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Records

WANL-TME-1952
OCTOBER 1970

REVISION A

RNPARX2 DATA SYSTEM
USERS MANUAL

MASTER

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ABSTRACT

The RNPARX2 Data System Users Manual includes all changes that have been made to the PARX2, PARX21, and DIRECT computer codes in order to permit subtraction of detector background radiation. The revised codes are presented in their entirety along with the descriptions of the equations used. FORTRAN listings, sample output, and instructions for sequential execution of the programs are included.

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I. Introductory Summary

In order to establish a basis for proper evaluation of the active dosimetry measurements from the NSS Shield Provision Experiments (T/S 59DW-268) performed at WANEF during April and May of 1969 as reported in Reference 1, moderate changes were made to subtract background radiation and insert proper conversion factors in the PARX2, PARX21, and DIRECT computer codes. The PARX2, PARX21, DIRECT, and PARX22 computer codes were written by Barbara J. Jacob and Ruby Hill of the Mathematics and Computer Programming group at WANL and are described in Reference 2.* The computer code system which resulted from combining the changes made to these computer programs was designated the RNP^{AR}X2 (Revised, New, Pax Active Dosimeter Reduction Experimental Code 2).

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 Experimental Physics E & S personnel at the Westinghouse Astronuclear Experimental Facility.

-
1. DRM 51183, Active Dosimetry Data from the NSS Shield Provision Trade Study Experiments
 2. WANL-TME-1952, PARX2 Data System Users Manual.

*This report is a complete revision of Reference 2, but it follows the original format and uses much of the original text.

II. Program Description

Raw data for each of four different types of detectors 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 RNPARX2

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

The RNPARX2 code, in addition to the original calculations which PARX2 performed, now subtracts dark current data (background with no reactor operation) from each CO_2 or Bragg-Gray detector recorded data reading. The code also calculates one of two variables--DELT 9 or DELT 9P--for each data point for the aluminum or beryllium Bragg-Gray detector. These constants are used in the DIRECT code.

The RNPARX2 code checks each detector data reading recorded before any calculations are made. This is done to provide the proper predetermined conversion factors for the configurations and detectors used. Configurations 14, 15, 16A, 16B, 16C, and 17 were specifically involved with the shield test data (1). Configuration 14 contained all of the background data for the remaining configurations. The following equations are used to calculate the dark current and to calculate the variables DELT 9 or DELT 9P.

- A. Obtain Detector Response with Dark Current Background Removed, as

$$A = B - C$$

where

B = Detector current recorded by a particular detector.

C = Dark current constant for the same detector.

A = Actual detector current recorded for that particular Bragg-Gray detector.

- B. Calculate Variable $\Delta 9$ for Aluminum Bragg-Gray Chamber, as

$$\Delta 9 = 100.0 \sqrt{0.03^2 + \left[\frac{0.05 \cdot C(\text{Al})}{A(\text{Al})} \right]^2}$$

where:

1. $C(\text{Al})$ = Dark current constant for the aluminum detector and for its particular configuration.

1. WANL-TME-1912, "Nuclear Subsystem Shielding Provision Study Experiments. "

2. $A(Al)$ = Actual detector current recorded for the aluminum detector for its particular configuration.
3. $\Delta 9$ = Conversion factor variable to be used in PARX21 code for calculating a percent standard deviation for the aluminum Bragg-Gray Chamber.
- C. Calculate Variable $\Delta 9P$ for Beryllium Bragg-Gray Chamber.

$\Delta 9P$ is of the same form as $\Delta 9$ except that the C and A variables refer to the beryllium Bragg-Gray detector.

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 proper 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 (11 PPM - U-235) Fission Chamber in a Boral Box)

TABLE 2: External Environmental Response of a Carbon Wall - CO_2 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

CARD LAYOUT (continued)

The following table illustrates the input for the remaining columns.

Columns	Format	Variable Name	1	Table Number 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⁽¹⁾

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

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

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

-
1. DRM 51181, "A Description of the Polar Angle Indexing System used with the WANEF (ρ , θ , ϕ) Transverse System for the PAX Reactor"

CALCULATION OF RADIUS AND ELEVATION

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

$$\text{ELEV} = \text{Core ray} * \cos (B)$$

$$\text{RADIUS} = \text{Core ray} * \sin (B) \quad \text{where } B = \text{polar angle}$$

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.

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

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
19	DELT9	Conversion variable used for calculating a percent standard deviation for aluminum Bragg-Gray Chamber
20	DELT9P	Conversion factor variable used for calculating a percent standard deviation for beryllium Bragg-Gray Chamber

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.

SEQ(P₁, P₂)

P₁ = Number of characters in collating sequence (maximum of 63)

P₂ = Collating sequence in ascending order.

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.

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

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

The SORT control card setup used for this program is:

SORT(1, 6, 200, ,2,, 20)

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)

SEQ (37, ABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789)

RECORD (I, F, 200)

FILE(TAPE 12, S, B, 20, R, N)

FILE(TAPE 11, 0, B, 20, R, N)

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.

The PARX21 code for RNPARX21 remains the same as the original for PARX2 with the exception that a percent standard deviation is obtained for each of the four (U-238, CO₂, Al, Be) detectors. For the U-238 detector, two different standard deviations are calculated--one is for the chamber response in units of FISS/GM-SEC-W and the other is for the chamber response in units of NEUTS/CM²-SEC-W. The following equations are used in PARX21 to obtain percent standard deviations.

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 =

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

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

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

Table I gives the active dosimetry measurement uncertainties which were used to obtain the uncertainty formulae, and the probable errors reported in the active dosimetry external data tables. The external (or total) percent standard deviation (σ) for the fast fission chamber report is obtained as the square root of the sums of the squares of the contributing uncertainty terms as follows:

$$\begin{aligned} & \sigma^2(\text{power reading}) + \sigma^2(\text{counting statistics}) + \sigma^2(\text{power calibration}) \\ & + \sigma^2(\text{chamber calibration}) = 2^2 + (100/\sqrt{n})^2 + 5^2 + 8.2^2 \\ & = 96.2 + 10,000/n \end{aligned}$$

where n is the total number of accumulated counts.

The remaining percent standard deviations for the other external measurements were calculated in a similar way. In each case the uncertainties were divided into two groups--those that affect the difference of the two subtracted values and those that affect each value separately. The uncertainty formula for the difference of two fast fission chamber measurements will be discussed in detail to illustrate the procedure.

Two uncertainties affect the relative accuracy of each data point taken with the fast fission chamber: 1) the uncertainty in power reading and 2) the uncertainty due to counting statistics. The uncertainties in chamber calibration and reactor power calibration affect all measurements in exactly the same way. So the quantity $(4 + 10,000/n_A)$, where n_A is the total accumulated counts for data point A, is the square of the relative percent error of point A. The square of the error of point A is then $A^2 (4 + 10,000/n_A)$ where A denotes fiss/gm-sec-w, and point B is obtained from a similar formula. If the quantity A-B is formed such as occurs when the background B is subtracted from foreground A, the square of its error will be the sum of these two quantities, so its relative percent error (squared) will be given by

$$\left[A^2 (4 + 10,000/n_A) + B^2 (4 + 10,000/n_B) \right] / (A-B)^2$$

The power calibration and chamber calibration errors affect only the difference, so they are added vectorially giving:

$$(5)^2 + (8.2)^2 + \left[A^2 (4 + 10,000/n_A) + B^2 (4 + 10,000/n_B) \right] (A-B)^2$$

To obtain a similar result for the neut/cm²-sec-W report, the 9.6% chamber calibration error is substituted for the 8.2% value.

For the Hurst chamber data, the power and chamber reading errors contribute individually, so the constant $(2^2 + 4^2)$ appears as the coefficient of $(A^2 + B^2) / (A - B)^2$ in the error calculation. The power and chamber calibration errors add $5^2 + 5.38^2 = 54$ under the radical in Table II. The constants in the error formula for the CO₂ Bragg-Gray chamber were obtained in a similar way. In the error formulae for the Al and Be Bragg-Gray chambers, the coefficient of the $(A^2 + B^2) / (A - B)^2$ term contains a small correction for background current (a residual current drawn by the chambers in the absence of a gamma field). The power and chamber reading uncertainties (2% and 3%) are modified by the 5% uncertainty attributed to the background current measurement.

TABLE I ACTIVE MEASUREMENT UNCERTAINTIES¹

ONE-SIGMA UNCERTAINTIES IN PERCENT						
DETECTOR						
Fast Fission Chamber Report			Bragg-Gray Chambers			Hurst
Source of Uncertainty	Fiss. gm-sec-w	$\frac{n}{\text{cm}^2 \text{-sec-w}}$	CO ₂	Al	Be	
Power Reading	2	2	2	2	2	2
Counting Statistics ²	$100/\sqrt{n}$	$100/\sqrt{n}$				
Chamber Reading			3	3	3	4 (max.)
Dark Current				5	5	
Power Calibration	5	5	5	5	5	5
Chamber Calibration	8.2	9.6	2	3.8	4.1	5.38
Conversion from R to Rads			3	3	3	
External Sigma ³	$\sqrt{96.2+10000/n}$	$\sqrt{121.2+10000/n}$	7.14	$\sqrt{61.4+(5i)^2}$	$\sqrt{63.8+(5i)^2}$	8.60

1. Most of these values were obtained from Table D-2 of WANL-TME-1912, "Nuclear Subsystem Shielding Provision Study Experiments". This table is to be used for illustration only.
2. n = total accumulated counts.
3. i = background current/chamber reading.

TABLE II ACTIVE MEASUREMENT DIFFERENCE UNCERTAINTIES

Detector System	Uncertainty Formula in Percent
Fast Fission Chamber:	
Fiss/gm-sec-w	$\sqrt{92.24 + (A^2(4 + 10000/n_A) + B^2(4 + 10000/n_B)) / (A - B)^2}$
Neuts/cm ² -sec-w	$\sqrt{117.16 + (A^2(4 + 10000/n_A) + B^2(4 + 10000/n_B)) / (A - B)^2}$
Hurst Chamber	$\sqrt{54 + 20(A^2 + B^2) / (A - B)^2}$
Bragg-Gray Chambers:	
CO ₂	$\sqrt{38 + 13(A^2 + B^2) / (A - B)^2}$
Al	$\sqrt{3.8^2 + 34 + (13 + (5i)^2)(A^2 + B^2) / (A - B)^2}$
Be	$\sqrt{4.1^2 + 34 + (13 + (5i)^2)(A^2 + B^2) / (A - B)^2}$

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-three 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 eleven remaining words for each table are:

REPORT 1

<u>Word Description</u>	<u>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)
Al Bragg-Gray Chamber Conversion Factor	DELT9
Be Bragg-Gray Chamber Conversion Factor	DELT9P

REPORTS 2, 3, 4

<u>Word Description</u>	<u>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	* ARRAY(10)
Rads (Al): Report 3	
Rads (Be): Report 4	

*Arrays available for plotting.

<u>Word Description</u>	<u>Name and Position</u>
% Std. Dev.	ARRAY(11)
Zero	ARRAY(12)
Calculated Polar Angle	ARRAY(13)
Al Bragg-Gray Chamber Conversion Factor	DELT9
Be Bragg-Gray Chamber Conversion Factor	DELT9P

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

TABLE 2

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

TABLE 3

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

TABLE 4

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

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

The DIRECT code remains the same as previously described, with the exception of obtaining a percent standard deviation from each of the four (U-238, CO₂, Al, Be) detectors. As in PARX21, two different percent standard deviations are calculated for the U-238 detector; one applies to the detector response in units of FISS/GM-SEC-W and the other for units of NEUTS/CM²-SEC-W. The following equations are used in the DIRECT code to obtain percent standard deviations for the detector.

$$\text{A.(1)} \quad \text{FG} = \sqrt{92.16 + \frac{\left[\text{TF}^2 \cdot \left(4.0 + \frac{10000.0}{\text{A}} \right) + \text{TFB}^2 \cdot \left(4.0 + \frac{10000.0}{\text{B}} \right) \right]}{(\text{TF} - \text{TFB})^2}}$$

where:

A = Total number of counts for U-238 detector.

B = Total number of counts for U-238 detector background.

TF = Total FISS/GM-SEC-W for U-238 detector.

TFB = Total FISS/GM-SEC-W for U-238 detector background.

FG = Percent standard deviation for U-238 detector in FIS/GM-SEC-W

$$\text{A.(2)} \quad \text{NC} = \sqrt{116.64 + \frac{\left[\text{TN}^2 \cdot \left(4.0 + \frac{10000.0}{\text{A}} \right) + \text{TNB}^2 \cdot \left(4.0 + \frac{10000.0}{\text{B}} \right) \right]}{(\text{TN} - \text{TNB})^2}}$$

where:

A = Total number of counts for U-238 detector.

B = Total number of counts for U-238 detector background.

TN = Total NEUTS/CM²-SEC-W for U-238 detector.

TNB = Total NEUTS/CM²-SEC-W for U-238 detector background.

NC = Percent standard deviation for U-238 detector in NEUTS/CM²-SEC-W.

$$B. \quad CO_2 = \sqrt{38.0 + \frac{(3.6)^2}{(A - B)^2} \cdot (A^2 + B^2)}$$

where:

A = RADS(C)/HR-W for CO₂ detector.

B = RADS(C)/HR-W for CO₂ detector background.

CO₂ = Percent standard deviation for CO₂ detector.

$$C. \quad ALD = \sqrt{3.8^2 + 34.0 + \frac{(4.0 + \Delta 9^2) \cdot (A^2 + B^2)}{(A - B)^2}}$$

where:

1. A = RADS(AL)/HR-W for aluminum detector.

2. B = RADS(AL)/HR-W for aluminum detector background.

3. Δ9 = Variable factor calculated in PARX 2 to be used with the aluminum in the DIRECT code.

4. ALD = Percent standard deviation for aluminum detector.

$$D. \quad BED = \sqrt{4.1^2 + 34.0 + \frac{(4.0 + \Delta 9 P^2) \cdot (A^2 + B^2)}{(A - B)^2}}$$

where:

1. A = RADS(BE)/HR-W for beryllium detector.
2. B = RADS(BE)/HR-W for beryllium detector background.
3. $\Delta 9 P$ = Variable factor calculated in PARX 2 to be used with the beryllium detector in the DIRECT code.
4. BED = Percent standard deviation for beryllium detector.

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 $\text{cm}^2\text{-sec-w}$
% 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.

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.

Print statements have been added to print out the input parameters, thus aiding the user in keeping a record of his selected parameters for future use.

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.

2nd 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 16A
- B = configuration 16B
- C = configuration 16C
- D = configuration 17
- E = configuration 14

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
7	1-72	12I6	TABLE(1, NOTAB)
			TABLE(2, NOTAB)
			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.

(CONTINUED ON NEXT PAGE)

Card	Column	Format	Variable Name and Description
	7-12	16	<p>For example, if NOPOAN = 9 and CUTP = 6, five curves will be plotted on the first grid and 4 on the second.</p> <p>IPLO : Indicator for the type of plot wanted.</p> <p>0 = Least squares fit, vectors connecting points are drawn, one curve/grid.</p> <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	16	NOPOAN: Number of polar angles to be given in the table. Maximum = 30.
7	1-6	16	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.

(CONTINUED ON NEXT PAGE)

Card	Column	Format	Variable Name and Description
			<p>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.</p>
	7-12	I6	<p>IPLO : Indicator for the type of plot wanted.</p> <p>The options available for IPLO are given in the variable description found on page 24.</p>
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.

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VIII FORTRAN Listing of RNPARX2

```

      PROGRAM RNPAX2(INPUT,OUTPUT,PUNCH,TAPE5=INPUT,TAPE6=OUTPUT,TAPE7=
1PUNCH,TAPE12)
C DCF THE NAME OF THIS PROGRAM IS RNPAX2 DATE=052070
C DCF RENAMED RNPAX2A
000003      DIMENSION IARRAY(5),ARRAY(13)
000003      DIMENSION NT(7)
000003      DATA END1,IREP1,IREP5/1F9,1H1,1H5/
000003      DATA NT/ 1H1,1F2,1F3,1H4,1H5,1H6,1H7 /
000003      INTEGER END1
000003      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
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           ARRAY(1)
C      COLUMN 17-24   - DET CON FACTOR                 ARRAY(2)
C      COLUMN 25-32   - PAX PWR CONV                   ARRAY(3)
C      COLUMN 33-40   - POLAR ANGLE OR RADIUS           TEMP1
C      COLUMN 41-48   - LINEAR NO. 1 CURRENT           ARRAY(6)
C      COLUMN 49-56   - CORE RAY OR ELEVATION           TEMP2
C      COLUMN 57-64   - TOTAL NO. COUNTS (REP 1)        ARRAY(9)
C                      DET CURRENT      (REPS 2-5)
C      COLUMN 65-72   - COUNTING TIME      (REP 1)        ARRAY(10)
C                      POL. ANG. RDOUT  (REPS 2-4)
C                      BLANK              (REP 5)
C      COLUMN 73-80   - POL. ANG. RDOUT  (REP 1)        ARRAY(11)
C                      MEASUREMENT TIME (REPS 2-4)
C                      BLANK              (REP 5)
C      ARRAY(4) AND ARRAY(7) CONTAIN THE INPUT VALUES (AS DETERMINED BY COL. 9)
C      ARRAY(5) AND ARRAY(8) CONTAIN THE CALCULATED VALUES
C
000003      CALL CLOCK(A,P,C)
000006      IMO = A + 0.5
000010      IDAY = P + 0.5
000012      IYR = C
000014      CONST1 = 125.185 * 2.54
000015      CONST2 = 12.375*2.54

```

```

000017      CONST3 = 7.687 * 2.54
000020      NFILE = 12
000021      INP = 5
000023      READING NFILE
000025      IPAGE = 0
000026      LINE = 0
000026      APPAC = 1.0
000030      10 CONTINUE
000030      DELTA = 0.0
000031      DELTAP = 0.0
000032      READ(INP,1000) (IARAY(I),I=1,5),(ARAY(I),I=1,3),TEMP1,ARAY(6),
1 TEMP2,(ARAY(I),I=9,11)
000065      1000 FORMAT(2A1,2I3,7F7.0,2F8.2,F8.0,F8.2,4F8.0)
000065      IF (IARAY(1).EQ.END1.AND.IARAY(2).EQ.END1) GO TO 70
C      THE FOLLOWING STATEMENTS ADDED BY REQUEST FROM HCW.,ON 6/20/69 LKS
C      SELECTS PROPER CONFIGURATION TO CALCULATE NEW VALUES FROM INPUT
C      THESE STATEMENTS ADDED BY REQUEST OF VSO.,ON 7/9/69 LKS
C      DELTA IS USED FOR AL.
C      DELTAP IS USED FOR HF.
000075      ISEL = IARAY(4)
000076      GO TO (1,2,3,4,5,6,7,8), ISEL
000111      1 CONTINUE
C      DATA OBTAINED FROM CONFIGURATION 15,DARK CURRENT BEING SUBTRACTED
000111      IF (IARAY(1).EQ.AT(5) ) ARAY(9) = ARAY(9) - 2.0E-13
000115      IF (IARAY(1).EQ.AT(6) ) ARAY(9) = ARAY(9) - 1.5E-13
000121      IF (IARAY(1).EQ.AT(7) ) ARAY(9) = ARAY(9) - 5.5E-13
000125      IF (IARAY(1).EQ.AT(6) ) DELTA = 100.0 * SQRT( 0.03 **2 + ( ( ( 0.05
1 * 1.5E-13 ) / ARAY(9) ) **2 ) )
000136      IF (IARAY(1).EQ.AT(7) ) DELTAP = 100.0 * SQRT( 0.03 **2 + ( ( ( 0.
105 * 5.5E-13 ) / ARAY(9) ) **2 ) )
C      DARK CURRENT WAS ASSUMED
000147      GO TO 9
000150      2 CONTINUE
C      DATA OBTAINED FROM CONFIGURATION 14,DARK CURRENT BEING SUBTRACTED
000150      IF (IARAY(1).EQ.AT(5) ) ARAY(9) = ARAY(9) - 2.5E-14
000154      IF (IARAY(1).EQ.AT(6) ) ARAY(9) = ARAY(9) - 1.4E-14
000160      IF (IARAY(1).EQ.AT(7) ) ARAY(9) = ARAY(9) - 1.5E-14
000164      IF (IARAY(1).EQ.AT(6) ) DELTA = 100.0 * SQRT( 0.03 **2 + ( ( ( 0.05
1 * 1.4E-14 ) / ARAY(9) ) **2 ) )
000175      IF (IARAY(1).EQ.AT(7) ) DELTAP = 100.0 * SQRT( 0.03 **2 + ( ( ( 0.0
15 * 1.5E-14 ) / ARAY(9) ) **2 ) )
000206      GO TO 9

```



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000207      3 CONTINUE
      C      DATA OBTAINED FROM CONFIGURATION 16A,DARK CURRENT BEING SUBTRACTED
000207      IF (IAHAY(1).EG.NT(5) ) ARAY(9) = ARAY(9) - 3.0F-14
000213      IF (IAHAY(1).EG.NT(6) ) ARAY(9) = ARAY(9) - 1.5F-13
000217      IF (IAHAY(1).EG.NT(7) ) ARAY(9) = ARAY(9) - 5.5F-14
000223      IF (IAHAY(1).EG.NT(6) ) DELT9 = 100.0 * SGRT( 0.03 **2 + ( ( ( 0.05
1 * 1.5E-13 ) / ARAY(9) ) **2 ) )
000234      IF (IAHAY(1).EG.NT(7) ) DELT9P = 100.0 * SQRT( 0.03 **2 + ( ( ( 0.0
15 * 5.5F-14 ) / ARAY(9) ) **2 ) )
000245      GO TO 9
000246      4 CONTINUE
      C      DATA OBTAINED FROM CONFIGURATION 16B,DARK CURRENT BEING SUBTRACTED
000246      IF (IAHAY(1).EG.NT(5) ) ARAY(9) = ARAY(9) - 3.0F-14
000252      IF (IAHAY(1).EG.NT(6) ) ARAY(9) = ARAY(9) - 1.5E-13
000256      IF (IAHAY(1).EG.NT(7) ) ARAY(9) = ARAY(9) - 5.5F-14
000262      IF (IAHAY(1).EG.NT(6) ) DELT9 = 100.0 * SGRT( 0.03 **2 + ( ( ( 0.05
1 * 1.5E-13 ) / ARAY(9) ) **2 ) )
000273      IF (IAHAY(1).EG.NT(7) ) DELT9P = 100.0 * SQRT( 0.03 **2 + ( ( ( 0.0
15 * 5.5F-14 ) / ARAY(9) ) **2 ) )
      C      DARK CURRENT WAS ASSUMED
000304      GO TO 9
000305      5 CONTINUE
      C      DATA OBTAINED FROM CONFIGURATION 16C,DARK CURRENT BEING SUBTRACTED
000305      IF (IAHAY(1).EG.NT(5) ) ARAY(9) = ARAY(9) - 2.0F-13
000311      IF (IAHAY(1).EG.NT(6) ) ARAY(9) = ARAY(9) - 2.0F-14
000315      IF (IAHAY(1).EG.NT(7) ) ARAY(9) = ARAY(9) - 2.5F-14
000321      IF (IAHAY(1).EG.NT(6) ) DELT9 = 100.0 * SGRT( 0.03 **2 + ( ( ( 0.05
1 * 2.0E-14 ) / ARAY(9) ) **2 ) )
000332      IF (IAHAY(1).EG.NT(7) ) DELT9P = 100.0 * SQRT( 0.03 **2 + ( ( ( 0.0
15 * 2.5F-14 ) / ARAY(9) ) **2 ) )
000343      GO TO 9
000344      6 CONTINUE
      C      DATA OBTAINED FROM CONFIGURATION 17,DARK CURRENT BEING SUBTRACTED
000344      IF (IAHAY(1).EG.NT(5) ) ARAY(9) = ARAY(9) - 3.0F-14
000350      IF (IAHAY(1).EG.NT(6) ) ARAY(9) = ARAY(9) - 1.5F-13
000354      IF (IAHAY(1).EG.NT(7) ) ARAY(9) = ARAY(9) - 5.5F-14
000360      IF (IAHAY(1).EG.NT(6) ) DELT9 = 100.0 * SGRT( 0.03 **2 + ( ( ( 0.05
1 * 1.5E-13 ) / ARAY(9) ) **2 ) )
000371      IF (IAHAY(1).EG.NT(7) ) DELT9P = 100.0 * SQRT( 0.03 **2 + ( ( ( 0.0
15 * 5.5F-14 ) / ARAY(9) ) **2 ) )
      C      DARK CURRENT WAS ASSUMED
000402      GO TO 9

```

```

000403      7 CONTINUE
C      CONFIGURATION 18 DATA WOULD BE SUBTRACTED FROM THE DARK CURRENT
000403      8 CONTINUE
C      CONFIGURATION 19 DATA WOULD BE SUBTRACTED FROM THE DARK CURRENT
000403      9 CONTINUE
C      THIS CONCLUDES STATEMENTS REQUESTED BY HCW., ON 6/20/69 LKS
000403      IF (IARAY(1) .EQ. NI(4) ) IARAY(1) = NI(1)
000406      IF (IARAY(1) .EQ. NI(5) ) IARAY(1) = NI(2)
000411      IF (IARAY(1) .EQ. NI(6) ) IARAY(1) = NI(3)
000414      IF (IARAY(1) .EQ. NI(7) ) IARAY(1) = NI(4)
000417      IF (IARAY(1) .EQ. IREP5) GO TO 40
000421      NO = 10
000421      IF (IARAY(1) .EQ. IREP1) NO = 11
000424      IF (ARAY(NO) .NE. 0.0) GO TO 40
000426      20 IF (LINE.GT.0.AND.LINE.LT.35) GO TO 30
000436      IPAGE = IPAGE + 1
000437      WHITE(6,100) IMO,1DAY,IYR,IPAGE
000453      1001 FORMAT(1H1,27X,4HPAGE,15,21H OF PARX2 CARD ERRORS,10X,6HDATE ,12,
        12(1H/,12)///)
000453      LINE = 0
000454      30 WHITE(6,1002) (IARAY(1),I=1,5),(ARAY(1),I=1,3),TEMP1,ARAY(6),
        1 TEMP2,(ARAY(1),I=9,11)
000510      1002 FORMAT(5X,2A1,2I3,11,F7.3,2F8.2,F8.4,F8.2,F8.4,F8.2,2F8.4)
000510      LINE = LINE + 1
000512      GO TO 10
000512      40 IF ( IARAY(5) .EQ. 1 .OR. IARAY(5) .EQ. 2 ) GO TO 41
000522      GO TO 20
000522      41 CONTINUE
000522      ARAY(3) = ARAY(3) * MFFAC
000524      ARAY(12) = ARAY(6)/ARAY(3)
000525      ARAY(4) = TEMP1
000526      ARAY(5) = 0.0
000527      ARAY(7) = TEMP2*2.54
000531      ARAY(8) = 0.0
000532      IF (IARAY(1) .EQ. IREP5) GO TO 60
000535      50 CH = ARAY(7)
000536      PATH = ARAY(AC) * 2.54
000541      PA = ARAY(4) * 0.017453
000543      A = CONST1**2
000544      R = CH + CONST2
000546      C = (PATH-CONST3)**2
000551      COSA = (A + R**2 - C) / (2.0 * CONST1 * R)

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000557      ANG = ACOS(COSA)
000561      ANGF = ANG - (62.216 * 0.017453)
000563      ARAY(5) = CR * SIN(ANGF)
000566      ARAY(8) = CR * COS(ANGF)

      C      CONVENT CALCULATED POLAR ANGLE TO DEGREES
000571      ARAY(13) = ANGF * 57.2958
000574      60  WRITE(MFILE) (IARAY(I),I=1,5),(ARAY(I),I=1,13),DELT9,DELT9P
000617      GO TO 10
000620      70  WRITE(MFILE) (IARAY(I),I=1,5),(ARAY(I),I=1,13),DELT9,DELT9P
000643      END FILE MFILE
000645      REWIND MFILE
000647      STOP
000651      END

```

PROGRAM LENGTH INCLUDING I/O BUFFERS
011225

FUNCTION ASSIGNMENTS

STATEMENT ASSIGNMENTS

1	-	000111	2	-	000150	3	-	000207	4	-	000246
5	-	000305	6	-	000344	7	-	000403	8	-	000403
9	-	000403	10	-	000030	20	-	000426	30	-	000454
40	-	000512	41	-	000522	50	-	000535	60	-	000574
70	-	000620	1000	-	000701	1001	-	000752	1002	-	000763

BLOCK NAMES AND LENGTHS

VARIABLE ASSIGNMENTS

A	-	001063	ANG	-	001113	ANGF	-	001114	ARRAY	-	001033
R	-	001064	C	-	001065	CONST1	-	001071	CONST2	-	001072
CONST3	-	001073	COSA	-	001112	CR	-	001107	DELT9	-	001100
DELT9P	-	001101	ENT1	-	001057	I	-	001102	IARRAY	-	001026
IDAY	-	001067	IMC	-	001066	IMP	-	001075	IPAGE	-	001076
IREP1	-	001060	IREP5	-	001061	ISFT	-	001105	IYR	-	001070
LINE	-	001077	MFILF	-	001074	MPFAC	-	001062	NO	-	001106
NI	-	001050	PA	-	001111	PATR	-	001110	TEMP1	-	001103
TEMP2	-	001104									

START OF CONSTANTS
000653

START OF TEMPORARIES
001003

START OF INDIRECTS
001025

UNUSED COMPUTER SPACE
110200

CORE MAP 15.34.31. NORMAL CONTROL 000100 017527
 ---TIME---LOAD MODE --L1--L2---TYPE-----USER-----CALL-----FWA LOAD--LWA LOAN--

FWA LOADER 143756 FWA TABLES 141701

--PROGRAM---ADDRESS-

--LABELED---COMMON--

RNPAX2 000100

SYSTEM 011401

WXPOM 011325
 SCOPE2 011401

CLOCK 012556

REWIM 012723

INPUTC 012775

ACGOER 013102

SQRT 013114

OUTPIC 013157

ASINCOS 013255

SINCOS 013413

OUTPIB 013512

ENDFIL 013572

SIO\$ 013626

CDC1 014711

INPUTS 014733

COUNT 015015

GETRA 015024

KRAKER 015043

NATSR\$ 016101

KODER 016332

--ENTRY---ADDRESS-

RNPAX2 000101

QANTRY 011402

SYSTEM 011652

RNPAX2 000102

REWIM 012761

INPUTC 013035

ACGOER 013105

SQRT 013141

OUTPIC 013241

ASINCOS 013347 013352

SINCOS 013456 013461

OUTPIB 013562

ENDFIL 013615

INPUTS 014761

KRAKER 015637 015663

KODER 017340

SYSTEMC 011570

SYSTEMP 011617

FND 011513

RNPAX2 000752

CLOCK 012673

REFERENCES

STOP	011543	RNPARR2	000750						
EXIT	011535								
ABNORML	011553	REWIND	012762						
		INPUTC	013036						
		ACGOFH	013106						
		OUTPTC	013242						
		OUTPTH	013563						
		ENDFIL	013616						
		INPUTS	014762						
		KRAKEM	015664						
		KODEH	017341						
WXPDSS	012273								
WXPCYS	012267								
CLOCK	012557	RNPARR2	000105						
CLOCKF	012566								
REWIND	012724	RNPARR2	000124	000746					
INPUTC	012777	RNPARR2	000133	000137	000145	000151	000153	000155	
			000164						
ACGOFH	013103	RNPARR2	000200						
		CLOCK	012655						
SORT	013115	RNPARR2	000233	000244	000272	000303	000331	000342	
			000401	000427	000440	000466	000477		
OUTPTC	013161	RNPARR2	000541	000543	000545	000547	000551	000552	
			000562	000570	000574	000576	000600	000604	
ASIN	013261								
ACOS	013256	RNPARR2	000660						
SIN	013414	RNPARR2	000664						
COS	013417	RNPARR2	000667						
OUTPTH	013531	RNPARR2	000675	000701	000707	000713	000715	000716	
			000725	000733	000737	000741	000742		
ENDFIL	013573	RNPARR2	000744						
CLOCK	014452	REWIND	012747	012751					

RCL1.	014463	REWIND	012742				
DAT.	013630	INPUTC	013005				
		OUTPTC	013170				
		KRAKEN	015636	015666	015674	015705	
SIO.CTL	013634	SYSTEM	012071				
		REWIND	012736				
THFA.	013631	INPUTC	013003				
		OUTPTC	013166				
THFR.	013632	INPUTC	013004				
		OUTPTC	013167				
INITL.	013654	SYSTEM	012067	012026			
		REWIND	012734				
		INPUTC	013010				
		OUTPTC	013173				
		OUTPTH	013552				
		ENDFIL	013604				
SIO.	013721	SYSTEM	012030				
		INPUTC	013047				
		OUTPTC	013220				
		OUTPTH	013517	013542	013546	013556	
SIO.END	014426	SYSTEM	012077				
		REWIND	012740				
		ENDFIL	013606				
OPEN.	014471	SYSTEM	012201				
RDPRU.	014531						
RKSPRU.	014546						
POSFI.	014557						
MVWDS.	014676						
CDC1	014712	CLOCK	012575				
INPUITS	014735	CLOCK	012604	012606	012610	012612	012614
			012626	012630	012632	012634	012635
COUNT	015016	CLOCK	012640				
GETRA	015025	REWIND	012731				
		ENDFIL	013577				
		SIO%	013656				

KRAFF	015044	INPUTC	013022	013001			
		INPUTS	014740	014756			
DAISH.	016103	INPUTC	013005	013045	013017	013053	013061
		OUTPIC	013200	013213	013170	013221	
		OUTPIR	013524	013515	013540		
		INPUTS	014752	014766	014775	015000	
KOOPER	016333	OUTPIC	013203	013163			

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

REFERENCES


```
SORT(1,6,200,,2,,20)
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)
SEQ(37, ABCUEFGHIJKLMNOPQRSTUVWXYZ0123456789)
RECORD(I,F,200)
FILE(TAPE12,S,B,20,R,N)
FILE(TAPE11,O,B,20,R,N)
END
```

```
** INSERTIONS DURING INPUT *****0
** DELETIONS DURING INPUT *****0
** TOTAL RECORDS SORTED *****464
** INSERTIONS DURING OUTPUT *****0
** DELETIONS DURING OUTPUT *****0
** TOTAL RECORDS OUTPUT *****464
**END SORT RUN
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IX FORTRAN Listing of PARX21

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      PROGRAM PARX21(INPUT,OUTPUT,PUNCH,TAPE5=INPUT,TAPE6=OUTPUT,
1          TAPE7=PUNCH,TAPE10,TAPE11,TAPE12,TAPE14)
C DCF THE NAME OF THIS PROGRAM IS PARX21 DATE=052070
C DCF RENAMED PARX21A
000003      COMMON      ANGRNG,ARRAY,CONF,IARRAY,IN,IOUT,LINE,OUT,PAGE,PAXANG,RAD,
1          REP1, REP2, TITLE(11,5,5), FCT14, FCT, NGH ,DELT9,DEFLT9P
000003      DIMENSION  ARRAY(13), IARRAY(5), IOUT(4), OUT(21)
000003      INTEGER    CONF,CTABLF(14),PAGE,REP1,REP2 ,FCT14,FCT
000003      REAL        LPAREN
000003      DATA      CTABLF /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,N09,RPAREN/1H ,1H(,1H9,1H) /
000003      EQUIVALENCE (BLANK,IBLANK)
000003      FCT14 = 0
000004      FCT = 0
000005      C1 = 5.
000006      C2 = 100.
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 = 1,5
000025      DO 5 J = 1,5
000026      READ(5,1000) (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 IN
000060      REWIND 12
000062      REWIND 10
000064      REWIND 14

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C      IF AGH = 1 REGULAR TABLES AND PLOTS ARE DESIRED
C      IF AGH = 2 DIFFERENCE TABLES AND PLOTS ARE DESIRED
C      OTHERWISE BOTH (REGULAR AND DIFFERENCE) TABLES AND PLOTS ARE REQUESTED
C      IARRAY(1) = REPORT NO.
C      IARRAY(2) = REPORT NO. SUFFIX
C      IARRAY(3) = RUN NO.
C      IARRAY(4) = CONFIGURATION
C      IARRAY(5) = W OR THETA INDICATOR
C      ARAY( 1) = MAX ANGLE (DEGREES)
C      ARAY( 2) = DFT CONV FACTOR
C      ARAY( 3) = MAX 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. ] CURRENT
C      ARAY( 7) = INPUT VALUE - EITHER ELEVATION OR CORE RAY
C      ARAY( 8) = CALCULATED VALUE - EITHER ELEVATION OR CORE RAY
C      ARAY(10) = COUNTING TIME, POLAR ANGLE READOUT, OR BLANK
C      ARAY(11) = POLAR ANGLE READOUT, MEASUREMENT (ELAPSED) TIME, OR BLANK
C      ARAY(12) = MAX POWER
C
C      ARAY(13) = CALCULATED POLAR ANGLE
C      SORT ORDER = IARRAY(1),(2),(4), ARAY(1),(4),(7)
000066      10 READ(IN) (IARRAY(I),I=1,5),(ARAY(I),I=1,13),DELTA9,DELTA9P
000111      IF (IARRAY(1).EQ.N09.AND.IARRAY(2).EQ.N09) GO TO 40
000121      TOUT(4) = 0
000122      DO 11 I= 17, 20
000123      11  OUT(I) = 0.0
C      ARRANGE DATA SO THAT ARAY(4) = RAD, (5) = POL ANG, (7) = ELFV, (8) = CR
000126      TEMP1 = ARAY(4)
000127      ARAY(4) = ARAY(5)
000130      ARAY(5) = TEMP1
000131      TEMP1 = ARAY(7)
000132      ARAY(7) = ARAY(8)
000133      ARAY(8) = TEMP1
000134      15 CALL COMPAR
000135      DO 20 I = 1,10,2
000137      OUT(I) = BLANK
000141      20  OUT(I+2) = BLANK
000143      TOUT(1) = IARRAY(3)
C      DETERMINE ALPHABETIC EQUIVALENT OF CONFIG. NO. AND STORE IN TOUT(2)
000145      DO 30 I = 1,14
000146      IF (IARRAY(4).NE.I) GO TO 30

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000147      IOUT(2) = CTABLE(I)
000151      GO TO 40
000151      30  CONTINUE
000153      IOUT(2) = IRLANK
C      FIX PAX ANGLE AND STORE IN IOUT(3)
000155      40  IOUT(3) = ARAY(1) + 0.5
C      INDICATE CALCULATED VALUES BY PARENTHESES
000160      I1 = 1
000161      IF (IARAY(5).EQ.2) I1 = 7
000164      OUT(I1) = LPAREN
000166      OUT(I1+2) = RPAREN
000170      OUT(I1+3) = LPAREN
000171      OUT(I1+5) = RPAREN
C      STORE RADIUS, ELEVATION, POLAR ANGLE, AND CORE RAY
000172      OUT(2) = ARAY(4)
000173      OUT(5) = ARAY(7)
000175      OUT(8) = ARAY(5)
000176      OUT(11) = ARAY(8)
000200      IF (REP1.NE.1) GO TO 50
C      STORE POL ANG TAPE RDOUT, PAX PWR, TOTAL NO. CTS., CT. TIME, + CONV FAC
000202      OUT(13) = ARAY(11)
000203      OUT(14) = ARAY(12)
C      MIXED MODE PERMITTED ON CDC 6600
000205      IOUT(4) = ARAY(9) + 0.5
000207      OUT(15) = ARAY(10)
000211      OUT(16) = ARAY(2)
C      CALCULATE TOTAL(U) FISS AND PCI. STD DEV
000212      OUT(17) = (ARAY(9)*ARAY(2))/(ARAY(10)*ARAY(12))
C      THESE CARDS SUBJECT TO REMOVAL AT A LATER DATE
C      CALCULATES PCT.STD DEV FOR FISS/GM
000215      X = SGRT(96.2 + ( 10000.0 / ARAY(9) ) )
000222      OUT(18) = X
C      AFTER OUT(17),THE FOLLOWING CARDS WERE DELETED
C      TEMP1 = C2/SGRT(ARAY(9))
C      TEMP2 = C1**2 + TEMP1**2 + C3**2 + C4**2
C      OUT(18) = SGRT(TEMP2)
C      CALCULATE NEUTS CM2-SEC-W AND PCT. STD DEV
000223      OUT(19) = OUT(17) * (238./C10)
000226      X = SGRT(121.2 + ( 10000.0 / ARAY(9) ) )
000233      OUT(20) = X
C      AFTER OUT(19),THE FOLLOWING CARDS WERE DELETED
C      TEMP = OUT(18)**2 + 25.

