

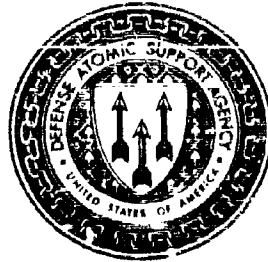
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**DEPARTMENT OF DEFENSE
LAND FALLOUT
PREDICTION SYSTEM**

**Volume V
PARTICLE ACTIVITY**

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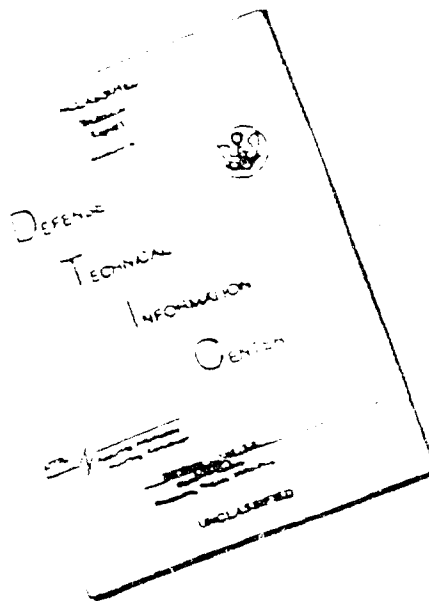
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DEPARTMENT OF DEFENSE
LAND FALLOUT PREDICTION SYSTEM

Volume V - Particle Activity

Robert C. Tompkins

February 1968

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US ARMY
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ABSTRACT

This volume of the DELFIC (Defense Land Fallout Interpretive Code) documentation describes the Particle Activity Module. This module computes the distribution of fission-product and induced activities as a function of fallout particle size. Fractionation is accounted for by a modified radial-distribution model. Radioactive decay is computed from the Bateman equation.

ACKNOWLEDGEMENTS

Valuable assistance in the computer programming was furnished by J. Meredith and N. Dombeck of the US Army Nuclear Defense Laboratory, Computer Branch. Fission-product transition cards and fission-yield cards were provided by J. K. Crawford of the US Naval Radiological Defense Laboratory. Soil-parameter cards and exposure-rate-multiplier cards were provided by S. H. Cassidy of the US Naval Radiological Defense Laboratory.

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DEPARTMENT OF DEFENSE
LAND FALLOUT PREDICTION SYSTEM

1. INTRODUCTION

The Particle Activity Module (PAM) assigns radioactivity to the fallout particles. Three sources of radioactivity are considered in DELFIC: (1) fission products, (2) products of the n, γ reaction on ^{238}U in the device, and (3) neutron-induced activity in the soil swept up by the fireball. The fallout radioactivity for a particular detonation is assumed to be a function only of particle size and of time after detonation.

The distribution of activity with particle size is generated by a modified version of Freiling's radial-distribution model (References 1 and 2). Consequently, the PAM takes into account radiochemical fractionation and can output the activity of individual mass chains.

The PAM computes the decay of each individual nuclide from the time of detonation to the time requested by the user by means of the Bateman equation. Thereby DELFIC circumvents the problem of selecting an exponent for the power-law approximation to the decay of mixed fission products, and can convert the activities to exposure rates or exposures on the basis of the decay schemes of the nuclides.

The computer program was written in FORTRAN IV for the IBM 7090/94. Its use on a computer having words of fewer than 36 bits will require drastic and intricate modifications.

2. PHYSICAL AND MATHEMATICAL MODELS

The following outline of the approach taken in the PAM will be confined to the computation of exposure rate. The extension to accumulated exposure should be self-evident.

The user requests (cf. Vol VI, Output Processor) the exposure rate at a specified time after detonation. The PAM computes by means of a fractionation model the distribution of the contributing nuclides with particle size. The decay of each activity from detonation to the requested time

is rigorously computed. Each activity is multiplied by a unique conversion factor (exposure-rate-multiplier, ERM) to obtain exposure rate. The ERM's were computed from the gamma energy spectra of the corresponding nuclides.

The normalization factor (K-factor, magic number) used in many fallout models does not appear in DELFIC. However, normalization factors can be readily derived from DELFIC output as described in Section 4.2.

2.1 Nuclide Abundances.

2.1.1 Fission Products. The fission products can be grouped into a number of decay chains:

$$N_1 \rightarrow N_2 \rightarrow N_3 \rightarrow \dots \rightarrow N_n$$

One or more members (including, of course, N_1) may be produced directly by the fission event, and each member except N_n decays as $e^{-\lambda_1 t}$, while each member except N_1 grows by $e^{\lambda_1 - 1 t}$. The complete growth and decay history for each member of a chain is represented by the Bateman equation (Reference 3):

$$N_n(t) = \sum_{i=1}^n \sum_{k=1}^n {}^n C_{ki} N_i^0 e^{-\lambda_k t}, \quad (2.1)$$

where

$N_n(t)$ = atoms of the nth member of the chain at time t,

N_i^0 = atoms of the ith member of the chain ($i \leq n$) at time 0,

and λ_k = disintegration constant of the kth member of the chain ($k \leq n$).

$${}^n C_{ki} = \left(\prod_{j=1}^{n-1} \lambda_j \right) / \left(\prod_{j=1}^n (\lambda_j - \lambda_k) \right) \quad (2.2)$$

The activity in disintegrations per second is given by

$$A_n(t) = \lambda_n N_n(t) \quad (2.3)$$

The number of disintegrations that occur between times t_1 and t_2 is given by

$$D_n(t_1, t_2) = \lambda_n \sum_{i=1}^n \sum_{k=1}^n n_{ki} C_{ki} N_1^0 \left(e^{-\lambda_k t_1} - e^{-\lambda_k t_2} \right) / \lambda_k \quad (2.4)$$

which is obtained by integration of Equations 2.1 and 2.3. The Bateman equation develops a singularity whenever $\lambda_k = \lambda_{k-1}$. This difficulty is circumvented in DELFIC by slightly incrementing one member of such a pair.

2.1.2 Induced Activity in Soil. The model for the contribution of induced activity in the cloudborne soil was developed by Jones (Reference 4). Three basic assumptions are made:

- (1) All neutrons entering the soil are thermalized and then captured.
- (2) Only those neutrons need be considered that are seen by the apparent crater.
- (3) All significant soil components are refractory in the fractionation scheme.

A detailed description is given in Reference 4. A data deck is currently available only for Nevada Test Site soil.

2.1.3 Induced Activity in Device Materials. The PAM currently accounts for induced activity in only one device component, ^{238}U . Neutron capture by ^{238}U produces ^{239}U , which decays to ^{239}Np and then ^{239}Pu . The following equations are used:

1. Activity of ^{239}U , dis s^{-1} .

$$A_1 = \lambda_1 N_1^0 e^{-\lambda_1 t}, \quad (2.5)$$

where

N_1^0 = number of neutron captures,

λ_1 = disintegration constant of ^{239}U , s^{-1} ,

and t = time, s.

2. Activity of ^{239}Np , dis s^{-1} ,

$$A_2 = \frac{\lambda_1 \lambda_2 N_1^0}{\lambda_2 - \lambda_1} \left(e^{-\lambda_1 t} - e^{-\lambda_2 t} \right), \quad (2.6)$$

where

λ_2 = disintegration constant of ^{239}Np , s^{-1} .

3. Disintegrations of ^{239}U occurring between t_1 and t_2 ,

$$\Delta A_1 \Big|_{t_1}^{t_2} = N_1^0 \left(e^{-\lambda_1 t_1} - e^{-\lambda_1 t_2} \right). \quad (2.7)$$

4. Disintegrations of ^{239}Np occurring between t_1 and t_2 ,

$$\Delta A_2 \Big|_{t_1}^{t_2} = \frac{N_1^0}{\lambda_2 - \lambda_1} \left[\lambda_2 \left(e^{-\lambda_1 t_1} - e^{-\lambda_1 t_2} \right) - \lambda_1 \left(e^{-\lambda_2 t_1} - e^{-\lambda_2 t_2} \right) \right]. \quad (2.8)$$

5. Disintegrations of ^{239}U from t_1 to infinity,

$$\Delta A_1 \Big|_{t_1}^{\infty} = N_1^0 e^{-\lambda_1 t_1} \quad (2.9)$$

6. Disintegrations of ^{239}Np from t_1 to infinity,

$$\Delta A_2 \Big|_{t_1}^{\infty} = \frac{N_1^0}{\lambda_2 - \lambda_1} \left(\lambda_2 e^{-\lambda_1 t_1} - \lambda_1 e^{-\lambda_2 t_1} \right) \quad (2.10)$$

This mass chain is considered completely refractory in the fractionation scheme.

2.2 Activity Versus Particle Size.

The radial-distribution model of Freiling (Reference 1) categorizes a nuclide as volatile if its boiling point is less than the solidification temperature of the soil particles. The nuclide is refractory if its boiling point is greater than the solidification temperature. Freiling then assumes that a volatile nuclide will condense on the particle surfaces, whereas a refractory nuclide will condense uniformly throughout the particle. A fission-product mass chain, whose composition changes with time, can then be characterized by the fraction of its membership that represents refractory nuclides at the time the cloud cools to the soil-solidification temperature. This Freiling ratio is referred to as r_s . Freiling has postulated, on an empirical basis, that the specific activity of fallout particles is proportional to the $(b_1 - 1)$ power of the particle size, where b_1 is $\sqrt{F_1}$ for mass chain 1.

Freiling (Reference 2) has treated the relationship of the model to the log-normal distribution of particle sizes. In DELFIC, however, it was desirable to generalize the model for arbitrary particle-size distributions in tabular form. The approach can be formulated as follows:

Let

d_k = geometric mean diameter of k th particle-size class,

N_k - number of particles in class k ,

F_T = total number of equivalent fissions in all size classes,

Y_i = fission yield of i th mass chain,

and r = index for perfectly refractory mass chain.

The equivalent fissions of mass chain i in size class k is

$$F_i(d_k) = F_T Y_i f_i(d_k) \quad , \quad (2.11)$$

where

$$f_i(d_k) = N_k d_k^{b_i + 2} / \sum_{k=1}^n N_k d_k^{b_i + 2} \quad (2.12)$$

For the perfectly refractory chain ($b_i = 1$), Equation 2.11 takes the form

$$F_r(d_k) = F_T Y_r f_M(d_k) \quad , \quad (2.13)$$

where

$$f_M(d_k) = N_k d_k^3 / \sum_{k=1}^n N_k d_k^3 \quad , \quad (2.14)$$

i.e., the mass fraction in the k th size class.

The fractionation ratio is given by

$$(r_{1,r})_k = \frac{y_1}{y_r} \cdot \frac{f_1(d_k)}{f_M(d_k)}, \quad (2.15)$$

or

$$(r_{1,r})_k = \frac{y_1}{y_r} \cdot \frac{\sum_{k=1}^n d_k^{b_1-1} N_k d_k^3}{\sum_{k=1}^n N_k d_k^{b_1+2}}. \quad (2.16)$$

To obtain an algorithm that takes advantage of the fact that particle size distribution consists of a table of $f_M(d_k)$ versus d_k , we note that

$$\sum_{k=1}^n N_k d_k^{b_1+2} / \sum_{k=1}^n N_k d_k^3 = \sum_{k=1}^n \left(f_M(d_k) d_k^{b_1-1} \right). \quad (2.17)$$

Taking

$$E_1 = 1 / \sum_{k=1}^n \left(f_M(d_k) \cdot d_k^{b_1-1} \right), \quad (2.18)$$

we can rewrite Equation 2.16

$$(r_{1,r})_k = \frac{y_1}{y_r} d_k^{b_1-1} E_1. \quad (2.19)$$

It follows from Equations 2.11, 2.15, and 2.19 that

$$F_i(d_k) = F_T Y_i E_i d_k^{b_i - 1} f_M(d_k) . \quad (2.20)$$

In this form of the radial distribution model, the specific activity for any mass chain that is not perfectly refractory decreases monotonically with increasing particle size. Observations of fallout, on the other hand, provide strong evidence that the specific activity tends to level off at about 100 to 200 μ . To account for this effect, the model was modified in the following manner:

The approach assumes a two-component system. One component obeys the radial distribution model. The other has a constant specific activity over the particle size distribution.

Let

R_i = fraction of fissions in i th mass chain that obeys radial distribution, and

S_i = fraction of fissions in i th mass chain that appears with constant specific activity.

Then Equation 2.20 is replaced by

$$F_i(d_k) = F_T Y_i (R_i E_i d_k^{b_i - 1} + S_i) f_M(d_k) . \quad (2.21)$$

Figure 2.1, an idealized plot from fallout observations, shows the two components.

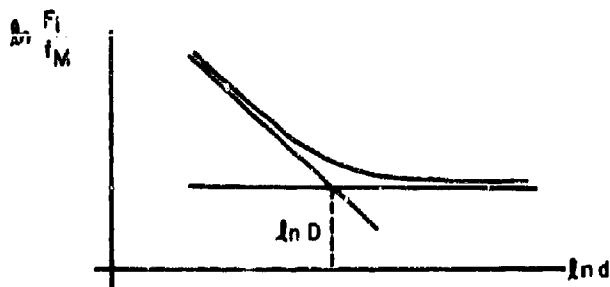


Figure 2.1 Relationship of equivalent fissions to particle size.

The crossing point sets the criterion

$$R_1 E_1 D^{b_1} - 1 = S_1 \quad , \quad (2.22)$$

since

$$R_1 + S_1 = 1 \quad , \quad (2.23)$$

$$R_1 (1 + E_1 D^{b_1} - 1) = 1 \quad , \quad (2.24)$$

then

$$R_1 = \frac{1}{1 + E_1 D^{b_1} - 1} \quad , \quad (2.25)$$

and

$$S_1 = \frac{E_1 D^{b_1} - 1}{1 + E_1 D^{b_1} - 1} \quad (2.26)$$

Finally

$$F_1(d_k) = \frac{F_T Y_1 E_1}{1 + E_1 D^{b_1} - 1} (d_k^{b_1} - 1 + D^{b_1} - 1) f_M(d_k) \quad (2.27)$$

On the basis of fallout observations, D has been taken as 100 μ .

3. COMPUTER PROGRAM DESCRIPTION

The Particle-Activity Module consists of 14 sub-routines organized as shown in Figure 3.1. The activity-versus-particle-size tables generated by the PAM are requested by the Output Processor for specific times. There may be any number of such requests. Consequently, the PAM has been divided into two phases. Phase I reads the input data and preprocesses them to the extent that requested time does not influence the computation. Phase I is exercised only once for a particular detonation. Phase II is exercised as often as required to prepare the tables of activity versus particle size for requested times.

Phase I consists of

PAM1	XPRM
SETUP	INDCD1
YIELD	FRATIO

Phase II consists of

PAM2	INDCD2
GXFSR	MCHDEP
URAN	

BATMAN is required in both Phase I and Phase II. TIMSEC and UNPACK are small utility routines. Table 3.1 shows the blocks of labeled COMMON.

The individual subroutines are described more fully in the following sections.

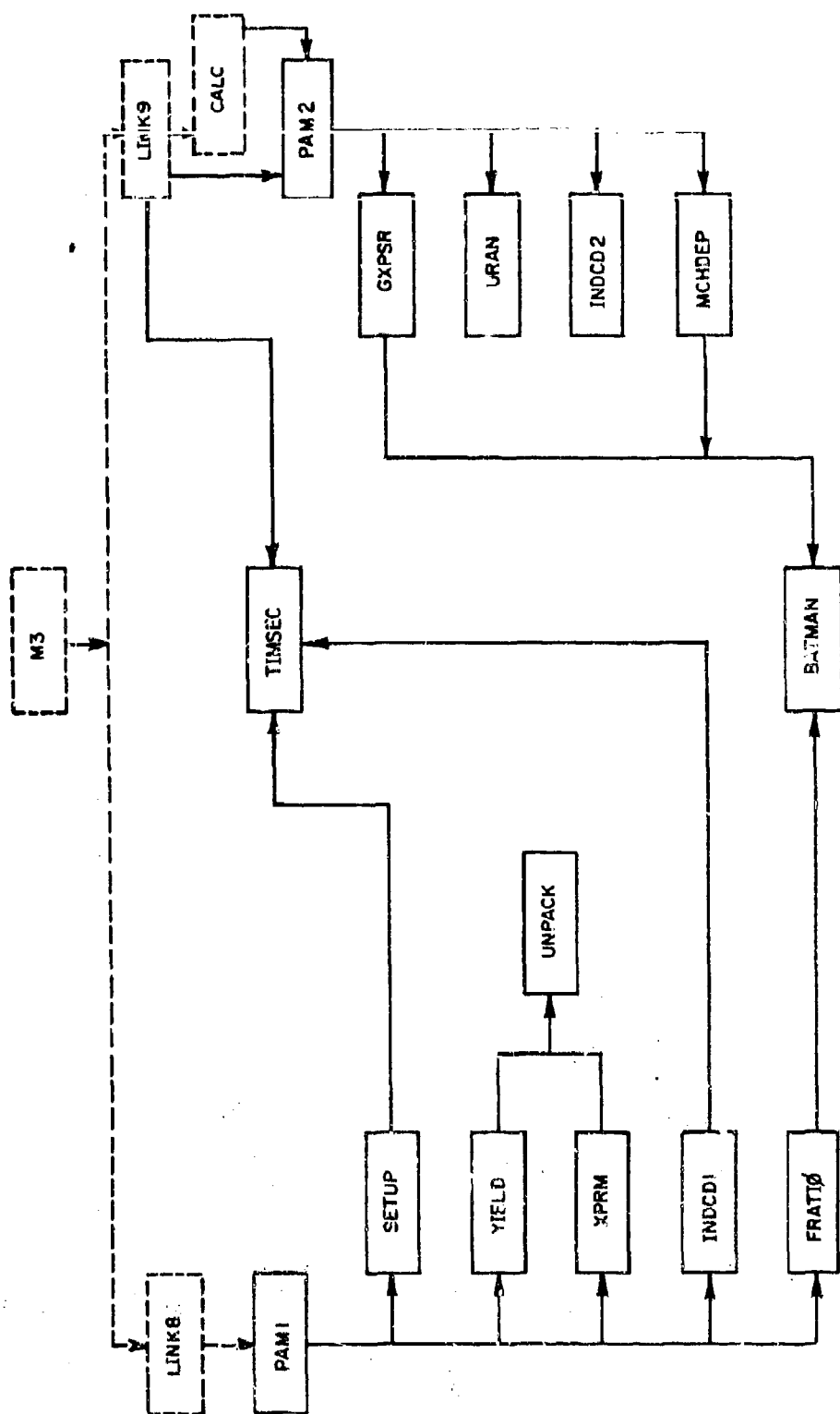


Figure 3.1 Organizational chart of particle-activity module.

TABLE 3.1

COMMON BLOCKS

Total Storage 12041s, 51531o

/FISHIN/1155s, 6211o	/DECAY/6s, 61o	/OUTPUT/316s, 2061o
ABEGN(700)	TENTER	FISNUM
ABUNDØ(700)	JD	FP(200)
BRANCH(130)	KDØS	FW
CAPFIS	TENTER	ITAB
DCØN(700)	TEXT	JØØ
IBRA	TIME	MASCHN
INUC		SIGMAS
MAXNUC		
MULT(11)		
NUCLID(700)		
/UTILITY/616s, 3981o	/INDUCE/616s, 3981o	/FRYLING/1047s, 5511o
KØUT	ALBFØM	BSUBK(90)
NPRNT(15)	FAC(7,18)	ERM(185)
	FØGRNY(7,18)	JRM(185)
	ISØ(18)	KRM
	IMAX	ECF(90)
	XLAM(7,18)	

/SET3/7251s, 37531o (PAM uses only FMAS and PSIZE)

BZ	IØT(18)	MXREQ	NS	X(500)
BZ2	IP	MYDUMY	NTAPES	XF
BZZ	IPØUT	NA	NTAPET	XØ
BZ22	ITT(18)	NBZX	NTASK	XMAX
DELTAX	IV	NBZX2	NXMAP	XMIN
DGX	JC(18)	NBZY	NYMAP	XNMAP
DGY	JIN	NCL	UMIN	X1
DIFCØN	JØUT	NE	IS(500)	X2
DIFADJ	JPØUT	NF	PSIZE(200)	X3
FMAS(500)	KTR(500)	NIJ	PACT(200)	X4
FMAS(200)	KTAF	NMAP	RØPART	Y(500)
IC(18)	LAST	NMAX	T(500)	YF
ICØN	MATRUN	NØX	TI	YO
ICTR	MARRAY	NP(21)	T2	YMAX
IH	MIN	NREQ	TLIMIT	

3.1 Executive Control.

3.1.1 Subroutine PAM1 (HOB, SIDTMP, TMSD, TW, ISIN, ISOUT, IPOUT, SIGMA).

Inputs:

Argument list	Input tape
HOB	CAPFIS
IPOUT	EMTIN
ISIN	FISSTD
ISOUT	IFTAPE(10)
SIGMA	NPRNT(15)
SIDTMP	PAMID(12)
TMSD	
TW	

Storage requirement (exclusive of COMMON)

1550₃, 872₁₀

Calling program: LINK8, Sequence 312

Subroutines called: SETUP, YIELD, XPRM, INDCD1, FRATIØ

Flowchart: Figure 3.2

Subroutine PAM1, the executive program for Phase I, reads control parameters and input data specific to the run. It also sets file assignments for the invariant data and manages the restart feature. Finally, it calls the worker subroutines of Phase I.

The PAM uses five mnemonics for I/O files. KØUT is the system output tape. ISIN is the system input tape. IPAM is the PAM restart tape. The invariant data set (transition cards, fission-yield tables, and exposure-rate multipliers) is read from INTP; the quasi-invariant data set (soil composition) is read from KRD. KØUT is identified with ISØUT, the mnemonic used in the Output Processor. IPAM is identified with IPOUT, the binary output tape from the Transport Module (cf. Vol IV). INTP and KRD are initially identified with ISIN.

PAM1 first reads a run identifier, PAMID(12), and two control arrays, IFTAPE(10) for file manipulation and NPRNT(15) for printout options. If IFTAPE(4) = T, the program branches to read restart data from IPAM, print the title page, and return to LINK8. Otherwise PAM1 reads CAFFIS, FMITN, and FISSID: prints the title page; checks IFTAPE(1) for the correct assignment of INTP; checks IFTAPE(2) for the assignment of KRD.

The worker subroutines are then called sequentially. If EMITN has been set ≤ 0.0 to suppress the induced activity calculation, IMAX is set to 0 as a flag for Phase II. If IFTAPE(3) = T, restart information is written on IPAM (binary) before the return to LINK8.

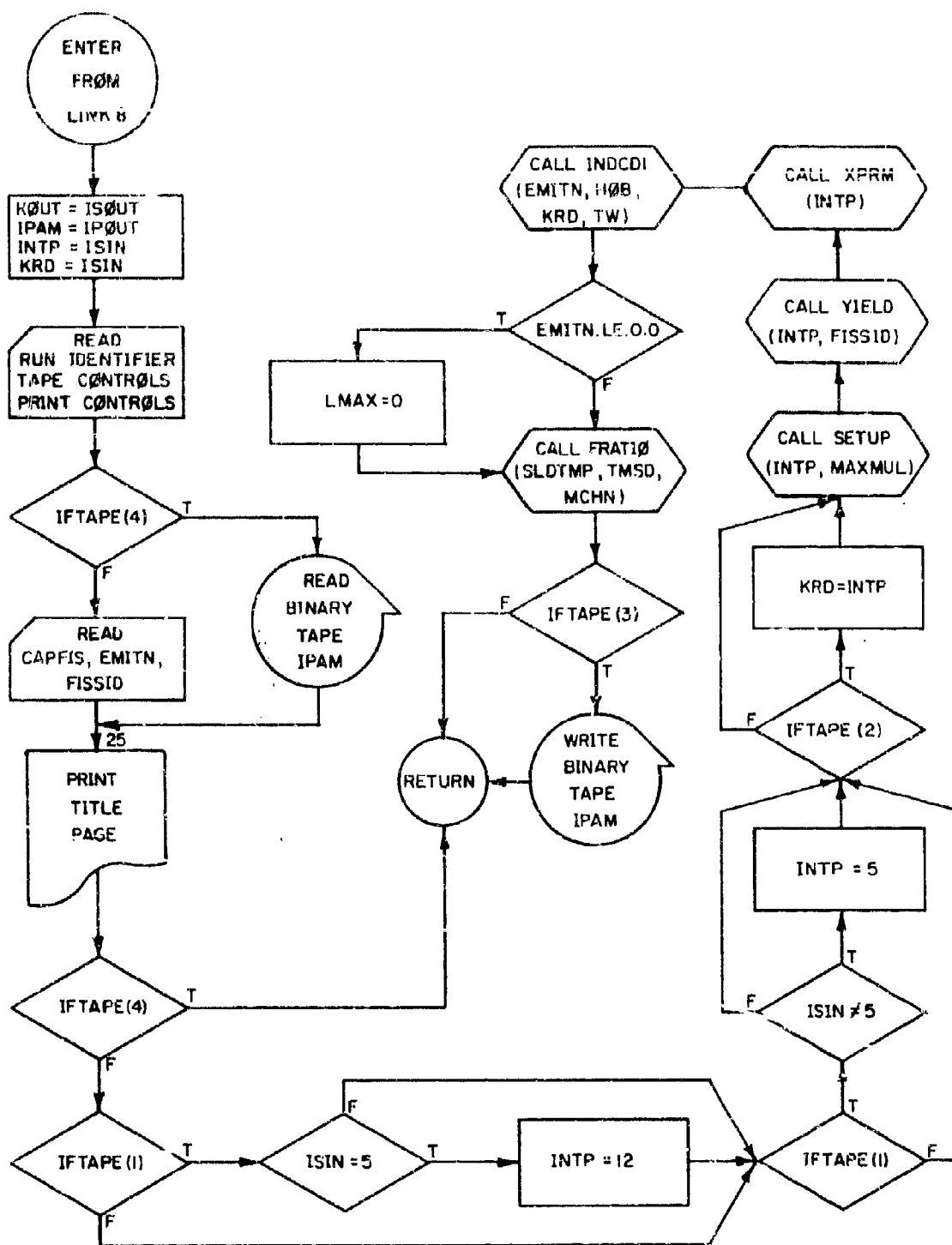


Figure 3.2 Detailed flowchart for Subroutine PAM1.

3.1.2 Subroutine PAM2.

Input:

COMMON/OUTPUT/	COMMON/UTILITY/	COMMON/FISHIN/	COMMON/INDUCE/
FP(200)	KOUT	CAPFIS	IMAX
ITAB	NPRNT(15)		
JGO			

Output:

COMMON/OUTPUT/
FP(200)

Storage requirement (exclusive of COMMON): 153a, 10710

Calling programs: LINK9, Sequence 189

CAIC, Sequence 89

Subroutines called: GXPSR, URAN, INDCD2, MCHDEF

Flowchart: Figure 3.3

This subroutine is the executive program for PAM Phase II. The user should note that provision has been made for an additional output option, JGO = 3, to compute induced activity only. This option is not implemented in the present Output Processor. PAM2 initializes the FP array so that the worker subroutines can accumulate the contributions from different kinds of activity.

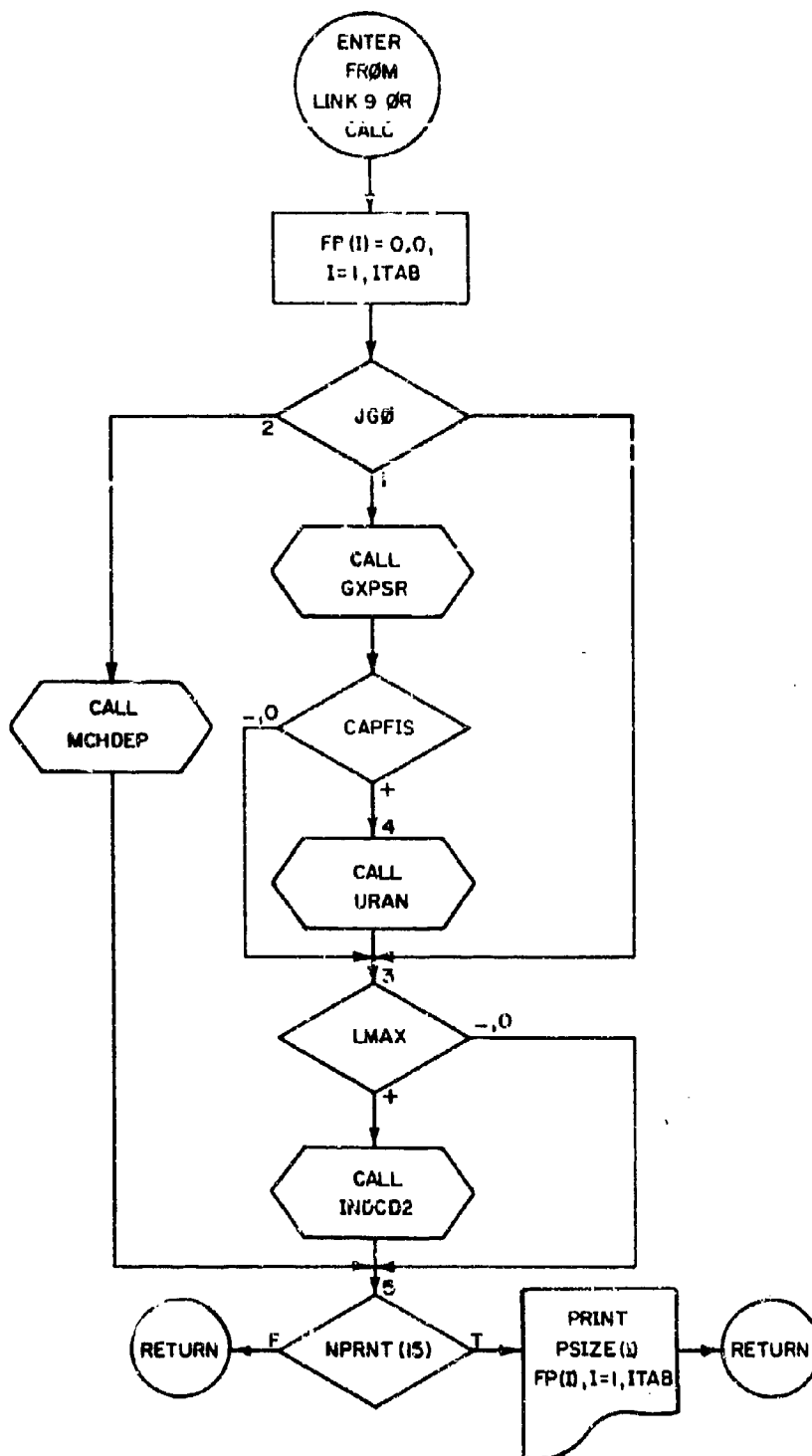


Figure 3.3 Detailed flowchart for Subroutine PAM2.

3.2 Fission Product Abundances.

3.2.1 Approach. Computation with the Bateman equation requires the following inputs:

1. Subchain lists
2. Disintegration constants
3. Branching ratios
4. Fission yields

Overall program efficiency dictated a compromise between rapid access to this information and conservation of core storage. The approach taken was based upon the principles of the packed word and the stacked array, with maximum pre-processing during Phase I of the FAM.

Figure 3.4 shows a typical example of branching in a mass chain (mass 115). The numbers in the circles are atomic numbers, numbers along the arrows are branching ratios, and the asterisks represent isomeric states.

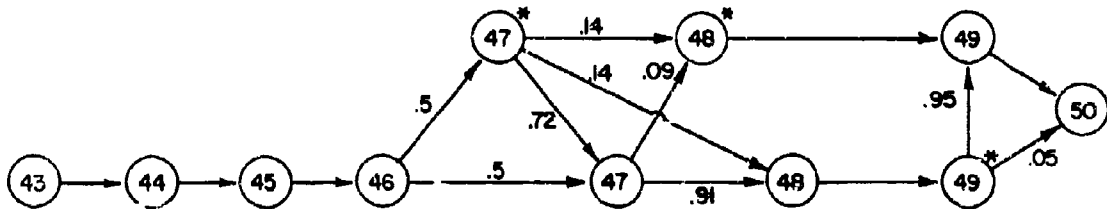
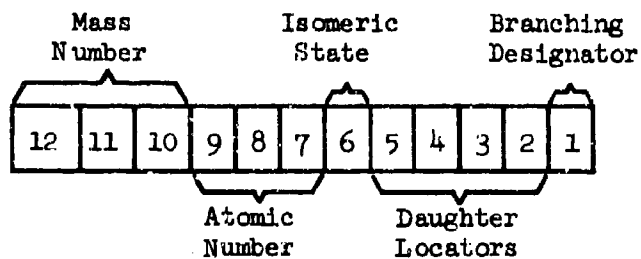


Figure 3.4 Example of complex mass chain (mass 115).

Each of the nine possible paths from 43 to 50 constitutes a subchain. PAM Phase I catalogs the subchains, branching ratios, and disintegration constants. The master table of fission products is the array NUCLID(700). Each entry contains in packed form the identification of the nuclide, a pointer to its daughter (similar to self-relative addressing in an assembly program), and a counter for scanning the branching ratio table, BRANCH(130), which is stacked. The disintegration constants are listed in the simple array DCØN(700), parallel to NUCLID.

A word in NUCLID is subdivided into 12 bytes of 3 bits each; i.e., a byte represents one octal digit. These may be numbered so:



The mass number is placed in bytes 10-12, the atomic number in 7-9, and the isomeric state indicator in byte 6. A fission product may have branching decay to at most 3 daughters. Each of bytes 3-5 references one of the daughters by the appropriate increment to the array index. (If the array is properly ordered, this increment cannot exceed 7.) At most one of these increments can be negative, whereupon byte 2 contains the appropriate byte number. The array BRANCH is stacked so that it contains entries only where there is more than one daughter. When NUCLID and BRANCH are scanned together, byte 1 provides (indirectly) the information for indexing BRANCH. Specifically, the index is incremented by 4-n, where n is the contents of byte 1. The beginning of each subchain is flagged with a minus sign.

Precautions must be taken to prevent redundancy on members of a subchain having more than one arrow entering or leaving (see Figure 3.4). Two steps are taken. Each fission yield [array YIELD(700) parallel to NUCLID] is divided in Phase I by the number of entering arrows. During the decoding process in Phase II, the leaving arrows are accounted for by

accumulating the branching ratios from right to left in each subchain.

The packed words in array NUCLID require a minimum of 36 bits. However, the program operates separately on two groups of 21 and 15 bits, respectively. Consequently, the program can be run on a machine having a word length as short as 21 bits by splitting NUCLID into two parallel arrays and suitably modifying the program. Adjustments may be necessary elsewhere in the program to release the additional 700 words of core memory required.

3.2.2 Subroutine SETUP (INTP, MAXMUL).

Inputs:

Argument list	Input tape	COMMON/UTILITY
INTP	BRAT DATNØ DISØM DMASS HLIFE IXEP IUNIT PATNØ PISØM PMASS	KØUT NPRNT(15)

Outputs:

Argument list	COMMON/FISHIN/
MAXMUL	BRANCH(130) DCØN(700) IBRA INUC MAXNUC MULT(11) NUCLID(700)

Storage requirement (exclusive of COMMON): 135210, 25100

Calling program: Subroutine PAM1, statement 50

Subroutines called: TIMSEC (DEIFIC function)

DUMP (System subroutine)

Flowchart: Figures 3.5a through 3.5h

This subroutine reads data on the nuclear transitions of the fission products and edits them into the arrays BRANCH, DCØN, and NUCLID described in Section 3.2.1. The sequence of input records is inconsequential.

The program begins with a series of initializations. Noteworthy among these is the array MULT(11), which is set up so that $MULT(I) = 8 * I$.

Statement 10 is the return point for successive reading of transition cards. Before each card is read a check is made to ensure that the dimensions of the principal arrays will not be exceeded. After each card is read, the contents are checked for validity. Bad cards are printed out and rejected. PMASS = 0 signals the end of the transition deck and causes a transfer to Statement 200 for a second pass through the stored data.

At Statement 14 the half-life is converted to a disintegration constant in s^{-1} . Then a note is made if the transition involves branching. The parent and daughter are compared to ascertain the type of transition, which is coded into KTYP.

At Statement 22 PMASS and PATNO are packed into bytes 2-6 of NAMPAR. The next block of coding determines what position the new nuclide should occupy in the master table of fission products, NUCLID(700). The first nuclide is immediately shunted to the general scheme for adding an entry to the bottom of the table.

NUCLID is to be ordered by (1) increasing mass number, (2) increasing atomic number, (3) decreasing isomer number. In the first sort loop (110) NAMPAR is compared with the most significant bytes of each entry in NUCLID. If a point is found where the new nuclide should be inserted, a transfer is made out of the loop to Statement 121 or 131. Normal exit from the loop (to Statement 111) indicates that the new nuclide is to be added at the bottom of the table.

At Statement 111 the contents of NAMPAR are transferred to bytes 7-12 of the next cell of NUCLID; PISOM and KTYP are stored in bytes 6 and 5, respectively; the branching designator (byte 1) is initialized at 4; and the sign bit is set negative. The disintegration constant is compiled into the parallel table, DCON(200). If there is no branching, control is immediately returned to Statement 10 to read another card. If there is branching, there is first a detour to Statement 112.

At Statement 112, BRAT is compiled into the stacked array BRANCH(130). The branching designator (byte 1 of NUCLID) is decremented by 1. This branching designator is used to maintain correspondence between NUCLID and BRANCH, which are not parallel. During passes through NUCLID there appear statements of the general form,

$$KBR = KBR + 4 - \text{MOD}(\text{NUC}, \text{MULT}(1)),$$

to effect this bookkeeping.

If the new nuclide is found on the basis of mass number and atomic number alone to fall between two entries in NUCLID, control is transferred from loop 110 immediately to Statement 131. NUCLID and DCON are opened for the insertion in a straightforward manner, and the cell of NUCLID is packed as at Statement 112. Again the paths diverge on the existence of branching. In the event of branching it may be necessary to make an insertion in BRANCH.

If the new nuclide has the same mass number and atomic number as an old entry, the transfer from loop 110 is to Statement 121 for a closer look. Isomeric states are now compared in the neighborhood of the exit point from loop 110. If an identical entry is not found, the point of insertion is determined and control is transferred to Statement 131. If an identical entry exists, the new nuclide is not really new but represents another branch in the decay scheme. Transfer is then to Statement 141. Note: The five statements following 121 comprise the most intricate coding in this subroutine.

At Statement 141, checks are made for duplication and for agreement of the disintegration constants. If all is well, the new KTYP is inserted in the highest order available byte, the branching designator is decremented, and BRAT is compiled into BRANCH.

After all the cards have been read, further processing begins at Statement 200. Except for initialization, this segment of the program consists of loop 250 through the nuclide table, now properly ordered. For each entry we examine each decay branch (if any) in turn. The disintegration constants of each parent-daughter pair are compared. If they are equal, one of them is incremented by 10^{-16} to avoid a singularity in the Bateman equation. The type of decay is decoded from KTYP,

and the packed name of the daughter is computed. A search is then made in NUCLID for the daughter. When a daughter is found, its sign is set positive. (Thus at the end a negative value of NUCLID indicates the beginning of a subchain). KTOP is replaced in its byte by the absolute value of the difference between the parent and daughter indices. If this difference is negative, the byte number is inserted as the value of byte 2.

The following restrictions are placed upon the data set input to this program:

1. There must be no more than three decay branches.
2. In a properly ordered table the absolute difference between parent and daughter indices must not exceed 7.
3. There must be no more than one branch per nuclide yielding a daughter lying above the parent in the table.

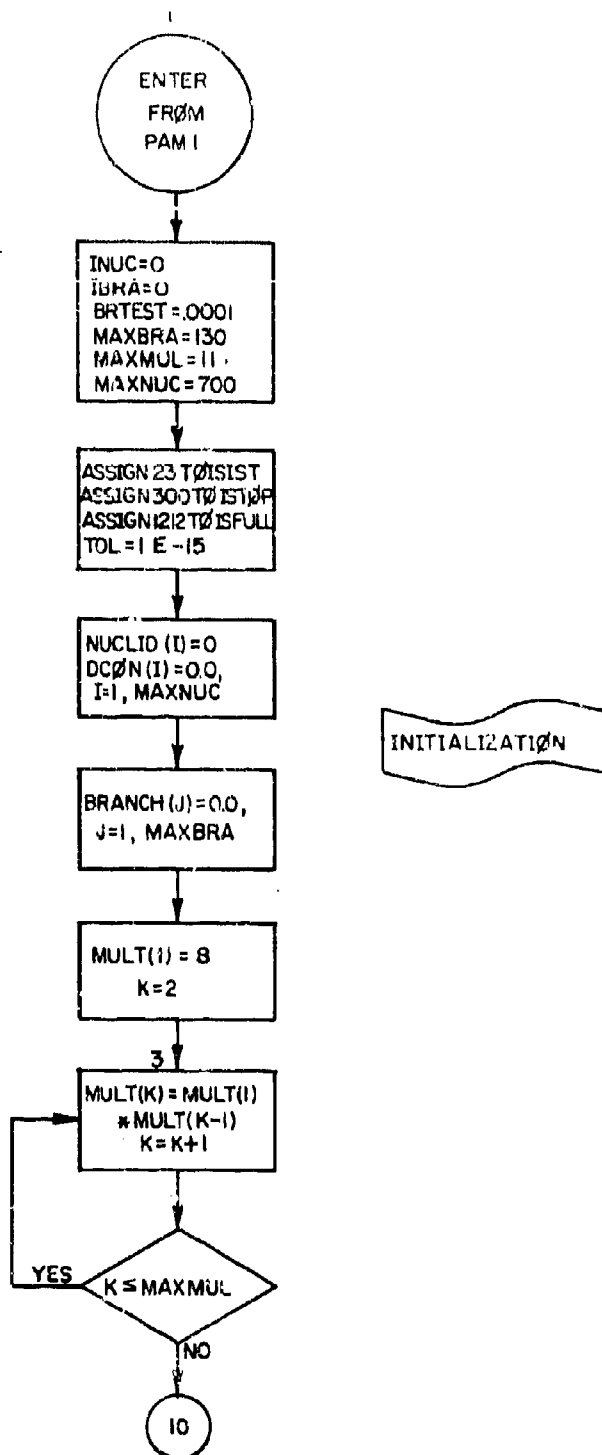


Figure 3.5a Detailed flowchart for Subroutine SETUP.

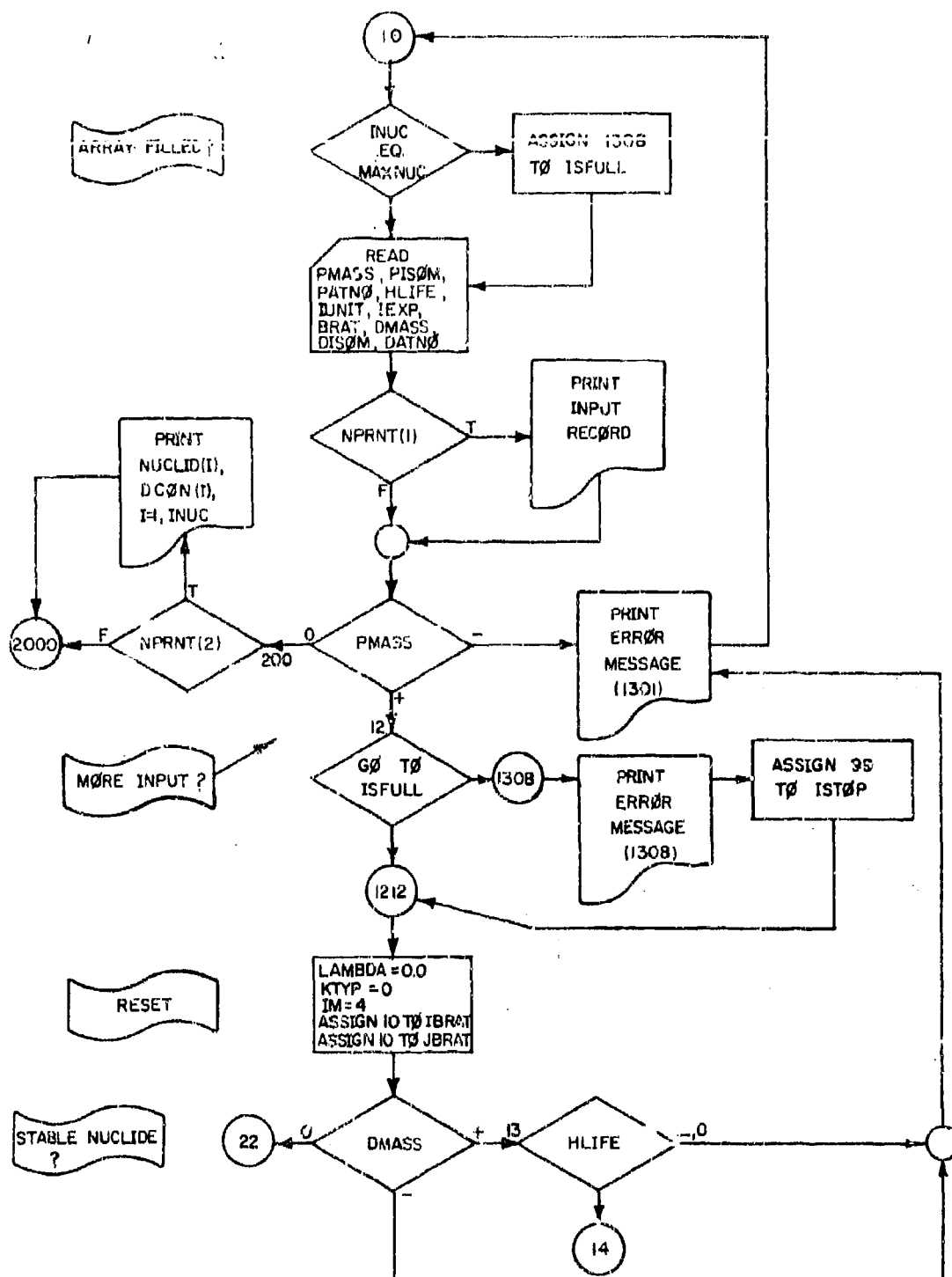


Figure 3.5b Detailed flowchart for Subroutine SETUP.

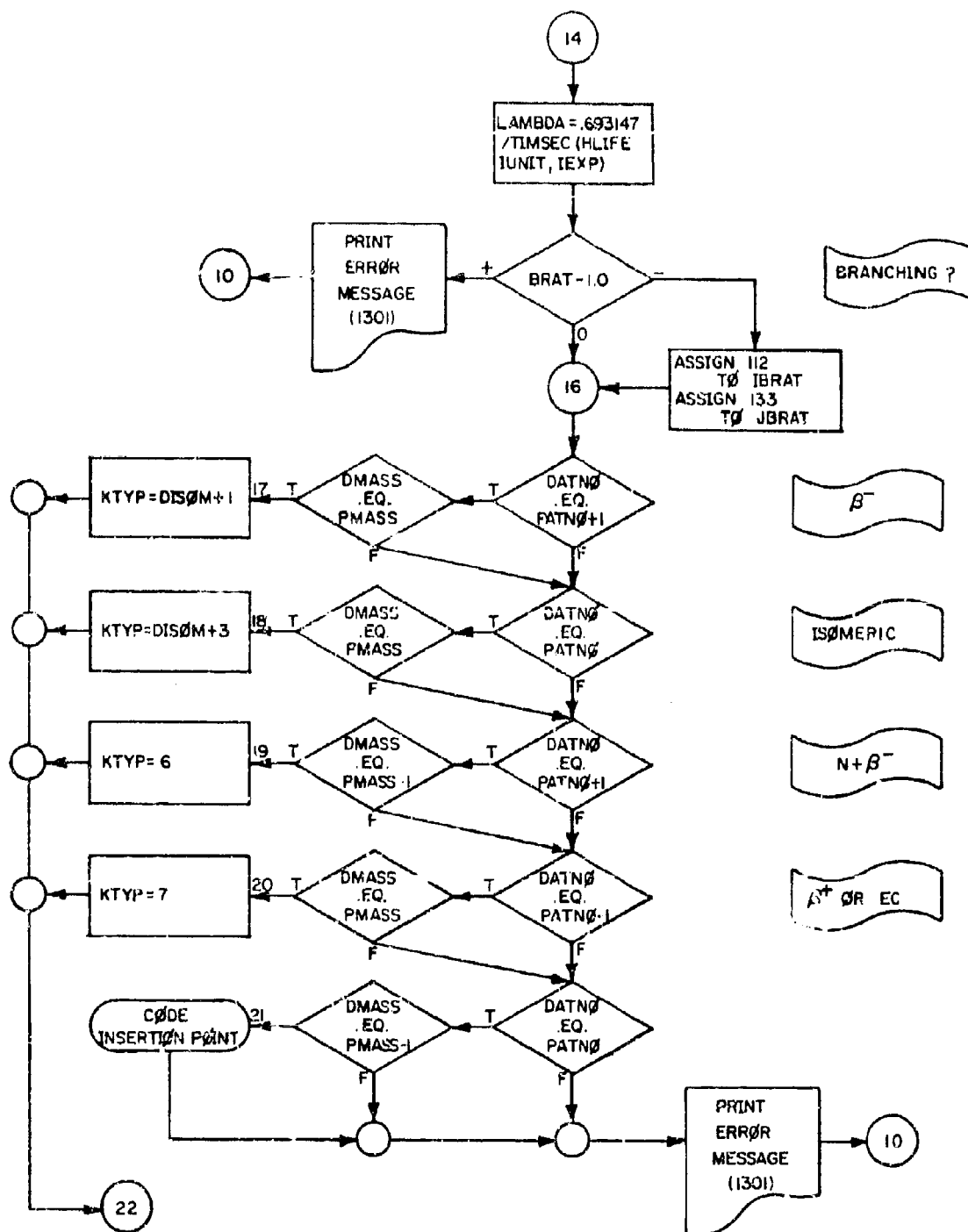


Figure 3.5c Detailed flowchart for Subroutine SETUP.

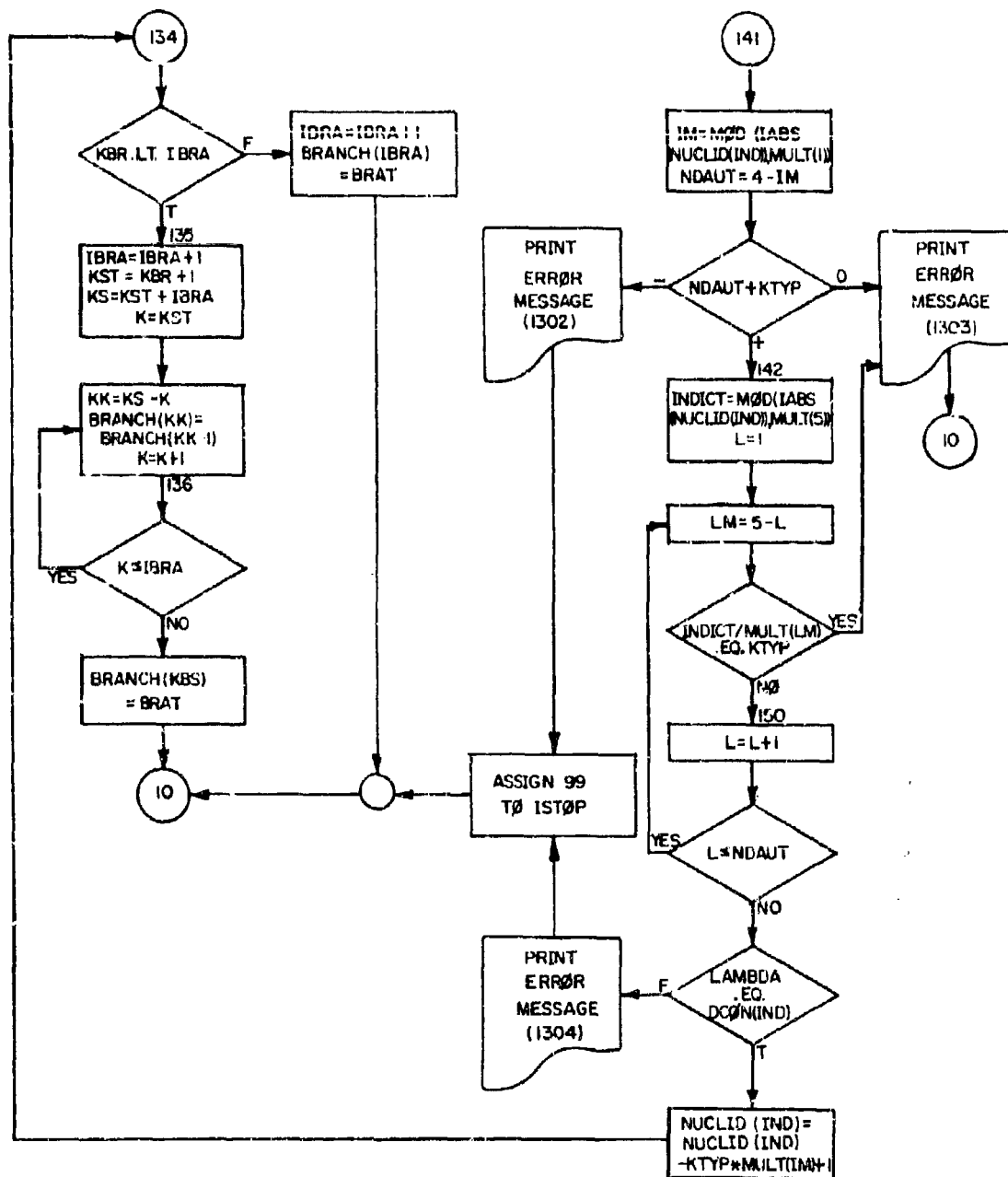


Figure 3.5e Detailed flowchart for Subroutine SETUP.

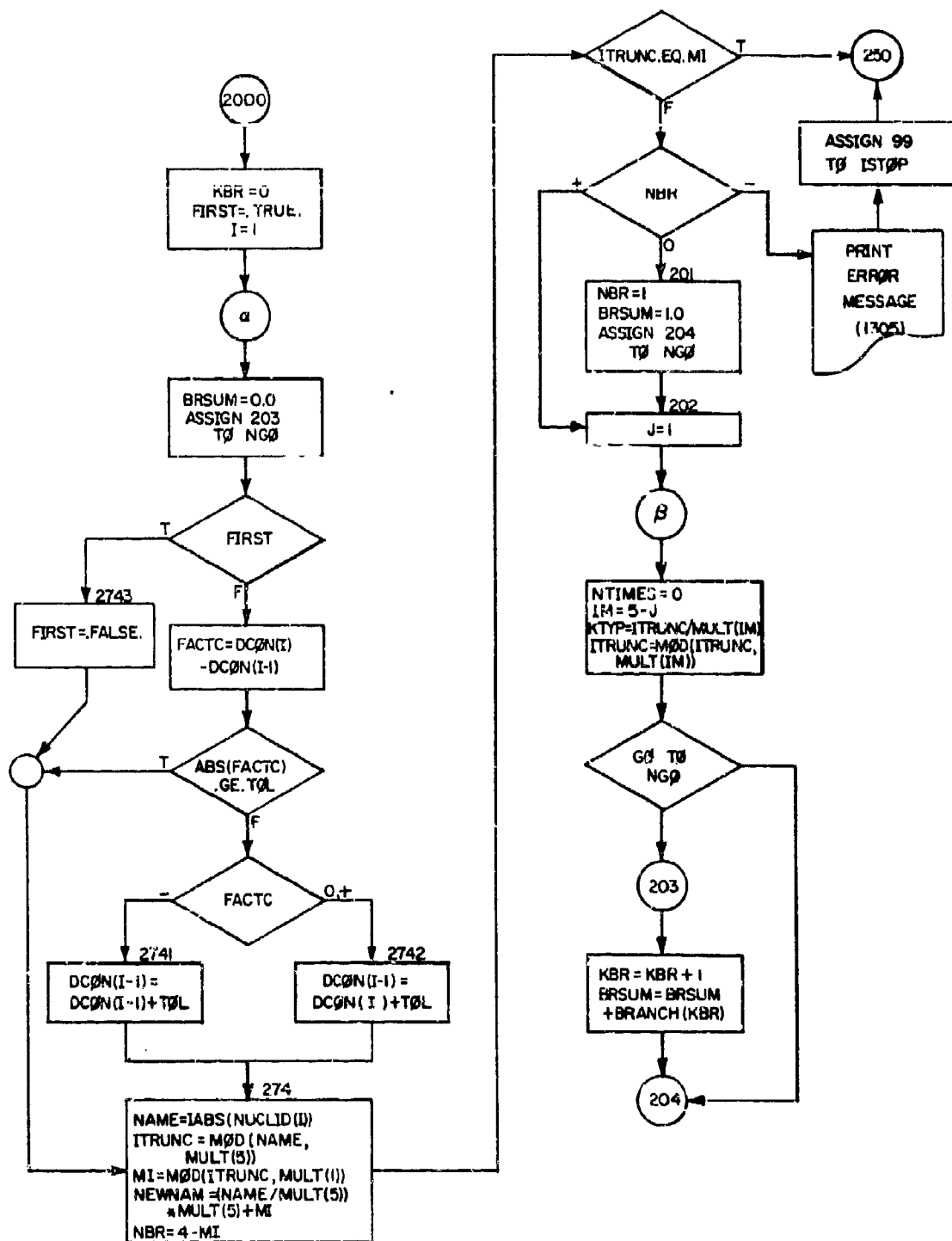


Figure 3.5f Detailed flowchart for Subroutine SETUP.

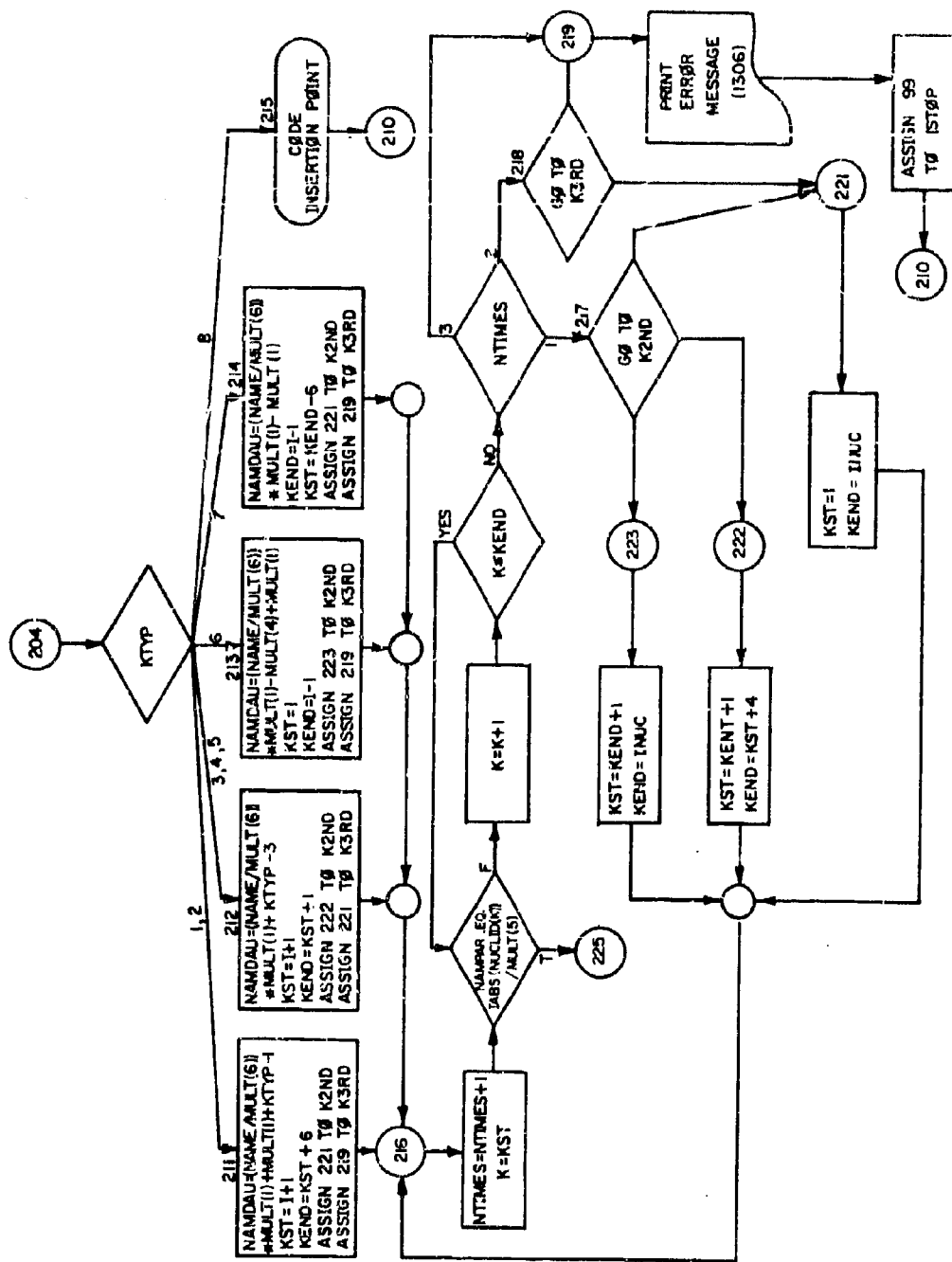


Figure 3.5g Detailed flowchart for Subroutine SETUP.

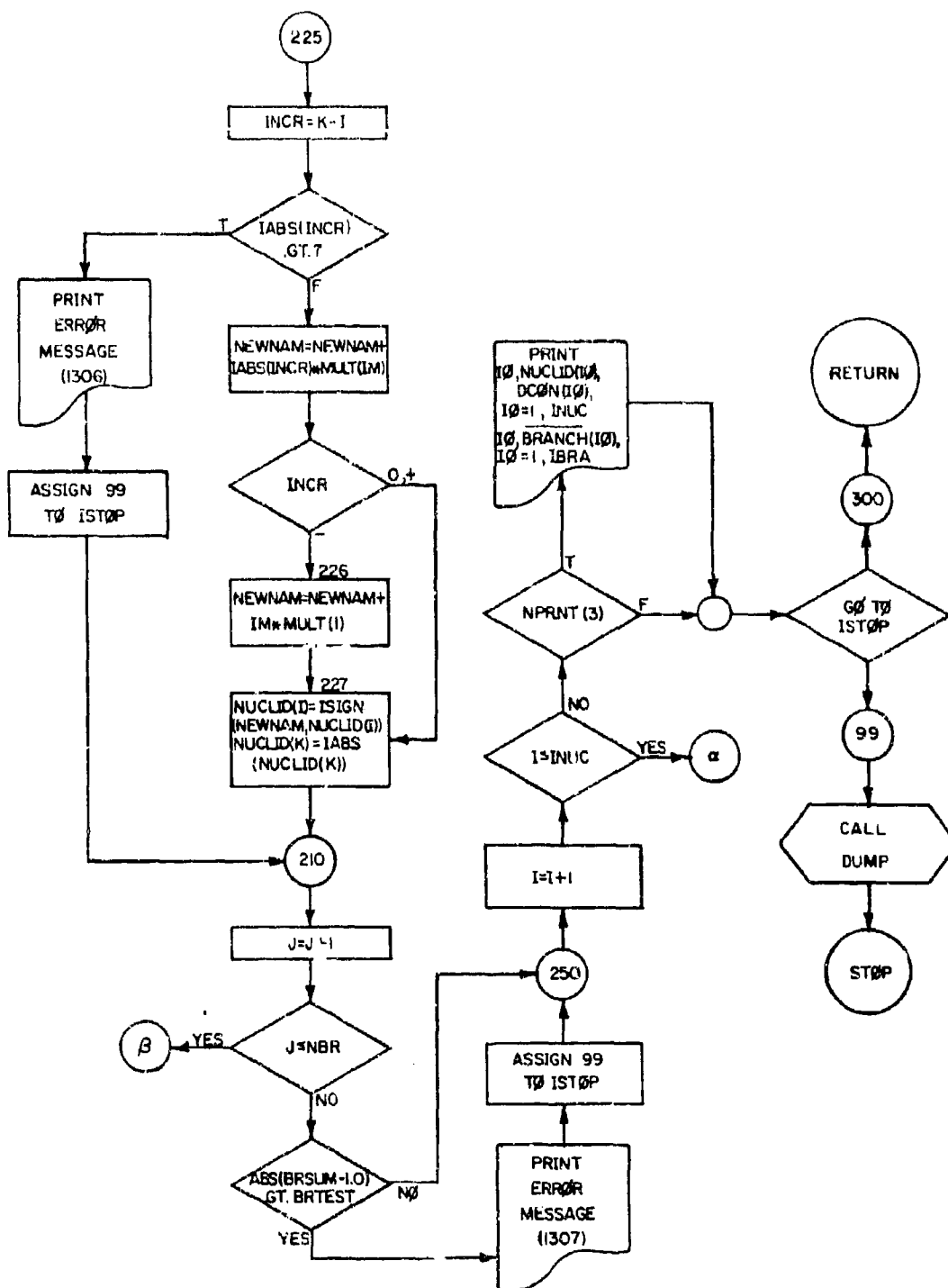


Figure 3.5h Detailed flowchart for Subroutine SETUP.

3.2.3 Subroutine YIELD (INTP, FISSID).

Input:

Argument list	~~C~~ OMMON/FISHIN/	~~C~~ OMMON/UTILITY/	Input tape
FISSID	INUC	KOUT	FISTYP
INTP	MULT(11)	NPRNT(15)	FYLDIN
	NUCLID(700)		NAT
			NMAS
			NSTAT

Output:

~~C~~OMMON/FISHIN/

ABEGN(700)

Storage requirement (exclusive of ~~C~~OMMON): 1300₈, 704₁₀

Calling program: PAM1, Sequence 127

Flowcharts: Figure 3.6a through 3.6e

This subroutine reads the requested table of fission yields and stores it in the array ABEGN, parallel to NUCLID. The entries in ABEGN are then adjusted to prevent redundancy in decay calculations for nuclides that are members of more than one subchain.

There are three sets of input cards (or card images on tape) for this subroutine. Each set consists of a header card containing a list of fission types (FISTYP(6)), a series of data cards containing nuclide identifiers and the fission yields (FYLDIN, atoms/10⁴ fissions) in columns ordered in accordance with the header card, and a blank termination card. The entire deck is terminated by an additional blank card.

The program searches the deck for the header card containing the fission type requested (FISSID). It then sets the reading ~~F~~ORMAT for the correct card column and reads the data cards. For any entry in NUCLID for which no card appears, the yield is set to zero.

After ABEGN has been compiled, the subchains are examined by a simplified version of the procedure used in BATMAN. Each entry in ABEGN is divided by the number of arrows (cf Figure 3.4) entering the corresponding subchain member.

If any user has an application for the PAM requiring an unmodified fission-yield table, alternate versions of SETUP, YIELD, and BATMAN are available in which the redundancy problem is handled in a different, but less efficient, manner.

