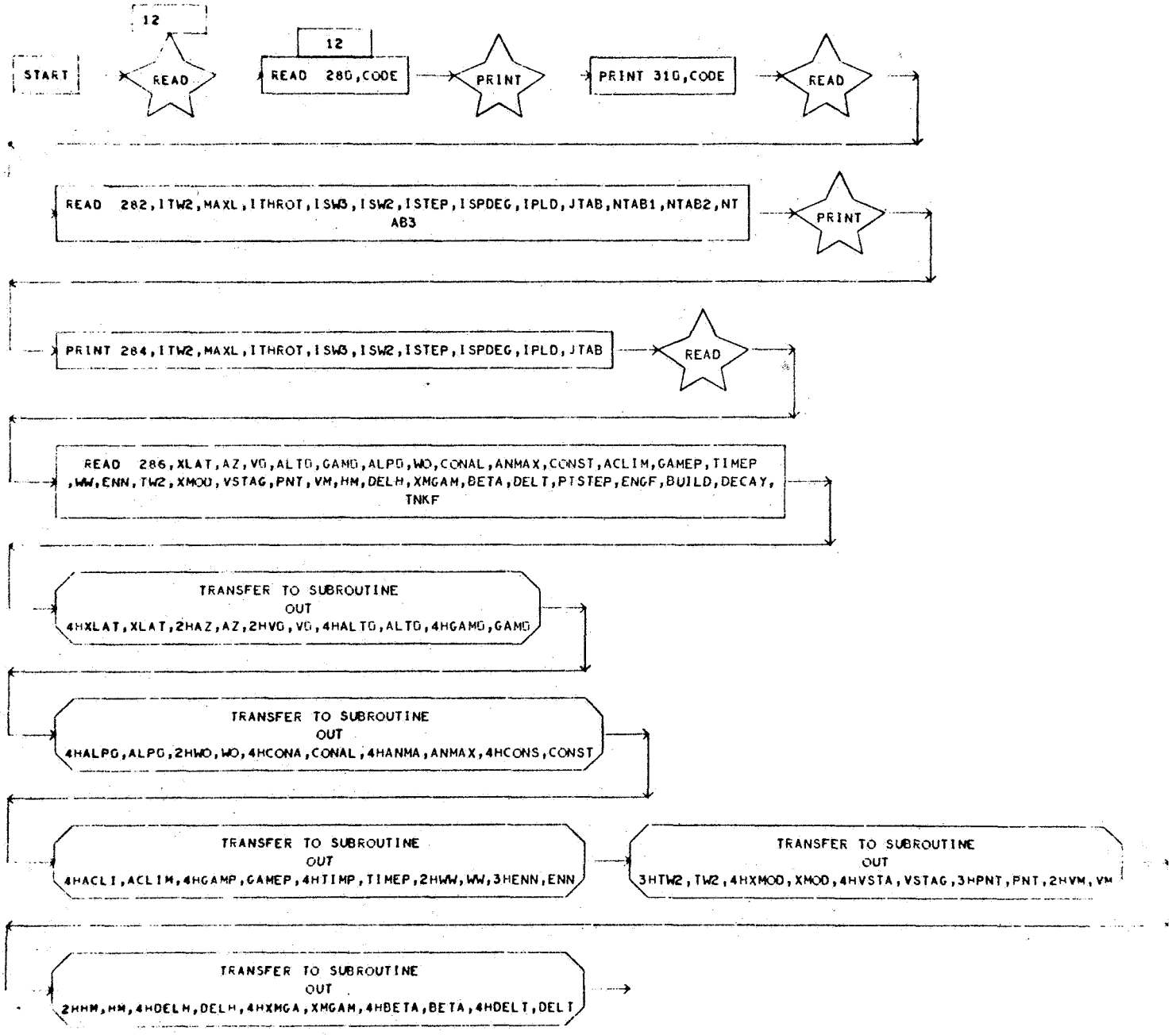
ENGINE	5.521981E 03	EQUIPMENT	4.316800E 04	TANK	1.184656E 04	JETTISON	6.053654E 04
PROPELLANT	2.510144E 05	FIXED RESERVES	3.409311E 03	VAR. RESERVES	0	PAYLOAD	2.484222E 04

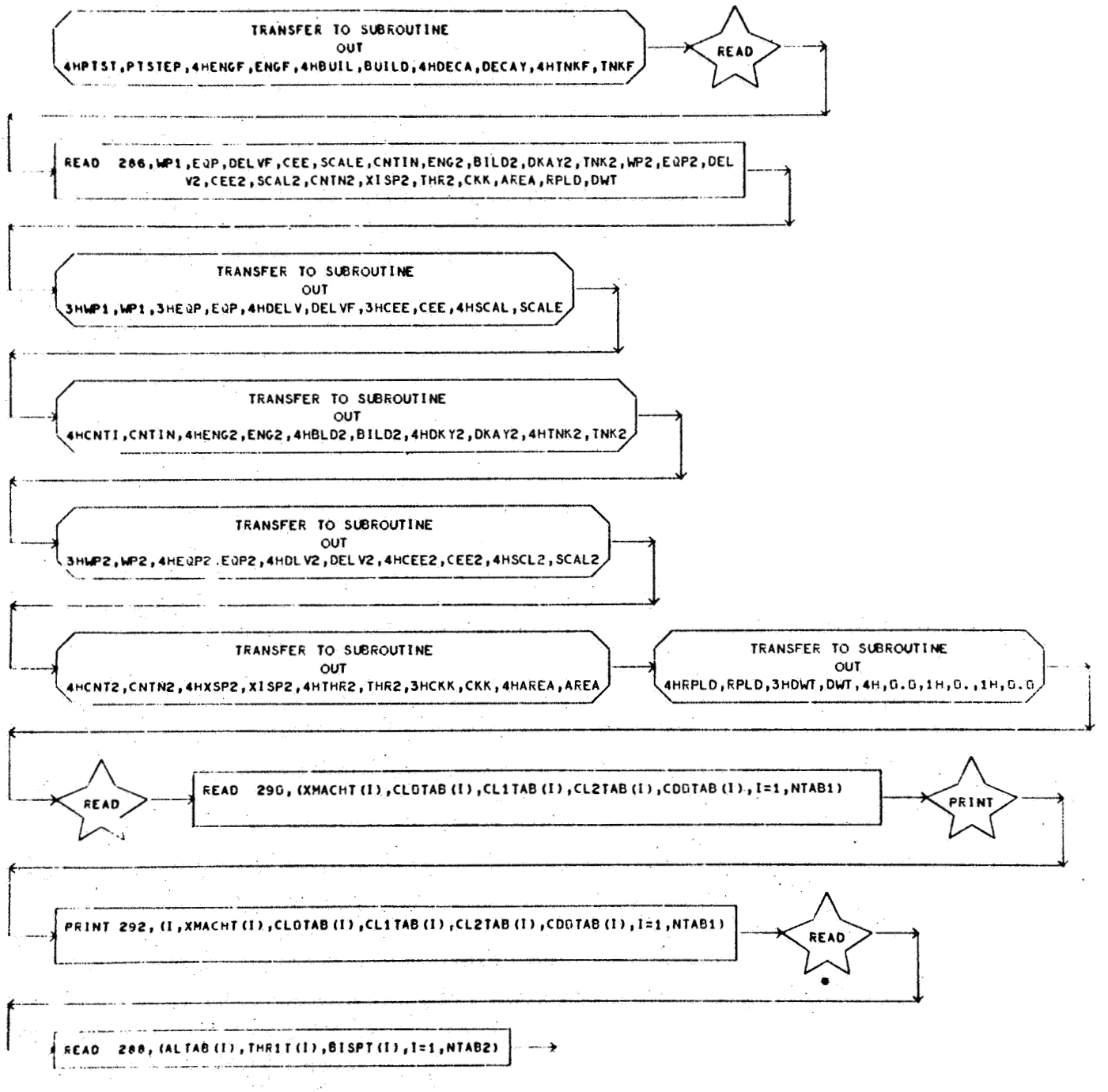
VLD= 1.344787E 3 VLG= 2.607738E 03 VLT= 4.457380E 02 VCHAR= 2.766911E 04

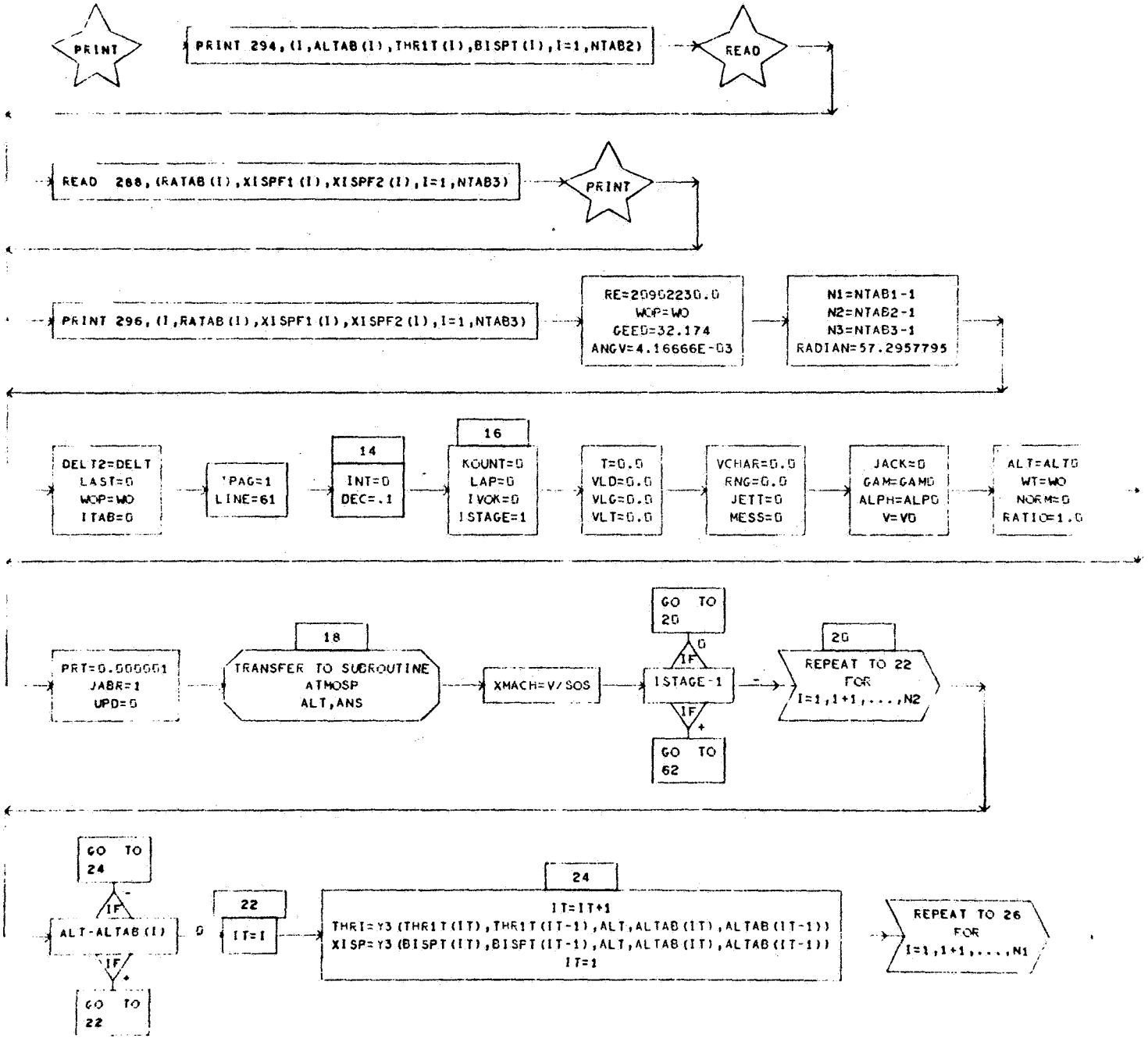
PNT	8.160000E-04	CONST	4.027000E-04	GAMEP	6.500000E 01	TIMEP	1.500000E 03
VSTAG	2.000000E 04	WP1	8.801100E 05				

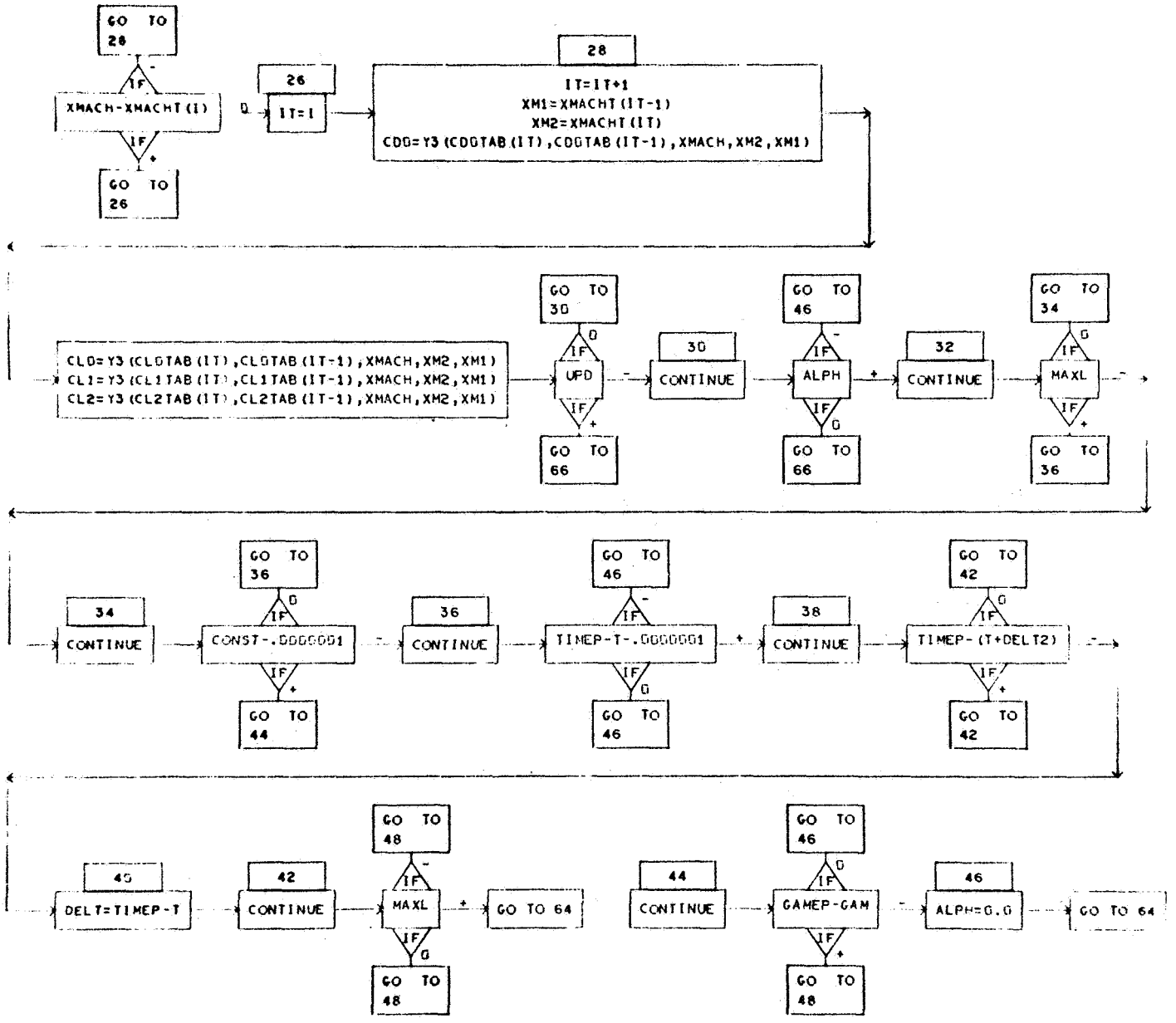
SECTION VIII

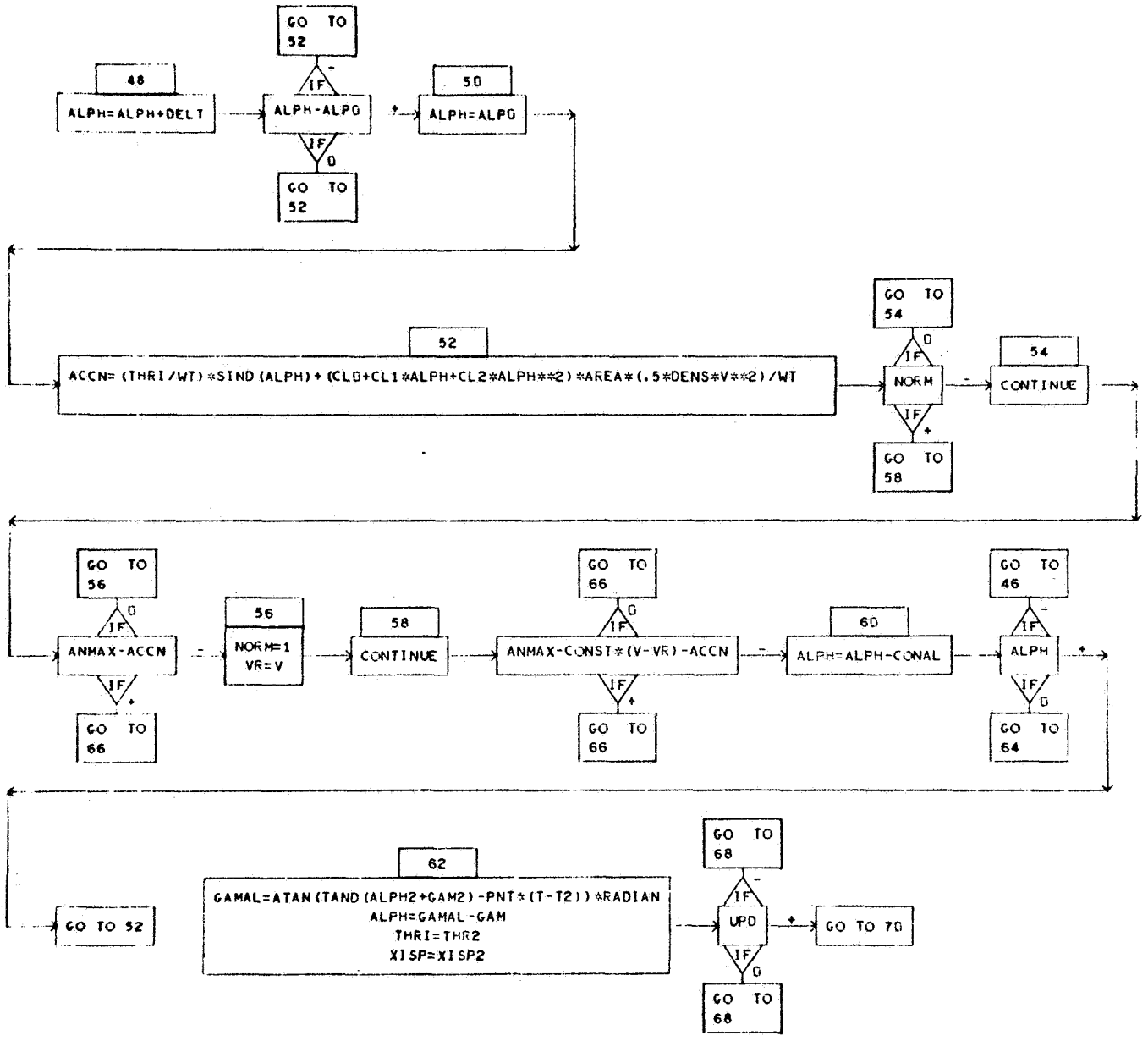
HTO FLOW CHART

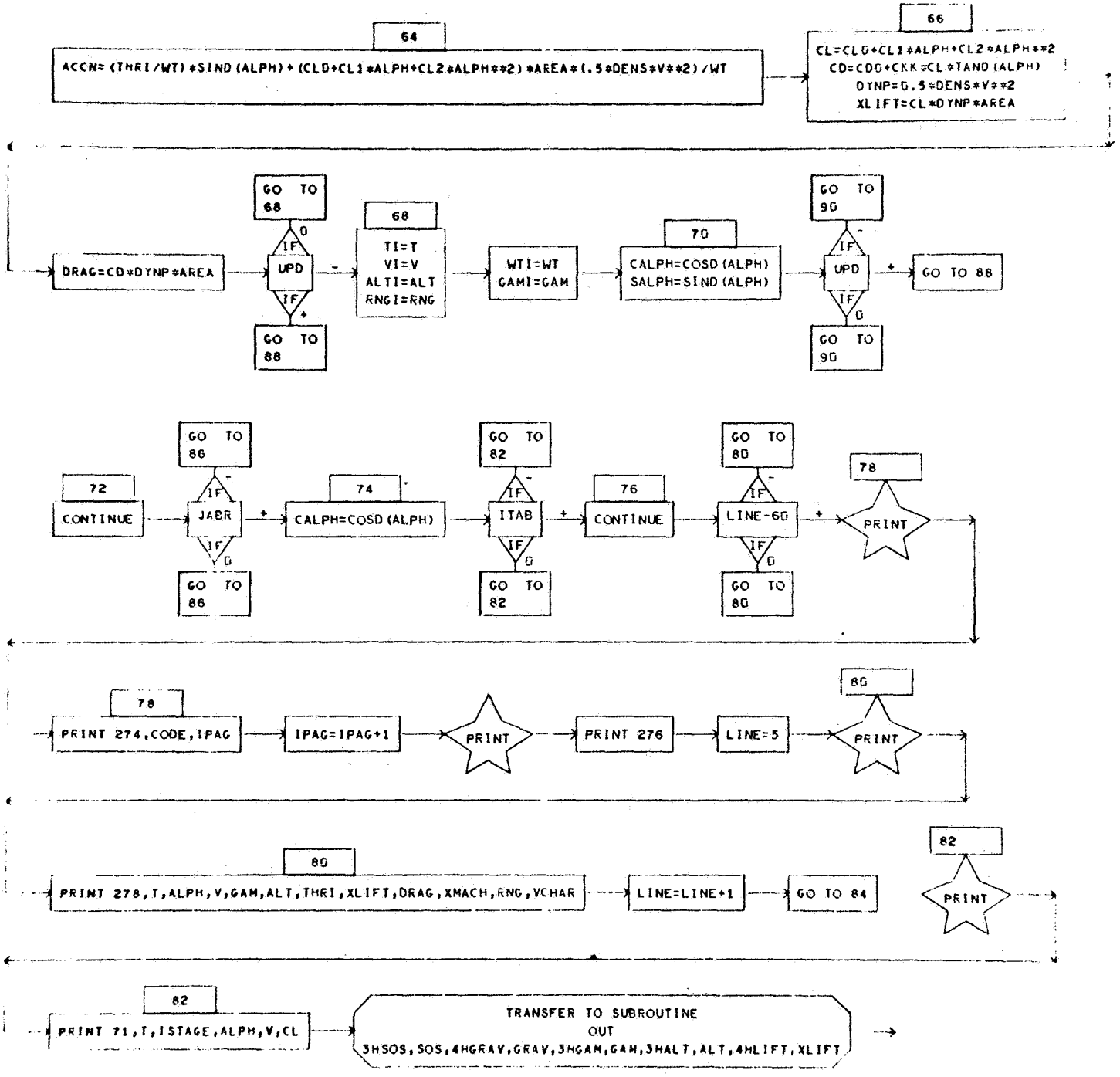


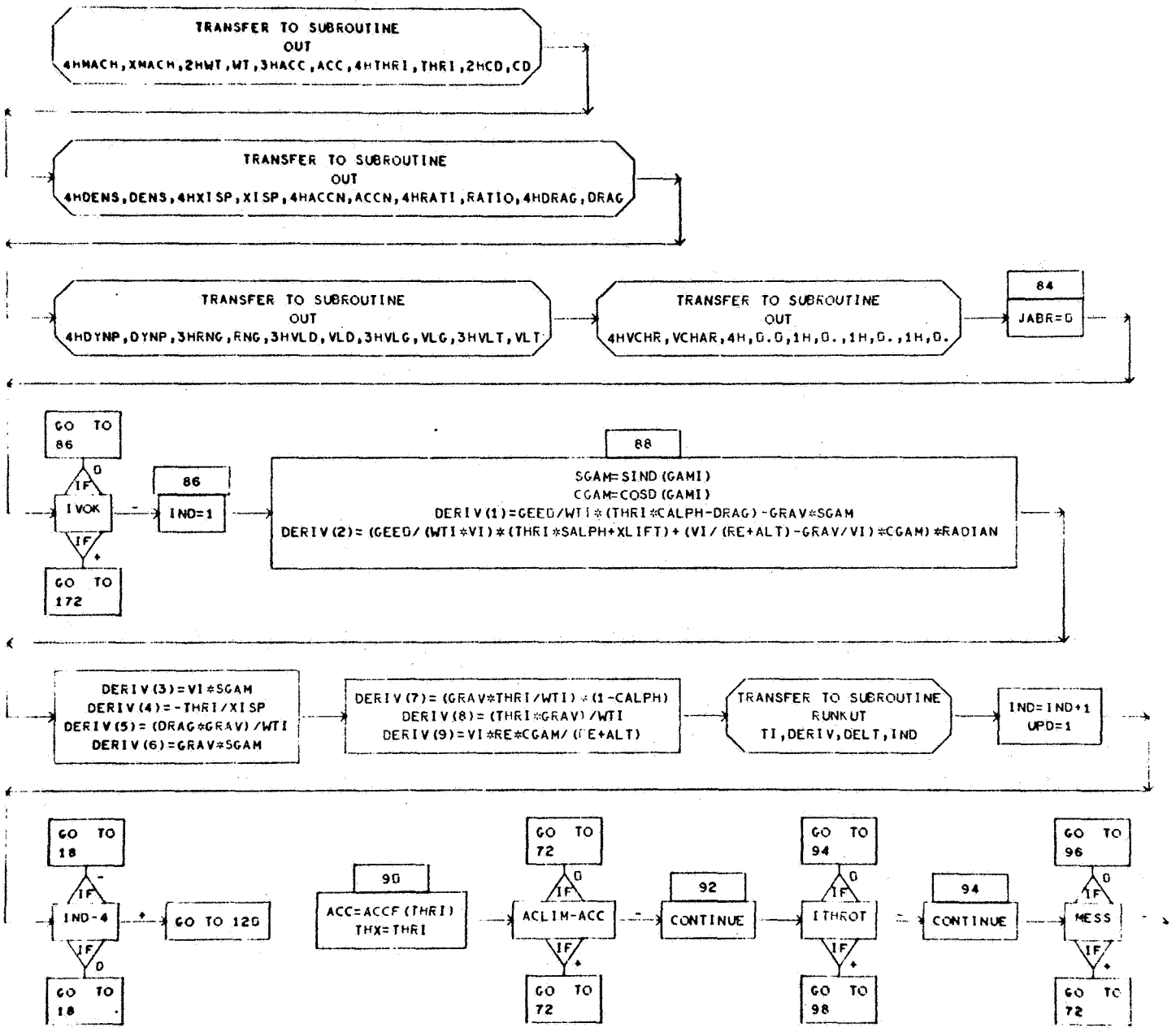

TRANSFER TO SUBROUTINE
OUT
4HPTST,PTSTEP,4HENGF,ENGF,4HBUIL,BUILD,4HDECA,DECAY,4HTNKF,TNKF
READ
READ 286,WP1,EQP,DELVF,CEE,SCALE,CNTIN,ENG2,BILD2,DKAY2,TNK2,WP2,EQP2,DEL
V2,CEE2,SCAL2,CNTN2,XISP2,THR2,CKK,AREA,RPLD,DWT
TRANSFER TO SUBROUTINE
OUT
3HWP1,WP1,3HEQP,EQP,4HDELV,DELVF,3HCEE,CEE,4HSCAL,SCALE
TRANSFER TO SUBROUTINE
OUT
4HCNTI,CNTIN,4HENG2,ENG2,4HBLD2,BILD2,4HDKY2,DKAY2,4HTNK2,TNK2
TRANSFER TO SUBROUTINE
OUT
3HWP2,WP2,4HEQP2,EQP2,4HDLV2,DELV2,4HCEE2,CEE2,4HSCL2,SCAL2
TRANSFER TO SUBROUTINE
OUT
4HCNT2,CNTN2,4HXSP2,XISP2,4HTHR2,THR2,3HCKK,CKK,4HAREA,AREA
TRANSFER TO SUBROUTINE
OUT
4HRPLD,RPLD,3HDWT,DWT,4H,0.0,1H,0.,1H,0.0
READ
READ 290,(XMACHT(I),CL0TAB(I),CL1TAB(I),CL2TAB(I),CD0TAB(I),I=1,NTAB1)
PRINT
PRINT 292,(I,XMACHT(I),CL0TAB(I),CL1TAB(I),CL2TAB(I),CD0TAB(I),I=1,NTAB1)
READ
READ 288,(ALTAB(I),THR1T(I),BISPT(I),I=1,NTAB2)

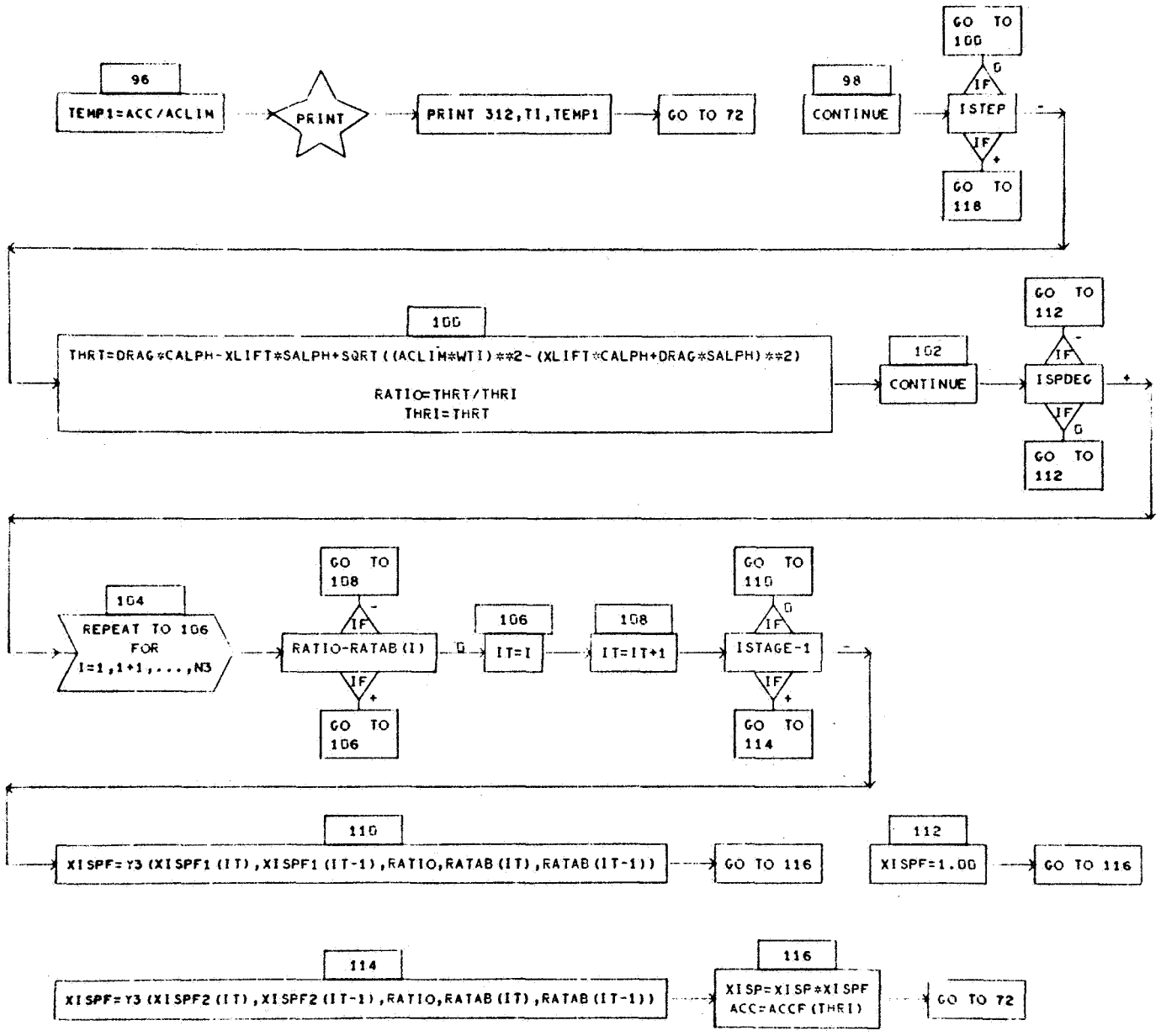

PRINT
PRINT 294,(I,ALTAB(I),THR1T(I),BISPT(I),I=1,NTAB2)
READ
READ 288,(RATAB(I),XISPF1(I),XISPF2(I),I=1,NTAB3)
PRINT
PRINT 296,(I,RATAB(I),XISPF1(I),XISPF2(I),I=1,NTAB3)
RE=20902230.0
WOP=WO
GEED=32.174
ANGV=4.16666E-03
N1=NTAB1-1
N2=NTAB2-1
N3=NTAB3-1
RADIAN=57.2957795
DELT2=DELT
LAST=0
WOP=WO
ITAB=0
'PAG=1
LINE=61
14
INT=0
DEC=.1
16
KOUNT=0
LAP=0
IVOK=0
ISTAGE=1
T=0.0
VLD=0.0
VLG=0.0
VLT=0.0
VCHAR=0.0
RNG=0.0
JETT=0
MESS=0
JACK=0
GAM=GAMD
ALPH=ALPD
V=VD
ALT=ALTD
WT=WO
NORM=0
RATIO=1.0
PRT=0.000001
JABR=1
UPD=0
18
TRANSFER TO SUBROUTINE
ATMOSP
ALT,ANS
XMACH=V/SOS
GO TO
20
IF
0
ISTAGE-1
IF
+
GO TO
62
20
REPEAT TO 22
FOR
I=1,1+1,...,N2
GO TO
24
IF
-
ALT-ALTAB(I)
0
IF
+
GO TO
22
22
IT=I
24
IT=IT+1
THRI=Y3(THR1T(IT),THR1T(IT-1),ALT,ALTAB(IT),ALTAB(IT-1))
XISP=Y3(BISPT(IT),BISPT(IT-1),ALT,ALTAB(IT),ALTAB(IT-1))
IT=1
REPEAT TO 26
FOR
I=1,1+1,...,N1

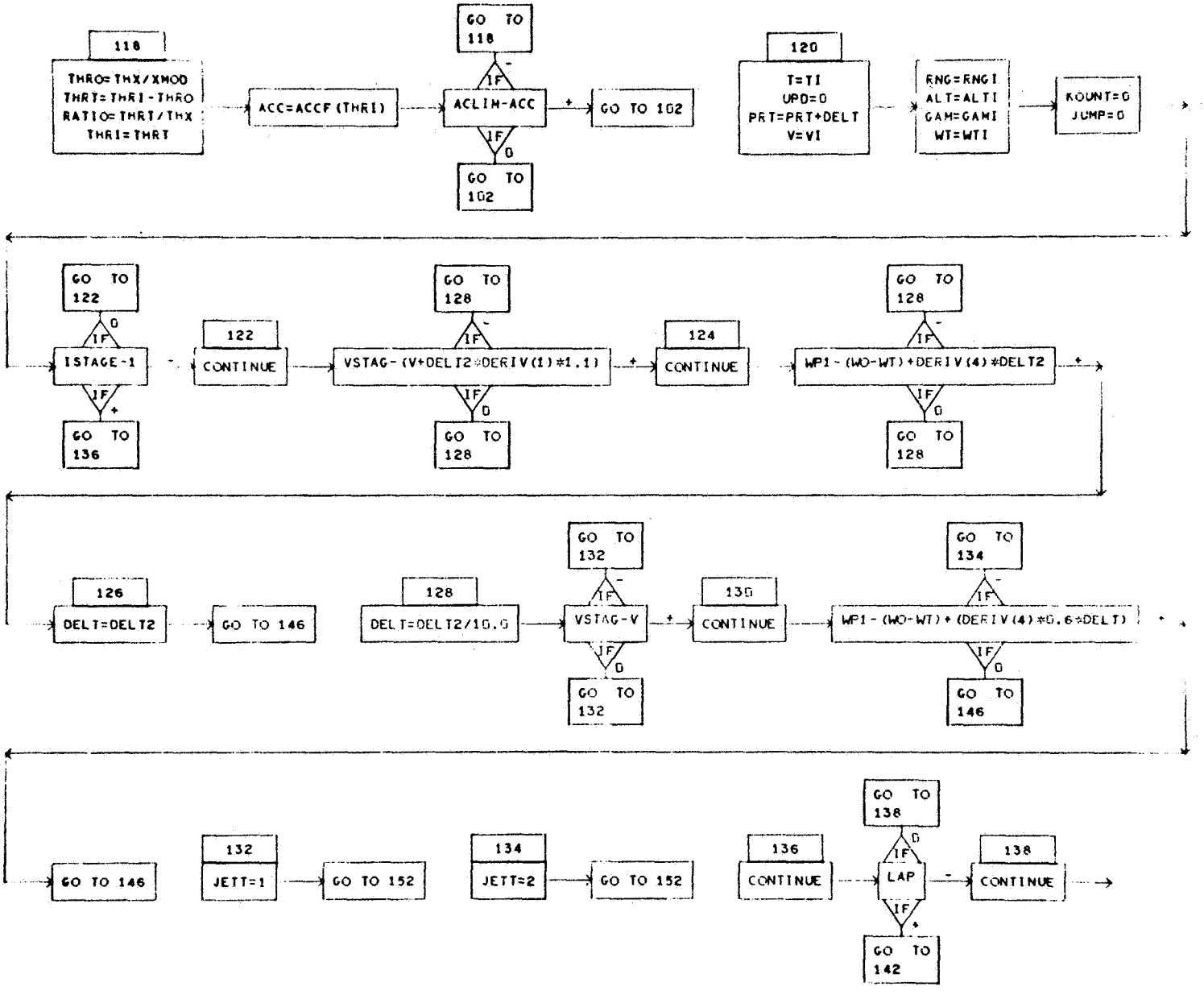

GO TO 28
IF
XMACH-XMACHT(I)
IF
GO TO 26
26
IT=I
28
IT=IT+1
XM1=XMACHT(IT-1)
XM2=XMACHT(IT)
CDO=Y3(CDOTAB(IT),CDOTAB(IT-1),XMACH,XM2,XM1)
CLO=Y3(CLOTAB(IT),CLOTAB(IT-1),XMACH,XM2,XM1)
CL1=Y3(CL1TAB(IT),CL1TAB(IT-1),XMACH,XM2,XM1)
CL2=Y3(CL2TAB(IT),CL2TAB(IT-1),XMACH,XM2,XM1)
GO TO 30
UPD
GO TO 66
30
CONTINUE
GO TO 46
ALPH
GO TO 66
32
CONTINUE
GO TO 34
MAXL
GO TO 36
34
CONTINUE
GO TO 36
CONST-.0000001
GO TO 44
36
CONTINUE
GO TO 46
TIMEP-T-.0000001
GO TO 46
38
CONTINUE
GO TO 42
TIMEP-(T+DELT2)
GO TO 42
40
DELT=TIMEP-T
42
CONTINUE
GO TO 48
MAXL
GO TO 48
GO TO 64
44
CONTINUE
GO TO 46
GAMEP-GAM
GO TO 48
46
ALPH=0.0
GO TO 64

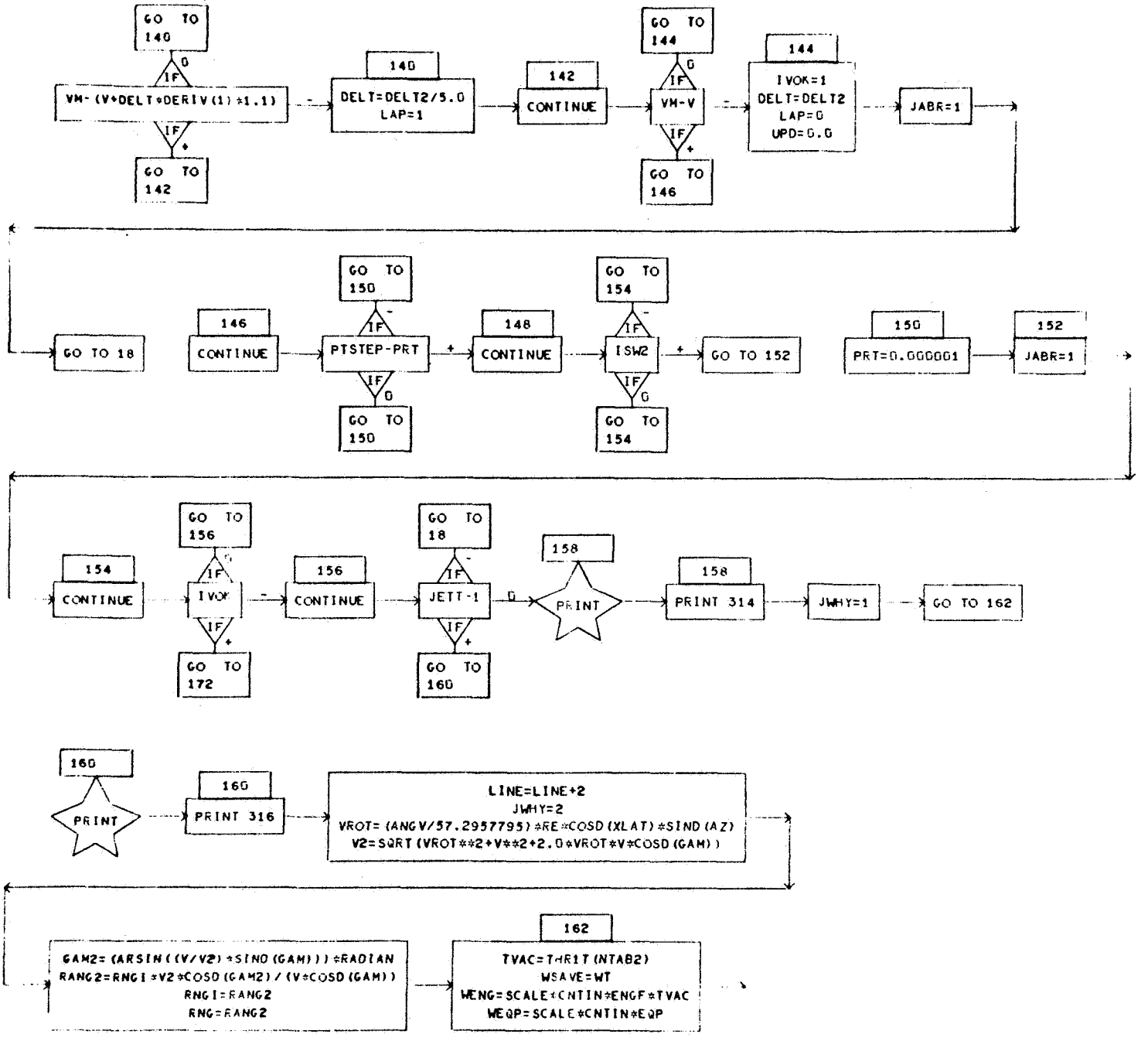

48
ALPH=ALPH+DELT
GO TO 52
IF
ALPH-ALPO
IF
GO TO 52
50
ALPH=ALPO
52
ACCN= (THRI/WT)*SIND(ALPH)+(CL0+CL1*ALPH+CL2*ALPH**2)*AREA*(.5*DENS*V**2)/WT
GO TO 54
IF
NORM
IF
GO TO 58
54
CONTINUE
GO TO 56
IF
ANMAX-ACCN
IF
GO TO 66
56
NORM=1
VR=V
58
CONTINUE
GO TO 66
IF
ANMAX-CONST*(V-VR)-ACCN
IF
GO TO 66
60
ALPH=ALPH-CONAL
GO TO 46
IF
ALPH
IF
GO TO 64
GO TO 52
62
GAMAL=ATAN(TAND(ALPH2+GAM2)-PNT*(T-T2))*RADIAN
ALPH=GAMAL-GAM
THRI=THR2
XISP=XISP2
GO TO 68
IF
UPD
IF
GO TO 68
GO TO 70

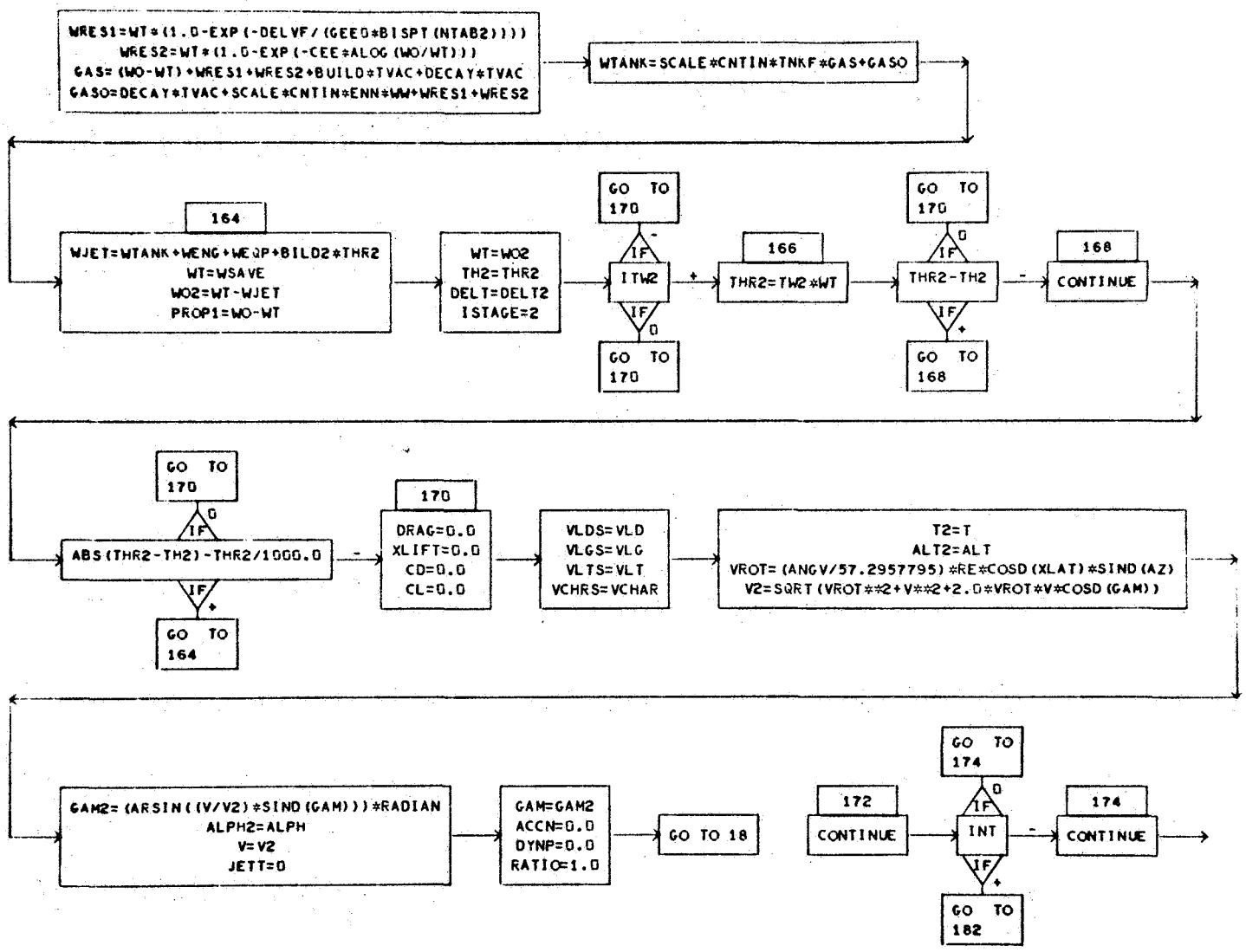

64
ACCN=(THRI/WT)*SIND(ALPH)+(CLD+CL1*ALPH+CL2*ALPH**2)*AREA*(.5*DENS*V**2)/WT
66
CL=CLD+CL1*ALPH+CL2*ALPH**2
CD=CDD+CKK*CL*TAND(ALPH)
DYNP=0.5*DENS*V**2
XLIFT=CL*DYNP*AREA
DRAG=CD*DYNP*AREA
UPD
GO TO 68
GO TO 88
68
TI=T
VI=V
ALTI=ALT
RNGI=RNG
WTI=WT
GAMI=GAM
70
CALPH=COSD(ALPH)
SALPH=SIND(ALPH)
GO TO 90
GO TO 88
72
CONTINUE
JABR
GO TO 86
74
CALPH=COSD(ALPH)
ITAB
GO TO 82
76
CONTINUE
LINE-60
GO TO 80
78
PRINT
78
PRINT 274,CODE,IPAG
IPAG=IPAG+1
PRINT
PRINT 276
LINE=5
80
PRINT
80
PRINT 278,T,ALPH,V,GAM,ALT,THRI,XLIFT,DRAG,XMACH,RNG,VCHAR
LINE=LINE+1
GO TO 84
82
PRINT
82
PRINT 71,T,ISTAGE,ALPH,V,CL
TRANSFER TO SUBROUTINE
OUT
3HSOS,SOS,4HGRAV,GRAV,3HGAM,GAM,3HALT,ALT,4HLIFT,XLIFT

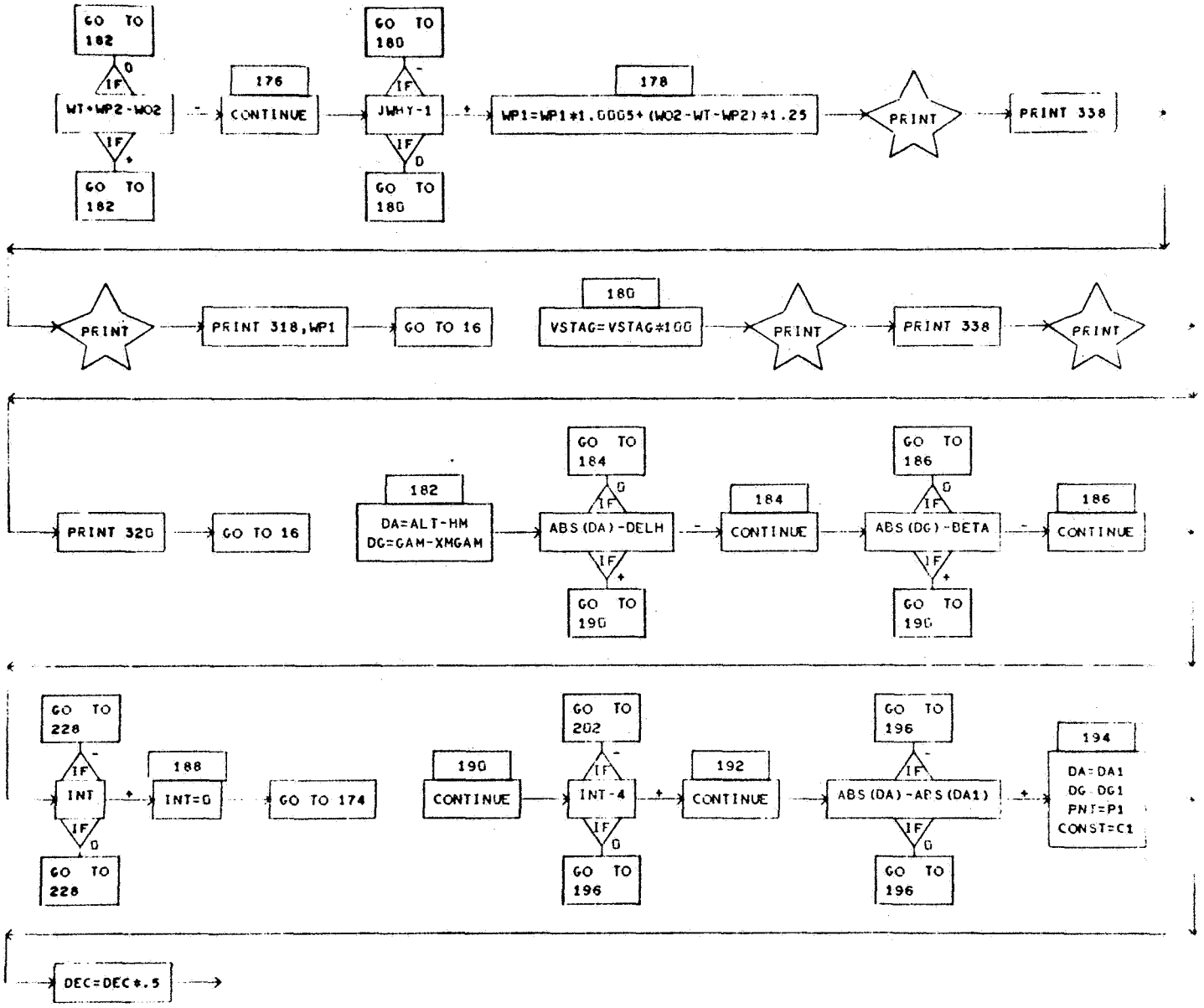

TRANSFER TO SUBROUTINE
OUT
4HMACH,XMACH,2HWT,WT,3HACC,ACC,4HTHRI,THRI,2HCD,CD
TRANSFER TO SUBROUTINE
OUT
4HDENS,DENS,4HXISP,XISP,4HACCN,ACCN,4HRATI,RATIO,4HDRAG,DRAG
TRANSFER TO SUBROUTINE
OUT
4HDYNP,DYNP,3HRNG,RNG,3HVLD,VLD,3HVLG,VLG,3HVLT,VLT
TRANSFER TO SUBROUTINE
OUT
4HVCHR,VCHAR,4H,0.0,1H,0.,1H,0.,1H,0.
84
JABR=0
GO TO 86
IF 0
IVOK
IF +
GO TO 172
86
IND=1
88
SGAM=SIND(GAMI)
CGAM=COSD(GAMI)
DERIV(1)=GEED/WTI*(THRI*CALPH-DRAG)-GRAV*SGAM
DERIV(2)=(GEED/(WTI*VI)*(THRI*SALPH+XLIFT)+(VI/(RE+ALT)-GRAV/VI)*CGAM)*RADIAN
DERIV(3)=VI*SGAM
DERIV(4)=-THRI/XISP
DERIV(5)=(DRAG*GRAV)/WTI
DERIV(6)=GRAV*SGAM
DERIV(7)=(GRAV*THRI/WTI)*(1-CALPH)
DERIV(8)=(THRI*GRAV)/WTI
DERIV(9)=VI*RE*CGAM/(RE+ALT)
TRANSFER TO SUBROUTINE
RUNKUT
TI,DERIV,DELT,IND
IND=IND+1
UPD=1
GO TO 18
IF -
IND-4
IF 0
GO TO 18
GO TO 120
90
ACC=ACCF(THRI)
THX=THRI
GO TO 72
IF 0
ACLIM-ACC
IF +
GO TO 72
92
CONTINUE
GO TO 94
IF 0
ITHROT
IF +
GO TO 98
94
CONTINUE
GO TO 96
IF 0
MESS
IF +
GO TO 72

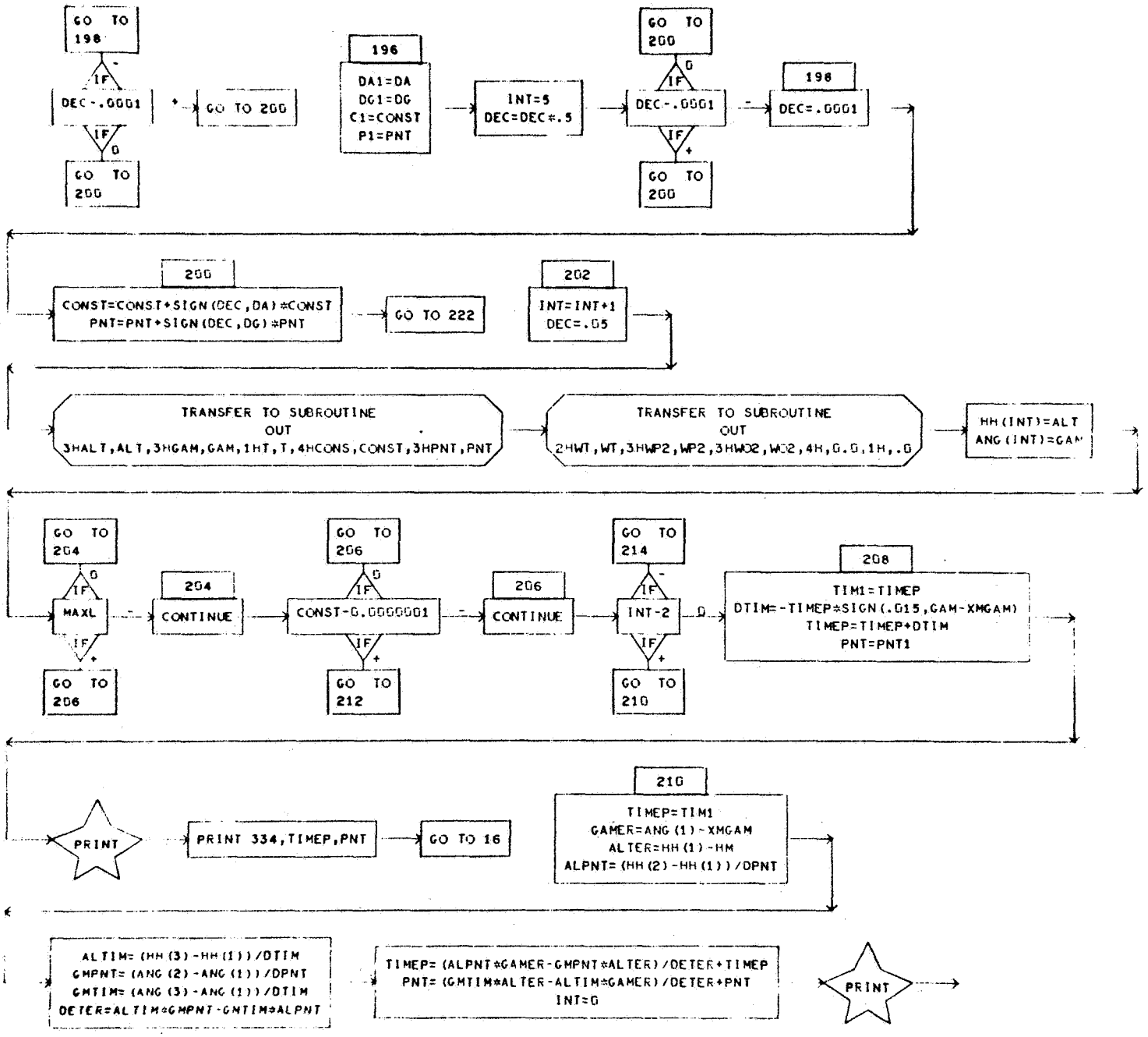

96
TEMP1=ACC/ACLIM
PRINT
PRINT 312,TI,TEMP1
GO TO 72
98
CONTINUE
ISTEP
IF
0
GO TO 100
IF
+
GO TO 118
100
THRT=DRAG*CALPH-XLIFT*SALPH+SQRT((ACLIM*WTI)**2-(XLIFT*CALPH+DRAG*SALPH)**2)
RATIO=THRT/THRI
THRI=THRT
102
CONTINUE
ISPDEG
IF
-
GO TO 112
IF
0
GO TO 112
104
REPEAT TO 106
FOR
I=1,1+1,...,N3
RATIO-RATAB(I)
IF
-
GO TO 108
IF
+
GO TO 106
0
106
IT=I
108
IT=IT+1
ISTAGE-1
IF
0
GO TO 110
IF
+
GO TO 114
110
XISPF=Y3(XISPF1(IT),XISPF1(IT-1),RATIO,RATAB(IT),RATAB(IT-1))
GO TO 116
112
XISPF=1.00
GO TO 116
114
XISPF=Y3(XISPF2(IT),XISPF2(IT-1),RATIO,RATAB(IT),RATAB(IT-1))
116
XISP=XISP*XISPF
ACC=ACCF(THRI)
GO TO 72

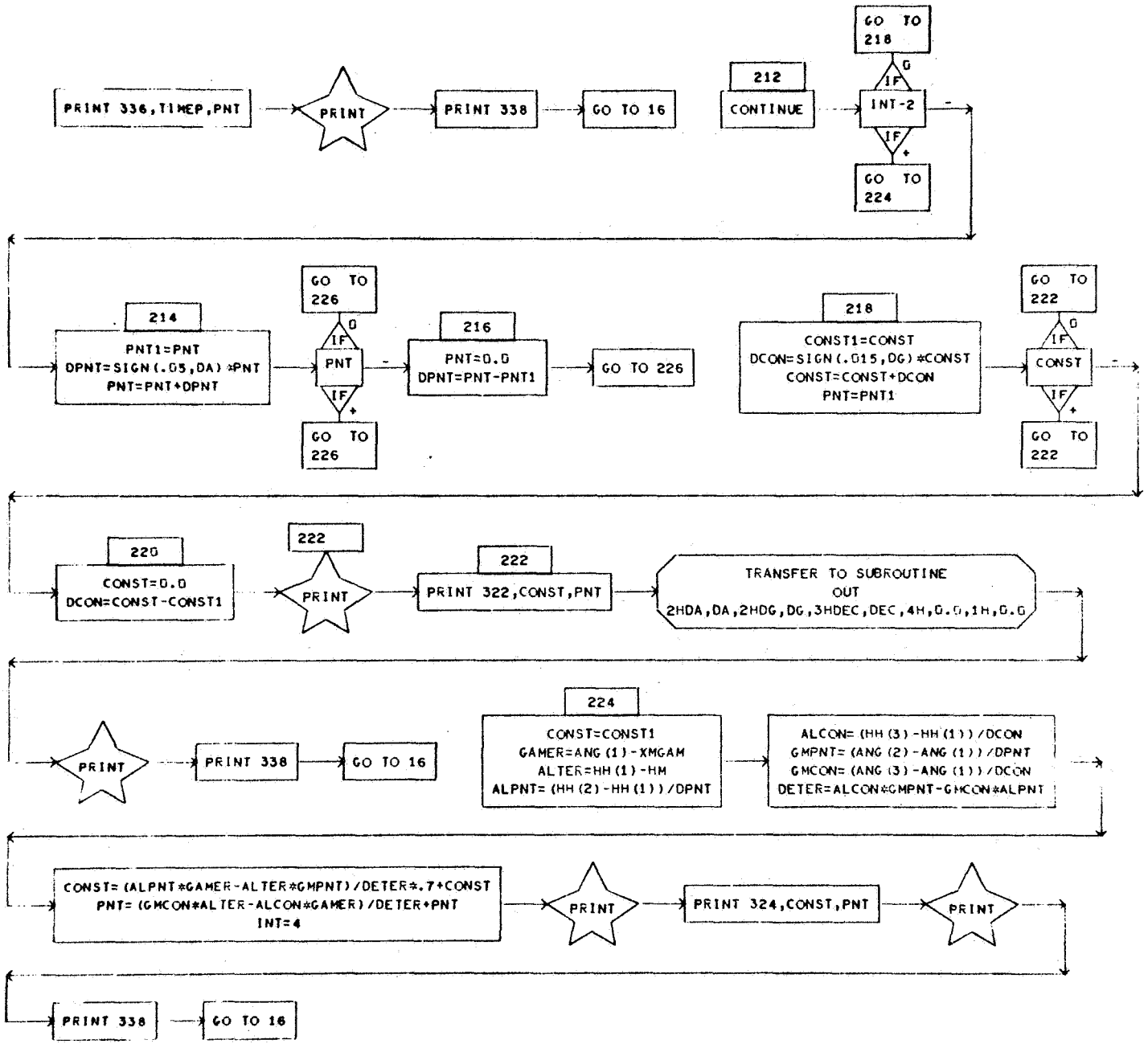

118
THRO=THX/XMOD
THRT=THRI-THRO
RATIO=THRT/THX
THRI=THRT
ACC=ACCF(THRI)
ACLIM-ACC
GO TO 118
GO TO 102
GO TO 102
120
T=TI
UPD=0
PRT=PRT+DELT
V=VI
RNG=RNGI
ALT=ALTI
GAM=GAMI
WT=WTI
KOUNT=0
JUMP=0
GO TO 122
ISTAGE-1
GO TO 136
122
CONTINUE
GO TO 128
VSTAG-(V+DELT2*DERIV(1)*1.1)
GO TO 128
124
CONTINUE
GO TO 128
WP1-(WO-WT)+DERIV(4)*DELT2
GO TO 128
126
DELT=DELT2
GO TO 146
128
DELT=DELT2/10.0
GO TO 132
VSTAG-V
GO TO 132
130
CONTINUE
GO TO 134
WP1-(WO-WT)+(DERIV(4)*0.6*DELT)
GO TO 146
GO TO 146
132
JETT=1
GO TO 152
134
JETT=2
GO TO 152
136
CONTINUE
GO TO 138
LAP
GO TO 142
138
CONTINUE