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      C      OUT(20) = SORT(TEMP)
      C      THE PREVIOUS CARDS SUBJECT TO REMOVAL AT A LATER DATE
000234      GO TO 70
      C      REPORTS 2,3, AND 4
000234      50 IF (REP1.EQ.5) GO TO 60
      C      STORE PCL ANG, PAX PWR, FLAPSED TIME, DET CURR, AND DET CON FACTOR
000236      OUT(13) = ARRAY(10)
000240      OUT(14) = ARRAY(12)
000241      OUT(15) = ARRAY(11)
000243      OUT(16) = ARRAY(9)
000244      OUT(17) = ARRAY(2)
      C      CALCULATE RADS(C), RADS(AL), OR RADS(BE) AND PCT. STD DEV
000246      OUT(18) = (ARRAY(2) * ARRAY(9))/ARRAY(12)
      C      THESE CARDS SUBJECT TO REMOVAL AT A LATER DATE
000250      IF (REP1.NE.2) GO TO 51
000252      OUT(19) = 7.14
000253      GO TO 52
000254      51 CONTINUE
      C      THE PREVIOUS CARDS SUBJECT TO REMOVAL AT A LATER DATE
000254      IF (REP1.EQ.3) OUT(19) = SQRT( 52.5 + DELT9 **2 )
000263      IF (REP1.EQ.4) OUT(19) = SQRT( 54.8 + DELT9P **2 )
000272      52 CONTINUE
      C      THE PREVIOUS CARD SUBJECT TO REMOVAL AT A LATER DATE
000272      GO TO 70
      C      REPORT 5
      C      STORE PAX PWR, DET CURRENT, DET CON FACT IN OUT(13), (14), AND (15)
000273      60 OUT(13) = ARRAY(12)
000275      OUT(14) = ARRAY(9)
000276      OUT(15) = ARRAY(2)
      C      CALCULATE H-10 CAP AND PCT. STD DEV
000300      OUT(16) = (ARRAY(4) * ARRAY(2))/ARRAY(12)
000302      TEMP = C1**2 + C7**2 + C3**2 + 26.9
000307      OUT(17) = SORT(TEMP)
000311      70 CALL WRITER
000312      GO TO 10
000313      80 REWIND IN
000315      WRITE(10) (AC9,I=1,23)
000325      WRITE(14) (AC9,I=1,23)
000335      WRITE(12) (AC9,I=1,21)
000345      END FILE 10
000347      END FILE 14
000351      END FILE 12

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000353      REWIND 10
000355      REWIND 14
000357      REWIND 12
000361      STOP
000363      1000  FORMAT(PA10)
000363      END
```

PROGRAM LENGTH INCLUDING I/O BUFFERS
016723

FUNCTION ASSIGNMENTS

STATEMENT ASSIGNMENTS

10	-	000066	11	-	000123	15	-	000134	30	-	000151
40	-	000155	50	-	000234	51	-	000254	52	-	000272
60	-	000273	70	-	000311	80	-	000313	1000	-	000432

BLOCK NAMES AND LENGTHS

- 000514

VARIABLE ASSIGNMENTS

ANGRNG	-	000000C01	ARRAY	-	000001C01	BLANK	-	000462	CONF	-	000016C01
CIABLE	-	000463	C1	-	000504	C10	-	000515	C2	-	000505
C3	-	000506	C4	-	000507	C5	-	000510	C6	-	000511
C7	-	000512	C8	-	000513	C9	-	000514	UFLTY	-	000512C01
DELTPP	-	000513C01	FCT	-	000510C01	FCT14	-	000507C01	I	-	000520
IARRAY	-	000017C01	IBLANK	-	000462	IN	-	000024C01	INUT	-	000025C01
IL	-	000522	J	-	000517	K	-	000516	LINE	-	000031C01
LPAREN	-	000501	NOS	-	000502	OUT	-	000032C01	PAGE	-	000057C01
PAXANG	-	000060C01	RAP	-	000061C01	RFP1	-	000062C01	RFP2	-	000063C01
RPAREN	-	000503	TEMP	-	000524	TEMP1	-	000521	TITLE	-	000064C01
X	-	000523									

START OF CONSTANTS

000365

START OF TEMPORARIES

000434

START OF INDIRECTS

000456

UNUSED COMPILER SPACE

111200

```

SUBROUTINE COMPAR
COMMON   ANGRNG, ARAY, CONF, IARRAY, IN, IOUT, LINE, OUT, PAGE, PAXANG, RAD,
1        REP1, REP2, TITLE(11,5,5), FCI14, FCT, NGH, DELT9, DELT9P
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) = 1000.0
000002   IF (REP1.EQ.1000) POLANG = 1000.0
C       FIND NUMERICAL EQUIVALENT OF TABLE NO., STORE IN ITEMP1
000006   DO 10 I = 1,5
000010     IF (IARRAY(1).NE.NO(I)) GO TO 10
000013     ITEMP1 = I
000014     GO TO 20
000014 10    CONTINUE
000016     ITEMP1 = I
C       CHECK FOR NEW TABLE
000017 20    IF (PAGE.EQ.0) GO TO 30
000020     IF (ITEMP1.EQ.REP1) GO TO 40
000022 30    PAGE = 0
000023     LINE = 0
C       STORE NEW REPORT NO.
000024     REP1 = ITEMP1
000025     REP2 = ITEMP2
000027     GO TO 50
C       CHECK FOR NEW CONFIGURATION
000027 40    IF (CONF.EQ.IARRAY(4)) GO TO 60
C       INDICATE CHANGE IN PRINTED OUTPUT BY A LINE OF ASTERISKS + 2 BLANK LINES
000031     WRITE(6,1000)
000035     LINE = LINE + 3
C       STORE NEW CONFIGURATION
000037 50    CONF = IARRAY(4)
000041     GO TO 70
C       CHECK FOR NEW PAX ANGLE
000041 60    IF (PAXANG.EQ.ARRAY(1)) GO TO 80
C       INDICATE CHANGE IN PRINTED OUTPUT BY 2 BLANK LINES
000043     WRITE(6,1001)
000047     LINE = LINE + 2
C       STORE NEW PAX ANGLE
000051 70    PAXANG = ARAY(1)
000053     GO TO 90