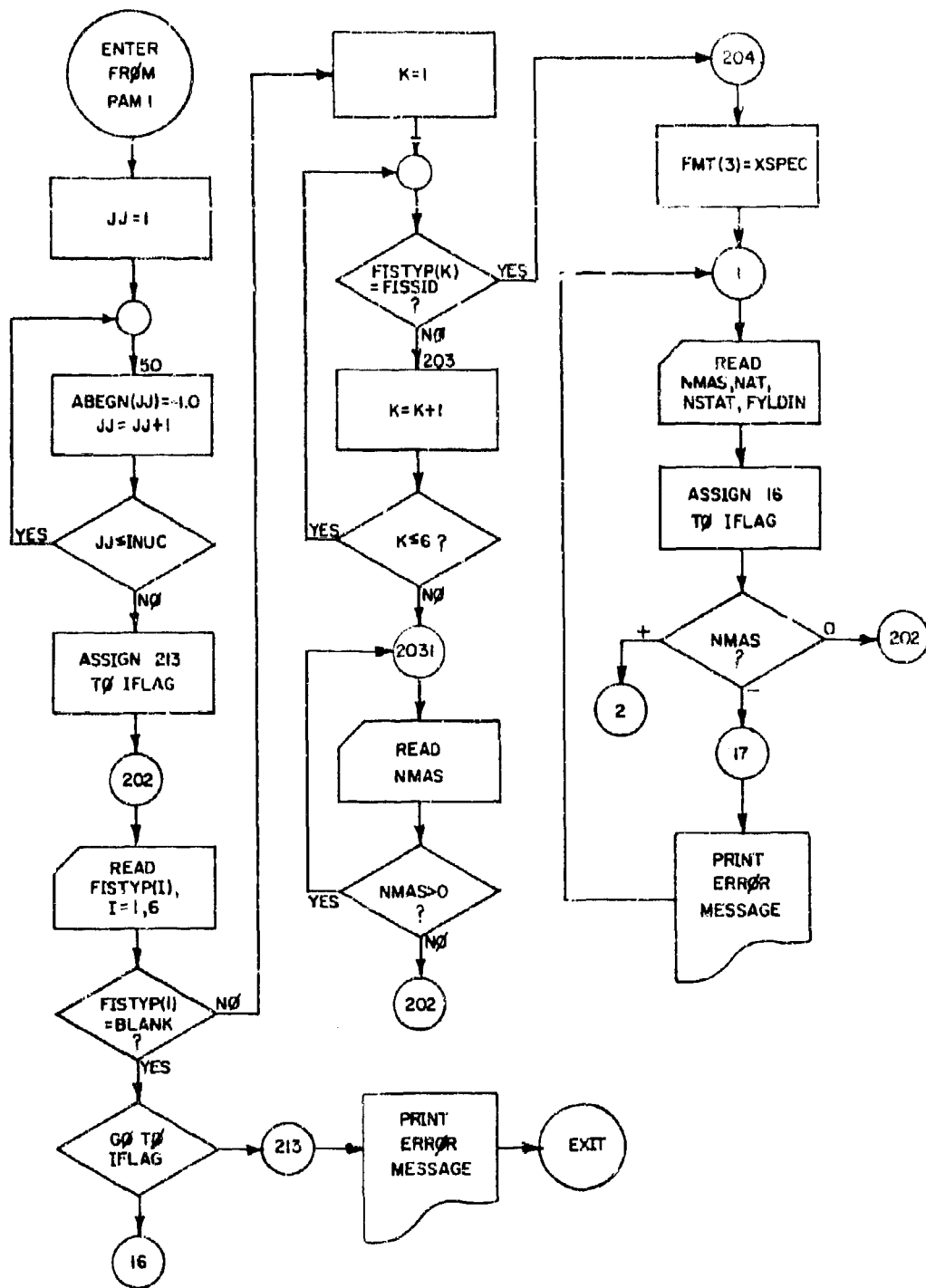


Figure 3.6a Detailed flowchart for Subroutine YIELD.

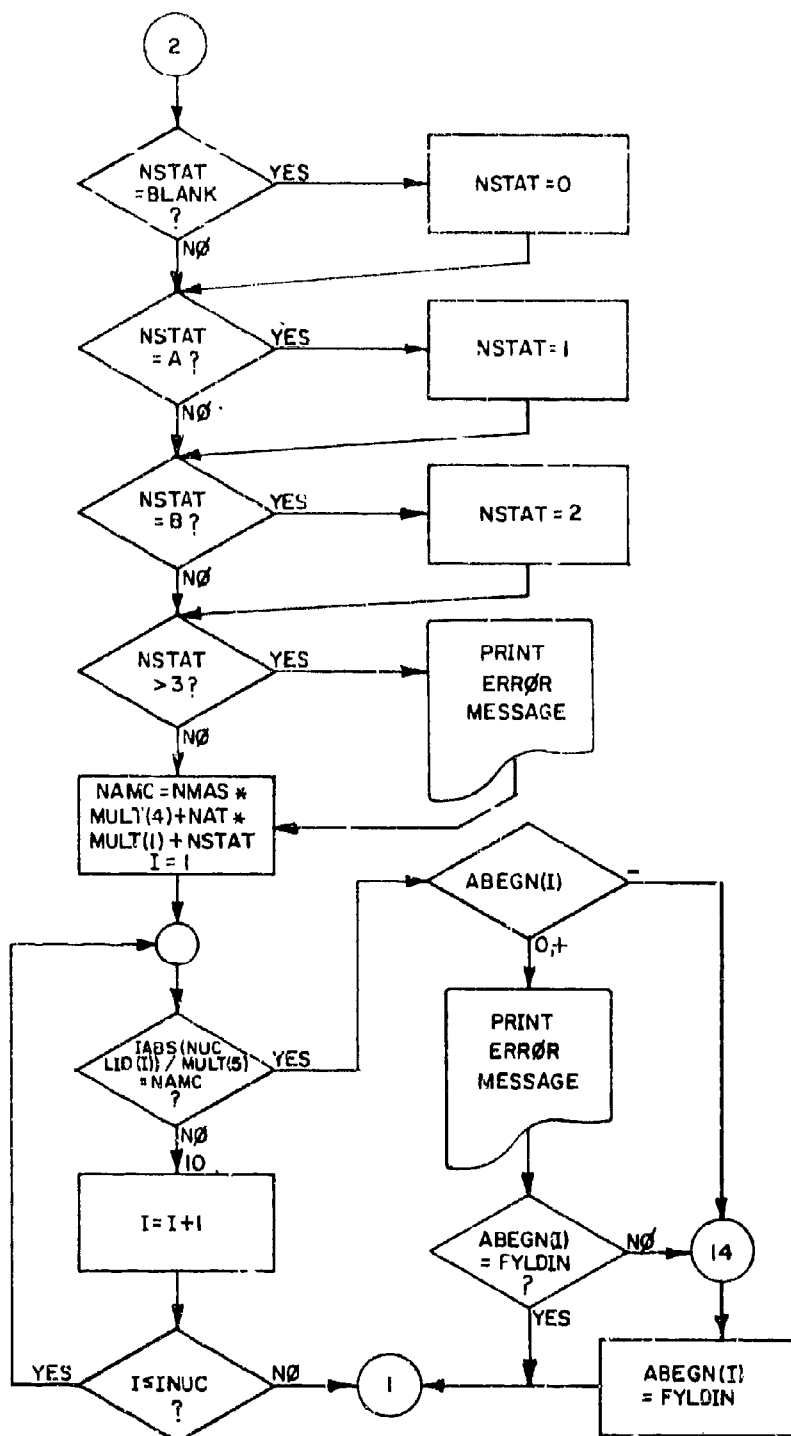


Figure 3.6b Detailed flowchart for Subroutine YIELD.

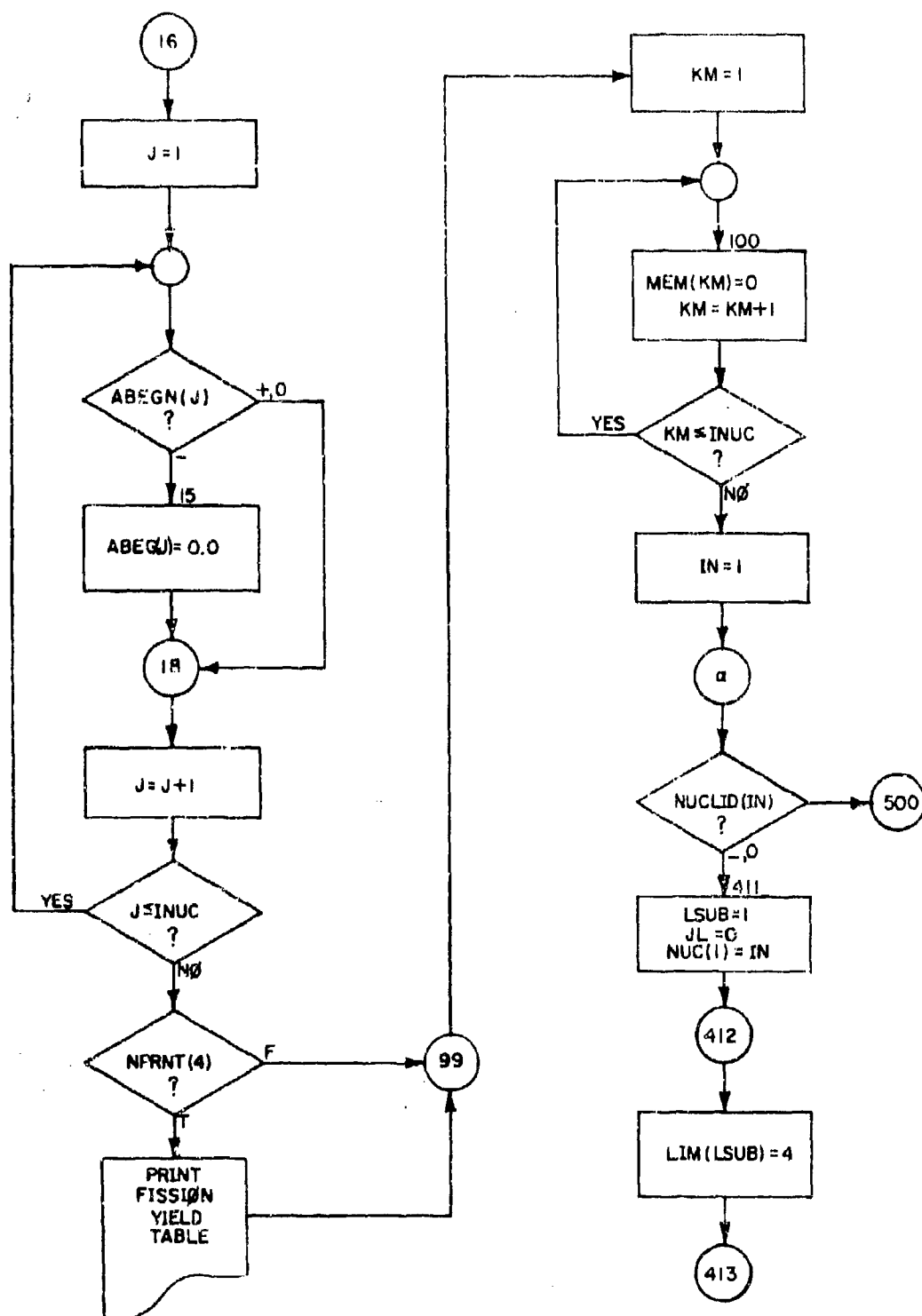


Figure 2.6c Detailed flowchart for Subroutine YIELD.

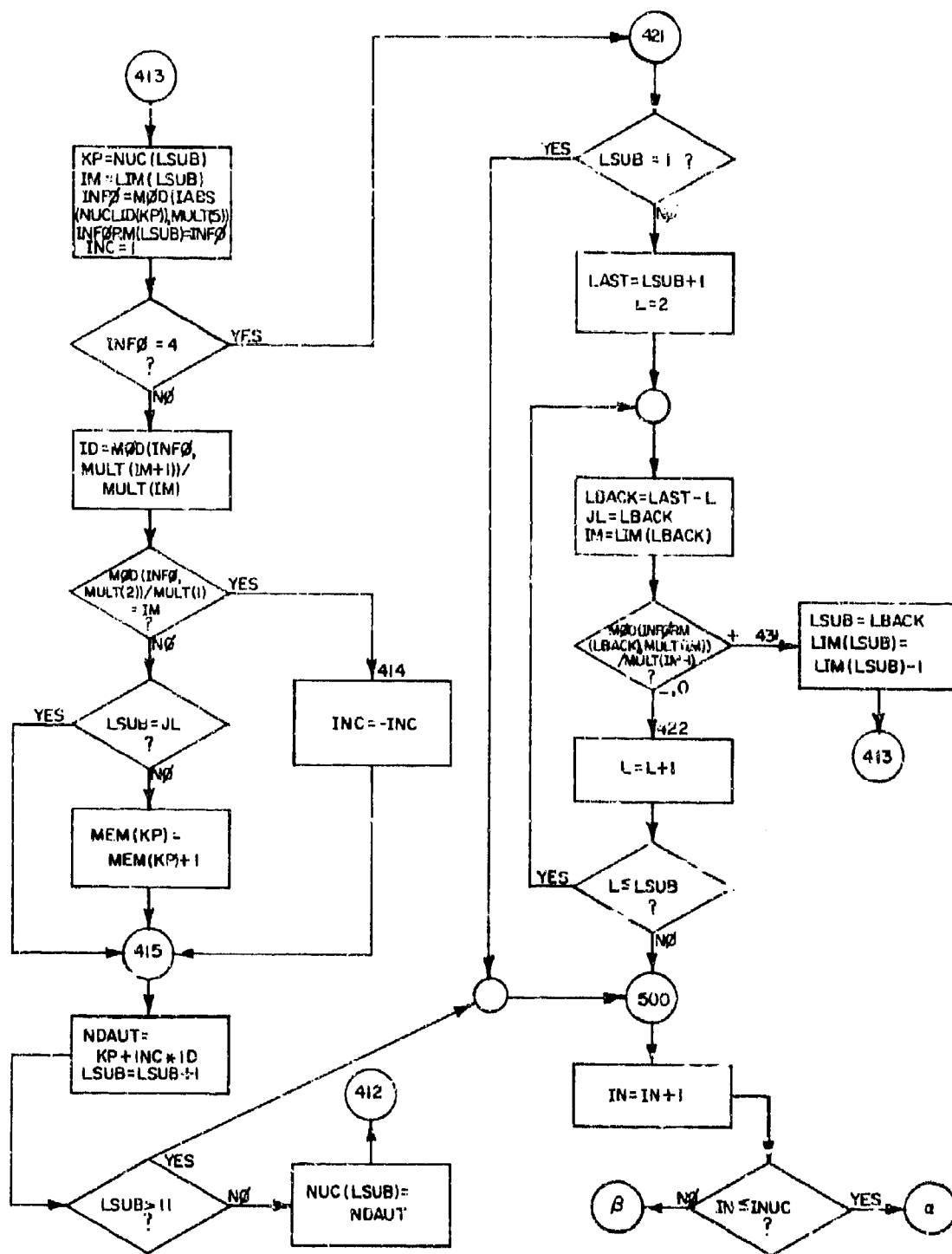


Figure 3.6d Detailed flowchart for Subroutine YIELD.

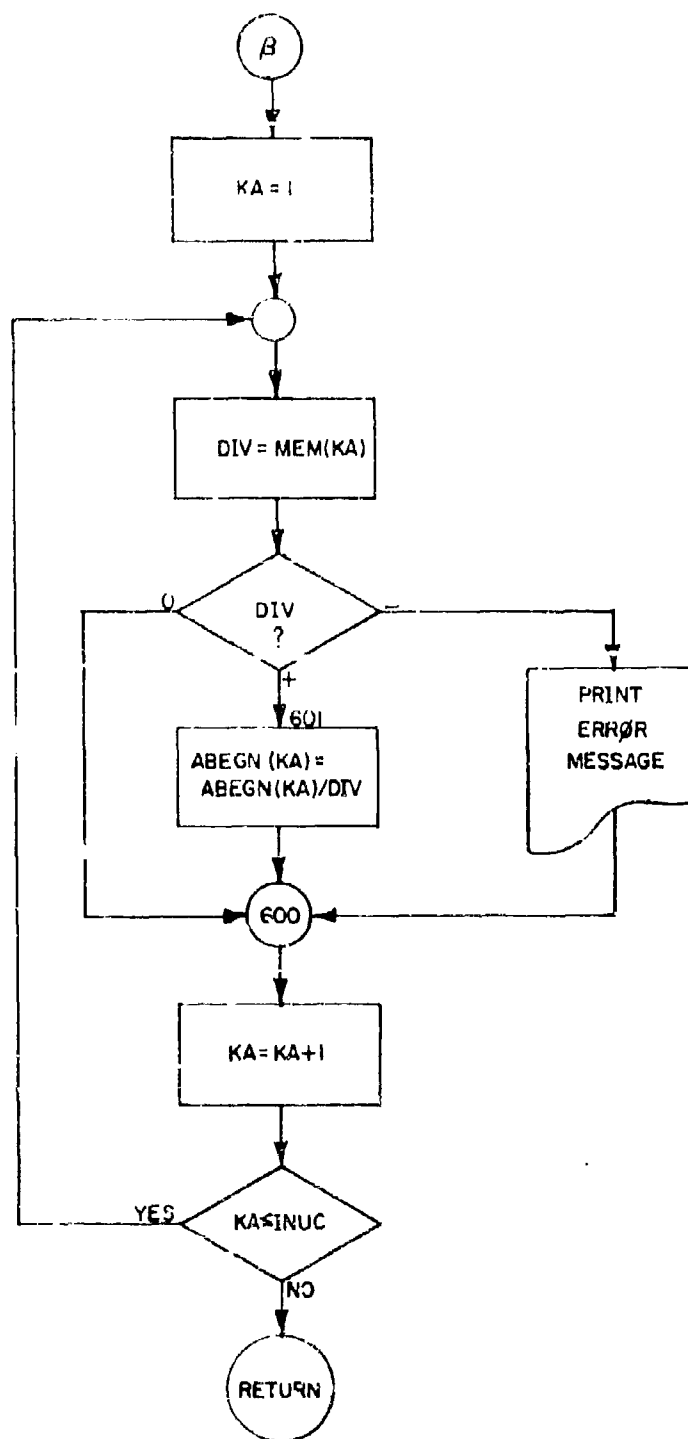


Figure 3.6a Detailed flowchart for Subroutine YIELD.

3.2.4 Subroutine BATMAN.

Input:

COMMON/UTILITY	COMMON/FISHIN/	COMMON/DECAY/
KOUT	ABEGN(700)	IGØ
NPRNT(15)	BRANCH(130)	KDØS
	DCØN(700)	TENTER
	IBRA	TEXIT
	INUC	TIME
	MAXNUC	
	MULT(11)	
	NUCLID(700)	

Output:

COMMON/FISHIN/
ABUNDØ(700)

Storage requirements (exclusive of COMMON): 12178, 65510

Calling programs: FRATIØ, Sequence 67

GXPSR, Sequence 62

MCHDEP, Sequence 76

Flowcharts: Figures 3.7a through 3.7c

This subroutine evaluates the Bateman equation for each fission product. A choice of four outputs is controlled by three input parameters as follows:

	IGØ	JD	KDØS
Atoms/ 10^4 fissions at TIME	F	T	F
Dis $s^{-1}/10^4$ fissions at TIME	T	T	F
Dis/ 10^4 fissions from TENTER to TEXT	T	F	T
Dis/ 10^4 fissions from TENTER to infinity	T	F	F

After initialization the program enters the main loop, which scans the NUCLID array. The sign of each entry is examined. If it is positive, the index, IBR, for the BRANCH array is adjusted and the scan continues. A negative sign initiates subchain processing at Statement 11. Subchain members are indexed by ISUB, cross-referenced to the index of NUCLID by the array NUC.

Each decay path (cf Figure 3.7) starting from this entry in NUCLID is considered in turn. The branching points constitute a hierarchy in which the one farthest to the right varies most rapidly and the one farthest to the left least rapidly.

The Bateman equation is evaluated from each member of each subchain. The output is stored in the array ABUND ϕ , parallel to NUCLID. For details of the logic, the user should examine the extensive comments in the FORTRAN listing.

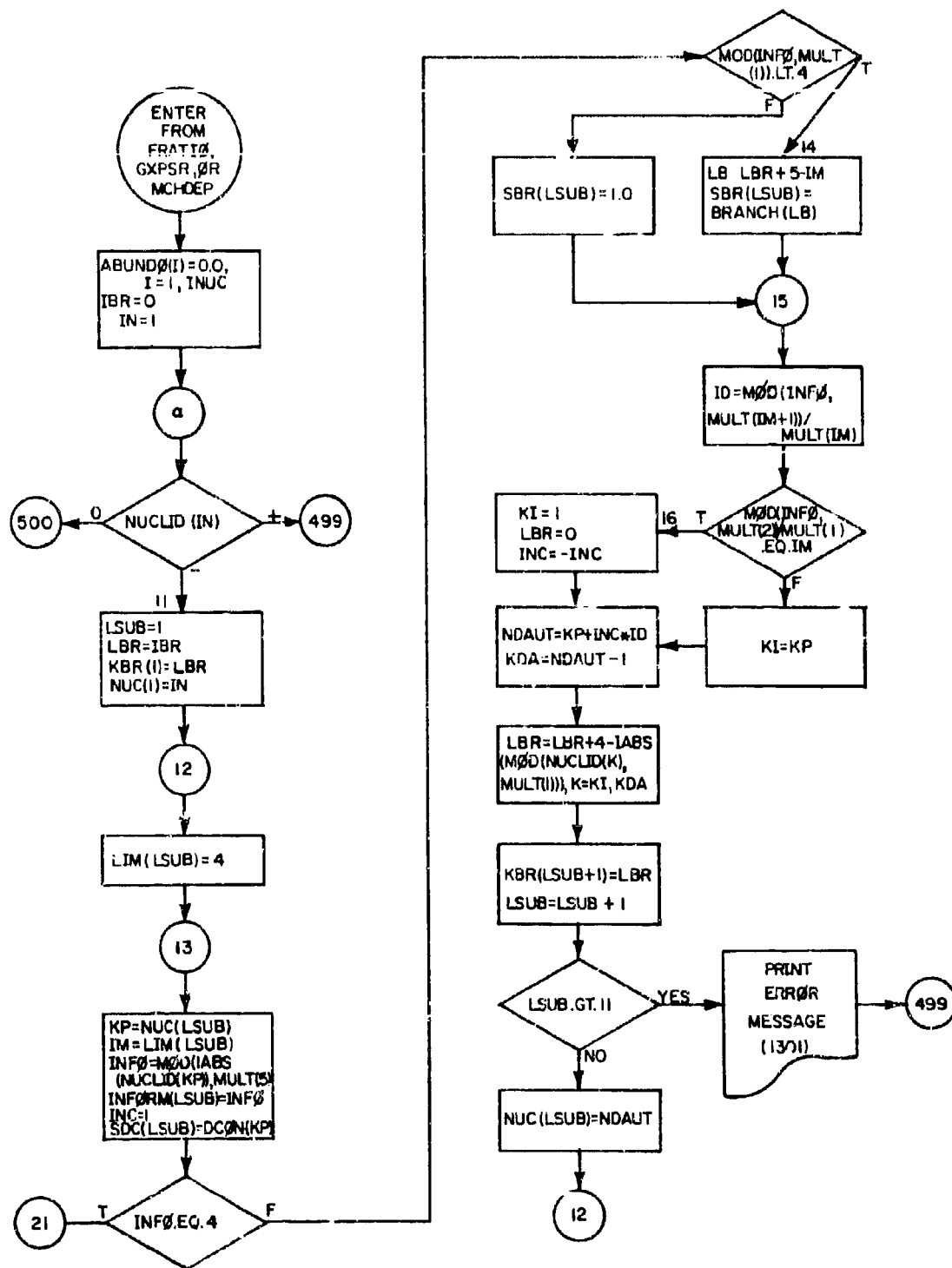


Figure 3.7a Detailed flowchart for Subroutine BATMAN.

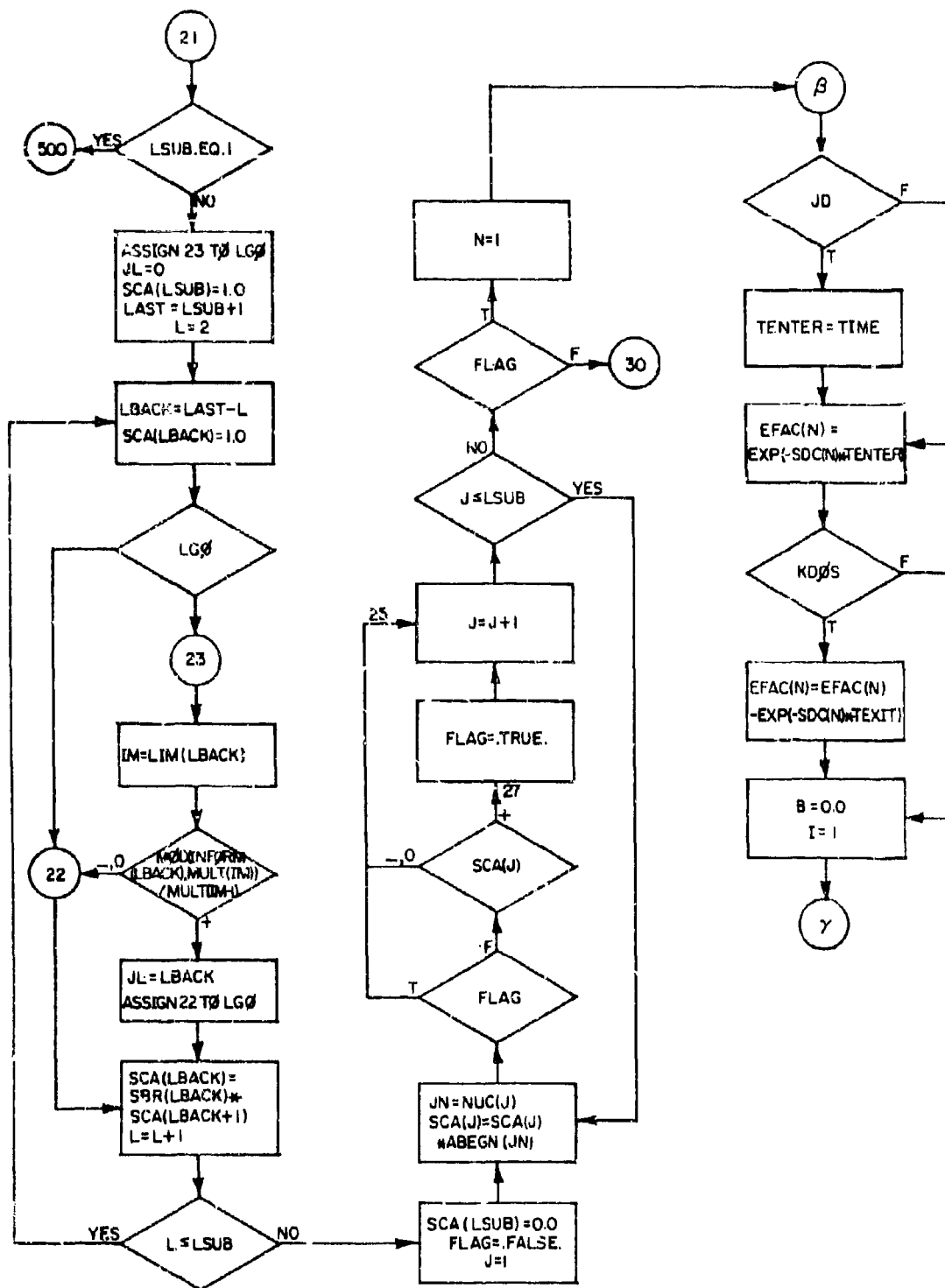


Figure 3.7b Detailed flowchart for Subroutine BATMAN.

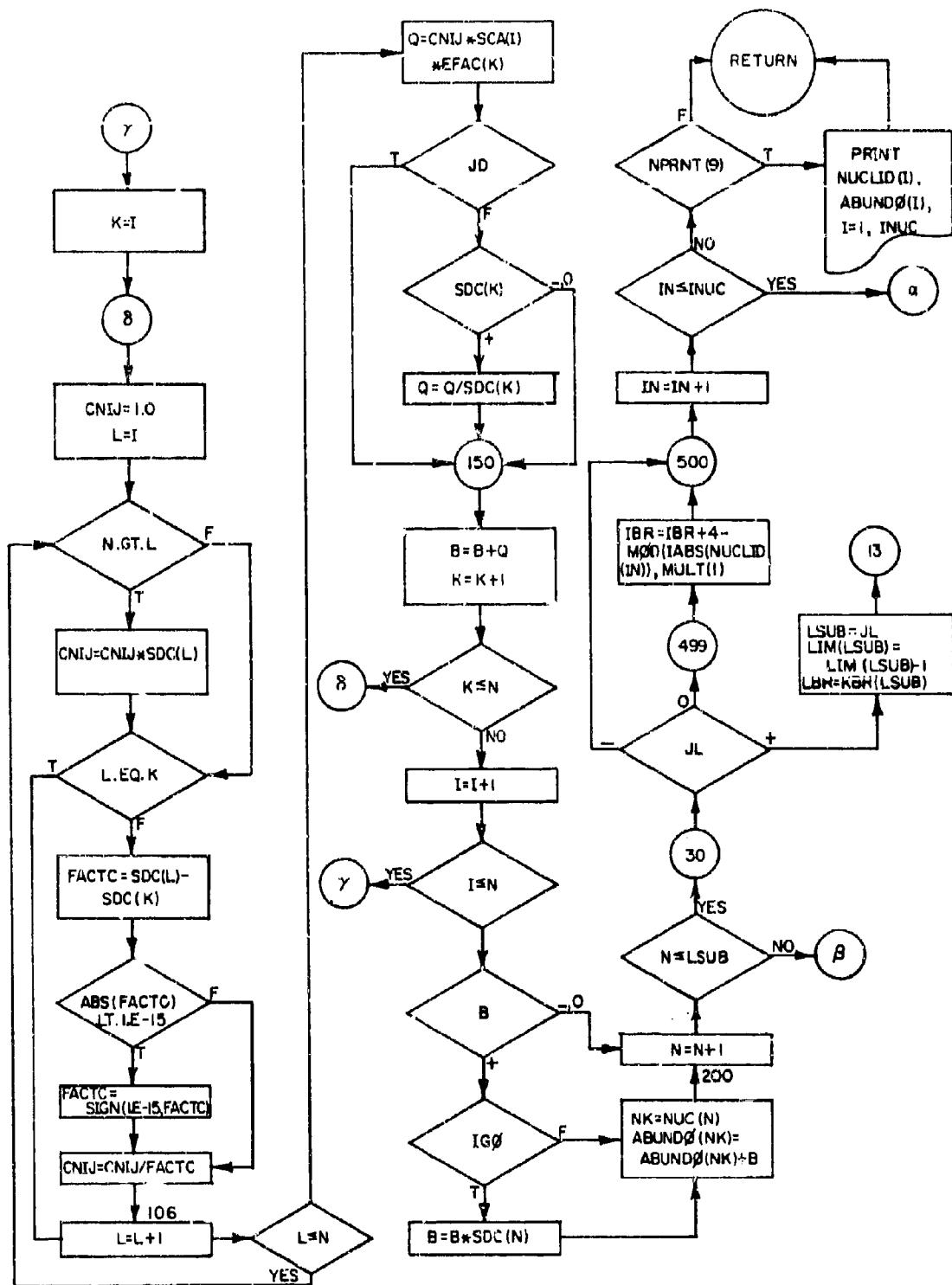


Figure 3.7c Detailed flowchart for Subroutine BATMAN.

3.3 Fractionation.

3.3.1 Subroutine FRATIO (SIDTMP, TMSD, MCHN).

Input:

Argument list	COMMON/SET3/	COMMON/OUTPUT/
SIDTMP	FMASS(200)	ITAB
TMSD	PSIZE(200)	
COMMON/FISHIN/	COMMON/UTILITY/	
ABUND(700)	KOUT	
INUC	NPRNT(15)	
MULT(11)		
NUCLID(700)		

Output:

Argument list	COMMON/FRYLING/	COMMON/DECAY/
MCHN	BSUBK(90)	IG
	ECF(90)	JD
		KD
		TIME

Storage requirement (exclusive of COMMON): 1035_B, 541₁₀

Calling program: PAM1, Sequence 134

Subroutine called: BATMAN

Flowcharts: Figures 3.8a and 3.8b

This subroutine computes the parameters for the radial distribution model. It first calls BATMAN to compute the atomic abundance of each fission product at the time (TMSD) when the cloud cooled to the condensation temperature of the soil. The boiling point (BØIL(40)) of each fission product is compared with the solidification temperature (SIDTMP) of the soil. Then the refractory fraction (FR(90)) of each mass chain is computed.

FRATIO then computes BSUBK(90) (b_i-1 in Section 2.2) and ECF(90) (E_i in Section 2.2).

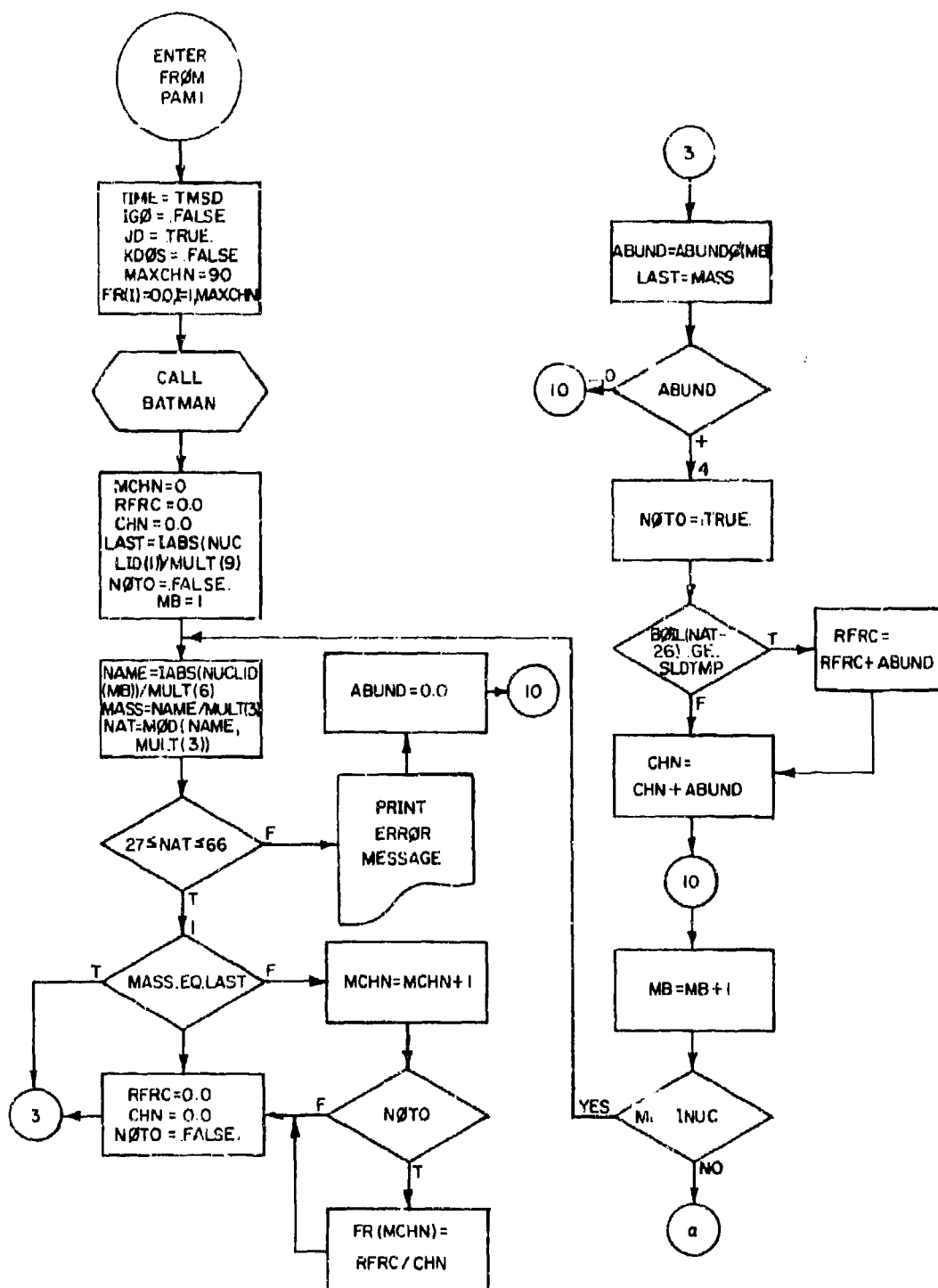
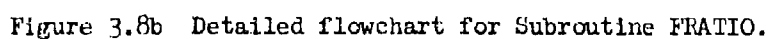


Figure 3.8a Detailed flowchart for Subroutine FRATIO.



3.3.2 Subroutine GXPSR.

Input:

~~COMMON~~ /FISHIN/	~~COMMON~~ /FRYLING/	~~COMMON~~ /UTILITY
ABUNDØ(700)	BSUBK(90)	KØUT
	ECF(90)	NPRNT(15)
	ERM(185)	
	JRM(185)	
	KRM	
~~COMMON~~ /ØUTPUT	~~COMMON~~ /SETS3/	
FISNUM	FMASS(200)	
ITAB	PSIZE(200)	

Output:

~~COMMON~~/ØUTPUT/
FP(200)

Storage requirement (exclusive of ~~COMMON~~): 50Ls, 32Ls

Calling program: PAM2, Sequence 72

Subroutine called: BATMAN

Flowchart: Figure 3.9

This subroutine computes the distribution of total fission-product activity with particle size. It first calls BATMAN to obtain the activity of each fission product. The activity, ABUNDØ, is then multiplied by the appropriate exposure-rate multiplier, ERM, and summed over each mass chain.

Finally, Equation 2.27 is evaluated and the result is multiplied by KRT. The mnemonics are related to the symbols of Section 2.2 as follows:

BNEX, BSUBK(IC)	$b_i - 1$
CRIS	$D^{b_i - 1}$

CROSS	D
ECF (LC)	E_t
FISNUM	F_t
FMASS (LD)	$f_m(d_k)$
PSIZE (LD)	d_k
RADIAL	$n_1 E_t$
STRAIT	S_t

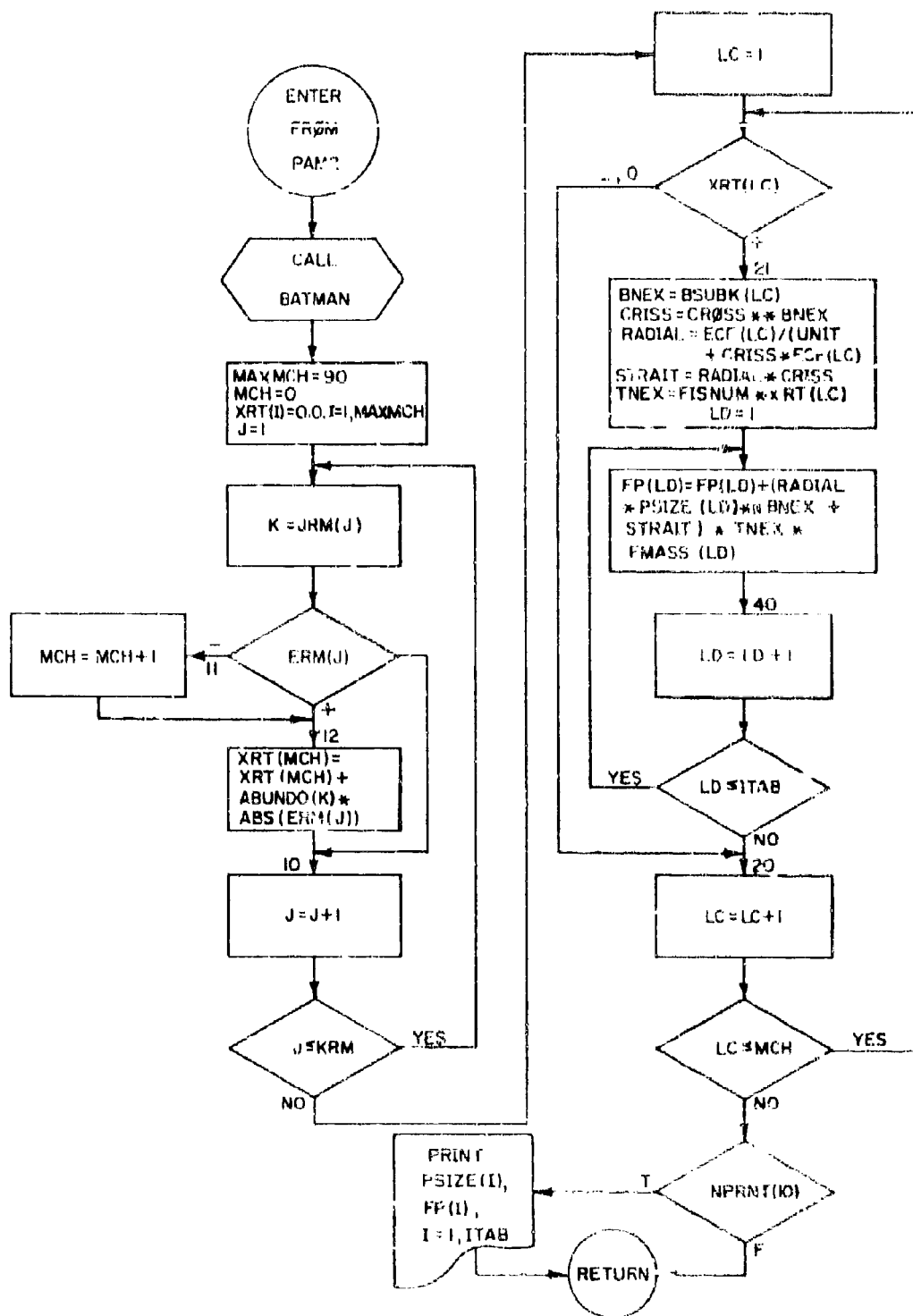


Figure 3.9 Detailed flowchart for Subroutine GXPR.

3.3.3 Subroutine MCHDEP.

Input:

COMMON/FISHIN/	COMMON/UTILITY/	COMMON/OUTPUT/
ABUND(100)	KOUT	FISNUM
INUC	NPRINT(15)	ITAB
MULT(11)		MASCHN
NUCLID(700)		
COMMON/FRYLING/	COMMON/DECAY/	COMMON/SET3/
BSUBK(90)	TIME	FMASS(200)
ECF(90)		FSIZE(200)

Output:

COMMON/OUTPUT

FP(200)

Storage requirement (exclusive of COMMON): 362₈, 242₁₀

Calling program: PAM2, Sequence 81

Subroutine called: BATMAN

Flowchart: Figure 3.10

This subroutine computes the distribution of a single, user-selected mass chain with particle size. Equation 2.27 is computed in a manner similar to that of GXPSR.

Two options are available.

1. TIME = 0.0

In this case the FP array is equivalent to $F_1(d_k)$ of Section 2.2 for a single value of i . No decay calculation is required.

2. TIME > 0.0

In this case the FP array represents activity in curies. The disintegration rate is obtained by calling BATMAN, is converted to curies per fission, and is multiplied by $F_1(d_k)$.

Provision has been made for addition of a third option with TIME < 0.0.

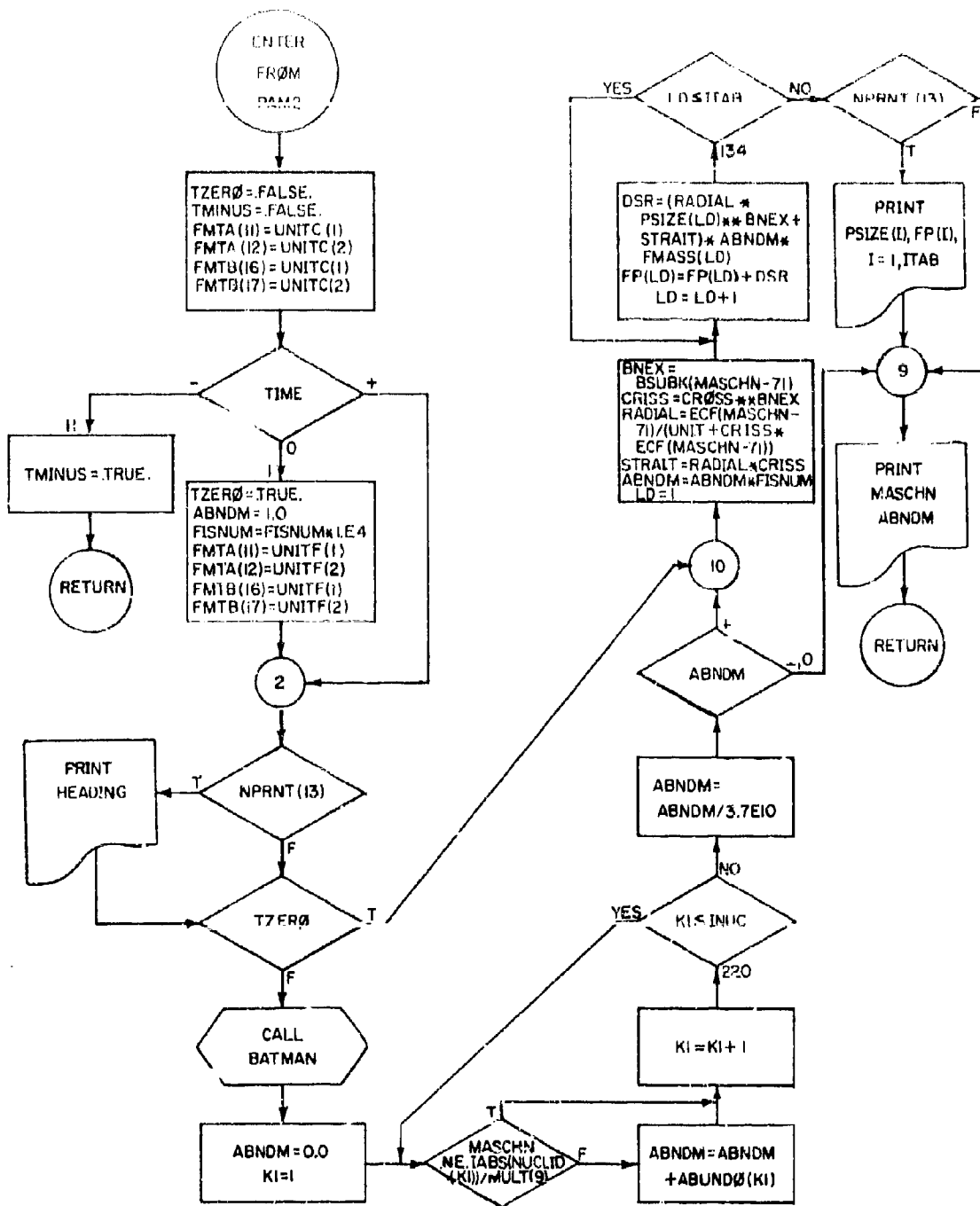


Figure 3.10 Detailed flowchart for Subroutine MCHDEP.

3.3.4 Subroutine YERM (INTP).

Input:

Argument list	COMMON/FISHIN/	COMMON/UTILITY/	Input tape
INTP	INUC MULT(11) NUCLID(700)	KOUT NPRNT(15)	NAT NMAS NSTAT XRM

Output:

COMMON/FRYLING/

ERM(185)
JRM(185)
KRM

Storage requirement (exclusive of COMMON): 1152₈, 618₁₀

Calling program: PAM1, Sequence 129

Subroutine called: UNPACK

Flowcharts: Figures 3.11a through 3.11c

This subroutine reads a table of exposure-rate multipliers ($XRM, R/hr$ 3 feet above an infinite, plane source emitting $1 \text{ dis s}^{-1} \text{ cm}^{-2}$) and orders it by mass number. Fission products for which no card appears are assigned zero multipliers. The multipliers are entered in array ERM(185), cross-indexed to NUCLID by the array JRM(185). The first entry in ERM for each mass chain is flagged with a minus sign.

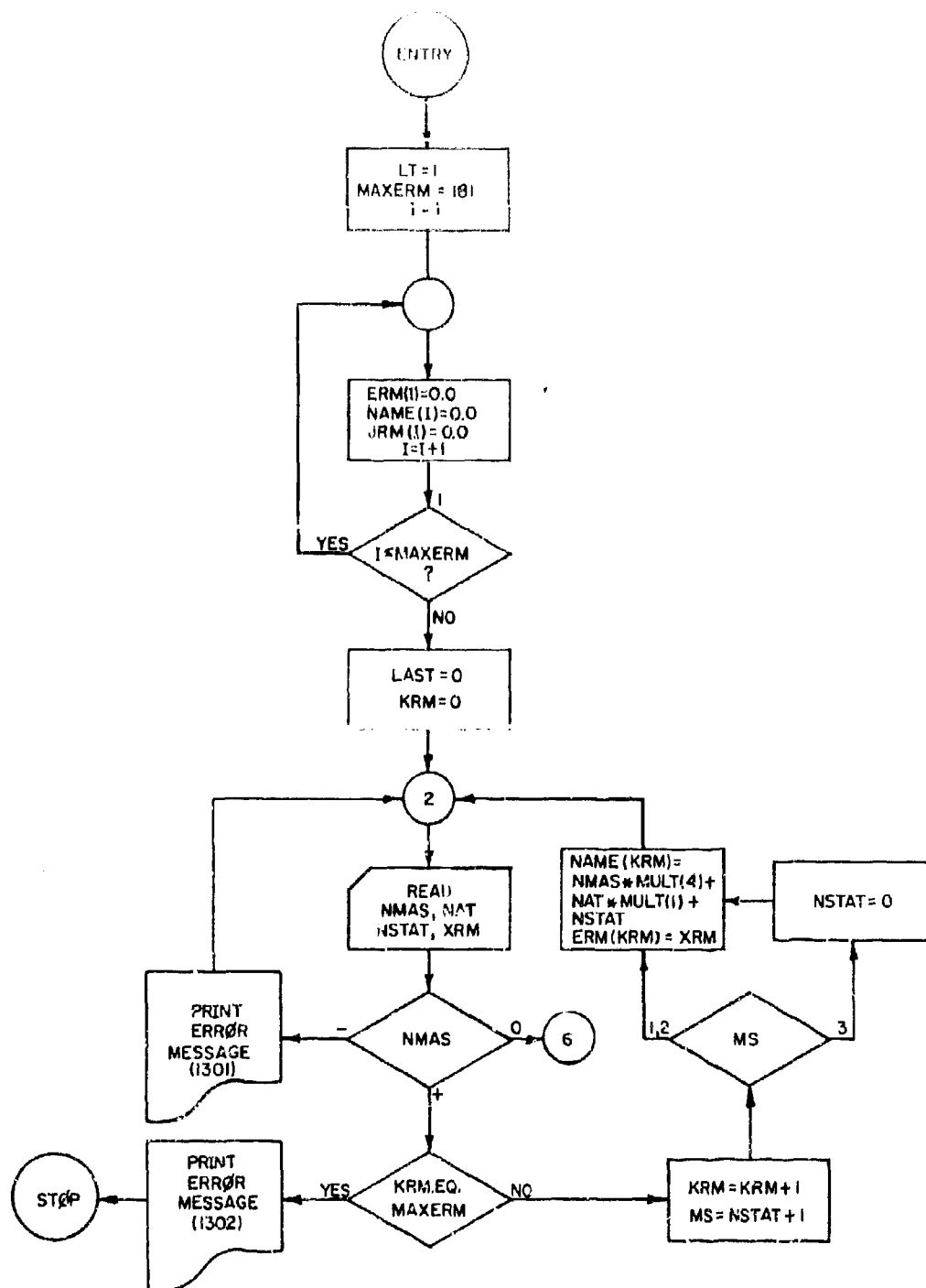


Figure 3.11a Detailed flowchart for Subroutine XPRM.

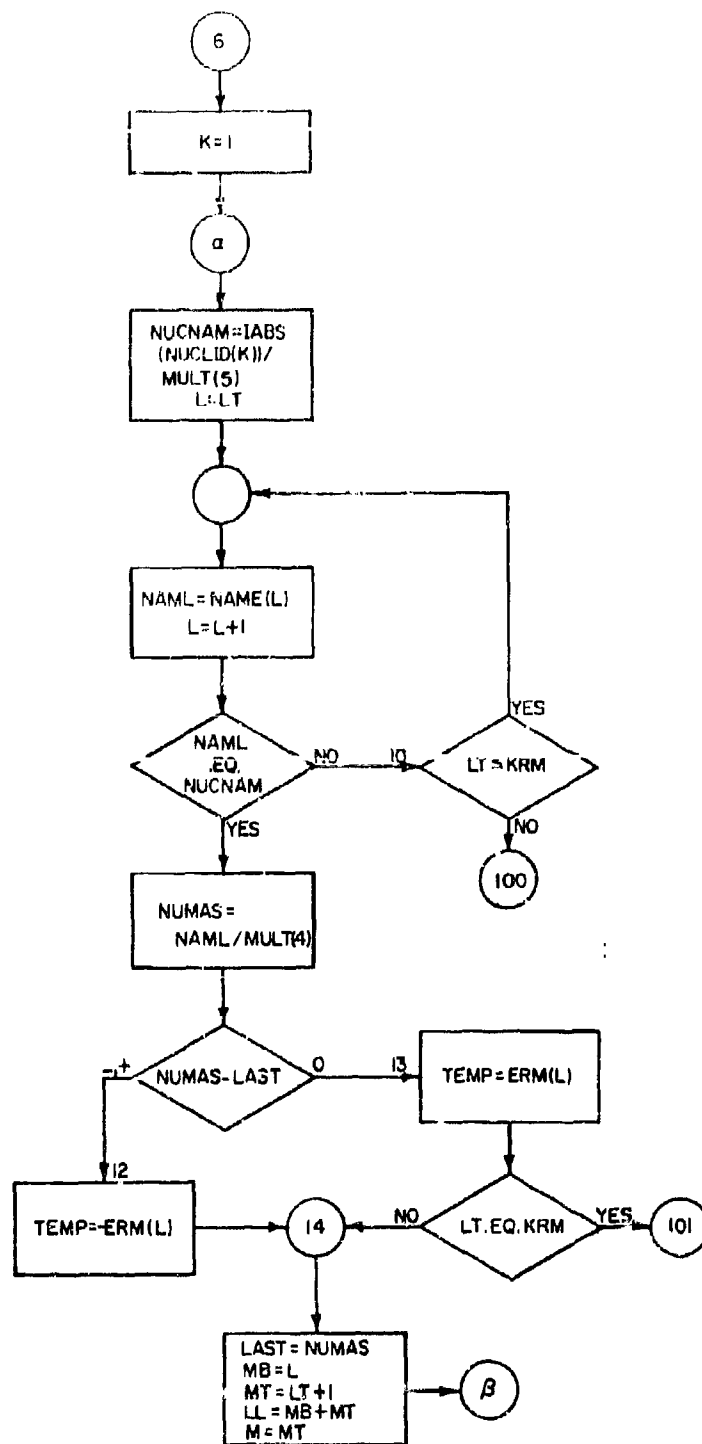


Figure 3.11b Detailed flowchart for Subroutine XPRM.

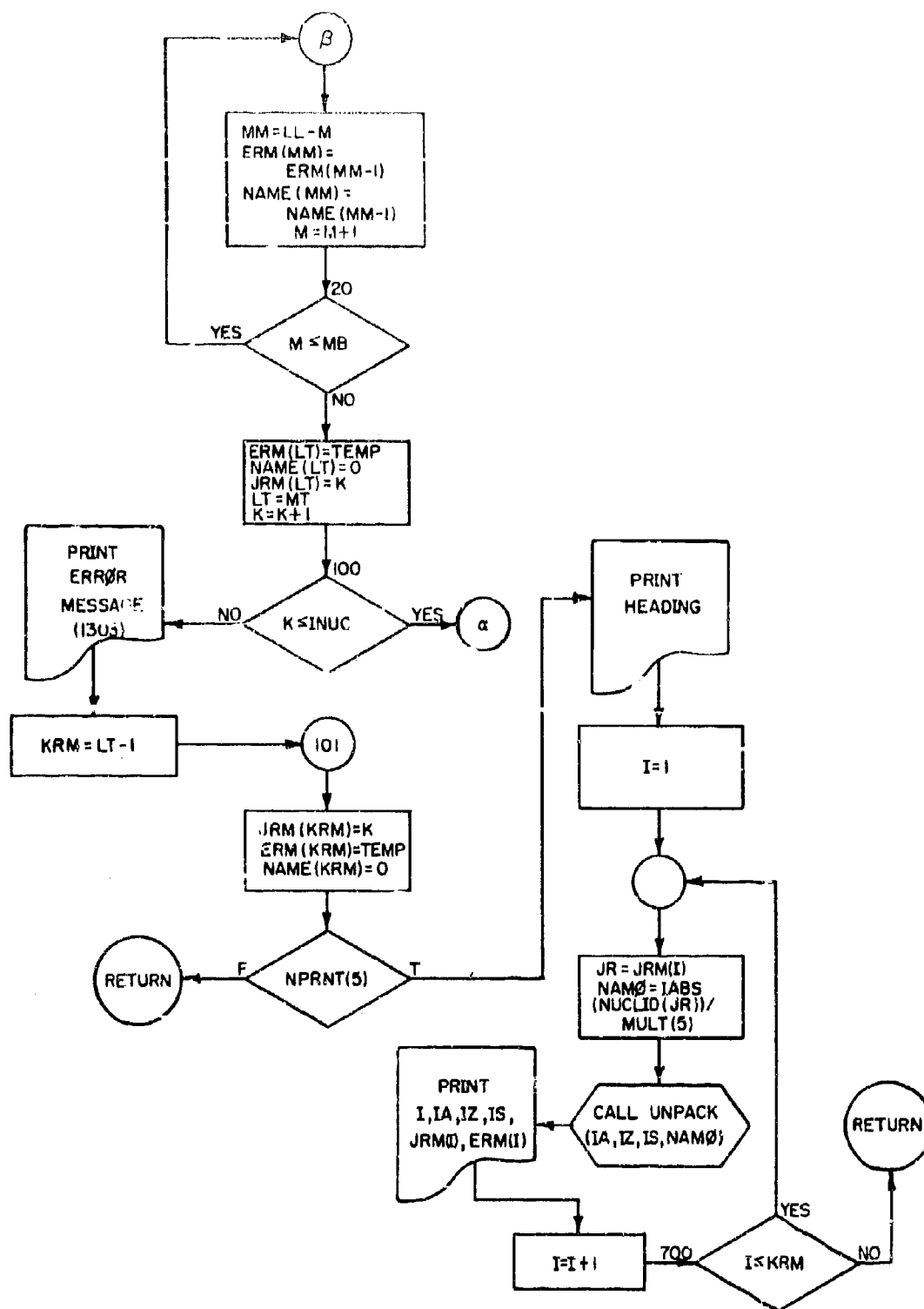


Figure 3.11c Detailed flowchart for Subroutine XPRM.

3.4 Induced Activities.

3.4.1 Subroutine INDCD1 (EMITN, HOB, KRD, TW).

Input:

Argument list	~~COMMON~~ /UTILITY/	Input Tape
EMITN	KOUT	FAI(7,18)
HOB	NPRNT(15)	FM(18)
KRD		F0G(5,7,18)
TW		HL(7,18)
		IS0(18)
		KEV(7,18)
		LH(7,18)
		IMAX
		NA(7,18)
		NE(18)
		RNY(5,7,18)
		SIGI(7,18)
		SIGISC(7,18)

Output:

~~COMMON~~/INLUCE/

ALBF0M
FAC(7,18)
F0GRNY(7,18)
IS0(18)
IMAX
XIAM(7,18)

Storage requirement (exclusive of ~~COMMON~~): 6145₈, 31731₀

Calling program: PAM1, Sequence 131

Subroutine called: TIMSEC

Flowcharts: Figures 3.12a through 3.12c

This subroutine and INDCD2 are a modification of the program described by Jones (Reference 4). The principal modification was elimination of the separate pass through the program for weapon casing. The program was split into time-dependent and

time-independent phases for greater efficiency. A new variable, $ALBF\phi M = ALB*F\phi M$, was introduced to facilitate communication with INOCID2.

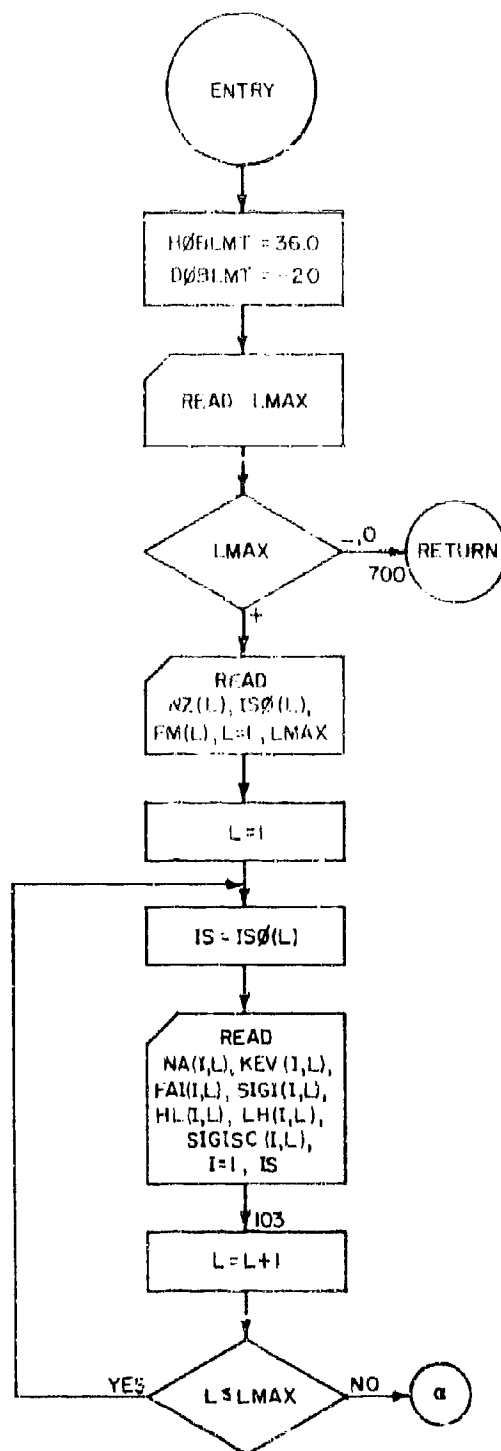


Figure 3.12a Detailed flowchart for Subroutine INDCD1.

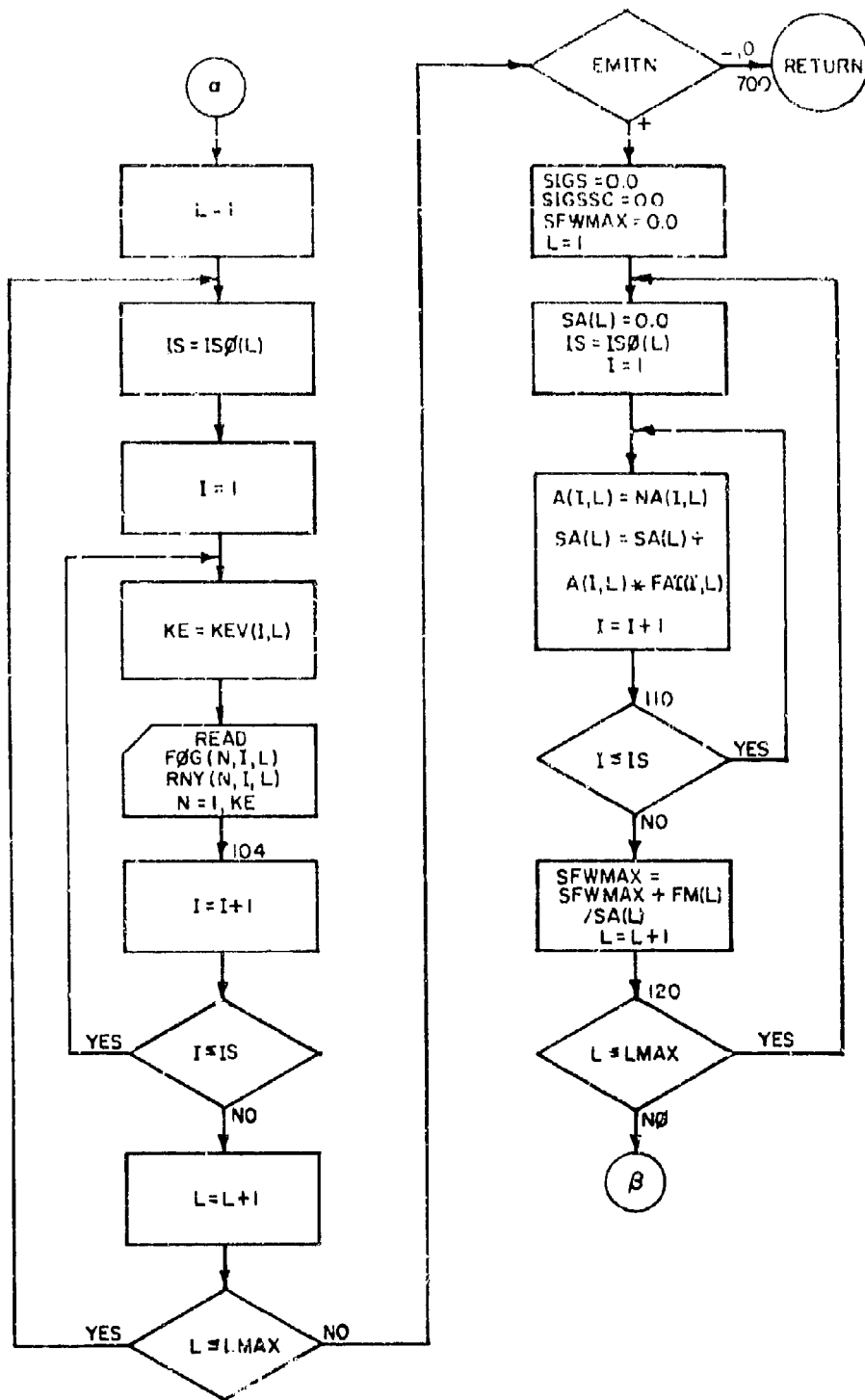


Figure 3.12b Detailed flowchart for Subroutine INDCD1.

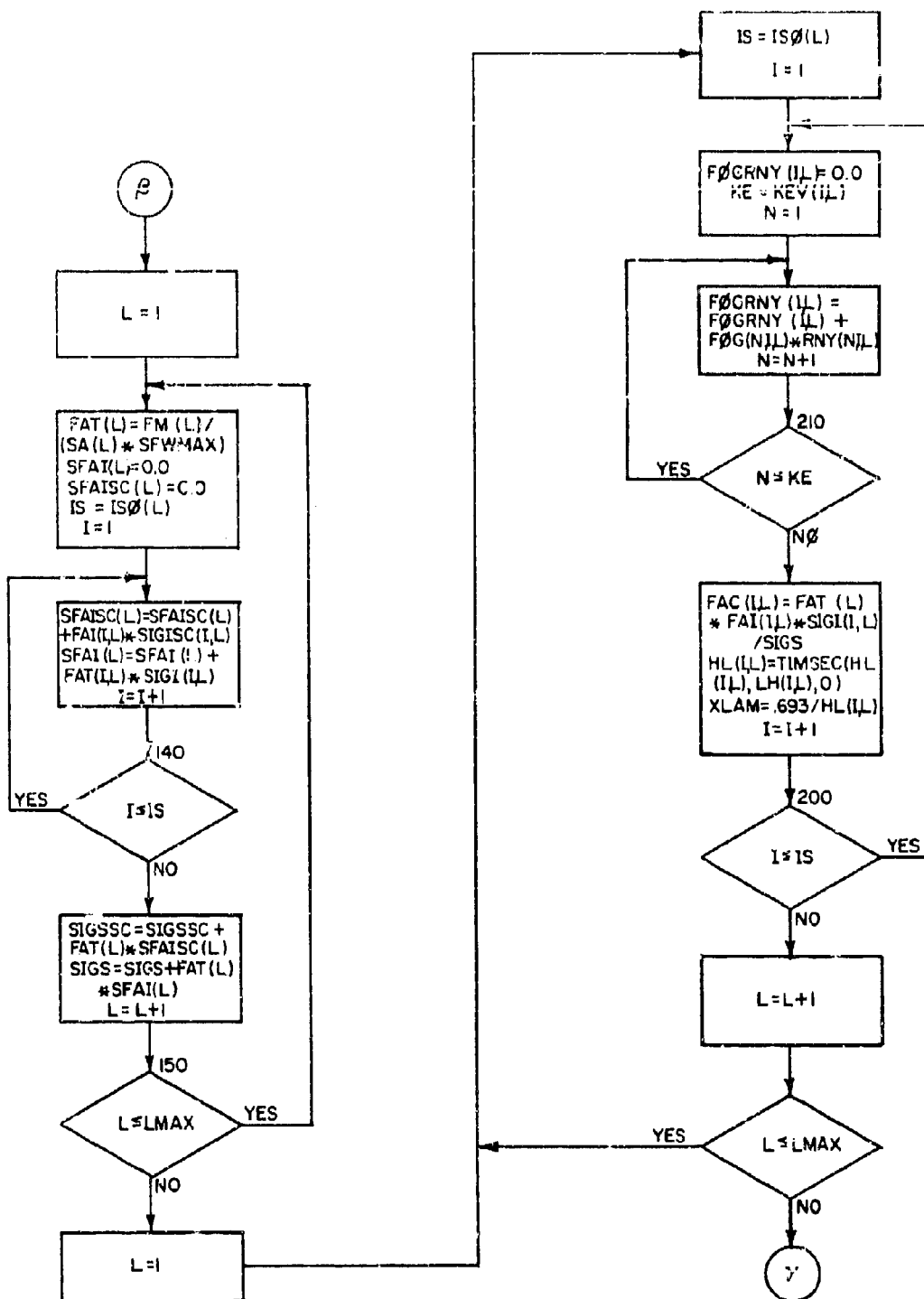


Figure 3.12c Detailed flowchart for Subroutine INDCD1.

