WANL-TME-1952
February 1970

Westinghouse Astronuclear Laboratory

PARX2 Data System
Users Manual

MASTER

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INFORMATION CATEGORY

Unclassified

H. C. Wordham 12/17/69
Authorized Classifier Date

DISTRIBUTION

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I. Introductory Summary

Data reduction for reactor shield tests conducted at Waltz Mills is accomplished by the PARX2 Data System. This system consists of a CDC-6600 SYSTEM SORT and four computer programs: PARX2, PARX21, DIRECT, and PARX22.

This report describes the function of each program, the computer input required, Fortran listings, sample output, and the deck setup for execution of the programs. The data reduction problem was defined by V. S. Oblock and J. R. Magaw of the Westinghouse Astronuclear Experimental Facility.

II. Program Description

Raw data for each of four tests are input to the computer code. The PARX2 program performs preliminary calculations for each input card and writes a tape which contains both the raw data and the results of the calculations. The CDC-6600 SORTMR3 routine operates on the PARX2 tape which results in a second tape containing the data sorted in a predetermined sequence. The sorted output tape is then used by the program PARX21 as a basis for further calculations and the final printout. In addition, PARX21 generates three tapes containing information required in DIRECT and PARX22. The program DIRECT uses two of these tapes to produce an output tape of its own containing the results of the difference calculations between configuration 14 data and that of the other configurations. Either this resultant tape or the third output tape from PARX21 is used in PARX22, depending on the input specifications, to produce graphs that represent the data points only, or a least squares curve fit of the data.

III. Program PARX2

Program PARX2 performs preliminary calculations and generates an unformatted tape on logical tape unit 12 to be used as input to the CDC-6600 SYSTEM SORT.

Only four types of data are used in the program. Each type represents a particular test and is referred to as data for TABLE or REPORT 1, 2, 3, or 4. Table numbers one through seven (1-7) are accepted. PARX2 will determine and assign the report number appropriate to the current system.

Table numbers 1 or 4 will generate table 1.

Table numbers 2 or 5 will generate table 2.

Table numbers 3 or 6 will generate table 3.

Table number 7 will generate table 4.

The titles for the tables are:

TABLE 1: External Environmental Response of a CD-Covered U-238
(2 PPM - U-235) Fission Chamber in a Boral Box)

TABLE 2: External Environmental Response of a Carbon Wall - CO₂ Gas
Ion Chamber

TABLE 3: External Environmental Response of an Aluminum Bragg-Gray
Chamber

TABLE 4: External Environmental Response of a Beryllium Bragg-Gray
Chamber

The columns, format, and field description are identical on the data cards for each table except in columns 57-64, 65-72, and 73-80. The following card layout describes the card fields up to column 56 for all input:

CARD LAYOUT

Columns	Format	Variable Name	Description	Remarks
1	A1	IARRAY(1)	Report or table number	1 for Table 1, 2 for Table 2, etc.
2	A1	IARRAY(2)	Report number suffix	Usually a blank
3-5	I3	IARRAY(3)	Run number	
6-8	I3	IARRAY(4)	Configuration code	Description of code is given in succeeding paragraph
9	I1	IARRAY(5)	Indicator for type of input	1: polar angle and core ray 2: radius and elevation (processed as type 1 data)
10-16	F7.0	ARRAY(1)	PAX angle in degrees	
17-24	F8.0	ARRAY(2)	Detection conversion factor	
25-32	F8.0	ARRAY(3)	PAX power conversion factor	
33-40	F8.0	TEMP1	Radius (in.) or polar angle (deg.)	Radius if col. 9 = 1 Polar angle if col. 9 = 2
41-48	F8.0	ARRAY(6)	Linear No. 1 current	
49-56	F8.0	TEMP2	Elevation (in.) or core ray (in.)	Elevation if col. 9 = 1 Core ray if col. 9 = 2

The following table illustrates the input for the remaining columns.

Columns	Format	Variable Name	Table Number		
			1	2 - 4	5
57-64	F8.0	ARRAY(9)	Total no. counts	Detection current	Detection current
65-72	F8.0	ARRAY(10)	Counting time	Polar angle readout	Blank
73-80	F8.0	ARRAY(11)	Polar angle readout	Measurement time	Blank

CONFIGURATION CODE

The configuration code, right adjusted, is reported in an I3 format. The following table lists the codes and the configurations to which they refer:

<u>Code</u>	<u>Configuration</u>
1	15
2	14
3	16A
4	16B
5	16C
6	17
7	18
8	19
9	20
10	21
11	22
12	23
13	24
14	25

CALCULATION OF POLAR ANGLE

Core ray distance = C
Polar angle tape readout = D
Polar angle = B
Total angle from solution of Law of Cosines = A

The equation is solved for A

$$\cos A = \frac{(125.185'')^2 + (C + 12.375'')^2 - (D - 7.687'')^2}{2 * (125.185'') * (C + 12.375'')} \star$$

$$A = \cos^{-1} (\cos A)$$

$$B = A - 62.216^\circ$$

★ See Astronuclear DRM 51181, "A Description of the Polar Angle Indexing System used with the WANEF (P, Θ, Ø) Transverse System for the PAX Reactor"

CALCULATION OF RADIUS AND ELEVATION

Radius and elevation are calculated from polar angle and core ray distance.

$$\begin{aligned} \text{ELEV} &= \text{Core ray} * \cos (B) \\ \text{RADIUS} &= \text{Core ray} * \sin (B) \quad \text{where } B = \text{polar angle} \end{aligned}$$

The input data is in inches and degrees and is converted to centimeters and radians by the program. The calculated polar angle is printed in degrees.

ARRAY(4) and ARRAY(7) contain the input values as determined by column 9.
ARRAY(5) and ARRAY(8) contain the calculated values.

IV. SORT

The unformatted data tape which is input to the SORT routine has the following setup.

Word	Variable Name	Description
1	IARRAY(1)	Report number
2	IARRAY(2)	Report number suffix
3	IARRAY(3)	Run number
4	IARRAY(4)	Configuration code
5	IARRAY(5)	Data type indicator
6	ARRAY(1)	PAX angle
7	ARRAY(2)	Detection conversion factor
8	ARRAY(3)	PAX power conversion factor
9	ARRAY(4)	Radius or polar angle, if data type is 1 or 2, respectively.
10	ARRAY(5)	Calculated value for polar angle or radius
11	ARRAY(6)	Linear No. 1 current
12	ARRAY(7)	Elevation or core ray, if data type is 1 or 2, respectively.
13	ARRAY(8)	Calculated value for core ray or elevation
14	ARRAY(9)	Total number counts (TABLE 1) Detector current (TABLES 2-4)
15	ARRAY(10)	Counting time (TABLE 1) Polar angle tape readout (TABLES 2-4)
16	ARRAY(11)	Polar angle readout (TABLE 1) Measurement time (TABLES 2-4)
17	ARRAY(12)	PAX power
18	ARRAY(13)	Calculated polar angle

The sorting sequence used is:

<u>Word</u>	<u>Description</u>	<u>Sort Key Sequence</u>
1	Report number	Primary
2	Report number suffix	Second
4	Configuration	Third
6	PAX angle (degrees)	Fourth
9	Input value for radius or polar angle	Fifth
12	Input value for elevation or core ray	Sixth

The general control cards and the parameter descriptions for the CDC-6600 SORT follow. Note that all cards of the SORT must begin in column 1.

SORT(P₁, P₂, P₃, P₄, P₅, P₆, P₇)

where P₁ = Number of sort input files.

P₂ = Number of keys (1-24)

P₃ = Maximum logical record length, in characters of records delivered to the SORT

P₄ = Sequence check option of final sorted output file
 blank : sequence check
 non-blank: no sequence check

P₅ = Parity error option
 1: include bad record
 2: terminate job

P₆ = Input order option
 blank : preserve input order of record with identical keys
 non-blank: input order not guaranteed

P₇ = Number of words per SCOPE logical record on the output file

P₈ = Checkpoint option
 0 or blank: no checkpoints
 R : checkpoint dumps at end of reel
 n : number of records to be processed between checkpoints

KEY(P₁, P₂, P₃, P₄)

- P₁ = Sort order option
A: ascending order
D: descending order
- P₂ = Key mode designator
C: character mode key
X: fixed point key
F: floating point key
- P₃ = Position indicator
For C keys, the relative position within the logical record of the first 6-Bit Byte of the key.
For X and F keys, the word position within the record.
- P₄ = The length of the key as the number of 6-Bit Bytes for C keys. This parameter need not be specified for X and F keys. A one (1) word length is assumed.

FILE(P₁, P₂, P₃, P₄, P₅, P₆)

- P₁ = Logical file name
- P₂ = File usage
S: sort input
O: sort output
- P₃ = Recording mode
B: binary
D: BCD
- P₄ = Length of I/O buffer (in words) to be used when reading or writing the file.
- P₅ = Disposal code
S: save (rewind and unload if a tape file)
R: release (rewind but do not unload if a tape file)
- P₆ = Type of label
S: standard
N: no label

RECORD (P₁, P₂, P₃)

- P₁ = Type of file
I: input file
O: output file

P₂ = Record type
F: fixed length

P₃ = Logical record length as the number of 6-Bit Bytes for
fixed length records.

The PARX2 Data System uses the CDC-6600 SORT package, SORTMR3.

The SORT control card setup used for this program is:

```
SORT(1,6,180,,2,,18)
KEY(A,C,1,1)
KEY(A,C,11,1)
KEY(A,X,4,1)
KEY(A,F,6,1)
KEY(A,F,9,1)
KEY(A,F,12,1)
FILE(TAPE12,S,B,18,R,N)
FILE(TAPE11,O,B,18,R,N)
RECORD(I,F,180)
END
```

V. Program PARX21

PARX21 basically has three functions: 1) performing additional calculations with the data on the SORT output tape; 2) generating printed reports for the tables; and 3) creating three tapes containing all the calculational results that are used by the succeeding programs, DIRECT and PARX22.

This routine requires the SORT output tape and report title cards as input. The data for the latter are read in an 8A10 format. There are four reports, five lines per report, and two cards per line. The titles are printed in an 11A10 format.

The first nine words of output for all reports are identical:

Run Number
Configuration
PAX Angle (degrees)
Radius (cm)
Elevation (cm)
Polar Angle (degrees)
Core Ray (cm)
Polar Angle Tape Readout
PAX Power (w)

The remaining output for reports 1-4 and the equations used are given in the following paragraphs.

TABLE 1

Total No. Counts Input

Count Time (secs.) Input

Conv. Fac $\frac{F/GM-SEC}{CPS}$ Input

Total (U) Fiss GM-SEC-W =

$$\frac{\text{Total No. Cts.} * \text{Det. Conv. Factor}}{\text{Counting Time} * \text{PAX Power}}$$

% Std. Dev. for Total (U) Fiss GM-SEC-W =

$$\sqrt{c_1^2 + \frac{c_2^2}{\text{Total No. Cts.}} + c_3^2 + c_4^2}$$

where $c_1 = 5.0$, $c_2 = 100.0$, $c_3 = 3.0$, $c_4 = 5.0$

Neuts CM2-SEC-W for $E > 1.4$ Mev =

$$\text{Total (U) Fiss GM-SEC-W} * \frac{c_5}{6.025E+23 * c_6}$$

where $c_5 = 2.38$, $c_6 = 0.555E-24$

% Std. Dev. for Neuts CM2-SEC-W =

$$\sqrt{(\% \text{ Std. Dev. Total (U) Fiss})^2 + c_7}$$

where $c_7 = 25.0$

TABLES 2, 3, 4

Elapsed Time Input

Chamber Current (amps) Input

Con Fac Rads (X) Hr-W Input

where X = Carbon for TABLE 2
 = Aluminum for TABLE 3
 = Beryllium for TABLE 4

$$\text{Rads(X) Hr-W} = \frac{\text{Det Conv Factor} * \text{Detector Current}}{\text{PAX Power}}$$

% Std. Dev. for Rads (X) =

$$\sqrt{c_1^2 + c_2^2 + c_3^2 + c_4^2}$$

where $c_1 = 5.0$, $c_2 = 3.0$, $c_3 = 3.0$, $c_4 = 5.0$

The contents of the records on the unformatted tape generated by the program PARX21 and used in the programs DIRECT and PARX22 vary slightly for each table. The following lists describe these records and the variable names into which the data is read. This information is essential since input to PARX22 requires a particular location in the read array to be given in order to determine the ordinate value to select for plots. The array values available for plotting are indicated by an asterisk.

The first twelve words of the twenty-one word records are identical for all four tables. They are:

<u>Word Description</u>	<u>Array Name and Position</u>
Report Number	IARRAY(1)
Report Number Suffix	IARRAY(2)
Configuration Code	IARRAY(3)
Run Number	IARRAY(4)
Configuration	IARRAY(5)
PAX Angle (degrees)	IARRAY(6)
Total Number of Counts	IARRAY(7)
R or θ Input Indicator	IARRAY(8)
Radius or Polar Angle (calculated)	ARRAY(1)
Elevation or Core Ray (calculated)	ARRAY(2)
Radius or Polar Angle (input)	ARRAY(3)
Elevation or Core Ray (input)	ARRAY(4)

The contents of the nine remaining words for each table are:

REPORT 1

<u>Word Description</u>	<u>Array Name and Position</u>
Polar Angle Tape Readout	ARRAY(5)
PAX Power	ARRAY(6)
Counting Time	ARRAY(7)
Det Con Factor	ARRAY(8)
* Total (U) Fission	* ARRAY(9)
% Std. Dev.	ARRAY(10)
* Neuts $\text{cm}^2\text{-sec-w}$	* ARRAY(11)
% Std. Dev.	ARRAY(12)
Calculated Polar Angle	ARRAY(13)

REPORTS 2, 3, 4

<u>Word Description</u>	<u>Array Name and Position</u>
Polar Angle Tape Readout	ARRAY(5)
PAX Power	ARRAY(6)
Elapsed Time	ARRAY(7)
Detection Current	ARRAY(8)
Detection Conversion Factor	ARRAY(9)
* Rads (C) : Report 2 Rads (Al): Report 3 Rads (Be): Report 4	* ARRAY(10)
% Std. Dev.	ARRAY(11)
Zero	ARRAY(12)
Calculated Polar Angle	ARRAY(13)

Program PARX21 outputs three tapes: tape 10, tape 14, and tape 12. Tape 10 contains data for all configurations except 14. Tape 14 contains configuration 14 data only. Tape 12 contains all data. Tapes 10 and 14 are used in DIRECT to obtain the difference reports, while tape 12 is used in PARX22 for the normal plot output. All three tapes follow the record description given in the preceding paragraphs.

VI. Program DIRECT

Program DIRECT subtracts configuration 14 data from data for the particular configuration being processed when common points are found and produces a report and an output tape reflecting the difference calculations performed. A common point is defined to be one where the variables, report number, polar angle, and core ray of a configuration 14 record (from tape 14) match those same variables of a record for another configuration (from tape 10). If a common point is found, the differences are calculated:

TABLE 1

1. $[\text{Total (U) Fiss GM-SEC-W}] - [\text{Total (U) Fiss GM-SEC-W}]_{\text{Conf. 14}}$
2. $[\text{Neuts cm}^2\text{-sec-w } E > 1.5 \text{ Mev}] - [\text{Neuts cm}^2\text{-sec-w } E > 1.5 \text{ Mev}]_{\text{Conf. 14}}$

TABLE 2

1. $[\text{Rads (C) Hr-W}] - [\text{Rads (C) Hr-W}]_{\text{Conf. 14}}$
2. $[\text{Elapsed Time}] - [\text{Elapsed Time}]_{\text{Conf. 14}}$

TABLE 3

1. [Rads (Al) Hr-W] - [Rads (Al) Hr-W] Conf. 14
2. [Elapsed Time] - [Elapsed Time] Conf. 14

TABLE 4

1. [Rads (Be) Hr-W] - [Rads (Be) Hr-W] Conf. 14
2. [Elapsed Time] - [Elapsed Time] Conf. 14

The results of the difference calculations are written on tape 11, which is used in PARX22.

Titles for the DIRECT reports are read in an 8A10 format. There are four reports, five lines per report, and two cards per line. The titles are printed in an 11A10 format.

The first nine words of output for all reports are identical:

E5 Run No. Total
E5 Run No. Background
Configuration
PAX Angle (degrees)
Radius (cm)
Elevation (cm)
Polar Angle (deg)
Polar Angle Tape Readout
Core Ray (cm)

The remaining output for the four reports follows:

TABLE 1

Direct Total (U) Fiss GM-SEC-W
Direct Neuts CM2-SEC-W E>1.5 Mev

TABLE 2

Direct Rads (C) Hr-W

Elapsed Time

TABLE 3

Direct Rads (Al) Hr-W

Elapsed Time

TABLE 4

Direct Rads (Be) Hr-W

Elapsed Time

The output tape from DIRECT has the same record layout for the various tables as that described for tape 12 from PARX21. The exception is that the words

```

      Total (U) Fiss GM-SEC-W
*   % Std. Dev. for Total (U) Fiss
      Neuts cm2-sec-w
*   % Std. Dev. for Neuts
      Rads (C) Hr-W
*   % Std. Dev. Rads (C)
      Rads (Al) Hr-W
*   % Std. Dev. Rads (Al)
      Rads (Be) Hr-W
*   % Std. Dev. Rads (Be)
      Elapsed Time
  
```

reflect the results of the subtractions done in DIRECT.

* Correct equations for these quantities are not present in this version of the program, but will be reported in future documentation.

VII. Program PARX22

Program PARX22 generates graphs from the data on tape 11, prepared by DIRECT, or tape 12, prepared by PARX21, using the Stromberg-Carlson 4020 microfilm plotter. The data for the curves can be either the original data points, or points derived from the original data by a third degree polynomial least squares fit.

Two types of graphs are available from PARX22.

Type 1: This type consists of a family of curves generated for each configuration and PAX angle for the tables requested. Type 1 graphs can be either of two kinds:

Graph A: Each curve is a function of core ray plotted along the abscissa and the input variable plotted on the ordinate. The polar angle values and the position of the variable that is plotted along the ordinate are given in the input table.

Multiple curves per grid are also available. All polar angles for a specific configuration can be plotted. Although PARX22 can handle a maximum of thirty different polar angles, no more than 5 curves should be plotted on one grid. A different symbol is used for each polar angle.

A = Polar Angle 0 (Degrees)

B = Polar Angle 10

C = Polar Angle 20

D = Polar Angle 30

Graph B: Each curve is a function of polar angle plotted on the abscissa and the input variable plotted on the ordinate for a fixed elevation. The data tape is searched for all values corresponding to the input value read in for the fixed elevation plots. Elevation is given in centimeters.

Example of Graph B

Type 2: This type of plot reflects curves of multiple configurations for a specific polar angle. Core ray values are plotted along the abscissa and the input variable is plotted along the ordinate. A different symbol is plotted for each configuration. A maximum of 10 configurations can be plotted for a specific polar angle. A maximum of 30 different polar angles is permissible. Type 2 graphs can be plotted from data on tapes 11 or 12. This type of plot is shown on the next page.

- A = configuration 14
- B = configuration 16A
- C = configuration 16B
- D = configuration 16C
- E = configuration 17

PARX22 INPUT

Data from DIRECT, tape 11, and from PARX21, tape 12, cannot be processed in the same run. The user must specify both the type of input and the type of graph desired.

Card	Column	Format	Variable Name and Description
1	1-3	I3	NTYPE : = 1: Multiple plots of configurations vs specific polar angle ≠ 1: Plots of all polar angles for a specific configuration
	4-6	I3	NGR : = 1: Regular plots (PARX21 data) ≠ 1: Difference plots (DIRECT data)
	6-9	I3	KELEV : Indicator for constant elevation plots = 0: No constant elevation plots > 0: Constant elevation plots wanted

If KELEV = 0, card 2 must be omitted

2	1-12	E12.5	CONEV1: First constant elevation value.
	13-24	E12.5	CONEV2: Second constant elevation value.
3	1-6	I6	ISPP : = 0: All curves are generated for each configuration and PAX angle for the tables requested. > 0: The number of specific sets of graphs to be produced where the three variables - table number, configuration, and PAX angle - determine a graph.
	7-12	I6	NYCYCL: Number of cycles wanted on the Y-axis
4	1-12	E12.6	XIMIN : Minimum value for the X-axis
	13-24	E12.6	XIMAX : Maximum value for the X-axis

(CONTINUED ON NEXT PAGE)

If ISPP is zero, the following set of cards (5-9) is required.

Card	Column	Format	Variable Name and Description
5	1-6	I6	NOPOAN: Number of polar angles to be given in table. Maximum = 30
	7-12	I6	NOTABS: Number of tables or reports to be searched.
6	1-80	80A1	TABLES: Alphanumeric identification of the tables or reports for which the graphs will be generated.
	1	A1	TABLES(1,1) - first table number
	2	A1	TABLES(2,1) - first table number suffix
	3	A1	TABLES(1,2) - second table number
	4	A1	TABLES(2,2) - second table number suffix
			• • •
			TABLE(1,NOTAB) TABLE(2,NOTAB)
7	1-72	12I6	POS(I), I=1, NOTABS: Array position of value to be plotted on ordinate axis for each table. More than one card can be used to describe the variable POS.
8	1-6	I6	CUTP : Cut-off point for the number of polar angle curves on the grid. If only one curve/grid is to be plotted, CUTP must be set equal to NOPOAN. If multiple curves/grid are being plotted, a maximum of two grids is allowed. The value given to CUTP indicates the curve which will start the second grid. For example, if NOPOAN = 9 and CUTP = 6, five curves will be plotted on the first grid and 4 on the second.
	7-12	I6	IPLO : Indicator for the type of plot wanted. 0 = Least squares fit, vectors connecting points are drawn, one curve/grid.

(CONTINUED ON NEXT PAGE)

Card	Column	Format	Variable Name and Description
			<p>1 = No least squares fit, data points only, no connecting vectors drawn, one curve/grid.</p> <p>2 = No least squares fit, data points only, no connecting vectors drawn, multiple curves/grid.</p> <p>3 = Least squares fit, vectors connecting points are drawn, multiple curves/grid.</p>
9	1-72	6E12.6	POANG : Table of NOPOAN polar angles (degrees). (Card 9 may be repeated if the input list requires more than one card).

If ISPP is non-zero, the following set of cards (5-8) is required for each set of curves.

5	1	A1	REP1 : Table or report number
	2	A1	REP2 : Table number suffix
	11-13	A3	CONFI : Configuration (right adjusted)
	21-25	I5	PAXANI: PAX angle in degrees (right adjusted)
	31-32	I2	POS : Array position of value to be plotted on ordinate axis.
6	1-6	I6	NOPOAN: Number of polar angles to be given in the table. Maximum = 30.
7	1-6	I6	CUTP : Cut-off point for the number of polar angles curves/grid. If only one curve/grid is requested, CUTP must be set equal to NOPOAN.
			If multiple curves/grid are plotted, a maximum of two grids is allowed. The value given to CUTP indicates the curve which will start the second grid.
	7-12	I6	IPLO : Indicator for the type of plot wanted. The options available for IPLO are given in the variable description found on page 24.
8	1-72	6E12.6	POANG : Table of NOPOAN polar angle values.

Card set 5-8 is repeated ISPP times.

Note that all data submitted in an integer or alphanumeric field must be right adjusted.

Fortran Listing of PARX2

```

PROGRAM PARX2(INPUT,OUTPUT,PUNCH,TAPE5=INPUT,TAPE6=OUTPUT,TAPE7=PU
1NCH,TAPE12)
00003    DIMENSION IARRAY(5), ARAY(13), NT(7)
00003    DATA NT/ 1H1, 1H2, 1H3, 1H4, 1H5, 1H6, 1H7 /
00003    DATA END1,IREP1,IREP5/1H9,1H1,1H5/
00003    INTEGER END1
00003    REAL MPFAC

C
C    COLUMN 1      - REPORT OR TABLE NO.          IARRAY(1)
C    COLUMN 2      - SUFFIX                        IARRAY(2)
C    COLUMN 3-5    - RUN NO.                      IARRAY(3)
C    COLUMN 6-8    - CONFIGURATION CODE           IARRAY(4)
C    COLUMN 9      - DATA TYPE INDICATOR         IARRAY(5)
C                                     1 - POLAR ANGLE AND CORE RAY
C                                     2 - RADIUS AND ELEVATION (THIS TYPE OF DATA NOT AVAILABLE)
C    COLUMN 10-16  - PAX ANGLE IN DEGREES          ARAY(1)
C    COLUMN 17-24  - DET CON FACTOR                ARAY(2)
C    COLUMN 25-32  - PAX PWR CONV                  ARAY(3)
C    COLUMN 33-40  - POLAR ANGLE OR RADIUS          TEMP1
C    COLUMN 41-48  - LINEAR NO. 1 CURRENT          ARAY(6)
C    COLUMN 49-56  - CORE RAY OR ELEVATION          TEMP2
C    COLUMN 57-64  - TOTAL NO. COUNTS (REP 1)      ARAY(9)
C                                     DET CURRENT      (REPS 2-4)
C    COLUMN 65-72  - COUNTING TIME (REP 1)          ARAY(10)
C                                     POL. ANG. RDOUT  (REPS 2-4)
C    COLUMN 73-80  - POL. ANG. RDOUT (REP 1)        ARAY(11)
C                                     MEASUREMENT TIME (REPS 2-4)
C    ARAY(4) AND ARAY(7) CONTAIN THE INPUT VALUES AS DETERMINED BY COL9
C    ARAY(5) AND ARAY(8) CONTAIN THE CALCULATED VALUES
C
00003    CALL CLUCK(A,B,C)
00006    IMU = A + 0.5
00010    IDAY = B + 0.5
00012    IYR = C
00014    CONST1 = 125.185 * 2.54
00015    CONST2 = 12.375*2.54
00017    CONST3 = 7.687 * 2.54
00020    MFILE = 12
00021    INP = 5
00023    REWIND MFILE
00025    IPAGE = 0

```

```

00026      LINE = 0
00026      MPFAC = 1.0
00030      5 READ(INP, 10) (IARAY(I), I=1,5), (ARAY(I), I=1,3), TEMP1, ARAY(6),
      1 TEMP2, (ARAY(I), I=9,11)
00064      10 FORMAT(2A1,2I3,1I,F7.0,2E8.2,F8.0,E8.2,4F8.0)
00064      IF (IARAY(1).EQ.FND1.AND.IARAY(2).EQ.END1) GO TO 55
00074      IF (IARAY(1).EQ. NT(4) ) IARAY(1) = NT(1)
00077      IF (IARAY(1).EQ. NT(5) ) IARAY(1) = NT(2)
00102      IF (IARAY(1).EQ. NT(6) ) IARAY(1) = NT(3)
00105      IF (IARAY(1).EQ. NT(7) ) IARAY(1) = NT(4)
00110      NO = 10
00111      IF (IARAY(1).EQ. IREP1) NO = 11
00114      IF (ARAY(NO).NE. 0.0) GO TO 35
00116      15 IF (LINE.GT.0.AND.LINE.LT.35) GO TO 25
00126      IPAGE = IPAGE + 1
00127      WRITE(6, 20) IM0, IDAY, IYR, IPAGE
00143      20 FORMAT(1H1,27X,4HPAGE,15,21H OF PARX2 CARD ERRORS,10X,6HDATE ,12,
      12(14/,12)///)
00143      LINE = 0
00144      25 WRITE(6, 30) (IARAY(I), I=1,5), (ARAY(I), I=1,3), TEMP1, ARAY(6),
      1 TEMP2, (ARAY(I), I=9,11)
00200      30 FORMAT(5X,2A1,2I3,1I,F7.3,2E8.2,F8.4,E8.2,F8.4,F8.2,2F8.4)
00200      LINE = LINE + 1
00202      GO TO 5
00202      35 IF (IARAY(5).EQ. 1 .OR. IARAY(5).EQ. 2 ) GO TO 40
00212      GO TO 15
00212      40 CONTINUE
00212      ARAY(3) = ARAY(3) * MPFAC
00214      ARAY(12) = ARAY(6)/ARAY(3)
00215      ARAY(4) = TEMP1
00216      ARAY(5) = 0.0
00217      ARAY(7) = TEMP2*2.54
00221      ARAY(8) = 0.0
00222      IF (IARAY(1).EQ. IREP5) GO TO 50
00225      45 CR = ARAY(7)
00226      PATR = ARAY(NO) * 2.54
00231      PA = ARAY(4) * 0.01745329252
00233      A = CONST1**2
00234      H = CR + CONST2
00236      C = (PATR-CONST3)**2
00241      COSA = (A + H**2 - C) / (2.0 * CONST1 * H)
00247      ANG = ACOS(COSA)

```



```

00251      ANGF = ANG = (62.216 * 0.017453292519943)
00253      ARAY(5) = CR * SIN(ANGF)
00256      ARAY(6) = CR * COS(ANGF)

      C:  CONVERT CALCULATED POLAR ANGLE TO DEGREES
00261      ARAY(13) = ANGF * 57.2957795131
00264      50 WRITE(MFILE) (IARAY(I), I=1,5), (ARAY(I), I=1,13)
00303      GO TO 5
00304      55 WRITE(MFILE) (IARAY(I), I=1,5), (ARAY(I), I=1,13)
00323      END FILE MFILE
00325      REWIND MFILE
00327      STOP
00331      END

```

PROGRAM LENGTH INCLUDING I/O BUFFERS
010637

FUNCTION ASSIGNMENTS

STATEMENT ASSIGNMENTS

5	-	000030	10	-	000361	15	-	000116	20	-	000370
25	-	000144	30	-	000401	35	-	000202	40	-	000212
45	-	000225	50	-	000264	55	-	000304			

BLOCK NAMES AND LENGTHS

VARIABLE ASSIGNMENTS

A	-	000500	ANG	-	000525	ANGF	-	000526	ARRAY	-	000450
H	-	000501	C	-	000502	CONST1	-	000506	CONST2	-	000507
CONST3	-	000510	COSA	-	000524	CR	-	000521	FND1	-	000474
I	-	000515	IARRAY	-	000443	IDAY	-	000504	IMO	-	000503
INP	-	000512	IPAGE	-	000513	IREP1	-	000475	IRFPS	-	000476
IYR	-	000505	LINE	-	000514	MFILE	-	000511	MPFAC	-	000477
NO	-	000520	NT	-	000465	PA	-	000523	PATR	-	000522
TEMP1	-	000516	TEMP2	-	000517						

START OF CONSTANTS
000333

START OF TEMPORARIES
000421

START OF INDIRECTS
000442

UNUSED COMPILER SPACE

111500

CORE MAP 10.09.19. NORMAL CONTROL 000100 017016
 ---TIME---LOAD MODE ---L1---L2---TYPE-----USER---+---CALL-----FWA LOAD---LWA LOAD---
 FWA LOADER 144564 FWA TABLES 144037
 --PROGRAM---ADDRESS-- --Labeled---COMMON--

PARX2	000100		
SYSTEM	010737	SCOPE?	010737
CLOCK	012012		
REWIND	012157		
INPUTC	012237		
OUTPTC	012600		
ASINCOS	013172		
SINCOS	013330		
OUTPTH	013427		
ENDFIL	013521		
STOP	013571		
CDC1	014177		
INPUTS	014221		
COUNT	014523		
ACGOER	014532		
GETBA	014544		
KRAKER	014563		
KODER	015620		

--ENTRY-----ADDRESS--

PARX2	000101
JENTRY	010740
SYSTEM	011176

REFERENCES

PARX2	000102	
REWIND	012227	
INPUTC	012304	
OUTPTC	012621	
ASINCOS	013264	013267
OUTPTH	013511	
ENDFIL	013561	
INPUTS	014245	
ACGOER	014535	
KRAKER	015416	
KODER	016626	

SYSTEMC	011113
SYSTEMP	011143
END	011037

PARX2	000432
CLOCK	012127

STOP	011066
------	--------

PARX2	000430
-------	--------

EXIT	011060
ABNORML	011076

REWIND	012230
INPUTC	012305

		OUTPTC	012622					
		OUTPTB	013512					
		ENDFIL	013562					
		INPUTS	014246					
		ACGOER	014536					
		KRAKER	015417					
		KUDER	016627					
AXPRSS	011566							
WXSYS	011562							
CLOCK	012013	PARX2	000105					
CLOCKF	012022							
REW INM	012160	PARX2	000124	000426				
INPUTC	012242	PARX2	000132	000136	000144	000150	000152	000154
			000163					
OUTPTC	012603	PARX2	000231	000233	000235	000237	000241	000242
			000252	000260	000264	000266	000270	000274
		KRAKER	015372	015353	015357			
ASIN	013176							
ACUS	013173	PARX2	000350					
SIN	013331	PARX2	000354					
COS	013334	PARX2	000357					
OUTPTB	013431	PARX2	000365	000371	000377	000402	000405	000411
			000422					
ENDFIL	013522	PARX2	000424					
BRSPRU.	014073							
FIZBAK.	014104							
POSFIL.	014142	OUTPTC	012637					
		ENDFIL	013547					
RUPRU.	014152							
DAT.	014176	INPUTC	012246					
		OUTPTC	012607					
CID1.	014040	REW INM	012207	012204	012175			
		OUTPTB	013500	013467	013506	013475	013447	

		ENDFIL	013554	013535	013541			
OPFN.	013573	SYSTEM	011474					
		INPUTC	012266					
		OUTPTC	012627					
		OUTPTR	013501					
		ENDFIL	013531					
SIO.	013712	INPUTC	012320					
		OUTPTC	012675					
		OUTPTR	013456					
IBFA	014174	INPUTC	012243					
		OUTPTC	012604					
IBFB	014175	INPUTC	012244					
		OUTPTC	012605					
CDC1	014200	CLOCK	012031					
INPUTS	014223	CLOCK	012040	012042	012044	012046	012050	012051
			012062	012064	012066	012070	012071	
COUNT	014524	CLOCK	012074					
ACGOER	014533	CLOCK	012111					
GETHA	014544	REWIND	012164					
		INPUTC	012254					
		OUTPTC	012615					
		OUTPTR	013462					
		ENDFIL	013525					
KRAKER	014564	INPUTC	012273	012250				
		INPUTS	014226	014242				
BCKA	015614	INPUTC	012317					
RDNX	015330	INPUTC	012315	012325	012332			
ARLI	015617	INPUTC	012262	012317	012313			
KUDER	015621	OUTPTC	012611	012646				
ARLO	017015	OUTPTC	012623	012647	012673			
WTNX	016603	OUTPTC	012710					

-----UNSATISFIED EXTERNALS-----

REFERENCES

```

SORT(1,6,180,,2,,18)
KEY(A,C,1,1)
KEY(A,C,11,1)
KEY(A,X,4,1)
KEY(A,F,6,1)
KEY(A,F,9,1)
KEY(A,F,12,1)
FILE(TAPE12,S,B,18,R,N)
FILE(TAPE11,O,B,18,R,N)
RECORD(I,F,180)
END

```

** INSERTIONS DURING INPUT *****0
** DELETIONS DURING INPUT *****0
** TOTAL RECORDS SORTED *****1041
** INSERTIONS DURING OUTPUT *****0
** DELETIONS DURING OUTPUT *****0
** TOTAL RECORDS OUTPUT *****1041
**END SORT RUN

Fortran Listing of PARX21

```

PROGRAM PARX21(INPUT,OUTPUT,PUNCH,TAPE5=INPUT,TAPE6=OUTPUT,
1          TAPE7=PUNCH,TAPE10,TAPE11,TAPE12,TAPE14)
000003 COMMON ANGRNG,ARRAY,CONF,IARRAY,IN,IOUT,LINE,OUT,PAGE,PAXANG,RAD,
1          REP1,REP2,TITLE(11,5,5),FCT14,FCT,NGR
000003 DIMENSION ARRAY(13),IARRAY(5),IOUT(4),OUT(21)
000003 INTEGER CONF,CTABLE(14),PAGE,REP1,REP2,FCT14,FCT
000003 REAL LPAREN
000003 DATA CTABLE /3H 15,3H 14,3H16A,3H16B,3H16C,3H 17,3H 18,3H 19,
1          3H 20,3H 21,3H 22,3H 23,3H 24,3H 25 /
000003 DATA BLANK,LPAREN,NO9,RPAREN/1H ,1H(,1H9,1H) /
000003 EQ IVALENCE (BLANK,IBLANK)
000003 FCT14 = 0
000004 FCT = 0
000005 C1 = 5.
000006 C2 = 10.
000010 C3 = 3.
000011 C4 = C1
000013 C5 = C3
000014 C6 = C1
000015 C7 = C3
000016 C8 = C3
000017 C9 = 2.0
000020 C10 = 6.025E+23 * 0.555E-24
000022 ANGRNG = 0.2
000023 DO 5 K = 1,4
000025 DO 5 J = 1,5
000026 READ(5,55) (TITLE(I,J,K),I=1,11)
000043 5 CONTINUE
000047 LINE = 0
000050 PAGE = 0
000051 REP1 = 1000
000052 REP2 = 1000
000053 PAXANG = 1000.
000054 RAD = 1000.
000055 IN = 11
000056 REWIND 12
000060 REWIND IN
000062 REWIND 10
000064 REWIND 14

```

```

C   IARRAY(1) = REPORT NO.
C   IARRAY(2) = REPORT NO. SUFFIX
C   IARRAY(3) = RUN NO.
C   IARRAY(4) = CONFIGURATION
C   IARRAY(5) = R OR THETA INDICATOR
C   ARAY( 1) = PAX ANGLE (DEGREES)
C   ARAY( 2) = DET CONV FACTOR
C   ARAY( 3) = PAX PWR CONV
C   ARAY( 4) = INPUT VALUE - EITHER RADIUS OR POLAR ANGLE
C   ARAY( 5) = CALCULATED VALUE - EITHER RADIUS OR POLAR ANGLE
C   ARAY( 6) = LINEAR NO. 1 CURRENT
C   ARAY( 7) = INPUT VALUE - EITHER ELEVATION OR CORE RAY
C   ARAY( 8) = CALCULATED VALUE - EITHER ELEVATION OR CORE RAY
C   ARAY(9) = TOTAL NUMBER OF COUNTS/DETECTION CURRENT
C   ARAY(10) = COUNTING TIME, POLAR ANGLE READOUT, OR BLANK
C   ARAY(11) = POLAR ANGLE READOUT, MEASUREMENT (ELAPSED) TIME, OR BLANK
C   ARAY(12) = PAX POWER
C   ARAY(13) = CALCULATED POLAR ANGLE

