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AIR FORCE WEAPONS LAB KIRTLAND AFB NM  
THE INSTALLATION AND OPERATION OF HULL ON 370S. PART 1. (U)  
JAN 79 L P GABY, M A FRY, C E RHOADES

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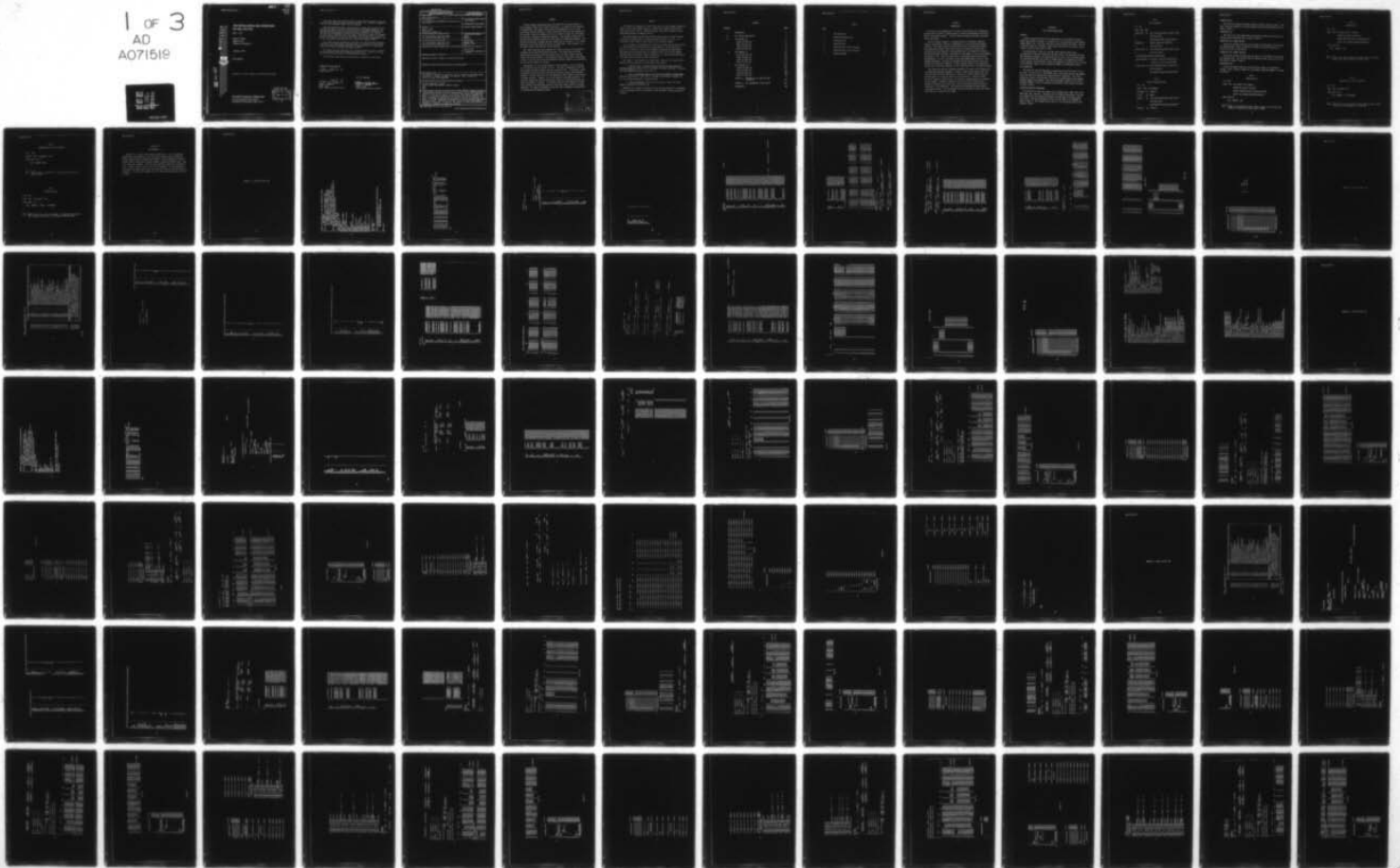
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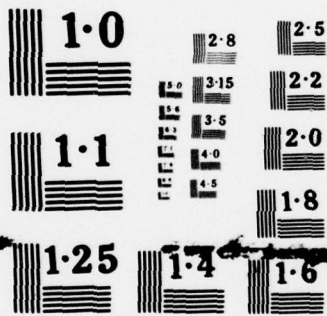
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# THE INSTALLATION AND OPERATION OF HULL ON 370s

Part 1 of 2

Lewis P. Gaby  
Mark A. Fry  
Clifford E. Rhoades, Jr.

January 1979

Final Report

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AIR FORCE WEAPONS LABORATORY  
Air Force Systems Command  
Kirtland Air Force Base, NM 87117



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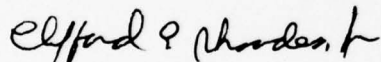
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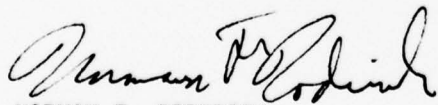
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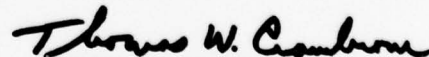


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19. KEY WORDS (Continue on reverse side if necessary and identify by block number)  Machine independent software Elastic plastic hydrodynamic computer program HULL SAIL		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) The HULL computer program is used to address problems in nuclear weapons effects and in armor penetration. Originally, HULL was written to run on the Air Force Weapons Laboratory CDC 6600s. To increase the number of installations which can successfully run HULL, the program has been modified to execute on System 370 compatible computers. This report describes the procedure for HULL installation under OS/VIS operating systems. Operation of the HULL program on System 370 compatible equipment is discussed. In addition, the results of three sample problems are included for reference and comparison purposes.		

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## SUMMARY

The HULL computer program has been used extensively to study problems in nuclear weapons effects and in armor penetration. In addition to the equations of hydrodynamics, HULL models elastic-plastic phenomenology as well as non-equilibrium radiation diffusion. When originally written, HULL was designed for the CDC 6600. With the introduction of the CDC 7600 and Cyber 176, the program was modified to execute on these newer machines. The increasing popularity of the program has required conversion to IBM system 370 compatible equipment. The 360/370 architecture is perhaps the most widely used in the world. It is widely emulated in the United States and within the Soviet Bloc. Most noteworthy are the Amdahl 470/V7, the Itel AS6, and the IBM 3033.

This report describes the procedures for installing HULL on 370 compatible equipment running the OS/VS2 operating system. The reader begins with the standard HULL distribution tape and installs SAIL, the SAIL library, the HULL library and the HULL program. The operation of HULL is described in some detail so that a user with the aid of three companion technical reports can successfully set up and run problems of interest.

Because HULL is a very large program or, more properly, a set of programs, not all options could be checked in detail. The user is expected to write the plot package interface routines that are required by HULL. In addition, certain calculations may be sensitive to the default precision used by 370 compatible computers. We have found that only the equation-of-state needed to be converted to Double Precision. However, not all EOS materials have been converted. All users are expected to exercise professional caution in exploiting the HULL program for problems of interest. In addition, because of the complexity of HULL, minor changes to the operating system can have very drastic effects on program operation. All users are expected to have more than rudimentary sophistication in dealing with the operating system.

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PREFACE

This manual was prepared as a part of the joint Air Force Armament Laboratory (AFATL) and Air Force Weapons Laboratory (AFWL) HULL computer program effort under Project 8809, Task 18, "Advanced Computer Simulation of Nuclear and Non-conventional Weapons and Weapons Effects."

This report applies to the elastic-plastic HULL system as written in-house at the AFATL by Major Daniel A. Matuska and Major Richard E. Durrett. All references in this report to HULL relate to this computer program.

It is a pleasure to acknowledge the assistance of Major Matuska whose technical contributions and advice made this report possible. We are thankful to Captain J. O. Skelton of the Air Force Armament Development and Test Center for arranging and providing funds for computer time at the Air Force Weapons Laboratory and at the Harry Diamond Laboratories. All calculations described in this report were performed at these laboratories.

This report is not intended to be read alone. Users of this report must be familiar with the contents of the following three reports:

1. The HULL Code: A Finite Difference Solution to the Equations of Continuum Mechanics, AFATL-TR-78-125 by Richard E. Durrett and Daniel A. Matuska, Air Force Armament Laboratory, Eglin AFB, FL.

2. SAIL, An Automated Approach to Software Development and Management, AFWL-TR-78-80 by Lewis P. Gaby, David H. Graham, and Clifford E. Rhoades, Jr., Air Force Weapons Laboratory, Kirtland AFB, NM.

3. HULL System Report, AFWL-TR-78-115 by Lewis P. Gaby, Air Force Weapons Laboratory, Kirtland AFB, NM.

Reference to a company or product name does not imply approval or recommendation of the product by the US Government to the exclusion of others that may be suitable.

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SECTION I  
INTRODUCTION

The study of the phenomenology of nuclear, nonconventional and conventional weapons effects requires an understanding of radiation hydrodynamics and elastic-plastic solid media response. The HULL computer program was written to provide these calculations.

The HULL computer program is a complete system for operating, updating, running, and plotting a variety of hydrodynamic or finite difference computer programs. The system includes an update routine which maintains and modifies the system source images, tape library routines, an executive routine which generates the source images for the executable code, and a module for plotting the resulting data calculated. Development of HULL began at the Air Force Weapons Laboratory in 1971. HULL was used mainly to investigate nuclear driven blast phenomenology. In 1975, a new phase of HULL development began at the Air Force Armament Laboratory. The code was extended into the elastic-plastic area with emphasis on solid media response. The HULL computer program is now operational on more than a half dozen computers in the United States and in the United Kingdom.

This manual provides the information necessary to install and to operate HULL on System 370 compatible computers. Section II, HULL System Installation, contains the details of the installation. Section III, IV and V display the test problems which can be used to check out the installation. Except for minor editorial changes to conserve space, the output is presented exactly as produced by the computer. Appendix A summarizes the intent of this research while Appendix B provides a quick overview of what was learned during the process of moving HULL to the System 370. The preface cites two reports, which must be understood in detail. The bibliography contains references to other calculations which may be of interest to the reader.

## SECTION II

### HULL SYSTEM INSTALLATION

#### OVERVIEW

The HULL installation tape for the IBM system is an unlabeled nine-track EBCDIC tape written at 800 bpi. It contains six files that have a fixed blocked format (RECFM = FB). The first four have a record length of 80 (LRECL = 80) and a blocking factor of 10 (BLKSIZE = 800), while the two last files have a record length of 120 with block sizes of 1200.

The installation of HULL on a new IBM system requires seven steps: (1) generation of SAIL and creation of the SAIL library, (2) obtaining the HULL/SAIL execution procedures, (3) converting the SAIL file of SAIL to packed format, (4) converting the SAIL file of HULL to packed format, (5) generating the SAIL utility routine in the SAIL/HULL library, (6) generating the HULL utility routines in the SAIL/HULL library, and (7) generating PLANK in the SAIL/HULL library.

#### SAIL GENERATION

The source for the SAIL generation is contained on the first three files of the tape. The first file is the FORTRAN source, the second contains the assembly source and the third contains the linkage editorial directives. The initial generation of SAIL is the SAIL/HULL library and is accomplished by the standard assembly compilation procedure. ASMC and the FORTRAN H compiler and link edit procedure FORTHCL. The JCL to generate the SAIL/HULL library named SAIL.HULLIB is shown in table 1.

#### EXTRACTING EXECUTION PROCEDURES

The fourth file on the tape contains the procedures SAIL, SGEN, SLIB, HLIB, PGEN, KEEL, HULL, and PULL. Procedures SAIL and SGEN are described in the SAIL users manual while the remaining procedures are described in the HULL system users guide. They may be punched to cards using the IBM utility IEBGENER as shown in table 2. The procedure may be used in line and may be placed in the procedure library.

Table 1  
SAIL GENERATION

```

/** JOB . . .
//ASM EXEC ASMC
//ASM.SYSIN DD UNIT= TAPE9,VOL=SER=HULL,LABEL=(2,NL),
//          DISP=(OLD,PASS),
//          DCB=RECFM=FB,LRECL=80,BLKSIZE=800)
//COMP EXEC   FORTHCL,PARM.FORT='NAME=SAIL',
//          PARM.LKED='OVLY'
//FORT.SYSIN DD UNIT=TAPE9,VOL=SER=HULL,LABEL=(1,NC),
//          DISP=(OLD,PASS),
//          DCB=(RECFM=FB,LRECL=80,BLKSIZE=800)
//LKED.SYSMOD DD DSC=SAIL.HULLIB,DISP=(NEW,CATLG),
//          SPACE=(CYL,(10,10,10)UNIT=SYSDA
//LKED.SYSIN DD UNIT=TAPE9,VOL=SER=HULL,LABEL=3,NL),
//          DISP=(OLD,KEEP),
//          DCB=(RECFM=FB,LRECL=80,BLKSIZE=800)

```

Table 2  
PUNCHING PROCEDURE DECKS

```

/** JOB-...
//COPY EXEC PGM=IEBGENER
//SYSPRINT DD SYSOUT=A
//SYSIN DD DUMMY
//SYSUT1 DD UNIT=TAPE9,VOL=SER=HULL,LABEL=(4,NL)
//          DISP=(OLD,KEEP),
//          DCB=(RECFM=FB,LRECL=80,BLKSIZE=800)
//SYSUT2 DD SYSOUT=B

```

CONVERTING SAIL

The fifth file contains the coded format of the SAIL library of SAIL. To be used it must be converted to a binary packed format using the procedure SAIL as shown in table 3.

CONVERTING HULL

The sixth file is the coded format of the HULL file which also must be converted using the procedure SAIL as shown in table 4.

GENERATING SAIL LIBRARY ROUTINE

The utility routines from SAIL must be added to the SAIL/HULL library using the procedure SLIB. Table 5 shows the JCL which will add the routines to a library on a data set SAIL.HULLIB.

GENERATING HULL LIBRARY ROUTINES

The utility routines from HULL must be added to the SAIL/HULL library using the procedure HLIB. The JCL which adds the routines to the library on data set SAIL.HULLIB is shown in table 6.

GENERATING PLANK

Finally the program PLANK must be generated and added to the SAIL/HULL library. Table 7 shows an example JCL using PGEN to generate PLANK on a library SAIL.HULLIB.

Table 3

CONVERTING SAIL

```

///*** JOB...
//COPY EXEC SAIL,GEND=,FILO=5,LABO=NL,
              OLDVOL=HULL,OLDD= '(OLD,KEEP',
              OLDDCB= '(RECFM=FB,LRECL=120,BLKSIZE=1200)',
              GENN= '.V58',NEWDUM=,NEWU=SYSDA,NEW=SAIL
//SAIL.INPUT DD
              SAIL CONVERT COPY
    
```

---

Note: Library is SAIL.HULLIB and SAIL library of SAIL is on SAIL.SAIL.V58 stored on a system direct access device (SYSDA).

Table 4  
CONVERTING HULL

```
//*** JOB...
//COPY EXEC SAIL,LENO=,FILO=6, LABO=NL,
            OLDVOL=HULL,OLDDS='(OLD,KEEP)',
            OLDDLB='(RELFM=FB,LRECL=120,BLKSIZE=1200)',
            GENN='.V105',NEWDUM=,NEWJ=SYSDA,NEW=HULL

//SAIL.INPUT DD*

        SAIL CONVERT COPY

/*
```

---

Note: Library is on SAIL.HULLIB.SAIL library of HULL is on system direct access device SYSDA) as SAIL.HULL.V105.

Table 5  
GENERATING SAIL UTILITY ROUTINES

```
//*** JOB...
//GEN EXEC HLIB,GENO='.V58'
//SAIL.INPUT DD *

        SAIL PROGRAM LIB ENDPROGRAM

/*
```

---

Note: Library to be used and update is SAIL.HULLIB and SAIL library file of SAIL is cataloged as SAIL.SAIL.V58.

Table 6  
GENERATING HULL UTILITY ROUTINES

```
//*** JOB...  
//PLANK EXEC PGEN,GENO='.V105'  
//SAIL.INPUT DD *  
SAIL PROGRAM PLANK  
/*
```

---

Note: Object library is SAIL.HULLIB. SAIL library file of HULL is SAIL.HULL.V105.

Table 7  
GENERATING PLANK

```
///*** JOB...  
//GEN EXEC HLIB,GENO='.V105'  
//SAIL.INPUT DD *  
SAIL PROGRAM LIBRARY ENDPROGRAM  
/*
```

---

Note: Object library to be used and updated is cataloged as SAIL.HULLIB. SAIL system library of HULL is cataloged as SAIL.HULL.V105.

SECTION III

TEST PROBLEM 1.2

Problem 1.2 is a small test problem with 560 zones. It is a cylindrical shaped copper rod impacting a thin steel plate at approximately 10,000 ft/s. Options selected for this problem were ATMOS=5, constant atmosphere, STRESS=1, elastic-plastic formulation included, FLUXER=3, volume and energy fluxes. Zone sizes were 0.25 cm square; 118 cycles were completed advancing the problem to 16  $\mu$ s. Dumps at cycle 0, 20, 27, and 118 are presented. In this penetration simulation, the copper rod was kept stationary and the steel plate was moved at 10,000 ft/s. By cycle 118, problem time 16  $\mu$ s the plate has moved to the top of the mesh.

PROBLEM 1.2 SYSTEM 370 KEEL RUN

```

//AF2001K JOB (AF2001,,5), 'KEEL RUN', MSGCLASS=H, CLASS=B,
//      NOTIFY=AF2001
//KEEL EXEC KEEL, GEND='V105', FPARM='NOSOURCE, TERM',
//      PS1='SYSOUT=H, HOLD=YES', PS2='SYSOUT=H, HOLD=YES',
//      FP1='SYSOUT=H, HOLD=YES', LP1='SYSOUT=H, HOLD=YES',
//      KP1='SYSOUT=H, HOLD=YES', KTIME=1, LIBPRE='AF2001.',
//      OLDPRE='AF2001.', PP1='SYSOUT=H, HOLD=YES', PTIME='(0,10)'
//KEEL.DATA DD DSN=AF2001.HULL.PROBIP2, UNIT=SYSDA, DISP=(NEW, CATLG),
//      DCB=(RECFM=VBS, LRECL=7220, BLKSIZE=7224),
//      SPACE=(CYL,(20,20))
//KEEL.STATION DD DUMMY
//KEEL.INPUT DD *
KEEL PROB=1.2
STRESS=1 STRAIN=1 ATMOS=5
IMAX=20 JMAX=28
EOS=6 NH=3 AIR=1 FE=2 CU=3
FLUXER=3
HEADER
CU PENETRATOR
MESH XMAX=5 Y0=-2 YMAX=5
GENERATE
PACKAGE AIR V 3.E5
RECTANGLE Y2=-1
PACKAGE FE V=3.E5
RECTANGLE Y1=-1 Y2=0
PACKAGE AIR
RECTANGLE Y1=0
RECTANGLE X2=1 Y1=0 Y2=4
PACKAGE CU
RECTANGLE X2=1 Y1=0 Y2=4
/*
//SAIL.INPUT DD *
SAIL LINENO
/*
//FORT.SYSTEM DD DSN=AF2001.KEEL.OUTLIST, DISP=(NEW, CATLG),
//      UNIT=SYSDA, SPACE=(CYL,(3,3)),
//      DCB=(RECFM=FB, LRECL=133, BLKSIZE=1330)
//
//      END OF DATA

```

J E S 2 J O B L O G

Time	Job	Message	Started	Init	Class	Issued
10.38.12	JOB	IEF677I WARNING MESSAGE(S) FOR JOB AF2001K	10:38:12	3	B	
10.38.12	JOB	109 \$HASP373 AF2001K	10:38:12	6	B	0.24 S000
10.38.18	JOB	109 AF2001K KEEL	10:38:20	11	B	0.74 S000
10.38.31	JOB	109 AF2001K PLANK	10:38:31	696	B	109.09 S000
10.50.07	JOB	109 AF2001K SAIL	10:50:08	270	B	19.00 S004
10.54.38	JOB	109 AF2001K FORT	10:54:41	36	B	2.19 S000
10.55.17	JOB	109 AF2001K LKED	10:55:17	29	B	3.61 S000
10.55.46	JOB	109 AF2001K GO				
10.55.48	JOB	109 \$HASP395 AF2001K ENDED				

OUT

GENERATING KEEL DISK VERSION  
KEEL RUN

EQUATION OF STATE - SOLIDS - NO STRENGTH

ATMOSPHERE - CONSTANT

VOLUME AND ENERGY FLUXING

THE FOLLOWING OPTIONS WERE DEFINED BY PLANK.

ATMOS	=	5
BURN	=	0
CODE	=	1
DIMEN	=	2
EDS	=	6
BEDM	=	2
HOT	=	0
IMAX	=	20
ISLAND	=	0
JMAX	=	28
KMAX	=	1
LBUFF	=	0
LBUFF	=	0
MAGFLD	=	0
METHOD	=	2
NH	=	20
NHIC	=	1600
MM	=	3
NOP	=	1000
NHIST	=	6
NPLPB	=	2
NPP	=	3
NROWPB	=	4
NSTN	=	0
NVARST	=	16
RAD	=	0
REZONE	=	1
STRESS	=	1
SURF	=	0
SW	=	6
SWX	=	0
VISC	=	0
LAMB	=	0
BOUND	=	0

LBOUND	=	0
KEEL	=	0
PULL	=	0
VOIDS	=	0
FLUXER	=	3
DEPOS	=	0
FAIL	=	0
STRAIN	=	1
WORK	=	0
FIREIN	=	0
MAT	=	3
AIR	=	1
FE	=	2
CU	=	3

OUT

KEEL OUTPUT  
 CU PENETRATOR  
 ZBLK

00002250

PROB	1.1999980926514D+00	411333330000000000
ATMOS	5.000000000000000D+00	415000000000000000
BREF	0.0	000000000000000000
CODE	1.000000000000000D+00	411000000000000000
COLD	0.00000514755759D-79	000000010000000000
CYCLE	0.0	000000000000000000
DIMEN	2.000000000000000D+00	412000000000000000
DT	1.00000008274037D-08	3A2AF31E0000000000
ELC	0.0	000000000000000000
EOS	6.000000000000000D+00	416000000000000000
ETH	0.0	000000000000000000
EXPAND	5.00000007450581D-02	3FCCCC000000000000
FAIL	0.0	000000000000000000
FLUXER	3.000000000000000D+00	413000000000000000
GEOM	2.000000000000000D+00	412000000000000000
INAX	2.000000000000000D+01	421400000000000000
ID	1.900000000000000D+01	421300000000000000
ISLAND	0.0	000000000000000000
JMAX	2.800000000000000D+01	421C00000000000000
JO	2.700000000000000D+01	421B00000000000000
HOB	0.0	000000000000000000
LREF	0.00000514755759D-79	000000010000000000
METHOD	2.000000000000000D+00	412000000000000000
MLC	0.0	000000000000000000
ATH	0.0	000000000000000000
NH	2.000000000000000D+01	421400000000000000
NHIC	1.600000000000000D+03	436400000000000000
NHIST	6.000000000000000D+00	416000000000000000
NH	3.000000000000000D+00	413000000000000000
NOP	0.0	000000000000000000
MPP	3.000000000000000D+00	413000000000000000
NRUMPB	4.000000000000000D+00	414000000000000000
PTSTOP	6.000000000000000D+02	432580000000000000
RADLOS	0.0	000000000000000000
RREF	0.0	000000000000000000
STABF	5.000000000000000D-01	408000000000000000
STRAIN	1.000000000000000D+00	411000000000000000
STRESS	1.000000000000000D+00	411000000000000000
SUME	0.0	000000000000000000
T	0.0	000000000000000000
TERAD	0.0	000000000000000000
TLC	0.0	000000000000000000
TREF	0.0	000000000000000000
TTIME	0.0	000000000000000000
TTSTOP	1.000000000000000D+02	426400000000000000
UREZ	1.000000000000000D+01	41A000000000000000
REZONE	1.000000000000000D+00	411000000000000000

```

VIBL          0.0
VREZ          1.000000000000000D+01
VOIDS          0.0
WORK          0.0
X1            4.000000000000000D+00
X2           -1.000000000000000D+00
X03           0.0
Y1            5.000000000000000D+00
Y2            2.300000000000000D+01
YGM          0.0
YIELD         0.0
AIR           1.000000000000000D+00
CU            3.000000000000000D+00
FE            2.000000000000000D+00

```

MESH INCREMENTS AND COORDINATES

I	DX	X	I	DX	X	J	DX	X	J	DX	X
X0= 0.0											
1	2.50000000E-01	2.50000000E-01	2	2.50000000E-01	5.00000000E-01	3	2.50000000E-01	7.50000000E-01	4	2.50000000E-01	1.00000000E+00
4	2.50000000E-01	1.00000000E+00	5	2.50000000E-01	1.25000000E+00	6	2.50000000E-01	1.50000000E+00	7	2.50000000E-01	1.75000000E+00
7	2.50000000E-01	1.75000000E+00	8	2.50000000E-01	2.00000000E+00	9	2.50000000E-01	2.25000000E+00	10	2.50000000E-01	2.50000000E+00
10	2.50000000E-01	2.50000000E+00	11	2.50000000E-01	2.75000000E+00	12	2.50000000E-01	3.00000000E+00	13	2.50000000E-01	3.25000000E+00
13	2.50000000E-01	3.25000000E+00	14	2.50000000E-01	3.50000000E+00	15	2.50000000E-01	3.75000000E+00	16	2.50000000E-01	4.00000000E+00
16	2.50000000E-01	4.00000000E+00	17	2.50000000E-01	4.25000000E+00	18	2.50000000E-01	4.50000000E+00	19	2.50000000E-01	4.75000000E+00
19	2.50000000E-01	4.75000000E+00	20	2.50000000E-01	5.00000000E+00	21	2.50000000E-01	5.25000000E+00	22	2.50000000E-01	5.50000000E+00
Y0= -2.00000095E+00											
1	2.50000000E-01	-1.75000000E+00	2	2.50000000E-01	-1.49999995E+00	3	2.50000000E-01	-1.24999990E+00	4	2.50000000E-01	-1.00000000E+00
4	2.50000000E-01	-9.99999033E-01	5	2.50000000E-01	-7.49997973E-01	6	2.50000000E-01	-4.99997914E-01	7	2.50000000E-01	-2.50000000E-01
7	2.50000000E-01	-2.49997854E-01	8	2.50000000E-01	2.20537186E-06	9	2.50000000E-01	2.50002265E-01	10	2.50000000E-01	5.00004530E-01
10	2.50000000E-01	5.00002325E-01	11	2.50000000E-01	7.50002384E-01	12	2.50000000E-01	1.00000191E+00	13	2.50000000E-01	1.25000191E+00
13	2.50000000E-01	1.25000191E+00	14	2.50000000E-01	1.50000191E+00	15	2.50000000E-01	1.75000191E+00	16	2.50000000E-01	2.00000191E+00
16	2.50000000E-01	2.00000191E+00	17	2.50000000E-01	2.25000191E+00	18	2.50000000E-01	2.50000191E+00	19	2.50000000E-01	2.75000191E+00
19	2.50000000E-01	2.75000191E+00	20	2.50000000E-01	3.00000191E+00	21	2.50000000E-01	3.25000191E+00	22	2.50000000E-01	3.50000191E+00
22	2.50000000E-01	3.50000191E+00	23	2.50000000E-01	3.75000191E+00	24	2.50000000E-01	4.00000191E+00	25	2.50000000E-01	4.25000191E+00
25	2.50000000E-01	4.25000191E+00	26	2.50000000E-01	4.50000191E+00	27	2.50000000E-01	4.75000191E+00	28	2.50000000E-01	5.00000191E+00

GENERATING PROBLEM 1.2000

```

DEFAULT WILL BE
GENERATE A CIRCLE OF MATERIAL 1
XC = 0.0      YC = 0.0      RADIUS = 0.0
AIR          = 1
GENERATE A RECTANGL OF MATERIAL 1
X1 = 0.0      X2 = 5.0000000E+00 Y1 = -2.0000010E+00 Y2 = -1.0000000E+00
9.620315E-02 GMS  4.5262023E+09 ERGS INSERTED AS MATERIAL 1
FE          = 2
GENERATE A RECTANGL OF MATERIAL 2
X1 = 0.0      X2 = 5.0000000E+00 Y1 = -1.0000000E+00 Y2 = 0.0
6.172676E+02 GMS  2.855992E+13 ERGS INSERTED AS MATERIAL 2

```

AIR = 1  
 GENERATE A RECTANGL OF MATERIAL 1  
 X1 = 0.0 X2 = 5.000000E+00 Y1 = 0.0 Y2 = 5.0000019E+00  
 DELETE A RECTANGL  
 X1 = 0.0 X2 = 1.0000000E+00 Y1 = 0.0 Y2 = 4.0000010E+00  
 4.655850E-01 GMS 9.515241E+08 ERGS INSERTED AS MATERIAL 1

CU = 3  
 GENERATE A RECTANGL OF MATERIAL 3  
 X1 = 0.0 X2 = 1.000000E+00 Y1 = 0.0 Y2 = 4.0000010E+00  
 1.118370E+02 GMS 1.267456E+11 ERGS INSERTED AS MATERIAL 3

ZBLK  
 PROB 1.15999980926514D+00 411333330000000000  
 ATMOS 5.0000000000000000B+00 415000000000000000  
 BREF 0.0 000000000000000000  
 CODE 1.0000000000000000+00 411000000000000000  
 COLD 0.00000514755759D-79 0000000100000000  
 CYCLE 0.0 000000000000000000  
 DIMEN 2.0000000000000000+00 412000000000000000  
 DT 1.00000008274037D-08 3A2AF31E00000000  
 ELC 0.0 000000000000000000  
 EDS 6.0000000000000000B+00 416000000000000000  
 ETH 0.0 000000000000000000  
 EXPAND 5.00000007450581D-02 3FCFCC0000000000  
 FAIL 0.0 000000000000000000  
 FLUXER 3.0000000000000000+00 413000000000000000  
 GEDM 2.0000000000000000B+00 412000000000000000  
 IMAX 2.0000000000000000+01 4214000000000000=  
 IQ 1.9000000000000000+01 4213000000000000  
 ISLAND 0.0 000000000000000000  
 JMAX 2.8000000000000000+01 421C00000000000000  
 JQ 2.7000000000000000+01 421B00000000000000  
 HOB 0.0 000000000000000000  
 LREF 0.00000514755759D-79 0000000100000000  
 METHOD 2.0000000000000000B+00 412000000000000000  
 MLC 0.0 000000000000000000  
 MTH 0.0 000000000000000000  
 MH 2.0000000000000000B+01 421400000000000000  
 MHIC 1.6000000000000000+03 436400000000000000  
 MHIST 6.0000000000000000+00 416000000000000000  
 MH 3.0000000000000000B+00 413000000000000000  
 MOP 0.0 000000000000000000  
 MPP 3.0000000000000000B+00 413000000000000000  
 MROUPE 4.0000000000000000+00 414000000000000000  
 PTSTOP 6.0000000000000000+02 432580000000000000  
 RABLOS 0.0 ..... 000000000000000000

```

KEZUNE      1.0000000000000000B+00      411000000000000000
REF         0.0
STABF      5.000000000000000D-01
STRAIN     1.000000000000000D+00      408000000000000000
STRESS     1.000000000000000D+00      411000000000000000
SUNE       0.0
T           0.0
TERAD      0.0
TLC        0.0
TREF       0.0
TTIME      0.0
T1STOP     1.000000000000000D+02      426400000000000000
UREZ       1.000000000000000D+01      414000000000000000
VISC       0.0
VREZ       1.000000000000000D+01      414000000000000000
VOIDS      0.0
WORK       0.0
X1         4.000000000000000D+00      414000000000000000
X2        -1.000000000000000D+00
XOR        0.0
Y1         5.000000000000000D+00      415000000000000000
Y2         2.300000000000000D+01      421700000000000000
YGND       0.0
YIELD      0.0
AIR        1.000000000000000D+00      411000000000000000
CU         3.000000000000000D+00      413000000000000000
FE         2.000000000000000D+00      412000000000000000

```

```

INDIVIDUAL MASS SUMS
5.618618E-01  6.173164E+02  1.118401E+02

```

```

I= 1  X(I)= 0.250  DX(I)= 0.250

```

J	U	V	AIX	RHO	AMX	DY	Y
1	0.0	3.00000187E+05	2.04397363E+09	1.22499629E-03	6.01318898E-05	2.50000060E-01	-1.75000000E+00
2	0.0	3.00000187E+05	2.04397363E+09	1.22499629E-03	6.01318898E-05	2.50000060E-01	-1.49999905E+00
3	0.0	3.00000187E+05	2.04397363E+09	1.22499629E-03	6.01318898E-05	2.50000060E-01	-1.24999809E+00
4	0.0	3.00000187E+05	2.04397363E+09	1.22499629E-03	6.01318898E-05	2.50000060E-01	-9.99998033E-01
5	0.0	2.99999750E+05	1.26824038E+09	7.85998154E+00	3.85826111E-01	2.50000060E-01	-7.49999793E-01
6	0.0	2.99999750E+05	1.26824038E+09	7.85998154E+00	3.85826111E-01	2.50000060E-01	-4.99999791E-01
7	0.0	2.99999750E+05	1.26824038E+09	7.85998154E+00	3.85826111E-01	2.50000060E-01	-2.49999785E-01
8	0.0	2.99999750E+05	1.26824038E+09	7.85998154E+00	3.85826111E-01	2.50000060E-01	2.20537156E-06
9	0.0	0.0	1.13335680E+09	8.89997673E+00	4.36876774E-01	2.50000060E-01	2.50000245E-01
10	0.0	0.0	1.13335680E+09	8.89997673E+00	4.36876774E-01	2.50000060E-01	5.00002325E-01
11	0.0	0.0	1.13335680E+09	8.89997673E+00	4.36876774E-01	2.50000060E-01	7.500002384E-01
12	0.0	0.0	1.13335680E+09	8.89997673E+00	4.36876774E-01	2.50000060E-01	1.00000191E+00

13	0.0	0.0	1.1333580E+09	8.89997673E+00	4.36876774E-01	2.50000060E-01	1.250000191E+00
14	0.0	0.0	1.1333580E+09	8.89997673E+00	4.36876774E-01	2.50000060E-01	1.500000191E+00
15	0.0	0.0	1.1333580E+09	8.89997673E+00	4.36876774E-01	2.50000060E-01	1.750000191E+00
16	0.0	0.0	1.1333580E+09	8.89997673E+00	4.36876774E-01	2.50000060E-01	2.000000191E+00
17	0.0	0.0	1.1333580E+09	8.89997673E+00	4.36876774E-01	2.50000060E-01	2.250000191E+00
18	0.0	0.0	1.1333580E+09	8.89997673E+00	4.36876774E-01	2.50000060E-01	2.500000191E+00
19	0.0	0.0	1.1333580E+09	8.89997673E+00	4.36876774E-01	2.50000060E-01	2.750000191E+00
20	0.0	0.0	1.1333580E+09	8.89997673E+00	4.36876774E-01	2.50000060E-01	3.000000191E+00
21	0.0	0.0	1.1333580E+09	8.89997673E+00	4.36876774E-01	2.50000060E-01	3.250000191E+00
22	0.0	0.0	1.1333580E+09	8.89997673E+00	4.36876774E-01	2.50000060E-01	3.500000191E+00
23	0.0	0.0	1.1333580E+09	8.89997673E+00	4.36876774E-01	2.50000060E-01	3.750000191E+00
24	0.0	0.0	1.1333580E+09	8.89997673E+00	4.36876774E-01	2.50000060E-01	4.000000191E+00
25	0.0	0.0	2.04399949E+09	1.22499629E-03	6.01318898E-05	2.50000060E-01	4.250000191E+00
26	0.0	0.0	2.04399949E+09	1.22499629E-03	6.01318898E-05	2.50000060E-01	4.500000191E+00
27	0.0	0.0	2.04399949E+09	1.22499629E-03	6.01318898E-05	2.50000060E-01	4.750000191E+00
28	0.0	0.0	2.04399949E+09	1.22499629E-03	6.01318898E-05	2.50000060E-01	5.000000191E+00

MATERIAL MASSES

J	1	2	3
1	6.01318898E-05	0.0	0.0
2	6.01318898E-05	0.0	0.0
3	6.01318898E-05	0.0	0.0
4	6.01318898E-05	0.0	0.0
5	0.0	3.85826111E-01	0.0
6	0.0	3.85826111E-01	0.0
7	0.0	3.85826111E-01	0.0
8	0.0	3.85826111E-01	0.0
9	0.0	0.0	4.36876774E-01
10	0.0	0.0	4.36876774E-01
11	0.0	0.0	4.36876774E-01
12	0.0	0.0	4.36876774E-01
13	0.0	0.0	4.36876774E-01
14	0.0	0.0	4.36876774E-01
15	0.0	0.0	4.36876774E-01
16	0.0	0.0	4.36876774E-01
17	0.0	0.0	4.36876774E-01
18	0.0	0.0	4.36876774E-01
19	0.0	0.0	4.36876774E-01
20	0.0	0.0	4.36876774E-01
21	0.0	0.0	4.36876774E-01
22	0.0	0.0	4.36876774E-01
23	0.0	0.0	4.36876774E-01
24	0.0	0.0	4.36876774E-01
25	6.01318898E-05	0.0	0.0
26	6.01318898E-05	0.0	0.0
27	6.01318898E-05	0.0	0.0
28	6.01318898E-05	0.0	0.0

	1	2	ALTITUDE
	12345678901234567890		METERS
1	+++++	+++++	-1.750E-02
2	+++++	+++++	-1.500E-02
3	+++++	+++++	-1.250E-02
4	+++++	+++++	-1.000E-02
5	XXXXX	XXXXX	-7.500E-03
6	XXXXX	XXXXX	-5.000E-03
7	XXXXX	XXXXX	-2.500E-03
8	XXXXX	XXXXX	2.205E-08
9	0000+	+++++	2.500E-03
10	0000+	+++++	5.000E-03
11	0000+	+++++	7.500E-03
12	0000+	+++++	1.000E-02
13	0000+	+++++	1.250E-02
14	0000+	+++++	1.500E-02
15	0000+	+++++	1.750E-02
16	0000+	+++++	2.000E-02
17	0000+	+++++	2.250E-02
18	0000+	+++++	2.500E-02
19	0000+	+++++	2.750E-02
20	0000+	+++++	3.000E-02
21	0000+	+++++	3.250E-02
22	0000+	+++++	3.500E-02
23	0000+	+++++	3.750E-02
24	0000+	+++++	4.000E-02
25	+++++	+++++	4.250E-02
26	+++++	+++++	4.500E-02
27	+++++	+++++	4.750E-02
28	+++++	+++++	5.000E-02
	12345678901234567890		

+ - AIR  
 X - STEEL  
 O - COPPER

AFWL-TR-78-134

PROBLEM 1.2 CYBER 176 KEEL RUN

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*****		SYSBULL		*****	
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7/14/78	---	MODS	---	FEATURES ADDED TO CDC NOS/BE	---
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1/ 4/78	---	DISSTIP	---	DISPLA TECH. INFO. PROGRAMMING SUGGESTIONS	---
10/ 3/77	---	DISSPLA	---	A NEW USER ORIENTED PLOTTING PACKAGE	---
*****					
SYSTEM WARNINGS *****					
8/16/78	**	BUDGETARY CONSIDERATION FOR FY 79: 176 CHARGES WILL GO UP BY ABOUT 15%.			
8/16/78	**	REVIEW, SIGN AND RETURN TAPE INVENTORY LISTINGS BEFORE 21 AUGUST 1978.			
8/15/78	**	+++++ FLASH MESSAGE +++++ CYBER RECORD MANAGER ANALYSIS CLASS HAS BEEN			
8/16/78	**	+++++ CHANGED TO AUG 28-30. ALL CLASS MEMBERS TAKE NOTE +++++ FLASH +++++			
8/16/78	**	** NOTICE TO CONTRACTORS ** CONTRACTOR WORK AREA IN ROOM 110 OF BLDG			
8/16/78	**	412 WILL NOT BE AVAILABLE AFTER 28 AUG 78. THIS WILL BE THE NEW			
8/15/78	**	PCAM AREA. PLEASE REMOVE ALL LISTINGS OR CARD DECKS STORED THERE.			
8/16/78	**	*****			

THE FOLLOWING OPTIONS WERE DEFINED BY PLANK.

ATMOS	5
BURN	0
CODE	1
DIMEN	2
EOS	6
GEOM	2
HOT	0
IMAX	20
ISLAND	0
JMAX	28
KMAX	1
LBUFA	0
LBUFB	0
MACFLD	0
METHOD	2
NA	20
NHIC	1600
NM	3
NOP	1000
NHIST	5
NPLPB	2
NPP	2
NRGMPB	4
NSTN	0
NVARST	15
RAD	0
REZONE	1
STRESS	1
SURF	0
SWJ	0
SWX	1
VISC	0
LAMB	0
BBOUND	0
LBOUND	0
KEEL	0
PULL	0
VOIDS	0
FLUXER	3
DEPOS	0
FAIL	0
STRAIN	1
WORK	0
FIREIN	0
MAT	3
AIR	1
FE	2
CU	3

EQUATION OF STATE -

SOLIDS - NO STRENGTH

ATMOSPHERE -

CONSTANT

VOLUME AND ENERGY FLIXING

+ + + +

THE FOLLOWING OPTIONS WERE SPECIFIED WHEN EXECUTIVE PROCESSING BEGAN

INST	1
PRG	0
PLANK	0
PULL	0
KEEL	1
LIBRARY	0
ATHDS	5
BURN	0
CODE	1
DIMEN	2
EOS	6
GEOM	2
HOT	0
IMAX	20
ISLAND	0
JMAX	20
KMAX	1
LBUFF	0
LBUFF	0
MAGFLD	0
METHOD	2
NH	20
NHIC	1600
NH	3
NOP	1000
NHIST	6
NPLPB	2
NPP	2
NROUFB	4
NSTN	0
NVARST	15
RAD	0
REZONE	1
STRESS	1
SURF	0
SW	0
SUX	1
VISC	0
LAMB	0
BBOUND	0
LBOUND	0
VOIDS	0
FLUXER	3
DEPOS	0
FAIL	0
STRAIN	1
WORK	0
FIREIN	3
MAT	3
AIR	1
TE	2
CU	3
+	

THE FOLLOWING DEFINITIONS OR REDEFINITIONS WERE MADE DURING EXECUTIVE PROCESSING

+	+	SYS	176
+	+	VER	4
		MOSBE	1
		PF	1
		ECS	1
		OBJLIB	1
		TAPELIB	4
		ROUTE	1
		DENSHUL	5
		DENSLIB	5
		DENSSTA	3
		LABEL	1
		DATE	1
		CONTROL	1
		CDC	1
		IBM	0
		CW	10
		HU	1
		RDEND	1
		CARDL	2
		CARDO	8
		NHEC	80
		NELKS	11200
		NPIC	7
		NPICMAX	2000
		STRAIN	3020
		STRESS	1
		DEBUG	1
		FILMER	0
		HLEV	1
		D\$NAMEA	1
		D\$NAMEB	21
		D\$NAMEC	12
		D\$NAMED	13
		D\$NAMEE	15
		D\$NAMEF	14
		D\$NAMEG	15
		D\$NAMEH	16
		D\$NAMEI	18
		D\$NAMEJ	18
		D\$NAMEK	5
		CIPEOS	1
		IMIN	250
		JMIN	250
		HMIN	5000

KEEL OUTPUT  
+ CU PENETRATOR  
+ ZBLK

PROB 1.200000000000000E+00  
ATHDS 5.000000000000000E+00  
BREF 0.  
CODE 1.000000000000000E+00  
COLD 0.  
CYCLE 0.  
DIMEN 2.000000000000000E+00  
DT 1.000000000000000E-06  
ELC 0.  
EDS 6.000000000000000E+02  
ETH 0.  
EXPAND 5.000000000000000E-02  
FAIL 0.  
FLUXER 3.000000000000000E+00  
GEOM 2.000000000000000E+00  
IMAX 2.000000000000000E+01  
IO 1.900000000000000E+01  
ISLAND 0.  
JMAX 2.000000000000000E+01  
JO 2.700000000000000E+01  
HOB 0.  
LREF 0.  
METHOD 2.000000000000000E+00  
MLC 0.  
MTH 0.  
MH 0.  
NHIC 1.600000000000000E+03  
NHIST 6.000000000000000E+00  
NM 3.000000000000000E+00  
NOP 0.  
NPP 2.000000000000000E+00  
NRGUPB 4.000000000000000E+00  
PTSTOP 6.000000000000000E+02  
RADLOS 0.  
REZONE 1.000000000000000E+00  
REF 0.  
STABF 5.000000000000000E-01  
STRAIN 1.000000000000000E+00  
STRESS 1.000000000000000E+00  
SUPE 0.  
T 0.  
TERAD 0.  
TLC 0.  
TREF 0.  
TTIME 0.  
TTIME6 0.  
TTIME7 0.  
TTSTOP 1.000000000000000E+02  
UREZ 1.000000000000000E+01

VISC  
VREZ  
VUIDS  
WORK  
X1  
X2  
XOB  
Y1  
Y2  
YEND  
YIELD  
AIR  
CU  
FE

0.  
1.000000000000000E+01  
0.  
0.  
0.  
4.000000000000000E+00  
-1.000000000000000E+00  
0.  
5.000000000000000E+00  
2.300000000000000E+01  
0.  
0.  
1.000000000000000E+00  
3.000000000000000E+00  
2.000000000000000E+00

0000000000000000000000  
172350000000000000000000  
0000000000000000000000  
0000000000000000000000  
172240000000000000000000  
685737777777777777777777  
0000000000000000000000  
172250000000000000000000  
172456000000000000000000  
0000000000000000000000  
0000000000000000000000  
172160000000000000000000  
172140000000000000000000

MESH INCREMENTS AND COORDINATES

+ X0 = 0.		I		DX		X		I		DX		X	
1	2.50000000E-01	2	2.50000000E-01	2	2.50000000E-01	5.00000000E-01	5.00000000E-01	3	2.50000000E-01	2.50000000E-01	2.50000000E-01	7.50000000E-01	7.50000000E-01
4	2.50000000E-01	5	2.50000000E-01	5	2.50000000E-01	1.00000000E+00	1.25000000E+00	6	2.50000000E-01	2.50000000E-01	2.50000000E-01	1.50000000E+00	1.50000000E+00
7	2.50000000E-01	8	2.50000000E-01	8	2.50000000E-01	1.75000000E+00	2.00000000E+00	9	2.50000000E-01	2.50000000E-01	2.50000000E-01	2.25000000E+00	2.25000000E+00
10	2.50000000E-01	11	2.50000000E-01	11	2.50000000E-01	2.50000000E+00	2.75000000E+00	12	2.50000000E-01	2.50000000E-01	2.50000000E-01	3.00000000E+00	3.00000000E+00
13	2.50000000E-01	14	2.50000000E-01	14	2.50000000E-01	3.25000000E+00	3.50000000E+00	15	2.50000000E-01	2.50000000E-01	2.50000000E-01	3.75000000E+00	3.75000000E+00
16	2.50000000E-01	17	2.50000000E-01	17	2.50000000E-01	4.00000000E+00	4.25000000E+00	18	2.50000000E-01	2.50000000E-01	2.50000000E-01	4.50000000E+00	4.50000000E+00
19	2.50000000E-01	20	2.50000000E-01	20	2.50000000E-01	4.75000000E+00	5.00000000E+00						

+ Y0 = -2.00000000E+00		J		DY		Y		J		DY		Y	
1	2.50000000E-01	2	2.50000000E-01	2	2.50000000E-01	-1.50000000E+00	-1.50000000E+00	3	2.50000000E-01	2.50000000E-01	2.50000000E-01	-1.25000000E+00	-1.25000000E+00
4	2.50000000E-01	5	2.50000000E-01	5	2.50000000E-01	-1.00000000E+00	-7.50000000E-01	6	2.50000000E-01	2.50000000E-01	2.50000000E-01	-5.00000000E-01	-5.00000000E-01
7	2.50000000E-01	8	2.50000000E-01	8	2.50000000E-01	-2.50000000E-01	0.	9	2.50000000E-01	2.50000000E-01	2.50000000E-01	2.50000000E-01	2.50000000E-01
10	2.50000000E-01	11	2.50000000E-01	11	2.50000000E-01	5.00000000E-01	7.50000000E-01	12	2.50000000E-01	2.50000000E-01	2.50000000E-01	1.00000000E+00	1.00000000E+00
13	2.50000000E-01	14	2.50000000E-01	14	2.50000000E-01	1.25000000E+00	1.50000000E+00	15	2.50000000E-01	2.50000000E-01	2.50000000E-01	1.75000000E+00	1.75000000E+00
16	2.50000000E-01	17	2.50000000E-01	17	2.50000000E-01	2.00000000E+00	2.25000000E+00	18	2.50000000E-01	2.50000000E-01	2.50000000E-01	2.50000000E+00	2.50000000E+00
19	2.50000000E-01	20	2.50000000E-01	20	2.50000000E-01	2.75000000E+00	3.00000000E+00	21	2.50000000E-01	2.50000000E-01	2.50000000E-01	3.25000000E+00	3.25000000E+00
22	2.50000000E-01	23	2.50000000E-01	23	2.50000000E-01	3.50000000E+00	3.75000000E+00	24	2.50000000E-01	2.50000000E-01	2.50000000E-01	4.00000000E+00	4.00000000E+00
25	2.50000000E-01	26	2.50000000E-01	26	2.50000000E-01	4.25000000E+00	4.50000000E+00	27	2.50000000E-01	2.50000000E-01	2.50000000E-01	4.75000000E+00	4.75000000E+00
28	2.50000000E-01												

```

GENERATING PROBLEM 1.2000
+ DEFAULT WILL BE
+ GENERATE A CIRCLE OF MATERIAL 1
  XC = 0.          RADIUS = 0.
+ AIR = 1
+ GENERATE A RECTANGLE OF MATERIAL 1
  X1 = 0.          X2 = 5.000000E+00 Y1 = -2.000000E+00 Y2 = -1.000000E+00
+ 9.621120E+02 GMS 4.526163E+09 ERGS INSERTED AS MATERIAL 1
+
+ FE = 2
+ GENERATE A RECTANGLE OF MATERIAL 2
  X1 = 0.          X2 = 5.000000E+00 Y1 = -1.000000E+00 Y2 = 0.
+ 5.173230E+02 GMS 2.056240E+13 ERGS INSERTED AS MATERIAL 2
+
+ AIR = 1
+ GENERATE A RECTANGLE OF MATERIAL 1
  X1 = 0.          X2 = 5.000000E+00 Y1 = 0.          Y2 = 5.000000E+00
DELETE A RECTANGLE
  X1 = 0.          X2 = 1.000000E+00 Y1 = 0.          Y2 = 4.000000E+00
+ 4.656626E-01 GMS 9.518143E+08 ERGS INSERTED AS MATERIAL 1
+
+ CU = 3
+ GENERATE A RECTANGLE OF MATERIAL 3
  X1 = 0.          X2 = 1.000000E+00 Y1 = 0.          Y2 = 4.000000E+00
+ 1.118407E+02 GMS 1.267555E+11 ERGS INSERTED AS MATERIAL 3
+
+
+
+

```

```

28LK
PROB 1.2000000000000000E+00 1720463146314632
ATMUS 5.0000000000000000E+00 172250000000000000
BREF 0. 0000000000000000000000
CODE 1.0000000000000000E+00 1720400000000000000
COLD 0. 77777777777777775
CYCLE 0. 00000000000000000000
DIME 2.0000000000000000E+00 172140000000000000
DIM 1.0000000000000000E+00 172140000000000000

```

Variable	Value	Variable	Value	Variable	Value
ELC	0.	EXPAND	0.	INDIVIDUAL MASS SUMS	1.118407E+02
EUS	6.00000000000000E+00	ETH	0.	5.618730E-01	6.173230E+02
ETH	0.	EXPAND	0.	2.00000000000000E+00	1721400000000000000000
EXPAND	5.00000000000000E-02	FLUXER	3.00000000000000E+00		
FLUXER	3.00000000000000E+00	GEOM	2.00000000000000E+00		
GEOM	2.00000000000000E+00	IMIX	1.50000000000000E+01		
IMIX	1.50000000000000E+01	ISLAND	0.		
ISLAND	0.	JMAX	2.00000000000000E+01		
JMAX	2.00000000000000E+01	JO	2.70000000000000E+01		
JO	2.70000000000000E+01	HOB	0.		
HOB	0.	LREF	0.		
LREF	0.	METHOD	2.00000000000000E+00		
METHOD	2.00000000000000E+00	TLC	0.		
TLC	0.	MTH	0.		
MTH	0.	NH	2.00000000000000E+01		
NH	2.00000000000000E+01	NHIC	1.50000000000000E+03		
NHIC	1.50000000000000E+03	NHIST	5.00000000000000E+00		
NHIST	5.00000000000000E+00	NH1	3.00000000000000E+00		
NH1	3.00000000000000E+00	NOP	0.		
NOP	0.	NPP	2.00000000000000E+00		
NPP	2.00000000000000E+00	NPLUPB	4.00000000000000E+00		
NPLUPB	4.00000000000000E+00	PTSTOP	6.00000000000000E+02		
PTSTOP	6.00000000000000E+02	RADLOS	0.		
RADLOS	0.	REZONE	1.00000000000000E+00		
REZONE	1.00000000000000E+00	REF	0.		
REF	0.	STABF	5.00000000000000E-01		
STABF	5.00000000000000E-01	STRAIN	1.00000000000000E+00		
STRAIN	1.00000000000000E+00	STRESS	1.00000000000000E+00		
STRESS	1.00000000000000E+00	SUVE	0.		
SUVE	0.	T	0.		
T	0.	TERAD	0.		
TERAD	0.	TLC	0.		
TLC	0.	TREF	0.		
TREF	0.	TIME	0.		
TIME	0.	TIME6	0.		
TIME6	0.	TIME7	0.		
TIME7	0.	TTSTOP	1.00000000000000E+02		
TTSTOP	1.00000000000000E+02	UREZ	1.00000000000000E+01		
UREZ	1.00000000000000E+01	VISC	0.		
VISC	0.	VREZ	1.00000000000000E+01		
VREZ	1.00000000000000E+01	VOIDS	0.		
VOIDS	0.	WORK	0.		
WORK	0.	X1	4.00000000000000E+00		
X1	4.00000000000000E+00	X2	-1.00000000000000E+00		
X2	-1.00000000000000E+00	XOB	0.		
XOB	0.	Y1	5.00000000000000E+00		
Y1	5.00000000000000E+00	Y2	2.30000000000000E+01		
Y2	2.30000000000000E+01	YEND	0.		
YEND	0.	YIELD	1.00000000000000E+00		
YIELD	1.00000000000000E+00	AIR	1720400000000000000000		
AIR	1720400000000000000000	CU	3.00000000000000E+00		
CU	3.00000000000000E+00				

FE 2.00000000000000E+00 1721400000000000000000

INDIVIDUAL MASS SUMS

5.618730E-01 6.173230E+02 1.118407E+02

+ + + +  
I= 1 X(I)= .250 DX(I)= .250

J	U	V	AIX	RHO	AMX	DY	Y
1	0.	3.00000000E+05	2.04400000E+09	1.22500000E-03	6.01320469E-05	2.50000000E-01	-1.75000000E+00
2	0.	3.00000000E+05	2.04400000E+09	1.22500000E-03	6.01320469E-05	2.50000000E-01	-1.50000000E+00
3	0.	3.00000000E+05	2.04400000E+09	1.22500000E-03	6.01320469E-05	2.50000000E-01	-1.25000000E+00
4	0.	3.00000000E+05	2.04400000E+09	1.22500000E-03	6.01320469E-05	2.50000000E-01	-1.00000000E+00
5	0.	3.00000000E+05	1.26816212E+09	7.86000000E+00	3.85826848E-01	2.50000000E-01	-7.50000000E-01
6	0.	3.00000000E+05	1.26816212E+09	7.86000000E+00	3.85826848E-01	2.50000000E-01	-5.00000000E-01
7	0.	3.00000000E+05	1.26816212E+09	7.86000000E+00	3.85826848E-01	2.50000000E-01	-2.50000000E-01
8	0.	3.00000000E+05	1.26816212E+09	7.86000000E+00	3.85826848E-01	2.50000000E-01	0.
9	0.	0.	1.13335748E+09	8.90000000E+00	4.3687728E-01	2.50000000E-01	2.50000000E-01
10	0.	0.	1.13335748E+09	8.90000000E+00	4.3687728E-01	2.50000000E-01	5.00000000E-01
11	0.	0.	1.13335748E+09	8.90000000E+00	4.3687728E-01	2.50000000E-01	7.50000000E-01
12	0.	0.	1.13335748E+09	8.90000000E+00	4.3687728E-01	2.50000000E-01	1.00000000E+00
13	0.	0.	1.13335748E+09	8.90000000E+00	4.3687728E-01	2.50000000E-01	1.25000000E+00
14	0.	0.	1.13335748E+09	8.90000000E+00	4.3687728E-01	2.50000000E-01	1.50000000E+00
15	0.	0.	1.13335748E+09	8.90000000E+00	4.3687728E-01	2.50000000E-01	1.75000000E+00
16	0.	0.	1.13335748E+09	8.90000000E+00	4.3687728E-01	2.50000000E-01	2.00000000E+00
17	0.	0.	1.13335748E+09	8.90000000E+00	4.3687728E-01	2.50000000E-01	2.25000000E+00
18	0.	0.	1.13335748E+09	8.90000000E+00	4.3687728E-01	2.50000000E-01	2.50000000E+00
19	0.	0.	1.13335748E+09	8.90000000E+00	4.3687728E-01	2.50000000E-01	2.75000000E+00
20	0.	0.	1.13335748E+09	8.90000000E+00	4.3687728E-01	2.50000000E-01	3.00000000E+00
21	0.	0.	1.13335748E+09	8.90000000E+00	4.3687728E-01	2.50000000E-01	3.25000000E+00
22	0.	0.	1.13335748E+09	8.90000000E+00	4.3687728E-01	2.50000000E-01	3.50000000E+00
23	0.	0.	1.13335748E+09	8.90000000E+00	4.3687728E-01	2.50000000E-01	3.75000000E+00
24	0.	0.	1.13335748E+09	8.90000000E+00	4.3687728E-01	2.50000000E-01	4.00000000E+00
25	0.	0.	2.04400000E+09	1.22500000E-03	6.01320469E-05	2.50000000E-01	4.25000000E+00
26	0.	0.	2.04400000E+09	1.22500000E-03	6.01320469E-05	2.50000000E-01	4.50000000E+00
27	0.	0.	2.04400000E+09	1.22500000E-03	6.01320469E-05	2.50000000E-01	4.75000000E+00
28	0.	0.	2.04400000E+09	1.22500000E-03	6.01320469E-05	2.50000000E-01	5.00000000E+00

+ + + J

MATERIAL MASSES

	1	2	3
1	6.01320469E-05	0.	0.
2	6.01320469E-05	0.	0.
3	6.01320469E-05	0.	0.
4	6.01320469E-05	0.	0.
5	0.	3.85826848E-01	0.
6	0.	3.85826848E-01	0.
7	0.	3.85826848E-01	0.
8	0.	3.85826848E-01	0.
9	0.	0.	4.36877728E-01
10	0.	0.	4.36877728E-01
11	0.	0.	4.36877728E-01
12	0.	0.	4.36877728E-01
13	0.	0.	4.36877728E-01
14	0.	0.	4.36877728E-01
15	0.	0.	4.36877728E-01
16	0.	0.	4.36877728E-01
17	0.	0.	4.36877728E-01
18	0.	0.	4.36877728E-01
19	0.	0.	4.36877728E-01
20	0.	0.	4.36877728E-01
21	0.	0.	4.36877728E-01
22	0.	0.	4.36877728E-01
23	0.	0.	4.36877728E-01
24	0.	0.	4.36877728E-01
25	6.01320469E-05	0.	0.
26	6.01320469E-05	0.	0.
27	6.01320469E-05	0.	0.
28	6.01320469E-05	0.	0.

MATERIAL MAP  
( 1- 20)

	1	2
	12345678901234567890	
	1 ++++++	
	2 ++++++	
	3 ++++++	
	4 ++++++	
	5 XXXXXXXX	
	6 XXXXXXXX	
	7 XXXXXXXX	
	8 XXXXXXXX	
	9 0000++++	
	10 0000++++	
	11 0000++++	
	12 0000++++	
	13 0000++++	
	14 0000++++	
	15 0000++++	
	16 0000++++	
	17 0000++++	
	18 0000++++	
	19 0000++++	
	20 0000++++	
	21 0000++++	
	22 0000++++	
	23 0000++++	
	24 0000++++	
	25 ++++++	
	26 ++++++	
	27 ++++++	
	28 ++++++	
	12345678901234567890	
	1	2

MF3 NOS/BE 1.2 K9FB 011 MF3 07/10/78  
FLCM=314000 MCM=250000 FLEC=1720K MCEC=0600K

08.58.40.GABY22Y FROM M02/15  
08.58.40.IP 00000320 WORDS - FILE INPUT , DC 04  
08.58.40.GABY2.T177.10177.P50.NTL.  
08.58.41.ACCOUNT.GABY, \*\*\*\*\*-\*\*\*.DYP.  
08.58.41.SYSBULL(BATCH)  
08.58.42.ATTACH.HULL18.ID=DYMXCR.  
08.58.42.PFN 15  
08.58.42.HULL18  
08.58.42.PF CYCLE NO. = 039  
08.58.42.LIBRARY.HULL18.  
08.59.10.HULLR.  
08.59.11.COPYCR(LOCAL.HHH)  
08.59.12.RETURN(LOCAL)  
08.59.12.IFE.FILE(CHANGES.IN),CPR.  
08.59.13.ENDIF.CPR.  
08.59.13.IFE.FILE(CHANGES.AS.AND..NOT.IN),CPY.  
08.59.14.ENDIF.CPY.  
08.59.14.GETC.HHH.  
08.59.15.ATTACH(XXX,CH105.ID=DYMXCR)  
08.59.15.PF CYCLE NO. = 014  
08.59.16.COPYCR(XXX.HHH)  
08.59.17.RETURN(XXX)  
08.59.19.CONTR.BOW.  
09.00.06.END CNT  
09.00.06.FILE(TAPE10,SBF=NO)  
09.00.09.FILE(TAPE11,SBF=NO)  
09.00.09.FILE(TAPE41,SBF=NO)  
09.00.10.FILE(TAPE42,SBF=NO)  
09.00.11.LDSET(FILES=TAPE10/TAPE11/TAPE41/TAPE42)  
09.00.11.BOW.  
09.00.14.REQUEST(TAPE10,\*PF)  
09.00.14.REQUEST(TAPE42,\*PF)  
09.01.06.STERN. PROBLEM 8 3630 UPDATED.  
09.02.11.CT ID= DYMXCR PFN=DYMASTLIBRARY  
09.02.11.CT CY= 002 00040064 WORDS.  
09.02.11.EX ID= DYMXCR PFN=DYMASTLIBRARY  
09.02.11.EX CY= 001 00000000 WORDS.  
09.02.11.EX ID= DYMXCR PFN=DYMASTLIBRARY  
09.02.11.EX CY= 001 00000000 WORDS.  
09.03.00.EX ID= DYMXCR PFN=DYMASTLIBRARY  
09.03.00.EX CY= 001 00040064 WORDS.  
09.03.00.PR ID= DYMXCR PFN=DYMASTLIBRARY  
09.03.00.PR CY= 002 00040064 WORDS.  
09.03.00.REQUEST(TAPE42,\*PF)  
09.03.01.PR ID= DYMXCR PFN=PROBLEMTAPE41INFOBP3630  
09.03.01.PR CY= 001 00000640 WORDS.  
09.03.03.STERN 10 RESOURCE TAPES REMAINING  
09.03.16.KEEL 10 RESOURCE TAPES REMAINING  
09.05.57.CT ID= DYMXCR PFN=DYMASTLIBRARY  
09.05.57.CT CY= 002 00040128 WORDS.