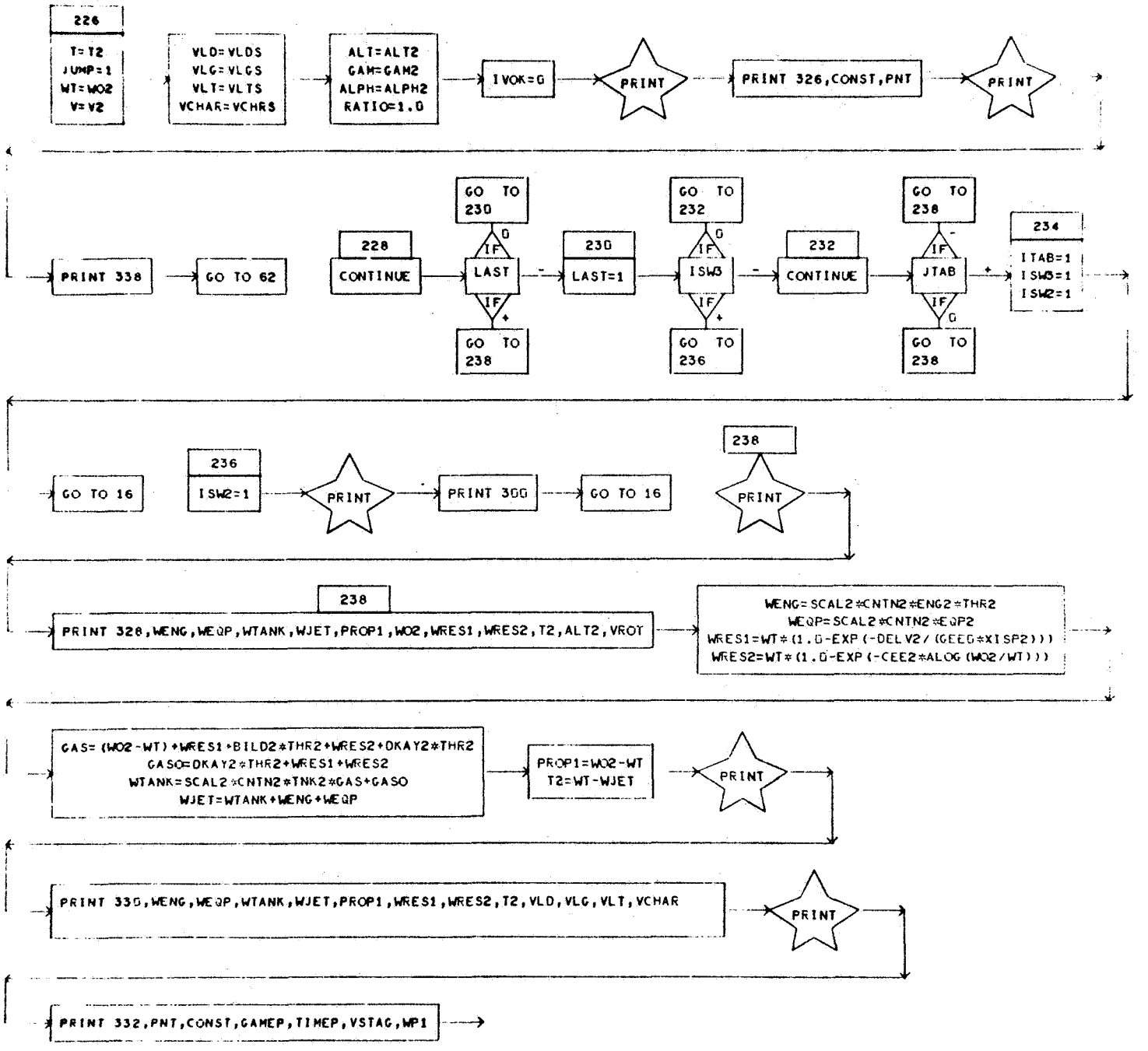

GO TO 140
IF 0
VM-(V+DELT*DERIV(1)*1.1)
IF +
GO TO 142
140
DELT=DELT2/5.0
LAP=1
142
CONTINUE
GO TO 144
IF 0
VM-V
IF +
GO TO 146
144
IVOK=1
DELT=DELT2
LAP=0
UPD=0.0
JABR=1
GO TO 18
146
CONTINUE
GO TO 150
IF -
PTSTEP-PRT
IF 0
GO TO 150
148
CONTINUE
GO TO 154
IF -
ISW2
IF 0
GO TO 154
GO TO 152
150
PRT=0.000001
152
JABR=1
154
CONTINUE
GO TO 156
IF -
IVOK
IF +
GO TO 172
156
CONTINUE
GO TO 18
IF -
JETT-1
IF +
GO TO 160
0
158
PRINT
158
PRINT 314
JWHY=1
GO TO 162
160
PRINT
160
PRINT 316
LINE=LINE+2
JWHY=2
VROT=(ANGV/57.2957795)*RE*COSD(XLAT)*SIND(AZ)
V2=SQRT(VROT**2+V**2+2.0*VROT*V*COSD(GAM))
GAM2=(ARSIN((V/V2)*SIND(GAM)))*RADIAN
RANG2=RNGI*V2*COSD(GAM2)/(V*COSD(GAM))
RNGI=RANG2
RNG=RANG2
162
TVAC=THRIT(NTAB2)
WSAVE=WT
WENG=SCALE*CNTIN*ENGF*TVAC
WEQP=SCALE*CNTIN*EQP

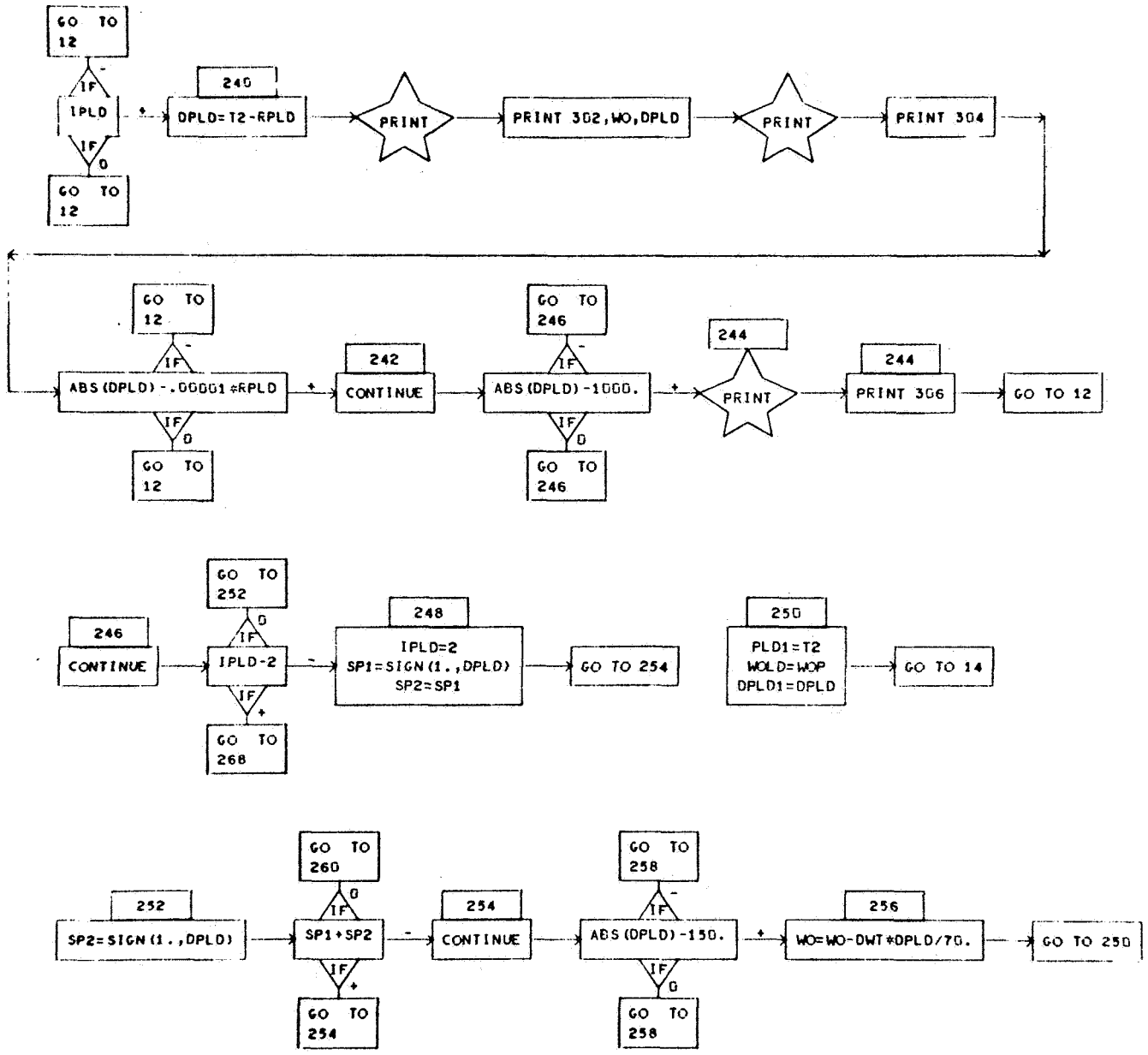

WRES1=WT*(1.0-EXP(-DELVF/(GEEO*BISPT(NTAB2))))
WRES2=WT*(1.0-EXP(-CEE*ALOG(WO/WT)))
GAS=(WO-WT)+WRES1+WRES2+BUILD*TVAC+DECAY*TVAC
GASO=DECAY*TVAC+SCALE*CNTIN*ENN*WW+WRES1+WRES2
WTANK=SCALE*CNTIN*TNKF*GAS+GASO
164
WJET=WTANK+WENG+WEQP+BILD2*THR2
WT=WSAVE
WO2=WT-WJET
PROP1=WO-WT
WT=WO2
TH2=THR2
DELT=DELT2
ISTAGE=2
GO TO 170
IF
ITW2
IF
GO TO 170
166
THR2=TW2*WT
GO TO 170
IF
THR2-TH2
IF
GO TO 168
168
CONTINUE
GO TO 170
IF
ABS(THR2-TH2)-THR2/1000.0
IF
GO TO 164
170
DRAG=0.0
XLIFT=0.0
CD=0.0
CL=0.0
VLDS=VLD
VLGS=VLG
VLTS=VLT
VCHRS=VCHAR
T2=T
ALT2=ALT
VROT=(ANGV/57.2957795)*RE*COSD(XLAT)*SIND(AZ)
V2=SQRT(VROT**2+V**2+2.0*VROT*V*COSD(GAM))
GAM2=(ARSIN((V/V2)*SIND(GAM)))*RADIAN
ALPH2=ALPH
V=V2
JETT=0
GAM=GAM2
ACCN=0.0
DYNP=0.0
RATIO=1.0
GO TO 18
172
CONTINUE
GO TO 174
IF
INT
IF
GO TO 182
174
CONTINUE

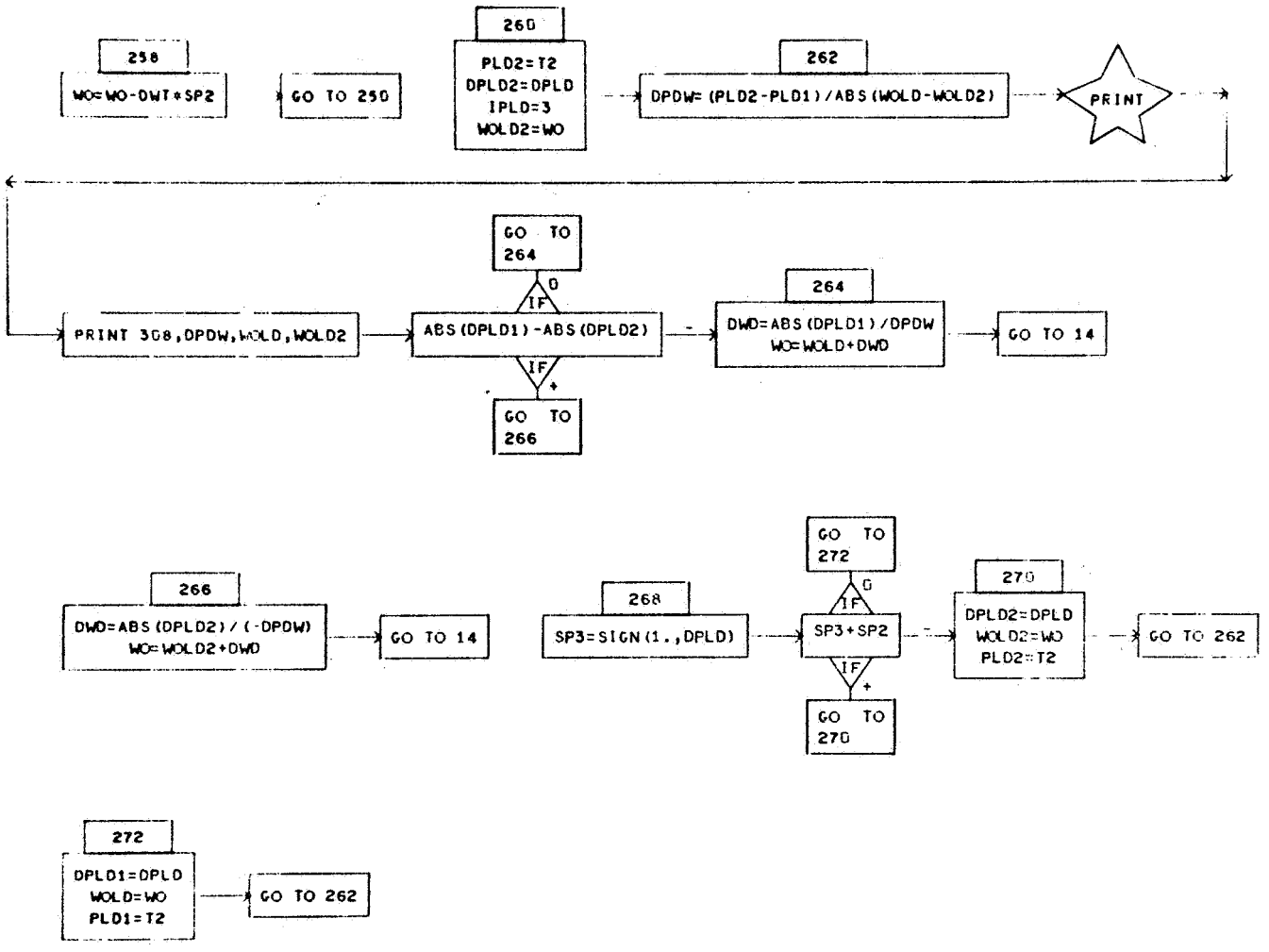

GO TO 182
IF 0
WT+WP2-WO2
IF +
GO TO 182
176
CONTINUE
GO TO 180
IF -
JWHY-1
IF 0
GO TO 180
178
WP1=WP1*1.0005+(WO2-WT-WP2)*1.25
PRINT
PRINT 338
PRINT
PRINT 318,WP1
GO TO 16
180
VSTAG=VSTAG*100
PRINT
PRINT 338
PRINT
PRINT 320
GO TO 16
182
DA=ALT-HM
DG=GAM-XMGAM
GO TO 184
IF 0
ABS(DA)-DELH
IF +
GO TO 190
184
CONTINUE
GO TO 186
IF 0
ABS(DG)-BETA
IF +
GO TO 190
186
CONTINUE
GO TO 228
IF -
INT
IF 0
GO TO 228
188
INT=0
GO TO 174
190
CONTINUE
GO TO 202
IF -
INT-4
IF 0
GO TO 196
192
CONTINUE
GO TO 196
IF -
ABS(DA)-ABS(DA1)
IF 0
GO TO 196
194
DA=DA1
DG=DG1
PNT=P1
CONST=C1
DEC=DEC*.5


GO TO 198
IF
DEC-.0001
GO TO 200
IF
GO TO 200
196
DA1=DA
DG1=DG
C1=CONST
P1=PNT
INT=5
DEC=DEC*.5
GO TO 200
IF
DEC-.0001
IF
GO TO 200
198
DEC=.0001
200
CONST=CONST+SIGN(DEC,DA)*CONST
PNT=PNT+SIGN(DEC,DG)*PNT
GO TO 222
202
INT=INT+1
DEC=.05
TRANSFER TO SUBROUTINE
OUT
3HALT,ALT,3HGAM,GAM,1HT,T,4HCONS,CONST,3HPNT,PNT
TRANSFER TO SUBROUTINE
OUT
2HWT,WT,3HWP2,WP2,3HWO2,WO2,4H,0.0,1H,.0
HH(INT)=ALT
ANG(INT)=GAM
GO TO 204
IF
MAXL
IF
GO TO 206
204
CONTINUE
GO TO 206
IF
CONST-0.0000001
IF
GO TO 212
206
CONTINUE
GO TO 214
IF
INT-2
IF
GO TO 210
208
TIM1=TIMEP
DTIM=-TIMEP*SIGN(.015,GAM-XMGAM)
TIMEP=TIMEP+DTIM
PNT=PNT1
PRINT
PRINT 334,TIMEP,PNT
GO TO 16
210
TIMEP=TIM1
GAMER=ANG(1)-XMGAM
ALTER=HH(1)-HM
ALPNT=(HH(2)-HH(1))/DPNT
ALTIM=(HH(3)-HH(1))/DTIM
GMPNT=(ANG(2)-ANG(1))/DPNT
GMTIM=(ANG(3)-ANG(1))/DTIM
DETER=ALTIM*GMPNT-GMTIM*ALPNT
TIMEP=(ALPNT*GAMER-GMPNT*ALTER)/DETER+TIMEP
PNT=(GMTIM*ALTER-ALTIM*GAMER)/DETER+PNT
INT=0
PRINT


PRINT 336,TIMEP,PNT
PRINT
PRINT 338
GO TO 16
212
CONTINUE
INT-2
IF 0
GO TO 218
IF +
GO TO 224
214
PNT1=PNT
DPNT=SIGN(.05,DA)*PNT
PNT=PNT+DPNT
PNT
IF 0
GO TO 226
IF +
GO TO 226
216
PNT=0.0
DPNT=PNT-PNT1
GO TO 226
218
CONST1=CONST
DCON=SIGN(.015,DG)*CONST
CONST=CONST+DCON
PNT=PNT1
CONST
IF 0
GO TO 222
IF +
GO TO 222
220
CONST=0.0
DCON=CONST-CONST1
222
PRINT
222
PRINT 322,CONST,PNT
TRANSFER TO SUBROUTINE
OUT
2HDA,DA,2HDG,DG,3HDEC,DEC,4H,0.0,1H,0.0
PRINT
PRINT 338
GO TO 16
224
CONST=CONST1
GAMER=ANG(1)-XMGAM
ALTER=HH(1)-HM
ALPNT=(HH(2)-HH(1))/DPNT
ALCON=(HH(3)-HH(1))/DCON
GMPNT=(ANG(2)-ANG(1))/DPNT
GMCON=(ANG(3)-ANG(1))/DCON
DETER=ALCON*GMPNT-GMCON*ALPNT
CONST=(ALPNT*GAMER-ALTER*GMPNT)/DETER*.7+CONST
PNT=(GMCON*ALTER-ALCON*GAMER)/DETER+PNT
INT=4
PRINT
PRINT 324,CONST,PNT
PRINT
PRINT 338
GO TO 16


226
T=T2
JUMP=1
WT=WO2
V=V2
VLD=VLDS
VLG=VLGS
VLT=VLTS
VCHAR=VCHRS
ALT=ALT2
GAM=GAM2
ALPH=ALPH2
RATIO=1.0
IVOK=0
PRINT
PRINT 326,CONST,PNT
PRINT
PRINT 338
GO TO 62
228
CONTINUE
GO TO 230
IF
LAST
GO TO 238
230
LAST=1
GO TO 232
ISW3
GO TO 236
232
CONTINUE
GO TO 238
JTAB
GO TO 238
234
ITAB=1
ISW3=1
ISW2=1
GO TO 16
236
ISW2=1
PRINT
PRINT 300
GO TO 16
238
PRINT
238
PRINT 328,WENG,WEQP,WTANK,WJET,PROP1,WO2,WRES1,WRES2,T2,ALT2,VROT
WENG=SCAL2*CNTN2*ENG2*THR2
WEQP=SCAL2*CNTN2*EQP2
WRES1=WT*(1.0-EXP(-DELV2/(GEEO*XISP2)))
WRES2=WT*(1.0-EXP(-CEE2*ALOG(WO2/WT)))
GAS=(WO2-WT)+WRES1+BILD2*THR2+WRES2+DKAY2*THR2
GASO=DKAY2*THR2+WRES1+WRES2
WTANK=SCAL2*CNTN2*TNK2*GAS+GASO
WJET=WTANK+WENG+WEQP
PROP1=WO2-WT
T2=WT-WJET
PRINT
PRINT 330,WENG,WEQP,WTANK,WJET,PROP1,WRES1,WRES2,T2,VLD,VLG,VLT,VCHAR
PRINT
PRINT 332,PNT,CONST,GAMEP,TIMEP,VSTAG,WP1

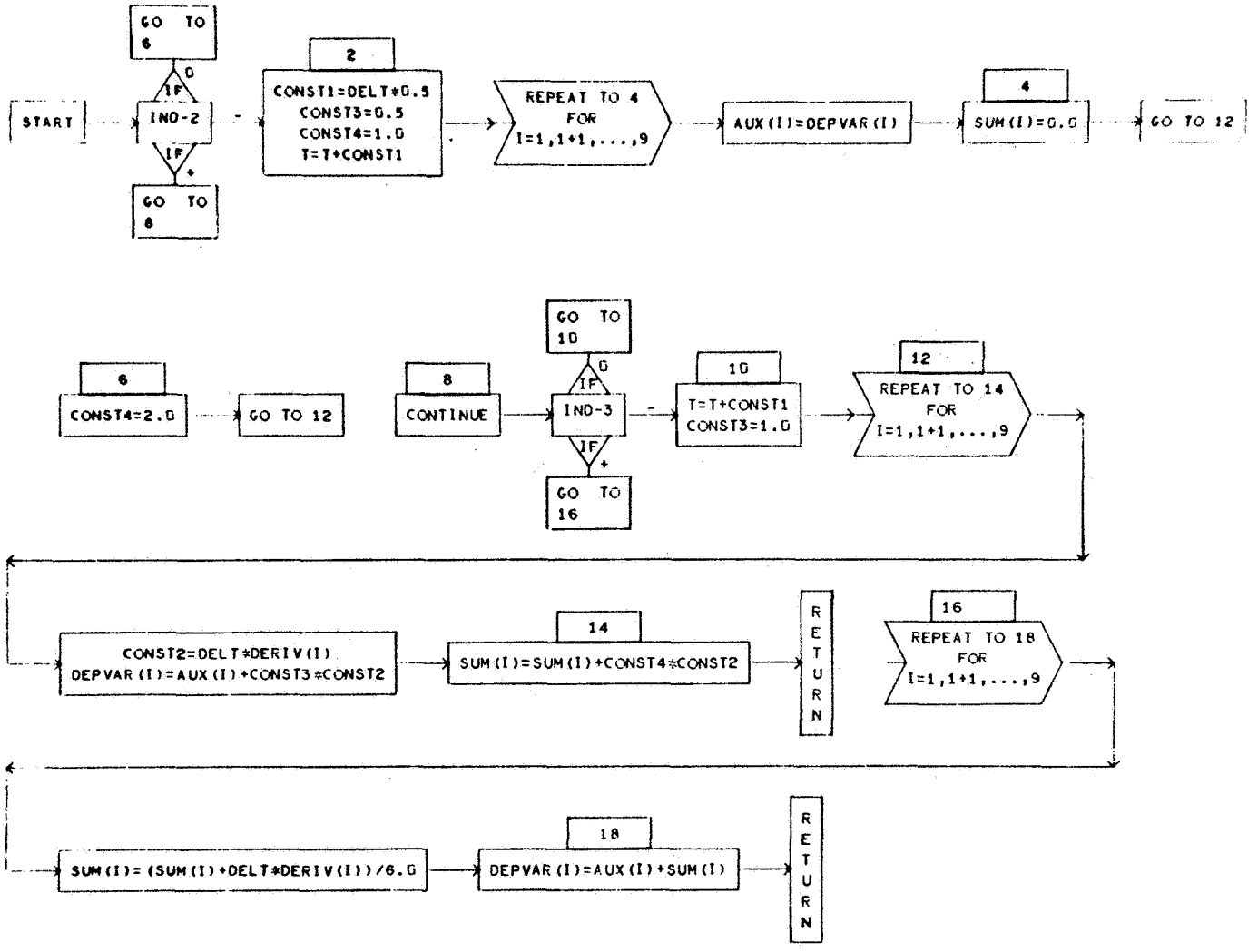

GO TO 12
IF
IPLD
IF
0
GO TO 12
240
DPLD=T2-RPLD
PRINT
PRINT 302,WO,DPLD
PRINT
PRINT 304
GO TO 12
IF
ABS(DPLD)-.00001*RPLD
IF
0
GO TO 12
242
CONTINUE
GO TO 246
IF
ABS(DPLD)-1000.
IF
0
GO TO 246
244
PRINT
244
PRINT 306
GO TO 12
GO TO 252
0
IF
246
CONTINUE
IPLD-2
IF
+
GO TO 268
248
IPLD=2
SP1=SIGN(1.,DPLD)
SP2=SP1
GO TO 254
250
PLD1=T2
WOLD=WOP
DPLD1=DPLD
GO TO 14
252
SP2=SIGN(1.,DPLD)
GO TO 260
0
IF
SP1+SP2
IF
+
GO TO 254
254
CONTINUE
GO TO 258
IF
ABS(DPLD)-150.
IF
0
GO TO 258
256
WO=WO-DWT*DPLD/70.
GO TO 250


258
WO=WO-DWT*SP2
GO TO 250
260
PLD2=T2
DPLD2=DPLD
IPLD=3
WOLD2=WO
262
DPDW=(PLD2-PLD1)/ABS(WOLD-WOLD2)
PRINT
PRINT 308,DPDW,WOLD,WOLD2
ABS(DPLD1)-ABS(DPLD2)
IF
0
GO TO 264
IF
+
GO TO 266
264
DWD=ABS(DPLD1)/DPDW
WO=WOLD+DWD
GO TO 14
266
DWD=ABS(DPLD2)/(-DPDW)
WO=WOLD2+DWD
GO TO 14
268
SP3=SIGN(1.,DPLD)
SP3+SP2
IF
0
GO TO 272
IF
+
GO TO 270
270
DPLD2=DPLD
WOLD2=WO
PLD2=T2
GO TO 262
272
DPLD1=DPLD
WOLD=WO
PLD1=T2
GO TO 262

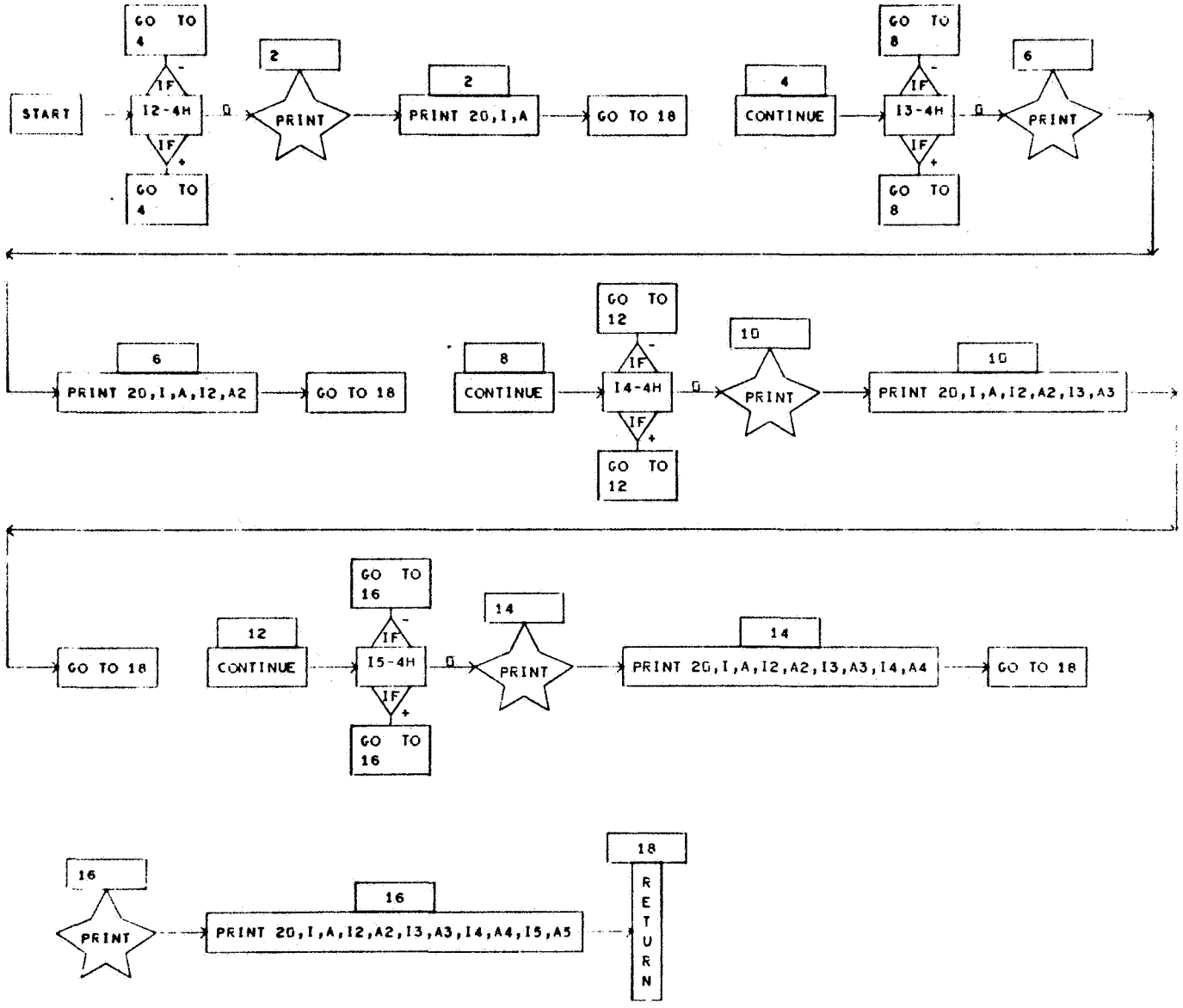
SUBROUTINE RUNKUT

DIMENSIONED VARIABLES

SYMBOL	STORAGES	SYMBOL	STORAGES	SYMBOL	STORAGES	SYMBOL	STORAGES	SYMBOL	STORAGES
DERIV	9	DEPVAR	9	AUX	9	SUM	9		



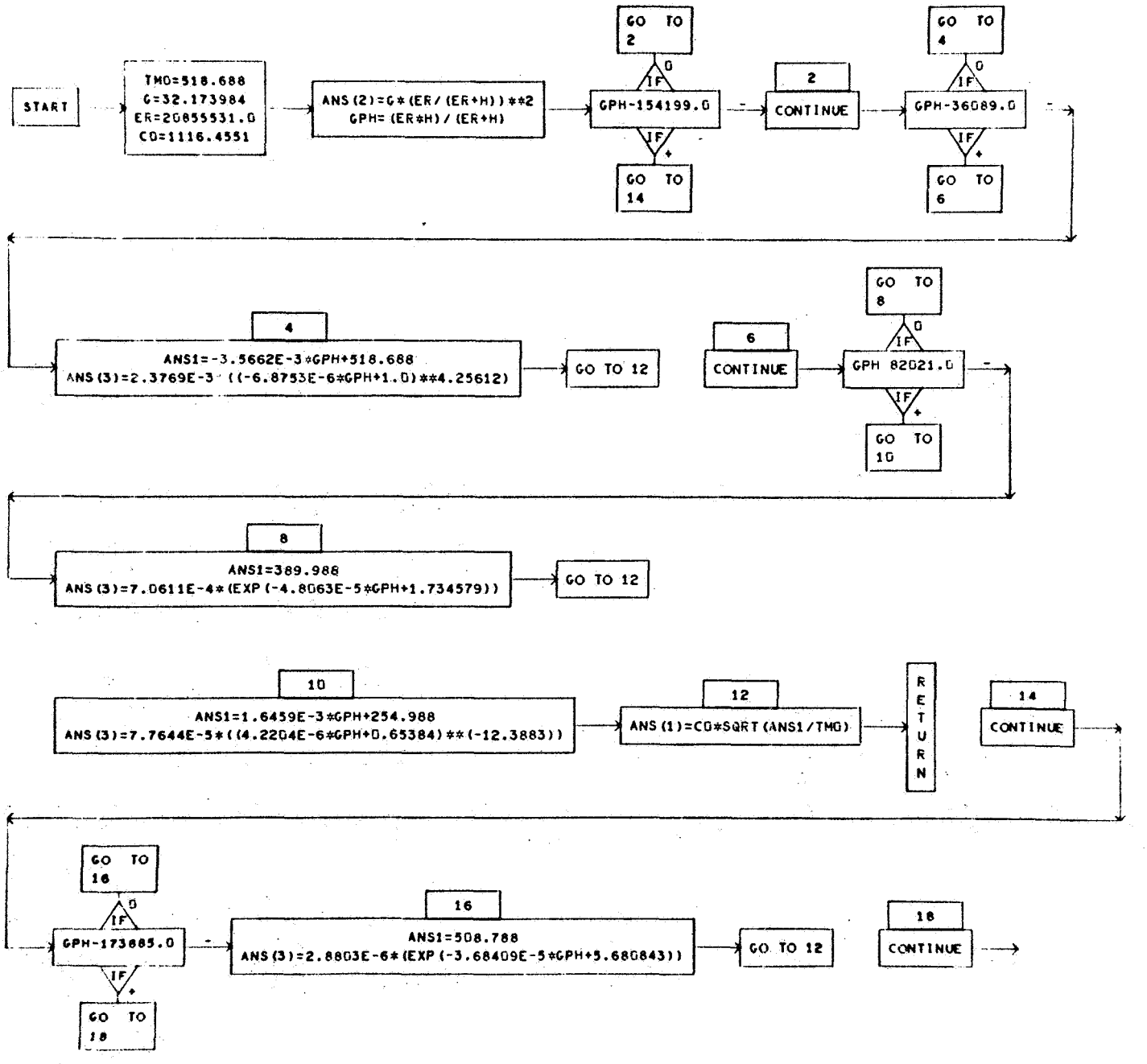
SUBROUTINE OUT

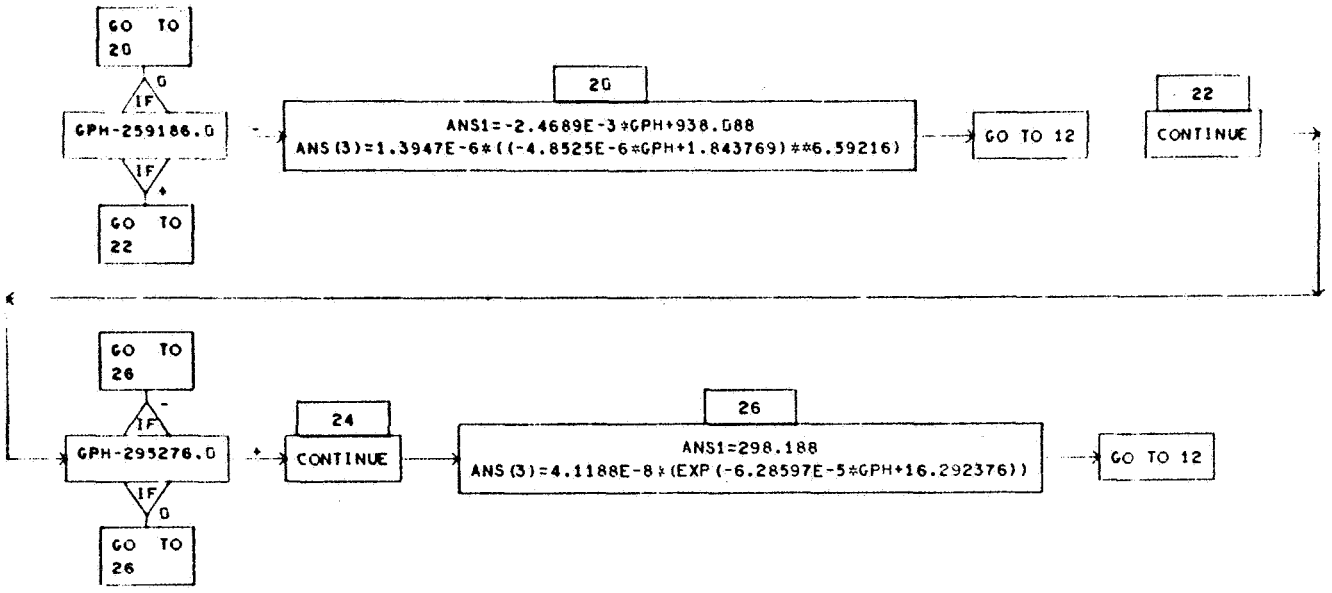


SUBROUTINE ATMOSP

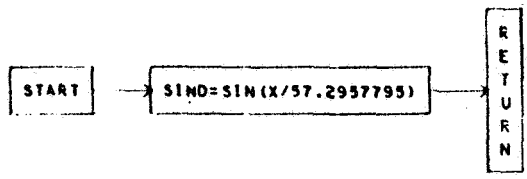
DIMENSIONED VARIABLES

SYMBOL	STORAGES	SYMBOL	STORAGES	SYMBOL	STORAGES	SYMBOL	STORAGES	SYMBOL	STORAGES
ANS	3								

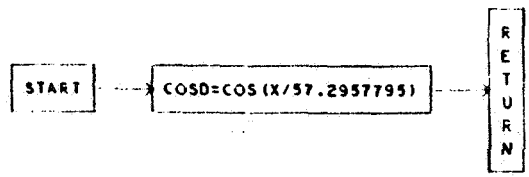



GO TO 20
0
IF
GPH-259186.0
-
IF
+
GO TO 22
20
ANS1=-2.4689E-3*GPH+938.088
ANS(3)=1.3947E-6*((-4.8525E-6*GPH+1.843769)**6.59216)
GO TO 12
22
CONTINUE
GO TO 26
-
IF
GPH-295276.0
+
IF
0
GO TO 26
24
CONTINUE
26
ANS1=298.188
ANS(3)=4.1188E-8*(EXP(-6.28597E-5*GPH+16.292376))
GO TO 12

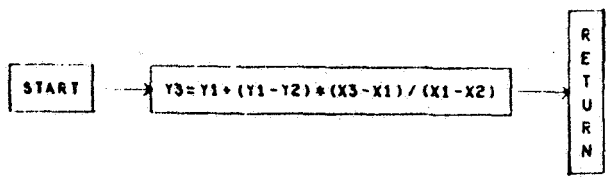
FUNCTION SIND



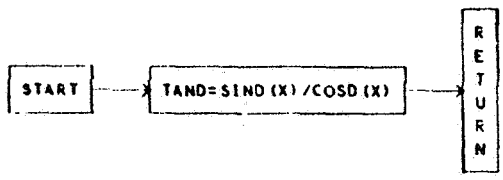
FUNCTION COSD



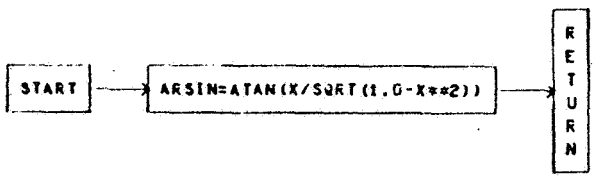
FUNCTION Y3



FUNCTION TAND



FUNCTION ARSIN



SECTION IX

VTO SOURCE LISTINGS - 3200 AND 930

```
                              3200  FORTRAN  (2.1.0)/(RTS)        /  /
      PROGRAM VTO
C     VERTICAL TAKEOFF PROGRAM      REPORT TR-293-6-110      NORTHROP
C        2-D FLIGHT EQUATIONS
C
      DIMENSION ANS(3), XMACHT(16), CL0TAB(16), CL1TAB(16), CL2TAB(16),
     1CD0TAB(16), ALTAB(10), THR1T(10), RATAB(11), XISPF1(11), XISPF2(11
     2), DEPVAR(8), DERIV(8), CODE(9), BISPT(10), HH(3), ANG(3)
      COMMON V,GAM,ALT,WT,VLD,VLG,VLT,VCHAR
      EQUIVALENCE (ANS(1),SOS), (ANS(2),GRAV), (ANS(3),DENS)
      CONST=0.0
      RE=20902230.0
      GEE0=32.174
      ANGV=4.16666E-03
C
C     HEADING
   12 READ 260, CODE
      PRINT 262, CODE
C
C     OPTIONS
      READ 266, ITW2,ITHROT,ISW3,ISW2,ISTEP,ISPDEG,IPLD,JTAB,NTAB1,NTAB2
     * ,NTAB3
      PRINT 270, ITW2,ITHROT,ISW3,ISW2,ISTEP,ISPDEG,IPLD,JTAB
C
C     SINGLE POINT DATA
      READ 268, XLAT,AZ,V0,ALT0,GAM0,ALP0,WO,VKICK,GAMK,ACLIM,TW2,WW,ENN
     1,XMOD,VSTAG,POINT,VM,HM,DELH,XMGAM,BETA,DELT,PTSTEP,ENGF,BUILD
      READ 268, DECAY,TNKF,WP1,EQP,DELVF,CEE,SCALE,CNTIN,ENG2,BILD2,DKAY
     12,TNK2,WP2,EQP2,DELV2,CEE2,SCAL2,CNTN2,XISP2,THR2,AREA,CKK,RPLD,DWT
     *T
      CALL OUT (4HXLAT,XLAT,2HAZ,AZ,2HV0,V0,4HALT0,ALT0,4HGAM0,GAM0)
      CALL OUT (4HALP0,ALP0,2HWO,WO,4HVKCK,VKICK,4HGAMK,GAMK,4HALCM,ACLI
     1M)
      CALL OUT (3HTW2,TW2,2HWW,WW,3HENN,ENN,4HXMOD,XMOD,4HVSTG,VSTAG)
      CALL OUT (4HPOIN,POINT,2HV7,VM,2HHM,HM,4HDELH,DELH,4HXMGM,XMGAM)
      CALL OUT (4HBETA,BETA,4HDELT,DELT,4HPTSP,PTSTEP,4HENGF,ENGF,4HBILD
     1,BUILD)
      CALL OUT (4HDCAY,DECAY,4HTNKF,TNKF,3HWP1,WP1,3HEQP,EQP,4HDLVF,DELV
     1F)
      CALL OUT (3HCEE,CEE,4HSCLE,SCALE,4HCNTN,CNTIN,4HENG2,ENG2,4HBLD2,B
     1ILD2)
      CALL OUT (4HDKY2,DKAY2,4HTNK2,TNK2,3HWP2,WP2,4HEQP2,EQP2,4HDLV2,DE
     1LV2)
      CALL OUT (4HCEE2,CEE2,4HSCL2,SCAL2,4HCNT2,CNTN2,4HISP2,XISP2,4HTHR
     12,THR2)
      CALL OUT (4HAREA,AREA,3HCKK,CKK,4H    ,0.0,1H ,0.0,1H ,0.0)
C
C     TABLE DATA
      READ 264, (XMACHT(I),CL0TAB(I),CL1TAB(I),CL2TAB(I),CD0TAB(I),I=1,N
     1TAB1)
      READ 240, (ALTAB(I),THR1T(I),BISPT(I),I=1,NTAB2)
      READ 240, (RATAB(I),XISPF1(I),XISPF2(I),I=1,NTAB3)
      PRINT 242, (I,XMACHT(I),CL0TAB(I),CL1TAB(I),CL2TAB(I),CD0TAB(I),I=
     11,NTAB1)
      PRINT 244, (I,ALTAB(I),THR1T(I),BISPT(I),I=1,NTAB2)
      PRINT 246, (I,RATAB(I),XISPF1(I),XISPF2(I),I=1,NTAB3)
      PRINT 300
```

```
C
      N1=NTAB1-1
      MODULS=XMOD
      N2=NTAB2-1
      N3=NTAB3-1
      DELT2=DELT
      RADIAN=57.2957795
      ITAB=0
      PNT=POINT
      INT=0
      LAST=0
      LIBE=61
      IPAG=1
C        TURN OFF ALL FLAGS.  INITIALIZE ALL VARIABLES
C        FOR NEW TRAJECTORY
      WOP=WO
   14 KOUNT=0
      KICK=0
      KICK2=0
      MESS=0
      JETT=0
      JUMP=0
      LAP=0
      LVOK=0
      ISTAGE=1
      T=0.0
      VLO=0.0
      VLS=0.0
      VLT=0.0
      VCHAR=0.0
      GAM=GAMO
      ALPH=ALPO
      V=VO
      ALT=ALTO
      WT=WO
      RATIO=1.0
      PRT=0.000001
      IF (ITAB) 16,16,18
   16 CONTINUE
      CALL OUT (3HTIM,T,3HGAM,GAM,3HVEL,V,3HALT,ALT,2HWT,WT)
   18 JABR=1
      UPD=0
C
   20 CALL ATMOSP (ALT,ANS)
      XMACH=V/SOS
      IF (ISTAGE-1) 22,22,34
   22 DO 24 I=1,N2
      IF (ALT-ALTAB(I)) 26,24,24
   24 IT=I
   26 IT=IT+1
      THR1=Y3(THR1T(IT),THR1T(IT-1),ALT,ALTAB(IT),ALTAB(IT-1))
      XISP=Y3(BISPT(IT),BISPT(IT-1),ALT,ALTAB(IT),ALTAB(IT-1))
      IT=1
      DO 28 I=1,N1
      IF (XMACH-XMACHT(I)) 30,28,28
   28 IT=I
```

```
   30 IT=IT+1                                                          A 111
      XM1=XMACHT(IT-1)                                                 A 112
      XM2=XMACHT(IT)                                                   A 113
      CD0=Y3(CD0TAB(IT),CD0TAB(IT-1),XMACH,XM2,XM1)                    A 114
      CL0=Y3(CL0TAB(IT),CL0TAB(IT-1),XMACH,XM2,XM1)                    A 115
      CL1=Y3(CL1TAB(IT),CL1TAB(IT-1),XMACH,XM2,XM1)                    A 116
      CL2=Y3(CL2TAB(IT),CL2TAB(IT-1),XMACH,XM2,XM1)                    A 117
      ALPH=0.0                                                         A 118
      IF (KICK) 32,32,36                                               A 119
   32 GAM=90.0                                                         A 120
      GO TO 36                                                         A 121
C                                                                      A 122
C     SECOND STAGE GUIDANCE CALCULUS OF VARIATIONS SOLUTION            A 123
   34 GAMAL=ATAN(TAND(ALPH2+GAM2)-PNT*(T-T2))*RADIAN                   A 124
      ALPH=GAMAL-GAM                                                   A 125
      THRI=THR2                                                        A 126
      XISP=XISP2                                                       A 127
      GO TO 38                                                         A 128
C                                                                      A 129
C        PREINTEGRATION                                                A 130
   36 CL=CL0+CL1*ALPH+CL2*ALPH**2                                      A 131
      CD=CD0+CKK*(CL*TAND(ALPH))                                       A 132
      DYNP=0.5*DENS*V**2                                               A 133
      XLIFT=CL*DYNP*AREA                                               A 134
      ACCN=(THRI/WT)*SIND(ALPH)+XLIFT/WT                               A 135
      DRAG=CD*DYNP*AREA                                                A 136
      IF (UPD) 38,38,58                                                A 137
   38 CALPH=COSD(ALPH)                                                 A 138
      SALPH=SIND(ALPH)                                                 A 139
      IF (UPD) 74,74,58                                                A 140
C                                                                      A 141
   40 IF (JABR) 56,56,42                                               A 142
   42 IF (ITAB) 50,50,44                                               A 143
   44 IF (LINE-60) 48,48,46                                            A 144
   46 PRINT 248, CODE,IPAG                                             A 145
      IPAG=IPAG+1                                                      A 146
      PRINT 250                                                        A 147
      LINE=5                                                           A 148
   48 PRINT 252, T,ALPH,V,GAM,ALT,THRI,XLIFT,DRAG,XMACH                A 149
      LINE=LINE+1                                                      A 150
      GO TO 52                                                         A 151
   50 PRINT 254, ISTAGE,ALPH,XMACH,XISP,DYNP                           A 152
      CALL OUT (4HGRAV,GRAV,3HACC,ACC,4HTHRI,THRI,2HCL,CL,4HLIFT,XLIFT)  A 153
      CALL OUT (4HDENS,DENS,4HACCN,ACCN,4HRATI,RATIO,2HCD,CD,4HDRAG,DRAG  A 154
     1)                                                                A 155
      CALL OUT (3HSOS,SOS,3HVLD,VLD,3HVLG,VLG,3HVLT,VLT,4HVCHR,VCHAR)   A 156
      PRINT 256                                                        A 157
   52 IF (JETT-1) 54,154,156                                           A 158
   54 IF (IVOK) 56,56,170                                              A 159
C                                                                      A 160
C        INTEGRATION                                                   A 161
   56 IND=1                                                            A 162
      JABR=0                                                           A 163
C     VELOCITY                                                         A 164
   58 DERIV(1)=(GEFO/WT)*(THRI*CALPH-DRAG)-GRAV*SIND(GAM)              A 165
      IF (V) 60,60,62                                                  A 166
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```
   60 DERIV(2)=0.0                                                      A 167
      GO TO 64                                                          A 168
C        GOUT                                                           A 169
   62 DERIV(2)=((GEE0/(WT*V))*(THRI*SALPH+XLIFT)+(V/(RE+ALT)-GRAV/V)*COS A 170
     1D(GAM))*RADIAN                                                    A 171
C        AOUT                                                           A 172
   64 DERIV(3)=V*SIND(GAM)                                              A 173
C        WOUT                                                           A 174
      DERIV(4)=-THRI/XISP                                               A 175
C        VELOCITY COMPONENTS                                            A 176
      DERIV(5)=(DRAG*GRAV)/WT                                           A 177
      DERIV(6)=GRAV*SIND(GAM)                                           A 178
      DERIV(7)=(GRAV*THRI/WT)*(1-CALPH)                                 A 179
      DERIV(8)=(THRI*GRAV)/WT                                           A 180
      CALL RUNKUT (I,DERIV,DELT,IND)                                    A 181
      IND=IND+1                                                         A 182
      UPD=1                                                             A 183
      IF (IND-4) 20,20,66                                               A 184
   66 UPD=0                                                             A 185
      PRT=PRT+DELT                                                      A 186
      IF (ISW2) 68,68,72                                                A 187
   68 IF (ITAB) 70,70,104                                               A 188
   70 IF (PTSTEP-PRT) 72,72,104                                         A 189
   72 CALL OUT (3HTIM,T,3HGAM,GAM,3HVEL,V,3HALT,ALT,2HWT,WT)            A 190
      PRT=0.000001                                                      A 191
      JABR=1                                                            A 192
      GO TO 104                                                         A 193
C                                                                       A 194
C     THIS IS THE ACCELERATION FELT BY THE PILOT.  IT IS THE ABSOLUTE   A 195
C     VALUE OF THE RATE OF CHANGE OF VELOCITY                           A 196
C     THIS ACCELERATION IS NOT USED FOR THE INTEGRATION                 A 197
   74 ACC=THRI/WT*SQRT(1.0+(XLIFT**2+DRAG**2)/THRI**2+2.0/THRI*(XLIFT*SA A 198
     1LPH-DRAG*CALPH))                                                  A 199
      THX=THRI                                                          A 200
      IF (ACLIM-ACC) 76,40,40                                           A 201
   76 IF (ITHROT) 78,78,82                                              A 202
   78 IF (MESS) 80,80,40                                                A 203
   80 TEMP1=ACC/ACLIM                                                   A 204
      PRINT 272, T,TEMP1                                                A 205
      GO TO 40                                                          A 206
C                                                                       A 207
C        THROTTLE                                                       A 208
   82 IF (ISTEP) 84,84,102                                              A 209
   84 THRT=DRAG*CALPH-XLIFT*SALPH+SQRT((ACLIM*WT)**2-(XLIFT*CALPH+DRAG*S A 210
     1ALPH)**2)                                                         A 211
      RATIO=THRT/THRI                                                   A 212
      THRI=THRT                                                         A 213
   86 IF (ISPDEG) 96,96,88                                              A 214
   88 DO 90 I=1,N3                                                      A 215
      IF (RATIO-RATAB(I)) 92,90,90                                      A 216
   90 IT=I                                                              A 217
   92 IT=IT+1                                                           A 218
      IF (ISTAGE-1) 94,94,98                                            A 219
   94 XISPF=Y3(XISPF1(IT),XISPF1(IT-1),RATIO,RATAB(IT),RATAB(IT-1))     A 220
      GO TO 100                                                         A 221
   96 XISPF=1.00                                                        A 222
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      GO TO 100                                                         A 223
   98 XISPF=Y3(XISPF2(IT),XISPF2(IT-1),RATIO,RATAB(IT),RATAB(IT-1))     A 224
  100 XISP=XISP*XISPF                                                   A 225
      ACC=THRI/WT*SQRT(1.0+(XLIFT**2+DRAG**2)/THRI**2+2.0/THRI*(XLIFT*SA  A 226
     1LPH-DRAG*CALPH))                                                  A 227
      GO TO 40                                                          A 228
  102 THRO=THX/MODULS                                                   A 229
      THRT=THRI-THRO                                                    A 230
      RATIO=THRT/THX                                                    A 231
      THRI=THRT                                                         A 232
      ACC=THRI/WT*SQRT(1.0+(XLIFT**2+DRAG**2)/THRI**2+2.0/THRI*(XLIFT*SA  A 233
     1LPH-DRAG*CALPH))                                                  A 234
      IF (ACLIM-ACC) 102,86,86                                          A 235
C                                                                       A 236
  104 IF (ISTAGE-1) 106,106,142                                         A 237
C      FIRST STAGE MONITORING SECTION  (V AND WP ARE CHECKED )          A 238
  106 IF (VKICK-V) 108,108,118                                          A 239
  108 IF (KICK) 110,110,118                                             A 240
  110 IF (ITAB) 112,112,116                                             A 241
  112 IF (JARR) 114,114,116                                             A 242
  114 CALL OUT (3HTIM,T,3HGAM,GAM,3HVEL,V,3HALT,ALT,2HWT,WT)            A 243
      JARR=1                                                            A 244
  116 GAM=GAMK                                                          A 245
      KICK=1                                                            A 246
      PRINT 274, GAM                                                    A 247
  118 IF (VSTAG-(V+DELT*DERIV(1)*1.1)) 122,122,120                      A 248
  120 IF (WP1-(WO-WT)+DERIV(4)*DELT) 122,122,124                        A 249
  122 DELT=DELT2/10.0                                                   A 250
  124 IF (VSTAG-V) 128,128,126                                          A 251
  126 IF (WP1-(WO-WT)+(DERIV(4)*0.6*DELT)) 130,20,20                    A 252
  128 JETT=1                                                            A 253
      GO TO 132                                                         A 254
  130 JETT=2                                                            A 255
  132 IF (ITAB) 134,134,138                                             A 256
  134 IF (JARR) 136,136,138                                             A 257
  136 CALL OUT (3HTIM,T,3HGAM,GAM,3HVEL,V,3HALT,ALT,2HWT,WT)            A 258
      JARR=1                                                            A 259
  138 IF (KICK) 140,140,20                                              A 260
  140 PRINT 276                                                         A 261
      VKICK=0.9*VKICK                                                   A 262
      PRINT 302                                                         A 263
      GO TO 14                                                          A 264
C      SECOND STAGE MONITORING SECTION ( V AND WP )                     A 265
  142 IF (LAP) 144,144,150                                              A 266
  144 IF (VM-(V+DELT*DERIV(1)*1.1)) 146,146,148                         A 267
  146 DELT=DELT2/10.0                                                   A 268
      LAP=1                                                             A 269
      GO TO 150                                                         A 270
  148 DELT=DELT2                                                        A 271
  150 IF (VM-V) 152,152,20                                              A 272
  152 IVOK=1                                                            A 273
      DELT=DELT2                                                        A 274
      LAP=0                                                             A 275
      GO TO 134                                                         A 276
C                                                                       A 277
C        CALCULATE FIRST STAGE WEIGHTS                                  A 278
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```
154 PRINT 278
    JWBY=1
    GO TO 158
156 PRINT 280
    JWBY=2
158 TVAC=THR1T(NTAB2)
    LINE=LINE+2
    WSAVE=WT
    WENG=SCALE*CNTIN*ENGF*TVAC
    WEOP=SCALE*CNTIN*EOP
    GAS=(WO-WT)+WT*(1.0-EXP(-DELVF/(GEE0*BISPT(NTAB2))))+BUILD*TVAC+WT
   1*(1.0-EXP(-CEE*ALOG(WO/WT)))+DECAY*TVAC
    GASO=DECAY*TVAC+SCALE*CNTIN*ENN*WW+WT*(1.0-EXP(-DELVF/(GEE0*BISPT(
   1NTAB2))))+WT*(1.0-EXP(-CEE*ALOG(WO/WT)))
    WTANK=SCALE*CNTIN*TNKF*GAS+GASO
    WPRS1=WT*(1.0-EXP(-DELVF/(GEE0*BISPT(NTAB2))))
    WPRS2=WT*(1.0-EXP(-CEE*ALOG(WO/WT)))
160 WJET=WTANK+WENG+WEOP+BILD2*THR2
    WT=WSAVE
    WO=WT-WJET
    PROP1=WO-WT

    BEGIN SECOND STAGE
    WT=WO2
    TH2=THR2
    DELT=DELT2-AMOD(T,DELT2)
    ISTAGE=2
    IF (ITW2) 166,166,162

162 THR2=TW2*WT
    IF (THR2-TH2) 164,166,164
164 IF (ABS(THR2-TH2)-THR2/1000.0) 166,166,160
166 DRAG=0.0
    XLIFT=0.0
    CD=0.0
    CL=0.0
    T2=T
    ALT2=ALT
    VLTS=VLD
    VLTS=VLG
    VLTS=VLT
    VCHRS=VCHAR
    VROT=(ANGV/RADIAN)*RE*COSD(XLAT)*SIND(AZ)
    V2=SQRT(VROT**2+V**2+2.0*VROT*V*COSD(GAM))
    GAM2=(ASIN((V/V2)*SIND(GAM)))*RADIAN
    ALPH2=ALPH
    V=V2
    JETT=0
    GAM=GAM2
    ACCN=0.0
    DYNP=0.0
    RATIO=1.0
    IF (ITAB) 168,168,20
168 CALL OUT (3HTIM,T,3HGAM,GAM,3HVEL,V,3HALT,ALT,2HWT,WT)
    JAMR=1
    GO TO 20
C
```

```
170 IF (INT) 172,172,180                                          A 335
172 IF (WT+WP2-WO2) 174,180,180                                   A 336
174 IF (JWHY-1) 178,178,176                                       A 337
176 WP1=WP1*1.0002+(WO2-WT-WP2)*1.25                              A 338
    PRINT 282, WP1                                                A 339
    PRINT 302                                                     A 340
    GO TO 14                                                      A 341
178 VSTAG=VSTAG*100                                               A 342
    PRINT 284                                                     A 343
    PRINT 302                                                     A 344
    GO TO 14                                                      A 345
180 IF (ABS(ALT-HM)-DELH) 182,182,188                             A 346
182 IF (ABS(XMGAM-GAM)-BETA) 184,184,188                          A 347
184 IF (INT) 200,200,186                                          A 348
186 INT=0                                                         A 349
    GO TO 172                                                     A 350
188 INT=INT+1.0                                                   A 351
    HH(INT)=ALT                                                   A 352
    ANG(INT)=GAM                                                  A 353
    IF (INT-2.0) 190,194,196                                      A 354
190 PNT1=PNT                                                      A 355
    DPNT=SIGN(.05,ALT-HM)*PNT                                     A 356
    PNT=PNT+DPNT                                                  A 357
    IF (PNT) 192,198,198                                          A 358
192 PNT=0.0                                                       A 359
    DPNT=PNT-PNT1                                                 A 360
    GO TO 198                                                     A 361
194 GAMK1=GAMK                                                    A 362
    DGMK=-SIGN(.001,GAM-XMGAM)*GAMK                               A 363
    GAMK=GAMK+DGMK                                                A 364
    PNT=PNT1                                                      A 365
    PRINT 286, GAMK,PNT                                           A 366
    PRINT 302                                                     A 367
    GO TO 14                                                      A 368
C                                                                 A 369
C   CALCULATE PARTIAL DERIVATIVES                                 A 370
196 GAMK=GAMK1                                                    A 371
    ALPNT=(HH(2)-HH(1))/DPNT                                      A 372
    ALK=(HH(3)-HH(1))/DGMK                                        A 373
    GMPNT=(ANG(2)-ANG(1))/DPNT                                    A 374
    GMK=(ANG(3)-ANG(1))/DGMK                                      A 375
    DETER=ALK*GMPNT-GMK*ALPNT                                     A 376
    DELPNT=(GMK*(HH(1)-HM)-ALK*(ANG(1)-XMGAM))/DETER              A 377
    DELGAM=(ALPNT*(ANG(1)-XMGAM)-(HH(1)-HM)*GMPNT)/DETER          A 378
    PNT=PNT+DELPNT                                                A 379
    GAMK=GAMK+DELGAM                                              A 380
    INT=0                                                         A 381
    PRINT 288, ALPNT,ALK,GMPNT,GMK,DETER,DELGAM,DELPNT,GAMK,PNT   A 382
    PRINT 302                                                     A 383
    GO TO 14                                                      A 384
198 T=T2                                                          A 385
    DELT=DELT2-AMOD(T,DELT2)                                      A 386
    WT=WO2                                                        A 387
    V=V2                                                          A 388
    VLDS=VLDS                                                     A 389
    VLGS=VLGS                                                     A 390
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      VLT=VLTS                                                          A 391
      VCHAR=VCHRS                                                       A 392
      ALT=ALT2                                                          A 393
      GAM=GAM2                                                          A 394
      ALPH=ALPH2                                                        A 395
      RATIO=1.0                                                         A 396
      IVOK=0                                                            A 397
      PRINT 290, CONST,PNT                                              A 398
      PRINT 302                                                         A 399
      GO TO 168                                                         A 400
C     FINAL RECALCULATION                                               A 401
  200 IF (LAST) 202,202,210                                             A 402
  202 LAST=1                                                            A 403
      IF (ISW3) 204,204,208                                             A 404
  204 IF (JTAB) 210,210,206                                             A 405
  206 ITAB=1                                                            A 406
  208 ISW2=1                                                            A 407
      PTSTEP=DELT2                                                      A 408
      PRINT 304
      GO TO 14                                                          A 409
C                                                                       A 410
  210 STAR=BILD2*THR2                                                   A 411
      PRINT 292, WENG,WEQP,WTANK,WJET,PROP1,WO2,WRES1,WRES2,VROT,V2,GAM2 A 412
     1,ALPH2,T2,ALT2                                                    A 413
      PRINT 294                                                         A 414
      WENG=SCAL2*CNTN2*ENG2*THR2                                        A 415
      WEQP=SCAL2*CNTN2*EQP2                                             A 416
      GAS=(WO2-WT)+WT*(1.0-EXP(-DELV2/(GEE0*XISP2) )+BILD2*THR2+WT*(1.0- A 417
     1EXP(-CEE2*ALOG(WO2/WT)))+DKAY2*THR2                               A 418
      GASO=DKAY2*THR2+WT*(1.0-EXP(-DELV2/(GEE0*XISP2)))+WT*(1.0-EXP(-CEE A 419
     12*ALOG(WO2/WT)))                                                  A 420
      WTANK=SCAL2*CNTN2*TNK2*GAS+GASO                                   A 421
      WRES1=WT*(1.0-EXP(-DELV2/(GEE0*XISP2)))                           A 422
      WRES2=WT*(1.0-EXP(-CEE2*ALOG(WO2/WT)))                            A 423
      WJET=WTANK+WENG+WEQP                                              A 424
      PROP1=WO2-WT                                                      A 425
      T2=WT-WJET                                                        A 426
      DK=DKAY2*THR2                                                     A 427
      PRINT 296, WENG,WEQP,WTANK,WJET,PROP1,WRES1,WRES2,T2,STAR,DK,VLD,V A 428
     1LG,VLT,VCHAR                                                      A 429

      PRINT 298                                                         A 430
      DPLD=T2-RPLD                                                      A 431
      IF (IPLD) 12,12,212                                               A 432
  212 IF (ABS(DPLD)-.00001*RPLD) 12,12,214                              A 433
  214 IF (ABS(DPLD)-1200.) 218,218,216                                  A 434
  216 PRINT 258                                                         A 435
      GO TO 12                                                          A 436
  218 IF (IPLD-2) 220,230,238                                           A 437
  220 IF (ABS(DPLD)-100.) 222,222,224                                   A 438
  222 DPLD1=DPLD                                                        A 439
      WOLD=WO                                                           A 440
      IPLD=2                                                            A 441
      SP1=DPLD/ABS(DPLD)                                                A 442
  224 IF (ABS(DPLD)-150.) 228,228,226                                   A 443
  226 WO=WO-DWT*DPLD/50.                                                A 444
      GO TO 14                                                          A 445
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228 WO=WO-DWT*DPLD/ABS(DPLD)                                          A 446
    GO TO 14                                                          A 447
230 SP2=DPLD/ABS(DPLD)                                                A 448
    IF (SP1+SP2) 232,234,232                                          A 449
232 IF (ABS(DPLD1)-ABS(DPLD)) 224,224,222                             A 450
234 IF (ABS(DPLD)-100.) 236,236,224                                   A 451
236 WO=Y3(WO,WOLD,0.0,DPLD,DPLD1)                                     A 452
    IPLD=3                                                            A 453
    GO TO 14                                                          A 454
238 STOP                                                              A 455
C     RETURN TO READ A NEW SET OF DATA                                A 456
C                                                                     A 457
240 FORMAT (3E12.6)                                                   A 458
242 FORMAT (1H0/9X,11HMACH NUMBER,9X,4HCL 0,12X,4HCL 1,12X,4HCL 2,12X,
   *4HCD 0,//(I5,2E16.6))
244 FORMAT (1H0,9X,8HALTITUDE,9X,6HTHRUST,12X,3HISP//(I5,3E16.6))     A 461
246 FORMAT (1H0,11X,5HRATAR,11X,6HISP F1,10X,6HISP F2//(I5,3E16.6))   A 462
248 FORMAT (1H1,9A6,5X,5HPAGE ,I3)                                    A 463
250 FORMAT (7H0  TIME,5X,5HALPHA,3X,8HVELOCITY,4X,5HGAMMA,5X,8HALTITUD A 464
   1E,7X,6HTHRUST,9X,4HLIFT,10X,4HDRAG,7X,4HMACH,/)                   A 465
252 FORMAT (1H ,F7.1,3X,F6.2,3X,F8.1,3X,F6.2,4(3X,E11.4),3X,F6.2)     A 466
254 FORMAT (6H STAGE,2X,I2,13X,4HALPH,E15.5,3X,4HMACH,E15.5,3X,4HXISP, A 467
   1E15.5,3X,4HDYNP,E15.8)                                            A 468
256 FORMAT (1H )                                                      A 469
258 FORMAT (82H DIFFERENCE BETWEEN PAYLOAD CALC AND PAYLOAD DESIRED IS A 470
   1 GREATER THAN 1200. POUNDS )                                      A 471
260 FORMAT (9A6)                                                      A 472
262 FORMAT (17H VERTICAL TAKEOFF,9A6)                                 A 473
264 FORMAT (5E12.6)                                                   A 474
266 FORMAT (12I3)
268 FORMAT (5E15.6,5X)                                                A 476
270 FORMAT (8H OPTIONS,/,4H IW2,I3,3X,5HTHROT,I3,3X,3HSW3,I3,3X,3HSW2, A 477
   1I3,3X,4HSTEP,I3,3X,6HISPDEG,I3,3X,3HPLD,I3,3X,3HTAB,I3)
272 FORMAT (5H0TIME,F12.2,2X,9HACC/ACLIM,E20.8)                       A 479
274 FORMAT (22H END VERTICAL SEGMENT ,/,10H SET GAM=,F11.5)           A 480
276 FORMAT (16H0VANICK TOO LARGE)                                     A 481
278 FORMAT (/15H VSTAG REACHED ,/)                                    A 482
280 FORMAT (12H0WP1 REACHED,/)                                        A 483
282 FORMAT (9H0NEW WP1=,E15.6)                                        A 484
284 FORMAT (/1X,13HIGNORE VSTAG ,/)                                   A 485
286 FORMAT (6H ENDII,5X,6H GAMK=,E15.6,10X,5H PNT=,E15.6)             A 486
288 FORMAT (7H0ALPNT=,E15.6,4X,4HALK=,E15.6,4X,6HGMPNT=,E15.6,4X,4HGMK A 487
   1=,E15.6,/,7H DETER=,E15.6,4X,7HDELGAM=,E15.6,4X,7HDELPNT=,E15.6,4X A 488
   2,5HGAMK=,E15.6,4X,4HPNT=,E15.6)                                   A 489
290 FORMAT (19H CUTOFF ERROR-REFLY,4X,6HCONST=,1X,E15.6,4X,4HPNT=,1X,E A 490
   115.6)                                                             A 491
292 FORMAT (28H1FIRST STAGE WEIGHTS  (LBS.)/1H0,6HENGINE,9X,E15.6,3X,9 A 492
   1HEQUIPMENT,6X,E15.6,3X,4HTANK,11X,E15.6,3X,8HJETTISON,7X,E15.6/1X, A 493
   215HUSED PROPELLANT,E15.6,3X,3HWO2,12X,E15.6,3X,14HFIXED RESERVES,1 A 494
   3X,E15.6,3X,13HVAR. RESERVES,2X,E15.6//1X,4HVOUT,11X,E15.6,3X,10HV- A 495
   4STAGE (INERT),E15.6,3X,5HGAMMA,10X,E15.6,3X,5HALPHA,10X,E15.6/1X,1 A 496
   52HSTAGING TIME,3X,E15.6,3X,8HALTITUDE,7X,E15.6//1X)               A 497
294 FORMAT (//94H FIRST STAGE JETTISON INCLUDES RESERVES (IF ANY), THR A 498
   1UST DECAY, AND 2ND STAGE THRUST BUILD-UP.//1X)                    A 499
296 FORMAT (1H0/1H0/29H0SECOND STAGE WEIGHTS  (LBS.)/7H0ENGINE,9X,E15. A 500
   16,3X,9HEQUIPMENT,6X,E15.6,3X,4HTANK,11X,E15.6,3X,8HJETTISON,7X,E15 A 501
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     2.6/11H PROPELLANT.5X,E15.6,3X.14HFIXED RESERVES,1X,E15.6,3X,13HVAR
     3. RESERVES.2X,E15.6,3X,7HPAYLOAD,8X,E15.6/16H THRUST BUILD-UP,E15.
     46,3X.12HTHRUST DECAY,3X,E15.6//1X,////1X,5HVLD =,E13.6,14X,5HVLG =
     5,E13.6,14X.5HVLT =,E13.6,14X,7HVCHAR =,E13.6//1X)
  298 FORMAT (//69H SECOND STAGE JETTISON INCLUDES RESERVES (IF ANY), AN
     1D THRUST DECAY, //1X)
  300 FORMAT (///)
  302 FORMAT (120H ***********************************************************
     1*************************************************************************
     2)
  304 FORMAT(1H1)
      END
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3200 FORTRAN DIAGNOSTIC RESULTS - FOR VTO

3200 FORTRAN (2.1.0)/(RTS) / /

