**======================================================================= Evalplot**

 **Evalplot**

 **PROGRAM EVALPLOT Evalplot**

 **================ Evalplot**

 **VERSION 75-1 (AUGUST 1975) Evalplot**

 **VERSION 76-1 (JULY 1976) Evalplot**

 **VERSION 77-1 (APRIL 1977) Evalplot**

 **VERSION 78-1 (JULY 1978) Evalplot**

 **VERSION 79-1 (FEBRUARY 1979) Evalplot**

 **VERSION 80-1 (JULY 1980) \*IBM VERSION Evalplot**

 **VERSION 80-2 (DECEMBER 1980) Evalplot**

 **VERSION 81-1 (MARCH 1981) Evalplot**

 **VERSION 81-2 (AUGUST 1981) \*IMPROVED ZOOM CAPABILITY Evalplot**

 **VERSION 82-1 (JANUARY 1982) \*IMPROVED COMPUTER COMPATIBILITY Evalplot**

 **VERSION 83-1 (JANUARY 1983) \*ELIMINATED COMPUTER DEPENDENT CODING. Evalplot**

 **VERSION 83-2 (OCTOBER 1983) \*ADDED PLOTTING OF HISTOGRAM DATA. Evalplot**

 **VERSION 84-1 (DECEMBER 1984)\*ADDED PLOTS OF LEGENDRE COEFFICENTS Evalplot**

 **AS A FUNCTION OF ENERGY. Evalplot**

 **\*ADDED SMALL PLOTTING MODE. Evalplot**

 **VERSION 85-1 (AUGUST 1985) \*FORTRAN-77/H VERSION Evalplot**

 **VERSION 86-1 (JANUARY 1986) \*ENDF/B-VI FORMAT Evalplot**

 **VERSION 88-1 (JULY 1988) \*MAJOR REVISION TO MAKE CODE EASILY Evalplot**

 **INTERFACEABLE TO ALMOST ANY PLOTTER. Evalplot**

 **\*WARNING...INPUT PARAMETERS FROM BEEN Evalplot**

 **CHANGED (SEE, DESCRIPTION BELOW) Evalplot**

 **\*COMPUTER INDEPENDENT SOFTWARE Evalplot**

 **CHARACTERS. Evalplot**

 **\*COLOR PLOTS. Evalplot**

 **\*MT NUMBER DEFINITIONS FROM DATA FILE Evalplot**

 **READ BY PROGRAM Evalplot**

 **\*FORTRAN-77 REQUIRED (FORTRAN-H NO Evalplot**

 **SUPPORTED BY THIS PROGRAM). Evalplot**

 **\*OPTION...INTERNALLY DEFINE ALL I/O Evalplot**

 **FILE NAMES (SEE, SUBROUTINE FILEIO Evalplot**

 **FOR DETAILS). Evalplot**

 **\*IMPROVED BASED ON USER COMMENTS. Evalplot**

 **VERSION 89-1 (JANUARY 1989) \*PSYCHOANALYZED BY PROGRAM FREUD TO Evalplot**

 **INSURE PROGRAM WILL NOT DO ANYTHING Evalplot**

 **CRAZY. Evalplot**

 **\*UPDATED TO USE NEW PROGRAM CONVERT Evalplot**

 **KEYWORDS. Evalplot**

 **\*ADDED LIVERMORE CIVIC COMPILER Evalplot**

 **CONVENTIONS. Evalplot**

 **\*FORTRAN-77/FORTRAN-H COMPATIBLE Evalplot**

 **\*SPECIAL ENDF/B MATERIAL DEFINITIONS Evalplot**

 **(ZA.LT.1000) FROM DATA FILE READ Evalplot**

 **BY PROGRAM. Evalplot**

 **VERSION 89-2 (MARCH 1989) \*ADDED ENDF/B-V AND VI MT Evalplot**

 **DEFINITIONS. PROGRAM WILL DETERMINE Evalplot**

 **ENDF/B FORMAT BASED ON MF=1, Evalplot**

 **MT=451 AND USE ASPPROPRIATE MT Evalplot**

 **DEFINITIONS. IF NO MF=1, MT=451 Evalplot**

 **PROGRAM WILL USE ENDF/B-V Evalplot**

 **MT DEFINITIONS. Evalplot**

 **VERSION 89-3 (JUNE 1989) \*3 CHARACTER FONTS Evalplot**

 **VERSION 92-1 (JANUARY 1992) \*COMPLETE REWRITE OF CODE Evalplot**

 **\*ADDED PHOTON DATA, MF=23 AND 27 Evalplot**

 **\*ADDED INCIDENT CHARGED PARTICLES Evalplot**

 **(IDENTIFIED IN PLOT TITLES) Evalplot**

 **\*ADDED FORTRAN SAVE OPTION. Evalplot**

 **\*UPDATED BASED ON USER COMMENTS Evalplot**

 **\*ADDED RETRIEVAL BY UP TO 100 Evalplot**

 **MAT/MF/MT OR ZA/MF/MT RANGES Evalplot**

 **\*WARNING...INPUT PARAMETER FORMAT Evalplot**

 **HAS BEEN CHANGED...SEE DESCRIPTION Evalplot**

 **BELOW. Evalplot**

 **VERSION 92-2 (FEBRUARY 1992)\*ADDED PHOTON SPECTRA, MF=15. Evalplot**

 **\*ADDED MULTIPLICATION OF DISTRIBUTIONS Evalplot**

 **IN MF=5 AND 15 BY PROBABILITY=YIELD. Evalplot**

 **\*INCREASED PAGE SIZE TO 12000 POINTS Evalplot**

 **VERSION 92-3 (MAY 1992) \*CORRECTED DESCRIPTION OF INPUT Evalplot**

 **PARAMETERS AND EXAMPLE PROBLEMS. Evalplot**

 **\*CORRECTED FOR ENDF/B-VI DEFINITION OF Evalplot**

 **TEMPERATURE FROM MF=1/MT=451. Evalplot**

 **\*CORRECTED LOGIC SO THAT EACH REQUEST Evalplot**

 **IS TREATED SEPARATELY TO CREATE A Evalplot**

 **PLOT, UNLESS REQUESTS ARE CHAINED Evalplot**

 **TOGETHER. Evalplot**

 **\*ADDED VARIABLE CHARACTER SIZE INPUT. Evalplot**

 **VERSION 93-1 (MARCH 1993) \*INCREASED PAGE SIZE FROM 12000 Evalplot**

 **TO 210000 Evalplot**

 **\*INCREASED THE NUMBER OF ENERGIES Evalplot**

 **VS. LEGENDRE COEFFICIENTS FROM Evalplot**

 **167 TO 7000 Evalplot**

 **\*UPDATED FOR ON SCREEN GRAPHICS Evalplot**

 **USING THE LAHEY FORTRAN COMPILER. Evalplot**

 **VERSION 94-1 (JANUARY 1994) \*VARIABLE ENDF/B DATA FILENAMES Evalplot**

 **TO ALLOW ACCESS TO FILE STRUCTURES Evalplot**

 **(WARNING - INPUT PARAMETER FORMAT Evalplot**

 **HAS BEEN CHANGED) Evalplot**

 **\*CLOSE ALL FILES BEFORE TERMINATING Evalplot**

 **(SEE, SUBROUTINE ENDIT) Evalplot**

 **VERSION 96-1 (JANUARY 1996) \*COMPLETE RE-WRITE Evalplot**

 **\*IMPROVED COMPUTER INDEPENDENCE Evalplot**

 **\*ALL DOUBLE PRECISION Evalplot**

 **\*UNIFORM TREATMENT OF ENDF/B I/O Evalplot**

 **\*IMPROVED OUTPUT PRECISION Evalplot**

 **\*DEFINED SCRATCH FILE NAMES Evalplot**

 **\*ALL DOUBLE PRECISION Evalplot**

 **VERSION 97-1 (APRIL 1997) \*INCREASED PAGE SIZE FROM 210000 Evalplot**

 **TO 480,000 Evalplot**

 **VERSION 99-1 (MARCH 1999) \*CORRECTED CHARACTER TO FLOATING Evalplot**

 **POINT READ FOR MORE DIGITS Evalplot**

 **\*UPDATED TEST FOR ENDF/B FORMAT Evalplot**

 **VERSION BASED ON RECENT FORMAT CHANGE Evalplot**

 **\*GENERAL