09.30.07.PE10)  
09.30.07.LDSET(FILES=TAPE44/TAPE45)  
09.30.07.HULL.  
09.34.17.LOCKOUT.  
09.34.17.UNLOCK.EXP.  
09.34.19.REQUEST(TAPE4,\*NT,PE,RING,U,U,E,VSN=01K127)  
09.34.19.( NT 066 ASSIGNED)  
09.34.19.NT66 VOLUME SERIAL NUMBER IS 01K127  
09.34.23.NT66 BLOCKS WRITTEN -000034  
09.34.24.REQUEST(TAPE41,\*PF)  
09.34.27.CT ID= DYMXCR PFN=PROBLEMTAPE41INFOIP2000  
09.34.27.CT CY= 001 00000512 WORDS.  
09.34.29.END KEEL  
09.34.29.838 CP SECONDS EXECUTION TIME  
09.34.29.RETURN(TAPE4,HULL)  
09.34.30.REVERT.  
09.34.32.ELSE.H176.  
09.34.34.ENDIF.H176.  
09.34.34.ENDIF.RUNS.  
09.34.36.ACCOUN.  
09.34.42.ACCOUNT FILE = ACCOUNTK12BY10F5P8  
09.34.42. ACCOUNT ID = DYMXCR  
09.34.44.END ACCNT  
09.34.44.REVERT.  
09.34.45.OP 00003200 WORDS - FILE OUTPUT , DC 40  
09.34.45.OP 00002048 WORDS - FILE FILMPR , DC 20  
09.34.45.MS 7168 WORDS ( 218624 MAX USED)  
09.34.45.CPA 22.372 SEC.  
09.34.45.IO 76.854 SEC.  
09.34.45.CM 1583.010 KWS.  
09.34.45.SS 48.228  
09.34.45.PP 155.711 SEC.  
09.34.45.COST ESTIMATE DATE 08/21/78  
09.34.45.EJ END OF JOB, IS \$ 8.10

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09.05.57.EX ID= DYMCCER PFN=DYMASTL LIBRARY
09.05.57.EX CY= 001 0000000 WORDS.
09.06.08.EX ID= DYMCCER PFN=DYMASTL LIBRARY
09.06.08.EX CY= 001 00040120 WORDS.
09.06.08.PR ID= DYMCCER PFN=DYMASTL LIBRARY
09.06.08.PR CY= 002 00040120 WORDS.
09.06.11. END BOJW
09.06.11.CONTR,PLANK.
09.06.14. END CNT
09.06.14.FILE(TAPE4,SBF=NO)
09.06.25.FILE(TAPE41,SBF=NO)
09.06.31.LDSET(FILES=TAPE4/TAPE41)
09.06.31.PLANK.
09.06.34.GENERATING KEEL WA-ECS/LCM VERSION
09.06.35. END PLANK
09.06.35.CONTR,SAIL.
09.06.37. END CNT
09.06.37.DYMAST(I=HHH)
09.28.46. 6265 CARDS GENERATED
09.28.46. END OF NORMAL RUN
09.28.46. SYSTEM HULL VERSION 105
09.28.46. EXIT
09.29.46.RETURN(HHH)
09.28.47.RETURN(SAVE)
09.29.48.REQUEST(SAVE,*0)
09.28.49.CONTR,COMPILE.
09.28.51. END CNT
09.28.51.IFE,R2.EQ.2,COMPS.
09.28.52.ELSE,COMPS.
09.28.52.FTN(A,I=SAIL,PL=1000000,B=HULL,OPT=2,L=S
09.29.44. 4.187 CP SECONDS COMPILATION TIME
09.29.44.ENDIF,COMPS.
09.29.45.RETURN(SAIL,LOCAL)
09.29.47.IFE,R2.NE.0,MET.
09.29.48.ENDIF,MET.
09.29.48.RETURN(MAP)
09.29.49.REQUEST(MAP,*0)
09.29.49.CONTR,LOAD.
09.29.57. END CNT
09.29.57.IFE,R2.EQ.2,RUNS.
09.29.58.ELSE,RUNS.
09.29.58.IFE,R1.NE.0,H176.
09.29.59.HULL176.COMMENT.
09.30.00.FILE(TAPE4,SBF=NO)
09.30.01.FILE(TAPE41,SBF=NO)
09.30.02.FILE(TAPE40,SBF=NO)
09.30.03.FILE(TAPE9,SBF=NO)
09.30.04.FILE(TAPE10,SBF=NO)
09.30.04.FILE(TAPE44,SBF=NO)
09.30.05.FILE(TAPE45,SBF=NO)
09.30.07.LDSET(PRESETA=NGINDEF,MAP=SBEX/MAP)
09.30.07.LDSET(FILES=TAPE4/TAPE41/TAPE9/TAPE40/TA

```

AFWL-TR-78-134

PROBLEM 1.2 SYSTEM 370 HULL RUN

```

//AF2001H JOB (AF2001,,10,25),HULL RUN',MSGCLASS=H,CLASS=C,
//      NOTIFY=AF2001
//HULL EXEC HULL,GEND='V105',FPARH='NOSOURCE,TERM',
//      PSI='SYSOUT=H,HOLD=YES',PS2='SYSOUT=H,HOLD=YES',
//      FP1='DUMMY',LP1='SYSOUT=H,HOLD=YES',
//      HP1='SYSOUT=H,HOLD=YES',MTIME=5,LIBPRE='AF2001.',
//      OLDPRE='AF2001.',PP1='SYSOUT=H,HOLD=YES',PTIME='(0,10)'
//HULL.DATA DD DSN=AF2001.HULL.PROB1P2,DISP=(OLD,KEEP),
//      DCB=(RECFM=VBS,LRECL=7220,BLKSIZE=7224)
//HULL.STATION DD DUMMY
//HULL.INPUT DD *
HULL
PROBLEM 1.2
CYCLE=0
INPUT
RTSTOP=0.08
CSTOP=150
REZONE=0
COLD=T
TIMES=3 DMPINT=1.E-6
MRELER=10
/*
//SAIL.INPUT DD DSN=AF2001.CHANG.DATA,DISP=(OLD,KEEP)
//FORT.SYSTEM DD SYSOUT=H,HOLD=YES
END OF DATA

```

J E S 2 J O B L O G

12.22.49	JOB	204	IEF677I WARNING MESSAGE(S) FOR JOB AF2001H ISSUED	STARTED -	INIT	4 - CLASS C - SYS A168
12.22.49	JOB	204	\$HASP373 AF2001H HULL	12:22:49	3	0.24 5000
12.22.53	JOB	204	AF2001H PLANK	12:22:53	5	0.80 5000
12.30.10	JOB	204	AF2001H SAIL	12:22:58	432	95.82 5000
12.32.29	JOB	204	AF2001H FORT	12:30:10	138	22.55 5004
12.32.52	JOB	204	AF2001H LKED	12:32:29	23	2.22 5000
12.43.49	JOB	004	AF2001H 60	12:32:53	656	280.41 5000
12.43.53	JOB	204	\$HASP395 AF2001H ENDED			

OUT

GENERATING HULL  
TAPEA SEARCH FOR START CYCLE

CU PENETRATOR

00002250

PROB 1.2000 CYCLE 0 TIME 0.0  
BACKSPACING 2 RECORDS  
TAPE POSITIONED  
DISK VERSION

\*\*\*\*\* OPTIONS SELECTED FOR THIS RUN \*\*\*\*\*

DIFFERENCE METHOD - SHELL II

AND MATERIAL STRENGTH WITH 6 FLUXED HISTORIES/CELL

EQUATION OF STATE - SOLIDS - NO STRENGTH

ATMOSPHERE - CONSTANT

VOLUME AND ENERGY FLUXING

REZONE - NO REZONE

CODE -

HULL

DIMENSIONS - 2-D

GEOMETRY - CYLINDRICAL

NO RADIATION ROUTINES

PARTICLES -

NO CODE

THE FOLLOWING OPTIONS WERE DEFINED BY PLANK.

ATMOS	=	5
BURN	=	0
CODE	=	1
DIMEN	=	2
EOS	=	6
GEOM	=	2
HOT	=	0
IMAX	=	20
ISLAND	=	0
.....		..

JRAX	28	1
KMAX		1729
LBUFA		122
LBUFB		0
MAGFLD		2
METHOD		20
MH		1600
MHIC		3
MN		0
NOP		0
MHIST		6
MPLPB		2
MPP		3
MROUPB		4
MSTN		0
MVARST		5
RAD		0
REZONE		0
STRESS		1
SURF		0
SV		6
SUX		0
VISC		0
LAMB		0
DBOUND		0
LBOUND		0
KEEL		0
PULL		0
VOIDS		0
FLUXER		3
DEPOS		0
FAIL		0
STRAIN		1
WORK		0
MAT		3
AIR		1
CU		3
FE		2

= = = = =

HULL START

PROB 1.2000 STARTUP ON CYCLE 0 TIME 0.0

MATERIAL	MATERIAL PROPERTIES DEFINED FOR THIS RUN			
	AMBIENT YIELD (Y0)	THERMAL SOFTENING YLD/Y0 EE/EMELT	WORK HARDENING YIELD	PLASTIC STRAIN
2	4.690E+09	1.00E+00	4.690E+09	0.0
		9.00E-01	5.500E+09	3.00E-01
		9.00E-01		
		0.0		
3	8.000E+08	1.00E+00	8.000E+08	0.0
		9.00E-01	4.000E+09	3.00E-01
		9.00E-01		
		0.0		

CU PENETRATOR

00002250

BLK/	PROB	1.20000B+00	4113333300000000
ATNDS		5.00000B+00	4150000000000000
BREF		0.0	0000000000000000
CODE		1.00000B+00	4110000000000000
COLD		0.00001B-79	0000000100000000
CYCLE		0.0	0000000000000000
DIMEN		2.00000B+00	4120000000000000
DT		1.00000B-08	3AZAF31E00000000
ELC		0.0	0600000000000000
EOS		6.00000B+00	4160000000000000
ETH		0.0	0000000000000000
EXPAND		5.00000B-02	3FCCCC0000000000
FAIL		0.0	0000000000000000
FLUXER		3.00000B+00	4130000000000000
GEOM		2.00000B+00	4120000000000000
IMAX		2.00000B+01	4214000000000000





TOTAL MASS 6.69416748 E+02 MTH 6.69416748 E+02 0.0 RELNERR

MAX VEL = 0.0 AT I 0 J 0  
 MAX CS = 0.0 AT I 0 J 0  
 MAX TEMP = 0.0 AT I 0 J 0  
 MAX P = 0.0 AT I 0 J 0  
 CELL SETTING DT, I 0 J 0

TOTAL TIME FOR THIS PROBLEM 0 HOURS, 0 MIN, 0 SEC

TIME FOR THIS RUN 0 HOURS, 0 MIN, 0 SEC  
 I= 1 X(I)= 0.250 U 0.250 V 0.250 XI 0.250

J	P	U	V	XI	RHO	SRR	SZZ	SRZ	Y	DY	H	XM	M	XM
1	1.013E+06	0.0	3.00E+05	2.044E+09	1.225E-03	0.0	0.0	0.0	-1.75E+00	2.50E-01	1	6.01319E-05		
2	1.013E+06	0.0	3.00E+05	2.044E+09	1.225E-03	0.0	0.0	0.0	-1.50E+00	2.50E-01	1	6.01319E-05		
3	1.013E+06	0.0	3.00E+05	2.044E+09	1.225E-03	0.0	0.0	0.0	-1.25E+00	2.50E-01	1	6.01319E-05		
4	1.013E+06	0.0	3.00E+05	2.044E+09	1.225E-03	0.0	0.0	0.0	-1.00E+00	2.50E-01	1	6.01319E-05		
5	-2.864E+06	0.0	3.00E+05	1.268E+09	7.860E+00	0.0	0.0	0.0	-7.50E-01	2.50E-01	2	3.85826E-01		
6	-2.864E+06	0.0	3.00E+05	1.268E+09	7.860E+00	0.0	0.0	0.0	-5.00E-01	2.50E-01	2	3.85826E-01		
7	-2.864E+06	0.0	3.00E+05	1.268E+09	7.860E+00	0.0	0.0	0.0	-2.50E-01	2.50E-01	2	3.85826E-01		
8	-2.864E+06	0.0	3.00E+05	1.268E+09	7.860E+00	0.0	0.0	0.0	2.21E-06	2.50E-01	2	3.85826E-01		
9	-3.577E+06	0.0	0.0	1.133E+09	8.900E+00	0.0	0.0	0.0	2.50E-01	2.50E-01	3	4.36877E-01		
10	-3.577E+06	0.0	0.0	1.133E+09	8.900E+00	0.0	0.0	0.0	5.00E-01	2.50E-01	3	4.36877E-01		
11	-3.577E+06	0.0	0.0	1.133E+09	8.900E+00	0.0	0.0	0.0	7.50E-01	2.50E-01	3	4.36877E-01		
12	-3.842E+05	0.0	0.0	1.133E+09	8.900E+00	0.0	0.0	0.0	1.00E+00	2.50E-01	3	4.36877E-01		
13	-2.506E+06	0.0	0.0	1.133E+09	8.900E+00	0.0	0.0	0.0	1.25E+00	2.50E-01	3	4.36877E-01		
14	-2.506E+06	0.0	0.0	1.133E+09	8.900E+00	0.0	0.0	0.0	1.50E+00	2.50E-01	3	4.36877E-01		
15	-2.506E+06	0.0	0.0	1.133E+09	8.900E+00	0.0	0.0	0.0	1.75E+00	2.50E-01	3	4.36877E-01		
16	-2.506E+06	0.0	0.0	1.133E+09	8.900E+00	0.0	0.0	0.0	2.00E+00	2.50E-01	3	4.36877E-01		
17	-2.506E+06	0.0	0.0	1.133E+09	8.900E+00	0.0	0.0	0.0	2.25E+00	2.50E-01	3	4.36877E-01		
18	-2.506E+06	0.0	0.0	1.133E+09	8.900E+00	0.0	0.0	0.0	2.50E+00	2.50E-01	3	4.36877E-01		
19	-2.506E+06	0.0	0.0	1.133E+09	8.900E+00	0.0	0.0	0.0	2.75E+00	2.50E-01	3	4.36877E-01		
20	-2.506E+06	0.0	0.0	1.133E+09	8.900E+00	0.0	0.0	0.0	3.00E+00	2.50E-01	3	4.36877E-01		
21	-2.506E+06	0.0	0.0	1.133E+09	8.900E+00	0.0	0.0	0.0	3.25E+00	2.50E-01	3	4.36877E-01		
22	-2.506E+06	0.0	0.0	1.133E+09	8.900E+00	0.0	0.0	0.0	3.50E+00	2.50E-01	3	4.36877E-01		
23	-2.506E+06	0.0	0.0	1.133E+09	8.900E+00	0.0	0.0	0.0	3.75E+00	2.50E-01	3	4.36877E-01		
24	-2.506E+06	0.0	0.0	1.133E+09	8.900E+00	0.0	0.0	0.0	4.00E+00	2.50E-01	3	4.36877E-01		
25	1.013E+06	0.0	0.0	2.044E+09	1.225E-03	0.0	0.0	0.0	4.25E+00	2.50E-01	1	6.01319E-05		
26	1.013E+06	0.0	0.0	2.044E+09	1.225E-03	0.0	0.0	0.0	4.50E+00	2.50E-01	1	6.01319E-05		
27	1.013E+06	0.0	0.0	2.044E+09	1.225E-03	0.0	0.0	0.0	4.75E+00	2.50E-01	1	6.01319E-05		
28	1.013E+06	0.0	0.0	2.044E+09	1.225E-03	0.0	0.0	0.0	5.00E+00	2.50E-01	1	6.01319E-05		

MATERIAL MAP

```

1 2 ALTITUDE
12345678901234567890
METERS
1 ***** -1.750E-02
2 ***** -1.500E-02
3 ***** -1.250E-02
4 ***** -1.000E-02
5 XXXXXXXXXXXXXXXXXX -7.500E-03
6 XXXXXXXXXXXXXXXXXX -5.000E-03
7 XXXXXXXXXXXXXXXXXX -2.500E-03
8 XXXXXXXXXXXXXXXXXX 2.205E-08
9 0000***** 2.500E-03
10 0000***** 5.000E-03
11 0000***** 7.500E-03
12 0000***** 1.000E-02
13 0000***** 1.250E-02
14 0000***** 1.500E-02
15 0000***** 1.750E-02
16 0000***** 2.000E-02
17 0000***** 2.250E-02
18 0000***** 2.500E-02
19 0000***** 2.750E-02
20 0000***** 3.000E-02
21 0000***** 3.250E-02
22 0000***** 3.500E-02
23 0000***** 3.750E-02
24 0000***** 4.000E-02
25 ***** 4.250E-02
26 ***** 4.500E-02
$HASP165 JOB 209 AF2001H ENDED CM(00)
27 ***** 4.750E-02
28 ***** 5.000E-02
12345678901234567890

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1 2
CYCLE 1 TIME 1.000E-08 DT 3.285E-08 IDT 7 JDT 5
CYCLE 2 TIME 4.2854E-08 DT 4.886E-08 IDT 3 JDT 8
CYCLE 3 TIME 9.1713E-08 DT 6.338E-08 IDT 2 JDT 8
CYCLE 4 TIME 1.5510E-07 DT 7.646E-08 IDT 2 JDT 8
CYCLE 5 TIME 2.3156E-07 DT 8.837E-08 IDT 1 JDT 8
CYCLE 6 TIME 3.1992E-07 DT 9.970E-08 IDT 1 JDT 8
CYCLE 7 TIME 4.1962E-07 DT 1.111E-07 IDT 1 JDT 8
CYCLE 8 TIME 5.3074E-07 DT 1.234E-07 IDT 1 JDT 8
CYCLE 9 TIME 6.5418E-07 DT 1.371E-07 IDT 1 JDT 8
CYCLE 10 TIME 7.9125E-07 DT 1.148E-07 IDT 1 JDT 8
CYCLE 11 TIME 9.0606E-07 DT 9.394E-08 IDT 1 JDT 8
CYCLE 12 TIME 1.0000E-06 DT 1.417E-07 IDT 1 JDT 8

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PROB 1.2000 CYCLE 12 TIME 9.999994E-07 DT 1.416545E-07

INTERNAL ENERGY E+12 2.47141646 E+13 2.59087359 E+13 2.59091050 E+13 -1.42459183 E+01  
1.19457448

KINETIC ENERGY E+13 6.69442139 E+02 6.69441650 E+02 7.29386330 E-01  
6.69442139

TOTAL ENERGY E+13 2.59087359 E+13 2.59091050 E+13 -1.42459183 E+01

RELNERM#

ETH 2.59091050 E+13

ETH 2.59091050 E+13

RELNERM#

MAX VEL = 3.03113E+05 AT I 6 J 9

MAX CS = 7.28736E+05 AT I 1 J 8

MAX TEMP = 3.33135E+03 AT I 5 J 10

MAX P = 1.10439E+12 AT I 1 J 9

CELL SETTING DT, I 1 J 8

TOTAL TIME FOR THIS PROBLEM 0 HOURS, 0 MIN, 19 SEC

TIME FOR THIS RUN 0 HOURS, 0 MIN, 19 SEC

MINIZ FACTOR TOTAL PROBLEM = 2.94E-03 SEC/CELL/CYCLE

MINIZ FACTOR SINCE LAST DUMP = 2.79E-03 SEC/CELL/CYCLE

J	I	X(I)=	U	V	W	DX(I)=	0.250	XI	RHO	SRR	SZZ	SRZ	Y	BY	M	XM	M	XM	XM	
1	1	0.013E+06	0.0	3.00E+05	2.04E+09	1.225E-03	0.0	0.0	0.0	0.0	0.0	0.0	-1.75E+00	2.50E-01	1	6.01319E-05	1	6.01319E-05	1	6.01319E-05
2	1	0.013E+06	3.09E-02	3.00E+05	2.045E+09	1.225E-03	0.0	0.0	0.0	0.0	0.0	0.0	-1.50E+00	2.50E-01	1	6.01320E-05	1	6.01320E-05	1	6.01320E-05
3	1	0.013E+06	7.58E-02	3.00E+05	2.045E+09	1.225E-03	0.0	0.0	0.0	0.0	0.0	0.0	-1.25E+00	2.50E-01	1	6.01320E-05	1	6.01320E-05	1	6.01320E-05
4	1	0.020E+06	1.01E-01	3.00E+05	2.047E+09	1.232E-03	0.0	0.0	0.0	0.0	0.0	0.0	-1.00E+00	2.50E-01	1	6.04644E-05	1	6.04644E-05	1	6.04644E-05
5	1	0.042E+06	1.45E+00	2.95E+05	2.073E+09	1.243E-03	0.0	0.0	0.0	0.0	0.0	0.0	-7.50E-01	2.50E-01	1	6.09974E-05	1	6.09974E-05	1	6.09974E-05
6	1	0.044E+06	6.32E+01	2.80E+05	1.688E+09	6.859E+00	1.66E+09	-3.10E+09	0.0	1.66E+09	-3.10E+09	0.0	-5.00E-01	2.50E-01	1	1.08264E-05	2	3.36694E-01	2	3.36694E-01
7	2	0.19E+11	6.70E+02	2.22E+05	4.829E+09	8.697E+00	1.74E+09	-2.95E+09	2.43E+07	8.80E+08	-2.03E+09	3.61E+07	-2.50E-01	2.50E-01	2	4.26926E-01	2	4.26926E-01	2	4.26926E-01
8	7	0.427E+11	1.53E+03	1.58E+05	1.386E+10	9.676E+00	8.80E+08	-2.03E+09	3.61E+07	8.80E+08	-2.03E+09	3.61E+07	2.21E-04	2.50E-01	2	4.74966E-01	2	4.74966E-01	2	4.74966E-01
9	1	0.59E+12	2.81E+03	1.60E+05	1.797E+10	1.097E+01	0.0	0.0	0.0	0.0	0.0	0.0	2.50E-01	2.50E-01	2	2.90952E-01	2	2.90952E-01	2	2.90952E-01
10	6	0.54E+11	9.55E+02	1.42E+05	1.309E+10	1.101E+01	3.55E+07	-6.89E+07	-1.11E+06	3.55E+07	-6.89E+07	-1.11E+06	5.00E-01	2.50E-01	3	5.40666E-01	3	5.40666E-01	3	5.40666E-01
11	2	0.80E+11	1.70E+02	5.29E+04	4.603E+09	1.009E+01	2.63E+08	-4.87E+08	-2.46E+06	2.63E+08	-4.87E+08	-2.46E+06	7.50E-01	2.50E-01	3	4.95494E-01	3	4.95494E-01	3	4.95494E-01
12	4	0.33E+10	8.87E+01	1.19E+04	1.353E+09	9.159E+00	3.25E+08	-5.24E+08	-1.08E+06	3.25E+08	-5.24E+08	-1.08E+06	1.00E+00	2.50E-01	3	4.49570E-01	3	4.49570E-01	3	4.49570E-01
13	7	0.15E+09	2.35E+01	1.44E+03	1.138E+09	8.947E+00	3.20E+08	-5.29E+08	-5.04E+06	3.20E+08	-5.29E+08	-5.04E+06	1.25E+00	2.50E-01	3	4.39172E-01	3	4.39172E-01	3	4.39172E-01
14	7	0.70E+08	4.85E+00	2.17E+02	1.133E+09	8.905E+00	9.37E+07	-1.29E+08	-1.64E+06	9.37E+07	-1.29E+08	-1.64E+06	1.50E+00	2.50E-01	3	4.37118E-01	3	4.37118E-01	3	4.37118E-01
15	1	0.97E+08	3.31E-01	1.85E+01	1.133E+09	8.901E+00	1.09E+07	-1.79E+07	-2.95E+05	1.09E+07	-1.79E+07	-2.95E+05	1.75E+00	2.50E-01	3	4.36911E-01	3	4.36911E-01	3	4.36911E-01
16	6	0.78E+06	-3.04E-03	2.15E+00	1.133E+09	8.900E+00	6.83E+05	-9.84E+05	-4.18E+04	6.83E+05	-9.84E+05	-4.18E+04	2.00E+00	2.50E-01	3	4.36879E-01	3	4.36879E-01	3	4.36879E-01
17	-1	0.336E+06	-3.22E-02	1.35E-01	1.133E+09	8.900E+00	-7.40E+04	-8.69E+04	-2.99E+03	-7.40E+04	-8.69E+04	-2.99E+03	2.25E+00	2.50E-01	3	4.36877E-01	3	4.36877E-01	3	4.36877E-01

18 -2.506E+06 -4.57E-02 1.90E-02 1.133E+09 8.900E+00 -1.11E+05 4.41E+04 -8.13E+02 2.50E+00 2.50E-01 3 4.36877E-01  
 19 -2.506E+06 -4.58E-02 6.76E-11 1.133E+09 8.900E+00 -1.11E+05 5.16E+04 -8.93E+00 2.75E+00 2.50E-01 3 4.36877E-01  
 20 -2.506E+06 -4.59E-02 -4.40E-11 1.133E+09 8.900E+00 -1.11E+05 4.93E+04 -2.44E+02 3.00E+00 2.50E-01 3 4.36877E-01  
 21 -2.506E+06 -4.97E-02 -1.53E-02 1.133E+09 8.900E+00 -1.11E+05 1.78E+04 -6.14E+03 3.25E+00 2.50E-01 3 4.36877E-01  
 22 -2.506E+06 -8.82E-02 -1.21E-01 1.133E+09 8.900E+00 -7.31E+04 -2.08E+05 -1.48E+03 3.50E+00 2.50E-01 3 4.36877E-01  
 23 -1.531E+06 -2.32E-02 -4.85E-01 1.133E+09 8.900E+00 1.39E+05 -5.46E+05 -8.46E+02 3.75E+00 2.50E-01 3 4.36877E-01  
 24 5.595E+05 4.68E-03 9.49E-01 1.133E+09 8.900E+00 -2.08E+03 -2.29E+04 0.0 4.00E+00 2.50E-01 1 4.3395E-10 3 4.36877E-01  
 25 1.013E+06 -3.27E-10 -5.25E-01 2.044E+09 1.225E-03 0.0 0.0 4.23E+00 2.50E-01 1 6.01317E-05  
 26 1.013E+06 -3.23E-03 -9.36E-12 2.044E+09 1.225E-03 0.0 0.0 4.50E+00 2.50E-01 1 6.01318E-05  
 27 1.013E+06 -3.49E-12 -7.06E-03 2.044E+09 1.225E-03 0.0 0.0 4.75E+00 2.50E-01 1 6.01319E-05  
 28 1.013E+06 0.0 0.0 2.044E+09 1.225E-03 0.0 0.0 5.00E+00 2.50E-01 1 6.01319E-05

ENERGY MAP

1 2 ALTITUDE  
 12345678901234567890

METERS  
 1 -1.750E-02  
 2 -1.500E-02  
 3 B -1.250E-02  
 4 B B T T T T -1.000E-02  
 5 B B T B B B B -7.500E-03  
 6 TTTTTT TTTTTTTTTT -5.000E-03  
 7 BBBBBB BB BB -2.500E-03  
 8 B B T B T B 2.205E-08  
 9 B BB BB 2.500E-03  
 10 TTTT T 5.000E-03  
 11 B 7.500E-03  
 12 TTTTTTTTTTTTTT 1.000E-02  
 13 B 1.250E-02  
 14 1.500E-02  
 15 1.750E-02  
 16 B B 2.000E-02  
 17 T B 2.250E-02  
 18 T T 2.500E-02  
 19 B 2.750E-02  
 20 3.000E-02  
 21 3.250E-02  
 22 B 3.500E-02  
 23 T B B B 3.750E-02  
 24 T B 4.000E-02  
 25 B B 4.250E-02  
 26 T T 4.500E-02  
 27 B T 4.750E-02  
 28 BB BBBBBBBBBBBB 5.000E-02  
 12345678901234567890 2

MATERIAL MAP

1	2	ALTITUDE
12345678901234567890		
1	+++++	METERS
2	+++++	-1.750E-02
3	+++++	-1.500E-02
4	+++++	-1.250E-02
5	+++++	-1.000E-02
6	+++++	-7.500E-03
7	+++++	-5.000E-03
8	XXXXXXXXXXXXXXXXXX	
9	XXXXXXXXXXXXXXXXXX	-2.500E-03
10	XXXXXXXXXXXXXXXXXX	2.205E-08
11	XXXXX	2.500E-03
12	0000	XX
13	0000	5.000E-03
14	0	XXXXXXXXXXXXXXXXXX
15	0	XXXXXXXXXXXXXXXXXX
16	0	XXXXXXXXXXXXXXXXXX
17	0	XXXXXXXXXXXXXXXXXX
18	0	XXXXXXXXXXXXXXXXXX
19	0	XXXXXXXXXXXXXXXXXX
20	0	XXXXXXXXXXXXXXXXXX
21	0	XXXXXXXXXXXXXXXXXX
22	0	XXXXXXXXXXXXXXXXXX
23	0	XXXXXXXXXXXXXXXXXX
24	0000	XXXXXXXXXXXXXXXXXX
25	+++++	4.000E-02
26	+++++	4.250E-02
27	+++++	4.500E-02
28	+++++	4.750E-02
12345678901234567890		5.000E-02

1  
 2  
 ●CYCLE 13 TIME 1.1417E-06 DT 1.445E-07 IDT 1 JDT 8  
 CYCLE 14 TIME 1.2862E-06 DT 1.435E-07 IDT 5 JDT 9  
 CYCLE 15 TIME 1.4297E-06 DT 1.413E-07 IDT 5 JDT 9  
 CYCLE 16 TIME 1.5710E-06 DT 1.413E-07 IDT 5 JDT 9  
 CYCLE 17 TIME 1.7122E-06 DT 1.419E-07 IDT 6 JDT 9  
 CYCLE 18 TIME 1.8541E-06 DT 8.024E-08 IDT 6 JDT 9  
 CYCLE 19 TIME 1.9343E-06 DT 6.565E-08 IDT 6 JDT 10  
 CYCLE 20 TIME 2.0000E-06 DT 1.421E-07 IDT 6 JDT 10

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PROB 1.2000 CYCLE 20 TIME 1.999999E-06 DT 1.420903E-07

INTERNAL ENERGY KINETIC ENERGY TOTAL ENERGY ETH REL ERROR E+01  
 1.30154391 E+12 2.46099781 E+13 2.59115209 E+13 2.59102626 E+13 6.28096466 E+01

TOTAL MASS MTH RELMERR E+00  
 6.69469727 E+02 6.69467285 E+02 2.91743088 E+00

MAX VEL = 3.34810E+05 AT I 6 J 11

52

MAX CS = 5.88557E+05 AT I 1 J 7

MAX TEMP = 4.48757E+03 AT I 5 J 11

MAX P = 5.43274E+11 AT I 1 J 12

CELL SETTING DT, I 6 J 10

TOTAL TIME FOR THIS PROBLEM 0 HOURS, 0 MIN, 33 SEC

TIME FOR THIS RUN 0 HOURS, 0 MIN, 33 SEC

WHIZ FACTOR TOTAL PROBLEM = 2.99E-03 SEC/CELL/CYCLE

WHIZ FACTOR SINCE LAST DUMP = 3.04E-03 SEC/CELL/CYCLE

J	P	U	V	DX(I)=	RHO	SRR	SZZ	SRZ	Y	DY	H	XM	XN
1	1	0.250	0.250	0.250									
1	1	0.013E+06	0.0	3.00E+05	2.044E+09	1.225E-03	0.0	0.0	-1.75E+00	2.50E-01	1	6.01319E-05	
2	1	0.013E+06	-8.53E-03	3.00E+05	2.044E+09	1.225E-03	0.0	0.0	-1.50E+00	2.50E-01	1	6.01325E-05	
3	1	0.014E+06	6.13E-02	3.00E+05	2.045E+09	1.225E-03	0.0	0.0	-1.25E+00	2.50E-01	1	6.01373E-05	
4	1	0.020E+06	1.66E-01	3.00E+05	2.048E+09	1.231E-03	0.0	0.0	-1.00E+00	2.50E-01	1	6.04079E-05	
5	1	0.338E+06	-5.31E-01	2.98E+05	2.203E+09	1.504E-03	0.0	0.0	-7.50E-01	2.50E-01	1	7.38463E-05	

6	J.658E+06	5.12E+02	1.71E+03	7.488E+09	1.626E+00	1.24E+09	-2.51E+09	0.0	-5.00E-01	2.50E-01	1	7.00830E-05	2	7.97600E-02
7	2.473E+11	3.41E+03	1.04E+05	7.237E+09	8.528E+00	6.81E+08	-2.66E+09	6.05E+08	-2.50E-01	2.50E-01	2	4.18616E-01		
8	2.135E+11	7.74E+03	1.32E+05	7.452E+09	8.385E+00	8.44E+08	-2.48E+09	1.10E+09	2.21E-06	2.50E-01	2	4.11611E-01		
9	1.366E+11	1.18E+04	1.34E+05	5.607E+09	8.199E+00	1.78E+09	-2.84E+09	3.63E+08	2.50E-01	2.50E-01	2	4.02473E-01		
10	2.631E+11	1.27E+04	1.27E+05	9.278E+09	9.344E+00	0.0	0.0	0.0	5.00E-01	2.50E-01	2	6.13923E-02	3	3.98244E-01
11	4.678E+11	9.86E+03	1.36E+05	1.017E+10	1.044E+01	5.45E+07	-1.26E+08	-1.63E+07	7.50E-01	2.50E-01	3	5.12335E-01		
12	5.414E+11	5.02E+03	1.25E+05	9.071E+09	1.086E+01	1.28E+08	-2.86E+08	-2.61E+07	1.00E+00	2.50E-01	3	5.33292E-01		
13	3.405E+11	1.57E+03	7.30E+04	5.077E+09	1.034E+01	2.41E+08	-4.85E+08	-2.34E+07	1.25E+00	2.50E-01	3	5.07450E-01		
14	1.048E+11	3.15E+02	2.52E+04	1.826E+09	9.448E+00	2.83E+08	-5.20E+08	-1.28E+07	1.50E+00	2.50E-01	3	4.63796E-01		
15	2.285E+10	8.49E+01	5.40E+03	1.175E+09	9.036E+00	3.00E+08	-5.31E+08	-6.21E+06	1.75E+00	2.50E-01	3	4.43568E-01		
16	3.974E+09	3.69E+01	1.04E+03	1.135E+09	8.925E+00	3.31E+08	-5.27E+08	-9.39E+06	2.00E+00	2.50E-01	3	4.38083E-01		
17	7.277E+08	5.19E+00	1.78E+02	1.133E+09	8.905E+00	1.02E+08	-1.67E+08	-4.33E+06	2.25E+00	2.50E-01	3	4.37100E-01		
18	1.118E+08	7.33E-01	3.02E+01	1.133E+09	8.901E+00	1.46E+07	-2.32E+07	-6.43E+05	2.50E+00	2.50E-01	3	4.36912E-01		
19	1.778E+07	-1.19E-01	4.00E+00	1.133E+09	8.900E+00	1.64E+06	-3.28E+06	-8.78E+04	2.75E+00	2.50E-01	3	4.36883E-01		
20	2.174E+06	-1.89E-01	5.06E-01	1.133E+09	8.900E+00	-2.71E+05	-8.21E+04	-2.83E+04	3.00E+00	2.50E-01	3	4.36878E-01		
21	4.201E+05	-2.13E-01	-2.27E-01	1.133E+09	8.900E+00	-4.24E+05	-1.65E+04	-2.14E+04	3.25E+00	2.50E-01	3	4.36878E-01		
22	1.005E+06	-7.59E-02	-6.04E-01	1.133E+09	8.900E+00	-3.16E+05	-4.45E+05	2.08E+05	3.50E+00	2.50E-01	3	4.36878E-01		
23	1.005E+06	-7.59E-02	-6.04E-01	1.133E+09	8.900E+00	1.51E+05	-1.38E+06	1.33E+05	3.75E+00	2.50E-01	3	4.36878E-01		
24	8.372E+05	1.81E-02	-1.11E+00	1.133E+09	8.900E+00	-2.08E+03	-2.29E+04	0.0	4.00E+00	2.50E-01	1	4.11852E-10	3	4.36874E-01
25	1.013E+06	-9.60E-03	-6.67E-01	2.044E+09	1.225E-03	0.0	0.0	0.0	4.25E+00	2.50E-01	1	6.01314E-05		
26	1.013E+06	-1.66E-02	-1.34E-02	2.044E+09	1.225E-03	0.0	0.0	0.0	4.50E+00	2.50E-01	1	6.01316E-05		
27	1.013E+06	-9.04E-03	-2.91E-02	2.044E+09	1.225E-03	0.0	0.0	0.0	4.75E+00	2.50E-01	1	6.01319E-05		
28	1.013E+06	0.0	0.0	2.044E+09	1.225E-03	0.0	0.0	0.0	5.00E+00	2.50E-01	1	6.01319E-05		

ENERGY MAP

12345678901234567890	1	2	ALTIMUDE
1	TTT	TTTTTTT	METERS
2	B		-1.750E-02
3	B		-1.500E-02
4	B		-1.250E-02
5	BBB		-1.000E-02
6	TT	TTTTTTT	-7.500E-03
7	TT	TTTTTTT	-5.000E-03
8	BB	BBBBB	-2.500E-03
9	TTT	TTT	2.205E-08
10	BBB	TT	2.500E-03
11	TT	TT	5.000E-03
12	TT	TT	7.500E-03
13	TTTTTTTTTTTTTT		1.000E-02
14			1.250E-02
15			1.500E-02
16	B		2.000E-02
17	BBBBBBBBBBBBBB		2.250E-02
18			2.500E-02
19	BBB		2.750E-02
20			3.000E-02
21	TT	TT	3.250E-02

22 1BR 3.500E-02  
 23 BB 3.750E-02  
 24 BT TB 4.000E-02  
 25 BB B 4.250E-02  
 26 T T 4.500E-02  
 27 B T 4.750E-02  
 28 BB 5.000E-02

12345678901234567890  
 1 2

MATERIAL MAP

	1	2	ALTIUDE
	12345678901234567890		
1	+++++		METERS -1.750E-02
2	+++++		-1.500E-02
3	+++++		-1.250E-02
4	+++++		-1.000E-02
5	+++++		-7.500E-03
6	+++++		-5.000E-03
7	XXXX		-2.500E-03
8	XXXXXXXXXXXXXXXXXX		2.205E-08
9	XXXXXXXXXXXXXXXXXX		2.500E-03
10	XXXXXXXXXXXXXXXXXX		5.000E-03
11	0000		7.500E-03
12	0000		1.000E-02
13	0000		1.250E-02
14	0000		1.500E-02
15	0000		1.750E-02
16	0000		2.000E-02
17	0000		2.250E-02
18	0000		2.500E-02
19	0000		2.750E-02
20	0000		3.000E-02

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21 0000000000000000000000000000000000 3.250E-02
22 0000000000000000000000000000000000 3.500E-02
23 0000000000000000000000000000000000 3.750E-02
24 0000000000000000000000000000000000 4.000E-02
25 0000000000000000000000000000000000 4.250E-02
26 0000000000000000000000000000000000 4.500E-02
27 0000000000000000000000000000000000 4.750E-02
28 0000000000000000000000000000000000 5.000E-02
12345678901234567890

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1 2
CYCLE 21 TIME 2.1421E-06 DT 1.409E-07 IDT 6 JDT 10
CYCLE 22 TIME 2.2830E-06 DT 1.416E-07 IDT 6 JDT 10
CYCLE 23 TIME 2.4246E-06 DT 1.443E-07 IDT 6 JDT 10
CYCLE 24 TIME 2.5689E-06 DT 1.482E-07 IDT 7 JDT 10
IM EDS, HIT NTRY LIMIT
CYCLE 25 TIME 2.7172E-06 DT 1.556E-07 IDT 7 JDT 10
IM EDS, HIT NTRY LIMIT
IM EDS, HIT NTRY LIMIT
IM EDS, HIT NTRY LIMIT
IM EDS, J = 10 FORMING DPDTAU
IM EDS, HIT NTRY LIMIT
CYCLE 26 TIME 2.8727E-06 DT 1.273E-07 IDT 7 JDT 11
CYCLE 27 TIME 3.0000E-06 DT 1.484E-07 IDT 7 JDT 11
IM EDS, HIT NTRY LIMIT
IM EDS, HIT NTRY LIMIT
IM EDS, J = 10 FORMING DPDTAU

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PROB 1.2000 CYCLE 27 TIME 2.999998E-06 DT 1.483527E-07

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INTERNAL ENERGY	E+12	KINETIC ENERGY	E+13	TOTAL ENERGY	E+13	ETH	REL ERROR	E+01
1.37784564	2.45365610	2.59144066	2.59114538	6.53926239	6.53926239	RELERR	2.55264834	E+00
		TOTAL MASS		6.6949826		MTH	6.69492876	E+02

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MAX VEL = 3.40383E+05 AT I 6 J 13
MAX CS = 5.14824E+05 AT I 1 J 14
MAX TEMP= 7.47932E+03 AT I 5 J 11
MAX P = 3.06779E+11 AT I 1 J 14

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CELL SETTING DT, I 7 J 11

TOTAL TIME FOR THIS PROBLEM 0 HOURS, 0 MIN, 45 SEC

TIME FOR THIS RUN 0 HOURS, 0 MIN, 45 SEC

UNIZ FACTOR TOTAL PROBLEM = 3.03E-03 SEC/CELL/CYCLE

UNIZ FACTOR SINCE LAST DUMP = 3.19E-03 SEC/CELL/CYCLE

J	P	U	V	XI	RHO	SRR	SZZ	SRZ	Y	BY	M	XH	M	XH
1	1.013E+06	0.0	3.00E+05	2.044E+09	1.225E-03	0.0	0.0	0.0	-1.75E+00	2.50E-01	1	6.01319E-05		
2	1.013E+06	-2.05E-02	3.00E+05	2.044E+09	1.225E-03	0.0	0.0	0.0	-1.50E+00	2.50E-01	1	6.01327E-05		
3	1.014E+06	-2.05E-02	3.00E+05	2.045E+09	1.226E-03	0.0	0.0	0.0	-1.25E+00	2.50E-01	1	6.01606E-05		
4	1.019E+06	6.88E-02	3.00E+05	2.048E+09	1.230E-03	0.0	0.0	0.0	-1.00E+00	2.50E-01	1	6.03881E-05		
5	1.694E+06	8.82E+00	2.97E+05	2.478E+09	1.701E-03	0.0	0.0	0.0	-7.50E-01	2.50E-01	1	8.35190E-05		
6	6.991E+06	3.81E+02	1.88E+05	8.097E+09	2.309E-03	0.0	0.0	0.0	-5.00E-01	2.50E-01	1	1.13319E-04		
7	4.633E+06	2.54E+03	9.98E+04	6.852E+09	5.848E+00	-2.23E+09	-2.70E+08	0.0	-2.50E-01	2.50E-01	1	1.84442E-05	2	2.87025E-01
8	-1.100E+11	6.64E+03	1.29E+05	7.091E+09	6.984E+00	1.09E+09	8.88E+08	1.32E+09	2.21E-06	2.50E-01	2	3.42839E-01		
9	-9.691E+10	7.53E+03	1.21E+05	6.268E+09	7.172E+00	1.69E+09	-2.79E+09	3.06E+08	2.50E-01	2.50E-01	2	3.52667E-01		
IM EOS, HIT NTRY LIMIT														
IM EOS, HIT WTRY LIMIT														
IM EOS, J = 28 FORMING DPDTAU														
10	1.082E+06	1.20E+04	1.02E+05	6.510E+09	7.335E+00	0.0	0.0	0.0	5.00E-01	2.50E-01	3	1.53310E-01	2	2.06748E-01
11	0.0	1.39E+04	8.73E+04	6.909E+09	7.958E+00	0.0	0.0	0.0	7.50E-01	2.50E-01	3	3.90515E-01		
12	1.507E+10	1.24E+04	8.16E+04	5.259E+09	8.566E+00	7.60E+07	-1.32E+08	-9.74E+06	1.00E+00	2.50E-01	3	4.20503E-01		
13	1.604E+11	9.54E+03	8.80E+04	4.758E+09	9.449E+00	1.93E+08	4.27E+08	-5.69E+07	1.25E+00	2.50E-01	3	4.63834E-01		
14	2.769E+11	5.73E+03	8.70E+04	4.896E+09	1.006E+01	2.00E+08	-4.81E+08	-4.86E+07	1.50E+00	2.50E-01	3	4.93990E-01		
15	2.378E+11	2.38E+03	6.13E+04	3.392E+09	1.000E+01	2.36E+08	-5.00E+08	-3.37E+07	1.75E+00	2.50E-01	3	4.90890E-01		
16	1.082E+11	6.42E+02	2.75E+04	1.763E+09	9.477E+00	2.84E+08	-5.21E+08	-2.20E+07	2.00E+00	2.50E-01	3	4.65218E-01		
17	3.282E+10	1.67E+02	8.13E+03	1.203E+09	9.094E+00	3.12E+08	-5.29E+08	-1.26E+07	2.25E+00	2.50E-01	3	4.46372E-01		
18	7.823E+09	6.82E+01	1.97E+03	1.137E+09	8.948E+00	3.32E+08	-5.27E+08	-1.15E+07	2.50E+00	2.50E-01	3	4.39238E-01		
19	1.773E+09	1.78E+01	4.44E+02	1.134E+09	8.911E+00	2.67E+08	-4.23E+08	-1.29E+07	2.75E+00	2.50E-01	3	4.37419E-01		
20	3.833E+08	3.58E+00	9.74E+01	1.133E+09	8.902E+00	5.34E+07	-8.34E+07	-2.35E+06	3.00E+00	2.50E-01	3	4.36995E-01		
21	8.437E+07	1.51E-01	1.81E+01	1.133E+09	8.901E+00	9.40E+06	-1.63E+07	-3.18E+05	3.25E+00	2.50E-01	3	4.36903E-01		
22	1.739E+07	-3.06E-01	2.65E+00	1.133E+09	8.900E+00	6.66E+05	-2.81E+06	-6.43E+04	3.50E+00	2.50E-01	3	4.36883E-01		
23	8.809E+06	-7.75E-01	4.31E-01	1.133E+09	8.900E+00	-4.14E+05	-1.41E+06	-4.55E+04	3.75E+00	2.50E-01	3	4.36880E-01		
24	1.009E+06	8.42E-03	-3.07E-01	1.133E+09	8.900E+00	-2.08E+03	-2.29E+04	0.0	4.00E+00	2.50E-01	1	5.96303E-10	3	4.36873E-01
25	1.013E+06	-1.96E-02	-7.19E-01	2.044E+09	1.225E-03	0.0	0.0	0.0	4.25E+00	2.50E-01	1	6.01311E-05		
26	1.013E+06	-3.62E-02	-3.89E-02	2.044E+09	1.225E-03	0.0	0.0	0.0	4.50E+00	2.50E-01	1	6.01315E-05		
27	1.013E+06	-2.09E-02	-6.41E-02	2.044E+09	1.225E-03	0.0	0.0	0.0	4.75E+00	2.50E-01	1	6.01319E-05		
28	1.013E+06	0.0	0.0	2.044E+09	1.225E-03	0.0	0.0	0.0	5.00E+00	2.50E-01	1	6.01319E-05		

ENERGY MAP

1 2

ALTITUDE

12345678901234567890

	METERS
1	-1.750E-02
2	-1.500E-02
3	B
4	B
5	BBB
6	T
7	TTTT
8	TTTTTTTTTT TT TTTT
9	TTTTTTTTTTTTTTTTTTTT
10	BB
11	T TT
12	TTT TT
13	T BBBB
14	TTTTTTTTTTTTTT
15	T
16	2.000E-02
17	2.250E-02
18	B
19	2.750E-02
20	B
21	3.000E-02
22	BBB
23	T
24	B TTTBB
25	BBBB T
26	T
27	B TT
28	BB BBBBTTTTTTTTTT

MATERIAL MAP

	ALTITUDE
1	+
2	+
3	+
4	+
5	+
6	+
7	+
8	XXXX
9	XXXX

```

10 ***** 3.000E-03
   XXX00
   000
11 0000***** 7.500E-03
   XX
   0
12 0000***** 1.000E-02
   0XXXXXXXXXXXXXX
   0
13 0000***** 1.250E-02
   0X
   0
14 0000***** 1.500E-02
   0
15 0000***** 1.750E-02
   0
16 0000***** 2.000E-02
   0
17 0000***** 2.250E-02
   0
18 0000***** 2.500E-02
   0
19 0000***** 2.750E-02
   0
20 0000***** 3.000E-02
   0
21 0000***** 3.250E-02
   0
22 0000***** 3.500E-02
   0
23 0000***** 3.750E-02
   0
24 ***** 4.000E-02
   0000
25 ***** 4.250E-02
26 ***** 4.500E-02
27 ***** 4.750E-02
28 ***** 5.000E-02
   12345678901234567890

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1
2
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
IN EOS, J = 10 FORMING DPDTAU
CYCLE 28 TIME 3.1484E-06 DT 1.493E-07 IDT 7 JDT 11
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
IN EOS, J = 10 FORMING DPDTAU
CYCLE 29 TIME 3.2976E-06 DT 1.519E-07 IDT 7 JDT 11
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT

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PROB 1.2000 CYCLE 118 TIME 1.599999E-05 DT 1.632141E-07

INTERNAL ENERGY	KINETIC ENERGY	TOTAL ENERGY	ETH	REL ERROR
1.90022314 E+12	2.20529458 E+13	2.39531668 E+13	2.39732324 E+13	-2.41585907 E+02

TOTAL MASS	MTH	REL MERR
6.28324463 E+02	6.28282471 E+02	6.60553837 E+00

MAX VEL = 3.01340E+05 AT I 12 J 27

50 MAX CS = 4.85176E+05 AT I 9 J 23

MAX TEMP = 3.79498E+03 AT I 20 J 27

MAX P = 6.11026E+10 AT I 1 J 21

CELL SETTING DT, I 10 J 27

TOTAL TIME FOR THIS PROBLEM 0 HOURS, 4 MIN, 7 SEC

TIME FOR THIS RUN 0 HOURS, 4 MIN, 7 SEC

OWNIZ FACIUK TUIAL PROBLEM = J./4E-0J SEC/CELL/CYCLE  
 OWNIZ FACTOR SINCE LAST DUMP = 4.23E-03 SEC/CELL/CYCLE

```

OI=  1  X(I)= 0.250  DX(I)= 0.250
O J  P  U  V  XI  RMD  SRR  SZZ  SRZ  Y  DY  M  XM  M  XM  M  XM
   1  1.013E+06  0.0  3.00E+05  2.044E+09  1.225E-03  0.0  0.0  0.0  -1.75E+00  2.50E-01  1  6.01319E-05
   2  1.013E+06  -3.09E-02  3.00E+05  2.044E+09  1.225E-03  0.0  0.0  0.0  -1.50E+00  2.50E-01  1  6.01322E-05
   3  1.013E+06  -4.35E-02  3.00E+05  2.045E+09  1.225E-03  0.0  0.0  0.0  -1.25E+00  2.50E-01  1  6.01325E-05
   4  1.014E+06  -1.71E-01  3.00E+05  2.045E+09  1.225E-03  0.0  0.0  0.0  -1.00E+00  2.50E-01  1  6.01335E-05
   5  1.014E+06  -3.63E-01  3.00E+05  2.045E+09  1.225E-03  0.0  0.0  0.0  -7.50E-01  2.50E-01  1  6.01417E-05
   6  1.015E+06  -7.92E-01  3.00E+05  2.046E+09  1.226E-03  0.0  0.0  0.0  -5.00E-01  2.50E-01  1  6.01926E-05
   7  1.023E+06  -3.82E+00  3.00E+05  2.052E+09  1.232E-03  0.0  0.0  0.0  -2.50E-01  2.50E-01  1  6.04783E-05
   8  1.063E+06  -2.92E+01  2.99E+05  2.087E+09  1.260E-03  0.0  0.0  0.0  2.1E-06  2.50E-01  1  6.18319E-05
   9  1.291E+06  -2.15E+02  2.94E+05  2.348E+09  1.365E-03  0.0  0.0  0.0  2.50E-01  2.50E-01  1  6.69822E-05
  10  2.499E+06  -9.61E+02  2.77E+05  3.780E+09  1.673E-03  0.0  0.0  0.0  5.00E-01  2.50E-01  1  8.21043E-05
  11  6.944E+06  -1.71E+03  2.39E+05  7.701E+09  2.399E-03  0.0  0.0  0.0  7.50E-01  2.50E-01  1  1.17741E-04
  12  1.684E+07  2.12E+02  1.91E+05  1.229E+10  3.842E-03  0.0  0.0  0.0  1.00E+00  2.50E-01  1  1.88586E-04
  13  1.919E+07  3.01E+03  1.36E+05  1.382E+10  3.953E-03  0.0  0.0  0.0  1.25E+00  2.50E-01  1  1.94034E-04
  14  1.759E+07  3.57E+03  1.16E+05  8.468E+09  5.576E+00  5.79E+08  -1.74E+09  0.0  1.50E+00  2.50E-01  1  4.57187E-05  2  2.73649E-01
  15  6.958E+04  3.26E+03  1.09E+05  8.824E+09  5.784E+00  4.42E+08  -1.53E+09  0.0  1.75E+00  2.50E-01  1  7.28162E-07  2  2.83934E-01
  16  1.902E+05  -6.35E+03  5.40E+04  7.998E+09  7.713E+00  0.0  0.0  0.0  2.00E+00  2.50E-01  3  3.53642E-01  2  2.49901E-02
  17  1.588E+10  -9.22E+01  4.50E+04  5.700E+09  8.529E+00  2.05E+07  -3.94E+07  2.11E+07  2.25E+00  2.50E-01  3  4.18690E-01
  18  3.316E+10  9.84E+02  3.56E+04  3.514E+09  8.845E+00  2.34E+08  -4.82E+08  2.50E+07  2.50E+00  2.50E-01  3  4.34160E-01
  
```

19	3.845E+10	7.23E+02	2.50E+04	2.228E+09	9.016E+00	2.57E+08	-5.10E+08	-1.60E+06	2.75E+00	2.50E-01	3	4.42551E-01
20	4.913E+10	1.11E+03	1.31E+04	1.684E+09	9.139E+00	2.55E+08	-5.22E+08	3.16E+05	3.00E+00	2.50E-01	3	4.48614E-01
21	6.214E+10	5.68E+02	5.50E+03	1.548E+09	9.231E+00	2.18E+08	-5.22E+08	3.00E+07	3.25E+00	2.50E-01	3	4.53135E-01
22	4.598E+10	1.32E+03	2.87E+03	1.427E+09	9.148E+00	2.08E+08	-4.87E+08	1.72E+08	3.50E+00	2.50E-01	3	4.49068E-01
23	5.041E+10	8.80E+02	9.51E+03	1.460E+09	9.171E+00	-4.67E+08	4.33E+08	-6.63E+07	3.75E+00	2.50E-01	3	4.50191E-01
24	2.366E+10	2.56E+02	1.63E+04	1.341E+09	9.023E+00	-1.55E+08	5.13E+08	4.58E+07	4.00E+00	2.50E-01	3	4.42909E-01
25	8.967E+05	7.15E+02	1.52E+04	1.341E+09	1.120E+00	-6.93E+07	3.57E+08	0.0	4.25E+00	2.50E-01	1	4.14071E-05
26	1.317E+06	-1.28E+02	4.65E+03	2.255E+09	1.448E-03	0.0	0.0	0.0	4.50E+00	2.50E-01	1	7.10745E-05
27	1.078E+06	-4.50E+01	2.20E+03	2.084E+09	1.279E-03	0.0	0.0	0.0	4.75E+00	2.50E-01	1	6.27861E-05
28	1.013E+06	0.0	0.0	2.044E+09	1.225E-03	0.0	0.0	0.0	5.00E+00	2.50E-01	1	6.01319E-05

ENERGY MAP

0

19

+		1	2
		ALTITUDE	

12345678901234567890

METERS

1	-1.750E-02
2	-1.500E-02
3	-1.250E-02
4	-1.000E-02
5	-7.500E-03
6	-5.000E-03
7	-2.500E-03
8	2.205E-08
.	.....

y		4.500E-03
10		5.000E-03
11		7.500E-03
12		1.000E-02
13		1.250E-02
14	TTTTT	1.500E-02
15	BBBBBT	1.750E-02
16	TTTTBT	2.000E-02
17	T B	2.250E-02
18	T	2.500E-02
19	BT	2.750E-02
20	TB	3.000E-02
21	B T	3.250E-02
22	TBT	3.500E-02
23	T T TT T T	3.750E-02
24	T BBB TT T TT	4.000E-02
25	B T BBBB	4.250E-02
26	B B T B	4.500E-02
27	TTTT B TTT	4.750E-02
28	TTT BBBB	5.000E-02

12345678901234567890

1 2

0

MATERIAL MAP

```

1/ UUUU+++++ 2.250E-02
+ 0XXX
+ 00
18 0000+++++ 2.500E-02
+ 00XX
+ 0
19 0000+++++ 2.750E-02
+ 00XX
+ 00
20 0000+++X+++++ 3.000E-02
+ 0 00X
21 0000+++++ 3.250E-02
+ 0 0XXX
+ 00
22 0000+++++ 3.500E-02
+ 0 00XX
+ 0
23 0000+++X+++++ 3.750E-02
+ 0 X XXX
+ 0
24 0000+++X+++++ 4.000E-02
+ 0 X XXXXXX
25 ++++++XXXXXXXXXX 4.250E-02
+ 0000 X
26 ++++++XXXXXXXXXX 4.500E-02
+ X

```

```

+ ALTITUDE
12345678901234567890
+ METERS
1 ++++++ -1.750E-02
2 ++++++ -1.500E-02
3 ++++++ -1.250E-02
4 ++++++ -1.000E-02
5 ++++++ -7.500E-03
6 ++++++ -5.000E-03
7 ++++++ -2.500E-03
8 ++++++ 2.203E-08
9 ++++++ 2.500E-03
10 ++++++ 5.000E-03
11 ++++++ 7.500E-03
12 ++++++ 1.000E-02
13 ++++++ 1.250E-02
14 ++++++ 1.500E-02
+ XXXXX
+ 0
15 ++++++ 1.750E-02
+ XXXXX
+ 00 0
16 +0+++++ 2.000E-02
+ X XXXXX
+ 0 0000

```

27 ++++++XXXXXXXXXX 4.750E-02

+ X

28 ++++++XXXXXXXXXX 5.000E-02

12345678901234567890

1 2

■!  
EDIT

AFWL-TR-78-134

PROBLEM 1.2 CYBER 176 HULL RUN

BATCH CREATED 08/19/78 TODAY IS 08/21/78  
 + AUTOMATIC BULLETIN TO BATCH JOBS

DATE	SYSBULL	CONTENTS
8/18/78	---	AVAILABILITY STATUS OF ALL SYSTEMS
8/ 9/78	---	CM AND ECS FIELD MANAGEMENT
7/31/78	---	INFORMATION FOR USERS OF NASTRAN
7/18/78	---	WHO TO CONTACT ABOUT COMPUTER PROBLEMS
7/14/78	---	FEATURES ADDED TO CDC NOS/BE
7/14/78	---	CM AND ECS FIELD LENGTH MANAGEMENT
6/23/78	---	STRUCTURED PROGRAMMING PRE-PROCESSOR FOR FTN
6/20/78	---	AFWL COMPUTER CENTER NEWSLETTER
5/14/78	---	AFWL COMMON MATH LIBRARIES
5/15/78	---	CLASSES FOR USERS OF AFWL COMPUTER CENTER
5/ 8/78	---	HOW TO OBTAIN AN AFWL/KAFB COMPUTER ACCOUNT
5/ 4/78	---	SYSTEMS CONFIGURATION
5/ 4/78	---	AFWL CUSTOMER SERVICE (EXPEDITOR)
5/ 1/78	---	JOB CARD PRIORITY CODES
4/24/78	---	AFWL COMPUTER BILLING INFORMATION
4/21/78	---	COMPUTER DIALUP PHONE NUMBERS
4/19/78	---	BASIC INTRODUCTION TO KAFB COMPUTER CENTER
4/18/78	---	STANDARD PROCEDURES FOR ERROR DUMPS
4/14/78	---	MICROFICHE VISUAL TITLE GENERATION
4/11/78	---	STANDARD PROCEDURES FOR REQUESTING TAPES
4/ 5/78	---	DEVICE INDEPENDENT PLOT SYSTEM -METAPLOT-
3/31/78	---	ACCOUNT CARD FORMAT
3/30/78	---	LOCAL RULES FOR CATALOGING FILES
3/30/78	---	PERMANENT FILE BACKUP PROCEDURES
3/30/78	---	PERM FILE ACCOUNTING AND BACKUP SYSTEMS
3/ 9/78	---	AFWL LABELLED TAPE PROCESSING
3/ 9/78	---	200 SIMULATION VIA FR80
3/ 9/78	---	FTN COMPILER CHANGES AND RELEASES
3/ 8/78	---	INFORMATION ABOUT AFSNET
3/ 7/78	---	AUTOMATIC DISPOSITION OF META PLOT FILES
2/10/78	---	NEW INTERCOM PHONE SWITCH
1/17/78	---	DIFFERENCES IN NOS/BE FROM 6600 TO CYBER 176
1/ 4/78	---	DISSEPLA TECH. INFO. PROGRAMMING SUGGESTIONS
10/ 3/77	---	A NEW USER ORIENTED PLOTTING PACKAGE
	*****	SYSTEM WARNINGS
8/16/78	**	BUDGETARY CONSIDERATION FOR FY 79: 176 CHARGES WILL GO UP BY ABOUT 15%.
8/16/78	**	REVIEW, SIGN AND RETURN TAPE INVENTORY LISTINGS BEFORE 21 AUGUST 1978.
8/16/78	**	++++ FLASH MESSAGE +++++ CYBER RECORD MANAGER ANALYSIS CLASS HAS BEEN
8/16/78	**	++++ CHANGED TO AUG 28-30, ALL CLASS MEMBERS TAKE NOTE +++++ FLASH +--
8/16/78	**	** NOTICE TO CONTRACTORS ** CONTRACTOR WORK AREA IN ROOM 110 OF BLDG
8/16/78	**	** 412 WILL NOT BE AVAILABLE AFTER 28 AUG 78. THIS WILL BE THE NEW
8/16/78	**	** PCAM AREA. PLEASE REMOVE ALL LISTINGS OR CARD DECKS STORED THERE.

NOT ENOUGH RESOURCES. I COULD ONLY PROVIDE 0  
 + TAPE4 BEHIND FOR START CYCLE

+ CU PENETRATOR  
 +  
 + PROB 1.2000 CYCLE 0 TIME 0.  
 + BACKSPACING 2 RECORDS  
 + TAPE POSITIONED  
 + DISK VERSION  
 +  
 +  
 +  
 +  
 +  
 +  
 +

\*\*\*\*\* OPTIONS SELECTED FOR THIS RUN \*\*\*\*\*

DIFFERENCE METHOD -

SHELL II

AND MATERIAL STRENGTH

WITH 6 FLUXED HISTORIES/CELL

EQUATION OF STATE -

SOLIDS - NO STRENGTH

ATMOSPHERE -

CONSTANT  
 VOLUME AND ENERGY FLUXING  
 REZONE -

NO REZONE  
 CODE -

HULL  
 DIMENSIONS -

2-D

GEOMETRY -

CYLINDRICAL  
 NO RADIATION ROUTINES  
 PARTICLES -

NO CODE

THE FOLLOWING OPTIONS WERE SPECIFIED WHEN EXECUTIVE PROCESSING BEGAN

INST	=	1
PRG	=	0
PLANK	=	0
PULL	=	0
KEEL	=	0
LIBRARY	=	0
ATMOS	=	5
BURN	=	0
CODE	=	1
DIMEN	=	2
EDS	=	6
GEOM	=	2
HOT	=	0
IMAX	=	20
ISLAND	=	0
JMAX	=	28
KMAX	=	28
LBUFA	=	1729
LBUFB	=	122
MAGFLD	=	0
METHOD	=	2
NH	=	20
NHIC	=	1600
NM	=	3
NOP	=	0
NHIST	=	6
NPLPB	=	2
NPP	=	2
NROUMPB	=	4
NSTN	=	0
NVARST	=	15
RAD	=	0
REZONE	=	0
STRESS	=	1
SURF	=	0
SW	=	6
SWX	=	0
VISC	=	0
LAMB	=	0
BBOUND	=	0
LBOUND	=	0
KEEL	=	0
PULL	=	0
VOIDS	=	0
FLUXER	=	3
DEPOS	=	0
FAIL	=	0
STRAIN	=	1
WORK	=	0
MAT	=	3
AIR	=	1
CU	=	3
FE	=	2
+	=	

THE FOLLOWING OPTIONS WERE DEFINED BY PLANK.

ATMOS	=	5
BURN	=	0
CODE	=	1
DIMEN	=	2
EDS	=	6
GEOM	=	2
HOT	=	0
IMAX	=	20
ISLAND	=	0
JMAX	=	28
KMAX	=	28
LBUFA	=	1729
LBUFB	=	122
MAGFLD	=	0
METHOD	=	2
NH	=	20
NHIC	=	1600
NM	=	3
NOP	=	0
NHIST	=	6
NPLPB	=	2
NPP	=	2
NROUMPB	=	4
NSTN	=	0
NVARST	=	15
RAD	=	0
REZONE	=	0
STRESS	=	1
SURF	=	0
SW	=	6
SWX	=	0
VISC	=	0
LAMB	=	0
BBOUND	=	0
LBOUND	=	0
KEEL	=	0
PULL	=	0
VOIDS	=	0
FLUXER	=	3
DEPOS	=	0
FAIL	=	0
STRAIN	=	1
WORK	=	0
MAT	=	3
AIR	=	1
CU	=	3
FE	=	2
+	=	

THE FOLLOWING DEFINITIONS OR REDEFINITIONS WERE MADE DURING EXECUTIVE PROCESSING

+	+	SYS	=	176
		VER	=	4
		NOSBE	=	1
		PF	=	1
		ECS	=	1
		OBJLIB	=	1
		TAPELIB	=	4
		ROUTE	=	1
		DENSHUL	=	5
		DENSLIS	=	5
		DENSSTA	=	3
		LABEL	=	1
		DATE	=	1
		CONTROL	=	1
		CDC	=	1
		IBM	=	0
		CU	=	10
		NW	=	1
		RDEND	=	2
		CARDL	=	8
		CARDO	=	80
		NHEC	=	11200
		NBLKS	=	7
		NPIC	=	0
		NPICMAX	=	3020
		STRAIN	=	1
		STRESS	=	1
		DEBUG	=	0
		FILMPR	=	1
		HLEV	=	1
		D\$NAMEA	=	21
		D\$NAMEB	=	12
		D\$NAMEC	=	13
		D\$NAMED	=	14
		D\$NAMEE	=	15
		D\$NAMEF	=	16
		D\$NAMEG	=	18
		D\$NAMEH	=	5
		D\$NAMEI	=	1
		A\$TRES	=	

PLANK START  
 NOT A 555 RECORD  
 PROB 1.2000 STARTUP ON CYCLE 0 TIME 0.

MATERIAL	AMBIENT YIELD (Y0)	YIELD	TEMPERATURE (T)	WORK HARDENING YIELD	PLASTIC STRAIN
2	4.500E+02	1.00E+00	0.	4.500E+02	0.
		9.00E-01	5.00E-01	5.500E+02	3.00E-01
		9.00E-01	5.00E-01		
		0.	1.00E+00		

MATERIAL	AMBIENT YIELD (Y0)	YIELD	TEMPERATURE (T)	WORK HARDENING YIELD	PLASTIC STRAIN
3	8.000E+00	1.00E+00	0.	8.000E+00	0.
		9.00E-01	5.00E-01	4.000E+09	3.00E-01
		9.00E-01	5.00E-01		
		0.	1.00E+00		

CU PENETRATOR

Z5LK	PROB	ATMOS	REF	CODE	COLD	CYCLE	DIVEL	DT	ELC	EOS	ETH	EXPAND	FAIL	FLUXER	GEOM	IMAX	IO	ISLAND	JTAG



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```
+ INOPT
+ XPLER 1.00000000000000E+01
+ CSTOP 1.10000000000000E+02
+ RTSTOP 1.00000000000000E+20
+ DCYCST 1.00000000000000E+20
+ PRINTU 0.
+ DEBUG 0.
+ XINew 1.50000000000000E+01
+ YINew 5.50000000000000E+01
+ ZINew 8.50000000000000E+01
+ TIMES 3.00000000000000E+00
+ DMPIIT 9.3999999999997E-07
+ YMIN 1.00000000000000E-03
+ ITRACE 0.
+ JTRACE 0.
```

```
+
+ *****
+ *****
+
+
+
+
+
```

DT 1.00000E-00

TIME 0.

CYCLE 0

PROB 1.2000

REL ERROR

0.

ETH

MTH

TOTAL ENERGY

2.59082398429260E+13

KINETIC ENERGY

2.58739591033307E+13

INTERNAL ENERGY

0.34280739596099E+11

0.34280739596099E+11

REL MERR

0.

TOTAL MASS

6.69450549226732E+02

6.69450549226732E+02

6.69450549226732E+02

-I AT I\*\*\*\*\* J\*\*\*\*\*

-I AT I\*\*\*\*\* J\*\*\*\*\*

MAX TEMP= -I AT Ixxxx Jxxxx  
 MAX P = -I AT Ixxxx Jxxxx  
 CELL SETTING DT, Ixxxx Jxxxx

TOTAL TIME FOR THIS PROBLEM 0 HOURS, 0 MIN, 0 SEC  
 OF THIS 0 HOURS, 0 MIN, 0 SEC IS 6600 TIME.  
 AND 0 HOURS, 0 MIN, 0 SEC IS 7600/176 TIME.

TIME FOR THIS RUN 0 HOURS, 0 MIN, 22 SEC

I= 1 X(I)= .250 DX(I)= .250

J	P	U	V	XI	RHO	SRR	SZZ	SRZ	Y	DY	M	XM	M	XM
1	1.013E+06	0.	3.00E+05	2.044E+09	1.225E-03	0.	0.	0.	-1.75E+00	2.50E-01	1	6.01320E-05		
2	1.013E+06	0.	3.00E+05	2.044E+09	1.225E-03	0.	0.	0.	-1.50E+00	2.50E-01	1	6.01320E-05		
3	1.013E+06	0.	3.00E+05	2.044E+09	1.225E-03	0.	0.	0.	-1.25E+00	2.50E-01	1	6.01320E-05		
4	1.013E+06	0.	3.00E+05	2.044E+09	1.225E-03	0.	0.	0.	-1.00E+00	2.50E-01	1	6.01320E-05		
5	1.013E+06	0.	3.00E+05	1.268E+09	7.860E+00	0.	0.	0.	-7.50E+00	2.50E-01	2	3.85827E-01		
6	1.013E+06	0.	3.00E+05	1.268E+09	7.860E+00	0.	0.	0.	-5.00E+00	2.50E-01	2	3.85827E-01		
7	1.013E+06	0.	3.00E+05	1.268E+09	7.860E+00	0.	0.	0.	-2.50E+00	2.50E-01	2	3.85827E-01		
8	1.013E+06	0.	3.00E+05	1.268E+09	7.860E+00	0.	0.	0.	0.	2.50E-01	2	3.85827E-01		
9	1.013E+06	0.	0.	1.133E+09	8.900E+00	0.	0.	0.	2.50E-01	2.50E-01	3	4.36879E-01		
10	1.013E+06	0.	0.	1.133E+09	8.900E+00	0.	0.	0.	5.00E-01	2.50E-01	3	4.36879E-01		
11	1.013E+06	0.	0.	1.133E+09	8.900E+00	0.	0.	0.	7.50E-01	2.50E-01	3	4.36879E-01		
12	1.013E+06	0.	0.	1.133E+09	8.900E+00	0.	0.	0.	1.00E+00	2.50E-01	3	4.36879E-01		
13	1.013E+06	0.	0.	1.133E+09	8.900E+00	0.	0.	0.	1.25E+00	2.50E-01	3	4.36879E-01		
14	1.013E+06	0.	0.	1.133E+09	8.900E+00	0.	0.	0.	1.50E+00	2.50E-01	3	4.36879E-01		
15	1.013E+06	0.	0.	1.133E+09	8.900E+00	0.	0.	0.	1.75E+00	2.50E-01	3	4.36879E-01		
16	1.013E+06	0.	0.	1.133E+09	8.900E+00	0.	0.	0.	2.00E+00	2.50E-01	3	4.36879E-01		
17	1.013E+06	0.	0.	1.133E+09	8.900E+00	0.	0.	0.	2.25E+00	2.50E-01	3	4.36879E-01		
18	1.013E+06	0.	0.	1.133E+09	8.900E+00	0.	0.	0.	2.50E+00	2.50E-01	3	4.36879E-01		
19	1.013E+06	0.	0.	1.133E+09	8.900E+00	0.	0.	0.	2.75E+00	2.50E-01	3	4.36879E-01		
20	1.013E+06	0.	0.	1.133E+09	8.900E+00	0.	0.	0.	3.00E+00	2.50E-01	3	4.36879E-01		
21	1.013E+06	0.	0.	1.133E+09	8.900E+00	0.	0.	0.	3.25E+00	2.50E-01	3	4.36879E-01		
22	1.013E+06	0.	0.	1.133E+09	8.900E+00	0.	0.	0.	3.50E+00	2.50E-01	3	4.36879E-01		
23	1.013E+06	0.	0.	1.133E+09	8.900E+00	0.	0.	0.	3.75E+00	2.50E-01	3	4.36879E-01		
24	1.013E+06	0.	0.	1.133E+09	8.900E+00	0.	0.	0.	4.00E+00	2.50E-01	3	4.36879E-01		
25	1.013E+06	0.	0.	2.044E+09	1.225E-03	0.	0.	0.	4.25E+00	2.50E-01	1	6.01320E-05		
26	1.013E+06	0.	0.	2.044E+09	1.225E-03	0.	0.	0.	4.50E+00	2.50E-01	1	6.01320E-05		
27	1.013E+06	0.	0.	2.044E+09	1.225E-03	0.	0.	0.	4.75E+00	2.50E-01	1	6.01320E-05		
28	1.013E+06	0.	0.	2.044E+09	1.225E-03	9.	0.	0.	5.00E+00	2.50E-01	1	6.01320E-05		

MATERIAL MAP

1 1 2

ALTITUDE

12345678901234567890

```

METE...J
1 +-----+-----+-----+-----+-----+-----+
2 -1.750E-02
3 -1.500E-02
4 -1.250E-02
5 -1.000E-02
6 -7.500E-03
7 -5.000E-03
8 -2.500E-03
9
10 0.000E+00
11 0.000E+00
12 0.000E+00
13 0.000E+00
14 0.000E+00
15 0.000E+00
16 0.000E+00
17 0.000E+00
18 0.000E+00
19 0.000E+00
20 0.000E+00
21 0.000E+00
22 0.000E+00
23 0.000E+00
24 0.000E+00
25 +-----+-----+-----+-----+-----+-----+
26 4.250E-02
27 4.500E-02
28 4.750E-02
29 5.000E-02
30 12345678901234567890

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1 1 TIME 1.000E-08 DT 3.285E-08 IDT 7 JDT 5
2 TIME 4.2854E-08 DT 4.886E-08 IDT 4 JDT 8
3 TIME 9.1712E-08 DT 6.338E-08 IDT 1 JDT 8
4 TIME 1.5589E-07 DT 7.646E-08 IDT 1 JDT 8
5 TIME 2.3155E-07 DT 8.835E-08 IDT 1 JDT 8
6 TIME 3.1991E-07 DT 9.969E-08 IDT 1 JDT 8
7 TIME 4.1960E-07 DT 1.111E-07 IDT 1 JDT 8
8 TIME 5.3072E-07 DT 1.233E-07 IDT 1 JDT 8
9 TIME 6.5407E-07 DT 1.378E-07 IDT 1 JDT 8
10 TIME 7.9102E-07 DT 1.549E-07 IDT 1 JDT 8
11 TIME 9.4596E-07 DT 1.748E-07 IDT 1 JDT 8
12 TIME 1.0800E-06 DT 1.975E-07 IDT 1 JDT 8

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+
+
*****
*****
+
+
+

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PROB 1.2000 CYCLE 12 TIME 1.000000E-06 DT 1.415109E-07

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INTERNAL ENERGY 2.47155101172210E+13 KINETIC ENERGY 2.59094578794685E+13 TOTAL ENERGY 2.59094658871490E+13 ETH 2.59094658871490E+13 REL ERROR -7.32468686745991E-01
1.19395771224753E+12

```

TOTAL MASS MTH RELMERR  
 6.69484599591844E+02 6.69484599591808E+02 5.43399924256658E-08

MAX VEL = 3.03104E+05 AT I 6 J 9  
 MAX CS = 7.28635E+05 AT I 1 J 8  
 MAX TEMP = 3.34345E+03 AT I 5 J 10  
 MAX P = 1.09846E+12 AT I 1 J 9  
 CELL SETTING DT, I 1 J 8

TOTAL TIME FOR THIS PROBLEM OF THIS AND  
 0 HOURS, 0 MIN, 3 SEC IS 6600 TIME.  
 0 HOURS, 0 MIN, 3 SEC IS 7080/176 TIME.