```
      SUBROUTINE RUNKUT (T,DERIV,DELT,IND)
C     RUNGE-KUTTA INTEGRATION OF DIFFERENTIAL EQUATIONS IN MAIN PROGRAM
      DIMENSION DERIV(8), DEPVAR(8), AUX(8), SUM(8)
C     CORRESPONDS TO MAIN PROGRAM COMMON
      COMMON DEPVAR
      IF (IND-2) 2,6,8
    2 CONST1=DELT*0.5
      CONST3=0.5
      CONST4=1.0
      T=T+CONST1
      DO 4 I=1,8
      AUX(I)=DEPVAR(I)
    4 SUM(I)=0.0
      GO TO 12
    6 CONST4=2.0
      GO TO 12
    8 IF (IND-3) 10,10,16
   10 T=T+CONST1
      CONST3=1.0
   12 DO 14 I=1,8
      CONST2=DELT*DERIV(I)
      DEPVAR(I)=AUX(I)+CONST3*CONST2
   14 SUM(I)=SUM(I)+CONST4*CONST2
      RETURN
   16 DO 18 I=1,8
      SUM(I)=(SUM(I)+DELT*DERIV(I))/6.0
   18 DEPVAR(I)=AUX(I)+SUM(I)
      RETURN
      END
```

3200 FORTRAN DIAGNOSTIC RESULTS - FOR RUNKUT

3200 FORTRAN (2.1.0)/(RTS) / /

```
      FUNCTION Y3 (Y2,Y1,X3,X2,X1)
C     LINEAR INTERPOLATION BETWEEN POINTS
      Y3=Y1+(Y1-Y2)*(X3-X1)/(X1-X2)
      RETURN
      END
```

3200 FORTRAN DIAGNOSTIC RESULTS - FOR Y3

3200 FORTRAN (2.1.0)/(RTS) / /

```
      SUBROUTINE OUT (I,A,I2,A2,I3,A3,I4,A4,I5,A5)                      D    1
C     OUTPUT ROUTINE UP TO 5 4 LETTER NAMES AND VALUES(FLOATING POINT)  D    2
C     PER LINE                                                          D    3
      IF (I2-4H    ) 4,2,4                                              D    4
    2 PRINT 20, I,A                                                     D    5
      GO TO 18                                                          D    6
    4 IF (I3-4H    ) 8,6,8                                              D    7
    6 PRINT 20, I,A,I2,A2                                               D    8
      GO TO 18                                                          D    9
    8 IF (I4-4H    ) 12,10,12                                           D   10
   10 PRINT 20, I,A,I2,A2,I3,A3                                         D   11
      GO TO 18                                                          D   12
   12 IF (I5-4H    ) 16,14,16                                           D   13
   14 PRINT 20, I,A,I2,A2,I3,A3,I4,A4                                   D   14
      GO TO 18                                                          D   15
   16 PRINT 20, I,A,I2,A2,I3,A3,I4,A4,I5,A5                             D   16
   18 RETURN                                                            D   17
C                                                                       D   18
C                                                                       D   19
C                                                                       D   20
   20 FORMAT (1H ,5(A4,3X,F12.5,3X))                                    D   21
      END                                                               D   22-
```

3200 FORTRAN DIAGNOSTIC RESULTS - FOR OUT

3200 FORTRAN (2.1.0)/(RTS) / /

```
      FUNCTION AMOD (A,B)                                               E    1
C     SDS930 SYSTEM ROUTINE GIVES REMAINDER OF A/B                      E    2
      AMOD=A-FLOAT(IFIX(A/B))*B                                         E    3
      RETURN                                                            E    4
      END                                                               E    5-
```

3200 FORTRAN DIAGNOSTIC RESULTS - FOR AMOD

3200 FORTRAN (2.1.0)/(RTS) / /

```
      SUBROUTINE ATMOSP (H,ANS)                                         F    1
C     VTO     REVISED ATMOSP ROUTINE     1/68                           F    2
C     ANS(1)=SOS,   ANS(2)=GRAV,   ANS(3)=DENS                          F    3
      DIMENSION ANS(3)                                                  F    4
      TMO=518.688                                                       F    5
      G=32.173984                                                       F    6
      ER=20855531.0                                                     F    7
      CO=1116.4551                                                      F    8
      ANS(2)=G*(ER/(ER+H))**2                                           F    9
      GPH=(ER*H)/(ER+H)                                                 F   10
      IF (GPH-154199.0) 2,2,14                                          F   11
    2 IF (GPH-36089.0) 4,4,6                                            F   12
    4 ANS1=-3.5662E-3*GPH+518.688                                       F   13
      ANS(3)=2.3769E-3*((-6.8753E-6*GPH+1.0)**4.25612)                  F   14
      GO TO 12                                                          F   15
    6 IF (GPH-82021.0) 8,8,10                                           F   16
    8 ANS1=389.988                                                      F   17
      ANS(3)=7.0611E-4*(EXP(-4.8063E-5*GPH+1.734579))                   F   18
      GO TO 12                                                          F   19
   10 ANS1=1.6459E-3*GPH+254.988                                        F   20
```

```
      ANS(3)=7.7644E-5*((4.2204E-6*GPH+0.65384)**(-12.3883))                F   21
   12 ANS(1)=C0*SQRT(ANS1/TM0)                                              F   22
      RETURN                                                                F   23
      HIGH ALTITUDE                                                         F   24
   14 IF (GPH-173885.0) 16,16,18                                            F   25
   16 ANS1=506.788                                                          F   26
      ANS(3)=2.8803E-6*(EXP(-3.68409E-5*GPH+5.680843))                      F   27
      GO TO 12                                                              F   28
   18 IF (GPH-259180.0) 20,20,22                                            F   29
   20 ANS1=-2.4689E-3*GPH+938.088                                           F   30
      ANS(3)=1.3947E-6*((-4.8525E-6*GPH+1.843769)**6.59216)                 F   31
      GO TO 12                                                              F   32
   22 IF (GPH-295276.0) 26,26,24                                            F   33
      HIGH HIGH ALTITUDE                                                    F   34
   24 CONTINUE                                                              F   35
      USE DATA FOR GPH=295276. IF GPH GREATER THAN 295276.                  F   36
   26 ANS1=298.188                                                          F   37
      ANS(3)=4.1188E-8*(EXP(-6.28597E-5*GPH+16.292376))                     F   38
      GO TO 12                                                              F   39
      END                                                                   F   40-
```

3200 FORTRAN DIAGNOSTIC RESULTS - FOR ATMOSP

3200 FORTRAN (2.1.0)/(RTS) / /

```
      FUNCTION SIND (X)                                                     G    1
      GIVES SIN(X) WHERE X IS IN DEGREES                                    G    2
      SIND=SIN(X/57.2957795)                                                G    3
      RETURN                                                                G    4
      END                                                                   G    5-
```

3200 FORTRAN DIAGNOSTIC RESULTS - FOR SIND

3200 FORTRAN (2.1.0)/(RTS) / /

```
      FUNCTION COSD (X)                                                     H    1
      GIVES COS(X) WHERE X IS IN DEGREES                                    H    2
      COSD=COS(X/57.2957795)                                                H    3
      RETURN                                                                H    4
      END                                                                   H    5-
```

3200 FORTRAN DIAGNOSTIC RESULTS - FOR COSD

3200 FORTRAN (2.1.0)/(RTS) / /

```
      FUNCTION TAND (X)                                                     I    1
      GIVES TAN(X) WHERE X IS IN DEGREES                                    I    2
      TAND=SIND(X)/COSD(X)                                                  I    3
      RETURN                                                                I    4
      END                                                                   I    5-
```

3200 FORTRAN DIAGNOSTIC RESULTS - FOR TAND

```
NO ERRORS
LOAD,56
RUN,10
```

SUBP

60006	Q8QERROR	60264	FIXF	60333	FLOATF	60362	ABSF	60376	SQRTF	60507	SIGNF
60533	LOGF	60742	EXPF	61074	ATANF	61235	SINCOS	61546	POWRF	62116	XTOI
62342	Q1QADRI	62223	Q8GOUTTB	62524	CONTROL	63264	FORMAT	63625	BCDOUT	65363	BCDINP
66360	ACCF	66471	Y3	66555	ARSIN	66633	TAND	66701	COSD	66743	SIND
67005	ATMOSP	67421	OUT	67700	RUNKUT	70177	HTCT				

ENTR

60264	IFIX	60264	XFIXF	60333	FLOAT	60362	XABSF	60362	IABS	60362	ABSF
60376	SQRTF	60507	XSIGNF	60507	ISIGN	60507	SIGNF	60533	ALOG10	60542	LOGF
60742	EXPF	61074	ATANF	61235	COSF	61243	SINF	61546	POWRF	60333	FLOATF
62116	XTOI	60264	FIXF	62465	Q1QSTRX	62453	Q1QSTRI	62442	Q1QSTXR	62405	Q1QSBXR
62360	Q1QADXR	62436	Q1QSBRX	62416	Q1QADRX	62413	Q1QDVIR	62410	Q1QMUIR	62360	Q1QADIR
62401	Q1QDVRI	62371	Q1QSBRI	62342	Q1QADRI	62623	Q8GIOTAB	62553	Q8QEXITS	62524	Q8QENTRY
62523	Q8QOUTTB	63210	PWRTBL	63726	Q8QLGOTC	63264	Q8GIFRMT	63315	Q8QFORMT	62577	Q8QIOSET
62557	Q8QSENSE	63022	Q8GEDITS	60006	Q8QERROR	63206	PWRTBL0	62701	Q8GIOERR	65462	Q8QLGINC
61235	COS	61243	SIN	61546	Q1QEXRR	62375	Q1QMURI	62405	Q1QSBIR	62116	Q1QEXRI
62442	Q1QSTIR	63726	Q8GLGOTI	65462	Q8QLGINI	64376	Q8GENGOT	63733	Q8GLGOTR	63625	Q8QINGOT
66035	Q8QENGIN	65466	Q8GLGINR	62643	Q8QARRAY	65363	Q8GINGIN	60507	SIGN	60362	ABS
60542	ALOG	60742	EXP	66562	ARSIN	60376	SQRT	66367	ACCF	70005	RUNKUT
66705	COSD	66035	TAND	61074	ATAN	66747	SIND	66473	Y3	67140	ATMOSP
67431	OUT	72757	HTCT	03765	GOFLG	03767	FDPBOXS	05717	RIO	02432	EINT.
02416	DINT.	05710	BNL.	01756	LOC5	01757	CIT.RTM	05770	RDCKSUM	06041	START2
05476	ACCOUNTS	07135	LOADER	05543	RDCKF1	03767	ABNORMAL	00014	CIO	05535	MEMORY
04650	MIPUF	04674	MIFKADD	04675	MIFORADD	05313	EST	05243	UST	05305	CST
05456	RRHT	05436	RHT	02011	CIT	05374	AET				

COMM

06277 06350

DATA

NONE

EXTA

NONE

VTO-930

```
ΔREWIND MT1.
ΔFORTRAN BO,LO.
C      VERTICAL TAKEOFF PROGRAM      REPORT TR-293-6-110      NORTHROP
C         2-D FLIGHT EQUATIONS
C
       DIMENSION ANS[3], XMACHT[16], CLOTAB[16], CL1TAB[16], CL2TAB[16],
      1CDOTAB[16], ALTAB[10], THR1T[10], RATAB[11], XISPF1[11], XISPF2[11
      2], DEPVAR[8], DERIV[8], CODE[9], BISPT[10], HH[3], ANG[3]
       COMMON VCHAR,VLT,VLG,VLD,WT,ALT,GAM,V
       EQUIVALENCE [ANS[1],SOS], [ANS[2],GRAV], [ANS[3],DENS]
       CONST=0.0
       RE=20902230.0
       GEEO=32.174
       ANGV=4.16666E-03
C
C      HEADING
    12 READ 260, CODE
       PRINT 262, CODE
C
C      OPTIONS
       READ 266, ITW2,ITHROT,ISW3,ISW2,ISTEP,ISPDEG, NTAB1,NTAB2,NTAB3
       PRINT 270, ITW2,ITHROT,ISW3,ISW2,ISTEP,ISPDEG
C
C      SINGLE POINT DATA
       READ 268, XLAT,AZ,VO,ALTO,GAMO,ALPO,WO,VKICK,GAMK,ACLIM,TW2,WW,ENN
      1,XMOD,VSTAG,POINT,VM,HM,DELH,XMGAM,BETA,DELT,PTSTEP,ENGF,BUILD
       READ 268, DECAY,TNKF,WP1,EQP,DELVF,CEE,SCALE,CNTIN,ENG2,BILD2,DKAY
      12,TNK2,WP2,EQP2,DELV2,CEE2,SCAL2,CNTN2,XISP2,THR2,AREA,CKK
       CALL OUT [4HXLAT,XLAT,2HAZ,AZ,2HVO,VO,4HALTO,ALTO,4HGAMO,GAMO]
       CALL OUT [4HALPO,ALPO,2HWO,WO,4HVKCK,VKICK,4HGAMK,GAMK,4HALCM,ACLI
      1M]
       CALL OUT [3HTW2,TW2,2HWW,WW,3HENN,ENN,4HXMOD,XMOD,4HVSTG,VSTAG]
       CALL OUT [4HPOIN,POINT,2HV7,VM,2HHM,HM,4HDELH,DELH,4HXMGM,XMGAM]
       CALL OUT [4HBETA,BETA,4HDELT,DELT,4HPTSP,PTSTEP,4HENGF,ENGF,4HBILD
      1,BUILD]
       CALL OUT [4HDCAY,DECAY,4HTNKF,TNKF,3HWP1,WP1,3HEQP,EQP,4HDLVF,DELV
      1F]
       CALL OUT [3HCEE,CEE,4HSCLE,SCALE,4HCNTN,CNTIN,4HENG2,ENG2,4HBLD2,B
      1ILD2]
       CALL OUT [4HDKY2,DKAY2,4HTNK2,TNK2,3HWP2,WP2,4HEQP2,EQP2,4HDLV2,DE
      1LV2]
       CALL OUT [4HCEE2,CEE2,4HSCL2,SCAL2,4HCNT2,CNTN2,4HISP2,XISP2,4HTHR
      12,THR2]
       CALL OUT [4HAREA,AREA,3HCKK,CKK,4H    ,0.0,1H ,0.0,1H ,0.0]
C
C      TABLE DATA
       READ 264, [XMACHT[I],CLOTAB[I],CL1TAB[I],CL2TAB[I],CDOTAB[I],I=1,N
      1TAB1]
       READ 240, [ALTAB[I],THR1T[I],BISPT[I],I=1,NTAB2]
       READ 240, [RATAB[I],XISPF1[I],XISPF2[I],I=1,NTAB3]
       PRINT 242, [I,XMACHT[I],CLOTAB[I],CL1TAB[I],CL2TAB[I],CDOTAB[I],I=
      11,NTAB1]
       PRINT 244, [I,ALTAB[I],THR1T[I],BISPT[I],I=1,NTAB2]
```

```
      PRINT 246, [I,RATAB[I],XISPF1[I],XISPF2[I],I=1,NTAB3]
      PRINT 300
C
      N1=NTAB1-1
      MODULS=XMOD
      N2=NTAB2-1
      N3=NTAB3-1
      DELT2=DELT
      RADIAN=57.2957795
      PNT=POINT
      INT=0
      LAST=0
C        TURN OFF ALL FLAGS.  INITIALIZE ALL VARIABLES
C        FOR NEW TRAJECTORY
      WOP=WO
   14 KOUNT=0
      KICK=0
      KICK2=0
      MESS=0
      JETT=0
      JUMP=0
      LAP=0
      IVOK=0
      ISTAGE=1
      T=0.0
      VLD=0.0
      VLG=0.0
      VLT=0.0
      VCHAR=0.0
      GAM=GAMO
      ALPH=ALPO
      V=VO
      ALT=ALTO
      WT=WO
      RATIO=1.0
      PRT=0.000001
      CALL OUT [3HTIM,T,3HGAM,GAM,3HVEL,V,3HALT,ALT,2HWT,WT]
   18 JABR=1
      UPD=0
C
   20 CALL ATMOSP [ALT,ANS]
      XMACH=V/SOS
      IF [ISTAGE-1] 22,22,34
   22 DO 24 I=1,N2
      IF [ALT-ALTAB[I]] 26,24,24
   24 IT=I
   26 IT=IT+1
      THRI=Y3[THR1T[IT],THR1T[IT-1],ALT,ALTAB[IT],ALTAB[IT-1]]
      XISP=Y3[BISPT[IT],BISPT[IT-1],ALT,ALTAB[IT],ALTAB[IT-1]]
      IT=1
      DO 28 I=1,N1
      IF [XMACH-XMACHT[I]] 30,28,28
   28 IT=I
   30 IT=IT+1
```

```
      XM1=XMACHT[IT-1]
      XM2=XMACHT[IT]
      CDO=Y3[CDOTAB[IT],CDOTAB[IT-1],XMACH,XM2,XM1]
      CLO=Y3[CLOTAB[IT],CLOTAB[IT-1],XMACH,XM2,XM1]
      CL1=Y3[CL1TAB[IT],CL1TAB[IT-1],XMACH,XM2,XM1]
      CL2=Y3[CL2TAB[IT],CL2TAB[IT-1],XMACH,XM2,XM1]
      ALPH=0.0
      IF [KICK] 32,32,36
   32 GAM=90.0
      GO TO 36
C
C     SECOND STAGE GUIDANCE CALCULUS OF VARIATIONS SOLUTION
   34 GAMAL=ATAN[TAND[ALPH2+GAM2]-PNT*[T-T2]]*RADIAN
      ALPH=GAMAL-GAM
      THRI=THR2
      XISP=XISP2
      GO TO 38
C
C        PREINTEGRATION
   36 CL=CLO+CL1*ALPH+CL2*ALPH**2
      CD=CDO+CKK*CL*TAND[ALPH]
      DYNP=0.5*DENS*V**2
      XLIFT=CL*DYNP*AREA
      ACCN=[THRI/WT]*SIND[ALPH]+XLIFT/WT
      DRAG=CD*DYNP*AREA
      IF [UPD] 38,38,58
   38 CALPH=COSD[ALPH]
      SALPH=SIND[ALPH]
      IF [UPD] 74,74,58
C
   40 IF [JABR] 56,56,42
   42 PRINT 254, ISTAGE,ALPH,XMACH,XISP,DYNP
      CALL OUT [4HGRAV,GRAV,3HACC,ACC,4HTHRI,THRI,2HCL,CL,4HLIFT,XLIFT]
      CALL OUT [4HDENS,DENS,4HACCN,ACCN,4HRATI,RATIO,2HCD,CD,4HDRAG,DRAG
     1]
      CALL OUT [3HSOS,SOS,3HVLD,VLD,3HVLG,VLG,3HVLT,VLT,4HVCHR,VCHAR]
      PRINT 256
   52 IF [JETT-1] 54,154,156
   54 IF [IVOK] 56,56,170
C
C        INTEGRATION
   56 IND=1
      JABR=0
C       VDOT
   58 DERIV[1]=[GEEO/WT]*[THRI*CALPH-DRAG]-GRAV*SIND[GAM]
      IF [V] 60,60,62
   60 DERIV[2]=0.0
      GO TO 64
C       GDOT
   62 DERIV[2]=[[GEEO/[WT*V]]*[THRI*SALPH+XLIFT]+[V/[RE+ALT]-GRAV/V]*COS
     1D[GAM]]*RADIAN
C       ADOT
   64 DERIV[3]=V*SIND[GAM]
C       WDOT
```

```
      DERIV[4]=-THRI/XISP
C      VELOCITY COMPONENTS
      DERIV[5]=[DRAG*GRAV]/WT
      DERIV[6]=GRAV*SIND[GAM]
      DERIV[7]=[GRAV*THRI/WT]*[1-CALPH]
      DERIV[8]=[THRI*GRAV]/WT
      CALL RUNKUT [T,DERIV,DELT,IND]
      IND=IND+1
      UPD=1
      IF [IND-4] 20,20,66
   66 UPD=0
      PRT=PRT+DELT
      IF [ISW2] 70,70,72
   70 IF [PTSTEP-PRT] 72,72,104
   72 CALL OUT [3HTIM,T,3HGAM,GAM,3HVEL,V,3HALT,ALT,2HWT,WT]
      PRT=0.000001
      JABR=1
      GO TO 104
C
C     THIS IS THE ACCELERATION FELT BY THE PILOT.  IT IS THE ABSOLUTE
C     VALUE OF THE RATE OF CHANGE OF VELOCITY
C     THIS ACCELERATION IS NOT USED FOR THE INTEGRATION
   74 ACC=THRI/WT*SQRT[1.0+[XLIFT**2+DRAG**2]/THRI**2+2.C/THRI*[XLIFT*SA
     1LPH-DRAG*CALPH]]
      THX=THRI
      IF [ACLIM-ACC] 76,40,40
   76 IF [ITHROT] 78,78,82
   78 IF [MESS] 80,80,40
   80 TEMP1=ACC/ACLIM
      PRINT 272, T,TEMP1
      GO TO 40
C
C         THROTTLE
   82 IF [ISTEP] 84,84,102
   84 THRT=DRAG*CALPH-XLIFT*SALPH+SQRT{[ACLIM*WT]**2-[XLIFT*CALPH+DRAG*S
     1ALPH]**2}
      RATIO=THRT/THRI
      THRI=THRT
   86 IF [ISPDEG] 96,96,88
   88 DO 90 I=1,N3
      IF [RATIO-RATAB[I]] 92,90,90
   90 IT=I
   92 IT=IT+1
      IF [ISTAGE-1] 94,94,98
   94 XISPF=Y3[XISPF1[IT],XISPF1[IT-1],RATIO,RATAB[IT],RATAB[IT-1]]
      GO TO 100
   96 XISPF=1.00
      GO TO 100
   98 XISPF=Y3[XISPF2[IT],XISPF2[IT-1],RATIO,RATAB[IT],RATAB[IT-1]]
  100 XISP=XISP*XISPF
      ACC=THRI/WT*SQRT[1.0+[XLIFT**2+DRAG**2]/THRI**2+2.C/THRI*[XLIFT*SA
     1LPH-DRAG*CALPH]]
      GO TO 40
  102 THRO=THX/MODULS
```

```
      THRT=THRI-THRO
      RATIO=THRT/THX
      THRI=THRT
      ACC=THRI/WT*SQRT[1.0+[XLIFT**2+DRAG**2]/THRI**2+2.0/THRI*[XLIFT*SA
     1LPH-DRAG*CALPH]]
      IF [ACLIM-ACC] 102,86,86
C
  104 IF [ISTAGE-1] 106,106,142
C      FIRST STAGE MONITORING SECTION  [V AND WP ARE CHECKED ]
  106 IF [VKICK-V] 108,108,118
  108 IF [KICK] 110,110,118
  110 IF [JABR] 114,114,116
  114 CALL OUT [3HTIM,T,3HGAM,GAM,3HVEL,V,3HALT,ALT,2HWT,WT]
      JABR=1
  116 GAM=GAMK
      KICK=1
      PRINT 274, GAM
  118 IF [VSTAG-[V+DELT*DERIV[1]*1.1]] 122,122,120
  120 IF [WP1-[WO-WT]+DERIV[4]*DELT] 122,122,124
  122 DELT=DELT2/10.0
  124 IF [VSTAG-V] 128,128,126
  126 IF [WP1-[WO-WT]+[DERIV[4]*0.6*DELT]] 130,20,20
  128 JETT=1
      GO TO 132
  130 JETT=2
  132 IF [JABR] 136,136,138
  136 CALL OUT [3HTIM,T,3HGAM,GAM,3HVEL,V,3HALT,ALT,2HWT,WT]
      JABR=1
  138 IF [KICK] 140,140,20
  140 PRINT 276
      VKICK=0.9*VKICK
      PRINT 302
      GO TO 14
C      SECOND STAGE MONITORING SECTION [ V AND WP ]
  142 IF [LAP] 144,144,150
  144 IF [VM-[V+DELT*DERIV[1]*1.1]] 146,146,148
  146 DELT=DELT2/10.0
      LAP=1
      GO TO 150
  148 DELT=DELT2
  150 IF [VM-V] 152,152,20
  152 IVOK=1
      DELT=DELT2
      LAP=0
      GO TO 132
C
C         CALCULATE FIRST STAGE WEIGHTS
  154 PRINT 278
      JWHY=1
      GO TO 158
  156 PRINT 280
      JWHY=2
  158 TVAC=THR1T[NTAB2]
      LINE=LINE+2
```

```
      WSAVE=WT
      WENG=SCALE*CNTIN*ENGF*TVAC
      WEQP=SCALE*CNTIN*EQP
      GAS=[WO-WT]+WT*[1.0-EXP[-DELVF/[GEEO*BISPT[NTAB2]]]]+BUILD*TVAC*WT
     1*[1.0-EXP[-CEE*ALOG[WO/WT]]]+DECAY*TVAC
      GASO=DECAY*TVAC+SCALE*CNTIN*ENN*WW+WT*[1.0-EXP[-DELVF/[GEEO*BISPT[
     1NTAB2]]]]+WT*[1.0-EXP[-CEE*ALOG[WO/WT]]]
      WTANK=SCALE*CNTIN*TNKF*GAS+GASO
      WRES1=WT*[1.0-EXP[-DELVF/[GEEO*BISPT[NTAB2]]]]
      WRES2=WT*[1.0-EXP[-CEE*ALOG[WO/WT]]]
  160 WJET=WTANK+WENG+WEQP+BILD2*THR2
      WT=WSAVE
      WO2=WT-WJET
      PROP1=WO-WT
C
C     BEGIN SECOND STAGE
      WT=WO2
      TH2=THR2
      DELT=DELT2-AMOD[T,DELT2]
      ISTAGE=2
      IF [ITW2] 166,166,162
  162 THR2=TW2*WT
      IF [THR2-TH2] 164,166,164
  164 IF [ABS[THR2-TH2]-THR2/1000.0] 166,166,160
  166 DRAG=0.0
      XLIFT=0.0
      CD=0.0
      CL=0.0
      T2=T
      ALT2=ALT
      VLDS=VLD
      VLGS=VLG
      VLTS=VLT
      VCHRS=VCHAR
      VROT=[ANGV/RADIAN]*RE*COSD[XLAT]*SIND[AZ]
      V2=SQRT[VROT**2+V**2+2.0*VROT*V*COSD[GAM]]
      GAM2=[ASIN[[V/V2]*SIND[GAM]]]*RADIAN
      ALPH2=ALPH
      V=V2
      JETT=0
      GAM=GAM2
      ACCN=0.0
      DYNP=0.0
      RATIO=1.0
  168 CALL OUT [3HTIM,T,3HGAM,GAM,3HVEL,V,3HALT,ALT,2HWT,WT]
      JABR=1
      GO TO 20
C
  170 IF [INT] 172,172,180
  172 IF [WT+WP2-WO2] 174,180,180
  174 IF [JWHY-1] 178,178,176
  176 WP1=WP1*1.0005+[WO2-WT-WP2]*1.25
      PRINT 282, WP1
      PRINT 302
```

```
      GO TO 14
  178 VSTAG=VSTAG*100
      PRINT 284
      PRINT 302
      GO TO 14
  180 IF [ABS[ALT-HM]-DELH] 182,182,188
  182 IF [ABS[XMGAM-GAM]-BETA] 184,184,188
  184 IF [INT] 200,200,186
  186 INT=0
      GO TO 172
  188 INT=INT+1.0
      HH[INT]=ALT
      ANG[INT]=GAM
      IF [INT-2.0] 190,194,196
  190 PNT1=PNT
      DPNT=SIGN[.05,ALT-HM]*PNT
      PNT=PNT+DPNT
      IF [PNT] 192,198,198
  192 PNT=0.0
      DPNT=PNT-PNT1
      GO TO 198
  194 GAMK1=GAMK
      DGMK=-SIGN[.001,GAM-XMGAM]*GAMK
      GAMK=GAMK+DGMK
      PNT=PNT1
      PRINT 286, GAMK,PNT
      PRINT 302
      GO TO 14
C
C     CALCULATE PARTIAL DERIVATIVES
  196 GAMK=GAMK1
      ALPNT=[HH[2]-HH[1]]/DPNT
      ALK=[HH[3]-HH[1]]/DGMK
      GMPNT=[ANG[2]-ANG[1]]/DPNT
      GMK=[ANG[3]-ANG[1]]/DGMK
      DETER=ALK*GMPNT-GMK*ALPNT
      DELPNT=[GMK*[HH[1]-HM]-ALK*[ANG[1]-XMGAM]]/DETER
      DELGAM=[ALPNT*[ANG[1]-XMGAM]-[HH[1]-HM]*GMPNT]/DETER
      PNT=PNT+DELPNT
      GAMK=GAMK+DELGAM
      INT=0
      PRINT 288, ALPNT,ALK,GMPNT,GMK,DETER,DELGAM,DELPNT,GAMK,PNT
      PRINT 302
      GO TO 14
  198 T=T2
      DELT=DELT2-AMOD[T,DELT2]
      WT=W02
      V=V2
      VLD=VLDS
      VLG=VLGS
      VLT=VLTS
      VCHAR=VCHRS
      ALT=ALT2
      GAM=GAM2
```

```
      ALPH=ALPH2
      RATIO=1.0
      IVOK=0
      PRINT 290, CONST,PNT
      PRINT 302
      GO TO 168
C     FINAL RECALCULATION
  200 IF [LAST] 202,202,210
  202 LAST=1
      IF [ISW3] 210,210,208
  208 ISW2=1
      PTSTEP=DELT2
      PRINT 304
      GO TO 14
C
  210 STAR=BILD2*THR2
      PRINT 292, WENG,WEQP,WTANK,WJET,PROP1,WO2,WRES1,WRES2,VROT,V2,GAM2
     1,ALPH2,T2,ALT2
      PRINT 294
      WENG=SCAL2*CNTN2*ENG2*THR2
      WEQP=SCAL2*CNTN2*EQP2
      GAS=[WO2-WT]+WT*[1.0-EXP[-DELV2/[GEEO*XISP2]]]+BILD2*THR2+WI*[1.0-
     1EXP[-CEE2*ALOG[WO2/WT]]]+DKAY2*THR2,
      GASO=DKAY2*THR2+WT*[1.0-EXP[-DELV2/[GEEO*XISP2]]]+WT*[1.0-EXP[-CEE
     12*ALOG[WO2/WT]]]
      WTANK=SCAL2*CNTN2*TNK2*GAS+GASO
      WRES1=WT*[1.0-EXP[-DELV2/[GEEO*XISP2]]]
      WRES2=WT*[1.0-EXP[-CEE2*ALOG[WO2/WT]]]
      WJET=WTANK+WENG+WEQP
      PROP1=WO2-WT
      T2=WT-WJET
      DK=DKAY2*THR2
      PRINT 296, WENG,WEQP,WTANK,WJET,PROP1,WRES1,WRES2,T2,STAR,DK,VLD,V
     1LG,VLT,VCHAR
      PRINT 298
      GO TO 12
C     RETURN TO READ A NEW SET OF DATA
  238 STOP
C
  240 FORMAT [3E12.6]
  242 FORMAT [1HO/9X,11HMACH NUMBER,9X,4HCL 0,12X,4HCL 1,12X,4HCL 2,12X,
     *4HCD 0,//[I5,5E16.6]]
  244 FORMAT [1HO,9X,8HALTITUDE,9X,6HTHRUST,12X,3HISP//[I5,3E16.6]]
  246 FORMAT [1HO,11X,5HRATAB,11X,6HISP F1,10X,6HISP F2//[I5,3E16.6]]
  254 FORMAT [6H STAGE,2X,I2,13X,4HALPH,E15.5,3X,4HMACH,E15.5,3X,4HXISP,
     1E15.5,3X,4HDYNP,E15.8]
  256 FORMAT [1H ]
  260 FORMAT [9A6]
  262 FORMAT [17H VERTICAL TAKEOFF,9A6]
  264 FORMAT [5E12.6]
  266 FORMAT [12I3]
  268 FORMAT [5E15.8,5X]
  270 FORMAT [8H OPTIONS,/,4H TW2,I3,3X,5HTHROT,I3,3X,3HSW3,I3,3X,3HSW2,
     1I3,3X,4HSTEP,I3,3X,6HISPDEG,I3]
```

```
  272 FORMAT [5HOTIME,F12.2,2X,9HACC/ACLIM,E20.8]
  274 FORMAT [22H END VERTICAL SEGMENT ,//,10H SET GAM=,F11.5]
  276 FORMAT [16HOVKICK TOO LARGE]
  278 FORMAT [/15H VSTAG REACHED ,/]
  280 FORMAT [12HOWP1 REACHED,/]
  282 FORMAT [9HONEW WP1=,E15.6]
  284 FORMAT [/1X,13HIGNORE VSTAG ,/]
  286 FORMAT [6H ENDII,5X,6H GAMK=,E15.6,10X,5H PNT=,E15.6]
  288 FORMAT [7HOALPNT=,E15.6,4X,4HALK=,E15.6,4X,6HGMPNT=,E15.6,4X,4HGMK
     1=,E15.6,/,7H DETER=,E15.6,4X,7HDELGAM=,E15.6,4X,7HDELPNT=,E15.6,4X
     2,5HGAMK=,E15.6,4X,4HPNT=,E15.6]
  290 FORMAT [19H CUTOFF ERROR-REFLY,4X,6HCONST=,1X,E15.6,4X,4HPNI=,1X,E
     115.6]
  292 FORMAT [28H1FIRST STAGE WEIGHTS  [LBS.]/1HO,6HENGINE,9X,E15.6,3X,9
     1HEQUIPMENT,6X,E15.6,3X,4HTANK,11X,E15.6,3X,8HJETTISON,7X,E15.6/1X,
     215HUSED PROPELLANT,E15.6,3X,3HWO2,12X,E15.6,3X,14HFIXED RESERVES,1
     3X,E15.6,3X,13HVAR. RESERVES,2X,E15.6//1X,4HVROT,11X,E15.6,3X,15HV-
     4STAGE [INERT],E15.6,3X,5HGAMMA,10X,E15.6,3X,5HALPHA,10X,E15.6/1X,1
     52HSTAGING TIME,3X,E15.6,3X,8HALTITUDE,7X,E15.6//1X]
  294 FORMAT [//94H FIRST STAGE JETTISON INCLUDES RESERVES [IF ANY], THR
     1UST DECAY, AND 2ND STAGE THRUST BUILD-UP.//1X]
  296 FORMAT [1HO/1HO/29HOSECOND STAGE WEIGHTS  [LBS.]/7HOENGINE,9X,E15.
     16,3X,9HEQUIPMENT,6X,E15.6,3X,4HTANK,11X,E15.6,3X,8HJETTISON,7X,E15
     2.6/11H PROPELLANT,5X,E15.6,3X,14HFIXED RESERVES,1X,E15.6,3X,13HVAR
     3. RESERVES,2X,E15.6,3X,7HPAYLOAD,8X,E15.6/16H THRUST BUILD-UP,E15.
     46,3X,12HTHRUST DECAY,3X,E15.6//1X,////1X,5HVLD =,E13.6,14X,5HVLG =
     5,E13.6,14X,5HVLT =,E13.6,14X,7HVCHAR =,E13.6//1X]
  298 FORMAT [//69H SECOND STAGE JETTISON INCLUDES RESERVES [IF ANY], AN
     1D THRUST DECAY. //1X]
  300 FORMAT [///]
  302 FORMAT [120H ************************************************************
     1*************************************************************
     2]
  304 FORMAT[1H1]
      END
```

COMMON ALLOCATION

77776	VCHAR	77774	VLT	77772	VLG	77770	VLD
77766	WT	77764	ALT	77762	GAM	77760	V

PROGRAM ALLOCATION

00041	ANS	00041	SOS	00043	GRAV	00045	DENS
00047	XMACHT	00107	CLOTAB	00147	CL1TAB	00207	CL2TAB
00247	CDOTAB	00307	ALTAB	00333	THR1T	00357	RATAB
00405	XISPF1	00433	XISPF2	00461	DEPVAR	00501	DERIV
00521	CODE	00543	BISPT	00567	HH	00575	ANG
00603	ITW2	00604	ITHROT	00605	ISW3	00606	ISW2
00607	ISTEP	00610	ISPDEG	00611	NTAB1	00612	NTAB2
00613	NTAB3	00614	I	00615	N1	00616	MODULS
00617	N2	00620	N3	00621	INT	00622	LAST

00623 KOUNT	00624 KICK	00625 KICK2	00626 MESS
00627 JETT	00630 JUMP	00631 LAP	00632 IVOK
00633 ISTAGE	00634 JABR	00635 IT	00636 IND
00637 JWHY	00640 LINE	00641 CONST	00643 RE
00645 GEEO	00647 ANGV	00651 XLAT	00653 AZ
00655 VO	00657 ALTO	00661 GAMO	00663 ALPC
00665 WO	00667 VKICK	00671 GAMK	00673 ACLIM
00675 TW2	00677 WW	00701 ENN	00703 XMOD
00705 VSTAG	00707 POINT	00711 VM	00713 HM
00715 DELH	00717 XMGAM	00721 BETA	00723 DELT
00725 PTSTEP	00727 ENGF	00731 BUILD	00733 DECAY
00735 TNKF	00737 WP1	00741 EQP	00743 DELVF
00745 CEE	00747 SCALE	00751 CNTIN	00753 ENG2
00755 BILD2	00757 DKAY2	00761 TNK2	00763 WP2
00765 EQP2	00767 DELV2	00771 CEE2	00773 SCAL2
00775 CNTN2	00777 XISP2	01001 THR2	01003 AREA
01005 CKK	01007 DELT2	01011 RADIAN	01013 PNT
01015 WOP	01017 T	01021 ALPH	01023 RATIO
01025 PRT	01027 UPD	01031 XMACH	01033 THRI
01035 XISP	01037 XM1	01041 XM2	01043 CDC
01045 CLO	01047 CL1	01051 CL2	01053 GAMAL
01055 ALPH2	01057 GAM2	01061 T2	01063 CL
01065 CD	01067 DYNP	01071 XLIFT	01073 ACCN
01075 DRAG	01077 CALPH	01101 SALPH	01103 ACC
01105 THX	01107 TEMP1	01111 THRT	01113 XISPF
01115 THRO	01117 TVAC	01121 WSAVE	01123 WENG
01125 WEQP	01127 GAS	01131 GASO	01133 WTANK
01135 WRES1	01137 WRES2	01141 WJET	01143 WO2
01145 PROP1	01147 TH2	01151 ALT2	01153 VLDS
01155 VLGS	01157 VLTS	01161 VCHRS	01163 VROT
01165 V2	01167 PNT1	01171 DPNT	01173 GAMK1
01175 DGMK	01177 ALPNT	01201 ALK	01203 GMPNT
01205 GMK	01207 DETER	01211 DELPNT	01213 DELGAM
01215 STAR	01217 DK		

SUBPROGRAMS REQUIRED

OUT	ATMOSP	Y3	ATAN	TAND	SIND
COSD	RUNKUT	SQRT	EXP	ALOG	AMOD
ABS	ASIN	SIGN			

THE END

```
 1          SUBROUTINE RUNKUT [T,DERIV,DELT,IND]
 2   C      RUNGE-KUTTA INTEGRATION OF DIFFERENTIAL EQUATIONS IN MAIN PROGRAM
 3          DIMENSION DERIV[8], DEPVAR[8], AUX[8], SUM[8]
 4   C      CORRESPONDS TO MAIN PROGRAM COMMON
 5          COMMON DEPVAR
 6          IF [IND-2] 2,6,8
 7        2 CONST1=DELT*0.5
 8          CONST3=0.5
 9          CONST4=1.0
10          T=T+CONST1
11          DO 4 I=1,8
12          AUX[I]=DEPVAR[I]
13        4 SUM[I]=0.0
14          GO TO 12
15        6 CONST4=2.0
16          GO TO 12
17        8 IF [IND-3] 10,10,16
18       10 T=T+CONST1
19          CONST3=1.0
20       12 DO 14 I=1,8
21          CONST2=DELT*DERIV[I]
22          DEPVAR[I]=AUX[I]+CONST3*CONST2
23       14 SUM[I]=SUM[I]+CONST4*CONST2
24          RETURN
25       16 DO 18 I=1,8
26          SUM[I]=[SUM[I]+DELT*DERIV[I]]/6.0
27       18 DEPVAR[I]=AUX[I]+SUM[I]
28          RETURN
29          END
```

```
COMMON ALLOCATION

  77760 DEPVAR

PROGRAM ALLOCATION

  DUMMY DERIV     00010 AUX       00030 SUM       DUMMY IND
  00050 I         00051 RUNKUT    00053 CONST1    DUMMY DELT
  00055 CONST3    00057 CONST4    DUMMY T         00061 CONST2

THE END
```

```
 1          FUNCTION Y3 [Y2,Y1,X3,X2,X1]
 2    C     LINEAR INTERPOLATION BETWEEN POINTS
 3          Y3=Y1+[Y1-Y2]*[X3-X1]/[X1-X2]
 4          RETURN
 5          END
```

```
PROGRAM ALLOCATION

  00016 Y3          DUMMY Y1          DUMMY Y2          DUMMY X3
  DUMMY X1          DUMMY X2
THE END
```

```
 1          SUBROUTINE OUT [I,A,I2,A2,I3,A3,I4,A4,I5,A5]
 2    C     OUTPUT ROUTINE UP TO 5 4 LETTER NAMES AND VALUES[FLOATING POIN[]
 3    C     PER LINE
 4          IF [I2-4H     ] 4,2,4
 5        2 PRINT 20, I,A
 6          GO TO 18
 7        4 IF [I3-4H     ] 8,6,8
 8        6 PRINT 20, I,A,I2,A2
 9          GO TO 18
10        8 IF [I4-4H     ] 12,10,12
11       10 PRINT 20, I,A,I2,A2,I3,A3
12          GO TO 18
13       12 IF [I5-4H     ] 16,14,16
14       14 PRINT 20, I,A,I2,A2,I3,A3,I4,A4
15          GO TO 18
16       16 PRINT 20, I,A,I2,A2,I3,A3,I4,A4,I5,A5
17       18 RETURN
18    C
19    C
20    C
21       20 FORMAT [1H ,5[A4,3X,E12.5,3X]]
22          END
```

```
PROGRAM ALLOCATION

  DUMMY I2          DUMMY I           DUMMY I3          DUMMY I4
  DUMMY I5          00024 OUT         DUMMY A           DUMMY A2
  DUMMY A3          DUMMY A4          DUMMY A5
THE END
```

```
      SUBROUTINE ATMOSP (H,ANS)
C     VTO      REVISED ATMOSP ROUTINE      1/68
C     ANS(1)=SOS,    ANS(2)=GRAV,    ANS(3)=DENS
      DIMENSION ANS(3)
      TMO=518.688
      G=32.173984
      ER=20855531.0
      CO=1116.4551
      ANS(2)=G*(ER/(ER+H))**2
      GPH=(ER*H)/(ER+H)
      IF (GPH-154199.0) 2,2,14
    2 IF (GPH-36089.0) 4,4,6
    4 ANS1=-3.5662E-3*GPH+518.688
      ANS(3)=2.3769E-3*((-6.8753E-6*GPH+1.0)**4.25612)
      GO TO 12
    6 IF (GPH-82021.0) 8,8,10
    8 ANS1=389.988
      ANS(3)=7.0611E-4*(EXP(-4.8063E-5*GPH+1.734579))
      GO TO 12
   10 ANS1=1.6459E-3*GPH+254.988
      ANS(3)=7.7644E-5*((4.2204E-6*GPH+0.65384)**(-12.3883))
   12 ANS(1)=CO*SQRT(ANS1/TMO)
      RETURN
C     HIGH ALTITUDE
   14 IF (GPH-173885.0) 16,16,18
   16 ANS1=508.788
      ANS(3)=2.8803E-6*(EXP(-3.68409E-5*GPH+5.680843))
      GO TO 12
   18 IF (GPH-259186.0) 20,20,22
   20 ANS1=-2.4689E-3*GPH+938.088
      ANS(3)=1.3947E-6*((-4.8525E-6*GPH+1.843769)**6.59216)
      GO TO 12
   22 IF (GPH-295276.0) 26,26,24
C     HIGH HIGH ALTITUDE
   24 CONTINUE
C     USE DATA FOR GPH=295276. IF GPH GREATER THAN 295276.
   26 ANS1=298.188
      ANS(3)=4.1188E-8*(EXP(-6.28597E-5*GPH+16.292376))
      GO TO 12
      END
```

PROGRAM ALLOCATION

```
DUMMY ANS      00012 ATMOSP    00014 TMO       00016 G
00020 ER       00022 CO        DUMMY H         00024 GPH
00026 ANS1
```

SUBPROGRAMS REQUIRED

```
EXP        SQRT
THE END
```

```
1          FUNCTION SIND [X]
2   C      GIVES SIN[X] WHERE X IS IN DEGREES
3          SIND=SIN[X/57.2957795]
4          RETURN
5          END
```

```
PROGRAM ALLOCATION

  00005 SIND       DUMMY X

SUBPROGRAMS REQUIRED

  SIN
THE END
```

```
1          FUNCTION COSD [X]
2   C      GIVES COS[X] WHERE X IS IN DEGREES
3          COSD=COS[X/57.2957795]
4          RETURN
5          END
```

```
PROGRAM ALLOCATION

  00005 COSD       DUMMY X

SUBPROGRAMS REQUIRED

  COS
THE END
```

```
1          FUNCTION TAND [X]
2   C      GIVES TAN[X] WHERE X IS IN DEGREES
3          TAND=SIND[X]/COSD[X]
4          RETURN
5          END
```