```

```

C   SORT ORDER = IARRAY(1),(2),(4), ARAY(1),(4),(7)
10  READ(IN) (IARRAY(I),I=1,5),(ARAY(I), I=1,13)
    IF (IARRAY(1).EQ.NO9.AND.IARRAY(2).EQ.NO9) GO TO 60
    IOUT(4) = 0
    DO 15 I = 17, 20
15  OUT(I) = 0.0

```

```

C   ARRANGE DATA SO THAT ARAY(4) = RAD, (5) = POL ANG, (7) = ELEV, (8) = RAD
000122  TEMP1 = ARAY(4)
000123  ARAY(4) = ARAY(5)
000124  ARAY(5) = TEMP1
000125  TEMP1 = ARAY(7)
000126  ARAY(7) = ARAY(8)
000127  ARAY(8) = TEMP1
000130  20  CALL COMPAR
000131  DO 25 I = 1,10,3
000133  OUT(I) = BLANK
000135  25  OUT(I+2) = BLANK
000137  IOUT(1) = IARRAY(3)

```

```

C   DETERMINE ALPHABETIC EQUIVALENT OF CONFIG. NO. AND STORE IN IOUT(2)
000141  DO 30 I = 1,14
000142  IF (IARRAY(4).NE.I) GO TO 30

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000143      IOUT(2) = CTABLE(I)
000145      GO TO 35
000145      30 CONTINUE
000147      IOUT(2) = IHLANK
C      FIX PAX ANGLE AND STORE IN IOUT(3)
000151      35 IOUT(3) = ARAY(1) + 0.5
C      INDICATE CALCULATED VALUES BY PARENTHESES
000154      I1 = 1
000155      IF (IARAY(5).EQ.2) I1 = 7
000160      OUT(I1) = LPAREN
000162      OUT(I1+2) = RPAREN
000164      OUT(I1+3) = LPAREN
000165      OUT(I1+5) = RPAREN
C      STORE RADIUS, ELEVATION, POLAR ANGLE, AND CORE RAY
000166      OUT(2) = ARAY(4)
000167      OUT(5) = ARAY(7)
000171      OUT(8) = ARAY(5)
000172      OUT(11) = ARAY(8)
000174      IF (REP1.NE.1) GO TO 40
C      STORE POL ANG TAPE RDOUT, PAX PWR, TOTAL NO. CTS., CT. TIME, + CONV FACTOR
000176      OUT(13) = ARAY(11)
000177      OUT(14) = ARAY(12)
000201      IOUT(4) = ARAY(9) + 0.5
000203      OUT(15) = ARAY(10)
000205      OUT(16) = ARAY(2)
C      CALCULATE TOTAL(U) FISS AND PCT. STD DEV
000206      OUT(17) = (ARAY(9)*ARAY(2))/(ARAY(10)*ARAY(12))
000211      TEMP1 = C2/SQRT(ARAY(9))
000215      TEMP2 = C1**2 + TEMP1**2 + C3**2 + C4**2
000222      OUT(18) = SQRT(TEMP2)
C      CALCULATE NEUTS CM2-SEC-W AND PCT. STD DEV
000225      OUT(19) = OUT(17) * (238./C10)
000230      TEMP = OUT(18)**2 + 25.
000232      OUT(20) = SQRT(TEMP)
000235      GO TO 50
C      REPORTS 2,3, AND 4
000235      40 CONTINUE
C      STORE POL ANG, PAX PWR, ELAPSED TIME, DET CURR, AND DET CON FACTOR
000235      OUT(13) = ARAY(10)
000237      OUT(14) = ARAY(12)
000240      OUT(15) = ARAY(11)
000242      OUT(16) = ARAY(9)

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000243      OUT(17) = ARAY(2)
C      CALCULATE RADS(C), RADS(AL), OR RADS(BE) AND PCT. STD DEV
000245      OUT(18) = (ARAY(2) * ARAY(9))/ARAY(12)
000247      TEMP = C1**2 + C3**2 + C5**2 + C6**2
000254      OUT(19) = SQRT(TEMP)
000257      GO TO 50
000257      45 CONTINUE
000257      50 CALL WRITER
000260      GO TO 10
000261      55 FORMAT(8A10)
000261      60 REWIND IN
000263      WRITE(10) (NO9,I=1,21)
000273      WRITE(14) (NO9,I=1,21)
000303      WRITE(12) (NO9,I=1,21)
000313      END FILE 10
000315      END FILE 12
000317      END FILE 14
000321      REWIND 10
000323      REWIND 12
000325      REWIND 14
000327      STOP
000331      END
  
```

PROGRAM LENGTH INCLUDING I/O BUFFERS
016665

FUNCTION ASSIGNMENTS

STATEMENT ASSIGNMENTS

10	-	000066	15	-	000117	20	-	000130	30	-	000145
35	-	000151	40	-	000235	45	-	000257	50	-	000257
55	-	000371	60	-	000261						

BLOCK NAMES AND LENGTHS

- 000512

VARIABLE ASSIGNMENTS

ANGRNG	-	000000C01	ARRAY	-	000001C01	BLANK	-	000424	CONF	-	000016C01
CTABLE	-	000425	C1	-	000446	C10	-	000457	C2	-	000447
C3	-	000450	C4	-	000451	C5	-	000452	C6	-	000453
C7	-	000454	C8	-	000455	C9	-	000456	FCT	-	000510C01
FCT14	-	000507C01	I	-	000462	IARRAY	-	000017C01	IBLANK	-	000474
IN	-	000024C01	IOUT	-	000025C01	II	-	000464	J	-	000461
K	-	000460	LINE	-	000031C01	LPAREN	-	000443	NO9	-	000444
OUT	-	000032C01	PAGE	-	000057C01	PAXANG	-	000060C01	RAD	-	000061C01
REP1	-	000062C01	REP2	-	000063C01	RPAREN	-	000445	TEMP	-	000466
TEMP1	-	000463	TEMP2	-	000465	TITLE	-	000064C01			

START OF CONSTANTS

000333

START OF TEMPORARIES

000374

START OF INDIRECTS

000417

UNUSED COMPILER SPACE

111300

```

SUBROUTINE COMPAR
COMMON  ANGRNG, ARAY, CONF, IARRAY, IN, IOUT, LINE, OUT, PAGE, PAXANG, RAD,
1      REP1, REP2, TITLE(11,5,4), FCT14, FCT, NGR
000002  DIMENSION  ARAY(13), IARRAY(5), IOUT(4), OUT(21)
000002  INTEGER    CONF, PAGE, REP1, REP2
000002  DIMENSION NO(5)
000002  DATA      NO/1H1,1H2,1H3,1H4,1H5/
C      IF THIS IS THE FIRST CALL TO COMPAR, SET POLAR ANGLE (POLANG) = 1000
000002  IF (REP1.EQ.1000) POLANG = 1000.0
C      FIND NUMERICAL EQUIVALENT OF TABLE NO., STORE IN ITEMP1
000006  DO 5 I = 1,5
000010  IF (IARRAY(I).NE.NO(I)) GO TO 5
000013  ITEMP1 = I
000014  GO TO 10
000014  5 CONTINUE
000016  ITEMP1 = I
C      CHECK FOR NEW TABLE
000017  10 IF (PAGE.EQ.0) GO TO 15
000020  IF (ITEMP1.EQ.REP1) GO TO 20
000022  15 PAGE = 0
000023  LINE = 0
C      STORE NEW REPORT NO.
000024  REP1 = ITEMP1
000025  REP2 = ITEMP2
000027  GO TO 25
C      CHECK FOR NEW CONFIGURATION
000027  20 IF (CONF.EQ.IARRAY(4)) GO TO 30
C      INDICATE CHANGE IN PRINTED OUTPUT BY A LINE OF ASTERISKS + 2 BLANK LINES
000031  WRITE(6, 55)
000035  LINE = LINE + 3
C      STORE NEW CONFIGURATION
000037  25 CONF = IARRAY(4)
000041  GO TO 35
C      CHECK FOR NEW PAX ANGLE
000041  30 IF (PAXANG.EQ.ARRAY(1)) GO TO 40
C      INDICATE CHANGE IN PRINTED OUTPUT BY 2 BLANK LINES
000043  WRITE(6, 60)
000047  LINE = LINE + 2
C      STORE NEW PAX ANGLE
000051  35 PAXANG = ARAY(1)
000053  GO TO 45

```

```

C      CHECK FOR CHANGE IN RADIUS IN RADIUS-ELEVATION INPUT OR
C      CHANGE IN POLAR ANGLE IN POLAR ANGLE-CORE RAY INPUT
000053 40 IF (IARAY(5).EQ.2.AND.ABS(RAD-ARAY(4)).LT.ANGRNG.OR.IARAY(5).EQ.1
      .AND.ABS(POLANG-ARAY(5)).LT.ANGRNG) GO TO 50
C      INDICATE CHANGE IN PRINTED OUTPUT BY 1 BLANK LINE
000102 WRITE(6, 65)
000105 LINE = LINE + 1
000110 45 RAD = ARAY(4)
000112 POLANG = ARAY(5)
000113 50 RETURN
000114 55 FORMAT(1H /1X,108(1H*)/)
000114 60 FORMAT(1H0)
000114 65 FORMAT(1H )
000114 END

```


SUBPROGRAM LENGTH
000154

FUNCTION ASSIGNMENTS

STATEMENT ASSIGNMENTS

5	-	000014	10	-	000017	15	-	000022	20	-	000027
25	-	000037	30	-	000041	35	-	000051	40	-	000053
45	-	000110	50	-	000113	55	-	000121	60	-	000124
65	-	000126									

BLOCK NAMES AND LENGTHS
- 000512

VARIABLE ASSIGNMENTS

ANGRNG	-	000000C01	ARRAY	-	000001C01	CONF	-	000016C01	I	-	000151
IARRAY	-	000017C01	IOUT	-	000025C01	ITEMP1	-	000152	ITEMP2	-	000153
LINE	-	000031C01	NO	-	000143	OUT	-	000032C01	PAGE	-	000057C01
PAXANG	-	000060C01	POLANG	-	000150	RAD	-	000061C01	REP1	-	000062C01
REP2	-	000063C01	TITLE	-	000064C01						

