```
======================================================================COMPLOT
                                                                      COMPLOT
     PROGRAM COMPLOT                                                  COMPLOT
     ===============                                                  COMPLOT
     VERSION 83-1 (FEBRUARY, 1983)                                    COMPLOT
     VERSION 83-2 (MAY, 1983)                                         COMPLOT
     VERSION 83-3 (DECEMBER, 1983) *MAJOR MODIFICATION.               COMPLOT
                                   *ADDED SELECTION OF PLOTS BY MAT OR COMPLOT
                                    ZA/MT/ENERGY RANGE (EV).          COMPLOT
                                   *ADDED VARIABLE AXIS UNITS (PROGRAM COMPLOT
                                    CONTROLLED..X=MILLI-EV, EV, KEV,  COMPLOT
                                    MEV...Y=MILLI-BARNS, BARNS).      COMPLOT
     VERSION 84-1 (APRIL, 1984)    *ADDED SELECTION BY REACTION/ENERGY COMPLOT
                                    RANGE.                            COMPLOT
                                   *ADDED IDENTIFY DATA POINTS OPTION  COMPLOT
                                    (SMALL BOX DRAWN AROUND EACH CROSS COMPLOT
                                     SECTION AND RATIO POINT).        COMPLOT
                                   *IMPROVED NON-IBM GRAPHICS INTERFACECOMPLOT
                                    (ALL CHARACTER POSITIONING NOW    COMPLOT
                                     BASED ON CHARACTER, NOT RASTER,  COMPLOT
                                     SIZE).                           COMPLOT
     VERSION 85-1 (APRIL, 1985)    *SPECIAL I/O ROUTINES TO GUARANTEE  COMPLOT
                                    ACCURACY OF ENERGY.               COMPLOT
                                   *DOUBLE PRECISION TREATMENT OF     COMPLOT
                                    ENERGY (REQUIRED FOR NARROW       COMPLOT
                                    RESONANCES).                      COMPLOT
                                   *ADDED (ZA,MT) EQUIVALENCE OPTION. COMPLOT
                                   *ADDED SMALL PLOT OPTION.          COMPLOT
     VERSION 85-2 (AUGUST, 1985)   *FORTRAN-77/H VERSION              COMPLOT
     VERSION 86-1 (JANUARY, 1986)  *ENERGY DEPENDENT SCATTERING RADIUS COMPLOT
     VERSION 86-2 (DECEMBER, 1986) *DOUBLE PRECISION PLOT SCALING     COMPLOT
                                    (REQUIRED FOR NARROW ENERGY RANGES)COMPLOT
     VERSION 88-1 (JULY 1988)      *MAJOR REVISION TO MAKE CODE EASILY COMPLOT
                                    INTERFACEABLE TO ALMOST ANY PLOTTERCOMPLOT
                                   *WARNING..INPUT PARAMETERS FROM BEENCOMPLOT
                                    CHANGED (SEE, DESCRIPTION BELOW)  COMPLOT
                                   *COMPUTER INDEPENDENT SOFTWARE     COMPLOT
                                    CHARACTERS.                       COMPLOT
                                   *COLOR PLOTS.                      COMPLOT
                                   *MT NUMBER DEFINITIONS FROM DATA   COMPLOT
                                    FILE READ BY PROGRAM              COMPLOT
                                   *FORTRAN-77 REQUIRED (FORTRAN-H NO  COMPLOT
                                    SUPPORTED BY THIS PROGRAM).       COMPLOT
                                   *OPTION...INTERNALLY DEFINE ALL I/O COMPLOT
                                    FILE NAMES (SEE, SUBROUTINE FILEIO COMPLOT
                                    FOR DETAILS).                     COMPLOT
                                   *IMPROVED BASED ON USER COMMENTS.   COMPLOT
     VERSION 88-2 (OCTOBER 1988)   *IMPROVED BASED ON USER COMMENTS.   COMPLOT
                                   *ADDED LIVERMORE CIVIC COMPILER     COMPLOT
                                    CONVENTIONS.                      COMPLOT
                                   *UPDATED TO USE NEW PROGRAM CONVERT COMPLOT
                                    KEYWORDS.                         COMPLOT
     VERSION 89-1 (JANUARY 1989)   *PSYCHOANALYZED BY PROGRAM FREUD TO COMPLOT
                                    INSURE PROGRAM WILL NOT DO ANYTHINGCOMPLOT
                                    CRAZY.                            COMPLOT
                                   *FORTRAN-77/FORTRAN-H COMPATIBLE    COMPLOT
                                   *SPECIAL ENDF/B MATERIAL DEFINITIONSCOMPLOT
                                    (ZA.LT.1000) FROM DATA FILE READ  COMPLOT
                                    BY PROGRAM.                       COMPLOT
     VERSION 89-2 (MARCH 1989)     *ADDED ENDF/B-V AND VI MT          COMPLOT
                                    DEFINITIONS. PROGRAM WILL DETERMINECOMPLOT
                                    ENDF/B FORMAT BASED ON MF=1,      COMPLOT
                                    MT=451 AND USE AS PPROPRIATE MT   COMPLOT
                                    DEFINITIONS. IF NO MF=1, MT=451   COMPLOT
                                    PROGRAM WILL USE ENDF/B-VI        COMPLOT
                                    MT DEFINITIONS.                   COMPLOT
     VERSION 90-1 (AUGUST 1990)    *A NEW PROGRAM                     COMPLOT
                                   *ADDED INTERACTIVE MOUSE INPUT     COMPLOT
                                   *ADDED 3 CHARACTER FONTS           COMPLOT
                                   *ADDED PHOTON DATA, MF=23 AND 27   COMPLOT
                                   *ADDED FORTRAN SAVE OPTION.        COMPLOT
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                              *ADDED MAXIMUM RATIO RANGE WHEN     COMPLOT
                               PLOTTING RATIOS.                   COMPLOT
                              *ADDED GRID TYPES                   COMPLOT
                              *ADDED VARIABLE LINE THICKNESS      COMPLOT
                              *WARNING...INPUT PARAMETER FORMAT   COMPLOT
                               HAS BEEN CHANGED...SEE DESCRIPTION COMPLOT
                               BELOW.                             COMPLOT
VERSION 92-1 (JANUARY 1992)   *ADDED INCIDENT CHARGED PARTICLES   COMPLOT
                               (IDENTIFIED IN PLOT TITLES)        COMPLOT
                              *ADDED COMPLETELY COMPATIBLE I/O    COMPLOT
                               FOR READING FLOATING POINT NUMBERS.COMPLOT
VERSION 92-2 (MAY 1992)       *CORRECTED DESCRIPTION OF INPUT     COMPLOT
                               PARAMETERS AND EXAMPLE PROBLEMS.   COMPLOT
                              *ADDED VARIABLE CHARACTER SIZE INPUTCOMPLOT
VERSION 93-1 (MARCH 1993)     *UPDATE FOR ON SCREEN GRAPHIC       COMPLOT
                               OUTPUT USING THE LAHEY COMPILER    COMPLOT
                              *ADDED NU-BAR (TOTAL, DELAYED,      COMPLOT
                               PROMPT).                           COMPLOT
VERSION 94-1 (JANUARY 1994)   *VARIABLE ENDF/B DATA FILENAMES     COMPLOT
                               TO ALLOW ACCESS TO FILE STRUCTURES COMPLOT
                               (WARNING - INPUT PARAMETER FORMAT  COMPLOT
                               HAS BEEN CHANGED)                  COMPLOT
                              *CLOSE ALL FILES BEFORE TERMINATING COMPLOT
                               (SEE, SUBROUTINE ENDIT)            COMPLOT
VERSION 95-1 (MARCH 1995)     *CORRECTED CROSS SECTION            COMPLOT
                               MULTIPLIER FOR EQUIVALENCES        COMPLOT
                              *CORRECTED RATIO SCALING, FOR       COMPLOT
                               MAXIMUM RATIO LESS THAN 1.0        COMPLOT
VERSION 96-1 (JANUARY 1996)   *COMPLETE RE-WRITE                  COMPLOT
                              *IMPROVED COMPUTER INDEPENDENCE     COMPLOT
                              *ALL DOUBLE PRECISION               COMPLOT
                              *UNIFORM TREATMENT OF ENDF/B I/O    COMPLOT
                              *IMPROVED OUTPUT PRECISION          COMPLOT
                              *DEFINED SCRATCH FILE NAMES         COMPLOT
                              *INCREASED PAGE SIZE FROM 24000     COMPLOT
                               TO 48000 POINTS                    COMPLOT
VERSION 97-1 (APRIL 1997)     *INCREASED PAGE SIZE FROM 48000     COMPLOT
                               TO 480000 POINTS                   COMPLOT
VERSION 99-1 (MARCH 1999)    *CORRECTED CHARACTER TO FLOATING     COMPLOT
                              POINT READ FOR MORE DIGITS          COMPLOT
                             *UPDATED TEST FOR ENDF/B FORMAT      COMPLOT
