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RLPSFLUX

RELAP with Surface Flux Modifications

Steven B. Cliff

Prepared for the U.S. Nuclear Regulatory Commission
Office of Nuclear Regulatory Research
Under Interagency Agreements DOE 40-551-75 and 40-552-75

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ABSTRACT

A modification to the RELAP4 computer code, which extends its external specification capabilities to include heat transfer quantities, is described with full discussion of all changes required. Sample output and source listings are included.

I. INTRODUCTION

This document describes the program RLPSFLUX which is a modification to RELAP4, MOD5, UPDATE2, from the Idaho National Engineering Laboratory [1]. Familiarity with RELAP and its documentation is assumed. The modification extends the time-dependent specifications already allowed for total reactor power and volume conditions by allowing slab conditions to be time-dependent. For time-dependent volumes, the fluid conditions are obtained from the plot information stored on the plot/restart tape. Likewise, for time-dependent slabs, the heat transfer conditions are obtained from the plot tape rather than from calculations. Additionally, the card numbers for fill tables have been changed to allow a larger number of fill table cards.

Specifically, surface flux, surface temperature and the average slab temperature are obtained from the plot tape. The center temperatures are set equal to the average temperatures, and both the heat transfer coefficients and power transferred to the water are calculated by special additions.

The average quality and fuel power are determined by normal RELAP computations. The heat transfer mode, critical flux, uncalculable heat transfer coefficients, nodal temperatures, and the metal water reaction quantities (heat generated and reaction depths) are set to non-allowable values as flags of the special happenings. Appendix 1 contains a copy of the printout from RLPSFLUX showing these flags and other changes made to the output, and Appendix 2 indicates the changes to RELAP itself which are necessary to create RLPSFLUX.

II. INPUT CHANGES AND MODELING CONSIDERATIONS

RLPSFLUX requires two small input changes if its extra features are desired and adds two minor constraints to the models run through it.

The input change is in the core cards (serial 160000). On each core card, after the QPMOD delay input, as the last input on the card, an integer slab retrieval index (comparable to the second input on the 05000 cards) is allowed. The original core cards have two optional entries, and this index is a third. The last one, last two, or all three may be omitted; but if the index is present, the other two must be present also. The index may have three possible ranges, only two of which are currently legal. If a zero is input or no input is given, this core section is not time-dependent and RELAP does its normal calculations. If the index is negative, its absolute value is the index of a slab of the plot-restart tape specified by FT02F001, and the surface flux, surface temperatures, and average temperature will be determined by the tape values, not by RELAP calculations. The absolute value of this index must be less than 50, the maximum number of slabs allowed. The third range of the index is for positive values, which may be references to slab value tables in the future; currently these tables are not supported and a positive index is invalid.

The other change is the card numbers of the fill tables. RELAP4 numbers them as 13xxyy where xx is the table number ($0 \leq xx \leq 20$) and yy constrains the maximum number of input cards to 99. RLPSFLUX numbers them as 8xyyyyyy where x is still the table number ($0 \leq x \leq 9$), but yyyyyy allows up to 999,999 cards in each fill table. Since both

RELAP and RLPSFLUX store fill tables in the dynamic storage areas, the real limit to fill table sizes is likely available memory on the machine, not input card limitations. If the region for RLPSFLUX must be expanded to store larger fill tables, RLPSFLUX will tell the user via error messages.

Any combination of time-dependent and regular volumes and slabs may be used subject to two modeling constraints. First, the slab number for every core section must be the core section number. Thus, core section 3 must be slab 3, section 22 must be slab 22, etc., for as many core sections as there are in the model. Core sections will always be the lowest continuously numbered slabs. The RELAP restrictions of a maximum of 50 slabs and 50 sections remain.

The second restriction involves the axial stacks of heat slabs. Each stack must be homogeneous, either all time-dependent or all not time-dependent. As with regular RELAP, the stacks may contain only one or many heat slabs, but each given axial stack of heat slabs must be all either time-dependent or all not. (A printout of axial stacks of heat slabs immediately follows the full data listing for the heat conducting slabs).

Note that if all time-dependent slab indices are zero, these modeling restrictions do not apply. Furthermore, since the index is optional and its default value is zero, all models which successfully run under RELAP4, MOD4, UPDATE2 should run and give the same results under RLPSFLUX. Input changes are required only if time-dependent slabs or fill tables are requested. Of course, an appropriate RELAP plot tape must be mounted for unit 2 if any items are time-dependent.

The fill table change affects modeling only in that it changes from 20 to 9 the maximum number of fill tables that may be used.

RLPSFLUX is not restartable if any time-dependent slabs have been specified. If all slab data are calculated by normal RELAP calculations, RLPSFLUX is restartable in the same manner as RELAP.

III. OUTPUT CHANGES

Output changes appear on all five of RELAP's outputs: Input Edit Print, Major Edit Print, Minor Edit Print, Plot Records, and Restart Records.

The Minor Edit Print, Major Edit Print, Restart Records, and Plot Record differ only in that certain quantities have special values in RLPSFLUX. In particular, the Heat Transfer mode is zero for all time-dependent slabs (TDS); the critical flux, uncalculable heat transfer coefficients, nodal temperature, and the metal water reaction quantities (heat generated and external and internal reaction depths) are minus one; both the right and left heat transfer coefficient are calculated if possible (see Program Changes for details); and, finally, these values on the plot tape appear in place of the calculated values. Thus, there are no format changes to any of these four outputs, only differences in the value present, its meaning, or origin.

However, the input edit print has several changes. First, the core cards, when listed, show the added input if present. Second, if any time-dependent quantities (slab, volume or power) are specified, the number of slabs in the old RELAP problem is written along with the number of volumes and junctions (see page 42 of Appendix 1). Further, the print of data for the core section (page 42) has the last column headed "BOUNDARY CONDITION FLAG" added, along with the values themselves. This page also shows the effects of one modeling restriction: The first two columns (headed "CORE SECT" and "SLAB NUM") are the same for each time-dependent slab. Of course, the listing on the input deck indicates the renumbering of the fill table cards.

Finally, all printout by RLPSFLUX has changes in the heading at the top of every page. All of the normal printout is present, including that which identifies the original RELAP as MOD5, UPDATE2 dated September 3, 1976. The configuration control word has been changed to NO indicating that the Blowdown Heat Transfer Project at ORNL is responsible for this program's development. Further, that this is the Boundary Conditioned (time-dependent) slab and modified fill table version of RELAP is noted by the phrase "BC SLABS FILL" and in the heading. Thus all printout from RLPSFLUX is immediately distinguishable as such.

IV. PROGRAM CHANGES

Appendix 2 is the output from IBM's FORTRAN H compiler for those RLPSFLUX routines which differ from RELAP. Thirteen routines were changed in some manner, if only minor. The 471 records inserted have a sequence field of BDHT ### where ### is the number of the inserted record. Each insertion is preceded by a blank comment card with no sequence field identification. Each deleted RELAP record remains in place as a comment. The changes made will be discussed in some detail in this section.

The MAIN routine has comments indicating which routines have been changed. Also, added records 115 and 116, with associated deletion, change the heading on all RLPSFLUX printout. Routines RKEN and BAL were changed only to reflect the changes in routine TRDAT and its calling arguments.

COMZER was changed in records 119 to 123 to zero the COMMON block that contains the time-dependent information. FAIL was changed such that a traceback is obtained for each call to FAIL.

FLOSRH has the bulk of the changes for transient analysis. First, records 126 to 143 make available the necessary COMMON blocks. Then record 144 tests the TDS index value and, if a regular slab is being analyzed, the normal RELAP actions are taken. If a time-dependent (boundary condition) slab is indicated, the current flux on the right side, surface temperature and average temperature are obtained from routine TRDAT. The center line temperature is set to the average temperature. The heat transfer rate to the fluid on the right, the moderator

heating rate, and the nuclear power generation in the core section are determined. Then if the surface temperature is non-zero, both heat transfer coefficients are determined; the left is based on saturation temperature, the right on the average temperature of the adjacent volume. These determinations are in records 145 to 173.

Routine INCORE has been modified to allow the input of the TDS indexes and to properly initialize the time-dependent plot tape. The appropriate COMMON is made available and changes to the input format are made in records 175 to 181. Record 186 loads the TDS index if it was present on the input, and record 190 checks its validity. Record 188 causes the printout of TDS index and records 198, 200 and 201 fix formats as needed for proper output. Records 192 to 196 test for the presence of time-dependent slabs, and, if any are present, routine INRCD1 is invoked to initialize the plot tape.

Routine INFILL was changed to reflect the new fill table numbering scheme. Records 203, 204, and 207 set the first card number to 8 000 000, while records 206, 208, 209, and 210 reflect the six-digit field for the cards in each table. Record 205 fixes the maximum number of fill tables to nine.

Routine INHEAT was modified to pass additional information to INCORE, allowing it to properly initialize the time-dependent plot/restart tape.

Routine INRCD1 opens the time-dependent plot tape (FT02F001) and initializes it for later use by SINITL. Records 213 to 215 fix COMMON blocks as needed and records 217 to 225 actually obtain the slab data.

The printing of the number of slabs in the old problem is enabled by records 227 to 230.

Routine SINITL does the initialization of the core slabs and it has been changed to check for the time-dependent slabs and initialize them as follows while skipping their regular RELAP initialization. TRDAT is invoked to get initial conditions from the time-dependent plot tape. Then the surface temperatures, critical flux, the cladding depth and metal water reaction values, and the heat transfer coefficients are set to minus one or values that will give minus one on major edits. The initial heat transfer rate, moderating heating rate and nuclear power generation rate are calculated. Then, if the surface temperature is non-zero, both heat transfer coefficients are determined, the left is based on saturation temperature, the right on the average temperature in the adjacent volume. These initializations are performed by records 235 to 263. Records 264 to 275 continue the initialization by setting the temperatures in all nodes to minus one in a manner that requires the core sections in a given axial stack to be homogeneous. The other changes complete the skipping of normal initializations.

Routine SLABHT has been changed to ensure skipping of normal RELAP calculations for TDS with one loop requiring homogeneity.

RELAP's TRDAT has been entirely replaced with a heavily modified one. As always, the old one is listed without change as comments. Beginning with record 291 is the new TRDAT with a new argument which determines the type of data to be returned: volume, power, or slab. Functionally, TRDAT is essentially the same as the old version except for the added maintenance for the surface flux, surface temperature, and average slab temperature.

These thirteen changed routines are linkage edited with the rest of RELAP's routines to produce the RLPSFLUX load module requiring approximately 10K bytes of extra storage for execution. The overlay structure must be changed to allow access to TRDAT by SINITL. In RLPSFLUX this was accomplished by moving TRDAT from the transient segment (segment 29) to the root segment.

These changes were made to the IBM version of RELAP 4, MOD5, UPDATE 2, and no knowledge of their applicability to the CDC version is claimed.

V. CONCLUSION

RLPSFLUX is a version of RELAP with the key extension of time-dependent slabs. This extension may, of course, be used in the same sense that time-dependent volumes are used: A RELAP model may depend on some previous RELAP run for its values. However, it was developed primarily to allow experimentally determined heat transfer conditions to provide boundary conditions. The method (changing the use of the plot tape) was chosen because it is philosophically the same as the time-dependent volumes which can also be specified experimentally. Also, a new data format does not have to be specified and RLPSFLUX is not tied to the output format of one experiment. Of course, interfacing programs which transform the experimental data format to RELAP plot tape format are required, but such interfaces exist for the Thermal Hydraulic Test Facility [2,3,4].

REFERENCES

1. *RELAP4/MOD5 - A Computer Program for Transient Thermal-Hydraulic Analysis of Nuclear Reactors and Related Systems User's Manual,* ANCR/NUREG-1335 (September 1976).

2. Cliff, Steven B., *OXREPT - ORINC and Experimental Data to RELAP Plot Tape Interface,* ORNL/NUREG/CSD/TM-3 (January 10, 1978).

3. Cliff, Steven B., *ORNL — PWR-BDHT Analysis Procedure - A Preliminary Overview,* ORNL/NUREG/CSD/TM-6 (January 10, 1978).

4. *Project Description ORNL-PWR Blowdown Heat Transfer Separate-Effects Program - Thermal Hydraulic Test Facility (THTF),* ORNL/NUREG/TM-2 (February 1976).

APPENDIX 1

RLPSFLUX OUTPUT

APPENDIX 1

RLPSFLUX OUTPUT

Appendix 1 is a listing of a typical run of RLPSFLUX showing the input changes, the changes in the input edit, and typical flags in the major edit. The run used a plot tape produced from experimentally determined conditions for slabs, and the new numbering system is used for the two fill tables.

LISTING OF INPUT DATA FOR CASE 1

```
    1  =THTF TEST 105  CORE MODEL BY EU SCF FILL
    2  *  FILL AND SFLUX TEST CLI
    3  *
    4  *
    5  * USING INVERTED TURBINE METER RESULTS FROM 0 THROUGH 1.95 SEC.
    6  * PROBLEM DIMENSIONS
    7  010001  -2  0  7  2 14  0  0  15  0  0  0  2 24 10 6  5  0  0
    8  010002   5.9775  1.0
    9  *
   10  * MINOR EDIT VARIABLES
   11  *
   12  *
   13  *   ENTHALPY TRANSPORT SHUT DOWN
   14  030003  0  0.  0.  .000001
   15  *
   16  * TIME STEP CARDS
   17  * CHANGE TIME STEP CARDS FROM WHAT THEY WERE IN EARLIER FILL TABLES RUNS
   18  *  BECAUSE OF UNSTABLE CONDITIONS AT 5 SEC IN THE TRANSIENT.
   19  030010  500  10  1  0  .0001  .00001     .001
   20  030020   50  10  1  0  .001   .00001     .010
   21  030030    4  10  2  0  .01    .00001     .100
   22  030040   10   1  1  0  .01    .00001     .500
   23  030050   10   5  1  0  .01    .00001    4.500
   24  030060  100   5  1  0  .001   .00001    5.500
   25  030070   10   5  1  0  .01    .00001  210.000
   26  *
   27  * TRIP CARDS
   28  *
   29  040010  1  1  0  0  1.0   0.0 * TRIP END
   30  040020  2  1  0  0   0.0   0.0 * TRIP LEAK TO FIRST POWER CURVE
   31  *
   32  * VOLUME DATA CARDS
   33  *
   34  050011 0      0 2295.8682 545.8999 -1.000 0.200400  3.0000  3.0000 *S.P.2 INLET
   35  050021 0    0 2286.6995 545.8916 -1.000 0.170200  1.2600  1.2600 *T.S. INLET
   36  050031 0    0 2287.2932 545.8923 -1.000 0.927800  5.0210  5.0210 *TOP DOWNCOMER
   37  050041 0    0 2288.5527 545.8933 -1.000 0.525400  2.9500  2.9500 *MID DOWNCOMER
   38  050051 0    0 2289.7312 545.8945 -1.000 0.934000  4.5130  4.5130 *BOT DOWNCMER
   39  050061 0    0 2290.5669 545.8953 -1.000 0.236000  0.8740  0.8740 *LOWER PLENUM
   40  050071 0    0 2285.3721 551.3379 -1.000 0.169000  2.6540  2.6540 *1ST HEATED
   41  050081 0    0 2280.0415 565.5754 -1.000 0.118400  1.8590  1.8590 *2ND HEATED
   42  050091 0    0 2274.1807 592.9590 -1.000 0.187900  2.9500  2.9500 *3RD HEATED
   43  050101 0    0 2268.0911 617.7253 -1.000 0.117900  1.8500  1.9500 *4TH HEATED
   44  050111 0    0 2262.3159 628.8167 -1.000 0.167000  2.6230  2.6230 *5TH HEATED
   45  050121 0    0 2259.0000 632.7415 -1.000 0.618000  2.4900  2.4900 *UPPER PLENUM
   46  050131 0    0 2256.7722 632.7275 -1.000 0.384000  0.8500  0.8500 *OUTLET LINE
   47  050141 0     0 2247.2159 632.6685 -1.000 0.200400  3.0000  3.000 *S.P.1 OUTLET
   48  050012 0   0.0668100   0.2916999   927.1089  0                    *S.P.2 INLET
   49  050022 0   0.0668100   0.2916999   930.1050  0                    *T.S. INLET
   50  050032 0   0.1848000   0.1750000   927.7317  0                    *TOP DOWNCOMER
   51  050042 0   0.1848000   0.1750000   924.7830  0                    *MID DOWNCOMER
   52  050052 0   0.1848000   0.1750000   920.2737  0                    *BOT DOWNCMER
   53  050062 0   0.3019000   0.1750000   919.4500  0                    *LOWER PLENUM
   54  050072 0   0.0634800   0.0197321   920.2698  0                    *1ST HEATED
   55  050082 0   0.0634800   0.0197321   922.9197  0                    *2ND HEATED
   56  050092 0   0.0634800   0.0197321   924.7747  0                    *3RD HEATED
```

```
    950102 0  0.0634800  0.0197321  927.7205  0                    *4TH HEATED
    950112 0  0.0634800  0.0197321  929.5869  0                    *5TH HEATED
    950122 0  0.2920000  0.3150000  932.1858  0                    *UPPER PLENUM
    950132 0  0.3668100  0.2920000  933.7000  0                    *OUTLET LINE
    950142 0  0.0668100  0.2916999  930.7100  0                    *S.P.1 OUTLET
*
* JUNCTION DATA CARDS
*
*THE AREA OF JUNCTIONS WITH ORIFICES OR VALVES IS = ADJACENT VOL CS AREA
*
    980011  1  2    0  0 46.549988 0.0668100  930.10669   0.0          7.500       7.500
    980021  2  3    0  0 46.549988 0.0668100  931.29932   0.0          0.0         0.0
    980031  3  4    0  0 46.549988 0.1348000  927.73218   0.0          0.0         0.0
    980041  4  5    0  0 46.549985 0.1348000  924.78467   0.0          0.0         0.0
    980051  5  6    0  0 46.549988 0.1348000  920.27588   0.0          0.639       0.639
    980061  6  7    0  0 46.549988 0.0634800  920.27173   0.0          1.614       1.614
    980071  7  8    0  0 46.549988 0.0634800  922.92188   0.0          1.654       1.654
    980081  8  9    0  0 46.549988 0.0634800  924.77686   0.0          1.762       1.762
    980091  9 10    0  0 46.549988 0.0634800  927.72266   0.0          1.758       1.758
    980101 10 11    0  0 46.549988 0.0634800  929.56885   0.0          1.639       1.639
    980111 11 12    0  0 46.549986 0.0634800  932.19799   0.0          1.605       1.605
    980121 12 13    0  0 46.549988 0.0668100  934.50020   0.0          0.500       0.500
    980131 13 14    0  0 46.549988 0.0668100  933.70459   0.0          7.500       7.500
    980012 0  0  2  0 0.0      0.600    0 0 0.0      0
    980022 0  0  3  0 0.0      0.0      0 0 0.0      0
    980032 0  0  3  0 0.0      0.0      0 0 1.0      0
    980042 0  0  3  0 0.0      0.0      0 0 1.0      0
    980052 0  0  2  0 0.0      0.0      0 0 1.0      0
    980062 0  0  2  0 0.0      0.0      0 0 0.0      0
    980072 0  0  2  0 0.0      0.0      0 0 0.0      0
    980082 0  0  2  0 0.0      0.0      0 0 0.0      0
    980092 0  0  2  0 0.0      0.0      0 0 0.0      0
    980102 0  0  2  0 0.0      0.0      0 0 0.0      0
    980112 0  0  2  0 0.0      0.0      0 0 0.0      0
    980122 0  0  2  0 0.0      0.0      0 0 0.0      0
    980132 0  0  2  0 0.0      0.600    0 0 0.0      0
*
* NEGATIVE FILL JUNCTIONS REPRESENTING LEAKS.
    980141  0  1    1  0  0.0      0.06681    927.13965   0.0          0.0         0.0
    980151  0 14    2  0  0.0      0.0668100  930.71094   0.0          0.0         0.0
    980142 0  0  3 -2 .292    0.0      0 0 0.0      0
    980152 0  0  3 -2 .292    0.0      0 0 0.0      0
*
*  FILL TABLE DATA FOR TEST 105 GGI USED FOR VERTICAL INLET SPOOL--
*         ALL DATA INVERTED EXCEPT FROM 3.00 TO 4.30 SEC  POINTS AROUND
*         3.05 AND 3.35 SEC SMOOTHED
* USING INVERTED TURBINE METER RESULTS FROM 0 THROUGH 1.95 SEC.
    8100000  2  4  257  1  LBS/SEC
    8100100  0.0    -674.45  540.22  0.05 -480.32  537.74  0.10 -412.35  538.71
    8100200  0.15 -581.45  539.77  0.20 -592.13  535.68  0.25 -637.18  539.71
    8100300  0.30 -651.51  539.70  0.35 -722.79  538.63  0.40 -758.45  540.76
    8100400  0.45 -782.67  540.77  0.50 -760.51  540.80  0.55 -735.52  539.78
    8100500  0.60 -768.23  538.73  0.65 -791.79  540.95  0.70 -796.44  540.87
    8100600  0.75 -815.53  539.31  0.80 -829.82  539.82  0.85 -838.95  539.84
    8100700  0.90 -824.77  539.85  0.95 -851.22  538.81  1.00 -862.89  540.95
    8100800  1.35 -845.09  540.97  1.10 -869.03  540.94  1.15 -846.58  538.88
    8100900  1.20 -840.44  541.02  1.25 -829.22  538.91  1.30 -838.65  538.93
    8110000  1.35 -819.49  540.01  1.40 -830.41  541.09  1.45 -811.56  541.11
```

115	8110100	1.50	-825.92	540.06	1.55	-802.56	539.02	1.60	-813.65	540.10
116	8110200	1.65	-797.47	539.05	1.70	-819.36	539.07	1.75	-783.72	541.22
117	8110300	1.80	-810.35	539.10	1.85	-757.37	539.12	1.90	-777.58	540.21
118	8110400	1.95	-758.23	540.23	2.00	-757.31	540.25	2.05	-760.50	546.71
119	8110500	2.10	-736.45	557.79	2.15	-718.76	567.84	2.20	-690.24	569.00
120	8110600	2.25	-676.65	566.79	2.30	-660.23	581.68	2.35	-631.12	604.31
121	8110700	2.40	-600.02	602.98	2.45	-566.43	601.91	2.50	-560.45	600.74
122	8110800	2.55	-562.85	599.94	2.60	-534.17	599.37	2.65	-498.13	598.66
123	8110900	2.70	-478.33	597.81	2.75	-413.77	601.31	2.80	-318.57	615.93
124	8120000	2.85	-254.02	632.64	2.90	-262.55	627.56	2.95	-210.64	624.79
125	8120100	3.00	-180.0	641.14	3.05	-155.0	675.59	3.10	-125.0	700.00
126	8120200	3.15	-101.45	699.89	3.20	-128.00	677.54	3.25	-138.93	675.82
127	8120300	3.30	-138.55	683.52	3.35	-140.45	694.42	3.40	-141.42	596.34
128	8120400	3.45	-148.93	694.55	3.50	-166.72	675.90	3.55	-155.79	689.44
129	8120500	3.75	-160.33	683.01	3.80	-151.65	692.86	3.85	-133.07	712.10
130	8120600	3.60	-178.67	672.34	3.65	-202.99	559.51	3.70	-187.89	664.56
131	8120700	3.90	-129.32	712.83	3.95	-128.92	715.00	4.00	-123.28	722.99
132	8120800	4.05	-113.79	740.17	4.10	-113.95	747.47	4.15	-132.06	719.01
133	8120900	4.20	-144.31	709.49	4.25	-126.14	743.69	4.30	-120.0	789.35
134	8130000	4.35	-115.0	748.21	4.40	-110.0	793.79	4.45	-101.48	740.19
135	8130100	4.50	-107.55	750.96	4.55	-102.09	795.34	4.60	-111.84	780.17
136	8130200	4.65	-104.33	790.46	4.70	-112.54	770.32	4.75	-117.44	747.56
137	8130300	4.80	-98.71	815.82	4.85	-92.82	773.27	4.90	-99.29	744.83
138	8130400	4.95	-85.69	752.23	5.00	-76.21	774.35	5.05	-80.25	781.99
139	8130500	5.10	-60.25	797.01	5.15	-57.68	800.07	5.20	-52.46	802.74
140	8130600	5.25	-45.32	824.93	5.30	-31.25	938.97	5.35	-29.64	929.19
141	8130700	5.40	-27.62	904.51	5.45	-25.73	938.36	5.50	-21.53	979.77
142	8130800	5.55	-20.69	994.44	5.60	-21.02	992.06	5.65	-24.45	924.88
143	8130900	5.70	-25.83	910.69	5.75	-23.59	968.20	5.80	-19.91	1057.71
144	8140000	5.85	-26.61	915.65	5.90	-19.35	984.41	5.95	-18.53	1008.47
145	8140100	6.00	-15.57	1079.53	6.05	-16.33	1054.33	6.10	-16.67	1010.32
146	8140200	6.15	-16.05	1017.48	6.20	-14.90	1057.53	6.25	-13.49	1079.68
147	8140300	6.30	-12.70	1076.82	6.35	-12.28	1060.86	6.40	-9.21	1095.92
148	8140400	6.45	-10.60	1045.54	6.50	-8.18	1106.68	6.55	-7.20	1076.89
149	8140500	6.60	-6.34	1075.91	6.65	-6.48	1016.57	6.70	-5.82	1046.69
150	8140600	6.75	-5.78	1056.65	6.80	-6.09	1043.84	6.85	-3.36	1093.44
151	8140700	6.90	0.53	1135.72	6.95	0.19	1017.01	7.00	2.19	1048.90
152	8140800	7.05	1.07	1034.31	7.10	0.43	1056.19	7.15	0.07	1139.75
153	8140900	7.20	-0.09	1028.56	7.25	-0.09	1049.23	7.30	-0.16	1099.88
154	8150000	7.35	-0.15	1128.54	7.40	1.62	1159.10	7.45	2.66	1193.22
155	8150100	7.50	3.45	1153.31	7.55	3.46	1188.38	7.60	5.14	1147.52
156	8150200	7.65	5.40	1090.63	7.70	47.08	567.49	7.75	79.25	532.28
157	8150300	7.80	64.35	535.82	7.85	55.17	539.94	7.90	56.29	540.05
158	8150400	7.95	29.01	537.81	8.00	16.19	532.19	8.05	7.38	532.34
159	8150500	8.10	2.01	533.68	8.15	0.89	538.20	8.20	25.69	536.41
160	8150600	8.25	11.48	537.79	8.30	4.93	540.28	8.35	-21.03	538.17
161	8150700	8.40	14.59	540.86	8.45	-14.33	539.32	8.50	-33.55	538.28
162	8150800	8.55	-41.55	538.70	8.60	-42.81	539.79	8.65	-54.24	541.87
163	8150900	8.70	-72.47	552.10	8.75	-24.60	713.15	8.80	-11.70	1019.61
164	8160000	8.85	-11.93	1004.67	8.90	-8.34	1199.56	8.95	-7.47	1199.64
165	8160100	9.00	-6.73	1191.25	9.05	-6.97	1178.47	9.10	-6.69	1199.91
166	8160200	9.15	-7.50	1172.91	9.20	-6.53	1200.10	9.25	-7.95	1200.22
167	8160300	9.30	-9.64	1137.74	9.35	-7.62	1200.46	9.40	-8.08	1200.61
168	8160400	9.45	-7.78	1200.69	9.50	-7.56	1200.79	9.55	-6.69	1200.90
169	8160500	9.60	-6.54	1200.97	9.65	-5.10	1201.10	9.70	-5.67	1201.21
170	8160600	9.75	-7.04	1199.94	9.80	-5.71	1201.45	9.85	-5.27	1201.59
171	8160700	9.90	-5.54	1201.89	10.05	-5.71	1202.19	10.15	-3.80	1202.43
172	8160800	10.25	4.32	1124.52	10.35	15.16	771.71	10.45	23.54	667.38

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  173     8160900 10.55    22.32  696.27 10.65    18.14  643.13 10.75     9.62  725.54
  174     8170000 10.85    12.73  682.42 10.95    11.28  619.94 11.05    11.88  663.97
  175     8170100 11.15     9.14  693.22 11.25     1.94  744.52 11.35     1.99  702.45
  176     8170200 11.45     3.08  776.34 11.55    -2.43  954.61 11.65    -2.21 1204.60
  177     8170300 11.75    -4.95 1008.53 11.85    -7.42 1204.55 11.95    -9.37 1204.56
  178     8170400 12.05   -14.90 1138.67 12.15   -16.01 1204.59 12.25   -13.98 1204.57
  179     8170500 12.35   -20.30 1204.60 12.45   -21.48 1204.65 12.55   -14.87 1204.57
  180     8170600 12.65   -21.02 1204.68 12.75   -15.34 1204.69 12.85   -19.29 1204.70
  181     8170700 12.95   -18.31 1204.71 13.05   -20.95 1204.73 13.15   -15.11 1204.74
  182     8170800 13.25   -19.16 1204.76 13.35   -18.89 1204.77 13.45   -16.75 1204.79
  183     8170900 13.55   -16.52 1204.77 13.65   -13.22 1204.74 13.75   -15.75 1204.71
  184     8180000 13.85   -21.49 1204.70 13.95   -13.21 1204.67 14.05   -20.60 1091.15
  185     8180100 14.15   -16.33 1159.80 14.25    -6.16 1204.53 14.35   -10.49 1123.40
  186     8180200 14.45    -4.84 1204.26 14.55    -2.08 1204.12 14.65    -2.50 1203.96
  187     8180300 14.75    -0.97 1120.19 14.85     0.18 1203.43 14.95     1.81 1071.09
  188     8180400 15.05     2.50 1203.00 15.15     4.33  989.14 15.25     2.79 1202.49
  189     8180500 15.35     3.04 1168.44 15.45     2.77 1202.11 15.55     3.19 1022.22
  190     8180600 15.65     2.45 1135.29 15.75     0.64 1202.00 15.85    -5.43  997.72
  191     8180700 15.95    -3.86 1202.16 16.05    -5.26 1202.16 16.15    -5.41 1202.06
  192     8180800 16.25    -8.78 1202.00 16.35   -11.19 1201.90 16.45    -7.76 1201.84
  193     8180900 16.55    -6.52 1201.74 16.65    -9.51 1201.68 16.75    -9.22 1201.57
  194     8190000 16.85   -11.29 1201.47 16.95    -9.48 1201.36 17.05     0.0  1201.20
  195     8190100 17.15   -15.24 1071.99 17.25   -10.83 1200.93 17.35    -6.80 1200.76
  196     8190200 17.45    -7.71 1207.92 17.55    -4.00 1208.15 17.65    -6.14 1207.52
  197     8190300 17.75    -5.08 1206.98 17.85    -3.98 1207.81 17.95    -2.79 1208.79
  198     8190400 18.05    -3.21 1215.50 18.15    -9.47 1224.96 18.25    -4.94 1235.19
  199     8190500 18.35     0.0  1241.80 18.45    -1.60 1245.96 18.55    -9.07 1247.49
  200     8190600 18.65    -2.60 1248.12 18.75    -4.53 1248.09 18.85    -5.61 1248.55
  201     8190700 18.95    -2.43 1247.86 19.05     0.0  1246.50 19.15    -3.66 1245.40
  202     8190800 19.25    -2.55 1242.27 19.35    -0.32 1239.36 19.45    -2.70 1235.65
  203     8190900 19.55    -0.80 1234.37 19.65    -0.24 1230.78 19.75    -1.13 1229.55
  204     *
  205     *  FILL TABLE DATA FOR TEST 105 GGI USED FOR VERTICAL OUTLET SPOOL PIECE
  206     * USING INVERTED TURBINE METER RESULTS FROM 0 THROUGH 1.95 SEC.
  207     8200000  z  a   z87  1   LBS/SEC
  208     8200100  0.0   -673.81  660.64  0.05 -559.03  656.34  0.10 -274.76  658.80
  209     8200200  0.15  -324.03  661.80  0.20 -132.75  661.86  0.25 -246.22  654.50
  210     8200300  0.30  -217.03  663.90  0.35 -255.95  664.03  0.40 -232.74  663.55
  211     8200400  0.45  -187.51  661.61  0.50 -285.44  659.06  0.55 -104.48  657.14
  212     8200500  0.60   -59.00  656.65  0.65  -59.57  656.00  0.70   92.05  655.99
  213     8200600  0.75   -47.00  656.15  0.80   85.32  656.16  0.85   40.71  655.83
  214     8200700  0.90   -42.21  655.68  0.95  -39.41  656.05  1.00  -40.56  656.98
  215     8200800  1.05   -38.17  658.19  1.10   28.80  657.17  1.15   -98.64  657.69
  216     8200900  1.20   -98.98  657.26  1.25 -149.83  656.83  1.30  -142.64  657.45
  217     8210000  1.35   -147.28 658.96  1.40 -105.22  659.72  1.45  -133.66  661.75
  218     8210100  1.50   -152.52 663.40  1.55 -169.29  663.14  1.60  -172.13  662.89
  219     8210200  1.65   -187.25 664.77  1.70 -183.36  660.47  1.75  -153.45  656.34
  220     8210300  1.80   -189.04 665.12  1.85 -171.23  674.56  1.90  -151.92  679.18
  221     8210400  1.95   -159.11 677.95  2.00 -135.32  671.73  2.05  -137.58  666.88
  222     8210500  2.10   -127.55 672.55  2.15 -121.27  676.43  2.20  -115.11  675.51
  223     8210600  2.25   -102.80 682.88  2.30 -104.37  680.43  2.35  -104.64  680.90
  224     8210700  2.40   -115.25 671.09  2.45 -112.10  666.87  2.50  -112.73  659.68
  225     8210800  2.55    -97.67 664.00  2.60  -92.07  662.00  2.65   -82.29  671.24
  226     8210900  2.70    -77.91 690.21  2.75  -72.61  698.01  2.80   -81.25  686.86
  227     8220000  2.85    -78.90 701.62  2.90  -78.07  708.74  2.95   -74.10  717.30
  228     8220100  3.00    -75.70 713.98  3.05  -61.50  749.03  3.10   -55.64  756.98
  229     8220200  3.15    -53.67 758.37  3.20  -50.98  749.11  3.25   -48.33  740.13
  230     8220300  3.30    -40.53 765.46  3.35  -30.20  787.63  3.40   -32.09  774.10
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231	8220400	3.45	-30.09	760.26	3.50	-32.23	754.37	3.55	-30.00	751.95
232	8220500	3.60	-32.14	750.39	3.65	-33.78	722.10	3.70	-34.08	739.73
233	8220600	3.75	-28.92	741.29	3.80	-39.16	708.24	3.85	-38.48	708.22
234	8220700	3.90	-32.07	738.04	3.95	-29.13	726.60	4.00	-26.26	717.57
235	8220800	4.05	-29.36	728.62	4.10	-24.77	756.40	4.15	-28.50	711.62
236	8220900	4.20	-3.52	710.94	4.25	-2.24	727.35	4.30	-1.57	730.43
237	8230000	4.35	-1.00	780.95	4.40	-0.68	803.16	4.45	-1.34	835.26
238	8230100	4.50	-21.92	750.20	4.55	-31.18	791.82	4.60	-34.51	824.21
239	8230200	4.65	-40.17	859.85	4.70	-43.10	910.89	4.75	-42.96	968.44
240	8230300	4.80	-43.96	991.52	4.85	-46.06	1017.56	4.90	-46.33	1047.49
241	8230400	4.95	-49.40	1052.09	5.00	-53.27	1047.38	5.05	-55.86	1044.22
242	8230500	5.10	-50.71	1089.09	5.15	-52.09	1073.20	5.20	-70.81	958.57
243	8230600	5.25	-139.48	753.35	5.30	-187.76	697.51	5.35	-216.62	669.22
244	8230700	5.40	-200.10	663.75	5.45	-162.88	675.94	5.50	-131.63	589.96
245	8230800	5.55	-113.60	695.64	5.60	-107.08	691.97	5.65	-109.10	685.67
246	8230900	5.70	-108.52	694.14	5.75	-93.30	729.06	5.80	-90.09	741.99
247	8240000	5.85	-97.35	740.57	5.90	-107.77	727.20	5.95	-88.84	776.94
248	8240100	6.00	-84.12	805.47	6.05	-75.29	845.99	6.10	-67.23	892.40
249	8240200	6.15	-65.27	901.78	6.20	-66.96	888.95	6.25	-69.69	880.06
250	8240300	6.30	-68.24	913.69	6.35	-73.23	917.93	6.40	-72.21	943.49
251	8240400	6.45	-75.05	941.14	6.50	-76.79	947.04	6.55	-83.69	930.78
252	8240500	6.60	-80.95	949.94	6.65	-92.32	912.49	6.70	-94.43	930.91
253	8240600	6.75	-110.91	895.98	6.80	-116.20	895.98	6.85	-124.03	881.83
254	8240700	6.90	-116.43	926.16	6.95	-109.63	971.42	7.00	-100.88	1038.34
255	8240800	7.05	-103.47	1025.15	7.10	-105.71	1058.44	7.15	-105.34	1069.17
256	8240900	7.20	-107.24	1066.09	7.25	-87.69	1196.18	7.30	-86.53	1195.34
257	8250000	7.35	-87.17	1196.43	7.40	-82.89	1196.57	7.45	-91.77	1195.28
258	8250100	7.50	-95.65	1137.69	7.55	-84.04	1196.93	7.60	-94.88	1197.06
259	8250200	7.65	-83.34	1197.20	7.70	-86.81	1197.29	7.75	-92.10	1195.62
260	8250300	7.80	-81.65	1197.38	7.85	-80.42	1197.51	7.90	-90.89	1193.85
261	8250400	7.95	-87.40	1148.06	8.00	-71.65	1197.91	8.05	-76.98	1194.00
262	8250500	8.10	-77.21	1198.14	8.15	-76.75	1198.23	8.20	-84.13	1151.83
263	8250600	8.25	-79.55	1166.16	8.30	-79.11	1163.58	8.35	-74.88	1198.72
264	8250700	8.40	-73.38	1198.77	8.45	-68.87	1198.95	8.50	-65.81	1199.03
265	8250800	8.55	-66.83	1199.08	8.60	-62.95	1190.76	8.65	-54.63	1199.12
266	8250900	8.70	-46.64	1199.17	8.75	-46.57	1199.26	8.80	-44.71	1199.30
267	8260000	8.85	-36.47	1199.39	8.90	-37.68	1199.43	8.95	-37.19	1199.63
268	8260100	9.00	-38.36	1199.67	9.05	-40.36	1199.74	9.10	-33.17	1199.78
269	8260200	9.15	-42.99	1142.75	9.20	-35.39	1199.98	9.25	-33.54	1200.17
270	8260300	9.30	-29.33	1200.25	9.35	-35.91	1200.37	9.40	-31.77	1200.48
271	8260400	9.45	-32.22	1200.64	9.50	-28.23	1200.82	9.55	-35.95	1200.82
272	8260500	9.60	-33.50	1200.89	9.65	-31.43	1201.03	9.70	-31.10	1201.13
273	8260500	9.75	-29.86	1201.27	9.80	-32.43	1201.41	9.85	-39.60	1201.58
274	8260700	9.95	-37.65	1201.82	10.05	-38.08	1202.18	10.15	-50.07	1202.51
275	8260800	10.25	-41.87	1202.78	10.35	-53.48	1229.94	10.45	-57.58	1232.29
276	8260900	10.55	-49.32	1231.11	10.65	-43.38	1227.44	10.75	-50.09	1225.50
277	8270000	10.85	-43.99	1226.41	10.95	-34.09	1227.27	11.05	-36.02	1228.45
278	8270100	11.15	-37.34	1230.92	11.25	-15.53	1233.19	11.35	-26.56	1235.61
279	8270200	11.45	-19.08	1237.31	11.55	-12.65	1239.62	11.65	-13.92	1241.13
280	8270300	11.75	-15.21	1240.39	11.85	-8.59	1204.50	11.95	-5.77	1204.50
281	8270400	12.05	-1.97	1193.95	12.15	21.98	487.48	12.25	200.67	471.27
282	8270500	12.35	150.70	484.02	12.45	35.00	562.56	12.55	33.12	538.42
283	8270600	12.65	14.68	571.77	12.75	20.06	556.93	12.85	33.97	514.28
284	8270700	12.95	44.69	496.11	13.05	23.84	507.07	13.15	5.10	511.49
285	8270800	13.25	4.75	521.41	13.35	0.76	564.29	13.45	7.07	559.33
286	8270900	13.55	11.09	505.92	13.65	7.34	507.05	13.75	-8.17	529.54
287	8280000	13.85	-8.09	602.77	13.95	-5.76	842.75	14.05	-6.31	987.65
288	8280100	14.15	-6.47	1204.63	14.25	-16.15	1079.49	14.35	-24.71	1185.32

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 287     8280200 14.45   -45.75  924.61 14.55   -52.23  956.76 14.65   -26.15 1204.01
 290     8280300 14.75   -29.86 1203.73 14.85   -45.09 1063.70 14.95   -32.94 1203.27
 291     8280400 15.05   -21.15 1203.07 15.15   -26.08 1202.86 15.25   -25.95 1202.65
 292     8280500 15.35   -27.45 1188.49 15.45   -19.01 1202.27 15.55   -20.03 1202.11
 293     8280600 15.65   -13.25 1202.11 15.75    -4.36 1202.27 15.85   -13.49  754.42
 294     8280700 15.95    -6.37  568.33 16.05     0.37  564.46 16.15     4.39  519.86
 295     8280800 16.25    12.87  539.18 16.35    56.11  434.13 16.45    45.13  465.45
 296     8280900 16.55    51.62  454.56 16.65    54.74  445.65 16.75    98.14  415.57
 297     8290000 16.45    52.77  440.05 16.95    46.68  435.99 17.05    25.90  461.29
 298     8290100 17.15     9.56  574.01 17.25    13.64  513.99 17.35    21.19  460.86
 299     8290200 17.45     4.41  508.85 17.55     8.67  438.33 17.65     0.64  610.57
 300     8290300 17.75     3.04  542.57 17.85     3.22  525.93 17.95     2.37  569.87
 301     8290400 18.05     0.25  503.55 18.15     0.05  862.20 18.25     1.44  510.69
 302     8290500 18.35     0.32  518.70 18.45     0.12  850.63 18.55     0.03  767.60
 303     8290600 18.65     0.10  470.66 18.75     0.05  588.33 18.85     0.02  914.95
 304     8290700 18.95     0.03  756.19 19.05    -0.95  487.65 19.15    -1.24 1196.96
 305     8290800 19.25    -2.17 1196.07 19.35    -0.91 1200.95 19.45    -3.87 1200.79
 306     8290900 19.55    -3.69 1194.80 19.65    -3.03 1194.41 19.75    -6.01 1199.06
 307     *
 308     * KINETIC CONSTANTS CARD
 309     *
 310     140300  0  0  0.  0.
 311     *
 312     * SCRAM POWER CARD
 313     *
 314     141001 20 2 0. 1.0  2.04 1.0  2.10 0.8247  2.15 0.7491  2.20 0.6804
 315     141002  2.25 0.618  2.3  0.5614  2.43 0.4638  2.5 0.3827  2.65 0.2874
 316     141003  2.8 0.2161  3.0 0.1484  3.25 0.0931  3.6 0.0495  4.0 0.0252
 317     141004  4.35 0.0172  4.8 0.1031  5.8 0.00458  5.85 0.  50.  0.
 318     *
 319     * SLAB CARDS
 320     *
 321     150011  3 7  3 0 0  2  2  0.0        14.4289980 0.12769979 0.0         0.03760000
 322     150021  0 4  2 1 0  2  2  0.0        10.0949984 0.08959997 0.0         0.03760000
 323     150031  0 9  1 1 0  2  2  0.0        16.0529938 0.14199996 0.0         0.03760000
 324     150041  0 10  9 1 0  2  2  0.0        10.0769930 0.08999976 0.0          0.03760000
 325     150051  0 11 10 1 0  2  2  0.0        14.2539928 0.12599999 0.0          0.03760000
 326     150061 1  0  7 0 0  2  2  2.7500000  0.0         0.13089997 0.0          0.0
 327     150071 2  0  7 0 0  2  2  2.3339987  0.0         0.11109996 0.0          0.0
 328     150081 13  0  7 0 0  2  2  3.2089987  0.0         0.15289980 0.0          0.0
 329     150091 6  0  4 0 0  2  2  2.0019999  0.0         0.18579996 0.0          0.0
 330     150101 3  0  4 0 0  2  2 11.5029984  0.0         1.06799984 0.0          0.0
 331     150111 4  0  4 0 0  2  2  6.7579985  0.0         0.62699986 0.0          0.0
 332     150121 5  0  4 0 0  2  2 10.3399992  0.0         0.95999998 0.0          0.0
 333     150131 12  0  4 0 0  2  2  4.1699982  0.0         0.38709980 0.0          0.0
 334     150141 7 5  5 0 0  2  2  1.7699991  2.4329987 0.17509997 0.02760000 0.0
 335     150151  8 5  5 0 0  2  2  1.2399998  1.7039986 0.12259996 0.02760000 0.0
 336     150161  9 4  5 0 0  2  2  1.9679995  2.7039986 0.19453999 0.02760000 0.0
 337     150171  10 3  5 0 0  2  2  1.2339993  1.6959982 0.12199998 0.02760000 0.0
 338     150181  11 3  5 0 0  2  2  1.749      2.3999987 0.17299998 0.02760000 0.0
 339     150191  7 5  6 0 0  2  2  1.769      2.6539984 0.13799977 0.02760000 0.0
 340     150201  8 5  6 0 0  2  2  1.2399998  1.8589993 0.09679997 0.02760000 0.0
 341     150211  9 4  6 0 0  2  2  1.9679995  2.9499989 0.15359998 0.02760000 0.0
 342     150221  10 3  6 0 0  2  2  1.2339993  1.8499985 0.09639973 0.02760000 0.0
 343     150231  11 3  6 0 0  2  2  1.749      2.6229992 0.13659993 0.02760000 0.0
 344     150241  1  0  7 0 0  2  2  2.7500000  0.0         0.13089997 0.0          0.0
 345     150012 0.0        0.0471000  0.0        0.0         0.0         0.0
 346     150022 0.0        0.0471000  0.0        0.0         0.0         0.0
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  347     150032 0.0         0.0471000  0.0         0.0         0.0         0.0
  348     150042 0.0         0.0471000  0.0         0.0         0.0         0.0
  349     150052 0.0         0.0471000  0.0         0.0         0.0         0.0
  350     150062 0.0         0.0        3.000000    0.0         0.0         0.0
  351     150072 0.0         0.0        2.549996    0.0         0.0         0.0
  352     150082 0.0         0.0        4.000000    0.0         0.0         0.0
  353     150092 0.0         0.0        0.0         0.0         0.0         0.0
  354     150102 0.0         0.0        0.0         0.0         0.0         0.0
  355     150112 0.0         0.0        0.0         0.0         0.0         0.0
  356     150122 0.0         0.0        0.0         0.0         0.0         0.0
  357     150132 0.0         0.0        0.0         0.0         0.0         0.0
  358     150142 0.0         0.0        0.0         2.653996    0.0         2.653996
  359     150152 0.0         0.0        0.0         1.858996    2.655000    4.509996
  360     150162 0.0         0.0        0.0         2.950000    0.0         0.0
  361     150172 0.0         0.0        0.0         1.849998    0.001000    1.839996
  362     150182 0.0         0.0        0.0         2.622996    1.851000    4.591000
  363     150192 0.0         0.0        0.0         2.653996    0.0         2.653996
  364     150202 0.0         0.0        0.0         1.858996    2.655000    4.511996
  365     150212 0.0         0.0        0.0         2.950000    0.0         0.0
  366     150222 0.0         0.0        0.0         1.849998    0.001000    1.849000
  367     150232 0.0         0.0        0.0         2.622996    1.851000    4.591000
  368     150242 0.0         0.0        3.000000    0.0         0.0         0.0
  369     *
  370     * CORE CARDS
  371     *
  372     *
  373     160010  1  5  8  9 0.0       0.1110400 0.0         0.0
  374     160020  2  5 12 13 0.0       0.1858799 0.0         0.0
  375     160030  3  5 12 13 0.0       0.4131899 0.0         0.0
  376     160040  4  5 12 13 0.0       0.1798900 0.0         0.0
  377     160050  5  5  8  9 0.0       0.1100000 0.0         0.0
  378     160010  1  5  8  9 0.0       0.1110400 0.0         0.0       -1 * BCSLAB
          CARD ABOVE IS REPLACEMENT CARD.
  379     160020  2  5 12 13 0.0       0.1858799 0.0         0.0       -3  * BC SLAB
          CARD ABOVE IS REPLACEMENT CARD.
  380     160030  3  5 12 13 0.0       0.4131899 0.0         0.0       -4 *BC SALB
          CARD ABOVE IS REPLACEMENT CARD.
  381     160040  4  5 12 13 0.0       0.1798900 0.0         0.0         -5  * BCSLAB
          CARD ABOVE IS REPLACEMENT CARD.
  382     160050  5  5  8  9 0.0       0.1100000 0.0         0.0         -7  * BC SLAB
          CARD ABOVE IS REPLACEMENT CARD.
  383     * SLAB GEOMETRY CARDS
  384     *
  385     170101 2 6 3 2 0. .009067 0.
  386     170102  0     1  2  1.100E-03    1.0
  387     170103  0     4  3  4.167E-03    0.
  388     170104 0  2 4 .0025 0.
  389     170105  0   6   1   5.489E-6   0.
  390     170105 0  2 2 .000833 0.
  391     170201 2 6 3 2 0. .008579 0.
  392     170202  0     1  2             1.588E-03    1.0
  393     170203  0     4  3             4.167E-03    0.
  394     170204 0  2 4 .0025 0.
  395     170205  0  6  1  3.702E-6    0.
  396     170206 0  2 2 .000833 0.
  397     170301 2 6 3 2 0. .007866 0.
  398     170302  0     1  1             1.783E-03    0.5
  399     170303  0     5  1             7.18E-04    0.5
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400     170304  0       4  3                4.167E-03      0.
401     170305  0    6  1  1.667E-5      0.
402     170306  0    2  5  3.333E-3  0.
403     170901  2  6  3  2  0.  .008579  0.
404     170902  0       1  2                1.588E-03      1.0
405     170903  0       4  3                4.167E-03      0.
406     170904  0    2  4  .0025  0.
407     170905  0    6  1  5.204E-5      0.
408     170906  0    2  2  .000833  0.
409     171001  2  6  3  2  0.  .007666  0.
410     171002  0       1  1                1.783E-03      0.5
411     171003  0       5  1                7.18E-04       0.5
412     171004  0       4  3                4.167E-03      0.
413     171005  0    6  1  4.115E-5      0.
414     171006  0    2  5  3.333E-3  0.
415     170401  2    2  2  3  0.365  0.3333       0.
416     170402  0       2  1          0.05         0.
417     170501  1  1    2  4  0.       0.08333      0.
418     170601  1  1    2  4  0.       0.0625       0.
419     170701  2    2  2  3  3.1459   0.01665      0.
420     170702  0       2  1          0.025        0.
421     170801  2  2  2  3  0.4375  0.0375   0.
422     170802  0    2  2  0.05525  0.
423     *
424     *    VOLUMETRIC HEAT CAPACITY  BTU/F-FT**3  MATERIAL 1 - INCONNEL
425     *
426     190101  20        0.      51.41         200.      57.434        300.      59.527   * INCONNEL
427     190102           400.      61.157        500.      62.476        600.      63.572   * INCONNEL
428     190103           700.      64.575        800.      65.612        900.      66.795   * INCONNEL
429     190104          1000.      68.247       1100.      70.088       1200.      72.439   * INCONNEL
430     190105          1300.      75.420       1400.      79.150       1500.      83.750   * INCONNEL
431     190106          1600.      89.341       1700.      96.042       1800.     103.973   * INCONNEL
432     190107          1900.     113.255       2000.     124.008                           * INCONNEL
433     *
434     *    THERMAL CONDUCTIVITY BTU/FT-HR-F    MATERIAL 1 - INCONNEL
435     *
436     180101  20        0.       8.4294       200.       9.098        300.       9.495  *9INCONNEL
437     180102           400.       9.930        500.      10.398        600.      10.895   * INCONNEL
438     180103           700.      11.420        800.      11.967        900.      12.532   * INCONNEL
439     180104          1000.      13.113       1100.      13.704       1200.      14.303   * INCONNEL
440     180105          1300.      14.906       1400.      15.509       1500.      16.109   * INCONNEL
441     180106          1600.      16.701       1700.      17.282       1800.      17.849   * INCONNEL
442     180107          1900.      18.397       2000.      18.922                           * INCONNEL
443     *
444     *    VOLUMETRIC HEAT CAPACITY  BTU/F-FT**3  MATERIAL 2 - 316 SS
445     *
446     190201  20        0.      51.68         200.      56.923        300.      59.020   * 316-STST
447     190202           400.      60.846        500.      62.447        600.      63.865   * 316-STST
448     190203           700.      65.141        800.      66.308        900.      67.400   * 316-STST
449     190204          1000.      68.444       1100.      69.463       1200.      70.480   * 316-STST
450     190205          1300.      71.506       1400.      72.563       1500.      73.652   * 316-STST
451     190206          1600.      74.782       1700.      75.952       1800.      77.162   * 316-STST
452     190207          1900.      78.406       2000.      79.672                           * 316-STST
453     *
454     *    THERMAL CONDUCTIVITY BTU/FT-HR-F    MATERIAL 2 - 316 SS
455     *
456     180201  20        0.       7.2458       200.       8.225        300.       8.691   * 316-STST
457     180202           400.       9.144        500.       9.586        600.      10.020   * 316-STST
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    458     180203         700.     10.448       800.     10.872       900.     11.294   * 316-STST
    459     180204        1000.     11.718      1100.     12.145      1200.     12.577   * 316-STST
    460     180205        1300.     13.017      1400.     13.467      1500.     13.929   * 316-STST
    461     180206        1600.     14.406      1700.     14.900      1800.     15.414   * 316-STST
    462     180207        1900.     15.948      2000.     16.507                         * 316-STST
    463     *
    464     *    VOLUMETRIC HEAT CAPACITY  BTU/F-FT**3  MATERIAL 3 - MGO
    465     *
    466     190301 20 0. 47.5516 200. 52.2156 300. 54.2084 400. 55.9458 500. 57.4944
    467     190302 600. 58.8512 700. 60.0384 800. 61.0348 900. 61.9040 1000. 62.5860
    468     190303 1100. 63.2698 1150. 63.5364 1200. 63.7908 1250. 64.0240 1300. 64.2360
    469     190304 1400. 64.5968 1500. 64.9148 1600. 65.1900 1700. 65.4444 1800. 65.9776
    470     *
    471     *    THERMAL CONDUCTIVITY BTU/FT-HR-F    MATERIAL 3 - MGO
    472     *
    473     180301 20 0. 8.4435  200.  6.4805  300.  5.7049  400.  5.0470  500.  4.4937
    474     180302  600.  4.0326  700.  3.6523  800.  3.3423  900.  3.0930
    475     180303  1000.  2.8959  1100.  2.7431  1200.  2.6281  1300.  2.5450
    476     180304  1400.  2.4889  1500.  2.4558  1600.  2.4428  1700.  2.4428
    477     180305 1800.  2.4428  1900.  2.4428  2000.  2.4428
    478     *
    479     *    VOLUMETRIC HEAT CAPACITY  BTU/F-FT**3  MATERIAL 4 - BN
    480     *
    481     190401 20         0.     20.98        200.     29.896       300.     33.012   *         BN
    482     190402          400.     36.265       500.     39.178       600.     41.775   *         BN
    483     190403          700.     44.078       800.     46.112       900.     47.903   *         BN
    484     190404         1000.     49.466      1100.     50.834      1200.     52.025   *         BN
    485     190405         1300.     53.067      1400.     53.990      1500.     54.780   *         BN
    486     190406         1600.     55.517      1700.     56.188      1800.     56.826   *         BN
    487     190407         1900.     57.453      2000.     58.094                         *         BN
    488     *
    489     *    THERMAL CONDUCTIVITY BTU/FT-HR-F    MATERIAL 4 - BN
    490     *
    491     180401  20    0.      21.0962  100.    19.6490  500.    17.0927  600.    15.3442
    492     180402        700.    15.6187  750.    15.2654  800.    14.9196  850.    14.5788
    493     180403        900.    14.2463  950.    13.9212  1000.   13.6040  1050.   13.2950
    494     180404        1100.   12.9944  1150.   12.7025  1200.   12.4136  1300.   11.8821
    495     180405        1400.   11.3844  1500.   10.9287  1700.   10.1531  2000.    9.3650
    496     *
    497     *    VOLUMETRIC HEAT CAPACITY  BTU/F-FT**3  MATERIAL 5 - 70CU30NI
    498     *
    499     190501 20         0.     52.55        200.     55.512       300.     56.317   * 70CU30NI
    500     190502          400.     58.032       500.     59.179       600.     60.280   * 70CU30NI
    501     190503          700.     61.358       800.     62.435       900.     63.532   * 70CU30NI
    502     190504         1000.     64.672      1100.     65.876      1200.     67.167   * 70CU30NI
    503     190505         1300.     68.567      1400.     70.093      1500.     71.732   * 70CU30NI
    504     190506         1600.     73.641      1700.     75.597      1800.     77.373   * 70CU30NI
    505     190507         1900.     80.489      2000.     83.269                         * 70CU30NI
    506     *
    507     *    THERMAL CONDUCTIVITY BTU/FT-HR-F    MATERIAL 5 - 70CU30NI
    508     *
    509     180501 20         0.     16.802       200.     17.972       300.     19.314   * 70CU30NI
    510     180502          400.     20.969       500.     22.933       600.     24.913   * 70CU30NI
    511     180503          700.     27.251       800.     29.964       900.     33.193   * 70CU30NI
    512     180504         1000.     37.174      1100.     42.190      1200.     48.589   * 70CU30NI
    513     180505         1300.     56.774      1400.     67.212      1500.     80.429   * 70CU30NI
    514     180506         1600.     97.010      1700.    117.602      1800.    142.911   * 70CU30NI
    515     180507         1900.    173.708      2000.    210.807                         * 70CU30NI
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516     *
517     *
518     *   VOLUMETRIC HEAT CAPACITY  BTU/F-FT**3  MATERIAL 6 - AIR IN GAP
519     *
520     190601 20  25. .01973    68. .01812    100. .01708    200. .01449
521     190602     300. .01259   400. .01111    500. .00995   600. .00901
522     190603     700. .00824   800. .00758    900. .00702  1000. .00654
523     180602     300. .01948   400. .02164    500. .02380   500. .02595
524     180603     700. .02812   800. .03028    900. .03244  1000. .03460
525     180604    1100. .03674  1200. .03892   1300. .04108  1400. .04324
526     180601 20  25. .01354    68. .0144688   100. .01516   200. .01732
527     190604    1100. .00612  1200. .00575    1300. .00543  1400. .00515
528     190605    1500. .00487  1600. .00463    1700. .00442  2000. .00388
529     190605    1500. .04540  1600. .04756    1700. .04972  2000. .05620
530     *
531     *
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MISCELLANEOUS PROBLEM CONTROL DATA.

TAPE DUMP 0=NO	NUM EDIT VAR	NUM TIME SETS	NUM TRIP SGNL	NUM VOL	NUM BUB SETS	NUM TIME VOL	NUM JUN	NUM PUMP SETS	NUM CHK VALV	NUM LEAK CURV	NUM FILL CURV	NUM HEAT SLAB	NUM SLAB GEOM	NUM SLAB MAT	NUM CORE SECT	NUM HEAT EXCH	PRO-GRAM FLAG
-2	0	7	2	14	0	0	15	0	0	0	2	24	10	6	5	0	0

INITIAL POWER (MEGAWATTS)	IMPLICIT-EXPLICIT FACTOR	LOW PRESSURE LIMIT (PSI)	HIGH PRESSURE LIMIT (PSI)	LOW TEMPERATURE LIMIT (F)	HIGH TEMPERATURE LIMIT (F)
5.977500D 00	1.0000000D 00	8.8599980-02	3.6260000D 03	3.2099990 01	8.5403090 03

DATA FOR 7 TIME STEP SETS.

SET NUM	T S PER BRF	BRF PER LRG	LRG PER RST	T S CNT OPT	TIME STEP SIZE	MIN T S SIZE	END OF INTERVAL
1	500	10	1	0	0.1000000-03	0.1000000-04	0.1000000-02
2	50	10	1	0	0.1000000-02	0.1000000-04	0.1000000-01
3	4	10	2	0	0.1000000-01	0.1000000-04	0.1000000 00
4	10	1	1	0	0.1000000-01	0.1000000-04	0.5000000 00
5	10	5	1	0	0.1000000-01	0.1000000-04	0.4500000 01
6	100	5	1	0	0.1000000-02	0.1000000-04	0.5500000 01
7	10	5	1	0	0.1000000-01	0.1000000-04	0.2100000 03

ENDCPU = 1.000000D 05

DATA FOR 2 FILL SYSTEMS

FILL	TYPE	TRIP ID	AIR FRACTION
4		2	0.0

** FILL TABLE **

N	TIME (SEC)	FLOW RATE (LB/SEC-FT2)	ENTHALPY (BTU/LB)	N	TIME (SEC)	FLOW RATE (LB/SEC-FT2)	ENTHALPY (BTU/LB)
1	0.0	8.7445300D 02	5.4022000D 02	150	7.4500000D 00	2.6600000D 00	1.1932200D 03
2	5.0000000D-02	-8.7993200D 02	5.3774000D 02	151	7.5000000D 00	3.4500000D 00	1.1533100D 03
3	1.0000000D-01	-8.7734800D 02	5.3471000D 02	152	7.5500000D 00	3.4600000D 00	1.1883800D 03
4	1.5000000D-01	-8.7589200D 02	5.3977000D 02	153	7.6000000D 00	5.1400000D 00	1.1475200D 03
5	2.0000000D-01	-8.7588300D 02	5.3868000D 02	154	7.6500000D 00	6.4000000D 00	1.0806300D 03
6	2.5000000D-01	-8.7788000D 02	5.3971000D 02	155	7.7000000D 00	4.7080000D 01	5.6749000D 02
7	3.0000000D-01	-8.8175200D 02	5.3970000D 02	156	7.7500000D 00	7.9250000D 01	5.3228000D 02
8	3.5000000D-01	-7.2279000D 02	5.3863000D 02	157	7.8000000D 00	8.4350000D 01	5.3582000D 02
9	4.0000000D-01	-7.6845000D 02	5.4076000D 02	158	7.8500000D 00	5.5170000D 01	5.3994000D 02
10	4.5000000D-01	-7.8267000D 02	5.4077000D 02	159	7.9000000D 00	5.6290000D 01	5.4005000D 02
11	5.0000000D-01	-7.8051000D 02	5.4080000D 02	160	7.9500000D 00	2.9010000D 01	5.3781000D 02
12	5.5000000D-01	-7.3552000D 02	5.3978000D 02	161	8.0000000D 00	1.6190000D 01	5.3219000D 02
13	6.0000000D-01	-7.4829000D 02	5.3873000D 02	162	8.0500000D 00	7.3800000D 00	5.3234000D 02
14	6.5000000D-01	-7.9179000D 02	5.4085000D 02	163	8.1000000D 00	2.0100000D 00	5.3366000D 02
15	7.0000000D-01	-7.9644000D 02	5.4087000D 02	164	8.1500000D 00	8.9000000D-01	5.3820000D 02
16	7.5000000D-01	-8.1355000D 02	5.3981000D 02	165	8.2000000D 00	2.5690000D 01	5.3641000D 02
17	8.0000000D-01	-8.2998200D 02	5.3982000D 02	166	8.2500000D 00	1.1460000D 01	5.3779000D 02
18	8.5000000D-01	-8.3895300D 02	5.3984000D 02	167	8.3000000D 00	4.9300000D 00	5.4028000D 02
19	9.0000000D-01	-8.2977000D 02	5.3985000D 02	168	8.3500000D 00	-2.1030000D 01	5.3817000D 02
20	9.5000000D-01	-8.3122000D 02	5.3881000D 02	169	8.4000000D 00	1.4940000D 01	5.4086000D 02
21	1.0000000D 00	-8.6289300D 02	5.4095000D 02	170	8.4500000D 00	-1.4330000D 01	5.3932000D 02
22	1.0500000D 00	-8.4508300D 02	5.4097000D 02	171	8.5000000D 00	-3.3550000D 01	5.3828000D 02
23	1.1000000D 00	-8.4903300D 02	5.4098000D 02	172	8.5500000D 00	-4.1550000D 01	5.3870000D 02
24	1.1500000D 00	-8.4458000D 02	5.3988000D 02	173	8.6000000D 00	-4.2810000D 01	5.3979000D 02
25	1.2000000D 00	-8.4044000D 02	5.4102000D 02	174	8.6500000D 00	-5.4240000D 01	5.4187000D 02
26	1.2500000D 00	-8.2522000D 02	5.3891000D 02	175	8.7000000D 00	-7.2470000D 01	5.5210000D 02
27	1.3000000D 00	-8.3665000D 02	5.3893000D 02	176	8.7500000D 00	-2.4600000D 01	7.1015000D 02
28	1.3500000D 00	-8.1949000D 02	5.4001000D 02	177	8.8000000D 00	-1.1700000D 01	1.0196100D 03
29	1.4000000D 00	-8.3041000D 02	5.4109000D 02	178	8.8500000D 00	-1.1990000D 01	1.0046700D 03
30	1.4500000D 00	-8.1156000D 02	5.4111000D 02	179	8.9000000D 00	-8.3400000D 00	1.1995600D 03
31	1.5000000D 00	-8.2592000D 02	5.4006000D 02	180	8.9500000D 00	-7.4700000D 00	1.1996400D 03
32	1.5500000D 00	-8.0256000D 02	5.3902000D 02	181	9.0000000D 00	-6.7300000D 00	1.1812500D 03
33	1.6000000D 00	-8.1365300D 02	5.4010000D 02	182	9.0500000D 00	-6.9700000D 00	1.1784700D 03
34	1.6500000D 00	-7.9749000D 02	5.3905300D 02	183	9.1000000D 00	-6.6800000D 00	1.1999100D 03
35	1.7000000D 00	-8.1036000D 02	5.3907000D 02	184	9.1500000D 00	-7.5000000D 00	1.1729100D 03
36	1.7500000D 00	-7.8372000D 02	5.4122000D 02	185	9.2000000D 00	-6.5300000D 00	1.2001000D 03
37	1.8000000D 00	-8.1036300D 02	5.3910000D 02	186	9.2500000D 00	-7.9500000D 00	1.2002200D 03
38	1.8500000D 00	-7.9737300D 02	5.3912000D 02	187	9.3000000D 00	-9.6900000D 00	1.1377400D 03
39	1.9000000D 00	-7.7758800D 02	5.4021000D 02	188	9.3500000D 00	-7.6200000D 00	1.2004600D 03
40	1.9500000D 00	-7.8423000D 02	5.4023000D 02	189	9.4000000D 00	-8.0800000D 00	1.2006100D 03
41	2.0000000D 00	-7.5731000D 02	5.4025000D 02	190	9.4500000D 00	-7.7800000D 00	1.2006900D 03
42	2.0500000D 00	-7.6050300D 02	5.4671000D 02	191	9.5000000D 00	-7.5600000D 00	1.2007900D 03
43	2.1000000D 00	-7.4665000D 02	5.5779000D 02	192	9.5500000D 00	-6.6900000D 00	1.2009000D 03
44	2.1500000D 00	-7.1875000D 02	5.6784000D 02	193	9.6000000D 00	-6.5400000D 00	1.2009700D 03
45	2.2000000D 00	-6.9024000D 02	5.6900000D 02	194	9.6500000D 00	-6.1000000D 00	1.2011000D 03

46	2.2500000D 00	-1.0280000D 02	6.8268800D 02	195	9.7000000D 00	-3.1100000D 01	1.2011300D 03
47	2.3000000D 00	-1.0437000D 02	6.8343000D 02	196	9.7500000D 00	-2.9860000D 01	1.2012700D 03
48	2.3500000D 00	-1.0464000D 02	6.8090000D 02	197	9.8000000D 00	-3.2430000D 01	1.2014100D 03
49	2.4000000D 00	-1.1525000D 02	6.7109000D 02	198	9.8500000D 00	-3.8600000D 01	1.2015800D 03
50	2.4500000D 00	-1.1219000D 02	6.6687000D 02	199	9.9500000D 00	-3.7650000D 01	1.2018200D 03
51	2.5000000D 00	-1.1273000D 02	6.5978000D 02	200	1.0050000D 01	-3.8080000D 01	1.2021800D 03
52	2.5500000D 00	-9.7693000D 01	6.6400000D 02	201	1.0150000D 01	-5.0070000D 01	1.2025100D 03
53	2.6000000D 00	-9.2070000D 01	6.6200000D 02	202	1.0250000D 01	-4.1870000D 01	1.2027800D 03
54	2.6500000D 00	-8.2290000D 01	6.7124000D 02	203	1.0350000D 01	-5.3480000D 01	1.2299400D 03
55	2.7000000D 00	-7.7910000D 01	6.9021000D 02	204	1.0450000D 01	-6.7580000D 01	1.2322900D 03
56	2.7500000D 00	-7.2610000D 01	6.9501000D 02	205	1.0550000D 01	-4.9390000D 01	1.2311100D 03
57	2.8000000D 00	-8.1250000D 01	6.8686000D 02	206	1.0650000D 01	-4.3380000D 01	1.2274400D 03
58	2.8500000D 00	-7.8900000D 01	7.0162000D 02	207	1.0750000D 01	-5.0090000D 01	1.2255000D 03
59	2.9000000D 00	-7.8070000D 01	7.0874000D 02	208	1.0850000D 01	-4.3990000D 01	1.2268100D 03
60	2.9500000D 00	-7.4100000D 01	7.1730000D 02	209	1.0950000D 01	-3.4090000D 01	1.2272700D 03
61	3.0000000D 00	-7.5700000D 01	7.1396000D 02	210	1.1050000D 01	-3.6020000D 01	1.2284600D 03
62	3.0500000D 00	-6.1500000D 01	7.4903000D 02	211	1.1150000D 01	-3.7340000D 01	1.2309200D 03
63	3.1000000D 00	-5.5640000D 01	7.5698000D 02	212	1.1250000D 01	-1.5530000D 01	1.2331900D 03
64	3.1500000D 00	-5.3670300D 01	7.5837000D 02	213	1.1350000D 01	-2.6560000D 01	1.2356100D 03
65	3.2000000D 00	-5.0980000D 01	7.4911300D 02	214	1.1450000D 01	-1.9080000D 01	1.2373100D 03
66	3.2500000D 00	-4.8930000D 01	7.4013000D 02	215	1.1550000D 01	-1.2650000D 01	1.2396200D 03
67	3.3000000D 00	-4.0530000D 01	7.6546000D 02	216	1.1650000D 01	-1.3920000D 01	1.2411300D 03
68	3.3500000D 00	-3.0200000D 01	7.8763000D 02	217	1.1750000D 01	-1.6210000D 01	1.2403900D 03
69	3.4000000D 00	-3.2090000D 01	7.7410000D 02	218	1.1850000D 01	-8.6900000D 00	1.2045000D 03
70	3.4500000D 00	-3.0090000D 01	7.6026000D 02	219	1.1950000D 01	-5.7700000D 00	1.2045000D 03
71	3.5000000D 00	-3.2230000D 01	7.5437000D 02	220	1.2050000D 01	-1.9700000D 00	1.1939500D 03
72	3.5500000D 00	-3.0000000D 01	7.5185000D 02	221	1.2150000D 01	2.1980000D 01	4.8744000D 02
73	3.6000000D 00	-3.2140000D 01	7.5039000D 02	222	1.2250000D 01	2.0067000D 02	4.7127000D 02
74	3.6500000D 00	-3.3780000D 01	7.2410000D 02	223	1.2350000D 01	1.5070000D 02	4.8402000D 02
75	3.7000000D 00	-3.4090000D 01	7.3973000D 02	224	1.2450000D 01	3.5000000D 01	5.6256000D 02
76	3.7500000D 00	-2.8920000D 01	7.4129000D 02	225	1.2550000D 01	3.3120000D 01	5.3842000D 02
77	3.8000000D 00	-3.9160000D 01	7.0824000D 02	226	1.2650000D 01	1.4680000D 01	5.7177000D 02
78	3.8500000D 00	-3.4480000D 01	7.0822000D 02	227	1.2750000D 01	2.0060000D 01	5.5693000D 02
79	3.9000000D 00	-3.2070000D 01	7.3804000D 02	228	1.2850000D 01	3.3970000D 01	5.1428000D 02
80	3.9500000D 00	-2.9130000D 01	7.2660300D 02	229	1.2950000D 01	4.4690000D 01	4.9611000D 02
81	4.0000000D 00	-2.5260000D 01	7.1757000D 02	230	1.3050000D 01	2.3840000D 01	5.0707000D 02
82	4.0500000D 00	-2.9360000D 01	7.2862000D 02	231	1.3150000D 01	5.1000000D 00	5.1149000D 02
83	4.1000000D 00	-2.4770000D 01	7.5540000D 02	232	1.3250000D 01	4.7500000D 00	5.2141000D 02
84	4.1500000D 00	-2.8500000D 01	7.1162000D 02	233	1.3350000D 01	7.6000000-01	5.6429000D 02
85	4.2000000D 00	-3.5200300D 00	7.1094000D 02	234	1.3450000D 01	7.0700000D 00	5.5933000D 02
86	4.2500000D 00	-2.2400000D 00	7.2735000D 02	235	1.3550000D 01	1.1090000D 01	5.0592000D 02
87	4.3000000D 00	-1.8700000D 00	7.3043000D 02	236	1.3650000D 01	7.3400000D 00	5.0705000D 02
88	4.3500000D 00	-1.0000000D 00	7.8095000D 02	237	1.3750000D 01	-8.1700000D 00	5.2954000D 02
89	4.4000000D 00	-6.8000000-01	8.0316000D 02	238	1.3850000D 01	-8.0900000D 00	6.0277000D 02
90	4.4500000D 00	-1.3400300D 00	8.0526000D 02	239	1.3950000D 01	-5.7600000D 00	8.4275000D 02
91	4.5000000D 00	-2.1920000D 01	7.5020000D 02	240	1.4050000D 01	-6.3100000D 00	9.8765000D 02
92	4.5500000D 00	-3.1180000D 01	7.9182000D 02	241	1.4150000D 01	-6.4700000D 00	1.2046300D 03
93	4.6000000D 00	-3.4510000D 01	8.2421000D 02	242	1.4250000D 01	-1.6150000D 01	1.0794900D 03
94	4.6500000D 00	-4.0170000D 01	8.5985000D 02	243	1.4350000D 01	-2.4710000D 01	1.1863200D 03
95	4.7000000D 00	-4.3100000D 01	9.1089000D 02	244	1.4450000D 01	-4.9790000D 01	9.2461000D 02
96	4.7500000D 00	-4.2960000D 01	9.6944000D 02	245	1.4550000D 01	-5.2230000D 01	9.5676000D 02
97	4.8000000D 00	-4.3950300D 01	9.9152000D 02	246	1.4650000D 01	-2.6150000D 01	1.2040100D 03
98	4.8500000D 00	-4.6060000D 01	1.0176600D 03	247	1.4750000D 01	-2.9860000D 01	1.2037300D 03
99	4.9000000D 00	-4.6330000D 01	1.0474900D 03	248	1.4850000D 01	-4.5090000D 01	1.0637000D 03
100	4.9500000D 00	-4.9400000D 01	1.0520400D 03	249	1.4950000D 01	-3.2940000D 01	1.2032700D 03
101	5.0000000D 00	-5.3270000D 01	1.0473800D 03	250	1.5050000D 01	-2.1150000D 01	1.2030700D 03
102	5.0500000D 00	-5.5960000D 01	1.0442200D 03	251	1.5150000D 01	-2.6080000D 01	1.2028600D 03