START OF CONSTANTS
000116

START OF TEMPORARIES
000130

START OF INDIRECTS
000142

UNUSED COMPILER SPACE
112400

```

SUBROUTINE WRITER
000002      COMMON      ANGRNG, ARAY, CONF, IARRAY, IN, IOUT, LINE, OUT, PAGE, PAXANG, RAD.
1          REP1, REP2, TITLE(11,5,5), FCT14, FCT, NGR
000002      DIMENSION ARAY(13), IARRAY(5), IOUT(4), OUT(21), NT(5)
000002      DATA NT /1H1, 1H2, 1H3, 1H4, 1H5 /

000002      INTEGER CONF, CTABLE(14), PAGE, REP1, REP2, FCT14, FCT, FR14, FR, FIGCODE
000002      K = REP1
000004      CALPA = ARAY(13)
000005      FIGCODE = IARRAY(4)
C          SHOULD A NEW PAGE BE STARTED
000007      IF( LINE .GT. 0 .AND. LINE .LT. 40) GO TO 25
C          INCREMENT PAGE COUNT AND REINITIALIZE LINE COUNT
000016      PAGE = PAGE + 1
000017      LINE = 0
C          WRITE APPROPRIATE HEADING FOR TABLE
000020      WRITE(6, 5) ( TITLE(I,1,K), I=1, 11)
000034      FORMAT(1H1, 11A10)
000034      LINE = LINE + 1
000036      IF(PAGE .GT. 1) GO TO 15
000041      DO 10 J=2, 5
000042      WRITE(6, 65) ( TITLE(I,J,K), I=1, 11)

000057      10 CONTINUE
000061      WRITE(6, 60)
000065      LINE = LINE + 7
000067      GO TO 20
000067      15 WRITE(6, 70)
000073      LINE = LINE + 3
000075      20 IF( REP1 .EQ. 1 ) WRITE(6, 75)
000103      IF( REP1 .EQ. 2 ) WRITE(6, 80)
000111      IF( REP1 .EQ. 3 ) WRITE(6, 85)
000117      IF( REP1 .EQ. 4 ) WRITE(6, 90)
000125      LINE = LINE + 4
000127      25 IF( REP1 .EQ. 1) WRITE(6, 100)
1          (IOUT(I), I=1, 3), (OUT(I), I=1, 7), CALPA, (OUT(I), I=9, 14), IOUT(4),
2          (OUT(I), I=15, 20)
000171      IF( REP1 .GT. 1 .AND. REP1 .LT. 5) WRITE(6, 105)
1          (IOUT(I), I=1, 3), (OUT(I), I=1, 7), CALPA, (OUT(I), I=9, 19)
000230      LINE = LINE + 1
000232      III = 20

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000233      IF(FIGCODE .EQ. 2) GO TO 45
000235      30 CONTINUE
000235      IF(FCT. EQ. 0) FR = REP1
000240      IF(FR .NE. REP1) GO TO 40
000242      FCT = 1
C      WRITE RECORD ON OUTPUT TAPE10(USED TO GENERATE GRAPHS)
000243      35 WRITE(10)      IARRAY(1), IARRAY(2), IARRAY(4), (IOUT(I), I=1,4), IARRAY(5),
1      OUT(2), OUT(5), OUT(8), OUT(11), (OUT(I), I=13,19), OUT(III), CALPA
GO TO 55
000307      40 CONTINUE
000310      NT1 = NT(FR)
000310      WRITE (10) (NT1, I=1, 21)
000313      FCT = 0
000323      GO TO 30
000324      45 CONTINUE
000325      IF(FCT14 .EQ. 0) FR14 = REP1
000325      IF(FR14 .NE. REP1) GO TO 50
000330      FCT14 = 1
C      TAPE 14 CONTAINS DATA FOR CONFIGURATION 14 ONLY
000333      WRITE(14)      IARRAY(1), IARRAY(2), IARRAY(4), (IOUT(I), I=1,4), IARRAY(5),
1      OUT(2), OUT(5), OUT(8), OUT(11), (OUT(I), I=13,19),
2      OUT(III), CALPA
GO TO 55
000377      50 CONTINUE
000400      NT1 = NT(FR14)
000400      WRITE (14) (NT1, I=1, 21)
000403      FCT14 = 0
000413      GO TO 45
000414      55 CONTINUE
000415      WRITE(12) IARRAY(1), IARRAY(2), IARRAY(4), (IOUT(I), I=1,4), IARRAY(5),
1      OUT(2), OUT(5), OUT(8), OUT(11), (OUT(I), I=13,20), CALPA
60 FORMAT(1H0)
000456      65 FORMAT(1H , 11A10)
000456      70 FORMAT(45X, 19HTABLE      CONTINUED //)
75 FORMAT(1X, 2HE5, 6X, 3HPAX, 2X, 3H***, 12X, 5HPOLAR, 2X, 6H**CORE, 2X, 7HPOL
1ANG, 2X, 3HPAX, 2X, 6HTOTAL , 5HCOUNT, 2X, 39HCONV FAC TOTAL (U) PCT. * NE
2UTS PCT. /1X, 44HPUN CON ANG RADIUS ELEVATN ANGLE RAY ,
363HTAPE POWER NO. TIME F/GM-SEC FISS STD CM2-SEC-W STD
4 /1X, 17HNO. FIG DEG (CM), 5X, 34H(CM) (DEG) (CM) READOUT (W)

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5.50H CTS. (SECS) CPS GM-SEC-W DEV E 1.4+MEV DEV /)

000456 80 FORMAT(1X,2HE5,7X,3HPAX,4X,3H***,13X,28HPOLAR **CORE POL ANG P
1X,11X,18HCHAMBER *CON FAC,14X,4HPCT./108H RUN CON ANG RADIUS
2 ELEVATN ANGLE RAY TAPE POWER FLAPSED CURRENT RADS(
3C) RADS(C) STD /108H NO. FIG DEG (CM) (CM) (DEG)
4 (CM) READOUT (W) TIME (AMPS) HR-AMP HR-W DE
5V /)

000456 85 FORMAT(1X,2HE5,7X,3HPAX,4X,3H***,13X,28HPOLAR **CORE POL ANG P
1X,11X,18HCHAMBER *CON FAC,14X,4HPCT./108H RUN CON ANG RADIUS
2 ELEVATN ANGLE RAY TAPE POWER FLAPSED CURRENT RADS(
3AL) RADS(AL) STD /108H NO. FIG DEG (CM) (CM) (DEG)
4 (CM) READOUT (W) TIME (AMPS) HR-AMP HR-W DE
5V /)

000456 90 FORMAT(1X,2HE5,7X,3HPAX,4X,3H***,13X,28HPOLAR **CORE POL ANG P
1X,11X,18HCHAMBER *CON FAC,14X,4HPCT./108H RUN CON ANG RADIUS
2 ELEVATN ANGLE RAY TAPE POWER ELAPSED CURRENT RADS(
3BE) RADS(HE) STD /108H NO. FIG DEG (CM) (CM) (DEG)
4 (CM) READOUT (W) TIME (AMPS) HR-AMP HR-W DE
5V /)

000456 100 FORMAT(1X,I3,1X,A3,1X,I3,1X,A1,F5.1,2A1,F6.1,A1,2(A1,F5.1,A1,1X),
1 F7.3,1X,F5.1,1X,I5,1X,F6.1,2(1X,E8.2),1X,F4.1,1X,E8.2,2X,F4.1)

000456 105 FORMAT(1X,I3,1X,A3,2X,I3,2X,A1,F5.1,A1,1X,A1,F6.1,A1,2(1X,A1,F5.1,
1A1),2X,F7.3,1X,F5.1,1X,F7.2,2(2X,E8.2),3X,E8.2,3X,F4.1)

000456 RETURN

000457 END

SUBPROGRAM LENGTH
001027

FUNCTION ASSIGNMENTS

STATEMENT ASSIGNMENTS

5	-	000463	15	-	000067	20	-	000075	25	-	000127
30	-	000235	35	-	000243	40	-	000310	45	-	000325
50	-	000400	55	-	000415	60	-	000471	65	-	000473
70	-	000476	75	-	000503	80	-	000553	85	-	000616
90	-	000661	100	-	000724	105	-	000742			

BLOCK NAMES AND LENGTHS
- 000512

VARIABLE ASSIGNMENTS

ARRAY	-	000001C01	CALPA	-	001022	CONF	-	000016C01	CTABLE	-	001000
FCT	-	000510C01	FCT14	-	000507C01	FIGCODE	-	001020	FR	-	001017
FR14	-	001016	I	-	001023	IARRAY	-	000017C01	III	-	001025
IOUT	-	000025C01	J	-	001024	K	-	001021	LINE	-	000031C01
NT	-	000773	NT1	-	001026	OUT	-	000032C01	PAGE	-	000057C01
REP1	-	000062C01	REP2	-	000063C01	TITLE	-	000064C01			

START OF CONSTANTS
000461

START OF TEMPORARIES
000757

START OF INDIRECTS
000772

UNUSED COMPILER SPACE
110600

CORE MAP 16.17.38. NORMAL CONTROL 000100 0
 ---TIME---LOAD MODE ---L1---L2---TYPE-----USER---+---CALL-----FWA LOAD---LW
 FWA LOADER 144564 FWA TABLES 43667

--PROGRAM---ADDRESS-- --Labeled---COMMON--

PARX21	000100		
COMPAR	016765		
WRITER	017141		
SYSTEM	020170	SCOPE2	020170
INPUTC	021243		
REWIND	021604		
INPUTH	021664		
SQRT	022020		
OUTPTH	022063		
ENDFIL	022155		
OUTPTC	022225		
SIO\$	022617		
GETBA	023225		
KRAKER	023244		
KODER	024301		

--ENTRY---ADDRESS--

REFERENCES

PARX21	000101	PARX21	000230
COMPAR	016766	PARX21	000357
WRITER	017142	PARX21	000102
QENTRY	020171	INPUTC	021310
SYSTEM	020427	REWIND	021654
		INPUTH	021724
		SQRT	022045
		OUTPTH	022145
		ENDFIL	022215
		OUTPTC	022246
		KRAKER	024077
		KODER	025307
SYSTEMC	020344	PARX21	000432
SYSTEMP	020374	COMPAR	017102
END	020270	WRITER	017621
STOP	020317	PARX21	000430
EXIT	020311		
ABNORML	020327	INPUTC	021311

ABNORML	020403	INPUTC	021365						
		REW INM	021731						
		INPUTB	022001						
		OUTPTB	022222						
		ENDFIL	022272						
		OUTPTC	022323						
		KRAKER	024154						
		KUDER	025364						
WXPRSS	021073								
WXPSYS	021067								
INPUTC	021322	PARX21	000127	000137	000142				
REW INM	021661	PARX21	000157	000161	000163	000165	000362	000422	000424
			000426						
INPUTB	021742	PARX21	000167	000173	000201	000204			
SQRT	022075	PARX21	000312	000323	000333	000355			
OUTPTH	022141	PARX21	000364	000367	000372	000374	000377	000402	000404
			000407	000412					
		WRITER	017405	017407	017411	017413	017417	017423	017425
			017427	017431	017433	017437	017444	017446	017447
			017455	017460	017463	017475	017477	017501	017503
			017507	017513	017515	017517	017521	017523	017527
			017534	017536	017537	017545	017550	017553	017557
			017561	017563	017565	017571	017575	017577	017601
			017603	017605	017611	017615	017616		
ENDFIL	022232	PARX21	000414	000416	000420				
OUTPTC	022304	COMPAR	017020	017021	017032	017033	017071	017072	
		WRITER	017163	017171	017174	017204	017214	017217	017224
			017225	017232	017233	017242	017243	017250	017251
			017256	017257	017264	017265	017274	017300	017306
			017312	017316	017322	017326	017331	017343	017347
			017355	017361	017365	017370			
		KRAKER	024127	024110	024114				
BKSPRU.	023175								
FILZRAK.	023206								
POSFIL.	023244	ENDFIL	022257						
		OUTPTC	022340						
RDPRU.	023254								
DAT.	023300	INPUTC	021326						

CIOI.	023066	REWIND	021634	021631	021622		
		INPUTB	021735	021743	021750	021710	
		OUTPTB	022134	022123	022142	022131	022103
		ENDFIL	022210	022171	022175		
OPEN.	022621	SYSTEM	020725				
		INPUTC	021272				
		INPUTB	021770				
		OUTPTB	022135				
		ENDFIL	022165				
		OUTPTC	022254				
SIO.	022740	INPUTC	021324				
		INPUTB	021717				
		OUTPTB	022112				
		OUTPTC	022322				
IBFA	023222	INPUTC	021247				
		OUTPTC	022231				
IBFB	023223	INPUTC	021250				
		OUTPTC	022232				
GETBA	023225	INPUTC	021260				
		REWIND	021611				
		INPUTB	021755				
		OUTPTB	022116				
		ENDFIL	022161				
		OUTPTC	022242				
KRAKER	023245	INPUTC	021277	021254			
BCKA	024275	INPUTC	021323				
RDNX	024011	INPUTC	021321	021331	021336		
ARLI	024300	INPUTC	021266	021323	021317		
KODER	024302	OUTPTC	022236	022273			
ARLO	025476	OUTPTC	022250	022274	022320		
WTIX	025264	OUTPTC	022335				

-----UNSATISFIED EXTERNALS-----

REFERENCES

Sample Output from PARX21

TABLE 1 EXTERNAL ENVIRONMENTAL RESPONSE OF A CD-COVERED U-238(2PPM U-235) FISSION CHAMBER IN A BORAL BOX

* NEUTS/CM²-SEC-W = (FISS/GM-SEC-W)*238/(6.025E+23*0.555E-24)

ASSUMED THAT BORAL AND CD ELIMINATES ALL U-235 RESPONSE

** DISTANCE FROM CORE CENTER

*** RADIAL DISTANCE FROM AXIAL CENTERLINE

ES RUN NO.	PAX CON FIG	ANG DEG	*** RADIUS (CM)	ELEVATN (CM)	POLAR ANGLE (DEG)	**CORE RAY (CM)	POL ANG TAPE READOUT	PAX POWER (W)	TOTAL COUNT NO. CTS.	TIME (SECS)	CONV FAC F/GM-SEC CPS	TOTAL (U) FISS GM-SEC-W	PCT. STD DEV	* NEUTS CM ² -SEC-W E 1.4+MEV	PCT. STD DEV
107	14	270	(.6)	(152.4)	.2	152.4	119.625	683.8	5354	46.9	1.35E+00	2.25E-01	7.8	1.60E+02	9.3
107	14	270	(.3)	(167.6)	.1	167.6	120.375	683.8	5129	39.6	1.35E+00	2.56E-01	7.8	1.82E+02	9.3
107	14	270	(.4)	(182.9)	.1	182.9	121.625	683.8	5062	34.8	1.35E+00	2.87E-01	7.8	2.04E+02	9.3
107	14	270	(.2)	(198.1)	.1	198.1	123.062	683.8	5057	30.9	1.35E+00	3.23E-01	7.8	2.30E+02	9.3
107	14	270	(.1)	(213.4)	.0	213.4	124.812	683.8	5177	29.9	1.35E+00	3.42E-01	7.8	2.43E+02	9.3
107	14	270	(-.3)	(274.3)	-.1	274.3	134.500	683.8	5099	28.3	1.35E+00	3.56E-01	7.8	2.53E+02	9.3
107	14	270	(-.9)	(335.3)	-.1	335.3	147.625	683.8	5125	31.1	1.35E+00	3.25E-01	7.8	2.32E+02	9.3
107	14	270	(-1.0)	(396.2)	-.1	396.2	163.500	683.8	5061	32.7	1.35E+00	3.06E-01	7.8	2.17E+02	9.3
107	14	270	(-.6)	(457.2)	-.1	457.2	181.375	683.8	5126	37.6	1.35E+00	2.69E-01	7.8	1.92E+02	9.3
107	14	270	.2	474.0	(.0)	(474.0)	186.750	683.8	10186	77.3	1.35E+08	2.60E+07	7.7	1.85E+10	9.2
107	14	270	(-.1)	(518.2)	-.0	518.2	200.625	683.8	5108	43.2	1.35E+00	2.33E-01	7.8	1.66E+02	9.3
107	14	270	(.9)	(574.0)	.1	574.0	219.250	683.8	5120	47.1	1.35E+00	2.15E-01	7.8	1.53E+02	9.3
107	14	270	(26.9)	(150.0)	10.2	152.4	131.875	683.8	5042	47.9	1.35E+08	2.08E+07	7.8	1.48E+10	9.3
107	14	270	(29.5)	(165.0)	10.1	167.6	133.625	683.8	5062	41.8	1.35E+08	2.39E+07	7.8	1.70E+10	9.3
107	14	270	(31.7)	(180.1)	10.0	182.9	135.500	683.8	5059	36.8	1.35E+08	2.71E+07	7.8	1.93E+10	9.3
107	14	270	(34.3)	(195.1)	10.0	198.1	137.750	683.8	5211	37.1	1.35E+08	2.77E+07	7.8	1.97E+10	9.3
107	14	270	(36.9)	(210.1)	10.0	213.4	140.250	683.8	5084	33.3	1.35E+08	3.01E+07	7.8	2.15E+10	9.3
107	14	270	(46.7)	(270.3)	9.8	274.3	152.125	683.8	5301	31.3	1.35E+08	3.34E+07	7.8	2.38E+10	9.3
107	14	270	(56.5)	(330.5)	9.7	335.3	166.750	683.8	5055	30.9	1.35E+08	3.23E+07	7.8	2.30E+10	9.3
107	14	270	(66.5)	(390.6)	9.7	396.2	183.500	683.8	5804	39.2	1.35E+08	2.92E+07	7.8	2.08E+10	9.3
107	14	270	(77.1)	(450.7)	9.7	457.2	201.937	683.8	5291	39.7	1.35E+08	2.63E+07	7.8	1.87E+10	9.3
107	14	270	(87.7)	(510.7)	9.7	518.2	221.500	683.8	5034	44.1	1.35E+08	2.25E+07	7.8	1.60E+10	9.3
107	14	270	(98.2)	(565.6)	9.8	574.0	240.312	683.8	5052	47.6	1.35E+08	2.10E+07	7.8	1.49E+10	9.3
107	14	270	31.5	473.9	(3.8)	(475.0)	195.125	683.8	10126	78.3	1.35E+08	2.55E+07	7.7	1.82E+10	9.2

TABLE 1 EXTERNAL ENVIRONMENTAL RESPONSE OF A CD-COVERED U-238(2PPM U-235) FISSION CHAMBER IN A BORAL BOX
TABLE CONTINUED

E5 RUN NO.	PAX CON FIG	PAX ANG DEG	*** RADIUS (CM)	ELEVATN (CM)	POLAR ANGLE (DEG)	**CORE RAY (CM)	POL ANG TAPE READOUT	PAX POW(R (W)	TOTAL NO. CTS.	COUNT TIME (SECS)	CONV FAC F/GM-SEC CPS	TOTAL(U) FISS GM-SEC-W	PCT. STD DEV	* NEUTS CM2-SEC-W E 1.4+MEV	PCT. STD DEV
107	14	270	(53.0)	(142.9)	20.3	152.4	143.937	683.8	9452	100.0	1.35E+08	1.87E+07	7.7	1.33E+10	9.2
107	14	270	(58.0)	(157.3)	20.2	167.6	146.375	683.8	10069	89.9	1.35E+08	2.21E+07	7.7	1.57E+10	9.2
107	14	270	(63.2)	(171.6)	20.2	182.9	149.125	680.4	10134	79.5	1.35E+08	2.53E+07	7.7	1.80E+10	9.2
107	14	270	(68.2)	(186.0)	20.1	198.1	152.000	677.0	10031	72.3	1.35E+08	2.77E+07	7.7	1.97E+10	9.2
107	14	270	(73.1)	(200.4)	20.0	213.4	155.031	680.4	10160	68.5	1.35E+08	2.94E+07	7.7	2.09E+10	9.2
107	14	270	(93.5)	(257.9)	19.9	274.3	169.062	683.8	10609	66.8	1.35E+08	3.14E+07	7.7	2.23E+10	9.2
107	14	270	(113.5)	(315.5)	19.8	335.3	185.125	683.8	8073	53.5	1.35E+08	2.98E+07	7.8	2.12E+10	9.2
107	14	270	(133.8)	(373.0)	19.7	396.2	202.937	683.8	5111	36.2	1.35E+08	2.79E+07	7.8	1.98E+10	9.3
107	14	270	(154.3)	(430.4)	19.7	457.2	222.000	683.8	5027	41.0	1.35E+08	2.42E+07	7.8	1.72E+10	9.3
107	14	270	(175.5)	(487.5)	19.8	518.2	242.125	683.8	5038	45.5	1.35E+08	2.19E+07	7.8	1.56E+10	9.3
107	14	270	(195.3)	(539.8)	19.9	574.0	261.250	683.8	5058	49.4	1.35E+08	2.02E+07	7.8	1.44E+10	9.3
107	14	270	61.4	474.0	(7.4)	(478.0)	203.625	683.8	10126	79.6	1.35E+08	2.51E+07	7.7	1.79E+10	9.2
107	14	270	(84.9)	(144.5)	30.4	167.6	158.437	680.4	10090	90.7	1.35E+08	2.21E+07	7.7	1.57E+10	9.2
107	14	270	(92.5)	(157.7)	30.4	182.9	161.812	683.8	10088	75.4	1.35E+08	2.64E+07	7.7	1.88E+10	9.2
107	14	270	(100.2)	(170.9)	30.4	198.1	165.375	680.4	10600	75.3	1.35E+08	2.79E+07	7.7	1.99E+10	9.2
107	14	270	(107.7)	(184.2)	30.3	213.4	169.000	680.4	10057	66.5	1.35E+08	3.00E+07	7.7	2.14E+10	9.2
107	14	270	(135.6)	(238.5)	29.6	274.3	184.125	680.4	10034	63.9	1.35E+08	3.12E+07	7.7	2.22E+10	9.2
107	14	270	(167.2)	(290.6)	29.9	335.3	202.250	683.3	10040	67.6	1.35E+08	2.93E+07	7.7	2.09E+10	9.2
107	14	270	(197.3)	(343.6)	29.9	396.2	221.125	683.8	10283	74.0	1.35E+08	2.74E+07	7.7	1.95E+10	9.2
107	14	270	(227.7)	(396.5)	29.9	457.2	241.000	683.8	10243	80.2	1.35E+08	2.52E+07	7.7	1.79E+10	9.2
107	14	270	(258.8)	(448.9)	30.0	518.2	261.750	683.8	10112	91.5	1.35E+08	2.18E+07	7.7	1.55E+10	9.2
107	14	270	(287.6)	(496.8)	30.1	574.0	281.312	687.3	10023	99.1	1.35E+08	1.99E+07	7.7	1.41E+10	9.2
107	14	270	92.2	473.9	(11.0)	(482.8)	212.687	680.4	10101	83.6	1.35E+08	2.40E+07	7.7	1.71E+10	9.2
107	14	270	122.4	474.0	(14.5)	(489.6)	222.000	670.1	11508	96.3	1.35E+08	2.41E+07	7.7	1.71E+10	9.2
107	14	270	150.4	474.7	(17.6)	(498.0)	231.000	673.5	10286	89.4	1.35E+08	2.31E+07	7.7	1.64E+10	9.2
107	14	270	184.0	473.7	(21.2)	(508.2)	241.625	683.8	10047	87.2	1.35E+08	2.27E+07	7.7	1.62E+10	9.2

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TABLE 1 EXTERNAL ENVIRONMENTAL RESPONSE OF A CO-COVERED U-238 (2PPM U-235) FISSION CHAMBER IN A BORAL BOX
TABLE CONTINUED

ES RUN NO.	PAX CON FIG	*** ANG DEG	RADIUS (CM)	ELEVATN (CM)	POLAR ANGLE (DEG)	**CORE RAY (CM)	POL ANG TAPE READOUT	PAX POWER (W)	TOTAL COUNT NO. CTS.	CONV FAC TIME (SECS)	F/GM-SEC CPS	TOTAL (U) FISS GM-SEC-W	PCT. STD DEV	* NEUTS CM2-SEC-W E 1.4-MEM	PCT. STD DEV
107	14	270	213.3	474.1	(24.2)	(519.9)	251.437	683.8	10047	90.4	1.35E+08	2.19E+07	7.7	1.56E+10	9.2
107	14	270	243.8	474.1	(27.2)	(533.1)	261.687	680.4	10126	94.5	1.35E+08	2.13E+07	7.7	1.51E+10	9.2
107	14	270	274.4	474.0	(30.1)	(547.7)	272.125	680.4	10136	96.4	1.35E+08	2.09E+07	7.7	1.48E+10	9.2

127	16A	270	(.1)	(152.4)	.0	152.4	119.375	683.8	41904	21.3	1.43E+00	4.11E+00	7.7	2.93E+03	9.2
127	16A	270	(-.2)	(167.6)	-.1	167.6	120.125	683.8	38207	23.9	1.43E+00	3.34E+00	7.7	2.38E+03	9.2
127	16A	270	(-.3)	(182.9)	-.1	182.9	121.312	683.8	26847	20.7	1.43E+00	2.71E+00	7.7	1.93E+03	9.2
127	16A	270	(-.5)	(198.1)	-.1	198.1	122.750	683.8	23069	21.6	1.43E+00	2.23E+00	7.7	1.59E+03	9.2
127	16A	270	(-.7)	(213.4)	-.2	213.4	124.500	683.8	20506	22.1	1.43E+00	1.94E+00	7.7	1.38E+03	9.2
127	16A	270	(-1.1)	(274.3)	-.2	274.3	134.187	683.8	11912	21.1	1.43E+00	1.18E+00	7.7	8.40E+02	9.2
127	16A	270	(-1.8)	(335.3)	-.3	335.3	147.312	683.8	10579	25.7	1.43E+00	8.61E-01	7.7	6.13E+02	9.2
127	16A	270	(-2.0)	(396.2)	-.3	396.2	163.187	683.8	10574	33.2	1.43E+00	6.66E-01	7.7	4.74E+02	9.2
127	16A	270	(-1.8)	(457.2)	-.2	457.2	181.062	683.8	10538	41.0	1.43E+00	5.37E-01	7.7	3.83E+02	9.2
127	16A	270	.4	474.0	(.0)	(474.0)	186.812	683.8	10662	42.8	1.43E+00	5.21E-01	7.7	3.71E+02	9.2
127	16A	270	(-1.7)	(518.2)	-.2	518.2	200.250	683.8	10261	47.8	1.43E+00	4.49E-01	7.7	3.19E+02	9.2
127	16A	270	(-.8)	(574.0)	-.1	574.0	218.875	683.8	10532	55.1	1.43E+00	4.00E-01	7.7	2.84E+02	9.2
127	16A	270	(26.6)	(150.1)	10.1	152.4	131.750	683.8	43690	23.6	1.43E+00	3.87E+00	7.7	2.76E+03	9.2
127	16A	270	(29.0)	(165.1)	10.0	167.6	133.437	683.8	36475	24.6	1.43E+00	3.10E+00	7.7	2.21E+03	9.2
127	16A	270	(31.5)	(180.2)	9.9	182.9	135.375	683.8	38273	31.8	1.43E+00	2.52E+00	7.7	1.79E+03	9.2
127	16A	270	(34.0)	(195.2)	9.9	198.1	137.625	683.8	15655	15.6	1.43E+00	2.10E+00	7.7	1.49E+03	9.2
127	16A	270	(36.4)	(210.2)	9.8	213.4	140.062	683.8	21090	24.7	1.43E+00	1.79E+00	7.7	1.27E+03	9.2
127	16A	270	(46.4)	(270.4)	9.7	274.3	152.000	683.8	16044	28.7	1.43E+00	1.17E+00	7.7	8.32E+02	9.2
127	16A	270	(56.4)	(330.5)	9.7	335.3	166.687	683.8	11854	29.0	1.43E+00	8.55E-01	7.7	6.08E+02	9.2
127	16A	270	(62.9)	(391.2)	9.1	396.2	182.437	683.8	10371	32.3	1.43E+00	6.71E-01	7.7	4.78E+02	9.2
127	16A	270	(77.3)	(450.6)	9.7	457.2	202.000	683.8	10369	40.8	1.43E+00	5.31E-01	7.7	3.78E+02	9.2
127	16A	270	(87.7)	(510.7)	9.7	518.2	221.500	683.8	11230	52.1	1.43E+00	4.51E-01	7.7	3.21E+02	9.2

TABLE 2 EXTERNAL ENVIRONMENTAL RESPONSE OF A CARBON WALL-CO2-GAS ION CHAMBER

* CALIBRATED BY CO-60 PHOTONS
 ** DISTANCE FROM CORE CENTER
 *** RADIAL DISTANCE FROM AXIAL CENTERLINE
 () DENOTES CALCULATED VALUE

E5 RUN NO.	CON FIG	PAX ANG DEG	*** RADIUS (CM)	ELEVATN (CM)	POLAR ANGLE (DEG)	**CORE RAY (CM)	POL ANG TAPE READOUT	PAX POWER (W)	ELAPSED TIME	CHAMBER CURRENT (AMPS)	*CON FAC RADS(C) HR-AMP	RADS(C) HR-W	PCT. STD DEV
106	14	270	(.5)	(148.0)	.2	148.0	119.375	683.8	116.40	1.50E-11	2.44E+11	5.35E-03	8.2
106	14	270	(.5)	(152.4)	.2	152.4	119.562	683.8	90.10	1.58E-11	2.44E+11	5.64E-03	8.2
106	14	270	(.3)	(167.6)	.1	167.6	120.375	683.8	92.20	1.88E-11	2.44E+11	6.71E-03	8.2
106	14	270	(.2)	(182.9)	.1	182.9	121.562	683.8	93.70	2.15E-11	2.44E+11	7.67E-03	8.2
106	14	270	(.1)	(198.1)	.0	198.1	123.000	683.8	94.80	2.33E-11	2.44E+11	8.31E-03	8.2
106	14	270	(-.1)	(213.4)	-.0	213.4	124.750	683.8	95.50	2.47E-11	2.44E+11	8.81E-03	8.2
106	14	270	(-.6)	(274.3)	-.1	274.3	134.375	683.8	97.70	2.58E-11	2.44E+11	9.21E-03	8.2
106	14	270	(-1.1)	(335.3)	-.2	335.3	147.562	683.8	99.70	2.43E-11	2.44E+11	8.67E-03	8.2
106	14	270	(.3)	(396.2)	.0	396.2	163.875	683.8	101.50	2.23E-11	2.44E+11	7.96E-03	8.2
106	14	270	(-1.1)	(457.2)	-.1	457.2	181.250	683.8	103.20	2.00E-11	2.44E+11	7.14E-03	8.2
106	14	270	.2	474.0	(.0)	(474.0)	186.750	683.8	8.10	2.00E-11	2.44E+11	7.14E-03	8.2
106	14	270	(-.6)	(518.2)	-.1	518.2	200.500	683.8	105.30	1.78E-11	2.44E+11	6.35E-03	8.2
106	14	270	(-.2)	(574.0)	-.0	574.0	219.000	683.8	106.90	1.63E-11	2.44E+11	5.82E-03	8.2
106	14	270	(26.3)	(148.0)	10.1	150.3	131.562	683.8	119.30	1.44E-11	2.44E+11	5.14E-03	8.2
106	14	270	(26.9)	(150.0)	10.2	152.4	131.875	683.8	87.60	1.48E-11	2.44E+11	5.28E-03	8.2
106	14	270	(29.3)	(165.1)	10.1	167.6	133.562	683.8	86.60	1.78E-11	2.44E+11	6.35E-03	8.2
106	14	270	(31.7)	(180.1)	10.0	182.9	135.500	683.8	84.60	2.03E-11	2.44E+11	7.24E-03	8.2
106	14	270	(34.3)	(195.1)	10.0	198.1	137.750	683.8	83.20	2.22E-11	2.44E+11	7.92E-03	8.2
106	14	270	(58.6)	(142.7)	48.0	213.4	190.187	687.3	81.70	2.37E-11	2.44E+11	8.41E-03	8.2
106	14	270	(46.6)	(270.3)	9.8	274.3	152.062	683.8	79.60	2.54E-11	2.44E+11	9.06E-03	8.2
106	14	270	(56.4)	(330.5)	9.7	335.3	166.687	683.8	77.50	2.39E-11	2.44E+11	8.53E-03	8.2
106	14	270	(66.5)	(390.6)	9.7	396.2	183.500	683.8	75.60	2.17E-11	2.44E+11	7.74E-03	8.2
106	14	270	(76.8)	(450.7)	9.7	457.2	201.875	687.3	73.60	1.97E-11	2.44E+11	6.99E-03	8.2
106	14	270	(87.7)	(510.7)	9.7	518.2	221.500	683.8	71.70	1.77E-11	2.44E+11	6.32E-03	8.2
106	14	270	(97.9)	(565.6)	9.8	574.0	240.250	683.8	70.00	1.63E-11	2.44E+11	5.82E-03	8.2

TABLE 2 EXTERNAL ENVIRONMENTAL RESPONSE OF A CARBON WALL-CO₂-GAS ION CHAMBER
TABLE CONTINUED

E5 RUN NO.	CON FIG	PAX ANG DEG	*** RADIUS (CM)	ELEVATN (CM)	POLAR ANGLE (DEG)	**CORE RAY (CM)	POL ANG TAPE READOUT	PAX POWER (W)	ELAPSED TIME	CHAMBER CURRENT (AMPS)	*CON FAC RADS(C) HR-AMP	RADS(C) HR-W	PCT. STD. DEV
106	14	270	31.3	474.0	(3.8)	(475.0)	195.062	683.8	13.00	1.97E-11	2.44E+11	7.03E-03	8.2
106	14	270	(50.9)	(147.9)	19.0	156.4	143.000	683.8	122.00	1.55E-11	2.44E+11	5.53E-03	8.2
106	14	270	(52.9)	(142.9)	20.3	152.4	143.875	683.8	45.80	1.43E-11	2.44E+11	5.10E-03	8.2
106	14	270	(58.0)	(157.3)	20.2	167.6	146.375	683.8	47.70	2.03E-11	2.44E+11	7.24E-03	8.2
106	14	270	(63.2)	(171.6)	20.2	182.9	149.125	683.8	48.60	2.47E-11	2.44E+11	8.81E-03	8.2
106	14	270	(68.2)	(186.0)	20.1	198.1	152.000	683.8	51.00	2.60E-11	2.44E+11	9.28E-03	8.2
106	14	270	(73.2)	(200.4)	20.1	213.4	155.062	683.8	53.70	2.65E-11	2.44E+11	9.46E-03	8.2
106	14	270	(93.6)	(258.0)	19.9	274.5	169.125	683.8	56.70	2.70E-11	2.44E+11	9.63E-03	8.2
106	14	270	(113.6)	(315.6)	19.8	335.4	185.187	683.8	59.20	2.50E-11	2.44E+11	8.92E-03	8.2
106	14	270	(133.6)	(373.0)	19.7	396.2	202.875	683.8	61.70	2.25E-11	2.44E+11	8.03E-03	8.2
106	14	270	(154.3)	(430.4)	19.7	457.2	222.000	683.8	63.70	2.04E-11	2.44E+11	7.28E-03	8.2
106	14	270	(175.5)	(487.5)	19.8	518.2	242.125	687.3	66.00	1.83E-11	2.44E+11	6.50E-03	8.2
106	14	270	(195.3)	(539.8)	19.9	574.0	261.250	687.3	68.10	1.67E-11	2.44E+11	5.93E-03	8.2
106	14	270	60.9	474.1	(7.3)	(478.0)	203.500	683.8	17.10	1.95E-11	2.44E+11	6.96E-03	8.2
106	14	270	(76.2)	(147.5)	27.3	166.1	154.500	683.8	124.40	3.00E-11	2.44E+11	1.07E-02	8.2
106	14	270	(85.1)	(144.4)	30.5	167.6	158.500	683.8	42.80	3.80E-11	2.44E+11	1.36E-02	8.2
106	14	270	(92.5)	(157.7)	30.4	182.9	161.812	683.8	42.00	3.75E-11	2.44E+11	1.34E-02	8.2
106	14	270	(100.1)	(171.0)	30.3	198.1	165.312	683.8	41.30	3.75E-11	2.44E+11	1.34E-02	8.2
106	14	270	(107.7)	(184.2)	30.3	213.4	169.000	683.8	40.40	3.70E-11	2.44E+11	1.32E-02	8.2
106	14	270	(137.7)	(237.3)	30.1	274.3	184.875	683.8	38.40	3.25E-11	2.44E+11	1.16E-02	8.2
106	14	270	(167.6)	(290.4)	30.0	335.3	202.375	683.8	36.60	2.85E-11	2.44E+11	1.02E-02	8.2
106	14	270	(197.3)	(343.6)	29.9	396.2	221.125	683.8	34.80	2.50E-11	2.44E+11	8.92E-03	8.2
106	14	270	(228.0)	(396.3)	29.9	457.2	241.062	683.8	33.00	2.22E-11	2.44E+11	7.92E-03	8.2
106	14	270	(259.0)	(448.8)	30.0	518.2	261.812	683.8	31.50	1.96E-11	2.44E+11	6.99E-03	8.2
106	14	270	(287.6)	(496.8)	30.1	574.0	281.312	683.8	29.60	1.78E-11	2.44E+11	6.35E-03	8.2
106	14	270	(99.8)	(147.9)	34.0	178.4	165.000	683.8	126.30	5.00E-11	2.44E+11	1.78E-02	8.2

TABLE 3 EXTERNAL ENVIRONMENTAL RESPONSE OF AN ALUMINUM BRAGG-GRAY CHAMBER
 * CALIBRATED BY CO-60 PHOTONS
 ** DISTANCE FROM CORE CENTER
 *** RADIAL DISTANCE FROM AXIAL CENTERLINE
 () DENOTES CALCULATED VALUE

E5 RUN NO.	CON FIG	PAX ANG DEG	*** RADIUS (CM)	ELEVATN (CM)	POLAR ANGLE (DEG)	**CORE RAY (CM)	POL ANG TAPE READOUT	PAX POWER (W)	ELAPSED TIME	CHAMBER CURRENT (AMPS)	*CON FAC RADS(AL) HR-AMP	RADS(AL) HR-W	PCT. STD DEV
106	14	270	(.5)	(148.0)	.2	148.0	119.375	683.8	116.40	6.80E-13	9.43E+12	9.38E-03	8.2
106	14	270	(.5)	(152.4)	.2	152.4	119.562	683.8	90.10	4.95E-13	9.43E+12	6.83E-03	8.2
106	14	270	(.3)	(167.6)	.1	167.6	120.375	683.8	92.20	5.60E-13	9.43E+12	7.72E-03	8.2
106	14	270	(.2)	(182.9)	.1	182.9	121.562	683.8	93.70	6.20E-13	9.43E+12	8.55E-03	8.2
106	14	270	(.1)	(198.1)	.0	198.1	123.000	683.8	94.80	6.70E-13	9.43E+12	9.24E-03	8.2
106	14	270	(-.1)	(213.4)	-.0	213.4	124.750	683.8	95.50	7.10E-13	9.43E+12	9.79E-03	8.2
106	14	270	(-.6)	(274.3)	-.1	274.3	134.375	683.8	97.70	7.85E-13	9.43E+12	1.08E-02	8.2
106	14	270	(-1.1)	(335.3)	-.2	335.3	147.562	683.8	99.70	7.95E-13	9.43E+12	1.10E-02	8.2
106	14	270	(.3)	(396.2)	.0	396.2	163.875	683.8	101.50	7.70E-13	9.43E+12	1.06E-02	8.2
106	14	270	(-1.1)	(457.2)	-.1	457.2	181.250	683.8	103.20	7.20E-13	9.43E+12	9.93E-03	8.2
106	14	270	.2	474.0	(.0)	(474.0)	186.750	683.8	8.10	5.90E-13	9.43E+12	8.14E-03	8.2
106	14	270	(-.6)	(518.2)	-.1	518.2	200.500	683.8	105.30	6.60E-13	9.43E+12	9.10E-03	8.2
106	14	270	(-.2)	(574.0)	-.0	574.0	219.000	683.8	106.90	6.20E-13	9.43E+12	8.55E-03	8.2
106	14	270	(26.3)	(148.0)	10.1	150.3	131.562	683.8	119.30	5.70E-13	9.43E+12	7.86E-03	8.2
106	14	270	(26.9)	(150.0)	10.2	152.4	131.875	683.8	87.60	5.05E-13	9.43E+12	6.96E-03	8.2
106	14	270	(29.3)	(165.1)	10.1	167.6	133.562	683.8	86.60	5.90E-13	9.43E+12	8.14E-03	8.2
106	14	270	(31.7)	(180.1)	10.0	182.9	135.500	683.8	84.60	6.60E-13	9.43E+12	9.10E-03	8.2
106	14	270	(34.3)	(195.1)	10.0	198.1	137.750	683.8	83.20	7.40E-13	9.43E+12	1.02E-02	8.2
106	14	270	(36.7)	(210.2)	9.9	213.4	140.187	687.3	81.70	7.68E-13	9.43E+12	1.05E-02	8.2
106	14	270	(46.6)	(270.3)	9.8	274.3	152.062	683.8	79.60	7.93E-13	9.43E+12	1.09E-02	8.2
106	14	270	(56.4)	(330.5)	9.7	335.3	166.687	683.8	77.50	7.35E-13	9.43E+12	1.01E-02	8.2
106	14	270	(66.5)	(390.6)	9.7	396.2	183.500	683.8	75.60	6.70E-13	9.43E+12	9.24E-03	8.2
106	14	270	(76.8)	(450.7)	9.7	457.2	201.875	687.3	73.60	6.19E-13	9.43E+12	8.49E-03	8.2
106	14	270	(87.7)	(510.7)	9.7	518.2	221.500	683.8	71.70	5.63E-13	9.43E+12	7.76E-03	8.2
106	14	270	(97.9)	(565.6)	9.8	574.0	240.250	683.8	70.00	5.55E-13	9.43E+12	7.65E-03	8.2

TABLE 3 EXTERNAL ENVIRONMENTAL RESPONSE OF AN ALUMINUM BRAGG-GRAY CHAMBER
TABLE CONTINUED

E5 RUN NO.	CON FIG	PAX ANG DEG	*** RADIUS (CM)	ELEVATN (CM)	POLAR ANGLE (DEG)	**CORE RAY (CM)	POL ANG TAPE READOUT	PAX POWER (W)	ELAPSED TIME	CHAMBER CURRENT (AMPS)	*CON FAC RADS (AL) HR-AMP	RADS (AL) HR-W	PCT. STD DEV
106	14	270	92.2	473.9	(11.0)	(482.8)	212.687	683.8	18.70	6.40E-13	9.43E+12	8.83E-03	8.2
106	14	270	(128.9)	(148.4)	41.0	196.5	177.562	683.8	128.70	2.20E-12	9.43E+12	3.03E-02	8.2
106	14	270	122.7	474.0	(14.5)	(489.6)	222.062	683.8	20.50	6.40E-13	9.43E+12	8.83E-03	8.2
106	14	270	150.9	474.6	(17.6)	(498.0)	231.125	683.8	22.10	6.50E-13	9.43E+12	8.96E-03	8.2
106	14	270	184.5	473.5	(21.3)	(508.2)	241.750	683.8	23.80	6.60E-13	9.43E+12	9.10E-03	8.2
106	14	270	213.3	474.1	(24.2)	(519.9)	251.437	683.8	25.00	6.50E-13	9.43E+12	8.96E-03	8.2
106	14	270	243.3	474.3	(27.2)	(533.1)	261.562	683.8	26.50	6.60E-13	9.43E+12	9.10E-03	8.2
106	14	270	274.1	474.2	(30.0)	(547.7)	272.062	683.8	28.10	6.50E-13	9.43E+12	8.96E-03	8.2

126	16A	270	(.5)	(148.0)	.2	148.0	119.375	342.3	86.90	2.40E-12	9.43E+12	6.61E-02	8.2
126	16A	270	(.6)	(152.4)	.2	152.4	119.625	342.3	63.30	2.28E-12	9.43E+12	6.28E-02	8.2
126	16A	270	(.3)	(167.6)	.1	167.6	120.375	342.3	64.40	1.90E-12	9.43E+12	5.23E-02	8.2
126	16A	270	(.2)	(182.9)	.1	182.9	121.562	341.6	65.20	1.60E-12	9.43E+12	4.42E-02	8.2
126	16A	270	(.1)	(198.1)	.0	198.1	123.000	341.6	66.40	1.45E-12	9.43E+12	4.00E-02	8.2
126	16A	270	(.1)	(213.4)	.0	213.4	124.812	342.3	67.20	1.26E-12	9.43E+12	3.47E-02	8.2
126	16A	270	(-.3)	(274.3)	-.1	274.3	134.500	342.3	68.80	8.10E-13	9.43E+12	2.23E-02	8.2
126	16A	270	(-.7)	(335.3)	-.1	335.3	147.687	342.6	71.30	7.40E-13	9.43E+12	2.04E-02	8.2
126	16A	270	(-.8)	(396.2)	-.1	396.2	163.562	342.3	73.60	6.50E-13	9.43E+12	1.79E-02	8.2
126	16A	270	(-.4)	(457.2)	-.1	457.2	181.437	342.3	75.20	5.70E-13	9.43E+12	1.57E-02	8.2
126	16A	270	.7	474.0	(.1)	(474.0)	186.875	343.3	4.40	4.50E-13	9.43E+12	1.24E-02	8.2
126	16A	270	(-.1)	(518.2)	-.0	518.2	200.625	341.9	76.80	5.00E-13	9.43E+12	1.38E-02	8.2
126	16A	270	(.6)	(574.0)	.1	574.0	219.187	341.6	78.40	4.45E-13	9.43E+12	1.23E-02	8.2

TABLE 4 EXTERNAL ENVIRONMENTAL RESPONSE OF A BERYLLIUM BRAGG-GRAY CHAMBER
 * CALIBRATED BY CO-60 PHOTONS
 ** DISTANCE FROM CORE CENTER
 *** RADIAL DISTANCE FROM AXIAL CENTERLINE
 () DENOTES CALCULATED VALUE

ES RUN NO.	CON FIG	PAX ANG DEG	*** RADIUS (CM)	ELEVATN (CM)	POLAR ANGLE (DEG)	**CORE RAY (CM)	POL ANG TAPE READOUT	PAX POWER (W)	ELAPSED TIME	CHAMBER CURRENT (AMPS)	*CON FAC RADS(BE) HR-AMP	RADS(BE) HR-W	PCT. STD DEV
106	14	270	(.5)	(148.0)	.2	148.0	119.375	683.8	116.40	3.90E-13	1.00E+13	5.70E-03	8.2
106	14	270	(.5)	(152.4)	.2	152.4	119.562	683.8	90.10	3.40E-13	1.00E+13	4.97E-03	8.2
106	14	270	(.3)	(167.6)	.1	167.6	120.375	683.8	92.20	3.80E-13	1.00E+13	5.56E-03	8.2
106	14	270	(.2)	(182.9)	.1	182.9	121.562	683.8	93.70	4.70E-13	1.00E+13	6.87E-03	8.2
106	14	270	(.1)	(198.1)	.0	198.1	123.000	683.8	94.80	5.00E-13	1.00E+13	7.31E-03	8.2
106	14	270	(-.1)	(213.4)	-.0	213.4	124.750	683.8	95.50	5.70E-13	1.00E+13	8.34E-03	8.2
106	14	270	(-.6)	(274.3)	-.1	274.3	134.375	683.8	97.70	6.30E-13	1.00E+13	9.21E-03	8.2
106	14	270	(-1.1)	(335.3)	-.2	335.3	147.562	683.8	99.70	6.30E-13	1.00E+13	9.21E-03	8.2
106	14	270	(.3)	(396.2)	.0	396.2	163.875	683.8	101.50	6.00E-13	1.00E+13	8.77E-03	8.2
106	14	270	(-1.1)	(457.2)	-.1	457.2	181.250	683.8	103.20	5.60E-13	1.00E+13	8.19E-03	8.2
106	14	270	.2	474.0	(.0)	(474.0)	186.750	683.8	8.10	3.90E-13	1.00E+13	5.70E-03	8.2
106	14	270	(-.6)	(518.2)	-.1	518.2	200.500	683.8	105.30	5.10E-13	1.00E+13	7.46E-03	8.2
106	14	270	(-.2)	(574.0)	-.0	574.0	219.000	683.8	106.90	4.60E-13	1.00E+13	6.73E-03	8.2
106	14	270	(26.3)	(148.0)	10.1	150.3	131.562	683.8	119.30	3.90E-13	1.00E+13	5.70E-03	8.2
106	14	270	(26.9)	(150.0)	10.2	152.4	131.875	683.8	87.60	3.20E-13	1.00E+13	4.68E-03	8.2
106	14	270	(29.3)	(165.1)	10.1	167.6	133.562	683.8	86.60	3.70E-13	1.00E+13	5.41E-03	8.2
106	14	270	(31.7)	(180.1)	10.0	182.9	135.500	683.8	84.60	4.30E-13	1.00E+13	6.29E-03	8.2
106	14	270	(34.3)	(195.1)	10.0	198.1	137.750	683.8	83.20	4.90E-13	1.00E+13	7.17E-03	8.2
106	14	270	(36.7)	(210.2)	9.9	213.4	140.187	687.3	81.70	5.40E-13	1.00E+13	7.86E-03	8.2
106	14	270	(46.6)	(270.3)	9.8	274.3	152.062	683.8	79.60	5.90E-13	1.00E+13	8.63E-03	8.2
106	14	270	(56.4)	(330.5)	9.7	335.3	166.687	683.8	77.50	5.60E-13	1.00E+13	8.19E-03	8.2
106	14	270	(66.5)	(390.6)	9.7	396.2	183.500	683.8	75.60	4.90E-13	1.00E+13	7.17E-03	8.2
106	14	270	(76.8)	(450.7)	9.7	457.2	201.875	687.3	73.60	4.20E-13	1.00E+13	6.11E-03	8.2
106	14	270	(87.7)	(510.7)	9.7	518.2	221.500	683.8	71.70	3.80E-13	1.00E+13	5.56E-03	8.2
106	14	270	(97.9)	(565.6)	9.8	574.0	240.250	683.8	70.00	3.50E-13	1.00E+13	5.12E-03	8.2

Fortran Listing of DIRECT

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PROGRAM DIRECT(INPUT,OUTPUT,PUNCH,TAPE5=INPUT,TAPE6=OUTPUT,
1          TAPE7=PUNCH,TAPE10,TAPE14,TAPE11)
000003 COMMON IARRAY(5),IOUT(4),OUT(20),DTITLE(11,5,5),IR14(500,10),
1          I14(5),IOUT14(4),OUT14(20),KREC,NPAGE,1,J,NLINES,
2          JF,IF,S17,S18,S19,S20,S15,REP1,REP2,CONF,R14(500,15)
000003 DIMENSION NT(5)
000003 INTEGER REP1 , REP2
000003 DATA NT/ 1H1, 1H2, 1H3, 1H4, 1H5 /
000003 DATA BLANK, LPAREN, NO9,RPAREN / 1H , 1H(, 1H9, 1H) /

000003 PAXANG 1000.
000005 NLINES = 0
000006 NPAGE = 0
000007 REP1 = 1000
000010 REP2 = 1000
C READ TITLES FOR DIRECT TABLES

C 4 TABLES OR REPORTS
C 5 LINES PER TABLE
C 2 CARDS PER LINE FORMAT(11A10)

000011 DO 5 K = 1, 4
000012 DO 5 J=1, 5
000013 READ(5, 10)(DTITLE(I,J,K),I=1,11)
000030 5 CONTINUE
000034 10 FORMAT(A10)

C DATA FOR CONFIGURATION 14
C IR14(I,1) = I14(1) REPORT NUMBER
C IR14(I,2) = I14(2) REPORT NUMBER SUFFIX
C IR14(I,3) = I14(3) CONFIGURATION CODE
C IR14(I,4) = IOUT14(1) RUN NUMBER
C IR14(I,5) = IOUT14(2) CONFIGURATION
C IR14(I,6) = IOUT14(3) PAX ANGLE (DEG)
C IR14(I,7) = IOUT14(4) TOTAL NUMBER OF COUNTS
C IR14(I,8) = I14(5) R OR THETA INDICATOR
C R14(I,1) = OUT14(2) POLAR ANGLE (RADIUS) CALCULATED
C R14(I,2) = OUT14(5) ELEVATION(CORE RAY) CALCULATED
C R14(I,3) = OUT14(8) RADIUS(POLAR ANGLE) INPUT
C R14(I,4) = OUT14(11) ELEVATION(CORE RAY) INPUT
C R14(I,5) = OUT14(13) POLAR ANGLE READOUT

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C	R14(I,6)	=	OUT14(14)	PAX POWER
C	R14(I,7)	=	OUT14(15)	COUNTING TIME (POL ANG READOUT)
C	R14(I,8)	=	OUT14(16)	DET CON FACTOR
C	R14(I,9)	=	OUT14(17)	TOTAL (U) FISSION
C	R14(I,10)	=	OUT14(18)	PCT STD DEV
C	R14(I,11)	=	OUT14(19)	NEUTS-CM2-SEC-W/RADS(C)/(AL)/(BE)/
C	R14(I,12)	=	OUT14(20)	PCT. STD. DEV.

000034 DEWIND 11
 000036 REWIND 10
 000040 REWIND 14

000042 15 I = 0
 000043 20 READ(14) I14(1), I14(2), I14(4), (IOUT14(I), I=1,4), I14(5),
 1 OUT14(2), OUT14(5), OUT14(8), OUT14(11), (OUT14(I),
 2 I=13,19), OUT14(20), OUT14(1)

000106 IF(I14(1) .EQ. NO9 .AND. I14(2) .EQ. NO9) GO TO 55

C CHECK FOR CHANGE IN REPORT NUMBER

000116 IF(I14(1) .EQ. NT(1) .AND. I14(2) .EQ. NT(1)) GO TO 55
 000125 IF(I14(1) .EQ. NT(2) .AND. I14(2) .EQ. NT(2)) GO TO 55
 000134 IF(I14(1) .EQ. NT(3) .AND. I14(2) .EQ. NT(3)) GO TO 55
 000143 IF(I14(1) .EQ. NT(4) .AND. I14(2) .EQ. NT(4)) GO TO 55

C

C N14 NUMBER OF RECORDS FOR CONFIG 14 PER REPORT NUMBER

000152 25 I = I + 1
 000154 30 CONTINUE
 000154 DO 35 N=1, 5
 000156 IF(I14(1) .EQ. NT(N)) GO TO 40
 000160 35 CONTINUE
 000162 40 L = N

C STORAGE ARRAYS FOR CONFIGURATION 14 DATA

000164 45 CONTINUE
 000164 IR14(I,1) = I14(1)
 000166 IR14(I,2) = I14(2)
 000170 IR14(I,3) = I14(4)
 000171 IR14(I,4) = IOUT14(1)
 000173 IR14(I,5) = IOUT14(2)

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000174      IR14(I,6) = IOUT14(3)
000176      IR14(I,7) = IOUT14(4)
000177      IR14(I,8) = I14(5)
000201      R14(I,1) = OUT14(2)
000202      R14(I,2) = OUT14(5)
000204      R14(I,3) = OUT14(8)
000205      R14(I,4) = OUT14(11)
000207      R14(I,5) = OUT14(13)
000210      R14(I,6) = OUT14(14)
000212      R14(I,7) = OUT14(15)
000213      R14(I,8) = OUT14(16)
000215      R14(I,9) = OUT14(17)
000216      R14(I,10) = OUT14(18)
000220      R14(I,11) = OUT14(19)
000221      R14(I,12) = OUT14(20)
000223      R14(I,13) = OUT14(1)
000224      N14 = I
000225      GO TO 20
000226      50 CONTINUE

000226      55 CONTINUE

000226      IX = 1
000227      I1 = 0
000230      IND1 = 0

C      READ DATA FROM TAPE (10) WHICH CONTAINS DATA FOR ALL CONFIGURATION
C      EXCEPT CONFIGURATION 14.
C      CONFIGURATION 14.

000231      60 READ(10) IARRAY(1),IARRAY(2),IARRAY(4),(IOUT(I),I=1,4),IARRAY(5),
1              OUT(2),OUT(5),OUT(8),OUT(11),(OUT(I),I=13,20), OUT(1)
000272      NEND = 0
000273      IF(IARRAY(1) .EQ. N09 .AND. IARRAY(2) .EQ. N09) NEND = 1

C      CHECK FOR CHANGE IN REPORT NUMBER

000304      IF( IARRAY(1) .EQ. NT(1) .AND. IARRAY(2) .EQ. NT(1) ) GO TO 15
000313      IF( IARRAY(1) .EQ. NT(2) .AND. IARRAY(2) .EQ. NT(2) ) GO TO 15
000322      IF( IARRAY(1) .EQ. NT(3) .AND. IARRAY(2) .EQ. NT(3) ) GO TO 15
000331      IF( IARRAY(1) .EQ. NT(4) .AND. IARRAY(2) .EQ. NT(4) ) GO TO 15

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```

000340      IF(NEND .EQ. 1) GO TO 140

000342      65 CONTINUE
000342      DO 70 N = 1, 5
000344      IF(IARAY(1) .EQ. NT(N)) GO TO 75
000346      70 CONTINUE
000350      75 K = N
000352      80 CONTINUE
000352      IF(L .NE. K) GO TO 130

C      FIND MATCH FOR CORE RAY FROM CONFIG 14

C      FPA IS THE POLAR ANGLE BEING PROCESSED
C      FCR IS THE CORE RAY BEING PROCESSED
C      IF POLAR ANGLES ARE EQUAL FIND MATCH FOR CORE RAY FROM
C      CONFIG 14 DATA
C

000354      FPA = OUT(8)
000356      FCR = OUT(11)

C      CHECK FOR CHANGE IN CONFIGURATION
000357      IF(IND1 .EQ. 0) IFIG = IARAY(4)
000362      IND1 = 1
000363      IF(IFIG .EQ. IARAY(4) ) GO TO 85

C      RESET CHANGE OF CONFIGURATION INDICATOR
C      RESET CONFIG 14 DATA COUNTER

000365      IND1 = 0
000366      IX = 1
000367      I1 = 0
000370      85 CONTINUE
000370      IF(IX .NE. 1) GO TO 95
000372      90 I1 = I1 + 1
000374      95 CONTINUE
000374      IF(I1 .GT. N14) GO TO 55
000400      IF(FPA .NE. R14(I1,3) ) GO TO 100
000402      IF(FCR .EQ. R14(I1,4) ) GO TO 105

C      IF CORE RAY IN PROCESS IS GREATER THAN CORE RAY FROM CONFIG
C      14 DATA THEN INCREMENT CON FIG 14 DATA COUNTER OTHERWISE
C      READ THE NEXT RECORD

000404      IF(FCR .GT. R14(I1,4) ) GO TO 90

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```

000407      IX = 0
000407      GO TO 60
000410      100 IF(FPA .GT. R14(11,3) ) GO TO 90
000414      IX = 0
000414      GO TO 60
000415      105 CONTINUE

      C      MATCH IS FOUND

000415      IX = 1
000416      IF = 11

000420      110 IF(L.NE. 1 .AND. K.NE. 1) GO TO 115
      C      CALCULATE DIRECT FOR REPORT 1
      C      SUBTRACT TOTAL(U) FISSION GM-SEC-W OUT(17)

000430      S17 = OUT(17) - R14(IF,9)
000432      OUT(17) = S17

      C      TENTATIVE FORMULA FOR PCT. STD. DEV.
000433      S18 = OUT(18) - R14(IF,10)
000435      OUT(18) = S18

      C      SUBTRACT NEUT-CM2-SEC-W
000436      S19 = OUT(19) - R14(IF,11)
000440      OUT(19) = S19

      C      TENTATIVE FORMULA FOR PCT. STD. DEV.
000441      S20 = OUT(20) - R14(IF,12)
000443      OUT(20) = S20

000444      GO TO 120
000445      115 CONTINUE

      C      CALCULATE DIFFERENCES FOR TABLES (2), (3), (4)
000445      S18 = OUT(18) - R14(IF,10)
000450      OUT(18) = S18

      C      CALCULATE RADS(C), RADS(AL), RADS(BE) DEPENDING UPON REPORT NO
000451      S19 = OUT(19) - R14(IF,11)
000453      OUT(19) = S19
  
```

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000454      C      DIFFERENCE IN ELAPSED TIME
000455      S15 = OUT(15) - R14(IF,7)
000456      OUT(15) = S15

000457      GO TO 120

000457      120 CONTINUE
000457      CALL PRINTER(L,K)
000461      CALL RITER
000462      GO TO 60
000463      125 CONTINUE
000463      130 WRITE(6, 135)
000467      135 FORMAT(46H0 **ERROR** REPORT NUMBER FOR DATA FROM CONFIG 14 DOES
          1 NOT MATCH THE ONE IN PROCESS )

000467      C      RESET INDEX COUNTER AND STORE NUMBER OF PREVIOUS RECORDS
000471      IF(NEND .EQ. 1) GO TO 140
000471      GO TO 60
000472      140 CONTINUE
000472      145 CONTINUE
000472      REWIND 10
000474      REWIND 14
000476      WRITE(11) (NO9,I=1,21)
000506      REWIND 11
000510      STOP
000512      END

```


PROGRAM LENGTH INCLUDING I/O BUFFERS
015022

FUNCTION ASSIGNMENTS

STATEMENT ASSIGNMENTS

10	-	000533	15	-	000042	20	-	000043	25	-	000152
30	-	000154	40	-	000162	45	-	000164	50	-	000226
55	-	000226	60	-	000231	65	-	000342	75	-	000350
80	-	000352	85	-	000370	90	-	000372	95	-	000374
100	-	000410	105	-	000415	110	-	000420	115	-	000445
120	-	000457	125	-	000463	130	-	000463	135	-	000541
140	-	000472	145	-	000472						

BLOCK NAMES AND LENGTHS

- 031060

VARIABLE ASSIGNMENTS

BLANK	-	000626	DTITLE	-	000035C01	FCH	-	000644	FPA	-	000643
I	-	012327C01	IARAY	-	000000C01	IF	-	012333C01	IFIG	-	000645
IND1	-	000641	IOUT	-	000005C01	IOUT14	-	012275C01	IR14	-	000460C01
IX	-	000637	I1	-	000640	I14	-	012270C01	J	-	012330C01
K	-	000633	L	-	000635	LPAREN	-	000627	N	-	000634
NEND	-	000642	NLINES	-	012331C01	N09	-	000630	NPAGE	-	012326C01
NT	-	000621	N14	-	000636	OUT	-	000011C01	OUT14	-	012301C01
PAXANG	-	000632	REP1	-	012341C01	REP2	-	012342C01	RPAREN	-	000631
R14	-	012344C01	S15	-	012340C01	S17	-	012334C01	S18	-	012335C01
S19	-	012336C01	S20	-	012337C01						

START OF CONSTANTS

000514

START OF TEMPORARIES

000556

START OF INDIRECTS

000574

UNUSED COMPILER SPACE

110500

```

SUBROUTINE PRINTER(NR14,NR)
000005 COMMON IARRAY(5),IOUT(4),OUT(20),TITLE(11,5,5),IR14(500,10),
1 I14(5),IOUT14(4),OUT14(20),KREC,NPAGE,I,J,NLINES,
2 JF,IF,S17,S18,S19,S20,S15,REP1,REP2,CONF,R14(500,15)
000005 INTEGER REP1, REP2, CONF
000005 DIMENSION NT(5)
000005 DATA NT/ 1H1, 1H2, 1H3, 1H4, 1H5 /

C IF THIS IS THE FIRST CALL TO PRINTER, SET POLAR ANG (POLANG) =1000
000005 IF(REP1 .EQ. 1000) POLANG = 1000
000010 IF(NR14 .NE. NR) GO TO 50
000012 M = NR14
000013 N = NR
000014 DO 5 K1=1,5
000015 IF(IR14(IF,1) .EQ. NT(K1) ) GO TO 10
000021 5 CONTINUE
000023 10 K2 = K1
000025 K3 = K2

C CHECK FOR NEW TABLE
000026 15 IF(NPAGE .EQ. 0) GO TO 20
000027 IF(K2 .EQ. REP1) GO TO 25
000031 20 NPAGE = 0
000032 NLINES = 0
C STORE NEW REPORT NUMBER
000033 REP1 = K2
000034 REP2 = K3
000036 GO TO 30

C CHECK FOR NEW CONFIGURATION
000036 25 IF(CONF .EQ. IARRAY(4) ) GO TO 35

C INDICATE CHANGE IN CONFIGURATION BY A LINE OF ASTERISKS
C PLUS TWO BLANK LINES
000040 WRITE(6, 60)

000044 NLINES = NLINES + 3

C STORE NEW CONFIGURATION
000046 30 CONF = IARRAY(4)
000050 GO TO 40

```

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000052 C: CHECK FOR NEW PAX ANGLE
        35 IF( PAXANG .EQ. IOUT(3) ) GO TO 45

000055 C: INDICATE CHANGE IN PAX ANGLE BY TWO BLANK LINES
        WRITE(6, 65)
000060        NLINES = NLINES + 2
        C: STORE NEW PAX ANGLE
000062        40 PAXANG = IOUT(3)
000064        45 CONTINUE
000064        GO TO 75
000066        50 WRITE(6, 55) NR14, NR
000076        55 FORMAT(45H0***ERROR*** REPORT NUMBERS DO NOT MATCH ,2I6)
000076        60 FORMAT(1H / 1X, 108(1H*) / )
000076        65 FORMAT(1H0)
000076        70 FORMAT(1H )
000076        75 CONTINUE
000076        POLANG = OUT(8)
000100        RETURN
000100        END
  
```

SUBPROGRAM LENGTH

000143

FUNCTION ASSIGNMENTS

STATEMENT ASSIGNMENTS

10	-	000023	15	-	000026	20	-	000031	25	-	000036
30	-	000046	35	-	000052	40	-	000062	45	-	000064
50	-	000066	55	-	000104	60	-	000113	65	-	000117
70	-	000121	75	-	000076						

BLOCK NAMES AND LENGTHS

- 031060

VARIABLE ASSIGNMENTS

CONF	-	012343C01	DTITLE	-	000035C01	IARRAY	-	000000C01	IF	-	012333C01
IOUT	-	000005C01	IOUT14	-	012275C01	IR14	-	000460C01	I14	-	012270C01
K1	-	000137	K2	-	000140	K3	-	000141	M	-	000135
N	-	000136	NLINES	-	012331C01	NPAGE	-	012326C01	NT	-	000127
OUT	-	000011C01	OUT14	-	012301C01	PAXANG	-	000142	POLANG	-	000134
REP1	-	012341C01	REP2	-	012342C01	R14	-	012344C01			