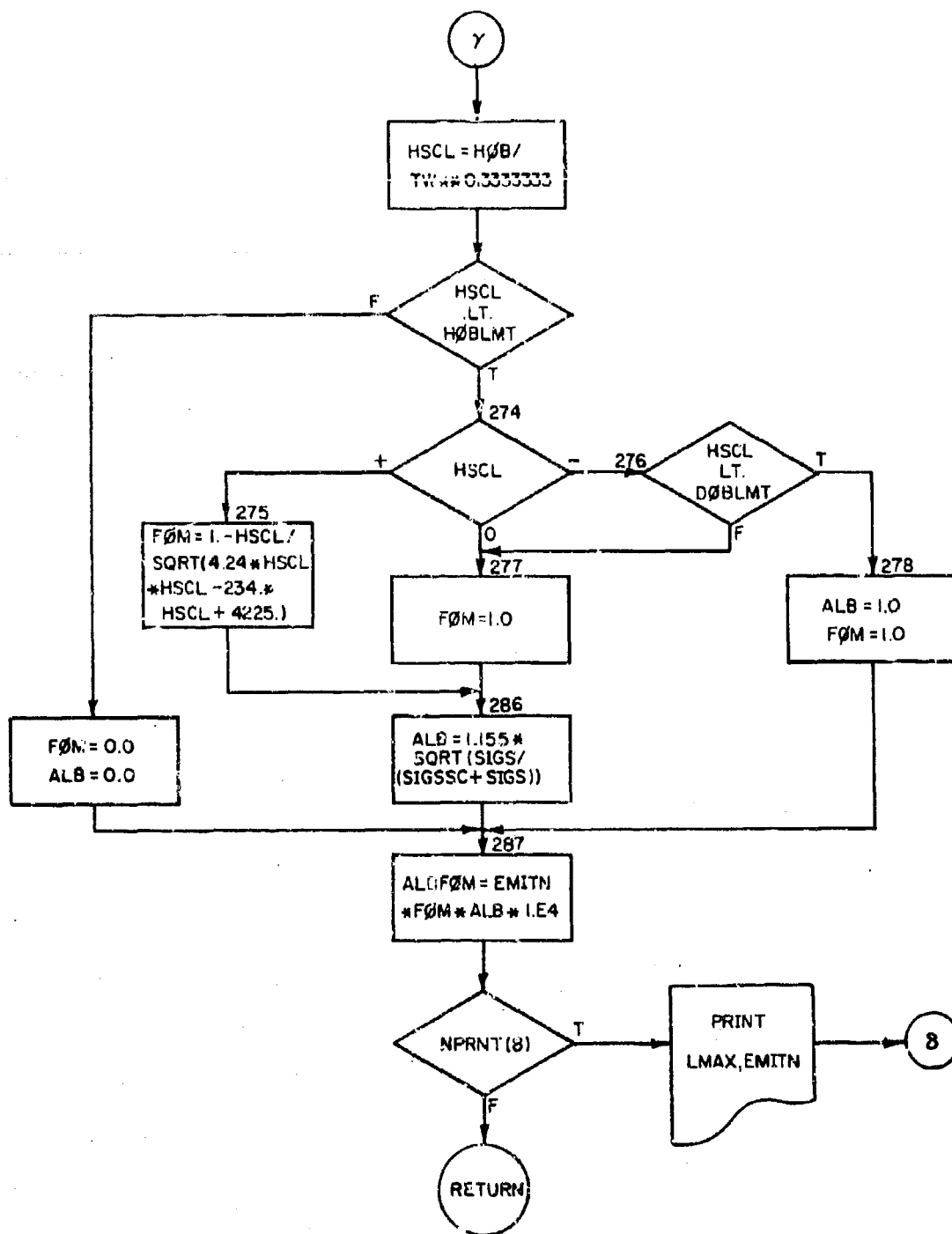


Figure 3.12d Detailed flowchart for Subroutine INDCD1.

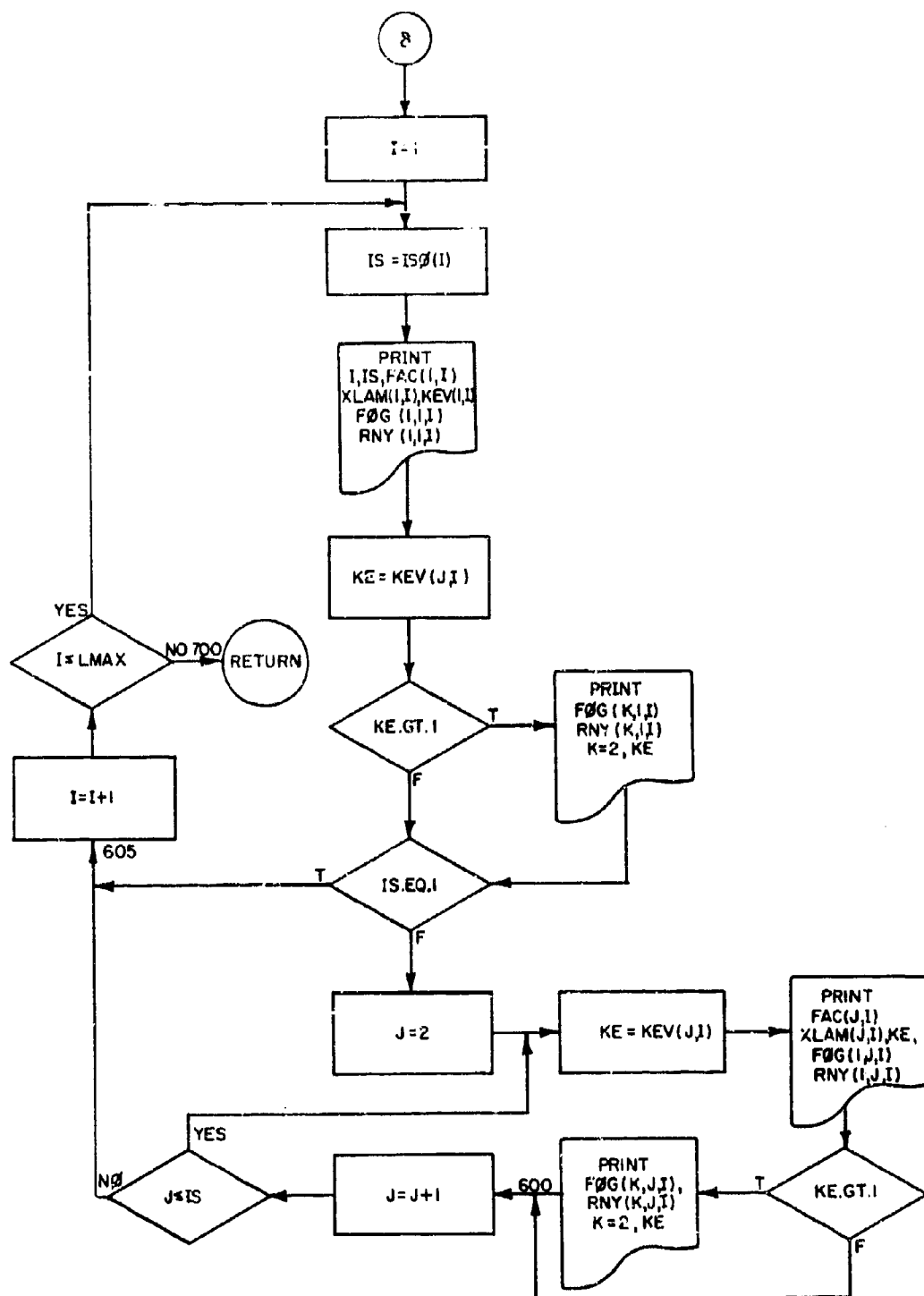


Figure 3.12e Detailed flowchart for Subroutine INDCD1.

3.4.2 Subroutine INDCD2.

Input:

<u>CØMMØN/INDUCE/</u>	<u>CØMMØN/UTILITY/</u>	<u>CØMMØN/ØUTPUT/</u>
ALBRØM	KØUT	FISNUM
FAC(7,18)	NPRNT(15)	ITAB
FØGRNY(7,18)		
ISØ(18)		
IMAX		
XIAM(7,18)		
<u>CØMMØN/DECAY/</u>	<u>CØMMØN/SET3/</u>	
JD	FMASS(200)	
KDØS		
TENTIER		
TEXTIT		
TIME		

Output:

CØMMØN/ØUTPUT/

FP(200)

Storage requirement (exclusive of CØMMØN): 262₈, 178₁₀

Calling program: PAM2, Sequence 76

Flowchart: Figure 3.13

See Subroutine INDCD1 for discussion.

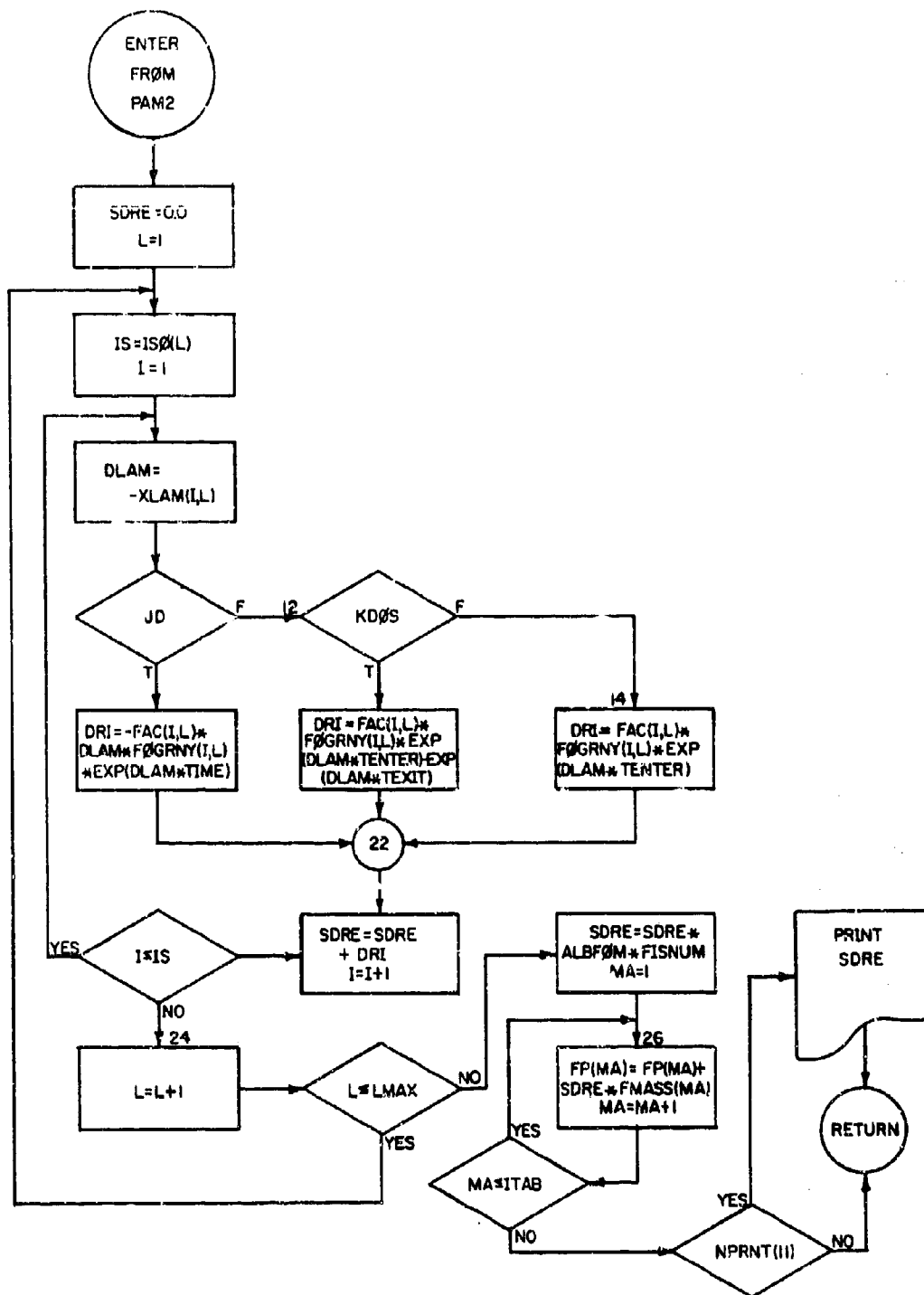


Figure 3.13 Detailed flowchart for Subroutine INDCD2.

3.4.3 Subroutine URAN.

Input:

COMMON/UTILITY/	COMMON/OUTPUT/	COMMON/DECAY/	COMMON/SET3/
KOUT	FISNUM	JD	FMASS(200)
NPRINT(15)	ITAB	KDQS	
		TENTER	
		TEXTIT	
		TIME	

Output:

COMMON/OUTPUT/

FP(200)

Storage requirement (exclusive of COMMON): 357e, 2391o

Calling program: PAM2, Sequence 74

Flowchart: Figure 3.14

: This subroutine computes the activity of ^{239}U and ^{239}Np produced by capture of neutrons by ^{238}U in the device. It evaluates the equations for decay of a parent-daughter pair in a straightforward manner.

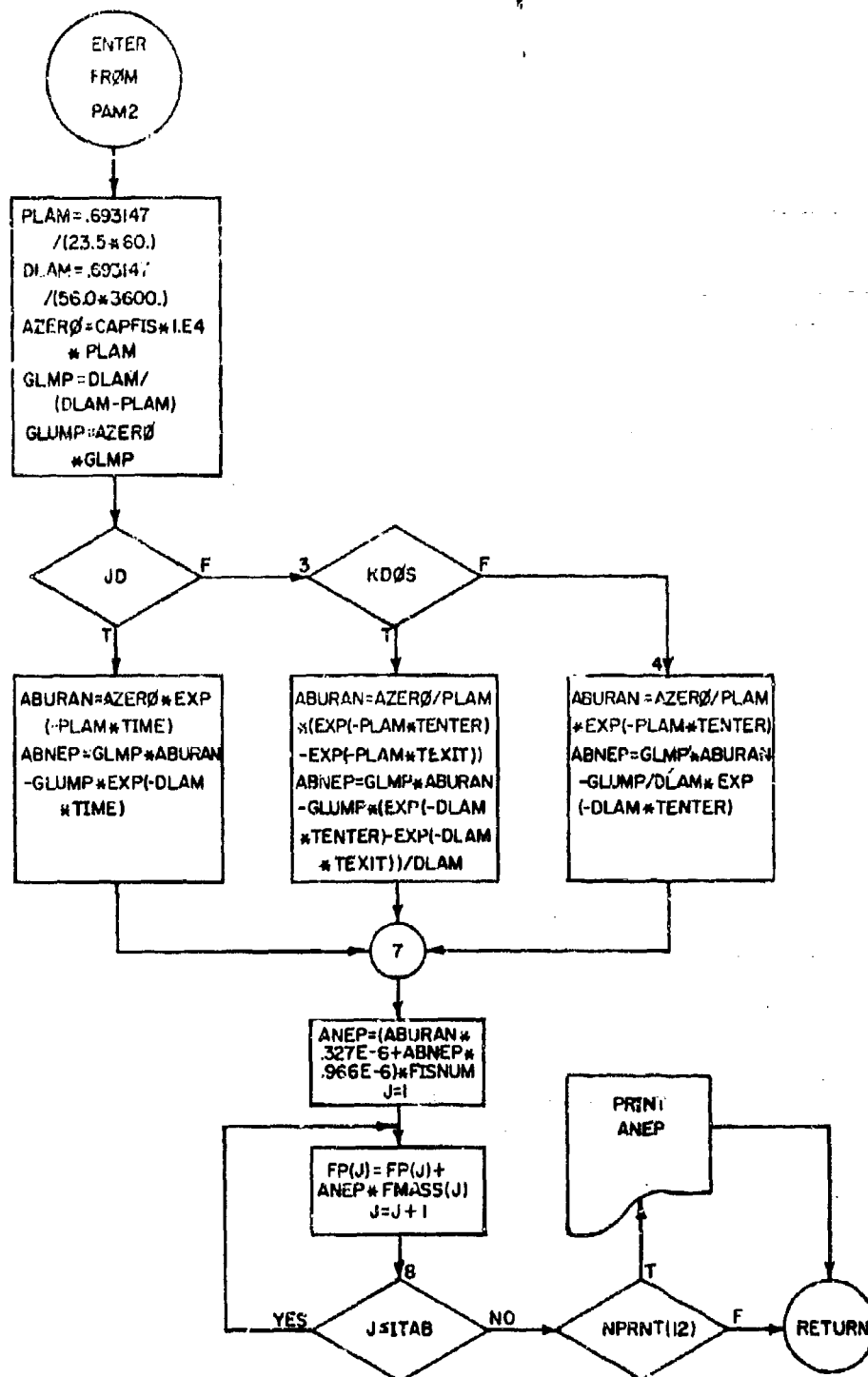


Figure 3.14 Detailed flowchart for Subroutine URAN.

3.5 Utility Programs.

3.5.1 Function TIMSEC (TIME, TUNIT, IEXP).

Input is the argument list

Storage requirement: 113_a, 75₁₀

Calling programs:

SEETJP, Sequence 170
INDCD1, Sequence 125
LINK9, Sequence 170, 171

This function converts time in various units to seconds. The input is

$TIME \times 10^{IEXP}$ in units coded

in TUNIT as follows:

1	seconds
2	minutes
3	hours
4	days
5	years

3.5.2 Subroutine UNPACK (IA, IZ, IS, NAME).

Input:

NAME

Output:

IA

IS

IZ

Storage requirement: 67e, 551o

Calling programs:

YIELD, Sequence 98

XPRM, Sequence 90

4. USER INFORMATION

4.1 Input.

The PAM normally obtains data from three sources:
(1) the other modules of DELFIC via argument list and COMMON,
(2) input cards, (3) magnetic tape (optionally replaced by cards). The first source comprises the following variables:

FISNUM	Number of fissions/ 10^8
FMASS(200)	Mass fraction in size class
FW	Fission yield, kt
HOB	Height of burst, ft
IP ~~OUT~~	Logical tape number
ISIN	Logical tape number
IS ~~OUT~~	Logical tape number
ITAB	Number of particle-size classes
JD	Control parameter
JG ~~0~~	Control parameter
KD ~~0~~ S	Control parameter
MASCHN	User-requested mass chain
PSIZE(200)	Midpoint of size class, μ
SIGMA	Not used
SIGMAS	Not used
SLDIMP	Melting point of soil, $^{\circ}$ K
TENTER	User-requested time, s
TEXTIT	User-requested time, s
TIME	User-requested time, s
TMSD	Time of soil condensation, s
TW	Total yield, kt

The input to PAM from sources 2 and 3 can be categorized into three classes (1) specific (to the computer run), (2) invariant, (3) quasi-invariant. The specific data are always on cards. Classes 2 and 3 are normally on magnetic tape, but either one or both can be on cards. The invariant data are the fission-product-tables, the exposure-rate multipliers, and the fission-yield tables. The soil composition is classified as quasi-invariant because only one set (Nevada Test Site) now exists. However, additional soil types may become available in the future.

Figure 4.1 shows the flow of input cards to the PAM. The squares represent card decks described on the pages following. The invariant and quasi-invariant data are described in the Appendix.

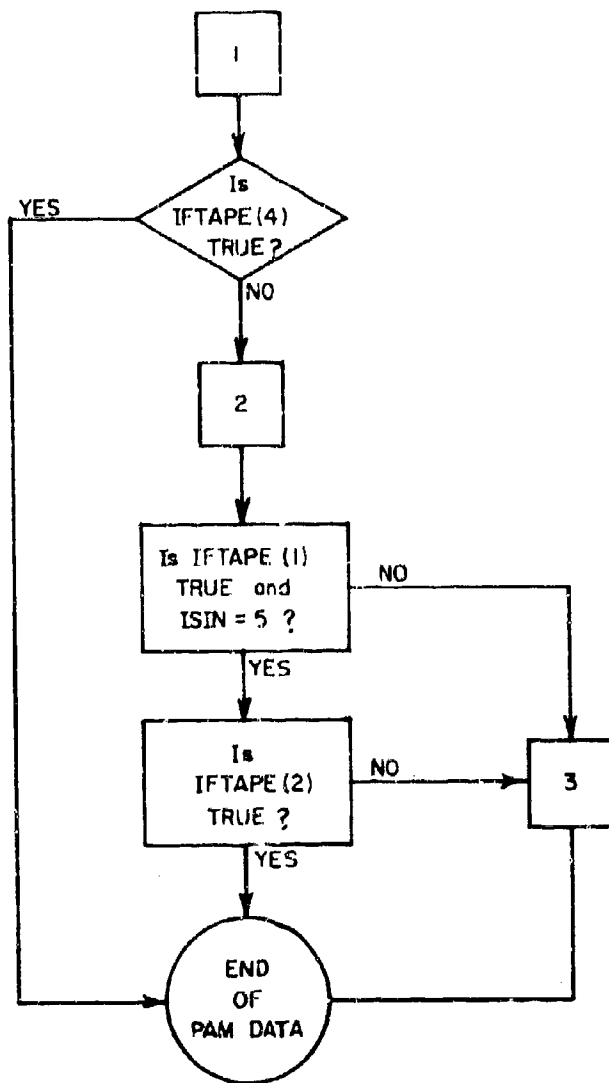


Figure 4.1 Input flowchart.

<u>Card Sequence</u>	<u>Mnemonic</u>	<u>Format</u>
1	PAMID(J), J=1,12	12A6
2	IFTAPE(J), J=1,10	10L1
3	NTRNT(J), J=1,15	15L1

PAMID(J) : Arbitrary 72 character particle activity module identifier.

IFTAPE(J) : File control parameters.

IFTAPE(1) : If FALSE, INTP = ISIN.

 If TRUE and ISIN = 5, INTP = 12.

 If TRUE and ISIN $\neq$ 5, INTP = 5.

IFTAPE(2) : If FALSE, KRD = ISIN

 If TRUE, KRD = INTP

IFTAPE(3) : If TRUE, write PAM restart information as a trailer on the grounded particles file (logical 9). Be sure 9 has ring in.

IFTAPE(4) : If TRUE, the PAM expects restart information on logical 9.

NTRNT(J) : Printout Control Parameters. See Table 4.1

Deck 1 is read by subroutine PAML.

2

<u>Card Sequence</u>	<u>Mnemonic</u>	<u>Format</u>
1	CAPFIS, EMITN	2F10.3
2	FISSID	A6

CAPFIS : Capture-to-fission ratio.

EMITN : Number of neutrons emitted per fission.

FISSID : Type of fission (See DASA-1800-V).

Deck 2 is read by subroutine PAM1.

3

<u>Card Sequence</u>	<u>Mnemonic</u>	<u>Format</u>
----------------------	-----------------	---------------

This option allows the invariant PAM data (on distributed Reel B) to be read into the program on cards. For a detailed description of the data deck required for this option see the Appendix.

4.2 Output.

The primary output of the PAM is the array FP(200), communicated to the Output Processor by ~~COMMON~~/OUTPUT/. The units of FP may be any of four, depending upon user option.

1. $R.m^2.h^{-1}$
2. $R.m^2$
3. Ci
4. equivalent fissions.

In the Output Processor (Subroutine CAIC), FP is multiplied by the mass fraction per unit area (m^{-2}) at each grid point. The so-called normalization factor, K, ($R.mi^2.kt^{-1}.h^{-1}$) can be obtained from

$$K = 3.861 \times 10^{-7} \frac{(FP).n_s}{W_f},$$

where

n_s = number of particle-size classes,

W_f = fission yield in kilotons,

and FP is obtained from option 1 above.

Printed output is controlled by the array NPRNT. The effect of setting each entry .TRUE. is shown in Table 4.1

TABLE 4.1

PAM Printout Control

Index of Array NPRNT	Subroutine Involved	Printout Resulting from TRUE Value
1	SETUP	Transition Cards (Warning - Produces some 700 pages)
2	SETUP	Intermediate Form of Nuclide Table (Octal)
3	SETUP	Final Form of Nuclide Table (Octal)
4	YIELD	Fission Yield Table
5	XPRM	Exposure Rate Multipliers
6	FRATIC	Refractory Fractions (FR)
7	FRATIC	Square Root of FR (BSUBK)
8	INDCD1	Information Stored for Use by INDCD2
9	BATMAN	Nuclide Abundances (Warning - This option combined with JD = FALSE will bury you in paper)
10	GXPSR	Fission Product Activity vs Part Size (Warning - See 9)
11	INDCD2	Induced Activity (Soil) vs Part Size (Warning - See 9)
12	URAN	Induced Activity (Mass 239) vs Part Size (Warning - See 9)
13	MCHDEP	Selected Mass Chain Activity vs Part Size
14		SPARE
15	PAM2	Total Activity vs Part Size (Warning - See 9)

5. FORTRAN LISTINGS

SIBFTC BAT1	LIST, BECK, M94/2	BAT1	0
	SUBROUTINE BATMAN	BAT1	1
C	VERSION 1	BAT1	2
C	R C TOMPKINS -- US ARMY NUCLEAR DEFENSE LABS	BAT1	3
C	AUGUST 1966	BAT1	4
C	THIS VERSION REPLACES SUBROUTINES INGEN, BATMAN, DECAY, AND DOSE OF	BAT1	5
C	THE INITIAL VERSION OF DELFTC	BAT1	6
C		BAT1	7
C		BAT1	8
C	THE FUNCTION OF THIS SUBROUTINE IS TO COMPUTE RADIOACTIVE DECAY	BAT1	9
C	CHAINS BY MEANS OF THE BATEMAN EQUATION	BAT1	10
C	CALLED BY FRATIO, GXPSR, AND MCHDEP	BAT1	11
C		BAT1	12
C	* * * * * GLOSSARY * * * * *	BAT1	13
C	ABEGN(700) INITIAL FISSION PRODUCT ABUNDANCES IN ATOMS/10000	BAT1	14
C	FISSIONS (PARALLEL TO NUCLID)	BAT1	15
C	ABUNDO(700) FISSION PRODUCT ABUNDANCES PER 10000 FISSIONS	BAT1	16
C	ATOMS AT TMSD IN FRATIO	BAT1	17
C	DISINTEGRATIONS/SEC AT TIME (JD=1)	BAT1	18
C	DISINTEGRATIONS FROM TENTER TO TEXT	BAT1	19
C	OR INFINITY (JD=2)	BAT1	20
C	BI(15) CONTRIBUTION OF ONE SUBCHAIN TO ABUNDO	BAT1	21
C	CNIJ(680) BATEMAN COEFFICIENTS FOR ONE SUBCHAIN	BAT1	22
C	IBR COUNTER TO KEEP PLACE IN BRANCHING RATIO TABLE WHILE	BAT1	23
C	SCANNING NUCLIDE TABLE	BAT1	24
C	IFIGO ASSIGNED GOTO PARAMETER CORRESPONDING TO IGO	BAT1	25
C	IFJD ASSIGNED GOTO PARAMETER CORRESPONDING TO JD	BAT1	26
C	IGO (LOGICAL) TRUE GIVES ACTIVITY,	BAT1	27
C	FALSE GIVES ATOMIC ABUNDANCES	BAT1	28
C	INFORM(11) TABLE OF DAUGHTER RETRIEVAL INFORMATION FOR EACH	BAT1	29
C	MEMBER OF A SUBCHAIN, OBTAINED BY TRUNCATING NUCLID	BAT1	30
C	FROM THE LEFT	BAT1	31
C	JD (LOGICAL) TRUE COMPUTES EXPOSURE RATE,	BAT1	32
C	FALSE COMPUTES DOSE	BAT1	33
C	KDOS (LOGICAL) TRUE COMPUTES DOSE FROM TENTER TO TEXT,	BAT1	34
C	FALSE COMPUTES DOSE FROM TENTER TO INFINITY	BAT1	35
C	KFJD SEE IFJD	BAT1	36
C	LIM(11) SUBCHAIN TABLE OF INDICES FOR MULT TO FIND CURRENT	BAT1	37
C	BRANCHING PATH	BAT1	38
C	LSUB COUNTER FOR SUBCHAIN MEMBERS	BAT1	39
C	NUC(11) CROSS REFERENCE OF SUBCHAIN MEMBERS TO INDEX IN NUCLID	BAT1	40
C	SBR(11) SUBCHAIN BRANCHING RATIOS	BAT1	41
C	SCA(15) FISSION YIELDS OF SUBCHAIN MEMBERS	BAT1	42
C	SDC(15) DISINTEGRATION CONSTANTS OF SUBCHAIN MEMBERS	BAT1	43
C	TENTER ENTRY TIME (SEC) FOR DOSE CALCULATION WITH JD = FALSE	BAT1	44
C	TEXT EXIT TIME (SEC) FOR DOSE CALCULATION	BAT1	45
C	WITH JD = FALSE, KDOS = TRUE	BAT1	46
C	TIME TIME (SEC) AT WHICH EXPOSURE RATE OR MASS CHAIN	BAT1	47
C	DEPOSITE IS CALCULATED WITH JD = TRUE	BAT1	48
C		BAT1	49

C	COMMON/OUTPUT/						BAT1	50
	1 FISHUN	,FF	(200)	,FW		,STAR	BAT1	51
	2 ,HASCHN	,SIGMAS					BAT1	52
	COMMON/UTILITY/						BAT1	53
	1 KOUT	,NPRNT	(15)				BAT1	54
C	COMMON/INDUCE/						BAT1	55
	1 ALBFOM	,FAC	(7,18)	,FOGRNY(7,18)	,ISO	(18)	BAT1	56
	2 ,LMAX	,XLAN	(7,18)				BAT1	57
C	COMMON/FISHIN/						BAT1	58
	1 ABEGN (700)	,ABUNDO(700)	,BRANCH(130)	,CAPFIS			BAT1	59
	2 ,DCON (700)	,IBRA	,INUC	,MAXNUC			BAT1	60
	3 ,MULT (11)	,NUCLID(700)					BAT1	61
C	COMMON/DECAY/						BAT1	62
	1 IQO	,JD		,KDOS		,TENTER	BAT1	63
	2 ,TEXT	,TIME					BAT1	64
C	COMMON/FRYLNG/						BAT1	65
	1 BSUBK (90)	,ERM	(105)	,JRM	(105)	,KRM	BAT1	66
						,ECF (90)	BAT1	67
C	COMMON/SET 3/DUNNY(3753)						BAT1	68
C	DIMENSION EFAC (11)	,KBR	(11)				BAT1	69
	1 ,INFORM(11)	,LHM	(11)	,NUC	(11)	,SBR	BAT1	70
	2 ,SCA (11)	,SDC	(11)				BAT1	71
C	LOGICAL JD,KDOS,IQO,FLAG,NPRNT						BAT1	72
C	SET INITIAL VALUES						BAT1	73
CC	DO 1 I = 1,INUC						BAT1	74
	1 ABUNDO(I) = 0.0						BAT1	75
	IBR = 0						BAT1	76
C	BEGIN MAIN LOOP THROUGH THE NUCLIDE TABLE						BAT1	77
CC	10 DO 500 IN = 1,INUC						BAT1	78
C	FIND THE NEXT NUCLIDE THAT BEGINS A SUBCHAIN						BAT1	79
	IF (NUCLID(IN))11,500.499						BAT1	80
C	SET PARAMETERS FOR BEGINNING OF A SUBCHAIN						BAT1	81
C	MEMBERSHIP COUNTER						BAT1	82
C	11 LSUB = 1						BAT1	83
	BRANCHING RATIO COUNTER						BAT1	84
C	LBR = IBR						BAT1	85
	KBR(1) = LBR						BAT1	86
C	STARTING INDEX						BAT1	87
							BAT1	88
							BAT1	89
							BAT1	90
							BAT1	91
							BAT1	92
							BAT1	93
							BAT1	94
							BAT1	95
							BAT1	96
							BAT1	97
							BAT1	98

NUC(17) = IN	BAT1 99
12 LIM(LSUB) = 4	BAT1 100
C PROCESS A SUBCHAIN MEMBER	BAT1 101
13 KP = NUC(LSUB)	BAT1 102
IM = LIM(LSUB)	BAT1 103
INFO = MOD(ABS(NUCLID(KP)),MULT(5))	BAT1 104
INFORM(LSUB) = INFO	BAT1 105
INC = 1	BAT1 106
C SET UP SUBCHAIN DISINTEGRATION CONSTANTS	BAT1 107
SDC(LSUB) = DCON(KP)	BAT1 108
CHECK FOR END OF SUBCHAIN	BAT1 109
IF (INFO.EQ.4) GO TO 21	BAT1 110
CHECK FOR BRANCHING	BAT1 111
IF (MOD(INFO,MULT(1)).LT.4) GO TO 14	BAT1 112
SBR(LSUB) = 1.0	BAT1 113
GO TO 15	BAT1 114
C SET UP SUBCHAIN BRANCHING RATIOS	BAT1 115
14 LB = LBR + 5 - IM	BAT1 116
SBR(LSUB) = BRANCH(LB)	BAT1 117
C EXTRACT THE DAUGHTER INCREMENT	BAT1 118
15 ID = MOD(INFO,MULT(IM+1))/MULT(IM)	BAT1 119
C SEE IF THIS INCREMENT SHOULD BE NEGATIVE	BAT1 120
IF (MOD(INFO,MULT(2))/MULT(1).EQ.IM) GO TO 16	BAT1 121
C SET PARAMETER TO LOOK AHEAD FOR BRANCHING RATIO OF DAUGHTER	BAT1 122
KI = KP	BAT1 123
GO TO 17	BAT1 124
C SET PARAMETER TO LOOK BEHIND FOR BRANCHING RATIO OF DAUGHTER	BAT1 125
16 KI = 1	BAT1 126
LBR = 0	BAT1 127
INC = -INC	BAT1 128
COMPUTE DAUGHTER INDEX	BAT1 129
17 NDAUT = KP + INC*ID	BAT1 130
KDA = NDAUT - 1	BAT1 131
C STEP THROUGH THE NUCLIDE TABLE TO ESTABLISH THE CORRECT INDEX FOR	BAT1 132
C THE BRANCHING RATIO OF THE DAUGHTER	BAT1 133
DO 20 K = KI,KDA	BAT1 134
20 LBR = LBR + 4 - (ABS(MOD(NUCLID(K),MULT(1)))	BAT1 135
KBR(LSUB+1) = LBR	BAT1 136
C	BAT1 137
C ACCEPT THE DAUGHTER FOR MEMBERSHIP IN THE SUBCHAIN AND RECYCLE	BAT1 138
LSUB = LSUB + 1	BAT1 139
IF (LSUB.GT.11) GO TO 130	BAT1 140
NUC(LSUB) = NDAUT	BAT1 141
GO TO 12	BAT1 142
C	BAT1 143
CC A SUBCHAIN HAS NOW BEEN SET UP AND CAN BE STUDIED IN TOTO	BAT1 144
C ELIMINATE UNI-MEMBERED SUBCHAIN	BAT1 145
21 IF (LSUB.EQ.1) GO TO 500	BAT1 146
C RUN BACK THROUGH THE SUBCHAIN TO ACCUMULATE BRANCHING RATIOS	BAT1 147
ASSIGN 23 TO LGO	BAT1 148
JL = 0	BAT1 149
SCA(LSUB) = 1.0	BAT1 150
LAST = LSUB + 1	BAT1 151
DO 22 L = 2,LSUB	BAT1 152
LBACK = LAST - L	BAT1 153
SCA(LBACK) = 1.0	BAT1 154
GO TO LGO,(22,23)	BAT1 155
C FIND THE LAST BRANCH IN THE SUBCHAIN	BAT1 156
23 IM = LIM(LBACK)	BAT1 157
IF (MOD(INFORM(LBACK),MULT(IM))/MULT(IM-1))22,22,24	BAT1 158

24 JL = LBACK	BAT1 159
ASSIGN 22 TO L80	BAT1 160
22 SCA(LBACK) = SBR(LBACK)*SCA(LBACK+1)	BAT1 161
SCA(LSUB) = 0.0	BAT1 162
CORRECT FISSION YIELDS FOR BRANCHING	BAT1 163
FLAG = .FALSE.	BAT1 164
DO 25 J = 1,LSUB	BAT1 165
JN = NUC(J)	BAT1 166
SCA(J) = SCA(J)*BEGN(JN)	BAT1 167
IF (FLAG) GO TO 25	BAT1 168
C MAKE A NOTE IF AT LEAST ONE VALUE OF SCA IS NONTRIVIAL	BAT1 169
IF (SCA(J))25,25,27	BAT1 170
27 FLAG = .TRUE.	BAT1 171
25 CONTINUE	BAT1 172
C	BAT1 173
C OMIT COMPUTATIONS FOR TRIVIAL SUBCHAIN	BAT1 174
IF (.NOT.FLAG) GO TO 30	BAT1 175
C	BAT1 176
CC THE CENTRAL COMPUTATIONS BEGIN AT THIS POINT	BAT1 177
C	BAT1 178
DO 200 N = 1,LSUB	BAT1 179
COMPUTE EXPONENTIALS BEFORE ENTERING INNER LOOPS	BAT1 180
IF (JD) TENTER = TIME	BAT1 181
EFAC(N) = EXP(-SDC(N)*TENTER)	BAT1 182
IF (KDD) EFAC(N) = EFAC(N) - EXP(-SDC(N)*TEXTI)	BAT1 183
B = 0.0	BAT1 184
C	BAT1 185
DO 150 I = 1,N	BAT1 186
DO 150 K = I,N	BAT1 187
C	BAT1 188
COMPUTE BATEMAN COEFFICIENTS	BAT1 189
CNIJ = 1.0	BAT1 190
DO 106 L = I,N	BAT1 191
IF (N.GT.L) CNIJ = CNIJ*SDC(L)	BAT1 192
IF (L.EQ.K) GO TO 106	BAT1 193
FACTC = SDC(L) - SDC(K)	BAT1 194
IF (ABS(FACTC).LT.1.E-15) FACTC = SIGN(1.E-15,FACTC)	BAT1 195
CNIJ = CNIJ/FACTC	BAT1 196
106 CONTINUE	BAT1 197
COMPUTE BATEMAN EQUATION, BRANCH TO 109 FOR INTEGRATED FORM	BAT1 198
C	BAT1 199
Q = CNIJ*SCA(I)*EFAC(K)	BAT1 200
IF (JD) GO TO 150	BAT1 201
C PREVENT DIVIDE CHECK ERROR	BAT1 202
IF (SDC(K))150,150,110	BAT1 203
110 Q = Q/SDC(K)	BAT1 204
150 B = B + Q	BAT1 205
C STORE RESULTS IN ABUNDANCE TABLE	BAT1 206
IF (B)200,200,151	BAT1 207
151 IF (IG) B = B*SDC(N)	BAT1 208
NK = NUC(N)	BAT1 209
ABUNDO(NK) = ABUNDO(NK) + B	BAT1 210
200 CONTINUE	BAT1 211
C	BAT1 212
C SET UP A NEW SUBCHAIN STARTING FROM DEEPEST UNEXPLORED BRANCH	BAT1 213
30 IF (JL)500,499,31	BAT1 214
31 LSUB = JL	BAT1 215
LIM(LSUB) = LIM(LSUB) - 1	BAT1 216
LBR = KBR(LSUB)	BAT1 217
GO TO 13	BAT1 218

C		BAT1 219
C		BAT1 220
	1301 WRITE (KOUT,1351) NUCLID(I)	BAT1 221
C		BAT1 222
C	STEP UP BRANCH COUNTER IN MAIN LOOP	BAT1 223
	499 IBR = IBR + 4 - MOD(ABS(NUCLID(I)),MULT(1))	BAT1 224
	500 CONTINUE	BAT1 225
	IF (NPRNT(9)) WRITE (KOUT,1000) (NUCLID(I),ABUNDO(I),I=1,INUC)	BAT1 226
	RETURN	BAT1 227
	1000 FORMAT (17H1OUTPUT OF BATMAN//8X6HNUCLID11X6HABUNDO/	BAT1 228
	1 (5X012.5X1PE12.4))	BAT1 229
	1351 FORMAT (25H0SUBCHAIN BEGINNING WITH 012.8M TOO BIG)	BAT1 230
	END	BAT1 231
	SIBFTC TIMSEC LIST,DECK,M94/2	TIMS 0
C	FTIMSEC = 3/66 - TOMPKINS	TIMS 1
C		TIMS 2
	FUNCTION TIMSEC (TIME,IUNIT,IEXP)	TIMS 3
C		TIMS 4
	GO TO (1,2,3,4,5),IUNIT	TIMS 5
C		TIMS 6
	1 SCALE = 1.0	TIMS 7
	GO TO 6	TIMS 8
	2 SCALE = 60.0	TIMS 9
	GO TO 6	TIMS 10
	3 SCALE = 3.6E3	TIMS 11
	GO TO 6	TIMS 12
	4 SCALE = 8.64E4	TIMS 13
	GO TO 6	TIMS 14
	5 SCALE = 8.64E4*365.25	TIMS 15
C		TIMS 16
	6 TIMSEC = TIME*SCALE*10.**IEXP	TIMS 17
	RETURN	TIMS 18
	END	TIMS 19
	SIBFTC UNPAX LIST,DECK,M94/2	UNPA 0
C	SRUNPACK = 3/66 - MEREDITH	UNPA 1
C		UNPA 2
	SUBROUTINE UNPACK	UNPA 3
	1 ((A,IZ,IS,NAME)	UNPA 4
C		UNPA 5
	JX = 8	UNPA 6
	JY = 4096	UNPA 7
C		UNPA 8
	IA = NAME/JY	UNPA 9
	IZ = (NAME - IA*JY)/JX	UNPA 10
	IS = MOD (NAME,JX)	UNPA 11
C		UNPA 12
	10 RETURN	UNPA 13
	END	UNPA 14
		UNPA 13

SIGFTO PAH1ST LIST,DECK,H94/2

SUBROUTINE PAH1

1 (MOB ,SLDTP ,THSD ,TH
2 ,ISIN ,ISOUT ,IPOUT ,SIGMA)

R C TOMPKINS -- US ARMY NUCLEAR DEFENSE LABS
OCTOBER 1966

EXECUTIVE PROGRAM FOR TIME-INDEPENDENT PART OF PARTICLE-ACTIVITY
MODULE

CALLS BY LINK6

CALLS SETUP, YIELD, XPRM, INDCD1, AND FRATIO

***** GLOSSARY *****

CAPFIS	CAPTURE-TO-FISSION RATIO	PAH1	0
EMITN	NUMBER OF NEUTRONS EMITTED PER FISSION	PAH1	1
FISSID	SIX CHARACTER IDENTIFIER OF FISSION TYPE	PAH1	2
IFTAPE(10)	LOGICAL ARRAY TO CONTROL FILE MANIPULATION	PAH1	3
	(1) TRUE - SET INTP NOT EQUAL TO ISIN	PAH1	4
	FALSE - SET INTP = ISIN	PAH1	5
	(2) TRUE - SET KR0 = INTP	PAH1	6
	FALSE - SET KR0 = ISIN	PAH1	7
	(3) TRUE - WRITE FILE IPAM	PAH1	8
	(4) TRUE - READ FILE IPAM INTO MEMORY AND RETURN	PAH1	9
	(5-10) SPARES	PAH1	10
IPAM	BINARY FILE OF PAH1 OUTPUT FOR RESTARTS	PAH1	11
ISIN	INPUT FILE (BCD) USED BY OTHER DELFIC MODULES	PAH1	12
KOUT	BCD FILE OF PAH1 OUTPUT FOR PERIPHERAL PRINTING	PAH1	13
KRD	INPUT FILE (BCD) CONTAINING SOIL PARAMETERS	PAH1	14
NPRINT(20)	LOGICAL ARRAY TO CONTROL WRITING OF KOUT, TRUE = WRITE	PAH1	15
	(1) SETUP - TRANSITION CARDS (WARNING - PRODUCES SOME	PAH1	16
	700 PAGES)	PAH1	17
	(2) SETUP - INTERMEDIATE FORM OF NUCLIDE TABLE (OCTAL	PAH1	18
	(3) SETUP - FINAL FORM OF NUCLIDE TABLE (OCTAL)	PAH1	19
	(4) YIELD - FISSION YIELD TABLE	PAH1	20
	(5) XPRM - EXPOSURE RATE MULTIPLIERS	PAH1	21
	(6) FRATIO - REFRACTORY FRACTIONS (FRI)	PAH1	22
	(7) FRATIO - SQUARE ROOT OF FR (BSUBK)	PAH1	23
	(8) INDCD1 - INFORMATION STORED FOR USE BY INDCD2	PAH1	24
	(9) BATMAN - NUCLIDE ABUNDANCES (WARNING - THIS	PAH1	25
	OPTION COMBINED WITH JD = FALSE WILL BURY YOU	PAH1	26
	IN PAPER)	PAH1	27
	(10) GXPSR - FISSION PRODUCT ACTIVITY VS PART SIZE	PAH1	28
	(WARNING - SEE (9))	PAH1	29
	(11) INDCD2 - INDUCED ACTIVITY (SOIL) VS PART SIZE	PAH1	30
	(WARNING - SEE (9))	PAH1	31
	(12) URAN - INDUCED ACTIVITY (S 239) VS PART SIZE	PAH1	32
	(WARNING - SEE (9))	PAH1	33
	(13) MCHDEP - SELECTED MA - CHAIN ACTIVITY VS PART SIZE	PAH1	34
	(14) SPARE	PAH1	35
	(15) PAH2 - TOTAL ACTIVITY VS PART SIZE (WARNING-SEE	PAH1	36
	(16-20) SPARES	PAH1	37
PAHID(12)	RUN IDENTIFICATION FOR PARTICLE-ACTIVITY MODULE	PAH1	38

C	*****	PAH1	54
C		PAH1	55
	COMMON/FISHIN/	PAH1	56
1	ABEGN (700) ,ABUNDO(700) ,BRANCH(130) ,CAPFIS	PAH1	57
2	,DCON (700) ,IBRA ,INUC ,MAXNUC	PAH1	58
3	,MULT (11) ,NUCLID(700)	PAH1	59
	COMMON/INDUCE/	PAH1	60
1	ALBFOM ,FAC (7,18) ,FOGRNY(7,18) ,ISO (18)	PAH1	61
2	,LMAX ,XLAM (7,18)	PAH1	62
	COMMON/UTILITY/	PAH1	63
1	KOUT ,NPRNT (15)	PAH1	64
	COMMON/FRYING/	PAH1	65
1	BSUBK (90) ,ERM (185) ,JRM (185) ,KRM ,ECF(90)	PAH1	66
	COMMON/OUTPUT/	PAH1	67
1	FISNUM ,FP (200) ,FW ,ITAB ,JGO	PAH1	68
2	,MASCHN ,SIGMAS	PAH1	69
	DIMENSION	PAH1	70
1	PAMID (12)	PAH1	71
	LOGICAL	PAH1	72
1	NPRNT ,IFTAPE(13)	PAH1	73
C		PAH1	74
C	*****	PAH1	75
C		PAH1	76
1	FORMAT (12A6/10L1/20L1)	PAH1	77
2	FORMAT (2F10.3/A6)	PAH1	78
3	FORMAT (1H1//51X19H* * * * * //12X101HTHE DEPAR	PAH1	79
	1TMENT OF DEFENSE FALLOUT PREDICTI	PAH1	80
	20N SYSTEM//51X19H* * * * * //48X24HPARTICLE ACT	PAH2	81
	3IVITY MODULE//55X11HPREPARED BY/43X34HUS ARMY NUCLEAR DEFENSE LAB	PAH1	82
	4ORATORY/47X26HEDGEWOOD ARSENAL, MARYLAND///24X12A6)	PAH1	83
4	FORMAT (///48X23HCONTROL VARIABLE ARRAYS//48X9HIFTAPE(1)/30X10L5/	PAH1	84
	1//48X8HNPRNT(1)/20X15L5)	PAH1	85
5	FORMAT (///40X31HCAPTURE - TO - FISSION RATIO (S,F10.3)	PAH1	86
6	FORMAT (///35X41HNUMBER OF NEUTRONS EMITTED PER FISSION (S,F10.3)	PAH1	87
7	FORMAT (///47X19HTYPE OF FISSION IS A6)	PAH1	88
8	FORMAT (///29X55HTHE CLOUD REACHED THE SOIL CONDENSATION TEMPERATUR	PAH1	89
	1E OF F7.1,4H AT F8.2,5H SEC.)	PAH1	90
9	FORMAT (///42X14HTOTAL YIELD IS,1PE12.4,10H KILOTONS.)	PAH1	91
10	FORMAT (///41X16HFISSION YIELD IS,1PE12.4,10H KILOTONS.)	PAH1	92
11	FORMAT (///32X9HTHERE ARE,14,36H PARTICLE GLASSES WITH SIGMA OF,	PAH1	93
	1 F7.4,1H.)	PAH1	94
12	FORMAT (///41X22HTHE HEIGHT OF BURST (3,F9.3,6H FEET.)	PAH1	95
C		PAH1	96
C	*****	PAH1	97
C	*****	PAH1	98
C		PAH1	99
	KOUT = ISOUT	PAH1	100
	JPAH = IPOUT	PAH1	101
	INTP = ISIN	PAH1	102
	KRD = ISIN	PAH1	103
	READ (ISIN,1)	PAH1	104
1	(PAMID(1),I=1,12),(IFTAPE(J),J=1,10),(NPRNT(K),K=1,15)	PAH1	105
	IF(IFTAPE(4)) GO TO 150	PAH1	106
	READ (ISIN,2)	PAH1	107
1	CAPFIS,EMITN,FISSID	PAH1	108
25	WRITE (KOUT,3)	PAH1	109
1	(PAMID(1),I=1,12)	PAH1	110
	WRITE (KOUT,4)	PAH1	111
1	(IFTAPE(J),J=1,10),(NPRNT(K),K=1,15)	PAH1	112
	WRITE (KOUT, 9) TW	PAH1	113

WRITE (KOUT,10) FW	PAM1 114
WRITE (KOUT,7) FISSID	PAM1 115
WRITE (KOUT,12) HOB	PAM1 116
WRITE (KOUT,5) CAPFIS	PAM1 117
WRITE (KOUT,6) EMITN	PAM1 118
WRITE (KOUT,8) SLDTMP,TMSD	PAM1 119
WRITE (KOUT,11) ITAB,SIGMA	PAM1 120
IF(IIFTAPE(4)) RETURN	PAM1 121
IF(IIFTAPE(1).AND. ISIN.EQ.5)INTP=12	PAM1 122
IF(IIFTAPE(1).AND. ISIN.NE.5)INTP=5	PAM1 123
IF(IIFTAPE(2)) KRD=INTP	PAM1 124
50 CALL SETUP	PAM1 125
1 (INTP ,MAXMUL)	PAM1 126
CALL YIELD	PAM1 127
1 (INTP,FISSID)	PAM1 128
CALL XPRM	PAM1 129
1 (INTP)	PAM1 130
CALL INDCD1	PAM1 131
1 (EMITN ,HOB ,KRD ,TW)	PAM1 132
IF (EMITN.LE.0.0) LMAX=0	PAM1 133
CALL FRATIO	PAM1 134
1 (SLDTMP ,TMSD ,MCHN)	PAM1 135
IF (IIFTAPE(3)) GO TO 100	PAM1 136
REWIND IPAM	PAM1 137
RETURN	PAM1 138
100 WRITE (IPAM)	PAM1 139
1 CAPFIS,ALBFOH,LMAX,EMITN,FISSID	PAM1 140
WRITE (IPAM)	PAM1 141
1 INUC,IBRA,MAXMUL,KRM,MCHN	PAM1 142
WRITE (IPAM)	PAM1 143
1 (MULT(I),I=1,MAXMUL)	PAM1 144
WRITE (IPAM)	PAM1 145
1 (NUCLID(J),DCON(J),ABEGN(J),J=1,INUC)	PAM1 146
WRITE (IPAM)	PAM1 147
1 (BRANCH(K),K=1,IBRA)	PAM1 148
WRITE (IPAM)	PAM1 149
1 (ERM(L),JRM(L),L=1,KRM)	PAM1 150
WRITE (IPAM)	PAM1 151
1 (SUBK(M),ECF(M),M=1,MCHN)	PAM1 152
WRITE (IPAM)	PAM1 153
1 ((FAC(I,J),FOGRNY(I,J),XLAM(I,J),I=1,7),ISO(J),J=1,18)	PAM1 154
ENDFILE IPAM	PAM1 155
REWIND IPAM	PAM1 156
RETURN	PAM1 157
150 READ (IPAM)	PAM1 158
1 CAPFIS,ALBFOH,LMAX,EMITN,FISSID	PAM1 159
READ (IPAM)	PAM1 160
1 INUC,IBRA,MAXMUL,KRM,MCHN	PAM1 161
READ (IPAM)	PAM1 162
1 (MULT(I),I=1,MAXMUL)	PAM1 163
READ (IPAM)	PAM1 164
1 (NUCLID(J),DCON(J),ABEGN(J),J=1,INUC)	PAM1 165
READ (IPAM)	PAM1 166
1 (BRANCH(K),K=1,IBRA)	PAM1 167
READ (IPAM)	PAM1 168
1 (ERM(L),JRM(L),L=1,KRM)	PAM1 169
READ (IPAM)	PAM1 170
1 (SUBK(M),ECF(M),M=1,MCHN)	PAM1 171
READ (IPAM)	PAM1 172
1 ((FAC(I,J),FOGRNY(I,J),XLAM(I,J),I=1,7),ISO(J),J=1,18)	PAM1 173

REWIND IPAM		PAM1 174
GO TO 25		PAM1 175
END		PAM1 176
\$IDFTC SUP1 LIST,DECK,M94/2		SUP1 0
SUBROUTINE SETUP		SUP1 1
1 (INTP,MAXMUL)		SUP1 2
VERSION 1		SUP1 3
C		SUP1 4
C		SUP1 5
C R C TOMPKINS -- US ARMY NUCLEAR DEFENSE LABS		SUP1 6
C		SUP1 7
C CALLED BY PAM1		SUP1 8
C		SUP1 9
C * * * * * GLOSSARY * * * * *		SUP1 10
C		SUP1 11
C BRANCH(150)	TABLE OF BRANCHING RATIOS THAT LIE BETWEEN 0 AND 1,	SUP1 12
C	I.E., REPRESENT NONTRIVIAL BRANCHES. IT IS ORDERED	SUP1 13
C	PRIMARILY BY INCREASING VALUES OF NUCLID AND SECON-	SUP1 14
C	DARILY BY DAUGHTER POSITION WITHIN NUCLID.	SUP1 15
C BRAT	TEMPORARY STORAGE FOR BRANCHING RATIO READ FROM INPUT	SUP1 16
C	RECORD	SUP1 17
C BRSUM	SUM OF BRANCHING RATIOS FOR A SINGLE PARENT	SUP1 18
C BRTEST	TOLERANCE FOR COMPARISON OF BRSUM WITH UNITY	SUP1 19
C DATNO	(INTEGER) TEMPORARY STORAGE FOR ATOMIC NUMBER OF	SUP1 20
C	DAUGHTER READ FROM INPUT RECORD	SUP1 21
C DCON(700)	TABLE OF DISINTEGRATION CONSTANTS PARALLEL TO NUCLID,	SUP1 22
C	SET TO ZERO FOR STABLE NUCLIDES. (SEC**-1)	SUP1 23
C DISOM	(INTEGER) TEMPORARY STORAGE FOR ISOMERIC STATE OF	SUP1 24
C	DAUGHTER READ FROM INPUT RECORD. 0 FOR GROUND STATE,	SUP1 25
C	1 AND 2 FOR EXCITED STATES.	SUP1 26
C DMASS	(INTEGER) TEMPORARY STORAGE FOR MASS NUMBER OF	SUP1 27
C	DAUGHTER READ FROM INPUT RECORD	SUP1 28
C HLIFE	FRACTIONAL PART OF HALF-LIFE READ FROM INPUT RECORD	SUP1 29
C IBRA	NUMBER OF ENTRIES IN ARRAY BRANCH	SUP1 30
C IBRAT	ASSIGNED GOTO PARAMETER FOR EXISTENCE OF BRANCHING ON	SUP1 31
C	RECORD BEING PROCESSED	SUP1 32
C IEXP	CHARACTERISTIC OF HALF-LIFE READ FROM INPUT RECORD	SUP1 33
C IM	WORD POSITION INDICATOR FOR LOCATING DAUGHTERS IN	SUP1 34
C	PACKED WORD, USED AS INDEX OF ARRAY MULT.	SUP1 35
C IND	INDEX OF INSERTION POINT IN ARRAY NUCLID FOR NEW ENTRY	SUP1 36
C INPUT	NAMelist NAME FOR PRINTOUT OF INPUT RECORD	SUP1 37
C INTP	INPUT FILE NUMBER, NORMALLY CORRESPONDS TO SYSIN1	SUP1 38
C INUC	NUMBER OF ENTRIES IN ARRAYS NUCLID AND DCON	SUP1 39
C IUNIT	UNIT OF HALF-LIFE READ FROM INPUT RECORD	SUP1 40
C	1 - SECONDS	SUP1 41
C	2 - MINUTES	SUP1 42
C	3 - HOURS	SUP1 43
C	4 - DAYS	SUP1 44
C	5 - YEARS	SUP1 45
C IS1ST	ASSIGNED GOTO PARAMETER FOR SPECIAL HANDLING OF FIRST	SUP1 46
C	INPUT RECORD	SUP1 47
C ISTOP	ASSIGNED GOTO PARAMETER TO SIGNAL A DISABLING ERROR	SUP1 48
C	FOR PANIC EXIT AFTER PROCESSING	SUP1 49
C ITRUNC	TEMPORARY STORAGE FOR RIGHT-MOST 5 OCTAL POSITIONS OF	SUP1 50
C	NUCLID	SUP1 51
C IBRAT	ASSIGNED GOTO PARAMETER SIMILAR TO IBRAT	SUP1 52
C K2ND	ASSIGNED GOTO PARAMETER FOR ACTION TO BE TAKEN IF	SUP1 53
C	FIRST SEARCH FOR DAUGHTER FAILS	SUP1 54
C K3RD	ASSIGNED GOTO PARAMETER FOR ACTION TO BE TAKEN IF	SUP1 55
C	SECOND SEARCH FOR DAUGHTER FAILS	SUP1 56
C KBR	COUNTER FOR ARRAY BRANCH DURING SCANS OF ARRAY NUCLID	

C	KEND	DO-TERMINATOR FOR DAUGHTER SEARCH	SUP1	57
C	KOUT	OUTPUT FILE NUMBER, NORMALLY CORRESPONDS TO SYSQ1	SUP1	58
C	KST	DO-INITIATOR FOR DAUGHTER SEARCH	SUP1	59
C	KTYP	INDICATOR FOR TYPE OF NUCLEAR TRANSITION ON CURRENT INPUT RECORD	SUP1	60
C	LAMBDA	[REAL] TEMPORARY STORAGE FOR DISINTEGRATION CONSTANT OF CURRENT INPUT PARENT. (SEQ**1)	SUP1	61
C	MAXBRA	DIMENSION OF ARRAY BRANCH	SUP1	62
C	MAXMUL	DIMENSION OF ARRAY MULT. MUST NOT EXCEED 11 ON IBM7094	SUP1	63
C	MAXNUC	DIMENSION OF ARRAYS NUCLID AND DCON	SUP1	64
C	MAXPNT	DIMENSION OF ARRAY NPRNT	SUP1	65
C	MULT(11)	MULTIPLIERS FOR ACCESS TO OCTAL POSITIONS OF WORD, MULT(I) = 8**I	SUP1	66
C	NAMDAU	PACKED NAME OF DAUGHTER NUCLIDE	SUP1	67
C	NAMPAR	PACKED NAME OF PARENT NUCLIDE	SUP1	68
C	NPRNT(20)	LOGICAL ARRAY TO CONTROL PRODUCTION OF OUTPUT RECORDS	SUP1	69
C	NTIMES	COUNTER FOR ITERATIONS OF DAUGHTER SEARCH	SUP1	70
C	NUCLID(700)	MASTER TABLE OF NUCLIDES. THE LEFT-MOST 7 OCTAL POSITIONS CONTAIN THE MASS NUMBER AND ATOMIC NUMBER IN ASCENDING ORDER AND THE ISOMER NUMBER IN DESCENDING ORDER. THE 5 RIGHT-MOST POSITIONS CONTAIN DAUGHTER IDENTIFICATION. THE DIGIT POSITION CONTAINS THE INDEX REQUIRED ON MULT TO ACCESS THE LEFT-MOST VACANT POSITION. INITIALLY THE MULT(2) TO MULT(4) POSITIONS ARE OCCUPIED BY KTYP VALUES. FINALLY THEY CONTAIN THE INCREMENTS OF THE NUCLID INDEX REQUIRED TO FIND THE DAUGHTERS: IF ONE OF THESE IS A DECREMENT, ITS POSITION IS TAGGED IN POSITION MULT(1). INITIALLY ALL ENTRIES ARE SET NEGATIVE, BUT AT THE END A MINUS SIGN DESIGNATES THE BEGINNING OF A SUBCHAIN.	SUP1	71
C	PATNO	[INTEGER] TEMPORARY STORAGE FOR THE ATOMIC NUMBER OF PARENT READ FROM INPUT RECORD	SUP1	72
C	PISOM	[INTEGER] TEMPORARY STORAGE OF ISOMERIC STATE OF PARENT READ FROM INPUT RECORD. SEE DISOM.	SUP1	73
C	PMASS	[INTEGER] TEMPORARY STORAGE FOR THE MASS NUMBER OF PARENT READ FROM INPUT RECORD	SUP1	74
C			SUP1	75
C			SUP1	76
C			SUP1	77
C			SUP1	78
C			SUP1	79
C			SUP1	80
C			SUP1	81
C			SUP1	82
C			SUP1	83
C			SUP1	84
C			SUP1	85
C			SUP1	86
C			SUP1	87
C			SUP1	88
C			SUP1	89
C			SUP1	90
C			SUP1	91
C			SUP1	92
C			SUP1	93
C			SUP1	94
C			SUP1	95
C	COMMON/FISHIN/		SUP1	96
C	1 ABEGN (700) ,ABUNDO(700) ,BRANCH(130) ,CAPFIS		SUP1	97
C	2 ,DCON (700) ,IBRA ,INUC ,MAXNUC		SUP1	98
C	3 ,MULT (11) ,NUCLID(700)		SUP1	99
C	COMMON/UTILITY/		SUP1	100
C	1 KOUT ,NPRNT (15)		SUP1	101
C	INTEGER DATNO,DISOM,DMASS,PATNO,PISOM,PMASS		SUP1	102
C	LOGICAL NPRNT,FIRST		SUP1	103
C	REAL LAMBDA		SUP1	104
C	NAMLIST /INPUT/		SUP1	105
C	1 PMASS,PATNO,PISOM,HLIFE,IEXP,IUNIT,DMASS,DATNO,DISOM,BRAT		SUP1	106
C	1001 FORMAT (29H1INTERMEDIATE OUTPUT OF SETUP//)		SUP1	107
C	1002 FORMAT (6X4HINUC7X6HNUCLID11X4HDCON/)		SUP1	108
C	1003 FORMAT (6X13,5X012,5X1PE10.3)		SUP1	109
C	1004 FORMAT (22H1FINAL OUTPUT OF SETUP//)		SUP1	110
C	1005 FORMAT (///6X4HIBRA5X6HBRANCH/)		SUP1	111
C	1006 FCRMAT (6X13,5XF8.5)		SUP1	112

C		SUP1 117
CC	INITIALIZE VARIABLES	SUP1 118
C	NUCLIDE COUNTER	SUP1 119
	INUC = 0	SUP1 120
C	BRANCHING RATIO COUNTER	SUP1 121
	IBRA = 0	SUP1 122
C	TOLERANCE ON SUM OF BRANCHING RATIOS	SUP1 123
	BRTEST = 0.0001	SUP1 124
	ASSIGN 23 TO ISIST	SUP1 125
	ASSIGN 300 TO ISTOP	SUP1 126
	ASSIGN 1212 TO ISFULL	SUP1 127
	MAXBRA = 130	SUP1 128
	MAXMUL = 11	SUP1 129
	MAXNUC = 700	SUP1 130
	TOL = 1.E-15	SUP1 131
C		SUP1 132
C		SUP1 133
CC	INITIALIZE ARRAYS	SUP1 134
	DO 1 I = 1,MAXNUC	SUP1 135
	NUCLID(I) = 0	SUP1 136
	1 DCON(I) = 0.0	SUP1 137
	DO 2 J = 1,MAXBRA	SUP1 138
	2 BRANCH(J) = 0.0	SUP1 139
C	SET UP WORD-POSITION MULTIPLIERS	SUP1 140
	MULT(1) = 0	SUP1 141
	DO 3 K=2,MAXMUL	SUP1 142
	3 MULT(K) = MULT(1)*MULT(K-1)	SUP1 143
C		SUP1 144
C	READ AN INPUT RECORD AFTER CHECK OF AVAILABLE SPACE	SUP1 145
C		SUP1 146
	10 IF (INUC.EQ.MAXNUC) ASSIGN 1308 TO ISFULL	SUP1 147
	READ (INTP,11)	SUP1 148
	1 PHASS,PISOM,PATNO,HLIFE,IUNIT,IEXP,BRAT,DMASS,DISOM,DATNO	SUP1 149
	11 FORMAT	SUP1 150
	1 (10X3)3,8XF9.4,1X2)3,3XF7.5,7X3)3)	SUP1 151
C		SUP1 152
	IF (NPRNT(1)) WRITE (KOUT,INPUT)	SUP1 153
C	CHECK FOR END-OF-FILE SENTINEL	SUP1 154
	IF (PHASS)1301,200,12	SUP1 155
	12 GO TO ISFULL,(1212,1308)	SUP1 156
C		SUP1 157
C	RESET PARAMETERS FOR NEW RECORD	SUP1 158
C		SUP1 159
	1212 LAMBDA = 0.0	SUP1 160
	KTP = 0	SUP1 161
	ASSIGN 10 TO IBRAT	SUP1 162
	ASSIGN 10 TO JBRAT	SUP1 163
	IM = 4	SUP1 164
C	CHECK FOR EXISTENCE OF DAUGHTER	SUP1 165
	IF (DMASS)1301,22,13	SUP1 166
C		SUP1 167
C	CHECK THE HALF-LIFE	SUP1 168
	13 IF (HLIFE)1301,1301,14	SUP1 169
	14 LAMBDA = 0.693147/TIMSEC(HLIFE,IUNIT,IEXP)	SUP1 170
C	CHECK THE BRANCHING RATIO AND MARK THE EXISTENCE OF A BRANCH	SUP1 171
	IF (BRAT-1.0)15,16,1301	SUP1 172
C		SUP1 173
	15 ASSIGN 112 TO IBRAT	SUP1 174
	ASSIGN 133 TO JBRAT	SUP1 175
CC	DETERMINE THE TYPE OF TRANSITION	SUP1 176