```
PROGRAM ALLOCATION

  00006 TAND       DUMMY X

SUBPROGRAMS REQUIRED

  SIND       COSD
THE END
```

SECTION X

VTO SAMPLE RUN - 3200

VERTICAL TAKEOFF VERTICAL TAKEOFF VEHICLE TEST CASE
OPTIONS

TW2	1	THRUT	1	SW3	1	SW2	0	STEP	0	ISPDEG	0
PLD	0	TAB	0								

XLAT	2.85000E 01	A7	9.00000E 01	V0	0	ALT0	0	GAM0	9.00000E 01		
ALP0	0	W0	2.40000E 06	VKCK	2.00000E 02	GAMK	8.86514E 01	ALCM	3.80000E 00		
TW2	1.00000E 00	WW	4.02100E 04	ENN	1.16540E 00	XMOD	0	VSTG	5.75000E 03		
POIN	7.79345E-04	V7	2.57600E 04	HM	3.03806E 05	DELH	1.00000E 03	XMGM	0		
BETA	1.00000E-01	DELT	1.00000E 00	PTSP	6.00000E 02	ENGF	1.13294E-02	BILD	7.72254E-03		
DCAY	2.59959E-03	TNKF	3.61200E-02	WP1	1.72250E 06	EQP	1.58080E 05	DLVF	0		
CEE	0	SCLF	1.00000E 00	CNTN	1.00000E 06	ENG2	1.69023E-02	BLD2	7.34610E-04		
DKY2	1.83485E-04	TNK2	3.26745E-02	WP2	5.00000E 05	EQP2	4.31680E 04	DLV2	6.00000E 02		
CEE2	0	SCL2	1.00000E 00	CNT2	1.00000E 06	ISP2	4.55000E 02	TFR2	3.84000E 05		
AREA	5.12400E 03	CKK	1.09000E 00								

	MACH NUMBER	CL 0	CL 1	CL 2	CD 0
1	0	0	3.00000E-02	-2.40000E-04	4.32000E-02
2	2.50000E-01	0	4.00000E-02	-2.40000E-04	4.32000E-02
3	5.00000E-01	0	4.60000E-02	-2.40000E-04	4.32000E-02
4	7.50000E-01	0	4.90000E-02	-2.20000E-04	4.36000E-02
5	1.00000E 00	0	5.10000E-02	-1.00000E-04	8.67000E-02
6	1.25000E 00	0	5.10000E-02	0	7.90000E-02
7	3.50000E 00	0	4.65000E-02	8.00000E-05	7.10000E-02
8	1.75000E 01	0	4.20000E-02	9.00000E-05	6.35000E-02
9	2.00000E 00	0	3.75000E-02	1.20000E-04	5.75000E-02
10	2.50000E 00	0	3.30000E-02	1.50000E-04	4.86000E-02
11	3.00000E 00	0	2.75000E-02	1.60000E-04	4.30000E-02
12	4.00000E 00	0	2.15000E-02	1.50000E-04	3.65000E-02
13	5.00000E 00	0	1.85000E-02	1.20000E-04	3.30000E-02
14	6.00000E 00	0	1.70000E-02	7.00000E-05	3.10000E-02
15	8.00000E 00	0	1.50000E-02	-7.00000E-05	2.95000E-02
16	1.00000E 01	0	1.30000E-02	-1.50000E-04	2.65000E-02

	ALTITUDE	THRUST	ISP
1	0	3.00000E 06	2.63580E 02
2	1.00000E 04	3.14400E 06	2.76230E 02
3	2.00000E 04	3.28800E 06	2.83610E 02
4	3.00000E 04	3.38400E 06	2.90280E 02
5	4.00000E 04	3.36000E 06	2.95200E 02
6	6.00000E 04	3.41200E 06	2.99770E 02
7	8.00000E 04	3.43200E 06	3.01530E 02
8	1.10000E 05	3.44800E 06	3.02940E 02
9	1.50000E 05	3.46000E 06	3.03990E 02
10	1.30000E 05	3.46100E 06	3.03990E 02

	MACH	ISP F1	ISP F2
1	0	0	0
2	1.00000E-01	9.37800E-01	9.87800E-01
3	2.00000E-01	9.91400E-01	9.91400E-01
4	3.00000E-01	9.93800E-01	9.93800E-01
5	4.00000E-01	9.95400E-01	9.95400E-01
6	5.00000E-01	9.96600E-01	9.96600E-01
7	6.00000E-01	9.97500E-01	9.97500E-01
8	7.00000E-01	9.98300E-01	9.98300E-01
9	8.00000E-01	9.98900E-01	9.98900E-01
10	9.00000E-01	9.99500E-01	9.99500E-01
11	1.00000E 00	1.00000E 00	1.00000E 00

TIM	0	GAM	9.00000E 01	VEL	0	ALT	0	WT	2.40000E 06
STAGE	1	ALPH	0	MACH	0	XISP	2.63580E 02	DYNP	0
GRAV	3.21764E 01	ACC	1.25000E 00	THRI	3.00000E 06	CL	0	LIFT	0
DENS	2.37600E-03	ACCN	0	RATI	1.00000E 00	CD	4.32000E-02	DRAG	0
SOS	1.11666E 03	VLD	0	VLG	0	VLT	0	VCHR	0

TIM	2.00000E 01	GAM	9.00000E 01	VEL	2.03265E 02	ALT	1.88389E 03	WT	2.17237E 06

END VERTICAL SEGMENT
SET GAM= 88.05137

STAGE	1	ALPH	0	MACH	1.85204E-01	XISP	2.65963E 02	DYNP	4.64527247E 01
GRAV	3.21662E 01	ACC	1.38878E 00	THRI	3.02735E 06	CL	0	LIFT	0
DENS	2.24862E-03	ACCN	0	RATI	1.00000E 00	CD	4.32000E-02	DRAG	1.02003E 04
SOS	1.10928E 03	VLD	8.98309E-01	VLG	6.43442E 02	VLT	0	VCHR	8.47555E 02

TIM	1.34500E 02	GAM	2.65816E 01	VEL	5.75047E 03	ALT	1.49630E 05	WT	8.69235E 05
STAGE	1	ALPH	0	MACH	5.24860E 00	XISP	3.03980E 02	DYNP	5.98140124E 01
GRAV	3.17172E 01	ACC	3.80000E 00	THRI	3.31298E 06	CL	0	LIFT	0
DENS	3.61765E-06	ACCN	0	RATI	9.57348E-01	CD	3.25026E-02	DRAG	9.88198E 03
SOS	1.09562E 03	VLD	2.54404E 02	VLG	3.48650E 03	VLT	0	VCHR	9.43809E 03

VSTAG REACHED

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TIM      1.3[illegible]E 02   GAM      2.16624E 01   VEL      6.97[illegible]9E 03   ALT      1.49630E 05   WT       5.59144E 05
STAGE    2                    ALPH     4.65561E-10   MACH     6.36241E 00   XISP     4.55000E 02   DYNP              0
GRAV     3.171722[illegible] 01   ACC      1.00000E 00   THRI     5.59[illegible]4E 05   CL                0   LIFT              0
DENS     3.61765E-06          ACCN              0    RATI     1.00000E 00   CD                0   DRAG              0
SOS      1.09562[illegible] 03   VLC      2.54404E 02   VLG      3.48650E 03   VLT               0   VCHR     9.43809E 03

TIM      4.[illegible] 02     GAM      1.55412E-01   VEL      2.57[illegible]5E 04   ALT      3.14561E 05   WT       1.43540E 05
STAGE    2                    ALPH     7.45427E 00   MACH     3.04[illegible]3E 01   XISP     4.55000E 02   DYNP              0
GRAV     3.1[illegible] 01    ACC      3.80000E 00   THRI     5.43451E 05   CL                0   LIFT              0
DENS     1.7[illegible]-09    ACCN              0    RATI     9.759[illegible]0E-01   CD                0   DRAG              0
SOS      8.46[illegible] 02   VLC      2.54404E 02   VLG      4.198[illegible]0E 03   VLT      3.87130E 02   VCHR     2.37440E 04

CUTOFF EN[illegible]PLY    COAST=              0    PNT=     8.183532E-04
**********************************************************************************************************************
TIM      1.345[illegible] 02  GAM      2.16624E 01   VEL      6.97079E 03   ALT      1.49630E 05   WT       5.59144E 05
STAGE    2                    ALPH     4.65561E-10   MACH     6.36241E 00   XISP     4.55000E 02   DYNP              0
GRAV     3.171722E 01         ACC      1.00000E 00   THRI     5.59144E 05   CL                0   LIFT              0
DENS     3.61765E-06          ACCN              0    RATI     1.00000E 00   CD                0   DRAG              0
SOS      1.09562E 03          VLC      2.54404E 02   VLG      3.48650E 03   VLT               0   VCHR     9.43809E 03

TIM      2.3[illegible] 02    GAM      3.04587E 00   VEL      1.09726E 04   ALT      3.44287E 05   WT       4.02461E 05
STAGE    2                    ALPH     1.32737E 01   MACH     1.29621E 01   XISP     4.55000E 02   DYNP              0
GRAV     3.1[illegible] 01    ACC      1.38931E 00   THRI     5.59[illegible]4E 05   CL                0   LIFT              0
DENS     2.78[illegible]-10   ACCN              0    RATI     1.00000E 00   CD                0   DRAG              0
SOS      8.46[illegible] 02   VLC      2.54404E 02   VLG      4.23392E 03   VLT      6.24181E 01   VCHR     1.41279E 04

TIM      4.7[illegible] 02    GAM     -1.78430E-01   VEL      2.57691E 04   ALT      3.02158E 05   WT       1.43907E 05
STAGE    2                    ALPH     7.05886E 00   MACH     3.04[illegible]5E 01   XISP     4.55000E 02   DYNP              0
GRAV     3.1[illegible] 01    ACC      3.80000E 00   THRI     5.46[illegible]7E 05   CL                0   LIFT              0
DENS     3.62[illegible]-09   ACCN              0    RATI     9.78[illegible]6E-01   CD                0   DRAG              0
SOS      8.46512E 02          VLC      2.54404E 02   VLG      4.17723E 03   VLT      3.67930E 02   VCHR     2.87149E 04

ENDII    GAMK=    8.874002E 01          PNT=     7.793841E-04
**********************************************************************************************************************
TIM              0            GAM      9.00000E 01   VEL              0   ALT              0   WT       2.40000E 06
STAGE    1                    ALPH             0    MACH             0   XISP     2.63580E 02   DYNP              0
GRAV     3.21[illegible] 01   ACC      1.25000E 00   THRI     3.00[illegible]0E 06   CL                0   LIFT              0
DENS     2.37[illegible]-03   ACCN              0    RATI     1.00000E 00   CD     4.32000E-02   DRAG              0
SOS      1.11[illegible] 03   VLC              0    VLG              0   VLT               0   VCHR              0

TIM      2.0[illegible] 01    GAM      9.00000E 01   VEL      2.03285E 02   ALT      1.88389E 03   WT       2.17237E 06
END VERTICAL [illegible]
SET GAM=,    [illegible]
STAGE    1                    ALPH             0    MACH     1.83254E-01   XISP     2.65963E 02   DYNP 4.64527247E 01
GRAV     3.21[illegible] 01   ACC      1.38878E 00   THRI     3.02713E 06   CL                0   LIFT              0
DENS     2.2[illegible]-03    ACCN              0    RATI     1.00000E 00   CD     4.32000E-02   DRAG     1.02003E 04
SOS      1.1[illegible] 03    VLC      8.95309E-01   VLG      6.43442E 02   VLT               0   VCHR     8.47555E 02

TIM      1.35[illegible] 02   GAM      2.93459E 01   VEL      5.75[illegible]0E 03   ALT      1.57699E 05   WT       8.62464E 05
STAGE    1                    ALPH             0    MACH     5.2[illegible]7E 03   XISP     3.03990E 02   DYNP 4.37559649E 01
GRAV     3.1[illegible] 01    ACC      3.80000E 00   THRI     3.26471E 06   CL                0   LIFT              0
DENS     2.64475E-06          ACCN              0    RATI     9.49[illegible]0E-01   CD     5.25957E-02   DRAG     7.24965E 03
SOS      1.1[illegible] 03    VLC      2.44489E 02   VLG      3.57[illegible]2E 03   VLT               0   VCHR     9.51441E 03

VSTAG REACHED

TIM      1.351[illegible] 02  GAM      2.39389E 01   VEL      6.94[illegible]4E 03   ALT      1.57699E 05   WT       5.52134E 05
STAGE    2                    ALPH             0    MACH     6.28[illegible]0E 00   XISP     4.55000E 02   DYNP              0
GRAV     3.14[illegible] 01   ACC      1.00000E 00   THRI     5.52134E 05   CL                0   LIFT              0
DENS     2.64475E-06          ACCN              0    RATI     1.00000E 00   CD                0   DRAG              0
SOS      1.16[illegible] 03   VLC      2.44489E 02   VLG      3.57[illegible]2E 03   VLT               0   VCHR     9.51441E 03

TIM      4.77[illegible] 02   GAM      2.58967E 00   VEL      2.57714E [illegible]4   ALT      3.09745E 05   WT       1.37277E 05
STAGE    2                    ALPH     7.47442E 00   MACH     3.04[illegible]2E [illegible]   XISP     4.55000E 02   DYNP              0
GRAV     3.06570E 01          ACC      3.80000E 00   THRI     5.21[illegible]3E [illegible]   CL                0   LIFT              0
DENS     1.27[illegible]-14   ACCN              0    RATI     9.447[illegible]5E-[illegible]   CD                0   DRAG              0
SOS      8.46512E 02          VLC      2.44489E 02   VLG      4.70[illegible]9E 03   VLT      4.01558E 02   VCHR     2.90866E 04

ALPNT=  -3.[illegible]E 06    ALK=     2.201704E 06   GMPNT=  -6.566814E 03   CMK=     2.745872E 01
DETER=  -1.012243E 10    DELGAM=  -4.215552E-03   DELPNT=  4.629308E-06   GAMK=    8.864715E 01   PNT=     7.840133E-04
**********************************************************************************************************************
TIM              0            GAM      9.00000E 01   VEL              0   ALT              0   WT       2.40000E 06
STAGE    1                    ALPH             0    MACH             0   XISP     2.63580E 02   DYNP              0
GRAV     3.21749E 01          ACC      1.25000E 00   THRI     3.00000E 06   CL                0   LIFT              0
DENS     2.37590E-03          ACCN              0    RATI     1.00000E 00   CD     4.32000E-02   DRAG              0
SOS      1.11646E 03          VLC              0    VLG              0   VLT               0   VCHR              0

TIM      2.00[illegible] 01   GAM      9.00000E 01   VEL      2.03285E 02   ALT      1.88389E 03   WT       2.17237E 06
END VERTICAL [illegible]
SET GAM=,    [illegible]
STAGE    1                    ALPH             0    MACH     1.83254E-01   XISP     2.65963E 02   DYNP 4.64527247E 01
GRAV     3.21[illegible] 01   ACC      1.38878E 00   THRI     3.02713E 06   CL                0   LIFT              0
DENS     2.2[illegible]-03    ACCN              0    RATI     1.00000E 00   CD     4.32000E-02   DRAG     1.02003E 04
SOS      1.1[illegible] 03    VLC      8.98309E-01   VLG      6.43442E 02   VLT               0   VCHR     8.47555E 02
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TIM	1.34500E 02	GAM	2.64466E 01	VEL	5.75353E 03	ALT	1.49325E 05	WT	8.69235E 05
STAGE	1	ALPH	0	MACH	5.25400E 00	XISP	3.03972E 02	DYNP	6.06184494E 01
GRAV	3.17182E 01	ACC	3.80000E 00	THRI	3.31311E 06	CL	0	LIFT	0
DENS	3.66240E-06	ACCN	0	RATI	9.57601E-01	CD	3.24920E-02	DRAG	1.00116E 04
SOS	1.09508E 03	VLD	2.54917E 02	VLG	3.48280E 03	VLT	0	VCHR	9.43804E 03

VSTAG REACHED

TIM	1.34500E 02	GAM	2.15536E 01	VEL	6.97500E 03	ALT	1.49325E 05	WT	5.59144E 05
STAGE	2	ALPH	0	MACH	6.36941E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.17182E 01	ACC	1.00000E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	3.66240E-06	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	1.09508E 03	VLD	2.54917E 02	VLG	3.48280E 03	VLT	0	VCHR	9.43804E 03
TIM	4.72500E 02	GAM	7.12489E-03	VEL	2.57698E 04	ALT	3.04531E 05	WT	1.43784E 05
STAGE	2	ALPH	7.39952E 00	MACH	3.04423E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12546E 01	ACC	3.80000E 00	THRI	5.46381E 05	CL	0	LIFT	0
DENS	3.13701E-09	ACCN	0	RATI	9.77174E-01	CD	0	DRAG	0
SOS	6.46512E 02	VLD	2.54917E 02	VLG	4.17330E 03	VLT	3.83701E 02	VCHR	2.87286E 04
TIM	0	GAM	9.00000E 01	VEL	0	ALT	0	WT	2.40000E 06
STAGE	1	ALPH	0	MACH	0	XISP	2.63580E 02	DYNP	0
GRAV	3.21740E 01	ACC	1.25000E 00	THRI	3.00000E 06	CL	0	LIFT	0
DENS	2.37690E-03	ACCN	0	RATI	1.00000E 00	CD	4.32000E-02	DRAG	0
SOS	1.11646E 03	VLD	0	VLG	0	VLT	0	VCHR	0
TIM	1.00000E 00	GAM	9.00000E 01	VEL	8.13937E 00	ALT	4.05367E 00	WT	2.38862E 06
STAGE	1	ALPH	0	MACH	7.29047E-03	XISP	2.63585E 02	DYNP	7.87247041E-02
GRAV	3.21740E 01	ACC	1.25597E 00	THRI	3.00006E 06	CL	0	LIFT	0
DENS	2.37662E-03	ACCN	0	RATI	1.00000E 00	CD	4.32000E-02	DRAG	1.72868E 01
SOS	1.11644E 03	VLD	7.70731E-05	VLG	3.21740E 01	VLT	0	VCHR	4.03134E 01
TIM	2.00000E 00	GAM	9.00000E 01	VEL	1.64724E 01	ALT	1.63433E 01	WT	2.37724E 06
STAGE	1	ALPH	0	MACH	1.47551E-02	XISP	2.63601E 02	DYNP	3.22320940E-01
GRAV	3.21739E 01	ACC	1.26204E 00	THRI	3.00024E 06	CL	0	LIFT	0
DENS	2.37576E-03	ACCN	0	RATI	1.00000E 00	CD	4.32000E-02	DRAG	7.07770E 01
SOS	1.11639E 03	VLD	6.29755E-04	VLG	6.43479E 01	VLT	0	VCHR	8.08209E 01
TIM	3.00000E 00	GAM	9.00000E 01	VEL	2.50022E 01	ALT	3.70641E 01	WT	2.36585E 06
STAGE	1	ALPH	0	MACH	2.23971E-02	XISP	2.63627E 02	DYNP	7.42105483E-01
GRAV	3.21739E 01	ACC	1.26820E 00	THRI	3.00053E 06	CL	0	LIFT	0
DENS	2.37432E-03	ACCN	0	RATI	1.00000E 00	CD	4.32000E-02	DRAG	1.62956E 02
SOS	1.11631E 03	VLD	2.17058E-03	VLG	9.65218E 01	VLT	0	VCHR	1.21526E 02
TIM	4.00000E 00	GAM	9.00000E 01	VEL	3.37317E 01	ALT	6.64142E 01	WT	2.35447E 06
STAGE	1	ALPH	0	MACH	3.02281E-02	XISP	2.63664E 02	DYNP	1.34962352E 00
GRAV	3.21738E 01	ACC	1.27445E 00	THRI	3.00096E 06	CL	0	LIFT	0
DENS	2.37228E-03	ACCN	0	RATI	1.00000E 00	CD	4.32000E-02	DRAG	2.96350E 02
SOS	1.11620E 03	VLD	5.25372E-03	VLG	1.28696E 02	VLT	0	VCHR	1.62432E 02
TIM	5.00000E 00	GAM	9.00000E 01	VEL	4.26640E 01	ALT	1.04595E 02	WT	2.34309E 06
STAGE	1	ALPH	0	MACH	3.82276E-02	XISP	2.63712E 02	DYNP	2.15662612E 00
GRAV	3.21737E 01	ACC	1.28080E 00	THRI	3.00151E 06	CL	0	LIFT	0
DENS	2.36963E-03	ACCN	0	RATI	1.00000E 00	CD	4.32000E-02	DRAG	4.73564E 02
SOS	1.11605E 03	VLD	1.04764E-02	VLG	1.60869E 02	VLT	0	VCHR	2.03543E 02
TIM	6.00000E 00	GAM	9.00000E 01	VEL	5.18024E 01	ALT	1.51811E 02	WT	2.33171E 06
STAGE	1	ALPH	0	MACH	4.64232E-02	XISP	2.63772E 02	DYNP	3.17504517E 00
GRAV	3.21735E 01	ACC	1.28725E 00	THRI	3.00239E 06	CL	0	LIFT	0
DENS	2.36636E-03	ACCN	0	RATI	1.00000E 00	CD	4.32000E-02	DRAG	6.97194E 02
SOS	1.11587E 03	VLD	1.84805E-02	VLG	1.93043E 02	VLT	0	VCHR	2.44863E 02
TIM	7.00000E 00	GAM	9.00000E 01	VEL	6.11499E 01	ALT	2.08270E 02	WT	2.32033E 06
STAGE	1	ALPH	0	MACH	5.46108E-02	XISP	2.63843E 02	DYNP	4.41696560E 00
GRAV	3.21733E 01	ACC	1.29380E 00	THRI	3.00300E 06	CL	0	LIFT	0
DENS	2.36245E-03	ACCN	0	RATI	1.00000E 00	CD	4.32000E-02	DRAG	9.69902E 02
SOS	1.11566E 03	VLD	2.99536E-02	VLG	2.25216E 02	VLT	0	VCHR	2.86394E 02
TIM	8.00000E 00	GAM	9.00000E 01	VEL	7.07099E 01	ALT	2.74182E 02	WT	2.30895E 06
STAGE	1	ALPH	0	MACH	6.33941E-02	XISP	2.63927E 02	DYNP	5.89459497E 00
GRAV	3.21731E 01	ACC	1.30044E 00	THRI	3.00395E 06	CL	0	LIFT	0
DENS	2.35789E-03	ACCN	0	RATI	1.00000E 00	CD	4.32000E-02	DRAG	1.29437E 03
SOS	1.11540E 03	VLD	4.56305E-02	VLG	2.57390E 02	VLT	0	VCHR	3.28142E 02
TIM	9.00000E 00	GAM	9.00000E 01	VEL	8.04857E 01	ALT	3.49761E 02	WT	2.29756E 06
STAGE	1	ALPH	0	MACH	7.21772E-02	XISP	2.64022E 02	DYNP	7.62023009E 00
GRAV	3.21729E 01	ACC	1.30719E 00	THRI	3.00504E 06	CL	0	LIFT	0
DENS	2.35267E-03	ACCN	0	RATI	1.00000E 00	CD	4.32000E-02	DRAG	1.67329E 03
SOS	1.11511E 03	VLD	6.62946E-02	VLG	2.89563E 02	VLT	0	VCHR	3.70110E 02
TIM	1.00000E 01	GAM	9.00000E 01	VEL	9.04806E 01	ALT	4.35226E 02	WT	2.28618E 06

STAGE	1	ALPH	0	MACH	8.11643E-02	XISP	2.64331E 02	DYNP	9.60622079E 00
GRAV	3.21726E 01	ACC	1.31405E 00	THRI	3.00627E 06	CL	0	LIFT	0
DENS	2.34678E-03	ACCN	0	RATI	1.00000E 00	CD	4.32000E-02	DRAG	2.10939E 03
SOS	1.11478E 03	VLD	9.27789E-02	VLG	3.21735E 02	VLT	0	VCHR	4.12303E 02
TIM	1.10000E 01	GAM	9.00000E 01	VEL	1.06698E 02	ALT	5.30797E 02	WT	2.27480E 06
STAGE	1	ALPH	0	MACH	9.03595E-02	XISP	2.64251E 02	DYNP	1.18649307E 01
GRAV	3.21723E 01	ACC	1.32101E 00	THRI	3.00764E 06	CL	0	LIFT	0
DENS	2.34020E-03	ACCN	0	RATI	1.00000E 00	CD	4.32000E-02	DRAG	2.60537E 03
SOS	1.11442E 03	VLD	1.25967E-01	VLG	3.53908E 02	VLT	0	VCHR	4.54724E 02
TIM	1.20000E 01	GAM	9.00000E 01	VEL	1.11142E 02	ALT	6.36697E 02	WT	2.26342E 06
STAGE	1	ALPH	0	MACH	9.97672E-02	XISP	2.64385E 02	DYNP	1.44086951E 01
GRAV	3.21720E 01	ACC	1.32808E 00	THRI	3.00917E 06	CL	0	LIFT	0
DENS	2.33293E-03	ACCN	0	RATI	1.00000E 00	CD	4.32000E-02	DRAG	3.16394E 03
SOS	1.11401E 03	VLD	1.66795E-01	VLG	3.86080E 02	VLT	0	VCHR	4.97378E 02
TIM	1.30000E 01	GAM	9.00000E 01	VEL	1.21815E 02	ALT	7.53156E 02	WT	2.25204E 06
STAGE	1	ALPH	0	MACH	1.09392E-01	XISP	2.64533E 02	DYNP	1.72497752E 01
GRAV	3.21717E 01	ACC	1.33526E 00	THRI	3.01065E 06	CL	0	LIFT	0
DENS	2.32496E-03	ACCN	0	RATI	1.00000E 00	CD	4.32000E-02	DRAG	3.78780E 03
SOS	1.11356E 03	VLD	2.16249E-01	VLG	4.18252E 02	VLT	0	VCHR	5.40270E 02
TIM	1.40000E 01	GAM	9.00000E 01	VEL	1.32721E 02	ALT	8.80404E 02	WT	2.24066E 06
STAGE	1	ALPH	0	MACH	1.19238E-01	XISP	2.64694E 02	DYNP	2.04003099E 01
GRAV	3.21713E 01	ACC	1.34255E 00	THRI	3.01268E 06	CL	0	LIFT	0
DENS	2.31627E-03	ACCN	0	RATI	1.00000E 00	CD	4.32000E-02	DRAG	4.47961E 03
SOS	1.11307E 03	VLD	2.75373E-01	VLG	4.50423E 02	VLT	0	VCHR	5.83403E 02
TIM	1.50000E 01	GAM	9.00000E 01	VEL	1.43864E 02	ALT	1.01868E 03	WT	2.22927E 06
STAGE	1	ALPH	0	MACH	1.29311E-01	XISP	2.64869E 02	DYNP	2.38722641E 01
GRAV	3.21708E 01	ACC	1.34996E 00	THRI	3.01467E 06	CL	0	LIFT	0
DENS	2.30645E-03	ACCN	0	RATI	1.00000E 00	CD	4.32000E-02	DRAG	5.24201E 03
SOS	1.11254E 03	VLD	3.45260E-01	VLG	4.82594E 02	VLT	0	VCHR	6.26783E 02
TIM	1.60000E 01	GAM	9.00000E 01	VEL	1.55247E 02	ALT	1.16821E 03	WT	2.21789E 06
STAGE	1	ALPH	0	MACH	1.39616E-01	XISP	2.65058E 02	DYNP	2.76773736E 01
GRAV	3.21704E 01	ACC	1.35748E 00	THRI	3.01682E 06	CL	0	LIFT	0
DENS	2.29671E-03	ACCN	0	RATI	1.00000E 00	CD	4.32000E-02	DRAG	6.07755E 03
SOS	1.11196E 03	VLD	4.27061E-01	VLG	5.14765E 02	VLT	0	VCHR	6.70415E 02
TIM	1.70000E 01	GAM	9.00000E 01	VEL	1.66876E 02	ALT	1.32925E 03	WT	2.20651E 06
STAGE	1	ALPH	0	MACH	1.50157E-01	XISP	2.65262E 02	DYNP	3.18270871E 01
GRAV	3.21699E 01	ACC	1.36512E 00	THRI	3.01914E 06	CL	0	LIFT	0
DENS	2.28582E-03	ACCN	0	RATI	1.00000E 00	CD	4.32000E-02	DRAG	6.98877E 03
SOS	1.11134E 03	VLD	5.21979E-01	VLG	5.46935E 02	VLT	0	VCHR	7.14302E 02
TIM	1.80000E 01	GAM	9.00000E 01	VEL	1.78752E 02	ALT	1.50205E 03	WT	2.19513E 06
STAGE	1	ALPH	0	MACH	1.60940E-01	XISP	2.65480E 02	DYNP	3.63325051E 01
GRAV	3.21694E 01	ACC	1.37288E 00	THRI	3.02163E 06	CL	0	LIFT	0
DENS	2.27418E-03	ACCN	0	RATI	1.00000E 00	CD	4.32000E-02	DRAG	7.97809E 03
SOS	1.11068E 03	VLD	6.31275E-01	VLG	5.79105E 02	VLT	0	VCHR	7.58452E 02
TIM	1.90000E 01	GAM	9.00000E 01	VEL	1.90880E 02	ALT	1.68684E 03	WT	2.18375E 06
STAGE	1	ALPH	0	MACH	1.71970E-01	XISP	2.65714E 02	DYNP	4.12043151E 01
GRAV	3.21688E 01	ACC	1.38077E 00	THRI	3.02429E 06	CL	0	LIFT	0
DENS	2.26178E-03	ACCN	0	RATI	1.00000E 00	CD	4.32000E-02	DRAG	9.04787E 03
SOS	1.10996E 03	VLD	7.56262E-01	VLG	6.11274E 02	VLT	0	VCHR	8.02867E 02
TIM	2.00000E 01	GAM	9.00000E 01	VEL	2.03265E 02	ALT	1.88389E 03	WT	2.17237E 06

END VERTICAL SEGMENT
SET GAM=, 88.64715

STAGE	1	ALPH	0	MACH	1.83254E-01	XISP	2.65963E 02	DYNP	4.64527247E 01
GRAV	3.21682E 01	ACC	1.38878E 00	THRI	3.02713E 06	CL	0	LIFT	0
DENS	2.24862E-03	ACCN	0	RATI	1.00000E 00	CD	4.32000E-02	DRAG	1.02003E 04
SOS	1.10920E 03	VLD	8.98309E-01	VLG	6.43442E 02	VLT	0	VCHR	8.47555E 02
TIM	2.10000E 01	GAM	8.84227E 01	VEL	2.15921E 02	ALT	2.09339E 03	WT	2.16098E 06
STAGE	1	ALPH	0	MACH	1.94805E-01	XISP	2.66228E 02	DYNP	5.20925540E 01
GRAV	3.21675E 01	ACC	1.39691E 00	THRI	3.03014E 06	CL	0	LIFT	0
DENS	2.23469E-03	ACCN	0	RATI	1.00000E 00	CD	4.32000E-02	DRAG	1.14388E 04
SOS	1.10839E 03	VLD	1.05884E 00	VLG	6.75600E 02	VLT	0	VCHR	8.92520E 02
TIM	2.20000E 01	GAM	8.81772E 01	VEL	2.28845E 02	ALT	2.31566E 03	WT	2.14960E 06
STAGE	1	ALPH	0	MACH	2.06626E-01	XISP	2.66509E 02	DYNP	5.81300926E 01
GRAV	3.21668E 01	ACC	1.40518E 00	THRI	3.03335E 06	CL	0	LIFT	0
DENS	2.21998E-03	ACCN	0	RATI	1.00000E 00	CD	4.32000E-02	DRAG	1.27645E 04
SOS	1.10753E 03	VLD	1.23936E 00	VLG	7.07753E 02	VLT	0	VCHR	9.37768E 02

TIM	2.30000E 01	GAM	8.79103E 01	VEL	2.42042E 02	ALT	2.55094E 03	WT	2.13822E 06
STAGE	1	ALPH	0	MACH	2.18722E-01	XISP	2.66807E 02	DYNP	6.45744708E 01
GRAV	3.21661E 01	ACC	1.41358E 00	THRI	3.03673E 06	CL	0	LIFT	0
DENS	2.20449E-03	ACCN	0	RATI	1.00000E 00	CD	4.32000E-02	DRAG	1.41796E 04
SOS	1.10662E 03	VLD	1.44139E 00	VLG	7.39901E 02	VLT	0	VCHR	9.83305E 02
TIM	2.40000E 01	GAM	8.76219E 01	VEL	2.55518E 02	ALT	2.79951E 03	WT	2.12684E 06
STAGE	1	ALPH	0	MACH	2.31100E-01	XISP	2.67121E 02	DYNP	7.14342326E 01
GRAV	3.21653E 01	ACC	1.42212E 00	THRI	3.04931E 06	CL	0	LIFT	0
DENS	2.18822E-03	ACCN	0	RATI	1.00000E 00	CD	4.32000E-02	DRAG	1.56859E 04
SOS	1.10566E 03	VLD	1.66652E 00	VLG	7.72842E 02	VLT	0	VCHR	1.02914E 03
TIM	2.50000E 01	GAM	8.73118E 01	VEL	2.69280E 02	ALT	3.06163E 03	WT	2.11546E 06
STAGE	1	ALPH	0	MACH	2.43771E-01	XISP	2.67453E 02	DYNP	7.87172835E 01
GRAV	3.21645E 01	ACC	1.43080E 00	THRI	3.04409E 06	CL	0	LIFT	0
DENS	2.17117E-03	ACCN	0	RATI	1.00000E 00	CD	4.32000E-02	DRAG	1.72852E 04
SOS	1.10464E 03	VLD	1.91640E 00	VLG	8.04175E 02	VLT	0	VCHR	1.07527E 03
TIM	2.60000E 01	GAM	8.69800E 01	VEL	2.83332E 02	ALT	3.33756E 03	WT	2.10407E 06
STAGE	1	ALPH	0	MACH	2.56740E-01	XISP	2.67802E 02	DYNP	8.64308378E 01
GRAV	3.21637E 01	ACC	1.43963E 00	THRI	3.04806E 06	CL	0	LIFT	0
DENS	2.15332E-03	ACCN	0	RATI	1.00000E 00	CD	4.32000E-02	DRAG	1.89790E 04
SOS	1.10357E 03	VLD	2.19272E 00	VLG	8.36300E 02	VLT	0	VCHR	1.12171E 03
TIM	2.70000E 01	GAM	8.66265E 01	VEL	2.97681E 02	ALT	3.62759E 03	WT	2.09269E 06
STAGE	1	ALPH	0	MACH	2.70018E-01	XISP	2.68169E 02	DYNP	9.45813638E 01
GRAV	3.21628E 01	ACC	1.44860E 00	THRI	3.05224E 06	CL	0	LIFT	0
DENS	2.13466E-03	ACCN	0	RATI	1.00000E 00	CD	4.32000E-02	DRAG	2.07687E 04
SOS	1.10245E 03	VLD	2.49723E 00	VLG	8.68433E 02	VLT	0	VCHR	1.16846E 03
TIM	2.80000E 01	GAM	8.62516E 01	VEL	3.12334E 02	ALT	3.93199E 03	WT	2.08131E 06
STAGE	1	ALPH	0	MACH	2.83634E-01	XISP	2.68554E 02	DYNP	1.03174528E 02
GRAV	3.21619E 01	ACC	1.45772E 00	THRI	3.05662E 06	CL	0	LIFT	0
DENS	2.11526E-03	ACCN	0	RATI	1.00000E 00	CD	4.32000E-02	DRAG	2.26556E 04
SOS	1.10126E 03	VLD	2.83172E 00	VLG	9.00533E 02	VLT	0	VCHR	1.21553E 03
TIM	2.90000E 01	GAM	8.58553E 01	VEL	3.27298E 02	ALT	4.25102E 03	WT	2.06993E 06
STAGE	1	ALPH	0	MACH	2.97538E-01	XISP	2.68956E 02	DYNP	1.12215137E 02
GRAV	3.21609E 01	ACC	1.46699E 00	THRI	3.06121E 06	CL	0	LIFT	0
DENS	2.09505E-03	ACCN	0	RATI	1.00000E 00	CD	4.32000E-02	DRAG	2.46408E 04
SOS	1.10002E 03	VLD	3.19803E 00	VLG	9.32598E 02	VLT	0	VCHR	1.26293E 03
TIM	3.00000E 01	GAM	8.54380E 01	VEL	3.42581E 02	ALT	4.58496E 03	WT	2.05855E 06
STAGE	1	ALPH	0	MACH	3.11800E-01	XISP	2.69380E 02	DYNP	1.21707079E 02
GRAV	3.21598E 01	ACC	1.47643E 00	THRI	3.06602E 06	CL	0	LIFT	0
DENS	2.07405E-03	ACCN	0	RATI	1.00000E 00	CD	4.32000E-02	DRAG	2.67251E 04
SOS	1.09872E 03	VLD	3.59805E 00	VLG	9.64666E 02	VLT	0	VCHR	1.31066E 03
TIM	3.10000E 01	GAM	8.50000E 01	VEL	3.58190E 02	ALT	4.93410E 03	WT	2.04717E 06
STAGE	1	ALPH	0	MACH	3.26411E-01	XISP	2.69822E 02	DYNP	1.31653255E 02
GRAV	3.21588E 01	ACC	1.48603E 00	THRI	3.07165E 06	CL	0	LIFT	0
DENS	2.05227E-03	ACCN	0	RATI	1.00000E 00	CD	4.32000E-02	DRAG	2.89092E 04
SOS	1.09736E 03	VLD	4.03371E 00	VLG	9.96713E 02	VLT	0	VCHR	1.35873E 03
TIM	3.20000E 01	GAM	8.45416E 01	VEL	3.74134E 02	ALT	5.29871E 03	WT	2.03578E 06
STAGE	1	ALPH	0	MACH	3.41383E-01	XISP	2.70283E 02	DYNP	1.42055523E 02
GRAV	3.21576E 01	ACC	1.49579E 00	THRI	3.07600E 06	CL	0	LIFT	0
DENS	2.02971E-03	ACCN	0	RATI	1.00000E 00	CD	4.32000E-02	DRAG	3.11933E 04
SOS	1.09593E 03	VLD	4.50698E 00	VLG	1.02874E 03	VLT	0	VCHR	1.40714E 03
TIM	3.30000E 01	GAM	8.40634E 01	VEL	3.90421E 02	ALT	5.67907E 03	WT	2.02440E 06
STAGE	1	ALPH	0	MACH	3.56729E-01	XISP	2.70764E 02	DYNP	1.52914622E 02
GRAV	3.21565E 01	ACC	1.50573E 00	THRI	3.08178E 06	CL	0	LIFT	0
DENS	2.00638E-03	ACCN	0	RATI	1.00000E 00	CD	4.32000E-02	DRAG	3.35778E 04
SOS	1.09445E 03	VLD	5.01986E 00	VLG	1.06074E 03	VLT	0	VCHR	1.45592E 03
TIM	3.40000E 01	GAM	8.35658E 01	VEL	4.07060E 02	ALT	6.07546E 03	WT	2.01302E 06
STAGE	1	ALPH	0	MACH	3.72460E-01	XISP	2.71265E 02	DYNP	1.64230102E 02
GRAV	3.21552E 01	ACC	1.51584E 00	THRI	3.08749E 06	CL	0	LIFT	0
DENS	1.98229E-03	ACCN	0	RATI	1.00000E 00	CD	4.32000E-02	DRAG	3.60626E 04
SOS	1.09290E 03	VLD	5.57439E 00	VLG	1.09270E 03	VLT	0	VCHR	1.50505E 03
TIM	3.50000E 01	GAM	8.30495E 01	VEL	4.24060E 02	ALT	6.48815E 03	WT	2.00164E 06
STAGE	1	ALPH	0	MACH	3.88591E-01	XISP	2.71788E 02	DYNP	1.76000250E 02
GRAV	3.21540E 01	ACC	1.52614E 00	THRI	3.09343E 06	CL	0	LIFT	0
DENS	1.95744E-03	ACCN	0	RATI	1.00000E 00	CD	4.32000E-02	DRAG	3.86471E 04
SOS	1.09128E 03	VLD	6.17265E 00	VLG	1.12464E 03	VLT	0	VCHR	1.55456E 03
TIM	3.60000E 01	GAM	8.25149E 01	VEL	4.41432E 02	ALT	6.91744E 03	WT	1.99026E 06

STAGE	1	ALPH	0	MACH	4.05135E-01	XISP	2.72331E 02	DYNP	1.88222011E 02
GRAV	3.21527E 01	ACC	1.53663E 00	THRI	3.09961E 06	CL	0	LIFT	0
DENS	1.93185E-03	ACCN	0	RATI	1.00000E 00	CD	4.32000E-02	DRAG	4.13308E 04
SOS	1.08959E 03	VLD	6.81674E 00	VLG	1.15654E 03	VLT	0	VCHR	1.60444E 03
TIM	3.70000E 01	GAM	8.19627E 01	VEL	4.59185E 02	ALT	7.36359E 03	WT	1.97887E 06
STAGE	1	ALPH	0	MACH	4.22109E-01	XISP	2.72895E 02	DYNP	2.00890903E 02
GRAV	3.21513E 01	ACC	1.54730E 00	THRI	3.10604E 06	CL	0	LIFT	0
DENS	1.90552E-03	ACCN	0	RATI	1.00000E 00	CD	4.32000E-02	DRAG	4.41127E 04
SOS	1.08784E 03	VLD	7.50876E 00	VLG	1.18840E 03	VLT	0	VCHR	1.65471E 03
TIM	3.80000E 01	GAM	8.13936E 01	VEL	4.77331E 02	ALT	7.82688E 03	WT	1.96749E 06
STAGE	1	ALPH	0	MACH	4.39526E-01	XISP	2.73481E 02	DYNP	2.14000936E 02
GRAV	3.21498E 01	ACC	1.55818E 00	THRI	3.11271E 06	CL	0	LIFT	0
DENS	1.87848E-03	ACCN	0	RATI	1.00000E 00	CD	4.32000E-02	DRAG	4.69915E 04
SOS	1.08601E 03	VLD	8.25087E 00	VLG	1.22021E 03	VLT	0	VCHR	1.70537E 03
TIM	3.90000E 01	GAM	8.06084E 01	VEL	4.95879E 02	ALT	8.30759E 03	WT	1.95611E 06
STAGE	1	ALPH	0	MACH	4.57405E-01	XISP	2.74089E 02	DYNP	2.27544519E 02
GRAV	3.21484E 01	ACC	1.56927E 00	THRI	3.11963E 06	CL	0	LIFT	0
DENS	1.85074E-03	ACCN	0	RATI	1.00000E 00	CD	4.32000E-02	DRAG	4.99655E 04
SOS	1.08411E 03	VLD	9.04521E 00	VLG	1.25197E 03	VLT	0	VCHR	1.75644E 03
TIM	4.00000E 01	GAM	8.02076E 01	VEL	5.14843E 02	ALT	8.80599E 03	WT	1.94473E 06
STAGE	1	ALPH	0	MACH	4.75762E-01	XISP	2.74720E 02	DYNP	2.41512368E 02
GRAV	3.21468E 01	ACC	1.58057E 00	THRI	3.12681E 06	CL	0	LIFT	0
DENS	1.82230E-03	ACCN	0	RATI	1.00000E 00	CD	4.32000E-02	DRAG	5.30326E 04
SOS	1.08214E 03	VLD	9.89394E 00	VLG	1.28368E 03	VLT	0	VCHR	1.80791E 03
TIM	4.10000E 01	GAM	7.95922E 01	VEL	5.34233E 02	ALT	9.32236E 03	WT	1.93335E 06
STAGE	1	ALPH	0	MACH	4.94614E-01	XISP	2.75373E 02	DYNP	2.55893413E 02
GRAV	3.21452E 01	ACC	1.59208E 00	THRI	3.13424E 06	CL	0	LIFT	0
DENS	1.79320E-03	ACCN	0	RATI	1.00000E 00	CD	4.32000E-02	DRAG	5.61905E 04
SOS	1.08010E 03	VLD	1.07992E 01	VLG	1.31533E 03	VLT	0	VCHR	1.85981E 03
TIM	4.20000E 01	GAM	7.89628E 01	VEL	5.54061E 02	ALT	9.85697E 03	WT	1.92197E 06
STAGE	1	ALPH	0	MACH	5.13982E-01	XISP	2.76049E 02	DYNP	2.70674520E 02
GRAV	3.21436E 01	ACC	1.60381E 00	THRI	3.14194E 06	CL	0	LIFT	0
DENS	1.76344E-03	ACCN	0	RATI	1.00000E 00	CD	4.32224E-02	DRAG	5.94670E 04
SOS	1.07798E 03	VLD	1.17634E 01	VLG	1.34691E 03	VLT	0	VCHR	1.91214E 03
TIM	4.30000E 01	GAM	7.83203E 01	VEL	5.74325E 02	ALT	1.04101E 04	WT	1.91058E 06
STAGE	1	ALPH	0	MACH	5.33869E-01	XISP	2.76533E 02	DYNP	2.85824623E 02
GRAV	3.21419E 01	ACC	1.61448E 00	THRI	3.14744E 06	CL	0	LIFT	0
DENS	1.73306E-03	ACCN	0	RATI	1.00000E 00	CD	4.32542E-02	DRAG	6.28417E 04
SOS	1.07578E 03	VLD	1.27891E 01	VLG	1.37842E 03	VLT	0	VCHR	1.96489E 03
TIM	4.40000E 01	GAM	7.76654E 01	VEL	5.94998E 02	ALT	1.09819E 04	WT	1.89920E 06
STAGE	1	ALPH	0	MACH	5.54259E-01	XISP	2.76955E 02	DYNP	3.01286737E 02
GRAV	3.21401E 01	ACC	1.62487E 00	THRI	3.15225E 06	CL	0	LIFT	0
DENS	1.70207E-03	ACCN	0	RATI	1.00000E 00	CD	4.32868E-02	DRAG	6.62912E 04
SOS	1.07350E 03	VLD	1.38764E 01	VLG	1.40986E 03	VLT	0	VCHR	2.01804E 03
TIM	4.50000E 01	GAM	7.69989E 01	VEL	6.16090E 02	ALT	1.15727E 04	WT	1.88782E 06
STAGE	1	ALPH	0	MACH	5.75170E-01	XISP	2.77391E 02	DYNP	3.17034563E 02
GRAV	3.21383E 01	ACC	1.63543E 00	THRI	3.15721E 06	CL	0	LIFT	0
DENS	1.67051E-03	ACCN	0	RATI	1.00000E 00	CD	4.33203E-02	DRAG	6.98100E 04
SOS	1.07114E 03	VLD	1.50334E 01	VLG	1.44122E 03	VLT	0	VCHR	2.07159E 03
TIM	4.60000E 01	GAM	7.63216E 01	VEL	6.37610E 02	ALT	1.21826E 04	WT	1.87644E 06
STAGE	1	ALPH	0	MACH	5.96820E-01	XISP	2.77841E 02	DYNP	3.33042129E 02
GRAV	3.21364E 01	ACC	1.64617E 00	THRI	3.16233E 06	CL	0	LIFT	0
DENS	1.63840E-03	ACCN	0	RATI	1.00000E 00	CD	4.33546E-02	DRAG	7.33930E 04
SOS	1.06870E 03	VLD	1.62559E 01	VLG	1.47249E 03	VLT	0	VCHR	2.12554E 03
TIM	4.70000E 01	GAM	7.56343E 01	VEL	6.59571E 02	ALT	1.28118E 04	WT	1.86506E 06
STAGE	1	ALPH	0	MACH	6.18630E-01	XISP	2.78305E 02	DYNP	3.49281412E 02
GRAV	3.21345E 01	ACC	1.65710E 00	THRI	3.16762E 06	CL	0	LIFT	0
DENS	1.60576E-03	ACCN	0	RATI	1.00000E 00	CD	4.33898E-02	DRAG	7.70342E 04
SOS	1.06618E 03	VLD	1.75479E 01	VLG	1.50366E 03	VLT	0	VCHR	2.17991E 03
TIM	4.80000E 01	GAM	7.49376E 01	VEL	6.81986E 02	ALT	1.34605E 04	WT	1.85367E 06
STAGE	1	ALPH	0	MACH	6.41221E-01	XISP	2.78784E 02	DYNP	3.65722304E 02
GRAV	3.21325E 01	ACC	1.66822E 00	THRI	3.17307E 06	CL	0	LIFT	0
DENS	1.57265E-03	ACCN	0	RATI	1.00000E 00	CD	4.34260E-02	DRAG	8.07274E 04
SOS	1.06357E 03	VLD	1.89111E 01	VLG	1.53474E 03	VLT	0	VCHR	2.23470E 03
TIM	4.90000E 01	GAM	7.42324E 01	VEL	7.04865E 02	ALT	1.41290E 04	WT	1.84229E 06

STAGE	1	ALPH	0	MACH	6.64415E-01	XISP	2.79277E 02	DYNP	3.82332592E 02
GRAV	3.21304E 01	ACC	1.67955E 00	THRI	3.17868E 06	CL	0	LIFT	0
DENS	1.53907E-03	ACCN	0	RATI	1.00000E 00	CD	4.34631E-02	DRAG	8.44660E 04
SOS	1.06088E 03	VLD	2.03472E 01	VLG	1.56572E 03	VLT	0	VCHR	2.28992E 03
TIM	5.00000E 01	GAM	7.35195E 01	VEL	7.28223E 02	ALT	1.48173E 04	WT	1.83091E 06
STAGE	1	ALPH	0	MACH	6.88235E-01	XISP	2.79785E 02	DYNP	3.99077938E 02
GRAV	3.21283E 01	ACC	1.69108E 00	THRI	3.18447E 06	CL	0	LIFT	0
DENS	1.50508E-03	ACCN	0	RATI	1.00000E 00	CD	4.35012E-02	DRAG	8.82427E 04
SOS	1.05810E 03	VLD	2.18579E 01	VLG	1.59658E 03	VLT	0	VCHR	2.34558E 03
TIM	5.10000E 01	GAM	7.27996E 01	VEL	7.52071E 02	ALT	1.55256E 04	WT	1.81953E 06
STAGE	1	ALPH	0	MACH	7.12706E-01	XISP	2.80308E 02	DYNP	4.15921869E 02
GRAV	3.21261E 01	ACC	1.70284E 00	THRI	3.19042E 06	CL	0	LIFT	0
DENS	1.47070E-03	ACCN	0	RATI	1.00000E 00	CD	4.35403E-02	DRAG	9.20500E 04
SOS	1.05523E 03	VLD	2.34446E 01	VLG	1.62733E 03	VLT	0	VCHR	2.40168E 03
TIM	5.20000E 01	GAM	7.20734E 01	VEL	7.76423E 02	ALT	1.62542E 04	WT	1.80815E 06
STAGE	1	ALPH	0	MACH	7.37852E-01	XISP	2.80846E 02	DYNP	4.32825782E 02
GRAV	3.21239E 01	ACC	1.71482E 00	THRI	3.19654E 06	CL	0	LIFT	0
DENS	1.43597E-03	ACCN	0	RATI	1.00000E 00	CD	4.35806E-02	DRAG	9.58796E 04
SOS	1.05227E 03	VLD	2.51088E 01	VLG	1.65796E 03	VLT	0	VCHR	2.45824E 03
TIM	5.30000E 01	GAM	7.13418E 01	VEL	8.01273E 02	ALT	1.70031E 04	WT	1.79677E 06
STAGE	1	ALPH	0	MACH	7.63681E-01	XISP	2.81398E 02	DYNP	4.49727567E 02
GRAV	3.21216E 01	ACC	1.72408E 00	THRI	3.20283E 06	CL	0	LIFT	0
DENS	1.40094E-03	ACCN	0	RATI	1.00000E 00	CD	4.59586E-02	DRAG	1.05060E 05
SOS	1.04923E 03	VLD	2.68709E 01	VLG	1.68846E 03	VLT	0	VCHR	2.51526E 03
TIM	5.40000E 01	GAM	7.06054E 01	VEL	8.26482E 02	ALT	1.77725E 04	WT	1.78538E 06
STAGE	1	ALPH	0	MACH	7.90072E-01	XISP	2.81966E 02	DYNP	4.66411890E 02
GRAV	3.21192E 01	ACC	1.73047E 00	THRI	3.20929E 06	CL	0	LIFT	0
DENS	1.36563E-03	ACCN	0	RATI	1.00000E 00	CD	5.05085E-02	DRAG	1.19744E 05
SOS	1.04608E 03	VLD	2.88854E 01	VLG	1.71883E 03	VLT	0	VCHR	2.57276E 03
TIM	5.50000E 01	GAM	6.98647E 01	VEL	8.52030E 02	ALT	1.85623E 04	WT	1.77400E 06
STAGE	1	ALPH	0	MACH	8.17022E-01	XISP	2.82549E 02	DYNP	4.82797526E 02
GRAV	3.21168E 01	ACC	1.73651E 00	THRI	3.21592E 06	CL	0	LIFT	0
DENS	1.33010E-03	ACCN	0	RATI	1.00000E 00	CD	5.51545E-02	DRAG	1.35352E 05
SOS	1.04285E 03	VLD	3.11860E 01	VLG	1.74905E 03	VLT	0	VCHR	2.63074E 03
TIM	5.60000E 01	GAM	6.91202E 01	VEL	8.77913E 02	ALT	1.93724E 04	WT	1.76262E 06
STAGE	1	ALPH	0	MACH	8.44536E-01	XISP	2.83147E 02	DYNP	4.98818024E 02
GRAV	3.21143E 01	ACC	1.74221E 00	THRI	3.22273E 06	CL	0	LIFT	0
DENS	1.29440E-03	ACCN	0	RATI	1.00000E 00	CD	5.98980E-02	DRAG	1.51871E 05
SOS	1.03952E 03	VLD	3.37931E 01	VLG	1.77913E 03	VLT	0	VCHR	2.68921E 03
TIM	5.70000E 01	GAM	6.83726E 01	VEL	9.04125E 02	ALT	2.02026E 04	WT	1.75124E 06
STAGE	1	ALPH	0	MACH	8.72624E-01	XISP	2.83745E 02	DYNP	5.14406592E 02
GRAV	3.21117E 01	ACC	1.74748E 00	THRI	3.22954E 06	CL	0	LIFT	0
DENS	1.25858E-03	ACCN	0	RATI	1.00000E 00	CD	6.47404E-02	DRAG	1.69279E 05
SOS	1.03610E 03	VLD	3.67269E 01	VLG	1.80906E 03	VLT	0	VCHR	2.74817E 03
TIM	5.80000E 01	GAM	6.76222E 01	VEL	9.30653E 02	ALT	2.10533E 04	WT	1.73986E 06
STAGE	1	ALPH	0	MACH	9.01287E-01	XISP	2.84313E 02	DYNP	5.29488539E 02
GRAV	3.21091E 01	ACC	1.75214E 00	THRI	3.23601E 06	CL	0	LIFT	0
DENS	1.22268E-03	ACCN	0	RATI	1.00000E 00	CD	6.96818E-02	DRAG	1.87541E 05
SOS	1.03258E 03	VLD	4.00078E 01	VLG	1.83883E 03	VLT	0	VCHR	2.80764E 03
TIM	5.90000E 01	GAM	6.68695E 01	VEL	9.57488E 02	ALT	2.19239E 04	WT	1.72847E 06
STAGE	1	ALPH	0	MACH	9.30529E-01	XISP	2.84893E 02	DYNP	5.43995591E 02
GRAV	3.21064E 01	ACC	1.75646E 00	THRI	3.24262E 06	CL	0	LIFT	0
DENS	1.18675E-03	ACCN	0	RATI	1.00000E 00	CD	7.47233E-02	DRAG	2.06619E 05
SOS	1.02897E 03	VLD	4.36557E 01	VLG	1.86844E 03	VLT	0	VCHR	2.86762E 03
TIM	6.00000E 01	GAM	6.61149E 01	VEL	9.84625E 02	ALT	2.28143E 04	WT	1.71709E 06
STAGE	1	ALPH	0	MACH	9.60362E-01	XISP	2.85487E 02	DYNP	5.57865714E 02
GRAV	3.21037E 01	ACC	1.76049E 00	THRI	3.24939E 06	CL	0	LIFT	0
DENS	1.15085E-03	ACCN	0	RATI	1.00000E 00	CD	7.98665E-02	DRAG	2.26472E 05
SOS	1.02526E 03	VLD	4.76902E 01	VLG	1.89788E 03	VLT	0	VCHR	2.92811E 03
TIM	6.10000E 01	GAM	6.53590E 01	VEL	1.01206E 03	ALT	2.37244E 04	WT	1.70571E 06
STAGE	1	ALPH	0	MACH	9.90797E-01	XISP	2.86094E 02	DYNP	5.71039505E 02
GRAV	3.21009E 01	ACC	1.76422E 00	THRI	3.25631E 06	CL	0	LIFT	0
DENS	1.11502E-03	ACCN	0	RATI	1.00000E 00	CD	8.51134E-02	DRAG	2.47050E 05
SOS	1.02146E 03	VLD	5.21304E 01	VLG	1.92715E 03	VLT	0	VCHR	2.98913E 03
TIM	6.20000E 01	GAM	6.46020E 01	VEL	1.03988E 03	ALT	2.46540E 04	WT	1.69433E 06
STAGE	1	ALPH	0	MACH	1.02193E 00	XISP	2.86714E 02	DYNP	5.83559552E 02
GRAV	3.20981E 01	ACC	1.77545E 00	THRI	3.26337E 06	CL	0	LIFT	0

DENS	1.07931E-03	ACCN	0	RATI	1.00000E 00	CD	8.60245E-02	DRAG	2.55169E 05
SOS	1.01756E 03	VLD	5.69068E 01	VLG	1.95673E 03	VLT	0	VCHR	3.05068E 03
TIM	6.30000E 01	GAM	6.38445E 01	VEL	1.06834E 03	ALT	2.56032E 04	WT	1.68295E 06
STAGE	1	ALPH	0	MACH	1.05404E 00	XISP	2.87347E 02	DYNP	5.95654795E 02
GRAV	3.20951E 01	ACC	1.75038E 00	THRI	3.27058E 06	CL	0	LIFT	0
DENS	1.04377E-03	ACCN	0	RATI	1.00000E 00	CD	8.50356E-02	DRAG	2.57463E 05
SOS	1.01357E 03	VLD	6.17793E 01	VLG	1.98514E 03	VLT	0	VCHR	3.11278E 03
TIM	6.40000E 01	GAM	6.30873E 01	VEL	1.09746E 03	ALT	2.65720E 04	WT	1.67156E 06
STAGE	1	ALPH	0	MACH	1.08738E 00	XISP	2.87993E 02	DYNP	6.07304604E 02
GRAV	3.20922E 01	ACC	1.80585E 00	THRI	3.27795E 06	CL	0	LIFT	0
DENS	1.00843E-03	ACCN	0	RATI	1.00000E 00	CD	8.40149E-02	DRAG	2.59348E 05
SOS	1.00947E 03	VLD	6.67245E 01	VLG	2.01355E 03	VLT	0	VCHR	3.17543E 03
TIM	6.50000E 01	GAM	6.23308E 01	VEL	1.12732E 03	ALT	2.75605E 04	WT	1.66018E 06
STAGE	1	ALPH	0	MACH	1.12140E 00	XISP	2.88653E 02	DYNP	6.18468234E 02
GRAV	3.20891E 01	ACC	1.82188E 00	THRI	3.28546E 06	CL	0	LIFT	0
DENS	9.73316E-04	ACCN	0	RATI	1.00000E 00	CD	8.29610E-02	DRAG	2.60802E 05
SOS	1.00528E 03	VLD	7.17353E 01	VLG	2.04237E 03	VLT	0	VCHR	3.23864E 03
TIM	6.60000E 01	GAM	6.15756E 01	VEL	1.15788E 03	ALT	2.85688E 04	WT	1.64880E 06
STAGE	1	ALPH	0	MACH	1.13674E 00	XISP	2.89325E 02	DYNP	6.29104151E 02
GRAV	3.20860E 01	ACC	1.83850E 00	THRI	3.29322E 06	CL	0	LIFT	0
DENS	9.38477E-04	ACCN	0	RATI	1.00000E 00	CD	8.18723E-02	DRAG	2.61806E 05
SOS	1.00099E 03	VLD	7.68038E 01	VLG	2.07069E 03	VLT	0	VCHR	3.30244E 03
TIM	6.70000E 01	GAM	6.08225E 01	VEL	1.18959E 03	ALT	2.95971E 04	WT	1.63742E 06
STAGE	1	ALPH	0	MACH	1.19327E 00	XISP	2.90011E 02	DYNP	6.39170099E 02
GRAV	3.20829E 01	ACC	1.85572E 00	THRI	3.30094E 06	CL	0	LIFT	0
DENS	9.03942E-04	ACCN	0	RATI	1.00000E 00	CD	8.07473E-02	DRAG	2.62340E 05
SOS	9.96586E 02	VLD	8.19220E 01	VLG	2.09820E 03	VLT	0	VCHR	3.36682E 03
TIM	6.80000E 01	GAM	6.00718E 01	VEL	1.22127E 03	ALT	3.06454E 04	WT	1.62604E 06
STAGE	1	ALPH	0	MACH	1.23102E 00	XISP	2.90598E 02	DYNP	6.48615405E 02
GRAV	3.20796E 01	ACC	1.87279E 00	THRI	3.30761E 06	CL	0	LIFT	0
DENS	8.69747E-04	ACCN	0	RATI	1.00000E 00	CD	7.95846E-02	DRAG	2.62363E 05
SOS	9.92081E 02	VLD	8.70812E 01	VLG	2.12671E 03	VLT	0	VCHR	3.43179E 03
TIM	6.90000E 01	GAM	5.93242E 01	VEL	1.25411E 03	ALT	3.17140E 04	WT	1.61465E 06
STAGE	1	ALPH	0	MACH	1.27002E 00	XISP	2.91123E 02	DYNP	6.57364338E 02
GRAV	3.20764E 01	ACC	1.89004E 00	THRI	3.31360E 06	CL	0	LIFT	0
DENS	8.35924E-04	ACCN	0	RATI	1.00000E 00	CD	7.83593E-02	DRAG	2.61828E 05
SOS	9.87469E 02	VLD	9.22715E 01	VLG	2.15471E 03	VLT	0	VCHR	3.49733E 03
TIM	7.00000E 01	GAM	5.85802E 01	VEL	1.28773E 03	ALT	3.28027E 04	WT	1.60327E 06
STAGE	1	ALPH	0	MACH	1.31053E 00	XISP	2.91659E 02	DYNP	6.65374588E 02
GRAV	3.20730E 01	ACC	1.90800E 00	THRI	3.31970E 06	CL	0	LIFT	0
DENS	8.02509E-04	ACCN	0	RATI	1.00000E 00	CD	7.70694E-02	DRAG	2.60656E 05
SOS	9.82748E 02	VLD	9.74803E 01	VLG	2.16169E 03	VLT	0	VCHR	3.56345E 03
TIM	7.10000E 01	GAM	5.78402E 01	VEL	1.32215E 03	ALT	3.39118E 04	WT	1.59189E 06
STAGE	1	ALPH	0	MACH	1.35201E 00	XISP	2.92205E 02	DYNP	6.72604324E 02
GRAV	3.20696E 01	ACC	1.92663E 00	THRI	3.32591E 06	CL	0	LIFT	0
DENS	7.69534E-04	ACCN	0	RATI	1.00000E 00	CD	7.57357E-02	DRAG	2.58929E 05
SOS	9.77916E 02	VLD	1.02697E 02	VLG	2.20974E 03	VLT	0	VCHR	3.63015E 03
TIM	7.20000E 01	GAM	5.71047E 01	VEL	1.35761E 03	ALT	3.50413E 04	WT	1.58051E 06
STAGE	1	ALPH	0	MACH	1.39522E 00	XISP	2.92760E 02	DYNP	6.79011660E 02
GRAV	3.20661E 01	ACC	1.94595E 00	THRI	3.33226E 06	CL	0	LIFT	0
DENS	7.37030E-04	ACCN	0	RATI	1.00000E 00	CD	7.43562E-02	DRAG	2.56634E 05
SOS	9.72970E 02	VLD	1.07909E 02	VLG	2.23628E 03	VLT	0	VCHR	3.69745E 03
TIM	7.30000E 01	GAM	5.63742E 01	VEL	1.39353E 03	ALT	3.61914E 04	WT	1.56913E 06
STAGE	1	ALPH	0	MACH	1.43947E 00	XISP	2.93326E 02	DYNP	6.84321812E 02
GRAV	3.20626E 01	ACC	1.96604E 00	THRI	3.33867E 06	CL	0	LIFT	0
DENS	7.04788E-04	ACCN	0	RATI	1.00000E 00	CD	7.29370E-02	DRAG	2.53705E 05
SOS	9.68086E 02	VLD	1.13106E 02	VLG	2.26299E 03	VLT	0	VCHR	3.76537E 03
TIM	7.40000E 01	GAM	5.56491E 01	VEL	1.43055E 03	ALT	3.73621E 04	WT	1.55774E 06
STAGE	1	ALPH	0	MACH	1.47771E 00	XISP	2.93902E 02	DYNP	6.81844143E 02
GRAV	3.20590E 01	ACC	1.98793E 00	THRI	3.34523E 06	CL	0	LIFT	0
DENS	6.66359E-04	ACCN	0	RATI	1.00000E 00	CD	7.17132E-02	DRAG	2.48545E 05