                              VERSION BASED ON RECENT FORMAT CHANGECOMPLOT
                             *GENERAL IMPROVEMENTS BASED ON       COMPLOT
                              USER FEEDBACK                       COMPLOT
VERS. 2000-1 (FEBRUARY 2000)*GENERAL IMPROVEMENTS BASED ON        COMPLOT
                              USER FEEDBACK                       COMPLOT
VERS. 2002-1 (MAY 2002)      *INPUT PARAMETERS OPTIONAL           COMPLOT
                             *CONTROL MINIMUM RATIO RANGE BY INPUT COMPLOT
                             *OPTIONAL BLACK OR WHITE BACKGROUND  COMPLOT
VERS. 2004-1 (SEPT. 2004)    *ADDED INCLUDE FOR COMMON            COMPLOT
                             *INCREASED PAGE SIZE FROM 480000     COMPLOT
                              TO 600000 POINTS                    COMPLOT
                             *ADDED NEW REICH-MOORE TO FILE2 TO   COMPLOT
                              ALLOW IDENTIFICATION OF RESOLVED AND COMPLOT
                              ANY FOLLOWING UNRESOLVED RESONANCE  COMPLOT
                              REGIONS.                            COMPLOT
VERS. 2007-1 (JAN.  2007)    *CHECKED AGAINST ALL ENDF/B-VII.     COMPLOT
                             *INCREASED MAXLOAD TO 600,000 FROM   COMPLOT
                              12,000                              COMPLOT
VERS. 2009-1 (JAN.  2009)    *IGNORED DIFFERENCES NEAR RESONANCE  COMPLOT
                              REGION BOUNDARIES (RESOLVED AND     COMPLOT
                              UNRESOLVED).                        COMPLOT
VERS. 2010-1 (July  2010)    *Allow comparison plot even if there COMPLOT
                              is no difference (just see data).   COMPLOT
                             *ONLY plot linearly interpoolable dataCOMPLOT
                             *Include threshold energy points to  COMPLOT
                              show cross sections, but NOT ratios COMPLOT
                              near threshold.                     COMPLOT
VERS. 2011-1 (Jan.  2011)    *Increased MT.DAT from 200 to 1,000  COMPLOT
                              entries, to accommodate new MTs.    COMPLOT
VERS. 2012-1 (Aug.  2012)    *Increased incident particle list to COMPLOT
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                          include photon (ZA = 0).              COMPLOT
                         *Added CODENAME                        COMPLOT
                         *32 and 64 bit Compatible              COMPLOT
                         *Added ERROR stop                      COMPLOT
VERS. 2013-1 (Nov. 2013) *ONLY use min/max ratios to decide     COMPLOT
                          whether or not to plot - non-positiveCOMPLOT
                          cross sections are no longer used.    COMPLOT
                         *Limited per-cent differences to fit   COMPLOT
                          output format = -9999 to +9999 %.     COMPLOT
                         *OUT9 replaced NORMX                   COMPLOT
VERS. 2015-1 (Jan. 2015) *Added MF=10 Radionuclide Production   COMPLOT
                          which requires longer plot titles.    COMPLOT
                         *Restricted character size multiplier COMPLOT
                          to 0.5 to 1.5 to accommodate longer   COMPLOT
                          plot titles.                          COMPLOT
                         *Replaced ALL 3 way if statements.     COMPLOT
VERS. 2015-2 (Mar. 2015) *Corrected tables for X and Y axis     COMPLOT
                          labels = see change search for 2015-2COMPLOT
VERS. 2015-3 (Oct. 2015) *Allow multiple LRF=7 regions plus     COMPLOT
                          unreslved region - earlier assumed    COMPLOT
                          LRF=7 never used unrsesolved.         COMPLOT
VERS. 2017-1 (May  2017) *For MF=2 use MT=151 to define         COMPLOT
                          Unresolved Resonance Region (URR).    COMPLOT
                          Ignore NJOY MT=152 and 153.           COMPLOT
                         *All floating input parameters changedCOMPLOT
                          to character input + IN9 conversion.  COMPLOT
                         *Added MF=4 Legendre Coefficient       COMPLOT
                          Comparison: f1 through f6             COMPLOT
Vers. 2018-1 (Jan. 2018) *Doubled in core storage to 1,200,000.COMPLOT
                         *Replaced Q MeV by MT= at top of plotsCOMPLOT
                          (Q value in ENDF is now only defined COMPLOT
                           in MF=3, making it difficult for allCOMPLOT
                           other MF now treated by this code)   COMPLOT
                         *Initial Linear X scaling for MF=1     COMPLOT
                          (nu-bar) and MF=4 (Legendre) =        COMPLOT
                          this can be turned OFF by ZOOM        COMPLOT
                         + Unless energy range is requested =   COMPLOT
                          allows MF=1 and 4 default Linear X    COMPLOT
                          scaling to be turned off by input     COMPLOT
                          parameters, i.e., by COMHARD          COMPLOT
                         *Zoom lower energy limit restricted    COMPLOT
                          1.0d-5 eV - to lower zoom of linear   COMPLOT
                          energy plots (otherwise cannot find   COMPLOT
                          actual lower limit on plot).          COMPLOT
                         *Added NRO = energy dependent scatter COMPLOT
                          radius to reading FILE2 parameters    COMPLOT
                          to define unresolved energy range.    COMPLOT
                         *Corrected energy dependent scatter    COMPLOT
                          for all resonance types (see, above   COMPLOT
                          remarks).                             COMPLOT
Vers. 2019-1 (June 2019) *Additional Interpolation Law Tests    COMPLOT
                         *Checked Maximum Tabulated Energy to   COMPLOT
                          insure it is the same for all MTs -   COMPLOT
                          if not, print WARNING messages.       COMPLOT
Vers. 2020-1 (Dec. 2020) *Corrected Treatment of Threshold      COMPLOT
                          cross sections, to include threshold COMPLOT
                          (Previously code only used positive   COMPLOT
                           cross sections = skipped threshold)  COMPLOT
                         *Added isomeric state (m or n) to ZA   COMPLOT
                          interpretation.                       COMPLOT
                         *Increased MAXIZA to 100,000 from      COMPLOT
                          10,000 to allow searching longer      COMPLOT
                          ENDF data fils with many MATs =       COMPLOT
                          NOT RECOMMENDED!!!!                   COMPLOT
Vers. 2021-1 (Jan. 2021) *SHOW ALL = mouse click above the      COMPLOT
                          plotting area.                        COMPLOT
                         *Updated for FORTRAN 2018              COMPLOT
                                                                COMPLOT
2020-1 Acknowledgment                                           COMPLOT
=====================                                           COMPLOT
I thank Jean-Christophe Sublet (NDS, IAEA, Vienna, Austria) for COMPLOT
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reporting the ERROR in COMPLOT (2019-1) that led to the update in COMPLOT
COMPLOT (2020-1) to correctly handle threshold reactions. COMPLOT
COMPLOT
2015-2 Acknowledgment COMPLOT
========== COMPLOT
I thank Chuck Whitmer (TerraPower,WA) for reporting the errors COMPLOT
that led to the 2015-2 Improvements in this code. COMPLOT
COMPLOT
I thank Jean-Christophe Sublet (UKAEA) for contributing MAC COMPLOT
executables and Bojan Zefran (IJS, Slovenia) for contributing COMPLOT
LINUX (32 or 63 bit) executables. And most of all I must thank COMPLOT
Andrej Trkov (NDS, IAEA) for overseeing the entire PREPRO project COMPLOT
at IAEA, Vienna. This was a truly International team who worked COMPLOT
together to produce PREPRO 2015-2. COMPLOT
COMPLOT
OWNED, MAINTAINED AND DISTRIBUTED BY COMPLOT
---------- COMPLOT
THE NUCLEAR DATA SECTION COMPLOT
INTERNATIONAL ATOMIC ENERGY AGENCY COMPLOT
P.O. BOX 100 COMPLOT
A-1400, VIENNA, AUSTRIA COMPLOT
EUROPE COMPLOT
COMPLOT
ORIGINALLY WRITTEN BY COMPLOT
---------- COMPLOT
Dermott E. Cullen COMPLOT
COMPLOT
PRESENT CONTACT INFORMATION COMPLOT
---------- COMPLOT
Dermott E. Cullen COMPLOT
1466 Hudson Way COMPLOT
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E. Mail RedCullen1@Comcast.net COMPLOT