IMPROVEMENTS BASED ON Evalplot**

 **USER FEEDBACK Evalplot**

 **VERS. 2000-1 (FEBRUARY 2000)\*ADDED MF=10, ACTIVATION CROSS Evalplot**

 **SECTION PLOTS. Evalplot**

 **\*INCREASED DIMENSIONS TO HANDLE MORE Evalplot**

 **SECTIONS - UP TO 1,000 Evalplot**

 **\*GENERAL IMPROVEMENTS BASED ON Evalplot**

 **USER FEEDBACK Evalplot**

 **VERS. 2002-1 (Nov. 2002) \*OPTIONAL INPUT PARAMETERTS Evalplot**

 **\*OPTIONAL BLACK OR WHITE BACKGROUND Evalplot**

 **\*COLOR POSTSCRIPT FILES Evalplot**

 **VERS. 2004-1 (MARCH 2004) \*ADDED INCLUDE FOR COMMON Evalplot**

 **\*INCREASED PAGE SIZE TO 600,000 Evalplot**

 **\*INCREASED THE NUMBER OF ENERGIES Evalplot**

 **VS. LEGENDRE COEFFICIENTS FROM Evalplot**

 **7000 TO 20000 Evalplot**

 **VERS. 2007-1 (JAN. 2007) \*CHECKED AGAINST ALL ENDF/B-VII. Evalplot**

 **\*INCREASED PAGE SIZE TO 2,400,000 Evalplot**

 **FROM 600,000. Evalplot**

 **VS. LEGENDRE COEFFICIENTS TO Evalplot**

 **80,000 FROM 20,000 (MUST BE 1/30 Evalplot**

 **PAGE SIZE). Evalplot**

 **\*ADDED (N,REMAINDER) TO FIRST PLOT. Evalplot**

 **VERS. 2007-2 (DEC. 2007) \*72 CHARACTER FILE NAMES. Evalplot**

 **VERS. 2008-1 (JULY 2008) \*UPDATED FOR MF=4/LTT = 3 = LEGENDRE Evalplot**

 **PLUS TABULATED Evalplot**

 **VERS. 2010-1 (Aug. 2010) \*Extended to plots up to 100 Legendre Evalplot**

 **Coefficients versus incident energy. Evalplot**

 **VERS. 2011-1 (July 2011) \*Increased MT.DAT from 200 to 1,000 Evalplot**

 **entries, to acommodate new MTs. Evalplot**

 **\*Updated MF=10 plots to identify ZAP Evalplot**

 **and state for Neutron Activation. Evalplot**

 **\*Updated for energy release parameters Evalplot**

 **MF=3, MT=301 to 450. Evalplot**

 **VERS. 2012-1 (Aug. 2012) \*Updated incident particle list to Evalplot**

 **include photon (ZA = 0). Evalplot**

 **\*Added CODENAME Evalplot**

 **\*32 and 64 bit Compatible Evalplot**

 **\*Added ERROR stops Evalplot**

 **VERS. 2013-1 (Nov. 2013) \*OUT9 replaced NORMX Evalplot**

 **VERS. 2015-1 (Jan. 2015) \*Updated MF=10 Labels, which requires Evalplot**

 **longer plot titles. Evalplot**

 **\*Restricted character size multiplier Evalplot**

 **to 0.5 to 1.5 to accommodate longer Evalplot**

 **plot titles. Evalplot**

 **\*Replaced ALL 3 way if statements. Evalplot**

 **VERS. 2015-2 (Mar. 2015) \*Minor changes based on user feedback Evalplot**

 **VERS. 2017-1 (May 2017) \*Expanded storage to handle new Evalplot**

 **R-M (LRF=7) angular distributions. Evalplot**

 **\*All floating input parameters changed Evalplot**

 **tp character input + IN9 conversion. Evalplot**

 **\*Replaced Q Mev by MT= at top of plots Evalplot**

 **(Q value in ENDF is now only defined Evalplot**

 **in MF=3, making it difficult for all Evalplot**

 **other MF now treated by this code) Evalplot**

 **\*Initial Linear X scaling for MF=1 Evalplot**

 **\*(nu-bar) and MF=4 (Legendre). Evalplot**

 **\* Unless energy range is requested = Evalplot**

 **allows MF=1 and MF=4 default X Evalplot**

 **scaling to be turned off by input Evalplot**

 **parameters, i.e., by EVALPLOT or Evalplot**

 **EVALHARD. Evalplot**

 **Vers. 2018-1 (Jan. 2018) \*Changed default Y range from 10^10 Evalplot**

 **to 10^8 (Based on experience). Evalplot**

 **\*Extended to plot Electron cross Evalplot**

 **sections (MT=525 through 528) Evalplot**

 **\*Extended to plot Electron Large Evalplot**

 **Angle angular ditibutiond. Evalplot**

 **Vers. 2019-1 (June 2019) \*Additional Interpolation Law Tests Evalplot**

 **\*Checked Maximum Tabulated Energy to Evalplot**

 **insure it is the same for all MTs - Evalplot**

 **if not, print WARNING messages. Evalplot**

 **Evalplot**

 **2015-2 Acknowledgment Evalplot**

 **===================== Evalplot**

 **I thank Chuck Whitmer (TerraPower,WA) for reporting the errors Evalplot**

 **that led to the 2015-2 Improvements in this code. Evalplot**

 **Evalplot**

 **I thank Jean-Christophe Sublet (UKAEA) for contributing MAC Evalplot**

 **executables and Bojan Zefran (IJS, Slovenia) for contributing Evalplot**

 **LINUX (32 or 63 bit) executables. And most of all I must thank Evalplot**

 **Andrej Trkov (NDS, IAEA) for overseeing the entire PREPRO project Evalplot**

 **at IAEA, Vienna. This was a truly International team who worked Evalplot**

 **together to produce PREPRO 2015-2. Evalplot**

 **Evalplot**

 **OWNED, MAINTAINED AND DISTRIBUTED BY Evalplot**

 **------------------------------------ Evalplot**

 **THE NUCLEAR DATA SECTION Evalplot**

 **INTERNATIONAL ATOMIC ENERGY AGENCY Evalplot**

 **P.O. BOX 100 Evalplot**

 **A-1400, VIENNA, AUSTRIA Evalplot**

 **EUROPE Evalplot**

 **Evalplot**

 **ORIGINALLY WRITTEN BY Evalplot**

 **------------------------------------ Evalplot**

 **Dermott E. Cullen Evalplot**

 **Evalplot**

 **PRESENT CONTACT INFORMATION Evalplot**

 **--------------------------- Evalplot**

 **Dermott E. Cullen Evalplot**

 **1466 Hudson Way Evalplot**

 **Livermore, CA 94550 Evalplot**

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 **Telephone 925-443-1911 Evalplot**

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 **Website RedCullen1.net/HOMEPAGE.NEW Evalplot**