START OF CONSTANTS

000102

START OF TEMPORARIES

000123

START OF INDIRECTS

000125

UNUSED COMPILER SPACE

112300

```

SUBROUTINE RITER
000002 COMMON IARRAY(5),IOUT(4),OUT(20),DTITLE(11,5,5),IR14(500,10),
1      I14(5),IOUT14(4),OUT14(20),KREC,NPAGE,I,J,NLINES,
2      JF,IF,S17,S18,S19,S20,S15,REP1,REP2,CONF,R14(500,15)
000002 DATA BLANK, LPAREN, NO9, RPAREN / 1H , 1H( , 1H9, 1H) /
000002 INTEGER REP1, REP2, CONF
000002 K4 = REP1
C      SHOULD A NEW PAGE BE STARTED
000004 IF(NLINES .GT. 0 .AND. NLINES .LT. 40) GO TO 20
C      INCREMENT PAGE COUNTER AND REINITIALIZE LINE COUNTER
000013 NPAGE = NPAGE + 1
000014 NLINES = 0
000015 WRITE(6, 25) (DTITLE(I,1,K4),I=1,11)
000031 NLINES = NLINES + 1
000033 IF(NPAGE .GT. 1) GO TO 10
000036 DO 5 J=2,5
000037 WRITE(6, 35) (DTITLE(I,J,K4), I=1,11)
000054 5 CONTINUE
000056 WRITE(6, 30)
000062 NLINES = NLINES + 7
000064 GO TO 15
000064 10 WRITE(6, 40)
000070 NLINES = NLINES + 3
000072 15 IF(REP1 .EQ. 1) WRITE(6, 45)
000100 IF(REP1 .EQ. 2) WRITE(6, 50)
000106 IF(REP1 .EQ. 3) WRITE(6, 55)
000114 IF(REP1 .EQ. 4) WRITE(6, 60)
000122 NLINES = NLINES + 5
000124 20 IF(REP1 .EQ. 1) WRITE(6, 70) IR14(IF,4),IOUT(1),IOUT(2),
1 IOUT(4),LPAREN,OUT(2),RPAREN,LPAREN,OUT(5),RPAREN,OUT(8),
2 OUT(13), OUT(11), (OUT(I),I=17,20)
000172 IF(REP1 .GT. 1 .AND. REP1 .LT. 5) WRITE(6, 75) IR14(IF,4),
1 IOUT(1), IOUT(2), IOUT(3),LPAREN,OUT(2),RPAREN,LPAREN,
2 OUT(5),RPAREN,OUT(8),OUT(13),OUT(11),OUT(18),OUT(19),OUT(15)
000245 NLINES = NLINES + 1
000247 WRITE(11) IARRAY(1), IARRAY(2),IARRAY(4),(IOUT(I),I=1,4),IARRAY(5),
1 OUT(2), OUT(5), OUT(8), OUT(11),(OUT(I),I=13,20),OUT(1)
000310 25 FORMAT(1H1,11A10)

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000310 30 FORMAT(1H0)
000310 35 FORMAT(1H , 11A10)
000310 40 FORMAT(45X, 27H DIRECT TABLE CONTINUED // )

000310 45 FORMAT(2X,2HE5,5X,2HE5, 45X, 5HPOLAR,13X,6HDIRECT,13X,6HDIRECT /
12X,3HRUN,4X,3HRUN,11X,3HPAX,22X,5HPOLAR,3X,5HANGLE,5X,4HCORE,4X,
28H10TAL(U), 4X,3HPCT, 4X,5HNEUTS,7X,4HPCT. /2X,3HNO. ,4X,3HNO. ,
35X,3HCON,3X,3HANG,3X, 6HRADIUS,3X,7HELEVATN,3X,5HANGLE,3X,4HTAPE,
46X, 3HRAY,5X,4HFISS,8X,3HSTD,4X,9HCM2-SFC-W,3X,3HSTD /
52X,5HTOTAL,2X,4HBKGD,4X,3HF IG,3X,3HDEG,4X,4H(CM),6X,4H(CM),4X,5H(D
6EG),3X,7HREADOUT,3X,4H(CM),4X,8HGM-SEC-W,4X,3HDEV,4X,9HE 1.5MEV,
/ 3X,3HDEV /)

000310 50 FORMAT(2X,2HE5,5X,2HE5, 49X, 5HPOLAR,13X /
12X,3HRUN,4X,3HRUN,11X,3HPAX,22X,5HPOLAR,7X,5HANGLE,5X,4HCORE,4X,
26HDIRECT ,10X, 3HPCT /2X,3HNO. ,4X,3HNO. ,
35X,3HCON,3X,3HANG,3X, 6HRADIUS,3X,7HELEVATN,3X,5HANGLE,7X,4HTAPE,
46X, 3HRAY,5X,9HRADS(C) ,7X, 3HSTD,8X,7HELAPSED /
52X,5HTOTAL,2X,4HBKGD,4X,3HF IG,3X,3HDEG,4X,4H(CM),6X,4H(CM),4X,
65H(DEG),6X,7HREADOUT,4X,4H(CM),5X,4HHR-W,11X,3HDEV,9X,4HTIME /)

000310 55 FORMAT(2X,2HE5,5X,2HE5, 49X, 5HPOLAR,13X /
12X,3HRUN,4X,3HRUN,11X,3HPAX,22X,5HPOLAR,7X,5HANGLE,5X,4HCORE,4X,
26HDIRECT ,10X, 3HPCT /2X,3HNO. ,4X,3HNO. ,
35X,3HCON,3X,3HANG,3X, 6HRADIUS,3X,7HELEVATN,3X,5HANGLE,7X,4HTAPE,
46X, 3HRAY,5X,9HRADS(AL) ,7X, 3HSTD,8X,7HELAPSED /
52X,5HTOTAL,2X,4HBKGD,4X,3HF IG,3X,3HDEG,4X,4H(CM),6X,4H(CM),4X,
65H(DEG),6X,7HREADOUT,4X,4H(CM),5X,4HHR-W,11X,3HDEV,9X,4HTIME /)

000310 60 FORMAT(2X,2HE5,5X,2HE5, 49X, 5HPOLAR,13X /
12X,3HRUN,4X,3HRUN,11X,3HPAX,22X,5HPOLAR,7X,5HANGLE,5X,4HCORE,4X,
26HDIRECT ,10X, 3HPCT /2X,3HNO. ,4X,3HNO. ,
35X,3HCON,3X,3HANG,3X, 6HRADIUS,3X,7HELEVATN,3X,5HANGLE,7X,4HTAPE,
46X, 3HRAY,5X,9HRADS(HE) ,7X, 3HSTD,8X,7HELAPSED /
52X,5HTOTAL,2X,4HBKGD,4X,3HF IG,3X,3HDEG,4X,4H(CM),6X,4H(CM),4X,
65H(DEG),6X,7HREADOUT,4X,4H(CM),5X,4HHR-W,11X,3HDEV,9X,4HTIME /)

000310 70 FORMAT(2X,I3,4X,I3,5X,A3,3X,I3,3X,A1,F5.1,A1,2X,A1,F6.1,A1,1X,F5.1
1 ,2X,F7.3,2X,F6.1,3X, E9.2,2X,F6.1,2X,E9.2,2X,F6.1 )

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000310

75 FORMAT(2X,I3,4X,I3,5X,A3,3X,I3,3X,A1,F5.1,A1,2X,A1,F6.1,A1,1X,F5.1
1 ,5X,F7.3, 5X,F6.1,3X,E9.2, 4X,F5.1,8X,F5.1)

000310

RETURN

000311

END

SUBPROGRAM LENGTH
000677

FUNCTION ASSIGNMENTS

STATEMENT ASSIGNMENTS

10	-	000064	15	-	000072	20	-	000124	25	-	000316
30	-	000321	35	-	000323	40	-	000326	45	-	000334
50	-	000415	55	-	000474	60	-	000553	70	-	000632
75	-	000647									

BLOCK NAMES AND LENGTHS
- 031060

VARIABLE ASSIGNMENTS

BLANK	-	000672	CONF	-	012343C01	DTITLE	-	000035C01	I	-	012327C01
IARAY	-	000000C01	IF	-	012333C01	IOUT	-	000005C01	IOUT14	-	012275C01
IR14	-	000460C01	I14	-	012270C01	J	-	012330C01	K4	-	000676
LPAREN	-	000673	NLINES	-	012331C01	N09	-	000674	NPAGE	-	012326C01
OUT	-	000011C01	OUT14	-	012301C01	REP1	-	012341C01	REP2	-	012342C01
RPAREN	-	000675	R14	-	012344C01						

START OF CONSTANTS
000313

START OF TEMPORARIES
000663

START OF INDIRECTS
000672

UNUSED COMPILER SPACE
111000

CORE MAP 16.18.54. NORMAL CONTROL 010100 01
 ---TIME---LOAD MODE ---L1---L2---TYPE-----USER---+---CALL-----FWA LOAD---LW
 FWA LOADER 144564 FWA TABLES 143712
 --PROGRAM---ADDRESS-- --Labeled---COMMON--

DIRECT	000100		
PRINTER	015122		
RITER	015265		
SYSTEM	016164	SCOPE 2	016164
INPUTC	017237		
REW INM	017600		
INPUTH	017660		
OUTPTC	020014		
OUTPTH	020406		
SIOB	020500		
GETBA	021106		
KRAKER	021125		
KODER	022162		

--ENTRY-----ADDRESS--

REFERENCES

DIRECT	000101		
PRINTER	015123	DIRECT	000560
RITER	015266	DIRECT	000561
QENTRY	016165	DIRECT	000102
SYSTEM	016423	INPUTC	017304
		REW INM	017650
		INPUTH	017720
		OUTPTC	020035
		OUTPTH	020470
		KRAKER	021760
		KODER	023170
SYSTEMC	016340		
SYSTEMP	016370		
ENU	016264	DIRECT	000613
		PRINTER	015223
		RITER	015577
STOP	016313	DIRECT	000611
EXIT	016305		
ABNORML	016323	INPUTC	017305
		REW INM	017651
		INPUTH	017721
		OUTPTC	020036
		OUTPTH	020471

		OUTPTH	020545						
		KRAKER	022035						
		KODER	023245						
WXPRESS	017067								
WXPSSYS	017063								
INPUTC	017316	DIRECT	000114	000124	000127				
REWIND	017655	DIRECT	000135	000137	000141	000573	000575	000607	
INPUTB	017736	DIRECT	000144	000146	000150	000152	000156	000162	000164
			000166	000170	000172	000176	000202	000204	000205
			000332	000334	000336	000340	000344	000350	000352
			000354	000356	000360	000364	000370	000371	
OUTPTC	020073	DIRECT	000565	000566					
		PRINTER	015164	015165	015200	015201	015212	015214	015216
			015217						
		WRITER	015304	015312	015315	015325	015335	015340	015345
			015346	015353	015354	015363	015364	015371	015372
			015377	015400	015405	015406	015415	015417	015421
			015423	015425	015427	015431	015433	015435	015437
			015441	015443	015445	015447	015453	015456	015470
			015472	015474	015476	015500	015502	015504	015506
			015510	015512	015514	015516	015520	015522	015524
			015526	015530	015531				
		KRAKER	022010	021771	021775				
OUTPTH	020464	DIRECT	000577	000602	000605				
		WRITER	015535	015537	015541	015543	015547	015553	015555
			015557	015561	015563	015567	015573	015574	
WKSPPU.	021056								
FI/BAK.	021067								
PDSFIL.	021125	OUTPTC	020127						
RDPUR.	021135								
DAT.	021161	INPUTC	017322						
		OUTPTC	020077						
CIOI.	021023	REWIND	017704	017701	017672				
		INPUTB	020005	020013	020020	017760			
		OUTPTH	020533	020522	020541	020530	020502		
OPEN.	020556	SYSTEM	016775						
		INPUTC	017342						
		INPUTB	020040						

		KRAKER	021761				
		KODER	023171				
WXPRESS	017013						
WXPSSYS	017007						
INPUTC	017242	DIRECT	000114	000124	000127		
REW INM	017601	DIRECT	000135	000137	000141	000573	000575
INPUTH	017662	DIRECT	000144	000146	000150	000152	000156
			000166	000170	000172	000176	000202
			000332	000334	000336	000340	000344
			000354	000356	000360	000364	000370
OUTPTC	020017	DIRECT	000565	000566			
		PRINTER	015164	015165	015200	015201	015212
			015217				
		RITER	015304	015312	015315	015325	015335
			015346	015353	015354	015363	015364
			015377	015400	015405	015406	015415
			015423	015425	015427	015431	015433
			015441	015443	015445	015447	015453
			015472	015474	015476	015500	015502
			015510	015512	015514	015516	015520
			015526	015530	015531		
		KRAKER	021734	021715	021721		
OUTPTH	020410	DIRECT	000577	000602	000605		
		RITER	015535	015537	015541	015543	015547
			015557	015561	015563	015567	015573
KASPRU.	021002						
FIZBAK.	021013						
POSFIL.	021051	OUTPTC	020053				
RDP RU.	021061						
DAI.	021105	INPUTC	017246				
		OUTPTC	020023				
CIU1.	020747	REW INM	017630	017625	017616		
		INPUTH	017731	017737	017744	017704	
		OUTPTH	020457	020446	020465	020454	020426
DPFN.	020502	SYSTEM	016721				
		INPUTC	017266				
		INPUTH	017764				
		OUTPTC	020043				

		OUTPTB	020460		
SIO.	020621	INPUTC	017320		
		INPUTB	017713		
		OUTPTC	020111		
		OUTPTB	020435		
IBFA	021103	INPUTC	017243		
		OUTPTC	020020		
IBFB	021104	INPUTC	017244		
		OUTPTC	020021		
GETBA	021106	INPUTC	017254		
		REWIM	017605		
		INPUTB	017751		
		OUTPTC	020031		
		OUTPTB	020441		
KRAKER	021126	INPUTC	017273	017250	
BCHA	022156	INPUTC	017317		
RDNX	021672	INPUTC	017315	017325	017332
ARLI	022161	INPUTC	017262	017317	017313
KODER	022163	OUTPTC	020025	020062	
ARLO	023357	OUTPTC	020037	020063	020107
WTNX	023145	OUTPTC	020124		

-----UNSATISFIED EXTERNALS-----

REFERENCES

Sample Output from DIRECT

TABLE 1 DIRECT EXT ENVIRONMENTAL RESPONSE OF A CD-COVERED U-238(2PPM U-235) FISSION CHAMBER IN A BORAL BOX

* NEUTS/CM2-SEC-W = (FISS/GM-SEC-W)*238/(0.025E+23*0.555E-24)

ASSUMED THAT BORAL AND CD ELIMINATES ALL U-235 RESPONSE

** DISTANCE FROM CORE CENTER

*** RADIAL DISTANCE FROM AXIAL CENTERLINE

E5 RUN NO. TOTAL	E5 RUN NO. BKGD	CON FIG	PAX ANG DEG	RADIUS (CM)	ELEVATN (CM)	POLAR ANGLE (DEG)	POLAR ANGLE TAPE READOUT	CORE RAY (CM)	DIRECT TOTAL(U) FISS GM-SEC-W	DIRECT NEUTS CM2-SEC-W E 1.5MEV
107	127	16A	270	(.1)	(152.4)	0.0	119.375	152.4	3.89E+00	2.77E+03
107	127	16A	270	(-.2)	(167.6)	0.0	120.125	167.6	3.09E+00	2.20E+03
107	127	16A	270	(-.3)	(182.9)	0.0	121.312	182.9	2.42E+00	1.73E+03
107	127	16A	270	(-.5)	(198.1)	0.0	122.750	198.1	1.91E+00	1.36E+03
107	127	16A	270	(-.7)	(213.4)	0.0	124.500	213.4	1.60E+00	1.14E+03
107	127	16A	270	(-1.1)	(274.3)	0.0	134.187	274.3	8.25E-01	5.87E+02
107	127	16A	270	(-1.8)	(335.3)	0.0	147.312	335.3	5.35E-01	3.81E+02
107	127	16A	270	(-2.0)	(396.2)	0.0	163.187	396.2	3.60E-01	2.57E+02
107	127	16A	270	(-1.8)	(457.2)	0.0	181.062	457.2	2.68E-01	1.91E+02
107	127	16A	270	(.4)	(474.0)	0.0	186.812	474.0	-2.60E+07	-1.85E+10
107	127	16A	270	(-1.7)	(518.2)	0.0	200.250	518.2	2.15E-01	1.53E+02
107	127	16A	270	(-.8)	(574.0)	0.0	218.875	574.0	1.85E-01	1.32E+02
107	127	16A	270	(26.6)	(150.1)	10.0	131.750	152.4	-2.08E+07	-1.48E+10
107	127	16A	270	(29.0)	(165.1)	10.0	133.437	167.6	-2.39E+07	-1.70E+10
107	127	16A	270	(31.5)	(180.2)	10.0	135.375	182.9	-2.71E+07	-1.93E+10
107	127	16A	270	(34.0)	(195.2)	10.0	137.625	198.1	-2.77E+07	-1.97E+10
107	127	16A	270	(36.4)	(210.2)	10.0	140.062	213.4	-3.01E+07	-2.15E+10
107	127	16A	270	(46.4)	(270.4)	10.0	152.000	274.3	-3.34E+07	-2.38E+10
107	127	16A	270	(56.4)	(330.5)	10.0	166.687	335.3	-3.23E+07	-2.30E+10
107	127	16A	270	(62.9)	(391.2)	10.0	182.437	396.2	-2.92E+07	-2.08E+10
107	127	16A	270	(77.3)	(450.6)	10.0	202.000	457.2	-2.63E+07	-1.87E+10
107	127	16A	270	(87.7)	(510.7)	10.0	221.500	518.2	-2.25E+07	-1.60E+10
107	127	16A	270	(97.9)	(565.6)	10.0	240.250	574.0	-2.10E+07	-1.49E+10
107	127	16A	270	(31.3)	(474.0)	12.0	195.062	475.0	-2.55E+07	-1.82E+10
107	127	16A	270	(52.9)	(142.9)	20.0	143.875	152.4	-1.87E+07	-1.33E+10
107	127	16A	270	(58.0)	(157.3)	20.0	146.375	167.6	-2.21E+07	-1.57E+10
107	127	16A	270	(63.0)	(171.7)	20.0	149.062	182.9	-2.53E+07	-1.80E+10

TABLE 1 DIRECT EXT ENVIRONMENTAL RESPONSE OF A CO-COVERED U-238(2PPM U-235) FISSION CHAMBER IN A BORAL BOX
DIRECT TABLE CONTINUED

E5 RUN NO. TOTAL	E5 RUN NO. BKGD	CON FIG	PAX ANG DEG	RADIUS (CM)	ELEVATN (CM)	POLAR ANGLE (DEG)	POLAR ANGLE TAPE READOUT	CORE RAY (CM)	DIRECT TOTAL(U) FISS GM-SEC-W	DIRECT NEUTS CM2-SEC-W E 1.5MEN
107	127	16A	270	(68.2)	(186.0)	20.0	152.000	198.1	-2.77E+07	-1.97E+10
107	127	16A	270	(73.2)	(200.4)	20.0	155.062	213.4	-2.94E+07	-2.09E+10
107	127	16A	270	(93.5)	(257.9)	20.0	169.062	274.3	-3.14E+07	-2.23E+10
107	127	16A	270	(113.7)	(315.4)	20.0	185.187	335.3	-2.98E+07	-2.12E+10
107	127	16A	270	(133.8)	(373.0)	20.0	202.937	396.2	-2.79E+07	-1.98E+10
107	127	16A	270	(154.6)	(430.3)	20.0	222.062	457.2	-2.42E+07	-1.72E+10
107	127	16A	270	(175.5)	(487.5)	20.0	242.125	518.2	-2.19E+07	-1.56E+10
107	127	16A	270	(195.6)	(539.7)	20.0	261.312	574.0	-2.02E+07	-1.44E+10
107	127	16A	270	(61.2)	(474.1)	24.0	203.562	478.0	-2.51E+07	-1.79E+10
107	127	16A	270	(85.1)	(144.4)	30.0	158.500	167.6	-2.21E+07	-1.57E+10
107	127	16A	270	(92.7)	(157.7)	30.0	161.875	182.9	-2.64E+07	-1.88E+10
107	127	16A	270	(100.2)	(170.9)	30.0	165.375	198.1	-2.79E+07	-1.99E+10
107	127	16A	270	(107.8)	(184.1)	30.0	169.062	213.4	-3.00E+07	-2.14E+10
107	127	16A	270	(137.9)	(237.2)	30.0	184.937	274.3	-3.12E+07	-2.22E+10
107	127	16A	270	(167.8)	(290.3)	30.0	202.437	335.3	-2.93E+07	-2.09E+10
107	127	16A	270	(197.8)	(343.4)	30.0	221.250	396.2	-2.74E+07	-1.95E+10
107	127	16A	270	(228.2)	(396.2)	30.0	241.125	457.2	-2.52E+07	-1.79E+10
107	127	16A	270	(217.0)	(470.5)	30.0	251.875	518.2	-2.18E+07	-1.55E+10
107	127	16A	270	(287.9)	(496.6)	30.0	281.375	574.0	-1.99E+07	-1.41E+10
107	127	16A	270	(92.2)	(473.9)	36.0	212.687	482.8	-2.40E+07	-1.71E+10
107	127	16A	270	(122.7)	(474.0)	48.0	222.062	489.6	-2.41E+07	-1.71E+10
107	127	16A	270	(353.1)	(351.2)	60.0	281.000	498.0	-2.31E+07	-1.64E+10
107	127	16A	270	(184.2)	(473.6)	72.0	241.687	508.2	-2.27E+07	-1.62E+10
107	127	16A	270	(213.3)	(474.1)	84.0	251.437	519.9	-2.19E+07	-1.56E+10
107	127	16A	270	(243.8)	(474.1)	96.0	261.687	533.1	-2.13E+07	-1.51E+10
107	127	16A	270	(274.4)	(474.0)	108.0	272.125	547.7	-2.09E+07	-1.48E+10

107	136	17	270	(-.5)	(182.9)	0.0	121.250	182.9	3.07E-01	2.18E+02
107	136	17	270	(-.8)	(198.1)	0.0	122.625	198.1	2.27E-01	1.61E+02

TABLE 2 DIRECT EXTERNAL ENVIRONMENTAL RESPONSE OF A CARBON WALL-CO₂-GAS ION CHAMBER
 * CALIBRATED BY CO-60 PHOTONS
 ** DISTANCE FROM CORE CENTER
 *** RADIAL DISTANCE FROM AXIAL CENTERLINE
 () DENOTES CALCULATED VALUE

E5 RUN NO. TOTAL	E5 RUN NO. BKGD	CON FIG	PAX ANG DEG	RADIUS (CM)	ELEVATN (CM)	POLAR ANGLE (DEG)	POLAR ANGLE TAPE HEADOUT	CORE RAY (CM)	DIRECT RADS(C) HR-W	ELAPSE TIME
106	126	16A	270	(.5)	(148.0)	0.0	119.375	148.0	5.74E-02	-29.5
106	126	16A	270	(.6)	(152.4)	0.0	119.625	152.4	5.30E-02	-26.8
106	126	16A	270	(.3)	(167.6)	0.0	120.375	167.6	4.21E-02	-27.8
106	126	16A	270	(.2)	(182.9)	0.0	121.562	182.9	3.34E-02	-28.5
106	126	16A	270	(.1)	(198.1)	0.0	123.000	198.1	2.72E-02	-28.4
106	126	16A	270	(.1)	(213.4)	0.0	124.812	213.4	2.26E-02	-28.3
106	126	16A	270	(-.3)	(274.3)	0.0	134.500	274.3	1.22E-02	-28.9
106	126	16A	270	(-.7)	(335.3)	0.0	147.687	335.3	7.57E-03	-28.4
106	126	16A	270	(-.8)	(396.2)	0.0	163.562	396.2	5.23E-03	-27.9
106	126	16A	270	(-.4)	(457.2)	0.0	181.437	457.2	4.06E-03	-28.0
106	126	16A	270	(-.1)	(518.2)	0.0	200.625	518.2	3.28E-03	-28.5
106	126	16A	270	(.6)	(574.0)	0.0	219.187	574.0	2.76E-03	-28.5
106	126	16A	270	(26.3)	(148.0)	10.0	131.562	150.3	5.18E-02	-30.6
106	126	16A	270	(26.6)	(150.1)	10.0	131.750	152.4	4.97E-02	-25.9
106	126	16A	270	(29.2)	(165.1)	10.0	133.500	167.6	3.94E-02	-25.7
106	126	16A	270	(31.6)	(180.1)	10.0	135.437	182.9	3.14E-02	-24.8
106	126	16A	270	(34.2)	(195.2)	10.0	137.687	198.1	2.57E-02	-24.1
106	126	16A	270	(36.6)	(210.2)	10.0	140.125	213.4	2.12E-02	-23.6
106	126	16A	270	(46.6)	(270.3)	10.0	152.062	274.3	1.14E-02	-23.6
106	126	16A	270	(56.4)	(330.5)	10.0	166.687	335.3	7.19E-03	-23.2
106	126	16A	270	(66.5)	(390.6)	10.0	183.500	396.2	5.10E-03	-22.9
106	126	16A	270	(77.1)	(450.7)	10.0	201.937	457.2	3.84E-03	-22.7
106	126	16A	270	(88.0)	(510.6)	10.0	221.562	518.2	3.10E-03	-22.4
106	126	16A	270	(97.9)	(565.6)	10.0	240.250	574.0	2.53E-03	-22.3
106	126	16A	270	(31.3)	(474.0)	12.0	195.062	475.0	3.34E-03	-6.6
106	126	16A	270	(50.9)	(147.9)	19.0	143.000	156.4	3.87E-02	-31.2
106	126	16A	270	(52.9)	(142.9)	20.0	143.875	152.4	3.92E-02	-13.1

TABLE 2 DIRECT EXTERNAL ENVIRONMENTAL RESPONSE OF A CARBON WALL-CO₂-GAS ION CHAMBER
DIRECT TABLE CONTINUED

E5 RUN NO. TOTAL	E5 RUN NO. BKGD	CON FIG	PAX ANG DEG	RADIUS (CM)	ELEVATN (CM)	POLAR ANGLE (DEG)	POLAR ANGLE TAPE READOUT	CORE RAY (CM)	DIRECT RADS(C) HR-W	ELAPSE TIME
106	126	16A	270	(58.0)	(157.3)	20.0	146.375	167.6	3.04E-02	-14.2
106	126	16A	270	(63.0)	(171.7)	20.0	149.062	182.9	2.39E-02	-14.4
106	126	16A	270	(68.2)	(186.0)	20.0	152.000	198.1	2.00E-02	-16.0
106	126	16A	270	(73.2)	(200.4)	20.0	155.062	213.4	1.69E-02	-18.0
106	126	16A	270	(134.1)	(372.9)	20.0	203.000	396.2	5.17E-03	-20.0
106	126	16A	270	(154.8)	(430.2)	20.0	222.125	457.2	4.00E-03	-20.5
106	126	16A	270	(175.8)	(487.4)	20.0	242.187	518.2	3.28E-03	-21.1
106	126	16A	270	(195.6)	(539.7)	20.0	261.312	574.0	2.91E-03	-21.6
106	126	16A	270	(76.2)	(147.5)	27.0	154.500	166.1	2.39E-02	-32.0
106	126	16A	270	(85.1)	(144.4)	30.0	158.500	167.6	2.32E-02	-12.7
106	126	16A	270	(92.7)	(157.7)	30.0	161.875	182.9	2.06E-02	-12.9
106	126	16A	270	(100.2)	(170.9)	30.0	165.375	198.1	1.82E-02	-13.0
106	126	16A	270	(107.8)	(184.1)	30.0	169.062	213.4	1.60E-02	-13.6
106	126	16A	270	(137.9)	(237.2)	30.0	184.937	274.3	1.09E-02	-13.4
106	126	16A	270	(167.8)	(290.3)	30.0	202.437	335.3	7.53E-03	-14.1
106	126	16A	270	(197.8)	(343.4)	30.0	221.250	396.2	5.71E-03	-13.8
106	126	16A	270	(228.2)	(396.2)	30.0	241.125	457.2	4.42E-03	-13.7
106	126	16A	270	(259.3)	(448.6)	30.0	261.875	518.2	3.78E-03	-13.8
106	126	16A	270	(287.9)	(496.6)	30.0	281.375	574.0	3.14E-03	-13.5
106	126	16A	270	(99.8)	(147.9)	34.0	165.000	178.4	2.54E-02	-32.9
106	126	16A	270	(128.9)	(148.4)	41.0	177.562	196.5	3.41E-02	-33.5
106	126	16A	270	(122.7)	(474.0)	48.0	222.062	489.6	3.07E-03	-10.6

106	121	16B	270	(.7)	(148.0)	0.0	119.437	148.0	2.97E-02	-24.0
106	121	16B	270	(.6)	(152.4)	0.0	119.625	152.4	2.78E-02	-20.9
106	121	16B	270	(.4)	(167.6)	0.0	120.437	167.6	2.20E-02	-22.3
106	121	16B	270	(.4)	(182.9)	0.0	121.625	182.9	1.77E-02	-23.1
106	121	16B	270	(.2)	(198.1)	0.0	123.062	198.1	1.45E-02	-23.5
106	121	16B	270	(.2)	(213.4)	0.0	124.875	213.4	1.20E-02	-23.5

TABLE 3 DIRECT EXTERNAL ENVIRONMENTAL RESPONSE OF AN ALUMINUM BRAGG-GRAY CHAMBER
 * CALIBRATED BY CO-60 PHOTONS
 ** DISTANCE FROM CORE CENTER
 *** RADIAL DISTANCE FROM AXIAL CENTERLINE
 () DENOTES CALCULATED VALUE

E5 RUN NO. TOTAL	E5 RUN NO. BKGD	CON FIG	PAX ANG DEG	RADIUS (CM)	ELEVATN (CM)	POLAR ANGLE (DEG)	POLAR ANGLE TAPE READOUT	CORE RAY (CM)	DIRECT RAD(SIAL) HR-W	ELAPSE TIME
106	126	16A	270	(.5)	(148.0)	0.0	119.375	148.0	5.67E-02	-29.5
106	126	16A	270	(.6)	(152.4)	0.0	119.625	152.4	5.60E-02	-26.8
106	126	16A	270	(.3)	(167.6)	0.0	120.375	167.6	4.46E-02	-27.8
106	126	16A	270	(.2)	(182.9)	0.0	121.562	182.9	3.56E-02	-26.5
106	126	16A	270	(.1)	(198.1)	0.0	123.000	198.1	3.08E-02	-28.4
106	126	16A	270	(.1)	(213.4)	0.0	124.812	213.4	2.49E-02	-28.3
106	126	16A	270	(-.3)	(274.3)	0.0	134.500	274.3	1.15E-02	-28.9
106	126	16A	270	(-.7)	(335.3)	0.0	147.687	335.3	9.40E-03	-28.4
106	126	16A	270	(-.8)	(396.2)	0.0	163.562	396.2	7.29E-03	-27.9
106	126	16A	270	(-.4)	(457.2)	0.0	181.437	457.2	5.78E-03	-28.0
106	126	16A	270	(-.1)	(518.2)	0.0	200.625	518.2	4.69E-03	-28.5
106	126	16A	270	(.6)	(574.0)	0.0	219.187	574.0	3.74E-03	-28.5
106	126	16A	270	(26.3)	(148.0)	10.0	131.562	150.3	5.27E-02	-30.6
106	126	16A	270	(26.6)	(150.1)	10.0	131.750	152.4	5.07E-02	-25.9
106	126	16A	270	(29.2)	(165.1)	10.0	133.500	167.6	4.02E-02	-25.7
106	126	16A	270	(31.6)	(180.1)	10.0	135.437	182.9	3.24E-02	-24.8
106	126	16A	270	(34.2)	(195.2)	10.0	137.687	198.1	2.57E-02	-24.1
106	126	16A	270	(36.6)	(210.2)	10.0	140.125	213.4	2.26E-02	-23.6
106	126	16A	270	(46.6)	(270.3)	10.0	152.062	274.3	1.25E-02	-23.6
106	126	16A	270	(56.4)	(330.5)	10.0	166.687	335.3	8.09E-03	-23.2
106	126	16A	270	(66.5)	(390.6)	10.0	183.500	396.2	6.76E-03	-22.9
106	126	16A	270	(77.1)	(450.7)	10.0	201.937	457.2	5.28E-03	-22.7
106	126	16A	270	(88.0)	(510.6)	10.0	221.562	518.2	4.92E-03	-22.4
106	126	16A	270	(97.9)	(565.6)	10.0	240.250	574.0	4.48E-03	-22.3
106	126	16A	270	(31.3)	(474.0)	12.0	195.062	475.0	3.66E-03	-6.6
106	126	16A	270	(50.9)	(147.9)	19.0	143.000	156.4	3.86E-02	-31.2
106	126	16A	270	(52.9)	(142.9)	20.0	143.875	152.4	3.78E-02	-13.1

TABLE 3 DIRECT EXTERNAL ENVIRONMENTAL RESPONSE OF AN ALUMINUM BRAGG-GRAY CHAMBER
DIRECT TABLE CONTINUED

E5 RUN NO. TOTAL	E5 RUN NO. BKGD	CON FIG	PAX ANG DEG	RADIUS (CM)	ELEVATN (CM)	POLAR ANGLE (DEG)	POLAR ANGLE TAPE READOUT	CORE RAY (CM)	DIRECT RADS(AL) HR-W	ELAPSE TIME
106	126	16A	270	(58.0)	(157.3)	20.0	146.375	167.6	3.01E-02	-14.2
106	126	16A	270	(63.0)	(171.7)	20.0	149.062	182.9	2.34E-02	-14.4
106	126	16A	270	(68.2)	(186.0)	20.0	152.000	198.1	1.96E-02	-16.0
106	126	16A	270	(73.2)	(200.4)	20.0	155.062	213.4	1.77E-02	-18.0
106	126	16A	270	(134.1)	(372.9)	20.0	203.000	396.2	8.55E-03	-20.0
106	126	16A	270	(154.8)	(430.2)	20.0	222.125	457.2	6.14E-03	-20.5
106	126	16A	270	(175.8)	(487.4)	20.0	242.187	518.2	5.30E-03	-21.1
106	126	16A	270	(195.6)	(539.7)	20.0	261.312	574.0	4.50E-03	-21.6
106	126	16A	270	(76.2)	(147.5)	27.0	154.500	166.1	2.64E-02	-32.0
106	126	16A	270	(85.1)	(144.4)	30.0	158.500	167.6	2.26E-02	-12.7
106	126	16A	270	(92.7)	(157.7)	30.0	161.875	182.9	1.93E-02	-12.9
106	126	16A	270	(100.2)	(170.9)	30.0	165.375	198.1	1.65E-02	-13.0
106	126	16A	270	(107.8)	(184.1)	30.0	169.062	213.4	1.67E-02	-13.6
106	126	16A	270	(137.9)	(237.2)	30.0	184.937	274.3	1.14E-02	-13.4
106	126	16A	270	(167.8)	(290.3)	30.0	202.437	335.3	8.27E-03	-14.1
106	126	16A	270	(197.8)	(343.4)	30.0	221.250	396.2	5.93E-03	-13.8
106	126	16A	270	(228.2)	(396.2)	30.0	241.125	457.2	4.96E-03	-13.7
106	126	16A	270	(259.3)	(448.6)	30.0	261.875	518.2	4.14E-03	-13.8
106	126	16A	270	(287.9)	(496.6)	30.0	281.375	574.0	4.14E-03	-13.5
106	126	16A	270	(99.8)	(147.9)	34.0	165.000	178.4	2.67E-02	-32.9
106	126	16A	270	(128.9)	(148.4)	41.0	177.562	196.5	3.74E-02	-33.5
106	126	16A	270	(122.4)	(474.0)	48.0	222.000	489.6	4.41E-03	-10.6

106	121	16B	270	(.7)	(148.0)	0.0	119.437	148.0	2.58E-02	-24.0
106	121	16B	270	(.6)	(152.4)	0.0	119.625	152.4	2.72E-02	-20.9
106	121	16B	270	(.4)	(167.6)	0.0	120.437	167.6	2.26E-02	-22.3
106	121	16B	270	(.4)	(182.9)	0.0	121.625	182.9	1.81E-02	-23.1
106	121	16B	270	(.2)	(198.1)	0.0	123.062	198.1	1.56E-02	-23.5
106	121	16B	270	(.2)	(213.4)	0.0	124.875	213.4	1.30E-02	-23.5

TABLE 4 DIRECT EXTERNAL ENVIRONMENTAL RESPONSE OF AN BERYLLIUM BRAGG-GRAY CHAMBER

* CALIBRATED BY CO-60 PHOTONS

** DISTANCE FROM CORE CENTER

*** RADIAL DISTANCE FROM AXIAL CENTERLINE

() DENOTES CALCULATED VALUE

ES RUN NO. TOTAL	ES RUN NO. BKGD	CON FIG	PAX ANG DEG	RADIUS (CM)	ELEVATN (CM)	POLAR ANGLE (DEG)	POLAR ANGLE TAPE READOUT	CORE RAY (CM)	DIRECT RADS(BE) HR-W	ELAPSE TIME
106	126	16A	270	(.5)	(148.0)	0.0	119.375	148.0	6.44E-02	-29.5
106	126	16A	270	(.6)	(152.4)	0.0	119.625	152.4	6.08E-02	-26.8
106	126	16A	270	(.3)	(167.6)	0.0	120.375	167.6	4.85E-02	-27.8
106	126	16A	270	(.2)	(182.9)	0.0	121.562	182.9	3.85E-02	-28.5
106	126	16A	270	(.1)	(198.1)	0.0	123.000	198.1	3.37E-02	-28.4
106	126	16A	270	(.1)	(213.4)	0.0	124.812	213.4	2.73E-02	-28.3
106	126	16A	270	(-.3)	(274.3)	0.0	134.500	274.3	1.30E-02	-28.9
106	126	16A	270	(-.7)	(335.3)	0.0	147.687	335.3	1.03E-02	-28.4
106	126	16A	270	(-.8)	(396.2)	0.0	163.562	396.2	8.17E-03	-27.9
106	126	16A	270	(-.4)	(457.2)	0.0	181.437	457.2	6.42E-03	-28.0
106	126	16A	270	(-.1)	(518.2)	0.0	200.625	518.2	4.83E-03	-28.5
106	126	16A	270	(.6)	(574.0)	0.0	219.187	574.0	4.40E-03	-28.5
106	126	16A	270	(26.3)	(148.0)	10.0	131.562	150.3	5.71E-02	-30.6
106	126	16A	270	(26.6)	(150.1)	10.0	131.750	152.4	5.53E-02	-25.9
106	126	16A	270	(29.2)	(165.1)	10.0	133.500	167.6	4.35E-02	-25.7
106	126	16A	270	(31.6)	(180.1)	10.0	135.437	182.9	3.62E-02	-24.8
106	126	16A	270	(34.2)	(195.2)	10.0	137.687	198.1	2.94E-02	-24.1
106	126	16A	270	(36.6)	(210.2)	10.0	140.125	213.4	2.52E-02	-23.6
106	126	16A	270	(46.6)	(270.3)	10.0	152.062	274.3	1.47E-02	-23.6
106	126	16A	270	(56.4)	(330.5)	10.0	166.687	335.3	9.08E-03	-23.2
106	126	16A	270	(66.5)	(390.6)	10.0	183.500	396.2	7.46E-03	-22.9
106	126	16A	270	(77.1)	(450.7)	10.0	201.937	457.2	6.45E-03	-22.7
106	126	16A	270	(88.0)	(510.6)	10.0	221.562	518.2	5.56E-03	-22.4
106	126	16A	270	(97.9)	(565.6)	10.0	240.250	574.0	5.41E-03	-22.3
106	126	16A	270	(31.3)	(474.0)	12.0	195.062	475.0	4.77E-03	-6.6
106	126	16A	270	(50.9)	(147.9)	19.0	143.000	156.4	4.23E-02	-31.2
106	126	16A	270	(52.9)	(142.9)	20.0	143.875	152.4	4.10E-02	-13.1

TABLE 4 DIRECT EXTERNAL ENVIRONMENTAL RESPONSE OF AN BERYLLIUM BRAGG-GRAY CHAMBER
DIRECT TABLE CONTINUED

E5 RUN NO. TOTAL	E5 RUN NO. BKGD	CON FIG	PAX ANG DEG	RADIUS (CM)	ELEVATN (CM)	POLAR ANGLE (DEG)	POLAR ANGLE TAPE READOUT	CORE RAY (CM)	DIRECT RAD(S)(BE) HR-W	ELAPSE TIME
106	126	16A	270	(58.0)	(157.3)	20.0	146.375	167.6	3.22E-02	-14.2
106	126	16A	270	(63.0)	(171.7)	20.0	149.062	182.9	2.67E-02	-14.4
106	126	16A	270	(68.2)	(186.0)	20.0	152.000	198.1	2.35E-02	-16.0
106	126	16A	270	(73.2)	(200.4)	20.0	155.062	213.4	2.09E-02	-18.0
106	126	16A	270	(93.7)	(257.8)	20.0	169.125	274.3	1.44E-02	-19.1
106	126	16A	270	(113.7)	(315.4)	20.0	185.187	335.3	1.04E-02	-19.9
106	126	16A	270	(134.1)	(372.9)	20.0	203.000	396.2	9.80E-03	-20.0
106	126	16A	270	(154.8)	(430.2)	20.0	222.125	457.2	7.75E-03	-20.5
106	126	16A	270	(175.8)	(487.4)	20.0	242.187	518.2	6.76E-03	-21.1
106	126	16A	270	(195.6)	(539.7)	20.0	261.312	574.0	5.86E-03	-21.6
106	126	16A	270	(76.2)	(147.5)	27.0	154.500	166.1	2.87E-02	-32.0
106	126	16A	270	(85.1)	(144.4)	30.0	158.500	167.6	2.79E-02	-12.7
106	126	16A	270	(92.7)	(157.7)	30.0	161.875	182.9	2.39E-02	-12.9
106	126	16A	270	(100.2)	(170.9)	30.0	165.375	198.1	2.18E-02	-13.0
106	126	16A	270	(107.8)	(184.1)	30.0	169.062	213.4	2.20E-02	-13.6
106	126	16A	270	(137.9)	(237.2)	30.0	184.937	274.3	1.43E-02	-13.4
106	126	16A	270	(167.8)	(290.3)	30.0	202.437	335.3	1.05E-02	-14.1
106	126	16A	270	(197.8)	(343.4)	30.0	221.250	396.2	6.87E-03	-13.8
106	126	16A	270	(228.2)	(396.2)	30.0	241.125	457.2	6.14E-03	-13.7
106	126	16A	270	(259.3)	(448.6)	30.0	261.875	518.2	5.26E-03	-13.8
106	126	16A	270	(287.9)	(496.6)	30.0	281.375	574.0	5.56E-03	-13.5
106	126	16A	270	(99.8)	(147.9)	34.0	165.000	178.4	1.95E-02	-32.9
106	126	16A	270	(128.9)	(148.4)	41.0	177.562	196.5	4.52E-02	-33.5
106	126	16A	270	(122.4)	(474.0)	48.0	222.000	489.6	6.00E-03	-10.6

106	121	16B	270	(.7)	(148.0)	0.0	119.437	148.0	2.79E-02	-24.0
106	121	16B	270	(.6)	(152.4)	0.0	119.625	152.4	2.72E-02	-20.9
106	121	16B	270	(.4)	(167.6)	0.0	120.437	167.6	2.22E-02	-22.3
106	121	16B	270	(.4)	(182.9)	0.0	121.625	182.9	1.74E-02	-23.1

Fortran Listing of PARX22

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PROGRAM PARX22(INPUT,OUTPUT,FILMPL,TAPE5=INPUT,TAPE6=OUTPUT,
1 TAPE11, TAPE12)
000003 DATA      1BLANK,I9 /1H ,1H9/
000003 COMMON     ARAY(13),CONF,COUNT4(30),COUNT6(30),CUTP,DCX,DCY,KX,KY,
1               IAPAY(8),ICTAB,IGRPH,ND,NG,NOPOAN,NOTARS,NS,NV,
2               NX0,NY0,PAXANG,POANG(30),POS(15),PX1(50,30),PX2(50,30),
3               PX3(50,30),PX4(50,30),PX5(50,30),PX6(50,30),PX7(50,30),
4               PX8(50,30),PX9(50,30),PX10(50,30),PY1(50,30),PY2(50,30),
5               PY3(50,30),PY4(50,30),PY5(50,30),PY6(50,30),PY7(50,30),
6               PY8(50,30),PY9(50,30),PY10(50,30),REP1,REP2,ISPP,NGR,
7               TABLES(2,15),NYCYCL,XIMAX,XIMIN,NTYPE,COUNT5(30)
000003 INTEGER    CONF, CUTP, PAXANG,POS,REP1,REP2,TABLES,COUNT4,COUNT5,
1               COUNT6,CONF1,PAXANI,READ
C      INITIALIZE PARAMETERS FOR LATER CALLS TO AICRT4 PLOT ROUTINE
000003 CALL PDVICE(3)
000005 KCEV = 0
000006 LCEV = 0
000007 KX = 0
000010 KY = 1
000011 ND = 1
000012 NS = 2
000013 NG = 1
000014 DCX = 16.0
000015 DCY = 16.0
000016 NX0 = 2
000017 NY0 = 2
000020 NV = 2
C
000021 READ=0
000022 ICTAB=0
000023 ICHANG=
C      ONLY ONE TYPE OF DATA (POLAR ANGLE AND CORE RAY) CAN BE PLOTTED
C      TYPE 2 DATA (RADIUS AND ELEVATION) IS PROCESSED AS TYPE 1
C
C      READ INPUT
C      ISPP - NO. OF SPECIFIC PLOTS. IF ZERO, PLOTS GENERATED BY INPUT TABLES
C      NYCYCL - NO. OF CYCLES WANTED ON Y-AXIS
C      XIMIN - MINIMUM VALUE WANTED ON X-AXIS
C      XIMAX - MAXIMUM VALUE WANTED ON X-AXIS
C      NOPOAN - NO. OF POLAR ANGLES TO BE CONSIDERED IN DATA SEARCH