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C      CHECK FOR CHANGE IN RADIUS IN RADIUS-ELEVATION INPUT OR
C      CHANGE IN POLAR ANGLE IN POLAR ANGLE-CONE RAY INPUT
000053  GO  IF (IARAY(5).EQ.2.AND.ABS(RAD-ARAY(4)).LT.ANGRNG.OR.IARAY(5).EQ.1
      1 .AND.ABS(POLANG-ARAY(5)).LT.ANGRNG) GO TO 100
C      INDICATE CHANGE IN PRINTED OUTPUT BY 1 BLANK LINE
000102  WRITE(6,1002)
000106  LINE = LINE + 1
000110  GO  RAD = ARAY(4)
000112  POLANG = ARAY(5)
000113  100  RETURN
000114  1000 FORMAT(1H /1X,10X(1H*)/)
000114  1001 FORMAT(1H0)
000114  1002 FORMAT(1H )
000114  END

```

SUBPROGRAM LENGTH
000154

FUNCTION ASSIGNMENTS

STATEMENT ASSIGNMENTS

10	-	000014	20	-	000017	30	-	000022	40	-	000027
50	-	000037	60	-	000041	70	-	000051	80	-	000053
90	-	000110	100	-	000113	1000	-	000121	1001	-	000124
1002	-	000126									

BLOCK NAMES AND LENGTHS
- 000514

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	ITLE	-	000064C01						

START OF CONSTANTS
000116

START OF TEMPORARIES
000130

START OF INDIRECTS
000142

UNUSED COMPILER SPACE
112400

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SUBROUTINE WRITER
COMMON  ANGRNG,ARAY,CONF,IARAY,IN,IOUT,LINE,OUT,PAGE,PAAANG,RAD,
1      REP1, REP2,TITLE(11,5,5), FCT14, FCT, NGH,DFLT9,DFLT4P
000002  DIMENSION ARAY(13), IARAY(5), IOUT(4), CUT(21), NT(5)
000002  DATA NT /1H1, 1H2, 1H3, 1H4, 1H5 /

000002  INTEGER CONF,CIAHIE(14),PAGE,REP1,REP2,FCT14,FCT,FR14,FR,FIGCODE
000002  K = REP1
000004  CALPA = ARAY(13)
000005  FIGCODE = IARAY(4)
000007  C SHOULD A NEW PAGE BE STARTED
    IF( LINE .GT. 0 .AND. LINE .LT. 40) GO TO 50
000016  C INCREMENT PAGE COUNT AND REINITIALIZE LINE COUNT
    PAGE = PAGE + 1
000017  LINE = 0
000020  C WRITE APPROPRIATE HEADING FOR TABLE
    WRITE(6,1000) ( TITLE(I,1,K), I=1, 11)
000034  1000 FORMAT(1H1, 11A10)
000034  LINE = LINE + 1
000036  IF(PAGE .GT. 1) GO TO 30
000041  DO 25 J=2, 5
000042  WRITE(6,1002) ( TITLE(I,J,K), I=1, 11)
000057  25 CONTINUE
000061  WRITE(6,1001)
000065  LINE = LINE + 1
000067  GO TO 40
000067  30 WRITE(6,1003)
000073  LINE = LINE + 3
000075  40 IF( REP1 .EQ. 1 ) WRITE(6,1010)
000103  IF( REP1 .EQ. 2 ) WRITE(6,1011)
000111  IF( REP1 .EQ. 3 ) WRITE(6,1012)
000117  IF( REP1 .EQ. 4 ) WRITE(6,1013)
000125  IF( REP1 .EQ. 5 ) WRITE(6,1014)
000133  LINE = LINE + 4
000135  50 IF( REP1 .EQ. 1 ) WRITE(6,1040)
1 (IOUT(I),I=1,3), (OUT(I),I=1,7), CALPA, (OUT(I),I=9,14), IOUT(4),
2 (OUT(I),I=15,27)
000177  IF( REP1 .GT. 1 .AND. REP1 .LT. 5) WRITE(6,1041)
1 (IOUT(I),I=1,3), (OUT(I),I=1,7), CALPA, (OUT(I),I=9,19)
000236  IF( REP1 .EQ. 5) WRITE(6,1042)
1 (IOUT(I),I=1,3), (OUT(I),I=1,7), CALPA, (OUT(I),I=9,17)

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000270      LINE = LINE + 1
000272      III = 20
000273      IF (FIGCCDE .EQ. 2) GO TO 95
000275  94    CONTINUE
000275      IF (FC1 .EQ. 0) FR = REP1
000300      IF (FR .NE. REP1) GO TO 118
000302      FCT = 1
C        WRITE RECORD ON OUTPUT TAPE10 (USED TO GENERATE GRAPHS)
000303  101  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,
2DELT9, DELT9P
000353      GO TO 999
000354  11A  CONTINUE
000354      NT1 = NT(FR)
000357      WRITE (10) (NT1, I=1, 23)
000367      FCT = 0
000370      GO TO 94
000371  95    CONTINUE
000371      IF (FC14 .EQ. 0) FR14 = REP1
000374      IF (FR14 .NE. REP1) GO TO 117
000376      FCT14 = 1
C        TAPE 14 CONTAINS DATA FOR CONFIGURATION 14 ONLY
000377      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), OUT(III),
2CALPA, DELT9, DELT9P
000447      GO TO 999
000450  117  CONTINUE
000450      NT1 = NT(FR14)
000453      WRITE (14) (NT1, I=1, 23)
000463      FCT14 = 0
000464      GO TO 95
000465  999  CONTINUE
000465      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
000526  1001 FORMAT (1H0)
000526  1002 FORMAT (1H , 11A10)
000526  1003 FORMAT (45X, 19HTABLE      CONTINUED //)
000526  1010 FORMAT (1X, 2HG0, 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, 44HRUN 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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000526 1011 5.50H CTS. (SECS) CPS GM-SEC-W DEV E 1.4+MEV DEV /)
 1011 FORMAT(1X,2HGO,7X,3HPAX,4X,3H***,13X,2HPOLAR **CORE PUL ANG P
 1AX,11X,1HCHAMFER *CON FAC,14X,4HPCI./10HH RUN CON ANG RADIUS
 2 ELEVAIN ANGLE RAY TAPE POWER ELAPSED CURRENT RADS(
 3C) RADS(C) STD /10HH NO. FIG DEG (CM) (CM) (DEG)
 4 (CM) HEADOUT (W) TIME (AMPS) HR-AMP HR-W DE
 5V /)
 000526 1012 FORMAT(1X,2HGO,7X,3HPAX,4X,3H***,13X,2HPOLAR **CORE PUL ANG P
 1AX,11X,1HCHAMFER *CON FAC,14X,4HPCI./10HH RUN CON ANG RADIUS
 2 FLEVAIN ANGLE RAY TAPE POWER ELAPSED CURRENT RADS(
 3AL) RADS(AL) STD /10HH NO. FIG DEG (CM) (CM) (DEG)
 4 (CM) HEADOUT (W) TIME (AMPS) HR-AMP HR-W DE
 5V /)
 000526 1013 FORMAT(1X,2HGO,7X,3HPAX,4X,3H***,13X,2HPOLAR **CORE PUL ANG P
 1AX,11X,1HCHAMFER *CON FAC,14X,4HPCI./10HH RUN CON ANG RADIUS
 2 ELEVAIN ANGLE RAY TAPE POWER ELAPSED CURRENT RADS(
 3HF) RADS(HE) STD /10HH NO. FIG DEG (CM) (CM) (DEG)
 4 (CM) HEADOUT (W) TIME (AMPS) HR-AMP HR-W DE
 5V /)
 000526 1014 FORMAT(9X,2HGO,4X,3HPAX,4X,3H***,13X,5HPCLAR,3X,6H**CORE,4X,3HPAX,
 13X,7HCHAMFER,3X,8H*CON FAC,12X,4HPCI./9X, 89HRUN CON ANG RADIUS
 2 FLEVAIN ANGLE RAY POWER CURRENT R-10 CAP R-10 CAP S
 3TD/9X, 82HNO. FIG DEG (CM) (CM) (DEG) (W) (AMPS)
 4 A-GM-SEC AM-SEC-W SFV/)
 000526 1040 FORMAT(1X,I3,1X,A3,1X,I3,1X,A1,F5.1,2A1,F6.1,A1,2(A1,F5.1,A1,1X),
 1 F/,3,1X,F5.1,1X,I5,1X,F6.1,2(1X,F8.2),1X,F4.1,1X,E8.2,2X,F4.1)
 000526 1041 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)
 000526 1042 FORMAT(9X,I3,2X,A3,2X,I3,1X,A1,F5.1,A1,2X,A1,F7.2,A1,1X,A1,F5.1,A1
 1,2X,A1,F5.1,A1,2X,F5.1,3(2X,E8.2),2X,F4.1)
 000526 RETURN
 000527 END

SUBPROGRAM LENGTH

001154

FUNCTION ASSIGNMENTS

STATEMENT ASSIGNMENTS

30	-	000067	40	-	000075	50	-	000135	94	-	000275
95	-	000371	101	-	000303	117	-	000450	118	-	000354
999	-	000465	1000	-	000533	1001	-	000541	1002	-	000543
1003	-	000546	1010	-	000553	1011	-	000623	1012	-	000666
1013	-	000731	1014	-	000774	1040	-	001032	1041	-	001050
1042	-	001065									

BLOCK NAMES AND LENGTHS

- 000514

VARIABLE ASSIGNMENTS

ARAY	-	000001C01	CALPA	-	001147	CONF	-	000016C01	CTABLE	-	001125
DELT9	-	000512C01	DELT9P	-	000513C01	FCT	-	000510C01	FCT14	-	000507C01
FIGCODE	-	001145	FR	-	001144	FR14	-	001143	I	-	001150
IARAY	-	000017C01	III	-	001152	IOUT	-	000025C01	J	-	001151
K	-	001146	LINE	-	000031C01	NT	-	001120	NT1	-	001153
OUT	-	000032C01	PAGE	-	000057C01	REP1	-	000062C01	REP2	-	000063C01
TITLE	-	000064C01									

START OF CONSTANTS

000531

START OF TEMPORARIES

001101

START OF INDIRECTS

001117

UNUSED COMPILER SPACE

110300

CORE MAP 15.40.44. NORMAL CONTROL 000100 026640

---TIME---LCAL MODF ---L1---L2---TYPE-----USER---+---CALL-----FWA LOAD---LWA LOAD---

FWA LOADER 143754 FWA TABLES 141537

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

PARX21 000100

COMPAR 017023

WRITEH 017177

SYSTEM 020427

WXPCOM 020353

SCOPE2 020427

INPUTC 021604

REWIND 021711

INPUTH 021763

SQRT 022061

OUTPTH 022124

FNDFIL 022204

OUTPTC 022240

SIN4 022336

KHAKFH 023421

DAISCH 024457

GETLA 024710

KODER 024727

---ENTRY-----ADDRESS-----REFERENCES

PARX21 000101

COMPAR 017024

PARX21 000234

WRITEH 017200

PARX21 000411

CHNTHY 020430

PARX21 000102

SYSTEM 020700

INPUTC 021644

REWIND 021747

INPUTH 022003

SQRT 022106

OUTPTH 022174

FNDFIL 022227

OUTPTC 022322

KHAKFH 024215

KODER 025735

024241

SYSTEMC 020616

SYSTEMD 020645

END 020541

PARX21 000464

COMPAR 017140

WRITEH 017727

STOP 020571

PARX21 000462

EXIT	020563							
ABNORML	020601							
		INPUTC	021645					
		REWIND	021750					
		INPUTB	022004					
		OUTPTR	022175					
		ENDFIL	022230					
		OUTPTC	022323					
		KRAKER	024242					
		KODER	025736					
WXPRESS	021321							
WXPSSYS	021315							
INPUTC	021606	PARX21	000127	000137	000142			
REWIND	021712	PARX21	000157	000161	000163	000165	000414	000454
			000460					
INPUTB	021765	PARX21	000167	000173	000201	000205	000207	000210
SORT	022062	PARX21	000320	000331	000361	000370	000407	
OUTPTR	022143	PARX21	000416	000421	000424	000426	000431	000434
			000441	000444				
		WRITER	017503	017505	017507	017511	017515	017521
			017525	017527	017531	017535	017542	017544
			017550	017551	017557	017562	017565	017577
			017603	017605	017611	017615	017617	017621
			017625	017631	017636	017640	017642	017644
			017653	017656	017661	017665	017667	017671
			017677	017703	017705	017707	017711	017713
			017723	017724				
ENDFIL	022205	PARX21	000446	000450	000452			
OUTPTC	022242	COMPAR	017056	017057	017070	017071	017127	017130
		WRITER	017221	017227	017232	017242	017252	017255
			017263	017270	017271	017300	017301	017306
			017314	017315	017322	017323	017330	017331
			017344	017352	017356	017362	017366	017372
			017407	017413	017421	017425	017431	017434
			017445	017453	017457	017463	017466	
CTO1.	023162	REWIND	021735	021737				
RCL1.	023173	REWIND	021730					
DAT.	022340	INPUTC	021614					

		OUTPIC	022251				
		KRAKEN	024214	024244	044252	024263	
SIO.CTL	022344	SYSTEM	021117				
		REWIND	021124				
THFA.	022341	INPUTC	021612				
		OUTPIC	022247				
THFL.	022342	INPUTC	021613				
		OUTPIC	022250				
INITL.	022364	SYSTEM	021115	021054			
		INPUTC	021617				
		REWIND	021122				
		INPUTH	022021				
		OUTPTH	022164				
		ENDFIL	022216				
		OUTPIC	022254				
SIO.	022431	SYSTEM	021056				
		INPUTC	021656				
		INPUTH	021175	022010	042024		
		OUTPTH	022131	022154	042160	042170	
		OUTPIC	022301				
SIO.FND	023134	SYSTEM	021125				
		REWIND	021126				
		ENDFIL	022220				
OPER.	023201	SYSTEM	021227				
DISPDI.	023241						
DISPDI.	023256						
DISST.	023261						
AVWDS.	023406						
KRAKEN	023422	INPUTC	021631	021610			
DATSE.	024461	INPUTC	021614	021654	041626	021662	021670
		OUTPTH	022136	022127	042152		
		OUTPIC	022261	022214	042251	042302	
GETFA	024711	REWIND	021117				
		ENDFIL	022211				
		SIO\$	022366				
KOBER	024730	OUTPIC	022264	022244			

----UNSATISFIED EXTERNALS-----

REFERENCES

X Sample Output from PARX21

TABLE 1 EXTERNAL ENVIRONMENTAL RESPONSE OF A CD-COVERED U-238(11PPM 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

GO 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 F/GM-SEC GPS	TOTAL(U) FISS GM-SEC-W	PCT. STD DEV	* NEUTS CM2-SEC-W E 1.4*MEV	PCT. STD DEV	
107	14	270	(.6)	(152.4)	.2	152.4	119.625	695.8	5354	46.9	1.53E+00	2.51E-01	9.9	1.79E+02	11.1
107	14	270	(.3)	(167.6)	.1	167.6	120.375	695.8	5129	39.6	1.53E+00	2.85E-01	9.9	2.03E+02	11.1
107	14	270	(.4)	(182.9)	.1	182.9	121.625	695.8	5062	34.8	1.53E+00	3.20E-01	9.9	2.28E+02	11.1
107	14	270	(.2)	(198.1)	.1	198.1	123.062	695.8	5057	30.9	1.53E+00	3.60E-01	9.9	2.54E+02	11.1
107	14	270	(.1)	(213.4)	.0	213.4	124.812	695.8	5177	29.9	1.53E+00	3.81E-01	9.9	2.71E+02	11.1
107	14	270	(-.3)	(274.3)	-.1	274.3	134.500	695.8	5099	28.3	1.53E+00	3.96E-01	9.9	2.82E+02	11.1
107	14	270	(-.9)	(335.3)	-.1	335.3	147.625	695.8	5125	31.1	1.53E+00	3.62E-01	9.9	2.58E+02	11.1
107	14	270	(-1.0)	(396.2)	-.1	396.2	163.500	695.8	5061	32.7	1.53E+00	3.40E-01	9.9	2.42E+02	11.1
107	14	270	(-.6)	(457.2)	-.1	457.2	181.375	695.8	5126	37.6	1.53E+00	3.00E-01	9.9	2.13E+02	11.1
107	14	270	(.2)	(474.0)	.0	474.0	186.750	695.8	10186	77.3	1.53E+00	2.90E-01	9.9	2.06E+02	11.1
107	14	270	(-.1)	(518.2)	-.0	518.2	200.625	695.8	5108	43.2	1.53E+00	2.60E-01	9.9	1.85E+02	11.1
107	14	270	(.9)	(574.0)	.1	574.0	219.250	695.8	5120	47.1	1.53E+00	2.39E-01	9.9	1.70E+02	11.1
107	14	270	(31.5)	(473.9)	3.8	475.0	195.125	695.8	10126	78.3	1.53E+00	2.84E-01	9.9	2.02E+02	11.1
107	14	270	(61.4)	(474.0)	7.4	478.0	203.625	695.8	10126	79.6	1.53E+00	2.80E-01	9.9	1.99E+02	11.1
107	14	270	(26.9)	(150.0)	10.2	152.4	131.875	695.8	5042	47.9	1.53E+00	2.31E-01	9.9	1.65E+02	11.1
107	14	270	(29.5)	(165.0)	10.1	167.6	133.625	695.8	5062	41.8	1.53E+00	2.66E-01	9.9	1.90E+02	11.1
107	14	270	(31.7)	(180.1)	10.0	182.9	135.500	695.8	5059	36.8	1.53E+00	3.02E-01	9.9	2.15E+02	11.1
107	14	270	(34.3)	(195.1)	10.0	198.1	137.750	695.8	5211	37.1	1.53E+00	3.09E-01	9.9	2.20E+02	11.1
107	14	270	(36.9)	(210.1)	10.0	213.4	140.250	695.8	5084	33.3	1.53E+00	3.36E-01	9.9	2.39E+02	11.1
107	14	270	(46.8)	(270.3)	9.8	274.3	152.125	695.8	5301	31.3	1.53E+00	3.72E-01	9.9	2.65E+02	11.1
107	14	270	(56.0)	(330.5)	9.7	335.3	166.750	695.8	5055	30.9	1.53E+00	3.60E-01	9.9	2.56E+02	11.1
107	14	270	(66.5)	(390.6)	9.7	396.2	183.500	695.8	5804	39.2	1.53E+00	3.20E-01	9.9	2.32E+02	11.1
107	14	270	(77.1)	(450.7)	9.7	457.2	201.937	695.8	5291	39.7	1.53E+00	2.93E-01	9.9	2.09E+02	11.1
107	14	270	(87.7)	(510.7)	9.7	518.2	221.500	695.8	5034	44.1	1.53E+00	2.51E-01	9.9	1.79E+02	11.1
107	14	270	(98.2)	(565.6)	9.8	574.0	240.312	695.8	5052	47.6	1.53E+00	2.33E-01	9.9	1.66E+02	11.1

TABLE 1 EXTERNAL ENVIRONMENTAL RESPONSE OF A CO-COVERED U-238(11PPM U-235) FISSION CHAMBER IN A BORAL BOX
TABLE CONTINUED

GU RUN NO.	CON FIG	PAX ANG DEG	*** RADIUS (CM)	ELEVATION (CM)	POLAR ANGLE (DEG)	**CORE RAY (CM)	POL ANG TAP HEADOUT	PAX POWER (W)	TOTAL COUNT NO. CTS.	TIME (SECS)	CONV FAC F/GM-SFC LPS	TOTAL(U) FISS GM-SEC-W	PCT. STD DEV	* NFU15 CM2-SEC-W E 1.4+MEV	PCT. STD DEV
107	14	270	(92.2)	(473.9)	11.0	482.8	212.687	692.3	10101	83.6	1.53E+00	2.67E-01	9.9	1.90E+02	11.1
107	14	270	(122.4)	(474.0)	14.5	489.6	222.000	681.8	11508	96.3	1.53F+00	2.68F-01	9.9	1.91E+02	11.0
107	14	270	(150.4)	(474.7)	17.6	494.0	231.000	685.3	10286	89.4	1.53F+00	2.57E-01	9.9	1.83E+02	11.1
107	14	270	(53.0)	(142.9)	20.3	152.4	143.937	695.8	9452	100.0	1.53E+00	2.08E-01	9.9	1.48E+02	11.1
107	14	270	(58.0)	(157.3)	20.2	167.6	146.375	695.8	10069	89.9	1.53F+00	2.46E-01	9.9	1.75E+02	11.1
107	14	270	(63.2)	(171.6)	20.2	182.9	149.125	692.3	10134	79.5	1.53F+00	2.82E-01	9.9	2.01E+02	11.1
107	14	270	(68.2)	(186.0)	20.1	194.1	152.000	688.8	10031	72.3	1.53F+00	3.08F-01	9.9	2.19E+02	11.1
107	14	270	(73.1)	(200.4)	20.0	213.4	155.031	692.3	10160	68.5	1.53F+00	3.28F-01	9.9	2.33E+02	11.1
107	14	270	(93.5)	(257.9)	19.9	274.3	169.062	695.8	10609	66.8	1.53F+00	3.49E-01	9.9	2.49E+02	11.1
107	14	270	(113.5)	(315.5)	19.8	335.3	185.125	695.8	8073	53.5	1.53E+00	3.32E-01	9.9	2.36E+02	11.1
107	14	270	(133.8)	(373.0)	19.7	396.2	202.937	695.8	5111	36.2	1.53F+00	3.10E-01	9.9	2.21E+02	11.1
107	14	270	(154.3)	(430.4)	19.7	457.2	222.000	695.8	5027	41.0	1.53F+00	2.70E-01	9.9	1.92E+02	11.1
107	14	270	(175.5)	(487.5)	19.8	518.2	242.125	695.8	5038	45.5	1.53F+00	2.43F-01	9.9	1.73E+02	11.1
107	14	270	(195.3)	(539.8)	19.9	574.0	261.250	695.8	5058	49.4	1.53F+00	2.25E-01	9.9	1.60E+02	11.1
107	14	270	(184.0)	(473.7)	21.2	508.2	241.625	695.8	10047	87.2	1.53F+00	2.53E-01	9.9	1.88E+02	11.1
107	14	270	(213.3)	(474.1)	24.2	519.9	251.437	695.8	10047	90.4	1.53F+00	2.44F-01	9.9	1.74E+02	11.1
107	14	270	(243.8)	(474.1)	27.2	533.1	261.687	692.3	10126	94.5	1.53F+00	2.37E-01	9.9	1.69E+02	11.1
107	14	270	(65.0)	(144.5)	30.4	167.6	158.437	692.3	10090	90.7	1.53F+00	2.46E-01	9.9	1.75E+02	11.1
107	14	270	(92.5)	(157.7)	30.4	182.9	161.812	695.8	10088	75.4	1.53F+00	2.94F-01	9.9	2.09E+02	11.1
107	14	270	(100.2)	(170.9)	30.4	194.1	165.375	692.3	10600	75.3	1.53F+00	3.11E-01	9.9	2.21E+02	11.1
107	14	270	(107.7)	(184.2)	30.3	213.4	169.000	692.3	10057	66.5	1.53F+00	3.34F-01	9.9	2.38E+02	11.1
107	14	270	(135.8)	(238.5)	29.6	274.3	184.125	692.3	10034	63.9	1.53F+00	3.47E-01	9.9	2.47E+02	11.1
107	14	270	(167.2)	(290.6)	29.9	335.3	202.250	695.8	10040	67.6	1.53F+00	3.27E-01	9.9	2.32E+02	11.1
107	14	270	(197.3)	(343.6)	29.9	396.2	221.125	695.8	10283	74.0	1.53F+00	3.06F-01	9.9	2.17E+02	11.1
107	14	270	(227.7)	(396.4)	29.9	457.2	241.000	695.8	10243	80.2	1.53F+00	2.81E-01	9.9	2.00E+02	11.1

TABLE 1 EXTERNAL ENVIRONMENTAL RESPONSE OF A CD-COVERED U-238(11PPM U-235) FISSION CHAMBER IN A BORAL BOX
TABLE CONTINUED

GO 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 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	(258.8)	(448.9)	30.0	518.2	261.750	695.8	10112	91.5	1.53E+00	2.43E-01	9.9	1.73E+02	11.1
107	14	270	(287.6)	(496.8)	30.1	574.0	281.312	699.3	10023	99.1	1.53E+00	2.21E-01	9.9	1.57E+02	11.1
107	14	270	(274.4)	(474.0)	30.1	547.7	272.125	692.3	10136	96.4	1.53E+00	2.32E-01	9.9	1.65E+02	11.1

118	16C	270	(.5)	(152.4)	.2	152.4	119.562	682.6	10770	23.9	1.61E+00	1.06E+00	9.9	7.56E+02	11.1
118	16C	270	(.0)	(167.6)	.0	167.6	120.250	686.0	11588	28.0	1.61E+00	9.71E-01	9.9	6.91E+02	11.0
118	16C	270	(-.2)	(182.9)	-.1	182.9	121.375	675.8	10323	28.6	1.61E+00	8.60E-01	9.9	6.12E+02	11.1
118	16C	270	(-.4)	(198.1)	-.1	198.1	122.812	675.8	10464	31.4	1.61E+00	7.94E-01	9.9	5.65E+02	11.1
118	16C	270	(-.7)	(213.4)	-.2	213.4	124.500	679.2	11346	35.4	1.61E+00	7.60E-01	9.9	5.41E+02	11.0
118	16C	270	(-1.3)	(274.3)	-.3	274.3	134.125	686.0	10852	40.0	1.61E+00	6.37E-01	9.9	4.53E+02	11.1
118	16C	270	(-2.2)	(335.3)	-.4	335.3	147.187	682.6	10511	45.5	1.61E+00	5.45E-01	9.9	3.88E+02	11.1
118	16C	270	(-2.4)	(396.2)	-.4	396.2	163.062	682.6	10290	52.5	1.61E+00	4.62E-01	9.9	3.29E+02	11.1
118	16C	270	(-2.3)	(457.2)	-.3	457.2	180.937	679.2	10492	62.6	1.61E+00	3.97E-01	9.9	2.83E+02	11.1
118	16C	270	(.4)	(474.0)	.1	474.0	186.812	682.6	10942	65.1	1.61E+00	3.96E-01	9.9	2.82E+02	11.1
118	16C	270	(-2.2)	(518.2)	-.2	518.2	200.125	682.6	10107	66.3	1.61E+00	3.60E-01	9.9	2.56E+02	11.1
118	16C	270	(7.5)	(574.0)	.8	574.0	220.687	679.2	10176	74.5	1.61E+00	3.24E-01	9.9	2.30E+02	11.1
118	16C	270	(31.3)	(474.0)	7.8	475.0	195.062	682.6	10175	61.8	1.61E+00	3.88E-01	9.9	2.76E+02	11.1
118	16C	270	(61.2)	(474.1)	7.4	478.0	203.562	682.6	10162	61.0	1.61E+00	3.93E-01	9.9	2.80E+02	11.1
118	16C	270	(26.9)	(150.0)	10.2	152.4	131.875	682.6	10214	24.6	1.61E+00	9.79E-01	9.9	6.97E+02	11.1
118	16C	270	(29.3)	(145.1)	10.1	167.6	133.562	679.2	10303	27.2	1.61E+00	8.98E-01	9.9	6.39E+02	11.1
118	16C	270	(31.9)	(180.1)	10.0	182.9	135.562	682.6	10137	30.0	1.61E+00	7.97E-01	9.9	5.67E+02	11.1
118	16C	270	(34.3)	(195.1)	10.0	198.1	137.750	682.6	10184	32.2	1.61E+00	7.46E-01	9.9	5.31E+02	11.1
118	16C	270	(36.6)	(210.2)	9.9	213.4	140.125	682.6	10195	33.2	1.61E+00	7.24E-01	9.9	5.16E+02	11.1
118	16C	270	(46.6)	(270.3)	9.8	274.3	152.062	682.6	10190	38.4	1.61E+00	6.26E-01	9.9	4.45E+02	11.1
118	16C	270	(56.6)	(330.5)	9.7	335.3	166.750	682.6	11522	50.3	1.61E+00	5.40E-01	9.9	3.85E+02	11.0
118	16C	270	(66.5)	(390.6)	9.7	396.2	183.500	682.6	10092	50.5	1.61E+00	4.71E-01	9.9	3.35E+02	11.1
118	16C	270	(77.1)	(450.7)	9.7	457.2	201.937	679.2	10203	59.2	1.61E+00	4.09E-01	9.9	2.91E+02	11.1

TABLE 1 EXTERNAL ENVIRONMENTAL RESPONSE OF A CO-COVERED U-238(11PPM U-235) FISSION CHAMBER IN A BORAL BOX
TABLE CONTINUED

GU RUN NO.	PAX CON FIG	*** ANG DEG	RADIUS (CM)	ELEVATA (CM)	POLAR ANGLE (DEG)	**CORE RAY (CM)	POL ANG TAPE READOUT	PAX POWER (W)	TOTAL NO. CTS.	COUNT TIME (SECS)	CONV FAC F/GM-SEC GPS	TOTAL(U) FISS GM-SEC-W	PCT. STD DEV	* NEUIS CM2-SEC-W E 1.4+MEV	PCT. STD DEV
118	16C	270	(87.7)	(510.7)	9.7	518.2	241.500	682.6	12999	85.0	1.01F+00	3.61E-01	9.8	2.57E+02	11.0
118	16C	270	(97.6)	(565.7)	9.8	574.0	240.187	682.6	10189	73.3	1.01E+00	3.28E-01	9.9	2.33E+02	11.1
118	16C	270	(92.2)	(473.9)	11.0	482.8	212.087	682.6	10033	60.5	1.01F+00	3.91E-01	9.9	2.78E+02	11.1
118	16C	270	(122.7)	(474.0)	14.5	489.6	222.062	679.2	10144	59.5	1.01F+00	4.04E-01	9.9	2.88E+02	11.1
118	16C	270	(150.4)	(474.7)	17.6	498.0	231.000	679.2	10165	58.0	1.01F+00	4.15E-01	9.9	2.96E+02	11.1
118	16C	270	(52.9)	(142.9)	20.3	152.4	143.875	682.6	10199	32.2	1.01F+00	7.47E-01	9.9	5.32E+02	11.1
118	16C	270	(58.0)	(157.3)	20.2	167.6	146.375	682.6	11584	37.3	1.01F+00	7.33E-01	9.9	5.21E+02	11.0
118	16C	270	(63.0)	(171.7)	20.2	182.9	149.062	682.6	10262	31.4	1.01F+00	7.71E-01	9.9	5.49E+02	11.1
118	16C	270	(68.2)	(186.0)	20.1	198.1	152.000	679.2	10346	31.0	1.01F+00	7.91E-01	9.9	5.63E+02	11.1
118	16C	270	(73.2)	(200.4)	20.1	213.4	155.062	682.6	10208	31.4	1.01F+00	7.67E-01	9.9	5.46E+02	11.1
118	16C	270	(93.5)	(257.9)	19.9	274.3	169.062	679.2	10149	34.8	1.01F+00	6.91E-01	9.9	4.92E+02	11.1
118	16C	270	(133.4)	(373.0)	19.7	396.2	202.937	682.6	10160	44.4	1.01F+00	5.40E-01	9.9	3.84E+02	11.1
118	16C	270	(154.6)	(430.3)	19.8	457.2	222.062	682.6	10153	51.5	1.01F+00	4.65E-01	9.9	3.31E+02	11.1
118	16C	270	(175.8)	(487.4)	19.8	518.2	242.187	679.2	10076	58.0	1.01E+00	4.12E-01	9.9	2.93E+02	11.1
118	16C	270	(195.6)	(539.7)	19.9	574.0	261.312	682.6	10077	65.0	1.01F+00	3.66E-01	9.9	2.60E+02	11.1
118	16C	270	(184.3)	(473.6)	21.3	508.2	241.087	679.2	10171	56.7	1.01F+00	4.25E-01	9.9	3.03E+02	11.1
118	16C	270	(213.3)	(474.1)	24.2	519.9	251.437	679.2	10335	57.1	1.01E+00	4.29E-01	9.9	3.05E+02	11.1
118	16C	270	(243.8)	(474.1)	27.2	533.1	261.087	682.6	10592	55.3	1.01F+00	4.52E-01	9.9	3.22E+02	11.1
118	16C	270	(77.5)	(131.2)	30.6	152.4	155.312	679.2	21673	32.1	1.01F+00	1.60E+00	9.8	1.14E+03	11.0
118	16C	270	(85.1)	(144.4)	30.5	167.6	158.500	682.6	17985	26.7	1.01F+00	1.59E+00	9.8	1.13E+03	11.0
118	16C	27	(92.7)	(157.6)	30.5	182.9	161.875	682.6	17334	27.2	1.01F+00	1.50E+00	9.8	1.07E+03	11.0
118	16C	270	(100.2)	(170.9)	30.4	198.1	165.375	686.0	16852	28.6	1.01F+00	1.38E+00	9.8	9.84E+02	11.0
118	16C	270	(107.8)	(184.1)	30.4	213.4	169.062	686.0	16426	28.9	1.01F+00	1.33E+00	9.8	9.49E+02	11.0
118	16C	270	(137.9)	(237.2)	30.2	274.3	184.937	682.6	10373	23.2	1.01F+00	1.05E+00	9.9	7.51E+02	11.1

TABLE 1 EXTERNAL ENVIRONMENTAL RESPONSE OF A CU-COVERED U-238(11PPM U-235) FISSION CHAMBER IN A BORAL BOX
TABLE CONTINUED

GO	PAX	***			POLAR	**CORE	POL ANG	PAX	TOTAL COUNT	CONV FAC	TOTAL (U)	PCT.	* NEUTS	PCT.
RUN NO.	CON FIG	ANG DEG	RADIUS (CM)	ELEVATN (CM)	ANGLE (DEG)	RAY (CM)	TAPE READOUT	POWER (W)	NO. CTS.	TIME (SECS)	F/GM-SFC CPS	FISS GM-SEC-W	STD DEV	CM2-SEC-W E 1.4+MEV STD DEV
118	16C	270	(167.6)	(290.4)	30.0	335.3	202.375	679.2	10258	29.7	1.61E+00	8.19E-01	9.9	5.83E+02 11.1
118	16C	270	(197.3)	(343.6)	29.9	396.2	221.125	679.2	10235	34.4	1.61E+00	7.05E-01	9.9	5.02E+02 11.1
118	16C	270	(228.0)	(396.3)	29.9	457.2	241.062	682.6	10245	41.8	1.61E+00	5.78E-01	9.9	4.11E+02 11.1
118	16C	270	(259.0)	(448.8)	30.0	518.2	261.812	682.6	10274	49.5	1.61E+00	4.90E-01	9.9	3.48E+02 11.1
118	16C	270	(287.6)	(496.8)	30.1	574.0	281.312	682.6	10094	56.0	1.61E+00	4.25E-01	9.9	3.03E+02 11.1
118	16C	270	(274.4)	(474.0)	30.1	547.7	272.125	682.6	10274	53.0	1.61E+00	4.57E-01	9.9	3.25E+02 11.1

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

GU RUN NO.	CON FIG	MAX ANG DEG	*** RADIUS (CM)	ELFVATN (CM)	PCLAM ANGLE (DEG)	**CONE RAY (CM)	PUL ANG TAPE READOUT	PAX POWER (W)	ELAPSED TIME	CHAMBER CURRENT (AMPS)	*CON FAC RADS(C) HR-AMP	KAUS(C) HR-W	PCT. STD DEV
106	14	270	(87.7)	(510.7)	9.7	518.2	221.500	695.8	71.70	1.77E-11	2.05E+11	5.21F-03	7.1
106	14	270	(97.9)	(565.6)	9.8	574.0	240.250	695.8	70.00	1.63E-11	2.05E+11	4.79F-03	7.1
106	14	270	(92.2)	(473.9)	11.0	482.4	212.687	695.8	18.70	1.94E-11	2.05E+11	5.71F-03	7.1
106	14	270	(122.7)	(474.0)	14.5	489.6	222.062	695.8	20.50	1.94E-11	2.05E+11	5.71F-03	7.1
106	14	270	(150.9)	(474.6)	17.6	498.0	231.125	695.8	22.10	1.91E-11	2.05E+11	5.62E-03	7.1
106	14	270	(50.9)	(147.9)	19.0	156.4	143.000	695.8	122.00	1.55E-11	2.05E+11	4.56E-03	7.1
106	14	270	(52.9)	(142.9)	20.3	152.4	143.475	695.8	45.80	1.43E-11	2.05E+11	4.21F-03	7.1
106	14	270	(58.0)	(157.3)	20.2	167.6	146.375	695.8	47.70	2.03E-11	2.05E+11	5.47F-03	7.1
106	14	270	(63.2)	(171.6)	20.2	182.4	149.125	695.8	48.60	2.47E-11	2.05E+11	7.27F-03	7.1
106	14	270	(68.2)	(186.0)	20.1	194.1	152.000	695.8	51.00	2.60E-11	2.05E+11	7.65F-03	7.1
106	14	270	(73.2)	(200.4)	20.1	213.4	155.062	695.8	53.70	2.65E-11	2.05E+11	7.40F-03	7.1
106	14	270	(93.7)	(257.4)	20.0	274.1	169.125	695.8	56.70	2.70E-11	2.05E+11	7.95F-03	7.1
106	14	270	(113.7)	(315.4)	19.8	336.3	185.187	695.8	59.20	2.50E-11	2.05E+11	7.36E-03	7.1
106	14	270	(133.6)	(373.0)	19.7	396.2	202.475	695.8	61.70	2.25E-11	2.05E+11	6.62F-03	7.1
106	14	270	(154.3)	(430.4)	19.7	457.2	222.000	695.8	63.70	2.04E-11	2.05E+11	6.00F-03	7.1
106	14	270	(175.5)	(487.5)	19.4	518.2	242.125	699.3	66.00	1.83E-11	2.05E+11	5.36F-03	7.1
106	14	270	(195.3)	(539.4)	19.9	574.0	261.250	699.3	68.10	1.67E-11	2.05E+11	4.89F-03	7.1
106	14	270	(144.5)	(473.5)	21.3	508.2	241.750	695.8	23.80	1.90E-11	2.05E+11	5.59F-03	7.1
106	14	270	(213.3)	(474.1)	24.2	519.9	251.437	695.8	25.00	1.90E-11	2.05E+11	5.59F-03	7.1
106	14	270	(70.2)	(147.5)	27.3	166.1	154.500	695.8	124.40	3.00E-11	2.05E+11	8.43F-03	7.1
106	14	270	(243.3)	(474.3)	27.2	533.1	261.562	695.8	26.50	1.89E-11	2.05E+11	5.56E-03	7.1
106	14	270	(85.1)	(144.4)	30.5	167.6	158.500	695.8	42.80	3.80E-11	2.05E+11	1.12E-02	7.1

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

GO 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	695.8	116.40	1.50E-11	2.05E+11	4.41E-03	7.1
106	14	270	(.5)	(152.4)	.2	152.4	119.562	695.8	90.10	1.58E-11	2.05E+11	4.65E-03	7.1
106	14	270	(.3)	(167.6)	.1	167.6	120.375	695.8	92.20	1.88E-11	2.05E+11	5.53E-03	7.1
106	14	270	(.2)	(182.9)	.1	182.9	121.562	695.8	93.70	2.15E-11	2.05E+11	6.33E-03	7.1
106	14	270	(.1)	(198.1)	.0	198.1	123.000	695.8	94.80	2.33E-11	2.05E+11	6.86E-03	7.1
106	14	270	(-.1)	(213.4)	-.0	213.4	124.750	695.8	95.50	2.47E-11	2.05E+11	7.27E-03	7.1
106	14	270	(-.6)	(274.3)	-.1	274.3	134.375	695.8	97.70	2.58E-11	2.05E+11	7.59E-03	7.1
106	14	270	(-1.1)	(335.3)	-.2	335.3	147.562	695.8	99.70	2.43E-11	2.05E+11	7.15E-03	7.1
106	14	270	(.3)	(396.2)	.0	396.2	163.875	695.8	101.50	2.23E-11	2.05E+11	6.56E-03	7.1
106	14	270	(-1.1)	(457.2)	-.1	457.2	181.250	695.8	103.20	2.00E-11	2.05E+11	5.89E-03	7.1
106	14	270	(.2)	(474.0)	.0	474.0	186.750	695.8	8.10	2.00E-11	2.05E+11	5.89E-03	7.1
106	14	270	(-.6)	(518.2)	-.1	518.2	200.500	695.8	105.30	1.78E-11	2.05E+11	5.24E-03	7.1
106	14	270	(-.2)	(574.0)	-.0	574.0	219.000	695.8	106.90	1.63E-11	2.05E+11	4.79E-03	7.1
106	14	270	(31.3)	(474.0)	3.8	475.0	195.062	695.8	13.00	1.97E-11	2.05E+11	5.80E-03	7.1
106	14	270	(60.9)	(474.1)	7.3	478.0	203.500	695.8	17.10	1.95E-11	2.05E+11	5.74E-03	7.1
106	14	270	(26.3)	(148.0)	10.1	150.3	131.562	695.8	119.30	1.44E-11	2.05E+11	4.24E-03	7.1
106	14	270	(26.9)	(150.0)	10.2	152.4	131.875	695.8	87.60	1.48E-11	2.05E+11	4.35E-03	7.1
106	14	270	(29.3)	(165.1)	10.1	167.6	133.562	695.8	86.60	1.78E-11	2.05E+11	5.24E-03	7.1
106	14	270	(31.7)	(180.1)	10.0	182.9	135.500	695.8	84.60	2.07E-11	2.05E+11	5.97E-03	7.1
106	14	270	(34.3)	(195.1)	10.0	198.1	137.750	695.8	83.20	2.22E-11	2.05E+11	6.53E-03	7.1
106	14	270	(36.7)	(210.2)	9.9	213.4	140.187	699.3	81.70	2.37E-11	2.05E+11	6.94E-03	7.1
106	14	270	(46.6)	(270.3)	9.8	274.3	152.062	695.8	79.60	2.54E-11	2.05E+11	7.48E-03	7.1
106	14	270	(56.4)	(330.5)	9.7	335.3	166.687	695.8	77.50	2.39E-11	2.05E+11	7.03E-03	7.1
106	14	270	(66.5)	(390.6)	9.7	396.2	183.500	695.8	75.60	2.17E-11	2.05E+11	6.39E-03	7.1
106	14	270	(76.8)	(450.7)	9.7	457.2	201.875	699.3	73.60	1.97E-11	2.05E+11	5.77E-03	7.1

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

GO RUN NO.	CON FIG	PAX ANG DEG	*** RADIUS (CM)	ELEVATN (CM)	PCLAK ANGLE (DEG)	**CORE RAY (CM)	PUL 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	(92.5)	(157.7)	30.4	182.9	161.812	695.8	42.00	3.75E-11	2.05E+11	1.10E-02	7.1
106	14	270	(100.1)	(171.0)	30.3	198.1	165.312	695.8	41.30	3.75E-11	2.05E+11	1.10E-02	7.1
106	14	270	(107.7)	(184.2)	30.3	213.4	169.000	695.8	40.40	3.70E-11	2.05E+11	1.09E-02	7.1
106	14	270	(137.7)	(237.3)	30.1	274.3	184.875	695.8	38.40	3.25E-11	2.05E+11	9.57E-03	7.1
106	14	270	(167.6)	(290.4)	30.0	335.3	202.315	695.8	36.60	2.85E-11	2.05E+11	8.39E-03	7.1
106	14	270	(197.3)	(343.6)	29.9	396.2	221.125	695.8	34.80	2.50E-11	2.05E+11	7.36E-03	7.1
106	14	270	(228.0)	(396.3)	29.9	457.2	241.062	695.8	33.00	2.22E-11	2.05E+11	6.53E-03	7.1
106	14	270	(259.0)	(448.8)	30.0	518.2	261.812	695.8	31.50	1.96E-11	2.05E+11	5.77E-03	7.1
106	14	270	(287.6)	(496.8)	30.1	574.0	281.312	695.8	29.60	1.78E-11	2.05E+11	5.24E-03	7.1
106	14	270	(274.1)	(474.2)	30.0	547.7	272.062	695.8	28.10	1.88E-11	2.05E+11	5.53E-03	7.1
106	14	270	(99.8)	(147.9)	34.0	178.4	165.000	695.8	126.30	5.00E-11	2.05E+11	1.47E-02	7.1
106	14	270	(128.9)	(148.4)	41.0	196.5	177.562	695.8	128.70	7.20E-11	2.05E+11	2.12E-02	7.1

117	16C	270	(.5)	(148.0)	.2	148.0	119.315	675.8	107.00	5.83E-11	2.05E+11	1.77E-02	7.1
117	16C	270	(.6)	(152.4)	.2	152.4	119.625	675.8	83.00	5.63E-11	2.05E+11	1.71E-02	7.1
117	16C	270	(.4)	(167.6)	.2	167.6	120.437	675.8	85.00	5.18E-11	2.05E+11	1.57E-02	7.1
117	16C	270	(.2)	(182.9)	.1	182.9	121.562	675.8	86.00	4.80E-11	2.05E+11	1.46E-02	7.1
117	16C	270	(-.1)	(198.1)	-.0	198.1	122.937	675.8	86.50	4.53E-11	2.05E+11	1.37E-02	7.1
117	16C	270	(-.1)	(213.4)	-.0	213.4	124.750	675.8	87.50	4.31E-11	2.05E+11	1.31E-02	7.1
117	16C	270	(-.5)	(274.3)	-.1	274.3	134.437	675.8	89.50	3.63E-11	2.05E+11	1.10E-02	7.1
117	16C	270	(-1.1)	(335.3)	-.2	335.3	147.562	675.8	91.00	3.18E-11	2.05E+11	9.65E-03	7.1
117	16C	270	(-1.2)	(396.2)	-.2	396.2	163.437	675.8	93.00	2.75E-11	2.05E+11	8.34E-03	7.1
117	16C	270	(-.9)	(457.2)	-.1	457.2	181.312	672.4	94.50	2.42E-11	2.05E+11	7.38E-03	7.1
117	16C	270	(-.5)	(474.0)	-.1	474.0	186.562	675.8	4.50	2.38E-11	2.05E+11	7.22E-03	7.1
117	16C	270	(-.4)	(518.2)	-.0	518.2	200.562	675.8	97.00	2.15E-11	2.05E+11	6.52E-03	7.1
117	16C	270	(.4)	(574.0)	.0	574.0	219.125	675.8	98.50	1.97E-11	2.05E+11	5.98E-03	7.1
117	16C	270	(-31.3)	(474.0)	3.8	475.0	195.062	675.8	12.00	2.33E-11	2.05E+11	1.07E-03	7.1

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

GO RUN NO.	CON FIG	PAX ANG DEG	*** RADIUS (CM)	ELEVATN (CM)	PCLAR 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
117	16C	270	(61.2)	(474.1)	7.4	478.0	203.562	675.8	13.00	2.31E-11	2.05E+11	7.01E-03	7.1
117	16C	270	(20.3)	(148.0)	10.1	150.3	131.562	675.8	109.50	5.36E-11	2.05E+11	1.63E-02	7.1
117	16C	270	(26.9)	(150.0)	10.2	152.4	131.875	675.8	81.50	5.23E-11	2.05E+11	1.59E-02	7.1
117	16C	270	(29.3)	(165.1)	10.1	167.6	133.562	675.8	81.00	4.78E-11	2.05E+11	1.45E-02	7.1
117	16C	270	(31.9)	(180.1)	10.0	182.9	135.562	675.8	80.00	4.48E-11	2.05E+11	1.36E-02	7.1
117	16C	270	(34.3)	(195.1)	10.0	198.1	137.750	675.8	79.00	4.23E-11	2.05E+11	1.28E-02	7.1
117	16C	270	(36.7)	(210.2)	9.9	213.4	140.187	675.8	78.00	4.08E-11	2.05E+11	1.24E-02	7.1
117	16C	270	(46.8)	(270.3)	9.8	274.3	152.125	675.8	76.50	3.53E-11	2.05E+11	1.07E-02	7.1
117	16C	270	(56.4)	(330.5)	9.7	335.3	166.687	675.8	75.00	3.08E-11	2.05E+11	9.34E-03	7.1
117	16C	270	(66.5)	(390.6)	9.7	396.2	183.500	675.8	73.50	2.70E-11	2.05E+11	8.19E-03	7.1
117	16C	270	(76.8)	(450.7)	9.7	457.2	201.875	675.8	71.00	2.39E-11	2.05E+11	7.25E-03	7.1
117	16C	270	(87.5)	(510.7)	9.7	518.2	221.437	675.8	69.00	2.14E-11	2.05E+11	6.49E-03	7.1
117	16C	270	(97.9)	(565.6)	9.8	574.0	240.250	675.8	65.00	1.96E-11	2.05E+11	5.95E-03	7.1
117	16C	270	(92.2)	(473.9)	11.0	482.8	212.687	675.8	14.50	2.31E-11	2.05E+11	7.01E-03	7.1
117	16C	270	(122.9)	(473.9)	14.5	489.6	222.125	675.8	16.00	2.33E-11	2.05E+11	7.07E-03	7.1
117	16C	270	(150.4)	(474.7)	17.6	498.0	231.000	675.8	18.00	2.33E-11	2.05E+11	7.07E-03	7.1
117	16C	270	(50.9)	(147.9)	19.0	156.4	143.000	675.8	111.50	4.38E-11	2.05E+11	1.33E-02	7.1
117	16C	270	(52.9)	(142.9)	20.3	152.4	143.875	675.8	46.50	4.23E-11	2.05E+11	1.28E-02	7.1
117	16C	270	(58.0)	(157.3)	20.2	167.6	146.375	675.8	48.00	4.18E-11	2.05E+11	1.27E-02	7.1
117	16C	270	(63.0)	(171.7)	20.2	182.9	149.062	675.8	49.00	4.18E-11	2.05E+11	1.27E-02	7.1
117	16C	270	(68.0)	(186.1)	20.1	198.1	151.937	675.8	50.00	4.17E-11	2.05E+11	1.25E-02	7.1
117	16C	270	(73.2)	(200.4)	20.1	213.4	155.062	675.8	51.50	4.08E-11	2.05E+11	1.24E-02	7.1
117	16C	270	(93.3)	(258.0)	19.9	274.3	169.000	675.8	53.50	3.73E-11	2.05E+11	1.13E-02	7.1
117	16C	270	(113.5)	(315.5)	19.8	335.3	185.125	675.8	55.20	3.33E-11	2.05E+11	1.01E-02	7.1
117	16C	270	(133.6)	(373.0)	19.7	396.2	202.875	675.8	57.50	2.95E-11	2.05E+11	8.95E-03	7.1
117	16C	270	(154.3)	(430.4)	19.7	457.2	222.000	675.8	59.50	2.59E-11	2.05E+11	7.86E-03	7.1

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

GO RUN NO.	CON FIG	PAX ANG DEG	*** RADIUS (CM)	ELEVATION (CM)	POLAR ANGLE (DEG)	**CONF 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
117	16C	270	(175.5)	(487.5)	19.8	518.2	242.125	675.8	61.30	2.32E-11	2.05E+11	7.04E-03	7.1
117	16C	270	(175.0)	(539.9)	19.9	574.0	261.187	675.8	63.00	2.12E-11	2.05E+11	6.43E-03	7.1
117	16C	270	(184.3)	(473.6)	21.3	508.2	241.687	675.8	19.00	2.38E-11	2.05E+11	7.22E-03	7.1
117	16C	270	(213.3)	(474.1)	24.2	519.9	251.437	675.8	20.50	2.48E-11	2.05E+11	7.52E-03	7.1
117	16C	270	(70.2)	(147.5)	27.3	166.1	154.500	675.8	113.00	5.23E-11	2.05E+11	1.59E-02	7.1
117	16C	270	(243.4)	(474.1)	27.2	533.1	261.687	675.8	22.50	2.53E-11	2.05E+11	7.67E-03	7.1
117	16C	270	(77.7)	(131.1)	30.6	152.4	155.375	675.8	43.50	7.53E-11	2.05E+11	2.28E-02	7.1
117	16C	270	(85.2)	(144.4)	30.6	167.6	158.562	675.8	42.50	7.53E-11	2.05E+11	2.28E-02	7.1
117	16C	270	(92.7)	(157.6)	30.5	182.9	161.875	675.8	41.50	7.18E-11	2.05E+11	2.18E-02	7.1
117	16C	270	(100.2)	(170.9)	30.4	198.1	165.375	675.8	40.00	6.83E-11	2.05E+11	2.07E-02	7.1
117	16C	270	(107.8)	(184.1)	30.4	213.4	169.062	675.8	37.50	6.53E-11	2.05E+11	1.98E-02	7.1
117	16C	270	(137.9)	(237.2)	30.2	274.3	184.937	675.8	35.00	5.28E-11	2.05E+11	1.60E-02	7.1
117	16C	270	(167.6)	(290.4)	30.0	335.3	202.375	675.8	34.00	4.28E-11	2.05E+11	1.30E-02	7.1
117	16C	270	(197.5)	(343.5)	29.9	396.2	221.187	675.8	32.00	3.63E-11	2.05E+11	1.10E-02	7.1
117	16C	270	(228.2)	(396.2)	29.9	457.2	241.125	675.8	30.30	3.13E-11	2.05E+11	9.50E-03	7.1
117	16C	270	(259.0)	(448.8)	30.0	518.2	261.812	675.8	28.50	2.73E-11	2.05E+11	8.28E-03	7.1
117	16C	270	(287.9)	(496.6)	30.1	574.0	281.375	675.8	26.00	2.43E-11	2.05E+11	7.37E-03	7.1
117	16C	270	(274.4)	(474.0)	30.1	547.7	272.125	675.8	24.00	2.58E-11	2.05E+11	7.83E-03	7.1
117	16C	270	(94.8)	(147.9)	34.0	178.4	165.000	675.8	115.50	1.10E-10	2.05E+11	3.33E-02	7.1
117	16C	270	(128.9)	(148.4)	41.0	196.5	177.562	675.8	118.00	1.68E-10	2.05E+11	5.09E-02	7.1

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

GO RUN NO.	CON FIG	PAX ANG DEG	*** RADIUS (CM)	ELEVATN (CM)	PCLAH 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	695.8	116.40	6.66E-13	7.98E+12	7.64F-03	7.8
106	14	270	(.5)	(152.4)	.2	152.4	119.562	695.8	90.10	4.81E-13	7.98E+12	5.52E-03	7.8
106	14	270	(.3)	(167.6)	.1	167.6	120.375	695.8	92.20	5.46E-13	7.98E+12	6.26F-03	7.8
106	14	270	(.2)	(182.9)	.1	182.9	121.562	695.8	93.70	6.06E-13	7.98E+12	6.95F-03	7.8
106	14	270	(.1)	(198.1)	.0	198.1	123.000	695.8	94.80	6.56F-13	7.98E+12	7.52E-03	7.8
106	14	270	(-.1)	(213.4)	-.0	213.4	124.750	695.8	95.50	6.96F-13	7.98E+12	7.98E-03	7.8
106	14	270	(-.6)	(274.3)	-.1	274.3	134.375	695.8	97.70	7.71E-13	7.98E+12	8.84E-03	7.8
106	14	270	(-1.1)	(335.3)	-.2	335.3	147.562	695.8	99.70	7.81F-13	7.98E+12	8.96E-03	7.8
106	14	270	(.3)	(396.2)	.0	396.2	163.875	695.8	101.50	7.56E-13	7.98E+12	8.67E-03	7.8
106	14	270	(-1.1)	(457.2)	-.1	457.2	181.250	695.8	103.20	7.06E-13	7.98E+12	8.10E-03	7.8
106	14	270	(.2)	(474.0)	.0	474.0	186.750	695.8	8.10	5.76E-13	7.98E+12	6.61E-03	7.8
106	14	270	(-.6)	(518.2)	-.1	518.2	200.500	695.8	105.30	6.46E-13	7.98E+12	7.41F-03	7.8
106	14	270	(-.2)	(574.0)	-.0	574.0	219.000	695.8	106.90	6.06F-13	7.98E+12	6.95E-03	7.8
106	14	270	(31.3)	(474.0)	3.8	475.0	195.062	695.8	13.00	6.16E-13	7.98E+12	7.06F-03	7.8
106	14	270	(60.9)	(474.1)	7.3	478.0	203.500	695.8	17.10	6.26F-13	7.98E+12	7.18F-03	7.8
106	14	270	(26.3)	(148.0)	10.1	150.3	131.562	695.8	119.30	5.56E-13	7.98E+12	6.38E-03	7.8
106	14	270	(26.9)	(150.0)	10.2	152.4	131.875	695.8	87.60	4.91F-13	7.98E+12	5.63E-03	7.8
106	14	270	(29.3)	(165.1)	10.1	167.6	133.562	695.8	86.60	5.76E-13	7.98E+12	6.61F-03	7.8
106	14	270	(31.7)	(180.1)	10.0	182.9	135.500	695.8	84.60	6.46F-13	7.98E+12	7.41F-03	7.8
106	14	270	(34.3)	(195.1)	10.0	198.1	137.750	695.8	83.20	7.26F-13	7.98E+12	8.33E-03	7.8
106	14	270	(36.7)	(210.2)	9.9	213.4	140.187	699.3	81.70	7.54E-13	7.98E+12	8.60F-03	7.8
106	14	270	(46.6)	(270.3)	9.8	274.3	152.062	695.8	79.60	7.79E-13	7.98E+12	8.93E-03	7.8
106	14	270	(56.4)	(330.5)	9.7	335.3	166.687	695.8	77.50	7.21E-13	7.98E+12	8.27E-03	7.8
106	14	270	(66.5)	(390.6)	9.7	396.2	183.500	695.8	75.60	6.56E-13	7.98E+12	7.52F-03	7.8
106	14	270	(76.8)	(450.7)	9.7	457.2	201.875	699.3	73.60	6.05F-13	7.98E+12	6.90F-03	7.8

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

GO RUN NO.	CON FIG	PAX ANG DEG	*** RADIUS (CM)	ELFVATN (CM)	PCLAH ANGLE (DEG)	**CORE RAY (CM)	PUL 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	(87.7)	(510.7)	9.7	518.2	221.500	695.8	71.70	5.49E-13	7.98E+12	6.30F-03	7.8
106	14	270	(97.9)	(564.6)	9.8	574.0	240.250	695.8	70.00	5.41E-13	7.98E+12	6.20F-03	7.8
106	14	270	(92.2)	(473.9)	11.0	482.4	212.687	695.8	18.70	6.26F-13	7.98E+12	7.18F-03	7.8
106	14	270	(122.7)	(474.0)	14.5	489.6	222.062	695.8	20.50	6.26F-13	7.98E+12	7.18E-03	7.8
106	14	270	(150.9)	(474.6)	17.6	498.0	231.125	695.8	22.10	6.36F-13	7.98E+12	7.29F-03	7.8
106	14	270	(50.9)	(147.9)	19.0	156.4	143.000	695.8	122.00	5.86F-13	7.98E+12	6.72F-03	7.8
106	14	270	(52.9)	(142.9)	20.3	152.4	143.875	695.8	45.80	4.86E-13	7.98E+12	5.57F-03	7.8
106	14	270	(58.0)	(157.3)	20.2	167.6	146.375	695.8	47.70	6.66F-13	7.98E+12	7.64F-03	7.8
106	14	270	(63.2)	(171.6)	20.2	182.9	149.125	695.8	48.60	8.06F-13	7.98E+12	9.24F-03	7.8
106	14	270	(92.2)	(175.4)	27.7	198.1	162.000	695.8	51.00	8.64F-13	7.98E+12	9.91F-03	7.8
106	14	270	(73.2)	(200.4)	20.1	213.4	155.062	695.8	53.70	8.66F-13	7.98E+12	9.93F-03	7.8
106	14	270	(93.7)	(267.8)	20.0	274.3	169.125	695.8	56.70	8.56F-13	7.98E+12	9.82F-03	7.8
106	14	270	(113.7)	(315.4)	19.8	335.3	185.187	695.8	59.20	8.09F-13	7.98E+12	9.28E-03	7.8
106	14	270	(133.6)	(373.0)	19.7	396.2	202.875	695.8	61.70	6.66F-13	7.98E+12	7.64F-03	7.8
106	14	270	(154.3)	(430.4)	19.7	457.2	222.000	695.8	63.70	6.81F-13	7.98E+12	7.81F-03	7.8
106	14	270	(175.5)	(487.5)	19.8	518.2	242.125	699.3	66.00	6.25F-13	7.98E+12	7.13E-03	7.8
106	14	270	(195.3)	(539.8)	19.9	574.0	261.250	699.3	68.10	5.82F-13	7.98E+12	6.64F-03	7.8
106	14	270	(184.5)	(473.5)	21.3	508.2	241.750	695.8	23.80	6.46E-13	7.98E+12	7.41E-03	7.8
106	14	270	(213.3)	(474.1)	24.2	519.9	251.437	695.8	25.00	6.36E-13	7.98E+12	7.29E-03	7.8
106	14	270	(76.2)	(147.5)	27.3	166.1	154.500	695.8	124.40	8.76F-13	7.98E+12	1.00E-02	7.8
106	14	270	(243.3)	(474.3)	27.2	533.1	261.562	695.8	26.50	6.46E-13	7.98E+12	7.41F-03	7.8
106	14	270	(85.1)	(144.4)	30.5	167.6	158.500	695.8	42.80	1.35E-12	7.98E+12	1.54F-02	7.8

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

GO 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	(92.5)	(157.7)	30.4	182.9	161.812	695.8	42.00	1.29E-12	7.98E+12	1.47E-02	7.8
106	14	270	(100.1)	(171.0)	30.3	198.1	165.312	695.8	41.30	1.29E-12	7.98E+12	1.47E-02	7.8
106	14	270	(107.7)	(184.2)	30.3	213.4	169.000	695.8	40.40	1.22E-12	7.98E+12	1.39E-02	7.8
106	14	270	(137.7)	(237.3)	30.1	274.3	184.875	695.8	38.40	1.04E-12	7.98E+12	1.19E-02	7.8
106	14	270	(167.6)	(290.4)	30.0	335.3	202.375	695.8	36.60	8.86E-13	7.98E+12	1.02E-02	7.8
106	14	270	(197.3)	(343.6)	29.9	396.2	221.125	695.8	34.80	7.96E-13	7.98E+12	9.13E-03	7.8
106	14	270	(228.0)	(396.3)	29.9	457.2	241.062	695.8	33.00	7.06E-13	7.98E+12	8.10E-03	7.8
106	14	270	(259.0)	(448.8)	30.0	518.2	261.812	695.8	31.50	6.46E-13	7.98E+12	7.41E-03	7.8
106	14	270	(287.6)	(496.8)	30.1	574.0	281.312	695.8	29.60	6.26E-13	7.98E+12	7.18E-03	7.8
106	14	270	(274.1)	(474.2)	30.0	547.7	272.062	695.8	28.10	6.36E-13	7.98E+12	7.29E-03	7.8
106	14	270	(99.8)	(147.9)	34.0	178.4	165.000	695.8	126.30	1.72E-12	7.98E+12	1.97E-02	7.8
106	14	270	(128.9)	(148.4)	41.0	196.5	177.562	695.8	128.70	2.19E-12	7.98E+12	2.51E-02	7.8

117	16C	270	(.5)	(148.0)	.2	148.0	119.375	675.8	107.00	1.63E-12	7.98E+12	1.92E-02	7.8
117	16C	270	(.6)	(152.4)	.2	152.4	119.625	675.8	83.00	1.60E-12	7.98E+12	1.89E-02	7.8
117	16C	270	(.4)	(167.6)	.2	167.6	120.437	675.8	85.00	1.54E-12	7.98E+12	1.82E-02	7.8
117	16C	270	(.2)	(182.9)	.1	182.9	121.562	675.8	86.00	1.48E-12	7.98E+12	1.75E-02	7.8
117	16C	270	(-.1)	(198.1)	-.0	198.1	122.937	675.8	86.50	1.38E-12	7.98E+12	1.63E-02	7.8
117	16C	270	(-.1)	(213.4)	-.0	213.4	124.750	675.8	87.50	1.37E-12	7.98E+12	1.62E-02	7.8
117	16C	270	(-.5)	(274.3)	-.1	274.3	134.437	675.8	89.50	1.20E-12	7.98E+12	1.42E-02	7.8
117	16C	270	(-1.1)	(335.3)	-.2	335.3	147.562	675.8	91.00	1.08E-12	7.98E+12	1.28E-02	7.8
117	16C	270	(-1.2)	(396.2)	-.2	396.2	163.437	675.8	93.00	9.80E-13	7.98E+12	1.16E-02	7.8
117	16C	270	(-.9)	(457.2)	-.1	457.2	181.312	672.4	94.50	9.00E-13	7.98E+12	1.07E-02	7.8
117	16C	270	(-.5)	(474.0)	-.1	474.0	186.562	675.8	4.50	8.00E-13	7.98E+12	9.45E-03	7.8
117	16C	270	(-.4)	(518.2)	-.0	518.2	200.562	675.8	97.00	8.30E-13	7.98E+12	9.80E-03	7.8
117	16C	270	(.4)	(574.0)	.0	574.0	219.125	675.8	98.50	7.30E-13	7.98E+12	8.62E-03	7.8
117	16C	270	(31.3)	(474.0)	3.8	475.0	195.062	675.8	12.00	8.20E-13	7.98E+12	9.68E-03	7.8

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

GO RUN NO.	CON FIG	PAX ANG DEG	*** RAUITS (CM)	ELFVAIN (CM)	POLAR ANGLE (DEG)	**CORE RAY (CM)	POL ANG TAPE READOUT	PAX POWER (W)	FLAPSED TIME	CHAMBER CURRENT (AMPS)	*CON FAC RADS(AL) HR-AMP	RADS(AL) HR-W	PCT. STD DEV
117	16C	270	(61.2)	(474.1)	7.4	478.0	203.562	675.8	13.00	8.40F-13	7.98E+12	9.92F-03	7.8
117	16C	270	(26.3)	(148.0)	10.1	150.3	131.562	675.8	109.50	1.50F-12	7.98E+12	1.77F-02	7.8
117	16C	270	(26.4)	(150.0)	10.2	152.4	131.875	675.8	81.50	1.48F-12	7.98E+12	1.75F-02	7.8
117	16C	270	(29.3)	(165.1)	10.1	167.6	133.562	675.8	81.00	1.38F-12	7.98E+12	1.63F-02	7.8
117	16C	270	(31.4)	(180.1)	10.0	182.9	135.562	675.8	80.00	1.30F-12	7.98E+12	1.54F-02	7.8
117	16C	270	(34.3)	(195.1)	10.0	198.1	137.750	675.8	79.00	1.30F-12	7.98E+12	1.54F-02	7.8
117	16C	270	(36.7)	(210.2)	9.9	213.4	140.187	675.8	78.00	1.28F-12	7.98E+12	1.51E-02	7.8
117	16C	270	(46.8)	(270.3)	9.8	274.3	152.125	675.8	76.50	1.13F-12	7.98E+12	1.33F-02	7.8
117	16C	270	(56.4)	(330.5)	9.7	335.3	166.687	675.8	75.00	1.05F-12	7.98E+12	1.24F-02	7.8
117	16C	270	(66.5)	(390.6)	9.7	396.2	183.500	675.8	73.50	9.70F-13	7.98E+12	1.15F-02	7.8
117	16C	270	(76.8)	(450.7)	9.7	457.2	201.875	675.8	71.00	8.60F-13	7.98E+12	1.02F-02	7.8
117	16C	270	(87.5)	(510.7)	9.7	518.2	221.437	675.8	69.00	8.00E-13	7.98E+12	9.45F-03	7.8
117	16C	270	(97.9)	(565.6)	9.8	574.0	240.250	675.8	65.00	7.80F-13	7.98E+12	9.21F-03	7.8
117	16C	270	(92.2)	(473.9)	11.0	482.8	212.687	675.8	14.50	8.42F-13	7.98E+12	9.94F-03	7.8
117	16C	270	(122.4)	(473.9)	14.5	489.6	222.125	675.8	16.00	8.60F-13	7.98E+12	1.02F-02	7.8
117	16C	270	(150.4)	(474.7)	17.6	498.0	231.000	675.8	18.00	8.75E-13	7.98E+12	1.03F-02	7.8
117	16C	270	(50.4)	(147.5)	19.0	156.4	143.000	675.8	111.50	1.28F-12	7.98E+12	1.51F-02	7.8
117	16C	270	(52.4)	(142.9)	20.3	152.4	143.875	675.8	46.50	1.17F-12	7.98E+12	1.38F-02	7.8
117	16C	270	(58.0)	(157.3)	20.2	167.6	146.375	675.8	48.00	1.18F-12	7.98E+12	1.39F-02	7.8
117	16C	270	(63.0)	(171.7)	20.2	182.9	149.062	675.8	49.00	1.28F-12	7.98E+12	1.51F-02	7.8
117	16C	270	(68.0)	(186.1)	20.1	198.1	151.937	675.8	50.00	1.33E-12	7.98E+12	1.57F-02	7.8
117	16C	270	(73.2)	(200.4)	20.1	213.4	155.062	675.8	51.50	1.33E-12	7.98E+12	1.57F-02	7.8
117	16C	270	(93.3)	(258.0)	19.9	274.3	164.000	675.8	53.50	1.25F-12	7.98E+12	1.48F-02	7.8
117	16C	270	(113.5)	(315.5)	19.8	335.3	185.125	675.8	55.20	1.15E-12	7.98E+12	1.36F-02	7.8
117	16C	270	(133.6)	(373.0)	19.7	396.2	202.875	675.8	57.50	1.03E-12	7.98E+12	1.22F-02	7.8
117	16C	270	(154.3)	(430.4)	19.7	457.2	222.000	675.8	59.50	9.60F-13	7.98E+12	1.13F-02	7.8

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

GO 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
117	16C	270	(175.5)	(487.5)	19.8	518.2	242.125	675.8	61.30	8.60E-13	7.98E+12	1.02E-02	7.8
117	16C	270	(195.0)	(539.9)	19.9	574.0	261.187	675.8	63.00	8.30E-13	7.98E+12	9.80E-03	7.8
117	16C	270	(184.3)	(473.6)	21.3	508.2	241.687	675.8	19.00	8.90E-13	7.98E+12	1.05E-02	7.8
117	16C	270	(213.3)	(474.1)	24.2	519.9	251.437	675.8	20.50	9.20E-13	7.98E+12	1.09E-02	7.8
117	16C	270	(76.2)	(147.5)	27.3	166.1	154.500	675.8	113.00	1.78E-12	7.98E+12	2.10E-02	7.8
117	16C	270	(243.8)	(474.1)	27.2	533.1	261.687	675.8	22.50	9.40E-13	7.98E+12	1.11E-02	7.8
117	16C	270	(77.7)	(131.1)	30.6	152.4	155.375	675.8	43.50	2.43E-12	7.98E+12	2.87E-02	7.8
117	16C	270	(85.2)	(144.4)	30.6	167.6	158.562	675.8	42.50	2.28E-12	7.98E+12	2.69E-02	7.8
117	16C	270	(92.7)	(157.6)	30.5	182.9	161.875	675.8	41.50	2.10E-12	7.98E+12	2.48E-02	7.8
117	16C	270	(100.2)	(170.9)	30.4	198.1	165.375	675.8	40.00	1.93E-12	7.98E+12	2.28E-02	7.8
117	16C	270	(107.8)	(184.1)	30.4	213.4	169.062	675.8	37.50	1.78E-12	7.98E+12	2.10E-02	7.8
117	16C	270	(137.9)	(237.2)	30.2	274.3	184.937	675.8	35.00	1.84E-12	7.98E+12	2.17E-02	7.8
117	16C	270	(329.6)	(61.4)	79.4	335.3	262.375	675.8	34.00	1.53E-12	7.98E+12	1.81E-02	7.8
117	16C	270	(197.6)	(343.5)	29.9	396.2	221.187	675.8	32.00	1.30E-12	7.98E+12	1.54E-02	7.8
117	16C	270	(228.2)	(396.2)	29.9	457.2	241.125	675.8	30.30	1.13E-12	7.98E+12	1.33E-02	7.8
117	16C	270	(259.0)	(448.8)	30.0	518.2	261.812	675.8	28.50	1.48E-12	7.98E+12	1.75E-02	7.8
117	16C	270	(287.9)	(496.6)	30.1	574.0	281.375	675.8	26.00	9.80E-13	7.98E+12	1.16E-02	7.8
117	16C	270	(274.4)	(474.0)	30.1	547.7	272.125	675.8	24.00	9.50E-13	7.98E+12	1.12E-02	7.8
117	16C	270	(99.8)	(147.9)	34.0	178.4	165.000	675.8	115.50	3.08E-12	7.98E+12	3.64E-02	7.8
117	16C	270	(128.9)	(148.4)	41.0	196.5	177.562	675.8	118.00	4.68E-12	7.98E+12	5.53E-02	7.8

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

GO RUN NO.	CON FIG	PAX ANG DEG	*** RADIUS (CM)	ELEVATN (CM)	PCLAN ANGLE (DEG)	**CORE RAY (CM)	POL ANG TAPE READOUT	PAX POWER (W)	ELAPSED TIME	CHAMBER CURRENT (AMPS)	*CON FAC RADS(BE) HR-AMP	RAUS(BE) HR-W	PCT. STD DEV
106	14	270	(.5)	(148.0)	.2	148.0	119.375	695.8	116.40	3.75E-13	8.08E+12	4.35F-03	8.0
106	14	270	(.5)	(152.4)	.2	152.4	119.562	695.8	90.10	3.25E-13	8.08E+12	3.77F-03	8.0
106	14	270	(.3)	(167.6)	.1	167.6	120.375	695.8	92.20	3.65E-13	8.08E+12	4.24F-03	8.0
106	14	270	(.2)	(182.9)	.1	182.9	121.562	695.8	93.70	4.55E-13	8.08E+12	5.28F-03	8.0
106	14	270	(.1)	(198.1)	.0	198.1	123.000	695.8	94.80	4.85E-13	8.08E+12	5.63F-03	8.0
106	14	270	(-.1)	(213.4)	-.0	213.4	124.750	695.8	95.50	5.55E-13	8.08E+12	6.44F-03	8.0
106	14	270	(-.6)	(274.3)	-.1	274.3	134.375	695.8	97.70	6.15E-13	8.08E+12	7.14F-03	8.0
106	14	270	(-1.1)	(335.3)	-.2	335.3	147.562	695.8	99.70	6.15E-13	8.08E+12	7.14F-03	8.0
106	14	270	(.3)	(396.2)	.0	396.2	163.875	695.8	101.50	5.85E-13	8.08E+12	6.79F-03	8.0
106	14	270	(-1.1)	(457.2)	-.1	457.2	181.250	695.8	103.20	5.45E-13	8.08E+12	6.33F-03	8.0
106	14	270	(.2)	(474.0)	.0	474.0	186.750	695.8	8.10	3.75E-13	8.08E+12	4.35F-03	8.0
106	14	270	(-.6)	(518.2)	-.1	518.2	200.500	695.8	105.30	4.95E-13	8.08E+12	5.75F-03	8.0
106	14	270	(-.2)	(574.0)	-.0	574.0	219.000	695.8	106.90	4.45E-13	8.08E+12	5.17F-03	8.0
106	14	270	(31.3)	(474.0)	3.8	475.0	195.062	695.8	13.00	4.15E-13	8.08E+12	4.82F-03	8.0
106	14	270	(60.4)	(474.1)	7.3	478.0	203.500	695.8	17.10	3.95E-13	8.08E+12	4.59F-03	8.0
106	14	270	(26.3)	(148.0)	10.1	150.3	131.562	695.8	119.30	3.75E-13	8.08E+12	4.35F-03	8.0
106	14	270	(26.9)	(150.0)	10.2	152.4	131.875	695.8	87.60	3.05E-13	8.08E+12	3.54F-03	8.0
106	14	270	(29.3)	(165.1)	10.1	167.6	133.562	695.8	86.60	3.55E-13	8.08E+12	4.12F-03	8.0
106	14	270	(31.7)	(180.1)	10.0	182.9	135.500	695.8	84.60	4.15E-13	8.08E+12	4.82F-03	8.0
106	14	270	(34.3)	(195.1)	10.0	198.1	137.750	695.8	83.20	4.75E-13	8.08E+12	5.52F-03	8.0
106	14	270	(36.7)	(210.2)	9.9	213.4	140.187	699.3	81.70	5.25E-13	8.08E+12	6.07F-03	8.0
106	14	270	(46.6)	(270.3)	9.8	274.3	152.062	695.8	79.60	5.75E-13	8.08E+12	6.68F-03	8.0
106	14	270	(56.4)	(330.5)	9.7	335.3	166.687	695.8	77.50	5.45E-13	8.08E+12	6.33F-03	8.0
106	14	270	(66.5)	(390.6)	9.7	396.2	183.500	695.8	75.60	4.75E-13	8.08E+12	5.52F-03	8.0
106	14	270	(76.8)	(450.7)	9.7	457.2	201.875	699.3	73.60	4.05E-13	8.08E+12	4.68F-03	8.0

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

GO RUN NO.	CON FIG	PAX ANG DEG	*** RADIUS (CM)	ELEVATN (CM)	PCLAM 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	(87.7)	(510.7)	9.7	518.2	221.500	695.8	71.70	3.65E-13	8.08E+12	4.24E-03	8.0
106	14	270	(97.9)	(565.6)	9.8	574.0	240.250	695.8	70.00	3.35E-13	8.08E+12	3.89E-03	8.0
106	14	270	(92.2)	(473.9)	11.0	482.8	212.687	695.8	18.70	3.65E-13	8.08E+12	4.24E-03	8.0
106	14	270	(122.7)	(474.0)	14.5	489.6	222.062	695.8	20.50	3.75E-13	8.08E+12	4.35E-03	8.0
106	14	270	(150.9)	(474.6)	17.6	498.0	231.125	695.8	22.10	3.85E-13	8.08E+12	4.47E-03	8.0
106	14	270	(50.9)	(147.9)	19.0	156.4	143.000	695.8	122.00	3.95E-13	8.08E+12	4.59E-03	8.0
106	14	270	(52.9)	(142.9)	20.3	152.4	143.875	695.8	45.80	3.25E-13	8.08E+12	3.77E-03	8.0
106	14	270	(58.0)	(157.3)	20.2	167.6	146.375	695.8	47.70	5.45E-13	8.08E+12	6.33E-03	8.0
106	14	270	(63.2)	(171.6)	20.2	182.9	149.125	695.8	48.60	5.95E-13	8.08E+12	6.91E-03	8.0
106	14	270	(68.2)	(186.0)	20.1	198.1	152.000	695.8	51.00	5.75E-13	8.08E+12	6.68E-03	8.0
106	14	270	(73.2)	(200.4)	20.1	213.4	155.062	695.8	53.70	5.95E-13	8.08E+12	6.91E-03	8.0
106	14	270	(93.7)	(257.8)	20.0	274.3	169.125	695.8	56.70	5.85E-13	8.08E+12	6.79E-03	8.0
106	14	270	(113.7)	(315.4)	19.8	335.3	185.187	695.8	59.20	5.35E-13	8.08E+12	6.21E-03	8.0
106	14	270	(133.6)	(373.0)	19.7	396.2	202.875	695.8	61.70	4.75E-13	8.08E+12	5.52E-03	8.0
106	14	270	(154.3)	(430.4)	19.7	457.2	222.000	695.8	63.70	4.35E-13	8.08E+12	5.05E-03	8.0
106	14	270	(175.5)	(487.5)	19.8	518.2	242.125	699.3	66.00	3.85E-13	8.08E+12	4.45E-03	8.0
106	14	270	(195.3)	(539.8)	19.9	574.0	261.250	699.3	68.10	3.45E-13	8.08E+12	3.99E-03	8.0
106	14	270	(183.3)	(474.0)	21.1	508.2	241.450	695.8	23.80	3.45E-13	8.08E+12	4.01E-03	8.0
106	14	270	(213.3)	(474.1)	24.2	519.9	251.437	695.8	25.00	4.05E-13	8.08E+12	4.70E-03	8.0
106	14	270	(76.2)	(147.5)	27.3	166.1	154.500	695.8	124.40	7.85E-13	8.08E+12	9.12E-03	8.0
106	14	270	(243.3)	(474.3)	27.2	533.1	261.562	695.8	26.50	3.65E-13	8.08E+12	4.24E-03	8.0
106	14	270	(85.1)	(144.4)	30.5	167.6	158.500	695.8	42.80	1.03E-12	8.08E+12	1.20E-02	8.0

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

GO RUN NO.	CON FIG	DAX ANG DEG	*** RADIUS (CM)	ELEVATN (CM)	PCLAH 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	(92.5)	(157.7)	30.4	182.9	161.812	695.8	42.00	9.85E-13	8.08E+12	1.14E-02	8.0
106	14	270	(100.1)	(171.0)	30.3	198.1	165.312	695.8	41.30	9.55E-13	8.08E+12	1.11E-02	8.0
106	14	270	(107.7)	(184.2)	30.3	213.4	169.000	695.8	40.40	8.75E-13	8.08E+12	1.02E-02	8.0
106	14	270	(137.7)	(237.3)	30.1	274.3	184.875	695.8	38.40	7.85E-13	8.08E+12	9.12E-03	8.0
106	14	270	(167.6)	(290.4)	30.0	335.3	202.315	695.8	36.60	6.65E-13	8.08E+12	7.72E-03	8.0
106	14	270	(197.3)	(343.6)	29.9	396.2	221.125	695.8	34.80	5.75E-13	8.08E+12	6.68E-03	8.0
106	14	270	(228.0)	(396.3)	29.9	457.2	241.062	695.8	33.00	4.85E-13	8.08E+12	5.63E-03	8.0
106	14	270	(259.0)	(448.8)	30.0	518.2	261.812	695.8	31.50	4.25E-13	8.08E+12	4.94E-03	8.0
106	14	270	(287.6)	(496.8)	30.1	574.0	281.312	695.8	29.60	3.85E-13	8.08E+12	4.47E-03	8.0
106	14	270	(274.1)	(474.2)	30.0	547.7	272.062	695.8	28.10	4.05E-13	8.08E+12	4.70E-03	8.0
106	14	270	(99.8)	(147.9)	34.0	178.4	165.000	695.8	126.30	1.33E-12	8.08E+12	1.55E-02	8.0
106	14	270	(128.9)	(148.4)	41.0	196.5	177.562	695.8	128.70	1.88E-12	8.08E+12	2.19E-02	8.0

117	16C	270	(.5)	(148.0)	.2	148.0	119.375	675.8	107.00	1.08E-12	8.08E+12	1.29E-02	8.0
117	16C	270	(.6)	(152.4)	.2	152.4	119.625	675.8	83.00	1.08E-12	8.08E+12	1.29E-02	8.0
117	16C	270	(.4)	(167.6)	.2	167.6	120.437	675.8	85.00	1.05E-12	8.08E+12	1.25E-02	8.0
117	16C	270	(.2)	(182.9)	.1	182.9	121.562	675.8	86.00	9.95E-13	8.08E+12	1.19E-02	8.0
117	16C	270	(-.1)	(198.1)	-.0	198.1	122.937	675.8	86.50	8.45E-13	8.08E+12	1.01E-02	8.0
117	16C	270	(-.1)	(213.4)	-.0	213.4	124.750	675.8	87.50	7.35E-13	8.08E+12	8.79E-03	8.0
117	16C	270	(-.5)	(274.3)	-.1	274.3	134.437	675.8	89.50	7.10E-13	8.08E+12	8.49E-03	8.0
117	16C	270	(-1.1)	(335.3)	-.2	335.3	147.562	675.8	91.00	6.85E-13	8.08E+12	8.19E-03	8.0
117	16C	270	(-1.2)	(396.2)	-.2	396.2	163.437	675.8	93.00	5.35E-13	8.08E+12	6.40E-03	8.0
117	16C	270	(-.9)	(457.2)	-.1	457.2	181.312	672.4	94.50	5.30E-13	8.08E+12	6.37E-03	8.0
117	16C	270	(-.5)	(474.0)	-.1	474.0	186.562	675.8	4.50	4.35E-13	8.08E+12	5.20E-03	8.0
117	16C	270	(-.4)	(518.2)	-.0	518.2	200.562	675.8	97.00	4.35E-13	8.08E+12	5.20E-03	8.0
117	16C	270	(.4)	(574.0)	.0	574.0	219.125	675.8	98.50	3.50E-13	8.08E+12	4.18E-03	8.0
117	16C	270	(31.3)	(474.0)	3.8	475.0	195.062	675.8	12.00	4.35E-13	8.08E+12	5.20E-03	8.0

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

GO 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
117	16C	270	(61.2)	(474.1)	7.4	478.0	203.562	675.8	13.00	4.85E-13	8.08E+12	5.80F-03	8.0
117	16C	270	(26.3)	(148.0)	10.1	150.3	131.562	675.8	109.50	9.95E-13	8.08E+12	1.19E-02	8.0
117	16C	270	(26.9)	(150.0)	10.2	152.4	131.875	675.8	81.50	9.25E-13	8.08E+12	1.11E-02	8.0
117	16C	270	(29.3)	(165.1)	10.1	167.6	133.562	675.8	81.00	8.35E-13	8.08E+12	9.98F-03	8.0
117	16C	270	(31.9)	(180.1)	10.0	182.9	135.562	675.8	80.00	7.95E-13	8.08E+12	9.51E-03	8.0
117	16C	270	(34.3)	(195.1)	10.0	198.1	137.750	675.8	79.00	7.65E-13	8.08E+12	9.15E-03	8.0
117	16C	270	(36.7)	(210.2)	9.9	213.4	140.187	675.8	78.00	7.35E-13	8.08E+12	8.79E-03	8.0
117	16C	270	(46.8)	(270.3)	9.8	274.3	152.125	675.8	76.50	6.55E-13	8.08E+12	7.83E-03	8.0
117	16C	270	(56.4)	(330.5)	9.7	335.3	166.687	675.8	75.00	5.65E-13	8.08E+12	6.76E-03	8.0
117	16C	270	(66.5)	(390.6)	9.7	396.2	183.500	675.8	73.50	5.15E-13	8.08E+12	6.16E-03	8.0
117	16C	270	(76.8)	(450.7)	9.7	457.2	201.875	675.8	71.00	4.55E-13	8.08E+12	5.44F-03	8.0
117	16C	270	(87.5)	(510.7)	9.7	518.2	221.437	675.8	69.00	3.95E-13	8.08E+12	4.72E-03	8.0
117	16C	270	(97.9)	(565.6)	9.8	574.0	240.250	675.8	65.00	3.85E-13	8.08E+12	4.60E-03	8.0
117	16C	270	(92.2)	(473.9)	11.0	482.8	212.687	675.8	14.50	4.90E-13	8.08E+12	5.86F-03	8.0
117	16C	270	(122.9)	(473.9)	14.5	489.6	222.125	675.8	16.00	4.85E-13	8.08E+12	5.80E-03	8.0
117	16C	270	(150.4)	(474.7)	17.6	498.0	231.000	675.8	18.00	5.15E-13	8.08E+12	6.16F-03	8.0
117	16C	270	(50.9)	(147.9)	19.0	156.4	143.000	675.8	111.50	8.25E-13	8.08E+12	9.86E-03	8.0
117	16C	270	(52.9)	(142.9)	20.3	152.4	143.875	675.8	46.50	5.75E-13	8.08E+12	6.88F-03	8.0
117	16C	270	(58.0)	(157.3)	20.2	167.6	146.375	675.8	48.00	6.45E-13	8.08E+12	7.71E-03	8.0
117	16C	270	(63.0)	(171.7)	20.2	182.9	149.062	675.8	49.00	6.55E-13	8.08E+12	7.83F-03	8.0
117	16C	270	(68.0)	(186.1)	20.1	198.1	151.937	675.8	50.00	7.45E-13	8.08E+12	8.91E-03	8.0
117	16C	270	(73.2)	(200.4)	20.1	213.4	155.062	675.8	51.50	8.15E-13	8.08E+12	9.74F-03	8.0
117	16C	270	(93.3)	(254.0)	19.9	274.3	169.000	675.8	53.50	7.35E-13	8.08E+12	8.79F-03	8.0
117	16C	270	(113.5)	(315.5)	19.8	335.3	185.125	675.8	55.20	6.85E-13	8.08E+12	8.19F-03	8.0
117	16C	270	(133.6)	(373.0)	19.7	396.2	202.875	675.8	57.50	5.95E-13	8.08E+12	7.11E-03	8.0
117	16C	270	(154.3)	(430.4)	19.7	457.2	222.000	675.8	59.50	5.65E-13	8.08E+12	6.76F-03	8.0

TABLE 4 EXTERNAL ENVIRONMENTAL RESPONSE OF A BERYLLIUM RHAGG-GRAY CHAMBER
TABLE CONTINUED

GO RUN NO.	CON FIG	PAX ANG DEG	*** RADIUS (CM)	ELFVATN (CM)	PCLAH ANGLE (DEG)	**CORE RAY (CM)	PUL ANG TAPE READOUT	PAX POWER (W)	ELAPSED TIME	CHAMFRF CURRENT (AMPS)	*CON FAC RADS(BE) HR-AMP	RADS(BE) HR-W	PCT. STD DEV
117	16C	270	(175.5)	(487.5)	19.8	518.2	242.125	675.8	61.30	4.85F-13	A.08E+12	5.80F-03	8.0
117	16C	270	(145.0)	(539.9)	19.9	574.0	261.187	675.8	63.00	4.05F-13	A.08E+12	4.84F-03	8.0
117	16C	270	(184.3)	(473.6)	21.3	508.2	241.687	675.8	19.00	5.25F-13	A.08E+12	6.24F-03	8.0
117	16C	270	(213.3)	(474.1)	24.2	519.9	251.437	675.8	20.50	5.45F-13	A.08E+12	6.52F-03	8.0
117	16C	270	(76.2)	(147.5)	27.3	166.1	154.500	675.8	113.00	1.23F-12	A.08E+12	1.46F-02	8.0
117	16C	270	(243.8)	(474.1)	27.2	533.1	261.687	675.8	22.50	5.55F-13	A.08E+12	6.64F-03	8.0
117	16C	270	(77.7)	(131.1)	30.6	152.4	155.375	675.8	43.50	1.48E-12	A.08E+12	1.76F-02	8.0
117	16C	270	(45.2)	(144.4)	30.6	167.6	158.562	675.8	42.50	1.48E-12	A.08E+12	1.76F-02	8.0
117	16C	270	(92.7)	(157.6)	30.5	182.9	161.875	675.8	41.50	1.17E-12	A.08E+12	1.40F-02	8.0
117	16C	270	(100.2)	(170.9)	30.4	194.1	165.375	675.8	40.00	2.40E-13	A.08E+12	2.87F-03	8.0
117	16C	270	(107.8)	(184.1)	30.4	213.4	169.062	675.8	37.50	4.75F-13	A.08E+12	5.68F-03	8.0
117	16C	270	(137.9)	(237.2)	30.2	274.3	184.937	675.8	35.00	1.28E-12	A.08E+12	1.54F-02	8.0
117	16C	270	(167.6)	(290.4)	30.0	335.3	202.375	675.8	34.00	1.12E-12	A.08E+12	1.35F-02	8.0
117	16C	270	(147.6)	(343.5)	29.9	396.2	221.187	675.8	32.00	A.55F-13	A.08E+12	1.02E-02	8.0
117	16C	270	(228.2)	(396.2)	29.9	457.2	241.125	675.8	30.30	7.15F-13	A.08E+12	8.55F-03	8.0
117	16C	270	(259.0)	(448.8)	30.0	518.2	261.812	675.8	28.50	6.25F-13	A.08E+12	7.47F-03	8.0
117	16C	270	(247.9)	(496.6)	30.1	574.0	281.375	675.8	26.00	5.55F-13	A.08E+12	6.64F-03	8.0
117	16C	270	(274.4)	(474.0)	30.1	547.7	272.125	675.8	24.00	5.75F-13	A.08E+12	6.88F-03	8.0
117	16C	270	(99.4)	(147.9)	34.0	178.4	165.000	675.8	115.50	2.40E-12	A.08E+12	2.88F-02	8.0
117	16C	270	(128.9)	(144.4)	41.0	196.5	177.562	675.8	118.00	3.67F-12	A.08E+12	4.39F-02	8.0

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XI FORTRAN Listing of DIRECT

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      PROGRAM DIRECT (INPLT,OUTPUT,PUNCH,TAPE5=INPUT,TAPE6=OUTPUT,
1          TAPE7=PUNCH,TAPE10,TAPE14,TAPE11)
C DCF THE NAME OF THIS PROGRAM IS DIRECT DATE=052070
C DCF RENAMED DIRECTA
000003      COMMON IARRAY(5),IOUT(4),OUT(20),DTITLE(11,5,5),IR14(100,10),
1          I14(5),IOUT14(4),OUT14(20),KREC,NPAGE,I,J,NLINES,
2          JF,IF,S17,S18,S19,S20,S15,REP1,REP2,CONF,R14(100,15)
000003      DIMENSION NT(5)
000003      INTEGER REP1 , REP2
000003      DATA NT/ 1H1, 1H2, 1H3, 1H4, 1H5 /
000003      DATA BLANK, LPAREN, NU9,RPAREN / 1H , 1H(, 1H9, 1H) /
000003      PAXANG = 1000.
000005      NLINES = 0
000006      NPAGE = 0
000007      REP1 = 1000
000010      REP2 = 1000
C      READ 11TLES FOR DIRECT TABLES
C      5 TABLES
C      5 LINES PER TABLE
C      2 CARDS PER LINE  FORMAT(11A10)
000011      DO 25 K=1, 5
000012      DO 25 J=1, 5
000013      READ(5,14) (DTITLE(I,J,K),I=1,11)
000030      25  CONTINUE
000034      14  FORMAT(A10)
C      DATA FOR CONFIGURATION 14
C      IR14(1,1)      =      I14(1)      REPORT NUMBER
C      IR14(1,2)      =      I14(2)      REPORT NUMBER SUFFIX
C      IR14(1,3)      =      I14(3)      CONFIGURATION CODE
C      IR14(1,4)      =      ICUT14(1)    RUN NUMBER
C      IR14(1,5)      =      ICUT14(2)    CONFIGURATION
C      IR14(1,6)      =      IOUT14(3)    PAX ANGLE (DEG)
C      IR14(1,7)      =      ICUT14(4)    TOTAL NUMBER OF COUNTS
C      IR14(1,8)      =      I14(5)      R OR THETA INDICATOR
C      R14(1,1)       =      OUT14(2)     POLAR ANGLE (INPUT)
C      R14(1,2)       =      OUT14(5)     ELEVATION(CORE RAY) INPUT
C      R14(1,3)       =      OUT14(8)     RADIUS(POLAR ANGLE) CALCULATED
C      R14(1,4)       =      OUT14(11)    ELEVATION(CORE RAY) CALCULATED
C      R14(1,5)       =      OUT14(13)    POLAR ANGLE READOUT
C      R14(1,6)       =      OUT14(14)    PAX POWER
C      R14(1,7)       =      OUT14(15)    COUNTING TIME(POL ANG READOUT)

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C      K14(1,8)      =      OUT14(16)      UFI CON FACTOR
C      K14(1,9)      =      OUT14(17)      TOTAL(U) FISSION
C      K14(1,10)     =      OUT14(18)      PCI STD DEV
C      K14(1,11)     =      OUT14(19)      NFUTS-CM2-SFC-W
C      K14(1,12)     =      OUT14(20)      PCI. STD. DEV.

000034      REWIND 11
000036      REWIND 10
000040      REWIND 14
000042      4      I = 0
000043      5      READ(14)      I14(1), I14(2), I14(4), (OUT14(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), DELT9, DELT9P

000112      IF(I14(1) .EQ. NG9 .AND. I14(2) .EQ. NG9) GO TO 544
C      CHECK FOR CHANGE IN REPORT NUMBER
000122      IF( I14(1) .EQ. NT(1) .AND. I14(2) .EQ. NT(1) ) GO TO 544
000131      IF( I14(1) .EQ. NT(2) .AND. I14(2) .EQ. NT(2) ) GO TO 544
000140      IF( I14(1) .EQ. NT(3) .AND. I14(2) .EQ. NT(3) ) GO TO 544
000147      IF( I14(1) .EQ. NT(4) .AND. I14(2) .EQ. NT(4) ) GO TO 544
000156      IF( I14(1) .EQ. NT(5) .AND. I14(2) .EQ. NT(5) ) GO TO 544

C
C      N14 NUMBER OF RECCORDS FOR CONFIG 14 PER REPORT NUMBER
000165      6      I = I + 1
000167      104     CONTINUE
000167      DO 33 N=1, 5
000171      IF(I14(1) .EQ. NT(N) ) GO TO 39
000173      33     CONTINUE
000175      39     L = N
C      STORAGE ARRAYS FOR CONFIGURATION 14 DATA
000177      102     CONTINUE
000177      I14(1,1) = I14(1)
000201      I14(1,2) = I14(2)
000203      I14(1,3) = I14(4)
000204      I14(1,4) = OUT14(1)
000206      I14(1,5) = OUT14(2)
000207      I14(1,6) = OUT14(3)
000211      I14(1,7) = OUT14(4)
000212      I14(1,8) = I14(5)
000214      R14(I,1) = OUT14(2)
000215      R14(I,2) = OUT14(5)
000217      R14(I,3) = OUT14(8)
000220      R14(I,4) = OUT14(11)
000222      R14(I,5) = OUT14(13)

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000223      R14(I,6) = OUT14(14)
000225      R14(I,7) = OUT14(15)
000226      R14(I,8) = OUT14(16)
000230      R14(I,9) = OUT14(17)
000231      R14(I,10) = OUT14(18)
000233      R14(I,11) = OUT14(19)
000234      R14(I,12) = OUT14(20)
000236      R14(I,13) = OUT14(1)
000237      N14 = I
000240      GO TO 5
000241      101 CONTINUE
000241      544 CONTINUE
000241      IX = I
000242      I1 = U
000243      IND1 = 0
000244      C READ DATA FOR ALL CONFIGURATIONS EXCEPT CONFIG 14
13      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)
2,DEL19,DELTOP
000311      NEND = 0
000312      C IF(IARRAY(1) .EQ. NO9 .AND. IARRAY(2) .EQ. NO9) NEND = 1
C CHECK FOR CHANGE IN REPORT NUMBER
000323      IF( IARRAY(1) .EQ. NT(1) .AND. IARRAY(2) .EQ. NT(1) ) GO TO 4
000332      IF( IARRAY(1) .EQ. NT(2) .AND. IARRAY(2) .EQ. NT(2) ) GO TO 4
000341      IF( IARRAY(1) .EQ. NT(3) .AND. IARRAY(2) .EQ. NT(3) ) GO TO 4
000350      IF( IARRAY(1) .EQ. NT(4) .AND. IARRAY(2) .EQ. NT(4) ) GO TO 4
000357      IF( IARRAY(1) .EQ. NT(5) .AND. IARRAY(2) .EQ. NT(5) ) GO TO 902
000366      IF(NEND .EQ. 1) GO TO 902
000370      204 CONTINUE
000370      DO 34 N = 1, 5
000372      IF(IARRAY(1) .EQ. NT(N)) GO TO 49
000374      34 CONTINUE
000376      49 K = N
000400      202 CONTINUE
000400      IF(L .NE. K) GO TO 804
C FIND MATCH FOR CORE RAY FROM CONFIG 14
C FPA IS THE POLAR ANGLE BEING PHOCESSED
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
000402      FPA = OUT(8)

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000404      FCR = OUT(1)
C      CHECK FOR CHANGE IN CONFIGURATION
000405      IF (IND1 .EQ. 0) IF1G = IARRAY(4)
000410      IND1 = 1
000411      IF (IF1G .EQ. IARRAY(4) ) GO TO 499
C      RESET CHANGE OF CONFIGURATION INDICATOR
C      RESET CONFIG 14 DATA COUNTER
000413      IND1 = 0
000414      IX = 1
000415      I1 = 0
000416      499 CONTINUE
000416      IF (IX .NE. 1) GO TO 502
000420      501 I1 = I1 + 1
000422      502 CONTINUE
000422      IF (I1 .GT. 14) GO TO 544
000426      IF (FPA .NE. R14(I1,3) ) GO TO 703
000430      IF (FCR .EQ. R14(I1,4) ) GO TO 589
C      IF CORE RAY IN PROCESS IS GREATER THAN CORE RAY FROM CONFIG
C      14 DATA THEN INCREMENT CONFIG 14 DATA COUNTER OTHERWISE
C      READ THE NEXT RECORD
000432      IF (FCR .GT. R14(I1,4) ) GO TO 501
000435      IX = 0
000435      GO TO 13
000436      703 IF (FPA .GT. R14(I1,3) ) GO TO 501
000442      IX = 0
000442      GO TO 13
000443      589 CONTINUE
C      MATCH IS FOUND
000443      IX = 1
000444      IF = I1
000446      1001 IF (L .NE. 1 .AND. K .NE. 1) GO TO 1002
C      CALCULATE DIRECT FCR REPORT 1
C      SUBTRACT TOTAL(U) FISSION GM-SEC-W OUT(17)
000456      SAVE2 = OUT(17)
000457      S17 = OUT(17) - R14(IF,9)
000462      OUT(17) = S17
C      TENTATIVE ERROR FORMULA FOR SUBTRACTION TO GET PCT. STD. DEV.
C      THE FOLLOWING CARDS WERE DELETED
C      S18 = OUT(18) - R14(IF,10)
C      OUT(18) = S18
C      THE FOLLOWING CARDS WERE ADDED TO OBTAIN PCT. STD. DEV. FOR FISSION/GM
C      MIXED MODE PERMITTED ON CDC 6600

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000463      TOTALC = IOUT(4)
000464      TCBKG = IR14(IF,7) - 0.5
000467      SIGMA1 = SQRT(92.16 + ( SAVE2 **2 * ( 4.0 + 10000.0 / TOTALC )
1 R14(IF,9) **2 * ( 4.0 + 10000.0 / TCBKG ) ) / ( SAVE2 - R14(IF,9
2))**2 )
000507      OUT(18) = SIGMA1
C      SUBTRACT NEUT-CM2-SEC-W
000510      SAVE2 = OUT(19)
000511      S19 = OUT(19) - R14(IF,11)
000514      OUT(19) = S19
C      ERROR FORMULA FOR PCT. STD. DEV
C      THE FOLLOWING CARDS WERE DELETED
C      S20 = OUT(20) - R14(IF,12)
C      OUT(20) = S20
C      THE FOLLOWING CARDS WERE ADDED TO OBTAIN PCT.STD.DEV.FOR NEUTS/CM2
000515      SIGMA2 = SQRT( 116.64 + ( SAVE2 **2 * ( 4.0 + 10000.0 / TOTALC ) +
1 R14(IF,11) **2 * ( 4.0 + 10000.0 / TCBKG ) ) / ( SAVE2 - R14(IF,11
2) ) **2 )
000535      OUT(20) = SIGMA2
000536      GO TO 618
000536      1002 CONTINUE
C      CALCULATE DIRECT FOR TABLES 2, 3, 4
000536      SAVE2 = OUT(18)
000540      S18 = OUT(18) - R14(IF,10)
000542      OUT(18) = S18
C      CALCULATE RADS(C), RADS(AL), RADS(BE) DEPENDING UPON REPORT NO
C      THE FOLLOWING CARDS WERE DELETED
C      S19 = OUT(19) - R14(IF,11)
C      OUT(19) = S19
C      THE FOLLOWING CARDS WERE ADDED TO TO OBTAIN RADS(C),RADS(AL),AND
C      RADS(BE)
000543      IF(IAHAY(1).EG.NT(3)) GO TO 1003
000545      IF(IAHAY(1).EG.NT(4)) GO TO 1004
000546      C02 = SQRT( 38.0 + ( 3.6 / ( SAVE2 - R14(IF,10) ) ) **2 * ( SAVE2
1 **2 + R14(IF,10) **2 ) )
000562      OUT(19) = C02
000563      GO TO 1005
000563      1003 CONTINUE
C      3.8 = CHAMBER CALIBRATION FROM BGOMFIT FOR AL.BG.
000563      AL = SQRT(3.8 **2 + 34.0 + ( 4.0 + DELT9 **2 ) * ( SAVE2 **2 + R
114(IF,10) **2 ) / ( SAVE2 - R14(IF,10) ) **2 )