103	5.100000D 00	-5.071000D 01	1.089000D 03	252	1.525000D 01	-2.695000D 01	1.202650D 03
104	5.150000D 00	-5.209000D 01	1.073200D 03	253	1.535000D 01	-2.746000D 01	1.188490D 03
105	5.200000D 00	-7.081000D 01	9.585700D 02	254	1.545000D 01	-1.901000D 01	1.202270D 03
106	5.250000D 00	-1.398800D 02	7.533500D 02	255	1.555000D 01	-2.003000D 01	1.202110D 03
107	5.300000D 00	-1.877600D 02	6.975100D 02	256	1.565000D 01	-1.326000D 01	1.202110D 03
108	5.350000D 00	-2.166200D 02	6.692200D 02	257	1.575000D 01	-4.360000D 00	1.202270D 03
109	5.400000D 00	-2.001000D 02	6.837500D 02	258	1.585000D 01	-1.349000D 01	7.544200D 02
110	5.450000D 00	-1.628800D 02	6.759400D 02	259	1.595000D 01	-6.970000D 00	5.683300D 02
111	5.500000D 00	-1.316300D 02	6.899600D 02	260	1.605000D 01	3.700000D-01	5.644600D 02
112	5.550000D 00	-1.136000D 02	6.956400D 02	261	1.615000D 01	4.390000D 00	6.198600D 02
113	5.600000D 00	-1.070800D 02	6.919700D 02	262	1.625000D 01	1.287000D 01	5.391800D 02
114	5.650000D 00	-1.091000D 02	6.856700D 02	263	1.633000D 01	5.611000D 01	4.341300D 02
115	5.700000D 00	-1.085200D 02	6.941400D 02	264	1.645000D 01	4.613000D 01	4.664500D 02
116	5.750000D 00	-9.330000D 01	7.290600D 02	265	1.655000D 01	5.162000D 01	4.545600D 02
117	5.800000D 00	-9.009000D 01	7.419900D 02	266	1.665000D 01	5.474000D 01	4.456500D 02
118	5.850000D 00	-9.735000D 01	7.405700D 02	267	1.675000D 01	9.814000D 01	4.155700D 02
119	5.900000D 00	-1.077700D 02	7.272000D 02	268	1.685000D 01	5.277000D 01	4.400500D 02
120	5.950000D 00	-8.884000D 01	7.769400D 02	269	1.695000D 01	4.668000D 01	4.359900D 02
121	6.000000D 00	-8.412000D 01	8.054700D 02	270	1.705000D 01	2.590000D 01	4.612900D 02
122	6.050000D 00	-7.629000D 01	8.459900D 02	271	1.715000D 01	9.560000D 00	5.740100D 02
123	6.100000D 00	-6.723000D 01	8.924000D 02	272	1.725000D 01	1.364000D 01	5.139900D 02
124	6.150000D 00	-6.527000D 01	9.017800D 02	273	1.735000D 01	2.118000D 01	4.608600D 02
125	6.200000D 00	-6.696000D 01	8.889500D 02	274	1.745000D 01	8.410000D 00	5.088900D 02
126	6.250000D 00	-6.969000D 01	8.800600D 02	275	1.755000D 01	8.670000D 00	4.383300D 02
127	6.300000D 00	-6.824000D 01	9.136900D 02	276	1.765000D 01	6.400000D-01	6.105700D 02
128	6.350000D 00	-7.323000D 01	9.179300D 02	277	1.775000D 01	3.080000D 00	5.425700D 02
129	6.400000D 00	-7.221000D 01	9.434900D 02	278	1.785000D 01	3.220000D 00	5.259300D 02
130	6.450000D 00	-7.505000D 01	9.411400D 02	279	1.795000D 01	2.370000D 00	5.699700D 02
131	6.500000D 00	-7.679000D 01	9.470400D 02	280	1.805000D 01	8.500000D-01	5.035500D 02
132	6.550000D 00	-8.369000D 01	9.307800D 02	281	1.815000D 01	5.000000D-02	8.622000D 02
133	6.600000D 00	-8.095000D 01	9.499400D 02	282	1.825000D 01	1.440000D 00	5.106900D 02
134	6.650000D 00	-9.232000D 01	9.124900D 02	283	1.835000D 01	3.200000D-01	5.187000D 02
135	6.700000D 00	-9.443000D 01	9.309100D 02	284	1.845000D 01	1.200000D-01	4.606300D 02
136	6.750000D 00	-1.109100D 02	8.959800D 02	285	1.855000D 01	3.000000D-02	7.676000D 02
137	6.800000D 00	-1.162000D 02	8.959800D 02	286	1.865000D 01	1.000000D-01	4.706600D 02
138	6.850000D 00	-1.240300D 02	8.818300D 02	287	1.875000D 01	5.000000D-02	5.883300D 02
139	6.900000D 00	-1.164300D 02	9.261600D 02	288	1.885000D 01	2.000000D-02	9.149500D 02
140	6.950000D 00	-1.096300D 02	9.714200D 02	289	1.895000D 01	3.000000D-02	7.561900D 02
141	7.000000D 00	-1.008800D 02	1.038340D 03	290	1.905000D 01	-9.500000D-01	8.876500D 02
142	7.050000D 00	-1.084700D 02	1.025150D 03	291	1.915000D 01	-1.240000D 00	1.196460D 03
143	7.100000D 00	-1.057100D 02	1.058440D 03	292	1.925000D 01	-2.170000D 00	1.196070D 03
144	7.150000D 00	-1.053400D 02	1.069170D 03	293	1.935000D 01	-9.100000D-01	1.200950D 03
145	7.200000D 00	-1.072400D 02	1.066090D 03	294	1.945000D 01	-3.870000D 00	1.200790D 03
146	7.250000D 00	-8.769000D 01	1.196180D 03	295	1.955000D 01	-3.690000D 00	1.194800D 03
147	7.300000D 00	-8.653000D 01	1.196340D 03	296	1.965000D 01	-3.030000D 00	1.194410D 03
148	7.350000D 00	-8.717000D 01	1.196430D 03	297	1.975000D 01	-6.010000D 00	1.199060D 03
149	7.400000D 00	-8.289000D 01	1.196570D 03				

DATA FOR 2 FILL SYSTEMS

FILL TYPE	TRIP ID	AIR FRACTION
4	2	0.0

** FILL TABLE **

N	TIME (SEC)	FLOW RATE (LB/SEC-FT2)	ENTHALPY (BTU/LB)	N	TIME (SEC)	FLOW RATE (LB/SEC-FT2)	ENTHALPY (BTU/LB)
1	0.0	-6.7381000D 02	6.6064000D 02	150	7.4500000D 00	-9.1770000D 01	1.1952800D 03
2	5.0000000D-02	-6.5903000D 02	6.5634000D 02	151	7.5000000D 00	-9.9650000D 01	1.1376900D 03
3	1.0000000D-01	-2.7496000D 02	6.5880000D 02	152	7.5500000D 00	-8.4040000D 01	1.1969300D 03
4	1.5000000D-01	-3.2809000D 02	6.6180000D 02	153	7.6000000D 00	-8.4880000D 01	1.1970600D 03
5	2.0000000D-01	-1.3275000D 02	6.6186000D 02	154	7.6500000D 00	-8.3360000D 01	1.1972000D 03
6	2.5000000D-01	-2.4622000D 02	6.6450000D 02	155	7.7000000D 00	-8.6810000D 01	1.1972900D 03
7	3.0000000D-01	-2.1703000D 02	6.6390000D 02	156	7.7500000D 00	-9.2100000D 01	1.1956200D 03
8	3.5000000D-01	-2.5595000D 02	6.6403000D 02	157	7.8000000D 00	-8.1650000D 01	1.1973800D 03
9	4.0000000D-01	-2.8274000D 02	6.6355000D 02	158	7.8500000D 00	-8.0420000D 01	1.1975100D 03
10	4.5000000D-01	-1.8751000D 02	6.6161000D 02	159	7.9000000D 00	-9.0890000D 01	1.1338500D 03
11	5.0000000D-01	-2.8544000D 02	6.5906000D 02	160	7.9500000D 00	-8.7490000D 01	1.1480600D 03
12	5.5000000D-01	-1.0448000D 02	6.5714000D 02	161	8.0000000D 00	-7.1650000D 01	1.1979100D 03
13	6.0000000D-01	-6.9000000D 01	6.5665000D 02	162	8.0500000D 00	-7.5980000D 01	1.1980000D 03
14	6.5000000D-01	-5.9570000D 01	6.5690000D 02	163	8.1000000D 00	-7.7210000D 01	1.1981400D 03
15	7.0000000D-01	9.2050000D 01	6.5599000D 02	164	8.1500000D 00	-7.6750000D 01	1.1982300D 03
16	7.5000000D-01	-4.7004000D 01	6.5615000D 02	165	8.2000000D 00	-8.4130000D 01	1.1518300D 03
17	8.0000000D-01	8.5320000D 01	6.5616000D 02	166	8.2500000D 00	-7.9550000D 01	1.1661600D 03
18	8.5000000D-01	4.0710000D 01	6.5583000D 02	167	8.3000000D 00	-7.9110000D 01	1.1635800D 03
19	9.0000000D-01	-4.2210000D 01	6.5568000D 02	168	8.3500000D 00	-7.4880000D 01	1.1987200D 03
20	9.5000000D-01	-3.9810000D 01	6.5605000D 02	169	8.4000000D 00	-7.3380000D 01	1.1987700D 03
21	1.0000000D 00	-4.0560000D 01	6.5698000D 02	170	8.4500000D 00	-6.8870000D 01	1.1989500D 03
22	1.0500000D 00	-3.8170000D 01	6.5819000D 02	171	8.5000000D 00	-6.5810000D 01	1.1990300D 03
23	1.1000000D 00	2.8890000D 01	6.5717000D 02	172	8.5500000D 00	-6.6830000D 01	1.1990800D 03
24	1.1500000D 00	-9.8640000D 01	6.5769000D 02	173	8.6000000D 00	-6.2950000D 01	1.1987600D 03
25	1.2000000D 00	-9.8940000D 01	6.5726000D 02	174	8.6500000D 00	-5.4630000D 01	1.1991200D 03
26	1.2500000D 00	-1.4983000D 02	6.5683000D 02	175	8.7000000D 00	-4.6640000D 01	1.1991700D 03
27	1.3000000D 00	-1.4264000D 02	6.5745000D 02	176	8.7500000D 00	-4.6570000D 01	1.1992600D 03
28	1.3500000D 00	-1.4729000D 02	6.5896000D 02	177	8.8000000D 00	-4.4710000D 01	1.1993000D 03
29	1.4000000D 00	-1.0522000D 02	6.5972000D 02	178	8.8500000D 00	-3.6470000D 01	1.1993900D 03
30	1.4500000D 00	-1.3366000D 02	6.6175000D 02	179	8.9000000D 00	-3.7683000D 01	1.1994300D 03
31	1.5000000D 00	-1.5252000D 02	6.6340000D 02	180	8.9500000D 00	-3.7190000D 01	1.1996300D 03
32	1.5500000D 00	-1.6929000D 02	6.6314000D 02	181	9.0000000D 00	-3.8390000D 01	1.1996700D 03
33	1.6000000D 00	-1.7213000D 02	6.6289000D 02	182	9.0500000D 00	-4.0360000D 01	1.1997400D 03
34	1.6500000D 00	-1.8725000D 02	6.6477000D 02	183	9.1000000D 00	-3.3170000D 01	1.1997800D 03
35	1.7000000D 00	-1.8336000D 02	6.6047000D 02	184	9.1500000D 00	-4.2990000D 01	1.1427900D 03
36	1.7500000D 00	-1.6345000D 02	6.5634000D 02	185	9.2000000D 00	-3.5390000D 01	1.1999800D 03
37	1.8000000D 00	-1.8904000D 02	6.6512000D 02	186	9.2500000D 00	-3.3540000D 01	1.2001700D 03
38	1.8500000D 00	-1.7123000D 02	6.7456000D 02	187	9.3000000D 00	-2.9330000D 01	1.2002500D 03
39	1.9000000D 00	-1.5192000D 02	6.7918000D 02	188	9.3500000D 00	-3.5910000D 01	1.2003700D 03
40	1.9500000D 00	-1.5911000D 02	6.7755000D 02	189	9.4000000D 00	-3.1770000D 01	1.2004800D 03
41	2.0000000D 00	-1.3532000D 02	6.7173000D 02	190	9.4500000D 00	-3.2220000D 01	1.2006400D 03
42	2.0500000D 00	-1.3758000D 02	6.6688000D 02	191	9.5000000D 00	-2.8230000D 01	1.2008200D 03
43	2.1000000D 00	-1.2755000D 02	6.7255000D 02	192	9.5500000D 00	-3.6950000D 01	1.2009200D 03
44	2.1500000D 00	-1.2127000D 02	6.7643000D 02	193	9.6000000D 00	-3.3500000D 01	1.2008900D 03
45	2.2000000D 00	-1.1511000D 02	6.7651000D 02	194	9.6500000D 00	-3.1430000D 01	1.2010300D 03

46	2.2500000D 00	-6.7665000D 02	5.6679000D 02	195	9.7000000D 00	-5.6700000D 00	1.2012100D 03
47	2.3000000D 00	-6.6023000D 02	5.8168000D 02	196	9.7500000D 00	-7.0400000D 00	1.1899400D 03
48	2.3500000D 00	-6.3112000D 02	6.0431000D 02	197	9.8000000D 00	-5.7100000D 00	1.2014500D 03
49	2.4000000D 00	-6.0002000D 02	6.0298000D 02	198	9.8500000D 00	-5.2700000D 00	1.2015900D 03
50	2.4500000D 00	-5.6843000D 02	6.0191000D 02	199	9.9500000D 00	-5.5800000D 00	1.2018900D 03
51	2.5000000D 00	-5.6045000D 02	6.0074000D 02	200	1.0050000D 01	-5.7100000D 00	1.2021900D 03
52	2.5500000D 00	-5.6285000D 02	5.9994000D 02	201	1.0150000D 01	-3.8000000D 00	1.2024300D 03
53	2.6000000D 00	-5.3417000D 02	5.9937000D 02	202	1.0250000D 01	4.3200000D 00	1.1245200D 03
54	2.6500000D 00	-4.9813000D 02	5.9866000D 02	203	1.0350000D 01	1.5160000D 01	7.7171000D 02
55	2.7000000D 00	-4.7833000D 02	5.9781000D 02	204	1.0450000D 01	2.3540000D 01	6.6738000D 02
56	2.7500000D 00	-4.1377000D 02	6.0131000D 02	205	1.0550000D 01	2.2320000D 01	6.9627000D 02
57	2.8000000D 00	-3.1857000D 02	6.1593000D 02	206	1.0650000D 01	1.8140000D 01	6.4313000D 02
58	2.8500000D 00	-2.5402000D 02	6.3264000D 02	207	1.0750000D 01	8.6200000D 00	7.2654000D 02
59	2.9000000D 00	-2.6255000D 02	6.2758000D 02	208	1.0850000D 01	1.2730000D 01	6.4242000D 02
60	2.9500000D 00	-2.1064000D 02	6.2479000D 02	209	1.0950000D 01	1.1280000D 01	6.1994000D 02
61	3.0000000D 00	-1.8000000D 02	6.4114000D 02	210	1.1050000D 01	1.1880000D 01	6.6397000D 02
62	3.0500000D 00	-1.5500000D 02	6.7559000D 02	211	1.1150000D 01	9.1400000D 00	6.9322000D 02
63	3.1000000D 00	-1.2500000D 02	7.0000000D 02	212	1.1250000D 01	1.9400000D 00	7.4462000D 02
64	3.1500000D 00	-1.0145000D 02	6.9989000D 02	213	1.1350000D 01	1.9900000D 00	7.0285000D 02
65	3.2000000D 00	-1.2800000D 02	6.7754000D 02	214	1.1450000D 01	3.0800000D 00	7.7634000D 02
66	3.2500000D 00	-1.3893000D 02	6.7582000D 02	215	1.1550000D 01	-2.4300000D 00	9.5461000D 02
67	3.3000000D 00	-1.3855000D 02	6.8352000D 02	216	1.1650000D 01	-2.2100000D 00	1.2046000D 03
68	3.3500000D 00	-1.4049000D 02	6.9482000D 02	217	1.1750000D 01	-4.9600000D 00	1.0085300D 03
69	3.4000000D 00	-1.4142000D 02	6.9634000D 02	218	1.1850000D 01	-7.4200000D 00	1.2045500D 03
70	3.4500000D 00	-1.4893000D 02	6.9155000D 02	219	1.1950000D 01	-9.3700000D 00	1.2045600D 03
71	3.5000000D 00	-1.6572000D 02	6.7590000D 02	220	1.2050000D 01	-1.4900000D 01	1.1386700D 03
72	3.5500000D 00	-1.5579000D 02	6.8944000D 02	221	1.2150000D 01	-1.6010000D 01	1.2045900D 03
73	3.6000000D 00	-1.7867000D 02	6.7234000D 02	222	1.2250000D 01	-1.8980000D 01	1.2045700D 03
74	3.6500000D 00	-2.0299000D 02	6.5851000D 02	223	1.2350000D 01	-2.0300000D 01	1.2046000D 03
75	3.7000000D 00	-1.8789000D 02	6.6456000D 02	224	1.2450000D 01	-2.1480000D 01	1.2046500D 03
76	3.7500000D 00	-1.6033000D 02	6.8301000D 02	225	1.2550000D 01	-1.4870000D 01	1.2046700D 03
77	3.8000000D 00	-1.5165000D 02	6.9286000D 02	226	1.2650000D 01	-2.1020000D 01	1.2046800D 03
78	3.8500000D 00	-1.3307000D 02	7.1210000D 02	227	1.2750000D 01	-1.5340000D 01	1.2046900D 03
79	3.9000000D 00	-1.2832000D 02	7.1283000D 02	228	1.2850000D 01	-1.9290000D 01	1.2047000D 03
80	3.9500000D 00	-1.2882000D 02	7.1500000D 02	229	1.2950000D 01	-1.8310000D 01	1.2047100D 03
81	4.0000000D 00	-1.2328000D 02	7.2299000D 02	230	1.3050000D 01	-2.0950000D 01	1.2047300D 03
82	4.0500000D 00	-1.1379000D 02	7.4017000D 02	231	1.3150000D 01	-1.5110000D 01	1.2047400D 03
83	4.1000000D 00	-1.1395000D 02	7.4747000D 02	232	1.3250000D 01	-1.9160000D 01	1.2047600D 03
84	4.1500000D 00	-1.1320600D 02	7.1901000D 02	233	1.3350000D 01	-1.8890000D 01	1.2047700D 03
85	4.2000000D 00	-1.4431000D 02	7.0949000D 02	234	1.3450000D 01	-1.4750000D 01	1.2047900D 03
86	4.2500000D 00	-1.2614000D 02	7.4389000D 02	235	1.3550000D 01	-1.6520000D 01	1.2047700D 03
87	4.3000000D 00	-1.2000000D 02	7.8935000D 02	236	1.3650000D 01	-1.1220000D 01	1.2047400D 03
88	4.3500000D 00	-1.1500000D 02	7.4821000D 02	237	1.3750000D 01	-1.5750000D 01	1.2047100D 03
89	4.4000000D 00	-1.1000000D 02	7.9379000D 02	238	1.3850000D 01	-2.1490000D 01	1.2047000D 03
90	4.4500000D 00	-1.0148000D 02	7.4019000D 02	239	1.3950000D 01	-1.3210000D 01	1.2046700D 03
91	4.5000000D 00	-1.0765000D 02	7.6096000D 02	240	1.4050000D 01	-2.0600000D 01	1.0911530D 03
92	4.5500000D 00	-1.0209000D 02	7.9634000D 02	241	1.4150000D 01	-1.6330000D 01	1.1598000D 03
93	4.6000000D 00	-1.1184000D 02	7.8017000D 02	242	1.4250000D 01	-5.1600000D 00	1.2045300D 03
94	4.6500000D 00	-1.0433300D 02	7.9046000D 02	243	1.4350000D 01	-1.0490000D 01	1.1234000D 03
95	4.7000000D 00	-1.1254000D 02	7.7932000D 02	244	1.4450000D 01	-4.8800000D 00	1.2042600D 03
96	4.7500000D 00	-1.1744000D 02	7.4766000D 02	245	1.4550000D 01	-2.0800000D 00	1.2041200D 03
97	4.8000000D 00	-8.4710000D 01	8.1582000D 02	246	1.4650000D 01	-2.5000000D 00	1.2039600D 03
98	4.8500000D 00	-9.2820000D 01	7.7327000D 02	247	1.4750000D 01	-9.7000000-01	1.1201900D 03
99	4.9000000D 00	-9.9290000D 01	7.4483000D 02	248	1.4850000D 01	1.8000000-01	1.2034300D 03
100	4.9500000D 00	-8.9680000D 01	7.5223000D 02	249	1.4950000D 01	1.8100000D 00	1.0710900D 03
101	5.0000000D 00	-7.6210000D 01	7.7435000D 02	250	1.5050000D 01	2.5000000D 00	1.2030000D 03
102	5.0500000D 00	-8.0250000D 01	7.4199000D 02	251	1.5150000D 01	4.3300000D 00	9.8914000D 02

103	5.1000000D 00	-6.0250000D 01	7.9791000D 02	252	1.5250000D 01	2.7900000D 00	1.2024900D 03
104	5.1500000D 00	-5.7680000D 01	8.0007300D 02	253	1.5350000D 01	3.0400000D 00	1.1684400D 03
105	5.2000000D 00	-5.2460000D 01	8.0274000D 02	254	1.5450000D 01	2.7700000D 00	1.2021100D 03
106	5.2500000D 00	-4.5320000D 01	8.0549000D 02	255	1.5550000D 01	3.1900000D 00	1.0222200D 03
107	5.3000000D 00	-3.1250000D 01	9.3977000D 02	256	1.5650000D 01	2.4600000D 00	1.1352900D 03
108	5.3500000D 00	-2.9640000D 01	9.2919000D 02	257	1.5750000D 01	5.4000000D-01	1.2020000D 03
109	5.4000000D 00	-2.9620000D 01	9.0451000D 02	258	1.5850000D 01	-5.4300000D 00	9.9772000D 02
110	5.4500000D 00	-2.5730000D 01	9.3836000D 02	259	1.5950000D 01	-3.8600000D 00	1.2021600D 03
111	5.5000000D 00	-2.1530300D 01	9.7977300D 02	260	1.6050000D 01	-5.2600000D 00	1.2021600D 03
112	5.5500000D 00	-2.0690000D 01	9.9444000D 02	261	1.6150000D 01	-5.4100000D 00	1.2020600D 03
113	5.6000000D 00	-2.1020000D 01	9.9206000D 02	262	1.6250000D 01	-8.7800000D 00	1.2020000D 03
114	5.6500000D 00	-2.4460300D 01	9.2488000D 02	263	1.6350000D 01	-1.1190000D 01	1.2019000D 03
115	5.7000000D 00	-2.5860000D 01	9.1069000D 02	264	1.6450000D 01	-7.7600000D 00	1.2018400D 03
116	5.7500000D 00	-2.3590000D 01	9.6820000D 02	265	1.6550000D 01	-6.5200000D 00	1.2017400D 03
117	5.8000000D 00	-1.9910000D 01	1.0577100D 03	266	1.6650000D 01	-9.5100000D 00	1.2016800D 03
118	5.8500000D 00	-2.6540000D 01	9.1565800D 02	267	1.6750000D 01	-8.2200000D 00	1.2015700D 03
119	5.9000000D 00	-1.9350000D 01	9.8441000D 02	268	1.6850000D 01	-1.1290000D 01	1.2014700D 03
120	5.9500000D 00	-1.8530000D 01	1.0088470D 03	269	1.6950000D 01	-9.4800000D 00	1.2013600D 03
121	6.0000000D 00	-1.5570000D 01	1.0795300D 03	270	1.7050000D 01	0.0	1.2012000D 03
122	6.0500000D 00	-1.6330000D 01	1.0543300D 03	271	1.7150000D 01	-1.5240000D 01	1.0719900D 03
123	6.1000000D 00	-1.6670000D 01	1.0193200D 03	272	1.7250000D 01	-1.0830000D 01	1.2009300D 03
124	6.1500000D 00	-1.6050300D 01	1.0174800D 03	273	1.7350000D 01	-6.8000000D 00	1.2007600D 03
125	6.2000000D 00	-1.4900000D 01	1.0575300D 03	274	1.7450000D 01	-7.7100000D 00	1.2079200D 03
126	6.2500300D 00	-1.3490000D 01	1.0796800D 03	275	1.7550000D 01	-4.0000000D 00	1.2081500D 03
127	6.3000000D 00	-1.2700000D 01	1.0768200D 03	276	1.7650000D 01	-6.1400000D 00	1.2076200D 03
128	6.3500000D 00	-1.2260000D 01	1.0608600D 03	277	1.7750000D 01	-5.0300000D 00	1.2069800D 03
129	6.4000000D 00	-9.2100000D 00	1.0969200D 03	278	1.7850000D 01	-3.9800000D 00	1.2078100D 03
130	6.4500000D 00	-1.0600000D 01	1.0455400D 03	279	1.7950000D 01	-2.7900000D 00	1.2087900D 03
131	6.5000000D 00	-8.1800000D 00	1.1066800D 03	280	1.8050000D 01	-8.2100000D 00	1.2155000D 03
132	6.5500000D 00	-7.2000000D 00	1.0768900D 03	281	1.8150000D 01	-9.4700000D 00	1.2249600D 03
133	6.6000000D 00	-6.3400000D 00	1.0759100D 03	282	1.8250000D 01	-4.9400000D 00	1.2361900D 03
134	6.6500000D 00	-6.4800000D 00	1.0165700D 03	283	1.8350000D 01	0.0	1.2418000D 03
135	6.7000000D 00	-5.8200000D 00	1.0466900D 03	284	1.8450000D 01	-1.6000000D 00	1.2459600D 03
136	6.7500000D 00	-5.7800000D 00	1.0566500D 03	285	1.8550000D 01	-9.0700000D 00	1.2474900D 03
137	6.8000000D 00	-6.0900300D 00	1.0438400D 03	286	1.8650000D 01	-2.6000000D 00	1.2481200D 03
138	6.8500000D 00	-3.3600000D 00	1.0934400D 03	287	1.8750000D 01	-4.5300000D 00	1.2480900D 03
139	6.9000000D 00	5.3000000D-01	1.1357200D 03	288	1.8850000D 01	-5.6100000D 00	1.2485500D 03
140	6.9500000D 00	1.9000000D-01	1.0170100D 03	289	1.8950000D 01	-2.4300000D 00	1.2478600D 03
141	7.0000000D 00	2.1900300D 00	1.0489000D 03	290	1.9050000D 01	0.0	1.2465000D 03
142	7.0500000D 00	1.0700300 00	1.0343100D 03	291	1.9150000D 01	-3.6600000D 00	1.2454000D 03
143	7.1000000D 00	4.3000300D-01	1.0561900D 03	292	1.9250000D 01	-2.5500000D 00	1.2422700D 03
144	7.1500000D 00	7.0000000D-02	1.1397500D 03	293	1.9350000D 01	-3.2000000-01	1.2393600D 03
145	7.2000000D 00	-9.0000300D-02	1.0285600D 03	294	1.9450000D 01	-2.7000000D 00	1.2366500D 03
146	7.2500000D 00	-9.0000300D-02	1.0492300D 03	295	1.9550000D 01	-8.0000000D-01	1.2343700D 03
147	7.3000000D 00	-1.6000000D-01	1.0998800 03	296	1.9650000D 01	-2.4000000-01	1.2307800D 03
148	7.3500000D 00	-1.5000000-01	1.1285400D 03	297	1.9750000D 01	-1.1300000D 00	1.2295500D 03
149	7.4000000D 00	1.6200000D 00	1.1591000D 03				

DATA FOR 24 HEAT CONDUCTING SLABS.

SLAB NUM	L VOL	R VOL	GEOM NUM	STK IND	LEFT SURFACE AREA, FT**2	RIGHT SURFACE AREA, FT**3	VOLUME FT**3	LEFT HYDRAULIC DIAMETER, FT	RIGHT HYDRAULIC DIAMETER, FT	MAJOR L IN	MAJOR L OUT	JUNCTIONS R IN	JUNCTIONS R OUT
	LOC IND	X IND	L IND	C IND	F C LEFT HEATED EQ DIAMETER, FT	RHT HEATED EQ DIAMETER, FT	LEFT CHANNEL LENGTH, FT	RIGHT CHANNEL LENGTH, FT	BOT HEIGHT IN R (L) VOL, FT	TOP HEIGHT IN R (L) VOL, FT			
1	0	7	3	0	0.0	0.144290D 02	0.127700D 00	0.0	0.376000D-01	0	0	6	7
		0	2	2	0.0	0.471000D-01	0.0	0.0	0.0	0.0			
2	0	8	2	1	0.0	0.100950D 02	0.896000D-01	0.0	0.376000D-01	0	0	7	8
		0	2	2	0.0	0.471000D-01	0.0	0.0	0.0	0.0			
3	0	9	1	1	0.0	0.160530D 02	0.142000D 00	0.0	0.376000D-01	0	0	8	9
		0	2	2	0.0	0.471000D-01	0.0	0.0	0.0	0.0			
4	0	10	9	1	0.0	0.100800D 02	0.890998D-01	0.0	0.375000D-01	0	0	9	10
		0	2	2	0.0	0.471000D-01	0.0	0.0	0.0	0.0			
5	0	11	10	1	0.0	0.142540D 02	0.126000D 00	0.0	0.376000D-01	0	0	10	11
		0	2	2	0.0	0.471000D-01	0.0	0.0	0.0	0.0			
6	1	0	7	0	0.275000D 01	0.0	0.130900D 00	0.0	0.0	14	1	0	0
		0	2	2	0.0	0.0	0.300000D 01	0.0	0.0	0.0			
7	2	0	7	0	0.233400D 01	0.0	0.111100D 00	0.0	0.0	1	2	0	0
		0	2	2	0.0	0.0	0.255000D 01	0.0	0.0	0.0			
8	13	0	7	0	0.320900D 01	0.0	0.152900D 00	0.0	0.0	12	13	0	0
		0	2	2	0.0	0.0	0.400000D 01	0.0	0.0	0.0			
9	6	0	4	0	0.200200D 01	0.0	0.185800D 00	0.0	0.0	5	6	0	0
		0	2	2	0.0	0.0	0.0	0.0	0.0	0.0			
10	3	0	4	0	0.115030D 02	0.0	0.106800D 01	0.0	0.0	2	3	0	0
		0	2	2	0.0	0.0	0.0	0.0	0.0	0.0			
11	4	0	4	0	0.675800D 01	0.0	0.627000D 00	0.0	0.0	3	4	0	0
		0	2	2	0.0	0.0	0.0	0.0	0.0	0.0			
12	5	0	4	0	0.103400D 02	0.0	0.960000D 00	0.0	0.0	4	5	0	0
		0	2	2	0.0	0.0	0.0	0.0	0.0	0.0			
13	12	0	4	0	0.417000D 01	0.0	0.387100D 00	0.0	0.0	11	12	0	0
		0	2	2	0.0	0.0	0.0	0.0	0.0	0.0			
14	7	5	5	0	0.176900D 01	0.243300D 01	0.175100D 00	0.276000D-01	0.0	6	7	4	5
		0	2	2	0.0	0.0	0.0	0.265400D 01	0.0	0.265400D 01			

SLAB 14 EXTENDS BEYOND TOP OR BOTTOM OF 1 VOLUME. IF IXLO GT 0, EXECUTION IS DELETED.

15	8	5	5	0	0.124000D 01	0.170400D 01	0.122600D 00	0.276000D-01	0.0	7	8	4	5
		0	2	2	0.0	0.0	0.0	0.185900D 01	0.265500D 01	0.451000D 01			

SLAB 15 EXTENDS BEYOND TOP OR BOTTOM OF 1 VOLUME. IF IXLO GT 0, EXECUTION IS DELETED.

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16   9   4   3   0   0.1968000 01   0.2704000 01   0.1946000 00   0.2760000-01   0.0              8     9     3     4
                 0   2   2   0.0                  0.0              0.0            0.2950000 01   0.0           0.0

SLAB 16 EXTENDS BEYOND TOP OR BOTTOM OF 1 VOLUME.  IF IXLO GT 0, EXECUTION IS DELETED.

17  10   3   5   0   0.1234000 01   0.1696000 01   0.1220000 00   0.2760000-01   0.0              9    10     2     3
                 0   2   2   0.0                  0.0              0.0            0.1850000 01   0.1000000-02  0.1840000 01

SLAB 17 EXTENDS BEYOND TOP OR BOTTOM OF 1 VOLUME.  IF IXLO GT 0, EXECUTION IS DELETED.

18  11   3   5   0   0.1749000 01   0.2400000 01   0.1730000 00   0.2760000-01   0.0             10    11     2     3
                 0   2   2   0.0                  0.0              0.0            0.2623000 01   0.1851000 01  0.4591000 01

SLAB 18 EXTENDS BEYOND TOP OR BOTTOM OF 1 VOLUME.  IF IXLO GT 0, EXECUTION IS DELETED.

19   7   5   6   0   0.1759000 01   0.2654000 01   0.1380000 00   0.2760000-01   0.0              6     7     4     5
                 0   2   2   0.0                  0.0              0.0            0.2654000 01   0.0           0.2654000 01

SLAB 19 EXTENDS BEYOND TOP OR BOTTOM OF 1 VOLUME.  IF IXLO GT 0, EXECUTION IS DELETED.

20   8   5   5   0   0.1240000 01   0.1859000 01   0.9630630-01   0.2760000-01   0.0              7     8     4     5
                 0   2   2   0.0                  0.0              0.0            0.1859000 01   0.2655000 01  0.4512000 01

SLAB 20 EXTENDS BEYOND TOP OR BOTTOM OF 1 VOLUME.  IF IXLO GT 0, EXECUTION IS DELETED.

21   9   4   6   0   0.1956000 01   0.2950000 01   0.1536000 00   0.2760000-01   0.0              8     9     3     4
                 0   2   2   0.0                  0.0              0.0            0.2950000 01   0.0           0.0

SLAB 21 EXTENDS BEYOND TOP OR BOTTOM OF 1 VOLUME.  IF IXLO GT 0, EXECUTION IS DELETED.

22  10   3   5   0   0.1234000 01   0.1850000 01   0.9639980-01   0.2760000-01   0.0              9    10     2     3
                 0   2   2   0.0                  0.0              0.0            0.1850000 01   0.1000000-02  0.1849000 01

SLAB 22 EXTENDS BEYOND TOP OR BOTTOM OF 1 VOLUME.  IF IXLO GT 0, EXECUTION IS DELETED.

23  11   3   6   0   0.1749000 01   0.2623000 01   0.1366000 00   0.2760000-01   0.0             10    11     2     3
                 0   2   2   0.0                  0.0              0.0            0.2623000 01   0.1851000 01  0.4591000 01

SLAB 23 EXTENDS BEYOND TOP OR BOTTOM OF 1 VOLUME.  IF IXLO GT 0, EXECUTION IS DELETED.

24   1   0   7   0   0.2750000 01   0.0              0.1309000 00   0.0            0.0             14     1     0     0
                 0   2   2   0.0                  0.0              0.3000000 01   0.0            0.0           0.0

     AXIAL STACKS OF HEAT SLABS -
                    1 THROUGH   5          1 DIMENSIONAL HEAT TRANSFER
                    6 THROUGH   6          1 DIMENSIONAL HEAT TRANSFER
                    7 THROUGH   7          1 DIMENSIONAL HEAT TRANSFER
                    8 THROUGH   8          1 DIMENSIONAL HEAT TRANSFER
                    9 THROUGH   9          1 DIMENSIONAL HEAT TRANSFER
```

10	THROUGH	10	1 DIMENSIONAL HEAT TRANSFER
11	THROUGH	11	1 DIMENSIONAL HEAT TRANSFER
12	THROUGH	12	1 DIMENSIONAL HEAT TRANSFER
13	THROUGH	13	1 DIMENSIONAL HEAT TRANSFER
14	THROUGH	14	1 DIMENSIONAL HEAT TRANSFER
15	THROUGH	15	1 DIMENSIONAL HEAT TRANSFER
16	THROUGH	16	1 DIMENSIONAL HEAT TRANSFER
17	THROUGH	17	1 DIMENSIONAL HEAT TRANSFER
18	THROUGH	18	1 DIMENSIONAL HEAT TRANSFER
19	THROUGH	19	1 DIMENSIONAL HEAT TRANSFER
20	THROUGH	20	1 DIMENSIONAL HEAT TRANSFER
21	THROUGH	21	1 DIMENSIONAL HEAT TRANSFER
22	THROUGH	22	1 DIMENSIONAL HEAT TRANSFER
23	THROUGH	23	1 DIMENSIONAL HEAT TRANSFER
24	THROUGH	24	1 DIMENSIONAL HEAT TRANSFER

DATA FOR 10 HEAT SLAB GEOMETRIES

GEOM TYPE	REG NO	GAP IND	MAT NO	NO DX	X0 TO N=1	REGION WIDTH	POWER FRAC
2	1		3	2	0.0	0.9067000D-02	0.0
	2	0	1	2		0.1100000D-02	0.1000000D 01
	3	0	4	3		0.4167000D-02	0.0
	4	0	2	4		0.2500000D-02	0.0
	5	0	6	1		0.5489000D-05	0.0
	6	0	2	2		0.8330000D-03	0.0

SUM OF POWER FRACTIONS IS 0.1000000D 01

GEOM TYPE	REG NO	GAP IND	MAT NO	NO DX	X0 TO N=1	REGION WIDTH	POWER FRAC
2	1		3	2	0.0	0.8579000D-02	0.0
	2	0	1	2		0.1588000D-02	0.1000000D 01
	3	0	4	3		0.4167000D-02	0.0
	4	0	2	4		0.2500000D-02	0.0
	5	0	6	1		0.3702000D-05	0.0
	6	0	2	2		0.8330000D-03	0.0

SUM OF POWER FRACTIONS IS 0.1000000D 01

GEOM TYPE	REG NO	GAP IND	MAT NO	NO DX	X0 TO N=1	REGION WIDTH	POWER FRAC
2	1		3	2	0.0	0.7666000D-02	0.0
	2	0	1	1		0.1783000D-02	0.5000000D 00
	3	0	5	1		0.7180000D-03	0.5000000D 00
	4	0	4	3		0.4167000D-02	0.0
	5	0	6	1		0.1667000D-05	0.0
	6	0	2	5		0.3333000D-02	0.0

SUM OF POWER FRACTIONS IS 0.1000000D 01

GEOM TYPE	REG NO	GAP IND	MAT NO	NO DX	X0 TO N=1	REGION WIDTH	POWER FRAC
2	1		2	3	0.3650000D 00	0.3330000D-01	0.0
	2	0	2	1		0.5000000D-01	0.0

SUM OF POWER FRACTIONS IS 0.0

GEOM TYPE	REG NO	GAP IND	MAT NO	NO DX	X0 TO N=1	REGION WIDTH	POWER FRAC
1	1		2	4	0.0	0.8333000D-01	0.0

SUM OF POWER FRACTIONS IS 0.0

****** WARNING - INPUT HEAT TRANSFER AREA FOR SLAB 14 IS GREATER THAN 1.001 TIMES THE MAXIMUM IMPLIED BY THE INPUT SLAB VOLUME AND THE GEOMETRY.
LEFT HEAT TRANS AREA = 0.1708990D 01, IMPLIED MAX = 0.2101284D 01

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                    RIGHT HEAT TRANS AREA =  0.2432999D 01, IMPLIED MAX =  0.2101284D 01

****** WARNING - INPUT HEAT TRANSFER AREA FOR SLAB  15 IS GREATER THAN 1.001 TIMES THE MAXIMUM IMPLIED BY
                THE INPUT SLAB VOLUME AND THE GEOMETRY.
                  LEFT  HEAT TRANS AREA =  0.1240000D 01, IMPLIED MAX =  0.1471258D 01
                  RIGHT HEAT TRANS AREA =  0.1703999D 01, IMPLIED MAX =  0.1471258D 01

****** WARNING - INPUT HEAT TRANSFER AREA FOR SLAB  16 IS GREATER THAN 1.001 TIMES THE MAXIMUM IMPLIED BY
                THE INPUT SLAB VOLUME AND THE GEOMETRY.
                  LEFT  HEAT TRANS AREA =  0.1968000D 01, IMPLIED MAX =  0.2335293D 01
                  RIGHT HEAT TRANS AREA =  0.2703999D 01, IMPLIED MAX =  0.2335293D 01

****** WARNING - INPUT HEAT TRANSFER AREA FOR SLAB  17 IS GREATER THAN 1.001 TIMES THE MAXIMUM IMPLIED BY
                THE INPUT SLAB VOLUME AND THE GEOMETRY.
                  LEFT  HEAT TRANS AREA =  0.1233999D 01, IMPLIED MAX =  0.1464058D 01
                  RIGHT HEAT TRANS AREA =  0.1695998D 01, IMPLIED MAX =  0.1464058D 01

****** WARNING - INPUT HEAT TRANSFER AREA FOR SLAB  18 IS GREATER THAN 1.001 TIMES THE MAXIMUM IMPLIED BY
                THE INPUT SLAB VOLUME AND THE GEOMETRY.
                  LEFT  HEAT TRANS AREA =  0.1749000D 01, IMPLIED MAX =  0.2076083D 01
                  RIGHT HEAT TRANS AREA =  0.2399999D 01, IMPLIED MAX =  0.2076083D 01

GEOM REG GAP MAT NO  X0 TO N=1       REGION WIDTH   POWER FRAC
TYPE  NO IND  NO DX

  1   1       2   4   0.0             0.6250000D-01   0.0

                        SUM OF POWER FRACTIONS IS   0.0

****** WARNING - INPUT HEAT TRANSFER AREA FOR SLAB  19 IS GREATER THAN 1.001 TIMES THE MAXIMUM IMPLIED BY
                THE INPUT SLAB VOLUME AND THE GEOMETRY.
                  LEFT  HEAT TRANS AREA =  0.1769000D 01, IMPLIED MAX =  0.2207996D 01
                  RIGHT HEAT TRANS AREA =  0.2653998D 01, IMPLIED MAX =  0.2207996D 01

****** WARNING - INPUT HEAT TRANSFER AREA FOR SLAB  20 IS GREATER THAN 1.001 TIMES THE MAXIMUM IMPLIED BY
                THE INPUT SLAB VOLUME AND THE GEOMETRY.
                  LEFT  HEAT TRANS AREA =  0.1240000D 01, IMPLIED MAX =  0.1548800D 01
                  RIGHT HEAT TRANS AREA =  0.1859999D 01, IMPLIED MAX =  0.1548800D 01

****** WARNING - INPUT HEAT TRANSFER AREA FOR SLAB  21  S GREATER THAN 1.001 TIMES THE MAXIMUM IMPLIED BY
                THE INPUT SLAB VOLUME AND THE GEOMETRY.
                  LEFT  HEAT TRANS AREA =  0.1968000D 01, IMPLIED MAX =  0.2457600D 01
                  RIGHT HEAT TRANS AREA =  0.2949999D 01, IMPLIED MAX =  0.2457600D 01

****** WARNING - INPUT HEAT TRANSFER AREA FOR SLAB  22 IS GREATER THAN 1.001 TIMES THE MAXIMUM IMPLIED BY
                THE INPUT SLAB VOLUME AND THE GEOMETRY.
                  LEFT  HEAT TRANS AREA =  0.1233999D 01, IMPLIED MAX =  0.1542396D 01
                  RIGHT HEAT TRANS AREA =  0.1849999D 01, IMPLIED MAX =  0.1542396D 01

****** WARNING - INPUT HEAT TRANSFER AREA FOR SLAB  23 IS GREATER THAN 1.001 TIMES THE MAXIMUM IMPLIED BY
                THE INPUT SLAB VOLUME AND THE GEOMETRY.
                  LEFT  HEAT TRANS AREA =  0.1749000D 01, IMPLIED MAX =  0.2185599D 01
                  RIGHT HEAT TRANS AREA =  0.2622999D 01, IMPLIED MAX =  0.2185599D 01

GEOM REG GAP MAT NO  X0 TO N=1       REGION WIDTH   POWER FRAC
TYPE  NO IND  NO DX
```

2	1		2	3	0.1459000 00	0.1666000-01	0.0
	2	0	2	1		0.2500000-01	0.0

SUM OF POWER FRACTIONS IS 0.0

GEOM TYPE	REG NO	GAP IND	MAT NO	NO DX	X0 TO N+1	REGION WIDTH	POWER FRAC
2	1		2	3	0.4375000 00	0.3750000-01	0.0
	2	0	2	2		0.5625000-01	0.0

SUM OF POWER FRACTIONS IS 0.0

GEOM TYPE	REG NO	GAP IND	MAT NO	NO DX	X0 TO N+1	REGION WIDTH	POWER FRAC
2	1		1	2	0.0	0.8579000-02	0.0
	2	0	1	2		0.1584000-02	0.1600000 01
	3	0	4	3		0.4167000-02	0.0
	4	0	2	4		0.2500000-02	0.0
	5	0	6	1		0.5204000-05	0.0
	6	0	2	2		0.8330000-03	0.0

SUM OF POWER FRACTIONS IS 0.1000000 01

GEOM TYPE	REG NO	GAP IND	MAT NO	NO DX	X0 TO N+1	REGION WIDTH	POWER FRAC
2	1		3	2	0.0	0.7656000-02	0.0
	2	0	1	1		0.1783000-02	0.5000000 00
	3	0	5	1		0.7180000-03	0.5000000 00
	4	0	4	3		0.4167000-02	0.0
	5	0	6	1		0.4105000-05	0.0
	6	0	2	5		0.3333000-02	0.0

SUM OF POWER FRACTIONS IS 0.1000000 01

PROPERTIES FOR HEAT CONDUCTING MATERIAL NUMBER 2

THERMAL CONDUCTIVITY (BTU/FT-HR-F) VS TEMPERATURE (T(I),K(I),----)

20 POINTS	0.0	0.724580D 01	0.200000D 03	0.822500D 01	0.300000D 03	0.869100D 01
	0.400000D 03	0.914400D 01	0.500000D 03	0.958600D 01	0.600000D 03	0.100200D 02
	0.700000D 03	0.104480D 02	0.800000D 03	0.108720D 02	0.900000D 03	0.112940D 02
	0.100000D 04	0.117180D 02	0.110000D 04	0.121450D 02	0.120000D 04	0.125770D 02
	0.130000D 04	0.130170D 02	0.140000D 04	0.134670D 02	0.150000D 04	0.139290D 02
	0.160000D 04	0.144060D 02	0.170000D 04	0.149000D 02	0.180000D 04	0.154140D 02
	0.190000D 04	0.159480D 02	0.200000D 04	0.165070D 02		

VOL HEAT CAPACITY (BTU/FT**3-F) VS TEMPERATURE (T(I),C(I),----)

20 POINTS	0.0	0.516400D 02	0.200000D 03	0.569230D 02	0.300000D 03	0.590200D 02
	0.400000D 03	0.608460D 02	0.500000D 03	0.624470D 02	0.600000D 03	0.638650D 02
	0.700000D 03	0.651410D 02	0.800000D 03	0.663080D 02	0.900000D 03	0.674000D 02
	0.100000D 04	0.684440D 02	0.110000D 04	0.694630D 02	0.120000D 04	0.704800D 02
	0.130000D 04	0.715080D 02	0.140000D 04	0.725630D 02	0.150000D 04	0.736520D 02
	0.160000D 04	0.747820D 02	0.170000D 04	0.759520D 02	0.180000D 04	0.771620D 02
	0.190000D 04	0.784060D 02	0.200000D 04	0.796720D 02		

DATA FOR 5 CORE SECTIONS.

CORE SECT	SLAB NUM	PRINT T AT NODES			INITIAL CLAD THICKNESS	SECTION POWER FRACTION	PROMPT MOD FRACTION	DELAY MOD FRACTION	BOUNDARY COND FLAG
1	1	5	8	9	0.0	0.111040D 00	0.0	0.0	-1
2	2	5	12	13	0.0	0.185480D 00	0.0	0.0	-3
3	3	5	12	13	0.0	0.413190D 00	0.0	0.0	-4
4	4	5	12	13	0.0	0.179890D 00	0.0	0.0	-5
5	5	5	8	9	0.0	0.110000D 00	0.0	0.0	-7

NO METAL WATER REACTION WILL BE CALCULATED

SUM OF POWER FRACTIONS = 0.9999998

OLD RELAP PROBLEM WAS TITLED

THTF TEST 105 CORE MODEL BY EU SCF

OLD PROBLEM HAD 2 VOLUMES 1 JUNCTIONS AND 50 HEAT SLABS

CPU TIME = 2.77
STANDARD TIME STEP NUMBER 0. ACTUAL TIME STEP NUMBER 0. TIME = 0.0 SEC. LAST DT = 0.0 SEC.

TOTAL SYSTEM QUANTITIES	NORM POWR	POWR (MW)	HEAT REM (BTU/HR)	ENGY LEAK (BTU)	MASS LEAK (LB)	ENGY BAL. (BTU)	MASS BAL. (LB)	TOT. REAC ($)	REAC T SEC.
	1.00000D 00	5.97750D 00	0.0	0.0	0.0	2.83913D 05	2.17781D 02	0.0	0.0

VOLUME NUMBER	AVG. PRES PSIA	TOT. MASS (LB) H2O	AVG. ENTH (BTU/LB)	AVG. DENS (LB/FT3)	AVG. TEMP (F)	AVG. QUAL	BUBB MASS (LB)	MIXT LEVL (FT)	LIQ. MASS (LB)
1	2.29587D 03	9.45189D 00	5.42044D 02	4.71651D 01	5.45900D 02	0.0	0.0	3.00000D 00	9.45189D 00
2	2.28670D 03	8.02656D 00	5.42046D 02	4.71596D 01	5.45892D 02	0.0	0.0	1.26000D 00	8.02656D 00
3	2.28729D 03	4.37550D 01	5.42046D 02	4.71599D 01	5.45892D 02	0.0	0.0	5.02100D 00	4.37550D 01
4	2.28635D 03	2.47782D 01	5.42046D 02	4.71607D 01	5.45893D 02	0.0	0.0	2.95000D 00	2.47782D 01
5	2.28973D 03	3.93326D 01	5.42046D 02	4.71614D 01	5.45895D 02	0.0	0.0	4.51300D 00	3.93326D 01
6	2.29057D 03	1.11302D 01	5.42046D 02	4.71619D 01	5.45895D 02	0.0	0.0	8.74000D-01	1.11302D 01
7	2.28537D 03	7.91192D 00	5.48806D 02	4.68161D 01	5.51338D 02	0.0	0.0	2.65400D 00	7.91192D 00
8	2.28004D 03	5.42879D 00	5.66762D 02	4.58513D 01	5.55575D 02	0.0	0.0	1.85900D 00	5.42879D 00
9	2.27418D 03	8.23459D 00	6.03373D 02	4.38243D 01	5.92959D 02	0.0	0.0	2.95000D 00	8.23459D 00
10	2.26809D 03	4.90202D 00	6.39807D 02	4.15778D 01	6.17725D 02	0.0	0.0	1.85000D 00	4.90202D 00
11	2.26236D 03	6.75674D 00	6.57376D 02	4.04595D 01	6.29817D 02	0.0	0.0	2.62300D 00	6.75674D 00
12	2.25500D 03	2.47099D 01	6.63919D 02	3.99836D 01	6.32742D 02	0.0	0.0	2.49000D 00	2.47099D 01
13	2.25677D 03	1.53528D 01	6.63921D 02	3.99812D 01	6.32728D 02	0.0	0.0	8.50000D-01	1.53528D 01
14	2.24722D 03	8.01014D 00	6.63935D 02	3.99708D 01	6.32669D 02	0.0	0.0	3.00000D 00	8.01014D 00

VOLUME	AIR MASS
1	0.0
2	0.0
3	0.0
4	0.0
5	0.0
6	0.0
7	0.0
8	0.0
9	0.0
10	0.0
11	0.0
12	0.0
13	0.0
14	0.0

HEAT SLAB NUMBER	VOL NUM	HEAT TRAN MODE	SURF FLUX (BTU/HR/FT2)	CRIT FLUX (BTU/HR/FT2)	H.T. COEF (BTU/H/F2/F)	SURF TEMP (F)	AVG. QUAL	POWR H2O (BTU/HR)
1 RIGHT	7	0	1.32352D 05	-1.00000D 00	-1.00000D 00	0.0	0.0	1.90971D 06
2 RIGHT	8	0	3.29536D 05	-1.00000D 00	7.24452D 03	6.41063D 02	0.0	3.32666D 06
3 RIGHT	9	0	4.07327D 05	-1.00000D 00	1.17435D 04	6.27644D 02	0.0	6.53881D 06
4 RIGHT	10	0	5.28570D 05	-1.00000D 00	1.19307D 04	6.62029D 02	0.0	5.32799D 06
5 RIGHT	11	0	3.26255D 05	-1.00000D 00	1.00830D 04	6.61174D 02	0.0	4.65045D 06
6 LEFT	1	0	0.0	9.00000D 04	5.00000D 00	5.45900D 02	0.0	0.0
7 LEFT	2	0	0.0	9.00000D 04	5.00000D 00	5.45892D 02	0.0	0.0
8 LEFT	13	0	0.0	9.00000D 04	5.00000D 00	6.32728D 02	0.0	0.0
9 LEFT	6	0	0.0	1.86128D 05	5.00000D 00	5.45895D 02	0.0	0.0
10 LEFT	3	0	0.0	2.09714D 05	5.00000D 00	5.45892D 02	0.0	0.0
11 LEFT	4	0	0.0	2.09546D 05	5.00000D 00	5.45893D 02	0.0	0.0
12 LEFT	5	0	0.0	2.09388D 05	5.00000D 00	5.45895D 02	0.0	0.0
13 LEFT	12	0	0.0	9.00000D 04	5.00000D 00	6.32742D 02	0.0	0.0

14	LEFT	7	1	-7.073270 02	9.401610 05	6.503870 03	5.512290 02	0.0	-1.251260 03
14	RIGHT	5	1	5.142880 02	2.093880 05	1.905380 03	5.461640 02	0.0	1.251260 03
15	LEFT	8	1	-2.562780 03	9.408010 05	6.564430 03	5.651850 02	0.0	-3.177350 03
15	RIGHT	5	1	1.864940 03	2.093880 05	1.905380 03	5.468730 02	0.0	3.177850 03
16	LEFT	9	1	-6.168090 03	9.415050 05	6.740500 03	5.920440 02	0.0	-1.213880 04
16	RIGHT	4	1	4.489230 03	2.095460 05	1.905400 03	5.492490 02	0.0	1.213880 04
17	LEFT	10	1	-9.466810 03	9.422370 05	6.935400 03	6.163600 02	0.0	-1.168200 04
17	RIGHT	3	1	6.888000 03	2.097140 05	1.905430 03	5.495070 02	0.0	1.168200 04
18	LEFT	11	1	-1.096250 04	9.429320 05	7.090880 03	6.272710 02	0.0	-1.917340 04
18	RIGHT	3	1	7.988910 03	2.097140 05	1.905430 03	5.500850 02	0.0	1.917340 04
19	LEFT	7	1	-9.695280 02	9.401610 05	6.503870 03	5.511890 02	0.0	-1.715090 03
19	RIGHT	5	1	6.462300 02	2.093880 05	1.905380 03	5.462340 02	0.0	1.715090 03
20	LEFT	8	1	-3.518760 03	9.408010 05	6.564430 03	5.650390 02	0.0	-4.363260 03
20	RIGHT	5	1	2.347100 03	2.093880 05	1.905380 03	5.471260 02	0.0	4.363260 03
21	LEFT	9	1	-8.467330 03	9.415050 05	6.740500 03	5.917030 02	0.0	-1.656370 04
21	RIGHT	4	1	5.648720 03	2.095460 05	1.905400 03	5.488580 02	0.0	1.866370 04
22	LEFT	10	1	-1.301000 04	9.422370 05	6.935400 03	6.158490 02	0.0	-1.605440 04
22	RIGHT	3	1	8.678040 03	2.097140 05	1.905430 03	5.504470 02	0.0	1.605440 04
23	LEFT	11	1	-1.505890 04	9.429320 05	7.090880 03	6.266930 02	0.0	-2.633790 04
23	RIGHT	3	1	1.004120 04	2.097140 05	1.905430 03	5.511620 02	0.0	2.633790 04
24	LEFT	1	0	0.0	9.000000 04	5.000000 00	5.459000 02	0.0	0.0

HEAT SLAB NUMBER		VOL NUM	NODE	TEMP	NODE	TEMP	NODE	TEMP
1	RIGHT	7	5	-1.000000 00	8	-1.000000 00	9	-1.000000 00
2	RIGHT	8	5	-1.000000 00	12	-1.000000 00	13	-1.000000 00
3	RIGHT	9	5	-1.000000 00	12	-1.000000 00	13	-1.000000 00
4	RIGHT	10	5	-1.000000 00	12	-1.000000 00	13	-1.000000 00
5	RIGHT	11	5	-1.000000 00	8	-1.000000 00	9	-1.000000 00

HEAT SLAB NUMBER		VOL NUM	HEAT GEN ZR-H2O REAC (BTU/HR)	DPTH REAC EXTERNALLY (FT)	DPTH REAC INTER (FT)	CENT TEMP (F)	AVG. TEMP (F)	FUEL POWER (MW)
1	RIGHT	7	-1.000000 00	-1.000000 00	-1.000000 00	0.0	0.0	6.637420-01
2	RIGHT	8	-1.000000 00	-1.000000 00	-1.000000 00	9.477840 02	9.477840 02	1.111100 00
3	RIGHT	9	-1.000000 00	-1.000000 00	-1.000000 00	1.008300 03	1.008300 03	2.469840 00
4	RIGHT	10	-1.000000 00	-1.000000 00	-1.000000 00	1.211450 03	1.211450 03	1.075290 00
5	RIGHT	11	-1.000000 00	-1.000000 00	-1.000000 00	1.015150 03	1.015150 03	6.575250-01

JUNCTION NUMBER	CONNECTING VOLUMES	CHOKE	JCT. FLOW (LB/SEC)	JCT. ENTH (BTU/LB)	JCT. SPVL (FT3/LB)	P R E S S U R E D I F F E R E N T I A L S STAG PSI	ELEV PSI	FRIC PSI	ACCL PSI	PUMP PSI
1	1 TO 2	0 0	4.655000 01	5.420420 02	2.120200-02	7.503230 00	-6.963490-01	-6.806880 00	6.661340-16	0.0
2	2 TO 3	0 0	4.655000 01	5.420460 02	2.120460-02	3.710410-01	1.613930-01	-5.324340-01	1.249000-16	0.0
3	3 TO 4	0 0	4.655000 01	5.420500 02	2.120450-02	-1.259500 00	1.304830 00	-4.533580-02	8.673620-19	0.0
4	4 TO 5	0 0	4.655000 01	5.420480 02	2.120410-02	-1.178500 00	1.220880 00	-4.238770-02	8.673620-19	0.0
5	5 TO 6	0 0	4.655000 01	5.420490 02	2.120380-02	-7.449080-01	8.656750-01	-1.207670-01	2.775560-17	0.0
6	6 TO 7	0 0	4.655000 01	5.420450 02	2.120380-02	4.000550 00	-5.568000-01	-3.443750 00	2.220450-16	0.0
7	7 TO 8	0 0	4.655000 01	5.498040 02	2.136050-02	5.278430 00	-7.260690-01	-4.552360 00	2.220450-16	0.0
8	8 TO 9	0 0	4.655000 01	5.667610 02	2.180990-02	5.743720 00	-7.436150-01	-5.000100 00	2.220450-16	0.0
9	9 TO 10	0 0	4.655000 01	6.033710 02	2.281900-02	5.946500 00	-7.147300-01	-5.231770 00	2.220450-16	0.0
10	10 TO 11	0 0	4.655000 01	6.394050 02	2.405180-02	5.698050 00	-6.345450-01	-5.063500 00	2.220450-16	0.0
11	11 TO 12	0 0	4.655000 01	6.573750 02	2.471700-02	4.680790 00	-7.130380-01	-3.967750 00	2.220450-16	0.0
12	12 TO 13	0 0	4.655000 01	6.639170 02	2.501070-02	9.859370-01	-1.927600-01	-7.931760-01	6.938890-17	0.0
13	13 TO 14	0 0	4.655000 01	6.639220 02	2.501180-02	1.152180 01	5.315860-01	-1.205340 01	1.776360-15	0.0
14	0 TO 1	0 0	4.506000 01	5.402200 02	0.0	0.0	0.0	0.0	0.0	0.0
15	0 TO 14	0 0	-4.501720 01	6.639370 02	1.000000-02	0.0	0.0	0.0	0.0	0.0

RELAP4/I05 09/03/75 (2) BDHT--BC SLABS FILLRELAP4 THERMAL HYDRAULIC CODE CONFIGURATION CONTROL: NO
THTF TEST 105 CORE MODEL BY EU SCF FILL 01/09/78

CPU TIME = 2.94

JUNCTION NUMBER	SLIP VEL. (FT/SEC)	LIQUID VEL. (FT/SEC)	VAPOR VEL. (FT/SEC)	JCT. FLOW-L (LBM/SEC)	JCT. FLOW-G (LBM/SEC)	SAT. H-L (BTU/LBM)	SAT. H-G (BTU/LBM)	FLOW-WEIGHTED H (BTU/LBM)
1	0.0	1.47726D 01	1.47726D 01	4.65500D 01	0.0	5.42045D 02	0.0	5.42045D 02
2	0.0	1.47743D 01	1.47743D 01	4.65500D 01	0.0	5.42051D 02	0.0	5.42051D 02
3	0.0	5.34127D 00	5.34127D 00	4.65500D 01	0.0	5.42047D 02	0.0	5.42047D 02
4	0.0	5.34118D 00	5.34118D 00	4.65500D 01	0.0	5.42046D 02	0.0	5.42046D 02
5	0.0	5.34110D 00	5.34110D 00	4.65500D 01	0.0	5.42046D 02	0.0	5.42046D 02
6	0.0	1.55486D 01	1.55486D 01	4.65500D 01	0.0	5.42046D 02	0.0	5.42046D 02
7	0.0	1.56634D 01	1.56634D 01	4.65500D 01	0.0	5.48811D 02	0.0	5.48811D 02
8	0.0	1.59930D 01	1.59930D 01	4.65500D 01	0.0	5.66767D 02	0.0	5.66767D 02
9	0.0	1.67328D 01	1.67328D 01	4.65500D 01	0.0	6.03378D 02	0.0	6.03378D 02
10	0.0	1.76369D 01	1.76369D 01	4.65500D 01	0.0	6.39413D 02	0.0	6.39413D 02
11	0.0	1.81243D 01	1.81243D 01	4.65500D 01	0.0	6.57383D 02	0.0	6.57383D 02
12	0.0	1.74259D 01	1.74259D 01	4.65500D 01	0.0	6.63919D 02	0.0	6.63919D 02
13	0.0	1.74273D 01	1.74270D 01	4.65500D 01	0.0	6.63927D 02	0.0	6.63927D 02
14	0.0	0.0	0.0	4.50600D 01	0.0	5.40219D 02	0.0	5.40219D 02
15	0.0	0.0	0.0	-4.50172D 01	0.0	6.63937D 02	0.0	6.63937D 02

PLOT RECORD NUMBER = 0

RESTART NUMBER = 0

CPU TIME = 3.57
STANDARD TIME STEP NUMBER 10. ACTUAL TIME STEP NUMBER 12. TIME = 0.100000D-02 SEC. LAST DT = 0.100000D-03 SEC.

TOTAL SYSTEM QUANTITIES	NORM POWR	POWR (MW)	HEAT REM (BTU/HR)	ENGY LEAK (BTU)	MASS LEAK (LB)	ENGY BAL. (BTU)	MASS BAL. (LB)	TOT. REAC ($)	REAC T SEC.
	1.00000D 00	5.977500D 00	0.0	0.0	0.0	2.839130D 05	2.177810D 02	0.0	0.0

VOLUME NUMBER	AVG. PRES PSIA	TOT. MASS (LB) H2O	AVG. ENTH (BTU/LB)	AVG. DENS (LB/FT3)	AVG. TEMP (F)	AVG. QUAL	BUBB MASS (LB)	MIXT LEVL (FT)	LIQ. MASS (LB)
1	2.272630 03	9.450230 00	5.419480 02	4.715670 01	5.457920 02	0.0	0.0	3.000000 00	9.450200 00
2	2.280480 03	8.026150 00	5.420220 02	4.715720 01	5.458640 02	0.0	0.0	1.260000 00	8.026150 00
3	2.287120 03	4.375490 01	5.420460 02	4.715980 01	5.458920 02	0.0	0.0	5.021000 00	4.375490 01
4	2.288560 03	2.477820 01	5.420460 02	4.716070 01	5.458940 02	0.0	0.0	2.950000 00	2.477820 01
5	2.287830 03	3.933260 01	5.420460 02	4.716140 01	5.458950 02	0.0	0.0	4.513000 00	3.933260 01
6	2.291290 03	1.113030 01	5.420480 02	4.716220 01	5.458980 02	0.0	0.0	8.740000-01	1.113030 01
7	2.287050 03	7.911820 00	5.438400 02	4.681550 01	5.513670 02	0.0	0.0	2.654000 00	7.911820 00
8	2.281910 03	5.428780 00	5.667850 02	4.585120 01	5.655970 02	0.0	0.0	1.859000 00	5.428780 00
9	2.274850 03	8.234510 00	6.033880 02	4.382390 01	5.929720 02	0.0	0.0	2.950000 00	8.234510 00
10	2.267390 03	4.902330 00	6.393610 02	4.158040 01	6.176910 02	0.0	0.0	1.850000 00	4.902330 00
11	2.265020 03	6.756300 00	6.574540 02	4.045690 01	6.288810 02	0.0	0.0	2.623000 00	6.756300 00
12	2.256200 03	2.471010 01	6.639030 02	3.998400 01	6.327260 02	0.0	0.0	2.490000 00	2.471010 01
13	2.257480 03	1.535300 01	6.639240 02	3.998170 01	6.327340 02	0.0	0.0	8.500000-01	1.535300 01
14	2.257180 03	8.011470 00	6.639760 02	3.997740 01	6.327640 02	0.0	0.0	3.000000 00	8.011470 00

VOLUME	AIR MASS
1	0.0
2	0.0
3	0.0
4	0.0
5	0.0
6	0.0
7	0.0
8	0.0
9	0.0
10	0.0
11	0.0
12	0.0
13	0.0
14	0.0

HEAT SLAB NUMBER		VOL NUM	HEAT TRAN MODE	SURF FLUX (BTU/HR/FT2)	CRIT FLUX (BTU/HR/FT2)	H.T. COEF (BTU/H/F2/F)	SURF TEMP (F)	AVG. QUAL	POWR H2O (BTU/HR)
1	RIGHT	7	0	1.323210 05	-1.000000D 00	-1.000000D 00	0.0	0.0	1.909250 06
2	RIGHT	8	0	3.294580 05	-1.000000D 00	7.242700 03	6.110840 02	0.0	3.325870 06
3	RIGHT	9	0	4.073310 05	-1.000000D 00	1.174760 04	6.276450 02	0.0	6.538880 06
4	RIGHT	10	0	3.282150 05	-1.000000D 00	1.139330 04	5.621040 02	0.0	5.324410 06
5	RIGHT	11	0	3.263730 05	-1.000000D 00	1.011190 04	5.611540 02	0.0	4.652130 06
6	LEFT	1	1	2.619680 01	9.000000D 04	2.712610 02	5.459000 02	0.0	7.204110 01
7	LEFT	2	1	8.150830 01	9.000000D 04	3.842400 03	5.458920 02	0.0	1.902420 02
8	LEFT	13	1	-2.221450 01	9.000000D 04	4.265730 03	5.327280 02	0.0	-7.128640 01
9	LEFT	6	1	-3.425380 00	1.839040 05	1.283990 03	5.458950 02	0.0	-6.857620 00
10	LEFT	3	1	1.671370-01	2.095980 05	1.901820 03	5.458920 02	0.0	1.922570 00
11	LEFT	4	1	-7.579270-01	2.095380 05	1.905310 03	5.458930 02	0.0	-5.122070 00
12	LEFT	5	1	-5.947060-01	2.093400 05	1.904300 03	5.458950 02	0.0	-7.183260 00
13	LEFT	12	1	1.859980 01	9.000000D 04	1.294910 03	5.327410 02	0.0	7.756110 01

14	LEFT	7	1	-8.79536D 02	9.39325D 05	6.49024D 03	5.51229D 02	0.0	-1.55590D 03
14	RIGHT	5	1	5.13302D 02	2.09340D 05	1.90430D 03	5.46164D 02	0.0	1.24886D 03
15	LEFT	8	1	-2.69527D 03	9.40682D 05	6.56635D 03	5.65185D 02	0.0	-3.34214D 03
15	RIGHT	5	1	1.86319D 03	2.09340D 05	1.90430D 03	5.46873D 02	0.0	3.17487D 03
16	LEFT	9	1	-5.25556D 03	9.41769D 05	6.74821D 03	5.92044D 02	0.0	-1.23129D 04
16	RIGHT	4	1	4.48822D 03	2.09538D 05	1.90531D 03	5.48249D 02	0.0	1.21361D 04
17	LEFT	10	1	-9.16732D 03	9.40365D 05	6.88831D 03	6.16360D 02	0.0	-1.13125D 04
17	RIGHT	3	1	8.87512D 03	2.09598D 05	1.90182D 03	5.49507D 02	0.0	1.16602D 04
18	LEFT	11	1	-1.13673D 04	9.41819D 05	7.07193D 03	6.27271D 02	0.0	-1.98813D 04
18	RIGHT	3	1	7.97395D 03	2.09598D 05	1.90182D 03	5.50085D 02	0.0	1.91375D 04
19	LEFT	7	1	-1.14113D 03	9.39325D 05	6.49024D 03	5.51189D 02	0.0	-2.01867D 03
19	RIGHT	5	1	6.45170D 02	2.09340D 05	1.90430D 03	5.46234D 02	0.0	1.71228D 03
20	LEFT	8	1	-3.65149D 03	9.40682D 05	6.56635D 03	5.65039D 02	0.0	-4.52785D 03
20	RIGHT	5	1	2.34508D 03	2.09340D 05	1.90430D 03	5.47126D 02	0.0	4.35950D 03
21	LEFT	9	1	-6.55840D 03	9.41769D 05	6.74821D 03	5.91703D 02	0.0	-1.68429D 04
21	RIGHT	4	1	5.64767D 03	2.09538D 05	1.90531D 03	5.48858D 02	0.0	1.66606D 04
22	LEFT	10	1	-1.26866D 04	9.40365D 05	6.88831D 03	6.15849D 02	0.0	-1.56553D 04
22	RIGHT	3	1	8.66177D 03	2.09598D 05	1.90182D 03	5.50447D 02	0.0	1.60243D 04
23	LEFT	11	1	-1.54526D 04	9.41819D 05	7.07193D 03	6.26693D 02	0.0	-2.70265D 04
23	RIGHT	3	1	1.00223D 04	2.09598D 05	1.90182D 03	5.51162D 02	0.0	2.62885D 04
24	LEFT	1	1	2.61968D 01	9.00000D 04	2.71261D 02	5.45900D 02	0.0	7.20411D 01

HEAT SLAB NUMBER		VOL NUM	NODE	TEMP	NODE	TEMP	NODE	TEMP
1	RIGHT	7	5	-1.00000D 00	8	-1.00000D 00	9	-1.00000D 00
2	RIGHT	8	5	-1.00000D 00	12	-1.00000D 00	13	-1.00000D 00
3	RIGHT	9	5	-1.00000D 00	12	-1.00000D 00	13	-1.00000D 00
4	RIGHT	10	5	-1.00000D 00	12	-1.00000D 00	13	-1.00000D 00
5	RIGHT	11	5	-1.00000D 00	8	-1.00000D 00	9	-1.00000D 00

HEAT SLAB NUMBER		VOL NUM	HEAT GEN Zr-H2O REAC (BTU/HR)	DPTH REAC EXTERNALLY (FT)	DPTH REAC INTER (FT)	CENT TEMP (F)	AVG. TEMP (F)	FUEL POWER (MW)
1	RIGHT	7	-1.00000D 00	-1.00000D 00	-1.00000D 00	0.0	0.0	6.63742D-01
2	RIGHT	8	-1.00000D 00	-1.00000D 00	-1.00000D 00	9.47784D 02	9.47784D 02	1.11110D 00
3	RIGHT	9	-1.00000D 00	-1.00000D 00	-1.00000D 00	1.00830D 03	1.00830D 03	2.46984D 00
4	RIGHT	10	-1.00000D 00	-1.00000D 00	-1.00000D 00	1.21145D 03	1.21145D 03	1.07529D 00
5	RIGHT	11	-1.00000D 00	-1.00000D 00	-1.00000D 00	1.01515D 03	1.01515D 03	6.57525D-01

JUNCTION NUMBER	CONNECTING VOLUMES	CHOKE	JCT. FLOW (LB/SEC)	JCT. ENTH (BTU/LB)	JCT. SPVL (FT3/LB)	P R E S S U R E STAG PSI	ELEV PSI	D I F F E R E N T I A L S FRIC PSI	ACCL PSI	PUMP PSI
1	1 TO 2	0 0	4.53702D 01	5.41944D 02	2.12054D-02	-9.02333D 00	-6.96262D-01	-6.50832D 00	-1.62279D 01	0.0
2	2 TO 3	0 0	4.62490D 01	5.42021D 02	2.12055D-02	-4.43903D 00	1.61400D-01	-5.26963D-01	-4.80459D 00	0.0
3	3 TO 4	0 0	4.65394D 01	5.42049D 02	2.12045D-02	-1.39588D 00	1.30493D 00	-4.52221D-02	-1.36276D-01	0.0
4	4 TO 5	0 0	4.65483D 01	5.42048D 02	2.12041D-02	-1.21363D 00	1.22088D 00	-4.23564D-02	-3.50985D-02	0.0
5	5 TO 6	0 0	4.64627D 01	5.42049D 02	2.12039D-02	-1.28485D 00	9.65676D-01	-1.20457D-01	-5.39626D-01	0.0
6	6 TO 7	0 0	4.63594D 01	5.42048D 02	2.12037D-02	2.96458D 00	-5.56796D-01	-3.42165D 00	-1.01386D 00	0.0
7	7 TO 8	0 0	4.55640D 01	5.48838D 02	2.13607D-02	5.14813D 00	-7.26064D-01	-4.54877D 00	-1.26697D-01	0.0
8	8 TO 9	0 0	4.65239D 01	5.66784D 02	2.18099D-02	6.85876D 00	-7.43611D-01	-5.01127D 00	1.10388D 00	0.0
9	9 TO 10	0 0	4.67543D 01	5.83386D 02	2.28192D-02	7.74663D 00	-7.14740D-01	-5.24331D 00	1.78859D 00	0.0
10	10 TO 11	0 0	4.61102D 01	6.33360D 02	2.40506D-02	1.69450D 00	-6.34541D-01	-4.99461D 00	-3.93465D 00	0.0
11	11 TO 12	0 0	4.70634D 01	6.57453D 02	2.47183D-02	8.31100D 00	-7.13022D-01	-4.00896D 00	3.58902D 00	0.0
12	12 TO 13	0 0	4.64753D 01	6.63901D 02	2.50107D-02	-3.38809D-01	-1.92762D-01	-7.90267D-01	-1.32184D 00	0.0
13	13 TO 14	0 0	4.60679D 01	6.63925D 02	2.50116D-02	1.12604D 00	5.31651D-01	-1.18866D 01	-1.02290D 01	0.0
14	0 TO 1	0 0	4.35170D 01	5.40170D 02	0.0	0.0	0.0	0.0	0.0	0.0
15	0 TO 14	0 0	-4.49975D 01	6.63978D 02	1.00000D-02	0.0	0.0	0.0	0.0	0.0

14	LEFT	7	1	-1.02920D 03	9.18495D 05	5.95221D 03	5.51230D 02	0.0		-1.82065D 03	
14	RIGHT	5	1	7.46950D 02	2.06499D 05	1.67073D 03	5.46164D 02	0.0		1.81733D 03	
15	LEFT	8	1	-2.62934D 03	9.20741D 05	6.07075D 03	5.65186D 02	0.0		-3.26039D 03	
15	RIGHT	5	1	1.93171D 03	2.06499D 05	1.67073D 03	5.46873D 02	0.0		3.29163D 03	
16	LEFT	9	1	-6.06681D 03	9.22940D 05	6.29532D 03	5.92044D 02	0.0		-1.19395D 04	
16	RIGHT	4	1	4.09513D 03	2.04873D 05	1.60280D 03	5.48250D 02	0.0		1.10732D 04	
17	LEFT	10	1	-7.44348D 03	9.25824D 05	6.54599D 03	6.16357D 02	0.0		-9.18524D 03	
17	RIGHT	3	1	5.86178D 03	2.03005D 05	1.52665D 03	5.49509D 02	0.0		9.94157D 03	
18	LEFT	11	1	-1.30696D 04	9.27933D 05	6.75046D 03	6.27275D 02	0.0		-2.28588D 04	
18	RIGHT	3	1	6.74450D 03	2.03005D 05	1.52665D 03	5.50088D 02	0.0		1.61868D 04	
19	LEFT	7	1	-1.26731D 03	9.18495D 05	5.95221D 03	5.51190D 02	0.0		-2.24187D 03	
19	RIGHT	5	1	8.62502D 02	2.06499D 05	1.67073D 03	5.46233D 02	0.0		2.28908D 03	
20	LEFT	8	1	-3.51269D 03	9.20741D 05	6.07075D 03	5.65040D 02	0.0		-4.35574D 03	
20	RIGHT	5	1	2.35468D 03	2.06499D 05	1.67073D 03	5.47126D 02	0.0		4.37736D 03	
21	LEFT	9	1	-8.21413D 03	9.22940D 05	6.29532D 03	5.91703D 02	0.0		-1.61654D 04	
21	RIGHT	4	1	5.07167D 03	2.04873D 05	1.60280D 03	5.48859D 02	0.0		1.49614D 04	
22	LEFT	10	1	-1.07943D 04	9.25824D 05	6.54599D 03	6.15845D 02	0.0		-1.33202D 04	
22	RIGHT	3	1	7.29867D 03	2.03005D 05	1.52665D 03	5.50451D 02	0.0		1.35025D 04	
23	LEFT	11	1	-1.69631D 04	9.27933D 05	6.75046D 03	6.26698D 02	0.0		-2.96684D 04	
23	RIGHT	3	1	8.39195D 03	2.03005D 05	1.52665D 03	5.51167D 02	0.0		2.20121D 04	
24	LEFT	1	1	4.69463D 01	9.00000D 04	1.16949D 02	5.45900D 02	0.0		1.29102D 02	

HEAT SLAB NUMBER	VOL NUM	NODE	TEMP	NODE	TEMP	NODE	TEMP
1 RIGHT	7	5	-1.00000D 00	8	-1.00000D 00	9	-1.00000D 00
2 RIGHT	8	5	-1.00000D 00	12	-1.00000D 00	13	-1.00000D 00
3 RIGHT	9	5	-1.00000D 00	12	-1.00000D 00	13	-1.00000D 00
4 RIGHT	10	5	-1.00000D 00	12	-1.00000D 00	13	-1.00000D 00
5 RIGHT	11	5	-1.00000D 00	8	-1.00000D 00	9	-1.00000D 00

HEAT SLAB NUMBER	VOL NUM	HEAT GEN ZR-H2O REAC (BTU/HR)	DPTH REAC EXTERNALLY (FT)	DPTH REAC INTER (FT)	CENT TEMP (F)	AVG. TEMP (F)	FUEL POWER (MW)
1 RIGHT	7	-1.00000D 00	-1.00000D 00	-1.00000D 00	0.0	0.0	6.63742D-01
2 RIGHT	8	-1.00000D 00	-1.00000D 00	-1.00000D 00	9.47783D 02	9.47783D 02	1.11110D 00
3 RIGHT	9	-1.00000D 00	-1.00000D 00	-1.00000D 00	1.00830D 03	1.00830D 03	2.46984D 00
4 RIGHT	10	-1.00000D 00	-1.00000D 00	-1.00000D 00	1.21145D 03	1.21145D 03	1.07529D 00
5 RIGHT	11	-1.00000D 00	-1.00000D 00	-1.00000D 00	1.01515D 03	1.01515D 03	6.57525D-01