TIME FOR THIS RUN 0 HOURS, 0 MIN, 25 SEC

WHIZ FACTOR TOTAL PROBLEM = 4.93E-04 SEC/CELL/CYCLE  
 WHIZ FACTOR SINCE LAST DUMP = 5.12E-04 SEC/CELL/CYCLE

I = 1 X(I) = .250 DX(I) = .250

J	P	U	V	XI	RHO	SRR	SZZ	SRZ	Y	DY	M	XTI	M	XTI
1	1.013E+06	0.	3.00E+05	2.044E+09	1.225E-03	0.	0.	0.	-1.75E+00	2.50E-01	1	6.01320E-05		
2	1.013E+06	0.	3.00E+05	2.044E+09	1.225E-03	0.	0.	0.	-1.50E+00	2.50E-01	1	6.01321E-05		
3	1.013E+06	0.	3.00E+05	2.044E+09	1.225E-03	0.	0.	0.	-1.25E+00	2.50E-01	1	6.01321E-05		
4	1.020E+06	0.	3.00E+05	2.047E+09	1.232E-03	0.	0.	0.	-1.00E+00	2.50E-01	1	6.04633E-05		
5	1.042E+06	1.78E+00	2.95E+05	2.074E+09	1.243E-03	0.	0.	0.	-7.50E-01	2.50E-01	1	6.09913E-05		
6	1.542E+06	6.61E+01	2.80E+05	1.683E+09	6.958E+00	1.66E+09	-3.10E+09	0.	-5.00E-01	2.50E-01	1	1.08349E-05	2	
7	2.591E+11	6.77E+02	2.22E+05	4.789E+09	8.690E+00	1.75E+09	-2.95E+09	2.42E+07	-2.50E-01	2.50E-01	2	4.26568E-01	2	
8	7.419E+11	1.52E+03	1.59E+05	1.379E+10	9.677E+00	8.83E+08	-2.05E+09	3.40E+07	0.	2.50E-01	2	4.74996E-01	3	
9	1.058E+12	2.66E+03	1.60E+05	1.800E+10	1.099E+01	0.	0.	0.	2.50E-01	2.50E-01	2	2.91542E-01	3	
10	6.619E+11	9.19E+02	1.41E+05	1.308E+10	1.103E+01	3.45E+07	-6.71E+07	-1.02E+06	5.00E-01	2.50E-01	3	5.41224E-01	3	
11	2.779E+11	1.65E+02	5.25E+04	4.563E+09	1.009E+01	2.63E+08	-4.87E+08	-2.37E+06	7.50E-01	2.50E-01	3	4.95209E-01	3	
12	4.515E+10	8.75E+01	1.17E+04	1.348E+09	9.157E+00	3.25E+08	-5.24E+08	-1.06E+06	1.00E+00	2.50E-01	3	4.49471E-01	3	
13	7.281E+09	2.27E+01	1.40E+03	1.138E+09	8.946E+00	3.20E+08	-5.59E+08	-5.11E+06	1.25E+00	2.50E-01	3	4.39130E-01	3	
14	7.412E+08	4.51E+00	2.07E+02	1.133E+09	8.905E+00	9.00E+07	-1.24E+08	-1.50E+06	1.50E+00	2.50E-01	3	4.37110E-01	3	
15	1.052E+08	2.48E-01	1.73E+01	1.133E+09	8.901E+00	1.05E+07	-1.70E+07	-2.23E+05	1.75E+00	2.50E-01	3	4.36310E-01	3	
16	8.672E+06	3.11E-02	2.02E+00	1.133E+09	8.900E+00	7.57E+05	-9.49E+05	-8.71E+03	2.00E+00	2.50E-01	3	4.36880E-01	3	
17	1.861E+06	1.24E-00	1.15E-01	1.133E+09	8.900E+00	6.66E+04	-1.05E+05	-9.15E+02	2.25E+00	2.50E-01	3	4.36878E-01	3	
18	1.057E+06	0.	1.02E-02	1.133E+09	8.900E+00	3.31E+03	-3.67E+03	-2.04E-01	2.50E+00	2.50E-01	3	4.36878E-01	3	
19	1.016E+06	0.	1.95E-11	1.133E+09	8.900E+00	1.64E+02	-2.59E+02	6.19E-10	2.75E+00	2.50E-01	3	4.36879E-01	3	
20	1.013E+06	0.	0.	1.133E+09	8.900E+00	0.	-2.25E-07	0.	3.00E+00	2.50E-01	3	4.36879E-01	3	
21	1.013E+06	0.	0.	1.133E+09	8.900E+00	0.	0.	0.	3.25E+00	2.50E-01	3	4.36878E-01	3	
22	1.013E+06	0.	0.	1.133E+09	8.900E+00	0.	0.	0.	3.25E+00	2.50E-01	3	4.36878E-01	3	



```

METERS
1 ++++++ -1.750E-02
2 ++++++ -1.500E-02
3 ++++++ -1.250E-02
4 ++++++ -1.000E-02
5 ++++++ -7.500E-03
6 ++++++ -5.000E-03
7 XXXXXXXXXXXXXXXXXXXX
8 XXXXXXXXXXXXXXXXXXXX -2.500E-03
9 XXXXXXXXXXXXXXXXXXXX 0.
10 0000
11 0000+++++ 5.000E-03
12 0000+++++ 7.500E-03
13 0000+++++ 1.000E-02
14 0000+++++ 1.250E-02
15 0000+++++ 1.500E-02
16 0000+++++ 1.750E-02
17 0000+++++ 2.000E-02
18 0000+++++ 2.250E-02
19 0000+++++ 2.500E-02
20 0000+++++ 2.750E-02
21 0000+++++ 3.000E-02
22 0000+++++ 3.250E-02
23 0000+++++ 3.500E-02
24 0000+++++ 3.750E-02
25 ++++++ 4.000E-02
26 ++++++ 4.250E-02
27 ++++++ 4.500E-02
28 ++++++ 4.750E-02
12345678901234567890

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CYCLE 13 TIME 1.1415E-06 DT 1.444E-07 IDT 1 JDT 8
CYCLE 14 TIME 1.2859E-06 DT 1.435E-07 IDT 5 JDT 9
CYCLE 15 TIME 1.4294E-06 DT 1.413E-07 IDT 5 JDT 9
CYCLE 16 TIME 1.5707E-06 DT 1.412E-07 IDT 5 JDT 9
CYCLE 17 TIME 1.7119E-06 DT 1.419E-07 IDT 6 JDT 9
CYCLE 18 TIME 1.8538E-06 DT 8.043E-08 IDT 6 JDT 9
CYCLE 19 TIME 1.9342E-06 DT 6.580E-08 IDT 6 JDT 10
CYCLE 20 TIME 2.0000E-06 DT 1.421E-07 IDT 6 JDT 10

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+
+ *****
+ *****
+
+ PROB 1.2000 CYCLE 20 TIME 2.000000E-06 DT 1.420614E-07
+
+
+

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INTERNAL ENERGY KINETIC ENERGY TOTAL ENERGY ETH REL ERROR
1.30082647427226E+12 2.46116495369098E+13 2.59124760111820E+13 2.5910733588040E+13 6.79884789198791E+01
+
TOTAL MASS MTH MTH REL ERR
6.69510663282919E+02 6.69510663282843E+02 5.97716646987911E-08
+

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+
+ MAX VEL = 3.34799E+05 AT I 6 J 11
+
+ MAX CS = 5.89024E+05 AT I 1 J 7
+
+ MAX TEMP = 4.51326E+03 AT I 5 J 11
+
+ MAX P = 5.42096E+11 AT I 1 J 12
+
+ CELL SETTING DT, I 6 J 10
+

```

```

+
+ TOTAL TIME FOR THIS PROBLEM 0 HOURS, 0 MIN, 5 SEC
+ OF THIS 0 HOURS, 0 MIN, 0 SEC IS 6600 TIME.
+ AND 0 HOURS, 0 MIN, 5 SEC IS 7600/176 TIME.
+

```

```

+
+ TIME FOR THIS RUN 0 HOURS, 0 MIN, 27 SEC
+
+ WHIZ FACTOR TOTAL PROBLEM = 5.27E-04 SEC/CELL/CYCLE
+
+ WHIZ FACTOR SINCE LAST DUMP = 5.73E-04 SEC/CELL/CYCLE
+

```

```

+
+ I= 1 X(I)= .250 DX(I)= .250
+
+
+ J P U V XI XI RHO SRR SZZ SRZ Y DY M M X01
+
+ 1 1.013E+06 0. 3.00E+05 2.044E+09 1.225E-03 0. 0. -1.75E+00 2.50E-01 1 6.01320E-05
+ 2 1.013E+06 0. 3.00E+05 2.044E+09 1.225E-03 0. 0. -1.50E+00 2.50E-01 1 6.01325E-05
+ 3 1.013E+06 0. 3.00E+05 2.044E+09 1.225E-03 0. 0. -1.25E+00 2.50E-01 1 6.01373E-05

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4	1.019E+06	5.87E-03	3.00E+05	2.047E+09	1.231E-03	0.	0.	0.	-1.00E+00	2.50E-01	1	6.04074E-05
5	1.335E+06	8.46E-01	2.98E+05	2.201E+09	1.503E-03	0.	0.	0.	-7.50E-01	2.50E-01	1	7.37571E-05
6	3.660E+06	3.07E+02	1.72E+05	7.471E+09	1.612E+00	1.24E+09	-2.32E+09	0.	-5.00E-01	2.50E-01	1	7.01759E-05
7	2.485E+11	3.30E+03	1.06E+05	7.231E+09	8.532E+00	6.59E+08	-2.67E+09	5.96E+08	-2.50E-01	2.50E-01	2	4.18827E-01
9	2.152E+11	7.73E+03	1.32E+05	7.637E+09	8.392E+00	8.59E+08	-2.49E+09	1.09E+09	0.	2.50E-01	2	4.11947E-01
9	1.368E+11	1.19E+04	1.34E+05	5.575E+09	8.201E+00	1.79E+09	-2.84E+09	3.69E+08	2.50E-01	2.50E-01	2	4.02508E-01
10	2.668E+11	1.27E+04	1.20E+05	9.332E+09	9.379E+00	0.	0.	0.	5.00E-01	2.50E-01	2	6.20146E-02
11	4.760E+11	9.73E+03	1.56E+05	1.029E+10	1.047E+01	5.30E+07	-1.23E+08	-1.60E+07	7.50E-01	2.50E-01	3	5.13997E-01
12	5.417E+11	4.91E+03	1.55E+05	9.097E+09	1.008E+01	1.20E+08	-2.84E+08	-2.55E+07	1.00E+00	2.50E-01	3	5.34136E-01
13	3.375E+11	1.53E+03	7.25E+04	5.036E+09	1.033E+01	2.41E+08	-4.85E+08	-2.31E+07	1.25E+00	2.50E-01	3	5.07242E-01
14	1.026E+11	3.05E+02	2.48E+04	1.009E+09	9.443E+00	2.63E+08	-5.20E+08	-1.23E+07	1.50E+00	2.50E-01	3	4.63516E-01
15	2.185E+10	8.23E+01	5.22E+03	1.173E+09	9.033E+00	3.00E+08	-5.31E+08	-6.12E+06	1.75E+00	2.50E-01	3	4.43426E-01
16	3.722E+09	3.49E+01	9.06E+02	1.135E+09	8.924E+00	3.31E+08	-5.20E+08	-9.27E+06	2.00E+00	2.50E-01	3	4.38037E-01
17	6.713E+08	4.84E+00	1.66E+02	1.133E+09	8.904E+00	9.57E+07	-1.59E+08	-3.02E+06	2.25E+00	2.50E-01	3	4.37008E-01
18	1.021E+08	8.27E-01	2.70E+01	1.133E+09	8.901E+00	1.40E+07	-2.19E+07	-4.25E+05	2.50E+00	2.50E-01	3	4.36909E-01
19	1.633E+07	8.43E-02	3.60E+00	1.133E+09	8.900E+00	2.04E+06	-3.36E+06	-6.52E+04	2.75E+00	2.50E-01	3	4.36883E-01
20	2.894E+06	1.13E-02	5.06E-01	1.133E+09	8.900E+00	2.38E+05	-3.63E+05	-5.57E+03	3.00E+00	2.50E-01	3	4.36878E-01
21	1.263E+06	8.33E-10	5.17E-02	1.133E+09	8.900E+00	2.87E+04	-4.66E+04	-4.99E+02	3.25E+00	2.50E-01	3	4.36878E-01
22	1.035E+06	0.	5.75E-03	1.133E+09	8.900E+00	2.51E+03	-3.56E+03	2.07E+00	3.50E+00	2.50E-01	3	4.36878E-01
23	1.015E+06	0.	4.55E-12	1.133E+09	8.900E+00	1.28E+02	-3.63E+02	3.61E-09	3.75E+00	2.50E-01	3	4.36878E-01
24	1.013E+06	0.	0.	1.133E+09	8.900E+00	0.	-2.07E-07	0.	4.00E+00	2.50E-01	3	4.36878E-01
25	1.013E+06	0.	0.	2.044E+09	1.225E-03	0.	0.	0.	4.25E+00	2.50E-01	1	6.01320E-05
26	1.013E+06	0.	0.	2.044E+09	1.225E-03	0.	0.	0.	4.50E+00	2.50E-01	1	6.01320E-05
27	1.013E+06	0.	0.	2.044E+09	1.225E-03	0.	0.	0.	4.75E+00	2.50E-01	1	6.01320E-05
28	1.013E+06	0.	0.	2.044E+09	1.225E-03	0.	0.	0.	5.00E+00	2.50E-01	1	6.01320E-05

79

ENERGY MAP

1 2

ALTITUDE

12345678901234567890

1	TTTTTTTTTTTTTTTT	-1.750E-02
2	TTTTTTTTTTTTTTTT	-1.500E-02
3	TTTTTTTTTTTTTTTT	-1.250E-02
4	TTTTTTTTTTTTTTTT	-1.000E-02
5	TTTTTTTTTTTTTTTT	-7.500E-03
6	TTTTTTTTTTTTTTTT	-5.000E-03
7	TTTTTTTTTTTTTTTT	-2.500E-03
8	TTTTTTTTTTTTTTTT	0.
9	TTTTTTTTTTTTTTTT	2.500E-03
10	TTTTTTTTTTTTTTTT	5.000E-03
11	TTTTTTTTTTTTTTTT	7.500E-03
12	TTTTTTTTTTTTTTTT	1.000E-02
13	TTTTTTTTTTTTTTTT	1.250E-02
14	TTTTTTTTTTTTTTTT	1.500E-02
15	TTTTTTTTTTTTTTTT	1.750E-02
16	TTTTTTTTTTTTTTTT	2.000E-02
17	TTTTTTTTTTTTTTTT	2.250E-02
18	TTTTTTTTTTTTTTTT	2.500E-02
19	TTTTTTTTTTTTTTTT	2.750E-02

20 3.00E-02  
 21 3.25E-02  
 22 3.50E-02  
 23 3.75E-02  
 24 4.00E-02  
 25 4.25E-02  
 26 4.50E-02  
 27 4.75E-02  
 28 5.00E-02

8888888888888888  
 12345678901234567890  
 1 2

+  
+  
+

MATERIAL MAP

ALTITUDE

12345678901234567890

METERS  
 1 ++++++ -1.75E-02  
 2 ++++++ -1.50E-02  
 3 ++++++ -1.25E-02  
 4 ++++++ -1.00E-02  
 5 ++++++ -7.50E-03  
 6 ++++++ -5.00E-03

XXXX  
 7 XXXX -2.50E-03

XXXXXXXXXXXXXXXX  
 8 XXXXXXXXXXXXXXXX 0.  
 9 XXXXXXXXXXXXXXXX 2.50E-03

0  
 10 XXXXXXXXXXXXXXXX 5.00E-03

000 0  
 11 0000 ++++++ 7.50E-03

XXXXXXXXXXXXXXXX

0  
 12 0000 ++++++ 1.00E-02

0  
 13 0000 ++++++ 1.25E-02

0  
 14 0000 ++++++ 1.50E-02

0  
 15 0000 ++++++ 1.75E-02

```

0
16 0000+++++ 2.000E-02
0
17 0000+++++ 2.250E-02
0
18 0000+++++ 2.500E-02
0
19 0000+++++ 2.750E-02
0
20 0000+++++ 3.000E-02
0
21 0000+++++ 3.250E-02
0
22 0000+++++ 3.500E-02
23 0000+++++ 3.750E-02
24 0000+++++ 4.000E-02
25 ++++++ 4.250E-02
26 ++++++ 4.500E-02
27 ++++++ 4.750E-02
28 ++++++ 5.000E-02
12345678901234567890

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01

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CYCLE 21 TIME 2.1421E-06 DT 1.409E-07 IDT 6 JDT 10
CYCLE 22 TIME 2.2829E-06 DT 1.416E-07 IDT 6 JDT 10
CYCLE 23 TIME 2.4245E-06 DT 1.443E-07 IDT 6 JDT 10
CYCLE 24 TIME 2.5688E-06 DT 1.482E-07 IDT 7 JDT 10
CYCLE 25 TIME 2.7178E-06 DT 1.556E-07 IDT 7 JDT 10
IN EOS, J = 10 FORMING DPDTAU
IN EOS, J = 11 FORMING DPDTAU
IN EOS, HIT NTRY LIMIT
CYCLE 26 TIME 2.8727E-06 DT 1.273E-07 IDT 7 JDT 11
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
IN EOS, J = 10 FORMING DPDTAU
IN EOS, HIT NTRY LIMIT
IN EOS, J = 11 FORMING DPDTAU
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
IN EOS, J = 11 FORMING DPDTAU

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+
*****
*****
+

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INTERNAL ENERGY      KINETIC ENERGY      TOTAL ENERGY      ETH      REL ERROR  
 1.37552587704973E+12    2.45400257451570E+13    2.59155516230066E+13    2.59119793636657E+13    7.06037890559410E+01

TOTAL MASS      MTH      RELMERR  
 6.69536779123177E+02    6.69536779123067E+02    4.89021817542369E-08

MAX VEL = 3.40481E+05 AT I 6 J 13  
 MAX CS = 5.14419E+05 AT I 7 J 11  
 MAX TEMP = 7.52860E+03 AT I 5 J 11  
 MAX P = 3.08783E+11 AT I 1 J 14  
 CELL SETTING DT, I 7 J 11

TOTAL TIME FOR THIS PROBLEM OF THIS AND  
 0 HOURS, 0 MIN, 0 SEC  
 0 HOURS, 0 MIN, 8 SEC IS 6600 TIME.  
 0 HOURS, 0 MIN, 8 SEC IS 7600/176 TIME.

TIME FOR THIS RUN 0 HOURS, 0 MIN, 30 SEC

WHIZ FACTOR TOTAL PROBLEM = 5.48E-04 SEC/CELL/CYCLE  
 WHIZ FACTOR SINCE LAST DUMP = 6.21E-04 SEC/CELL/CYCLE

I = 1 X(I) = .250 DX(I) = .250

J	P	U	V	XI	RHO	SRR	SZZ	SRZ	Y	DY	M	XM	M	XM
1	1.013E+06	0.	3.00E+05	2.844E+09	1.225E-03	0.	0.	0.	-1.75E+00	2.50E-01	1	6.01320E-05		
2	1.013E+06	0.	3.00E+05	2.044E+09	1.225E-03	0.	0.	0.	-1.50E+00	2.50E-01	1	6.01326E-05		
3	1.014E+06	1.87E-03	3.00E+05	2.044E+09	1.225E-03	0.	0.	0.	-1.25E+00	2.50E-01	1	6.01604E-05		
4	1.019E+06	2.39E-02	3.00E+05	2.047E+09	1.230E-03	0.	0.	0.	-1.00E+00	2.50E-01	1	6.03877E-05		
5	1.692E+06	9.63E+00	2.97E+05	2.475E+09	1.699E-03	0.	0.	0.	-7.50E-01	2.50E-01	1	8.34219E-05		
6	6.961E+06	3.73E+02	1.87E+05	8.089E+09	2.307E-03	0.	0.	0.	-5.00E-01	2.50E-01	1	1.13255E-04		
7	4.636E+06	2.45E+03	9.97E+04	6.538E+09	5.830E+00	-2.24E+09	-2.70E+08	0.	-2.50E-01	2.50E-01	1	1.06057E-05	2	2.06543E-01
8	-1.099E+11	6.58E+03	1.28E+05	7.060E+09	6.991E+00	1.11E+09	8.48E+08	1.38E+09	0.	2.50E-01	2	3.43146E-01		
9	-9.619E+10	7.52E+03	1.21E+05	6.234E+09	7.177E+00	1.69E+09	-2.79E+09	3.10E+08	0.	2.50E-01	2	3.52288E-01		
10	1.063E+06	1.20E+04	1.02E+05	6.476E+09	7.351E+00	0.	0.	0.	5.00E-01	2.50E-01	3	1.53936E-01	2	2.06902E-01
11	0.	1.04E+04	8.73E+04	6.702E+09	7.963E+00	0.	0.	0.	7.50E-01	2.50E-01	3	3.90904E-01		
12	1.068E+10	1.22E+04	8.20E+04	5.250E+03	8.579E+00	8.15E+07	-1.42E+08	-6.02E+06	1.00E+00	2.50E-01	3	4.21116E-01		
13	1.637E+11	9.53E+03	8.86E+04	4.790E+09	9.459E+00	1.92E+08	-4.26E+08	-5.58E+07	1.25E+08	2.50E-01	3	4.64826E-01		
14	2.793E+11	5.63E+03	8.73E+04	4.722E+09	1.000E+01	2.00E+08	-4.80E+08	-4.85E+07	1.50E+00	2.50E-01	3	4.94751E-01		
15	2.378E+11	2.34E+03	6.11E+04	3.390E+09	1.000E+01	2.35E+08	-5.00E+08	-3.35E+07	1.75E+00	2.50E-01	3	4.91098E-01		
16	1.071E+11	6.25E+02	2.72E+04	1.753E+09	9.475E+00	2.85E+08	-5.21E+08	-2.17E+07	2.00E+00	2.50E-01	3	4.65081E-01		

IN EOS, HIT NTRY LIMIT

17	3.156E+10	1.60E+02	7.88E+03	1.200E+09	9.090E+00	3.13E+08	-5.29E+08	-1.14E+07	2.25E+00	2.50E-01	3	4.46219E-01
18	7.335E+09	6.55E+01	1.86E+03	1.137E+09	8.946E+00	3.32E+08	-5.27E+08	-1.14E+07	2.50E+00	2.50E-01	3	4.39150E-01
19	1.530E+09	1.63E+01	4.14E+02	1.134E+09	8.910E+00	2.51E+08	-3.92E+08	-1.17E+07	2.73E+00	2.50E-01	3	4.37388E-01
20	3.432E+08	3.39E+00	8.96E+01	1.133E+09	8.902E+00	5.03E+07	-7.76E+07	-1.94E+06	3.00E+00	2.50E-01	3	4.36985E-01
21	7.095E+07	5.31E-01	1.65E+01	1.133E+09	8.900E+00	9.50E+06	-1.48E+07	-3.40E+05	3.25E+00	2.50E-01	3	4.36900E-01
22	1.314E+07	9.26E-02	2.97E+00	1.133E+09	8.900E+00	1.58E+06	-2.32E+06	-4.56E+04	3.50E+00	2.50E-01	3	4.36882E-01
23	3.894E+06	1.16E-02	4.54E-01	1.133E+09	8.900E+00	2.51E+05	-3.72E+05	-6.94E+03	3.75E+00	2.50E-01	3	4.36878E-01
24	1.270E+06	1.22E-03	7.02E-02	1.133E+09	8.900E+00	3.11E+04	-4.92E+04	-5.94E+02	4.00E+00	2.50E-01	3	4.36878E-01
25	1.013E+06	3.52E-07	1.17E-02	2.044E+09	1.276E-03	1.15E+01	-1.49E+01	0.	4.25E+00	2.50E-01	1	6.01320E-05
26	1.013E+06	0.	3.47E-11	2.044E+09	1.275E-03	0.	0.	0.	4.50E+00	2.50E-01	1	6.01320E-05
27	1.013E+06	0.	0.	2.044E+09	1.225E-03	0.	0.	0.	4.75E+00	2.50E-01	1	6.01320E-05
28	1.013E+06	0.	0.	2.044E+09	1.225E-03	0.	0.	0.	5.00E+00	2.50E-01	1	6.01320E-05

ENERGY MAP

+ +

ALTITUDE

12345678901234567890

1	-1.750E-02	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
2	-1.500E-02	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
3	-1.250E-02	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
4	-1.000E-02	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
5	-7.500E-03	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
6	-5.000E-03	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
7	-2.500E-03	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
9	TT	TTTTTTTTTTTTTTTT	TTTTTTTTTTTTTTTT	TTTTTTTTTTTTTTTT	TTTTTTTTTTTTTTTT	TTTTTTTTTTTTTTTT	TTTTTTTTTTTTTTTT	TTTTTTTTTTTTTTTT	TTTTTTTTTTTTTTTT	TTTTTTTTTTTTTTTT	TTTTTTTTTTTTTTTT	TTTTTTTTTTTTTTTT
10	BB	BBBBBBBBBBBBBBBB	BBBBBBBBBBBBBBBB	BBBBBBBBBBBBBBBB	BBBBBBBBBBBBBBBB	BBBBBBBBBBBBBBBB	BBBBBBBBBBBBBBBB	BBBBBBBBBBBBBBBB	BBBBBBBBBBBBBBBB	BBBBBBBBBBBBBBBB	BBBBBBBBBBBBBBBB	BBBBBBBBBBBBBBBB
11	T	T	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT
12	TTT	TTT	TTT	TTT	TTT	TTT	TTT	TTT	TTT	TTT	TTT	TTT
13	T	TTTTTTTTTTTTTTTT	TTTTTTTTTTTTTTTT	TTTTTTTTTTTTTTTT	TTTTTTTTTTTTTTTT	TTTTTTTTTTTTTTTT	TTTTTTTTTTTTTTTT	TTTTTTTTTTTTTTTT	TTTTTTTTTTTTTTTT	TTTTTTTTTTTTTTTT	TTTTTTTTTTTTTTTT	TTTTTTTTTTTTTTTT
14	T	TTTTTTTTTTTTTTTT	TTTTTTTTTTTTTTTT	TTTTTTTTTTTTTTTT	TTTTTTTTTTTTTTTT	TTTTTTTTTTTTTTTT	TTTTTTTTTTTTTTTT	TTTTTTTTTTTTTTTT	TTTTTTTTTTTTTTTT	TTTTTTTTTTTTTTTT	TTTTTTTTTTTTTTTT	TTTTTTTTTTTTTTTT
15	T	TTTTTTTTTTTTTTTT	TTTTTTTTTTTTTTTT	TTTTTTTTTTTTTTTT	TTTTTTTTTTTTTTTT	TTTTTTTTTTTTTTTT	TTTTTTTTTTTTTTTT	TTTTTTTTTTTTTTTT	TTTTTTTTTTTTTTTT	TTTTTTTTTTTTTTTT	TTTTTTTTTTTTTTTT	TTTTTTTTTTTTTTTT
16	T	TTTTTTTTTTTTTTTT	TTTTTTTTTTTTTTTT	TTTTTTTTTTTTTTTT	TTTTTTTTTTTTTTTT	TTTTTTTTTTTTTTTT	TTTTTTTTTTTTTTTT	TTTTTTTTTTTTTTTT	TTTTTTTTTTTTTTTT	TTTTTTTTTTTTTTTT	TTTTTTTTTTTTTTTT	TTTTTTTTTTTTTTTT
17	B	B	B	B	B	B	B	B	B	B	B	B
18	B	B	B	B	B	B	B	B	B	B	B	B
19	B	B	B	B	B	B	B	B	B	B	B	B
20	B	B	B	B	B	B	B	B	B	B	B	B
21	B	B	B	B	B	B	B	B	B	B	B	B
22	B	B	B	B	B	B	B	B	B	B	B	B
23	B	B	B	B	B	B	B	B	B	B	B	B
24	B	B	B	B	B	B	B	B	B	B	B	B
25	BBBB	BBBB	BBBB	BBBB	BBBB	BBBB	BBBB	BBBB	BBBB	BBBB	BBBB	BBBB
26	TTTT	TTTT	TTTT	TTTT	TTTT	TTTT	TTTT	TTTT	TTTT	TTTT	TTTT	TTTT
27	TTTT	TTTT	TTTT	TTTT	TTTT	TTTT	TTTT	TTTT	TTTT	TTTT	TTTT	TTTT
28	BBBB	BBBB	BBBB	BBBB	BBBB	BBBB	BBBB	BBBB	BBBB	BBBB	BBBB	BBBB
29	12345678901234567890	12345678901234567890	12345678901234567890	12345678901234567890	12345678901234567890	12345678901234567890	12345678901234567890	12345678901234567890	12345678901234567890	12345678901234567890	12345678901234567890	12345678901234567890

MATERIAL MAP

```

19 0000+++++ 2.750E-02
0
20 0000+++++ 3.000E-02
0
21 0000+++++ 3.250E-02
0
22 0000+++++ 3.500E-02
0
23 0000+++++ 3.750E-02
0
24 0000+++++ 4.000E-02
0
25 ++++++ 4.250E-02
0000
26 ++++++ 4.500E-02
27 ++++++ 4.750E-02
28 ++++++ 5.000E-02
12345678901234567890
1
2
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
IN EOS, J = 11 FORMING DPDTAU
CYCLE 28 TIME 3.1483E-06 DT 1.493E-07 IDT 7 JDT 11
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
IN EOS, J = 10 FORMING DPDTAU
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
IN EOS, J = 11 FORMING DPDTAU
CYCLE 29 TIME 3.2976E-06 DT 1.519E-07 IDT 7 JDT 11
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
IN EOS, J = 10 FORMING DPDTAU
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
IN EOS, J = 11 FORMING DPDTAU
CYCLE 30 TIME 3.4495E-06 DT 1.518E-07 IDT 7 JDT 12
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT

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```

+ 1 2
ALTTITUDE
12345678901234567890
METERS
1 ++++++ -1.750E-02
2 ++++++ -1.500E-02
3 ++++++ -1.250E-02
4 ++++++ -1.000E-02
5 ++++++ -7.500E-03
6 ++++++ -5.000E-03
7 ++++++ -2.500E-03
8 XXXXX 0.
XXXXXX
9 XXXXXXXXXXXXXXXXXXXX 2.500E-03
10 XXXXXXXXXXXXXXXXXXXX 5.000E-03
XXXXXX
000
C-00+XXXXXXXXXXXXXXXXX 7.500E-03
00 0 XX
12 0000+++++ 1.000E-02
0XXXXXXXXXXXXXXXXXXXXX
13 0000+++++ 1.250E-02
0
0X
14 0000+++++ 1.500E-02
0
15 0000+++++ 1.750E-02
0
16 0000+++++ 2.000E-02
0
17 0000+++++ 2.250E-02
0
18 0000+++++ 2.500E-02
0

```



1. 46875933574765E+12 2. 44480774644511E+13 2. 59168368001980E+13 2. 59132226943497E+13 1. 61464826957865E+00  
 +  
 6. 69562871840641E+02 6. 69562871840466E+02 6. 69562871840466E+02 9. 78005520940088E-08

MAX VEL = 3.43426E+05 AT I 7 J 14  
 +  
 MAX CS = 5.17079E+05 AT I 1 J 8  
 +  
 MAX TEMP = 7.86224E+03 AT I 7 J 13  
 +  
 MAX P = 1.68777E+11 AT I 2 J 16  
 +  
 CELL SETTING DT, I 8 J 12  
 +

TOTAL TIME FOR THIS PROBLEM 0 HOURS, 0 MIN, 11 SEC  
 OF THIS 0 HOURS, 0 MIN, 0 SEC IS 6680 TIME.  
 AND 0 HOURS, 0 MIN, 11 SEC IS 7680/176 TIME.  
 +  
 TIME FOR THIS RUN 0 HOURS, 0 MIN, 33 SEC  
 +

UMIZ FACTOR TOTAL PROBLEM = 5.82E-04 SEC/CELL/CYCLE  
 +  
 UMIZ FACTOR SINCE LAST DUMP = 7.16E-04 SEC/CELL/CYCLE  
 +  
 +  
 +  
 +

I = 1 X(I) = .250 DX(I) = .250  
 +  
 J P U V XI RHO SRR SZZ SRZ  
 1 1.013E+06 0. 3.00E+05 2.044E+09 1.225E-03 0. 0. 0. -1.75E+00 2.50E-01 6.01320E-05  
 2 1.013E+06 0. 3.00E+05 2.044E+09 1.225E-03 0. 0. 0. -1.50E+00 2.50E-01 6.01320E-05  
 3 1.014E+06 1.56E-02 3.00E+05 2.045E+09 1.226E-03 0. 0. 0. -1.25E+00 2.50E-01 6.01819E-05  
 4 1.025E+06 2.26E-01 2.59E+05 2.051E+09 1.235E-03 0. 0. 0. -1.00E+00 2.50E-01 6.06242E-05  
 5 1.542E+06 2.14E+01 2.94E+05 2.507E+09 1.529E-03 0. 0. 0. -7.50E-01 2.50E-01 7.50788E-05  
 6 7.713E+06 3.77E+02 3.66E+05 7.899E+09 2.604E-03 0. 0. 0. -5.00E-01 2.50E-01 1.27835E-04  
 7 6.306E+06 -2.17E+03 1.39E+05 7.181E+09 1.450E-03 -2.00E+09 -2.41E+08 0. -2.50E-01 2.50E-01 7.91554E-05  
 8 -8.397E+10 5.53E+03 1.49E+05 7.967E+09 6.931E+00 1.17E+09 -2.02E+09 1.64E+08 0. 2.50E-01 2.50E-01 2.3.40246E-01  
 9 -7.624E+10 7.16E+03 1.12E+05 7.649E+09 7.048E+00 1.21E+09 -2.20E+09 7.54E+07 0. 2.50E-01 2.50E-01 3.45962E-01  
 10 2.779E+05 1.02E+04 8.33E+04 5.929E+09 5.948E+00 4.86E+08 -8.06E+08 0. 5.00E-01 2.50E-01 3.65953E-06  
 2 2.91970E-01

IN EOS, J = 28 FORMING DPDTAU  
 IN EOS, HIT NTRY LIMIT  
 IN EOS, HIT NTRY LIMIT  
 11 9.918E+03 4.00E+03 8.53E+04 7.143E+09 6.913E+00 0. 0. 0. 7.50E-01 2.50E-01 3.31642E-01  
 12 0. 1.24E+04 7.70E+04 6.350E+09 6.976E+00 0. 0. 0. 1.00E+00 2.50E-01 3.3.42452E-01  
 13 0. 1.25E+04 6.40E+04 4.825E+09 7.693E+00 3.29E+07 -1.20E+07 0. 1.25E+00 2.50E-01 3.3.73225E-01  
 14 -3.042E+10 8.59E+03 5.29E+04 3.439E+09 8.375E+00 2.84E+08 -4.71E+08 -5.89E+07 1.50E+00 2.50E-01 3.4.11104E-01  
 15 5.586E+10 6.10E+03 5.26E+04 2.662E+09 9.076E+00 2.44E+08 -4.99E+08 -5.25E+07 1.75E+00 2.50E-01 3.4.45540E-01  
 16 1.360E+11 3.72E+03 5.34E+04 2.466E+09 9.560E+00 2.23E+08 -5.07E+08 -4.27E+07 2.00E+00 2.50E-01 3.4.69288E-01  
 17 1.354E+11 1.73E+03 4.04E+04 2.023E+09 9.604E+00 2.43E+08 -5.17E+08 -3.20E+07 2.25E+00 2.50E-01 3.4.71411E-01  
 18 7.513E+10 5.69E+02 2.08E+04 1.438E+09 9.325E+00 2.74E+08 -5.27E+08 -2.52E+07 2.50E+00 2.50E-01 3.4.57728E-01

19 2.001E+10 1.09E+02 7.55E+03 1.103E+09 9.070E+00 2.96E+08 -5.31E+08 -1.56E+07 2.75E+00 2.50E-01 3 4.45241E-01  
 20 8.215E+09 7.93E+01 2.22E+03 1.130E+09 8.952E+00 3.14E+08 -5.30E+08 -1.35E+07 3.00E+00 2.50E-01 3 4.39419E-01  
 21 2.509E+09 3.01E+01 6.00E+02 1.134E+09 8.914E+00 3.21E+08 -5.29E+08 -1.75E+07 3.25E+00 2.50E-01 3 4.37569E-01  
 22 5.753E+08 7.55E+00 1.66E+02 1.133E+09 8.914E+00 3.92E+07 -1.61E+08 -5.00E+06 3.50E+00 2.50E-01 3 4.37058E-01  
 23 1.447E+08 1.55E+00 3.92E+01 1.133E+09 8.911E+00 2.30E+07 -3.75E+07 -1.02E+06 3.75E+00 2.50E-01 3 4.36923E-01  
 24 2.603E+07 3.44E-01 1.02E-01 1.133E+09 6.901E+00 4.10E+06 -6.05E+06 -1.32E+05 4.00E+00 2.50E-01 3 4.36806E-01  
 25 1.013E+06 1.71E-02 2.53E+10 1.970E+19 1.334E-03 2.13E+05 -3.07E+05 0. 4.25E+00 2.50E-01 1 6.01320E-05  
 26 1.013E+06 3.59E-09 2.03E-13 2.044E+19 1.225E-03 0. 0. 0. 4.50E+00 2.50E-01 1 6.01321E-05  
 27 1.013E+06 0. 1.78E-12 2.044E+19 1.225E-03 0. 0. 0. 4.75E+00 2.50E-01 1 6.01320E-05  
 28 1.013E+06 0. 0. 2.044E+19 1.225E-03 0. 0. 0. 5.00E+00 2.50E-01 1 6.01320E-05

ENERGY MAP

+

+

+

ALTIMTIDE	1	2
12345678901234567890		
METERS		
-1.750E-02		
-1.500E-02		
-1.250E-02		
-1.000E-02		
-7.500E-03		
-5.000E-03		
-2.500E-03		
0.		
2.500E-03		
5.000E-03		
7.500E-03		
1.000E-02		
1.250E-02		
1.500E-02		
1.750E-02		
2.000E-02		
2.250E-02		
2.500E-02		
2.750E-02		
3.000E-02		
3.250E-02		
3.500E-02		
3.750E-02		
4.000E-02		
4.250E-02		
4.500E-02		
4.750E-02		
5.000E-02		

MATERIAL MAP

+

+

ALTITUDE

12345678901234567890

METERS  
1 ++++++ -1.750E-02  
2 ++++++ -1.500E-02  
3 ++++++ -1.250E-02  
4 ++++++ -1.000E-02  
5 ++++++ -7.500E-03  
6 ++++++ -5.000E-03  
7 ++++++ -2.500E-03

XXXX  
8 XX+++++ 0.

XXXX  
9 XXXX+++++ 2.500E-03

XXXXXXXXXXXXXXXXXXXX  
10 ++X+XXXXXXX 5.000E-03  
XX XX

0 0  
0 0  
11 ++++++XXXXXXXXXXXX 7.500E-03  
X0X0XX

0 0 0  
12 0000+XXXXXXXXXXXX 1.000E-02  
X

0  
13 0000+XXXXXXXXXXXX 1.250E-02  
XXXXXXXXXXXXXXXXXXXX

0  
14 0000+XXXXXXXXXXXX 1.500E-02  
0XXX

0  
15 0000+XXXXXXXXXXXX 1.750E-02  
0

0  
16 0000+XXXXXXXXXXXX 2.000E-02  
0

0  
17 0000+XXXXXXXXXXXX 2.250E-02

0  
 18 0000+++++ 2.500E-02  
 0  
 19 0000+++++ 2.750E-02  
 0  
 20 0000+++++ 3.000E-02  
 0  
 21 0000+++++ 3.250E-02  
 0  
 22 0000+++++ 3.500E-02  
 0  
 23 0000+++++ 3.750E-02  
 0  
 24 0000+++++ 4.000E-02  
 0  
 25 ++++++ 4.250E-02

0000  
 26 ++++++ 4.500E-02  
 27 ++++++ 4.750E-02  
 28 ++++++ 5.000E-02  
 12345678901234567898

1  
 2  
 IN EOS, J = 11 FORMING DPDTAU  
 IN EOS, HIT NTRY LIMIT  
 IN EOS, HIT NTRY LIMIT  
 IN EOS, HIT NTRY LIMIT  
 IN EOS, J = 11 FORMING DPDTAU  
 IN EOS, HIT NTRY LIMIT  
 IN EOS, HIT NTRY LIMIT  
 IN EOS, J = 12 FORMING DPDTAU  
 CYCLE 35 TIME 4.1564E-06 DT 1.571E-07 IDT 8 JDT 13  
 IN EOS, HIT NTRY LIMIT  
 IN EOS, J = 13 FORMING DPDTAU  
 IN EOS, HIT NTRY LIMIT  
 IN EOS, HIT NTRY LIMIT  
 CYCLE 36 TIME 4.3135E-06 DT 1.574E-07 IDT 8 JDT 13  
 IN EOS, HIT NTRY LIMIT  
 IN EOS, HIT NTRY LIMIT  
 IN EOS, J = 12 FORMING DPDTAU  
 CYCLE 37 TIME 4.4789E-06 DT 1.575E-07 IDT 8 JDT 13  
 IN EOS, HIT NTRY LIMIT  
 IN EOS, HIT NTRY LIMIT  
 IN EOS, HIT NTRY LIMIT  
 IN EOS, J = 12 FORMING DPDTAU  
 IN EOS, HIT NTRY LIMIT  
 IN EOS, HIT NTRY LIMIT  
 IN EOS, J = 12 FORMING DPDTAU

IN EOS, HIT NTRY LIMIT  
IN EOS, HIT NTRY LIMIT  
IN EOS, HIT NTRY LIMIT  
IN EOS, HIT NTRY LIMIT  
IN EOS, HIT NTRY LIMIT  
CYCLE 38 TIME 4.6284E-06 DT 1.507E-07 IDT 8 JDT 13  
IN EOS, HIT NTRY LIMIT  
IN EOS, HIT NTRY LIMIT  
IN EOS, J = 12 FORMING DPDTAU  
IN EOS, HIT NTRY LIMIT  
IN EOS, J = 13 FORMING DPDTAU  
CYCLE 39 TIME 4.7871E-06 DT 1.171E-07 IDT 9 JDT 13  
IN EOS, HIT NTRY LIMIT  
IN EOS, J = 12 FORMING DPDTAU  
CYCLE 40 TIME 4.9042E-06 DT 9.579E-08 IDT 8 JDT 14  
IN EOS, HIT NTRY LIMIT  
IN EOS, J = 12 FORMING DPDTAU  
CYCLE 41 TIME 5.0000E-06 DT 1.575E-07 IDT 8 JDT 14  
IN EOS, HIT NTRY LIMIT  
IN EOS, HIT NTRY LIMIT  
IN EOS, J = 12 FORMING DPDTAU

90

PROB 1.2000 CYCLE 41 TIME 5.0000E-06 DT 1.575125E-07

INTERNAL ENERGY KINETIC ENERGY TOTAL ENERGY REL ERROR  
1.55412492242083E+12 2.43621780997421E+13 2.59163030221629E+13 -6.46638279330878E+01  
TOTAL MASS MTH  
6.69586818530000E+02 6.69586818529763E+02 9.23638898292532E-08

MAX VEL = 3.28532E+05 AT I 7 J 15

MAX CS = 5.06289E+05 AT I 1 J 12

MAX TEMP = 3.98466E+03 AT I 7 J 16

MAX P = 8.22160E+10 AT I 2 J 18

CELL SETTING DT, I 8 J 14

TOTAL TIME FOR THIS PROBLEM 0 HOURS, 0 MIN, 13 SEC  
OF THIS 0 HOURS, 0 MIN, 0 SEC IS 6600 TIME.  
AND 0 HOURS, 0 MIN, 13 SEC IS 7600/176 TIME.

TIME FOR THIS RUN 0 HOURS, 0 MIN, 35 SEC

UMIZ FACTOR TOTAL PROBLEM = 6.03E-04 SEC/CELL/CYCLE

UMIZ FACTOR SINCE LAST DUMP = 7.02E-04 SEC/CELL/CYCLE

I = 1 X(I) = .250 DX(I) = .250

J	P	U	V	XI	RHO	SRR	SZZ	SRZ	Y	DY	M	XM	M	XM
1	1.013E+06	0.	3.00E+05	2.044E+09	1.225E-03	0.	0.	0.	-1.75E+00	2.50E-01	1	6.01320E-05		
2	1.013E+06	0.	3.00E+05	2.044E+09	1.225E-03	0.	0.	0.	-1.50E+00	2.50E-01	1	6.01333E-05		
3	1.014E+06	3.46E-02	3.00E+05	2.045E+09	1.226E-03	0.	0.	0.	-1.25E+00	2.50E-01	1	6.01853E-05		
4	1.028E+06	5.36E-01	3.00E+05	2.053E+09	1.238E-03	0.	0.	0.	-1.00E+00	2.50E-01	1	6.07336E-05		
5	1.344E+06	2.36E+01	2.94E+05	2.367E+09	1.410E-03	0.	0.	0.	-7.50E-01	2.50E-01	1	6.91936E-05		
6	5.034E+06	2.93E+02	2.60E+05	6.085E+09	2.158E-03	0.	0.	0.	-5.00E-01	2.50E-01	1	1.05909E-04		
7	8.263E+06	-1.12E+03	2.06E+05	9.191E+09	2.437E-03	0.	0.	0.	-2.50E-01	2.50E-01	1	1.19639E-04		
8	7.235E+06	5.70E+03	1.57E+05	7.908E+09	4.027E+00	1.22E+09	-2.06E+09	0.	0.	2.50E-01	1	4.61461E-05	2	1.97631E-01
9	3.953E+10	3.14E+03	1.29E+05	8.093E+09	7.641E+00	1.05E+09	-2.13E+09	4.90E+07	2.50E-01	2.50E-01	2	3.75087E-01		
10	1.527E+09	7.81E+03	9.07E+04	6.820E+09	7.548E+00	1.42E+09	-2.65E+09	1.15E+07	5.00E-01	2.50E-01	2	3.70497E-01		
11	9.375E+04	4.92E+03	8.59E+04	7.095E+09	3.441E+00	0.	0.	0.	7.50E-01	2.50E-01	3	1.54982E-01	2	1.39149E-02
12	0.	1.14E+04	7.80E+04	7.307E+09	6.349E+00	0.	0.	0.	1.00E+00	2.50E-01	3	3.1670E-01		
13	0.	1.20E+04	7.18E+04	5.987E+09	6.339E+00	0.	0.	0.	1.25E+00	2.50E-01	3	3.11108E-01		
14	0.	1.24E+04	6.32E+04	4.766E+09	7.176E+00	9.37E+07	-2.01E+08	-1.60E+07	1.50E+00	2.50E-01	3	3.52235E-01		
15	-7.324E+10	7.62E+03	4.09E+04	3.414E+09	8.024E+00	2.68E+08	-4.74E+08	-5.91E+07	1.75E+00	2.50E-01	3	3.93687E-01		
16	-5.188E+10	5.07E+03	2.61E+04	2.179E+09	8.475E+00	2.77E+08	-5.06E+08	-4.31E+07	2.00E+00	2.50E-01	3	4.15999E-01		
17	1.317E+10	3.42E+03	2.97E+04	1.683E+09	8.922E+00	2.56E+08	-5.19E+08	-4.17E+07	2.25E+00	2.50E-01	3	4.37933E-01		
18	6.610E+10	2.04E+03	3.10E+04	1.566E+09	9.238E+00	2.38E+08	-5.23E+08	-3.00E+07	2.50E+00	2.50E-01	3	4.54437E-01		
19	7.201E+10	9.81E+02	2.41E+04	1.429E+09	9.307E+00	2.51E+08	-5.27E+08	-2.39E+07	2.75E+00	2.50E-01	3	4.56877E-01		
20	4.503E+10	3.86E+02	1.35E+04	1.247E+09	9.167E+00	2.71E+08	-5.30E+08	-1.87E+07	3.00E+00	2.50E-01	3	4.49984E-01		
21	1.969E+10	1.51E+02	5.64E+03	1.157E+09	9.022E+00	2.89E+08	-5.32E+08	-1.39E+07	3.25E+00	2.50E-01	3	4.42048E-01		
22	6.860E+09	7.30E+01	1.57E+03	1.137E+09	8.943E+00	3.04E+08	-5.31E+08	-1.30E+07	3.50E+00	2.50E-01	3	4.39006E-01		
23	2.133E+09	3.39E+01	6.56E+02	1.134E+09	8.914E+00	3.13E+08	-5.30E+08	-1.67E+07	3.75E+00	2.50E-01	3	4.37545E-01		
24	4.643E+08	1.16E+01	2.63E+02	1.133E+09	8.903E+00	1.02E+08	-1.50E+08	-4.19E+06	4.00E+00	2.50E-01	3	4.37023E-01		
25	1.013E+06	6.69E+00	1.58E+02	1.356E+09	5.004E-03	4.70E+07	-7.11E+07	0.	4.25E+00	2.50E-01	1	6.01240E-05	3	1.85521E-04
26	1.013E+06	2.25E-04	1.75E-01	2.844E+09	1.225E-03	0.	0.	0.	4.50E+00	2.50E-01	1	6.01393E-05		
27	1.013E+06	0.	4.22E-02	2.044E+09	1.225E-03	0.	0.	0.	4.75E+00	2.50E-01	1	6.01321E-05		
28	1.013E+06	0.	0.	2.044E+09	1.225E-03	0.	0.	0.	5.00E+00	2.50E-01	1	6.01320E-05		

ENERGY MAP

ALTITUDE

12345678901234567890

METERS

- 1 -1.750E-02
- 2 -1.500E-02
- 3 -1.250E-02

```

0
11 +++++XXXXXXXXXXXXXXXXXXXXX 7.500E-03
    XDXXX
    0 000
12 0000++++XXXXXXXXXXXXXXXXXXXXX 1.000E-02
    XX
    00
13 0000++++XXXXXXXXXXXXXXXXXXXXX 1.250E-02
    XX
    0
14 0000++++XXXXXXXXXXXXXXXXXXXXX 1.500E-02
    OXX XXXX
    00
15 0000++++XXXXXXXXXXXXXXXXXXXXX 1.750E-02
    OXXXXXXXXXXXXX
    0
16 0000++++XXXXXXXXXXXXXXXXXXXXX 2.000E-02
    0
17 0000++++XXXXXXXXXXXXXXXXXXXXX 2.250E-02
    0
18 0000++++XXXXXXXXXXXXXXXXXXXXX 2.500E-02
    0
19 0000++++XXXXXXXXXXXXXXXXXXXXX 2.750E-02
    0
20 0000++++XXXXXXXXXXXXXXXXXXXXX 3.000E-02
    0
21 0000++++XXXXXXXXXXXXXXXXXXXXX 3.250E-02
    0
22 0000++++XXXXXXXXXXXXXXXXXXXXX 3.500E-02
    0
23 0000++++XXXXXXXXXXXXXXXXXXXXX 3.750E-02
    0
24 0000++++XXXXXXXXXXXXXXXXXXXXX 4.000E-02
    0
25 +++++XXXXXXXXXXXXXXXXXXXXX 4.250E-02

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MATERIAL MAP

```

-1.000E-02
-7.500E-03
-5.000E-03
-2.500E-03
0.
2.500E-03
5.000E-03
7.500E-03
1.000E-02
1.250E-02
1.500E-02
1.750E-02
2.000E-02
2.250E-02
2.500E-02
2.750E-02
3.000E-02
3.250E-02
3.500E-02
3.750E-02
4.000E-02
4.250E-02
4.500E-02
4.750E-02
5.000E-02

+
+
+

12345678901234567890
1 1 2
12345678901234567890
ALTTITUDE
METERS
1 +++++XXXXXXXXXXXXXXXXXXXXX -1.750E-02
2 +++++XXXXXXXXXXXXXXXXXXXXX -1.500E-02
3 +++++XXXXXXXXXXXXXXXXXXXXX -1.250E-02
4 +++++XXXXXXXXXXXXXXXXXXXXX -1.000E-02
5 +++++XXXXXXXXXXXXXXXXXXXXX -7.500E-03
6 +++++XXXXXXXXXXXXXXXXXXXXX -5.000E-03
7 +++++XXXXXXXXXXXXXXXXXXXXX -2.500E-03
8 +++++XXXXXXXXXXXXXXXXXXXXX 0.
9 XXXX++++XXXXXXXXXXXXXXXXXXXXX 2.500E-03
    XX
10 X+XX++++XXXXXXXXXXXXXXXXXXXXX 5.000E-03
    X XXXXXXXXXXXXXXXXXXXXXXXX

```

```

0000
26 ++++++ 4.500E-02
27 ++++++ 4.750E-02
28 ++++++ 5.000E-02
12345678901234567890
1
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
CYCLE 42 TIME 5.1575E-06 DT 1.580E-07 IDT 8 JDT 14
IN EOS, HIT NTRY LIMIT
IN EOS, J = 12 FORMING DPDTAU
IN EOS, HIT NTRY LIMIT
IN EOS, J = 14 FORMING DPDTAU
CYCLE 43 TIME 5.3155E-06 DT 1.587E-07 IDT 8 JDT 14
IN EOS, J = 12 FORMING DPDTAU
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
IN EOS, J = 12 FORMING DPDTAU
IN EOS, HIT NTRY LIMIT
IN EOS, J = 14 FORMING DPDTAU
CYCLE 44 TIME 5.4742E-06 DT 1.595E-07 IDT 8 JDT 14
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
IN EOS, J = 12 FORMING DPDTAU
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
IN EOS, J = 12 FORMING DPDTAU
IN EOS, HIT NTRY LIMIT
IN EOS, J = 12 FORMING DPDTAU
CYCLE 45 TIME 5.6337E-06 DT 1.603E-07 IDT 8 JDT 14
IN EOS, HIT NTRY LIMIT
IN EOS, J = 12 FORMING DPDTAU
IN EOS, HIT NTRY LIMIT
IN EOS, J = 12 FORMING DPDTAU
CYCLE 46 TIME 5.7940E-06 DT 1.133E-07 IDT 8 JDT 15
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
IN EOS, J = 12 FORMING DPDTAU
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
CYCLE 47 TIME 5.9073E-06 DT 9.272E-08 IDT 8 JDT 15
IN EOS, HIT NTRY LIMIT
IN EOS, J = 12 FORMING DPDTAU
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
CYCLE 48 TIME 6.0000E-06 DT 1.587E-07 IDT 8 JDT 15
IN EOS, HIT NTRY LIMIT

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IN EOS, HIT NTRY LIMIT  
 IN EOS, J = 12 FORMING DPDTAU  
 IN EOS, HIT NTRY LIMIT  
 IN EOS, J = 12 FORMING DPDTAU

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PROB 1.2000 CYCLE 48 TIME 6.000000E-06 DT 1.586964E-07

INTERNAL ENERGY KINETIC ENERGY TOTAL ENERGY ETH REL ERROR  
 1.62465114289773E+12 2.42920367942712E+13 2.59166879371689E+13 2.59147183848714E+13 1.21169107822903E+00

TOTAL MASS MTH RELMERR  
 6.69594760040804E+02 6.69594760040531E+02 5.43310525140656E-08

MAX VEL = 3.21396E+05 AT I 8 J 16

MAX CS = 5.36761E+05 AT I 1 J 13

MAX TEMP = 4.54067E+03 AT I 5 J 14

MAX P = 4.13952E+10 AT I 2 J 20

CELL SETTING DT, I 8 J 15

TOTAL TIME FOR THIS PROBLEM 0 HOURS, 0 MIN, 16 SEC  
 OF THIS 0 HOURS, 0 MIN, 0 SEC IS 6600 TIME.  
 AND 0 HOURS, 0 MIN, 16 SEC IS 7600/176 TIME.

TIME FOR THIS RUN 0 HOURS, 0 MIN, 30 SEC

WHIZ FACTOR TOTAL PROBLEM = 6.16E-04 SEC/CELL/CYCLE

WHIZ FACTOR SINCE LAST DUMP = 6.97E-04 SEC/CELL/CYCLE

I = 1 X(I) = .250 DX(I) = .250

J	P	U	V	XI	RHO	SRR	SZZ	SRZ	Y	DY	M	X01	H	X01	M
1	1.813E+06	0.	3.00E+05	2.844E+09	1.225E-03	0.	0.	0.	-1.75E+00	2.50E-01	1	6.01320E-05			
2	1.813E+06	0.	3.00E+05	2.844E+09	1.225E-03	0.	0.	0.	-1.50E+00	2.50E-01	1	6.01336E-05			
3	1.814E+06	4.43E-02	3.00E+05	2.845E+09	1.226E-03	0.	0.	0.	-1.25E+00	2.50E-01	1	6.01762E-05			
4	1.026E+06	6.16E-01	3.00E+05	2.852E+09	1.236E-03	0.	0.	0.	-1.00E+00	2.50E-01	1	6.06772E-05			
5	1.195E+06	1.65E+01	2.96E+05	2.218E+09	1.334E-03	0.	0.	0.	-7.50E-01	2.50E-01	1	6.55059E-05			
6	2.948E+06	1.61E+02	2.76E+05	4.292E+09	1.748E-03	0.	0.	0.	-5.00E-01	2.50E-01	1	8.58252E-05			
7	8.240E+06	-2.42E+02	2.36E+05	8.245E+09	2.677E-03	0.	0.	0.	-2.50E-01	2.50E-01	1	1.31413E-04			

8	0.498E+06	6.92E+03	1.44E+05	9.517E+09	2.431E-03	0.	0.	2.50E-01	1.19319E-04
9	1.439E+07	4.10E+03	1.30E+05	8.112E+09	7.425E+00	9.57E+08	-1.99E+09	0.	2.50E-01
10	-1.974E+10	4.28E+03	1.19E+05	7.797E+09	7.364E+00	1.20E+09	-2.11E+09	1.51E+08	2.50E-01
11	8.216E+04	5.08E+03	9.92E+04	7.414E+09	3.147E+00	4.76E+08	-8.30E+08	0.	2.50E-01
IN EOS, J = 28 FORMING DPDTAU									
IN EOS, HIT NTRY LIMIT									
12	1.159E+03	9.70E+03	9.70E+03	7.799E+09	6.126E+00	0.	0.	1.00E+00	2.50E-01
13	0.	1.17E+04	7.44E+04	7.086E+09	5.412E+00	0.	0.	1.25E+00	2.50E-01
14	0.	1.27E+04	7.32E+04	5.737E+09	5.874E+00	0.	0.	1.50E+00	2.50E-01
15	-6.036E+09	1.14E+04	6.40E+04	4.555E+09	7.300E+00	1.11E+08	-2.44E+08	-2.48E+07	2.00E+00
16	-8.012E+10	5.87E+03	3.31E+04	3.074E+09	8.143E+00	2.58E+08	-4.83E+08	-5.88E+07	2.25E+00
17	-9.099E+10	3.82E+03	1.06E+04	2.123E+09	8.259E+00	2.82E+08	-5.08E+08	-3.35E+07	2.50E+00
18	-5.621E+10	2.53E+03	9.89E+03	1.572E+09	8.589E+00	2.98E+08	-5.20E+08	-2.79E+07	2.50E+00
19	-3.977E+09	1.70E+03	1.51E+04	1.314E+09	8.954E+00	2.47E+08	-5.29E+08	-1.15E+07	2.75E+00
20	3.057E+10	1.00E+03	1.70E+04	1.260E+09	9.077E+00	2.42E+08	-5.30E+08	-1.29E+07	3.00E+00
21	3.671E+10	4.99E+02	1.36E+04	1.222E+09	9.119E+00	2.56E+08	-5.31E+08	-1.37E+07	3.25E+00
22	2.479E+10	2.18E+02	0.10E+03	1.170E+09	9.852E+00	2.72E+08	-5.32E+08	-1.23E+07	3.50E+00
23	1.163E+10	1.02E+02	3.91E+03	1.142E+09	8.973E+00	2.89E+08	-5.33E+08	-9.35E+06	3.75E+00
24	2.878E+09	8.30E+01	1.96E+03	1.134E+09	8.918E+00	3.35E+08	-5.27E+08	-3.63E+06	4.00E+00
25	1.015E+06	8.54E+01	1.47E+03	1.161E+09	4.139E-02	3.46E+08	-5.25E+08	0.	4.25E+00
26	1.015E+05	7.82E-02	4.70E+00	2.046E+09	1.226E-03	0.	0.	0.	4.75E+00
27	1.013E+06	2.94E-08	1.68E+00	2.044E+09	1.225E-03	0.	0.	0.	5.00E+00
28	1.013E+06	0.	0.	2.044E+09	1.225E-03	0.	0.	0.	0.

ENERGY MAP

95

ALTITUDE

12345678901234567890

1	T	TT	2.500E-03	
2	BBT	5.000E-03		
3	B	7.500E-03		
4	BB	1.000E-02		
5	BBB	1.250E-02		
6	BBBB	1.500E-02		
7	TTTT	1.750E-02		
8	T	2.000E-02		
9	TT	2.250E-02		
10	BBT	2.500E-02		
11	B	2.750E-02		
12	B	3.000E-02		
13	TTTT	3.250E-02		
14	T	3.500E-02		
15	TT	3.750E-02		
16	BB	4.000E-02		
17	BBB	4.250E-02		
18	TTTTTTTTTTTT	4.500E-02		
19	TTTTTTTTTTTT	4.750E-02		
20	TTTTTTTTTTTT	5.000E-02		
21	TTTTTTTTTTTT	5.250E-02		

METERS

1	-1.750E-02
2	-1.500E-02
3	-1.250E-02
4	-1.000E-02
5	-7.500E-03
6	-5.000E-03
7	-2.500E-03
8	0.
9	2.500E-03
10	5.000E-03
11	7.500E-03
12	1.000E-02
13	1.250E-02
14	1.500E-02
15	1.750E-02
16	2.000E-02
17	2.250E-02
18	2.500E-02
19	2.750E-02
20	3.000E-02
21	3.250E-02

AD-A071 519

AIR FORCE WEAPONS LAB KIRTLAND AFB NM  
THE INSTALLATION AND OPERATION OF HULL ON 370S. PART 1. (U)

F/G 15/6

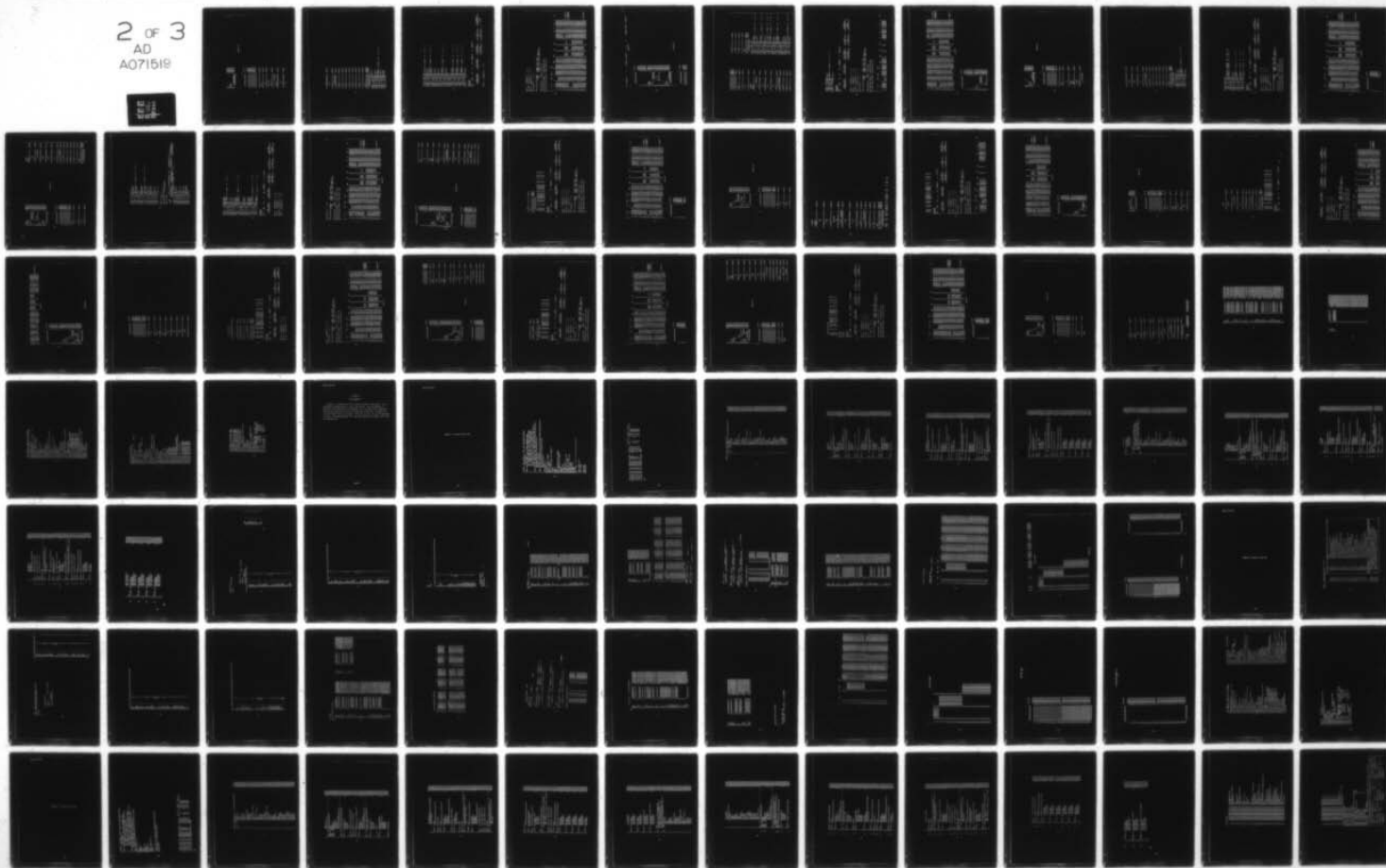
UNCLASSIFIED

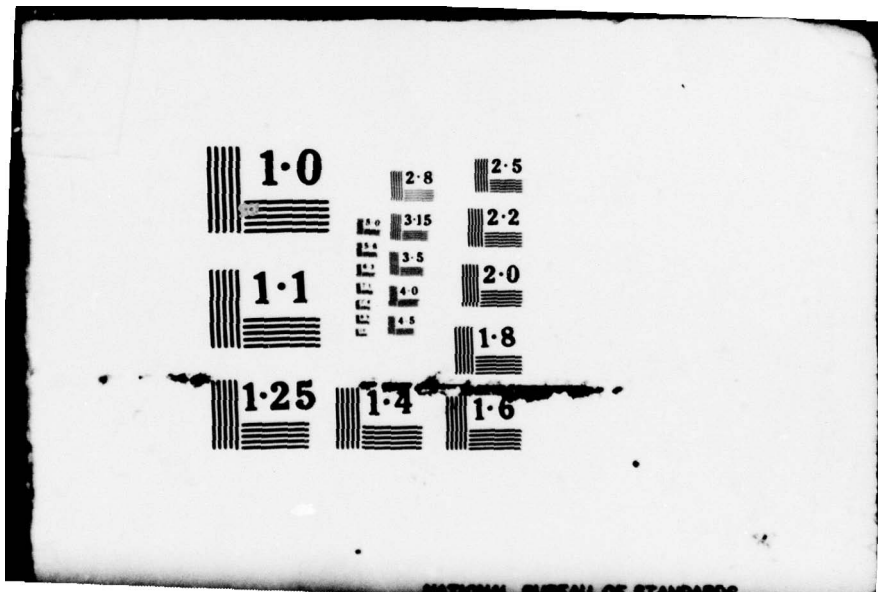
AFWL-TR-78-134-PT-1

SBIE-AD-E200 324

NL

2 OF 3  
AD  
A071519





NATIONAL BUREAU OF STANDARDS

22 8 3.500E-02  
 23 3.750E-02  
 24 4.000E-02  
 25 8888 4.250E-02  
 26 T 4.500E-02  
 27 TTTT 4.750E-02  
 28 8888888888888888 5.000E-02  
 12345678901234567890

MATERIAL MAP

+  
 +  
 +  
 ALTITUDE  
 12345678901234567890

METERS  
 1 ++++++ -1.750E-02  
 2 ++++++ -1.500E-02  
 3 ++++++ -1.250E-02  
 4 ++++++ -1.000E-02  
 5 ++++++ -7.500E-03  
 6 ++++++ -5.000E-03  
 7 ++++++ -2.500E-03  
 8 ++++++ 0.

X  
 9 +X+++++ 2.500E-03  
 X XXX  
 10 XXX+++++ 5.000E-03  
 XX  
 11 ++X+X+++++ 7.500E-03  
 XXXXD XXXX

0 0  
 12 +0+0+++++ 1.000E-02  
 X X X X XXXXXXXXXXXXXXXX  
 0 0 00  
 13 00000+++++ 1.250E-02  
 XX

0  
 14 0000+++++ 1.500E-02  
 0:XX

00  
15 0000++++XXXXXXXXXXXXXXXXXXXX 1.750E-02

00X

0  
16 0000++++XXXXXXXXXXXXXXXXXXXX 2.000E-02

00XXXXXXXXXXXXXXXXXXXXXXXXXXXX  
17 0000++++XXXXXXXXXXXXXXXXXXXX 2.250E-02

0  
18 0000++++XXXXXXXXXXXXXXXXXXXX 2.500E-02

0  
19 0000++++XXXXXXXXXXXXXXXXXXXX 2.750E-02

0  
20 0000++++XXXXXXXXXXXXXXXXXXXX 3.000E-02

0  
21 0000++++XXXXXXXXXXXXXXXXXXXX 3.250E-02

0  
22 0000++++XXXXXXXXXXXXXXXXXXXX 3.500E-02

0  
23 0000++++XXXXXXXXXXXXXXXXXXXX 3.750E-02

0  
24 0000++++XXXXXXXXXXXXXXXXXXXX 4.000E-02

0  
25 ++++++XXXXXXXXXXXXXXXXXXXX 4.250E-02

0000  
26 ++++++XXXXXXXXXXXXXXXXXXXX 4.500E-02  
27 ++++++XXXXXXXXXXXXXXXXXXXX 4.750E-02  
28 ++++++XXXXXXXXXXXXXXXXXXXX 5.000E-02

12345678901234567890  
1

2  
IN EOS, J = 12 FORMING DPDTAU  
IN EOS, HIT NTRY LIMIT  
IN EOS, HIT NTRY LIMIT  
IN EOS, J = 12 FORMING DPDTAU  
IN EOS, HIT NTRY LIMIT  
IN EOS, J = 12 FORMING DPDTAU  
IN CYCLE 49 TIME 6.1567E-06 DT 1.591E-07 IDT 8 JDT 15  
IN EOS, HIT NTRY LIMIT  
IN EOS, J = 12 FORMING DPDTAU  
IN EOS, HIT NTRY LIMIT  
IN EOS, J = 12 FORMING DPDTAU  
IN EOS, J = 13 FORMING DPDTAU  
IN EOS, HIT NTRY LIMIT

```

IN EOS, HIT NTRY LIMIT
CYCLE 50 TIME 6.3178E-06 DT 1.597E-07 IDT 8 JDT 15
IN EOS, HIT NTRY LIMIT
IN EOS, J = 12 FORMING DPDTAU
IN EOS, HIT NTRY LIMIT
IN EOS, J = 13 FORMING DPDTAU
CYCLE 51 TIME 6.4775E-06 DT 1.604E-07 IDT 8 JDT 15
IN EOS, J = 12 FORMING DPDTAU
IN EOS, HIT NTRY LIMIT
IN EOS, J = 12 FORMING DPDTAU
IN EOS, HIT NTRY LIMIT
IN EOS, J = 11 FORMING DPDTAU
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
IN EOS, J = 13 FORMING DPDTAU
CYCLE 52 TIME 6.6379E-06 DT 1.581E-07 IDT 8 JDT 16
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
IN EOS, J = 11 FORMING DPDTAU
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
IN EOS, J = 13 FORMING DPDTAU
CYCLE 53 TIME 6.7960E-06 DT 1.122E-07 IDT 8 JDT 16
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
IN EOS, J = 13 FORMING DPDTAU
CYCLE 54 TIME 6.9082E-06 DT 9.100E-08 IDT 8 JDT 16
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
CYCLE 55 TIME 7.0000E-06 DT 1.594E-07 IDT 8 JDT 16
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
IN EOS, J = 13 FORMING DPDTAU

```

```

+
+
*****
*****
+ PROB 1.2000 CYCLE 55 TIME 7.000000E-06 DT 1.594394E-07
+
+
INTERNAL ENERGY KINETIC ENERGY TOTAL ENERGY REL ERROR
1.68128800743937E+12 2.42325375877146E+13 2.59138255951539E+13 -2.78686498948739E+01
TOTAL MASS MTH ETH
6.69552879679039E+02 6.69552879678766E+02 2.59125780381940E+13 -2.78686498948739E+01
REL ERR
MAX VEL = 3.17009E+05 AT I 8 J 10

```

+ MAX CS = 5.52316E+05 AT I 1 J 14  
 + MAX TEMP = 4.49931E+03 AT I 8 J 17  
 + MAX P = 3.58897E+10 AT I 6 J 13  
 + CELL SETTING DT, I 8 J 16  
 +  
 +

+ TOTAL TIME FOR THIS PROBLEM OF THIS AND  
 0 HOURS, 0 MIN, 19 SEC IS 6600 TIME.  
 0 HOURS, 0 MIN, 19 SEC IS 7600/176 TIME.