```

```

000602      OUT(15) = AI
000603      GO TO 1005
000603  1004 CONTINUE
C      4.1 = CHAMBER CALIBRATION FROM BGOMFIT FOR HE.BG.
000603      HE = SQRT( 4.1 **2 + 34.0 + ( 4.0 + DELT9P **2 ) * ( SAVE2 **2 + R
114(IF,10) **2 ) / ( SAVE2 - R14(IF,10) ) **2 )
000622      OUT(15) = HE
000623  1005 CONTINUE
C      DIFFERENCE IN ELAPSED TIME
000623      S15 = OUT(15) - R14(IF,7)
000626      OUT(15) = S15
000627      GO TO 618
C      CALCULATE DIRECT FOR REPORT 5
000627  618 CONTINUE
000627      CALL PRINTER(L,K)
000631      CALL RTIER
000632      GO TO 13
000633  500 CONTINUE
000633  804 WRITE(6,R07)
000637  807 FORMAT(66H0 **ERROR** REPORT NUMBER FOR DATA FROM CONFIG 14 DOES
1 NOT MATCH THE ONE IN PROCESS )
C      RESET INDEX COUNTER AND STORE NUMBER OF PREVIOUS RECORDS
000637      IF(NEND.EQ.1) GO TO 402
000641      GO TO 13
000642  402 CONTINUE
000642  301 CONTINUE
000642      REWIND 10
000644      REWIND 14
000646      WRITE(11) (N09,I=1,21)
000656      REWIND 11
000660      STOP
000662      END

```

PROGRAM LENGTH INCLUDING I/O BUFFERS
015240

FUNCTION ASSIGNMENTS

STATEMENT ASSIGNMENTS

4	-	000042	5	-	000043	6	-	000165	13	-	000244
14	-	000703	39	-	000175	49	-	000376	101	-	000241
102	-	000177	104	-	000167	202	-	000400	204	-	000370
301	-	000642	499	-	000416	500	-	000633	501	-	000420
502	-	000422	544	-	000241	589	-	000443	618	-	000627
703	-	000436	804	-	000633	807	-	000723	902	-	000642
1001	-	000446	1002	-	000536	1003	-	000563	1004	-	000603
1005	-	000623									

BLOCK NAMES AND LENGTHS
- 005440

VARIABLE ASSIGNMENTS

AL	-	001062	BE	-	001063	BLANK	-	001032	CO2	-	001061
DELT9	-	001040	DELT9P	-	001041	DTITLE	-	000035C01	FCR	-	001052
FPA	-	001051	I	-	002467C01	IARRAY	-	000000C01	IF	-	002473C01
IFIG	-	001053	IND1	-	001047	IOUT	-	000005C01	IOUT14	-	002435C01
IR14	-	000460C01	IX	-	001045	I1	-	001046	I14	-	002430C01
J	-	002470C01	K	-	001037	L	-	001043	LPAREN	-	001033
N	-	001042	NEAD	-	001050	NLINES	-	002471C01	NO9	-	001034
NPAGE	-	002466C01	NT	-	001025	N14	-	001044	OUT	-	000011C01
OUT14	-	002441C01	PAXANG	-	001036	REP1	-	002501C01	REP2	-	002502C01
RPAREN	-	001035	M14	-	002504C01	SAVE2	-	001054	SIGMA1	-	001057
SIGMA2	-	001060	S15	-	002500C01	S17	-	002474C01	S18	-	002475C01
S19	-	002476C01	ICRKG	-	001056	TOTALC	-	001055			

START OF CONSTANTS
000664

START OF TEMPORARIES
000740

START OF INDIRECTS
001000

UNUSED COMPILER SPACE

107700

```

SUBROUTINE PRINTER(NR14,NR)
000005 COMMON IARRAY(5),IOUT(4),OUT(20),DTITLE(11,5,5),IR14(100,10),
1 I14(5),IOUT14(4),OUT14(20),KREC,NPAGE,I,J,NLINES,
2 JF,IF,S17,S18,S19,S20,S15,REP1,REP2,CONF,R14(100,15)
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 500
000012 M = NR14
000013 N = NR
000014 DO 10 K1=1,5
000015 IF(IR14(IF,1) .EQ. NT(K1) ) GO TO 15
000021 10 CONTINUE
000023 15 K2 = K1
000025 K3 = K2
C CHECK FOR NEW TABLE
000026 20 IF(NPAGE .EQ. 0) GO TO 30
000027 IF(K2 .EQ. REP1) GO TO 40
000031 30 NPAGE = 0
000032 NLINES = 0
C STORE NEW REPORT NUMBER
000033 REP1 = K2
000034 REP2 = K3
000036 GO TO 50
C CHECK FOR NEW CONFIGURATION
000036 40 IF(CONF .EQ. IARRAY(4) ) GO TO 60
C INDICATE CHANGE IN PRINTED OUTPUT BY A LINE OF ASTERISKS
C PLUS TWO BLANK LINES
000040 WRITE(6,1000)
000044 NLINES = NLINES + 3
C STORE NEW CONFIGURATION
000046 50 CONF = IARRAY(4)
000050 GO TO 70
C CHECK FOR NEW PAX ANGLE
000052 60 IF( PAXANG .EQ. IOUT(3) ) GO TO 80
C INDICATE CHANGE IN PRINTED OUTPUT BY TWO BLANK LINES
000055 WRITE(6,1001)
000060 NLINES = NLINES + 2
C STORE NEW PAX ANGLE

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000062      70  PAXANG = IOT(3)
000064      80  CONTINUE
000064      90  GO TO 505
000066      500  WRITE(6,501) NR14, NR
000076      501  FORMAT(45H0***ERROR*** REPORT  NUMBERS DO NOT MATCH
000076      1000 FORMAT(1H / 1X, 108(1H*) / )
000076      1001 FORMAT(1H0)
000076      1002 FORMAT(1H )
000076      505  CONTINUE
000076      POLANG = OUT(4)
000100      RETURN
000100      END

```

•216)

SUBPROGRAM LENGTH
000143

FUNCTION ASSIGNMENTS

STATEMENT ASSIGNMENTS

15	-	000023	20	-	000026	30	-	000031	40	-	000036
50	-	000046	60	-	000052	70	-	000062	80	-	000064
500	-	000066	501	-	000104	505	-	000076	1000	-	000113
1001	-	000117	1002	-	000121						

BLOCK NAMES AND LENGTHS
- 005440

VARIABLE ASSIGNMENTS

CONF	-	002503C01	DTITLE	-	000035C01	IARRAY	-	000000C01	IF	-	002473C01
IOUT	-	000005C01	IOUT14	-	002435C01	IR14	-	000460C01	I14	-	002430C01
K1	-	000137	K2	-	000140	K3	-	000141	M	-	000135
N	-	000136	NLINES	-	002471C01	NPAGE	-	002466C01	NT	-	000127
OUT	-	000011C01	OUT14	-	002441C01	PAXANG	-	000142	POLANG	-	000134
REP1	-	002501C01	REP2	-	002502C01	R14	-	002504C01			