JUNCTION NUMBER	CONNECTING VOLUMES	CHOKE	JCT. FLOW (LB/SEC)	JCT. ENTH (BTU/LB)	JCT. SPVL (FT3/LB)	P R E S S U R E STAG PSI	ELEV PSI	D I F F E R E N T I A L S FRIC PSI	ACCL PSI	PUMP PSI
1	1 TO 2	0 0	3.17954D 01	5.41625D 02	2.12140D-02	-9.31690D 00	-6.95970D-01	-3.48154D 00	-1.34944D 01	0.0
2	2 TO 3	0 0	3.23476D 01	5.41769D 02	2.12152D-02	-1.03338D 01	1.61339D-01	-2.84262D-01	-1.04567D 01	0.0
3	3 TO 4	0 0	3.53640D 01	5.41820D 02	2.12134D-02	-6.97430D 00	1.30431D 00	-2.82591D-02	-5.69825D 00	0.0
4	4 TO 5	0 0	3.69870D 01	5.41841D 02	2.12120D-02	-6.25533D 00	1.22046D 00	-2.98678D-02	-5.06474D 00	0.0
5	5 TO 6	0 0	3.94107D 01	5.41861D 02	2.12108D-02	-4.27537D 00	8.65394D-01	-9.16988D-02	-3.50167D 00	0.0
6	6 TO 7	0 0	4.00732D 01	5.41871D 02	2.12101D-02	-2.60289D 00	-5.56531D-01	-2.75220D 00	-5.91163D 00	0.0
7	7 TO 8	0 0	4.08186D 01	5.48942D 02	2.13719D-02	-4.52279D 00	-7.25713D-01	-3.73742D 00	-8.98592D 00	0.0
8	8 TO 9	0 0	4.13583D 01	5.66874D 02	2.19191D-02	-4.01636D 00	-7.43337D-01	-4.20940D 00	-8.96909D 00	0.0
9	9 TO 10	0 0	4.22768D 01	6.03499D 02	2.28267D-02	-1.99844D 00	-7.14709D-01	-4.52563D 00	-7.23878D 00	0.0
10	10 TO 11	0 0	4.25105D 01	6.39053D 02	2.40398D-02	-1.24102D 00	-6.34335D-01	-4.44161D 00	-6.31696D 00	0.0
11	11 TO 12	0 0	4.37559D 01	6.58039D 02	2.47400D-02	1.22434D 00	-7.12802D-01	-3.59677D 00	-3.08524D 00	0.0
12	12 TO 13	0 0	4.45237D 01	6.63822D 02	2.50030D-02	-8.05893D-02	-1.92840D-01	-7.34176D-01	-1.00760D 00	0.0
13	13 TO 14	0 0	4.48078D 01	6.63954D 02	2.50084D-02	1.00650D 01	5.31659D-01	-1.12567D 01	-6.60032D-01	0.0
14	0 TO 1	0 0	2.96300D 01	5.39724D 02	0.0	0.0	0.0	0.0	0.0	0.0
15	0 TO 14	0 0	-4.48198D 01	6.63968D 02	1.00000D-02	0.0	0.0	0.0	0.0	0.0

CPU TIME = 3.64

JUNCTION NUMBER	SLIP VEL. (FT/SEC)	LIQUID VEL. (FT/SEC)	VAPOR VEL. (FT/SEC)	JCT. FLOW-L (LBM/SEC)	JCT. FLOW-G (LBM/SEC)	SAT. H-L (BTU/LBM)	SAT. H-G (BTU/LBM)	FLOW-WEIGHTED H (BTU/LBM)
1	0.0	1.44008D 01	1.44008D 01	4.53702D 01	0.0	5.41946D 02	0.0	5.41946D 02
2	0.0	1.46795D 01	1.46795D 01	4.62490D 01	0.0	5.42026D 02	0.0	5.42026D 02
3	0.0	5.34006D 00	5.34006D 00	4.65394D 01	0.0	5.42047D 02	0.0	5.42047D 02
4	0.0	5.34099D 00	5.34099D 00	4.65483D 01	0.0	5.42047D 02	0.0	5.42047D 02
5	0.0	5.33109D 00	5.33109D 00	4.64627D 01	0.0	5.42047D 02	0.0	5.42047D 02
6	0.0	1.54849D 01	1.54849D 01	4.63594D 01	0.0	5.42049D 02	0.0	5.42049D 02
7	0.0	1.56684D 01	1.56684D 01	4.65640D 01	0.0	5.48845D 02	0.0	5.48845D 02
8	0.0	1.60185D 01	1.60185D 01	4.66239D 01	0.0	5.66790D 02	0.0	5.66790D 02
9	0.0	1.68064D 01	1.68064D 01	4.67543D 01	0.0	6.03393D 02	0.0	6.03393D 02
10	0.0	1.74691D 01	1.74691D 01	4.61102D 01	0.0	6.39367D 02	0.0	6.39367D 02
11	0.0	1.83254D 01	1.83254D 01	4.70634D 01	0.0	6.57461D 02	0.0	6.57461D 02
12	0.0	1.73978D 01	1.73978D 01	4.64753D 01	0.0	6.63903D 02	0.0	6.63903D 02
13	0.0	1.72463D 01	1.72463D 01	4.60679D 01	0.0	6.63930D 02	0.0	6.63930D 02
14	0.0	0.0	0.0	4.35170D 01	0.0	5.40170D 02	0.0	5.40170D 02
15	0.0	0.0	0.0	-4.49975D 01	0.0	6.63978D 02	0.0	6.63978D 02

PLOT RECORD NUMBER = 1

RESTART NUMBER = 1

CPU TIME = 3.66

TIMING EDIT TOTAL TIME = 3.68 SEC

SUBROUTINE NAME	CPU TIME(SEC)	PERCENT	NO. OF CALLS
MAIN	0.03	0.73	1
INPUT	2.70	73.40	1
TRAN	0.02	0.60	1
BAL	0.18	4.79	13
EDIT	0.20	5.46	2
FLOSRH	0.04	1.21	12
TSTP	0.01	0.18	12
PREW	0.19	5.03	14
PUMPS	0.00	0.03	13
SLABHT	0.29	7.81	12
NIFTE	0.04	1.20	12

TIME STEP CONTROL SUMMARY

NUMBER OF TIMES TEST CONTROLLED TIME STEP

UPPER LIMIT	LOWER LIMIT	PRESSURE CH. /VOLUME	ZERO FLOW CROSSING	MASS CH. /VOLUME	ENERGY CH. /VOLUME	MASS VOL. FLOW	SAT. LINE CROSSINGS	OTHER--LO MASS DEPLETE,AIR CH
9	0	11	0	0	0	0	0	0

VOLUMES CONTROLLING PRESSURE CHANGE MINIMUM
(VOLUME INDEX TIMES CONTROLLING)

1	0	2	0	3	0	4	0	5	0	6	0	7	0	8	0	9	0	10	0
11	0	12	0	13	0	14	0												

JUNCTIONS CONTROLLING FLOW CROSSING MINIMUM
(JUNCTION INDEX TIMES CONTROLLING)