Website RedCullen1.net/HOMEPAGE.NEW COMPLOT
COMPLOT
AUTHORS MESSAGE COMPLOT
---------- COMPLOT
THE COMMENTS BELOW SHOULD BE CONSIDERED THE LATEST DOCUMENTATION COMPLOT
ALL RECENT IMPROVEMENTS. PLEASE READ ALL OF THESE COMMENTS BEFORE,COMPLOT
PARTICULARLY THE COMMENTS CONCERNING MACHINE DEPENDENT CODING. COMPLOT
COMPLOT
AT THE PRESENT TIME WE ARE ATTEMPTING TO DEVELOP A SET OF COMPUTERCOMPLOT
INDEPENDENT PROGRAMS THAT CAN EASILY BE IMPLEMENTED ON ANY ONE COMPLOT
OF A WIDE VARIETY OF COMPUTERS. IN ORDER TO ASSIST IN THIS PROJECTCOMPLOT
IT WOULD BE APPECIATED IF YOU WOULD NOTIFY THE AUTHOR OF ANY COMPLOT
COMPILER DIAGNOSTICS, OPERATING PROBLEMS OR SUGGESTIONS ON HOW TO COMPLOT
IMPROVE THIS PROGRAM. HOPEFULLY, IN THIS WAY FUTURE VERSIONS OF COMPLOT
THIS PROGRAM WILL BE COMPLETELY COMPATIBLE FOR USE ON YOUR COMPLOT
COMPUTER. COMPLOT
COMPLOT
PURPOSE COMPLOT
------- COMPLOT
COMPARE ENDF/B FORMATTED DATA FROM TWO SEPARATE INPUT TAPES. COMPLOT
REACTIONS ARE CONSIDERED TO BE COMPARABLE IF THEY HAVE THE SAME COMPLOT
(ZA,MF,MT). RESULTS ARE PRESENTED IN GRAPHICAL FORM. COMPLOT
COMPLOT
IN THE FOLLOWING FOR SIMPLICITY THE ENDF/B TERMINOLOGY--ENDF/B COMPLOT
TAPE--WILL BE USED. IN FACT THE ACTUAL MEDIUM MAY BE TAPE, CARDS, COMPLOT
DISK OR ANY OTHER MEDIUM. COMPLOT
COMPLOT
ON WHAT COMPUTERS WILL THE PROGRAM RUN COMPLOT
----------COMPLOT
THE PROGRAM HAS BEEN IMPLEMENTED ON A VARIETY OF COMPUTERS FROM COMPLOT
CRAY AND IBM MAINFRAME TO SUN WORKSTATIONS TO AN IBM-AT PC. THE COMPLOT
PROGRAM IS SMALL ENOUGH TO RUN ON VIRTUALLY ANY COMPUTER. COMPLOT
COMPLOT
THE PROGRAM USES A SIMPLE CALCOMP LIKE GRAPHICS INTERFACE COMPLOT
(DESCRIBED BELOW) AND ALLOWS THE USER SPECIFY THE PHYSICAL SIZE COMPLOT
OF THE PLOTTER BEING USED, BY INPUT PARAMETERS. USING THESE COMPLOT

```
CONVENTIONS THIS PROGRAM CAN BE EASILY INTERFACED TO VIRTUALLY    COMPLOT
ANY PLOTTER.                                                      COMPLOT
                                                                  COMPLOT
FOR SPECIAL CONSIDERATIONS SEE THE SECTIONS BELOW ON,             COMPLOT
(1) COMPUTER DEPENDENT CODING                                     COMPLOT
(2) PLOTTER/GRAPHICS TERMINAL INTERFACE                           COMPLOT
                                                                  COMPLOT
GRAPHICS INTERFACE                                                COMPLOT
------------------------------------------------------------------COMPLOT
THIS PROGRAM USES A SIMPLE CALCOMP LIKE GRAPHICS INTERFACE WHICH  COMPLOT
REQUIRES ONLY 3 SUBROUTINES...PLOTS, PLOT AND PEN (DESCRIBED IN   COMPLOT
DETAIL BELOW). ALL CHARACTERS AND SYMBOLS ARE DRAWN USING TABLES  COMPLOT
OF PEN STROKES (SUPPLIED WITH THIS PROGRAM). USING THIS METHOD    COMPLOT
THE PROGRAM SHOULD BE SIMPLE TO INTERFACE TO VIRTUALLY ANY PLOTTERCOMPLOT
OR GRAPHICS TERMINAL AND THE APPEARANCE AND LAYOUT OF THE PLOTS   COMPLOT
SHOULD BE INDEPENDENT OF WHICH PLOTTER IS USED.                   COMPLOT
                                                                  COMPLOT
2015 PLOTTER DIMENSIONS                                           COMPLOT
==================================================================COMPLOT
PLOTTER DIMENSIONS ARE IN INCHES - NOT CM, MM, OR CUBITS.         COMPLOT
THIS IS DONE FOR HISTORICAL REASONS AND HOPEFULLY THIS WILL       COMPLOT
NOT INCONVENIENCE ANYONE - IN PRACTICE I HAVE USED EXACTLY THE    COMPLOT
SAME DIMENSION = X = 0 to 12.5 and Y = 0 to 10 FOR DECADES        COMPLOT
TO PRODUCE BOTH ON-SCREEN AND HARDCOPY POSTSCRIPT PLOTS.          COMPLOT
                                                                  COMPLOT
I STRONGLY SUGGEST THAT YOU NOT CHANGE THESE DIMENSIONS UNLESS    COMPLOT
YOU MUST = BASED ON THE PLOT SIZE YOU OBTAIN WHEN YOU FIRST RUN   COMPLOT
THIS CODE.                                                        COMPLOT
                                                                  COMPLOT
PROGRAM IDENTIFICATION                                            COMPLOT
----------------------                                            COMPLOT
AS DISTRIBUTED THE FIRST FRAME OF PLOTTED OUTPUT WILL DOCUMENT    COMPLOT
THE PROGRAM NAME, VERSION AND INSTALLATION. THIS INFORMATION IS   COMPLOT
STORED AS DATA IN THE ARRAY VERSES NEAR THE BEGINNING OF          COMPLOT
SUBROUTINE FRAME1. IF YOU WISH TO CUSTOMIZE THE OUTPUT TO IDENTIFYCOMPLOT
YOUR INSTALLATION CHANGE THE LAST TWO LINES OF THE ARRAY (VERSES).COMPLOT
                                                                  COMPLOT
ENDF/B FORMAT                                                     COMPLOT
-------------                                                     COMPLOT
THIS PROGRAM ONLY USES THE ENDF/B BCD OR CARD IMAGE FORMAT (AS    COMPLOT
OPPOSED TO THE BINARY FORMAT) AND CAN HANDLE DATA IN ANY VERSION  COMPLOT
OF THE ENDF/B FORMAT (I.E., ENDF/B-I, II,III, IV, V OR VI FORMAT).COMPLOT
                                                                  COMPLOT
BOTH SETS OF EVALUATED DATA MUST BE IN THE ENDF/B FORMAT. ONLY    COMPLOT
SECTIONS OF FILE 2 (RESONANCE PARAMETERS) AND FILES 3, 23 AND 27  COMPLOT
(TABULATED DATA) WILL BE READ AND ALL OTHER SECTIONS WILL BE      COMPLOT
SKIPPED. IN FILE 2 THE ONLY IMPORTANT INFORMATION IS THE ENERGY   COMPLOT
LIMITS OF THE RESOLVED AND UNRESOLVED RESONANCE REGION WHICH IS   COMPLOT
LOCATED IN THE SAME FIELDS IN ALL VERSIONS OF THE ENDF/B FORMAT.  COMPLOT
SIMILARLY THE FORMAT OF FILES 3, 23 AND 27 IS THE SAME IN ALL     COMPLOT
VERSIONS OF ENDF/B. THEREFORE THIS PROGRAM CAN BE USED WITH DATA  COMPLOT
IN ANY ENDF/B FORMAT (I.E. ENDF/B-I, II, III, IV, V OR VI).       COMPLOT
                                                                  COMPLOT
CROSS SECTION INTERPOLATION                                       COMPLOT
---------------------------                                       COMPLOT
CROSS SECTIONS MUST BE IN EITHER HISTOGRAM (I.E., INTERPOLATION   COMPLOT
LAW 1) OR LINEARLY INTERPOLABLE (I.E. INTERPOLATION LAW 2) FORM.  COMPLOT
IF THEY ARE NOT A WARNING MESSAGE WILL BE PRINTED AND EXECUTION   COMPLOT
WILL BE TERMINATED. SEE INSTRUCTIONS BELOW ON HOW TO CONVERT      COMPLOT
DATA TO HISTOGRAM OR LINEARLY INTERPOLABLE FORM.                  COMPLOT
                                                                  COMPLOT
REACTION INDEX                                                    COMPLOT
--------------                                                    COMPLOT
THIS PROGRAM DOES NOT USE THE REACTION INDEX WHICH IS GIVEN IN    COMPLOT
SECTION MF=1, MT=451 OF EACH EVALUATION.                          COMPLOT
                                                                  COMPLOT
SECTION SIZE                                                      COMPLOT
------------                                                      COMPLOT
SINCE THIS PROGRAM USES A LOGICAL PAGING SYSTEM THERE IS NO LIMIT COMPLOT
TO THE NUMBER OF POINTS IN ANY SECTION, E.G., THE TOTAL CROSS     COMPLOT
SECTION MAY BE REPRESENTED BY 200,000 DATA POINTS.                COMPLOT
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```
                                                                      COMPLOT
DATA SELECTION                                                        COMPLOT
--------------                                                        COMPLOT
THE USER MAY SPECIFYING THE DATA TO BE COMPARED BY INPUTTING UP       COMPLOT
TO 100 MAT/MT/ENERGY OR ZA/MT/ENERGY RANGES. IF THE UPPER LIMIT       COMPLOT
OF THE MAT OR ZA RANGE IS LESS THAN THE LOWER LIMIT IT WILL BE SETCOMPLOT
EQUAL TO THE LOWER LIMIT (I.E. THIS INDICATE ONLY COMPARE ONE         COMPLOT
MAT OR ZA). IF THE UPPER LIMIT IS STILL ZERO IT WILL BE SET TO        COMPLOT
9999 (NO LIMIT). IF THE UPPER MF OR MT LIMIT IS ZERO IT WILL BE       COMPLOT
SET TO 99 OR 999, RESPECTIVELY (NO LIMIT). IF THE UPPER ENERGY        COMPLOT
LIMIT IS ZERO IT WILL BE SET TO A LARGE NUMBER (NO LIMIT).            COMPLOT
                                                                      COMPLOT
THE LIST OF RANGES MUST BE TERMINATED BY A BLANK LINE (I.E. ZERO      COMPLOT
LOWER AND UPPER MAT/MF/MT OR ZA/MF/MT LIMITS).                        COMPLOT
                                                                      COMPLOT
IF THE FIRST RANGE LINE IS BLANK THIS LINE WILL TERMINATE THE         COMPLOT
LIST OF REQUESTS (I.E. A SECOND BLANK LINE NEED NOT BE INPUT)         COMPLOT
AND ALL PHYSICALLY COMPARABLE DATA WILL BE PLOTTED.                   COMPLOT
                                                                      COMPLOT
WHICH REACTIONS WILL BE PLOTTED                                       COMPLOT