C		SUP1 177
C	BETA EMISSION	SUP1 178
C	16 IF (DATNO.EQ.(PATNO+1).AND.DMASS.EQ.PMASS) GO TO 17	SUP1 179
C	ISOMERIC TRANSITION	SUP1 180
C	IF (DATNO.EQ.PATNO.AND.DMASS.EQ.PMASS) GO TO 18	SUP1 181
C	NEUTRON PLUS BETA EMISSION	SUP1 182
C	IF (DATNO.EQ.(PATNO+1).AND.DMASS.EQ.(PMASS-1)) GO TO 19	SUP1 183
C	POSITRON EMISSION OR ELECTRON CAPTURE	SUP1 184
C	IF (DATNO.EQ.(PATNO-1).AND.DMASS.EQ.PMASS) GO TO 20	SUP1 185
C	NEUTRON EMISSION	SUP1 186
C	IF (DATNO.EQ.PATNO.AND.DMASS.EQ.(PMASS-1)) GO TO 21	SUP1 187
C	ERROR TRACE FOR ILLEGAL TRANSITION	SUP1 188
C	GO TO 1301	SUP1 189
C		SUP1 190
C	INDICATE THE TYPE OF TRANSITION	SUP1 191
C	17 KTYP = DISOM + 1	SUP1 192
C	GO TO 22	SUP1 193
C	18 KTYP = DISOM + 3	SUP1 194
C	GO TO 22	SUP1 195
C	19 KTYP = 6	SUP1 196
C	GO TO 22	SUP1 197
C	20 KTYP = 7	SUP1 198
C	GO TO 22	SUP1 199
C		SUP1 200
C	* * * * * CODE INSERTION POINTS * * * * *	SUP1 201
C	21 GO TO 1301	SUP1 202
C	* * * * *	SUP1 203
C		SUP1 204
C	PACK THE PARENT NAME INTO THE 7 LOWEST OCTAL POSITIONS OF NAMPAR	SUP1 205
C	22 NAMPAR = PMASS*MULT[4] + PATNO*MULT[1]	SUP1 206
C	IF THIS IS THE FIRST RECORD GO DIRECTLY TO 111 AFTER CHECKING IT OFF	SUP1 207
C	GO TO IS1ST,(23,100)	SUP1 208
C	23 ASSIGN 100 TO IS1ST	SUP1 209
C	GO TO 111	SUP1 210
C		SUP1 211
C	FIND OUT WHERE THE NEW ENTRY BELONGS IN THE NUCLIDE TABLE WHILE	SUP1 212
C	KEEPING TRACK OF LOCATION IN THE BRANCHING RATIO TABLE	SUP1 213
C	100 KBR = 0	SUP1 214
C	DO 110 I = 1,INUC	SUP1 215
C	IND = I	SUP1 216
C	NUCTRY = IABS(NUCLID[I])	SUP1 217
C	INCREMENT THE INDEX OF BRANCH IF REQUIRED	SUP1 218
C	KBR = KBR + 4 - MOD(NUCTRY,MULT[1])	SUP1 219
C	IF(NAMPAR/MULT[1]-NUCTRY/MULT[6])131,121,110	SUP1 220
C	110 CONTINUE	SUP1 221
C		SUP1 222
C	THE NEW ENTRY BELONGS NEXT IN SEQUENCE. INCREMENT THE NUCLIDE	SUP1 223
C	COUNTER AND PUT NAME IN HIGH ORDER POSITIONS OF NEW WORD.	SUP1 224
C	111 INUC = INUC + 1	SUP1 225
C	NUCLID(INUC) = -((NAMPAR * PISOM)*MULT[5] + KTYP*MULT[4] + 4)	SUP1 226
C	DCON(INUC) = LAMBDA	SUP1 227
C	GO TO IBRAY,(10,112)	SUP1 228
C		SUP1 229
C	ADD NEW BRANCHING RATIO	SUP1 230
C	112 IBRA = IBRA + 1	SUP1 231
C	BRANCH(IBRA) = BRAT	SUP1 232
C	DECREMENT THE BRANCH INDICATOR	SUP1 233
C	NUCLID(INUC) = NUCLID(INUC) + 1	SUP1 234
C	GO TO 10	SUP1 235
C		SUP1 236

C	THE NEW ENTRY IS EQUAL TO OR ISOMERIC WITH AN OLD ONE. ISOMERS MUST	SUP1 237
C	BE ORDERED IN D*E*S*C*E*N*D*I*N*G SEQUENCE	SUP1 238
121	IF ((ABS(NUCLID(IND))/MULT(5)) - (NAMPAR + PISOM))/131,141,122	SUP1 239
C	IF THIS IS THE END OF THE TABLE WE MUST STOP HERE AND GO TO 111	SUP1 240
122	IF (IND.EQ.INUC) GO TO 111	SUP1 241
	IND = IND + 1	SUP1 242
	IF ((ABS(NUCLID(IND))/MULT(6)).GT.NAMPAR/MULT(1)) GO TO 131	SUP1 243
	KBR = KBR + 4 - MOD((ABS(NUCLID(IND))/MULT(1))	SUP1 244
	GO TO 121	SUP1 245
C		SUP1 246
C	THE NEW ENTRY MUST BE I*N*S*E*R*T*E*D ABOVE IND. MOVE THE	SUP1 247
C	SUCCEEDING ENTRIES DOWN TO MAKE ROOM.	SUP1 248
131	INUC = INUC + 1	SUP1 249
	JST = IND + 1	SUP1 250
	JS = JST + INUC	SUP1 251
	DO 140 J = JST, INUC	SUP1 252
	JJ = JS - J	SUP1 253
	NUCLID(JJ) = NUCLID(JJ-1)	SUP1 254
140	DCON(JJ) = DCON(JJ-1)	SUP1 255
C		SUP1 256
C	NOW INSERT THE NEW ENTRY	SUP1 257
132	NUCLID(IND) = -((NAMPAR + PISOM)*MULT(5) + KTYP*MULT(4) + 4)	SUP1 258
	DCON(IND) = LAMBDA	SUP1 259
	GO TO JBRAT.(10,133)	SUP1 260
C		SUP1 261
C	DECREMENT THE BRANCH INDICATOR	SUP1 262
133	NUCLID(IND) = NUCLID(IND) + 1	SUP1 263
	CHECK POSITION IN BRANCHING RATIO TABLE, AND GO TO 134 IF INSERTION IS	SUP1 264
C	REQUIRED.	SUP1 265
134	IF (KBR.LT.IBRA) GO TO 135	SUP1 266
C	OTHERWISE EXTEND THE TABLE.	SUP1 267
	IBRA = IBRA + 1	SUP1 268
	BRANCH(IBRA) = BRAT	SUP1 269
	GO TO 10	SUP1 270
C		SUP1 271
135	IBRA = IBRA + 1	SUP1 272
C	MAKE ROOM IN THE TABLE.	SUP1 273
	KST = KBR + 1	SUP1 274
	KS = KST + IBRA	SUP1 275
	DO 136 K = KST, IBRA	SUP1 276
	KK = KS - K	SUP1 277
136	BRANCH(KK) = BRANCH(KK-1)	SUP1 278
	BRANCH(KBR) = BRAT	SUP1 279
	GO TO 10	SUP1 280
C		SUP1 281
C	THE NEW ENTRY REPRESENTS ANOTHER BRANCH OF AN OLD ENTRY.	SUP1 282
C	SET POSITION INDICATOR.	SUP1 283
141	IM = MOD((ABS(NUCLID(IND))/MULT(1))	SUP1 284
	NDAUT = 4 - IM	SUP1 285
	CHECK FOR DUPLICATION	SUP1 286
	IF (NDAUT + KTYP)/1302,1303,142	SUP1 287
142	INDICT = MOD((ABS(NUCLID(IND))/MULT(5))	SUP1 288
	DO 150 L = 1, NDAUT	SUP1 289
	LM = 5 - L	SUP1 290
	IF (INDICT/MULT(LM).EQ.KTYP) GO TO 1303	SUP1 291
150	CONTINUE	SUP1 292
C		SUP1 293
C	CHECK AGREEMENT OF DISINTEGRATION CONSTANTS	SUP1 294
	IF (LAMBDA*NE.DCON(IND)) GO TO 1304	SUP1 295
C	ENTER THE NEW TRANSITION AND DECREMENT THE POSITION COUNTER.	SUP1 296

NUCLID(IND) = NUCLID(IND) - KTYP*MULT(IM) + 1	SUP1 297
C GO BACK TO STORE THE BRANCHING RATIO	SUP1 298
GO TO 134	SUP1 299
C	SUP1 300
C	SUP1 301
CC NOW THAT ALL THE INPUT RECORDS HAVE BEEN READ, IT IS TIME TO SET UP	SUP1 302
CC THE RELATIONS BETWEEN THE PARENT AND DAUGHTER INDICES.	SUP1 303
C	SUP1 304
C	SUP1 305
WRITE INTERMEDIATE OUTPUT IF REQUESTED	SUP1 306
200 IF(.NOT.NPRNT(2)) GO TO 2000	SUP1 307
WRITE (KOUT,1001)	SUP1 308
WRITE (KOUT,1002)	SUP1 309
WRITE (KOUT,1003) (IO,NUCLID(IO),DCON(IO),IO=1,INUC)	SUP1 310
2000 KBR = 0	SUP1 311
FIRST = .TRUE.	SUP1 312
C BEGIN THE MAIN LOOP THROUGH THE NUCLIDE TABLE.	SUP1 313
DO 250 I = 1,INUC	SUP1 314
BRSUM = 0.0	SUP1 315
ASSIGN 203 TO NGO	SUP1 316
C UNPACK THE NUCLIDE WORD	SUP1 317
C ENSURE THAT SUCCESSIVE DISINTEGRATION CONSTANTS ARE NOT EQUAL	SUP1 318
IF (FIRST) GO TO 2743	SUP1 319
FACTC = DCON(I) - DCON(I-1)	SUP1 320
IF (ABS(FACTC).GE.TOL) GO TO 274	SUP1 321
IF (FACTC) 2741,2742,2742	SUP1 322
2741 DCON(I-1) = DCON(I-1) + TOL	SUP1 323
GO TO 274	SUP1 324
2742 DCON(I) = DCON(I) + TOL	SUP1 325
GO TO 274	SUP1 326
2743 FIRST = .FALSE.	SUP1 327
274 NAME = ABS(NUCLID(I))	SUP1 328
ITRUNC = MOD(NAME,MULT(5))	SUP1 329
M1 = MOD(ITRUNC,MULT(1))	SUP1 330
NEWNAM = (NAME/MULT(5))*MULT(5) + M1	SUP1 331
NBR = 4 - M1	SUP1 332
CHECK FOR EXISTENCE OF DAUGHTERS	SUP1 333
IF(ITRUNC.EQ.M1)GO TO 250	SUP1 334
IF (NBR)1305,201,202	SUP1 335
201 NBR = 1	SUP1 336
BRSUM = 1.0	SUP1 337
ASSIGN 204 TO NGO	SUP1 338
C	SUP1 339
CONSIDER EACH BRANCH IN TURN	SUP1 340
202 DO 210 J = 1,NBR	SUP1 341
NTIMES = 0	SUP1 342
IM = 5 - J	SUP1 343
KTYP = ITRUNC/MULT(IM)	SUP1 344
ITRUNC = MOD(ITRUNC,MULT(IM))	SUP1 345
GO TO NGO,(203,204)	SUP1 346
203 KBR = KBR + 1	SUP1 347
C SUM THE BRANCHING RATIOS FOR CHECKING	SUP1 348
BRSUM = BRSUM + PRANCH(KBR)	SUP1 349
C BRANCH ON THE TRANSITION MODE TO SYNTHESIZE THE DAUGHTER NAME	SUP1 350
204 GO TO (211,211,212,212,212,213,214,215),KTYP	SUP1 351
C	SUP1 352
C BETA EMISSION	SUP1 353
211 NANDAU = (NAME/MULT(6))*MULT(1) + MULT(1) + KTYP - 1	SUP1 354
C SET DO PARAMETERS FOR SEARCH IN NEXT 7 ENTRIES	SUP1 355
KST = 1 + 1	SUP1 356

KEND = KST + 6	SUP1 357
C SET MODE FOR FURTHER SEARCHES	SUP1 358
ASSIGN 221 TO K2ND	SUP1 359
ASSIGN 219 TO K3RD	SUP1 360
GO TO 216	SUP1 361
C	SUP1 362
C ISOMERIC TRANSITION	SUP1 363
212 NAMDAU = (NAME/MULT(6))*MULT(1) + KTY - 3	SUP1 364
C SET DO PARAMETERS FOR SEARCH IN NEXT 2 ENTRIES	SUP1 365
KST = I + 1	SUP1 366
KEND = KST + 1	SUP1 367
C SET MODE FOR FURTHER SEARCHES	SUP1 368
ASSIGN 222 TO K2ND	SUP1 369
ASSIGN 221 TO K3RD	SUP1 370
GO TO 216	SUP1 371
C	SUP1 372
C NEUTRON PLUS BETA EMISSION	SUP1 373
213 NAMDAU = (NAME/MULT(6))*MULT(1) - MULT(4) + MULT(1)	SUP1 374
C SET DO PARAMETERS FOR SEARCH IN PRECEDING ENTRIES	SUP1 375
KST = 1	SUP1 376
KEND = I - 1	SUP1 377
C SET MODE FOR FURTHER SEARCHES	SUP1 378
ASSIGN 223 TO K2ND	SUP1 379
ASSIGN 219 TO K3RD	SUP1 380
GO TO 216	SUP1 381
C	SUP1 382
C POSITRON EMISSION OR ELECTRON CAPTURE	SUP1 383
214 NAMDAU = (NAME/MULT(6))*MULT(1) - MULT(1)	SUP1 384
C SET DO PARAMETERS FOR SEARCH IN PREVIOUS SEVEN ENTRIES	SUP1 385
KEND = I - 1	SUP1 386
KST = KEND - 6	SUP1 387
C SET MODE FOR FURTHER SEARCHES	SUP1 388
ASSIGN 221 TO K2ND	SUP1 389
ASSIGN 219 TO K3RD	SUP1 390
GO TO 216	SUP1 391
C	SUP1 392
C * * * * * CODE INSERTION POINTS * * * * *	SUP1 393
215 GO TO 210	SUP1 394
C * * * * *	SUP1 395
C	SUP1 396
C SEARCH FOR THE DAUGHTER IN THE NUCLIDE TABLE	SUP1 397
216 NTIMES = NTIMES + 1	SUP1 398
DO 220 K = KST, KEND	SUP1 399
IF (NAMDAU EQ (ABS(NUCLID(K))/MULT(5))) GO TO 223	SUP1 400
220 CONTINUE	SUP1 401
C	SUP1 402
C SEARCH FAILED, TRY LONGER SEARCH IF POSSIBLE	SUP1 403
GO TO (217, 218, 219), NTIMES	SUP1 404
C	SUP1 405
217 GO TO K2ND, (221, 222, 223)	SUP1 406
221 KST = 1	SUP1 407
KEND = INUC	SUP1 408
GO TO 216	SUP1 409
C	SUP1 410
222 KST = KEND + 1	SUP1 411
KEND = KST + 4	SUP1 412
GO TO 216	SUP1 413
C	SUP1 414
223 KST = KEND + 1	SUP1 415
KEND = INUC	SUP1 416

	GO TO 216	SUP1 417
C		SUP1 418
218	GO TO K3RD,(219,221)	SUP1 419
C	DAUGHTER IS MISSING	SUP1 420
219	GO TO 1306	SUP1 421
C		SUP1 422
	COMPUTE INCREMENT OR DECREMENT OF PARENT INDEX TO FIND DAUGHTER, AND	SUP1 423
C	MAKE SURE IT DOES NOT EXCEED 7	SUP1 424
225	INCR = K - I	SUP1 425
	IF (IABS(INCR).GT.7) GO TO 1306	SUP1 426
C	REVISE THE NUCLIDE NAME	SUP1 427
	NEWNAM = NEWNAM + IABS(INCR)*MULT(IM)	SUP1 428
C	MARK THE POSITION IF IT BE A DECREMENT.	SUP1 429
	IF (INCR)226,227,227	SUP1 430
226	NEWNAM = NEWNAM + IM*MULT(I)	SUP1 431
227	NUCLID(I) = ISIGN(NEWNAM,NUCLID(I))	SUP1 432
C	MARK THE DAUGHTER AS NOT THE BEGINNING OF A SUBCHAIN.	SUP1 433
	NUCLID(K) = IABS(NUCLID(K))	SUP1 434
210	CONTINUE	SUP1 435
C		SUP1 436
	CHECK WHETHER BRANCHING RATIOS ADD UP TO 1.	SUP1 437
	IF (ABS(BRSUM-1.0).GT.BRTEST) GO TO 1307	SUP1 438
C		SUP1 439
250	CONTINUE	SUP1 440
C		SUP1 441
	IF (.NOT.NPRNT(3)) GO TO 2500	SUP1 442
	WRITE (KOUT,1004)	SUP1 443
	WRITE (KOUT,1002)	SUP1 444
	WRITE (KOUT,1003) (IO,NUCLID(IO),DCON(IO),IO=1,INUC)	SUP1 445
	WRITE (KOUT,1005)	SUP1 446
	WRITE (KOUT,1006) (IO,BRANCH(IO),IO=1,IBRA)	SUP1 447
2500	GO TO ISTOP,(99,300)	SUP1 448
300	RETURN	SUP1 449
C		SUP1 450
C	* * * * * ERROR FORMATS * * * * *	SUP1 451
C		SUP2 452
1351	FORMAT (37H0FAULTY INPUT RECORD HAS BEEN OMITTED//)	SUP1 453
1352	FORMAT (22H0KTY + NDAUT NEGATIVE//)	SUP1 454
1353	FORMAT (40H0DUPLICATE INPUT RECORD HAS BEEN OMITTED//)	SUP1 455
1354	FORMAT (7H0DCON, 1PE10.3,13H FOR NUCLID, 012,27H INCONSISTENT WITSUP1 456	
	1H LAMBDA, 1PE10.3//)	SUP1 457
1355	FORMAT (21H0TOO MANY DAUGHTERS, 012)	SUP1 458
1356	FORMAT (11H0DAUGHTER, G7,20H NOT FOUND OR INCR EXCEEDS 7)	SUP1 459
1357	FORMAT (23H0BRANCHING RATIOS FOR, 012,20H, DO NOT ADD UP TO 1)	SUP1 460
1358	FORMAT (40H0DIMENSIONS OF NUCLID HAVE BEEN EXCEEDED)	SUP1 461
C		SUP1 462
C	* * * * * ERROR TRACES * * * * *	SUP1 463
C		SUP1 464
1301	WRITE (KOUT,1351)	SUP1 465
1310	WRITE (KOUT,INPUT)	SUP1 466
	GO TO 10	SUP1 467
C		SUP1 468
1302	WRITE (KOUT,1352)	SUP1 469
	ASSIGN 99 TO ISTOP	SUP1 470
	GO TO 1310	SUP1 471
C		SUP1 472
1303	WRITE (KOUT,1353)	SUP1 473
	GO TO 1310	SUP1 474
C		SUP1 475
1304	WRITE (KOUT,1354) DCON(IND),NUCLID(IND),LAMBDA	SUP1 476

ASSIGN 99 TO ISTOP	SUP1 477
GO TO 1310	SUP1 478
C 1305 WRITE (KOUT,1355) NUCLID(I)	SUP1 479
ASSIGN 99 TO ISTOP	SUP1 480
GO TO 250	SUP1 481
C 1306 WRITE (KOUT,1356) NAMDAU	SUP1 482
ASSIGN 99 TO ISTOP	SUP1 483
GO TO 210	SUP1 484
C 1307 WRITE (KOUT,1357) NUCLID(I)	SUP1 485
ASSIGN 99 TO ISTOP	SUP1 486
GO TO 250	SUP1 487
C 1308 WRITE (KOUT,1358)	SUP1 488
ASSIGN 99 TO ISTOP	SUP1 489
GO TO 1212	SUP1 490
C 99 CALL DUMP	SUP1 491
STOP	SUP1 492
C END	SUP1 493
SIBFTC YLD1 LIST,DECK,M94/2	SUP1 494
SUBROUTINE YIELD	SUP1 495
1 (INTP,FISSID)	SUP1 496
C VERSION 1	SUP1 497
C R C TOMPKINS -- US ARMY NUCLEAR DEFENSE LABS	SUP1 498
C 14 SEPTEMBER 1966	SUP1 499
C CALLED BY PAM1	YLD1 0
C * * * * *	YLD1 1
C * * * * * GLOSSARY * * * * *	YLD1 2
C * * * * *	YLD1 3
C ABEGN(700) INITIAL FISSION PRODUCT ABUNDANCES IN ATOMS/10000	YLD1 4
C FISSIONS (PARALLEL TO NPARNT)	YLD1 5
C FISSID TYPE OF FISSION REQUESTED BY USER	YLD1 6
C FISTYP(6) TYPES OF FISSION CORRESPONDING TO DATA FIELDS ON	YLD1 7
C FISSION YIELD CARDS	YLD1 8
C FYLDIN FISSION YIELD ON INPUT CARD (YIELD)	YLD1 9
C NSTAT ISOMER NUMBER ON	YLD1 10
C FISSION YIELD CARD (YIELD), CP. LISOM	YLD1 11
C ERM CARD (XPRM) -	YLD1 12
C GROUND STATE 0 OR 2	YLD1 13
C EXCITED STATE 1	YLD1 14
C * * * * *	YLD1 15
C * * * * *	YLD1 16
C COMMON/FISHIN/	YLD1 17
1 ABEGN (700) ,ABUNDO(700) ,BRANCH(130) ,CAPFIS	YLD1 18
2 ,DCON (700) ,IBRA ,INUC ,MAXNUC	YLD1 19
3 ,MULT (11) ,NUCLID(700)	YLD1 20
C COMMON/UTILITY/	YLD1 21
1 KOUT ,NPRNT (15)	YLD1 22
C DIMENSION FMT(4),XSPEC(6),FISTYP(6)	YLD1 23
C DIMENSION INFORM(11),LIM(11),MEM(700),NUC(11)	YLD1 24
C EQUIVALENCE (MEM,ABUNDO)	YLD1 25
C INTEGER A,B,BLANK,FISSID,FISTYP	YLD1 26
	YLD1 27
	YLD1 28
	YLD1 29
	YLD1 30
	YLD1 31
	YLD1 32
	YLD1 33
	YLD1 34
	YLD1 35
	YLD1 36

LOGICAL NPRNT	YLD1 37
C DATA FMT(1),FMT(2),FMT(4)/6H(15,14,6H,A1, ,6HE10.0)/,	YLD1 38
1 [XSPEC(1),1=1,6]/6H ,6H10X ,6H20X ,6H30X ,	YLD1 39
2 6H40X ,6H50X /	YLD1 40
DATA BLANK.A.0/1W .1HA.1HB/	YLD1 41
C DO 50 JJ=1,INUC	YLD1 42
50 ABEGN(JJ) = -1.0	YLD1 43
ASSIGN 213 TO IFLAG	YLD1 44
C FIND THE RIGHT DATA	YLD1 45
202 READ (INTP,101) (FISTYP(1),1=1,6)	YLD1 46
C GO AHEAD IF WE FOUND IT, ELSE STOP	YLD1 47
IF (FISTYP(1).EQ.BLANK) GO TO IFLAG,(213,16)	YLD1 48
DO 203 K=1,6	YLD1 49
IF (FISTYP(K).EQ.FISSID) GO TO 204	YLD1 50
203 CONTINUE	YLD1 51
C 2031 READ (INTP,103) NHAS	YLD1 52
IF (NHAS)202,202,2031	YLD1 53
204 FMT(3) = XSPEC(K)	YLD1 54
1 READ (INTP,FMT) NHAS,NAT,NSTAT,FYLDIN	YLD1 55
C MAKE A NOTE THAT WE FOUND IT	YLD1 56
ASSIGN 16 TO IFLAG	YLD1 57
IF(NHAS)17,202,2	YLD1 58
213 WRITE (KOUT,1304) FISSID	YLD1 59
STOP	YLD1 60
COMPATIBILIZE THE ISOMERIC STATE INDICATORS	YLD1 61
2 IF (NSTAT.EQ.BLANK) NSTAT=0	YLD1 62
IF (NSTAT.EQ.A) NSTAT=1	YLD1 63
IF (NSTAT.EQ.B) NSTAT=2	YLD1 64
IF (NSTAT.GT.3) WRITE (KOUT,1305) NHAS,NAT,NSTAT,FYLDIN	YLD1 65
NAMC = NHAS*MULT(4) + NAT*MULT(1) + NSTAT	YLD1 66
C DO 10 I=1,INUC	YLD1 67
10 IF (ABS(NUCLID(I))/MULT(5).EQ.NAMC) GO TO 12	YLD1 68
GO TO 1	YLD1 69
CHECK CONTENTS OF AREGN	YLD1 70
12 IF (AREGN(I))14,13,13	YLD1 71
COMPILE FYLDIN INTO ARRAY	YLD1 72
14 ABEGN(I) = FYLDIN	YLD1 73
GO TO 1	YLD1 74
C 13 WRITE (KOUT,1301)	YLD1 75
1 NUCLID(I),ABEGN(I)	YLD1 76
IF(ABEGN(I)-FYLDIN)14,1,14	YLD1 77
17 WRITE (KOUT,1302)	YLD1 78
RACKSPACE INTP	YLD1 79
READ (INTP,1303)	YLD1 80
WRITE (INTP,1303)	YLD1 81
GO TO 1	YLD1 82
CHECK FOR COMPLETENESS	YLD1 83
16 DO 18 J=1,INUC	YLD1 84
IF(ABEGN(J))15,18,18	YLD1 85
15 CONTINUE	YLD1 86
ABEGN(J) = 0.0	YLD1 87
18 CONTINUE	YLD1 88
IF (.NOT.NPRNT(4)) GO TO 29	YLD1 89
WRITE (KOUT,1001) FISSID	YLD1 90
DO 1000 IO = 1,INUC	YLD1 91
	YLD1 92
	YLD1 93
	YLD1 94
	YLD1 95
	YLD1 96

NAME = IABS(NUCLID(101))/MULT(5)	YLD1 97
CALL UNPACK (NMA5,NAT,NSTAT,NAME)	YLD1 98
1000 WRITE (KOUT,1002) NMA5,NAT,NSTAT,ABEGN(101	YLD1 99
CODING TO PREVENT DUPLICATION OF FISSION YIELDS FOR NUCLIDES THAT ARE	YLD1 100
C MEMBERS OF MORE THAN ONE SUBCHAIN	YLD1 101
99 DO 100 XM = 1,INUC	YLD1 102
100 MEM(KM) = 0	YLD1 103
DO 500 IN = 1,INUC	YLD1 104
C FIND THE NEXT NUCLIDE THAT BEGINS A SUBCHAIN	YLD1 105
IF (NUCLID(IN))411,411,500	YLD1 106
C	YLD1 107
C SET PARAMETERS FOR BEGINNING OF A SUBCHAIN	YLD1 108
C MEMBERSHIP COUNTER	YLD1 109
411 LSUB = 1	YLD1 110
JL = 0	YLD1 111
C STARTING INDEX	YLD1 112
NUC(1) = IN	YLD1 113
412 LIM(LSUB) = 4	YLD1 114
C PROCESS A SUBCHAIN MEMBER	YLD1 115
413 KP = NUC(LSUB)	YLD1 116
IM = LIM(LSUB)	YLD1 117
INFO = MOD(IABS(NUCLID(KP)),MULT(5))	YLD1 118
INFORM(LSUB) = INFO	YLD1 119
INC = 1	YLD1 120
CHECK FOR END OF SUBCHAIN	YLD1 121
IF (INFO.EQ.4) GO TO 421	YLD1 122
C EXTRACT THE DAUGHTER INCREMENT	YLD1 123
ID = MOD(INFO,MULT(IM+1))/MULT(IM)	YLD1 124
C SEE IF THIS INCREMENT SHOULD BE NEGATIVE	YLD1 125
IF (MOD(INFO,MULT(2))/MULT(1).EQ.IM) GO TO 414	YLD1 126
IF (LSUB.EQ.JL) GO TO 415	YLD1 127
C RECORD THE MEMBERSHIP OF NUCLID(KP) IN THIS SUBCHAIN	YLD1 128
MEM(KP) = MEM(KP) + 1	YLD1 129
GO TO 415	YLD1 130
414 INC = -INC	YLD1 131
COMPUTE DAUGHTER INDEX	YLD1 132
415 NDAUT = KP + INC*ID	YLD1 133
C ACCEPT THE DAUGHTER FOR MEMBERSHIP AND RECYCLE	YLD1 134
LSUB = LSUB + 1	YLD1 135
IF (LSUB.GT.11) GO TO 500	YLD1 136
NUC(LSUB) = NDAUT	YLD1 137
GO TO 412	YLD1 138
C	YLD1 139
421 IF (LSUB.EQ.1) GO TO 500	YLD1 140
C FIND THE LAST BRANCH IN THE SUBCHAIN	YLD1 141
LAST = LSUB + 1	YLD1 142
DO 422 L = 2,LSUB	YLD1 143
LBACK = LAST - L	YLD1 144
JL = LBACK	YLD1 145
IM = LIM(LBACK)	YLD1 146
IF (MOD(INFORM(LBACK),MULT(IM))/MULT(IM-1))422,422,431	YLD1 147
422 CONTINUE	YLD1 148
GO TO 500	YLD1 149
C	YLD1 150
C SET UP A NEW SUBCHAIN STARTING FROM THE DEEPEST UNEXPLORED BRANCH	YLD1 151
431 LSUB = LBACK	YLD1 152
LIM(LSUB) = LIM(LSUB) + 1	YLD1 153
GO TO 413	YLD1 154
500 CONTINUE	YLD1 155
C	YLD1 156

10 600 KA =1, INUC	YLD1 157
DIV = MEM(KA)	YLD1 158
IF (DIV) 613,600,601	YLD1 159
601 ABEGNIKA) = ABEGNIKA)/DIV	YLD1 160
GO TO 600	YLD1 161
613 WRITE (6,6130) KA	YLD1 162
6130 FORMAT (15H0MINUS MEM FOR 13)	YLD1 163
600 CONTINUE	YLD1 164
RETURN	YLD1 165
C	YLD1 166
101 FORMAT(6A6)	YLD1 167
103 FORMAT(I5)	YLD1 168
1001 FORMAT (20H1FISSION YIELDS FOR A6//5X4HMA\$5X6HCHARGE5X6HISOMER5X2YLD1	YLD1 169
15HYIELD PER 10,000 FISSIONS/)	YLD1 170
1002 FORMAT (5X13.7X13.9X11.14X1PE12.4)	YLD1 171
1301 FORMAT (9H0NUCLIDE 012,11H WITH YIELD1PE12.4,14H IS DUPLICATED)	YLD1 172
1302 FORMAT (24HUCARD WITH NEGATIVE MASS)	YLD1 173
1303 FORMAT(80H	YLD1 174
1	YLD1 175
1304 FORMAT (32H0NO FISSION YIELD AVAILABLE FOR A6)	YLD1 176
1305 FORMAT (8H0BAD CARD/5X2I3,A3,5X1PE12.4)	YLD1 177
END	YLD1 178
SIBFTC XPRM LIST,DECK,M94/2	XPRM 0
SUBROUTINE XPRM	XPRM 1
1 (INTP)	XPRM 2
C	XPRM 3
C R C TOMPKINS - US ARMY NUCLEAR DEFENSE LABS	XPRM 4
C NOVEMBER 1966	XPRM 5
C CALLED BY PAM1	XPRM 6
C	XPRM 7
C * * * * * GLOSSARY * * * * *	XPRM 8
C	XPRM 9
C ERM(181) EXPOSURE RATE MULTIPLIERS FOR GAMMA-EMITTING FISSION	XPRM 10
C PRODUCTS (CF. XPRM AND GXPSR)	XPRM 11
C JRM(181) CROSS REFERENCE TO INDICES OF NPARNT (XPRM AND GXPSR)	XPRM 12
C PARALLEL TO ERM	XPRM 13
C KRM NUMBER OF FISSION PRODUCTS CONTRIBUTING TO GAMMA DOSE	XPRM 14
C (XPRM AND GXPSR)	XPRM 15
C NSTAT ISOMER NUMBER ON	XPRM 16
C FISSION YIELD CARD (YIELD), CP. LISON	XPRM 17
C ERM CARD (XPRM) -	XPRM 18
C GROUND STATE 0 OR 2	XPRM 19
C EXCITED STATE 1	XPRM 20
C XRM EXPOSURE RATE MULTIPLIER ON ERM CARD (XPRM)	XPRM 21
C	XPRM 22
C * * * * *	XPRM 23
C	XPRM 24
C COMMON/FRYING/	XPRM 25
1 BSUBK (90) ,ERM (185) ,JRM (185) ,KRM ,ECF(90)	XPRM 26
C COMMON/FISHIN/	XPRM 27
1 ABEGN (700) ,ABUNDO(780) ,BRANCH(130) ,CAPFIS	XPRM 28
2 ,DCON (700) ,IBRA ,INUC ,MAXNUC	XPRM 29
3 ,MULT (11) ,NUCLID(700)	XPRM 30
C COMMON/UTILITY/	XPRM 31
1 KOUT ,NPRNT (15)	XPRM 32
C DIMENSION NAME(181)	XPRM 33
C LOGICAL JD,IGO,KDOS,NPRNT	XPRM 34
C	XPRM 35
1001 FORMAT (2X2I3,I2,E8.3)	XPRM 36
1002 FORMAT	XPRM 37

1	[15H10UTPUT OF XPRM//5X5HINDBX5X2H1A5X2H1Z5X2H1S5X3HJRM9X3HERMXPRM	38
2	//1	XPRM 39
702	FORMAT	XPRM 40
1	16X13,5X13,5X12,6X11,5X13,5X1PE10.3)	XPRM 41
1311	FORMAT (22H0NEBATIVE MASS IN XPRM)	XPRM 42
1312	FORMAT (19H0T00 HANY ERM CARDS)	XPRM 43
1313	FORMAT (55H0THE FOLLOWING ERM CARDS HAVE NO COUNTERPARTS IN NUCLID	XPRM 44
1)		XPRM 45
1323	FORMAT (5X07,5XE6.3)	XPRM 46
C		XPRM 47
C	INITIALIZE VARIABLES	XPRM 48
	LT = 1	XPRM 49
	MAXERM = 181	XPRM 50
	DO 1 I = 1,MAXERM	XPRM 51
	ERM(I) = 0.0	XPRM 52
	NAME(I) = 0.0	XPRM 53
1	JRM(I) = 0	XPRM 54
	LAST = 0	XPRM 55
	KRM = 0	XPRM 56
C		XPRM 57
C		XPRM 58
C		XPRM 59
C	READ A CARD	XPRM 60
	2 READ (INTP,1001)	XPRM 61
1	NMAS,NAT,NSTAT,XRM	XPRM 62
CHECK	FOR END-OF-FILE SENTINEL	XPRM 63
	IF (NMAS,1301,6,3	XPRM 64
3	IF(KRM.EQ.MAXERM) GO TO 1302	XPRM 65
	KRM = KRM + 1	XPRM 66
COMPAT	ILIZE THE ISOMERIC STATE INDICATORS	XPRM 67
	MS = NSTAT + 1	XPRM 68
	GO TO (5,5,4),MS	XPRM 69
C		XPRM 70
	4 NSTAT = 0	XPRM 71
C	PACK THE NUCLIDE NAME	XPRM 72
5	NAME(KRM) = NMAS*MULT(4) + NAT*MULT(1) + NSTAT	XPRM 73
	ERM(KRM) = XRM	XPRM 74
C		XPRM 75
	GO TO 2	XPRM 76
C	MATCH THE NAMES	XPRM 77
6	DO 100 K = 1,INUC	XPRM 78
	NUCNAM = IABS(NUCLID(K))/MULT(5)	XPRM 79
	DO 10 L = LT,KRM	XPRM 80
	NAML = NAME(L)	XPRM 81
7	IF (NAML.EQ.NUCNAM) GO TO 11	XPRM 82
10	CONTINUE	XPRM 83
	GO TO 100	XPRM 84
C		XPRM 85
11	NUMAS = NAML/MULT(4)	XPRM 86
CHECK	FOR BEGINNING OF MASS CHAIN	XPRM 87
	IF (NUMAS + LAST,12,13,12	XPRM 88
12	TEMP = -ERM(L)	XPRM 89
	GO TO 14	XPRM 90
13	TEMP = ERM(L)	XPRM 91
	IF (LT.EQ.KRM) GO TO 101	XPRM 92
14	LAST = NUMAS	XPRM 93
C	ORDER THE ARRAYS	XPRM 94
	MB = L	XPRM 95
	MT = LT + 1	XPRM 96
	LL = MB + MT	XPRM 97

C	DO 20 M = MT,HB	XPRM 98
	MM = LL - M	XPRM 99
	ERM(MM) = ERM(MM-1)	XPRM 100
	20 NAME(MM) = NAME(MM-1)	XPRM 101
C		XPRM 102
	ERM(LT) = TEMP	XPRM 103
	NAME(LT) = 0	XPRM 104
	JRM(LT) = K	XPRM 105
	LT = MT	XPRM 106
C		XPRM 107
	100 CONTINUE	XPRM 108
C	ERROR TRACE ON NORMAL EXIT	XPRM 109
	GO TO 1303	XPRM 110
C	PROCESS THE LAST ENTRY	XPRM 111
	101 JRM(KRM) = K	XPRM 112
	ERM(KRM) = TEMP	XPRM 113
	NAME(KRM) = 0	XPRM 114
C	OUTPUT RESULTS ON REQUEST	XPRM 115
	IF (.NOT.NPRNT(5)) RETURN	XPRM 116
	WRITE (KOUT,1002)	XPRM 117
	DO 700 I=1,KRM	XPRM 118
	JR = JRM(I)	XPRM 119
	NANO = IABS(NUCLID(JR))/MULT(5)	XPRM 120
	CALL UNPACK(IA,IZ,IS,NANO)	XPRM 121
	700 WRITE (KOUT,702)	XPRM 122
	1 I,IA,IZ,IS,JRM(I),ERM(I)	XPRM 123
	RETURN	XPRM 124
C	*** ERROR TRACES ***	XPRM 125
	1301 WRITE (KOUT,1311)	XPRM 126
	WRITE (KOUT,1001) NHAS,NAT,NSTAT,XRM	XPRM 127
	GO TO 2	XPRM 128
	1302 WRITE (KOUT,1312)	XPRM 129
	STOP 1302	XPRM 130
	1303 WRITE (KOUT,1313)	XPRM 131
	WRITE (KOUT,1323) (NAME(L),ERM(L),L=LT,KRM)	XPRM 132
	KRM = LT - 1	XPRM 133
	GO TO 101	XPRM 134
	END	XPRM 135
		XPRM 136
SIBFTC	INDX LIST,DECK,M94/2	INDX 0
	SUBROUTINE INDCD1	INDX 1
	1 IEMITN , MOB , KRD , TW I	INDX 2
	CALLED BY PAM1	INDX 3
C	INDCD IS MODIFIED VERSION OF JONES-HOFFMAN INDUCED	INDX 4
C	COMPUTER PROGRAM, USNRDL DR-	INDX 5
C		INDX 6
C	NOVEMBER 1966	INDX 7
C		INDX 8
C	***** GLOSSARY *****	INDX 9
C		INDX 10
C	ALB NEUTRON ALBEDO OF SOIL	INDX 11
C	FAC(7,18) NUMBER OF ATOMS OF ISOTOPE I OF ELEMENT J ACTIVATED	INDX 12
C		INDX 13
C	FAI(7,18) PER NEUTRON (CF. INDCD1 AND INDCD2)	INDX 14
C	FAT(18) ATOMS OF ISOTOPE I OF J PER ATOM OF J	INDX 15
C	FM(18) ATOMS OF ELEMENT I PER ATOM OF SOIL	INDX 16
C		INDX 17
C	FOG(5,7,18) MASS FRACTION OF ELEMENTS IN SOIL	INDX 18
C		INDX 19
C	FOM(5,7,18) (CF. CASSIDY/JONES FW)	INDX 20
C		
C	FOG(5,7,18) PHOTONS PER DISINTEGRATION OF ENERGY I OF ISOTOPE J OF	
C		
C	FOH ELEMENT K (INDCD1 AND INDCD2)	
C		
C	FOH FRACTIONS OF NEUTRONS SEEN BY APPARENT CRATER	

C	HL(7,18)	HALF LIFE OF CAPTURE PRODUCT OF ISOTOPE I OF ELEMENT J	INDX	21
C	HOB	HEIGHT OF BURST IN FEET	INDX	22
C	HSCL	SCALED HEIGHT OF BURST (W**1/3 IN INDCD2)	INDX	23
C	ISO(18)	NUMBER OF ISOTOPE OF EACH ELEMENT OCCURRING IN NATURE	INDX	24
C	KEV(7,18)	NUMBER OF PHOTON ENERGIES EMITTED BY CAPTURE PRODUCT	INDX	25
C		OF I OF J	INDX	26
C	LH(7,18)	UNITS OF HL, CR, I UNIT	INDX	27
C	NA(7,18)	MASS NUMBER OF ISOTOPE I OF ELEMENT J	INDX	28
C	NZ(18)	ATOMIC NUMBERS OF SOIL ELEMENTS	INDX	29
C	RNY(5,7,18)	EXPOSURE RATE MULTIPLIERS FOR PHOTON ENERGIES PARALLEL	INDX	30
C		TO FOG	INDX	31
C	SIGI(7,18)	THERMAL NEUTRON ABSORPTION CROSS SECTION OF ISOTOPE I	INDX	32
C		OF ELEMENT J (BARN)	INDX	33
C	SIGISC(7,18)	THERMAL NEUTRON SCATTERING CROSS SECTION OF ISOTOPE I	INDX	34
C		OF ELEMENT J (BARN)	INDX	35
C	SIGS	THERMAL NEUTRON ABSORPTION CROSS SECTION OF SOIL	INDX	36
C		(BARN)	INDX	37
C	SIGSSC	THERMAL NEUTRON SCATTERING CROSS SECTION OF SOIL	INDX	38
C		(BARN)	INDX	39
C	XLAM(7,18)	DISINTEGRATION CONSTANT OF CAPTURE PRODUCT OF ISOTOPE	INDX	40
C		I OF ELEMENT J	INDX	41
C			INDX	42
C	* * * * *		INDX	43
C			INDX	44
C	COMMON/INDUCE/		INDX	45
	1 ALBFOM	,FAC (7,18),FOGRNY(7,18),ISO (18)	INDX	46
	2 ,LMAX	,XLAM (7,18)	INDX	47
C			INDX	48
C	COMMON/UTILITY/		INDX	49
	1 KOUT	,NPRNT (15)	INDX	50
C			INDX	51
C	DIMENSION		INDX	52
	1 A (7, 18),	FAI (7, 18), FAT(18), FM(18), FOG(5,7,18),	INDX	53
	2HL(7,18), NZ(18),	LH (7, 18), NA (7, 18), RNY(5,7,18).	INDX	54
	3KEV(7,18),		INDX	55
	4 SA (18), SFAI (18), SFAISC (18), SIGI (7, 18), SIGISC (7, 18)		INDX	56
C			INDX	57
C	LOGICAL NPRNT		INDX	58
	10 FORMAT(I2,8X,F10.0)		INDX	59
	14 FORMAT (I2,I5,E13.3)		INDX	60
	016 FORMAT (		INDX	61
	1 I3, I2, F9.5, F15.5, E10.3, I3, F15.5)		INDX	62
	18 FORMAT (F10.0,E10.0)		INDX	63
	601 FORMAT		INDX	64
	1 [17H1OUTPUT OF INDCD1/22HNUMBER OF ELEMENTS = I2/42HNUMBER OF		INDX	65
	2F NEUTRONS EMITTED PER FISSION = F5.2/		INDX	66
	4 / 9H0 INDEX5X3HISO18X3HFAC12X4HXLAM9X3HKEV9X3HFOG12X3HRNY/)		INDX	67
	602 FORMAT		INDX	68
	1 [/76X12,8X11,6X1PE12.3,5XE10,3,6X11,6X0PF10.5,5X1PE10.3)		INDX	69
	603 FORMAT		INDX	70
	1 (63X0PF10.5,5X1PE10.3)		INDX	71
	604 FORMAT		INDX	72
	1 (1H022X1PE12.3,5XE10,3,6X11,6X0PF10.5,5X1PE10.3)		INDX	73
C		ELEMENTS OF CASING ARE	INDX	74
C		IGNORED IN THIS COMPUTATIONS	INDX	75
C			INDX	76
	HOBLMT = 36.0		INDX	77
	DOBLMT = -2.0		INDX	78
	100 READ	(KRD, 10)	INDX	79
			INDX	80

1 LMAX	INDX 81
IF(LMAX)700,700,102	INDX 82
102 READ (KRD, 14)	INDX 83
1 INZ(I), ISO(I), FM(I), L=1, LMAX	INDX 84
DO 103 L = 1, LMAX	INDX 85
IS = ISO(I)	INDX 86
103 READ (KRD, 14)	INDX 87
1 (NA(I,L), KEV(I,L), FAI(I,L), SIGI(I,L), HL(I,L), LH(I,L),	INDX 88
2 SIGISC(I,L), I = 1, IS)	INDX 89
DO 104 L = 1, LMAX	INDX 90
IS = ISO(I)	INDX 91
DO 104 I = 1, IS	INDX 92
KE = KEV(I,L)	INDX 93
104 READ (KRD, 18)	INDX 94
1 IFQ(N,I,L), RNY(N,I,L), N=1, ME)	INDX 95
IF(HITN)700,700,105	INDX 96
105 SIGS= 0.	INDX 97
SIGSSC= 0.0	INDX 98
SFWMAX=0.	INDX 99
DO 120 L=1, LMAX	INDX 100
SA(L)=0.	INDX 101
IS=ISO(I)	INDX 102
DO 110 I=1, IS	INDX 103
A(I,L)=NA(I,L)	INDX 104
110 SA(I)= SA(I)+A(I,L)*FAI(I,L)	INDX 105
120 SFWMAX=SFWMAX+FM(I)/SA(I)	INDX 106
DO 130 L=1, LMAX	INDX 107
FAT(L) = FM(L)/(SA(L)+SFWMAX)	INDX 108
SFAI(L)=0.	INDX 109
SFAISC(L)=0.0	INDX 110
IS=ISO(I)	INDX 111
DO 140 I=1, IS	INDX 112
SFAISC(I) = SFAISC(I)+FAI(I,L)*SIGISC(I,L)	INDX 113
140 SFAI(L) = SFAI(L)+FAI(I,L)*SIGI(I,L)	INDX 114
SIGSSC=SIGSSC+FAT(I)*SFAISC(I)	INDX 115
150 SIGS=SIGS+FAT(I)*SFAI(I)	INDX 116
152 DO 200 L=1, LMAX	INDX 117
IS=ISO(I)	INDX 118
DO 200 I=1, IS	INDX 119
FOGRNY(I,L) = 0.	INDX 120
KE = KEV(I,L)	INDX 121
DO 210 N = 1, KE	INDX 122
210 FOGRNY(I,L) = FOGRNY(I,L) + FQ(N,I,L)*RNY(N,I,L)	INDX 123
FAC(I,L)=FAT(I)*FAI(I,L)*SIGI(I,L)/SIGS	INDX 124
HL(I,L)=TIMSEC(HL(I,L),LH(I,L),0)	INDX 125
200 XLAM(I,L)=.693/HL(I,L)	INDX 126
C REDUCTION OF SOIL EXP. RATE IS NOW MADE AC	INDX 127
C THE SOLID ANGLE FRACTION OF THE FIREBALL TOUCHING THE GROUND AT	INDX 128
C THE TIME OF HYDRODYNAMIC SEPARATION, AND THE FRACTION OF	INDX 129
C NEUTRONS THAT REMAIN IN THE SOIL AFTER ALBEDO.	INDX 130
HSCL=HOB/TW*.03333333	INDX 131
272 IF (HSCL.LT.HOBLMT) GO TO 274	INDX 132
273 FOM=0.0	INDX 133
ALB=0.0	INDX 134
GO TO 287	INDX 135
274 IF(HSCL)276,277,275	INDX 136
275 FOM=1.-HSCL/SQRT(4.24*HSCL*HSCL-234.*HSCL+4225.)	INDX 137
GO TO 286	INDX 138
276 IF (HSCL.LT.DOBLMT) GO TO 278	INDX 139
277 FOM=1.0	INDX 140

GO TO 286	INDX 141			
278 ALB=170	INDX 142			
FOM=170	INDX 143			
GO TO 287	INDX 144			
286 ALB=17155+SQRT(SIGS/(SIGSSC+SIGS))	INDX 145			
287 ALBFOM = EMITN*FOM*ALB*1.E4	INDX 146			
IF (.NOT.NPRNT:8)) RETURN	INDX 147			
6 WRITE (KOUT,601)	INDX 148			
1 LMAX,EMITN	INDX 149			
C	INDX 150			
DO 605 I=1,LMAX	INDX 151			
IS = ISO(I)	INDX 152			
WRITE (KOUT,602)	INDX 153			
1 I=IS,FAC(1,I),XLAM(1,I),KEV(1,I),FOG(1,1,I),RNY(1,1,I)	INDX 154			
KE=KEV(1,I)	INDX 155			
IF(KE>GT.1)	INDX 156			
1WRITE (KOUT,603)	INDX 157			
1 (FOG(K,1,I),RNY(K,1,I),K=2,KE)	INDX 158			
IF(IISTEQ.1) GO TO 605	INDX 159			
C	INDX 160			
DO 600 J=2,IS	INDX 161			
KE = KEV(J,I)	INDX 162			
WRITE (KOUT,604)	INDX 163			
1 FAC(J,I),XLAM(J,I),KE,FOG(1,J,I),RNY(1,J,I)	INDX 164			
IF(KE>GT.1)	INDX 165			
1WRITE (KOUT,603)	INDX 166			
1 (FOG(K,J,I),RNY(K,J,I),K=2,KE)	INDX 167			
600 CONTINUE	INDX 168			
605 CONTINUE	INDX 169			
700 RETURN	INDX 170			
END	INDX 171			
SIBFTC FRTAB LIST,DECK,004/2	FRTA 0			
SUBROUTINE FRTAB	FRTA 1			
1 (SLDTMP,TMSD,MCHN)	FRTA 2			
C	FRTA 3			
R C TOMPKINS -- US ARMY NUCLEAR DEFENSE LABS	FRTA 4			
C	FRTA 5			
SEPTEMBER 1966	FRTA 6			
C	FRTA 7			
COMMON /SET3/	FRTA 8			
1 BZ	,BZ2	,BZZ	,BZZ2	FRTA 9
2 ,DELTAX	,DGX	,DGY	,DIFCON	FRTA 10
3 ,DIFADJ	,FMAS(500)	,FMAS(200)	,IC(18)	FRTA 11
4 ,ICON	,ICTR	,IH	,IOT(18)	FRTA 12
5 ,IP	,IPOUT	,ITT(18)	,IV	FRTA 13
6 ,JC(18)	,JIN	,JOUT	,JPOUT	FRTA 14
7 ,KTR(500)	,KTAPE	,LAST	,MAPRUN	FRTA 15
8 ,MARRAY	,MIN	,MXREQ		FRTA 16
9 ,N	,NA	,NBZX	,NBZX2	FRTA 17
1 ,NBZY	,NCL	,NE	,NF	FRTA 18
2 ,NIJ	,NMAP	,NMAX	,NOX	FRTA 19
3 ,NP(21)	,NREQ	,NS	,NTAPES	FRTA 20
4 ,NTAPET	,NTASK	,NXMAP	,NYMAP	FRTA 21
5 ,YNIN	,PS(500)	,PSIZE(200)	,PACT(200)	FRTA 22
6 ,ROPART		,T(500)	,T1	FRTA 23
7 ,T2	,TLIMIT	,X(500)	,XF	FRTA 24
8 ,X0	,XMAX	,XMIN	,XNMAP	FRTA 25
9 ,X1	,X2	,X3	,X4	FRTA 26
1 ,Y(500)	,YF	,YO	,YMAX	FRTA 27
COMMON/OUTPUT/				FRTA 28
1 FTSNUM	,FP	(200)	,FW	,ITAB
				,JGO

2	,MASCHN	,SIGMAS	FRTA	29
	COMMON/FISHIN/		FRTA	30
1	ABEGN (700)	,ABUNDO(700) ,BRANCH(130) ,CAPF(3	FRTA	31
2	,DCON (700)	,IBRA ,INUC ,MAXNUC	FRTA	32
3	,MULT (11)	,NUCLID(700)	FRTA	33
C			FRTA	34
	COMMON/UTILTY/		FRTA	35
1	KOUT	,NPRNT (15)	FRTA	36
C			FRTA	37
	COMMON/FRYLNG/		FRTA	38
1	BSUBK (90)	,ERM (185) ,JRM (185) ,KRM ,ECF(90)	FRTA	39
C			FRTA	40
	COMMON/DECAY/		FRTA	41
1	IGO	,JD ,KDOS ,TENTER	FRTA	42
2	,TEXT	,TIME	FRTA	43
C			FRTA	44
	DIMENSION FR(90)		FRTA	45
C			FRTA	46
	DIMENSION BOIL(40)		FRTA	47
C			FRTA	48
	EQUIVALENCE (FR,BSUBK)		FRTA	49
C			FRTA	50
	LOGICAL NPRNT,IGO,JD,NOTO,KDOS		FRTA	51
C			FRTA	52
	DATA BOIL/2*3173.0,2907.0,3000.0,2976.0,1764.0,1010.0,1026.0,331.8	FRTA	53	
	1.120.1,1656.0,3497.0,4695.0,4808.0,3300.0,1351.0,583.0,4505.0,4149	FRTA	54	
	2.0,3436.0,2451.0,1832.0,2123.0,2247.0,1832.0,1534.0,457.4,165.9,15	FRTA	55	
	355.0,3003.0,4608.0,4367.0,4252.0,4464.0,4348.0,5*4300.0/	FRTA	56	
C			FRTA	57
	TIME = TMSD		FRTA	58
C			FRTA	59
	IGO = .FALSE.		FRTA	60
	JD = .TRUE.		FRTA	61
	KDOS = .FALSE.		FRTA	62
	MACHN = 90		FRTA	63
	DO 30 I = 1,MACHN		FRTA	64
30	FR(I) = 0.0		FRTA	65
C			FRTA	66
	CALL BATMAN		FRTA	67
C			FRTA	68
	MCHN = 0		FRTA	69
	RFRG = 0.0		FRTA	70
	CHN = 0.0		FRTA	71
	LAST = IABS(NUCLID(1))/MULT(9)		FRTA	72
	NOTO = .FALSE.		FRTA	73
C			FRTA	74
	DO 10 MB = 1,INUC		FRTA	75
	NAME = IABS(NUCLID(MB))/MULT(6)		FRTA	76
	MASS = NAME/MULT(3)		FRTA	77
	NAT = MOD(NAME,MULT(3))		FRTA	78
	IF (NAT.GE.27.AND.NAT.LE.66) GO TO 1		FRTA	79
	WRITE (KOUT,513) NAT,MASS		FRTA	80
	ABUND = 0.0		FRTA	81
	GO TO 10		FRTA	82
1	IF (MASS.EQ.LAST) GO TO 3		FRTA	83
	MCHN = MCHN + 1		FRTA	84
	IF (NOTO) FR(MCHN) = RFRG/CHN		FRTA	85
	RFRG = 0.0		FRTA	86
	CHN = 0.0		FRTA	87
	NOTO = .FALSE.		FRTA	88

3 ABUND = ABUNDO(MB)	FRTA 89
LAST = MASS	FRTA 90
IF (ABUND)10,10,4	FRTA 91
4 NOT0 = .TRUE.	FRTA 92
IF (BOIL(NAT-26),GE.SLDTMB) RFRC = RFRC + ABUND	FRTA 93
CHN = CHN + ABUND	FRTA 94
10 CONTINUE	FRTA 95
MCHN = MCHN + 1	FRTA 96
IF (NOT0) FR(MCHN) = RFRC/CHN	FRTA 97
C	FRTA 98
IF (NPRNT(6)) GO TO 22	FRTA 99
19 DO 32 L = 1,MCHN	FRTA 100
BSUBK(L) = SORT(FR(L)) + 1.0	FRTA 101
POWER = BSUBK(L)	FRTA 102
SUM = 0.0	FRTA 103
DO 20 M = 1,ITAB	FRTA 104
20 SUM = SUM + FMASS(M)*PSIZE(M)**POWER	FRTA 105
32 ECF(L) = 1.0/SUM	FRTA 106
IF (NPRNT(7)) GO TO 23	FRTA 107
21 IGO = .TRUE.	FRTA 108
RETURN	FRTA 109
22 WRITE (KOUT,501)	FRTA 110
WRITE (KOUT,502) (J,FR(J),J=1,MCHN)	FRTA 111
GO TO 19	FRTA 112
23 WRITE (KOUT,503)	FRTA 113
WRITE (KOUT,502) (K,BSUBK(K),K=1,MCHN)	FRTA 114
GO TO 21	FRTA 115
501 FORMAT	FRTA 116
1 (17H10UTPUT OF FRATIO//6X4HMCHN 10X2HFR//)	FRTA 117
502 FORMAT	FRTA 118
1 (7X12.6X1PE12.4)	FRTA 119
503 FORMAT(///6X4HMCHN9X5HBSUBK//)	FRTA 120
513 FORMAT (44HBOILING POINT IS NOT AVAILABLE FOR ELEMENT 13.	FRTA 121
1 6H(MASS 13,1H))	FRTA 122
END	FRTA 123
1 6H(MASS 13,1H))	FRTA 122
SIBFTC PAN2ND LIST,DECK,M94/2	PAM2 0
SUBROUTINE PAM2	PAM2 1
C	PAM2 2
C R C TOMPKINS -- US ARMY NUCLEAR DEFENSE LABS	PAM2 3
C OCTOBER 1966	PAM2 4
C EXECUTIVE PROGRAM FOR THE TIME-DEPENDENT PART OF THE PARTICLE	PAM2 5
C ACTIVITY MODULE	PAM2 6
C CALLED BY LINK9 AND BY CALC	PAM2 7
C	PAM2 8
C * * * * * GLOSSARY * * * * *	PAM2 9
C	PAM2 10
C FP(200) ACTIVITY DENSITY IN EACH PARTICLE SIZE FRACTION	PAM2 11
C ITAB NUMBER OF PARTICLE SIZE CLASSES	PAM2 12
C HASCHN MASS NUMBER REQUESTED FOR OUTPUT WITH JGO = 2	PAM2 13
C SV(200) FRACTION OF TOTAL SURFACE IN EACH PARTICLE SIZE CLASS	PAM2 14
C DIVIDED BY FRACTION OF TOTAL VOLUME	PAM2 15
C	PAM2 16
C * * * * *	PAM2 17
C	PAM2 18
C COMMON/FISHIN/	PAM2 19
1 ABEGN (700) ,ABUNDO(700) ,BRANCH(136) ,CAPFIS	PAM2 20
2 ,DCON (700) ,IBRA ,INUC ,MAXNUC	PAM2 21
3 ,MULT (11) ,NUCLID(700)	PAM2 22
C	PAM2 23
C COMMON/INDUCE/	PAM2 24

1	ALBFOH	,FAC	(7,18),FOGRNY(7,18),ISO	(18)	PAH2	25
2	,LMAX	,XLAM	(7,18)		PAH2	26
C					PAH2	27
	COMMON/UTILITY/				PAH2	28
1	KOUT	,NPRNT	(15)		PAH2	29
C					PAH2	30
	COMMON/OUTPUT/				PAH2	31
1	FIGNUM	,FP	(200),FW	,ITAB	PAH2	32
2	,MASCHN	,SIGMAS			PAH2	33
C					PAH2	34
	COMMON/DECAY/				PAH2	35
1	IGQ	,JD	,KDOS	,TENTER	PAH2	36
2	,TEXIT	,TIME			PAH2	37
C					PAH2	38
	COMMON /SET3/				PAH2	39
1	BZ	,BZ2	,BZ2	,BZ22	PAH2	40
2	,DELTAX	,DGX	,DGY	,DIFCON	PAH2	41
3	,GIFADJ	,FMAS(500)	,FMAS(200)	,IC(18)	PAH2	42
4	,ICON	,ICTR	,IH	,IOT(18)	PAH2	43
5	,IP	,IPOUT	,IYT(18)	,IV	PAH2	44
6	,JC(18)	,JIN	,JOUT	,JPOUT	PAH2	45
7	,KTR(500)	,KTAPE	,LAST	,MAPRUT	PAH2	46
8	,MARRAY	,MIN	,MXREQ		PAH2	47
	,MYDUMY	,NA	,NBZX	,NBZX2	PAH2	48
1	,NBZY	,NCL	,NE	,NF	PAH2	49
2	,NIJ	,NMAP	,NMAX	,NOX	PAH2	50
3	,NP(21)	,NREQ	,NS	,NTAPES	PAH2	51
4	,NTAPET	,NTASK	,NXHAP	,NYHAP	PAH2	52
5	,YMIN	,PS(500)	,PSIZE(200)	,PACT(200)	PAH2	53
6	,ROPART		,T(500)	,T1	PAH2	54
7	,T2	,TLIMIT	,X(500)	,XF	PAH2	55
8	,XO	,XMAX	,XNIM	,XNHAP	PAH2	56
9	,X1	,X2	,X3	,X4	PAH2	57
1	,Y(500)	,YF	,YO	,YHAX	PAH2	58
C	LOGIC. JD,IGQ,KDOS,NPRNT				PAH2	59
C					PAH2	60
	100 FORMAT				PAH2	61
1	(17H1TOTAL PAM OUTPUT/9X5HPSIZE22X2HFP)				PAH2	62
101 FORMAT					PAH2	63
1	(5)	12.4,14XE12.4)			PAH2	64
C					PAH2	65
	DO 101 = 1,ITAB				PAH2	66
10	FP(1) = 0.0				PAH2	67
C					PAH2	68
	GO TO (1,2,3),JGQ				PAH2	69
C					PAH2	70
	1 CALL GXPSR				PAH2	71
	IF (CAPFIS)3,3,4				PAH2	72
	4 CALL URAN				PAH2	73
	3 IF (LMAX)5,5,6				PAH2	74
	6 CALL INDCD2				PAH2	75
	5 IF (.NOT.NPRNT(15)) RETURN				PAH2	76
	WRITE (KOUT,100)				PAH2	77
	WRITE (KOUT,101) (PSIZE(I),FP(I),I=1,ITAB)				PAH2	78
	RETURN				PAH2	79
	2 CALL MCHDEP				PAH2	80
	GO TO 5				PAH2	81
	END				PAH2	82
	GO TO 5				PAH2	83
					PAH2	82

SIBFTC	GXTS	LIST,DECK,M94/2	GXTS	0
		SUBROUTINE GXPSR	GXTS	1
C			GXTS	2
C		CASSIDY - NRDL / TOMPKINS - NDL	GXTS	3
C			GXTS	4
C		NOVEMBER 1966	GXTS	5
		CALLED BY PAM2	GXTS	6
		COMMON/FISHIN/	GXTS	7
1		ABEON (700) ,ABUNDO(700) ,BRANCH(130) ,CAPFIS	GXTS	8
2		,DOON (700) ,IBRA ,INUC ,MAXNUC	GXTS	9
3		,MULT (11) ,NUCLID(700)	GXTS	10
C			GXTS	11
		COMMON/FRYLNG/	GXTS	12
1		BSUBK (90) ,ERM (185) ,JRM (185) ,KRM ,ECF(90)	GXTS	13
C			GXTS	14
		COMMON/UTILITY/	GXTS	15
1		KOUT ,NPRNT (15)	GXTS	16
C			GXTS	17
		COMMON/OUTPUT/	GXTS	18
1		FISNUM ,FP (200) ,FW ,ITAB ,JGO	GXTS	19
2		,MASCHN ,SIGMAS	GXTS	20
C			GXTS	21
		COMMON/DECAY/	GXTS	22
1		IGO ,JD ,KDOS ,TENTER	GXTS	23
2		,TEXIT ,TIME	GXTS	24
C			GXTS	25
		COMMON /SET3/	GXTS	26
1		BZ ,BZ2 ,BZZ ,BZ22	GXTS	27
2		,DELTA ,DGX ,DGY ,DIFCON	GXTS	28
3		,DIFADJ ,FMAS(500) ,FMAS(200) ,ICI(18)	GXTS	29
4		,ICON ,ICTR ,IM ,IOT(18)	GXTS	30
5		,IP ,IPOUT ,ITT(18) ,IV	GXTS	31
6		,JC(18) ,JIN ,JOUT ,JPOUT	GXTS	32
7		,KTR(500) ,KTAPE ,LAST ,MAPRUN	GXTS	33
8		,MARRAY ,MIN ,MXREQ	GXTS	34
9		,MYDUMY ,NA ,NBZX ,NBZX2	GXTS	35
1		,NBZY ,NCL ,NE ,NF	GXTS	36
2		,NIJ ,NMAP ,NMAX ,NOX	GXTS	37
3		,NP(21) ,NREQ ,NS ,NTAPES	GXTS	38
4		,NTAPET ,NTASK ,NXMAP ,NYMAP	GXTS	39
5		,YMIN ,PS(500) ,PSIZE(200) ,PACT(200)	GXTS	40
6		,ROPART ,T(500) ,T1	GXTS	41
7		,T2 ,TLIMIT ,X(500) ,XF	GXTS	42
8		,X0 ,XMAX ,XMIN ,XNMAP	GXTS	43
9		,X1 ,X2 ,X3 ,X4	GXTS	44
1		,Y(500) ,YF ,YO ,YMAX	GXTS	45
C			GXTS	46
		DIMENSION XRT(90)	GXTS	47
C			GXTS	48
		LOGICAL JD,I00,KDOS,NPRNT	GXTS	49
		DATA CROSS,UNIT/100.0,1.0/	GXTS	50
C			GXTS	51
901		FORMAT	GXTS	52
1		(16M10OUTPUT OF GXPSR/5X13HPARTICLE SIZE7X24HFISSION PROCUCT ACGTIVITY)	GXTS	53
902		FORMAT	GXTS	54
1		(8X7HMICRONS16X11H(R*M**2)/HP//)	GXTS	55
903		FORMAT	GXTS	56
1		(5X1PE12.4,14XE12.4)	GXTS	57
912		FORMAT	GXTS	58
			GXTS	59

1	(8X7HMICRONS18X6HR*M**2//)	GXTS	60
C		GXTS	61
	CALL BATMAN	GXTS	62
	MAXMCH = 90	GXTS	63
	MCH = 0	GXTS	64
	DO 1 I = 1,MAXMCH	GXTS	65
1	XRT[I] = 0.0	GXTS	66
C		GXTS	67
	DO 10 J = 1,KRM	GXTS	68
	K = JRM(J)	GXTS	69
	IF (ERM(J))11,10,12	GXTS	70
11	MCH = MCH + 1	GXTS	71
	COMPUTE MASS CHAIN NORMALIZATION FACTOR	GXTS	72
C		GXTS	73
	12 XRT(MCH) = XRT(MCH) + ABUNDO(K)*ABS(ERM(J))	GXTS	74
C		GXTS	75
	10 CONTINUE	GXTS	76
C		GXTS	77
	DO 20 LC = 1,MCH	GXTS	78
	IF (XRT(LC))20,20,21	GXTS	79
21	BNEX = BSUBK(LC)	GXTS	80
	CRISS = CROSS**BNEX	GXTS	81
	RADIAL = ECF(LC)/(UNIT + CRISS*ECF(LC))	GXTS	82
	STRAIT = RADIAL*CRISS	GXTS	83
	TNEX = FISNUM*XRT(LC)	GXTS	84
	DO 40 LD = 1,ITAB	GXTS	85
40	FP(LD) = FP(LD) + (RADIAL*PSIZE(LD)**BNEX + STRAIT)*TNEX*FMASS(LD)	GXTS	86
20	CONTINUE	GXTS	87
C		GXTS	88
C		GXTS	89
	IF (.NOT.NPRNT(10)) RETURN	GXTS	90
C		GXTS	91
	WRITE (KOUT,901)	GXTS	92
	IF (JD) GO TO 101	GXTS	93
	WRITE (KOUT,912)	GXTS	94
	GO TO 102	GXTS	95
101	WRITE (KOUT,902)	GXTS	96
102	CONTINUE	GXTS	97
	DO 103 I=1,ITAB	GXTS	98
	WRITE (KOUT,903) FSIZE[I],FP[I]	GXTS	99
103	CONTINUE	GXTS	100
C		GXTS	101
	RETURN	GXTS	102
	END	GXTS	103
	SUBFC UNANX LIST,DECK,M94/2	URAN	0
	SUBROUTINE URAN	URAN	1
C		URAN	2
C	R C TOMPKINS - US ARMY NUCLEAR DEFENSE LABS	URAN	3
C	MAY 1966	URAN	4
C	CALLED BY PAN2	URAN	5
C		URAN	6
C	DLAM DISINTEGRATION CONSTANT OF NP239	URAN	7
C	PLAM DISINTEGRATION CONSTANT OF U239	URAN	8
C		URAN	9
	COMMON/FISHIN/	URAN	10
1	ABEGN (700) ,ABUNDO(700) ,BRANCH(130) ,CAPFIS	URAN	11
2	,DCON (700) ,IBRA ,INUC ,MAXNUC	URAN	12
3	,MULT (11) ,NUCLID(700)	URAN	13
C		URAN	14
	COMMON/UTILITY/	URAN	15