 **Evalplot**

 **AUTHORS MESSAGE Evalplot**

 **--------------- Evalplot**

 **THE REPORT DESCRIBED ABOVE IS THE LATEST PUBLISHED DOCUMENTATION Evalplot**

 **FOR THIS PROGRAM. HOWEVER, THE COMMENTS BELOW SHOULD BE CONSIDERED Evalplot**

 **THE LATEST DOCUMENTATION INCLUDING ALL RECENT IMPROVEMENTS. PLEASE Evalplot**

 **READ ALL OF THESE COMMENTS BEFORE IMPLEMENTATION, PARTICULARLY Evalplot**

 **THE COMMENTS CONCERNING MACHINE DEPENDENT CODING. Evalplot**

 **Evalplot**

 **AT THE PRESENT TIME WE ARE ATTEMPTING TO DEVELOP A SET OF COMPUTER Evalplot**

 **INDEPENDENT PROGRAMS THAT CAN EASILY BE IMPLEMENTED ON ANY ONE Evalplot**

 **OF A WIDE VARIETY OF COMPUTERS. IN ORDER TO ASSIST IN THIS PROJECT Evalplot**

 **IT WOULD BE APPECIATED IF YOU WOULD NOTIFY THE AUTHOR OF ANY Evalplot**

 **COMPILER DIAGNOSTICS, OPERATING PROBLEMS OR SUGGESTIONS ON HOW TO Evalplot**

 **IMPROVE THIS PROGRAM. HOPEFULLY, IN THIS WAY FUTURE VERSIONS OF Evalplot**

 **THIS PROGRAM WILL BE COMPLETELY COMPATIBLE FOR USE ON YOUR Evalplot**

 **COMPUTER. Evalplot**

 **Evalplot**

 **PURPOSE Evalplot**

 **------- Evalplot**

 **THIS PROGRAM IS DESIGNED TO READ EVALUATED DATA FROM THE ENDF/B Evalplot**

 **FORMAT AND TO PLOT THE DATA. THE USER MAY SELECT CROSS SECTIONS, Evalplot**

 **PARAMETERS (E.G. NU-BAR, MU-BAR, ETC.), ANGULAR DISTRIBUTIONS Evalplot**

 **AND/OR ENERGY DISTRIBUTIONS TO BE PLOTTED. Evalplot**

 **Evalplot**

 **IN THE FOLLOWING FOR SIMPLICITY THE ENDF/B TERMINOLOGY--ENDF/B Evalplot**

 **TAPE--WILL BE USED. IN FACT THE ACTUAL MEDIUM MAY BE TAPE, CARDS, Evalplot**

 **DISK OR ANY OTHER MEDIUM. Evalplot**

 **Evalplot**

 **ON WHAT COMPUTERS WILL THE PROGRAM RUN Evalplot**

 **------------------------------------------------------------------ Evalplot**

 **THE PROGRAM HAS BEEN IMPLEMENTED ON A WIDE VARIETY OF COMPUTERS Evalplot**

 **FROM THE ONE EXTREME OF LARGE MAINFRAME CRAY AND IBM COMPUTERS Evalplot**

 **TO THE OTHER EXTREME OF SUN TERMINALS AND IBM PERSONAL COMPUTERS. Evalplot**

 **THE PROGRAM IS DESIGNED TO RUN ON VIRTUALLY ANY COMPUTER. FOR Evalplot**

 **SPECIAL CONSIDERATIONS SEE THE SECTIONS BELOW ON, Evalplot**

 **(1) COMPUTER DEPENDENT CODING Evalplot**

 **(2) PLOTTER/GRAPHICS TERMINAL INTERFACE Evalplot**

 **Evalplot**

 **2015 PLOTTER DIMENSIONS Evalplot**

 **================================================================== Evalplot**

 **PLOTTER DIMENSIONS ARE IN INCHES - NOT CM, MM, OR CUBITS. Evalplot**

 **THIS IS DONE FOR HISTORICAL REASONS AND HOPEFULLY THIS WILL Evalplot**

 **NOT INCONVENIENCE ANYONE - IN PRACTICE I HAVE USED EXACTLY THE Evalplot**

 **SAME DIMENSION = X = 0 to 12.5 and Y = 0 to 10 FOR DECADES Evalplot**

 **TO PRODUCE BOTH ON-SCREEN AND HARDCOPY POSTSCRIPT PLOTS. Evalplot**

 **Evalplot**

 **I STRONGLY SUGGEST THAT YOU NOT CHANGE THESE DIMENSIONS UNLESS Evalplot**

 **YOU MUST = BASED ON THE PLOT SIZE YOU OBTAIN WHEN YOU FIRST RUN Evalplot**

 **THIS CODE. Evalplot**

 **Evalplot**

 **GRAPHICS INTERFACE Evalplot**

 **------------------------------------------------------------------ Evalplot**

 **THIS PROGRAM USES A SIMPLE CALCOMP LIKE GRAPHICS INTERFACE WHICH Evalplot**

 **REQUIRES ONLY 3 SUBROUTINES...PLOTS, PLOT AND PEN (DESCRIBED IN Evalplot**

 **DETAIL BELOW). ALL CHARACTERS AND SYMBOLS ARE DRAWN USING TABLES Evalplot**

 **OF PEN STROKES (SUPPLIED WITH THIS PROGRAM). USING THIS METHOD Evalplot**

 **THE PROGRAM SHOULD BE SIMPLE TO INTERFACE TO VIRTUALLY ANY PLOTTER Evalplot**

 **OR GRAPHICS TERMINAL AND THE APPEARANCE AND LAYOUT OF THE PLOTS Evalplot**

 **SHOULD BE INDEPENDENT OF WHICH PLOTTER IS USED. Evalplot**

 **Evalplot**

 **PROGRAM IDENTIFICATION Evalplot**

 **---------------------- Evalplot**

 **AS DISTRIBUTED THE FIRST FRAME OF PLOTTED OUTPUT WILL DOCUMENT Evalplot**

 **THE PROGRAM NAME, VERSION AND INSTALLATION. THIS INFORMATION IS Evalplot**

 **STORED AS DATA IN THE ARRAY VERSES NEAR THE BEGINNING OF Evalplot**

 **SUBROUTINE FRAME1. IF YOU WISH TO CUSTOMIZE THE OUTPUT TO IDENTIFY Evalplot**

 **YOUR INSTALLATION CHANGE THE LAST TWO LINES OF THE ARRAY VERSES. Evalplot**

 **Evalplot**

 **SIZE OF PLOTS Evalplot**

 **------------- Evalplot**

 **THE PROGRAM HAS A BUILT-IN DEFAULT SIZE TO MAKE EACH PLOT 13.50 Evalplot**

 **BY 10.24 INCHES. THIS SIZE WAS SELECTED ASSUMING THAT THE Evalplot**

 **RESOLUTION OF THE PLOTTER IS 1024 RASTER POINTS PER INCH. THE Evalplot**

 **USER MAY CHANGE THE SIZE OF THE PLOT BY SPECIFYING ANY REQUIRED Evalplot**

 **SIZE ON THE FIRST INPUT LINE. IN PARTICULAR FOR USE ON ANY PLOTTER Evalplot**

 **THAT USES CENTIMETERS INSTEAD OF INCHES THE USER MAY MERELY Evalplot**

 **SPECIFY THE REQUIRED SIZE OF THE PLOT IN CENTIMETERS (E.G., TO Evalplot**

 **OBTAIN A 13.50 BY 10.24 INCH PLOT, THE USER NEED ONLY SPECIFY Evalplot**

 **34.3 BY 26 ON THE FIRST INPUT LINE...ASSUMING 2.54 CENTIMETERS PER Evalplot**

 **INCH, OR 343 BY 260 FOR MILLIMETERS..ASSUMING 25.4 MILLIMETERS Evalplot**

 **PER INCH). Evalplot**

 **Evalplot**

 **CHARACTER SIZE Evalplot**

 **-------------- Evalplot**

 **THE PLOT HAS A BUILT-IN CHARACTER SIZE WHICH HAS BEEN DEFINED FOR Evalplot**

 **COMPATIBILITY WITH THE BUILT-IN PLOT SIZE. IF THE USER SPECIFIES Evalplot**

 **BY INPUT A DIFFERENT PLOT SIZE, THE PROGRAM WILL AUOTMATICALLY Evalplot**

 **SCALE THE SIZE OF ALL CHARACTERS BY THE RATIO OF THE Y SIZE OF THE Evalplot**

 **PLOT SPECIFIED BY THE USER TO THE BUILT-IN Y SIZE OF PLOTS (E.G., Evalplot**

 **FOR PLOTS WHICH ARE ONLY 5.12 HIGH (Y DIRECTION) ALL CHARACTERS Evalplot**

 **WILL BE SCALED TO BE ONLY 1/2 THE CHARACTER SIZE ON PLOTS WHICH Evalplot**

 **ARE 10.24 HIGH (10.24 = THE BUILT-IN SIZE). NOTE, CHANGES IN THE Evalplot**

 **X SIZE OF THE PLOT WILL NOT HAVE ANY EFFECT ON THE CHARACTER SIZE Evalplot**

 **(E.G., FOR A LONG PLOT, 30 BY 10.24 THE CHARACTER SIZE WILL BE THE Evalplot**

 **THE SAME AS ON A 13.50 BY 10.24 PLOT). Evalplot**

 **Evalplot**

 **PLOT PER FRAME Evalplot**

 **-------------- Evalplot**

 **BY INPUT THE USER CAN SPECIFY NOT ONLY THE ACTUAL SIZE OF THE Evalplot**

 **LOCAL PLOTTER, BUT ALSO HOW MANY PLOTS SHOULD APPEAR ON EACH Evalplot**

 **FRAME. THIS IS DONE BY SPECIFYING THE LAYOUT OF A FRAME IN TERMS Evalplot**

 **OF THE NUMBER OF PLOTS IN