-------------------------------                                       COMPLOT
THOSE REACTIONS WITH THE SAME (ZA, MF, MT) WILL BE COMPARED, BUT      COMPLOT
ONLY THOSE DATA WHICH DIFFER BY A USER SPECIFIED ALLOWABLE            COMPLOT
DIFFERENCE WILL BE PLOTTED. IN ORDER TO FORCE ALL COMPARABLE          COMPLOT
REACTIONS TO BE PLOTTED THE USER NEED ONLY SPECIFY AN ALLOWABLE       COMPLOT
DIFFERENCE OF ZERO.                                                   COMPLOT
                                                                      COMPLOT
EQUIVALENT REACTIONS                                                  COMPLOT
--------------------                                                  COMPLOT
IN ORDER TO COMPARE REACTIONS WHICH HAVE DIFFERENT ZA, MF OR MT       COMPLOT
THE USER IS ALLOWED TO SPECIFY AN EQUIVALENCE LIST OF UP TO           COMPLOT
100 (ZA,MF,MT) COMBINATIONS ON THE MASTER FILE WHICH ARE TO BE        COMPLOT
EQUATED TO DIFFERENT (ZA,MF,MT) ON THE SECOND FILE. THIS OPTION       COMPLOT
MAY BE USED TO COMPARE SIMILAR REACTIONS FROM DIFFERENT MATERIALS COMPLOT
(E.G. IRON AND NICKEL INELASTIC SCATTERING) OR DIFFERENT REACTIONSCOMPLOT
FROM THE SAME OR DIFFERENT MATERIALS (E.G. U-235 CAPTURE AND          COMPLOT
FISSION - IN WHICH CASE THE RATIO WILL BE THE CAPTURE TO FISSION      COMPLOT
RATIO) OR THE SAME REACTION IN DIFFERENT VERSIONS OF THE ENDF/B       COMPLOT
FORMAT WHICH MAY BE ASSIGNED DIFFERENT MT NUMBERS, E.G., THE          COMPLOT
PHOTOELECTRIC CROSS SECTION IS MT=602 IN ENDF/B-V AND EARLIER         COMPLOT
VERSIONS OF ENDF/B, BUT IS MT=522 IN ENDF/B-VI.                       COMPLOT
                                                                      COMPLOT
IN THESE EQUIVALENCE LISTS A ZERO FIELD IMPLIES ALL. FOR EXAMPLE,     COMPLOT
TO EQUATE MT=522 FROM ONE FILE TO MT=602 ON THE OTHER, FOR ALL        COMPLOT
MATERIALS, ONE NEED ONLY SPECIFY ZA=0, MF=23, MT=522 EQUIVALENT       COMPLOT
TO ZA=0, MF=23 AND MT=602.                                            COMPLOT
                                                                      COMPLOT
PLOT FORMATS                                                          COMPLOT
------------                                                          COMPLOT
THE TWO CROSS SECTIONS ARE CONSIDERED TO BE A STANDARD (THE FIRST     COMPLOT
CROSS SECTION) AND A CROSS SECTION TO BE COMPARED TO THE STANDARD     COMPLOT
(THE SECOND CROSS SECTION). THE OUTPUT FROM THIS PROGRAM IS A         COMPLOT
SERIES OF PLOTS. EACH PLOT WILL CONTAIN THE STANDARD CROSS SECTIONCOMPLOT
AND IN ADDITION THE USER MAY SPECIFY THAT EACH PLOT ALSO CONTAIN      COMPLOT
THE SECOND CROSS SECTION AND/OR THE RATIO OF THE SECOND CROSS         COMPLOT
SECTION TO THE FIRST CROSS SECTION.                                   COMPLOT
                                                                      COMPLOT
THE USER MAY SELECT ONE OF THE FOLLOWING FIVE PLOT FORMATS (THE       COMPLOT
NUMBER PRECEDING THE OPTION IS THE VALUE OF THE PLOT MODE SELECTORCOMPLOT
THAT THE USER SHOULD SPECIFY AS INPUT ON THE FIRST LINE).             COMPLOT
                                                                      COMPLOT
(0) THE STANDARD CROSS SECTION (I.E. FIRST EVALUATION) AND THE        COMPLOT
    RATIO OF THE SECOND EVALUATION TO THE FIRST EVALUATION. THE       COMPLOT
    DATA WILL BE PRESENETED AS TWO SUB-PLOTS PER PLOT WITH THE        COMPLOT
    STANDARD CROSS SECTION IN THE UPPER HALF OF THE PLOT AND THE      COMPLOT
    RATIO IN THE LOWER HALF OF THE PLOT.                              COMPLOT
                                                                      COMPLOT
(1) THE STANDARD CROSS SECTION (I.E. FIRST EVALUATION) AND THE        COMPLOT
    SECOND EVALUATION. THE DATA WILL BE PRESENTED AS TWO SUB-PLOTSCOMPLOT
    PER PLOT WITH THE STANDARD CROSS SECTION ON THE UPPER HALF        COMPLOT
    OF THE PLOT AND THE SECOND CROSS SECTION IN THE LOWER HALF OF COMPLOT
```

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    THE PLOT.                                                          COMPLOT
                                                                       COMPLOT
(2) THE STANDARD CROSS SECTION (I.E. FIRST EVALUATION) AND THE         COMPLOT
    SECOND EVALUATION. THE DATA WILL BE PRESENTED AS ONE PLOT          COMPLOT
    CONTAINING BOTH THE STANDARD AND SECOND CROSS SECTION. THE         COMPLOT
    STANDARD CROSS SECTION WILL BE PRESENTED AS A SOLID LINE AND       COMPLOT
    THE SECOND CROSS SECTION WILL BE PRESENTED AS A DASHED LINE.       COMPLOT
                                                                       COMPLOT
(3) THE STANDARD CROSS SECTION, SECOND CROSS SECTION AND RATIO OF      COMPLOT
    THE SECOND CROSS SECTION TO THE FIRST CROSS SECTION. THE DATA      COMPLOT
    WILL BE PRESENTED AS THREE SUB-PLOTS PER PLOT WITH THE             COMPLOT
    STANDARD CROSS SECTION IN THE UPPER THIRD OF THE PLOT, THE         COMPLOT
    SECOND CROSS SECTION IN THE MIDDLE THIRD AND THE RATIO OF THE      COMPLOT
    TWO IN THE LOWER THIRD OF THE PLOT (RECOMMENDED OPTION).           COMPLOT
                                                                       COMPLOT
(4) THE STANDARD CROSS SECTION, SECOND CROSS SECTION AND RATIO OF      COMPLOT
    THE SECOND CROSS SECTION TO THE FIRST CROSS SECTION. THE DATA      COMPLOT
    WILL BE PRESENTED AS TWO SUB-PLOTS PER PLOT WITH THE STANDARD      COMPLOT
    AND SECOND CROSS SECTION ON THE SAME SUB-PLOT IN THE UPPER         COMPLOT
    TWO THIRDS OF THE PLOT AND THE RATIO OF THE TWO IN THE LOWER       COMPLOT
    THIRD OF THE PLOT. THE STANDARD CROSS SECTION WILL BE              COMPLOT
    PRESENTED AS A SOLID LINE AND THE SECOND CROSS SECTION WILL BE     COMPLOT
    PRESENTED AS A DASHED LINE.                                        COMPLOT
                                                                       COMPLOT
ADDITIONAL PLOT FEATURES                                               COMPLOT
------------------------                                               COMPLOT
IN ADDITION TO THE CROSS SECTIONS AND/OR RATIO THE FOLLOWING           COMPLOT
INFORMATIONS WILL BE INCLUDED ON EACH PLOT.                            COMPLOT
                                                                       COMPLOT
(1) AN IDENTIFICATION FOR EACH SET OF CROSS SECTIONS (UP TO 30         COMPLOT
    CHARACTERS FOR EACH SET).                                          COMPLOT
                                                                       COMPLOT
(2) THE MAXIMUM NEGATIVE AND POSITIVE PER-CENT DIFFERENCE BETWEEN      COMPLOT
    THE TWO CROSS SECTIONS.                                            COMPLOT
                                                                       COMPLOT
(3) ARROWS INDICATING THE ENERGY AT WHICH THE MAXIMUM DIFFERENCES      COMPLOT
    (MINIMUM AND MAXIMUM RATIO) OCCUR.                                 COMPLOT
                                                                       COMPLOT
(4) THE ENERGY LIMITS OF THE RESOLVED AND UNRESOLVED RESONANCE         COMPLOT
    REGION (IF THEY FALL WITHIN THE ENERGY LIMITS OF THE PLOT).        COMPLOT
                                                                       COMPLOT
RATIO DATA                                                             COMPLOT
----------                                                             COMPLOT
IF RATIO OUTPUT IS REQUESTED THE RATIO WILL BE DEFINED AT EACH         COMPLOT
ENERGY THAT APPEARS IN EITHER EVALUATION. BETWEEN THESE ENERGIES       COMPLOT
THE RATIO WILL BE PLOTTED ASSUMING LINEAR DEPENDENCE BETWEEN           COMPLOT
TABULATED VALUES. FOR HISTOGRAM OR LINEARLY INTERPOLABLE CROSS         COMPLOT
SECTIONS THIS REPRESENTATION WILL POINT OUT ALL EXTREMA OF THE         COMPLOT
RATIO, BUT NOT NECESSARILY THE ENERGY DEPENDENCE BETWEEN TABULATED     COMPLOT
VALUES.                                                                COMPLOT
                                                                       COMPLOT
IF THE EVALUATED DATA IS NOT IN EITHER HISTOGRAM OR LINRARLY           COMPLOT
INTERPOLABLE FORM THE RATIO MAY NOT EVEN FIND ALL EXTREMA. FOR         COMPLOT
EXAMPLE, IF ONE EVALUATION IS LINEARLY INTERPOLABLE AND THE            COMPLOT
OTHER NON-LINEAR, BUT BOTH AGREE AT ALL TABULATED ENERGIES THE         COMPLOT
RATIO WILL APPEAR TO BE EQUAL TO UNITY AT ALL ENERGIES, BUT IN         COMPLOT
FACT THE CROSS SECTION BETWEEN TABULATED ENERGIES MAY BE QUITE         COMPLOT
DIFFERENT USING LINEAR VS. NON-LINEAR INTERPOLATION. FOR THIS          COMPLOT