+ TIME FOR THIS RUN 0 HOURS, 0 MIN, 41 SEC

+ UMIZ FACTOR TOTAL PROBLEM = 6.29E-04 SEC/CELL/CYCLE

+ UMIZ FACTOR SINCE LAST DUMP = 7.07E-04 SEC/CELL/CYCLE

+ I = 1 X(I) = .250 DX(I) = .250

99

J	P	U	V	XI	RHO	SRR	SZZ	SRZ	Y	DY	M	XM	M	XM	
1	1.013E+06	0.	3.80E+05	2.844E+09	1.225E-03	0.	0.	0.	-1.75E+00	2.50E-01	1	6.01320E-05			
2	1.013E+06	0.	3.80E+05	2.844E+09	1.225E-03	0.	0.	0.	-1.50E+00	2.50E-01	1	6.01335E-05			
3	1.014E+06	4.01E-02	3.80E+05	2.844E+09	1.226E-03	0.	0.	0.	-1.25E+00	2.50E-01	1	6.01635E-05			
4	1.022E+06	4.94E-01	3.80E+05	2.849E+09	1.233E-03	0.	0.	0.	-1.00E+00	2.50E-01	1	6.05148E-05			
5	1.109E+06	9.15E+00	2.98E+05	2.128E+09	1.290E-03	0.	0.	0.	-7.50E-01	2.50E-01	1	6.33007E-05			
6	1.917E+06	7.82E+01	2.86E+05	3.149E+09	1.527E-03	0.	0.	0.	-5.00E-01	2.50E-01	1	7.49423E-05			
7	5.465E+06	-1.53E+02	2.55E+05	6.471E+09	2.214E-03	0.	0.	0.	-2.50E-01	2.50E-01	1	1.08659E-04			
8	1.085E+07	2.87E+03	1.99E+05	1.025E+10	2.908E-03	0.	0.	0.	0.	2.50E-01	1	1.42728E-04			
9	9.610E+06	3.51E+03	1.35E+05	8.091E+09	3.227E+00	8.42E+08	-1.95E+09	0.	5.00E-01	2.50E-01	1	7.19763E-05			
10	1.875E+10	4.74E+03	1.25E+05	8.105E+09	7.340E+00	1.01E+09	-1.96E+09	9.55E+07	5.00E-01	2.50E-01	2	3.68282E-01			
11	8.087E+04	4.74E+03	1.07E+05	7.767E+09	6.184E+00	1.17E+09	-2.14E+09	0.	7.50E-01	2.50E-01	1	8.43920E-07			
12	4.187E+04	9.70E+03	8.16E+04	7.803E+09	2.403E+00	0.	0.	0.	1.00E+00	2.50E-01	3	1.17314E-01			
13	0.	9.35E+03	7.65E+04	7.769E+09	5.921E+00	0.	0.	0.	1.25E+00	2.50E-01	3	2.74432E-01			
14	0.	1.14E+04	7.37E+04	6.924E+09	4.921E+00	0.	0.	0.	1.50E+00	2.50E-01	3	2.41569E-01			
15	0.	1.29E+04	7.60E+04	5.482E+09	6.114E+00	2.47E+07	-5.20E+07	-6.11E+06	1.75E+00	2.50E-01	3	3.00115E-01			
16	-5.267E+10	4.81E+03	5.74E+04	3.592E+09	8.101E+00	2.37E+08	-4.34E+08	-9.09E+07	2.00E+00	2.50E-01	3	3.97651E-01			
17	-4.618E+10	7.87E+03	2.29E+04	2.369E+09	8.489E+00	2.43E+08	-5.03E+08	-3.71E+07	2.25E+00	2.50E-01	3	4.16701E-01			
18	-8.816E+10	1.5E+03	3.99E+03	1.909E+09	8.294E+00	2.91E+08	-5.12E+08	-3.69E+07	2.50E+00	2.50E-01	3	4.07146E-01			
19	-8.359E+10	1.51E+03	-2.79E+03	1.611E+09	8.348E+00	3.49E+08	-5.11E+08	1.53E+07	2.75E+00	2.50E-01	3	4.09782E-01			
20	-4.913E+10	9.97E+02	1.42E+03	1.328E+09	8.576E+00	3.85E+08	-4.43E+08	2.11E+08	3.00E+00	2.50E-01	3	4.20965E-01			
21	-1.105E+10	6.83E+02	6.89E+03	1.194E+09	8.823E+09	2.14E+08	-5.23E+08	6.79E+07	3.25E+00	2.50E-01	3	4.33100E-01			
22	1.101E+10	4.12E+02	9.14E+03	1.166E+09	8.966E+00	2.30E+08	-5.31E+08	1.28E+07	3.50E+00	2.50E-01	3	4.40126E-01			
23	1.478E+10	2.97E+02	8.36E+03	1.153E+09	8.951E+00	2.49E+08	-5.33E+08	-1.37E+05	3.75E+00	2.50E-01	3	4.41365E-01			
24	5.571E+09	1.20E+02	5.67E+03	1.140E+09	8.935E+00	3.14E+08	-5.30E+08	7.63E+06	4.00E+00	2.50E-01	3	4.38587E-01			
25	1.021E+06	1.62E+02	5.36E+03	1.144E+09	2.017E-01	3.32E+08	-5.27E+08	0.	4.23E+00	2.50E-01	1	5.99750E-05		3	9.84032E-03
26	1.034E+06	1.59E+00	7.06E+01	2.056E+09	1.244E-03	0.	0.	0.	4.50E+00	2.50E-01	1	6.10627E-05			
27	1.013E+06	1.73E-05	1.68E+01	2.044E+09	1.225E-03	0.	0.	0.	4.75E+00	2.50E-01	1	6.01353E-05			

20 1.013E+06 0. 0. 2.044E+09 1.225E-03 0. 0. 5.00E+00 2.50E-01 1.601320E-05

ENERGY MAP

1 2

ALTITUDE

12345678901234567890

METERS  
 -1.750E-02  
 -1.500E-02  
 -1.250E-02  
 -1.000E-02  
 -7.500E-03  
 -5.000E-03  
 -2.500E-03  
 0.  
 2.500E-03  
 5.000E-03  
 7.500E-03  
 1.000E-02  
 1.250E-02  
 1.500E-02  
 1.750E-02  
 2.000E-02  
 2.250E-02  
 2.500E-02  
 2.750E-02  
 3.000E-02  
 3.250E-02  
 3.500E-02  
 3.750E-02  
 4.000E-02  
 4.250E-02  
 4.500E-02  
 4.750E-02  
 5.000E-02

MATERIAL MAP

1 2

ALTITUDE

12345678901234567890

METERS  
 -1.750E-02  
 -1.500E-02  
 -1.250E-02

```

4 ++++++ -1.000E-02
5 ++++++ -7.500E-03
6 ++++++ -5.000E-03
7 ++++++ -2.500E-03
8 ++++++ 0.
9 ++++++ 2.500E-03
   XXXX
10 XXXX+++++ 5.000E-03
   X
11 +XX+++++ 7.500E-03
   XX XX
   0
12 ++++++ 1.000E-02
   XXXXXXXX
   000000
13 00+00+++++ 1.250E-02
   0 XX XXXXXXXXXXXXXXXX
   0XX
14 0000+++++XXXXXXXXXXXXX 1.500E-02
   0
   0XX
15 0000+++++XXXXXXXXXXXXX 1.750E-02
   0XX
   0
16 0000+++++XXXXXXXXXXXXX 2.000E-02
   0XX
   0
17 0000+++++XXXXXXXXXXXXX 2.250E-02
   00XXXXXXXXXXXXXXXXXXXXX
18 0000+++++XXXXXXXXXXXXX 2.500E-02
   0 X
19 0000+++++XXXXXXXXXXXXX 2.750E-02
   0
20 0000+++++XXXXXXXXXXXXX 3.000E-02
   0
21 0000+++++XXXXXXXXXXXXX 3.250E-02

```

101

```

0
22 0000+++++ 3.500E-02
   0
23 0000+++++ 3.750E-02
   0
24 0000+++++ 4.000E-02
   0
25 ++++++ 4.250E-02
   0000
26 ++++++ 4.500E-02
27 ++++++ 4.750E-02
28 ++++++ 5.000E-02
   12345678901234567890
   1 2
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
IN EOS, J = 13 FORMING DPDTAU
CYCLE 56 TIME 7.1594E-06 DT 1.578E-07 IDT 8 JDT 17
IN EOS, HIT NTRY LIMIT
IN EOS, J = 13 FORMING DPDTAU
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
IN EOS, J = 12 FORMING DPDTAU
CYCLE 57 TIME 7.3173E-06 DT 1.581E-07 IDT 8 JDT 17
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
IN EOS, J = 13 FORMING DPDTAU
CYCLE 58 TIME 7.4754E-06 DT 1.585E-07 IDT 8 JDT 17
IN EOS, HIT NTRY LIMIT
IN EOS, J = 13 FORMING DPDTAU
CYCLE 59 TIME 7.6339E-06 DT 1.589E-07 IDT 8 JDT 17
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
IN EOS, J = 13 FORMING DPDTAU
CYCLE 60 TIME 7.7928E-06 DT 1.139E-07 IDT 8 JDT 17
IN EOS, J = 13 FORMING DPDTAU
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
IN EOS, J = 13 FORMING DPDTAU
IN EOS, HIT NTRY LIMIT
IN EOS, J = 15 FORMING DPDTAU
CYCLE 61 TIME 7.9068E-06 DT 9.323E-08 IDT 8 JDT 17
IN EOS, HIT NTRY LIMIT
IN EOS, J = 13 FORMING DPDTAU

```

```

IN EOS. HIT NTRY LIMIT
IN EOS. J = 15 FORMING DPDTAU
IN EOS. HIT NTRY LIMIT
CYCLE 62 TIME 9.0000E-06 DT 1.602E-07 IDT 8 JDT 17
IN EOS. HIT NTRY LIMIT
IN EOS. HIT NTRY LIMIT
IN EOS. J = 13 FORMING DPDTAU
+
+
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
+
+
PROB 1.2000 CYCLE 62 TIME 9.000000E-06 DT 1.601803E-07
+
+

```

```

INTERNAL ENERGY KINETIC ENERGY TOTAL ENERGY ETH REL ERROR
1.72922640406992E+12 2.41767714593131E+13 2.59059970633830E+13 2.59066087813876E+13 -7.17340307905742E+01
+
TOTAL MASS MTH RELMERR
6.69432388358266E+02 6.69432388357902E+02 1.35868576450976E-07
+

```

```

MAX VEL = 3.12918E+05 AT I 8 J 19
MAX CS = 5.65957E+05 AT I 1 J 14
MAX TEMP = 4.45281E+03 AT I 8 J 18
MAX P = 3.52901E+10 AT I 2 J 17
CELL SETTING DT, I 8 J 17
+
+

```

```

TOTAL TIME FOR THIS PROBLEM 0 HOURS, 0 MIN, 22 SEC
OF THIS 0 HOURS, 0 MIN, 0 SEC IS 6600 TIME.
AND 0 HOURS, 0 MIN, 22 SEC IS 7600/176 TIME.
+
+

```

```

TIME FOR THIS RUN 0 HOURS, 0 MIN, 44 SEC
WHIZ FACTOR TOTAL PROBLEM = 6.36E-04 SEC/CELL/CYCLE
WHIZ FACTOR SINCE LAST DUMP = 6.99E-04 SEC/CELL/CYCLE
+
+

```

```

I = 1 X(I) = .250 DX(I) = .250
+
+

```

J	P	U	V	XI	RHO	SRR	SZZ	SRZ	Y	DY	M	X01	M	X01
1	1.013E+06	0.	3.00E+05	2.044E+09	1.225E-03	0.	0.	0.	-1.75E+00	2.50E-01	1	6.01320E-05		
2	1.013E+06	0.	3.00E+05	2.044E+09	1.225E-03	0.	0.	0.	-1.50E+00	2.50E-01	1	6.01333E-05		
3	1.013E+06	2.91E-02	3.00E+05	2.044E+09	1.225E-03	0.	0.	0.	-1.29E+00	2.50E-01	1	6.01524E-05		
4	1.019E+06	3.24E-01	3.00E+05	2.047E+09	1.230E-03	0.	0.	0.	-1.00E+00	2.50E-01	1	6.03674E-05		



21 TT 3.250E-02  
 22 3.500E-02  
 23 3.750E-02  
 24 4.000E-02  
 25 8888 4.250E-02  
 26 T 4.500E-02  
 27 TTT 4.750E-02  
 28 8888 88 8 28 5.000E-02  
 12345678901234567898  
 1  
 2

MATERIAL MAP

+  
+  
+

ALTITUDE  
 12345678901234567898  
 1 2

METERS  
 1 ++++++ -1.750E-02  
 2 ++++++ -1.500E-02  
 3 ++++++ -1.250E-02  
 4 ++++++ -1.000E-02  
 5 ++++++ -7.500E-03  
 6 ++++++ -5.000E-03  
 7 ++++++ -2.500E-03  
 8 ++++++ 0.  
 9 ++++++ 2.500E-03

X  
 10 +X+++++ 5.000E-03  
 X XX  
 11 XXXX+++++ 7.500E-03  
 X

0  
 12 ++++++ 1.000E-02  
 XXXXXXXX

00000  
 13 +0+0+++++ 1.250E-02  
 X 0 XXXX

0 00  
 14 00000+X+++++ 1.500E-02  
 XX XXXXXXXXXX  
 0

15 0000++++XXXXXXXXXXXXXXXXX 1.750E-02  
     0XX  
     00  
 16 0000++++XXXXXXXXXXXXXXXXX 2.000E-02  
     00X0  
     0  
 17 0000++++XXXXXXXXXXXXXXXXX 2.250E-02  
     00X  
     0  
 18 0000++++XXXXXXXXXXXXXXXXX 2.500E-02  
     0 X XXXXXXXXXXXXXXXXX  
 19 0000++++XXXXXXXXXXXXXXXXX 2.750E-02  
     0 XX  
 20 0000++++XXXXXXXXXXXXXXXXX 3.000E-02  
     0  
 21 0000++++XXXXXXXXXXXXXXXXX 3.250E-02  
     0  
 22 0000++++XXXXXXXXXXXXXXXXX 3.500E-02  
     0  
 23 0000++++XXXXXXXXXXXXXXXXX 3.750E-02  
     0  
 24 0000++++XXXXXXXXXXXXXXXXX 4.000E-02  
     0  
 25 ++++++XXXXXXXXXXXXXXXXX 4.250E-02

0000  
 26 ++++++XXXXXXXXXXXXXXXXX 4.500E-02  
 27 ++++++XXXXXXXXXXXXXXXXX 4.750E-02  
 28 ++++++XXXXXXXXXXXXXXXXX 5.000E-02  
 12345678901234567890

IN EOS, HIT NTRY LIMIT  
 IN EOS, HIT NTRY LIMIT  
 IN EOS, J = 13 FORMING DPDTAU  
 IN EOS, HIT NTRY LIMIT  
 IN EOS, J = 14 FORMING DPDTAU  
 CYCLE 63 TIME 8.1602E-06 DT 1.586E-07 IDT 8 JDT 18  
 IN EOS, J = 13 FORMING DPDTAU  
 IN EOS, HIT NTRY LIMIT  
 IN EOS, J = 13 FORMING DPDTAU

```

IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
CYCLE 64 TIME 8.3188E-06 DT 1.590E-07 IDT 8 JDT 18
CYCLE 65 TIME 8.4779E-06 DT 1.595E-07 IDT 8 JDT 18
CYCLE 66 TIME 8.6373E-06 DT 1.599E-07 IDT 8 JDT 19
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
IN EOS, J = 12 FORMING DPDTAU
IN EOS, HIT NTRY LIMIT
IN EOS, J = 16 FORMING DPDTAU
CYCLE 67 TIME 8.7973E-06 DT 1.115E-07 IDT 8 JDT 18
IN EOS, J = 17 FORMING DPDTAU
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
CYCLE 68 TIME 8.9088E-06 DT 9.124E-08 IDT 9 JDT 19
IN EOS, J = 17 FORMING DPDTAU
IN EOS, HIT NTRY LIMIT
CYCLE 69 TIME 9.0000E-06 DT 1.606E-07 IDT 9 JDT 19
+
+
*****
*****
+
PROB 1.2000 CYCLE 69 TIME 9.000000E-06 DT 1.605726E-07
+
+
INTERNAL ENERGY KINETIC ENERGY TOTAL ENERGY REF ERROR
1.77378202501109E+12 2.41187602679320E+13 2.58925422929430E+13 -1.48702738729E06E+02
+
TOTAL MASS MTH RELMERR
6.69233202903382E+02 6.69233202902902E+02 5.43604051817601E-08
+
MAX VEL = 3.10555E+05 AT I 9 J 20
+
MAX CS = 5.59930E+05 AT I 1 J 15
+
MAX TEMP = 4.06081E+03 AT I 8 J 19
+
MAX P = 7.066898E+10 AT I 1 J 18
+
CELL SETTING DT, I 9 J 19
+
+
TOTAL TIME FOR THIS PROBLEM 0 HOURS, 0 MIN, 24 SEC
OF THIS 0 HOURS, 0 MIN, 0 SEC IS 6600 TIME.
AND 0 HOURS, 0 MIN, 24 SEC IS 7600/176 TIME.
+
TIME FOR THIS RUN 0 HOURS, 0 MIN, 46 SEC
+
WATZ FACTOR TOTAL PROBLEM = 6.40E-04 SEC/CELL/CYCLE
+
WATZ FACTOR SINCE LAST DUMP = 6.67E-04 SEC/CELL/CYCLE

```

J	P	U	V	XI	RHO	SRR	SZZ	SRZ	Y	DY	M	XI	M	XI
1	1.013E+06	0.	3.00E+05	2.044E+09	1.225E-03	0.	0.	0.	-1.75E+00	2.50E-01	1	6.01320E-05		
2	1.013E+06	0.	3.00E+05	2.044E+09	1.225E-03	0.	0.	0.	-1.50E+00	2.50E-01	1	6.01330E-05		
3	1.013E+06	1.80E-02	3.00E+05	2.044E+09	1.225E-03	0.	0.	0.	-1.25E+00	2.50E-01	1	6.01445E-05		
4	1.016E+06	1.03E-01	3.00E+05	2.046E+09	1.228E-03	0.	0.	0.	-1.00E+00	2.50E-01	1	6.02657E-05		
5	1.039E+06	1.74E+00	2.99E+05	2.063E+09	1.246E-03	0.	0.	0.	-7.50E-01	2.50E-01	1	6.11544E-05		
6	1.213E+06	8.79E+00	2.96E+05	2.260E+09	1.331E-03	0.	0.	0.	-5.00E-01	2.50E-01	1	6.53201E-05		
7	2.279E+06	-1.26E+02	2.80E+05	3.564E+09	1.613E-03	0.	0.	0.	-2.50E-01	2.50E-01	1	7.91669E-05		
8	5.458E+06	4.37E+01	2.46E+05	7.290E+09	2.344E-03	0.	0.	0.	0.	2.50E-01	1	1.15071E-04		
9	1.232E+07	1.56E+03	1.96E+05	1.070E+10	3.157E-03	0.	0.	0.	2.50E-01	2.50E-01	1	1.54969E-04		
10	1.127E+07	6.35E+03	1.35E+05	8.283E+09	2.515E+00	9.84E+08	-1.05E+09	0.	5.00E-01	2.50E-01	1	9.35151E-05	2	1.23382E-01
11	1.570E+10	4.02E+03	1.21E+05	8.289E+09	7.342E+00	1.00E+09	-1.86E+09	1.25E+07	7.50E-01	2.50E-01	2	3.68413E-01		
12	4.971E+04	3.65E+03	1.10E+05	8.133E+09	5.114E+00	1.89E+09	-1.94E+09	0.	1.00E+00	2.50E-01	1	9.20653E-07	2	2.51023E-01
13	2.696E+04	7.23E+03	7.95E+04	7.994E+09	1.851E+00	0.	0.	0.	1.25E+00	2.50E-01	3	9.07735E-02	2	8.88273E-05
14	0.	7.72E+03	7.83E+04	8.114E+09	5.115E+00	0.	0.	0.	1.50E+00	2.50E-01	3	2.51005E-01		
15	0.	7.80E+03	7.72E+04	7.110E+09	4.739E+00	0.	0.	0.	1.75E+00	2.50E-01	3	3.2632E-01		
16	-3.420E+08	-5.51E+02	5.20E+04	4.591E+09	8.139E+00	1.27E+08	-2.31E+08	-4.94E+07	2.00E+00	2.50E-01	3	3.99479E-01		
17	6.504E+10	1.50E+03	2.89E+04	2.070E+09	9.100E+00	2.84E+08	-4.96E+08	-1.63E+07	2.25E+00	2.50E-01	3	4.47895E-01		
18	7.329E+10	1.36E+02	3.20E+04	2.031E+09	9.249E+00	1.59E+08	-4.54E+08	-1.82E+08	2.50E+00	2.50E-01	3	4.54025E-01		
19	7.011E+10	-6.55E+02	2.33E+04	1.646E+09	9.273E+00	2.11E+08	-5.17E+08	-5.53E+07	2.75E+00	2.50E-01	3	4.55168E-01		
20	1.529E+10	-1.22E+03	1.05E+04	1.353E+09	8.972E+00	2.74E+08	-5.20E+08	-2.53E+06	3.00E+00	2.50E-01	3	4.40415E-01		
21	-3.281E+10	-9.09E+02	-2.06E+03	1.302E+09	8.677E+00	3.51E+08	-5.01E+08	1.09E+06	3.25E+00	2.50E-01	3	4.25921E-01		
22	-5.374E+10	-7.25E+02	-6.79E+03	1.312E+09	8.550E+00	-6.03E+07	4.29E+08	2.19E+08	3.50E+00	2.50E-01	3	4.19699E-01		
23	-4.441E+10	-3.64E+02	-5.34E+03	1.240E+09	8.612E+00	-1.97E+08	4.99E+08	1.48E+08	3.75E+00	2.50E-01	3	4.22756E-01		
24	-1.916E+10	2.00E+02	-3.24E+03	1.162E+09	8.776E+00	-2.53E+08	4.46E+08	2.50E+08	4.00E+00	2.50E-01	3	4.30781E-01		
25	1.010E+06	1.21E+02	2.36E+03	1.156E+09	5.709E-01	2.13E+08	-3.05E+08	0.	4.25E+00	2.50E-01	1	5.6568E-05	3	2.79669E-02
26	1.102E+06	-3.30E+00	5.54E+02	2.096E+09	1.301E-03	0.	0.	0.	4.50E+00	2.50E-01	1	6.38440E-05		
27	1.015E+06	-2.35E-01	1.97E+02	2.045E+09	1.227E-03	0.	0.	0.	4.75E+00	2.50E-01	1	6.02171E-05		
28	1.013E+06	0.	0.	2.044E+09	1.225E-03	0.	0.	0.	5.00E+00	2.50E-01	1	6.01320E-05		

ENERGY MAP

1 2

12345678901234567890

ALTITUDE

METERS
-1.750E-02
-1.500E-02
-1.250E-02
-1.000E-02
-7.500E-03
-5.000E-03
-2.500E-03
0.
2.500E-03

10 TT T  
 11 88TBT  
 12 TTB BT  
 13 TTB B  
 14 88TT T  
 15 TT TTTTTTTTTT  
 16 88888888 B  
 17 888  
 18 TT  
 19 TT  
 20 TB 88  
 21 TB TTTTTTTTTT  
 22 88 TTT  
 23 TT  
 24  
 25 888  
 26 88 T  
 27 TTTT  
 28 12345678901234567890

1  
 2

108  
 12345678901234567890  
 1  
 2

ALTIMUDE

METERS  
 1 ++++++  
 2 -1.750E-02  
 3 -1.500E-02  
 4 -1.250E-02  
 5 -1.000E-02  
 6 -7.500E-03  
 7 -5.000E-03  
 8 -2.500E-03  
 9 0.  
 10 ++++++  
 11 XXXX  
 12 +XXX+  
 13 XX XX  
 14 00  
 15 ++++++

16 7.500E-03  
 17 X X  
 18 0  
 19 1.000E-02  
 20 XX XX  
 21 00  
 22 ++++++  
 23 1.250E-02

XXXXXXXX  
 000000  
 14 00000+++++ 1.500E-02  
 XXX  
 0  
 15 0000+XX+++++ 1.750E-02  
 0X XXXXXXXXXXXXXXXX  
 0  
 16 0000+++++XXXXXXX 2.000E-02  
 00X0  
 0  
 17 0000+++++XXXXXXXXXXXX 2.250E-02  
 00X0  
 0  
 18 0000+++++XXXXXXXXXXXX 2.500E-02  
 0 X  
 0  
 19 0000+++++XX+++++ 2.750E-02  
 0 XX XXXXXXXXXXXXXXXX  
 0  
 20 0000+++++XXXXXXXXXXXX 3.000E-02  
 0 XXX  
 21 0000+++++XXXXXXXXXXXX 3.250E-02  
 0  
 22 0000+++++XXXXXXXXXXXX 3.500E-02  
 0  
 23 0000+++++XXXXXXXXXXXX 3.750E-02  
 0  
 24 0000+++++XXXXXXXXXXXX 4.000E-02  
 0  
 25 ++++++XXXXXXXXXXXX 4.250E-02  
 0000  
 26 ++++++XXXXXXXXXXXX 4.500E-02  
 27 ++++++XXXXXXXXXXXX 4.750E-02  
 28 ++++++XXXXXXXXXXXX 5.000E-02  
 12345678901234567890

MATERIAL MAP

```

1
IN EOS, HIT NTRY LIMIT
IN EOS, J = 16 FORMING DPDTAU
IN EOS, J = 17 FORMING DPDTAU
IN EOS, HIT NTRY LIMIT
CYCLE 70 TIME 9.1606E-06 DT 1.597E-07 IDT 8 JDT 19
IN EOS, J = 14 FORMING DPDTAU
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
IN EOS, J = 16 FORMING DPDTAU
IN EOS, J = 17 FORMING DPDTAU
IN EOS, HIT NTRY LIMIT
CYCLE 71 TIME 9.3203E-06 DT 1.601E-07 IDT 8 JDT 19
IN EOS, J = 12 FORMING DPDTAU
IN EOS, HIT NTRY LIMIT
IN EOS, J = 12 FORMING DPDTAU
IN EOS, HIT NTRY LIMIT
IN EOS, J = 14 FORMING DPDTAU
IN EOS, J = 15 FORMING DPDTAU
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
IN EOS, J = 16 FORMING DPDTAU
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
IN EOS, J = 16 FORMING DPDTAU
+
+ PRESSURE ITERATION
+
VOL = 7.368739823399011E-01
FIRST GUES P = 1.171875000000000E-02
+
ITERATION NUMBER
+
0
MATERIAL DELT P = -8.455566493473399E-03 P(N+1) = 3.263183586526601E-03
2 3.552871630145589E-15 7.367886118920559E-01 -1.220703125000000E-03 -1.336349376349350E+13
3 -1.579513451198062E-19 8.537844784761054E-05 0. -1.107327316349494E+13
CYCLE 72 TIME 9.4804E-06 DT 1.605E-07 IDT 8 JDT 19
IN EOS, HIT NTRY LIMIT
IN EOS, J = 12 FORMING DPDTAU
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
IN EOS, J = 13 FORMING DPDTAU
IN EOS, HIT NTRY LIMIT
IN EOS, J = 14 FORMING DPDTAU
IN EOS, HIT NTRY LIMIT
IN EOS, J = 13 FORMING DPDTAU
IN EOS, J = 16 FORMING DPDTAU
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT

```

```

IN EOS, J = 17 FORMING DPDTAU
IN EOS, J = 16 FORMING DPDTAU
IN EOS, J = 16 FORMING DPDTAU
CYCLE 73 TIME 9.5409E-06 DT 1.610E-07 IDT 8 JDT 19
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
IN EOS, J = 14 FORMING DPDTAU
IN EOS, HIT NTRY LIMIT
IN EOS, J = 16 FORMING DPDTAU
IN EOS, HIT NTRY LIMIT
IN EOS, J = 17 FORMING DPDTAU
IN EOS, J = 16 FORMING DPDTAU
IN EOS, J = 15 FORMING DPDTAU
CYCLE 74 TIME 9.8019E-06 DT 1.090E-07 IDT 9 JDT 20
IN EOS, J = 14 FORMING DPDTAU
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
IN EOS, J = 14 FORMING DPDTAU
IN EOS, J = 16 FORMING DPDTAU
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
IN EOS, J = 17 FORMING DPDTAU
IN EOS, J = 15 FORMING DPDTAU
IN EOS, J = 16 FORMING DPDTAU
IN EOS, J = 17 FORMING DPDTAU
CYCLE 75 TIME 9.9108E-06 DT 8.916E-08 IDT 9 JDT 20
IN EOS, HIT NTRY LIMIT
IN EOS, HIT NTRY LIMIT
IN EOS, J = 14 FORMING DPDTAU
CYCLE 76 TIME 1.0000E-05 DT 1.611E-07 IDT 9 JDT 20
+
+
*****
*****
+
PROB 1.2000 CYCLE 76 TIME 1.000000E-05 DT 1.611313E-07
+
+
INTERNAL ENERGY KINETIC ENERGY TOTAL ENERGY ETH REL ERROR
1.81444201725077E+12 2.40605361681851E+13 2.58749701854359E+13 2.59846162198399E+13 -2.00008516497821E+02
+
TOTAL MASS MTH RELMERR
6.68967744446800E+02 6.68967744446349E+02 7.61347669182575E-08
+
MAX VEL = 3.08026E+05 AT I 10 J 21
+
MAX CS = 5.58467E+05 AT I 1 J 15
+
MAX TEMP = 4.04622E+03 AT I 9 J 21
+
MAX P = 9.88407E+10 AT I 1 J 20
+

```

CELL SETTING DT, I 9 J 20

TOTAL TIME FOR THIS PROBLEM OF THIS AND TIME FOR THIS RUN 0 HOURS, 0 MIN, 27 SEC 0 HOURS, 0 MIN, 27 SEC IS 6600 TIME. 0 HOURS, 0 MIN, 27 SEC IS 7600/176 TIME.

TIME FOR THIS RUN 0 HOURS, 0 MIN, 49 SEC

UMIZ FACTOR TOTAL PROBLEM = 6.51E-04 SEC/CELL/CYCLE

UMIZ FACTOR SINCE LAST DUMP = 7.75E-04 SEC/CELL/CYCLE

I= 1 X(I)= .250 DX(I)= .250

J	P	U	V	XI	RHO	SRR	SZZ	SRZ	Y	DY	M	XM	M	XM
1	1.013E+06	0.	3.00E+05	2.044E+09	1.225E-03	0.	0.	0.	-1.75E+00	2.50E-01	1	6.01320E-05		
2	1.013E+06	0.	3.00E+05	2.044E+09	1.225E-03	0.	0.	0.	-1.50E+00	2.50E-01	1	6.01326E-05		
3	1.013E+06	9.77E-03	3.00E+05	2.044E+09	1.225E-03	0.	0.	0.	-1.25E+00	2.50E-01	1	6.01394E-05		
4	1.015E+06	9.02E-02	3.00E+05	2.045E+09	1.226E-03	0.	0.	0.	-1.00E+00	2.50E-01	1	6.02046E-05		
5	1.027E+06	5.61E-01	3.00E+05	2.053E+09	1.236E-03	0.	0.	0.	-7.50E-01	2.50E-01	1	6.06850E-05		
6	1.116E+06	2.51E-01	2.50E+05	2.156E+09	1.286E-03	0.	0.	0.	-5.00E-01	2.50E-01	1	6.31241E-05		
7	1.630E+06	9.58E+01	2.89E+05	2.793E+09	1.465E-03	0.	0.	0.	-2.50E-01	2.50E-01	1	7.18992E-05		
8	4.117E+06	3.73E+02	2.62E+05	5.454E+09	1.952E-03	0.	0.	0.	0.	2.50E-01	1	9.58257E-05		
9	1.070E+07	4.56E+02	2.20E+05	9.728E+09	3.003E-03	0.	0.	0.	2.50E-01	2.50E-01	1	1.47402E-04		
10	1.286E+07	4.97E+03	1.59E+05	1.150E+10	3.161E-03	0.	0.	0.	5.00E-01	2.50E-01	1	1.55170E-04		
11	1.156E+07	4.75E+03	1.29E+05	8.389E+09	6.001E+00	9.08E+08	-1.01E+09	0.	7.50E-01	2.50E-01	1	2.77957E-05	2	2.94542E-01
12	5.020E+09	3.50E+03	1.15E+05	8.267E+09	7.427E+00	9.69E+08	-1.86E+09	1.79E+08	1.00E+00	2.50E-01	2	3.64565E-01		
13	3.320E+04	3.71E+03	1.13E+05	8.244E+09	9.175E-01	9.85E+08	-1.89E+09	0.	1.25E+00	2.50E-01	1	1.70680E-06	2	4.50347E-02
14	8.211E+03	6.43E+03	7.79E+04	8.255E+09	4.465E+00	0.	0.	0.	1.50E+00	2.50E-01	3	2.19174E-01	2	4.32050E-06
15	0.	6.45E+03	7.07E+04	7.806E+09	4.924E+00	0.	0.	0.	1.75E+00	2.50E-01	3	2.41709E-01		
16	0.	4.63E+02	4.42E+04	5.239E+09	8.120E+00	5.37E+07	-1.03E+08	-6.97E+06	2.00E+00	2.50E-01	3	3.98567E-01		
17	2.703E+10	3.28E+03	2.23E+04	3.047E+09	8.956E+00	2.35E+08	-4.91E+08	1.64E+07	2.25E+00	2.50E-01	3	4.34726E-01		
18	3.200E+10	2.82E+03	2.23E+04	2.043E+09	9.004E+00	2.47E+08	-4.88E+08	-1.39E+08	2.50E+00	2.50E-01	3	4.41900E-01		
19	7.329E+10	1.82E+03	2.28E+04	1.734E+09	9.292E+00	9.11E+07	-4.23E+08	-2.36E+08	2.75E+00	2.50E-01	3	4.55618E-01		
20	9.963E+10	6.28E+02	2.53E+04	1.665E+09	9.441E+00	9.00E+07	-4.50E+08	-1.90E+08	3.00E+00	2.50E-01	3	4.63450E-01		
21	8.306E+10	-7.36E+02	1.83E+04	1.496E+09	9.369E+00	2.10E+08	-5.17E+08	-7.00E+07	3.25E+00	2.50E-01	3	4.59907E-01		
22	3.630E+10	-1.20E+03	5.04E+03	1.277E+09	3.111E+00	2.70E+08	-5.29E+08	2.66E+07	3.50E+00	2.50E-01	3	4.47245E-01		
23	5.467E+09	-9.06E+02	-6.24E+03	1.190E+09	8.928E+00	3.00E+08	-4.95E+08	1.61E+08	3.75E+00	2.50E-01	3	4.39271E-01		
24	-3.374E+09	-4.54E+02	-1.27E+04	1.153E+09	8.076E+00	1.37E+08	-1.94E+08	4.20E+08	4.00E+00	2.50E-01	3	4.35713E-01		
25	1.019E+06	9.89E+01	-4.17E+03	1.205E+09	2.242E-01	2.13E+08	-3.85E+08	0.	4.25E+00	2.50E-01	1	5.50877E-05	3	1.09517E-02
26	1.008E+06	-2.77E+01	5.83E+02	2.091E+09	1.287E-03	0.	0.	0.	4.75E+00	2.50E-01	1	6.31905E-05		
27	1.017E+06	-9.91E-01	3.35E+02	2.046E+09	1.228E-03	0.	0.	0.	4.75E+00	2.50E-01	1	6.02996E-05		
28	1.013E+06	0.	0.	2.044E+09	1.225E-03	0.	0.	0.	5.00E+00	2.50E-01	1	6.01320E-05		

ENERGY MP

ALTITUDE

12345678901234567890

1 METERS  
 2 -1.750E-02  
 3 -1.500E-02  
 4 -1.250E-02  
 5 -1.000E-02  
 6 -7.500E-03  
 7 -5.000E-03  
 8 -2.500E-03  
 9 0.  
 10 2.500E-03  
 11 5.000E-03  
 12 7.500E-03  
 13 1.000E-02  
 14 1.250E-02  
 15 1.500E-02  
 16 1.750E-02  
 17 2.000E-02  
 18 2.250E-02  
 19 2.500E-02  
 20 2.750E-02  
 21 3.000E-02  
 22 3.250E-02  
 23 3.500E-02  
 24 3.750E-02  
 25 4.000E-02  
 26 4.250E-02  
 27 4.500E-02  
 28 4.750E-02  
 29 5.000E-02  
 30 5.250E-02

MATERIAL MAP

ALTITUDE

12345678901234567890

1 METERS  
 2 -1.750E-02  
 3 -1.500E-02  
 4 -1.250E-02  
 5 -1.000E-02  
 6 -7.500E-03  
 7 -5.000E-03  
 8 -2.500E-03  
 9 0.  
 10 2.500E-03  
 11 5.000E-03  
 12 7.500E-03  
 13 1.000E-02  
 14 1.250E-02  
 15 1.500E-02  
 16 1.750E-02  
 17 2.000E-02  
 18 2.250E-02  
 19 2.500E-02  
 20 2.750E-02  
 21 3.000E-02  
 22 3.250E-02  
 23 3.500E-02  
 24 3.750E-02  
 25 4.000E-02  
 26 4.250E-02  
 27 4.500E-02  
 28 4.750E-02  
 29 5.000E-02  
 30 5.250E-02

11 ++++++ 7.500E-03

12 XXXX  
X+X+X+ 1.000E-02

X X0  
0  
13 ++++++ 1.250E-02  
XXXXXX

00000  
+0+00+ 1.500E-02  
X X XX

0 0 0  
0000+X+ 1.750E-02  
DX X

0  
0000+X+X+ 2.000E-02  
0000XXXXXX  
0000+X+X+ 2.250E-02

00X0  
0  
0000+X+X+ 2.500E-02  
00X0

0 X  
0  
0000+X+X+ 2.750E-02  
0 X

0  
0000+X+X+ 3.000E-02  
0 X X

0 X X  
0000+X+X+ 3.250E-02  
0 XXXXXXXXX

0  
0000+X+X+ 3.500E-02  
0

0  
00+0+ 4.000E-02  
0

```

0 0
25 ++++++ 4.250E-02
00 0
26 ++++++ 4.500E-02
27 ++++++ 4.750E-02
28 ++++++ 5.000E-02
12345678901234567890

```

```

CYCLE 77 TIME 1.0161E-05 DT 1.613E-07 IDT 9 JDT 20
CYCLE 78 TIME 1.0322E-05 DT 1.615E-07 IDT 9 JDT 20
CYCLE 79 TIME 1.0484E-05 DT 1.618E-07 IDT 9 JDT 20
CYCLE 80 TIME 1.0646E-05 DT 1.611E-07 IDT 9 JDT 21
CYCLE 81 TIME 1.0807E-05 DT 1.062E-07 IDT 9 JDT 21
CYCLE 82 TIME 1.0913E-05 DT 8.692E-08 IDT 9 JDT 21
CYCLE 83 TIME 1.1000E-05 DT 1.616E-07 IDT 9 JDT 21

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+ +
+ +
+ +
+ +

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PROB 1.2000 CYCLE 83 TIME 1.100000E-05 DT 1.615791E-07

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INTERNAL ENERGY KINETIC ENERGY TOTAL ENERGY ETH REL ERROR
1.85140296404985E+12 2.40086244858972E+13 2.58680274499478E+13 -3.43443072307653E+01

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MAX VEL = 3.06234E+05 AT I 10 J 22
MAX CS = 5.32705E+05 AT I 1 J 15
MAX TEMP = 4.05080E+03 AT I 10 J 22
MAX P = 1.11433E+11 AT I 1 J 22
CELL SETTING DT, I 9 J 21

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TOTAL TIME FOR THIS PROBLEM 0 HOURS, 0 MIN, 30 SEC
OF THIS 0 HOURS, 0 MIN, 0 SEC IS 6600 TIME.
AND 0 HOURS, 0 MIN, 30 SEC IS 7600/176 TIME.

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TIME FOR THIS RUN 0 HOURS, 0 MIN, 52 SEC
WHIZ FACTOR TOTAL PROBLEM = 6.63E-04 SEC/CELL/CYCLE
WHIZ FACTOR SINCE LAST DUMP = 7.89E-04 SEC/CELL/CYCLE

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+ +
+ +
+ +
+ +

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J	I	X(I)	U	V	XI	RHO	SRR	SZZ	SRZ	Y	DY	M	XI	M	XI
1	1	1.013E+06	0.	3.00E-05	2.044E+09	1.225E-03	0.	0.	0.	-1.75E+00	2.50E-01	1	6.01320E-05		
2	1	1.013E+06	0.	3.00E+05	2.044E+09	1.225E-03	0.	0.	0.	-1.50E+00	2.50E-01	1	6.01324E-05		
3	1	1.013E+06	4.72E-03	3.00E+05	2.044E+09	1.225E-03	0.	0.	0.	-1.25E+00	2.50E-01	1	6.01362E-05		
4	1	1.014E+06	3.79E-02	3.00E+05	2.044E+09	1.225E-03	0.	0.	0.	-1.00E+00	2.50E-01	1	6.01704E-05		
5	1	1.020E+06	8.02E-02	3.00E+05	2.048E+09	1.231E-03	0.	0.	0.	-7.50E-01	2.50E-01	1	6.04226E-05		
6	1	1.061E+06	-2.09E+00	2.99E+05	2.083E+09	1.259E-03	0.	0.	0.	-5.00E-01	2.50E-01	1	6.17968E-05		
7	1	1.316E+06	-6.33E+01	2.94E+05	2.385E+09	1.370E-03	0.	0.	0.	-2.50E-01	2.50E-01	1	6.72513E-05		
8	2	1.678E+06	-4.06E+02	2.75E+05	4.013E+09	1.694E-03	0.	0.	0.	0.	2.50E-01	1	8.31476E-05		
9	7	2.566E+05	-4.63E+02	2.39E+05	7.065E+09	2.459E-03	0.	0.	0.	2.50E-01	2.50E-01	1	1.20727E-04		
10	1	1.406E+07	2.17E+03	1.91E+05	1.136E+10	3.437E-03	0.	0.	0.	5.00E-01	2.50E-01	1	1.68716E-04		
11	1	1.341E+07	5.05E+03	1.31E+05	8.373E+09	2.100E+00	9.02E+08	-1.81E+09	0.	7.50E-01	2.50E-01	1	1.13404E-04	2	1.06887E-01
12	-1	1.735E+10	1.60E+03	1.20E+05	8.387E+09	7.319E+04	1.09E+09	-1.70E+09	2.79E+08	1.00E+00	2.50E-01	2	3.59281E-01		
13	3	3.563E+04	1.93E+03	1.14E+05	8.318E+09	4.316E+00	1.18E+09	-1.82E+09	0.	1.25E+00	2.50E-01	1	8.79176E-07	2	2.11854E-01
14	1	1.993E+04	6.43E+03	7.84E+04	8.271E+09	1.465E+00	0.	0.	0.	1.50E+00	2.50E-01	3	7.19020E-02	2	4.31969E-06
15	0.	5.21E+03	5.73E+02	6.67E+04	8.205E+09	5.723E+00	0.	0.	0.	1.75E+00	2.50E-01	3	2.80924E-01		
16	0.	5.73E+02	5.73E+02	4.46E+04	5.778E+09	8.155E+00	0.	0.	0.	2.00E+00	2.50E-01	3	4.00319E-01		
17	6.168E+09	2.94E+03	2.94E+03	2.58E+04	3.378E+09	8.694E+00	2.36E+08	-4.01E+08	2.53E+07	2.25E+00	2.50E-01	3	4.26781E-01		
18	-9.724E+09	3.23E+03	3.23E+03	1.81E+04	2.141E+09	8.728E+00	2.73E+08	-5.09E+08	1.05E+07	2.50E+00	2.50E-01	3	4.28457E-01		
19	-5.584E+03	3.02E+03	3.02E+03	1.81E+04	1.584E+09	8.815E+00	2.89E+08	-5.22E+08	1.00E+06	2.75E+00	2.50E-01	3	4.32691E-01		
20	2.425E+10	3.15E+03	3.15E+03	1.08E+04	1.433E+09	9.019E+00	2.36E+08	-5.20E+08	-7.10E+07	3.00E+00	2.50E-01	3	4.42725E-01		
21	7.577E+10	2.56E+03	2.56E+03	1.48E+04	1.527E+09	9.319E+00	1.16E+08	-4.72E+08	-1.60E+08	3.25E+00	2.50E-01	3	4.57437E-01		
22	1.895E+11	1.66E+03	1.66E+03	1.57E+04	1.635E+09	9.500E+00	1.48E+08	-4.97E+08	-1.03E+08	3.50E+00	2.50E-01	3	4.66351E-01		
23	9.304E+10	5.23E+02	5.23E+02	1.03E+04	1.483E+09	9.453E+00	1.97E+08	-5.18E+08	-5.16E+07	3.75E+00	2.50E-01	3	4.62567E-01		
24	2.871E+10	-1.32E+02	-1.32E+02	2.14E+03	1.226E+09	9.870E+00	3.34E+08	-5.25E+08	-4.95E+05	4.00E+00	2.50E-01	3	4.45213E-01		
25	9.844E+05	-9.84E+01	-9.84E+01	1.97E+03	1.358E+09	7.824E-03	2.86E+08	-4.48E+08	0.	4.25E+00	2.50E-01	1	5.61520E-05	3	3.27904E-04
26	1.069E+06	-6.61E+01	-6.61E+01	7.31E+02	2.079E+09	1.271E-03	0.	0.	0.	4.50E+00	2.50E-01	1	6.24861E-05		
27	1.019E+06	-2.50E+00	-2.50E+00	4.38E+02	2.048E+09	1.230E-03	0.	0.	0.	4.75E+00	2.50E-01	1	6.03911E-05		
28	1.013E+06	0.	0.	0.	2.044E+09	1.225E-03	0.	0.	0.	5.00E+00	2.50E-01	1	6.01320E-05		

ENERGY MAP

ALTTITUDE

12345678901234567890

METERS	
1	-1.750E-02
2	-1.500E-02
3	-1.250E-02
4	-1.000E-02
5	-7.500E-03
6	-5.000E-03
7	-2.500E-03
8	0.
9	2.500E-03
10	5.000E-03

11 TT T  
 12 BBTBT  
 13 T BT  
 14 T B  
 15 TT T  
 16 BT  
 17 BTBT  
 18 BT B TTTTTTT  
 19 T B BBBB8888  
 20 T B B T TTTT  
 21 BB B T TTTT  
 22 B B BBBB  
 23 TTT TTBB  
 24 T TTTTTTTTTT  
 25 B BBT T  
 26 B  
 27 TTTT  
 28 12345678901234567890

1 2

+

+

+

MATERIAL MAP

ALTITUDE

12345678901234567890

METERS  
 1 ++++++ -1.750E-02  
 2 ++++++ -1.500E-02  
 3 ++++++ -1.250E-02  
 4 ++++++ -1.000E-02  
 5 ++++++ -7.500E-03  
 6 ++++++ -5.000E-03  
 7 ++++++ -2.500E-03  
 8 ++++++ 0.  
 9 ++++++ 2.500E-03  
 10 ++++++ 5.000E-03  
 11 ++++++ 7.500E-03

XXXX  
 12 XXXX+++++ 1.000E-02  
 X X0

0  
 13 ++++++ 1.250E-02  
 XXXXXX

00  
 14 ++++++ 1.500E-02

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XXXXXXXXX
000000
15 0000+++++ 1.750E-02
    XXX
    0
16 0000+X+++++ 2.000E-02
    000X
    0
17 0000+++++ 2.250E-02
    00XXXXXX
    00
18 0000++XXXX+++++ 2.500E-02
    0000 XXXXXXXXXXXX
19 0000+++++XXXXXX 2.750E-02
    0 0X
    0
20 0000+++++XXXXXXXX 3.000E-02
    0 XX
    0
21 0000+++++XXXXXXXXXX 3.250E-02
    0 X
22 0000+++++ 3.500E-02
    0 XXXXXXXXXXXXX
23 0000+++++ 3.750E-02
    0 X
24 00+++++ 4.000E-02
    00
25 ++++ 4.250E-02
    00 0
26 ++++++ 4.500E-02
27 ++++++ 4.750E-02
28 ++++++ 5.000E-02
    12345678901234567890

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CYCLE 84 TIME 1.1162E-05 DT 1.617E-07 IDT 9 JDT 21
CYCLE 85 TIME 1.1323E-05 DT 1.613E-07 IDT 9 JDT 22

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CYCLE 86 TIME 1.1465E-05 DT 1.614E-07 IDT 9 JDT 22  
 CYCLE 87 TIME 1.1646E-05 DT 1.615E-07 IDT 9 JDT 22  
 CYCLE 88 TIME 1.1807E-05 DT 1.659E-07 IDT 9 JDT 22  
 CYCLE 89 TIME 1.1913E-05 DT 8.666E-08 IDT 9 JDT 22  
 CYCLE 90 TIME 1.2000E-05 DT 1.619E-07 IDT 9 JDT 22

+ +  
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+ PROB 1.2000 CYCLE 90 TIME 1.20000E-05 DT 1.619256E-07

+ INTERNAL ENERGY KINETIC ENERGY TOTAL ENERGY ETH REL ERROR  
 1.88248347956963E+12 2.39623822810520E+13 2.58448657686216E+13 2.58557299900177E+13 -1.38786262510177E+01  
 + TOTAL MASS MTH RELMERR  
 6.68325848043649E+02 6.68325848043132E+02 5.4434287706746E-08

+ MAX VEL = 3.84642E+05 AT I 10 J 23  
 + MAX CS = 4.94449E+05 AT I 2 J 15  
 + MAX TEMP = 4.88374E+03 AT I 9 J 23  
 + MAX P = 3.07511E+10 AT I 1 J 23  
 + CELL SETTING DT, I 9 J 22

+ TOTAL TIME FOR THIS PROBLEM 0 HOURS, 0 MIN, 34 SEC  
 OF THIS 0 HOURS, 0 MIN, 0 SEC IS 6600 TIME.  
 AND 0 HOURS, 0 MIN, 34 SEC IS 7800/176 TIME.

+ TIME FOR THIS RUN 0 HOURS, 0 MIN, 56 SEC

+ UMIZ FACTOR TOTAL PROBLEM = 6.76E-04 SEC/CELL/CYCLE

+ UMIZ FACTOR SINCE LAST DUMP = 8.38E-04 SEC/CELL/CYCLE

+ I = 1 X(I) = .250 DX(I) = .250

J	P	U	V	XI	RHO	SRR	SZZ	SRZ	Y	DY	M	MT	XT
1	1.013E+06	0.	3.00E+05	2.044E+09	1.225E-03	0.	0.	0.	-1.75E+00	2.50E-01	1	6.01320E-05	
2	1.013E+06	0.	3.00E+05	2.044E+09	1.225E-03	0.	0.	0.	-1.50E+00	2.50E-01	1	6.01323E-05	
3	1.013E+06	1.98E-03	3.00E+05	2.044E+09	1.225E-03	0.	0.	0.	-1.25E+00	2.50E-01	1	6.01343E-05	
4	1.013E+06	1.23E-02	3.00E+05	2.044E+09	1.225E-03	0.	0.	0.	-1.00E+00	2.50E-01	1	6.01521E-05	
5	1.017E+06	-6.32E-02	3.00E+05	2.046E+09	1.228E-03	0.	0.	0.	-7.50E-01	2.50E-01	1	6.02814E-05	
6	1.037E+06	-2.14E+00	2.99E+05	2.061E+09	1.243E-03	0.	0.	0.	-5.00E-01	2.50E-01	1	6.10300E-05	

	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	
	1.159E+06	-3.79E+01	2.97E+05	2.192E+09	1.310E-03	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	1.861E+06	-3.04E+02	2.85E+05	3.062E+09	1.523E-03	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	4.750E+06	-8.09E+02	2.56E+05	6.014E+09	2.038E-03	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	1.200E+07	4.29E+02	2.12E+05	1.035E+10	3.187E-03	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	1.524E+07	3.88E+03	1.56E+05	1.196E+10	3.560E-03	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	1.357E+07	4.52E+03	1.26E+05	8.448E+09	5.732E+00	1.04E+09	-1.77E+09	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	4.818E+07	2.96E+03	1.17E+05	8.387E+09	7.459E+00	1.11E+09	-1.80E+09	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	2.700E+04	2.90E+03	1.16E+05	8.382E+09	2.652E-01	1.12E+09	-1.80E+09	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	7.259E+03	4.63E+03	6.51E+04	8.343E+09	5.150E+00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	8.59E+02	8.59E+02	4.63E+04	6.286E+09	8.326E+00	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	5.411E+09	2.39E+03	3.16E+04	3.781E+09	8.648E+00	2.05E+08	-4.15E+08	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	6.618E+06	1.90E+03	2.34E+04	2.311E+09	8.770E+00	2.51E+08	-5.06E+08	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	1.788E+10	1.95E+03	1.13E+04	1.682E+09	8.732E+00	2.72E+08	-5.20E+08	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	2.967E+10	2.54E+03	1.62E+03	1.456E+09	8.690E+00	2.89E+08	-5.20E+08	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	2.465E+10	2.85E+03	4.05E+02	1.349E+09	8.723E+00	3.05E+08	-5.15E+08	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	6.998E+09	2.94E+03	5.44E+03	1.304E+09	8.836E+00	-4.30E+08	3.94E+08	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	1.995E+10	2.69E+03	1.75E+04	1.273E+09	9.010E+00	-3.26E+08	2.61E+08	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	9.172E+09	7.11E+02	2.42E+04	1.248E+09	8.946E+00	8.13E+07	-5.95E+07	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	1.005E+06	5.03E+02	2.20E+04	1.262E+09	6.095E-01	3.48E+08	-4.41E+08	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	1.40E+06	-8.31E+01	1.57E+03	2.124E+09	1.338E-03	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	1.022E+06	-5.32E+00	5.59E+02	2.049E+09	1.233E-03	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	1.013E+06	0.	0.	2.044E+09	1.225E-03	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

ENERGY MAP

	1	2
	12345678901234567890	
	ALTIMUDE	
	METERS	
1	-1.750E-02	
2	-1.500E-02	
3	-1.250E-02	
4	-1.000E-02	
5	-7.500E-03	
6	-5.000E-03	
7	-2.500E-03	
8	0.	
9	2.500E-03	
10	5.000E-03	
11	7.500E-03	
12	1.000E-02	
13	1.250E-02	
14	1.500E-02	
15	1.750E-02	
16	2.000E-02	
17	2.250E-02	
18	2.500E-02	
19	2.750E-02	
20	3.000E-02	
21	3.250E-02	
22	3.500E-02	

MATERIAL MAP

23 3.750E-02  
 24 4.000E-02  
 25 4.250E-02  
 26 4.500E-02  
 27 4.750E-02  
 28 5.000E-02

+  
 +  
 +

8888  
 88888888  
 TT TTTTTTTTTT  
 B T  
 TTTT  
 12345678901234567890  
 1 2

ALTITUDE

12345678901234567890

1 2

METERS  
 1 ++++++ -1.750E-02  
 2 ++++++ -1.500E-02  
 3 ++++++ -1.250E-02  
 4 ++++++ -1.000E-02  
 5 ++++++ -7.500E-03  
 6 ++++++ -5.000E-03  
 7 ++++++ -2.500E-03  
 8 ++++++ 0  
 9 ++++++ 2.500E-03  
 10 ++++++ 5.000E-03  
 11 ++++++ 7.500E-03  
 12 ++++++ 1.000E-02

XXXX 0  
 X+++++ 1.250E-02

XXXXX

0  
 ++++++ 1.500E-02

XXXXXX

00000  
 +0+00X+++++ 1.750E-02

X X 0X

0 0  
 0000++X+++++ 2.000E-02

0X0X

0  
 0000++X+++++ 2.250E-02

```

000XX
0
18 0000++++X+++++ 2.500E-02
00X0XXX
0
19 0000++++X+++++ 2.750E-02
0 0X XXXXXXXXXXXXX
0
20 0000++++X+++++ 3.000E-02
0 XX
0
21 0000++++X+++++ 3.250E-02
0 X
22 0000++++X+++++ 3.500E-02
0 X
23 0000++++X+++++ 3.750E-02
0 X XXXXXXXXXXXXX
24 0000++++X+++++ 4.000E-02
0 X
25 ++++++X+++++ 4.250E-02
0000
26 ++++++X+++++ 4.500E-02
27 ++++++X+++++ 4.750E-02
28 ++++++X+++++ 5.000E-02
12345678901234567890

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CYCLE 91 TIME 1.2162E-05 DT 1.615E-07 IDT 9 JDT 23
CYCLE 92 TIME 1.2323E-05 DT 1.616E-07 IDT 9 JDT 23
CYCLE 93 TIME 1.2485E-05 DT 1.617E-07 IDT 9 JDT 23
CYCLE 94 TIME 1.2647E-05 DT 1.619E-07 IDT 9 JDT 23
CYCLE 95 TIME 1.2809E-05 DT 1.653E-07 IDT 9 JDT 23
CYCLE 96 TIME 1.2914E-05 DT 8.612E-08 IDT 9 JDT 23
CYCLE 97 TIME 1.3000E-05 DT 1.623E-07 IDT 9 JDT 23

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+
+
*****
*****
+
PROB 1.2000 CYCLE 97 TIME 1.30000E-05 DT 1.623101E-07
+
+
+

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INTERNAL ENERGY      KINETIC ENERGY      TOTAL ENERGY      ETH      REL ERROR  
 1.91218838580735E+12    2.39152302221730E+13    2.58274186879802E+13    2.58399586797280E+13    -6.48819630454955E+01

MAX VEL = 3.03855E+05 AT I 11 J 24      RELMERR  
 MAX CS = 4.95512E+05 AT I 1 J 13      MTH      3.81248294468392E-08  
 MAX TEMP = 4.07229E+03 AT I 10 J 25      TOTAL MASS      6.67973769290766E+02  
 MAX P = 3.02835E+10 AT I 1 J 16      MTH      3.81248294468392E-08  
 CELL SETTING DT, I 9 J 23

TOTAL TIME FOR THIS PROBLEM    0 HOURS, 0 MIN, 37 SEC  
 OF THIS                            0 HOURS, 0 MIN, 0 SEC IS 6600 TIME.  
 AND                                0 HOURS, 0 MIN, 37 SEC IS 7600/176 TIME.

TIME FOR THIS RUN    0 HOURS, 0 MIN, 59 SEC

WHIZ FACTOR TOTAL PROBLEM = 6.88E-04 SEC/CELL/CYCLE  
 WHIZ FACTOR SINCE LAST DUMP = 8.26E-04 SEC/CELL/CYCLE

I= 1 X(I) = .250    DX(I) = .250

J	P	U	V	XI	RHO	SRR	SZZ	SRZ	Y	DY	M	XM	M	XM
1	1.013E+06	0.	3.00E+05	2.044E+09	1.225E-03	0.	0.	0.	-1.75E+00	2.50E-01	1	6.01320E-05		
2	1.013E+06	0.	3.00E+05	2.044E+09	1.225E-03	0.	0.	0.	-1.50E+00	2.50E-01	1	6.01320E-05		
3	1.013E+06	0.	3.00E+05	2.044E+09	1.225E-03	0.	0.	0.	-1.25E+00	2.50E-01	1	6.01333E-05		
4	1.013E+06	1.23E-03	3.00E+05	2.044E+09	1.225E-03	0.	0.	0.	-1.00E+00	2.50E-01	1	6.01424E-05		
5	1.015E+06	-8.76E-02	3.00E+05	2.045E+09	1.227E-03	0.	0.	0.	-7.50E-01	2.50E-01	1	6.02078E-05		
6	1.025E+06	-1.59E+00	3.00E+05	2.052E+09	1.235E-03	0.	0.	0.	-5.00E-01	2.50E-01	1	6.06020E-05		
7	1.084E+06	-2.13E+01	2.98E+05	2.107E+09	1.273E-03	0.	0.	0.	-2.50E-01	2.50E-01	1	6.24721E-05		
8	1.431E+06	-1.89E+02	2.92E+05	2.526E+09	1.409E-03	0.	0.	0.	0.	2.50E-01	1	6.91817E-05		
9	3.112E+06	-7.67E+02	2.70E+05	4.462E+09	1.780E-03	0.	0.	0.	5.00E-01	2.50E-01	1	8.73916E-05		
10	8.336E+06	-7.97E+02	2.31E+05	8.557E+09	2.620E-03	0.	0.	0.	7.50E-01	2.50E-01	1	1.28593E-04		
11	1.627E+07	1.68E+03	1.84E+05	1.204E+10	3.778E-03	0.	0.	0.	7.50E-01	2.50E-01	1	1.85435E-04		
12	1.541E+07	5.24E+03	1.26E+05	8.452E+09	1.966E+00	1.04E+09	-1.77E+09	0.	1.00E+00	2.50E-01	1	1.29101E-04	2	9.63732E-02
13	8.159E+09	1.73E+03	1.20E+05	8.439E+09	7.385E+00	1.02E+09	-1.68E+09	4.86E+08	1.25E+00	2.50E-01	2	3.62701E-01		
14	3.125E+04	1.81E+03	1.17E+05	8.424E+09	3.750E+00	1.08E+09	-1.78E+09	0.	1.50E+00	2.50E-01	1	8.97302E-07	2	1.84455E-01
15	1.846E+04	4.63E+03	6.00E+04	8.425E+09	2.875E+00	0.	0.	0.	1.75E+00	2.50E-01	3	1.41137E-01	1	6.90566E-07
16	2.879E+10	4.50E+03	4.43E+04	6.712E+09	8.496E+00	0.	0.	0.	2.00E+00	2.50E-01	3	4.17035E-01		
17	3.746E+09	2.46E+03	3.68E+04	4.241E+09	8.593E+00	1.68E+08	-3.13E+08	-4.57E+07	2.25E+00	2.50E-01	3	4.21789E-01		
18	1.002E+10	1.91E+03	2.71E+04	2.516E+09	8.809E+00	2.38E+08	-5.01E+08	-2.80E+07	2.50E+00	2.50E-01	3	4.32416E-01		
19	-2.730E+08	1.49E+03	2.01E+04	1.754E+03	8.829E+00	2.32E+08	-5.18E+08	-2.43E+07	2.75E+00	2.50E-01	3	4.33374E-01		
20	-2.265E+10	8.84E+02	1.19E+04	1.491E+09	8.719E+00	2.64E+08	-5.25E+08	2.32E+06	3.00E+00	2.50E-01	3	4.27981E-01		

21	-5.944E+10	9.82E+02	6.37E+03	1.505E+09	8.497E+00	3.04E+08	-5.22E+08	1.29E+07	3.25E+00	2.50E-01	3	4.17105E-01
22	-8.694E+10	6.89E+02	3.24E+03	1.603E+09	8.330E+00	3.36E+08	1.10E+08	2.07E+08	3.50E+00	2.50E-01	3	4.08886E-01
23	-8.087E+10	1.48E+03	7.05E+03	1.541E+09	8.372E+00	-1.34E+08	5.02E+08	-5.41E+07	3.75E+00	2.50E-01	3	4.10947E-01
24	-3.072E+10	2.18E+02	1.32E+04	1.301E+09	8.690E+00	-2.66E+08	5.03E+08	-1.43E+08	4.00E+00	2.50E-01	3	4.26553E-01
25	3.945E+05	6.49E+02	1.79E+04	1.267E+09	1.326E+00	-1.14E+08	0.	0.	4.25E+00	2.50E-01	1	4.71350E-05
26	1.260E+06	-3.11E+01	3.24E+03	2.207E+09	1.414E-03	0.	0.	0.	4.50E+00	2.50E-01	1	6.94274E-05
27	1.830E+06	-8.08E+00	8.52E+02	2.055E+09	1.240E-03	0.	0.	0.	4.75E+00	2.50E-01	1	6.08537E-05
28	1.013E+06	0.	0.	2.044E+09	1.225E-03	0.	0.	0.	5.00E+00	2.50E-01	1	6.01320E-05

ENERGY MAP

+ +  
+ +

ALTITUDE

12345678901234567890

METERS  
-1.750E-02  
-1.500E-02  
-1.250E-02  
-1.000E-02  
-7.500E-03  
-5.000E-03  
-2.500E-03  
0.  
2.500E-03  
5.000E-03  
7.500E-03  
1.000E-02  
1.250E-02  
1.500E-02  
1.750E-02  
2.000E-02  
2.250E-02  
2.500E-02  
2.750E-02  
3.000E-02  
3.250E-02  
3.500E-02  
3.750E-02  
4.000E-02  
4.250E-02  
4.500E-02  
4.750E-02  
5.000E-02

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12 TT T  
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15 BT BT  
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18 TB  
19 BT  
20 T TTTTTTTTT  
21 B T 8888888888  
22 B B  
23 TT TTTT  
24 888  
25 TT TT 88  
26 8888 TB TTTTTTTTT  
27 TTTT TT  
28 12345678901234567890

+ +  
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MATERIAL MAP

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ALTITUDE

12345678901234567890

1	+++++	METERS	+++++	-1.750E-02
2	+++++		+++++	-1.500E-02
3	+++++		+++++	-1.250E-02
4	+++++		+++++	-1.000E-02
5	+++++		+++++	-7.500E-03
6	+++++		+++++	-5.000E-03
7	+++++		+++++	-2.500E-03
8	+++++		0	
9	+++++		+++++	2.500E-03
10	+++++		+++++	5.000E-03
11	+++++		+++++	7.500E-03
12	+++++		+++++	1.000E-02
13	XX X 0		+++++	1.250E-02
	X X0			
14	0		+++++	1.500E-02
	XXXXXX			
15	000		+++++	1.750E-02
	XXX XX			
16	000 0		+++++	2.000E-02
	0XXX			
17	00		+++++	2.250E-02
	000X			
18	0		+++++	2.500E-02
	00XXX			
19	00		+++++	2.750E-02
	0 0XXX			
20	0		+++++	3.000E-02

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0 0X XXXXXXXXXXXXX
0
21 0000++++XXXXXXXXXXXXX 3.250E-02
0 0X
0
22 0000++++XXXXXXXXXXXXX 3.500E-02
0 X
23 0000++++XXXXXXXXXXXXX 3.750E-02
0 X
24 0000++++XXXXXXXXXXXXX 4.000E-02
0 X XXXXXXXXXXXXX
25 ++++++XXXXXXXXXXXXX 4.250F-02
0000 XX
26 ++++++XXXXXXXXXXXXX 4.500E-02
27 ++++++XXXXXXXXXXXXX 4.750E-02
28 ++++++XXXXXXXXXXXXX 5.000E-02
12345678901234567090
CYCLE 98 TIME 1.3162E-05 DT 1.619E-07 IDT 9 JDT 24
CYCLE 99 TIME 1.3324E-05 DT 1.620E-07 IDT 9 JDT 24
CYCLE 100 TIME 1.3486E-05 DT 1.621E-07 IDT 9 JDT 24
CYCLE 101 TIME 1.3648E-05 DT 1.623E-07 IDT 9 JDT 24
CYCLE 102 TIME 1.3811E-05 DT 1.624E-07 IDT 9 JDT 24
CYCLE 103 TIME 1.3973E-05 DT 1.626E-07 IDT 9 JDT 24
CYCLE 104 TIME 1.4135E-05 DT 1.628E-07 IDT 9 JDT 24
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+ PPOB 1.2000 CYCLE 104 TIME 1.40000E-05 DT 1.627629E-07
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+
+
+ INTERNAL ENERGY KINETIC ENERGY TOTAL ENERGY ETH REL ERROR
1.93429039513241E+12 2.36689782361200E+13 2.58032686312524E+13 2.58190775151343E+13 -1.26666048914780E+02
+
+ TOTAL MASS MTH RELMERR
6.67564304870136E+02 6.67564304869623E+02 -4.35970441787965E-08
```

```
+ MAX VEL = 3.09752E+05 AT I 10 J 27
+
+ MAX CS = 4.80672E+05 AT I 9 J 21
+
+ MAX TEMP = 4.87281E+03 AT I 11 J 26
+
```

MAX P = 2.62828E+10 AT I 3 J 16

CELL SETTING DT, I 9 J 24

TOTAL TIME FOR THIS PROBLEM 0 HOURS, 0 MIN, 40 SEC  
OF THIS 0 HOURS, 0 MIN, 0 SEC IS 6600 TIME.  
AND 0 HOURS, 0 MIN, 40 SEC IS 7600/176 TIME.

TIME FOR THIS RUN 0 HOURS, 1 MIN, 2 SEC

WHIZ FACTOR TOTAL PROBLEM = 6.91E-04 SEC/CELL CYCLE

WHIZ FACTOR SINCE LAST DUMP = 7.34E-04 SEC/CELL CYCLE

I= 1 X(I)= .250 DX(I)= .250

J	P	U	V	XI	RHO	SRR	SZZ	SRZ	Y	DY	M	XPI	M	XPI	M	XPI
1	1.013E+06	0.	3.00E+05	2.044E+09	1.225E-03	0.	0.	0.	-1.75E+00	2.50E-01	1	6.01320E-05				
2	1.013E+06	0.	3.00E+05	2.044E+09	1.225E-03	0.	0.	0.	-1.50E+00	2.50E-01	1	6.01321E-05				
3	1.013E+06	0.	3.00E+05	2.044E+09	1.225E-03	0.	0.	0.	-1.25E+00	2.50E-01	1	6.01327E-05				
4	1.013E+06	0.	3.00E+05	2.044E+09	1.225E-03	0.	0.	0.	-1.00E+00	2.50E-01	1	6.01374E-05				
5	1.014E+06	-7.06E-02	3.00E+05	2.045E+09	1.226E-03	0.	0.	0.	-7.50E-01	2.50E-01	1	6.01702E-05				
6	1.019E+06	-1.03E+00	3.00E+05	2.048E+09	1.230E-03	0.	0.	0.	-5.00E-01	2.50E-01	1	6.03725E-05				
7	1.048E+06	-1.16E+01	2.99E+05	2.073E+09	1.251E-03	0.	0.	0.	-2.50E-01	2.50E-01	1	6.14042E-05				
8	1.216E+06	-1.06E+02	2.96E+05	2.259E+09	1.335E-03	0.	0.	0.	0.	2.50E-01	1	6.55142E-05				
9	2.122E+06	-5.67E+02	2.82E+05	3.362E+09	1.568E-03	0.	0.	0.	2.50E-01	2.50E-01	1	7.79512E-05				
10	5.592E+06	-1.24E+03	2.49E+05	6.699E+09	2.134E-03	0.	0.	0.	5.00E-01	2.50E-01	1	1.07716E-04				
11	1.407E+07	1.34E+02	2.03E+05	1.118E+10	3.489E-03	0.	0.	0.	7.50E-01	2.50E-01	1	1.71247E-04				
12	1.734E+07	4.11E+03	1.48E+05	1.266E+10	3.854E-03	0.	0.	0.	1.00E+00	2.50E-01	1	1.89191E-04				
13	1.574E+07	4.01E+03	1.23E+05	8.470E+09	5.628E+00	9.54E+08	-1.77E+09	0.	1.25E+00	2.50E-01	1	4.29103E-05	2	2.76233E-01		
14	3.667E+04	2.83E+03	1.19E+05	8.450E+09	7.263E+00	1.83E+09	-1.77E+09	0.	1.50E+00	2.50E-01	1	5.78334E-08	2	3.56540E-01		
15	2.882E+04	4.63E+03	5.55E+04	8.489E+09	1.004E+00	0.	0.	0.	1.75E+00	2.50E-01	3	4.92835E-02	1	1.45484E-06		
16	0.	2.59E+03	4.35E+04	6.997E+09	8.269E+00	0.	0.	0.	2.00E+00	2.50E-01	3	4.05906E-01				
17	0.	2.65E+03	3.83E+04	4.679E+09	8.442E+00	1.10E+08	-2.20E+08	-6.01E+06	2.25E+00	2.50E-01	3	4.14402E-01				
18	3.324E+09	2.82E+03	3.00E+04	2.777E+09	8.700E+00	2.38E+08	-4.93E+08	-3.92E+07	2.50E+00	2.50E-01	3	4.27054E-01				
19	-1.137E+10	1.64E+03	2.58E+04	1.859E+09	8.749E+00	2.55E+08	-4.96E+08	-1.26E+08	2.75E+00	2.50E-01	3	4.29441E-01				
20	-1.273E+10	2.97E+02	2.29E+04	1.505E+09	8.778E+00	2.32E+08	-5.00E+08	-1.36E+08	3.00E+00	2.50E-01	3	4.30907E-01				
21	-2.818E+10	-4.44E+02	1.92E+04	1.416E+09	8.693E+00	2.83E+08	-5.07E+08	-1.21E+08	3.25E+00	2.50E-01	3	4.26715E-01				
22	-3.240E+10	-1.53E+03	1.13E+04	1.394E+09	8.669E+00	2.73E+08	-5.27E+08	-1.26E+08	3.50E+00	2.50E-01	3	4.25540E-01				
23	-5.097E+10	-6.80E+02	-1.65E+03	1.445E+09	8.553E+00	3.51E+08	-5.00E+08	7.04E+07	3.75E+00	2.50E-01	3	4.19645E-01				
24	-2.144E+10	-7.51E+02	-1.04E+04	1.267E+09	8.748E+00	-2.19E+08	2.30E+08	3.98E+08	4.00E+00	2.50E-01	3	4.29420E-01				
25	1.012E+06	6.97E+02	4.85E+03	1.375E+09	1.316E+00	-1.73E+08	4.70E+08	0.	4.25E+00	2.50E-01	1	7.44635E-05	3	6.45683E-02		
26	1.301E+06	7.53E+00	3.87E+03	2.239E+09	1.439E-03	0.	0.	0.	4.50E+00	2.50E-01	1	7.06504E-05				
27	1.044E+06	-7.98E+00	1.29E+03	2.063E+09	1.251E-03	0.	0.	0.	4.75E+00	2.50E-01	1	6.13950E-05				
28	1.013E+06	0.	0.	2.044E+09	1.225E-03	0.	0.	0.	5.00E+00	2.50E-01	1	6.01320E-05				

ENERGY MAP

9 ++++++ 2.500E-03  
 10 ++++++ 5.000E-03  
 11 ++++++ 7.500E-03  
 12 ++++++ 1.000E-02  
  
 13 ++++++ 1.250E-02  
 XXXX 0  
 14 ++++++ 1.500E-02  
 XXXXXXX  
 15 ++++++ 1.750E-02  
 XXXXXXX  
 000000  
 16 00000+ 2.000E-02  
 XX  
 00  
 17 0000+X+ 2.250E-02  
 000X  
 18 0000+ 2.500E-02  
 00XXX  
 00  
 19 0000+ 2.750E-02  
 0 0XX  
 0  
 20 0000+ 3.000E-02  
 0 0XXX  
 00  
 21 0000+X+ 3.250E-02  
 0 0X XXXXXXXXXX  
 0  
 22 0000+XXXXXXXXXXXX 3.500E-02  
 0 X  
 23 0000+XXXXXXXXXXXX 3.750E-02  
 0 X  
 24 0000+XXXXXXXXXXXX 4.000E-02

MATERIAL MAP

1 2  
 12345678901234567890 ALTITUDE  
 METERS  
 -1.750E-02  
 -1.500E-02  
 -1.250E-02  
 -1.000E-02  
 -7.500E-03  
 -5.000E-03  
 -2.500E-03  
 0  
 2.500E-03  
 5.000E-03  
 7.500E-03  
 1.000E-02  
 1.250E-02  
 1.500E-02  
 1.750E-02  
 2.000E-02  
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 4.250E-02  
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 12345678901234567890 ALTITUDE  
 METERS  
 -1.750E-02  
 -1.500E-02  
 -1.250E-02  
 -1.000E-02  
 -7.500E-03  
 -5.000E-03  
 -2.500E-03  
 0

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0 X
25 ++++++XXXXXXXXXXXXXXXXXXXX 4.250E-02
    0000 X XXXXXXXXXXXXXXXX
26 ++++++XXXXXXXXXXXXXXXXXXXX 4.500E-02
    XXX
27 ++++++XXXXXXXXXXXXXXXXXXXX 4.750E-02
28 ++++++XXXXXXXXXXXXXXXXXXXX 5.000E-02
    12345678901234567890
    1
CYCLE 105 TIME 1.4163E-05 DT 1.623E-07 IDT 9 JDT 25
CYCLE 106 TIME 1.4329E-05 DT 1.625E-07 IDT 9 JDT 25
CYCLE 107 TIME 1.4489E-05 DT 1.626E-07 IDT 9 JDT 25
CYCLE 108 TIME 1.4650E-05 DT 1.628E-07 IDT 9 JDT 25
CYCLE 109 TIME 1.4813E-05 DT 1.029E-07 IDT 10 JDT 26
CYCLE 110 TIME 1.4916E-05 DT 8.416E-08 IDT 10 JDT 26
CYCLE 111 TIME 1.5000E-05 DT 1.630E-07 IDT 10 JDT 26
+
+
XXXXXXXXXXXX
XXXXXXXXXXXX
+
PROB 1.2000 CYCLE 111 TIME 1.500000E-05 DT 1.629873E-07
+
+
INTERNAL ENERGY KINETIC ENERGY TOTAL ENERGY ETH REL ERROR
1.95240003226947E+12 2.38201421003140E+13 2.57725422125824E+13 2.57914136352720E+13 -1.10015400736036E+02
+
MAX VEL = 3.10764E+05 AT I 14 J 27
+
MAX CS = 4.93004E+05 AT I 1 J 14
+
MAX TEMP = 4.04418E+03 AT I 11 J 27
+
MAX P = 5.11725E+10 AT I 1 J 22
+
CELL SETTING DT, I 10 J 26
+
TOTAL TIME FOR THIS PROBLEM 0 HOURS, 0 MIN, 42 SEC
OF THIS 0 HOURS, 0 MIN, 0 SEC IS 6600 TIME.
AND 0 HOURS, 0 MIN, 42 SEC IS 7600/176 TIME.
+
TIME FOR THIS RUN 0 HOURS, 1 MIN, 4 SEC
+
WHIZ FACTOR TOTAL PROBLEM = 6.91E-04 SEC/CELL/CYCLE
+
WHIZ FACTOR SINCE LAST DUMP = 6.89E-04 SEC/CELL/CYCLE

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J	P	U	V	XI	RHO	SRR	SZZ	SRZ	Y	DY	M	XM	M	XM
1	1.013E+06	0.	3.00E+05	2.044E+09	1.225E-03	0.	0.	0.	-1.75E+00	2.50E-01	1	6.01320E-05		
2	1.013E+06	0.	3.00E+05	2.044E+09	1.225E-03	0.	0.	0.	-1.50E+00	2.50E-01	1	6.01321E-05		
3	1.013E+06	0.	3.00E+05	2.044E+09	1.225E-03	0.	0.	0.	-1.25E+00	2.50E-01	1	6.01324E-05		
4	1.013E+06	0.	3.00E+05	2.044E+09	1.225E-03	0.	0.	0.	-1.00E+00	2.50E-01	1	6.01348E-05		
5	1.013E+06	-4.69E-02	3.00E+05	2.044E+09	1.225E-03	0.	0.	0.	-7.50E-01	2.50E-01	1	6.01511E-05		
6	1.016E+06	-6.19E-01	3.00E+05	2.045E+09	1.229E-03	0.	0.	0.	-5.00E-01	2.50E-01	1	6.02532E-05		
7	1.030E+06	-5.25E+00	3.00E+05	2.056E+09	1.239E-03	0.	0.	0.	-2.50E-01	2.50E-01	1	6.08033E-05		
8	1.113E+06	-5.55E+01	2.98E+05	2.137E+09	1.288E-03	0.	0.	0.	0.	2.50E-01	1	6.32109E-05		
9	1.573E+06	-3.57E+02	2.89E+05	2.657E+09	1.455E-03	0.	0.	0.	2.50E-01	2.50E-01	1	7.14042E-05		
10	3.701E+06	-1.17E+03	2.65E+05	3.037E+09	1.890E-03	0.	0.	0.	5.00E-01	2.50E-01	1	9.27756E-05		
11	9.955E+06	-1.06E+03	2.21E+05	3.477E+09	2.061E-03	0.	0.	0.	7.50E-01	2.50E-01	1	1.40432E-04		
12	1.892E+07	1.06E+03	1.74E+05	8.480E+09	1.311E+00	9.53E+08	-1.76E+09	0.	1.25E+00	2.50E-01	1	1.99932E-04		
13	1.740E+07	4.69E+03	1.22E+05	8.480E+09	1.311E+00	9.53E+08	-1.69E+09	4.47E+08	1.50E+00	2.50E-01	1	3.84265E-13	2	9.36609E-02
14	-1.400E+09	2.00E+03	1.21E+05	8.456E+09	7.443E+00	9.80E+09	-1.67E+09	0.	1.75E+00	2.50E-01	1	1.19220E-06	2	3.65382E-01
15	4.034E+04	2.36E+03	1.13E+05	8.655E+09	3.253E+00	8.20E+08	-1.67E+09	0.	2.00E+00	2.50E-01	1	3.75035E-01	2	1.59778E-01
16	5.255E+04	6.85E+02	4.71E+04	7.309E+09	7.681E+00	0.	0.	0.	2.25E+00	2.50E-01	1	4.07676E-01		
17	0.	2.41E+03	4.07E+04	5.094E+09	8.309E+00	5.44E+07	-1.33E+08	1.17E+07	2.50E+00	2.50E-01	1	3.426219E-01		
18	-1.108E+10	1.74E+03	2.67E+04	3.032E+09	8.509E+00	2.57E+08	-4.65E+08	-4.89E+07	2.50E+00	2.50E-01	3	4.23577E-01		
19	-1.299E+10	1.11E+03	2.67E+04	1.999E+09	8.724E+00	2.75E+08	-5.04E+08	-7.96E+07	2.75E+00	2.50E-01	3	4.34819E-01		
20	6.717E+08	3.55E+02	2.13E+04	1.543E+09	8.858E+00	2.57E+08	-5.08E+08	-1.10E+08	3.00E+00	2.50E-01	3	4.41269E-01		
21	1.919E+10	-5.44E+02	1.49E+04	1.416E+09	8.989E+00	2.97E+08	-5.07E+08	-1.19E+08	3.25E+00	2.50E-01	3	4.52414E-01		
22	5.659E+10	-9.90E+02	9.56E+03	1.427E+09	9.215E+00	1.95E+08	-5.17E+08	-5.48E+07	3.50E+00	2.50E-01	3	4.52892E-01		
23	5.874E+10	-1.59E+03	1.73E+03	1.456E+09	9.225E+00	2.19E+08	-5.21E+08	5.61E+07	3.75E+00	2.50E-01	3	4.52892E-01		
24	1.938E+10	-5.33E+02	-8.71E+03	1.299E+09	9.004E+00	2.52E+08	-4.58E+08	2.30E+08	4.00E+00	2.50E-01	3	4.41972E-01		
25	9.620E+05	7.79E+02	2.92E+03	1.404E+09	9.263E-01	-1.73E+08	4.70E+08	0.	4.25E+00	2.50E-01	1	4.35561E-05	3	4.54376E-02
26	1.207E+06	1.74E+01	4.22E+03	2.236E+09	1.426E-03	0.	0.	0.	4.50E+00	2.50E-01	1	7.00123E-05		
27	1.059E+06	-5.63E+00	1.75E+03	2.073E+09	1.263E-03	0.	0.	0.	4.75E+00	2.50E-01	1	6.19934E-05		
28	1.013E+06	0.	0.	2.044E+09	1.229E-03	0.	0.	0.	5.00E+00	2.50E-01	1	6.01320E-05		

ENERGY MP

ALTITUDE

12345678901234567890

METERS

- 1.750E-02
- 1.500E-02
- 1.250E-02
- 1.000E-02
- 7.500E-03
- 5.000E-03
- 2.500E-03
- 0.

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8

9 2.500E-03  
 10 5.000E-03  
 11 7.500E-03  
 12 1.000E-02  
 13 1.250E-02  
 14 1.500E-02  
 15 1.750E-02  
 16 2.000E-02  
 17 2.250E-02  
 18 2.500E-02  
 19 2.750E-02  
 20 3.000E-02  
 21 3.250E-02  
 22 3.500E-02  
 23 3.750E-02  
 24 4.000E-02  
 25 4.250E-02  
 26 4.500E-02  
 27 4.750E-02  
 28 5.000E-02  
 +  
 +  
 +  
 129  
 12345678901234567890  
 1  
 2

ALTIITUDE

METERS  
 1 ++++++ -1.750E-02  
 2 ++++++ -1.500E-02  
 3 ++++++ -1.250E-02  
 4 ++++++ -1.000E-02  
 5 ++++++ -7.500E-03  
 6 ++++++ -5.000E-03  
 7 ++++++ -2.500E-03  
 8 ++++++ 0.  
 9 ++++++ 2.500E-03  
 10 ++++++ 5.000E-03  
 11 ++++++ 7.500E-03  
 12 ++++++ 1.000E-02  
 13 ++++++ 1.250E-02  
 XX X 0  
 14 ++++++ 1.500E-02  
 XXXXX 0

MATERIAL MAP

15 ++++++ 1.750E-02  
 XXXXXX  
 00000  
 16 +0000+ 2.000E-02  
 X XX  
 0 00  
 17 0000+ 2.250E-02  
 00XX  
 0  
 18 0000+X+ 2.500E-02  
 000XX  
 0  
 19 0000+ 2.750E-02  
 00XXX  
 00  
 20 0000+ 3.000E-02  
 0 0XX  
 00  
 21 0000+X+ 3.250E-02  
 0 000X  
 22 0000+X+ 3.500E-02  
 0 0X XXXXXXXXXXXX  
 0  
 23 0000+X+ 3.750E-02  
 0 X  
 0 X  
 24 0000+X+ 4.000E-02  
 0 X  
 25 ++++++X+ 4.250E-02  
 0000 X  
 26 ++++++X+ 4.500E-02  
 XX XXXX  
 27 ++++++X+ 4.750E-02  
 XXXXXXXX  
 28 ++++++X+ 5.000E-02

12345678901234567890<sup>2</sup>