SOS	9.68086E 02	VLD	1.18256E 02	VLG	2.28958E 03	VLT	0	VCHR	3.83390E 03
TIM	7.50000E 01	GAM	5.49297E 01	VEL	1.46852E 03	ALT	3.85535E 04	WT	1.54636E 06
STAGE	1	ALPH	0	MACH	1.51693E 00	XISP	2.94488E 02	DYNP	6.78668027E 02
GRAV	3.20554E 01	ACC	2.01035E 00	THRI	3.35190E 06	CL	0	LIFT	0
DENS	6.29402E-04	ACCN	0	RATI	1.00000E 00	CD	7.04921E-02	DRAG	2.43174E 05
SOS	9.68086E 02	VLD	1.23334E 02	VLG	2.31593E 03	VLT	0	VCHR	3.90306E 03

TIM	7.60000E 01	GAM	5.42166E 01	VEL	1.50745E 03	ALT	3.97659E 04	WT	1.53498E 06
STAGE	1	ALPH	0	MACH	1.55714E 00	XISP	2.95085E 02	DYNP	6.74794025E 02
GRAV	3.20514E 01	ACC	2.03328E 00	THRI	3.35669E 06	CL	0	LIFT	0
DENS	5.93948E-04	ACCN	0	RATI	1.00000E 00	CD	6.92857E-02	DRAG	2.37648E 05
SOS	9.68086E 02	VLD	1.28336E 02	VLG	2.34205E 03	VLT	0	VCHR	3.97287E 03
TIM	7.70000E 01	GAM	5.35100E 01	VEL	1.54733E 03	ALT	4.09994E 04	WT	1.52360E 06
STAGE	1	ALPH	0	MACH	1.59834E 00	XISP	2.95428E 02	DYNP	6.70205342E 02
GRAV	3.20479E 01	ACC	2.05486E 00	THRI	3.36260E 06	CL	0	LIFT	0
DENS	5.59567E-04	ACCN	0	RATI	1.00000E 00	CD	6.80497E-02	DRAG	2.31822E 05
SOS	9.68086E 02	VLD	1.33256E 02	VLG	2.36793E 03	VLT	0	VCHR	4.04331E 03
TIM	7.80000E 01	GAM	5.28103E 01	VEL	1.58815E 03	ALT	4.22539E 04	WT	1.51222E 06
STAGE	1	ALPH	0	MACH	1.64050E 00	XISP	2.95715E 02	DYNP	6.64872280E 02
GRAV	3.20446E 01	ACC	2.07653E 00	THRI	3.36586E 06	CL	0	LIFT	0
DENS	5.27213E-04	ACCN	0	RATI	1.00000E 00	CD	6.67849E-02	DRAG	2.25703E 05
SOS	9.68086E 02	VLD	1.38086E 02	VLG	2.39358E 03	VLT	0	VCHR	4.11433E 03
TIM	7.90000E 01	GAM	5.21178E 01	VEL	1.62991E 03	ALT	4.35297E 04	WT	1.50083E 06
STAGE	1	ALPH	0	MACH	1.68364E 00	XISP	2.96007E 02	DYNP	6.58809919E 02
GRAV	3.20401E 01	ACC	2.09874E 00	THRI	3.36918E 06	CL	0	LIFT	0
DENS	4.95581E-04	ACCN	0	RATI	1.00000E 00	CD	6.54909E-02	DRAG	2.19311E 05
SOS	9.68086E 02	VLD	1.42819E 02	VLG	2.41899E 03	VLT	0	VCHR	4.18595E 03
TIM	8.00000E 01	GAM	5.14327E 01	VEL	1.67263E 03	ALT	4.48269E 04	WT	1.48945E 06
STAGE	1	ALPH	0	MACH	1.72777E 00	XISP	2.96303E 02	DYNP	6.52037415E 02
GRAV	3.20361E 01	ACC	2.12151E 00	THRI	3.37255E 06	CL	0	LIFT	0
DENS	4.66127E-04	ACCN	0	RATI	1.00000E 00	CD	6.41670E-02	DRAG	2.12669E 05
SOS	9.68086E 02	VLD	1.47448E 02	VLG	2.44435E 03	VLT	0	VCHR	4.25819E 03
TIM	8.10000E 01	GAM	5.07552E 01	VEL	1.71633E 03	ALT	4.61453E 04	WT	1.47807E 06
STAGE	1	ALPH	0	MACH	1.77291E 00	XISP	2.96604E 02	DYNP	6.44574494E 02
GRAV	3.20321E 01	ACC	2.14451E 00	THRI	3.37598E 06	CL	0	LIFT	0
DENS	4.37625E-04	ACCN	0	RATI	1.00000E 00	CD	6.29502E-02	DRAG	2.06248E 05
SOS	9.68086E 02	VLD	1.51967E 02	VLG	2.46908E 03	VLT	0	VCHR	4.33104E 03
TIM	8.20000E 01	GAM	5.00857E 01	VEL	1.76101E 03	ALT	4.74853E 04	WT	1.46669E 06
STAGE	1	ALPH	0	MACH	1.81907E 00	XISP	2.96910E 02	DYNP	6.36432654E 02
GRAV	3.20280E 01	ACC	2.16774E 00	THRI	3.37946E 06	CL	0	LIFT	0
DENS	4.10448E-04	ACCN	0	RATI	1.00000E 00	CD	6.18424E-02	DRAG	2.00059E 05
SOS	9.68086E 02	VLD	1.56387E 02	VLG	2.49377E 03	VLT	0	VCHR	4.40451E 03
TIM	8.30000E 01	GAM	4.94242E 01	VEL	1.80669E 03	ALT	4.88468E 04	WT	1.45531E 06
STAGE	1	ALPH	0	MACH	1.86625E 00	XISP	2.97221E 02	DYNP	6.27637180E 02
GRAV	3.20238E 01	ACC	2.19151E 00	THRI	3.38300E 06	CL	0	LIFT	0
DENS	3.84565E-04	ACCN	0	RATI	1.00000E 00	CD	6.07099E-02	DRAG	1.93682E 05
SOS	9.68086E 02	VLD	1.60702E 02	VLG	2.51831E 03	VLT	0	VCHR	4.47863E 03
TIM	8.40000E 01	GAM	4.87710E 01	VEL	1.85339E 03	ALT	5.02299E 04	WT	1.44392E 06
STAGE	1	ALPH	0	MACH	1.91449E 00	XISP	2.97536E 02	DYNP	6.18216282E 02
GRAV	3.20196E 01	ACC	2.21581E 00	THRI	3.38660E 06	CL	0	LIFT	0
DENS	3.59946E-04	ACCN	0	RATI	1.00000E 00	CD	5.95522E-02	DRAG	1.87137E 05
SOS	9.68086E 02	VLD	1.64909E 02	VLG	2.54241E 03	VLT	0	VCHR	4.55340E 03
TIM	8.50000E 01	GAM	4.81262E 01	VEL	1.90112E 03	ALT	5.16346E 04	WT	1.43254E 06
STAGE	1	ALPH	0	MACH	1.96379E 00	XISP	2.97859E 02	DYNP	6.08199764E 02
GRAV	3.20153E 01	ACC	2.24064E 00	THRI	3.39025E 06	CL	0	LIFT	0
DENS	3.36556E-04	ACCN	0	RATI	1.00000E 00	CD	5.83690E-02	DRAG	1.80447E 05
SOS	9.68086E 02	VLD	1.69000E 02	VLG	2.56638E 03	VLT	0	VCHR	4.62884E 03
TIM	8.60000E 01	GAM	4.74899E 01	VEL	1.94990E 03	ALT	5.30611E 04	WT	1.42116E 06
STAGE	1	ALPH	0	MACH	2.01418E 00	XISP	2.98184E 02	DYNP	5.97618311E 02
GRAV	3.20109E 01	ACC	2.26580E 00	THRI	3.39396E 06	CL	0	LIFT	0
DENS	3.14362E-04	ACCN	0	RATI	1.00000E 00	CD	5.72476E-02	DRAG	1.73901E 05
SOS	9.68086E 02	VLD	1.72974E 02	VLG	2.59009E 03	VLT	0	VCHR	4.70494E 03
TIM	8.70000E 01	GAM	4.68623E 01	VEL	1.99972E 03	ALT	5.45094E 04	WT	1.40978E 06
STAGE	1	ALPH	0	MACH	2.06565E 00	XISP	2.98515E 02	DYNP	5.86496147E 02
GRAV	3.20055E 01	ACC	2.29099E 00	THRI	3.39772E 06	CL	0	LIFT	0
DENS	2.93329E-04	ACCN	0	RATI	1.00000E 00	CD	5.63315E-02	DRAG	1.67933E 05
SOS	9.68086E 02	VLD	1.76839E 02	VLG	2.61357E 03	VLT	0	VCHR	4.78173E 03
TIM	8.80000E 01	GAM	4.62434E 01	VEL	2.05061E 03	ALT	5.59796E 04	WT	1.39839E 06
STAGE	1	ALPH	0	MACH	2.11821E 00	XISP	2.98851E 02	DYNP	5.74865641E 02
GRAV	3.20020E 01	ACC	2.31671E 00	THRI	3.40155E 06	CL	0	LIFT	0
DENS	2.73419E-04	ACCN	0	RATI	1.00000E 00	CD	5.53958E-02	DRAG	1.61869E 05
SOS	9.68086E 02	VLD	1.80597E 02	VLG	2.63680E 03	VLT	0	VCHR	4.85922E 03
TIM	8.90000E 01	GAM	4.56332E 01	VEL	2.10258E 03	ALT	5.74717E 04	WT	1.38701E 06
STAGE	1	ALPH	0	MACH	2.17189E 00	XISP	2.99192E 02	DYNP	5.62763955E 02
GRAV	3.19974E 01	ACC	2.34295E 00	THRI	3.40543E 06	CL	0	LIFT	0

DENS	2.54597E-04	ACCN	0	RATI	1.00000E 00	CD	5.44403E-02	DRAG	1.55726E 05
SOS	9.68086E 02	VLC	1.84246E 02	VLG	2.65980E 03	VLT	0	VCHR	4.93743E 03
TIM	9.00000E 01	GAM	4.50320E 01	VEL	2.15563E 03	ALT	5.89858E 04	WT	1.37563E 06
STAGE	1	ALPH	0	MACH	2.22670E 00	XISP	2.99538E 02	DYNP	5.50229147E 02
GRAV	3.19926E 01	ACC	2.36970E 00	THRI	3.40936E 06	CL	0	LIFT	0
DENS	2.36823E-04	ACCN	0	RATI	1.00000E 00	CD	5.34646E-02	DRAG	1.49531E 05
SOS	9.68086E 02	VLC	1.87782E 02	VLG	2.68255E 03	VLT	0	VCHR	5.01635E 03
TIM	9.10000E 01	GAM	4.44397E 01	VEL	2.20979E 03	ALT	6.05219E 04	WT	1.36425E 06
STAGE	1	ALPH	0	MACH	2.28264E 00	XISP	2.99816E 02	DYNP	5.37298419E 02
GRAV	3.19861E 01	ACC	2.39636E 00	THRI	3.41252E 06	CL	0	LIFT	0
DENS	2.20660E-04	ACCN	0	RATI	1.00000E 00	CD	5.24690E-02	DRAG	1.43297E 05
SOS	9.68086E 02	VLC	1.91201E 02	VLG	2.70507E 03	VLT	0	VCHR	5.09601E 03
TIM	9.20000E 01	GAM	4.38563E 01	VEL	2.26503E 03	ALT	6.20802E 04	WT	1.35287E 06
STAGE	1	ALPH	0	MACH	2.33970E 00	XISP	2.99953E 02	DYNP	5.23992036E 02
GRAV	3.19833E 01	ACC	2.42229E 00	THRI	3.41408E 06	CL	0	LIFT	0
DENS	2.04271E-04	ACCN	0	RATI	1.00000E 00	CD	5.14533E-02	DRAG	1.37043E 05
SOS	9.68086E 02	VLC	1.94501E 02	VLG	2.72735E 03	VLT	0	VCHR	5.17637E 03
TIM	9.30000E 01	GAM	4.32818E 01	VEL	2.32135E 03	ALT	6.36606E 04	WT	1.34148E 06
STAGE	1	ALPH	0	MACH	2.39778E 00	XISP	3.00092E 02	DYNP	5.10347555E 02
GRAV	3.19755E 01	ACC	2.44668E 00	THRI	3.41566E 06	CL	0	LIFT	0
DENS	1.89415E-04	ACCN	0	RATI	1.00000E 00	CD	5.04178E-02	DRAG	1.30789E 05
SOS	9.68086E 02	VLC	1.97680E 02	VLG	2.74939E 03	VLT	0	VCHR	5.25744E 03
TIM	9.40000E 01	GAM	4.27163E 01	VEL	2.37876E 03	ALT	6.52632E 04	WT	1.33010E 06
STAGE	1	ALPH	0	MACH	2.45778E 00	XISP	3.00233E 02	DYNP	4.96409035E 02
GRAV	3.19736E 01	ACC	2.47553E 00	THRI	3.41726E 06	CL	0	LIFT	0
DENS	1.75457E-04	ACCN	0	RATI	1.00000E 00	CD	4.93623E-02	DRAG	1.24553E 05
SOS	9.68086E 02	VLC	2.00736E 02	VLG	2.77120E 03	VLT	0	VCHR	5.33922E 03
TIM	9.50000E 01	GAM	4.21597E 01	VEL	2.43727E 03	ALT	6.68879E 04	WT	1.31872E 06
STAGE	1	ALPH	0	MACH	2.51762E 00	XISP	3.00376E 02	DYNP	4.82219915E 02
GRAV	3.19686E 01	ACC	2.50261E 00	THRI	3.41869E 06	CL	0	LIFT	0
DENS	1.62356E-04	ACCN	0	RATI	1.00000E 00	CD	4.84027E-02	DRAG	1.18641E 05
SOS	9.68086E 02	VLC	2.03668E 02	VLG	2.79277E 03	VLT	0	VCHR	5.42173E 03
TIM	9.60000E 01	GAM	4.16120E 01	VEL	2.49658E 03	ALT	6.85350E 04	WT	1.30734E 06
STAGE	1	ALPH	0	MACH	2.57919E 00	XISP	3.00521E 02	DYNP	4.67817759E 02
GRAV	3.19636E 01	ACC	2.52963E 00	THRI	3.42053E 06	CL	0	LIFT	0
DENS	1.50076E-04	ACCN	0	RATI	1.00000E 00	CD	4.77131E-02	DRAG	1.13458E 05
SOS	9.68086E 02	VLC	2.06494E 02	VLG	2.81411E 03	VLT	0	VCHR	5.50499E 03
TIM	9.70000E 01	GAM	4.10731E 01	VEL	2.55760E 03	ALT	7.02042E 04	WT	1.29596E 06
STAGE	1	ALPH	0	MACH	2.64191E 00	XISP	3.00668E 02	DYNP	4.53244950E 02
GRAV	3.19585E 01	ACC	2.55711E 00	THRI	3.42220E 06	CL	0	LIFT	0
DENS	1.38580E-04	ACCN	0	RATI	1.00000E 00	CD	4.70106E-02	DRAG	1.08305E 05
SOS	9.68086E 02	VLC	2.09216E 02	VLG	2.83522E 03	VLT	0	VCHR	5.58900E 03
TIM	9.80000E 01	GAM	4.05431E 01	VEL	2.61943E 03	ALT	7.18958E 04	WT	1.28457E 06
STAGE	1	ALPH	0	MACH	2.70579E 00	XISP	3.00817E 02	DYNP	4.38545606E 02
GRAV	3.19533E 01	ACC	2.58506E 00	THRI	3.42390E 06	CL	0	LIFT	0
DENS	1.27829E-04	ACCN	0	RATI	1.00000E 00	CD	4.62952E-02	DRAG	1.03198E 05
SOS	9.68086E 02	VLC	2.11835E 02	VLG	2.85611E 03	VLT	0	VCHR	5.67378E 03
TIM	9.90000E 01	GAM	4.00217E 01	VEL	2.68240E 03	ALT	7.36096E 04	WT	1.27319E 06
STAGE	1	ALPH	0	MACH	2.77083E 00	XISP	3.00968E 02	DYNP	4.23762758E 02
GRAV	3.19481E 01	ACC	2.61348E 00	THRI	3.42561E 06	CL	0	LIFT	0
DENS	1.17769E-04	ACCN	0	RATI	1.00000E 00	CD	4.55667E-02	DRAG	9.81500E 04
SOS	9.68086E 02	VLC	2.14350E 02	VLG	2.87676E 03	VLT	0	VCHR	5.75934E 03
TIM	1.00000E 02	GAM	3.95091E 01	VEL	2.74652E 03	ALT	7.53458E 04	WT	1.26181E 06
STAGE	1	ALPH	0	MACH	2.83796E 00	XISP	3.01120E 02	DYNP	4.08938191E 02
GRAV	3.19428E 01	ACC	2.64237E 00	THRI	3.42735E 06	CL	0	LIFT	0
DENS	1.08423E-04	ACCN	0	RATI	1.00000E 00	CD	4.48249E-02	DRAG	9.31745E 04
SOS	9.68086E 02	VLC	2.16761E 02	VLG	2.89720E 03	VLT	0	VCHR	5.84570E 03
TIM	1.01000E 02	GAM	3.90051E 01	VEL	2.81179E 03	ALT	7.71043E 04	WT	1.25043E 06
STAGE	1	ALPH	0	MACH	2.90449E 00	XISP	3.01275E 02	DYNP	3.94112281E 02
GRAV	3.19374E 01	ACC	2.67174E 00	THRI	3.42910E 06	CL	0	LIFT	0
DENS	9.96972E-05	ACCN	0	RATI	1.00000E 00	CD	4.40697E-02	DRAG	8.82837E 04
SOS	9.68086E 02	VLC	2.19068E 02	VLG	2.91741E 03	VLT	0	VCHR	5.93287E 03
TIM	1.02000E 02	GAM	3.85096E 01	VEL	2.87824E 03	ALT	7.88852E 04	WT	1.23905E 06
STAGE	1	ALPH	0	MACH	2.97313E 00	XISP	3.01432E 02	DYNP	3.79323857E 02
GRAV	3.19320E 01	ACC	2.70159E 00	THRI	3.43089E 06	CL	0	LIFT	0
DENS	9.15768E-05	ACCN	0	RATI	1.00000E 00	CD	4.33010E-02	DRAG	8.34887E 04
SOS	9.68086E 02	VLC	2.21271E 02	VLG	2.93740E 03	VLT	0	VCHR	6.02087E 03

TIM	1.03000E 02	GAM	3.80225E 01	VEL	2.94587E 03	ALT	8.06885E 04	WT	1.22766E 06
STAGE	1	ALPH	0	MACH	3.04299E 00	XISP	3.01562E 02	DYNP	3.64609020E 02
GRAV	3.19265E 01	ACC	2.73136E 00	THRI	3.43237E 06	CL	0	LIFT	0
DENS	8.40291E-05	ACCN	0	RATI	1.00000E 00	CD	4.27206E-02	DRAG	7.91744E 04
SOS	9.68066E 02	VLD	2.23374E 02	VLG	2.95717E 03	VLT	0	VCHR	6.10971E 03
TIM	1.04000E 02	GAM	3.75439E 01	VEL	3.01467E 03	ALT	8.25143E 04	WT	1.21628E 06
STAGE	1	ALPH	0	MACH	3.11295E 00	XISP	3.01648E 02	DYNP	3.49729334E 02
GRAV	3.19209E 01	ACC	2.76104E 00	THRI	3.43334E 06	CL	0	LIFT	0
DENS	7.69632E-05	ACCN	0	RATI	1.00000E 00	CD	4.22658E-02	DRAG	7.51348E 04
SOS	9.68427E 02	VLD	2.25390E 02	VLG	2.97673E 03	VLT	0	VCHR	6.19939E 03
TIM	1.05000E 02	GAM	3.70735E 01	VEL	3.08454E 03	ALT	8.43626E 04	WT	1.20490E 06
STAGE	1	ALPH	0	MACH	3.17297E 00	XISP	3.01735E 02	DYNP	3.32827161E 02
GRAV	3.19153E 01	ACC	2.79150E 00	THRI	3.43433E 06	CL	0	LIFT	0
DENS	6.99582E-05	ACCN	0	RATI	1.00000E 00	CD	4.18757E-02	DRAG	7.08437E 04
SOS	9.72164E 02	VLD	2.27314E 02	VLG	2.99608E 03	VLT	0	VCHR	6.28993E 03
TIM	1.06000E 02	GAM	3.66113E 01	VEL	3.15582E 03	ALT	8.62334E 04	WT	1.19352E 06
STAGE	1	ALPH	0	MACH	3.23365E 00	XISP	3.01823E 02	DYNP	3.16528709E 02
GRAV	3.19096E 01	ACC	2.82240E 00	THRI	3.43532E 06	CL	0	LIFT	0
DENS	6.35651E-05	ACCN	0	RATI	1.00000E 00	CD	4.14813E-02	DRAG	6.67399E 04
SOS	9.75932E 02	VLD	2.29144E 02	VLG	3.01521E 03	VLT	0	VCHR	6.38134E 03
TIM	1.07000E 02	GAM	3.61572E 01	VEL	3.22820E 03	ALT	8.81268E 04	WT	1.18214E 06
STAGE	1	ALPH	0	MACH	3.29500E 00	XISP	3.01912E 02	DYNP	3.00830607E 02
GRAV	3.19038E 01	ACC	2.85374E 00	THRI	3.43633E 06	CL	0	LIFT	0
DENS	5.77338E-05	ACCN	0	RATI	1.00000E 00	CD	4.10825E-02	DRAG	6.28202E 04
SOS	9.79729E 02	VLD	2.30883E 02	VLG	3.03414E 03	VLT	0	VCHR	6.47363E 03
TIM	1.08000E 02	GAM	3.57111E 01	VEL	3.30181E 03	ALT	9.00428E 04	WT	1.17075E 06
STAGE	1	ALPH	0	MACH	3.35701E 00	XISP	3.02002E 02	DYNP	2.85727726E 02
GRAV	3.18980E 01	ACC	2.88555E 00	THRI	3.43736E 06	CL	0	LIFT	0
DENS	5.24177E-05	ACCN	0	RATI	1.00000E 00	CD	4.06794E-02	DRAG	5.90809E 04
SOS	9.83556E 02	VLD	2.32536E 02	VLG	3.05266E 03	VLT	0	VCHR	6.56682E 03
TIM	1.09000E 02	GAM	3.52729E 01	VEL	3.37665E 03	ALT	9.19813E 04	WT	1.15937E 06
STAGE	1	ALPH	0	MACH	3.41969E 00	XISP	3.02093E 02	DYNP	2.71213333E 02
GRAV	3.18920E 01	ACC	2.91765E 00	THRI	3.43839E 06	CL	0	LIFT	0
DENS	4.75739E-05	ACCN	0	RATI	1.00000E 00	CD	4.02720E-02	DRAG	5.55181E 04
SOS	9.87413E 02	VLD	2.34104E 02	VLG	3.07138E 03	VLT	0	VCHR	6.66094E 03
TIM	1.10000E 02	GAM	3.48425E 01	VEL	3.45274E 03	ALT	9.39426E 04	WT	1.14799E 06
STAGE	1	ALPH	0	MACH	3.48305E 00	XISP	3.02185E 02	DYNP	2.57279239E 02
GRAV	3.18861E 01	ACC	2.95064E 00	THRI	3.43944E 06	CL	0	LIFT	0
DENS	4.31626E-05	ACCN	0	RATI	1.00000E 00	CD	3.98602E-02	DRAG	5.21272E 04
SOS	9.91299E 02	VLD	2.35591E 02	VLG	3.08969E 03	VLT	0	VCHR	6.75600E 03
TIM	1.11000E 02	GAM	3.44198E 01	VEL	3.53009E 03	ALT	9.59266E 04	WT	1.13661E 06
STAGE	1	ALPH	0	MACH	3.54707E 00	XISP	3.02279E 02	DYNP	2.43915954E 02
GRAV	3.18800E 01	ACC	2.98395E 00	THRI	3.44049E 06	CL	0	LIFT	0
DENS	3.91471E-05	ACCN	0	RATI	1.00000E 00	CD	3.94441E-02	DRAG	4.89037E 04
SOS	9.95213E 02	VLD	2.37001E 02	VLG	3.10781E 03	VLT	0	VCHR	6.85201E 03
TIM	1.12000E 02	GAM	3.40047E 01	VEL	3.60871E 03	ALT	9.79334E 04	WT	1.12523E 06
STAGE	1	ALPH	0	MACH	3.61176E 00	XISP	3.02373E 02	DYNP	2.31112826E 02
GRAV	3.18739E 01	ACC	3.01781E 00	THRI	3.44156E 06	CL	0	LIFT	0
DENS	3.54935E-05	ACCN	0	RATI	1.00000E 00	CD	3.90236E-02	DRAG	4.58428E 04
SOS	9.99157E 02	VLD	2.38335E 02	VLG	3.12574E 03	VLT	0	VCHR	6.94900E 03
TIM	1.13000E 02	GAM	3.35971E 01	VEL	3.68863E 03	ALT	9.99631E 04	WT	1.11385E 06
STAGE	1	ALPH	0	MACH	3.67713E 00	XISP	3.02468E 02	DYNP	2.18858187E 02
GRAV	3.18678E 01	ACC	3.05223E 00	THRI	3.44265E 06	CL	0	LIFT	0
DENS	3.21788E-05	ACCN	0	RATI	1.00000E 00	CD	3.85987E-02	DRAG	4.29393E 04
SOS	1.00313E 03	VLD	2.39599E 02	VLG	3.14347E 03	VLT	0	VCHR	7.04699E 03
TIM	1.14000E 02	GAM	3.31968E 01	VEL	3.76986E 03	ALT	1.02016E 05	WT	1.10246E 06
STAGE	1	ALPH	0	MACH	3.74318E 00	XISP	3.02565E 02	DYNP	2.07139484E 02
GRAV	3.18615E 01	ACC	3.08723E 00	THRI	3.44374E 06	CL	0	LIFT	0
DENS	2.91503E-05	ACCN	0	RATI	1.00000E 00	CD	3.81694E-02	DRAG	4.01881E 04
SOS	1.00713E 03	VLD	2.40793E 02	VLG	3.16100E 03	VLT	0	VCHR	7.14600E 03
TIM	1.15000E 02	GAM	3.28038E 01	VEL	3.85240E 03	ALT	1.04091E 05	WT	1.09108E 06
STAGE	1	ALPH	0	MACH	3.88990E 00	XISP	3.02662E 02	DYNP	1.95943404E 02
GRAV	3.18552E 01	ACC	3.12283E 00	THRI	3.44465E 06	CL	0	LIFT	0
DENS	2.64056E-05	ACCN	0	RATI	1.00000E 00	CD	3.77356E-02	DRAG	3.75839E 04
SOS	1.01116E 03	VLD	2.41923E 02	VLG	3.17836E 03	VLT	0	VCHR	7.24605E 03

TIM	1.16000E 02	GAM	3.24180E 01	VEL	3.93629E 03	ALT	1.06190E 05	WT	1.07970E 06
STAGE	1	ALPH	0	MACH	3.87732E 00	XISP	3.02761E 02	DYNP	1.85256003E 02
GRAV	3.18488E 01	ACC	3.15907E 00	THRI	3.44597E 06	CL	0	LIFT	0
DENS	2.39126E-05	ACCN	0	RATI	1.00000E 00	CD	3.72974E-02	DRAG	3.51214E 04
SOS	1.01521E 03	VLD	2.42989E 02	VLG	3.19552E 03	VLT	0	VCHR	7.34716E 03
TIM	1.17000E 02	GAM	3.20392E 01	VEL	4.02154E 03	ALT	1.08312E 05	WT	1.06832E 06
STAGE	1	ALPH	0	MACH	3.94542E 00	XISP	3.02861E 02	DYNP	1.75062814E 02
GRAV	3.18424E 01	ACC	3.19596E 00	THRI	3.44710E 06	CL	0	LIFT	0
DENS	2.16496E-05	ACCN	0	RATI	1.00000E 00	CD	3.68546E-02	DRAG	3.27950E 04
SOS	1.01929E 03	VLD	2.43996E 02	VLG	3.21250E 03	VLT	0	VCHR	7.44936E 03
TIM	1.18000E 02	GAM	3.16674E 01	VEL	4.10817E 03	ALT	1.10457E 05	WT	1.05694E 06
STAGE	1	ALPH	0	MACH	4.01422E 00	XISP	3.02952E 02	DYNP	1.65348897E 02
GRAV	3.18359E 01	ACC	3.23340E 00	THRI	3.44814E 06	CL	0	LIFT	0
DENS	1.95945E-05	ACCN	0	RATI	1.00000E 00	CD	3.64502E-02	DRAG	3.06353E 04
SOS	1.02346E 03	VLD	2.44945E 02	VLG	3.22931E 03	VLT	0	VCHR	7.55266E 03
TIM	1.19000E 02	GAM	3.13025E 01	VEL	4.19618E 03	ALT	1.12625E 05	WT	1.04555E 06
STAGE	1	ALPH	0	MACH	4.08371E 00	XISP	3.03009E 02	DYNP	1.56098113E 02
GRAV	3.18293E 01	ACC	3.27105E 00	THRI	3.44879E 06	CL	0	LIFT	0
DENS	1.77304E-05	ACCN	0	RATI	1.00000E 00	CD	3.62070E-02	DRAG	2.87283E 04
SOS	1.02754E 03	VLD	2.45644E 02	VLG	3.24593E 03	VLT	0	VCHR	7.65708E 03
TIM	1.20000E 02	GAM	3.09443E 01	VEL	4.28559E 03	ALT	1.14817E 05	WT	1.03417E 06
STAGE	1	ALPH	0	MACH	4.15386E 00	XISP	3.03066E 02	DYNP	1.47294880E 02
GRAV	3.18226E 01	ACC	3.30943E 00	THRI	3.44945E 06	CL	0	LIFT	0
DENS	1.60397E-05	ACCN	0	RATI	1.00000E 00	CD	3.59614E-02	DRAG	2.69243E 04
SOS	1.03171E 03	VLD	2.46695E 02	VLG	3.26238E 03	VLT	0	VCHR	7.76265E 03
TIM	1.21000E 02	GAM	3.05927E 01	VEL	4.37641E 03	ALT	1.17033E 05	WT	1.02279E 06
STAGE	1	ALPH	0	MACH	4.22476E 00	XISP	3.03125E 02	DYNP	1.38923997E 02
GRAV	3.18159E 01	ACC	3.34857E 00	THRI	3.45011E 06	CL	0	LIFT	0
DENS	1.45068E-05	ACCN	0	RATI	1.00000E 00	CD	3.57134E-02	DRAG	2.52190E 04
SOS	1.03590E 03	VLD	2.47501E 02	VLG	3.27866E 03	VLT	0	VCHR	7.86938E 03
TIM	1.22000E 02	GAM	3.02477E 01	VEL	4.46868E 03	ALT	1.19272E 05	WT	1.01141E 06
STAGE	1	ALPH	0	MACH	4.29633E 00	XISP	3.03183E 02	DYNP	1.30970145E 02
GRAV	3.18091E 01	ACC	3.38851E 00	THRI	3.45078E 06	CL	0	LIFT	0
DENS	1.31173E-05	ACCN	0	RATI	1.00000E 00	CD	3.54628E-02	DRAG	2.36084E 04
SOS	1.04012E 03	VLD	2.48265E 02	VLG	3.29477E 03	VLT	0	VCHR	7.97730E 03
TIM	1.23000E 02	GAM	2.99091E 01	VEL	4.56242E 03	ALT	1.21535E 05	WT	1.00003E 06
STAGE	1	ALPH	0	MACH	4.36862E 00	XISP	3.03243E 02	DYNP	1.23417966E 02
GRAV	3.18023E 01	ACC	3.42928E 00	THRI	3.45146E 06	CL	0	LIFT	0
DENS	1.18582E-05	ACCN	0	RATI	1.00000E 00	CD	3.52098E-02	DRAG	2.20883E 04
SOS	1.04436E 03	VLD	2.48987E 02	VLG	3.31071E 03	VLT	0	VCHR	8.08644E 03
TIM	1.24000E 02	GAM	2.95768E 01	VEL	4.65765E 03	ALT	1.23822E 05	WT	9.88645E 05
STAGE	1	ALPH	0	MACH	4.44164E 00	XISP	3.03303E 02	DYNP	1.16252133E 02
GRAV	3.17953E 01	ACC	3.47090E 00	THRI	3.45215E 06	CL	0	LIFT	0
DENS	1.07176E-05	ACCN	0	RATI	1.00000E 00	CD	3.49543E-02	DRAG	2.06548E 04
SOS	1.04863E 03	VLD	2.49670E 02	VLG	3.32648E 03	VLT	0	VCHR	8.19683E 03
TIM	1.25000E 02	GAM	2.92508E 01	VEL	4.75439E 03	ALT	1.26133E 05	WT	9.77264E 05
STAGE	1	ALPH	0	MACH	4.51539E 00	XISP	3.03363E 02	DYNP	1.09457416E 02
GRAV	3.17883E 01	ACC	3.51342E 00	THRI	3.45284E 06	CL	0	LIFT	0
DENS	9.68470E-06	ACCN	0	RATI	1.00000E 00	CD	3.46961E-02	DRAG	1.93040E 04
SOS	1.05293E 03	VLD	2.50316E 02	VLG	3.34210E 03	VLT	0	VCHR	8.30850E 03
TIM	1.26000E 02	GAM	2.89309E 01	VEL	4.85267E 03	ALT	1.28468E 05	WT	9.65882E 05
STAGE	1	ALPH	0	MACH	4.58988E 00	XISP	3.03425E 02	DYNP	1.03018740E 02
GRAV	3.17812E 01	ACC	3.55686E 00	THRI	3.45354E 06	CL	0	LIFT	0
DENS	8.74953E-06	ACCN	0	RATI	1.00000E 00	CD	3.44354E-02	DRAG	1.80319E 04
SOS	1.05725E 03	VLD	2.50926E 02	VLG	3.35755E 03	VLT	0	VCHR	8.42147E 03
TIM	1.27000E 02	GAM	2.86171E 01	VEL	4.95252E 03	ALT	1.30828E 05	WT	9.54500E 05
STAGE	1	ALPH	0	MACH	4.66513E 00	XISP	3.03487E 02	DYNP	9.69212302E 01
GRAV	3.17741E 01	ACC	3.60127E 00	THRI	3.45425E 06	CL	0	LIFT	0
DENS	7.90307E-06	ACCN	0	RATI	1.00000E 00	CD	3.41721E-02	DRAG	1.68349E 04
SOS	1.06161E 03	VLD	2.51503E 02	VLG	3.37285E 03	VLT	0	VCHR	8.53578E 03
TIM	1.28000E 02	GAM	2.83092E 01	VEL	5.05398E 03	ALT	1.33212E 05	WT	9.43118E 05
STAGE	1	ALPH	0	MACH	4.74135E 00	XISP	3.03549E 02	DYNP	9.11502644E 01
GRAV	3.17669E 01	ACC	3.64669E 00	THRI	3.45496E 06	CL	0	LIFT	0
DENS	7.13709E-06	ACCN	0	RATI	1.00000E 00	CD	3.39060E-02	DRAG	1.57092E 04
SOS	1.06598E 03	VLD	2.52048E 02	VLG	3.38799E 03	VLT	0	VCHR	8.65145E 03
TIM	1.29000E 02	GAM	2.80071E 01	VEL	5.15706E 03	ALT	1.35621E 05	WT	9.31736E 05

STAGE	1	ALPH	0	MACH	4.81795E 00	XISP	3.03613E 02	DYNP	8.56915045E 01
GRAV	3.17596E 01	ACC	3.69314E 00	THRI	3.45569E 06	CL	0	LIFT	0
DENS	6.44411E-06	ACCN	0	RATI	1.00000E 00	CD	3.36372E-02	DRAG	1.46513E 04
SOS	1.07839E 03	VLD	2.52562E 02	VLG	3.40298E 03	VLT	0	VCHR	8.76853E 03
TIM	1.30000E 02	GAM	2.77109E 01	VEL	5.26181E 03	ALT	1.38056E 05	WT	9.20354E 05
STAGE	1	ALPH	0	MACH	4.89555E 00	XISP	3.03676E 02	DYNP	8.05309316E 01
GRAV	3.17522E 01	ACC	3.74069E 00	THRI	3.45642E 06	CL	0	LIFT	0
DENS	5.81732E-06	ACCN	0	RATI	1.00000E 00	CD	3.33656E-02	DRAG	1.36578E 04
SOS	1.07482E 03	VLD	2.53047E 02	VLG	3.41782E 03	VLT	0	VCHR	8.88705E 03
TIM	1.31000E 02	GAM	2.74203E 01	VEL	5.36825E 03	ALT	1.40515E 05	WT	9.08972E 05
STAGE	1	ALPH	0	MACH	4.97395E 00	XISP	3.03741E 02	DYNP	7.56548733E 01
GRAV	3.17448E 01	ACC	3.78937E 00	THRI	3.45715E 06	CL	0	LIFT	0
DENS	5.25057E-06	ACCN	0	RATI	1.00000E 00	CD	3.30912E-02	DRAG	1.27253E 04
SOS	1.07927E 03	VLD	2.53505E 02	VLG	3.43251E 03	VLT	0	VCHR	9.00704E 03
TIM	1.32000E 02	GAM	2.71353E 01	VEL	5.47642E 03	ALT	1.43000E 05	WT	8.97590E 05
STAGE	1	ALPH	0	MACH	5.05319E 00	XISP	3.03806E 02	DYNP	7.10500171E 01
GRAV	3.17373E 01	ACC	3.80000E 00	THRI	3.42272E 06	CL	0	LIFT	0
DENS	4.73806E-06	ACCN	0	RATI	9.89827E-01	CD	3.28936E-02	DRAG	1.18794E 04
SOS	1.08375E 03	VLD	2.53937E 02	VLG	3.44705E 03	VLT	0	VCHR	9.12854E 03
TIM	1.33000E 02	GAM	2.68558E 01	VEL	5.58614E 03	ALT	1.45510E 05	WT	8.86228E 05
STAGE	1	ALPH	0	MACH	5.13358E 00	XISP	3.03872E 02	DYNP	6.66986052E 01
GRAV	3.17297E 01	ACC	3.80000E 00	THRI	3.37876E 06	CL	0	LIFT	0
DENS	4.27487E-06	ACCN	0	RATI	9.76981E-01	CD	3.27338E-02	DRAG	1.10977E 04
SOS	1.08826E 03	VLD	2.54345E 02	VLG	3.46346E 03	VLT	0	VCHR	9.25137E 03
TIM	1.34000E 02	GAM	2.65817E 01	VEL	5.69739E 03	ALT	1.48047E 05	WT	8.74890E 05
STAGE	1	ALPH	0	MACH	5.21357E 00	XISP	3.03939E 02	DYNP	6.25881466E 01
GRAV	3.17220E 01	ACC	3.80000E 00	THRI	3.33494E 06	CL	0	LIFT	0
DENS	3.85634E-06	ACCN	0	RATI	9.64070E-01	CD	3.25729E-02	DRAG	1.03626E 04
SOS	1.09260E 03	VLD	2.54732E 02	VLG	3.47572E 03	VLT	0	VCHR	9.37552E 03
TIM	1.34100E 02	GAM	2.65546E 01	VEL	5.70859E 03	ALT	1.48302E 05	WT	8.73758E 05
STAGE	1	ALPH	0	MACH	5.22164E 00	XISP	3.03945E 02	DYNP	6.21896369E 01
GRAV	3.17212E 01	ACC	3.80000E 00	THRI	3.33057E 06	CL	0	LIFT	0
DENS	3.81673E-06	ACCN	0	RATI	9.62735E-01	CD	3.25567E-02	DRAG	1.02915E 04
SOS	1.09325E 03	VLD	2.54769E 02	VLG	3.47714E 03	VLT	0	VCHR	9.38800E 03
TIM	1.34200E 02	GAM	2.65275E 01	VEL	5.71980E 03	ALT	1.48557E 05	WT	8.72627E 05
STAGE	1	ALPH	0	MACH	5.22972E 00	XISP	3.03952E 02	DYNP	6.17934230E 01
GRAV	3.17205E 01	ACC	3.80000E 00	THRI	3.32620E 06	CL	0	LIFT	0
DENS	3.77755E-06	ACCN	0	RATI	9.61451E-01	CD	3.25406E-02	DRAG	1.02209E 04
SOS	1.09371E 03	VLD	2.54807E 02	VLG	3.47856E 03	VLT	0	VCHR	9.40049E 03
TIM	1.34300E 02	GAM	2.65005E 01	VEL	5.73103E 03	ALT	1.48813E 05	WT	8.71496E 05
STAGE	1	ALPH	0	MACH	5.23781E 00	XISP	3.03959E 02	DYNP	6.13994942E 01
GRAV	3.17197E 01	ACC	3.80000E 00	THRI	3.32184E 06	CL	0	LIFT	0
DENS	3.73878E-06	ACCN	0	RATI	9.60167E-01	CD	3.25244E-02	DRAG	1.01507E 04
SOS	1.09417E 03	VLD	2.54844E 02	VLG	3.47997E 03	VLT	0	VCHR	9.41299E 03
TIM	1.34400E 02	GAM	2.64736E 01	VEL	5.74227E 03	ALT	1.49069E 05	WT	8.70366E 05
STAGE	1	ALPH	0	MACH	5.24590E 00	XISP	3.03966E 02	DYNP	6.10078399E 01
GRAV	3.17189E 01	ACC	3.80000E 00	THRI	3.31747E 06	CL	0	LIFT	0
DENS	3.70040E-06	ACCN	0	RATI	9.58864E-01	CD	3.25082E-02	DRAG	1.00809E 04
SOS	1.09462E 03	VLD	2.54880E 02	VLG	3.48139E 03	VLT	0	VCHR	9.42551E 03
TIM	1.34500E 02	GAM	2.64466E 01	VEL	5.75353E 03	ALT	1.49325E 05	WT	8.69235E 05
STAGE	1	ALPH	0	MACH	5.25400E 00	XISP	3.03972E 02	DYNP	6.06184494E 01
GRAV	3.17182E 01	ACC	3.80000E 00	THRI	3.31311E 06	CL	0	LIFT	0
DENS	3.66240E-06	ACCN	0	RATI	9.57601E-01	CD	3.24920E-02	DRAG	1.00116E 04
SOS	1.09508E 03	VLD	2.54917E 02	VLG	3.48280E 03	VLT	0	VCHR	9.43804E 03
VSTAG REACHED									
TIM	1.34500E 02	GAM	2.15536E 01	VEL	6.97500E 03	ALT	1.49325E 05	WT	5.59144E 05
STAGE	2	ALPH	0	MACH	6.36941E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.17182E 01	ACC	1.00000E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	3.66240E-06	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	1.09508E 03	VLD	2.54917E 02	VLG	3.48280E 03	VLT	0	VCHR	9.43804E 03
TIM	1.35000E 02	GAM	2.14414E 01	VEL	6.98528E 03	ALT	1.50604E 05	WT	5.58530E 05
STAGE	2	ALPH	9.27379E-02	MACH	6.36558E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.17143E 01	ACC	1.00110E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	3.47888E-06	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	1.09735E 03	VLD	2.54917E 02	VLG	3.48861E 03	VLT	6.93617E-06	VCHR	9.45390E 03
TIM	1.36000E 02	GAM	2.12181E 01	VEL	7.00599E 03	ALT	1.53148E 05	WT	5.57301E 05
STAGE	2	ALPH	2.77199E-01	MACH	6.35832E 00	XISP	4.55000E 02	DYNP	0

GRAV	3.17066E 01	ACC	1.00331E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	3.14269E-06	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	1.10176E 03	VLD	2.54917E 02	VLG	3.50075E 03	VLT	1.86524E-04	VCHR	9.48568E 03
TIM	1.37000E 02	GAM	2.09961E 01	VEL	7.02679E 03	ALT	1.55675E 05	WT	5.56072E 05
STAGE	2	ALPH	4.60304E-01	MACH	6.35487E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.16990E 01	ACC	1.00552E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.84631E-06	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	1.10575E 03	VLD	2.54917E 02	VLG	3.51156E 03	VLT	8.60065E-04	VCHR	9.51753E 03
TIM	1.38000E 02	GAM	2.07754E 01	VEL	7.04798E 03	ALT	1.58184E 05	WT	5.54843E 05
STAGE	2	ALPH	6.42051E-01	MACH	6.37354E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.16814E 01	ACC	1.00775E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.59860E-06	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	1.10575E 03	VLD	2.54917E 02	VLG	3.52286E 03	VLT	2.35049E-03	VCHR	9.54943E 03
TIM	1.39000E 02	GAM	2.05561E 01	VEL	7.06925E 03	ALT	1.60675E 05	WT	5.53614E 05
STAGE	2	ALPH	8.22439E-01	MACH	6.39326E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.16639E 01	ACC	1.00999E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.37402E-06	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	1.10575E 03	VLD	2.54917E 02	VLG	3.53405E 03	VLT	4.97542E-03	VCHR	9.58140E 03
TIM	1.40000E 02	GAM	2.03381E 01	VEL	7.09071E 03	ALT	1.63148E 05	WT	5.52385E 05
STAGE	2	ALPH	1.00147E 00	MACH	6.41259E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.16764E 01	ACC	1.01224E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.17030E-06	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	1.10575E 03	VLD	2.54917E 02	VLG	3.54511E 03	VLT	9.04711E-03	VCHR	9.61343E 03
TIM	1.41000E 02	GAM	2.01215E 01	VEL	7.11276E 03	ALT	1.65604E 05	WT	5.51356E 05
STAGE	2	ALPH	1.17913E 00	MACH	6.43216E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.16690E 01	ACC	1.01449E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.98538E-06	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	1.10575E 03	VLD	2.54917E 02	VLG	3.55607E 03	VLT	1.45725E-02	VCHR	9.64553E 03
TIM	1.42000E 02	GAM	1.99062E 01	VEL	7.13419E 03	ALT	1.68042E 05	WT	5.49927E 05
STAGE	2	ALPH	1.35543E 00	MACH	6.45191E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.16617E 01	ACC	1.01676E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.81741E-06	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	1.10575E 03	VLD	2.54917E 02	VLG	3.56690E 03	VLT	2.27533E-02	VCHR	9.67769E 03
TIM	1.43000E 02	GAM	1.96922E 01	VEL	7.15621E 03	ALT	1.70462E 05	WT	5.48698E 05
STAGE	2	ALPH	1.53037E 00	MACH	6.47162E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.16544E 01	ACC	1.01904E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.66476E-06	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	1.10575E 03	VLD	2.54917E 02	VLG	3.57763E 03	VLT	3.29857E-02	VCHR	9.70991E 03
TIM	1.44000E 02	GAM	1.94796E 01	VEL	7.17841E 03	ALT	1.72865E 05	WT	5.47470E 05
STAGE	2	ALPH	1.70394E 00	MACH	6.49190E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.16472E 01	ACC	1.02132E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.52593E-06	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	1.10575E 03	VLD	2.54917E 02	VLG	3.58824E 03	VLT	4.58609E-02	VCHR	9.74220E 03
TIM	1.45000E 02	GAM	1.92683E 01	VEL	7.20079E 03	ALT	1.75250E 05	WT	5.46241E 05
STAGE	2	ALPH	1.87614E 00	MACH	6.51214E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.16400E 01	ACC	1.02362E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.39960E-06	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	1.10575E 03	VLD	2.54917E 02	VLG	3.59873E 03	VLT	6.16644E-02	VCHR	9.77456E 03
TIM	1.46000E 02	GAM	1.90584E 01	VEL	7.22356E 03	ALT	1.77617E 05	WT	5.45012E 05
STAGE	2	ALPH	2.04698E 00	MACH	6.56824E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.16329E 01	ACC	1.02593E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.29802E-06	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	1.09974E 03	VLD	2.54917E 02	VLG	3.60912E 03	VLT	8.04769E-02	VCHR	9.80698E 03
TIM	1.47000E 02	GAM	1.88498E 01	VEL	7.24531E 03	ALT	1.79967E 05	WT	5.43783E 05
STAGE	2	ALPH	2.21645E 00	MACH	6.62659E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.16258E 01	ACC	1.02825E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.20407E-06	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	1.09349E 03	VLD	2.54917E 02	VLG	3.61939E 03	VLT	1.03173E-01	VCHR	9.83946E 03
TIM	1.48000E 02	GAM	1.86426E 01	VEL	7.26964E 03	ALT	1.82299E 05	WT	5.42554E 05
STAGE	2	ALPH	2.38455E 00	MACH	6.64569E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.16188E 01	ACC	1.03058E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.11660E-06	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	1.08725E 03	VLD	2.54917E 02	VLG	3.62955E 03	VLT	1.29424E-01	VCHR	9.87202E 03
TIM	1.49000E 02	GAM	1.84367E 01	VEL	7.29215E 03	ALT	1.84614E 05	WT	5.41325E 05
STAGE	2	ALPH	2.55129E 00	MACH	6.74556E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.16118E 01	ACC	1.03292E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.03520E-06	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	1.08103E 03	VLD	2.54917E 02	VLG	3.63961E 03	VLT	1.59694E-01	VCHR	9.90464E 03

TIM	1.50000E 02	GAM	1.82322E 01	VEL	7.31544E 03	ALT	1.86912E 05	WT	5.40096E 05
STAGE	2	ALPH	2.71666E 00	MACH	6.80622E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.16049E 01	ACC	1.03527E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	9.59465E-07	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	1.07482E 03	VLD	2.54917E 02	VLG	3.64955E 03	VLT	1.94242E-01	VCHR	9.93732E 03
TIM	1.51000E 02	GAM	1.80290E 01	VEL	7.33892E 03	ALT	1.89192E 05	WT	5.38867E 05
STAGE	2	ALPH	2.88066E 00	MACH	6.86767E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.15981E 01	ACC	1.03763E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	8.89016E-07	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	1.06862E 03	VLD	2.54917E 02	VLG	3.65938E 03	VLT	2.33322E-01	VCHR	9.97007E 03
TIM	1.52000E 02	GAM	1.78271E 01	VEL	7.36257E 03	ALT	1.91454E 05	WT	5.37638E 05
STAGE	2	ALPH	3.04330E 00	MACH	6.92992E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.15913E 01	ACC	1.04000E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	8.23506E-07	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	1.06243E 03	VLD	2.54917E 02	VLG	3.66911E 03	VLT	2.77185E-01	VCHR	1.00029E 04
TIM	1.53000E 02	GAM	1.76266E 01	VEL	7.38640E 03	ALT	1.93700E 05	WT	5.36410E 05
STAGE	2	ALPH	3.20458E 00	MACH	6.99298E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.15846E 01	ACC	1.04238E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	7.62605E-07	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	1.05626E 03	VLD	2.54917E 02	VLG	3.67873E 03	VLT	3.26074E-01	VCHR	1.00358E 04
TIM	1.54000E 02	GAM	1.74275E 01	VEL	7.41041E 03	ALT	1.95928E 05	WT	5.35181E 05
STAGE	2	ALPH	3.36449E 00	MACH	7.05687E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.15779E 01	ACC	1.04478E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	7.06005E-07	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	1.05010E 03	VLD	2.54917E 02	VLG	3.68824E 03	VLT	3.80228E-01	VCHR	1.00687E 04
TIM	1.55000E 02	GAM	1.72296E 01	VEL	7.43460E 03	ALT	1.98139E 05	WT	5.33952E 05
STAGE	2	ALPH	3.52305E 00	MACH	7.12159E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.15712E 01	ACC	1.04718E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	6.53419E-07	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	1.04395E 03	VLD	2.54917E 02	VLG	3.69764E 03	VLT	4.39681E-01	VCHR	1.01018E 04
TIM	1.56000E 02	GAM	1.70331E 01	VEL	7.45896E 03	ALT	2.00332E 05	WT	5.32723E 05
STAGE	2	ALPH	3.68024E 00	MACH	7.18716E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.15647E 01	ACC	1.04960E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	6.04574E-07	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	1.03782E 03	VLD	2.54917E 02	VLG	3.70694E 03	VLT	5.05262E-01	VCHR	1.01349E 04
TIM	1.57000E 02	GAM	1.68380E 01	VEL	7.48351E 03	ALT	2.02508E 05	WT	5.31494E 05
STAGE	2	ALPH	3.83607E 00	MACH	7.25359E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.15581E 01	ACC	1.05202E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	5.59219E-07	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	1.03170E 03	VLD	2.54917E 02	VLG	3.71613E 03	VLT	5.76596E-01	VCHR	1.01680E 04
TIM	1.58000E 02	GAM	1.66442E 01	VEL	7.50823E 03	ALT	2.04668E 05	WT	5.30265E 05
STAGE	2	ALPH	3.99055E 00	MACH	7.32088E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.15517E 01	ACC	1.05446E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	5.17115E-07	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	1.02559E 03	VLD	2.54917E 02	VLG	3.72522E 03	VLT	6.54100E-01	VCHR	1.02013E 04
TIM	1.59000E 02	GAM	1.64517E 01	VEL	7.53312E 03	ALT	2.06810E 05	WT	5.29036E 05
STAGE	2	ALPH	4.14367E 00	MACH	7.38906E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.15453E 01	ACC	1.05691E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	4.78043E-07	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	1.01950E 03	VLD	2.54917E 02	VLG	3.73421E 03	VLT	7.37990E-01	VCHR	1.02346E 04
TIM	1.60000E 02	GAM	1.62606E 01	VEL	7.55819E 03	ALT	2.08934E 05	WT	5.27807E 05
STAGE	2	ALPH	4.29544E 00	MACH	7.45812E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.15389E 01	ACC	1.05937E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	4.41793E-07	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	1.01342E 03	VLD	2.54917E 02	VLG	3.74309E 03	VLT	8.28473E-01	VCHR	1.02679E 04
TIM	1.61000E 02	GAM	1.60708E 01	VEL	7.58343E 03	ALT	2.11042E 05	WT	5.26578E 05
STAGE	2	ALPH	4.44586E 00	MACH	7.52809E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.15326E 01	ACC	1.06184E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	4.08172E-07	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	1.00735E 03	VLD	2.54917E 02	VLG	3.75187E 03	VLT	9.25755E-01	VCHR	1.03014E 04
TIM	1.62000E 02	GAM	1.58823E 01	VEL	7.60885E 03	ALT	2.13133E 05	WT	5.25350E 05
STAGE	2	ALPH	4.59493E 00	MACH	7.59898E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.15263E 01	ACC	1.06433E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	3.76999E-07	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	1.00130E 03	VLD	2.54917E 02	VLG	3.76055E 03	VLT	1.03004E 00	VCHR	1.03349E 04
TIM	1.63000E 02	GAM	1.56951E 01	VEL	7.63445E 03	ALT	2.15207E 05	WT	5.24121E 05
STAGE	2	ALPH	4.74265E 00	MACH	7.67079E 00	XISP	4.55000E 02	DYNP	0

GRAV	3.15291E 01	ACC	1.06682E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	3.48194E-07	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	9.95262E 02	VLC	2.54917E 02	VLG	3.76913E 03	VLT	1.14151E 00	VCHR	1.03685E 04
TIM	1.640000E 02	GAM	1.55093E 01	VEL	7.66021E 03	ALT	2.17264E 05	WT	5.22892E 05
STAGE	2	ALPH	4.88903E 00	MACH	7.74355E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.15140E 01	ACC	1.06933E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	3.21329E-07	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	9.89238E 02	VLC	2.54917E 02	VLG	3.77760E 03	VLT	1.26036E 00	VCHR	1.04022E 04
TIM	1.660000E 02	GAM	1.53248E 01	VEL	7.68635E 03	ALT	2.19303E 05	WT	5.21663E 05
STAGE	2	ALPH	5.03407E 00	MACH	7.81726E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.15079E 01	ACC	1.07185E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.96525E-07	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	9.83229E 02	VLC	2.54917E 02	VLG	3.78598E 03	VLT	1.38679E 00	VCHR	1.04359E 04
TIM	1.680000E 02	GAM	1.51416E 01	VEL	7.71226E 03	ALT	2.21326E 05	WT	5.20434E 05
STAGE	2	ALPH	5.17776E 00	MACH	7.89193E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.15018E 01	ACC	1.07438E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.73554E-07	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	9.77234E 02	VLC	2.54917E 02	VLG	3.79426E 03	VLT	1.52096E 00	VCHR	1.04697E 04
TIM	1.700000E 02	GAM	1.49597E 01	VEL	7.73855E 03	ALT	2.23332E 05	WT	5.19205E 05
STAGE	2	ALPH	5.32014E 00	MACH	7.96758E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.14958E 01	ACC	1.07692E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.52288E-07	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	9.71254E 02	VLC	2.54917E 02	VLG	3.80244E 03	VLT	1.66305E 00	VCHR	1.05036E 04
TIM	1.720000E 02	GAM	1.47791E 01	VEL	7.76500E 03	ALT	2.25322E 05	WT	5.17976E 05
STAGE	2	ALPH	5.46118E 00	MACH	8.04423E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.14896E 01	ACC	1.07948E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.32605E-07	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	9.65288E 02	VLC	2.54917E 02	VLG	3.81052E 03	VLT	1.81325E 00	VCHR	1.05375E 04
TIM	1.740000E 02	GAM	1.45999E 01	VEL	7.79163E 03	ALT	2.27294E 05	WT	5.16747E 05
STAGE	2	ALPH	5.60089E 00	MACH	8.12188E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.14840E 01	ACC	1.08205E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.14354E-07	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	9.59330E 02	VLC	2.54917E 02	VLG	3.81850E 03	VLT	1.97170E 00	VCHR	1.05716E 04
TIM	1.760000E 02	GAM	1.44219E 01	VEL	7.81842E 03	ALT	2.29250E 05	WT	5.15518E 05
STAGE	2	ALPH	5.73928E 00	MACH	8.20055E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.14781E 01	ACC	1.08462E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.97550E-07	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	9.53402E 02	VLC	2.54917E 02	VLG	3.82639E 03	VLT	2.13858E 00	VCHR	1.06057E 04
TIM	1.780000E 02	GAM	1.42452E 01	VEL	7.84539E 03	ALT	2.31186E 05	WT	5.14290E 05
STAGE	2	ALPH	5.87634E 00	MACH	8.28025E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.14724E 01	ACC	1.08722E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.81475E-07	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	9.47482E 02	VLC	2.54917E 02	VLG	3.83438E 03	VLT	2.31404E 00	VCHR	1.06399E 04
TIM	1.720000E 02	GAM	1.40699E 01	VEL	7.87253E 03	ALT	2.33111E 05	WT	5.13061E 05
STAGE	2	ALPH	6.01208E 00	MACH	8.36160E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.14666E 01	ACC	1.08982E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.67577E-07	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	9.41577E 02	VLC	2.54917E 02	VLG	3.84158E 03	VLT	2.49824E 00	VCHR	1.06741E 04
TIM	1.730000E 02	GAM	1.38958E 01	VEL	7.89983E 03	ALT	2.35016E 05	WT	5.11832E 05
STAGE	2	ALPH	6.14651E 00	MACH	8.44261E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.14609E 01	ACC	1.09244E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.54972E-07	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	9.35688E 02	VLC	2.54917E 02	VLG	3.84948E 03	VLT	2.69133E 00	VCHR	1.07084E 04
TIM	1.740000E 02	GAM	1.37230E 01	VEL	7.92731E 03	ALT	2.36905E 05	WT	5.10603E 05
STAGE	2	ALPH	6.27964E 00	MACH	8.52569E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.14553E 01	ACC	1.09507E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.41591E-07	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	9.29814E 02	VLC	2.54917E 02	VLG	3.85669E 03	VLT	2.89344E 00	VCHR	1.07429E 04
TIM	1.750000E 02	GAM	1.35516E 01	VEL	7.95495E 03	ALT	2.38777E 05	WT	5.09374E 05
STAGE	2	ALPH	6.41145E 00	MACH	8.60967E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.14497E 01	ACC	1.09771E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.30630E-07	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	9.23956E 02	VLC	2.54917E 02	VLG	3.86441E 03	VLT	3.10473E 00	VCHR	1.07773E 04
TIM	1.760000E 02	GAM	1.33814E 01	VEL	7.98276E 03	ALT	2.40633E 05	WT	5.08145E 05