THE X AND Y DIRECTION. FOR EXAMPLE BY Evalplot**

 **SPECIFYING THAT EACH FRAME BE DIVIDED INTO 3 PLOTS IN THE X Evalplot**

 **DIRECTION AND 2 PLOTS IN THE Y DIRECTION, EACH FRAME WILL CONTAIN Evalplot**

 **UP TO 6 PLOTS (3 X 2). INTERNALLY EACH PLOT WILL BE GENERATED TO Evalplot**

 **STANDARD A4 SIZE, AS DESCRIBED ABOVE, AND THEN ON OUTPUT SCALED Evalplot**

 **TO THE NUMBER OF PLOTS PER FRAME SPECIFIED BY THE USER INPUT. Evalplot**

 **Evalplot**

 **ENDF/B FORMAT Evalplot**

 **------------- Evalplot**

 **THIS PROGRAM ONLY USES THE ENDF/B BCD OR CARD IMAGE FORMAT (AS Evalplot**

 **OPPOSED TO THE BINARY FORMAT) AND CAN HANDLE DATA IN ANY VERSION Evalplot**

 **OF THE ENDF/B FORMAT (I.E., ENDF/B-I, II,III, IV, V OR VI FORMAT). Evalplot**

 **Evalplot**

 **IT IS ASSUMED THAT THE DATA IS CORRECTLY CODED IN THE ENDF/B Evalplot**

 **FORMAT AND NO ERROR CHECKING IS PERFORMED. IN PARTICULAR IT IS Evalplot**

 **ASSUMED THAT THE MAT, MF AND MT ON EACH LINE IS CORRECT. SEQUENCE Evalplot**

 **NUMBERS (COLUMNS 76-80) ARE IGNORED. FORMAT OF SECTION MT=452, 455 Evalplot**

 **OF MF=1, AND ALL SECTIONS OF MF=3, 4 AND 5 MUST BE CORRECT. ALL Evalplot**

 **OTHER SECTION OF DATA ARE SKIPPED AND AS SUCH THE OPERATION OF Evalplot**

 **THIS PROGRAM IS INSENSITIVE TO THE CORRECTNESS OR INCORRECTNESS Evalplot**

 **OF ALL OTHER SECTIONS. Evalplot**

 **Evalplot**

 **INTERPOLATION LAW Evalplot**

 **----------------- Evalplot**

 **EACH TABLE OF DATA MAY USE EITHER COMPLETELY HISTOGRAM OR Evalplot**

 **COMPLETELY LINEAR INTERPOLATION LAW (THE TWO INTERPOLATION LAWS Evalplot**

 **CANNOT BE MIXED TOGETHER IN ONE TABLE). EITHER OF THESE TWO Evalplot**

 **REPRESENTATIONS WILL BE STORED IN CORE IN LINEARLY INTERPOLABLE Evalplot**

 **FORM. IF THIS PROGRAM FINDS ANY DATA THAT USES ANY OTHER Evalplot**

 **INTERPOLATION LAW IT WILL PRINT AN ERROR MESSAGE AND PLOT THE Evalplot**

 **TABLE AS IF IT WERE LINEARLY INTERPOLABLE. THE ONLY ERROR THAT Evalplot**

 **WILL RESULT IN THE PLOT WILL BE IN THE CURVE FOLLOWED BETWEEN Evalplot**

 **TABULATED POINTS. PROGRAM LINEAR (UCRL-50400, VOL. 17, PART A) Evalplot**

 **MAY BE USED TO CONVERT CROSS SECTIONS TO LINEARLY INTERPOLABLE Evalplot**

 **FORM. PROGRAM LEGEND CAN BE USED FOR ANGULAR DISTRIBUTIONS AND Evalplot**

 **PROGRAM ENERGY CAN BE USED FOR SECONDARY ENERGY DISTRIBUTIONS. Evalplot**

 **Evalplot**

 **REACTION INDEX Evalplot**

 **-------------- Evalplot**

 **THIS PROGRAM DOES NOT USE THE REACTION INDEX WHICH IS GIVEN IN Evalplot**

 **SECTION MF=1, MT=451 OF EACH EVALUATION. Evalplot**

 **Evalplot**

 **PAGE SIZE Evalplot**

 **--------- Evalplot**

 **ONLY ONE PAGE OF DATA = 600000 DATA POINTS - IS KEPT IN CORE AT Evalplot**

 **ANY GIVEN TIME. IF THERE IS MORE THAN THIS MANY POINTS THEY WILL Evalplot**

 **BE KEPT ON A SCRATCH FILE AND LOADED INTO CORE AS NEEDED. Evalplot**

 **Evalplot**

 **TO CHANGE THE PAGE SIZE, Evalplot**

 **Evalplot**

 **1) CHANGE 600000 TO THE NEW PAGE SIZE Evalplot**

 **2) CHANGE 1200000 TO TWO TIMES THE NEW PAGE SIZE Evalplot**

 **Evalplot**

 **SECTION SIZE Evalplot**

 **------------ Evalplot**

 **SINCE THIS PROGRAM USES A LOGICAL PAGING SYSTEM THERE IS NO LIMIT Evalplot**

 **TO THE NUMBER OF POINTS IN ANY SECTION, E.G., THE TOTAL CROSS Evalplot**

 **SECTION MAY BE REPRESENTED BY 200,000 DATA POINTS. Evalplot**

 **Evalplot**

 **THE ONLY EXCEPTION TO THIS RULE IS THAT EACH TABLE OF DATA WHICH Evalplot**

 **USES A HISTOGRAM INTERPOLATION LAW CANNOT EXCEED HALF THE SIZE Evalplot**

 **OF THE IN CORE PAGE (PRESENTLY 600000/2=300000) WHICH IS ADEQUATE Evalplot**

 **FOR ALMOST ALL HISTOGRAM (E.G. MULTIGROUP) REPRESENTATIONS OF Evalplot**

 **A SINGLE TABLE (E.G. REACTION). Evalplot**

 **Evalplot**

 **WHAT DATA CAN BE PLOTTED Evalplot**

 **------------------------ Evalplot**

 **THIS CODE CAN PLOT VIRTUALLY ANY NEUTRON OR PHOTON CROSS SECTIONS Evalplot**

 **(MF=3 OR 23) AND ANY TABULATED ANGULAR OR ENERGY DISTRIBUTIONS OR Evalplot**

 **LEGENDRE COEFFICIENTS. WHAT IS ACTUALLY PLOTTED DEPENDS ON WHAT Evalplot**

 **DATA IS SELECTED BY THE USER. Evalplot**

 **Evalplot**

 **SELECTION OF DATA Evalplot**

 **----------------- Evalplot**

 **DATA TO BE PLOTTED IS SPECIFIED BY INPUTTING UP TO 100 MAT/MF/MT Evalplot**

 **RANGES OR UP TO 100 ZA/MF/MT RANGES. IN ADDITION FOR EACH RANGE Evalplot**

 **THE USER MAY SPECIFY AN X RANGE (USUALLY ENERGY) AND THE TYPE OF Evalplot**

 **DATA TO BE PLOTTED (SEE: THE DESCRIPTION OF TYPES, BELOW). Evalplot**

 **Evalplot**

 **THE X RANGE FOR MF = 1, 3, 23 AND 27 AND MF = 4 LEGENDRE Evalplot**

 **COEFFICIENTS WILL BE USED AS THE X LIMITS OF THE PLOTS, E.G., Evalplot**

 **PLOT ENERGY DEPENDENT CROSS SECTIONS BETWEEN 1 AND 20 MEV. Evalplot**

 **Evalplot**

 **THE X RANGE FOR MF = 4 AND 5 WILL BE USED TO ONLY SELECT ANGULAR Evalplot**

 **AND ENERGY DISTRIBUTION FOR WHICH THE INCIDENT NEUTRON ENERGY Evalplot**

 **IS IN THE X RANGE. E.G., ONLY PLOT ANGULAR DISTRIBUTIONS WHERE Evalplot**

 **THE INCIDENT NEUTRON ENERGY IS 1 TO 20 MEV. Evalplot**

 **Evalplot**

 **INTERACTIVE VS. BATCH MODE Evalplot**

 **-------------------------- Evalplot**

 **VERSION 92-1 AND LATER VERSIONS OF THIS CODE ONLY USE A BATCH Evalplot**

 **MODE WHERE ALL REQUESTS ARE READ AND PROCESSED. EARLIER VERSIONS Evalplot**

 **OF THIS CODE HAD BOTH AN INTERACTIVE MODE (WHERE REQUESTS WHERE Evalplot**

 **READ AND EXECUTED ONE AT A TIME) AND A BATCH MODE. INTERACTIVE Evalplot**

 **MODE HAS BEEN DROPPED AND WILL NOT TO REINTRODUCED UNLESS THE Evalplot**

 **AUTHOR IS INFORMED BY USERS THAT THEY WERE USING THE INTERACTIVE Evalplot**

 **MODE. Evalplot**

 **Evalplot**

 **PLOT LAYOUT Evalplot**

 **----------- Evalplot**

 **VERSION 92-1 AND LATER VERSIONS OF THIS CODE WILL PLOT ALL Evalplot**

 **CURVES ON A SINGLE PLOT. EARLIER VERSIONS OF THIS CODE ALLOWED Evalplot**

 **THE OPTION TO HAVE, Evalplot**

 **MULTIPLE PLOTS - INDIVIDUAL SCALING Evalplot**

 **MULTIPLE PLOTS - COMMON SCALING Evalplot**

 **SINGLE PLOT Evalplot**

 **MULTILE PLOTS PER PLOT HAVE BEEN DROPPED AND WILL NOT BE Evalplot**

 **REINTRODUCED UNLESS IT IS DEMONSTRATED TO THE AUTHOR THAT THEY Evalplot**

 **ARE OF PRACTICAL USE IN SOME APPLICATION. Evalplot**

 **Evalplot**

 **PROCESSING OF DATA