1	0	2	0	3	0	4	0	5	0	6	0	7	0	8	0	9	0	10	0
11	0	12	0	13	0	14	0	15	0										

APPENDIX 2

RLPSFLUX PROGRAM LISTING

APPENDIX 2

RLPSFLUX PROGRAM LISTING

Appendix 2 is a listing from IBM's FORTRAN H compiler of the thirteen routines which were changed to produce RLPSFLUX. All additions are noted by sequence fields beginning with BDHT, and all deletions are represented by identical comments.

```
          COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=60,SIZE=0000K,
                             SOURCE,EBCDIC,NOLIST,NODECK,LOAD,NOMAP,NOEDIT,ID,NOXREF
                C
                C CHANGES TO GET BOUNDARY CONDITION SLABS AND BIG FILL TABLES IN RELAP   BDHT 100
                C                                                                       BDHT 101
                C CHANGES IN     MAIN                                                   BDHT 102
                C                PAL                                                    BDHT 103
                C                COMZER                                                 BDHT 104
                C                FAIL                                                   BDHT 105
                C                FLOSRH                                                 BDHT 106
                C                INCORE                                                 BDHT 107
                C                INCRD1                                                 BDHT 108
                C                INFILL                                                 BDHT 109
                C                RKEN                                                   BDHT 110
                C                SINITL                                                 BDHT 111
                C                SLABHT                                                 BDHT 112
                C                TRDAT                                                  BDHT 113
                C      PROGRAM RELAP4 (INPUT,OUTPUT,TAPE5=INPUT,TAPE6=OUTPUT,          CDC 0005
                C     * TAPE2,TAPE3,TAPE4,TAPE15,TAPE16,DEBUG=OUTPUT)                   CDC 0006
                C      MAIN ROUTINE FOR RELAP4                                        RMAN0010
      ISN 0002        IMPLICIT REAL*8 (A-H,O-Z)                                       IBM 0015
                CTIMER001   COMMON BLOCK                                              RMAN0016
      ISN 0003        COMMON /ZCLOCK/ ZSUBNM(50),ZTIMEA(50),IZCALL(50),NZSUBC,MAXZUB,T RMAN0017
      ISN 0004        COMMON / STATUS / OMEGA, PERIOD, POWER, TIMEX,                  RMAN0018
                     1                  PQUITL, PQUITH, TQUITL, TQUITH, NOGO         RMAN0019
      ISN 0005        LOGICAL NOGO                                                    RMAN0025
                C     PQUITL = LOWER LIMIT ON PRESSURE IN ANY VOLUME                  RMAN0026
                C     PQUITH = UPPER LIMIT ON PRESSURE IN ANY VOLUME                  RMAN0027
                C     TQUITL = LOWER LIMIT ON TEMPERATURE IN ANY VOLUME               RMAN0028
                C     TQUITH = UPPER LIMIT ON TEMPERATURE IN ANY VOLUME               RMAN0029
      ISN 0006        DIMENSION ITL(26)                                               RMAN0030
      ISN 0007        LOGICAL FRST,LAST                                               RMAN0031
      ISN 0008        DATA FRST, LAST /  .TRUE.. .FALSE. /                            RMAN0033
                C      FIRST 5 WORDS OF ITL IS USED FOR PLOT TITLE                    RMAN0035
                C                                                                     
                C  CHANGE HEADER ON RELAP OUTPUT TO INDICAT A CHANGE HAS BEEEN MADE     BDHT 114
      ISN 0009        DATA ITL /4HRELA,                                               RMAN0036
                     1                  4HP4/1, 4H05 0, 4H9/03, 4H/76 , 4H( 2),     RMAN0037
                C    2            4H    , 4H    , 4H    , 4H    , 4H    ,            RMAN0038
                C                                                                     
                     1  4H BDH,4HT--B,4HC SL,4HABS ,4HFILL,                           BDHT 115
                     3                  4HRELA, 4HP4 T, 4HHERM, 4HAL H, 4HYDRA,     RMAN0042
                     4                  4HULIC, 4H COD, 4HE   , 4H  CO, 4HNFIG,     RMAN0041
                     5            4HURAT, 4HION , 4H CON, 4HTROL,                    RMAN0043
                C    6            4H:YES/                                            RMAN0045
                C                                                                     
                     1   4H: NO/                                                      BDHT 116
                CTIMER005   INITIAL BLOCK                                             RMAN0047
      ISN 0010        DATA NZSUBN/  1/                                                RMAN0049
      ISN 0011        CALL TIMSET                                                     IBM 0051
                C     CALL TIMSET(0)                                                  CDC 0052
      ISN 0012        IZCALL(NZSUBN) = IZCALL(NZSUBN) + 1                             RMAN0053
      ISN 0013        NZSUB5 = NZSUBC                                                 RMAN0055
      ISN 0014        NZSUBC = NZSUBN                                                 RMAN0057
      ISN 0015        NCASE = 0                                                       RMAN0059
      ISN 0016        NOGO = .FALSE.                                                  RMAN0061
      ISN 0017     10 CALL INPUT(NCASE,FRST,LAST,ITL)                                 RMAN0070
      ISN 0018        IF(LAST) GO TO 20                                               RMAN0080
```

```
   ISN 0020            CALL TRAN                                                RMAN0090
              CTIME4002   FINAL BLOCK                                           RMAN0095
   ISN 0021            NZSUBC = NZSUBS                                          RMAN0096
   ISN 0022            CALL ZTEDIT(0)                                           RMAN0097
   ISN 0023            CALL ETSCON                                              RMAN0098
   ISN 0024            REWIND 2                                                 RMAN0099
   ISN 0025            GO TO 10                                                 RMAN0100
   ISN 0026         20 CONTINUE                                                 RMAN0106
   ISN 0027            STOP                                                     RMAN0107
   ISN 0028             END                                                     RMAN0110

*OPTIONS IN EFFECT*       NAME=  MAIN,OPT=02,LINECNT=60,SIZE=0000K,

*OPTIONS IN EFFECT*       SOURCE,EBCDIC,NOLIST,NODECK,LOAD,NOMAP,NOEDIT,ID,NOXREF

*STATISTICS*     SOURCE STATEMENTS =       27 ,PROGRAM SIZE =      504

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                675K BYTES OF CORE NOT USED
```

```
          COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=60,SIZE=0000K,
                             SOURCE,EBCDIC,NOLIST,NODECK,LOAD,NOMAP,NOEDIT,ID,NOXREF
  ISN 0002            SUBROUTINE BAL  (NVOL,NJUN,NSLB,NCOR,IPROGM,IEMHT,IEMPS,IEMEC,    BAL00010
                     1 DT,STDATA)                                                       BAL00011
  ISN 0003            IMPLICIT REAL*8 (A-H,O-Z)                                        IBM 0020
                    CTIMER001   COMMON BLOCK                                           BAL00025
  ISN 0004            COMMON /ZCLOCK/ ZSUBNM(50),ZTIMEA(50),IZCALL(50),NZSUBC,MAXZUB,T BAL00026
                     C                                                                 BAL00040
                     C      SUBROUTINE TO CALC. ENERGY IN VOL., MASS AND VOL. OF LIQ.,GAS,  BAL00050
                     C          MIX.,AND BUBBLES,SATURATED ENTHALPY OF GAS AND LIQ.,HEIGHT  BAL00060
                     C          OF LIQUID,AND PRESSURE IN VOL.                          BAL00070
                     C      NVOL    = NUMBER OF VOLUMES                                 BAL00080
                     C      NJUN    = NUMBER OF JUNCTIONS                               BAL00090
                     C      NSLB    = NUMBER OF HEAT CONDUCTORS                         BAL00095
                     C      NCOR    = NUMBER OF CORE SECTIONS                           BAL00100
                     C      IPROGM  = TYPE OF CALCULATION                               BAL00105
                     C      IEMEG   = EVALUATION MODEL CALCULATION FLAG                 BAL00106
                     C      DT      = TIME STEP SIZE                                    BAL00110
                     C      STDATA  = STORAGE FOR STEAM TABLE INPUT AND OUTPUT          BAL00120
                     C                                                                  BAL00130
  ISN 0005            COMMON /BALEQ / AE, AMASS, BMASSW, BMASSA, DMASSW, DMASSA, EB,  BAL00140
                    * FE, HE, PNORM, POWRI, QLOSS, UFILL, ULOSS                         BAL00150
                     C                                                                  BAL00160
                     C       AE     = ENERGY ADDED                                      BAL00170
                     C       AMASS  = MASS ADDED                                        BAL00180
                     C      BMASSW  = MASS OF WATER                                     BAL00190
                     C      BMASSA  = MASS OF AIR                                       BAL00200
                     C      DMASSW  = MASS OF WATER LEAKED                              BAL00210
                     C      DMASSA  = MASS OF AIR LEAKED                                BAL00220
                     C       EB     = ENERGY BALANCE                                    BAL00230
                     C       FE     = ENERGY IN FUEL                                    BAL00240
                     C       HE     = ENERGY EXTRACTED BY HEAT EXCHANGER                BAL00250
                     C       PNORM  = NORMALIZED REACTOR POWER                          BAL00260
                     C       POWRI  = INITIAL REACTOR POWER                             BAL00270
                     C       QLOSS  = TOTAL RATE OF HEAT REMOVAL                        BAL00280
                     C       UFILL  = ENERGY FROM FILLS                                 BAL00290
                     C       ULOSS  = ENERGY LEAKED                                     BAL00300
                     C                                                                  BAL00310
  ISN 0006            COMMON /BUBLER/ ALPH(6), RGST(75), VBUB(6), IBUB(75)             BAL00320
                     C                                                                  BAL00330
                     C      ALPH = SLOPE COEFFICIENT                                    BAL00340
                     C      RGST = BUBBLE FRACTION AT MIXTURE SURFACE                   BAL00350
                     C      VBUB = BUBBLE VELOCITY                                      BAL00360
                     C      IBUB = VOLUME BUBBLE BEHAVIOR INDEX                         BAL00370
                     C                                                                  BAL00372
  ISN 0007            COMMON /CONTRL/ FILID(30), INDEX(30), FILSIZ(30)                 BAL00374
  ISN 0008            INTEGER FILSIZ                                                   BAL00376
                     C*CONTRL HOLDS INFORMATION OF DYNAMIC ARRAYS.                      BAL00378
                     C      FILID = FTB NUMBER OF ARRAY, ZERO MEANS ARRAY NOT BEING USED.  BAL00380
                     C      NEGATIVE VALUE MEANS ARRAY NEED NOT BE SAVED FOR RESTART.   BAL00382
                     C      INDEX = POSITION OF FIRST WORD OF ARRAY.                    BAL00384
                     C      FILSIZ = LENGTH OF ARRAY, POS. IF IN /FAST/, NEG. IF IN /FTBLCM/.  BAL00385
                     C      CONTRL(I) IMPLIES FILID(I), INDEX(I), AND FILSIZ(I).        BAL00388
                     C      CONTR(1) = INPUT DATA IN INPUT PHASE AND SCRATCH IN TRAN PHASE.  BAL00390
                     C      CONTR(2) = ICE CONDENSER ARRAYS                             BAL00392
                     C      CONTR(3) = FILL DATA                                        BAL00394
                     C      CONTR(4) = WATER PROPERTY DATA                              BAL00396
                     C                                                                  BAL00398
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ISN 0009          COMMON / ENVAJ / FLOWA(75),FLOWLE(75),FLOWRA(75),WVBAR(75),      BAL00450
                 1 WVBARO(75),SPVZ(75),SPVZO(75),AINERV(75),CMAS(75),DIAMV(75),    BAL00460
                 2 FANING(75),ELOD(75),TPMV(75),CMACHV(75),JTPMV(75),              BAL00470
                 3   IFAN(75),JVISC(75),IAMBLO(75),  IIN(75),  IOUT(75)           BAL00480
                C                                                                  BAL00490
                C     FLOWA    = VOLUME FLOW AREA (FT2), INPUT                     BAL00500
                C     FLOWL    = VOLUME FLOW PATH LENGTH (FT)                      BAL00510
                C     FLOWRA   = 1/(144*GC*FLOWA**2)                               BAL00520
                C     WVBAR    = AVERAGE VOLUME FLOW (LBM/SEC)                     BAL00530
                C     WVBARO   = PREVIOUS TIME STEP VALUE OF WVBAR                 BAL00540
                C     SPVZ     = VOLUME AVERAGE SPECIFIC VOLUME (FT3/LBM)          BAL00550
                C     SPVZO    = PREVIOUS TIME STEP VALUE OF SPVZ                  BAL00560
                C     AINERV   = HALF-VOLUME INERTIA (L/(2*A*144*GC)               BAL00570
                C     CMAS     = CENTER OF MASS HEIGHT                             BAL00580
                C     DIAMV    = EQUIVALENT DIAMETER OF FLOW AREA                  BAL00590
                C     FANING   = FANNING FRICTION FACTOR                           BAL00600
                C     ELOD     = (L/D)/(144*GC*A**2)                               BAL00610
                C     TPMV     = TWO-PHASE MULTIPLIER FOR FANNING FRICTION TERMS   BAL00620
                C     CMACHV   = MACH NUMBER SQUARED FOR AVERAGE VOLUME FLOW       BAL00630
                C     JTPMV    = INDEX FOR TWO-PHASE FRICTION  0=NO, 1=YES         BAL00640
                C     IFAN     = MEMORY INDEX FOR FANNING FRICTION CALCULATION     BAL00650
                C     JVISC    = MEMORY INDEX FOR VISCOSITY CALCULATION            BAL00660
                C     IAMBLO   = INDEX FOR DETERMINING WHEATHER TO CALCULATE LIQUID LEVELBAL00670
                C     IIN,IOUT = PRIMARY INLET AND OUTLET JUNCTION NUMBERS         BAL00672
                C                                                                  BAL00674
                C     COMMON BLOCK CONTAINING FAST MEMORY ARRAY FOR DYNAMIC STORAGE.BAL00676
ISN 0010          COMMON /FAST/ FA(1)                                              BAL00678
ISN 0011          INTEGER IA(2,1)                                                  IBM 0680
                C     INTEGER IA(1)                                                CDC 0682
ISN 0012          EQUIVALENCE (FA(1),IA(1,1))                                      IBM 0684
                C     EQUIVALENCE (FA(1),IA(1))                                    CDC 0686
                C     COMMON BLOCK CONTAINING LCM MEMORY ARRAY FOR DYNAMIC STORAGE.BAL00688
                C     FOR COMPUTERS WITHOUT LCM. THIS ARRAY IS EQUIVALENCED TO FAST BAL00690
                C     ARRAY.                                                       BAL00692
ISN 0013          REAL*8 LFA(1)                                                    IBM 0694
                C     COMMON /FTBLCM/ LFA(1)                                       CDC 0696
ISN 0014          INTEGER LIA(2,1)                                                 IBM 0698
                C     INTEGER LIA(1)                                               CDC 0700
                C     LEVEL 2, LFA,LIA                                             CDC 0702
ISN 0015          EQUIVALENCE (LFA(1),LIA(1,1),FA(1))                              IBM 0704
                C     EQUIVALENCE (LFA(1),LIA(1))                                  CDC 0706
                C                                                                  BAL00708
ISN 0016           COMMON /FLOOD/       BFFF,     CORCHL, DELTQ(12),      DTSUB, BAL00710
                  1          DZ,         EN,       EN0,        EN1,        EN2,  BAL00712
                  2       ENOLD,        HC1,       HC2,      HCOUT,       HOLD,  BAL00714
                  3        HPAD,    HTK(12),     QMAXFD,     QTOTF,      TINIT,  BAL00716
                  4     TK2K(12), TPKRK(12),     TQUENM,        TQ, TSKRK(12),  BAL00718
                  5        VOLD,       XMOLD,                                    BAL00720
                  6        IENT, IFLAG(12),       IHM, ISWKK(50),      JUNIH,  BAL00722
                  7      JUNOUT,     JUNSSL,    JUNWSL,       NAL,      NCVOL,  BAL00724
                  8      NDCVOL,     NLPVOL,NSGVOL(12),      NSGV,     NUPVOL  BAL00726
                C     LEVEL 2,BFFF                                                 CDC 0728
                C                                                                  BAL00730
ISN 0017           COMMON / GITTER / PSTAR(100,2), PARTLD(100,2), ENERGK(100,2),   BAL00732
                *    SPVSTR(200), BWSQR(100,2)                                    BAL00734
                C                                                                  BAL00736
                C     GITTER NORMALLY CONTAINS INFORMATION ABOUT MOMENTUM EQUATION  BAL00738
                C     PARTLD = DV/DP AND DV/DH                                     BAL00740
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                C                                                                       BAL00742
ISN 0018        C     COMMON /HEADOR/ HEAD(100,2)                                       BAL00744
                C                                                                       BAL00745
ISN 0019        C     COMMON /HEXTRA/ CSUBP(75),CSUBPF(75),CSUBPG(75)                   BAL00748
               *  ,HTSUPH(75),HTSURL(75),HOLDA(100)                                    BAL00750
                C                                                                       BAL00752
                C     CSUBP = SPECIFIC HEAT CAPACITY AT CONSTANT PRESSURE               BAL00754
                C     CSUBPF = CSUBP FOR SATURATED WATER                                BAL00756
                C     CSUBPG = CSUBP FOR SATURATED VAPOR                                BAL00758
                C                                                                       BAL00760
ISN 0020        C     COMMON / JUNED / DELA(100), DELE(100), DFLF(100), FL(100), XP(100)BAL00762
                C                                                                       BAL00770
ISN 0021        C     COMMON / JUNER / HP(100), WP(100), WSLIP(100), WTP(100), VSLIP,   BAL00780
               *  FMFRAC(100), IJ(100), IK(100), IPUMP(100), IVALVE(100),              BAL00790
               2    IPOCON(100), IVAP(100), IW(100,2), ISTAGP                         BAL00800
                C                                                                       BAL00810
                C     HP       = JUNCTION FLUID ENTHALPY                                BAL00820
                C     WP       = JUNCTION WEIGHT FLOW                                   BAL00830
                C     WSLIP    = JUNCTION WEIGHT FLOW OF WATER FROM SLIP FLOW           BAL00840
                C     WTP      = THE JUNCTION WEIGHT FLOW OF THE TWO PHASE MIXTURE OR STEAMBAL00850
                C     VSLIP    = SLIP VELOCITY FOR VOLUMES DIRECTLY ABOVE EACH OTHER    BAL00860
                C     FMFRAC   = MASS FRACTION OF FLUID IN JUNCTION FLOW                BAL00870
                C     IJ       = MIXING JUNCTION NUMBER                                 BAL00880
                C     IPUMP    = PUMP CURVE NUMBER                                      BAL00890
                C     IVALVE   = VALVE NUMBER                                           BAL00900
                C     IVAP     = JUNCTION VAPOR PRESSURE INDEX                          BAL00910
                C     IW(K,1) = JUNCTION INLET                                          BAL00920
                C     IW(K,2) = JUNCTION OUTLET                                         BAL00930
                C                                                                       BAL00940
ISN 0022        C     COMMON / JUNES / AJUN(100), ELEV(75), INERTA(100),                BAL00950
               1                 SRCOS(100), ZJUN(100), ZVOL(75), KCHOKE(100)         BAL00960
ISN 0023        C     REAL*8 INERTA                                                     IBM 0970
                C     REAL   INERTA                                                     CDC 0971
                C                                                                       BAL00980
                C     AJUN   = JUNCTION FLOW AREA                                       BAL00990
                C     ELEV   = VOLUME ELEVATION                                         BAL01000
                C     INERTA = JUNCTION INERTIA                                         BAL01010
                C     SRCOS  = SQ ROOT (COS (ANGLE BETWEEN CONNECTED VOLUMES))          BAL01020
                C     ZJUN   = JUNCTION ELEVATION                                       BAL01030
                C     ZVOL   = VOLUME HEIGHT                                            BAL01040
                C     KCHOKE = CHOKING INDICATOR                                        BAL01050
                C                                                                       BAL01060
ISN 0024        C     COMMON / RETALS / FJUNF(100), FJUNR(100), HKIN(100), SPVJ(100),   BAL01062
               1 SPVJO(100), RESOK(100), AJUNT(100), DIAMJ(100), TPMJ(100),           BAL01064
               2 CMACHJ(100), PBO(100),                                               BAL01066
               3 KMACH(100), JVERTL(100), JCHOKE(100), JCALCI(100), MVMIX(100)        BAL01068
                C                                                                       BAL01070
                C     JVERTL = VERTICAL JUNCTION INDEX                                  BAL01072
                C                                                                       BAL01074
ISN 0025        C     COMMON / SLAB   /      AHTL(50), AHTR(50), HDML(50), HDMR(50),    BAL01076
               *  CHNL(50), CHNR(50), DHEL(50), DHER(50), FCHL(50), FCHR(50),          BAL01078
               1  HTCL(50), HTCR(50), PHIL(50), PHIR(50), SLEN(50), VOLS(50),         BAL01080
               2  WQCL(50), WQCR(50), XSLL(50), XSLR(50), ZBOT(50), ZTOP(50),         BAL01082
               *  IBCL(50), IBCR(50), IHTL(50), IHTR(50), IMCL(50), IMCR(50),          BAL01084
               3  ISCO(50), ISHD(50), ISSB(50), ISST(50), IVSL(50), IVSR(50),         BAL01086
               4  IXLO(50)                                                           BAL01088
                C     LEVEL 2,AHTL                                                      CDC 1090
                C                                                                       BAL01092
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C      XSLL,R = LOCAL QUALITY FOR HEAT SLAB ON LEFT, RIGHT SIDES          BAL01094
C      IVSL = INDEX NO OF VOLUME AT LEFT SURFACE OF SLAB                  BAL01096
C      IVSR = INDEX NO OF VOLUME AT RIGHT SURFACE OF SLAB                 BAL01098
C                                                                         BAL01100
ISN 0026      COMMON /SPECAL/ HSPIN(100), HSPOUT(100), QSPL(75), WQ(75)   BAL01102
C                                                                         BAL01104
ISN 0027      COMMON / STATUS / OMEGA, PERIOD, POWER, TIMEX,              BAL01105
     1                          PQUITL, PQUITH, TQUITL, TQUITH, NOGO     BAL01106
ISN 0028      LOGICAL NOGO                                                BAL01108
C                                                                         BAL01110
C      OMEGA  = CRANK-NICOLSON IMPLICIT-EXPLICIT PROPORTION MULTIPLIER    BAL01112
C      PERIOD = REACTOR PERIOD                                            BAL01114
C      POWER  = REACTOR POWER                                             BAL01120
C      TIMEX  = ELAPSED PROBLEM TIME                                      BAL01130
C      PQUITL = LOWER LIMIT ON PRESSURE IN ANY VOLUME                     BAL01131
C      PQUITH = UPPER LIMIT ON PRESSURE IN ANY VOLUME                     BAL01132
C      TQUITL = LOWER LIMIT ON TEMPERATURE IN ANY VOLUME                  BAL01133
C      TQUITH = UPPER LIMIT ON TEMPERATURE IN ANY VOLUME                  BAL01134
C      NOGO   = .TRUE. MEANS PROBLEM FAILURE                              BAL01140
C                                                                         BAL01142
ISN 0029        COMMON/SLPVEL/VSLA(100),VLIQA(100),VVAPA(100),XWL(100),XWG(100),  BAL01144
     *                  HLOUT(100),HLIN(100),HGOUT(100),HGIN(100),       BAL01146
     *                  RL(100),RG(100),                                 BAL01148
     *        SLVAMX,SLVELZ,SLVPWR,SLVSLI,SLVDPF,                        BAL01149
     *        WALSC1,WALSC2,WALSC3,WALSC4,WALSC5,WALSC6,                 BAL01150
     *        DTRDWN,DWNGAP,JCNDWN,IDWNEM,ISLIP                          BAL01151
C      LEVEL 2,VSLA                                                       COC 1152
C      VSLA   = SLIP VELOCITY TIMES SQRT OF COSINE OF CON. ANGLE          BAL01153
C      VLIQA  = LIQUID VELOCITY                                           BAL01154
C      VVAPA  = VAPOR VELOCITY                                            BAL01156
C      XWL    = LIQUID PHASE JUNCTION MASS FLOW                           BAL01158
C      XWG    = GAS PHASE JUNCTION MASS FLOW                              BAL01160
C      HLOUT  = OUTLET LIQUID PHASE JUNCTION ENTHALPY                     BAL01162
C      HLIN   = INLET LIQUID PHASE JUNCTION ENTHALPY                      BAL01164
C      HGOUT  = OUTLET GAS PHASE JUNCTION ENTHALPY                        BAL01166
C      HGIN   = INLET GAS PHASE JUNCTION ENTHALPY                         BAL01168
C      RL     = PARTIAL LIQUID JUNCTION DENSITY                           BAL01170
C      RG     = PARTIAL GAS JUNCTION DENSITY                              BAL01172
C      ISLIP  = 0 FOR NO SLIP, = POSITIVE IF SOME JUNCTION REQUIRES SLIP  BAL01174
C      SLV*S  = SLIP VELOCITY PARAMETERS                                  BAL01175
C      WALSC*S = WALLIS AND DOWN FLOODING SLIP PARAMETERS                 BAL01176
C      DTRDWN = DOWNCOMER DIAMETER (FT)                                   BAL01177
C      DWNGAP = DOWNCOMER OUTER - INNER RADIUS / 2                        BAL01178
C      JCNDWN = DOWNCOMER JUNCTION INDEX                                  BAL01179
C      IDWNEM = EVALUATION MODEL DOWNCOMER FLAG,  0 FOR R4, 1 FOR EM      BAL01180
C                                                                         BAL01190
ISN 0030      COMMON /TSTPER/ DELTM(20), DTMIN(20), TLAST(20),            BAL01192
     1                  DTNEXT, DTOLDS, IDMP, IMAJ, IMIN, IPLT,          BAL01194
     2                  NCHK(20), NDMP(20), NMAJ(20), NMIN(20),          BAL01196
     3                  NSET, NSTEP, NTSET, NTTSP, ENDSTP, REDUC         BAL01197
ISN 0031      LOGICAL ENDSTP, REDUC                                       BAL01198
C                                                                         BAL01200
ISN 0032      COMMON /VOLDER/ SOUND2(75),  SATUF(75),  SATUG(75), UW(75), BAL01202
     * VSTIDX(75),  SATIDX(75),  PHASE(75)                                BAL01210
ISN 0033      INTEGER  PHASE                                              BAL01220
C                                                                         BAL01230
C      SOUND2 = ISENTROPIC SONIC VELOCITY SQUARED, DP/DR)RHO              BAL01240
C      SATUF  = SATURATED LIQUID SPECIFIC INTERNAL ENERGY  U(TSAT)        BAL01250
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C      SATUG  = SATURATED GAS SPECIFIC INTERNAL ENERGY  UG(TSAT)          BAL01260
C      UW     = SPECIFIC INTERNAL ENERGY                                 BAL01270
C      VSTIDX = MEMORY INDEX FOR STATE PROPERTIES                        BAL01280
C      SATIDX = MEMORY INDEX FOR SATURATED STATE PROPERTIES              BAL01290
C      PHASE  = PHASE OF WATER IN VOLUME                                 BAL01300
C                                                                        BAL01310
ISN 0034       COMMON / VOLED / AVED(75), AVEX(75), SATP(75), SATT(75),  BAL01320
              1SATVF(75), SATVG(75)                                      BAL01330
C                                                                        BAL01340
C      AVED   = AVERAGE DENSITY                                          BAL01350
C      AVEX   = AVERAGE QUALITY                                          BAL01360
C      SATP   = SATURATION PRESSURE                                      BAL01370
C      SATT   = SATURATION TEMPERATURE                                   BAL01380
C      SATVF  = SATURATION SPECIFIC VOLUME OF LIQUID                     BAL01390
C      SATVG  = SATURATION SPECIFIC VOLUME OF GAS                        BAL01400
C                                                                        BAL01410
ISN 0035       COMMON / VOLER / A(75), HW(75), P(75), TEMP(75), ZL(75),  BAL01420
              1 ZM(75), ZMO(75), IGIN(75), IRFAD(75)                     BAL01430
C                                                                        BAL01440
C      A      = VOLUME AREA                                             BAL01450
C      HW     = VOLUME SPECIFIC ENTHALPY                                BAL01460
C      P      = VOLUME PRESSURE                                         BAL01470
C      TEMP   = VOLUME TEMPERATURE                                      BAL01480
C      ZL     = LIQUID LEVEL                                            BAL01490
C      ZM     = MIXTURE LEVEL                                           BAL01500
C      ZMO    = MIXTURE LEVEL FOR PREVIOUS TIME STEP                    BAL01505
C      IGIN   = HEAT CALCULATION INDEX                                  BAL01510
C      IRFAD= INDEX FOR TIME DEPENDENT VOLUMES                          BAL01520
C                                                                        BAL01530
ISN 0035       COMMON /VOLES1/ GASM(75), GASV(75), LIQV(75), FMASS(75), MIXV(75),BAL01540
              *ARMASS(75),SATHF(75),SATHG(75),U(75),V(75),WPTIME,        BAL01550
              * IWPAC(100),IWPEDT                                        BAL01555
ISN 0037       REAL*8  LIQV,  MIXV                                       IBM 1560
               REAL    LIQV,  MIXV                                       CDC 1561
C                                                                        BAL01570
C      GASM   = GAS MASS (INCLUDES BUBBLE MASS)                          BAL01580
C      GASV   = GAS VOLUME                                               BAL01590
C      LIQV   = LIQUID VOLUME                                            BAL01600
C      FMASS  = TOTAL WATER MASS                                         BAL01610
C      MIXV   = MIXTURE VOLUME                                           BAL01620
C      ARMASS = AIR MASS                                                 BAL01630
C      SATHF  = SPECIFIC ENTHALPY OF SATURATED LIQUID                    BAL01640
C      SATHG  = SPECIFIC ENTHALPY OF SATURATED GAS                       BAL01650
C      U      = TOTAL ENERGY                                             BAL01660
C      V      = TOTAL VOLUME                                             BAL01670
C      WPTIME = STARTING TIME FOR APPLYING WATER PACKING ADJUSTMENTS     BAL01672
C      IWPAC  = WATERPACKING FLAGS, SEE SUBROUTINE WPACK FOR DEFINITION  BAL01675
C      IWPEDT = MAXIMUM NUMBER OF WATER PACK EDITS FOR ANY GIVEN VOLUME  BAL01676
C                                                                        BAL01680
ISN 0038       COMMON / VOLES2 / BUBM(75), GASH(75), LIQH(75), LIQM(75),  BAL01690
              1MIXD(75), VL(75), VS(75)                                  BAL01700
ISN 0039       REAL*8 MIXD, LIQH, LIQM                                   IBM 1710
               REAL   MIXD, LIQH, LIQM                                   CDC 1711
C                                                                        BAL01720
C      BUBM = BUBBLE MASS                                                BAL01730
C      GASH = GAS SPECIFIC ENTHALPY                                      BAL01740
C      LIQH = LIQUID SPECIFIC ENTHALPY                                   BAL01750
C      LIQM = LIQUID MASS                                                BAL01760
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C      MIXG = MIXTURE QUALITY                                                    BAL01770
C      VL   = LIQUID SPECIFIC VOLUME                                             BAL01780
C      VS   = GAS SPECIFIC VOLUME                                                BAL01790
C                                                                                BAL01800
C                                                                                BAL01810
ISN 0040       COMMON /DERIV / DPDU(75), DPDMF(75), DPDMA(75),  ESUBK(100),      BAL01820
     *     FSUBK(100), FU(75), FM(75), FMA(75)                                   BAL01830
C                                                                                BAL01840
C      DPDU   = DP/DU  AT CONSTANT M, MA                                         BAL01850
C      DPDMF  = DP/DMF AT CONSTANT U, MA                                         BAL01860
C      DPDMA  = DP/DMA AT CONSTANT U, MF                                         BAL01870
C      ESUBK  = DW/DT - MOMENTUM EQUATION                                        BAL01880
C      FSUBK  = FRICTION TERM  K/RHO FOR MOMENTUM EQUATION                       BAL01890
C      FU     = DU/DT   - ENERGY EQUATION                                        BAL01900
C      FM     = DMF/DT  - FLUID MASS EQUATION                                    BAL01910
C      FMA    = DMA/DT  - AIR MASS EQUATION                                      BAL01920
C                                                                                BAL01930
ISN 0041       DIMENSION STDATA( 1)                                              BAL01940
C                                                                                BAL01950
C      STDATA = THERMODYNAMIC STATE PROPERTIES RETURNED FROM STATE ROUT.         BAL01960
C         (1) = MASS OF WATER                LB                                  BAL01970
C         (2) = MASS OF AIR                  LB                                  BAL01980
C         (3) = TOTAL ENERGY                 BTU                                 BAL01990
C         (4) = TEMPERATURE GUESS IN   DEG F     STATE TEMPERATURE OUT           BAL02000
C         (5) = VOLUME                       FT3                                 BAL02010
C         (6) = LIQUID MASS                  LB                                  BAL02020
C         (7) = VAPOR MASS                   LB                                  BAL02030
C         (8) = TOTAL PRESSURE               PSI                                 BAL02040
C         (9) = TOTAL SPECIFIC ENTHALPY  BTU/LB                                  BAL02050
C        (10) = QUALITY                                                          BAL02060
C        (11) = SPECIFIC VOLUME OF WATER CUFT/LB                                 BAL02070
C        (12) = SONIC VELOCITY SQUARED   FT2/SEC2                                BAL02080
C        (13) = DPDMF                                                            BAL02090
C        (14) = DPDMA                                                            BAL02100
C        (15) = DPDU                                                             BAL02110
C        (16) = DV/DP                       (FT3*IN2)/(LBM*LBF)                  BAL02120
C        (17) = DV/DH                       FT3/BTU                              BAL02130
C        (18) = SAT PRESSURE AT TEMP        PSI                                  BAL02140
C        (19) = SAT TEMPERATURE AT P        DEG F                                BAL02150
C        (20) = LIQUID SPECIFIC VOLUME AT TSAT(P)              FT3/LB             BAL02160
C        (21) = VAPOR  SPECIFIC VOLUME AT TSAT(P)              FT3/LB             BAL02170
C        (22) = LIQUID SPECIFIC INTERNAL ENERGY AT TSAT(P)     BTU/LB             BAL02180
C        (23) = VAPOR  SPECIFIC INTERNAL ENERGY AT TSAT(P)     BTU/LB             BAL02190
C        (24) = LIQUID SPECIFIC ENTHALPY AT TSAT(P)            BTU/LB             BAL02200
C        (25) = VAPOR  SPECIFIC ENTHALPY AT TSAT(P)            BTU/LB             BAL02210
C        (26) = TABLE POSITION FOR FLUID PROPERTIES                               BAL02220
C        (27) = TABLE POSITION FOR SATURATION PROPERTIES                          BAL02230
C        (28) = CSUBP                                                            BAL02233
C        (29) = LIQUID CSUBP                                                     BAL02234
C        (30) = VAPOR  CSUBP                                                     BAL02236
C                                                                                BAL02240
ISN 0042       COMMON / WPCOM / IREDO(75)                                        BAL02241
C      LEVEL 2, IREDO                                                            COC 2242
C                                                                                BAL02243
C      IREDO = 0, NO 2ND CALL, = 1, 2ND STATE CALL-WATER PACK ADJUSTMENT         BAL02244
C      NOT NEEDED FOR RESTART                                                    BAL02245
C                                                                                BAL02246
ISN 0043       DATA ZERO, ONE / 0., 1. /                                         BAL02250
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ISN 0044            DATA IS1, IS2 / 1, 2 /                                    BAL02252
ISN 0045            DATA CPAIR / 2.401441S1D-1 /, T0 / 459.670D0 /            IBM 2255
                    DATA CPAIR / 2.401441918-1 /, T0 / 459.67E0 /             CDC 2256
                    C                                                         BAL02260
                    C                                                         BAL02262
                    CTIMER006   INITIAL BLOCK                                 BAL02263
ISN 0046            DATA NZSUBN/ 4/                                           BAL02264
ISN 0047            CALL TIMEL(ZDELTZ)                                        BAL02265
ISN 0048            ZTIMEA(NZSUBC) = ZTIMEA(NZSUBC) + ZDELTZ                  BAL02266
ISN 0049            IZCALL(NZSUBN) = IZCALL(NZSUBN) + 1                       BAL02267
ISN 0050            NZSUBS = NZSUBC                                           BAL02268
ISN 0051            NZSUBC = NZSUBN                                           BAL02269
ISN 0052              IX = INDEX(A)                                           BAL02270
                    C       ZERO ENERGY AND MASS BALANCES                     BAL02280
ISN 0053            EB = ZERO                                                 BAL02290
ISN 0054            BMASSA = ZERO                                             BAL02300
ISN 0055            BMASSW = ZERO                                             BAL02310
                    C                                                         BAL02320
                    C       PARTIAL EXPLICIT PEBBLE MASS INTEGRATION          BAL02340
ISN 0056            CALL BBLBAL(NVOL,NJUN,NSLB,DT,0,IPROGM)                   BAL02350
ISN 0057            IF (NDGO) GO TO 900                                       BAL02354
                    C       EM                                                BAL02355
ISN 0058            IF (IEMEC .EQ. 0) GO TO 10                                BAL02356
ISN 0059            CALL ECCADJ(NJUN)                                         BAL02357
ISN 0060          10 CONTINUE                                                 BAL02358
                    C *EM                                                     BAL02359
ISN 0061            IANYWP = 0                                                BAL02360
                    C                                                         BAL02365
                    C                                                         BAL02367
                    C *** FLOOD CHANGE                                        BAL02369
                    C       COMPUTE CORE QUANTITIES LAST FOR FLOOD ONLY       BAL02371
                    C                                                         BAL02372
ISN 0062            IOPEAT = 0                                                BAL02373
ISN 0063            KAT = NVOL                                                BAL02375
ISN 0064            IF (IPROGM .EQ. 2) KAT = NVOL + 1                         BAL02376
ISN 0065          90 IKRK = 0                                                 BAL02377
ISN 0066         100 IKEK = IKEK + 1                                          BAL02379
ISN 0067            I = IKRK                                                  BAL02380
ISN 0068            IF (IPROGM .NE. 2) GO TO 105                              BAL02381
ISN 0069            IF (I .EQ. NCVOL) GO TO 600                               BAL02383
ISN 0070            IF (I.EQ.KAT) I = NCVOL                                   BAL02385
ISN 0071          105 CONTINUE                                                BAL02386
ISN 0072            IF (IANYWP .EQ. 0) IHEDO(I) = 0                           BAL02388
ISN 0073            IF (IANYWP .NE.0 .AND. IHEDO(I) .LE. 0) GO TO 600         BAL02390
ISN 0074            ISW = 0                                                   BAL02392
                    C                                                         BAL02394
                    C       INITIALIZATION FOR BOTH PATHS                     BAL02400
ISN 0075          110 CALL ZEROUT(STDATA,30)                                  BAL02410
ISN 0076            SPVZO(I) = SPVZ(I)                                        BAL02420
ISN 0077            STDATA(2) = ARMASS(I)                                     BAL02430
ISN 0078            STDATA(4) = VII                                           BAL02440
ISN 0079            STDATA(26) = VSTIDX(I)                                    BAL02450
ISN 0080            STDATA(27) = SATIDX(I)                                    BAL02460
                    C                                                         BAL02470
                    C       TEST FOR SPECIAL BOUNDARY VOLUMES                 BAL02480
ISN 0081            IF (ISPCAS(I)) 140,120,140                                BAL02490
                    C                                                         BAL02500
                    C       NORMAL VOLUME                                     BAL02510
ISN 0082          120 IF (IOPEAT .EQ. 0  ) BURM(I) = BURM(I) - GASM(I)
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ISN 0092            IF (PMASS(I) .LT. ZERO) PMASS(I) = ZERO                          BAL02515
ISN 0094            STDATA(1) = PMASS(I)                                             BAL02520
ISN 0095            STDATA(2) = U(I)                                                 BAL02530
ISN 0096            STDATA(4) = TEMP(I)                                              BAL02540
                C                                                                    BAL02550
                C     EQUATION OF STATE ON U,V PLANE                                 BAL02560
ISN 0097            IF (IREPEAT .NE. 0  ) GO TO 130                                  BAL02561
ISN 0099            IF (IPHASE .NE. 2) GO TO 130                                     BAL02562
ISN 0101            IF (I .NE. NOVOL) GO TO 130                                      BAL02563
ISN 0103            CALL EQUAL(I,I,NJUN,ISW,STDATA,DT)                               BAL02564
ISN 0104            GO TO 1*                                                         BAL02565
ISN 0105      130   IF (IPHASE .EQ. 3) GO TO 124                                     BAL02569
ISN 0107            CALL STAIR(LFA(IX), STDATA, PHASE(I), ISW,                       BAL02570
                   1           PQUITL, PQUITH, TQUITL, TQUITH)                      BAL02571
ISN 0113            GO TO 125                                                        BAL02573
ISN 0109      124   CALL STAIR (LFA(IX),STDATA,PHASE(I),ISW,                         BAL02575
                   1           PQUITL, PQUITH, TQUITL, TQUITH)                      BAL02576
ISN 0110      125   IF (ISW) 910,170,170                                             BAL02580
                C                                                                    BAL02590
                C     READ VOLUME CONDITIONS FROM CARDS OR TAPE                      BAL02600
ISN 0111      140   IF (IREPEAT  .NE. 0) GO TO 600                                   BAL02608
                C     CALL TREAT (IRFAD(I),TIMEX,DUM,P(I),TEMP(I),AVEX(I),ZM(I),ISW) BAL02610
                C                                                                    BAL02620
                C CHANGE TO CALL THE NEW INDAT WITH ITS NEW ARGUMENTS                BDHT 117
ISN 0113            CALL TREAT(1,IRFAD(I),TIMEX,DUM,P(I),TEMP(I),AVEX(I),ZM(I),ISW)  BDHT 118
ISN 0114            IF (ISW) 920,150,150                                             BAL02620
ISN 0115      150   STDATA(4) = TEMP(I)                                              BAL02630
ISN 0116            STDATA(3) = P(I)                                                 BAL02640
ISN 0117            STDATA(10) = AVEX(I)                                             BAL02650
                C                                                                    BAL02660
                C     EQUATION OF STATE ON P,X OR P,T PLANE                          BAL02670
ISN 0118      160   CALL PRESS (LFA(IX),STDATA,PHASE(I),ISW)                         BAL02680
ISN 0119            IF (ISW) 930,170,170                                             BAL02690
                C                                                                    BAL02700
                C     STORE OFF ANSWERS FROM EQUATION OF STATE                       BAL02710
ISN 0120      170   IF (IPHASE(I) .LT. 100 .OR. PHASE(I) .NE. 2) GO TO 180           BAL02712
                C     WATER PACKING HAS FORCED THE VOLUME SLIGHTLY 2-PHASE.          BAL02714
ISN 0122            IPHASE(I) = -1                                                   BAL02715
ISN 0123            PHASE(I) = 1                                                     BAL02716
                C     IF THE 2-PHASE REDISTRIBUTIONS HAVE BEEN MADE, USE EARLIER ITER.BAL02718
ISN 0124            IF (IREPEAT .NE. 1) GO TO 600                                    BAL02720
                C     IF NO PRESSURE READJUSTMENT HAS BEEN MADE, E.G. FIRST WATER PACKINGBAL02726
                C     ADJUSTMENT MAKES VOLUME 2-PHASE, USE ADJUSTED MASS AND ENERGY. BAL02729
                C     NEW P AND SATP, AND OTHER OLD SUPERCOOLED PROPERTIES.          BAL02730
                C     (THIS CASE HAS NOT BEEN OBSERVED TO OCCUR IN ANY CHECK OUT RUNS)BAL02732
ISN 0126            SATP(I) = STDATA(15)                                             BAL02734
ISN 0127            STDATA(3) = SATP(I)                                              BAL02736
ISN 0128      180   PMASS (I) = STDATA(1)                                            BAL02738
ISN 0129            U     (I) = STDATA(2)                                            BAL02740
ISN 0130            TEMP  (I) = STDATA(4)                                            BAL02742
ISN 0131            LIQA  (I) = STDATA(5)                                            BAL02750
ISN 0132            GASM  (I) = STDATA(7)                                            BAL02760
ISN 0133            P     (I) = STDATA(8)                                            BAL02770
ISN 0134            HX    (I) = STDATA(9)                                            BAL02780
ISN 0135            AVEX  (I) = STDATA(10)                                           BAL02790
ISN 0136            SOUND2(I) = STDATA(12)                                           BAL02800
ISN 0137            EPSMF (I) = STDATA(13)                                           BAL02810
ISN 0138            DPEMA (I) = STDATA(14)                                           BAL02820
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ISN 0139            UP(I)  (I) = STDATA(15)                                  BAL02830
ISN 0140            SATP   (I) = STDATA(16)                                  BAL02840
ISN 0141            SATT   (I) = STDATA(17)                                  BAL02850
ISN 0142            SATVP  (I) = STDATA(20)                                  BAL02860
ISN 0143            SATVG  (I) = STDATA(21)                                  BAL02870
ISN 0144            SATUF  (I) = STDATA(22)                                  BAL02880
ISN 0145            SATUG  (I) = STDATA(23)                                  BAL02890
ISN 0146            SATHF  (I) = STDATA(24)                                  BAL02900
ISN 0147            SATHG  (I) = STDATA(25)                                  BAL02910
ISN 0148            VSTIONE(I) = STDATA(26)                                  BAL02920
ISN 0149            SATIONE(I) = STDATA(27)                                  BAL 2930
ISN 0150            PARTLDE(,I) = STDATA(16)                                 BAL 2940
ISN 0151            PARTLDE(,2) = STDATA(17)                                 BAL0 2950
ISN 0152            CSUBPE(I) = STDATA(28)                                   BAL02952
ISN 0153            CSUBPP(I) = STDATA(29)                                   BAL02953
ISN 0154            CSUBPG(I) = STDATA(30)                                   BAL02954
ISN 0155            TOMASS = PMASS(I) + AGMASS(I)                            BAL02955
ISN 0156            IF (TOMASS.LE.ZERO) GO TO 950                            BAL02960
ISN 0157            UN(I) = U(I) / TOMASS                                    BAL02970
ISN 0158            CALL ENFSUB(INDUS,NSUB,LPA(1X1,P(I),I,IHQC'0 )           BAL02982
                C                                                            BAL02990
                C   BRANCH ON PHASE INDEX                                    BAL03000
                C   0 = AIR ONLY          1 = LIQUID          2 = TWO PHASE  BAL03010
                C   3 = SUPERHEATED       4 = SUPERCRITICAL                  BAL03020
ISN 0159            IF (SATVP(I) .LE. SATVG(I)) GO TO 15                     BAL03022
ISN 0160            CALL FAIL                                                BAL03024
ISN 0161            WRITE(6,501) I                                           BAL03026
ISN 0162          501 FORMAT(/3HOSTEAM TABLE FAILURE FOR VOL., I4,           BAL03028
                   1 17H SATVP .GT. SATVG, 40X, 27H******** EXECUTION DELETED.  )  BAL03030
ISN 0163           15 CONTINUE                                               BAL03032
ISN 0164            ISW = PHASE(I) + 1                                       BAL03034
ISN 0165            GO TO (200,300,400,500,500), ISW                         BAL03040
                C                                                            BAL03050
                C   AIR ONLY, NO WATER                                       BAL03060
ISN 0166          200 CONTINUE                                               BAL03070
ISN 0167            VL     (I) = ZERO                                        BAL03080
ISN 0168            VS     (I) = ZERO                                        BAL03090
ISN 0169            GASH   (I) = ZERO                                        BAL03100
ISN 0170            LIQH   (I) = ZERO                                        BAL03110
ISN 0171            GASV   (I) = ZERO                                        BAL03120
ISN 0172            LIQV   (I) = ZERO                                        BAL03130
ISN 0173            ZL     (I) = ZERO                                        BAL03140
ISN 0174            MIXV   (I) = ZERO                                        BAL03150
ISN 0175            ZM     (I) = ZERO                                        BAL03160
ISN 0176            MIXQ   (I) = ZERO                                        BAL03170
ISN 0177            GO TO 600                                                BAL03180
                C                                                            BAL03190
                C   LIQUID WATER ONLY, NO AIR                                BAL03200
ISN 0178          300 CONTINUE                                               BAL03210
ISN 0179            VS     (I) = ZERO                                        BAL03220
ISN 0180            GASH   (I) = ZERO                                        BAL03230
ISN 0181            GASV   (I) = ZERO                                        BAL03240
ISN 0182            MIXQ   (I) = ZERO                                        BAL03250
ISN 0183            VL     (I) = STDATA(11)                                  BAL03260
ISN 0184            LIQH   (I) = HW(I)                                       BAL03270
ISN 0185            LIQV   (I) = V(I)                                        BAL03280
ISN 0186            ZL     (I) = ZVOL(I)                                     BAL03290
ISN 0187            MIXV   (I) = V(I)                                        BAL03300
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ISN 0190            ZM     (I) = ZVOL(I)                                                    BAL03310
ISN 0191            GO TO 600                                                               BAL03320
                C                                                                           BAL03330
                C   TWO PHASE, WITH OR WITHOUT AIR                                          BAL03340
ISN 0192          400 VL     (I) = SATVF(I)                                                 BAL03350
ISN 0193            VS     (I) = SATVG(I)                                                  BAL03360
ISN 0194            LIQM   (I) = SATMF(I)                                                  BAL03370
ISN 0195            GASM   (I) = SATMG(I)                                                  BAL03380
ISN 0196            LIQV   (I) = LIQM(I) * SATVF(I)                                        BAL03390
ISN 0197            ZL     (I) = LIQV(I) / A(I)                                            BAL03400
ISN 0198            GASV   (I) = GASM(I) * SATVG(I)                                        BAL03410
ISN 0199            GO TO 600                                                              BAL03412
                C                                                                          BAL03414
                C   SUPERHEATED STEAM, WITH OR WITHOUT AIR                                BAL03416
ISN 0200          500 CONTINUE                                                             BAL03418
ISN 0201            VL     (I) = 0.0                                                       BAL03420
ISN 0202            LIQM   (I) = 0.0                                                       BAL03422
ISN 0203            LIQV   (I) = 0.0                                                       BAL03424
ISN 0204            ZL     (I) = 0.0                                                       BAL03426
ISN 0205            MIXV   (I) = 0.0                                                       BAL03428
ISN 0206            ZM     (I) = 0.0                                                       BAL03430
ISN 0207            VS     (I) = STDATA(11)                                                BAL03432
ISN 0209            GASM(I) = HW(I)                                                        BAL03434
ISN 0210            IF (IPROGM .NE. 3) GO TO 510                                           BAL03435
ISN 0211            GASM(I) = (HW(I)*(ARMASS(I)+FMASS(I)) -                                BAL03438
                   1  ARMASS(I)*CPAIR*(TEMP(I)+TO))/FMASS(I)                             BAL03440
ISN 0212          510 GASV   (I) = V(I)                                                    BAL03442
ISN 0213            MIXQ   (I)  =1.0                                                       BAL03444
ISN 0214          600 CONTINUE                                                             BAL03446
ISN 0215            AVED(I) = (FMASS(I) + ARMASS(I)) / V(I)                                BAL03448
ISN 0216            IF (AVED(I) .LE. 0.0) GO TO 950                                        BAL03450
ISN 0218            SPVZ(I) = 1.0 / AVED(I)                                                BAL03452
ISN 0219            IF (IKRK .LT. KAT) GO TO 100                                           BAL03454
ISN 0221            IF (IRPEAT .EQ. 0) GO TO 540                                           BAL03456
ISN 0223            IHIP = 0                                                               BAL03458
ISN 0224            DO 530 I = 1,NVOL                                                      BAL03460
ISN 0225            IF (IREDO(I) .LT. 100 .OR. P(I) .LT. 1.00500 * SATP(I)) GO TO 530 IBM 3462
                C   IF (IREDO(I) .LT. 100 .OR. P(I) .LT. 1.00500 * SATP(I)) GO TO 530 CDC 3464
ISN 0227            IHIP = 1                                                               BAL03466
ISN 0228          530 CONTINUE                                                             BAL03468
ISN 0229            IF (IHIP .EQ. 0) GO TO 550                                             BAL03470
ISN 0231          540 CALL WPACK(NVOL,NJUN,QSPL,SPVZ,SATP,IREDO,IANYWP,IRPEAT)             BAL03472
ISN 0232            IF (IANYWP .EQ. 0 ) GO TO 550                                          BAL03474
ISN 0234            IRPEAT = IRPEAT + 1                                                    BAL03476
ISN 0235            IF (IRPEAT .LE. 3) GO TO 90                                            BAL03478
ISN 0237          550 DO 590 I = 1,NVOL                                                    BAL03480
ISN 0238            IF (PHASE(I) .EQ. 2) GO TO 402                                         BAL03482
ISN 0240            BUBM(I) = 0.0                                                          BAL03484
ISN 0241            GO TO 590                                                              BAL03486
ISN 0242          402 CONTINUE                                                             BAL03488
                C                                                                          BAL03490
                C   IF BUBBLE RISE VELOCITY IS ZERO, ALL GAS IS IN BUBBLES                BAL03492
ISN 0243            K = IBUB(I) + 1                                                        BAL03494
ISN 0244            IF (VBUB(K)) 410,410,405                                               BAL03496
ISN 0245          405 IF (WVBAR(I)*3600.+FLOWA(I)*2000000.) 420,420,410                    BAL03498
ISN 0246          410 BUBM   (I) = GASM(I)                                                 BAL03500
ISN 0247            MIXQ   (I) = AVEX(I)                                                   BAL03502
ISN 0248            MIXV   (I) = V(I)                                                      BAL03504
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ISN 0249            ZM    (I) = ZVOL(I)                                                 BAL03506
ISN 0250            GO TO 540                                                           BAL03508
                    C                                                                   BAL03510
                    C     TEST FOR SPECIAL BOUNDARY VOLUMES                             BAL03520
ISN 0251          420 IF (IREAD(I)) 440,430,440                                         BAL03530
                    C                                                                   BAL03540
                    C     APPLY BUBBLE SEPARATION MODEL, REGARDLESS OF SLIP             BAL03550
                    C     BUBM(T+1) = BUBM(T) + (GASM(T+1)-GASM(T)) - DT*VBUB*...       BAL03560
ISN 0252          430 BUBM(I) = BUBM(I) + GASM(I) - DT*VBUB(K)*RGAT(I)*A(I)           BAL03570
ISN 0253            IF (ARMASS(I) .GT. ZERO) BUBM(I) = ZERO                           BAL03575
ISN 0254            BUBM(I) = DMAX1(ZERO,DMIN1(GASM(I),BUBM(I)))                      IBM 3580
                    C     BUBM(I) = AMAX1(ZERO,AMIN1(GASM(I),BUBM(I)))                CDC 3581
ISN 0255            MIXQ(I) = BUBM(I) / (BUBM(I)+LIQM(I))                             BAL03590
ISN 0256            MIXV(I) = LIQV(I) + BUBM(I)*SATVG(I)                              BAL03600
ISN 0257            ZM(I) = MIXV(I) / A(I)                                            BAL03610
ISN 0258            IF (ZM(I) *1.000000100 .GT. ZVOL(I)) ZM(I) = ZVOL(I)              IBM 3612
                    C     IF (ZM(I) *1.000000100 .GT. ZVOL(I)) ZM(I) = ZVOL(I)        CDC 3614
ISN 0259            GO TO 540                                                         BAL03620
                    C                                                                 BAL03630
                    C     MIXTURE LEVEL KNOWN FROM CARDS OR TAPE                      BAL03640
ISN 0260          440 IF (ZM(I)-ZVOL(I)) 450,450,940                                  BAL03650
ISN 0261          450 MIXV(I) = ZM(I) * A(I)                                          BAL03660
ISN 0262            BUBM(I) = GASM(I) - (V(I)-MIXV(I))/SATVG(I)                       BAL03670
ISN 0263            BUBM(I) = DMAX1(BUBM(I),ZERO)                                     IBM 3675
                    C     BUBM(I) = AMAX1(BUBM(I),ZERO)                               CDC 3676
ISN 0264            MIXQ(I) = BUBM(I) / (BUBM(I)+LIQM(I))                             BAL03680
                    C                                                                 BAL03830
                    C     PARTIAL ENERGY AND MASS BALANCE                             BAL03840
ISN 0265          540 UE = EN * U(I)                                                  BAL03850
ISN 0266            AMASSW = AMASSW + FMASS(I)                                        BAL03860
ISN 0267            AMASSA = AMASSA + ARMASS(I)                                       BAL03870
ISN 0268          550 CONTINUE                                                        BAL03880
                    C                                                                 BAL03882
                    C     CHECK FOR POSSIBLE SLIP FLOW ADJUSTMENTS                    BAL03884
ISN 0269          700 DO 750 I= 1, NVOL                                               BAL03886
ISN 0270            K = IBUF(I) + 1                                                   BAL03888
ISN 0271            IF (VBUF(K).LE.ZERO) GO TO 750                                    BAL03890
ISN 0272            IF (PHASE(I).NE.2) GO TO 750                                      BAL03892
ISN 0273            K = IAMLC(I)                                                      BAL03894
ISN 0274            IF (K.LT.0) GO TO 750                                             BAL03896
ISN 0275            IF (LIQM(K).LE.ZERO) GO TO 750                                    BAL03898
                    C                                                                 BAL03900
                    C     FIND JUNCTION NUMBER INVOLVED                               BAL03902
ISN 0276          710 DO 730 J= 1, NJUN                                               BAL03904
ISN 0277            IF (ESPOS(J) .EQ. ZERO) GO TO 730                                 BAL03906
ISN 0278            IF (IW(J,1).NE.I) GO TO 720                                       BAL03908
ISN 0279            IF (IW(J,2).NE.K) GO TO 730                                       BAL03910
ISN 0280            GO TO 740                                                         BAL03912
ISN 0281          720 IF (IW(J,1).NE.K) GO TO 730                                     BAL03914
ISN 0282            IF (IW(J,2).NE.I) GO TO 730                                       BAL03915
                    C                                                                 BAL03924
                    C     ADJUST MIXTURE LEVEL ONLY IF NECESSARY                      BAL03926
ISN 0283          740 ZJ = DMAX1((ZJUN(J)-ELEV(I)),ZERO)                              IBM 3928
                    C 740 ZJ = AMAX1((ZJUN(J)-ELEV(I)),ZERO)                        CDC 3929
ISN 0284            ZJ = DMIN1(ZJ,ZVOL(I))                                            IBM 3930
                    C     ZJ = AMIN1(ZJ,ZVOL(I))                                      CDC 3931
ISN 0285            IF (ZM(I).GE.ZJ) GO TO 750                                        BAL03932
ISN 0286            ZEXPAN = 2. * LIQM(K) / (AVED(I) * A(I))                          BAL03933
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ISN 0299            ZM(I) = DMIN1(ZJ,ZM(I)+ZEXPAN)                                  IBM 3935
                C   ZM(I) = AMIN1(ZJ,ZM(I)+ZEXPAN)                                  CDC 3936
ISN 0300            IF (ZM(I)*1.000000100 .GT. ZVOL(I)) ZM(I) = ZVOL(I)            IBM 3938
                C   IF (ZM(I)*1.000000100 .GT. ZVOL(I)) ZM(I) = ZVOL(I)            CDC 3940
ISN 0302            MIXV(I) = ZM(I) * A(I)                                         BAL03942
ISN 0303            BUBM(I) = GASM(I) - (V(I)-MIXV(I))/SATVG(I)                    BAL03944
ISN 0304            BUBM(I) = DMAX1(BUBM(I),ZERO)                                  IBM 3946
                C   BUBM(I) = AMAX1(BUBM(I),ZERO)                                  CDC 3948
ISN 0305            MIXQ(I) = BUBM(I) / (BUBM(I)+LIQM(I))                          BAL03950
                C                                                                  BAL03952
ISN 0306          730 CONTINUE                                                     BAL03954
ISN 0307          750 CONTINUE                                                     BAL03956
                C                                                                  BAL04112
                C   GET NEW JUNCTION ENTHALPIES AND QUALITIES                      BAL04114
ISN 0308            CALL VAPCRI(NVOL)                                              BAL04116
ISN 0309            CALL ENTHBL (NVOL, NJUN, NSLB, DT, 0, IPROGM)                  BAL04120
ISN 0310            CALL DWNPEN                                                    BAL04121
ISN 0311            CALL PLNENT                                                    BAL04122
                C   GET NEW LOCAL HEAT SLAB QUALITIES                              BAL04124
ISN 0312            DO 780 L=1,NSLB                                                BAL04126
ISN 0313            IL = IVSL(L)                                                   BAL04128
ISN 0314            IF (IL.LE.0) GO TO 770                                         BAL04130
ISN 0315            XSLLSC = AVEX(IL)                                              BAL04132
ISN 0317            IF (AVEX(IL).GT.ZERO) CALL BUBX (L, IS1, XSLLSC)               BAL04134
ISN 0319            XSLL(L) = XSLLSC                                               BAL04135
ISN 0320          770 IR = IVSR(L)                                                 BAL04136
ISN 0321            IF (IR.LE.0) GO TO 780                                         BAL04138
ISN 0323            XSLRSC = AVEX(IR)                                              BAL04140
ISN 0324            IF (AVEX(IR).GT.ZERO) CALL BUBX (L, IS2, XSLRSC)               BAL04142
ISN 0325            XSLR(L) = XSLRSC                                               BAL04143
ISN 0327          780 CONTINUE                                                     BAL04144
                C                                                                  BAL04146
                C   ENERGY AND MASS BALANCE                                       BAL04148
ISN 0328            EB = EB + FE + ULOSS + HE - AE - UFILL                         BAL04150
ISN 0329            BMASSW = BMASSW - AMASS + DMASSW                               BAL04152
ISN 0330            BMASSA = BMASSA + DMASSA                                       BAL04154
ISN 0331            IF (NOGO) GO TO 940                                            BAL04156
                C                                                                  BAL04158
ISN 0333            IF (IPROGM .EQ.2) CALL FLOBAL(2,IDMM,NJUN,IDUM,STDATA,DT)      BAL04160
                C   LIQUID LEVEL CALCULATION                                      BAL04162
ISN 0335            CALL LEVCAL (LIQM,SATVF)                                       BAL04164
ISN 0336            IF (NOGO) GO TO 960                                            BAL04166
                C                                                                  BAL04168
ISN 0338          840 CONTINUE                                                     BAL04192
                C                                                                  BAL04194
                C   COMPUTE FW,FU,FMA(ENERGY,WATER MASS,AIR MASS TIME DERIVATIVES) BAL04196
ISN 0339            DO 845 I=1,NVOL                                                BAL04198
ISN 0340            FU(I)=QSPL(I)                                                  BAL04200
ISN 0341            FM(I)=0.                                                       BAL04202
ISN 0342            FMA(I)=0.0                                                     BAL04204
ISN 0343          845 CONTINUE                                                     BAL04206
ISN 0344            DO 870   K=1,NJUN                                              BAL04208
ISN 0345            IF(XWL(K).LT.0.)GO TO 850                                      BAL04210
ISN 0347            HTEMP=HLOUT(K)                                                 BAL04212
ISN 0348            HSTAR=HLIN(K)                                                  BAL04214
ISN 0349            GO TO 855                                                      BAL04216
ISN 0350          850 HTEMP=HLIN(K)                                                BAL04218
ISN 0351            HSTAR=HLOUT(K)                                                 BAL04220
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ISN 0352        855 IF(XWG(K).LT.0.) GO TO 860                                  BAL04222
ISN 0354            TEMP2=HGOUT(K)                                              BAL04224
ISN 0355            TEMP3=HGIN(K)                                               BAL04226
ISN 0356            GO TO 865                                                   BAL04228
ISN 0357        860 TEMP2=HGIN(K)                                               BAL04230
ISN 0358            TEMP3=HGOUT(K)                                              BAL04232
ISN 0359        865 TEMP4 = FMFRAC(K)*WP(K)                                     BAL04234
ISN 0360            TEMP5 = WP(K) - TEMP4                                       BAL04235
ISN 0361            J = IW(K,2)                                                 BAL04236
ISN 0362            IF (J .EQ. 0) GO TO 865                                     BAL04237
ISN 0364            FU(J)=FU(J)+HTEMP*XWL(K)+TEMP2*XWG(K)                       BAL04238
ISN 0365            FM(J) = FM(J) + TEMP4                                       BAL04240
ISN 0366            FMA(J) = FMA(J) + TEMP5                                     BAL04242
ISN 0367        865 I = IW(K,1)                                                 BAL04244
ISN 0368            IF (I .EQ. 0) GO TO 870                                     BAL04245
ISN 0370            FU(I)=FU(I)-HSTAR*XWL(K)-TEMP3*XWG(K)                       BAL04246
ISN 0371            FM(I) = FM(I) - TEMP4                                       BAL04248
ISN 0372            FMA(I) = FMA(I) - TEMP5                                     BAL04250
ISN 0373        870 CONTINUE                                                    BAL04252
ISN 0374            CALL SLPZNT(IW,IHOCUR,SRCOS,NJUN,PHASE,TIMEX)               BAL04253
               CTIME0003   FINAL BLOCK                                          BAL04254
ISN 0375            NZSUBC = NZSUBS                                             BAL04256
ISN 0376            CALL TIMFL(ZDELTZ)                                          BAL04258
ISN 0377            ZTIMEA(NZSUBN) = ZTIMEA(NZSUBN) + ZDELTZ                    BAL04260
ISN 0378            RETURN                                                      BAL04262
                C                                                               BAL04264
                C     ERROR IN FIRST CALL TO SLIP                               BAL04266
ISN 0379        900 WRITE (6,690)                                               BAL04268
ISN 0380            GO TO 940                                                   BAL04270
                C                                                               BAL04272
                C     STEAM TABLE FAILURE IN STATE                              BAL04274
ISN 0381        910 WRITE (6,691) I                                             BAL04276
ISN 0382            GO TO 940                                                   BAL04280
                C                                                               BAL04290
                C     ERROR READING SPECIAL BOUNDARY VOLUME DATA                BAL04300
ISN 0383        920 WRITE (6,692) I                                             BAL04310
ISN 0384            GO TO 940                                                   BAL04320
                C                                                               BAL04330
                C     STEAM TABLE FAILURE IN PRESS                              BAL04340
ISN 0385        930 WRITE (6,693) I                                             BAL04350
ISN 0386            GO TO 940                                                   BAL04360
                C                                                               BAL04370
                C     ERROR IN SECOND CALL TO SLIP                              BAL04380
ISN 0387        940 WRITE (6,694)                                               BAL04390
ISN 0388            GO TO 990                                                   BAL04391
                C                                                               BAL04392
                C     ZERO OR NEGATIVE TOTAL MASS                               BAL04393
ISN 0389        950 WRITE (6,695) I, TOMASS                                     BAL04394
ISN 0390            GO TO 940                                                   BAL04395
                C                                                               BAL04396
                C     ERROR IN CORE LIQUID LEVEL                                BAL04397
ISN 0391        960 WRITE (6,696)                                               BAL04398
                C                                                               BAL04400
ISN 0392        980 CALL FAIL                                                   BAL04410
ISN 0393        990 GO TO 840                                                   BAL04420
                C                                                               BAL04430
ISN 0394        690 FORMAT (43HORAL FAILURE IN FIRST SLIP FLOW CALCULATION)     BAL04440
ISN 0395        691 FORMAT (38HSTEAM TABLE FAILURE FOR NORMAL VALUE,I4)         BAL04450
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ISN 0395          692 FORMAT (1RH0ERROR FINDING DATA FOR SPECIAL VOLUME,I4)                BAL04460
ISN 0397          693 FORMAT (39H0STEAM TABLE FAILURE FOR SPECIAL VOLUME,I4)               BAL04470
ISN 0399          694 FORMAT (44H0BAL FAILURE IN SECOND SLIP FLOW CALCULATION)             BAL04480
ISN 0399          695 FORMAT(     47H0***** NONPOSITIVE TOTAL MASS IN SUBROUTINE BAL,     BAL04482
                     *                 9H FOR VOL., I5, 1PE13.5)                         BAL04483
ISN 0400          696 FORMAT (35H0ERROR IN LIQUID LEVEL CALCULATION.)                      BAL04484
ISN 0401              END                                                                  BAL04490
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                ERROR NO   LEVEL        ERROR MESSAGE
   NAME     ONE   IFK3071      04        THE DATA STATEMENT CONTAINS A VARIABLE THAT IS NOT REFERENCED.
*OPTIONS IN EFFECT*       NAME=  MAIN,OPT=02,LINECNT=60,SIZE=300K,
*OPTIONS IN EFFECT*       SOURCE,EBCDIC,NOLIST,NODECK,LOAD,NOMAP,NOEDIT,ID,NOXREF
*STATISTICS*     SOURCE STATEMENTS =      400 ,PROGRAM SIZE =     6494
*STATISTICS*    1 DIAGNOSTICS GENERATED, HIGHEST SEVERITY CODE IS  4
****** END OF COMPILATION ******                                        591K BYTES OF CORE NOT USED
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          COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=60,SIZE=0000K,
                             SOURCE,EBCDIC,NOLIST,NODECK,LOAD,NOMAP,NOEDIT,ID,NOXREF
ISN 0002            SUBROUTINE CONZER(IFRST,MAXTRP,MAXJUN,MAXVOL,LENGTH)                  COMZ0010
ISN 0003            IMPLICIT REAL*8 (A-H,O-Z)                                             IBM 0020
                C                                                                         COMZ0030
                C   ROUTINE TO ZERO COMMON BLOCKS                                        COMZ0040
ISN 0004            COMMON / STATUS / OMEGA, PERIOD, POWER, TIMEX,                        COMZ0041
                   1                  PQUITL, PQUITH, TQUITL, TQUITH, NOSO            COMZ0042
ISN 0005            COMMON / TAPER / ILAST, INEXT, IOK, NLFLT, NLINT, NLLOG               COMZ0060
ISN 0006            COMMON / BALED / IB (1)                                               COMZ0070
ISN 0007            COMMON / BURER / IC (1)                                               COMZ0080
ISN 0008            COMMON / BURLER/ ID (1)                                               COMZ0090
                C                                                                         COMZ0100
ISN 0009            COMMON / CHKVER / CV1(10), CV2(10), CV3(10), PCV(10),                 COMZ0110
                   1 THDOT(100), THETA(100), IACV(10), ITCV(10), OPEN(100), LATCH(10)     COMZ0120
ISN 0010            LOGICAL OPEN                                                          COMZ0130
                C                                                                         COMZ0140
                C   CV1 = FORWARD FLOW FRICTION FACTOR                                   COMZ0150
                C         OR DOOR AREA TIMES MOMENT ARM                                   COMZ0160
                C   CV2 = REVERSE FLOW FRICTION FACTOR, VALVE OPEN                        COMZ0170
                C         OR DOOR MOMENT OF INERTIA                                       COMZ0180
                C   CV3 = REVERSE FLOW FRICTION FACTOR, VALVE CLOSED                      COMZ0190
                C         OR DOOR DAMPING CONSTANT                                        COMZ0200
                C   PCV = BACK PRESSURE TO CLOSE CHECK VALVE                              COMZ0210
                C   THDOT = DOOR ANGULAR VELOCITY                                        COMZ0220
                C   THETA = DOOR ANGLE                                                   COMZ0230
                C   IACV = INDEX FOR AREA VS ANGLE TABLE                                 COMZ0240
                C   ITCV = TYPE OF CHECK VALVE                                           COMZ0250
                C   OPEN= .TRUE. MEANS CHECK VALVE IN OPEN POSITION                      COMZ0260
ISN 0011            COMMON / CORMWR / CLTI(50), CTR(50), CTRL(50), PRO(50), MWREAC        COMZ0270
ISN 0012            COMMON / COFPOW / IG(1)                                               COMZ0280
ISN 0013            COMMON / CSLBOC / IH(1)                                               COMZ0290
ISN 0014            COMMON / DERIV / IDPDU(1)                                             COMZ0300
ISN 0015            COMMON / EDITER / IFOUT(1)                                            COMZ0310
                C   LEVEL 2,IFOUT                                                        CDC 0320
ISN 0016            COMMON / EDITET/ ISAVE(1)                                             COMZ0330
                C   LEVEL 2,ISAVE                                                        CDC 0340
ISN 0017            COMMON / ENYAJ / IL (1)                                               COMZ0350
ISN 0018            COMMON /FLOOD / INB(1)                                                COMZ0360
                C   LEVEL 2,INB                                                          CDC 0370
ISN 0019            COMMON / FLSMOD / INA(1)                                              COMZ0380
                C   LEVEL 2,INA                                                          CDC 0390
ISN 0020            COMMON / GITTER/ IO (1)                                               COMZ0400
ISN 0021            COMMON /HEXTRA / IPA(1)                                               COMZ0410
ISN 0022            COMMON /HORZSP/ IPB(1)                                                COMZ0420
                C   LEVEL 2,IPB                                                          CDC 0430
ISN 0023            COMMON / HTXQER/ IQ (1)                                               COMZ0440
                C   LEVEL 2,IQ                                                           CDC 0450
ISN 0024            COMMON / JUNED / IR (1)                                               COMZ0460
ISN 0025            COMMON / JUNER / HP(100), WP(100), WSLIP(100), WTP(100), VSLIP,       COMZ0470
                   *   FMFRAC(100), IJ(100), IK(100), IPUMP(100), IVALVE(100),           COMZ0480
                   2   IHQCOR(100), IVAP(100), IW(100,2), ISTAGP                         COMZ0490
ISN 0026            COMMON / JUNES / IT (1)                                               COMZ0500
ISN 0027            COMMON / JUNET / IU (1)                                               COMZ0510
ISN 0028            COMMON / JUNIN / IV (1)                                               COMZ0520
ISN 0029            COMMON /LEAKIN/ IAX(1)                                                COMZ0530
                C   LEVEL 2,IAX                                                          CDC 0535
ISN 0030            COMMON / LEEKER/ IX (1)                                               COMZ0540
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ISN 0031            COMMON /LIQLEV/ IZA(1)                                          COMZ0550
ISN 0032            COMMON/PLNDAN/ITPR(1)                                           COMZ0555
ISN 0033            COMMON / PUMPH / IZ (1)                                         COMZ0560
                C   LEVEL 2,IZ                                                      CDC 0570
ISN 0034            COMMON / PUMPT / IAA(1)                                         COMZ0580
                C   LEVEL 2,IAA                                                    CDC 0590
ISN 0035            COMMON / PUMPV / IAB(1)                                         COMZ0600
ISN 0036            COMMON /RAEM  /  PIN(1)                                         COMZ0610
                C   LEVEL 2,PIN                                                    CDC 0620
ISN 0037            COMMON /RAFRAP / FSWELL(1)                                      COMZ0630
                C   LEVEL 2,FSWELL                                                 CDC 0640
ISN 0038            COMMON /RANGE  / IAC(1)                                         COMZ0650
                C   LEVEL 2,IAC                                                    CDC 0660
ISN 0039            COMMON / REACER/ IAD(1)                                         COMZ0670
ISN 0040            COMMON / REACES/ IAE(1)                                         COMZ0680
ISN 0041            COMMON / READES / IAE1(1)                                       COMZ0690
                C   LEVEL 2,IAE1                                                   CDC 0700
ISN 0042            COMMON / READE2 / IAE2(1)                                       COMZ0710
                C   LEVEL 2,IAE2                                                   CDC 0720
ISN 0043            COMMON / RETALS/ IAF(1)                                         COMZ0730
ISN 0044            COMMON / RKENER/ IAG(1)                                         COMZ0740
ISN 0045            COMMON / RNDER / IAH(1)                                         COMZ0750
ISN 0046            COMMON / SCRNER/ IAI(1)                                         COMZ0760
ISN 0047            COMMON / SLAB  / IAJ(1)                                         COMZ0770
                C   LEVEL 2,IAJ                                                    CDC 0780
ISN 0048            COMMON / SLABAT/ IAK(1)                                         COMZ0790
                C   LEVEL 2,IAK                                                    CDC 0800
ISN 0049            COMMON / SLABCK/ IAL(1)                                         COMZ0810
                C   LEVEL 2,IAL                                                    CDC 0820
ISN 0050            COMMON / SLABGM/ IAM(1)                                         COMZ0830
                C   LEVEL 2,IAM                                                    CDC 0840
ISN 0051            COMMON / SLABTP/ IAN(1)                                         COMZ0850
                C   LEVEL 2,IAN                                                    CDC 0860
ISN 0052            COMMON /SLADRK/ IBA(1)                                          COMZ0870
                C   LEVEL 2,IBA                                                    CDC 0880
ISN 0053            COMMON /SLPVEL/ IBC(1)                                          COMZ0890
                C   LEVEL 2,IBC                                                    CDC 0900
ISN 0054            COMMON / SPECAL / IBB(1)                                        C3MZ0910
ISN 0055            COMMON / TRIPER / DELAY(20), PNUCL, SETPT(20), TRPT(20),        COMZ0920
                   1TSIG(20), IDSIG(20), IDTRP(20), IX1(20), IX2(20),               COMZ0930
                   2MTRP(20), NTRTOT, FLAG(20), FLOG(20)                            COMZ0940
                C                                                                  COMZ0950
ISN 0056            COMMON /TSTCON/ FC3,FC4,FC5,FC6,FC7,FC8,FC9,                    COMZ0960
                   1      XOPTONE(5),IOPTON(5), ITSPL(100), KNTDT(10), IEVERY(20)  COMZ0970
                C   FC3, FC4, ... = TIME STEP CONSTANT FACTORS                     COMZ0980
                C                                                                  COMZ0990
ISN 0057            COMMON /TSTPER/ DELTM(20), DTMIN(20), TLAST(20),                COMZ1000
                   1                DTNEXT, DTOLDS, IOMP, IMAJ, IMIN, IPLT,        COMZ1010
                   2                NCHK(20), NOMP(20), NMAJ(20), NMIN(20),        COMZ1020
                   3                NSET, NSTEP, NTSET, NTTSP, ENDSTP, REDJC       COMZ1030
ISN 0058            COMMON / VOLOFR/ IAU(1)                                         COMZ1040
ISN 0059            COMMON / VOLED / IAV(1)                                         COMZ1050
ISN 0060            COMMON / VOLER / IAQ(1)                                         COMZ1060
ISN 0061            COMMON / VOLES1 / IGM(1)                                        COMZ1070
ISN 0062            COMMON / VOLES2/ IAS(1)                                         COMZ1080
ISN 0063             COMMON / HEADER / IP(1)                                        COMZ1090
ISN 0064            LOGICAL MAREAC                                                  COMZ1100
ISN 0065            LOGICAL FLAG, FLOG                                              COMZ1110
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ISN 0065            LOGICAL ENDSTP, REDUC                                                  COMZ1120
                C                                                                          COMZ1130
                C       MAXTRP = MAXIMUM NUMBER OF TRIPS                                   COMZ1140
                C       MAXJUN = MAXIMUM NUMBER OF JUNCTIONS                               COMZ1150
                C       LENGTH = LENGTHS OF EACH COMMON BLOCK                              COMZ1160
                C                                                                          COMZ1170
ISN 0067            LOGICAL NOGO                                                           COMZ1180
                C                                                                          COMZ1190
                C       OMEGA  = CRANK-NICOLSON IMPLICIT-EXPLICIT PROPORTION MULTIPLIER    COMZ1200
                C       PERIOD = REACTOR PERIOD                                            COMZ1210
                C       POWER  = REACTOR POWER                                             COMZ1220
                C       TIMEX  = ELAPSED PROBLEM TIME                                      COMZ1230
                C       NOGO   = .TRUE. MEANS PROBLEM FAILURE                              COMZ1240
                C                                                                          COMZ1250
                C       ILAST = NUMBER OF LOCATIONS TRANSMITTED BY PREVIOUS BUFIO CALL     COMZ1260
                C       INEXT = NUMBER OF LOCATIONS TO BE TRANSMITTED                      COMZ1270
                C       IOK   = STATUS OF PREVIOUS BUFIO CALL (1=OKAY)                     COMZ1280
                C       NLFLT = NUMBER OF LOCATIONS PER FLOATING POINT WORD                COMZ1290
                C       NLINT = NUMBER OF LOCATIONS PER INTEGER WORD                       COMZ1300
                C       NLLOG = NUMBER OF LOCATIONS PER LOGICAL WORD                       COMZ1310
                C                                                                          COMZ1320
ISN 0068            DIMENSION LENGTH(1)                                                    COMZ1330
                C                                                                          COMZ1340
                C       ZERO THE COMMON AREAS                                              COMZ1350
                C                                                                          
                C ZERO THE BOUNDARY CONDITION SLAB AREAS=7*MAXSLABS                        BDHT 119
ISN 0069            COMMON /PCSLAB/IBCX(650)                                               BDHT 120
ISN 0070            DO 1 IBCSI=1,650                                                       BDHT 121
ISN 0071            IBCX(IBCSI) = 0                                                        BDHT 122
ISN 0072          1 CONTINUE                                                               BDHT 123
ISN 0073            J = 5                                                                  COMZ1360
                C/LIMIT  /                                                                 COMZ1370
                C       /LIMITX/ IS INITIALIZED BY DATC BLOCK DATA                         COMZ1380
ISN 0074           10 CONTINUE                                                             COMZ1390
ISN 0075            J = J + 1                                                              COMZ1400
ISN 0076            CALL IZERO(IB ,LENGTH( J))                                             COMZ1410
ISN 0077            J = J + 1                                                              COMZ1420
ISN 0078            CALL IZERO(IC ,LENGTH( J))                                             COMZ1430
ISN 0079            J = J + 1                                                              COMZ1440
ISN 0080            CALL IZERO(ID ,LENGTH( J))                                             COMZ1450
                C                                                                          COMZ1460
                C                                                                          COMZ1470
ISN 0081           20 CONTINUE                                                             COMZ1480
ISN 0082            J = J + 1                                                              COMZ1490
ISN 0083            LEN = LENGTH(J) - MAXJUN*NLLOG                                         COMZ1500
ISN 0084            CALL IZERO( VI,LEN)                                                    COMZ1510
ISN 0085           30 CONTINUE                                                             COMZ1520
ISN 0086            DO 100 I = 1,MAXJUN                                                    COMZ1530
ISN 0087            OPEN(I) = .FALSE.                                                      COMZ1540
ISN 0088          100 CONTINUE                                                             COMZ1550
                C                                                                          COMZ1560
                C       CLTI   = INITIAL CLAD THICKNESS, FT                                COMZ1570
                C       CTA    = DEPTH REACTION HAS PENETRATED CLADDING AT END OF ANY TIME COMZ1580
                C                STEP, FT                                                  COMZ1590
                C       CTAL =  DEPTH REACTION HAS PENETRATED CLADDING AT START OF ANY TIMECOMZ1600
                C                STEP, FT                                                  COMZ1610
                C       ARC    = ORIGINAL FUEL PIN RADIUS, FT                              COMZ1620
                C       MWREAC = .TRUE. INDICATES METAL-WATER REACTION MODEL DESIRED       COMZ1630
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                C                                                                COMZ1640
ISN 0089                J = J + 1                                                COMZ1650
ISN 0090                 LEN = LENGTH(J) - NLLOG                                 COMZ1660
ISN 0091                CALL IZERO(CLI,LEN)                                      COMZ1670
ISN 0092                MOREAC = .FALSE.                                         COMZ1680
ISN 0093                J = J + 1                                                COMZ1690
ISN 0094                CALL IZERO(IG ,LENGTH( J))                               COMZ1700
ISN 0095                J = J + 1                                                COMZ1710
ISN 0096                CALL IZERO(IH ,LENGTH( J))                               COMZ1720
ISN 0097                J = J + 1                                                COMZ1730
ISN 0098                CALL IZERO(IDPDU,IABS(LENGTH(J)) )                       COMZ1740
ISN 0099                J = J + 1                                                COMZ1750
                C       / DIALS  / IS INITIALIZED IN INDIAL                      COMZ1755
ISN 0100                J = J + 1                                                COMZ1756
ISN 0101                CALL LZERO(IFOUT,IABS(LENGTH(J)) )                       COMZ1760
ISN 0102                J = J + 1                                                COMZ1770
ISN 0103                LEN = IABS(LENGTH(J)) - 20                               COMZ1780
ISN 0104                CALL LZERO(ISAVE(21),LEN)                                COMZ1790
ISN 0105                J = J + 1                                                COMZ1800
ISN 0106                CALL IZERO(IL,LENGTH(J))                                 COMZ1810
ISN 0107                J = J + 1                                                COMZ1820
ISN 0108                CALL LZERO(INB,LENGTH(J))                                COMZ1830
ISN 0109                J = J + 1                                                COMZ1840
ISN 0110                CALL LZERO(INA,LENGTH(J))                                COMZ1850
ISN 0111                J = J + 1                                                COMZ1860
ISN 0112                CALL IZERO(IO ,LENGTH( J))                               COMZ1870
ISN 0113                J = J + 1                                                COMZ1880
ISN 0114                CALL IZERO(IP ,LENGTH( J))                               COMZ1890
ISN 0115                J = J + 1                                                COMZ1900
ISN 0116                CALL IZERO(IPA,LENGTH( J))                               COMZ1910
ISN 0117                J = J +1                                                 COMZ1920
ISN 0118                CALL LZERO(IPB,LENGTH(J))                                COMZ1930
ISN 0119                J = J + 1                                                COMZ1940
ISN 0120                CALL LZERO(IQ,LENGTH(J))                                 COMZ1950
                C       / IREKIN / IS INITIALIZED BY DATC BLOCK DATA              COMZ1960
ISN 0121                J = J + 1                                                COMZ1970
ISN 0122                J = J + 1                                                COMZ1980
ISN 0123                CALL IZERO(IR ,LENGTH( J))                               COMZ1990
ISN 0124                J = J + 1                                                COMZ2000
ISN 0125                CALL IZERO(HP,LENGTH(J))                                 COMZ2010
ISN 0126                J = J + 1                                                COMZ2020
ISN 0127                CALL IZERO(IT ,LENGTH( J))                               COMZ2030
ISN 0128                J = J + 1                                                COMZ2040
ISN 0129                CALL IZERO(IU ,LENGTH( J))                               COMZ2050
ISN 0130                J = J + 1                                                COMZ2060
                C       /JUNIN/ IS INITIALIZED TO 1 IN INJUN                     COMZ2070
ISN 0131                J = J + 1                                                COMZ2080
                C       /LEAKIN/ IS INITIALIZED TO 1 IN INJUN                    COMZ2090
ISN 0132                J = J + 1                                                COMZ2100
ISN 0133                CALL IZERO(IX ,LENGTH( J))                               COMZ2110
ISN 0134                J = J + 1                                                COMZ2120
ISN 0135                CALL IZERO(IZA,LENGTH(J))                                COMZ2130
ISN 0136                J = J + 1                                                COMZ2132
ISN 0137                CALL IZERO(ITPR,LENGTH(J))                               COMZ2134
ISN 0138                J = J + 1                                                COMZ2140
                C       /PUMPH / IS INITIALIZED BY DATP BLOCK DATA               COMZ2150
ISN 0139                J = J + 1                                                COMZ2160
                C       /PUMPT / IS INITIALIZED BY DATP BLOCK DATA               COMZ2170
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ISN 0140            J = J + 1                                                   COMZ2180
ISN 0141            CALL IZERO(IAB,LENGTH( J))                                  COMZ2190
                C EM                                                            COMZ2200
ISN 0142            J = J + 1                                                   COMZ2210
ISN 0143            CALL LZERO(PIN,LENGTH(J))                                   COMZ2220
ISN 0144            J = J + 1                                                   COMZ2230
ISN 0145            CALL LZERO (FSWELL, LENGTH(J))                              COMZ2240
                C EM                                                            COMZ2250
ISN 0146            J = J + 1                                                   COMZ2260
ISN 0147            CALL LZERO(IAC,LENGTH( J))                                  COMZ2270
ISN 0148            J = J + 1                                                   COMZ2280
ISN 0149            CALL IZERO(IAD,LENGTH( J))                                  COMZ2290
ISN 0150            J = J + 1                                                   COMZ2300
ISN 0151            CALL IZERO(IAE,LENGTH(J) )                                  COMZ2310
ISN 0152            J = J + 1                                                   COMZ2320
ISN 0153            CALL LZERO(IAE1,LENGTH(J))                                  COMZ2330
ISN 0154            J = J + 1                                                   COMZ2340
ISN 0155            CALL LZERO(IAE2,LENGTH(J))                                  COMZ2350
ISN 0156            J = J + 1                                                   COMZ2360
ISN 0157            CALL IZERO(IAF,LENGTH( J))                                  COMZ2370
ISN 0158            J = J + 1                                                   COMZ2380
ISN 0159            CALL IZERO(IAG,LENGTH( J))                                  COMZ2390
ISN 0160            J = J + 1                                                   COMZ2400
ISN 0161            CALL IZERO(IAH,LENGTH( J))                                  COMZ2410
ISN 0162            J = J + 1                                                   COMZ2420
ISN 0163            CALL IZERO(IAI,LENGTH( J))                                  COMZ2430
ISN 0164            J = J + 1                                                   COMZ2440
ISN 0165            CALL LZERO(IAJ,LENGTH( J))                                  COMZ2450
ISN 0166            J = J + 1                                                   COMZ2460
ISN 0167            CALL LZERO(IAK,LENGTH( J))                                  COMZ2470
ISN 0168            J = J + 1                                                   COMZ2480
ISN 0169            CALL LZERO(IAL,LENGTH( J))                                  COMZ2490
ISN 0170            J = J + 1                                                   COMZ2500
ISN 0171            CALL LZERO(IAM,LENGTH( J))                                  COMZ2510
ISN 0172            J = J + 1                                                   COMZ2520
ISN 0173            CALL LZERO(IAN,LENGTH( J))                                  COMZ2530
ISN 0174            J = J + 1                                                   COMZ2540
ISN 0175            CALL LZERO(IBA,IABS(LENGTH(J)))                             COMZ2550
ISN 0176            J = J + 1                                                   COMZ2560
ISN 0177            CALL LZERO(IBC,IABS(LENGTH(J)) )                            COMZ2570
ISN 0178            J = J + 1                                                   COMZ2580
ISN 0179            CALL IZERO(IBD,IABS(LENGTH(J)) )                            COMZ2590
                C/STATUS /                                                      COMZ2600
ISN 0180            J = J + 1                                                   COMZ2610
                C     /STATUS/ IS NOT INITIALIZED                               COMZ2620
                C                                                               COMZ2630
                C     DELAY = TRIP DELAY AFTER SETPOINT IS PASSED               COMZ2640
                C     PNUCL = INITIAL NUCLEAR POWER LEVEL                       COMZ2650
                C     SETPT = SINGAL SETPOINT, TYPE ACCORDING TO IDSIG          COMZ2660
                C     TRPT  = TIME TO REACH SET POINT + DELAY TIME              COMZ2670
                C     TSIG  = TIME TO REACH SET POINT                           COMZ2680
                C     IDSIG = INPUT SIGNAL INDEX (+=MAX,-=MIN)                  COMZ2690
                C           1 = ELAPSED PROBLEM TIME                            COMZ2700
                C           2 = REACTOR POWER                                   COMZ2710
                C           3 = REACTOR PERIOD                                  COMZ2720
                C           4 = PRESSURE OF VOLUME I (OR PRES(I)-PRES(J))       COMZ2730
                C           5 = MIXTURE LEVEL IN VOLUME I                       COMZ2740
                C           6 = LIQUID LEVEL IN VOLUME I                        COMZ2750
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                C          7 = WATER TEMPERATURE OF VOLUME I (OR TEMP(I)-TEMP(J))          COMZ2760
                C          8 = METAL TEMPERATURE OF CORE REGION I                          COMZ2770
                C          9 = FLOW THROUGH JUNCTION I                                     COMZ2780
                C         10 = SURFACE TEMPERATURE OF CORE REGION I                        COMZ2790
                C      IDTRP = INDEX FOR TRIP TYPE                                        COMZ2800
                C          1 = END PROBLEM                                                COMZ2810
                C      IX1   = SIGNAL 1 INDEX (VOLUME OR JUNCTION NUMBER)                 COMZ2820
                C      IX2   = SIGNAL 2 INDEX (NONZERO FOR DIFFERENCES)                   COMZ2830
                C      MTRP  = NUMBER OF INPUT SIGNALS                                    COMZ2840
                C      NTRTOT= TOTAL NUMBER OF TRIP CARDS                                 COMZ2850
                C      FLAG  = TRUE MEANS TRIP ALREADY ACTUATED                           COMZ2860
                C      FLOG  = TRUE MEANS SET POINT REACHED                               COMZ2870
                                                                                          COMZ2880
ISN 0181                      J = J + 1                                                   COMZ2890
ISN 0182                       LEN = LENGTH(J) - 2 * MAXTRP*NLLOG                         COMZ2900
ISN 0183                      CALL IZERO(DELAY,LEN)                                       COMZ2910
ISN 0184                      DO 200 I = 1,MAXTRP                                         COMZ2920
ISN 0185                      FLAG(I) = .FALSE.                                           COMZ2930
ISN 0186                      FLOG(I) = .FALSE.                                           COMZ2940
ISN 0187                  200 CONTINUE                                                    COMZ2950
                C                                                                         COMZ2960
                C                                                                         COMZ2970
ISN 0188                      J = J + 1                                                   COMZ2980
ISN 0189                      LEN = LENGTH(J) - 7*NLFLT                                   COMZ2990
ISN 0190                      CALL IZERO(XOPTON,LEN)                                      COMZ3000
                C                                                                         COMZ3010
                C      DELTM = TIME STEP SIZE                                             COMZ3020
                C      DTMIN = MINIMUM ALLOWABLE TIME STEP SIZE                           COMZ3030
                C      TLAST = END OF INTERVAL                                            COMZ3040
                C      IDMP  = NUMBER OF COMPLETE EDITS SINCE LAST RESTART SAVE           COMZ3050
                C      IMAJ  = NUMBER OF BRIEF EDITS SINCE LAST COMPLETE EDIT             COMZ3060
                C      IMIN  = NUMBER OF TIME STEPS SINCE LAST BRIEF EDIT                 COMZ3070
                C      IPLT  = NUMBER OF TIME STEPS SINCE LAST PLOT SAVE                  COMZ3080
                C      NCHK  = TIME STEP CONTROL OPTION (0=YES, 1=NO, BLANK=YES)          COMZ3090
                C      NDMP  = NUMBER OF COMPLETE EDITS PER TAPE SAVE FOR RESTART         COMZ3100
                C      NMAJ  = NUMBER OF BRIEF EDITS PER COMPLETE EDIT                    COMZ3110
                C      NMIN  = NUMBER OF TIME STEPS PER BRIEF EDIT                        COMZ3120
                C            = NUMBER OF TIME STEPS PER TAPE SAVE OF PLOTS VARIABLES       COMZ3130
                C      NSFT  = CURRENT INTERVAL INDEX                                     COMZ3140
                C      NSTEP = CURRENT TIME STEP NUMBER                                   COMZ3150
                C      NTSET = NUMBER OF TIME STEP SETS                                   COMZ3160
                C      NTTSP = TOTAL NUMBER OF TIME STEPS USED                            COMZ3170
                C      ENDSTP = .TRUE. INDICATES LAST TIME STEP IN INTERVAL REDUCED       COMZ3180
                C      NCHK  = TIME STEP CONTROL OPTION (0, BLANK OR NEG = YES, POS = NO) COMZ3190
ISN 0191                      J = J + 1                                                   COMZ3200
ISN 0192                       LEN = LENGTH(J) - 2*NLLOG                                  COMZ3210
ISN 0193                      CALL IZERO(DELTM,LEN)                                       COMZ3220
ISN 0194                      ENDSTP = .FALSE.                                            COMZ3230
ISN 0195                      REDUC  = .FALSE.                                            COMZ3240
ISN 0196                      J = J + 1                                                   COMZ3250
ISN 0197                      CALL IZERO(IAU,LENGTH( J))                                  COMZ3260
ISN 0198                      J = J + 1                                                   COMZ3270
ISN 0199                      CALL IZERO(IAV,LENGTH( J))                                  COMZ3280
ISN 0200                      J = J + 1                                                   COMZ3290
ISN 0201                      CALL IZERO(IAU,LENGTH( J))                                  COMZ3300
ISN 0202                      J = J + 1                                                   COMZ3305
ISN 0203                      CALL IZERO (IGM,LENGTH(J))                                  COMZ3320
ISN 0204                      J = J + 1                                                   COMZ3330
ISN 0205                      CALL IZERO(IAS,LENGTH( J))
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                C       COMMON /WORK/ IS ZEROED IN INMAIN                                       COMZ3340
   ISN 0206             J = J + 1                                                               COMZ3350
                C       CHECK THAT LENGTH(J) MATCHES BETWEEN COML AND COMZ                      COMZ3360
   ISN 0207             J = J + 1                                                               COMZ3370
   ISN 0208             IF (LENGTH(J) .EQ. -999999) GO TO 500                                   COMZ3380
   ISN 0210       601   FORMAT(    50H0ERROR--LENGTH ARGUMENT IN CONFLICT. COML VS. COMZ.       COMZ3390
                  1      5H  J =,I10,45X,  18HEXECUTION DELETED. )                            COMZ3400
   ISN 0211             WRITE(5,601)                                                            COMZ3410
   ISN 0212             CALL FAIL                                                               COMZ3420
   ISN 0213       500   CONTINUE                                                                COMZ3430
   ISN 0214             RETURN                                                                  COMZ3440
   ISN 0215             END                                                                     COMZ3450

*OPTIONS IN EFFECT*       NAME=  MAIN,OPT=02,LINECNT=60,SIZE=0000K,

*OPTIONS IN EFFECT*       SOURCE,EBCDIC,NOLIST,NODECK,LOAD,NOMAP,NOEDIT,ID,NOXREF

*STATISTICS*      SOURCE STATEMENTS =      214 ,PROGRAM SIZE =      3446

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                  651K BYTES OF CORE NOT USED
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LEVEL 21.8 ( JUN 74 )                    OS/360  FORTRAN H                                    DATE  78.009/14.55.46

          COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=60,SIZE=0000K,
                             SOURCE,EBCDIC,NOLIST,NODECK,LOAD,NOMAP,NOEDIT,ID,NOXREF
   ISN 0002            SUBROUTINE FAIL                                                  FAIL0010
   ISN 0003            IMPLICIT REAL*8 (A-H,O-Z)                                        IBM 0020
                                                                                        FAIL0030
   ISN 0004            COMMON / STATUS / OMEGA, PERIOD, POWER, TIMEX,                   FAIL0031
                      1                  PQUITL, PQUITH, TQUITL, TQUITH, NOGO          FAIL0032
                                                                                        FAIL0050
   ISN 0005            LOGICAL NOGO                                                     FAIL0060
                       C                                                                FAIL0065
                       C     OMEGA  = CRANK-NICOLSON IMPLICIT-EXPLICIT PROPORTION MULTIPLIER FAIL0070
                       C     PERIOD = REACTOR PERIOD                                    FAIL0080
                       C     POWER  = REACTOR POWER                                     FAIL0090
                       C     TIMEX  = ELAPSED PROBLEM TIME                              FAIL0091
                       C     PQUITL = LOWER LIMIT ON PRESSURE IN ANY VOLUME             FAIL0092
                       C     PQUITH = UPPER LIMIT ON PRESSURE IN ANY VOLUME             FAIL0093
                       C     TQUITL = LOWER LIMIT ON TEMPERATURE IN ANY VOLUME          FAIL0094
                       C     TQUITH = UPPER LIMIT ON TEMPERATURE IN ANY VOLUME          FAIL0100
                       C     NOGO   = .TRUE. INDICATES PROBLEM FAILURE                  FAIL0110
                       C                                                                FAIL0120
   ISN 0006            NOGO = .TRUE.
                       C                                                                3DHT 124
                       C GET A TRACEBACK FOR DEBUGGING PURPOSES                         3DHT 125
   ISN 0007            CALL ERRTRA                                                      FAIL0130
   ISN 0008            RETURN                                                           FAIL0140
   ISN 0009            END

*OPTIONS IN EFFECT*       NAME=  MAIN,OPT=02,LINECNT=60,SIZE=0000K,

*OPTIONS IN EFFECT*       SOURCE,EBCDIC,NOLIST,NODECK,LOAD,NOMAP,NOEDIT,ID,NOXREF

*STATISTICS*     SOURCE STATEMENTS =        8 ,PROGRAM SIZE =       212

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                  679K BYTES OF CORE NOT USED
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          COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=60,SIZE=0000K,
                             SOURCE,EBCDIC,NOLIST,NODECK,LOAD,NOMAP,NOEDIT,ID,NOXREF
ISN 0002            SUBROUTINE FLOSRHT   NVOL,   NJUN,   NPMP,   NSLB, NJSMOO,          FLOS0010
                   1       MP,     MS,     MG,     MM,     MC,     MR,     MN,          FLOS0012
                   2 MT, MAXJUN, MAXVOL, MAXSMO, IPROGM, IEMHT, IEMPS, IEMEC,IDEBUG,    FLOS0014
                   3 DT)                                                                 FLOS0015
ISN 0003            IMPLICIT REAL*8 (A-H,O-Z)                                           IBM 0020
                 CTIME0001   COMMON BLOCK                                               FLOS0023
                 C
ISN 0004            COMMON /ICSLAB/ PHSOLD(50),TSOLD(50),TAOLD(50),                     BDHT 126
                   1                PHSNEW(50),TSNEW(50),TANEW(50),IBCS(50)            BDHT 127
                 C  TAOLD  = OLD AVERAGE TEMPERATURE                                   BDHT 128
                 C  TANEW  = NEW AVERAGE TEMPERATURE IN SLAB                           BDHT 129
                 C  TSOLD  = OLD SURFACE TEMPERATURE                                   BDHT 130
                 C  TSNEW  = NEW SURFACE TEMPERATURE                                   BDHT 131
                 C  PHSOLD = SURFACE HEAT FLUX, OLD VALUE                              BDHT 132
                 C  PHSNEW = SURFACE HEAT FLUX, NEW VALUE                              BDHT 133
                 C  IBCS   = INDEX OF THE BOUNDARY CONDITION SLAB                      BDHT 134
                 C                                                                     BDHT 135
ISN 0005            COMMON / REACER / ALPHTM(50), ALPHTW(50), DOPRO(40), DOPWT(50),    BDHT 136
                   1          RHOCAL, VOIDFO(40), VOIDWT(50), VI(50),                 BDHT 137
                   2          IDOP(50), IVOID(50), NDOP, NVOID                        BDHT 138
ISN 0006            COMMON / SLABAT / AP(21,50), TP(21,50),                           BDHT 139
                   1      IGJM(50), ITPC(6,50), ITPK(6,50), ITPX(6,50)               BDHT 140
ISN 0007            COMMON / SLABGM / ASUL(20), ASUR(20), POFR(6,20), S(21,20),        BDHT 141
                   1  VP(21,20), VREG(6,20), VPI(6,20), XDCP(6,20),                   BDHT 142
                   2      IGAP(6,20), IKC(6,20), NI(6,20), NSI(20)                    BDHT 143
ISN 0008            COMMON /ZCLOCK/ ZSUBNM(50),ZTIMEA(50),IZCALL(50),NZSUBC,MAXZUB,T  FLOS0024
ISN 0009            DIMENSION PSAT(75)                                                FLOS0026
                 C                                                                    FLOS0027
                 C     SUBROUTINE TO EVALUATE FLOW IN ALL PIPES INCLUDING LEAK AND FILL FLOS0040
                 C                                                                    FLOS0050
                 C     NVOL    = NUMBER OF VOLUMES                                    FLOS0060
                 C     NJUN    = NUMBER OF JUNCTIONS                                  FLOS0070
                 C     NPMP    = NUMBER OF PUMPS                                      FLOS0080
                 C     NSLB    = NUMBER OF HEAT SLABS                                 FLOS0090
                 C     NJSMOO  = NUMBER OF SMOOTHED OLD JUNCTIONS                     FLOS0095
                 C     MP      = MAXIMUM NUMBER OF PUMPS                              FLOS0100
                 C     MS      = MAXIMUM NUMBER OF HEAT SLABS                         FLOS0110
                 C     MG      = MAXIMUM NUMBER OF HEAT SLAB GEOMETRIES               FLOS0120
                 C     MM      = MAXIMUM NUMBER OF HEAT SLAB MATERIALS                FLOS0130
                 C     MC      = MAXIMUM NUMBER OF CORE SECTIONS                      FLOS0140
                 C     MR      = MAXIMUM NUMBER OF REGIONS IN HEAT SLAB               FLOS0150
                 C     MN      = MAXIMUM NUMBER OF NODES IN HEAT SLAB                 FLOS0160
                 C     MT      = MAXIMUM NUMBER OF TABLE VALUES                       FLOS0170
                 C     MAXJUN  = MAXIMUM NUMBER OF JUNCTIONS                          FLOS0172
                 C     MAXVOL  = MAXIMUM NUMBER OF VOLUMES                            FLOS0174
                 C     MAXSMO  = MAXIMUM NUMBER OF SMOOTHED OLD JUNCTIONS             FLOS0176
                 C     IPROGM  = TYPE OF CALCULATION                                  FLOS0178
                 C     IEMFG   = EVALUATION MODEL CALCULATION FLAG                    FLOS0179
                 C     IDEBUG  = DEBUG PRINT FLAG                                     FLOS0180
                 C     DT      = RELAP TIME STEP SIZE                                 FLOS0181
                 C                                                                    FLOS0192
                 C     WORKA = WORKING STORAGE ARRAY, IWORK=ITS INDEXES, SEE MAIN FOR USEFLOS0183
                 C                                                                    FLOS0190
ISN 0010            COMMON /BALED / AE,  AMASS, BMASSW, BMASSA, DMASSW, DMASSA, EB,    FLOS0200
                   *  EF, HF, PNORM, PUMPI, QLOSS, QFILL, QLOSS                       FLOS0210
                 C                                                                    FLOS0220
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C     WMASSW = MASS OF WATER                                                    FLOS0230
C     WMASS  = MASS OF AIR                                                      FLOS0235
C     EB     = ENERGY BALANCE                                                   FLOS0240
C     FE     = ENERGY IN FUEL                                                   FLOS0250
C     HE     = ENERGY EXTRACTED BY HEAT EXCHANGERS                              FLOS0260
C     QLOSS  = TOTAL RATE OF HEAT REMOVAL                                       FLOS0270
C                                                                               FLOS0272
ISN 0011       COMMON /CONTRL/ FILID(30), INDEX(30), FILSIZ(30)                 FLOS0274
ISN 0012       INTEGER FILSIZ                                                   FLOS0276
C     CONTRL HOLDS INFORMATION OF DYNAMIC ARRAYS.                               FLOS0278
C     FILID = FTB NUMBER OF ARRAY, ZERO MEANS ARRAY NOT BEING USED.             FLOS0280
C     NEGATIVE VALUE MEANS ARRAY NEED NOT BE SAVED FOR RESTART.                 FLOS0282
C     INDEX = POSITION OF FIRST WORD OF ARRAY.                                  FLOS0284
C     FILSIZ = LENGTH OF ARRAY, POS. IF IN /FAST/, NEG. IF IN /FTBLCM/.         FLOS0286
C              I IMPLIES FILID(I), INDEX(I), AND FILSIZ(I).                     FLOS0288
C              ) = INPUT DATA IN INPUT PHASE AND SCRATCH IN TRAN PHASE.         FLOS0290
C              ) = ICE CONDENSER ARRAYS                                         FLOS0292
C              ) = FILL DATA                                                    FLOS0294
C              ) = WATER PROPERTY DATA                                          FLOS0296
C                                                                               FLOS0298
C                                                                               FLOS0300
C     COMMON / COMPAI / CVRAI(1)                                                CDC 0302
C                                                                               FLOS0304
C                                                                               FLOS0306
ISN 0013       COMMON / COMPOW / DPDW, FQ(50), LAMBDA, MQ(50), PPOW, PRTMPT,    FLOS0308
              1 WCMCD(50), QFRAC(50), QN(21), QPMOD(50), SF(50), TAU, TM(50),   FLOS0310
              2 TS(50), VW(50), ISLB(50), IVOL(50)                              FLOS0312
ISN 0014       REAL*8 LAMBDA, MQ                                                IBM 0314
C              REAL   LAMBDA, MQ                                                CDC 0316
C                                                                               FLOS0318
C     MQ   = MODERATOR HEATING RATE  (BTU/SEC)                                  FLOS0320
C     IVOL= VOLUME NUMBER                                                       FLOS0322
C                                                                               FLOS0324
ISN 0015       COMMON /DERIV / DPDU(75), DPDMF(75), DPDMA(75), FSUBK(100),      FLOS0326
              *    FSUBK(100), FU(75), FM(75), FMA(75)                          FLOS0328
C                                                                               FLOS0330
C     DPDU   = DP/DU AT CONSTANT M, MA                                          FLOS0332
C     DPDMF  = DP/DMF AT CONSTANT U, MA                                         FLOS0334
C     DPDMA  = DP/DMA T CONSTANT U, MF                                          FLOS0336
C     FSUBK = DW/DT - MOMENTUM EQUATION                                         FLOS0340
C     FSUBK = FRICTION TERM K/RHO FOR MOMENTUM EQUATION                         FLOS0350
C     FM     = DM/DT - MASS EQUATION                                            FLOS0360
C     FU     = DU/DT - ENERGY EQUATION                                          FLOS0370
C     FMA    = DMA/DT  - AIR MASS EQUATION                                      FLOS0375
C                                                                               FLOS0380
C                                                                               FLOS0382
ISN 0016       COMMON / DIALS /  DLXTFE  ,  DLXTR  ,  DLEHRY  ,  DLHRY  ,  DLMDY  ,FLOS0384
              1                  DLHEM  ,  DLMHEM  ,  DLPB   ,  DDWNPN  ,  DPLNEN ,FLOS0386
              2          DCHF    ,  DHTC1  ,  DHTC2  ,  DHTC3  ,  DHTC5  ,  DHTC6  ,FLOS0388
              3          DHTC7   ,  DHTC8  ,  DHTC9  ,  DPBAL  ,  DLMWR  ,  DLTFFM ,FLOS0390
              4          DLWAL1  ,  DLWAL2                                      FLOS0392
C                                                                               FLOS0394
C                                                                               FLOS0396
C     DLXTFE  = TRANSITION QUALITY FOR FAUSKE-HENRY/HOMOGENEOUS EQUI-           FLOS0398
C               LIBRIUM CRITICAL FLOW MODEL                                     FLOS0400
C     DLXTF   = TRANSITION QUALITY FOR RSR PRESCRIPTION CRITICAL FLOW           FLOS0402
C               MODEL                                                           FLOS0404
C     DLEHRY  = FLOW RATE MULTIPLIER FOR EXTENDED HENRY CRITICAL FLOW           FLOS0406
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C                 MODEL                                                          FLOS0408
C       DLHRY     = FLOW RATE MULTIPLIER FOR HENRY CRITICAL FLOW MODEL           FLOS0410
C       DLMDY     = FLOW RATE MULTIPLIER FOR MOODY CRITICAL FLOW MODEL           FLOS0412
C       DLHEM     = FLOW RATE MULTIPLIER FOR HOMOGENEOUS EQUILIBRIUM             FLOS0414
C                   CRITICAL FLOW MODEL                                          FLOS0416
C       DLMHEM    = FLOW RATE MULTIPLIER FOR MODIFIED HOMOGENEOUS EQUILIB-       FLOS0418
C                   RIUM CRITICAL FLOW MODEL (ELEMENT OF RSR PRESCRIPTION        FLOS0420
C                   CRITICAL FLOW MODEL)                                         FLOS0422
C       DLPB      = BACK PRESSURE MODIFIER FOR RSR PRESCRIPTION CRITICAL         FLOS0424
C                   FLOW MODEL                                                   FLOS0426
C       DOWNPN    = LIQUID FLOW RATE MULTIPLIER TO THE LOWER                     FLOS0428
C                   PLENUM (XJL) FOR THE BATTELLE DOWNCOMER                      FLOS0430
C                   PENETRATION MODEL                                            FLOS0432
C       UPLNFN    = MULTIPLIER OF THE CALCULATED VALUE OF THE CRITICAL           FLOS0434
C                   DISTANCE (HCRIT) BETWEEN THE BOTTOM OF THE                   FLOS0436
C                   DOWNCOMER AND THE LOWER PLENUM LIQUID LEVEL FOR              FLOS0438
C                   THE WALLIS LOWER PLENUM ENTRAINMENT MODEL                    FLOS0440
C       DCHF      = CRITICAL HEAT FLUX MULTIPLIER                                FLOS0442
C       DHTCN     = HEAT TRANS. COEF. MULTIPLIERS FOR MODE N                     FLOS0444
C       UPBAL     = VOID FRACTION USED TO SELECT POOL BOILING H.T. CORREL.       FLOS0446
C       DLWAF     = MULTIPLIER FOR METAL WATER REACTION HEAT PRODUCTION          FLOS0448
C       DLTFFM    = MULTIPLIER FOR THE TWO PHASE FRICTION FACTOR MULTIPLIER      FLOS0450
C       DLWAL1    = **********                                                   FLOS0452
C       DLWAL2    = **********                                                   FLOS0454
C                                                                                FLOS0456
C                                                                                FLOS0458
ISN 0017          COMMON / ENVAJ / FLOWF(75),FLOWL(75),FLOWRA(75),WVBAR(75),     FLOS0460
                 1 WVBARO(75),SPVZ(75),SPVZO(75),AINERV(75),CMAS(75),DIAMV(75),  FLOS0462
                 2 FANING(75),ELOD(75),TPMV(75),CMACHV(75),JTPMV(75),            FLOS0464
                 3  IFAN(75),JVISC(75),IAMBLO(75), IIN(75), IOUT(75)            FLOS0466
C                                                                                FLOS0468
C         FLOWA    = VOLUME FLOW AREA (FT2), INPUT                               FLOS0470
C         FLOWL    = VOLUME FLOW PATH LENGTH (FT)                                FLOS0472
C         FLOWFA   = 1/(144*GC*FLOWA**2)                                         FLOS0474
C         WVBAR    = AVERAGE VOLUME FLOW (LBM/SEC)                               FLOS0476
C         WVBARO   = PREVIOUS TIME STEP VALUE OF WVBAR                           FLOS0480
C         SPVZ     = VOLUME AVERAGE SPECIFIC VOLUME (FT3/LBM)                    FLOS0490
C         SPVZO    = PREVIOUS TIME STEP VALUE OF SPVZ                            FLOS0500
C         AINERV   = HALF-VOLUME INERTIA (L/(2*A*144*GC)                         FLOS0510
C         CMAS     = CENTER OF MASS HEIGHT                                       FLOS0520
C         DIAMV    = EQUIVALENT DIAMETER OF FLOW AREA                            FLOS0530
C         FANING   = FANNING FRICTION FACTOR                                     FLOS0540
C         ELOD     = (L/D)/(144*GC*A**2)                                         FLOS0550
C         TPMV     = TWO-PHASE MULTIPLIER FOR FANNING FRICTION TERMS             FLOS0560
C         CMACHV   = MACH NUMBER SQUARED FOR AVERAGE VOLUME FLOW                 FLOS0570
C         JTPMV    = INDEX FOR TWO-PHASE FRICTION  0=NO, 1=YES                   FLOS0580
C         IFAN     = MEMORY INDEX FOR FANNING FRICTION CALCULATION               FLOS0590
C         JVISC    = MEMORY INDEX FOR VISCOSITY CALCULATION                      FLOS0600
C         IAMBLO   = INDEX FOR DETERMINING WHEATHER TO CALCULATE LIQUID LEVEL    FLOS0610
C         IIN,IOUT = PRIMARY INLET AND OUTLET JUNCTION NUMBERS                   FLOS0612
C                                                                                FLOS051A
C         COMMON BLOCK CONTAINING FAST MEMORY ARRAY FOR DYNAMIC STORAGE.         FLOS0616
ISN 0018          COMMON /FAST/ FA(1)                                            FLOS0618
ISN 0019          INTEGER IA(2,1)                                                IBM 0620
C                 INTEGER IA(1)                                                  CDC 0622
ISN 0020          EQUIVALENCE (FA(1),IA(1,1))                                    IBM 0624
C                 EQUIVALENCE (FA(1),IA(1))                                      CDC 0626
C         COMMON BLOCK CONTAINING LCM MEMORY ARRAY FOR DYNAMIC STORAGE.          FLOS0628
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C      FOR COMPUTERS WITHOUT LCM, THIS ARRAY IS EQUIVALENCED TO FAST      FLOS0630
C      ARRAY.                                                             FLOS0632
C      REAL*8 LFA(1)                                                      IBM 0634
ISN 0021                                                                  CDC 0635
C      COMMON /FTHLCM/ LFA(1)                                             IBM 0638
ISN 0022                                                                  CDC 0640
C      INTEGER LIA(2,1)                                                   CDC 0642
C      INTEGER LIA(1)                                                     IBM 0644
C      LEVEL 2, LFA,LIA                                                   CDC 0645
ISN 0023                                                                  FLOS0648
C      EQUIVALENCE (LFA(1),LIA(1,1),FA(1))                                FLOS0650
C      EQUIVALENCE (LFA(1),LIA(1))                                        FLOS0652
C                                                                         FLOS0654
ISN 0024                                                                  FLOS0656
      COMMON /FLOOD/      BFFF,     CORCHL, DELTQ(12),      DTSUB,      FLOS0658
     1          DZ,        EN,       EN0,       EN1,       EN2,        FLOS0660
     2      PNOLD,       HC1,      HC2,      HCOUT,      HOLD,         FLOS0662
     3       HEAD,    HTK(12),  QMAXFO,     QTOTF,     TINIT,         FLOS0664
     4   TKRK(12), TPKRK(12),    TQUENM,        TQ, TSKRK(12),         FLOS0666
     5       VOLD,     XMCLO,                                          CDC 0668
     5       IENT, IFLAG(12),      IHM, ISWKK(50),      JUNIN,         FLOS0670
     7     JUNOUT,    JUNSSL,   JUNWSL,      NAL,      NCVOL,         FLOS0672
     4     NDCVOL,   NLPVOL,NSGVOL(12),      NSGV,     NUPVOL         FLOS0674
C     LEVEL 2,BFFF                                                       FLOS0676
C                                                                        FLOS0678
C                                                                        FLOS0680
ISN 0025                                                                 FLOS0682
      COMMON / GITTER / PSTAR(100,2), PARTLD(100,2), ENERGK(100,2),      FLOS0684
     1 SPVSTR(100,2), BWSQR(100,2)                                       FLOS0686
C     SECOND INDEX  1=OUTLET, 2=INLET SIDE OF NORMAL FLOW                FLOS0688
C     PSTAR = UNMIXED PRESSURE                                           FLOS0690
C     PARTLD = DV/DP AND DV/DH                                           FLOS0692
C     ENERGK = KINETIC ENERGY                                            FLOS0694
C     SPVSTR = SPECIFIC VOLUME AT JUNCTION                               FLOS0696
C     BWSQR  = COEFFICIENT OF *J**2 FROM MACH SUBROUTINE                 FLOS0698
C                 AND FANNING FRICTION COEFFICIENT OF ***2               FLOS0700
C                                                                        FLOS0710
ISN 0026      COMMON /HEADOF/ HEAD(100,2)                                FLOS0720
C                                                                        FLOS0730
C     HEAD(K,1)    = HEAD TERM FOR JUNCTION INLET                        FLOS0740
C     HEAD(K,2)    = HEAD TERM FOR JUNCTION OUTLET                       FLOS0750
C                                                                        FLOS0752
ISN 0027      COMMON /HEXTRA/ CSUBP(75),CSUBPF(75),CSUBPG(75)            FLOS0753
C                                                                        FLOS0754
C     CSUBP = SPECIFIC HEAT CAPACITY AT CONSTANT PRESSURE                FLOS0755
C     CSUBPF = CSUBP FOR SATURATED WATER                                 FLOS0756
C     CSUBPG = CSUBP FOR SATURATED VAPOR                                 FLOS0757
C                                                                        FLOS0760
C                                                                        FLOS0762
C *** H-S ADDITION                                                       FLOS0764
ISN 0028      COMMON /HORZSP/ ALPHAJ(100), FANNGJ(100), INTRLO(100),     FLOS0765
     *                      CFJ(100), IADJUN(100),  IJFAN(100)          CDC 0767
C     LEVEL 2,ALPHAJ                                                     FLOS0768
C                                                                        IBM 0770
ISN 0029      REAL*8 INTRLO                                              CDC 0771
C     REAL   INTRLO                                                      FLOS0772
C                                                                        FLOS0784
ISN 0030      COMMON / JUNED / DELA(100), DELE(100), DELF(100), FL(100), XP(100)FLOS0786
C                                                                        FLOS0790
C       DELA  = PRESSURE DIFFERENTIAL - ACCELERATION                     FLOS0800
C       DELE  = PRESSURE DIFFERENTIAL - ELEVATION                        FLOS0810
C       DELF  = PRESSURE DIFFERENTIAL - FRICTION                         FLOS0820
C       FL    = PUMP SPEED, STORED HERE FOR EDIT PURPOSES                FLOS0830
C       XP    = JUNCTION QUALITY
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                C                                                                       FLOS0840
ISN 0031              COMMON / JUNER / HP(100), WP(100), WSLIP(100), WTP(100), VSLIP,    FLOS0850
               *    FMFRAC(100), IJ(100), IK(100), IPUMP(100), IVALVE(100),            FLOS0860
               2    IHOCJR(100), IVAP(100), IW(100,2), ISTAGP                          FLOS0870
                C                                                                       FLOS0880
                C     HP        = JUNCTION FLUID ENTHALPY                               FLOS0890
                C     WP        = JUNCTION WEIGHT FLOW                                  FLOS0900
                C     WSLIP     = JUNCTION WEIGHT FLOW OF WATER FROM SLIP FLOW          FLOS0910
                C     WTP       = THE JUNCTION WEIGHT FLOW OF THE TWO PHASE MIXTURE OR STEAMFLOS0920
                C     VSLIP     = SLIP VELOCITY FOR VOLUMES DIRECTLY ABOVE EACH OTHER   FLOS0930
                C     FMFRAC    = MASS FRACTION OF WATER IN JUNCTION FLOW               FLOS0935
                C     IJ        = MIXING JUNCTION NUMBER                                FLOS0940
                C     IK        = MIXING VOLUME NUMBER                                  FLOS0950
                C     IPUMP     = PUMP CURVE NUMBER                                     FLOS0960
                C     IVALVE    = VALVE NUMBER                                          FLOS0970
                C     IVAP      = JUNCTION VAPOR PRESSURE INDEX                         FLOS0980
                C     IW(K,1)   = JUNCTION INLET                                        FLOS0990
                C     IW(K,2)   = JUNCTION OUTLET                                       FLOS1000
                C                                                                       FLOS1010
ISN 0032              COMMON / JUNES / AJUN(100), ELEV(75), INERTA(100),                FLOS1020
               1                       SRCOS(100), ZJUN(100), ZVOL(75), KCHOKE(100)     FLOS1030
ISN 0033              REAL*8 INERTA                                                     IBM 1040
                C     REAL   INERTA                                                     CDC 1041
                C                                                                       FLOS1050
                C     AJUN      = JUNCTION FLOW AREA                                    FLOS1060
                C     ELEV      = VOLUME ELEVATION                                      FLOS1070
                C      SRCOS    = SQUARE ROOT OF THE COS OF ANGLE BETWEEN VOLUMES CONNECTEDFLOS1080
                C     INERTA    = JUNCTION INERTIA                                      FLOS1090
                C     ZJUN      = JUNCTION ELEVATION                                    FLOS1100
                C     ZVOL      = VOLUME HEIGHT                                         FLOS1110
                C     KCHOKE    = CHOKING INDICATOR (0=UNCHOKED)                        FLOS1120
                C                                                                       FLOS1130
ISN 0034              COMMON / JUNET / CHKVK(100), DELP(100), PUMPK(100), PUMPP(100)    FLOS1140
                C                                                                       FLOS1150
                C     CHKVK     = CHECK VALVE FRICTION FACTOR                           FLOS1160
                C     DELP      = VOLUME TO VOLUME PRESSURE DIFFERENCE                  FLOS1170
                C     PUMPK     = PUMP FRICTION FACTOR                                  FLOS1180
                C     PUMPP     = PUMP HEAD                                             FLOS1190
                C                                                                       FLOS1200
                C                                                                       FLOS1210
ISN 0035              COMMON / LEAKER / CONCO(100), SINK(5), TAREA(40,5),                FLOS1220
               1  IAREA(5), ICHOKE(100), ITLEAK(5), NAREA(5)                           FLOS1230
                C                                                                       FLOS1240
                C     CONCO     = CONTRACTION COEFFICIENT                               FLOS1250
                C     SINK      = SINK PRESSURE                                         FLOS1260
                C     TAREA     = TABLE OF AREA VS TIME                                 FLOS1270
                C     IAREA     = CURRENT POSITION IN AREA VS TIME TABLE                FLOS1280
                C     ICHOKE    = LIQUID PHASE CHOKING CONDITION (0=CHOKED,1=NOT CHOKED)FLOS1290
                C     ITLEAK    = TRIP SIGNAL NUMBER TO OPEN LEAK                       FLOS1300
                C     NAREA     = NUMBER OF AREA VS TIME DATA POINTS                    FLOS1310
                C                                                                       FLOS1320
                C EM                                                                    FLOS1400
ISN 0036              COMMON /P&EM/ PIN(50),EF(50),EC(50),HCOND(50),TJUMP(50),FRACT(50),FLOS1410
               1 AFR(7,50), BLKJUN(100), RROIN(50), CTRIN(50),                          FLOS1420
               2PITCH,       AMASS0,VINPUT,TAB1(50),TAB2(50),TAB3(50),TAB4(50),       FLOS1421
               3ISWJUN(100),IRUPFG(50), IRGPIN, IRGGAP, IRGSW, IACCV(4), ITRIP(4),FLOS1425
               4IDNCRV,IREMV(10),ITP(100),ISLBAJ(50),ISWTAB(50),NTAB1,NTAB2,NTAB3,FLOS1426
               5NTAB4,INSPR                                                             FLOS1427
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C      LEVEL 2,PIN                                                              COC 1428
C EM                                                                            FLOS1460
ISN 0037       COMMON / RETALS / FJUNF(100), FJUNR(100), HKIN(100), SPVJ(100),  FLOS1510
              1 SPVJO(100), RESDK(100), AJUNT(100), DIAMJ(100), TPMJ(100),      FLOS1515
              2 CMACHJ(100), PBO(100),                                          FLOS1520
              3 KMACH(100), JVERTL(100), JCHOKE(100), JCALCI(100), MVMIX(100)   FLOS1525
C                                                                               FLOS1540
C       FJUNF    = SPECIFIC ENERGY LOSS COEFFICIENT FOR FORWARD FLOW            FLOS1650
C       FJUNR    = SPECIFIC ENERGY LOSS COEFFICIENT FOR REVERSE FLOW            FLOS1660
C       HKIN     = JUNCTION KINETIC ENERGY, (V**2)/2 BTU/LBM                    FLOS1670
C       SPVJ     = JUNCTION SPECIFIC VOLUME, FT3/LBM                            FLOS1680
C      SPVJO     = JUNCTION SPECIFIC VOLUME FOR PREVIOUS TIME STEP,FT3/LBM      FLOS1685
C       RESDK    = RESIDUAL JUNCTION FRICTION FACTOR FOR STEADY STATE           FLOS1690
C       AJUNT    = TIME DEPENDENT JUNCTION AREA                                 FLOS1700
C       DIAMJ    = JUNCTION DIAMETER                                            FLOS1710
C       TPMJ     = TWO-PHASE FRICTION MULTIPLIER FOR FORM-LOSS                  FLOS1720
C       CMACHJ   = MACH NUMBER SQUARED AT JUNCTION                              FLOS1730
C       KMACH    = MACH TABLE MEMORY INDEX                                      FLOS1740
C       JVERTL   = VERTICAL JUNCTION CONTROL INDEX                              FLOS1750
C       JCHOKE   = JUNCTION CHOKING INDEX                                       FLOS1760
C       JCALCI   = INITIAL CONDITION CALCULATION TYPE CONTROL INDEX             FLOS1770
C       MVMIX    = MOMENTUM MIXING INDEX                                        FLOS1780
C                                                                               FLOS1790
ISN 0038       COMMON / SLAB   /      AHTL(50), AHTR(50), HDWL(50), HDWR(50),   FLOS1800
              *  CHNL(50), CHNR(50), DHEL(50), DHER(50), FCHL(50), FCHR(50),    FLOS1805
              1  HTCL(50), HTCR(50), PHIL(50), PHIR(50), SLEN(50), VOLS(50),    FLOS1810
              2  WQCL(50), WQCR(50), XSLL(50), XSLR(50), ZBOT(50), ZTOP(50),    FLOS1820
              *  IBCL(50), IBCR(50), IHTL(50), IHTR(50), IMCL(50), IMCR(50),    FLOS1822
              3  ISCO(50), ISHO(50), ISSO(50), ISST(50), IVSL(50), IVSR(50),    FLOS1830
              4  IXLO(50)                                                       FLOS1832
C      LEVEL 2,AHTL                                                             COC 1833
C                                                                               FLOS1840
C       AHTL = HEAT TRANS AREA AT LEFT  SLAB SURFACE, FT**2                     FLOS1842
C       AHTR = HEAT TRANS AREA AT RIGHT SLAB SURFACE, FT**2                     FLOS1843
C              HEAT TRANS AREAS ARE TOTAL UP TO INHEAT, THEN /UNIT LENGTH       FLOS1844
C       WQCL = HEAT TRANS RATE TO FLUID AT LEFT  SLAB SURFACE, BTU/HR           FLOS1850
C       WQCR = HEAT TRANS RATE TO FLUID AT RIGHT SLAB SURFACE, BTU/HR           FLOS1860
C       IVSL = INDEX NO OF VOLUME AT LEFT  SURFACE OF SLAB                      FLOS1870
C       IVSR = INDEX NO OF VOLUME AT RIGHT SURFACE OF SLAB                      FLOS1880
C                                                                               FLOS1882
ISN 0039       COMMON/SLEVEL/VSLA(100),VLIQA(100),VVAPA(100),XWL(100),XWG(100), FLOS1884
              *                HLOUT(100),HLIN(100),HGOUT(100),HGIN(100),       FLOS1886
              *                RL(100),RG(100),                                 FLOS1888
              *       SLVAMX,SLVELZ,SLVPAR,SLVSLI,SLVDPF,                       FLOS1889
              *       WALSC1,WALSC2,WALSC3,WALSC4,WALSC5,WALSC6,                FLOS1890
              *       DTROWN,DWGAP,JCNDWN,IDWNEM,ISLIP                          FLOS1891
C      LEVEL 2,VSLA                                                             COC 1892
C       VSLA  = SLIP VELOCITY TIMES SQRT OF COSINE OF CON. ANGLE                FLOS1893
C       VLIQA = LIQUID VELOCITY                                                 FLOS1894
C       VVAPA = VAPOR VELOCITY                                                  FLOS1896
C       XWL   = LIQUID PHASE JUNCTION MASS FLOW                                 FLOS1898
C       XWG   = GAS PHASE JUNCTION MASS FLOW                                    FLOS1900
C       HLOUT = OUTLET LIQUID PHASE JUNCTION ENTHALPY                           FLOS1902
C       HLIN  = INLET LIQUID PHASE JUNCTION ENTHALPY                            FLOS1904
C       HGOUT = OUTLET GAS PHASE JUNCTION ENTHALPY                              FLOS1906
C       HGIN  = INLET GAS PHASE JUNCTION ENTHALPY                               FLOS1908
C       RL    = PARTIAL LIQUID JUNCTION DENSITY                                 FLOS1910
C       RG    = PARTIAL GAS JUNCTION DENSITY                                    FLOS1912
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C     ISLIP   = 0 FOR NO SLIP, = POSITIVE IF SOME JUNCTION REQUIRES SLIP  FLOS1914
C     SLV*S   = SLIP VELOCITY PARAMETERS                                 FLOS1915
C     WALSC*S = WALLIS AND DOWN FLOODING SLIP PARAMETERS                 FLOS1916
C     DTRDWN  = DOWNCOMER DIAMETER (FT)                                  FLOS1917
C     DWNGAP  = DOWNCOMER OUTER - INNER RADIUS / 2                       FLOS1918
C     JCNDWN  = DOWNCOMER JUNCTION INDEX                                 FLOS1919
C     IDWNEM  = EVALUATION MODEL DOWNCOMER FLAG,  0 FOR R4, 1 FOR EM     FLOS1920
C                                                                        FLOS1921
ISN 0040      COMMON / SPECAL / HSPIN(100),HSPOUT(100),QSPL(75),WQ(75)   FLOS1922
C                                                                        FLOS1923
C      HSPIN    = EQUIVALENT JUNCTION INLET ENTHALPY                     FLOS1924
C      HSPOUT   = EQUIVALENT JUNCTION OUTLET ENTHALPY                    FLOS1925
C     QSPL = VOLUME HEAT SOURCE                                          FLOS1930
C     WQ       = VOLUME POWER INTO COOLANT (QSPL - K.E.)                 FLOS1935
C                                                                        FLOS1940
ISN 0041      COMMON / STATUS / OMEGA, PERIOD, POWER, TIMEX,             FLOS1941
     1                  PQUITL, PQUITH, TQUITL, TQUITH, NOG)            FLOS1942
ISN 0042      LOGICAL NOGO                                               FLOS1960
C     PQUITL = LOWER LIMIT ON PRESSURE IN ANY VOLUME                     FLOS1961
C     PQUITH = UPPER LIMIT ON PRESSURE IN ANY VOLUME                     FLOS1962
C     TQUITL = LOWER LIMIT ON TEMPERATURE IN ANY VOLUME                  FLOS1963
C     TQUITH = UPPER LIMIT ON TEMPERATURE IN ANY VOLUME                  FLOS1964
C                                                                        FLOS1970
C                                                                        FLOS1972
ISN 0043      COMMON /TSTCON/ FC3,FC4,FC5,FC6,FC7,FC8,FC9,               FLOS1974
     1       XOPTON(5),IOPTEN(5),ITSPL(100),KNTDT(10),IEVERY(20)        FLOS1976
C     XOPTON(3) = STARTING TIME FOR APPLYING CHOKING SMOOTHING           FLOS1978
C                                                                        FLOS1980
ISN 0044      COMMON /VOLDEP/ SOUND2(75),  SATUF(75),  SATUG(75),  UW(75),FLOS1982
     *   VSTIDX(75),  SATIDX(75),  PHASE(75)                             FLOS1990
ISN 0045      INTEGER  PHASE                                             FLOS1995
C                                                                        FLOS2000
C     SOUND2 = ISENTROPIC SONIC VELOCITY SQUARED, DP/DR)PHI              FLOS2040
C     SATUF  = SATURATED LIQUID SPECIFIC INTERNAL ENERGY  UF(TSAT)       FLOS2050
C     SATUG  = SATURATED GAS SPECIFIC INTERNAL ENERGY  UG(TSAT)          FLOS2060
C     UW     = SPECIFIC INTERNAL ENERGY                                  FLOS2070
C     VSTIDX = MEMORY INDEX FOR VOLUME STATE PROPERTIES                  FLOS2080
C     SATIDX = MEMORY INDEX FOR SATURATED STATE PROPERTIES               FLOS2085
C     PHASE  = PHASE OF WATER IN VOLUME                                  FLOS2090
C                                                                        FLOS2100
ISN 0046      COMMON / VOLED / AVED(75), AVEX(75), SATP(75), SATT(75),   FLOS2110
     1 SATVF(75), SATVG(75)                                             FLOS2120
C                                                                        FLOS2130
ISN 0047      COMMON / VOLER / A(75), HW(75), P(75), TEMP(75), ZL(75),   FLOS2140
     1 ZM(75), ZMO(75), IQIN(75), IREAD(75)                             FLOS2150
C                                                                        FLOS2160
C     A     = VOLUME AREA                                              FLOS2170
C     HW    = VOLUME SPECIFIC ENTHALPY                                 FLOS2180
C     P     = VOLUME PRESSURE                                          FLOS2190
C     TEMP  = VOLUME TEMPERATURE                                       FLOS2200
C     ZL    = LIQUID LEVEL                                             FLOS2210
C     ZM    = MIXTURE LEVEL                                            FLOS2220
C     ZMO   = MIXTURE LEVEL FOR PREVIOUS TIME STEP                     FLOS2230
C     IQIN  = HEAT CALCULATION INDEX                                   FLOS2240
C     IREAD= INDEX FOR TIME DEPENDENT VOLUMES                          FLOS2245
C                                                                        FLOS2260
ISN 0048      COMMON /VOLES1/ GASM(75), GASV(75), LIQV(75), FMASS(75), MIXV(75),FLOS2270
     *AFMASS(75),SATHF(75),SATHG(75),U(75),V(75),WPTIME,                FLOS2280
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                     * IWPAC(100),IWPEDT                                                FLOS2285
ISN 0049              REAL*8  MIXV, LIQV                                                IBM 2290
                C     REAL    MIXV, LIQV                                                CDC 2291
                C                                                                       FLOS2300
                C     GASM   = GAS MASS (INCLUDES BUBBLE MASS)                          FLOS2310
                C     GASV   = GAS VOLUME                                               FLOS2320
                C     LIQV   = LIQUID VOLUME                                            FLOS2330
                C     PMASS  = TOTAL WATER MASS                                         FLOS2340
                C     MIXV   = MIXTURE VOLUME                                           FLOS2350
                C     APMASS = AIR MASS                                                 FLOS2360
                C     SATHF  = SPECIFIC ENTHALPY OF SATURATED LIQUID                    FLOS2370
                C     SATHG  = SPECIFIC ENTHALPY OF SATURATED GAS                       FLOS2380
                C     U      = TOTAL ENERGY                                             FLOS2390
                C     V      = TOTAL VOLUME                                             FLOS2400
                C     WPTIME = STARTING TIME FOR APPLYING WATER PACKING ADJUSTMENTS     FLOS2402
                C     IWPAC  = WATERPACKING FLAGS, SEE SUBROUTINE WPACK FOR DEFINITION  FLOS2405
                C     IWPEDT = MAXIMUM NUMBER OF WATER PACK EDITS FOR ANY GIVEN VOLUME  FLOS2406
                C                                                                       FLOS2410
ISN 0050              COMMON / XUNITS / ALARG, BTUMWH, CFMGPS, FOOT, FPBTU,             FLOS2420
                     1 GAMMA, GRAVTY, G120PI, PI, ROTENG, SECHR, SQINCH                 FLOS2430
                C                                                                       FLOS2440
ISN 0051              LOGICAL KRK                                                       FLOS2445
ISN 0052              LOGICAL ISONIC                                                    FLOS2446
                C                                                                       FLOS2447
                C     PHYSICAL UNITS AND CONVERSION FACTORS                             FLOS2450
                C                                                                       FLOS2460
                C     REAL LEAK                                                         CDC 2462
ISN 0053              DATA ZERO, ONE, TWO, ONEEX7 / 0., 1., 2., 10000000. /             FLOS2470
                C                                                                       FLOS2480
                C     GET STATIC PRESSURE HEADS                                         FLOS2490
ISN 0054              REAL*8 LEAK                                                       IBM 2520
                CTIMER006   INITIAL BLOCK                                               FLOS2522
ISN 0055              DATA NZSUBN/  6/                                                  FLOS2523
ISN 0056              CALL TIMEL(ZDELTZ)                                                FLOS2524
ISN 0057              ZTIMEA(NZSUBC) = ZTIMEA(NZSUBC) + ZDELTZ                          FLOS2525
ISN 0058              IZCALL(NZSUBN) = IZCALL(NZSUBN) + 1                               FLOS2526
ISN 0059              NZSUBS = NZSUBC                                                   FLOS2527
ISN 0060              NZSUBC = NZSUBN                                                   FLOS2528
ISN 0061              IF (IPROGM .NE. 1) GO TO 803                                      FLOS2533
                C FM                                                                    FLOS2534
ISN 0063              IF (IEMPS .EQ. 1) CALL PRESWL (NJUN, MS, IDEBUG)                  FLOS2535
                C FM                                                                    FLOS2536
ISN 0065            803 CONTINUE                                                        FLOS2537
ISN 0066              CALL PREW (NJUN,NVOL,0,MAXJUN,MAXVOL,DT,IEMHT,IEMPS,IEMEC,IDEBUG, FLOS2538
                     1 IPROGM)                                                          FLOS2539
                C                                                                       FLOS2588
ISN 0067              HRSEC = ONE / SECHR                                               FLOS2590
ISN 0068              QLOSS = ZERO                                                      FLOS2640
ISN 0069              FE = ZERO                                                         FLOS2650
                C                                                                       FLOS2970
                C     HEAT SOURCES AND SINKS                                            FLOS2980
                C                                                                       FLOS2990
                C       IF (FILID(1) .EQ. 0)                                            CDC 2994
                C     * CALL WRITEC (FA(INDEX(1)),LFA(INDEX(30)),FILSIZ(1))             CDC 2995
ISN 0070              IAA = INDEX(1)                                                    FLOS3000
ISN 0071              ITA = IAA + NSLB*21                                               FLOS3002
                C  21 = MAX NUMBER OF MESH POINTS IN HEAT SLAB - CHANGE LATER-RJW      FLOS3003
ISN 0072              CALL SLABHT(NSLB,MS,MG,MM,MC,MR,MN,MT,                            FLOS3004
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     *  IPROGM,IEMHT,IEMPS,IEMEC,IDEBUG,DT,FA(IAA),FA(ITA))                  FLOS3007
C                                                                            FLOS3010
ISN 0073        DO 890 I=1,NVOL                                              FLOS3020
ISN 0074        WQ(I) = ZERO                                                 FLOS3030
ISN 0075        QSPL(I) = ZERO                                               FLOS3040
ISN 0076        IF (IQIN(I)) 885,893,890                                     FLOS3050
ISN 0077      885 MIQIN = -IQIN(I)                                           FLOS3060
ISN 0078        HTX = HTXQ(I,MIQIN,DT,WVBAR(I),TEMP(I),QLOSS,HE)             FLOS3075
ISN 0079        QSPL(I) = QSPL(I) - HTX                                      FLOS3080
ISN 0080        WQ(I) = WQ(I) - HTX                                          FLOS3085
ISN 0081        WQ(I) = WQ(I) / DT                                           FLOS3095
ISN 0082      890 QSPL(I) = QSPL(I) / DT                                     FLOS3100
ISN 0083        QTOTF  = 0.0                                                 FLOS3107
ISN 0084        DO 895 L=1,NSLB                                              FLOS3110
ISN 0085        IL = IVSL(L)                                                 FLOS3115
ISN 0086        IF (IL.EQ.0) GO TO 892                                       FLOS3117
ISN 0088        WQCS = WQCL(L)*HRSEC                                         FLOS3120
ISN 0089        IF (IL.GT.0) GO TO 891                                       FLOS3121
ISN 0091        QLOSS = QLOSS + WQCL(L)                                      FLOS3123
ISN 0092        HE = HE + WQCS*DT                                            FLOS3125
ISN 0093        GO TO 892                                                    FLOS3127
ISN 0094      891 QSPL(IL) = QSPL(IL) + WQCS                                 FLOS3128
ISN 0095        WQ(IL) = WQ(IL) + WQCS                                       FLOS3129
ISN 0096      892 IR = IVSR(L)                                               FLOS3131
ISN 0097        IF (IR.EQ.0) GO TO 895                                       FLOS3133
C                                                                            BOHT 144
C CHECK FOR BOUNDARY CONDITION SLAB                                          BOHT 144
ISN 0099        IF(IBCS(L) .EQ. 0) GO TO 893                                 BOHT 145
C GET NEW BOUNDARY CONDITION SLAB DATA FORM TAPE                             BOHT 146
C CHANGE TO CALL THE NEW TROAT WITH ITS NEW ARGUMENTS                        BOHT 147
ISN 0101        NM = IGOM(L)                                                 BOHT 148
ISN 0102        NN= NSI(NM)                                                  BOHT 149
ISN 0103        CALL TROAT(3,IBCS(L),TIMEX,PHIR(L),TP(NN,L),TM(L),DUM,DUM,IER) BOHT 150
C SET CENTERLINE TEMPERATURE TO AVERAGE TEMP                                 BOHT 151
ISN 0104        TP(1,L)=TM(L)                                                BOHT 152
ISN 0105        IF(IER .EQ. 0) GO TO 895                                     BOHT 153
C INPUT ERROR -- FLAG IT AND TERMINATE EXECUTION                             BOHT 154
ISN 0107        WRITE (6,897) L                                              BOHT 155
ISN 0108      897 FORMAT (50H0ERROR IN READING BOUNDARY CONDITION FLUX FOR SLAB, BOHT 156
     1    I4,33X,*EXECUTION DELETED*)                                        BOHT 157
ISN 0109        CALL FAIL                                                    BOHT 158
ISN 0110        GO TO 895                                                    BOHT 159
C NO ERROR -- CALCULATE HEAT TRANFER RATE                                    BOHT 160
ISN 0111      896 CONTINUE                                                   BOHT 161
ISN 0112        WQCS(L) = PHIR(L)*AHTR(L)*SLEN(L)                            BOHT 162
ISN 0113        WQCS    = WQCR(L)*HRSEC                                      BOHT 163
ISN 0114        JVK=IVOL(L)                                                  BOHT 164
ISN 0115        MU(K)=QFRAC(K)*(PPOW*QPMOD(K)*DPOW*QPMOD(K))*VI(K)/SPVZ(JVK) BOHT 165
ISN 0116        FQ(K)=QFRAC(K)*POWER-MU(K)                                   BOHT 166
ISN 0117        IF(TP(NN,L) .EQ. 0) GO TO 894                                BOHT 167
ISN 0119        HTCL(L)=PHIR(L)/(TP(NN,L)-SATT(IR))                          BOHT 168
ISN 0120        HTCR(L)=PHIR(L)/(TP(NN,L)-TEMP(IR))                          BOHT 169
C SKIP OLD HEAT TRANSFER RATE CALCULATIONS                                   BOHT 170
ISN 0121        GO TO 894                                                    BOHT 171
ISN 0122      893 CONTINUE                                                   BOHT 172
C IF NOT BOUNDARY CONTION SLAB, DO THE OLD CALCULATIONS                      BOHT 173
ISN 0123        WQCS = WQCR(L)*HRSEC                                         FLOS3135
ISN 0124        IF (IR.GT.0) GO TO 894                                       FLOS3137
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ISN 0125            QLOSS = QLOSS + WQCR(L)                                     FLOS3140
ISN 0127            HF = HF + WQCS*D*                                           FLOS3141
ISN 0128              GO TO 395                                                 FLOS3143
ISN 0129          494 K = ISC(L)                                                FLOS3144
ISN 0130            QSPL(IR) = QSPL(IR) + MQ(K) + WQCS                          FLOS3145
ISN 0131            WQ(IR) =  WQ(IR) + MQ(K) + WQCS                             FLOS3150
ISN 0132            IF (IAMODM .NE. 2) GO TO 395                                FLOS3153
                C **** CHANGE FOR FLOOD                                         FLOS3155
ISN 0134            K = ISC(L)                                                  FLOS3156
ISN 0135            IF (K.GT.0 .OR. IL.EQ.NEVOL .OR. IR.EQ.NEVOL)               FLOS3157
                   +    QTOTF = QTOTF + WQCL(L)/SECHR + WQCR(L)/SECHR           FLOS3159
ISN 0137          395 CONTINUE                                                  FLOS3160
                C                                                               FLOS3200
                C     GET HEAT LOSS FROM ICE CONDENSER VOLUMES                  FLOS3210
ISN 0138            IF (FILID(2).NE.0) CALL ICETRA (QT,HF, QLOSS)               FLOS3220
                C                                                               FLOS3230
                C     GET PUMP HEADS                                            FLOS3350
ISN 0140            CALL PUMPS(QT,NJUN,.FALSE.,.TRUE.)                          FLOS3360
                C                                                               FLOS3370
                C     LOOP OVER ALL JUNCTIONS                                   FLOS3380
                C                                                               FLOS3390
ISN 0141            DO 270 I = 1,NJUN                                           FLOS3400
ISN 0142            ISONIC = .FALSE.                                            FLOS3404
ISN 0143            KKK = .FALSE.                                               FLOS3405
ISN 0144            IF (ISTACP .GE. 1) KKK = .TRUE.                             FLOS3406
ISN 0146            K = IW(I,1)                                                 FLOS3410
ISN 0147            L = IW(I,2)                                                 FLOS3420
ISN 0148            ITP(I) = 1                                                  FLOS3425
ISN 0149            AJ = AJUNT(I)                                               FLOS3430
ISN 0150            SPJ = SPVJ(I)                                               FLOS3440
ISN 0151            RAJ = ZERO                                                  FLOS3450
ISN 0152            IF( AJ.GT.ZERO )  RAJ = ONE/(AJ*AJ*GRAVTY*SQINCH*RHO)       FLOS3460
ISN 0154            W = WP(I)                                                   FLOS3470
ISN 0155            AI = CONCC(I)                                               FLOS3472
ISN 0156            IF( K.GT.0 )  GO TO 100                                     FLOS3490
ISN 0158            IF( L.LE.0 )  GO TO 270                                     FLOS3500
                C                                                               FLOS3510
                C**   CALL TO FILL IS NOW IN SLIP                               FLOS3515
                C     FILL SYSTEM                                               FLOS3520
                C     WP(I) = FILL(I,AJ)                                        FLOS3530
ISN 0160            XWL(I) = WP(I)                                              FLOS3535
ISN 0161            XWG(I) = ZERO                                               FLOS3537
ISN 0162            IF (CHKVK(I) .LT. ONEEX7) GO TO 90                          FLOS3540
ISN 0164            WP(I) = ZERO                                                FLOS3541
ISN 0165            XWL(I) = ZERO                                               FLOS3542
ISN 0166          90 FSURK(I) = ZERO                                            FLOS3550
ISN 0167            RSURK(I) = -ONEEX7                                          FLOS3555
ISN 0169            GO TO 270                                                   FLOS3560
                C                                                               FLOS3570
                C     LEAK OR NORMAL JUNCTION                                   FLOS3580
ISN 0169          100 CONTINUE                                                  FLOS3590
ISN 0170            H = HP(I)                                                   FLOS3620
ISN 0171            HSAT = SATHF(K)                                             FLOS3622
ISN 0172            IF( W.LT.ZERO.AND.L.GT.0 )  HSAT = SATHF(L)                 FLOS3624
ISN 0174            IF( H.LE.ZERO )  GO TO 220                                  FLOS3630
ISN 0176            CV = CMACHU(I)                                              FLOS3640
ISN 0177            AI = INERTA(I)                                              FLOS3650
ISN 0178            FM = BASQR(I,1)                                             FLOS3660
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                C *** IMPLEMENT ZUBER FORM, FLAG BY MVMIX=4                                FLOS3665
ISN 0179              IF (MVMIX(I).EQ.4) BM = ZERO                                        FLOS3666
                C *** H-S ADDITION                                                        FLOS3668
                C     DELETE HEAD TERMS FOR GAS JUNCTION FROM HORZ SLIP PAIR              FLOS3670
ISN 018[illegible]    IF (IADJUN(I) .LE. 0) GO TO 105                                     FLOS3672
ISN 0183              IF (ZJUN(I) .LT. ZJUN(IADJUN(I))) GO TO 105                         FLOS3674
                C     STEAM JUNCTION, DROP HEAD TERM                                      FLOS3676
ISN 0185              P1 = PSTAR(I,1)                                                     FLOS3678
ISN 0186              P2 = PSTAR(I,2)                                                     FLOS3680
ISN 0187              DELP(I) = 0.0                                                       FLOS3682
ISN 0188              GO TO 107                                                           FLOS3684
ISN 0189          105 P1 = PSTAR(I,1) + HEAD(I,1)                                         FLOS3686
ISN 0190              P2 = PSTAR(I,2) + HEAD(I,2)                                         FLOS3688
ISN 0191              DELP(I) = HEAD(I,1) - HEAD(I,2)                                     FLOS3690
ISN 0192          107 CONTINUE                                                            FLOS3692
ISN 0193              DELP(I) = PSTAR(I,1) - PSTAR(I,2) + BM*ZZ**2                        FLOS3694
ISN 0194              IF (IPROGM.EQ.2) GO TO 110                                          FLOS3695
ISN 0196              IF( CHKVK(I).GE.ONEEX7 )  GO TO 220                                 FLOS3696
ISN 0198              IF( AJ.LE.ZERO )  GO TO 220                                         FLOS3698
ISN 0200          110 CONTINUE                                                            FLOS3700
ISN 0201              IF (L.LE.0) GO TO 355                                               FLOS3702
                C                                                                         FLOS3710
                C                                                                         FLOS3720
                C     NORMAL JUNCTION                                                     FLOS3730
                C                                                                         FLOS3780
                C     GENERAL INERTIAL SOLUTION, NORMAL JUNCTION                          FLOS3790
ISN 0203              TOTK1 = ZERO                                                        FLOS3800
ISN 0204              TOTK2 = ZERO                                                        FLOS3810
ISN 0205              IF (JCALCI(I).LT.0.AND.JCALCI(I).NE.(-4)) GO TO 157                 FLOS3820
ISN 0207              DUMF = CHKVK(I) + PUMPK(I) + FFSDK(I)                               FLOS3824
ISN 0208              TOTK1 = -(FJUNF(I) + DUMF )*SPJ*TPMJ(I)                             FLOS3830
ISN 0209              TOTK2 = (FJUNR(I) + DUMF )*SPJ*TPMJ(I)                              FLOS3840
ISN 0210              IF (IPROGM.NE.2) GO TO 157                                          FLOS3842
                C *** FLOOD CHANGE                                                        FLOS3844
ISN 0212              IF (I.NE.JUNSL .AND. I.NE.JUNSSL) GO TO 157                         FLOS3846
ISN 0214              HEAD(I,1) = ZERO                                                    FLOS3847
ISN 0215              HEAD(I,2) = ZERO                                                    FLOS3848
ISN 0216              IF (AJ.LE.0.) GO TO 157                                             FLOS3849
ISN 0218              ATOT = AJUN(JUNSL) + AJUN(JUNSSL)                                   FLOS3850
ISN 0219              AT = (ATOT/AJ)**2                                                   FLOS3852
ISN 0220              TOTK1 = TOTK1*AT                                                    FLOS3854
ISN 0221              TOTK2 = TOTK2*AT                                                    FLOS3856
ISN 0222          157 CONTINUE                                                            FLOS3858
                C *** H-S ADDITION                                                        FLOS3860
ISN 0223              IF (IADJUN(I).LE.0) GO TO 103                                       FLOS3862
ISN 0225              IF (AJ.LE.0.) GO TO 103                                             FLOS3864
ISN 0227              ATOT = AJUN(I) + AJUN(IADJUN(I))                                    FLOS3866
ISN 0228              AT = (ATOT/AJ)**2                                                   FLOS3867
ISN 0229              TOTK1 = TOTK1*AT                                                    FLOS3870
ISN 0230              TOTK2 = TOTK2*AT                                                    FLOS3872
ISN 0231          103 CONTINUE                                                            FLOS3874
ISN 0232              IF (CHKVK(I).GE.ONEEX7 .AND. IPROGM.NE.2) GO TO 220                 FLOS3876
ISN 0234              BF = BM + TOTK1                                                     FLOS3878
ISN 0235              BR = BM + TOTK2                                                     FLOS3880
                C *** H-S ADDITION                                                        FLOS3885
                C     USE JUNCTION FANNING INSTEAD OF VOLUME FOR HORZ SLIP                FLOS3887
                C     AND ADD INTERFACIAL SHEAR PRESSURE DROP                             FLOS3888
ISN 0236              IF (IADJUN(I) .GT. 0 .AND. ALPHAJ(I) .GE. .1) GO TO 115             FLOS3889
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ISN 0238            DP = P1 - P2 + PUMPP(I) + B*SQR(I,2)                                    FLOS3891
ISN 0239            GO TO 116                                                               FLOS3893
C           CFJ(I) = 0 FOR JCALCI ) 0, FANNGJ(I) = 0 FOR JCALCI = -4                        FLOS3895
ISN 0240      115   DP = P1 - P2 + PUMPP(I) + FANNGJ(I) + CFJ(I)                            FLOS3897
ISN 0241      116   CONTINUE                                                                FLOS3899
ISN 0242            IF (CHKVK(I).GE.ONEEX7 .OR. AJ.LE.0.0) GO TO 220                        FLOS3900
ISN 0244            IF (W) 125,120,130                                                      FLOS3902
ISN 0245      120   IF (DP) 125,130,130                                                     FLOS3904
ISN 0246      125   N = L                                                                   FLOS3906
ISN 0247            GO TO 135                                                               FLOS3908
ISN 0248      130   N = K                                                                   FLOS3910
ISN 0249      135   CONTINUE                                                                FLOS3912
ISN 0250      140   B = -BF                                                                 FLOS3914
ISN 0251            IF( W.LT.ZERO )  B = BR                                                 FLOS3916
C           JCHOKE = 0, 2, OR 4 WILL ALLOW SONIC CHOKING                                    FLOS3918
ISN 0253            IF(JCHOKE(I).NE.0.AND.JCHOKE(I).NE.2.AND.JCHOKE(I).NE.4) GO TO 158      FLOS3920
ISN 0255            IF(JCHOKE(I).EQ.0.AND.ICHOKE(I).GT.0) GO TO 158                         FLOS3922
C           TEST FOR FLOW EQUATION CHOKING                                                  FLOS3925
ISN 0257            WTEST=W+(DP-B*W*DABS(W))*DT/AI                                          IBM 3927
C           WTEST=W+(DP-B*W* ABS(W))*DT/AI                                                  CDC 3929
C           CHOKED MOMENTUM EQUATION                                                        FLOS3931
ISN 0258            WCHOKE = (AJ/SPJ)*DSQRT(C2)                                             IBM 3933
C           WCHOKE = (AJ/SPJ)* SQRT(C2)                                                     CDC 3935
ISN 0259            IF( DABS(WTEST).GE.WCHOKE )  GO TO 159                                  IBM 3939
C           IF(  ABS(WTEST).GE.WCHOKE )  GO TO 159                                          CDC 3941
ISN 0261      153   CONTINUE                                                                FLOS3943
ISN 0262            KCHOKE(I) = 0                                                           FLOS3945
ISN 0263            GO TO 164                                                               FLOS3947
ISN 0264       159  BTEMP = -DP/(WCHOKE)**2                                                 FLOS3949
ISN 0265            IF (W.GE.ZERO) BF = DMIN1(BF, BTEMP)                                    IBM 3951
C           IF (W.GE.ZERO) BF = AMIN1(BF, BTEMP)                                           CDC 3953
ISN 0267            IF (W.LT.ZERO) BR = DMAX1(BR, BTEMP)                                    IBM 3955
C           IF (W.LT.ZERO) BR = AMAX1(BR, BTEMP)                                           CDC 3957
ISN 0269            TOTK1 = BF-BM                                                           FLOS3959
ISN 0270            TOTK2 = BR-BM                                                           FLOS3961
ISN 0271            ISONIC = .TRUE.                                                         FLOS3962
ISN 0272            KCHOKE(I)=2                                                             FLOS3963
ISN 0273            IF (B .GE. 0.0) BTEMP = -BF                                             FLOS3965
ISN 0275            IF (B .LT. 0.0) BTEMP = +BF                                             FLOS3970
C                                                                                           FLOS3980
ISN 0277      164   IF(W.LT.ZERO) GO TO 170                                                 FLOS3990
ISN 0279            TOTK = TOTK1                                                            FLOS4000
ISN 0280            GO TO 175                                                               FLOS4010
ISN 0281      170   TOTK = TOTK2                                                            FLOS4020
ISN 0282      175   CONTINUE                                                                FLOS4030
C           CALCULATE STAGNATION PROPERTIES                                                 FLOS4032
ISN 0283            IF (JCHOKE(I).EQ.2) GO TO 230                                           FLOS4034
ISN 0285            IF(.NOT.K3K) GO TO 230                                                  FLOS4036
ISN 0287            POL = P(L)                                                              FLOS4038
ISN 0288            POK = P(K)                                                              FLOS4040
ISN 0289            HOL = H                                                                 FLOS4042
ISN 0290            HOK = H                                                                 FLOS4044
ISN 0291            PSAT(L) = SATP (L)                                                      FLOS4046
ISN 0292            PSAT(K) = SATP (K)                                                      FLOS4048
ISN 0293            XSTAGP = AVEX(K)                                                        FLOS4050
ISN 0294            IF (N .NE. K) XSTAGP = AVEX(L)                                          FLOS4052
ISN 0296            IF(PHASE(N).EQ.1) GO TO 222                                             FLOS4053
ISN 0299            IF (DSQRT(MACHV(N)).LT. 0.300) GO TO 230                                IBM 4054
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C       IF ( SQRT(EMACHV(N)).LT. 0.300) GO TO 230                                  CDC 4055
ISN 0300   222 JC = 3                                                              FLOS4058
ISN 0301       IF( N.EQ.K ) GO TO 225                                              FLOS4060
ISN 0302       CALL STAGP(POL,HOL,PSAT(L),XSTAGP ,P(L),H,SPJ,W,FLOWA(L),           FLOS4062
              1 SATVF(L),SATVG(L),SATHF(L),SATHG(L),SOUND2(L))                     FLOS4064
ISN 0304       GO TO 230                                                           FLOS4066
ISN 0305   225 CALL STAGP(POK,HOK,PSAT(K),XSTAGP ,P(K),H,SPJ,W,FLOWA(K),          FLOS4068
              1 SATVF(K),SATVG(K),SATHF(K),SATHG(K),SOUND2(K))                     FLOS4070
ISN 0306   230 CONTINUE                                                            FLOS4072
C                                                                                  FLOS4074
C       TEST FOR MOODY CHOKING                                                     FLOS4076
C       TEST FOR RSP PRESCRIBED CHOKE FLOW CALCULATION (JCHOKE=3)                  FLOS4080
ISN 0307       IF (JCHOKE(I).EQ.3) GO TO 500                                       FLOS4082
ISN 0308       IF (JCHOKE(I) .EQ. 4 .OR.  JCHOKE(I) .EQ. 5) GO TO 173              FLOS4083
ISN 0311       IF (JCHOKE(I) .NE. 0 .AND. JCHOKE(I) .NE. 1) GO TO 190              FLOS4084
ISN 0313   173 IF (LT.EQ.ZERO) GO TO 180                                           FLOS4086
C *** M-S ADDITION, DELETE HEAD TERMS FOR GAS JUNCTION                             FLOS4088
ISN 0315       IF (IADJUN(I) .LE. 0) GO TO 171                                     FLOS4090
ISN 0317       IF (ZJUN(I) .LT. ZJUN(IADJUN(I))) GO TO 171                         FLOS4092
ISN 0319       PLK = P(K)                                                          FLOS4094
ISN 0320       PLL = P(L)                                                          FLOS4096
ISN 0321       IF (KFK) PLK = FOK                                                  FLOS4098
ISN 0323       IF (KFK) PLL = FOL                                                  FLOS4100
ISN 0325       GO TO 172                                                           FLOS4102
ISN 0326   171 PLK = P(K) + HEAD(I,1)                                             FLOS4104
ISN 0327       PLL = P(L) + HEAD(I,2)                                              FLOS4106
ISN 0328       IF (KFK) PLK = POK + HEAD(I,1)                                      FLOS4108
ISN 0330       IF (KFK) PLL = POL + HEAD(I,2)                                      FLOS4110
ISN 0332   172 CONTINUE                                                           FLOS4112
ISN 0333        WIFST = W + (DP - B**DABS(W)) *DT/AI                               IBM 4113
C               WIFST = W + (DP - B** ABS(W)) *DT/AI                               CDC 4114
ISN 0334       WTHMIN =-CKFEXP                                                     FLOS4115
ISN 0335       WTHMAX = CKFEXP                                                     FLOS4116
ISN 0336       IF (WIFST .GE. 0.0) GO TO 165                                       FLOS4117
ISN 0338       IF (WIFST .LT. 0.0) GO TO 163                                       FLOS4119
ISN 0340       H = HW(K)                                                           FLOS4120
ISN 0341       HSAT = SATHF(K)                                                     FLOS4121
ISN 0342       GO TO 165                                                           FLOS4122
ISN 0343   163 H = HW(L)                                                          FLOS4123
ISN 0344       HSAT = SATHF(L)                                                     FLOS4124
ISN 0345   165 CONTINUE                                                           FLOS4125
ISN 0346       IF(JCHOKE(I).EQ.0.AND.ICHOKE(I).GT.0) GO TO 179                     FLOS4126
ISN 0348       IF (JCHOKE(I).EQ.5) GO TO 176                                       FLOS4127
ISN 0350       IF (ICHOKE(I).GE.10) GO TO 174                                      FLOS4128
ISN 0352       IF( ICHOKE(I).LE.0 )  GO TO 176                                     FLOS4129
ISN 0354       IF(KFK) GO TO 174                                                   FLOS4130
ISN 0356       IF( PLK.GT.SATP(K).AND.PLL.LT.SATP(K))  PLK = SATP(K)               FLOS4131
ISN 0358       IF( PLL.GT.SATP(L).AND.PLK.LT.SATP(L))  PLL = SATP(L)               FLOS4132
ISN 0360       GO TO 179                                                           FLOS4133
ISN 0361   176 CONTINUE                                                           FLOS4134
ISN 0362       IF (PLK.GT.PSAT(K).AND.PLL.LT.PSAT(K)) PLK=PSAT(K)                  FLOS4135
ISN 0364       IF (PLL.GT.PSAT(L).AND.PLK.LT.PSAT(L)) PLL=PSAT(L)                  FLOS4136
ISN 0366       GO TO 179                                                           FLOS4137
ISN 0367   174 IF (KFK) GO TO 190                                                 FLOS4138
ISN 0369       IF (WIFST) 177,178,178                                              FLOS4139
ISN 0370   177 IF( H.GT.HSAT .OR. P(L).LE.SATP(L) ) GO TO 179                     FLOS4140
ISN 0372       GO TO 181                                                           FLOS4142
ISN 0373   178 IF( H.GT.HSAT .OR. P(K).LE.SATP(K) ) GO TO 179                     FLOS4144
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ISN 0375            GO TO 191                                                                  FLOS4145
ISN 0376          150 IF (WIEST) 197,196,195                                                   FLOS4148
ISN 0377          197 IF (XSTAGP .GT. 0.0) GO TO 179                                           FLOS4150
ISN 0378            GO TO 191                                                                  FLOS4152
ISN 0379          194 IF (XSTAGP .GT. 0.0) GO TO 179                                           FLOS4154
ISN 0380          181 IF (JCHOKE(I).NE.5) GO TO 186                                            FLOS4156
ISN 0381            ICHOK=7                                                                    FLOS4158
ISN 0382            GO TO 182                                                                  FLOS4160
C           GET TO THIS POINT ONLY IF ICHOKE LE 0 OR ICHOKE GE 10                              FLOS4162
ISN 0383          186 IF (ICHOKE(I).LT.10) GO TO 180                                           FLOS4164
C           SUBCOOLED CONDITIONS, USE MOMENTUM CHOKING UNLESS ICHOKE.GT.10                     FLOS4166
C           THEN USE MINIMUM OF MOMENTUM OR HENRY EXTENDED TABLES                              FLOS4168
ISN 0384            ICHOK=10                                                                   FLOS4170
ISN 0385            GO TO 182                                                                  FLOS4172
ISN 0386          179 CONTINUE                                                                 FLOS4174
ISN 0387            ICHOK = IABS(ICHOKE(I))                                                    FLOS4176
ISN 0388            IF (ICHOK.GE.10) ICHOK=ICHOK-10                                            FLOS4178
C           CHECK FOR HEM CHOKE FLOW MODEL, FLAG BY JCHOKE = 4, SET ICHOK = 5                  FLOS4180
ISN 0389            IF (JCHOKE(I).EQ.4) ICHOK = 5                                              FLOS4182
C           CHECK FOR FAUSKE-HEM CRITICAL FLOW MODEL, FLAG BY JCHOKE = 5                       FLOS4184
ISN 0390            IF(JCHOKE(I).EQ.5) GO TO 184                                               FLOS4186
ISN 0391                                                                                       FLOS4188
ISN 0392          182 CONTINUE                                                                 FLOS4190
ISN 0393            IF (KRK) GO TO 183                                                         FLOS4191
ISN 0394            IF (WIEST .LT. 0.0)                                                        FLOS4192
                   **THMIN = -A1*AJ*LEAK(H,PLL,XL,I,DER,ICHOK,ITPL)                            FLOS4193
ISN 0395            IF (WIEST .GE. 0.0)                                                        FLOS4194
                   **THMAX =  A1*AJ*LEAK(H,PLK,XK,I,DER,ICHOK,ITPK)                            FLOS4196
ISN 0396            GO TO 185                                                                  FLOS4198
ISN 0397          184 ICHOK=6                                                                  FLOS4200
ISN 0398            XK=(HW(K)-SATHF(K))/(SATHG(K)-SATHF(K))                                    FLOS4202
ISN 0399            XL=(HW(L)-SATHF(L))/(SATHG(L)-SATHF(L))                                    FLOS4204
ISN 0400            IF(XK.GE.CLXTFE.AND.XL.GE.CLXTFE) GO TO 182                                FLOS4206
ISN 0401            IF(XK.LT.CLXTFE.AND.XL.LT.CLXTFE) GO TO 187                                FLOS4208
ISN 0402            IF(XK.GE.CLXTFE) GO TO 188                                                 FLOS4210
ISN 0403            ICHOKK=8                                                                   FLOS4212
ISN 0404            ICHOKL=6                                                                   FLOS4214
ISN 0405            GO TO 189                                                                  FLOS4216
ISN 0406          187 ICHOK=8                                                                  FLOS4218
ISN 0407            GO TO 182                                                                  FLOS4220
ISN 0408          188 ICHOKK=6                                                                 FLOS4222
ISN 0409            ICHOKL=8                                                                   FLOS4224
ISN 0410          189 IF(KRK) GO TO 191                                                        FLOS4225
ISN 0411            IF (WIEST .LT. 0.0)                                                        FLOS4226
                   **THMIN = -A1*AJ*LEAK(H,PLL,XL,I,DER,ICHOKL,ITPL)                           FLOS4227
ISN 0412            IF (WIEST .GE. 0.0)                                                        FLOS4228
                   **THMAX =  A1*AJ*LEAK(H,PLK,XK,I,DER,ICHOKK,ITPK)                           FLOS4230
ISN 0413            GO TO 195                                                                  FLOS4231
ISN 0414          191 IF (WIEST .LT. 0.0)                                                      FLOS4232
                   **THMIN = -A1*AJ*LEAK(HOL,PLL,XL,I,DER,ICHOKL,ITPL)                         FLOS4233
ISN 0415            IF (WIEST .GE. 0.0)                                                        FLOS4234
                   **THMAX =  A1*AJ*LEAK(HOK,PLK,XK,I,DER,ICHOKK,ITPK)                         FLOS4236
ISN 0416            GO TO 195                                                                  FLOS4237
ISN 0417          193 IF (WIEST .LT. 0.0)                                                      FLOS4238
                   **THMIN = -A1*AJ*LEAK(HOL,PLL,XL,I,DER,ICHOK,ITPL)                          FLOS4239
ISN 0418            IF (WIEST .GE. 0.0)                                                        FLOS4240
                   **THMAX =  A1*AJ*LEAK(HOK,PLK,XK,I,DER,ICHOK,ITPK)                          FLOS4242
ISN 0419          185 CONTINUE                                                                 FLOS4244
C
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                C       MAKE  PREDICTIVE TEST ON INERTIAL FLOW                                      FLOS4246
ISN 0439                WTH = WTHMIN                                                               FLOS4252
ISN 0440                IF (WIEST.LT.WTH) GO TO 210                                                FLOS4254
ISN 0442                WTH = WTHMAX                                                               FLOS4256
ISN 0443                IF (WIEST.GT.WTH) GO TO 210                                                FLOS4258
ISN 0445                TOTK = -B-BM                                                               FLOS4259
ISN 0446                IF(W.LT.ZERO) TOTK = B-BM                                                  FLOS4260
ISN 0448                ISONIC = .FALSE.                                                           FLOS4261
ISN 0449                KCHOKE(I) = 0                                                              FLOS4262
ISN 0450                GO TO 180                                                                  FLOS4263
ISN 0451              500 CONTINUE                                                                 FLOS4264
                C       RSR PRESCRIPTION                                                           FLOS4265
                C       FSR PRESCRIBED CHOKE FLOW MODEL, FLAGGED BY JCHOKE = 3                     FLOS4266
                C       UPSTREAM VOLUME IS DETERMINED BY INDICATOR N                               FLOS4268
ISN 0452                CALL FLORSR(I,K,L,N,DP,          B,H,W,AVEX(N),                            FLOS4400
                     1          BM,AJ,AI,ITPI  ,XOPTON(3),IOPTON(3),DT,IRET)                       FLOS4410
ISN 0453                ITP(I) = ITPI                                                              FLOS4412
ISN 0454                IF (IRET .EQ. 1) GO TO 270                                                 FLOS4420
                C       USE INERTIAL CALCULATION                                                   FLOS4442
ISN 0456              180 CONTINUE                                                                 FLOS4443
ISN 0457                IF( ISONIC ) B = BTEMP                                                     FLOS4444
ISN 0459                DELF(I) = TOTK * W**2                                                      FLOS4445
ISN 0460                DELA(I) = DP - B*WP(I)*DABS(WP(I))                                         IBM 4446
                C       DELA(I) = DP - B*WP(I)* ABS(WP(I))                                         CDC 4447
ISN 0461                ESUBK(I) = DELA(I) / INERTA(I)                                             FLOS4448
ISN 0462                FSUBK(I) = -B                                                              FLOS4449
ISN 0463                IF (KCHOKE(I) .NE. 2) GO TO 192                                            FLOS4450
                C       MOMENTUM EQUATION CHOKING                                                  FLOS4452
ISN 0465                GO TO 270                                                                  FLOS4458
ISN 0465              192 DELF(I) = DELF(I) + B*SQR(I,2)                                           FLOS4460
ISN 0467                GO TO 270                                                                  FLOS4462
                C                                                                                  FLOS4464
                C       USE CHOKE CALCULATION                                                      FLOS4466
ISN 0468              210 CONTINUE                                                                 FLOS4468
ISN 0469                KCHOKE(I) = 1                                                              FLOS4473
ISN 0470                ITP(I) = ITPK                                                              FLOS4474
ISN 0471                IF (WTH.LE.0) ITP(I) = ITPL                                                FLOS4475
                C       SINCE DW/DT IS INACCURATE FOR CHOKED FLOW AT SMALL DT, LIMIT               FLOS4476
                C       THE MINIMUM SIZE OF DT                                                     FLOS4477
ISN 0473                DTADJ = DT                                                                 FLOS4478
                C       SKIP IF STARTING TIME FOR CHOKING SMOOTHING NOT REACHED                    FLOS4479
ISN 0474                IF (TIMEX .LT. XOPTON(3)) GO TO 212                                        FLOS4480
                C       SKIP WDOT ADJUSTMENT IF JUNCTION AREA IS CHANGING.                         FLOS4481
ISN 0476                IF (AJUNT(I) .EQ. 0.0) GO TO 212                                           FLOS4482
ISN 0478                IF (DABS((AJUNT(I)-AJUN(I))/AJUNT(I)) .GT..00100) GO TO 212                IBM 4484
                C       IF ( ABS((AJUNT(I)-AJUN(I))/AJUNT(I)) .GT..001E0) GO TO 212                CDC 4486
                C       SKIP WDOT ADJUSTMENT UNLESS UPSTREAM VOLUME IS SUBCOOLED OR ALMOST         FLOS4488
ISN 0480                IF (AVEX(N) .GT. 5.0D-3) GO TO 212                                         IBM 4490
                C       IF (AVEX(N) .GT. 5.0E-3) GO TO 212                                         CDC 4492
                C       SKIP WDOT ADJUSTMENT DURING INITIAL RAPID DEPRESSURIZATION                 FLOS4494
ISN 0482                IF (P(N) .GT. SATP(N) + 25.) GO TO 212                                     FLOS4496
ISN 0484                DTADJ = DMAX1(0.00100, DT)                                                 IBM 4498
                C       DTADJ = AMAX1(0.001E0, DT)                                                 CDC 4500
ISN 0485              212 ESUBK(I) = (WTH-WP(I))/DTADJ                                             FLOS4502
ISN 0486                IF (IOPTON(3) .EQ. 1) WP(I) = WTH                                          FLOS4503
ISN 0488                DELA(I) = ESUBK(I) * AI                                                    FLOS4504
ISN 0489                IF (WTH .NE. ZERO) GO TO 215                                               FLOS4506
ISN 0491                WRITE(6,902) I,DT,H,PLL,PLK                                                FLOS4508
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ISN 0492        902 FORMAT(1H0,49H ERROR -- ZERO CHOKED FLOW, PROBABLY OFF CRITICAL,  FLOS4510
                   1 32H FLOW TABLES -- CHECK TIME STEP, /                          FLOS4512
                   2 23H JCN, DT, H, PLL, PLK =, I3, 1P4E11.4, 30X,                 FLOS4514
                   3 27H********* EXECUTION DELETED. )                             FLOS4515
ISN 0493              CALL FAIL                                                     FLOS4518
ISN 0494              GO TO 270                                                     FLOS4520
ISN 0495        215 CONTINUE                                                        FLOS4522
ISN 0496              FRICT = (DELA(I) - DP) / (WTH*DABS(WTH) )                     IBM 4524
C               CDC 4526
                      FRICT = (DELA(I) - DP) / (WTH* ABS(WTH) )
ISN 0497              DELF(I) =-(BM**WTH**2+FRICT*WTH*DABS(WTH))                    IBM 4528
C               CDC 4530
                      DELF(I) =-(BM**WTH**2+FRICT*WTH* ABS(WTH))
ISN 0498              IF (IPROBV .NE. 2) GO TO 205                                  FLOS4532
ISN 0500              IF (I .EQ. JUNOUT) DELF(I) = ZERO                             FLOS4534
ISN 0502        205 CONTINUE                                                        FLOS4536
ISN 0503              FSUBK(I) = DMIN1(-B,FRICT)                                    IBM 4538
C               CDC 4540
                      FSUBK(I) = AMIN1(-B,FRICT)
ISN 0504              GO TO 270                                                     FLOS4542
C                                                                                   FLOS4544
C               INLET ENTHALPY OF JUNCTION AREA IS ZERO                             FLOS4546
ISN 0505        220 KCHOKE(I) = 0                                                   FLOS4548
ISN 0506              WP(I) = ZERO                                                  FLOS4550
ISN 0507              XE(I) = ZERO                                                  FLOS4552
ISN 0508              DELA(I) = ZERO                                                FLOS4554
ISN 0509              DELF(I) = ZERO                                                FLOS4556
ISN 0510              FSUBK(I) = ZERO                                               FLOS4558
ISN 0511              FSUBK(I) = -ONEEX7**2                                         FLOS4560
ISN 0512              GO TO 270                                                     FLOS4562
C                                                                                   FLOS4564
C               LEAK JUNCTION                                                       FLOS4566
ISN 0513        355 CONTINUE                                                        FLOS4568
ISN 0514              N = K                                                         FLOS4569
ISN 0515              FSUBK(I) = -ONEEX7                                            FLOS4570
ISN 0516              TOTK1 = ZERO                                                  FLOS4610
ISN 0517              TOTK2 = ZERO                                                  FLOS4620
ISN 0518              IF (JCALCI(I).LT.0.AND.JCALCI(I).NE.(-4)) GO TO 357           FLOS4630
ISN 0520              DUMF = FJUNF(I) + CHKVK(I) + PUMPK(I) + RESDK(I)              FLOS4635
ISN 0521              TOTK1 = -DUMF*SPJ*TPMJ(I)                                     FLOS4640
ISN 0522        357 CONTINUE                                                        FLOS4660
ISN 0523              IF( CHKVK(I).GE.ONEEX7 )  GO TO 360                           FLOS4670
ISN 0525              BF = BM + TOTK1                                               FLOS4680
ISN 0526              DP = P1 - P2 + PUMPP(I) + BWSQR(I,2)                          FLOS4685
C *** M-S ADDITION                                                                  FLOS4686
ISN 0527              IF (IADJUN(I) .GT. 0) DP = P1 - P2 + PUMPP(I) + FANNGJ(I) + CFJ(I)FLOS4687
C               JCHOKE = 0, 2, OR 4 WILL ALLOW SONIC CHOKING                        FLOS4688
ISN 0529              IF(JCHOKE(I).NE.0.AND.JCHOKE(I).NE.2.AND.JCHOKE(I).NE.4) GO TO 365FLOS4690
ISN 0531              IF(JCHOKE(I).EQ.4.AND.ICHOKE(I).GT.0) GO TO 365               FLOS4692
C               TEST FOR FLOW EQUATION CHOKING                                      FLOS4696
ISN 0533              WIEST=W+(DP+BF*W*DABS(W))*DT/AI                               IBM 4698
C               CDC 4700
                      WIEST=W+(DP+BF*W* ABS(W))*DT/AI
ISN 0534              WCHOKE = (AJ/SPJ)*DSQRT(C2)                                   IBM 4702
C               CDC 4704
                      WCHOKE = (AJ/SPJ)* SQRT(C2)
ISN 0535              IF( DABS(WIEST).GE.WCHOKE )  GO TO 354                        IBM 4708
C               CDC 4710
                      IF(  ABS(WIEST).GE.WCHOKE )  GO TO 354
ISN 0537        353 CONTINUE                                                        FLOS4712
ISN 0538              KCHOKE(I) = 0                                                 FLOS4714
ISN 0539              GO TO 365                                                     FLOS4716
ISN 0540        354 FTEMP = -DP/(WCHOKE)**2                                         FLOS4718
ISN 0541              ISONIC = .TRUE.                                               FLOS4725
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ISN 0542            KCHOKE(I) = 2                                                    FLOS4726
ISN 0543            GO TO 365                                                        FLOS4736
ISN 0544          360 W = ZERO                                                       FLOS4780
ISN 0545            WP(I) = ZERO                                                     FLOS4790
ISN 0546            ESUBK(I) = ZERO                                                  FLOS4800
ISN 0547            GO TO 250                                                        FLOS4810
ISN 0548          365 CONTINUE                                                       FLOS4820
                C     CALCULATE STAGNATION PROPERTIES                              FLOS4835
ISN 0549            IF(JCHOKE(I).EQ.2) GO TO 370                                     FLOS4837
ISN 0551            IF (.NOT. KRK) GO TO 370                                         FLOS4839
ISN 0553            POK= P(K)                                                        FLOS4841
ISN 0554            HOK = H                                                          FLOS4843
ISN 0555            PSAT(K) = SATP(K)                                                FLOS4845
ISN 0556            XSTAGP = AVEX(K)                                                 FLOS4847
ISN 0557            IF (PHASE(K) .EQ. 1) GO TO 367                                   FLOS4848
ISN 0559            IF (DSQRT(CMACHV(K)).LT.0.3D0) GO TO 370                         IBM 4849
                C     IF ( SQRT(CMACHV(K)).LT.0.3E0) GO TO 370                       CDC 4851
ISN 0561          367 JC = 3                                                         FLOS4853
ISN 0562            CALL STAGP(POK,HOK,PSAT(K),XSTAGP ,P(K),H,SPJ,W,FLOWA(K),      FLOS4855
                   1  SATVF(K),SATVG(K),SATHF(K),SATHG(K),SOUND2(K))               FLOS4857
ISN 0563          370  CONTINUE                                                     FLOS4859
                C     TEST FOR TABLE CHOKED FLOW                                   FLOS4861
                C     CHECK FOR RSR PRESCRIBED CHOKE FLOW. FLAG BY JCHOKE = 3      FLOS4863
ISN 0564            IF (JCHOKE(I).EQ.3) GO TO 600                                    FLOS4867
ISN 0566            IF (JCHOKE(I) .EQ. 4 .OR.  JCHOKE(I) .EQ. 5) GO TO 373           FLOS4868
ISN 0568            IF (JCHOKE(I) .NE. 0 .AND. JCHOKE(I) .NE. 1) GO TO 380           FLOS4869
ISN 0570          373 IF (DT.EQ.ZERO) GO TO 380                                      FLOS4871
                C *** H-S ADDITION                                                   FLOS4873
ISN 0572            IF (IADJUN(I) .LE. 0) GO TO 362                                  FLOS4875
ISN 0574            IF (ZJUN(I) .LT. ZJUN(IADJUN(I))) GO TO 362                      FLOS4877
ISN 0576            PLK = P(K)                                                       FLOS4879
ISN 0577            IF (KRK) PLK = POK                                               FLOS4881
ISN 0579            GO TO 363                                                        FLOS4883
ISN 0580          362 PLK = P(K) + HEAD(I,1)                                         FLOS4885
ISN 0581            IF (KRK)  PLK= POK + HEAD(I,1)                                   FLOS4887
ISN 0583          363 CONTINUE                                                       FLOS4889
ISN 0584            IF(JCHOKE(I).EQ.4.AND.ICHOKE(I).GT.0) GO TO 379                  FLOS4891
ISN 0586            IF(JCHOKE(I).EQ.5) GO TO 366                                     FLOS4893
ISN 0588            IF( ICHOKE(I).GE.10) GO TO 366                                   FLOS4895
ISN 0590            IF( ICHOKE(I).LE.0 )  GO TO 366                                  FLOS4897
ISN 0592            LL = IABS(IPUMP(I))                                              FLOS4899
ISN 0593            IF (KRK) GO TO 364                                               FLOS4901
ISN 0595            IF( PLK.GT.SATP(K).AND.SINK(LL).LT.SATP(K))  PLK = SATP(K)       FLOS4903
ISN 0597            GO TO 379                                                        FLOS4905
ISN 0598          364 CONTINUE                                                       FLOS4907
ISN 0599            IF (PLK.GT.PSAT(K).AND.SINK(LL).LT.PSAT(K)) PLK = PSAT(K)        FLOS4909
ISN 0601            GO TO 379                                                        FLOS4910
ISN 0602          366 CONTINUE                                                       FLOS4911
ISN 0603            IF (KRK) GO TO 369                                               FLOS4913
ISN 0605            IF( H.GE.HSAT .OR. P(K).LE.SATP(K) ) GO TO 379                   FLOS4915
ISN 0607            GO TO 381                                                        FLOS4917
ISN 0608          369 IF (XSTAGP .GT. 0.0) GO TO 379                                 FLOS4919
ISN 0610          381 IF(JCHOKE(I).NE.5) GO TO 386                                   FLOS4921
ISN 0612            ICHOK=7                                                          FLOS4923
ISN 0613            GO TO 382                                                        FLOS4925
ISN 0614          386 IF(ICHOKE(I).LT.10) GO TO 380                                  FLOS4927
                C     SUBCOOLED CONDITIONS. USE MOMENTUM CHOKING UNLESS ICHOKE.GT.10 FLOS4929
                C     THEN USE MINIMUM OF MOMENTUM OR HENRY EXTENDED TABLES          FLOS4931
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ISN 0616            ICHOK=10                                                                FLOS4933
ISN 0617            GO TO 382                                                               FLOS4935
                C   CALL LEAK FOR CHOKE FLOW AND DERIVATIVE                                  FLOS4937
ISN 0618          379 CONTINUE                                                              FLOS4939
ISN 0619            ICHOK = IABS(ICHOKE(I))                                                 FLOS4941
ISN 0620            IF (ICHOK.GE.10) ICHOK=ICHOK-10                                         FLOS4943
                C   TEST FOR HEM CHOKE FLOW MODEL, FLAG BY JCHOKE = 4                       FLOS4945
ISN 0622            IF (JCHOKE(I).EQ.4) ICHOK = 5                                           FLOS4947
                C   TEST FOR FAUSKE-HEM CHOKE FLOW MODEL, FLAG BY JCHOKE = 5               FLOS4949
ISN 0624            IF(JCHOKE(I).EQ.5) GO TO 384                                            FLOS4951
ISN 0626          382 CONTINUE                                                              FLOS4953
ISN 0627            ITPSC = ITP(I)                                                          FLOS4954
ISN 0628            IF (.NOT. KRK) WTH = AI*AJ*LEAK(H  ,PLK,XK,I,DER,ICHOK,ITPSC)           FLOS4955
ISN 0630            IF (       KRK) WTH = AI*AJ*LEAK(HOK,PLK,XK,I,DER,ICHOK,ITPSC)          FLOS4957
ISN 0632            ITP(I) = ITPSC                                                          FLOS4958
ISN 0633            WIEST = W+(DP+BF*W*DABS(W))*DT/AI                                       IBM 4959
                C   WIEST = W+(DP+BF*W* ABS(W))*DT/AI                                       CDC 4960
ISN 0634            DWDPC = DER*AI * AJ                                                     FLOS4961
ISN 0635            IF (DABS(WIEST) .GT. DABS(WTH)) GO TO 410                               IBM 4963
                C   IF ( ABS(WIEST) .GT.  ABS(WTH)) GO TO 410                               CDC 4965
ISN 0637            ISONIC = .FALSE.                                                        FLOS4966
ISN 0638            KCHOKE(I) = 0                                                           FLOS4967
ISN 0639            GO TO 380                                                               FLOS4968
ISN 0640          384 ICHOK=6                                                               FLOS4969
ISN 0641            XK=(HW(K)-SATHF(K))/(SATHG(K)-SATHF(K))                                 FLOS4971
ISN 0642            IF(XK.GE.DLXTFE) GO TO 382                                              FLOS4973
ISN 0644            ICHOK=8                                                                 FLOS4975
ISN 0645            GO TO 382                                                               FLOS4977
                C                                                                           FLOS4979
                C   FSR PRESCRIPTION                                                        FLOS4981
ISN 0646          600 CONTINUE                                                              FLOS4983
ISN 0647            CALL FLOPSR(I,K,L,N,DP,      -BF,H,W,AVEX(K),                       FLOS5100
                   1            BM,AJ,AI,ITPI  ,XOPTON(3),IOPTON(3),DT,IRET)            FLOS5110
ISN 0648            ITP(I) = ITPI                                                           FLOS5112
ISN 0649            IF (IRET .EQ. 1) GO TO 250                                              FLOS5130
                C   USE INERTIAL CALCULATION                                               FLOS5138
ISN 0651          380 CONTINUE                                                              FLOS5139
ISN 0652            IF(ISONIC) BF = DMIN1(BF, BTEMP)                                        IBM 5140
                C   IF(ISONIC) BF = AMIN1(BF, BTEMP)                                       CDC 5141
ISN 0654            TOTK = BF - BM                                                          FLOS5142
ISN 0655            DELA(I) = DP + BF*WP(I)*DABS(WP(I))                                     IBM 5143
                C   DELA(I) = DP + BF*WP(I)* ABS(WP(I))                                    CDC 5144
ISN 0656            DELF(I) = TOTK*WP(I)**2                                                 FLOS5145
ISN 0657            IF( KCHOKE(I).NE.2 )  DELF(I) = DELF(I) + BWSQR(I,2)                    FLOS5146
ISN 0659            IF (BF.LT.ZERO) GO TO 358                                               FLOS5147
ISN 0661            IF (AI.GT.ZERO) GO TO 359                                               FLOS5148
ISN 0663            WRITE(6,901)                                                            FLOS5149
ISN 0664          901 FORMAT(55HONONPOSITIVE INERTIA AND POSITIVE FRICTION.     FAIL IN ,FLOS5150
                   16HFLOSRH,40X,18HEXECUTION DELETED.)                                    FLOS5151
ISN 0665            CALL FAIL                                                               FLOS5152
ISN 0666            GO TO 360                                                               FLOS5153
ISN 0667          359 CONTINUE                                                              FLOS5154
ISN 0668            WIEST = W + (DP + BF*W*DABS(W))*DT/AI                                   IBM 5155
                C   WIEST = W + (DP + BF*W* ABS(W))*DT/AI                                   CDC 5156
ISN 0669            GO TO 361                                                               FLOS5157
ISN 0670          358 D = (AI/DT)**2 - 4.0*BF*(DP + AI*W/DT)                                FLOS5158
ISN 0671            IF( D.LT.ZERO ) GO TO 360                                               FLOS5159
ISN 0673            WIEST = (AI/DT - DSQRT(D))/(TWO*BF)                                     IBM 5160
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                C       WIEST = (AI/DT -  SQRT(D))/(TWO*BF)                                    CDC 5161
ISN 0674          361   IF(WIEST.LE.ZERO) GO TO 360                                            FLOS5162
ISN 0676                WP(I) = WIEST                                                          FLOS5163
ISN 0677                B = -BF                                                                FLOS5164
ISN 0678                DWDPI = DT/(AI + TWO*B*DT*DABS(WP(I)))                                 IBM 5165
                C       DWDPI = DT/(AI + TWO*B*DT* ABS(WP(I)))                                 CDC 5166
ISN 0679                ESUBK(I) = DWDPI                                                       FLOS5167
ISN 0680                GO TO 250                                                              FLOS5168
                C       USE CHOKE CALCULATION                                                  FLOS5169
ISN 0681          410   CONTINUE                                                               FLOS5170
                C       SINCE DW/DT IS INACCURATE FOR CHOKED FLOW AT SMALL DT, LIMIT           FLOS5171
                C       THE MINIMUM SIZE OF DT                                                 FLOS5172
ISN 0682                DTADJ = DT                                                             FLOS5173
                C       SKIP IF STARTIG TIME FOR CHOKING SMOOTHING NOT REACHED                 FLOS5174
ISN 0683                IF (TIMEX .LT. XOPTON(3)) GO TO 411                                    FLOS5175
                C       SKIP WDOT ADJUSTMENT IF JUNCTION AREA IS CHANGING.                     FLOS5176
ISN 0685                IF (AJUNT(I) .EQ. 0.0) GO TO 411                                       FLOS5177
ISN 0687                IF (DABS((AJUNT(I)-AJUN(I))/AJUNT(I)) .GT..001D0) GO TO 411            IBM 5178
                C       IF ( ABS((AJUNT(I)-AJUN(I))/AJUNT(I)) .GT..001E0) GO TO 411            CDC 5179
                C       SKIP WDOT ADJUSTMENT UNLESS UPSTREAM VOLUME IS SUBCOOLED OR ALMOSTFLOS5180
ISN 0689                IF (AVEX(N) .GT. 5.0D-3) GO TO 411                                     IBM 5181
                C       IF (AVEX(N) .GT. 5.0E-3) GO TO 411                                     CDC 5182
                C       SKIP WDOT ADJUSTMENT DURING INITIAL RAPID DEPRESSURIZATION             FLOS5183
ISN 0691                IF (P(N) .GT. SATP(N) + 25.) GO TO 411                                 FLOS5184
ISN 0693                DTADJ = DMAX1(0.001D0, DT)                                             IBM 5185
                C       DTADJ = AMAX1(0.001E0, DT)                                             CDC 5186
ISN 0694          411   DELA(I) = (WTH-WP(I))*AI/DTADJ                                         FLOS5187
ISN 0695                KCHOKE(I) = 1                                                          FLOS5188
ISN 0696                DELF(I) = TOTK1*WTH**2                                                 FLOS5189
ISN 0697                WP(I) = WTH                                                            FLOS5190
ISN 0698                ESUBK(I) = DWDPC                                                       FLOS5191
ISN 0699          250   XWL(I) = WP(I)                                                         FLOS5192
ISN 0700                XWG(I) = 0.0                                                           FLOS5193
ISN 0701                GO TO 270                                                              FLOS5194
ISN 0702          270   CONTINUE                                                               FLOS5195
ISN 0703                CONST = TWO * FPSTU * GRAVTY                                           FLOS5196
ISN 0704                DO 450 I = 1, NVOL                                                     FLOS5197
ISN 0705                TOTMAS = FMASS(I)                                                      FLOS5198
ISN 0706                IF (IPROGM .EQ. 3) TOTMAS = TOTMAS + ARMASS(I)                         FLOS5199
ISN 0708                IF(TOTMAS               .GT.ZERO) U(I)=U(I)+WVBAR(I)**2*FLOWL(I)*      FLOS5200
                      1 V(I)/( TOTMAS                 *FLOWA(I)*CONST)                       FLOS5201
ISN 0710          450   CONTINUE                                                               FLOS5202
                C                                                                            FLOS5203
                C       FORCE SMOOTHED FLOW ON JUNCTIONS WITH IVALVE(I) LT 0                   FLOS5204
ISN 0711                DO 455 K = 1,NJUN                                                      FLOS5205
ISN 0712                IF (IVALVE(K).GE.0) GO TO 455                                          FLOS5206
ISN 0714                WP(K) = SMOOTH (K,IVALVE(K),NJSMOO,MAXSMO,TIMEX)                       FLOS5207
ISN 0715                BOT = RL(K) + RG(K)                                                    FLOS5208
ISN 0716                XWL(K) = (RL(K)/BOT) * (WP(K) + VSLA(K)*RG(K)*AJUNT(K))                FLOS5209
ISN 0717                XWG(K) = (RG(K)/BOT) * (WP(K) - VSLA(K)*RL(K)*AJUNT(K))                FLOS5210
ISN 0718          455   CONTINUE                                                               FLOS5211
                C                                                                            FLOS5212
                C       INTEGRATE MASS,ENERGY,FLOW                                             FLOS5213
ISN 0719                CALL NIFTE (HSPIN, HSPOUT, QSPL, U, FMASS, ARMASS,                     FLOS5214
                      * WP, INERTA, DT, OMEGA, FA(IAA), NJUN,                                  FLOS5215
                      2         IPROGM, ZL(NCVOL),AJUNT,TIMEX)                               FLOS5216
                C       IF (FILID(I) .EQ. 0)                                                   CDC 5217
                C     * CALL READEC (FA(INDEX(I)),LFA(INDEX(30)),FILSIZ(I))                    CDC 5218
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ISN 0720            CALL POSTW(NJUN,NVOL,0,MAXJUN,WVBAR,SPVJ,SPVZ,WP,IJ,IW,JCALC1,     FLOS5219
                   1  IPROGM)                                                          FLOS5220
ISN 0721            DO 460 I = 1,NVOL                                                  FLOS5221
ISN 0722            TOTMAS = FMASS(I)                                                  FLOS5222
ISN 0723            IF (IPROGM .EQ. 3) TOTMAS = TOTMAS + ARMASS(I)                     FLOS5223
ISN 0725            IF(TOTMAS                .GT.ZERO) U(I)=U(I)-WVBAR(I)**2*FLOWL(I)*  FLOS5224
                   1  V(I)/( TOTMAS                    *FLOWA(I)*CONST)               FLOS5225
                                                                                      FLOS5226
ISN 0727          460  CONTINUE                                                       FLOS5227
                 CTIMER003   FINAL BLOCK                                              FLOS5228
ISN 0728            NZSUBC = NZSUBS                                                    FLOS5229
ISN 0729            CALL TIMEL(ZDELTZ)                                                 FLOS5231
ISN 0730            ZTIMEA(NZSUBN) = ZTIMEA(NZSUBN) + ZDELTZ                           FLOS5233
ISN 0731            RETURN                                                             FLOS9000
ISN 0732            END
```