```

```

C      NOTABS = NO. OF TABLES FROM WHICH DATA WILL BE SELECTED
C      CUIP = CUT-OFF POINT FOR NO. OF POLAR ANGLE CURVES/GRAPH
C      POS(I), I=1, NOTABS = ARRAY POSITION OF Y-VALUE FOR RESPECTIVE   TABLES
C      IPLO = INDICATOR FOR TYPE OF GRAPH WANTED
C      IPLO = 0, LEAST SQUARES FIT, VECTORS DRAWN, ONE CURVE/PLOT
C      IPLO = 1, NO LEAST SQUARES FIT, DATA PTS. ONLY, ONE CURVE/PLOT
C      IPLO = 2, NO LEAST SQUARES FIT, DATA PTS. ONLY, MULTIPLE CURVES/PLOT
C      IPLO = 3, LEAST SQUARES FIT, VECTORS DRAWN, MULTIPLE CURVES/PLOT
C      RADII = TABLE OF RADIUS VALUES (INCHES)
C      ELEV = TABLE OF ELEVATION VALUES (INCHES)
C      POANG = TABLE OF POLAR ANGLE VALUES (DEGREES)
C      TABLES(I), I = 1, NOTABS = LIST OF TABLES FROM WHICH DATA IS TO BE CHOSEN
C
C      NTYPE = 1   INDICATES THAT MULTIPLE PLOTS OF CONFIGURATIONS VS.
C                  SPECIFIC POLAR ANGLE ARE DESIRED
C      KELEV = 1   REQUEST FOR CONSTANT ELEV(474, 148CM) VS CAL. POL ANG.
C      CONEV1 AND CONEV2 SHOULD BE GIVEN IN CENTIMETERS
C      NGR = 1 REGULAR PLOTS ARE DESIRED OTHERWISE DIFFERENCE(DIRECT) PLOTS
C      ARE DESIRED.
C
C      ICN = 1
C      ICON = 0
C      IF = 0
C      REWIND INPUT TAPE
C
C      IN = 12
C      IN1 = 11
C      REWIND IN
C      REWIND IN1
C
C      READ(5, 5) NTYPE, NGR, KELEV
C      5 FORMAT(3I3)
C      READ CONSTANT ELEVATION VALUES
C      CONEV1 = 1ST CONSTANT ELEVATION VALUE
C      CONEV2 = 2ND CONSTANT ELEVATION VALUE
C      IF(KELEV .GT. 0) READ(5, 10) CONEV1, CONEV2
C      10 FORMAT(2F12.5)
C
C      READ NO. OF SPECIFIC PLOTS AND NO. OF CYCLES FOR Y-AXIS
C      READ(5, 200) ISPP, NYCYCL
C      READ MINIMUM AND MAXIMUM VALUES FOR X-AXIS
C      READ(5, 205) XIMIN, XIMAX
C      READ NO. OF POLAR ANGLES AND TABLES

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000100      READ(5, 200) NOPOAN, NOTABS
          C      READ TABLE IDENTIFICATIONS
000110      READ(5, 210) (TABLES(1,I),TABLES(2,I),I=1,NOTABS)
          C      ARE SPECIFIC CURVES DESIRED
000127      IF (ISPP.NE.0) GO TO 135
          C      READ ARRAY POSITIONS OF ORDINATE VALUES FOR ALL TABLES REQUESTED
000130      READ(5, 200) (POS(I),I=1,NOTABS)
          C      READ CUTOFF POINTS FOR GRAPHS AND OPTION FOR TYPES OF CURVES
000143      READ(5, 200) CUTP, IPLO

000153      15 IF(NOPOAN .EQ. 0) GO TO 20
000154      READ(5, 205) (POANG(I),I=1,NOPOAN)
000167      20 CONTINUE
000167      IF(NTYPE .EQ. 1) CALL MULTCON(IPLO)
000173      IF(NTYPE .EQ. 1) GO TO 195

          C      INITIALIZE INDICATORS
000175      ICHANG = 1

          C      CALL SUBROUTINE CLEAR TO INITIALIZE STORAGE ARRAYS
000176      25 CALL CLEAR
          C      WAS ALL DATA FOR A SPECIFIC TABLE PROCESSED
000177      IF (ICHANG.NE.1) GO TO 30
          C      UPDATE COUNT OF TABLES PROCESSED
000201      ICTAB = ICTAB + 1

          C      HAVE ALL TABLES BEEN PROCESSED
000202      IF (ICTAB.GT.NOTABS) GO TO 195
          C      STORE TABLE IDENTIFICATION IN REP1 AND REP2
000205      REP1 = TABLES(1,ICTAB)
000206      REP2 = TABLES(2,ICTAB)
000210      GO TO 35

          C      STORE CONFIGURATION AND PAX ANGLE TO PROCESS IN CONF AND PAXANG
000211      30 CONF = IARRAY(5)
000213      PAXANG = IARRAY(6)
          C      SHOULD A NEW RECORD BE READ FROM THE INPUT TAPE
000214      35 IF (READ.NE.0) GO TO 60
  
```

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000215 C      WERE SPECIFIC CURVES REQUESTED
        C      40 IF (ISPP.NF.0) GO TO 150
        C      READ RECORD AND SET INDICATOR

        C      NGR = 1 REGULAR PLOTS ARE REQUESTED
        C      NGR = 2 DIFFERENCE (DIRECT) PLOTS ARE REQUESTED

000216      IF (NGR .EQ. 1) GO TO 50
000220      45 READ(11) (IARAY(I),I=1,8), (ARAY(I),I=1,13)
000237      ITP = 1
000240      GO TO 55
000241      50 READ(12) (IARAY(I),I=1,8), (ARAY(I),I=1,13)
000260      ITP = 2
000261      55 CONTINUE
000261      READ = 1
        C      DOES THE TABLE IDENTIFICATION MATCH THE ONE IN PROCESS
000262      C      60 IF (IARAY(1).EQ.REP1.AND.IARAY(2).EQ.REP2) GO TO 65
        C      HAS DATA BEEN FOUND FOR THE TABLE AND CONFIGURATION IN PROCESS
000272      IF (CONF.NE.IHLANK) GO TO 105
000274      GO TO 40

        C      DOES THE CONFIGURATION MATCH THE ONE IN PROCESS
000274      C      65 IF (IARAY(5) .EQ. CONF) GO TO 70
        C      HAS DATA BEEN FOUND FOR THE TABLE AND CONF
000276      IF (CONF.NE.IHLANK) GO TO 110
        C      STORE NEW CONFIGURATION
000300      CONF = IARAY(5)
000301      GO TO 75
        C      DOES THE PAX ANGLE MATCH THE ONE IN PROCESS
000301      C      70 IF (IARAY(6).EQ.PAXANG) GO TO 80

        C      HAS DATA BEEN FOUND FOR THE TABLE, CONF., AND PAX ANGLE IN PROCESS
000303      IF (PAXANG.NE.1000) GO TO 115
        C      STORE NEW PAX ANGLE IN PAXANG
000305      C      75 PAXANG = IARAY(6)
        C      STORE ORDINATE POSITION IN ARRAY INTO J
000307      C      80 J = POS(ICTAB)
        C      INDICATE THAT A NEW RECORD SHOULD BE READ
000311      READ = 0
        C      IS THE INPUT OF THE POLAR ANGLE AND CORE RAY TYPE
000312      IF (IARAY(8) .EQ. 1 .OR. IARAY(8) .EQ. 2) GO TO 85

```

```

000321      GO TO 40

      C      CHECK FOR FIXED ELEVATION
000321      85 IF (NOPOAN.EQ.0) GO TO 40
000322      IF (KELEV .EQ. 1) CALL FIXELEV(IF,ICN,ICON,KCEV,LCEV,CONEV1,CONEV2)

      C      ARE THERE ANY ELEVATION VALUES TO BE CONSIDERED IN DATA SEARCH

      C      GRAPH 6 CURVE AT CONSTANT ELEVATION( 474CM OR 148CM)
      C      X = CALCULATED POLAR ANGLE
      C      DOES POLAR ANGLE ON TAPE MATCH ANY VALUE IN TABLE OF POLAR ANGLES
000333      DO 90 I4 = 1,NOPOAN
000335      IF (ABS(ARAY(3)-POANG(I4)).LT.0.5) GO TO 95
000342      90 CONTINUE

000344      GO TO 40

      C      ARE 50 DATA POINTS STORED FOR THIS ELEVATION
000345      95 IF (COUNT4(I4).EQ.50) GO TO 40

      C      IS THIS THE FIRST DATA POINT FOR THIS ELEVATION
000350      IF (COUNT4(I4).EQ.0) GO TO 100

      C      CALL SUBROUTINE LIMITS TO CHECK FOR DUPLICATE DATA
000351      CALL LIMITS(COUNT4(I4),PX4(1,I4),PY4(1,I4),ARAY(4),ARAY(J),ILIM)

      C      IS THIS POINT A DUPLICATE OF ONE PREVIOUSLY FOUND
000360      IF (ILIM.EQ.0) GO TO 40

      C      IS THE ORDINATE VALUE NEGATIVE OR ZERO
000361      100 IF (ARAY(J).LE.0) GO TO 40

      C      UPDATE COUNT OF POINTS STORED FOR THIS ELEVATION
000363      COUNT4(I4) = COUNT4(I4) + 1
000366      IC4 = COUNT4(I4)

      C      STORE ABSCISSA AND ORDINATE VALUES IN PX4 AND PY4 ARRAYS
000367      PX4(IC4,I4) = ARAY(4)
000373      PY4(IC4,I4) = ARAY(J)
000376      GO TO 40

      C      INDICATE ALL DATA FOR A PARTICULAR TABLE HAS BEEN PROCESSED
000377      105 ICHANG = 1
000400      GO TO 120

      C      INDICATE ALL DATA FOR A PARTICULAR CONFIGURATION HAS BEEN PROCESSED
000401      110 ICHANG = 2
000402      GO TO 120

      C      INDICATE ALL DATA FOR A PARTICULAR PAX ANGLE HAS BEEN PROCESSED
000403      115 ICHANG = 3

```

```

000404 C      CALL SUBROUTINE SETUP TO SET UP GRAPHS AND TO PLOT
      120 CALL SETUP(IPLO,CONEV1,CONEV2,ICN)
000407 C      REINITIALIZE CONFIGURATION COUNTER
000411      IF (ICHANG .NE. 1) GO TO 125
000412      ICN = 1
000413      IF = 0
000414      KCEV = 0
000415      LCEV = 0
000415      125 CONTINUE
000415      IF (ICHANG .NE. 2) GO TO 130
000417      KCEV = 0
000420      LCEV = 0
000421      130 CONTINUE
000421 C      END OF DATA TAPE
000421      IF (IARAY(2).EQ.19) GO TO 195
000423 C      WERE SPECIFIC PLOTS REQUESTED
000424      IF (ISPP.NE.0) GO TO 140
      GO TO 25

000425 C      INITIALIZE VARIABLES
      135 ISPCT = 0
000426      READ = 0
000427      ICTAB = 1
000430 C      UPDATE COUNT OF PLOTS PROCESSED
      140 ISPCT = ISPCT + 1
000432 C      HAS ALL DATA BEEN PROCESSED
000432      IF (ISPCT.GT.ISPP) GO TO 195
000435 C      READ TABLE 10.,CONF,PAX ANGLE,AND ARRAY POSITION OF ORDINATE VALUE
      READ(5, 215) REP1,REP2,CONF1,PAXANI,POS(1)

000452 C      READ NUMBER OF POLAR ANGLES
      READ(5, 200) NOPOAN
000460 C      READ CUTOFF POINTS FOR GRAPHS AND OPTION FOR TYPES OF CURVES
000470      READ(5, 200) CUTP, IPLO
000504      145 IF (NOPOAN.NE.0) READ(5, 205) (POANG(I),I=1,NOPOAN)
000504 C      CALL SUBROUTINE CLEAR TO INITIALIZE STORAGE ARRAYS
      CALL CLEAR

000505 C      SET CONF AND PAXANG VARIABLES
000507      CONF = CONF1
      PAXANG = PAXANI

```

```

000510      IFIND = 0

      C      SHOULD A RECORD BE READ FROM THE INPUT TAPE
000511      150 IF (READ.NE.0) GO TO 175
      C      READ A RECORD AND SET INDICATOR
000512      155 IF (NGR.EQ.1) GO TO 165
000514      160 READ(11) (IARAY(I),I=1,8), (ARAY(I),I=1,13)
000533      ITP = 1
000534      GO TO 170

000535      165 READ(12) (IARAY(I),I=1,8), (ARAY(I),I=1,13)
000554      ITP = 2
000555      170 CONTINUE
000555      READ = 1

      C      DOES THE TABLE ID ON TAPE MATCH THE ONE IN PROCESS
000556      175 IF (IARAY(1).EQ.REP1.AND.IARAY(2).EQ.REP2) GO TO 180
      C      HAS DATA BEEN FOUND FOR THIS GRAPH
000566      IF (IFIND.EQ.0) GO TO 155
000567      GO TO 120
      C      DOES TAPE CONFIGURATION MATCH THE ONE IN PROCESS
000567      180 IF (IARAY(5).EQ.CONF) GO TO 185

      C      HAS DATA BEEN FOUND FOR THIS GRAPH
000571      IF (IFIND.EQ.0) GO TO 155
000572      GO TO 120
      C      DOES THE PAX ANGLE FROM THE TAPE MATCH THE ONE IN PROCESS
000573      185 IF (IABS(IARAY(6) - PAXANG).LT.0.5) GO TO 190
      C      HAS DATA BEEN FOUND FOR THIS GRAPH
000601      IF (IFIND.EQ.0) GO TO 155
000602      GO TO 120

      C      INDICATE THAT DATA HAS BEEN FOUND FOR THIS GRAPH
000602      190 IFIND = 1
000603      GO TO 80
      C      END FILE PLOT TAPE
      C
000604      195 CALL PLOT3
000605      REWIND IN
000607      REWIND IN1
      C
000611      200 FORMAT(12I6)
  
```

```
000611      205 FORMAT(6E12.5)
000611      210 FORMAT(80A1)
000611      215 FORMAT(2A1,8X,A3,7X,I5,5X,I2)
000611          STOP
000613          END
```

PROGRAM LENGTH INCLUDING I/O BUFFERS
013054

FUNCTION ASSIGNMENTS

STATEMENT ASSIGNMENTS

5	-	000633	10	-	000635	15	-	000153	20	-	000167
25	-	000176	30	-	000211	35	-	000214	40	-	000215
45	-	000220	50	-	000241	55	-	000261	60	-	000262
65	-	000274	70	-	000301	75	-	000305	80	-	000307
85	-	000321	95	-	000345	100	-	000361	105	-	000377
110	-	000401	115	-	000403	120	-	000404	125	-	000415
130	-	000421	135	-	000425	140	-	000430	145	-	000470
150	-	000511	155	-	000512	160	-	000514	165	-	000535
170	-	000555	175	-	000556	180	-	000567	185	-	000573
190	-	000602	195	-	000604	200	-	000642	205	-	000644
210	-	000646	215	-	000650						

BLOCK NAMES AND LENGTHS

- 073003

VARIABLE ASSIGNMENTS

ARRAY	-	000000C01	CONEV1	-	000707	CONEV2	-	000710	CONF	-	000015C01
CONF1	-	000673	COUNT4	-	000016C01	COUNT5	-	072745C01	COUNT6	-	000054C01
CUTP	-	000112C01	DCX	-	000113C01	DCY	-	000114C01	I	-	000711
IARRAY	-	000117C01	IBLANK	-	000671	ICHANG	-	000700	ICN	-	000701
ICON	-	000702	ICTAB	-	000127C01	IC4	-	000717	IF	-	000703
IFIND	-	000721	ILIM	-	000716	IN	-	000704	IN1	-	000705
IPLO	-	000712	ISPCT	-	000720	ISPP	-	072701C01	ITP	-	000713
I4	-	000715	I9	-	000672	J	-	000714	KCEV	-	000676
KELEV	-	000706	KX	-	000115C01	KY	-	000116C01	LCEV	-	000677
ND	-	000131C01	NG	-	000132C01	NGR	-	072702C01	NOPOAN	-	000133C01
NOTABS	-	000134C01	NS	-	000135C01	NTYPE	-	072744C01	NV	-	000136C01
NX0	-	000137C01	NYCYCL	-	072741C01	NY0	-	000140C01	PAXANG	-	000141C01
PAXANI	-	000674	POANG	-	000142C01	POS	-	000200C01	PX1	-	000217C01
PX10	-	032513C01	PX2	-	003153C01	PX3	-	006107C01	PX4	-	011043C01
PX5	-	013777C01	PX6	-	016733C01	PX7	-	021667C01	PX8	-	024623C01
PX9	-	027557C01	PY1	-	035447C01	PY10	-	067743C01	PY2	-	040403C01
PY3	-	043337C01	PY4	-	046273C01	PY5	-	051227C01	PY6	-	054163C01
PY7	-	057117C01	PY8	-	062053C01	PY9	-	065007C01	READ	-	000675

REP1 - 072677C01 REP2 - 072700C01 TABLES - 072703C01 XIMAX - 072742C01
XIMIN - 072743C01

START OF CONSTANTS
000615

START OF TEMPORARIES
000655

START OF INDIRECTS
000662

UNUSED COMPILER SPACE
110200


```

SUBROUTINE FIXELEV(IF,ICN,ICON,KCEV,LCEV,CONEV1,CONEV2)
000012 COMMON ARAY(13),CONF,COUNT4(30),COUNT6(30),CUTP,DCX,DCY,KX,KY,
1 IARAY(8),ICTAB,IGRPH,ND,NG,NOPOAN,NOTARS,NS,NV,
2 NX0,NY0,PAXANG,POANG(30),POS(15),PX1(50,30),PX2(50,30),
3 PX3(50,30),PX4(50,30),PX5(50,30),PX6(50,30),PX7(50,30),
4 PX8(50,30),PX9(50,30),PX10(50,30),PY1(50,30),PY2(50,30),
5 PY3(50,30),PY4(50,30),PY5(50,30),PY6(50,30),PY7(50,30),
6 PY8(50,30),PY9(50,30),PY10(50,30),REP1,REP2,ISPP,NGR,
7 TABLES(2,15),NYCYCL,XIMAX,XIMIN,NTYPE,COUNT5(30)
000012 INTEGER CONF,CUTP,PAXANG,POS,REP1,REP2,TABLES,COUNT4,COUNT5,
1 COUNT6,CONF1,PAXANI,READ
000012 DIMENSION NT(5)
000012 DATA NT /1H1, 1H2, 1H3, 1H4, 1H5 /

```

```

C GRAPH 6 CURVE AT CONSTANT ELEVATION (CONEV1 OR CONEV2)
C X = CALCULATED POLAR ANGLE
C ICN IS CONFIGURATION COUNTER
C COUNT5 CONTAIN NUMBER OF POINTS FOUND FOR 1ST CONSTANT ELEV VALUE
C COUNT6 CONTAIN NUMBER OF POINTS FOUND FOR 2ND CONSTANT ELEV VALUE

```

```

000012 DO 5 K=1, 5
000013 IF(REP1 .EQ. NT(K) ) GO TO 10
000016 5 CONTINUE
000020 10 KREP = K

000022 IF(IF .EQ. 0) ICON = CONF
000024 IF = 1
000025 IF(ICON .EQ. IARAY(5) ) GO TO 15
000027 ICON = ICON + 1
000030 ICON = CONF
000031 15 CONTINUE
000031 I4 = ICON

```

```

C TABLE (1) ONLY - CONEV2 (2ND CONSTANT ELEV VALUE)
C TABLES (2), (3), (4), - CONEV1 AND CONEV2
C

```

```

000032 FEV = ARAY(2)
000034 DIFF1 = FEV-CONEV1
000035 IF(ABS(DIFF) .LT. .9) GO TO 20
000040 DIFF1 = FEV - CONEV2
000042 IF(ABS(DIFF1) .LT. .9 ) GO TO 25

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```

000045      GO TO 30
000046 20 IF (KREP .EQ. 1 .OR. KREP .EQ. 5) GO TO 30
000056      KCEV = KCEV + 1
000057      IF (ARRAY(10) .LT. 0.0) ARRAY(10) = 1.0
000061      PY5(KCEV,14) = ARRAY(10)
000066      PX5(KCEV,14) = ARRAY(13)
000072      COUNT5(14) = KCEV
000073      GO TO 30
000074 25 LCEV = LCEV + 1
000076      PX6(LCEV,14) = ARRAY(13)
000102      NU = 10
000103      IF (KREP .EQ. 1) NU = 11
000106      IF (ARRAY(NU) .LT. 0.0) ARRAY(NU) = 1.0
000113      PY6(LCEV,14) = ARRAY(NU)
000121      COUNT6(14) = LCEV
000123 30 CONTINUE
000123      RETURN
000124      END

```

SUBPROGRAM LENGTH
000165

FUNCTION ASSIGNMENTS

STATEMENT ASSIGNMENTS

10	-	000020	15	-	000031	20	-	000046	25	-	000074
30	-	000123									

BLOCK NAMES AND LENGTHS

- 073003

VARIABLE ASSIGNMENTS

ARRAY	-	000000C01	CONEV2	-	000000	CONF	-	000015C01	CONFI	-	000146
COUNT4	-	000016C01	COUNT5	-	072745C01	COUNT6	-	000054C01	CUTP	-	000112C01
DIFF	-	000162	DIFF1	-	000163	FEV	-	000161	IARAY	-	000117C01
I4	-	000160	K	-	000156	KREP	-	000157	NO	-	000164
NT	-	000151	PAXANG	-	000141C01	PAXANI	-	000147	POANG	-	000142C01
POS	-	000200C01	PX1	-	000217C01	PX10	-	032513C01	PX2	-	003153C01
PX3	-	006107C01	PX4	-	011043C01	PX5	-	013777C01	PX6	-	016733C01
PX7	-	021667C01	PX8	-	024623C01	PX9	-	027557C01	PY1	-	035447C01
PY10	-	067743C01	PY2	-	040403C01	PY3	-	043337C01	PY4	-	046273C01
PY5	-	051227C01	PY6	-	054163C01	PY7	-	057117C01	PY8	-	062053C01
PY9	-	065007C01	READ	-	000150	REP1	-	072677C01	REP2	-	072700C01
TABLES	-	072703C01									

START OF CONSTANTS
000126

START OF TEMPORARIES
000132

START OF INDIRECTS
000140

UNUSED COMPILER SPACE
112100

```

SUBROUTINE CLEAR
000002 COMMON ARAY(13),CONF, COUNT4(30),COUNT6(30),CUTP,DCX,DCY,KX,KY,
1 IARAY(8),ICTAB,IGRPH,ND,NG,NOPOAN,NOTABS,NS,NV,
2 NX0,NY0,PAXANG,POANG(30),POS(15),PX1(50,30),PX2(50,30),
3 PX3(50,30),PX4(50,30),PX5(50,30),PX6(50,30),PX7(50,30),
4 PX8(50,30),PX9(50,30),PX10(50,30),PY1(50,30),PY2(50,30),
5 PY3(50,30),PY4(50,30),PY5(50,30),PY6(50,30),PY7(50,30),
6 PY8(50,30),PY9(50,30),PY10(50,30),REP1,REP2,ISPP,NGR,
7 TABLES(2,15),NYCYCL,XIMAX,XIMIN,NTYPE,COUNT5(30)
000002 INTEGER CONF, CUTP, PAXANG,POS,REP1,REP2,TABLES,COUNT4,COUNT5,
1 COUNT6,CONF1,PAXANI,READ

000002 DATA IHLANK /1H /
C INITIALIZE X AND Y STORAGE
000002 DO 15 J = 1,30
000004 DO 10 I = 1,50
000005 PX4(I,J) = 0.0
000011 PX5(I,J) = 0.0
000015 PX6(I,J) = 0.0
000020 PY4(I,J) = 0.0
000024 PY5(I,J) = 0.0
000027 PY6(I,J) = 0.0
000033 IF(NTYPE .EQ. 2) GO TO 5
000035 PX1(I,J) = 0.0
000040 PX2(I,J) = 0.0
000044 PX3(I,J) = 0.0
000047 PX7(I,J) = 0.0
000053 PX8(I,J) = 0.0
000056 PX9(I,J) = 0.0
000062 PX10(I,J) = 0.0
000065 PY1(I,J) = 0.0
000071 PY2(I,J) = 0.0
000074 PY3(I,J) = 0.0
000100 PY7(I,J) = 0.0
000103 PY8(I,J) = 0.0
000107 PY9(I,J) = 0.0
000112 PY10(I,J) = 0.0
000116 5 CONTINUE
000116 10 CONTINUE
C INITIALIZE COUNTERS
000120 COUNT4(I) = 0

```

```
000122      COUNT5(J) = 0
000124      COUNT6(J) = 0
000125      15 CONTINUE
           C      INITIALIZE CONFIGURATION AND PAX ANGLE VARIABLES
000127      CONF1 = IBLANK
000131      PAXANG = 1000
000132      RETURN
000132      END
```

SUBPROGRAM LENGTH
000171

FUNCTION ASSIGNMENTS

STATEMENT ASSIGNMENTS
5 - 000116 10 - 000116

BLOCK NAMES AND LENGTHS
- 073003

VARIABLE ASSIGNMENTS
ARRAY - 000000C01 CONF - 000015C01 CONF1 - 000163 COUNT4 - 000016C01
COUNT5 - 072745C01 COUNT6 - 000054C01 CUTP - 000112C01 I - 000170
IARRAY - 000117C01 IBLANK - 000166 J - 000167 NTYPE - 072744C01
PAXANG - 000141C01 PAXANI - 000164 POANG - 000142C01 POS - 000200C01
PX1 - 000217C01 PX10 - 032513C01 PX2 - 003153C01 Px3 - 006107C01
PX4 - 011043C01 PX5 - 013777C01 PX6 - 016733C01 PX7 - 021667C01
PX8 - 024623C01 PX9 - 027557C01 PY1 - 035447C01 PY10 - 067743C01
PY2 - 040403C01 PY3 - 043337C01 PY4 - 046273C01 PY5 - 051227C01
PY6 - 054163C01 PY7 - 057117C01 PY8 - 062053C01 PY9 - 065007C01
READ - 000165 REP1 - 072677C01 REP2 - 072700C01 TABLES - 072703C01

START OF CONSTANTS
000134

START OF TEMPORARIES
000135

START OF INDIRECTS
000137

UNUSED COMPILER SPACE
112100

```

SUBROUTINE CONVER(A,N)
000005 DIMENSION DECS(20)
000005 DATA DECS /4HE+01,4HE+02,4HE+03,4HE+04,4HE+05,4HE+06,4HE+07,
1 4HE+08,4HE+09,4HE+10,4HE-01,4HE-02,4HE-03,4HE-04,
2 4HE-05,4HE-06,4HE-07,4HE-08,4HE-09,4HE-10 /
C DETERMINE MAGNITUDE OF EXPONENT N
000005 DO 5 I = 1,10
000006 IF (IABS(N).NE.I) GO TO 5
C FIND APPROPRIATE LABEL IN DATA STATEMENT AND STORE IN A
000010 IF (N.EQ.I) A = DECS(I)
000012 IF (N.EQ.-I) A = DECS(I+10)
000015 GO TO 10
000016 5 CONTINUE
000020 10 RETURN
000021 END

```

SUBPROGRAM LENGTH
000057

FUNCTION ASSIGNMENTS

STATEMENT ASSIGNMENTS
5 - 000016 10 - 000020

BLOCK NAMES AND LENGTHS

VARIABLE ASSIGNMENTS
DECS - 000032 1 - 000056

START OF CONSTANTS
000023

START OF TEMPORARIES
000024

START OF INDIRECTS
000030

UNUSED COMPILER SPACE
112700


```

      SUBROUTINE LSQUAR(M,N,X,Y,B,SIGMA)
      C M = DEGREE, N = NO. OF DATA POINTS
      C X = POINTS OF X- COORDINATE , Y = POINTS OF Y-COORDINATE
      C B = COEFFICIENTS OF POLYNOMIAL = A(0),A(1),... A(K)
      C SIGMA = SUM OF SQUARES OF THE RESIDUALS
000011      DIMENSION X(1), Y(1), A(25,26),XSUM(50),YSUM(25),B(25)
      C
      C  CALCULATION OF COEFFICIENTS
000011      IC=M + 1
000013      IC2 = IC + 1
000014      XSUM(1)=N
000015      I2=2*M
000016      DO 5 I1=1,I2
000017      J=I1+1
000021      XSUM(J)=0.
000023      DO 5 I3 =1,N
000024      5 XSUM(J)=XSUM(J)+X(I3)**I1
      C
      C  TRANSFER OF COEFFICIENTS TO MATRIX
000037      DO 10 I =1,IC
000041      K=I
000042      DO 10 J =1,IC
000044      A(I,J) = XSUM(K)
000052      10 K = K +1
      C
      C  CALCULATION OF CONSTANTS
000057      YSUM(1)=0.0
000060      DO 15 I = 1,N
000061      15 YSUM(1) = YSUM(1) + Y(I)
000065      DO 20 K= 1,M
000066      K1=K+1
000070      YSUM(K1)=0.
000072      DO 20 I= 1,N
000073      20 YSUM(K1) =YSUM(K1) +Y(I)*X(I)**K
      C
      C  TRANSFER OF CONSTANTS TO MATRIX
000110      DO 25 I= 1,IC
      C
      C  SIMULTANEOUS LINEAR EQUATION SUBPROGRAM
000111      25 A(I,IC2) = YSUM(I)
000123      CALL ISIMER (A,25 ,IC,1)

```

```

000126      DO 30 I = 1, IC
C
C  CALCULATION OF SIGMA
000133      30 B(I) = A(I,IC2)
000145          SIGMA=0.0
000146          DO 40 K= 1,N
000147              YC = A(1,IC2)
000154              DO 35 I= 2,IC
000155                  35 YC = YC +A(I,IC2) *X(K)**(I-1)
000175                  40 SIGMA = SIGMA + (YC-Y(K))**2
000203              RETURN
000203          END

```

SUBPROGRAM LENGTH
001562

FUNCTION ASSIGNMENTS

STATEMENT ASSIGNMENTS

5	-	000024	15	-	000061	20	-	000073	25	-	000111
30	-	000133									

BLOCK NAMES AND LENGTHS

VARIABLE ASSIGNMENTS

A	-	000223	I	-	001556	IC	-	001550	IC2	-	001551
I1	-	001553	I2	-	001552	I3	-	001555	J	-	001554
K	-	001557	K1	-	001560	XSUM	-	001435	YC	-	001561
YSUM	-	001517									

START OF CONSTANTS
000205

START OF TEMPORARIES
000210

START OF INDIRECTS
000220

UNUSED COMPILER SPACE
112200