Evalplot**

 **------------------ Evalplot**

 **IN THE CASE OF NEUTRON AND PHOTON CROSS SECTIONS (MF=3 OR 23) Evalplot**

 **AND PARAMETERS (MF=1 OR 27) ALL DATA IN A FILE (MF) IS READ Evalplot**

 **GROUPED TOGETHER BY TYPE (AS EXPLAINED BELOW) AND PLOTTED. Evalplot**

 **Evalplot**

 **IN THE CASE OF ANGULAR AND ENERGY DISTRIBUTIONS (MF=4 OR 5) ONLY Evalplot**

 **ONE SECTION OF DATA AT A TIME IS READ AND PLOTTED. Evalplot**

 **Evalplot**

 **TYPES OF DATA (MF=1, 3, 23 AND 27 ONLY) Evalplot**

 **--------------------------------------- Evalplot**

 **THESE DATA ARE DIVIDED INTO UP TO 20 TYPES AND EACH TYPE OF Evalplot**

 **DATA IS GROUPED TOGETHER AND PLOTTED (IF THE DATA IS ACTUALLY Evalplot**

 **PRESENT). Evalplot**

 **Evalplot**

 **WHAT TYPE OF DATA IS ACTUALLY PLOTTED CAN BE CONTROLLED BY USER Evalplot**

 **INPUT EITHER BASED ON SELECTED MAT/MF/MT OR ZA/MF/MT RANGES OR Evalplot**

 **BY EXPLICITLY SELECTING ONLY ONE TYPE OF DATA IS TO BE PLOTTED Evalplot**

 **(SEE THE DESCRIPTION OF INPUT BELOW). Evalplot**

 **Evalplot**

 **SIMPLE REQUESTS Evalplot**

 **--------------- Evalplot**

 **GENERALLY EACH MAT/MF/MT OR ZA/MF/MT REQUESTED IS TREATED Evalplot**

 **SEPERATELY AND THE SPECIFIED DATA IS GROUPED BY TYPE AND PLOTTED. Evalplot**

 **FOR EXAMPLE, THE USER MAY SPECIFY USING ONE REQUEST THAT ALL Evalplot**

 **TYPES OF DATA BE PLOTTED OVER THE ENTIRE ENERGY RANGE AND USE Evalplot**

 **A SECOND REQUEST TO SPECIFY THAT ONE PARTICULAR TYPE OF DATA Evalplot**

 **BE PLOTTED OVER A SPECIFIC ENERGY RANGE. Evalplot**

 **Evalplot**

 **CHAINED REQUESTS Evalplot**

 **---------------- Evalplot**

 **REQUESTS MAY ALSO BE CHAINED TOGETHER (SEE, THE DESCRIPTION OF Evalplot**

 **INPUT BELOW), WHERE A NUMBER OF REQUESTS MAY BE USED TO SELECT Evalplot**

 **DATA, BUT ONLY THE LAST REQUEST IN A CHAIN WILL CAUSE ALL SELECTED Evalplot**

 **DATA TO BE PLOTTED. CHAINED REQUESTED ARE INDICATED ON INPUT BY Evalplot**

 **A SERIES OF REQUESTS FOR DATA TYPE = -1, EXCEPT FOR THE LAST Evalplot**

 **REQUEST OF THE CHAIN, WHICH MUST SPECIFY A TYPE DATA = 0 (ALL) Evalplot**

 **OR A POSITIVE NUMBER. UNLIKE SIMPLE REQUESTS, WHERE EACH WILL Evalplot**

 **PRODUCE ONE OR MORE PLOTS, WITH CHAINED REQUESTS THE ENTIRE Evalplot**

 **SERIES OF CHAINED REQUESTS WILL BE TREATED AS A SINGLE REQUEST Evalplot**

 **AND WILL PRODUCE ONE OR MORE PLOTS. Evalplot**

 **Evalplot**

 **FOR EXAMPLE, DATA TYPE = 1 WILL NORMALLY INCLUDE, Evalplot**

 **MT = 1 - TOTAL Evalplot**

 **= 2 - ELASTIC Evalplot**

 **= 4 - TOTAL INELASTIC Evalplot**

 **= 5 - (N,REMAINDER) Evalplot**

 **= 18 - FISSION Evalplot**

 **= 102 - CAPTURE Evalplot**

 **IF YOU WISH TO EXCLUDE TOTAL INELASTIC FROM A PLOT YOU NEED ONLY Evalplot**

 **SPECIFY TWO CHAINED REQUESTS THE FIRST TO SELECT MT = 1 THROUGH Evalplot**

 **2 (TO INCLUDE TOTAL AND ELASTIC) AND A SECOND TO INCLUDE MT = 18 Evalplot**

 **THROUGH 102. THE FIRST REQUEST SHOULD SPECIFY DATA TYPE = -1 AND Evalplot**

 **SECOND 1 (THIS WILL CHAIN THE 2 REQUESTS TOGETHER, SO THAT MT =1 Evalplot**

 **THROUGH 2, AND MT = 18 THROUGH 102 ALL APPEAR ON THE SAME PLOT). Evalplot**

 **SINCE MT = 4 (TOTAL INELASTIC) IS NOT REQUESTED IT WILL NOT BE Evalplot**

 **PLOTTED. Evalplot**

 **Evalplot**

 **DEFINITION OF 20 DATA TYPES Evalplot**

 **------------------------------------------------------------------ Evalplot**

 **NEUTRONS (MF = 3) Evalplot**

 **----------------- Evalplot**

 **(1) TOTAL, ELASTIC, CAPTURE, FISSION, TOTAL INELASTIC, REMAINDER Evalplot**

 **(2) (N,2N), (N,3N) AND (N,N' CHARGED PARTICLE) Evalplot**

 **(3) (N,CHARGED PARTICLE) Evalplot**

 **(4) PARTICLE PRODUCTION (PROTON, DEUTERON, ETC.) AND DAMAGE Evalplot**

 **(5) TOTAL, FIRST, SECOND, ETC. CHANCE FISSION. Evalplot**

 **(6) TOTAL INELASTIC, INELASTIC DISCRETE LEVELS AND CONTINUUM Evalplot**

 **(7) (N,P) TOTAL AND LEVELS (ONLY IF LEVELS ARE GIVEN) Evalplot**

 **(8) (N,D) TOTAL AND LEVELS (ONLY IF LEVELS ARE GIVEN) Evalplot**

 **(9) (N,T) TOTAL AND LEVELS (ONLY IF LEVELS ARE GIVEN) Evalplot**

 **(10) (N,HE-3) TOTAL AND LEVELS (ONLY IF LEVELS ARE GIVEN) Evalplot**

 **(11) (N,ALPHA) TOTAL AND LEVELS (ONLY IF LEVELS ARE GIVEN) Evalplot**

 **(12) PARAMETERS MU-BAR, XI AND GAMMA Evalplot**

 **(13) NU-BAR - TOTAL, PROMPT AND DELAYED Evalplot**

 **(19) ENERGY RELEASE PARAMETERS, MF=3, MT=301-450 Evalplot**

 **Evalplot**

 **ACTIVATION (MF=10) Evalplot**

 **------------------ Evalplot**

 **(20) ALL mt=1 TO 999. Evalplot**

 **Evalplot**

 **PHOTONS (MF=23 AND 27) Evalplot**

 **----------------------- Evalplot**

 **(14) TOTAL, COHERENT, INCOHERENT, TOTAL PHOTOELECTRIC, TOTAL Evalplot**

 **PAIR PRODUCTION Evalplot**

 **(15) TOTAL AND SUBSHELL PHOTOELECTRIC Evalplot**

 **(16) TOTAL, NUCLEAR AND ELECTRON PAIR PRODUCTION Evalplot**

 **(17) COHERENT FORM FACTOR AND INCOHERENT SCATTERING FUNCTION Evalplot**

 **(18) REAL AND IMAGINARY SCATTERING FACTORS Evalplot**

 **Evalplot**

 **Evalplot**

 **IDENTIFICATION OF DATA Evalplot**

 **---------------------- Evalplot**

 **ALL PLOTS IDENTIFY THE TARGET, E.G., U-238 AND UNITS OF THE X AND Evalplot**

 **Y AXIS, E.G., X = ENERGY (MEV) OR COSINE (LAB), ETC., Y = CROSS Evalplot**

 **SECTION (BARNS) OR PROBABILITY/COSINE, ETC. Evalplot**

 **Evalplot**

 **FOR TYPES OF DATA (MF=1, 3, 23 AND 27) DIFFERENT REACTIONS (MT) Evalplot**

 **ARE GROUPED TOGETHER TO APPEAR ON THE SAME PLOT. THE TITLE AT Evalplot**

 **THE TOP OF THE PLOT WILL IDENTIFY THE TYPE OF DATA BEING PLOTTED Evalplot**

 **AND THE LEGEND BOX WITHIN THE PLOT WILL IDENTIFY EACH REACTION. Evalplot**

 **Evalplot**

 **FOR ANGULAR AND ENERGY DISTRIBUTIONS (MF=4 OR 5) EACH PLOT WILL Evalplot**

 **CONTAIN DATA FOR A SINGLE REACTION (MT) AND DIFFERENT INCIDENT Evalplot**

 **NEUTRON ENERGIES. THE TITLE AT THE TOP OF THE PLOT WILL IDENTIFY Evalplot**

 **THE REACTION AND THE LEGEND BOX WITHIN THE PLOT WILL IDENTIFY Evalplot**

 **THE INCIDENT ENERGY. Evalplot**

 **Evalplot**

 **FOR LEGENDRE COEFFICIENT THE DATA IN ENDF/B FORMAT WILL BE Evalplot**

 **INVERTED IN ORDER TO PRESENT EACH LEGENDRE COEFFICIENT VERSUS Evalplot**

 **INCIDENT ENERGY. THE TITLE AT THE TOP OF THE PLOT WILL IDENTIFY Evalplot**

 **THE REACTION AND THE LEGEND BOX WITHIN THE PLOT WILL IDENTIFY