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                ERROR NO   LEVEL        ERROR MESSAGE
     ISN    0470   IEK206I       04       THE STATEMENT HAS A NON-SUBSCRIPTED ARRAY ITEM.
*OPTIONS IN EFFECT*       NAME=  MAIN,OPT=02,LINECNT=60,SIZE=0000K,
*OPTIONS IN EFFECT*       SOURCE,EBCDIC,NOLIST,NODECK,LOAD,NOMAP,NOEDIT,ID,NOXREF
*STATISTICS*      SOURCE STATEMENTS =      731 ,PROGRAM SIZE =    13496
*STATISTICS*    1 DIAGNOSTICS GENERATED, HIGHEST SEVERITY CODE IS  4
****** END OF COMPILATION ******                                  527K BYTES OF CORE NOT USED
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          COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=60,SIZE=0000K,
                             SOURCE,EBCDIC,NOLIST,NODECK,LOAD,NOMAP,NOEDIT,ID,NOXREF
ISN 0002                    SUBROUTINE INCORE (NCOR, NSLB ,MAXCOR,MAXNOD,IEMHT,IEMPS,IEMEC,   INC00010
                  C     1                   IGIN, IVSL, IVSR, DATA, FA, IA)                   INC00020
                  C
                        1         IGIN, IVSL, IVSR, DATA, FA, IA, LENGTH, IN2)                BDHT 174
ISN 0003                    IMPLICIT REAL*8 (A-H,O-Z)                                         IBM 0030
                  C          LEVEL 2,IVSL,IVSR                                                CDC 0032
ISN 0004                    REAL*8 DATA(1),FA(1)                                              IBM 0035
                  C         REAL   DATA(1),FA(1)                                              CDC 0036
ISN 0005                    INTEGER IA(2,1)                                                   IBM 0037
                  C         INTEGER IA(  1)                                                   CDC 0038
                  C                                                                           INC00040
                  C         NCOR   = NUMBER OF CORE SECTIONS                                  INC00060
                  C         NSLB   = NUMBER OF HEAT SLABS                                     INC00080
                  C         MAXCOR = MAXIMUM NUMBER OF CORE SECTIONS                          INC00090
                  C         MAXNOD = MAXIMUM NUMBER OF HEAT SLAB NODES                        INC00100
                  C         IGIN   = HEAT CALCULATION INDEX FOR VOLUME                        INC00120
                  C         IVSL   = INDEX NO OF VOLUME AT LEFT  SURFACE OF SLAB              INC00130
                  C         IVSR   = INDEX NO OF VOLUME AT RIGHT SURFACE OF SLAB              INC00140
                  C                                                                           INC00170
                  C
ISN 0006                    DIMENSION LENGTH (1)                                              BDHT 175
ISN 0007                    COMMON /ECSLAB/ PHSOLD(50),TSOLD(50),TAOLD(50),                   BDHT 176
                        1                   PHSNEW(50),TSNEW(50),TANEW(50),IBCS(50)           BDHT 177
                  C  PHSOLD = SURFACE HEAT FLUX, OLD VALUE                                    BDHT 178
                  C  PHSNEW = SURFACE HEAT FLUX, NEW VALUE                                    BDHT 179
                  C  IBCS   = INDEX OF THE BOUNDARY CONDITION SLAB                            BDHT 180
                  C                                                                           BDHT 181
ISN 0008                    COMMON / CORMWR / CLTI(50), CTR(50), CTRL(50), RR0(50), MWREAC    INC00200
ISN 0009                     LOGICAL MWREAC                                                   INC00212
                  C                                                                           INC00220
                  C         CLTI   = INITIAL CLAD THICKNESS, FT                               INC00232
                  C         CTR    = DEPTH REACTION HAS PENERATED CLADDING AT END OF ANY TIME  INC00234
                  C                  STEP, FT                                                 INC00236
                  C         CTRL =   DEPTH REACTION HAS PENERATED CLADDING AT START OF ANY TIMEINC00238
                  C                  STEP, FT                                                 INC00240
                  C         RR0    = ORIGINAL FUEL PIN RADIUS, FT                            INC00272
                  C         MWREAC = .TRUE. INDICATES METAL-WATER REACTION MODEL DESIRED      INC00292
                  C                                                                           INC00300
ISN 0010                    COMMON / CORPOW / DPOW, FQ(50), LAMBDA, MQ(50), PPOW, PROMPT,     INC00310
                       1 QDMOD(50), QFRAC(50), QN(21), QPMOD(50), SF(50), TAU, TM(50),       INC00315
                       2 TS(50), VW(50), ISLB(50), IVOL(50)                                 INC00320
ISN 0011                    REAL*8 LAMBDA, MQ                                                 IBM 0325
                  C         REAL   LAMBDA, MQ                                                 CDC 0326
                  C                                                                           INC00330
                  C         FQ     = NUCLEAR POWER GENERATION IN CORE HEAT SLAB, MW            INC00350
                  C         QFRAC  = FRACTION OF POWER IN CORE SECTION                        INC00355
                  C         QN     = HEAT GENERATION RATE, BTU/FT**3-SEC                      INC00360
                  C         TM     = AVERAGE TEMPERATURE OF CORE HEAT SLAB                    INC00370
                  C         TS     = SURFACE TEMPERATURE OF CORE HEAT SLAB                    INC00380
                  C         VW     = WATER SPECIFIC VOLUME                                    INC00390
                  C         ISLB   = HEAT SLAB NUMBER                                         INC00400
                  C         IVOL   = VOLUME NUMBER                                            INC00410
                  C         MQ     = MODERATOR HEATING RATE   (BTU/SEC)                       INC00411
                  C          QPMOD  = PROMPT POWER IN CORE SECTION MODERATOR, INPUT IS THE     INC00412
                  C                   FRACTION OF QFRAC, THEN QPMOD = QPMOD*POWER IN INCORE  INC00413
                  C          QDMOD  =  DELAY POWER IN CORE SECTION MODERATOR, INPUT IS THE     INC00414
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C                 FRACTION OF QFRAC, THEN QDMOD = QDMOD*POWER IN INCORE   INC00415
C      PREMPT = FRACTION OF TOTAL POWER RELEASED INSTANTLY                INC00416
C      PPOW   = PROMPT POWER LEVEL                                        INC00417
C      DPOW   = DELAY POWER LEVEL                                         INC00418
C                                                                         INC00420
ISN 0012        COMMON / CSLBQC / AZ(100), AZI(100), BZ(100), CZ(100),    INC00430
     1    EZ(100), EZI(100), FZ(100), HZ(100), WED(100), NODT(4,50)       INC00440
C                                                                         INC00450
C      AZ - HZ = COEFFICIENTS FOR CRITICAL HEAT FLUX CORRELATIONS         INC00460
C      WED     = WETTED EQUIVALENT DIAMETER, IN                           INC00470
C      NODT    = MAJOR EDIT CONTROL FOR CORE NODE TEMPERATURES            INC00480
C                                                                         INC00490
C EM                                                                      INC00492
ISN 0013        COMMON /R4EM/ PIN(50),EF(50),EC(50),HCOND(50),TJUMP(50),FRACT(50),INC00494
     1 AFR(7,50), BLKJUN(100), RRDIN(50), CTRIN(50),                      INC00496
     2PITCH,      AMASS0,VINPUT,TAB1(50),TAB2(50),TAB3(50),TAB4(50),      INC00498
     3ISWJUN(100),IRUPFG(50), IRGPIN, IRGGAP, IRGSW, IACCV(4), ITRIP(4),INC00500
     4IDNCMV,IREMV(10),ITP(100),ISLBAJ(50),ISWTAB(50),NTAB1,NTAB2,NTAB3,INC00502
     5NTAB4,IMSPR                                                         INC00504
C      LEVEL 2,PIN                                                        CDC 0505
C                                                                         INC00506
C        PIN     = INTERNAL PRESSURE OF HEAT SLAB OR PIN (LBS/IN**2)      INC00508
C        EF      = EMISSIVITY OF FUEL (DIMENSIONLESS)                     INC00510
C        EC      = EMISSIVITY OF CLAD (DIMENSIONLESS)                     INC00512
C        HCOND   = CONDUCTANCE ACROSS GAP IN PIN WHEN NO GAP              INC00514
C        TJUMP   = TEMPERATURE JUMP (FT)                                  INC00516
C        FRACT   = FRACTION OF THEORETICAL DENSITY FOR FUEL               INC00518
C        AFR     = MOLE FRACTIONS OF GASSES IN GAP                        INC00520
C        BLKJUN  = PERCENT BLOCKAGE OF JUNCTION                           INC00522
C        RRDIN   = RADIUS TO INNER SIDE OF SWOLLEN CLAD (FT)              INC00524
C        CTRIN     = INTERNAL DEPTH OF M-W REACTION (FT)                  INC00526
C        PITCH   = PIN PITCH IN LATTICE (FT)                              INC00528
C        TDELT   = TEMPERATURE INCREMENT OF SWELLING ZONE (F)             INC00530
C        AMASS0  = INITIAL TOTAL MASS IN ACCUMULATOR VOLUMES (LBS)        INC00532
C        VINPUT  = VELOCITY ABOVE WHICH END-OF-BYPASS IN VOL    (FT/SEC)  INC00534
C        TAB1    = CLAD RUPTURE TABLE, MULTIPLE PINS                      INC00536
C        TAB2    = FLOW BLOCKAGE TABLE, MULTIPLE PINS                     INC00538
C        TAB3    = CLAD RUPTURE TABLE, SINGLE PINS                        INC00540
C        TAB4    = FLOW BLOCKAGE TABLE, SINGLE PINS                       INC00542
C        ISWJUN  = FLAG TO INDICATE JUNCTIONS AFFECTED BY SWOLLEN SLAB    INC00544
C        IRUPFG  = FLAG INDICATING PIN CLAD HAS RUPTURED                  INC00546
C        IRGPIN  = NUMBER OF EXTERNAL REGION OF FUEL PIN                  INC00548
C        IRGGAP  = REGION IN HEAT SLAB WHERE GAP IS PRESENT               INC00550
C        IRGSW   = REGION IN HEAT SLAB WHERE CLAD SWELLING TAKES PLACE    INC00552
C        IACCV   = ACCUMULATOR VOLUMES MONITORED AFTER END-OF-BYPASS      INC00554
C        ITRIP   = ACCUMULATOR JUNCTION FOR START OF ECC BYPASS CHECKING  INC00556
C        IDNCMV  = VOLUME MONITORED FOR END-OF-BYPASS                     INC00558
C        IREMV   = VOLUMES ADJUSTED FOR INJECTED ACCUMULATOR FLUID        INC00560
C        ITP     = FLAG INDICATING TYPE OF CHOKING                        INC00562
C        ISLBAJ  = FLAG DEFINING CALCULATION AFTER SWELLING               INC00564
C        ISWTAB  = INDICATES TABLE TO USE TO DETERMINE PERCENT BLOCKAGE   INC00566
C        NTAB1   = NUMBER OF POINTS IN MULTIPLE PIN RUPTURE TABLE         INC00568
C        NTAB2   = NUMBER OF POINTS IN MULTIPLE PIN FLOW BLOCKAGE TABLE   INC00570
C        NTAB3   = NUMBER OF POINTS IN SINGLE PIN RUPTURE TABLE           INC00572
C        NTAB4   = NUMBER OF POINTS IN SINGLE PIN FLOW BLOCKAGE TABLE     INC00574
C ..                                                                      INC00576
ISN 0014        COMMON / RAFRAP / FSWELL(50), EPSMXR(50), GSMOL(50), PINF(50),INC00578
     1    RPIN(50), RSHD(50), VPLENI(50)                                  INC00580
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                     2 ,  FPEL(50), AS(50), VSP(50), PMOL(50), QPL(50), TPL(5,2,50),     INC00582
                     3    GAMFPL(50)                                                     INC00584
                C     LEVEL 2, FSWELL                                                    CDC 0586
                C                                                                        INC00588
                C     FSWELL = PRIOR FUEL SWELLING (FT)                                  INC00590
                C     EPSMXR = PERMANENT HOOP STRAIN OF CLADDING                         INC00592
                C     GSMOL  = TOTAL MOLES OF GAS IN PLENUM AND GAS GAP                  INC00594
                C     PINF   = INTERFACIAL PRESSURE OF FUEL AGAINST CLADDING             INC00596
                C     RPIN   = OUTSIDE FUEL PIN RADIUS                                   INC00598
                C     RSHD   = RADIUS OF SHOULDER FOR AXIAL EXPANSION OF FUEL            INC00600
                C     VPLENI = INITIAL FUEL ROD PLENUM VOLUME                            INC00602
                C     FPEL       = INSULATION FACTOR OF INSULATOR PELLET                 INC00604
                C        NOMINAL VALUES 1.0 IF NO INSULATION, 200. FOR INSULATOR         INC00606
                C     AS         = SPRING SURFACE AREA (FT**2)                           INC00608
                C     VSP        = SPRING VOLUME (FT**3)                                 INC00610
                C     PMOL   = MOLES OF GAS IN FUEL ROD PLENUM                           INC00612
                C     QPL    = HEAT FLUX FROM ROD PLENUM                                 INC00614
                C     TPL = FUEL ROD PLENUM TEMPERATURE ARRAY                            INC00616
                C     GAMFPL = GAMMA HEAT FACTOR FOR ROD PLENUM SPRING AND CLAD          INC00618
                C CM                                                                     INC00620
                C                                                                        INC00622
ISN 0015              COMMON / STATUS / OMEGA, PERIOD, POWER, TIMEX,                     INC00624
                     1                  PQUITL, PQUITH, TQUITL, TQUITH, NOGO            INC00626
ISN 0016              LOGICAL NOGO                                                       INC00628
                C     PQUITL = LOWER LIMIT ON PRESSURE IN ANY VOLUME                     INC00630
                C     PQUITH = UPPER LIMIT ON PRESSURE IN ANY VOLUME                     INC00632
                C     TQUITL = LOWER LIMIT ON TEMPERATURE IN ANY VOLUME                  INC00634
                C     TQUITH = UPPER LIMIT ON TEMPERATURE IN ANY VOLUME                  INC00636
                C                                                                        INC00638
ISN 0017              DIMENSION  IQIN(1), IVSL(1), IVSR(1)                               INC00640
                C     DIMENSION L3(13),L3C(11)                                           INC00642
                C                                                                        INC00644
                C REDIMENSION L3 FOR THE NEW INPUT ON CARD 160010                        BDHT 182
ISN 0018              DIMENSION L3(15),L3C(11)                                           BDHT 183
                C                                                                        INC00644
ISN 0019              DIMENSION SL(50), SN(50), SDC(50), SDW(50)                         INC00646
                C     USE TPL ARRAY HERE FOR TEMPORARY STORAGE                           INC00648
ISN 0020              EQUIVALENCE (TPL(1),SL(1)), (TPL(51),SN(1)), (TPL(101),SDC(1)),    INC00650
                     1 (TPL(151),SDW(1))                                                 INC00652
                C     LEVEL 2,SL,SN,SDC,SDW                                              CDC 0654
ISN 0021              LOGICAL PLENUM                                                     INC00656
ISN 0022              DATA ZERO, PI / 0.0, 3.141592654 D0 /                              IBM 0658
                C     DATA ZERO, PI / 0.0, 3.141592654 /                                 CDC 0660
ISN 0023              DATA HNO /  4H NO /, BLANK /4H    /                                INC00662
                C     DATA L3 /160010,0,6,9,0,1,4*0,2,1,1/                               INC00664
                C                                                                        INC00666
                C CHANGE MAXIMUM NUMBER OF INPUT ALLOWABLE ON CARD 150010                BDHT 184
ISN 0024              DATA L3 /160010,0,6,9,0,1,4*0,4*1,0/                               BDHT 185
                C                                                                        INC00666
                C CM                                                                     INC00700
ISN 0025              DATA L3C/160015,0,14,24,0,1,2*0,2,1,1/                             INC00720
                C CM                                                                     INC00730
ISN 0026              IF (NCOR.LE.0) GO TO 17)                                           INC00930
                C                                                                        INC00940
                C     READ CORE DATA                                                     INC00950
                C                                                                        INC00960
ISN 0028               L3(1) = 160000                                                    INC00975
ISN 0029              L3C(1)=150305                                                      INC00978
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ISN 0030            WRITE (6,600) NCOR                                          INC00980
ISN 0031            QFTOT = ZERO                                                INC00990
ISN 0032            MWPFAC = .FALSE.                                            INC00995
ISN 0033            PLENUM = .FALSE.                                            INC00998
ISN 0034            DO 160 J=1,NCOR                                             INC01000
ISN 0035            IF (J.GT.MAXCOR) GO TO 105                                  INC01010
ISN 0037            DO 70 II=1,24                                               INC01012
ISN 0038         70 FA(II) = ZERO                                               INC01014
ISN 0039            L3(1) = L3(1) + 10                                          INC01018
ISN 0040            L3(2) = L3(1)+1                                             INC01020
ISN 0041             L3(6) = 1                                                  INC01021
ISN 0042             CALL INP2 (DATA,FA,L3,IA)                                  INC01022
ISN 0043             IF (L3(6) .LT. 0) GO TO 107                                INC01023
ISN 0045             ISLB(J) = IA(2,1)                                          IBM 1024
C                    ISLB(J) = IA(  1)                                          CDC 1025
ISN 0046             NODT(1,J) = IA(2,2)                                        IBM 1026
C                    NODT(1,J) = IA(  2)                                        CDC 1027
ISN 0047             NODT(2,J) = IA(2,3)                                        IBM 1028
C                    NODT(2,J) = IA(  3)                                        CDC 1029
ISN 0048             NODT(3,J) = IA(2,4)                                        IBM 1030
C                    NODT(3,J) = IA(  4)                                        CDC 1031
ISN 0049             CLTI(J) = FA(5)                                            INC01032
ISN 0050             QFRAC(J) = FA(6)                                           INC01033
ISN 0051            IF(L3(5).GE.7) QPMOD(J) = FA(7)                             INC01034
ISN 0053            IF(L3(6).GE.8) QDMOD(J) = FA(8)                             INC01035
                C
                C GET BOUNDARY CONDITION SLAB DATA IF IT IS PRESENT             BDHT 186
ISN 0055            IF(L3(6) .GE. 9) IBCS(J) = IA(2,9)                          BDHT 187
ISN 0057            WRITE (6,610) J, ISLB(J), (NODT(I,J),I=1,3),                INC01040
                   *  CLTI(J), QFRAC(J), QPMOD(J), QDMOD(J)                     INC01050
                C
                C ADD THE BOUNDARY CONDITION FLAG TO THE PRINTOUT               BDHT 188
                     8  ,IBCS(J)                                               BDHT 189
ISN 0058             QPMOD(J) = QPMOD(J)*POWER                                  INC01052
ISN 0059            QDMOD(J) = QDMOD(J) * POWER                                 INC01054
                C                                                               INC01060
                C      CHECK INPUT AND SET UP INDEX ARRAYS                      INC01070
                C                                                               INC01080
ISN 0060            IF (ISLB(J).LE.0 .OR. ISLB(J).GT. NSLB ) GO TO 90           INC01090
ISN 0062            DO 80 I=1,3                                                 INC01100
ISN 0063            IF (NODT(I,J).GT.MAXNOD) GO TO 90                           INC01110
ISN 0065            IF (NODT(I,J).GT.0) NODT(4,J) = 1                           INC01120
ISN 0067         80 CONTINUE                                                    INC01130
ISN 0068            IF (CLTI(J)  .LT. ZERO) GO TO 90                            INC01150
ISN 0070            IF (QFRAC(J) .LT. ZERO) GO TO 90                            INC01170
                C
                C CHAECK FOR BAD BOUNDARY CONDTION FLAG                         BDHT 190
ISN 0072            IF((IBCS(J) .GT.0) .OR. (IABS(IBCS(J)) .GT. MAXCOR)) GO TO 90  BDHT 191
ISN 0074            QFTOT = QFTOT + QFRAC(J)                                    INC01180
ISN 0075            I = ISLB(J)                                                 INC01190
ISN 0076            IF (IVSL(I).NE.0) GO TO 90                                  INC01200
ISN 0078            IF (IVSR(I).GT.0) GO TO 100                                 INC01210
                C                                                               INC01220
ISN 0080         90 WRITE (6,710) J                                             INC01225
ISN 0081        107 CALL FAIL                                                   INC01245
ISN 0082            GO TO 150                                                   INC01250
                C                                                               INC01260
ISN 0083        100 K = IVSR(I)                                                 INC01270
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ISN 0084            IVOL(J) = K                                                          INC01280
ISN 0085            IQIN(K) = J                                                          INC01300
ISN 0086            IF (CLTI(J) .GT. 0) MWREAC = .TRUE.                                  INC01305
                C EM                                                                     INC01310
ISN 0088            IF (IEMPS .EQ. 0) GO TO 160                                          INC01312
ISN 0090            L3C(1) = L3C(1) + 10                                                 INC01318
ISN 0091            L3C(2) = L3C(1) + 4                                                  INC01319
ISN 0092            L3C(6)=1                                                             INC01320
ISN 0093            CALL INP2 (DATA,FA,L3C,IA)                                           INC01322
ISN 0094            IF (L3C(6)) 107,160,165                                              INC01325
ISN 0095          165 CONTINUE                                                           INC01326
ISN 0096            ISLHAJ(J)=IA(2,1)                                                    IBM 1328
                C   ISLHAJ(J)=IA(  1)                                                    CDC 1329
ISN 0097            ISWTAB(J)=IA(2,2)                                                    IBM 1330
                C   ISWTAB(J)=IA(  2)                                                    CDC 1331
ISN 0098            GSMOL(J) = FA(3)                                                     INC01332
ISN 0099            EF(J) = FA(4)                                                        INC01335
ISN 0100            ZC(J) = FA(5)                                                        INC01338
ISN 0101            FRACT(J)=FA(6)                                                       INC01340
ISN 0102            DO 502 II=1,7                                                        INC01342
ISN 0103          502 AFP(II,J)=FA(II+6)                                                 INC01345
ISN 0104            HCOND(J)=FA(14)                                                      INC01348
ISN 0105            VPLEN(J)=FA(15)                                                      INC01351
ISN 0106            RSHO(J)=FA(16)                                                       INC01352
ISN 0107            EPSMXF(J)=FA(17)                                                     INC01353
ISN 0108            FSWELL(J) = FA(18)                                                   INC01354
                C                                                                        INC01356
                C         DATA FOR FUEL ROD PLENUM MODEL                                 INC01358
ISN 0109            FPEL(J)=FA(19)                                                       INC01360
ISN 0110            SL(J) = FA(20)                                                       INC01362
ISN 0111            SN(J) = FA(21)                                                       INC01364
ISN 0112            SDC(J)= FA(22)                                                       INC01366
ISN 0113            SDW(J)= FA(23)                                                       INC01368
ISN 0114            GAMFPL(J) = FA(24)                                                   INC01370
ISN 0115            IF (L3C(6).LT.L3C(4).OR.FPEL(J).LE.0.) GO TO 160                     INC01372
                C     SPRING WIRE LENGTH, SURFACE AREA, VOLUME                           INC01374
ISN 0117            SW = DSQRT( (PI*SN(J)*(SDC(J)-SDW(J)))**2 + SL(J)*SL(J) )            IBM 1376
                C   SW =  SQRT( (PI*SN(J)*(SDC(J)-SDW(J)))**2 + SL(J)*SL(J) )          CDC 1378
ISN 0118            AS(J) = PI * SDW(J) * SW                                             INC01380
ISN 0119            VSP(J) = AS(J) * SDW(J) / 4.0                                        INC01382
ISN 0120            IF(AS(J) .GT.0.) PLENUM = .TRUE.                                     INC01384
                C EM                                                                     INC01400
ISN 0122          160 CONTINUE                                                           INC01450
ISN 0123            DUM = HNC                                                            INC01452
ISN 0124            IF (MWREAC) DUM = BLANK                                              INC01453
ISN 0126            WRITE (6,770) DUM                                                    INC01454
                C                                                                        INC01460
ISN 0127            WRITE(6,780) QFTOT                                                   INC01480
                C EM                                                                     INC01481
ISN 0128            IF (IEMPS .EQ. 0) GO TO 170                                          INC01482
ISN 0130            IF (NCOR.GT.10 .AND. NCOR.LE.18) WRITE (6,740)                       INC01483
ISN 0132          740 FORMAT (1H1)                                                       INC01484
ISN 0133            WRITE (6,755)                                                        INC01485
ISN 0134          755 FORMAT(/78HOSLAB GAS MOLES       FUEL         CLAD       FRACTION    INC01486
                   1   MOLE FRACTIONS IN GAP,35X,17H          CONTACT/                  INC01487
                   2         133H NUM              EMISSIVITY  EMISSIVITY  THEO. DEN. HEINC01488
                   3LIUM     ARGON     KRYPTON    XENON     HYDROGEN  NITROGEN  STEAM    INC01489
                   4 CONDUCTANCE /1H0)                                                   INC01490
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ISN 0135            DO 765 J=1,NCOR                                                    INC01491
ISN 0136          765 WRITE (6,750) J,GSMOL(J),EF(J),EC(J),FRACT(J),(AFR(K,J),K=1,7),  INC01492
                     1 HCOND(J)                                                        INC01493
ISN 0137          750 FORMAT (I3, 1P4E12.4, 8E10.2)                                  INC01494
ISN 0138            WRITE (6,785)                                                    INC01495
ISN 0139          785 FORMAT(/89H0SLAB      SWELL      SWELL          GAS       TEMPERATURE  INC01496
                     1   SHOULDER       RADIAL        FUEL/                         INC01497
                     2                9X,83HADJ OPT   TABLE OPT      VOLUME       CONTROL   INC01498
                     3   RADIUS         STRAIN       SWELL(FT)/)                    INC01499
ISN 0140            DO 775 J=1,NCOR                                                  INC01500
ISN 0141          775 WRITE(6,780) J,ISLBAJ(J),ISWTAB(J),VPLENI(J),FPEL(J),RSHD(J),  INC01501
                     1 EPSMXR(J),FSWELL(J)                                           INC01502
ISN 0142          780 FORMAT (I3,2I10,5X,5E13.5)                                     INC01503
ISN 0143            IF(.NOT.PLENUM) GO TO 170                                        INC01504
ISN 0145            WRITE(6,800)                                                     INC01505
ISN 0146          800 FORMAT(/106H0SLAB      PLENUM        N-SPRING      N-SPRING      SPRINC01506
                     1G        SPRING        SPRING        SPRING        GAMMA/       INC01507
                     2       107H NUM     INSULATION      LENGTH        TURNS      COIL DIAINC01508
                     3M.    WIRE DIAM.      SURFACE       VOLUME        FACTOR/)      INC01509
ISN 0147            DO 810 J=1,NCOR                                                  INC01510
ISN 0148            IF(AS(J).LE.0.) GO TO 810                                        INC01511
ISN 0150            WRITE(6,820)J,FPEL(J),SL(J),SN(J),SDC(J),SDW(J),AS(J),VSP(J),    INC01512
                     1 GAMFPL(J)                                                     INC01513
ISN 0151            IF(FPEL(J).GE.1.0) GO TO 810                                     INC01514
ISN 0153            WRITE(6,805)                                                     INC01515
ISN 0154          805 FORMAT(74H0FPEL LESS THAN 1.0 IS INVALID FOR PLENUM AND ABOVE DATAINC01516
                     1 WILL NOT BE USED.)                                            INC01517
ISN 0155          810 CONTINUE                                                       INC01518
ISN 0156          820 FORMAT(I4, 1P8E13.5)                                           INC01519
                  C EM                                                               INC01520
                  C                                                                  INC01521
ISN 0157          170 CONTINUE                                                       INC01522
                  C                                                                  
ISN 0158            I=0                                                              BDHT 192
ISN 0159            DO 175 J=1,NCOR                                                  BDHT 193
ISN 0160            IF(IBCS(J) .NE. 0) I=1                                           BDHT 194
ISN 0162           175  CONTINUE                                                     BDHT 195
ISN 0163            IF((I .EQ. 1) .AND. (IN2 .LE. 0)) CALL INRCD1 (00,0,LENGTH)      BDHT 196
ISN 0165            RETURN                                                           INC01523
ISN 0166          105  CALL FAIL                                                     INC01524
ISN 0167             RETURN                                                          INC01525
                  C                                                                  INC01526
ISN 0168          600 FORMAT(10H1DATA FOR I3,15H CORE SECTIONS. /                    INC01610
                     *       1H0,50HCORE SLAB  PRINT T    INITIAL CLAD   SECTION POWER  INC01620
                  C  *          30H   PROMPT MOD      DELAY MOD  /                   INC01630
                  C                                                                  
                  C FIX FORMAT AS NEEDED FOR ADITIONAL PRINTOUT                      BDHT 197
                     *   50H   PROMPT MOD      DELAY MOD      BOUNDARY COND    /     BDHT 198
                     *       1H ,50HSECT NUM   AT NODES   THICKNESS      FRACTION    INC01640
                  C  *          30H   FRACTION         FRACTION    )                  INC01650
                  C610  FORMAT (5I4, 4E15.6)                                         INC01660
                  C                                                                  
                  C FIX FORMAT AS NEEDED FOR ADITIONAL PRINTOUT                      BDHT 199
                     *   50H   FRACTION         FRACTION          FLAG        )     BDHT 200
ISN 0169           610  FORMAT (5I4,4E15.6,5X,I4)                                   BDHT 201
ISN 0170          710 FORMAT (23H0 DATA FOR CORE SECTION I3,14H OUT OF RANGE.//)    INC01670
ISN 0171          760 FORMAT (25H0 SUM OF POWER FRACTIONS = F10.//)                 INC01710
ISN 0172          770 FORMAT(1H0,44,40H METAL WATER REACTION WILL BE CALCULATED   / ) INC01713
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                C                                                                    INC01720
   ISN 0173             END                                                          INC01730
*OPTIONS IN EFFECT*       NAME=  MAIN,OPT=02,LINECNT=60,SIZE=0000K,
*OPTIONS IN EFFECT*       SOURCE,EBCDIC,NOLIST,NODECK,LOAD,NOMAP,NOEDIT,ID,NOXREF
*STATISTICS*     SOURCE STATEMENTS =     172 ,PROGRAM SIZE =     4596
*STATISTICS*  NO  DIAGNOSTICS GENERATED
****** END OF COMPILATION ******                          639K BYTES OF CORE NOT USED
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          COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=60,SIZE=0000K,
                             SOURCE,EBCDIC,NOLIST,NODECK,LOAD,NOMAP,NOEDIT,ID,NOXREF
 ISN 0002            SUBROUTINE INFILL (NFILLS, DATA, ITFILL, MAXTRP, IDTRP)                  INFI0010
 ISN 0003            IMPLICIT  REAL*8 (A-H, O-Z)                                              IBM 0030
 ISN 0004            REAL*8 DATA(1)                                                           IBM 0040
               C     REAL   DATA(1)                                                           CDC 0041
 ISN 0005            DIMENSION IDTRP(1)                                                       INFI0044
               C                                                                              INFI0046
               C     NFILLS = NUMBER OF DIFFERENT FILL SYSTEMS                                INFI0048
               C     ITFILL = TRIP NUMBER CONTROLLING FILL                                    INFI0050
               C     MAXTRP = MAXIMUM TRIP TYPE                                               INFI0052
               C     IDTRP  = INDEX FOR TRIP TYPE                                             INFI0054
               C                                                                              INFI0056
               C                                                                              INFI0058
 ISN 0006             COMMON /CONTRL/ FILID(30), INDEX(30), FILSIZ(30)                        INFI0060
 ISN 0007             INTEGER FILSIZ                                                          INFI0062
               C      CONTRL HOLDS INFORMATION OF DYNAMIC ARRAYS.                             INFI0064
               C      FILID = FTB NUMBER OF ARRAY, ZERO MEANS ARRAY NOT BEING USED.           INFI0066
               C      NEGATIVE VALUE MEANS ARRAY NEED NOT BE SAVED FOR RESTART.               INFI0068
               C      INDEX = POSITION OF FIRST WORD OF ARRAY.                                INFI0070
               C      FILSIZ = LENGTH OF ARRAY, POS. IF IN /FAST/, NEG. IF IN /FTBLCM/.       INFI0072
               C      CONTRL(I) IMPLIES FILID(I), INDEX(I), AND FILSIZ(I).                    INFI0074
               C      CONTR(1) = INPUT DATA IN INPUT PHASE AND SCRATCH IN TRAN PHASE.         INFI0076
               C      CONTR(2) = ICE CONDENSER ARRAYS                                         INFI0078
               C      CONTR(3) = FILL DATA                                                    INFI0080
               C      CONTR(4) = WATER PROPERTY DATA                                          INFI0082
               C                                                                              INFI0084
               C      COMMON BLOCK CONTAINING FAST MEMORY ARRAY FOR DYNAMIC STORAGE.          INFI0086
 ISN 0008             COMMON /FAST/ FA(1)                                                     INFI0088
 ISN 0009             INTEGER IA(2,1)                                                         IBM 0090
               C      INTEGER IA(1)                                                           CDC 0092
 ISN 0010             EQUIVALENCE (FA(1),IA(1,1))                                             IBM 0094
               C      EQUIVALENCE (FA(1),IA(1))                                               CDC 0096
               C      COMMON BLOCK CONTAINING LCM MEMORY ARRAY FOR DYNAMIC STORAGE.           INFI0098
               C      FOR COMPUTERS WITHOUT LCM, THIS ARRAY IS EQUIVALENCED TO FAST           INFI0100
               C      ARRAY.                                                                  INFI0102
 ISN 0011             REAL*8 LFA(1)                                                           IBM 0104
               C      COMMON /FTBLCM/ LFA(1)                                                  CDC 0106
 ISN 0012             INTEGER LIA(2,1)                                                        IBM 0108
               C      INTEGER LIA(1)                                                          CDC 0110
               C      LEVEL 2, LFA,LIA                                                        CDC 0112
 ISN 0013             EQUIVALENCE (LFA(1),LIA(1,1),FA(1))                                     IBM 0114
               C      EQUIVALENCE (LFA(1),LIA(1))                                             CDC 0116
               C                                                                              INFI0160
               C     DATA STORAGE IF FILL DATA SET                                            INFI0170
               C     FA(FILIDX  ) = NO. OF FILL CURVES                                        INFI0180
               C     FA(FILIDX+1) = ADDRESS OF DATA FOR CURVE 1                               INFI0190
               C     ----                                                                     INFI0200
               C     FA(FILIDX+N) = ADDRESS OF DATA FOR CURVE N                               INFI0210
               C     DATA FOR CURVE J                                                         INFI0220
               C     ( 1) = TRIP NUMBER                                                       INFI0230
               C     ( 2) = FILL TYPE                                                         INFI0240
               C     ( 3) = NO. OF DATA POINTS                                                INFI0250
               C     ( 4- 2*NP+3)  DATA                                                       INFI0260
               C                                                                              INFI0380
 ISN 0014            DIMENSION  PROP(23),  SIUNIT(17)                                         INFI0390
               C                                                                              INFI0400
               C     PROP   = ARRAY IN WHICH STATE PROPERTIES ARE PASSED TO AND               INFI0410
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C               FROM STEAM TABLE SUBROUTINES  VALUES ARE IN SI UNITS      INFI0420
C      PROP(1)= TEMPERATURE   K                                           INFI0430
C          (2)= PRESSURE      N/M2                                        INFI0440
C          (3)= SPECIFIC VOLUME    M3/KG                                  INFI0450
C          (4)= SPECIFIC INTERNAL ENERGY    J/KG                         INFI0460
C          (5)= SPECIFIC ENTHALPY    J/KG                               INFI0470
C      QUANTITIES 1-5 ARE INPUT AND OUTPUT TO STATE ROUTINES              INFI0480
C          (6)= SINGLE PHASE BETA                                         INFI0490
C          (7)= SINGLE PHASE KAPPA                                        INFI0500
C          (8)= SINGLE PHASE CSUBP                                        INFI0510
C          (9)= QUALITY IF TWO-PHASE                                      INFI0520
C         (10)= SATURATION PRESSURE                                       INFI0530
C         (11)= LIQUID SPECIFIC VOLUME                                    INFI0540
C         (12)= VAPOR  SPECIFIC VOLUME                                    INFI0550
C         (13)= LIQUID SPECIFIC INTERNAL ENERGY                           INFI0560
C         (14)= VAPOR  SPECIFIC INTERNAL ENERGY                           INFI0570
C         (15)= LIQUID SPECIFIC ENTHALPY                                  INFI0580
C         (16)= VAPOR  SPECIFIC ENTHALPY                                  INFI0590
C         (17)= LIQUID BETA                                               INFI0600
C         (18)= VAPOR  BETA                                               INFI0610
C         (19)= LIQUID KAPPA                                              INFI0620
C         (20)= VAPOR  KAPPA                                              INFI0630
C         (21)= LIQUID CSUBP                                              INFI0640
C         (22)= VAPOR  CSUBP                                              INFI0650
C         (23)= INDEXES                                                   INFI0660
ISN 0015        EQUIVALENCE           (PROP( 1),    TT),     (PROP( 2),  PRES),  INFI0670
               * (PROP( 3),  VBAR),    (PROP( 4),  UBAR),     (PROP( 5),  HBAR),  INFI0680
               * (PROP( 6),  BETA),    (PROP( 7), KAPPA),     (PROP( 8), CSUBP),  INFI0690
               * (PROP( 9),  QUAL),    (PROP(10),  PSAT),     (PROP(11), VSUBF),  INFI0700
               * (PROP(12), VSUBG),    (PROP(13), USUBF),     (PROP(14), USUBG),  INFI0710
               * (PROP(15), HSUBF),    (PROP(16), HSUBG),     (PROP(17), BETAF),  INFI0720
               * (PROP(18), BETAG),    (PROP(19),KAPPAF),     (PROP(20),KAPPAG),  INFI0730
               * (PROP(21),CSUBPF),    (PROP(22),CSUBPG)                          INFI0740
ISN 0016        REAL*8    KAPPA,  KAPPAF,  KAPPAG                          IBM 0750
C               REAL      KAPPA,  KAPPAF,  KAPPAG                          CDC 0751
C                                                                          INFI0760
C               LIMITS ON WATER PROPERTY TABLES                            INFI0770
C               273.16 ) T ) 700   T IN DEG K.    32.018 ) T ) 800.3   T IN DEG F  INFI0780
C               2.003  ) P ) 2.507 P IN N/SQM.    0.0886 ) P ) 3626    P IN PSI    INFI0790
C                                                                          INFI0800
ISN 0017        INTEGER CARDNO,FILIDX,L3B(9),L3(14)                        INFI0810
ISN 0018        LOGICAL ERR                                                INFI0811
ISN 0019        REAL*8 UNITS(2)                                            IBM 0812
ISN 0020        DIMENSION ITFILL(1)                                        INFI0813
C               REAL NEXTID                                                CDC 0814
C               INTEGER UNITS(2)                                           CDC 0815
C                                                                          INFI0820
ISN 0021        EQUIVALENCE (SIUNIT(1), SIPR), (SIUNIT(2), SISVOL),        INFI0830
               * (SIUNIT(3), SIH), (SIUNIT(4), SICP), (SIUNIT(5), SIJULE),  INFI0840
               * (SIUNIT(6), SIK), (SIUNIT(7), SIV),  (SIUNIT(8), SIM),     INFI0850
               * (SIUNIT(9), ENPR), (SIUNIT(10), ENSVOL), (SIUNIT(11), ENH),  INFI0860
               * (SIUNIT(12), ENCP), (SIUNIT(13), ENBTU), (SIUNIT(14), ENR),  INFI0870
               * (SIUNIT(15), ENV),  (SIUNIT(16), ENM),  (SIUNIT(17), ENVEL2)  INFI0880
C                                                                          INFI0890
C               COMPUTATIONS IN THIS SUBROUTINE ARE DONE IN SI UNITS       INFI0900
ISN 0022        DATA  SIPR/ 6894.757293 /, SISVOL/ 6.242796060-2 /, SIH/ 2.326D3/,IBM 0910
               * SICP/ 4.186D3 /, SIJULE/ 1055.055853 /, SIK/ 0.555555555560D0 /, IBM 0920
               * SIV/ 2.831684660-2 /, SIM / 0.4535923700 /, ENPR/ 1.4503773770-4/IBM 0930
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     *,ENSVOL/ 16.01846337 /, ENH/ 4.299226139D-4 /,                                  IBM 0940
     * ENCP/ 2.388458966D-4 /, ENBTU/ 9.47817120D-4 /, ENR/ 1.8D0/,                   IBM 0950
     * ENV / 35.31466671 /, ENM / 2.204622622 /, ENVEL2 / 10.76391042/                IBM 0960
C     DATA  SIPR/ 6894.757293 /, SISVOL/ 6.242796O4E-2 /, SIH/ 2.326E3/,CDC 0961
C    * SICP/ 4.1868E3 /, SIJULE/ 1055.055853 /, SIK/ 0.555555555556E0 /, CDC 0962
C    * SIV/ 2.83168466E-2 /, SIM / 0.45359237E0 /, ENPR/ 1.450377377E-4/CDC 0963
C    *,ENSVOL/ 16.01846337 /, ENH/ 4.299226139E-4 /,                                 CDC 0964
C    * ENCP/ 2.388458966E-4 /, ENBTU/ 9.47817120E-4 /, ENR/ 1.8E0/,                  CDC 0965
C    * ENV / 35.31466671 /, ENM / 2.204622622 /, ENVEL2 / 10.76391042/               CDC 0966
C                                                                                    INFI0970
C     SIPR   = PRESSURE MULTIPLIER    LBF/IN2 -> N/M2                                INFI0980
C     SISVOL = SPECIFIC VOLUME MULTIPLIER    FT3/LBM -> M3/KG                        INFI0990
C     SIH    = ENTHALPY MULTIPLIER    BTU/LBM -> J/KG                               INFI1000
C     SICP   = ENTROPY, GAS CONSTANT, SPECIFIC HEAT MULTIPLIER                       INFI1010
C              BTU/(LBM-R) -> J/(KG-K)                                               INFI1020
C     SIJULE = ENERGY MULTIPLIER  BTU -> JOULE                                       INFI1030
C     SIK    = TEMPERATURE MULTIPLIER    R -> K                                      INFI1040
C     SIV    = VOLUME MULTIPLIER  FT3 -> M3                                          INFI1050
C     SIM    = MASS MULTIPLIER    LBM -> KG                                          INFI1060
C     ENPR   = PRESSURE MULTIPLIER  N/M2 -> LBF/IN2                                  INFI1070
C     ENSVOL = SPECIFIC VOLUME MULTIPLIER  M3/KG -> FT3/LBM                          INFI1080
C     ENH    = ENTHALPY MULTIPLIER    J/KG -> BTU/LBM                             INFI1090
C     ENCP   = ENTROPY, GAS CONSTANT, HEAT CAPACITY MULTIPLIER                       INFI1100
C              J/(KG-K) -> BTU/(LBM-R)                                               INFI1110
C     ENBTU  = ENERGY MULTIPLIER    JOULE -> BTU                                     INFI1120
C     ENR    = TEMPERATURE MULTIPLIER    K -> R                                     INFI1130
C     ENV    = VOLUME MULTIPLIER    M3 -> FT3                                       INFI1140
C     ENM    = MASS MULTIPLIER    KG -> LBM                                         INFI1150
C     ENVEL2 = VELOCITY MULTIPLIER    M2/SEC2 -> FT2/SEC2                           INFI1160
C                                                                                    INFI1170
ISN 0023           DATA UNITS / 8HLBS/SEC , 8HGAL/MIN  /                           INFI1230
ISN 0024           DATA T0/459.67/,GPM/.2228009D-2/                                IBM 1241
C                  DATA T0/459.67/,GPM/.2228009E-2/                                CDC 1242
ISN 0025           DATA L3 /0,0,0,0,0,0,0,0,0,0,-1,1,1,1/                          INFI1244
ISN 0026           DATA L38/0,0,0,0,0,0,0,2,1,1 /                                  INFI1245
C                                                                                  INFI1250
C                                                                                  INFI1270
ISN 0027           REAL*8 NEXTID                                                   IBM 1280
C                                                                                  INFI1290
C     LOCATE ANY FILL DATA SETS                                                    INFI1300
C                                                                                  INFI1310
ISN 0028            IX = INDEX('4')                                                INFI1320
C     CARDNO = 130000                                                              INFI1330
C                                                                                  
C CHANGE FILL CARDS FROM 13XXYY TO RXYYYYYY                                        BDHT 202
ISN 0029           CARDNO = 8 000 000                                              BDHT 203
ISN 0030           NFILLS = 0                                                      INFI1340
ISN 0031           NFLL = 0                                                        INFI1350
C     LIMIT = 140000                                                               INFI1370
C     DO 10 I=1,99                                                                 INFI1380
C     CARDNO = CARDNO + 100                                                        INFI1390
C                                                                                  
ISN 0032           LIMIT = 9 000 000                                               BDHT 204
ISN 0033            DO 10 I=1,9                                                    BDHT 205
ISN 0034            CARDNO = CARDNO + 100 000                                      BDHT 206
ISN 0035           CALL LINK (CARDNO, NEXT, IL, LU, DATA )                         INFI1410
ISN 0036           IF (NEXT.GE.LIMIT .OR. NEXT.EQ.-1) GO TO 20                     INFI1420
ISN 0038           NFILLS = NFILLS + 1                                             INFI1430
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ISN 0039       10    CONTINUE                                                                  INFI1440
ISN 0040       20    IF (NFILLS.EQ.0) RETURN                                                   INFI1450
                     C                                                                         INFI1460
                     C     PROCESS FILL DATA                                                   INFI1470
ISN 0042             FILLID = NEXTID(0)                                                        INFI1480
ISN 0043             FLLFIL = FILLID + 1                                                       INFI1490
ISN 0044             LEN = 100                                                                 INFI1500
ISN 0045             CALL RESERV(FLLFIL, LEN, 1, IDXSCR)                                       INFI1510
ISN 0046             LEN    = LCONTG(1)                                                        INFI1520
ISN 0047             CALL RESERV (FILLID, LEN, 2, FILIDX)                                      INFI1530
                     C     L3(1) = 130000                                                      INFI1540
                     C                                                                         INFI1550
ISN 0048             L3(1) = 6 000 000                                                         BDHT 207
ISN 0049             IA(2,FILIDX) = NFILLS                                                     IBM 1550
                     C     IA(  FILIDX) = NFILLS                                               CDC 1551
ISN 0050             KADDR = NFILLS + 1                                                        INFI1560
ISN 0051             DO 600 IF=1,NFILLS                                                        INFI1570
ISN 0052             IA(2,FILIDX+IF) = KADDR                                                   IBM 1580
                     C     IA(  FILIDX+IF) = KADDR                                             CDC 1581
ISN 0053             IADDR = KADDR + FILIDX                                                    INFI1590
ISN 0054             TEMPID = 0.0                                                              INFI1600
                     C     L3(1) = L3(1) + 100                                                 INFI1610
                     C                                                                         INFI1620
ISN 0055              L3(1) = L3(1) + 100 000                                                  BDHT 208
ISN 0056             L3(5) = 1                                                                 INFI1630
ISN 0057             IUNIT = 0                                                                 INFI1640
ISN 0058             CALL INP2(DATA, FA(IDXSCR), L3, IA)                                       INFI1650
ISN 0059             IF (L3(5)) 30, 25, 40                                                     INFI1660
ISN 0060       25    IA (2,FILIDX+IF) = 0                                                      IBM 1670
                C25  IA (  FILIDX+IF) = 0                                                      CDC 1671
ISN 0061             GO TO 600                                                                 INFI1680
ISN 0062       40    NFLL = NFLL + 1                                                           INFI1730
ISN 0063             IA(2,IADDR) = IA(2,IDXSCR)                                                IBM 1740
                     C     IA(  IADDR) = IA(  IDXSCR)                                          CDC 1741
ISN 0064             ITYPE = IA(2,IDXSCR+1)                                                    IBM 1750
                     C     ITYPE = IA(  IDXSCR+1)                                              CDC 1751
ISN 0065             IA(2,IADDR+1)=ITYPE                                                       IBM 1760
                     C     IA(  IADDR+1)=ITYPE                                                 CDC 1761
ISN 0066             NPTS = IA(2,IDXSCR+2)                                                     IBM 1770
                     C     NPTS = IA(  IDXSCR+2)                                               CDC 1771
ISN 0067             IA(2,IADDR+2) = NPTS                                                      IBM 1780
                     C     IA(  IADDR+2) = NPTS                                                CDC 1781
ISN 0068             IA(2,IADDR+3) = 7                                                         IBM 1790
                     C     IA(  IADDR+3) = 7                                                   CDC 1791
ISN 0069             ILEN = 2*NPTS                                                             INFI1800
ISN 0070             ICALC = IA(2,IDXSCR+3)                                                    IBM 1810
                     C     ICALC = IA(  IDXSCR+3)                                              CDC 1811
                     C     DETERMINE FLOW RATE UNITS                                           INFI1820
ISN 0071             IUNIT = 1                                                                 INFI1830
ISN 0072             IF (FA(IDXSCR+4) .EQ. UNITS(1)) GO TO 50                                  IBM 1840
                     C     IF (IA(IDXSCR+4) .EQ. UNITS(1)) GO TO 50                            CDC 1841
ISN 0074             IUNIT = 2                                                                 INFI1850
ISN 0075             IF (FA(IDXSCR+4) .EQ. UNITS(2)) GO TO 50                                  IBM 1860
                     C     IF (IA(IDXSCR+4) .EQ. UNITS(2)) GO TO 50                            CDC 1861
ISN 0077             WRITE (6, 1000) IF                                                        INFI1870
ISN 0078       1000  FORMAT('0 ******** UNITS OF FLOW RATE FOR FILL NO. ',I3,' NOT DEC       INFI1880
                    *PHERABLE')                                                                INFI1890
ISN 0079             GO TO 30                                                                  INFI1900
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ISN 0080          50 IF (ITYPE.GT.0 .AND. ITYPE.LT.5) GO TO 60                          INFI1990
ISN 0082             WRITE (6, 1001) ITYPE, IF                                          INFI2000
ISN 0083          1001 FORMAT ('0 ******** FILL TYPE = ',I3,' NOT DEFINED FOR FILL NO. ' INFI2010
                     * I3)                                                              INFI2020
ISN 0084             GO TO 30                                                           INFI2030
C                    ICALC - THERMODYNAMIC VARIABLE INDICATOR                           INFI2040
C                            1   PORT = PRESSURE,  HORX = ENTHALPY                    INFI2050
C                            2   PORT = PRESSURE,  HORX = QUALITY                     INFI2060
C                            3   PORT = TEMPERATURE, HORX=QUALITY                     INFI2070
C                            4   PORT = PRESSURE, HORX= TEMPERATURE                   INFI2080
ISN 0085          60    IF (ICALC.GT.0 .AND. ICALC.LT.5) GO TO 70                      INFI2090
ISN 0087             WRITE (6, 1002) ICALC, IF                                          INFI2100
ISN 0088          1002 FORMAT('0 ******** THERMODYNAMIC VARIABLE INDICATOR '13,' NOT DEFI INFI2110
                     *NED FOR FILL NO. '13)                                             INFI2120
ISN 0089             GO TO 30                                                           INFI2130
ISN 0090          70 CONTINUE                                                           INFI2131
ISN 0091             FA(IADDR + [illegible]) = 0.0                                      INFI2132
ISN 0092             IF (L3(5) .LT. 7) GO TO 80                                         INFI2134
ISN 0094             ARFRAC = FA(IDXSCR + 7)                                            INFI2136
ISN 0095             FA(IADDR + 5) = ARFRAC                                             INFI2138
ISN 0096             IF(ARFRAC .LE. 1.0 .AND. ARFRAC .GE. 0.0) GO TO 80                 INFI2140
ISN 0098             WRITE (6,1007) IF                                                  INFI2142
ISN 0099          1007 FORMAT ('0 ******** AIR FRACTION OUTSIDE RANGE FOR FILL NO. ' I3) INFI2144
ISN 0100             CALL FAIL                                                          INFI2146
ISN 0101             WRITE (6,590)                                                      INFI2148
ISN 0102          80    IF (ITYPE.GT.3) GO TO 400                                      INFI2150
C                                                                                       INFI2152
C                    ITYPE = 1  FLOW IS A FUNCTION OF TIME AT CONSTANT ENTHALPY      INFI2160
C                    ITYPE = 2  => FLOW IS A FUNCTION OF VOLUME PRESSURE - ENTHALPY  INFI2170
C                                  CONSTANT                                          INFI2180
C                    ITYPE = 3  => FLOW IS A FUNCTION OF DIFFERENTIAL PRESSURE BETWEEN INFI2190
C                                  VOLUME AND FILL - ENTHALPY CONSTANT               INFI2200
C                                                                                    INFI2210
C                    FA(IADDR+4) = PRESSURE   (FLOW RATE IF NPTS = 1)                INFI2220
C                    FA(IADDR+5) = ENTHALPY                                          INFI2230
ISN 0104             IF (L3(5) .GE. 7) GO TO 90                                      INFI2232
ISN 0106             WRITE (6,1008) IF                                               INFI2234
ISN 0107          1008 FORMAT ('0 ******** PORT AND HORX MUST BE SET IF ITYPE.LT.4 FOR FI INFI2236
                     ILL NO. ' I3)                                                   INFI2238
ISN 0108             CALL FAIL                                                       INFI2240
ISN 0109             WRITE(6,590)                                                    INFI2242
ISN 0110          90 PORT = FA(IDXSCR+5)                                             INFI2244
ISN 0111             HORX = FA(IDXSCR+6)                                             INFI2250
ISN 0112             FA(IADDR+4) = PORT                                              INFI2260
ISN 0113             FA(IADDR+5) = HORX                                              INFI2270
ISN 0114             IDX = IDXSCR                                                    INFI2280
ISN 0115             IF (NPTS.LE.50) GO TO 110                                       INFI2290
ISN 0117             IL = KADDR + 7                                                  INFI2300
ISN 0118             CALL SHIFT (FILLID, IL, 3, FILIDX)                              INFI2310
ISN 0119             TEMPID = NEXTID(0)                                              INFI2320
ISN 0120             CALL RESERV (TEMPID, ILEN, 1, IDX)                              INFI2330
ISN 0121             LEN = LCONTG(1)                                                 INFI2340
ISN 0122             CALL SHIFT (FILLID, LEN, 3, FILIDX)                             INFI2350
ISN 0123          110  L3R(1) = L3(1)+1                                             INFI2360
C                    L3R(2) =-L3(1)-99                                               INFI2370
C                                                                                    BOAT 209
ISN 0124             L3R(2) = -L3(1) - 99 999                                        INFI2379
ISN 0125             L3R(3) = ILEN                                                   INFI2380
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ISN 0126            L3P(4) = ILEN                                                    INFI2390
ISN 0127            L3P(6) = 1                                                       INFI2400
ISN 0128            CALL INP2 (DATA       , FA(IDX),L3P,IA)                          INFI2420
ISN 0129            IF (L3P(5).LT.0) GO TO 30                                        INFI2430
ISN 0131            NU = IDX + ILEN - 1                                              INFI2440
                C   TEST THERMODYNAMIC VARIABLE TYPE                                 INFI2450
ISN 0132            IF (ICALC.EQ.1) GO TO 160                                        INFI2460
ISN 0134            IF (ICALC-3) 115, 120, 130                                       INFI2470
                C   ICALC = 2 => P-X PLANE                                          INFI2480
ISN 0135     115    PRES = PORT*SIPR                                                 INFI2490
ISN 0136            QUAL = HORX                                                      INFI2500
ISN 0137             CALL STH202 (LFA(IX), PROP, ERR)                                INFI2520
ISN 0138            IF (.NOT.ERR) GO TO 140                                          INFI2530
ISN 0140            WRITE (6, 1003) IP, PORT, HORX                                   INFI2540
ISN 0141     1003   FORMAT('0 ******** THERMO PROPERTY ERROR IN FILL NO. ',I3/       INFI2550
                   * 10X,'PRESSURE = ',1PD15.6,' PSI.   QUALITY = ',1PD15.6)        INFI2560
ISN 0142            GO TO 30                                                         INFI2570
                C   ICALC = 3 => T-X PLANE                                          INFI2580
ISN 0143     120    TT = (PORT+TO)*SIK                                               INFI2590
ISN 0144            QUAL = HORX                                                      INFI2600
ISN 0145             CALL STH201 (LFA(IX), PROP, ERR)                                INFI2610
ISN 0146            IF (.NOT.ERR) GO TO 140                                          INFI2630
ISN 0148            WRITE (6, 1004) IP, PORT, HORX                                   INFI2640
ISN 0149     1004   FORMAT('0 ******** THERMO PROPERTY ERROR IN FILL NO. ',I3/       INFI2650
                   * 10X,'TEMPERATURE = ',1PD15.6,' DEG F.     QUALITY = ',1PD15.6)  INFI2660
ISN 0150            GO TO 30                                                         INFI2670
                C   ICALC = 4 => T-P PLANE                                          INFI2680
ISN 0151     130    TT = (HORX+TO)*SIK                                               INFI2690
ISN 0152            PRES = PORT*SIPR                                                 INFI2700
ISN 0153             CALL STH203 (LFA(IX), PROP, TT, ERR)                            INFI2720
ISN 0154            IF (.NOT.ERR) GO TO 140                                          INFI2730
ISN 0156            WRITE (6, 1005) IP, PORT, HORX                                   INFI2740
ISN 0157     1005   FORMAT('0 ******** THERMO PROPERTY ERROR IN FILL NO. ',I3/       INFI2750
                   * 10X,'TEMPERATURE = ',1PD15.6,' DEG F.     PRESSURE = ',1PD15.6,INFI2760
                   & ' PSI')                                                        INFI2770
ISN 0158     140    SPVOL = PREP(3)*ENSVOL                                           INFI2780
ISN 0159            FA(IADDR+4) = PRES*ENPR                                          INFI2790
ISN 0160            FA(IADDR+5) = HBAR*ENH                                           INFI2800
                C   TEST UNITS OF FLOW.  IUNIT = 1 => LBS/SEC.  IUNIT = 2 => GAL/MIN INFI2810
ISN 0161            IF (IUNIT.EQ.1) GO TO 160                                        INFI2820
                C   CONVERT FLOW FROM GAL/MIN TO LBS/SEC                            INFI2830
ISN 0163            CONST = GPM/SPVOL                                                INFI2840
ISN 0164            DO 150 J=IDX,NU,2                                                INFI2850
ISN 0165            FA(J+1)=FA(J+1)*CONST                                            INFI2860
ISN 0166     150    CONTINUE                                                         INFI2870
                C   STORE TIME POINTS AND FLOW RATES                                INFI2880
ISN 0167     160    IF (NPTS.GT.1) GO TO 165                                         INFI2890
ISN 0169            FA(IADDR+6) = FA(IDX+1)                                          INFI2900
ISN 0170            KADDR = KADDR + 7                                                INFI2910
ISN 0171            GO TO 170                                                        INFI2920
ISN 0172     165    JADDR = IADDR + 7                                                INFI2930
ISN 0173            KADDR = KADDR + ILEN + 7                                         INFI2940
ISN 0174            IF((KADDR      ).GT.LEN) GO TO 700                               INFI2950
ISN 0175            DO 170 J=IDX,NU,2                                                INFI2960
ISN 0177            FA(JADDR) = FA(J)                                                INFI2970
ISN 0176            FA(JADDR+NPTS)=FA(J+1)                                           INFI2980
ISN 0174            JADDR=JADDR+1                                                    INFI2990
ISN 0180     170    CONTINUE                                                         INFI3000
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ISN 0191            IF (TEMPID.GT.0.0  ) CALL DELETE (TEMPID)                                  INFI3010
ISN 0193            GO TO 600                                                                  INFI3020
                C                                                                              INFI3030
                C     ITYPE = 5  => FLOW AND ENTHALPY ARE FUNCTIONS OF TIME                    INFI3040
                C                   DATA IS IN TRIPLETS  TIME(I), FLOW (I), H(I)               INFI3050
                C                                                                              INFI3060
ISN 0194        400 IDX=IDXSCR                                                                 INFI3070
ISN 0195            ILEN = ILEN + NPTS                                                         INFI3080
ISN 0196            IF (NPTS.LE.33) GO TO 410                                                  INFI3090
ISN 0198            IL = KADDR +7                                                              INFI3100
ISN 0199            CALL SHIFT (FILLID, IL, 3, FILIDX)                                         INFI3110
ISN 0200            TEMPID = NEXTID(0)                                                         INFI3120
ISN 0201            CALL RESERV (TEMPID, ILEN, 1, IDX)                                         INFI3130
ISN 0202            LEN = LCONTG(1)                                                            INFI3140
ISN 0203            CALL SHIFT (FILLID, LEN, 3, FILIDX)                                        INFI3150
ISN 0204        410 L3B(1) = L3(1)+1                                                           INFI3160
                C   L3B(2) =-L3(1)-99                                                          INFI3170
                C                                                                              INFI3180
ISN 0205            L3B(2) = -L3(1) - 99.999                                                   BDHT 210
ISN 0206            L3B(3) = ILEN                                                              INFI3190
ISN 0207            L3B(4) = ILEN                                                              INFI3195
ISN 0208            L3B(6) = 1                                                                 INFI3200
ISN 0209            CALL INP2 (DATA       , FA(IDX),L3B,IA)                                    INFI3220
ISN 0210            IF (L3B(6).LT.0) GO TO 30                                                  INFI3230
                C   STORE TIME, FLOW RATE, AND ENTHALPY                                        INFI3240
ISN 0212            JADDR = IADDR + 7                                                          INFI3250
ISN 0213            NU = IDX+ILEN-1                                                            INFI3260
ISN 0214            KADDR = KADDR + ILEN + 7                                                   INFI3270
ISN 0215            IF (KADDR      .GT.LEN) GO TO 700                                          INFI3280
ISN 0217            DO 420 J=IDX,NU,3                                                          INFI3290
ISN 0218            FA(JADDR        )=FA(J)                                                    INFI3300
ISN 0219            FA(JADDR+  NPTS)=FA(J+1)                                                   INFI3310
ISN 0220            FA(JADDR+2*NPTS)=FA(J+2)                                                   INFI3320
ISN 0221            JADDR=JADDR+1                                                              INFI3330
ISN 0222        420 CONTINUE                                                                   INFI3340
ISN 0223            IF (TEMPID.GT.0.0  ) CALL DELETE (TEMPID)                                  INFI3350
ISN 0225        600 CONTINUE                                                                   INFI3360
ISN 0226            FILSIZ(3) = KADDR                                                          INFI3370
ISN 0227            CALL SHIFT (FILLID, FILSIZ(3), 1, FILIDX)                                  INFI3380
ISN 0228            INDEX(3)  = FILIDX                                                         INFI3390
ISN 0229            FILID(3) = FILLID                                                          INFI3400
                C                                                                              INFI3410
                C     PRINT THE INPUT                                                          INFI3420
                C                                                                              INFI3430
ISN 0230            WRITE (6, 2001) NFLL                                                       INFI3440
ISN 0231        2001 FORMAT ('1                DATA FOR ', I3,' FILL SYSTEMS')                 INFI3450
ISN 0232            DO 650 IF=1,NFILLS                                                         INFI3460
ISN 0233            IF (IA(2,FILIDX+IF).EQ.0) GO TO 650                                        IBM 3470
                C   IF (IA(  FILIDX+IF).EQ.0) GO TO 650                                        CDC 3471
ISN 0235            IADDR=IA(2,FILIDX+IF) + FILIDX                                             IBM 3480
                C   IADDR=IA(  FILIDX+IF) + FILIDX                                             CDC 3481
ISN 0236            ITRIP = IA(2,IADDR)                                                        IBM 3490
                C   ITRIP = IA(  IADDR)                                                        CDC 3491
                C   ITFILL VECTOR RECREATED TO BE USED IN INENTH AS RECOMMENDED BY GLSINFI3500
ISN 0237            ITFILL(IF) = IA(2,IADDR)                                                   IBM 3510
                C   ITFILL(IF) = IA(  IADDR)                                                   CDC 3511
ISN 0238            ITYPE = IA(2,IADDR+1)                                                      IBM 3520
                C   ITYPE = IA(  IADDR+1)                                                      CDC 3521
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ISN 0229            NPTS  = IA(2,IADDR+2)                                                    IBM 3530
                C   NPTS  = IA(  IADDR+2)                                                    CDC 3531
ISN 0230            IF (LINES(0).LT.15) WRITE (6, 2001) NFLL                                 INFI3540
ISN 0232            ARFRAC = FA(IADDR+6)                                                     INFI3545
ISN 0233            IF (ITYPE.GT.3) GO TO 625                                                INFI3550
ISN 0235            PORT = FA(IADDR+4)                                                       INFI3560
ISN 0236            HORX = FA(IADDR+5)                                                       INFI3570
ISN 0237            ILEN = (NPTS+2)/3                                                        INFI3580
ISN 0238            IL = (NPTS-ILEN+1)/2                                                     INFI3590
ISN 0239            IF (NPTS.EQ.1) PORT = 0.0                                                IBM 3600
ISN 0241            WRITE (6, 2002) ITYPE, ITRIP, PORT, HORX, ARFRAC                         INFI3610
ISN 0242         2002 FORMAT('0',10X,'FILL TYPE  TRIP ID      FILL PRESS   FILL ENTHALPY    INFI3620
                     1   AIR FRACTION'/38X,'(PSI)',8X,'(BTU/LB)'//14X,I3,7X,I3.2X,        INFI3630
                     2 1P3D16.6)                                                             INFI3635
                                                                                             INFI3640
ISN 0243            WRITE (6, 2003)                                                          INFI3650
ISN 0244            IF (ITYPE.EQ.1) WRITE (6, 2004)                                          INFI3660
ISN 0246            IF (ITYPE.NE.1) WRITE (6, 2009)                                          INFI3670
ISN 0248         2009 FORMAT (1H0,3(2X,'N',5X,'PRESSURE',8X,'FLOW RATE',10X)/               INFI3680
                    * 1X,3(10X,'(PSI)', 8X,'(LB/SEC-FT2)', 8X)/)                             INFI3690
ISN 0249         2003 FORMAT (1H0,52X,'** FILL TABLE **')                                    INFI3700
ISN 0250         2004 FORMAT (1H0,3(2X,'N',7X,'TIME',10X,'FLOW RATE',10X)/                   INFI3710
                    * 1X,3(10X,'(SEC)', 8X,'(LB/SEC-FT2)', 8X)/)                             INFI3720
ISN 0251            IF (NPTS.GT.1) GO TO 500                                                 INFI3730
ISN 0253            N = 1                                                                    INFI3740
ISN 0254            WRITE (6, 2005) N, PORT, FA(IADDR+4)                                     INFI3750
ISN 0255            GO TO 645                                                                INFI3760
ISN 0256         500 IT1 = IADDR + 7                                                         INFI3770
ISN 0257            IT2=IT1+ILEN                                                             INFI3780
ISN 0258            IT3=IT2+IL                                                               INFI3790
ISN 0259            IW1=IT1+NPTS                                                             INFI3800
ISN 0260            IW2=IW1+ILEN                                                             INFI3810
ISN 0261            IW3=IW2+IL                                                               INFI3820
ISN 0262            IW =IW1                                                                  INFI3830
ISN 0263            LU =IT3                                                                  INFI3840
ISN 0264            J  =ILEN+1                                                               INFI3850
ISN 0265            L  =J + IL                                                               INFI3860
ISN 0266            DO 620 N=1,ILEN                                                          INFI3870
ISN 0267            IF(IT3.LT.IW) GO TO 610                                                  INFI3880
ISN 0269            IF (IT2.LT.LU) GO TO 605                                                 INFI3890
                C                                                                            INFI3900
ISN 0271            WRITE (6, 2005) N, FA(IT1), FA(IW1)                                      INFI3910
ISN 0272            GO TO 615                                                                INFI3920
ISN 0273         605 WRITE (6, 2005) N, FA(IT1), FA(IW1), J, FA(IT2), FA(IW2)                INFI3930
ISN 0274            GO TO 615                                                                INFI3940
ISN 0275         610 WRITE (6, 2005) N, FA(IT1), FA(IW1), J, FA(IT2), FA(IW2),               INFI3950
                    * L, FA(IT3), FA(IW3)                                                    INFI3960
ISN 0276         615 IT1=IT1+1                                                               INFI3970
ISN 0277            IT2=IT2+1                                                                INFI3980
ISN 0278            IT3=IT3+1                                                                INFI3990
ISN 0279            IW1=IW1+1                                                                INFI4000
ISN 0280            IW2=IW2+1                                                                INFI4010
ISN 0281            IW3=IW3+1                                                                INFI4020
ISN 0282            J=J+1                                                                    INFI4030
ISN 0283            L=L+1                                                                    INFI4040
ISN 0284         620 CONTINUE                                                                INFI4050
ISN 0285            GO TO 645                                                                INFI4060
ISN 0286         2005 FORMAT (1X,3(I3,1P2D16.6,8X))                                          INFI4070
ISN 0287         625 ILEN = (NPTS+1)/2
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ISN 0284            WRITE (6,2006) ITYPE, ITRIP, ARFRAC                                    INFI4080
ISN 0289         2006 FORMAT('0',10X,'FILL TYPE  TRIP ID     AIR'/ 33X,'FRACTION' //      INFI4090
                     1 14X,I3,7X,I3,4X,E12.5)                                              INFI4095
ISN 0290            WRITE (6,2003)                                                         INFI4100
ISN 0291            WRITE (6,2007)                                                         INFI4110
ISN 0292         2007 FORMAT (1H0,2(2X,'N',7X,'TIME',10X,'FLOW RATE',7X,'ENTHALPY',10X)/INFI4120
                    * 1X,2(10X,'(SEC)', 8X,'(LB/SEC-FT2)', 5X,'(BTU/LB)',10X)/)         INFI4130
ISN 0293            IT1 = IA00R + 7                                                        INFI4140
ISN 0294            IT2=IT1+ILEN                                                           INFI4150
ISN 0295            Iw1=IT1+NPTS                                                           INFI4160
ISN 0296            Iw2=Iw1+ILEN                                                           INFI4170
ISN 0297            IH1=Iw1+NPTS                                                           INFI4180
ISN 0298            IH2=IH1+ILEN                                                           INFI4190
ISN 0299            Iw =Iw1                                                                INFI4200
ISN 0300            J=ILEN+1                                                               INFI4210
ISN 0301            DO 640 N=1,ILEN                                                        INFI4220
ISN 0302            IF (IT2.LT.Iw) GO TO 630                                               INFI4230
ISN 0304            WRITE (6, 2008) N, FA(IT1), FA(Iw1), FA(IH1)                           INFI4240
ISN 0305            GO TO 635                                                              INFI4250
ISN 0306          630 WRITE (6, 2008) N, FA(IT1), FA(Iw1), FA(IH1), J, FA(IT2), FA(Iw2),INFI4260
                    * FA(IH2)                                                            INFI4270
ISN 0307         635  IT1=IT1+1                                                           INFI4280
ISN 0308              IT2=IT2+1                                                          INFI4290
ISN 0309              Iw1=Iw1+1                                                          INFI4300
ISN 0310              Iw2=Iw2+1                                                          INFI4310
ISN 0311              IH1=IH1+1                                                          INFI4320
ISN 0312              IH2=IH2+1                                                          INFI4330
ISN 0313              J=J+1                                                              INFI4340
ISN 0314         640  CONTINUE                                                           INFI4350
ISN 0315          645 DO 647 IT = 1,MAXIRP                                              INFI4355
ISN 0316              IF (ITFILL(IF) .EQ. IDTRP(IT)) GO TO 650                           INFI4357
ISN 0318          647 CONTINUE                                                          INFI4359
ISN 0319              WRITE (6,680) ITFILL(IF), IF                                       INFI4361
ISN 0320              WRITE (6,690)                                                      INFI4363
ISN 0321              CALL FAIL                                                          INFI4365
ISN 0322         650  CONTINUE                                                           INFI4367
ISN 0323         2008 FORMAT (1X,2(I3,1P3D16.6,7X))                                      INFI4370
ISN 0324              CALL DELETE (FLLFIL)                                               INFI4380
ISN 0325              RETURN                                                             INFI4390
ISN 0326          680 FORMAT (32H0******** NO TRIP CORRESPONDS TO,                       INFI4393
                     1 17H FILL TRIP NUMBER,I5, 8H INDEX =,I4)                         INFI4395
ISN 0327          690 FORMAT (100X, 25H*****  EXECUTION DELETED.)                       INFI4397
                  C                                                                     INFI4399
                  C                                                                     INFI4401
ISN 0328          700  WRITE (6, 1005) IF                                              INFI4410
ISN 0329         1005 FORMAT('0 ******** DATA FOR FILL SYSTEM ',I3,' EXCEEDED AVAILABLE INFI4420
                    *STORAGE')                                                          INFI4430
ISN 0330           30 CALL FAIL                                                         INFI4440
ISN 0331              CALL DELETE (FILLID)                                              INFI4450
ISN 0332              IF (TEMPID .NE. 0.0) CALL DELETE (TEMPID)                         INFI4460
ISN 0334              RETURN                                                            INFI4470
ISN 0335              END                                                               INFI4480