REASON ONLY LINEARLY INTERPOLABLE OR HISTOGRAM DATA IS ALLOWED         COMPLOT
AS INPUT TO THIS PROGRAM.                                              COMPLOT
                                                                       COMPLOT
LINEAR INTERPOLABLE                                                    COMPLOT
-------------------                                                    COMPLOT
ALL CROSS SECTIONS MAY BE CONVERTED TO LINEARLY INTERPOLABLE FORM      COMPLOT
BE USING PROGRAM LINEAR (UCRL-50400, VOL. 17, PART A).                 COMPLOT
                                                                       COMPLOT
HISTOGRAM                                                              COMPLOT
---------                                                              COMPLOT
ALL LINEARLY INTERPOLABLE CROSS SECTION MAY BE CONVERTED TO            COMPLOT
HISTOGRAM (I.E. MULTIGROUP) FORM BY USING PROGRAM GROUPIE              COMPLOT
(UCRL-50400, VOL. 17, PART D).                                         COMPLOT
```

```
                                                                        COMPLOT
 INPUT UNITS                                                            COMPLOT
 -----------                                                            COMPLOT
 UNIT  DESCRIPTION                                                      COMPLOT
 ----  -----------                                                      COMPLOT
   2   INPUT LINE                                                       COMPLOT
   9   MT DEFINITIONS.                                                  COMPLOT
  10   FIRST ENDF/B FORMATTED EVALUATION (STANDARD).                    COMPLOT
  11   SECOND ENDF/B FORMATTED EVALUATION.                              COMPLOT
  17   SOFTWARE CHARACTERS.                                             COMPLOT
  18   SOFTWARE SYMBOLS AND LINE TYPES                                  COMPLOT
                                                                        COMPLOT
 OUTPUT UNITS                                                           COMPLOT
 ------------                                                           COMPLOT
 UNIT  DESCRIPTION                                                      COMPLOT
 ----  -----------                                                      COMPLOT
   3   NORMAL OUTPUT REPORT.                                            COMPLOT
  16   PLOTTER UNIT                                                     COMPLOT
                                                                        COMPLOT
 SCRATCH UNITS                                                          COMPLOT
 -------------                                                          COMPLOT
 UNIT  DESCRIPTION                                                      COMPLOT
 ----  -----------                                                      COMPLOT
  12   SCRATCH UNIT FOR FIRST EVALUATION                                COMPLOT
  13   SCRATCH UNIT FOR SECOND EVALUATION                               COMPLOT
  14   SCRATCH UNIT FOR RATIO (ONLY USED IF RATIOS REQUESTED).          COMPLOT
                                                                        COMPLOT
 OPTIONAL STANDARD FILE NAMES (SEE SUBROUTINE FILIO1 AND FILIO2)        COMPLOT
 ---------------------------------------------------------------        COMPLOT
 UNIT  FILE NAME                                                        COMPLOT
 ----  ----------                                                       COMPLOT
   2   COMPLOT.INP                                                      COMPLOT
   3   COMPLOT.LST                                                      COMPLOT
   9   MT.DAT                                                           COMPLOT
  10   ENDFB.IN1    (OR AS READ FROM INPUT)                             COMPLOT
  11   ENDFB.IN2    (OR AS READ FROM INPUT)                             COMPLOT
12-14  (SCRATCH)                                                        COMPLOT
  15   PLOT.CHR                                                         COMPLOT
  16   (PLOTTER UNIT...USUALLY A DUMMY)                                 COMPLOT
                                                                        COMPLOT
 INPUT PARAMETERS                                                       COMPLOT
 ------------------------------------------------------------------------COMPLOT
 LINE  COLUMNS  FORMAT  DESCRIPTION                                     COMPLOT
 ----  -------  ------  -----------                                     COMPLOT
   1     1-11    E11.4  LOWER X LIMIT OF PLOTTER                       COMPLOT
        12-22    E11.4  UPPER X LIMIT OF PLOTTER                       COMPLOT
        23-33    E11.4  LOWER Y LIMIT OF PLOTTER                       COMPLOT
        34-44    E11.4  UPPER Y LIMIT OF PLOTTER                       COMPLOT
        45-55     I11   NUMBER OF PLOTS PER FRAME IN X DIRECTION       COMPLOT
        56-66     I11   NUMBER OF PLOTS PER FRAME IN Y DIRECTION       COMPLOT
        67-70     F4.1  CHARACTER SIZE MULTIPLIER                      COMPLOT
                        = 0 TO 1    - NORMAL CHARACTER SIZE            COMPLOT
                        = OTHERWISE - CHARACTERS SCALED BY THIS        COMPLOT
                                      FACTOR                           COMPLOT
                                                                       COMPLOT
                        PLOT ORIENTATION IS BASED ON THE UPPER X       COMPLOT
                        LIMIT                                          COMPLOT
                        = .GT.0 - X HORIZONTAL/Y VERTICAL              COMPLOT
                        = .LT.0 - Y HORIZONTAL/X VERTICAL              COMPLOT
                        AFTER TESTING THE UPPER X LIMIT WILL BE        COMPLOT
                        SET TO ITS ABSOLUTE VALUE.                     COMPLOT
   2     1-72     A72   FILENAME FOR FIRST ENDF/B DATA FILE            COMPLOT
                        (LEAVE BLANK FOR ENDFB.IN1)                    COMPLOT
   3     1-72     A72   FILENAME FOR SECOND ENDF/B DATA FILE           COMPLOT
                        (LEAVE BLANK FOR ENDFB.IN2)                    COMPLOT
   4     1-11     I11   RETRIEVAL MODE (0=MAT, 1=ZA)                   COMPLOT
        12-22     I11   GRID (SPEED) OPTION.                          COMPLOT
                        = 0 - TICK MARKS ON BORDER                     COMPLOT
                        = 1 - SOLID AT COARSE INTERVALS                COMPLOT
                        = 2 - DASHED AT COARSE INTERVALS               COMPLOT
                        = 3 - SOLID AT COARSE AND FINE INTERVALS       COMPLOT
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                    = 4 - DASHED AT COARSE AND FINE INTERVALS  COMPLOT
                    = 5 - SOLID COARSE/DASHED FINE INTERVALS   COMPLOT
       23-33    I11 SHOULD BORDER BE PLOTTED AROUND EACH PLOT  COMPLOT
                    = 0 - NO                                   COMPLOT
                    = 1 - YES                                  COMPLOT
       34-44    I11 LINE THICKNESS                             COMPLOT
                    = 0 TO  5 - LINES AND CHARACTERS           COMPLOT
                    =-1 TO -5 - ONLY LINES                     COMPLOT
       45-55    I11 OUTPUT MODE                                COMPLOT
                    =-1 - ONLY COMPARISON LISTING. NO PLOTS.   COMPLOT
                    = 0 - CROSS SECTION OVER RATIO.            COMPLOT
                    = 1 - CROSS SECTION OVER CROSS SECTION.    COMPLOT
                    = 2 - TWO CROSS SECTIONS ON SAME PLOT.     COMPLOT
                    = 3 - CROSS SECTION OVER CROSS SECTION OVERCOMPLOT
                          RATIO.                               COMPLOT
                    = 4 - TWO CROSS SECTIONS ON SAME PLOT OVER COMPLOT
                          RATIO.                               COMPLOT
       56-66    I11 STARTING PLOT NUMBER                       COMPLOT
                    = 0     - DO NOT NUMBER PLOTS              COMPLOT
                    = .GT.0 - NUMBER PLOTS IN LOWER LEFT HAND  COMPLOT
                              CORNER STARTING WITH INPUT NUMBERCOMPLOT
       67-70    I41 BACKGROUND COLOR                           COMPLOT
                    = 0         = BLACK                        COMPLOT
                    = OTHERWISE = WHITE                        COMPLOT
  5     1-11  E11.4 ALLOWABLE FRACTIONAL DIFFERENCE. USED WHEN COMPLOT
                    PLOTTING RATIOS. ANY REACTION WHERE THE    COMPLOT
                    TWO EVALUATIONS DIFFER BY MORE THAN THE    COMPLOT