START OF CONSTANTS
000102

START OF TEMPORARIES
000123

START OF INDIRECTS
000125

UNUSED COMPILER SPACE
112300

```

SUBROUTINE WITER
COMMON IARRAY(5),IOUT(4),OUT(20),DTITLE(11,5,5),IR14(100,10),
1      I14(5),IOUT14(4),OUT14(20),KREC,NPAGE,I,J,NLINES,
2      JF,IF,S17,S18,S19,S20,S15,REF1,REF2,CONF,H14(100,15)
000002 DATA BLANK, LPAREN, ROP, RPAREN / 1H, 1H, 1H, 1H /
000002 INTEGER REF1, REF2, CONF
000002 K4 = REF1
C      SHOULD A NEW PAGE BE STARTED
000004 IF(NLINES .GT. 0 .AND. NLINES .LT. 40) GO TO 50
C      INCREMENT PAGE COUNTER AND REINITIALIZE LINE COUNTER
000013 NPAGE = NPAGE + 1
000014 NLINES = 0
000015 WRITE(6,1000) (DTITLE(I,1,K4),I=1,11)
000031 NLINES = NLINES + 1
000033 IF(NPAGE .GT. 1) GO TO 30
000036 DO 25 J=2,5
000037 WRITE(6,1002) (DTITLE(I,J,K4), I=1,11)
000054 25 CONTINUE
000056 WRITE(6,1001)
000062 NLINES = NLINES + 7
000064 GO TO 40
000064 30 WRITE(6,1003)
000070 NLINES = NLINES + 3
000072 40 IF(REF1 .EQ. 1) WRITE(6,1011)
000100 IF(REF1 .EQ. 2) WRITE(6,1012)
000106 IF(REF1 .EQ. 3) WRITE(6,1013)
000114 IF(REF1 .EQ. 4) WRITE(6,1014)
000122 IF(REF1 .EQ. 5) WRITE(6,1015)
000130 NLINES = NLINES + 5
000132 50 IF(REF1.EQ.1) WRITE(6,1021) IOUT(1),IR14(IF,4),IOUT(2),
1 IOUT(3),LPAREN,OUT(2),RPAREN,LPAREN,OUT(5),RPAREN,OUT(8),
2 OUT(13), OUT(11), (OUT(I),I=17,20)
000200 IF(REF1.GT.1 .AND. REF1.LT.5) WRITE(6,1022) IOUT(1),IR14(IF,4),
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)
000253 IF(REF1 .EQ. 5) WRITE(6,1025)
000261 NLINES = NLINES + 1
000263 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)
000324 1000 FORMAT(1H1,11A11)
000324 1001 FORMAT(1H0)

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000324 1002 FORMAT(1H , 11A10)
000324 1003 FORMAT(45X, 27H DIRECT TABLE CONTINUED // )
000324 1011 FORMAT(2X,2HG0,5X,2HG0,44X,5HPOLAR,13X,6HDIRECT,13X,6HDIRECT /
12X,3HRUN,4X,3HRUN,11X,3HPAX,22X,5HPOLAR,2X,5HANGLE,5X,4HCORE,4X,
28HTOTAL(U),4X,3HPCT,4X,5HNEUTS,7X,4HPCT. / 2X,3HNO. , 4X, 3HNO.,
35X,3HCON,3X,3HANG,3X, 6HRADIUS,3X, 7HELEVATN,3X, 5HANGLE, 2X, 4HTA
4PE, 6X, 3HRAY, 5X, 4HFISS, 8X, 3HSTD, 4X, 9HCM2-SEC-W, 3X, 3HSTD /
52X, 5HTOTAL, 2X, 4HBKGD, 4X, 3HFIG, 3X, 3HDEG, 4X, 4H(CM), 6X, 4H
6(CM), 4X, 5H(DEG), 2X,7HREADOUT,3X,4H(CM), 4X, 8HGM-SEC-W,4X, 3HDE
7V, 4X, 9HE 1.5MEV, 3X, 3HDEV / )
000324 1012 FORMAT(2X,2HG0,5X,2HG0, 47X, 5HPOLAR /
12X,3HRUN,4X,3HRUN,11X,3HPAX,22X,5HPOLAR,5X,5HANGLE,8X,4HCORE, 5X,
2 6HDIRECT, 7X, 3HPCT / 2X,3HNO. , 4X, 3HNO.,
3 5X,3HCON,3X,3HANG,3X, 6HRADIUS,3X,7HELEVATN,3X,5HANGLE, 5X,4HTAPE
4,9X,3HRAY,6X, 9HRADS(C) , 4X,3HSTD, 8X, 7HELAPSED /
52X,5HTOTAL,2X,4HBKGD,4X,3HFIG,3X,3HDEG,4X,4H(CM),6X,4H(CM), 4X,
65H(DEG),4X,7HREADOUT,7X,4H(CM),6X,4HHR-W, 8X,3HDEV,9X,4HTIME / )
000324 1013 FORMAT(2X,2HG0,5X,2HG0, 47X, 5HPOLAR /
12X,3HRUN,4X,3HRUN,11X,3HPAX,22X,5HPOLAR,5X,5HANGLE,8X,4HCORE, 5X,
2 6HDIRECT, 7X, 3HPCT / 2X,3HNO. , 4X, 3HNO.,
3 5X,3HCON,3X,3HANG,3X, 6HRADIUS,3X,7HELEVATN,3X,5HANGLE, 5X,4HTAPE
4,9X,3HRAY,6X, 9HRADS(AL) , 4X,3HSTD, 8X, 7HELAPSED /
52X,5HTOTAL,2X,4HBKGD,4X,3HFIG,3X,3HDEG,4X,4H(CM),6X,4H(CM), 4X,
65H(DEG),4X,7HREADOUT,7X,4H(CM),6X,4HHR-W, 8X,3HDEV,9X,4HTIME / )
000324 1014 FORMAT(2X,2HG0,5X,2HG0, 47X, 5HPOLAR /
12X,3HRUN,4X,3HRUN,11X,3HPAX,22X,5HPOLAR,5X,5HANGLE,8X,4HCORE, 5X,
2 6HDIRECT, 7X, 3HPCT / 2X,3HNO. , 4X, 3HNO.,
3 5X,3HCON,3X,3HANG,3X, 6HRADIUS,3X,7HELEVATN,3X,5HANGLE, 5X,4HTAPE
4,9X,3HRAY,6X, 9HRADS(BE) , 4X,3HSTD, 8X, 7HELAPSED /
52X,5HTOTAL,2X,4HBKGD,4X,3HFIG,3X,3HDEG,4X,4H(CM),6X,4H(CM), 4X,
65H(DEG),4X,7HREADOUT,7X,4H(CM),6X,4HHR-W, 8X,3HDEV,9X,4HTIME / )
000324 1015 FORMAT(15HONO FORMAT GIVEN )
000324 1021 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 )
000324 1022 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,F5.1,7X,F6.1)
000324 1025 FORMAT(15HONC FORMAT GIVEN )
000324 RETURN
000325 END

```

SUBPROGRAM LENGTH
000725

FUNCTION ASSIGNMENTS

STATEMENT ASSIGNMENTS

30	-	000064	40	-	000072	50	-	000132	1000	-	000332
1001	-	000335	1002	-	000337	1003	-	000342	1011	-	000350
1012	-	000433	1013	-	000512	1014	-	000571	1015	-	000650
1021	-	000654	1022	-	000671	1025	-	000705			

BLOCK NAMES AND LENGTHS
- 005440

VARIABLE ASSIGNMENTS

BLANK	-	000720	CONF	-	002503C01	DTITLE	-	000035C01	I	-	002467C01
IAWAY	-	000000C01	IF	-	002473C01	IOUT	-	000005C01	IOUT14	-	002435C01
IR14	-	000440C01	114	-	002430C01	J	-	002470C01	K4	-	000724
LPAREN	-	000721	NLINES	-	002471C01	N09	-	000722	NPAGE	-	002466C01
OUT	-	000011C01	OUT14	-	002441C01	RFP1	-	002501C01	RFP2	-	002502C01
RPAKEN	-	000723	R14	-	002504C01						

START OF CONSTANTS
000327

START OF TEMPORARIES
000711

START OF INDIRECTS
000720

UNUSED COMPILER SPACE
110700

CORE MAP 15.41.18. NORMAL CONTROL 000100 031605

TIME	LCAD	MODE	L1	L2	TYPE	USER	CALL	FWA LOAD	LWA LOAD
FWA LOADER	143756				FWA TABLES	141555			
PROGRAM					ADDRESS				
--Labeled--COMMON--									
DIRECT	000100								
PRINTER	015340								
RITER	015503								
SYSTEM	016504								
					WXPCOM			016430	
					SCOPE2			016504	
INPUTC	017661								
REWINM	017766								
INPUTB	020040								
SORT	020136								
OUTPTC	020201								
OUTPTH	020277								
STOP	020357								
KRAKER	021442								
DATSHS	022500								
GETRA	022731								
KODER	022750								
ENTRY					ADDRESS				
DIRECT	000101								
PRINTER	015341				DIRECT			000730	
RITER	015504				DIRECT			000731	
DANTHY	016505				DIRECT			000102	
SYSTEM	016755				INPUTC			017721	
					REWINM			020024	
					INPUTB			020060	
					SORT			020163	
					OUTPTC			020263	
					OUTPTH			020347	
					KRAKER			022236	022262
					KODER			023756	
SYSTEMC	016673								
SYSTEMP	016722								
FND	016616				DIRECT			000763	
					PRINTER			015441	
					RITER			016031	
STOP	016646				DIRECT			000761	
EXIT	016640								
ABNORMAL	016656				INPUTC			017722	

		REWIND	020025					
		INPUT	020061					
		OUTPUT	020264					
		OUTPUT	020350					
		KRAKEN	022263					
		KODER	023757					
WXPRESS	017376							
WXPRES	017372							
INPUTC	017663	DIRECT	000114	000124	000127			
REWIND	017767	DIRECT	000135	000137	000141	000743	000745	000757
INPUTH	020042	DIRECT	000144	000146	000150	000152	000156	000162
			000166	000170	000172	000176	000202	000204
			000210	000211	000345	000347	000351	000353
			000363	000365	000367	000371	000373	000377
			000405	000407	000410			
SHORT	020137	DIRECT	000605	000633	000660	000700	000720	
OUTPUT	020203	DIRECT	000735	000736				
		PRINTK	015402	015403	015416	015417	015430	015432
			015435					
		WRITE	015522	015530	015533	015543	015553	015556
			015564	015571	015572	015601	015602	015607
			015615	015616	015623	015624	015631	015632
			015643	015645	015647	015651	015653	015655
			015661	015663	015665	015667	015671	015673
			015702	015714	015716	015720	015722	015724
			015730	015732	015734	015736	015740	015742
			015746	015750	015752	015754	015755	015762
OUTPUT	020316	DIRECT	000747	000752	000755			
		WRITE	015767	015771	015773	015775	016001	016005
			016011	016013	016015	016021	016025	016026
CI01.	021203	REWIND	020012	020014				
CI11.	021214	REWIND	020005					
DATA.	020361	INPUTC	017671					
		OUTPUT	020212					
		KRAKEN	022235	022265	022273	022304		
SIO.CIL	020365	SYSTEM	017174					

		REWIND	020001					
TRFA.	020362	INPUTC	017667					
		OUTPTC	020210					
TRFR.	020363	INPUTC	017670					
		OUTPTC	020211					
TNITL.	020405	SYSTEM	017172	017131				
		INPUTC	017674					
		REWIND	017777					
		INPUTB	020076					
		OUTPTC	020215					
		OUTPTB	020337					
SIO.	020452	SYSTEM	017133					
		INPUTC	017733					
		INPUTB	020052	020065	040101			
		OUTPTC	020242					
		OUTPTB	020304	020327	020333	020343		
SIO.END	021157	SYSTEM	017202					
		REWIND	020003					
OPEN.	021222	SYSTEM	017304					
RDPRU.	021262							
RKSPRU.	021277							
POSFI.	021310							
MVWDS.	021427							
KRAKER	021443	INPUTC	017706	017665				
DATSR.	022502	INPUTC	017671	017731	017703	017737	017745	
		OUTPTC	020222	020235	040212	020243		
		OUTPTB	020311	020302	040325			
GETRA	022732	REWIND	017774					
		SIO\$	020407					
KODFR	022751	OUTPTC	020225	020205				

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

REFERENCES

XII Sample Output from DIRECT

TABLE 1 DIRECT EXT ENVIRONMENTAL RESPONSE OF A CU-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 CU ELIMINATES ALL U-235 RESPONSE
 ** DISTANCE FROM CORE CENTER
 *** RADIAL DISTANCE FROM AXIAL CENTERLINE

GN RUN NO.	GN RUN NO.	CON FIG	PAX ANG DEG	RADIUS (CM)	ELEVATN (CM)	POLAR ANGLE (DEG)	POLAR ANGLE TAPE HEADOUT	CORE RAY (CM)	DIRECT TOTAL (U) FISS GM-SFC-W	PCT STD DEV	DIRECT NEUTS CM2-SEC-W E 1.5MEV	PCT. STD DEV
118	107	16C	270	(.5)	(152.4)	0.0	119.562	152.4	8.12F-01	10.1	5.78E+02	11.2
118	107	16C	270	(.0)	(167.6)	0.0	120.250	167.6	8.86F-01	10.1	4.89E+02	11.3
118	107	16C	270	(-.2)	(182.9)	0.0	121.375	182.9	5.40F-01	10.3	3.84E+02	11.5
118	107	16C	270	(-.4)	(198.1)	0.0	122.812	198.1	4.34E-01	10.6	3.09E+02	11.7
118	107	16C	270	(-.7)	(213.4)	0.0	124.500	213.4	3.79F-01	10.9	2.70E+02	11.9
118	107	16C	270	(-1.3)	(274.3)	0.0	134.125	274.3	2.41F-01	12.0	1.71E+02	12.9
118	107	16C	270	(-2.2)	(335.3)	0.0	147.187	335.3	1.83F-01	12.6	1.30E+02	13.6
118	107	16C	270	(-2.4)	(396.2)	0.0	163.062	396.2	1.22F-01	14.5	8.68E+01	15.3
118	107	16C	270	(-2.3)	(457.2)	0.0	180.937	457.2	9.75F-02	15.2	6.94F+01	16.0
118	107	16C	270	(.4)	(474.0)	0.0	186.812	474.0	1.07F-01	14.0	7.59E+01	14.9
118	107	16C	270	(-2.2)	(518.2)	0.0	200.125	518.2	9.96F-02	14.1	7.09E+01	14.9
118	107	16C	270	(7.5)	(574.0)	0.0	220.687	574.0	8.48F-02	14.6	6.03E+01	15.4
118	107	16C	270	(31.3)	(474.0)	3.8	195.062	475.0	1.04E-01	14.1	7.40E+01	14.9
118	107	16C	270	(41.2)	(474.1)	7.4	203.562	478.0	1.13F-01	13.5	8.06E+01	14.4
118	107	16C	270	(26.9)	(150.0)	10.0	131.875	152.4	7.48E-01	10.1	5.32E+02	11.2
118	107	16C	270	(29.3)	(165.1)	10.0	133.562	167.6	6.32F-01	10.2	4.50E+02	11.3
118	107	16C	270	(31.9)	(180.1)	10.0	135.562	182.9	4.95F-01	10.4	3.52E+02	11.5
118	107	16C	270	(34.3)	(195.1)	10.0	137.750	198.1	4.37F-01	10.5	3.11E+02	11.6
118	107	16C	270	(36.6)	(210.2)	10.0	140.125	213.4	3.89E-01	10.7	2.77E+02	11.8
118	107	16C	270	(46.6)	(270.3)	10.0	152.062	274.3	2.53E-01	11.6	1.80F+02	12.6
118	107	16C	270	(56.6)	(330.5)	10.0	166.750	335.3	1.81F-01	12.6	1.29E+02	13.6
118	107	16C	270	(66.5)	(390.6)	10.0	183.500	396.2	1.46F-01	13.1	1.04E+02	14.0
118	107	16C	270	(77.1)	(450.7)	10.0	201.937	457.2	1.15F-01	13.9	8.22E+01	14.7
118	107	16C	270	(87.7)	(510.7)	10.0	221.500	518.2	1.10F-01	13.2	7.81E+01	14.1
118	107	16C	270	(97.6)	(565.7)	10.0	240.187	574.0	9.45F-02	13.7	6.72E+01	14.6
118	107	16C	270	(92.2)	(473.9)	11.0	212.687	482.8	1.24F-01	12.8	8.83F+01	13.8
118	107	16C	270	(122.7)	(474.0)	14.5	222.062	489.6	1.36F-01	12.5	9.68E+01	13.4

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

GO RUN NO. TOTAL	GO RUN NO. BKGD	CON FIG	PAX ANG DEG	RADIUS (CM)	ELEVATN (CM)	POLAR ANGLE (DEG)	POLAR ANGLE TAPE HEADOUT	COHE RAY (CM)	DIRECT TOTAL (U) FISS GM-SFC-W	PCT STD DEV	DIRECT NEUTS CM2-SEC-W E 1.5MEV	PCT. STD DEV
118	107	16C	270	(150.4)	(474.7)	17.6	231.000	498.0	1.59F-01	11.8	1.13E+02	12.8
118	107	16C	270	(52.9)	(142.9)	20.0	143.875	152.4	5.39F-01	10.1	3.84E+02	11.3
118	107	16C	270	(58.0)	(157.3)	20.0	146.375	167.6	4.86F-01	10.2	3.46E+02	11.4
118	107	16C	270	(63.0)	(171.7)	20.0	149.062	182.9	4.89F-01	10.3	3.48F+02	11.4
118	107	16C	270	(68.2)	(186.0)	20.0	152.000	198.1	4.83F-01	10.4	3.44E+02	11.5
118	107	16C	270	(73.2)	(200.4)	20.0	155.062	213.4	4.39F-01	10.5	3.12F+02	11.6
118	107	16C	270	(93.5)	(257.9)	20.0	169.062	274.3	3.42F-01	10.8	2.43F+02	11.9
118	107	16C	270	(133.8)	(373.0)	20.0	202.937	396.2	2.29F-01	11.4	1.63F+02	12.5
118	107	16C	270	(154.6)	(430.3)	20.0	222.062	457.2	1.95F-01	11.5	1.39F+02	12.5
118	107	16C	270	(175.8)	(487.4)	20.0	242.187	518.2	1.68F-01	11.6	1.20F+02	12.6
118	107	16C	270	(195.6)	(539.7)	20.0	261.312	574.0	1.41F-01	11.9	1.00F+02	12.9
118	107	16C	270	(184.3)	(473.6)	21.2	241.687	508.2	1.72F-01	11.6	1.22E+02	12.6
118	107	16C	270	(213.3)	(474.1)	24.2	251.437	519.9	1.85F-01	11.3	1.31F+02	12.3
118	107	16C	270	(243.8)	(474.1)	27.2	261.687	533.1	2.15F-01	11.0	1.53F+02	12.0
118	107	16C	270	(85.1)	(144.4)	30.0	158.500	167.6	1.34F+00	9.9	9.56E+02	11.1
118	107	16C	270	(92.7)	(157.6)	30.0	161.875	182.9	1.21F+00	10.0	8.60E+02	11.1
118	107	16C	270	(100.2)	(170.9)	30.0	165.375	198.1	1.07F+00	10.0	7.63F+02	11.2
118	107	16C	270	(107.8)	(184.1)	30.0	169.062	213.4	1.00F+00	10.0	7.12E+02	11.2
118	107	16C	270	(127.9)	(237.2)	30.0	184.937	274.3	7.08F-01	10.2	5.04E+02	11.4
118	107	16C	270	(147.6)	(290.4)	30.0	202.375	335.3	4.92F-01	10.4	3.50F+02	11.5
118	107	16C	270	(197.3)	(343.6)	30.0	221.125	396.2	4.00F-01	10.5	2.84E+02	11.6
118	107	16C	270	(228.0)	(396.3)	30.0	241.062	457.2	2.97F-01	10.7	2.12E+02	11.8
118	107	16C	270	(259.0)	(448.8)	30.0	261.812	518.2	2.47F-01	10.8	1.75F+02	11.9
118	107	16C	270	(287.6)	(496.8)	30.0	281.312	574.0	2.04F-01	10.9	1.45F+02	12.0
118	107	16C	270	(274.4)	(474.0)	30.1	272.125	547.7	2.25F-01	10.9	1.60E+02	11.9

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

GO RUN NO. TOTAL	GO 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	PCT STD DEV	ELAPSE TIME
117	106	16C	270	(.5)	(148.0)	0.0	119.375	148.0	1.33E-02	7.9	-9.4
117	106	16C	270	(.6)	(152.4)	0.0	119.625	152.4	1.24E-02	8.0	-7.1
117	106	16C	270	(.4)	(167.6)	0.0	120.437	167.6	1.02E-02	8.5	-7.2
117	106	16C	270	(.2)	(182.9)	0.0	121.562	182.9	8.23E-03	9.3	-7.7
117	106	16C	270	(-.1)	(198.1)	0.0	122.937	198.1	6.88E-03	10.1	-8.3
117	106	16C	270	(-.1)	(213.4)	0.0	124.750	213.4	5.80E-03	11.1	-8.0
117	106	16C	270	(-.5)	(274.3)	0.0	134.437	274.3	3.42E-03	15.4	-8.2
117	106	16C	270	(-1.1)	(335.3)	0.0	147.562	335.3	2.49E-03	18.4	-8.7
117	106	16C	270	(-1.2)	(396.2)	0.0	163.437	396.2	1.78E-03	22.3	-8.5
117	106	16C	270	(-.9)	(457.2)	0.0	181.312	457.2	1.49E-03	23.6	-8.7
117	106	16C	270	(-.5)	(474.0)	0.0	186.562	474.0	1.33E-03	25.9	-3.6
117	106	16C	270	(-.4)	(518.2)	0.0	200.562	518.2	1.29E-03	24.2	-8.3
117	106	16C	270	(.4)	(574.0)	0.0	219.125	574.0	1.18E-03	24.2	-8.4
117	106	16C	270	(31.3)	(474.0)	3.8	195.062	475.0	1.27E-03	26.6	-1.0
117	106	16C	270	(61.2)	(474.1)	7.4	203.562	478.0	1.27E-03	26.4	-4.1
117	106	16C	270	(26.3)	(148.0)	10.0	131.562	150.3	1.20E-02	8.0	-9.2
117	106	16C	270	(26.9)	(150.0)	10.0	131.875	152.4	1.15E-02	8.0	-6.1
117	106	16C	270	(29.3)	(165.1)	10.0	133.562	167.6	9.26E-03	8.6	-5.4
117	106	16C	270	(31.9)	(180.1)	10.0	135.562	182.9	7.62E-03	9.3	-4.6
117	106	16C	270	(34.3)	(195.1)	10.0	137.750	198.1	6.30E-03	10.3	-4.2
117	106	16C	270	(36.7)	(210.2)	10.0	140.187	213.4	5.44E-03	11.2	-3.7
117	106	16C	270	(46.8)	(270.3)	10.0	152.125	274.3	3.23E-03	15.8	-3.1
117	106	16C	270	(56.4)	(330.5)	10.0	166.687	335.3	2.31E-03	19.2	-2.5
117	106	16C	270	(66.5)	(390.6)	10.0	183.500	396.2	1.80E-03	21.6	-2.1
117	106	16C	270	(76.8)	(450.7)	10.0	201.875	457.2	1.48E-03	23.3	-2.4
117	106	16C	270	(87.5)	(510.7)	10.0	221.437	518.2	1.28E-03	24.1	-2.7
117	106	16C	270	(97.9)	(565.6)	10.0	240.250	574.0	1.15E-03	24.7	-5.0

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

GO RUN NO. TOTAL	GO RUN NO. RNGD	CON FIG	PAX ANG DEG	RADIUS (CM)	ELEVATION (CM)	POLAR ANGLE (DEG)	POLAR ANGLE TAPE READOUT	COME RAY (CM)	DIRECT RADS(C) HR-W	PCT STD DEV	FLAPSF TIME
117	106	16C	270	(92.2)	(473.9)	11.0	212.687	482.8	1.30E-03	25.4	-4.2
117	106	16C	270	(122.9)	(473.9)	14.5	222.125	489.6	1.36E-03	24.4	-4.5
117	106	16C	270	(150.4)	(474.7)	17.6	231.000	498.0	1.45E-03	23.3	-4.1
117	106	16C	270	(50.9)	(147.9)	19.0	143.000	156.4	8.73E-03	8.5	-10.5
117	106	16C	270	(52.9)	(142.9)	20.0	143.875	152.4	8.63E-03	8.4	.7
117	106	16C	270	(58.0)	(157.3)	20.0	146.375	167.6	6.71E-03	9.7	.3
117	106	16C	270	(63.0)	(171.7)	20.0	149.062	182.9	5.41E-03	11.5	.4
117	106	16C	270	(68.0)	(186.1)	20.0	151.937	198.1	4.88E-03	12.5	-1.0
117	106	16C	270	(73.2)	(200.4)	20.0	155.062	213.4	4.58E-03	13.1	-2.2
117	106	16C	270	(93.3)	(258.0)	20.0	169.000	274.3	3.37E-03	16.0	-3.2
117	106	16C	270	(113.5)	(315.5)	20.0	185.125	335.3	2.74E-03	17.5	-4.0
117	106	16C	270	(133.6)	(373.0)	20.0	202.875	396.2	2.33E-03	18.3	-4.2
117	106	16C	270	(154.3)	(430.4)	20.0	222.000	457.2	1.85E-03	20.2	-4.2
117	106	16C	270	(175.5)	(487.5)	20.0	242.125	518.2	1.68E-03	19.9	-4.7
117	106	16C	270	(195.0)	(539.9)	20.0	261.187	574.0	1.54E-03	19.8	-5.1
117	106	16C	270	(184.3)	(473.6)	21.2	241.687	508.2	1.63E-03	21.1	-4.8
117	106	16C	270	(213.3)	(474.1)	24.2	251.437	519.9	1.93E-03	18.5	-4.5
117	106	16C	270	(76.2)	(147.5)	27.0	154.500	166.1	7.03E-03	11.2	-11.4
117	106	16C	270	(243.8)	(474.1)	27.2	261.687	533.1	2.11E-03	17.3	-4.0
117	106	16C	270	(85.2)	(144.4)	30.0	158.562	167.6	1.17E-02	10.0	-.3
117	106	16C	270	(92.7)	(157.6)	30.0	161.875	182.9	1.07E-02	10.2	-.5
117	106	16C	270	(100.2)	(170.9)	30.0	165.375	198.1	9.68E-03	10.7	-1.3
117	106	16C	270	(107.8)	(184.1)	30.0	169.062	213.4	8.92E-03	11.0	-2.0
117	106	16C	270	(137.9)	(237.2)	30.0	184.937	274.3	6.45E-03	12.1	-3.4
117	106	16C	270	(147.6)	(290.4)	30.0	202.375	335.3	4.59E-03	13.6	-2.4
117	106	16C	270	(197.6)	(343.5)	30.0	221.187	396.2	3.65E-03	14.4	-2.8
117	106	16C	270	(228.2)	(396.2)	30.0	241.125	457.2	2.96E-03	15.3	-2.7
117	106	16C	270	(259.0)	(448.4)	30.0	261.812	518.2	2.51E-03	15.7	-3.0
117	106	16C	270	(287.9)	(496.6)	30.0	281.375	574.0	2.13E-03	16.4	-3.4
117	106	16C	270	(276.4)	(474.0)	30.1	272.125	547.7	2.30E-03	16.2	-4.1
117	106	16C	270	(99.8)	(147.9)	34.0	165.000	178.4	1.86E-02	9.4	-10.8

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

GO RUN NO. TOTAL	GO RUN NO. PKGD	CUN FIG	PAX ANG DEG	RADIUS (CM)	ELEVATN (CM)	POLAR ANGLE (DEG)	POLAR ANGLE TAPE READOUT	COME RAY (CM)	DIRECT RADS(C) HR-W	PCT STD DEV	ELAPSE TIME
117	106	16C	270	(128.9)	(148.4)	41.0	177.562	196.5	2.97E-02	9.1	-10.7

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

GN RUN NO. TOTAL	GN PWR NO. RKGD	CON FIG	PAX ANG DEG	RADIUS (CM)	ELFVATN (CM)	POLAR ANGLE (DEG)	POLAR ANGLE TAPE READOUT	CORE RAY (CM)	DIRECT RADS(AL) HR-W	PCT STD DEV	FLAPSEI TIME
117	106	10C	270	(.5)	(148.0)	0.0	119.375	148.0	1.16E-02	9.5	-9.4
117	106	10C	270	(.6)	(152.4)	0.0	119.625	152.4	1.34E-02	8.8	-7.1
117	106	10C	270	(.4)	(167.6)	0.0	120.437	167.6	1.19E-02	9.1	-7.2
117	106	10C	270	(.2)	(182.9)	0.0	121.562	182.9	1.05E-02	9.5	-7.7
117	106	10C	270	(-.1)	(198.1)	0.0	122.937	198.1	8.77E-03	10.1	-8.2
117	106	10C	270	(-.1)	(213.4)	0.0	124.750	213.4	8.20E-03	10.6	-8.0
117	106	10C	270	(-.5)	(274.3)	0.0	134.437	274.3	5.33E-03	13.3	-8.2
117	106	10C	270	(-1.1)	(335.3)	0.0	147.562	335.3	3.80E-03	16.4	-8.7
117	106	10C	270	(-1.2)	(396.2)	0.0	163.437	396.2	2.90E-03	19.3	-8.5
117	106	10C	270	(-.9)	(457.2)	0.0	181.312	457.2	2.58E-03	20.0	-8.7
117	106	10C	270	(-.5)	(474.0)	0.0	186.562	474.0	2.84E-03	16.2	-3.6
117	106	10C	270	(-.4)	(518.2)	0.0	200.562	518.2	2.39E-03	19.8	-8.2
117	106	10C	270	(.4)	(574.0)	0.0	219.125	574.0	1.67E-03	24.9	-8.4
117	106	10C	270	(21.3)	(474.0)	3.8	195.062	475.0	2.62E-03	17.9	-1.0
117	106	10C	270	(61.2)	(474.1)	7.4	203.562	478.0	2.74E-03	17.6	-4.1
117	106	10C	270	(26.3)	(148.0)	10.0	131.562	150.3	1.13E-02	9.2	-9.8
117	106	10C	270	(26.9)	(150.0)	10.0	131.875	152.4	1.18E-02	8.9	-6.1
117	106	10C	270	(29.3)	(165.1)	10.0	133.562	167.6	9.69E-03	9.6	-5.6
117	106	10C	270	(31.9)	(180.1)	10.0	135.562	182.9	7.94E-03	10.4	-4.6
117	106	10C	270	(34.3)	(195.1)	10.0	137.750	198.1	7.03E-03	11.3	-4.2
117	106	10C	270	(36.7)	(210.2)	10.0	140.187	213.4	6.51E-03	11.9	-3.7
117	106	10C	270	(46.8)	(270.3)	10.0	152.125	274.3	4.41E-03	14.9	-3.1
117	106	10C	270	(56.4)	(330.5)	10.0	166.687	335.3	4.13E-03	14.8	-2.5
117	106	10C	270	(66.5)	(390.6)	10.0	183.500	396.2	3.93E-03	14.4	-2.1
117	106	10C	270	(76.8)	(450.7)	10.0	201.875	457.2	3.25E-03	15.3	-2.6
117	106	10C	270	(87.5)	(510.7)	10.0	221.437	518.2	3.15E-03	14.7	-2.7
117	106	10C	270	(97.9)	(565.6)	10.0	240.250	574.0	3.01E-03	15.0	-5.0

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

GO RUN NO. TOTAL	GO RUN NO. RKGDN	CUN FIG	PAX ANG DEG	RADIUS (CM)	ELEVATN (CM)	POLAR ANGLE (DEG)	POLAR ANGLE TAPE READOUT	CONE RAY (CM)	DIRECT RADS(AL) HR-W	PCT STD DEV	ELAPSE TIME
117	106	16C	270	(92.2)	(473.9)	11.0	212.687	482.8	2.76E-03	17.5	-4.2
117	106	16C	270	(122.9)	(473.9)	14.5	222.125	489.6	2.98E-03	16.6	-4.5
117	106	16C	270	(150.4)	(474.7)	17.6	231.000	498.0	3.04E-03	16.6	-4.1
117	106	16C	270	(50.9)	(147.9)	19.0	143.000	156.4	8.39E-03	9.9	-10.5
117	106	16C	270	(52.9)	(142.9)	20.0	143.875	152.4	8.24E-03	9.5	.7
117	106	16C	270	(58.0)	(157.3)	20.0	146.375	167.6	6.30E-03	11.5	.3
117	106	16C	270	(63.0)	(171.7)	20.0	149.062	182.9	5.87E-03	12.9	.4
117	106	16C	270	(68.0)	(186.1)	20.0	151.937	198.1	5.80E-03	13.5	-1.0
117	106	16C	270	(73.2)	(200.4)	20.0	155.062	213.4	5.77E-03	13.5	-2.2
117	106	16C	270	(93.3)	(258.0)	20.0	169.000	274.3	4.94E-03	14.7	-3.2
117	106	16C	270	(113.5)	(315.5)	20.0	185.125	335.3	4.30E-03	15.4	-4.0
117	106	16C	270	(133.6)	(373.0)	20.0	202.875	396.2	4.52E-03	13.4	-4.2
117	106	16C	270	(154.3)	(430.4)	20.0	222.000	457.2	3.53E-03	15.7	-4.2
117	106	16C	270	(175.5)	(487.5)	20.0	242.125	518.2	3.02E-03	16.4	-4.7
117	106	16C	270	(195.0)	(539.9)	20.0	261.187	574.0	3.16E-03	15.2	-5.1
117	106	16C	270	(194.3)	(473.6)	21.2	241.687	508.2	3.10E-03	16.5	-4.8
117	106	16C	270	(213.3)	(474.1)	24.2	251.437	519.9	3.57E-03	14.9	-4.5
117	106	16C	270	(76.2)	(147.5)	27.0	154.500	166.1	1.10E-02	10.3	-11.4
117	106	16C	270	(243.8)	(474.1)	27.2	261.687	533.1	3.69E-03	14.8	-4.0
117	106	16C	270	(85.2)	(144.4)	30.0	158.562	167.6	1.15E-02	12.0	-.3
117	106	16C	270	(92.7)	(157.6)	30.0	161.875	182.9	1.00E-02	12.5	-.5
117	106	16C	270	(100.2)	(170.9)	30.0	165.375	198.1	8.04E-03	14.0	-1.3
117	106	16C	270	(107.8)	(184.1)	30.0	169.062	213.4	7.07E-03	14.6	-2.0
117	106	16C	270	(137.9)	(237.2)	30.0	184.937	274.3	9.85E-03	11.4	-3.4
117	106	16C	270	(329.6)	(61.4)	30.0	262.375	335.3	7.91E-03	11.7	-2.4
117	106	16C	270	(197.6)	(343.5)	30.0	221.187	396.2	6.22E-03	12.5	-2.8
117	106	16C	270	(228.2)	(396.2)	30.0	241.125	457.2	5.25E-03	12.8	-2.7
117	106	16C	270	(259.0)	(448.8)	30.0	261.812	518.2	1.01E-02	9.7	-3.0
117	106	16C	270	(287.9)	(496.6)	30.0	281.375	574.0	4.39E-03	13.2	-3.4
117	106	16C	270	(274.4)	(474.0)	30.1	272.125	547.7	3.92E-03	14.1	-4.1
117	106	16C	270	(99.8)	(147.9)	34.0	165.000	178.4	1.67E-02	11.3	-10.8

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

GO RUN NO. TOTAL	GO RUN NO. BKGD	CON FIG	PAX ANG DEG	RADIUS (CM)	ELEVATN (CM)	POLAR ANGLE (DEG)	POLAR ANGLF TAPE READOUT	COHE RAY (CM)	DIRECT RADS(AL) HR-W	PCT STD DEV	ELAPSE TIME
117	106	16C	270	(128.9)	(148.4)	41.0	177.562	196.5	3.02E-02	10.0	-10.7

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

GO RUN NO. TOTAL	GO RIN NO. BKGD	CON FIG	PAX ANG DEG	RADIUS (CM)	ELEVATN (CM)	POLAR ANGLE (DEG)	POLAR ANGLE TAPE READOUT	CONE RAY (CM)	DIRECT RADS(BE) HR-W	PCT STD DEV	ELAPSE TIME
117	106	16C	270	(.5)	(148.0)	0.0	119.375	148.0	8.50E-03	9.2	-9.4
117	106	16C	270	(.6)	(152.4)	0.0	119.625	152.4	9.08E-03	8.9	-7.1
117	106	16C	270	(.4)	(167.6)	0.0	120.437	167.6	8.26E-03	9.2	-7.2
117	106	16C	270	(.2)	(182.9)	0.0	121.562	182.9	6.61E-03	10.1	-7.7
117	106	16C	270	(-.1)	(198.1)	0.0	122.937	198.1	4.47E-03	11.7	-8.2
117	106	16C	270	(-.1)	(213.4)	0.0	124.750	213.4	2.34E-03	18.2	-8.0
117	106	16C	270	(-.5)	(274.3)	0.0	134.437	274.3	1.35E-03	30.6	-8.2
117	106	16C	270	(-1.1)	(335.3)	0.0	147.562	335.3	1.05E-03	38.1	-8.7
117	106	16C	270	(-1.2)	(396.2)	0.0	163.437	396.2	-3.96E-04	85.3	-8.5
117	106	16C	270	(-.9)	(457.2)	0.0	181.312	457.2	4.05E-05	801.8	-8.7
117	106	16C	270	(-.5)	(474.0)	0.0	186.562	474.0	8.47E-04	29.8	-3.6
117	106	16C	270	(-.4)	(518.2)	0.0	200.562	518.2	-5.47E-04	51.8	-8.2
117	106	16C	270	(.4)	(574.0)	0.0	219.125	574.0	-9.83E-04	25.5	-8.4
117	106	16C	270	(31.3)	(474.0)	3.8	195.062	475.0	3.82E-04	67.5	-1.0
117	106	16C	270	(61.2)	(474.1)	7.4	203.562	478.0	1.21E-03	23.2	-4.1
117	106	16C	270	(26.3)	(148.0)	10.0	131.562	150.3	7.54E-03	9.4	-9.8
117	106	16C	270	(26.9)	(150.0)	10.0	131.875	152.4	7.52E-03	9.0	-6.1
117	106	16C	270	(29.3)	(165.1)	10.0	133.562	167.6	5.86E-03	9.7	-5.6
117	106	16C	270	(31.9)	(180.1)	10.0	135.562	182.9	4.69E-03	10.9	-4.6
117	106	16C	270	(34.3)	(195.1)	10.0	137.750	198.1	3.63E-03	12.8	-4.2
117	106	16C	270	(36.7)	(210.2)	10.0	140.187	213.4	2.72E-03	15.9	-3.7
117	106	16C	270	(46.8)	(270.3)	10.0	152.125	274.3	1.15E-03	33.0	-3.1
117	106	16C	270	(56.4)	(330.5)	10.0	166.687	335.3	4.27E-04	78.7	-2.5
117	106	16C	270	(66.5)	(390.6)	10.0	183.500	396.2	6.42E-04	47.1	-2.1
117	106	16C	270	(76.8)	(450.7)	10.0	201.875	457.2	7.61E-04	34.8	-2.6
117	106	16C	270	(87.5)	(510.7)	10.0	221.437	518.2	4.84E-04	48.0	-2.7
117	106	16C	270	(97.9)	(565.6)	10.0	240.250	574.0	7.13E-04	31.4	-5.0