```

CYCLE 112 TIME 1.5163E-05 DT 1.630E-07 IDT 10 JDT 26
CYCLE 113 TIME 1.5326E-05 DT 1.630E-07 IDT 9 JDT 26
CYCLE 114 TIME 1.5489E-05 DT 1.632E-07 IDT 9 JDT 26
CYCLE 115 TIME 1.5652E-05 DT 1.630E-07 IDT 10 JDT 27
CYCLE 116 TIME 1.5815E-05 DT 1.616E-08 IDT 10 JDT 27
CYCLE 117 TIME 1.5978E-05 DT 8.316E-08 IDT 10 JDT 27
CYCLE 118 TIME 1.600E-05 DT 1.632E-07 IDT 10 JDT 27
  
```

```

+ *****
* * CSTOP *
* * *
* * *
+
+ *****
+ *****
  
```

```

PROB 1.2000 CYCLE 118 TIME 1.6000E-05 DT 1.631986E-07
  
```

```

INTERNAL ENERGY KINETIC ENERGY TOTAL ENERGY ETH REL ERROR
1.8965469E+12 2.20329404550550E+13 2.392294874163026E+13 2.3955276258057E+13 -2.88991563732216E+02
+
TOTAL MASS MTH REL MERR
6.27919779359872E+02 6.27919779359872E+02 6.95243996448415E-08
  
```

```

+ MAX VEL = 3.01382E+05 AT I 12 J 27
+ MAX CS = 4.87076E+05 AT I 9 J 22
+ MAX TEMP = 3.79408E+03 AT I 20 J 27
+ MAX P = 7.17497E+10 AT I 3 J 15
  
```

```

CELL SETTING DT, I 10 J 27
  
```

```

+ TOTAL TIME FOR THIS PROBLEM 0 HOURS, 0 MIN, 45 SEC
OF THIS AND 0 HOURS, 0 MIN, 0 SEC IS 6600 TIME.
AND 0 HOURS, 0 MIN, 45 SEC IS 7600/176 TIME.
  
```

```

+ TIME FOR THIS RUN 0 HOURS, 1 MIN, 7 SEC
  
```

```

+ WHIZ FACTOR TOTAL PROBLEM = 6.93E-04 SEC/CELL/CYCLE
+ WHIZ FACTOR SINCE LAST DUMP = 7.41E-04 SEC/CELL/CYCLE
  
```

J	P	U	V	XI	RHO	SRR	SZZ	SRZ	Y	DY	M	XM	M	XM
1	1.013E+05	0.	3.00E+05	2.044E+09	1.225E-03	0.	0.	0.	-1.75E+00	2.50E-01	1	6.01320E-05		
2	1.013E+05	0.	3.00E+05	2.044E+09	1.225E-03	0.	0.	0.	-1.50E+00	2.50E-01	1	6.01321E-05		
3	1.013E+05	0.	3.00E+05	2.044E+09	1.225E-03	0.	0.	0.	-1.25E+00	2.50E-01	1	6.01322E-05		
4	1.013E+05	0.	3.00E+05	2.044E+09	1.225E-03	0.	0.	0.	-1.00E+00	2.50E-01	1	6.01334E-05		
5	1.013E+05	-2.96E-02	3.00E+05	2.044E+09	1.225E-03	0.	0.	0.	-7.50E-01	2.50E-01	1	6.01416E-05		
6	1.013E+05	-3.53E-01	3.00E+05	2.045E+09	1.226E-03	0.	0.	0.	-5.00E-01	2.50E-01	1	6.01925E-05		
7	1.022E+05	-3.33E+00	3.00E+05	2.050E+09	1.232E-03	0.	0.	0.	-2.50E-01	2.50E-01	1	6.04779E-05		
8	1.062E+05	-2.82E+01	2.99E+05	2.084E+09	1.260E-03	0.	0.	0.	0.	2.50E-01	1	6.18321E-05		
9	1.289E+05	-2.00E+02	2.94E+05	2.345E+09	1.364E-03	0.	0.	0.	2.50E-01	2.50E-01	1	6.65779E-05		
10	2.489E+05	-8.77E+02	2.77E+05	3.768E+09	1.671E-03	0.	0.	0.	5.00E-01	2.50E-01	1	8.28021E-05		
11	6.820E+05	-1.53E+03	2.40E+05	7.607E+09	2.382E-03	0.	0.	0.	7.50E-01	2.50E-01	1	1.16920E-04		
12	1.634E+07	2.95E+02	1.93E+05	1.207E+10	3.787E-03	0.	0.	0.	1.00E+00	2.50E-01	1	1.85901E-04		
13	1.935E+07	3.80E+03	1.40E+05	1.334E+10	4.108E-03	0.	0.	0.	1.25E+00	2.50E-01	1	2.01650E-04		
14	1.950E+07	-1.33E+03	1.21E+05	8.475E+09	5.715E-03	1.64E+09	-1.39E+09	0.	1.50E+00	2.50E-01	1	4.57827E-05	2	2.80501E-01
15	8.101E+04	6.80E+02	1.17E+05	8.585E+09	6.600E+00	1.31E+09	-1.57E+09	0.	1.75E+00	2.50E-01	1	4.32607E-07	2	3.27879E-01
16	9.048E+04	-4.63E+03	4.93E+04	7.433E+09	6.525E+00	0.	0.	0.	2.00E+00	2.50E-01	3	3.11741E-01	2	8.54329E-03
17	0.	1.31E+03	4.13E+04	5.473E+09	8.315E+00	2.51E+07	-4.84E+07	2.12E+07	2.25E+00	2.50E-01	3	4.08166E-01		
18	1.234E+10	6.98E+02	3.44E+04	3.485E+09	8.728E+00	2.48E+08	-4.82E+08	-2.11E+07	2.50E+00	2.50E-01	3	4.28455E-01		
19	2.642E+10	7.89E+02	2.36E+04	2.178E+09	8.949E+00	2.53E+08	-5.11E+08	-4.19E+06	2.75E+00	2.50E-01	3	4.39293E-01		
20	4.068E+10	8.96E+02	1.35E+04	1.659E+09	9.095E+00	2.56E+08	-5.22E+08	-1.59E+07	3.00E+00	2.50E-01	3	4.46451E-01		
21	5.935E+10	3.84E+02	5.55E+03	1.538E+09	9.221E+00	2.22E+08	-5.23E+08	2.29E+07	3.25E+00	2.50E-01	3	4.52623E-01		
22	5.266E+10	1.16E+03	2.54E+03	1.445E+09	9.191E+00	1.74E+08	-5.86E+08	5.80E+07	3.50E+00	2.50E-01	3	4.51164E-01		
23	6.152E+10	6.46E+02	8.80E+03	1.494E+09	9.238E+00	-5.14E+08	3.08E+08	-8.49E+07	3.75E+00	2.50E-01	3	4.53492E-01		
24	2.763E+10	1.02E+02	1.39E+04	1.355E+09	9.049E+00	2.81E+07	3.91E+08	1.88E+08	4.00E+00	2.50E-01	3	4.44181E-01		
25	8.991E+05	7.23E+02	1.36E+04	1.349E+09	1.085E+00	-8.33E+07	3.47E+08	0.	4.25E+00	2.50E-01	1	4.15008E-05	3	5.32137E-02
26	1.317E+06	-1.18E+02	4.67E+03	2.255E+09	1.447E-03	0.	0.	0.	4.50E+00	2.50E-01	1	7.10393E-05		
27	1.070E+06	-4.33E+01	2.21E+03	2.085E+09	1.279E-03	0.	0.	0.	4.75E+00	2.50E-01	1	6.28807E-05		
28	1.013E+06	0.	2.044E+09	1.225E-03	0.	0.	0.	0.	5.00E+00	2.50E-01	1	6.01320E-05		

ENERGY MP

ALTITUDE

12345678901234567890

METERS
-1.750E-02
-1.500E-02
-1.250E-02
-1.000E-02
-7.500E-03
-5.000E-03
-2.500E-03
0.
2.500E-03
5.000E-03
7.500E-03
1.000E-02

13	TTTTT	1.250E-02
14	BBBBB	1.500E-02
15	TTTTT	1.750E-02
16	TTTTT	2.000E-02
17	TTTTT	2.250E-02
18	T	2.500E-02
19	T	2.750E-02
20	T	3.000E-02
21	T	3.250E-02
22	T	3.500E-02
23	T	3.750E-02
24	T	4.000E-02
25	T	4.250E-02
26	T	4.500E-02
27	T	4.750E-02
28	T	5.000E-02

+  
+  
+

MATERIAL MAP

1  
2

ALTITUDE

12345678901234567890

1	+	1.750E-02
2	+	1.500E-02
3	+	1.250E-02
4	+	1.000E-02
5	+	7.500E-03
6	+	5.000E-03
7	+	2.500E-03
8	+	0.
9	+	2.500E-03
10	+	5.000E-03
11	+	7.500E-03
12	+	1.000E-02

0  
1.250E-02

0  
1.500E-02

XXXXX

0  
1.750E-02

XXXXX

```

0 00
16 +0+0+++++ 2.000E-02
X XX XX

0 00 0
17 0000+++++ 2.250E-02
0XXX

00
18 0000++X+++++ 2.500E-02
000XX

0000X
19 0000+++++ 2.750E-02
0000X

00
20 0000++X+++++ 3.000E-02
0 00X

0 00X
21 0000+++++ 3.250E-02
0 0XXX

00
22 0000++X+++++ 3.500E-02
0 000X

0 X XXX
23 0000+++++ 3.750E-02
0 X XXX

0
24 0000+++++XXX+++++ 4.000E-02
0 XX XXXXXXXX

0000 X
25 ++++++XXXXXXXXX 4.250E-02
XXXXX

X
26 ++++++XXXXXXXXX 4.500E-02
XXXXX

X
27 ++++++XXXXXXXXX 4.750E-02
XXXXX

X
28 ++++++XXXXXXXXX 5.000E-02
12345678901234567890
1 2

```

```

:BLK
PROB 1.2000000000000E+00 1720463146314632
ATMOS 5.0000000000000E+00 17225000000000000000

```

BREF	0.	1.00000000000000E+00	000000000000000000000000
CODE	0.		172040000000000000000000
COLD	0.		777777777777777777777776
CYCLE	1.	1.00000000000000E+02	172673000000000000000000
DIMEN	2.	0.00000000000000E+00	172140000000000000000000
DT	1.	6.3198568001726E-07	16715363565622924356
ELC	2.	39294874163026E+13	17745341604461557565
ELC	6.	0.00000000000000E+00	172260000000000000000000
ETH	2.	39552762588557E+13	17745344605565554876
EXPAND	5.	0.00000000000000E-02	17136314631463146315
FAIL	0.		000000000000000000000000
FLUXER	3.	0.00000000000000E+00	172160000000000000000000
GEOM	2.	0.00000000000000E+00	172140000000000000000000
ITAX	2.	0.00000000000000E+01	172450000000000000000000
IO	1.	9.00000000000000E+01	172446000000000000000000
ISLAND	0.		000000000000000000000000
JMAX	2.	8.00000000000000E+01	172470000000000000000000
JO	2.	7.00000000000000E+01	172466000000000000000000
HOB	0.		000000000000000000000000
LREF	0.		777777777777777777777776
METHOD	2.	0.00000000000000E+00	172140000000000000000000
NLC	6.	2791973959672E+02	17314717533552437525
PTH	6.	2791973959672E+02	17314717533552437260
NH	2.	0.00000000000000E+01	172450000000000000000000
NHIC	1.	6.00000000000000E+03	173262000000000000000000
NHIST	6.	0.00000000000000E+00	172250000000000000000000
NM	3.	0.00000000000000E+00	172160000000000000000000
NOP	0.		000000000000000000000000
NPP	2.	0.00000000000000E+00	172140000000000000000000
NROLPB	4.	0.00000000000000E+00	172240000000000000000000
PTSTOP	6.	0.00000000000000E+02	173145400000000000000000
RADLOS	0.		0.000000000000000000000000
REZONE	0.		0.000000000000000000000000
REF	0.		0.000000000000000000000000
STABF	5.	0.00000000000000E-01	171740000000000000000000
STRAIN	1.	0.00000000000000E+00	172040000000000000000000
STRESS	1.	0.00000000000000E+00	172040000000000000000000
SUM	0.		000000000000000000000000
T	1.	5.99999999999996E-05	17004143367501327551
TERAD	0.		000000000000000000000000
TLC	1.	5.99999999999996E-05	17004143367501327551
TREF	0.		000000000000000000000000
TTIME	4.	5.62399999999998E+31	17255564570651767635
TTIME6	0.		000000000000000000000000
TTIME7	4.	5.62399999999998E+01	17255564570651767635
TTSTOP	1.	0.00000000000000E+02	172662000000000000000000
UREZ	1.	0.00000000000002E+01	172350000000000000000000
VISC	0.		000000000000000000000000
VREZ	1.	0.00000000000000E+01	172350000000000000000000
VOIDS	0.		000000000000000000000000
WORK	0.		000000000000000000000000
X1	4.	0.00000000000000E+00	172240000000000000000000
X2	-1.	0.00000000000000E+00	605737777777777777777777
XOB	0.		000000000000000000000000



```

MFX NOS/BE 1.2 KAFB 011 MFX 07/10/78
FLCM=314000 MXCM=250000 FLEC=1720K MDEC=0500K
+
14.56.32.GABY22B FROM MX2/15
14.56.32.IP 00000320 WORDS - FILE INPUT , DC 04
14.56.32.GABY2.T377.NT1.
14.56.34.ACCOUNT.GABY.*****-***.DYP.
14.56.35.SXSEUIL(BATCH)
14.56.36.ATTACH.HULLIB.ID=DYMXCER.
14.56.36.PFN IS
14.56.36.HULLIB
14.56.36.PF CYCLE NO. = 039
14.56.36.LIBRARY.HULLIB.
14.56.37.SWITCH,6.
14.56.37.SWITCH,3.
14.56.37.HULLR.
14.56.30.COPYCR(LOCAL,HHH)
14.56.40.RETURN(LOCAL)
14.56.40.IF.FILE(CHANGES,IN),CPR.
14.56.46.ENDIF,CPR.
14.56.46.IF.FILE(CHANGES,AS,AND...NOT,IN),CPY.
14.56.48.ENDIF,CPY.
14.56.51.GETC,HHH.
14.56.54.ATTACH(XXX,CH105.ID=DYMXCER)
14.56.55.PF CYCLE NO. = 014
14.56.55.COPYCR(XXX,HHH)
14.56.56.RETURN(XXX)
14.56.57.REVERT.
14.56.58.CONTR.BOW.
14.56.59. END CNT
14.56.59.FILE(TAPE10,SBF=NO)
14.57.01.FILE(TAPE11,SBF=NO)
14.57.03.FILE(TAPE41,SBF=NO)
14.57.05.FILE(TAPE42,SBF=NO)
14.57.06.LDSET(FILES=TAPE10/TAPE11/TAPE41/TAPE42)
14.57.07.BOW.
14.57.11.REQUEST(TAPE10,*PF)
14.57.11.REQUEST(TAPE42,*PF)
15.01.52.STERN 8 RESOURCE TAPES REMAINING
15.02.46.CT ID= DYMXCER PFN=DYMASTLIBRARY
15.02.46.CT CY= 002 00040128 WORDS.
15.02.47.EX ID= DYMXCER PFN=DYMASTLIBRARY
15.02.47.EX CY= 001 00000000 WORDS.
15.02.55.EX ID= DYMXCER PFN=DYMASTLIBRARY
15.02.55.EX CY= 001 00040128 WORDS.
15.02.55.PR ID= DYMXCER PFN=DYMASTLIBRARY
15.02.55.PR CY= 002 00040128 WORDS.
15.04.29.REQUEST(TAPE4.*MT,PE,RING,U,E,VSN=01K127)
15.04.29.( NT 065 ASSIGNED)
15.04.29.INT65 VOLUME SERIAL NUMBER IS 01K127
15.04.30. END BOW
15.04.30.CONTR.PLANK.
15.04.40. END CNT
15.04.40.FILE(TAPE4,SBF=NO)

```

```

15.04.43 FILE(TAPE41,SBF=NO)
15.04.44.LDSET(FILES=TAPE4/TAPE41)
15.04.44.PLANK.
15.04.47.GENERATING HULL DISK VERSION
15.04.50. END PLANK
15.04.50.CONTR,SAIL.
15.04.55. END CNT
15.04.55.DYMAST(I=HHH)
15.07.15. B325 CARDS GENERATED
15.07.15. END OF NORMAL RUN
15.07.15. SYSTEM HULL VERSION 185
15.07.16. EXIT
15.07.16.RETURN(HHH)
15.07.16.RETURN(SAVE)
15.07.17.REQUEST(SAVE,#0)
15.07.18.CONTR,COMPILE.
15.07.19. END CNT
15.07.19. IFE,P2,ED,2,COMPS.
15.07.20.ELSE,COMPS
15.07.20.FTN(A,I=SAIL,PL=1000300,B=HULL,OPT=2,L=5
15.07.20.SAVE)
15.08.16. 7.299 CP SECONDS COMPILATION TIME
15.08.16.END,IF,COMPS.
15.08.20.RETURN(SAIL,LOCAL)
15.08.21. IFE,P2,NE,0,MET.
15.08.21.END,IF,MET.
15.08.22.RETURN(MAP)
15.08.22.REQUEST(MAP,#0)
15.08.23.CONTR,LOAD.
15.08.24. END CNT
15.08.24. IFE,P2,ED,2,RUNS.
15.08.25.ELSE,RUNS.
15.08.25. IFE,61,NE,0,H176.
15.08.25.HULEI76.COMMENT.
15.08.27. FILE(TAPE41,SBF=NO)
15.08.27. FILE(TAPE41,SBF=NO)
15.08.28. FILE(TAPE9,SBF=NO)
15.08.29. FILE(TAPE40,SBF=NO)
15.08.30. FILE(TAPE10,SBF=NO)
15.08.30. FILE(TAPE44,SBF=NO)
15.08.31. FILE(TAPE45,SBF=NO)
15.08.32.LDSET(PRESETTING,INDEX MAP=SBEX/MAP)
15.08.32.LDSET(FILES=TAPE4/TAPE41/TAPE9/TAPE40/TA
15.08.32.PE10)
15.08.32.LDSET(FILES=TAPE44/TAPE45)
15.08.32.HULL.
15.21.49.NT65. BLOCKS WRITTEN -000865
15.23.37.NT65. BLOCKS WRITTEN -000896
15.24.16.NT65. BLOCKS WRITTEN -000127.
15.24.59.NT65. BLOCKS WRITTEN -000158
15.25.33.NT65. BLOCKS WRITTEN -000189
15.26.02.NT65. BLOCKS WRITTEN -000220
15.26.23.NT65. BLOCKS WRITTEN -000251
15.26.50.NT65. BLOCKS WRITTEN -000282

```

```

15.27.09.NT65 BLOCKS WRITTEN -000313
15.27.56.NT65 BLOCKS WRITTEN -000344
15.28.10.LOCKIN.
15.28.48.NT65 BLOCKS WRITTEN -000375
15.29.37.NT65 BLOCKS WRITTEN -000406
15.30.11.NT65 BLOCKS WRITTEN -000437
15.30.40.NT65 BLOCKS WRITTEN -000468
15.31.10.NT65 BLOCKS WRITTEN -000499
15.31.26.***** TOTAL CYCLE STOP.
15.31.29.NT65 BLOCKS WRITTEN -000530
15.31.31. END HULL
15.31.31. 46.361 CP SECONDS EXECUTION TIME
15.31.31.RETURN(TAPE4,HULL)
15.31.32.REVERT.
15.31.35.ELSE.H176.
15.31.37.ENDIF.H176.
15.31.37.ENDIF.RUNS.
15.31.38.ACCOUN.
15.31.40.ACCOUNT FILE = ACCOUNTKJ28V10F5P8
15.31.40. ACCOUNT ID = DYMPCR
15.31.50. END ACCT
15.31.50.REVERT.
15.31.51.OP 00016576 WORDS - FILE FILMFR , DC 20
15.31.51.OP 00019200 WORDS - FILE OUTPUT , DC 40
15.31.51.PS 39424 WORDS ( 26776 MAX USED)
15.31.51.CPA 68.479 SEC.
15.31.51.I0 160.605 SEC.
15.31.51.CM 5382.543 KWS.
15.31.51.SS 131.216
15.31.51.PP 385.244 SEC.
15.31.51.COST ESTIMATE DATE 08/21/78
15.31.51.EJ END OF JOB. IS $22.04

```

SECTION IV

TEST PROBLEM 1.3

Problem 1.3 is another small test problem consisting of 800 zones. It is a multimaterial problem with air, steel, and concrete. The configuration is basically a long narrow steel rod impinging upon a concrete slab at 25,000 ft/s. Stations were used for this run to test that part of the code. The entire JCL output has been listed as an example. Dumps from cycles 0, 10, and 104 have been included. After approximately 3.5  $\mu$ s the steel penetrator has moved 5 cells into the concrete slab.

AFWL-TR-78-234

PROBLEM 1.3 SYSTEM 370 KEEL RUN

```

//AF2001K JOB (AF2001,,5), 'KEEL RUN', MSGCLASS=H, CLASS=B,
//
//NOTIFY=AF2001
//KEEL EXEC KEEL, GEND='V105', FPARM='NOSOURCE, TERM',
//
//PS1='SYSOUT=H, HOLD=YES', PS2='SYSOUT=H, HOLD=YES',
//
//FP1='SYSOUT=H, HOLD=YES', LP1='SYSOUT=H, HOLD=YES',
//
//KP1='SYSOUT=H, HOLD=YES', KTIME=1, LIBPRE='AF2001.',
//
//OLDPRE='AF2001.', PPI='SYSOUT=H, HOLD=YES', PTIME='(0,10)'
//KEEL.DATA DD DSM=AF2001.HULL.PROBIP3, UNIT=SYSDA, DISP=(NEW,CATLG),
//
//DCB=(RECFM=VBS, LRECL=7220, BLKSIZE=7224),
//
//SPACE=(CYL,(20,20))
//KEEL.STATION DD DSM=AF2001.HULL.STATIP3, UNIT=SYSDA, DISP=(NEW,CATLG),
//
//DCB=(RECFM=VBS, LRECL=7220, BLKSIZE=7224),
//
//SPACE=(CYL,(4,4))
//KEEL.INPUT DD *
KEEL PROB=1.3
STRESS=1 STRAIN=1 ATMOS=5
IMAX=20 JMAX=40
EOS=6 T=0 NM=3 AIR=1 FE=2 CONCRT=3
FLUXER=3
NSTM=16
HEADER
STEEL PENETRATOR INTO CONCRETE
MESH XMAX=10, Y0=-10 YMAX=10
GENERATE
PACKAGE AIR
RECTANGLE Y2=0
RECTANGLE X2=1 Y1=-8 Y2=0
PACKAGE FE V=7.62E5
RECTANGLE X2=1 Y1=-8 Y2=0
PACKAGE CONCRT
RECTANGLE Y1=0
STATIONS
XL=0 YL=-8 -7 -5 -3 -1 0 .5 1 2 3 4 5 6 7 8 9
/*
//SAIL.INPUT DD *
SAIL LINE0
/*
L,2300,2400
END OF DATA

```

J E S 2   J O B   L O G

TIME	JOB	UNIT	CLASS	STARTED	ENDED	INIT	SYS
09.56.25	JOB	105	\$HASP373 AF2001K	09:56:25	10:37:25	7	5000
09.56.32	JOB	105	AF2001K KEEL	09:56:33	10:36:59	13	5000
09.56.45	JOB	105	AF2001K PLANK	09:56:46	10:37:24	1735	5000
10.25.42	JOB	105	AF2001K SAIL	10:25:42	10:38.09	677	5004
10.36.59	JOB	105	AF2001K FORT	10:36:59	10.38.10	25	5000
10.37.24	JOB	105	AF2001K LKED	10:37:25		45	5000
10.38.09	JOB	105	AF2001K GO				
10.38.10	JOB	105	\$HASP395 AF2001K				

OUT

```

$HASP165 JOB 109 AF2001K ENDED CM(00)
1 //AF2001K JOB (AF2001,,5), 'KEEL RUN',MSGCLASS=H,CLASS=B,
//NOTIFY=AF2001
//KEEL PROC LIB=HULLIB,
// LIBPRE='SAIL,',
// LIBU=,
// LIBVOL=,
// CHNBLK=3521,
// CHNLRL=3517,
// CREG=100K,
// FLIB='SYS1.FORTLIB',
// FILO=,
// FPARM=MAP,
// FPROG=IFEARR,
// FREG=512K,
// FPI='SYSOUT=A',
// FSPACE='(CYL,(10,5),RLSE)',
// FTIME='(1,0)',
// GENQ='(0)',
// GOSPACE='(CYL,(20,5,1))',
// LABD=,
// LWAME=KEEL,
// LPARM='MAP',
// LPROG=IEWL,
// LREG=250K,
// LP1='SYSOUT=A',
// LTIME='(0,45)',
// KEELSP='(CYL,(10,5),RLSE)',
// KRED=512K,
// KPI='SYSOUT=A',
// KTIME='(2,0)',
// OLD=HULL,
// OLDDCB=,
// OLDDS=SHR,
// OLDPRE='SAIL,',
// OLDU=,
// OLDBVOL=,
// PPROG=PLANK,
// PP1='SYSOUT=A',
// PRCM=5000,
// PRCI=3644,
// PRED=100K,
// PTIME='(1,0)',
// PS1='SYSOUT=A',
// PS2='SYSOUT=A',
// SAILBLK=800,
// SAILR=80,
// SCRTC=SYSDA,
//

```

```

JOB 105
00000020
X00000030
X00000040
X00000050
X00000060
X00000070
X00000080
X00000090
X00000100
X00000110
X00000120
X00000130
X00000140
X00000150
X00000160
X00000170
X00000180
X00000190
X00000200
X00000210
X00000220
X00000230
X00000240
X00000250
X00000260
X00000270
X00000280
X00000290
X00000300
X00000310
X00000320
X00000330
X00000340
X00000350
X00000360
X00000370
X00000380
X00000390
X00000400
X00000410
X00000420
X00000430
X00000440
X00000450
X00000460
X00000470

```

```

// SFROG=SAIL, X0000480
// SREG=175K, X0000490
// STIME=(2,0), X0000500
// WORKSP=(CYL,(5,5)) X0000510
//----- X0000520
//** EXEC PGM=IEBGENER,REGION=8KREG 00000530
//SYSPRINT DD DUMMY 00000540
//SYSIN DD DUMMY 00000550
//SYSUT1 DD DNAME=INPUT 00000560
//SYSUT2 DD DSN=88KEELI, X0000570
// DISP=(NEW,PASS), X0000580
// UNIT=8SCRTC, X0000590
// SPACE=(TRK,(5,5),RLSE), X0000600
// DCB=(RECFM=FB,LRECL=80,RLKSIZE=1600) X0000610
//----- X0000620
//** PLANK EXEC PGM=8PPROG,TIME=8PTIME,REGION=8PREG 00000630
// 00000640
//** STEPLIB DD DSN=8LIBPRE8LIB, X0000650
// UNIT=8LIBU, X0000660
// VOL=8LIBVOL, X0000670
// DISP=SHR 0000680
//** FT05F001 DD DSN=88KEELI,DISP=(OLD,PASS) 0000690
//** FT06F001 DD 8PPI, 0000700
// DCB=(RECFM=FB,LRECL=133,BLKSIZE=1330) X0000710
//** FT07F001 DD DSN=88ALTI, X0000720
// DISP=(NEW,PASS), 0000730
// UNIT=8SCRTC, 0000740
// SPACE=(TRK,(5,5),RLSE), X0000750
// DCB=(RECFM=FB,LRECL=80,BLKSIZE=1600) X0000760
//----- X0000770
//** SAIL EXEC PGM=8SPROG,TIME=8STIME,REGION=8SREG, 0000780
// COND=(8,LT,PLANK) 0000790
//** 0000800
//** STEPLIB DD DSN=8LIBPRE8LIB, X0000810
// UNIT=8LIBU, X0000820
// VOL=8LIBVOL, X0000830
// DISP=SHR P 0000840
//** FT01F001 DD DUMMY 0000850
//** FT02F001 DD DSN=8OLDPRE8OLD8GEN0, 0000860
// UNIT=8OLDU, 0000870
// LABEL=(8FILO,8LARO,,IN), 0000880
// DISP=8OLD8S, 0000890
// VOL=8OLDVOL, 0000900
// DCB=8OLDDCB 0000910
//** FT03F001 DD UNIT=8SCRTC, 0000920
// 0000930
// 0000940
// 0000950
// 0000960
// 0000970
// 0000980
// 0000990
// 00000910
// 00000920
// 00000930
// 00000940
// 00000950
// 00000960
// 00000970
// 00000980
// 00000990

```

```

//          DISP=(NEW,DELETE),
//          DCB=(RECFM=VBS,LRECL=8CHNLRL,BLKSIZE=8CHNBK),
//          SPACE=(TRN,(20,20))
// *
//FT04F001 DD 4PS2,
//          DCB=(RECFM=FBA,LRECL=133,BLKSIZE=1330)
// *
//FT05F001 DD DDNAME=INPUT
// *
//FT06F001 DD 4PS1,
//          DCB=(RECFM=FBA,LRECL=133,BLKSIZE=1330)
// *
//FT08F001 DD DSN=8KEEL,
//          DISP=(NEW,PASS),
//          UNIT=8SCRTC,
//          SPACE=8KEELSP,
//          DCB=(RECFM=FB,LRECL=8SAILR,BLKSIZE=8SAILBK)
// *
//FT09F001 DD DSN=8ALTI,DISP=(OLD,DELETE)
// *
//FT10F001 DD UNIT=8SCRTC,
//          DISP=(NEW,DELETE),
//          SPACE=(8PRCL,(8PRCN))
// *
//FT11F001 DD DUMMY
// *
//FT12F001 DD DUMMY
// *
//FORT EXEC PGM=8PROG,REGION=8REG,PARM='8FPARM',TIME=8FTIME,
//          COND=((8,LT,PLANK),(8,LT,SAIL))
// *
//SYSPRINT DD 4P1,
//          DCB=(RECFM=FBA,LRECL=133,BLKSIZE=1330)
// *
//SYSLIN DD DSN=8LOADSET,
//          DISP=(MOD,PASS),
//          UNIT=8SCRTC,
//          SPACE=8FSPACE,
//          DCB=(RECFM=FB,LRECL=80,BLKSIZE=1600)
// *
//SYSIN DD DSN=8KEEL,DISP=(OLD,DELETE)
// *
//SYSUT1 DD UNIT=8SCRTC,SPACE=(CYL,(2,2))
// *
//SYSUT2 DD UNIT=8SCRTC,SPACE=(CYL,(2,2))
// *
//SYSTEM DD DUMMY
// *
//LKED EXEC PGM=8LPROG,REGION=8LREG,TIME=8LTIME,
//          COND=((4,LT,FORT),(8,LT,SAIL),(8,LT,PLANK)),
//          PARM='8LPARM'

```

```

X00000770
X00001000
X00001010
X00001020
X00001030
X00001040
X00001050
X00001060
X00001070
X00001080
X00001090
X00001100
X00001110
X00001120
X00001130
X00001140
X00001150
X00001160
X00001170
X00001180
X00001190
X00001200
X00001210
X00001220
X00001230
X00001240
X00001250
X00001260
X00001270
X00001280
X00001290
X00001300
X00001310
X00001320
X00001330
X00001340
X00001350
X00001360
X00001370
X00001380
X00001390
X00001400
X00001410
X00001420
X00001430
X00001440
X00001450
X00001460
X00001470
X00001480
X00001490

```

```

00001500
X00001510
00001520
00001530
00001540
00001550
00001560
00001570
00001580
X00001590
X00001600
X00001610
X00001620
00001630
00001640
00001650
X00001660
00001670
00001680
00001690
00001700
00001710
00001720
X00001730
00001740
00001750
00001760
00001770
X00001780
X00001790
X00001800
00001810
00001820
X00001830
X00001840
X00001850
00001860
00001870
X00001880
X00001890
X00001900
00001910
00001920
X00001930
X00001940
X00001950
00001960
00001970
X00001980
X00001990
X00002000

//*
//SYSPRINT DD &LPI,
//          DCB=(RECFM=FBA,LRECL=133,BLKSIZE=1330)
//*
//SYSLIB DD DSN=&LIBPRELIB,DISP=SHR
//          DD DSN=&FLIB,DISP=SHR
//*
//SYSUT1 DD UNIT=&SCRTC,SPACE=(1024,(200,20))
//*
//SYSLMOD DD DSN=&GOSSET(&LNAME),
//          UNIT=&SCRTC,
//          DISP=(,PASS),
//          SPACE=&GOSPACE
//*
//SYSLIM DD DSN=&LOADSET,DISP=(OLD,DELETE)
//*
//GO EXEC PGM=&LKED.SYSLMOD,TIME=&KTIME,REGION=&KREG,
//      COND=((4,LT,LKED),(4,LT,FORT),(8,LT,SAIL),(8,LT,PLANK))
//*
//FT04F001 DD DSN=&.KEEL.DATA,DISP=(OLD,KEEP)
//*
//FT05F001 DD DSN=&KEELI,DISP=(OLD,DELETE)
//*
//FT06F001 DD &KPI,
//          DCB=(RECFM=FBA,LRECL=133,BLKSIZE=1330)
//*
//FT09F001 DD DSN=&.KEEL.STATION,DISP=(OLD,KEEP)
//*
//FT10F001 DD UNIT=&SCRTC,
//          SPACE=&WORKSP,
//          DISP=(NEW,DELETE),
//          DCB=&.KEEL.DATA
//*
//FT11F001 DD UNIT=&SCRTC,
//          SPACE=&WORKSP,
//          DISP=(NEW,DELETE),
//          DCB=&.KEEL.DATA
//*
//FT14F001 DD UNIT=&SCRTC,
//          SPACE=&WORKSP,
//          DISP=(NEW,DELETE),
//          DCB=&.KEEL.DATA
//*
//FT21F001 DD UNIT=&SCRTC,
//          SPACE=&WORKSP,
//          DISP=(NEW,DELETE),
//          DCB=&.KEEL.DATA
//*
//FT44F001 DD UNIT=&SCRTC,
//          SPACE=&WORKSP,
//          DISP=(NEW,DELETE),

```

```

00002010
00002020
X00002030
X00002040
X00002050
00002060
00002070
00002080
00002090
00002100
00002110
00002120
00002130
X00000030
X00000040
X00000050
X00000060
X00000070
X00000080
X00000090
X00000100
X00000110
X00000120
X00000130
X00000140
X00000150
X00000160
X00000170
X00000180
X00000190
X00000200
X00000210
X00000220
X00000230
X00000240
X00000250
X00000260
X00000270
X00000280
X00000290
X00000300
X00000310
X00000320
X00000330
X00000340
X00000350
X00000360
X00000370
X00000380
X00000390
X00000400

// **KEEL DATA
// **
// FT45F001 DD UNIT=ASCRT.
// SPACE=WORKSP,
// DISP=(NEW,DELETE),
// DCB=*.KEEL.DATA
// **
// PENDING
// **KEEL EXEC KEEL,GENO='V105',FPARM='NOSOURCE,TERM',
// PS1='SYSOUT=H,HOLD=YES',PS2='SYSOUT=H,HOLD=YES',
// FP1='SYSOUT=H,HOLD=YES',LP1='SYSOUT=H,HOLD=YES',
// KP1='SYSOUT=H,HOLD=YES',KTIME='AF2001.',
// OLDPRE='AF2001.',PPI='SYSOUT=H,HOLD=YES',PTIME='(0,10)'
// PROC LIB=HULLIB,
// LIBPRE='SAIL.',
//
// LIBVOL=,
// CHMHLK=3521,
// CHMLRL=3517,
// CREG=100K,
// FLIB='SYSI.FORTLIB',
// FILLO=,
// FPARM=MAP,
// FPROG=IFEARB,
// FREG=512K,
// FPI='SYSOUT=A',
// FSPACE='(CYL,(10,5),RLSE)',
// FTIME='(1,0)',
// GENO='(0)',
// GOSPACE='(CYL,(20,5,1))',
// LABO=,
// LMAHE=KEEL,
// LPARM='MAP',
// LPROG=IEML,
// LREG=250K,
// LPI='SYSOUT=A',
// LTIME='(0,45)',
// KEELSP='(CYL,(10,5),RLSE)',
// KREG=512K,
// KP1='SYSOUT=A',
// KTIME='(2,0)',
// OLD=HULL,
// OLDDCB=,
// OLDDS=SHR,
// OLDPRE='SAIL.',
// OLDU=,
// OLVDL=,
// PPROG=PLANK,
// PPI='SYSOUT=A',
// PRCM=5000,
// PRCL=3644,
// **

```

2

3

```

X00000410
X00000420
X00000430
X00000440
X00000450
X00000460
X00000470
X00000480
X00000490
X00000500
X00000510
X00000520
X00000530
X00000540
X00000550
X00000560
X00000570
X00000580
X00000590
X00000600
X00000610
X00000620
X00000630
X00000640
X00000650
X00000660
X00000670
X00000680
X00000690
X00000700
X00000710
X00000720
X00000730
X00000740
X00000750
X00000760
X00000770
X00000780
X00000790
X00000800
X00000810
X00000820
X00000830
X00000840

```

```

PREG=100K,
PTIME=(1,0),
PS1='SYSOUT=A',
PS2='SYSOUT=A',
SAILBLK=800,
SAILR=80,
SCRIC=SYSDA,
SPROG=SAIL,
SREG=175K,
STIME=(2,0),
WORKSP=(CYL,(5,5))
-----*
**KEEL EXEC PGM=IEGENER,REGION=3CREG
**SYSPRINT DD DUMMY
**SYSIN DD DUMMY
**SYSUT1 DD DDNAME=INPUT
**SYSUT2 DD DSN=8KEELI,
DISP=(NEW,PASS),
UNIT=8SCRTC,
SPACE=(TRK,(5,5),RLSE),
DCB=(RECFM=FB,LRECL=80,BLKSIZE=1600)
-----*
**//KEEL.DATA DD DSN=AF2001.HULL.PROB1P3,UNIT=SYSDA,DISP=(NEW,CATLG),
// DCB=(RECFM=VBS,LRECL=7220,BLKSIZE=7224),
// SPACE=(CYL,(20,20))
**//KEEL.STATION DD DSN=AF2001.HULL.STAT1P3,UNIT=SYSDA,DISP=(NEW,CATLG),
// DCB=(RECFM=VBS,LRECL=7220,BLKSIZE=7224),
// SPACE=(CYL,(4,4))
**//KEEL.INPUT DD *
**PLANK EXEC PGM=8PPROG,TIME=8PTIME,REGION=4PREG
***
**STEPLIB DD DSN=8LIBPRELIB,
UNIT=8LIBU,
VOL=8LIBVOL,
DISP=SHR
***
**FT05F001 DD DSN=88KEELI,DISP=(OLD,PASS)
***
**FT06F001 DD 8PPI,
DCB=(RECFM=FB,LRECL=133,BLKSIZE=1330)
***
**FT07F001 DD DSN=88ALTI,
DISP=(NEW,PASS),
UNIT=8SCRTC,
SPACE=(TRK,(5,5),RLSE),
DCB=(RECFM=FB,LRECL=80,BLKSIZE=1600)
-----*
**SAIL EXEC PGM=8SPROG,TIME=8STIME,REGION=4SREG,
COND=(8,LT,PLANK)
***
**STEPLIB DD DSN=8LIBPRELIB,

```

```

X00000820
X00000860
00000870
00000880
00000890
00000900
X0000910
X0000920
X0000930
X0000940
X0000950
00000960
00000970
X0000980
X0000990
X0001000
00001010
00001020
X0001030
00001040
00001050
00001060
00001070
X0001080
00001090
00001100
X0001110
X0001120
X0001130
X0001140
00001150
00001160
00001170
00001180
X0001190
X0001200
00001210
00001220
00001230
00001240
00001250
00001260
00002410
X00001270
00001280
00001290
X00001300
00001310
00001320
X00001330

**          UNIT=BLBU,
**          VOL=BLBVOL,
**          DISP=SMR
***
19  **FT01F001 DD DUMMY
***
20  **FT02F001 DD DSN=OLDPROD&GENO,
**          UNIT=OLDU,
**          LABEL=(FILO,LABO,,IN),
**          DISP=OLD DS,
**          VOL=OLDVOL,
**          DCB=OLDDCB
***
21  **FT03F001 DD UNIT=ASCRT,
**          DISP=(NEW,DELETE),
**          DCB=(RECFM=VBS,LRECL=8CHNLRL,BLKSIZE=8CHNLRL),
**          SPACE=(TRK,(20,20))
***
22  **FT04F001 DD PS2,
**          DCB=(RECFM=FBA,LRECL=133,BLKSIZE=1330)
***
23  **FT05F001 DD DDNAME=INPUT
***
24  **FT06F001 DD PSI,
**          DCB=(RECFM=FBA,LRECL=133,BLKSIZE=1330)
***
25  **FT08F001 DD DSN=8KEEL,
**          DISP=(NEW,PASS),
**          UNIT=ASCRT,
**          SPACE=8KEELSP,
**          DCB=(RECFM=FB,LRECL=8SAILR,BLKSIZE=8SAILBLK)
***
26  **FT09F001 DD DSN=8ALTI,DISP=(OLD,DELETE)
***
27  **FT10F001 DD UNIT=ASCRT,
**          DISP=(NEW,DELETE),
**          SPACE=(8PRL,(8PRCN))
***
28  **FT11F001 DD DUMMY
***
29  **FT12F001 DD DUMMY
***
30  -----*
31  //SAIL.INPUT DD *
32  //SYSIN DD *          GENERATED STATEMENT
**          EXEC PGM=8FPROG,REGION=8FREG,PARM=8FPARM,TIME=8FTIME,
**          COND=((8,LT,PLANK),(8,LT,SAIL))
***
33  **SYSPRINT DD 8FP1,
**          DCB=(RECFM=FBA,LRECL=133,BLKSIZE=1330)
***
34  **SYSLIN DD DSN=8LOADSET,

```

```

35  ** DISP=(MOD,PASS),
** UNIT=ASCRTC,
** SPACE=8FSPACE,
** DCB=(RECFM=BF,LRECL=80,BLKSIZE=1600)
**
**
**
**
36  **SYSIN DD DSN=88KEEL,DISP=(OLD,DELETE)
***
**
**
37  **SYSUT1 DD UNIT=ASCRTC,SPACE=(CYL,(2,2))
***
**
**
38  **SYSUT2 DD UNIT=ASCRTC,SPACE=(CYL,(2,2))
***
**
**
39  **SYSTEM DD DUMMY
***
**
**
40  **LKED EXEC PGM=8LPROG,REGION=8LREG,TIME=8LTIME,
** COND=(4,LT,FORT),(8,LT,SAIL),(8,LT,PLANK)),
** PARM=8LPARN
**
**
41  **SYSPRINT DD 8LP1,
** DCB=(RECFM=ZFB,LRECL=133,BLKSIZE=1330)
***
**
**
42  **SYSLIB DD DSN=8LIBPRELIB,DISP=SHR
** DD DSN=8LIB,DISP=SHR
***
**
**
43  **SYSUT1 DD UNIT=ASCRTC,SPACE=(1024,(200,20))
***
**
**
44  **SYSLMOD DD DSN=88GOSSET(8LNAME),
** UNIT=ASCRTC,
** DISP=(,PASS),
** SPACE=8GOSPACE
***
**
**
45  **SYSLIN DD DSN=88LOADSET,DISP=(OLD,DELETE)
***
**
**
46  **60 EXEC PGM=8LKED.SYSLMOD,TIME=8KTIME,REGION=8KREG,
** COND=((4,LT,LKED),(4,LT,FORT),(8,LT,SAIL),(8,LT,PLANK))
***
**
**
47  **FT04F001 DD DSN=88KEEL.DATA,DISP=(OLD,KEEP)
***
**
**
48  **FT05F001 DD DSN=88KEELI,DISP=(OLD,DELETE)
***
**
**
49  **FT06F001 DD 8KP1,
** DCB=(RECFM=FB,LRECL=133,BLKSIZE=1330)
***
**
**
50  **FT09F001 DD DSN=88KEEL.STATION,DISP=(OLD,KEEP)
***
**
**
51  **FT10F001 DD UNIT=ASCRTC,
** SPACE=8WORKSP,
** DISP=(NEW,DELETE),
** DCB=88KEEL.DATA
***
**
**
52  **FT11F001 DD UNIT=ASCRTC,
** SPACE=8WORKSP,

```

```

X00001340
X00001350
X00001360
X00001370
X00001380
X00001390
X00001400
X00001410
X00001420
X00001430
X00001440
X00001450
X00001460
X00001470
X00001480
X00001490
X00001500
X00001510
X00001520
X00001530
X00001540
X00001550
X00001560
X00001570
X00001580
X00001590
X00001600
X00001610
X00001620
X00001630
X00001640
X00001650
X00001660
X00001670
X00001680
X00001690
X00001700
X00001710
X00001720
X00001730
X00001740
X00001750
X00001760
X00001770
X00001780
X00001790
X00001800
X00001810
X00001820
X00001830
X00001840

```

X00001850  
00001860  
00001870  
X00001880  
X00001890  
X00001900  
00001910  
00001920  
X00001930  
X00001940  
X00001950  
00001960  
00001970  
X00001980  
X00001990  
X00002000  
00002010  
00002020  
X00002030  
X00002040  
X00002050  
00002060  
00002070

++ DISP=(NEW,DELETE),  
++ DCB=\*.KEEL.DATA  
\*\*\*  
53 ++FT14F001 DD UNIT=ASCRTC,  
++ SPACE=SWORKSP,  
++ DISP=(NEW,DELETE),  
++ DCB=\*.KEEL.DATA  
\*\*\*  
54 ++FT21F001 DD UNIT=ASCRTC,  
++ SPACE=SWORKSP,  
++ DISP=(NEW,DELETE),  
++ DCB=\*.KEEL.DATA  
\*\*\*  
55 ++FT44F001 DD UNIT=ASCRTC,  
++ SPACE=SWORKSP,  
++ DISP=(NEW,DELETE),  
++ DCB=\*.KEEL.DATA  
\*\*\*  
56 ++FT45F001 DD UNIT=ASCRTC,  
++ SPACE=SWORKSP,  
++ DISP=(NEW,DELETE),  
++ DCB=\*.KEEL.DATA  
\*\*\*

OUT

GENERATING KEEL DISK VERSION  
 KEEL RUN

EQUATION OF STATE - SOLIDS - NO STRENGTH

ATMOSPHERE - CONSTANT

VOLUME AND ENERGY FLUXING  
 THE FOLLOWING OPTIONS HERE DEFINED BY PLANK.

ATMOS	=	5
BURN	=	0
CODE	=	1
DIMEN	=	2
EOS	=	6
GEOM	=	2
HOT	=	0
IMAX	=	20
ISLAND	=	0
JMAX	=	40
KNAX	=	1
LBUFF	=	0
MAGFLD	=	0
METHOD	=	2
MH	=	20
MHIC	=	1600
MN	=	3
MOP	=	1000
MHIST	=	6
NPLPB	=	2
NPP	=	3
NROUPB	=	4
NSTH	=	16
NVARST	=	16
RAD	=	0
REZONE	=	1
STRESS	=	1
SURF	=	0
SU	=	6
SWX	=	0
VTSC	=	0
LAMB	=	0
BBOUND	=	0

LBUUNU	=	0
KEEL	=	0
PULL	=	0
VOIDS	=	0
FLUXER	=	3
DEPOS	=	0
FAIL	=	0
STRAIN	=	1
WORK	=	0
FIREIN	=	0
MAT	=	3
AIR	=	1
FE	=	2
CONCRT	=	3

OUT

THE FOLLOWING OPTIONS WERE SPECIFIED WHEN EXECUTIVE PROCESSING BEGAN

INST	=	6
PRG	=	0
PLANK	=	0
PULL	=	0
KEEL	=	1
LIBRARY	=	0
ATMOS	=	5
BURN	=	0
CODE	=	1
DIMEN	=	2
EOS	=	6
GEOM	=	2
HO	=	0
IMAX	=	20
ISLAND	=	0
JMAX	=	40
KMAX	=	1
LBUFA	=	0
LBUFB	=	0
MAGFLD	=	0
METHOD	=	2
NH	=	20
NHIC	=	1600
NH	=	3
NOP	=	1000
NHIST	=	6
NPLPB	=	2
NPP	=	3
NROUPB	=	P 4
NSTM	=	16
NVARST	=	16
RAD	=	0
REZONE	=	1
STRESS	=	1
SURF	=	0
SU	=	6
SUX	=	0
VISC	=	0
LAMB	=	0
BBOUND	=	0
LBOUND	=	0
VOIDS	=	0
FLUXER	=	3
DEPOS	=	0
FAIL	=	0
STRAIN	=	1
WORK	=	0
FIREIN	=	0

MAI = J  
AIR = 1  
FE = 2  
CONCRT = 3

THE FOLLOWING DEFINITIONS OR REDEFINITIONS WERE MADE DURING EXECUTIVE PROC=J,J=ZM=

SYS = 370  
VER = 1  
OBJLIB = 1  
TAPELIB = 0  
CDC = 0  
IBM = 1  
HX = 0  
CW = 8  
NW = 2  
RDEND = 1  
CARDL = 10  
CARDO = 80  
DOUBLE = 0  
MHEC = 14000  
NBLKS = 10  
NPIC = 3000  
NPICMAX = 3020  
STRAIN = 1  
STRESS = 1  
DEBUG = 0  
FILMPR = 0  
D\$NAMEA = 21  
D\$NAMEB = 12  
D\$NAMEC = 13  
D\$NAMED = 15  
D\$NAMEE = 17  
D\$NAMEF = 14  
D\$NAMEG = 15  
D\$NAMEH = 16  
D\$NAMEI = 5  
AIREOS = 1

6489 CARDS GENERATED  
END OF NORMAL RUN  
SYSTEM HULL , VERSION 105  
CREATED 19MAY78  
OUT

KEEL OUTPUT  
 STEEL PENETRATOR INTD CONCRETE  
 ZBLK

00002280

PROB	1.29999923706055D+00	4114CCCC0000000000
ATMOS	5.00000000000000D+00	415000000000000000
BREF	0.0	000000000000000000
CODE	1.00000000000000D+00	411000000000000000
COLD	0.00000514755759D-79	0000000100000000
CYCLE	0.0	000000000000000000
DINEM	2.00000000000000D+00	412000000000000000
DT	1.00000008274037D-08	342AF31E00000000
ELC	0.0	000000000000000000
EOS	6.00000000000000D+00	416000000000000000
ETH	0.0	000000000000000000
EXPAND	5.00000007450581D-02	3FCCCCDD00000000
FAIL	0.0	000000000000000000
FLUXER	3.00000000000000D+00	413000000000000000
GEOM	2.00000000000000D+00	412000000000000000
JMAX	2.00000000000000D+01	421400000000000000
IQ	1.90000000000000D+01	421300000000000000
ISLAND	0.0	000000000000000000
JMAX	4.00000000000000D+01	422800000000000000
JU	3.90000000000000D+01	422700000000000000
HOB	0.0	000000000000000000
LREF	0.00000514755759D-79	0000000100000000
Y=	2.00000000000000D+00	412000000000000000
MLC	0.0	000000000000000000
MTH	0.0	000000000000000000
MH	2.00000000000000D+01	421400000000000000
MHIC	1.60000000000000D+03	436400000000000000
MHIST	6.00000000000000D+00	416000000000000000
MH	3.00000000000000D+00	413000000000000000
MOP	0.0	000000000000000000
MPP	3.00000000000000D+00	413000000000000000
MROMPB	4.00000000000000D+00	414000000000000000
MSTM	0.0	000000000000000000
MVARST	1.60000000000000D+01	421000000000000000
PTSTOP	6.00000000000000D+02	432580000000000000
RABLOS	0.0	000000000000000000
REZONE	1.00000000000000D+00	411000000000000000
RREF	0.0	000000000000000000
STABF	5.00000000000000D-01	408000000000000000
STRAIN	1.00000000000000D+00	411000000000000000
STRESS	1.00000000000000D+00	411000000000000000
SUME	0.0	000000000000000000
T	0.0	000000000000000000
TERAD	0.0	000000000000000000
TLC	0.0	000000000000000000
TREF	0.0	000000000000000000



DELETE A RECTANGL  
 X1 = 0.0 X2 = 1.000000E+00 Y1 = -8.000001E+00 Y2 = 0.0  
 3.816498E+00 GMS 7.800115E+09 ERGS INSERTED AS MATERIAL 1

FE = 2  
 GENERATE A RECTANGL OF MATERIAL 2  
 X1 = 0.0 X2 = 1.000000E+00 Y1 = -8.000001E+00 Y2 = 0.0  
 1.975430E+02 GMS 5.759959E+13 ERGS INSERTED AS MATERIAL 2

COMCRT = 3  
 GENERATE A RECTANGL OF MATERIAL 3  
 X1 = 0.0 X2 = 1.000000E+01 Y1 = 0.0 Y2 = 9.999999E+00  
 6.908410E+03 GMS 5.394512E+12 ERGS INSERTED AS MATERIAL 3

LOCATIONS OF STATIONS GENERATED ARE ...

STATION 1	XP = 0.0	YP = -8.000001E+00
STATION 2	XP = 0.0	YP = -7.000001E+00
STATION 3	XP = 0.0	YP = -5.000001E+00
STATION 4	XP = 0.0	YP = -3.000001E+00
STATION 5	XP = 0.0	YP = -1.000000E+00
STATION 6	XP = 0.0	YP = 0.0
STATION 7	XP = 0.0	YP = 5.000001E-01
STATION 8	XP = 0.0	YP = 1.000000E+00
STATION 9	XP = 0.0	YP = 2.000001E+00
STATION 10	XP = 0.0	YP = 3.000001E+00
STATION 11	XP = 0.0	YP = 4.000001E+00
STATION 12	XP = 0.0	YP = 5.000001E+00
STATION 13	XP = 0.0	YP = 6.000001E+00
STATION 14	XP = 0.0	YP = 7.000001E+00
STATION 15	XP = 0.0	YP = 8.000001E+00
STATION 16	XP = 0.0	YP = 9.000001E+00

ZBLK 0 PARTICLES AND 16 STATIONS GENERATED

PROB	1.29999923704055D+00	4114CCCC00000000
ATMOS	5.00000000000000D+00	4150000000000000
BREF	0.0	0000000000000000
CODE	1.00000000000000D+00	4110000000000000
COLD	0.00000514755759D-79	0000001000000000
CYCLE	0.0	0000000000000000
DIMEN	2.00000000000000D+00	4120000000000000
DT	1.00000008274037D-08	3A2AF31E00000000
ELC	0.0	0000000000000000
EOS	6.00000000000000D+00	4160000000000000
ETH	0.0	0000000000000000
EXPAND	5.00000007450581D-02	3FC0000000000000

FAIL	0.0	00000000000000000000
FLUXER	3.000000000000000000D+00	41300000000000000000
GEOM	2.000000000000000000D+00	41200000000000000000
IMAX	2.000000000000000000D+01	42140000000000000000
IG	1.900000000000000000D+01	42130000000000000000
ISLAND	0.0	00000000000000000000
JMAX	4.000000000000000000D+01	42280000000000000000
JO	3.900000000000000000D+01	42270000000000000000
HOB	0.0	00000000000000000000
LREF	0.0000051475759D-79	000000010000000000
METHOD	2.000000000000000000D+00	41200000000000000000
MLC	0.0	00000000000000000000
MTH	0.0	00000000000000000000
NH	2.000000000000000000D+01	42140000000000000000
NMIC	1.600000000000000000D+03	43640000000000000000
NHIST	6.000000000000000000D+00	41600000000000000000
NN	3.000000000000000000D+00	41300000000000000000
NDF	1.600000000000000000D+01	42100000000000000000
NDFP	3.000000000000000000D+00	41300000000000000000
NROHFB	4.000000000000000000D+00	41400000000000000000
NVARST	1.600000000000000000D+01	42100000000000000000
PTSTOP	1.600000000000000000D+01	42100000000000000000
RADLOS	6.000000000000000000D+02	43258000000000000000
REZONE	0.0	00000000000000000000
REF	1.000000000000000000D+00	41100000000000000000
STABF	0.0	00000000000000000000
STRAIN	5.000000000000000000D-01	40800000000000000000
STRESS	1.000000000000000000D+00	41100000000000000000
SUME	1.000000000000000000D+00	41100000000000000000
T	0.0	00000000000000000000
TERAD	0.0	00000000000000000000
TLC	0.0	00000000000000000000
TREF	0.0	00000000000000000000
TTIME	0.0	00000000000000000000
TTSTOP	1.000000000000000000D+02	42640000000000000000
UREZ	1.000000000000000000D+01	41A00000000000000000
VISC	0.0	00000000000000000000
VREZ	1.000000000000000000D+01	41A00000000000000000
VOIDS	0.0	00000000000000000000
WORK	0.0	00000000000000000000
X1	4.000000000000000000D+00	41400000000000000000
X2	-1.000000000000000000D+00	C1100000000000000000
XOB	0.0	00C00000000000000000
Y1	8.000000000000000000D+00	41800000000000000000
Y2	3.200000000000000000D+01	42200000000000000000
YGND	0.0	00000000000000000000
YIELD	0.0	00000000000000000000
AIR	1.000000000000000000D+00	41100000000000000000
FE	2.000000000000000000D+00	41200000000000000000
COMCRT	3.000000000000000000D+00	41300000000000000000

CHECKING STATION LOCATIONS.

INDIVIDUAL MASS SUMS

3.817519E+00 1.975430E+02 6.911145E+03

I= 1 X(I)= 0.500 DX(I)= 0.500

J	U	V	AIX	RHO	AMX	BY	Y
1	0.0	0.0	2.04400205E+09	1.22499699E-03	4.81055118E-04	5.00000000E-01	-9.50000095E+00
2	0.0	0.0	2.04400205E+09	1.22499699E-03	4.81055118E-04	5.00000000E-01	-9.00000095E+00
3	0.0	0.0	2.04400205E+09	1.22499699E-03	4.81055118E-04	5.00000000E-01	-8.50000095E+00
4	0.0	0.0	2.04400205E+09	1.22499699E-03	4.81055118E-04	5.00000000E-01	-8.00000095E+00
5	0.0	0.0	7.62000312E+05	1.26792499E+09	3.08660889E+00	5.00000000E-01	-7.50000095E+00
6	0.0	7.62000312E+05	1.26792499E+09	7.85998631E+00	3.08660889E+00	5.00000000E-01	-7.00000095E+00
7	0.0	7.62000312E+05	1.26792499E+09	7.85998631E+00	3.08660889E+00	5.00000000E-01	-6.50000095E+00
8	0.0	7.62000312E+05	1.26792499E+09	7.85998631E+00	3.08660889E+00	5.00000000E-01	-6.00000095E+00
9	0.0	7.62000312E+05	1.26792499E+09	7.85998631E+00	3.08660889E+00	5.00000000E-01	-5.50000095E+00
10	0.0	7.62000312E+05	1.26792499E+09	7.85998631E+00	3.08660889E+00	5.00000000E-01	-5.00000095E+00
11	0.0	7.62000312E+05	1.26792499E+09	7.85998631E+00	3.08660889E+00	5.00000000E-01	-4.50000095E+00
12	0.0	7.62000312E+05	1.26792499E+09	7.85998631E+00	3.08660889E+00	5.00000000E-01	-4.00000095E+00
13	0.0	7.62000312E+05	1.26792499E+09	7.85998631E+00	3.08660889E+00	5.00000000E-01	-3.50000095E+00
14	0.0	7.62000312E+05	1.26792499E+09	7.85998631E+00	3.08660889E+00	5.00000000E-01	-3.00000095E+00
15	0.0	7.62000312E+05	1.26792499E+09	7.85998631E+00	3.08660889E+00	5.00000000E-01	-2.50000095E+00
16	0.0	7.62000312E+05	1.26792499E+09	7.85998631E+00	3.08660889E+00	5.00000000E-01	-2.00000095E+00
17	0.0	7.62000312E+05	1.26792499E+09	7.85998631E+00	3.08660889E+00	5.00000000E-01	-1.50000095E+00
18	0.0	7.62000312E+05	1.26792499E+09	7.85998631E+00	3.08660889E+00	5.00000000E-01	-1.00000095E+00
19	0.0	7.62000312E+05	1.26792499E+09	7.85998631E+00	3.08660889E+00	5.00000000E-01	-5.00000954E-01
20	0.0	7.62000312E+05	1.26792499E+09	7.85998631E+00	3.08660889E+00	5.00000000E-01	-9.5367431E-07
21	0.0	0.0	7.80999168E+08	2.19999695E+00	8.63936663E-01	5.00000000E-01	4.99999046E-01
22	0.0	0.0	7.80999168E+08	2.19999695E+00	8.63936663E-01	5.00000000E-01	9.99999046E-01
23	0.0	0.0	7.80999168E+08	2.19999695E+00	8.63936663E-01	5.00000000E-01	1.49999905E+00
24	0.0	0.0	7.80999168E+08	2.19999695E+00	8.63936663E-01	5.00000000E-01	1.99999905E+00
25	0.0	0.0	7.80999168E+08	2.19999695E+00	8.63936663E-01	5.00000000E-01	2.49999905E+00
26	0.0	0.0	7.80999168E+08	2.19999695E+00	8.63936663E-01	5.00000000E-01	2.99999905E+00
27	0.0	0.0	7.80999168E+08	2.19999695E+00	8.63936663E-01	5.00000000E-01	3.49999905E+00
28	0.0	0.0	7.80999168E+08	2.19999695E+00	8.63936663E-01	5.00000000E-01	3.99999905E+00
29	0.0	0.0	7.80999168E+08	2.19999695E+00	8.63936663E-01	5.00000000E-01	4.49999905E+00
30	0.0	0.0	7.80999168E+08	2.19999695E+00	8.63936663E-01	5.00000000E-01	4.99999905E+00
31	0.0	0.0	7.80999168E+08	2.19999695E+00	8.63936663E-01	5.00000000E-01	5.49999905E+00
32	0.0	0.0	7.80999168E+08	2.19999695E+00	8.63936663E-01	5.00000000E-01	5.99999905E+00
33	0.0	0.0	7.80999168E+08	2.19999695E+00	8.63936663E-01	5.00000000E-01	6.49999905E+00
34	0.0	0.0	7.80999168E+08	2.19999695E+00	8.63936663E-01	5.00000000E-01	6.99999905E+00
35	0.0	0.0	7.80999168E+08	2.19999695E+00	8.63936663E-01	5.00000000E-01	7.49999905E+00
36	0.0	0.0	7.80999168E+08	2.19999695E+00	8.63936663E-01	5.00000000E-01	7.99999905E+00
37	###	0.0	7.80999168E+08	2.19999695E+00	8.63936663E-01	5.00000000E-01	8.49999905E+00

38	0.0	0.0	7.80999168E+08	2.19999495E+00	8.63936663E-01	5.00000000E-01	8.99999905E+00
39	0.0	0.0	7.80999168E+08	2.19999495E+00	8.63936663E-01	5.00000000E-01	9.49999905E+00
40	0.0	0.0	7.80999168E+08	2.19999495E+00	8.63936663E-01	5.00000000E-01	9.99999905E+00

MATERIAL MASSES

J	1	2	3
1	4.81055118E-04	0.0	0.0
2	4.81055118E-04	0.0	0.0
3	4.81055118E-04	0.0	0.0
4	4.81055118E-04	0.0	0.0
5	0.0	3.08660889E+00	0.0
6	0.0	3.08660889E+00	0.0
7	0.0	3.08660889E+00	0.0
8	0.0	3.08660889E+00	0.0
9	0.0	3.08660889E+00	0.0
10	0.0	3.08660889E+00	0.0
11	0.0	3.08660889E+00	0.0
12	0.0	3.08660889E+00	0.0
13	0.0	3.08660889E+00	0.0
14	0.0	3.08660889E+00	0.0
15	0.0	3.08660889E+00	0.0
16	0.0	3.08660889E+00	0.0
17	0.0	3.08660889E+00	0.0
18	0.0	3.08660889E+00	0.0
19	0.0	3.08660889E+00	0.0
20	0.0	3.08660889E+00	0.0
21	0.0	0.0	8.63936663E-01
22	0.0	0.0	8.63936663E-01
23	0.0	0.0	8.63936663E-01
24	0.0	0.0	8.63936663E-01
25	0.0	0.0	8.63936663E-01
26	0.0	0.0	8.63936663E-01
27	0.0	0.0	8.63936663E-01
28	0.0	0.0	8.63936663E-01
29	0.0	0.0	8.63936663E-01
30	0.0	0.0	8.63936663E-01
31	0.0	0.0	8.63936663E-01
32	0.0	0.0	8.63936663E-01
33	0.0	0.0	8.63936663E-01
34	0.0	0.0	8.63936663E-01
35	0.0	0.0	8.63936663E-01
36	0.0	0.0	8.63936663E-01
37	0.0	0.0	8.63936663E-01
38	0.0	0.0	8.63936663E-01
39	0.0	0.0	8.63936663E-01
40	0.0	0.0	8.63936663E-01

1	2	ALTIMITUDE
1	12345678901234567890	METERS
2	+	-9.500E-02
3	+	-8.500E-02
4	+	-8.000E-02
5	XX	-7.500E-02
6	XX	-7.000E-02
7	XX	-6.500E-02
8	XX	-6.000E-02
9	XX	-5.500E-02
10	XX	-5.000E-02
11	XX	-4.500E-02
12	XX	-4.000E-02
13	XX	-3.500E-02
14	XX	-3.000E-02
15	XX	-2.500E-02
16	XX	-2.000E-02
17	XX	-1.500E-02
18	XX	-1.000E-02
19	XX	-5.000E-03
20	XX	-9.537E-09
21	00000000000000000000	5.000E-03
22	00000000000000000000	1.000E-02
23	00000000000000000000	1.500E-02
24	00000000000000000000	2.000E-02
25	00000000000000000000	2.500E-02
26	00000000000000000000	3.000E-02
27	00000000000000000000	3.500E-02
28	00000000000000000000	4.000E-02
29	00000000000000000000	4.500E-02
30	00000000000000000000	5.000E-02
31	00000000000000000000	5.500E-02
32	00000000000000000000	6.000E-02
33	00000000000000000000	6.500E-02
34	00000000000000000000	7.000E-02
35	00000000000000000000	7.500E-02
36	00000000000000000000	8.000E-02
37	00000000000000000000	8.500E-02
38	00000000000000000000	9.000E-02
39	00000000000000000000	9.500E-02
40	00000000000000000000	1.000E-01
	12345678901234567890	

STATIONS/DUST/PARTICLES  
( 1 - 20)

1	2	ALTIMITUDE
1	12345678901234567890	METERS
2	+	-9.500E-02
3	+	-8.500E-02
4	+	-8.000E-02
5	XX	-7.500E-02
6	XX	-7.000E-02
7	XX	-6.500E-02
8	XX	-6.000E-02
9	XX	-5.500E-02
10	XX	-5.000E-02
11	XX	-4.500E-02
12	XX	-4.000E-02
13	XX	-3.500E-02
14	XX	-3.000E-02
15	XX	-2.500E-02
16	XX	-2.000E-02
17	XX	-1.500E-02
18	XX	-1.000E-02
19	XX	-5.000E-03
20	XX	-9.537E-09
21	00000000000000000000	5.000E-03
22	00000000000000000000	1.000E-02
23	00000000000000000000	1.500E-02
24	00000000000000000000	2.000E-02
25	00000000000000000000	2.500E-02
26	00000000000000000000	3.000E-02
27	00000000000000000000	3.500E-02
28	00000000000000000000	4.000E-02
29	00000000000000000000	4.500E-02
30	00000000000000000000	5.000E-02
31	00000000000000000000	5.500E-02
32	00000000000000000000	6.000E-02
33	00000000000000000000	6.500E-02
34	00000000000000000000	7.000E-02
35	00000000000000000000	7.500E-02
36	00000000000000000000	8.000E-02
37	00000000000000000000	8.500E-02
38	00000000000000000000	9.000E-02
39	00000000000000000000	9.500E-02
40	00000000000000000000	1.000E-01
	12345678901234567890	

OUT

AFWL-TR-78-134

PROBLEM 1.3 CYBER 176 KEEL RUN

8/16/78	STATUS	----	AVAILABILITY STATUS OF ALL SYSTEMS
8/ 9/78	MEMMGT	----	CM AND EGS FIELD MANAGEMENT
7/31/78	NASTRAN	----	INFORMATION FOR USERS OF NASTRAN
7/18/78	CONTACT	----	WHO TO CONTACT ABOUT COMPUTER PROBLEMS
7/14/78	MODS	----	FEATURES ADDED TO CDC NOS/BE
7/14/78	CHECMGT	----	CM AND EGS FIELD LENGTH MANAGEMENT
5/23/78	FLECS	----	STRUCTURED PROGRAMMING PRE-PROCESSOR FOR FTN
5/20/78	LETTER	----	AFWL COMPUTER CENTER NEWSLETTER
8/14/78	ASPLIB	----	AFWL COMMON MATH LIBRARIES
5/16/78	CLASS	----	CLASSES FOR USERS OF AFWL COMPUTER CENTER
5/ 8/78	ACCESS	----	HOW TO OBTAIN AN AFWL/KAFB COMPUTER ACCOUNT
5/ 4/78	CONFIG	----	SYSTEMS CONFIGURATION
5/ 4/78	EXPDIIE	----	AFWL CUSTOMER SERVICE (EXPEDITOR)
5/ 1/79	PRIORITY	----	JOB CARD PRIORITY CODES
4/24/78	BILLING	----	AFWL COMPUTER BILLING INFORMATION
4/21/78	DIALUP	----	COMPUTER DIALUP PHONE NUMBERS
4/19/78	INTRO	----	BASIC INTRODUCTION TO KAFB COMPUTER CENTER
4/18/78	DUMPS	----	STANDARD PROCEDURES FOR ERROR DUMPS
4/14/78	TITLE	----	MICROFICHE VISUAL TITLE GENERATION
4/11/78	REQUFST	----	STANDARD PROCEDURES FOR REQUESTING TAPES
4/ 5/78	PLOT	----	DEVICE INDEPENDENT PLOT SYSTEM -METAPLOT-
3/31/78	ACCOUNT	----	ACCOUNT CARD FORMAT
3/30/78	AFRULES	----	LOCAL RULES FOR CATALOGING FILES
3/30/78	BACKUP	----	PERMANENT FILE BACKUP PROCEDURES
3/30/78	PRMFILE	----	PERM FILE ACCOUNTING AND BACKUP SYSTEMS
3/ 9/78	LABEL	----	AFWL LABELLED TAPE PROCESSING
3/ 9/78	FR88	----	288 SIMULATION VIA FR88
3/ 8/78	COMPILE	----	FTN COMPILER CHANGES AND RELEASES
3/ 7/78	AFSCNET	----	INFORMATION ABOUT AFSCNET
2/10/78	METAQUE	----	AUTOMATIC DISPOSITION OF META PLOT FILES
1/17/78	SWITCH	----	NEW INTERCOM PHONE SWITCH
1/ 4/78	DIFFER	----	DIFFERENCES IN NOS/BE FROM 6800 TO CYBER 175
10/ 3/77	DISSFLA	----	DISPLA TECH. INFO. PROGRAMMING SUGGESTIONS
			A NEW USER ORIENTED PLOTTING PACKAGE
			SYSTEM WARNINGS
8/16/78			BUDGETARY CONSIDERATION FOR FY 79: 176 CHARGES UTIL GO UP BY ABOUT 15%.
8/16/78			REVIEU, SIGN AND RETURN TAPE INVENTORY LISTINGS BEFORE 21 AUGUST 1978.
8/16/78			+++++ FLASH MESSAGE +++++ CYBER RECORD MANAGER ANALYSIS CLASS HAS BEEN
8/16/78			CHANGED TO AUG 28-30. ALL CLASS MEMBERS TAKE NOTE +++++ FLASH +++++
8/16/78			** NOTICE TO CONTRACTORS ** CONTRACTOR WORK AREA IN ROOM 118 OF BLDG
8/16/78			412 WILL NOT BE AVAILABLE AFTER 28 AUG 78. THIS WILL BE THE NEW
8/16/78			PCAM AREA. PLEASE REMOVE ALL LISTINGS OR CARD DECKS STORED THERE.

THE FOLLOWING OPTIONS WERE DEFINED BY PLANK.

PROB 1.3000 IS NOT ON THE LIBTAPE ON A KEEL RERUN  
 ! WILL CONTINUE AS FOR A NORMAL FIRST RUN  
 + KEEL RUN  
 +  
 +  
 +  
 +

EQUATION OF STATE -  
 ATMOSPHERE - SOLIDS - NO STRENGTH  
 CONSTANT  
 VOLUME AND ENERGY FLUXING

ATMOS	.	5
BURN	.	0
CODE	.	1
DIMEN	.	2
EOS	.	6
GEOM	.	2
HOT	.	0
IMAX	.	20
ISLAND	.	0
JMAX	.	40
KMAX	.	1
LBUFF	.	0
MAGFLD	.	0
METHOD	.	2
NH	.	20
NHIC	.	1600
NM	.	3
NOP	.	1000
NHIST	.	6
NPLPB	.	2
NPF	.	2
NGROUPB	.	4
NSTN	.	16
NYARST	.	15
RAD	.	0
REZONE	.	1
STRESS	.	1
SURE	.	0
SU	.	0
SUX	.	1
VISC	.	0
LAMB	.	0
BBOUND	.	0
LBOUND	.	0
KEEL	.	0
PULL	.	0
VOIDS	.	0
FLUXER	.	3
DEPOS	.	0
FAIL	.	0
STRAIN	.	1
WORK	.	0
FIREIN	.	0
MAT	.	3
AIR	.	1
FE	.	2
CONCRT	.	3

THE FOLLOWING OPTIONS WERE SPECIFIED WHEN EXECUTIVE PROCESSING BEGAN

INST	1
PRG	0
PLANK	0
PULL	0
KEEL	1
LIBRARY	0
ATMOS	5
BURN	0
CODE	1
DIMEN	2
EOS	6
GEOM	2
HOT	0
IMAX	20
ISLAND	0
JMAX	40
KMAX	1
LBUFA	0
LBUFB	0
MAGFLD	0
METHOD	2
NH	20
NHIC	1600
NH	3
NOP	1000
NHIST	6
NPLPB	2
NPP	2
NGROUPB	4
NSTN	16
NVARST	15
RAD	0
REZONE	1
STRESS	1
SURF	0
SW	0
SUX	0
VISC	1
LATD	0
BBOUND	0
LBOUND	0
VOIDS	0
FLUXER	3
DEPOS	0
FAIL	0
STRAIN	1
WORK	0
FIREIN	0
MAT	3
AIR	1
FE	2
CUNCKT	3

† THE FOLLOWING DEFINITIONS OR REDEFINITIONS WERE MADE DURING EXECUTIVE PROCESSING

†	SYS	176
†	VER	4
	MOSBE	1
	PF	1
	ECS	1
	OBJL1B	1
	TAPEL1B	4
	ROUTE	1
	DENSHUL	5
	DENSL1B	5
	DENSGTA	3
	LABEL	1
	DATE	1
	CONTROL	1
	CDC	1
	IBMT	0
	CW	10
	NW	1
	ROEND	2
	CARDL	0
	CARDU	0
	NHEC	16000
	NBLKS	10
	NPIC	3000
	NPICMAX	3020
	STRAIN	1
	STRESS	1
	DEBING	0
	FILMPR	1
	PLEV	1
	DNAMEA	21
	DNAMEB	12
	DNAMEC	13
	DNAMED	15
	DNAMEE	17
	DNAMEF	14
	DNAMEG	15
	DNAMEH	16
	DNAMEI	18
	DNAMEJ	5
	ATREOS	1
	JMIN	250
	JMIN	250
	NMIN	5000



MESH INCREMENTS AND COORDINATES

+		I	DX	X	I	DX	X	I	DX	X	
		X0 = 0.									
	1	5.00000000E-01	5.00000000E-01	5.00000000E-01	2	5.00000000E-01	1.00000000E+00	3	5.00000000E-01	1.50000000E+00	
	4	5.00000000E-01	2.00000000E+00	2.00000000E+00	5	5.00000000E-01	2.50000000E+00	6	5.00000000E-01	3.00000000E+00	
	7	5.00000000E-01	3.50000000E+00	3.50000000E+00	8	5.00000000E-01	4.00000000E+00	9	5.00000000E-01	4.50000000E+00	
	10	5.00000000E-01	5.00000000E+00	5.00000000E+00	11	5.00000000E-01	5.50000000E+00	12	5.00000000E-01	6.00000000E+00	
	13	5.00000000E-01	6.50000000E+00	6.50000000E+00	14	5.00000000E-01	7.00000000E+00	15	5.00000000E-01	7.50000000E+00	
	16	5.00000000E-01	8.00000000E+00	8.00000000E+00	17	5.00000000E-01	8.50000000E+00	18	5.00000000E-01	9.00000000E+00	
	19	5.00000000E-01	9.50000000E+00	9.50000000E+00	20	5.00000000E-01	1.00000000E+01				
+		Y0 = -1.00000000E+01									
	1	5.00000000E-01	-9.50000000E+00	-9.50000000E+00	2	5.00000000E-01	-9.00000000E+00	3	5.00000000E-01	-8.50000000E+00	
	4	5.00000000E-01	-8.00000000E+00	-8.00000000E+00	5	5.00000000E-01	-7.50000000E+00	6	5.00000000E-01	-7.00000000E+00	
	7	5.00000000E-01	-6.50000000E+00	-6.50000000E+00	8	5.00000000E-01	-6.00000000E+00	9	5.00000000E-01	-5.50000000E+00	
	10	5.00000000E-01	-5.00000000E+00	-5.00000000E+00	11	5.00000000E-01	-4.50000000E+00	12	5.00000000E-01	-4.00000000E+00	
	13	5.00000000E-01	-3.50000000E+00	-3.50000000E+00	14	5.00000000E-01	-3.00000000E+00	15	5.00000000E-01	-2.50000000E+00	
	16	5.00000000E-01	-2.00000000E+00	-2.00000000E+00	17	5.00000000E-01	-1.50000000E+00	18	5.00000000E-01	-1.00000000E+00	
	19	5.00000000E-01	-5.00000000E-01	-5.00000000E-01	20	5.00000000E-01	0.	21	5.00000000E-01	5.00000000E-01	
	22	5.00000000E-01	1.00000000E+00	1.00000000E+00	23	5.00000000E-01	1.50000000E+00	24	5.00000000E-01	2.00000000E+00	
	25	5.00000000E-01	2.50000000E+00	2.50000000E+00	26	5.00000000E-01	3.00000000E+00	27	5.00000000E-01	3.50000000E+00	
	28	5.00000000E-01	4.00000000E+00	4.00000000E+00	29	5.00000000E-01	4.50000000E+00	30	5.00000000E-01	5.00000000E+00	
	31	5.00000000E-01	5.50000000E+00	5.50000000E+00	32	5.00000000E-01	6.00000000E+00	33	5.00000000E-01	6.50000000E+00	
	34	5.00000000E-01	7.00000000E+00	7.00000000E+00	35	5.00000000E-01	7.50000000E+00	36	5.00000000E-01	8.00000000E+00	
	37	5.00000000E-01	8.50000000E+00	8.50000000E+00	38	5.00000000E-01	9.00000000E+00	39	5.00000000E-01	9.50000000E+00	
	40	5.00000000E-01	1.00000000E+01	1.00000000E+01							

```

+ GENERATING PROBLEM 1.3000
+ DEFAULT WILL BE
+ GENERATE A CIRCLE OF MATERIAL 1          RADIUS = 0.
  XC = 0.
+ AIR = 1
+ GENERATE A RECTANGLE OF MATERIAL 1
  X1 = 0.          X2 = 1.0000000E+01  Y1 = -1.0000000E+01  Y2 = 0.
  X1 = 0.          X2 = 1.0000000E+00  Y1 = -0.0000000E+00  Y2 = 0.
+ 3.817603E+00 GMS 7.803304E+09 ERGS INSERTED AS MATERIAL 1
+
+
+ FE = 2
+ GENERATE A RECTANGLE OF MATERIAL 2
  X1 = 0.          X2 = 1.0000000E+00  Y1 = -0.0000000E+00  Y2 = 0.
+ 1.975433E+02 GMS 5.760170E+13 ERGS INSERTED AS MATERIAL 2
+
+
+ CONCRT = 3
+ GENERATE A RECTANGLE OF MATERIAL 3
  X1 = 0.          X2 = 1.0000000E+01  Y1 = 0.          Y2 = 1.0000000E+01
+ 6.911504E+03 GMS 5.397884E+12 ERGS INSERTED AS MATERIAL 3
+

```

LOCATIONS OF STATIONS GENERATED ARE ...