Evalplot**

 **THE LEGENDRE ORDER. Evalplot**

 **Evalplot**

 **INPUT FILES Evalplot**

 **----------- Evalplot**

 **UNIT DESCRIPTION Evalplot**

 **---- ----------- Evalplot**

 **2 INPUT LINES (BCD - 80 CHARACTERS/RECORD) Evalplot**

 **9 MT DEFINITIONS (BCD - 80 CHARACTERS/RECORD) Evalplot**

 **10 ENDF/B DATA (BCD - 80 CHARACTERS/RECORD) Evalplot**

 **12 SOFTWARE CHARACTERS (BCD - 80 CHARACTERS/RECORD) Evalplot**

 **Evalplot**

 **OUTPUT FILES Evalplot**

 **------------ Evalplot**

 **UNIT DESCRIPTION Evalplot**

 **---- ----------- Evalplot**

 **3 OUTPUT REPORT (BCD - 120 CHARACTERS/RECORD) Evalplot**

 **16 PLOTTING UNIT Evalplot**

 **Evalplot**

 **SCRATCH FILES Evalplot**

 **------------- Evalplot**

 **UNIT DESCRIPTION Evalplot**

 **---- ----------- Evalplot**

 **11 SCRATCH FILE (BINARY - 960000 WORDS/RECORD = 2\*PAGE SIZE) Evalplot**

 **Evalplot**

 **OPTIONAL STANDARD FILE NAMES (SEE SUBROUTINE FILIO1 AND FILIO2) Evalplot**

 **--------------------------------------------------------------- Evalplot**

 **UNIT FILE NAME Evalplot**

 **---- ---------- Evalplot**

 **2 EVALPLOT.INP Evalplot**

 **3 EVALPLOT.LST Evalplot**

 **9 MT.DAT Evalplot**

 **10 ENDFB.IN (OR AS INPUT PARAMETER) Evalplot**

 **11 (SCRATCH) Evalplot**

 **12 PLOT.CHR Evalplot**

 **16 (PLOTTING UNIT...USUALLY A DUMMY) Evalplot**

 **Evalplot**

 **INPUT PARAMETERS Evalplot**

 **---------------- Evalplot**

 **LINE COLUMNS FORMAT DESCRIPTION Evalplot**

 **---- ------- ------ ----------- Evalplot**

 **1 1-11 E11.4 LOWER X LIMIT OF PLOTTER Evalplot**

 **12-22 E11.4 UPPER X LIMIT OF PLOTTER Evalplot**

 **23-33 E11.4 LOWER Y LIMIT OF PLOTTER Evalplot**

 **34-44 E11.4 UPPER Y LIMIT OF PLOTTER Evalplot**

 **45-55 I11 NUMBER OF PLOTS PER FRAME IN X DIRECTION Evalplot**

 **56-66 I11 NUMBER OF PLOTS PER FRAME IN Y DIRECTION Evalplot**

 **67-70 F4.1 CHARACTER SIZE MULTIPLIER Evalplot**

 **= 0 OR 1 - NORMAL CHARACTER SIZE Evalplot**

 **= OTHERWISE - CHARACTERS SCALED BY THIS Evalplot**

 **FACTOR. Evalplot**

 **2 1-72 A72 ENDF/B DATA FILENAME Evalplot**

 **(LEAVE BLANK FOR STANDARD = ENDFB.IN) Evalplot**

 **3 1-11 I11 RETRIEVAL CRITERIA Evalplot**

 **= 0 - MAT Evalplot**

 **= 1 - ZA Evalplot**

 **12-22 I11 TYPE OF GRID Evalplot**

 **= 0 - TICK MARKS ON BORDER Evalplot**

 **= 1 - SOLID AT COARSE INTERVALS Evalplot**

 **= 2 - DASHED AT COARSE INTERVALS Evalplot**

 **= 3 - SOLID AT FINE INTERVALS Evalplot**

 **= 4 - DASHED AT FINE INTERVALS Evalplot**

 **= 5 - SOLID COARSE/DASHED FINE GRID Evalplot**

 **23-33 I11 SHOULD BORDER BE PLOTTED ON EACH PLOT Evalplot**

 **= 0 - NO Evalplot**

 **= 1 - YES Evalplot**

 **34-44 I11 LINE THICKNESS Evalplot**

 **= 0 - 5 = BORDER/CURVES/CHARACTERS Evalplot**

 **=-1 - -5 = BORDER/CURVES (NOT CHARACTERS) Evalplot**

 **NOTE, THE GRID IS NEVER THICK. Evalplot**

 **45-55 I11 SHOULD TEMPERATURE BE PLOTTED. Evalplot**

 **= 0 - YES Evalplot**

 **= 1 - NO Evalplot**

 **56-66 E11.4 ALLOWABLE RATIO OF PLOT Y RANGE MAXIMUM TO Evalplot**

 **MINIMUM - IF THIS RATIO IS EXCEEDED THE Y Evalplot**

 **RANGE MINIMUM WILL BE CHANGED TO THE Y RANGE Evalplot**

 **MAXIMUM TIMES THIS RATIO. Evalplot**

 **IF THIS RATIO IS NOT POSITIVE, IT IS Evalplot**

 **INTERPRETED TO MEAN NO LIMIT ON Y RANGE. Evalplot**

 **67-70 I4 BACKGROUND COLOR Evalplot**

 **= 0 = BLACK Evalplot**

 **= OTHERWISE = WHITE Evalplot**

 **4-N 1- 6 I6 LOWER MAT OR ZA LIMIT Evalplot**

 **7- 8 I2 LOWER MF LIMIT Evalplot**

 **9-11 I3 LOWER MT LIMIT Evalplot**

 **11-22 E11.4 LOWER X LIMIT (USUALLY ENERGY) - EV Evalplot**

 **23-28 I6 UPPER MAT OR ZA LIMIT Evalplot**

 **29-30 I2 UPPER MF LIMIT Evalplot**

 **31-33 I3 UPPER MT LIMIT Evalplot**

 **34-44 E11.4 UPPER X LIMIT (USUALLY ENERGY) - EV Evalplot**

 **45-55 I11 TYPE OF DATA TO RETRIEVE AND PLOT Evalplot**

 **= -1 - CHAIN THIS REQUEST TO THE NEXT ONE Evalplot**

 **= 0 - ALL Evalplot**

 **= 1-20 - TYPE AS SPECIFIED ABOVE Evalplot**

 **Evalplot**

 **THERE MAY BE UP 100 MAT/MF/MT OR ZA/MF/MT REQUEST RANGES. INPUT Evalplot**

 **MUST BE TERMINATED BY A BLANK LINE. Evalplot**

 **Evalplot**

 **IF X LIMITS ARE NOT SPECIFIED (I.E., LOWER AND UPPER X LIMIT = 0) Evalplot**

 **THIS WILL BE INTERPRETED TO MEAN NO LIMIT AND ALL DATA WILL BE Evalplot**

 **PLOTTED OVER THEIR ENTIRE ENERGY RANGE, I.E., YOU NEED NOT Evalplot**

 **KNOW AND SPECIFY THE ACTUAL ENERGY LIMITS OF THE DATA. Evalplot**

 **Evalplot**

 **EXAMPLE DEFINITION OF PLOTTER Evalplot**

 **----------------------------- Evalplot**

 **2015 - WARNING - THE FOLLOWING DESCRIPTION IS OUT-OF-DATE. Evalplot**

 **TODAY THE DIMENSIONS OF THE PLOTTER ARE IN INCHES. Evalplot**

 **Evalplot**

 **THE FIRST INPUT LINE DEFINES THE DIMENSIONS OF THE PLOTTER BEING Evalplot**

 **USED IN ANY UNITS (INCHES, CENTIMETERS, MILLIMETERS, ANYTHING) Evalplot**

 **WHICH APPLY TO THE PLOTTER. IN ADDITION THE FIRST LINE DEFINES Evalplot**

 **HOW MANY PLOTS SHOULD APPEAR ON EACH FRAME. THE PLOTTING AREA Evalplot**

 **DEFINED ON THE FIRST INPUT LINE MAY BE SUBDIVIDED INTO ANY NUMBER Evalplot**

 **OF PLOTS IN THE X AND Y DIRECTION. FOR EXAMPLE, TO PRODUCE A Evalplot**

 **SERIES OF FRAMES EACH CONTAINING 3 PLOTS IN THE X DIRECTION AND Evalplot**

 **2 PLOTS IN THE Y DIRECTION (6 PLOTS PER FRAME) COLUMN 45-55 OF Evalplot**

 **THE FIRST INPUT LINE SHOULD BE 3 AND COLUMNS 56-66 SHOULD BE 2. Evalplot**

 **Evalplot**

 **IF THE LOCAL PLOTTER USES DIMENSIONS OF INCHES IN ORDER TO OBTAIN Evalplot**

 **10 X 10 INCH FRAMES WITH 3 X 2 PLOTS PER FRAME THE FIRST INPUT Evalplot**

 **LINE SHOULD BE, Evalplot**

 **Evalplot**

 **0.0 10.0 0.0 10.0 3 2 Evalplot**

 **Evalplot**

 **IF THE LOCAL PLOTTER USES DIMENSION OF MILLIMETERS THE SAME Evalplot**

 **PHYSICAL SIZE PLOT MAY BE OBTAINED IF THE FIRST INPUT LINE IS, Evalplot**

 **Evalplot**

 **0.0 254.0 0.0 254.0 3 2 Evalplot**

 **Evalplot**

 **FOR SIMPLICITY THE FOLLOWING EXAMPLE INPUTS WILL NOT DISCUSS THE Evalplot**

 **PHYSICAL DIMENSIONS OF THE PLOTTER AND THE FIRST INPUT LINE WILL Evalplot**

 **IN ALL CASES INDICATE 10 X 10 INCH PLOTS WITH ONLY 1 PLOT PER Evalplot**

 **FRAME. Evalplot**

 **Evalplot**

 **ALL OF THE FOLLOWING EXAMPLE WILL USE, Evalplot**

 **1) A DASHED GRID (SECOND LINE, COLS. 12-22 = 2) Evalplot**

 **2) NO BORDER (SECOND LINE, COLS. 23-33 = 0) Evalplot**

 **3) LINE THICKNESS -2 (SECOND LINE, COLS. 34-44 =-2) Evalplot**

 **4) TEMPERATURE ON PLOTS (SECOND LINE, COLS. 45-55 = 0) Evalplot**

 **5) NO Y RANGE LIMIT (SECOND LINE, COLS. 56-66 = 0.0) Evalplot**

 **Evalplot**

 **EXAMPLE INPUT NO. 1 Evalplot**

 **------------------- Evalplot**

 **FOR ALL THORIUM AND URANIUM ISOTOPES PLOT NEUTRON CROSS SECTIONS Evalplot**

 **ENTIRE ENERGY RANGE. IN ADDITION PLOT TYPE 1 DATA, MAJOR NEUTRON Evalplot**

 **CROSS SECTIONS OVER THE ENERGY RANGE 1 EV TO 1 KEV. USE THE Evalplot**

 **STANDARD FILENAME (ENDFB.IN) FOR THE ENDF/B DATA. THE FOLLOWING Evalplot**

 **6 INPUT LINES ARE REQUIRED, Evalplot**

 **Evalplot**

 **0.0 10.0 0.0 10.0 3 2 Evalplot**

 **ENDFB.IN Evalplot**

 **1 2 0 -2 0 0.0 Evalplot**

 **90000 3 0 90999 3999 0 Evalplot**

 **90000 3 0 1.00000+ 090999 3999 1.00000+ 3 1 Evalplot**

 **(BLANK LINE MUSE FOLLOW LAST REQUEST) Evalplot**

 **Evalplot**

 **EXAMPLE INPUT NO. 2 Evalplot**

 **------------------- Evalplot**

 **PLOT FE-56 ELASTIC AND INELASTIC ANGULAR DISTRIBUTIONS BETWEEN Evalplot**

 **1 AND 20 MEV. THE FOLLOWING 6 INPUT LINES ARE REQUIRED, Evalplot**

 **Evalplot**

 **0.0 10.0 0.0 10.0 3 2 Evalplot**

 **ENDFB.IN Evalplot**

 **1 2 0 -2 0 0.0 Evalplot**

 **26056 4 2 1.00000+ 626056 4 2 2.00000+ 7 0 Evalplot**

 **26056 4 4 1.00000+ 626056 4 4 2.00000+ 7 0 Evalplot**

 **(BLANK LINE MUSE FOLLOW LAST REQUEST) Evalplot**

 **Evalplot**

 **EXAMPLE INPUT NO. 3 (CHAINED INPUT) Evalplot**

 **----------------------------------- Evalplot**

 **FOR ALL THORIUM AND URANIUM ISOTOPES PLOT TOTAL, ELASTIC ,CAPTURE Evalplot**

 **AND FISSION, BUT NOT INELASTIC CROSS SECTIONS OVER THERE ENTIRE Evalplot**

 **ENERGY RANGE AND FROM 1 KEV TO 1 MEV. THE FOLLOWING 8 INPUT Evalplot**

 **LINES ARE REQUIRED, Evalplot**

 **Evalplot**

 **0.0 10.0 0.0 10.0 3 2 Evalplot**

 **ENDFB.IN Evalplot**

 **1 2 0 -2 0 0.0 Evalplot**

 **90000 3 1 90999 3 2 -1 Evalplot**

 **90000 3 18 90999 3102 1 Evalplot**

 **90000 3 1 1.00000+ 390999 3 2 1.00000+ 6 -1 Evalplot**

 **90000 3 18 1.00000+ 390999 3102 1.00000+ 6 1 Evalplot**

 **(BLANK LINE MUSE FOLLOW LAST REQUEST) Evalplot**

 **Evalplot**

 **NOTE, THIS EXAMPLE INCLUDES 2 CHAINED REQUESTED - INPUT LINES 3 Evalplot**

 **AND 4 SELECTING DATA AND PRODUCING A PLOT OVER THE ENTIRE ENERGY Evalplot**

 **RANGE AND INPUT LINES 5 AND 6 SELECTING THE SAME DATA AND Evalplot**

 **PRODUCING A PLOT FROM 1 KEV TO 1 MEV. Evalplot**

 **Evalplot**

 **ANY NUMBER OF REQUEST LINES MAY TO CHAINED TOGETHER TO SELECT Evalplot**

 **DATA. THE CHAIN ENDS WHERE THE TYPE OF DATA (COLS. 45-55) IS NOT Evalplot**

 **NEGATIVE AND THEN THE SELECTED DATA WILL BE PLOTTED. Evalplot**

 **Evalplot**

 **EXAMPLE INPUT NO. 4 Evalplot**

 **------------------- Evalplot**

 **FOR THE SAME EXAMPLE AS ABOVE, EXCEPT USE A DIFFERENT FILENAME Evalplot**

 **FOR THE ENDF/B DATA TO READ FROM A FILE TREE STRUCTURE. THE Evalplot**

 **FOLLOWING 8 INPUT LINES ARE REQUIRED, Evalplot**

 **Evalplot**

 **0.0 10.0 0.0 10.0 3 2 Evalplot**

 **EVALUATION/ENDFB6/THORIUM Evalplot**

 **1 2 0 -2 0 0.0 Evalplot**

 **90000 3 1 90999 3 2 -1 Evalplot**

 **90000 3 18 90999 3102 1 Evalplot**

 **90000 3 1 1.00000+ 390999 3 2 1.00000+ 6 -1 Evalplot**

 **90000 3 18 1.00000+ 390999 3102 1.00000+ 6 1 Evalplot**

 **(BLANK LINE MUST FOLLOW LAST REQUEST) Evalplot**

 **Evalplot**

 **===== PLOTTER/GRAPHICS TERMINAL INTERFACE ============================= Evalplot**

 **Evalplot**

 **THIS PROGRAM USES A SIMPLE CALCOMP LIKE INTERFACE INVOLVING Evalplot**

 **ONLY 6 SUBROUTINES, Evalplot**

 **Evalplot**

 **STARPLOT - INITIALIZE PLOTTER Evalplot**

 **NEXTPLOT - CLEAR THE SCREEN FOR THE NEXT PLOT Evalplot**

 **ENDPLOTS - TERMINATE PLOTTING Evalplot**

 **Evalplot**

 **PLOT(X,Y,IPEN) - DRAW OR MOVE FROM LAST LOCATION TO (X,Y), Evalplot**

 **END OF CURRENT PLOT OR END OF PLOTTING. Evalplot**

 **IPEN = 2 - DRAW Evalplot**

 **= 3 - MOVE Evalplot**

 **Evalplot**

 **PEN(IPEN) - SELECT COLOR. Evalplot**

 **IPEN- COLOR = 1 TO N (N = ANY POSITIVE INTEGER) Evalplot**

 **Evalplot**

 **BOXCOLOR(X,Y,IFILL,IBORDER) - FILL A RECTANGULAR BOX DEFINED Evalplot**

 **BY THE X AND Y CORNERS - X(1), Evalplot**

 **X(2), Y(1),Y(2) Evalplot**

 **IFILL - COLOR TO FILL BOX WITH Evalplot**

 **IBORDER - COLOR OF BOX BORDER Evalplot**

 **Evalplot**

 **IN ORDER TO INTERFACE THIS PROGRAM FOR USE ON ANY PLOTTER WHICH Evalplot**

 **DOES NOT USE THE ABOVE CONVENTIONS IT IS MERELY NECESSARY FOR THE Evalplot**

 **THE USER TO WRITE 6 SUBROUTINES WITH THE NAMES PLOTS, PLOT AND PEN Evalplot**

 **WITH THE SUBROUTINE ARGUMENTS DESCRIBED ABOVE AND TO THEN CALL THE Evalplot**

 **LOCAL EQUIVALENT ROUTINES. Evalplot**

 **Evalplot**

 **COLOR PLOTS Evalplot**

 **------------------------------------------------------------------ Evalplot**

 **TO SELECT PLOTTING COLORS SUBROUTINE PEN (DESCRIBED ABOVE) IS USED Evalplot**

 **TO SELECT ONE OF THE AVAILABLE COLORS. IF YOU HAVE COLOR ON YOUR Evalplot**

 **PLOTTER YOU SHOULD PROVIDE A SUBROUTINE PEN TO SELECT COLORS. Evalplot**

 **Evalplot**

 **BLACK AND WHITE PLOTS Evalplot**

 **------------------------------------------------------------------ Evalplot**

 **WHEN PRODUCING BLACK AND WHITE PLOTS SUBROUTINE PEN NEED MERELY Evalplot**

 **BE A DUMMY SUBROUTINE TO IGNORE ANY ATTEMPT TO CHANGE COLORS, Evalplot**

 **Evalplot**

 **SUBROUTINE PEN(IPEN) Evalplot**

 **RETURN Evalplot**

 **END Evalplot**

 **Evalplot**

 **SIMILAR BOXCOLOR CAN BE A DUMMY Evalplot**

 **Evalplot**

 **SUBROUTINE BOXCOLOR(X,Y,IFILL,IBORDER) Evalplot**

 **RETURN Evalplot**

 **END Evalplot**

 **Evalplot**

 **CHARACTER SET Evalplot**

 **------------------------------------------------------------------ Evalplot**

 **THIS PROGRAM USES COMPUTER AND PLOTTER DEVICE INDEPENDENT SOFTWARE Evalplot**

 **CHARACTERS. THIS PROGRAM COMES WITH A FILE THAT DEFINES THE PEN Evalplot**

 **STROKES REQUIRED TO DRAW ALL CHARACTERS ON AN IBM KEYBOARD (UPPER Evalplot**

 **AND LOWER CASE CHARACTERS, NUMBERS, ETC.) PLUS AN ALTERNATE SET OF Evalplot**

 **ALL UPPER AND LOWER CASE GREEK CHARACTERS AND ADDITIONAL SPECIAL Evalplot**

 **SYMBOLS. Evalplot**

 **Evalplot**

 **THE