```

SUBROUTINE LIMITS(NO,XS,YS,XI,YI,ILIM)
000011 DIMENSION XS(2),YS(2)
C      NO - NUMBER OF COORDINATES STORED
C      XS - ARRAY OF ABSCISSA VALUES
C      YS - ARRAY OF ORDINATE VALUES
C      XI - ABSCISSA VALUE FROM PRESENT RECORD
C      YI - ORDINATE VALUE FROM PRESENT RECORD
C      ILIM = 0, DUPLICATE DATA.  ILIM = 1, NEW POINT
000011 ILIM = 0
C      FIX THE FLOATING POINT VALUES
000011 IXI = XI
000012 IYI = YI
000014 DO 5 I = 1,NO
000016 IXS = XS(I)
000020 IYS = YS(I)
C      ARE THE X,Y VALUES DUPLICATES
000022 IF (IXI.EQ.IXS.AND.IYI.EQ.IYS) GO TO 10
000032 5 CONTINUE
C      INDICATE THAT THESE VALUES SHOULD BE STORED
000034 ILIM = 1
000035 10 RETURN
000036 END

```

SUBPROGRAM LENGTH
000054

FUNCTION ASSIGNMENTS

STATEMENT ASSIGNMENTS
10 - 000035

BLOCK NAMES AND LENGTHS

VARIABLE ASSIGNMENTS

I - 000051 IXI - 000047 IXS - 000052 IYI - 000050
IYS - 000053

START OF CONSTANTS
000040

START OF TEMPORARIES
000041

START OF INDIRECTS
000045

UNUSED COMPILER SPACE
112700

```

SUBROUTINE MINI(A,B,C,NY0)
000007 COMMON ARAY(13),CONF,COUNT4(30),COUNT6(30),CUTP,DCX,DCY,KX,KY,
1 IADAY(8),ICTAB,IGRPH,ND,NG,NOPOAN,NOTARS,NS,NV,
2 NX0,NY0,PAXANG,POANG(30),POS(15),PX1(50,30),PX2(50,30),
3 PX3(50,30),PX4(50,30),PX5(50,30),PX6(50,30),PX7(50,30),
4 PX8(50,30),PX9(50,30),PX10(50,30),PY1(50,30),PY2(50,30),
5 PY3(50,30),PY4(50,30),PY5(50,30),PY6(50,30),PY7(50,30),
6 PY8(50,30),PY9(50,30),PY10(50,30),REP1,REP2,ISPP,NGR,
7 TABLES(2,15),NYCYCL,XIMAX,XIMIN,NTYPE,COUNT5(30)
000007 INTEGER CONF,CUTP,PAXANG,POS,REP1,REP2,TABLES,COUNT4,COUNT5,
1 COUNT6,CONF1,PAXANI,READ
000007 DIMENSION SCALE(21)
000007 DATA SCALE /1.0E-10,1.0E-9,1.0E-8,1.0E-7,1.0E-6,1.0E-5,
1 1.0E-4,1.0E-3,1.0E-2,1.0E-1,1.0,1.0E+1,1.0E+2,1.0E+3,
2 1.0E+4,1.0E+5,1.0E+6,1.0E+7,1.0E+8,1.0E+9,1.0E+10 /

```

C A - VARIABLE TRANSFERRED TO ROUTINE THAT CONTAINS SMALLEST Y-VALUE
C B - MINIMUM Y-VALUE AS DETERMINED BY THIS ROUTINE
C C - MAXIMUM Y-VALUE AS DETERMINED BY THIS ROUTINE

C FIND LOWER LIMIT FOR Y-AXIS

```

000007 DO 5 I = 1,20
000010 IF (A.GT.SCALE(I).AND.A.LT.SCALE(I+1)) GO TO 10
000021 5 CONTINUE
C IF THE MINIMUM IS NOT WITHIN RANGE OF SCALE,LET AICRT4 SELECT LIMIT
000023 NY0 = 1
000024 GO TO 25
000024 10 INDEX1 = I
000026 INDEX = I + NYCYCL
000027 B = SCALE(I)

```

C FIND UPPER LIMIT

```

000031 DO 15 I = 1,21
000032 ALOW = SCALE(I) * 0.5
000035 HIGH = SCALE(I) + ALOW
000037 IF (C.GT.ALLOW.AND.C.LT.HIGH) GO TO 20
000047 15 CONTINUE

```

C IF UPPER LIMIT IS NOT WITHIN RANGE OF SCALE,OR IF DATA EXTENDS OVER MORE
C THAN THREE CYCLES FIND MAX
000051 CMAX=ALOG10(C)

```

000055      CMAXX=AINT(CMAX)
000057      IF(CMAX .GT. CMAXX) CMAXX=CMAX+1.0
000063      C=10.0**CMAXX
000067      GO TO 25
C
000070      20 C = SCALE(INDEX)
000072      IF ((I-INDEX1).GE.(NYCYCL-1)) GO TO 25
000076      IDIF = I - INDEX1
000077      INC = (NYCYCL - IDIF)/2
000101      IL = INDEX1 - INC
000102      IH = I + INC
000103      H = SCALE(IL)
000105      C = SCALE(IH)
000107      IDIF1 = IH - IL
000110      IF (IDIF1.EQ.NYCYCL) GO TO 25
000112      ITEMP = NYCYCL - IDIF1 + IH
000113      C = SCALE(ITEMP)
000115      25 RETURN
000116      END

```

SUBPROGRAM LENGTH
000206

FUNCTION ASSIGNMENTS

STATEMENT ASSIGNMENTS

10 - 000024 20 - 000070 25 - 000115

BLOCK NAMES AND LENGTHS
- 073003

VARIABLE ASSIGNMENTS

ALOW	-	000174	ARRAY	-	000000C01	CMAX	-	000176	CMAXX	-	000177
CONF	-	000015C01	CONFI	-	000141	COUNT4	-	000016C01	COUNT5	-	072745C01
COUNT6	-	000054C01	CUTP	-	000112C01	HIGH	-	000175	I	-	000171
IARRAY	-	000117C01	IDIF	-	000200	IDIF1	-	000204	IH	-	000203
IL	-	000202	INC	-	000201	INDEX	-	000173	INDEX1	-	000172
ITEMP	-	000205	NYCYCL	-	072741C01	PAXANG	-	000141C01	PAXANI	-	000142
POANG	-	000142C01	POS	-	000200C01	Px1	-	000217C01	Px10	-	032513C01
PX2	-	003153C01	PX3	-	006107C01	PX4	-	011043C01	PX5	-	013777C01
PX6	-	016733C01	PX7	-	021667C01	PX8	-	024623C01	PX9	-	027557C01
PY1	-	035447C01	PY10	-	067743C01	PY2	-	040403C01	PY3	-	043337C01
PY4	-	046273C01	PY5	-	051227C01	PY6	-	054163C01	PY7	-	057117C01
PY8	-	062053C01	PY9	-	065007C01	HEAD	-	000143	RFP1	-	072677C01
REP2	-	072700C01	SCALE	-	000144	TABLES	-	072703C01			

START OF CONSTANTS
000120

START OF TEMPORARIES
000124

START OF INDIRECTS
000135

UNUSED COMPILER SPACE
112100


```

SUBROUTINE MINIR(Y,A,B)
000006 DIMENSION Y(50,30)
C      INITIALIZE VARIABLES
000006 A = 1.0
000007 B = 1.0
000007 N = 1
C      FIND FIRST NON-ZERO ORDINATE VALUE FOR FURTHER COMPARISONS
000010 DO 5 J = 1,30
000012 DO 5 I = 1,50
000013 IF (Y(I,J).EQ.0.0) GO TO 5
000017 C = Y(I,J)
000023 GO TO 10
000023 5 CONTINUE
C      FIND SMALLEST NON-ZERO VALUE IN ORDINATE ARRAY
000027 10 DO 15 J = 1,30
000031 DO 15 I = 1,50
000032 IF (Y(I,J).EQ.0.0) GO TO 15
000036 IF (Y(I,J).LT.C) C = Y(I,J)
000046 15 CONTINUE
000052 YMAX = Y(1,1)
000053 DO 20 L=1, 30
000055 DO 20 K=1, 50
000056 20 YMAX = AMAX1(Y(L,K), YMAX)
000070 B=YMAX
C      CALL SUBROUTINE MINI TO DETERMINE Y MIN AND MAX FOR GRAPH
000071 CALL MINI(C,A,B,N)
000073 IF(A .EQ. B)B=B*10.0
000100 RETURN
000101 END

```

SUBPROGRAM LENGTH
000124

FUNCTION ASSIGNMENTS

STATEMENT ASSIGNMENTS

5 - 000023 10 - 000027 15 - 000046 20 - 000056

BLOCK NAMES AND LENGTHS

VARIABLE ASSIGNMENTS

C - 000120 I - 000117 J - 000116 K - 000123
L - 000122 N - 000115 YMAX - 000121

START OF CONSTANTS
000103

START OF TEMPORARIES
000106

START OF INDIRECTS
000112

UNUSED COMPILER SPACE
112600

```

SUBROUTINE POINTS(XVALS,YVALS,JCOUNT,COEF,ICATOR,XLOW,XTOP,YLOW,
1      YTOP,TITLE,ABSCIS,ORDIN,KC,XRAY,YRAY,NPONTs)
000023 COMMON  ARRAY(13),CONF,COUNT (30),COUNT6(30),CUTP,DCX,DCY,KX,KY,
1      IARRAY(8),ICTAB,IGRPH,ND,NG,NOPOAN,NOTABS,NS,NV,
2      NXO,NYO,PAXANG,POANG(30),POS(15),PX1(50,30),PX2(50,30),
3      PX3(50,30),PX4(50,30),PX5(50,30),PX6(50,30),PX7(50,30),
4      PX8(50,30),PX9(50,30),PX10(50,30),PY1(50,30),PY2(50,30),
5      PY3(50,30),PY4(50,30),PY5(50,30),PY6(50,30),PY7(50,30),
6      PY8(50,30),PY9(50,30),PY10(50,30),REP1,REP2,ISPP,NGR,
7      TABLES(2,15),NYCYCL,XIMAX,XIMIN,NTYPE,COUNT5(30)
000023 INTEGER  CONF, CUTP, PAXANG,POS,REP1,REP2,TABLES,COUNT4,COUNT5,
1      COUNT6,CONF1,PAXANI,READ
000023 DIMENSION XVALS(2), YVALS(2), COEF(2), XRAY(2), YRAY(2),
1      TITLE(8), ORDIN(8), ABSCIS(8), ICHAR(30)
000023 DATA  ICHAR /17,18,19,20,21,22,23,24,25,33,34,35,36,37,38,39,
1      40,41,50,51,52,53,54,55,56,57,01,02,03,04 /

```

```

C      ARGUMENTS OF SUBROUTINE FOLLOW -
C      XVALS - ABSCISSA VALUES
C      YVALS - ORDINATE VALUES
C      JCOUNT - NO. OF POINTS
C      COEF - COEFFICIENTS OF POLYNOMIAL GENERATED BY LEAST SQUARES FIT
C      ICATOR - INDICATES WHETHER A NEW FRAME SHOULD BE STARTED
C      XLOW - MINIMUM VALUE FOR X-ARRAY
C      XTOP - MAXIMUM VALUE FOR X-ARRAY
C      YLOW - MINIMUM VALUE FOR Y-ARRAY
C      YTOP - MAXIMUM VALUE FOR Y-ARRAY
C      TITLE - GRAPH TITLE
C      ABSCIS - STORAGE ARRAY FOR ABSCISSA FROM ORIGINAL DATA
C      ORDIN - STORAGE ARRAY FOR ORDINATE FROM ORIGINAL DATA
C      KC - CURVE NO. USED TO SELECT SYMBOL IN MULTIPLE CURVE/PLOT CASE
C      XRAY - ABSCISSA STORAGE ARRAY FOR GENERATED AND ORIGINAL DATA
C      YRAY - ORDINATE STORAGE ARRAY FOR GENERATED AND ORIGINAL DATA
C      NPONTs - UPON ENTRANCE TO SUBROUTINE CONTAINS INDICATOR IPLO VALUE
C      NPONTs - RETURN ARGUMENT CONTAINS TOTAL NO. OF GENERATED POINTS
C      STORE INDICATOR FOR TYPE OF GRAPH IN IPLO
C      SET INDICATOR NV, 1 - JOIN POINTS, 2 - DO NOT JOIN POINTS
C      SET INDICATOR NF, 1 - ADVANCE FRAME, 2 - DO NOT ADVANCE FRAME

```

```

000023 IPLO = NPONTs

```

```

000024      NV = 1
000025      IF (IPLO.EQ.0.OR,IPLO.EQ.3) NV = 2
000035      NF = 1
000036      IF (IPLO.EQ.0.OR,IPLO.EQ.1) GO TO 5
000045      IF (ICATOR .GT. 1) NF = 2

      C      IS A LEAST SQUARES FIT DESIRED
000047      5 CONTINUE
000047      IF (IGRPH .EQ. 2) NF=1
000052      IF (IPLO .EQ. 1 .OR. IPLO .EQ. 2) GO TO 30
      C      INDICATE CHARACTER TO BE PLOTTED IS A BLANK
000062      NC = 48

      C      INITIALIZE VARIABLES
000063      JPTS = 100
000064      NPIS = JCOUNT
000065      XDIV = JPTS
000067      YDIV=XDIV
000070      NPONTS=0
000071      A0=COEF(1)
000072      A1=COEF(2)
000074      A2=COEF(3)
000075      A3=COEF(4)
      C      DETERMINE X AND Y INCREMENTS
000077      XINC=(XTOP-XLOW)/XDIV
000102      YINC=(YTOP-YLOW)/YDIV
000105      DO 10 J=1,JPTS
000107      XRAY(J)=0.
000111      YRAY(J)=0.
000113      10 CONTINUE
000115      TEMPX=XVALS(1)
      C      GENERATE POINTS
000116      DO 20 KX1 = 1,JPTS
000120      TEMPY = A0 + A1*TEMPX + A2*TEMPX**2 + A3*TEMPX**3
000132      IF (TEMPY.LE.0) GO TO 15
000133      NPONTS = NPONTS + 1
000135      YRAY(NPONTS) = TEMPY
000140      XRAY(NPONTS) = TEMPX
000142      15 TEMPX = TEMPX + XINC
000144      IF (TEMPX .GT. XVALS(NPTS) ) GO TO 25
000151      20 CONTINUE
000153      GO TO 25

```

```

000154      25 CONTINUE

      C          CALL AICRT4 SUBROUTINE TO PLOT GENERATED DATA POINTS
000154      CALL AICRT4(KX,KY,XRAY,YRAY,NPONT,ND,NV,NS,NC,TITLE,ABSCIS,ORDIN,
      1          NF,NG,DCX,DCY,NX0,XLOW,XTOP,NY0,YLOW,YTOP,8,8,8)
      C          RESET VARIABLES TO PLOT ORIGINAL DATA PTS. IN CASE OF LEAST SQ.
000212          NF = 2
000213          NV = 1
000214          NX0 = 2
000215          NY0 = 2

      C          ARE WE PLOTTING MULTIPLE CURVES ON ONE GRID
000216      30 IF (IPLO.GE.2) GO TO 35
      C          SET CHARACTER CODE FOR SINGLE CURVES
000224          NC = 64
000225          GO TO 45

      C          FIND APPROPRIATE CHARACTER FOR THE CURVE NO. IN PROCESS
000226      35 NC = 55
000227          DO 40 INO = 1,30
000231          IF (KC.EQ.INO) NC = ICHAR(INO)
000235      40 CONTINUE
000237      45 CONTINUE

      C          ARE WE PLOTTING ONE CURVE / PLOT
000237      IF (IPLO.NE.1.AND.IPLO.NE.2) GO TO 65
      C          SET XMIN AND XMAX
000247      50 CONTINUE
000247      IF (IGRPH.EQ. 2) GO TO 65
000251          XLOW = XIMIN
000252          XTOP = XIMAX
000254      55 CONTINUE

      C          ARE WE PLOTTING ONE CURVE/PLOT
000254      IF (IPLO.NE.1) GO TO 65
      C          DETERMINE Y MIN AND Y MAX, CENTER CYCLES WITH DATA PTS.
000256          YMIN = YVALS(1)
000257          DO 60 I = 1,JCOUNT
000261          IF (YVALS(I).LT.YMIN) YMIN = YVALS(I)
000266      60 CONTINUE
000271          CALL MINI(YMIN,YLOW,YTOP,NY0)
      C          CALL AICRT4 SUBROUTINE TO PLOT DATA POINTS
000275      65 CALL AICRT4(KX,KY,XVALS,YVALS,JCOUNT,ND,NV,NS,NC,TITLE,ABSCIS,

```

000336
000337

70¹ RETURN
END

ORDIN,NF,NG,DCX,DCY,NXO,XLOW,XTOP,NYO,YLOW,YTOP,8,8,8)

SUBPROGRAM LENGTH
000444

FUNCTION ASSIGNMENTS

STATEMENT ASSIGNMENTS

5	-	000047	15	-	000142	25	-	000154	30	-	000216
35	-	000226	40	-	000235	45	-	000237	50	-	000247
55	-	000254	60	-	000266	65	-	000275	70	-	000336

BLOCK NAMES AND LENGTHS
- 073003

VARIABLE ASSIGNMENTS

ABSCIS	-	000004	ARRAY	-	000000C01	A0	-	000427	A1	-	000430
A2	-	000431	A3	-	000432	CONF	-	000015C01	CONF1	-	000357
COUNT4	-	000016C01	COUNT5	-	072745C01	COUNT6	-	000054C01	CUTP	-	000112C01
DCX	-	000113C01	DCY	-	000114C01	I	-	000443	IARRAY	-	000117C01
ICHAR	-	000362	IGHPH	-	000130C01	INO	-	000441	IPLO	-	000420
J	-	000435	JPTS	-	000423	KC	-	000006	KX	-	000115C01
KX1	-	000437	KY	-	000116C01	NC	-	000422	ND	-	000131C01
NF	-	000421	NG	-	000132C01	NPONTS	-	000011	NPTS	-	000424
NS	-	000135C01	NV	-	000136C01	NX0	-	000137C01	NY0	-	000140C01
ORDIN	-	000005	PAXANG	-	000141C01	PAXANI	-	000360	POANG	-	000142C01
POS	-	000200C01	PX1	-	000217C01	PX10	-	032513C01	PX2	-	003153C01
PX3	-	006107C01	PX4	-	011043C01	PX5	-	013777C01	PX6	-	016733C01
PX7	-	021667C01	PX8	-	024623C01	PX9	-	027557C01	PY1	-	035447C01
PY10	-	067743C01	PY2	-	040403C01	PY3	-	043337C01	PY4	-	046273C01
PY5	-	051227C01	PY6	-	054163C01	PY7	-	057117C01	PY8	-	062053C01
PY9	-	065007C01	READ	-	000361	REP1	-	072677C01	REP2	-	072700C01
TABLES	-	072703C01	TEMPX	-	000436	TEMPY	-	000440	TITLE	-	000003
XDIV	-	000425	XIMAX	-	072742C01	XIMIN	-	072743C01	XINC	-	000433
XRAY	-	000007	XTOP	-	000000	YDIV	-	000426	YINC	-	000434
YLOW	-	000001	YMIN	-	000442	YRAY	-	000010	YTOP	-	000002

START OF CONSTANTS
000341

START OF TEMPORARIES
000343

START OF INDIRECTS

000353

UNUSED COMPILER SPACE
111200


```

SUBROUTINE HEADER(ABSCIS,ORDIN,IPL0,KPL)
000007 COMMON ARAY(13),CONF,COUNT4(30),COUNT6(30),CUTP,DCX,DCY,KX,KY,
1 IARAY(8),ICTAB,IGRPH,ND,NG,NOPOAN,NOTARS,NS,NV,
2 NX0,NY0,PAXANG,POANG(30),POS(15),PX1(50,30),PX2(50,30),
3 PX3(50,30),PX4(50,30),PX5(50,30),PX6(50,30),PX7(50,30),
4 PX8(50,30),PX9(50,30),PX10(50,30),PY1(50,30),PY2(50,30),
5 PY3(50,30),PY4(50,30),PY5(50,30),PY6(50,30),PY7(50,30),
6 PY8(50,30),PY9(50,30),PY10(50,30),REP1,REP2,ISPP,NGR,
7 TABLES(2,15),NYCYCL,XIMAX,XIMIN,NTYPE,COUNT5(30)
000007 INTEGER CONF,CUTP,PAXANG,POS,REP1,REP2,TABLES,COUNT4,COUNT5,
1 COUNT6,CONF1,PAXANI,READ,ANUM
000007 DIMENSION ANUM(5),XTITLE(5),YTITLE(12),YDIREC(13),CTITLE(4),
1 ABSCIS(8),ORDIN(8)

000007 DATA YTITLE/10H TOTAL(,10HU) FISS GM,10H-SEC-W ,
1 10H NEUTS C,10HM2-SEC-W ,10H RADS(C,
2 10H) HR-W ,10H B-10 CAP,10H GM-SEC-W ,
3 10H RADS(AL,10H RADS(RE/

000007 DATA YDIREC/ 10HDIRECT NE,10HUTS CM2-SE,10HC-W ,
1 10HDIRECT RAD,10HS(C) HR-W ,10HDIRECT B-1,
2 10H0 CAP GM-S,10HEC-W ,10HS(AL) HR-W,
3 10HS(BE) HR-W /

000007 DATA XTITLE/10HELEVATION ,10H RADIUS,10H CORE RAY ,
1 10H POLAR,10H ANGLE /

000007 DATA ANUM /1H1,1H2,1H3,1H4,1H5/
000007 DATA CTITLE /10HRADIUS ,10HELEVATION ,10HPOLAR ANG.,
1 10HCORE RAY /
000007 DATA BLANK /1H /

C BLANK OUT ABSCISSA AND ORDINATE LABEL ARRAYS
000007 DO 5 I = 1,8
000010 ABSCIS(I) = BLANK
000012 5 ORDIN(I) = BLANK

C SET UP X LABEL AS A FUNCTION OF GRAPH TYPE
C IF ONE CURVE/PLOT, IDENTIFY RADIUS,ELEVATION, OR POLAR ANGLE VALUE

000015 GO TO ( 10, 15) IGRPH

```

```

000023      10 ABSCIS(4) = XTITLE(3)
000025      IF(IPLN .GE. 2) GO TO 20
000027      ABSCIS(1) = CTITLE(3)
000031      GO TO 20
000031      15 ABSCIS(4) = XTITLE(4)
000033      ABSCIS(5) = XTITLE(5)
000034      ABSCIS(1)=CTITLE(2)

```

C SET UP Y LABEL AS A FUNCTION OF GRAPH TYPE AND ARRAY POSITION

```

000036      20 CONTINUE
000036      IF(KPL .NE. 1) GO TO 60
000040      DO 25 K3 = 1,5
000041      IF(REP1 .EQ. ANUM(K3) ) GO TO 30
000044      25 CONTINUE
000046      30 KREP = K3
000050      GO TO ( 35, 40, 45, 50, 55) KREP
000060      35 CONTINUE
000060      ORDIN(4) = YTITLE(4)
000062      ORDIN(5) = YTITLE(5)
000063      GO TO 100
000064      40 CONTINUE
000064      ORDIN(4) = YTITLE(6)
000066      ORDIN(5) = YTITLE(7)
000067      GO TO 100
000070      45 CONTINUE
000070      ORDIN(4) = YTITLE(10)
000072      ORDIN(5) = YTITLE(7)
000073      GO TO 100
000074      50 CONTINUE
000074      ORDIN(4)= YTITLE(11)
000076      ORDIN(5) = YTITLE(7)
000077      GO TO 100
000100      55 CONTINUE
000100      ORDIN(4) = YTITLE(8)
000102      ORDIN(5) = YTITLE(9)
000103      GO TO 100
000104      60 CONTINUE
000104      DO 65 K5=1,5
000106      IF( REP1 .EQ. ANUM(K) ) GO TO 70
000111      65 CONTINUE
000113      70 KREP = K5
000115      GO TO ( 75, 80, 85, 90, 95) KREP

```

```
000125      75 ORDIN(4) = YDIREC(1)
000127      ORDIN(5) = YDIREC(2)
000130      ORDIN(6) = YDIREC(3)
000132      GO TO 100
000132      80 CONTINUE
000132      ORDIN(4) = YDIREC(4)
000134      ORDIN(5) = YDIREC(5)
000135      GO TO 100
000136      85 CONTINUE
000136      ORDIN(4) = YDIREC(4)
000140      ORDIN(5) = YDIREC(9)
000141      GO TO 100
000142      90 CONTINUE
000142      ORDIN(4) = YDIREC(4)
000144      ORDIN(5) = YDIREC(10)
000145      GO TO 100
000146      95 CONTINUE
000146      ORDIN(4) = YDIREC(6)
000150      ORDIN(5) = YDIREC(7)
000151      ORDIN(6) = YDIREC(8)
000153      100 RETURN
000154      END
```

SUBPROGRAM LENGTH
000243

FUNCTION ASSIGNMENTS

STATEMENT ASSIGNMENTS

10	-	000023	15	-	000031	20	-	000036	30	-	000046
35	-	000060	40	-	000064	45	-	000070	50	-	000074
55	-	000100	60	-	000104	70	-	000113	75	-	000125
80	-	000132	85	-	000136	90	-	000142	95	-	000146
100	-	000153									

BLOCK NAMES AND LENGTHS
- 073003

VARIABLE ASSIGNMENTS

ANUM	-	000167	ARRAY	-	000000C01	BLANK	-	000236	CONF	-	000015C01
CONF1	-	000164	COUNT4	-	000016C01	COUNT5	-	072745C01	COUNT6	-	000054C01
CTITLE	-	000232	CUTP	-	000112C01	I	-	000237	IARRAY	-	000117C01
IGRPH	-	000130C01	KREP	-	000241	KJ	-	000240	K5	-	000242
PAXANG	-	000141C01	PAXANI	-	000165	P0ANG	-	000142C01	POS	-	000200C01
PX1	-	000217C01	Px10	-	032513C01	Px2	-	003153C01	PX3	-	006107C01
PX4	-	011043C01	PX5	-	013777C01	PX6	-	016733C01	PX7	-	021667C01
PX8	-	024623C01	PX9	-	027557C01	PY1	-	035447C01	PY10	-	067743C01
PY2	-	040403C01	PY3	-	043337C01	PY4	-	046273C01	PY5	-	051227C01
PY6	-	054163C01	PY7	-	057117C01	PY8	-	062053C01	PY9	-	065007C01
READ	-	000166	REP1	-	072677C01	REP2	-	072700C01	TABLES	-	072703C01
XTITLE	-	000174	YDIREC	-	000215	YTITLE	-	000201			

START OF CONSTANTS
000156

START OF TEMPORARIES
000157

START OF INDIRECTS
000161

UNUSED COMPILER SPACE
111600

```

SUBROUTINE SETUP(IPL0,CONEV1,CONEV2,ICN)
000007 COMMON ARAY(13),CONF,COUNT4(30),COUNT6(30),CUTP,DCX,DCY,KX,KY,
1 IARAY(2),ICTAB,IGRPH,ND,NG,NOPOAN,NOTABS,NS,NV,
2 NX0,NY0,PAXANG,POANG(30),POS(15),PX1(50,30),PX2(50,30),
3 PX3(50,30),PX4(50,30),PX5(50,30),PX6(50,30),PX7(50,30),
4 PX8(50,30),PX9(50,30),PX10(50,30),PY1(50,30),PY2(50,30),
5 PY3(50,30),PY4(50,30),PY5(50,30),PY6(50,30),PY7(50,30),
6 PY8(50,30),PY9(50,30),PY10(50,30),REP1,REP2,ISPP,NGR,
7 TABLES(2,15),NYCYCL,XIMAX,XIMIN,NTYPE,COUNT5(30)
000007 EQUIVALENCE(CONF,FCONF)
000007 INTEGER CONF,CUTP,PAXANG,POS,REP1,REP2,TABLES,COUNT4,COUNT5,
1 COUNT6,CONF1,PAXANI,READ

000007 DIMENSION TITLE(8),DECS(20),ABSCIS(8),ORDIN(8),STOREX(1000),
1 STOREY(1000),COEF(4,30),NOREP(5),REPTIL(5)

000007 DATA DECS /4HE+01,4HE+02,4HE+03,4HE+04,4HE+05,4HE+06,4HE+07,
1 4HE+08,4HE+09,4HE+10,4HE-01,4HE-02,4HE-03,4HE-04,
2 4HE-05,4HE-06,4HE-07,4HE-08,4HE-09,4HE-10 /

000007 DATA TITLE/1H,10HPAX ANGLE,1H,10H CONF = .4*1H /
000007 DATA BLANK/1H /
000007 DATA NOREP /1H1,1H2,1H3,1H4,1H5 /
000007 DATA REPTIL/6HREP 1,6HREP 2,6HREP 3,6HREP 4,6HREP 5 /
C INITIALIZE VARIABLES
000007 KPL = NGR
000010 XMIN = 0.0
000011 YMIN = 0.0

C SET DEGREE OF POLYNOMIAL WANTED IN LEAST SQUARES FIT
000012 M = 3
000013 MMM = M + 1
C SET UP TITLE FOR GRAPH,REPORT NO.,PAX ANGLE,AND CONFIGURATION
000015 TITLE(1) = BLANK
000016 DO 5 I=1,5
000020 IF(REP1.EQ. NOREP(I)) GO TO 10
000023 5 CONTINUE
000025 10 TITLE(1) = REPTIL(I)
000030 APAX = PAXANG
000031 CALL BNBCDV(APAX,BCDWD,ND5)
000034 TITLE(3) = BCDWD
000036 TITLE(4) = BLANK

```

```

000037      DO 15 I = 1,10
000043      IF (IAB<(NDS),NE,I) GO TO 15
000046      IF (NDS.EQ.I) TITLE(4) = DECS(I)
000051      IF (NDS.EQ.-1) TITLE(4) = DECS(I+10)
000054      GO TO 20
000055  15 CONTINUE

000057      20 TITLE(5) = FCONF
000061      IFOUND = 0

000062      25 IFOUND = 0
C      WERE THERE ANY POLAR ANGLE VALUES FOR WHICH TO SEARCH
000063      IF (NOPOAN.EQ.0) GO TO 65
000064      DO 30 I = 1,NOPOAN
C      NO. OF POINTS FOR THIS RADIUS 1 MORE THAN THE DEGREE OF POLYNOMIAL WANTED
C      INDICATE AT LEAST ONE CURVE SHOULD BE PLOTTED
000066      IF (COUNT4(I).LT.MMM) GO TO 30
000071      IFOUND =
C      IS A LEAST SQUARES FIT WANTED
000072      IF (IPLO.EQ.1.OR.IPLO.EQ.2) GO TO 30
000101      N = COUNT4(I)
C      CALL LSQUAR TO OBTAIN COEFFICIENTS FOR POLYNOMIAL
000103      CALL LSQUAR(M,N,PX4(1,I),PY4(1,I),COEF(1,I),SIGMA)
C      IS I GREATER THAN NOPOAN
000122      30 CONTINUE

C      HAS SUFFICIENT DATA BEEN FOUND FOR AT LEAST ONE CURVE
000127      IF (IFOUND.EQ.0) GO TO 65
C      1ST GRAPH - FAMILY OF CURVES FOR VARIOUS POLAR ANGLE
C      X=CORE RAY, Y=VARIABLE INPUT
000130      IGRPH = 1

C      CALL HEADER SUBROUTINE TO LABEL X AND Y AXES
000131      CALL HEADER(IABSCIS,ORDIN,IPLO,KPL)
C      CALL MINIR SUBROUTINE TO DETERMINE YMIN AND YMAX AND TO CENTER CYCLES
000135      CALL MINIR(PY4(1,1),YMIN,YMAX)

000140      IND = 0
C      SET X-MIN AND X-MAX
000141      XMIN = XIMIN
000143      XMAX = XIMAX

```

```

000144      NXD=2
000145      DO 40 IP = 1,NOPOAN
C          IF CUTOFF POINT FOR NO. OF CURVES ON GRAPH REACHED, ADVANCE FRAME

C          HAVE SUFFICIENT PTS. BEEN FOUND TO PLOT CURVE
000151      IF (IP.EQ.CUTP.AND.CUTP.NE.NOPOAN) IND = 0
000161      IF (COUNT4(IP).LT.MMM) GO TO 40
C          MULTIPLE CURVES/PLOT
000165      IF (IPLO.GT.1) GO TO 35
000170      ABSCIS(2) = BLANK
000171      ABSCIS(3) = BLANK
C          CONVERT VALUE OF POLAR ANGLE FOR WHICH CURVE DRAWN TO BCD
000172      CALL BNHCDV(POANG(IP),BCDWD,NDS)
C          INCLUDE CONVERTED VALUE IN ABSCISSA LABEL
000176      ABSCIS(2) = BCDWD
000200      CALL CONVER(ABSCIS(2),NDS)
C          UPDATE CURVE COUNTER
000202      35 IND = IND + 1
C          STORE THE VALUE OF IPLO IN ARGUMENT NPOINTS FOR POINTS SUBROUTINE
000204      NPOINT = IPLO

C          CALL POINTS SUBROUTINE TO GENERATE PTS. FOR CURVE AND TO PLOT CURVE
000207      CALL POINTS(PX4(1,IP),PY4(1,IP),COUNT4(IP),COEF(1,IP),IND,XMIN,
1 XMAX,YMIN,YMAX,TITLE,ABSCIS,ORDIN,IP,STOREX,STOREY,NPOINT)
C          WAS LEAST SQUARES FIT WANTED
000242      IF (IPLO.EQ.1.OR.IPLO.EQ.2) GO TO 40

000254      40 CONTINUE
C          2ND GRAPH - CURVE FOR ELEVATION = 474CM OR 148CM
C          X=CALCULATED POLAR ANGLE Y=VARIABLE INPUT

C          ONE CURVE/GRID

000257      45 CONTINUE
000257      IP = ICN
000260      N=COUNT5(IP)
000263      IF(COUNT5(IP) .LT. MMM) GO TO 55
000266      IF(IPLO .EQ. 1 .OR. IPLO .EQ. 2) GO TO 50

C          CALL LSQUAR TO OBTAIN COEFFICIENTS FOR POLYNOMIAL
000275      CALL LSQUAR(M,N,PX5(1,ICN),PY5(1,ICN),COEF(1,ICN),SIGMA)

```

```

000316 C GRAPH 6 CURVE AT CONSTANT ELEVATION(474CM OR 148CM) X= POLAR ANGLE
000316 50 CONTINUE
000316 IGRPH = 2
000317 C CALL HEADER TO LABEL X AND Y AXES
000317 CALL HEADER(ABSCIS,ORDIN,IPLO,KPL)
000325 C LET AICHT4 SELECT YMIN, YMAX, XMIN, XMAX
000325 NX0=1
000326 NY0=1

000327 ABSCIS(2) = BLANK
000331 ABSCIS(3) = BLANK
000332 C CONVERT ELEVATION VALUE TO BCD AND INCLUDE IN ABSCISSA LABEL
000332 CELEV = CONEV1
000335 CALL BNBCDV(CELEV,-CDWD,NDS)
000340 CALL CON ER(ABSCIS(3),NDS)
000343 ABSCIS(2) = BCDWD
000345 IND = 1
000346 IP = ICN

000351 C STORE THE VALUE OF IPLO IN ARGUMENT NPOINTS FOR POINTS SUBROUTINE
000352 NPOINT = IPLO
000352 CALL POINTS(PX5(1,IP),PY5(1,IP),COUNT5(IP),COEF(1,IP),IND,XMIN,
1 XMAX,YMIN,YMAX,TITLE,ABSCIS,ORDIN, IP,STOREX,STOREY,
2 NPOINT )

000405 55 CONTINUE
000405 IP = ICN
000411 N=COUNT6(IP)
000413 IF(COUNT6(IP) .LT. MMM) GO TO 65
000416 IF(IPLO .EQ. 1 .OR. IPLO .EQ. 2) GO TO 60
000425 CALL LSQUAR(M,N,PX6(1,IP),PY6(1,IP),COEF(1,IP),SIGMA)

000444 60 CONTINUE
000444 C ONE CURVE/GRID
000444 IGRPH = 2
000445 CALL HEADER(ABSCIS,ORDIN,IPLO,KPL)
000453 ABSCIS(2) = BLANK
000455 ABSCIS(3) = BLANK

000456 C CONVERT ELEVATION VALUE TO BCD
000456 CELEV = CONEV2

```



```

000461      CALL BNBCDV(CELEV,BCDWD,NDS)
000464      ABSCIS(2) = HCDWD
000466      CALL CONVER(ABSCIS(3), NDS)

000470      IND = 1

      C      LET AICHT4 SELECT YMIN, YMAX,XMIN, XMAX FOR CONSTANT ELEV PLOTS
000471      NX0=1
000472      NY0=1
000473      NPOINT = IPLO
000477      CALL POINTS(PX6(1,IP),PY6(1,IP),COUNT6(IP),COEF(1,IP),IND,XMIN,
1          XMAX,YMIN,YMAX,TITLE,ABSCIS,ORDIN,IP,STOREX,STOREY,NPOINT)

000531      65 RETURN
000532      END

```

SUBPROGRAM LENGTH
004773

FUNCTION ASSIGNMENTS

STATEMENT ASSIGNMENTS

10	-	000025	15	-	000055	20	-	000057	25	-	000062
30	-	000122	35	-	000202	40	-	000254	45	-	000257
50	-	000316	55	-	000405	60	-	000444	65	-	000531

BLOCK NAMES AND LENGTHS
- 073003

VARIABLE ASSIGNMENTS

ABSCIS	-	000606	APAX	-	004757	ARRAY	-	000000C01	BCDWD	-	004760
BLANK	-	004750	CELEV	-	004772	COEF	-	004546	CONF	-	000015C01
CONF1	-	000547	COUNT4	-	000016C01	COUNT5	-	072745C01	COUNT6	-	000054C01
CUTP	-	000112C01	DECS	-	000562	FCONF	-	000015C01	I	-	004756
IARAY	-	000117C01	IFOUND	-	004762	IGRPH	-	000130C01	IND	-	004766
IP	-	004770	KPL	-	004751	M	-	004754	MMM	-	004755
N	-	004763	NDS	-	004761	NGR	-	072702C01	NOPOAN	-	000133C01
NOREP	-	004736	NPOINT	-	004771	NX0	-	000137C01	NYO	-	000140C01
ORDIN	-	000616	PAXANG	-	000141C01	PAXANI	-	000550	POANG	-	000142C01
POS	-	000200C01	PX1	-	000217C01	PX10	-	032513C01	PX2	-	003153C01
PX3	-	006107C01	PX4	-	011043C01	PX5	-	013777C01	PX6	-	016733C01
PX7	-	021667C01	PX8	-	024623C01	PX9	-	027557C01	PY1	-	035447C01
PY10	-	067743C01	PY2	-	040403C01	PY3	-	043337C01	PY4	-	046273C01
PY5	-	051227C01	PY6	-	054163C01	PY7	-	057117C01	PY8	-	062053C01
PY9	-	065007C01	HEAD	-	000551	REPTIL	-	004743	REP1	-	072677C01
REP2	-	072700C01	SIGMA	-	004764	STOREX	-	000626	STOREY	-	002576
TABLES	-	072703C01	TITLE	-	000552	XIMAX	-	072742C01	XIMIN	-	072743C01
XMAX	-	004767	XMIN	-	004752	YMAX	-	004765	YMIN	-	004753

START OF CONSTANTS
000534

START OF TEMPORARIES
000535

START OF INDIRECTS

000542

UNUSED COMPILER SPACE
110400