                    ALLOWABLE DIFFERENCE WILL BE PLOTTED. IF   COMPLOT
                    ZERO IS INPUT THE STANDARD ALLOWABLE       COMPLOT
                    DIFFERENCE OF 0.001 (0.1 PER-CENT) WILL BE COMPLOT
                    USED.                                      COMPLOT
       12-22  E11.4 MAXIMUM ALLOWABLE RATIO. IF RATIOS ARE     COMPLOT
                    PLOTTED THEY WILL BE IN THE RANGE RATMAX   COMPLOT
                    TO 1/RATMAX. IF 0.0 IS INPUT THERE WILL    COMPLOT
                    BE NO LIMIT ON THE RANGE OF THE RATIOS.    COMPLOT
                    THIS OPTION MAY BE USED TO IGNORE LARGE    COMPLOT
                    DIFFERENCES OVER VERY NARROW ENERGY RANGES COMPLOT
                    (WHICH MAY BE UNIMPORTANT) AND ALLOW ONE   COMPLOT
                    TO SEE IMPORTANT, BUT SMALLER DIFFERENCES, COMPLOT
                    OVER EXTENDED ENERGY RANGES.               COMPLOT
  6     1-40   40A1 IDENTIFICATION FOR UPPER EVALUATIONS       COMPLOT
  7     1-40   40A1 IDENTIFICATION FOR LOWER EVALUATIONS       COMPLOT
                    (IDENTIFICATIONS SHOULD BE LEFT ADJUSTED   COMPLOT
                    TO START IN COLUMN 1).                     COMPLOT
8-N     1- 6    I6  LOWER MAT OR ZA LIMIT (SEE SELECTION MODE, COMPLOT
                    INPUT LINE 1, COLUMNS 1-11).               COMPLOT
        7- 8    I2  LOWER MF LIMIT                             COMPLOT
        9-11    I3  LOWER MT LIMIT                             COMPLOT
       12-22  E11.4 LOWER ENERGY LIMIT                         COMPLOT
       23-28    I6  UPPER MAT OR ZA LIMIT (SEE SELECTION MODE, COMPLOT
                    INPUT LINE 1, COLUMNS 1-11).               COMPLOT
       29-30    I2  UPPER MF LIMIT                             COMPLOT
       31-33    I3  UPPER MT LIMIT                             COMPLOT
       34-44  E11.4 UPPER ENERGY LIMIT                         COMPLOT
       45-55    I11 IDENTIFY EVALUATED DATA POINTS OPTION.     COMPLOT
                    = 0 - DO NOT IDENTIFY DATA POINTS.         COMPLOT
                    = 1 - IDENTIFY DATA POINTS (BY DRAWING A   COMPLOT
                          SMALL BOX AROUND EACH POINT).        COMPLOT
       56-66    I11 INTERACTIVE INPUT FLAG                     COMPLOT
                    = 0 - NO INTERACTIVE INPUT ALLOWED         COMPLOT
                    = 1 - INTERACTIVE INPUT ALLOWED            COMPLOT
                   *SETTING THIS OPTION =1 WILL TURN ON THE    COMPLOT
                    MOUSE AFTER EACH PLOT AND ALLOW YOU TO     COMPLOT
                    INTERACTIVELY SPECIFY PLOT LIMITS.         COMPLOT
                   *IF YOU DO NOT WISH TO INTERACT WITH A PLOT COMPLOT
                    OR IF YOU HAVE NO INTERACTIVE CAPABILITY   COMPLOT
                    THIS OPTION SHOULD BE SET = 0.             COMPLOT
                                                               COMPLOT
                   *WARNING...DATA POINTS IDENTIFIED OPTION IS COMPLOT
                    NOT RECOMMENDED FOR PLOTS CONTAINING MANY  COMPLOT
                    (I.E. THOUSANDS) OF DATA POINTS SINCE IT   COMPLOT
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                        WILL MERELY INCREASE THE RUNNING TIME OF   COMPLOT
                        THE PROGRAM AND STILL NOT ALLOW ONE TO     COMPLOT
                        ACCURATELY SEE DATA POINTS.                COMPLOT
                                                                   COMPLOT
                       *UP TO 100 MAT OR ZA RANGES ARE ALLOWED.    COMPLOT
                        THE LIST IS TERMINATED BY A BLANK LINE.    COMPLOT
                        IF THE UPPER LIMIT IS LESS THAN THE LOWER  COMPLOT
                        LIMIT IT WILL BE SET EQUAL TO THE LOWER    COMPLOT
                        LIMIT. IF THE FIRST RANGE LINE IS BLANK    COMPLOT
                        ALL DATA WILL BE RETRIEVED. IF THE UPPER   COMPLOT
                        MT LIMIT IS ZERO IT WILL BE SET EQUAL TO   COMPLOT
                        999 (NO LIMIT). IF THE UPPER ENERGY LIMIT  COMPLOT
                        IS ZERO IT WILL BE INTREPRETED TO MEAN NO  COMPLOT
                        LIMIT. IF THE FIRST RANGE LINE SPECIFIES   COMPLOT
                        ZERO LOWER AND UPPER MAT OR ZA RANGE IT    COMPLOT
                        WILL TERMINATE THE LIST BE RANGE LINES     COMPLOT
                        (A SECOND BLANK LINE NEED NOT BE INPUT)    COMPLOT
                        AND THE ENTIRE RANGE OF MATS WILL BE       COMPLOT
                        COMPARED FOR THE SPECIFIED MT AND ENERGY   COMPLOT
                        RANGES.                                    COMPLOT
                                                                   COMPLOT
N+1-M                   EQUIVALENCES                               COMPLOT
          1- 6      I6  MASTER ZA.                                 COMPLOT
          7- 8      I2  MASTER MF.                                 COMPLOT
          9-11      I3  MASTER MT.                                 COMPLOT
         12-17      I6  EQUIVALENT ZA FROM SECOND FILE.            COMPLOT
         18-19      I2  EQUIVALENT MF FROM SECOND FILE.            COMPLOT
         20-22      I3  EQUIVALENT MT FROM SECOND FILE.            COMPLOT
         23-33   E11.4  MULTIPLICATION FACTOR. ANY EQUATED ZA,MF,  COMPLOT
                        MT DATA WILL BE MULTIPLIED BY THIS FACTOR. COMPLOT
                       *THIS OPTION MAY BE USED TO RE-NORMALIZE    COMPLOT
                        THE SECOND CROSS SECTION OR IF COMPARING   COMPLOT
                        ONE CONSTITUENT OF A MIXTURE TO THE MIXED  COMPLOT
                        CROSS SECTION THIS MAY BE USED TO CONVERT  COMPLOT
                        THE SECOND CROSS SECTION TO BARNS PER MIXEDCOMPLOT
                        ATOM BY USING A MULTIPLICATION FACTOR WHICHCOMPLOT
                        IS EQUAL TO THE NUMBER OF ATOMS OF THE ONE COMPLOT
                        CONSTITUENT PER ATOM OF THE MIXTURE.       COMPLOT
                        = 0.0 - ON INPUT WILL BE INTERPRETED AS 1.0COMPLOT
                        (WITH THIS CONVENTION THE USER NEED ONLY   COMPLOT
                        INPUT MULTIPLICATION FACTORS IF THEY ARE   COMPLOT
                        NOT 1.0).                                  COMPLOT
                       *UP TO 100 MAT OR ZA EQUIVALENCES ARE       COMPLOT
                        ALLOWED.                                   COMPLOT
                       *THE LIST IS TERMINATED BY A BLANK LINE.    COMPLOT
                       *A ZERO INPUT FIELD IMPLIES ALL. TO EQUATE  COMPLOT
                        A GIVEN MT NUMBER TO ANOTHER MT NUMBER YOU COMPLOT
                        NEED MERELY SPECIFY ZA=0 ON INPUT.         COMPLOT
                       *NOTE, IN ALL CASES THE TITLE AT TOP OF PLOTCOMPLOT
                        WILL ONLY INDENTIFY MASTER (ZA,MF,MT). THE COMPLOT
                        USER INPUT TITLES MUST BE USED TO IDENTIFY COMPLOT
                        THE SECOND REACTION (SEE, EXAMPLE INPUT 4  COMPLOT
                        BELOW).                                    COMPLOT
                                                                   COMPLOT
  EXAMPLE DEFINITION OF PLOTTER                                    COMPLOT
  ----------------------------                                     COMPLOT
  2015 - WARNING - THE FOLLOWING DESCRIPTION IS OUT-OF-DATE.       COMPLOT
  TODAY THE DIMENSIONS OF THE PLOTTER ARE IN INCHES.               COMPLOT
                                                                   COMPLOT
  THE FIRST INPUT LINE DEFINES THE DIMENSIONS OF THE PLOTTER BEING COMPLOT
  USED IN ANY UNITS (INCHES, CENTIMETERS, MILLIMETERS, ANYTHING)   COMPLOT
  WHICH APPLY TO THE PLOTTER. IN ADDITION THE FIRST LINE DEFINES   COMPLOT
  HOW MANY PLOTS SHOULD APPEAR ON EACH FRAME. THE PLOTTING AREA    COMPLOT
  DEFINED ON THE FIRST INPUT LINE MAY BE SUBDIVIDED INTO ANY NUMBER COMPLOT
  OF PLOTS IN THE X AND Y DIRECTION. FOR EXAMPLE, TO PRODUCE A     COMPLOT
  SERIES OF FRAMES EACH CONTAINING 3 PLOTS IN THE X DIRECTION AND  COMPLOT
  2 PLOTS IN THE Y DIRECTION (6 PLOTS PER FRAME) COLUMN 45-55 OF   COMPLOT
  THE FIRST INPUT LINE SHOULD BE 3 AND COLUMNS 56-66 SHOULD BE 2.  COMPLOT
                                                                   COMPLOT
  IF THE LOCAL PLOTTER USES DIMENSIONS OF INCHES IN ORDER TO OBTAIN COMPLOT
  10 X 10 INCH FRAMES WITH 3 X 2 PLOTS PER FRAME THE FIRST INPUT   COMPLOT
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   LINE SHOULD BE,                                                      COMPLOT