1	KOUT	,NPRNT (15)		URAN	16
	COMMON/OUTPUT/			URAN	17
1	FISNUM	,FP (200) ,FW	,ITAB	,JGO	URAN 18
2	,MASCHN	,SIGMAS			URAN 19
	COMMON/DECAY/				URAN 20
1	IGO	,JD	,KDOS	,TENTER	URAN 21
2	,TEXIT	,TIME			URAN 22
C					URAN 23
	COMMON /SET3/				URAN 24
1	BZ	,BZ2	,BZZ	,BZ22	URAN 25
2	,DELTAX	,DGX	,DGY	,DIFCON	URAN 26
3	,DIFADJ	,FMAS(500)	,FMAS(200)	,IC(18)	URAN 27
4	,ICON	,ICTR	,IH	,IOT(18)	URAN 28
5	,IP	,IPOUT	,ITT(18)	,IV	URAN 29
6	,JC(18)	,JIN	,JOUT	,JPOUT	URAN 30
7	,KTR(500)	,KTAPE	,LAST	,MAPRUN	URAN 31
8	,MARRAY	,MIN	,MXREQ		URAN 32
9	,MYDUMY	,NA	,NBZX	,NBZX2	URAN 33
1	,NBZY	,NCL	,NE	,NF	URAN 34
2	,NIJ	,NHAP	,NMAX	,NOX	URAN 35
3	,NP(21)	,NREQ	,NS	,NTAPES	URAN 36
4	,NTAPET	,NTASK	,NXMAP	,NYMAP	URAN 37
5	,YMIN	,PS(500)	,PSIZE(200)	,PACT(200)	URAN 38
6	,ROPART		,TI(500)	,T1	URAN 39
7	,T2	,TLIMIT	,XI(500)	,XF	URAN 40
8	,X0	,XMAX	,XMIN	,XNMAP	URAN 41
9	,X1	,X2	,X3	,X4	URAN 42
1	,Y(500)	,YF	,Y0	,YMAX	URAN 43
CCCCC					URAN 44
	LOGICAL JD,IGO,KDOS,NPRNT				URAN 45
C					URAN 46
	COMPUTE U239 DISINTEGRATION CONSTANT				URAN 47
	PLAM = 0.693147/(23.5*60.0)				URAN 48
	COMPUTE NP239 DISINTEGRATION CONSTANT				URAN 49
	DLAM = 0.693147/(56.0*3600.0)				URAN 50
C					URAN 51
	2 AZERO = CAPFIS*1.E4*PLAM				URAN 52
	GLMP = DLAM/(DLAM - PLAM)				URAN 53
	GLUMP = AZERO*GLMP				URAN 54
C					URAN 55
	IF (.NOT.JD) GO TO 3				URAN 56
	ABURAN = AZERO*EXP (-PLAM*TIME)				URAN 57
	ABNEP = GLMP*ABURAN - GLUMP*EXP (-DLAM*TIME)				URAN 58
	GO TO 7				URAN 59
C					URAN 60
	3 IF (.NOT.KDOS) GO TO 4				URAN 61
	ABURAN = AZERO/PLAM*(EXP (-PLAM*TENTER) - EXP (-PLAM*TEXIT))				URAN 62
	ABNEP = GLMP*ABURAN -				URAN 63
	1GLUMP*(EXP (-DLAM*TENTER) - EXP (-DLAM*TEXIT))/DLAM				URAN 64
	GO TO 7				URAN 65
C					URAN 66
	4 ABURAN = AZERO/PLAM*EXP (-PLAM*TENTER)				URAN 67
	ABNEP = GLMP*ABURAN - GLUMP/DLAM*EXP (-DLAM*TENTER)				URAN 68
C					URAN 69
	7 ANEP = (ABURAN*.327E-6 + ABNEP*.966E-6)*FISNUM				URAN 70
	DO 8 J=1,ITAB				URAN 71
	8 FP(J) = FP(J) + ANEP*FMAS(J)				URAN 72
C					URAN 73
	IF (NPRNT(12)) WRITE (KOUT,100) ANEP				URAN 74
	100 FORMAT				URAN 75

1	(15H1OUTPUT OF URAN/5X21HMASS 239 CONTRIBUTES 1PE12.4,	URAN	76
2	23H TO EACH PARTICLE SIZE.)	URAN	77
	RETURN	URAN	78
	END	URAN	79
818FTC	INDY LIST,DECK,M94/2	INDY	80
	SUBROUTINE INDCD2	INDY	1
C		INDY	2
C	NOVEMBER 1966	INDY	3
	COMMON/INDUCE/	INDY	4
1	ALBFOH ,FAC (7,18),FOGRNY(7,18),ISO (18)	INDY	5
2	,LMAX ,XLAH (7,18)	INDY	6
C		INDY	7
	COMMON/UTILITY/	INDY	8
1	KOUT ,NPRNT (15)	INDY	9
C		INDY	10
	COMMON/OUTPUT/	INDY	11
1	FISNUM ,FP (200) ,FW ,ITAB ,JGO	INDY	12
2	,HASCHN ,SIGMAS	INDY	13
C		INDY	14
	COMMON/DECAY/	INDY	15
1	IGO ,JD ,KDOS ,TENTER	INDY	16
2	,TEXT ,TIME	INDY	17
C		INDY	18
	COMMON /SET3/	INDY	19
1	BZ ,BZ2 ,BZZ ,BZ22	INDY	20
2	,DELTA ,DGLX ,DGLY ,DIFCON	INDY	21
3	,DIFADJ ,FMAS(500) ,FMAS(200) ,IC(18)	INDY	22
4	,ICON ,ICTR ,IH ,IOT(18)	INDY	23
5	,IP ,IPOUY ,ITT(18) ,IV	INDY	24
6	,IC(18) ,JIN ,JOUT ,JPOUT	INDY	25
7	,IR(500) ,KTAPE ,LAST ,MAPRUN	INDY	26
8	,MARRY ,MIN ,MXREQ	INDY	27
9	,HYDUMY ,NA ,NBZX ,NBZX2	INDY	28
1	,NBZY ,NCL ,NE ,NF	INDY	29
2	,NIJ ,NHAP ,NMAX ,NOX	INDY	30
3	,NP(21) ,NREQ ,NS ,NTAPES	INDY	31
4	,NTAPET ,NTASK ,NXMAP ,NYMAP	INDY	32
5	,YMIN ,PS(500) ,PSIZE(200) ,PACT(200)	INDY	33
6	,ROPART ,T(500) ,T1	INDY	34
7	,T2 ,TLIMIT ,X(500) ,XF	INDY	35
8	,XO ,XMAX ,XMIN ,XNMAP	INDY	36
9	,X1 ,X2 ,X3 ,X4	INDY	37
1	,Y(500) ,YF ,YO ,YMAX	INDY	38
C		INDY	39
	LOGICAL JD,IGO,KDOS,NPRNT	INDY	40
C		INDY	41
1000	FORMAT	INDY	42
1	(17H1OUTPUT OF INDCD2/5X53HINDUCED ACTIVITY IN THE TRANSPORTED	INDY	43
2	SOIL CONTRIBUTES 1PE12.4,23H TO EACH PARTICLE SIZE.)	INDY	44
C		INDY	45
	SDRE = 0.0	INDY	46
C		INDY	47
	DO 24 L = 1,LMAX	INDY	48
	IS = ISOIL	INDY	49
C		INDY	50
	DO 22 I = 1,IS	INDY	51
	DLAM = -XLAH(I,L)	INDY	52
	IF (.NOT.JD) GO TO 12	INDY	53
	DRI = -FAC(I,L)*DLAM*FOGRNY(I,L)*EXP(DLAM*TIME)	INDY	54
	GO TO 22	INDY	55

C	12 IF (.NOT.KDOS) GO TO 14	INDY 56
	DRI = FAC(I,L)*FOGRNY(I,L*(EXP(DLAM*YENTER) - EXP(DLAM*TEXT)))	INDY 57
	GO TO 22	INDY 58
C	14 DRI = FAC(I,L)*FOGRNY(I,L*(EXP(DLAM*YENTER)	INDY 59
C	22 SDRE = SDRE + DRI	INDY 60
C	24 CONTINUE	INDY 61
		INDY 62
C		INDY 63
C	SDRE = SDRE*ALBFOM*FISNUM	INDY 64
		INDY 65
C	DO 26 MA = 1,ITAB	INDY 66
	26 FP(MA) = FP(MA) + SDRE*FMAS(MA)	INDY 67
C	IF (NPRNT(11)) WRITE (KOUT,1000) SDRE	INDY 68
	RETURN	INDY 69
	END	INDY 70
	RETURN	INDY 71
SIBFTC	MCTS LIST,DECK,M94/2	INDY 72
	SUBROUTINE MCHBEP	INDY 73
C		MCTS 0
C	R C TOMPKINS - US ARMY NUCLEAR DEFENSE LABS	MCTS 1
C	NOVEMBER 1966	MCTS 2
C	CALLED BY PAM2	MCTS 3
C		MCTS 4
	COMMON/FISHIN/	MCTS 5
1	ABEGN (700) ,ABUNDO(700) ,BRANCH(130) ,CAPFIS	MCTS 6
2	,DCON (700) ,LBRA ,INUC ,MAXNUC	MCTS 7
3	,MULT (11) ,NUCLID(700)	MCTS 8
	COMMON/UTILITY/	MCTS 9
1	KOUT ,NPRNT (15)	MCTS 10
	COMMON/OUTPUT/	MCTS 11
1	FISNUM ,FP (200) ,FW ,ITAB ,J60	MCTS 12
2	,MASCHN ,SIGMAS	MCTS 13
	COMMON/FRYLNG/	MCTS 14
1	BSUBK (90) ,ERM (185) ,JRM (185) ,XRM ,ECF(90)	MCTS 15
	COMMON/DECAY/	MCTS 16
1	IQO ,JD ,KDOS ,TENTER	MCTS 17
2	,TEXT ,TIME	MCTS 18
	COMMON /SET3/	MCTS 19
1	BZ ,BZ2 ,BZZ ,BZZ2	MCTS 20
2	,DELTAX ,DGX ,DGY ,DIFCON	MCTS 21
3	,DIFADJ ,FMAS(500) ,FMAS(200) ,IC(18)	MCTS 22
4	,ICON ,ICTR ,IH ,IOT(18)	MCTS 23
5	,IP ,IPOUT ,ITT(18) ,IV	MCTS 24
6	,JC(18) ,JIN ,JOUT ,JPOUT	MCTS 25
7	,KTR(500) ,KTAPE ,LAST ,MAPRUN	MCTS 26
8	,MARRAY ,MIN ,MXREQ	MCTS 27
9	,MYDUMY ,NA ,NBZX ,NBZX2	MCTS 28
1	,NBZY ,NCL ,NE ,NF	MCTS 29
2	,NIJ ,NHAP ,NHAX ,NOX	MCTS 30
3	,NP(21) ,NREQ ,NS ,NTAPES	MCTS 31
4	,NTAPET ,NTASK ,NXMAP ,NYMAP	MCTS 32
5	,YMIN ,PS(500) ,PS(200) ,PACT(200)	MCTS 33
6	,ROPART ,T(500) ,T1	MCTS 34
7	,T2 ,TLIMIT ,X(500) ,XF	MCTS 35
8	,XO ,XMAX ,XMIN ,XNMAP	MCTS 36
9	,X1 ,X2 ,X3 ,X4	MCTS 37
		MCTS 38
		MCTS 39

	1	,Y(500)	,YF	,YO	,YMAX	MCTS	40
C		DIMENSION FMTA(12),FMTB(16),UNITC(2),UNITF(2)				MCTS	41
C		LOGICAL NPRNT,TZERO,TMINUS				MCTS	42
C		DATA (FMTA(1),I=1,10)/6H(/14X3,6H1H TOT,6HAL ABU,6HNDANCE,6H OF				MCTS	43
		1,6HSS CHA,6HIN 13,,6H4H WAS,6H1PE12,,6H4, 9H/				MCTS	44
		2,(FMTB(1),I=1,15)/6H(/17H10,6HUTPUT ,6HOF MCH,6HDEP///,6H5X13HP				MCTS	45
		3,6HARTICL,6HME SIZE,6H6X22HA,6HCTIVIT,6HY OF M,6HASS CH,6HAIN14/				MCTS	46
		4,6H8X7HMI,6HCRONS1,6HAX 9H/				MCTS	47
		5,(UNITC(1),I=1,2)/6H CURIE,6HS /) /				MCTS	48
		6,(UNITF(1),I=1,2)/6H FISSI,6HONS/) /				MCTS	49
		DATA CROSS,UNIT/100.0,1.0/				MCTS	50
C		903 FORMAT				MCTS	51
	1	(5X1PE12.4,14XE12.4)				MCTS	52
C		TZERO = .FALSE.				MCTS	53
		TMINUS = .FALSE.				MCTS	54
		FMTA(11) = UNITC(1)				MCTS	55
		FMTA(12) = UNITC(2)				MCTS	56
		FMTB(16) = UNITC(1)				MCTS	57
		FMTB(17) = UNITC(2)				MCTS	58
		IF (TIME)11,1,2				MCTS	59
	1	TZERO = .TRUE.				MCTS	60
		COMPUTE EQUIVALENT FISSIONS				MCTS	61
		ABNDM = 1.0				MCTS	62
		FISNUM = FISNUM*1.E4				MCTS	63
		FMTA(11) = UNITF(1)				MCTS	64
		FMTA(12) = UNITF(2)				MCTS	65
		FMTB(16) = UNITF(1)				MCTS	66
		FMTB(17) = UNITF(2)				MCTS	67
	2	IF (NPRNT(13)) WRITE (KOUT,FMTB) MASCHN				MCTS	68
		IF (TZERO) GO TO 10				MCTS	69
		COMPUTE ACTIVITY IN CURIES				MCTS	70
		CALL BATHAN				MCTS	71
		ABNDM = 0.0				MCTS	72
		DO 220 K1=1,INUC				MCTS	73
		IF(MASCHN.NE.(ABS(NUCLID(K1))/MULT(9))) GO TO 220				MCTS	74
C		SUM THE ACTIVITIES IN ONE MASS CHAIN AND CONVERT TO CURIES				MCTS	75
		ABNDM = ABNDM + ABUNDO(K1)				MCTS	76
	220	CONTINUE				MCTS	77
		ABNDM = ABNDM/3.7E10				MCTS	78
C		IF (ABNDM)9.9,10				MCTS	79
C		THE REST IS AN ABRIDGEMENT OF GXPSR				MCTS	80
	10	BNEX = BSUBK(MASCHN-71)				MCTS	81
		CRISS = CROSS**BNEX				MCTS	82
		RADIAL = ECF(MASCHN-71)/(UNIT + CRISS*ECF(MASCHN-71))				MCTS	83
		STRAIT = RADIAL*CRISS				MCTS	84
		ABNDM = ABNDM*FISNUM				MCTS	85
		DO 134 LD = 1,ITAB				MCTS	86
		DSR = (RADIAL*PSIZE(LD)**BNEX + STRAIT)*ABNDM*FMASS(LD)				MCTS	87
	134	FP(LD) = FP(LD) + DSR				MCTS	88
		IF (.NOT.NPRNT(13)) GO TO 9				MCTS	89
		WRITE (KOUT,903)				MCTS	90
	1	(PSIZE(1),FP(1),I=1,ITAB)				MCTS	91
	9	WRITE (KOUT,FMTA) MASCHN,ABNDM				MCTS	92
		RETURN				MCTS	93

C	***** CODE INSERTION POINT *****	MCTS 100
C		MCTS 101
	11 TMINUS = .TRUE.	MCTS 102
	RETURN	MCTS 103
C		MCTS 104
C	*****	MCTS 105
	END	MCTS 106

6. SAMPLE TEST PROBLEM AND PRINTOUT

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INTERMEDIATE OUTPUT OF SETUP

INUC	NUCLID	DCON
1	510033010004	6.931E 01
2	510034010004	1.980E-01
3	510035010004	6.931E-02
4	510036010004	4.141E-06
5	510037010004	1.366E-05
6	510040000004	0.000E-39
7	511033010004	6.931E 01
8	511034010004	3.466E-01
9	511035010004	9.902E-02
10	511036010004	5.776E-03
11	511037020004	4.011E-05
12	511040130004	1.308E 00
13	511040000004	0.000E-39
14	512033010004	6.931E 01
15	512034010004	4.621E-01
16	512035010004	1.733E-01
17	512036010004	2.567E-03
18	512037010004	1.481E-03
19	512040000004	0.000E-39
20	513033010004	6.931E 01
21	513034010004	6.931E 01
22	513035010004	2.773E-01
23	513036010004	7.296E-02
24	513037020004	5.776E-03
25	513040130004	1.415E-02
26	513040010004	1.409E-04
27	513041000004	0.000E-39
28	514034010004	6.931E 01
29	514035010004	3.466E-01
30	514036010004	8.664E-02
31	514037010004	2.310E-02
32	514040000004	0.000E-39
33	514041010004	7.266E-06
34	514042000004	0.000E-39
35	515034010004	6.931E 01
36	515035010004	4.621E-01
37	515036010004	1.980E-01
38	515037021002	4.621E-02
39	515040131002	1.284E-02
40	515040010004	1.704E-05
41	515041010004	4.975E-06
42	515042000004	0.000E-39
43	516034010004	6.931E 01
44	516035010004	6.931E 01
45	516036010004	2.773E-01
46	516037010004	8.664E-02
47	516040021002	9.169E-05
48	516041130004	1.925E-03
49	516041010004	1.269E-04
50	516042000004	0.000E-39
51	517035010004	6.931E 01
52	517036010004	4.621E-01
53	517037010004	1.540E-01
54	517040010004	2.773E-02
55	517041020004	1.284E-03
56	517042130004	2.970E-03
57	517042010004	3.661E-13

58	517043000004	0.000E-39
59	520035010004	6.931E 01
60	520036010004	4.621E-01
61	520037010004	2.310E-01
62	520040010004	2.773E-02
63	520041010004	1.925E-02
64	520042000004	0.000E-39
65	521035010004	6.931E 01
66	521036010004	6.931E 01
67	521037010004	3.466E-01
68	521040010004	9.902E-02
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581	622066010004	6.931E-01
582	622067010004	6.931E-01
583	622070010004	4.621E-01
584	622071010004	1.723E-01
585	622072010004	8.311E-04
586	622073010004	4.735E-04
587	622074000004	0.000E-39
588	623067010004	6.931E-01
589	623070010004	6.931E-01
590	623071010004	3.466E-01
591	623072010004	9.627E-03
592	623073010004	9.627E-04
593	623074010004	7.228E-07
594	623075010004	8.448E-09
595	623076000004	0.000E-39
596	624067010004	6.931E-01
597	624070010004	6.931E-01

598	624071010004	3.466E-01
599	624072010004	1.732E-02
600	624073010004	5.924E-03
601	624074000004	0.000E-39
602	624075010004	1.484E-06
603	624076000004	0.000E-39
604	625070010004	6.931E-01
605	625071010004	4.621E-01
606	625072010004	1.980E-01
607	625073010004	2.310E-02
608	625074010004	9.627E-05
609	625075010004	3.626E-06
610	625076000004	0.000E-39
611	626070010004	6.931E-01
612	626071010004	4.621E-01
613	626072010004	2.773E-01
614	626073010004	4.621E-02
615	626074000004	0.000E-39
616	626075010004	7.131E-05
617	626076000004	0.000E-39
618	627071010004	6.931E-01
619	627072010004	3.466E-01
620	627073010004	9.902E-02
621	627074010004	8.886E-04
622	627075010004	6.780E-06
623	627076010004	2.746E-10
624	627077000004	0.000E-39
625	630071010004	6.931E-01
626	630072010004	4.621E-01
627	630073010004	1.386E-01
628	630074010004	3.851E-03
629	630075010004	1.925E-03
630	630076000004	0.000E-39
631	630077171002	2.070E-05
632	630077071002	1.690E-09
633	630100000004	0.000E-39
634	631071010004	6.931E-01
635	631072010004	4.621E-01
636	631073010004	2.310E-01
637	631074010004	3.851E-02
638	631075010004	2.100E-03
639	631076010004	4.097E-06
640	631077000004	0.000E-39
641	632072010004	6.931E-01
642	632073010004	3.466E-01
643	632074010004	5.776E-02
644	632075010004	4.621E-03
645	632076000004	0.000E-39
646	632077010004	1.373E-09
647	632100000004	0.000E-39
648	633072010004	6.931E-01
649	633073010004	3.466E-01
650	633074010004	1.386E-01
651	633075010004	1.153E-02
652	633076010004	4.814E-04
653	633077010004	1.292E-08
654	633100000004	0.000E-39
655	634073010004	4.621E-01
656	634074010004	1.540E-01
657	634075010004	2.773E-02

658	634076010004	1.925E-05
659	634077010004	5.209E-07
660	634100000004	0.000E-39
661	635073010004	6.931E 01
662	635074010004	2.310E-01
663	635075010004	5.332E-02
664	635076010004	2.310E-02
665	635077010004	1.284E-05
666	635100000004	0.000E-39
667	636073010004	6.931E 01
668	636074010004	3.466E-01
669	636075010004	1.155E-01
670	636076010004	7.702E-04
671	636077010004	1.925E-04
672	636100000004	0.000E-39
673	637074010004	4.621E-01
674	637075010004	1.980E-01
675	637076010004	4.951E-02
676	637077010004	5.776E-04
677	637100010004	1.070E-05
678	637101000004	0.000E-39
679	640074010004	6.931E 01
680	640075010004	2.773E-01
681	640076010004	4.621E-02
682	640077010004	4.621E-03
683	640100000004	0.000E-39
684	640101010004	1.099E-07
685	640102000004	0.000E-39
686	641074010004	6.931E 01
687	641075010004	3.466E-01
688	641076010004	1.733E-01
689	641077010004	3.151E-02
690	641100010004	3.122E-03
691	641101010004	1.163E-06
692	641102000004	0.000E-39

FINAL OUTPUT OF SETUP

LINE	NUCLEO	DOUN
1	510033010004	6.931E-01
2	110034010004	1.980E-01
3	110035010004	6.931E-02
4	110036010004	4.141E-06
5	110037010004	1.366E-05
6	110040000004	0.000E-39
7	511033010004	6.931E-01
8	111034010004	3.466E-01
9	111035010004	9.902E-02
10	111036010004	5.776E-03
11	111037010004	4.011E-05
12	111040110004	1.308E-00
13	111040000004	0.000E-39
14	512033010004	6.931E-01
15	112034010004	4.621E-01
16	112035010004	1.733E-01
17	112036010004	2.567E-03
18	112037010004	1.481E-03
19	112040000004	0.000E-39
20	513033010004	6.931E-01
21	113034010004	6.931E-01
22	113035010004	2.773E-01
23	113036010004	7.296E-02
24	113037010004	5.776E-03
25	113040110004	1.415E-02
26	113040010004	1.409E-04
27	113041000004	0.000E-39
28	514034010004	6.931E-01
29	114035010004	3.466E-01
30	114036010004	8.664E-02
31	114037010004	2.310E-02
32	114040000004	0.000E-39
33	514041010004	7.266E-06
34	114042000004	0.000E-39
35	515034010004	6.931E-01
36	115035010004	4.621E-01
37	115036010004	1.980E-01
38	115037012002	4.621E-02
39	115040112002	1.284E-02
40	115040010004	1.704E-05
41	115041010004	4.975E-06
42	115042000004	0.000E-39
43	516034010004	6.931E-01
44	116035010004	6.931E-01
45	116036010004	2.773E-01
46	116037010004	8.664E-02
47	116040012002	7.169E-05
48	116041110004	1.925E-03
49	116041010004	1.269E-04
50	116042000004	0.000E-39
51	517033010004	6.931E-01
52	117036010004	4.621E-01
53	117037010004	1.540E-01
54	117040010004	2.773E-02
55	117041010004	1.284E-03
56	117042110004	2.970E-03
57	117042010004	3.661E-13

58	117042000004	0.000E-39
59	520035010004	6.931E 01
60	120036010004	4.621E-01
61	120037010004	2.310E-01
62	120040010004	2.773E-02
63	120041010004	1.925E-02
64	120042000004	0.000E 39
65	521035010004	6.931E 01
66	121036010004	6.931E 01
67	121037010004	3.466E-01
68	121040010004	9.902E-02
69	121041012002	2.100E-02
70	121042110004	2.027E-04
71	121042010004	6.418E-04
72	121043000004	0.000E-39
73	522036010004	6.931E 01
74	122037010004	4.621E-01
75	122040010004	1.386E-01
76	122041010004	3.851E-02
77	122042000004	0.000E-39
78	522043010004	5.363E-06
79	122044000004	0.000E-39
80	523036010004	6.931E 01
81	123037010004	6.931E 01
82	123040010004	3.466E-01
83	123041012002	9.902E-02
84	123042112002	1.005E-02
85	123042010004	4.621E-04
86	123043010004	8.023E-05
87	123044110004	1.013E-04
88	123044000004	0.000E-39
89	524037010004	6.931E 01
90	124040010004	4.621E-01
91	124041010004	1.733E-01
92	124042010004	3.851E-03
93	124043010004	3.610E-04
94	124044000004	0.000E-39
95	525037010004	6.931E 01
96	125040010004	6.931E-01
97	125041010004	1.612E 00
98	125042010004	1.777E-02
99	125043010004	3.851E-03
100	125044112002	4.376E-05
101	125044010004	2.072E-09
102	125045000004	0.000E-39
103	526040010004	6.931E 01
104	126041010004	3.466E-01
105	126042010004	4.332E-02
106	126043010004	1.155E-02
107	126044000004	0.000E-39
108	526045110004	1.111E-02
109	126045010004	4.313E-07
110	126046000004	0.000E-39
111	527040010004	6.931E 01
112	127041010004	4.621E-01
113	127042010004	4.332E-02
114	127043071042	1.272E-02
115	127044010004	1.481E-04
116	127045010004	1.001E-15
117	127046000004	0.000E-39

128	130040010004	6.931E-01
129	130041010004	6.931E-01
130	130042010004	2.773E-01
131	130043051042	4.252E-02
132	130044010004	6.076E-05
133	130045010004	6.418E-04
134	130046000004	0.000E-39
135	531041010004	6.931E-01
136	131042010004	3.466E-01
137	131043051042	1.575E-01
138	131044010004	3.610E-03
139	131045010004	7.502E-04
140	131046020004	1.500E-07
141	531047110004	4.532E-02
142	131047000004	0.000E-39
143	532041010004	6.931E-01
144	132042010004	6.931E-01
145	132043071042	4.332E-01
146	132044010004	2.100E-02
147	132045010004	4.279E-03
148	132046010004	7.844E-10
149	132047010004	2.994E-06
150	132050000004	0.000E-39
151	533042010004	6.931E-01
152	133043010004	3.466E-01
153	133044010004	6.931E-02
154	133045010004	9.627E-03
155	133046012002	1.285E-05
156	133047110004	2.310E-04
157	133047010004	1.383E-07
158	133050000004	0.000E-39
159	534042010004	6.931E-01
160	134043010004	4.621E-01
161	134044010004	2.310E-01
162	134045010004	1.308E-01
163	134046010004	7.131E-05
164	134047010004	5.340E-05
165	134050000004	0.000E-39
166	535042010004	6.931E-01
167	135043010004	6.931E-01
168	135044010004	3.466E-01
169	135045010004	1.238E-01
170	135046010004	1.444E-03
171	135047010004	1.925E-05
172	135050012002	2.312E-14
173	135051110004	5.936E-09
174	135051000004	0.000E-39
175	536043010004	6.931E-01
176	136044010004	4.951E-01
177	136045010004	2.310E-01
178	136046010004	8.887E-03
179	136047010004	5.776E-04
180	136050000004	0.000E-39
181	537043010004	6.931E-01
182	137044010004	6.931E-01
183	137045010004	3.466E-01
184	137046010004	1.733E-02
185	137047010004	1.155E-03
186	137050012002	1.234E-07
187	137051110004	2.139E-06

178	137051010004	2.292E-07
179	137052000004	0.000E-39
180	540043010004	6.931E 01
181	140044010004	6.931E 01
182	140045010004	6.931E-01
183	140046010004	2.773E-01
184	140047010004	5.023E-03
185	140050000004	0.000E-39
186	540051010004	8.371E-06
187	140052000004	0.000E-39
188	541044010004	6.931E 01
189	141045010004	6.931E 01
190	141046010004	4.621E-01
191	141047010004	1.336E-01
192	141050012002	1.133E-05
193	141051110004	1.155E-02
194	141051010004	1.583E-04
195	141052010004	0.000E-39
196	542044010004	6.931E 01
197	142045010004	6.931E 01
198	142046010004	6.931E-01
199	142047010004	2.773E-01
200	142050020004	1.155E-02
201	542051120004	2.265E-04
202	142051010004	5.776E-03
203	142052000004	0.000E-39
204	543045010004	6.931E 01
205	143046010004	6.931E-01
206	143047010004	4.621E-01
207	143050010004	4.332E-01
208	143051010004	5.023E-03
209	143052012002	2.895E-06
210	143053110004	3.209E-05
211	143053010004	1.046E-13
212	143054000004	0.000E-39
213	544046010004	6.931E 01
214	144047010004	4.621E-01
215	144050010004	1.980E-01
216	144051010004	3.851E-03
217	144052000004	0.000E-39
218	544053010004	4.332E-02
219	144054000004	0.000E-39
220	545046010004	6.931E 01
221	145047010004	6.931E-01
222	145050010004	2.773E-01
223	145051010004	1.155E-02
224	145052010004	7.913E-04
225	145053010004	8.252E-04
226	145054000004	0.000E-39
227	546046010004	6.931E 01
228	146047010004	6.931E 01
229	146050010004	3.466E-01
230	146051010004	9.902E-02
231	146052012002	1.005E-03
232	146053120004	2.567E-03
233	146054010004	1.386E-01
234	146054000004	0.000E-39
235	547047010004	6.931E 01
236	147050010004	4.621E-01
237	147051010004	1.733E-01

238	147052010004	2.773E-02
239	147053010004	9.627E-03
240	147054012002	2.021E-07
241	147055110004	2.027E-04
242	147055000004	0.000E-39
243	550047010004	6.931E 01
244	150050010004	6.931E 01
245	150051010004	2.310E-01
246	150052010004	4.621E-03
247	150053010004	6.418E-04
248	150054000004	0.000E-39
249	550055110004	2.626E-03
250	150055010004	1.650E-02
251	150056000004	0.000E-39
252	551047010004	6.931E 01
253	151050010004	6.931E 01
254	151051010004	3.466E-03
255	151052010004	5.776E-03
256	151053010004	1.284E-03
257	151054012002	4.376E-05
258	151055110004	1.824E-02
259	151055010004	5.348E-06
260	151056000004	0.000E-39
261	552047010004	6.931E 01
262	152050010004	6.931E 01
263	152051010004	4.621E-01
264	152052010004	1.733E-01
265	152053010004	7.702E-02
266	152054020004	2.196E-08
267	552055120004	3.752E-05
268	152055010004	2.310E-02
269	152056000004	0.000E-39
270	553050010004	6.931E 01
271	153051010004	6.931E-01
272	153052010004	2.773E-01
273	153053010004	1.155E-02
274	153054012002	2.511E-03
275	153055110004	1.540E-02
276	153055010004	5.251E-04
277	153056010004	3.138E-15
278	153057000004	0.000E-39
279	554050010004	6.931E 01
280	154051010004	6.931E 01
281	154052010004	3.466E-01
282	154053010004	1.155E-02
283	154054010004	2.687E-03
284	154055010004	3.851E-02
285	154056000004	0.000E-39
286	555050010004	6.931E 01
287	155051010004	6.931E 01
288	155052010004	4.621E-01
289	155053010004	2.773E-01
290	155054012002	4.332E-02
291	155055110004	1.386E-02
292	155055012002	2.310E-02
293	155056110004	2.458E-03
294	155056010004	1.375E-05
295	155057110004	1.777E-02
296	155057000004	0.000E-39
297	556051010004	6.931E 01

298	156052010004	6.931E-01
299	156053010004	3.466E-01
300	156054010004	4.621E-01
301	156055010004	1.386E-01
302	156056000004	0.000E-39
303	557051010004	6.931E 01
304	157052010004	6.931E 01
305	157053010004	4.621E-01
306	157054010004	1.733E-01
307	157055012002	5.776E-02
308	157056112002	3.501E-05
309	157056012002	5.023E-04
310	157057110004	9.367E-03
311	157057010004	1.056E-06
312	157060000004	0.000E-39
313	560052010004	6.931E 01
314	160053010004	4.621E-01
315	160054010004	2.310E-01
316	160055010004	9.902E-02
317	160056010004	9.169E-06
318	160057010004	6.017E-05
319	160060000004	0.000E-39
320	561052010004	6.931E 01
321	161053010004	6.931E 01
322	161054010004	3.466E-01
323	161055010004	1.733E-01
324	161056010004	8.252E-03
325	161057112002	9.627E-03
326	161057010004	3.633E-05
327	161060000004	0.000E-39
328	562052010004	6.931E 01
329	162053010004	6.931E 01
330	162054010004	4.621E-01
331	162055010004	2.310E-01
332	162056010004	4.814E-03
333	162057010004	1.386E-01
334	162060000004	0.000E-39
335	563053010004	6.931E 01
336	163054010004	6.931E-01
337	163055010004	2.773E-01
338	163056012002	1.540E-02
339	163057112301	3.466E-02
340	163057012002	5.501E-04
341	163060130004	1.866E-07
342	163060010004	3.633E-06
343	163061112002	4.269E-05
344	163061010004	1.000E-15
345	163062000004	0.000E-39
346	564053010004	6.931E 01
347	164054010004	6.931E 01
348	164055010004	3.466E-01
349	164056010004	6.931E-02
350	164057010004	4.621E-03
351	164060000004	0.000E-39
352	565053010004	6.931E 01
353	165054010004	6.931E 01
354	165055010004	4.621E-01
355	165056010004	1.386E-01
356	165057012002	1.050E-02
357	165060112301	6.418E-05

358	165060010004	2.310E-04
359	165061113201	9.627E-05
360	165061020004	2.567E-04
361	165062110004	5.730E-07
362	165062000004	0.000E-39
363	566054010004	6.931E 01
364	166055010004	4.621E-01
365	166056010004	1.540E-01
366	166057010004	2.773E-02
367	166060020004	2.310E-04
368	566061120004	2.567E-03
369	166061010004	1.386E-01
370	166062000004	0.000E-39
371	567054010004	6.931E 01
372	167055010004	4.621E-01
373	167056010004	2.310E-01
374	167057012002	4.077E-02
375	167060120004	4.279E-03
376	167060010004	1.226E-03
377	167061112301	6.418E-04
378	167061010004	5.776E-03
379	167062110004	3.275E-08
380	167062000004	0.000E-39
381	570055010004	6.931E 01
382	170056010004	3.466E-01
383	170057010004	1.155E-01
384	170060010004	9.627E-04
385	170061010004	1.386E-02
386	170062000004	0.000E-39
387	571055010004	6.931E 01
388	171056010004	4.621E-01
389	171057010004	1.733E-01
390	171060012002	6.931E-02
391	171061130004	3.727E-03
392	171061020004	2.310E-02
393	571062120004	8.786E-10
394	171062010004	7.131E-06
395	171063000004	0.000E-39
396	572056010004	4.621E-01
397	172057010004	2.310E-01
398	172060010004	1.733E-02
399	172061010004	1.540E-02
400	172062000004	0.000E-39
401	572063110004	2.784E-03
402	172063021042	2.865E-06
403	172064000004	0.000E-39
404	573056010004	6.931E 01
405	173057010004	2.773E-01
406	173060012002	7.702E-02
407	173061130004	1.925E-02
408	173061020004	6.931E-02
409	573062120004	6.418E-08
410	173062010004	2.818E-04
411	173063000004	0.000E-39
412	574056010004	6.931E 01
413	174057010004	3.466E-01
414	174060010004	6.931E-02
415	174061010004	3.466E-02
416	174062000004	0.000E-39
417	574063230004	5.501E-04

418	574063120004	8.887E-03
419	574063010004	1.337E-07
420	174064000004	0.000E-39
421	575057010004	3.466E-01
422	175060010004	1.386E-01
423	175061012002	4.621E-02
424	175062120004	1.191E-03
425	175062010004	8.535E-07
426	175063012002	8.135E-09
427	175064110004	1.383E-07
428	175064000004	0.000E-39
429	576057010004	6.931E 01
430	176060010004	2.310E-01
431	176061010004	9.902E-02
432	176062010004	1.028E-13
433	176063112002	6.080E-04
434	176063010004	6.418E-07
435	176064000004	0.000E-39
436	577057010004	6.931E 01
437	177060010004	4.621E-01
438	177061012002	2.310E-01
439	177062120004	2.751E-03
440	177062010004	8.557E-05
441	177063012002	2.061E-06
442	177064112002	7.641E-08
443	177064010004	2.070E-05
444	177065000004	0.000E-39
445	600060010004	6.931E-01
446	200061010004	3.466E-01
447	200062012002	2.027E-04
448	200063120004	1.050E-03
449	200063010004	2.239E-05
450	200064000004	0.000E-39
451	600065011042	4.621E-04
452	200065000004	0.000E-39
453	601060010004	6.931E 01
454	201061010004	4.621E-01
455	201062010004	1.070E-04
456	201063012002	4.186E-05
457	201064112002	1.957E-07
458	201064010004	1.605E-04
459	201065020004	1.373E-15
460	601066110004	1.003E-06
461	201066000004	0.000E-39
462	602060010004	6.931E 01
463	202061010004	4.621E-01
464	202062012002	4.443E-03
465	202063120004	1.925E-03
466	202063010004	3.122E-04
467	202064000004	0.000E-39
468	602065010004	1.540E-05
469	202066000004	0.000E-39
470	603060010004	6.931E 01
471	203061010004	6.931E-01
472	203062010004	1.050E-02
473	203063012002	5.955E-04
474	203064112002	6.418E-06
475	203064010004	4.814E-04
476	203065012002	9.946E-07
477	203066110004	6.685E-07

478	203066000004	0.000E-39
479	204066010004	6.931E-01
480	204061010004	6.931E-01
481	204062010004	1.386E-02
482	204063010004	3.691E-03
483	204064010004	2.468E-06
484	204065010004	8.371E-05
485	204066000004	0.000E-39
486	605061010004	6.931E-01
487	205062010004	1.777E-02
488	205063012002	4.376E-03
489	205064112002	2.310E-04
490	205064010004	9.242E-04
491	205065012002	9.257E-06
492	205066110004	3.488E-06
493	205066010004	1.522E-06
494	205067000004	0.000E-39
495	606061010004	6.931E-01
496	206062010004	6.931E-01
497	206063010004	4.621E-01
498	206064010004	2.751E-04
499	206065010004	2.180E-04
500	206066000004	0.000E-39
501	606067110004	6.639E-05
502	206067010004	9.984E-09
503	206070000004	0.000E-39
504	607062010004	6.931E-01
505	207063010004	3.648E-01
506	207064010004	8.252E-03
507	207065012002	2.874E-05
508	207066110004	7.551E-04
509	207066010004	2.093E-05
510	207067010004	1.098E-14
511	207070000004	0.000E-39
512	610063010004	2.310E-01
513	210064010004	1.155E-01
514	210065010004	8.351E-03
515	210066000004	0.000E-39
516	610067010004	6.171E-07
517	210070000004	0.000E-39
518	611063010004	6.931E-01
519	211064010004	2.310E-01
520	211065051042	2.841E-02
521	211066010004	2.962E-03
522	211067012002	7.522E-10
523	211070110004	4.443E-03
524	211070000004	0.000E-39
525	612063010004	6.931E-01
526	212064010004	3.466E-01
527	212065061042	1.100E-01
528	212066010004	8.252E-04
529	212067010004	3.588E-04
530	212070000004	0.000E-39
531	612071010004	1.000E-15
532	212072000004	0.000E-39
533	613064010004	6.931E-01
534	213065061042	3.466E-01
535	213066010004	1.691E-02
536	213067010004	1.216E-03
537	213070010004	1.359E-04

538	213071000004	0.000E-39
539	614064010004	6.931E 01
540	214065010004	4.621E-01
541	214066010004	4.332E-02
542	214067010004	1.050E-02
543	214070010004	6.268E-07
544	214071010004	4.790E-06
545	214072000004	0.000E-39
546	615065010004	6.931E 01
547	215066010004	4.077E-01
548	215067010004	2.773E-02
549	215070010004	6.418E-04
550	215071010004	5.067E-05
551	215072010004	2.431E-07
552	215073000004	0.000E-39
553	616065010004	6.931E 01
554	216066010004	4.621E-01
555	216067010004	8.664E-02
556	216070010004	1. 55E-03
557	216071010004	1.375E-04
558	216072000004	0.000E-39
559	617065010004	6.931E 01
560	217066010004	6.931E-01
561	217067010004	3.466E-01
562	217070010004	5.332E-02
563	217071010004	6.418E-04
564	217072010004	5.835E-06
565	217073010004	5.813E-07
566	217074000004	0.000E-39
567	620066010004	6.931E 01
568	220067010004	4.621E-01
569	220070010004	1.980E-01
570	220071010004	4.621E-02
571	220072010004	2.815E-08
572	220073010004	6.678E-04
573	220074000004	0.000E-39
574	621066010004	6.931E 01
575	221067010004	6.931E-01
576	221070010004	3.466E-01
577	221071010004	7.702E-02
578	221072010004	3.851E-03
579	221073010004	3.220E-05
580	221074000004	0.000E-39
581	622066010004	6.931E 01
582	222067010004	6.931E 01
583	222070010004	4.621E-01
584	222071010004	1.733E-01
585	222072010004	8.311E-04
586	222073010004	4.735E-04
587	222074000004	0.000E-39
588	623067010004	6.931E 01
589	223070010004	6.931E-01
590	223071010004	3.466E-01
591	223072010004	9.627E-03
592	223073010004	9.627E-04
593	223074010004	7.228E-07
594	223075010004	8.448E-09
595	223076000004	0.000E-39
596	624067010004	6.931E 01
597	224070010004	6.931E-01

598	224071010004	3.466E-01
599	224072010004	1.722E-02
600	224073010004	5.924E-03
601	224074000004	0.000E-39
602	624075010004	1.486E-06
603	224076000004	0.000E-39
604	625070010004	6.931E 01
605	225071010004	4.621E-01
606	225072010004	1.980E-01
607	225073010004	2.310E-02
608	225074010004	9.627E-05
609	225075010004	3.626E-06
610	225076000004	0.000E-39
611	626070010004	6.931E 01
612	226071010004	4.621E-01
613	226072010004	2.773E-01
614	226073010004	4.621E-02
615	226074000004	0.000E-39
616	626075010004	7.131E-05
617	226076000004	0.000E-39
618	627071010004	6.931E-01
619	227072010004	3.466E-01
620	227073010004	9.902E-02
621	227074010004	8.986E-04
622	227075010004	6.780E-06
623	227076010004	2.746E-19
624	227077000004	0.000E-39
625	630071010004	6.931E 01
626	230072010004	4.621E-01
627	230073010004	1.386E-01
628	230074010004	3.851E-03
629	230075010004	1.925E-03
630	230076000004	0.000E-39
631	630077112042	2.070E-05
632	630077021042	1.690E-09
633	230100000004	0.000E-39
634	631071010004	6.931E 01
635	231072010004	4.621E-01
636	231073010004	2.310E-01
637	231074010004	3.851E-02
638	231075010004	2.100E-03
639	231076010004	4.097E-06
640	231077000004	0.000E-39
	632072010004	6.931E-01
	232073010004	3.466E-01
643	232074010004	5.776E-02
644	232075010004	4.621E-03
645	232076000004	0.000E-39
646	632077010004	1.373E-09
647	232100000004	0.000E-39
648	633072010004	6.931E 01
649	233073010004	3.466E-01
650	233074010004	1.386E-01
651	233075010004	1.155E-02
652	233076010004	4.814E-04
653	233077010004	1.292E-08
654	233100000004	0.000E-39
655	634073010004	4.621E-01
656	234074010004	1.540E-01
657	234075010004	2.773E-02

658	234076010004	1.925E-05
659	234077010004	5.209E-07
660	234100000004	0.000E-39
661	635073010004	6.931E-01
662	235074010004	2.310E-01
663	235075010004	5.332E-02
664	235076010004	2.310E-02
665	235077010004	1.284E-05
666	235100000004	0.000E-39
667	636073010004	6.931E-01
668	236074010004	3.466E-01
669	236075010004	1.155E-01
670	236076010004	7.702E-04
671	236077010004	1.925E-04
672	236100000004	0.000E-39
673	637074010004	4.521E-01
674	237075010004	1.980E-01
675	237076010004	4.951E-02
676	237077010004	5.776E-04
677	237100010004	1.070E-05
678	237101000004	0.000E-39
679	640074010004	6.931E-01
680	240075010004	2.773E-01
681	240076010004	4.621E-02
682	240077010004	4.621E-03
683	240100000004	0.000E-39
684	640101010004	1.099E-07
685	240102000004	0.000E-39
686	641074010004	6.931E-01
687	241075010004	3.466E-01
688	241076010004	1.733E-01
689	241077010004	3.151E-02
690	241100010004	3.122E-03
691	241101010004	1.163E-06
692	241102000004	0.000E-39

IBHA	BRANCH
1	0.60000
2	0.40000
3	0.36000
4	0.64000
5	0.50000
6	0.50000
7	0.06000
8	0.94000
9	0.44000
10	0.56000
11	0.10000
12	0.90000
13	0.19000
14	0.81000
15	0.03000
16	0.97000
17	0.07000
18	0.93000
19	0.11800
20	0.88200
21	0.15000

22	0.85000
23	0.60000
24	0.40000
25	0.25000
26	0.75000
27	0.02000
28	0.98000
29	0.96000
30	0.04000
31	0.87000
32	0.13000
33	0.50000
34	0.50000
35	0.99500
36	0.00500
37	0.20600
38	0.79400
39	0.50000
40	0.50000
41	0.50000
42	0.50000
43	0.50000
44	0.50000
45	0.01000
46	0.99000
47	0.68000
48	0.32000
49	0.50000
50	0.50000
51	0.90000
52	0.10000
53	0.50000
54	0.50000
55	0.72000
56	0.14000
57	0.14000
58	0.09000
59	0.91000
60	0.95000
61	0.05000
62	0.50000
63	0.50000
64	0.60000
65	0.10000
66	0.30000
67	0.21900
68	0.78000
69	0.00100
70	0.50000
71	0.50000
72	0.05000
73	0.50000
74	0.45000
75	0.50000
76	0.50000
77	0.03000
78	0.97000
79	0.50000
80	0.50000
81	0.50000

82	0.50000
83	0.21500
84	0.78500
85	0.99000
86	0.01000
87	0.50000
88	0.50000
89	0.22000
90	0.78000
91	0.98000
92	0.02000
93	0.97000
94	0.03000
95	0.06500
96	0.93500
97	0.17300
98	0.82700
99	0.68000
100	0.32000
101	0.90000
102	0.10000
103	0.15000
104	0.85000
105	0.20000
106	0.80000
107	0.00800
108	0.99200
109	0.72000
110	0.28000
111	0.13000
112	0.87000
113	0.02400
114	0.97600
115	0.30000
116	0.70000
117	0.04000
118	0.96000
119	0.92000
120	0.08000
121	0.03000
122	0.97000
123	0.04000
124	0.96000
125	0.75000
126	0.25000
127	0.73000
128	0.27000

FISSION YIELDS FOR P239HE

MASS	CHARGE	ISOMER	YIELD PER 10,000 FISSIONS
72	27	0	-0.0000E-39
72	28	0	-0.0000E-39
72	29	0	-0.0000E-39
72	30	0	-0.0000E-39
72	31	0	-0.0000E-39
72	32	0	0.0000E-39
73	27	0	-0.0000E-39
73	28	0	-0.0000E-39
73	29	0	-0.0000E-39
73	30	0	-0.0000E-39
73	31	0	-0.0000E-39
73	32	1	-0.0000E-39
73	32	0	-0.0000E-39
74	27	0	-0.0000E-39
74	28	0	-0.0000E-39
74	29	0	-0.0000E-39
74	30	0	-0.0000E-39
74	31	0	-0.0000E-39
74	32	0	-0.0000E-39
75	27	0	-0.0000E-39
75	28	0	-0.0000E-39
75	29	0	-0.0000E-39
75	30	0	-0.0000E-39
75	31	0	-0.0000E-39
75	32	1	-0.0000E-39
75	32	0	-0.0000E-39
75	33	0	0.0000E-39
76	28	0	-0.0000E-39
76	29	0	-0.0000E-39
76	30	0	-0.0000E-39
76	31	0	-0.0000E-39
76	32	0	-0.0000E-39
76	33	0	-0.0000E-39
76	34	0	0.0000E-39
77	28	0	-0.0000E-39
77	29	0	-0.0000E-39
77	30	0	-0.0000E-39
77	31	0	-0.0000E-39
77	32	1	-0.0000E-39
77	32	0	-0.0000E-39
77	33	0	-0.0000E-39
77	34	0	0.0000E-39
78	28	0	-0.0000E-39
78	29	0	-0.0000E-39
78	30	0	-0.0000E-39
78	31	0	-0.0000E-39
78	32	0	-0.0000E-39
78	33	1	-0.0000E-39
78	33	0	-0.0000E-39
78	34	0	0.0000E-39
79	29	0	-0.0000E-39
79	30	0	-0.0000E-39
79	31	0	-0.0000E-39
79	32	0	-0.0000E-39
79	33	0	-0.0000E-39
79	34	1	-0.0000E-39
79	34	0	-0.0000E-39

79	33	0	0.0000E-39
80	29	0	-0.0000E-39
80	30	0	6.2000E-01
80	31	0	1.8400E 00
80	32	0	4.7800E 00
80	33	0	3.2100E 00
80	34	0	5.2500E-01
81	29	0	-0.0000E-39
81	30	0	-0.0000E-39
81	31	0	1.2900E 00
81	32	0	5.9200E 00
81	33	0	6.7200E 00
81	34	1	9.9620E-01
81	34	0	9.9620E-01
81	35	0	2.0700E-02
82	30	0	-0.0000E-39
82	31	0	5.4900E-01
82	32	0	5.3100E 00
82	33	0	1.0600E 01
82	34	0	5.3100E 00
82	35	0	5.4900E-01
82	36	0	0.0000E-39
83	30	0	-0.0000E-39
83	31	0	-0.0000E-39
83	32	0	3.5000E 00
83	33	0	1.3200E 01
83	34	1	4.5883E 00
83	34	0	7.8126E 00
83	35	0	2.8300E 00
83	36	1	-0.0000E-39
83	36	0	-0.0000E-39
84	31	0	-0.0000E-39
84	32	0	1.6800E-01
84	33	0	1.2600E 01
84	34	0	2.1400E 01
84	35	0	9.4400E 00
84	36	0	5.6200E-01
85	31	0	-0.0000E-39
85	32	0	1.1900E-02
85	33	0	8.6200E 00
85	34	0	2.7900E 01
85	35	0	2.3000E 01
85	36	1	3.0647E 00
85	36	0	3.0647E 00
85	37	0	-0.0000E-39
86	32	0	-0.0000E-39
86	33	0	5.9400E 00
86	34	0	3.1100E 01
86	35	0	4.0200E 01
86	36	0	1.3400E 01
86	37	1	1.3010E-01
86	37	0	1.3010E-01
86	38	0	0.0000E-39
87	32	0	-0.0000E-39
87	33	0	1.5800E 00
87	34	0	2.6700E 01
87	35	0	6.0500E 01
87	36	0	3.5500E 01
87	37	0	4.7500E 00
87	38	0	0.0000E-39

88	32	0	-0.0000E-39
88	33	0	-0.0000E-39
88	34	0	1.6800E 01
88	35	0	6.7200E 01
88	36	0	6.7200E 01
88	37	0	1.6800E 01
88	38	0	-0.0000E-39
89	33	0	-0.0000E-39
89	34	0	7.6600E 00
89	35	0	5.7300E 01
89	36	0	9.7500E 01
89	37	0	4.3000E 01
89	38	0	2.5600E 00
89	39	1	-0.0000E-39
89	39	0	-0.0000E-39
90	33	0	-0.0000E-39
90	34	0	1.0600E 00
90	35	0	4.1500E 01
90	36	0	1.1600E 02
90	37	0	8.3600E 01
90	38	0	1.4800E 01
90	39	0	0.0000E-39
90	40	0	0.0000E-39
91	34	0	-0.0000E-39
91	35	0	2.2500E 01
91	36	0	1.0900E 02
91	37	0	1.3519E 02
91	38	0	4.1100E 01
91	39	1	2.9840E-01
91	39	0	2.9840E-01
91	40	0	0.0000E-39
92	34	0	-0.0000E-39
92	35	0	6.4100E 00
92	36	0	8.0600E 01
92	37	0	1.7000E 02
92	38	0	9.2200E 01
92	39	0	1.1200E 01
92	40	0	0.0000E-39
93	34	0	-0.0000E-39
93	35	0	5.4500E-01
93	36	0	5.1200E 01
93	37	0	1.7700E 02
93	38	0	1.5500E 02
93	39	0	3.3900E 01
93	40	0	-0.0000E-39
93	41	1	-0.0000E-39
93	41	0	-0.0000E-39
94	35	0	-0.0000E-39
94	36	0	2.3500E 01
94	37	0	1.4300E 02
94	38	0	2.1300E 02
94	39	0	8.2200E 01
94	40	0	2.7700E 00
95	35	0	-0.0000E-39
95	36	0	2.9500E 00
95	37	0	8.7400E 01
95	38	0	2.2700E 02
95	39	0	1.5200E 02
95	40	0	2.5000E 01
95	41	1	-0.0000E-39

95	41	0	-0.0000E-39
95	42	0	0.0000E-39
96	35	0	-0.0000E-39
96	36	0	4.3400E 01
96	37	0	1.9900E 02
96	38	0	2.2600E 02
96	39	0	6.5500E 01
96	40	0	6.9800E-01
96	41	0	-0.0000E-39
96	42	0	0.0000E-39
97	36	0	-0.0000E-39
97	37	0	-0.0000E-39
97	38	0	1.7000E 01
97	39	0	1.4100E 02
97	40	0	2.5900E 02
97	41	1	6.2513E 01
97	41	0	6.2513E 01
97	42	0	9.7300E 00
98	36	0	-0.0000E-39
98	37	0	-0.0000E-39
98	38	0	5.4800E 01
98	39	0	2.1900E 02
98	40	0	2.1900E 02
98	41	1	2.7851E 01
98	41	0	2.7851E 01
98	42	0	-0.0000E-39
99	37	0	-0.0000E-39
99	38	0	6.7500E 00
99	39	0	1.1400E 02
99	40	0	2.5700E 02
99	41	0	1.5100E 02
99	42	0	2.0200E 01
99	43	1	-0.0000E-39
99	43	0	-0.0000E-39
99	44	0	0.0000E-39
100	38	0	-0.0000E-39
100	39	0	4.0000E 01
100	40	0	1.9400E 02
100	41	0	2.3600E 02
100	42	0	7.2900E 01
100	43	0	1.0500E 00
100	44	0	0.0000E-39
101	38	0	-0.0000E-39
101	39	0	3.1200E 00
101	40	0	9.2600E 01
101	41	0	2.4100E 02
101	42	0	1.6100E 02
101	43	0	2.6500E 01
101	44	0	0.0000E-39
102	38	0	-0.0000E-39
102	39	0	-0.0000E-39
102	40	0	4.5400E 01
102	41	0	1.9600E 02
102	42	0	2.1100E 02
102	43	1	2.8512E 01
102	43	0	2.8512E 01
102	44	0	-0.0000E-39
103	39	0	-0.0000E-39
103	40	0	2.0600E 01
103	41	0	1.3900E 02

103	42	0	2.2000E 02
103	43	0	9.0900E 01
103	44	0	4.0700E 00
103	45	1	-0.0000E-39
103	45	0	-0.0000E-39
104	39	0	-0.0000E-39
104	40	0	1.2200E 00
104	41	0	6.4400E 01
104	42	0	1.9200E 02
104	43	0	1.4900E 02
104	44	0	2.8500E 01
104	45	1	-0.0000E-39
104	45	0	-0.0000E-39
104	46	0	0.0000E-39
105	39	0	-0.0000E-39
105	40	0	5.1700E-01
105	41	0	4.8500E 01
105	42	0	1.6700E 02
105	43	0	1.4700E 02
105	44	0	3.2200E 01
105	45	1	-0.0000E-39
105	45	0	-0.0000E-39
105	46	0	0.0000E-39
106	39	0	-0.0000E-39
106	40	0	-0.0000E-39
106	41	0	3.4800E 01
106	42	0	1.3800E 02
106	43	0	1.3800E 02
106	44	0	3.4800E 01
106	45	1	-0.0000E-39
106	45	0	-0.0000E-39
106	46	0	0.0000E-39
107	40	0	-0.0000E-39
107	41	0	2.3600E 01
107	42	0	1.0800E 02
107	43	0	1.2200E 02
107	44	0	3.5600E 01
107	45	1	-0.0000E-39
107	45	0	-0.0000E-39
107	46	0	0.0000E-39
107	47	0	0.0000E-39
108	40	0	-0.0000E-39
108	41	0	3.7900E 00
108	42	0	4.7800E 01
108	43	0	1.0100E 02
108	44	0	5.4600E 01
108	45	0	6.6400E 00
108	46	0	0.0000E-39
109	40	0	-0.0000E-39
109	41	0	2.0600E-01
109	42	0	1.9300E 01
109	43	0	6.6300E 01
109	44	0	5.8400E 01
109	45	1	6.5054E 00
109	45	0	6.5054E 00
109	46	1	-0.0000E-39
109	46	0	-0.0000E-39
109	47	1	-0.0000E-39
109	47	0	-0.0000E-39
110	41	0	-0.0000E-39

110	42	0	8.1200E 00
110	43	0	4.2700E 01
110	44	0	6.3900E 01
110	45	0	2.4500E 01
110	46	0	8.2600E-01
111	41	0	-0.0000E-39
111	42	0	7.5000E-01
111	43	0	2.2300E 01
111	44	0	5.7800E 01
111	45	0	3.8800E 01
111	46	1	3.2324E 00
111	46	0	3.2324E 00
111	47	1	-0.0000E-39
111	47	0	-0.0000E-39
111	48	0	0.0000E-39
112	42	0	-0.0000E-39
112	43	0	9.6900E 00
112	44	0	4.4300E 01
112	45	0	5.0200E 01
112	46	0	1.4600E 01
112	47	0	1.5500E-01
112	48	0	0.0000E-39
113	42	0	-0.0000E-39
113	43	0	2.8000E 00
113	44	0	2.7000E 01
113	45	0	4.8100E 01
113	46	0	2.7000E 01
113	47	1	1.4231E 00
113	47	0	1.4231E 00
113	48	0	0.0000E-39
114	42	0	-0.0000E-39
114	43	0	1.5200E-01
114	44	0	1.3300E 01
114	45	0	4.5600E 01
114	46	0	4.0200E 01
114	47	0	8.8000E 00
114	48	0	-0.0000E-39
115	43	0	-0.0000E-39
115	44	0	5.3000E 00
115	45	0	3.2300E 01
115	46	0	4.8200E 01
115	47	1	9.4532E 00
115	47	0	9.4532E 00
115	48	1	3.1770E-01
115	48	0	3.1770E-01
115	49	1	-0.0000E-39
115	49	0	-0.0000E-39
115	50	0	0.0000E-39
116	43	0	-0.0000E-39
116	44	0	6.2000E-01
116	45	0	1.8400E 01
116	46	0	4.7800E 01
116	47	0	3.2000E 01
116	48	0	5.2500E 00
117	43	0	-0.0000E-39
117	44	0	-0.0000E-39
117	45	0	9.1800E 00
117	46	0	3.9700E 01
117	47	0	4.2800E 01
117	48	1	5.7431E 00

117	48	0	5.7431E 00
117	49	1	-0.0000E-39
117	49	0	-0.0000E-39
117	50	1	-0.0000E-39
117	50	0	-0.0000E-39
118	44	0	-0.0000E-39
118	45	0	3.1400E 00
118	46	0	2.5800E 01
118	47	0	4.7600E 01
118	48	0	2.2600E 01
118	49	1	9.1480E-01
118	49	0	9.1480E-01
118	50	0	0.0000E-39
119	44	0	-0.0000E-39
119	45	0	1.9000E-01
119	46	0	1.3300E 01
119	47	0	4.2900E 01
119	48	1	1.7991E 01
119	48	0	1.7991E 01
119	49	1	4.2082E 00
119	49	0	4.2082E 00
119	50	1	-0.0000E-39
119	50	0	-0.0000E-39
120	45	0	-0.0000E-39
120	46	0	5.7900E 00
120	47	0	3.2800E 01
120	48	0	4.5800E 01
120	49	0	1.6300E 01
120	50	0	-0.0000E-39
121	45	0	-0.0000E-39
121	46	0	8.7600E-01
121	47	0	1.9500E 01
121	48	0	4.7300E 01
121	49	1	1.5145E 01
121	49	0	1.5145E 01
121	50	1	2.2464E 00
121	50	0	2.2464E 00
121	51	0	0.0000E-39
122	46	0	-0.0000E-39
122	47	0	7.7200E 00
122	48	0	3.7500E 01
122	49	0	4.5400E 01
122	50	0	1.4100E 01
122	51	1	1.0220E-01
122	51	0	1.0220E-01
122	52	0	0.0000E-39
123	46	0	-0.0000E-39
123	47	0	3.4000E 00
123	48	0	2.7900E 01
123	49	1	2.6123E 01
123	49	0	2.6123E 01
123	50	1	1.2401E 01
123	50	0	1.2401E 01
123	51	0	1.9400E 00
124	46	0	-0.0000E-39
124	47	0	2.2200E-01
124	48	0	1.5500E 01
124	49	0	5.0200E 01
124	50	0	4.1400E 01
124	51	2	2.8902E 00

124	51	1	2.8902E 00
124	51	0	2.8902E 00
124	52	0	-0.0000E-39
125	47	0	-0.0000E-39
125	48	0	7.0000E-01
125	49	0	4.1300E 01
125	50	1	2.9173E 01
125	50	0	2.9173E 01
125	51	0	2.0400E 01
125	52	1	5.9470E-01
125	52	0	5.9470E-01
126	47	0	-0.0000E-39
126	48	0	1.0900E 00
126	49	0	2.4600E 01
126	50	0	5.9400E 01
126	51	1	1.9059E 01
126	51	0	1.9059E 01
126	52	0	5.5500E 00
127	47	0	-0.0000E-39
127	48	0	-0.0000E-39
127	49	0	1.4200E 01
127	50	1	0.0000E-39
127	50	0	6.1600E 01
127	51	0	6.6500E 01
127	52	1	8.9449E 00
127	52	0	8.9449E 00
127	53	0	-0.0000E-39
128	48	0	-0.0000E-39
128	49	0	1.2900E 01
128	50	0	6.7300E 01
128	51	1	4.4267E 01
128	51	0	4.4267E 01
128	52	0	2.9100E 01
128	53	0	5.5500E-01
128	54	0	0.0000E-39
129	48	0	-0.0000E-39
129	49	0	1.0500E 01
129	50	0	7.0700E 01
129	51	0	1.1200E 02
129	52	1	2.3531E 01
129	52	0	2.3531E 01
129	53	0	2.0700E 00
129	54	1	-0.0000E-39
129	54	0	-0.0000E-39
130	48	0	-0.0000E-39
130	49	0	1.0900E 01
130	50	0	8.0900E 01
130	51	1	0.0000E-39
130	51	0	1.3800E 02
130	52	0	6.0800E 01
130	53	0	3.6200E 00
130	54	0	0.0000E-39
131	48	0	-0.0000E-39
131	49	0	2.0700E 00
131	50	0	6.1300E 01
131	51	0	1.6000E 02
131	52	1	5.4381E 01
131	52	0	5.4381E 01
131	53	0	1.7600E 01
131	54	1	-0.0000E-39

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132	48	0	-0.0000E-39
132	49	0	-0.0000E-39
132	50	0	3.2900E 01
132	51	0	1.5100E 02
132	52	0	1.7100E 02
132	53	0	4.9600E 01
132	54	0	5.2900E-01
133	49	0	-0.0000E-39
133	50	0	1.4800E 01
133	51	0	1.2200E 02
133	52	1	1.1435E 02
133	52	0	1.1435E 02
133	53	0	1.0600E 02
133	54	1	4.2946E 00
133	54	0	4.2946E 00
133	55	0	0.0000E-39
134	49	0	-0.0000E-39
134	50	0	-0.0000E-39
134	51	0	4.7400E 01
134	52	0	2.0500E 02
134	53	0	2.2100E 02
134	54	0	5.8600E 01
134	55	1	-0.0000E-39
134	55	0	-0.0000E-39
134	56	0	0.0000E-39
135	50	0	-0.0000E-39
135	51	0	4.7900E 00
135	52	0	1.0700E 02
135	53	0	2.5900E 02
135	54	1	8.2842E 01
135	54	0	8.2842E 01
135	55	0	2.4200E 01
135	56	0	0.0000E-39
136	51	0	-0.0000E-39
136	52	0	3.1500E 01
136	53	0	1.7800E 02
136	54	0	2.4900E 02
136	55	0	8.8200E 01
136	56	0	2.2700E 00
137	51	0	-0.0000E-39
137	52	0	6.6900E 00
137	53	0	1.1300E 02
137	54	0	2.5500E 02
137	55	0	1.5000E 02
137	56	1	1.0165E 01
137	56	0	1.0165E 01
138	51	0	-0.0000E-39
138	52	0	-0.0000E-39
138	53	0	5.2500E 01
138	54	0	2.0700E 02
138	55	0	2.0700E 02
138	56	0	5.2500E 01
138	57	0	-0.0000E-39
138	58	0	0.0000E-39
139	52	0	-0.0000E-39
139	53	0	1.8100E 01
139	54	0	1.3600E 02
139	55	0	2.3200E 02
139	56	0	1.0200E 02

139	57	0	6.0200E 00
140	52	0	-0.0000E-39
140	53	0	1.9800E 00
140	54	0	7.7400E 01
140	55	0	2.1700E 02
140	56	0	1.5700E 02
140	57	0	2.7600E 01
140	58	0	0.0000E-39
141	53	0	-0.0000E-39
141	54	0	3.2800E 01
141	55	0	1.5900E 02
141	56	0	1.9300E 02
141	57	0	5.9800E 01
141	58	0	8.5300E-01
141	59	0	0.0000E-39
142	53	0	-0.0000E-39
142	54	0	7.4800E 00
142	55	0	9.4100E 01
142	56	0	1.9800E 02
142	57	0	1.0700E 02
142	58	0	1.3100E 01
143	53	0	-0.0000E-39
143	54	0	5.1400E-01
143	55	0	4.8200E 01
143	56	0	1.6600E 02
143	57	0	1.4600E 02
143	58	0	3.2100E 01
143	59	0	-0.0000E-39
143	60	0	0.0000E-39
144	54	0	-0.0000E-39
144	55	0	1.8600E 01
144	56	0	1.1300E 02
144	57	0	1.7000E 02
144	58	0	6.5100E 01
144	59	0	2.2000E 00
144	60	0	0.0000E-39
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145	56	0	5.5300E 01
145	57	0	1.4400E 02
145	58	0	9.6300E 01
145	59	0	1.5800E 01
145	60	0	0.0000E-39
146	54	0	-0.0000E-39
146	55	0	-0.0000E-39
146	56	0	2.3800E 01
146	57	0	1.0300E 02
146	58	0	1.0900E 02
146	59	0	2.9400E 01
146	60	0	-0.0000E-39
147	55	0	-0.0000E-39
147	56	0	6.8100E 00
147	57	0	5.6000E 01
147	58	0	1.0300E 02
147	59	0	4.9000E 01
147	60	0	3.8900E 00
147	61	0	0.0000E-39
147	62	0	0.0000E-39
148	55	0	-0.0000E-39
148	56	0	3.3900E-01

148	57	0	2.3800E 01
148	58	0	7.6700E 01
148	59	0	6.3200E 01
148	60	0	1.3000E 01
148	61	0	-0.0000E-39
148	62	0	0.0000E-39
149	56	0	-0.0000E-39
149	57	0	6.6200E 00
149	58	0	4.0300E 01
149	59	0	6.0200E 01
149	60	0	2.3200E 01
149	61	0	7.8000E-01
149	62	0	0.0000E-39
150	56	0	-0.0000E-39
150	57	0	3.8600E-01
150	58	0	1.5100E 01
150	59	0	4.2400E 01
150	60	0	3.0400E 01
150	61	0	5.3700E 00
150	62	0	0.0000E-39
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151	58	0	-0.0000E-39
151	59	0	-0.0000E-39
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160	63	0	-0.0000E-39
160	64	0	-0.0000E-39
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160	66	0	0.0000E-39
161	60	0	-0.0000E-39
161	61	0	-0.0000E-39
161	62	0	-0.0000E-39
161	63	0	-0.0000E-39
161	64	0	-0.0000E-39
161	65	0	-0.0000E-39
161	66	0	0.0000E-39