```

+
+ STATION 1 XP = 0.          YP = -0.0000000E+00
+ STATION 2 XP = 0.          YP = -7.0000000E+00
+ STATION 3 XP = 0.          YP = -5.0000000E+00
+ STATION 4 XP = 0.          YP = -3.0000000E+00
+ STATION 5 XP = 0.          YP = -1.0000000E+00
+ STATION 6 XP = 0.          YP = 0.
+ STATION 7 XP = 0.          YP = 5.0000000E-01
+ STATION 8 XP = 0.          YP = 1.0000000E+00
+ STATION 9 XP = 0.          YP = 2.0000000E+00
+ STATION 10 XP = 0.         YP = 3.0000000E+00
+ STATION 11 XP = 0.         YP = 4.0000000E+00
+ STATION 12 XP = 0.         YP = 5.0000000E+00
+ STATION 13 XP = 0.         YP = 6.0000000E+00
+ STATION 14 XP = 0.         YP = 7.0000000E+00
+ STATION 15 XP = 0.         YP = 8.0000000E+00
+ STATION 16 XP = 0.         YP = 9.0000000E+00

```

+ 0 PARTICLES AND 16 STATIONS GENERATED

```

ZBLK
PROB 1.300000000000000E+00 17205146314631463146
ATMOS 5.000000000000000E+00 172250000000000000000000
BREF 0. 000000000000000000000000
CODE 1.000000000000000E+00 172040000000000000000000
COLD 0. 77777777777777776
CYCLE 0. 000000000000000000000000
DIMEN 2.000000000000000E+00 172140000000000000000000
DT 1.000000000000000E-08 1655274616784302142
ELC 0. 000000000000000000000000
EOS 5.000000000000000E+00 172260000000000000000000
ETH 0. 000000000000000000000000
EXPAND 5.000000000000000E-02 17136314631463146315
FAIL 0. 000000000000000000000000
FLUXER 3.000000000000000E+00 172160000000000000000000
GEOM 2.000000000000000E+00 172140000000000000000000
IMAX 2.000000000000000E+01 172450000000000000000000
IQ 1.900000000000000E+01 172446000000000000000000
ISLAND 0. 000000000000000000000000
JMAX 4.000000000000000E+01 172550000000000000000000
JQ 3.500000000000000E+01 172547000000000000000000
HOB 0. 000000000000000000000000
LREF 77777777777777776
METHOD 172140000000000000000000
MLC 0. 000000000000000000000000
MTH 0. 000000000000000000000000
NH 2.000000000000000E+01 172450000000000000000000
NHIC 1.600000000000000E+03 173262000000000000000000
NHIST 6.000000000000000E+00 172260000000000000000000
NM 3.000000000000000E+00 172160000000000000000000
NOP 1.600000000000000E+01 172440000000000000000000
NPP 2.000000000000000E+00 172140000000000000000000
NROLFPB 4.000000000000000E+00 172440000000000000000000
NSTN 1.600000000000000E+01 172440000000000000000000
NVPST 1.500000000000000E+01 172374000000000000000000
PTSTOP 6.00000000000000E+02 173145400000000000000000
RADLOS 0. 000000000000000000000000
REZONE 1.000000000000000E+00 172040000000000000000000
REF 0. 171740000000000000000000
STABF 5.000000000000000E-01 172040000000000000000000
STRAIN 1.000000000000000E+00 172040000000000000000000
STRESS 1.000000000000000E+00 000000000000000000000000
SUME 0. 000000000000000000000000
T 0. 000000000000000000000000
TERAD 0. 000000000000000000000000
TLC 0. 000000000000000000000000
TREF 0. 000000000000000000000000
TTIME 0. 000000000000000000000000
TTIME6 0. 000000000000000000000000
TTIME7 0. 000000000000000000000000
TTSTOP 1.000000000000000E+02 172662000000000000000000
  
```

UREZ	1.00000000000000E+01	172350000000000000000000
VISC	0.	000000000000000000000000
VREZ	1.00000000000000E+01	172350000000000000000000
VOIDS	0.	000000000000000000000000
WORK	0.	000000000000000000000000
X1	4.00000000000000E+00	172240000000000000000000
X2	-1.00000000000000E+00	60573777777777777777
X0B	0.	000000000000000000000000
Y1	0.00000000000000E+00	172340000000000000000000
Y2	3.20000000000000E+01	172540000000000000000000
YGND	0.	000000000000000000000000
YIELD	0.	000000000000000000000000
AIR	1.00000000000000E+00	172040000000000000000000
FE	2.00000000000000E+00	172140000000000000000000
CONCRT	3.00000000000000E+00	172160000000000000000000
STAPE	1.02094870487300-196	0505364155555555551031

CHECKING STATION LOCATIONS.

+  
+  
+  
+

INDIVIDUAL MASS SUMS  
 3.817663E+00 1.975433E+02 6.911504E+03

J	I	X(I)=	.500	DX(I)=	.500	V	ATX	RHO	AMX	DY	Y
+											
+											
+											
+											
+											
+											
J											
1	0.					2.04400000E+09	1.22500000E-03	4.81056375E-04	5.00000000E-01	-9.50000000E+00	
2	0.					2.04400000E+09	1.22500000E-03	4.81056375E-04	5.00000000E-01	-9.50000000E+00	
3	0.					2.04400000E+09	1.22500000E-03	4.81056375E-04	5.00000000E-01	-8.50000000E+00	
4	0.					2.04400000E+09	1.22500000E-03	4.81056375E-04	5.00000000E-01	-8.50000000E+00	
5	0.					7.62000000E+05	7.86000000E+00	3.08661479E+00	5.00000000E-01	-7.50000000E+00	
6	0.					7.62000000E+05	7.86000000E+00	3.08661479E+00	5.00000000E-01	-7.50000000E+00	
7	0.					7.62000000E+05	7.86000000E+00	3.08661479E+00	5.00000000E-01	-6.50000000E+00	
8	0.					7.62000000E+05	7.86000000E+00	3.08661479E+00	5.00000000E-01	-6.50000000E+00	
9	0.					7.62000000E+05	7.86000000E+00	3.08661479E+00	5.00000000E-01	-5.50000000E+00	
10	0.					7.62000000E+05	7.86000000E+00	3.08661479E+00	5.00000000E-01	-5.50000000E+00	
11	0.					7.62000000E+05	7.86000000E+00	3.08661479E+00	5.00000000E-01	-4.50000000E+00	
12	0.					7.62000000E+05	7.86000000E+00	3.08661479E+00	5.00000000E-01	-4.50000000E+00	
13	0.					7.62000000E+05	7.86000000E+00	3.08661479E+00	5.00000000E-01	-3.50000000E+00	
14	0.					7.62000000E+05	7.86000000E+00	3.08661479E+00	5.00000000E-01	-3.50000000E+00	
15	0.					7.62000000E+05	7.86000000E+00	3.08661479E+00	5.00000000E-01	-2.50000000E+00	
16	0.					7.62000000E+05	7.86000000E+00	3.08661479E+00	5.00000000E-01	-2.50000000E+00	
17	0.					7.62000000E+05	7.86000000E+00	3.08661479E+00	5.00000000E-01	-1.50000000E+00	
18	0.					7.62000000E+05	7.86000000E+00	3.08661479E+00	5.00000000E-01	-1.50000000E+00	
19	0.					7.62000000E+05	7.86000000E+00	3.08661479E+00	5.00000000E-01	-1.00000000E+00	
20	0.					7.62000000E+05	7.86000000E+00	3.08661479E+00	5.00000000E-01	-1.00000000E+00	
21	0.					7.81000000E+08	2.20000000E+00	8.63937986E-01	5.00000000E-01	0.	
22	0.					7.81000000E+08	2.20000000E+00	8.63937986E-01	5.00000000E-01	5.00000000E-01	
23	0.					7.81000000E+08	2.20000000E+00	8.63937986E-01	5.00000000E-01	1.00000000E+00	
24	0.					7.81000000E+08	2.20000000E+00	8.63937986E-01	5.00000000E-01	1.50000000E+00	
25	0.					7.81000000E+08	2.20000000E+00	8.63937986E-01	5.00000000E-01	2.00000000E+00	
26	0.					7.81000000E+08	2.20000000E+00	8.63937986E-01	5.00000000E-01	2.50000000E+00	
27	0.					7.81000000E+08	2.20000000E+00	8.63937986E-01	5.00000000E-01	3.00000000E+00	
28	0.					7.81000000E+08	2.20000000E+00	8.63937986E-01	5.00000000E-01	3.50000000E+00	
29	0.					7.81000000E+08	2.20000000E+00	8.63937986E-01	5.00000000E-01	4.00000000E+00	
30	0.					7.81000000E+08	2.20000000E+00	8.63937986E-01	5.00000000E-01	4.50000000E+00	
31	0.					7.81000000E+08	2.20000000E+00	8.63937986E-01	5.00000000E-01	5.00000000E+00	
32	0.					7.81000000E+08	2.20000000E+00	8.63937986E-01	5.00000000E-01	5.50000000E+00	
33	0.					7.81000000E+08	2.20000000E+00	8.63937986E-01	5.00000000E-01	6.00000000E+00	
34	0.					7.81000000E+08	2.20000000E+00	8.63937986E-01	5.00000000E-01	6.50000000E+00	
35	0.					7.81000000E+08	2.20000000E+00	8.63937986E-01	5.00000000E-01	7.00000000E+00	
36	0.					7.81000000E+08	2.20000000E+00	8.63937986E-01	5.00000000E-01	7.50000000E+00	
37	0.					7.81000000E+08	2.20000000E+00	8.63937986E-01	5.00000000E-01	8.00000000E+00	
38	0.					7.81000000E+08	2.20000000E+00	8.63937986E-01	5.00000000E-01	8.50000000E+00	
39	0.					7.81000000E+08	2.20000000E+00	8.63937986E-01	5.00000000E-01	9.00000000E+00	
40	0.					7.01000000E+08	2.20000000E+00	8.63937986E-01	5.00000000E-01	9.50000000E+00	

MATERIAL MASSES

	1	2	3
+ +			
+ J			
1	4.81056375E-04	0.	0.
2	4.81056375E-04	0.	0.
3	4.81056375E-04	0.	0.
4	4.81056375E-04	0.	0.
5	0.	3.08661478E+00	0.
6	0.	3.08661478E+00	0.
7	0.	3.08661478E+00	0.
8	0.	3.08661478E+00	0.
9	0.	3.08661478E+00	0.
10	0.	3.08661478E+00	0.
11	0.	3.08661478E+00	0.
12	0.	3.08661478E+00	0.
13	0.	3.08661478E+00	0.
14	0.	3.08661478E+00	0.
15	0.	3.08661478E+00	0.
16	0.	3.08661478E+00	0.
17	0.	3.08661478E+00	0.
18	0.	3.08661478E+00	0.
19	0.	3.08661478E+00	0.
20	0.	3.08661478E+00	0.
21	0.	0.	8.63937980E-01
22	0.	0.	8.63937980E-01
23	0.	0.	8.63937980E-01
24	0.	0.	8.63937980E-01
25	0.	0.	8.63937980E-01
26	0.	0.	8.63937980E-01
27	0.	0.	8.63937980E-01
28	0.	0.	8.63937980E-01
29	0.	0.	8.63937980E-01
30	0.	0.	8.63937980E-01
31	0.	0.	8.63937980E-01
32	0.	0.	8.63937980E-01
33	0.	0.	8.63937980E-01
34	0.	0.	8.63937980E-01
35	0.	0.	8.63937980E-01
36	0.	0.	8.63937980E-01
37	0.	0.	8.63937980E-01
38	0.	0.	8.63937980E-01
39	0.	0.	8.63937980E-01
40	0.	0.	8.63937980E-01

+ 1 2

ALTITUDE

12345678901234567890

	1	2
1	+	+
2	+	+
3	+	+
4	+	+
5	XX	+
6	XX	+
7	XX	+
8	XX	+
9	XX	+
10	XX	+
11	XX	+
12	XX	+
13	XX	+
14	XX	+
15	XX	+
16	XX	+
17	XX	+
18	XX	+
19	XX	+
20	XX	+
21	0.	0.
22	5.000E-02	5.000E-03
23	1.000E-02	1.000E-02
24	1.500E-02	1.500E-02
25	2.000E-02	2.000E-02
26	2.500E-02	2.500E-02
27	3.000E-02	3.000E-02
28	3.500E-02	3.500E-02
29	4.000E-02	4.000E-02
30	4.500E-02	4.500E-02
31	5.000E-02	5.000E-02
32	5.500E-02	5.500E-02
33	6.000E-02	6.000E-02
34	6.500E-02	6.500E-02
35	7.000E-02	7.000E-02
36	7.500E-02	7.500E-02
37	8.000E-02	8.000E-02
38	8.500E-02	8.500E-02
39	9.000E-02	9.000E-02
40	9.500E-02	9.500E-02
	1.000E-01	1.000E-01

12345678901234567890

STATIONS/DUST/PARTICLES  
( 1- 20)

+ 1 2

ALTITUDE

12345678901234567890

	METERS
1	-9.500E-02
2	-9.000E-02
3	-8.500E-02
4 L	-8.000E-02
5	-7.500E-02
6 L	-7.000E-02
7	-6.500E-02
8	-6.000E-02
9	-5.500E-02
10 L	-5.000E-02
11	-4.500E-02
12	-4.000E-02
13	-3.500E-02
14 L	-3.000E-02
15	-2.500E-02
16	-2.000E-02
17	-1.500E-02
18 L	-1.000E-02
19	-5.000E-03
20	0.
21 L	5.000E-03
22	1.000E-02
23 L	1.500E-02
24	2.000E-02
25 L	2.500E-02
26	3.000E-02
27 L	3.500E-02
28	4.000E-02
29 L	4.500E-02
30	5.000E-02
31 L	5.500E-02
32	6.000E-02
33 L	6.500E-02
34	7.000E-02
35 L	7.500E-02
36	8.000E-02
37 L	8.500E-02
38	9.000E-02
39 L	9.500E-02
40	1.000E-01

12345678901234567890  
1 2

WA-ECS/LCM VERSION

13.53.56.GENERATING KEEL  
 13.53.57. END PLANK  
 13.53.57.CONTR,SAIL.  
 13.53.59. END CNT  
 13.53.59.DYMAST(I-HHH)  
 13.55.21. 6945 CARDS GENERATED  
 13.55.21. END OF NORMAL RUN  
 13.55.21. SYSTEM HULL VERSION 105  
 13.55.22. EXIT  
 13.55.22.RETURN(HHH)  
 13.55.23.RETURN(SAVE)  
 13.55.27.REQUEST(SAVE,\*Q)  
 13.55.29.CONTR,COMPILE.  
 13.55.31. END CNT  
 13.55.31.IFE,R2,ED.2,COMPS.  
 13.55.32.ELSE,COMPS.  
 13.55.32.FTN(A,I=SAIL,PL=1000000,B=HULL,OPT=2,L=S  
 13.57.29. 4.554 CP SECONDS COMPILATION TIME  
 13.57.29.ENDIF,COMPS.  
 13.57.30.RETURN(SAIL,LOCAL)  
 13.57.31.IFE,R2,NE.0,MET.  
 13.57.33.ENDIF,MET.  
 13.57.33.RETURN(MAP)  
 13.57.34.REQUEST(MAP,\*Q)  
 13.57.35.CONTR,LOAD.  
 13.57.43. END CNT  
 13.57.43.IFE,R2,ED.2,RUNS.  
 13.57.44.ELSE,RUNS.  
 13.57.44.IFE,R1,NE.0,H176.  
 13.57.57.HULL176.COMMENT.  
 13.58.02.FILE(TAPE4,SBF=NO)  
 13.58.10.FILE(TAPE41,SBF=NO)  
 13.58.14.FILE(TAPE9,SBF=NO)  
 13.58.18.FILE(TAPE40,SBF=NO)  
 13.58.21.FILE(TAPE10,SBF=NO)  
 13.58.23.FILE(TAPE44,SBF=NO)  
 13.58.24.FILE(TAPE45,SBF=NO)  
 13.58.27.LDSET(PRESETA=NGINDEF,MAP=SBEX/MAP)  
 13.58.27.LDSET(FILE=TAPE4/TAPE41/TAPES/TAPE40/TA  
 13.58.27,PE10)  
 13.58.27.LDSET(FILE=TAPE44/TAPE45)  
 13.58.27.HULL.  
 14.04.37.REQUEST(TAPE4,\*NT,PE,RING,IU,U,E,VSN=0IK110)  
 14.04.37 ( NT 056 ASSIGNED)  
 14.04.38.NT66 VOLUME SERIAL NUMBER IS 0IK110  
 14.04.42.NT66 BLOCKS WRITTEN -000047  
 14.06.58.REQUEST(TAPE9,\*HT,HY,RING,IU,U,E,VSN=00EE36)  
 14.06.58 ( NT 052 ASSIGNED)  
 14.06.58.NT52 VOLUME SERIAL NUMBER IS 00EE36  
 14.07.04.NT52 BLOCKS WRITTEN -000005  
 14.07.04.REQUEST(TAPE41,\*PF)  
 14.07.55.CT ID= DYMCER PFN=PROBLEMTASTAPE41INFO1P3000  
 14.07.55.CT CY= 001 00000576 WORDS.

MFX NOS/BE 1.2 KAFB 011 MFX 07/10/78  
FLCM314000 MACH=250000 FLEC=1720K MSEC=0600K

13.49.08.GABY31X FROM M02/1S  
 13.49.09.IP 00000320 WORDS - FILE INPUT , DC 04  
 13.49.09.GABY3,1177,10177,PS0,NT1,MT1.  
 13.49.10.ACCOUNT.GABY,\*\*\*\*\*-\*\*\*,DYP.  
 13.49.11.SYSBULL(BATCH)  
 13.49.12.ATTACH,HULL1B, ID=DYMCER.  
 13.49.12.PFN IS  
 13.49.12.HULL1B  
 13.49.12.PF CYCLE NO. = 039  
 13.49.12.LIBRARY,HULL1B.  
 13.49.12.HULLR.  
 13.49.14.COPYCR(LOCAL,HHH)  
 13.49.15.RETURN(LOCAL)  
 13.49.16.IFE,FILE(CHANGES,IN),CPR.  
 13.49.18.ENDIF,CPR.  
 13.49.18.IFE,FILE(CHANGES,AS,AND,NOT,IN),CPY.  
 13.49.19.ENDIF,CPY.  
 13.49.51.GETC,HHH.  
 13.49.55.ATTACH(XXX,CH105, ID=DYMCER)  
 13.49.56.PF CYCLE NO. = 012  
 13.49.56.COPYCR(XXX,HHH)  
 13.49.57.RETURN(XXX)  
 13.50.29.REVERT.  
 13.50.30.CONTR,BOW.  
 13.50.32. END CNT  
 13.50.32.FILE(TAPE10,SBF=NO)  
 13.50.34.FILE(TAPE11,SBF=NO)  
 13.50.34.FILE(TAPE41,SBF=NO)  
 13.50.35.FILE(TAPE42,SBF=NO)  
 13.50.36.LDSET(FILE=TAPE10/TAPE11/TAPE41/TAPE42)  
 13.50.37.BOW.  
 13.50.39.REQUEST(TAPE10,\*PF)  
 13.50.39.REQUEST(TAPE42,\*PF)  
 13.52.54.STERN 15 RESOURCE TAPES REMAINING  
 13.53.15.KEEL 13 RESOURCE TAPES REMAINING  
 13.53.44.CT ID= DYMCER PFN=DYMASTLIBRARY  
 13.53.44.CT CY= 002 00039104 WORDS.  
 13.53.44.EX ID= DYMCER PFN=DYMASTLIBRARY  
 13.53.44.EX CY= 001 00000000 WORDS.  
 13.53.49.EX ID= DYMCER PFN=DYMASTLIBRARY  
 13.53.49.EX CY= 001 00039104 WORDS.  
 13.53.49.PR ID= DYMCER PFN=DYMASTLIBRARY  
 13.53.49.PR CY= 002 00039104 WORDS.  
 13.53.49.NEED IK110 EE36  
 13.53.52. END BOW  
 13.53.52.CONTR,PLANK.  
 13.53.53. END CNT  
 13.53.53.FILE(TAPE4,SBF=NO)  
 13.53.54.FILE(TAPE41,SBF=NO)  
 13.53.55.LDSET(FILE=TAPE4/TAPE41)

14.07.57. END KEEL  
 14.07.57. 1.098 CP SECONDS EXECUTION TIME  
 14.07.57.RETURN(TAPE4,HULL)  
 14.07.58.REVERT.  
 14.08.00.ELSE,H176.  
 14.08.02.ENDIF,H176.  
 14.08.02.ENDIF,RUNS.  
 14.08.05.ACCOUN.  
 14.08.07.ACCOUNT FILE = ACCOUNTKJ28V10F5P8  
 14.08.07. ACCOUNT ID = DYMCCR  
 14.08.15. END ACCNT  
 14.08.15.REVERT.  
 14.08.17.OP 00002560 WORDS - FILE FILMPR , DC 20  
 14.08.17.OP 00003904 WORDS - FILE OUTPUT , DC 40  
 14.08.17.MS 14336 WORDS ( 229376 MAX USED)  
 14.08.17.CPA 22.721 SEC.  
 14.08.17.I0 72.453 SEC.  
 14.08.17.CM 1521.564 KWS.  
 14.08.17.SS 47.219  
 14.08.17.PP 168.340 SEC. DATE 08/16/78  
 14.08.17.COST ESTIMATE \$ 7.93  
 14.08.17.EJ END OF JOB, IS

PROBLEM 1.3 SYSTEM 370 HULL RUN

```

//AF2001H JOB (AF2001,,10,25),HULL RUN',MSGCLASS=H,CLASS=C,
//      NOTIFY=AF2001
//HULL EXEC HULL,GEND='V105',FPARM='NOSOURCE,TERM',
//      PSI='SYSOUT=H,HOLD=YES',PS2='SYSOUT=H,HOLD=YES',
//      FPI='DUMMY',LPI='SYSOUT=H,HOLD=YES',
//      HPI='SYSOUT=H,HOLD=YES',HTIME=5,LIBPRE='AF2001.',
//      OLDPRE='AF2001.',PPI='SYSOUT=H,HOLD=YES',PTIME='(0,10)'
//HULL.DATA DD DSN=AF2001.HULL.PROB1P3,DISP=(OLD,KEEP),
//      BCB=(RECFM=VBS,LRECL=7220,BLKSIZE=7224)
//HULL.STATION DD DSN=AF2001.HULL.STAT1P3,DISP=(OLD,KEEP)
//HULL.INPUT DD *
HULL
PROBLEM 1.3
CYCLE=0
INPUT
CSTOP= 150
REZONE=0
RTSTOP=0.06
COLB=T
TIMES=J DMPINT=1.E-6
MRELER=10
/*
//SAIL.INPUT DD DSN=AF2001.CHANG.DATA,DISP=(OLD,KEEP)
//FORT.SYSTEM DD SYSOUT=H,HOLD=YES
END OF DATA

```

```

J E S 2   J O B   L O G
          - INIT 3 - CLASS C - SYS A168
13.48.41 JOB 279 $HASP373 AF2001H   STARTED - 13:48:41
13.48.44 JOB 279 AF2001H HULL      13:48:41
13.48.49 JOB 279 AF2001H PLANK     13:48:44
13.58.33 JOB 279 AF2001H SAIL      13:48:49
14.02.41 JOB 279 AF2001H FORT      13:58:33
14.03.16 JOB 279 AF2001H LKED      14:02:42
14.10.25 JOB 279 AF2001H GO        14:03:16
14.10.25 JOB 279 $HASP395 AF2001H ENDED

```

```

1 //AF2001H JOB (AF2001,10,25),HULL RUN,MSGCLASS=H,CLASS=C,
// NOTIFY=AF2001
//HULL PROC LIB=HULLIB,
// LIBPRE='SAIL.',
// LIBU=,
// LIBVOL=,
// CHMBLK=3521,
// CREG=100K,
// CHMLRL=3517,
// FILO=,
// FLIB='SYST.FORTLIB',
// FPARM=MAP,
// FPROG=IFEAB,
// FREG=512K,
// FP1='SYSOUT=A',
// FSPACE='(CYL,(10,5),RLSE)',
// FTIME='(1,0)',
// GEMO='(0)',
// GOSPACE='(CYL,(20,5,1))',
// LABO=,
// LNAME=HULL,
// LPARM='MAP',
// LPROG=IEUL,
// LREG=512K,
// LP1='SYSOUT=A',
// LTIME='(0,45)',
// MULLSP='(CYL,(10,5),RLSE)',
// MP1='SYSOUT=A',
// HREG=175K,
// HTIME=2,
// OLD=HULL,
// OLDBCB=,
// OLDDDS=SHR,
// OLDPRE='SAIL.',
// OLDBU=,
// OLDBVOL=,
// PPROG=PLANK,
// PP1='SYSOUT=A',
// PRCN=5000,
// PRCL=3640,
// PREB=100K,
// PTIME='(1,0)',
// PS1='SYSOUT=A',
// PS2='SYSOUT=A',
// SAILBLK=800,
// SAILR=80,
// SCRTC=SYSDA,
// SPRG=SAIL,
// SREG=175K,

```

```

JOB 279
00000020
X00000030
X00000040
X00000050
X00000060
X00000070
X00000080
X00000090
X00000100
X00000110
X00000120
X00000130
X00000140
X00000150
X00000160
X00000170
X00000180
X00000190
X00000200
X00000210
X00000220
X00000230
X00000240
X00000250
X00000260
X00000270
X00000280
X00000290
X00000300
X00000310
X00000320
X00000330
X00000340
X00000350
X00000360
X00000370
X00000380
X00000390
X00000400
X00000410
X00000420
X00000430
X00000440
X00000450
X00000460
X00000470
X00000480
X00000490

```

```

// STIME=(12,0),
// WORKSP=(CYL,(5,5))'
//-----*
//NULL EXEC PGM=IEGENER,REGION=4CREG
//SYSPRINT DD DUMMY
//SYSIN DD DUMMY
//SYSUT1 DD DNAME=INPUT
//SYSUT2 DD DSN=8HULLI,
// DISP=(NEW,PASS),
// UNIT=4SCRTC,
// SPACE=(TRK,(5,5),RLSE),
// DCB=(RECFM=FB,LRECL=80,BLKSIZE=1600)
//-----*
//PLANK EXEC PGM=8PPROG,TIME=8PTIME,REGION=8PREG
//-----*
//STEPLIB DD DSN=8LIBPRE8LIB,
// UNIT=8LIBU,
// VOL=8LIBVOL,
// DISP=SHR
//-----*
//FT04F001 DD DSN=8HULLI,DISP=(OLD,KEEP)
//-----*
//FT05F001 DD DSN=8HULLI,DISP=(OLD,PASS)
//-----*
//FT06F001 DD 8PPI,
// DCB=(RECFM=FB,LRECL=133,BLKSIZE=1330)
//-----*
//FT07F001 DD DSN=8ALTI,
// DISP=(NEW,PASS),
// UNIT=4SCRTC,
// SPACE=(TRK,(5,5),RLSE),
// DCB=(RECFM=FB,LRECL=80,BLKSIZE=1600)
//-----*
//SAIL EXEC PGM=8PROG,TIME=8STIME,REGION=8SREG,
// COND=(8,LT,PLANK)
//-----*
//STEPLIB DD DSN=8LIBPRE8LIB,
// UNIT=8LIBU,
// VOL=8LIBVOL,
// DISP=SHR
//-----*
//FT01F001 DD DUMMY
//-----*
//FT02F001 DD DSN=8OLDPRE8OLD8GENO,
// UNIT=8OLBU,
// LABEL=(8FILE,8LABO,,IN),
// DISP=8OLD8DS,
// VOL=8OLDVOL,
// DCB=8OLD8DCB
//-----*
//FT03F001 DD UNIT=4SCRTC,
//-----*

```

```

X0000500
0000510
0000520
0000530
0000540
0000550
0000560
X0000570
X0000580
X0000590
X0000600
0000610
0000620
0000630
0000640
0000650
X0000660
X0000670
0000680
0000690
0000700
0000710
0000720
0000730
X0000740
0000750
0000760
0000770
X0000780
X0000790
X0000800
0000810
0000820
X0000830
0000840
0000850
X0000860
X0000870
X0000880
0000890
0000900
0000910
0000920
X0000930
X0000940
X0000950
X0000960
X0000970
0000980
0000990
X0001000
.....

```

```

//          DISP=(MLR,DELETE),
//          DCB=(RECFM=VBS,LRECL=8CHMLR,BLKSIZE=8CHBLK),
//          SPACE=(TRK,(20,20))
// *
//FT04F001 DD 3PS2,
//          DCB=(RECFM=FBA,LRECL=133,BLKSIZE=1330)
// *
//FT05F001 DD DDNAME=INPUT
// *
//FT06F001 DD 3PS1,
//          DCB=(RECFM=FBA,LRECL=133,BLKSIZE=1330)
// *
//FT08F001 DD DSN=88HULL,
//          DISP=(NEW,PASS),
//          UNIT=88CRTC,
//          SPACE=88HULLSP,
//          DCB=(RECFM=FB,LRECL=88SAILR,BLKSIZE=88SAILBLK)
// *
//FT09F001 DD DSN=88ALTI,DISP=(OLD,DELETE)
// *
//FT10F001 DD UNIT=88CRTC,
//          DISP=(NEW,DELETE),
//          SPACE=(88RCL,(88PRCN))
// *
//FT11F001 DD DUMMY
// *
//FT12F001 DD DUMMY
// *-----*
//FORT EXEC PGM=88PROG,REGION=88REG,PARM='88PARM',TIME=88TIME,
//          COND=(8,LT,PLANK),(8,LT,SAIL)
// *
//SYSPRINT DD 88P1,
//          DCB=(RECFM=FBA,LRECL=133,BLKSIZE=1330)
// *
//SYSLIN DD DSN=88LOADSET,
//          DISP=(MOD,PASS),
//          UNIT=88CRTC,
//          SPACE=88SPACE,
//          DCB=(RECFM=FB,LRECL=80,BLKSIZE=1600)
// *
//SYSIN DD DSN=88HULL,DISP=(OLD,DELETE)
// *
//SYSUT1 DD UNIT=88CRTC,SPACE=(CYL,(2,2))
// *
//SYSUT2 DD UNIT=88CRTC,SPACE=(CYL,(2,2))
// *
//SYSTEM DD DUMMY
// *-----*
//LKED EXEC PGM=88PROG,REGION=88REG,TIME=88TIME,
//          COND=(8,LT,FORT),(8,LT,SAIL),(8,LT,PLANK)),
//          PARM='88PARM'
// *

```

```

X00001010
X00001020
00001030
00001040
X00001050
00001060
00001070
00001080
00001090
X00001100
00001110
00001120
X00001130
X00001140
X00001150
X00001160
00001170
00001180
00001190
00001200
X00001210
X00001220
00001230
00001240
00001250
00001260
00001270
00001280
X00001290
00001300
00001310
X00001320
00001330
00001340
X00001350
X00001360
X00001370
X00001380
00001390
00001400
00001410
00001420
00001430
00001440
00001450
00001460
00001470
00001480
X00001490
X00001500
00001510

```

```

00001520
X00001530
00001540
00001550
00001560
00001570
00001580
00001590
00001600
X00001610
X00001620
X00001630
00001640
00001650
00001660
00001670
00001680
X00001690
00001700
00001710
00001720
00001730
00001740
00001750
X00001760
00001770
00001780
00001790
00001800
X00001810
X00001820
X00001830
00001840
00001850
X00001860
X00001870
X00001880
00001890
00001900
X00001910
X00001920
X00001930
00001940
00001950
X00001960
X00001970
X00001980
00001990
00002000
X00002010
X00002020
.....

/**
//SYSPRINT DD &LP1,
//          DCB=(RECFM=FBA,LRECL=133,BLKSIZE=1330)
/**
//SYSLIB DD DSN=&LIBPRELIB,DISP=SHR
//          DD DSN=&FLIB,DISP=SHR
/**
//SYSUT1 DD UNIT=&SCRTC,SPACE=(1024,(200,20))
/**
//SYSLMOD DD DSN=&GOSSET(&LNAME),
//          UNIT=&SCRTC,
//          DISP=(,PASS),
//          SPACE=&GOSPACE
/**
//SYSLIN DD DSN=&LOADSET,DISP=(OLD,DELETE)
//-----
//GO EXEC PGM=&.LKED.SYSLMOD,TIME=(&HTIME,0),REGION=&HREG,
//          PARM='&HTIME',
//          COND=((&,LT,LKED),(&,LT,FORT),(&,LT,SAIL),(&,LT,PLANK))
/**
//FT04F001 DD DSN=&.HULL.DATA,DISP=(OLD,KEEP)
/**
//FT05F001 DD DSN=&SHULLI,DISP=(OLD,DELETE)
/**
//FT06F001 DD &HP1,
//          DCB=(RECFM=FBA,LRECL=133,BLKSIZE=1330)
/**
//FT09F001 DD DSN=&*.HULL.STATION,DISP=(OLD,KEEP)
/**
//FT10F001 DD UNIT=&SCRTC,
//          SPACE=&WORKSP,
//          DISP=(NEW,DELETE),
//          DCB=&.HULL.DATA
/**
//FT11F001 DD UNIT=&SCRTC,
//          SPACE=&WORKSP,
//          DISP=(NEW,DELETE),
//          DCB=&.HULL.DATA
/**
//FT12F001 DD UNIT=&SCRTC,
//          SPACE=&WORKSP,
//          DISP=(NEW,DELETE),
//          DCB=&.HULL.DATA
/**
//FT13F001 DD UNIT=&SCRTC,
//          SPACE=&WORKSP,
//          DISP=(NEW,DELETE),
//          DCB=&.HULL.DATA
/**
//FT14F001 DD UNIT=&SCRTC,
//          SPACE=&WORKSP,

```



```

X00000250
X00000260
X00000270
X00000280
X00000290
X00000300
X00000310
X00000320
X00000330
X00000340
X00000350
X00000360
X00000370
X00000380
X00000390
X00000400
X00000410
X00000420
X00000430
X00000440
X00000450
X00000460
X00000470
X00000480
X00000490
X00000500
X00000510
X00000520
X00000530
X00000540
X00000550
X00000560
X00000570
X00000580
X00000590
X00000600
X00000610
X00000620
X00000630
X00000640
X00000650
X00000660
X00000670
X00000680
X00000690
X00000700
X00000710

** LP1='SYSUUI=A',
** LTIME='(0,45)',
** HULLSP='(CYL,(10,5),RLSE)',
** MP1='SYSOUT=A',
** HREG=175K,
** HTIME=2,
** OLB=HULL,
** OLDDCB=,
** OLDDS=SHR,
** OLDPRE='SAIL',
** OLBVOL=,
** PPRG=PLANK,
** PPI='SYSOUT=A',
** PRCN=5000,
** PRCL=3640,
** PREG=100K,
** PTIME='(1,0)',
** PSI='SYSOUT=A',
** PS2='SYSOUT=A',
** SAILBLK=800,
** SAILR=80,
** SCRTC=SYSDA,
** SPROG=SAIL,
** SREG=175K,
** STIME='(2,0)',
** WORKSP='(CYL,(5,5))'
***-----**
4 **HULL EXEC PGM=IEBGENER,REGION=8CREG
5 **SYSPRINT DD DUMMY
6 **SYSIN DD DUMMY
7 **SYSUT1 DD DDNAME=INPUT
8 **SYSUT2 DD DSN=88HULLI,
** DISP=(NEW,PASS),
** UNIT=8CRTC,
** SPACE=(TRK,(5,5),RLSE),
** DCB=(RECFM=FB,LRECL=80,BLKSIZE=1600)
***-----**
9 **HULL.DATA DD DSN=AF2001.HULL.PROB1P3,DISP=(OLD,KEEP),
** DCB=(RECFM=VBS,LRECL=7220,BLKSIZE=7224)
10 **HULL.STATION DD DSN=AF2001.HULL.STAT1P3,DISP=(OLD,KEEP)
11 **HULL.INPUT DD *
12 **PLANK EXEC PGM=8PPROG,TIME=8PTIME,REGION=8PREG
***
13 **STEPLIB DD DSN=8LIBPRELIB,
** UNIT=8LIBU,
** VOL=8LIBVOL,
** DISP=8HR
***
14 **FT04F001 DD DSN=88.HULL.DATA,DISP=(OLD,KEEP)
***

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```

15  **FT05F001 DD DSN=88HULLI,DISP=(OLD,PASS) 00000720
*** 00000730
** **FT06F001 DD SP1, 00000740
DCB=(RECFM=FBA,LRECL=133,BLKSIZE=1330) 00000750
*** 00000760
** **FT07F001 DD DSN=88ALTI, 00000770
DISP=(NEW,PASS), 00000780
UNIT=8SCRTC, 00000790
SPACE=(TRK,(5,5),ALBE), 00000800
DCB=(RECFM=FB,LRECL=80,BLKSIZE=1600) 00000810
*** 00000820
** **SAIL EXEC PGM=8SPROG,TIME=8STIME,REGION=8SREG,
** COND=(0,LT,PLANK) X00000830
*** 00000840
** **STEPLIB DD DSN=8LIBPRE8LIB, 00000850
UNIT=8LIBU, 00000860
VOL=8LIBVOL, 00000870
DISP=SHR 00000880
*** 00000890
** **FT01F001 DD DUMMY 00000900
*** 00000910
** **FT02F001 DD DSN=80LBPRESOLD8GEMO, 00000920
UNIT=80LBU, 00000930
LABEL=(8FILD,8LABD,,IN), 00000940
DISP=80LDBS, 00000950
VOL=80LDVOL, 00000960
DCB=80LDBC 00000970
*** 00000980
** **FT03F001 DD UNIT=8SCRTC, 00000990
DISP=(NEW,DELETE), 00001000
DCB=(RECFM=VBS,LRECL=8CHMLRL,BLKSIZE=8CHMLBK), 00001010
SPACE=(TRK,(20,20)) 00001020
*** 00001030
** **FT04F001 DD SP2, 00001040
DCB=(RECFM=FBA,LRECL=133,BLKSIZE=1330) 00001050
*** 00001060
** **FT05F001 DD DDNAME=INPUT 00001070
*** 00001080
** **FT06F001 DD SP1, 00001090
DCB=(RECFM=FBA,LRECL=133,BLKSIZE=1330) 00001100
*** 00001110
** **FT08F001 DD DSN=88HULL, 00001120
DISP=(NEW,PASS), 00001130
UNIT=8SCRTC, 00001140
SPACE=8HULLSP, 00001150
DCB=(RECFM=FB,LRECL=8SAILR,BLKSIZE=8SAILBLK) 00001160
*** 00001170
** **FT09F001 DD DSN=88ALTI,DISP=(OLD,DELETE) 00001180
*** 00001190
** **FT10F001 DD UNIT=8SCRTC, 00001200
DISP=(NEW,DELETE), 00001210
*** 00001220

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**          SPACE=(8PRCL,(8PRCL))          00001230
***          00001240
**FT11F001 DD DUMMY                        00001250
***          00001260
**FT12F001 DD DUMMY                        00001270
***          00001280
//SAIL.INPUT DD DSN=AF2001.CHANG.DATA,DISP=(OLD,KEEP) 00002470
**FORT EXEC PGM=8PRK06,REGION=8REG,PARM=8FPARM',TIME=8FTIME, X00001290
**          CO:ID=((8,LT,PLANK),(8,LT,SAIL))          00001300
***          00001310
**SYSPRINT DD 8FP1,                        X00001320
**          DCB=(RECFM=FBA,LRECL=133,BLKSIZE=1330) 00001330
***          00001340
**SYSLIN DD DSN=8LOADSET,                  X00001350
**          DISP=(MOD,PASS),                  X00001360
**          UNIT=8SCRTC,                      X00001370
**          SPACE=8FSPACE,                    X00001380
**          DCB=(RECFM=BF,LRECL=80,BLKSIZE=1600) 00001390
***          00001400
**SYSIN DD DSN=88HULL,DISP=(OLD,DELETE)     00001410
***          00001420
**SYSUT1 DD UNIT=8SCRTC,SPACE=(CYL,(2,2))   00001430
***          00001440
**SYSUT2 DD UNIT=8SCRTC,SPACE=(CYL,(2,2))   00001450
***          00001460
//FORT.SYSTEM DD SYSOUT=H,MOLD=YES          00002480
**/SYSTEM DD DUMMY                          00001470
***          00001480
**LKED EXEC PGM=8LPROG,REGION=8LREG,TIME=8LTIME, X00001490
**          COND=((4,LT,FORT),(8,LT,SAIL),(8,LT,PLANK)), X00001500
**          PARM='8LPARM'                     00001510
***          00001520
**SYSPRINT DD 8LP1,                        X00001530
**          DCB=(RECFM=FBA,LRECL=133,BLKSIZE=1330) 00001540
***          00001550
**SYSLIB DD DSN=8LIBPRE8LIB,DISP=SHR       00001560
**          DD DSN=8FLIB,DISP=SHR           00001570
***          00001580
**SYSUT1 DD UNIT=8SCRTC,SPACE=(1024,(200,20)) 00001590
***          00001600
**SYSMOD DD DSN=88G0SET(8LNAME),           X00001610
**          UNIT=8SCRTC,                      X00001620
**          DISP=(,PASS),                      X00001630
**          SPACE=8G0SPACE                    00001640
***          00001650
**SYSLIN DD DSN=88LOADSET,DISP=(OLD,DELETE) 00001660
***          00001670
**60 EXEC PGM=8.LKED.SYSLMOD,TIME=(8HTIME,0),REGION=8HREG, X00001680
**          PARM=' 8HTIME '                  X00001690
**          COND=((4,LT,LKED),(4,LT,FORT),(8,LT,SAIL),(8,LT,PLANK)) 00001700
***          00001710

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47  ++FT104F001 DD DSN=*,HULL.DATA,DISP=(OLD,KEEP)
***
++FT05F001 DD DSN=**HULL1,DISP=(OLD,DELETE)
***
49  ++FT06F001 DD &HPI,
++ DCB=(RECFM=FBA,LRECL=133,BLKSIZE=1330)
***
50  ++FT09F001 DD DSN=*,HULL.STATION,DISP=(OLD,KEEP)
***
51  ++FT10F001 DD UNIT=&SCRTC,
++ SPACE=&WORKSP,
++ DISP=(NEW,DELETE),
++ DCB=*,HULL.DATA
***
52  ++FT11F001 DD UNIT=&SCRTC,
++ SPACE=&WORKSP,
++ DISP=(NEW,DELETE),
++ DCB=*,HULL.DATA
***
53  ++FT12F001 DD UNIT=&SCRTC,
++ SPACE=&WORKSP,
++ DISP=(NEW,DELETE),
++ DCB=*,HULL.DATA
***
54  ++FT13F001 DD UNIT=&SCRTC,
++ SPACE=&WORKSP,
++ DISP=(NEW,DELETE),
++ DCB=*,HULL.DATA
***
55  ++FT14F001 DD UNIT=&SCRTC,
++ SPACE=&WORKSP,
++ DISP=(NEW,DELETE),
++ DCB=*,HULL.DATA
***
56  ++FT15F001 DD UNIT=&SCRTC,
++ SPACE=&WORKSP,
++ DISP=(NEW,DELETE),
++ DCB=*,HULL.DATA
***

```

```

00001720
00001730
00001740
00001750
X00001760
00001770
00001780
00001790
00001800
X00001810
X00001820
X00001830
00001840
00001850
X00001860
X00001870
X00001880
00001890
00001900
X00001910
X00001920
X00001930
00001940
00001950
X00001960
X00001970
X00001980
00001990
0002000
0002000
X00002010
X00002020
X00002030
0002040
0002050
X00002060
X00002070
X00002080
00002090
00002100

```

```

      57      ■  ++FT21F001 DD UNIT=&SCRTC,
                SPACE=&WORKSP,
                DISP=(NEW,DELETE),
                DCB=*.HULL.DATA
                ***
      58      ■  ++FT22F001 DD UNIT=&SCRTC,SEP=FT21F001,
                SPACE=&WORKSP,
                DISP=(NEW,DELETE),
                DCB=*.HULL.DATA
                ***
      59      ■  ++FT23F001 DD UNIT=&SCRTC,SEP=(FT21F001,FT22F001),
                SPACE=&WORKSP,
                DISP=(NEW,DELETE),
                DCB=*.HULL.DATA
                ***

```

```

X00002110
X00002120
X00002130
00002140
00002150
  ■ X00002160
X00002170
X00002180
00002190
00002200
X00002210
X00002220
X00002230
00002240
00002250

```

OUT

STMT NO. MESSAGE

4 IEF653I SUBSTITUTION JCL - PGM=IEBGENER,REGION=100K  
 8 IEF653I SUBSTITUTION JCL - UNIT=SYSDA,  
 12 IEF653I SUBSTITUTION JCL - PGM=PLANK,TIME=(0,10),REGION=100K  
 13 IEF653I SUBSTITUTION JCL - DSN=AF2001.HULLIB,  
 13 IEF653I SUBSTITUTION JCL - UNIT=,  
 13 IEF653I SUBSTITUTION JCL - VOL=,  
 16 IEF653I SUBSTITUTION JCL - SYSOUT=H,HOLD=YES,  
 17 IEF653I SUBSTITUTION JCL - UNIT=SYSDA,  
 18 IEF653I SUBSTITUTION JCL - PGM=SAIL,TIME=(2,0),REGION=175K,  
 19 IEF653I SUBSTITUTION JCL - DSN=AF2001.HULLIB,  
 19 IEF653I SUBSTITUTION JCL - UNIT=,  
 19 IEF653I SUBSTITUTION JCL - VOL=,  
 21 IEF653I SUBSTITUTION JCL - DSN=AF2001.HULL.V105,  
 21 IEF653I SUBSTITUTION JCL - UNIT=,  
 21 IEF653I SUBSTITUTION JCL - LABEL=(,IN),  
 21 IEF653I SUBSTITUTION JCL - DISP=SHR,  
 21 IEF653I SUBSTITUTION JCL - VOL=,  
 21 IEF653I SUBSTITUTION JCL - DCB=,  
 22 IEF653I SUBSTITUTION JCL - UNIT=SYSDA,  
 22 IEF653I SUBSTITUTION JCL - DCB=(RECFM=VBS,LRECL=3517,BLKSIZE=3521),  
 23 IEF653I SUBSTITUTION JCL - SYSOUT=H,HOLD=YES,  
 25 IEF653I SUBSTITUTION JCL - SYSOUT=H,HOLD=YES,  
 26 IEF653I SUBSTITUTION JCL - UNIT=SYSDA,  
 26 IEF653I SUBSTITUTION JCL - SPACE=(CYL,(10,5),RLSE),  
 26 IEF653I SUBSTITUTION JCL - DCB=(RECFM=FB,LRECL=80,BLKSIZE=800)  
 28 IEF653I SUBSTITUTION JCL - UNIT=SYSDA,  
 28 IEF653I SUBSTITUTION JCL - SPACE=(3640,(5000))  
 32 IEF653I SUBSTITUTION JCL - PGM=IEFAR,REGION=512K,PARM='NOSOURCE,TERM',TIME=(1,0),  
 33 IEF653I SUBSTITUTION JCL - DUMMY,  
 34 IEF653I SUBSTITUTION JCL - UNIT=SYSDA,  
 34 IEF653I SUBSTITUTION JCL - SPACE=(CYL,(10,5),RLSE),  
 36 IEF653I SUBSTITUTION JCL - UNIT=SYSDA,SPACE=(CYL,(2,2))  
 37 IEF653I SUBSTITUTION JCL - UNIT=SYSDA,SPACE=(CYL,(2,2))  
 39 IEF653I SUBSTITUTION JCL - PGM=IEUL,REGION=512K,TIME=(0,45),  
 39 IEF653I SUBSTITUTION JCL - PARM='MAP',  
 40 IEF653I SUBSTITUTION JCL - SYSOUT=H,HOLD=YES,  
 41 IEF653I SUBSTITUTION JCL - DSN=AF2001.HULLIB,DISP=SHR  
 42 IEF653I SUBSTITUTION JCL - DSN=SY51.FORTLIB,DISP=SHR  
 43 IEF653I SUBSTITUTION JCL - UNIT=SYSDA,SPACE=(1024,(200,20))  
 44 IEF653I SUBSTITUTION JCL - DSN=860SET(HULL),  
 44 IEF653I SUBSTITUTION JCL - UNIT=SYSDA,  
 44 IEF653I SUBSTITUTION JCL - SPACE=(CYL,(20,5,1))  
 46 IEF653I SUBSTITUTION JCL - PGM=\*.LKED.SYSLMOD,TIME=(5,0),REGION=175K,  
 46 IEF653I SUBSTITUTION JCL - PARM=' 5',  
 49 IEF653I SUBSTITUTION JCL - SYSOUT=H,HOLD=YES,



AD-A071 519

AIR FORCE WEAPONS LAB KIRTLAND AFB NM  
THE INSTALLATION AND OPERATION OF HULL ON 370S. PART 1. (U)  
JAN 79 L P GABY, M A FRY, C E RHOADES

F/G 15/6

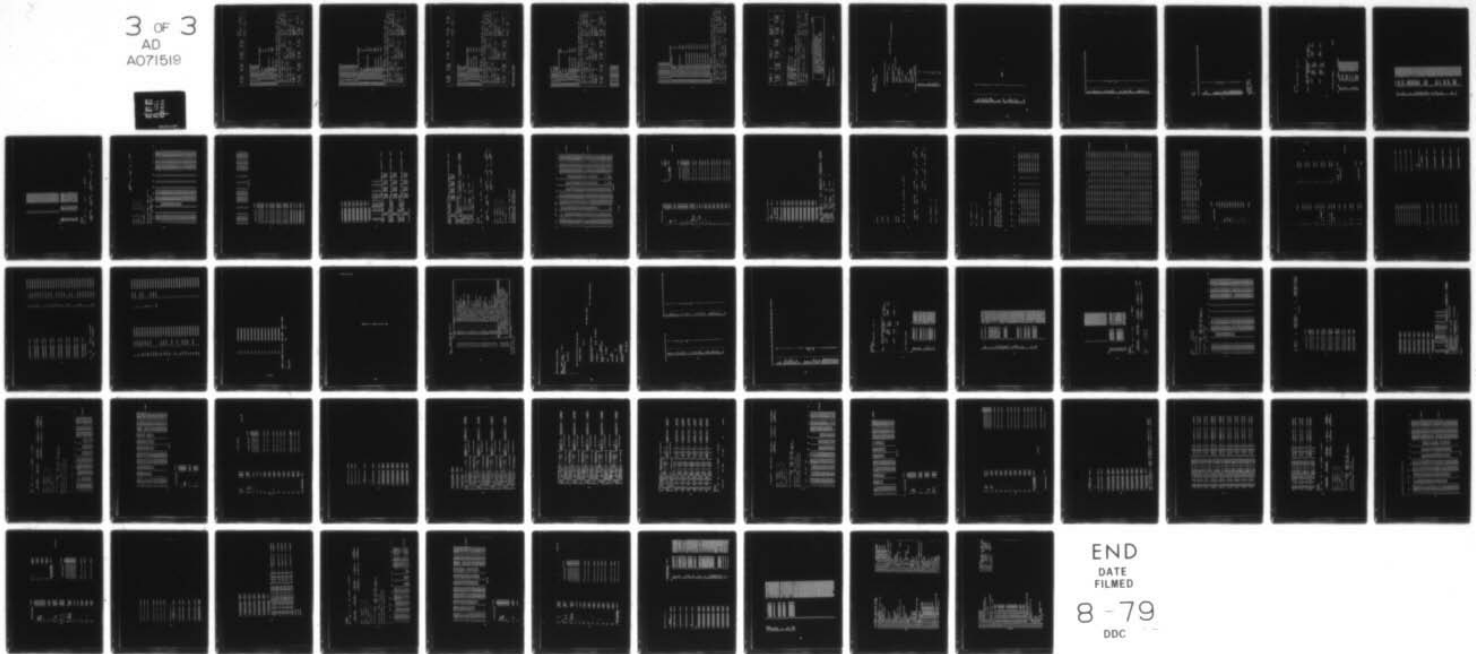
UNCLASSIFIED

AFWL-TR-78-134-PT-1

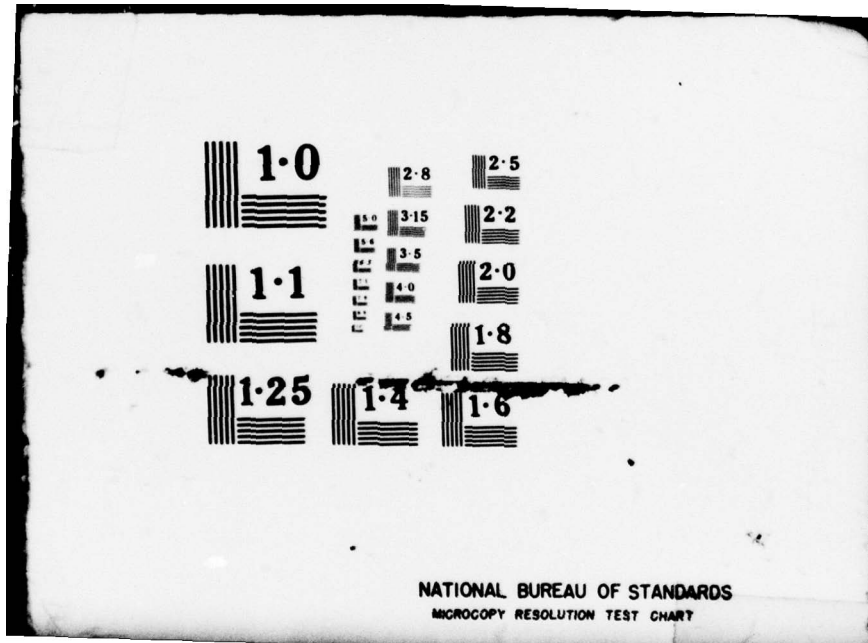
SBIE-AD-E200 324

NL

3 of 3  
AD  
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END  
DATE  
FILMED  
8-79  
DDC



```

* # SWAPS = 0
*
* UNIT EXCP'S UNIT EXCP'S UNIT EXCP'S UNIT EXCP'S UNIT EXCP'S
* 15A 000001 492 000000 152 000000 492 000000
*
* STEP COST = $0.01

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```

IEF2361 ALLOC. FOR AF2001H PLANK HULL
IEF2371 159 ALLOCATED TO STEPLIB
IEF2371 152 ALLOCATED TO SYS00144
IEF2371 492 ALLOCATED TO FT04F001
IEF2371 15A ALLOCATED TO FT05F001
IEF2371 JES2 ALLOCATED TO FT06F001
IEF2371 158 ALLOCATED TO FT07F001
IEF1421 AF2001H PLANK HULL - STEP WAS EXECUTED - COND CODE 0000
IEF2851 AF2001.HULLIB
IEF2851 VOL SER NOS= USER06.
IEF2851 SYSCTLG.USER01
IEF2851 VOL SER NOS= USER01.
IEF2851 AF2001.HULL.PROBIP3
IEF2851 VOL SER NOS= WORK50.
IEF2851 SYS78153.1134841.RA000.AF2001H.HULLI
IEF2851 VOL SER NOS= USER07.
IEF2851 JES2.JOB00279.S00102
IEF2851 SYS78153.1134841.RA000.AF2001H.ALT1
IEF2851 VOL SER NOS= USER05.
IEF3731 STEP /PLANK / START 78153.1348
IEF3741 STEP /PLANK / STOP 78153.1348 CPU OMIM 00.75SEC SRB OMIM 00.05SEC VIRT 92K SYS 188K

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```

* HARRY DIAMOND LABORATORIES COMPUTER CENTER -- STEP TERMINATION STATISTICS 05/US2 REL 03.7 AT168 06/02/78
*
* JOBNAME = AF2001H STEPNAME = PLANK STEP # = 2 PGM = PLANK COMP CODE = S000
*
* DPTY = 118 PERFORM = 13 ASID = 4 PROT KEY = 8 SERVICE = 1588 ADDRSPC = VIRTUAL
*
* START = 13:48:44 STOP = 13:48:49 ELAPSED = 00:00:05 CPU TIME = 0.80
*
* REGION AVAILABLE = 10736K REGION USED(SYSTEM) = 188K REGION USE=(USER) = 92K
*
* PGM PAGES IN = 0 VIO PAGES IN = 0 SWAP PAGES IN = 0
* PGM PAGES OUT = 0 VIO PAGES OUT = 0 SWAP PAGES OUT = 0
* # SWAPS = 0
*
* UNIT EXCP'S UNIT EXCP'S UNIT EXCP'S UNIT EXCP'S UNIT EXCP'S
* 159 000000 152 000000 492 000002 15A 000010 158 000003
*
* STEP COST = $0.06

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IEF236I ALLOC. FOR AF2001H SAIL HULL
IEF237I 159 ALLOCATED TO STEPLIB
IEF237I 152 ALLOCATED TO SYS00146
IEF237I 152 ALLOCATED TO FT01F001
IEF237I 492 ALLOCATED TO FT02F001
IEF237I 15A ALLOCATED TO FT03F001
IEF237I JES2 ALLOCATED TO FT04F001
IEF237I 15D ALLOCATED TO FT05F001
IEF237I JES2 ALLOCATED TO FT06F001
IEF237I 159 ALLOCATED TO FT08F001
IEF237I 158 ALLOCATED TO FT09F001
IEF237I 159 ALLOCATED TO FT10F001
IEF237I 159 ALLOCATED TO FT11F001
IEF237I 159 ALLOCATED TO FT12F001
IEF142I AF2001H SAIL HULL - STEP WAS EXECUTED - COND CODE 0000
IEF285I AF2001.HULLIB
IEF285I VOL SER NOS= USER06.
IEF285I SYSTLG.USER01
IEF285I VOL SER NOS= USER01.
IEF285I AF2001.HULL.V105
IEF285I VOL SER NOS= WORK50.
IEF285I SYS78153.1134841.RA000.AF2001H.R0000001
IEF285I VOL SER NOS= USER07.
IEF285I JES2.JOB00279.S00103
IEF285I AF2001.CHANG.DATA
IEF285I VOL SER NOS= USER04.
IEF285I JES2.JOB00279.S00104
IEF285I SYS78153.1134841.RA000.AF2001H.HULL
IEF285I VOL SER NOS= USER06.
IEF285I SYS78153.1134841.RA000.AF2001H.ALT1
IEF285I VOL SER NOS= USER05.
IEF285I SYS78153.1134841.RA000.AF2001H.R00000002
IEF285I VOL SER NOS= USER06.
IEF373I STEP /SAIL / START 78153.1348
IEF374I STEP /SAIL / STOP 78153.1358 CPU 1M1M 37.31SEC SRB 0M1M 10.38SEC VIRT 168K SYS 236K

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* HARRY DIAMOND LABORATORIES COMPUTER CENTER -- STEP TERMINATION STATISTICS OS/VS2 REL 03.7 A168 06/02/78
*
* JOBNAME = AF2001H STEPNAME = SAIL STEP # = 3 PGM = SAIL COMP CODE = 5000
*
* DPTY = 118 PERFORM = 13 ASID = 4 PROT KEY = 8 SERVICE = 218853 ADDRSPC = VIRTUAL
*
* START = 13:48:49 STOP = 13:58:33 ELAPSED = 00:09:44 CPU TIME = 107.69
*
* REGION AVAILABLE = 10736K REGION USED(SYSTEM) = 236K REGION USED(USER) = 168K
*
* PGM PAGES IN = 138 VIO PAGES IN = 0 SWAP PAGES IN = 0
* PGM PAGES OUT = 185 VIO PAGES OUT = 0 SWAP PAGES OUT = 0
* # SWAPS = 0

```

```

* UNIT EXCP'S UNIT EXCP'S UNIT EXCP'S UNIT EXCP'S UNIT EXCP'S
* 159 000000 152 000000 492 000374 15A 000004 15D 000003 159 000888
* 158 000004 159 005324
*-----*
* STEP COST = $9.98
*-----*

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IEF2361 ALLOC. FOR AF2001H FORT HULL
IEF2371 DMY ALLOCATED TO SYSRINT
IEF2371 15A ALLOCATED TO SYSLIN
IEF2371 159 ALLOCATED TO SYSIN
IEF2371 158 ALLOCATED TO SYSUT1
IEF2371 15D ALLOCATED TO SYSUT2
IEF2371 JES2 ALLOCATED TO SYSTEM
IEF1421 AF2001H FORT HULL - STEP WAS EXECUTED - CMD CODE 0004
IEF2851 SYS78153.1134841.RA000.AF2001H.LOADSET PASSED
IEF2851 VOL SER NOS= USER07.
IEF2851 SYS78153.1134841.RA000.AF2001H.HULL DELETED
IEF2851 VOL SER NOS= USER06.
IEF2851 SYS78153.1134841.RA000.AF2001H.R0000003 DELETED
IEF2851 VOL SER NOS= USER05.
IEF2851 SYS78153.1134841.RA000.AF2001H.R0000004 DELETED
IEF2851 VOL SER NOS= USER04.
IEF2851 JES2.JOB00279.S00105 SYSOUT
IEF3731 STEP /FORT / START 78153.1358
IEF3741 STEP /FORT / STOP 78153.1402 CPU OMIN 20.93SEC SRB OMIN 07.49SEC VIRT 520K SYS 236K
*-----*
* HARRY DIAMOND LABORATORIES COMPUTER CENTER -- STEP TERMINATION STATISTICS OS/VS2 REL 03.7 A168 06/02/78
*-----*
* JOBNAME = AF2001H STEPNAME = FORT STEP # = 4 PGM = IFCAB COMP CODE = S004
* DPTY = 118 PERFORM = 13 ASID = 4 PROT KEY = 8 SERVICE = 96917 ADDRSPC = VIRTUAL
* START = 13:58:33 STOP = 14:02:41 ELAPSED = 00:04:08 CPU TIME = 28.42
* REGION AVAILABLE = 10736K REGION USED(SYSTEM) = 236K REGION USED(USER) = 520K
* PGM PAGES IN = 247 VIO PAGES IN = 0 SWAP PAGES IN = 0
* PGM PAGES OUT = 280 VIO PAGES OUT = 0 SWAP PAGES OUT = 0
* # SWAPS = 0
*-----*
* UNIT EXCP'S UNIT EXCP'S UNIT EXCP'S UNIT EXCP'S UNIT EXCP'S
* 15A 000150 159 000888 158 008869 15D 000000
*-----*
* STEP COST = $3.55
*-----*

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IEF2361 ALLOC. FOR AF2001H LKED HULL
IEF2371 JES2 ALLOCATED TO SYSRINT

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IEF237I 159 ALLOCATED TO SYSLIB
IEF237I 490 ALLOCATED TO
IEF237I 152 ALLOCATED TO SYS00148
IEF237I 158 ALLOCATED TO SYSUT1
IEF237I 158 ALLOCATED TO SYSUMOD
IEF237I 15D ALLOCATED TO SYSLMOD
IEF237I 15A ALLOCATED TO SYSLIN
IEF142I AF2001H LKED HULL - STEP WAS EXECUTING! COND CODE 0000
SYSOUT
IEF285I JES2-JOB00279.S00106
IEF285I AF2001.HULLIB
IEF285I VOL SER NOS= USER06.
IEF85I SYS1.FORTLIB
IEF285I VOL SER NOS= D50002.
IEF285I SYSCTLG.USER01
IEF285I VOL SER NOS= USER01.
IEF285I SYS78153.T134841.RA000.AF2001H.R0000005
IEF285I VOL SER NOS= USER05.
IEF285I SYS78153.T134841.RA000.AF2001H.G0SET
IEF285I VOL SER NOS= USER04.
IEF285I SYS78153.T134841.RA000.AF2001H.L0ADSET
IEF285I VOL SER NOS= USER07.
IEF373I STEP /LKED / START 78153.1402
IEF374I STEP /LKED / STOP 78153.1403 CPU ONMIN 02.04SEC SRB ONMIN 00.52SEC VIRT 196K SYS 240K
HARRY DIAMOND LABORATORIES COMPUTER CENTER --- STEP TERMINATION STATISTICS 05/US2 REL 03.7 A168 06/02/78
*-----*
* JOBNAME = AF2001H STEPNAME = LKED STEP # = 5 PGM = IEWL COMP CODE = S000
* DPTY = 118 PERFORM = 13 ASID = 4 PROT KEY = 8 SERVICE = 8304 ADDRSPC = VIRTUAL
* START = 14:02:42 STOP = 14:03:16 ELAPSED = 00:00:34 CPU TIME = 2.56
* REGION AVAILABLE = 10736K REGION USED(SYSTEM) = 240K REGION USED(USER) = 196K
* PGM PAGES IN = 33 VIO PAGES IN = 0 SWAP PAGES IN = 0
* PGM PAGES OUT = 49 VIO PAGES OUT = 0 SWAP PAGES OUT = 0
* # SWAPS = 0
* UNIT EXCP'S UNIT EXCP'S UNIT EXCP'S UNIT EXCP'S UNIT EXCP'S
* 159 000136 490 000191 152 000000 158 000204 15D 000141 15A 000151
*-----*
STEP COST = 90.29

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IEF236I ALLOC. FOR AF2001H GO HULL
IEF237I 15D ALLOCATED TO PGM=*.DD
IEF237I 492 ALLOCATED TO FT04F001
IEF237I 152 ALLOCATED TO SYS00150
IEF237I 15A ALLOCATED TO FT03F001
IEF237I JES2 ALLOCATED TO FT06F001
IEF237I 492 ALLOCATED TO FT09F001

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IEF2371 158 ALLOCATED TO FT110F001
IEF2371 159 ALLOCATED TO FT111F001
IEF2371 159 ALLOCATED TO FT112F001
IEF2371 15A ALLOCATED TO FT113F001
IEF2371 15D ALLOCATED TO FT114F001
IEF2371 15B ALLOCATED TO FT115F001
IEF2371 158 ALLOCATED TO FT116F001
IEF2371 15A ALLOCATED TO FT117F001
IEF2371 15D ALLOCATED TO FT118F001
IEF1421 AF2001H GO HULL - STEP WAS EXECUTED - COND CODE 0000
IEF2851 SYS78153.T134841.RA000.AF2001H.G0SET
IEF2851 VOL SER NOS= USER04.
IEF2851 AF2001.HULL.PROBIP3
IEF2851 VOL SER NOS= W0RK50.
IEF2851 SYSTLG.USER01
IEF2851 VOL SER NOS= USER01.
IEF2851 SYS78153.T134841.RA000.AF2001H.HULL1
IEF2851 VOL SER NOS= USER07.
IEF2851 JES2.J0800279.S00107
IEF2851 AF2001.HULL.STA11P3
IEF2851 VOL SER NOS= W0RK50.
IEF2851 SYS78153.T134841.RA000.AF2001H.R00000006
IEF2851 VOL SER NOS= USER05.
IEF2851 SYS78153.T134841.RA000.AF2001H.R00000007
IEF2851 VOL SER NOS= USER06.
IEF2851 SYS78153.T134841.RA000.AF2001H.R00000008
IEF2851 VOL SER NOS= USER06.
IEF2851 SYS78153.T134841.RA000.AF2001H.R00000009
IEF2851 VOL SER NOS= USER07.
IEF2851 SYS78153.T134841.RA000.AF2001H.R00000010
IEF2851 VOL SER NOS= USER04.
IEF2851 SYS78153.T134841.RA000.AF2001H.R00000011
IEF2851 VOL SER NOS= USER05.
IEF2851 SYS78153.T134841.RA000.AF2001H.R00000012
IEF2851 VOL SER NOS= USER05.
IEF2851 SYS78153.T134841.RA000.AF2001H.R00000013
IEF2851 VOL SER NOS= USER07.
IEF2851 SYS78153.T134841.RA000.AF2001H.R00000014
IEF2851 VOL SER NOS= USER04.
IEF3731 STEP /60 / START 78153.1403
IEF3741 STEP /60 / STOP 78153.1410 CPU 3MIN 28.23SEC SRB 0MIN 02.51SEC VIRT 228K SYS 240K

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* HARRY DIAMOND LABORATORIES COMPUTER CENTER -- STEP TERMINATION STATISTICS US/V52 REL 03.7 AT68 06/02/78 *
* JOBNAME = AF2001H STEPNAME = G0 STEP # = 6 PGM = PGM=#.DD COMP CODE = S000 *
* DPRY = 118 PERFORM = 13 ASID = 4 PROT KEY = 8 SERVICE = 447415 ADDRSPC = VIRTUAL *
* START = 14:03:16 STOP = 14:10:25 ELAPSED = 00:07:08 CPU TIME = 210.74 *
* REGION AVAILABLE = 10736K REGION USED(SYSTEM) = 240K REGION USED(USER) = 228K *
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* PGM PAGES IN = 321 VIO PAGES IN = 0 SWAP PAGES IN = 0
* PGM PAGES OUT = 321 VIO PAGES OUT = 0 SWAP PAGES OUT = 0
* # SWAPS = 0
*
* UNIT EXCP'S UNIT EXCP'S UNIT EXCP'S UNIT EXCP'S UNIT EXCP'S
* 15D 000000 492 000069 152 000000 15A 000004 492 000017 15B 000000
* 159 000000 159 000000 15A 000000 15D 000000 158 000000
* 15A 001177 15B 000000
*
* STEP COST = $18.62

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IEF237I 15D ALLOCATED TO SYS00001
IEF285I SYS78153.1141025.RA000.AF2001H.R0000001 KEPT
IEF285I VOL SER NOS= USER04.
IEF285I SYS78153.1134841.RA000.AF2001H.G0SET DELETED
IEF285I VOL SER NOS= USER04.
IEF375I JOB /AF2001H / START 78153.1348
IEF376I JOB /AF2001H / STOP 78153.1410 CPU 5MIN 29.48SEC SRB 0MIN 20.96SEC
* HARRY DIAMOND LABORATORIES COMPUTER CENTER -- JOB TERMINATION STATISTICS OS/VS2 REL 03.7 A168 06/02/78
*
* JOBNAME = AF2001H CLASS = C ASID = 4 SERVICE = 773500
*
* START = 13:48:41 STOP = 14:10:25 ELAPSED = 00:21:44 CPU TIME = 350.44
*
* # PLOT RECORDS = 0 JOB COST = $32.52 + PRINT/PUNCH

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----- H O T N E W S ----- 05/26/78
*
* THE THREE 3340 WORK PACKS, WORK01, WORK02 AND WORK03, WILL BE
* REPLACED BY A SINGLE 3350 VOLUME LABELLED WORK05 ON TUESDAY,
* 30 MAY 1978. CONCURRENTLY, THREE ADDITIONAL 3340 USER PACKS,
* LABELLED USER05, USER06 AND USER07, WILL BECOME AVAILABLE. THE
* USE ATTRIBUTE OF THE NEW WORK05 VOLUME WILL BE 'STORAGE'. THE USE
* ATTRIBUTE OF THE NEW 3340 USER PACKS AND ALL OTHER USER PACKS WILL
* BE CHANGED TO 'PUBLIC'.
*
*

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OUT
GENERATING HULL
TAPE4 SEARCH FOR START CYCLE

STEEL PENETRATOR INTO CONCRETE

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00002280

PKUB 1.0000 CTLE 0 LINE 0.0  
 BACKSPACING 2 RECORDS  
 TAPE POSITIONED  
 DISK VERSION

\*\*\*\*\* OPTIONS SELECTED FOR THIS RUN \*\*\*\*\*

DIFFERENCE METHOD - SHELL II  
 AND MATERIAL STRENGTH

WITH 6 FLUXED HISTORIES/CELL

STATION DATA ROUTINES INCLUDED  
 EQUATION OF STATE - SOLIDS - NO STRENGTH

ATMOSPHERE - CONSTANT

VOLUME AND ENERGY FLUXING

REZONE - NO REZD=

CODE - HULL

DIMENSIONS - 2-D

GEOMETRY - CYLINDRICAL

NO RADIATION ROUTINES

PARTICLES - CODE INCLUDED

THE FOLLOWING OPTIONS WERE DEFINED BY PLANK.