*OPTIONS IN EFFECT*       NAME=  MAIN,OPT=02,LINECNT=60,SIZE=0000K,

*OPTIONS IN EFFECT*       SOURCE,EBCDIC,NOLIST,NODECK,LOAD,NOMAP,NOEDIT,ID,NOXREF

*STATISTICS*      SOURCE STATEMENTS =      334 ,PROGRAM SIZE =      7304
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*STATISTICS*  NO  DIAGNOSTICS GENERATED
****** END OF COMPILATION ******                    523K BYTES OF CORE NOT USED
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          COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=60,SIZE=0000K,
                             SOURCE,EBCDIC,NOLIST,NODECK,LOAD,NOMAP,NOEDIT,ID,NOXREF
   ISN 0002               SUBROUTINE INHEAT (NVOL, NJUN, NSLB, NGOM, NMAT, NCOR, NSC,      INHE0010
                         1 MAXSLB, MAXGOM, MAXMAT, MAXCOR, MAXREG, MAXNOD, MAXTBL, MAXNSC,  INHE0015
                         2 MAXTRP,IEMHT,IEMPS,IEMEC,IDEBUG,IN2,                             INHE0020
                         3 IPROGM,ISPROG,LENGTH,DT,DATA,FA,IA)                              INHE0025
   ISN 0003               IMPLICIT REAL*8 (A-H,O-Z)                                        IBM 0030
   ISN 0004                REAL*8 DATA(1),FA(1)                                            IBM 0031
             C             REAL   DATA(1),FA(1)                                            CDC 0032
   ISN 0005                INTEGER IA(2,1)                                                 IBM 0033
             C             INTEGER IA(  1)                                                 CDC 0034
   ISN 0006               DIMENSION LENGTH(1)                                              INHE0035
             C                                                                              INHE0040
             C      NVOL    = NUMBER OF VOLUMES                                           INHE0050
             C      NJUN    = NUMBER OF JUNCTIONS                                         INHE0060
             C      NSLB    = NUMBER OF HEAT SLABS                                        INHE0070
             C      NGOM    = NUMBER OF HEAT SLAB GEOMETRIES                              INHE0080
             C      NMAT    = NUMBER OF HEAT SLAB MATERIALS                               INHE0090
             C      NCOR    = NUMBER OF CORE SECTIONS                                     INHE0100
             C      NSC     = NUMBER OF SCRAM CURVES                                      INHE0110
             C      MAXSLB  = MAXIMUM NUMBER OF HEAT SLABS                                INHE0120
             C      MAXGOM  = MAXIMUM NUMBER OF HEAT SLAB GEOMETRIES                      INHE0130
             C      MAXMAT  = MAXIMUM NUMBER OF HEAT SLAB MATERIALS                       INHE0140
             C      MAXCOR  = MAXIMUM NUMBER OF CORE SECTIONS                             INHE0150
             C      MAXREG  = MAXIMUM NUMBER OF HEAT SLAB REGIONS                         INHE0160
             C      MAXNOD  = MAXIMUM NUMBER OF HEAT SLAB NODES                           INHE0170
             C      MAXTBL  = MAXIMUM NUMBER OF TABLE VALUES                              INHE0180
             C      MAXNSC  = MAXIMUM NUMBER OF SCRAM CURVES                              INHE0182
             C      IPROGM  = TYPE OF CALCULATION                                         INHE0184
             C      IEMFG   = EVALUATION MODEL CALCULATION FLAG                           INHE0185
             C      IDEBUG  = DEBUG PRINT FLAG                                            INHE0186
             C      IN2     = FLAG TO SET UP OLD PLOT TAPE                                INHE0187
             C      DT      = TIME STEP SIZE                                              INHE0190
             C      LENGTH  = COMMON BLOCK LENGTHS                                        INHE0195
             C                                                                            INHE0200
   ISN 0007               COMMON / CORMWR / CLTI(50), CTR(50), CTRL(50), RRO(50), MWREAC   INHE0210
   ISN 0008                LOGICAL MWREAC                                                INHE0230
             C                                                                            INHE0240
             C      RRO     = ORIGINAL FUEL PIN RADIUS, FT                                INHE0250
             C                                                                            INHE0260
   ISN 0009               COMMON / CORPOW / DPOW, FQ(50), LAMBDA, MQ(50), PPOW, PROMPT,    INHE0270
                         1 QDMOD(50), QFRAC(50), QN(21), QPMOD( 0), SE(50), TAU, TW(50),  INHE0275
                         2 TS(50), VW(50), ISLB(50), IVOL(50)                             INHE0280
   ISN 0010                REAL*8 LAMBDA, MQ                                             IBM 0285
             C             REAL   LAMBDA, MQ                                             CDC 0286
             C                                                                            INHE0290
             C      IVOL = VOLUME NUMBER                                                  INHE0300
             C                                                                            INHE0310
   ISN 0011               COMMON / ENVAJ / FLOWA(75),FLOWL(75),FLOWRA(75),WVBAR(75),     INHE0320
                         1  WVBARO(75),SPVZ(75),SPVZO(75),AINERV(75),CMAS(75),DIAMV(75),  INHE0330
                         2 FANING(75),ELOC(75),IPMV(75),CMACHV(75),JTPMV(75),            INHE0340
                         3  IFAN(75),JVISC(75),IAMBLO(75), IIN(75), IOUT(75)             INHE0350
             C                                                                            INHE0360
             C      DIAMV   = EQUIVALENT DIAMETER OF FLOW AREA                            INHE0370
             C                                                                            INHE0380
             C EM                                                                         INHE0452
   ISN 0012               COMMON /R4EM/ PIN(50),EF(50),EC(50),HCOND(50),TJUMP(50),FRACT(50),INHE0453
                         1 AFR(7,50), BLKJUN(100), RROIN(50), CTRIN(50),                  INHE0454
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     2PITCH,       AMASSO,VINPUT,TAB1(50),TAB2(50),TAB3(50),TAB4(50),     INHE0455
     3ISWJUN(100),IRUPFG(50), IRGPIN, IRGGAP, IRGSW, IACCV(4), ITRIP(4),INHE0456
     4IDNCMV,IREMV(10),ITP(100),ISLBAJ(50),ISWTAB(50),NTAB1,NTAB2,NTAB3,INHE0457
     5NTAB4,IMSPR                                                        INHE0458
C     LEVEL 2,PIN                                                        CDC 0459
ISN 0013      COMMON / RAFRAP / FSWELL(50), EPSMXR(50), GSMOL(50), PINF(50),  INHE0460
     1     RPIN(50), RSHD(50), VPLEN1(50)                                 INHE0461
     2 ,   FPEL(50), AS(50), VSP(50), PMOL(50), QPL(50), TPL(5,2,50),     INHE0462
     3     GAMFPL(50)                                                     INHE0463
C     LEVEL 2, FSWELL                                                    CDC 0464
C EM                                                                     INHE0465
C                                                                        INHE0466
ISN 0014      COMMON / SLAB    /      AHTL(50), AHTR(50), HDWL(50), HDWR(50),  INHE0467
     *  CHNL(50), CHNR(50), DHEL(50), DHER(50), FCHL(50), FCHR(50),     INHE0468
     1  HTCL(50), HTCR(50), PHIL(50), PHIR(50), SLEN(50), VOLS(50),     INHE0470
     2  WQCL(50), WQCR(50), XSLL(50), XSLR(50), ZBOT(50), ZTOP(50),     INHE0480
     *  IBCL(50), IBCR(50), IHTL(50), IHTR(50), IMCL(50), IMCR(50),     INHE0482
     3  ISCO(50), ISHD(50), ISSB(50), ISST(50), IVSL(50), IVSR(50),     INHE0490
     4  IXLO(50)                                                        INHE0492
C     LEVEL 2,AHTL                                                       CDC 0493
C                                                                        INHE0500
C     AHTL = HEAT TRANS AREA AT LEFT  SLAB SURFACE, FT**2                INHE0505
C     AHTR = HEAT TRANS AREA AT RIGHT SLAB SURFACE, FT**2                INHE0506
C          HEAT TRANS AREAS ARE TOTAL UP TO INHEAT, THEN /UNIT LENGTH    INHE0507
C     SLEN = EQUIVALENT LENGTH OF HEAT SLAB, FT                          INHE0510
C     VOLS = VOLUME OF HEAT SLAB, FT**3                                  INHE0520
C     ISCO = CORE NUMBER                                                 INHE0530
C     IVSL = INDEX NO OF VOLUME AT LEFT  SURFACE OF SLAB                 INHE0540
C     IVSR = INDEX NO OF VOLUME AT RIGHT SURFACE OF SLAB                 INHE0550
C                                                                        INHE0560
ISN 0015      COMMON / SLABAT / AP(21,50), TP(21,50),                    INHE0570
     1     IGOM(50), IIPC(6,50), ITPK(6,50), ITPX(6,50)                   INHE0580
C     LEVEL 2,AP                                                         CDC 0581
C                                                                        INHE0590
C     IGOM = GEOMETRY INDEX                                              INHE0600
C                                                                        INHE0610
ISN 0016      COMMON / SLABGM / ASUL(20), ASUR(20), POFR(6,20), S(21,20),     INHE0620
     *    VP(21,20), VREG(6,20), VRI(6,20), XDCR(6,20),                  INHE0630
     2     IGAP(6,20), IKC(6,20), NI(6,20), NSI(20)                       INHE0640
C     LEVEL 2,ASUL                                                       CDC 0641
C                                                                        INHE0650
C     ASUL = LEFT  SLAB SURFACE AREA FOR UNIT HEIGHTH IN REC OR CYL GEOM INHE0660
C     ASUR = RIGHT SLAB SURFACE AREA FOR UNIT HEIGHTH IN REC OR CYL GEOM INHE0670
C     POFR = FRACTION OF POWER IN REGION OF CORE HEAT SLAB               INHE0680
C     S    = SURFACE AREA WEIGHT, A/2DX                                  INHE0690
C     VP   = VOLUME, FT**3                                               INHE0700
C     VREG = VOLUME OF REGION PER FOOT OF LENGTH, FT**3                  INHE0705
C     VRI  = VOLUME RATIO AT INTERFACE                                   INHE0710
C     XDCR = COLD RADIUS OR DISTANCE TO RIGHT SURFACE OF REGION          INHE0720
C     IGAP = GAP INDICATOR  (0 = NOT A GAP)                              INHE0730
C     IKC  = MATERIAL INDEX                                              INHE0740
C     NI   = NODE NUMBER AT INTERFACE                                    INHE0750
C     NSI  = NODE NUMBER AT RIGHT SURFACE                                INHE0760
C                                                                        INHE0770
ISN 0017      COMMON /SLABTP/ TPC(40,7), TPCI(20,7), TPK(40,7), TPX(40,7),    INHE0780
     1               NCP(7), NKP(7), NXP(7)                             INHE0790
C     LEVEL 2,TPC                                                        CDC 0791
C                                                                        INHE0800
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C      TPC  = TABLES OF VOL HEAT CAPACITY VS TEMPERATURE                        INHE0810
C      TPCI = INTEGRAL TABLES OF TPC                                           INHE0815
C      TPK  = TABLES OF THERMAL CONDUCTIVITY VS TEMPERATURE                    INHE0820
C      TPX  = TABLES OF LINEAR EXPANSION COEFFICIENT VS TEMPERATURE            INHE0830
C      NCP  = NUMBER OF POINTS IN TPC TABLE                                    INHE0840
C      NKP  = NUMBER OF POINTS IN TPK TABLE                                    INHE0850
C      NXP  = NUMBER OF POINTS IN TPX TABLE                                    INHE0860
C                                                                              INHE0870
ISN 0018       COMMON / VOLER / A(75), HW(75), P(75), TEMP(75), ZL(75),        INHE0880
              1 ZM(75), ZMO(75), IQIN(75), IREAD(75)                           INHE0890
C                                                                              INHE0900
C      TEMP = VOLUME TEMPERATURE                                               INHE0910
C      IQIN = HEAT CALCULATION INDEX                                           INHE0920
C                                                                              INHE0930
ISN 0019       COMMON / XUNITS / ALARG, BTUMWH, CFMGPS, FOOT, FRBTU,           INHE0940
              1 GAMMA, GRAVTY, G12OPI, PI, POTENG, SECHR, SQINCH               INHE0950
C                                                                              INHE0960
C      SECHR  = 3600 SECONDS/HOUR                                              INHE0970
C                                                                              INHE0980
ISN 0020       DATA  ZERO, TWO / 0.0, 2.0 /                                    INHE1000
ISN 0021       DATA  ONEPT / 1.00100 /                                         IBM 1005
C      DATA  ONEPT / 1.00100 /                                                 CDC 1006
C                                                                              INHE1010
C      GET REATIVITY DATA                                                      INHE1020
C                                                                              INHE1030
ISN 0022       CALL INRKEN (NCOR,NSC,MAXCOR,MAXNSC,MAXTRP,MAXTBL,IN2,          INHE1040
              1    ISPROG, LENGTH, DATA, FA, IA )                              INHE1045
C                                                                              INHE1050
C      GET INPUT DATA FOR HEAT SLABS                                           INHE1060
C                                                                              INHE1070
ISN 0023       CALL INSLAB (NVOL, NJUN, NSLB, NGOM, MAXSLB, MAXGOM, MAXMAT,    INHE1080
              1             MAXREG, MAXNOD, MAXTBL,                          INHE1085
              2             DIAMV, BTUMWH, DATA, FA, IA, IIN, IOUT)          INHE1090
C                                                                              INHE1100
C      GET INPUT DATA FOR CORE SECTIONS                                        INHE1110
C                                                                              INHE1120
ISN 0024       CALL INCORE (NCOR, NSLB ,MAXCOR,MAXNOD, IEMHT,IEMPS,IEMEC,      INHE1130
C     1             IQIN, IVSL, IVSR, DATA, FA, IA)                          INHE1140
C                                                                              INHE1150
C PASS IN2 AND LENGTH TO INCORE FOR PLOTAPE INITILZATION                       BDHT 211
     1       IQIN, IVSL, IVSR, DATA, FA, IA, LENGTH, IN2)                      BDHT 212
ISN 0025       DO 10 K=1,NCOR                                                  INHE1150
ISN 0026       L = ISLB(K)                                                     INHE1160
ISN 0027       IF (ISCO(L) .EQ. 0) GO TO 10                                    INHE1162
ISN 0028       WRITE (6,8)                                                     INHE1164
ISN 0030     8 FORMAT (34HCORE SECTION SLAB NOS. NOT UNIQUE, EXECUTION DELETED.)INHE1165
ISN 0031       CALL FAIL                                                       INHE1167
C                                                                              INHE1168
ISN 0032      10 ISCO(L) = K                                                   INHE1170
C                                                                              INHE1180
C      GET HEAT SLAB GEOMETRY DATA                                             INHE1190
C                                                                              INHE1200
ISN 0033       IF (NGOM.LE.0) GO TO 65                                         INHE1210
ISN 0035       WRITE (6,810) NGOM                                              INHE1230
ISN 0036       NX = 0                                                          INHE1240
ISN 0037       DO 40 J=1,NGOM                                                  INHE1250
ISN 0038       CALL INGEOM (J,MAXREG,MAXNOD, NMAT , I, IG, NR, IKC(1,J),       INHE1260
              1    IGAP(1,J), PGR(1,J), NI(1,J), XDCR(1,J), VRI(1,J), VREG(1,J),INHE1270
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     2 VP(I,J),ASUL(J),ASUR(J),S(I,J),IR,PROI,DATA,FA,IA)                    INHE1280
ISN 0039        IF (IR .EQ. 0) GO TO 41                                      INHE1290
ISN 0041        CALL FAIL                                                    INHE1291
ISN 0042        GO TO 40                                                     INHE1292
C                                                                            INHE1300
C       COMBINE VOLUME FRACTION WITH POWER FRACTION                          INHE1310
C                                                                            INHE1320
ISN 0043     41 VT = ZERO                                                    INHE1330
ISN 0044        DO 20 I=1,N2                                                 INHE1340
ISN 0045        IF (IGAP(I,J).NE.0) NX = 1                                   INHE1350
ISN 0047     20 VT = VT + VREG(I,J)                                          INHE1360
ISN 0048        DO 30 I=1,NF                                                 INHE1370
ISN 0049     30 POWR(I,J) = POWR(I,J) / (VREG(I,J)/VT)                       INHE1380
C                                                                            INHE1390
C       CALCULATE EQUIVALENT LENGTHS OF HEAT SLABS                           INHE1400
C             AND ACTUAL HEAT TRANSFER AREA PER UNIT LENGTH                  INHE1401
C                                                                            INHE1410
ISN 0050        DO 35 L=1,NSLB                                               INHE1420
ISN 0051        IF (IGOP(L).NE.J) GO TO 35                                   INHE1430
ISN 0053        SLEN(L) = VOLS(L) / VT                                       INHE1440
ISN 0054        ALT =  ASUL(J)*SLEN(L)                                       INHE1442
ISN 0055        ART =  ASUR(J)*SLEN(L)                                       INHE1443
ISN 0056        IF (AHTL(L).GT.ONEPT*ALT .OR. AHTR(L).GT.ONEPT*ART)          INHE1446
     1     WRITE (6,32) L,AHTL(L),ALT,AHTR(L),ART                            INHE1447
ISN 0058     32 FORMAT (5(1H0****** WARNING - INPUT HEAT TRANSFER AREA FOR SLAB,  IBM 1450
     1     I3, 51H IS GREATER THAN 1.001 TIMES THE MAXIMUM IMPLIED BY/       IBM 1451
     2     17X, 40H THE INPUT SLAB VOLUME AND THE GEOMETRY./                 IBM 1452
     3     20X, 23HLEFT  HEAT TRANS AREA =E15.7,1SH, IMPLIED MAX =E15.7/     IBM 1453
     4     20X, 23HRIGHT HEAT TRANS AREA =E15.7,1SH, IMPLIED MAX =E15.7)     IBM 1454
C    32 FORMAT (5(1H0****** WARNING - INPUT HEAT TRANSFER AREA FOR SLAB,      CDC 1455
C     1     I4, 51H IS GREATER THAN 1.001 TIMES THE MAXIMUM IMPLIED BY/       CDC 1456
C     2     17X, 40H THE INPUT SLAB VOLUME AND THE GEOMETRY./                 CDC 1457
C     3     20X, 23HLEFT  HEAT TRANS AREA =E15.7,1SH, IMPLIED MAX =E15.7/     CDC 1458
C     4     20X, 23HRIGHT HEAT TRANS AREA =E15.7,1SH, IMPLIED MAX =E15.7)     CDC 1459
ISN 0059        AHTL(L) = AHTL(L) / SLEN(L)                                  INHE1460
ISN 0060        AHTR(L) = AHTR(L) / SLEN(L)                                  INHE1461
ISN 0061        IS = ISCO(L)                                                 INHE1462
ISN 0062        IF (IS .LE. 0) GO TO 35                                      INHE1463
ISN 0064        APC(IS) = PROI                                               INHE1470
ISN 0065        IF (ISMAT.EQ.0 .AND. IEMPS.EQ.0 .AND. IEMEC.EQ.0) GO TO 150  INHE1473
ISN 0067        IRPIN(IS) = XDCR(IRGPIN,J)                                   INHE1474
ISN 0068        IRGIN(IS)=XDCR(IRGGAP,J)                                     INHE1475
ISN 0069     150 CONTINUE                                                    INHE1477
ISN 0070     35 CONTINUE                                                     INHE1480
ISN 0071        M = NI(N2,J)                                                 INHE1490
ISN 0072        NSI(J) = M                                                   INHE1500
ISN 0073        S(M,J) = ASUR(J) / TWL                                       INHE1510
ISN 0074     40 CONTINUE                                                     INHE1511
C                                                                            INHE1520
C       GET HEAT SLAB MATERIAL PROPERTY DATA                                 INHE1530
C                                                                            INHE1540
ISN 0075     45 IF (NMAT.LE.0) GO TO 100                                     INHE1550
ISN 0077        DO 90 J=1,NMAT                                               INHE1560
ISN 0078        WRITE (6,620)                                                INHE1570
ISN 0079        NXP(J) = NX                                                  INHE1580
ISN 0080        CALL INXPED (J, MAXTBL, NXP(J), TPX(1,J), NCP(J), TPC(1,J),  INHE1590
     1     TPC(1,J),NXP(J),TPX(1,J),DATA,FA,IA)                             INHE1600
ISN 0081        XMAX = IABS(NXP(J))                                          INHE1610
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ISN 0092            DO 70 K=1,KMAX                                                  INHE1620
ISN 0093         70 TPR(2*K-1,J) = TPR(2*K-1,J) / SECHR                             INHE1630
ISN 0094            80 CONTINUE                                                     INHE1640
                 C                                                                  INHE1650
                 C     DO STEADY STATE HEAT BALANCE                                 INHE1660
                 C                                                                  INHE1670
ISN 0095             CALL SINITL (NSLB, MAXSLB, MAXMAT, MAXNOD, MAXTBL,             INHE1680
                    1 IPROGM, IFMAT, IEMPS, IBMEC, IDEBUG)                          INHE1681
                 C                                                                  INHE1682
                 C     REINITIALIZE TEMPERATURES THROUGH INPUT TO NON-STEADY STATE  INHE1683
                 C                                                                  INHE1684
ISN 0096             CALL INSALT (NSLB,IGOM,NSI,TP,DATA,FA,IA)                      INHE1685
                 C                                                                  INHE1690
                 C     DO STEADY STATE REACTIVITY SETUP                             INHE1700
                 C                                                                  INHE1710
ISN 0097         100 CALL KINITL (NCCH,NSCCF,IHTR,SPVZ,TEMP,WGCP)                   INHE1720
                 C                                                                  INHE1730
ISN 0098             RETURN                                                         INHE1740
                 C                                                                  INHE1750
ISN 0099         910 FORMAT (10H1DATA FOR I3,21H HEAT SLAB GEOMETRIES/)              INHE1760
ISN 0100         920 FORMAT (*1*)                                                   INHE1761
ISN 0101             END                                                            INHE1770

*OPTIONS IN EFFECT*       NAME= MAIN,OPT=02,LINECNT=60,SIZE=0000K,

*OPTIONS IN EFFECT*       SOURCE,EBCDIC,NOLIST,NODECK,LOAD,NOMAP,NOEDIT,ID,NOXREF

*STATISTICS*     SOURCE STATEMENTS =      90 ,PROGRAM SIZE =     3584

*STATISTICS*  NO DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                    451K BYTES OF CORE NOT USED
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         COMPILER OPTIONS - NAME= MAIN,OPT=02,LINECNT=60,SIZE=0000K,
                            SOURCE,EBCDIC,NOLIST,NODECK,LOAD,NOMAP,NOEDIT,ID,NOXREF
ISN 0002            SUBROUTINE INRC01 (NJUNS,NJSMOO,LENGT)                                  INRC0010
ISN 0003            IMPLICIT REAL*8 (A-H,O-Z)                                               IBM 0020
                    C     LEVEL 2,ISAVE,SAVE                                                CDC 0022
                    C     LEVEL 2,IVDAT,VDAT                                                CDC 0024
                    C                                                                       INRC0030
                    C     NJUNS  = NUMBER OF JUNCTIONS TO SEARCH                            INRC0040
                    C     NJSMOO = NUMBER OF SMOOTHED OLD JUNCTIONS                         INRC0050
                    C     LENGT  = COMMON BLOCK LENGTHS                                     INRC0060
                    C                                                                       INRC0070
ISN 0004            C     DIMENSION LENGT(5)                                                INRC0080
                    C                                                                       INRC0090
ISN 0005            C     COMMON / EDITET / ISAVE(4441), LBL1(16), LBL2(8)                  INRC0100
ISN 0006            C     REAL SAVE(4441)                                                   INRC0110
ISN 0007            C     EQUIVALENCE (SAVE(1),ISAVE(1))                                    INRC0120
                    C                                                                       INRC0130
                    C     DO NOT MAKE SAVE DOUBLE PRECISION                                 INRC0140
                    C     SAVE SIZE = 41 + 24*MAXVOL + 16*MAXJUN + 20*MAXSLJ                INRC0150
                    C     SAVE = I-O BUFFER FOR PLTAPE                                      INRC0160
                    C     LBL1 = HEADER LABEL FOR RELAP3 DATA TAPE                          INRC0170
                    C     LBL2 = TRAILER LABEL FOR RELAP3 DATA TAPE                         INRC0180
                    C                                                                       INRC0190
ISN 0008            C     COMMON / FLSMOO / FLOFAC(100), OFW1(10), OFW2(10),                INRC0191
                    1 SMFLO(10), TIMSMO, WFUN(40), OLDFLO(10,500), OLDTIM(500),             INRC0193
                    2 JSMOO(10), NFLO1, NFLO2, NWFUN                                        INRC0195
                    C     LEVEL 2,FLOFAC                                                    CDC 0196
ISN 0009            C     REAL OLDFLO, OLDTIM                                               INRC0197
                    C                                                                       INRC0199
                    C     DO NOT MAKE OLDFLO OR OLDTIM DOUBLE PRECISION                     INRC0201
                    C     FLOFAC = RATIO OF OLD JUNCTION FLOW TO NEW                        INRC0203
                    C     OFW1,2 = OLD FLOW * WEIGHT                                        INRC0205
                    C     SMFLO  = SMOOTHED FLOW                                            INRC0207
                    C     TIMSMO = TIME OF PREVIOUS CONVOLUTION INTEGRALS                   INRC0209
                    C     WFUN   = WEIGHTING FUNCTION VERSUS TAU                            INRC0211
                    C     OLDFLO = FLOWS RETRIEVED FROM TAPE                                INRC0213
                    C     OLDTIM = TIMES RETRIEVED FROM TAPE                                INRC0215
                    C     JSMOO  = JUNCTION NUMBERS OF OLD PROBLEM                          INRC0217
                    C     NFLO1  = FIRST VALID OLDFLO VALUE                                 INRC0219
                    C     NFLO2  = LAST VALID OLDFLO VALUE                                  INRC0221
                    C     NWFUN  = NUMBER OF WEIGHTING FUNCTION POINTS                      INRC0223
                    C                                                                       INRC0225
ISN 0010            C     COMMON / JUNER / HP(100), WP(100), WSLIP(100), WTP(100), VSLIP,   INRC0227
                    1   FMFRAC(100), IJ(100), IK(100), IPUMP(100), IVALVE(100),            INRC0229
                    2   IHGCOR(100), IVAP(100), T#(100,2), ISTAGP                           INRC0231
                    C                                                                       INRC0233
                    C     HP       = JUNCTION FLUID ENTHALPY                                INRC0235
                    C     WP       = JUNCTION WEIGHT FLOW                                   INRC0237
                    C     WSLIP = JUNCTION WEIGHT FLOW OF WATER FROM SLIP FLOW              INRC0239
                    C     WTP   = THE JUNCTION WEIGHT FLOW OF THE TWO PHASE MIXTURE OR STEAMINRC0241
                    C     VSLIP    = SLIP VELOCITY FOR VOLUMES DIRECTLY ABOVE EACH OTHER    INRC0243
                    C     FMFRAC = MASS FRACTION OF WATER IN JUNCTION FLOW                  INRC0245
                    C     IJ    = MIXING JUNCTION NUMBER                                    INRC0247
                    C     IK    = MIXING VOLUME NUMBER                                      INRC0249
                    C     IPUMP    = PUMP CURVE NUMBER                                      INRC0251
                    C     IVALVE   = VALVE NUMBER                                           INRC0253
                    C     IHGCOR = ENTHALPY TRANSPORT INDEX                                 INRC0255
                    C              0 = BOTH OFF? 1 = INLET ON, OUTLET OFF                   INRC0257
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C                2 = OUTLET ON, INLET OFF?  3 = BOTH ON?                          INRC0259
C       IVAP     = JUNCTION VAPOR PRESSURE INDEX                                  INRC0261
C       IW(K,1)  = JUNCTION INLET                                                 INRC0263
C       IW(K,2)  = JUNCTION OUTLET                                                INRC0265
C                                                                                 INRC0267
ISN 0011        COMMON / PAGEC / NREST, NPLOT, ITITLE(24), IHEADR(26)             INRC0269
C                                                                                 INRC0271
C       NREST  = RESTART NUMBER                                                   INRC0273
C       NPLOT  = PLOT RECORD NUMBER                                               INRC0275
C       ITITLE = TITLE FOR PROBLEM                                                INRC0277
C       IHEADR = PROGRAM HEADER LABEL (USED FOR CDC ONLY)                         INRC0278
C                                                                                 INRC0279
ISN 0012        COMMON / READES /                                                 INRC0281
               1 PNEW(75), POLD(75), PTABL(20,5), POWNEW, POWOLD,                 INRC0283
               2 TNEW(75), TOLD(75), TTABL(20,5), TIMNEW, TIMOLD, TIMTBL(20,5),   INRC0285
               3 XNEW(75), XOLD(75), XTABL(20,5),                                 INRC0287
               4 ZNEW(75), ZOLD(75), ZTABL(20,5), IIR(5), IRIN(5)                 INRC0290
C       LEVEL 2,PNEW                                                              CDC 0291
C                                                                                 INRC0300
C       PNEW  , POLD  , PTABL  = PRESSURE                                         INRC0310
C       POWNEW, POWOLD         = NORMALIZED POWER                                 INRC0320
C       TNEW  , TOLD  , TTABL  = TEMPERATURE                                      INRC0330
C       TIMNEW, TIMOLD, TIMTBL = TIME                                             INRC0340
C       XNEW  , XOLD  , XTABL  = QUALITY                                          INRC0350
C       ZNEW  , ZOLD  , ZTABL  = QMIXTURE LEVEL                                   INRC0360
C       IIR                    = CURRENT TABLE INDEX                              INRC0370
C       IRIN                   = NUMBER OF TABLE VALUES                           INRC0380
C                                                                                 INRC0390
C                                                                                 
C ADD NEW COMMON AND NEW MEMBER TO OLD COMMON                                     BDHT 213
ISN 0013        COMMON /RCSLAR/ PHSOLD(50),TSOLD(50),TAOLD(50),                   BDHT 214
               1                PHSNEW(50),TSNEW(50),TANEW(50),IBCS(50)           BDHT 215
ISN 0014        COMMON / READET / IVDAT(4441), LPOLD, NJOLD, NVOLD                INRC0400
C                                                                                 
              *  ,NSOLD                                                           BDHT 216
ISN 0015        REAL VDAT(4441)                                                   INRC0410
ISN 0016        EQUIVALENCE (VDAT(1),IVDAT(1))                                    INRC0420
C                                                                                 INRC0430
C       DO NOT MAKE VDAT DOUBLE PRECISION                                         INRC0440
C       VDAT SIZE = 41 + 24*MAXVOL + 16*MAXJUN + 20*MAXSLB                        INRC0450
C       IVDAT = INPUT PLOT RECORD                                                 INRC0460
C       LPOLD = LENGTH OF OLD PLOT RECORD                                         INRC0470
C       NJOLD = NUMBER OF JUNCTIONS IN OLD PROBLEM                                INRC0480
C       NVOLD = NUMBER OF VOLUMES IN OLD PROBLEM                                  INRC0490
C                                                                                 INRC0500
ISN 0017        COMMON / TAPER / ILAST, INEXT, IOK, NLFLT, NLINT, NLLOG           INRC0510
C                                                                                 INRC0520
C       ILAST = NUMBER OF LOCATIONS TRANSMITTED BY PREVIOUS BUFIO CALL            INRC0530
C       INEXT = NUMBER OF LOCATIONS TO BE TRANSMITTED                             INRC0540
C       IOK   = STATUS OF PREVIOUS BUFIO CALL (1=OKAY)                            INRC0550
C       NLFLT = NUMBER OF LOCATIONS PER FLOATING POINT WORD                       INRC0560
C       NLINT = NUMBER OF LOCATIONS PER INTEGER WORD                              INRC0570
C       NLLOG = NUMBER OF LOCATIONS PER LOGICAL WORD                              INRC0580
C                                                                                 INRC0590
ISN 0018        IERR = 0                                                          INRC0600
ISN 0019        IPLOT = ISAVE(1)                                                  INRC0610
C                                                                                 INRC0620
C       READ TAPE HEADING                                                         INRC0630
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ISN 0020          20 CALL BUFIN (2,IVDAT(1),LENGT(1),IOK,ILAST)                  IBM 0540
ISN 0021             CALL BUFOLY(2, 0, 0,IOK,ILAST)                              IBM 0550
ISN 0022             IF (IOK.NE.1) GO TO 210                                     IBM 0560
                C 29 LX = LENGT(1)                                               CDC 0561
                C    BUFFER IN (2,1) (IVDAT(1),IVDAT(LX))                        CDC 0562
                C    IOK = UNIT(2)                                               CDC 0563
                C    IF (IOK.GE.0) GO TO 210                                     CDC 0564
                C    ILAST = LENGTH(2)                                           CDC 0565
ISN 0024             IF (ILAST.NE.LENGT (1)) GO TO 210                           INRC0570
                C                                                                INRC0580
                C    CHECK TAPE HEADING                                          INRC0690
ISN 0026             DO 30 I= 1, 4                                               INRC0700
ISN 0027             IF (LABEL(I).NE. IVDAT(I)) GO TO 220                        INRC0710
ISN 0029          30 CONTINUE                                                    INRC0720
                C                                                                INRC0730
                C    READ TITLE                                                  INRC0740
ISN 0033          40 CALL BUFIN (2,IVDAT(1),LENGT(2),IOK,ILAST)                  IBM 0750
ISN 0031             CALL BUFOLY(2, 0, 3,IOK,ILAST)                              IBM 0760
ISN 0032             IF (IOK.NE.1) GO TO 230                                     IBM 0770
                C 40 LX = LENGT(2)                                               CDC 0771
                C    BUFFER IN (2,1) (IVDAT(1),IVDAT(LX))                        CDC 0772
                C    IOK = UNIT(2)                                               CDC 0774
                C    IF (IOK.GE.0) GO TO 230                                     CDC 0776
                C    ILAST = LENGTH(2)                                           CDC 0778
ISN 0034             IF (ILAST.NE.LENGT(2)) GO TO 230                            INRC0780
                C                                                                INRC0790
                C    CHECK FIRST 12 CHARACTERS OF TITLE                          INRC0800
ISN 0036             DO 50 I= 1, 3                                               INRC0810
ISN 0037             IF (ITITLE(I).NE. IVDAT(I)) GO TO 240                       INRC0820
ISN 0039          50 CONTINUE                                                    INRC0830
ISN 0040             WRITE (6,605)  (IVDAT(I),I=1,3)                             INRC0840
                C                                                                INRC0850
                C    READ AND CHECK INTEGER DATA                                 INRC0860
ISN 0041          60 CALL BUFIN (2,IVDAT(1),LENGT(3),IOK,ILAST)                  IBM 0870
ISN 0042             CALL BUFOLY(2, 0, 3,IOK,ILAST)                              IBM 0880
ISN 0043             IF (IOK.NE.1) GO TO 250                                     IBM 0890
                C 60 LX = LENGT(3)                                               CDC 0891
                C    BUFFER IN (2,1) (IVDAT(1),IVDAT(LX))                        CDC 0892
                C    IOK = UNIT(2)                                               CDC 0894
                C    IF (IOK.GE.0) GO TO 250                                     CDC 0896
                C    ILAST = LENGTH(2)                                           CDC 0898
ISN 0045             IF (ILAST.NE.LENGT(3)) GO TO 250                            INRC0900
ISN 0047             NVOLD = IVDAT(5)                                            INRC0910
ISN 0048          70 NJOLD = IVDAT(6)                                            INRC0920
ISN 0049             NSOLD = IVDAT(7)                                            INRC0925
ISN 0050          80 LPOLD = 41 + 24*NVOLD + 15*NJOLD + 20*NSOLD                 INRC0930
ISN 0051             LENTH4 = LPOLD*NCINT                                        INRC0940
ISN 0052             IF (IVDAT(1).EQ.100.100.250                                 INRC0950
                C                                                                INRC0960
                C    READ A PLOT RECORD                                          INRC0970
ISN 0053          90 CALL BUFIN (2,IVDAT(1),LENTH4,IOK,ILAST)                    IBM 0980
ISN 0054             CALL BUFOLY(2, 0, 0,IOK,ILAST)                              IBM 0990
ISN 0055             IF (IOK.NE.1) GO TO 270                                     IBM 1000
                C 100 LX = LENTH4                                                CDC 1001
                C    BUFFER IN (2,1) (IVDAT(1),IVDAT(LX))                        CDC 1002
                C    IOK = UNIT(2)                                               CDC 1004
                C    IF (IOK.GE.0) GO TO 270                                     CDC 1006
                C    ILAST = LENGTH(2)                                           CDC 1008
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ISN 0057            IF (ISAVE(I).NE.IPLOT) GO TO 250                    INRC1010
ISN 0058            IF (ILAST.NE.LENTH4) GO TO 280                      INRC1015
                C                                                       INRC1020
                C       THIS IS A PLOT RECORD                           INRC1030
ISN 0061            NP = 42                                             INRC1042
ISN 0062            NT = 42 + 3*NVOLD                                   INRC1043
ISN 0063            NX = 42 + 6*NVOLD                                   INRC1044
ISN 0064            NZ = 42 + 8*NVOLD                                   INRC1045
ISN 0065            TIMNEW = VDAT(39)                                   INRC1046
ISN 0066            POWNEW = VDAT(22)                                   INRC1047
ISN 0067            DO 110 I = 1, NVOLD                                 INRC1049
ISN 0068            PNEW(I) = VDAT(NP)                                  INRC1050
ISN 0069            TNEW(I) = VDAT(NT)                                  INRC1051
ISN 0070            XNEW(I) = VDAT(NX)                                  INRC1052
ISN 0071            ZNEW(I) = VDAT(NZ)                                  INRC1054
ISN 0072            NP = NP + 1                                         INRC1055
ISN 0073            NT = NT + 1                                         INRC1056
ISN 0074            NX = NX + 1                                         INRC1057
ISN 0075        110 NZ = NZ + 1                                         INRC1058
                C                                                       
                C COPY IN THE BOUNDARY CONDITION SLAB DATA               BDHT 217
ISN 0076            NSA = 42+24*NVOLD+16*NJOLD+12*NSOLD-1               BDHT 218
ISN 0077            NSF = 42+24*NVOLD+16*NJOLD+5*NSOLD-1                BDHT 219
ISN 0078            NSS = 42+24*NVOLD+16*NJOLD+8I*NSOLD-1               BDHT 220
ISN 0079            DO 111 I=1,NSOLD                                    BDHT 221
ISN 0080            PHSNEW (I) = VDAT(NSF+I)                            BDHT 222
ISN 0081            TSNEW(I) = VDAT(NSS+I)                              BDHT 223
ISN 0082            TANEW(I) = VDAT(NSA+I)                              BDHT 224
ISN 0083        111   CONTINUE                                          BDHT 225
                C                                                       INRC1060
                C       FLOW RATIO CALCULATION, TEST FOR SMOOTHING       INRC1062
ISN 0084            IF (NJSMOO.LE.0) GO TO 180                          INRC1064
ISN 0086            NFLO1 = 1                                           INRC1066
ISN 0087            NFLO2 = 1                                           INRC1068
ISN 0088            OLDTIM(1) = VDAT(39)                                INRC1070
ISN 0089            NWO = 24*NVOLD + 41                                 INRC1072
                C       NJUNS CANNOT BE ZERO IF NJSMOO IS POSITIVE      INRC1074
ISN 0090            DO 160 I = 1, NJUNS                                 INRC1076
ISN 0091            IF (IVALVE(I).GE.0) GO TO 160                       INRC1078
ISN 0093            J = -IVALVE(I)                                      INRC1080
ISN 0094            K = JSMOO(J)                                        INRC1082
ISN 0095            IF (K.GT.0.AND.K.LE.NJOLD) GO TO 130                INRC1084
ISN 0097        120 WRITE (6,612) I, IVALVE(I), K, NJOLD                INRC1086
ISN 0098            CALL FAIL                                           INRC1088
ISN 0099            GO TO 160                                           INRC1090
ISN 0100        130 L = K + NWO                                         INRC1092
ISN 0101            OLDFLO(J,1) = VDAT(L)                               INRC1094
ISN 0102            IF (VDAT(L)*WP(I)) 150,140,150                      INRC1096
ISN 0103        140 WRITE (6,614) I, WP(I), K, VDAT(L)                  INRC1098
ISN 0104            CALL FAIL                                           INRC1100
ISN 0105            GO TO 160                                           INRC1102
ISN 0106        150 FLOFAC(I) = WP(I) / VDAT(L)                         INRC1104
ISN 0107        160 CONTINUE                                            INRC1106
                C                                                       INRC1108
ISN 0108        180 CONTINUE                                            INRC1130
                C                                                       INRC1140
                C       PLOT RECORD OK, TITLE OK.                       INRC1150
ISN 0109        200 WRITE (5,620) NVOLD, NJOLD                          INRC1160
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                C
                C ADD ADDITIONAL VALUE TO OUTPUT                                    BDHT 226
                C     *    ,ASOLD                                                   BDHT 227
ISN 0110              GO TO 410                                                     INRC1320
                C                                                                   INRC1330
                C     *WRONG *CRD COUNT OR ERROR IN FIRST RECORD                    INRC1340
ISN 0111        210 CONTINUE                                                        INRC1341
                C     ILAST = LENGTH(2)                                           CDC 1343
ISN 0112              *RITE (5,621) LENGT(1),IOK,ILAST                              INRC1350
ISN 0113              GO TO 400                                                     INRC1360
                C                                                                   INRC1370
                C     HEADER LABEL HAS *WRONG *ORDS                                 INRC1380
ISN 0114        220 *RITE (5,622)  (IVDAT(I),I=1,ILAST)                             INRC1390
ISN 0115              GO TO 400                                                     INRC1400
                C                                                                   INRC1410
                C     *RONG *CRD COUNT OR ERROR READING TITLE                       INRC1420
ISN 0116        230 CONTINUE                                                        INRC1421
                C     ILAST = LENGTH(2)                                           CDC 1423
ISN 0117              *RITE (5,623) LENGT(2),IOK,ILAST                              INRC1430
ISN 0118              GO TO 400                                                     INRC1440
                C                                                                   INRC1450
                C     *RONG TITLE                                                   INRC1460
ISN 0119        240 *RITE (5,624) ITITLE,  (IVDAT(I),I=1,ILAST)                     INRC1470
ISN 0120              GO TO 400                                                     INRC1480
                C                                                                   INRC1490
                C     *RONG *CRD COUNT OR ERROR IN THIRD RECORD                     INRC1500
ISN 0121        250 CONTINUE                                                        INRC1501
                C     ILAST = LENGTH(2)                                           CDC 1503
ISN 0122              *RITE (5,625) LENGT(3),IOK,ILAST                              INRC1510
ISN 0123              GO TO 400                                                     INRC1520
                C                                                                   INRC1530
                C     ORIGINAL PROBLEM DID NOT PRODUCE A PLOT TAPE                  INRC1540
ISN 0124        260 *RITE (5,626) IVDAT(1), IVDAT(1)                                INRC1550
ISN 0125              GO TO 400                                                     INRC1560
                C                                                                   INRC1570
                C     ERROR READING PLOT RECORD                                     INRC1580
ISN 0126        270 CONTINUE                                                        INRC1581
                C     ILAST = LENGTH(2)                                           CDC 1583
ISN 0127              *RITE (5,627) LENTH4,  IOK,ILAST                              INRC1590
ISN 0128              GO TO 400                                                     INRC1600
                C                                                                   INRC1610
                C     *RONG *ORD COUNT IN PLOT RECORD                               INRC1620
ISN 0129        280 CONTINUE                                                        IBM 1621
                C 280 IOK = UNIT(2)                                                 CDC 1622
                C     ILAST = LENGTH(2)                                           CDC 1623
ISN 0130              *RITE (5,628) LENTH4,  IOK,ILAST                              INRC1630
ISN 0131              GO TO 400                                                     INRC1640
                C                                                                   INRC1650
                C                                                                   INRC1730
                C     ERROR, ABORT JOB, REWIND 2.                                   INRC1740
ISN 0132        400 CALL FAIL                                                       INRC1750
ISN 0133              IFRS = 1                                                      INRC1760
ISN 0134              CALL BUFFER(2, 1,-1,KCK,KLAST)                                IBM 1770
                C     REWIND 2                                                    CDC 1771
                C                                                                   INRC1780
ISN 0135        410 RETURN                                                          INRC1790
                C                                                                   INRC1800
                C                                                                   INRC1810
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ISN 0135        605 FORMAT (29H0OLD RELAP PROBLEM WAS TITLED / 1H0, 19A4)                INRC1820
ISN 0137        612 FORMAT (44H0****** OLD JUNCTION NUMBER IS OUT OF RANGE. /            INRC1822
                   1 1H0,7X,21HNEW JUNCTION NUMBER =,I4,22H, VALVE INDEX IS NOW =,       INRC1823
                   2 I3,23H, OLD JUNCTION NUMBER =,I4,21H, JUNCTIONS ON TAPE =,I4)       INRC1824
ISN 0138        614 FORMAT (40H0****** FLOW RATIO CANNOT BE CALCULATED. /                INRC1825
                   1 1H0,7X,21HNEW JUNCTION NUMBER =,I4,12H, NEW FLOW =,E14.6,           INRC1826
                   2 23H, OLD JUNCTION NUMBER =,I4,12H, OLD FLOW =,E14.6)                INRC1827
                C 620 FORMAT (16H0OLD PROBLEM HAD,I4,12H VOLUMES AND,I4,11H JUNCTIONS.)  INRC1830
                C
                C FIX FORMAT AS NEEDED FOR ADITIONAL PRINTOUT                            8DHT 228
ISN 0139         620   FORMAT(16H0OLD PROBLEM HAD  ,I4,10H VOLUMES   ,I4,                8DHT 229
                  *13H JUNCTIONS AND   ,I4,12H HEAT SLABS    )                          8DHT 230
ISN 0140        621 FORMAT (41H0READING ERROR ATTEMPTING TO READ HEADER..                INRC1840
                   1 20H  EXECUTION DELETED. / 1H0,3I12 )                                INRC1850
ISN 0141        622 FORMAT (44H0NOT A RELAP4 DATA TAPE.  EXECUTION DELETED. /            INRC1860
                   1 1H0,15A4 )                                                          INRC1870
ISN 0142        623 FORMAT (40H0READING ERROR ATTEMPTING TO READ TITLE..                 INRC1880
                   1 20H  EXECUTION DELETED. / 1H0,3I12 )                                INRC1890
ISN 0143        624 FORMAT (39H0OLD AND NEW TITLES CONFLICT.  EXECUTION DELETED. /       INRC1900
                   1 1H0,2A4 / 1H0, 24A4 )                                               INRC1910
ISN 0144        625 FORMAT (52H0ERROR READING OLD INTEGER DATA.  EXECUTION DELETED. /    INRC1920
                   1 1H0,3I12 )                                                          INRC1930
ISN 0145        626 FORMAT (42H0OLD PROBLEM DID NOT CREATE A PLOT RECORD.                INRC1940
                   1 20H  EXECUTION DELETED. / 1H0,I12,9H , , , ,,A4 )                   INRC1950
ISN 0146        627 FORMAT (38H0ERROR ATTEMPTING TO READ PLOT RECORD. / 1H0,3I12 )       INRC1960
ISN 0147        628 FORMAT (41H0PLOT RECORD ENCOUNTERED OF WRONG LENGTH. / 1H0,3I12 )    INRC1970
ISN 0148            END                                                                  INRC2000