OUTPUT OF XPRM

INDEX	IA	IZ	IS	JRM	ERM
1	72	30	0	4	-8.400E-07
2	72	31	0	5	1.170E-05
3	73	31	0	11	-1.890E-06
4	73	32	1	12	7.790E-08
5	74	30	0	17	-3.450E-06
6	74	31	0	18	1.800E-05
7	75	32	1	25	-3.030E-07
8	75	32	0	26	1.990E-07
9	76	33	0	33	-2.100E-06
10	77	32	1	39	-4.040E-07
11	77	32	0	40	5.740E-06
12	77	33	0	41	5.730E-08
13	78	32	0	47	-2.430E-06
14	78	33	1	48	2.710E-06
15	78	33	0	49	4.280E-06
16	79	34	1	56	-1.040E-07
17	81	34	1	70	-1.150E-07
18	82	35	0	78	-1.430E-05
19	83	34	1	84	-6.660E-07
20	83	34	0	85	1.490E-05
21	83	35	0	86	2.770E-07
22	83	36	1	87	2.320E-07
23	84	35	0	93	-9.170E-06
24	85	36	1	100	-9.090E-07
25	85	36	0	101	2.770E-08
26	86	37	1	108	-2.990E-06
27	86	37	0	109	4.750E-07
28	87	36	0	115	-4.100E-06
29	88	36	0	122	-7.680E-06
30	88	37	0	123	3.120E-06
31	89	36	0	128	-1.690E-05
32	89	37	0	129	1.100E-05
33	90	36	0	134	-8.990E-06
34	91	38	0	145	-4.180E-06
35	91	39	1	146	2.820E-06
36	91	39	0	147	1.730E-08
37	92	38	0	153	-5.880E-06
38	92	39	0	154	1.220E-06
39	93	38	0	160	-1.140E-05
40	93	39	0	161	4.880E-07
41	93	41	1	163	1.660E-07
42	94	39	0	169	-3.480E-06
43	95	40	0	176	-3.780E-06
44	95	41	1	177	1.330E-06
45	95	41	0	178	3.910E-06
46	96	41	0	186	-1.150E-05
47	97	40	0	192	-2.380E-07
48	97	41	1	193	3.820E-06
49	97	41	0	194	3.500E-06
50	99	42	0	209	-6.580E-07
51	99	43	1	210	7.450E-07
52	100	43	0	218	-6.070E-06
53	101	42	0	227	-7.920E-06
54	101	43	0	225	1.930E-06
55	102	43	1	232	-5.250E-06
56	103	44	0	240	-2.610E-06

57	103	45	1	241	1.220E-07
58	104	45	1	249	-2.150E-07
59	104	45	0	250	3.000E-06
60	105	44	0	257	-3.880E-06
61	105	45	1	258	4.170E-07
62	105	45	0	259	1.750E-07
63	106	45	1	267	-8.680E-06
64	106	45	0	268	1.480E-06
65	107	44	0	274	-1.240E-06
66	107	45	0	276	1.740E-06
67	108	44	0	283	-2.650E-07
68	108	45	0	284	2.360E-06
69	109	45	1	291	-6.370E-07
70	109	46	1	293	6.910E-07
71	109	46	0	294	1.690E-07
72	109	47	1	295	8.050E-08
73	111	46	1	308	-3.400E-07
74	111	46	0	309	8.900E-07
75	111	47	1	310	3.770E-07
76	111	47	0	311	1.310E-07
77	112	46	0	317	-1.250E-07
78	112	47	0	318	3.240E-06
79	115	48	1	341	-1.770E-07
80	115	48	0	342	1.040E-06
81	115	49	1	343	1.020E-06
82	116	47	0	350	-4.430E-06
83	117	48	1	357	-7.080E-06
84	117	49	1	359	5.250E-07
85	117	49	0	360	3.850E-06
86	117	50	1	361	1.220E-06
87	118	49	0	369	-1.160E-06
88	119	49	1	377	-2.690E-07
89	119	49	0	378	4.070E-06
90	119	50	1	379	1.470E-07
91	120	48	0	384	-2.710E-06
92	121	49	0	392	-4.690E-06
93	122	51	1	401	-4.840E-07
94	122	51	0	402	2.020E-06
95	123	49	0	408	-5.350E-06
96	123	50	1	409	1.050E-07
97	123	50	0	410	8.320E-07
98	124	51	0	419	-8.960E-06
99	125	50	1	424	-1.960E-06
100	125	50	0	425	3.980E-07
101	125	51	0	426	2.540E-06
102	125	52	1	427	3.270E-07
103	126	51	0	434	-9.390E-06
104	127	50	0	440	-2.710E-06
105	127	51	0	441	2.630E-06
106	127	52	1	442	5.140E-07
107	127	52	0	443	2.340E-08
108	128	50	0	447	-2.390E-06
109	128	51	1	448	9.280E-06
110	128	53	0	451	4.900E-07
111	129	51	0	456	-5.400E-06
112	129	52	1	457	1.830E-07
113	129	52	0	458	1.230E-06
114	129	54	1	460	4.360E-07
115	130	53	0	468	-7.240E-06
116	131	51	0	473	-3.180E-06

117	131	52	1	474	9.300E-06
118	131	52	0	475	2.130E-06
119	131	53	0	476	2.210E-06
120	131	54	1	477	1.980E-07
121	132	52	0	483	-1.440E-06
122	132	53	0	484	1.120E-05
123	133	52	1	489	-1.120E-05
124	133	52	0	490	7.840E-06
125	133	53	0	491	3.140E-06
126	133	54	1	492	3.840E-07
127	133	54	0	493	3.060E-07
128	134	52	0	498	-6.840E-06
129	134	53	0	499	1.220E-05
130	134	55	1	501	7.540E-07
131	134	55	0	502	8.130E-06
132	135	53	0	507	-1.560E-05
133	135	54	1	508	2.390E-06
134	135	54	0	509	1.490E-06
135	136	53	0	514	-1.210E-05
136	136	55	0	516	1.170E-05
137	137	56	1	523	-3.180E-06
138	138	54	0	528	-4.410E-06
139	138	55	0	529	9.790E-06
140	139	54	0	535	-1.460E-06
141	139	55	0	536	1.100E-06
142	139	56	0	537	2.550E-07
143	140	55	0	542	-3.230E-06
144	140	56	0	543	1.160E-06
145	140	57	0	544	1.140E-05
146	141	56	0	549	-3.650E-06
147	141	57	0	550	1.270E-07
148	141	58	0	551	4.670E-07
149	142	56	0	556	-4.950E-06
150	142	57	0	557	6.010E-06
151	143	57	0	563	-5.740E-06
152	143	58	0	564	3.500E-06
153	144	58	0	571	-1.230E-07
154	144	59	0	572	1.400E-07
155	145	58	0	578	-3.650E-06
156	145	59	0	579	4.090E-06
157	146	58	0	585	-1.500E-06
158	146	59	0	586	6.530E-06
159	147	60	0	593	-9.600E-07
160	148	61	0	602	-5.280E-06
161	149	60	0	608	-1.220E-06
162	149	61	0	609	2.800E-08
163	150	61	0	616	-8.040E-06
164	151	60	0	621	-5.600E-06
165	151	61	0	622	1.290E-06
166	152	61	0	629	-3.400E-06
167	152	63	1	631	1.920E-06
168	152	63	0	632	5.800E-06
169	153	61	0	638	-8.040E-07
170	153	62	0	639	1.860E-07
171	154	63	0	646	-6.610E-06
172	155	62	0	652	-7.260E-07
173	155	63	0	653	2.890E-07
174	156	63	0	659	-3.020E-06
175	157	63	0	665	-3.380E-06
176	158	62	0	670	-2.710E-06

177	158	63	0	671	6.300E-06
178	159	64	0	677	-2.950E-07
179	160	65	0	684	-2.020E-06
180	161	64	0	690	-2.030E-06
181	161	65	0	691	2.430E-07

OUTPUT OF INDC1

NUMBER OF ELEMENTS = 18

NUMBER OF NEUTRONS EMITTED PER FISSION = 1.40

INDEX	ISC	FAC	XLAM	KEV	FOG	RNY
1	4	1.002E-02	7.419E-09	1	0.00000	0.000E-39
		1.469E-01	7.461E-35	1	0.00000	0.000E-39
		3.250E-03	6.930E-31	1	0.00000	0.000E-39
		2.155E-04	1.744E-07	3	0.43000 0.03000 0.57000	6.100E-06 5.770E-06 5.380E-06
2	7	0.000E-39	3.487E-08	1	0.00000	0.000E-39
		0.000E-39	6.930E-31	1	0.00000	0.000E-39
		0.000E-39	6.930E-31	1	0.00000	0.000E-39
		0.000E-39	6.930E-31	1	0.00000	0.000E-39
		0.000E-39	6.930E-31	1	0.00000	0.000E-39
		0.000E-39	1.069E-05	1	0.00000	0.000E-39
		0.000E-39	3.208E-03	1	0.00000	0.000E-39
3	3	4.829E-02	6.930E-31	1	0.00000	0.000E-39
		8.615E-03	6.930E-31	1	0.00000	0.000E-39
		2.225E-03	7.347E-05	1	0.00700	6.040E-06
4	3	8.997E-02	1.689E-17	1	0.11000	6.700E-06
		6.150E-04	6.930E-31	1	0.00000	0.000E-39
		3.324E-03	1.552E-05	1	0.18000	6.950E-06
5	1	2.714E-03	5.022E-03	1	1.00000	7.750E-06
6	1	7.455E-03	1.283E-05	2	1.00000	1.070E-05
					1.00000	6.400E-06
7	5	2.899E-04	6.930E-31	1	0.00000	0.000E-39
		7.541E-04	6.930E-31	1	0.00000	0.000E-39

		3.604E-02	6.930E-31	1	0.00000	0.000E-39
		6.379E-04	6.930E-31	1	0.00000	0.000E-39
		4.556E-05	1.591E-03	3	0.04200 0.01300 0.94500	4.650E-06 3.230E-06 1.750E-06
8	2	5.779E-01	6.930E-31	1	0.00000	0.000E-39
		1.498E-07	1.771E-09	1	0.00000	0.000E-39
9	4	1.167E-02	6.930E-31	1	0.00000	0.000E-39
		1.540E-02	6.930E-31	1	0.00000	0.000E-39
		8.676E-04	5.277E-06	1	0.00000	0.000E-39
		1.191E-04	1.259E-03	3	0.00600 0.01000 0.89000	1.576E-05 1.410E-05 1.168E-05
10	2	1.970E-02	7.130E-14	1	0.00000	0.000E-39
		8.120E-05	3.080E-04	2	0.47000 0.31000	8.920E-06 7.140E-06
11	7	0.000E-39	2.005E-08	1	0.00000	0.000E-39
		0.000E-39	6.930E-31	1	0.00000	0.000E-39
		0.000E-39	6.930E-31	1	0.00000	0.000E-39
		0.000E-39	6.930E-31	1	0.00000	0.000E-39
		0.000E-39	6.930E-31	1	0.00000	0.000E-39
		0.000E-39	4.096E-06	1	0.00000	0.000E-39
		0.000E-39	4.813E-04	1	0.00000	0.000E-39
12	1	8.026E-02	7.461E-05	5	0.00500 0.01800 0.19500 0.28200 0.97700	1.134E-05 1.040E-05 8.840E-06 7.950E-06 4.550E-06
13	3	1.347E-03	1.283E-34	1	0.00000	0.000E-39
		1.560E-03	6.930E-31	1	0.00000	0.000E-39
		1.911E-04	1.216E-03	2	0.30000 0.70000	5.050E-06 4.330E-06

14	2	0.000E-39	6.930E-31	1	0.00000	0.000E-39
		0.000E-39	2.310E-01	2	0.02600	1.513E-05
					0.01300	1.200E-05
15	2	0.000E-39	6.930E-31	1	0.00000	0.000E-39
		0.000E-39	3.072E-03	1	1.00000	6.620E-06
16	4	1.869E-04	2.885E-07	1	0.09000	1.750E-06
		1.709E-04	6.930E-31	1	0.00000	0.000E-39
		4.384E-04	6.930E-31	1	0.00000	0.000E-39
		2.306E-06	3.208E-05	1	0.00000	0.000E-39
17	1	4.801E-04	5.609E-07	1	0.00000	0.000E-39
18	1	4.539E-04	6.930E-31	1	-0.00000	-0.000E-39

OUTPUT OF BATMAN

NUCLID	ABUNCO
510033010004	0.0000E-39
110034010004	0.0000E-39
110035010004	0.0000E-39
110036010004	0.0000E-39
110037010004	0.0000E-39
110040000004	0.0000E-39
511033010004	0.0000E-39
111034010004	0.0000E-39
111035010004	0.0000E-39
111036010004	0.0000E-39
111037010004	0.0000E-39
111040110004	0.0000E-39
111040000004	0.0000E-39
512033010004	0.0000E-39
112034010004	0.0000E-39
112035010004	0.0000E-39
112036010004	0.0000E-39
112037010004	0.0000E-39
112040000004	0.0000E-39
513033010004	0.0000E-39
113034010004	0.0000E-39
113035010004	0.0000E-39
113036010004	0.0000E-39
113037010004	0.0000E-39
113040110004	0.0000E-39
113040010004	0.0000E-39
113041000004	0.0000E-39
514034010004	0.0000E-39
114035010004	0.0000E-39
114036010004	0.0000E-39
114037010004	0.0000E-39
114040000004	0.0000E-39
514041010004	0.0000E-39
114042000004	0.0000E-39
515034010004	0.0000E-39
115035010004	0.0000E-39
115036010004	0.0000E-39
115037012002	0.0000E-39
115040112002	0.0000E-39
115040010004	0.0000E-39
115041010004	0.0000E-39
115042000004	0.0000E-39
516034010004	0.0000E-39
116035010004	0.0000E-39
116036010004	0.0000E-39
116037010004	0.0000E-39
116040012002	0.0000E-39
116041110004	0.0000E-39
116041010004	0.0000E-39
116042000004	0.0000E-39
517035010004	0.0000E-39
117036010004	0.0000E-39
117037010004	0.0000E-39
117040010004	0.0000E-39
117041010004	0.0000E-39
117042110004	0.0000E-39
117042010004	0.0000E-39

117043000004	0.0000E-39
520035010004	0.0000E-39
120036010004	1.0416E-01
120037010004	1.0541E 00
120040010004	5.5232E 00
120041010004	3.5188E 00
120042000004	2.4971E-01
521035010004	0.0000E-39
121036010004	0.0000E-39
121037010004	3.3851E-01
121040010004	4.7978E 00
121041012002	8.1857E 00
121042110004	1.0319E 00
121042010004	1.5654E 00
121043000004	2.1509E-03
522036010004	0.0000E-39
122037010004	9.2231E-02
122040010004	3.4370E 00
122041010004	1.1289E 01
122042000004	1.6407E 00
522043010004	5.4899E-01
122044000004	1.1370E-05
523036010004	0.0000E-39
123037010004	0.0000E-39
123040010004	9.1843E-01
123041012002	1.1064E 01
123042112002	6.4484E 00
123042010004	1.0459E 01
123043010004	3.0394E 00
123044110004	9.0626E-04
123044000004	1.1474E-06
524037010004	0.0000E-39
124040010004	2.8224E-02
124041010004	6.5470E 00
124042010004	2.7226E 01
124043010004	9.7931E 00
124044000004	1.3393E-02
525037010004	0.0000E-39
125040010004	8.1941E-04
125041010004	1.7703E-02
125042010004	3.4181E 01
125043010004	2.4976E 01
125044112002	3.4205E 00
125044010004	3.0648E 00
125045000004	4.4549E-04
526040010004	0.0000E-39
126041010004	1.5587E 00
126042010004	3.0272E 01
126043010004	4.3540E 01
126044000004	1.9585E 00
526045110004	1.2464E-01
126045010004	1.3556E-01
126046000004	2.2724E-07
527040010004	0.0000E-39
127041010004	2.6544E-01
127042010004	2.3770E 01
127043071042	6.1741E 01
127044010004	3.9174E 01
127045010004	4.7713E 00
127046000004	9.5367E-07

530040010004	0.0000E-39
130041010004	0.0000E-39
130042010004	5.7609E 00
130043061042	6.7062E 01
130044010004	8.0858E 01
130045010004	1.6778E 01
130046000004	4.1600E-02
531041010004	0.0000E-39
131042010004	2.0100E 00
131043051042	3.5152E 01
131044010004	1.2562E 02
131045010004	4.4452E 01
131046020004	2.6865E 00
531047110004	0.0000E-39
131047000004	1.0639E-05
532041010004	0.0000E-39
132042010004	0.0000E-39
132043071042	7.9945E 00
132044010004	1.3488E 02
132045010004	9.2644E 01
132046010004	1.6254E 01
132047010004	4.6915E-08
132050000004	8.9407E-06
533042010004	0.0000E-39
133043010004	5.9042E 00
133044010004	9.7553E 01
133045010004	1.5778E 02
133046012002	4.6553E 01
133047110004	3.0014E-01
133047010004	3.0001E-01
133050000004	1.3046E-05
534042010004	0.0000E-39
134043010004	1.0769E 00
134044010004	3.6137E 01
134045010004	1.4042E 02
134046010004	1.7154E 02
134047010004	1.1234E 01
134050000004	2.3264E-03
535042010004	0.0000E-39
135043010004	0.0000E-39
135044010004	1.3579E 01
135045010004	1.3856E 02
135046010004	2.3052E 02
135047010004	3.4981E 01
135050012002	2.5622E-03
135051110004	1.1369E-11
135051000004	5.1260E-06
536043010004	0.0000E-39
136044010004	3.4756E 00
136045010004	7.0155E 01
136046010004	2.9693E 02
136047010004	9.0949E 01
136050000004	1.9252E-01
537043010004	0.0000E-39
137044010004	0.0000E-39
137045010004	2.3712E 01
137046010004	2.7630E 02
137047010004	1.6862E 02
137050012002	2.5714E 01
137051110004	2.4214E-07

137051010004	1.1683E-05
137052000004	2.6561E-05
540043010004	0.0000E-39
140044010004	0.0000E-39
140045010004	1.6721E 01
140046010004	1.8826E 02
140047010004	3.2500E 02
140050000004	3.9119E 00
540051010004	0.0000E-39
140052000004	0.0000E-39
541044010004	0.0000E-39
141045010004	0.0000E-39
141046010004	2.8560E 00
141047010004	9.2709E 01
141050012002	3.2142E 02
141051110004	5.9798E 01
141051010004	6.5201E 01
141052000004	3.9028E-02
542044010004	0.0000E-39
142045010004	0.0000E-39
142046010004	3.7734E 00
142047010004	1.0013E 02
142050020004	3.7513E 02
542051120004	2.7827E 01
142051010004	4.0863E 01
142052000004	7.7807E-01
543045010004	0.0000E-39
143046010004	4.6479E-01
143047010004	2.1159E 01
143050010004	8.6545E 01
143051010004	4.1463E 02
143052012002	2.6154E 01
143053110004	2.2095E-04
143053010004	5.4389E-05
143054000004	1.7732E-05
544046010004	0.0000E-39
144047010004	6.7199E 00
144050010004	1.1115E 02
144051010004	3.4771E 02
144052000004	4.4204E 00
544053010004	8.8830E-01
144054000004	1.6170E-01
545046010004	0.0000E-39
145047010004	2.1484E-01
145050010004	3.3179E 01
145051010004	2.9122E 02
145052010004	1.7260E 02
145053010004	2.6924E 01
145054000004	8.5071E-02
546046010004	0.0000E-39
146047010004	0.0000E-39
146050010004	1.1913E 01
146051010004	1.6043E 02
146052012002	2.7911E 02
146053120004	2.8706E 01
146053010004	1.7070E 01
146054000004	1.2202E 01
547047010004	0.0000E-39
147050010004	3.4607E 00
147051010004	8.2551E 01

147052010004	2.6713E 02
147053010004	1.1357E 02
147054012002	7.8563E 00
147055110004	4.5594E-06
147055000004	2.4044E-05
550047010004	0.0000E-39
150050010004	0.0000E-39
150051010004	2.6898E 01
150052010004	2.2693E 02
150053010004	1.5241E 02
150054000004	3.7326E-01
550055110004	0.0000E-39
150055010004	0.0000E-39
150056000004	0.0000E-39
551047010004	0.0000E-39
151050010004	0.0000E-39
151051010004	1.2863E 01
151052010004	1.9899E 02
151053010004	1.5043E 02
151054012002	3.2931E 01
151055110004	1.0943E-03
151055010004	4.4107E-03
151056000004	1.5616E-05
552047010004	0.0000E-39
152050010004	0.0000E-39
152051010004	5.8463E 00
152052010004	8.9860E 01
152053010004	1.6849E 02
152054020004	8.1408E 01
552055120004	0.0000E-39
152055010004	4.6803E-06
152056000004	1.6212E-05
553050010004	0.0000E-39
153051010004	1.6250E 00
153052010004	4.7814E 01
153053010004	1.9679E 02
153054012002	4.2591E 01
153055110004	1.8287E-01
153055010004	1.9333E-01
153056010004	1.9574E-04
153057000004	2.3842E-06
554050010004	0.0000E-39
154051010004	0.0000E-39
154052010004	1.3543E 01
154053010004	1.3363E 02
154054010004	5.9430E 01
154055010 04	6.2718E 00
154056000004	9.5837E-01
555050010004	0.0000E-39
155051010004	0.0000E-39
155052010004	3.2772E 00
155053010004	3.1265E 01
155054012002	9.6125E 01
155055110004	1.2772E 01
155055012002	1.2933E 01
155056110004	4.2093E-01
155056010004	4.2444E-01
155057110004	9.7619E-06
155057000004	8.4043E-06
556051010004	0.0000E-39

156052010004	5.5913E-01
156053010004	1.4348E 01
156054010004	7.9662E 01
156055010004	3.0087E 01
156056000004	1.4564E 01
557051010004	0.0000E-39
157052010004	0.0000E-39
157053010004	3.8732E 00
157054010004	4.2305E 01
157055012002	6.1937E 01
157056112002	3.3473E 00
157056012002	1.4635E 01
157057110004	8.2725E-03
157057010004	8.3635E-03
157060000004	5.4985E-06
560052010004	0.0000E-39
160053010004	1.6279E 00
160054010004	2.2845E 01
160055010004	5.8272E 01
160056010004	3.6044E 01
160057010004	1.5585E-01
160060000004	4.1123E-05
561052010004	0.0000E-39
161053010004	0.0000E-39
161054010004	7.8235E 00
161055010004	3.9520E 01
161056010004	5.6202E 01
161057112002	2.6937E 00
161057010004	1.4893E 00
161060000004	7.5807E-03
562052010004	0.0000E-39
162053010004	0.0000E-39
162054010004	2.2601E 00
162055010004	2.5198E 01
162056010004	7.0734E 01
162057010004	5.9938E 00
162060000004	3.8667E 00
563053010004	0.0000E-39
163054010004	3.6495E-01
163055010004	1.3497E 01
163056012002	6.8365E 01
163057112301	9.9477E 00
163057012002	1.2147E 01
163060130004	5.0062E-01
163060010004	5.1933E-01
163061112002	5.7707E-06
163061010004	3.8524E-06
163062000004	1.0825E-06
564053010004	0.0000E-39
164054010004	0.0000E-39
164055010004	4.9418E 00
164056010004	4.6533E 01
164057010004	4.4612E 01
164060000004	6.8354E-01
565053010004	0.0000E-39
165054010004	0.0000E-39
165055010004	1.5422E 00
165056010004	2.8724E 01
165057012002	5.9321E 01
165060112301	6.7880E 00

165060010004	6.7849E 00
165061113201	5.7157E-03
165061020004	4.6385E-04
165062110004	4.6566E-09
165062000004	7.8356E-06
566054010004	0.0000E-34
166055010004	5.2751E-01
166056010004	1.6044E 01
166057010004	5.4449E 01
166060020004	2.8097E 01
566061120004	9.0578E-01
166061010004	5.5333E-01
166062000004	3.9305E-01
567054010004	0.0000E-39
167055010004	3.1920E-02
167056010004	5.5433E 00
167057012002	4.3893E 01
167060120004	2.1129E 01
167060010004	2.1360E 01
167061112301	4.6127E 00
167061010004	4.1159E 00
167062110004	9.8258E-02
167062000004	4.9143E-03
570055010004	0.0000E-39
170056010004	1.5193E 00
170057010004	2.4280E 01
170060010004	5.8396E 01
170061010004	1.5641E 01
170062000004	8.5427E-01
571055010004	0.0000E-39
171056010004	1.4717E-01
171057010004	1.0472E 01
171060012002	4.4639E 01
171061130004	2.1093E 01
171061020004	1.9791E 01
571062120004	2.2464E 00
171062010004	4.0713E 00
171063000004	8.8662E-05
572056010004	0.0000E-39
172057010004	3.1642E 00
172060010004	3.9459E 01
172061010004	4.5301E 01
172062000004	2.6959E 00
572063110004	1.0111E-01
172063021042	1.0329E-01
172064000004	1.1055E-06
573056010004	0.0000E-39
173057010004	1.1659E 00
173060012002	2.2607E 01
173061130004	2.7874E 01
173061020004	2.3277E 01
573062120004	1.2401E 01
173062010004	2.1005E 01
173063000004	1.8231E-02
574056010004	0.0000E-39
174057010004	5.8235E-02
174060010004	1.2001E 01
174061010004	4.7333E 01
174062000004	6.5304E 00
574063230004	2.8841E 00

574063120004	2.7927E 00
574063010004	2.8902E 00
174064000004	1.0360E-01
575057010004	0.0000E-39
175060010004	4.0991E-01
175061012002	3.4816E 01
175062120004	3.2418E 01
175062010004	3.2559E 01
175063012002	2.0542E 01
175064110004	5.9470E-01
175064000004	4.8502E-06
576057010004	0.0000E-39
176060010004	4.4676E-01
176061010004	1.7305E 01
176062010004	6.7338E 01
176063112002	1.9014E 01
176063010004	1.9103E 01
176064000004	4.9737E-04
577057010004	0.0000E-39
177060010004	0.0000E-39
177061012002	5.8202E 00
177062120004	4.1645E 00
177062010004	6.5769E 01
177063012002	6.6546E 01
177064112002	8.9450E 00
177064010004	8.9446E 00
177065000004	7.2003E-04
600060010004	0.0000E-39
200061010004	3.3851E 00
200062012002	7.6758E 01
200063120004	4.4143E 01
200063010004	4.4265E 01
200064000004	1.8310E-01
600065011042	5.5401E-01
200066000004	9.2483E-04
601060010004	0.0000E-39
201061010004	1.7640E 00
201062010004	7.9405E 01
201063012002	1.1201E 02
201064112002	2.3534E 01
201064010004	2.3532E 01
201065020004	2.0846E 00
601066110004	0.0000E-39
201066000004	1.8477E-04
602060010004	0.0000E-39
202061010004	1.8312E 00
202062012002	8.8404E 01
202063120004	1.3225E 00
202063010004	1.3798E 02
202064000004	1.7117E-01
602065010004	3.6198E 00
202066000004	2.1523E-04
603060010004	0.0000E-39
203061010004	1.4254E-01
203062010004	6.0738E 01
203063012002	1.6212E 02
203064112002	5.4435E 01
203064010004	5.4595E 01
203065012002	1.7702E 01
203066110004	5.3453E-07

203066000004	7.7062E-05
604060010004	0.0000E-39
204061010004	0.0000E-39
204062010004	3.1186E 01
204063010004	1.5057E 02
204064010004	1.7315E 02
204065010004	4.9586E 01
204066000004	1.6037E-02
605061010004	0.0000E-39
205062010004	1.3819E 01
205063012002	1.2093E 02
205064112002	1.1573E 02
205064010004	1.1453E 02
205065012002	1.0649E 02
205066110004	4.2946E 00
205066010004	4.2983E 00
205067000004	4.3690E-05
606061010004	0.0000E-39
206062010004	0.0000E-39
206063010004	7.9631E 00
206064010004	2.4419E 02
206065010004	2.2106E 02
206066000004	1.0597E-01
606067110004	0.0000E-39
206067010004	0.0000E-39
206070000004	0.0000E-39
607062010004	0.0000E-39
207063010004	1.1715E 00
207064010004	1.0719E 02
207065012002	2.5240E 02
20706611000	8.2610E 01
207066010004	8.3097E 01
207067010004	2.4207E 01
207070000004	4.7684E-06
610063010004	0.0000E-39
210064010004	2.0167E 01
210065010004	1.8349E 02
210066000004	6.3198E 00
610067010004	8.8200E 01
210070000004	2.0981E-04
611063010004	0.0000E-39
211064010004	2.7421E 00
211065051042	1.0497E 02
211066010004	2.6407E 02
211067012002	1.5297E 02
211070110004	9.9918E 00
211070000004	1.7288E-01
612063010004	0.0000E-39
212064010004	0.0000E-39
212065061042	3.4333E 01
212066010004	2.2447E 02
212067010004	2.0740E 02
212070000004	2.8697E-01
612071010004	0.0000E-39
212072000004	0.0000E-39
613064010004	0.0000E-39
213065061042	4.7496E 00
213066010004	1.3973E 02
213067010004	2.3998E 02
213070010004	1.0305E 02

213071000004	5.3800E-02
614064010004	0.0000E-39
214065010004	3.3264E-01
214066010004	6.6962E 01
214067010004	2.2022E 02
214070010004	1.6587E 02
214071010004	2.7600E 01
214072000004	5.2547E-04
615065010004	0.0000E-39
215066010004	6.7970E 00
215067010004	1.6719E 02
215070010004	2.1021E 02
215071010004	6.0288E 01
215072010004	8.6475E-07
215073000004	1.5579E-05
616065010004	0.0000E-39
216066010004	1.2366E 00
216067010004	7.2392E 01
216070010004	2.2499E 02
216071010004	1.0789E 02
216072000004	5.7042E-02
617065010004	0.0000E-39
217066010004	3.5393E-02
217067010004	1.2847E 01
217070010004	1.6679E 02
217071010004	1.8063E 02
217072010004	3.2504E 01
217073010004	7.2289E-04
217074000004	1.8597E-05
620066010004	0.0000E-39
220067010004	3.1248E 00
220070010004	6.2296E 01
220071010004	2.0231E 02
220072010004	9.8974E 01
220073010004	2.1943E 00
220074000004	5.6762E-03
621066010004	0.0000E-39
221067010004	1.3014E-01
221070010004	1.5213E 01
221071010004	1.4203E 02
221072010004	1.3835E 02
221073010004	1.7544E 01
221074000004	2.0752E-03
622066010004	0.0000E-39
222067010004	0.0000E-39
222070010004	3.9983E 00
222071010004	6.5872E 01
222072010004	1.6548E 02
222073010004	2.9793E 01
222074000004	5.4068E-02
623067010004	0.0000E-39
223070010004	4.6892E-01
223071010004	1.7331E 01
223072010004	1.4327E 02
223073010004	5.3550E 01
223074010004	4.0801E 00
223075010004	1.3262E-05
223076000004	6.2883E-06
624067010004	0.0000E-39
224070010004	2.3343E-02

224071010004	6.3765E 00
224072010004	8.8774E 01
224073010004	6.7374E 01
224074000004	1.4918E 00
624075010004	0.0000E-39
224076000004	0.0000E-39
625070010004	0.0000E-39
225071010004	1.1121E 00
225072010004	2.2210E 01
225073010004	7.7540E 01
225074010004	2.9448E 01
225075010004	7.8972E-01
225076000004	1.5207E-05
626070010004	0.0000E-39
226071010004	6.4847E-02
226072010004	5.3468E 00
226073010004	4.4560E 01
226074000004	7.9139E 00
626075010004	5.3685E 00
226076000004	1.4781E-03
627071010004	0.0000E-39
227072010004	0.0000E-39
227073010004	0.0000E-39
227074010004	0.0000E-39
227075010004	0.0000E-39
227076010004	0.0000E-39
227077000004	0.0000E-39
630071010004	0.0000E-39
230072010004	0.0000E-39
230073010004	0.0000E-39
230074010004	0.0000E-39
230075010004	0.0000E-39
230076000004	0.0000E-39
630077112042	0.0000E-39
630077021042	0.0000E-39
230100000004	0.0000E-39
631071010004	0.0000E-39
231072010004	0.0000E-39
231073010004	0.0000E-39
231074010004	0.0000E-39
231075010004	0.0000E-39
231076010004	0.0000E-39
231077000004	0.0000E-39
632072010004	0.0000E-39
232073010004	0.0000E-39
232074010004	0.0000E-39
232075010004	0.0000E-39
232076000004	0.0000E-39
632077010004	0.0000E-39
232100000004	0.0000E-39
633072010004	0.0000E-39
233073010004	0.0000E-39
233074010004	0.0000E-39
233075010004	0.0000E-39
233076010004	0.0000E-39
233077010004	0.0000E-39
233100000004	0.0000E-39
634073010004	0.0000E-39
234074010004	0.0000E-39
234075010004	0.0000E-39

234076010004	0.0000E-39
234077010004	0.0000E-39
234100000004	0.0000E-39
235072010004	0.0000E-39
235074010004	0.0000E-39
235075010004	0.0000E-39
235076010004	0.0000E-39
235077010004	0.0000E-39
235100000004	0.0000E-39
236073010004	0.0000E-39
236074010004	0.0000E-39
236075010004	0.0000E-39
236076010004	0.0000E-39
236077010004	0.0000E-39
236100000004	0.0000E-39
237074010004	0.0000E-39
237075010004	0.0000E-39
237076010004	0.0000E-39
237077010004	0.0000E-39
237100010004	0.0000E-39
237101000004	0.0000E-39
240074010004	0.0000E-39
240075010004	0.0000E-39
240076010004	0.0000E-39
240077010004	0.0000E-39
240100000004	0.0000E-39
240101010004	0.0000E-39
240102000004	0.0000E-39
241074010004	0.0000E-39
241075010004	0.0000E-39
241076010004	0.0000E-39
241077010004	0.0000E-39
241100010004	0.0000E-39
241101010004	0.0000E-39
241102000004	0.0000E-39

OUTPUT OF FRATIO

MCHN	FR
1	0.0000E-39
2	0.0000E-39
3	0.0000E-39
4	0.0000E-39
5	0.0000E-39
6	0.0000E-39
7	0.0000E-39
8	0.0000E-39
9	1.1084E-01
10	2.1260E-02
11	5.4278E-03
12	0.0000E-39
13	0.0000E-39
14	0.0000E-39
15	2.9288E-09
16	7.3517E-09
17	2.4399E-04
18	1.2798E-02
19	6.4557E-02
20	1.5290E-01
21	5.0714E-01
22	6.3572E-01
23	8.4052E-01
24	9.5203E-01
25	9.6868E-01
26	9.9993E-01
27	9.9858E-01
28	9.5236E-01
29	9.8873E-01
30	6.1939E-01
31	3.6226E-01
32	1.9780E-01
33	6.7067E-02
34	1.1589E-01
35	2.5247E-01
36	1.5419E-01
37	3.1174E-01
38	7.8029E-01
39	8.9292E-01
40	9.6929E-01
41	2.8631E-01
42	9.9993E-01
43	9.6421E-01
44	9.9032E-01
45	9.2308E-01
46	8.6838E-01
47	7.0727E-01
48	4.9183E-01
49	2.6471E-01
50	1.6530E-01
51	6.4522E-02
52	3.1908E-01
53	8.8328E-02
54	5.3550E-01
55	5.4654E-01
56	4.3656E-01

57	4.5341E-01
58	3.2767E-01
59	3.7912E-01
60	1.7367E-01
61	7.7097E-02
62	2.8783E-02
63	0.0000E-39
64	8.5047E-09
65	7.0363E-07
66	1.9002E-02
67	6.1517E-04
68	2.1147E-01
69	4.0224E-01
70	6.0942E-01
71	8.1886E-01
72	9.6720E-01
73	9.9153E-01
74	9.9958E-01
75	1.0000E 00
76	1.0000E 00
77	1.0000E 00
78	1.0000E 00
79	1.0000E 00
80	0.0000E-39
81	0.0000E-39
82	0.0000E-39
83	0.0000E-39
84	0.0000E-39
85	0.0000E-39
86	0.0000E-39
87	0.0000E-39
88	0.0000E-39
89	0.0000E-39
90	0.0000E-39

ENTERING LINK 9

OUTPUT OF BATMAN

NUCLID	ABUND
510033010004	0.0000E-39
110034010004	0.0000E-39
110035010004	0.0000E-39
110036010004	0.0000E-39
110037010004	0.0000E-39
110040000004	0.0000E-39
511033010004	0.0000E-39
111034010004	0.0000E-39
111035010004	0.0000E-39
111036010004	0.0000E-39
111037010004	0.0000E-39
111040110004	0.0000E-39
111040000004	0.0000E-39
512033010004	0.0000E-39
112034010004	0.0000E-39
112035010004	0.0000E-39
112036010004	0.0000E-39
112037010004	0.0000E-39
112040000004	0.0000E-39
513033010004	0.0000E-39
113034010004	0.0000E-39
113035010004	0.0000E-39
113036010004	0.0000E-39
113037010004	0.0000E-39
113040110004	0.0000E-39
113040010004	0.0000E-39
113041000004	0.0000E-39
514034010004	0.0000E-39
114035010004	0.0000E-39
114036010004	0.0000E-39
114037010004	0.0000E-39
114040000004	0.0000E-39
514041010004	0.0000E-39
114042000004	0.0000E-39
515034010004	0.0000E-39
115035010004	0.0000E-39
115036010004	0.0000E-39
115037010004	0.0000E-39
115040112002	0.0000E-39
115040010004	0.0000E-39
115041010004	0.0000E-39
115042000004	0.0000E-39
516034010004	0.0000E-39
116035010004	0.0000E-39
116036010004	0.0000E-39
116037010004	0.0000E-39
116040012002	0.0000E-39
116041110004	0.0000E-39
116041010004	0.0000E-39
116042000004	0.0000E-39
517035010004	0.0000E-39
117036010004	0.0000E-39
117037010004	0.0000E-39
117040010004	0.0000E-39
117041010004	0.0000E-39
117042110004	0.0000E-39
117042010004	0.0000E-39

117043000004	0.0000E-39
520035010004	0.0000E-39
120036010004	0.0000E-39
120037010004	0.0000E-39
120040010004	0.0000E-39
120041010004	4.2123E-31
120042000004	0.0000E-39
521035010004	0.0000E-39
121036010004	0.0000E-39
121037010004	0.0000E-39
121040010004	0.0000E-39
121041012002	4.8548E-34
121042110004	1.7989E-04
121042010004	1.1347E-03
121043000004	0.0000E-39
522036010004	0.0000E-39
122037010004	0.0000E-39
122040010004	0.0000E-39
122041010004	0.0000E-39
122042000004	0.0000E-39
522043010004	2.8881E-06
122044000004	0.0000E-39
523036010004	0.0000E-39
123037010004	0.0000E-39
123040010004	0.0000E-39
123041012002	0.0000E-39
123042112002	2.5343E-17
123042010004	1.6167E-03
123043010004	1.8181E-03
123044110004	4.9726E-04
123044000004	0.0000E-39
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236100000004	0.0000E-39
637074010004	0.0000E-39
237075010004	0.0000E-39
237076010004	0.0000E-39
237077010004	0.0000E-39
237100010004	0.0000E-39
237101000004	0.0000E-39
640074010004	0.0000E-39
240075010004	0.0000E-39
240076010004	0.0000E-39
240077010004	0.0000E-39
240100000004	0.0000E-39
640101010004	0.0000E-39
240102000004	0.0000E-39
641074010004	0.0000E-39
241075010004	0.0000E-39
241076010004	0.0000E-39
241077010004	0.0000E-39
241100010004	0.0000E-39
241101010004	0.0000E-39
241102000004	0.0000E-39

OUTPUT OF GXPSR
PARTICLE SIZE
MICRONS

FISSION PRODUCT ACTIVITY
(R=H=02)/HR

7.7965E C3
4.3673E C2
2.5825E C2
1.7168E C2
1.1940E C2
8.4075E C1
5.8469E C1
3.8870E C1
2.2965E C1
1.2875E C0

2.6227E C8
3.1975E C8
3.4085E C8
3.6162E C8
3.8434E C8
4.1113E C8
4.4532E C8
4.9397E C8
5.7853E C8
2.4852E C9

OUTPUT OF INDC2
INDUCED ACTIVITY IN THE TRANSPORTED SOIL CONTRIBUTES 1.6528E 07 TO EACH PARTICLE SIZE.

TOTAL PAM OUTPUT

PSIZE
 7.7965E 03
 4.3673E 02
 2.5825E 02
 1.7168E 02
 1.1940E 02
 8.4075E 01
 5.8469E 01
 3.8870E 01
 2.2985E 01
 1.2875E 00

FP
 2.6392E 08
 3.2141E 08
 3.1250E 08
 3.6327E 08
 3.8599E 08
 4.1278E 08
 4.4698E 08
 4.9563E 08
 5.8018E 08
 2.4869E 09

OUTPUT OF MCHDEP

PARTICLE SIZE MICRONS	ACTIVITY OF MASS CHAIN 89 FISSIONS
7.1965E 03	2.1632E 21
4.3073E 02	2.6919E 21
2.5825E 02	3.0321E 21
1.7168E 02	3.4307E 21
1.1940E 02	3.9293E 21
8.4075E 01	4.5898E 21
5.8469E 01	5.5290E 21
3.8870E 01	7.0169E 21
2.2985E 01	9.9243E 21
1.2875E 00	1.0269E 23

TOTAL ABUNDANCE OF+MASS CHAIN 89 WAS 1.4500E 23 FISSIONS

REFERENCES

1. Freiling, E. C., Fractionation I. High-Yield Surface Burst Correlation, USNRDL-TR-385, US Naval Radiological Defense Laboratory, San Francisco, California (1959).
2. Freiling, E. C., Fractionation III. Estimation of Degree of Fractionation and Radionuclide Partition for Nuclear Debris, USNRDL-TR-680, US Naval Radiological Defense Laboratory, San Francisco, California (1963).
3. Bateman, Proc Camb Phil Soc, 15, 423 (1910).
4. Jones, T. H., A Prediction System for the Neutron-Induced Activity Contribution to Fallout Exposure Rates, USNRDL-TR-1056, US Naval Radiological Defense Laboratory, San Francisco, California (1966).

APPENDIX

DETAILS OF RAM DATA TAPE

The data cards for this tape were obtained from Messrs. E. H. Cassidy and G. R. Crocker of the US Naval Radiological Defense Laboratory.

TABLE A.1
Transition Cards

Cards Sequence	Mnemonic	Format
1	FMASS, PISOM, PATNO, HLIFE, IUNIT, IEXP, BRAT, DMASS, DISOM, DATNØ	(10X, 3I3, 8X, F9.4, IX, 2I3, 3X, F7.5, 7X, 3I3)
2	Same as Card 1	
.	.	
.	.	
.	.	
Terminator	Blank	

Mnemonics explained in Glossary of Subroutine SETUP.

Deck is read by SETUP.

TABLE A.2
Fission Yield Cards

	Card Sequence	Mnemonic	Format
First Set	1	FISTYP(I) = I=1,6	12A6
	2	NMAS,NAT,NSTAT,FYLDIN(1),I = 1,6	(I5,I4,A1,6E10.0)
	3	Same as Card 3	
	.	.	
	.	.	
	Set Terminator	Blank	
	Second Set	Same sequence as first set	
	Third Set	Same sequence as first set	
	.	.	
	.	.	
	.	.	
	.	.	
	Deck Terminator	Blank	

Mnemonics explained in Glossary of Subroutine YIELD.

Deck is read by YIELD.

TABLE A.3
Exposure - Rate Multipliers

Card Sequence	Mnemonic	Format
1	NMAS,NAT,NSTAT,XRM	(2X2I3,I2,E8.3)
2	Same as Card 1	
.	.	
.	.	
.	.	
Terminator	Blank	

Mnemonics explained in Glossary of Subroutine XPRM.

Deck is read by XPRM.

LISTING OF
PAM DATA TAPE

211

PRECEDING
PAGE BLANK

BLANK PAGE

72	0	27	1.0000	1	-2	1.00000
72	0	28	3.5000	1	0	1.00000
72	0	29	10.0000	1	0	1.00000
72	0	30	46.5000	3	0	1.00000
72	0	31	14.1000	3	0	1.00000
72	0	32				
73	0	27	1.0000	1	-2	1.00000
73	0	28	2.0000	1	0	1.00000
73	0	29	7.0000	1	0	1.00000
73	0	30	2.0000	2	0	1.00000
73	0	31	4.8000	3	0	1.00000
73	1	32	0.5300	1	0	1.00000
73	0	32				
74	0	27	1.0000	1	-2	1.00000
74	0	28	1.5000	1	0	1.00000
74	0	29	4.0000	1	0	1.00000
74	0	30	4.5000	2	0	1.00000
74	0	31	7.8000	2	0	1.00000
74	0	32				
75	0	27	1.0000	1	-2	1.00000
75	0	28	1.0000	1	-2	1.00000
75	0	29	2.5000	1	0	1.00000
75	0	30	9.5000	1	0	1.00000
75	0	31	2.0000	2	0	1.00000
75	1	32	49.0000	1	0	1.00000
75	0	32	82.0000	2	0	1.00000
75	0	33				
76	0	28	1.0000	1	-2	1.00000
76	0	29	2.0000	1	0	1.00000
76	0	30	8.0000	1	0	1.00000
76	0	31	30.0000	1	0	1.00000
76	0	32				
76	0	33	26.5000	3	0	1.00000
76	0	34				
77	0	28	1.0000	1	-2	1.00000
77	0	29	1.5000	1	0	1.00000
77	0	30	3.5000	1	0	1.00000
77	0	31	15.0000	1	0	0.60000
77	0	31	15.0000	1	0	0.40000
77	1	32	54.0000	1	0	0.36000
77	1	32	54.0000	1	0	0.64000
77	0	32	11.3000	3	0	1.00000
77	0	33	38.7000	3	0	1.00000
77	0	34				
78	0	28	1.0000	1	-2	1.00000
78	0	29	1.0000	1	-2	1.00000
78	0	30	2.5000	1	0	1.00000
78	0	31	8.0000	1	0	1.00000
78	0	32	2.1000	3	0	0.50000
78	0	32	2.1000	3	0	0.50000
78	1	33	6.0000	2	0	1.00000
78	0	33	91.0000	2	0	1.00000
78	0	34				
79	0	29	1.0000	1	-2	1.00000
79	0	30	1.5000	1	0	1.00000
79	0	31	4.5000	1	0	1.00000
79	0	32	25.0000	1	0	1.00000
79	0	33	9.0000	2	0	1.00000
79	1	34	3.8900	2	0	1.00000
79	0	34	6.0000	5	1	1.00000

72	0	28	TRAN	1
72	0	29	TRAN	2
72	0	30	TRAN	3
72	0	31	TRAN	4
72	0	32	TRAN	5
72	0	32	TRAN	6
73	0	28	TRAN	7
73	0	29	TRAN	8
73	0	30	TRAN	9
73	0	31	TRAN	10
73	1	32	TRAN	11
73	0	32	TRAN	12
73	0	32	TRAN	13
74	0	28	TRAN	14
74	0	29	TRAN	15
74	0	30	TRAN	16
74	0	31	TRAN	17
74	0	32	TRAN	18
74	0	32	TRAN	19
75	0	28	TRAN	20
75	0	29	TRAN	21
75	0	30	TRAN	22
75	0	31	TRAN	23
75	1	32	TRAN	24
75	0	32	TRAN	25
75	0	33	TRAN	26
75	0	33	TRAN	27
76	0	29	TRAN	28
76	0	30	TRAN	29
76	0	31	TRAN	30
76	0	32	TRAN	31
76	0	32	TRAN	32
76	0	34	TRAN	33
76	0	34	TRAN	34
77	0	29	TRAN	35
77	0	30	TRAN	36
77	0	31	TRAN	37
77	1	32	TRAN	38
77	0	32	TRAN	39
77	0	32	TRAN	40
77	0	33	TRAN	41
77	0	33	TRAN	42
77	0	34	TRAN	43
77	0	34	TRAN	44
78	0	29	TRAN	45
78	0	30	TRAN	46
78	0	31	TRAN	47
78	0	32	TRAN	48
78	1	33	TRAN	49
78	0	33	TRAN	50
78	0	33	TRAN	51
78	0	34	TRAN	52
78	0	34	TRAN	53
79	0	30	TRAN	54
79	0	31	TRAN	55
79	0	32	TRAN	56
79	0	33	TRAN	57
79	1	34	TRAN	58
79	0	34	TRAN	59
79	0	35	TRAN	60

79	0 35							TRAN	61
80	0 29	1.0000	1 -2	1.00000		80	0 30	TRAN	62
80	0 30	1.5000	1 0	1.00000		80	0 31	TRAN	63
80	0 31	3.0000	1 0	1.00000		80	0 32	TRAN	64
80	0 32	25.0000	1 0	1.00000		80	0 33	TRAN	65
80	0 33	36.0000	1 0	1.00000		80	0 34	TRAN	66
80	0 34							TRAN	67
81	0 29	1.0000	1 -2	1.00000		81	0 30	TRAN	68
81	0 30	1.0000	1 -2	1.00000		81	0 31	TRAN	69
81	0 35							TRAN	70
81	0 31	2.0000	1 0	1.00000		81	0 32	TRAN	71
81	0 32	7.0000	1 0	1.00000		81	0 33	TRAN	72
81	0 33	33.0000	1 0	0.06000		81	1 34	TRAN	73
81	0 33	33.0000	1 0	0.94000		81	0 34	TRAN	74
81	1 34	57.0000	2 0	1.00000		81	0 34	TRAN	75
81	0 34	18.0000	2 0	1.00000		81	0 35	TRAN	76
82	0 30	1.0000	1 -2	1.00000		82	0 31	TRAN	77
82	0 31	1.5000	1 0	1.00000		82	0 32	TRAN	78
82	0 32	5.0000	1 0	1.00000		82	0 33	TRAN	79
82	0 33	18.0000	1 0	1.00000		82	0 34	TRAN	80
82	0 34							TRAN	81
82	0 35	35.9000	3 0	1.00000		82	0 36	TRAN	82
82	0 36							TRAN	83
83	0 30	1.0000	1 -2	1.00000		83	0 31	TRAN	84
83	0 31	1.0000	1 -2	1.00000		83	0 32	TRAN	85
83	0 32	2.0000	1 0	1.00000		83	0 33	TRAN	86
83	0 33	7.0000	1 0	0.44000		83	1 34	TRAN	87
83	0 33	7.0000	1 0	0.56000		83	0 34	TRAN	88
83	1 34	69.0000	1 0	0.10000		83	0 34	TRAN	89
83	1 34	69.0000	1 0	0.90000		83	0 35	TRAN	90
83	0 34	25.0000	2 0	1.00000		83	0 35	TRAN	91
83	0 35	2.4000	3 0	1.00000		83	1 36	TRAN	92
83	1 36	114.0000	2 0	1.00000		83	0 36	TRAN	93
83	0 36							TRAN	94
84	0 31	1.0000	1 -2	1.00000		84	0 32	TRAN	95
84	0 32	1.5000	1 0	1.00000		84	0 33	TRAN	96
84	0 33	4.0000	1 0	1.00000		84	0 34	TRAN	97
84	0 34	3.0000	2 0	1.00000		84	0 35	TRAN	98
84	0 35	32.0000	2 0	1.00000		84	0 36	TRAN	99
84	0 36							TRAN	100
85	0 31	1.0000	1 -2	1.00000		85	0 32	TRAN	101
85	0 32	1.0000	1 0	1.00000		85	0 33	TRAN	102
85	0 33	0.4300	1 0	1.00000		85	0 34	TRAN	103
85	0 34	39.0000	1 0	1.00000		85	0 35	TRAN	104
85	0 35	3.0000	2 0	1.00000		85	1 36	TRAN	105
85	1 36	4.4000	3 0	0.19000		85	0 36	TRAN	106
85	1 36	4.4000	3 0	0.81000		85	0 37	TRAN	107
85	0 36	10.6000	5 0	1.00000		85	0 37	TRAN	108
85	0 37							TRAN	109
86	0 32	1.0000	1 -2	1.00000		86	0 33	TRAN	110
86	0 33	2.0000							

87	0	35	54.5000	1	0	0.03000	86	0	36	TRAN	121
87	0	35	54.5000	1	0	0.97000	87	0	36	TRAN	122
87	0	36	78.0000	2	0	1.00000	87	0	37	TRAN	123
87	0	37	4.3000	5	10	1.00000	87	0	38	TRAN	124
87	0	38								TRAN	125
88	0	32	1.0000	1	-2	1.00000	88	0	33	TRAN	126
88	0	33	1.0000	1	-2	1.00000	88	0	34	TRAN	127
88	0	34	2.5000	1	0	1.00000	88	0	35	TRAN	128
88	0	35	16.3000	1	0	0.07000	87	0	36	TRAN	129
88	0	35	16.3000	1	0	0.93000	88	0	36	TRAN	130
88	0	36	2.8000	3	0	1.00000	88	0	37	TRAN	131
88	0	37	18.0000	2	0	1.00000	88	0	38	TRAN	132
88	0	38								TRAN	133
89	0	33	1.0000	1	-2	1.00000	89	0	34	TRAN	134
89	0	34	2.0000	1	0	1.00000	89	0	35	TRAN	135
89	0	35	4.4000	1	0	0.11000	89	0	36	TRAN	136
89	0	35	4.4000	1	0	0.08200	89	0	36	TRAN	137
89	0	36	3.2000	2	0	1.00000	89	0	37	TRAN	138
89	0	37	15.4000	2	0	1.00000	89	0	38	TRAN	139
89	0	38	50.5000	4	0	1.00000	89	0	39	TRAN	140
89	1	39	16.0000	1	0	1.00000	89	0	39	TRAN	141
89	0	39								TRAN	142
90	0	33	1.0000	1	-2	1.00000	90	0	34	TRAN	143
90	0	34	1.0000	1	-2	1.00000	90	0	35	TRAN	144
90	0	35	1.6000	1	0	0.15000	89	0	36	TRAN	145
90	0	35	1.6000	1	0	0.85000	90	0	36	TRAN	146
90	0	36	33.0000	1	0	1.00000	90	0	37	TRAN	147
90	0	37	2.7000	2	0	1.00000	90	0	38	TRAN	148
90	0	38	28.0000	5	0	1.00000	90	0	39	TRAN	149
90	0	39	64.3000	3	0	1.00000	90	0	40	TRAN	150
90	0	40								TRAN	151
91	0	34	1.0000	1	-2	1.00000	91	0	35	TRAN	152
91	0	35	2.0000	1	0	1.00000	91	0	36	TRAN	153
91	0	36	10.0000	1	0	1.00000	91	0	37	TRAN	154
91	0	37	72.0000	1	0	1.00000	91	0	38	TRAN	155
91	0	38	9.7000	3	0	0.60000	91	1	39	TRAN	156
91	0	38	9.7000	3	0	0.40000	91	0	39	TRAN	157
91	1	39	50.0000	2	0	1.00000	91	0	39	TRAN	158
91	0	39	58.0000	4	0	1.00000	91	0	40	TRAN	159
91	0	40								TRAN	160
92	0	34	1.0000	1	-2	1.00000	92	0	35	TRAN	161
92	0	35	1.5000	1	0	1.00000	92	0	36	TRAN	162
92	0	36	3.0000	1	0	1.00000	92	0	37	TRAN	163
92	0	37	5.3000	1	0	1.00000	92	0	38	TRAN	164
92	0	38	2.7000	3	0	1.00000	92	0	39	TRAN	165
92	0	39	3.6000	3	0	1.00000	92	0	40	TRAN	166
92	0	40								TRAN	167
93	0	34	1.0000	1	-2	1.00000	93	0	35	TRAN	168
93	0	35	1.0000	1	-2	1.00000	93	0	36	TRAN	169
93	0	36	2.0000	1	0	1.00000	93	0	37	TRAN	170
93	0	37	5.6000	1	0	1.00000	93	0	38	TRAN	171
93	0	38	8.0000	2	0	1.00000	93	0	39	TRAN	172
93	0	39	16.0000	3	0	1.00000	93	0	40	TRAN	173
93	0	40	9.5000	5	5	0.25000	93	1	41	TRAN	174
93	0	40	9.5000	5	5	0.75000	93	0	41	TRAN	175
93	1	41	3.7000	5	0	1.00000	93	0	41	TRAN	176
93	0	41								TRAN	177
94	0	35	1.0000	1	-2	1.00000	94	0	36	TRAN	178
94	0	36	1.4000	1	0	1.00000	94	0	37	TRAN	179
94	0	37	3.0000	1	0	1.00000	94	0	38	TRAN	180

94	0	38	1.3000	2	0	1.00000	94	0	39	TRAN	181
94	0	39	20.0000	2	0	1.00000	94	0	40	TRAN	182
94	0	40								TRAN	183
95	0	35	1.0000	1	-2	1.00000	95	0	36	TRAN	184
95	0	36	1.0000	1	-2	1.00000	95	0	37	TRAN	185
95	0	37	2.0000	1	0	1.00000	95	0	38	TRAN	186
95	0	38	40.0000	1	0	1.00000	95	0	39	TRAN	187
95	0	39	10.0000	2	0	1.00000	95	0	40	TRAN	188
95	0	40	65.0000	4	0	0.02000	95	1	41	TRAN	189
95	0	40	65.0000	4	0	0.98000	95	0	41	TRAN	190
95	1	41	90.0000	3	0	1.00000	95	0	41	TRAN	191
95	0	41	35.0000	4	0	1.00000	95	0	42	TRAN	192
95	0	42								TRAN	193
96	0	35	1.0000	1	-2	1.00000	96	0	36	TRAN	194
96	0	36	1.0000	1	-2	1.00000	96	0	37	TRAN	195
96	0	37	1.0000	1	0	1.00000	96	0	38	TRAN	196
96	0	38	2.5000	1	0	1.00000	96	0	39	TRAN	197
96	0	39	2.3000	2	0	1.00000	96	0	40	TRAN	198
96	0	40								TRAN	199
96	0	41	23.0000	3	0	1.00000	96	0	42	TRAN	200
96	0	42								TRAN	201
97	0	36	1.0000	1	-2	1.00000	97	0	37	TRAN	202
97	0	37	1.0000	1	-2	1.00000	97	0	38	TRAN	203
97	0	38	1.5000	1	0	1.00000	97	0	39	TRAN	204
97	0	39	5.0000	1	0	1.00000	97	0	40	TRAN	205
97	0	40	17.0000	3	0	0.96000	97	1	41	TRAN	206
97	0	40	17.0000	3	0	0.04000	97	0	41	TRAN	207
97	1	41	1.0000	2	0	1.00000	97	0	41	TRAN	208
97	0	41	73.0000	2	0	1.00000	97	0	42	TRAN	209
97	0	42								TRAN	210
98	0	36	1.0000	1	-2	1.00000	98	0	37	TRAN	211
98	0	37	1.0000	1	-2	1.00000	98	0	38	TRAN	212
98	0	38	1.0000	1	0	1.00000	98	0	39	TRAN	213
98	0	39	2.5000	1	0	1.00000	98	0	40	TRAN	214
98	0	40	60.0000	1	0	1.00000	98	0	41	TRAN	215
98	1	41	51.0000	2	0	1.00000	98	0	42	TRAN	216
98	0	41	2.0000	2	0	1.00000	98	0	42	TRAN	217
98	0	42								TRAN	218
99	0	37	1.0000	1	-2	1.00000	99	0	38	TRAN	219
99	0	38	1.0000	1	0	1.00000	99	0	39	TRAN	220
99	0	39	1.5000	1	0	1.00000	99	0	40	TRAN	221
99	0	40	1.6000	1	0	1.00000	99	0	41	TRAN	222
99	0	41	2.3000	2	0	1.00000	99	0	42	TRAN	223
99	0	42	46.5000	3	0	0.87000	99	1	43	TRAN	224
99	0	42	66.5000	3	0	0.13000	99	0	43	TRAN	225
99	1	43	6.0000	3	0	1.00000	99	0	43	TRAN	226
99	0	43	2.1000	5	5	1.00000	99	0	44	TRAN	227
99	0	44								TRAN	228
100	0	38	1.0000	1	-2	1.00000	100	0	39	TRAN	229
100	0	39	1.5000	1	0	1.00000	100	0	40	TRAN	230
100	0	40	3.5000	1	0	1.00000	100	0	41	TRAN	231
100	0	41	3.0000	2	0	1.00000	100	0	42	TRAN	232
100	0	42								TRAN	233
100	0	43	16.0000	1	0	1.00000	100	0	44	TRAN	234
100	0	44								TRAN	235
101	0	38	1.0000	1	-2	1.00000	101	0	39	TRAN	236
101	0	39	1.0000	1	0	1.00000	101	0	40	TRAN	237
101	0	40	2.5000	1	0	1.00000	101	0	41	TRAN	238
101	0	41	1.0000	2	0	1.00000	101	0	42	TRAN	239
101	0	42	14.4000	2	0	1.00000	101	0	43	TRAN	240

101	0	43	14.0000	2	0	1.00000	101	0	44	TRAN	241
101	0	44								TRAN	242
102	0	38	1.0000	1	-2	1.00000	102	0	39	TRAN	243
102	0	39	1.0000	1	-2	1.00000	102	0	40	TRAN	244
102	0	40	2.0000	1	0	1.00000	102	0	41	TRAN	245
102	0	41	7.0000	1	0	1.00000	102	0	42	TRAN	246
102	0	42	11.5000	2	0	0.50000	102	1	43	TRAN	247
102	0	42	11.5000	2	0	0.50000	102	0	43	TRAN	248
102	1	43	4.5000	2	0	1.00000	102	0	44	TRAN	249
102	0	43	5.0000	1	0	1.00000	102	0	44	TRAN	250
102	0	44								TRAN	251
103	0	39	1.0000	1	-2	1.00000	103	0	40	TRAN	252
103	0	40	1.5000	1	0	1.00000	103	0	41	TRAN	253
103	0	41	4.0000	1	0	1.00000	103	0	42	TRAN	254
103	0	42	25.0000	1	0	1.00000	103	0	43	TRAN	255
103	0	43	1.2000	2	0	1.00000	103	0	44	TRAN	256
103	0	44	39.7000	4	0	0.99500	103	1	45	TRAN	257
103	0	44	39.7000	4	0	0.00500	103	0	45	TRAN	258
103	1	45	57.0000	2	0	1.00000	103	0	45	TRAN	259
103	0	45								TRAN	260
104	0	39	1.0000	1	-2	1.00000	104	0	40	TRAN	261
104	0	40	1.0000	1	-2	1.00000	104	0	41	TRAN	262
104	0	41	3.0000	1	0	1.00000	104	0	42	TRAN	263
104	0	42	2.5000	2	0	1.00000	104	0	43	TRAN	264
104	0	43	18.0000	2	0	1.00000	104	0	44	TRAN	265
104	0	44								TRAN	266
104	1	45	4.4000	2	0	1.00000	104	0	45	TRAN	267
104	0	45	42.0000	1	0	1.00000	104	0	46	TRAN	268
104	0	46								TRAN	269
105	0	39	1.0000	1	-2	1.00000	105	0	40	TRAN	270
105	0	40	1.0000	1	-2	1.00000	105	0	41	TRAN	271
105	0	41	2.0000	1	0	1.00000	105	0	42	TRAN	272
105	0	42	2.0000	2	0	1.00000	105	0	43	TRAN	273
105	0	43	9.0000	2	0	1.00000	105	0	44	TRAN	274
105	0	44	4.4000	3	0	0.20600	105	1	45	TRAN	275
105	0	44	4.4000	3	0	0.79400	105	0	45	TRAN	276
105	1	45	38.0000	1	0	1.00000	105	0	45	TRAN	277
105	0	45	36.0000	3	0	1.00000	105	0	46	TRAN	278
105	0	46								TRAN	279
106	0	39	1.0000	1	-2	1.00000	106	0	40	TRAN	280
106	0	40	1.0000	1	-2	1.00000	106	0	41	TRAN	281
106	0	41	1.5000	1	0	1.00000	106	0	42	TRAN	282
106	0	42	4.0000	1	0	1.00000	106	0	43	TRAN	283
106	0	43	9.0000	1	0	1.00000	106	0	44	TRAN	284
106	0	44	1.0000	5	0	1.00000	106	0	45	TRAN	285
106	1	45	2.2000	3	0	1.00000	106	0	46	TRAN	286
106	0	45	30.0000	1	0	1.00000	106	0	46	TRAN	287
106	0	46								TRAN	288
107	0	40	1.0000	1	-2	1.00000	107	0	41	TRAN	289
107	0	41	1.0000	1	0	1.00000	107	0	42	TRAN	290
107	0	42	2.5000	1	0	1.00000	107	0	43	TRAN	291
107	0	43	1.0000	2	0	1.00000	107	0	44	TRAN	292
107	0	44	4.6000	2	0	0.50000	107	1	45	TRAN	293
107	0	44	4.6000	2	0	0.50000	107	0	45	TRAN	294
107	1	45	45.0000	1	0	1.00000	107	0	45	TRAN	295
107	0	45	22.0000	2	0	0.00000	107	0	46	TRAN	296
107	0	46	7.0000	5	6	1.00000	107	0	47	TRAN	297
107	0	47								TRAN	298
108	0	40	1.0000	1	-2	1.00000	108	0	41	TRAN	299
108	0	41	1.0000	1	-2	1.00000	108	0	42	TRAN	300

108	0	42	2.0000	1	0	1.000000	108	0	43	TRAN	301
108	0	43	1.0000	2	0	1.000000	108	0	44	TRAN	302
108	0	44	4.3000	2	0	1.000000	108	0	45	TRAN	303
108	0	45	18.0000	1	0	1.000000	108	0	46	TRAN	304
108	0	46								TRAN	305
109	0	40	1.0000	1	-2	1.000000	109	0	41	TRAN	306
109	0	41	1.0000	1	-2	1.000000	109	0	42	TRAN	307
109	0	42	1.5000	1	0	1.000000	109	0	43	TRAN	308
109	0	43	2.5000	1	0	1.000000	109	0	44	TRAN	309
109	0	44	16.0000	1	0	0.500000	109	1	45	TRAN	310
109	0	44	16.0000	1	0	0.500000	109	0	45	TRAN	311
109	1	45	50.0000	1	0	1.000000	109	0	45	TRAN	312
109	0	45	30.0000	1	0	0.500000	109	1	46	TRAN	313
109	0	45	30.0000	1	0	0.500000	109	0	46	TRAN	314
109	1	46	4.7000	2	0	1.000000	109	0	46	TRAN	315
109	0	46	14.0000	3	0	1.000000	109	1	47	TRAN	316
109	1	47	39.0000	1	0	1.000000	109	0	47	TRAN	317
109	0	47								TRAN	318
110	0	41	1.0000	1	-2	1.000000	110	0	42	TRAN	319
110	0	42	1.0000	1	0	1.000000	110	0	43	TRAN	320
110	0	43	2.0000	1	0	1.000000	110	0	44	TRAN	321
110	0	44	10.0000	1	0	1.000000	110	0	45	TRAN	322
110	0	45	5.0000	1	0	1.000000	110	0	46	TRAN	323
110	0	46								TRAN	324
111	0	41	1.0000	1	-2	1.000000	111	0	42	TRAN	325
111	0	42	1.0000	1	-2	1.000000	111	0	43	TRAN	326
112	0	42	1.0000	1	-2	1.000000	112	0	43	TRAN	327
111	0	43	1.5000	1	0	1.000000	111	0	44	TRAN	328
111	0	44	4.0000	1	0	1.000000	111	0	45	TRAN	329
111	0	45	12.0000	1	0	0.010000	111	1	46	TRAN	330
111	0	45	12.0000	1	0	0.990000	111	0	46	TRAN	331
111	1	46	5.5000	3	0	0.680000	111	0	46	TRAN	332
111	1	46	5.5000	3	0	0.320000	111	1	47	TRAN	333
111	0	46	23.0000	2	0	0.500000	111	1	47	TRAN	334
111	0	46	23.0000	2	0	0.500000	111	0	47	TRAN	335
111	1	47	74.0000	1	0	1.000000	111	0	47	TRAN	336
111	0	47	7.6000	4	0	1.000000	111	0	48	TRAN	337
111	0	48								TRAN	338
112	0	43	1.5000	1	0	1.000000	112	0	44	TRAN	339
112	0	44	3.0000	1	0	1.000000	112	0	45	TRAN	340
112	0	45	7.0000	1	0	1.000000	112	0	46	TRAN	341
112	0	46	21.0000	3	0	1.000000	112	0	47	TRAN	342
112	0	47	3.2000	3	0	1.000000	112	0	48	TRAN	343
112	0	48								TRAN	344
113	0	42	1.0000	1	-2	1.000000	113	0	43	TRAN	345
113	0	43	1.0000	1	-2	1.000000	113	0	44	TRAN	346
113	0	44	2.0000	1	0	1.000000	113	0	45	TRAN	347
113	0	45	4.0000	1	0	1.000000	113	0	46	TRAN	348
113	0	46	1.4000	2	0	1.000000	113	1	47	TRAN	349
113	1	47	1.2000	2	0	0.900000	113	0	47	TRAN	350
113	1	47	1.2000	2	0	0.100000	113	0	48	TRAN	351
113	0	47	5.3000	3	0	1.000000	113	0	48	TRAN	352
113	0	48								TRAN	353
114	0	42	1.0000	1	-2	1.000000	114	0	43	TRAN	354
114	0	43	1.0000	1	-2	1.000000	114	0	44	TRAN	355
114	0	44	1.5000	1	0	1.000000	114	0	45	TRAN	356
114	0	45	3.0000	1	0	1.000000	114	0	46	TRAN	357
114	0	46	2.4000	2	0	1.000000	114	0	47	TRAN	358
114	0	47	5.0000	1	0	1.000000	114	0	48	TRAN	359
114	0	48								TRAN	360