STAGE	2	ALPH	6.54196E 00	MACH	8.69474E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.14442E 01	ACC	1.10036E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.20150E-07	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	9.18114E 02	VLC	2.54917E 02	VLG	3.87173E 03	VLT	3.32532E 00	VCHR	1.08119E 04

TIM	1.770000E 02	GAM	1.32124E 01	VEL	8.01074E 03	ALT	2.42472E 05	WT	5.06916E 05
STAGE	2	ALPH	6.67117E 00	MACH	8.78094E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.14387E 01	ACC	1.10303E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.10476E-07	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	9.12288E 02	VLD	2.54917E 02	VLG	3.87896E 03	VLT	3.55535E 00	VCHR	1.08465E 04
TIM	1.780000E 02	GAM	1.30448E 01	VEL	8.03889E 03	ALT	2.44295E 05	WT	5.05687E 05
STAGE	2	ALPH	6.79909E 00	MACH	8.86826E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.14333E 01	ACC	1.10571E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.01554E-07	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	9.06479E 02	VLD	2.54917E 02	VLG	3.88610E 03	VLT	3.79495E 00	VCHR	1.08813E 04
TIM	1.790000E 02	GAM	1.28784E 01	VEL	8.06720E 03	ALT	2.46101E 05	WT	5.04458E 05
STAGE	2	ALPH	6.92572E 00	MACH	8.95674E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.14279E 01	ACC	1.10840E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	9.33223E-08	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	9.00686E 02	VLD	2.54917E 02	VLG	3.89315E 03	VLT	4.04425E 00	VCHR	1.09160E 04
TIM	1.800000E 02	GAM	1.27133E 01	VEL	8.09568E 03	ALT	2.47891E 05	WT	5.03230E 05
STAGE	2	ALPH	7.05106E 00	MACH	9.04637E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.14226E 01	ACC	1.11111E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	8.57325E-08	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.94909E 02	VLD	2.54917E 02	VLG	3.90001E 03	VLT	4.30335E 00	VCHR	1.09509E 04
TIM	1.810000E 02	GAM	1.25494E 01	VEL	8.12433E 03	ALT	2.49665E 05	WT	5.02001E 05
STAGE	2	ALPH	7.17512E 00	MACH	9.13739E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.14173E 01	ACC	1.11383E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	7.87363E-08	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.89150E 02	VLD	2.54917E 02	VLG	3.90698E 03	VLT	4.57238E 00	VCHR	1.09859E 04
TIM	1.820000E 02	GAM	1.23868E 01	VEL	8.15334E 03	ALT	2.51422E 05	WT	5.00772E 05
STAGE	2	ALPH	7.29790E 00	MACH	9.22920E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.14120E 01	ACC	1.11656E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	7.22895E-08	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.83407E 02	VLD	2.54917E 02	VLG	3.91377E 03	VLT	4.85145E 00	VCHR	1.10209E 04
TIM	1.830000E 02	GAM	1.22255E 01	VEL	8.18242E 03	ALT	2.53162E 05	WT	4.99543E 05
STAGE	2	ALPH	7.41941E 00	MACH	9.32242E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.14069E 01	ACC	1.11931E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	6.63507E-08	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.77682E 02	VLD	2.54917E 02	VLG	3.92046E 03	VLT	5.14067E 00	VCHR	1.10560E 04
TIM	1.840000E 02	GAM	1.20654E 01	VEL	8.21126E 03	ALT	2.54887E 05	WT	4.98314E 05
STAGE	2	ALPH	7.53966E 00	MACH	9.41657E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.14017E 01	ACC	1.12207E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	6.08817E-08	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.71974E 02	VLD	2.54917E 02	VLG	3.92707E 03	VLT	5.44015E 00	VCHR	1.10912E 04
TIM	1.850000E 02	GAM	1.19065E 01	VEL	8.24057E 03	ALT	2.56595E 05	WT	4.97085E 05
STAGE	2	ALPH	7.65864E 00	MACH	9.51256E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.13967E 01	ACC	1.12485E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	5.58468E-08	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.66283E 02	VLD	2.54917E 02	VLG	3.93359E 03	VLT	5.74997E 00	VCHR	1.11265E 04
TIM	1.860000E 02	GAM	1.17489E 01	VEL	8.27004E 03	ALT	2.58287E 05	WT	4.95856E 05
STAGE	2	ALPH	7.77635E 00	MACH	9.60950E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.13916E 01	ACC	1.12763E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	5.12132E-08	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.60611E 02	VLD	2.54917E 02	VLG	3.94002E 03	VLT	6.07025E 00	VCHR	1.11619E 04
TIM	1.870000E 02	GAM	1.15925E 01	VEL	8.29968E 03	ALT	2.59963E 05	WT	4.94627E 05
STAGE	2	ALPH	7.89282E 00	MACH	9.70772E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.13866E 01	ACC	1.13043E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	4.69502E-08	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.54956E 02	VLD	2.54917E 02	VLG	3.94657E 03	VLT	6.40106E 00	VCHR	1.11973E 04
TIM	1.880000E 02	GAM	1.14374E 01	VEL	8.32948E 03	ALT	2.61623E 05	WT	4.93398E 05
STAGE	2	ALPH	8.00804E 00	MACH	9.80723E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.13817E 01	ACC	1.13325E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	4.30253E-08	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.49320E 02	VLD	2.54917E 02	VLG	3.95264E 03	VLT	6.74251E 00	VCHR	1.12328E 04
TIM	1.890000E 02	GAM	1.12835E 01	VEL	8.35945E 03	ALT	2.63267E 05	WT	4.92170E 05
STAGE	2	ALPH	8.12201E 00	MACH	9.87516E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.13768E 01	ACC	1.13608E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	3.91719E-08	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	3.95862E 03	VLT	7.09468E 00	VCHR	1.12684E 04
TIM	1.900000E 02	GAM	1.11308E 01	VEL	8.38957E 03	ALT	2.64894E 05	WT	4.90941E 05
STAGE	2	ALPH	8.23474E 00	MACH	9.91075E 00	XISP	4.55000E 02	DYNP	0

GRAV	3.13720E 01	ACC	1.13892E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	3.54224E-08	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	3.96492E 03	VLT	7.45765E 00	VCHR	1.13041E 04
TIM	1.91000E 02	GAM	1.09793E 01	VEL	8.41966E 03	ALT	2.66506E 05	WT	4.89712E 05
STAGE	2	ALPH	8.34624E 00	MACH	9.94654E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.13672E 01	ACC	1.14178E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	3.21301E-08	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	3.97093E 03	VLT	7.83150E 00	VCHR	1.13399E 04
TIM	1.92000E 02	GAM	1.08290E 01	VEL	8.45042E 03	ALT	2.68101E 05	WT	4.88483E 05
STAGE	2	ALPH	8.45651E 00	MACH	9.98251E 00	XISP	4.55000E 02	DYNP	0
GRAV	3.13625E 01	ACC	1.14465E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.91264E-08	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	3.97686E 03	VLT	8.21630E 00	VCHR	1.13757E 04
TIM	1.93000E 02	GAM	1.06799E 01	VEL	8.48093E 03	ALT	2.69681E 05	WT	4.87254E 05
STAGE	2	ALPH	8.56555E 00	MACH	1.00187E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.13578E 01	ACC	1.14754E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.64395E-08	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	3.98272E 03	VLT	8.61213E 00	VCHR	1.14117E 04
TIM	1.94000E 02	GAM	1.05320E 01	VEL	8.51171E 03	ALT	2.71245E 05	WT	4.86025E 05
STAGE	2	ALPH	8.67336E 00	MACH	1.00550E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.13531E 01	ACC	1.15044E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.40242E-08	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	3.98849E 03	VLT	9.01905E 00	VCHR	1.14477E 04
TIM	1.95000E 02	GAM	1.03854E 01	VEL	8.54266E 03	ALT	2.72793E 05	WT	4.84795E 05
STAGE	2	ALPH	8.77999E 00	MACH	1.00916E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.13485E 01	ACC	1.15336E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.18513E-08	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	3.99418E 03	VLT	9.43714E 00	VCHR	1.14838E 04
TIM	1.96000E 02	GAM	1.02399E 01	VEL	8.57376E 03	ALT	2.74325E 05	WT	4.83567E 05
STAGE	2	ALPH	8.88539E 00	MACH	1.01283E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.13440E 01	ACC	1.15629E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.98941E-08	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	3.99979E 03	VLT	9.86644E 00	VCHR	1.15200E 04
TIM	1.97000E 02	GAM	1.00956E 01	VEL	8.60502E 03	ALT	2.75841E 05	WT	4.82339E 05
STAGE	2	ALPH	8.98959E 00	MACH	1.01653E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.13395E 01	ACC	1.15924E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.81302E-08	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.00552E 03	VLT	1.03070E 01	VCHR	1.15563E 04
TIM	1.98000E 02	GAM	9.95244E 00	VEL	8.63645E 03	ALT	2.77342E 05	WT	4.81110E 05
STAGE	2	ALPH	9.09259E 00	MACH	1.02024E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.13350E 01	ACC	1.16220E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.65388E-08	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.01078E 03	VLT	1.07590E 01	VCHR	1.15927E 04
TIM	1.99000E 02	GAM	9.81049E 00	VEL	8.66804E 03	ALT	2.78826E 05	WT	4.79881E 05
STAGE	2	ALPH	9.19439E 00	MACH	1.02397E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.13306E 01	ACC	1.16517E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.51018E-08	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.01615E 03	VLT	1.12223E 01	VCHR	1.16291E 04
TIM	2.00000E 02	GAM	9.66970E 00	VEL	8.69979E 03	ALT	2.80295E 05	WT	4.78652E 05
STAGE	2	ALPH	9.29501E 00	MACH	1.02772E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.13263E 01	ACC	1.16816E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.38031E-08	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.02145E 03	VLT	1.16970E 01	VCHR	1.16657E 04
TIM	2.01000E 02	GAM	9.53008E 00	VEL	8.73170E 03	ALT	2.81749E 05	WT	4.77423E 05
STAGE	2	ALPH	9.39445E 00	MACH	1.03149E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.13220E 01	ACC	1.17117E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.26283E-08	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.02668E 03	VLT	1.21833E 01	VCHR	1.17023E 04
TIM	2.02000E 02	GAM	9.39162E 00	VEL	8.76377E 03	ALT	2.83187E 05	WT	4.76194E 05
STAGE	2	ALPH	9.49271E 00	MACH	1.03528E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.13177E 01	ACC	1.17419E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.15647E-08	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.03183E 03	VLT	1.26810E 01	VCHR	1.17391E 04
TIM	2.03000E 02	GAM	9.25430E 00	VEL	8.79600E 03	ALT	2.84609E 05	WT	4.74965E 05
STAGE	2	ALPH	9.58979E 00	MACH	1.03909E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.13135E 01	ACC	1.17723E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.06009E-08	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.03690E 03	VLT	1.31904E 01	VCHR	1.17759E 04

TIM	2.04000E 02	GAM	9.11814E 00	VEL	8.82839E 03	ALT	2.86016E 05	WT	4.73736E 05
STAGE	2	ALPH	9.66571E 00	MACH	1.04291E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.13093E 01	ACC	1.18029E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	9.72673E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.04190E 03	VLT	1.37113E 01	VCHR	1.18128E 04
TIM	2.05000E 02	GAM	8.98312E 00	VEL	8.86094E 03	ALT	2.87407E 05	WT	4.72507E 05
STAGE	2	ALPH	9.78047E 00	MACH	1.04676E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.13052E 01	ACC	1.18336E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	8.93322E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.04682E 03	VLT	1.42439E 01	VCHR	1.18498E 04
TIM	2.06000E 02	GAM	8.84923E 00	VEL	8.89365E 03	ALT	2.88783E 05	WT	4.71279E 05
STAGE	2	ALPH	9.87408E 00	MACH	1.05062E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.13011E 01	ACC	1.18644E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	8.21225E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.05167E 03	VLT	1.47882E 01	VCHR	1.18869E 04
TIM	2.07000E 02	GAM	8.71647E 00	VEL	8.92652E 03	ALT	2.90144E 05	WT	4.70050E 05
STAGE	2	ALPH	9.96653E 00	MACH	1.05451E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12971E 01	ACC	1.18954E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	7.55673E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.05645E 03	VLT	1.53441E 01	VCHR	1.19241E 04
TIM	2.08000E 02	GAM	8.58484E 00	VEL	8.95956E 03	ALT	2.91489E 05	WT	4.68821E 05
STAGE	2	ALPH	1.00578E 01	MACH	1.05841E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12931E 01	ACC	1.19266E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	6.96011E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.06116E 03	VLT	1.59118E 01	VCHR	1.19613E 04
TIM	2.09000E 02	GAM	8.45433E 00	VEL	8.99275E 03	ALT	2.92818E 05	WT	4.67592E 05
STAGE	2	ALPH	1.01480E 01	MACH	1.06233E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12892E 01	ACC	1.19580E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	6.41668E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.06580E 03	VLT	1.64913E 01	VCHR	1.19987E 04
TIM	2.10000E 02	GAM	8.32494E 00	VEL	9.02610E 03	ALT	2.94133E 05	WT	4.66363E 05
STAGE	2	ALPH	1.02371E 01	MACH	1.06627E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12853E 01	ACC	1.19895E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	5.92126E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.07036E 03	VLT	1.70825E 01	VCHR	1.20362E 04
TIM	2.11000E 02	GAM	8.19665E 00	VEL	9.05961E 03	ALT	2.95432E 05	WT	4.65134E 05
STAGE	2	ALPH	1.03250E 01	MACH	1.07023E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12815E 01	ACC	1.20211E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	5.46924E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.07465E 03	VLT	1.76855E 01	VCHR	1.20737E 04
TIM	2.12000E 02	GAM	8.06947E 00	VEL	9.09328E 03	ALT	2.96716E 05	WT	4.63905E 05
STAGE	2	ALPH	1.04117E 01	MACH	1.07421E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12777E 01	ACC	1.20530E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	5.05647E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.07928E 03	VLT	1.83003E 01	VCHR	1.21114E 04
TIM	2.13000E 02	GAM	7.94338E 00	VEL	9.12711E 03	ALT	2.97985E 05	WT	4.62676E 05
STAGE	2	ALPH	1.04974E 01	MACH	1.07820E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12739E 01	ACC	1.20850E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	4.67923E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.08364E 03	VLT	1.89270E 01	VCHR	1.21491E 04
TIM	2.14000E 02	GAM	7.81839E 00	VEL	9.16100E 03	ALT	2.99239E 05	WT	4.61447E 05
STAGE	2	ALPH	1.05820E 01	MACH	1.08222E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12702E 01	ACC	1.21172E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	4.33418E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.08792E 03	VLT	1.95655E 01	VCHR	1.21870E 04
TIM	2.15000E 02	GAM	7.69448E 00	VEL	9.19525E 03	ALT	3.00478E 05	WT	4.60219E 05
STAGE	2	ALPH	1.06654E 01	MACH	1.08625E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12665E 01	ACC	1.21495E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	4.01831E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.09234E 03	VLT	2.02158E 01	VCHR	1.22249E 04
TIM	2.16000E 02	GAM	7.57165E 00	VEL	9.22956E 03	ALT	3.01701E 05	WT	4.58990E 05
STAGE	2	ALPH	1.07478E 01	MACH	1.09030E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12629E 01	ACC	1.21821E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	3.72891E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.09630E 03	VLT	2.08780E 01	VCHR	1.22629E 04
TIM	2.17000E 02	GAM	7.44990E 00	VEL	9.26402E 03	ALT	3.02910E 05	WT	4.57761E 05
STAGE	2	ALPH	1.08290E 01	MACH	1.09438E 01	XISP	4.55000E 02	DYNP	0

GRAV	3.12594E 01	ACC	1.22148E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	3.46356E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.10038E 03	VLT	2.15520E 01	VCHR	1.23011E 04
TIM	2.18000E 02	GAM	7.32922E 00	VEL	9.29865E 03	ALT	3.04104E 05	WT	4.56532E 05
STAGE	2	ALPH	1.09092E 01	MACH	1.09847E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12558E 01	ACC	1.22476E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	3.22002E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.10440E 03	VLT	2.22379E 01	VCHR	1.23393E 04
TIM	2.19000E 02	GAM	7.20961E 00	VEL	9.33343E 03	ALT	3.05282E 05	WT	4.55303E 05
STAGE	2	ALPH	1.09883E 01	MACH	1.10258E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12523E 01	ACC	1.22807E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.99642E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.10836E 03	VLT	2.29356E 01	VCHR	1.23776E 04
TIM	2.20000E 02	GAM	7.09105E 00	VEL	9.36838E 03	ALT	3.06446E 05	WT	4.54074E 05
STAGE	2	ALPH	1.10663E 01	MACH	1.10670E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12489E 01	ACC	1.23139E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.79028E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.11225E 03	VLT	2.36452E 01	VCHR	1.24161E 04
TIM	2.21000E 02	GAM	6.97355E 00	VEL	9.40348E 03	ALT	3.07595E 05	WT	4.52845E 05
STAGE	2	ALPH	1.11432E 01	MACH	1.11085E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12455E 01	ACC	1.23474E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.60200E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.11607E 03	VLT	2.43666E 01	VCHR	1.24546E 04
TIM	2.22000E 02	GAM	6.85710E 00	VEL	9.43875E 03	ALT	3.08730E 05	WT	4.51616E 05
STAGE	2	ALPH	1.12191E 01	MACH	1.11502E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12422E 01	ACC	1.23810E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.42778E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.11983E 03	VLT	2.50999E 01	VCHR	1.24932E 04
TIM	2.23000E 02	GAM	6.74168E 00	VEL	9.47417E 03	ALT	3.09849E 05	WT	4.50387E 05
STAGE	2	ALPH	1.12939E 01	MACH	1.11920E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12389E 01	ACC	1.24147E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.26739E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.12353E 03	VLT	2.58449E 01	VCHR	1.25320E 04
TIM	2.24000E 02	GAM	6.62731E 00	VEL	9.50975E 03	ALT	3.10954E 05	WT	4.49159E 05
STAGE	2	ALPH	1.13677E 01	MACH	1.12340E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12356E 01	ACC	1.24487E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.11954E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.12717E 03	VLT	2.66016E 01	VCHR	1.25708E 04
TIM	2.25000E 02	GAM	6.51397E 00	VEL	9.54549E 03	ALT	3.12044E 05	WT	4.47930E 05
STAGE	2	ALPH	1.14404E 01	MACH	1.12763E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12324E 01	ACC	1.24829E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.98312E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.13074E 03	VLT	2.73706E 01	VCHR	1.26097E 04
TIM	2.26000E 02	GAM	6.40165E 00	VEL	9.58140E 03	ALT	3.13120E 05	WT	4.46701E 05
STAGE	2	ALPH	1.15120E 01	MACH	1.13187E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12292E 01	ACC	1.25172E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.85715E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.13426E 03	VLT	2.81511E 01	VCHR	1.26488E 04
TIM	2.27000E 02	GAM	6.29035E 00	VEL	9.61746E 03	ALT	3.14181E 05	WT	4.45472E 05
STAGE	2	ALPH	1.15826E 01	MACH	1.13613E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12261E 01	ACC	1.25517E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.74074E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.13771E 03	VLT	2.89433E 01	VCHR	1.26879E 04
TIM	2.28000E 02	GAM	6.18007E 00	VEL	9.65368E 03	ALT	3.15227E 05	WT	4.44243E 05
STAGE	2	ALPH	1.16522E 01	MACH	1.14041E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12230E 01	ACC	1.25864E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.63306E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.14130E 03	VLT	2.97473E 01	VCHR	1.27271E 04
TIM	2.29000E 02	GAM	6.07080E 00	VEL	9.69006E 03	ALT	3.16259E 05	WT	4.43014E 05
STAGE	2	ALPH	1.17208E 01	MACH	1.14470E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12199E 01	ACC	1.26214E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.53344E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.14443E 03	VLT	3.05631E 01	VCHR	1.27665E 04
TIM	2.30000E 02	GAM	5.96253E 00	VEL	9.72659E 03	ALT	3.17277E 05	WT	4.41785E 05
STAGE	2	ALPH	1.17863E 01	MACH	1.14902E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12169E 01	ACC	1.26565E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.44116E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0

SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.14770E 03	VLT	3.13905E 01	VCHR	1.28060E 04
TIM	2.31000E 02	GAM	5.85527E 00	VEL	9.76329E 03	ALT	3.18280E 05	WT	4.40556E 05
STAGE	2	ALPH	1.18548E 01	MACH	1.15336E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12140E 01	ACC	1.26918E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.35563E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.15092E 03	VLT	3.22296E 01	VCHR	1.28455E 04
TIM	2.32000E 02	GAM	5.74899E 00	VEL	9.80015E 03	ALT	3.19269E 05	WT	4.39327E 05
STAGE	2	ALPH	1.19203E 01	MACH	1.15771E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12111E 01	ACC	1.27273E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.27630E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.15407E 03	VLT	3.30804E 01	VCHR	1.28852E 04
TIM	2.33000E 02	GAM	5.64370E 00	VEL	9.83717E 03	ALT	3.20244E 05	WT	4.38099E 05
STAGE	2	ALPH	1.19848E 01	MACH	1.16208E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12082E 01	ACC	1.27630E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.20267E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.15717E 03	VLT	3.39428E 01	VCHR	1.29250E 04
TIM	2.34000E 02	GAM	5.53940E 00	VEL	9.87435E 03	ALT	3.21204E 05	WT	4.36870E 05
STAGE	2	ALPH	1.20483E 01	MACH	1.16647E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12054E 01	ACC	1.27989E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.13428E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.16021E 03	VLT	3.48168E 01	VCHR	1.29648E 04
TIM	2.35000E 02	GAM	5.43607E 00	VEL	9.91169E 03	ALT	3.22150E 05	WT	4.35641E 05
STAGE	2	ALPH	1.21108E 01	MACH	1.17089E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12026E 01	ACC	1.28350E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.07071E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.16319E 03	VLT	3.57024E 01	VCHR	1.30048E 04
TIM	2.36000E 02	GAM	5.33372E 00	VEL	9.94919E 03	ALT	3.23082E 05	WT	4.34412E 05
STAGE	2	ALPH	1.21723E 01	MACH	1.17532E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11998E 01	ACC	1.28713E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.01158E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.16612E 03	VLT	3.65995E 01	VCHR	1.30449E 04
TIM	2.37000E 02	GAM	5.23233E 00	VEL	9.98685E 03	ALT	3.24000E 05	WT	4.33183E 05
STAGE	2	ALPH	1.22328E 01	MACH	1.17976E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11971E 01	ACC	1.29078E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	9.56541E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.16899E 03	VLT	3.75081E 01	VCHR	1.30852E 04
TIM	2.38000E 02	GAM	5.13190E 00	VEL	1.00247E 04	ALT	3.24903E 05	WT	4.31954E 05
STAGE	2	ALPH	1.22924E 01	MACH	1.18423E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11945E 01	ACC	1.29445E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	9.05279E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.17181E 03	VLT	3.84281E 01	VCHR	1.31255E 04
TIM	2.39000E 02	GAM	5.03243E 00	VEL	1.00627E 04	ALT	3.25793E 05	WT	4.30725E 05
STAGE	2	ALPH	1.23509E 01	MACH	1.18872E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11919E 01	ACC	1.29815E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	8.57501E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.17458E 03	VLT	3.93595E 01	VCHR	1.31659E 04
TIM	2.40000E 02	GAM	4.93391E 00	VEL	1.01008E 04	ALT	3.26669E 05	WT	4.29496E 05
STAGE	2	ALPH	1.24085E 01	MACH	1.19323E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11893E 01	ACC	1.30186E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	8.12941E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.17728E 03	VLT	4.03024E 01	VCHR	1.32065E 04
TIM	2.41000E 02	GAM	4.83633E 00	VEL	1.01391E 04	ALT	3.27530E 05	WT	4.28267E 05
STAGE	2	ALPH	1.24652E 01	MACH	1.19775E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11867E 01	ACC	1.30560E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	7.71354E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.17994E 03	VLT	4.12565E 01	VCHR	1.32471E 04
TIM	2.42000E 02	GAM	4.73970E 00	VEL	1.01776E 04	ALT	3.28378E 05	WT	4.27039E 05
STAGE	2	ALPH	1.25209E 01	MACH	1.20230E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11842E 01	ACC	1.30935E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	7.32517E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.18254E 03	VLT	4.22220E 01	VCHR	1.32879E 04
TIM	2.43000E 02	GAM	4.64400E 00	VEL	1.02162E 04	ALT	3.29212E 05	WT	4.25810E 05
STAGE	2	ALPH	1.25756E 01	MACH	1.20686E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11818E 01	ACC	1.31313E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	6.96225E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.18509E 03	VLT	4.31987E 01	VCHR	1.33288E 04

TIM	2.44000E 02	GAM	4.54923E 00	VEL	1.02550E 04	ALT	3.30033E 05	WT	4.24581E 05
STAGE	2	ALPH	1.26294E 01	MACH	1.21144E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11794E 01	ACC	1.31693E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	6.62290E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.18759E 03	VLT	4.41866E 01	VCHR	1.33698E 04
TIM	2.45000E 02	GAM	4.45538E 00	VEL	1.02970E 04	ALT	3.30839E 05	WT	4.23352E 05
STAGE	2	ALPH	1.26822E 01	MACH	1.21604E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11770E 01	ACC	1.32075E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	6.30539E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.19004E 03	VLT	4.51856E 01	VCHR	1.34109E 04
TIM	2.46000E 02	GAM	4.36245E 00	VEL	1.03331E 04	ALT	3.31632E 05	WT	4.22123E 05
STAGE	2	ALPH	1.27341E 01	MACH	1.22066E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11747E 01	ACC	1.32460E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	6.00814E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.19244E 03	VLT	4.61958E 01	VCHR	1.34521E 04
TIM	2.47000E 02	GAM	4.27044E 00	VEL	1.03723E 04	ALT	3.32411E 05	WT	4.20894E 05
STAGE	2	ALPH	1.27851E 01	MACH	1.22530E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11724E 01	ACC	1.32847E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	5.72968E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.19478E 03	VLT	4.72170E 01	VCHR	1.34935E 04
TIM	2.48000E 02	GAM	4.17934E 00	VEL	1.04118E 04	ALT	3.33177E 05	WT	4.19665E 05
STAGE	2	ALPH	1.28351E 01	MACH	1.22996E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11701E 01	ACC	1.33236E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	5.46867E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.19708E 03	VLT	4.82492E 01	VCHR	1.35350E 04
TIM	2.49000E 02	GAM	4.08914E 00	VEL	1.04514E 04	ALT	3.33929E 05	WT	4.18436E 05
STAGE	2	ALPH	1.28842E 01	MACH	1.23464E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11679E 01	ACC	1.33627E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	5.22387E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.19933E 03	VLT	4.92923E 01	VCHR	1.35766E 04
TIM	2.50000E 02	GAM	3.99984E 00	VEL	1.04912E 04	ALT	3.34667E 05	WT	4.17207E 05
STAGE	2	ALPH	1.29324E 01	MACH	1.23934E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11657E 01	ACC	1.34021E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	4.99416E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.20152E 03	VLT	5.03464E 01	VCHR	1.36183E 04
TIM	2.51000E 02	GAM	3.91143E 00	VEL	1.05311E 04	ALT	3.35392E 05	WT	4.15979E 05
STAGE	2	ALPH	1.29797E 01	MACH	1.24406E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11636E 01	ACC	1.34417E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	4.77847E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.20367E 03	VLT	5.14112E 01	VCHR	1.36601E 04
TIM	2.52000E 02	GAM	3.82391E 00	VEL	1.05712E 04	ALT	3.36104E 05	WT	4.14750E 05
STAGE	2	ALPH	1.30261E 01	MACH	1.24879E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11615E 01	ACC	1.34815E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	4.57584E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.20578E 03	VLT	5.24869E 01	VCHR	1.37020E 04
TIM	2.53000E 02	GAM	3.73728E 00	VEL	1.06115E 04	ALT	3.36802E 05	WT	4.13521E 05
STAGE	2	ALPH	1.30716E 01	MACH	1.25355E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11595E 01	ACC	1.35215E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	4.38538E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.20783E 03	VLT	5.35733E 01	VCHR	1.37441E 04
TIM	2.54000E 02	GAM	3.65152E 00	VEL	1.06519E 04	ALT	3.37487E 05	WT	4.12292E 05
STAGE	2	ALPH	1.31161E 01	MACH	1.25833E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11574E 01	ACC	1.35618E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	4.20626E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.20984E 03	VLT	5.46703E 01	VCHR	1.37863E 04
TIM	2.55000E 02	GAM	3.56664E 00	VEL	1.06925E 04	ALT	3.38159E 05	WT	4.11063E 05
STAGE	2	ALPH	1.31598E 01	MACH	1.26312E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11555E 01	ACC	1.36024E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	4.03773E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.21180E 03	VLT	5.57780E 01	VCHR	1.38286E 04
TIM	2.56000E 02	GAM	3.48263E 00	VEL	1.07332E 04	ALT	3.38818E 05	WT	4.09834E 05
STAGE	2	ALPH	1.32026E 01	MACH	1.26794E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11535E 01	ACC	1.36432E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	3.87907E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.21372E 03	VLT	5.68962E 01	VCHR	1.38711E 04
TIM	2.57000E 02	GAM	3.39948E 00	VEL	1.07742E 04	ALT	3.39463E 05	WT	4.08605E 05
STAGE	2	ALPH	1.32446E 01	MACH	1.27277E 01	XISP	4.55000E 02	DYNP	0

GRAV	3.11516E 01	ACC	1.36842E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	3.72964E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.21558E 03	VLT	5.80248E 01	VCHR	1.39136E 04
TIM	2.58000E 02	GAM	3.31720E 00	VEL	1.08153E 04	ALT	3.40096E 05	WT	4.07376E 05
STAGE	2	ALPH	1.32856E 01	MACH	1.27763E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11498E 01	ACC	1.37255E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	3.58883E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.21741E 03	VLT	5.91639E 01	VCHR	1.39563E 04
TIM	2.59000E 02	GAM	3.23576E 00	VEL	1.08565E 04	ALT	3.40715E 05	WT	4.06147E 05
STAGE	2	ALPH	1.33258E 01	MACH	1.28250E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11479E 01	ACC	1.37670E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	3.45609E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.21919E 03	VLT	6.03133E 01	VCHR	1.39991E 04
TIM	2.60000E 02	GAM	3.15518E 00	VEL	1.08980E 04	ALT	3.41321E 05	WT	4.04919E 05
STAGE	2	ALPH	1.33651E 01	MACH	1.28739E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11462E 01	ACC	1.38088E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	3.33090E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.22093E 03	VLT	6.14730E 01	VCHR	1.40421E 04
TIM	2.61000E 02	GAM	3.07544E 00	VEL	1.09395E 04	ALT	3.41915E 05	WT	4.03690E 05
STAGE	2	ALPH	1.34035E 01	MACH	1.29241E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11444E 01	ACC	1.38508E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	3.21278E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.22262E 03	VLT	6.26429E 01	VCHR	1.40852E 04
TIM	2.62000E 02	GAM	2.99654E 00	VEL	1.09813E 04	ALT	3.42495E 05	WT	4.02461E 05
STAGE	2	ALPH	1.34411E 01	MACH	1.29724E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11427E 01	ACC	1.38931E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	3.10128E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.22427E 03	VLT	6.38230E 01	VCHR	1.41284E 04
TIM	2.63000E 02	GAM	2.91848E 00	VEL	1.10232E 04	ALT	3.43063E 05	WT	4.01232E 05
STAGE	2	ALPH	1.34778E 01	MACH	1.30220E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11410E 01	ACC	1.39357E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.99600E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.22587E 03	VLT	6.50131E 01	VCHR	1.41717E 04
TIM	2.64000E 02	GAM	2.84125E 00	VEL	1.10653E 04	ALT	3.43618E 05	WT	4.00003E 05
STAGE	2	ALPH	1.35137E 01	MACH	1.30717E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11394E 01	ACC	1.39785E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.89655E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.22744E 03	VLT	6.62133E 01	VCHR	1.42152E 04
TIM	2.65000E 02	GAM	2.76484E 00	VEL	1.11076E 04	ALT	3.44160E 05	WT	3.98774E 05
STAGE	2	ALPH	1.35488E 01	MACH	1.31216E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11378E 01	ACC	1.40216E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.80257E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.22896E 03	VLT	6.74233E 01	VCHR	1.42588E 04
TIM	2.66000E 02	GAM	2.68926E 00	VEL	1.11501E 04	ALT	3.44689E 05	WT	3.97545E 05
STAGE	2	ALPH	1.35830E 01	MACH	1.31718E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11363E 01	ACC	1.40649E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.71374E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.23044E 03	VLT	6.86433E 01	VCHR	1.43025E 04
TIM	2.67000E 02	GAM	2.61449E 00	VEL	1.11927E 04	ALT	3.45206E 05	WT	3.96316E 05
STAGE	2	ALPH	1.36163E 01	MACH	1.32221E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11348E 01	ACC	1.41085E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.62975E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.23188E 03	VLT	6.98730E 01	VCHR	1.43463E 04
TIM	2.68000E 02	GAM	2.54054E 00	VEL	1.12354E 04	ALT	3.45710E 05	WT	3.95087E 05
STAGE	2	ALPH	1.36489E 01	MACH	1.32726E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11333E 01	ACC	1.41524E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.55031E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.23328E 03	VLT	7.11124E 01	VCHR	1.43903E 04
TIM	2.69000E 02	GAM	2.46739E 00	VEL	1.12784E 04	ALT	3.46202E 05	WT	3.93859E 05
STAGE	2	ALPH	1.36806E 01	MACH	1.33234E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11318E 01	ACC	1.41966E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.47515E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.23464E 03	VLT	7.23615E 01	VCHR	1.44345E 04
TIM	2.70000E 02	GAM	2.39505E 00	VEL	1.13215E 04	ALT	3.46681E 05	WT	3.92630E 05
STAGE	2	ALPH	1.37114E 01	MACH	1.33743E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11304E 01	ACC	1.42410E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.40403E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.23596E 03	VLT	7.36202E 01	VCHR	1.44787E 04

TIM	2.71000E 02	GAM	2.32350E 00	VEL	1.13648E 04	ALT	3.47148E 05	WT	3.91401E 05
STAGE	2	ALPH	1.37415E 01	MACH	1.34255E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11290E 01	ACC	1.42857E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.33672E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.23725E 03	VLT	7.48883E 01	VCHR	1.45231E 04
TIM	2.72000E 02	GAM	2.25275E 00	VEL	1.14083E 04	ALT	3.47603E 05	WT	3.90172E 05
STAGE	2	ALPH	1.37708E 01	MACH	1.34768E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11277E 01	ACC	1.43307E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.27300E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.23849E 03	VLT	7.61659E 01	VCHR	1.45677E 04
TIM	2.73000E 02	GAM	2.18279E 00	VEL	1.14519E 04	ALT	3.48045E 05	WT	3.88943E 05
STAGE	2	ALPH	1.37992E 01	MACH	1.35284E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11264E 01	ACC	1.43760E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.21268E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.23969E 03	VLT	7.74527E 01	VCHR	1.46123E 04
TIM	2.74000E 02	GAM	2.11362E 00	VEL	1.14958E 04	ALT	3.48475E 05	WT	3.87714E 05
STAGE	2	ALPH	1.38269E 01	MACH	1.35882E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11252E 01	ACC	1.44216E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.15556E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.24086E 03	VLT	7.87489E 01	VCHR	1.46572E 04
TIM	2.75000E 02	GAM	2.04523E 00	VEL	1.15398E 04	ALT	3.48893E 05	WT	3.86485E 05
STAGE	2	ALPH	1.38537E 01	MACH	1.36321E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11239E 01	ACC	1.44674E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.10147E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.24199E 03	VLT	8.00542E 01	VCHR	1.47021E 04
TIM	2.76000E 02	GAM	1.97761E 00	VEL	1.15839E 04	ALT	3.49299E 05	WT	3.85256E 05
STAGE	2	ALPH	1.38798E 01	MACH	1.36843E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11227E 01	ACC	1.45136E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.05025E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.24308E 03	VLT	8.13686E 01	VCHR	1.47472E 04
TIM	2.77000E 02	GAM	1.91077E 00	VEL	1.16263E 04	ALT	3.49693E 05	WT	3.84027E 05
STAGE	2	ALPH	1.39051E 01	MACH	1.37367E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11216E 01	ACC	1.45600E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.00175E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.24414E 03	VLT	8.26920E 01	VCHR	1.47925E 04
TIM	2.78000E 02	GAM	1.84470E 00	VEL	1.16728E 04	ALT	3.50074E 05	WT	3.82799E 05
STAGE	2	ALPH	1.39295E 01	MACH	1.37893E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11206E 01	ACC	1.46067E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.95583E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.24516E 03	VLT	8.40243E 01	VCHR	1.48378E 04
TIM	2.79000E 02	GAM	1.77939E 00	VEL	1.17175E 04	ALT	3.50444E 05	WT	3.81570E 05
STAGE	2	ALPH	1.39532E 01	MACH	1.38421E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11194E 01	ACC	1.46538E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.91234E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.24614E 03	VLT	8.53655E 01	VCHR	1.48834E 04
TIM	2.80000E 02	GAM	1.71484E 00	VEL	1.17674E 04	ALT	3.50802E 05	WT	3.80341E 05
STAGE	2	ALPH	1.39762E 01	MACH	1.38951E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11183E 01	ACC	1.47011E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.87118E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.24709E 03	VLT	8.67155E 01	VCHR	1.49291E 04
TIM	2.81000E 02	GAM	1.65104E 00	VEL	1.18074E 04	ALT	3.51148E 05	WT	3.79112E 05
STAGE	2	ALPH	1.39983E 01	MACH	1.39483E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11173E 01	ACC	1.47488E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.83222E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.24800E 03	VLT	8.80741E 01	VCHR	1.49749E 04
TIM	2.82000E 02	GAM	1.58800E 00	VEL	1.18577E 04	ALT	3.51483E 05	WT	3.77883E 05
STAGE	2	ALPH	1.40197E 01	MACH	1.40018E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11163E 01	ACC	1.47967E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.79535E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.24888E 03	VLT	8.94413E 01	VCHR	1.50208E 04
TIM	2.83000E 02	GAM	1.52571E 00	VEL	1.18981E 04	ALT	3.51805E 05	WT	3.76654E 05
STAGE	2	ALPH	1.40403E 01	MACH	1.40554E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11154E 01	ACC	1.48450E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.76049E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.24973E 03	VLT	9.08170E 01	VCHR	1.50670E 04
TIM	2.84000E 02	GAM	1.46416E 00	VEL	1.19437E 04	ALT	3.52116E 05	WT	3.75425E 05
STAGE	2	ALPH	1.40602E 01	MACH	1.41093E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11145E 01	ACC	1.48936E 00	THRI	5.59144E 05	CL	0	LIFT	0

DENS	1.72752E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.25054E 03	VLT	9.22011E 01	VCHR	1.51132E 04
TIM	2.85000E 02	GAM	1.40334E 00	VEL	1.19895E 04	ALT	3.52416E 05	WT	3.74196E 05
STAGE	2	ALPH	1.40793E 01	MACH	1.41654E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11136E 01	ACC	1.49425E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.69636E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.25132E 03	VLT	9.35936E 01	VCHR	1.51596E 04
TIM	2.86000E 02	GAM	1.34327E 00	VEL	1.20354E 04	ALT	3.52703E 05	WT	3.72967E 05
STAGE	2	ALPH	1.40976E 01	MACH	1.42127E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11127E 01	ACC	1.49918E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.66693E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.25206E 03	VLT	9.49943E 01	VCHR	1.52062E 04
TIM	2.87000E 02	GAM	1.28392E 00	VEL	1.20816E 04	ALT	3.52980E 05	WT	3.71739E 05