ATMOS	=	5
BURN	=	0
CODE	=	1
DIMEN	=	2
EOS	=	6
GEOM	=	2
HOT	=	0
IMAX	=	20
ISLAND	=	0
JMAX	=	40
KNAX	=	1
LBUFA	=	1729
LBUFB	=	122
MAGFLD	=	0
METHOD	=	2
NH	=	20
NHIC	=	1600

MM		3
NOP	=	16
MHIST	=	6
MPLPB	=	2
MPP	=	3
MROUPB	=	4
MSTN	=	16
MVARST	=	16
RAD	=	0
REZONE	=	0
STRESS	=	1
SURF	=	0
SW	=	6
SWX	=	0
VISC	=	0
LAMB	=	0
LBOUND	=	0
KEEL	=	0
PULL	=	0
VOIDS	=	0
FLUXER	=	3
DEPOS	=	0
FAIL	=	0
STRAIN	=	1
WORK	=	0
MAT	=	3
AIR	=	1
FE	=	2
CONCRT	=	3

BBOUND = 0

THE FOLLOWING OPTIONS WERE SPECIFIED WHEN EXECUTIVE PROCESSING BEGAN

INST	=	6
PRG	=	0
PLANK	=	0
PULL	=	0
KEEL	=	0
LIBRARY	=	0
ATHOS	=	5
BURN	=	0
CODE	=	1
DIMEN	=	2
EOS	=	6
GEON	=	2
HOT	=	0
IMAX	=	20
ISLAND	=	0
JMAX	=	40
KMAX	=	1
LBUFA	=	1729
LBUFB	=	122
MAGFLD	=	0
METHOD	=	2
NH	=	20
NHIC	=	1600
NH	=	3
NOP	=	16
NHIST	=	6
NPLPB	=	2
NPP	=	3
MROUFB	=	4
NSTN	=	16
NVARST	=	16
RAD	=	0
REZONE	=	0
STRESS	=	1
SURF	=	0
SU	=	6
SUX	=	0
VISC	=	0
LAMB	=	0
BBOUND	=	0
LBOUND	=	0
VOIDS	=	0
FLUXER	=	3
DEPOS	=	0
FAIL	=	0
STRAIN	=	1
WORK	=	0
MAT	=	3
...	=	3

AIN = 1  
FE = 2  
COMCRT = 3

THE FOLLOWING DEFINITIONS OR REDEFINITIONS WERE MADE DURING EXECUTIVE PROCESSING

SYS = 370  
VER = 1  
OBJLIB = 1  
TAPELIB = 0  
CBC = 0  
IBH = 1  
HX = 0  
CU = 8  
MU = 2  
RDEND = 1  
CARDL = 10  
CARDO = 80  
DOUBLE = 0  
MHEC = 16000  
MBLKS = 10  
MPIC = 48  
MPICMAX = 3020  
STRAIN = 1  
STRESS = 1  
DEBUG = 0  
FILHPR = 0  
DSNAMEA = 21  
DSNAMEB = 12  
DSNAMEC = 13  
DSNAMED = 15  
DSNAMEE = 17  
DSNAMEF = 14  
DSNAMEG = 15  
DSNAMEH = 16  
DSNAMEI = 5  
ATREDS = 1

HULL START

PROB 1.3000 STARTUP ON CYCLE 0 TIME 0.0

MATERIAL	MATERIAL PROPERTIES DEFINED FOR THIS RUN			
	AMBIENT YIELD (Y0)	THERMAL SOFTENING YLD/Y0	EE/EHELT	WORK HARDENING YIELD PLASTIC STRAIN
2	4.690E+09	1.00E+00 9.00E-01 9.00E-01 0.0	0.0 5.00E-01 5.00E-01 1.00E+00	4.690E+09 5.500E+09 3.00E-01
3	3.000E+09	1.00E+00 3.00E+28 0.14E+27 0.0	0.0 -2.23E-67 0.19E-19 1.00E+00	3.000E+09 -5.208E+22 0.59E+17

STEEL PENETRATOR INTO CONCRETE

00002280

BLK/	PROB	1.300000D+00	4114CCCC0000000000
ATMOS		5.000000D+00	415000000000000000
BREF		0.0	000000000000000000
CODE		1.000000D+00	411000000000000000
COLD		0.0001D-79	0000001000000000
CYCLE		0.0	000000000000000000
DIMEN		2.000000D+00	412000000000000000
DT		1.000000D-08	3A2AF31E00000000
ELC		0.0	000000000000000000
E0S		6.000000D+00	416000000000000000
ETH		0.0	000000000000000000
EXPAND		5.000000D-02	3FC000000000000000
FAIL		0.0	000000000000000000
FLUXER		3.000000D+00	413000000000000000
GEOM		2.000000D+00	412000000000000000
IMAX		2.000000D+01	421400000000000000





INITIAL MASS E+03 6.43812891 E+03 0.0 HELMERR  
 MIN  
 6.43812891 E+03 0.0

MAX VEL = 0.0 AT I 0 J 0  
 MAX CS = 0.0 AT I 0 J 0  
 MAX TEMP = 0.0 AT I 0 J 0  
 MAX P = 0.0 AT I 0 J 0  
 CELL SETTING DT, I 0 J 0

TOTAL TIME FOR THIS PROBLEM 0 HOURS, 0 MIN, 0 SEC

TIME FOR THIS RUN 0 HOURS, 0 MIN, 0 SEC

I= 1 X(I)= 0.500 DX(I)= 0.500

J	P	U	V	XI	RHO	SRR	SZZ	SRZ	Y	BY	M	XM	M	XM
1	1	-0.13E+06	0.0	2.04E+09	1.225E-03	0.0	0.0	0.0	-9.50E+00	5.00E-01	1	4.81055E-04		
2	1	-0.13E+06	0.0	2.04E+09	1.225E-03	0.0	0.0	0.0	-9.00E+00	5.00E-01	1	4.81055E-04		
3	1	-0.13E+06	0.0	2.04E+09	1.225E-03	0.0	0.0	0.0	-8.50E+00	5.00E-01	1	4.81055E-04		
4	1	-0.13E+06	0.0	2.04E+09	1.225E-03	0.0	0.0	0.0	-8.00E+00	5.00E-01	1	4.81055E-04		
5	2	-0.17E+06	0.0	7.62E+05	1.268E+09	7.860E+00	0.0	0.0	-7.50E+00	5.00E-01	2	3.08661E+00		
6	2	-0.17E+06	0.0	7.62E+05	1.268E+09	7.860E+00	0.0	0.0	-7.00E+00	5.00E-01	2	3.08661E+00		
7	2	-0.17E+06	0.0	7.62E+05	1.268E+09	7.860E+00	0.0	0.0	-6.50E+00	5.00E-01	2	3.08661E+00		
8	2	-0.17E+06	0.0	7.62E+05	1.268E+09	7.860E+00	0.0	0.0	-6.00E+00	5.00E-01	2	3.08661E+00		
9	2	-0.17E+06	0.0	7.62E+05	1.268E+09	7.860E+00	0.0	0.0	-5.50E+00	5.00E-01	2	3.08661E+00		
10	2	-0.17E+06	0.0	7.62E+05	1.268E+09	7.860E+00	0.0	0.0	-5.00E+00	5.00E-01	2	3.08661E+00		
11	2	-0.17E+06	0.0	7.62E+05	1.268E+09	7.860E+00	0.0	0.0	-4.50E+00	5.00E-01	2	3.08661E+00		
12	2	-0.17E+06	0.0	7.62E+05	1.268E+09	7.860E+00	0.0	0.0	-4.00E+00	5.00E-01	2	3.08661E+00		
13	2	-0.17E+06	0.0	7.62E+05	1.268E+09	7.860E+00	0.0	0.0	-3.50E+00	5.00E-01	2	3.08661E+00		
14	2	-0.17E+06	0.0	7.62E+05	1.268E+09	7.860E+00	0.0	0.0	-3.00E+00	5.00E-01	2	3.08661E+00		
15	2	-0.17E+06	0.0	7.62E+05	1.268E+09	7.860E+00	0.0	0.0	-2.50E+00	5.00E-01	2	3.08661E+00		
16	2	-0.17E+06	0.0	7.62E+05	1.268E+09	7.860E+00	0.0	0.0	-2.00E+00	5.00E-01	2	3.08661E+00		
17	2	-0.17E+06	0.0	7.62E+05	1.268E+09	7.860E+00	0.0	0.0	-1.50E+00	5.00E-01	2	3.08661E+00		
18	2	-0.17E+06	0.0	7.62E+05	1.268E+09	7.860E+00	0.0	0.0	-1.00E+00	5.00E-01	2	3.08661E+00		
19	2	-0.17E+06	0.0	7.62E+05	1.268E+09	7.860E+00	0.0	0.0	-5.00E-01	5.00E-01	2	3.08661E+00		
20	2	-0.17E+06	0.0	7.62E+05	1.268E+09	7.860E+00	0.0	0.0	-9.54E-07	5.00E-01	2	3.08661E+00		
21	8	-1.40E+05	0.0	7.810E+08	2.200E+00	0.0	0.0	0.0	5.00E-01	5.00E-01	3	8.63937E-01		
22	8	-1.40E+05	0.0	7.810E+08	2.200E+00	0.0	0.0	0.0	1.00E+00	5.00E-01	3	8.63937E-01		
23	8	-1.40E+05	0.0	7.810E+08	2.200E+00	0.0	0.0	0.0	1.50E+00	5.00E-01	3	8.63937E-01		
24	8	-1.40E+05	0.0	7.810E+08	2.200E+00	0.0	0.0	0.0	2.00E+00	5.00E-01	3	8.63937E-01		
25	8	-1.40E+05	0.0	7.810E+08	2.200E+00	0.0	0.0	0.0	2.50E+00	5.00E-01	3	8.63937E-01		
26	8	-1.40E+05	0.0	7.810E+08	2.200E+00	0.0	0.0	0.0	3.00E+00	5.00E-01	3	8.63937E-01		
27	8	-1.40E+05	0.0	7.810E+08	2.200E+00	0.0	0.0	0.0	3.50E+00	5.00E-01	3	8.63937E-01		
28	8	-1.40E+05	0.0	7.810E+08	2.200E+00	0.0	0.0	0.0	4.00E+00	5.00E-01	3	8.63937E-01		
29	8	-1.40E+05	0.0	7.810E+08	2.200E+00	0.0	0.0	0.0	4.50E+00	5.00E-01	3	8.63937E-01		
30	8	-1.40E+05	0.0	7.810E+08	2.200E+00	0.0	0.0	0.0	5.00E+00	5.00E-01	3	8.63937E-01		
31	8	-1.40E+05	0.0	7.810E+08	2.200E+00	0.0	0.0	0.0	5.50E+00	5.00E-01	3	8.63937E-01		

32	8.140E+05	0.0	0.0	7.810E+08	2.200E+00	0.0	0.0	6.00E+00	5.00E-01	3 8.63937E-01
33	8.140E+05	0.0	0.0	7.810E+08	2.200E+00	0.0	0.0	6.50E+00	5.00E-01	3 8.63937E-01
34	8.140E+05	0.0	0.0	7.810E+08	2.200E+00	0.0	0.0	7.00E+00	5.00E-01	3 8.63937E-01
35	8.140E+05	0.0	0.0	7.810E+08	2.200E+00	0.0	0.0	7.50E+00	5.00E-01	3 8.63937E-01
36	8.140E+05	0.0	0.0	7.810E+08	2.200E+00	0.0	0.0	8.00E+00	5.00E-01	3 8.63937E-01
37	8.140E+05	0.0	0.0	7.810E+08	2.200E+00	0.0	0.0	8.50E+00	5.00E-01	3 8.63937E-01
38	8.140E+05	0.0	0.0	7.810E+08	2.200E+00	0.0	0.0	9.00E+00	5.00E-01	3 8.63937E-01
39	8.140E+05	0.0	0.0	7.810E+08	2.200E+00	0.0	0.0	9.50E+00	5.00E-01	3 8.63937E-01
40	8.140E+05	0.0	0.0	7.810E+08	2.200E+00	0.0	0.0	1.00E+01	5.00E-01	3 8.63937E-01

MATERIAL MAP

1 2  
 ALTITUDE  
 12345678901234567890

1	*****	-9.500E-02
2	*****	-9.000E-02
3	*****	-8.500E-02
4	*****	-8.000E-02
5	*****	-7.500E-02
6	*****	-7.000E-02
7	*****	-6.500E-02
8	*****	-6.000E-02
9	*****	-5.500E-02
10	*****	-5.000E-02
11	*****	-4.500E-02
12	*****	-4.000E-02
13	*****	-3.500E-02
14	*****	-3.000E-02
15	*****	-2.500E-02
16	*****	-2.000E-02
17	*****	-1.500E-02
18	*****	-1.000E-02
19	*****	-5.000E-03
20	*****	-9.537E-09
21	00000000000000000000	5.000E-03
22	00000000000000000000	1.000E-02
23	00000000000000000000	1.500E-02
24	00000000000000000000	2.000E-02
25	00000000000000000000	2.500E-02
26	00000000000000000000	3.000E-02

27 000000000000000000000000 3.500E-02  
 L  
 28 000000000000000000000000 4.000E-02  
 29 000000000000000000000000 4.500E-02  
 L  
 30 000000000000000000000000 5.000E-02  
 31 000000000000000000000000 5.500E-02  
 L  
 32 000000000000000000000000 6.000E-02  
 33 000000000000000000000000 6.500E-02  
 L  
 34 000000000000000000000000 7.000E-02  
 35 000000000000000000000000 7.500E-02  
 L  
 36 000000000000000000000000 8.000E-02  
 37 000000000000000000000000 8.500E-02  
 L  
 38 000000000000000000000000 9.000E-02  
 39 000000000000000000000000 9.500E-02  
 L  
 40 000000000000000000000000 1.000E-01  
 12345678901234567890<sup>2</sup>

CYCLE 1 TIME 1.0000E-08 DT 4.088E-08 IDT 1 JDT 1 5  
 CYCLE 2 TIME 5.0885E-08 DT 6.114E-08 IDT 1 JDT 20  
 CYCLE 3 TIME 1.1203E-07 DT 8.059E-08 IDT 1 JDT 20  
 CYCLE 4 TIME 1.9261E-07 DT 9.927E-08 IDT 2 JDT 20  
 CYCLE 5 TIME 2.9189E-07 DT 1.174E-07 IDT 2 JDT 20  
 CYCLE 6 TIME 4.0931E-07 DT 1.354E-07 IDT 2 JDT 20  
 CYCLE 7 TIME 5.4470E-07 DT 1.537E-07 IDT 2 JDT 20

IH02081 IBCOM - PROGRAM INTERRUPT (P) - UNDERFLOW OLD PSW IS 078D000DA20899AE . REGISTER CONTAINED 75118260  
 TRACEBACK ROUTINE CALLED FROM ISM REG. 14 REG. 15 REG. 0 REG. 1  
 STATE 42076ABA 00088F0 0000009 000768E4  
 EOSSET 42075BA6 00076870 00000019 00000000  
 MAIN 00008858 00075538 004ED078 00074FF0

ENTRY POINT= 00075538

STANDARD FIXUP TAKEN, EXECUTION CONTINUING

IH02081 IBCOM - PROGRAM INTERRUPT (P) - UNDERFLOW OLD PSW IS 078D000DA20899AE . REGISTER CONTAINED 75118260

TRACEBACK ROUTINE CALLED FROM ISM REG. 14 REG. 15 REG. 0 REG. 1  
 STATE 420783C0 00088F0 00000024 00077624  
 HYDRO 42075DBE 00077530 00000019 00000000  
 MAIN 00008858 00075538 004ED078 00074FF0

ENTRY POINT= 00075538

STANDARD FIXUP TAKEN, EXECUTION CONTINUING

IH02081 IBCOM - PROGRAM INTERRUPT (P) - UNDERFLOW OLD PSW IS 078D000DA20899AE . REGISTER CONTAINED 77302BA4

TRACEBACK ROUTINE CALLED FROM ISM REG. 14 REG. 15 REG. 0 REG. 1  
 STATE 42076ABA 00088F0 00000009 000768E4  
 EOSSET 42075BA6 00076870 00000023 00000000  
 MAIN 00008858 00075538 004ED078 00074FF0

ENTRY POINT= 00075538

STANDARD FIXUP TAKEN , EXECUTION CONTINUING  
 JMD20BI IBCOM - PROGRAM INTERRUPT (P) - UNDERFLOW OLD PSW IS 07D0000A20899AE . REGISTER CONTAINED 773D2B84  
 TRACEBACK ROUTINE CALLED FROM ISN REG. 14 REG. 15 REG. 0 REG. 1  
 STATE 620783C0 0008BFD0 00000024 00077624  
 HYDRO 0207508E 02077530 00000023 00000000  
 MAIN 00008858 00075538 00AED078 00074FF0

ENTRY POINT= 00075538  
 STANDARD FIXUP TAKEN , EXECUTION CONTINUING  
 CYCLE 9 TIME 8.6426E-07 DT 1.357E-07 IDT 2 JDT 20  
 \*\*HYDRO - NEGATIVE ENERGY IN I 1 J 4 XI(N)= 5.3425229E+08 XI(N+1)= -1.7518715E+08 KE(N+1)= 5.1168940E+06  
 \*\*HYDRO - NEGATIVE ENERGY IN I 2 J 4 XI(N)= 5.3442099E+08 XI(N+1)= -1.7543890E+08 KE(N+1)= 5.3100000E+06  
 NEG ENERGY AT I= 1 J= 4  
 P= 8.16855000 E+04 U= 0.0 V= 2.43006349 E-01  
 XI= -1.69173600 E+08 XM= 1.45382452 E-04  
 XM= 1.45382466 E-04 0.0  
 NEG ENERGY AT I= 2 J= 4  
 P= 8.17724375 E+04 U= -3.23420405 E-01 V= 2.41543949 E-01  
 XI= -1.68040080 E+08 XM= 4.36691567 E-04  
 XM= 4.36692033 E-04 0.0  
 CYCLE 10 TIME 1.0000E-06 DT 1.386E-07 IDT 2 JDT 21

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PROB	1.3000	CYCLE	10	TIME	9.999994E-07	DT	1.385681E-07	INTERNAL ENERGY	KINETIC ENERGY	TOTAL ENERGY	ETH	REL ERROR
	6.6709816	E+12	5.58082346	E+13	6.24791912	E+13	6.24795771	E+13	-6.17603683	E+00		
MAX VEL =	7.62004E+05	AT I	2 J	12	TOTAL MASS	6.43812500	E+03	6.43812891	RELHERR	E-01		
MAX CS =	6.64689E+05	AT I	2 J	21								
MAX TEMP =	1.81835E+04	AT I	3 J	21								
MAX P =	4.98883E+11	AT I	2 J	21								
CELL SETTING DT, I	2 J	21										

TOTAL TIME FOR THIS PROBLEM 0 HOURS, 0 MIN, 22 SEC  
 TIME FOR THIS RUN 0 HOURS, 0 MIN, 22 SEC  
 WHIZ FACTOR TOTAL PROBLEM = 2.78E-03 SEC/CELL/CYCLE  
 WHIZ FACTOR SINCE LAST DUMP = 2.67E-03 SEC/CELL/CYCLE

J	I	P	U	0.500	DX(I)=	V	XI	RHO	SRR	SZZ	SRZ	Y	DY	M	XN	H	XN	M	XN
1	1	0.013E+06	0.0	0.0	2.044E+09	1.225E-03	0.0	0.0	0.0	0.0	0.0	-9.50E+00	5.00E-01	1	4.81055E-04				
2	1	0.013E+06	-5.90E-10	1.08E-01	2.044E+09	1.225E-03	0.0	0.0	0.0	0.0	0.0	-9.00E+00	5.00E-01	1	4.80936E-04				
3	1	0.013E+06	-8.44E-10	6.00E+02	2.044E+09	1.225E-03	0.0	0.0	0.0	0.0	0.0	-8.50E+00	5.00E-01	1	4.81016E-04				
4	1	5.38E+04	0.0	2.43E-01	1.000E+08	3.702E-04	0.0	0.0	0.0	0.0	0.0	-8.00E+00	5.00E-01	1	4.5382E-04				
5	6	9.24E+06	-3.36E+00	5.48E+05	5.779E+10	5.294E-04	0.0	0.0	0.0	0.0	0.0	-7.50E+00	5.00E-01	1	2.07972E-04				
6	6	0.099E+06	1.53E+00	7.62E+05	1.296E+09	3.743E+00	-7.15E+06	1.68E+07	0.0	0.0	0.0	-7.00E+00	5.00E-01	1	1.27726E-04	2	1.46974E+00		
7	1	1.474E+07	1.53E+00	7.62E+05	1.281E+09	7.859E+00	-9.42E+06	2.34E+07	6.11E+05	1.22E+06	1.48E+07	-6.50E+00	5.00E-01	2	3.08626E+00				
8	1	1.843E+06	1.80E+00	7.62E+05	1.273E+09	7.860E+00	-5.38E+06	1.48E+07	1.48E+07	1.22E+06	1.48E+07	-6.00E+00	5.00E-01	2	3.0848E+00				
9	2	3.09E+07	1.96E+00	7.62E+05	1.271E+09	7.860E+00	-1.31E+06	4.01E+06	1.78E+06	1.78E+06	1.78E+06	-5.50E+00	5.00E-01	2	3.08658E+00				
10	3	2.55E+07	1.79E+00	7.62E+05	1.271E+09	7.860E+00	6.15E+05	-9.17E+05	3.33E+06	3.33E+06	3.33E+06	-4.50E+00	5.00E-01	2	3.08661E+00				
11	2	9.45E+07	1.59E+00	7.62E+05	1.270E+09	7.860E+00	9.64E+05	-5.73E+05	3.77E+06	3.77E+06	3.77E+06	-4.00E+00	5.00E-01	2	3.08661E+00				
12	2	9.11E+07	1.65E+00	7.62E+05	1.271E+09	7.860E+00	1.08E+06	-2.24E+05	3.85E+06	3.85E+06	3.85E+06	-3.50E+00	5.00E-01	2	3.08660E+00				
13	3	3.07E+07	1.92E+00	7.62E+05	1.271E+09	7.860E+00	8.00E+05	-4.40E+05	3.87E+06	3.87E+06	3.87E+06	-3.00E+00	5.00E-01	2	3.08660E+00				
14	2	9.63E+07	1.98E+00	7.62E+05	1.271E+09	7.860E+00	1.09E+06	-1.58E+05	3.84E+06	3.84E+06	3.84E+06	-2.50E+00	5.00E-01	2	3.08660E+00				
15	2	9.28E+07	1.90E+00	7.62E+05	1.271E+09	7.860E+00	8.28E+05	-1.49E+07	3.83E+06	3.83E+06	3.83E+06	-2.00E+00	5.00E-01	2	3.08674E+00				
16	1	1.079E+08	1.90E+00	7.62E+05	1.271E+09	7.860E+00	8.28E+05	-1.49E+07	3.83E+06	3.83E+06	3.83E+06	-2.00E+00	5.00E-01	2	3.08674E+00				
17	2	1.147E+08	4.57E+00	7.62E+05	1.270E+09	7.861E+00	3.82E+07	-3.04E+07	3.67E+06	3.67E+06	3.67E+06	-1.50E+00	5.00E-01	2	3.08696E+00				
18	5	2.14E+09	4.03E+00	7.62E+05	1.272E+09	7.884E+00	8.08E+08	-1.59E+09	2.77E+07	2.77E+07	2.77E+07	-1.00E+00	5.00E-01	2	3.09610E+00				
19	1	4.57E+10	2.84E+02	7.54E+05	1.326E+09	7.924E+00	2.47E+09	-2.89E+09	4.24E+07	4.24E+07	4.24E+07	-5.00E-01	5.00E-01	2	3.11180E+00				
20	1	5.88E+11	5.35E+02	7.38E+05	3.191E+09	8.414E+00	1.66E+09	-3.03E+09	5.92E+06	5.92E+06	5.92E+06	-9.54E-07	5.00E-01	2	3.30404E+00				
21	5	3.04E+11	1.03E+03	6.54E+05	1.077E+10	9.245E+00	1.20E+09	-2.50E+09	-1.46E+06	1.00E+00	1.00E+00	5.00E-01	5.00E-01	2	3.63057E+00				
22	4	8.10E+11	9.74E+02	4.28E+05	1.272E+11	5.236E+00	1.08E+09	-2.21E+09	0.0	0.0	0.0	1.00E+00	5.00E-01	2	6.36342E-01	3	1.41968E+00		
23	5	5.70E+10	1.76E+02	9.38E+04	4.167E+10	2.822E+00	3.60E+09	-7.05E+09	1.81E+06	1.81E+06	1.81E+06	5.00E+00	5.00E-01	3	1.10810E+00				
24	1	7.67E+09	1.33E+01	3.46E+03	1.166E+09	2.245E+00	6.34E+08	-1.21E+09	-1.21E+06	2.00E+00	2.00E+00	2.00E+00	5.00E-01	3	8.81561E-01				
25	9	3.38E+07	9.40E-01	1.38E+02	7.811E+08	2.201E+00	2.15E+07	-3.75E+07	-1.03E+05	2.50E+00	2.50E+00	2.50E+00	5.00E-01	3	8.64492E-01				
26	5	0.33E+06	7.38E-02	4.55E+00	7.810E+08	2.200E+00	7.75E+05	-1.55E+06	-5.16E+03	3.00E+00	3.00E+00	3.00E+00	5.00E-01	3	8.63937E-01				
27	8	8.35E+05	4.33E-02	1.62E-01	7.810E+08	2.200E+00	2.25E+04	-3.66E+04	-6.32E+02	3.50E+00	3.50E+00	3.50E+00	5.00E-01	3	8.63937E-01				
28	7	6.44E+05	4.29E-02	3.19E-03	7.810E+08	2.200E+00	9.62E+03	-1.42E+03	-5.53E+00	4.00E+00	4.00E+00	4.00E+00	5.00E-01	3	8.63936E-01				
29	7	5.44E+05	4.29E-02	1.38E-12	7.810E+08	2.200E+00	9.62E+03	-8.09E-06	1.19E-01	4.50E+00	4.50E+00	4.50E+00	5.00E-01	3	8.63936E-01				
30	7	5.44E+05	4.29E-02	0.0	7.810E+08	2.200E+00	9.62E+03	0.0	0.0	0.0	0.0	5.00E+00	5.00E-01	3	8.63936E-01				
31	7	5.44E+05	4.29E-02	0.0	7.810E+08	2.200E+00	9.62E+03	0.0	0.0	0.0	0.0	5.50E+00	5.00E-01	3	8.63936E-01				
32	7	5.44E+05	4.29E-02	0.0	7.810E+08	2.200E+00	9.62E+03	0.0	0.0	0.0	0.0	6.00E+00	5.00E-01	3	8.63936E-01				
33	7	5.44E+05	4.29E-02	0.0	7.810E+08	2.200E+00	9.62E+03	0.0	0.0	0.0	0.0	6.50E+00	5.00E-01	3	8.63936E-01				
34	7	5.44E+05	4.29E-02	0.0	7.810E+08	2.200E+00	9.62E+03	0.0	0.0	0.0	0.0	7.00E+00	5.00E-01	3	8.63936E-01				
35	7	5.44E+05	4.29E-02	0.0	7.810E+08	2.200E+00	9.62E+03	-6.68E-18	-1.20E-03	8.00E+00	8.00E+00	8.00E+00	5.00E-01	3	8.63936E-01				
36	7	5.44E+05	4.29E-02	0.0	7.810E+08	2.200E+00	9.62E+03	0.0	0.0	0.0	0.0	8.50E+00	5.00E-01	3	8.63936E-01				
37	7	5.44E+05	4.29E-02	0.0	7.810E+08	2.200E+00	9.62E+03	-3.09E-07	-4.34E+00	8.50E+00	8.50E+00	8.50E+00	5.00E-01	3	8.63936E-01				
38	7	5.44E+05	4.26E-02	-1.45E-11	7.810E+08	2.200E+00	9.60E+03	-3.74E+02	-4.82E-06	9.00E+00	9.00E+00	9.00E+00	5.00E-01	3	8.63936E-01				
39	7	5.44E+05	4.29E-02	-1.03E-02	7.810E+08	2.200E+00	9.62E+03	5.26E-05	-1.90E+03	9.50E+00	9.50E+00	9.50E+00	5.00E-01	3	8.63936E-01				
40	8	1.40E+05	0.0	0.0	7.810E+08	2.200E+00	0.0	0.0	0.0	0.0	0.0	1.00E+01	5.00E-01	3	8.63937E-01				

ENERGY MAP

ALITUDE

1 2

12345678901234567890

1		METERS	-9.500E-02
2			-9.000E-02
3			-8.500E-02
4			-8.000E-02
5	BBBBB		-7.500E-02
6	TTTTT		-7.000E-02
7	B		-6.500E-02
8	B B		-6.000E-02
9	L		-5.500E-02
10			-5.000E-02
11	B		-4.500E-02
12	BL		-4.000E-02
13	T		-3.500E-02
14	T		-3.000E-02
15	B T		-2.500E-02
16	B B		-2.000E-02
17	T TT		-1.500E-02
18	B BBB		-1.000E-02
19	TTTTB BBBB		-5.000E-03
20	BBB B TTT		-9.537E-09
21	L BTTTTT		5.000E-03
22	L T BBBBBB		1.000E-02
23	TT B		1.500E-02
24	B T		2.000E-02
25	B		2.500E-02
26	L		3.000E-02
27	B		3.500E-02
28	L		4.000E-02
29	L		4.500E-02
30	L		5.000E-02
31	L		5.500E-02
32	L		6.000E-02
33	L		6.500E-02
34	L		7.000E-02
35	L		7.500E-02
36	L		8.000E-02

MATERIAL MAP

J/	L	8.500E-02	
38	L	9.000E-02	
39	L	9.500E-02	
40	BB B	1.000E-01	
	12345678901234567890		
	1	2	
	1	2	
	12345678901234567890		
1	+	METERS	-9.500E-02
2	+		-9.000E-02
3	+		-8.500E-02
4	+		-8.000E-02
5	+		-7.500E-02
6	+		-7.000E-02
7	XX		-6.500E-02
8	X		-6.000E-02
9	X		-5.500E-02
10	X		-5.000E-02
11	X		-4.500E-02
12	XX		-4.000E-02
13	XX		-3.500E-02
14	XX		-3.000E-02
15	XX		-2.500E-02
16	XX		-2.000E-02
17	XX		-1.500E-02
18	XX		-1.000E-02
19	XX		-5.000E-03

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A
20 XX+++++----- -9.537E-09
L
X000
21 XX+00+++++----- 5.000E-03
L
X0 0000000000000000
0
22 XX0000000000000000 1.000E-02
L
00
23 000000000000000000 1.500E-02
L
24 000000000000000000 2.000E-02
25 000000000000000000 2.500E-02
L
26 000000000000000000 3.000E-02
27 000000000000000000 3.500E-02
L
28 000000000000000000 4.000E-02
29 000000000000000000 4.500E-02
L
30 000000000000000000 5.000E-02
31 000000000000000000 5.500E-02
L
32 000000000000000000 6.000E-02
33 000000000000000000 6.500E-02
L
34 000000000000000000 7.000E-02
35 000000000000000000 7.500E-02
L
36 000000000000000000 8.000E-02
37 000000000000000000 8.500E-02
L
38 000000000000000000 9.000E-02
39 000000000000000000 9.500E-02
L
40 000000000000000000 1.000E-01
12345678901234567890
1 2

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**HYDRO - NEGATIVE ENERGY IN I 1 J 4 XI(N)= 9.9999904E+07 XI(N+1)= -5.8750054E+08 KE(N+1)= 1.9071220E+06
**HYDRO - NEGATIVE ENERGY IN I 2 J 4 XI(N)= 1.0000000E+08 XI(N+1)= -5.8741888E+08 KE(N+1)= 1.9243610E+06
NEG ENERGY AT I= 1 J= 4 V= 4.58243191 E-01
P= 1.41264180 E+04 U= 0.0 E-04
XI= -5.84034560 E+08 XM= 1.33564288 E-04
XM= 1.33564288 E-04 0.0
NEG ENERGY AT I= 2 J= 4
P= 1.41475742 E+04 U= -6.09345821 E-01 V= 4.52145576 E-01
XI= -5.81867520 E+08 XM= 4.01515514 E-04
XM= 4.01515514 E-04 0.0
CYCLE 11 TIME 1.1386E-06 DT 1.083E-07 IDT 2 JDT 21

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\* \*  
\* RTSTOP \*  
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PROB 1.3000 CYCLE 104 TIME 3.46069E-06 DT 4.797723E-08

INTERNAL ENERGY	KINETIC ENERGY	TOTAL ENERGY	ETH	REL ERROR
1.03060760 E+13	5.21732662 E+13	6.24793422 E+13	6.24795771 E+13	-1.16579037 E+01
TOTAL MASS		MTH		REL MERR
6.43812109 E+03		6.43812891 E+03		-1.31707287 E+00

MAX VEL = 7.61969E+05 AT I 2 J 13

MAX CS = 6.54954E+05 AT I 2 J 25

MAX IEMP= 1.84V68E+04 A I I J J 21

MAX P = 4.00484E+11 AT I 2 J 25

CELL SETTING DT, I 2 J 20

TOTAL TIME FOR THIS PROBLEM 0 HOURS, 3 MIN, 36 SEC

TIME FOR THIS RUN 0 HOURS, 3 MIN, 36 SEC

OWNIZ FACTOR TOTAL PROBLEM = 2.60E-03 SEC/CELL/CYCLE

OWNIZ FACTOR SINCE LAST DUMP = 2.63E-03 SEC/CELL/CYCLE

O I= 1 X(I)= 0.500 DX(I)= 0.500

O J	P	U	V	XI	RHO	SRR	SZZ	SRZ	Y	BY	M	XN	M	XN
1	1.013E+06	0.0	0.0	2.044E+09	1.225E-03	0.0	0.0	0.0	-9.50E+00	5.00E-01	1	4.81055E-04		
2	1.005E+06	1.04E-03	5.17E+00	2.039E+09	1.218E-03	0.0	0.0	0.0	-9.00E+00	5.00E-01	1	4.78240E-04		
3	1.007E+06	-1.97E-06	3.97E+03	2.039E+09	1.220E-03	0.0	0.0	0.0	-8.50E+00	5.00E-01	1	4.79188E-04		
4	1.615E+03	1.30E+00	-8.51E+02	2.262E+07	1.717E-04	0.0	0.0	0.0	-8.00E+00	5.00E-01	1	6.74388E-05		
5	1.231E+06	6.85E+01	2.05E+05	4.745E+10	1.123E+04	0.0	0.0	0.0	-7.50E+00	5.00E-01	1	4.41102E-05		
6	1.941E+06	2.84E+01	3.91E+05	6.826E+10	1.380E-04	0.0	0.0	0.0	-7.00E+00	5.00E-01	1	5.41771E-05		
7	2.744E+06	-8.73E+00	5.44E+05	7.260E+10	1.831E-04	0.0	0.0	0.0	-6.50E+00	5.00E-01	1	7.18963E-05		
8	3.504E+06	-3.61E+00	6.61E+05	7.004E+10	2.392E-04	0.0	0.0	0.0	-6.00E+00	5.00E-01	1	9.39376E-05		

9	4.182E+06	2.76E+01	7.43E+05	6.720E+10	2.933E-04	0.0	0.0	0.0	-5.50E+00	5.00E-01	1.15171E-04
10	4.308E+06	5.19E+01	7.62E+05	1.307E+09	5.709E+00	1.62E+07	3.00E+07	0.0	-5.00E+00	5.00E-01	3.26304E-05
11	1.578E+07	5.60E+01	7.62E+05	1.303E+09	7.858E+00	2.75E+07	1.65E+07	2.55E+07	-4.50E+00	5.00E-01	2.3.08579E+00
12	1.736E+07	5.70E+01	7.62E+05	1.300E+09	7.858E+00	3.66E+07	1.31E+04	3.55E+07	-4.00E+00	5.00E-01	2.3.08588E+00
13	5.437E+07	5.96E+01	7.62E+05	1.298E+09	7.858E+00	5.07E+07	-2.41E+07	4.21E+07	-3.50E+00	5.00E-01	2.3.08599E+00
14	1.721E+08	6.17E+01	7.62E+05	1.299E+09	7.859E+00	7.42E+07	-7.74E+07	4.90E+07	-3.00E+00	5.00E-01	2.3.08619E+00
15	4.391E+08	5.99E+01	7.62E+05	1.297E+09	7.860E+00	1.42E+08	-2.28E+08	5.56E+07	-2.50E+00	5.00E-01	2.3.08672E+00
16	1.145E+09	5.69E+01	7.62E+05	1.297E+09	7.864E+00	3.78E+08	-7.02E+08	6.30E+07	-2.00E+00	5.00E-01	2.3.08803E+00
17	3.129E+09	5.56E+01	7.61E+05	1.300E+09	7.873E+00	1.15E+09	-2.21E+09	3.80E+07	-1.50E+00	5.00E-01	2.3.09161E+00
18	8.829E+09	1.29E+01	7.59E+05	1.312E+09	7.899E+00	1.60E+09	-3.12E+09	-4.02E+07	-1.00E+00	5.00E-01	2.3.10174E+00
19	2.326E+10	-2.88E+01	7.54E+05	1.402E+09	7.959E+00	1.58E+09	-3.12E+09	-7.21E+07	-5.00E-01	5.00E-01	2.3.12551E+00
20	4.809E+10	-4.93E+01	7.42E+05	1.844E+09	8.043E+00	1.56E+09	-3.09E+09	3.06E+07	-9.54E-07	5.00E-01	2.3.15844E+00
21	7.921E+10	1.34E+03	7.20E+05	3.246E+09	8.095E+00	1.51E+09	-3.02E+09	1.18E+08	5.00E-01	5.00E-01	2.3.17904E+00
22	1.093E+11	4.23E+03	6.83E+05	5.756E+09	8.079E+00	1.44E+09	-2.89E+09	6.80E+07	1.00E+00	5.00E-01	2.3.17269E+00
23	1.120E+11	5.60E+03	6.21E+05	8.196E+09	7.952E+00	1.18E+09	-2.35E+09	-4.24E+07	1.50E+00	5.00E-01	2.3.12288E+00
24	2.207E+11	3.12E+03	5.55E+05	3.771E+10	6.640E+00	1.35E+09	-2.67E+09	0.0	2.00E+00	5.00E-01	2.2.06195E+00
25	3.579E+11	-6.10E+03	4.33E+05	1.308E+11	4.133E+00	3.53E+09	-7.05E+09	-5.59E+07	2.50E+00	5.00E-01	3.1.62316E+00
26	1.959E+11	-5.56E+03	2.46E+05	7.607E+10	3.614E+00	3.56E+09	-7.05E+09	2.67E+08	3.00E+00	5.00E-01	3.1.41933E+00
27	2.185E+10	-1.05E+03	6.34E+04	1.486E+10	2.644E+00	3.59E+09	-7.05E+09	2.61E+08	3.50E+00	5.00E-01	3.1.03848E+00
28	1.974E+09	-4.52E+01	4.89E+03	1.035E+09	2.251E+00	7.44E+08	-1.47E+09	2.25E+07	4.00E+00	5.00E-01	3.8.83838E-01
29	2.043E+08	8.06E-02	4.50E+02	7.816E+08	2.203E+00	9.53E+07	-1.86E+08	1.73E+06	4.50E+00	5.00E-01	3.8.65158E-01
30	1.937E+07	-2.24E-02	4.34E+01	7.810E+08	2.200E+00	8.67E+06	-1.71E+07	3.58E+04	5.00E+00	5.00E-01	3.8.64048E-01
31	2.084E+06	-6.83E-03	3.84E+00	7.810E+08	2.200E+00	7.16E+05	-1.52E+06	1.51E+03	5.50E+00	5.00E-01	3.8.63944E-01
32	6.254E+05	9.68E-02	2.81E-01	7.810E+08	2.200E+00	8.23E+04	-1.52E+05	5.15E+03	6.00E+00	5.00E-01	3.8.63936E-01
33	5.658E+05	1.47E-01	1.20E-02	7.810E+08	2.200E+00	5.89E+04	-1.05E+04	1.17E+03	6.50E+00	5.00E-01	3.8.63935E-01

34	3.658E+03	1.31E-01	6.32E-12	7.810E+08	2.200E+00	5.90E+04	-1.91E+02	5.16E+01	7.00E+00	5.00E-01	3 8.63935E-01
35	5.658E+05	1.51E-01	0.0	7.810E+08	2.200E+00	5.90E+04	5.06E+02	-5.18E+01	7.50E+00	5.00E-01	3 8.63935E-01
36	5.658E+05	1.50E-01	1.30E-02	7.810E+08	2.200E+00	5.89E+04	-2.64E+02	-7.85E+02	8.00E+00	5.00E-01	3 8.63935E-01
37	4.963E+05	1.34E-01	-9.66E-03	7.810E+08	2.200E+00	5.66E+04	6.12E+03	-4.31E+03	8.50E+00	5.00E-01	3 8.63935E-01
38	5.857E+05	8.08E-02	3.89E-02	7.810E+08	2.200E+00	5.22E+04	-5.35E+04	-1.11E+04	9.00E+00	5.00E-01	3 8.63935E-01
39	4.368E+05	2.97E-02	-2.04E-01	7.810E+08	2.200E+00	2.98E+04	-6.62E+03	5.17E+03	9.50E+00	5.00E-01	3 8.63934E-01
40	8.140E+05	0.0	0.0	7.810E+08	2.200E+00	0.0	0.0	0.0	1.00E+01	5.00E-01	3 8.63937E-01

ENERGY MAP

1 2

ALTITUDE

12345678901234567890

216

METERS

1	-9.500E-02
2	-9.000E-02
3 BBBB	-8.500E-02
4 TTTTBB	-8.000E-02
5 BBBB	-7.500E-02
6 TTT	-7.000E-02
7 T	-6.500E-02
8 TT	-6.000E-02
9 B	-5.500E-02
10 BB	-5.000E-02
+ L	
11 B	-4.500E-02

12		-4.000E-02							
+ L									
13	B	-3.500E-02							
14	B	-3.000E-02							
15	T	-2.500E-02							
16		-2.000E-02							
+ L									
17	BBT	-1.500E-02							
18	B	-1.000E-02							
19	TTTT	BBBBBBBBBB -5.000E-03							
20	BB TB	TTT -9.537E-09							
+ L									
21	BTT	TTTTTTTT 5.000E-03							
22	TBBBB	BBBBBBBB 1.000E-02							
23	BT TTTBT	1.500E-02							
+ L									
24	T B	2.000E-02							
+ L									
25	T	2.500E-02							
+ L									
26	TT B T	3.000E-02							
27	B	3.500E-02							
+ L									
28	B T	4.000E-02							
29	B T	4.500E-02							
30	T	5.000E-02							
31	B T	5.500E-02							
+ L									
32		6.000E-02							
33		6.500E-02							
+ L									
34		7.000E-02							
35		7.500E-02							
+ L									
36		8.000E-02							
37		8.500E-02							
+ L									
38	T	9.000E-02							
39	B B	9.500E-02							
+ L									
40	BBBB BBBB	BBB 1.000E-01							

12345678901234567890

1 2

MATERIAL MAP

ALTIITUDE  
METERS

12345678901234567890

1	+++++	-9.500E-02
2	+++++	-9.000E-02
3	+++++	-8.500E-02
4	+++++	-8.000E-02
5	+++++	-7.500E-02
6	+++++	-7.000E-02
7	+++++	-6.500E-02
8	+++++	-6.000E-02
9	+++++	-5.500E-02
10	+++++	-5.000E-02
	+ L	
	+ XXX	
11	XX+++++	-4.500E-02
	+ X	
12	XX+++++	-4.000E-02
	+ L	
	+ X	
13	XX+++++	-3.500E-02
	+ X	
14	XX+++++	-3.000E-02
	+ X	
15	XX+++++	-2.500E-02
	+ X	
16	XX+++++	-2.000E-02
	+ L	
17	XX+++++	-1.500E-02
	+ X	
18	XX+++++	-1.000E-02
	+ X	
19	XX+++++	-5.000E-03
	+ X	
20	XX+++++	-9.537E-09
	+ L	
	+ X 0030	
21	XX+0000+++++	5.000E-03
	+ X0 000000000000	
	+ 0	
22	XX+0000000000000000	1.000E-02
	+ X	
	+ 0	
23	XXX0000000000000000	1.500E-02
	+ L	
	+ 0	
24	XXX0000000000000000	2.000E-02
	+ L	
	+ 000	
25	0X0000000000000000	2.500E-02
	+ L	
	+ 0	
26	00000000000000000000	3.000E-02

BREF	0.0	000000000000000000
CODE	1.00000D+00	411000000000000000
COLD	0.00001D-79	000000010000000000
CYCLE	1.04000D+02	424800000000000000
DIMEN	2.00000D+00	412000000000000000
DT	4.79772D-08	3ACE0F860000000000
ELC	6.24793D+13	4C38D31B0000000000
EOS	6.00000D+00	416000000000000000
ETH	6.24796D+13	4C38D3290000000000
EXPAND	5.00000D-02	3FC000000000000000
FAIL	0.0	000000000000000000
FLUXER	3.00000D+00	413000000000000000
GEOM	2.00000D+00	412000000000000000
IMAX	2.00000D+01	421400000000000000
IQ	1.90000D+01	421300000000000000
ISLAND	0.0	000000000000000000
JMAX	4.00000D+01	422800000000000000
JO	3.90000D+01	422700000000000000
HOB	0.0	000000000000000000
LREF	0.00001D-79	000000010000000000
METHOD	2.00000D+00	412000000000000000
MLC	6.43812D+03	4419261F0000000000
MTH	6.43813D+03	441926210000000000
MH	2.00000D+01	421400000000000000
MHIC	1.60000D+03	436400000000000000
MHIST	6.00000D+00	416000000000000000

27	00000000000000000000	3.500E-02
+ L		
28	00000000000000000000	4.000E-02
29	00000000000000000000	4.500E-02
+ L		
30	00000000000000000000	5.000E-02
31	00000000000000000000	5.500E-02
+ L		
32	00000000000000000000	6.000E-02
33	00000000000000000000	6.500E-02
+ L		
34	00000000000000000000	7.000E-02
35	00000000000000000000	7.500E-02
+ L		
36	00000000000000000000	8.000E-02
37	00000000000000000000	8.500E-02
+ L		
38	00000000000000000000	9.000E-02
39	00000000000000000000	9.500E-02
+ L		
40	00000000000000000000	1.000E-01

12345678901234567890

ZBLK/	PROB	1.30000D+00	4114CCCC00000000
ATMOS		5.00000D+00	415000000000000000

NR	3.000000B+00	4130000000000000	X1	4.000000B+00	4140000000000000
NDP	1.600000B+01	4210000000000000	X2	-1.000000B+00	C1100000000000000
MPP	3.000000B+00	4130000000000000	X08	0.0	0000000000000000
NRQMPB	4.000000B+00	4140000000000000	Y1	8.000000B+00	4180000000000000
NSTN	1.600000B+01	4210000000000000	Y2	3.200000B+01	4220000000000000
NVARST	1.600000B+01	4210000000000000	YGMB	0.0	0000000000000000
PTSTOP	6.000000B+02	4325800000000000	YIELD	0.0	0000000000000000
RADLOS	0.0	0000000000000000	AIR	1.000000B+00	4110000000000000
REZONE	0.0	0000000000000000	FE	2.000000B+00	4120000000000000
RREF	0.0	0000000000000000	CONCRT	3.000000B+00	4130000000000000
STABF	5.000000B-01	4080000000000000		0.0	0000000000000000
STRAIN	1.000000B+00	4110000000000000		0.0	0000000000000000
STRESS	1.000000B+00	4110000000000000		0.0	0000000000000000
SUME	0.0	0000000000000000		0.0	0000000000000000
T	3.46067B-06	3C3A0F7600000000		0.0	0000000000000000
TERAD	0.0	0000000000000000		0.0	0000000000000000
TLC	3.46067B-06	3C3A0F7600000000		0.0	0000000000000000
TREF	0.0	0000000000000000		0.0	0000000000000000
TTIME	2.16132B+02	428821B000000000		0.0	0000000000000000
TTSTOP	1.000000B+02	4264000000000000		0.0	0000000000000000
UREZ	1.000000B+01	41A0000000000000		0.0	0000000000000000
VISC	0.0	0000000000000000		0.0	0000000000000000
VREZ	1.000000B+01	41A0000000000000		0.0	0000000000000000
VOIDS	0.0	0000000000000000		0.0	0000000000000000
WORK	0.0	0000000000000000		0.0	0000000000000000

0.0	00000000000000000000
0.0	00000000000000000000
0.0	00000000000000000000
0.0	00000000000000000000
0.0	00000000000000000000
0.0	00000000000000000000
0.0	00000000000000000000
0.0	00000000000000000000
0.0	00000000000000000000
0.0	00000000000000000000
0.0	00000000000000000000
0.0	00000000000000000000
0.0	00000000000000000000
0.0	00000000000000000000
0.0	00000000000000000000
0.0	00000000000000000000
0.0	00000000000000000000

1SUMMARY OF ERRORS FOR THIS JOB      ERROR NUMBER      NUMBER OF ERRORS

0    208                          437

END OF DATA

AFWL-TR-78-134

PROBLEM 1.3 CYBER 176 HULL RUN



+ STEEL PENETRATOR INTO CONCRETE  
 +  
 + PROB 1.3800 CYCLE 0 TIME 0.  
 BACKSPACING 2 RECORDS  
 TAPE POSITIONED  
 + DISK VERSION  
 +  
 +  
 +  
 +  
 +  
 +

\*\*\*\*\* OPTIONS SELECTED FOR THIS RUN \*\*\*\*\*  
 DIFFERENCE METHOD -

SHELL II

AND MATERIAL STRENGTH

WITH 6 FLUXED HISTORIES/CELL

STATION DATA ROUTINES INCLUDED  
 EQUATION OF STATE -

SOLIDS - NO STRENGTH

ATMOSPHERE -

CONSTANT  
 VOLUME AND ENERGY FLUXING  
 REZONE -

NO REZONE  
 CODE -

HULL  
 DIMENSIONS -

GEOMETRY -  
 2-D

CYLINDRICAL  
 NO RADIATION ROUTINES  
 PARTICLES -

CODE INCLUDED

THE FOLLOWING OPTIONS WERE SPECIFIED WHEN EXECUTIVE PROCESSING BEGAN

INST	=	1
PRG	=	0
PLANK	=	0
PULL	=	0
KEEL	=	0
LIBRARY	=	0
ATYOS	=	5
BURN	=	0
CODE	=	1
DIMEN	=	2
EOS	=	6
GEOM	=	2
HOT	=	0
IMX	=	20
ISLAND	=	0
JMAX	=	40
KMAX	=	1
LSUFA	=	1729
LBUFB	=	122
MAGFLD	=	0
METHOD	=	2
NH	=	20
NHIC	=	1500
NI	=	3
NOP	=	16
NHIST	=	6
NPLPB	=	2
NPP	=	2
NROUPLB	=	4
NSTN	=	16
NVARST	=	15
RAD	=	0
REZONE	=	0
STRESS	=	1
SURF	=	0
SW	=	0
SWX	=	6
VISC	=	0
LAMB	=	0
BBOUND	=	0
LBOUND	=	0
VOIDS	=	0
FLUXER	=	3
DEPOS	=	0
FAIL	=	0
STRAIN	=	1
WORK	=	1
MAT	=	3
AIR	=	1
FE	=	2
CONCRT	=	3
+	=	+

THE FOLLOWING OPTIONS WERE DEFINED BY PLANK.

ATMOS	=	5
BURN	=	0
CODE	=	1
DIMEN	=	2
EOS	=	6
GEOM	=	2
HOT	=	0
IMAX	=	20
ISLAND	=	0
JMAX	=	40
KMAX	=	1
LSUFA	=	1729
LBUFB	=	122
MAGFLD	=	0
METHOD	=	2
NH	=	20
NHIC	=	1500
NI	=	3
NOP	=	16
NHIST	=	6
NPLPB	=	2
NPP	=	2
NROUPLB	=	4
NSTN	=	16
NVARST	=	15
RAD	=	0
REZONE	=	0
STRESS	=	1
SURF	=	0
SW	=	0
SWX	=	6
VISC	=	0
LAMB	=	0
BBOUND	=	0
LBOUND	=	0
KEEL	=	0
PULL	=	0
VOIDS	=	0
FLUXER	=	3
DEPOS	=	0
FAIL	=	0
STRAIN	=	1
WORK	=	1
MAT	=	3
AIR	=	1
FE	=	2
CONCRT	=	3
+	=	+

THE FOLLOWING DEFINITIONS OR REDEFINITIONS WERE MADE DURING EXECUTIVE PROCESSING

+	SYS	176	-
+	VER	4	-
	NOSBE	1	-
	PF	1	-
	ECS	1	-
	OBJLIB	1	-
	TAPELIB	4	-
	ROUTE	1	-
	DENSHUL	5	-
	DENSLIB	5	-
	DENSSTA	3	-
	LABEL	1	-
	DATE	1	-
	CONTROL	1	-
	CDC	1	-
	IBM	0	-
	CU	10	-
	NW	1	-
	RDEND	2	-
	CARDL	8	-
	CARDO	80	-
	NHEC	16000	-
	NBLKS	10	-
	NPIC	32	-
	NPICMAX	3020	-
	STRAIN	1	-
	STRESS	1	-
	DEBUG	0	-
	FILMPR	1	-
	HLEV	1	-
	D\$NAMEA	21	-
	D\$NAMEB	12	-
	D\$NAMEB	13	-
	D\$NAMEB	15	-
	D\$NAMEB	17	-
	D\$NAMEC	14	-
	D\$NAMEC	15	-
	D\$NAMEC	16	-
	D\$NAMEC	18	-
	D\$NAMEC	5	-
	AIREDS	1	-

PLANK START  
 NOT A 555 RECORD  
 PROB 1.3888 STARTUP ON CYCLE 0 TIME 0.

+ +  
 + +  
 + +  
 + +

MATERIAL AMBIENT YIELD (Y8) 4.690E+09 1.00E+02 0. 9.00E-01 5.00E-01 9.00E-01 1.00E+00 0.

MATERIAL PROPERTIES DEFINED FOR THIS RUN  
 THERMAL SOFTENING YLD/Y8 EE/EMELT

WORK HARDENING YIELD PLASTIC STRAIN  
 4.690E+09 0.  
 5.500E+09 3.00E-01

+ +

3 3.000E+09 1.00E+00 0. -1 -1 3.000E+09 0. -1

+ +

0. -1 -1 1.00E+00

STEEL PENETRATOR INTO CONCRETE

ZBLK

PROB 1.3888000000000000E+00  
 ATMOS 5.0000000000000000E+00  
 BREF 0.  
 CODE 1.0000000000000000E+00  
 COLD 0.  
 CYCLE 0.  
 DIMEN 1721400000000000000000  
 DT 16655274616784382142  
 ELC 0.  
 EOS 1722600000000000000000  
 ETH 0.  
 EXPAND 17136314631463146315  
 FAIL 0.  
 FLUXER 1721600000000000000000  
 GEOM 1721400000000000000000  
 IMAX 1724500000000000000000  
 ID 1724460000000000000000  
 ISLAND 0.  
 JMAX 1725500000000000000000





MAX TEMP = -I AT Jxxxxx Jxxxxx  
 +  
 MAX P = -I AT Jxxxxx Jxxxxx  
 +  
 CELL SETTING DT, Jxxxxx Jxxxxx  
 +

TOTAL TIME FOR THIS PROBLEM 0 HOURS, 0 MIN, 0 SEC  
 OF THIS 0 HOURS, 0 MIN, 0 SEC IS 6600 TIME.  
 AND 0 HOURS, 0 MIN, 0 SEC IS 7600/176 TIME.  
 +  
 TIME FOR THIS RUN 0 HOURS, 0 MIN, 25 SEC

I = 1 X(I) = .500 DX(I) = .500

J	P	U	V	XI	RHO	SRR	SZZ	SRZ	Y	DY	M	XM	M	XM
1	1.013E+06	0.	0.	2.044E+09	1.225E-03	0.	0.	0.	-9.50E+00	5.00E-01	1	4.81056E-04		
2	1.013E+06	0.	0.	2.044E+09	1.225E-03	0.	0.	0.	-9.00E+00	5.00E-01	1	4.81056E-04		
3	1.013E+06	0.	0.	2.044E+09	1.225E-03	0.	0.	0.	-8.50E+00	5.00E-01	1	4.81056E-04		
4	1.013E+06	0.	0.	2.044E+09	1.225E-03	0.	0.	0.	-8.00E+00	5.00E-01	1	4.81056E-04		
5	1.013E+06	0.	0.	7.62E+05	1.268E+09	7.860E+00	0.	0.	-7.50E+00	5.00E-01	2	3.08661E+00		
6	1.013E+06	0.	0.	7.62E+05	1.268E+09	7.860E+00	0.	0.	-7.00E+00	5.00E-01	2	3.08661E+00		
7	1.013E+06	0.	0.	7.62E+05	1.268E+09	7.860E+00	0.	0.	-6.50E+00	5.00E-01	2	3.08661E+00		
8	1.013E+06	0.	0.	7.62E+05	1.268E+09	7.860E+00	0.	0.	-6.00E+00	5.00E-01	2	3.08661E+00		
9	1.013E+06	0.	0.	7.62E+05	1.268E+09	7.860E+00	0.	0.	-5.50E+00	5.00E-01	2	3.08661E+00		
10	1.013E+06	0.	0.	7.62E+05	1.268E+09	7.860E+00	0.	0.	-5.00E+00	5.00E-01	2	3.08661E+00		
11	1.013E+06	0.	0.	7.62E+05	1.268E+09	7.860E+00	0.	0.	-4.50E+00	5.00E-01	2	3.08661E+00		
12	1.013E+06	0.	0.	7.62E+05	1.268E+09	7.860E+00	0.	0.	-4.00E+00	5.00E-01	2	3.08661E+00		
13	1.013E+06	0.	0.	7.62E+05	1.268E+09	7.860E+00	0.	0.	-3.50E+00	5.00E-01	2	3.08661E+00		
14	1.013E+06	0.	0.	7.62E+05	1.268E+09	7.860E+00	0.	0.	-3.00E+00	5.00E-01	2	3.08661E+00		
15	1.013E+06	0.	0.	7.62E+05	1.268E+09	7.860E+00	0.	0.	-2.50E+00	5.00E-01	2	3.08661E+00		
16	1.013E+06	0.	0.	7.62E+05	1.268E+09	7.860E+00	0.	0.	-2.00E+00	5.00E-01	2	3.08661E+00		
17	1.013E+06	0.	0.	7.62E+05	1.268E+09	7.860E+00	0.	0.	-1.50E+00	5.00E-01	2	3.08661E+00		
18	1.013E+06	0.	0.	7.62E+05	1.268E+09	7.860E+00	0.	0.	-1.00E+00	5.00E-01	2	3.08661E+00		
19	1.013E+06	0.	0.	7.62E+05	1.268E+09	7.860E+00	0.	0.	-5.00E-01	5.00E-01	2	3.08661E+00		
20	1.013E+06	0.	0.	7.62E+05	1.268E+09	7.860E+00	0.	0.	0.	5.00E-01	3	8.63938E-01		
21	1.013E+06	0.	0.	7.810E+08	2.200E+00	0.	0.	0.	5.00E-01	5.00E-01	3	8.63938E-01		
22	1.013E+06	0.	0.	7.810E+08	2.200E+00	0.	0.	0.	1.00E+00	5.00E-01	3	8.63938E-01		
23	1.013E+06	0.	0.	7.810E+08	2.200E+00	0.	0.	0.	1.50E+00	5.00E-01	3	8.63938E-01		
24	1.013E+06	0.	0.	7.810E+08	2.200E+00	0.	0.	0.	2.00E+00	5.00E-01	3	8.63938E-01		
25	1.013E+06	0.	0.	7.810E+08	2.200E+00	0.	0.	0.	2.50E+00	5.00E-01	3	8.63938E-01		
26	1.013E+06	0.	0.	7.810E+08	2.200E+00	0.	0.	0.	3.00E+00	5.00E-01	3	8.63938E-01		
27	1.013E+06	0.	0.	7.810E+08	2.200E+00	0.	0.	0.	3.50E+00	5.00E-01	3	8.63938E-01		
28	1.013E+06	0.	0.	7.810E+08	2.200E+00	0.	0.	0.	4.00E+00	5.00E-01	3	8.63938E-01		
29	1.013E+06	0.	0.	7.810E+08	2.200E+00	0.	0.	0.	4.50E+00	5.00E-01	3	8.63938E-01		
30	1.013E+06	0.	0.	7.810E+08	2.200E+00	0.	0.	0.	5.00E+00	5.00E-01	3	8.63938E-01		
31	1.013E+06	0.	0.	7.810E+08	2.200E+00	0.	0.	0.	5.50E+00	5.00E-01	3	8.63938E-01		
32	1.013E+06	0.	0.	7.810E+08	2.200E+00	0.	0.	0.	6.00E+00	5.00E-01	3	8.63938E-01		
33	1.013E+06	0.	0.	7.810E+08	2.200E+00	0.	0.	0.	6.50E+00	5.00E-01	3	8.63938E-01		
34	1.013E+06	0.	0.	7.810E+08	2.200E+00	0.	0.	0.	7.00E+00	5.00E-01	3	8.63938E-01		
35	1.013E+06	0.	0.	7.810E+08	2.200E+00	0.	0.	0.	7.50E+00	5.00E-01	3	8.63938E-01		
36	1.013E+06	0.	0.	7.810E+08	2.200E+00	0.	0.	0.	8.00E+00	5.00E-01	3	8.63938E-01		
37	1.013E+06	0.	0.	7.810E+08	2.200E+00	0.	0.	0.	8.50E+00	5.00E-01	3	8.63938E-01		

38 1.013E+06 0. 7.810E+08 2.200E+00 0. 9.00E+00 5.00E-01 3 8.63930E-01  
39 1.013E+05 0. 7.810E+08 2.200E+00 0. 9.50E+00 5.00E-01 3 8.63930E-01  
40 1.013E+06 0. 7.810E+08 2.200E+00 0. 1.00E+01 5.00E-01 3 8.63930E-01

MATERIAL MAP

0. 0.  
0. 0.  
0. 0.

7.810E+08 2.200E+00 0.  
7.810E+08 2.200E+00 0.  
7.810E+08 2.200E+00 0.

1.013E+06 0.  
1.013E+05 0.  
1.013E+06 0.