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

GO RUN NO. TOTAL	GO RUN NO. RKGD	CUN FIG	PAX ANG DEG	RADIUS (CM)	ELEVATN (CM)	POLAR ANGLE (DEG)	POLAR ANGLF TAPE READOUT	COME RAY (CM)	DIRECT RADS(HE) HR-W	PCT STD DEV	ELAPSE TIME
117	106	16C	270	(92.2)	(473.9)	11.0	212.6A7	482.8	1.62E-03	17.6	-4.2
117	106	16C	270	(122.9)	(473.9)	14.5	222.125	489.6	1.44E-03	19.5	-4.5
117	106	16C	270	(150.4)	(474.7)	17.6	231.000	498.0	1.69E-03	17.8	-4.1
117	106	16C	270	(50.9)	(147.9)	19.0	143.000	156.4	5.28E-03	10.3	-10.5
117	106	16C	270	(52.9)	(142.9)	20.0	143.875	152.4	3.10E-03	11.6	.7
117	106	16C	270	(58.0)	(157.3)	20.0	146.375	167.6	1.38E-03	27.0	.3
117	106	16C	270	(63.0)	(171.7)	20.0	149.062	182.9	9.22E-04	41.5	.4
117	106	16C	270	(68.0)	(186.1)	20.0	151.937	198.1	2.23E-03	19.4	-1.0
117	106	16C	270	(73.2)	(200.4)	20.0	155.062	213.4	2.84E-03	16.8	-2.2
117	106	16C	270	(93.3)	(258.0)	20.0	169.000	274.3	1.99E-03	21.3	-3.2
117	106	16C	270	(113.5)	(315.5)	20.0	185.125	335.3	1.98E-03	20.1	-4.0
117	106	16C	270	(133.6)	(373.0)	20.0	202.875	396.2	1.60E-03	21.6	-4.2
117	106	16C	270	(154.3)	(430.4)	20.0	222.000	457.2	1.70E-03	19.2	-4.2
117	106	16C	270	(175.5)	(487.5)	20.0	242.125	518.2	1.35E-03	20.8	-4.7
117	106	16C	270	(195.0)	(539.9)	20.0	261.187	574.0	8.56E-04	27.5	-5.1
117	106	16C	270	(184.3)	(473.6)	21.2	241.687	508.2	2.27E-03	13.8	-4.8
117	106	16C	270	(213.3)	(474.1)	24.2	251.437	519.9	1.81E-03	17.5	-4.5
117	106	16C	270	(76.2)	(147.5)	27.0	154.500	166.1	5.53E-03	13.3	-11.4
117	106	16C	270	(243.8)	(474.1)	27.2	261.687	533.1	2.40E-03	13.8	-4.0
117	106	16C	270	(85.2)	(144.4)	30.0	158.562	167.6	5.62E-03	15.4	-.3
117	106	16C	270	(92.7)	(157.6)	30.0	161.875	182.9	2.61E-03	26.0	-.5
117	106	16C	270	(100.2)	(170.9)	30.0	165.375	198.1	-8.22E-03	8.8	-1.3
117	106	16C	270	(107.8)	(184.1)	30.0	169.062	213.4	-4.48E-03	11.8	-2.0
117	106	16C	270	(137.9)	(237.2)	30.0	184.937	274.3	6.25E-03	12.5	-3.4
117	106	16C	270	(167.6)	(290.4)	30.0	202.375	335.3	5.73E-03	12.1	-2.6
117	106	16C	270	(197.6)	(343.5)	30.0	221.187	396.2	3.55E-03	14.3	-2.8
117	106	16C	270	(228.2)	(396.2)	30.0	241.125	457.2	2.92E-03	14.5	-2.7
117	106	16C	270	(259.0)	(448.8)	30.0	261.812	518.2	2.54E-03	14.6	-3.0
117	106	16C	270	(287.9)	(496.6)	30.0	281.375	574.0	2.17E-03	15.1	-3.6
117	106	16C	270	(274.4)	(474.0)	30.1	272.125	547.7	2.17E-03	15.6	-4.1
117	106	16C	270	(99.8)	(147.9)	34.0	165.000	178.4	1.33E-02	11.4	-10.8

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

GO RUN NO. TOTAL	GO RUN NO. BKGD	CON FIG	PAX ANG DEG	RADIUS (CM)	ELEVATN (CM)	POLAR ANGLE (DEG)	POLAR ANGLE TAPE READOUT	COME RAY (CM)	DIRECT RADS(BE) HR-W	PCT STD DEV	ELAPSE TIME
117	106	16C	270	(128.9)	(148.4)	41.0	177.562	196.5	2.21E-02	10.7	-10.7

XIII FORTRAN Listing of PARX22

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PROGRAM PARX22(INPUT,OUTPUT,FILMPL,TAPE5=INPUT,TAPE6=OUTPUT,
1 TAPE11, TAPE12)
000003 DATA IRLANK,I9 /1F,1H9/
000003 COMMON ARRAY(13),CONF,COUNT4(30),COUNT6(30),CUTP,DCX,DCY,KX,KY,
1 IARRAY(8),ICTAB,IGRPH,ND,NG,NOPCAN,NOTABS,NS,NV,
2 NX0,NYC,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,ISHP,NGR,
7 TABLES(2,15),NYCYCL,XIMAX,XIMIN,NITYPE,COUNT5(30)
000003 INTEGER CONF, CUTP, PAXANG,POS,REP1,REP2,TABLES,COUNT4,COUNT5,
1 COUNT6,CONF1,PAXANT,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
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 ISHP = NO. OF SPECIFIC PLOTS. IF ZERO, PLOTS GENERATED BY INPUT TABLES
C INCYCL = NO. OF CYCLES WANTED ON Y-AXIS
C XIMIN = MINIMUM VALUE WANTED ON X-AXIS
C XIMAX = MAXIMUM VALUE WANTED ON X-AXIS
C NOPCAN = NO. OF POLAR ANGLES TO BE CONSIDERED IN DATA SEARCH
C
C NOTABS = NO. OF TABLES FROM WHICH DATA WILL BE SELECTED
C POS(I),I=1,NCTABS = ARRAY POSITION OF Y-VALUE FOR RESPECTIVE TABLES
C CUTP = CUT-OFF POINT FOR NO. OF POLAR ANGLE CURVES/GRAPH

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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      RALIT = TABLE OF RADIUS VALUES (INCHES)
C      ELEV = TABLE OF ELEVATION VALUES (INCHES)
C      FOANG = TABLE OF POLAR ANGLE VALUES (DEGREES)
C      TABLES(I), I = 1, NTAHS = 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      NGM = 1 REGULAR PLOTS ARE DESIRED OTHERWISE DIFFERENCE (DIRECT) PLOTS
C            ARE DESIRED. -
C
000021      ICN = 1
000022      ICUN = 0
000023      IF = 0
C      REWIND INPUT TAPF
000024      IN = 12
000025      IN1 = 11
000026      REWIND IN
000030      REWIND IN1
C
000032      READ(5,5) NTYPE, (GR,KELEV
000044      5      FORMAT(3I3)
000044      WRITE(6,800)
000050      800 FORMAT(1H1,3X,5FNTYPE)
000050      WRITE(6,801) NTYPE
000056      801 FORMAT(1H+,15X,I3)
000056      WRITE(6,802)
000062      802 FORMAT(14X,3FANGR)
000062      WRITE(6,801) NGR
000070      WRITE(6,803)
000074      803 FORMAT(14X,5FKELEV)
000074      WRITE(6,801) KELEV
000102      IF(KELEV.GT.0) READ(5,6) CONEV1,CONEV2
000113      6      FORMAT(2E12.5)
000113      IF(KELEV.GT.0) WRITE(6,804)
000120      804 FORMAT(14X,6FCONEV1)

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000120      IF (KELEV.GT.0) WRITE(6,805) CONEV1
000127      805 FORMAT(1H+,15X,E12.5)
000127      IF (KELEV.GT.0) WRITE(6,806)
000134      806 FORMAT(/4X,6FCONEV2)
000134      IF (KELEV.GT.0) WRITE(6,805) CONEV2

      C      READ NO. OF SPECIFIC PLOTS AND NO. OF CYCLES FOR Y-AXIS
000143      READ(5,1000) ISPP,NYCYCL
000153      WRITE(6,807)
000157      807 FORMAT(/4X,4FISPP)
000157      WRITE(6,808) ISPP
000165      808 FORMAT(1H+,15X,I6)
000165      WRITE(6,809)
000171      809 FORMAT(/4X,6FNYCYCL)
000171      WRITE(6,808) NYCYCL

      C      READ MINIMUM AND MAXIMUM VALUES FOR X-AXIS
000177      READ(5,1001) XIMIN,XIMAX
000207      WRITE(6,810)
000213      810 FORMAT(/4X,5FXIMIN)
000213      WRITE(6,805) XIMIN
000221      WRITE(6,811)
000225      811 FORMAT(/4X,5FXIMAX)
000225      WRITE(6,805) XIMAX

      C      READ NO. OF PCLAR ANGLES AND TABLES
000233      READ(5,1000) NOPOAN, NOTARS
000243      WRITE(6,812)
000247      812 FORMAT(/4X,6FNOPOAN)
000247      WRITE(6,808) NOPOAN
000255      WRITE(6,813)
000261      813 FORMAT(/4X,6FNOTARS)
000261      WRITE(6,808) NOTARS

      C      READ ARRAY POSITIONS OF ORDINATE VALUES FOR ALL TABLES REQUESTED

      C      READ TABLE IDENTIFICATIONS
000267      READ(5,1002) (TABLES(1,I),TABLES(2,I),I=1,NOTARS)
000306      WRITE(6,814)
000312      814 FORMAT(/4X,26F(TABLES(1,I),TABLES(2,I),I=1,NOTARS) )
000312      WRITE(6,815) (TABLES(1,I),TABLES(2,I),I=1,NOTARS)
000331      815 FORMAT(1H+,39X,A0A1)

      C      ARE SPECIFIC CURVES DESIRED
000331      IF (ISPP.NE.0) GO TO 230

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000332      READ(5,1000) (PCS(I),I=1,NOTABS)
000345      WRITE(6,816)
000351      816 FORMAT(/4X,19F(POS(I),I=1,NOTABS) )
000351      WRITE(6,817) (PCS(I),I=1,NOTABS)
000364      817 FORMAT(1H+,22X,12(I2,1X),/ )

C      READ CUTOFF POINTS FOR GRAPHS AND OPTION FOR TYPES OF CURVES
000364      READ(5,1000) CUTP, IPL0
000374      IF(CUTP.LE.0) CUTP = 0
000377      WRITE(6,818)
000403      818 FORMAT(/4X,4F(CUTP)
000403      WRITE(6,808) CUTP
000411      WRITE(6,819)
000415      819 FORMAT(/4X,4F(IPL0)
000415      WRITE(6,808) IPL0

000423      8      IF(NCPOAN .EQ. 0) GO TO 9
000424      READ(5,1001) (PCANG(I),I=1,NCPOAN)
000437      WRITE(6,820)
000443      820 FORMAT(/4X,21F(PCANG(I),I=1,NCPOAN) )
000443      WRITE(6,821) (PCANG(I),I=1,NCPOAN)
000456      821 FORMAT(1H+,24X,6(E12.5,1X) )
000456      9      CONTINUE
000456      IF(NTYPE .EQ. 1) CALL MULTCON(IPL0)
000462      IF(NTYPE .EQ. 1) GO TO 340

C      INITIALIZE INDICATORS
000464      REAC = 0
000465      ICTAB = 0
000466      ICHANG = 1

C      CALL SUBROUTINE CLEAR TO INITIALIZE STORAGE ARRAYS
000467      30      CALL CLEAR

C      WAS ALL DATA FOR A SPECIFIC TABLE PROCESSED
000470      IF (ICHANG.NE.1) GO TO 40

C      UPDATE COUNT OF TABLES PROCESSED
000472      ICTAB = ICTAB + 1

C      HAVE ALL TABLES BEEN PROCESSED
000473      IF (ICTAB.GT.NOTABS) GO TO 340

C      STORE TABLE IDENTIFICATION IN REPI AND REP2

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000476      REP1 = TABLES(1,ICTAB)
000477      REP2 = TABLES(2,ICTAB)
000501      GO TO 50

      C      STORE CONFIGURATION AND PAX ANGLE IN PROCESS IN CCNF AND PAXANG
000502      40  CONF = IARRAY(5)
000504      PAXANG = IARRAY(6)
      C      SHOULD A NEW RECORD BE READ FROM THE INPUT TAPE
000505      50  IF (READ.NE.0) GO TO 70
      C      WERE SPECIFIC CURVES REQUESTED
000506      60  IF (ISPF.NE.0) GO TO 285
      C      READ RECORD AND SET INDICATOR

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

000507      IF (NGH .EQ. 1) GO TO 3
000511      4  READ(11) (IARRAY(I),I=1,8), (AARRAY(I),I=1,13)
000530      ITP = 1
000531      GO TO 7
000532      3  READ(12) (IARRAY(I),I=1,8), (AARRAY(I),I=1,13)
000551      ITP = 2
000552      7  CONTINUE
000552      READ = 1
      C      DOES THE TABLE IDENTIFICATION MATCH THE ONE IN PROCESS
000553      70  IF (IARRAY(1).EQ.REP1.AND.IARRAY(2).EQ.REP2) GO TO 80
      C      HAS DATA BEEN FOUND FOR THE TABLE AND CONFIGURATION IN PROCESS
000563      IF (CCNF.NE.IPLANK) GO TO 190
000565      GO TO 60

      C      DOES THE CONFIGURATION MATCH THE ONE IN PROCESS
000565      80  IF (IARRAY(5) .EQ. CCNF) GO TO 90
      C      HAS DATA BEEN FOUND FOR THE TABLE AND CONF
000567      IF (CCNF.NE.IPLANK) GO TO 200
      C      STORE NEW CONFIGURATION
000571      CONF = IARRAY(5)
000572      GO TO 100
      C      DOES THE PAX ANGLE MATCH THE ONE IN PROCESS
000572      90  IF (IARRAY(6).EQ.PAXANG) GO TO 110

      C      HAS DATA BEEN FOUND FOR THE TABLE, CCNF., AND PAX ANGLE IN PROCESS
000574      IF (PAXANG.NE.1000) GO TO 210

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000576 C      STORE NEW PAX ANGLE IN PAXANG
      100 PAXANG = IARAY(4)
000600 C      STORE ORIGINATE POSITION IN ARRAY INTO J
      110 J = PCS(ICTAP)
000602 C      INDICATE THAT A NEW RECORD SHOULD BE READ
      READ = 0
000603 C      IS THE INPUT OF THE POLAR ANGLE AND CONE RAY TYPE
      IF(IARAY(8) .EQ. 1 .OR. IARAY(8) .EQ. 2) GO TO 150
000612      GO TO 60

000612 C      CHECK FOR FIXED ELEVATION
      150 IF (NCPDAN.EQ.0) GO TO 60
000613      IF (KELEV .EQ. 1) CALL FIXELEV(IF,ICN,ICCN,KCEV,LCEV,CONEV1,CONEV2)

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

C      GRAPH 6 CURVE AT CONSTANT ELEVATION( 4/4CM OR 14XCH) X=CAL POLAR ANGLE
C      DOES POLAR ANGLE ON TAPE MATCH ANY VALUE IN TABLE OF POLAR ANGLES
000624      DO 160 I4 = 1,NCPDAN
000626      IF (ABS(ARAY(3)-POANG(I4)).LT.0.5) GO TO 170
000633      160 CONTINUE

000635      GO TO 60

C      ARE 50 DATA POINTS STORED FOR THIS ELEVATION
000636      170 IF (CCOUNT4(I4).EQ.50) GO TO 60
C      IS THIS THE FIRST DATA POINT FOR THIS ELEVATION
000641      IF (CCOUNT4(I4).EQ.0) GO TO 180
C      CALL SUBROUTINE LIMITS TO CHECK FOR DUPLICATE DATA
000642      CALL LIMITS(CCOUNT4(I4),PX4(1,I4),PY4(1,I4),ARAY(4),ARAY(J),ITLM)
C      IS THIS POINT A DUPLICATE OF ONE PREVIOUSLY FOUND
000651      IF (ILIM.EQ.0) GO TO 60
C      IS THE ORIGINATE VALUE NEGATIVE OR ZERO
000652      180 IF (ARAY(J).LE.0) GO TO 60
C      UPDATE COUNT OF POINTS STORED FOR THIS ELEVATION
000654      CCOUNT4(I4) = CCOUNT4(I4) + 1
000657      IC4 = CCOUNT4(I4)

C      STORE ABSCISSA AND ORIGINATE VALUES IN PX4 AND PY4 ARRAYS
000660      PX4(IC4,I4) = ARAY(4)
000664      PY4(IC4,I4) = ARAY(J)
000667      GO TO 60

```



```

000670 C      INDICATE ALL DATA FOR A PARTICULAR TABLE HAS BEEN PROCESSED
000671 190 ICHANG = 1
      GO TO 220
000672 C      INDICATE ALL DATA FOR A PARTICULAR CONFIGURATION HAS BEEN PROCESSED
000673 200 ICHANG = 2
      GO TO 220
000674 C      INDICATE ALL DATA FOR A PARTICULAR PAX ANGLE HAS BEEN PROCESSED
      210 ICHANG = 3

000675 C      CALL SUBROUTINE SETUP TO SET UP GRAPHS AND TO PLOT
      220 CALL SETUP(TFLO,CONFV1,CONFV2,ICN)
C      REINITIALIZE CONFIGURATION COUNTER
000700 IF (ICHANG .NE. 1) GO TO 224
000702 ICN = 1
000703 IF = 0
000704 KCEV = 0
000705 LCEV = 0
000706 224 CONTINUE
000706 IF (ICHANG .NE. 2) GO TO 225
000710 KCEV = 0
000711 LCEV = 0
000712 225 CONTINUE
C      END OF DATA TAPE
000712 IF (IARAY(2).EQ.19) GO TO 340
C      WERE SPECIFIC PLOTS REQUESTED
000714 IF (ISPP.NE.0) GO TO 240
000715 GO TO 30

C      INITIALIZE VARIABLES
000716 230 ISPCT = 0
000717 READ = 0
000720 ICTAB = 1
C      UPDATE COUNT OF PLOTS PROCESSED
000721 240 ISPCT = ISPCT + 1
C      HAS ALL DATA BEEN PROCESSED
000723 IF (ISPCT.GT.ISPP) GO TO 340
C      READ TABLE ID.,CONF,PAX ANGLE,AND ARRAY POSITION OF ORIGINATE VALUE
000726 READ(5,1003) REP1,REP2,CONF1,PAXAN1,POS(1)

C      READ NUMBER OF POLAR ANGLES
000743 READ(5,1000) NUPOLAN
C      READ CUTOFF POINTS FOR GRAPHS AND OPTION FOR TYPES OF CURVES

```

```

000751      READ(5,1000) COTP, IPLD
000761      280 IF (NCPAN.NE.0) READ(5,1001) (POANG(I),I=1,NCPAN)
C          CALL SUBROUTINE CLEAR TO INITIALIZE STORAGE ARRAYS
000775      CALL CLEAR

C          SET CONF AND PAXANG VARIABLES
000776      CONF = CONF1
001000      PAXANG = PAXANI
001001      IFIND = 0

C          SHOULD A RECORD BE READ FROM THE INPUT TAPE
001002      285 IF (READ.NE.0) GO TO 300
C          READ A RECORD AND SET INDICATOR
001003      290 IF (NGR.EQ. 1) GO TO 29
001005      21  READ(11) (IARAY(I),I=1,8), (ARAY(I),I=1,13)
001024      ITP = 1
001025      GO TO 71

001026      29  READ(12) (IARAY(I),I=1,8), (ARAY(I),I=1,13)
001045      ITP = 2
001046      71  CONTINUE
001046      READ = 1

C          DOES THE TABLE ID ON TAPE MATCH THE ONE IN PROCESS
001047      300 IF (IARAY(1).EQ.REF1.AND.IARAY(2).EQ.REF2) GO TO 310
C          HAS DATA BEEN FOUND FOR THIS GRAPH
001057      IF (IFIND.EQ.0) GO TO 290
001060      GO TO 220
C          DOES TAPE CONFIGURATION MATCH THE ONE IN PROCESS
001060      310 IF (IARAY(5).EQ. CONF) GO TO 320

C          HAS DATA BEEN FOUND FOR THIS GRAPH
001062      IF (IFIND.EQ.0) GO TO 290
001063      GO TO 220
C          DOES THE PAX ANGLE FROM THE TAPE MATCH THE ONE IN PROCESS
001064      320 IF (IABS(IARAY(4) - PAXANG).LT.0.5) GO TO 330
C          HAS DATA BEEN FOUND FOR THIS GRAPH
001072      IF (IFIND.EQ.0) GO TO 290
001073      GO TO 220

C          INDICATE THAT DATA HAS BEEN FOUND FOR THIS GRAPH
001073      330 IFIND = 1

```

```
001074      GO TO 110
           C      FND FILE PLOT TAPE
           C
001075      340  CALL PLOT3
001076      REWIND IN
001100      REWIND IN1
           C
001102      1000 FORMAT(12I6)
001102      1001 FORMAT(6E12.5)
001102      1002 FORMAT(A0A1)
001102      1003 FORMAT(2A1,AX,A3,7X.15.5X,12)
001102      STOP
001104      END
```

PROGRAM LENGTH INCLUDING I/O BUFFERS
013460

STATEMENT FUNCTION REFERENCES

LOCATION	GEN TAG	SYM TAG	REFERENCES
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STATEMENT NUMBER REFERENCES

LOCATION	GEN TAG	SYM TAG	REFERENCES
000532	L00326	3	000510
000511	L00315	4	NONE
001124	C00016	5	000032
001143	C00035	6	000103
000552	L00336	7	000531
000423	L00243	8	NONE
000456	L00262	9	000423
001005	L00511	21	NONE
001026	L00522	29	001004
000467	L00273	30	000715
000502	L00305	40	000471
000505	L00307	50	000501
000506	L00311	60	000564
			000611
			000667
			000612
			000635
			000641
			000651
000553	L00337	70	000505
001046	L00532	71	001025
000565	L00346	80	000562
000572	L00354	90	000566
000576	L00360	100	000571
000600	L00361	110	000573
			001074
000612	L00370	150	000611
000636	L00405	170	000632
000652	L00415	180	000641
000670	L00424	190	000564
000672	L00426	200	000570
000674	L00430	210	000575
000675	L00431	220	000671
			000673
			001057
			001063
			001072
000706	L00441	224	000701
000712	L00445	225	000707
000716	L00452	230	000331

000721	L00455	240	000714					
000761	L00472	240	NONE					
001002	L00505	245	000506					
001003	L00507	290	001057	001062	001072			
001047	L00533	300	001002					
001060	L00542	310	001056					
001064	L00547	320	001061					
001073	L00554	330	001071					
001075	L00556	340	000463	000474	000713	000724		
001127	C00021	800	000044					
001132	C00024	801	000050	000062	000074			
001135	C00027	802	000056					
001140	C00032	803	000070					
001145	C00037	804	000114					
001150	C00042	805	000121	000135	000213	000225		
001153	C00045	806	000130					
001156	C00050	807	000153					
001161	C00053	808	000157	000171	000247	000261	000403	000415
001164	C00056	809	000165					
001167	C00061	810	000207					
001172	C00064	811	000221					
001175	C00067	812	000243					
001200	C00072	813	000255					
001203	C00075	814	000306					
001211	C00103	815	000312					
001214	C00106	816	000345					
001221	C00113	817	000351					
001225	C00117	818	000377					
001230	C00122	819	000411					
001233	C00125	820	000437					
001240	C00132	821	000443					
001247	C00141	1000	000143	000233	000332	000364	000743	000751
001251	C00143	1001	000177	000424	000762			
001253	C00145	1002	000267					
001255	C00147	1003	000725					

BLOCK NAMES AND LENGTHS
- 073003

VARIABLE REFERENCES

LOCATION	GEN TAG	SYM TAG	REFERENCES
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000000C01	A00001	ARRAY	NONE					
001312	V00073	CONFV1	000106	000124	000617	000675		
001313	V00074	CONFV2	000110	000140	000621	000676		
000015C01	V00037	CONF	000503	000562	000565	000177	001060	
001277	V00044	CONF1	000734	000776				
000016C01	A00002	CCUNT4	NONE					
072745C01	A00034	CCUNT5	NONE					
000054C01	A00003	CCUNT6	NONE					
000112C01	V00040	CLTP	000367	000314	000406	000154		
000113C01	V00056	LCX	000014					
000114C01	V00057	LCY	000015					
001314	V00103	I	NONE					
000117C01	A00004	IARRAY	000553	001047				
001275	V00001	IRLANK	000563	000567				
001316	V00106	ICHANG	000466	000410	000670	000672	000674	000700
			000706					
001304	V00063	ICN	000021	000615	000676	000102		
001305	V00064	ICON	000022	000616				
000127C01	V00105	ICTAB	000465	000412	000600	000120		
001323	V00113	IC4	000657					
001306	V00065	IF	000023	000615	000703			
001325	V00115	IFINC	001001	001056	001062	001071	001073	
001322	V00112	ILTM	000647	000651				
001307	V00066	IN	000024	000025	001076			
001310	V00067	IN1	000025	000030	001100			
001315	V00104	IPLO	000371	000420	000460	000675	000756	
001324	V00114	ISPCT	000716	000721				
072701C01	V00075	ISPP	000146	000162	000331	000506	000714	000123
001317	V00107	ITP	000530	000551	001024	001045		
001321	V00111	I4	000625	000636	000654			
001276	V00002	I9	000712					
001320	V00110	J	000601	000646	000652			
001302	V00047	KCFV	000005	000616	000704	000110		
001311	V00072	KFLFV	000041	000077	000102	000113	000120	000127
			000134	000613				
000115C01	V00051	KX	000007					
000116C01	V00052	KY	000010					
001303	V00050	LCFV	000006	000617	000705	000111		
000131C01	V00053	NC	000011					
000132C01	V00055	NC	000013					
072702C01	V00071	NGR	000037	000065	000507	001003		
000133C01	V00101	NCPDAN	000236	000252	000423	000433	000452	000612

000134C01	V00102	NCTABS	000633	000746	000761	000771		
			000240	000264	000302	000325	000341	000360
			000473					
000135C01	V00054	NS	000012					
072744C01	V00070	NTYPE	000035	000053	000456	000462		
000136C01	V00062	NV	000020					
000137C01	V00060	NX0	000016					
072741C01	V00076	NYCYCL	000150	000174				
000140C01	V00061	NY0	000017					
000141C01	V00041	PAXANG	000504	000512	000577	001000	001064	
001300	V00045	PAXANT	000736	000777				
000142C01	A00005	PCANG	NONE					
000200C01	A00006	PCS	000740					
000217C01	A00007	PX1	NONE					
032513C01	A00020	PX10	NONE					
003153C01	A00010	PX2	NONE					
006107C01	A00011	PX3	NONE					
011043C01	A00012	PX4	NONE					
013777C01	A00013	PX5	NONE					
016733C01	A00014	PX6	NONE					
021667C01	A00015	PX7	NONE					
024623C01	A00016	PX8	NONE					
027557C01	A00017	PX9	NONE					
035447C01	A00021	PY1	NONE					
067743C01	A00032	PY10	NONE					
040403C01	A00022	PY2	NONE					
043337C01	A00023	PY3	NONE					
046273C01	A00024	PY4	NONE					
051227C01	A00025	PY5	NONE					
054163C01	A00026	PY6	NONE					
057117C01	A00027	PY7	NONE					
062053C01	A00030	PY8	NONE					
065007C01	A00031	PY9	NONE					
001301	V00046	HEAD	000464	000505	000552	000602	000717	001002
			001046					
072677C01	V00042	HEP1	000476	000553	000730	001047		
072700C01	V00043	HEP2	000500	000557	000732	001053		
072703C01	A00033	TARLES	NONE					
072742C01	V00100	XIMAX	000204	000230				
072743C01	V00077	XIMIN	000202	000216				

START OF CONSTANTS

001106

START OF TEMPORARIES

001262

START OF INDIRECTS

001266

UNUSED COMPILER SPACE

106700


```

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,NOPCAN,NOTARS,NS,NV,
2 NX0,NYC,PAXANG,POANG(30),PCS(15),PX1(50,30),PX2(50,30),
3 PX3(50,30),PX4(50,30),PX5(50,30),PX6(50,30),PX7(50,30),
4 PXR(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) X=POLAR ANGLE
C ICN IS CONFIGURATION COUNTER
C COUNT5 AND COUNT6 CONTAIN NUMBER OF POINTS FOUND FOR ELEV=CONEV1
C AND CONEV2 FOR A PARTICULAR CONFIGURATION

000012 DO 35 K=1, 5
000013 IF (REP1 .EQ. NT(K) ) GO TO 37
000016 35 CONTINUE
000020 37 KREP = K

000022 IF (IF .EQ. 0) ICON = CONF
000024 IF = 1
000025 IF (ICON .EQ. IARAY(5) ) GO TO 20
000027 ICON = ICON + 1
000030 ICON = CONF
000031 20 CONTINUE
000031 I4 = ICON

C FIXED ELEVATION FOR TABLE 1 =CONEV2
C FIXED ELEVATION FOR TABLES 2, 3, 4=CONEV1 AND CONEV2
000032 FEV = ARAY(2)
000034 DIFF = FEV-CONEV1
000035 IF (ABS(DIFF) .LT. .9) GO TO 201
000040 DIFF1 = FEV - CONEV2
000042 IF (ABS(DIFF1) .LT. .9 ) GO TO 301
000045 GO TO 199
000046 201 IF (KREP .EQ. 1 .OR. KREP .EQ. 5) GO TO 199

```

```

000056      KCEV = KCEV + 1
000057      IF (ARRAY(10) .LT. 0.0) ARRAY(10) = 1.0
000061      PY5(KCEV,I4) = ARRAY(10)
000066      PX5(KCEV,I4) = ARRAY(13)
000072      COUNT5(I4) = KCEV
000073      GO TO 199
000074 301    LCEV = LCEV + 1
000076      PX6(LCEV,I4) = ARRAY(13)
000102      NC = 10
000103      IF (KREP .EQ. 1) NC = 11
000106      IF (ARRAY(NC) .LT. 0.0) ARRAY(NC) = 1.0
000113      PY6(LCEV,I4) = ARRAY(NC)
000121      COUNT6(I4) = LCEV
000123 199    CONTINUE

000123      RETURN
000124      END

```

SUBPROGRAM LENGTH
000165

STATEMENT FUNCTION REFERENCES

LOCATION	GEN TAG	SYM TAG	REFERENCES
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STATEMENT NUMBER REFERENCES

LOCATION	GEN TAG	SYM TAG	REFERENCES
000031	L00031	20	000026
000020	L00020	37	000015
000123	L00071	199	000045 000055 000073
000046	L00042	201	000037
000074	L00056	301	000044

BLOCK NAMES AND LENGTHS
- 073003

VARIABLE REFERENCES

LOCATION	GEN TAG	SYM TAG	REFERENCES
000000C01	A00001	ARRAY	000106 000111 000117
000000	L00011	CONFV2	000040
000015C01	V00044	CONF	000022 000030
000146	V00051	CONF1	NONE
000016C01	A00002	COUNT4	NONE
072745C01	A00034	COUNT5	000071
000054C01	A00003	COUNT6	000121
000112C01	V00045	CLTP	NONE
000162	V00061	DIFF	000034
000163	V00062	DIFF1	000041
000161	V00060	FFV	000033
000117C01	A00004	IARRAY	NONE
000160	V00057	I4	000031 000062 000076 000114
000156	V00055	K	000012 000020
000157	V00056	KREF	000021 000046 000103
000164	V00063	NC	000102 000105 000106
000151	A00035	NT	000013
000141C01	V00046	PAXANG	NONE

000147	V00052	PAXANT	NONE
000142C01	A00005	PCANG	NONE
000200C01	A00006	PCS	NONE
000217C01	A00007	PX1	NONE
032513C01	A00020	PX10	NONE
003153C01	A00010	PX2	NONE
006107C01	A00011	PX3	NONE
011043C01	A00012	PX4	NONE
013777C01	A00013	PX5	000065
016733C01	A00014	PX6	000075
021667C01	A00015	PX7	NONE
024623C01	A00016	PX8	NONE
027557C01	A00017	PX9	NONE
035447C01	A00021	PY1	NONE
067743C01	A00032	PY10	NONE
040403C01	A00022	PY2	NONE
043337C01	A00023	PY3	NONE
046273C01	A00024	PY4	NONE
051227C01	A00025	PY5	000061
054163C01	A00026	PY6	000113
057117C01	A00027	PY7	NONE
062053C01	A00030	PY8	NONE
065007C01	A00031	PY9	NONE
000150	V00053	HEAD	NONE
072677C01	V00047	HFP1	000014
072700C01	V00050	HFP2	NONE
072703C01	A00033	TABIES	NONE

START OF CONSTANTS
000126

START OF TEMPORARIES
000132

START OF INDIRECTS
000140

UNUSED COMPILER SPACE
112100

SUBROUTINE CLEAR

000002

```
COMMON  ARRAY(13),CONF,COUNT4(30),COUNT6(30),CUTP,DCX,DCY,KX,KY,
1        IARRAY(8),ICTAB,IGRPH,ND,NG,NOPCAN,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,NIYPE,COUNT5(30)
```

000002

```
INTEGER  CONF, CLTP, PAXANG, POS, REP1, REP2, TABLES, COUNT4, COUNT5,
1        COUNT6, CONF I, PAXANI, READ
```

000002

```
DATA      IRLANK /1H /
```

C

INITIALIZE X AND Y STORAGE ARRAYS FOR THE 6 POSSIBLE SETS OF GRAPHS

000002

```
DO 20 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(NIYPE .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(0) = 0
```

```
000122      COUNT5(J) = 0
000124      COUNT6(J) = 0
000125      20      CONTINUE
          C      INITIALIZE CONFIGURATION AND PAX ANGLE VARIABLES
000127      CONF = IBLANK
000131      PAXANG = 1000
000132      RETURN
000132      END
```

SUBPROGRAM LENGTH
000171

STATEMENT FUNCTION REFERENCES

LOCATION	GEN TAG	SYM TAG	REFERENCES
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STATEMENT NUMBER REFERENCES

LOCATION	GEN TAG	SYM TAG	REFERENCES
000116	L00037	5	000034
000116	L00037	10	000034

BLOCK NAMES AND LENGTHS
- 073003

VARIABLE REFERENCES

LOCATION	GEN TAG	SYM TAG	REFERENCES
000000C01	A00001	ARRAY	NONE
000015C01	V00035	CONF	000130
000163	V00042	CONF1	NONE
000016C01	A00002	COUNT4	000120
072745C01	A00034	COUNT5	000122
000054C01	A00003	COUNT6	000123
000112C01	V00036	CLTP	NONE
000170	V00047	I	000004 000116
000117C01	A00004	IARRAY	NONE
000166	V00045	IRLANK	000127
000167	V00046	J	000003 000005 000120
072744C01	V00050	NTYPE	000032
000141C01	V00037	PAXANG	000131
000164	V00043	PAXANI	NONE
000142C01	A00005	PCANG	NONE
000200C01	A00006	PCS	NONE
000217C01	A00007	PX1	000034
032513C01	A00020	PX10	000061
003153C01	A00010	PX2	000040
006107C01	A00011	PX3	000043
011043C01	A00012	PX4	000005

013777C01	A00013	PX5	000011
016733C01	A00014	PX6	000014
021667C01	A00015	PX7	000047
024623C01	A00016	PX8	000052
027557C01	A00017	PX9	000056
035447C01	A00021	PY1	000065
067743C01	A00032	PY10	000112
040403C01	A00022	PY2	000070
043337C01	A00023	PY3	000074
046273C01	A00024	PY4	000020
051227C01	A00025	PY5	000023
054163C01	A00026	PY6	000027
057117C01	A00027	PY7	000077
062053C01	A00030	PY8	000103
065007C01	A00031	PY9	000106
000165	V00044	HEAD	NONE
072677C01	V00040	HFP1	NONE
072700C01	V00041	HFP2	NONE
072703C01	A00033	TARLES	NONE

START OF CONSTANTS
000134

START OF TEMPORARIES
000135

START OF INDIRECTS
000137

UNUSED COMPILER SPACE
112100


```

000005      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 10 I = 1,10
000006      IF (IABS(N).NE.I) GO TO 10
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 15
000016      10  CONTINUE
000020      15  RETURN
000021      END

```

SUBPROGRAM LENGTH
000057

STATEMENT FUNCTION REFERENCES

LOCATION	GEN TAG	SYM TAG	REFERENCES
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STATEMENT NUMBER REFERENCES

LOCATION	GEN TAG	SYM TAG	REFERENCES
000016	L00021	10	000007
000020	L00023	15	000015

BLOCK NAMES AND LENGTHS

VARIABLE REFERENCES

LOCATION	GEN TAG	SYM TAG	REFERENCES
000032	A00001	DECS	000010
000056	V00004	I	000005 000006 000016

START OF CONSTANTS
000023

START OF TEMPORARIES
000024

START OF INDIRECTS
000030

UNUSED COMPILER SPACE
112700

```

      SUBROUTINE LSQUAR(M,N,X,Y,H,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),R(25)
C
C  CALCULATION OF COEFFICIENTS
000011      IC=M + 1
000013      IC2 = IC + 1
000014      XSUM(1)=N
000015      I2=2*M
000016      DO 3 I1=1,I2
000017      J=I1+1
000021      XSUM(J)=0.
000023      DO 3 I3 =1,N
000024      3 XSUM(J)=XSUM(J)+X(I3)**I1
C
C  TRANSFER OF COEFFICIENTS TO MATRIX
000037      DO 4 I =1,IC
000041      K=I
000042      DO 4 J =1,IC
000044      A(I,J) = XSUM(K)
000052      4 K = K +1
C
C  CALCULATION OF CONSTANTS
000057      YSUM(1)=0.0
000060      DO 5 I = 1,N
000061      5 YSUM(1) = YSUM(1) + Y(I)
000065      DO 6 K= 1,M
000066      K1=K+1
000070      YSUM(K1)=0.
000072      DO 6 I= 1,N
000073      6 YSUM(K1) =YSUM(K1) +Y(I)*X(I)**K
C
C  TRANSFER OF CONSTANTS TO MATRIX
000110      DO 7 I= 1,IC
000111      7 A(I,IC2) = YSUM(I)
C
C  SIMULTANEOUS LINEAR EQUATION SUBPROGRAM
000123      CALL LSIMEQ (A,25 ,IC,1)

```

```

000126      DO 200 I = 1, IC
000133      200 R(I) = A(I,IC2)

C
C  CALCULATION OF SIGMA
000145      SIGMA=0.0
000146      DO 8 K= 1,N
000147      YC = A(1,IC2)
000154      DO 9 I= 2,IC
000155      9 YC = YC +A(I,IC2) *X(K)**(I-1)
000175      8 SIGMA = SIGMA + (YC-Y(K))**2
000203      RETURN
000203      END

```

SUBPROGRAM LENGTH
001562

STATEMENT FUNCTION REFERENCES

LOCATION	GEN TAG	SYM TAG	REFERENCES
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STATEMENT NUMBER REFERENCES

LOCATION	GEN TAG	SYM TAG	REFERENCES
000024	L00025	3	NONE
000061	L00050	5	000064
000073	L00062	6	NONE
000111	L00071	7	NONE
000133	L00101	200	NONE

BLOCK NAMES AND LENGTHS

VARIABLE REFERENCES

148

LOCATION	GEN TAG	SYM TAG	REFERENCES
000223	A00001	A	000044 000112 000123 000133 000147 000156
001556	V00020	I	000040 000044 000054 000060 000072 000103
			000110 000132 000154 000162 000171
001550	V00012	IC	000012 000052 000116 000124 000140 000172
001551	V00013	IC?	000013 000112 000133 000147 000157
001553	V00015	I1	000016 000026 000034
001552	V00014	I2	000015 000035
001555	V00017	I3	000023 000032
001554	V00016	J	000020 000024 000043
001557	V00021	K	000041 000047 000065 000077 000105 000146
			000155 000174
001560	V00022	K1	000067 000073
001435	A00002	XSUM	000014 000021 000024 000050
001561	V00023	Y	000153 000166 000176
001517	A00003	YSUM	000057 000062 000070 000073 000111

START OF CONSTANTS
000205

START OF TEMPORARIES

000210

START OF INDIRECTS

000220

UNUSED COMPILER SPACE

112200