```

SUBROUTINE MULTCON(IPLO)
000003 COMMON ARAY(13),CONF,COUNT4(30),COUNT6(30),CUTP,DCX,DCY,KX,KY,
1 IARRAY(8),ICTAB,IGRPH,ND,NG,NOPOAN,NOTABS,NS,NV,
2 NX0,NY0,PAXANG,POANG(30),POS(15),PX1(50,30),PX2(50,30),
3 PX3(50,30),PX4(50,30),PX5(50,30),PX6(50,30),PX7(50,30),
4 PX8(50,30),PX9(50,30),PX10(50,30),PY1(50,30),PY2(50,30),
5 PY3(50,30),PY4(50,30),PY5(50,30),PY6(50,30),PY7(50,30),
6 PY8(50,30),PY9(50,30),PY10(50,30),REP1,REP2,ISPP,NGR,
7 TABLES(2,15),NYCYCL,XIMAX,XIMIN,NTYPE,COUNT5(30)
000003 INTEGER CONF,CUTE,CUTP,CUTR,PAXANG,POS,REP1,REP2,TABLES,COUNT1
000003 DIMENSION NT(5),NP1(10,30)
000003 DATA NO9/ 1H9 /
000003 DATA NT/1H1,1H2,1H3,1H4,1H5/

```

C MULTCON PLOTS MULTIPLE CONFIGURATIONS FOR A SPECIFIC POLAR ANGLE
 C FOR DATA FROM TAPE (11) DIFFERENCE CALCULATIONS OR FROM
 C TAPE (12).
 C LEAST SQUARES FIT NOT AVAILABLE
 C NO CHECK IS MADE FOR CHANGE IN PAX ANGLE.

C KCHAN=1 INDICATES ALL DATA FOR A PARTICULAR TABLE HAS BEEN PROCESSED
 C KCHAN=2 INDICATES ALL DATA FOR A PARTICULAR CONFIG HAS BEEN PROCESSED
 C ICNT COUNTS THE NUMBER OF CONFIGURATIONS
 C MAXIMUM NUMBER OF CONFIGURATIONS PER REPORT NUMBER = 10
 C MAXIMUM NUMBER OF DATA POINTS PER POLAR ANGLE = 50
 C MAXIMUM NUMBER OF POLAR ANGLES PER CONFIGURATION = 30

C	IARRAY(1)	IARRAY(1)	REPORT NUMBER
C	IARRAY(2)	IARRAY(2)	REPORT NUMBER SUFFIX
C	IARRAY(3)	IARRAY(4)	CONFIGURATION CODE
C	IARRAY(4)	IOUT(1)	RUN NUMBER
C	IARRAY(5)	IOUT(2)	CONFIGURATION
C	IARRAY(6)	IOUT(3)	PAX ANGLE(DEG)
C	IARRAY(7)	IOUT(4)	TOTAL NUMBER OF COUNTS
C	IARRAY(8)	IARRAY(5)	R OR THETA INDICATOR
C	ARAY(1)	OUT(2)	CALCULATED VALUE RADIUS(POLAR ANGLE)
C	ARAY(2)	OUT(5)	CALCULATED VALUE CORE RAY(ELEVATION)
C	ARAY(3)	OUT(8)	INPUT VALUE RADIUS(POLAR ANGLE)
C	ARAY(4)	OUT(11)	INPUT VALUE ELEVATION(CORE RAY)
C	ARAY(5)	OUT(13)	POLAR ANGLE TAPE READOUT/CT TIME
C	ARAY(6)	OUT(14)	PAX POWER

```

C   ARAY(7)          OUT(15)    **COUNTING TIME/POL ANG RDOUT
C   ARAY(8)          OUT(16)    DET CONVERSION FAC/DET CURRENT
C   ARAY(9)          OUT(17)    **TOTAL (U) FISSION/DET CONU FAC
C   ARAY(10)         OUT(18)    **PCT. STD. DEV./RADS(C)/RADS(AL)/RADS(BE)
C   ARAY(11)         OUT(19)    **NEUTS CM2-SEC-W/PCT STD DEV
C   ARAY(12)         OUT(20)    **PCT. STD. DEV
C   ARAY(13)         OUT(1)     CALCULATED POLAR ANGLE

```

```

C   ** INDICATES THAT THE DIFFERENCE OF THE VARIABLES WAS TAKEN FOR DIRECT
C

```

```

000003      KCT = 0
000004      IFIG = 0
000005      K3 = 0
000006      ISAV1 = 0
000007      IGRPH = 1
000010      KCHAN = 0
000011      5 CONTINUE
000011      ICNT = 0
000012      ICON1 = 0

```

C

```

000013      CALL CLEAR

```

C

```

C      K3-REPORT NUMBER INDEX
C      IF REGULAR PLOTS ARE DESIRED READ TAPE 12 WHICH CONTAIN DATA FOR ALL
C      CONFIGURATIONS FOR ALL REPORTS. OTHERWISE, READ TAPE11 WHICH
C      CONTAINS DATA FOR DIFFERENCE PLOTS(MINUS CONFIG 14)

```

C

C

C

C

```

      STORE NEW REPORT NUMBER

```

```

000014      K3 = K3 + 1
000016      IF(K3 .GT. NOTABS) GO TO 150
000022      REP1 = TABLES(1,K3)
000024      REP2 = TABLES(2,K3)
000026      DO 10 K1 = 1, 5
000030      IF(REP1 .EQ. NT(K1) ) GO TO 15
000033      10 CONTINUE
000035      15 KTAB = K1
000037      IF(KCHAN .EQ. 1) GO TO 35
000041
000046
000046      25 IF(NGR .NE. 1) GO TO 30

```

```

000051      READ(12) (IARAY(I),I=1,8), (ARAY(I),I=1,13)
000070      IF(IARAY(1) .EQ. NO9 .AND. IARAY(2) .EQ. NO9) GO TO 50
000101      ITP = 1
000102      GO TO 35

000102      30 READ(11) (IARAY(I),I=1,8), (ARAY(I),I=1,13)
000121      IF(IARAY(1) .EQ. NO9 .AND. IARAY(2) .EQ. NO9) GO TO 50
000132      ITP = 2

000133      35 CONTINUE
000133      DO 40 K5=1,5
000135      IF(IARAY(1) .EQ. NT(K5) ) GO TO 45
000140      40 CONTINUE
000142      45 NK1 = K5
000144      NK2 = NK1
C          CHECK FOR NEW TABLE
000145      IF(NK1 .EQ. KTAB) GO TO 55
000146      IF(KCHAN .EQ. 0) GO TO 25

C          CALL PLOTTING ROUTINE
C          CALL CLEAR
C          INITIALIZE VARIABLES

000147      50 CONTINUE
000147      CALL PLOTTER(ICNT,NP1,IPLO)
000152      IF(IARAY(1) .EQ. NO9 .AND. IARAY(2) .EQ. NO9) GO TO 150
000163      KCHAN = 1
000164      GO TO 5

000164      55 CONTINUE
000164      PAXANG = IARAY(6)
000166      DO 60 I=1,NPOAN
000167      IF(ARAY(3) .EQ. POANG(I))GO TO 65
000172      60 CONTINUE

C          IF NO MATCH FOR POLAR ANGLE IS FOUND READ NEXT RECORD
000174      IF(ITP .EQ. 1) GO TO 25
000176      GO TO 30
000177      65 CONTINUE
000177      IF(KCHAN .EQ. 0) ISAV1 = 1
000202      IF(ISAV1 .EQ. I) GO TO 70
000204      KCT = 0

```

```

000205      ISAV1 = 1

C      DOES THE CONFIGURATION MATCH THE ONE IN PROCESS
000205      70 CONTINUE
000205          IF(ICNT1 .NE. 0) GO TO 75
000206          KCHAN = 2
000207          IFIG = IARRAY(3)
000211          ICNT = ICNT + 1
000212      75 CONTINUE
000212          IF(ICNT .GT. 10) GO TO 150
000216          IF(KCHAN.EQ. 2) KCT=0
000221          ICON1 = 1
000222          KCHAN = 1
000223          IF( IFIG .EQ. IARRAY(3) ) GO TO 80
000225          ICON1 = 0
000226          GO TO 70

C      REPORT NUMBER AND CONFIG HAVE NOT CHANGED
000226      80 CONTINUE
000226          GO TO ( 85, 90, 95, 100, 105, 110, 115, 120, 125, 130) ICNT
000244      85 CONTINUE

C
C      MATCH FOR POLAR ANGLE-PLUT NEUTS.CM2/RAOS(C,AL,BE) .VS. CORE RAY
000244          IF(ICNT .NE. 1) GO TO 90
000246          KCT = KCT+1
000247          PX1(KCT,1) = ARAY(4)
000254          KPOS = POS(KTAB)
000257          IF(ARAY(KPOS) .LE. 0.0) ARAY(KPOS)=1.0
000264          PY1(KCT,1) = ARAY(KPOS)
000272          NP1(ICNT,1) = KCT
000276          GO TO 25

C      STORE DATA FOR 2ND CONFIGURATION INTO PX2, PY2 ARRAYS

000276      90 CONTINUE
000276          IF(ICNT .NE. 2) GO TO 95
000300          KCT = KCT +1
000302          PX2(KCT,1) = ARAY(4)
000307          KPOS = POS(KTAB)
000311          IF(ARAY(KPOS) .LE. 0.0) ARAY(KPOS)=1.0
000316          PY2(KCT,1) = ARAY(KPOS)
000324          NP1(ICNT,1)= KCT

```

```

000330      GO TO 25

      C      STORE DATA FOR 3RD CONFIGURATION INTO PX3, PY3 ARRAYS
000330      95 CONTINUE
000330      IF(ICNT .NE. 3) GO TO 100
000332      KCT = KCT + 1
000334      PX3(KCT,I) = ARAY(4)
000341      KPUS = POS(KTAB)
000343      IF(ARAY(KPOS) .LE. 0.0) ARAY(KPOS)=1.0
000350      PY3(KCT,I) = ARAY(KPOS)
000356      NP1(ICNT,I) = KCT
000362      GO TO 25

      C      STORE DATA FOR 4TH CONFIGURATION INTO PX4, PY4 ARRAYS
000362      100 CONTINUE
000362      IF(ICNT .NE. 4) GO TO 105
000364      KCT = KCT+1
000366      PX4(KCT, I) = ARAY(4)
000373      KPUS = POS(KTAB)
000375      IF(ARAY(KPOS) .LE. 0.0) ARAY(KPOS)=1.0
000402      PY4(KCT,I) = ARAY(KPOS)
000410      NP1(ICNT,I) = KCT
000414      GO TO 25

      C      STORE DATA FOR 5TH CONFIGURATION INTO PX5, PY5 ARRAYS
000414      105 CONTINUE
000414      IF(ICNT .NE. 5) GO TO 110
000416      KCT = KCT + 1
000420      PX5(KCT,I) = ARAY(4)
000425      KPUS = POS(KTAB)
000427      IF(ARAY(KPOS) .LE. 0.0) ARAY(KPOS)=1.0
000434      PY5(KCT,I) = ARAY(KPOS)
000442      NP1(ICNT,I) = KCT
000446      GO TO 25

      110 CONTINUE
000446      IF(ICNT .NE. 6) GO TO 115
000450      KCT = KCT + 1
000452      KPUS = POS(KTAB)
000454      PX6(KCT,I) = ARAY(4)
000461      IF(ARAY(KPOS) .LE. 0.0) ARAY(KPOS)=1.0
000466      PY6(KCT,I) = ARAY(KPOS)

```



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000474      NP1(ICNT,I) = KCT
000500      GO TO 25

000500      115 CONTINUE
000500      IF(ICNT .NE. 7) GO TO 120
000502      KCT = KCT + 1
000504      KPOS= POS(KTAB)
000506      IF(ARRAY(KPOS) .LE. 0.0) ARRAY(KPOS)=1.0
000513      PX7(KCT,I) = ARRAY(4)
000520      PY7(KCT,I) = ARRAY(KPOS)
000525      NP1(ICNT,I) = KCT
000531      GO TO 25

000531      120 CONTINUE
000531      IF(ICNT .NE. 8) GO TO 125
000533      KCT = KCT + 1
000535      KPOS = POS(KTAB)
000537      IF(ARRAY(KPOS) .LE. 0.0) ARRAY(KPOS)=1.0
000544      PX8(KCT,I) = ARRAY(4)
000551      PY8(KCT,I) = ARRAY(KPOS)
000556      NP1(ICNT,I) = KCT
000562      GO TO 25

000562      125 CONTINUE
000562      IF(ICNT .NE. 9) GO TO 130
000564      KCT = KCT + 1
000566      KPOS = POS(KTAB)
000570      IF(ARRAY(KPOS) .LE. 0.0) ARRAY(KPOS)=1.0
000575      PX9(KCT,I) = ARRAY(4)
000602      PY9(KCT,I)=ARRAY(KPOS)
000607      NP1(ICNT,I) = KCT
000613      GO TO 25

000613      130 CONTINUE
000613      IF(ICNT.NE.10) GO TO 135
000615      KCT = KCT + 1
000617      KPOS=POS(KTAB)
000621      IF(ARRAY(KPOS) .LE. 0.0) ARRAY(KPOS)=1.0
000626      PX10(KCT,I) = ARRAY(4)
000633      PY10(KCT,I) =ARRAY(KPOS)
000640      NP1(ICNT,I) = KCT
000644      GO TO 25

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```

000644      135 IF(ICNT .GT. 10) WRITE(6, 140) ICNT
000655          IF(ICNT .LE. 0) WRITE(6, 145) ICNT
000666          GO TO 25
000667      140 FORMAT(1H0,27H***ERROR*** CONFIG COUNTER=,I2,18HYOU HAVE EXCEEDED
          1      ,33HMAXIMUM NUMBER OF CONFIGURATIONS.  )
000667      145 FORMAT(1H0,27H***ERROR*** CONFIG COUNTER= , I2,30HILLEGAL CONFIGUR
          XATION COUNTER  )
000667      150 CONTINUE
000667          RETURN
000670          END

```

SUBPROGRAM LENGTH
001447

FUNCTION ASSIGNMENTS

STATEMENT ASSIGNMENTS

5	-	000011	15	-	000035	20	-	000674	25	-	000046
30	-	000102	35	-	000133	45	-	000142	50	-	000147
55	-	000164	65	-	000177	70	-	000205	75	-	000212
80	-	000226	85	-	000244	90	-	000276	95	-	000330
100	-	000362	105	-	000414	110	-	000446	115	-	000500
120	-	000531	125	-	000562	130	-	000613	135	-	000644
140	-	000701	145	-	000715	150	-	000667			

BLOCK NAMES AND LENGTHS

- 073003

VARIABLE ASSIGNMENTS

ARRAY	-	000000C01	CONF	-	000015C01	COUNT1	-	000745	COUNT4	-	000016C01
COUNT5	-	072745C01	COUNT6	-	000054C01	CUTE	-	000743	CUTP	-	000112C01
CUTR	-	000744	I	-	001441	IARRAY	-	000117C01	ICNT	-	001435
ICON1	-	001436	IFIG	-	001431	IGRPH	-	000130C01	ISAV1	-	001433
ITP	-	001442	KCHAN	-	001434	KCT	-	001430	KPOS	-	001446
KTAB	-	001440	K1	-	001437	K3	-	001432	K5	-	001443
NGR	-	072702C01	NK1	-	001444	NK2	-	001445	NOPOAN	-	000133C01
NOTABS	-	000134C01	NO9	-	001427	NP1	-	000753	NT	-	000746
PAXANG	-	000141C01	POANG	-	000142C01	P0S	-	000200C01	PX1	-	000217C01
PX10	-	032513C01	PX2	-	003153C01	PX3	-	006107C01	PX4	-	011043C01
PX5	-	013777C01	PX6	-	016733C01	PX7	-	021667C01	PX8	-	024623C01
PX9	-	027557C01	PY1	-	035447C01	PY10	-	067743C01	PY2	-	040403C01
PY3	-	043337C01	PY4	-	046273C01	PY5	-	051227C01	PY6	-	054163C01
PY7	-	057117C01	PY8	-	062053C01	PY9	-	065007C01	REP1	-	072677C01
REP2	-	072700C01	TABLES	-	072703C01						

START OF CONSTANTS

000672

START OF TEMPORARIES

000726

START OF INDIRECTS

000734

UNUSED COMPILER SPACE

110100

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SUBROUTINE PLOTTER( KCNT,NP1,IPL0)
000006 COMMON ARAY(13),CONF,COUNT4(30),COUNT6(30),CUTP,DCX,DCY,KX,KY,
1 IARAY(8),ICTAB,IGRPH,ND,NG,NOPOAN,NOTABS,NS,NV,
2 NX0,NY0,PAXANG,POANG(30),POS(15),PX1(50,30),PX2(50,30),
3 PX3(50,30),PX4(50,30),PX5(50,30),PX6(50,30),PX7(50,30),
4 PX8(50,30),PX9(50,30),PX10(50,30),PY1(50,30),PY2(50,30),
5 PY3(50,30),PY4(50,30),PY5(50,30),PY6(50,30),PY7(50,30),
6 PY8(50,30),PY9(50,30),PY10(50,30),REP1,REP2,ISPP,NGR,
7 TABLES(2,15),NYCYCL,XIMAX,XIMIN,NTYPE,COUNT5(30)
000006 INTEGER CONF,CUTE,CUTP,CUTH,PAXANG,POS,REP1,REP2,TABLES,COUNT1
000006 DIMENSION TITL(8),DECS(20),AHSCIS(8),ORDIN(8),NOREP(5),CT(14),
1 REPTIL(5),NP1(10,30)
000006 DATA BRT/ 10HMCSPA /
000006 DATA REPTIL/6HREP 1 ,6HREP 2 ,6HREP 3 ,6HREP 4 ,6HREP 5 /
000006 DATA TITL /1H ,10HPAX ANGLE ,1H ,10H(MCSPA) ,1H /
000006 DATA DECS /4HE+01,4HE+02,4HE+03,4HE+04,4HE+05,4HE+06,4HE+07,
1 4HE+08,4HE+09,4HE+10,4HE-01,4HE-02,4HE-03,4HE-04,
2 4HE-05,4HE-06,4HE-07,4HE-08,4HE-09,4HE-10 /
000006 DATA BLANK/1H /
000006 DATA NOREP /1H1,1H2,1H3,1H4,1H5 /

C
C LINEAR X-DISPLAY
000006 KX = 0

C
C LOG Y-DISPLAY
000007 KY = 1

C
C EACH POINT IN ARAY IS TO BE DISPLAYED
000010 ND=1

C
C SORT POINTS
000011 NS=2

C
C ORIF FORMAT TYPE LABELING
000012 NG = 1

C
C NO. OF RASTERS BETWEEN X-GRID LINES
000013 DCX = 16.0

C
C NO. OF RASTERS BETWEEN Y-GRID LINES
000014 DCY=16.0

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```

000015 C PROGRAM WILL DETERMINE X-AXIS SCAL
        NX0=2
000016 C PROGRAM WILL DETERMINE Y-AXIS SCAL
        NY0 = 2
000017 KCUN = 0

000020 C DO NOT JOIN POINTS
        NV = 1

C NO LEAST SQUARES FIT, NO VECTOR DRAWN      IPL0=1

C CONFIGURATION      SYMBOL      CODE
C 1      L      35
C 2      O      38
C 3      R      41
C 4      S      50
C 5      T      51
C 6      V      53
C 7      W      54
C 8      X      55
C 9      Y      56
C 10     /      57

000021 XMIN = XIMIN
000022 XMAX = XIMAX
000024 ICNT = KCNT
000025 KPL = NGR
000026 JSAV = ICNT
000030 M1 = 4
C SET UP TITLE FOR GRAPH,REPORT NO.,PAX ANGLE,AND CONFIGURATION
000031 TITL(1) = BLANK
000032 DO 5 I=1,5
000034 IF(REP1 .EQ. NOREP(I)) GO TO 10
000037 5 CONTINUE
000041 10 TITL(1) = REPTIL(I)
000044 ISAV1 = I
000045 APAX = PAXANG
000046 CALL BNHCDV(APAX,BCDWD,NDS)
000051 TITL(3) = BCDWD
000053 TITL(4) = BLANK
000054 DO 15 I=1,10

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000060      IF (IABS(NDS).EQ. 1) GO TO 20
000063      15 CONTINUE
000065      20 IF(NDS .EQ. 1) TITL(4)=DECS(1)
000071      IF(NDS .EQ.-1) TITL(4)= DECS(1+10)
000075      TITL(5) = HRT

000077      KSAV = ISAV
000100      DO 80 I=1, NOPOAN
C          INITIALIZE CONFIG COUNTER
000102      ISAV=I
000103      KCON = 0
C          CALL HEADER SUBROUTINE TO LABEL X AND Y  AXES
000104      CALL HEADER(ABSCIS, ORDIN, IPLO, KPL)
C          DETERMINE YMIN, YMAX AND CENTER CYCLES
000106      CALL SCAL(ISAV, NP1, KSAV, YMIN, YMAX)
000113      PLANG = POANG(ISAV)
000116      CALL BNBCDV( PLANG, BCDWD, NDS )
000120      CALL CONVER (ABSCIS(3), NDS)
000123      ABSCIS(2) = BCDWD

C          CALL AICRT4 SUBROUTINE TO PLOT DATA POINTS
C          NF INDICATOR 1 -ADVANCE FRAME 2- DO NOT ADVANCE FRAME
C          DATA FOR FIRST CONFIGURATION
000125      KCON =KCON+1
000126      NN1= NP1(1,I)
000133      IF(NN1 .LT. M1) GO TO 25
000135      NF=1
000136      NC =35
000137      CALL AICRT4(KX,KY,PX1(1,I),PY1(1,I),NN1,N0,NV,NS,NC,TITL,ABSCIS,
1          ORDIN,NF,NG,DCX,DCY,NX0,XMIN,XMAX,NY0,YMIN,YMAX,8,8,
2          8 )

000176      25 CONTINUE
000176      KCON = KCON + 1
000200      NN2 = NP1(2,I)
000205      IF(NN2 .LT. M1) GO TO 30
000207      NF = 2
000210      NC =38
000211      CALL AICRT4(KX,KY,PX2(1,I),PY2(1,I),NN2,N0,NV,NS,NC,TITL,ABSCIS,
1          ORDIN,NF,NG,DCX,DCY,NX0,XMIN,XMAX,NY0,YMIN,YMAX,8,8,8)

000250      30 CONTINUE
000250      KCON = KCON + 1

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000252      IF(KCON .GT. KCNT) GO TO 75
000256      IF(KCON .LT. 3) GO TO 75
000257      NC =41
000260      NN3= NP1(3,I)
000263      IF(NN3 .LT. M1) GO TO 35
000265      CALL AICRT4(KX,KY,PX3(1,I),PY3(1,I),NN3,ND,NV,NS,NC,TITL,ABSCIS,
1          ORDIN,NF,NG,DCX,DCY,NX0,XMIN,XMAX,NYO,YMIN,YMAX,8,8,8)

```

```

000324 35 CONTINUE
000324      KCON = KCON + 1
000326      IF(KCON .GT. KCNT) GO TO 75
000332      IF(KCON .LT. 4) GO TO 75
000333      NC =50
000334      NN4 = NP1(4,I)
000337      IF(NN4 .LT. M1) GO TO 40
000341      CALL AICRT4(KX,KY,PX4(1,I),PY4(1,I),NN4,ND,NV,NS,NC,TITL,ABSCIS,
1          ORDIN,NF,NG,DCX,DCY,NX0,XMIN,XMAX,NYO,YMIN,YMAX,8,8,8)

```

```

000400 40 CONTINUE
000400      KCON = KCON + 1
000402      IF(KCON .GT. KCNT) GO TO 75
000406      IF(KCON .LT. 5) GO TO 75
000407      NC =51
000410      NN5 = NP1(5,I)
000413      IF(NN5 .LT. M1) GO TO 45
000415      CALL AICRT4(KX,KY,PX5(1,I),PY5(1,I),NN5,ND,NV,NS,NC,TITL,ABSCIS,
1          ORDIN,NF,NG,DCX,DCY,NX0,XMIN,XMAX,NYO,YMIN,YMAX,8,8,8)

```

```

000454 45 CONTINUE
000454      KCON = KCON + 1
000456      IF(KCON .GT. KCNT) GO TO 75
000462      IF(KCON .LT. 6) GO TO 75
000463      NN6 = NP1(6,I)
000466      IF(NN6 .LT. M1) GO TO 50
000470      NC =53
000471      CALL AICRT4(KX,KY,PX6(1,I),PY6(1,I),NN6,ND,NV,NS,NC,TITL,ABSCIS,
1          ORDIN,NF,NG,DCX,DCY,NX0,XMIN,XMAX,NYO,YMIN,YMAX,8,8,8)

```

```

000530 50 CONTINUE
000530      KCON = KCON + 1
000532      IF(KCON .GT. KCNT) GO TO 75
000536      IF(KCON .LT. 7) GO TO 75

```



```

000537      NN7 = NP1(7,I)
000542      IF(NN7 .LT. M1) GO TO 55
000544      NC =54
000545      CALL AICRT4(KX,KY,PX7(1,I),PY7(1,I),NN7,ND,NV,NS,NC,TITL,ABSCIS,
1          ORDIN,NF,NG,DCX,DCY,NX0,XMIN,XMAX,NYO,YMIN,YMAX,8,8,8)

000604 55 CONTINUE
000604      KCON = KCON + 1
000606      IF(KCON .GT. KCNT) GO TO 75
000612      IF(KCON .LT. 8) GO TO 75
000613      NN8 = NP1(8,I)
000616      IF(NN8 .LT. M1) GO TO 60
000620      NC =55
000621      CALL AICRT4(KX,KY,PX8(1,I),PY8(1,I),NN8,ND,NV,NS,NC,TITL,ABSCIS,
1          ORDIN,NF,NG,DCX,DCY,NX0,XMIN,XMAX,NYO,YMIN,YMAX,8,8,8)

000660 60 CONTINUE
000660      KCON = KCON + 1
000662      IF(KCON .GT. KCNT) GO TO 75
000666      IF(KCON .LT. 9) GO TO 75
000667      NN9 = NP1(9,I)
000672      IF(NN9 .LT. M1) GO TO 65
000674      NC = 56
000675      CALL AICRT4(KX,KY,PX9(1,I),PY9(1,I),NN9,ND,NV,NS,NC,TITL,ABSCIS,
1          ORDIN,NF,NG,DCX,DCY,NX0,XMIN,XMAX,NYO,YMIN,YMAX,8,8,8)

000734 65 CONTINUE
000734      KCON = KCON + 1
000736      IF(KCON .GT. KCNT) GO TO 75
000742      NN10 = NP1(10,I)
000745      IF(NN10 .LT. M1) GO TO 70
000747      NC =57
000750      CALL AICRT4(KX,KY,PX10(1,I),PY10(1,I),NN10,ND,NV,NS,NC,TITL,
1          ABSCIS,ORDIN,NF,NG,DCX,DCY,NX0,XMIN,XMAX,NYO,YMIN,YMAX,8,8,8)

001007 70 CONTINUE
001007 75 CONTINUE
001007 80 CONTINUE
001014      RETURN
001014      END

```

SUBPROGRAM LENGTH
001177

FUNCTION ASSIGNMENTS

STATEMENT ASSIGNMENTS

10	-	000041	20	-	000065	25	-	000176	30	-	000250
35	-	000324	40	-	000400	45	-	000454	50	-	000530
55	-	000604	60	-	000660	65	-	000734	70	-	001007
75	-	001007	80	-	001007						

BLOCK NAMES AND LENGTHS

- 073003

VARIABLE ASSIGNMENTS

ABSCIS	-	001067	ABSICS	-	001171	APAX	-	001152	ARRAY	-	000000C01
BCDWD	-	001153	BLANK	-	001140	BRT	-	001137	CONF	-	000015C01
COUNT1	-	001032	COUNT4	-	000016C01	COUNT5	-	072745C01	COUNT6	-	000054C01
CT	-	001114	CUTE	-	001030	CUTP	-	000112C01	CUTR	-	001031
DCX	-	000113C01	DCY	-	000114C01	DECS	-	001043	I	-	001150
IAPAY	-	000117C01	ICNT	-	001144	ISAV	-	001156	ISAV1	-	001151
JSAV	-	001146	KCON	-	001141	KPL	-	001145	KSAV	-	001155
KX	-	000115C01	KY	-	000116C01	M1	-	001147	NC	-	001164
ND	-	000131C01	NDS	-	001154	NF	-	001163	NG	-	000132C01
NGR	-	072702C01	NN1	-	001162	NN10	-	001176	NN2	-	001165
NN3	-	001166	NN4	-	001167	NN5	-	001170	NN6	-	001172
NN7	-	001173	NN8	-	001174	NN9	-	001175	NOPOAN	-	000133C01
NOREP	-	001107	NS	-	000135C01	NV	-	000136C01	NX0	-	000137C01
NY0	-	000140C01	ORDIN	-	001077	PAXANG	-	000141C01	PLANG	-	001161
POANG	-	000142C01	POS	-	000200C01	PX1	-	000217C01	PX10	-	032513C01
PX2	-	003153C01	PX3	-	006107C01	PX4	-	011043C01	PX5	-	013777C01
PX6	-	016733C01	PX7	-	021667C01	PX8	-	024623C01	PX9	-	027557C01
PY1	-	035447C01	PY10	-	067743C01	PY2	-	040403C01	PY3	-	043337C01
PY4	-	046273C01	PY5	-	051227C01	PY6	-	054163C01	PY7	-	057117C01
PY8	-	062053C01	PY9	-	065007C01	REPTIL	-	001132	REP1	-	072677C01
REP2	-	072700C01	TABLES	-	072703C01	TITL	-	001033	XIMAX	-	072742C01
XIMIN	-	072743C01	XMAX	-	001143	XMIN	-	001142	YMAX	-	001160
YMIN	-	001157									

START OF CONSTANTS

001016

START OF TEMPORARIES

001021

START OF INDIRECTS

001025

UNUSED COMPILER SPACE

107500

```

000010      SUBROUTINE SCAL( I,NP1, KCON, YMIN, YMAX)
COMMON      ARAY(13),CONF,COUNT4(30),COUNT6(30),CUTP,DCX,DCY,KX,KY,
1           IARAY(8),ICTAB,IGRPH,ND,NG,NOPOAN,NOTABS,NS,NV,
2           NXO,NYO,PAXANG,POANG(30),POS(15),PX1(50,30),PX2(50,30),
3           PX3(50,30),PX4(50,30),PX5(50,30),PX6(50,30),PX7(50,30),
4           PX8(50,30),PX9(50,30),PX10(50,30),PY1(50,30),PY2(50,30),
5           PY3(50,30),PY4(50,30),PY5(50,30),PY6(50,30),PY7(50,30),
6           PY8(50,30),PY9(50,30),PY10(50,30),REP1,REP2,ISPP,NGR,
7           TABLES(2,15),NYCYCL,XIMAX,XIMIN,NTYPE,COUNT5(30)
000010      INTEGER CONF,CUTE,CUTP,CUTR,PAXANG,POS,REP1,REP2,TABLES,COUNT1
000010      DIMENSION STY(20), NP1(10,30)

```

C SCAL SELECTS A SIMPLE YMIN AND YMAX

```

000010      NN1= NP1(1,I)
000013      IF(NN1 .LT. 5) GO TO 70
C      KCON= TOTAL NUMBER OF CONFIGS. (GT1)
000015      MCT =1
000016      Y1MIN = PY1( 1 ,I)
000022      Y1MAX = PY1( 1 ,I)
000026      DO 5 N1= 1,NN1
000027      Y1MIN = AMIN1(PY1(N1,I) ,Y1MIN)
000035      Y1MAX = AMAX1(PY1(N1,I) ,Y1MAX)
000043      5 CONTINUE
000045      STY(1) = Y1MIN
000046      STY(2) = Y1MAX
000047      MCT = 2
000050      NN2 = NP1(2, I)
000053      IF(NN2 .LT. 5) GO TO 70
000055      Y2MIN=PY2( 1,I)
000061      Y2MAX=PY2(1,I)
000065      DO 10 N1=1,NN2
000066      Y2MIN = AMIN1(PY2(N1,I), Y2MIN)
000074      Y2MAX = AMAX1(PY2(N1,I), Y2MAX)
000102      10 CONTINUE
000104      STY(3) = Y2MIN
000105      STY(4) = Y2MAX
000106      MCT = 3
000107      IF(KCON .LT. 3) GO TO 60
000111      NN3 = NP1(3,I)
000114      Y3MIN = PY3(1,I)

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000120      Y3MAX = PY3(1,I)
000124      DO 15 N1=1,NN3
000125      Y3MIN = AMIN1(PY3(N1,I),Y3MIN)
000133      Y3MAX = AMAX1(PY3(N1,I),Y3MAX)
000141      15 CONTINUE
000143      STY(5) = Y3MIN
000144      STY(6) = Y3MAX
000145      IF(KCON .LT. 4) GO TO 60
000147      NN4 = NP1(4,I)
000152      Y4MIN = PY4(1,I)
000156      Y4MAX = PY4(1,I)
000162      DO 20 N1=1,NN4
000163      Y4MIN = AMIN1(PY4(N1,I),Y4MIN)
000171      Y4MAX = AMAX1(PY4(N1,I),Y4MAX)
000177      20 CONTINUE
000201      STY(7) = Y4MIN
000202      STY(8) = Y4MAX
000203      IF(KCON .LT. 5) GO TO 60
000205      NN5 = NP1(5,I)
000210      Y5MIN = PY5(1,I)
000214      Y5MAX = PY5(1,I)
000220      DO 25 N1=1,NN5
000221      Y5MIN = AMIN1(PY5(N1,I),Y5MIN)
000227      Y5MAX = AMAX1(PY5(N1,I),Y5MAX)
000235      25 CONTINUE
000237      STY(9) = Y5MIN
000240      STY(10) = Y5MAX

000241      IF(KCON .LT. 6) GO TO 60
000243      NN6 = NP1(6,I)
000246      Y6MIN = PY6(1,I)
000252      Y6MAX = PY6(1,I)
000256      DO 30 N1 =1,NN6
000257      Y6MIN = AMIN1(PY6(N1,I),Y6MIN)
000265      Y6MAX = AMAX1(PY6(N1,I),Y6MAX)
000273      30 CONTINUE
000275      STY(11) = Y6MIN
000276      STY(12) = Y6MAX

000277      IF(KCON .LT. 7) GO TO 60
000301      NN7 = NP1(7,I)
000304      Y7MIN = PY7(1,I)

```

```

000310      Y7MAX =PY7(1,I)
000314      DO 35 N1=1,NN1
000315      Y7MIN = AMIN1(PY7(N1,I),Y7MIN)
000323      Y7MAX = AMAX1(PY7(N1,I),Y7MAX)
000331      35 CONTINUE
000333      STY(13) = Y7MIN
000334      STY(14) = Y7MAX

000335      IF(KCON .LT. 8) GO TO 60
000337      NN8 = NP1(8,I)
000342      Y8MIN = PY8(1,I)
000346      Y8MAX = PY8(1,I)
000352      DO 40 N1=1,NN8
000353      Y8MIN = AMIN1(PY8(N1,I),Y8MIN)
000361      Y8MAX = AMAX1(PY8(N1,I),Y8MAX)
000367      40 CONTINUE
000371      STY(15) = Y8MIN
000372      STY(16) = Y8MAX

000373      IF(KCON .LT. 9) GO TO 60
000375      NN9 = NP1(9,I)
000400      Y9MIN = PY9(1,I)
000404      Y9MAX = PY9(1,I)
000410      DO 45 N1=1,NN9
000411      Y9MIN = AMIN1(PY9(N1,I),Y9MIN)
000417      Y9MAX = AMAX1(PY9(N1,I),Y9MAX)
000425      45 CONTINUE
000427      STY(17) = Y9MIN
000430      STY(18) = Y9MAX

000431      IF(KCON .LT. 10) GO TO 60

000433      NN10 = NP1(10,I)
000436      Y10MIN = PY10(1,I)
000442      Y10MAX = PY10(1,I)
000446      DO 50 N1=1,NN10
000447      Y10MIN = AMIN1(PY10(N1,I),Y10MIN)
000455      Y10MAX = AMAX1(PY10(N1,I),Y10MAX)
000463      50 CONTINUE
000465      STY(19) = Y10MIN
000466      STY(20) = Y10MAX
000467      IF(KCON .GT. 10) WRITE(6,55)

```