                                                                        COMPLOT
     0.0       10.0      0.0     10.0              3          2       COMPLOT
                                                                        COMPLOT
   IF THE LOCAL PLOTTER USES DIMENSION OF MILLIMETERS THE SAME          COMPLOT
   PHYSICAL SIZE PLOT MAY BE OBTAINED IF THE FIRST INPUT LINE IS,       COMPLOT
                                                                        COMPLOT
     0.0      254.0      0.0    254.0              3          2       COMPLOT
                                                                        COMPLOT
   FOR SIMPLICITY THE FOLLOWING EXAMPLE INPUTS WILL NOT DISCUSS THE     COMPLOT
   PHYSICAL DIMENSIONS OF THE PLOTTER AND THE FIRST INPUT LINE WILL     COMPLOT
   IN ALL CASES INDICATE 10 X 10 INCH PLOTS WITH ONLY 1 PLOT PER        COMPLOT
   FRAME.                                                               COMPLOT
                                                                        COMPLOT
   IN THE FOLLOWING EXAMPLES IN ALL CASES THESE OPTIONS WILL BE USED,COMPLOT
   1) DASHED GRID       - COLUMNS 12-22 OF SECOND INPUT LINE =  1       COMPLOT
   2) NO BORDER         - COLUMNS 23-33 OF SECOND INPUT LINE =  0       COMPLOT
   3) LINE THICKNESS    - COLUMNS 34-44 OF SECOND INPUT LINE = -2       COMPLOT
   4) OUTPUT MODE       - COLUMNS 45-55 OF SECOND INPUT LINE =  3       COMPLOT
   5) FIRST PLOT NUMBER - COLUMNS 56-66 OF SECOND INPUT LINE =  1       COMPLOT
                                                                        COMPLOT
   EXAMPLE INPUT 1                                                      COMPLOT
   ---------------                                                      COMPLOT
   RETRIEVE MATS 1023, 1056 AND 1065 THROUGH 1072, MT = 1 AND 2         COMPLOT
   (TOTAL AND ELASTIC) FROM THE FIRST INPUT FILE AND COMPARE TO         COMPLOT
   ANY SECTION FROM THE SECOND FILE THAT HAS THE SAME ZA/MF/MT. ONLY COMPLOT
   COMPARE DATA OVER THE ENERGY RANGE 0.1 EV TO 1 KEV. IDENTIFY         COMPLOT
   THE TWO SETS OF DATA AS ENDF/B-V AND ENDF/B-IV, RESPECTIVELY.        COMPLOT
   ONLY PLOT THOSE REACTIONS WHICH DIFFER AT ONE OR MORE ENERGIES       COMPLOT
   BY MORE THAN 1 PER-CENT (NOTE, 1 PER-CENT = 0.01 AS INPUT            COMPLOT
   FRACTION). NO EQUIVALENT REACTIONS ARE SPECIFIED. FILERNAMES         COMPLOT
   ARE STANDARD (THSE CAN EITHER BE EXPLICITLY INCLUDED, OR SIMPLY      COMPLOT
   LEFT BLANK).                                                         COMPLOT
                                                                        COMPLOT
   THE FOLLOWING 12 INPUT LINES ARE REQUIRED.                           COMPLOT
                                                                        COMPLOT
      0.0       10.0      0.0     10.0              3          2       COMPLOT
 ENDFB.IN1                                                              COMPLOT
 ENDFB.IN2                                                              COMPLOT
        0          1        0       -2              3          1       COMPLOT
     0.01        0.0                                                    COMPLOT
 ENDF/B-V DATA (STANDARD)                                               COMPLOT
 ENDF/B-IV DATA                                                         COMPLOT
 1023 3  1 0.1            3  2 1000.0               0                  COMPLOT
 1056 3  1 0.1            3  2 1000.0               0                  COMPLOT
 1065 3  1 0.1       1072 3  2 1000.0               0                  COMPLOT
                                    (TERMINATES REQUEST LIST)           COMPLOT
                                    (TERMINATES EQUIVALENCE LIST)       COMPLOT
                                                                        COMPLOT
   EXAMPLE INPUT 2                                                      COMPLOT
   ---------------                                                      COMPLOT
   TO USE ALL OF THE SAME OPTIONS AS SPECIFIED IN EXAMPLE INPUT 1,      COMPLOT
   EXCEPT TO RETRIEVE U-235, U-238 AND PU-239 THROUGH PU-242 THE        COMPLOT
   FOLLOWING 12 INPUT LINES ARE REQUIRED.                               COMPLOT
                                                                        COMPLOT
      0.0       10.0      0.0     10.0              3          2       COMPLOT
 ENDFB.IN1                                                              COMPLOT
 ENDFB.IN2                                                              COMPLOT
        1          1        0       -2              3          1       COMPLOT
     0.01        0.0                                                    COMPLOT
 ENDF/B-V DATA (STANDARD)                                               COMPLOT
 ENDF/B-IV DATA                                                         COMPLOT
92235 3  1 0.1            3  2 1000.0               0                  COMPLOT
92238 3  1 0.1            3  2 1000.0               0                  COMPLOT
94239 3  1 0.1      94242 3  2 1000.0               0                  COMPLOT
                                    (TERMINATES REQUEST LIST)           COMPLOT
                                    (TERMINATES EQUIVALENCE LIST)       COMPLOT
   EXAMPLE INPUT 3                                                      COMPLOT
   ---------------                                                      COMPLOT
   TO USE ALL OF THE SAME OPTIONS AS SPECIFIED IN EXAMPLE INPUT 1,      COMPLOT
   EXCEPT TO RETRIEVE AND COMPARE ALL MATS THE FOLLOWING 10 INPUT       COMPLOT
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    LINES ARE REQUIRED.                                                 COMPLOT
                                                                        COMPLOT
      0.0       10.0      0.0     10.0              3          2      COMPLOT
 ENDFB.IN1                                                              COMPLOT
 ENDFB.IN2                                                              COMPLOT
        0          1        0       -2              3          1      COMPLOT
     0.01        0.0                                                    COMPLOT
ENDF/B-V DATA (STANDARD)                                                COMPLOT
ENDF/B-IV DATA                                                          COMPLOT
    1 1  1 0.0       999999999 0.0                   0                  COMPLOT
                                    (TERMINATES REQUEST LIST)           COMPLOT
                                    (TERMINATES EQUIVALENCE LIST)       COMPLOT
                                     NOTE, ZERO LOWER AND UPPER         COMPLOT
                                     MAT LIMITS INDICATES NO LIMIT.     COMPLOT
                                                                        COMPLOT
    EXAMPLE INPUT 4                                                     COMPLOT
    ---------------                                                     COMPLOT
    RETRIEVE U-235 AND EQUATE THE FISSION CROSS SECTION (MT=18) ON      COMPLOT
    THE MASTER FILE TO CAPTURE (MT=102) ON THE SECOND FILE. PLOT        COMPLOT
    THE CAPTURE, FISSION AND CAPTURE TO FISSION RATIO OVER THE ENERGY   COMPLOT
    RANGE 0.0253 EV TO 1 KEV. THE FOLLOWING 11 INPUT LINES ARE          COMPLOT
    REQUIRED.                                                           COMPLOT
                                                                        COMPLOT
      0.0       10.0      0.0     10.0              3          2      COMPLOT
 ENDFB.IN1                                                              COMPLOT
 ENDFB.IN2                                                              COMPLOT
        1          1        0       -2              3          1      COMPLOT
     0.01        0.0                                                    COMPLOT
 FISSION                                                                COMPLOT
 CAPTURE                                                                COMPLOT
92235 3 18 0.0253   92235 3 18 1000.0                0                  COMPLOT
                                    (TERMINATES REQUEST LIST)           COMPLOT
92235 3 18 92235 3102               (MULTIPLICATION OF 1.0 INFERRED)    COMPLOT
                                    (TERMINATES EQUIVALENCE LIST)       COMPLOT
                                                                        COMPLOT
    EXAMPLE INPUT 5                                                     COMPLOT
    ---------------                                                     COMPLOT
    IN DIFFERENT VERSIONS OF THE ENDF/B FORMAT DIFFERENT MT NUMBERS     COMPLOT