*OPTIONS IN EFFECT*       NAME=  MAIN,OPT=02,LINECNT=60,SIZE=0000K,

*OPTIONS IN EFFECT*       SOURCE,EBCDIC,NOLIST,NODECK,LOAD,NOMAP,NOEDIT,ID,NOXREF

*STATISTICS*      SOURCE STATEMENTS =      147 ,PROGRAM SIZE =     3402

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                  651K BYTES OF CORE NOT USED
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        COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=60,SIZE=0000K,
                           SOURCE,EBCDIC,NOLIST,NODECK,LOAD,NOMAP,NOEDIT,ID,NOXREF
ISN 0002            FUNCTION RKEN (NCOR,NSC,DTM)                                    RKEN0010
ISN 0003            IMPLICIT REAL*8 (A-H,O-Z)                                       IBM 0020
                                                                                    RKEN0030
                    C                                                               RKEN0040
                    C     NCOR   = NUMBER OF CORE REGIONS                           RKEN0045
                    C     NSC    = NUMBER OF SCRAM CURVES                           RKEN0050
                    C     DTM    = RELAP TIME INTERVAL                              RKEN0060
                    C                                                               RKEN0061
ISN 0004            COMMON / CORPOW / OPOW, FQ(50), LAMBDA, MU(50), PPOW, PROMPT,   RKEN0062
                   1 QDMOD(50), QFRAC(50), UN(21), QPMOD(50), SE(50), TAU, T4(50),  RKEN0063
                   2 TS(50), VW(50), ISUB(50), IVOL(50)                             IBM 0064
ISN 0005            REAL*8 LAMBDA, MU                                               CDC 0065
                    C     REAL   LAMBDA, MU                                         RKEN0066
                    C                                                               RKEN0070
ISN 0006            COMMON / IRSKIN / ALPHA( 20), CONKIN( 3), EGAM( 14), FI(6),     RKEN0080
                   1QMAX, QMIN                                                      RKEN0090
                    C                                                               RKEN0100
                    C     ALPHA(1-6) = DECAY CONSTANTS FOR DELAYED NEUTRON EMITTERS (SEC-1) RKEN0110
                    C     ALPHA(7-18)= DECAY CONSTANTS FOR GAMMA EMITTERS (SEC-1)   RKEN0115
                    C     ALPHA(19-20)=DECAY CONSTANTS FOR U-239 AND NP-239  (SEC-1) RKEN0120
                    C     CONKIN(1)  = 88.0, A SOLUTION CONSTANT                    RKEN0130
                    C     CONKIN(2)  = 3.05E-5, A SOLUTION CONSTANT--  2**(-15)     RKEN0140
                    C     CONKIN(3)  = SMALLEST RKEN TIME STEP (1.0E-7 SEC)         RKEN0150
                    C     EGAM(1-11) = YIELD FRACTIONS OF GAMMA NEUTRON EMITTERS    RKEN0152
                    C     EGAM(12-13)= EQUIVALENT YIELD FRACTIONS FOR  U-239 & NP-239 RKEN0154
                    C     EGAM(14)   = EQUIVALENT YIELD FRACTION FOR FISSION POWER  RKEN0160
                    C     FI         = DELAYED NEUTRON FRACTIONS                    RKEN0170
                    C     QMAX       = MAXIMUM IREKIN ERROR ( 1.E-3 )               RKEN0180
                    C     QMIN       = MINIMUM IREKIN ERROR ( 1.E-4 )               RKEN0190
                    C                                                               RKEN0250
ISN 0007            COMMON / RKENER / BOVL, DT, RHOIN, W1, UDUF, NODEL, KMUL        RKEN0260
                    C                                                               RKEN0270
                    C     BOVL   = BETA / MEAN NEUTRON LIFETIME                     RKEN0280
                    C     DT     = IREKIN TIME INTERVAL                             RKEN0290
                    C     RHOIN  = INITIAL REACTIVITY                               RKEN0300
                    C     W1     = PERIOD AT PREVIOUS TIME STEP                     RKEN0310
                    C     NODEL  = NUMBER OF DELAYED GROUPS                         RKEN0320
                    C      LE 0  = POWER VS TIME                                    RKEN0330
                    C      GE 1  = REACTIVITY VS TIME                               RKEN0332
                    C     KMUL   = MULTIPLYING FACTOR FOR DECAY ENERGY RELEASE RATES RKEN0334
                    C      EQ 0  = 1.0 ANS RATES                                    RKEN0336
                    C      NE 0  = 1.2 ANS RATES                                    RKEN0337
                    C     UDUF   = U-238 ATOMS CONSUMED PER U-235 ATOMS FISSIONED   RKEN0338
                    C              THE DEFAULT VALUE IS 1.0                         RKEN0340
                    C                                                               RKEN0350
ISN 0008            COMMON / RNDER / PHI( 2, 20), PREAC, SLOPE, SS, SUM, T, W, W3, KK RKEN0360
                    C                                                               RKEN0370
                    C     PHI(1,I) = OLD EMITTER CONCENTRATION                      RKEN0380
                    C     PHI(2,I) = NEW EMITTER CONCENTRACTION                     RKEN0390
                    C     PREAC    = TOTAL REACTIVITY                               RKEN0400
                    C     SLOPE    = RATE OF CHANGE OF REACTIVITY                   RKEN0410
                    C     SS       = TIME INDEPENDENT SOURCE                        RKEN0420
                    C     SUM      = DELAYED NEUTRON SOURCE                         RKEN0430
                    C     T        = IREKIN TIME STEP SIZE                          RKEN0440
                    C     W        = AVERAGE RECIPROCAL PERIOD                      RKEN0450
                    C     W3       = INSTANTANEOUS RECIPROCAL PERIOD                RKEN0460
                    C     KK       = RUNGA KUTTA STAGE
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                C                                                                       RKEN0470
ISN 0009            COMMON / STATUS / OMEGA, PERIOD, POWER, TIMEX,                      RKEN0471
                   1                  PQUITL, PQUITH, TQUITL, TQUITH, NOGO          RKEN0472
ISN 0010            LOGICAL NOGO                                                        RKEN0490
                C                                                                       RKEN0500
                C     OMEGA  = CRANK-NICOLSON IMPLICIT-EXPLICIT PROPORTION MULTIPLIER   RKEN0505
                C     PERIOD = REACTOR PERIOD                                           RKEN0510
                C     POWER  = REACTOR POWER                                            RKEN0520
                C     TIMEX  = ELAPSED PROBLEM TIME                                     RKEN0530
                C     PQUITL = LOWER LIMIT ON PRESSURE IN ANY VOLUME                    RKEN0531
                C     PQUITH = UPPER LIMIT ON PRESSURE IN ANY VOLUME                    RKEN0532
                C     TQUITL = LOWER LIMIT ON TEMPERATURE IN ANY VOLUME                 RKEN0533
                C     TQUITH = UPPER LIMIT ON TEMPERATURE IN ANY VOLUME                 RKEN0534
                C     NOGO   = .TRUE. MEANS PROBLEM FAILURE                             RKEN0540
                C                                                                       RKEN0550
ISN 0011            DIMENSION C1(20), C2(20), C3(20), C11(20), C22(20), R(3,20)         RKEN0560
                C                                                                       RKEN0565
ISN 0012            DATA ZERO, HALF, ONE, ONEPS, TWO                                    RKEN0566
                   1 / 0., 0.5, 1., 1.5, 2. /                                           RKEN0567
                C                                                                       RKEN0568
ISN 0013            IF (NODEL) 5,10,20                                                  RKEN0570
                C                                                                       RKEN0571
                C     GET NORMALIZED POWER FROM OLD PLOT TAPE                           RKEN0572
                C   5 CALL TRDAT(0,TIMEX,POWERN,DUM1,DUM2,DUM3,DUM4,IER)               RKEN0573
                C                                                                       
                C CHANGE TO CALL THE NEW TRDAT WITH ITS NEW ARGUMENTS                   BDHT 231
ISN 0014          5 CALL TRDAT (2,0,TIMEX,POWERN,DUM,DUM,DUM,DUM,IER)                  BDHT 232
ISN 0015            RKEN = POWERN                                                       RKEN0576
ISN 0016            IF (IER) 6,7,7                                                      RKEN0575
ISN 0017          6 WRITE (6,601)                                                       RKEN0576
ISN 0018        601 FORMAT (43HFAILURE TRYING TO GET POWER FROM OLD TAPE.)              RKEN0577
ISN 0019            CALL FAIL                                                           RKEN0578
ISN 0020          7 RETURN                                                              RKEN0579
                C                                                                       RKEN0580
                C     POWER VS TIME                                                     RKEN0590
ISN 0021         10 RKEN = SCRM(NODEL,NSC)                                            RKEN0600
ISN 0022            RETURN                                                              RKEN0610
                C                                                                       RKEN0620
                C     REACTOR KINETICS MODE                                             RKEN0630
ISN 0023         20 IF (NOGO) RETURN                                                    RKEN0640
ISN 0024            CON = ZERO                                                          RKEN0650
ISN 0025            DT = TWO* DT                                                        RKEN0660
ISN 0027            IF (CON+PS*DT.GE.DTM) DT = DTM                                      RKEN0670
ISN 0029            RHO = REAC(NCOR,NODEL,NSC,DT)                                       RKEN0680
ISN 0030            SLOPE = (RHO-PREAC) / DTM                                           RKEN0690
ISN 0031            DTS = DT                                                            RKEN0700
ISN 0032         30 IF (DT .GT. CONKIN(3)) GO TO 40                                     RKEN0710
                C                                                                       RKEN0720
                C     IF=KIN TIME STEP TOO SMALL                                        RKEN0730
ISN 0034            WRITE (6,603) DT, Q, QMIN, QMAX                                     RKEN0740
ISN 0035        603 FORMAT (41HFAILURE IN REACTOR KINETICS INTEGRATION. /               RKEN0750
                   1 12HOTIMEKIN TIME STEP TOO SMALL. / 17HOTIME STEP SIZE =,E16.8 /    RKEN0760
                   2 9HOERROR =,E16.8 / 12HOMIN ERROR =,E16.8 / 12HOMAX ERROR =,E16.8)  RKEN0770
                                                                                        RKEN0780
ISN 0035            CALL FAIL                                                           RKEN0790
ISN 0037            RETURN                                                              RKEN0800
                C                                                                       RKEN0810
ISN 0038         40 ALPHA(1) = BOVL * (PREAC-ONE)                                       RKEN0820
ISN 0039            LL = 1
```

```
ISN 0040            IF (CON .EQ. DT) LL = 2                                                  RKEN0830
                C                                                                            RKEN0840
                CCCC  IF ALPHA(I) TIMES TIME INTERVAL IS GREATER THAN 88,                    RKEN0850
                CCC     THE TIME INTERVAL IS HALVED.                                         RKEN0860
                CCC                                                                          RKEN0870
ISN 0042            IF (ALPHA(I)*DT .GE. CONKIN(I)) GO TO 260                                RKEN0880
ISN 0044            DEL = ZERO                                                               RKEN0890
ISN 0045            KK = 0                                                                   RKEN0900
ISN 0046            J=1                                                                      RKEN0910
ISN 0047            K = 1                                                                    RKEN0920
                C                                                                            RKEN0930
                C         COMPUTATION OF  R FACTORS USED IN RUNGA KUTTA METHOD               RKEN0940
ISN 0048            T = ZERO                                                                 RKEN0950
                C                                                                            RKEN0960
ISN 0049         50 SUM =  ZERO                                                              RKEN0970
ISN 0050            DO 60 I=2,7                                                              RKEN0980
ISN 0051         60 SUM = FII(I-1)*PHI(J,I) + SUM                                            RKEN0990
ISN 0052            IF ( KK.GE.1 .AND. T*SLOPE+PREAC.LT.ONE ) CALL RNOD                      RKEN1000
ISN 0054            R(K,1) = DOVL * (T*SLOPE*PHI(J,1) + SUM + SS)                            RKEN1010
ISN 0055            DO 70 I= 2, NODEL                                                        RKEN1020
ISN 0056         70 R(K,I) = -ALPHA(I) * PHI(J,1)                                            RKEN1030
ISN 0057            KK = KK + 1                                                              RKEN1040
ISN 0058            J = 2                                                                    RKEN1050
ISN 0059            GO TO (90, 110, 130, 150, 170) , KK                                      RKEN1060
                C                                                                            RKEN1070
                CCC       1ST STAGE OF RUNGA KUTTA                                           RKEN1080
                CCC                                                                          RKEN1090
ISN 0060         80 DO 100 I= 1, NODEL                                                       RKEN1100
ISN 0061            IF (LL .EQ. 2 .AND. I .GT. 1) GO TO 90                                   RKEN1110
ISN 0063            CALL CCC   (ALPHA(I)*DT*HALF,C11(I), C22(I),R(3,I))                      RKEN1120
ISN 0064         90 PHI(2,I) = PHI(1,I) + HALF*DT*(ALPHA(I)*PHI(1,I) + R(1,I))*C11(I)        RKEN1130
ISN 0065            IF (I .GT. 7) GO TO 100                                                  RKEN1140
ISN 0067            DELN = DABS(ONE-PHI(1,I)/PHI(2,I))                                       IBM 1150
                C       DELN =  ABS(ONE-PHI(1,I)/PHI(2,I))                                   CDC 1151
ISN 0068            IF (DELN .GT. DEL) DEL = DELN                                            RKEN1160
ISN 0070         100 CONTINUE                                                                RKEN1170
ISN 0071            T = DT / TWO                                                             RKEN1180
ISN 0072            K = 2                                                                    RKEN1190
ISN 0073            GO TO 50                                                                 RKEN1200
                C                                                                            RKEN1210
                CCC       2ND STAGE OF RUNGA KUTTA                                           RKEN1220
                C                                                                            RKEN1230
ISN 0074         110 DO 120 I= 1, NODEL                                                      RKEN1240
ISN 0075         120 PHI(2,I) = PHI(2,I) + HALF*DT*(R(2,I) - R(1,I))*C22(I)                  RKEN1250
ISN 0076            GO TO 50                                                                 RKEN1260
                C                                                                            RKEN1270
                CCC       3RD STAGE OF RUNGA KUTTA                                           RKEN1280
                C                                                                            RKEN1290
ISN 0077         130 DO 140 I= 1, NODEL                                                      RKEN1300
ISN 0078            IF (LL .EQ. 2 .AND. I .GT. 1) GO TO 140                                  RKEN1310
ISN 0080            CALL CCC    (ALPHA(I)*DT,   C1(I),C2(I),C3(I))                          RKEN1320
ISN 0081         140 PHI(2,I) = PHI(1,I) + DT*(ALPHA(I)*PHI(1,I) + R(1,I))*C1(I) +           RKEN1330
                1          TWO*DT*(R(2,I) - R(1,I))*C2(I)                                   RKEN1340
ISN 0082            K = 3                                                                    RKEN1350
ISN 0083            T = DT                                                                   RKEN1360
ISN 0084            GO TO 50                                                                 RKEN1370
                C                                                                            RKEN1380
                C         4TH STAGE OF RUNGA KUTTA                                           RKEN1390
```

```
                C
ISN 0085          150 DO 160 I= 1, NODEL                                                    RKEN1400
ISN 0086          150 PHI(2,I) = PHI(2,I)+DT*(R(1,I)-TWO*R(2,I)+R(3,I))*(TWO*C3(I)          RKEN1410
                     1         - C2(I))                                                     RKEN1420
ISN 0087              K = 2                                                                 RKEN1430
ISN 0088              GO TO 50                                                              RKEN1440
                C                                                                           RKEN1450
                C         5TH STAGE OF RUNGA KUTTA                                        RKEN1460
                C                                                                           RKEN1470
ISN 0089          170 DO 180 I= 1, NODEL                                                    RKEN1480
ISN 0090          180 PHI(2,I) = PHI(2,I) + DT*(R(2,I) - R(3,I))*(C3(I)*TWO - C2(I))        RKEN1490
                C                                                                           RKEN1500
                C         CHECKING ACCURACY OF SOLUTION                                   RKEN1510
                C                                                                           RKEN1520
ISN 0091              SUM =ZERO                                                             RKEN1530
ISN 0092              DO 190 I=2,7                                                          RKEN1540
ISN 0093          190 SUM = FI(I-1)*PHI(2,I) + SUM                                          RKEN1550
ISN 0094              R(1,1) = BOVL * (T*SLOPE*PHI(2,1) + SUM + SS)                         RKEN1560
ISN 0095              W3 = ALPHA(1) + R(1,1)/PHI(2,1)                                       RKEN1570
ISN 0096              W    = DLOG(PHI(2,1)/PHI(1,1))/DT                                     RKEN1580
                C     W    = ALOG(PHI(2,1)/PHI(1,1))/DT                                     IBM 1590
ISN 0097              IF (T*SLOPE+PREAC .LT. ONE) CALL RNDO                                 CDC 1591
ISN 0099              Q = DT * C2(1) * (DABS(W1-TWO*W+W3)) / (ONE+C1(1))                    RKEN1600
                C     Q = DT * C2(1) * ( ABS(W1-TWO*W+W3)) / (ONE+C1(1))                    IBM 1610
ISN 0100              CON = DT                                                              CDC 1611
ISN 0101              IF (DEL .GT. CONXIN(2)) GO TO 250                                     RKEN1620
ISN 0103          200 DO 210 I= 1, NODEL                                                    RKEN1630
ISN 0104          210 PHI(1,I) = PHI(2,I)                                                   RKEN1640
ISN 0105              PREAC = PREAC + DT*SLOPE                                              RKEN1650
ISN 0106              W1 = W3                                                               RKEN1660
ISN 0107              IF (DTS .EQ. DTM) GO TO 290                                           RKEN1670
ISN 0109              IF (Q.LT.QMIN) DT = TWO * DT                                          RKEN1680
ISN 0111          220 IF (DTM-DTS-ONEPS*DT) 240,240,230                                     RKEN1690
ISN 0112          230 DTS = DTS + DT                                                        RKEN1700
ISN 0113              GO TO 30                                                              RKEN1710
ISN 0114          240 DT = DTM - DTS                                                        RKEN1720
ISN 0115              DTS=DTM                                                               RKEN1730
ISN 0116              GO TO 30                                                              RKEN1740
ISN 0117          250 IF (Q.LT.QMIN) GO TO 200                                              RKEN1750
ISN 0119              IF (Q.LT.QMAX) GO TO 270                                              RKEN1760
                C                                                                           RKEN1770
                C         TIME STEP IS HALVED                                             RKEN1780
                C                                                                           RKEN1790
ISN 0121          260 DT = DT * HALF                                                        RKEN1800
ISN 0122              DTS = DTS - DT                                                        RKEN1810
ISN 0123              GO TO 30                                                              RKEN1820
ISN 0124          270 DO 280 I= 1, NODEL                                                    RKEN1830
ISN 0125          280 PHI(1,I) = PHI(2,I)                                                   RKEN1840
ISN 0126              PREAC = PREAC + DT*SLOPE                                              RKEN1850
ISN 0127              W1 = W3                                                               RKEN1860
ISN 0128              IF (DTS .EQ. DTM) GO TO 290                                           RKEN1870
ISN 0130              GO TO 220                                                             RKEN1880
                C                                                                           RKEN1890
                C         POWER CALCULATION                                               RKEN1900
                C                                                                           RKEN1910
ISN 0131          290 SUM = ZERO                                                            RKEN1920
ISN 0132              IM = 11                                                               RKEN1930
ISN 0133              IF(NODEL .EQ. 20) IM = 13                                             RKEN1932
                                                                                            RKEN1934
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   ISN 0135           DO 300 I=1,IM                                                  RKEN1940
   ISN 0136       300 SUM = EGAM(I)*PHI(2,I+7) + SUM                                 RKEN1950
   ISN 0137           PPOW = PHI(2,1)*PRUMPT                                         RKEN1955
   ISN 0138           DPOW = SUM                                                     RKEN1960
   ISN 0139           RKEN = PPOW + DPOW                                             RKEN1965
                C                                                                    RKEN1970
                C          CALCULATION  OF POWER WHEN GAMMA DECAY HEAT NOT USED (LVAR = RKEN1980
                C            7 )                                                     RKEN1990
   ISN 0140           IF (NODEL.LT.15) RKEN = PHI(2,1)                               RKEN2000
   ISN 0142           PREAC = RHO                                                    RKEN2010
   ISN 0143           IF (W3) 320,310,320                                            RKEN2020
   ISN 0144       310 PERIOD = ZERO                                                  RKEN2030
   ISN 0145           GO TO 330                                                      RKEN2040
   ISN 0146       320 PERIOD = ONE / W3                                              RKEN2050
   ISN 0147       330 RETURN                                                         RKEN2060
   ISN 0148           END                                                            RKEN2070

*OPTIONS IN EFFECT*       NAME= MAIN,OPT=02,LINECNT=60,SIZE=0000K,

*OPTIONS IN EFFECT*       SOURCE,EBCDIC,NOLIST,NODECK,LOAD,NOMAP,NOEDIT,ID,NOXREF

*STATISTICS*      SOURCE STATEMENTS =      147 ,PROGRAM SIZE =      4544

*STATISTICS*  40  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                  847K BYTES OF CORE NOT USED
```

```
ISN 0135          DO 300 I=1,IM                                               RKEN1940
ISN 0136      300 SUM = EGAM(I)*PHI(2,I+7) + SUM                              RKEN1950
ISN 0137           PPOW = PHI(2,1)*PROMPT                                     RKEN1955
ISN 0138          DPOW = SUM                                                  RKEN1960
ISN 0139           RKEN = PPOW + DPOW                                         RKEN1965
              C                                                               RKEN1970
              C          CALCULATION  OF POWER WHEN GAMMA DECAY HEAT NOT USED (LVAR = RKEN1980
              C          7 )                                                  RKEN1990
ISN 0140          IF (NODEL.LT.18) RKEN = PHI(2,1)                            RKEN2000
ISN 0142          PREAC = RHO                                                 RKEN2010
ISN 0143          IF (W3) 320,310,320                                         RKEN2020
ISN 0144      310 PERIOD = ZERO                                               RKEN2030
ISN 0145          GO TO 330                                                   RKEN2040
ISN 0146      320 PERIOD = ONE / W3                                           RKEN2050
ISN 0147      330 RETURN                                                      RKEN2060
ISN 0148          END                                                         RKEN2070

*OPTIONS IN EFFECT*       NAME=  MAIN,OPT=02,LINECNT=60,SIZE=0000K,

*OPTIONS IN EFFECT*       SOURCE,EBCDIC,NOLIST,NODECK,LOAD,NOMAP,NOEDIT,ID,NOXREF

*STATISTICS*      SOURCE STATEMENTS =      147 ,PROGRAM SIZE =      4546

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                   647K BYTES OF CORE NOT USED
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          COMPILER OPTIONS - NAME= MAIN,OPT=02,LINECNT=60,SIZE=0000K,
                             SOURCE,EBCDIC,NOLIST,NODECK,LOAD,NOMAP,NOEDIT,ID,NOXREF
ISN 0002            SUBROUTINE SINITL (NSLB, MS, MM, MN, MT,                          SINI0010
                   1                   IPRBLM, ISMHT, IEMPS, IEMEC, IDEBUG)         SINI0011
ISN 0003            IMPLICIT REAL*8 (A-H,O-Z)                                         IBM 0020
                    C                                                                 SINI0030
                    C     NSLB   = NUMBER OF HEAT SLABS                               SINI0040
                    C     MS     = MAXIMUM NUMBER OF HEAT SLABS                       SINI0050
                    C     MM     = MAXIMUM NUMBER OF HEAT SLAB MATERIALS              SINI0060
                    C     MN     = MAXIMUM NUMBER OF NODES IN HEAT SLABS              SINI0070
                    C     MT     = MAXIMUM NUMBER OF TABLE VALUES                     SINI0080
                    C     IPRBLM = TYPE OF CALCULATION                                SINI0085
                    C     IEMPS  = EVALUATION MODEL CALCULATION FLAG                  SINI0086
                    C     IDEBUG = DEBUG PRINT FLAG                                   SINI0087
                    C                                                                 SINI0090
                    C                                                                 
ISN 0004            COMMON /PCSLAB/ PHSOLE(50),TSOLO(50),TADLO(50),                   3DHT 233
                   1                PHSNEW(50),TSNEW(50),TANEW(50),IBCS(50)         8DHT 234
ISN 0005            COMMON /BALED / AE,  AMASS, PMASS, SMASSA, DMASS, DMASSA, EB,     SINI0100
                   *  FE, HG, PNORM, POWRI, QLOSS, UFILL, ULOSS                       SINI0110
                    C                                                                 SINI0120
                    C     EB     = ENERGY BALANCE                                     SINI0130
                    C     FE     = ENERGY IN HEAT SLABS                               SINI0140
                    C     PNORM  = NORMALIZED REACTOR POWER                           SINI0150
                    C     POWRI  = INITIAL REACTOR POWER                              SINI0160
                    C                                                                 SINI0170
ISN 0006            COMMON / CORMAX / CLTI(50), CTS(50), CTFL(50), R20(50), MWREAC    SINI0180
ISN 0007             LOGICAL MWREAC                                                   SINI0200
                    C                                                                 SINI0210
                    C     CLTI   = INITIAL CLAD THICKNESS, FT                         SINI0230
                    C     CTS    = DEPTH REACTION HAS PENETRATED CLADDING AT END OF ANY TIME  SINI0240
                    C              STEP, FT                                           SINI0250
                    C     CTFL   =  DEPTH REACTION HAS PENETRATED CLADDING AT START OF ANY TIMESINI0260
                    C              STEP, FT                                           SINI0270
                    C     R20    = ORIGINAL FUEL PIN RADIUS, FT                       SINI0300
                    C     MWREAC = .TRUE. INDICATES METAL-WATER REACTION MODEL DESIRED SINI0330
                    C                                                                 SINI0340
ISN 0008            COMMON / CORPOW / DPOW, FQ(50), LAMBDA, MQ(50), PPOW, R2OMPT,     SINI0350
                   1 QDMOD(50), QFRAC(50), QN(21), QPMOD(50), SF(50), TAU, TM(50),    SINI0355
                   2 TS(50), VW(50), ISLB(50), IVOL(50)                               SINI0360
ISN 0009            REAL*8 LAMBDA, MQ                                                 IBM 0365
                    C     REAL   LAMBDA, MQ                                           CDC 0366
                    C                                                                 SINI0370
                    C     FQ     = NUCLEAR POWER GENERATION IN CORE HEAT SLAB, MW      SINI0390
                    C     QFRAC  = FRACTION OF POWER IN CORE SECTION                  SINI0395
                    C     QN     = HEAT GENERATION RATE, BTU/FT**3-SEC                SINI0400
                    C     TM     = AVERAGE TEMPERATURE OF CORE HEAT SLAB              SINI0410
                    C     TS     = SURFACE TEMPERATURE OF CORE HEAT SLAB              SINI0420
                    C     VW     = WATER SPECIFIC VOLUME                              SINI0430
                    C     ISLB   = HEAT SLAB NUMBER                                   SINI0440
                    C     IVOL   = VOLUME NUMBER                                      SINI0450
                    C                                                                 SINI0460
ISN 0010            COMMON / ENVAR / FLOWA(75),FLOWL(75),FLOWRA(75),WVBAR(75),        SINI0470
                   1 WVBARG(75),SPVZ(75),SPVZG(75),AINFEV(75),CMAS(75),DIAMV(75),     SINI0480
                   2 FANING(75),ELUDE(75),IPMV(75),CMACHV(75),JTPMV(75),              SINI0490
                   3  IFAN(75),JVISC(75),LAMBLO(75), EIN(75), IOUT(75)               SINI0500
                    C                                                                 SINI0510
                    C     FLOWA  = VOLUME FLOW AREA (FT2), INPUT                      SINI0520
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C      WVHAR    = AVERAGE VOLUME FLOW (LBM/SEC)                                  SINI0530
C      SPVZ     = VOLUME AVERAGE SPECIFIC VOLUME (FT3/LBM)                       SINI0540
C      IIN,IOUT = PRIMARY INLET AND OUTLET JUNCTION NUMBERS                      SINI0542
C                                                                                SINI0544
ISN 0011       COMMON /FLOOD/       BFFF,     CORCHL, DELT3(12),      DTSUB,   SINI0546
     1              DZ,          EN,         END,        ENI,        EN2,      SINI0548
     2         ENOLD,          HCI,        HC2,       HCOUT,       HOLD,      SINI0550
     3          HRAD,    HTK(12),     QMAXFD,      QTOTF,      TIMIT,         SINI0552
     4      TKPR(12), TPKPR(12),     TQUENH,         TQ, TSKPR(12),            SINI0554
     5          VOLD,       XMOLD,                                              SINI0556
     6          IENT, IFLAG(12),        IHM, ISWKK(50),      JUNIN,           SINI0558
     7        JUNOUT,     JUNSSL,     JUNWSL,       NAL,      NCVOL,          SINI0560
     8        NOCVOL,     NLPVOL,NSGVOL(12),      NSGV,     NUPVOL           SINI0562
C      LEVEL 2,BFFF                                                              CDC 0563
C                                                                                SINI0564
C FM                                                                             SINI0622
ISN 0012       COMMON /REEM/ PIN(50),EF(50),EC(50),HCOND(50),TJUMP(50),FRACT(50),SINI0623
     1 AFF(7,50), QLKJUN(100), HFOIN(50), CTPIN(50),                             SINI0624
     2PITCH,        AMASS0,VINPUT,TAB1(50),TAB2(50),TAB3(50),TAB4(50),          SINI0625
     3ISWJUN(100),IROPFG(50), IRGPIN, IRGGAP, IRGSW, IACCVF(4), ITRIP(4),SINI0626
     4IDNCMV,IREMV(10),ITP(100),ISLBAJ(50),ISWTAB(50),NTAB1,NTAB2,NTAB3,SINI0627
     5NTAB4,IWSPR                                                                SINI0628
C      LEVEL 2,PIN                                                               CDC 0629
C **                                                                             SINI0630
ISN 0013       COMMON / REFWAP / FSWELL(50), EPSMXR(50), GSMDL(50), PINF(50),    SINI0531
     1     RPIN(50), RSHD(50), VPLENI(50)                                        SINI0532
     2 ,   FPEL(50), AS(50), VSP(50), PMDL(50), QPL(50), TPL(5,2,50),            SINI0534
     3     GAMPPL(50)                                                            SINI0536
C      LEVEL 2, FSWELL                                                           CDC 0638
C FM                                                                             SINI0540
ISN 0014       COMMON / SLAB   /      AHTL(50), AHTR(50), HDML(50), HDMR(50),   SINI0642
     *   CHNL(50), CHNR(50), DHEL(50), DHER(50), FCHL(50), FCHR(50),             SINI0644
     1   HTCL(50), HTCR(50), PHIL(50), PHIR(50), SLEN(50), VOLS(50),             SINI0646
     2   WQCL(50), WQCR(50), XSLL(50), XSLR(50), ZBOT(50), ZTOP(50),             SINI0650
     *   IHCL(50), IHCR(50), IHTL(50), IHTR(50), IMCL(50), IMCR(50),             SINI0652
     3   ISCO(50), ISHD(50), ISSB(50), ISST(50), IVSL(50), IVSR(50),             SINI0660
     4   IXLO(50)                                                                SINI0662
C      LEVEL 2,AHTL                                                              CDC 0663
C                                                                                SINI0570
C      AHTL = HEAT TRANS AREA AT LEFT  SLAB SURFACE, FT**2                       SINI0580
C      AHTR = HEAT TRANS AREA AT RIGHT SLAB SURFACE, FT**2                       SINI0690
C             HEAT TRANS AREAS ARE TOTAL UP TO INHEAT, THEN /UNIT LENGTH         SINI0691
C      HDML = HYDRAULIC DIAMETER OF VOLUME ON LEFT  OF SLAB, FT                  SINI0700
C      HDMR = HYDRAULIC DIAMETER OF VOLUME ON RIGHT OF SLAB, FT                  SINI0710
C      CHNL = CHANNEL LENGTH ON  LEFT OF SLAB, FT                                SINI0712
C      CHNR = CHANNEL LENGTH ON RIGHT OF SLAB, FT                                SINI0713
C      DHEL = HEATED EQUIVALENT DIAMETER ON  LEFT OF SLAB, FT                    SINI0714
C      DHER = HEATED EQUIVALENT DIAMETER ON RIGHT OF SLAB, FT                    SINI0715
C      FCHL = CRITICAL HEAT FLUX AT  LEFT SLAB SURFACE, BTU/FT**2-HR             SINI0716
C      FCHR = CRITICAL HEAT FLUX AT RIGHT SLAB SURFACE, BTU/FT**2-HR             SINI0717
C      HTCL = HEAT TRANS COEF AT LEFT  SLAB SURFACE, BTU/FT**2-HR-F              SINI0720
C      HTCR = HEAT TRANS COEF AT RIGHT SLAB SURFACE, BTU/FT**2-HR-F              SINI0730
C      PHIL = HEAT FLUX AT LEFT  SLAB SURFACE, BTU/FT**2-HR                      SINI0740
C      PHIR = HEAT FLUX AT RIGHT SLAB SURFACE, BTU/FT**2-HR                      SINI0750
C      SLEN = EQUIVALENT LENGTH OF HEAT SLAB, FT                                 SINI0760
C      VOLS = VOLUME OF HEAT SLAB, FT**3                                         SI 10770
C      WQCL = HEAT TRANS RATE TO FLUID AT LEFT  SLAB SURFACE, BTU/HR             SINI0780
C      WQCR = HEAT TRANS RATE TO FLUID AT RIGHT SLAB SURFACE, BTU/HR             SINI0790
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C      XSLL,R = LOCAL QUALITY FOR HEAT SLAB ON LEFT, RIGHT SIDES          SINI0792
C      ZBOT = HEIGHT OF BOTTOM OF SLAB ABOVE BOTTOM OF R VOL (L IF NO R)  SINI0795
C      ZTOP = HEIGHT OF TOP OF SLAB ABOVE BOTTOM OF R VOL (L IF NO R)     SINI0796
C      IBCL = LEFT  BOUNDARY CONDITION INDICATOR                          SINI0800
C      IBCR = RIGHT BOUNDARY CONDITION INDICATOR                          SINI0810
C      IHTL = HEAT TRANS MODE AT LEFT SLAB SURFACE                        SINI0820
C      IHTR = HEAT TRANS MODE AT RIGHT SLAB SURFACE                       SINI0830
C      IMCL,R = INDICATOR FOR HEAT TRANSFER CORRELATIONS                  SINI0834
C      ISCO = CORE NUMBER                                                 SINI0840
C      ISHD = NUMBER OF DIMENSIONS FOR HEAT TRANSFER                      SINI0850
C      ISSB = INDEX NO OF SLAB AT BOTTOM OF AXIAL STACK                   SINI0860
C      ISST = INDEX NO OF SLAB AT TOP    OF AXIAL STACK                   SINI0870
C      IVSL = INDEX NO OF VOLUME AT LEFT  SURFACE OF SLAB                 SINI0880
C      IVSR = INDEX NO OF VOLUME AT RIGHT SURFACE OF SLAB                 SINI0890
C      IXLO = INDICATOR FOR LOCAL X CALCULATION                           SINI0892
C                                                                         SINI0900
ISN 0015       COMMON / SLABAT / AP(21,50), TP(21,50),                    SINI0910
     1           IGOM(50), ITPC(6,50), ITPK(6,50), ITPX(6,50)            SINI0920
C      LEVEL 2,AP                                                         CDC 0921
C                                                                         SINI0930
C      AP    = -2 * SURFACE WEIGHT * THERMAL CONDUCTIVITY                 SINI0940
C      TP    = TEMPERATURE, F                                             SINI0950
C      IGOM = GEOMETRY INDEX                                              SINI0960
C      ITPC = CURRENT POSITION IN TPC TABLE                               SINI0970
C      ITPK = CURRENT POSITION IN TPK TABLE                               SINI0980
C      ITPX = CURRENT POSITION IN TPX TABLE                               SINI0990
C                                                                         SINI1000
ISN 0016       COMMON / SLABCK / CR(21), TK(21), TL(50), TR(50)           SINI1010
C      LEVEL 2,CR                                                         CDC 1011
C                                                                         SINI1020
C      CR    = VOLUMETRIC HEAT CAPACITY, BTU/FT**3-F                      SINI1030
C      TK    = THERMAL CONDUCTIVITY, BTU/FT-SEC-F                         SINI1040
C      TL    = LEFT  SINK TEMPERATURE, F                                  SINI1050
C      TR    = RIGHT SINK TEMPERATURE, F                                  SINI1060
C                                                                         SINI1070
ISN 0017       COMMON / SLABGM / ASUL(20), ASUR(20), PDFR(6,20), S(21,20), SINI1080
     1   VP(21,20), VREG(6,20), VRI(6,20), XDCR(6,20),                    SINI1090
     2        IGAP(6,20), IKC(6,20), NI(6,20), NSI(20)                    SINI1100
C      LEVEL 2,ASUL                                                       CDC 1101
C                                                                         SINI1110
C      ASUL = LEFT  SURFACE AREA (FOR UNIT HEIGHT IN REC OR CYL GEOM)     SINI1120
C      ASUR = RIGHT SURFACE AREA (FOR UNIT HEIGHT IN REC OR CYL GEOM)     SINI1130
C      PDFR = FRACTION OF POWER IN REGION OF CORE HEAT SLAB               SINI1140
C      S     = SURFACE AREA WEIGHT, A/2DX                                 SINI1150
C      VP    = VOLUME, FT**3                                              SINI1160
C      VREG = VOLUME OF REGION PER FOOT OF LENGTH, FT**3                  SINI1170
C      VRI   = VOLUME RATIO AT INTERFACE                                  SINI1180
C      XDCR = COLD RADIUS OR DISTANCE TO RIGHT SURFACE OF REGION          SINI1190
C      IGAP = GAP INDICATOR  (0 = NOT A GAP)                              SINI1200
C      IKC   = MATERIAL INDEX                                             SINI1210
C      NI    = NODE NUMBER AT INTERFACE                                   SINI1220
C      NSI   = NODE NUMBER AT RIGHT SURFACE                               SINI1230
C                                                                         SINI1240
ISN 0018       COMMON / SLABTP / TPC(40,7), TPCI(20,7), TPK(40,7), TPX(40,7), SINI1250
     1                    NCP(7), NKP(7), NXP(7)                         SINI1260
C      LEVEL 2,TPC                                                        CDC 1261
C                                                                         SINI1270
C      TPC   = TABLES OF VOL HEAT CAPACITY VS TEMPERATURE                 SINI1280
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C      TPCI = INTEGRAL TABLES OF TPC                                          SINI1290
C      TPK  = TABLES OF THERMAL CONDUCTIVITY VS TEMPERATURE                   SINI1300
C      TPX  = TABLES OF LINEAR EXPANSION COEFFICIENT VS TEMPERATURE           SINI1310
C      NCP  = NUMBER OF POINTS IN TPC TABLE                                   SINI1320
C      NKP  = NUMBER OF POINTS IN TPK TABLE                                   SINI1330
C      NXP  = NUMBER OF POINTS IN TPX TABLE                                   SINI1340
C                                                                             SINI1350
ISN 0019       COMMON / SLABWK / BA(84), GL(50), GR(50),                      SINI1360
     1      HTO(50), PHOL(50), PHOR(50), QAWP(50), IC(50)                     SINI1370
       LEVEL 2,PA                                                            CDC 1371
C                                                                             SINI1380
C      WORKING SPACE FOR HEAT CONDUCTION CALCULATIONS                         SINI1390
C                                                                             SINI1400
C      QMAP = HEAT GENERATED BY M-W REACTION PER FOOT OF ROD, BTU/SEC         SINI1410
C                                                                             SINI1420
ISN 0020       COMMON / STATUS / OMEGA, PERIOD, POWER, TIMEX,                 SINI1421
     1                   PQUITL, PQUITH, TQUITL, TQUITH, NOGO                 SINI1422
ISN 0021       LOGICAL NOGO                                                   SINI1440
C                                                                             SINI1450
C      OMEGA  = CRANK-NICOLSON IMPLICIT-EXPLICIT PROPORTION MULTIPLIER        SINI1460
C      POWER  = REACTOR POWER, MW                                             SINI1470
C      PQUITL = LOWER LIMIT ON PRESSURE IN ANY VOLUME                         SINI1471
C      PQUITH = UPPER LIMIT ON PRESSURE IN ANY VOLUME                         SINI1472
C      TQUITL = LOWER LIMIT ON TEMPERATURE IN ANY VOLUME                      SINI1473
C      TQUITH = UPPER LIMIT ON TEMPERATURE IN ANY VOLUME                      SINI1474
C      NOGO   = .TRUE. INDICATES PROBLEM FAILURE                              SINI1480
C                                                                             SINI1490
ISN 0022       COMMON / VOLED / AVED(75), AVEX(75), SATP(75), SATT(75),       SINI1500
     1SATVF(75), SATVG(75)                                                    SINI1510
C                                                                             SINI1520
C      AVED   = AVERAGE DENSITY                                               SINI1530
C      AVEX   = AVERAGE QUALITY                                               SINI1540
C      SATP   = SATURATION PRESSURE                                           SINI1550
C      SATT   = SATURATION TEMPERATURE                                        SINI1560
C      SATVF  = SATURATION SPECIFIC VOLUME OF LIQUID                          SINI1570
C      SATVG  = SATURATION SPECIFIC VOLUME OF GAS                             SINI1580
C                                                                             SINI1590
ISN 0023       COMMON / VOLIP / A(75), HW(75), P(75), TEMP(75), ZL(75),       SINI1600
     1 ZM(75), ZMO(75), IQIN(75), IREAD(75)                                   SINI1610
C                                                                             SINI1620
C      HW     = VOLUME SPECIFIC ENTHALPY                                      SINI1630
C      P      = VOLUME PRESSURE                                               SINI1640
C      TEMP   = VOLUME TEMPERATURE                                            SINI1650
C      ZMC  = MIXTURE LEVEL FOR PREVIOUS TIME STEP                            SINI1670
C                                                                             SINI1680
ISN 0024       COMMON /VOLES1/ GASM(75), GASV(75), LIQV(75), MASS(75), MIXV(75),SINI1690
     *ARMAS(75),SATHF(75),SATHG(75),U(75),VC(75),WPTIME,                      SINI1700
     * IWPAC(100),IWPEDT                                                     SINI1705
ISN 0025       REAL*8  MIXV, LIQV                                             IBM 1710
C      REAL    MIXV, LIQV                                                     CDC 1711
C                                                                             SINI1720
C      SATHF = SPECIFIC ENTHALPY OF SATURATED LIQUID                          SINI1730
C      SATHG = SPECIFIC ENTHALPY OF SATURATED GAS                             SINI1740
C      WPTIME = STARTING TIME FOR APPLYING WATER PACKING ADJUSTMENTS          SINI1742
C      IWPAC  = WATERPACKING FLAGS, SEE SUBROUTINE WPACK FOR DEFINITION       SINI1745
C      IWPEDT = MAXIMUM NUMBER OF WATER PACK EDITS FOR ANY GIVEN VOLUME       SINI1745
C                                                                             SINI1750
ISN 0026       COMMON / XUNITS / ALARG, BTUMWH, CFMGPS, FOOT, FRBTU,          SINI1760
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                     1 GAMMA, GRAVTY, G120PI, PI, ROTENG, SECHR, SQINCH                  SINI1770
                C                                                                        SINI1780
                C     BTUMWH = 3.413D+6   BTU / MW-HOUR                                  SINI1790
                C     FOOT   = 12.0 IN / FT                                              SINI1800
                C     PI     = PI                                                        SINI1810
                C     SECHR  = 3600. SECONDS / HOUR                                      SINI1820
                C                                                                        SINI1830
ISN 0027              DATA  ZERO, ONE, TWO / 0.0, 1.0, 2.0 /                             SINI1840
ISN 0028              DATA  TEN, IU / 1.0, 50 /                                          SINI1855
ISN 0029              DATA DT / 0. /                                                     SINI1856
ISN 0030              DATA  TENM9 / 1.0D9 /                                              IBM 1857
                C     DATA  TENM9 / 1.0E9 /                                              CDC 1858
ISN 0031              DATA  IS1, IS2 / 1, 2 /                                            SINI1859
ISN 0032              DATA  DUM1,DUM2,DUM3,DUM4,DUM5,DUM6,DUM7,DUM8 / 8*0 /              SINI1861
ISN 0033              DATA  IDUM1, IDUM2 / 0, 0 /                                        SINI1863
                C                                                                        SINI1865
ISN 0034              IF (IPROGM .NE. 2) GO TO 7                                         SINI1867
                C                                                                        SINI1869
                C *** FLOW CHANGE FOR FORCING SG RHS HEAT TRANSFER COEFF                 SINI1871
ISN 0035              IF (NSGV .LE. 0) GO TO 7                                           SINI1873
ISN 0036              DO 5 KK=1,NSLB                                                     SINI1875
ISN 0037              ISWKK(KK) = 0                                                      SINI1877
ISN 0038              DO 4 KRK = 1,NSGV                                                  SINI1879
ISN 0039              IF (IVSR(KK).EQ.NSGVOL(KRK)) ISWKK( KK ) = 1                       SINI1881
ISN 0040            4 CONTINUE                                                           SINI1883
ISN 0041            5 CONTINUE                                                           SINI1885
ISN 0042            7 CONTINUE                                                           SINI1887
                C                                                                        SINI1589
ISN 0043              MN3 = 3*MN                                                         SINI1891
                C                                                                        SINI1893
ISN 0044              IF (NSLB.LE.0) GO TO 300                                           SINI1895
                C                                                                        SINI1900
                C     SET UP NEEDED QUANTITIES FOR ALL HEAT SLABS                        SINI1910
                C                                                                        SINI1920
ISN 0045              II = 0                                                             SINI1925
ISN 0046              DO 150 L=1,NSLB                                                    SINI1930
ISN 0047              IL = IVSL(L)                                                       SINI1940
ISN 0048              IR = IVSR(L)                                                       SINI1950
ISN 0049              K  = ISC(L)                                                        SINI1960
ISN 0050              M  = IGOW(L)                                                       SINI1970
ISN 0051              NS = NSI(M)                                                        SINI1980
ISN 0052              IBCL(L) = 1                                                        SINI1990
ISN 0053              IBCR(L) = 1                                                        SINI2000
ISN 0054              JL = IMCL(L) / 10                                                  SINI2005
ISN 0055              JR = IMCR(L) / 10                                                  SINI2006
                C                                                                        SINI2020
                C     LEFT SIDE                                                          SINI2030
                C                                                                        SINI2040
ISN 0056              IF (IL) 20,70,30                                                   SINI2050
ISN 0057           20 IBCL(L) = 5                                                        SINI2060
ISN 0058              GO TO 70                                                           SINI2070
ISN 0059           30 IBCL(L) = 2                                                        SINI2080
ISN 0060              XSLLSC = AVEX(IL)                                                  SINI2082
ISN 0061              IF (AVEX(IL).GT.ZERO) CALL SUBX (L, IS1, XSLLSC)                   SINI2083
ISN 0062              XSLL(L) = XSLLSC                                                   SINI2084
ISN 0063              WOA = DABS(WVBAR(IL) / FLOWA(IL))                                  IBM 2085
                C     WOA =  ABS(WVBAR(IL) / FLOWA(IL))                                  CDC 2086
ISN 0064              GL(L) = SECHR * WOA                                                SINI2090
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ISN 0070            FV = WOA / AVED(IL)                                                  SINI2092
ISN 0071            TSUB = SATT(IL) - TEMP(IL)                                           SINI2093
ISN 0072            TL(L) = TEMP(IL)                                                     SINI2095
ISN 0073            TLS = TEMP(IL)                                                       SINI2100
ISN 0074            DRI = FOOT * ASUL(M) / PI                                            SINI2102
ISN 0075            IF (ASUL(M).EQ.ONE) DRI = - FOOT * HDML(L)                           SINI2103
ISN 0077            GLSC = GL(L)                                                         SINI2105
ISN 0078            CHNLSC = CHNL(L)                                                     SINI2107
ISN 0079            DHELSC = DHEL(L)                                                     SINI2109
ISN 0080            HDMLSC = HDML(L)                                                     SINI2111
ISN 0081            CALL PCHF (GLSC, PI(L), XSLLSC, SATHF(IL), SATHG(IL), CHNLSC,        SINI2113
                   1      DHELSC, DRI, HDMLSC, L, HW(IL), IIN(L), IOUT(L),              SINI2115
                   2           TSUB, FV, JL, FCHLSC)                                   SINI2117
ISN 0082            FCHL(L) = FCHLSC                                                     SINI2119
ISN 0083            IF (IR.GE.0) GO TO 60                                                SINI2121
ISN 0085            IRCL(L) = 3                                                          SINI2123
ISN 0086            FLUX = PHIL(L) / SECHF                                               SINI2130
ISN 0087                        TLS = TLS - ONE                                          SINI2135
ISN 0088            CALL HTVC (IEMHT,IEMPS,IEMEC,IDEBUG,ZERO,FLUX,TLS,GL,GR,ISI,L,II)   SINI2140
ISN 0089         60 TRS = TLS                                                            SINI2150
                C                                                                       SINI2160
                C     RIGHT SIDE                                                        SINI2170
                C                                                                       SINI2180
ISN 0090         70 IF (IR) 90,130,90                                                   SINI2190
ISN 0091         80 IRCR(L) = 5                                                         SINI2200
ISN 0092            GO TO 130                                                           SINI2210
ISN 0093         90 IRCR(L) = 4                                                         SINI2220
                C                                                                       BDHT 234
                C CHECK FOR BOUNDARY CONDITION SLAB                                     BDHT 235
ISN 0094            IF(IBCS(L) .EQ. 0) GO TO 99                                         BDHT 236
ISN 0096            NM = IGOM(L)                                                        BDHT 237
ISN 0097            NN= NSI(NM)                                                         BDHT 238
ISN 0098            CALL TABDAT(3,IBCS(L),TIMEX,PHIR(L),TP(NN,L),TM(L),DUM,DUM,IER)     BDHT 239
ISN 0099            TP(1,L)=TM(L)                                                       BDHT 240
ISN 0100            IF(IER .EQ. 0) GO TO 92                                             BDHT 241
ISN 0102            WRITE(6,91) L                                                       BDHT 242
ISN 0103         91 FORMAT('0 BOUNDARY CONDITION SLAB DATA UNAVAILABEL FOR SLAB ',      BDHT 243
                   * I4,30X,'EXECUTION DELETED')                                        BDHT 244
ISN 0104            CALL FAIL                                                           BDHT 245
ISN 0105            GO TO 150                                                           BDHT 246
ISN 0106         92 CONTINUE                                                            BDHT 247
ISN 0107            TS(L)=-1                                                            BDHT 248
ISN 0108            FCHR(L)=-1                                                          BDHT 249
ISN 0109            XSLR(L) = -1                                                        BDHT 250
ISN 0110            CTRIN(K)=-1.0                                                       BDHT 251
ISN 0111            CTR(L) =-1.0                                                        BDHT 252
ISN 0112            QMAR(L)=-1.0/(SLEN(L)*3600.)                                        BDHT 253
ISN 0113            HQCR(L)=PHIR(L)*AHTR(L)*SLEN(L)                                     BDHT 254
ISN 0114            MQ(K)=QFRAC(K)*((PPO**GPMOD(K))+DPO**GDMOD(K))                      BDHT 255
ISN 0115            FQ(K)=QFRAC(K)*PO**ER-MQ(K)                                         BDHT 256
ISN 0116            HTCR(L) = -1                                                        BDHT 257
ISN 0117            HTCL(L) = -1                                                        BDHT 258
ISN 0119            IF(TP(NN,L) .EQ. 0) GO TO 150                                       BDHT 259
ISN 0120            HTCL(L)=PHIR(L)/(TP(NN,L)-SATT(IR))                                 BDHT 260
ISN 0121            HTCR(L)=PHIR(L)/(TP(NN,L)-TEMP(IR))                                 BDHT 261
ISN 0122            GO TO 150                                                           BDHT 262
ISN 0123         99 CONTINUE                                                            BDHT 263
ISN 0124            XSLRSC = AVEX(IR)                                                   SINI2222
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ISN 0125            IF (AVFX(IR).GT.ZERO) CALL HUBX (L, IS2, XSLRSC)                    SINI2223
ISN 0127            XSLP(L) = XSLRSC                                                    SINI2224
ISN 0128            WDA = DABS(WVDAR(IR) / FLOWA(IR))                                   IBM 2225
C                   WDA =  ABS(WVDAR(IR) / FLOWA(IR))                                   CDC 2226
ISN 0129            GR(L) = SECHR * WDA                                                 SINI2230
ISN 0130            FV = WDA / AVED(IR)                                                 SINI2232
ISN 0131            TSUB = SATT(IR) - TEMP(IR)                                          SINI2233
ISN 0132            TR(L) = TEMP(IR)                                                    SINI2235
ISN 0133            TRS = TEMP(IR)                                                      SINI2240
ISN 0134            DRI = FDOT * ASUR(M) / PI                                           SINI2242
ISN 0135            IF (ASUR(M).EQ.ONE) DRI = - FDOT * HDMR(L)                          SINI2244
ISN 0137            LR = MS + L                                                         SINI2245
ISN 0138            GRSC = GR(L)                                                        SINI2247
ISN 0139            CHNRSC = CHNR(L)                                                    SINI2249
ISN 0140            DHERSC = DHER(L)                                                    SINI2251
ISN 0141            HDMRSC = HDMR(L)                                                    SINI2253
ISN 0142            CALL PCHF (GRSC, P(IR), XSLRSC, SATHF(IR), SATHG(IR), CHNRSC,       SINI2255
                   1      DHERSC, DRI, HDMRSC, LR, HW(IR), IIN(IR), IOUT(IR),          SINI2257
                   2            TSUB, FV, JR, FCHRSC)                                 SINI2259
ISN 0143            FCHR(L) = FCHRSC                                                    SINI2261
ISN 0144            IF (IL) 110,100,120                                                 SINI2263
ISN 0145      100   IF (K.LE.0) GO TO 120                                               SINI2265
                                                                                        SINI2270
C                   CORE CALCULATIONS     (LEFT SURFACE NOT ALLOWED)                    SINI2280
C                                                                                       SINI2290
ISN 0147            MU(K) = QFRAC(K)*(PPD**QPMOD(K) + QPO*QDMOD(K))                     SINI2295
ISN 0148            FU(K) = QFRAC(K)*PJ*EA - MU(K)                                      SINI2300
ISN 0149            MU(K) = MU(K)*BTUMM*M/SECHR                                         SINI2305
ISN 0152            WQR(L) = BTUMM * FU(K)                                              SINI2310
ISN 0151            PHIR(L) = WQR(L) / (AHTR(L)*SLEN(L))                                SINI2320
C                                                                                       SINI2430
ISN 0152      110   IBCH(L) = 3                                                         SINI2440
ISN 0153            FLUX = PHIR(L) / SECHR                                              SINI2450
ISN 0154            IF (IL.LT.0) TRS = TRS - ONE                                        SINI2455
ISN 0156            IF (IPROGM .NE. 2) GO TO 112                                        SINI2456
C *** FLOOD CHANGE                                                                      SINI2457
C                   CHANGE 2ADE FOR FORCING FLECHT HEAT TRANSFER CORRELATION            SINI2458
ISN 0158            IF (K.GT.0) GO TO 114                                               SINI2459
ISN 0160      112   CONTINUE                                                            SINI2460
C                                                                                       SINI2461
ISN 0161            CALL HTEC (IEMNT,IFMPS,IEMEC,IDEBUG,ZERO,FLUX,TRS,GL,G2,IS2,L,III) SINI2462
ISN 0162            IF (TRS.LT.SATT(IR)) GO TO 120                                      SINI2466
ISN 0164            GO TO 115 I=1,3                                                     SINI2465
ISN 0165            FLUX = PHIR(L) / SECHR                                              SINI2469
ISN 0166            CALL HTEC (IEMNT,IFMPS,IEMEC,IDEBUG,ZERO,FLUX,TRS,GL,G2,IS2,L,III) SINI2470
ISN 0167      115   CONTINUE                                                            SINI2472
ISN 0169            GO TO 120                                                           SINI2474
C                   FLOOD CHANGES BELOW                                                 SINI2475
ISN 0165      114   HTCR(L) = HWAD                                                      SINI2478
ISN 0170            IHTC(L) = 31                                                        SINI2480
ISN 0171            IBCH(L) = 3                                                         SINI2482
ISN 0172            IF (TSKRK(L).LT.TEMP(IR)) TSKRK(L) = TEMP(IR)                       SINI2484
ISN 0174            TR(L) = TSKRK(L)                                                    SINI2485
ISN 0175            TRS = TSKRK(L)                                                      SINI2488
C                                                                                       SINI2490
C                                                                                       SINI2492
C                   FLOOD CHANGES ABOVE                                                 SINI2494
ISN 0176      120   IF (IL.LE.0) TLS = TRS                                              SINI2496
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                C                                                                       SINI2497
                C       SET NODE TEMPERATURES AT FIRST ESTIMATE                         SINI2498
                C                                                                       SINI2500
ISN 0178          130 TAVG = (TLS + TRS) / TWO                                          SINI2510
ISN 0179              DO 140 N=1,NS                                                     SINI2520
ISN 0180          140 TP(N,L) = TAVG                                                    SINI2530
ISN 0181              IF (IL.LE.0 .OR. IR.LE.0) GO TO 150                               SINI2533
ISN 0183              IF (TLS .EQ. TRS)         GO TO 150                               SINI2534
                C                                                                       SINI2535
                C       CALCULATE H T C FOR EACH SIDE OF SLAB BETWEEN 2 NORMAL VOLUMES  SINI2536
                C          (H T C IS NOT VALID FOR MODE 2.)                             SINI2537
ISN 0185              TSUR0 = TP(1,L)                                                   SINI2538
ISN 0186              FLUX0 = ONE                                                       SINI2539
ISN 0187              CALL HTRC (IEMHT,IEMPS,IEMEC,IDEBUG,ZERO,FLUX0,TSUR0,GL,GR,IS1,L, SINI2544
                     1 II)                                                              SINI2545
ISN 0188              IF (IHTL(L).NE.2) GO TO 145                                       SINI2546
                C                                                                       SINI2547
                C          FORCE CALCULATION OF MODE 1 HEAT TRANS COEF ON LEFT          SINI2548
ISN 0190              TSUR0 = SATT(IL) - ONE                                            SINI2549
ISN 0191              FLUX0 = ONE                                                       SINI2550
ISN 0192              CALL HTRC (IEMHT,IEMPS,IEMEC,IDEBUG,ZERO,FLUX0,TSUR0,GL,GR,IS1,L, SINI2551
                     1 II)                                                              SINI2552
ISN 0193          145 IF (IHTL(L).NE.1 .AND. IHTL(L).NE.8) TL(L) = SATT(IL)           SINI2553
ISN 0195              TSUR0 = TP(NS,L)                                                  SINI2554
ISN 0196              FLUX0 = ONE                                                       SINI2555
ISN 0197              IF (IPROGM .NE. 2) GO TO 143                                      SINI2556
                C *** FLOOD CHANGE FOR SG RHS HTC                                       SINI2557
ISN 0199              IF (ISWKK(L).EQ.1) GO TO 146                                      SINI2558
ISN 0201          143 CONTINUE                                                          SINI2559
ISN 0202              CALL HTRC (IEMHT,IEMPS,IEMEC,IDEBUG,ZERO,FLUX0,TSUR0,GL,GR,IS2,  SINI2560
                     1 L,II)                                                            SINI2561
ISN 0203              GO TO 147                                                         SINI2562
                C *** FLOOD CHANGE FOR SG RHS HTC                                       SINI2563
ISN 0204          146 CALL FLDHTX(HTCSG, TSUR0,TEMP(IR))                               SINI2564
ISN 0205              HTCR(L) = HTCSG                                                   SINI2565
ISN 0206              IBCR(L) = 2                                                       SINI2566
ISN 0207              IHTR(L) = 32                                                      SINI2567
ISN 0208              GO TO 150                                                         SINI2568
ISN 0209          147 CONTINUE                                                          SINI2569
                C     FLOOD CHANGES ABOVE                                               SINI2570
ISN 0210              IF (IHTR(L).NE.2) GO TO 148                                       SINI2571
                C                                                                       SINI2572
                C          FORCE CALCULATION OF MODE 1 HEAT TRANS COEF ON RIGHT         SINI2573
ISN 0212              TSUR0 = SATT(IR) - ONE                                            SINI2574
ISN 0213              FLUX0 = ONE                                                       SINI2575
ISN 0214              CALL HTRC (IEMHT,IEMPS,IEMEC,IDEBUG,ZERO,FLUX0,TSUR0,GL,GR,IS2,  SINI2576
                     1 L,II)                                                            SINI2577
ISN 0215          148 IF (IHTR(L).NE.1 .AND. IHTR(L).NE.8) TR(L) = SATT(IR)           SINI2578
ISN 0217              IBCR(L) = 2                                                       SINI2579
                C                                                                       SINI2583
ISN 0218          150 CONTINUE                                                          SINI2590
                C                                                                       SINI2592
                C     CALCULATE THERMAL PROPERTIES AND TEMPERATURES                     SINI2593
                C                                                                       SINI2594
ISN 0219              J = 1                                                             SINI2597
ISN 0220          155 L1 = ISSB(J)                                                      SINI2600
ISN 0221              L2 = ISST(J)                                                      SINI2610
                C
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                C SLABS IN A GIVEN STACK MUST ALL OR NONE BE BOUNDARY CONDTION SLABS     BDHT 264
ISN 0222              IF(IBCS(LI) .EQ.0) GO TO 156                                      BDHT 265
                C SET ALL NODE TEMP IN THIS STACK OF SLABS TO -1                        BDHT 266
ISN 0224              DO 1000 LL=L1,L2                                                  BDHT 267
ISN 0225              NM=IGOM(LL)                                                       BDHT 268
ISN 0226              NN = NSI(NM) -1                                                   BDHT 269
ISN 0227              NM = 2                                                            BDHT 270
ISN 0228              DO 1000 I=NM,NN                                                   BDHT 271
ISN 0229              TP(I,LL) = -1                                                     BDHT 272
ISN 0230             1000 CONTINUE                                                      BDHT 273
ISN 0231              GO TO 219                                                         BDHT 274
ISN 0232             156  CONTINUE                                                     BDHT 275
ISN 0233              ITC = -1                                                          SINI2611
                C EM                                                                    SINI2612
ISN 0234              KKK = 0                                                           SINI2614
ISN 0235              IF (IEMPS .EQ. 0) GO TO 10                                        SINI2616
ISN 0237              KKK   = ISCO(L1)                                                  SINI2618
ISN 0238              IF (KKK .LE.0) GO TO 10                                           SINI2620
ISN 0240              ITC = 0                                                           SINI2638
ISN 0241              PPNOLD = -TWO                                                     SINI2640
ISN 0242              GSMOLS = 0.                                                       SINI2644
ISN 0243              VPLEN = 0.                                                        SINI2646
ISN 0244              DO 159 LL=L1,L2                                                   SINI2648
ISN 0245              KKK   = ISCO(LL)                                                  SINI2650
ISN 0246              IF (KKK .GT.0) GO TO 157                                          SINI2652
ISN 0248              WRITE (6,701) L1, L2                                              SINI2654
ISN 0249             701 FORMAT (1H0, 5X,50HBOTH CORE AND NON-CORE HEAT SLABS ARE IN THE ST SINI2656
                    1ACK FROM SLAB,I3, 8H TO SLAB,I3,21H.  EXECUTION DELETED.)          SINI2658
ISN 0250              CALL FAIL                                                         SINI2660
ISN 0251              GO TO 10                                                          SINI2662
ISN 0252             157 GSMOLS = GSMOLS + GSMOL(KKK )                                  SINI2664
                C     COLLECT TOTAL GAS,STORE IN 1ST SLAB OF STACK                      SINI2665
ISN 0253              GSMOL(KKK) = 0.                                                   SINI2668
ISN 0254              M=IGOM(LL)                                                        SINI2670
ISN 0255             159 VPLEN = VPLEN + VPLEN1(KKK ) + VREG(IRGGAP,M)*SLEN(LL)         SINI2672
ISN 0256              KKK = ISCO(L1)                                                    SINI2674
ISN 0257              GSMOL(KKK) = GSMOLS                                               SINI2676
ISN 0258              DO 440 LL = L1,L2                                                 SINI2678
ISN 0259              KKK = ISCO(LL)                                                    SINI2680
ISN 0260              PMOL(KKK) = GSMOLS                                                SINI2682
ISN 0261              IRTOP = IVSR(LL)                                                  SINI2684
ISN 0262              TTEM = TEMP(IRTOP)                                                SINI2686
ISN 0263              DO 440 I=1,5                                                      SINI2688
ISN 0264             440 TPL(I,1,KKK) = TTEM                                            SINI2690
ISN 0265              CALL PINI( VPLEN, GSMOLS, TTEM, PINTOP)                           SINI2692
ISN 0266                 IF (IDEBUG .GT. 0)  WRITE (6,450) PINTOP                       SINI2694
ISN 0267             450    FORMAT ( 8H0 PINI = , 1PD14.4)                             SINI2696
ISN 0269              DO 11 LL=L1,L2                                                    SINI2698
ISN 0270              K2 = ISCO(LL)                                                     SINI2700
ISN 0271              11 PIN(K2)=PINTOP                                                 SINI2702
                C                                                                       SINI2704
ISN 0272             160 POLD = PPNOLD                                                  SINI2706
ISN 0273              K2 = ISCO(L2)                                                     SINI2708
ISN 0274              DO 152 I=1,10                                                     SINI2710
ISN 0275              CALL REFRAP (L1, L2, GT, IDEBUG)                                  SINI2712
                C     ALSO USES RA, HTO  IN /SLAB#K/                                    SINI2714
ISN 0276                 IF (IDEBUG .GT. 0)                                             SINI2716
                    1        WRITE (6,15) J,L1,L2,ITC,I,PPNOLD,POLD,PIN(K2)             SINI2718
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ISN 0278          15          FORMAT (1H0,5I5,3E20.11)                                        SINI2720
ISN 0279              IF (DABS(PIN(K2) - POLD).LE.ONE) GO TO 163                            IBM 2722
C             C       IF ( ABS(PIN(K2) - POLD).LE.ONE) GO TO 163                            CDC 2724
ISN 0281              POLD = PIN(K2)                                                        SINI2726
ISN 0282            162 CONTINUE                                                            SINI2728
ISN 0283              GO TO 164                                                             SINI2730
C                                                                                           SINI2732
ISN 0284            163 IF (DABS(PIN(K2)-PPNOLD).GT.TWO) GO TO 161                        IBM 2734
C                   163 IF ( ABS(PIN(K2)-PPNOLD).GT.TWO) GO TO 161                        CDC 2736
ISN 0285              ITC = -1                                                              SINI2738
ISN 0287              GO TO 10                                                              SINI2740
ISN 0288            161 ITC = ITC + 1                                                       SINI2742
ISN 0289              IF (ITC.LE.20) GO TO 167                                              SINI2744
ISN 0291            164 CALL FAIL                                                           SINI2746
ISN 0292              WRITE (6,166) L2                                                      SINI2748
ISN 0293            166 FORMAT (48H0INTERNAL PIN PRESSURE FAILS TO CONVERGE IN SLAB I3)     SINI2750
ISN 0294              GO TO 219                                                             SINI2752
ISN 0295            167 PPNOLD = PIN(K2)                                                    SINI2754
ISN 0296             10 CONTINUE                                                            SINI2756
C             C EM                                                                          SINI2758
ISN 0297              DO 218 L=L1,L2                                                        SINI2760
ISN 0298              ICOOL = 0                                                             SINI2762
ISN 0299              IL = IVSL(L)                                                          SINI2764
ISN 0300              IR = IVSR(L)                                                          SINI2766
ISN 0301              K  = ISCO(L)                                                          SINI2768
ISN 0302              M  = IGOM(L)                                                          SINI2770
ISN 0303              NS = NSI(M)                                                           SINI2772
ISN 0304              SL = AHTL(L)/TWO                                                      SINI2774
ISN 0305              SR = AHTR(L)/TWO                                                      SINI2776
ISN 0306              HL = HTCL(L)/SECHR                                                    SINI2778
ISN 0307              HR = HTCR(L)/SECHR                                                    SINI2780
ISN 0308              CALL CONG (POFR(1,M), VRI(1,M), NI(1,M), NS, VOLS(L), K)              SINI2782
ISN 0309            170 DO 180 N=1,NS                                                       SINI2784
ISN 0310            180 BA(MN3+N) = GN(N)                                                   SINI2786
C                                                                                           SINI2788
ISN 0311              KK=K                                                                  SINI2790
ISN 0312              IF (KK.LE.0) KK=1                                                     SINI2792
ISN 0314            190 DO 197 I=1,IU                                                       SINI2794
ISN 0315              CALL TKANDC (NS, MM, MT, TPC, TPK, TPX, NCP, NKP, NXP,                SINI2800
                   1     ITPC(1,L), ITPK(1,L), ITPX(1,L), IKC(1,M), IGAP(1,M), NI(1,M),SINI2810
                   2     XDCR(1,M), VRI(1,M), TP(1,L),      CR,      TK, VP(1,M),       SINI2820
                   3 RRGIN(KK),EF(KK),EC(KK),IRGPIN,IRGGAP,HCOND(KK),FRACT(KK),          SINI2825
                   4 AFR(1,KK),IEMHT,IEMPS,IEMEC,K,IDEBUG,                               SINI2826
                   5 PIN(KK), RPIN(KK) )                                                 SINI2828
ISN 0316              IF (K.GT.0) GO TO 195                                               SINI2830
ISN 0318              IF (IL.EQ.0 .OR. IR.EQ.0)          GO TO 215                        SINI2840
ISN 0320              IF (IL.LT.0 .OR. IR.LT.0)          GO TO 195                        SINI2850
ISN 0322              IF (TEMP(IL) .EQ. TEMP(IR))        GO TO 215                        SINI2852
ISN 0324            195 IF (IBCL(L).EQ.3) TL(L) = TP( 1,L)                                SINI2860
ISN 0325              IF (IBCR(L).EQ.3) TR(L) = TP(NS,L)                                  SINI2865
ISN 0328              TP10 = TP(1,L)                                                      SINI2867
ISN 0329              PHLSEC = PHIL(L) / SECHR                                            SINI2868
ISN 0330              PHRSEC = PHIR(L) / SECHR                                            SINI2869
ISN 0331              CALL TEMZ (NS, MM, IEMHT, IEMPS, IEMEC, IDEBUG, IBCL(L), IBCR(L),  SINI2870
                   1     TL(L), TR(L), SL, SR, HL, HR,                                  SINI2875
                   1     S(1,M), VP(1,M), BA(MN3 +1),     TK,    AP(1,L), TP(1,L), BA,  SINI2880
                   2                    GL, GR, L, PHLSEC, PHRSEC)                     SINI2890
ISN 0332              IF (I.LT.5) GO TO 197                                               SINI2891
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ISN 0334            IF (DABS(TP(1,L) - TPIO) .LT. TEP) GO TO 200                    IBM 2892
                C   IF ( ABS(TP(1,L) - TPIO) .LT. TEP) GO TO 200                    CDC 2893
                C                                                                   SINI2894
ISN 0336          197 CONTINUE                                                      SINI2895
                C                                                                   SINI2896
ISN 0337            WRITE (6,199) L, TEP, IU, TPIO, TP(1,L)                         SINI2897
ISN 0338          199 FORMAT (29H0*** WARNING *** IN HEAT SLAB I4, 44H, TEMP AT NODE 1 DSINI2898
                     1OES NOT CONVERGE TO WITHIN F6.2, 11H DEGREES IN I3,12H ITERATIONS.SINI2899
                     2    /  30X, 28H TEMP AT LAST 2 ITERATIONS = 2E19.7 )          SINI2900
ISN 0339          200 IF (IL.LE.0 .OR. IR.LE.0)            GO TO 215                SINI2901
                C                                                                   SINI2902
                C     INITIALIZATION FOR SLAB BETWEEN 2 NORMAL VOLUMES              SINI2903
                C                                                                   SINI2904
ISN 0341            STCL = FCHL(L)                                                  SINI2905
ISN 0342            STCR = FCHR(L)                                                  SINI2907
ISN 0343            FCHL(L) = TEN9                                                  SINI2909
ISN 0344            FCHR(L) = TEN9                                                  SINI2911
ISN 0345            IF (ICOOL.GT.0)                          GO TO 215              SINI2913
ISN 0347            PHIL(L) = HTCL(L) * (TP( 1,L) - TL(L))                          SINI2915
ISN 0348            PHIR(L) = HTCR(L) * (TP(NS,L) - TR(L))                          SINI2917
ISN 0349            ICCOL = 1                                                       SINI2919
ISN 0350            IF (TEMP(IL).GT.TEMP(IR)) GO TO 202                             SINI2921
                C *** FLOOD CHANGE FOR FORCING SG RHS                               SINI2922
ISN 0352            IF (IHTL(L).EQ.3 .OR. IHTL(L).EQ.8) GO TO 204                   SINI2923
ISN 0354            IF (TP( 1,L).LE.SATT(IL))                GO TO 204              SINI2925
ISN 0356            TSUR0 = TP( 1,L)                                                SINI2927
ISN 0357            FLUX0 = PHIL(L) / SECHR                                         SINI2929
ISN 0358            CALL HTRC (IEMHT,IEMPS,IEMEC,IDEBUG,ZERO,FLUX0,TSUR0,GL,GR,IS1, SINI2931
                   1 L,II)                                                          SINI2932
ISN 0359            IF (IHTL(L).EQ.1)                        GO TO 204              SINI2933
ISN 0361            IBCL(L) = 3                                                     SINI2935
ISN 0362            TL(L) = TSUR0                                                   SINI2937
ISN 0363            GO TO 205                                                       SINI2939
ISN 0364          202 ICOOL = 2                                                     SINI2940
ISN 0365            IF (IPROGM .NE. 2) GO TO 201                                    SINI2941
                C *** FLOOD CHANGE FOR STEAM GENERATOR RHS                          SINI2942
ISN 0367            IF (IPROGM .EQ. 2 .AND. ISWKK(L) .EQ. 1) GO TO 205              SINI2943
ISN 0369          201 IF (IHTR(L).EQ.3 .OR. IHTR(L).EQ.8) GO TO 215                 SINI2945
ISN 0371            IF (TP(NS,L).LE.SATT(IR))                GO TO 215              SINI2947
ISN 0373            TSUR0 = TP(NS,L)                                                SINI2949
ISN 0374            FLUX0 = PHIR(L) / SECHR                                         SINI2951
ISN 0375            CALL HTRC (IEMHT,IEMPS,IEMEC,IDEBUG,ZERO,FLUX0,TSUR0,GL,GR,IS2, SINI2953
                   1 L,II)                                                          SINI2954
ISN 0376            IF (IHTR(L).EQ.1)                        GO TO 215              SINI2955
ISN 0378            IBCR(L) = 3                                                     SINI2957
ISN 0379            TR(L) = TSUR0                                                   SINI2958
ISN 0380            IF (IPROGM .NE. 2) GO TO 205                                    SINI2959
ISN 0382          204 IF (IPROGM .NE. 2 .OR. ISWKK(L) .NE. 1) GO TO 215             SINI2960
                C                                                                   SINI2961
                C     MODE ON COOLER SIDE NOT 1, 3, OR 8.                           SINI2963
                C     TRY MODE 2, USING TEMPERATURE BOUNDARY CONDITION.             SINI2965
ISN 0384          205 DO 208 I=1,10                                                 SINI2967
ISN 0385            CALL TKANDC (NS, MM, MT, TPC, TPK, TPX, NCP, NKP, NXP,          SINI2969
                   1     ITPC(1,L), ITPK(1,L), ITPX(1,L), IKC(1,M), IGAP(1,M), NI(1,M),SINI2971
                   2    XDCR(1,M), VRI(1,M), TP(1,L),      CR,      TK, VP(1,M),    SINI2973
                   3 DUM1, DUM2, DUM3, IDUM1, IDUM2, DUM4, DUM5, DUM6,              SINI2975
                   4     IEMHT,IEMPS,IEMEC,K,IDEBUG,DUM7, DUM8)                    SINI2977
ISN 0386            CALL TEMZ (NS, MM, IEMHT, IEMPS, IEMEC, IDEBUG, IBCL(L), IBCR(L), SINI2979
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                     1     TL(L), TR(L), SL, SR, HL, HR,                                    SINI2981
                     1     S(1,M), VP(1,M), BA(MN3+1), TK,    AP(1,L), TP(1,L), BA,         SINI2983
                     2       GL, GP, L, DUM1, DUM2)                                         SINI2985
ISN 0387              IF (ICODE.EQ.2) GO TO 207                                             SINI2987
ISN 0389              PHIR(L) = HTCR(L) * (TP(NS,L) - TR(L))                                SINI2997
ISN 0390              PHIL(L) = - PHIR(L) * AHTR(L) / AHTL(L)                               SINI3007
ISN 0391              FLUX0 = PHIL(L) / SECHR                                               SINI3017
ISN 0392              TSUR0 = TP( 1,L)                                                      SINI3027
ISN 0393              CALL HTPC (IEMHT,IEMPS,IEMEC,IDEBUG,ZERO,FLUX0,TSUR0,GL,GP,IS1,       SINI3037
                     1 L,II)                                                                SINI3038
ISN 0394              TL(L) = TSUR0                                                         SINI3047
ISN 0395              IF (IPROGM .NE. 2) GO TO 203                                          SINI3049
                    C *** FLOOD CHANGE FOR STEAM GENERATOR RHS                              SINI3051
ISN 0397              IF (IS#KK(L).NE.1) GO TO 203                                          SINI3053
ISN 0399              TSUR0 = TP(NS,L)                                                      SINI3055
ISN 0400              CALL FLOHTX(HTCSG, TSUR0,TEMP(IR))                                    SINI3057
ISN 0401              HTCR(L) = HTCSG                                                       SINI3059
ISN 0402              TL(L) = TEMP(IL)                                                      SINI3061
ISN 0403              GO TO 208                                                             SINI3063
ISN 0404            203 CONTINUE                                                            SINI3065
ISN 0405              IF (IHTL(L).EQ.1) GO TO 211                                           SINI3067
ISN 0407              GO TO 208                                                             SINI3069
                    C                                                                       SINI3077
ISN 0408            207 PHIL(L) = HTCL(L) * (TP( 1,L) - TL(L))                              SINI3087
ISN 0409              PHIR(L) = - PHIL(L) * AHTL(L) / AHTR(L)                               SINI3097
ISN 0410              FLUX0 = PHIR(L) / SECHR                                               SINI3107
ISN 0411              TSUR0 = TP(NS,L)                                                      SINI3117
ISN 0412              IF (IPROGM .NE. 2) GO TO 206                                          SINI3119
                    C *** FLOOD CHANGE FOR STEAM GENER ATOR RHS                             SINI3121
ISN 0414              IF (IS#KK(L).NE.1) GO TO 206                                          SINI3123
ISN 0415              CALL FLOHTX(HTCSG, TSUR0,TEMP(IR))                                    SINI3125
ISN 0417              HTCR(L) = HTCSG                                                       SINI3127
ISN 0418              GO TO 209                                                             SINI3129
ISN 0419            206 CONTINUE                                                            SINI3131
ISN 0420              CALL HTPC (IEMHT,IEMPS,IEMEC,IDEBUG,ZERO,FLUX0,TSUR0,GL,GP,IS2,       SINI3133
                     1 L,II)                                                                SINI3134
ISN 0421              TR(L) = TSUR0                                                         SINI3137
ISN 0422              IF (IHTR(L).EQ.1) GO TO 212                                           SINI3147
                    C                                                                       SINI3157
ISN 0424            209 CONTINUE                                                            SINI3167
                    C                                                                       SINI3177
ISN 0425              GO TO 215                                                             SINI3297
                    C                                                                       SINI3307
                    C     MODE 1 CHOSEN INSTEAD OF MODE 2 - RETURN TO BNDRY COND 2 SOLUTION SINI3317
                    C                                                                       SINI3327
ISN 0426            211 IBCL(L) = 2                                                         SINI3337
ISN 0427              TL(L) = TEMP(IL)                                                      SINI3347
ISN 0428              GO TO 190                                                             SINI3357
ISN 0429            212 IBCR(L) = 2                                                         SINI3367
ISN 0430              TR(L) = TEMP(IR)                                                      SINI3377
ISN 0431              GO TO 190                                                             SINI3387
                    C                                                                       SINI3397
ISN 0432            215 CONTINUE                                                            SINI3407
                    C                                                                       SINI3417
ISN 0433              FCHL(L) = STOL                                                        SINI3418
ISN 0434              FCHR(L) = STOR                                                        SINI3419
ISN 0435            216 IF (ITC.NE.-1) GO TO 218                                            SINI3420
ISN 0437              CALL SENG (CR, TP(1,L), VP(1,M), VREG(1,M), IKC(1,M),                 SINI3427
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                     1          NI(I,M), I, NS, TPC, TPCI, NCP, MM, MT, MT/2, E)        SINI3437
ISN 0438                 FF = FF + E*SLEN(L)                                            SINI3447
ISN 0439                 IF (K.LE.0) GO TO 218                                          SINI3457
ISN 0441                 NISC = NI(I,M)                                                 SINI3460
ISN 0442                 CALL TAVS((R,TP(I,L),VP(I,M),I,NISC,TM(K))                     SINI3467
ISN 0443                 TS(K) = TP(NS,L)                                               SINI3477
                C                                                                       SINI3487
ISN 0444           218 CONTINUE                                                         SINI3497
                C EM                                                                    SINI3500
ISN 0445                 IF (ITC.NE.-1) GO TO 160                                       SINI3502
                C EM                                                                    SINI3504
                C            NEXT STACK OF SLABS                                        SINI3507
                C                                                                       SINI3517
ISN 0447           219 J = J + 1                                                        SINI3527
ISN 0448                 IF (J.GT.MS) GO TO 220                                         SINI3537
ISN 0450                 IF (ISSB(J).GT.0) GO TO 155                                    SINI3547
                C                                                                       SINI3557
ISN 0452           220 DO 270 L=1,NSLB                                                  SINI3567
                C                                                                       
ISN 0453                 IF(IBCS(L) .NE. 0) GO TO 270                                   BDHT 276
ISN 0455                 IL = IVSL(L)                                                   SINI3577
ISN 0456                 IR = IVSR(L)                                                   SINI3587
ISN 0457                 K  = ISCO(L)                                                   SINI3597
ISN 0458                 M  = IGOM(L)                                                   SINI3607
ISN 0459                 NS = NSI(M)                                                    SINI3617
ISN 0460                 IF (IL.LE.0  .OR. IR.LE.0) GO TO 240                           SINI3627
ISN 0462                 IBCR(L) = 4                                                    SINI3637
ISN 0463                 WQCL(L) = PHIL(L) * AHTL(L) * SLEN(L)                          SINI3647
ISN 0464                 WQCR(L) = PHIR(L) * AHTR(L) * SLEN(L)                          SINI3657
ISN 0465           240 IF (IL.GE.0) GO TO 250                                           SINI3667
ISN 0467                 TL(L) = TP( 1,L) - PHIL(L) / HTCL(L)                           SINI3677
ISN 0468                 QLOSS = QLOSS + WQCL(L)                                        SINI3687
ISN 0469           250 IF (IR.GE.0) GO TO 260                                           SINI3697
ISN 0471                 TR(L) = TP(NS,L) - PHIR(L) / HTCR(L)                           SINI3707
ISN 0472                 QLOSS = QLOSS + WQCR(L)                                        SINI3717
ISN 0473           260 IF (IBCL(L).EQ.3) IBCL(L) = 2                                    SINI3727
ISN 0475                 IF (IBCL(L).EQ.5) IBCL(L) = 2                                  SINI3737
ISN 0477                 IF (IBCR(L).EQ.3) IBCR(L) = 4                                  SINI3747
ISN 0479                 IF (IBCR(L).EQ.5) IBCR(L) = 2                                  SINI3757
ISN 0481                 IF (IPROGM .NE. 2) GO TO 209                                   SINI3758
                C *** FLOOD CHANGE FOR STEAM GENERATOR RHS                              SINI3760
ISN 0483                 IF (ISWKK(L).EQ.1) IBCR(L) = 2                                 SINI3762
                C *** FLOOD CHANGE TO FORCE MODE OF HEAT COND SOLUTION TO USE           SINI3764
                C      HEAT TRANSFER COEFF * BULK TEMP                                  SINI3766
ISN 0485                 IF (K.GT.0) IBCR(L) = 2                                        SINI3768
ISN 0487           209 CONTINUE                                                         SINI3770
ISN 0488                 IF (PHIL(L).GT.FCHL(L) .AND. IL.GT.0) GO TO 265                SINI3772
ISN 0490                 IF (PHIR(L).GT.FCHR(L) .AND. IR.GT.0) GO TO 265                SINI3774
ISN 0492                 IF (IHTL(L).GT.3 .AND. IHTL(L).NE.8  GO TO 265                 SINI3776
ISN 0494                 IF (IPROGM .NE. 2) GO TO 210                                   SINI3778
                C *** FLOOD CHANGE                                                      SINI3780
                C      SINCE IHTR(L) = 32 FOR FLOOD SG, BYPASS NEXT TEST IF ISWKK = 1  SINI3782
ISN 0496                 IF (ISWKK(L) .EQ. 1 .OR. IHTR(L) .EQ. 31) GO TO 270            SINI3784
ISN 0498           210 CONTINUE                                                         SINI3786
ISN 0499                 IF (IHTR(L).GT.3 .AND. IHTR(L).NE.8) GO TO 265                 SINI3788
ISN 0501                 GO TO 270                                                      SINI3790
                C                                                                       SINI3797
ISN 0502           265 WRITE (6,267) L                                                  SINI3807
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   ISN 0503        267 FORMAT (1SH0******** SLAB, I4, 72H CANNOT INITIALIZE CORRECTLY INSINI3817
                      1 MODES 1, 2, 3, OR 8.  EXECUTION DELETED.)                        SINI3827
   ISN 0504            CALL FAIL                                                         SINI3837
                  C                                                                      SINI3847
   ISN 0505        270 CONTINUE                                                         SINI3857
   ISN 0506            PO*R1 = PO**ER                                                   SINI3867
   ISN 0507            EB = EB * FE                                                     SINI3877
   ISN 0508            PNORM = ONE                                                      SINI3887
                  C                                                                      SINI3897
   ISN 0509        300 RETURN                                                           SINI3907
                  C                                                                      SINI3917
   ISN 0510            END