```

000500      55 FORMAT(50H0YOU HAVE EXCEEDED MAX NUMBER OF CONFIGURATIONS. )
C      SELECT THE MINIMUM AND MAXIMUM Y VALUIFS.
000500      60 CONTINUE
000500          YMIN = STY(1)
000501          YMAX = STY(1)
000502          NTOT = 2 * KCON
000503          DO 65 NK =1, NTOT
000504              YMIN = AMIN1(STY(NK), YMIN)
000510              YMAX = AMAX1(STY(NK), YMAX)
000514      65 CONTINUE
000516          IF(YMIN .EQ. YMAX) YMAX=YMAX*10.0
000521      70 CONTINUE
000521          RETURN
000522          END

```

SUBPROGRAM LENGTH
000644

FUNCTION ASSIGNMENTS

STATEMENT ASSIGNMENTS

55 - 000526 60 - 000500 70 - 000521

BLOCK NAMES AND LENGTHS
- 073003

VARIABLE ASSIGNMENTS

ARRAY	-	000000C01	CONF	-	000015C01	COUNT1	-	000555	COUNT4	-	000016C01
COUNT5	-	072745C01	COUNT6	-	000054C01	CUTE	-	000553	CUTP	-	000112C01
CUTR	-	000554	IARRAY	-	000117C01	MCT	-	000603	NK	-	000643
NN1	-	000602	NN10	-	000637	NN2	-	000607	NN3	-	000612
NN4	-	000615	NN5	-	000620	NN6	-	000623	NN7	-	000626
NN8	-	000631	NN9	-	000634	NIOT	-	000642	NI	-	000606
PAXANG	-	000141C01	POANG	-	000142C01	PDS	-	000200C01	PX1	-	000217C01
PX10	-	032513C01	PX2	-	003153C01	PX3	-	006107C01	PX4	-	011043C01
PX5	-	013777C01	PX6	-	016733C01	PX7	-	021667C01	PX8	-	024623C01
PX9	-	027557C01	PY1	-	035447C01	PY10	-	067743C01	PY2	-	040403C01
PY3	-	043337C01	PY4	-	046273C01	PY5	-	051227C01	PY6	-	054163C01
PY7	-	057117C01	PY8	-	062053C01	PY9	-	065007C01	REP1	-	072677C01
REP2	-	072700C01	STY	-	000556	TABLES	-	072703C01	Y1MAX	-	000605
Y1MIN	-	000604	Y10MAX	-	000641	Y10MIN	-	000640	Y2MAX	-	000611
Y2MIN	-	000610	Y3MAX	-	000614	Y3MIN	-	000613	Y4MAX	-	000617
Y4MIN	-	000616	Y5MAX	-	000622	Y5MIN	-	000621	Y6MAX	-	000625
Y6MIN	-	000624	Y7MAX	-	000630	Y7MIN	-	000627	Y8MAX	-	000633
Y8MIN	-	000632	Y9MAX	-	000636	Y9MIN	-	000635			

START OF CONSTANTS
000524

START OF TEMPORARIES
000536

START OF INDIRECTS
000546

UNUSED COMPILER SPACE

110300

```

SUBROUTINE AICRT4(KX,KY,X,Y,NP,ND,NV,NS,NC,T,A,O,NF,NG,DCS,DCY,
1              NXO,XL,XU,NYO,YL,YU,KT,KA,KO,ICRD)
C
000035      DIMENSION X(1),Y(1),A(1),O(1),T(1),K1(3),ICH(61),X6(4)
C
000035      DATA TEN/2H10/
000035      DATA X6/0.1,0.2,0.5,1.0/
000035      DATA ICH/1H0,1H1,1H2,1H3,1H4,1H5,1H6,1H7,1H8,1H9,1HX,1H=,4*1HX,
11H+,1HA,1HB,1HC,1HD,1HE,1HF,1HG,1HH,1HI,1HX,1H.,1H),3*1HX,1H-,
21HJ,1HK,1HL,1HM,1HN,1HO,1HP,1HQ,1HR,2*1HX,1H*,3*1HX,1H,1H/,1HS,
31HT,1HU,1HV,1HW,1HX,1HY,1HZ,1HX,1H.,1H)/
C
C
000035      MX=KX
000035      MY=KY
000036      NIMP=NP
000037      INT=ND
000040      NCON=NV
000042      NSOR=NS
000043      NCHR=NC+1
000046      NADV=NF
000047      NGX=NG
000051      NGY=NGX
000052      NXS=N XO
000054      NYS=NYO
000055      XMIN=XL
000057      XMAX=XU
000060      YMIN=YL
000062      YMAX=YU
C
000063      IF(KX.NE.0) NGX=2
000066      IF(KY.NE.0) NGY=2
000070      IF(INT.LE.0) INT=1
000073      IF(NCHR.LT.0) NCHR=IAHS(NCHR)
000076      IF(NCHR.GT.61) NCHR=58
000101      IF(XMAX.LE.XMIN) NXS=1
000105      IF(YMAX.LE.YMIN) NYS=1
C
C
      SORT POINTS IF NECESSARY
C
000111      IF(NCON.NE.2.OR.NSOR.NE.2) GO TO 15

```

```

000121      J1=NUMP-1
000123      DO 10 J2=1,J1
000124      K=J2+1
000126      DO 5 J3=K,NUMP
000130      IF(X(J2).LE.X(J3)) GO TO 5
000134      X1=X(J3)
000136      X(J3)=X(J2)
000141      X(J2)=X1
000142      X1=Y(J3)
000145      Y(J3)=Y(J2)
000147      Y(J2)=X1
000151      5 CONTINUE
000154      10 CONTINUE

C
C      DETERMINE MAXIMUM AND MINIMUM
C
000156      15 IF(NADV.NE.1) GO TO 115
C
000160      IF(NXS.EQ.1) CALL EXXX(X,NUMP,XMIN,XMAX,MX)
000171      IF(MX.EQ.0) GO TO 20
000172      X1=ALOG10(XMIN)
000174      AMINX=AIN(T(X1)
000176      IF(10.0**AMINX .GT. XMIN) AMINX = AMINX-1.0
000212      X1=ALOG10(XMAX)
000214      AMAXX=AIN(T(X1)
000216      IF(X1.GT.AMAXX) AMAXX=AMAXX+1.0
000227      XMIN=10.0**AMINX
000233      XMAX=10.0**AMAXX
000237      KX1=AMINX
000240      KX2=AMAXX
000242      XINCH=(AMAXX-AMINX)/9.7
000244      XENT=1.0
000245      GO TO 25
000246      20 CALL RXXXX(XMIN,XMAX,XENT)
000251      XINCH=(XMAX-XMIN)/9.7
C
000254      25 IF(NYS.EQ.1) CALL EXXX(Y,NUMP,YMIN,YMAX,MY)
000271      IF(MY.EQ.0) GO TO 30
000272      X1=ALOG10(YMIN)
000274      AMINY=AIN(T(X1)
000276      IF(10.0**AMINY .GT. YMIN) AMINY = AMINY - 1.0
000312      X1=ALOG10(YMAX)

```

```

000314      AMAXY=AINT(X1)
000316      IF(X1.GT.AMAXY) AMAXY=AMAXY+1.0
000327      YMIN=10.0**AMINY
000333      YMAX=10.0**AMAXY
000337      KY1=AMINY
000340      KY2=AMAXY
000342      YINCH=(AMAXY-AMINY)/9.0
000344      YENT=1.0
000345      GO TO 35
000346  30 CALL RXXXX(YMIN,YMAX,YENT)
000351      YINCH= (YMAX-YMIN)/9.0

      C
      C
      C      DETERMINE SUBINTERVALS

000354  35 XXENT=XENT
000355      IF(MX.NE.0) GO TO 45
000362      DO 40 I=1,4
000364      XXENT=XENT*X6(I)
000366      X1=XXENT*XINCH
000370      IF(X1.GE.0.02) GO TO 45
000373  40 CONTINUE
000375  45 YYENT=YENT
000376      IF(MY.NE.0) GO TO 55
000400      DO 50 I=1,4
000401      YYENT=YENT*X6(I)
000403      IF(X1.GE.0.02) GO TO 55
000406  50 CONTINUE

      C
      C
      C      DRAW GRID TITLES

000410  55 CALL PLOGXY(0.0)
000412      CALL PLOT1(0.0,11.0,0.0,11.0,11.0,11.0,6HACRT4)
000421      DO 65 I=1,2
000426      IF(ICRD.EQ.0) GO TO 60
000427      CALL WXLABL(1.0,10.75,0.0,0.2,56,56HCONFIDENTIAL RESTRICTED DATA-A
10MIC ENERGY ACT 1954-GP-1)
000433      CALL WXLABL(7.00,0.1,0.0,0.2,22,22HCONFIDENTIAL DATA-GP-1)

      C

000437  60 CALL WXLABL(2.65,10.4,0.0,0.15,48,T)
000444      CALL WXLABL(2.275,0.45,0.0,0.15,54,A)
000451      CALL WXLABL(0.4,2.125,1.571,0.15,54,0)
000456  65 CONTINUE

```

```

C      DETERMINE LABEL FORMATS
C
000464      IF(NGX.NE.1) GO TO 70
000466      J1=(XMAX-XMIN)/XFNT+1.5
000472      X1=10.3/FLOAT(J1)
000474      J1=12.0*X1-4.5
000477      IF(J1.GT.5) J1=5
000503      X1=10.0**J1
000507      IF(XMAX.GT.X1) NGX=2
000513      IF(XMIN.LT.-X1) NGX=2
000517      FMX=FLOAT(J1)+3.1
000521      IF(XENT.LT.0.01) NGX=2

C
000525      70 IF(NGY.NE.1) GO TO 75
000527      X1=10.0**4
000530      IF(YMAX.GT.X1) NGY=2
000534      IF(YMIN.LT.-X1) NGY=2
000540      IF(YENT.LT.0.01) NGY=2
000544      FMY=7.1

C      DRAW GRID OUTLINE
C
000546      75 CALL PLOGXY(MX,MY)
000550      CALL PGRIDV(XMIN,1.2,XMAX,10.7,YMIN,1.0,YMAX,10.0,XENT,YENT,1,1)
000564      CALL PGRIDV(XMIN,1.2,XMAX,10.7,YMIN,1.0,YMAX,10.0,XXENT,YYENT,0.0)

C      LABEL X-AXIS
C
000600      Y0=YMIN-0.2*YINCH
000603      IF(MY.NE.0) Y0=10.0** (AMINY-0.2*YINCH)
000616      IF(MX.EQ.0) GO TO 85
000617      Y1=Y0+0.075*YINCH
000622      IF(MY.NE.0) Y1=10.0** (AMINY-0.125*YINCH)
000632      J2=KX1
000634      80 X2=10.0**J2
000640      CALL CONV(J2,K1,3.0)
000643      X3=10.0** (FLOAT(J2)-XINCH*0.25)
000652      CALL PSYMBL(X3,Y0,0.0,0.15,2,TEN)
000656      CALL PSYMBL(X2,Y1,0.0,0.1,3,K1)
000662      J2=J2+1
000664      IF(J2.LE.KX2) GO TO 80
  
```

```

C
000671      GO TO 95
000672      85 J1=(XMAX-XMIN)/XENT+1.5
000676      J3=FMX
000700      IF(NGX.EQ.2) J3=8
000703      DO 90 J2=1,J1
000705      X2=XMIN+FLOAT(J2-1)*XFNT
000711      IF(NGX.NE.2) CALL CONV(X2,K1,FMX)
000722      IF(NGX.EQ.2) CALL ECONV(X2,K1,R.1)
000733      X2=X2-FLOAT(J3/2)*XINCH*0.1
000740      CALL PSYMBL(X2,Y0,0.0,0.1,J3,K1)
000744      90 CONTINUE

C
C      LABEL Y-AXIS
C
000752      95 X0=XMIN-0.65*XINCH
000755      IF(MX.NF.0) X0=10.0** (AMINX-0.65*XINCH)
000765      IF(MY.EQ.0) GO TO 105
000766      X1=X0+0.25*XINCH
000771      IF(MX.NF.0) X1=10.0** (AMINX-0.4*XINCH)
001001      J2=KY1
001003      100 X2=10.0**J2
001007      CALL CONV(J2,K1,3.0)
001012      CALL PSYMBL(X0,X2,0.0,0.15,2,TFN)
001016      X3=10.0** (FLOAT(J2)+YINCH*0.075)
001025      CALL PSYMBL(X1,X3,0.0,0.1,3,K1)
001031      J2=J2+1
001033      IF(J2.LE.KY2) GO TO 100
001040      GO TO 115

C
001041      105 J1=(YMAX-YMIN)/YENT+1.5
001045      J3=FMY
001047      IF(NGY.EQ.2) J3=8
001052      DO 110 J2=1,J1
001054      X2=YMIN+FLOAT(J2-1)*YENT
001060      IF(NGY.NE.2) CALL CONV(X2,K1,FMY)
001071      IF(NGY.EQ.2) CALL ECONV(X2,K1,R.1)
001102      CALL PSYMBL(X0,X2,0.0,0.1,J3,K1)
001106      110 CONTINUE

C
C      PLOT THE POINTS
C

```

```

001114      115 IF(NCON.NE.2) GO TO 125
001116          CALL LINE
001117          CALL RAISE
001120          DO 120 J1=1,NUMP,INT
001125          CALL PLOT2(X(J1),Y(J1))
001133      120 CONTINUE
001141          GO TO 135

C
001142      125 DO 130 J1=1,NUMP,INT
001144          CALL PSYMBL(X(J1),Y(J1),0.0,0.1,1,ICH(NCHR))
001157      130 CONTINUE

C
001165      135 RETURN
001166          END
  
```

SUBPROGRAM LENGTH
001522

FUNCTION ASSIGNMENTS

STATEMENT ASSIGNMENTS

5	-	000151	15	-	000156	20	-	000246	25	-	000254
30	-	000346	35	-	000354	45	-	000375	55	-	000410
60	-	000437	70	-	000525	75	-	000546	80	-	000634
85	-	000672	95	-	000752	100	-	001003	105	-	001041
115	-	001114	125	-	001142	135	-	001165			

BLOCK NAMES AND LENGTHS

VARIABLE ASSIGNMENTS

A	-	000004	AMAXX	-	001475	AMAXY	-	001503	AMINX	-	001474
AMINY	-	001502	DCS	-	000010	DCY	-	000011	FMX	-	001513
FMY	-	001514	I	-	001511	ICH	-	001345	ICRD	-	000023
INT	-	001452	J1	-	001467	J2	-	001470	J3	-	001472
K	-	001471	KA	-	000021	KO	-	000022	KT	-	000020
KX1	-	001476	KX2	-	001477	KY1	-	001504	KY2	-	001505
L	-	001342	MX	-	001447	MY	-	001450	NADV	-	001456
NC	-	000002	NCHR	-	001455	NCUN	-	001453	NF	-	000006
NG	-	000007	NGA	-	001457	NGY	-	001460	NS	-	000001
NSOR	-	001454	NUMP	-	001451	NV	-	000000	NX0	-	000012
NXS	-	001461	NYU	-	000015	NYS	-	001462	O	-	000005
T	-	000003	TEN	-	001446	XENT	-	001501	XINCH	-	001500
XL	-	000013	XMAX	-	001464	XMIN	-	001463	XU	-	000014
XXENT	-	001510	X0	-	001521	X1	-	001473	X2	-	001517
X3	-	001520	X6	-	001442	YENT	-	001507	YINCH	-	001506
YL	-	000016	YMAX	-	001466	YMIN	-	001465	YU	-	000017
YYENT	-	001512	Y0	-	001515	Y1	-	001516			

START OF CONSTANTS
001170

START OF TEMPORARIES
001311

START OF INDIRECTS

001330

UNUSED COMPILER SPACE

106500

Astronuclear
Laboratory

```

SUBROUTINE RXXXX(S,R,XT)
C
000006      S1=S
000006      H1=B
C
000010      5 EN=ABS((H1-S1)/20.0)
000013      SV=EN
000015      IF(EN.LE.1.0) GO TO 10
000017      M=1
000020      K=1
000021      GO TO 15
000022      10 M=-1
000023      K=0
000024      15 DO 20 N=1,1000
000026      IF(EN.GT.10.0**(K-1).AND.EN.LE.10.0**K) GO TO 25
000046      K=K+M
000047      20 CONTINUE
000051      25 EN=10.0**(K-1)
000057      30 IF(SV.GE.0.5*EN) GO TO 35
000063      GO TO 40
000063      35 EN=EN*10.0
000065      GO TO 30
000065      40 CONTINUE
000065      R=AMOD(S1,EN)
000072      IF(R.EQ.0.0) GO TO 45
000073      FIT=S1/EN
000074      IT=FIT
000075      IF(FIT.LT.0.0) IT=IT-1
000100      FIT=IT
000101      S1=EN*FIT
000103      45 R=AMOD(H1,EN)
000110      IF(R.EQ.0) GO TO 50
000111      IT=H1/EN
000112      FIT=IT+1
000114      H1=FIT*EN
000116      50 B=B1
000117      S=S1
000120      55 XT=EN
000121      RETURN
000122      END

```

SUBPROGRAM LENGTH
000153

FUNCTION ASSIGNMENTS

STATEMENT ASSIGNMENTS

5	-	000010	10	-	000022	15	-	000024	25	-	000051
30	-	000057	35	-	000063	40	-	000065	45	-	000103
50	-	000116	55	-	000120						

BLOCK NAMES AND LENGTHS

VARIABLE ASSIGNMENTS

H1	-	000142	EN	-	000143	FIT	-	000151	IT	-	000152
K	-	000146	M	-	000145	N	-	000147	R	-	000150
SV	-	000144	S1	-	000141						

START OF CONSTANTS
000124

START OF TEMPORARIES
000131

START OF INDIRECTS
000141

UNUSED COMPILER SPACE
112500

```

SUBROUTINE EXXX(X,N,S,B,J)
C
000010    DIMENSION X(1)
000010    M=J
000010    N1=N
000011    IF(M.EQ.0) GO TO 20
000013    DO 5 I=1,N1
000014    IF(X(I).NE.0.0) GO TO 15
000016    5 CONTINUE
000020    PRINT 10
000024    10 FORMAT(1H1,///,24X,52HONE OF THE ARRAYS IS IDENTICALLY EQUAL TO ZE
000024    1RO. CHECK X AND Y.)
000024    CALL PLOT3
000025    STOP
000027    15 S1=X(1)
000034    B1=X(1)
000036    GO TO 25
000036    20 S1=X(1)
000037    B1=X(1)
000040    25 DO 35 I=1,N1
000042    S2=AMIN1(S1,X(I))
000046    B2=AMAX1(B1,X(I))
000052    IF( M.EQ.0) GO TO 30
000053    IF(S2.NE.0.0) S1=S2
000055    IF(B2.NE.0.0) B1=B2
000057    GO TO 35
000060    30 S1=S2
000061    B1=B2
000063    35 CONTINUE
000066    S=S1
000067    B=B1
000070    RETURN
000070    END

```

SUBPROGRAM LENGTH
000130

FUNCTION ASSIGNMENTS

STATEMENT ASSIGNMENTS

10	-	000074	15	-	000027	20	-	000036	25	-	000040
30	-	000060	35	-	000063						

BLOCK NAMES AND LENGTHS

VARIABLE ASSIGNMENTS

B1	-	000125	B2	-	000127	I	-	000123	M	-	000121
N1	-	000122	S1	-	000124	S2	-	000126			

START OF CONSTANTS
000072

START OF TEMPORARIES
000107

START OF INDIRECTS
000117

UNUSED COMPILER SPACE
112600

WXPCID	044451
WXPSID	044636
ERROR	045247
GETBA	045370
KRAKER	045407
EXP	046444
CNICDC	046523
SHIFTV	046645
ORAV	046670
KOUER	046704
SINCOS	050102
WXPXPN	050201
WXPUPK	050213
OUTPTS	050233
REMARK	050540
ENDFIL	050562
BACKSP	050632
PHOLDV	051036
WXP4CA	051117
WXP4SD	051326
WXPSPL	051716
WXPOUT	052035
WXPIDN	052107
CLOCK	052124
WXPWLG	052271
WXPSVC	052473
OUTPTB	052642
CDC1	052734
INPUTS	052756
COUNT	053260
WXPWLC	053267
--ENTRY----	ADDRESS--
PARX22	000101
FIXELEV	013156
CLEAR	013342
CONVER	013533
LSQUAR	013612
LIMITS	015374
MINI	015450

WXPCOM	031442
WXPCOM	031442
WXPCOM	031442
WXPCOM	031442
WXPCOM	031442
WXPCM2	042467
WXPCOM	031442

REFERENCES

PARX22	000427	000432	
PARX22	000276	000604	
MULTCON	023716		
SETUP	017111	017252	017377
PLOTTER	025474		
SETUP	017031	017225	017353
PARX22	000457		
MINIR	015747		

		POINTS	016275						
MINIR	015656	SETUP	017047						
POINTS	016014	SETUP	017135	017151	017300	017314	017424	017440	
HEADER	016446	SETUP	017044	017234	017362				
		PLOTTER	025457						
SETUP	016711	PARX22	000506						
MULTCON	023704	PARX22	000272						
PLOTTER	025353	MULTCON	024054						
SCAL	026552	PLOTTER	025464						
AICRT4	027442	POINTS	016161	016212	016305	016336			
		PLOTTER	025522	025547	025574	025621	025650	025675	025724
			025751	026000	026025	026054	026101	026130	026155
			026204	026231	026260	026305	026333	026360	
XXXXX	031140	AICRT4	027665	027765					
EXXX	031313	AICRT4	027601	027701					
UNTRY	031517	PARX22	000102						
SYSTEM	031755	REWJNM	033251						
		INPUTC	033326						
		INPUTB	033662						
		RBALEX	034001						
		ALNLOG	034253	034255					
		RBALEX	034346						
		ACGDFR	034371						
		OUTPTC	034560						
		KHAKER	046242						
		EXP	046477						
		KODER	047712						
		SINCOS	050145	050150					
		OUTPTS	050300						
		ENDFIL	050622						
		BACKSP	050646						
		OUTPTB	052724						
		INPUTS	053002						
SYSTEMC	031672								

SYSTEMP
END

031722
031616

PARX22 000714
CLEAR 013474
CONVER 013554
LSQUAR 014015
LIMITS 015432
MINI 015566
MINIR 015757
POINTS 016341
HEADER 016622
SETUP 017443
MULTCON 024574
PLOTTER 026367
SCAL 027274
AICRT4 030604
RXXXX 031262
EXXX 031403
PLOT1 033137
ISIMEQ 034157
BNBCDV 034513
PLOGXY 035150
WXLABL 035552
PGRIDV 037412
CONV 037557
ECONV 037635
PLOT2 040056
WXPEND 040642
WXPLT4 043366
WXPCID 044554
WXP5ID 045040
CNTCUC 046540
ORAV 046700
WXP4CA 051245
WXP4SD 051647
WXP5PL 052011
WXP0UT 052076
CLOCK 052241
WXPWLG 052423
WXP5VC 052621
WXPWLC 053432

STOP 031645

PARX22 000712
EXXX 031340

EXIT 031637
ABNORML 031655

REWIND 033252
INPUTC 033327

		INPUTB	033663						
		ACGDER	034372						
		OUTPTC	034561						
		KHAKER	046243						
		KODER	047713						
		OUTPTS	050301						
		ENDFIL	050623						
		BACKSP	050647						
		OUTPTB	052725						
		INPUTS	053003						
WXPRSS	032345								
WXPSYS	032341	PLUT1	032605						
PLUT1	032573	AICRT4	030032	030035					
PFNAME	033035								
POVICE	033054	PARX22	000104						
PLUT3	033073	PARX22	000704						
		EXXX	031336						
REWIM	033202	PARX22	000132	000134	000706	000710			
		WXPLT4	043241	043355					
INPUTC	033264	PARX22	000137	000141	000143	000145	000146	000152	000154
			000156	000157	000162	000164	000166	000167	000172
			000174	000176	000177	000202	000204	000206	000207
			000212	000217	000222	000226	000232	000236	000242
			000245	000247	000251	000252	000256	000262	000266
			000536	000540	000542	000544	000546	000550	000551
			000554	000556	000557	000562	000564	000566	000567
			000573	000577	000603				
INPUT..	033624	PARX22	000321	000325	000333	000336	000342	000346	000354
			000357	000615	000621	000627	000632	000636	000642
			000650	000653					
		MULTCON	023755	023761	023767	023772	024006	024012	024020
			024023						
		WXPLT4	043251	043253	043255	043257	043261	043262	
RBAIEX	033757	LSQUAR	013641	013711	013776				
		AICRT4	030122	030253	030422				
		RXXXX	031170	031173	031214				
		RBAIEX	034313						
		HNBODV	034437	034447					
		PGRIDV	036404	036426	036527	037025	037047	037151	

ISIMEQ	034020	LSQUAR	013736						
ALOG	034217	RHAREX	034326						
ALUG10	034214	MINI	015520						
		AICRT4	027610	027630	027710	027730			
		BNBCDV	034414						
		WXLABL	035170	035204	035520	035535			
		PGRIDV	036204	036217	036246	036260	036315	036370	036453
			036735	037011	037073				
		PLOT2	037665	037677					
RHAREX	034303	MINI	015534						
		AICRT4	027621	027646	027652	027721	027746	027752	030231
			030245	030265	030400	030414	030440		
		PGRIDV	036327	036462	036747	037105			
ACGOER	034367	HEADER	016465	016517	016564				
		MULTCON	024134						
		PLOT1	032731	033121					
		WXPEND	040551						
		WXPLT4	043165	043215					
		CLOCK	052223						
BNBCDV	034401	SETUP	016743	017105	017247	017373			
		PLOTTER	025422	025471					
OUTPTC	034542	MULTCON	023745	023747	023750	024553	024555	024556	024564
			024566	024567					
		SCAL	027244	027245					
		EXXX	031334	031335					
		WXLABL	035321	035323	035324				
		PGRIDV	037350	037355	037357	037361	037363	037365	037367
			037371	037373	037375	037377	037401	037403	037404
		ERROR	045254	045260	045267	045272	045273	045311	045316
			045321	045327	045330				
		KHAKER	046216	046177	046203				
		WXPOUT	052062	052070	052073				
PLUGXY	035132	AICRT4	030026	030164					
		WXPEND	040557						
WXLABL	035155	AICRT4	030047	030053	030060	030065	030072		
		WXPICD	044524	044530	044534	044540	044544	044550	
		WXPSTD	044717	044723	044727	044733	044740	044744	044750

			044754 045010	044760 045014	044764	044770	044774	045000	045004
WXPLHL	035421								
PSYMBL	035441	AICRT4	030272	030276	030360	030432	030445	030522	030573
PGRIDV	036123	AICRT4	030170	030200	030204	030214			
		PLOT1	033010	033021					
		WXPCID	044504	044514					
		WXPSID	044643	044653	045020	045030			
CONV	037477	AICRT4	030257	030332	030426	030501			
		WXPCID	044472	044477					
		WXPSID	044700	044703	044710				
ECONV	037602	AICRT4	030343	030512					
PLUT2	037647	AICRT4	030547						
		PGRIDV	036337	036341	036347	036440	036477	036501	036504
			036556	036561	036616	036624	036655	036664	036677
			036704	036712	036757	036761	036766	037061	037115
			037117	037125	037200	037206	037247	037254	037306
			037314	037327	037335	037343			
WXPLT2	040004	WXLABL	035363						
		WXPSID	044656	044660	044662	044664	044666		
		WXPWLG	052404						
		WXPWLC	053346	053402	053416				
RAISE	040021	AICRT4	030534						
		WXLABL	035337	035402					
		PGRIDV	036163	036276	036441	036547	036612	036671	036713
			037062	037171	037240	037321	037344		
		WXPWLG	052414						
		WXPWLC	053300	053421					
LINF	040032	AICRT4	030533						
		WXLABL	035217						
		PGRIDV	036164						
		WXPSID	044654						
POINT	040043								
WKSPRU.	040433	BACKSP	050747	050770					
FLZBAK.	040444	BACKSP	050751	050744					

POSFIL.	040502	OUTPTC ENDFIL	034576 050610						
RUPRU. DAT.	040512 040536	INPUTC OUTPTC	033270 034546						
CIOL.	040400	REWIND INPUTB ENDFIL BACKSP OUTPTB	033231 033673 050615 050657 051002 052713	033226 033701 050576 050662 051004 052702	033217 033706 050602 050671 051011 052721	033646	050704	050712	050716 050774
OPEN.	040133	SYSTEM INPUTC INPUTB OUTPTC ENDFIL OUTPTB	032253 033310 033726 034566 050572 052714						
SIO.	040252	INPUTC INPUTB OUTPTC OUTPTB	033342 033655 034634 052671						
IHFA	040534	INPUTC OUTPTC	033265 034543						
IBFB	040535	INPUTC OUTPTC	033266 034544						
WXPEND	040540	PLOT1	032604						
WXPFIN	040701	PLOT1	032614						
WXPMP	040713	WXPEND	040637						
WXPLT4	043141	PLOT2	037732	037756	037775				
WXPNXF	043202	PLOT1 WXPEND WXPCID WXPSID	032634 040545 044551 045035	033111					
WXPSTV	043431	WXPLT4 WXPSTV	043343 052543	052554					

WXPSAD	043422	WXPLT4	043227	043353	
WXPSMT	043476	PLOT1	032663	033133	
		WXPEND	040564		
WXPSCM	043515	PLOT1	032707	032756	032761
WXPXAX	043522	WXPLT4	043335		
		WXP4SD	051611	051642	
WXPYAX	043533	WXPLT4	043325		
		WXP4SD	051556		
WXPCT7	044371	WXP4CA	051151	051217	
WXPCTM	044411	PLOT1	032672	033126	
		WXPEND	040562		
WXPCTD	044452	PLOT1	032737		
		WXPEND	040561		
WXPSID	044637	PLOT1	032757		
ERROR	045250	PLOT1	033024		
		ISIMEQ	034152		
		WXLARL	035411		
		PGRIDV	037406		
		PLOT2	040053		
		PHOLDV	051070	051074	
GETRA	045370	REWIND	033206		
		INPUTC	033276		
		INPUTB	033713		
		OUTPTC	034554		
		WXPFIN	040714		
		ENDFIL	050566		
		BACKSP	050642		
		OUTPTB	052675		
KRAKER	045410	INPUTC	033315	033272	
		INPUTS	052763	052777	
BCKA	046440	INPUTC	033341		
RIDNX	046154	INPUTC	033337	033347	033354

ARLI	046443	INPUTC	033304	033341	033335				
EXP	046445	HBAREX	034331						
CNTCDC	046524	BNBCDV	034467						
SHFT1V	046645	BNBCDV	034472	034505					
SHFT2V	046647								
DRAV	046671	BNBCDV	034475						
KOUER	046705	OUTPTC	034550	034605					
		OUTPTS	050240	050255					
ARLO	050101	OUTPTC	034562	034606	034632				
WTNX	047667	OUTPTC	034647						
SIN	050103	WXLABL	035236	035245	035455	035473			
		WXPWLC	053325	053361					
COS	050106	WXLABL	035227	035254	035463	035501			
		WXPWLC	053333	053367					
WXPXPN	050202	WXLABL	035265						
WXPUPK	050214	WXLABL	035303						
OUTPTS	050235	CONV	037516	037520	037522	037523	037531	037533	037535
			037536	037544	037546	037550	037551		
		ECONV	037612	037614	037616	037617	037625	037627	037631
			037632						
		WXPEND	040574	040576	040600	040601	040611	040613	040615
			040617	040621	040622				
REMARK	050541	WXPEND	040603	040624					
REMARKA	050544								
REMARKH	050550								
ENUFIL	050563	WXPEND	040633						
BACKSP	050633	WXPEND	040635						
PHOLDV	051037								
WXPPLD	051050	WXPLT4	043157						
PENDHD	051057								

WXP4CA	051120	WXPLT4	043172	043224					
WXPCNF	051230	WXPLT4	043225						
WXP4SD	051327	WXPLT4	043176						
WXPSPL	051717	WXP4SD	051551	051631					
		WXPSVC	052564	052604					
WXPSTP	051773	WXPLT4	043237						
WXPOUT	052036	WXPSUV	043466	043510					
WXPC66	052053	WXPC17	044404	044424					
WXPIDN	052110	WXPCID	044457						
		WXPSID	044713						
CLOCK	052125	WXPCID	044462						
		WXPSID	044671						
CLOCKF	052134								
WXPWLG	052272	WXPSID	045033						
WXPSVC	052474	WXP4SD	051461	051472	051512				
OUTPTH	052644	WXPSPL	051755	051757	051761	051763	051765	051766	
		WXPOUT	052043	052046	052047				
CDC1	052735	CLOCK	052143						
INPUTS	052760	CLOCK	052152	052154	052156	052160	052162	052163	052170
			052174	052176	052200	052202	052203		
COUNT	053261	CLOCK	052206						
WXPWLC	053270	WXPWLG	052313	052327	052345				

---UNSA[ISFIED EXTERNALS----

REFERENCES


```

10.07.54. PARX035. ASP1394,PARX2,180.150000,02.
10.07.54. PARX035. AS00212.
10.13.51. PARX035. GO
10.13.51. PARX035. REQUEST TAPE14(HI201,DIRECT,PARX,TAPE)
10.13.53. PARX035. (53 ASSIGNED)
10.13.53. PARX035. REQUEST TAPE11(HI103,DIRECT,PARX,TAPE)
10.13.54. PARX035. (52 ASSIGNED)
10.13.55. PARX035. REQUEST TAPE10(HI102,DIRECT,PARX,TAPE)
10.13.56. PARX035. (56 ASSIGNED)
10.13.56. PARX035. REQUEST TAPE12(HI101,ALLDATA,PARX,TAPE)
10.13.57. PARX035. (55 ASSIGNED)
10.13.57. PARX035. RUN(S,,,,,70000)
10.14.00. PARX035. LGO.
10.14.07. PARX035. MAXIMUM FL IF NO COMPILE **** 023200
10.14.41. PARX035. STOP
10.14.41. PARX035. SORTMR3.
10.15.53. PARX035. 1** INSERTIONS DURING INPUT *****0
10.15.53. PARX035. ** DELETIONS DURING INPUT *****0
10.15.53. PARX035. ** TOTAL RECORDS SORTED *****1041
10.13.51. PARX035. ** INSERTIONS DURING OUTPUT *****0
10.15.56. PARX035. ** DELETIONS DURING OUTPUT *****0
10.15.56. PARX035. ** TOTAL RECORDS OUTPUT *****1041
10.16.00. PARX035. **END SORT RUN
10.16.00. PARX035. REWIND(LGO)
10.16.07. PARX035. RUN(S,,,,,70000)
10.16.13. PARX035. LGO.
10.16.20. PARX035. MAXIMUM FL IF NO COMPILE **** 032500
10.17.09. PARX035. STOP
10.17.10. PARX035. REWIND(LGO)
10.17.10. PARX035. RUN(S,,,,,70000)
10.17.18. PARX035. LGO.
10.17.24. PARX035. MAXIMUM FL IF NO COMPILE **** 061000
10.13.51. PARX035. STOP
10.17.55. PARX035. REWIND(LGO)
10.17.56. PARX035. RUN(S,,,,,70000)
10.18.07. PARX035. LGO.
10.19.19. PARX035. STOP
10.19.19. PARX035. SC-4020 FRAMES . OMF 17HC 0BOTH
10.19.20. PARX035. CP 054.397 SEC.
10.19.20. PARX035. PP 160.755 SEC.
10.50.56. 01/06/70 WEC SCOPE 3.1 SYSTEM (6416) 12/09/68

```

Sample Output from PARX22

REP 1 PAX ANGLE 270000 E+03 16A

MULTIPLE POLAR ANGLES VS. SPECIFIC CONFIGURATION

REP 2 PAX ANGLE 270000 E+03 14

LEAST SQUARES FIT
MULTIPLE POLAR ANGLES VS. SPECIFIC CONFIGURATION

REP 2 PAX ANGLE 270000 E+03 17

LEAST SQUARES FIT
MULTIPLE POLAR ANGLES VS. SPECIFIC CONFIGURATION

REP 4 PAX ANGLE 270000 E+03 168

LEAST SQUARES FIT
MULTIPLE POLAR ANGLES VS. SPECIFIC CONFIGURATION

REP 4 PAX ANGLE 270000 E+03 14

DATA POINTS ONLY
MULTIPLE POLAR ANGLES VS. SPECIFIC CONFIGURATION

REP 1 PAX ANGLE 270000 E+03 MCSPA

DATA POINTS ONLY
MULTIPLE CONFIGURATIONS VS. SPECIFIC POLAR ANGLE

REP 1 PAX ANGLE 270000 E+03 MCSPA

MULTIPLE CONFIGURATIONS VS. SPECIFIC POLAR ANGLE

REP 1 PAX ANGLE 270000 E+03 MCSPA

MULTIPLE CONFIGURATIONS VS. SPECIFIC POLAR ANGLE

REP 1 PAX ANGLE 270000 E+03 MCSPA

MULTIPLE CONFIGURATIONS VS. SPECIFIC POLAR ANGLE

3

REP 2 PAX ANGLE 270000 E+03 17

LEAST SQUARES FIT
POLAR ANGLE VS. SPECIFIC CONFIGURATION

REP 2 PAX ANGLE 270000 E+03 17

LEAST SQUARES FIT
POLAR ANGLE VS. SPECIFIC CONFIGURATION

REP 2 PAX ANGLE 270000 E+03 17

LEAST SQUARES FIT
POLAR ANGLE VS. SPECIFIC CONCENTRATION

REP 2 PAX ANGLE 270000 E+03 17

LEAST SQUARES FIT
POLAR ANGLE VS. SPECIFIC CONFIGURATION

REP 4 PAX ANGLE 270000 E+03 168

DATA POINTS ONLY
CONSTANT ELEVATION VS. CALCULATED POLAR ANGLE

REP 4 PAX ANGLE 270000 E+03 168

LEAST SQUARES FIT
CONSTANT ELEVATION VS. CALCULATED POLAR ANGLE

DATA POINTS ONLY
CONSTANT ELEVATION VS. CALCULATED POLAR ANGLE

Deck Setup for One Step Execution of all Programs

JØB, 10.

AS90356.

ASPI394, PARX2, 600, 150000, 01.

REQUEST TAPE10(HI102, DIRECT, PARX, TAPE)

REQUEST TAPE11(HI103, DIRECT, PARX, TAPE)

REQUEST TAPE12(HI101, ALLDATA, PARX, TAPE)

REQUEST TAPE14(HI201, DIRECT, PARX, TAPE)

RUN(S,,,,,,70000)

LGØ.

SØRTMR3.

REWIND(LGØ)

RUN(S,,,,,,70000)

LGØ.

REWIND(LGØ)

RUN(S,,,,,,70000)

LGØ.

REWIND(LGØ)

RUN(S,,,,,,70000)

LGØ.

⁷⁸⁹

Program PARX2(Source Deck)

⁷⁸⁹

Data for various reports - followed by an all 9's card.

⁷⁸⁹

SO~~R~~T(1,6,180,,2,,18)

KEY(A,C,1,1)

KEY(A,C,11,1)

KEY(A,X,4,1)

KEY(A,F,6,1)

KEY(A,F,9,1)

KEY(A,F,12,1)

FILE(TAPE12,S,B,18,S,N)

FILE(TAPE11,~~O~~,B,18,S,N)

REC~~O~~RD(I,F,180)

END

78₉

Program PARX21 (Source Deck)

78₉

Data for titles for reports

78₉

Program DIRECT (Source Deck)

78₉

Data for titles for reports

78₉

Program PARX22 (Source Deck)

78₉

Data

78₉

678₉