SOFTWARE CHARACTER TABLE CONTAINS X AND Y AND PEN POSITIONS TO Evalplot**

 **DRAW EACH CHARACTER. IF YOU WISH TO DRAW ANY ADDITIONAL CHARACTERS Evalplot**

 **OR TO MODIFY THE FONT OF THE EXISTING CHARACTERS YOU NEED ONLY Evalplot**

 **MODIFY THIS TABLE. Evalplot**

 **Evalplot**

 **ADDITIONAL FONTS Evalplot**

 **---------------- Evalplot**

 **THIS PROGRAM COMES WITH 3 COMPLETE SETS OF THE SAME CHARACTERS Evalplot**

 **USING DIFFERENT FONTS. FOR SPEED IN PLOTTING IT IS RECOMMENDED Evalplot**

 **THAT YOU USE THE SIMPLEX FONT. FOR FINISHED PLOTS SUITABLE FOR Evalplot**

 **PUBLICATION, BUT REQUIRING MORE TIME TO GENERATE A PLOT, IT IS Evalplot**

 **RECOMMENDED THAT YOU USE THE DUPLEX OR COMPLEX FONT - YOU CAN Evalplot**

 **EXPERIMENT WITH ANY OF THE 3 FONTS TO DETERMINE WHICH BEST MEETS Evalplot**

 **YOUR NEEDS. Evalplot**

 **Evalplot**

 **TO USE ANY ONE OF THE FONTS MERELY BY SURE THAT IT IS DEFINED AS Evalplot**

 **UNIT 12 FOR INPUT (IF USING STANDARD FILENAMES IT SHOULD BE Evalplot**

 **NAMED PLOT.CHR). SO THAT SWITCHING FONTS CAN BE SIMPLY DONE Evalplot**

 **MERELY BY COPYING THE FONT THAT YOU WANT TO THE UNIT 12 THAT Evalplot**

 **YOU ARE USING FOR INPUT. Evalplot**

 **Evalplot**

 **CONTROL CHARACTERS Evalplot**

 **------------------------------------------------------------------ Evalplot**

 **IN THE SOFTWARE CHARACTER TABLE ALL CHARACTERS TO BE PLOTTED WILL Evalplot**

 **HAVE PEN POSITION = 2 (DRAW) OR = 3 (MOVE). IN ADDITION THE TABLE Evalplot**

 **CURRENTLY CONTAINS 4 CONTROL CHARACTERS, Evalplot**

 **Evalplot**

 **PEN POSITION = 0 Evalplot**

 **---------------- Evalplot**

 **SHIFT THE NEXT PRINTED CHARACTER BY X AND Y. 3 CONTROL CHARACTERS Evalplot**

 **ARE PRESENTLY INCLUDED IN THE SOFTWARE CHARACTER TABLE TO ALLOW Evalplot**

 **SHIFTING. Evalplot**

 **Evalplot**

 **{ = SHIFT UP (FOR SUPERSCRIPTS..............X= 0.0, Y= 0.5) Evalplot**

 **} = SHIFT DOWN (FOR SUBSCRIPTS..............X= 0.0, Y=-0.5) Evalplot**

 **\ = SHIFT LEFT 1 CHARACTER (FOR BACKSPACE...X=-1.0, Y= 0.0) Evalplot**

 **Evalplot**

 **PEN POSITION =-1 Evalplot**

 **---------------- Evalplot**

 **SELECT THE NEXT PRINTED CHARACTER FROM THE ALTERNATE CHARACTER Evalplot**

 **SET. AT PRESENT THIS CONTROL CHARACTER IS, Evalplot**

 **Evalplot**

 **| = SWITCH TO ALTERNATE CHARACTER SET Evalplot**

 **Evalplot**

 **THESE 4 CONTROL CHARACTERS ARE ONLY DEFINED BY THE VALUE OF THE Evalplot**

 **PEN POSITION IN THE SOFTWARE CHARACTER TABLE (I.E., THEY ARE NOT Evalplot**

 **HARD WIRED INTO THIS PROGRAM). AS SUCH BY MODIFYING THE SOFTWARE Evalplot**

 **CHARACTER TABLE THE USER HAS THE OPTION OF DEFINING ANY CONTROL Evalplot**

 **CHARACTERS TO MEET SPECIFIC NEEDS. Evalplot**

 **Evalplot**

 **THESE CHARACTERS MAY BE USED IN CHARACTER STRINGS TO PRODUCE Evalplot**

 **SPECIAL EFFECTS. FOR EXAMPLE, TO PLOT SUBSCRIPT 5, B, SUPERSCRIPT Evalplot**

 **10 USE THE STRING, Evalplot**

 **Evalplot**

 **}5B{1{0 Evalplot**

 **Evalplot**

 **TO PLOT B, SUBSCRIPT 5 AND SUPERSCRIPT 10 WITH THE 5 DIRECTLY Evalplot**

 **BELOW THE 1 OF THE 10 WE CAN USE THE BACKSPACE CHARACTER TO Evalplot**

 **POSITION THE 1 DIRECTLY ABOVE THE 5 USING THE STRING, Evalplot**

 **Evalplot**

 **B}5\{1{0 Evalplot**

 **Evalplot**

 **TO PLOT UPPER CASE GREEK GAMMA FOLLOWED BY THE WORD TOTAL (I.E., Evalplot**

 **RESONANCE TOTAL WIDTH) USE THE STRING. Evalplot**

 **Evalplot**

 **|G TOTAL Evalplot**

 **Evalplot**

 **NOTE, WHEN THESE CONTROL CHARACTERS ARE USED THEY ONLY EFFECT THE Evalplot**

 **NEXT 1 PRINTED CHARACTER (SEE, ABOVE EXAMPLE OF PLOTTING SUPER- Evalplot**

 **SCRIPT 10 WHERE THE SHIFT UP CONTROL CHARACTER WAS USED BEFORE THE Evalplot**

 **1 AND THEN AGAIN BEFORE THE 0 AND THE BACKSPACE AND SHIFT UP Evalplot**

 **CONTROL CHARACTERS WERE USED IN COMBINATION). Evalplot**

 **Evalplot**

 **IF THESE 4 CONTROL CHARACTERS ARE NOT AVAILABLE ON YOUR COMPUTER Evalplot**

 **YOU CAN MODIFY THE SOFTWARE CHARACTER TABLE TO USE ANY OTHER 4 Evalplot**

 **CHARACTERS THAT YOU DO NOT NORMALLY USE IN CHARACTER STRINGS (FOR Evalplot**

 **DETAILS SEE THE SOFTWARE CHARACTER TABLE). Evalplot**

 **Evalplot**

 **STANDARD/ALTERNATE CHARACTER SETS Evalplot**

 **------------------------------------------------------------------ Evalplot**

 **THE SOFTWARE CHARACTER TABLE CONTAINS 2 SETS OF CHARACTERS WHICH Evalplot**

 **ARE A STANDARD SET (ALL CHARACTERS ON AN IBM KEYBOARD) AND AN Evalplot**

 **ALTERNATE SET (UPPER AND LOWER CASE GREEK CHARACTERS AND SPECIAL Evalplot**

 **CHARACTERS). TO DRAW A CHARACTER FROM THE ALTERNATE CHARACTER SET Evalplot**

 **PUT A RIGHT BRACKET CHARACTER (|) BEFORE A CHARACTER (SEE THE Evalplot**

 **ABOVE EXAMPLE AND THE SOFTWARE CHARACTER TABLE FOR DETAILS). THIS Evalplot**

 **CONTROL CHARACTER WILL ONLY EFFECT THE NEXT 1 PLOTTED CHARACTER. Evalplot**

 **Evalplot**

 **SUB AND SUPER SCRIPTS Evalplot**

 **------------------------------------------------------------------ Evalplot**

 **TO DRAW SUBSCRIPT PRECEED A CHARACTER BY }. TO DRAW SUPERSCRIPT Evalplot**

 **PRECEED A CHARACTER BY { (SEE THE ABOVE EXAMPLE AND THE SOFTWARE Evalplot**

 **CHARACTER TABLE FOR DETAILS). THESE CONTROL CHARACTER WILL ONLY Evalplot**

 **EFFECT THE NEXT 1 PLOTTED CHARACTER. Evalplot**

 **Evalplot**

 **BACKSPACING Evalplot**

 **------------------------------------------------------------------ Evalplot**

 **TO BACKSPACE ONE CHARACTER PRECEED A CHARACTER BY \ (SEE, THE Evalplot**

 **ABOVE EXAMPLE AND THE SOFTWARE CHARACTER TABLE FOR DETAILS). THIS Evalplot**

 **CONTROL CHARACTER WILL PERFORM A TRUE BACKSPACE AND WILL EFFECT Evalplot**

 **ALL FOLLOWING CHARACTERS IN THE SAME CHARACTER STRING. Evalplot**

 **Evalplot**

 **PLOT DIMENSIONS Evalplot**

 **--------------- Evalplot**

 **ARE DEFINED BY USER INPUT. INTERNALLY THE PROGRAM WILL CREATE A Evalplot**

 **PLOT IN APPROXIMATELY A4 OR 8-1/2 BY 11 INCH FORMAT. DURING Evalplot**

 **OUTPUT THE PLOT IS TRANSFORMED TO THE UNITS (INCHES, CENTIMETERS, Evalplot**

 **MILLIMETERS, WHATEVER) OF THE PLOTTER BEING USED AND OUTPUT. Evalplot**

 **Evalplot**

 **===== PLOTTER/GRAPHICS TERMINAL INTERFACE ============================= Evalplot**

 **======================================================================= Evalplot**