*OPTIONS IN EFFECT*       NAME=  MAIN,OPT=02,LINECNT=60,SIZE=0000K,

*OPTIONS IN EFFECT*       SOURCE,EBCDIC,NOLIST,NODECK,LOAD,NOMAP,NOEDIT,ID,NOXREF

*STATISTICS*     SOURCE STATEMENTS =      509 ,PROGRAM SIZE =     11456

*STATISTICS*  NO  DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                  559K BYTES OF CORE NOT USED
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          COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=60,SIZE=0000K,
                             SOURCE,EBCDIC,NOLIST,NODECK,LOAD,NOMAP,NOEDIT,ID,NOXREF
  ISN 0002              SUBROUTINE SLABHT(NSLB,MS,MG,MM,MC,MR,MN,MT,                    SLA80010
                       1 IPROGM, IEMHT, IEMPS, IEMEC, IDEBUG, DT, AA, TA)               SLA80015
  ISN 0003              IMPLICIT REAL*8 (A-H,O-Z)                                       IBM 0020
                     CTIMER001   COMMON BLOCK                                           SLA80025
  ISN 0004              COMMON /ZCLOCK/ ZSUBNM(50),ZTIMEA(50),IZCALL(50),NZSUBC,MAXZUB,T SLA80026
                     C                                                                  SLA80030
                     C      NSLB    = NUMBER OF HEAT SLABS                           SLA80040
                     C      MS      = MAXIMUM NUMBER OF HEAT SLABS                   SLA80050
                     C      MG      = MAXIMUM NUMBER OF HEAT SLAB GEOMETRIES         SLA80060
                     C      MM      = MAXIMUM NUMBER OF HEAT SLAB MATERIALS          SLA80070
                     C      MC      = MAXIMUM NUMBER OF CORE SECTIONS                SLA80080
                     C      MR      = MAXIMUM NUMBER OF REGIONS IN HEAT SLAB         SLA80090
                     C      MN      = MAXIMUM NUMBER OF NODES IN HEAT SLAB           SLA80100
                     C      MT      = MAXIMUM NUMBER OF TABLE VALUES                 SLA80110
                     C      IPROGM  = TYPE OF CALCULATION                            SLA80115
                     C      IEMFG   = EVALUATION MODEL CALCULATION FLAG              SLA80116
                     C      IDEBUG  = DEBUG PRINT FLAG                               SLA80117
                     C      DT      = TIME STEP SIZE, SEC                            SLA80120
                     C                                                               SLA80130
  ISN 0005              COMMON /BCSLAB/ PHSOLD(50),TSOLD(50),TAOLD(50),               BDHT 277
                       1                PHSNEW(50),TSNEW(50),TANEW(50),IBCS(50)      BDHT 278
                     C  PHSOLD = SURFACE HEAT FLUX, OLD VALUE                        BDHT 279
                     C  PHSNEW = SURFACE HEAT FLUX, NEW VALUE                        BDHT 280
                     C  IBCS   = INDEX OF THE BOUNDARY CONDITION SLAB                BDHT 281
                     C                                                               BDHT 282
                     C                                                               SLA80130
  ISN 0006              COMMON /BALFD / AE,  AMASS, BMASSW, BMASSA, DMASSW, DMASSA, EB, SLA80132
                       *  FE, HF, PNORM, POWRI, QLOSS, UFILL, ULOSS                  SLA80133
                     C                                                               SLA80134
                     C      AE      = ENERGY ADDED                                   SLA80135
                     C      FE      = ENERGY IN FUEL                                 SLA80137
                     C                                                               SLA80139
  ISN 0007              COMMON / CORMWR / CLTI(50), CTR(50), CTRL(50), RRO(50), MWREAC SLA80140
  ISN 0008              LOGICAL MWREAC                                                SLA80152
                     C                                                               SLA80160
                     C      CLTI    = INITIAL CLAD THICKNESS, FT                     SLA80172
                     C      CTR     = DEPTH REACTION HAS PENETRATED CLADDING AT END OF ANY TIME SLA80173
                     C                STEP, FT                                       SLA80174
                     C      CTRL =   DEPTH REACTION HAS PENETRATED CLADDING AT START OF ANY TIMESLA80175
                     C                STEP, FT                                       SLA80176
                     C      RRO     = ORIGINAL FUEL PIN RADIUS, FT                   SLA80192
                     C      MWREAC = .TRUE. INDICATES METAL-WATER REACTION MODEL DESIRED SLA80212
                     C                                                               SLA80220
  ISN 0009              COMMON / ENVAJ / FLOWA(75),FLOWL(75),FLOWRA(75),WVBAR(75),    SLA80450
                       1 WVBARO(75),SPVZ(75),SPVZO(75),AINERV(75),CMAS(75),DIAVV(75), SLA80460
                       2 FANING(75),FLUD(75),TPMV(75),CMACHV(75),JTPMV(75),          SLA80470
                       3  IFAN(75),JVISC(75),IAMBLO(75), IIN(75), IOUT(75)          SLA80480
                     C                                                               SLA80490
                     C      FLOWA   = VOLUME FLOW AREA (FT2), INPUT                  SLA80500
                     C      WVBAR   = AVERAGE VOLUME FLOW (LBM/SEC)                  SLA80510
                     C       IAMBLO  = INDEX FOR DETERMINING WHETHER TO CALCULATE LIQUID LEVELSLA80515
                     C      IIN,IOUT = PRIMARY INLET AND OUTLET JUNCTION NUMBERS     SLA80517
                     C                                                               SLA80520
  ISN 0010              COMMON /FLCOD/       AFFF,     CORCHL, DELTQ(12),     DTSUB, SLA80540
                       1          DZ,        EN,        ENO,       ENI,       ENZ,    SLA80542
                       2       ENOLD,       HC1,       HC2,     HCOUT,      HOLD,    SLA80544
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                     3          HRAD,    HTK(12),     QMAXFD,      QTOTF,      TINIT,          SLA80546
                     4      TKRK(12), TPKRK(12),     TQUENH,         TQ, TSKRK(12),          SLA80548
                     5          VOLD,      XMOLD,                                              SLA80550
                     6          IENT, IFLAG(12),       IHM, ISWKK(50),      JUNIN,          SLA80552
                     7        JUNOUT,     JUNSSL,    JUNWSL,       NAL,      NCVOL,          SLA80554
                     8         NOCVOL,     NLPVOL,NSGVOL(12),       NSGV,     NUPVOL          SLA80556
C                     LEVEL 2,RFFF                                                             CDC 0557
C EM                                                                                          SLA80581
ISN 0011              COMMON /RAEM/ PIN(50),EF(50),EC(50),HCOND(50),TJUMP(50),FRACT(50),SLA80582
                     1 AFS(7,50), BLKJUN(100), RPOIN(50), CTRIN(50),                          SLA80583
                     2PITCH,       AMASS0,VINPUT,TAB1(50),TAB2(50),TAB3(50),TAB4(50),         SLA80584
                     3IS#JUN(100),IRUFFG(50), IRGPIN, IRGGAP, IRGSW, IACCV(4), ITRIP(4),SLA80585
                     4IDNCMV,IREMV(10),ITP(100),ISLBAJ(50),IS#TAB(50),NTAB1,NTAB2,NTAB3,SLA80586
                     5NTAB4,IMSPR                                                             SLA80587
C                     LEVEL 2,PIN                                                              CDC 0588
C EM                                                                                          SLA80589
ISN 0012              COMMON / SLAB   /      AHTL(50), AHTR(50), HDML(50), HDMR(50),          SLA80590
                     *  CHNL(50), CHNR(50), DHEL(50), DHER(50), FCHL(50), FCHR(50),          SLA80600
                     1  HTCL(50), HTCR(50), PHIL(50), PHIR(50), SLEN(50), VOLS(50),          SLA80602
                     2  #QCL(50), #QCR(50), XSLL(50), XSLR(50), ZBOT(50), ZTOP(50),          SLA80610
                     *  IBCL(50), IBCR(50), IHTL(50), IHTR(50), IMCL(50), IMCR(50),          SLA80612
                     3  ISCO(50), ISHD(50), ISSB(50), ISST(50), IVSL(50), IVSR(50),          SLA80620
                     4  IXLO(50)                                                             SLA80622
C                     LEVEL 2,AHTL                                                             CDC 0623
C                                                                                             SLA80630
C                     AHTL = HEAT TRANS AREA AT LEFT  SLAB SURFACE, FT**2                     SLA80640
C                     AHTR = HEAT TRANS AREA AT RIGHT SLAB SURFACE, FT**2                     SLA80650
C                            HEAT TRANS AREAS ARE TOTAL UP TO INHEAT, THEN /UNIT LENGTH       SLA80651
C                     HDML = HYDRAULIC DIAMETER OF VOLUME ON LEFT  OF SLAB, FT                SLA80660
C                     HDMR = HYDRAULIC DIAMETER OF VOLUME ON RIGHT OF SLAB, FT                SLA80670
C                     CHNL = CHANNEL LENGTH ON  LEFT OF SLAB, FT                              SLA80672
C                     CHNR = CHANNEL LENGTH ON RIGHT OF SLAB, FT                              SLA80673
C                     DHEL = HEATED EQUIVALENT DIAMETER ON  LEFT OF SLAB, FT                  SLA80674
C                     DHER = HEATED EQUIVALENT DIAMETER ON RIGHT OF SLAB, FT                  SLA80675
C                     FCHL = CRITICAL HEAT FLUX AT  LEFT SLAB SURFACE, BTU/FT**2-HR           SLA80676
C                     FCHR = CRITICAL HEAT FLUX AT RIGHT SLAB SURFACE, BTU/FT**2-HR           SLA80677
C                     HTCL = HEAT TRANS COEF AT LEFT  SLAB SURFACE, BTU/FT**2-HR-F            SLA80680
C                     HTCR = HEAT TRANS COEF AT RIGHT SLAB SURFACE, BTU/FT**2-HR-F            SLA80690
C                     PHIL = HEAT FLUX AT LEFT  SLAB SURFACE, BTU/FT**2-HR                    SLA80700
C                     PHIR = HEAT FLUX AT RIGHT SLAB SURFACE, BTU/FT**2-HR                    SLA80710
C                     SLEN = EQUIVALENT LENGTH OF HEAT SLAB, FT                               SLA80715
C                     VOLS = VOLUME OF HEAT SLAB, FT**3                                       SLA80720
C                     #QCL = HEAT TRANS RATE TO FLUID AT LEFT  SLAB SURFACE, BTU/HR           SLA80730
C                     #QCR = HEAT TRANS RATE TO FLUID AT RIGHT SLAB SURFACE, BTU/HR           SLA80740
C                     XSLL,R = LOCAL QUALITY FOR HEAT SLAB ON LEFT, RIGHT SIDES               SLA80742
C                     ZBOT = HEIGHT OF BOTTOM OF SLAB ABOVE BOTTOM OF R VOL (L IF NO R)       SLA80745
C                     ZTOP = HEIGHT OF TOP OF SLAB ABOVE BOTTOM OF R VOL (L IF NO R)          SLA80746
C                     IBCL = LEFT  BOUNDARY CONDITION INDICATOR                               SLA80750
C                     IBCR = RIGHT BOUNDARY CONDITION INDICATOR                               SLA80760
C                     IHTL = HEAT TRANS MODE AT LEFT SLAB SURFACE                             SLA80770
C                     IHTR = HEAT TRANS MODE AT RIGHT SLAB SURFACE                            SLA80780
C                     IMCL,R = INDICATOR FOR HEAT TRANSFER CORRELATIONS                       SLA80784
C                     ISCO = CORE NUMBER                                                      SLA80790
C                     ISHD = NUMBER OF DIMENSIONS FOR HEAT TRANSFER                           SLA80800
C                     ISSB = INDEX NO OF SLAB AT BOTTOM OF AXIAL STACK                        SLA80810
C                     ISST = INDEX NO OF SLAB AT TOP    OF AXIAL STACK                        SLA80820
C                     IVSL = INDEX NO OF VOLUME AT LEFT  SURFACE OF SLAB                      SLA80830
C                     IVSR = INDEX NO OF VOLUME AT RIGHT SURFACE OF SLAB                      SLA80840
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C      IXLO = INDICATOR FOR LOCAL X CALCULATION                                  SLAB0942
C                                                                                SLAB0950
ISN 0013        COMMON / SLABAT / AP(21,50), TP(21,50),                          SLAB0960
     1      IGOM(50), ITPC(6,50), ITPK(6,50), ITPX(6,50)                         SLAB0970
C      LEVEL 2,AP                                                                CDC 0971
C                                                                                SLAB0980
C      AP    = -2 * SURFACE WEIGHT * THERMAL CONDUCTIVITY                       SLAB0990
C      TP    = TEMPERATURE, F                                                   SLAB1000
C      IGOM  = GEOMETRY INDEX                                                   SLAB1010
C      ITPC  = CURRENT POSITION IN TPC TABLE                                    SLAB1020
C      ITPK  = CURRENT POSITION IN TPK TABLE                                    SLAB1030
C      ITPX  = CURRENT POSITION IN TPX TABLE                                    SLAB1035
C                                                                               SLAB1040
ISN 0014        COMMON / SLABCK / CR(21), TK(21), TL(50), TR(50)                 SLAB1050
C      LEVEL 2,CR                                                                CDC 0951
C                                                                                SLAB1060
C      CR    = VOLUMETRIC HEAT CAPACITY, BTU/FT**3-F                            SLAB1070
C      TK    = THERMAL CONDUCTIVITY, BTU/FT-SEC-SEC-F                           SLAB1076
C      TL    = LEFT SINK TEMPERATURE, F                                         SLAB1078
C      TR    = RIGHT SINK TEMPERATURE, F                                        SLAB1083
C                                                                               SLAB1090
ISN 0015        COMMON / SLABGM / ASUL(20), ASUR(20), POFR(6,20), S(21,20),      SLAB1000
     1  VP(21,20), VREG(6,20), VRI(6,20), XDCR(6,20),                           SLAB1010
     2      IGAP(6,20), IKC(6,20), NI(6,20), NSI(20)                            SLAB1015
C      LEVEL 2,ASUL                                                              CDC 1016
C                                                                                SLAB1020
C      ASUL  = LEFT  SURFACE AREA (FOR UNIT HEIGHT IN REC OR CYL GEOM)           SLAB1030
C      ASUR  = RIGHT SURFACE AREA (FOR UNIT HEIGHT IN REC OR CYL GEOM)           SLAB1040
C      POFR  = FRACTION OF POWER IN REGION OF CORE HEAT SLAB                     SLAB1050
C      S     = SURFACE AREA WEIGHT, A/2DX                                       SLAB1060
C      VP    = VOLUME, FT**3                                                    SLAB1070
C      VREG  = VOLUME OF REGION PER FOOT OF LENGTH, FT**3                       SLAB1075
C      VRI   = VOLUME RATIO AT INTERFACE                                        SLAB1080
C      XDCR  = COLL RADIUS OR DISTANCE TO RIGHT SURFACE OF REGION               SLAB1085
C      IGAP  = GAP INDICATOR  (0 = NOT A GAP)                                   SLAB1087
C      IKC   = MATERIAL INDEX                                                   SLAB1090
C      NI    = NODE NUMBER AT INTERFACE                                         SLAB1100
C      NSI   = NODE NUMBER AT RIGHT SURFACE                                     SLAB1110
C                                                                               SLAB1120
ISN 0016        COMMON / SLABTP / TPC(40,7), TPCI(20,7), TPK(40,7), TPX(40,7),   SLAB1130
     1                    NCP(7), NKP(7), NXP(7)                                SLAB1135
C      LEVEL 2,TPC                                                               CDC 1136
C                                                                                SLAB1140
C      TPC   = TABLES OF VOL HEAT CAPACITY VS TEMPERATURE                       SLAB1150
C      TPCI  = INTEGRAL TABLES OF TPC                                           SLAB1155
C      TPK   = TABLES OF THERMAL CONDUCTIVITY VS TEMPERATURE                    SLAB1160
C      TPX   = TABLES OF LINEAR EXPANSION COEFFICIENT VS TEMPERATURE            SLAB1165
C      NCP   = NUMBER OF POINTS IN TPC TABLE                                    SLAB1170
C      NKP   = NUMBER OF POINTS IN TPK TABLE                                    SLAB1180
C      NXP   = NUMBER OF POINTS IN TPX TABLE                                    SLAB1182
C                                                                               SLAB1185
ISN 0017        COMMON / SLABWK / BA(84), GL(50), GR(50),                        SLAB1187
     1      HTO(50), PHOL(50), PHOR(50), QMWR(50), IC(50)                       SLAB1188
C      LEVEL 2,BA                                                                CDC 1189
C                                                                                SLAB1190
C      WORKING SPACE FOR HEAT CONDUCTION CALCULATIONS                            SLAB1195
C                                                                               SLAB1197
C      QMWR = HEAT GENERATED BY M-W REACTION PER FOOT OF ROD, BTU/SEC            SLAB1198
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                C                                                                       SLAB1199
ISN 0018              COMMON / STATUS / OMEGA, PERIOD, POWER, TIMEX,                    SLAB1200
                     1                  PQUITL, PQUITH, TQUITL, TQUITH, NOGO          SLAB1201
ISN 0019              LOGICAL NOGO                                                      SLAB1210
                C                                                                       SLAB1220
                C     OMEGA   = CRANK-NICOLSON IMPLICIT-EXPLICIT PROPORTION MULTIPLIER  SLAB1225
                C     POWER   = REACTOR POWER, MW                                       SLAB1230
                C     PQUITL = LOWER LIMIT ON PRESSURE IN ANY VOLUME                    SLAB1231
                C     PQUITH = UPPER LIMIT ON PRESSURE IN ANY VOLUME                    SLAB1232
                C     TQUITL = LOWER LIMIT ON TEMPERATURE IN ANY VOLUME                 SLAB1233
                C     TQUITH = UPPER LIMIT ON TEMPERATURE IN ANY VOLUME                 SLAB1234
                C     NOGO    = .TRUE. INDICATES PROBLEM FAILURE                        SLAB1240
                C                                                                       SLAB1242
ISN 0020              COMMON / VOLED / AVED(75), AVEX(75), SATP(75), SATT(75),          SLAB1244
                    1SATVF(75), SATVG(75)                                               SLAB1245
                C                                                                       SLAB1246
                C     AVED    = AVERAGE DENSITY                                         SLAB1248
                C     AVEX    = AVERAGE QUALITY                                         SLAB1250
                C     SATP    = SATURATION PRESSURE                                     SLAB1252
                C     SATT    = SATURATION TEMPERATURE                                  SLAB1254
                C     SATVF = SATURATION SPECIFIC VOLUME OF LIQUID                      SLAB1255
                C     SATVG = SATURATION SPECIFIC VOLUME OF GAS                         SLAB1256
                C                                                                       SLAB1258
ISN 0021              COMMON / VOLER / A(75), HM(75), P(75), TEMP(75), ZL(75),          SLAB1260
                    1 ZM(75), ZMO(75), IUIN(75), IREAD(75)                              SLAB1270
                C                                                                       SLAB1280
                C     HM      = VOLUME SPECIFIC ENTHALPY                                SLAB1290
                C     P       = VOLUME PRESSURE                                         SLAB1300
                C     TEMP    = VOLUME TEMPERATURE                                      SLAB1310
                C     ZMO   = MIXTURE LEVEL FOR PREVIOUS TIME STEP                      SLAB1320
                C                                                                       SLAB1330
ISN 0022              COMMON /VOLES1/ GASM(75), GASV(75), LIQV(75), EMASS(75), MIXV(75),SLAB1332
                    *ARMASS(75),SATHF(75),SATHG(75),U(75),V(75),*PTIME,                 SLAB1333
                    * IWPAC(100),IWPEDT                                                 SLAB1335
ISN 0023              REAL*8  MIXV, LIQV                                                IBM 1337
                C     REAL    MIXV, LIQV                                                CDC 1339
                C                                                                       SLAB1341
                C     SATHF = SPECIFIC ENTHALPY OF SATURATED LIQUID                     SLAB1343
                C     SATHG = SPECIFIC ENTHALPY OF SATURATED GAS                        SLAB1345
                C     *PTIME = STARTING TIME FOR APPLYING *WATER PACKING ADJUSTMENTS     SLAB1347
                C                                                                       SLAB1349
                C     IWPAC   = WATERPACKING FLAGS, SEE SUBROUTINE *PACK FOR DEFINITION SLAB1351
                C     IWPEDT = MAXIMUM NUMBER OF *WATER PACK EDITS FOR ANY GIVEN VOLUME SLAB1353
ISN 0024              COMMON / XUNITS / ALARG, BTUMWH, CFMGPS, FOOT, FRTU,              SLAB1355
                    1 GAMMA, GRAVTY, GI20PI, PI, RCTSNG, SECHR, SQINCH                  SLAB1357
                C                                                                       SLAB1360
                C     BTUMWH = 3.413E+6   BTU / MW HOUR                                 SLAB1370
                C     SECHR   = 3600. SECONDS / HOUR                                    SLAB1380
                C                                                                       SLAB1390
ISN 0025              DIMENSION AA(MN,MS),IA(MN,MS)                                     SLAB1395
ISN 0026              DATA  ZERO, TENM3 / 0.0, 0.001 /                                  SLAB1400
ISN 0027              DATA  DUM1, DUM2, DUM3  / 0.0, 0.0, 0.0 /                         SLAB1401
ISN 0028              DATA  IS1       / 1     /                                         SLAB1402
                C                                                                       SLAB1410
                CTIMSPJOB   INITIAL BLOCK                                               SLAB1412
ISN 0029              DATA NZSUBN/ 10/                                                  SLAB1413
ISN 0030              CALL TIMEL(ZDELTZ)                                                SLAB1414
ISN 0031              ZTIMEA(NZSUBC) = ZTIMEA(NZSUBC) + ZDELTZ                          SLAB1415
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ISN 0032            IZCALL(NZSUBN) = IZCALL(NZSUBN) + 1                                 SLAB1415
ISN 0033            NZSUBS = NZSUBC                                                     SLAB1417
ISN 0034            NZSUBC = NZSUBN                                                     SLAB1418
ISN 0035            IF (NSLB.LE.0) GO TO 300                                            SLAB1420
                C                                                                       SLAB1500
                C     SET UP NEEDED QUANTITIES FOR ALL HEAT SLABS                       SLAB1510
                C                                                                       SLAB1520
ISN 0037            IFL = 0                                                             SLAB1525
ISN 0038            ZI = ZERO                                                           SLAB1528
ISN 0039            ZZ = ZERO                                                           SLAB1529
ISN 0040            DO 55 L=1,NSLB                                                      SLAB1530
                C                                                                       BOHT 283
                C CHECK FOR BOUNDARY CONDITION SLAB                                     BOHT 284
ISN 0041            IF(IBCS(L) .NE. 0) GO TO 55                                         SLAB1540
ISN 0042            IL = IVSL(L)                                                        SLAB1550
ISN 0043            IP = IVSP(L)                                                        SLAB1560
ISN 0044            K  = ISCO(L)                                                        SLAB1570
ISN 0045            M  = IGOM(L)                                                        SLAB1600
ISN 0046            NS = NSI(M)                                                         SLAB1605
ISN 0047            JL = IMCL(L) / 10                                                   SLAB1606
ISN 0048            JR = IMCP(L) / 10                                                   SLAB1610
ISN 0049            DO 20 N=1,NS                                                        SLAB1620
ISN 0050            AA(N,L) = AP(N,L)                                                   SLAB1630
ISN 0051         20 TA(N,L) = TP(N,L)                                                   SLAB1640
                C                                                                       SLAB1650
ISN 0052         25 IF (IL.EQ.0) GO TO 30                                               SLAB1660
                C                                                                       SLAB1670
                C     LEFT SURFACE                                                      SLAB1680
                C                                                                       SLAB1690
ISN 0053            PHIL(L) = PHI(L)                                                    SLAB1700
ISN 0054            IF (IL.LT.0) GO TO 30                                               IBM 1705
ISN 0055            WOA = DABS(WVBAR(IL) / FLOWA(IL))                                   CDC 1706
                C     WOA =  ABS(WVBAR(IL) / FLOWA(IL))                                 SLAB1710
ISN 0056            GL(L) = SPCHR * WOA                                                 SLAB1712
ISN 0057            FV = WOA / AVED(IL)                                                 SLAB1713
ISN 0058            TSUR = SATT(IL) - TEMP(IL)                                          SLAB1715
ISN 0059            GLSC = GL(L)                                                        SLAB1717
ISN 0060            CHNLSC = CHNL(L)                                                    SLAB1719
ISN 0061            XSLLSC = XSLL(L)                                                    SLAB1721
ISN 0062            CALL FCHF (GLSC, P(IL), XSLLSC, SATHF(IL), SATHG(IL), CHNLSC,       SLAB1723
                   1          DUM1, DUM2, DUM3, L, HW(IL), IIN(IL), IOUT(IL),         SLAB1725
                   2           TSUB, FV, JL, FCHLSC)                                   SLAB1727
ISN 0063            FCHL(L) = FCHLSC                                                    SLAB1729
ISN 0064            TL(L) = TEMP(IL)                                                    SLAB1731
ISN 0065            TSUR0 = TP(1,L)                                                     SLAB1733
ISN 0066            FLUX0 = PHIL(L) / SECHR                                             IBM 1735
ISN 0067            IF (FLUX0.GE.ZERO) FLUX0 = DMAX1(FLUX0, TENM3)                      CDC 1737
                C     IF (FLUX0.GE.ZERO) FLUX0 = AMAX1(FLUX0, TENM3)                    IBM 1739
ISN 0068            IF (FLUX0.LT.ZERO) FLUX0 = DMIN1(FLUX0,-TENM3)                      CDC 1741
                C     IF (FLUX0.LT.ZERO) FLUX0 = AMIN1(FLUX0,-TENM3)                    SLAB1743
ISN 0069            II = 1                                                              SLAB1745
ISN 0070            CALL HTHC (ISMHT,IEMPS,IEMEC,IDEBUG,ZERO,FLUX0,TSUR0,GL,GR,ISI,     SLAB1747
                   1 L,II)                                                              SLAB1749
ISN 0071            IF (IHTL(L).NE.1 .AND. IHTL(L).NE.4) TL(L) = SATT(IL)               SLAB1751
                C                                                                       SLAB1760
ISN 0072         30 IF (IP.EQ.0) GO TO 50                                               SLAB1770
                C                                                                       SLAB1780
                C     RIGHT SURFACE
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                C                                                                       SLAB1790
ISN 0080              PHOP(L) = PHIP(L)                                                 SLAB1800
ISN 0081              IF (IP.LT.0) GO TO 50                                             SLAB1810
ISN 0083              WDA = DABS(WVBAR(IP) / FLOWA(IR))                                 IBM 1815
                C     WDA =  ABS(WVBAR(IP) / FLOWA(IR))                                 CDC 1815
ISN 0084              GR(L) = SECHN * WDA                                               SLAB1820
ISN 0085              FV = WDA / AVED(IP)                                               SLAB1822
ISN 0086              TSUB = SATT(IR) - TEMP(IR)                                        SLAB1823
ISN 0087              IF (IPROGM .NE. 2) GO TO 42                                       SLAB1824
                C                                                                       SLAB1826
                C *** FLOOD CHANGE FOR FORCING HTC ON RHS OF SG                         SLAB1828
ISN 0089              IF (ISWKK(L).NE.1) GO TO 42                                       SLAB1830
                C                                                                       SLAB1832
                C *** FLOOD FOR RHS HTC OF STEAM GENERATOR                              SLAB1834
ISN 0091              TP(L) = TEMP(IR)                                                  SLAB1836
ISN 0092              TPNSL = TP(NS,L)                                                  SLAB1837
ISN 0093              CALL FLOHTX(HTCSG,TPNSL,TEMP(IR))                                 SLAB1838
ISN 0094              HTCP(L) = HTCSG                                                   SLAB1840
ISN 0095              IHTP(L) = 32                                                      SLAB1842
ISN 0096              GO TO 50                                                          SLAB1844
ISN 0097           42 CONTINUE                                                          SLAB1846
                C     FLOOD CHANGES ABOVE                                               SLAB1848
ISN 0098              LP = NS + L                                                       SLAB1850
ISN 0099              GRSC = GR(L)                                                      SLAB1852
ISN 0100              CHNRSC = CHNR(L)                                                  SLAB1854
ISN 0101              XSLRSC = XSLR(L)                                                  SLAB1856
ISN 0102              CALL PCHF (GRSC, P(IR), XSLRSC, SATHF(IR), SATHG(IR), CHNRSC,     SLAB1858
                     1          DUM1, DUM2, DUM3, LP,HW(IR), IIN(IP), IOUT(IP),       SLAB1860
                     2          TSUB, FV, JR, FCHRSC)                                 SLAB1862
ISN 0103              FCHR(L) = FCHRSC                                                  SLAB1864
                C                                                                       SLAB1866
ISN 0104              IF (K.LE.0) GO TO 50                                              SLAB1870
                C                                                                       SLAB1880
                C     CORE SECTION - CALCULATE METAL WATER REACTION                     SLAB1890
                C                                                                       SLAB1900
ISN 0106              IF (IPROGM .NE. 2) GO TO 40                                       SLAB1902
                C     FIRST SET UP FLOOD CHANGES                                        SLAB1904
                C (1) SET BULK TEMPERATURES                                             SLAB1906
ISN 0108              TP(L) = TEMP(IR)                                                  SLAB1909
                C                                                                       SLAB1910
                C (2) SET UP H.T.COEFFICIENT                                            SLAB1912
ISN 0109              Z1=Z1+CHNR(L)/12.0                                                SLAB1914
ISN 0110              Z2=Z1-0.5*CHNR(L)/12.0                                            SLAB1916
ISN 0111              L1 = ISSR(I)                                                      SLAB1918
ISN 0112              TPNSL = TP(NS,L)                                                  SLAB1919
ISN 0113              CALL FLOHTC(HTCFLT,DT,L,L1,Z2,TPNSL)                              SLAB1920
ISN 0114              HTCP(L) = HTCFLT                                                  SLAB1922
ISN 0115              IHTP(L) = 31                                                      SLAB1924
                C                                                                       SLAB1926
                C      CONTINUE WITH CORE SECTION DATA                                  SLAB1928
                C     FLOOD CHANGES ABOVE                                               SLAB1930
ISN 0116           40 CONTINUE                                                          SLAB1932
                C                                                                       SLAB1987
ISN 0117              IF (IEMNT.EQ.1 .OR. IEMPS.EQ.1 .OR. IEMEC.EQ.1) GO TO 10          SLAB1988
ISN 0119              IF (NWREAC) CALL MH2OR(AVEX(IP),CLT(K),CTR(K),CTRL(K),GASM(IR),   SLAB1989
                     1       QWWR(K),SLEN(L),RRO(K),DT,TP(NS,L))                      SLAB1990
ISN 0121              GO TO 15                                                          SLAB1991
                C EM  USE TEMPERATURE ON INSIDE OF CLAD FOR INTERNAL M-W REACTION       SLAB1992
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C CM  ASSUME GAP IS ADJACENT TO CLAD ON INSIDE                                  SLAB1993
ISN 0122        10 NINS=NII(IRGS+1,M)                                           SLAB1994
ISN 0123           IF (M.NE.1) CALL MHGEM(CLTI(K),CTR(K),CTRL(K),QMAX(K),RRO(K),DT,  SLAB1995
                  2 TPINS,L), CTRIN(K), FRDIN(K), TPINS,L), IRUPFG(K), ISLBAJ(K))  SLAB1996
C FM                                                                            SLAB1997
ISN 0124        15 CONTINUE                                                     SLAB1998
ISN 0125        50 CONTINUE                                                     SLAB2000
C                                                                               SLAB2002
ISN 0127           IF (.NOT. NOGO) GO TO 55                                     SLAB2003
ISN 0129           IF (IFL.GT.0)   GO TO 55                                     SLAB2004
ISN 0131           IFL = IFL + 1                                                SLAB2005
ISN 0132           WRITE (6,53) L                                               SLAB2006
ISN 0133        53 FORMAT (36H0HEAT TRANSFER FAILURE FOR HEAT SLAB, I3)         SLAB2007
C                                                                               SLAB2008
ISN 0134        55 CONTINUE                                                     SLAB2009
C                                                                               SLAB2010
C     CALCULATE HEAT TRANSFER COEFFS, THERMAL PROPERTIES, AND                   SLAB2020
C     TEMPERATURE, TAKING 1 STACK OF HEAT SLABS AT A TIME.                      SLAB2030
C                                                                               SLAB2040
ISN 0135           J = 1                                                        SLAB2060
ISN 0136        70 L1 = ISSR(J)                                                 SLAB2070
ISN 0137           L2 = ISST(J)                                                 SLAB2080
C                                                                               
C CHECK FOR BOUNDARY CONDITION SLAB                                             BOHT 285
ISN 0138           IF(IRCS(L1) .NE. 0) GO TO 81                                 BOHT 286
C                                                                               SLAB2500
ISN 0140           IT = 0                                                       SLAB2505
C CM                                                                            SLAB2506
ISN 0141           IF (IFMS .EQ. 0) GO TO 80                                    SLAB2509
ISN 0143           K=ISCD(L1)                                                   SLAB2510
ISN 0144           IF (K.LE.0) GO TO 80                                         SLAB2512
ISN 0145           CALL BFRAP (L1, L2, DT, IDEBUG)                              SLAB2514
C     ALSO USES BA, HTO  IN /SLAF**/                                            SLAB2515
ISN 0147        80 CONTINUE                                                     SLAB2518
C FM                                                                            SLAB2520
ISN 0148           CALL CONDPHOL, PHOA, IFMHT, IFMPS, IFMFC, IDEBUG,            SLAB2522
                1             IC, J, IT, L1, L2, AA, FA, QMAX, BA,             SLAB2524
                2             MS, MN, MM, MT, DT, GL, GA)                      SLAB2526
C                                                                               SLAB2860
C     TAKE THE NEXT STACK OF HEAT SLABS                                         SLAB2870
C                                                                               SLAB2880
C                                                                               
C ADD NEEDED LABEL                                                              BOHT 287
ISN 0149        81 CONTINUE                                                     BOHT 288
ISN 0150           J = J + 1                                                    SLAB2890
ISN 0151           IF (J.GT.MS) GO TO 220                                       SLAB2895
ISN 0153           IF (ISSR(J).GT.0) GO TO 70                                   SLAB2900
C                                                                               SLAB2910
ISN 0155        220 DO 270 L=1,NSLB                                             SLAB2920
C                                                                               
C CHECK FOR BOUNDARY CONDITION SLAB                                             BOHT 289
ISN 0156           IF(IRCS(L) .NE. 0) GO TO 270                                 BOHT 290
ISN 0158           K = ISCD(L)                                                  SLA83927
ISN 0159           M = IGPM(L)                                                  SLA83937
ISN 0160           NS = NST(M)                                                  SLA83947
ISN 0161           IF (IPCL(L).EQ.1) PHIL(L) = HTCL(L) * (TPI 1,L) - TL(L))     SLA83957
ISN 0163           IF (IPC+(L).EQ.2) PHIR(L) = HTCR(L) * (TPINS,L) - TR(L))     SLA83967
ISN 0165           AQCL(L) = PHIL(L) * AHTL(L) * SL*N(L)                        SLA83977
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ISN 0166            WQCP(L) = PHIP(L) * AMTR(L) * SLEN(L)                                SLAB3987
ISN 0167            IF (IEMPS .EQ. 0) GO TO 270                                          SLAB3997
ISN 0169            IF (K.LE.0)                    GO TO 270                             SLAB4007
ISN 0171            IF (ISLRAJ(K).GT.1)            GO TO 270                             SLAB4017
                C                                                                        SLAB4027
                C          VARIABLE RIGHT HEAT TRANSFER AREA DUE TO PIN SWELLING         SLAB4037
                C                                                                        SLAB4047
ISN 0173            WQCP(L) = WQCP(L) * RFO(K)/XCCH(IRGSW,M)                             SLAB4057
ISN 0174          270 CONTINUE                                                           SLAB4067
ISN 0175            AE = AF + BTU4WH * POWER * DT / SECHR                                SLAB4077
                C                                                                        SLAB4087
ISN 0176          300 CONTINUE                                                           SLAB4097
                CTIMER003   FINAL BLOCK                                                  SLAB4107
ISN 0177            NZSUBC = NZSUBS                                                      SLAB4117
ISN 0178            CALL TIMEL(ZDELTZ)                                                   SLAB4127
ISN 0179            ZTIMEA(NZSUBN) = ZTIMEA(NZSUBN) + ZDELTZ                             SLAB4137
ISN 0180            RETURN                                                               SLAB4147
                C                                                                        SLAB4157
ISN 0181            END                                                                  TRAN3000

*OPTIONS IN EFFECT*       NAME= MAIN,OPT=02,LINECNT=60,SIZE=0000K,

*OPTIONS IN EFFECT*       SOURCE,EBCDIC,NOLIST,NODECK,LOAD,NOMAP,NOEDIT,ID,NOXREF

*STATISTICS*     SOURCE STATEMENTS =     180 ,PROGRAM SIZE =     4140

*STATISTICS*  NO DIAGNOSTICS GENERATED

****** END OF COMPILATION ******                                  531K BYTES OF CORE NOT USED
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COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=60,SIZE=0000K,
                   SOURCE,EBCDIC,NOLIST,NODECK,LOAD,NOMAP,NOEDIT,ID,NOXREF
C      SUBROUTINE TRDATA(IR,TI,PN,P,T,X,Z,IE)                                  TRDA0010
C      IMPLICIT REAL*8 (A-H,O-Z)                                               IBM 0020
C       LEVEL 2,IVDAT,VDAT                                                     CDC 0025
C                                                                              TRDA0030
C      IR  = VOLUME TABLE NUMBER (POSITIVE)                                    TRDA0040
C          = OLD VOLUME NUMBER (NEGATIVE)                                      TRDA0050
C          = NORMALIZED POWER REQUEST (ZERO)                                   TRDA0060
C      TI  = ELAPSED PROBLEM TIME                                              TRDA0070
C      PN  = NORMALIZED POWER                                                  TRDA0080
C      P   = PRESSURE                                                          TRDA0090
C      T   = TEMPERATURE                                                       TRDA0100
C      X   = QUALITY                                                           TRDA0110
C      Z   = MIXTURE LEVEL                                                     TRDA0120
C      IE  = ERROR INDICATOR                                                   TRDA0130
C                                                                              TRDA0140
C      COMMON / READES /                                                       TRDA0150
C     1 PNEW(75), POLD(75), PTABL(20,5), POWNEW, POWOLD,                       TRDA0160
C     2 TNEW(75), TOLD(75), TTABL(20,5), TIMNEW, TIMOLD, TIMTBL(20,5),         TRDA0170
C     3 XNEW(75), XOLD(75), XTABL(20,5),                                       TRDA0180
C     4 ZNEW(75), ZOLD(75), ZTABL(20,5), IIR(5), IRIN(5)                       TRDA0190
C      LEVEL 2,PNEW                                                           CDC 0191
C                                                                              TRDA0200
C      PNEW   , POLD   , PTABL   = PRESSURE                                    TRDA0210
C      POWNEW, POWOLD            = NORMALIZED POWER                            TRDA0220
C      TNEW   , TOLD   , TTABL   = TEMPERATURE                                 TRDA0230
C      TIMNEW, TIMOLD, TIMTBL    = TIME                                        TRDA0240
C      XNEW   , XOLD   , XTABL   = QUALITY                                     TRDA0250
C      ZNEW   , ZOLD   , ZTABL   = QMIXTURE LEVEL                              TRDA0260
C      IIR                       = CURRENT TABLE INDEX                         TRDA0270
C      IRIN                      = NUMBER OF TABLE VALUES                      TRDA0280
C                                                                              TRDA0290
C      COMMON / READET / IVDAT(4441), LPOLD, NJOLD, NVOLD                      TRDA0300
C      REAL VDAT(4441)                                                         TRDA0310
C      EQUIVALENCE (VDAT(1),IVDAT(1))                                          TRDA0320
C                                                                              TRDA0330
C      DO NOT MAKE VDAT DOUBLE PRECISION                                       TRDA0340
C      VDAT SIZE = 41 + 2A*MAXVOL + 16*MAXJUN + 20*MAXSLB                      TRDA0350
C      IVDAT = INPUT PLOT RECORD                                               TRDA0360
C      LPOLD = LENGTH OF OLD PLOT RECORD                                       TRDA0370
C      NJOLD = NUMBER OF JUNCTIONS IN OLD PROBLEM                              TRDA0380
C      NVOLD = NUMBER OF VOLUMES IN OLD PROBLEM                                TRDA0390
C                                                                              TRDA0400
C      DATA ZERO, ONE / 0., 1. /                                               TRDA0410
C                                                                              TRDA0420
C      IE = 0                                                                  TRDA0430
C      IF (IR) 200,300,100                                                     TRDA0440
C                                                                              TRDA0450
C      GET DATA FROM TABULAR INPUT                                             TRDA0460
C  100 I = IIR(IR)                                                             TRDA0470
C      IF (I-IRIN(IR)) 110,170,170                                             TRDA0480
C  110 IF (TIMTBL(I+1,IR)-TI) 180,160,120                                      TRDA0490
C  120  FLO = (TI-TIMTBL(I,IR))/(TIMTBL(I+1,IR)-TIMTBL(I,IR))                  TRDA0491
C       P = FLO*(PTABL(I+1,IR)-PTABL(I,IR)) + PTABL(I,IR)                      TRDA0492
C       T = FLO*(TTABL(I+1,IR)-TTABL(I,IR)) + TTABL(I,IR)                      TRDA0493
C       X = FLO*(XTABL(I+1,IR)-XTABL(I,IR)) + XTABL(I,IR)                      TRDA0494
C       Z = FLO*(ZTABL(I+1,IR)-ZTABL(I,IR)) + ZTABL(I,IR)                      TRDA0495
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C      RETURN                                                                  TRDA0560
C  160 P = PTABL(I+1,IR)                                                       TRDA0570
C      T = TTABL(I+1,IR)                                                       TRDA0580
C      X = XTABL(I+1,IR)                                                       TRDA0590
C      Z = ZTABL(I+1,IR)                                                       TRDA0600
C      RETURN                                                                  TRDA0610
C  170 P = PTABL(I,IR)                                                         TRDA0620
C      T = TTABL(I,IR)                                                         TRDA0630
C      X = XTABL(I,IR)                                                         TRDA0640
C      Z = ZTABL(I,IR)                                                         TRDA0650
C      RETURN                                                                  TRDA0660
C  180 IIR(IR) = I + 1                                                         TRDA0670
C      GO TO 100                                                               TRDA0680
C                                                                              TRDA0690
C      USE DATA OBTAINED FROM TAPE                                             TRDA0700
C  200 IF (TIMNEW-TI) 400,250,210                                              TRDA0710
C  210 I = -IP                                                                 TRDA0720
C       FLO = (TI-TIMOLD)/(TIMNEW-TIMOLD)                                      TRDA0721
C       P = FLO*(PNEW(I)-POLD(I)) + POLD(I)                                    TRDA0722
C       T = FLO*(TNEW(I)-TOLD(I)) + TOLD(I)                                    TRDA0723
C       X = FLO*(XNEW(I)-XOLD(I)) + XOLD(I)                                    TRDA0724
C      IF (XOLD(I).GE.ONE.OR.XNEW(I).GE.ONE) X = ONE                           TRDA0775
C       Z = FLO*(ZNEW(I)-ZOLD(I)) + ZOLD(I)                                    TRDA0780
C      IF (X.GE.ONE) Z = ZERO                                                  TRDA0785
C      RETURN                                                                  TRDA0790
C  250 I = -IR                                                                 TRDA0800
C      P = PNEW(I)                                                             TRDA0810
C      T = TNEW(I)                                                             TRDA0820
C      X = XNEW(I)                                                             TRDA0830
C      Z = ZNEW(I)                                                             TRDA0840
C      RETURN                                                                  TRDA0850
C                                                                              TRDA0860
C      NORMALIZED POWER FROM TAPE                                              TRDA0870
C  300 IF (TIMNEW-TI) 400,320,310                                              TRDA0880
C  310  FLO = (TI-TIMOLD)/(TIMNEW-TIMOLD)                                      TRDA0881
C       PN = FLO*(POWNEW-POWOLD) + POWOLD                                      TRDA0882
C      RETURN                                                                  TRDA0920
C  320 PN = POWNEW                                                             TRDA0930
C      RETURN                                                                  TRDA0940
C                                                                              TRDA0950
C      GET NEW DATA FROM TAPE                                                  TRDA0960
C  400 TIMOLD = TIMNEW                                                         TRDA0970
C      POWOLD = POWNEW                                                         TRDA0980
C      DO 410 I= 1, NVOLD                                                      TRDA0990
C      POLD(I) = PNEW(I)                                                       TRDA1000
C      TOLD(I) = TNEW(I)                                                       TRDA1010
C      XOLD(I) = XNEW(I)                                                       TRDA1020
C  410 ZOLD(I) = ZNEW(I)                                                       TRDA1030
C  420 CALL FCON(IERR)                                                         TRDA1040
C      IF (IERR) 500,430,500                                                   TRDA1050
C  430 NP = 42                                                                 TRDA1060
C      NT = 42 + 3*NVOLD                                                       TRDA1070
C      NX = 42 + 6*NVOLD                                                       TRDA1080
C      NZ = 42 + 8*NVOLD                                                       TRDA1090
C      IF (VDAT(39)-TI) 440,460,460                                            TRDA1100
C  440 TIMOLD = VDAT(39)                                                       TRDA1110
C      POWOLD = VDAT(22)                                                       TRDA1120
C      DO 450 I= 1, NVOLD                                                      TRDA1130
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C      POLD(I) = VDAT(NP)                                                TRDA1140
C      TOLD(I) = VDAT(NT)                                                TRDA1150
C      XOLD(I) = VDAT(NX)                                                TRDA1160
C      ZOLD(I) = VDAT(NZ)                                                TRDA1170
C      NP = NP + 1                                                       TRDA1180
C      NT = NT + 1                                                       TRDA1190
C      NX = NX + 1                                                       TRDA1200
C 460  NZ = NZ + 1                                                       TRDA1210
C      GO TO 420                                                         TRDA1220
C 440  TIMNEW = VDAT(39)                                                 TRDA1230
C      POWNEW = VDAT(22)                                                 TRDA1240
C      DO 470 I= 1, NVOLD                                                TRDA1250
C      PNEW(I) = VDAT(NP)                                                TRDA1260
C      TNEW(I) = VDAT(NT)                                                TRDA1270
C      XNEW(I) = VDAT(NX)                                                TRDA1280
C      ZNEW(I) = VDAT(NZ)                                                TRDA1290
C      NP = NP + 1                                                       TRDA1300
C      NT = NT + 1                                                       TRDA1310
C      NX = NX + 1                                                       TRDA1320
C 470  NZ = NZ + 1                                                       TRDA1330
C      IF (IR) 210,310,100                                               TRDA1340
C                                                                        TRDA1350
C      ERROR TRYING TO READ NEW DATA                                     TRDA1360
C 500  WRITE (6,510) TI                                                  TRDA1370
C 510  FORMAT (21HOCANNOT READ DATA FOR,F13.5,9H SECONDS. )              TRDA1380
C      CALL FAIL                                                         TRDA1390
C      IE = -1                                                           TRDA1400
C      RETURN                                                            TRDA1410
C
C ABOVE WAS OLD TRDAT, BELOW IS NEW ONE                                  BDHT 291
ISN 0002       SUBROUTINE TRDAT(IWHICH,IP,TI,PN,P,T,X,Z,IE)              BDHT 292
ISN 0003       IMPLICIT REAL*8 (A-H,O-Z)                                 BDHT 293
C       LEVEL 2,IVDAT,VDAT                                               BDHT 294
C                                                                        BDHT 295
C IWHICH = WHICH TYPE OF DATA TO BE RETURNED:                            BDHT 296
C                  1 = VOLUMN INFO                                       BDHT 297
C                  2 = POWER INFO                                        BDHT 298
C                  3 = SLAB INFO                                         BDHT 299
C      IP = VOLUME TABLE NUMBER (POSITIVE)                               BDHT 300
C         = OLD VOLUME NUMBER (NEGATIVE)                                 BDHT 301
C         = NORMALIZED POWER REQUEST (ZERO)                              BDHT 302
C      TI = ELAPSED PROBLEM TIME                                         BDHT 303
C      PN = NORMALIZED POWER                                             BDHT 304
C         = SURFACE HEAT FLUX IF IWHICH = 3                              BDHT 305
C      P  = PRESSURE                                                     BDHT 306
C         = SURFACE TEMPERATURE IF IWHICH=3                              BDHT 307
C      T  = TEMPERATURE                                                  BDHT 308
C         = AVERAGE TEMPERATURE IF IWHICH =3                             BDHT 309
C      X  = QUALITY                                                      BDHT 310
C      Z  = MIXTURE LEVEL                                                BDHT 311
C      IE = ERROR INDICATOR                                              BDHT 312
C                                                                        BDHT 313
ISN 0004       COMMON /PCSLAB/ PHSOLD(50),TSOLD(50),TAOLD(50),           BDHT 314
     1                         PHSNEW(50),TSNEW(50),TANEW(50),IBCS(50)   BDHT 315
C PHSOLD,PHSNEW = SURFACE HEAT FLUX                                      BDHT 316
C IBCS = SLAB FLAG LIKE IR                                               BDHT 317
ISN 0005       COMMON / READES /                                         BDHT 318
     1 PNEW(75), POLD(75), PTABL(20,5), POWNEW, POWOLD,                  BDHT 319
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     2 PNEW(75), POLD(75), PTABL(20,5), TIMNEW, TIMOLD, TIMTBL(20,5),
     3 XNEW(75), XOLD(75), XTABL(20,5),
     4 ZNEW(75), ZOLD(75), ZTABL(20,5), IIR(5), IRIN(5)
C      LEVEL 2,PNEW
C
C      PNEW   , POLD   , PTABL   = PRESSURE
C      POWNEW, POWOLD            = NORMALIZED POWER
C      TNEW   , TOLD   , TTABL   = TEMPERATURE
C      TIMNEW, TIMOLD, TIMTBL  = TIME
C      XNEW   , XOLD   , XTABL   = QUALITY
C      ZNEW   , ZOLD   , ZTABL   = UMIXTURE LEVEL
C      IIR                       = CURRENT TABLE INDEX
C      IRIN                      = NUMBER OF TABLE VALUES
C
ISN 0006       COMMON / READET / IVDAT(4441), LPOLD, NJOLD, NVOLD,NSOLD
ISN 0007       REAL VDAT(4441)
ISN 0008       EQUIVALENCE (VDAT(1),IVDAT(1))
C
C      DO NOT MAKE VDAT DOUBLE PRECISION
C      VDAT SIZE = 41 + 24*MAXVOL + 16*MAXJUN + 20*MAXSLB
C      IVDAT = INPUT PLOT RECORD
C      LPOLD = LENGTH OF OLD PLOT RECORD
C      NJOLD = NUMBER OF JUNCTIONS IN OLD PROBLEM
C      NVOLD = NUMBER OF VOLUMES IN OLD PROBLEM
C
ISN 0009       DATA ZERO, ONE / 0., 1. /
ISN 0010       IE = 0
ISN 0011       IF (IWHICH .EQ. 3) GO TO 600
C
ISN 0013       IF (IR) 200,300,100
C
C      GET DATA FROM TABULAR INPUT
ISN 0014     100 I = IIR(IR)
ISN 0015       IF (I-IRIN(IR)) 110,170,170
ISN 0016     110 IF (TIMTBL(I+1,IR)-TI) 180,160,120
ISN 0017     120  FLO = (TI-TIMTBL(I,IR))/(TIMTBL(I+1,IR)-TIMTBL(I,IR))
ISN 0018          P = FLO*(PTABL(I+1,IR)-PTABL(I,IR)) + PTABL(I,IR)
ISN 0019          T = FLO*(TTABL(I+1,IR)-TTABL(I,IR)) + TTABL(I,IR)
ISN 0020          X = FLO*(XTABL(I+1,IR)-XTABL(I,IR)) + XTABL(I,IR)
ISN 0021          Z = FLO*(ZTABL(I+1,IR)-ZTABL(I,IR)) + ZTABL(I,IR)
ISN 0022       RETURN
ISN 0023     160 P = PTABL(I+1,IR)
ISN 0024         T = TTABL(I+1,IR)
ISN 0025         X = XTABL(I+1,IR)
ISN 0026         Z = ZTABL(I+1,IR)
ISN 0027       RETURN
ISN 0028     170 P = PTABL(I,IR)
ISN 0029         T = TTABL(I,IR)
ISN 0030         X = XTABL(I,IR)
ISN 0031         Z = ZTABL(I,IR)
ISN 0032       RETURN
ISN 0033     180 IIR(IR) = I + 1
ISN 0034         GO TO 100
C
C      USE DATA OBTAINED FROM TAPE
ISN 0035     200 IF (TIMNEW-TI) 400,250,210
ISN 0036     210 I = -IR
ISN 0037          FLO = (TI-TIMOLD)/(TIMNEW-TIMOLD)
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ISN 0038              P = FLO*(PNEW(I)-POLD(I)) + POLD(I)                        BDHT 378
ISN 0039              T = FLO*(TNEW(I)-TOLD(I)) + TOLD(I)                        BDHT 379
ISN 0040              X = FLO*(XNEW(I)-XOLD(I)) + XOLD(I)                        BDHT 380
ISN 0041             IF (XOLD(I).GE.ONE.OR.XNEW(I).GE.ONE) X = ONE               BDHT 381
ISN 0043              Z = FLO*(ZNEW(I)-ZOLD(I)) + ZOLD(I)                        BDHT 382
ISN 0044             IF (X.GE.ONE) Z = ZERO                                      BDHT 383
ISN 0046             RETURN                                                      BDHT 384
ISN 0047         250 I = -IP                                                     BDHT 385
ISN 0048             P = PNEW(I)                                                 BDHT 386
ISN 0049             T = TNEW(I)                                                 BDHT 387
ISN 0050             X = XNEW(I)                                                 BDHT 388
ISN 0051             Z = ZNEW(I)                                                 BDHT 389
ISN 0052             RETURN                                                      BDHT 390
                    C                                                            BDHT 391
                    C    NORMALIZED POWER FROM TAPE                              BDHT 392
ISN 0053         300 IF (TIMNEW-TI) 400,320,310                                  BDHT 393
ISN 0054         310  FLO = (TI-TIMOLD)/(TIMNEW-TIMOLD)                          BDHT 394
ISN 0055              PN = FLO*(POWNEW-POWOLD) + POWOLD                          BDHT 395
ISN 0056             RETURN                                                      BDHT 396
ISN 0057         320 PN = POWNEW                                                 BDHT 397
ISN 0058             RETURN                                                      BDHT 398
                    C                                                            BDHT 399
                    C    GET NEW DATA FROM TAPE                                  BDHT 400
ISN 0059         400 TIMOLD = TIMNEW                                             BDHT 401
ISN 0060             POWOLD = POWNEW                                             BDHT 402
ISN 0061             DO 410 I= 1, NVOLD                                          BDHT 403
ISN 0062             POLD(I) = PNEW(I)                                           BDHT 404
ISN 0063             TOLD(I) = TNEW(I)                                           BDHT 405
ISN 0064             XOLD(I) = XNEW(I)                                           BDHT 406
ISN 0065         410 ZOLD(I) = ZNEW(I)                                           BDHT 407
ISN 0066             DO 415 I=1,NSOLD                                            BDHT 408
ISN 0067             TAOLD(I) = TANEW(I)                                         BDHT 409
ISN 0068             TSOLD(I) = TSNEW(I)                                         BDHT 410
ISN 0069             PHSOLD(I) = PHSNEW(I)                                       BDHT 411
ISN 0070         415 CONTINUE                                                    BDHT 412
ISN 0071         420 CALL RCON(IERR)                                             BDHT 413
ISN 0072             IF(IERR .NE. 0) GO TO 500                                   BDHT 414
ISN 0074         430 NP = 42 -1                                                  BDHT 415
ISN 0075             NT = 42 + 3*NVOLD -1                                        BDHT 416
ISN 0076             NX = 42 + 8*NVOLD -1                                        BDHT 417
ISN 0077             NZ = 42 + 8*NVOLD -1                                        BDHT 418
ISN 0078             NSS = 42+24*NVOLD+16*NJOLD+01*NSOLD-1                       BDHT 419
ISN 0079             NSA = 42+24*NVOLD+16*NJOLD+12*NSOLD-1                       BDHT 420
ISN 0080             NPH = 42 + 24*NVOLD + 16*NJOLD + 5*NSOLD -1                 BDHT 421
ISN 0081             IF(TI .GT. VDAT(9)) GO TO 450                               BDHT 422
ISN 0083         440 TIMOLD = VDAT(39)                                           BDHT 423
ISN 0084             POWOLD = VDAT(22)                                           BDHT 424
ISN 0085             DO 450 I= 1, NVOLD                                          BDHT 425
ISN 0086             POLD(I) = VDAT(NP+I)                                        BDHT 426
ISN 0087             TOLD(I) = VDAT(NT+I)                                        BDHT 427
ISN 0088             XOLD(I) = VDAT(NX+I)                                        BDHT 428
ISN 0089             ZOLD(I) = VDAT(NZ+I)                                        BDHT 429
ISN 0090         450 CONTINUE                                                    BDHT 430
ISN 0091             DO 455 I=1,NSOLD                                            BDHT 431
ISN 0092             TAOLD(I) = VDAT(NSA+I)                                      BDHT 432
ISN 0093             TSOLD(I) = VDAT(NSS+I)                                      BDHT 433
ISN 0094             PHSOLD(I) = VDAT(NPH+I)                                     BDHT 434
ISN 0095         455 CONTINUE                                                    BDHT 435
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ISN 0095            GO TO 420                                                   BDHT 436
ISN 0097          460 TIMNEW = VDAT(39)                                         BDHT 437
ISN 0098              PHSNEW = VDAT(22)                                         BDHT 438
ISN 0099              DO 470 I= 1, NVOLD                                        BDHT 439
ISN 0100              PNEW(I) = VDAT(NP+I)                                      BDHT 440
ISN 0101              TNEW(I) = VDAT(NT+I)                                      BDHT 441
ISN 0102              XNEW(I) = VDAT(NX+I)                                      BDHT 442
ISN 0103              ZNEW(I) = VDAT(NZ+I)                                      BDHT 443
ISN 0104          470 CONTINUE                                                  BDHT 444
ISN 0105              DO 475 I=1,NSOLD                                          BDHT 445
ISN 0106              TSNEW(I) = VDAT(NSS+I)                                    BDHT 446
ISN 0107              TANEW(I) = VDAT(NSA+I)                                    BDHT 447
ISN 0108              PHSNEW(I)=VDAT(NPH+I)                                     BDHT 448
ISN 0109          475 CONTINUE                                                  BDHT 449
ISN 0110              GO TO (210,310,610),IWHICH                                BDHT 450
ISN 0111              CALL ERRTRA                                               BDHT 451
                  C                                                           BDHT 452
ISN 0112          600 IF(TIMNEW - TI) 400,650,610                               BDHT 453
ISN 0113          610 I = -IR                                                   BDHT 454
ISN 0114              FLO=(TI-TIMOLD)/(TIMNEW-TIMOLD)                           BDHT 455
ISN 0115              PN=FLO*(PHSNEW(I)-PHSOLD(I))+PHSOLD(I)                    BDHT 456
ISN 0116              P =FLO*(TSNEW(I)-TSOLD(I))+TSOLD(I)                       BDHT 457
ISN 0117              T = FLO*(TANEW(I)-TAOLD(I))+TAOLD(I)                      BDHT 458
ISN 0118              RETURN                                                    BDHT 459
ISN 0119          650 CONTINUE                                                  BDHT 460
ISN 0120              I =-IR                                                    BDHT 461
ISN 0121              PN = PHSNEW(I)                                            BDHT 462
ISN 0122              P = TSNEW(I)                                              BDHT 463
ISN 0123              T = TANEW(I)                                              BDHT 464
ISN 0124              RETURN                                                    BDHT 465
                  C     ERROR TRYING TO READ NEW DATA                           BDHT 466
ISN 0125            500 WRITE (6,510) TI                                        BDHT 467
ISN 0126            510 FORMAT (21HOCANNOT READ DATA FOR,E13.6,9H SECONDS. )    BDHT 468
ISN 0127              CALL FAIL                                                 BDHT 469
ISN 0128              IE = -1                                                   BDHT 470
ISN 0129              RETURN                                                    BDHT 471
ISN 0130              END                                                       TRDA1420
```

OPTIONS IN EFFECT NAME= MAIN,OPT=02,LINECNT=60,SIZE=0000K,

OPTIONS IN EFFECT SOURCE,EBCDIC,NOLIST,NODECK,LOAD,NOMAP,NOEDIT,ID,NOXREF

STATISTICS SOURCE STATEMENTS = 129 ,PROGRAM SIZE = 2466

STATISTICS NO DIAGNOSTICS GENERATED

****** END OF COMPILATION ****** 655K BYTES OF CORE NOT USED

STATISTICS 2 DIAGNOSTICS THIS STEP, HIGHEST SEVERITY CODE IS 4

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