STAGE	2	ALPH	1.41152E 01	MACH	1.42722E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11119E 01	ACC	1.50413E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.63916E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.25278E 03	VLT	9.64032E 01	VCHR	1.52529E 04
TIM	2.88000E 02	GAM	1.22531E 00	VEL	1.21279E 04	ALT	3.53245E 05	WT	3.70510E 05
STAGE	2	ALPH	1.41321E 01	MACH	1.43269E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11112E 01	ACC	1.50912E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.61297E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.25346E 03	VLT	9.78201E 01	VCHR	1.52998E 04
TIM	2.89000E 02	GAM	1.16741E 00	VEL	1.21744E 04	ALT	3.53499E 05	WT	3.69281E 05
STAGE	2	ALPH	1.41482E 01	MACH	1.43818E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11104E 01	ACC	1.51414E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.58828E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.25411E 03	VLT	9.92450E 01	VCHR	1.53468E 04
TIM	2.90000E 02	GAM	1.11024E 00	VEL	1.22211E 04	ALT	3.53741E 05	WT	3.68052E 05
STAGE	2	ALPH	1.41636E 01	MACH	1.44370E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11097E 01	ACC	1.51920E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.56505E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.25473E 03	VLT	1.00678E 02	VCHR	1.53940E 04
TIM	2.91000E 02	GAM	1.05378E 00	VEL	1.22680E 04	ALT	3.53972E 05	WT	3.66823E 05
STAGE	2	ALPH	1.41782E 01	MACH	1.44924E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11090E 01	ACC	1.52429E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.54322E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.25531E 03	VLT	1.02118E 02	VCHR	1.54413E 04
TIM	2.92000E 02	GAM	9.98038E-01	VEL	1.23151E 04	ALT	3.54192E 05	WT	3.65594E 05
STAGE	2	ALPH	1.41921E 01	MACH	1.45480E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11084E 01	ACC	1.52941E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.52271E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.25587E 03	VLT	1.03567E 02	VCHR	1.54888E 04
TIM	2.93000E 02	GAM	9.43001E-01	VEL	1.23623E 04	ALT	3.54401E 05	WT	3.64365E 05
STAGE	2	ALPH	1.42053E 01	MACH	1.46038E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11078E 01	ACC	1.53457E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.50349E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.25640E 03	VLT	1.05023E 02	VCHR	1.55365E 04
TIM	2.94000E 02	GAM	8.88669E-01	VEL	1.24098E 04	ALT	3.54599E 05	WT	3.63136E 05
STAGE	2	ALPH	1.42178E 01	MACH	1.46599E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11072E 01	ACC	1.53976E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.48551E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.25690E 03	VLT	1.06486E 02	VCHR	1.55843E 04
TIM	2.95000E 02	GAM	8.35037E-01	VEL	1.24574E 04	ALT	3.54786E 05	WT	3.61907E 05
STAGE	2	ALPH	1.42295E 01	MACH	1.47161E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11066E 01	ACC	1.54499E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.46873E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.25736E 03	VLT	1.07957E 02	VCHR	1.56323E 04
TIM	2.96000E 02	GAM	7.82102E-01	VEL	1.25052E 04	ALT	3.54962E 05	WT	3.60679E 05
STAGE	2	ALPH	1.42406E 01	MACH	1.47726E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11061E 01	ACC	1.55026E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.45309E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.25780E 03	VLT	1.09435E 02	VCHR	1.56804E 04
TIM	2.97000E 02	GAM	7.29860E-01	VEL	1.25552E 04	ALT	3.55128E 05	WT	3.59450E 05
STAGE	2	ALPH	1.42509E 01	MACH	1.48294E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11056E 01	ACC	1.55556E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.43857E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.25821E 03	VLT	1.10920E 02	VCHR	1.57287E 04

TIM	2.98000E 02	GAM	6.78308E-01	VEL	1.26014E 04	ALT	3.55282E 05	WT	3.58221E 05
STAGE	2	ALPH	1.42605E 01	MACH	1.48863E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11052E 01	ACC	1.56089E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.42512E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.25859E 03	VLT	1.12413E 02	VCHR	1.57772E 04
TIM	2.90000E 02	GAM	6.27442E-01	VEL	1.26499E 04	ALT	3.55426E 05	WT	3.56992E 05
STAGE	2	ALPH	1.42695E 01	MACH	1.49435E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11048E 01	ACC	1.56627E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.41272E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.25895E 03	VLT	1.13913E 02	VCHR	1.58259E 04
TIM	3.00000E 02	GAM	5.77259E-01	VEL	1.26984E 04	ALT	3.55559E 05	WT	3.55763E 05
STAGE	2	ALPH	1.42777E 01	MACH	1.50009E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11044E 01	ACC	1.57168E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.40132E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.25928E 03	VLT	1.15419E 02	VCHR	1.58747E 04
TIM	3.01000E 02	GAM	5.27755E-01	VEL	1.27472E 04	ALT	3.55682E 05	WT	3.54534E 05
STAGE	2	ALPH	1.42852E 01	MACH	1.50585E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11040E 01	ACC	1.57712E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.39092E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.25958E 03	VLT	1.16933E 02	VCHR	1.59236E 04
TIM	3.02000E 02	GAM	4.78925E-01	VEL	1.27962E 04	ALT	3.55794E 05	WT	3.53305E 05
STAGE	2	ALPH	1.42920E 01	MACH	1.51164E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11037E 01	ACC	1.58261E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.38147E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.25985E 03	VLT	1.18453E 02	VCHR	1.59728E 04
TIM	3.03000E 02	GAM	4.30768E-01	VEL	1.28454E 04	ALT	3.55896E 05	WT	3.52076E 05
STAGE	2	ALPH	1.42982E 01	MACH	1.51745E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11034E 01	ACC	1.58813E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.37295E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.26010E 03	VLT	1.19980E 02	VCHR	1.60221E 04
TIM	3.04000E 02	GAM	3.83279E-01	VEL	1.28948E 04	ALT	3.55987E 05	WT	3.50847E 05
STAGE	2	ALPH	1.43037E 01	MACH	1.52328E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11031E 01	ACC	1.59370E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.36535E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.26032E 03	VLT	1.21513E 02	VCHR	1.60716E 04
TIM	3.05000E 02	GAM	3.36456E-01	VEL	1.29444E 04	ALT	3.56068E 05	WT	3.49619E 05
STAGE	2	ALPH	1.43084E 01	MACH	1.52914E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11029E 01	ACC	1.59930E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.35863E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.26051E 03	VLT	1.23053E 02	VCHR	1.61212E 04
TIM	3.06000E 02	GAM	2.90293E-01	VEL	1.29941E 04	ALT	3.56139E 05	WT	3.48390E 05
STAGE	2	ALPH	1.43125E 01	MACH	1.53502E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11027E 01	ACC	1.60494E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.35279E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.26068E 03	VLT	1.24599E 02	VCHR	1.61710E 04
TIM	3.07000E 02	GAM	2.44789E-01	VEL	1.30441E 04	ALT	3.56200E 05	WT	3.47161E 05
STAGE	2	ALPH	1.43160E 01	MACH	1.54092E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11025E 01	ACC	1.61062E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.34780E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.26083E 03	VLT	1.26151E 02	VCHR	1.62210E 04
TIM	3.08000E 02	GAM	1.99940E-01	VEL	1.30943E 04	ALT	3.56251E 05	WT	3.45932E 05
STAGE	2	ALPH	1.43187E 01	MACH	1.54685E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11023E 01	ACC	1.61634E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.34366E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.26095E 03	VLT	1.27710E 02	VCHR	1.62712E 04
TIM	3.09000E 02	GAM	1.55742E-01	VEL	1.31447E 04	ALT	3.56291E 05	WT	3.44703E 05
STAGE	2	ALPH	1.43208E 01	MACH	1.55280E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11022E 01	ACC	1.62210E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.34034E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.26104E 03	VLT	1.29275E 02	VCHR	1.63216E 04
TIM	3.10000E 02	GAM	1.12192E-01	VEL	1.31953E 04	ALT	3.56322E 05	WT	3.43474E 05
STAGE	2	ALPH	1.43223E 01	MACH	1.55878E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11021E 01	ACC	1.62791E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.33783E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.26112E 03	VLT	1.30846E 02	VCHR	1.63721E 04
TIM	3.11000E 02	GAM	6.92874E-02	VEL	1.32460E 04	ALT	3.56343E 05	WT	3.42245E 05
STAGE	2	ALPH	1.43230E 01	MACH	1.56478E 01	XISP	4.55000E 02	DYNP	0

GRAV	3.11021E 01	ACC	1.63375E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.33613E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.26117E 03	VLT	1.32422E 02	VCHR	1.64229E 04
TIM	3.12000E 02	GAM	2.70243E-02	VEL	1.32970E 04	ALT	3.56354E 05	WT	3.41016E 05
STAGE	2	ALPH	1.43231E 01	MACH	1.57080E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11020E 01	ACC	1.63964E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.33523E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.26119E 03	VLT	1.34004E 02	VCHR	1.64738E 04
TIM	3.13000E 02	GAM	-1.46003E-02	VEL	1.33482E 04	ALT	3.56356E 05	WT	3.39788E 05
STAGE	2	ALPH	1.43226E 01	MACH	1.57685E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11020E 01	ACC	1.64557E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.33511E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.26120E 03	VLT	1.35592E 02	VCHR	1.65248E 04
TIM	3.14000E 02	GAM	-5.55897E-02	VEL	1.33997E 04	ALT	3.56348E 05	WT	3.38559E 05
STAGE	2	ALPH	1.43214E 01	MACH	1.58293E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11021E 01	ACC	1.65154E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.33578E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.26118E 03	VLT	1.37186E 02	VCHR	1.65761E 04
TIM	3.15000E 02	GAM	-9.59468E-02	VEL	1.34513E 04	ALT	3.56330E 05	WT	3.37330E 05
STAGE	2	ALPH	1.43196E 01	MACH	1.58902E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11021E 01	ACC	1.65756E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.33722E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.26114E 03	VLT	1.38785E 02	VCHR	1.66276E 04
TIM	3.16000E 02	GAM	-1.35675E-01	VEL	1.35031E 04	ALT	3.56303E 05	WT	3.36101E 05
STAGE	2	ALPH	1.43171E 01	MACH	1.59515E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11022E 01	ACC	1.66362E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.33944E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.26107E 03	VLT	1.40389E 02	VCHR	1.66792E 04
TIM	3.17000E 02	GAM	-1.74777E-01	VEL	1.35552E 04	ALT	3.56266E 05	WT	3.34872E 05
STAGE	2	ALPH	1.43139E 01	MACH	1.60129E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11023E 01	ACC	1.66972E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.34243E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.26099E 03	VLT	1.41999E 02	VCHR	1.67311E 04
TIM	3.18000E 02	GAM	-2.13257E-01	VEL	1.36074E 04	ALT	3.56220E 05	WT	3.33643E 05
STAGE	2	ALPH	1.43102E 01	MACH	1.60747E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11024E 01	ACC	1.67587E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.34618E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.26088E 03	VLT	1.43614E 02	VCHR	1.67831E 04
TIM	3.19000E 02	GAM	-2.51116E-01	VEL	1.36599E 04	ALT	3.56165E 05	WT	3.32414E 05
STAGE	2	ALPH	1.43058E 01	MACH	1.61367E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11026E 01	ACC	1.68207E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.35071E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.26076E 03	VLT	1.45234E 02	VCHR	1.68353E 04
TIM	3.20000E 02	GAM	-2.88359E-01	VEL	1.37126E 04	ALT	3.56100E 05	WT	3.31185E 05
STAGE	2	ALPH	1.43007E 01	MACH	1.61989E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11028E 01	ACC	1.68831E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.35601E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.26061E 03	VLT	1.46858E 02	VCHR	1.68877E 04
TIM	3.21000E 02	GAM	-3.24988E-01	VEL	1.37655E 04	ALT	3.56027E 05	WT	3.29956E 05
STAGE	2	ALPH	1.42951E 01	MACH	1.62614E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11030E 01	ACC	1.69460E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.36209E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.26044E 03	VLT	1.48488E 02	VCHR	1.69403E 04
TIM	3.22000E 02	GAM	-3.61006E-01	VEL	1.38186E 04	ALT	3.55944E 05	WT	3.28728E 05
STAGE	2	ALPH	1.42888E 01	MACH	1.63241E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11032E 01	ACC	1.70093E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.36894E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.26026E 03	VLT	1.50122E 02	VCHR	1.69931E 04
TIM	3.23000E 02	GAM	-3.96416E-01	VEL	1.38719E 04	ALT	3.55852E 05	WT	3.27499E 05
STAGE	2	ALPH	1.42819E 01	MACH	1.63871E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11035E 01	ACC	1.70732E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.37657E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.26005E 03	VLT	1.51761E 02	VCHR	1.70461E 04
TIM	3.24000E 02	GAM	-4.31221E-01	VEL	1.39255E 04	ALT	3.55752E 05	WT	3.26270E 05
STAGE	2	ALPH	1.42743E 01	MACH	1.64504E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11038E 01	ACC	1.71375E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.38500E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.25983E 03	VLT	1.53405E 02	VCHR	1.70993E 04

TIM	3.25000E 02	GAM	-4.65424E-01	VEL	1.39793E 04	ALT	3.55643E 05	WT	3.25041E 05
STAGE	2	ALPH	1.42662E 01	MACH	1.65140E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11041E 01	ACC	1.72023E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.39422E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.25958E 03	VLT	1.55052E 02	VCHR	1.71528E 04
TIM	3.26000E 02	GAM	-4.99027E-01	VEL	1.40333E 04	ALT	3.55525E 05	WT	3.23812E 05
STAGE	2	ALPH	1.42574E 01	MACH	1.65777E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11045E 01	ACC	1.72676E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.40424E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.25932E 03	VLT	1.56705E 02	VCHR	1.72064E 04
TIM	3.27000E 02	GAM	-5.32034E-01	VEL	1.40875E 04	ALT	3.55398E 05	WT	3.22583E 05
STAGE	2	ALPH	1.42480E 01	MACH	1.66418E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11048E 01	ACC	1.73333E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.41508E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.25904E 03	VLT	1.58361E 02	VCHR	1.72602E 04
TIM	3.28000E 02	GAM	-5.64447E-01	VEL	1.41419E 04	ALT	3.55263E 05	WT	3.21354E 05
STAGE	2	ALPH	1.42380E 01	MACH	1.67061E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11052E 01	ACC	1.73996E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.42674E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.25874E 03	VLT	1.60022E 02	VCHR	1.73142E 04
TIM	3.29000E 02	GAM	-5.96269E-01	VEL	1.41966E 04	ALT	3.55120E 05	WT	3.20125E 05
STAGE	2	ALPH	1.42274E 01	MACH	1.67707E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11057E 01	ACC	1.74664E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.43924E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.25843E 03	VLT	1.61686E 02	VCHR	1.73684E 04
TIM	3.30000E 02	GAM	-6.27503E-01	VEL	1.42515E 04	ALT	3.54968E 05	WT	3.18896E 05
STAGE	2	ALPH	1.42162E 01	MACH	1.68356E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11061E 01	ACC	1.75337E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.45259E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.25810E 03	VLT	1.63354E 02	VCHR	1.74229E 04
TIM	3.31000E 02	GAM	-6.58152E-01	VEL	1.43067E 04	ALT	3.54808E 05	WT	3.17668E 05
STAGE	2	ALPH	1.42044E 01	MACH	1.69007E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11066E 01	ACC	1.76015E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.46681E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.25775E 03	VLT	1.65026E 02	VCHR	1.74775E 04
TIM	3.32000E 02	GAM	-6.88217E-01	VEL	1.43621E 04	ALT	3.54639E 05	WT	3.16439E 05
STAGE	2	ALPH	1.41920E 01	MACH	1.69662E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11071E 01	ACC	1.76699E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.48190E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.25738E 03	VLT	1.66702E 02	VCHR	1.75324E 04
TIM	3.33000E 02	GAM	-7.17702E-01	VEL	1.44177E 04	ALT	3.54463E 05	WT	3.15210E 05
STAGE	2	ALPH	1.41790E 01	MACH	1.70318E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11076E 01	ACC	1.77388E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.49789E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.25700E 03	VLT	1.68382E 02	VCHR	1.75874E 04
TIM	3.34000E 02	GAM	-7.46610E-01	VEL	1.44735E 04	ALT	3.54278E 05	WT	3.13981E 05
STAGE	2	ALPH	1.41654E 01	MACH	1.70978E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11081E 01	ACC	1.78082E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.51479E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.25660E 03	VLT	1.70064E 02	VCHR	1.76427E 04
TIM	3.35000E 02	GAM	-7.74943E-01	VEL	1.45296E 04	ALT	3.54086E 05	WT	3.12752E 05
STAGE	2	ALPH	1.41513E 01	MACH	1.71641E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11087E 01	ACC	1.78782E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.53262E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.25619E 03	VLT	1.71751E 02	VCHR	1.76982E 04
TIM	3.36000E 02	GAM	-8.02703E-01	VEL	1.45859E 04	ALT	3.53885E 05	WT	3.11523E 05
STAGE	2	ALPH	1.41365E 01	MACH	1.72306E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11093E 01	ACC	1.79487E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.55140E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.25576E 03	VLT	1.73440E 02	VCHR	1.77540E 04
TIM	3.37000E 02	GAM	-8.29894E-01	VEL	1.46425E 04	ALT	3.53677E 05	WT	3.10294E 05
STAGE	2	ALPH	1.41212E 01	MACH	1.72974E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11099E 01	ACC	1.80198E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.57116E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.25532E 03	VLT	1.75132E 02	VCHR	1.78099E 04
TIM	3.38000E 02	GAM	-8.56517E-01	VEL	1.46993E 04	ALT	3.53461E 05	WT	3.09065E 05
STAGE	2	ALPH	1.41052E 01	MACH	1.73645E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11105E 01	ACC	1.80915E 00	THRI	5.59144E 05	CL	0	LIFT	0

DENS	1.59192E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.25486E 03	VLT	1.76828E 02	VCHR	1.78661E 04
TIM	3.39000E 02	GAM	-8.82576E-01	VEL	1.47563E 04	ALT	3.53238E 05	WT	3.07836E 05
STAGE	2	ALPH	1.40887E 01	MACH	1.74319E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11112E 01	ACC	1.81637E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.61369E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.25439E 03	VLT	1.78526E 02	VCHR	1.79225E 04
TIM	3.40000E 02	GAM	-9.08072E-01	VEL	1.48136E 04	ALT	3.53006E 05	WT	3.06608E 05
STAGE	2	ALPH	1.40716E 01	MACH	1.74995E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11119E 01	ACC	1.82365E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.63651E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.25390E 03	VLT	1.80227E 02	VCHR	1.79791E 04
TIM	3.41000E 02	GAM	-9.33008E-01	VEL	1.48711E 04	ALT	3.52768E 05	WT	3.05379E 05
STAGE	2	ALPH	1.40540E 01	MACH	1.75675E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11126E 01	ACC	1.83099E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.66041E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.25340E 03	VLT	1.81931E 02	VCHR	1.80359E 04
TIM	3.42000E 02	GAM	-9.57387E-01	VEL	1.49289E 04	ALT	3.52522E 05	WT	3.04150E 05
STAGE	2	ALPH	1.40357E 01	MACH	1.76358E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11133E 01	ACC	1.83838E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.68540E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.25289E 03	VLT	1.83638E 02	VCHR	1.80930E 04
TIM	3.43000E 02	GAM	-9.81210E-01	VEL	1.49869E 04	ALT	3.52269E 05	WT	3.02921E 05
STAGE	2	ALPH	1.40169E 01	MACH	1.77043E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11140E 01	ACC	1.84584E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.71153E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.25236E 03	VLT	1.85347E 02	VCHR	1.81503E 04
TIM	3.44000E 02	GAM	-1.00448E 00	VEL	1.50452E 04	ALT	3.52009E 05	WT	3.01692E 05
STAGE	2	ALPH	1.39976E 01	MACH	1.77731E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11148E 01	ACC	1.85336E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.73882E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.25182E 03	VLT	1.87058E 02	VCHR	1.82079E 04
TIM	3.45000E 02	GAM	-1.02720E 00	VEL	1.51037E 04	ALT	3.51742E 05	WT	3.00463E 05
STAGE	2	ALPH	1.39776E 01	MACH	1.78423E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11156E 01	ACC	1.86094E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.76730E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.25127E 03	VLT	1.88771E 02	VCHR	1.82657E 04
TIM	3.46000E 02	GAM	-1.04937E 00	VEL	1.51625E 04	ALT	3.51467E 05	WT	2.99234E 05
STAGE	2	ALPH	1.39571E 01	MACH	1.79117E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11164E 01	ACC	1.86858E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.79701E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.25071E 03	VLT	1.90487E 02	VCHR	1.83237E 04
TIM	3.47000E 02	GAM	-1.07100E 00	VEL	1.52215E 04	ALT	3.51186E 05	WT	2.98005E 05
STAGE	2	ALPH	1.39361E 01	MACH	1.79815E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11172E 01	ACC	1.87629E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.82798E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.25013E 03	VLT	1.92204E 02	VCHR	1.83820E 04
TIM	3.48000E 02	GAM	-1.09208E 00	VEL	1.52808E 04	ALT	3.50898E 05	WT	2.96776E 05
STAGE	2	ALPH	1.39144E 01	MACH	1.80515E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11180E 01	ACC	1.88406E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.86026E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.24955E 03	VLT	1.93924E 02	VCHR	1.84405E 04
TIM	3.49000E 02	GAM	-1.11263E 00	VEL	1.53404E 04	ALT	3.50604E 05	WT	2.95548E 05
STAGE	2	ALPH	1.38923E 01	MACH	1.81219E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11189E 01	ACC	1.89189E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.89387E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.24895E 03	VLT	1.95645E 02	VCHR	1.84992E 04
TIM	3.50000E 02	GAM	-1.13263E 00	VEL	1.54002E 04	ALT	3.50303E 05	WT	2.94319E 05
STAGE	2	ALPH	1.38695E 01	MACH	1.81926E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11198E 01	ACC	1.89979E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.92887E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.24834E 03	VLT	1.97368E 02	VCHR	1.85582E 04
TIM	3.51000E 02	GAM	-1.15210E 00	VEL	1.54603E 04	ALT	3.49995E 05	WT	2.93090E 05
STAGE	2	ALPH	1.38463E 01	MACH	1.82636E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11207E 01	ACC	1.90776E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.96529E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.24772E 03	VLT	1.99093E 02	VCHR	1.86175E 04

TIM	3.52000E 02	GAM	-1.17103E 00	VEL	1.55207E 04	ALT	3.49681E 05	WT	2.91861E 05
STAGE	2	ALPH	1.38224E 01	MACH	1.83349E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11216E 01	ACC	1.91579E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.00318E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.24709E 03	VLT	2.00819E 02	VCHR	1.86770E 04
TIM	3.53000E 02	GAM	-1.18943E 00	VEL	1.55813E 04	ALT	3.49361E 05	WT	2.90632E 05
STAGE	2	ALPH	1.37981E 01	MACH	1.84065E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11226E 01	ACC	1.92389E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.04257E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.24644E 03	VLT	2.02546E 02	VCHR	1.87367E 04
TIM	3.54000E 02	GAM	-1.20729E 00	VEL	1.56422E 04	ALT	3.49034E 05	WT	2.89403E 05
STAGE	2	ALPH	1.37731E 01	MACH	1.84784E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11235E 01	ACC	1.93206E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.08353E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.24579E 03	VLT	2.04274E 02	VCHR	1.87967E 04
TIM	3.55000E 02	GAM	-1.22464E 00	VEL	1.57034E 04	ALT	3.48702E 05	WT	2.88174E 05
STAGE	2	ALPH	1.37477E 01	MACH	1.85507E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11245E 01	ACC	1.94030E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.12610E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.24513E 03	VLT	2.06004E 02	VCHR	1.88570E 04
TIM	3.56000E 02	GAM	-1.24145E 00	VEL	1.57648E 04	ALT	3.48363E 05	WT	2.86945E 05
STAGE	2	ALPH	1.37217E 01	MACH	1.86233E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11255E 01	ACC	1.94861E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.17033E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.24446E 03	VLT	2.07734E 02	VCHR	1.89175E 04
TIM	3.57000E 02	GAM	-1.25774E 00	VEL	1.58265E 04	ALT	3.48019E 05	WT	2.85716E 05
STAGE	2	ALPH	1.36951E 01	MACH	1.86962E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11265E 01	ACC	1.95699E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.21628E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.24378E 03	VLT	2.09466E 02	VCHR	1.89783E 04
TIM	3.58000E 02	GAM	-1.27351E 00	VEL	1.58885E 04	ALT	3.47668E 05	WT	2.84488E 05
STAGE	2	ALPH	1.36681E 01	MACH	1.87694E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11275E 01	ACC	1.96544E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.26399E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.24310E 03	VLT	2.11198E 02	VCHR	1.90393E 04
TIM	3.59000E 02	GAM	-1.28876E 00	VEL	1.59508E 04	ALT	3.47312E 05	WT	2.83259E 05
STAGE	2	ALPH	1.36405E 01	MACH	1.88430E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11286E 01	ACC	1.97397E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.31354E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.24240E 03	VLT	2.12931E 02	VCHR	1.91006E 04
TIM	3.60000E 02	GAM	-1.30349E 00	VEL	1.60134E 04	ALT	3.46951E 05	WT	2.82030E 05
STAGE	2	ALPH	1.36123E 01	MACH	1.89169E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11296E 01	ACC	1.98257E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.36497E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.24170E 03	VLT	2.14664E 02	VCHR	1.91622E 04
TIM	3.61000E 02	GAM	-1.31770E 00	VEL	1.60762E 04	ALT	3.46584E 05	WT	2.80801E 05
STAGE	2	ALPH	1.35836E 01	MACH	1.89911E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11307E 01	ACC	1.99125E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.41835E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.24099E 03	VLT	2.16398E 02	VCHR	1.92241E 04
TIM	3.62000E 02	GAM	-1.33140E 00	VEL	1.61393E 04	ALT	3.46211E 05	WT	2.79572E 05
STAGE	2	ALPH	1.35544E 01	MACH	1.90657E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11318E 01	ACC	2.00000E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.47374E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.24027E 03	VLT	2.18132E 02	VCHR	1.92862E 04
TIM	3.63000E 02	GAM	-1.34459E 00	VEL	1.62028E 04	ALT	3.45834E 05	WT	2.78343E 05
STAGE	2	ALPH	1.35247E 01	MACH	1.91406E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11329E 01	ACC	2.00883E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.53122E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.23954E 03	VLT	2.19866E 02	VCHR	1.93486E 04
TIM	3.64000E 02	GAM	-1.35727E 00	VEL	1.62665E 04	ALT	3.45451E 05	WT	2.77114E 05
STAGE	2	ALPH	1.34945E 01	MACH	1.92159E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11340E 01	ACC	2.01774E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.59084E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.23880E 03	VLT	2.21601E 02	VCHR	1.94113E 04

TIM	3.65000E 02	GAM	-1.36943E 00	VEL	1.63305E 04	ALT	3.45063E 05	WT	2.75885E 05
STAGE	2	ALPH	1.34637E 01	MACH	1.92915E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11352E 01	ACC	2.02673E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.65268E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.23806E 03	VLT	2.23335E 02	VCHR	1.94742E 04
TIM	3.66000E 02	GAM	-1.38110E 00	VEL	1.63948E 04	ALT	3.44671E 05	WT	2.74656E 05
STAGE	2	ALPH	1.34324E 01	MACH	1.93675E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11363E 01	ACC	2.03579E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.71682E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.23732E 03	VLT	2.25069E 02	VCHR	1.95375E 04
TIM	3.67000E 02	GAM	-1.39225E 00	VEL	1.64594E 04	ALT	3.44273E 05	WT	2.73428E 05
STAGE	2	ALPH	1.34006E 01	MACH	1.94438E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11375E 01	ACC	2.04494E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.78332E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.23656E 03	VLT	2.26803E 02	VCHR	1.96010E 04
TIM	3.68000E 02	GAM	-1.40291E 00	VEL	1.65243E 04	ALT	3.43871E 05	WT	2.72199E 05
STAGE	2	ALPH	1.33683E 01	MACH	1.95205E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11387E 01	ACC	2.05418E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.85228E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.23580E 03	VLT	2.28536E 02	VCHR	1.96648E 04
TIM	3.69000E 02	GAM	-1.41306E 00	VEL	1.65895E 04	ALT	3.43464E 05	WT	2.70970E 05
STAGE	2	ALPH	1.33354E 01	MACH	1.95975E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11399E 01	ACC	2.06349E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.92375E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.23504E 03	VLT	2.30269E 02	VCHR	1.97289E 04
TIM	3.70000E 02	GAM	-1.42271E 00	VEL	1.66551E 04	ALT	3.43053E 05	WT	2.69741E 05
STAGE	2	ALPH	1.33021E 01	MACH	1.96749E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11411E 01	ACC	2.07289E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.99784E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.23427E 03	VLT	2.32002E 02	VCHR	1.97934E 04
TIM	3.71000E 02	GAM	-1.43187E 00	VEL	1.67209E 04	ALT	3.42637E 05	WT	2.68512E 05
STAGE	2	ALPH	1.32682E 01	MACH	1.97527E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11423E 01	ACC	2.08238E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	3.07463E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.23349E 03	VLT	2.33733E 02	VCHR	1.98581E 04
TIM	3.72000E 02	GAM	-1.44053E 00	VEL	1.67870E 04	ALT	3.42217E 05	WT	2.67283E 05
STAGE	2	ALPH	1.32338E 01	MACH	1.98308E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11435E 01	ACC	2.09195E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	3.15420E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.23271E 03	VLT	2.35464E 02	VCHR	1.99231E 04
TIM	3.73000E 02	GAM	-1.44870E 00	VEL	1.68535E 04	ALT	3.41793E 05	WT	2.66054E 05
STAGE	2	ALPH	1.31989E 01	MACH	1.99093E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11448E 01	ACC	2.10162E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	3.23665E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.23193E 03	VLT	2.37193E 02	VCHR	1.99884E 04
TIM	3.74000E 02	GAM	-1.45637E 00	VEL	1.69203E 04	ALT	3.41365E 05	WT	2.64825E 05
STAGE	2	ALPH	1.31635E 01	MACH	1.99882E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11460E 01	ACC	2.11137E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	3.32207E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.23114E 03	VLT	2.38922E 02	VCHR	2.00540E 04
TIM	3.75000E 02	GAM	-1.46355E 00	VEL	1.69874E 04	ALT	3.40933E 05	WT	2.63596E 05
STAGE	2	ALPH	1.31276E 01	MACH	2.00675E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11473E 01	ACC	2.12121E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	3.41055E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.23034E 03	VLT	2.40649E 02	VCHR	2.01199E 04
TIM	3.76000E 02	GAM	-1.47025E 00	VEL	1.70548E 04	ALT	3.40497E 05	WT	2.62368E 05
STAGE	2	ALPH	1.30912E 01	MACH	2.01471E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11486E 01	ACC	2.13115E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	3.50220E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.22955E 03	VLT	2.42375E 02	VCHR	2.01861E 04
TIM	3.77000E 02	GAM	-1.47645E 00	VEL	1.71225E 04	ALT	3.40058E 05	WT	2.61139E 05
STAGE	2	ALPH	1.30543E 01	MACH	2.02272E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11499E 01	ACC	2.14118E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	3.59711E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.22874E 03	VLT	2.44100E 02	VCHR	2.02526E 04
TIM	3.78000E 02	GAM	-1.48217E 00	VEL	1.71906E 04	ALT	3.39615E 05	WT	2.59910E 05
STAGE	2	ALPH	1.30169E 01	MACH	2.03076E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11512E 01	ACC	2.15130E 00	THRI	5.59144E 05	CL	0	LIFT	0

DENS	3.69540E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.22794E 03	VLT	2.45822E 02	VCHR	2.03195E 04
TIM	3.79000E 02	GAM	-1.48741E 00	VEL	1.72590E 04	ALT	3.39168E 05	WT	2.58681E 05
STAGE	2	ALPH	1.29791E 01	MACH	2.03884E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11529E 01	ACC	2.16152E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	3.79716E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.22713E 03	VLT	2.47544E 02	VCHR	2.03867E 04
TIM	3.80000E 02	GAM	-1.49216E 00	VEL	1.73278E 04	ALT	3.38719E 05	WT	2.57452E 05
STAGE	2	ALPH	1.29407E 01	MACH	2.04696E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11538E 01	ACC	2.17184E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	3.90251E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.22632E 03	VLT	2.49263E 02	VCHR	2.04542E 04
TIM	3.81000E 02	GAM	-1.49643E 00	VEL	1.73969E 04	ALT	3.38266E 05	WT	2.56223E 05
STAGE	2	ALPH	1.29018E 01	MACH	2.05512E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11551E 01	ACC	2.18225E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	4.01155E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.22551E 03	VLT	2.50980E 02	VCHR	2.05220E 04
TIM	3.82000E 02	GAM	-1.50022E 00	VEL	1.74663E 04	ALT	3.37810E 05	WT	2.54994E 05
STAGE	2	ALPH	1.28624E 01	MACH	2.06332E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11565E 01	ACC	2.19277E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	4.12441E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.22470E 03	VLT	2.52696E 02	VCHR	2.05902E 04
TIM	3.83000E 02	GAM	-1.50353E 00	VEL	1.75361E 04	ALT	3.37352E 05	WT	2.53765E 05
STAGE	2	ALPH	1.28225E 01	MACH	2.07157E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11578E 01	ACC	2.20339E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	4.24120E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.22388E 03	VLT	2.54409E 02	VCHR	2.06586E 04
TIM	3.84000E 02	GAM	-1.50637E 00	VEL	1.76062E 04	ALT	3.36890E 05	WT	2.52536E 05
STAGE	2	ALPH	1.27822E 01	MACH	2.07985E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11592E 01	ACC	2.21411E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	4.36204E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.22306E 03	VLT	2.56120E 02	VCHR	2.07275E 04
TIM	3.85000E 02	GAM	-1.50872E 00	VEL	1.76766E 04	ALT	3.36426E 05	WT	2.51308E 05
STAGE	2	ALPH	1.27413E 01	MACH	2.08617E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11606E 01	ACC	2.22494E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	4.48705E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.22224E 03	VLT	2.57828E 02	VCHR	2.07966E 04
TIM	3.86000E 02	GAM	-1.51061E 00	VEL	1.77475E 04	ALT	3.35959E 05	WT	2.50079E 05
STAGE	2	ALPH	1.27000E 01	MACH	2.09654E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11619E 01	ACC	2.23587E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	4.61635E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.22142E 03	VLT	2.59534E 02	VCHR	2.08661E 04
TIM	3.87000E 02	GAM	-1.51202E 00	VEL	1.78186E 04	ALT	3.35490E 05	WT	2.48850E 05
STAGE	2	ALPH	1.26582E 01	MACH	2.10495E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11633E 01	ACC	2.24691E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	4.75008E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.22060E 03	VLT	2.61237E 02	VCHR	2.09360E 04
TIM	3.88000E 02	GAM	-1.51296E 00	VEL	1.78902E 04	ALT	3.35019E 05	WT	2.47621E 05
STAGE	2	ALPH	1.26158E 01	MACH	2.11340E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11647E 01	ACC	2.25806E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	4.88836E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.21978E 03	VLT	2.62938E 02	VCHR	2.10062E 04
TIM	3.89000E 02	GAM	-1.51344E 00	VEL	1.79621E 04	ALT	3.34546E 05	WT	2.46392E 05
STAGE	2	ALPH	1.25731E 01	MACH	2.12169E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11661E 01	ACC	2.26933E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	5.03131E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.21895E 03	VLT	2.64635E 02	VCHR	2.10767E 04
TIM	3.90000E 02	GAM	-1.51344E 00	VEL	1.80343E 04	ALT	3.34070E 05	WT	2.45163E 05
STAGE	2	ALPH	1.25298E 01	MACH	2.13043E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11675E 01	ACC	2.28070E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	5.17908E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.21813E 03	VLT	2.66330E 02	VCHR	2.11476E 04
TIM	3.91000E 02	GAM	-1.51297E 00	VEL	1.81070E 04	ALT	3.33593E 05	WT	2.43934E 05
STAGE	2	ALPH	1.24860E 01	MACH	2.13901E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11689E 01	ACC	2.29219E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	5.33179E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.21731E 03	VLT	2.68021E 02	VCHR	2.12189E 04

TIM	3.92000E 02	GAM	-1.51204E 00	VEL	1.81800E 04	ALT	3.33114E 05	WT	2.42705E 05
STAGE	2	ALPH	1.24418E 01	MACH	2.14764E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11703E 01	ACC	2.30380E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	5.48957E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLC	2.54917E 02	VLG	4.21648E 03	VLT	2.69710E 02	VCHR	2.12905E 04
TIM	3.93000E 02	GAM	-1.51065E 00	VEL	1.82534E 04	ALT	3.32634E 05	WT	2.41476E 05
STAGE	2	ALPH	1.23971E 01	MACH	2.15631E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11717E 01	ACC	2.31552E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	5.65258E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.21566E 03	VLT	2.71394E 02	VCHR	2.13625E 04
TIM	3.94000E 02	GAM	-1.50879E 00	VEL	1.83272E 04	ALT	3.32152E 05	WT	2.40248E 05
STAGE	2	ALPH	1.23519E 01	MACH	2.16502E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11731E 01	ACC	2.32737E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	5.82093E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.21454E 03	VLT	2.73075E 02	VCHR	2.14349E 04
TIM	3.95000E 02	GAM	-1.50647E 00	VEL	1.84013E 04	ALT	3.31669E 05	WT	2.39019E 05
STAGE	2	ALPH	1.23063E 01	MACH	2.17378E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11746E 01	ACC	2.33933E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	5.99478E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.21462E 03	VLT	2.74753E 02	VCHR	2.15076E 04
TIM	3.96000E 02	GAM	-1.50369E 00	VEL	1.84759E 04	ALT	3.31184E 05	WT	2.37790E 05
STAGE	2	ALPH	1.22601E 01	MACH	2.18259E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11760E 01	ACC	2.35142E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	6.17425E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.21320E 03	VLT	2.76427E 02	VCHR	2.15807E 04
TIM	3.97000E 02	GAM	-1.50045E 00	VEL	1.85508E 04	ALT	3.30699E 05	WT	2.36561E 05
STAGE	2	ALPH	1.22135E 01	MACH	2.19144E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11774E 01	ACC	2.36364E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	6.35949E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.21238E 03	VLT	2.78097E 02	VCHR	2.16542E 04
TIM	3.98000E 02	GAM	-1.49675E 00	VEL	1.86262E 04	ALT	3.30213E 05	WT	2.35332E 05
STAGE	2	ALPH	1.21664E 01	MACH	2.20034E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11788E 01	ACC	2.37598E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	6.55063E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.21157E 03	VLT	2.79763E 02	VCHR	2.17281E 04
TIM	3.99000E 02	GAM	-1.49259E 00	VEL	1.87019E 04	ALT	3.29726E 05	WT	2.34103E 05
STAGE	2	ALPH	1.21189E 01	MACH	2.20929E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11803E 01	ACC	2.38845E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	6.74781E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.21076E 03	VLT	2.81424E 02	VCHR	2.18024E 04
TIM	4.00000E 02	GAM	-1.48798E 00	VEL	1.87781E 04	ALT	3.29239E 05	WT	2.32874E 05