1

2

ALTITUDE

12345678901234567890

METERS

1 ++++++ -9.500E-02  
2 ++++++ -9.000E-02  
3 ++++++ -8.500E-02  
4 ++++++ -8.000E-02

5 XX -7.500E-02  
6 XX -7.000E-02

7 XX -6.500E-02  
8 XX -6.000E-02  
9 XX -5.500E-02  
10 XX -5.000E-02

11 XX -4.500E-02  
12 XX -4.000E-02  
13 XX -3.500E-02  
14 XX -3.000E-02

15 XX -2.500E-02  
16 XX -2.000E-02  
17 XX -1.500E-02  
18 XX -1.000E-02

19 XX -5.000E-03  
20 XX 0.  
21 00000000000000000000 5.000E-03

22 00000000000000000000 1.000E-02  
23 00000000000000000000 1.500E-02

24 00000000000000000000 2.000E-02  
25 00000000000000000000 2.500E-02

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26 000000000000000000000000 3.000E-02
27 000000000000000000000000 3.500E-02
L
28 000000000000000000000000 4.000E-02
29 000000000000000000000000 4.500E-02
L
30 000000000000000000000000 5.000E-02
31 000000000000000000000000 5.500E-02
L
32 000000000000000000000000 6.000E-02
33 000000000000000000000000 6.500E-02
L
34 000000000000000000000000 7.000E-02
35 000000000000000000000000 7.500E-02
L
36 000000000000000000000000 8.000E-02
37 000000000000000000000000 8.500E-02
L
38 000000000000000000000000 9.000E-02
39 000000000000000000000000 9.500E-02
L
40 000000000000000000000000 1.000E-01
12345678901234567890
2
CYCLE 1 TIME 1.000E-08 DT 4.000E-08 IDT 1 JDT 1 6
CYCLE 2 TIME 5.000E-08 DT 6.114E-08 IDT 2 JDT 20
CYCLE 3 TIME 1.1203E-07 DT 8.059E-08 IDT 2 JDT 20
CYCLE 4 TIME 1.9261E-07 DT 9.927E-08 IDT 2 JDT 20
CYCLE 5 TIME 2.9180E-07 DT 1.174E-07 IDT 2 JDT 20
CYCLE 6 TIME 4.0931E-07 DT 1.354E-07 IDT 2 JDT 20
CYCLE 7 TIME 5.4470E-07 DT 1.537E-07 IDT 2 JDT 20
CYCLE 8 TIME 6.9836E-07 DT 1.659E-07 IDT 2 JDT 20
CYCLE 9 TIME 8.6426E-07 DT 1.357E-07 IDT 2 JDT 20
***HYDRO - NEGATIVE ENERGY IN I 1 J 4 XI(N)= 5.3377743E+08 XI(N+1)= -1.7597579E+08 KE(N+1)= 5.1226002E+06
***HYDRO - NEGATIVE ENERGY IN I 2 J 4 XI(N)= 5.3525509E+08 XI(N+1)= -1.7415078E+08 KE(N+1)= 5.2988794E+06
V= 2.430273285124427E-01
IEG ENERGY AT I= 1 J= 4
V= 8.16123455627321E+04 U= 0.
XI= -1.699561965484762E+08 XM= 1.453806178714498E-04
M= 1.453806178714507E-04 0.
IEG ENERGY AT I= 2 J= 4
V= 8.189924442216521E+04 U= -3.234012309591829E-01 V= 2.415297367428995E-01
XI= -1.667644609785099E+08 XM= 4.36693162802217E-04
M= 4.36693162802235E-04 0.
CYCLE 10 TIME 1.0000E-06 DT 1.386E-07 IDT 2 JDT 21
F
*****

```

\*\*\* cell-removal Run \*\*\*

PROB 1.3000 CYCLE 10 TIME 1.000000E-06 DT 1.385674E-07  
 INTERNAL ENERGY KINETIC ENERGY TOTAL ENERGY ETH MTH REL ERROR  
 6.67126792524812E+12 5.508994073756005E+13 6.24802145008485E+13 6.24799684429785E+13 3.93818812864106E+00  
 TOTAL MASS RELMERR  
 6.43844433782579E+03 6.43844433782561E+03 1.35609608142842E-08

MAX VEL = 7.62006E+05 AT I 2 J 12  
 MAX CS = 6.64092E+05 AT I 2 J 21  
 MAX TEMP = 1.81832E+04 AT I 3 J 21  
 MAX P = 4.98905E+11 AT I 2 J 21  
 CELL SETTING DT, I 2 J 21

TOTAL TIME FOR THIS PROBLEM 0 HOURS, 0 MIN, 3 SEC  
 OF THIS 0 HOURS, 0 MIN, 0 SEC IS 6000 TIME.  
 AND 0 HOURS, 0 MIN, 3 SEC IS 7600/176 TIME.

TIME FOR THIS RUN 0 HOURS, 0 MIN, 29 SEC

WHIZ FACTOR TOTAL PROBLEM = 4.56E-04 SEC/CELL/CYCLE

WHIZ FACTOR SINCE LAST DUMP = 4.72E-04 SEC/CELL/CYCLE

I = 1 X(I) = .500 DX(I) = .500

J	P	U	V	X1	RHO	SRR	SZ2	SRZ	Y	DY	M	XI	M	XI
1	1.013E+05	0.	0.	2.044E+09	1.225E-03	0.	0.	0.	-9.50E+00	5.00E-01	1	4.81056E-04		
2	1.013E+06	-6.02E-10	1.00E-01	2.044E+09	1.225E-03	0.	0.	0.	-9.00E+00	5.00E-01	1	4.80938E-04		
3	1.013E+06	-8.60E-10	6.00E+02	2.044E+09	1.225E-03	0.	0.	0.	-8.50E+00	5.00E-01	1	4.81018E-04		
4	1.538E+04	0.	2.43E-01	1.000E+08	3.702E-04	0.	0.	0.	-8.00E+00	5.00E-01	1	1.45381E-04		
5	9.26E+05	2.01E-01	5.48E+05	5.782E+18	5.256E-04	0.	0.	0.	-7.50E+00	5.00E-01	1	2.07972E-04		
6	6.059E+06	4.28E-01	7.62E+05	1.293E+09	3.743E+00	-7.86E+05	1.63E+07	0.	-7.00E+00	5.00E-01	1	1.27729E-04	2	1.46571E+00
7	-2.386E+07	-9.36E-02	7.62E+05	1.279E+09	7.859E+00	-1.07E+07	2.26E+07	2.99E+05	-6.50E+00	5.00E-01	2	3.08630E+00		
8	-1.800E+07	-1.39E-01	7.62E+05	1.271E+09	7.860E+00	-6.76E+06	1.42E+07	9.67E+05	-6.00E+00	5.00E-01	2	3.08651E+00		
9	-2.670E+04	8.12E-02	7.62E+05	1.269E+09	7.859E+00	-2.05E+06	4.03E+06	1.65E+06	-5.50E+00	5.00E-01	2	3.08660E+00		
10	9.444E+06	1.62E-01	7.62E+05	1.268E+09	7.860E+00	-1.59E+05	1.09E+05	2.45E+06	-5.00E+00	5.00E-01	2	3.08663E+00		
11	1.036E+07	8.70E-02	7.62E+05	1.268E+09	7.860E+00	1.83E+05	-4.45E+05	3.26E+06	-4.50E+00	5.00E-01	2	3.08663E+00		
12	5.060E+06	7.12E-03	7.62E+05	1.268E+09	7.860E+00	8.93E+04	-1.67E+05	3.63E+06	-4.00E+00	5.00E-01	2	3.08662E+00		
13	1.207E+05	-1.69E-03	7.62E+05	1.268E+09	7.860E+00	1.35E+04	-1.95E+04	3.63E+06	-3.50E+00	5.00E-01	2	3.08662E+00		
14	1.490E+06	0.	7.62E+05	1.268E+09	7.860E+00	3.10E+04	-5.99E+04	3.63E+06	-3.00E+00	5.00E-01	2	3.08662E+00		

15	2.334E+06	1.24E-02	7.62E+05	1.268E+09	7.860E+00	2.29E+05	-9.40E+04	3.63E+06	-2.50E+00	5.00E-01	2.3.00662E+00
16	7.633E+07	5.65E-03	7.62E+05	1.268E+09	7.860E+00	2.29E+05	-1.49E+07	3.76E+06	-2.00E+00	5.00E-01	2.3.00675E+00
17	5.195E+08	2.32E+00	7.62E+05	1.268E+09	7.860E+00	2.29E+05	-3.02E+07	3.65E+06	-1.50E+00	5.00E-01	2.3.00697E+00
18	5.195E+09	2.09E+00	7.62E+05	1.270E+09	7.884E+00	2.47E+09	-1.59E+09	2.75E+07	-1.00E+00	5.00E-01	2.3.09612E+00
19	1.455E+10	2.02E+02	7.54E+05	1.324E+09	7.924E+00	2.47E+09	-2.89E+09	4.21E+07	-5.00E-01	5.00E-01	2.3.11182E+00
20	1.508E+11	5.33E+02	7.38E+05	3.188E+09	8.414E+00	1.66E+09	-3.87E+09	5.91E+06	0.	5.00E-01	2.3.30485E+00
21	5.306E+11	1.03E+03	6.54E+05	1.077E+10	3.245E+00	1.20E+09	-2.50E+09	-1.45E+06	5.00E-01	5.00E-01	2.3.63095E+00
22	4.810E+11	9.73E+02	4.28E+05	1.272E+11	5.235E+00	1.09E+09	-2.21E+09	0.	1.00E+00	5.00E-01	2.6.36353E-01
23	5.579E+10	1.76E+02	9.38E+04	4.167E+10	2.822E+00	3.60E+09	-7.05E+09	1.83E+06	1.50E+00	5.00E-01	3.1.10811E+00
24	1.767E+03	1.30E+01	3.46E+03	1.166E+09	2.245E+00	6.74E+08	-1.21E+09	-1.20E+06	2.00E+00	5.00E-01	3.8.15673E-01
25	9.363E+07	8.68E-01	1.30E+02	7.811E+08	2.201E+00	2.14E+07	-3.76E+07	-9.99E+04	2.50E+00	5.00E-01	3.8.64494E-01
26	5.273E+05	2.25E-02	4.53E+00	7.810E+08	2.200E+00	7.71E+05	-1.35E+06	-3.99E+03	3.00E+00	5.00E-01	3.8.63964E-01
27	1.140E+05	1.44E-08	1.59E-01	7.810E+08	2.200E+00	1.09E+04	-3.03E+04	-6.22E+01	3.50E+00	5.00E-01	3.8.63995E-01
28	1.013E+06	0.	2.82E-03	7.810E+08	2.200E+00	4.63E+02	-7.58E+02	-1.53E-05	4.90E+00	5.00E-01	3.8.63938E-01
29	1.013E+06	0.	1.08E-12	7.810E+08	2.200E+00	1.77E+07	-6.58E+06	-5.73E-15	5.00E+00	5.00E-01	3.8.63938E-01
30	1.013E+06	0.	0.	7.810E+08	2.200E+00	0.	0.	0.	5.50E+00	5.00E-01	3.8.63938E-01
31	1.013E+06	0.	0.	7.810E+08	2.200E+00	0.	0.	0.	6.00E+00	5.00E-01	3.8.63938E-01
32	1.013E+06	0.	0.	7.810E+08	2.200E+00	0.	0.	0.	6.50E+00	5.00E-01	3.8.63938E-01
33	1.013E+06	0.	0.	7.810E+08	2.200E+00	0.	0.	0.	7.00E+00	5.00E-01	3.8.63938E-01
34	1.013E+06	0.	0.	7.810E+08	2.200E+00	0.	0.	0.	7.50E+00	5.00E-01	3.8.63938E-01
35	1.013E+06	0.	0.	7.810E+08	2.200E+00	0.	0.	0.	8.00E+00	5.00E-01	3.8.63938E-01
36	1.013E+06	0.	0.	7.810E+08	2.200E+00	0.	0.	0.	8.50E+00	5.00E-01	3.8.63938E-01
37	1.013E+06	0.	0.	7.810E+08	2.200E+00	0.	0.	0.	9.00E+00	5.00E-01	3.8.63938E-01
38	1.013E+06	0.	0.	7.810E+08	2.200E+00	0.	0.	0.	9.50E+00	5.00E-01	3.8.63938E-01
39	1.013E+06	0.	0.	7.810E+08	2.200E+00	0.	0.	0.	1.00E+01	5.00E-01	3.8.63938E-01
40	1.013E+06	0.	0.	7.810E+08	2.200E+00	0.	0.	0.	1.00E+01	5.00E-01	3.8.63938E-01

235

ENERGY MAP

ALTITUDE

12345678901234567890

- 1 -9.500E-02
- 2 -8.000E-02
- 3 -8.500E-02
- 4 -8.000E-02
- 5 -7.500E-02
- 6 -7.000E-02

- L 7 B
- 8 -6.500E-02
- 6.000E-02

- L 9
- 10 B
- 11 T
- 12 B
- L

METERS

- 9.500E-02
- 8.000E-02
- 8.500E-02
- 8.000E-02
- 7.500E-02
- 7.000E-02

MATERIAL MAP

12345678901234567890

+ + +

ALTIUDE

12345678901234567890

METERS

1 + + + + + -9.500E-02  
 2 + + + + + -9.000E-02  
 3 + + + + + -8.500E-02  
 4 + + + + + -8.000E-02  
 5 + + + + + -7.500E-02  
 6 + + + + + -7.000E-02

L

XX

X

L

X

X

X

X

L

X

XX

X

L

-3.500E-02  
 -3.000E-02  
 -2.500E-02  
 -2.000E-02

-1.500E-02  
 -1.000E-02  
 -5.000E-03  
 0.

5.000E-03  
 1.000E-02  
 1.500E-02

2.000E-02  
 2.500E-02  
 3.000E-02  
 3.500E-02

4.000E-02  
 4.500E-02  
 5.000E-02  
 5.500E-02

6.000E-02  
 6.500E-02  
 7.000E-02  
 7.500E-02

8.000E-02  
 8.500E-02  
 9.000E-02  
 9.500E-02

1.000E-01

13 TT  
 14 BB  
 15 B B  
 16 B

L T  
 18 B B  
 19 TTTT  
 20 BB BB

L BTT TT  
 21

L T  
 22

L TT  
 23

L  
 24  
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L B  
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L B  
 30  
 31

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 32  
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 34  
 35

L  
 36  
 37

L  
 38  
 39

L BB  
 40

X  
 17 XX+++++ -1.500E-02  
 X  
 18 XX+++++ -1.000E-02  
 X  
 19 XX+++++ -5.000E-03  
 X  
 20 XX+++++ 0.  
 L  
 X0000  
 21 XX+++++ 5.000E-03  
 L  
 X0  
 22 XX00000000000000000000 1.000E-02  
 L  
 00  
 23 0000000000000000000000 1.500E-02  
 L  
 24 000000000000000000000000 2.000E-02  
 25 000000000000000000000000 2.500E-02  
 L  
 26 000000000000000000000000 3.000E-02  
 27 000000000000000000000000 3.500E-02  
 L  
 28 000000000000000000000000 4.000E-02  
 29 000000000000000000000000 4.500E-02  
 L  
 30 000000000000000000000000 5.000E-02  
 31 000000000000000000000000 5.500E-02  
 L  
 32 000000000000000000000000 6.000E-02  
 33 000000000000000000000000 6.500E-02  
 L  
 34 000000000000000000000000 7.000E-02  
 35 000000000000000000000000 7.500E-02

```

36 00000000000000000000000000000000 8.000E-02
37 00000000000000000000000000000000 6.500E-02

L
38 00000000000000000000000000000000 9.000E-02
39 00000000000000000000000000000000 9.500E-02

L
40 00000000000000000000000000000000 1.000E-01
12345678901234567890

***HYDRO - NEGATIVE ENERGY IN I 1 J 4 XI(N) = 1.0000000E+08 KE(N+1) = -5.8770806E+08 KE(N+1) = 1.9085549E+06
***HYDRO - NEGATIVE ENERGY IN I 2 J 4 XI(N) = 1.0000000E+08 KE(N+1) = -5.8701807E+08 KE(N+1) = 1.9218700E+06
NEG ENERGY AT I = 1 J = 4
P = 1.412616847894508E+04 U = 0.
XI = -5.843203428206253E+08 XM = 1.335618710852906E-04 V = 4.582734494789324E-01
XM = 1.335618710852906E-04
NEG ENERGY AT I = 2 J = 4
P = 1.414758811875063E+04 U = -6.093325106367651E-01 V = 4.521212237146379E-01
XI = -5.814709189185791E+08 XM = 4.015165437918199E-04
XM = 4.015165437918199E-04
CYCLE 11 TIME 1.1386E-06 DT 1.003E-07 IDT 2 JDT 21
***HYDRO - NEGATIVE ENERGY IN I 1 J 4 XI(N) = 1.0000000E+08 KE(N+1) = -3.9913402E+08 KE(N+1) = 1.2153772E+06
***HYDRO - NEGATIVE ENERGY IN I 2 J 4 XI(N) = 1.0000000E+08 KE(N+1) = -3.9817922E+08 KE(N+1) = 1.2230524E+06
NEG ENERGY AT I = 1 J = 4
P = 1.329110573044759E+04 U = 0.
XI = -3.96474517007337E+08 XM = 1.256768685908334E-04 V = 5.389827609870821E-01
XM = 1.256768685908334E-04
NEG ENERGY AT I = 2 J = 4
P = 1.332203996619700E+04 U = -7.159016948587009E-01 V = 5.278234097349497E-01
XI = -3.93600475308416E+08 XM = 3.781238378901628E-04
XM = 3.781238378901645E-04
CYCLE 12 TIME 1.2469E-06 DT 8.564E-08 IDT 2 JDT 21
***HYDRO - NEGATIVE ENERGY IN I 1 J 4 XI(N) = 1.0000000E+08 KE(N+1) = -2.6479061E+08 KE(N+1) = 7.5263467E+05
***HYDRO - NEGATIVE ENERGY IN I 2 J 4 XI(N) = 1.0000000E+08 KE(N+1) = -2.6377330E+08 KE(N+1) = 7.5702830E+05
NEG ENERGY AT I = 1 J = 4
P = 1.270770763203513E+04 U = 0.
XI = -2.627637656055701E+08 XM = 1.201637459294354E-04 V = 5.677898381505706E-01
XM = 1.201637459294358E-04
NEG ENERGY AT I = 2 J = 4
P = 1.27476847578352E+04 U = -7.53484232759368E-01 V = 5.524284762714409E-01
XI = -2.580394804981497E+08 XM = 3.618205946321947E-04
XM = 3.618205946321982E-04
CYCLE 13 TIME 1.3325E-06 DT 6.016E-08 IDT 2 JDT 21
***HYDRO - NEGATIVE ENERGY IN I 1 J 4 XI(N) = 1.0000000E+08 KE(N+1) = -1.6982535E+08 KE(N+1) = 4.6318388E+05
***HYDRO - NEGATIVE ENERGY IN I 2 J 4 XI(N) = 1.0000000E+08 KE(N+1) = -1.6881882E+08 KE(N+1) = 4.6562229E+05
NEG ENERGY AT I = 1 J = 4
P = 1.228664446390443E+04 U = 0.
XI = -1.68251986133014E+08 XM = 1.161820014996563E-04 V = 5.573149021873967E-01
XM = 1.161820014986563E-04
NEG ENERGY AT I = 2 J = 4
P = 1.233464139000978E+04 U = -7.39919422122770E-01 V = 5.392832060183466E-01
XM = 1.1657777714424181E+08 XM = 3.520945716603232E-04
XI = -1.657777714424181E+08

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XH= 3.500845716605267E-04 0.  
 CYCLE 14 TIME 1.4007E-06 DT 5.436E-08 IDT 2 JDT 21  
 \*\*HYDRO - NEGATIVE ENERGY IN I 1 J 4 XI(N)= 1.0000000E+08 XI(N+1)= -1.0556148E+08 KE(N+1)= 2.9120464E+05  
 \*\*HYDRO - NEGATIVE ENERGY IN I 2 J 4 XI(N)= 1.0000000E+08 XI(N+1)= -1.0462339E+08 KE(N+1)= 2.9263735E+05  
 NEG ENERGY AT I= 1 J= 4  
 P= 1.197366890286189E+04 U= 0.  
 XI= -1.043290270308000E+08 XH= 1.132203642355716E-04  
 XH= 1.132203642355716E-04 0.  
 NEG ENERGY AT I= 2 J= 4  
 P= 1.202875462126800E+04 U= -6.887016757906602E-01 V= 5.009134670572060E-01  
 XI= -1.021399336528954E+08 XH= 3.413741592127404E-04  
 XH= 3.413741592127439E-04 0.  
 CYCLE 15 TIME 1.4550E-06 DT 4.336E-08 IDT 2 JDT 21  
 \*\*HYDRO - NEGATIVE ENERGY IN I 1 J 4 XI(N)= 1.0000000E+08 XI(N+1)= -5.7833218E+07 KE(N+1)= 1.8279634E+05  
 \*\*HYDRO - NEGATIVE ENERGY IN I 2 J 4 XI(N)= 1.0000000E+08 XI(N+1)= -5.6993740E+07 KE(N+1)= 1.8361146E+05  
 NEG ENERGY AT I= 1 J= 4  
 P= 1.173738416961336E+04 U= 0.  
 XI= -5.685792965976095E+07 XH= 1.109921710458731E-04  
 XH= 1.109921710458731E-04 0.  
 NEG ENERGY AT I= 2 J= 4  
 P= 1.179853771694290E+04 U= -6.187004703495020E-01 V= 4.486184985387034E-01  
 XI= -5.497454735054635E+07 XH= 3.348004216226923E-04  
 XH= 3.348004216226958E-04 0.  
 CYCLE 16 TIME 1.4984E-06 DT 3.458E-08 IDT 2 JDT 21  
 \*\*HYDRO - NEGATIVE ENERGY IN I 1 J 4 XI(N)= 1.0000000E+08 XI(N+1)= -2.1970454E+07 KE(N+1)= 1.1468983E+05  
 \*\*HYDRO - NEGATIVE ENERGY IN I 2 J 4 XI(N)= 1.0000000E+08 XI(N+1)= -2.1240756E+07 KE(N+1)= 1.1515500E+05  
 NEG ENERGY AT I= 1 J= 4  
 P= 1.155696979681007E+04 U= 0.  
 XI= -2.119908461071277E+07 XH= 1.092721223579477E-04  
 XH= 1.092721223579477E-04 0.  
 NEG ENERGY AT I= 2 J= 4  
 P= 1.16232308527376E+04 U= -5.405840068288542E-01 V= 3.909921246941899E-01  
 XI= -1.968540066143391E+07 XH= 3.298019377478423E-04  
 XH= 3.298019377478440E-04 0.  
 CYCLE 17 TIME 1.5330E-06 DT 2.756E-08 IDT 2 JDT 21  
 \*\*HYDRO - NEGATIVE ENERGY IN I 1 J 4 XI(N)= 1.0000000E+08 XI(N+1)= -9.6371879E+07 KE(N+1)= 3.1705892E+05  
 \*\*HYDRO - NEGATIVE ENERGY IN I 2 J 4 XI(N)= 5.7450067E+06 XI(N+1)= -9.4326325E+07 KE(N+1)= 3.1807748E+05  
 NEG ENERGY AT I= 1 J= 4  
 P= 6.482290919655024E+02 U= 0.  
 XI= -9.540142048643732E+07 XH= 1.0654542393070721E-04  
 XH= 1.0654542393070725E-04 0.  
 NEG ENERGY AT I= 2 J= 4  
 P= 8.040206062152793E+02 U= -5.498941309592186E-01 V= 3.962248347179411E-01  
 XI= -9.24908023037866E+07 XH= 3.218394687492868E-04  
 XH= 3.218394687492902E-04 0.  
 CYCLE 19 TIME 1.5909E-06 DT 2.420E-08 IDT 2 JDT 21  
 \*\*HYDRO - NEGATIVE ENERGY IN I 1 J 4 XI(N)= 2.0847865E+07 XI(N+1)= -6.5161726E+07 KE(N+1)= 2.3892760E+05  
 \*\*HYDRO - NEGATIVE ENERGY IN I 2 J 4 XI(N)= 2.2125866E+07 XI(N+1)= -6.3195676E+07 KE(N+1)= 2.3954884E+05  
 NEG ENERGY AT I= 1 J= 4  
 P= 2.301996883858999E+03 U= 0.  
 XI= -6.431360082516026E+07 XH= 1.042861911189270E-04  
 XH= 1.042861911189270E-04 0.

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NEG ENERGY AT I= 2 J= 4
P= 2.451121827989948E+03 U= -5.457868982114511E-01 V= 3.919186788394722E-01
XI= -6.154947169032574E+07 XM= 3.152641149924921E-04
XM= 3.152641149924955E-04 0.
CYCLE 21 TIME 1.6418E-06 DT 2.125E-08 IDT 2 JDT 21
CYCLE 22 TIME 1.6631E-06 DT 2.342E-08 IDT 2 JDT 21
**HYDRO - NEGATIVE ENERGY IN I 1 J 4 XI(N)= 3.3268588E+07 XI(N+1)= -3.9468181E+07 KE(N+1)= 1.7999117E+05
**HYDRO - NEGATIVE ENERGY IN I 2 J 4 XI(N)= 3.4466354E+07 XI(N+1)= -3.7688443E+07 KE(N+1)= 1.8834904E+05
NEG ENERGY AT I= 1 J= 4
P= 3.685517347941443E+03 U= 0. V= 4.026788826385553E-01
XI= -3.871771529191841E+07 XM= 1.024806852465725E-04
XM= 1.024806852465725E-04 0.
CYCLE 23 TIME 1.6865E-06 DT 1.564E-08 IDT 2 JDT 21
CYCLE 24 TIME 1.7051E-06 DT 2.854E-08 IDT 2 JDT 21
**HYDRO - NEGATIVE ENERGY IN I 1 J 4 XI(N)= 4.3513713E+07 XI(N+1)= -1.8198397E+07 KE(N+1)= 1.3562837E+05
**HYDRO - NEGATIVE ENERGY IN I 2 J 4 XI(N)= 4.4637479E+07 XI(N+1)= -1.6453774E+07 KE(N+1)= 1.3581144E+05
CYCLE 25 TIME 1.7257E-06 DT 1.635E-08 IDT 2 JDT 21
CYCLE 26 TIME 1.7428E-06 DT 1.759E-08 IDT 2 JDT 22
CYCLE 27 TIME 1.7596E-06 DT 1.937E-08 IDT 2 JDT 22
**HYDRO - NEGATIVE ENERGY IN I 1 J 4 XI(N)= 1.1514572E+06 XI(N+1)= -5.4479534E+07 KE(N+1)= 2.4517698E+05
**HYDRO - NEGATIVE ENERGY IN I 2 J 4 XI(N)= 3.3428986E+06 XI(N+1)= -5.1665792E+07 KE(N+1)= 2.4528554E+05
CYCLE 28 TIME 1.7790E-06 DT 1.541E-08 IDT 2 JDT 22
CYCLE 29 TIME 1.7944E-06 DT 1.697E-08 IDT 2 JDT 22
CYCLE 30 TIME 1.8113E-06 DT 1.878E-08 IDT 2 JDT 22
**HYDRO - NEGATIVE ENERGY IN I 1 J 4 XI(N)= 9.7345146E+06 XI(N+1)= -4.1753411E+07 KE(N+1)= 2.1875343E+05
**HYDRO - NEGATIVE ENERGY IN I 2 J 4 XI(N)= 1.1972288E+07 XI(N+1)= -3.8878418E+07 KE(N+1)= 2.1865916E+05
CYCLE 31 TIME 1.8308E-06 DT 1.488E-08 IDT 2 JDT 22
CYCLE 32 TIME 1.8448E-06 DT 1.648E-08 IDT 2 JDT 22
CYCLE 33 TIME 1.8613E-06 DT 1.886E-08 IDT 2 JDT 22
**HYDRO - NEGATIVE ENERGY IN I 1 J 4 XI(N)= 1.6472716E+07 XI(N+1)= -3.1267599E+07 KE(N+1)= 1.9824967E+05
**HYDRO - NEGATIVE ENERGY IN I 2 J 4 XI(N)= 1.8772165E+07 XI(N+1)= -2.8382975E+07 KE(N+1)= 1.9798362E+05
CYCLE 34 TIME 1.8794E-06 DT 1.438E-08 IDT 2 JDT 22
CYCLE 35 TIME 1.8938E-06 DT 1.585E-08 IDT 2 JDT 22
CYCLE 36 TIME 1.9096E-06 DT 1.746E-08 IDT 2 JDT 22
**HYDRO - NEGATIVE ENERGY IN I 1 J 4 XI(N)= 2.2577718E+07 XI(N+1)= -2.1759897E+07 KE(N+1)= 1.7986874E+05
**HYDRO - NEGATIVE ENERGY IN I 2 J 4 XI(N)= 2.4838343E+07 XI(N+1)= -1.8725254E+07 KE(N+1)= 1.7944912E+05
CYCLE 37 TIME 1.9271E-06 DT 1.398E-08 IDT 2 JDT 22
CYCLE 38 TIME 1.9418E-06 DT 1.532E-08 IDT 2 JDT 22
CYCLE 39 TIME 1.9563E-06 DT 1.686E-08 IDT 2 JDT 22
**HYDRO - NEGATIVE ENERGY IN I 1 J 4 XI(N)= 2.8129091E+07 XI(N+1)= -1.3188360E+07 KE(N+1)= 1.6331499E+05
**HYDRO - NEGATIVE ENERGY IN I 2 J 4 XI(N)= 3.0526239E+07 XI(N+1)= -1.0815774E+07 KE(N+1)= 1.6278141E+05
CYCLE 40 TIME 1.9732E-06 DT 1.475E-08 IDT 2 JDT 22
CYCLE 41 TIME 1.9879E-06 DT 1.207E-08 IDT 2 JDT 22
CYCLE 42 TIME 2.0000E-06 DT 1.633E-08 IDT 2 JDT 22

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+
+
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*****
+
PROD 1.3800 CYCLE 42 TIME 2.000000E-06 DT 1.633103E-08
INTERNAL ENERGY KINETIC ENERGY TOTAL ENERGY ETH REL ERROR
+
+

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+ 0.19923365984778E+12 5.42632675569817E+13 6.24025012168295E+13 6.24799684429785E+13 3.65990417808626E+01  
 + TOTAL MASS MTH RELMERR  
 + 6.43844433782540E+03 6.43844433782576E+03 8.58860851571307E-08

+ MAX VEL = 7.62804E+05 AT I 2 J 14  
 + MAX CS = 7.17223E+05 AT I 1 J 23  
 + MAX TEMP = 1.82646E+04 AT I 4 J 21  
 + MAX P = 7.23750E+11 AT I 2 J 23  
 + CELL SETTING DT, I 2 J 22

+ TOTAL TIME FOR THIS PROBLEM 0 HOURS, 0 MIN, 15 SEC  
 + OF THIS 0 HOURS, 0 MIN, 8 SEC IS 6600 TIME.  
 + AND 0 HOURS, 0 MIN, 15 SEC IS 7600/176 TIME.

+ TIME FOR THIS RUN 0 HOURS, 0 MIN, 41 SEC  
 + LM12 FACTOR TOTAL PROBLEM = 4.65E-04 SEC/CELL/CYCLE  
 + LM12 FACTOR SINCE LAST DUMP = 4.69E-04 SEC/CELL/CYCLE

+ I = 1 X(I) = .500 DX(I) = .500

J	P	U	V	XI	LD	SRR	SZZ	SRZ	Y	DY	M	XM	M	XM
1	1.013E+06	0.	0.	2.044E+09	1.225E-03	0.	0.	0.	-9.50E+00	5.00E-01	1	4.81056E-04		
2	1.011E+06	-1.84E-08	7.82E-01	2.043E+09	1.223E-03	0.	0.	0.	-9.00E+00	5.00E-01	1	4.80321E-04		
3	1.012E+06	-9.26E-09	1.92E+03	2.043E+09	1.224E-03	0.	0.	0.	-8.50E+00	5.00E-01	1	4.80645E-04		
4	3.536E+03	-2.80E-02	-3.28E+02	3.656E+07	2.326E-04	0.	0.	0.	-8.00E+00	5.00E-01	1	9.13333E-05		
5	3.153E+06	7.84E+00	3.47E+05	6.430E+10	2.305E-04	0.	0.	0.	-7.50E+00	5.00E-01	1	9.05721E-05		
6	4.566E+06	1.94E+00	5.95E+05	6.700E+10	3.199E-04	0.	0.	0.	-7.00E+00	5.00E-01	1	1.25636E-04		
7	5.494E+06	2.85E+00	7.54E+05	5.851E+10	4.202E-04	0.	0.	0.	-6.50E+00	5.00E-01	1	1.65011E-04		
8	5.512E+06	2.89E+00	7.62E+05	1.281E+09	7.484E+00	-1.58E+07	3.36E+07	0.	-6.00E+00	5.00E-01	1	7.94547E-06		
9	-2.750E+07	1.10E+00	7.62E+05	1.276E+09	7.859E+00	-1.53E+07	3.23E+07	0.	-5.50E+00	5.00E-01	2	3.89637E+00		
10	-1.731E+07	9.82E-01	7.62E+05	1.272E+09	7.860E+00	-1.04E+07	2.15E+07	5.04E+06	-5.00E+00	5.00E-01	2	3.08649E+00		
11	1.529E+06	1.50E+00	7.62E+05	1.265E+09	7.860E+00	-4.91E+06	9.75E+06	7.63E+06	-4.50E+00	5.00E-01	2	3.08658E+00		
12	1.838E+07	2.09E+00	7.62E+05	1.269E+09	7.860E+00	-9.15E+05	1.34E+06	1.03E+07	-4.00E+00	5.00E-01	2	3.08664E+00		
13	2.937E+07	2.36E+00	7.62E+05	1.268E+09	7.860E+00	1.41E+06	-3.34E+06	1.38E+07	-3.50E+00	5.00E-01	2	3.08666E+00		
14	4.303E+07	2.19E+00	7.62E+05	1.258E+09	7.860E+00	4.82E+06	-9.99E+06	1.79E+07	-3.00E+00	5.00E-01	2	3.08669E+00		
15	8.771E+07	2.00E+00	7.62E+05	1.258E+09	7.860E+00	1.47E+07	-2.85E+07	2.15E+07	-2.50E+00	5.00E-01	2	3.08677E+00		
16	4.764E+08	1.39E+00	7.62E+05	1.268E+09	7.862E+00	1.14E+08	-2.24E+08	3.04E+07	-2.00E+00	5.00E-01	2	3.08749E+00		
17	1.657E+09	1.45E+01	7.61E+05	1.269E+09	7.861E+00	4.44E+08	-8.41E+08	2.98E+07	-1.50E+00	5.00E-01	2	3.08965E+00		
18	8.997E+09	1.14E+01	7.59E+05	1.281E+09	7.901E+00	1.60E+09	-3.13E+09	3.19E+07	-1.00E+00	5.00E-01	2	3.10277E+00		
19	3.674E+10	6.88E+01	7.51E+05	1.450E+09	8.016E+00	1.58E+09	-3.12E+09	3.04E+07	-1.25E+07	5.00E-01	2	3.14801E+00		
20	1.176E+11	1.70E+02	7.26E+05	2.925E+09	8.270E+00	1.53E+09	-3.04E+09	2.21E+06	0.	5.00E-01	2	3.24770E+00		
21	2.824E+11	1.22E+03	6.75E+05	7.564E+09	8.633E+00	1.43E+09	-2.85E+09	1.45E+07	5.00E-01	5.00E-01	2	3.39017E+00		

	1	2
22	4.910E+11	2.30E+03
23	6.833E+11	8.51E+02
24	2.368E+11	-1.25E+02
25	1.632E+10	3.66E+01
26	1.148E+09	4.92E+00
27	7.575E+07	5.91E-01
28	6.832E+06	2.66E-02
29	1.273E+06	3.67E-09
30	1.027E+06	0.
31	1.013E+06	0.
32	1.013E+06	0.
33	1.013E+06	0.
34	1.013E+06	0.
35	1.013E+06	0.
36	1.013E+06	0.
37	1.013E+06	0.
38	1.013E+06	0.
39	1.013E+06	0.
40	1.013E+06	0.

+ +

242

ALTIITUDE

12345678901234567890

METERS

1	-9.500E-02
2	-9.000E-02
3	-8.500E-02
4	-8.000E-02
5	-7.500E-02
6	-7.000E-02
7	-6.500E-02
8	-6.000E-02
9	-5.500E-02
10	-5.000E-02
11	-4.500E-02
12	-4.000E-02
13	-3.500E-02
14	-3.000E-02
15	-2.500E-02
16	-2.000E-02
17	-1.500E-02
18	-1.000E-02

ENERGY MAP

1	1.27E+09	-2.53E+09	-2.05E+07	1.00E+00	5.00E-01	3.59277E+00
2	1.34E+09	-2.70E+09	0.	1.50E+00	5.00E-01	8.77848E-01
3	3.54E+09	-7.05E+09	4.77E+07	2.00E+00	5.00E-01	1.47534E+00
4	3.56E+09	-7.05E+09	1.76E+07	2.50E+00	5.00E-01	1.80562E+00
5	4.51E+08	-9.13E+08	-1.17E+06	3.00E+00	5.00E-01	8.74665E-01
6	3.44E+07	-6.00E+07	-1.60E+05	3.50E+00	5.00E-01	8.54387E-01
7	2.28E+06	-4.51E+06	-1.29E+04	4.00E+00	5.00E-01	8.63969E-01
8	1.16E+05	-2.30E+05	-2.90E+02	4.50E+00	5.00E-01	8.63948E-01
9	6.09E+03	-1.21E+04	6.92E-01	5.00E+00	5.00E-01	8.63938E-01
10	1.12E+02	-2.24E+02	9.66E-10	5.50E+00	5.00E-01	8.63938E-01
11	0.	-5.63E-08	0.	6.00E+00	5.00E-01	8.63938E-01
12	0.	0.	0.	6.50E+00	5.00E-01	8.63938E-01
13	0.	0.	0.	7.00E+00	5.00E-01	8.63938E-01
14	0.	0.	0.	7.50E+00	5.00E-01	8.63938E-01
15	0.	0.	0.	8.00E+00	5.00E-01	8.63938E-01
16	0.	0.	0.	8.50E+00	5.00E-01	8.63938E-01
17	0.	0.	0.	9.00E+00	5.00E-01	8.63938E-01
18	0.	0.	0.	9.50E+00	5.00E-01	8.63938E-01

1.43646E+00



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X 0000
21 XX+0+00000000000000000000 5.000E-03
L
X0 0
0
22 XXX000000000000000000000 1.000E-02
0
23 XX0000000000000000000000 1.500E-02
L
00
24 00000000500000000000000000 2.000E-02
25 00000000000000000000000000 2.500E-02
L
26 00000000000000000000000000 3.000E-02
27 00000000000000000000000000 3.500E-02
L
28 00000000000000000000000000 4.000E-02
29 00000000000000000000000000 4.500E-02
L
30 00000000000000000000000000 5.000E-02
31 00000000000000000000000000 5.500E-02
L
32 00000000000000000000000000 6.000E-02
33 00000000000000000000000000 6.500E-02
L
34 00000000000000000000000000 7.000E-02
35 00000000000000000000000000 7.500E-02
L
36 00000000000000000000000000 8.000E-02
37 00000000000000000000000000 8.500E-02
L
38 00000000000000000000000000 9.000E-02
39 00000000000000000000000000 9.500E-02
L
40 00000000000000000000000000 1.000E-01
12345678901234567890
2

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**HYDRO - NEGATIVE ENERGY IN I I J 4 XI(N) = 3.6562996E+07 XI(N+1) = -1.8935371E+06 KE(N+1) = 1.3903898E+05
CYCLE 43 TIME 2.0163E-06 DT 1.530E-08 IDT 2 JDT 22
**HYDRO - NEGATIVE ENERGY IN I 2 J 4 XI(N) = 2.4126409E+06 XI(N+1) = -3.2423277E+07 KE(N+1) = 2.5267995E+05

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CYCLE 44	TIME 2.0316E-06	DT 1.433E-08	IDT 2	JDT 22					
CYCLE 45	TIME 2.0460E-06	DT 1.580E-08	IDT 2	JDT 22					
***HYDRO -	NEGATIVE ENERGY IN 1	J 4 XI(N) =							
CYCLE 46	TIME 2.0618E-06	DT 1.480E-08	IDT 2	JDT 22					1.4967899E+05
CYCLE 47	TIME 2.0766E-06	DT 1.631E-08	IDT 2	JDT 22					
***HYDRO -	NEGATIVE ENERGY IN 1	J 4 XI(N) =							
CYCLE 48	TIME 2.0929E-06	DT 1.528E-08	IDT 2	JDT 22					2.6641013E+05
***HYDRO -	NEGATIVE ENERGY IN 1	J 4 XI(N) =							
CYCLE 49	TIME 2.1081E-06	DT 1.432E-08	IDT 2	JDT 22					1.5146509E+05
CYCLE 50	TIME 2.1235E-06	DT 1.579E-08	IDT 2	JDT 22					
CYCLE 51	TIME 2.1383E-06	DT 1.740E-08	IDT 2	JDT 22					
***HYDRO -	NEGATIVE ENERGY IN 1	J 4 XI(N) =							
CYCLE 52	TIME 2.1557E-06	DT 1.630E-08	IDT 2	JDT 22					2.6824973E+05
***HYDRO -	NEGATIVE ENERGY IN 1	J 4 XI(N) =							
CYCLE 53	TIME 2.1720E-06	DT 1.528E-08	IDT 2	JDT 22					2.7629215E+05
CYCLE 54	TIME 2.1872E-06	DT 1.684E-08	IDT 1	JDT 21					
CYCLE 55	TIME 2.2041E-06	DT 1.853E-08	IDT 1	JDT 21					
***HYDRO -	NEGATIVE ENERGY IN 1	J 4 XI(N) =							
***HYDRO -	NEGATIVE ENERGY IN 1	J 4 XI(N) =							
CYCLE 56	TIME 2.2226E-06	DT 1.734E-08	IDT 1	JDT 21					1.6731892E+05
***HYDRO -	NEGATIVE ENERGY IN 1	J 4 XI(N) =							
CYCLE 57	TIME 2.2399E-06	DT 1.622E-08	IDT 1	JDT 21					2.9123721E+05
CYCLE 58	TIME 2.2562E-06	DT 1.785E-08	IDT 1	JDT 21					
CYCLE 59	TIME 2.2740E-06	DT 1.965E-08	IDT 1	JDT 21					
***HYDRO -	NEGATIVE ENERGY IN 1	J 4 XI(N) =							
***HYDRO -	NEGATIVE ENERGY IN 1	J 4 XI(N) =							
CYCLE 60	TIME 2.2937E-06	DT 1.836E-08	IDT 1	JDT 21					1.9207644E+04
***HYDRO -	NEGATIVE ENERGY IN 1	J 4 XI(N) =							
CYCLE 61	TIME 2.3120E-06	DT 1.719E-08	IDT 1	JDT 21					
CYCLE 62	TIME 2.3292E-06	DT 1.892E-08	IDT 1	JDT 21					1.7926409E+05
CYCLE 63	TIME 2.3482E-06	DT 2.082E-08	IDT 1	JDT 21					3.1190538E+05
***HYDRO -	NEGATIVE ENERGY IN 1	J 4 XI(N) =							
***HYDRO -	NEGATIVE ENERGY IN 1	J 4 XI(N) =							
CYCLE 64	TIME 2.3690E-06	DT 1.948E-08	IDT 2	JDT 20					2.0524337E+04
***HYDRO -	NEGATIVE ENERGY IN 1	J 4 XI(N) =							
CYCLE 65	TIME 2.3885E-06	DT 1.822E-08	IDT 2	JDT 20					
CYCLE 66	TIME 2.4067E-06	DT 2.004E-08	IDT 2	JDT 20					
CYCLE 67	TIME 2.4267E-06	DT 2.205E-08	IDT 2	JDT 20					
***HYDRO -	NEGATIVE ENERGY IN 1	J 4 XI(N) =							
***HYDRO -	NEGATIVE ENERGY IN 1	J 4 XI(N) =							
CYCLE 68	TIME 2.4488E-06	DT 2.062E-08	IDT 2	JDT 20					3.5114530E+05
***HYDRO -	NEGATIVE ENERGY IN 1	J 4 XI(N) =							
CYCLE 69	TIME 2.4694E-06	DT 1.929E-08	IDT 2	JDT 20					3.6227881E+05
CYCLE 70	TIME 2.4887E-06	DT 2.122E-08	IDT 2	JDT 20					
CYCLE 71	TIME 2.5099E-06	DT 2.335E-08	IDT 2	JDT 20					
***HYDRO -	NEGATIVE ENERGY IN 1	J 4 XI(N) =							
***HYDRO -	NEGATIVE ENERGY IN 1	J 4 XI(N) =							
CYCLE 72	TIME 2.5333E-06	DT 2.184E-08	IDT 2	JDT 20					3.6938285E+05
***HYDRO -	NEGATIVE ENERGY IN 1	J 4 XI(N) =							
CYCLE 73	TIME 2.5551E-06	DT 2.042E-08	IDT 2	JDT 20					3.8194620E+05
CYCLE 74	TIME 2.5755E-06	DT 2.247E-08	IDT 2	JDT 20					
CYCLE 75	TIME 2.5988E-06	DT 2.473E-08	IDT 2	JDT 20					
***HYDRO -	NEGATIVE ENERGY IN 1	J 4 XI(N) =							
***HYDRO -	NEGATIVE ENERGY IN 1	J 4 XI(N) =							
CYCLE 76	TIME 2.6227E-06	DT 2.313E-08	IDT 2	JDT 20					3.8678484E+05
***HYDRO -	NEGATIVE ENERGY IN 1	J 4 XI(N) =							
CYCLE 77	TIME 2.6456E-06	DT 2.163E-08	IDT 2	JDT 20					4.0098503E+05
CYCLE 78	TIME 2.6675E-06	DT 2.388E-08	IDT 2	JDT 20					

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CYCLE 79 TIME 2.6913E-06 DT 2.619E-08 IDT 2 JDT 20
**HYDRO - NEGATIVE ENERGY IN I 2 J 4 XI(N) = 2.0651329E+07 XI(N+1) = -1.1837909E+07 KE(N+1) = 4.0303783E+05
CYCLE 80 TIME 2.7175E-06 DT 2.449E-08 IDT 2 JDT 20
**HYDRO - NEGATIVE ENERGY IN I 1 J 4 XI(N) = 8.7556226E+06 XI(N+1) = -2.2650022E+07 KE(N+1) = 4.1909913E+05
CYCLE 81 TIME 2.7420E-06 DT 2.291E-08 IDT 2 JDT 20
CYCLE 82 TIME 2.7649E-06 DT 2.521E-08 IDT 2 JDT 20
CYCLE 83 TIME 2.7901E-06 DT 2.774E-08 IDT 2 JDT 20
**HYDRO - NEGATIVE ENERGY IN I 2 J 4 XI(N) = 2.4485710E+07 XI(N+1) = -6.9675372E+06 KE(N+1) = 4.1779990E+05
CYCLE 84 TIME 2.8178E-06 DT 2.595E-08 IDT 2 JDT 20
**HYDRO - NEGATIVE ENERGY IN I 1 J 4 XI(N) = 1.1640527E+07 XI(N+1) = -1.8954031E+07 KE(N+1) = 4.3595736E+05
CYCLE 85 TIME 2.8438E-06 DT 2.427E-08 IDT 2 JDT 20
CYCLE 86 TIME 2.8690E-06 DT 2.670E-08 IDT 2 JDT 20
CYCLE 87 TIME 2.8947E-06 DT 2.938E-08 IDT 2 JDT 20
**HYDRO - NEGATIVE ENERGY IN I 2 J 4 XI(N) = 2.8821031E+07 XI(N+1) = -1.4686553E+06 KE(N+1) = 4.3070464E+05
CYCLE 88 TIME 2.9241E-06 DT 3.234E-08 IDT 2 JDT 20
**HYDRO - NEGATIVE ENERGY IN I 1 J 4 XI(N) = 1.4933388E+07 XI(N+1) = -1.9972069E+07 KE(N+1) = 4.9272121E+05
CYCLE 89 TIME 2.9564E-06 DT 2.395E-08 IDT 2 JDT 20
**HYDRO - NEGATIVE ENERGY IN I 2 J 4 XI(N) = 3.8233595E+06 XI(N+1) = -2.8531301E+07 KE(N+1) = 3.8161732E+04
CYCLE 90 TIME 2.9804E-06 DT 1.960E-08 IDT 2 JDT 20
CYCLE 91 TIME 3.0000E-06 DT 3.113E-08 IDT 2 JDT 20

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PROB 1.3000 CYCLE 91 TIME 3.0000E-06 DT 3.113002E-08
INTERNAL ENERGY KINETIC ENERGY TOTAL ENERGY ETH REL ERROR
9.64338479846287E+12 5.28417032065952E+13 6.24850880049690E+13 6.24799684429822E+13 4.14002014063500E+01
TOTAL MASS MTH REL MERR
6.43844433782960E+03 6.43844433782822E+03 9.94470459713665E-08

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MAX VEL = 7.61996E+05 AT I 2 J 13
MAX CS = 6.52919E+05 AT I 2 J 25
MAX TEMP = 1.86100E+04 AT I 4 J 21
MAX P = 4.23700E+11 AT I 2 J 24
CELL SETTING DT, I 2 J 20
TOTAL TIME FOR THIS PROBLEM 0 HOURS, 0 MIN, 34 SEC
OF THIS 0 HOURS, 0 MIN, 0 SEC IS 6600 TIME.
AND 0 HOURS, 0 MIN, 34 SEC IS 7500/176 TIME.
TIME FOR THIS RUN 0 HOURS, 1 MIN, 0 SEC
WHIZ FACTOR TOTAL PROBLEM = 4.75E-04 SEC/CELL/CYCLE

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UNITZ FACTOR SINCE LAST DUMP = 4.33E-04 SEC/CELL/CYCLE

I= 1 X(I)= .500 DX(I)= .500

J	P	U	V	XI	RHO	SRR	SZZ	SRZ	Y	DY	M	XM	M	XM
1	1.013E+06	0.	0.	2.044E+03	1.225E-03	0.	0.	0.	-9.50E+00	5.00E-01	1	4.81055E-04		
2	1.007E+06	-6.04E-07	3.11E+00	2.041E+09	1.220E-03	0.	0.	0.	-9.50E+00	5.00E-01	1	4.79066E-04		
3	1.009E+06	-3.36E-07	3.32E+03	2.041E+09	1.222E-03	0.	0.	0.	-8.50E+00	5.00E-01	1	4.79779E-04		
4	4.399E+03	-1.19E-01	-3.67E+02	5.784E+07	1.830E-04	0.	0.	0.	-8.00E+00	5.00E-01	1	7.18539E-05		
5	1.593E+06	4.54E+01	2.39E+05	5.286E+10	1.353E-04	0.	0.	0.	-7.50E+00	5.00E-01	1	5.31379E-05		
6	2.542E+06	5.79E+00	4.44E+05	7.066E+10	1.741E-04	0.	0.	0.	-7.00E+00	5.00E-01	1	6.83539E-05		
7	3.471E+06	-1.38E+01	6.03E+05	7.085E+10	2.347E-04	0.	0.	0.	-6.50E+00	5.00E-01	1	9.21764E-05		
8	4.311E+06	-6.02E+00	7.16E+05	6.657E+10	3.041E-04	0.	0.	0.	-6.00E+00	5.00E-01	1	1.19434E-04		
9	4.620E+06	6.04E+00	7.62E+05	1.293E+09	3.365E+00	-1.68E+07	3.55E+07	0.	-5.50E+00	5.00E-01	1	7.47136E-05	2	1.32193E+00
10	-1.374E+07	4.89E+00	7.62E+05	1.277E+03	7.859E+00	-1.55E+07	3.50E+07	0.	-5.00E+00	5.00E-01	2	3.88637E+00		
11	-1.992E+07	3.90E+00	7.52E+05	1.274E+03	7.859E+00	-1.45E+07	3.05E+07	6.40E+06	-4.50E+00	5.00E-01	2	3.08643E+00		
12	-1.219E+07	3.76E+00	7.62E+05	1.271E+03	7.860E+00	-9.98E+06	2.04E+07	1.24E+07	-4.00E+00	5.00E-01	2	3.08651E+00		
13	7.537E+05	4.47E+00	7.62E+05	1.270E+03	7.860E+00	-2.71E+06	5.34E+06	1.80E+07	-3.50E+00	5.00E-01	2	3.08659E+00		
14	6.608E+07	5.88E+00	7.62E+05	1.269E+03	7.860E+00	1.40E+07	-2.64E+07	2.33E+07	-3.00E+00	5.00E-01	2	3.08672E+00		
15	2.549E+08	4.82E+00	7.62E+05	1.268E+03	7.861E+00	6.43E+07	-1.27E+08	2.72E+07	-2.50E+00	5.00E-01	2	3.08708E+00		
16	9.131E+08	3.45E+00	7.62E+05	1.268E+03	7.864E+00	2.68E+08	-5.29E+08	3.20E+07	-2.00E+00	5.00E-01	2	3.08829E+00		
17	2.962E+09	3.95E+00	7.61E+05	1.270E+03	7.874E+00	9.70E+08	-1.91E+09	1.34E+07	-1.50E+00	5.00E-01	2	3.09203E+00		
18	9.698E+09	-3.54E+01	7.59E+05	1.265E+03	7.904E+00	1.59E+09	-3.13E+09	-4.46E+07	-1.00E+00	5.00E-01	2	3.18395E+00		
19	2.939E+10	-9.15E+01	7.52E+05	1.410E+03	7.987E+00	1.57E+09	-3.12E+09	-7.05E+07	-5.00E-01	5.00E-01	2	3.13548E+00		
20	6.928E+10	-1.99E+02	7.36E+05	2.102E+03	8.119E+00	1.55E+09	-3.08E+09	1.44E+07	0.	5.00E-01	2	3.18823E+00		
21	1.259E+11	1.17E+03	7.07E+05	4.206E+03	8.233E+00	1.49E+09	-2.97E+09	5.00E+07	5.00E-01	5.00E-01	2	3.23305E+00		
22	1.633E+11	2.75E+03	6.59E+05	6.946E+03	8.232E+00	1.42E+09	-2.84E+09	4.70E+06	1.00E+00	5.00E-01	2	3.23258E+00		
23	1.969E+11	2.90E+03	5.94E+05	8.245E+03	8.292E+00	1.31E+09	-2.59E+09	-8.97E+07	1.50E+00	5.00E-01	2	3.25620E+00		
24	3.945E+11	-2.02E+03	5.22E+05	9.793E+10	5.266E+00	1.42E+09	-2.84E+09	0.	2.00E+00	5.00E-01	2	7.76055E-01	3	1.29176E+00
25	3.217E+11	-5.73E+03	3.51E+05	1.139E+11	4.040E+00	3.54E+09	-7.80E+09	1.36E+06	2.50E+00	5.00E-01	3	1.58655E+00		
26	1.097E+11	-2.49E+03	1.26E+05	3.852E+10	5.009E+00	3.56E+09	-7.05E+09	2.56E+08	3.00E+00	5.00E-01	3	1.18150E+00		
27	4.601E+09	-1.01E+02	1.42E+04	2.585E+09	2.324E+00	1.63E+09	-3.22E+09	5.57E+07	3.50E+00	5.00E-01	3	9.12701E-01		
28	4.333E+08	-1.04E+00	9.68E+02	7.867E+08	2.200E+00	2.12E+08	-4.20E+08	2.85E+06	4.00E+00	5.00E-01	3	8.66903E-01		
29	3.736E+07	-6.54E-02	9.17E+01	7.810E+08	2.201E+00	1.71E+07	-3.38E+07	1.15E+05	4.50E+00	5.00E-01	3	8.64157E-01		
30	4.193E+05	-1.27E-07	7.09E+00	7.810E+08	2.200E+00	1.41E+06	-2.79E+06	6.23E+03	5.00E+00	5.00E-01	3	8.63957E-01		
31	1.242E+06	0.	5.23E-01	7.810E+08	2.200E+00	1.87E+05	-2.04E+05	2.57E+02	5.50E+00	5.00E-01	3	8.63939E-01		
32	1.028E+06	0.	2.96E-02	7.810E+08	2.200E+00	6.61E+03	-1.30E+04	9.20E+00	6.00E+00	5.00E-01	3	8.63938E-01		
33	1.013E+06	0.	1.71E-11	7.810E+08	2.200E+00	2.21E+02	-4.38E+02	2.73E-08	6.50E+00	5.00E-01	3	8.63938E-01		
34	1.013E+06	0.	0.	7.810E+08	2.200E+00	0.	-2.94E-07	0.	7.00E+00	5.00E-01	3	8.63538E-01		
35	1.013E+06	0.	0.	7.810E+08	2.200E+00	0.	0.	0.	7.50E+00	5.00E-01	3	8.63938E-01		
36	1.013E+06	0.	0.	7.810E+08	2.200E+00	0.	0.	0.	8.00E+00	5.00E-01	3	8.63938E-01		
37	1.013E+06	0.	0.	7.810E+08	2.200E+00	0.	0.	0.	8.50E+00	5.00E-01	3	8.63938E-01		
38	1.013E+06	0.	0.	7.810E+08	2.200E+00	0.	0.	0.	9.00E+00	5.00E-01	3	8.63938E-01		
39	1.013E+06	0.	0.	7.810E+08	2.200E+00	0.	0.	0.	9.50E+00	5.00E-01	3	8.63938E-01		
40	1.013E+06	0.	0.	7.810E+08	2.200E+00	0.	0.	0.	1.00E+01	5.00E-01	3	8.63938E-01		

ENERGY MAP

12345678901234567890  
ALTITUDE

METERS  
-9.500E-02  
-9.000E-02  
-8.500E-02  
-8.000E-02  
-7.500E-02  
-7.000E-02  
-6.500E-02  
-6.000E-02  
-5.500E-02

L B  
32 6.000E-02  
33 6.500E-02

L  
34 7.000E-02  
35 7.500E-02  
L  
36 8.000E-02  
37 8.500E-02  
L  
38 9.000E-02  
39 9.500E-02

L  
40 8888 88 888888888888 1.000E-01  
12345678901234567890

+  
+  
+

20 88 TTT  
21 8TT  
22 T8888888  
23 8TTTTTTT

METERS  
-9.500E-02  
-9.000E-02  
-8.500E-02  
-8.000E-02  
-7.500E-02  
-7.000E-02  
-6.500E-02  
-6.000E-02  
-5.500E-02

L  
24 T  
L  
25  
L  
26 TT  
27  
L  
28  
29 B  
L  
30  
31

L  
10 X+++++ 5.000E-02  
X  
11 X+++++ 4.500E-02  
L  
X  
12 X+++++ 4.000E-02

MATERIAL MAP

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X
13 X+++++++ -3.500E-02
X
14 X+++++++ -3.000E-02
X
15 XX+++++++ -2.500E-02
L
X
16 XX+++++++ -2.000E-02
X
17 XX+++++++ -1.500E-02
X
18 XX+++++++ -1.000E-02
X
19 XX+++++++ -5.000E-03
L
X
20 XX+++++++ 0.
X 000000
21 XX++++0000000000000000 5.000E-03
XD
0
22 XXXXXXX0000000000000000 1.000E-02
0
23 XXXXXXX0000000000000000 1.500E-02
L
0
24 XXXXXXX0000000000000000 2.000E-02
L
00
25 000000000000000000000000 2.500E-02
L
26 000000000000000000000000 3.000E-02
27 000000000000000000000000 3.500E-02
L

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28 000000000000000000000000 4.800E-02
29 000000000000000000000000 4.500E-02
L
30 000000000000000000000000 5.000E-02
31 000000000000000000000000 5.500E-02
L
32 000000000000000000000000 6.000E-02
33 000000000000000000000000 6.500E-02
L
34 000000000000000000000000 7.000E-02
35 000000000000000000000000 7.500E-02
L
36 000000000000000000000000 8.000E-02
37 000000000000000000000000 8.500E-02
L
38 000000000000000000000000 9.000E-02
39 000000000000000000000000 9.500E-02
L
40 000000000000000000000000 1.000E-01
12345678901234567890
CYCLE 92 TIME 3.0311E-06 DT 3.426E-08
**HYDRO - NEGATIVE ENERGY IN I 1 J 4 XI(N) =
CYCLE 93 TIME 3.0654E-06 DT 3.204E-08
**HYDRO - NEGATIVE ENERGY IN I 2 J 4 XI(N) =
CYCLE 94 TIME 3.0974E-06 DT 2.998E-08
CYCLE 95 TIME 3.1274E-06 DT 3.299E-08
CYCLE 96 TIME 3.1604E-06 DT 3.630E-08
**HYDRO - NEGATIVE ENERGY IN I 1 J 4 XI(N) =
CYCLE 97 TIME 3.1967E-06 DT 3.396E-08
CYCLE 98 TIME 3.2307E-06 DT 3.737E-08
**HYDRO - NEGATIVE ENERGY IN I 2 J 4 XI(N) =
CYCLE 99 TIME 3.2680E-06 DT 3.495E-08
CYCLE 100 TIME 3.3030E-06 DT 3.847E-08
**HYDRO - NEGATIVE ENERGY IN I 1 J 4 XI(N) =
CYCLE 101 TIME 3.3415E-06 DT 3.599E-08
CYCLE 102 TIME 3.3775E-06 DT 3.961E-08
CYCLE 103 TIME 3.4171E-06 DT 4.359E-08
**HYDRO - NEGATIVE ENERGY IN I 2 J 4 XI(N) =
CYCLE 104 TIME 3.4607E-06 DT 4.797E-08
+
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*
* CSTOP *
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* *****
+

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PROB 1.3000 CYCLE 104 TIME 3.460653E-06 DT 4.797493E-08

INTERNAL ENERGY KINETIC ENERGY TOTAL ENERGY ETH REL ERROR  
 1.03067052737724E+13 5.2178930644235E+13 6.24856359181957E+13 6.24799684429907E+13 1.90353609812002E+01

TOTAL MASS MTH REL ERR  
 6.43844433783303E+03 6.43844433783152E+03 7.85027584953087E-08

MAX VEL = 7.01989E+05 AT I 2 J 13  
 MAX US = 6.54966E+05 AT I 2 J 25  
 MAX TEMP = 1.84890E+04 AT I 3 J 21  
 MAX P = 4.00522E+11 AT I 2 J 25  
 CELL SETTING DT. I 2 J 20

TOTAL TIME FOR THIS PROBLEM 0 HOURS, 0 MIN, 39 SEC  
 OF THIS 0 HOURS, 0 MIN, 0 SEC IS 6600 TIME.  
 AND 0 HOURS, 0 MIN, 39 SEC IS 7600/176 TIME.

TIME FOR THIS RUN 0 HOURS, 1 MIN, 5 SEC

WHIZ FACTOR TOTAL PROBLEM = 4.77E-04 SEC/CELL/CYCLE  
 WHIZ FACTOR SINCE LAST DUMP = 4.35E-04 SEC/CELL/CYCLE

I = 1 X(I) = .500 DX(I) = .500

J	P	U	V	XI	RHO	SRR	SZZ	SRZ	Y	DY	M	XM	H	XM
1	1.013E+06	0.	0.	2.044E+09	1.225E-03	0.	0.	0.	-9.50E+00	5.00E-01	1	4.81055E-04		
2	1.005E+06	-3.68E-06	5.16E+00	2.039E+09	1.218E-03	0.	0.	0.	-9.50E+00	5.00E-01	1	4.70252E-04		
3	1.007E+06	-2.27E-02	3.97E+03	2.039E+09	1.220E-03	0.	0.	0.	-8.50E+00	5.00E-01	1	4.79199E-04		
4	1.613E-03	1.30E+00	-8.51E+02	2.259E+07	1.717E-04	0.	0.	0.	-8.00E+00	5.00E-01	1	6.74325E-05		
5	1.231E-05	7.95E+01	2.05E+05	4.747E+10	1.123E-04	0.	0.	0.	-7.50E+00	5.00E-01	1	4.41007E-05		
6	1.939E+06	2.56E+01	3.91E+05	6.820E+10	1.380E-04	0.	0.	0.	-7.00E+00	5.00E-01	1	5.41748E-05		
7	2.739E+06	-2.40E+01	5.44E+05	7.245E+10	1.831E-04	0.	0.	0.	-6.50E+00	5.00E-01	1	7.19018E-05		
8	3.492E+06	-2.08E+01	6.61E+05	6.375E+10	2.392E-04	0.	0.	0.	-6.00E+00	5.00E-01	1	9.06715E-05		
9	4.165E+06	-4.23E+00	7.43E+05	6.095E+10	2.933E-04	0.	0.	0.	-5.50E+00	5.00E-01	1	1.10015E-04		
10	4.286E+06	7.40E+00	7.62E+05	1.279E+09	5.700E-08	-1.63E+07	3.46E+07	0.	-5.00E+00	5.00E-01	1	3.26585E-05	2	2.24161E+06
11	-1.525E+07	6.21E+00	7.62E+05	1.278E+09	7.859E+09	-1.53E+07	3.25E+07	2.97E+06	-4.50E+00	5.00E-01	2	3.08539E+00		
12	-1.690E+07	5.35E+00	7.62E+05	1.277E+09	7.069E+00	-1.23E+07	2.59E+07	1.00E+07	-4.00E+00	5.00E-01	2	3.08646E+00		
13	1.675E-05	5.41E+00	7.62E+05	1.277E+09	7.660E+00	-4.48E+06	9.61E+06	1.00E+07	-3.50E+00	5.00E-01	2	3.08754E+00		

14	7.719E+07	5.83E+00	7.62E+05	1.270E+09	7.860E+00	1.85E+07	-3.67E+07	2.47E+07	-3.00E+00	5.00E-01	2	3.86672E+00
15	3.228E+08	5.23E+00	7.62E+05	1.269E+09	7.861E+00	9.63E+07	-1.79E+08	2.81E+07	-2.50E+00	5.00E-01	2	3.86719E+00
16	1.009E+00	2.74E+00	7.62E+05	1.269E+09	7.865E+00	3.20E+08	-6.47E+08	2.55E+07	-2.00E+00	5.00E-01	2	3.88846E+00
17	3.000E+09	7.99E-01	7.61E+05	1.270E+09	7.874E+00	1.10E+09	-2.16E+09	-1.15E+07	-1.50E+00	5.00E-01	2	3.89209E+00
18	8.754E+09	-4.53E+01	7.55E+05	1.283E+09	7.900E+00	1.59E+09	-3.12E+09	-6.87E+07	-1.00E+00	5.00E-01	2	3.10229E+00
19	2.321E+19	-8.64E+01	7.54E+05	1.373E+09	7.961E+00	1.59E+09	-3.12E+09	-8.05E+07	-5.00E-01	5.00E-01	2	3.12610E+00
20	4.806E+10	-1.06E+02	7.42E+05	1.816E+09	8.044E+00	1.51E+09	-3.02E+09	2.00E+08	5.00E-01	5.00E-01	2	3.15903E+00
21	7.320E+10	1.29E+03	7.20E+05	3.220E+09	8.097E+00	1.51E+09	-3.02E+09	1.18E+08	5.00E-01	5.00E-01	2	3.17318E+00
22	1.052E+11	4.19E+03	6.83E+05	5.732E+09	8.080E+00	1.44E+09	-2.69E+09	6.81E+07	1.00E+00	5.00E-01	2	3.12328E+00
23	1.120E+11	5.56E+03	6.21E+05	8.177E+09	7.953E+00	1.19E+09	-2.36E+09	-4.23E+07	1.50E+00	5.00E-01	2	2.06204E+00
24	2.207E+11	3.10E+03	5.55E+05	3.770E+10	6.641E+00	1.35E+09	-2.68E+09	0.	2.00E+00	5.00E-01	2	1.62320E+00
25	3.500E+11	-6.11E+03	4.33E+05	1.308E+11	4.133E+00	3.53E+09	-7.05E+09	-5.53E+07	2.50E+00	5.00E-01	3	1.41935E+00
26	1.959E+11	-5.56E+03	2.45E+05	7.607E+10	3.614E+00	3.56E+09	-7.05E+09	2.67E+08	3.00E+00	5.00E-01	3	1.83849E+00
27	2.156E+10	-1.06E+03	6.34E+04	1.486E+10	2.644E+00	3.59E+09	-7.05E+09	2.61E+08	3.50E+00	5.00E-01	3	1.83849E+00
28	1.975E+09	-4.91E+01	4.89E+03	1.035E+09	2.251E+00	7.44E+08	-1.47E+09	2.29E+07	4.00E+00	5.00E-01	3	8.83046E-01
29	2.051E+08	-1.01E+00	4.50E+02	7.817E+08	2.203E+00	9.48E+07	-1.86E+08	1.90E+06	4.50E+00	5.00E-01	3	8.65154E-01
30	2.092E+07	-4.76E-02	4.37E+01	7.810E+08	2.200E+00	8.68E+06	-1.71E+07	9.41E+04	5.00E+00	5.00E-01	3	8.64052E-01
31	2.675E+06	-9.91E-08	3.87E+00	7.810E+08	2.200E+00	7.42E+05	-1.46E+06	5.13E+03	5.50E+00	5.00E-01	3	8.63946E-01
32	1.151E+06	0.	2.99E-01	7.810E+08	2.200E+00	6.80E+04	-1.18E+05	2.61E+02	6.50E+00	5.00E-01	3	8.63939E-01
33	1.023E+06	0.	1.77E-22	7.810E+08	2.200E+00	4.62E+03	-7.86E+03	7.84E+00	7.00E+00	5.00E-01	3	8.63938E-01
34	1.014E+06	0.	1.36E-11	7.810E+08	2.200E+00	1.25E+02	-2.50E+02	1.66E-08	7.50E+00	5.00E-01	3	8.63938E-01
35	1.013E+06	0.	0.	7.810E+08	2.200E+00	0.	-1.32E-07	0.	8.00E+00	5.00E-01	3	8.63938E-01
36	1.013E+06	0.	0.	7.810E+08	2.200E+00	0.	0.	0.	8.00E+00	5.00E-01	3	8.63938E-01
37	1.013E+06	0.	0.	7.810E+08	2.200E+00	0.	0.	0.	8.00E+00	5.00E-01	3	8.63938E-01
38	1.013E+06	0.	0.	7.810E+08	2.200E+00	0.	0.	0.	9.00E+00	5.00E-01	3	8.63938E-01
39	1.013E+06	0.	0.	7.810E+08	2.200E+00	0.	0.	0.	9.50E+00	5.00E-01	3	8.63938E-01
40	1.013E+06	9.	0.	7.810E+08	2.200E+00	0.	0.	0.	1.00E+01	5.00E-01	3	8.63938E-01

ENERGY MAP

1 1 2

ALTITUDE

12345678901234567890

METERS

- 1 -9.500E-02
- 2 -9.000E-02
- 3 -8.500E-02
- 4 -8.000E-02
- 5 -7.500E-02
- 6 -7.000E-02
- 7 -6.500E-02
- 8 -6.000E-02
- 9 -5.500E-02
- 10 -5.000E-02
- 11 B
- 12 B B
- 13 L



20 XX+++++\*\*\*\*\* 0.

40 000000000000000000000000 1.000E-01

12345678901234567890

1 2

ZRLK

PROB 1.300000000000000000E+00  
 ATROS 5.000000000000000000E+00  
 BREF 0.  
 CODE 1.000000000000000000E+00  
 COLD 0.  
 CYCLE 1.040000000000000000E+02  
 D1YEN 2.000000000000000000E+00  
 DT 4.7974933695873E-08  
 ELC 6.24856359181957E+13  
 EOS 6.000000000000000000E+00  
 ETH 6.24799664429907E+13  
 EXPAND 5.000000000000000000E-02  
 FAIL 0.  
 FLUXER 3.000000000000000000E+00  
 GEOM 2.000000000000000000E+00  
 IYAX 2.000000000000000000E+01  
 IQ 1.900000000000000000E+01  
 ISLAND 0.  
 JYAX 4.000000000000000000E+01  
 JO 3.900000000000000000E+01  
 HOB 0.  
 LREF 9.  
 METHOD 2.000000000000000000E+00  
 MLC 6.43844433783303E+03  
 MTH 6.43844433783152E+03  
 NH 2.000000000000000000E+01  
 NH'IC 1.600000000000000000E+03  
 NH'IST 6.000000000000000000E+00  
 NM 3.000000000000000000E+00  
 NOP 1.500000000000000000E+01  
 NP 2.000000000000000000E+00  
 NSTN 4.000000000000000000E+00  
 NVARST 1.500000000000000000E+01  
 P1STOP 1.500000000000000000E+01  
 RADLOS 6.000000000000000000E+02  
 REZONE 0.  
 REF 0.  
 STABF 5.000000000000000000E-01  
 STRAIN 1.000000000000000000E+00  
 STRESS 1.000000000000000000E+00  
 SUITE 0.  
 T 3.46065339440955E-06  
 TERRD 0.  
 TLC 3.46065339440955E-06  
 TRJ 0.  
 TITLE 3.9711993995995E+01

17205146314631463146  
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 0900000000000000000000  
 1720400000000000000000  
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 1726640000000000000000  
 1721400000000000000000  
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 0000000000000000000000  
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 0000000000000000000000  
 17251755442541625400

21 XX+00000000000000000000 5.000E-03  
 22 XX+00000000000000000000 1.000E-02  
 23 XXX0000000000000000000 1.500E-02  
 24 XXX0000000000000000000 2.000E-02  
 25 0XX00000000000000000000 2.500E-02  
 26 000000000000000000000000 3.000E-02  
 27 000000000000000000000000 3.500E-02  
 28 000000000000000000000000 4.000E-02  
 29 000000000000000000000000 4.500E-02  
 30 000000000000000000000000 5.000E-02  
 31 000000000000000000000000 5.500E-02  
 32 000000000000000000000000 6.000E-02  
 33 000000000000000000000000 6.500E-02  
 34 000000000000000000000000 7.000E-02  
 35 000000000000000000000000 7.500E-02  
 36 000000000000000000000000 8.000E-02  
 37 000000000000000000000000 8.500E-02  
 38 000000000000000000000000 9.000E-02  
 39 000000000000000000000000 9.500E-02



MFX NOS/BE 1.2 KAFB 011 MFX 07/10/78  
 FLM=31400 MCTM=250000 FLEC=1720K MDEC=0600K  
 +  
 14.52.40.GABY31X FROM M2/1S  
 14.52.40.IF 00000320 WORDS - FILE INPUT . DC 04  
 14.52.40.GABY3.T377.NTL.MT1.  
 14.52.51.ACCOUNT.GABY.  
 14.52.53.SYSBULL(BATCH)  
 14.52.54.ATTACH.HULL1B.ID=DYMCER.  
 14.52.54.PFN IS  
 14.52.54.HULL1B  
 14.52.55.PF CYCLE NO. = 039  
 14.52.55.LIBRARY.HULL1B.  
 14.52.55.SWITCH.6.  
 14.52.55.SWITCH.3.  
 14.52.56.HULLK.  
 14.53.22.RECOVERED RMS ERROR  
 14.53.22.COPYCR(LOCAL.HHH)  
 14.53.24.RETURN(LOCAL)  
 14.53.29.IFE.FILE(CHANGES,IN),CPR.  
 14.53.30.END.IF,CPR.  
 14.53.30.IFE.FILE(CHANGES,AS.AND..NOT.IN),CPY.  
 14.53.32.END.IF,CPY.  
 14.53.32.GETC.HHH.  
 14.53.35.ATTACH(XXX.CH105.ID=DYMCER)  
 14.53.38.PF CYCLE NO. = 014  
 14.53.38.COPYCR(XXX.HHH)  
 14.53.39.RETURN(XXX)  
 14.53.40.REVERT.  
 14.53.42.CONTR.BOW.  
 14.53.54.END CNT  
 14.53.54.FILE(TAPE10,SBF=NO)  
 14.54.01.FILE(TAPE11,SBF=NO)  
 14.54.02.FILE(TAPE41,SBF=NO)  
 14.54.03.FILE(TAPE42,SBF=NO)  
 14.54.04.LDSET(FILES=TAPE10/TAPE11/TAPE41/TAPE42)  
 14.54.05.BOW.  
 14.54.06.REQUEST(TAPE10,MPF)  
 14.54.06.REQUEST(TAPE42,MPF)  
 14.54.12.STERN, PROBLEM 1.1200 UPDATED.  
 14.56.10.CT ID= DYMCER PFN=DYMASTLIBRARY  
 14.56.10.CT CY= 002 00040064 WORDS.  
 14.56.11.EX ID= DYMCER PFN=DYMASTLIBRARY  
 14.56.11.EX CY= 001 00000000 WORDS.  
 14.56.11.EX ID= DYMCER PFN=DYMASTLIBRARY  
 14.56.11.EX CY= 001 00000000 WORDS.  
 14.56.57.EX ID= DYMCER PFN=DYMASTLIBRARY  
 14.56.57.EX CY= 001 00040064 WORDS.  
 14.56.58.PR ID= DYMCER PFN=DYMASTLIBRARY  
 14.56.58.PR CY= 002 00040064 WORDS.  
 14.56.58.REQUEST(TAPE42,MPF)  
 14.56.59.PR ID= DYMCER PFN=PROBLEMTAPE41.INFO1P.1200  
 14.56.59.PR CY= 001 00000512 WORDS.  
 14.57.01.STERN 10 RESOURCE TAPES REMAINING

14.57.39.HULL 8 RESOURCE TAPES REMAINING  
 14.58.21.CT ID= DYMCER PFN=DYMASTLIBRARY  
 14.58.21.CT CY= 002 00040128 WORDS.  
 14.58.37.EX ID= DYMCER PFN=DYMASTLIBRARY  
 14.58.37.EX CY= 001 00040000 WORDS.  
 14.59.40.EX ID= DYMCER PFN=DYMASTLIBRARY  
 14.59.40.EX CY= 001 00040128 WORDS.  
 14.59.52.PR ID= DYMCER PFN=DYMASTLIBRARY  
 14.59.52.PR CY= 002 00040128 WORDS.  
 15.01.19.NEED IK110 EE36 ED91 GK73  
 15.01.19.REQUEST(TAPE4.\*NT,PE,RING,U,E,VSN=0IK110)  
 15.01.19.NT066 ASSIGNED)  
 15.01.19.NT66 VOLUME SERIAL NUMBER IS 0IK110  
 15.01.20.END BOW  
 15.01.20.CONTR.PLANK.  
 15.01.25.END CNT  
 15.01.25.FILE(TAPE4,SBF=NO)  
 15.01.25.FILE(TAPE41,SBF=NO)  
 15.01.27.LDSET(FILES=TAPE4/TAPE41)  
 15.01.27.PLANK.  
 15.01.34.GENERATING HULL DISK VERSION  
 15.01.36.END PLANK  
 15.01.36.CONTR.SAIL.  
 15.01.39.END CNT  
 15.01.39.DYMAST(I=HHH)  
 15.03.35.10317 CARDS GENERATED  
 15.03.35.END OF NORMAL RUN  
 15.03.35.SYSTEM HULL VERSION 105  
 15.04.16.EXIT  
 15.04.16.RETURN(HHH)  
 15.04.17.RETURN(SAVE)  
 15.04.19.REQUEST(SAVE,#0)  
 15.04.20.CONTR.COPYFILE.  
 15.04.28.END CNT  
 15.04.28.IFE,R2.EQ.2,COMPS.  
 15.04.28.ELSE,COMPS.  
 15.04.28.FTN(A,I=SAIL,PL=1000000,B=HULL.OPT=2,L=S  
 15.04.28.AVE)  
 15.06.59.8.553 CP SECONDS COMPILATION TIME  
 15.06.59.END.IF,COMPS.  
 15.07.00.RETURN(SAIL,LOCAL)  
 15.07.00.IFE,R2.NE.0,MET.  
 15.07.01.END.IF,MET.  
 15.07.01.RETURN(MAP)  
 15.07.02.REQUEST(MAP,#0)  
 15.07.03.CONTR.LOAD.  
 15.07.06.END CNT  
 15.07.06.IFE,R2.EQ.2,RUNS.  
 15.07.07.ELSE,RUNS.  
 15.07.07.IFE,R1.NE.0,HITG.  
 15.07.08.HULE176.COMMENT.  
 15.07.09.FILE(TAPE4,SBF=NO)  
 15.07.10.FILE(TAPE41,SBF=NO)  
 15.07.11.FILE(TAPE9,SBF=NO)

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15.07.11.FILE(TAPE40,SBF=NO)  
15.07.12.FILE(TAPE10,SBF=NO)  
15.07.13.FILE(TAPE44,SBF=NO)  
15.07.14.LDSET(PRESETAGINGINDEF,MAP=SBEX/MAP)  
15.07.14.LDSET(FILES=TAPE4/TAPE41/TAPE5/TAPE40/TA  
15.07.14.PE10)  
15.07.14.LDSET(FILES=TAPE44/TAPE45)  
15.07.14.HULL  
15.08.12.REQUEST(TAPE9,MT,HY,RING,IU,U,E,YSN=00EE36)  
15.08.12.( MT 052 ASSIGNED)  
15.08.18.MT52 VOLUME SERIAL NUMBER IS 00EE36  
15.08.29.LOCK IN.  
15.08.38.MT52 BLOCKS WRITTEN -000007  
15.08.42.MT66 BLOCKS WRITTEN -000091  
15.08.43.REQUEST(TAPE41,\*PF)  
15.08.57.MT52 BLOCKS WRITTEN -000009  
15.08.09.MT52 BLOCKS WRITTEN -000011  
15.08.21.MT52 BLOCKS WRITTEN -000013  
15.09.47.MT52 BLOCKS WRITTEN -000015  
15.10.13.MT52 BLOCKS WRITTEN -000017  
15.10.25.MT66 BLOCKS WRITTEN -000135  
15.10.25.REQUEST(TAPE41,\*PF)  
15.10.29.MT52 BLOCKS WRITTEN -000019  
15.10.50.MT52 BLOCKS WRITTEN -000021  
15.12.00.MT52 BLOCKS WRITTEN -000023  
15.12.59.MT52 BLOCKS WRITTEN -000025  
15.13.32.MT52 BLOCKS WRITTEN -000027  
15.13.41.MT52 BLOCKS WRITTEN -000029  
15.14.05.MT52 BLOCKS WRITTEN -000031  
15.14.18.MT52 BLOCKS WRITTEN -000033  
15.14.38.MT52 BLOCKS WRITTEN -000035  
15.14.47.MT66 BLOCKS WRITTEN -000179  
15.14.48.REQUEST(TAPE41,\*PF)  
15.15.00.MT52 BLOCKS WRITTEN -000037  
15.15.10.MT52 BLOCKS WRITTEN -000039  
15.15.17.\*\*\*\*\* TOTAL CYCLE STOP.  
15.15.21.MT66 BLOCKS WRITTEN -000223  
15.15.22.MT52 BLOCKS WRITTEN -000041  
15.15.22.REQUEST(TAPE41,\*PF)  
15.15.24.CT ID= DYMCCR PFN=PROBLEM#ASTAPE41,INFO1P3000  
15.15.24.CT CY= 001 00000640 WORDS.  
15.15.27. END HULL  
15.15.27. 40.346 CP SECONDS EXECUTION TIME  
15.15.27.RETURN(TAPE4,HULL)  
15.15.27.REVERT.  
15.15.28.ELSE.MT76.  
15.15.29.END IF.MT76.  
15.15.29.END IF.RUNS.  
15.15.30.ACCOUNT.  
15.15.47.UNLOCK,EXP.  
15.15.48.ACCOUNT FILE = ACCOUNTJ2BV10F5P8  
15.15.48. ACCOUNT ID = DYMCCR  
15.15.00. END ACCT

15.16.00.REVERT.  
15.16.02.OP 09007744 WORDS - FILE FILMER , DC 20  
15.16.02.OP 00010568 WORDS - FILE OUTPUT , DC 40  
15.16.02.MS 21504 WORDS ( 306176 MAX USED)  
15.16.02.CPA 65.986 SEC. 65.985 ADJ.  
15.16.02.IO 180.973 SEC. 45.243 ADJ.  
15.16.02.CM 6347.696 KUS. 26.635 ADJ.  
15.16.02.SS 137.864  
15.16.02.PP 497.763 SEC. DATE 08/21/79  
15.16.02.CUST ESTIMATE \$23.16  
15.16.02.EJ END OF JOB, IS