```

SUBROUTINE LIMITS(NC,XS,YS,XI,YI,ILIM)
000011 DIMENSION XS(2),YS(2)
C      NC = 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 10 I = 1,NC
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 20
000032 10 CONTINUE
C      INDICATE THAT THESE VALUES SHOULD BE STORED
000034 ILIM = 1
000035 20 RETURN
000036 END

```

SUBPROGRAM LENGTH
000054

STATEMENT FUNCTION REFERENCES

LOCATION	GEN TAG	SYM TAG	REFERENCES
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STATEMENT NUMBER REFERENCES

LOCATION	GEN TAG	SYM TAG	REFERENCES
000035	LU0027	20	000031

BLOCK NAMES AND LENGTHS

VARIABLE REFERENCES

LOCATION	GEN TAG	SYM TAG	REFERENCES
000051	V00011	I	000015 000031
000047	V00007	IXI	000016 000021
000052	V00012	IXS	000017 000022
000050	V00010	IYI	000013 000025
000053	V00013	IYS	000022 000026

START OF CONSTANTS
000040

START OF TEMPORARIES
000041

START OF INDIRECTS
000045

UNUSED COMPILER SPACE
112700


```

SUBROUTINE MINI(A,B,C,NYO)
000007 COMMON ARAY(13),CONF,COUNT4(30),COUNT6(30),CUTP,DCX,DCY,KX,KY,
1 IARAY(8),ICTAR,IGRPH,ND,NG,NOPCAN,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,X1MAX,X1MIN,NTYPE,COUNT5(30)
000007 INTEGER CONF,CLTP,PAXANG,PCS,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 10 I = 1,20
000010 IF (A.GT.SCALE(I).AND.A.LT.SCALE(I+1)) GO TO 20
000021 10 CONTINUE
C IF THE MINIMUM IS NOT WITHIN RANGE OF SCALE,LET AICRT4 SELECT LIMIT
000023 NYO = 1
000024 GO TO 50
000024 20 INDEX1 = I
000026 INDEX = I + NYCYCL
000027 R = SCALE(I)
C FIND UPPER LIMIT
000031 DO 30 I = 1,21
000032 ALOW = SCALE(I) * 0.5
000035 HIGH = SCALE(I) + ALOW
000037 IF (C.GT.ALOW.AND.C.LT.HIGH) GO TO 40
000047 30 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 50

```

```

C      CENTER CYCLES CONTAINING DATA POINTS
40    C = SCALE(INDEX)
      IF ((1-INDEX).GE.(NYCYCL-1)) GO TO 50
      IDIF = I - INDEX
      INC = (NYCYCL - IDIF)/2
      IL = INDEX - INC
      IH = I + INC
      R = SCALE(IL)
      C = SCALE(IH)
      IDIF1 = IH - IL
      IF (IDIF1.EQ.NYCYCL) GO TO 50
      ITEMP = NYCYCL - IDIF1 + IH
      C = SCALE(ITEMP)
50    RETURN
      END
000070
000072
000076
000077
000101
000102
000103
000105
000107
000110
000112
000113
000115
000116

```

SUBPROGRAM LENGTH
000206

STATEMENT FUNCTION REFERENCES

LOCATION	GEN TAG	SYM TAG	REFERENCES
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STATEMENT NUMBER REFERENCES

LOCATION	GEN TAG	SYM TAG	REFERENCES
000024	LU0021	20	000020
000070	LU0047	40	000046
000115	LU0065	50	000023 000067 000075 000111

BLOCK NAMES AND LENGTHS
- 073003

VARIABLE REFERENCES

154

LOCATION	GEN TAG	SYM TAG	REFERENCES
000174	V00056	ALOW	000034 000035
000000C01	A00001	ARRAY	NONE
000176	V00060	CMAK	000054
000177	V00061	CMAKX	000056 000062 000063
000015C01	V00041	CCNF	NONE
000141	V00046	CCNF1	NONE
000016C01	A00002	CCUNT4	NONE
072745C01	A00034	CCUNT5	NONE
000054C01	A00003	CCUNT6	NONE
000112C01	V00042	CLTP	NONE
000175	V00057	HIGH	000036 000042
000171	V00052	I	000007 000020 000024 000031 000046 000073
000117C01	A00004	IARRAY	NONE
000200	V00062	ICIF	000076
000204	V00066	ICIF1	000107
000203	V00065	IF	000102 000105
000202	V00064	IL	000101 000103
000201	V00063	INC	000100
000173	V00054	INDEX	000026 000070
000172	V00053	INDEX1	000025 000074

000205	V00067	ITEMP	000112					
072741C01	V00055	NYCYCI	000025	000012	000110			
000141C01	V00043	PAXANG	NONE					
000142	V00047	PAXANI	NONE					
000142C01	A00005	PCANG	NONE					
000200C01	A00006	PCS	NONE					
000217C01	A00007	PX1	NONE					
032513C01	A00020	PX10	NONE					
003153C01	A00010	PX2	NONE					
006107C01	A00011	PX3	NONE					
011043C01	A00012	PX4	NONE					
013777C01	A00013	PX5	NONE					
016733C01	A00014	PX6	NONE					
021667C01	A00015	PX7	NONE					
024623C01	A00016	PX8	NONE					
027557C01	A00017	PX9	NONE					
035447C01	A00021	PY1	NONE					
067743C01	A00032	PY10	NONE					
040403C01	A00022	PY2	NONE					
043337C01	A00023	PY3	NONE					
046273C01	A00024	PY4	NONE					
051227C01	A00025	PY5	NONE					
054163C01	A00026	PY6	NONE					
057117C01	A00027	PY7	NONE					
062053C01	A00030	PY8	NONE					
065007C01	A00031	PY9	NONE					
000143	V00050	KEAD	NONE					
072677C01	V00044	KEP1	NONE					
072700C01	V00045	KEP2	NONE					
000144	A00035	SCALE	000010	000011	000027	000032	000034	000070
			000103	000105	000113			
072703C01	A00033	TABLES	NONE					

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   R = 1.0
000007   N = 1
C       FIND FIRST NON-ZERO ORDINATE VALUE FOR FURTHER COMPARISONS
000010   DO 10 J = 1,30
000012   DO 10 I = 1,50
000013   IF (Y(I,J).EQ.0.0) GO TO 10
000017   C = Y(I,J)
000023   GO TO 20
000023  10  CONTINUE
C       FIND SMALLEST NON-ZERO VALUE IN ORDINATE ARRAY
000027  20  DO 30 J = 1,30
000031      DO 30 I = 1,50
000032      IF (Y(I,J).EQ.0.0) GO TO 30
000036      IF (Y(I,J).LT.C) C = Y(I,J)
000046  30  CONTINUE

000052   YMAX = Y(1,1)
000053   DO 50 L=1, 30
000055   DO 50 K=1, 50
000056   50  YMAX = AMAX1(Y(L,K), YMAX)
000070   R=YMAX

C       CALL SUBROUTINE MINT TO DETERMINE Y MIN AND MAX FOR GRAPH
000071   CALL MINT(C,A,B,N)
000073   IF(A .EQ. B) B=B*10.0
000100   RETURN
000101   END

```

SUBPROGRAM LENGTH
000124

STATEMENT FUNCTION REFERENCES

LOCATION	GEN TAG	SYM TAG	REFERENCES
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STATEMENT NUMBER REFERENCES

LOCATION	GEN TAG	SYM TAG	REFERENCES
000023	L00023	10	000016
000027	L00026	20	000022
000046	L00041	30	000035 000042
000056	L00053	50	NONE

BLOCK NAMES AND LENGTHS

VARIABLE REFERENCES

LOCATION	GEN TAG	SYM TAG	REFERENCES
000120	V00007	C	000022 000040 000070
000117	V00006	I	000012 000043 000031
000116	V00005	J	000011 000014 000025 000046
000123	V00012	K	000055 000030 000033 000050
000122	V00011	L	000054 000056 000065
000115	V00004	N	000007 000071
000121	V00010	YMAX	000052 000061

START OF CONSTANTS
000103

START OF TEMPORARIES
000106

START OF INDIRECTS
000112

UNUSED COMPILER SPACE
112600

```

SUBROUTINE POINTS(XVALS,YVALS,ICOUNT,COEF,ICATCH,XLOW,XTOP,YLOW,
1             YTOP,TITLE,ABSCIS,ORDIN,KC,XRAY,YRAY,NPOINTS)
000023 COMMON  ARRAY(13),CONF,COUNT4(30),COUNT6(30),CUTP,DCX,DCY,KX,KY,
1             IARRAY(8),ICTAR,IGRPH,ND,NG,NOPCAN,NOTARS,NS,NV,
2             NX0,NYC,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,KTYPE,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             40,41,50,51,52,53,54,55,56,57,61,62,63,64 /

```

```

C      ARGUMENTS OF SUBROUTINE FOLLOW -
C      XVALS - ABSCISSA VALUES
C      YVALS - ORDINATE VALUES
C      ICOUNT - NO. OF POINTS
C      COEF - COEFFICIENTS OF POLYNOMIAL GENERATED BY LEAST SQUARES FIT
C      ICATCH - 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      NPOINTS - UPON ENTRANCE TO SUBROUTINE CONTAINS INDICATOR IPLO VALUE
C      NPOINTS - RETURN ARGUMENT CONTAINS TOTAL NO. OF GENERATED POINTS
C      STORE INDICATOR FOR TYPE OF GRAPH IN IPLO
000023 IPLO = NPOINTS
C      SET INDICATOR NV, 1 - JOIN POINTS, 2 - DO NOT JOIN POINTS

```

```

000024 NV = 1
000025 IF (IPLO.EQ.0.OR.IPLO.EQ.3) NV = 2

```



```

000035 C      SET INDICATOR NF, 1 - ADVANCE FRAME, 2 - DO NOT ADVANCE FRAME
000036 NF = 1
000036 IF (IFLC.EQ.0.OR.IPLO.EQ.1) GO TO 35
000045 IF (ICATOR .GT. 1) NF = 2
C      IS A LEAST SQUARES FIT DESIRED
000047 35 CONTINUE
000047 IF (IGHPT .EQ. 2) NF=1
000052 IF (IPLO .EQ. 1 .OR. IFLC .EQ. 2) GO TO 910
C      INDICATE CHARACTER TO BE PLOTTED IS A BLANK
000062 NC = 48

```

```

C      INITIALIZE VARIABLES
000063 JPTS = 100
000064 NPIS = ICOUNT
000065 XDIV = IJPTS
000067 YDIV=XDIV
000070 NPONTS=0
000071 A0=COEF(1)
000072 A1=COEF(2)
000074 A2=COEF(3)
000075 A3=COEF(4)
CZ1  DETERMINE X AND Y INCREMENTS
000077 XINC=(XTOP-XLCW)/XDIV
000102 YINC=(YTOP-YLCW)/YDIV
000105 DO 40 J=1,JPTS
000107 XRAY(J)=0.
000111 YRAY(J)=0.
000113 40 CONTINUE
000115 TEMPX=XVALS(1)
C      GENERATE POINTS
000116 DO 45 KX1 = 1,JPTS
000120 YRAY(NPONT) = TEMPY
000123 XRAY(NPONT) = TEMPX
000126 44 TEMPX = TEMPX + XINC
000130 IF (TEMPX .GT. XVALS(NPTS) ) GO TO 900
000135 45 CONTINUE
000137 TEMPY = A0 + A1*TEMPX + A2*TEMPX**2 + A3*TEMPX**3
000146 IF (TEMPY.LE.0) GO TO 44
000147 NPONT = NPONT + 1
000151 GO TO 900
000152 900 CONTINUE

```

```

C      CALL AICRT4 SUBROUTINE TO PLOT GENERATED DATA POINTS
000152  CALL AICRT4(KX,KY,XRAY,YRAY,NPOINTS,ND,NV,NS,NC,TITLE,ARSCIS,ORDIN,
1      NF,NG,DCX,DCY,NXC,XLOW,XTOP,NYU,YLOW,YTOP,R,R,R)
C      RESET VARIABLES TO PLOT ORIGINAL DATA PIS. IN CASE OF LEAST SQ. FIT
000210  NF = 2
000211  NV = 1
000212  NXU = 2
000213  NYU = 2

C      ARE WE PLOTTING MULTIPLE CURVES ON ONE GRID
000214  910 IF (IPLC.GE.2) GO TO 915
C      SET CHARACTER CODE FOR SINGLE CURVES
000222  NC = 64
000223  GO TO 916
C      FIND APPROPRIATE CHARACTER FOR THE CURVE NO. IN PROCESS
000224  915 NC = 55
000225  DO 917 INC = 1,30
000227  IF (KC.FQ.INC) NC = ICHAR(INC)
000233  917 CONTINUE
000235  916 CONTINUE
C      ARE WE PLOTTING ONE CURVE / PLOT
000235  IF (IPLC.NF.1.AND.IPLC.NF.2) GO TO 930
C      SET XMIN AND XMAX
000245  920 CONTINUE
000245  IF (IGHPT.EQ.2) GO TO 930
000247  XLOW = XMIN
000250  XTOP = XMAX
000252  921 CONTINUE
C      ARE WE PLOTTING ONE CURVE/PLOT
000252  IF (IPLC.NF.1) GO TO 930
C      DETERMINE Y MIN AND Y MAX, CENTER CYCLES WITH DATA PIS.
000254  YMIN = YVALS(1)
000255  DO 925 I = 1,CCOUNT
000257  IF (YVALS(I).LT.YMIN) YMIN = YVALS(I)
000264  925 CONTINUE
000267  CALL MIN1(YMIN,YLOW,YTOP,NYC)
C      CALL AICRT4 SUBROUTINE TO PLOT DATA POINTS
000273  930 CALL AICRT4(KX,KY,XVALS,YVALS,CCOUNT,ND,NV,NS,NC,TITLE,ARSCIS,
1      ORDIN,NF,NG,DCX,DCY,NXC,XLOW,XTOP,NYC,YLOW,YTOP,R,R,R)
000334  990 RETURN
000335  END

```

SUBPROGRAM LENGTH
000442

STATEMENT FUNCTION REFERENCES

LOCATION	GEN TAG	SYM TAG	REFERENCES
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STATEMENT NUMBER REFERENCES

LOCATION	GEN TAG	SYM TAG	REFERENCES
000047	L00041	35	000044 000045
000126	L00100	44	000146
000152	L00112	900	000133 000151
000214	L00120	910	000061
000224	L00124	915	000221
000235	L00135	916	000223
000233	L00133	917	000230
000245	L00141	920	NONE
000252	L00145	921	NONE
000264	L00156	925	000261
000273	L00162	930	000244 000246 000253
000334	L00164	990	NONE

BLOCK NAMES AND LENGTHS
- 073003

VARIABLE REFERENCES

LOCATION	GEN TAG	SYM TAG	REFERENCES
000004	L00015	ARSCIS	000164 000310
000000C01	A00001	ARRAY	NONE
000425	V00077	A0	000071 000140
000426	V00100	A1	000073 000140
000427	V00101	A2	000074 000141
000430	V00102	A3	000076 000142
000015C01	V00055	CONF	NONE
000355	V00062	CONF1	NONE
000016C01	A00002	COUNT4	NONE
072745C01	A00034	COUNT5	NONE
000054C01	A00003	COUNT6	NONE

000112C01	V00056	CLTP	NONE					
000113C01	V00116	LCX	000171	000315				
000114C01	V00117	LCY	000172	000316				
000441	V00126	L	000256	000204				
000117C01	A00004	LARAY	NONE					
000360	A00035	LCHAR	000230					
000130C01	V00071	LGRPT	000047	000245				
000437	V00122	LNO	000226	000233				
000416	V00066	LPLC	000023	000025	000052	000417	000235	000252
000433	V00105	J	000106					
000421	V00073	JPTS	000063	000065	000113	000135		
000006	L00017	KC	000226					
000115C01	V00111	KX	000152	000276				
000435	V00107	KXJ	000117	000134				
000116C01	V00112	KY	000152	000277				
000420	V00072	KC	000062	000162	000222	000424	000232	000306
000131C01	V00113	KC	000156	000302				
000417	V00070	KE	000035	000046	000051	000167	000210	000313
000132C01	V00115	KE	000170	000314				
000011	L00022	KPOINTS	000022	000076	000121	000147	000155	
000422	V00074	KETS	000064	000130				
000135C01	V00114	KS	000161	000305				
000136C01	V00067	KV	000024	000034	000160	000411	000304	
000137C01	V00120	KX0	000173	000212	000317			
000140C01	V00121	KY0	000177	000213	000271	000323		
000005	L00016	ORDIN	000166	000312				
000141C01	V00057	PAXANG	NONE					
000356	V00063	PAXANT	NONE					
000142C01	A00005	PCANG	NONE					
000200C01	A00006	PCS	NONE					
000217C01	A00007	PX1	NONE					
032513C01	A00020	PX10	NONE					
003153C01	A00010	PX2	NONE					
006107C01	A00011	PX3	NONE					
011043C01	A00012	PX4	NONE					
013777C01	A00013	PX5	NONE					
016733C01	A00014	PX6	NONE					
021667C01	A00015	PX7	NONE					
024623C01	A00016	PX8	NONE					
027557C01	A00017	PX9	NONE					
035447C01	A00021	PY1	NONE					
067743C01	A00032	PY10	NONE					

040403C01	A00022	PY2	NONE			
043337C01	A00023	PY3	NONE			
046273C01	A00024	PY4	NONE			
051227C01	A00025	PY5	NONE			
054163C01	A00026	PY6	NONE			
057117C01	A00027	PY7	NONE			
062053C01	A00030	PY8	NONE			
065007C01	A00031	PY9	NONE			
000357	V00064	HFAD	NONE			
072677C01	V00060	HEP1	NONE			
072700C01	V00061	HEP2	NONE			
072703C01	A00033	IARLES	NONE			
000434	V00106	TFMPX	000115	V00124	000126	
000436	V00110	TFMPY	000122	V00145		
000003	L00014	IITLE	000163	V00307		
000423	V00075	AFIV	000066	V00100		
072742C01	V00124	ATMAX	000250			
072743C01	V00123	ATMIN	000247			
000431	V00103	ATNC	000101	V00126		
000007	L00020	ARRAY	000107	V00123	000153	
000000	L00011	ATOP	000076	V00176	000251	000322
000424	V00076	YFIV	000067	V00103		
000432	V00104	YJNC	000104			
000001	L00012	YLOW	000102	V00200	000267	000324
000440	V00125	YMIN	000254	V00260	000266	
000010	L00021	YRAY	000111	V00120	000154	
000002	L00013	YTOP	000101	V00202	000270	000326

START OF CONSTANTS

000337

START OF TEMPORARIES

000341

START OF INDIRECTS

000351

UNUSED COMPILER SPACE

111200

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SUBROUTINE HEADER(ARSCIS,ORDIN,IPLU,KPL)
000007 COMMON ARAY(13),CONF,COUNT4(30),COUNT6(30),CLTP,DCX,DCY,KX,KY,
1 IARAY(8),ICTAB,IGRPH,ND,NG,NORCAN,NOTARS,NS,NV,
2 NXC,NYC,PAXANG,POANG(30),FCS(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,KTYPE,COUNT5(30)
000007 INTEGER CONF,CLTP,PAXANG,FCS,REP1,REP2,TABLES,COUNT4,COUNT5,
1 COUNT6,CONF1,PAXANI,HEAD,ANUM
000007 DIMENSION ANUM(5),XTITLE(5),YTITLE(12),YDIREC(13),CTITLE(4),
1 ARSCIS(8),ORDIN(8)

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

000007 DATA YDIREC/ 10HDIRECT NE,10HUTS CM2-SF,10HC-W ,
1 10HDIRECT RAD,10HS(C) HR-W ,10HDIRECT H-1,
2 10H0 CAP GM-S,10HFC-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 PLANK OUT ARSCISSA AND ORDINATE LABEL ARRAYS
000007 DO 10 I = 1,8
000010 ARSCIS(I) = PLANK
000012 10 ORDIN(I) = PLANK

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 (40,50) IGRPH

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000023      40  ABSCIS(4) = XTITLF(3)
000025      IF(IPL0 .GE. 2) GO TO 60
000027      ABSCIS(1) = CTITLE(3)
000031      GO TO 60
000031      50  ABSCIS(4) = XTITLE(4)
000033      ABSCIS(5) = XTITLE(5)
000034      ABSCIS(1)=CTITLF(2)

C      SET UP Y LABEL AS A FUNCTION OF GRAPH TYPE AND ARRAY POSITION
000036      60  CONTINUE
000036      IF(KPL .NE. 1) GO TO 200
000040      DO 70 K3 = 1,5
000041      IF(REF1 .EQ. ANUM(K3) ) GO TO 75
000044      70  CONTINUE
000046      75  KREF = K3
000050      GO TO (101,102,103,104,105) KREF
000060      101 CONTINUE
000060      ORDIN(4) = YTITLF(4)
000062      ORDIN(5) = YTITLF(5)
000063      GO TO 275
000064      102 CONTINUE
000064      ORDIN(4) = YTITLF(6)
000066      ORDIN(5) = YTITLF(7)
000067      GO TO 275
000070      103 CONTINUE
000070      ORDIN(4) = YTITLF(10)
000072      ORDIN(5) = YTITLF(7)
000073      GO TO 275
000074      104 CONTINUE
000074      ORDIN(4)= YTITLF(11)
000076      ORDIN(5) = YTITLF(7)
000077      GO TO 275
000100      105 CONTINUE
000100      ORDIN(4) = YTITLF(8)
000102      ORDIN(5) = YTITLF(9)
000103      GO TO 275
000104      200 CONTINUE
000104      DO 198 K5=1,5
000106      IF( REF1 .EQ. ANUM(K5) ) GO TO 199
000111      198 CONTINUE
000113      199  KREF = K5
000115      GO TO (201,202,203,204,205) KREF

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000125      201  ORDIN(4) = YCIRFC(1)
000127          ORDIN(5) = YCIRFC(2)
000130          ORDIN(6) = YCIRFC(3)
000132          GO TO 275
000132      202  CONTINUE
000132          ORDIN(4) = YCIRFC(4)
000134          ORDIN(5) = YCIRFC(5)
000135          GO TO 275
000136      203  CONTINUE
000136          ORDIN(4) = YCIRFC(4)
000140          ORDIN(5) = YCIRFC(5)
000141          GO TO 275
000142      204  CONTINUE
000142          ORDIN(4) = YCIRFC(4)
000144          ORDIN(5) = YCIRFC(10)
000145          GO TO 275
000146      205  CONTINUE
000146          ORDIN(4) = YCIRFC(6)
000150          ORDIN(5) = YCIRFC(7)
000151          ORDIN(6) = YCIRFC(8)
000153      275  RETURN
000154          END

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SUBPROGRAM LENGTH

000243

STATEMENT FUNCTION REFERENCES

LOCATION	GEN TAG	SYM TAG	REFERENCES
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STATEMENT NUMBER REFERENCES

LOCATION	GEN TAG	SYM TAG	REFERENCES
000023	L00017	40	000021
000031	L00024	50	000022
000036	L00027	60	000026 000030
000046	L00037	75	000043
000060	L00042	101	000053
000064	L00045	102	000054
000070	L00050	103	000055
000074	L00053	104	000056
000100	L00056	105	000057
000113	L00067	199	000110
000104	L00061	200	000037
000125	L00072	201	000120
000132	L00076	202	000121
000136	L00101	203	000122
000142	L00104	204	000123
000146	L00107	205	000124
000153	L00112	275	000063 000067 000073 000077 000103 000131
			000135 000141 000145

BLOCK NAMES AND LENGTHS

- 073003

VARIABLE REFERENCES

LOCATION	GEN TAG	SYM TAG	REFERENCES
000167	A00035	AKUM	000041 000106
000000C01	A00001	ARRAY	NONE
000236	V00056	BIANK	000011
000015C01	V00041	CONF	NONE
000164	V00046	CONF1	NONE

000016C01	A00002	COUNT4	NONE	
072745C01	A00034	COUNT5	NONE	
000054C01	A00003	COUNT6	NONE	
000232	A00041	CTITLE	NONE	
000112C01	V00042	CLTP	NONE	
000237	V00057	I	000007	
000117C01	A00004	ISRAY	NONE	
000130C01	V00060	IGHPT	000015	
000241	V00062	KRFP	000047	V00114
000240	V00061	K3	000040	V00046
000242	V00063	K5	000105	V00113
000141C01	V00043	PAXANG	NONE	
000165	V00047	PAXANI	NONE	
000142C01	A00005	PRANG	NONE	
000200C01	A00006	POS	NONE	
000217C01	A00007	PX1	NONE	
032513C01	A00020	PX10	NONE	
003153C01	A00010	PX2	NONE	
006107C01	A00011	PX3	NONE	
011043C01	A00012	PX4	NONE	
013777C01	A00013	PX5	NONE	
016733C01	A00014	PX6	NONE	
021667C01	A00015	PX7	NONE	
024623C01	A00016	PX8	NONE	
027557C01	A00017	PX9	NONE	
035447C01	A00021	PY1	NONE	
067743C01	A00032	PY10	NONE	
040403C01	A00022	PY2	NONE	
043337C01	A00023	PY3	NONE	
046273C01	A00024	PY4	NONE	
051227C01	A00025	PY5	NONE	
054163C01	A00026	PY6	NONE	
057117C01	A00027	PY7	NONE	
062053C01	A00030	PY8	NONE	
065007C01	A00031	PY9	NONE	
000166	V00050	REFD	NONE	
072677C01	V00044	REF1	000042	V00107
072700C01	V00045	REF2	NONE	
072703C01	A00033	TAPLES	NONE	
000174	A00036	XTITLE	NONE	
000215	A00040	YDIRECT	000125	
000201	A00037	YTITLE	NONE	

START OF CONSTANTS

000156

START OF TEMPORARIES

000157

START OF INDIRECTS

000161

UNUSED COMPILER SPACE

111600

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SUBROUTINE SF10P(IFLC,CONEV1,CONEV2,ICN)
000007 COMMON ARAY(13),CONF,COU14(3),COU16(30),CUTP,DCX,DCY,KX,KY,
1 IARAY(8),ICTAR,IGRPF,NO,NG,N)PCAN,NOTARF,OS,AV,
2 MXC,MYC,PAXANG,PCANG(30),PCS(15),PX1(50,30),PX2(50,30),
3 PX3(50,30),PX4(50,30),PX5(50,30),PX6(50,30),PX7(50,30),
4 PXR(50,30),PAY(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),REF1,REF2,ISHP,NGR,
7 TABLES(2,15),NYCYC,ALMAX,ALMIN,ALYF,COU15(30)
000007 EQUIVALENCE(CONF,PCANG)
000007 INTEGER CONF, CUTP, PAXANG,PCS,REF1,REF2,TABLES,COU14,COU15,
1 COU16,CONF1,PAXANT,HEAD
000007 DIMENSION TITLE(8),DECS(20),AMSCIS(8),ORDIN(8),STORFX(1000),
1 STORFY(1000),COFF(4,30),NOREP(5),REFITL(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 REFTIL/6HREF 1 ,6HREF 2 ,6HREF 3 ,6HREF 4 ,6HREF 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(REF1.EQ. NOREP(I)) GO TO 4
000023 5 CONTINUE
000025 4 TITLE(I) = REFTIL(I)
000030 APAX = PAXANG
000031 CALL BNRCOV(APAX,PCANG,PCS)
000034 TITLE(3) = PCANG
000036 TITLE(4) = BLANK

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

000057      15     TITLE(5) = FCCNF
000061      IFOUND = 0

000062      105    IFOUND = 0
C          WERE THERE ANY POLAR ANGLE VALUES FOR WHICH TO SEARCH
000063      IF (NOPOAN.EQ.0) GO TO 160
000064      DO 110 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 110
000071      IFOUND = 1
C          IS AT LEAST SQUARES FIT WANTED
000072      IF (IFLC.EQ.1.OR.IPLO.EQ.2) GO TO 110
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      110    CONTINUE

C          HAS SUFFICIENT DATA BEEN FOUND FOR AT LEAST ONE CURVE
000127      IF (IFOUND.EQ.0) GO TO 160
C          1ST GRAPH - FAMILY OF CURVES FOR VARIOUS POLAR ANG., X=CORE RAY, Y=VAR
000130      IGRAPH = 1

C          CALL HEADER SUBROUTINE TO LABEL X AND Y AXES
000131      CALL HEADER(ABSCIS,ORDIN,IPL0,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      NX0=2

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000145      DO 140 IP = 1,NCP0AN
C          IF CUTOFF POINT FOR NO. OF CURVES ON GRAPH REACHED, ADVANCE FRAME
000151      IF (IP.EQ.CLIF.AND.CUIP.NE.NOP0AN) IND = 0

C          HAVE SUFFICIENT PTS. BEEN FOUND TO PLOT CURVE
000161      IF (COUNT4(IP).LT.MMM) GO TO 140
C          MULTIPLE CURVES/PLCT
000165      IF (IFLC.GT.1) GO TO 120
000170      ABSCIS(2) = BLANK
000171      ABSCIS(3) = BLANK
C          CONVERT VALUE OF POLAR ANGLE FOR WHICH CURVE DRAWN TO RCD
000172      CALL ENPCDV(PCANG(IP),RCDWD,NPS)
C          INCLUDE CONVERTED VALUE IN ABSCISSA LABEL
000176      ABSCIS(2) = RCDWD
000200      CALL CONVER(ABSCIS(3),NPS)
C          UPDATE CURVE COUNTER
000202      120 IND = IND + 1
C          STORE THE VALUE OF IPLO IN ARGUMENT NPOINTS FOR POINTS SUBROUTINE
000204      NPOINT = IPIC

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,CHDIN,IP,STCRES,STCRES,NPOINT)
C          WAS LEAST SQUARES FIT WANTED
000242      IF (IFLC.EQ.1.OR.IFLC.EQ.2) GO TO 140

000254      140 CONTINUE
C          2ND GRAPH - CURVE FOR ELEVATION = 474CM OR 148CM (X=POLAR ANGLE,Y=VARIABLE)
C          ONE CURVE/GRID

000257      151 CONTINUE
000257      IP = 1CN
000260      N=COUNT5(IP)
000263      IF(COUNT5(IP) .LT. MMM) GO TO 157
000266      IF(IPLO .EQ. 1 .OR. IFLO .EQ. 2) GO TO 159

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

C          GRAPH 6 CURVE AT CONSTANT ELEVATION(474CM OR 148CM) X= POLAR ANGLE
000316      159 CONTINUE

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000316      IGRPH = 2
C          CALL HFADEP TO LABEL X AND Y AXES
000317      CALL HFADEP(ABSCIS,ORDIN,IPLO,KPL)
C          LET ALCRT4 SELECT YMIN, YMAX, XMIN, XMAX
000325      NXO=1
000326      NYO=1

000327      ABSCIS(2) = BLANK
000331      ABSCIS(3) = BLANK
C          CONVERT ELEVATION VALUE TO RCD AND INCLUDE IN ABSCISSA LABEL
000332      CELEV = CONEV1
000335      CALL BNRCOV(CELEV,BCDWD,NDS)
000340      CALL CONVER(ABSCIS(3),NDS)
000343      ABSCIS(2) = BCDWD
000345      IND = 1
000346      IP = ICA

C          STORE THE VALUE OF IPLO IN ARGUMENT NPOINTS FOR POINTS SUBROUTINE
000351      NPOINT = IPLO
000352      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,
2          NPOINT )

000405      157 CONTINUE
000405      IP = ICA
000411      N=COUNT6(IP)
000413      IF(COUNT6(IP) .LT. MMM) GO TO 160
000416      IF(IPLO .EQ. 1 .OR. IPLO .EQ. 2) GO TO 163
000425      CALL LSQUAR(M,N,PX6(1,IP),PY6(1,IP),COEF(1,IP),SIGMA)

000444      163 CONTINUE
C          ONE CURVE/GRID
000444      IGRPH = 2
000445      CALL HFADEP(ABSCIS,ORDIN,IPLO,KPL)
000453      ABSCIS(2) = BLANK
000455      ABSCIS(3) = BLANK

C          CONVERT ELEVATION VALUE TO RCD
000456      CELEV = CONEV2
000461      CALL BNRCOV(CELEV,BCDWD,NDS)
000464      ABSCIS(2) = BCDWD

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000466      CALL CONVER(ABSCTS(3), ADS)
000470      IND = 1

      C      LET ALCRT4 SELECT YMIN, YMAX, XMIN, XMAX
000471      NX0=1
000472      NY0=1
000473      NPOINT = IPLC
000477      CALL POINTS(PX6(1,IP),PY6(1,IP),COUNT6(IP),COEF(1,IP),TAP,XMIN,
1          XMAX,YMIN,YMAX,TITLE,ANSCIS,ORDIN,IP,STOREX,STOREY,NPOINT)

000531      160 RETURN
000532      END

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SUBPROGRAM LENGTH
004773

STATEMENT FUNCTION REFERENCES

LOCATION	GEN TAG	SYM TAG	REFERENCES
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STATEMENT NUMBER REFERENCES

LOCATION	GEN TAG	SYM TAG	REFERENCES
000025	L00023	8	000022
000055	L00045	10	000045
000057	L00047	15	000054
000062	L00051	105	NONE
000122	L00071	110	000070 000100
000202	L00131	120	000166
000254	L00141	140	000164 000253
000257	L00143	151	NONE
000405	L00177	157	000265
000316	L00155	159	000274
000531	L00232	160	000063 000127 000415
000444	L00211	163	000424

BLOCK NAMES AND LENGTHS
- 073003

VARIABLE REFERENCES

LOCATION	GEN TAG	SYM TAG	REFERENCES
000606	A00037	ARSCIS	000131 000232 000321 000375 000447 000521
004757	V00072	APAX	000030 000031
000000C01	A00001	ARRAY	NONE
004760	V00073	BCDWC	000031 000034 000173 000174 000335 000343
004750	V00062	BLANK	000461 000464
004772	V00114	CFLFV	000014 000035 000167 000327 000453
004546	A00043	COFF	000334 000335 000460 000461
000015C01	V00041	CONF	000111 000217 000305 000362 000433 000506
000547	V00046	CONF1	NONE
000016C01	A00002	COUNT4	000066 000101 000161 000215

072745C01	A00034	CCUNT5	000260	000262	000360			
000054C01	A00003	CCUNT6	000411	000413	000594			
000112C01	V00042	CLTP	000151					
000562	A00036	DECS	000046					
000015C01	V00075	FCONE	000057					
004756	V00071	I	000017	000025	000042	000044	000055	000065
			000100	000124				
000117C01	A00004	IARAY	NONE					
004762	V00076	IFOUND	000061	000062	000071	000127		
000130C01	V00102	IGRPH	000130	000316	000444			
004766	V00104	IND	000140	000160	000202	000224	000345	000367
			000470	000513				
004770	V00111	IP	000150	000161	000171	000207	000234	000254
			000257	000350	000352	000377	000410	000425
			000477	000523				
004751	V00063	KPL	000007	000133	000323	000451		
004754	V00067	M	000012	000114	000310	000436		
004755	V00070	MM	000014	000067	000162	000263	000414	
004763	V00100	N	000102	000115	000262	000311	000412	000437
004761	V00074	NDS	000032	000042	000174	000200	000336	000341
			000462	000466				
072702C01	V00064	NGR	000006					
000133C01	V00077	NCPCAN	000063	000125	000153	000254		
004736	A00044	NCRFP	000020					
004771	V00112	NPOINT	000206	000237	000351	000402	000476	000526
000137C01	V00110	AXO	000144	000325	000471			
000140C01	V00113	AYO	000326	000472				
000616	A00040	ORDIN	000131	000233	000322	000376	000450	000522
000141C01	V00043	PAXANG	000027					
000550	V00047	PAXANT	NONE					
000142C01	A00005	PCANG	000172					
000200C01	A00006	PCS	NONE					
000217C01	A00007	PX1	NONE					
032513C01	A00020	PX10	NONE					
003153C01	A00010	PX2	NONE					
006107C01	A00011	PX3	NONE					
011043C01	A00012	PX4	000103	000207				
013777C01	A00013	PX5	000274	000352				
016733C01	A00014	PX6	000424	000476				
021667C01	A00015	PX7	NONE					
024623C01	A00016	PX8	NONE					
027557C01	A00017	PX9	NONE					

035447C01	A00021	PY1	NONE			
067743C01	A00032	PY10	NONE			
040403C01	A00022	PY2	NONE			
043337C01	A00023	PY3	NONE			
046273C01	A00024	PY4	000107	000135	000213	
051227C01	A00025	PY5	000301	000356		
054163C01	A00026	PY6	000431	000502		
057117C01	A00027	PY7	NONE			
062053C01	A00030	PY8	NONE			
065007C01	A00031	PY9	NONE			
000551	V00050	HEAD	NONE			
004743	A00045	HEPTIL	000025			
072677C01	V00044	HFP1	000021			
072700C01	V00045	HFP2	NONE			
004764	V00101	SIGMA	000120	000314	000442	
000626	A00041	STOREX	000235	000400	000524	
002576	A00042	STOREY	000236	000401	000525	
072703C01	A00033	TABLES	NONE			
000552	A00035	TITLE	000015	000027	000231	000374
072742C01	V00107	XTMAX	000142			000520
072743C01	V00105	XTMIN	000141			
004767	V00106	XMAX	000143	000226	000371	000515
004752	V00065	XMIN	000010	000142	000224	000367
004765	V00103	YMAX	000136	000230	000373	000517
004753	V00066	YMIN	000011	000136	000227	000372
						000516

START OF CONSTANTS
000534

START OF TEMPORARIES
000535

START OF INDIRECTS
000542

UNUSED COMPILER SPACE
110400

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SUBROUTINE MLLICON(TPLO)
000003 COMMON ARRAY(13),CONF,COUNT4(30),COUNT6(30),CUTE,DCX,DCY,KX,KY,
1 IARRAY(8),ICTAR,IGRPH,ND,NQ,NOPCAN,NOTABS,DS,NV,
2 NX0,NYC,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(5,30),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,AGR,
7 TABLES(2,15),NYCYCL,XIMAX,XIMIN,NTYPE
000003 INTEGER CONF,CUTE,CUTP,CUTH,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 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
C NO LEAST SQUARES FIT
C NO CHECK IS MADE FOR CHANGES IN PAX ANGLE
C
C ICNT COUNTS THE NUMBER OF CONFIGURATIONS
C
C MAXIMUM NUMBER OF CONFIGURATIONS PER REPORT NUMBER = 10
C MAXIMUM NUMBER OF DATA POINTS PER POLAR ANGLE = 60
C MAXIMUM NUMBER OF POLAR ANGLES PER CONFIGURATION = 30
C
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) IOLT(1) RUN NUMBER
C IARRAY(5) IOLT(2) CONFIGURATION
C IARRAY(6) IOLT(3) PAX ANGLE(DEG)
C IARRAY(7) IOLT(4) TOTAL NUMBER OF COUNTS
C IARRAY(8) IARRAY(5) R OR THEIA INDICATOR
C ARAY(1) OLT(2) CALCULATED VALUE RADIUS(POLAR ANGLE)
C ARAY(2) OLT(5) CALCULATED VALUE CORE RAY(ELEVATION)
C ARAY(3) OLT(8) INPUT VALUE RADIUS(POLAR ANGLE)
C ARAY(4) OLT(11) INPUT VALUE ELEVATION(CORE RAY)
C ARAY(5) OLT(13) POLAR ANGLE TAPE HEADOUT/CT TIME
C ARAY(6) OLT(14) PAX POWER
C ARAY(7) OLT(15) **COUNTING TIME/POL ANG HEADOUT
C ARAY(8) OLT(16) DET CONVERSION FAC/DET CURRENT