STAGE	2	ALPH	1.20709E 01	MACH	2.21829E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11817E 01	ACC	2.40106E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	6.95117E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.20994E 03	VLT	2.83082E 02	VCHR	2.18771E 04
TIM	4.01000E 02	GAM	-1.48291E 00	VEL	1.88546E 04	ALT	3.28751E 05	WT	2.31645E 05
STAGE	2	ALPH	1.20224E 01	MACH	2.22733E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11831E 01	ACC	2.41379E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	7.16084E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.20914E 03	VLT	2.84735E 02	VCHR	2.19521E 04
TIM	4.02000E 02	GAM	-1.47739E 00	VEL	1.89316E 04	ALT	3.28263E 05	WT	2.30416E 05
STAGE	2	ALPH	1.19735E 01	MACH	2.23642E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11846E 01	ACC	2.42667E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	7.37695E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.20833E 03	VLT	2.86384E 02	VCHR	2.20276E 04
TIM	4.03000E 02	GAM	-1.47142E 00	VEL	1.90090E 04	ALT	3.27775E 05	WT	2.29188E 05
STAGE	2	ALPH	1.19241E 01	MACH	2.24557E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11860E 01	ACC	2.43968E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	7.59964E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.20753E 03	VLT	2.88028E 02	VCHR	2.21035E 04
TIM	4.04000E 02	GAM	-1.46499E 00	VEL	1.90868E 04	ALT	3.27287E 05	WT	2.27959E 05
STAGE	2	ALPH	1.18742E 01	MACH	2.25476E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11875E 01	ACC	2.45283E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	7.82903E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.20673E 03	VLT	2.89667E 02	VCHR	2.21798E 04
TIM	4.05000E 02	GAM	-1.45812E 00	VEL	1.91650E 04	ALT	3.26799E 05	WT	2.26730E 05
STAGE	2	ALPH	1.18238E 01	MACH	2.26400E 01	XISP	4.55000E 02	DYNP	0

GRAV	3.11869E 01	ACC	2.46612E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	8.06525E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.20593E 03	VLT	2.91302E 02	VCHR	2.22565E 04
TIM	4.06000E 02	GAM	-1.45079E 00	VEL	1.92437E 04	ALT	3.26311E 05	WT	2.25501E 05
STAGE	2	ALPH	1.17730E 01	MACH	2.27329E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11903E 01	ACC	2.47956E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	8.30842E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.20514E 03	VLT	2.92931E 02	VCHR	2.23336E 04
TIM	4.07000E 02	GAM	-1.44301E 00	VEL	1.93228E 04	ALT	3.25824E 05	WT	2.24272E 05
STAGE	2	ALPH	1.17218E 01	MACH	2.28264E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11918E 01	ACC	2.49315E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	8.55664E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.20435E 03	VLT	2.94556E 02	VCHR	2.24112E 04
TIM	4.08000E 02	GAM	-1.43479E 00	VEL	1.94024E 04	ALT	3.25338E 05	WT	2.23043E 05
STAGE	2	ALPH	1.16701E 01	MACH	2.29204E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11932E 01	ACC	2.50689E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	8.81604E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.20357E 03	VLT	2.96175E 02	VCHR	2.24891E 04
TIM	4.09000E 02	GAM	-1.42612E 00	VEL	1.94824E 04	ALT	3.24853E 05	WT	2.21814E 05
STAGE	2	ALPH	1.16179E 01	MACH	2.30149E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11946E 01	ACC	2.52078E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	9.08072E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.20279E 03	VLT	2.97788E 02	VCHR	2.25675E 04
TIM	4.10000E 02	GAM	-1.41701E 00	VEL	1.95628E 04	ALT	3.24368E 05	WT	2.20585E 05
STAGE	2	ALPH	1.15653E 01	MACH	2.31099E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11960E 01	ACC	2.53482E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	9.35277E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.20202E 03	VLT	2.99397E 02	VCHR	2.26464E 04
TIM	4.11000E 02	GAM	-1.40745E 00	VEL	1.96437E 04	ALT	3.23885E 05	WT	2.19356E 05
STAGE	2	ALPH	1.15122E 01	MACH	2.32055E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11975E 01	ACC	2.54902E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	9.63229E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.20125E 03	VLT	3.00999E 02	VCHR	2.27257E 04
TIM	4.12000E 02	GAM	-1.39745E 00	VEL	1.97251E 04	ALT	3.23403E 05	WT	2.18128E 05
STAGE	2	ALPH	1.14586E 01	MACH	2.33016E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.11989E 01	ACC	2.56338E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	9.91934E-10	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.20049E 03	VLT	3.02596E 02	VCHR	2.28055E 04
TIM	4.13000E 02	GAM	-1.38700E 00	VEL	1.98069E 04	ALT	3.22923E 05	WT	2.16899E 05
STAGE	2	ALPH	1.14046E 01	MACH	2.33982E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12003E 01	ACC	2.57790E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.02140E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.19973E 03	VLT	3.04187E 02	VCHR	2.28857E 04
TIM	4.14000E 02	GAM	-1.37611E 00	VEL	1.98892E 04	ALT	3.22445E 05	WT	2.15670E 05
STAGE	2	ALPH	1.13502E 01	MACH	2.34955E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12017E 01	ACC	2.59259E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.05164E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.19898E 03	VLT	3.05772E 02	VCHR	2.29663E 04
TIM	4.15000E 02	GAM	-1.36479E 00	VEL	1.99720E 04	ALT	3.21968E 05	WT	2.14441E 05
STAGE	2	ALPH	1.12953E 01	MACH	2.35932E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12031E 01	ACC	2.60745E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.08265E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.19823E 03	VLT	3.07351E 02	VCHR	2.30474E 04
TIM	4.16000E 02	GAM	-1.35302E 00	VEL	2.00552E 04	ALT	3.21493E 05	WT	2.13212E 05
STAGE	2	ALPH	1.12399E 01	MACH	2.36916E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12045E 01	ACC	2.62248E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.11443E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.19749E 03	VLT	3.08924E 02	VCHR	2.31290E 04
TIM	4.17000E 02	GAM	-1.34081E 00	VEL	2.01389E 04	ALT	3.21021E 05	WT	2.11983E 05
STAGE	2	ALPH	1.11841E 01	MACH	2.37905E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12059E 01	ACC	2.63768E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.14699E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.19676E 03	VLT	3.10491E 02	VCHR	2.32111E 04
TIM	4.18000E 02	GAM	-1.32816E 00	VEL	2.02232E 04	ALT	3.20551E 05	WT	2.10754E 05
STAGE	2	ALPH	1.11278E 01	MACH	2.38900E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12073E 01	ACC	2.65306E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.18034E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.19603E 03	VLT	3.12050E 02	VCHR	2.32937E 04

TIM	4.19000E 02	GAM	-1.31508E 00	VEL	2.03079E 04	ALT	3.20084E 05	WT	2.09525E 05
STAGE	2	ALPH	1.10711E 01	MACH	2.39901E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12087E 01	ACC	2.66862E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.21446E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.19531E 03	VLT	3.13604E 02	VCHR	2.33767E 04
TIM	4.20000E 02	GAM	-1.30156E 00	VEL	2.03931E 04	ALT	3.19619E 05	WT	2.08296E 05
STAGE	2	ALPH	1.10140E 01	MACH	2.40908E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12100E 01	ACC	2.68437E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.24936E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.19460E 03	VLT	3.15150E 02	VCHR	2.34602E 04
TIM	4.21000E 02	GAM	-1.28760E 00	VEL	2.04789E 04	ALT	3.19157E 05	WT	2.07068E 05
STAGE	2	ALPH	1.09564E 01	MACH	2.41921E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12114E 01	ACC	2.70030E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.28504E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.19389E 03	VLT	3.16690E 02	VCHR	2.35443E 04
TIM	4.22000E 02	GAM	-1.27321E 00	VEL	2.05651E 04	ALT	3.18699E 05	WT	2.05839E 05
STAGE	2	ALPH	1.08983E 01	MACH	2.42940E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12128E 01	ACC	2.71642E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.32148E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.19319E 03	VLT	3.18223E 02	VCHR	2.36288E 04
TIM	4.23000E 02	GAM	-1.25839E 00	VEL	2.06519E 04	ALT	3.18243E 05	WT	2.04610E 05
STAGE	2	ALPH	1.08398E 01	MACH	2.43965E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12141E 01	ACC	2.73273E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.35868E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.19250E 03	VLT	3.19748E 02	VCHR	2.37138E 04
TIM	4.24000E 02	GAM	-1.24313E 00	VEL	2.07392E 04	ALT	3.17792E 05	WT	2.03381E 05
STAGE	2	ALPH	1.07809E 01	MACH	2.44996E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12154E 01	ACC	2.74924E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.39664E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.19182E 03	VLT	3.21267E 02	VCHR	2.37994E 04
TIM	4.25000E 02	GAM	-1.22743E 00	VEL	2.08271E 04	ALT	3.17343E 05	WT	2.02152E 05
STAGE	2	ALPH	1.07215E 01	MACH	2.46034E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12168E 01	ACC	2.76596E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.43533E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.19115E 03	VLT	3.22778E 02	VCHR	2.38855E 04
TIM	4.26000E 02	GAM	-1.21131E 00	VEL	2.09154E 04	ALT	3.16899E 05	WT	2.00923E 05
STAGE	2	ALPH	1.06617E 01	MACH	2.47078E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12181E 01	ACC	2.78287E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.47474E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.19049E 03	VLT	3.24281E 02	VCHR	2.39721E 04
TIM	4.27000E 02	GAM	-1.19475E 00	VEL	2.10044E 04	ALT	3.16459E 05	WT	1.99694E 05
STAGE	2	ALPH	1.06014E 01	MACH	2.48128E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12194E 01	ACC	2.80000E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.51486E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.18983E 03	VLT	3.25777E 02	VCHR	2.40592E 04
TIM	4.28000E 02	GAM	-1.17776E 00	VEL	2.10938E 04	ALT	3.16023E 05	WT	1.98465E 05
STAGE	2	ALPH	1.05407E 01	MACH	2.49185E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12206E 01	ACC	2.81734E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.55567E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.18918E 03	VLT	3.27265E 02	VCHR	2.41469E 04
TIM	4.29000E 02	GAM	-1.16034E 00	VEL	2.11839E 04	ALT	3.15592E 05	WT	1.97237E 05
STAGE	2	ALPH	1.04795E 01	MACH	2.50249E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12219E 01	ACC	2.83489E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.59714E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.18855E 03	VLT	3.28746E 02	VCHR	2.42352E 04
TIM	4.30000E 02	GAM	-1.14249E 00	VEL	2.12745E 04	ALT	3.15166E 05	WT	1.96008E 05
STAGE	2	ALPH	1.04179E 01	MACH	2.51319E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12232E 01	ACC	2.85266E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.63925E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.18792E 03	VLT	3.30218E 02	VCHR	2.43239E 04
TIM	4.31000E 02	GAM	-1.12422E 00	VEL	2.13657E 04	ALT	3.14744E 05	WT	1.94779E 05
STAGE	2	ALPH	1.03559E 01	MACH	2.52396E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12244E 01	ACC	2.87066E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.68196E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.18730E 03	VLT	3.31682E 02	VCHR	2.44133E 04
TIM	4.32000E 02	GAM	-1.10551E 00	VEL	2.14574E 04	ALT	3.14327E 05	WT	1.93550E 05
STAGE	2	ALPH	1.02934E 01	MACH	2.53480E 01	XISP	4.55000E 02	DYNP	0

GRAV	3.12256E 01	ACC	2.88889E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.72526E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.18669E 03	VLT	3.33138E 02	VCHR	2.45032E 04
TIM	4.33000E 02	GAM	-1.08637E 00	VEL	2.15498E 04	ALT	3.13916E 05	WT	1.92321E 05
STAGE	2	ALPH	1.02305E 01	MACH	2.54571E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12269E 01	ACC	2.90735E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.76910E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.18610E 03	VLT	3.34586E 02	VCHR	2.45937E 04
TIM	4.34000E 02	GAM	-1.06681E 00	VEL	2.16427E 04	ALT	3.13510E 05	WT	1.91092E 05
STAGE	2	ALPH	1.01671E 01	MACH	2.55669E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12281E 01	ACC	2.92605E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.81344E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.18551E 03	VLT	3.36025E 02	VCHR	2.46848E 04
TIM	4.35000E 02	GAM	-1.04682E 00	VEL	2.17363E 04	ALT	3.13110E 05	WT	1.89863E 05
STAGE	2	ALPH	1.01033E 01	MACH	2.56774E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12292E 01	ACC	2.94498E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.85825E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.18493E 03	VLT	3.37456E 02	VCHR	2.47765E 04
TIM	4.36000E 02	GAM	-1.02641E 00	VEL	2.18304E 04	ALT	3.12716E 05	WT	1.88634E 05
STAGE	2	ALPH	1.00391E 01	MACH	2.57887E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12304E 01	ACC	2.96417E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.90347E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.18437E 03	VLT	3.38877E 02	VCHR	2.48687E 04
TIM	4.37000E 02	GAM	-1.00557E 00	VEL	2.19252E 04	ALT	3.12328E 05	WT	1.87405E 05
STAGE	2	ALPH	9.97445E 00	MACH	2.59006E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12315E 01	ACC	2.98361E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.94907E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.18382E 03	VLT	3.40290E 02	VCHR	2.49616E 04
TIM	4.38000E 02	GAM	-9.84302E-01	VEL	2.20206E 04	ALT	3.11947E 05	WT	1.86177E 05
STAGE	2	ALPH	9.90935E 00	MACH	2.60133E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12327E 01	ACC	3.00330E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	1.99498E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.18327E 03	VLT	3.41694E 02	VCHR	2.50551E 04
TIM	4.39000E 02	GAM	-9.62611E-01	VEL	2.21166E 04	ALT	3.11572E 05	WT	1.84948E 05
STAGE	2	ALPH	9.84381E 00	MACH	2.61268E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12338E 01	ACC	3.02326E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.04115E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.18274E 03	VLT	3.43089E 02	VCHR	2.51492E 04
TIM	4.40000E 02	GAM	-9.40496E-01	VEL	2.22133E 04	ALT	3.11204E 05	WT	1.83719E 05
STAGE	2	ALPH	9.77784E 00	MACH	2.62410E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12349E 01	ACC	3.04348E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.08752E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.18222E 03	VLT	3.44475E 02	VCHR	2.52440E 04
TIM	4.41000E 02	GAM	-9.17956E-01	VEL	2.23107E 04	ALT	3.10842E 05	WT	1.82490E 05
STAGE	2	ALPH	9.71144E 00	MACH	2.63560E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12359E 01	ACC	3.06397E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.13402E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.18172E 03	VLT	3.45851E 02	VCHR	2.53393E 04
TIM	4.42000E 02	GAM	-8.94993E-01	VEL	2.24087E 04	ALT	3.10489E 05	WT	1.81261E 05
STAGE	2	ALPH	9.64460E 00	MACH	2.64718E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12370E 01	ACC	3.08475E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.18059E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.18122E 03	VLT	3.47218E 02	VCHR	2.54354E 04
TIM	4.43000E 02	GAM	-8.71607E-01	VEL	2.25073E 04	ALT	3.10143E 05	WT	1.80032E 05
STAGE	2	ALPH	9.57733E 00	MACH	2.65883E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12380E 01	ACC	3.10580E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.22716E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.18074E 03	VLT	3.48575E 02	VCHR	2.55321E 04
TIM	4.44000E 02	GAM	-8.47798E-01	VEL	2.26067E 04	ALT	3.09804E 05	WT	1.78803E 05
STAGE	2	ALPH	9.50962E 00	MACH	2.67057E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12390E 01	ACC	3.12715E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.27364E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.18027E 03	VLT	3.49922E 02	VCHR	2.56294E 04
TIM	4.45000E 02	GAM	-8.23567E-01	VEL	2.27067E 04	ALT	3.09474E 05	WT	1.77574E 05
STAGE	2	ALPH	9.44148E 00	MACH	2.68239E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12400E 01	ACC	3.14879E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.31997E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.17982E 03	VLT	3.51260E 02	VCHR	2.57274E 04

TIM	4.46000E 02	GAM	-7.98914E-01	VEL	2.28075E 04	ALT	3.09151E 05	WT	1.76345E 05
STAGE	2	ALPH	9.37291E 00	MACH	2.69429E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12499E 01	ACC	3.17073E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.36604E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.17937E 03	VLT	3.52587E 02	VCHR	2.58262E 04
TIM	4.47000E 02	GAM	-7.73839E-01	VEL	2.29089E 04	ALT	3.08838E 05	WT	1.75117E 05
STAGE	2	ALPH	9.30391E 00	MACH	2.70627E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12418E 01	ACC	3.19298E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.41179E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.17895E 03	VLT	3.53904E 02	VCHR	2.59256E 04
TIM	4.48000E 02	GAM	-7.48343E-01	VEL	2.30111E 04	ALT	3.08533E 05	WT	1.73888E 05
STAGE	2	ALPH	9.23448E 00	MACH	2.71834E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12427E 01	ACC	3.21555E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.45711E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.17853E 03	VLT	3.55212E 02	VCHR	2.60257E 04
TIM	4.49000E 02	GAM	-7.22426E-01	VEL	2.31140E 04	ALT	3.08237E 05	WT	1.72659E 05
STAGE	2	ALPH	9.16461E 00	MACH	2.73049E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12436E 01	ACC	3.23843E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.50191E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.17813E 03	VLT	3.56508E 02	VCHR	2.61265E 04
TIM	4.50000E 02	GAM	-6.96088E-01	VEL	2.32176E 04	ALT	3.07950E 05	WT	1.71430E 05
STAGE	2	ALPH	9.09432E 00	MACH	2.74274E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12445E 01	ACC	3.26165E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.54609E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.17774E 03	VLT	3.57795E 02	VCHR	2.62280E 04
TIM	4.51000E 02	GAM	-6.69330E-01	VEL	2.33220E 04	ALT	3.07673E 05	WT	1.70201E 05
STAGE	2	ALPH	9.02359E 00	MACH	2.75507E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12453E 01	ACC	3.28520E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.58955E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.17737E 03	VLT	3.59070E 02	VCHR	2.63303E 04
TIM	4.52000E 02	GAM	-6.42152E-01	VEL	2.34271E 04	ALT	3.07405E 05	WT	1.68972E 05
STAGE	2	ALPH	8.95244E 00	MACH	2.76749E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12461E 01	ACC	3.30909E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.63219E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.17701E 03	VLT	3.60335E 02	VCHR	2.64333E 04
TIM	4.53000E 02	GAM	-6.14554E-01	VEL	2.35330E 04	ALT	3.07148E 05	WT	1.67743E 05
STAGE	2	ALPH	8.88085E 00	MACH	2.78000E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12468E 01	ACC	3.33333E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.67389E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.17667E 03	VLT	3.61590E 02	VCHR	2.65371E 04
TIM	4.54000E 02	GAM	-5.86536E-01	VEL	2.36397E 04	ALT	3.06900E 05	WT	1.66514E 05
STAGE	2	ALPH	8.80884E 00	MACH	2.79260E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12476E 01	ACC	3.35793E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.71456E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.17634E 03	VLT	3.62833E 02	VCHR	2.66416E 04
TIM	4.55000E 02	GAM	-5.58100E-01	VEL	2.37472E 04	ALT	3.06664E 05	WT	1.65285E 05
STAGE	2	ALPH	8.73639E 00	MACH	2.80530E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12483E 01	ACC	3.38290E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.75406E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.17603E 03	VLT	3.64065E 02	VCHR	2.67470E 04
TIM	4.56000E 02	GAM	-5.29244E-01	VEL	2.38555E 04	ALT	3.06438E 05	WT	1.64057E 05
STAGE	2	ALPH	8.66352E 00	MACH	2.81809E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12489E 01	ACC	3.40824E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.79230E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.17573E 03	VLT	3.65286E 02	VCHR	2.68531E 04
TIM	4.57000E 02	GAM	-4.99969E-01	VEL	2.39646E 04	ALT	3.06223E 05	WT	1.62828E 05
STAGE	2	ALPH	8.59022E 00	MACH	2.83098E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12496E 01	ACC	3.43396E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.82915E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.17545E 03	VLT	3.66495E 02	VCHR	2.69600E 04
TIM	4.58000E 02	GAM	-4.70275E-01	VEL	2.40745E 04	ALT	3.06020E 05	WT	1.61599E 05
STAGE	2	ALPH	8.51649E 00	MACH	2.84396E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12502E 01	ACC	3.46008E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.86450E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.17519E 03	VLT	3.67693E 02	VCHR	2.70677E 04
TIM	4.59000E 02	GAM	-4.40163E-01	VEL	2.41853E 04	ALT	3.05828E 05	WT	1.60370E 05
STAGE	2	ALPH	8.44233E 00	MACH	2.85705E 01	XISP	4.55000E 02	DYNP	0

GRAV	3.12507E 01	ACC	3.48659E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.89823E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.17494E 03	VLT	3.68880E 02	VCHR	2.71762E 04
TIM	4.60000E 02	GAM	-4.09632E-01	VEL	2.42969E 04	ALT	3.05648E 05	WT	1.59141E 05
STAGE	2	ALPH	8.36775E 00	MACH	2.87024E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12513E 01	ACC	3.51351E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.93022E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.17471E 03	VLT	3.70055E 02	VCHR	2.72856E 04
TIM	4.61000E 02	GAM	-3.78683E-01	VEL	2.44094E 04	ALT	3.05481E 05	WT	1.57912E 05
STAGE	2	ALPH	8.29273E 00	MACH	2.88353E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12518E 01	ACC	3.54086E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.96035E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.17449E 03	VLT	3.71218E 02	VCHR	2.73958E 04
TIM	4.62000E 02	GAM	-3.47316E-01	VEL	2.45228E 04	ALT	3.05326E 05	WT	1.56683E 05
STAGE	2	ALPH	8.21729E 00	MACH	2.89692E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12522E 01	ACC	3.56863E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	2.98850E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.17430E 03	VLT	3.72369E 02	VCHR	2.75069E 04
TIM	4.63000E 02	GAM	-3.15531E-01	VEL	2.46371E 04	ALT	3.05183E 05	WT	1.55454E 05
STAGE	2	ALPH	8.14142E 00	MACH	2.91042E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12526E 01	ACC	3.59684E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	3.01456E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.17411E 03	VLT	3.73508E 02	VCHR	2.76189E 04
TIM	4.64000E 02	GAM	-2.83328E-01	VEL	2.47523E 04	ALT	3.05054E 05	WT	1.54225E 05
STAGE	2	ALPH	8.06513E 00	MACH	2.92403E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12530E 01	ACC	3.62550E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	3.03841E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.17395E 03	VLT	3.74634E 02	VCHR	2.77318E 04
TIM	4.65000E 02	GAM	-2.50708E-01	VEL	2.48684E 04	ALT	3.04939E 05	WT	1.52997E 05
STAGE	2	ALPH	7.98841E 00	MACH	2.93775E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12534E 01	ACC	3.65462E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	3.05994E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.17361E 03	VLT	3.75749E 02	VCHR	2.78455E 04
TIM	4.66000E 02	GAM	-2.17669E-01	VEL	2.49854E 04	ALT	3.04837E 05	WT	1.51768E 05
STAGE	2	ALPH	7.91126E 00	MACH	2.95157E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12537E 01	ACC	3.68421E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	3.07904E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.17368E 03	VLT	3.76851E 02	VCHR	2.79602E 04
TIM	4.67000E 02	GAM	-1.84213E-01	VEL	2.51034E 04	ALT	3.04749E 05	WT	1.50539E 05
STAGE	2	ALPH	7.83368E 00	MACH	2.96551E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12539E 01	ACC	3.71429E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	3.09560E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.17357E 03	VLT	3.77941E 02	VCHR	2.80758E 04
TIM	4.68000E 02	GAM	-1.50339E-01	VEL	2.52224E 04	ALT	3.04676E 05	WT	1.49310E 05
STAGE	2	ALPH	7.75568E 00	MACH	2.97957E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12541E 01	ACC	3.74486E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	3.10952E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.17348E 03	VLT	3.79018E 02	VCHR	2.81924E 04
TIM	4.69000E 02	GAM	-1.16047E-01	VEL	2.53424E 04	ALT	3.04617E 05	WT	1.48081E 05
STAGE	2	ALPH	7.67725E 00	MACH	2.99374E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12543E 01	ACC	3.77593E 00	THRI	5.59144E 05	CL	0	LIFT	0
DENS	3.12070E-09	ACCN	0	RATI	1.00000E 00	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.17340E 03	VLT	3.80082E 02	VCHR	2.83099E 04
TIM	4.70000E 02	GAM	-8.13378E-02	VEL	2.54633E 04	ALT	3.04573E 05	WT	1.46852E 05
STAGE	2	ALPH	7.59839E 00	MACH	3.00803E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12544E 01	ACC	3.80000E 00	THRI	5.58038E 05	CL	0	LIFT	0
DENS	3.12905E-09	ACCN	0	RATI	9.98022E-01	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.17335E 03	VLT	3.81133E 02	VCHR	2.84284E 04
TIM	4.71000E 02	GAM	-4.62232E-02	VEL	2.55853E 04	ALT	3.04545E 05	WT	1.45624E 05
STAGE	2	ALPH	7.51912E 00	MACH	3.02244E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12545E 01	ACC	3.80000E 00	THRI	5.53370E 05	CL	0	LIFT	0
DENS	3.13448E-09	ACCN	0	RATI	9.89673E-01	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.17332E 03	VLT	3.82171E 02	VCHR	2.85479E 04
TIM	4.72000E 02	GAM	-1.07422E-02	VEL	2.57061E 04	ALT	3.04532E 05	WT	1.44397E 05
STAGE	2	ALPH	7.43947E 00	MACH	3.03694E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12546E 01	ACC	3.80000E 00	THRI	5.48708E 05	CL	0	LIFT	0
DENS	3.13693E-09	ACCN	0	RATI	9.81336E-01	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.17330E 03	VLT	3.83195E 02	VCHR	2.86682E 04

TIM	4.7[illegible]E 02	GAM	-7.17614E-03	VEL	2.57204E 04	ALT	3.04531E 05	WT	1.44274E 05
STAGE	2	ALPH	7.43149E 00	MACH	3.03840E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12546E 01	ACC	3.80000E 00	THRI	5.48242E 05	CL	0	LIFT	0
DENS	3.13701E-09	ACCN	0	RATI	9.80503E-01	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.17330E 03	VLT	3.83296E 02	VCHR	2.86803E 04
TIM	4.72200E 02	GAM	-3.60639E-03	VEL	2.57327E 04	ALT	3.04531E 05	WT	1.44152E 05
STAGE	2	ALPH	7.42350E 00	MACH	3.03986E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12546E 01	ACC	3.80000E 00	THRI	5.47777E 05	CL	0	LIFT	0
DENS	3.13705E-09	ACCN	0	RATI	9.79621E-01	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.17330E 03	VLT	3.83398E 02	VCHR	2.86923E 04
TIM	4.72300E 02	GAM	-3.29659E-05	VEL	2.57451E 04	ALT	3.04531E 05	WT	1.44029E 05
STAGE	2	ALPH	7.41551E 00	MACH	3.04131E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12546E 01	ACC	3.80000E 00	THRI	5.47312E 05	CL	0	LIFT	0
DENS	3.13707E-09	ACCN	0	RATI	9.78838E-01	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.17330E 03	VLT	3.83499E 02	VCHR	2.87044E 04
TIM	4.72400E 02	GAM	3.54412E-03	VEL	2.57574E 04	ALT	3.04531E 05	WT	1.43907E 05
STAGE	2	ALPH	7.40752E 00	MACH	3.04277E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12546E 01	ACC	3.80000E 00	THRI	5.46846E 05	CL	0	LIFT	0
DENS	3.13708E-09	ACCN	0	RATI	9.78006E-01	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.17330E 03	VLT	3.83600E 02	VCHR	2.87165E 04
TIM	4.72500E 02	GAM	7.12487E-03	VEL	2.57698E 04	ALT	3.04531E 05	WT	1.43784E 05
STAGE	2	ALPH	7.39952E 00	MACH	3.04423E 01	XISP	4.55000E 02	DYNP	0
GRAV	3.12546E 01	ACC	3.80000E 00	THRI	5.46381E 05	CL	0	LIFT	0
DENS	3.13701E-09	ACCN	0	RATI	9.77174E-01	CD	0	DRAG	0
SOS	8.46512E 02	VLD	2.54917E 02	VLG	4.17330E 03	VLT	3.83701E 02	VCHR	2.87286E 04

FIRST STAGE WEIGHTS (LBS.)

ENGINE	3.919972E 04	EQUIPMENT	1.580800E 05	TANK	1.124007E 05	JETTISON	3.100912E 05
USED PROPELLANT	1.530765E 06	LO2	5.591440E 05	FIXED RESERVES	0	VAR. RESERVES	0
VROT	1.335847E 03	V-STAGE (INERT)	6.974999E 03	GAMMA	2.155361E 01	ALPHA	0
STAGING TIME	1.345000E 02	ALTITUDE	1.493248E 05				

FIRST STAGE JETTISON INCLUDES RESERVES (IF ANY), THRUST DECAY, AND 2ND STAGE THRUST BUILD-UP.

SECOND STAGE WEIGHTS (LBS.)

ENGINE	9.450820E 03	EQUIPMENT	4.316800E 04	TANK	1.965380E 04	JETTISON	7.227262E 04
PROPELLANT	4.153595E 05	FIXED RESERVES	5.774006E 03	VAR. RESERVES	0	PAYLOAD	7.151187E 04
THRUST BUILD-UP	4.107528E 02	THRUST DECAY	1.026868E 02				

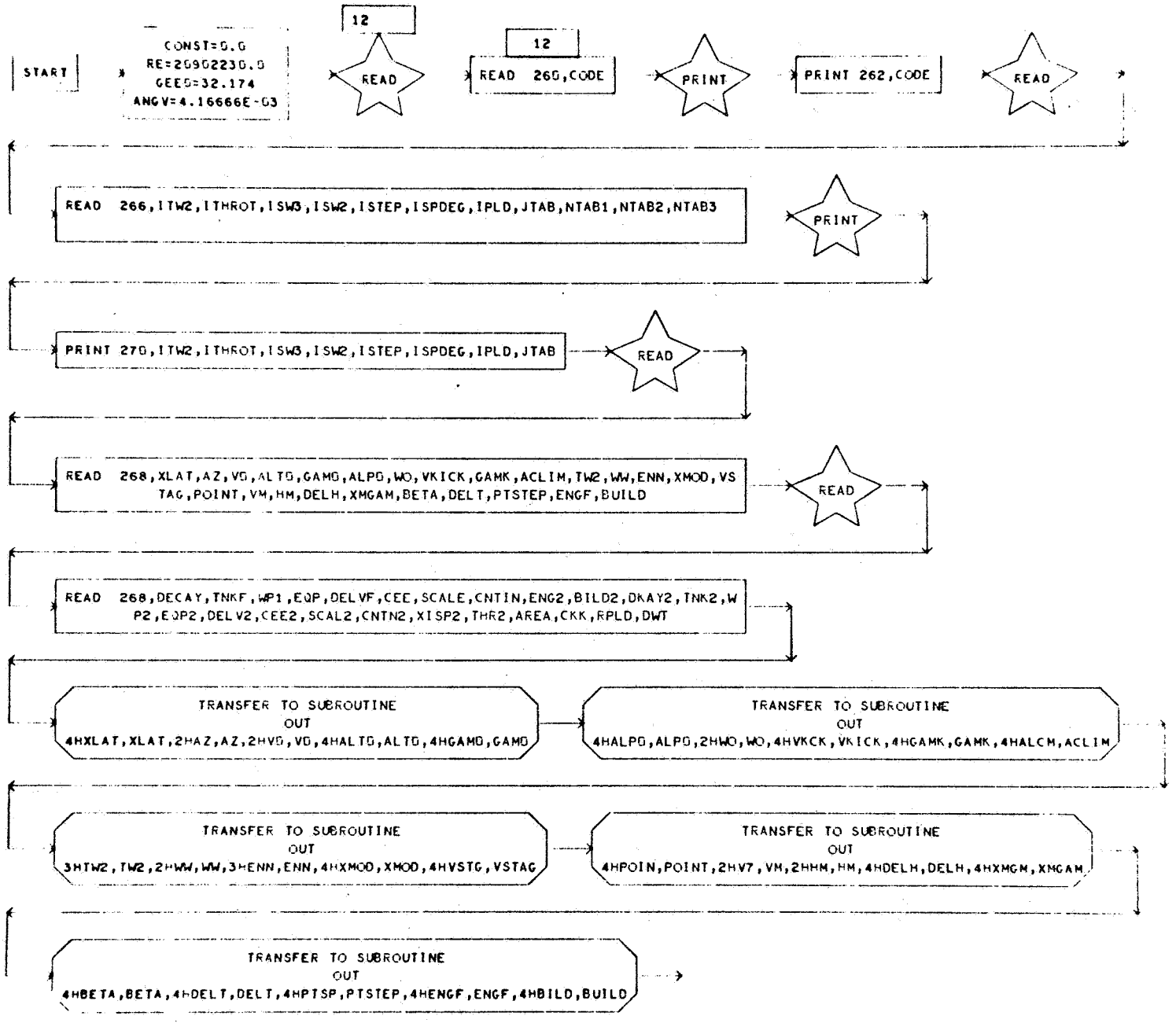
VLD = 2.549170E 02 VLG = 4.173300E 03 VLT = 3.837010E 02 VCHAR = 2.872862E 04

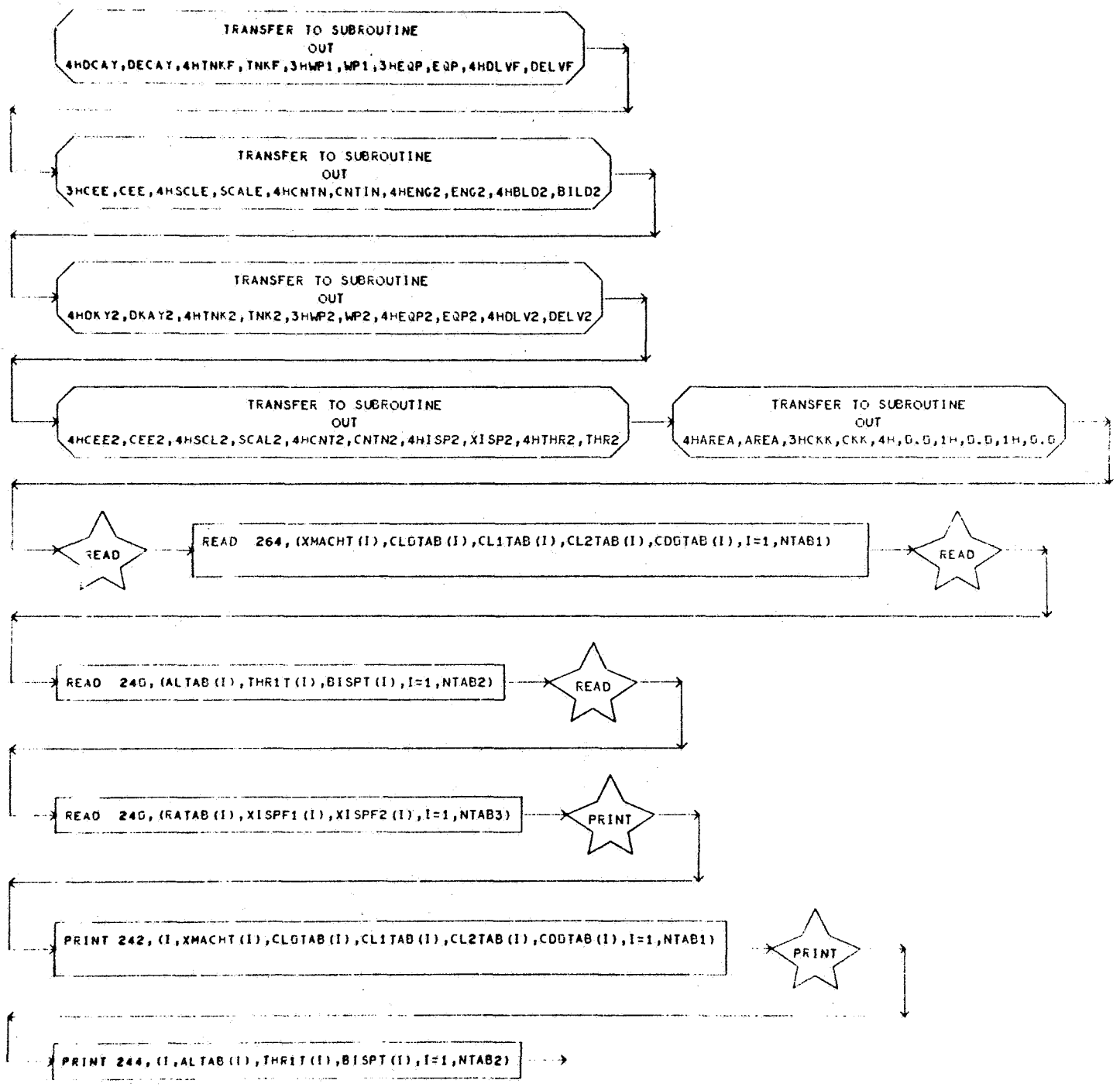
SECOND STAGE JETTISON INCLUDES RESERVES (IF ANY), AND THRUST DECAY.

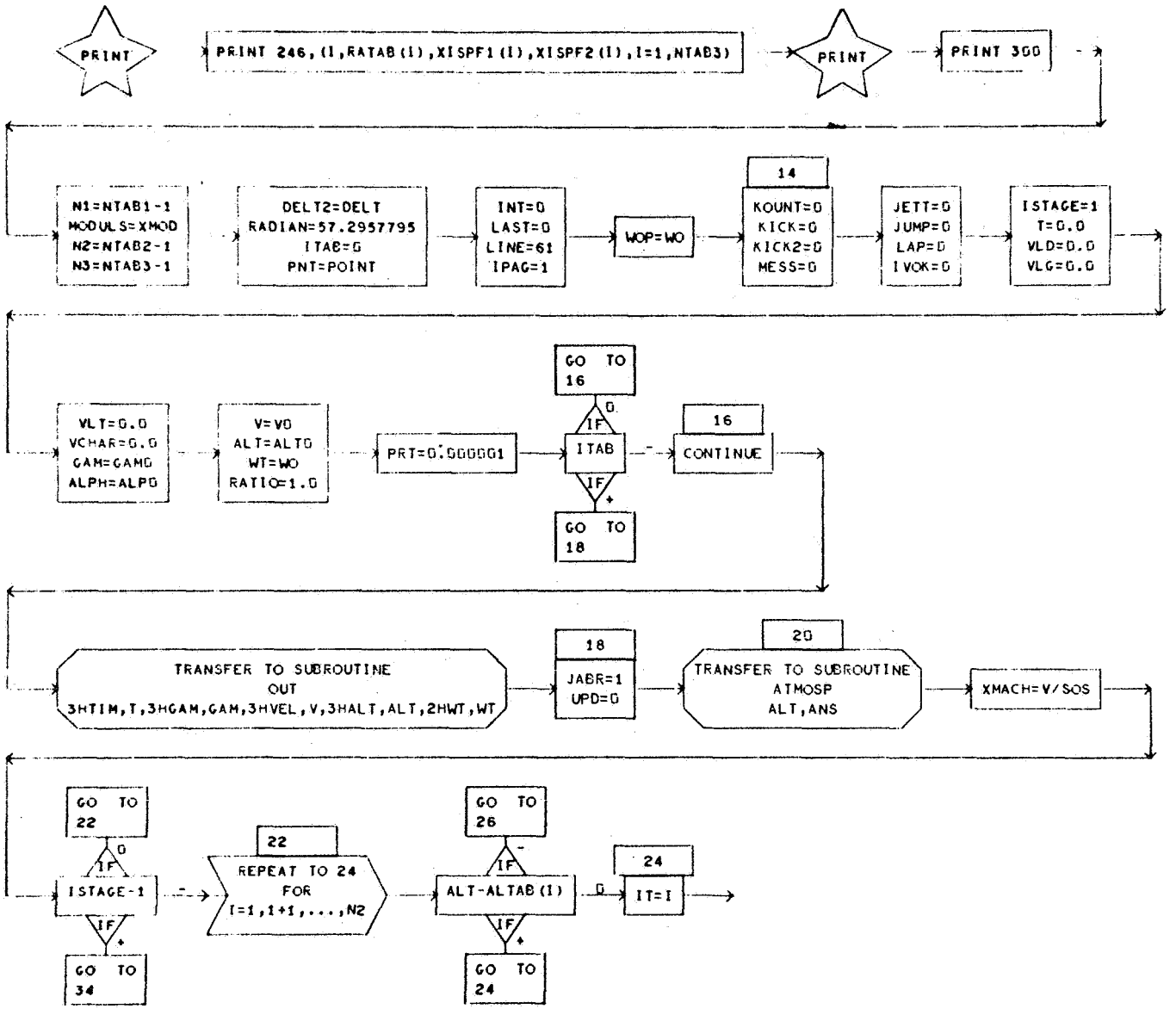
VERTICAL [illegible]

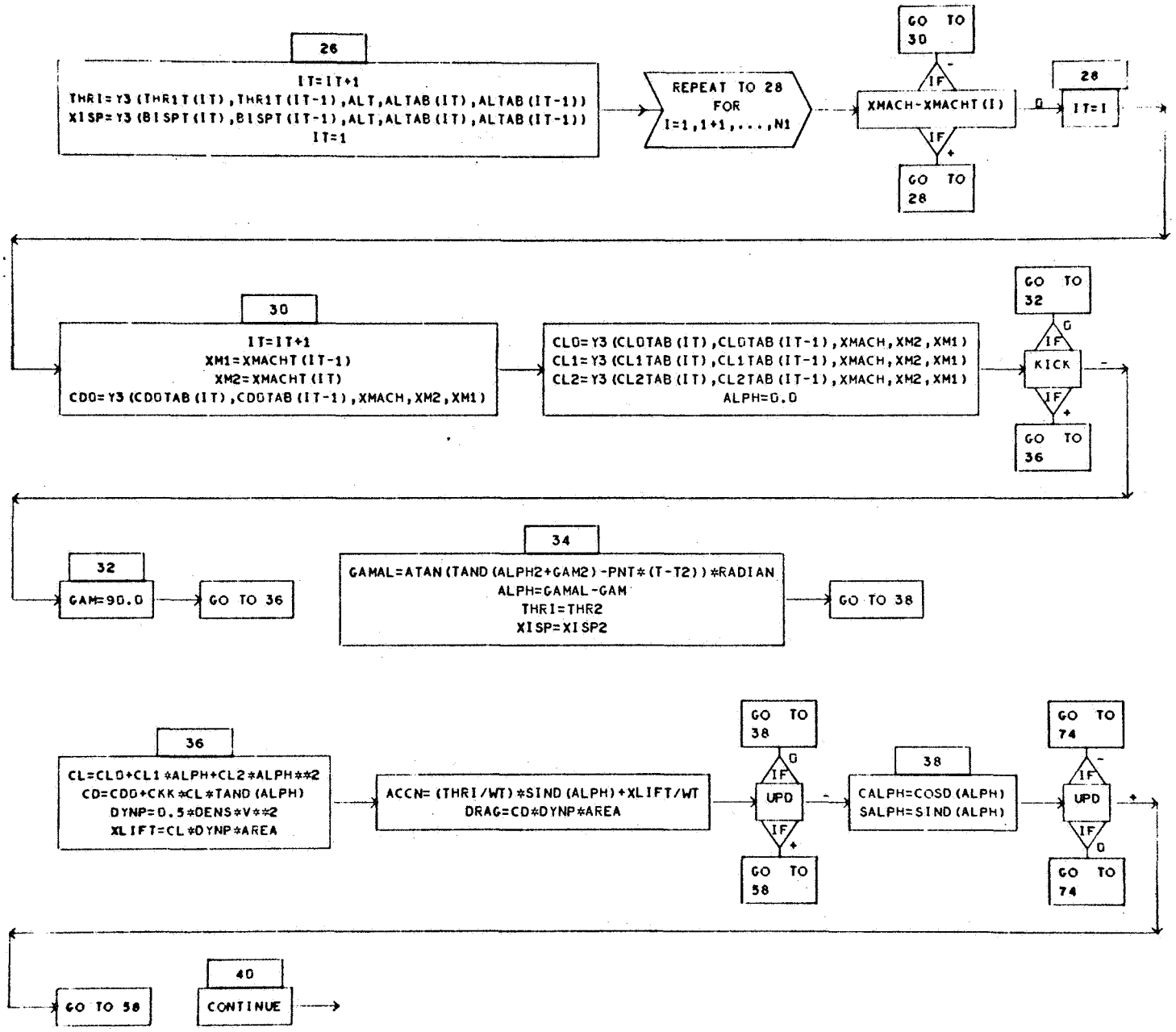
SECTION XI

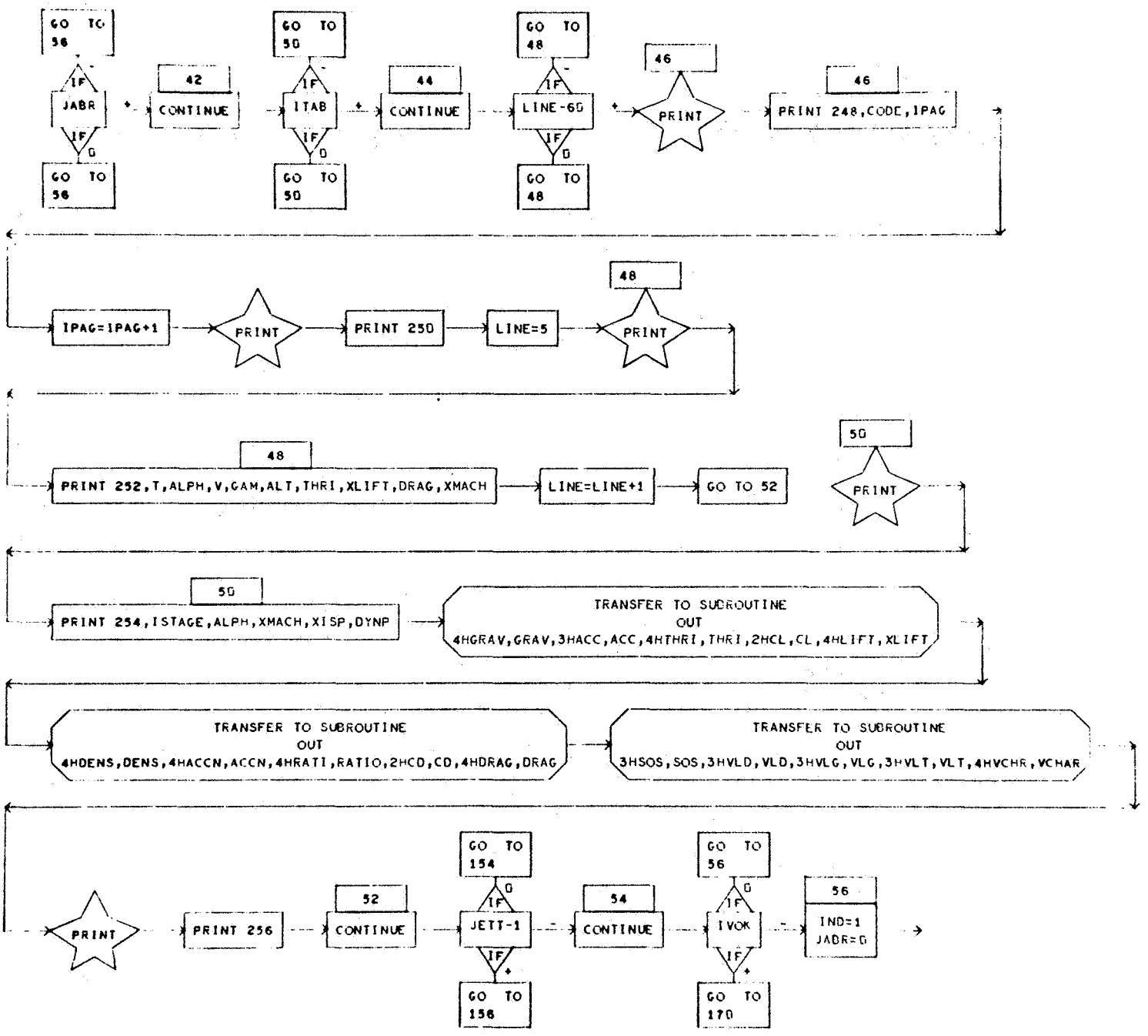
VTO FLOW CHART - 3200 SERIES

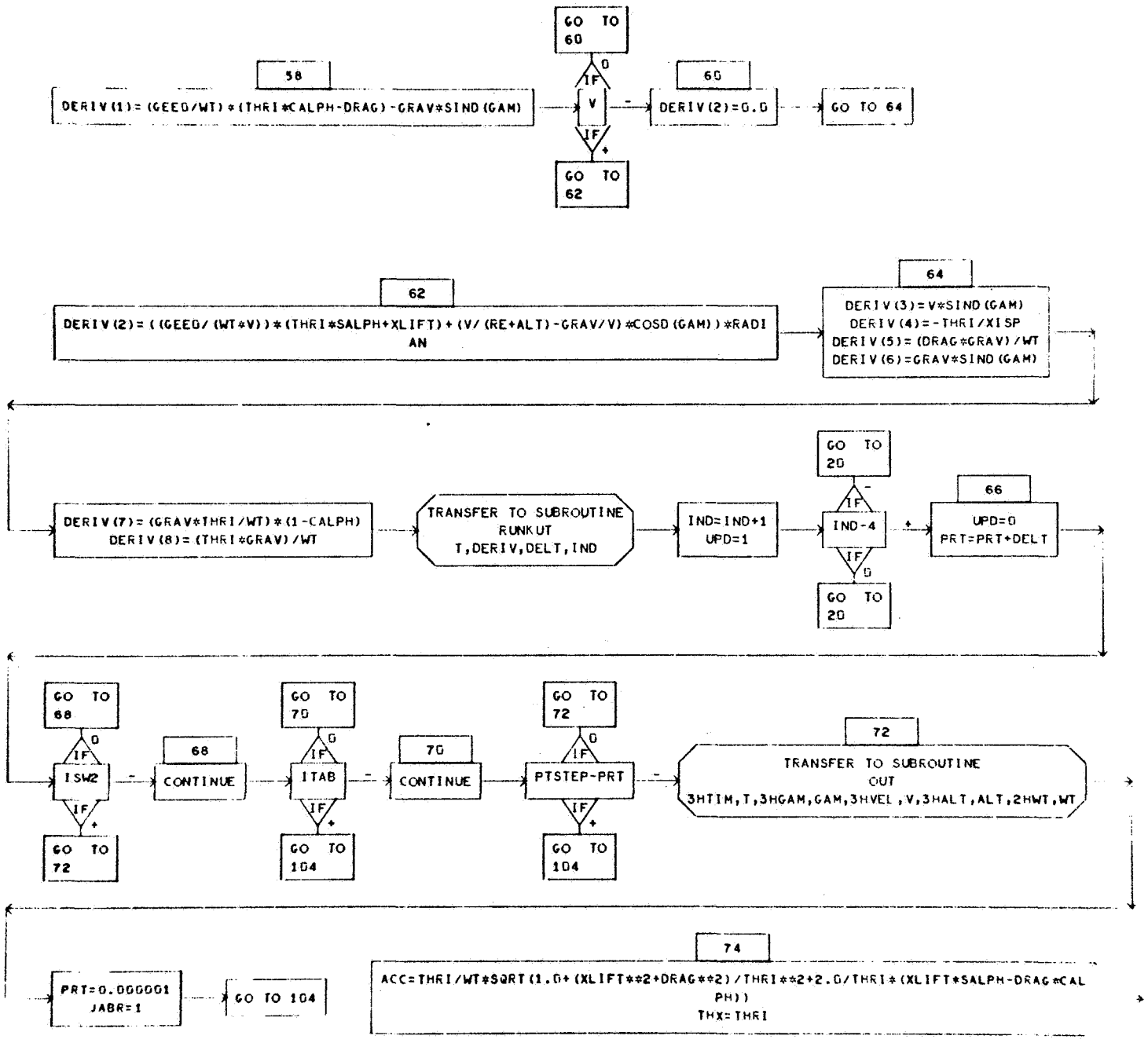


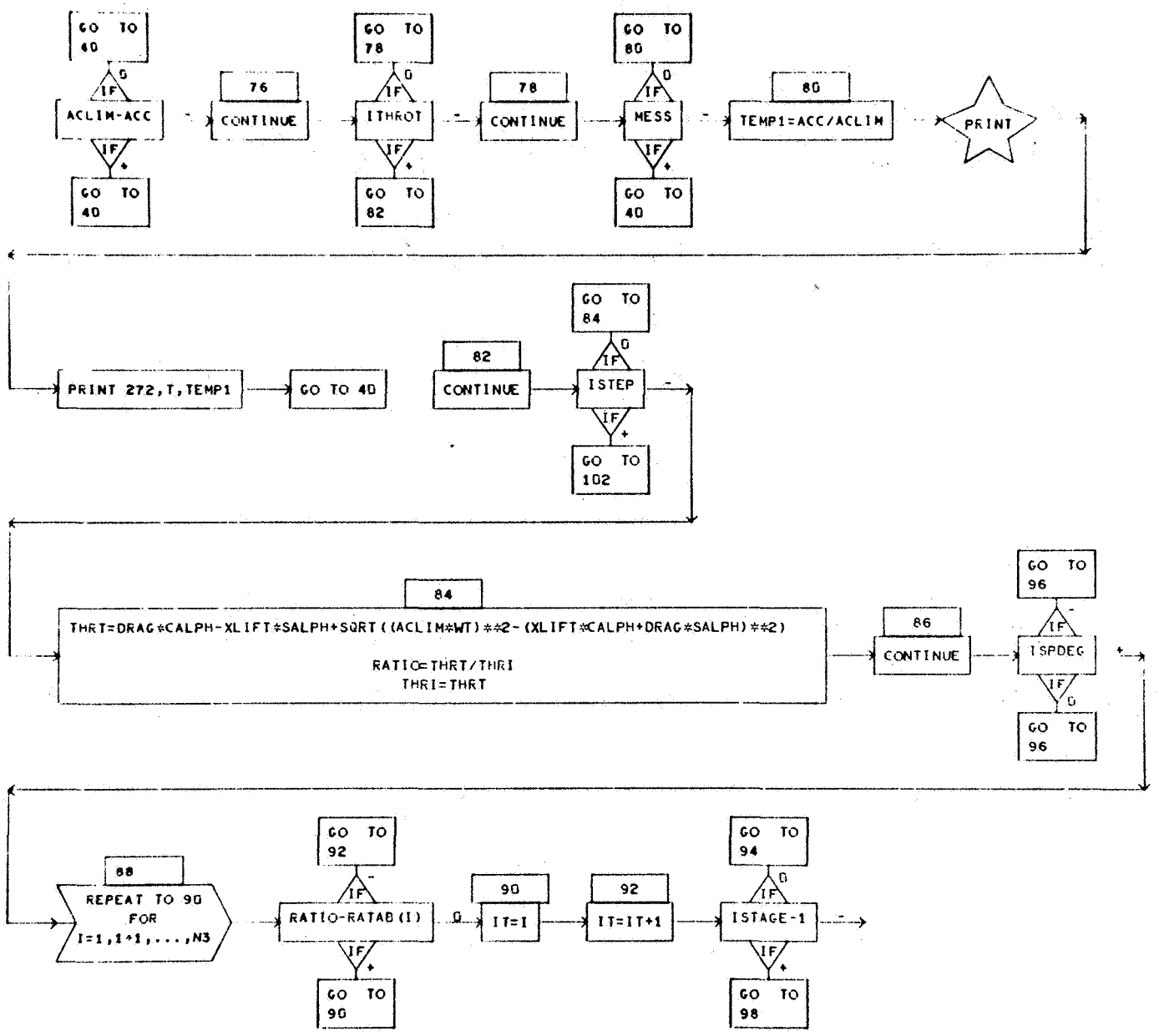

TRANSFER TO SUBROUTINE
OUT
4HDCAY,DECAY,4HTNKF,TNKF,3HWP1,WP1,3HEQP,EQP,4HDLVF,DELVF
TRANSFER TO SUBROUTINE
OUT
3HCEE,CEE,4HSCLE,SCALE,4HCNTN,CNTIN,4HENG2,ENG2,4HBLD2,BILD2
TRANSFER TO SUBROUTINE
OUT
4HDKY2,DKAY2,4HTNK2,TNK2,3HWP2,WP2,4HEQP2,EQP2,4HDLV2,DELV2
TRANSFER TO SUBROUTINE
OUT
4HCEE2,CEE2,4HSCL2,SCAL2,4HCNT2,CNTN2,4HISP2,XISP2,4HTHR2,THR2
TRANSFER TO SUBROUTINE
OUT
4HAREA,AREA,3HCKK,CKK,4H,0.0,1H,0.0,1H,0.0
READ
READ 264, (XMACHT(I),CLDTAB(I),CL1TAB(I),CL2TAB(I),CDDTAB(I),I=1,NTAB1)
READ
READ 240, (ALTAB(I),THR1T(I),BISPT(I),I=1,NTAB2)
READ
READ 240, (RATAB(I),XISPF1(I),XISPF2(I),I=1,NTAB3)
PRINT
PRINT 242, (I,XMACHT(I),CLDTAB(I),CL1TAB(I),CL2TAB(I),CDDTAB(I),I=1,NTAB1)
PRINT
PRINT 244, (I,ALTAB(I),THR1T(I),BISPT(I),I=1,NTAB2)

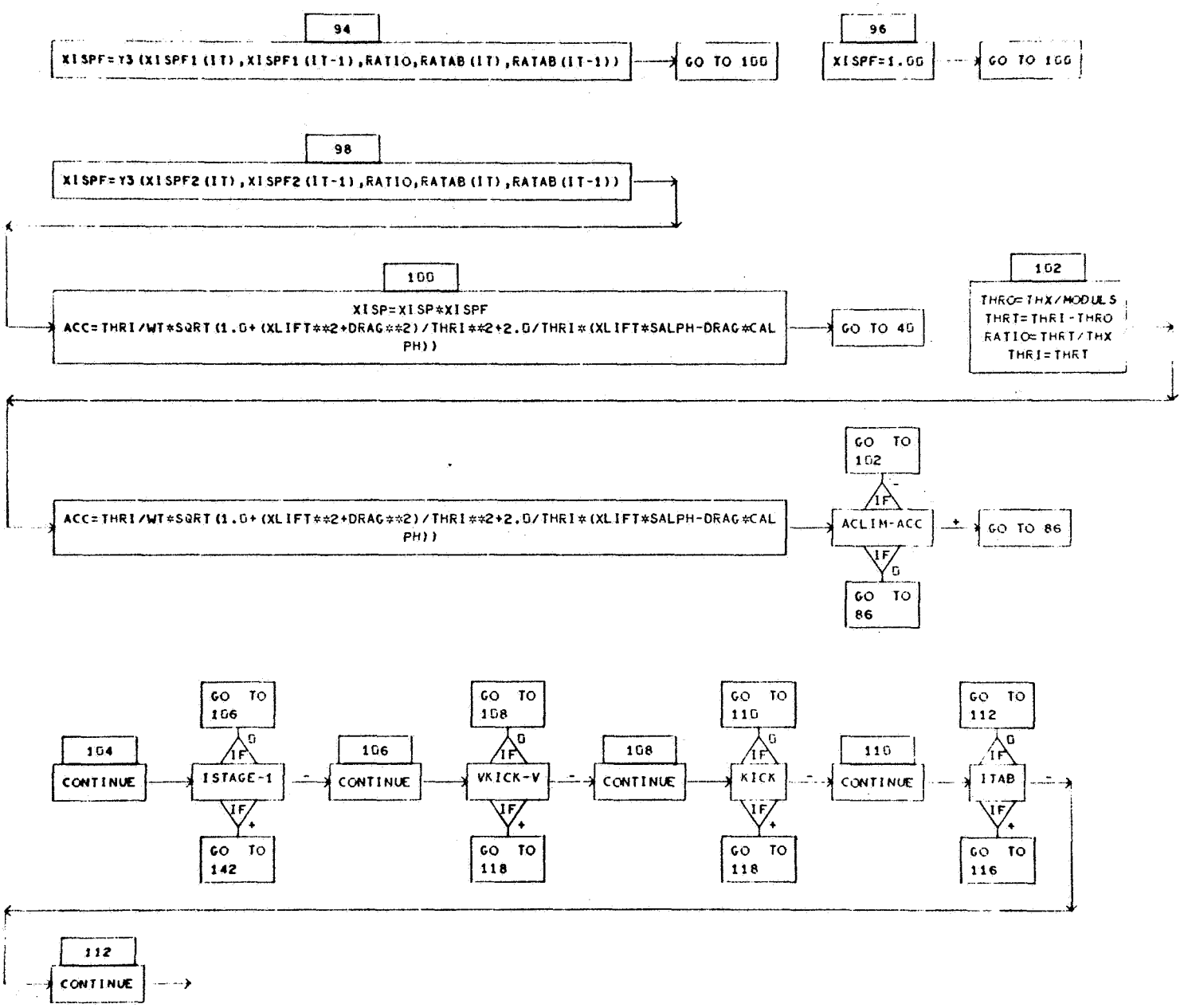

PRINT
PRINT 246,(I,RATAB(I),XISPF1(I),XISPF2(I),I=1,NTAB3)
PRINT
PRINT 300
N1=NTAB1-1
MODULS=XMOD
N2=NTAB2-1
N3=NTAB3-1
DELT2=DELT
RADIAN=57.2957795
ITAB=0
PNT=POINT
INT=0
LAST=0
LINE=61
IPAG=1
WOP=WO
14
KOUNT=0
KICK=0
KICK2=0
MESS=0
JETT=0
JUMP=0
LAP=0
IVOK=0
ISTAGE=1
T=0.0
VLD=0.0
VLG=0.0
VLT=0.0
VCHAR=0.0
GAM=GAMO
ALPH=ALPO
V=VO
ALT=ALTO
WT=WO
RATIO=1.0
PRT=0.000001
GO TO 16
IF 0
ITAB
IF +
GO TO 18
16
CONTINUE
TRANSFER TO SUBROUTINE
OUT
3HTIM,T,3HGAM,GAM,3HVEL,V,3HALT,ALT,2HWT,WT
18
JABR=1
UPD=0
20
TRANSFER TO SUBROUTINE
ATMOSP
ALT,ANS
XMACH=V/SOS
GO TO 22
IF 0
ISTAGE-1
IF +
GO TO 34
22
REPEAT TO 24
FOR
I=1,1+1,...,N2
GO TO 26
IF -
ALT-ALTAB(I)
IF +
GO TO 24
0
24
IT=I

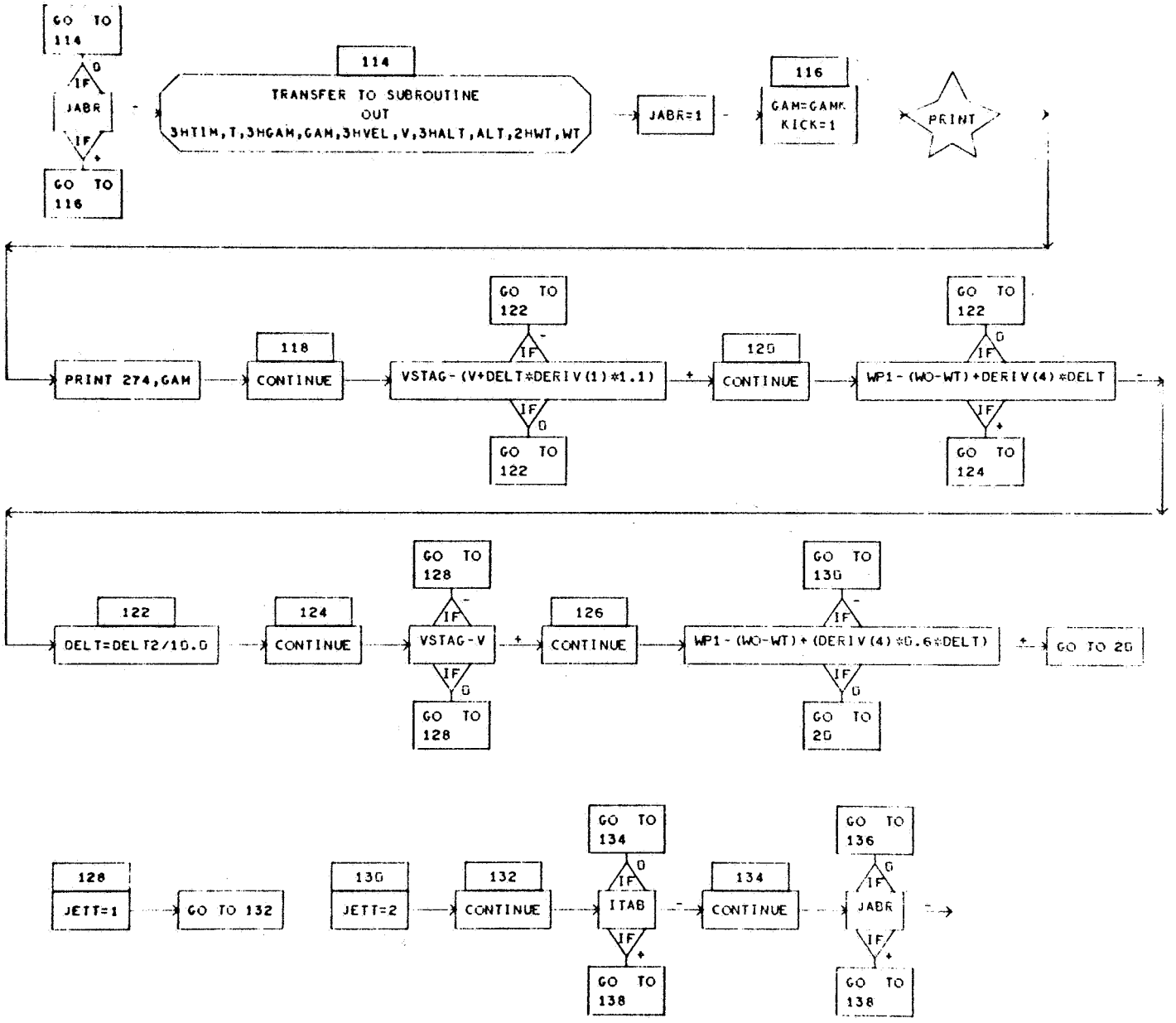

26
IT=IT+1
THRI=Y3(THR1T(IT),THR1T(IT-1),ALT,ALTAB(IT),ALTAB(IT-1))
XISP=Y3(BISPT(IT),BISPT(IT-1),ALT,ALTAB(IT),ALTAB(IT-1))
IT=1
REPEAT TO 28
FOR
I=1,1+1,...,N1
XMACH-XMACHT(I)
IF
GO TO 30
GO TO 28
28
IT=I
30
IT=IT+1
XM1=XMACHT(IT-1)
XM2=XMACHT(IT)
CDO=Y3(CDOTAB(IT),CDOTAB(IT-1),XMACH,XM2,XM1)
CLO=Y3(CLOTAB(IT),CLOTAB(IT-1),XMACH,XM2,XM1)
CL1=Y3(CL1TAB(IT),CL1TAB(IT-1),XMACH,XM2,XM1)
CL2=Y3(CL2TAB(IT),CL2TAB(IT-1),XMACH,XM2,XM1)
ALPH=0.0
KICK
GO TO 32
GO TO 36
32
GAM=90.0
GO TO 36
34
GAMAL=ATAN(TAND(ALPH2+GAM2)-PNT*(T-T2))*RADIAN
ALPH=GAMAL-GAM
THRI=THR2
XISP=XISP2
GO TO 38
36
CL=CLO+CL1*ALPH+CL2*ALPH**2
CD=CDO+CKK*CL*TAND(ALPH)
DYNP=0.5*DENS*V**2
XLIFT=CL*DYNP*AREA
ACCN=(THRI/WT)*SIND(ALPH)+XLIFT/WT
DRAG=CD*DYNP*AREA
UPD
GO TO 38
GO TO 58
38
CALPH=COSD(ALPH)
SALPH=SIND(ALPH)
GO TO 74
GO TO 58
40
CONTINUE

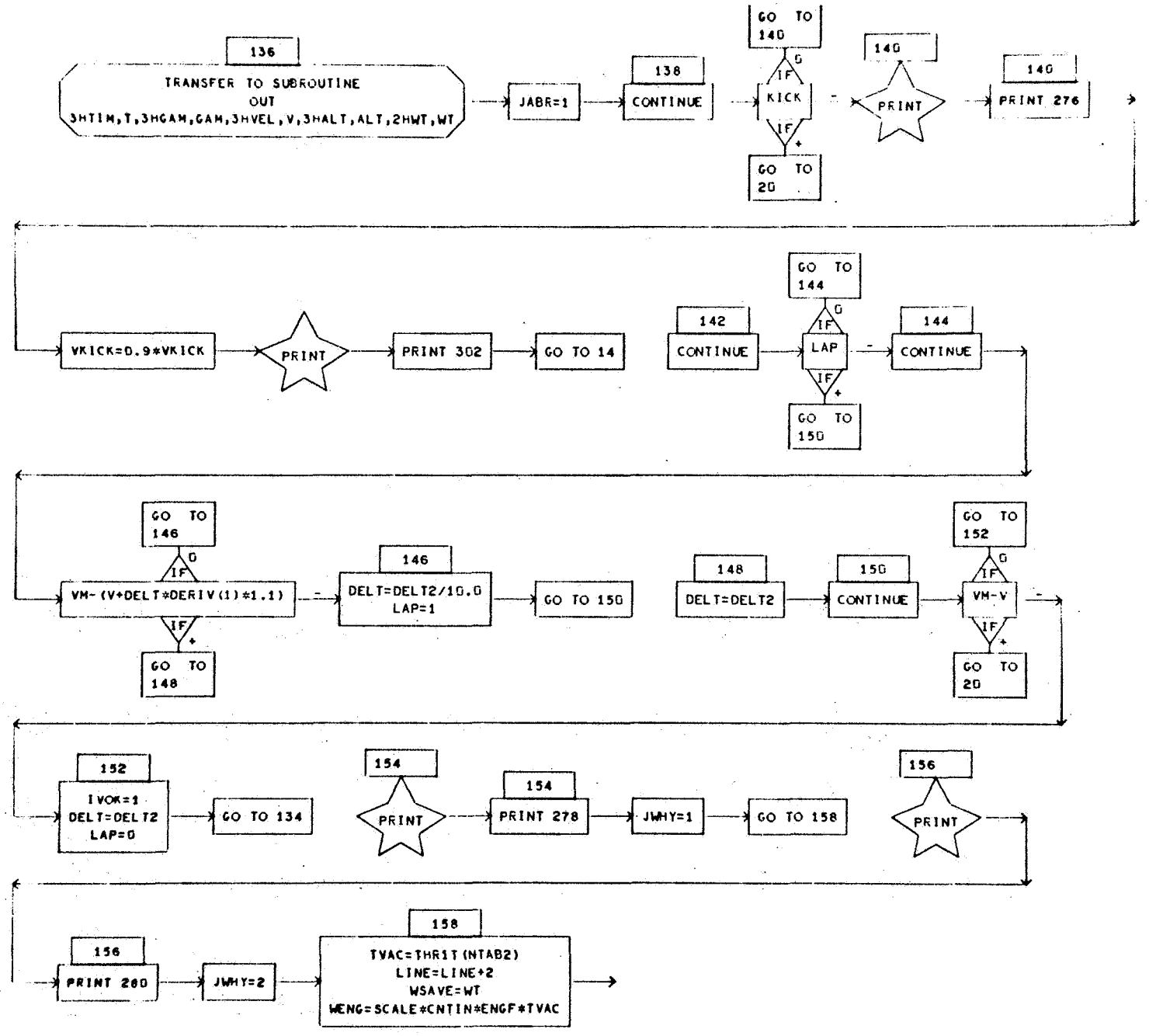

GO TO 56
IF JABR
IF 0
GO TO 56
42
CONTINUE
GO TO 50
IF ITAB
IF 0
GO TO 50
44
CONTINUE
GO TO 48
IF LINE-60
IF 0
GO TO 48
46
PRINT
46
PRINT 248,CODE,IPAG
IPAG=IPAG+1
PRINT
PRINT 250
LINE=5
48
PRINT
48
PRINT 252,T,ALPH,V,GAM,ALT,THRI,XLIFT,DRAG,XMACH
LINE=LINE+1
GO TO 52
50
PRINT
50
PRINT 254,ISTAGE,ALPH,XMACH,XISP,DYNP
TRANSFER TO SUBROUTINE
OUT
4HGRAV,GRAV,3HACC,ACC,4HTHRI,THRI,2HCL,CL,4HLIFT,XLIFT
TRANSFER TO SUBROUTINE
OUT
4HDENS,DENS,4HACCN,ACCN,4HRATI,RATIO,2HCD,CD,4HDRAG,DRAG
TRANSFER TO SUBROUTINE
OUT
3HSOS,SOS,3HVLD,VLD,3HVLG,VLG,3HVLT,VLT,4HVCHR,VCHAR
PRINT
PRINT 256
52
CONTINUE
GO TO 154
0
IF JETT-1
IF +
GO TO 156
54
CONTINUE
GO TO 56
0
IF IVOK
IF +
GO TO 170
56
IND=1
JADR=0

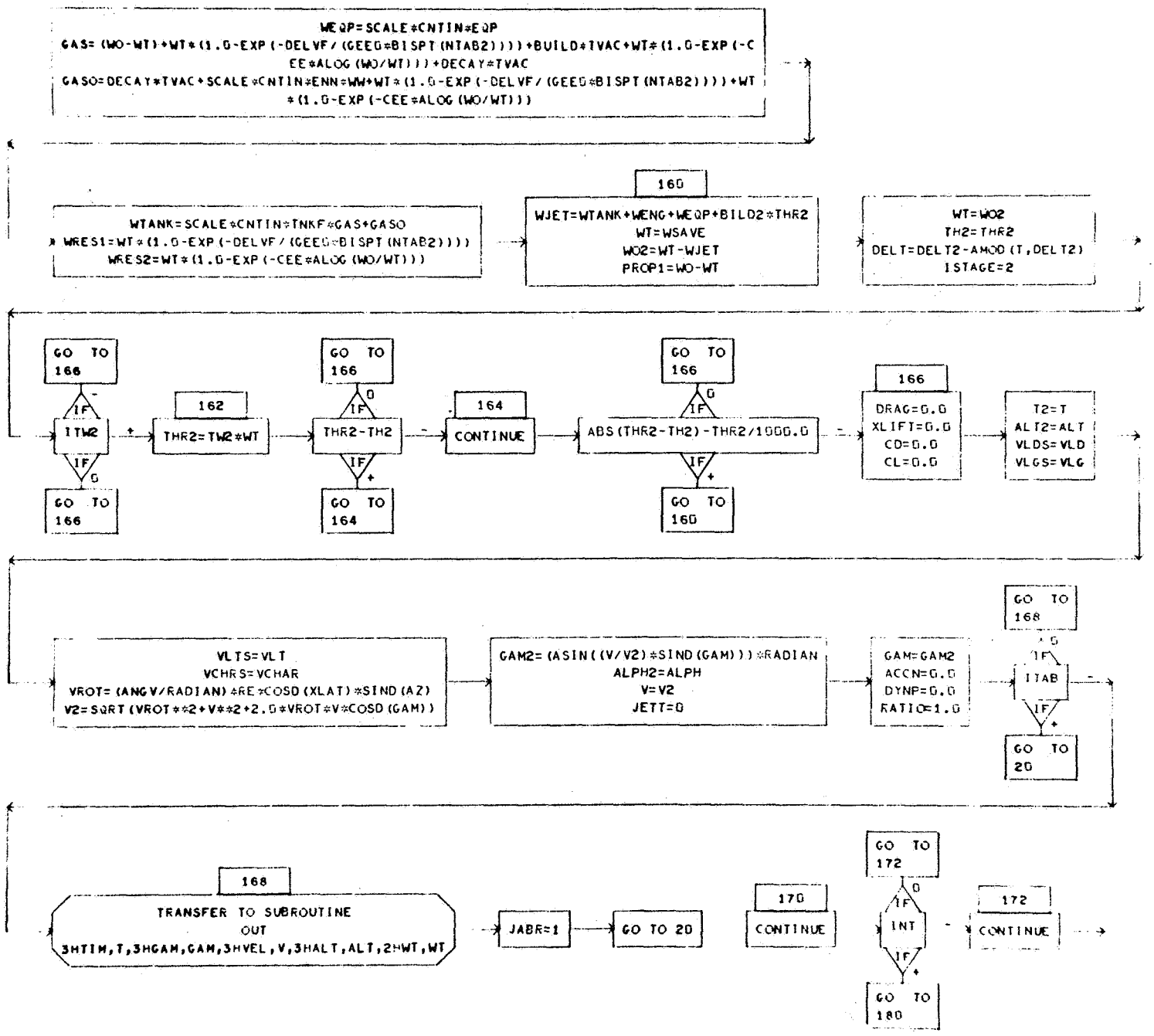

58
DERIV(1)= (GEED/WT)*(THRI*CALPH-DRAG)-GRAV*SIND(GAM)
GO TO 60
IF 0
V
IF +
GO TO 62
60
DERIV(2)=0.0
GO TO 64
62
DERIV(2)= ((GEED/(WT*V))*(THRI*SALPH+XLIFT)+(V/(RE+ALT)-GRAV/V)*COSD(GAM))*RADIAN
64
DERIV(3)=V*SIND(GAM)
DERIV(4)=-THRI/XISP
DERIV(5)= (DRAG*GRAV)/WT
DERIV(6)=GRAV*SIND(GAM)
DERIV(7)= (GRAV*THRI/WT)*(1-CALPH)
DERIV(8)= (THRI*GRAV)/WT
TRANSFER TO SUBROUTINE
RUNKUT
T,DERIV,DELT,IND
IND=IND+1
UPD=1
GO TO 20
IF -
IND-4
IF 0
GO TO 20
66
UPD=0
PRT=PRT+DELT
GO TO 68
IF 0
ISW2
IF +
GO TO 72
68
CONTINUE
GO TO 70
IF 0
ITAB
IF +
GO TO 104
70
CONTINUE
GO TO 72
IF 0
PTSTEP-PRT
IF +
GO TO 104
72
TRANSFER TO SUBROUTINE
OUT
3HTIM,T,3HGAM,GAM,3HVEL,V,3HALT,ALT,2HWT,WT
PRT=0.000001
JABR=1
GO TO 104
74
ACC=THRI/WT*SQRT(1.0+(XLIFT**2+DRAG**2)/THRI**2+2.0/THRI*(XLIFT*SALPH-DRAG*CALPH))
THX=THRI

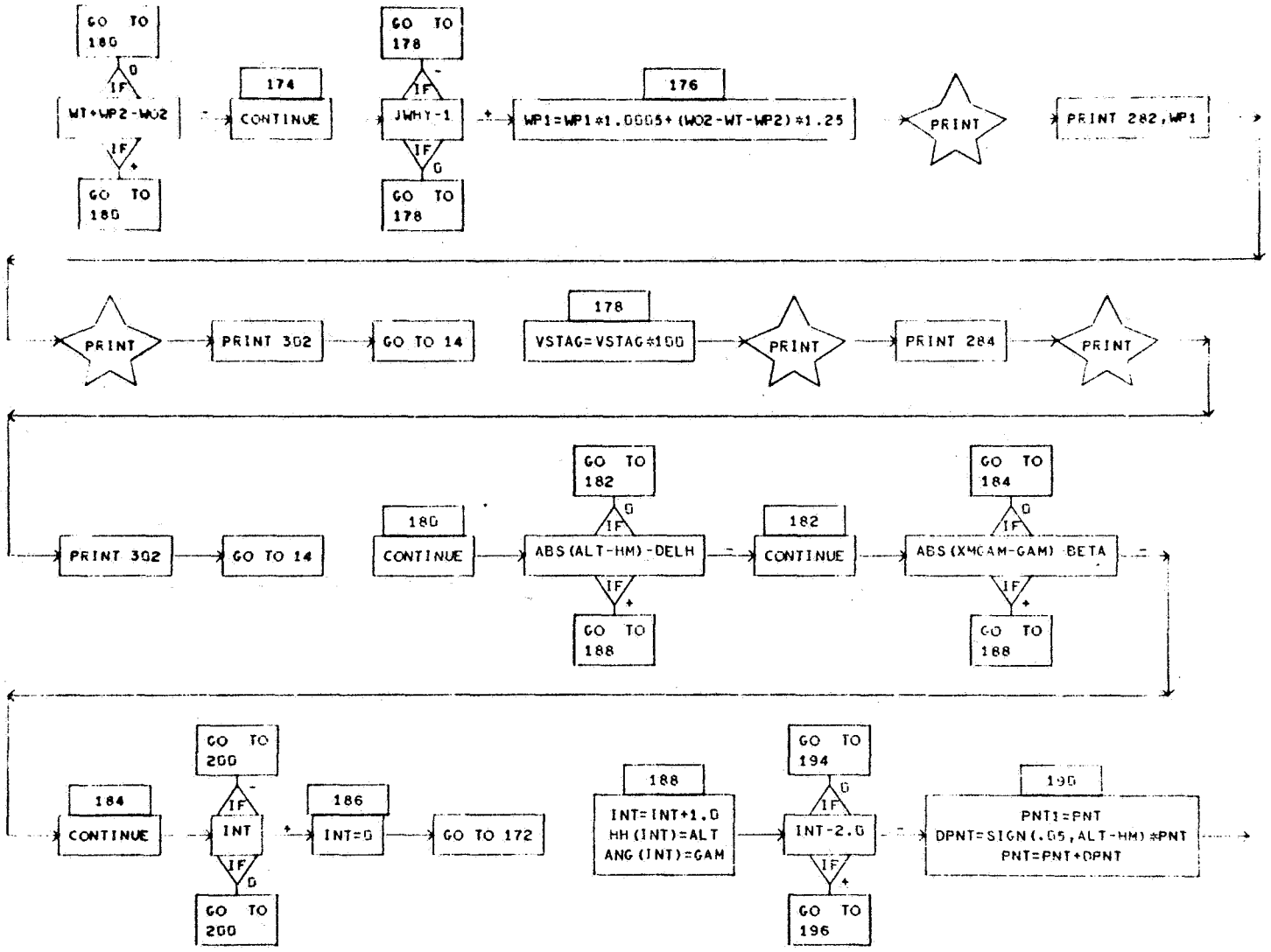

GO TO 40
IF 0
ACLIM-ACC
IF +
GO TO 40
76
CONTINUE
GO TO 78
IF 0
ITHROT
IF +
GO TO 82
78
CONTINUE
GO TO 80
IF 0
MESS
IF +
GO TO 40
80
TEMP1=ACC/ACLIM
PRINT
PRINT 272,T,TEMP1
GO TO 40
82
CONTINUE
GO TO 84
IF 0
ISTEP
IF +
GO TO 102
84
THRT=DRAG*CALPH-XLIFT*SALPH+SQRT((ACLIM*WT)**2-(XLIFT*CALPH+DRAG*SALPH)**2)
RATIO=THRT/THRI
THRI=THRT
86
CONTINUE
GO TO 96
IF -
ISPDEG
IF 0
GO TO 96
88
REPEAT TO 90
FOR
I=1,I+1,...,N3
GO TO 92
IF -
RATIO-RATAB(I)
IF +
GO TO 90
90
IT=I
92
IT=IT+1
GO TO 94
IF 0
ISTAGE-1
IF +
GO TO 98

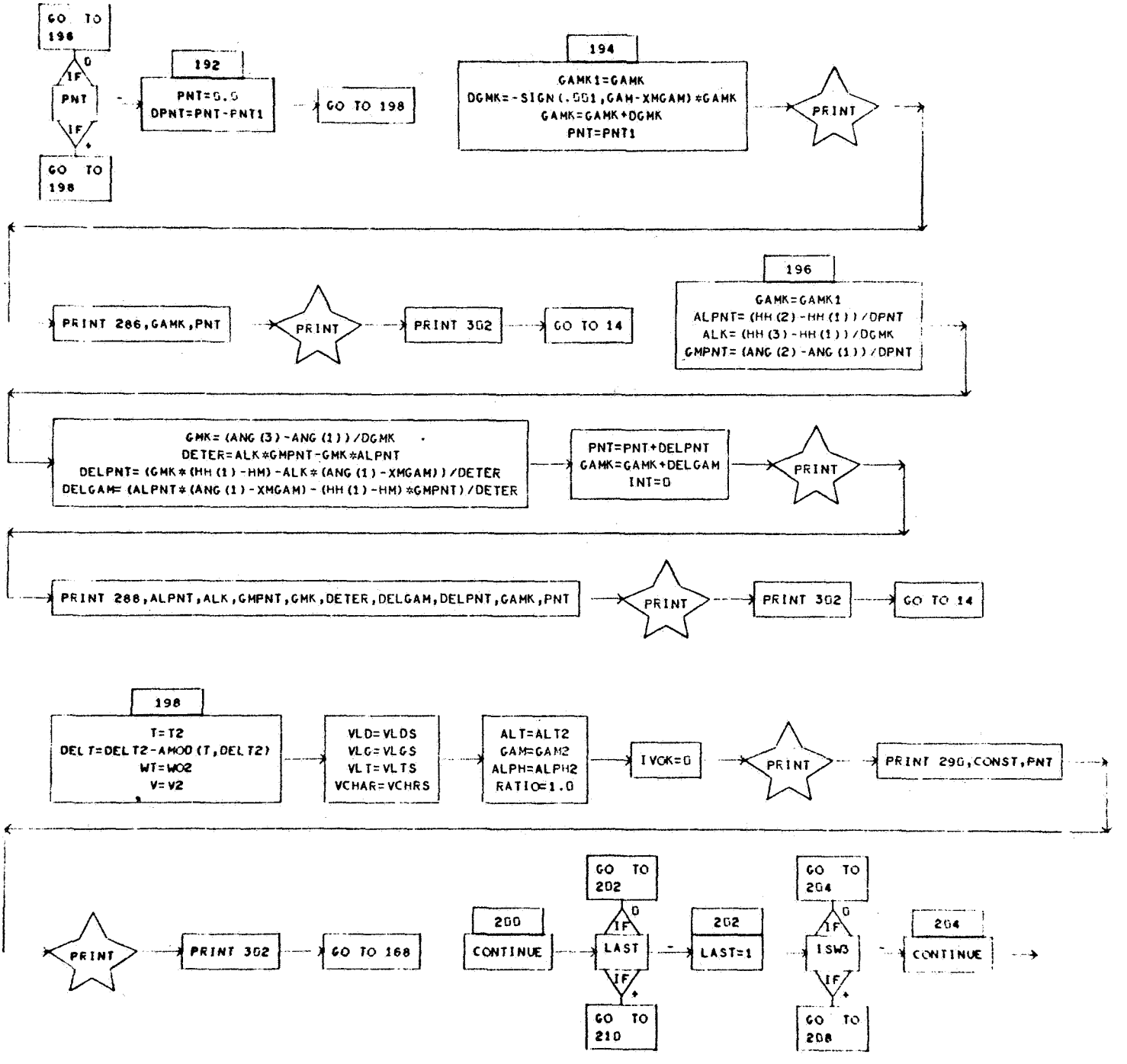

94
XISPF=Y3(XISPF1(IT),XISPF1(IT-1),RATIO,RATAB(IT),RATAB(IT-1))
GO TO 100
96
XISPF=1.00
GO TO 100
98
XISPF=Y3(XISPF2(IT),XISPF2(IT-1),RATIO,RATAB(IT),RATAB(IT-1))
100
XISP=XISP*XISPF
ACC=THRI/WT*SQRT(1.0+(XLIFT**2+DRAG**2)/THRI**2+2.0/THRI*(XLIFT*SALPH-DRAG*CALPH))
GO TO 40
102
THRO=THX/MODULS
THRT=THRI-THRO
RATIO=THRT/THX
THRI=THRT
ACC=THRI/WT*SQRT(1.0+(XLIFT**2+DRAG**2)/THRI**2+2.0/THRI*(XLIFT*SALPH-DRAG*CALPH))
ACLIM-ACC
IF
GO TO 102
GO TO 86
GO TO 86
104
CONTINUE
ISTAGE-1
GO TO 106
GO TO 142
106
CONTINUE
VKICK-V
GO TO 108
GO TO 118
108
CONTINUE
KICK
GO TO 110
GO TO 118
110
CONTINUE
ITAB
GO TO 112
GO TO 116
112
CONTINUE

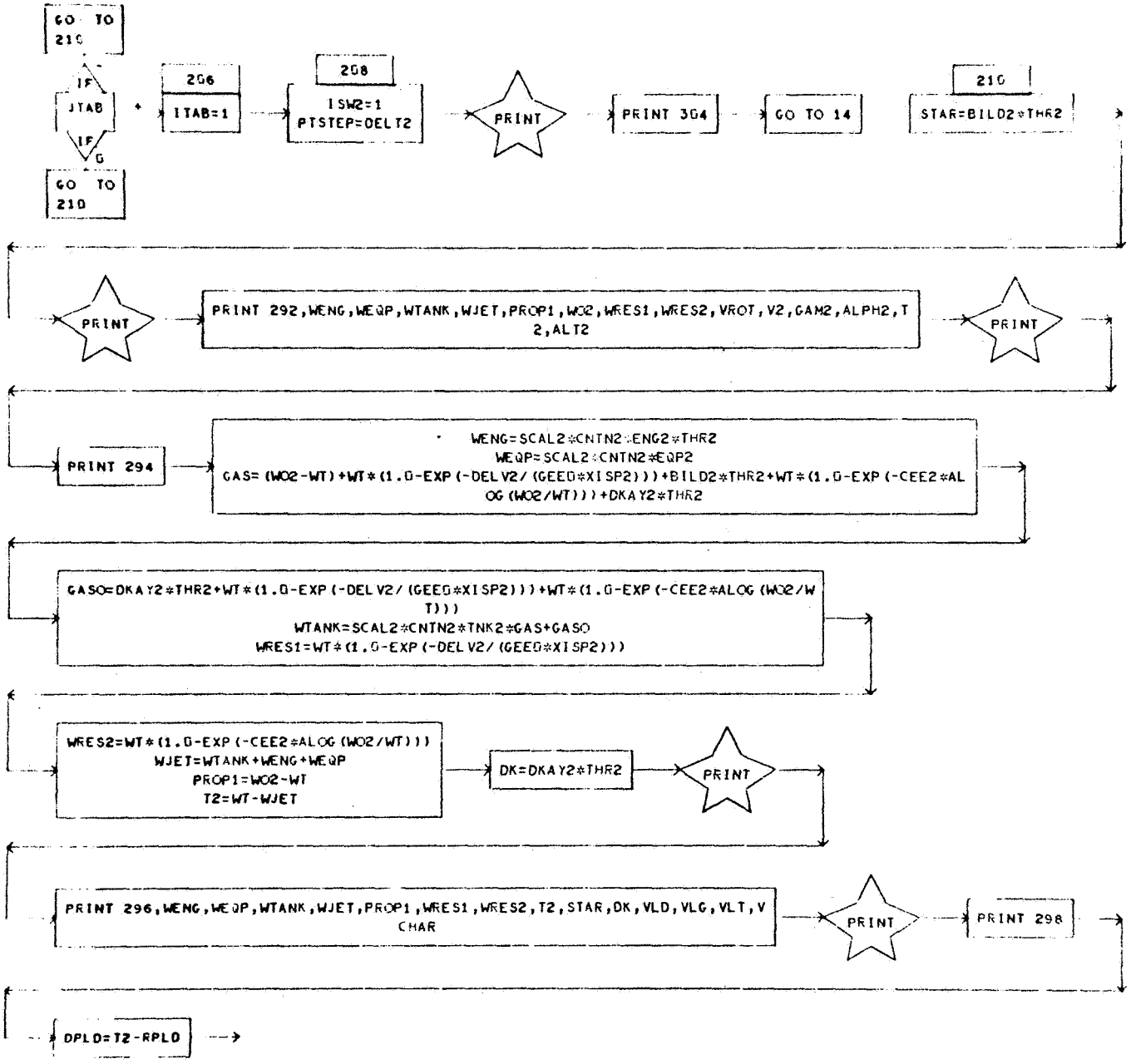

GO TO 114
IF 0
JABR
IF +
GO TO 116
114
TRANSFER TO SUBROUTINE
OUT
3HTIM,T,3HGAM,GAM,3HVEL,V,3HALT,ALT,2HWT,WT
JABR=1
116
GAM=GAMK
KICK=1
PRINT
PRINT 274,GAM
118
CONTINUE
GO TO 122
IF -
VSTAG-(V+DELT*DERIV(1)*1.1)
IF 0
GO TO 122
120
CONTINUE
GO TO 122
IF 0
WP1-(WO-WT)+DERIV(4)*DELT
IF +
GO TO 124
122
DELT=DELT2/10.0
124
CONTINUE
GO TO 128
IF -
VSTAG-V
IF 0
GO TO 128
126
CONTINUE
GO TO 130
IF -
WP1-(WO-WT)+(DERIV(4)*0.6*DELT)
IF 0
GO TO 20
GO TO 20
128
JETT=1
GO TO 132
130
JETT=2
132
CONTINUE
GO TO 134
IF 0
ITAB
IF +
GO TO 138
134
CONTINUE
GO TO 136
IF 0
JABR
IF +
GO TO 138

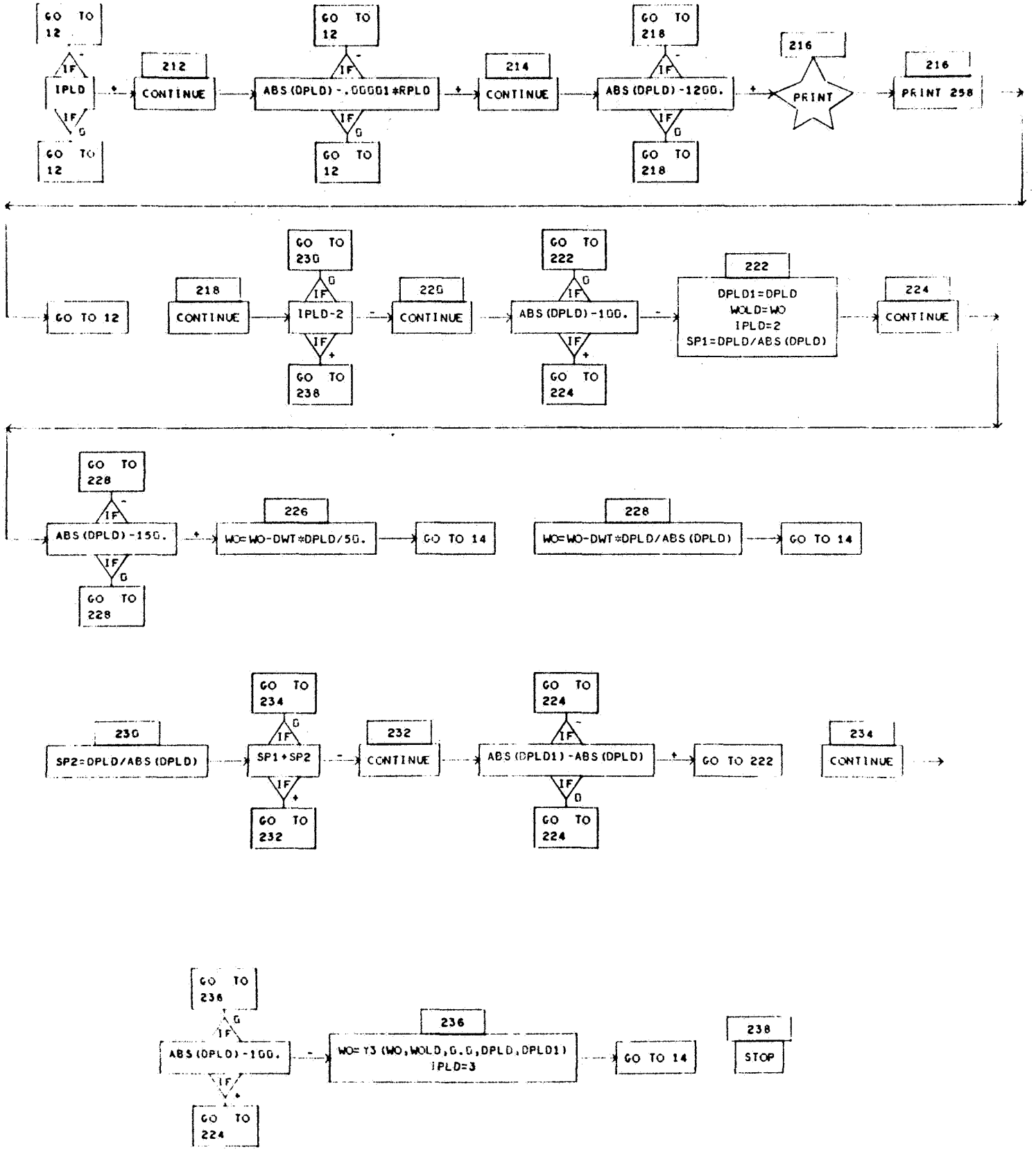

136
TRANSFER TO SUBROUTINE
OUT
3HTIM,T,3HGAM,GAM,3HVEL,V,3HALT,ALT,2HWT,WT
JABR=1
138
CONTINUE
GO TO 140
IF 0
KICK
IF +
GO TO 20
140
PRINT
140
PRINT 276
VKICK=0.9*VKICK
PRINT
PRINT 302
GO TO 14
GO TO 144
142
CONTINUE
IF 0
LAP
IF +
GO TO 150
144
CONTINUE
GO TO 146
IF 0
VM-(V+DELT*DERIV(1)*1.1)
IF +
GO TO 148
146
DELT=DELT2/10.0
LAP=1
GO TO 150
148
DELT=DELT2
150
CONTINUE
GO TO 152
IF 0
VM-V
IF +
GO TO 20
152
IVOK=1
DELT=DELT2
LAP=0
GO TO 134
154
PRINT
154
PRINT 278
JWHY=1
GO TO 158
156
PRINT
156
PRINT 280
JWHY=2
158
TVAC=THR1T(NTAB2)
LINE=LINE+2
WSAVE=WT
WENG=SCALE*CNTIN*ENGF*TVAC


WEQP=SCALE*CNTIN*EQP
GAS=(WO-WT)+WT*(1.0-EXP(-DELVF/(GEEO*BISPT(NTAB2))))+BUILD*TVAC+WT*(1.0-EXP(-CEE*ALOG(WO/WT)))+DECAY*TVAC
GASO=DECAY*TVAC+SCALE*CNTIN*ENN*WW+WT*(1.0-EXP(-DELVF/(GEEO*BISPT(NTAB2))))+WT*(1.0-EXP(-CEE*ALOG(WO/WT)))
WTANK=SCALE*CNTIN*TNKF*GAS+GASO
WRES1=WT*(1.0-EXP(-DELVF/(GEEO*BISPT(NTAB2))))
WRES2=WT*(1.0-EXP(-CEE*ALOG(WO/WT)))
160
WJET=WTANK+WENG+WEQP+BILD2*THR2
WT=WSAVE
WO2=WT-WJET
PROP1=WO-WT
WT=WO2
TH2=THR2
DELT=DELT2-AMOD(T,DELT2)
ISTAGE=2
GO TO 166
IF
ITW2
IF
GO TO 166
162
THR2=TW2*WT
GO TO 166
IF
THR2-TH2
IF
GO TO 164
164
CONTINUE
GO TO 166
IF
ABS(THR2-TH2)-THR2/1000.0
IF
GO TO 160
166
DRAG=0.0
XLIFT=0.0
CD=0.0
CL=0.0
T2=T
ALT2=ALT
VLDS=VLD
VLGS=VLG
VLTS=VLT
VCHRS=VCHAR
VROT=(ANGV/RADIAN)*RE*COSD(XLAT)*SIND(AZ)
V2=SQRT(VROT**2+V**2+2.0*VROT*V*COSD(GAM))
GAM2=(ASIN((V/V2)*SIND(GAM)))*RADIAN
ALPH2=ALPH
V=V2
JETT=0
GAM=GAM2
ACCN=0.0
DYNP=0.0
RATIO=1.0
GO TO 168
IF
ITAB
IF
GO TO 20
168
TRANSFER TO SUBROUTINE
OUT
3HTIM,T,3HGAM,GAM,3HVEL,V,3HALT,ALT,2HWT,WT
JABR=1
GO TO 20
170
CONTINUE
GO TO 172
IF
INT
IF
GO TO 180
172
CONTINUE


GO TO 180
IF 0
WT+WP2-WO2
IF +
GO TO 180
174
CONTINUE
GO TO 178
IF -
JWHY-1
IF 0
GO TO 178
176
WP1=WP1*1.0005+(WO2-WT-WP2)*1.25
PRINT
PRINT 282,WP1
PRINT
PRINT 302
GO TO 14
178
VSTAG=VSTAG*100
PRINT
PRINT 284
PRINT
PRINT 302
GO TO 14
180
CONTINUE
GO TO 182
IF 0
ABS(ALT-HM)-DELH
IF +
GO TO 188
182
CONTINUE
GO TO 184
IF 0
ABS(XMCAM-GAM)-BETA
IF +
GO TO 188
184
CONTINUE
GO TO 200
IF -
INT
IF 0
GO TO 200
186
INT=0
GO TO 172
188
INT=INT+1.0
HH(INT)=ALT
ANG(INT)=GAM
GO TO 194
IF 0
INT-2.0
IF +
GO TO 196
190
PNT1=PNT
DPNT=SIGN(.05,ALT-HM)*PNT
PNT=PNT+DPNT


GO TO 196
IF
PNT
0
+
GO TO 198
192
PNT=0.0
DPNT=PNT-PNT1
GO TO 198
194
GAMK1=GAMK
DGMK=-SIGN(.001,GAM-XMGAM)*GAMK
GAMK=GAMK+DGMK
PNT=PNT1
PRINT
PRINT 286,GAMK,PNT
PRINT
PRINT 302
GO TO 14
196
GAMK=GAMK1
ALPNT=(HH(2)-HH(1))/DPNT
ALK=(HH(3)-HH(1))/DGMK
GMPNT=(ANG(2)-ANG(1))/DPNT
GMK=(ANG(3)-ANG(1))/DGMK
DETER=ALK*GMPNT-GMK*ALPNT
DELPNT=(GMK*(HH(1)-HM)-ALK*(ANG(1)-XMGAM))/DETER
DELGAM=(ALPNT*(ANG(1)-XMGAM)-(HH(1)-HM)*GMPNT)/DETER
PNT=PNT+DELPNT
GAMK=GAMK+DELGAM
INT=0
PRINT
PRINT 288,ALPNT,ALK,GMPNT,GMK,DETER,DELGAM,DELPNT,GAMK,PNT
PRINT
PRINT 302
GO TO 14
198
T=T2
DELT=DELT2-AMOD(T,DELT2)
WT=WO2
V=V2
VLD=VLDS
VLG=VLGS
VLT=VLTS
VCHAR=VCHRS
ALT=ALT2
GAM=GAM2
ALPH=ALPH2
RATIO=1.0
IVCK=0
PRINT
PRINT 290,CONST,PNT
PRINT
PRINT 302
GO TO 168
200
CONTINUE
GO TO 202
IF
LAST
0
+
GO TO 210
202
LAST=1
GO TO 204
IF
ISW3
0
+
GO TO 208
204
CONTINUE

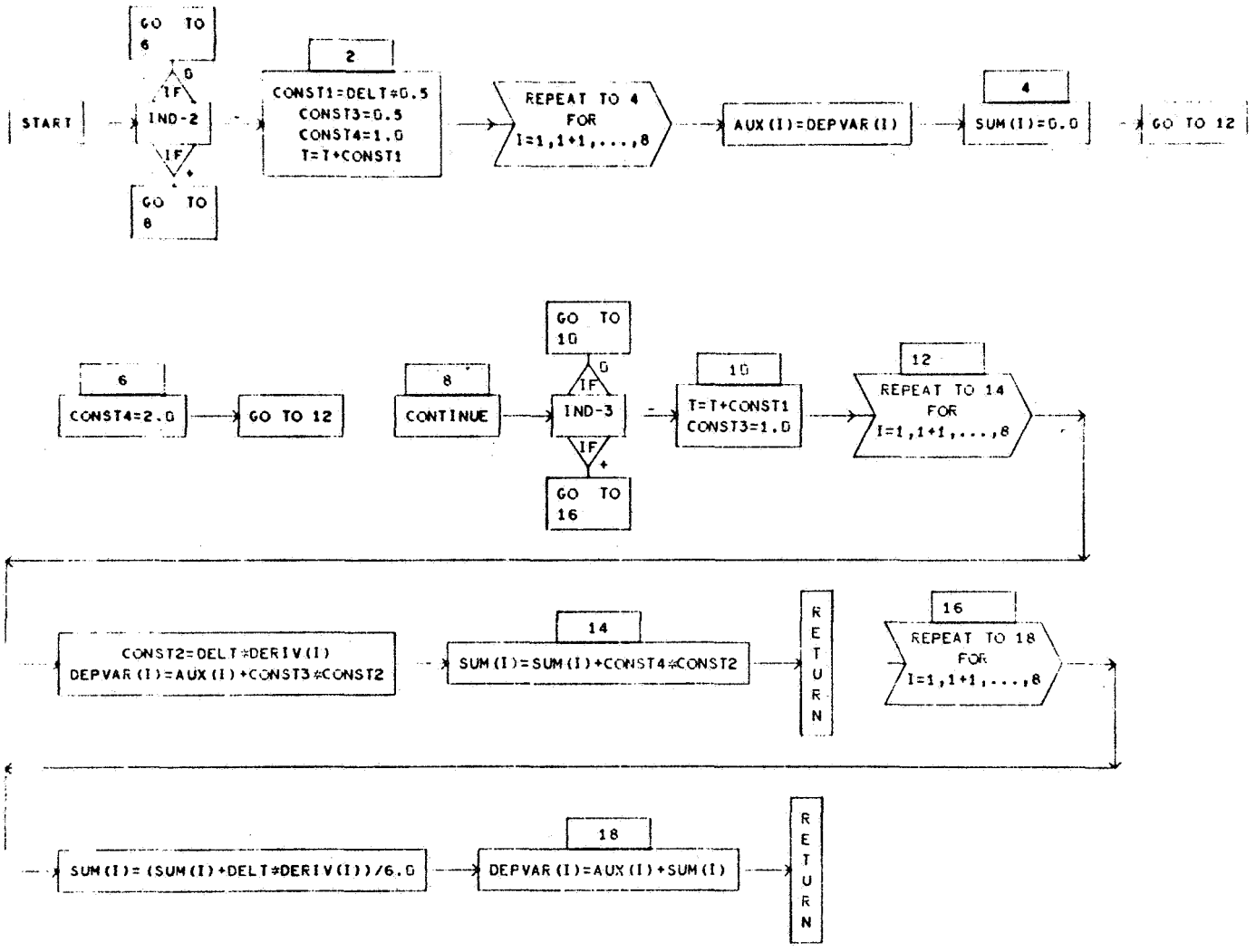

GO TO 210
IF
JTAB
IF
0
GO TO 210
206
ITAB=1
208
ISW2=1
PTSTEP=DELT2
PRINT
PRINT 304
GO TO 14
210
STAR=BILD2*THR2
PRINT
PRINT 292,WENG,WEQP,WTANK,WJET,PROP1,WO2,WRES1,WRES2,VROT,V2,GAM2,ALPH2,T2,ALT2
PRINT
PRINT 294
WENG=SCAL2*CNTN2*ENG2*THR2
WEQP=SCAL2*CNTN2*EQP2
GAS=(WO2-WT)+WT*(1.0-EXP(-DELV2/(GEED*XISP2)))+BILD2*THR2+WT*(1.0-EXP(-CEE2*ALOG(WO2/WT)))+DKAY2*THR2
GASO=DKAY2*THR2+WT*(1.0-EXP(-DELV2/(GEED*XISP2)))+WT*(1.0-EXP(-CEE2*ALOG(WO2/WT)))
WTANK=SCAL2*CNTN2*TNK2*GAS+GASO
WRES1=WT*(1.0-EXP(-DELV2/(GEED*XISP2)))
WRES2=WT*(1.0-EXP(-CEE2*ALOG(WO2/WT)))
WJET=WTANK+WENG+WEQP
PROP1=WO2-WT
T2=WT-WJET
DK=DKAY2*THR2
PRINT
PRINT 296,WENG,WEQP,WTANK,WJET,PROP1,WRES1,WRES2,T2,STAR,DK,VLD,VLG,VLT,VCHAR
PRINT
PRINT 298
DPLD=T2-RPLD


GO TO 12
IF
IPLD
IF
0
GO TO 12
+
212
CONTINUE
GO TO 12
IF
ABS(DPLD)-.00001*RPLD
IF
0
GO TO 12
+
214
CONTINUE
GO TO 218
IF
ABS(DPLD)-1200.
IF
0
GO TO 218
+
216
PRINT
216
PRINT 258
GO TO 12
218
CONTINUE
GO TO 230
0
IF
IPLD-2
IF
+
GO TO 238
-
220
CONTINUE
GO TO 222
0
IF
ABS(DPLD)-100.
IF
+
GO TO 224
-
222
DPLD1=DPLD
WOLD=WO
IPLD=2
SP1=DPLD/ABS(DPLD)
224
CONTINUE
GO TO 228
IF
ABS(DPLD)-150.
IF
0
GO TO 228
+
226
WO=WO-DWT*DPLD/50.
GO TO 14
228
WO=WO-DWT*DPLD/ABS(DPLD)
GO TO 14
230
SP2=DPLD/ABS(DPLD)
GO TO 234
0
IF
SP1+SP2
IF
+
GO TO 232
-
232
CONTINUE
GO TO 224
IF
ABS(DPLD1)-ABS(DPLD)
IF
0
GO TO 224
+
GO TO 222
234
CONTINUE
GO TO 236
0
IF
ABS(DPLD)-100.
IF
+
GO TO 224
-
236
WO=Y3(WO,WOLD,0.0,DPLD,DPLD1)
IPLD=3
GO TO 14
238
STOP

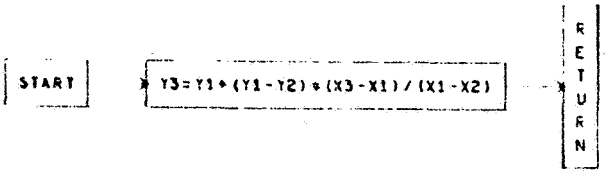
SUBROUTINE RUNKUT

DIMENSIONED VARIABLES

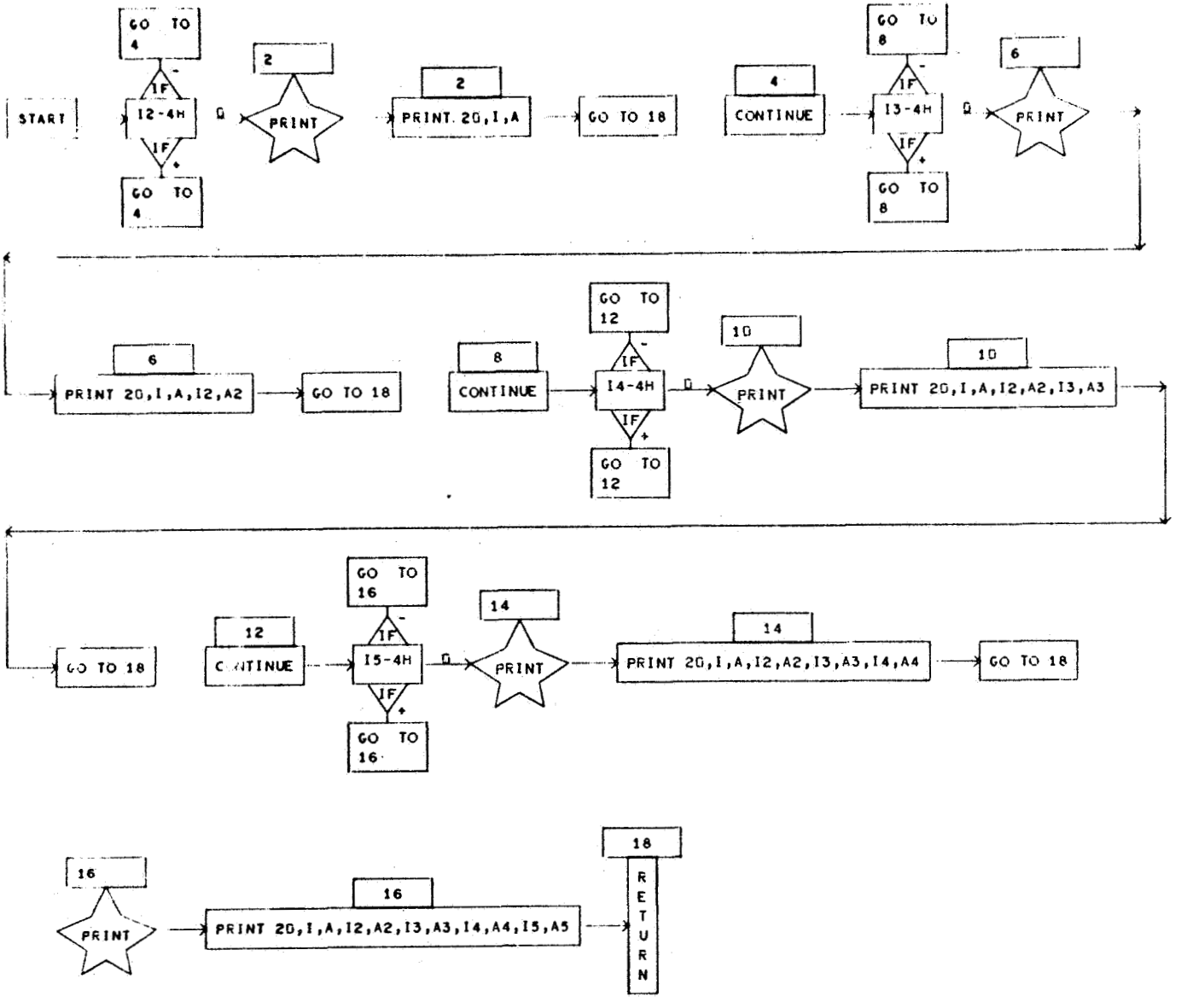
SYMBOL	STORAGES	SYMBOL	STORAGES	SYMBOL	STORAGES	SYMBOL	STORAGES	SYMBOL	STORAGES
DERIV	8	DEPVAR	8	AUX	8	SUM	8		



FUNCTION Y3



SUBROUTINE OUT

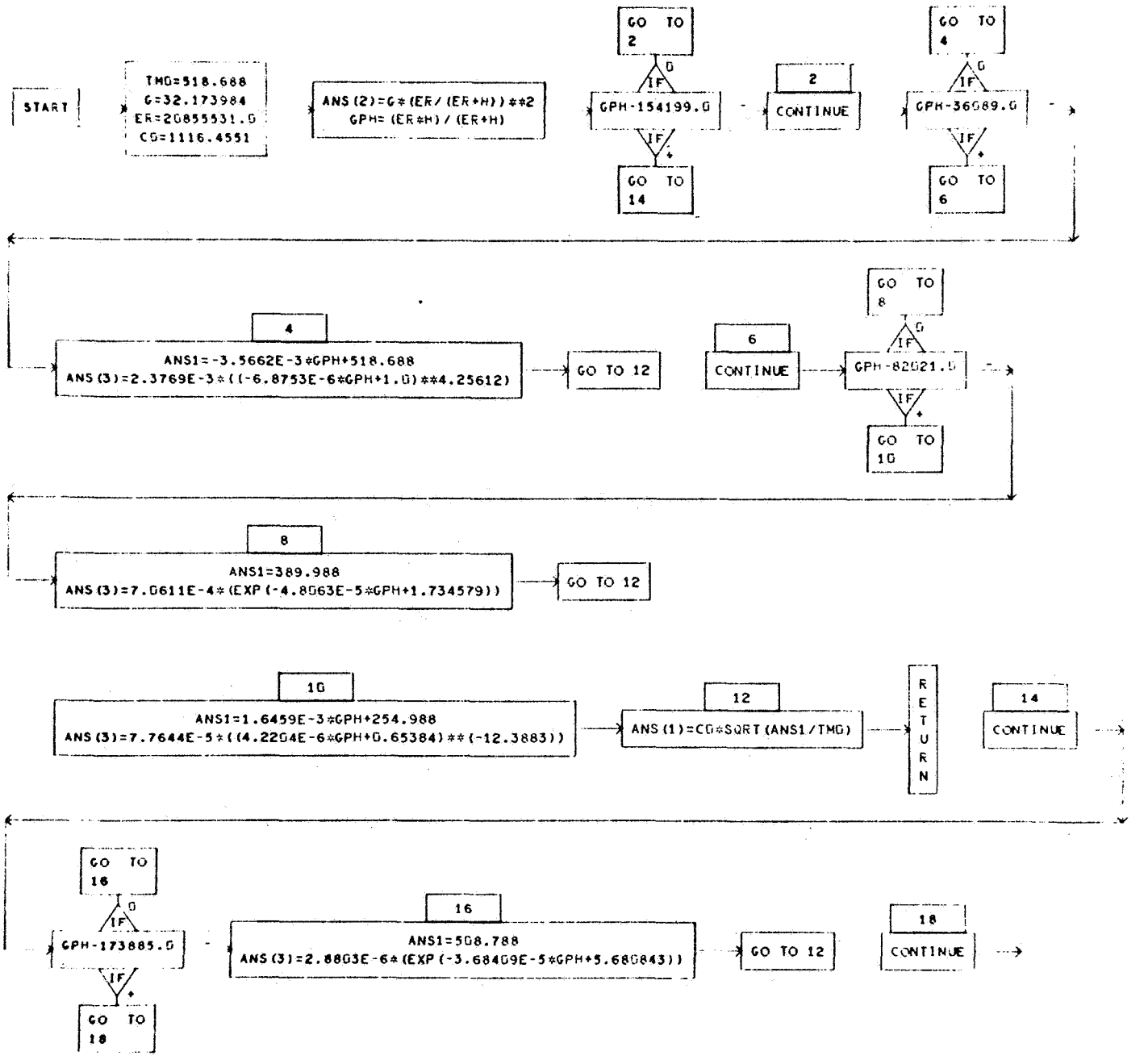


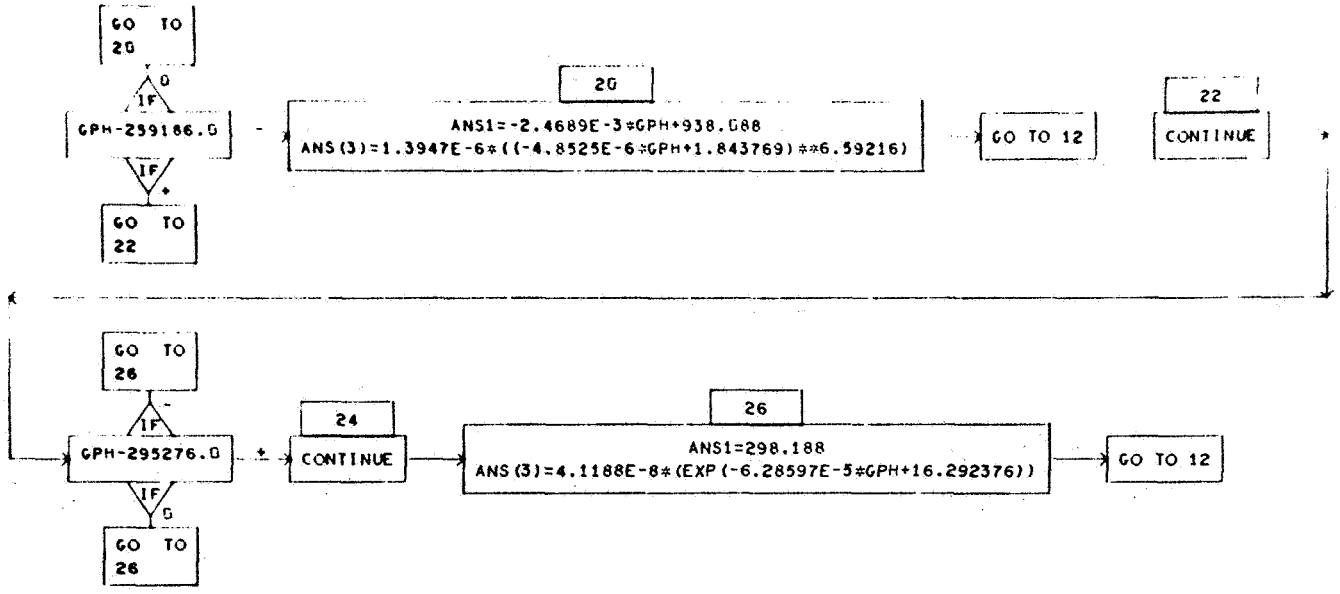
FUNCTION AMOD

SUBROUTINE ATMOSP

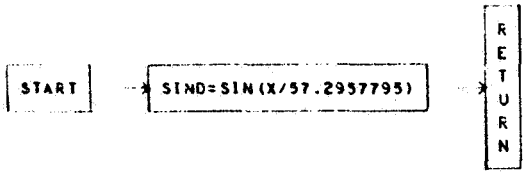
DIMENSIONED VARIABLES

SYMBOL	STORAGES	SYMBOL	STORAGES	SYMBOL	STORAGES	SYMBOL	STORAGES	SYMBOL	STORAGES
ANS	3								

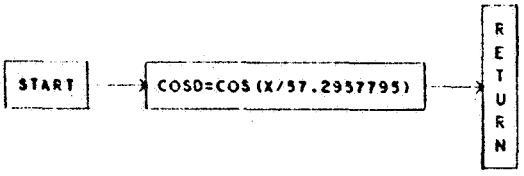




FUNCTION SIND



FUNCTION COSD



FUNCTION TAND