115	0	43	1.0000	1	-2	1.000000	115	0	44	TRAN	361
115	0	44	1.0000	1	0	1.000000	115	0	45	TRAN	362
115	0	45	2.5000	1	0	1.000000	115	0	46	TRAN	363
115	0	46	45.0000	1	0	0.500000	115	1	47	TRAN	364
115	0	47	45.0000	1	0	0.500000	115	0	47	TRAN	365
115	1	47	20.0000	1	0	0.720000	115	0	47	TRAN	366
115	1	47	20.0000	1	0	0.140000	115	1	48	TRAN	367
115	1	47	20.0000	1	0	0.140000	115	0	48	TRAN	368
115	0	47	21.0000	2	0	0.090000	115	1	48	TRAN	369
115	0	47	21.0000	2	0	0.910000	115	0	48	TRAN	370
115	1	48	43.0000	4	0	1.000000	115	0	49	TRAN	371
115	0	48	53.0000	3	0	1.000000	115	1	49	TRAN	372
115	1	49	4.5100	3	0	0.950000	115	0	49	TRAN	373
115	1	49	4.5100	3	0	0.050000	115	0	50	TRAN	374
115	0	49	6.0000	5	14	1.000000	115	0	50	TRAN	375
115	0	50								TRAN	376
116	0	43	1.0000	1	-2	1.000000	116	0	44	TRAN	377
116	0	44	1.0000	1	-2	1.000000	116	0	45	TRAN	378
116	0	45	2.0000	1	0	1.000000	116	0	46	TRAN	379
116	0	46	10.0000	1	0	1.000000	116	0	47	TRAN	380
116	0	47	2.5000	2	0	1.000000	116	0	48	TRAN	381
116	0	48								TRAN	382
117	0	43	1.0000	1	-2	1.000000	117	0	44	TRAN	383
117	0	44	1.0000	1	-2	1.000000	117	0	45	TRAN	384
117	0	45	1.5000	1	0	1.000000	117	0	46	TRAN	385
117	0	46	5.0000	1	0	1.000000	117	0	47	TRAN	386
117	0	47	1.1000	2	0	0.500000	117	1	48	TRAN	387
117	0	47	1.1000	2	0	0.500000	117	0	48	TRAN	388
117	1	48	3.0000	3	0	0.600000	117	0	48	TRAN	389
117	1	48	3.0000	3	0	0.100000	117	1	49	TRAN	390
117	1	48	3.0000	3	0	0.300000	117	0	49	TRAN	391
117	0	48	50.0000	2	0	1.000000	117	1	49	TRAN	392
117	1	49	2.0000	3	0	0.219000	117	0	49	TRAN	393
117	1	49	2.0000	3	0	0.780000	117	0	50	TRAN	394
117	1	49	2.0000	3	0	0.001000	117	1	50	TRAN	395
117	0	49	45.0000	2	0	1.000000	117	0	50	TRAN	396
117	1	50	14.0000	4	0	1.000000	117	0	50	TRAN	397
117	0	50								TRAN	398
118	0	44	1.0000	1	-2	1.000000	118	0	45	TRAN	399
118	0	45	1.5000	1	0	1.000000	118	0	46	TRAN	400
118	0	46	4.5000	1	0	1.000000	118	0	47	TRAN	401
118	0	47	25.0000	1	0	1.000000	118	0	48	TRAN	402
118	0	48	50.0000	2	0	1.000000	118	0	49	TRAN	403
118	1	49	4.5000	2	0	1.000000	118	0	50	TRAN	404
118	0	49	5.0000	1	0	1.000000	118	0	50	TRAN	405
118	0	50								TRAN	406
119	0	44	1.0000	1	-2	1.000000	119	0	45	TRAN	407
119	0	45	1.5000	1	0	1.000000	119	0	46	TRAN	408
119	0	46	3.0000	1	0	1.000000	119	0	47	TRAN	409
119	0	47	17.0000	1	0	0.500000	119	1	48	TRAN	410
119	0	47	17.0000	1	0	0.500000	119	0	48	TRAN	411
119	1	48	2.7000	2	0	1.000000	119	1	49	TRAN	412
119	0	48	9.5000	2	0	1.000000	119	1	49	TRAN	413
119	1	49	18.0000	2	0	0.050000	119	0	49	TRAN	414
119	1	49	18.0000	2	0	0.500000	119	1	50	TRAN	415
119	1	49	18.0000	2	0	0.450000	119	0	50	TRAN	416
119	0	49	2.0000	2	0	1.000000	119	1	50	TRAN	417
119	1	50	245.0000	4	0	1.000000	119	0	50	TRAN	418
119	0	50								TRAN	419
120	0	45	1.0000	1	-2	1.000000	120	0	46	TRAN	420

120	0 46	2.0000	1 0	1.00000	120	0 47	TRAN	421
120	0 47	6.0000	1 0	1.00000	120	0 48	TRAN	422
120	0 48	12.0000	2 0	1.00000	120	0 49	TRAN	423
120	0 49	50.0000	1 0	1.00000	120	0 50	TRAN	424
120	0 50						TRAN	425
121	0 45	1.0000	1 -2	1.00000	121	0 46	TRAN	426
121	0 46	1.5000	1 0	1.00000	121	0 47	TRAN	427
121	0 47	4.0000	1 0	1.00000	121	0 48	TRAN	428
121	0 48	10.0000	1 0	0.50000	121	1 49	TRAN	429
121	0 48	10.0000	1 0	0.50000	121	0 49	TRAN	430
121	1 49	3.1000	2 0	1.00000	121	0 50	TRAN	431
121	0 49	30.0000	1 0	1.00000	121	0 50	TRAN	432
121	1 50	25.0000	5 0	1.00000	121	0 51	TRAN	433
121	0 50	27.0000	3 0	1.00000	121	0 51	TRAN	434
121	0 51						TRAN	435
122	0 46	1.5000	1 0	1.00000	122	0 47	TRAN	436
122	0 47	3.0000	1 0	1.00000	122	0 48	TRAN	437
122	0 48	40.0000	1 0	1.00000	122	0 49	TRAN	438
122	0 49	45.0000	1 0	1.00000	122	0 50	TRAN	439
122	0 50						TRAN	440
122	0 51	2.8000	4 0	0.03000	122	0 50	TRAN	441
122	1 51	4.1500	2 0	1.00000	122	0 51	TRAN	442
122	0 51	2.8000	4 0	0.97000	122	0 52	TRAN	443
122	0 52						TRAN	444
123	0 46	1.0000	1 -2	1.00000	123	0 47	TRAN	445
123	0 47	2.5000	1 0	1.00000	123	0 48	TRAN	446
123	0 48	9.0000	1 0	0.50000	123	1 49	TRAN	447
123	0 48	9.0000	1 0	0.50000	123	0 49	TRAN	448
123	1 49	36.0000	1 0	1.00000	123	0 50	TRAN	449
123	0 49	10.0000	1 0	1.00000	123	0 50	TRAN	450
123	1 50	125.0000	4 0	1.00000	123	0 51	TRAN	451
123	0 50	41.0000	2 0	1.00000	123	0 51	TRAN	452
123	0 51						TRAN	453
124	0 46	1.0000	1 -2	1.00000	124	0 47	TRAN	454
124	0 47	2.0000	1 0	1.00000	124	0 48	TRAN	455
124	0 48	10.0000	1 0	1.00000	124	0 49	TRAN	456
124	0 49	20.0000	1 0	1.00000	124	0 50	TRAN	457
124	0 50						TRAN	458
124	2 51	21.0000	2 0	1.00000	124	0 52	TRAN	459
124	1 51	1.3000	2 0	1.00000	124	0 52	TRAN	460
124	0 51	60.0000	4 0	1.00000	124	0 52	TRAN	461
124	0 52						TRAN	462
125	0 47	2.0000	1 0	1.00000	125	0 48	TRAN	463
125	0 48	5.0000	1 0	1.00000	125	0 49	TRAN	464
125	0 49	15.0000	1 0	0.50000	125	1 50	TRAN	465
125	0 49	15.0000	1 0	0.50000	125	0 50	TRAN	466
125	1 50	9.7000	2 0	1.00000	125	0 51	TRAN	467
125	0 50	9.4000	4 0	1.00000	125	0 51	TRAN	468
125	0 51	2.7000	5 0	0.21500	125	1 52	TRAN	469
125	0 51	2.7000	5 0	0.78500	125	0 52	TRAN	470
125	1 52	58.0000	4 0	1.00000	125	0 52	TRAN	471
125	0 52						TRAN	472
126	0 47	1.0000	1 -2	1.00000	126	0 48	TRAN	473
126	0 48	3.0000	1 0	1.00000	126	0 49	TRAN	474
126	0 49	7.0000	1 0	1.00000	126	0 50	TRAN	475
126	0 50	2.0000	5 5	1.00000	126	1 51	TRAN	476
126	1 51	19.0000	2 0	0.99000	126	0 51	TRAN	477
126	1 51	19.0000	2 0	0.01000	126	0 52	TRAN	478
126	0 51	12.5000	4 0	1.00000	126	0 52	TRAN	479
127	0 47	1.0000	1 -2	1.00000	127	0 48	TRAN	480

127	0	48	1.5000	1	0	1.00000	127	0	49	TRAN	481
127	0	49	3.0000	1	0	0.50000	127	1	50	TRAN	482
127	0	49	3.0000	1	0	0.50000	127	0	50	TRAN	483
127	0	52								TRAN	484
127	1	50	4.2000	2	0	1.00000	127	0	51	TRAN	485
127	0	50	2.2500	3	0	1.00000	127	0	51	TRAN	486
127	0	51	93.4000	3	0	0.22000	127	1	52	TRAN	487
127	0	51	93.4000	3	0	0.78000	127	0	52	TRAN	488
127	1	52	105.0000	4	0	0.98000	127	0	52	TRAN	489
127	1	52	105.0000	4	0	0.02000	127	0	53	TRAN	490
127	0	52	9.3000	3	0	1.00000	127	0	53	TRAN	491
127	0	53								TRAN	492
128	0	48	1.0000	1	0	1.00000	128	0	49	TRAN	493
128	0	49	2.0000	1	0	1.00000	128	0	50	TRAN	494
128	0	50	57.0000	2	0	0.97000	128	1	51	TRAN	495
128	0	50	57.0000	2	0	0.03000	128	0	51	TRAN	496
128	1	51	11.0000	2	0	1.00000	128	0	52	TRAN	497
128	0	51	8.6000	3	0	1.00000	128	0	52	TRAN	498
128	0	52								TRAN	499
128	0	53	25.0000	2	0	0.06500	128	0	52	TRAN	500
128	0	53	25.0000	2	0	0.93500	128	0	54	TRAN	501
128	0	54								TRAN	502
129	0	48	1.0000	1	-2	1.00000	129	0	49	TRAN	503
129	0	49	1.5000	1	0	1.00000	129	0	50	TRAN	504
129	0	50	1.8000	3	0	1.00000	129	0	51	TRAN	505
129	0	51	4.6000	3	0	0.17300	129	1	52	TRAN	506
129	0	51	4.6000	3	0	0.82700	129	0	52	TRAN	507
129	1	52	41.0000	4	0	0.68000	129	0	52	TRAN	508
129	0	52	72.0000	2	0	1.00000	129	0	53	TRAN	509
129	1	52	41.0000	4	0	0.32000	129	0	53	TRAN	510
129	0	53	1.6000	5	7	1.00000	129	0	54	TRAN	511
129	1	54	8.0000	4	0	1.00000	129	0	54	TRAN	512
129	0	54								TRAN	513
130	0	48	1.0000	1	-2	1.00000	130	0	49	TRAN	514
130	0	49	1.5000	1	0	1.00000	130	0	50	TRAN	515
130	0	50	2.6000	2	0	0.90000	130	1	51	TRAN	516
130	0	50	2.6000	2	0	0.10000	130	0	51	TRAN	517
130	1	51	6.0000	2	0	1.00000	130	0	52	TRAN	518
130	0	51	37.0000	2	0	1.00000	130	0	52	TRAN	519
130	0	52								TRAN	520
130	0	53	12.5000	3	0	1.00000	130	0	54	TRAN	521
130	0	54								TRAN	522
131	0	48	1.0000	1	-2	1.00000	131	0	49	TRAN	523
131	0	49	1.0000	1	0	1.00000	131	0	50	TRAN	524
131	0	50	66.0000	1	0	1.00000	131	0	51	TRAN	525
131	0	51	19.4000	2	0	0.15000	131	1	52	TRAN	526
131	0	51	19.4000	2	0	0.85000	131	0	52	TRAN	527
131	1	52	30.0000	3	0	0.20000	131	0	52	TRAN	528
131	1	52	30.0000	3	0	0.80000	131	0	53	TRAN	529
131	0	52	24.0000	2	0	1.00000	131	0	53	TRAN	530
131	0	53	8.0500	4	0	0.00800	131	1	54	TRAN	531
131	0	53	8.0500	4	0	0.99200	131	0	54	TRAN	532
131	1	54	12.0000	4	0	1.00000	131	0	54	TRAN	533
131	0	54								TRAN	534
132	0	48	1.0000	1	-2	1.00000	132	0	49	TRAN	535
132	0	49	1.0000	1	-2	1.00000	132	0	50	TRAN	536
132	0	50	50.0000	1	0	1.00000	132	0	51	TRAN	537
132	0	51	3.1300	2	0	1.00000	132	0	52	TRAN	538
132	0	52	78.0000	3	0	1.00000	132	0	53	TRAN	539
132	0	53	2.3000	3	0	1.00000	132	0	54	TRAN	540

139	0	56	85.0000	2	0	1.00000	139	0	57	TRAN	601
139	0	57								TRAN	602
140	0	52	1.0000	1	-2	1.00000	140	0	53	TRAN	603
140	0	53	1.5000	1	0	1.00000	140	0	54	TRAN	604
140	0	54	16.0000	1	0	1.00000	140	0	55	TRAN	605
140	0	55	66.0000	1	0	1.00000	140	0	56	TRAN	606
140	0	56	12.8000	4	0	1.00000	140	0	57	TRAN	607
140	0	57	40.2000	3	0	1.00000	140	0	58	TRAN	608
140	0	58								TRAN	609
141	0	53	1.0000	1	-2	1.00000	141	0	54	TRAN	610
141	0	54	1.7000	1	0	1.00000	141	0	55	TRAN	611
141	0	55	25.0000	1	0	1.00000	141	0	56	TRAN	612
141	0	56	18.0000	2	0	1.00000	141	0	57	TRAN	613
141	0	57	3.8000	3	0	1.00000	141	0	58	TRAN	614
141	0	58	33.0000	4	0	1.00000	141	0	59	TRAN	615
141	0	59								TRAN	616
142	0	53	1.0000	1	-2	1.00000	142	0	54	TRAN	617
142	0	54	1.5000	1	0	1.00000	142	0	55	TRAN	618
142	0	55	8.0000	1	0	1.00000	142	0	56	TRAN	619
142	0	56	10.0000	2	0	1.00000	142	0	57	TRAN	620
142	0	57	1.4000	3	0	1.00000	142	0	58	TRAN	621
142	0	58								TRAN	622
143	0	53	1.0000	1	-2	1.00000	143	0	54	TRAN	623
143	0	54	1.0000	1	0	1.00000	143	0	55	TRAN	624
143	0	55	2.0000	1	0	1.00000	143	0	56	TRAN	625
143	0	56	13.0000	1	0	1.00000	143	0	57	TRAN	626
143	0	57	18.0000	2	0	1.00000	143	0	58	TRAN	627
143	0	58	33.0000	3	0	1.00000	143	0	59	TRAN	628
143	0	59	13.8000	4	0	1.00000	143	0	60	TRAN	629
143	0	60								TRAN	630
144	0	54	1.0000	1	-2	1.00000	144	0	55	TRAN	631
144	0	55	1.5000	1	0	1.00000	144	0	56	TRAN	632
144	0	56	3.5000	1	0	1.00000	144	0	57	TRAN	633
144	0	57	15.0000	1	0	1.00000	144	0	58	TRAN	634
144	0	58	285.0000	4	0	1.00000	144	0	59	TRAN	635
144	0	59	17.3000	2	0	1.00000	144	0	60	TRAN	636
144	0	60								TRAN	637
145	0	54	1.0000	1	-2	1.00000	145	0	55	TRAN	638
145	0	55	1.0000	1	0	1.00000	145	0	56	TRAN	639
145	0	56	2.0000	1	0	1.00000	145	0	57	TRAN	640
145	0	57	9.0000	1	0	1.00000	145	0	58	TRAN	641
145	0	58	3.0000	2	0	1.00000	145	0	59	TRAN	642
145	0	59	5.9800	3	0	1.00000	145	0	60	TRAN	643
145	0	60								TRAN	644
146	0	54	1.0000	1	-2	1.00000	146	0	55	TRAN	645
146	0	55	1.0000	1	-2	1.00000	146	0	56	TRAN	646
146	0	56	1.5000	1	0	1.00000	146	0	57	TRAN	647
146	0	57	4.0000	1	0	1.00000	146	0	58	TRAN	648
146	0	58	13.9000	2	0	1.00000	146	0	59	TRAN	649
146	0	59	24.4000	2	0	1.00000	146	0	60	TRAN	650
146	0	60								TRAN	651
147	0	55	1.0000	1	-2	1.00000	147	0	56	TRAN	652
147	0	56	1.0000	1	0	1.00000	147	0	57	TRAN	653
147	0	57	2.0000	1	0	1.00000	147	0	58	TRAN	654
147	0	58	1.2000	2	0	1.00000	147	0	59	TRAN	655
147	0	59	12.0000	2	0	1.00000	147	0	60	TRAN	656
147	0	60	11.1000	4	0	1.00000	147	0	61	TRAN	657
147	0	61	2.6000	5	0	1.00000	147	0	62	TRAN	658
147	0	62								TRAN	659
148	0	55	1.0000	1	-2	1.00000	148	0	56	TRAN	660

148	0	56	1.0000	1	0	1.00000	148	0	57	TRAN	661
148	0	57	2.0000	1	0	1.00000	148	0	58	TRAN	662
148	0	58	40.0000	1	0	1.00000	148	0	59	TRAN	663
148	0	59	1.9500	2	0	1.00000	148	0	60	TRAN	664
148	0	60					148	0	61	TRAN	665
148	0	61	5.4000	4	0	1.00000	148	0	62	TRAN	666
148	0	62					148	0	63	TRAN	667
149	0	56	1.0000	1	-2	1.00000	149	0	57	TRAN	668
149	0	57	1.5000	1	0	1.00000	149	0	58	TRAN	669
149	0	58	3.5000	1	0	1.00000	149	0	59	TRAN	670
149	0	59	30.0000	1	0	1.00000	149	0	60	TRAN	671
149	0	60	2.0000	3	0	1.00000	149	0	61	TRAN	672
149	0	61	53.1000	3	0	1.00000	149	0	62	TRAN	673
149	0	62					149	0	63	TRAN	674
150	0	56	1.0000	1	-2	1.00000	150	0	57	TRAN	675
150	0	57	1.5000	1	0	1.00000	150	0	58	TRAN	676
150	0	58	2.5000	1	0	1.00000	150	0	59	TRAN	677
150	0	59	15.0000	1	0	1.00000	150	0	60	TRAN	678
150	0	60					150	0	61	TRAN	679
150	0	61	2.0000	3	0	1.00000	150	0	62	TRAN	680
150	0	62					150	0	63	TRAN	681
151	0	57	1.0000	1	0	1.00000	151	0	58	TRAN	682
151	0	58	2.0000	1	0	1.00000	151	0	59	TRAN	683
151	0	59	7.0000	1	0	1.00000	151	0	60	TRAN	684
151	0	60	13.0000	2	0	1.00000	151	0	61	TRAN	685
151	0	61	28.4000	3	0	1.00000	151	0	62	TRAN	686
151	0	62	80.0000	5	0	1.00000	151	0	63	TRAN	687
151	0	63					151	0	64	TRAN	688
152	0	57	1.0000	1	-2	1.00000	152	0	58	TRAN	689
152	0	58	1.5000	1	0	1.00000	152	0	59	TRAN	690
152	0	59	5.0000	1	0	1.00000	152	0	60	TRAN	691
152	0	60	3.0000	2	0	1.00000	152	0	61	TRAN	692
152	0	61	6.0000	2	0	1.00000	152	0	62	TRAN	693
152	0	62					152	0	63	TRAN	694
152	1	63	9.3000	3	0	0.25000	152	0	64	TRAN	695
152	0	63	13.0000	5	0	0.73000	152	0	65	TRAN	696
152	1	63	9.3000	3	0	0.75000	152	0	66	TRAN	697
152	0	63	13.0000	5	0	0.27000	152	0	67	TRAN	698
152	0	64					152	0	68	TRAN	699
153	0	57	1.0000	1	-2	1.00000	153	0	58	TRAN	700
153	0	58	1.5000	1	0	1.00000	153	0	59	TRAN	701
153	0	59	3.0000	1	0	1.00000	153	0	60	TRAN	702
153	0	60	10.0000	1	0	1.00000	153	0	61	TRAN	703
153	0	61	5.5000	2	0	1.00000	153	0	62	TRAN	704
153	0	62	47.0000	3	0	1.00000	153	0	63	TRAN	705
153	0	63					153	0	64	TRAN	706
154	0	58	1.0000	1	0	1.00000	154	0	59	TRAN	707
154	0	59	2.0000	1	0	1.00000	154	0	60	TRAN	708
154	0	60	12.0000	1	0	1.00000	154	0	61	TRAN	709
154	0	61	2.5000	2	0	1.00000	154	0	62	TRAN	710
154	0	62					154	0	63	TRAN	711
154	0	63	16.0000	5	0	1.00000	154	0	64	TRAN	712
154	0	64					154	0	65	TRAN	713
155	0	58	1.0000	1	-2	1.00000	155	0	59	TRAN	714
155	0	59	2.0000	1	0	1.00000	155	0	60	TRAN	715
155	0	60	5.0000	1	0	1.00000	155	0	61	TRAN	716
155	0	61	60.0000	1	0	1.00000	155	0	62	TRAN	717
155	0	62	24.0000	2	0	1.00000	155	0	63	TRAN	718
155	0	63	1.7000	5	0	1.00000	155	0	64	TRAN	719
155	0	64					155	0	65	TRAN	720

156	0	59	1.5000	1	0	1.000000	156	0	60	TRAN	721
156	0	60	4.5000	1	0	1.000000	156	0	61	TRAN	722
156	0	61	25.0000	1	0	1.000000	156	0	62	TRAN	723
156	0	62	10.0000	3	0	1.000000	156	0	63	TRAN	724
156	0	63	15.4000	4	0	1.000000	156	0	64	TRAN	725
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157	0	59	1.0000	1	-2	1.000000	157	0	60	TRAN	727
157	0	60	3.0000	1	0	1.000000	157	0	61	TRAN	728
157	0	61	13.0000	1	0	1.000000	157	0	62	TRAN	729
157	0	62	30.0000	1	0	1.000000	157	0	63	TRAN	730
157	0	63	15.0000	3	0	1.000000	157	0	64	TRAN	731
157	0	64					157	0	64	TRAN	732
158	0	59	1.0000	1	-2	1.000000	158	0	60	TRAN	733
158	0	60	2.0000	1	0	1.000000	158	0	61	TRAN	734
158	0	61	6.0000	1	0	1.000000	158	0	62	TRAN	735
158	0	62	15.0000	2	0	1.000000	158	0	63	TRAN	736
158	0	63	1.0000	3	0	1.000000	158	0	64	TRAN	737
158	0	64					158	0	64	TRAN	738
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159	0	61	3.5000	1	0	1.000000	159	0	62	TRAN	740
159	0	62	14.0000	1	0	1.000000	159	0	63	TRAN	741
159	0	63	20.0000	2	0	1.000000	159	0	64	TRAN	742
159	0	64	18.0000	3	0	1.000000	159	0	65	TRAN	743
159	0	65					159	0	65	TRAN	744
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160	0	61	2.5000	1	0	1.000000	160	0	62	TRAN	746
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160	0	64					160	0	64	TRAN	749
160	0	65	73.0000	4	0	1.000000	160	0	66	TRAN	750
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161	0	60	1.0000	1	-2	1.000000	161	0	61	TRAN	752
161	0	61	2.0000	1	0	1.000000	161	0	62	TRAN	753
161	0	62	4.0000	1	0	1.000000	161	0	63	TRAN	754
161	0	63	22.0000	1	0	1.000000	161	0	64	TRAN	755
161	0	64	3.7000	2	0	1.000000	161	0	65	TRAN	756
161	0	65	6.9000	4	0	1.000000	161	0	66	TRAN	757
161	0	66					161	0	66	TRAN	758
										TRAN	759

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110	46	-	.230	-	1.38	-2.298	-	.826	-	1FY	1
72	27	17	-4	-	1.	-4	-	5.	-4	1FY	2
72	28	47	-4	-	1.9	-3	-	3.4	-3	1FY	3
72	29	67	-4	-	4.6	-3	-	5.5	-3	1FY	4
72	30	27	-4	-	2.9	-3	-	2.4	-3	1FY	5
72	31	57	-5	-	4.0	-4	-	2.	-4	1FY	6
73	27	17	-4	-	-	-	-	1.	-4	1FY	7
73	28	273	-3	-	3.37	-3	-	4.1	-3	1FY	8
73	29	572	-3	-	1.32	-2	-	1.14	-2	1FY	9
73	30	279	-3	-	1.32	-2	-	0.5	-3	1FY	10
73	31	470	-4	-	3.37	-3	-	1.4	-3	1FY	11
073	032A	-	-	-	-	-	-	-	-	1FY	12
073	032	-	-	-	-	-	-	-	-	1FY	13
74	27	-	-	-	-	-	-	-	-	1FY	14
74	26	379	-3.147	-	4.04	-3	-	5.1	-3	1FY	15
74	29	1742	-2.877	-	2.63	-2	-	2.32	-2	1FY	16
74	30	1732	-21.26	-	4.17	-2	-	2.65	-2	1FY	17
74	31	371	-3.462	-	1.72	-2	-	7.6	-3	1FY	18
74	32	-	6.7	-	38.09	-4	-	1.0	-4	1FY	19
75	27	-	-	-	-	-	-	-	-	1FY	20
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75	28	5112	-33.40	-29.91	-4	-	3.5	-3	-	1FY	22
75	29	3740	-2.796	-3.70	-2	-	3.44	-2	-	1FY	23
75	30	5133	-21.95	-1.04	-	-	6.82	-2	-	1FY	24
75	31	2117	-21.23	-7.47	-2	-	3.44	-2	-	1FY	25
075	032A	.0005	-.0904	-.0061	-	-	.0018	-	-	1FY	26
075	032	.0005	-.0904	-.0061	-	-	.0018	-	-	1FY	27
76	28	1789	-3	-	-	-	4.	-4	-	1FY	28
76	29	6702	-2.577	-5.01	-2	-	3.79	-2	-	1FY	29
76	30	.16	-2.47	-.244	-	-	.131	-	-	1FY	30
76	31	.110	-2.62	-.294	-	-	.115	-	-	1FY	31
76	32	1.81	-2.698	-9.12	-2	-	2.53	-2	-	1FY	32
76	33		-	-1.21	-3	-	-	-	-	1FY	33
77	28		-	-	-	-	-	-	-	1FY	34
77	29	6775	-2.300	-5.15	-2	-	3.02	-2	-	1FY	35
77	30	.308	-2.33	-.498	-	-	.171	-	-	1FY	36
77	31	.348	-4.15	-.987	-	-	.237	-	-	1FY	37
077	032A	.0500	-.8990	-.2492	-	-	.0422	-	-	1FY	38
077	032	.0500	-.8990	-.2492	-	-	.0422	-	-	1FY	39
77	33	171	-3.115	-5.15	-2	-	2.16	-3	-	1FY	40
78	28		-	-	-	-	-	-	-	1FY	41
78	29	5715	-23.28	-26.3	-3	-	1.01	-2	-	1FY	42
78	30	.485	-1.72	-.588	-	-	.227	-	-	1FY	43
78	31	.953	-5.15	-2.03	-	-	.545	-	-	1FY	44
78	32	.473	-3.93	-1.79	-	-	.347	-	-	1FY	45
078	033A	.0233	-.3678	-.1957	-	-	.0255	-	-	1FY	46
078	033	.0233	-.3678	-.1957	-	-	.0255	-	-	1FY	47
79	29		-	-	-	-	-	-	-	1FY	48
79	30	.735	-1.21	-.554	-	-	.248	-	-	1FY	49
79	31	2739	-6.04	-3.39	-	-	.987	-	-	1FY	50
79	32	2702	-7.68	-5.05	-	-	.987	-	-	1FY	51
79	33	.415	-2.23	-1.94	-	-	.248	-	-	1FY	52
079	034A		-.0215	-.0327	-	-	-	-	-	1FY	53
079	034		-.0215	-.0327	-	-	-	-	-	1FY	54
80	29		-	-	-	-	-	-	-	1FY	55
80	30	.569	-.355	-.302	-1.00	-	.179	-.620	-	1FY	56
80	31	3711	-4.44	-4.52	-16.9	-	1.33	-1.84	-	1FY	57
80	32	4721	-9.45	-10.9	-38.2	-	2.27	-4.78	-	1FY	58
80	33	1749	-5.12	-6.90	-22.4	-	1.00	-3.21	-	1FY	59
80	34	3728	-2.626	-1.03	-3.00	-	5.97	-2.525	-	1FY	60
81	29		-	-	-	-	-	-	-	1FY	61
81	30	.163	-	-	-	-	3.95	-2	-	1FY	62
81	31	2790	-3.03	-3.90	-4.69	-	1.54	-1.29	-	1FY	63
81	32	6761	-10.9	-17.0	-31.6	-	4.35	-5.92	-	1FY	64
81	33	3790	-10.1	-18.3	-50.1	-	3.12	-6.72	-	1FY	65
081	034A	.2626	-1.1068	-2.4217	-10.5964	-	.2737	-.9962	-	1FY	66
081	034	.2626	-1.1068	-2.4217	-10.5964	-	.2737	-.9962	-	1FY	67
81	35		-	-	-.926	-	-	-2.07	-2	1FY	68
82	30	1701	-2	-	-	-	-	-	-	1FY	69
82	31	3790	-1.70	-2.30	-.397	-	1.09	-.549	-	1FY	70
82	32	11.0	-11.6	-18.9	-20.8	-	5.67	-5.31	-	1FY	71
82	33	7789	-18.6	-34.9	-62.4	-	7.34	-10.6	-	1FY	72
82	34	1739	-7.73	-16.5	-48.2	-	2.45	-5.31	-	1FY	73
82	35		-.364	-1.31	-9.21	-	4.68	-2.549	-	1FY	74
83	30		-	-	-	-	-	-	-	1FY	75
83	31	4743	-.339	-.152	-	-	.261	-	-	1FY	76
83	32	20.2	-17.5	-18.3	-11.5	-	5.59	-3.50	-	1FY	77
83	33	22.9	-51.4	-49.1	-59.8	-	13.5	-13.2	-	1FY	78
083	34A2	.8650	-16.3770	-28.3532	-34.0742	-	3.1407	-4.5883	-	1FY	79
083	034	3.7977	-21.7090	-26.9799	-45.1682	-	5.3477	-7.8126	-	1FY	80
83	35	7713	-27.37	-9.48	-29.8	-	1.27	-2.83	-	1FY	81

083	36A	-	-	-	.2519	-	-	-	1FY	82
083	36	-	-	-	.2519	-	-	-	1FY	83
84	31 2:48	-	-	-	-	-	-	-	1FY	84
84	32 24.0	- 9.91	- 9.79	- 1.86	- 4.17	- .168	-	-	1FY	85
84	33 47.5	- 53.6	- 54.7	- 41.7	- 18.1	- 12.6	-	-	1FY	86
84	34 24.0	- 70.4	- 89.0	- 101.	- 19.5	- 21.4	-	-	1FY	87
84	35 27.48	- 24.0	- 54.3	- 63.7	- 5.16	- 9.44	-	-	1FY	88
84	36	- .496	- 1.15	- 9.44	-	- .562	-	-	1FY	89
85	31	-	-	-	-	-	-	-	1FY	90
85	32 57.89	- 1.48	- 1.03	-	- 1.34	- 1.19	-2	-	1FY	91
85	33 38.3	- 38.2	- 40.2	- 21.1	- 13.0	- 8.62	-	-	1FY	92
85	34 60.9	- 97.5	- 113.	- 96.6	- 25.6	- 27.9	-	-	1FY	93
85	35 25.0	- 63.6	- 81.1	- 110.	- 13.0	- 23.0	-	-	1FY	94
085	36A.5552	- 4.9299	- 7.1550	- 16.3297	- .6668	- 3.0647	-	-	1FY	95
085	36 .5552	- 4.9299	- 7.1550	- 16.3297	- .6668	- 3.0647	-	-	1FY	96
85	37	-	-	-	.340	-	-	-	1FY	97
86	32 .852	-	-	-	.215	-	-	-	1FY	98
86	33 32.8	- 23.3	- 24.1	- 8.29	- 11.3	- 5.94	-	-	1FY	99
86	34 91.3	- 96.8	- 117.	- 80.2	- 33.7	- 31.1	-	-	1FY	100
86	35 64.9	- 109.	- 142.	- 159.	- 26.0	- 40.2	-	-	1FY	101
86	36 11.1	- 29.8	- 43.7	- 80.2	- 4.98	- 13.4	-	-	1FY	102
086	37A	-	-	.3132	- 4.2437	-	-	.1301	1FY	103
086	37	-	-	.3132	- 4.2437	-	-	.1301	1FY	104
87	32	-	-	-	-	-	-	-	1FY	105
87	33 18.6	- 9.87	- 8.05	- .750	- 3.36	- 1.58	-	-	1FY	106
87	34 90.1	- 81.2	- 102.	- 52.5	- 25.1	- 26.7	-	-	1FY	107
87	35 107.	- 150.	- 213.	- 170.	- 42.8	- 60.5	-	-	1FY	108
87	36 32.8	- 70.1	- 116.	- 140.	- 18.9	- 35.5	-	-	1FY	109
87	37 .428	- 5.62	- 14.1	- 28.8	- 1.12	- 4.75	-	-	1FY	110
88	32	-	-	-	-	-	-	-	1FY	111
88	33 77.89	- .748	-	-	- .840	-	-	-	1FY	112
88	34 82.6	- 50.5	- 59.2	- 24.7	- 25.0	- 16.8	-	-	1FY	113
88	35 170.	- 160.	- 223.	- 140.	- 64.7	- 67.2	-	-	1FY	114
88	36 86.9	- 132.	- 207.	- 194.	- 43.4	- 67.2	-	-	1FY	115
88	37 97.33	- 27.7	- 47.9	- 69.3	- 7.12	- 16.8	-	-	1FY	116
88	38	-	-	- 1.78	-	-	-	-	1FY	117
89	33 .621	-	-	-	-	-	-	-	1FY	118
89	34 57.3	- 28.2	- 29.5	- 4.00	- 15.3	- 7.66	-	-	1FY	119
89	35 200.	- 153.	- 180.	- 89.4	- 66.3	- 57.3	-	-	1FY	120
89	36 175.	- 199.	- 269.	- 217.	- 71.5	- 97.5	-	-	1FY	121
89	37 38.6	- 68.1	- 104.	- 136.	- 18.9	- 43.8	-	-	1FY	122
89	38	- 1.37	- 3.49	- 20.2	-	- 2.56	-	-	1FY	123
089	39A	-	-	-	-	-	-	-	1FY	124
089	39	-	-	-	-	-	-	-	1FY	125
90	33	-	-	-	-	-	-	-	1FY	126
90	34 30.2	- 5.64	- 3.81	-	- 6.99	- 1.06	-	-	1FY	127
90	35 180.	- 92.6	- 114.	- 49.0	- 57.5	- 41.5	-	-	1FY	128
90	36 263.	- 213.	- 295.	- 196.	- 106.	- 116.	-	-	1FY	129
90	37 98.6	- 122.	- 198.	- 196.	- 50.3	- 83.6	-	-	1FY	130
90	38	- 16.4	- 32.4	- 49.0	- 3.99	- 14.8	-	-	1FY	131
91	34 47.52	-	-	-	- .792	-	-	-	1FY	132
91	35 110.	- 50.3	- 52.4	- 18.8	- 41.6	- 22.5	-	-	1FY	133
91	36 270.	- 197.	- 239.	- 140.	- 125.	- 109.	-	-	1FY	134
091	37 172.0688	- 188.4969	- 272.1905	- 244.6890	- 104.4880	- 135.1901	-	-	1FY	135
91	38 25.8	- 47.3	- 78.9	- 106.	- 18.4	- 41.1	-	-	1FY	136
091	39A	-	-	.4208	- 3.2148	-	-	.2984	1FY	137
091	39	-	-	.4208	- 3.2148	-	-	.2984	1FY	138
92	34	-	-	-	-	-	-	-	1FY	139
92	35 53.9	- 20.3	- 28.7	- 1.49	- 20.3	- 6.41	-	-	1FY	140
92	36 231.	- 142.	- 170.	- 78.0	- 106.	- 80.6	-	-	1FY	141

92	37	246.	- 238.	- 313.	- 233.	- 137.	- 170.	- 1FY	142
92	38	65.9	- 99.7	- 149.	- 181.	- 46.0	- 92.2	- 1FY	143
92	39	.605	- 5.09	- 11.8	- 34.5	- .875	- 11.2	- 1FY	144
93	34		-	-	-	-	-	- 1FY	145
93	35	20.0	- 1.93	- 1.34	-	- 4.88	- .545	- 1FY	146
93	36	168.	- 79.7	- 93.2	- 35.0	- 82.1	- 51.2	- 1FY	147
93	37	304.	- 228.	- 382.	- 183.	- 187.	- 177.	- 1FY	148
93	38	141.	- 165.	- 249.	- 237.	- 109.	- 155.	- 1FY	149
93	39	10.3	- 29.4	- 51.2	- 79.0	- 14.6	- 33.9	- 1FY	150
93	40		-	- 1.56	- 1.50	-	-	- 1FY	151
093	041A		-	-	-	-	-	- 1FY	152
093	041		-	-	-	-	-	- 1FY	153
94	35	1:42	-	-	-	-	-	- 1FY	154
94	36	88.4	- 37.1	- 38.4	- 9.40	- 45.0	- 23.5	- 1FY	155
94	37	279.	- 181.	- 217.	- 119.	- 179.	- 147.	- 1FY	156
94	38	225.	- 210.	- 302.	- 250.	- 179.	- 213.	- 1FY	157
94	39	44.5	- 68.1	- 103.	- 135.	- 45.0	- 82.2	- 1FY	158
94	40		- .969	- 2.76	- 16.4	-	- 2.77	- 1FY	159
95	35		-	-	-	-	-	- 1FY	160
95	36	40.2	- 10.5	- 5.24	-	- 21.7	- 2.95	- 1FY	161
95	37	212.	- 115.	- 117.	- 57.3	- 147.	- 87.4	- 1FY	162
95	38	277.	- 236.	- 284.	- 216.	- 232.	- 227.	- 1FY	163
95	39	94.4	- 125.	- 179.	- 201.	- 96.8	- 152.	- 1FY	164
95	40	1:89	- 1.0	- 26.5	- 46.4	- 4.30	- 25.	- 1FY	165
095	041A		-	-	-	-	-	- 1FY	166
095	041		-	-	-	-	-	- 1FY	167
96	35		-	-	-	-	-	- 1FY	168
96	36	7:58	- .598	-	-	- 2.13	- 43.4	- 1FY	169
96	37	130.	- 61.3	- 56.0	- 21.8	- 83.0	- 199.	- 1FY	170
96	38	294.	- 212.	- 223.	- 147.	- 234.	- 226.	- 1FY	171
96	39	171.	- 193.	- 223.	- 233.	- 169.	- 65.5	- 1FY	172
96	40	22.7	- 43.1	- 56.0	- 96.3	- 29.6	- .698	- 1FY	173
96	41		-	-	- 4.30	-	-	- 1FY	174
97	36		-	-	-	-	-	- 1FY	175
97	37		-	-	-	-	-	- 1FY	176
97	38	61.3	- 28.5	- 19.7	- 2.85	- 41.2	- 17.0	- 1FY	177
97	39	246.	- 174.	- 148.	- 84.6	- 201.	- 141.	- 1FY	178
97	40	241.	- 254.	- 252.	- 220.	- 243.	- 259.	- 1FY	179
097	041A	29.7619	- 48.2359	- 55.5389	- 75.2496	- 37.3669	- 62.5127	- 1FY	180
097	041	29.7619	- 48.2359	- 55.5389	- 75.2496	- 37.3669	- 62.5127	- 1FY	181
97	42		- 3.31	- 6.59	- 24.2	- 1.07	- 9.73	- 1FY	182
98	36		-	-	-	-	-	- 1FY	183
98	37	10.2	- .925	-	-	- 3.49	-	- 1FY	184
98	38	131.	- 64.9	- 56.9	- 22.3	- 103.	- 54.8	- 1FY	185
98	39	174.	- 215.	- 214.	- 136.	- 269.	- 219.	- 1FY	186
98	40	146.	- 177.	- 190.	- 202.	- 180.	- 219.	- 1FY	187
098	041A	8:6035	- 17.8347	- 22.9661	- 39.8260	- 14.7279	- 27.8512	- 1FY	188
098	041	8:6035	- 17.8347	- 22.9661	- 39.8260	- 14.7279	- 27.8512	- 1FY	189
98	42		-	-	- 2.63	-	-	- 1FY	190
99	37		-	-	-	-	-	- 1FY	191
99	38	49.5	- 18.2	- 11.9	- .782	- 35.1	- 6.75	- 1FY	192
99	39	229.	- 140.	- 115.	- 54.8	- 199.	- 114.	- 1FY	193
99	40	259.	- 243.	- 227.	- 177.	- 277.	- 257.	- 1FY	194
99	41	58.1	- 108.	- 115.	- 147.	- 98.4	- 151.	- 1FY	195
99	42	.805	- 7.52	- 11.9	- 30.1	- 2.52	- 20.2	- 1FY	196
099	043A		-	-	-	-	-	- 1FY	197
099	043		-	-	-	-	-	- 1FY	198
100	38	4:95	-	-	-	- 2.00	-	- 1FY	199
100	39	119.	- 49.4	- 35.9	- 13.6	- 105.	- 40.0	- 1FY	200
100	40	292.	- 192.	- 164.	- 102.	- 314.	- 194.	- 1FY	201

100	41	186.	- 188.	- 186.	- 151.	- 242.	- 236.	- 1FY	202
100	42	28.0	- 44.1	- 54.2	- 76.3	- 46.5	- 72.9	- 1FY	203
100	43		-	- .577	- 4.55	-	- 1.05	- 1FY	204
101	38		-	-	-	-	-	- 1FY	205
101	39	31.9	- 7.92	- 22.1	-	- 21.8	- 3.12	- 1FY	206
101	40	170.	- 93.5	- 51.8	- 35.7	- 162.	- 92.6	- 1FY	207
101	41	223.	- 198.	- 123.	- 135.	- 277.	- 241.	- 1FY	208
101	42	76.0	- 104.	- 80.0	- 125.	- 122.	- 161.	- 1FY	209
101	43	1:57	- 13.0	- 11.7	- 28.8	- 7.27	- 26.5	- 1FY	210
102	38		-	-	-	-	-	- 1FY	211
102	39	5:51	- 5.16	-	-	- 2.48	-	- 1FY	212
102	40	87.1	- 47.3	- 22.0	- 11.4	- 96.5	- 45.4	- 1FY	213
102	41	194.	- 164.	- 87.7	- 69.5	- 272.	- 196.	- 1FY	214
102	42	111.	- 144.	- 87.7	- 104.	- 194.	- 211.	- 1FY	215
102	043A	7:0528	- 15.1281	- 11.0077	- 20.4249	- 17.1162	- 28.5119	- 1FY	216
102	043	7:0528	- 15.1281	- 11.0077	- 20.4249	- 17.1162	- 28.5119	- 1FY	217
102	44		-	-	- 1.35	-	-	- 1FY	218
103	39	.510	-	-	-	-	-	- 1FY	219
103	40	39.0	- 24.1	- 9.03	- 2.03	- 56.3	- 20.6	- 1FY	220
103	41	128.	- 120.	- 55.1	- 34.1	- 225.	- 139.	- 1FY	221
103	42	108.	- 154.	- 82.2	- 77.4	- 225.	- 220.	- 1FY	222
103	43	22.2	- 51.2	- 31.6	- 45.4	- 56.3	- 98.9	- 1FY	223
103	44		- .883	- 1.06	- 6.07	-	- 4.07	- 1FY	224
103	045A		-	-	-	-	-	- 1FY	225
103	045		-	-	-	-	-	- 1FY	226
104	39		-	-	-	-	-	- 1FY	227
104	40	8:07	- 1.99	- .882	- 11.3	- 14.5	- 1.22	- 1FY	228
104	41	53.1	- 47.5	- 14.9	- 51.7	- 141.	- 64.4	- 1FY	229
104	42	83.4	- 117.	- 42.0	- 58.7	- 280.	- 192.	- 1FY	230
104	43	34.0	- 70.7	- 30.2	- 17.1	- 141.	- 149.	- 1FY	231
104	44	1:46	- 11.2	- 5.32	- .182	- 14.5	- 28.5	- 1FY	232
104	045A		-	-	-	-	-	- 1FY	233
104	045		-	-	-	-	-	- 1FY	234
105	39		-	-	-	-	-	- 1FY	235
105	40	2:92	- .649	- .142	-	- 6.40	- .517	- 1FY	236
105	41	23.8	- 27.0	- 7.47	- 9.26	- 108.	- 48.5	- 1FY	237
105	42	43.1	- 76.9	- 22.3	- 45.1	- 244.	- 167.	- 1FY	238
105	43	19.8	- 55.6	- 17.3	- 54.5	- 143.	- 147.	- 1FY	239
105	44	.776	- 9.91	- 3.31	- 16.8	- 19.2	- 32.2	- 1FY	240
105	045A		-	-	- .1234	-	-	- 1FY	241
105	045		-	-	- .1234	-	-	- 1FY	242
106	39		-	-	-	-	-	- 1FY	243
106	40	.749	- .285	-	-	- 2.72	-	- 1FY	244
106	41	8:87	- 21.0	- 2.63	- 5.91	- 80.6	- 34.8	- 1FY	245
106	42	18.6	- 68.2	- 9.92	- 36.0	- 210.	- 138.	- 1FY	246
106	43	9.85	- 57.1	- 9.20	- 53.7	- 140.	- 138.	- 1FY	247
106	44	1.14	- 11.4	- 2.13	- 20.3	- 23.1	- 34.8	- 1FY	248
106	045A		-	-	- .3568	-	-	- 1FY	249
106	045		-	-	- .3568	-	-	- 1FY	250
107	40	.173	-	-	-	- .971	-	- 1FY	251
107	41	3:71	- 15.7	- 1.54	- 3.94	- 51.0	- 23.6	- 1FY	252
107	42	8:87	- 59.8	- 6.71	- 29.4	- 153.	- 108.	- 1FY	253
107	43	5:51	- 56.2	- 7.23	- 50.1	- 118.	- 122.	- 1FY	254
107	44	.806	- 13.3	- 1.92	- 22.1	- 22.6	- 35.6	- 1FY	255
107	045A		-	-	- .6757	-	-	- 1FY	256
107	045		-	-	- .6757	-	-	- 1FY	257
108	40		-	-	-	-	-	- 1FY	258
108	41	.635	- 6.08	- .259	- .424	- 16.9	- 3.79	- 1FY	259
108	42	2.74	- 40.8	- 2.12	- 16.6	- 87.9	- 47.8	- 1FY	260
108	43	2:56	- 65.0	- 3.92	- 46.6	- 113.	- 101.	- 1FY	261

108	44	.746	- 26.9	- 1.85	- 33.5	- 38.0	- 54.6	- 1FY	262
108	45		- 1.20	- .149	- 5.90	- .724	- 6.64	- 1FY	263
109	40		-	-	-	-	-	- 1FY	264
109	41	9.62	-2.540	- 0.5	-3	- 1.71	- .285	- 1FY	265
109	42	.785	- 21.1	- .884	- 7.15	- 28.6	- 19.3	- 1FY	266
109	43	1.42	- 59.3	- 1.89	- 34.7	- 65.3	- 66.3	- 1FY	267
109	44	.656	- 47.5	- 1.56	- 42.2	- 38.3	- 58.4	- 1FY	268
109	045A.0227		- 3.6298	- .1601	- 6.6547	- 2.5475	- 6.5054	- 1FY	269
109	045 .0227		- 3.6298	- .1601	- 6.6547	- 2.5475	- 6.5054	- 1FY	270
109	046A		-	-	- .0952	-	-	- 1FY	271
109	046		-	-	- .0952	-	-	- 1FY	272
109	047A		-	-	-	-	-	- 1FY	273
109	047		-	-	-	-	-	- 1FY	274
110	41	470	-3	-	-	-	-	- 1FY	275
110	42	.247	- 9.89	- .191	- .170	- 7.51	- 8.12	- 1FY	276
110	43	.778	- 44.3	- 1.09	- 21.4	- 30.0	- 42.7	- 1FY	277
110	44	.624	- 53.6	- 1.52	- 45.1	- 30.0	- 63.9	- 1FY	278
110	45	.124	- 16.8	- .538	- 24.5	- 7.51	- 24.5	- 1FY	279
111	41		-	-	-	-	-	- 1FY	280
111	42	.114	- 2.29	- 2.05	-2	- .851	- .750	- 1FY	281
111	43	.609	- 27.1	- .458	- 10.3	- 6.36	- 22.3	- 1FY	282
111	44	.805	- 56.8	- 1.10	- 39.2	- 10.8	- 57.8	- 1FY	283
111	45	.275	- 30.2	- .699	- 36.4	- 4.78	- 38.8	- 1FY	284
111	046A.0028		- 1.7497	- .0516	- 4.3051	- .1418	- 3.2324	- 1FY	285
111	046 .0028		- 1.7497	- .0516	- 4.3051	- .1418	- 3.2324	- 1FY	286
111	047A		-	-	-	-	-	- 1FY	287
111	047		-	-	-	-	-	- 1FY	288
112	42	1.11	-2 .1130	-	-	- 3.90	-2	- 1FY	289
112	43	.202	- 12.547	- .142	- 3.97	- .204	- 9.69	- 1FY	290
112	44	.469	- 46.430	- .816	- 26.0	- 6.12	- 44.3	- 1FY	291
112	45	.280	- 42.974	- .665	- 42.4	- 4.73	- 50.2	- 1FY	292
112	46	3783	-2 9.936	- .176	- 17.5	- .902	- 14.6	- 1FY	293
112	47		-	-	- .784	-	- .155	- 1FY	294
113	42		-	-	-	-	-	- 1FY	295
113	43	.156	- .528	- 4.82	-2.371	- .889	- 2.80	- 1FY	296
113	44	.633	- 34.5	- .397	- 14.5	- 4.32	- 27.0	- 1FY	297
113	45	.649	- 52.8	- .731	- 40.7	- 5.23	- 48.1	- 1FY	298
113	46	.166	- 21.3	- .346	- 29.3	- 1.62	- 27.0	- 1FY	299
113	047A		- .4109	- .8138	- 2.6414	- .0116	- 1.4231	- 1FY	300
113	047		- .4109	- .8138	- 2.6414	- .0116	- 1.4231	- 1FY	301
114	42		-	-	-	-	-	- 1FY	302
114	43	4.75	-2.544	- 2.94	-3	- 9.79	-2.152	- 1FY	303
114	44	.371	- 18.3	- .205	- 6.59	- 1.24	- 13.3	- 1FY	304
114	45	.646	- 48.9	- .863	- 32.0	- 2.60	- 45.6	- 1FY	305
114	46	.290	- 34.3	- .547	- 38.8	- 1.41	- 40.2	- 1FY	306
114	47	1766	-25.98	- .113	- 12.0	- .172	- 8.80	- 1FY	307
114	48		-	-	- .172	-	-	- 1FY	308
115	43	3.0	-3	-	-	-	-	- 1FY	309
115	44	.163	- 8.37	- .138	- .159	- .452	- 5.30	- 1FY	310
115	45	.487	- 39.1977	- .718	- 20.0	- 1.70	- 32.3	- 1FY	311
115	46	.375	- 45.1412	- .929	- 42.2	- 1.58	- 48.2	- 1FY	312
115	047A.0353		- 6.3513	- .1551	- 11.7738	- .1821	- 9.4532	- 1FY	313
115	047 .0353		- 6.3513	- .1551	- 11.7738	- .1821	- 9.4532	- 1FY	314
115	048A		- .0728	- .8030	- 1.4231	-	- .3177	- 1FY	315
115	048		- .0728	- .8030	- 1.4231	-	- .3177	- 1FY	316
115	049A		-	-	-	-	-	- 1FY	317
115	049		-	-	-	-	-	- 1FY	318
116	43		-	-	-	-	-	- 1FY	319
116	44	.117	- 2.49	- 1.87	-2	- .162	- .620	- 1FY	320
116	45	.617	- 24.9	- .313	- 9.85	- 1.10	- 18.4	- 1FY	321

116	46	.801	- 50.8	- .709	- 37.2	- 1.74	- 47.8	- 1FY	322
116	47	.267	- 26.0	- .417	- 34.5	- .719	- 32.0	- 1FY	323
116	48	4798	-22.82	- 3.22	-27.99	- 3.22	-25.25	- 1FY	324
117	43		-	-	-	-	-	- 1FY	325
117	44	1750	-2.233	-	-	- 1.49	-2	- 1FY	326
117	45	.232	- 12.8	- .150	- 3.89	- .579	- 9.18	- 1FY	327
117	46	.518	- 44.8	- .600	- 26.2	- 1.63	- 39.7	- 1FY	328
117	47	.296	- 39.4	- .620	- 41.5	- 1.17	- 42.8	- 1FY	329
117	048A	.0194	- 4.7173	- .0751	- 8.8047	- .1025	- 5.7431	- 1FY	330
117	048	.0194	- 4.7173	- .0751	- 8.8047	- .1025	- 5.7431	- 1FY	331
117	049A		-	-	- .3932	-	-	- 1FY	332
117	049		-	-	- .3932	-	-	- 1FY	333
117	050A		-	-	-	-	-	- 1FY	334
117	050		-	-	-	-	-	- 1FY	335
118	44		-	-	-	-	-	- 1FY	336
118	45	.143	- 5.42	- 6.00	-2.376	- .261	- 3.14	- 1FY	337
118	46	.574	- 33.3	- .418	- 14.6	- 1.27	- 28.8	- 1FY	338
118	47	.567	- 49.6	- .713	- 41.3	- 1.53	- 47.6	- 1FY	339
118	48	.139	- 19.2	- .314	- 29.6	- .476	- 22.6	- 1FY	340
118	049A		- .3272	- .0095	- 2.6722	- .0034	- .9148	- 1FY	341
118	049		- .3272	- .0095	- 2.6722	- .0034	- .9148	- 1FY	342
119	44		-	-	-	-	-	- 1FY	343
119	45	574	-2.646	- 4.4	-37.54	- 6.41	-2.190	- 1FY	344
119	46	.395	- 19.3	- .232	- 34.5	- .807	- 13.3	- 1FY	345
119	47	.667	- 50.0	- .694	- 39.1	- 1.70	- 42.4	- 1FY	346
119	048A	.1431	- 16.1914	- .2687	- 5.7845	- .4593	- 17.9915	- 1FY	347
119	048	.1431	- 16.1914	- .2687	- 5.7845	- .4593	- 17.9915	- 1FY	348
119	049A	.0075	- 2.6583	- .0516	- .0620	- .0558	- 4.2082	- 1FY	349
119	049	.0075	- 2.6583	- .0516	- .0620	- .0558	- 4.2082	- 1FY	350
119	050A		-	-	-	-	-	- 1FY	351
119	050		-	-	-	-	-	- 1FY	352
120	45	.675	-3	-	-	-	-	- 1FY	353
120	46	.213	- 9.14	- .106	- 2.37	- .413	- 5.79	- 1FY	354
120	47	.625	- 42.3	- .554	- 23.0	- 1.56	- 32.8	- 1FY	355
120	48	.476	- 47.6	- .717	- 45.6	- 1.44	- 45.8	- 1FY	356
120	49	878	-213.8	- .239	- 23.0	- .334	- 16.3	- 1FY	357
120	50		- .150	- 4.6	-32.37	-	-	- 1FY	358
121	45		-	-	-	-	-	- 1FY	359
121	46	9751	-23.02	- 2.22	-2.131	- .190	- .876	- 1FY	360
121	47	.487	- 29.2	- .373	- 12.2	- 1.28	- 19.5	- 1FY	361
121	48	.618	- 58.6	- .842	- 42.3	- 2.02	- 47.3	- 1FY	362
121	049A	.1011	- 14.1131	- .2487	- 19.0428	- .4160	- 15.1454	- 1FY	363
121	049	.1011	- 14.1131	- .2487	- 19.0428	- .4160	- 15.1454	- 1FY	364
121	050A	.0002	- 1.4597	- .0332	- 4.1669	- .0186	- 2.2464	- 1FY	365
121	050	.0032	- 1.4597	- .0332	- 4.1669	- .0186	- 2.2464	- 1FY	366
122	46	17	-2	-	-	- 9.1	-3	- 1FY	367
122	47	.274	- 12.3	- 8.40	-23.90	- .639	- 7.72	- 1FY	368
122	48	.696	- 49.7	- .382	- 29.2	- 2.06	- 37.5	- 1FY	369
122	49	.456	- 49.7	- .434	- 49.7	- 1.71	- 45.4	- 1FY	370
122	50	7709	-212.3	- 1.26	- 21.9	- .350	- 14.1	- 1FY	371
122	051A		-	- .0007	- .6655	-	- .1022	- 1FY	372
122	051		-	- .0007	- .6655	-	- .1022	- 1FY	373
123	46		-	-	-	-	-	- 1FY	374
123	47	.174	- 6.44	- .127	- .679	- .415	- 3.40	- 1FY	375
123	48	.657	- 39.1	- .898	- 20.1	- 2.02	- 27.9	- 1FY	376
123	049A	.3157	- 28.0329	- .7656	- 26.7725	- 1.2191	- 26.1232	- 1FY	377
123	049	.3157	- 28.0329	- .7656	- 26.7725	- 1.2191	- 26.1232	- 1FY	378
123	50A	.0761	- 10.5365	- .3413	- 17.9678	- .3767	- 12.4009	- 1FY	379
123	50	.0761	- 10.5365	- .3413	- 17.9678	- .3767	- 12.4009	- 1FY	380
123	51		- .676	- 3.94	-25.75	- 1.07	-21.94	- 1FY	381

124	46	-	-	-	-	-	-	1FY	382
124	47 7.10	-2.814	- 1.6	-2	- .125	- .222	-	1FY	383
124	48 .520	- 23.4	- .812	- 10.1	- 1.57	- 15.5	-	1FY	384
124	49 .826	- 59.1	- 2.43	- 46.1	- 3.31	- 50.2	-	1FY	385
124	50 .346	- 39.4	- 1.88	- 52.4	- 1.88	- 41.4	-	1FY	386
124	051A.0057	- 2.0332	- .1198	- 5.1873	- .0723	- 2.8902	-	1FY	387
124	051A.0057	- 2.0332	- .1198	- 5.1873	- .0723	- 2.8902	-	1FY	388
124	051 .0057	- 2.0332	- .1198	- 5.1873	- .0723	- 2.8902	-	1FY	389
124	52	-	-	- .182	-	-	-	1FY	390
125	47 6.78	-2	-	-	-	-	-	1FY	391
125	48 .329	- 11.2	- .974	- 3.25	- 1.05	- .70	-	1FY	392
125	49 .937	- 50.4	- 5.09	- 31.5	- 3.95	- 41.3	-	1FY	393
125	050A.3497	- 27.2596	- 3.2973	- 31.9939	- 1.8211	- 29.1726	-	1FY	394
125	050 .3497	- 27.2596	- 3.2973	- 31.9939	- 1.8211	- 29.1726	-	1FY	395
125	51 .128	- 16.0	- 2.20	- 31.5	- .847	- 20.4	-	1FY	396
125	052A	- .0822	- .0210	- 1.6637	-	- .5947	-	1FY	397
125	052	- .0822	- .0210	- 1.6637	-	- .5947	-	1FY	398
126	47	-	-	-	-	-	-	1FY	399
126	48 .226	- 5.05	- .395	- .203	- .827	- 1.09	-	1FY	400
126	49 1.13	- 44.8	- 6.66	- 19.0	- 5.05	- 24.6	-	1FY	401
126	50 1.39	- 87.9	- 15.1	- 65.5	- 7.53	- 59.4	-	1FY	402
126	051A.2196	- 21.2180	- 4.4331	- 29.4856	- 1.4430	- 19.0588	-	1FY	403
126	051 .2196	- 21.2180	- 4.4331	- 29.4856	- 1.4430	- 19.0588	-	1FY	404
126	52 6.7	-34.30	- 1.19	- 12.6	- 9.75	-25.55	-	1FY	405
127	47	-	-	-	-	-	-	1FY	406
127	48 .130	- .323	-	-	- .229	-	-	1FY	407
127	49 1.78	- 28.3	- 5.88	- 9.33	- 6.81	- 14.2	-	1FY	408
127	50 8.76	- 97.1	- 23.5	- 56.9	- 17.7	- 61.6	-	1FY	409
127	51 2.07	- 84.5	- 23.5	- 34.9	- 11.9	- 66.5	-	1FY	410
127	052A.1301	- 8.6999	- 2.9421	- 16.7392	- .9703	- 8.9449	-	1FY	411
127	052 .1301	- 8.6999	- 2.9421	- 16.7392	- .9703	- 8.9449	-	1FY	412
127	53	-	-	- 1.11	-	-	-	1FY	413
128	48 .190	-	-	-	- .111	-	-	1FY	414
128	49 6.41	- 25.9	- 6.99	- 6.42	- 10.4	- 12.9	-	1FY	415
128	50 17.2	- 109.	- 33.9	- 52.8	- 35.9	- 67.3	-	1FY	416
128	051A5.8524	- 55.5824	- 26.6145	- 49.6545	- 15.7230	- 44.2672	-	1FY	417
128	051 5.8524	- 55.5824	- 26.6145	- 49.6545	- 15.7230	- 44.2672	-	1FY	418
128	52 1.97	- 30.1	- 12.7	- 46.1	- 6.93	- 29.1	-	1FY	419
128	53	-	- .282	- 3.66	-	- .555	-	1FY	420
129	48 .113	-	-	-	-	-	-	1FY	421
129	49 11.0	- 21.3	- 8.59	- 2.81	- 15.1	- 10.5	-	1FY	422
129	50 33.8	- 111.	- 52.3	- 47.2	- 65.5	- 70.7	-	1FY	423
129	51 29.1	- 144.	- 78.0	- 107.	- 70.6	- 112.	-	1FY	424
129	052A3.0963	- 23.2963	- 15.0105	- 32.1986	- 9.3044	- 23.5312	-	1FY	425
129	052 3.0963	- 23.2963	- 15.0105	- 32.1986	- 9.3044	- 23.5312	-	1FY	426
129	53	- .917	- 1.61	- 8.44	-	- 2.07	-	1FY	427
129	054A	-	-	-	-	-	-	1FY	428
129	054	-	-	-	-	-	-	1FY	429
130	48	-	-	-	-	-	-	1FY	430
130	49 18.3	- 15.8	- 6.84	- .816	- 17.7	- 10.9	-	1FY	431
130	50 77.0	- 107.	- 58.2	- 42.8	- 92.6	- 80.9	-	1FY	432
130	51 81.2	- 173.	- 104.	- 128.	- 119.	- 138.	-	1FY	433
130	52 21.7	- 71.2	- 49.2	- 99.1	- 40.8	- 60.0	-	1FY	434
130	53 .562	- 3.38	- 3.90	- 18.9	- .762	- 3.52	-	1FY	435
131	48	-	-	-	-	-	-	1FY	436
131	49 17.7	- 7.60	- 2.91	- 37.5	- 13.9	- 2.07	-	1FY	437
131	50 97.4	- 95.8	- 68.9	- 142.	- 104.	- 61.3	-	1FY	438
131	51 131.	- 203.	- 157.	- 132.	- 177.	- 160.	-	1FY	439
131	052A23.0092	- 53.1658	- 49.5847	- 15.5618	- 38.8396	- 54.3610	-	1FY	440
131	052 23.0092	- 53.1658	- 49.5847	- 15.5618	- 38.8396	- 54.3610	-	1FY	441