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C   ARRAY(9)          OUT(17)  **TOTAL(U) FISSION/DET CONU FAC
C   ARRAY(10)         OUT(18)  **PCT. STD. DEV./RADS(C)/RADS(AL)/RADS(RF)
C   ARRAY(11)         OUT(19)  **NEUTS CM2-SEC-w/PCT STD DEV
C   ARRAY(12)         OUT(20)  **PCT. STD. DEV
C   ARRAY(13)         OUT(1)   CALCULATED POLAR ANGLE
C
C ** INDICATES THAT THE DIFFERENCE OF THE VARIABLES WAS TAKEN FOR DIRECT
C
000003      KCT = 0
000004      IFLG = 0
000005      K3 = 0
000006      ISAV1 = 0
000007      IGRPH = 1
000010      KCHAN = 0
000011      1  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      STORE NEW RPPCMT NUMBER
C
000014      K3 = K3 + 1
000016      IF(K3 .GT. NCTARS) GO TO 999
000022      REP1 = TABLES(1,K3)
000024      REP2 = TABLES(2,K3)
000026      DO 2 K1 = 1, 5
000030      IF(REP1 .EQ. NT(K1) ) GO TO 3
000033      2  CONTINUE
000035      3  KTAB = K1
000037      IF(KCHAN .EQ. 1) GO TO 10
000041      6  IF(NGR .NE. 1) GO TO 5

000043      READ(12)((ARRAY(I),I=1,8), (AHAY(I),I=1,13))
000062      IF(IAHAY(1) .EQ. N09 .AND. IAHAY(2) .EQ. N09) GO TO 9
000073      ITP = 1
000074      GO TO 10

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000074      5      READ(11) (IARAY(I),I=1,8), (AKAY(I),I=1,13)
000113      IF(IAHAY(1) .EQ. NO9 .AND. IAHAY(2) .EQ. NO9) GO TO 9
000124      ITP = 2

000125      10      CONTINUE
000125      DO 11 K5=1,5
000127      IF(IAHAY(1) .EQ. NT(K5) ) GO TO 12
000132      11      CONTINUE
000134      12      NK1 = K5
000136      NK2 = NK1
C          CHECK FOR NEW TABLE
000137      IF(NK1 .EQ. K1AR) GO TO 13
000140      IF(KCHAN .EQ. 0) GO TO 6

C          CALL PLOTTING ROUTINE
C          CALL CLEAR
C          INITIALIZE VARIABLES

000141      9      CONTINUE
000141      CALL PLOTTER(ICNT,NP1,JPLO)
000144      IF(IAHAY(1) .EQ. NO9 .AND. IAHAY(2) .EQ. NO9) GO TO 499
000155      KCHAN = 1
000156      GO TO 1

000156      13      CONTINUE
000156      PAXANG = IARAY(4)
000160      DO 15 I=1,NOPCAN
000161      IF(IARAY(3) .EQ. PCANG(I))GO TO 20
000164      15      CONTINUE

C          IF NO MATCH FOR POLAR ANGLE IS FOUND READ NEXT RECORD
000166      IF(ITP .EQ. 1) GO TO 6
000170      GO TO 5
000171      20      CONTINUE
000171      IF(KCHAN .EQ. 0) ISAV1 = 1
000174      IF(ISAV1 .EQ. 1) GO TO 21
000176      KCT = 0
000177      ISAV1 = 1

C          DOES THE CONFIGURATION MATCH THE ONE IN PROCESS
000177      21      CONTINUE

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000177      IF(ICNT .NE. 0) GO TO 22
000200      KCHAN = 2
000201      IFIG = IARRAY(3)
000203      ICNT = ICNT + 1
000204      22  CONTINUE
000204      IF(ICNT .GT. 10) GO TO 999
000210      IF(KCHAN.EQ. 2) KCT=0
000213      ICON1 = 1
000214      KCHAN = 1
000215      IF( IFIG .EQ. IARRAY(3) ) GO TO 40
000217      ICON1 = 0
000220      GO TO 21

      C      REPROC NUMBER AND CONFIG HAVE NOT CHANGED
000220      40  CONTINUE
      C      CHECK FOR CHANGE IN POLAR ANGLE
      C
      C      MATCH FOR POLAR ANGLE=PLOT NEUTS.CM2/RADS(C,AL,PE) .VS. CORE RAY
000220      IF(ICNT .NE. 1) GO TO 45
000222      KCT = KCT+1
000223      PX1(KCT,I) = ARAY(4)
000230      KPOS = POS(KTAB)
000233      IF(ARAY(KPOS) .LE. 0.0) ARAY(KPOS)=1.0
000240      PY1(KCT,I) = ARAY(KPOS)
000246      NP1(ICNT,I) = KCT
000252      GO TO 6

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

000252      45  CONTINUE
000252      IF(ICNT .NE. 2) GO TO 50
000254      KCT = KCT +1
000256      PX2(KCT,I) = ARAY(4)
000263      KPOS = POS(KTAB)
000265      IF(ARAY(KPOS) .LE. 0.0) ARAY(KPOS)=1.0
000272      PY2(KCT,I) = ARAY(KPOS)
000300      NP1(ICNT,I)= KCT
000304      GO TO 6

      C      STORE DATA FOR 3RD CONFIGURATION INTO PX3, PY3 ARRAYS
000304      50  CONTINUE
000304      IF(ICNT .NE. 3) GO TO 55

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000306      KCT = KCT + 1
000310      PX3(KCT,I) = ARRAY(4)
000315      KPOS = POS(KTAB)
000317      IF(ARRAY(KPOS) .IF. 0.0) ARRAY(KPOS)=1.0
000324      PY3(KCT,I) = ARRAY(KPOS)
000332      NP1(ICNT,I) = KCT
000336      GO TO 6

```

```

C      STORE DATA FOR 4TH CONFIGURATION INTO PX4, PY4 ARRAYS
55  CONTINUE
      IF(ICNT .NE. 4) GO TO 60
      KCT = KCT+1
      PX4(KCT, I) = ARRAY(4)
      KPOS = POS(KTAB)
      IF(ARRAY(KPOS) .IF. 0.0) ARRAY(KPOS)=1.0
      PY4(KCT,I) = ARRAY(KPOS)
      NP1(ICNT,I) = KCT
      GO TO 6

```

```

C      STORE DATA FOR 5TH CONFIGURATION INTO PX5, PY5 ARRAYS
60  CONTINUE
      IF(ICNT .NE. 5) GO TO 65
      KCT = KCT + 1
      PX5(KCT,I) = ARRAY(4)
      KPOS = POS(KTAB)
      IF(ARRAY(KPOS) .IF. 0.0) ARRAY(KPOS)=1.0
      PY5(KCT,I) = ARRAY(KPOS)
      NP1(ICNT,I) = KCT
      GO TO 6

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```

65  CONTINUE
      IF(ICNT .NE. 6) GO TO 75
      KCT = KCT + 1
      KPOS = POS(KTAB)
      PX6(KCT,I) = ARRAY(4)
      IF(ARRAY(KPOS) .IF. 0.0) ARRAY(KPOS)=1.0
      PY6(KCT,I) = ARRAY(KPOS)
      NP1(ICNT,I) = KCT
      GO TO 6

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75  CONTINUE
      IF(ICNT .NE. 7) GO TO 80

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000456      KCT = KCT + 1
000460      KPOS = POS(KTAB)
000462      IF (ARRAY(KPOS) .LE. 0.0) ARRAY(KPOS) = 1.0
000467      PX7(KCT,I) = ARRAY(4)
000474      PY7(KCT,I) = ARRAY(KPOS)
000501      NP1(ICNT,I) = KCT
000505      GO TO 6

000505      80  CONTINUE
000505      IF (ICNT .NE. 8) GO TO 85
000507      KCT = KCT + 1
000511      KPOS = POS(KTAB)
000513      IF (ARRAY(KPOS) .LE. 0.0) ARRAY(KPOS) = 1.0
000520      PX8(KCT,I) = ARRAY(4)
000525      PY8(KCT,I) = ARRAY(KPOS)
000532      NP1(ICNT,I) = KCT
000536      GO TO 6

000536      85  CONTINUE
000536      IF (ICNT .NE. 9) GO TO 90
000540      KCT = KCT + 1
000542      KPOS = POS(KTAB)
000544      IF (ARRAY(KPOS) .LE. 0.0) ARRAY(KPOS) = 1.0
000551      PX9(KCT,I) = ARRAY(4)
000556      PY9(KCT,I) = ARRAY(KPOS)
000563      NP1(ICNT,I) = KCT
000567      GO TO 6

000567      90  CONTINUE
000567      IF (ICNT .NE. 10) GO TO 95
000571      KCT = KCT + 1
000573      KPOS = POS(KTAB)
000575      IF (ARRAY(KPOS) .LE. 0.0) ARRAY(KPOS) = 1.0
000602      PX10(KCT,I) = ARRAY(4)
000607      PY10(KCT,I) = ARRAY(KPOS)
000614      NP1(ICNT,I) = KCT
000620      GO TO 6
000620      95  WRITE(6,70)
000624      70  FORMAT(' 52H YOU HAVE EXCEEDED MAX NO. OF CONFIGS TO BE PLOTTED ')
000624      GO TO 999

C
C      CALL PLOTND(0)

```

000626 999 CONTINUE
000626 RETURN
000627 END

SUBPROGRAM LENGTH
001367

STATEMENT FUNCTION REFERENCES

LOCATION	GEN TAG	SYM TAG	REFERENCES
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STATEMENT NUMBER REFERENCES

LOCATION	GEN TAG	SYM TAG	REFERENCES
000011	L00012	1	000155
000035	L00032	3	000032
000074	L00054	5	000042 000170
000041	L00035	6	000140 000167 000251 000303 000335 000367
			000421 000453 000504 000535 000565 000617
000141	L00104	9	000072 000123
000125	L00070	10	000040 000073
000134	L00076	12	000131
000156	L00114	13	000137
000171	L00126	20	000163
000177	L00135	21	000175 000217
000204	L00142	22	000177
000220	L00156	40	000216
000252	L00171	45	000221
000304	L00204	50	000253
000336	L00217	55	000305
000370	L00232	60	000337
000422	L00245	65	000371
000636	C00005	70	000620
000454	L00260	75	000423
000505	L00273	80	000455
000536	L00306	85	000506
000567	L00321	90	000537
000620	L00334	95	000570
000626	L00340	999	000020 000154 000206 000625

BLOCK NAMES AND LENGTHS
- 072745

VARIABLE REFERENCES

LOCATION	GEN TAG	SYM TAG	REFERENCES
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000000C01	A00001	ARAY	000055	V00106	000233	000235	000244	000255
			000267	V00276	000317	000321	000330	000351
			000353	V00362	000403	000405	000414	000435
			000437	V00446	000452	000464	000477	000513
			000515	V00530	000544	000546	000551	000575
			000577	V00612				
000015C01	V00035	CONF	NONE					
000665	V00044	CONF1	NONE					
000016C01	A00002	CONF4	NONE					
000054C01	A00003	CONF6	NONE					
000663	V00036	CLTE	NONE					
000112C01	V00037	CLTP	NONE					
000664	V00040	CLTR	NONE					
001361	V00064	I	000160	V00172	000174	000224	000241	000256
			000273	V00310	000325	000342	000357	000374
			000411	V00430	000443	000470	000521	000552
			000603					
000117C01	A00004	IARAY	000047	V00063	000100	000114	000130	000145
001355	V00056	ICNT	000011	V00141	000202	000204	000220	000245
			000252	V00277	000304	000331	000334	000353
			000370	V00415	000422	000447	000454	000500
			000505	V00531	000536	000562	000567	000613
001356	V00057	ICON1	000012	V00177	000213	000217		
001351	V00051	IFIG	000004	V00202	000215			
000130C01	V00054	ICRPH	000007					
001353	V00053	ISAV1	000006	V00173	000174			
001362	V00065	ITP	000073	V00164	000166			
001354	V00055	KCHAN	000010	V00036	000140	000155	000171	000200
			000207					
001350	V00050	KCT	000003	V00176	000212	000222	000240	000250
			000254	V00272	000302	000306	000324	000334
			000340	V00356	000366	000372	000410	000420
			000424	V00442	000452	000456	000467	000503
			000507	V00520	000534	000540	000551	000565
			000571	V00602	000616			
001366	V00072	KPOS	000232	V00235	000264	000267	000316	000321
			000350	V00353	000402	000405	000427	000434
			000461	V00464	000512	000515	000543	000546
			000574	V00577				
001360	V00062	KTAR	000036	V00136	000230	000262	000314	000346
			000400	V00425	000457	000510	000541	000572
001357	V00061	KI	000027	V00035				

001352	V00052	K3	000005	000014				
001363	V00066	K5	000126	000134				
072702C01	V00063	NGR	000041					
001364	V00067	NK1	000135					
001365	V00070	NK2	000136					
000133C01	V00071	NCPOAN	000164					
000134C01	V00060	NCTABS	000016					
001347	V00047	NC9	000063	000114	000145			
000673	A00035	NP1	000141	000246	000300	000332	000364	000416
			000450	000501	000532	000563	000614	
000666	A00034	NT	000030	000127				
000141C01	V00041	PAXANG	000157					
000142C01	A00005	PCANG	000161					
000200C01	A00006	PCS	000230	000263	000315	000347	000401	000426
			000460	000511	000542	000573		
000217C01	A00007	PX1	000223					
032513C01	A00020	PX10	000602					
003153C01	A00010	PX2	000256					
006107C01	A00011	PX3	000310					
011043C01	A00012	PX4	000342					
013777C01	A00013	PX5	000374					
016733C01	A00014	PX6	000430					
021667C01	A00015	PX7	000467					
024623C01	A00016	PX8	000520					
027557C01	A00017	PX9	000551					
035447C01	A00021	PY1	000240					
067743C01	A00032	PY10	000607					
040403C01	A00022	PY2	000272					
043337C01	A00023	PY3	000324					
046273C01	A00024	PY4	000356					
051227C01	A00025	PY5	000410					
054163C01	A00026	PY6	000442					
057117C01	A00027	PY7	000474					
062053C01	A00030	PY8	000525					
065007C01	A00031	PY9	000556					
072677C01	V00042	KFP1	000023	000031				
072700C01	V00043	KFP2	000025					
072703C01	A00033	TABLES	000021	000023				

START OF CONSTANTS

000631

START OF TEMPORARIES

000646

START OF INDIRECTS
000654

UNUSED COMPILER SPACE
110200

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SUBROUTINE PLCTER( KCNT,NP1,IFLU)
000006 COMMON ARRAY(13),CONF,COUNT4(30),COUNT6(30),CUTP,DCX,DCY,KX,KY,
1 IARRAY(8),ICTAR,IGRPH,ND,NG,NOPCAR,NOTARS,NS,NV,
2 NX0,NYC,PAXANG,POANG(30),PCS(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,XIYPE
000006 INTEGER CONF,CUTE,CUTP,CUTH,PAXANG,PCS,REP1,REP2,TABLES,COUNT1
000006 DIMENSION TITL(8),DECS(20),ABSCIP(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 ARRAY IS TO BE DISPLAYED
000010 ND=1

C
C SORT POINTS
000011 NS=2

C
C E OR F 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 IPI=1

C CONFIGURATION SYMBO L 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 Z 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(REF1 .EQ. NCREP(I)) GO TO 8
000037 5 CONTINUE
000041 8 TITL(1) = REPTIL(I)
000044 JSAV1 = I
000045 APAX = PAXANG
000046 CALL BNRCOV(APAX, HCDWD, NDS)
000051 TITL(3) = PCWD
000053 TITL(4) = BLANK
000054 DO 10 I=1,10

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```

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

000077      KSAV = USAV
000100      DO50  I=1,  NPOAN
C      INITIALIZE CONFIG COUNTER
000102      ISAV=1
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 BRACDV( PLANG, BCDWD, NDS )
000120      CALL CONVER (ARSCIS(3), NDS)
000123      ABSCIS(2) = ECUWD

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(1,1)
000133      IF(NN1 .LT. N1) GO TO 20
000135      NF=1
000136      NC =35
000137      CALL AICRT4(KX,KY, PX1(1,1), PY1(1,1), NN1, ND, NV, NS, NC, TITL, ARSCIS,
1      CHFIN, NF, NG, DCX, DCY, AAC, XMIN, XMAX, NYC, YMIN, YMAX, R, P, H,
2      R )
000176      20  CONTINUE
000176      KCON = KCON + 1
000200      NN2 = NP1(2,1)
000205      IF(NN2 .LT. N1) GO TO 25
000207      NF = 2
000210      NC =38
000211      CALL AICRT4(KX,KY, PX2(1,1), PY2(1,1), NN2, ND, NV, NS, NC, TITL, ARSCIS,
1      CHFIN, NF, NG, DCX, DCY, AAC, XMIN, XMAX, NYC, YMIN, YMAX, R, P, H)
000250      25  CONTINUE
000250      KCON = KCON + 1

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000252      IF(KCCN .GT. KCAT) GO TO 750
000256      IF(KCCN .LT. 3) GO TO 750
000257      NC =41
000260      NN3= NP1(3,I)
000263      IF(NN3 .LT. M1) GO TO 30
000265      CALL AICRT4(KX,KY,PX3(1,I),PY3(1,I),NN3,ND,NV,NS,NC,TITLE,ARSCIS,
1          CREDIT,NF,NG,DCX,DCY,NXU,XMIN,XMAX,NYC,YMIN,YMAX,R,R,H)

000324      30  CONTINUE
000324      KCON = KCON + 1
000326      IF(KCCN .GT. KCAT) GO TO 750
000332      IF(KCCN .LT. 4) GO TO 750
000333      NC =50
000334      NN4 = NP1(4,I)
000337      IF(NN4 .LT. M1) GO TO 35
000341      CALL AICRT4(KX,KY,PX4(1,I),PY4(1,I),NN4,ND,NV,NS,NC,TITLE,ARSCIS,
1          CREDIT,NF,NG,DCX,DCY,NXU,XMIN,XMAX,NYC,YMIN,YMAX,R,R,H)

000400      35  CONTINUE
000400      KCON = KCON + 1
000402      IF(KCCN .GT. KCAT) GO TO 750
000406      IF(KCCN .LT. 5) GO TO 750
000407      NC =51
000410      NN5 = NP1(5,I)
000413      IF(NN5 .LT. M1) GO TO 40
000415      CALL AICRT4(KX,KY,PX5(1,I),PY5(1,I),NN5,ND,NV,NS,NC,TITLE,ARSCIS,
1          CREDIT,NF,NG,DCX,DCY,NXU,XMIN,XMAX,NYC,YMIN,YMAX,R,R,H)

000454      40  CONTINUE
000454      KCON = KCON + 1
000456      IF(KCCN .GT. KCAT) GO TO 750
000462      IF(KCCN .LT. 6) GO TO 750
000463      NN6 = NP1(6,I)
000466      IF(NN6 .LT. M1) GO TO 45
000470      NC =53
000471      CALL AICRT4(KX,KY,PX6(1,I),PY6(1,I),NN6,ND,NV,NS,NC,TITLE,ARSCIS,
1          CREDIT,NF,NG,DCX,DCY,NXU,XMIN,XMAX,NYC,YMIN,YMAX,R,R,H)

000530      45  CONTINUE
000530      KCON = KCON + 1
000532      IF(KCCN .GT. KCAT) GO TO 750
000536      IF(KCCN .LT. 7) GO TO 750

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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          CRDIN,NF,NG,DCX,DCY,NXU,XMIN,XMAX,NYC,YMIN,YMAX,R,R,R)

000604      55  CONTINUE
000604      KCON = KCON + 1
000606      IF(KCON .GT. KCNT) GO TO 750
000612      IF(KCON .LT. 8) GO TO 750
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          CRDIN,NF,NG,DCX,DCY,NXU,XMIN,XMAX,NYC,YMIN,YMAX,R,R,R)

000660      60  CONTINUE
000660      KCON = KCON + 1
000662      IF(KCON .GT. KCNT) GO TO 750
000666      IF(KCON .LT. 9) GO TO 750
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          CRDIN,NF,NG,DCX,DCY,NXU,XMIN,XMAX,NYC,YMIN,YMAX,R,R,R)

000734      65  CONTINUE
000734      KCON = KCON + 1
000736      IF(KCON .GT. KCNT) GO TO 750
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,CRDIN,NF,NG,DCX,DCY,NXU,XMIN,XMAX,NYC,YMIN,YMAX,R,R,R)

001007      70  CONTINUE
001007      750  CONTINUE
001007      50  CONTINUE
001014      RETLRA
001014      END

```

SUBPROGRAM LENGTH
001177

STATEMENT FUNCTION REFERENCES

LOCATION	GEN TAG	SYM TAG	REFERENCES
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STATEMENT NUMBER REFERENCES

LOCATION	GEN TAG	SYM TAG	REFERENCES
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000041	L00036	8	000036
000065	L00053	15	000062
000176	L00112	20	000134
000250	L00122	25	000206
000324	L00136	30	000264
000400	L00152	35	000340
000454	L00166	40	000414
000530	L00202	45	000467
001007	L00260	50	000254

000256	000330	000332	000404	000406
000462	000534	000536	000610	000612
000664	000740	000746		

000604	L00216	55	000543
000660	L00232	60	000617
000734	L00246	65	000673
001007	L00260	70	000254

000256	000330	000332	000404	000406
000462	000534	000536	000610	000612
000664	000740	000746		
000254	000256	000330	000332	000404
000460	000462	000534	000536	000610
000664	000666	000740	000746	
000254	000256	000330	000332	000404
000460	000462	000534	000536	000610
000664	000666	000740	000746	

BLOCK NAMES AND LENGTHS
- 072745

VARIABLE REFERENCES

LOCATION	GEN TAG	SYM TAG	REFERENCES
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001067	A00036	ARSCIS	000103
			000563
001171	V00126	ABSICS	000433

000155	000227	000303	000357	000507
000637	000713	000766		

001152	V00106	APAX	000045	000046				
000000C01	A00001	ARRAY	NONE					
001153	V00107	BCDWD	000046	000051	000116	000123		
001140	V00057	BLANK	000030	000052				
001137	V00056	BRT	000075					
000015C01	V00037	CONF	NONE					
001032	V00046	CCUNT1	NONE					
000016C01	A00002	COUNT4	NONE					
000054C01	A00003	COUNT6	NONE					
001114	A00041	CT	NONE					
001030	V00040	CUTE	NONE					
000112C01	V00041	CUTP	NONE					
001031	V00042	CUTR	NONE					
000113C01	V00065	DCX	000013	000161	000233	000307	000363	000437
			000513	000567	000643	000717	000772	
000114C01	V00066	DCY	000014	000162	000234	000310	000364	000440
			000514	000570	000644	000720	000773	
001043	A00035	DECS	000067					
001150	V00104	I	000033	000041	000057	000061	000065	000071
			000101	000130	000202	000260	000334	000410
			000463	000537	000613	000667	000742	001011
000117C01	A00004	IARRAY	NONE					
001144	V00077	ICNT	000024	000026				
001156	V00113	ISAV	000102	000110	000113			
001151	V00105	ISAV1	000044					
001146	V00102	JSAV	000027	000076				
001141	V00071	KCON	000017	000103	000124	000176	000250	000324
			000400	000454	000530	000604	000660	000734
001145	V00100	KPL	000025	000104				
001155	V00111	KSAV	000077	000110				
000115C01	V00060	KX	000006	000144	000216	000272	000346	000422
			000476	000552	000626	000702	000755	
000116C01	V00061	KY	000007	000145	000217	000273	000347	000423
			000477	000553	000627	000703	000756	
001147	V00103	M1	000030	000133	000205	000263	000337	000413
			000466	000542	000616	000672	000745	
001164	V00121	NC	000136	000153	000210	000225	000257	000301
			000333	000355	000407	000431	000470	000505
			000544	000561	000620	000635	000674	000711
			000747	000764				
000131C01	V00062	NC	000010	000147	000221	000275	000351	000425
			000501	000555	000631	000705	000760	

001154	V00110	NCS	000047	000057	000065	000071	000116	000121
001163	V00120	NF	000135	000157	000207	000431	000305	000361
			000435	000511	000565	000641	000715	000770
000132C01	V00064	NG	000012	000160	000232	000306	000362	000436
			000512	000566	000642	000716	000771	
072702C01	V00101	NGR	000024					
001162	V00117	NA1	000132	000147				
001176	V00133	NA10	000744	000760				
001165	V00122	NA2	000204	000221				
001166	V00123	NA3	000262	000275				
001167	V00124	NA4	000336	000351				
001170	V00125	NA5	000412	000425				
001172	V00127	NA6	000465	000501				
001173	V00130	NA7	000541	000555				
001174	V00131	NA8	000615	000631				
001175	V00132	NA9	000671	000705				
000133C01	V00112	NCPOAN	001011					
001107	A00040	NCREP	000034					
000135C01	V00063	NS	000011	000152	000224	000300	000354	000430
			000504	000560	000634	000710	000763	
000136C01	V00072	NV	000020	000151	000223	000477	000353	000427
			000503	000557	000633	000707	000762	
000137C01	V00067	NX0	000015	000163	000235	000311	000365	000441
			000515	000571	000645	000721	000774	
000140C01	V00070	NY0	000016	000166	000240	000314	000370	000444
			000520	000574	000650	000724	000777	
001077	A00037	ORDIA	000104	000156	000230	000304	000360	000434
			000510	000564	000640	000714	000767	
000141C01	V00043	PAXANG	000044					
001161	V00116	PLANG	000115					
000142C01	A00005	PCANG	000113					
000200C01	A00006	POS	NONE					
000217C01	A00007	PX1	000137					
032513C01	A00020	PX10	000750					
003153C01	A00010	PX2	000211					
006107C01	A00011	PX3	000265					
011043C01	A00012	PX4	000341					
013777C01	A00013	PX5	000415					
016733C01	A00014	PX6	000471					
021667C01	A00015	PX7	000545					
024623C01	A00016	PX8	000621					
027557C01	A00017	PX9	000675					

035447C01	A00021	PY1	000142					
067743C01	A00032	PY10	000753					
040403C01	A00022	PY2	000214					
043337C01	A00023	PY3	000270					
046273C01	A00024	PY4	000344					
051227C01	A00025	PY5	000420					
054163C01	A00026	PY6	000474					
057117C01	A00027	PY7	000550					
062053C01	A00030	PY8	000624					
065007C01	A00031	PY9	000700					
001132	A00042	REPTIL	000041					
072677C01	V00044	REP1	000035					
072700C01	V00045	REP2	NONE					
072703C01	A00033	TARLES	NONE					
001033	A00034	TITL	000031	000043	000154	000426	000302	000356
			000432	000506	000562	000636	000712	000765
072742C01	V00076	XIMAX	000022					
072743C01	V00074	XIMIN	000020					
001143	V00075	XMAX	000023	000165	000237	000313	000367	000443
			000517	000573	000647	000723	000776	
001142	V00073	XMIN	000021	000164	000236	000312	000366	000442
			000516	000572	000646	000722	000775	
001160	V00115	YMAX	000111	000170	000242	000316	000372	000446
			000522	000576	000652	000726	001001	
001157	V00114	YMIN	000111	000167	000241	000315	000371	000445
			000521	000575	000651	000725	001000	

START OF CONSTANTS

001016

START OF TEMPORARIES

001021

START OF INDIRECTS

001025

UNUSED COMPILER SPACE

107500

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SUBROUTINE SCAL( I, NP1, KCON, YMIN, YMAX)
000010 COMMON ARAY(13), CONF, COUNT4(30), COUNT6(30), CUTP, DCX, DCY, KX, KY,
1 IARAY(P), ICTAB, IGRPH, ND, NG, NOPCAN, NOTAPS, NS, NV,
2 NX0, NYC, 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
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 850
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 850
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 800
000111 NN3 = NP1(3,I)
000114 Y3MIN = PY3(1,I)

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000120      Y3MAX = PY3(1,I)
000124      DO 20  N1=1,NN3
000125      Y3MIN = AMIN1(PY3(N1,I) ,Y3MIN)
000133      Y3MAX = AMAX1(PY3(N1,I) ,Y3MAX)
000141      20  CONTINUE
000143      STY(5) = Y3MIN
000144      STY(6) = Y3MAX
000145      IF(KCCN .LT. 4)  GO TO 800
000147      NN4 = NP1(4,I)
000152      Y4MIN = PY4(1,I)
000156      Y4MAX = PY4(1,I)
000162      DO 25  N1=1, NN4
000163      Y4MIN = AMIN1(PY4(N1,I) , Y4MIN)
000171      Y4MAX = AMAX1(PY4(N1,I), Y4MAX)
000177      25  CONTINUE
000201      STY(7) = Y4MIN
000202      STY(8) = Y4MAX
000203      IF(KCCN .LT. 5)  GO TO 800
000205      NN5= NP1(5,I)
000210      Y5MIN = PY5(1,I)
000214      Y5MAX = PY5(1,I)
000220      DO 30  N1=1,NN5
000221      Y5MIN =  AMIN1(PY5(N1,I),Y5MIN)
000227      Y5MAX =  AMAX1(PY5(N1,I),Y5MAX)
000235      30  CONTINUE
000237      STY(9) = Y5MIN
000240      STY(10)= Y5MAX

000241      IF(KCCN .LT. 6) GO TO 800
000243      NN6 = NP1(6,I)
000246      Y6MIN = PY6(1,I)
000252      Y6MAX = PY6(1,I)
000256      DO 45  N1 =1,NN6
000257      Y6MIN = AMIN1(PY6(N1,I),Y6MIN)
000265      Y6MAX = AMAX1(PY6(N1,I),Y6MAX)
000273      45  CONTINUE
000275      STY(11) = Y6MIN
000276      STY(12) =Y6MAX

000277      IF(KCCN .LT. 7)  GO TO 800
000301      NN7 =  NP1(7,I)
000304      Y7MIN =PY7(1,I)

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000310      Y7MAX =PY7(1,I)
000314      DO 50 N1=1,NN1
000315      Y7MIN = AMIN1(PY7(N1,I),Y7MIN)
000323      Y7MAX = AMAX1(PY7(N1,I),Y7MAX)
000331      50 CONTINUE
000333      STY(13) = Y7MIN
000334      STY(14) = Y7MAX

000335      IF(KCCN .LT. 8) GO TO 800
000337      NN8 = NP1(8,I)
000342      Y8MIN = PY8(1,I)
000346      Y8MAX = PY8(1,I)
000352      DO 55 N1=1,NN8
000353      Y8MIN = AMIN1(PY8(N1,I),Y8MIN)
000361      Y8MAX = AMAX1(PY8(N1,I),Y8MAX)
000367      55 CONTINUE
000371      STY(15) = Y8MIN
000372      STY(16) =Y8MAX

000373      IF(KCCN .LT. 9) GO TO 800
000375      NN9 = NP1(9,I)
000400      Y9MIN = PY9(1,I)
000404      Y9MAX = PY9(1,I)
000410      DO 60 N1=1,NN9
000411      Y9MIN = AMIN1(PY9(N1,I),Y9MIN)
000417      Y9MAX = AMAX1(PY9(N1,I),Y9MAX)
000425      60 CONTINUE
000427      STY(17) = Y9MIN
000430      STY(18) = Y9MAX

000431      IF(KCCN .LT. 10) GO TO 800

000433      NN10 = NP1(10,I)
000436      Y10MIN = PY10(1,I)
000442      Y10MAX = PY10(1,I)
000446      DO 65 N1=1,NN10
000447      Y10MIN = AMIN1(PY10(N1,I),Y10MIN)
000455      Y10MAX = AMAX1(PY10(N1,I),Y10MAX)
000463      65 CONTINUE
000465      STY(19) = Y10MIN
000466      STY(20) = Y10MAX
000467      IF(KCCN .GT. 10) WRITE(6,35)

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000500      35  FORMAT(50HNOYCL HAVE EXCEEDED MAX NUMBER OF CONFIGURATIONS. )
C          SELECT THE MINIMUM AND MAXIMUM Y VALUES.
000500      800  CONTINUE
000500          YMIN = STY(1)
000501          YMAX = STY(1)
000502          NTOT = 2 * KCCN
000503          DO 40 NK = 1, NTOT
000504          YMIN = AMIN1(STY(NK), YMIN)
000510          YMAX = AMAX1(STY(NK), YMAX)
000514      40  CONTINUE
000516          IF(YMIN .EQ. YMAX) YMAX=YMAX*10.0
000521      850  CONTINUE
000521          RETURN
000522          END

```

SUBPROGRAM LENGTH
000644

STATEMENT FUNCTION REFERENCES

LOCATION	GEN TAG	SYM TAG	REFERENCES
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STATEMENT NUMBER REFERENCES

LOCATION	GEN TAG	SYM TAG	REFERENCES
000526	C00002	JE	000471
000500	L00246	B90	000110 000144 000214 000442 000300 000336
			000374 000432 000470
000521	L00264	BEN	000014 000054 000516

BLOCK NAMES AND LENGTHS
= 072745

VARIABLE REFERENCES

LOCATION	GEN TAG	SYM TAG	REFERENCES
000000C01	A00001	ARRAY	NONE
000015C01	V00041	CONF	NONE
000555	V00050	COUNT1	NONE
000016C01	A00002	COUNT4	NONE
000054C01	A00003	COUNT6	NONE
000553	V00042	CLTF	NONE
000112C01	V00043	CLTP	NONE
000554	V00044	CLTR	NONE
000117C01	A00004	IARRAY	NONE
000603	V00053	NCT	000015 000047 000116
000643	V00113	AK	000503
000602	V00052	AA1	000012 000042 000330
000637	V00107	AA10	000435 000462
000607	V00057	AA2	000052 000101
000612	V00062	AA3	000113 000140
000615	V00065	AA4	000151 000176
000620	V00070	AA5	000207 000234
000623	V00073	AA6	000245 000272
000626	V00076	AA7	000303

203

000631	V00101	NK8	000341	V00366				
000634	V00104	NK9	000377	V00424				
000642	V00112	NTOT	000502	V00513				
000606	V00056	N1	000026	V00065	000124	000162	000220	000256
			000314	V00352	000410	000446		
000141C01	V00045	PAXANG	NONE					
000142C01	A00005	PCANG	NONE					
000200C01	A00006	PCS	NONE					
000217C01	A00007	PX1	NONE					
032513C01	A00020	PX10	NONE					
003153C01	A00010	PX2	NONE					
006107C01	A00011	PX3	NONE					
011043C01	A00012	PX4	NONE					
013777C01	A00013	PX5	NONE					
016733C01	A00014	PX6	NONE					
021667C01	A00015	PX7	NONE					
024623C01	A00016	PX8	NONE					
027557C01	A00017	PX9	NONE					
035447C01	A00021	PY1	000016	V00021	000027	000034		
067743C01	A00032	PY10	000436	V00441	000447	000454		
040403C01	A00022	PY2	000055	V00060	000066	000073		
043337C01	A00023	PY3	000114	V00117	000125	000132		
046273C01	A00024	PY4	000152	V00155	000163	000170		
051227C01	A00025	PY5	000210	V00213	000221	000226		
054163C01	A00026	PY6	000246	V00251	000257	000264		
057117C01	A00027	PY7	000304	V00307	000315	000322		
062053C01	A00030	PY8	000342	V00345	000353	000360		
065007C01	A00031	PY9	000400	V00403	000411	000416		
072677C01	V00046	HFP1	NONE					
072700C01	V00047	HFP2	NONE					
000556	A00034	STY	000045	V00500	000504	000507		
072703C01	A00033	TARIES	NONE					
000605	V00055	Y1MAX	000025	V00040				
000604	V00054	Y1MIN	000021	V00032	000044			
000641	V00111	Y10MAX	000445	V00460				
000640	V00110	Y10MIN	000441	V00452	000464			
000611	V00061	Y2MAX	000064	V00077				
000610	V00060	Y2MIN	000060	V00071	000103			
000614	V00064	Y3MAX	000123	V00136				
000613	V00063	Y3MIN	000117	V00130	000142			
000617	V00067	Y4MAX	000161	V00174				
000616	V00066	Y4MIN	000155	V00166	000200			

000622	V00072	Y5 AX	000217	000232	
000621	V00071	Y5 IN	000213	000224	000245
000625	V00075	Y6 AX	000255	000273	
000624	V00074	Y6 IN	000251	000282	000274
000630	V00080	Y7 AX	000313	000325	
000627	V00077	Y7 IN	000307	000323	000332
000633	V00103	Y8 AX	000343	000354	
000632	V00102	Y8 IN	000345	000355	000377
000636	V00106	Y9 AX	000407	000422	
000635	V00105	Y9 IN	000403	000414	000425

START OF CONSTANTS
000524

START OF TEMPORARIES
000536

START OF INDIRECTS
000546

UNUSED COMPILER SPACE
110300

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XIV Typical Printout From PAR X22


```

NTYPE      1
NGR         1
KELFV      0
ISPP        0
NYCYCL      3
XIMIN       0.
XIMAX       7.000000E+02
NOPCAN      4
NOTARS      4
(TABLES(1,I),TABLES(2,I),I=1,NOTARS) 1 2 3 4
(POS(I),I=1,NOTARS)) 1 10 10 10
CUTP        5
IPL0        2
(POANG(I),I=1,NOPCAN) 0.          1.000000E+01  2.000000E+01  3.000000E+01

```

XV Sample Graphs From PARX22

REP 1 PAX ANGLE 270000 E+03 16A

MULTIPLE ANGLES VS. SPECIFIC CONFIGURATION

REP 2 PAX ANGLE 270000 E+03 14

LEAST SQUARES FIT
MULTIPLE POLAR ANGLES VS. SPECIFIC CONFIGURATION

LEAST SQUARES FIT
MULTIPLE POLAR ANGLES VS. SPECIFIC CONFIGURATION

REP 4 PAX ANGLE 270000 E+03 16B

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

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 CONFIGURATION

REP 2

PAX ANGLE 270000 E+03

17

LEAST SQUARES FIT
POLAR ANGLE VS. SPECIFIC CONFIGURATION

REP 4 PAX ANGLE 270000 E+03 16B

DATA POINTS ONLY
CONSTANT ELEVATION VS. CALCULATED POLAR ANGLE

REP 4

PAX ANGLE 270000 E+03

16B

LEAST SQUARES FIT
CONSTANT ELEVATION VS. CALCULATED POLAR ANGLE

REP 4 PAX ANGLE 270000 E+03 16B

DATA POINTS ONLY
CONSTANT ELEVATION VS. CALCULATED POLAR ANGLE

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XVI Deck Assembly For Sequential Execution For All Programs

JOB, 10.
 AS00268
 ASP1337, RNPARX2, 300, 160000, 01.
 REQUEST TAPE10.
 REQUEST TAPE14.
 REQUEST TAPE11 (SKBKG, FOR, DIRECT, DATA)
 REQUEST TAPE12 (SKFWD, FOR TOTAL, DATA)
 RUN(S,,,,,,77777,, 1)
 LGO.
 SORTMR3.
 REWIND(LGO)
 RUN(S,,,,,,77777,, 1)
 LGO.
 REWIND(LGO)
 RUN(S,,,,,,77777,, 1)
 LGO.
 REWIND(LDO)
 RUN(S,,,,,,77777,, 1)
 LGO.
 REWIND(LGO)
 FORM, FILMPL,01.
 LOC, 160000.
 RUN(S,,,,,,77777,, 1)
 LGO.
 7
 8₉
 RNPARX2 PROGRAM(SOURCE DECK)
 7
 8₉

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

⁷₈₉

SORT(1,6,200,,2,,20)

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)

SEQ(37, ABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789)

RECORD (I,F,200)

FILE(TAPE 12,S,B,20,R,N)

FILE(TAPE 11,0,B,20,R,N)

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

*The number 9 punched in columns 1-80 on a data card.

	TITLE RNPARX2 DATA SYSTEM USERS MANUAL	
	DOCUMENT NO. WANL-TME-1952, Rev. A	DATE 10/19/70
ABSTRACT Moderate changes to the PARX computer code, as reported in the original document, were made to permit subtraction of radiation background and perform experimental uncertainty analysis in order to establish a basis for proper evaluation of the active dosimetry measurements as reported in WANL-TME-1912. The computer code which resulted is designated RNPARX2, as described herein.		
DATA ITEM NO. N/A		SECURITY CLASSIFICATION OF DOCUMENT UNCLASSIFIED
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W Form 59943 DOCUMENT INFORMATION SUMMARY		

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