131	53	.945	-	13.1	-	14.7	-	-	-	4.65	-	17.6	-	1FY	442
131	054A	-	-	-	-	-	-	-	-	-	-	-	-	1FY	443
131	054	-	-	-	-	-	-	-	-	-	-	-	-	1FY	444
132	48	-	-	-	-	-	-	-	-	-	-	-	-	1FY	445
132	49	4.86	-	.557	-	-	-	-	-	2.16	-	-	-	1FY	446
132	50	66.3	-	58.2	-	41.3	-	17.4	-	54.1	-	32.9	-	1FY	447
132	51	206.	-	208.	-	179.	-	117.	-	237.	-	151.	-	1FY	448
132	52	122.	-	191.	-	193.	-	186.	-	170.	-	171.	-	1FY	449
132	53	16.7	-	43.0	-	50.1	-	76.9	-	30.0	-	49.6	-	1FY	450
132	54	-	-	-	-	-	-	3.44	-	-	-	.529	-	1FY	451
133	49	-	-	-	-	-	-	-	-	-	-	-	-	1FY	452
133	50	66.4	-	27.2	-	21.2	-	1.92	-	50.5	-	14.8	-	1FY	453
133	51	266.	-	168.	-	159.	-	74.7	-	246.	-	122.	-	1FY	454
133	052A	130.5522-	120.8313-	135.0946-	107.4994-	148.2735-	114.3525-	1FY	455						
133	052	130.5522-	120.8313-	135.0946-	107.4994-	148.2735-	114.3525-	1FY	456						
133	53	64.4	-	96.7	-	118.	-	151.	-	92.1	-	106.	-	1FY	457
133	054A	-	-	1.5950	-	4.9935	-	13.6678	-	.6518	-	4.2946	-	1FY	458
133	054	-	-	1.5950	-	4.9935	-	13.6678	-	.6518	-	4.2946	-	1FY	459
134	49	-	-	-	-	-	-	-	-	-	-	-	-	1FY	460
134	50	10.5	-	.744	-	-	-	-	-	3.07	-	-	-	1FY	461
134	51	170.	-	70.2	-	59.5	-	22.6	-	121.	-	47.4	-	1FY	462
134	52	378.	-	247.	-	238.	-	152.	-	339.	-	205.	-	1FY	463
134	53	217.	-	224.	-	238.	-	241.	-	242.	-	221.	-	1FY	464
134	54	27.5	-	48.7	-	59.5	-	99.9	-	42.8	-	58.6	-	1FY	465
134	055A	-	-	-	-	-	-	2.2831	-	-	-	-	-	1FY	466
134	055	-	-	-	-	-	-	2.2831	-	-	-	-	-	1FY	467
135	50	-	-	-	-	-	-	-	-	-	-	-	-	1FY	468
135	51	43.7	-	13.7	-	7.41	-	-	-	30.8	-	4.79	-	1FY	469
135	52	225.	-	135.	-	125.	-	59.9	-	208.	-	107.	-	1FY	470
135	53	285.	-	270.	-	282.	-	227.	-	331.	-	259.	-	1FY	471
135	054A	46.5186	-	66.2156	-	83.5585	-	107.4994-	67.6684	-	82.8421	-	1FY	472	
135	054	46.5186	-	66.2156	-	83.5585	-	107.4994-	67.6684	-	82.8421	-	1FY	473	
135	55	-	-	15.0	-	22.1	-	48.6	-	6.10	-	24.2	-	1FY	474
136	51	2.27	-	-	-	-	-	-	-	.867	-	-	-	1FY	475
136	52	102.	-	43.3	-	43.3	-	13.5	-	81.3	-	31.5	-	1FY	476
136	53	288.	-	198.	-	226.	-	130.	-	279.	-	178.	-	1FY	477
136	54	211.	-	217.	-	294.	-	259.	-	246.	-	249.	-	1FY	478
136	55	37.7	-	60.9	-	98.0	-	130.	-	54.0	-	88.2	-	1FY	479
136	56	-	-	.581	-	1.87	-	13.5	-	-	-	2.27	-	1FY	480
137	51	-	-	-	-	-	-	-	-	-	-	-	-	1FY	481
137	52	46.0	-	15.2	-	11.6	-	.693	-	33.5	-	6.69	-	1FY	482
137	53	220.	-	128.	-	147.	-	65.1	-	204.	-	113.	-	1FY	483
137	54	266.	-	240.	-	309.	-	224.	-	304.	-	255.	-	1FY	484
137	55	81.5	-	116.	-	188.	-	197.	-	117.	-	150.	-	1FY	485
137	056A	.5853	-	3.1996	-	18.2072	-	22.1142	-	1.9604	-	10.1647	-	1FY	486
137	056	.5853	-	3.1996	-	18.2072	-	22.1142	-	1.9604	-	10.1647	-	1FY	487
138	51	-	-	-	-	-	-	-	-	-	-	-	-	1FY	488
138	52	12.7	-	1.64	-	-	-	-	-	3.76	-	-	-	1FY	489
138	53	133.	-	68.7	-	70.1	-	29.7	-	112.	-	52.5	-	1FY	490
138	54	275.	-	215.	-	285.	-	167.	-	290.	-	207.	-	1FY	491
138	55	140.	-	179.	-	245.	-	234.	-	194.	-	207.	-	1FY	492
138	56	12.7	-	36.1	-	56.8	-	83.2	-	31.9	-	52.5	-	1FY	493
138	57	-	-	-	-	-	-	2.13	-	-	-	-	-	1FY	494
139	52	.757	-	-	-	-	-	-	-	-	-	-	-	1FY	495
139	53	77.7	-	30.3	-	27.9	-	4.18	-	52.3	-	18.1	-	1FY	496
139	54	275.	-	167.	-	188.	-	93.0	-	226.	-	136.	-	1FY	497
139	55	244.	-	223.	-	380.	-	226.	-	244.	-	232.	-	1FY	498
139	56	54.7	-	78.4	-	124.	-	143.	-	64.7	-	102.	-	1FY	499
139	57	-	-	1.70	-	3.52	-	21.1	-	-	-	6.02	-	1FY	500
140	52	-	-	-	-	-	-	-	-	-	-	-	-	1FY	501

140	53	28.6	- 5.45	- 3.86	-	- 17.5	- 1.98	- 1FY	502
140	54	202.	- 93.0	- 114.	- 41.5	- 144.	- 77.4	- 1FY	503
140	55	296.	- 216.	- 298.	- 180.	- 265.	- 217.	- 1FY	504
140	56	112.	- 125.	- 125.	- 124.	- 125.	- 127.	- 1FY	505
140	57	3771	- 17.4	- 32.7	- 51.5	- 9.98	- 27.6	- 1FY	506
141	53	4345	-	-	-	- 1.02	-	- 1FY	507
141	54	116.	- 45.0	- 53.9	- 16.3	- 71.4	- 32.8	- 1FY	508
141	55	296.	- 179.	- 245.	- 122.	- 231.	- 159.	- 1FY	509
141	56	193.	- 178.	- 279.	- 207.	- 191.	- 193.	- 1FY	510
141	57	34.1	- 43.2	- 81.1	- 91.6	- 39.1	- 59.8	- 1FY	511
141	58		-	- .864	- 5.45	-	- .853	- 1FY	512
142	53		-	-	-	-	-	- 1FY	513
142	54	53.6	- 16.0	- 16.8	- 1.18	- 32.8	- 7.48	- 1FY	514
142	55	232.	- 116.	- 143.	- 61.9	- 171.	- 94.1	- 1FY	515
142	56	249.	- 195.	- 323.	- 185.	- 221.	- 198.	- 1FY	516
142	57	67.0	- 83.0	- 163.	- 143.	- 74.1	- 107.	- 1FY	517
142	58		- 4.63	- 16.8	- 27.4	- 1.41	- 13.1	- 1FY	518
143	53		-	-	-	-	-	- 1FY	519
143	54	19.0	- 1.48	- 1.14	-	- 5.6	- .514	- 1FY	520
143	55	151.	- 61.8	- 88.2	- 25.6	- 94.1	- 48.2	- 1FY	521
143	56	277.	- 177.	- 259.	- 134.	- 214.	- 166.	- 1FY	522
143	57	143.	- 127.	- 215.	- 173.	- 126.	- 146.	- 1FY	523
143	58	12.5	- 22.7	- 43.9	- 57.8	- 16.8	- 32.1	- 1FY	524
143	59		-	-	- 1.11	-	-	- 1FY	525
144	54	1225	-	-	-	-	-	- 1FY	526
144	55	77.6	- 24.1	- 26.3	- 6.43	- 39.2	- 18.6	- 1FY	527
144	56	244.	- 118.	- 149.	- 80.9	- 156.	- 113.	- 1FY	528
144	57	196.	- 143.	- 207.	- 171.	- 156.	- 170.	- 1FY	529
144	58	38.5	- 44.0	- 73.8	- 92.5	- 39.2	- 65.1	- 1FY	530
144	59		- .632	- 1.89	- 11.2	-	- 2.20	- 1FY	531
145	53		-	-	-	-	-	- 1FY	532
145	54		-	-	-	-	-	- 1FY	533
145	55	25.6	- 6.50	- 2.98	-	- 13.5	- 1.89	- 1FY	534
145	56	134.	- 68.9	- 68.6	- 34.3	- 90.9	- 55.3	- 1FY	535
145	57	175.	- 142.	- 161.	- 129.	- 144.	- 144.	- 1FY	536
145	58	59.5	- 74.0	- 101.	- 119.	- 59.6	- 96.3	- 1FY	537
145	59	111	- 8.46	- 15.1	- 27.6	- 2.66	- 15.8	- 1FY	538
146	54		-	-	-	-	-	- 1FY	539
146	55	3748	- .309	-	-	- 1.08	-	- 1FY	540
146	56	64.8	- 29.1	- 25.9	- 11.0	- 42.0	- 23.8	- 1FY	541
146	57	145.	- 111.	- 104.	- 74.5	- 118.	- 103.	- 1FY	542
146	58	83.7	- 91.1	- 184.	- 118.	- 84.8	- 109.	- 1FY	543
146	59	11.2	- 20.2	- 25.9	- 48.9	- 14.9	- 29.4	- 1FY	544
146	60		-	-	- 2.18	-	-	- 1FY	545
147	53		-	-	-	-	-	- 1FY	546
147	56	26.0	- 10.5	- 7.14	- 1.21	- 14.95	- 6.81	- 1FY	547
147	57	96.3	- 63.7	- 53.4	- 35.8	- 72.715	- 56.0	- 1FY	548
147	58	92.7	- 92.4	- 98.9	- 93.2	- 88.107	- 103.	- 1FY	549
147	59	22.1	- 35.2	- 48.1	- 62.5	- 27.334	- 49.0	- 1FY	550
147	60		- 1.13	- 2.39	- 10.2	- 3.892	- 3.89	- 1FY	551
148	53		-	-	-	-	-	- 1FY	552
148	56	7504	- .883	- .374	-	- 4.20	- .339	- 1FY	553
148	57	49.3	- 24.9	- 19.6	- 13.2	- 40.6	- 23.8	- 1FY	554
148	58	79.9	- 64.8	- 58.8	- 60.3	- 80.4	- 76.7	- 1FY	555
148	59	33.2	- 42.8	- 45.5	- 68.4	- 40.6	- 63.2	- 1FY	556
148	60	1755	- 6.69	- 8.68	- 19.8	- 4.20	- 13.0	- 1FY	557
148	61		-	-	- .212	-	-	- 1FY	558
149	53	.286	-	-	-	-	-	- 1FY	559
149	57	16.3	- 4.31	- 4.31	- 2.28	- 14.5	- 6.62	- 1FY	560
149	58	50.0	- 20.4	- 24.4	- 28.6	- 54.8	- 40.3	- 1FY	561

149	59	38.3	- 24.1	- 34.1	- 60.4	- 50.9	- 60.2	- 1FY	562
149	60	77.54	- 7.08	- 12.2	- 32.8	- 11.8	- 23.2	- 1FY	563
149	61		- 9.05	-2.311	- 3.98	-	- .780	- 1FY	564
150	56		-	-	-	-	-	- 1FY	565
150	57	.835	- .386	- .326	- 9.55	- 5.05	- .386	- 1FY	566
150	58	13.5	- 6.24	- 9.68	- 38.2	- 30.8	- 15.1	- 1FY	567
150	59	30.2	- 13.9	- 25.2	- 38.2	- 46.0	- 42.4	- 1FY	568
150	60	17.0	- 7.85	- 16.9	- 9.55	- 17.7	- 30.4	- 1FY	569
150	61	25.12	- .977	- 2.76	-	- .596	- 5.37	- 1FY	570
151	57	.236	-	-	-	- .154	-	- 1FY	571
151	58	77.59	- 1.97	- 2.45	-	- 10.7	-	- 1FY	572
151	59	20.3	- 3.21	- 11.9	-	- 34.7	-	- 1FY	573
151	60	13.8	- 8.41	- 14.4	-	- 28.7	-	- 1FY	574
151	61	2732	- 2.21	- 4.46	-	- 5.90	-	- 1FY	575
151	62		-	- 3.67	-2	-	-	- 1FY	576
152	57		-	-	-	-	-	- 1FY	577
152	58	1798	- .408	- .267	-	- 3.11	-	- 1FY	578
152	59	9798	- 3.77	- 4.49	-	- 19.0	-	- 1FY	579
152	60	12.1	- 7.38	- 10.2	-	- 28.3	-	- 1FY	580
152	61	3783	- 3.69	- 5.98	-	- 10.9	-	- 1FY	581
152	62	5792	-2.361	- .799	-	- .367	-	- 1FY	582
152	063A		-	-	-	-	-	- 1FY	583
152	063		-	-	-	-	-	- 1FY	584
153	57		-	-	-	-	-	- 1FY	585
153	58	.224	- 9.35	-2	-	- .161	-	- 1FY	586
153	59	3761	- 1.41	- 1.29	-	- 4.23	-	- 1FY	587
153	60	8705	- 5.03	- 5.14	-	- 17.7	-	- 1FY	588
153	61	4763	- 4.49	- 5.14	-	- 12.7	-	- 1FY	589
153	62	.603	- .980	- 1.39	-	- 2.24	-	- 1FY	590
154	58		-	-	-	-	-	- 1FY	591
154	59	.824	- .480	- .163	-	- 2.14	-	- 1FY	592
154	60	3710	- 2.92	- 1.22	-	- 10.4	-	- 1FY	593
154	61	2779	- 4.23	- 2.07	-	- 12.6	-	- 1FY	594
154	62	.716	- 1.62	- .915	-	- 3.90	-	- 1FY	595
154	63		- 5.08	-25.44	-2	- 5.57	-2	- 1FY	596
155	58		-	-	-	-	-	- 1FY	597
155	59	.145	- 6.00	-21.11	-2	- .571	-	- 1FY	598
155	60	.960	- 1.40	- .439	-	- 5.52	-	- 1FY	599
155	61	1751	- 3.44	- 1.24	-	- 10.9	-	- 1FY	600
155	62	.619	- 2.17	- .886	-	- 5.52	-	- 1FY	601
155	63	2749	-2.329	- .150	-	- .571	-	- 1FY	602
156	59	872	-3	-	-	- 1.44	-2	- 1FY	603
156	60	.241	- .506	- 8.1	-2	- 1.35	-	- 1FY	604
156	61	.646	- 2.14	- .395	-	- 4.66	-	- 1FY	605
156	62	.440	- 2.26	- .477	-	- 4.11	-	- 1FY	606
156	63	7738	-2.600	- .147	-	- .899	-	- 1FY	607
156	64		-	- 2.1	-3	-	-	- 1FY	608
157	59		-	-	-	-	-	- 1FY	609
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157	61	.291	- 1.19	- .112	-	- 2.47	-	- 1FY	611
157	62	.324	- 2.87	- .223	-	- 3.44	-	- 1FY	612
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157	64	97	-45.37	-21.16	-2	- 3.14	-2	- 1FY	614
158	59		-	-	-	-	-	- 1FY	615
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158	62	9754	-21.39	- 7.59	-2	- 1.99	-	- 1FY	618
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158	64	379	-3.195	- 1.46	-2	- .156	-	- 1FY	620
159	60	27	-4	-	-	-	-	- 1FY	621

159	61	1743	-2.151	-	-	.211	-	1FY	622	
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159	63	3771	-2.914	-	-	.842	-	1FY	624	
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160	65	27	-4	-	-		-	1FY	632	
161	60		-	-	-		-	1FY	633	
161	61	17	-4	-	-	1.6	-3	1FY	634	
161	62	176	-3	-	-	6.29	-2	1FY	635	
161	63	376	-3	-	-	.177	-	1FY	636	
161	64	270	-3	-	-	.127	-	1FY	637	
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162	61		-	-	-		-	1FY	639	
162	62		-	-	-	1.98	-2	1FY	640	
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162	64		-	-	-	.103	-	1FY	642	
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162	66		-	-	-	3.	-4	1FY	644	
163	62		-	-	-	4.3	-3	1FY	645	
163	63		-	-	-	2.89	-2	1FY	646	
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72	27		-	-	-		-	2FY	662	
72	28		-	-	-		-	2FY	663	
72	29		-	-	-		-	2FY	664	
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73	31		-	-	-		-	2FY	671	
073	032A		-	-	-		-	2FY	672	
073	032		-	-	-		-	2FY	673	
74	27	-1.	-4	-	-		-	2FY	674	
74	28	-1.61	-2	-	-		-	2FY	675	
74	29	-5.92	-2	-	-		-	2FY	676	
74	30	-5.59	-2	-	-		-	2FY	677	
74	31	-1.30	-2	-	-		-	2FY	678	
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76	29	.697	-	.506	-	3.62	-24.66	-2	2FY	688
76	30	1719	-	1.34	-	4.20	-2.160	-	2FY	689
76	31	.524	-	.922	-	1.35	-2.141	-	2FY	690
76	32	3711	-2.152	-	-	1.	-43.10	-2	2FY	691
76	33		-	-	-	-	-	-	2FY	692
77	28	7:5	-3	-	-	7.6	-3	-	2FY	693
77	29	.728	-	.388	-	9.31	-2.105	-	2FY	694
77	30	2718	-	1.77	-	.179	-.594	-	2FY	695
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077	032A	.1616	-	.2949	-	.0037	-.1498	-	2FY	697
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78	28		-	-	-	2.2	-3	-	2FY	700
78	29	.615	-	.192	-	.197	-3.04	-2	2FY	701
78	30	2799	-	1.81	-	.613	-.680	-	2FY	702
78	31	3762	-	3.56	-	.529	-1.65	-	2FY	703
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078	033A	.0080	-	.0880	-	-	-.0782	-	2FY	705
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79	29	.243	-	-	-	.210	-	-	2FY	707
79	30	3703	-	1.55	-	1.28	-.647	-	2FY	708
79	31	6741	-	5.08	-	1.91	-2.58	-	2FY	709
79	32	3749	-	4.28	-	.776	-2.58	-	2FY	710
79	33	.425	-	.881	-	2.09	-2.647	-	2FY	711
079	034A		-	-	-	-	-	-	2FY	712
079	034		-	-	-	-	-	-	2FY	713
80	29	2782	-2	-	-	.180	-	-	2FY	714
80	30	2764	-	1.11	-.162	2.21	-.397	-	2FY	715
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80	32	8700	-	8.24	-8.74	2.21	-5.06	-	2FY	717
80	33	1775	-	2.91	-5.51	.180	-2.23	-	2FY	718
80	34		-	6.48	-2.817	-	.133	-	2FY	719
81	29		-	-	-	2.46	-2	-	2FY	720
81	30	1762	-	3.17	-	2.22	-7.09	-2	2FY	721
81	31	9791	-	5.61	-4.90	6.70	-2.79	-	2FY	722
81	32	14.8	-	12.81	-21.2	5.95	-7.786	-	2FY	723
81	33	3768	-	7.54	-22.8	1.34	-5.59	-	2FY	724
081	034A	.0963	-	.5186	-3.0802	-	-.5000	-	2FY	725
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81	35		-	-	-	-	-	-	2FY	727
82	30	.273	-	.174	-	.539	-	-	2FY	728
82	31	8703	-	6.76	-2.91	6.61	-1.67	-	2FY	729
82	32	20.9	-	19.1	-24.0	12.7	-8.71	-	2FY	730
82	33	14.0	-	13.6	-44.2	6.61	-11.3	-	2FY	731
82	34	2729	-	2.41	-21.0	.539	-3.77	-	2FY	732
82	35		-	-	-1.66	-	-7.19	-2	2FY	733
83	30		-	-	-	6.37	-2	-	2FY	734
83	31	4741	-	.2221	-.201	5.73	-.317	-	2FY	735
83	32	21.4	-	11.4660	-18.8	17.8	-7.08	-	2FY	736
83	33	26.0	-	33.6773	-65.0	13.0	-17.2	-	2FY	737
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83	35	.114	-	4.8289	-12.5	-	-1.60	-	2FY	740
083	036A		-	-	-	-	-	-	2FY	741

003	036	-	-	-	-	-	-	2FY	742
04	31 1733	- 2.22	-	-	- 4.25	-	-	2FY	743
04	32 22.4	- 21.5	- 9.90	-	- 25.4	- 4.54	-	2FY	744
04	33 30.0	- 42.6	- 68.4	-	- 38.7	- 19.6	-	2FY	745
04	34 29.7	- 21.5	- 90.1	-	- 15.7	- 21.2	-	2FY	746
04	35 3798	- 2.22	- 34.7	-	- .425	- 5.62	-	2FY	747
04	36	-	- 1.17	-	-	-	-	2FY	748
05	31	-	-	-	- .520	-	-	2FY	749
05	32 10.7	- 5.22	- 1.05	-	- 19.2	- 1.70	-	2FY	750
05	33 46.3	- 35.0	- 40.8	-	- 47.3	- 16.47	-	2FY	751
05	34 49.8	- 55.8	- 115.	-	- 31.7	- 32.66	-	2FY	752
05	35 13.2	- 22.9	- 82.4	-	- 5.20	- 16.47	-	2FY	753
005	036A	- .5186	- 7.3822	-	-	- .8629	-	2FY	754
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05	37	-	-	-	-	-	-	2FY	756
06	32 5755	- .758	- 23.4	-	- 11.3	- 2.46	-	2FY	757
06	33 41.5	- 29.3	- 114.	-	- 50.0	- 12.94	-	2FY	758
06	34 70.8	- 81.2	- 138.	-	- 57.9	- 38.72	-	2FY	759
06	35 31.2	- 57.7	- 42.7	-	- 18.6	- 29.92	-	2FY	760
06	36 1786	- .985	- .610	-	- .208	- 5.72	-	2FY	761
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006	037	-	-	-	-	-	-	2FY	763
07	32 .531	-	-	-	- 3.56	-	-	2FY	764
07	33 27.9	- 18.4	- 6.83	-	- 43.6	- 5.13	-	2FY	765
07	34 83.6	- 89.4	- 86.1	-	- 83.7	- 38.3	-	2FY	766
07	35 64.6	- 106.	- 181.	-	- 43.6	- 39.1	-	2FY	767
07	36 12.4	- 32.4	- 98.4	-	- 3.56	- 28.7	-	2FY	768
07	37	- .425	- 12.0	-	-	- 1.72	-	2FY	769
08	32	-	-	-	- .326	-	-	2FY	770
08	33 14.9	- 7.48	-	-	- 29.3	- .840	-	2FY	771
08	34 77.7	- 78.3	- 51.2	-	- 91.1	- 24.9	-	2FY	772
08	35 101.	- 161.	- 193.	-	- 78.5	- 64.7	-	2FY	773
08	36 33.7	- 82.3	- 179.	-	- 17.7	- 43.4	-	2FY	774
08	37 .641	- 8.85	- 41.4	-	-	- 7.12	-	2FY	775
08	38	-	-	-	-	-	-	2FY	776
09	33 3526	- .545	-	-	- 14.6	-	-	2FY	777
09	34 54.9	- 50.3	- 26.8	-	- 88.4	- 15.3	-	2FY	778
09	35 125.	- 176.	- 163.5	-	- 132.	- 65.9	-	2FY	779
09	36 73.1	- 154.	- 243.9	-	- 53.6	- 71.0	-	2FY	780
09	37 9778	- 33.9	- 93.8	-	- 1.46	- 18.8	-	2FY	781
09	38	-	- 3.16	-	-	-	-	2FY	782
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009	039	-	-	-	-	-	-	2FY	784
90	33	-	-	-	- 1.59	-	-	2FY	785
90	34 33.7	- 26.2	- 3.73	-	- 58.6	- 6.84	-	2FY	786
90	35 127.	- 156.	- 111.	-	- 147.	- 56.3	-	2FY	787
90	36 118.	- 229.	- 288.	-	- 96.5	- 104.	-	2FY	788
90	37 27.3	- 85.8	- 193.	-	- 15.9	- 49.2	-	2FY	789
90	38	- 2.52	- 31.7	-	-	- 3.91	-	2FY	790
91	34 15.6	- 4.22	-	-	- 32.1	- .655	-	2FY	791
91	35 105.	- 103.	- 52.9	-	- 143.	- 34.4	-	2FY	792
91	36 167.	- 292.	- 262.	-	- 166.	- 103.	-	2FY	793
091	037 69.3288	- 162.6760	- 278.9940	-	- 51.5898	- 87.9143	-	2FY	794
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091	039A	-	- .4323	-	-	-	-	2FY	796
091	039	-	- .4323	-	-	-	-	2FY	797
92	34 1766	-	-	-	- 9.10	-	-	2FY	798
92	35 64.4	- 51.6	- 21.1	-	- 111.	- 18.6	-	2FY	799
92	36 181.	- 221.	- 173.	-	- 214.	- 57.1	-	2FY	800
92	37 130.	- 236.	- 329.	-	- 111.	- 126.	-	2FY	801

92	38	23.0	- 63.2	- 152.	- 9.10	- 41.9	-	2FY	802
92	39		- .580	- 12.0	-	- .799	-	2FY	803
93	34		-	-	- 7.40	-	-	2FY	804
93	35	36.1	- 18.7	- 1.31	- 66.6	- 4.04	-	2FY	805
93	36	165.	- 156.	- 92.0	- 207.	- 67.8	-	2FY	806
93	37	187.	- 284.	- 298.	- 179.	- 153.5	-	2FY	807
93	38	54.3	- 131.	- 246.	- 40.2	- 90.3	-	2FY	808
93	39	.579	- 9.63	- 50.5	-	- 12.0	-	2FY	809
93	40		-	-	-	-	-	2FY	810
093	041A		-	-	-	-	-	2FY	811
093	041		-	-	-	-	-	2FY	812
94	35		- 1.35	- 37.3	- 27.0	-	-	2FY	813
94	36	12.0	- 84.5	- 212.	- 166.	- 37.4	-	2FY	814
94	37	116.	- 266.	- 295.	- 246.	- 150.	-	2FY	815
94	38	229.	- 215.	- 185.	- 99.9	- 150.	-	2FY	816
94	39	116.	- 42.5	- 2.69	- 2.70	- 37.4	-	2FY	817
94	40	12.0	-	-	-	-	-	2FY	818
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95	37	220.	- 209.	- 115.	- 268.	- 124.	-	2FY	821
95	38	193.	- 273.	- 277.	- 140.	- 197.	-	2FY	822
95	39	42.4	- 93.2	- 175.	- 11.4	- 81.5	-	2FY	823
95	40		- 1.86	- 25.9	-	- 3.64	-	2FY	824
095	041A		-	-	-	-	-	2FY	825
095	041		-	-	-	-	-	2FY	826
96	35		-	-	- .892	-	-	2FY	827
96	36	27.8	- 7.47	-	- 80.4	- 1.96	-	2FY	828
96	37	169.	- 127.5	- 55.8	- 250.	- 76.4	-	2FY	829
96	38	253.	- 298.	- 223.	- 215.	- 215.	-	2FY	830
96	39	97.1	- 170.	- 223.	- 48.5	- 154.	-	2FY	831
96	40	37.27	- 22.4	- 55.8	-	- 27.2	-	2FY	832
96	41		-	-	-	-	-	2FY	833
97	36		-	-	- 30.7	-	-	2FY	834
97	37	4791	- 61.1	- 19.9	- 187.	- 38.3	-	2FY	835
97	38	109.	- 244.	- 149.	- 279.	- 186.	-	2FY	836
97	39	266.	- 240.	- 254.	- 114.	- 225.	-	2FY	837
97	40	167.	- 59.2	- 112.	- 3.07	- 69.7	-	2FY	838
097	041A12.4411		-	- 3.3907	-	- .5051	-	2FY	839
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97	42		-	-	-	-	-	2FY	841
98	36		-	-	- .935	-	-	2FY	842
98	37	37.2	- 1.16	-	- 84.1	- 3.37	-	2FY	843
98	38	194.	- 80.8	- 56.8	- 262.	- 100.	-	2FY	844
98	39	251.	- 261.	- 214.	- 223.	- 260.	-	2FY	845
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98	42		-	-	-	-	-	2FY	849
99	37		-	-	- 12.6	-	-	2FY	850
99	38	1759	- 35.0	- 11.6	- 154.	- 34.4	-	2FY	851
99	39	83.4	- 198.	- 113.	- 296.	- 195.	-	2FY	852
99	40	250.	- 276.	- 223.	- 154.	- 272.	-	2FY	853
99	41	193.	- 98.2	- 113.	- 12.6	- 96.6	-	2FY	854
99	42	36.9	- 2.51	- 11.6	-	- 2.47	-	2FY	855
099	043A		-	-	-	-	-	2FY	856
099	043		-	-	-	-	-	2FY	857
100	38	24.1	- 7.38	-	- 53.0	- 1.90	-	2FY	858
100	39	162.	- 124.	- 35.2	- 235.	- 99.8	-	2FY	859
100	40	259.	- 281.	- 181.	- 273.	- 294.	-	2FY	860
100	41	106.	- 165.	- 183.	- 87.8	- 231.	-	2FY	861

100	42	47.77	-	22.1	-	53.1	-	.975	-	44.1	-	-	2FY	862
100	43		-		-	.566	-		-		-	-	2FY	863
101	38	.708	-		-		-	3.27	-		-	-	2FY	864
101	38	46.4	-	37.1	-	2.94	-	121.	-	24.5	-	-	2FY	865
101	40	229.	-	198.	-	65.7	-	298.	-	182.9	-	-	2FY	866
101	41	202.	-	260.	-	159.	-	200.	-	311.6	-	-	2FY	867
101	42	44.2	-	88.5	-	180.	-	32.7	-	137.4	-	-	2FY	868
101	43		-	1.83	-	14.9	-		-	8.17	-	-	2FY	869
102	38		-		-		-		-	.987	-	-	2FY	870
102	39	28.2	-	6.66	-		-	88.8	-	2.71	-	-	2FY	871
102	40	161.	-	104.	-	25.5	-	276.	-	105.	-	-	2FY	872
102	41	223.	-	231.	-	182.	-	238.	-	296.	-	-	2FY	873
102	42	79.3	-	132.	-	182.	-	53.7	-	213.	-	-	2FY	874
102	043A170184		-	8.4897	-	12.9824	-		-	19.0346	-	-	2FY	875
102	043	170184	-	8.4897	-	12.9824	-		-	19.0346	-	-	2FY	876
102	44		-		-		-		-		-	-	2FY	877
103	39	7591	-	.496	-		-	33.0	-		-	-	2FY	878
103	40	99.3	-	37.9	-	9.50	-	201.	-	62.7	-	-	2FY	879
103	41	210.	-	124.	-	58.	-	300.	-	250.	-	-	2FY	880
103	42	114.	-	105.	-	86.5	-	122.	-	250.	-	-	2FY	881
103	43	13.9	-	21.6	-	33.3	-	3.30	-	62.7	-	-	2FY	882
103	44		-		-	1.12	-		-		-	-	2FY	883
103	045A		-		-		-		-		-	-	2FY	884
103	045		-		-		-		-		-	-	2FY	885
104	39		-		-		-	3.06	-		-	-	2FY	886
104	40	99.1	-	7.53	-	.496	-	113.	-	14.2	-	-	2FY	887
104	41	156.	-	49.6	-	19.4	-	279.	-	138.	-	-	2FY	888
104	42	156.	-	77.9	-	54.5	-	187.	-	273.	-	-	2FY	889
104	43	39.1	-	31.7	-	39.1	-	30.6	-	138.	-	-	2FY	890
104	44		-	1.31	-	6.90	-		-	14.2	-	-	2FY	891
104	045A		-		-		-		-		-	-	2FY	892
104	045		-		-		-		-		-	-	2FY	893
105	39		-		-		-	.810	-		-	-	2FY	894
105	40	27.7	-	4.34	-	.165	-	72.9	-	6.36	-	-	2FY	895
105	41	126.	-	29.2	-	8.67	-	227.	-	107.	-	-	2FY	896
105	42	144.	-	46.4	-	26.0	-	196.	-	242.	-	-	2FY	897
105	43	41.7	-	19.2	-	28.1	-	44.0	-	142.	-	-	2FY	898
105	44	.445	-	.857	-	3.84	-		-	19.1	-	-	2FY	899
105	045A		-		-		-		-		-	-	2FY	900
105	045		-		-		-		-		-	-	2FY	901
106	39		-		-		-	.436	-		-	-	2FY	902
106	40	16.3	-	.247	-		-	38.4	-	2.72	-	-	2FY	903
106	41	85.1	-	9.66	-	3.96	-	113.	-	80.7	-	-	2FY	904
106	42	110.	-	27.2	-	14.9	-	97.7	-	210.	-	-	2FY	905
106	43	36.7	-	19.5	-	13.9	-	220.	-	141.	-	-	2FY	906
106	44	.701	-	3.44	-	3.20	-		-	23.1	-	-	2FY	907
106	045A		-		-		-		-		-	-	2FY	908
106	045		-		-		-		-		-	-	2FY	909
107	40	8768	-	.331	-		-	10.9	-	1.09	-	-	2FY	910
107	41	52.9	-	5.64	-	2.49	-	48.2	-	57.3	-	-	2FY	911
107	42	79.0	-	17.0	-	14.9	-	55.9	-	172.	-	-	2FY	912
107	43	30.4	-	10.5	-	11.6	-	17.9	-	133.	-	-	2FY	913
107	44	10.2	-	1.54	-	3.68	-	.199	-	25.4	-	-	2FY	914
107	045A		-		-		-		-		-	-	2FY	915
107	045		-		-		-		-		-	-	2FY	916
108	40	.821	-		-		-	1.23	-		-	-	2FY	917
108	41	24.4	-	2.25	-	.620	-	15.9	-	20.1	-	-	2FY	918
108	42	43.3	-	9.39	-	5.10	-	30.5	-	105.	-	-	2FY	919
108	43	42.5	-	9.80	-	9.40	-	15.9	-	136.	-	-	2FY	920
108	44	6596	-	2.56	-	4.46	-	1.23	-	45.4	-	-	2FY	921

108	45	-	-	.354	-	.864	-	-	2FY	922		
109	40	-	-	-	-	4.80	-2	-	2FY	923		
109	41 9:61	-	.477	-	2.85	-24.32	-	2.46	-	2FY	924	
109	42 43.9	-	3.81	-	2.00	-	13.5	-	41.3	-	2FY	925
109	43 49.9	-	6.89	-	6.45	-	11.6	-	93.8	-	2FY	926
109	44 14.4	-	3.20	-	5.33	-	2.60	-	55.1	-	2FY	927
109	045A.0773	-	.1119	-	.5600	-	-	-	3.7359	-	2FY	928
109	045 .0773	-	.1119	-	.5600	-	-	-	3.7359	-	2FY	929
109	046A	-	-	-	-	-	-	-	-	-	2FY	930
109	046	-	-	-	-	-	-	-	-	-	2FY	931
109	047A	-	-	-	-	-	-	-	-	-	2FY	932
109	047	-	-	-	-	-	-	-	-	-	2FY	933
110	41 2:52	-	2.40	-2	-	.724	-	-	-	-	2FY	934
110	42 24.3	-	1.50	-	.627	-	4.42	-	7.51	-	2FY	935
110	43 48.3	-	4.72	-	3.55	-	6.60	-	30.0	-	2FY	936
110	44 24.3	-	3.80	-	4.95	-	2.68	-	30.0	-	2FY	937
110	45 2:52	-	.754	-	1.76	-	7.24	-	27.51	-	2FY	938
110	46	-	-	-	4.51	-2	-	-	-	-	2FY	939
111	41 .126	-	-	-	-	3.8	-2	-	-	-	2FY	940
111	42 11.9	-	.445	-	6.80	-21.41	-	1.18	-	-	2FY	941
111	43 40.5	-	2.39	-	1.52	-	3.46	-	8.79	-	2FY	942
111	44 35.7	-	3.16	-	3.68	-	2.32	-	15.0	-	2FY	943
111	45 7:82	-	1.08	-	2.32	-	.380	-	6.63	-	2FY	944
111	046A	-	.0110	-	.1752	-	-	-	.2005	-	2FY	945
111	046	-	.0110	-	.1752	-	-	-	.2005	-	2FY	946
111	047A	-	-	-	-	-	-	-	-	-	2FY	947
111	047	-	-	-	-	-	-	-	-	-	2FY	948
112	42 3:48	-	4.54	-2	-	.375	-	3.93	-2	-	2FY	949
112	43 21.2	-	.825	-	.623	-	1.67	-	2.07	-	2FY	950
112	44 31.7	-	1.93	-	2.70	-	1.93	-	6.20	-	2FY	951
112	45 12.2	-	1.15	-	2.91	-	.621	-	4.78	-	2FY	952
112	46 .411	-	.157	-	.770	-	6.9	-	3.913	-	2FY	953
112	47	-	-	-	-	-	-	-	-	-	2FY	954
113	42 .506	-	-	-	-	.210	-	-	-	-	2FY	955
113	43 15.0	-	.384	-	.198	-	1.28	-	.744	-	2FY	956
113	44 39.0	-	1.56	-	1.63	-	1.91	-	3.61	-	2FY	957
113	45 26.2	-	1.60	-	3.01	-	.777	-	4.37	-	2FY	958
113	46 4:29	-	.468	-	1.43	-	.921	-	1.35	-	2FY	959
113	047A	-	-	-	.0579	-	-	-	.0098	-	2FY	960
113	047	-	-	-	.0579	-	-	-	.0098	-	2FY	961
114	42	-	-	-	-	1.97	-2	-	-	-	2FY	962
114	43 5:70	-	.134	-	.116	-	.730	-	.142	-	2FY	963
114	44 26.1	-	1.04	-	.811	-	1.79	-	1.79	-	2FY	964
114	45 29.5	-	1.81	-	2.62	-	1.20	-	3.77	-	2FY	965
114	46 8:57	-	.811	-	2.17	-	.197	-	2.05	-	2FY	966
114	47 9:14	-25.22	-2.445	-	-	-	-	-	.246	-	2FY	967
114	48	-	-	-	-	-	-	-	-	-	2FY	968
115	43 1:75	-	1.03	-2	-	.302	-	-	-	-	2FY	969
115	44 17.0	-	.559	-	.452	-	1.34	-	.738	-	2FY	970
115	45 33.6	-	1.67	-	2.37	-	1.55	-	2.78	-	2FY	971
115	46 17.0	-	1.28	-	3.06	-	.509	-	2.58	-	2FY	972
115	047A.8779	-	.1236	-	.0520	-	.0027	-	.3031	-	2FY	973
115	047 .8779	-	.1236	-	.0520	-	.0027	-	.3031	-	2FY	974
115	048A	-	-	-	.0100	-	-	-	-	-	2FY	975
115	048	-	-	-	.0100	-	-	-	-	-	2FY	976
115	049A	-	-	-	-	-	-	-	-	-	2FY	977
115	049	-	-	-	-	-	-	-	-	-	2FY	978
116	43 9:03	-2	-	-	-	7.14	-2	-	-	-	2FY	979
116	44 8:47	-	.240	-	7.32	-2.875	-	.282	-	-	2FY	980
116	45 29.1	-	1.26	-	1.23	-	1.68	-	1.90	-	2FY	981

116	46	25.7	- 1.65	- 2.79	- .875	- 3.01	-	-	2FY	982
116	47	57.62	- .552	- 1.64	- 7.14	-21.25	-	-	2FY	983
116	48		- 1.02	-2.219	-	- 5.57	-2	-	2FY	984
117	43		-	-	- .52	-2	-	-	2FY	985
117	44	3790	- 5.1	-3	- .473	- 2.58	-2	-	2FY	986
117	45	22.1	- .791	- .694	- 1.47	- 1.01	-	-	2FY	987
117	46	30.1	- 1.76	- 2.41	- 1.27	- 2.04	-	-	2FY	988
117	47	11.0	- 1.01	- 2.41	- .285	- 2.04	-	-	2FY	989
117	048A	.1405	- .0671	- .3075	-	- .1828	-	-	2FY	990
117	048	.1405	- .0671	- .3075	-	- .1828	-	-	2FY	991
117	049A		-	-	-	-	-	-	2FY	992
117	049		-	-	-	-	-	-	2FY	993
117	050A		-	-	-	-	-	-	2FY	994
117	050		-	-	-	-	-	-	2FY	995
118	44	.578	-	-	- .173	-	-	-	2FY	996
118	45	12.9	- .375	- .226	- 1.06	- .461	-	-	2FY	997
118	46	31.3	- 1.50	- 1.69	- 1.58	- 2.24	-	-	2FY	998
118	47	19.8	- 1.48	- 2.88	- .642	- 2.72	-	-	2FY	999
118	48	2793	- .364	- 1.27	- 1.73	-2.840	-	-	2FY	1000
118	049A		-	- .0385	-	- .0061	-	-	2FY	1001
118	049		-	- .0385	-	- .0061	-	-	2FY	1002
119	44		-	-	- 1.74	-2	-	-	2FY	1003
119	45	6708	- .145	- 1.85	-2.645	- .111	-	-	2FY	1004
119	46	26.3	- 1.05	- .970	- 1.58	- 1.41	-	-	2FY	1005
119	47	28.4	- 1.78	- 2.90	- 1.07	- 2.96	-	-	2FY	1006
119	048A	37725	- .3879	- 1.1404	- .0842	- .8122	-	-	2FY	1007
119	048	37725	- .3879	- 1.1404	- .0842	- .8122	-	-	2FY	1008
119	049A		- .0204	- .2184	-	- .0990	-	-	2FY	1009
119	049		- .0204	- .2184	-	- .0990	-	-	2FY	1010
119	050A		-	-	-	-	-	-	2FY	1011
119	050		-	-	-	-	-	-	2FY	1012
120	45	2720	- 1.79	-2	- .285	-	-	-	2FY	1013
120	46	18.2	- .585	- .494	- 1.27	- .694	-	-	2FY	1014
120	47	33.5	- 1.72	- 2.58	- 1.47	- 2.62	-	-	2FY	1015
120	48	15.9	- 1.31	- 2.34	- .473	- 2.42	-	-	2FY	1016
120	49	1726	- .242	- 1.12	- 5.2	-3.562	-	-	2FY	1017
120	50		-	- 2.13	-2	-	-	-	2FY	1018
121	45	.142	-	-	-	-	-	-	2FY	1019
121	46	10.0	- .271	- .134	- 7.24	-2.279	-	-	2FY	1020
121	47	32.2	- 1.38	- 2.26	- .887	- 1.88	-	-	2FY	1021
121	48	26.6	- 1.76	- 5.12	- 1.70	- 2.98	-	-	2FY	1022
121	049A	27441	- .2918	- 1.5274	- .4293	- .6244	-	-	2FY	1023
121	049	27441	- .2918	- 1.5274	- .4293	- .6244	-	-	2FY	1024
121	050A		- .0050	- .2047	- .0351	- .0315	-	-	2FY	1025
121	050		- .0050	- .2047	- .0351	- .0315	-	-	2FY	1026
122	46	3742	- 4.06	-2	- .310	- 1.2	-3	-	2FY	1027
122	47	23.1	- 1.11	- 1.13	- 1.38	- .901	-	-	2FY	1028
122	48	36.6	- 2.82	- 5.18	- 1.60	- 2.90	-	-	2FY	1029
122	49	15.2	- 1.85	- 5.88	- .513	- 2.40	-	-	2FY	1030
122	50	.677	- .289	- 1.71	- 5.7	-3.493	-	-	2FY	1031
122	051A		-	- .0093	-	-	-	-	2FY	1032
122	051		-	- .0093	-	-	-	-	2FY	1033
123	46	.738	-	-	- .202	-	-	-	2FY	1034
123	47	16.5	- 1.00	- .894	- 1.23	- .588	-	-	2FY	1035
123	48	39.9	- 3.78	- 5.19	- 1.83	- 2.86	-	-	2FY	1036
123	049A	12.6417	- 1.8505	- 4.5006	- .3611	- 1.7563	-	-	2FY	1037
123	049	12.6417	- 1.8505	- 4.5006	- .3611	- 1.7563	-	-	2FY	1038
123	050A	178762	- .4443	- 1.9856	- .0001	- .5431	-	-	2FY	1039
123	050	178762	- .4443	- 1.9856	- .0001	- .5431	-	-	2FY	1040
123	51		-	- .232	-	- 1.53	-2	-	2FY	1041

124	46	-	-	-	2.20	-2	-	-	2FY	1042
124	47 8750	- .516	- 7.28	-2.814	- 1.75	-2	-	-	2FY	1043
124	48 36.8	- 3.74	- 3.82	- 2.00	- 2.21	-	-	-	2FY	1044
124	49 39.7	- 6.00	- 11.4	- 1.34	- 4.65	-	-	-	2FY	1045
124	50 10.6	- 2.52	- 8.84	- .220	- 2.52	-	-	-	2FY	1046
124	051B	- .420	- .5736	-	- .1039	-	-	-	2FY	1047
124	051A	- .420	- .5736	-	- .1039	-	-	-	2FY	1048
124	051	- .420	- .5736	-	- .1039	-	-	-	2FY	1049
124	52	-	-	-	-	-	-	-	2FY	1050
125	47 3739	- 6.64	-2	- .399	-	-	-	-	2FY	1051
125	48 28.0	- 3.22	- 2.28	- 1.77	- .154	-	-	-	2FY	1052
125	49 51.4	- 9.22	- 11.9	- 2.06	- 5.81	-	-	-	2FY	1053
125	050A12.1903	- 3.4823	- 7.8404	- .3204	- 2.7359	-	-	-	2FY	1054
125	050 12.1903	- 3.4823	- 7.8404	- .3204	- 2.7359	-	-	-	2FY	1055
125	51 1794	- 1.25	- 5.15	- 7.4	-21.25	-	-	-	2FY	1056
125	052A	-	- .0499	-	-	-	-	-	2FY	1057
125	052	-	- .0499	-	-	-	-	-	2FY	1058
126	47 .247	-	-	- .118	-	-	-	-	2FY	1059
126	48 17.3	- 2.39	- .561	- 1.45	- .914	-	-	-	2FY	1060
126	49 55.8	- 11.9	- 9.43	- 2.77	- 5.58	-	-	-	2FY	1061
126	50 46.1	- 14.8	- 21.4	- 1.45	- 8.30	-	-	-	2FY	1062
126	051A477557	- 2.3588	- 6.4149	- .0571	- 1.6243	-	-	-	2FY	1063
126	051 477557	- 2.3588	- 6.4149	- .0571	- 1.6243	-	-	-	2FY	1064
126	52	- 7.16	-21.68	-	- .108	-	-	-	2FY	1065
127	47	-	-	- 1.8	-2	-	-	-	2FY	1066
127	48 9775	- .750	-	- 1.62	- .205	-	-	-	2FY	1067
127	49 55.2	- 10.2	- 6.14	- 5.04	- 6.10	-	-	-	2FY	1068
127	50 77.0	- 22.0	- 24.5	- 4.34	- 15.8	-	-	-	2FY	1069
127	51 27.3	- 12.0	- 24.5	- .978	- 10.6	-	-	-	2FY	1070
127	052A.3517	- .7626	- 3.1260	-	- .8832	-	-	-	2FY	1071
127	052 .3517	- .7626	- 3.1260	-	- .8832	-	-	-	2FY	1072
127	53	-	-	-	-	-	-	-	2FY	1073
128	48 8:38	- 1.80	-	- 3.01	- .216	-	-	-	2FY	1074
128	49 62.8	- 16.7	- 6.35	- 13.4	- 20.2	-	-	-	2FY	1075
128	50 107.	- 33.0	- 30.9	- 15.5	- 69.7	-	-	-	2FY	1076
128	051A23.6280	- 8.4897	- 19.0409	- 2.4198	- 31.1660	-	-	-	2FY	1077
128	051 23.6280	- 8.4897	- 19.0409	- 2.4198	- 31.1660	-	-	-	2FY	1078
128	52 2:80	- 1.80	- 11.6	- 5.55	-213.4	-	-	-	2FY	1079
128	53	-	- .165	-	-	-	-	-	2FY	1080
129	48 5716	- .239	-	- 4.55	-	-	-	-	2FY	1081
129	49 68.0	- 16.7	- 6.85	- 27.8	- 26.2	-	-	-	2FY	1082
129	50 136.	- 54.1	- 41.8	- 41.3	- 113.3	-	-	-	2FY	1083
129	51 74.3	- 44.7	- 62.3	- 16.9	- 122.	-	-	-	2FY	1084
129	052A475350	- 4.6617	- 12.2187	- .2202	- 16.4459	-	-	-	2FY	1085
129	052 475350	- 4.6617	- 12.2187	- .2202	- 16.4459	-	-	-	2FY	1086
129	53	-	- .808	-	-	-	-	-	2FY	1087
129	054A	-	-	-	-	-	-	-	2FY	1088
129	054	-	-	-	-	-	-	-	2FY	1089
130	48 2722	-	-	- 3.78	-	-	-	-	2FY	1090
130	49 36.1	- 13.7	- 8.28	- 46.3	- 24.8	-	-	-	2FY	1091
130	50 172.	- 71.8	- 68.1	- 88.8	- 130.	-	-	-	2FY	1092
130	51 115.	- 92.9	- 126.	- 46.3	- 168.	-	-	-	2FY	1093
130	52 18.9	- 31.1	- 59.5	- 3.78	- 56.2	-	-	-	2FY	1094
130	53	- .591	- 4.73	-	- 1.07	-	-	-	2FY	1095
131	48 .628	-	-	- 1.48	-	-	-	-	2FY	1096
131	49 58.8	- 21.7	- 3.28	- 54.8	- 16.6	-	-	-	2FY	1097
131	50 203.	- 120.	- 73.3	- 135.	- 124.	-	-	-	2FY	1098
131	51 179.	- 161.	- 77.6	- 114.	- 211.	-	-	-	2FY	1099
131	052A19.6148	- 28.7225	- 61.0936	- 7.1626	- 47.2058	-	-	-	2FY	1100
131	052 19.6148	- 28.7225	- 61.0936	- 7.1626	- 47.2058	-	-	-	2FY	1101

131	53	- 1.16	- 16.6	-	- 5.53	-	- 2FY	1102
131	054A	-	-	-	-	-	- 2FY	1103
131	054	-	-	-	-	-	- 2FY	1104
132	48	-	-	- .705	-	-	- 2FY	1105
132	49 23.7	- 5.50	-	- 63.4	- 2.11	-	- 2FY	1106
132	50 144.	- 100.	- 17.4	- 197.	- 82.4	-	- 2FY	1107
132	51 216.	- 233.	- 117.	- 170.	- 232.	-	- 2FY	1108
132	52 83.0	- 138.	- 186.	- 39.3	- 166.	-	- 2FY	1109
132	53 2779	- 19.1	- 76.9	-	- 29.4	-	- 2FY	1110
132	54	-	- 3.44	-	-	-	- 2FY	1111
133	49 5.66	-	-	- 27.5	-	-	- 2FY	1112
133	50 126.	- 55.1	- 1.92	- 168.	- 41.5	-	- 2FY	1113
133	51 307.	- 220.	- 74.7	- 250.	- 202.	-	- 2FY	1114
133	052A96.8195	- 109.8063	- 106.9138	- 49.3636	- 124.3592	-	- 2FY	1115
133	052 96.8195	- 109.8063	- 106.9138	- 49.3636	- 124.3592	-	- 2FY	1116
133	53 28.6	- 53.4	- 151.	- 2.75	- 75.7	-	- 2FY	1117
133	054A	-	- 13.5933	-	- .5482	-	- 2FY	1118
133	054	-	- 13.5933	-	- .5482	-	- 2FY	1119
134	49	-	-	- .990	-	-	- 2FY	1120
134	50 33.1	- 7.01	-	- 89.1	- 2.52	-	- 2FY	1121
134	51 189.	- 123.	- 22.6	- 277.	- 98.7	-	- 2FY	1122
134	52 263.	- 274.	- 152.	- 239.	- 277.	-	- 2FY	1123
134	53 93.2	- 157.	- 241.	- 53.8	- 199.	-	- 2FY	1124
134	54 2739	- 19.9	- 99.9	-	- 35.2	-	- 2FY	1125
134	055A	-	- 2.2707	-	-	-	- 2FY	1126
134	055	-	- 2.2707	-	-	-	- 2FY	1127
135	50 1:04	-	-	- 12.0	-	-	- 2FY	1128
135	51 72.6	- 66.6	-	- 147.	- 28.0	-	- 2FY	1129
135	52 235.	- 251.	- 59.9	- 282.	- 189.	-	- 2FY	1130
135	53 193.	- 233.	- 227.	- 147.	- 300.	-	- 2FY	1131
135	054A20.0161	- 27.4008	- 106.9138	- 5.8075	- 62.9410	-	- 2FY	1132
135	054 20.0161	- 27.4008	- 106.9138	- 5.8075	- 62.9410	-	- 2FY	1133
135	55	-	- 48.6	-	- 5.54	-	- 2FY	1134
136	51	- 2.23	-	- 48.0	- .882	-	- 2FY	1135
136	52 30.7	- 100.	- 42.9	- 213.	- 82.8	-	- 2FY	1136
136	53 174.	- 283.	- 224.	- 248.	- 285.	-	- 2FY	1137
136	54 242.	- 207.	- 291.	- 80.1	- 251.	-	- 2FY	1138
136	55 86.1	- 37.0	- 97.1	- .884	- 55.0	-	- 2FY	1139
136	56 2:21	-	- 1.85	-	-	-	- 2FY	1140
137	51 1:49	-	-	- 12.4	-	-	- 2FY	1141
137	52 78.5	- 47.3	- 11.6	- 152.	- 34.3	-	- 2FY	1142
137	53 235.	- 227.	- 147.	- 291.	- 209.	-	- 2FY	1143
137	54 182.	- 271.	- 309.	- 152.	- 312.	-	- 2FY	1144
137	55 34.7	- 83.8	- 188.	- 12.4	- 120.	-	- 2FY	1145
137	056A	- .6101	- 10.3859	-	- 2.0558	-	- 2FY	1146
137	056	- .6101	- 10.3859	-	- 2.0558	-	- 2FY	1147
138	51	-	-	- .938	-	-	- 2FY	1148
138	52 33.7	- 13.8	-	- 84.4	- 3.57	-	- 2FY	1149
138	53 176.	- 144.	- 67.4	- 263.	- 106.	-	- 2FY	1150
138	54 228.	- 296.	- 254.	- 226.	- 276.	-	- 2FY	1151
138	55 76.0	- 152.	- 236.	- 50.9	- 185.	-	- 2FY	1152
138	56 1744	- 13.8	- 54.6	-	- 30.3	-	- 2FY	1153
138	57	-	-	-	-	-	- 2FY	1154
139	52 5765	- .702	-	- 30.8	-	-	- 2FY	1155
139	53 95.5	- 72.0	- 27.0	- 188.	- 49.4	-	- 2FY	1156
139	54 216.	- 255.	- 182.	- 280.	- 214.	-	- 2FY	1157
139	55 126.	- 226.	- 289.	- 114.	- 231.	-	- 2FY	1158
139	56 16.9	- 50.7	- 119.	- 3.08	- 61.1	-	- 2FY	1159
139	57	-	- 5.34	-	-	-	- 2FY	1160
140	52	-	-	- 2.85	-	-	- 2FY	1161

140	53	50.6	- 26.1	- 3.79	- 105.	- 15.5	-	- 2FY	1162
140	54	190.	- 184.	- 113.	- 259.	- 128.	-	- 2FY	1163
140	55	178.	- 269.	- 293.	- 174.	- 236.	-	- 2FY	1164
140	56	42.0	- 102.	- 196.	- 28.5	- 112.	-	- 2FY	1165
140	57		- 3.37	- 32.2		- 8.88	-	- 2FY	1166
141	53	18.6	- 3.97		- 46.0	- .850	-	- 2FY	1167
141	54	128.	- 103.	- 54.5	- 204.	- 59.4	-	- 2FY	1168
141	55	200.	- 265.	- 249.	- 237.	- 192.	-	- 2FY	1169
141	56	82.3	- 173.	- 283.	- 76.3	- 159.	-	- 2FY	1170
141	57	37.69	- 30.5	- 82.1	- .848	- 32.6	-	- 2FY	1171
141	58			- .875			-	- 2FY	1172
142	53	1362			- 10.8		-	- 2FY	1173
142	54	63.5	- 49.3	- 16.7	- 132.	- 26.1	-	- 2FY	1174
142	55	178.	- 213.	- 162.	- 254.	- 137.	-	- 2FY	1175
142	56	129.	- 229.	- 321.	- 132.	- 177.	-	- 2FY	1176
142	57	22.6	- 61.5	- 162.	- 10.8	- 59.1	-	- 2FY	1177
142	58			- 16.7		- 1.13	-	- 2FY	1178
143	53				- .750		-	- 2FY	1179
143	54	29.3	- 16.5	- 1.15	- 67.5	- 4.37	-	- 2FY	1180
143	55	134.	- 132.	- 80.2	- 210.	- 73.6	-	- 2FY	1181
143	56	152.	- 243.	- 259.	- 181.	- 167.	-	- 2FY	1182
143	57	44.1	- 124.	- 214.	- 40.8	- 98.0	-	- 2FY	1183
143	58	.470	- 10.9	- 44.0		- 13.1	-	- 2FY	1184
143	59						-	- 2FY	1185
144	54	8716	- 1.12		- 22.5		-	- 2FY	1186
144	55	78.8	- 69.7	- 28.2	- 137.	- 31.7	-	- 2FY	1187
144	56	156.	- 219.	- 160.	- 205.	- 126.	-	- 2FY	1188
144	57	78.8	- 176.	- 223.	- 83.2	- 126.	-	- 2FY	1189
144	58	8716	- 34.6	- 79.2	- 2.25	- 31.7	-	- 2FY	1190
144	59			- 2.03			-	- 2FY	1191
145	53						-	- 2FY	1192
145	54	.375		- 2.94	- 7.80		-	- 2FY	1193
145	55	35.2	- 25.8	- 65.7	- 95.5	- 11.9	-	- 2FY	1194
145	56	122.	- 136.	- 159.	- 183.	- 80.1	-	- 2FY	1195
145	57	107.	- 177.	- 100.	- 95.5	- 127.	-	- 2FY	1196
145	58	23.3	- 60.0	- 14.9	- 7.80	- 52.5	-	- 2FY	1197
145	59		- 1.13			- 2.35	-	- 2FY	1198
146	54				- .465		-	- 2FY	1199
146	55	13.2139-	4.11		- 41.8	- .985	-	- 2FY	1200
146	56	74.9980-	66.5	- 25.4	- 130.	- 38.5	-	- 2FY	1201
146	57	104.7591-	149.	- 102.	- 112.	- 108.	-	- 2FY	1202
146	58	37.0823-	85.9	- 102.	- 25.3	- 77.6	-	- 2FY	1203
146	59	0.9464-	11.5	- 25.4		- 13.7	-	- 2FY	1204
146	60						-	- 2FY	1205
147	55	1769			- 13.0		-	- 2FY	1206
147	56	37.8	- 24.4	- 6.50	- 79.3	- 1.59	-	- 2FY	1207
147	57	91.4	- 94.0	- 48.6	- 118.	- 77.4	-	- 2FY	1208
147	58	57.6	- 90.5	- 82.8	- 48.1	- 93.6	-	- 2FY	1209
147	59	8754	- 21.6	- 36.5	- 1.30	- 28.9	-	- 2FY	1210
147	60			- 2.17		- .414	-	- 2FY	1211
148	55				- 1.07		-	- 2FY	1212
148	56	15.9	- 7.34	- .333	- 39.6	- 4.1456	-	- 2FY	1213
148	57	69.4	- 51.4	- 17.5	- 97.4	- 40.1390-	-	- 2FY	1214
148	58	74.8	- 83.2	- 52.4	- 65.2	- 79.6505-	-	- 2FY	1215
148	59	19.8	- 34.5	- 48.5	- 10.7	- 40.1390-	-	- 2FY	1216
148	60		- 1.62	- 7.74		- 4.1456	-	- 2FY	1217
148	61						-	- 2FY	1218
149	56	3.3136			- 14.7		-	- 2FY	1219
149	57	31.9607-	6.31	- 4.50	- 65.1	- 15.1869-	-	- 2FY	1220
149	58	63.4513-	35.7	- 25.5	- 75.6	- 57.27	-	- 2FY	1221

149	59	31.9607	- 49.8	- 35.6	- 24.3	- 53.1605	-	2FY	1222
149	60	3.3136	- 17.7	- 12.6	- .270	- 12.2883	-	2FY	1223
149	61		- .454	- .324	-	-	-	2FY	1224
150	56		-	-	- .685	-	-	2FY	1225
150	57	12.5	- .645	- .305	- 25.3	- 5.553	-	2FY	1226
150	58	47.3	- 14.8	- 8.75	- 62.3	- 33.845	-	2FY	1227
150	59	44.8	- 36.0	- 22.8	- 41.8	- 50.558	-	2FY	1228
150	60	10.2	- 22.7	- 15.3	- 6.85	- 19.437	-	2FY	1229
150	61		- 3.36	- 2.90	-	- .655	-	2FY	1230
151	57	37.16	-	-	- 7.98	- .166	-	2FY	1231
151	58	23.7	- 5.26	- 2.04	- 35.5	- 11.7	-	2FY	1232
151	59	40.3	- 21.0	- 0.94	- 41.2	- 37.7	-	2FY	1233
151	60	17.8	- 21.0	- 12.0	- 13.2	- 31.1	-	2FY	1234
151	61	17.06	- 5.26	- 3.72	- .147	- 6.40	-	2FY	1235
151	62		-	- 6.32	-2	-	-	2FY	1236
152	57		-	-	-	-	-	2FY	1237
152	58	.117	- 1.52	-	- 1.32	- 3.38	-	2FY	1238
152	59	8.17	- 10.3	- .207	- 16.2	- 20.7	-	2FY	1239
152	60	26.4	- 16.2	- 3.49	- 31.0	- 30.8	-	2FY	1240
152	61	21.8	- 6.70	- 7.91	- 16.2	- 11.8	-	2FY	1241
152	62	47.49	- .360	- 4.64	- 1.32	- .399	-	2FY	1242
152	043A		-	- .3162	-	-	-	2FY	1243
152	063		-	- .3162	-	-	-	2FY	1244
153	57		-	-	- 6.15	-2	-	2FY	1245
153	58	27.20	- .275	-	- 5.54	- .198	-	2FY	1246
153	59	12.5	- 4.44	- .900	- 17.2	- 8.45	-	2FY	1247
153	60	17.4	- 9.86	- 3.59	- 14.8	- 21.7	-	2FY	1248
153	61	67.18	- 5.68	- 3.59	- 3.34	- 15.5	-	2FY	1249
153	62	.128	- .740	- .900	-	- 2.75	-	2FY	1250
154	58	.219	-	-	- 1.26	-	-	2FY	1251
154	59	47.90	- 1.43	- .183	- 7.68	- 2.58	-	2FY	1252
154	60	11.9	- 5.35	- 1.37	- 11.5	- 12.6	-	2FY	1253
154	61	7.48	- 5.18	- 2.33	- 4.66	- 15.2	-	2FY	1254
154	62	17.11	- 1.24	- 1.03	- .127	- 4.70	-	2FY	1255
154	63		-	- 6.10	-2	- 6.71	-2	2FY	1256
155	58		-	-	- 7.6	-2	-	2FY	1257
155	59	1.5800	- .312	- 1.03	-22.81	- .608	-	2FY	1258
155	60	6.3200	- 2.06	- .400	- 6.92	- 5.87	-	2FY	1259
155	61	6.3200	- 3.23	- 1.13	- 4.64	- 11.6	-	2FY	1260
155	62	1.5800	- 1.32	- .808	- .760	- 5.87	-	2FY	1261
155	63		- 5.31	-2.143	-	- .608	-	2FY	1262
156	59	.434	- 1.40	-2	- .579	- 2.26	-2	2FY	1263
156	60	37.25	- .424	- 9.49	-22.57	- 2.13	-	2FY	1264
156	61	57.53	- 1.16	- .462	- 2.98	- 7.31	-	2FY	1265
156	62	27.44	- .772	- .859	- .959	- 6.44	-	2FY	1266
156	63	.145	- .129	- .173	- 1.07	-21.41	-	2FY	1267
156	64		-	- 2.5	-3	-	-	2FY	1268
157	59	37.44	-2	-	- 8.39	-2	-	2FY	1269
157	60	17.34	- .142	-	- 1.03	- .648	-	2FY	1270
157	61	37.79	- .640	-	- 1.97	- 3.67	-	2FY	1271
157	62	27.71	- .713	-	- 1.03	- 5.11	-	2FY	1272
157	63	.479	- .283	-	- 8.39	-21.82	-	2FY	1273
157	64		- 2.0	-3	-	- 4.66	-2	2FY	1274
158	59		-	-	- 2.7	-3	-	2FY	1275
158	60	.418	- 2.40	-2	- .247	- 8.74	-2	2FY	1276
158	61	27.04	- .258	-	- .768	- 1.47	-	2FY	1277
158	62	27.46	- .391	-	- .662	- 3.33	-	2FY	1278
158	63	.763	- .185	-	- .149	- 1.95	-	2FY	1279
158	64	17.09	-21.58	-2	-	- .261	-	2FY	1280
159	60	97.52	-25.	-4	- 4.20	-2	-	2FY	1281

159	61	.920	- 4.65	-2	- .256	- .454	-	-	2FY	1282
159	62	1.782	- .148	-	- .382	- 1.81	-	-	2FY	1283
159	63	.920	- .121	-	- .155	- 1.81	-	-	2FY	1284
159	64	9:45	-22.44	-2	- 4.2	-3.454	-	-	2FY	1285
159	65		-	-	-	-	-	-	2FY	1286
160	60	.307	-	-	- 7.0	-3	-	-	2FY	1287
160	61	1.706	- 8.8	-3	- .0856	- .111	-	-	2FY	1288
160	62	.930	- 4.66	-2	- .165	- .747	-	-	2FY	1289
160	63	.203	- 6.06	-2	- 8.56	-21.18	-	-	2FY	1290
160	64		- 2.05	-2	- 7.0	-3.490	-	-	2FY	1291
160	65		- 4.	-4	-	- 2.19	-2	-	2FY	1292
161	60		-	-	- 2.	-4	-	-	2FY	1293
161	61	9:35	-2	-	- 2.16	-25.6	-3	-	2FY	1294
161	62	.529	-	-	- 6.72	-2.225	-	-	2FY	1295
161	63	.738	-	-	- 5.79	-2.634	-	-	2FY	1296
161	64	.263	-	-	- 1.30	-2.454	-	-	2FY	1297
161	65	6:7	-2	-	-	- 8.93	-2	-	2FY	1298
162	61	8:9	-3	-	-	-	-	-	2FY	1299
162	62	.199	-	-	-	-	-	-	2FY	1300
162	63	.483	-	-	-	-	-	-	2FY	1301
162	64	.304	-	-	-	-	-	-	2FY	1302
162	65	4:51	-2	-	-	-	-	-	2FY	1303
162	66		-	-	-	-	-	-	2FY	1304
163	62	9:	-4	-	-	-	-	-	2FY	1305
163	63	8:66	-2	-	-	-	-	-	2FY	1306
163	64	.298	-	-	-	-	-	-	2FY	1307
163	65	.262	-	-	-	-	-	-	2FY	1308
163	66	5:75	-2	-	-	-	-	-	2FY	1309
164	62	3:81	-2	-	-	-	-	-	2FY	1310
164	63	.174	-	-	-	-	-	-	2FY	1311
164	64	.198	-	-	-	-	-	-	2FY	1312
164	65	5:74	-2	-	-	-	-	-	2FY	1313
164	66	6:	-4	-	-	-	-	-	2FY	1314
165	62		-	-	-	-	-	-	2FY	1315
165	63		-	-	-	-	-	-	2FY	1316
165	64		-	-	-	-	-	-	2FY	1317
165	65		-	-	-	-	-	-	2FY	1318
165	66		-	-	-	-	-	-	2FY	1319
U238TN									FY	1320
72	27	-	-	-	-	-	-	-	FY	1321
72	28	-	-	-	-	-	-	-	3FY	1322
72	29	-	-	-	-	-	-	-	3FY	1323
72	30	-	-	-	-	-	-	-	3FY	1324
72	31	-	-	-	-	-	-	-	3FY	1325
73	27	-	-	-	-	-	-	-	3FY	1326
73	28	-	-	-	-	-	-	-	3FY	1327
73	29	-	-	-	-	-	-	-	3FY	1328
73	30	-	-	-	-	-	-	-	3FY	1329
73	31	-	-	-	-	-	-	-	3FY	1330
073	032A	-	-	-	-	-	-	-	3FY	1331
073	032	-	-	-	-	-	-	-	3FY	1332
074	27	-	-	-	-	-	-	-	3FY	1333
74	28	-	-	-	-	-	-	-	3FY	1334
74	29	-	-	-	-	-	-	-	3FY	1335
74	30	-	-	-	-	-	-	-	3FY	1336
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56 1	09166	2.7	2.58 +39	3	11.0
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156 1	02047	0.0	1.000+30	1	00.0
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28 1	09221	.06	1.000+30	1	01.7
29 1	00470	.20	1.000+30	1	01.7
30 1	00309	.11	2.620+00	3	01.7
39 1	09310	2.2	1.300+00	5	01.5
40 1	00002	70.0	1.000+30	1	01.5
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152	1	.2663	224.0	4.760+01	3	00.0
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24	1	.7870	.03	1.500+30	3	03.6
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.473	8.92-6
.318	7.14-6
0.000	0.00-6
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0.000	0.00-6
.005	11.34-6
.518	10.40-6
.195	8.84-6
.282	7.85-6
.977	4.55-6
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.300	5.05-6
.700	4.33-6
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.026	15.13-6
.913	12.00-6
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1.000	6.62-6
.090	1.75-6
0.000	0.00-6
0.000	0.00-6
0.000	0.00-6
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This volume of the DELFIC (Defense Land Fallout Interpretive Code) documentation describes the Particle Activity Module. This module computes the distribution of fission-product and induced activities as a function of fallout particle size. Fractionation is accounted for by a modified radial-distribution model. Radioactive decay is computed from the Bateman equation.			

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