    ARE ASSIGNED TO THE SAME REACTION. FOR EXAMPLE, IN ENDF/B-V AND     COMPLOT
    EARLIER VERSIONS OF ENDF/B THE PHOTOELECTRIC CROSS SECTION IS       COMPLOT
    MT=602, WHILE IN ENDF/B-VI IT IS MT=522. IN ORDER TO COMPARE        COMPLOT
    ASSUMING THAT THE MASTER IS ENDF/B-VI AND THE OTHER ENDF/B FILE     COMPLOT
    IS ENDF/B-V (OR EARLIER) YOU MAY EQUATE MT=522 TO 602.              COMPLOT
                                                                        COMPLOT
    WHEN COMPARING PHOTOELECTRIC CROSS SECTIONS WE EXPECT THERE TO BE   COMPLOT
    LARGE DIFFERENCES NEAR EDGES, SINCE IT IS UNLIKELY THAT TWO         COMPLOT
    INDEPENDENT EVALUATIONS USE EXACTLY THE SAME EDGE ENERGIES. FROM    COMPLOT
    A PRACTICAL VIEWPOINT THESE DIFFERENCES ARE NOT IMPORTANT IF THEY   COMPLOT
    ONLY OCCUR OVER NARROW ENERGY RANGES NEAR ENERGIES. HOWEVER THESE   COMPLOT
    LARGE DIFFERENCES MAY MAKE IT DIFFICULT TO SEE DIFFERENCES OVER     COMPLOT
    OTHER ENERGY RANGES, WHICH MAY BE IMPORTANT. IN ORDER TO BE ABLE    COMPLOT
    TO SEE IMPORTANT DIFFERENCES IN THE FOLLOWING COMPARISON WE WILL    COMPLOT
    CONSTRAIN THE PLOTTED RATIO TO THE RANGE ABOUT 0.9 TO 1.1 IN        COMPLOT
    ORDER TO BE ABLE TO SEE DIFFERENCES OF UP TO 10 PER-CENT. WE WILL   COMPLOT
    DO THIS BY SPECIFYING A MAXIMUM RATIO OF 1.1, WHICH WILL IN TURN    COMPLOT
    DEFINE A MINIMUM RATIO OF 1/1.1, OR ABOUT 0.9.                      COMPLOT
                                                                        COMPLOT
    IN ORDER TO COMPARE THE PHOTOELECTRIC CROSS SECTION FOR ALL         COMPLOT
    MATERIALS THE FOLLOWING 11 INPUT LINES ARE REQUIRED.                COMPLOT
                                                                        COMPLOT
      0.0       10.0      0.0     10.0              3          2      COMPLOT
 ENDFB.IN1                                                              COMPLOT
 ENDFB.IN2                                                              COMPLOT
        0          1        0       -2              3          1      COMPLOT
     0.01        1.1                                                    COMPLOT
ENDF/B-VI                                                               COMPLOT
ENDF/B-V                                                                COMPLOT
   023522           999923522                       0                  COMPLOT
                                    (TERMINATES REQUEST LIST)           COMPLOT
   023522     023602                (MULTIPLICATION OF 1.0 INFERRED)    COMPLOT
                                    (TERMINATES EQUIVALENCE LIST)       COMPLOT
```

```
                                                                      COMPLOT
    EXAMPLE INPUT 6                                                   COMPLOT
    ---------------                                                   COMPLOT
    THE SAME EXAMPLE AS ABOVE, EXCEPT THAT DIFFERENT FILENAMES WILL   COMPLOT
    BE USED TO READ THE DATA FROM A FILE TREE STRUCTURE. THE FOLLOWINGCOMPLOT
    11 INPUT LINES ARE REQUIRED.                                      COMPLOT
                                                                      COMPLOT
      0.0       10.0      0.0     10.0              3          2      COMPLOT
 /Evaluated/ENDFB6/PHOTON.IN                                          COMPLOT
 /Evaluated/ENDFB5/PHOTON.IN                                          COMPLOT
        0          1        0       -2              3          1      COMPLOT
     0.01        1.1                                                  COMPLOT
ENDF/B-VI                                                             COMPLOT
ENDF/B-V                                                              COMPLOT
   023522           999923522                      0                 COMPLOT
                                  (TERMINATES REQUEST LIST)           COMPLOT
   023522     023602              (MULTIPLICATION OF 1.0 INFERRED)COMPLOT
                                  (TERMINATES EQUIVALENCE LIST)       COMPLOT
                                                                      COMPLOT
    EXAMPLE INPUT 7                                                   COMPLOT
    ---------------                                                   COMPLOT
    THE OUTPUT FOR ALL OF THE ABOVE EXAMPLES ARE ORIENTED WITH X      COMPLOT
    HORIZONTAL AND Y VERTICAL. TO CHANGE THE ORIENTATION OF THE PLOTS COMPLOT
    YOU NEED MERELY SPECIFY A NEGATIVE UPPER X LIMIT OF THE SIZE OF   COMPLOT
    THE PLOTS ON THE FIRST INPUT LINE.                                COMPLOT
                                                                      COMPLOT
    THE FOLLOWING EXAMPLE IS EXACTLY THE SAME AS THE ABOVE EXAMPLE,   COMPLOT
    EXCEPT THAT THE ORIENTATION OF THE PLOTS HAS BEEN CHANGED. THE    COMPLOT
    FOLLOWING 11 INPUT LINES ARE REQUIRED.                            COMPLOT
                                                                      COMPLOT
      0.0      -10.0      0.0     10.0              3          2      COMPLOT
 /Evaluated/ENDFB6/PHOTON.IN                                          COMPLOT
 /Evaluated/ENDFB5/PHOTON.IN                                          COMPLOT
        0          1        0       -2              3          1      COMPLOT
     0.01        1.1                                                  COMPLOT
ENDF/B-VI                                                             COMPLOT
ENDF/B-V                                                              COMPLOT
   023522           999923522                      0                 COMPLOT
                                  (TERMINATES REQUEST LIST)           COMPLOT
   023522     023602              (MULTIPLICATION OF 1.0 INFERRED)COMPLOT
                                  (TERMINATES EQUIVALENCE LIST)       COMPLOT
                                                                      COMPLOT
===== PLOTTER/GRAPHICS TERMINAL INTERFACE ==============================COMPLOT
                                                                      COMPLOT
     NON-INTERACTIVE                                                  COMPLOT
     ----------------------------------------------------------------COMPLOT
     THIS PROGRAM USES A SIMPLE CALCOMP LIKE INTERFACE INVOLVING      COMPLOT
     ONLY 5 SUBROUTINES,                                              COMPLOT
                                                                      COMPLOT
     STARPLOT     - INITIALIZE PLOTTER                                COMPLOT
     NEXTPLOT     - CLEAR SCREEN FOR NEXT PLOT                        COMPLOT
     ENDPLOTS     - TERMINATE PLOTTING                                COMPLOT
                                                                      COMPLOT
     PLOT(X,Y,IPEN)        - DRAW OR MOVE FROM LAST LOCATION TO (X,Y),COMPLOT
                             END OF CURRENT PLOT OR END OF PLOTTING.  COMPLOT
           IPEN =   2 - DRAW                                          COMPLOT
                =   3 - MOVE                                          COMPLOT
                                                                      COMPLOT
     PEN(IPEN)             - SELECT COLOR.                            COMPLOT
         IPEN- COLOR = 1 TO N (N = ANY POSITIVE INTEGER)              COMPLOT
                                                                      COMPLOT
     BOXCOLOR(X,Y,IFILL,IBORDER) - FILL A RECTANGLE WITH COLOR        COMPLOT
              X,Y                = DEFINE THE CORNERS OF THE BOX      COMPLOT
                  IFILL          = COLOR TO FILL BOX WITH             COMPLOT
                        IBORDER  = COLOR OF BORDER OF BOX             COMPLOT
                                                                      COMPLOT
     INTERACTIVE                                                      COMPLOT
     ----------------------------------------------------------------COMPLOT
     THIS PROGRAM INCLUDES AN INTERACTIVE INTERFACE FOR USE WITH A    COMPLOT
     MOUSE. THE INTERFACE INVOLVES 2 SUBROUTINE,                      COMPLOT
                                                                      COMPLOT
```

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 INTERACT(MYACTION)             - WHETHER OR NOT INTERACTION      COMPLOT
          MYACTION              = 0 - NO (RETURNED BY INTERACT)   COMPLOT
                                = 1 - YES (RETURNED BY INTERACT)  COMPLOT
                                                                  COMPLOT
 MOUSEY(IWAY,XI,YI,IWAY1,IWAY2) - READ POSITION OF MOUSE          COMPLOT
                          IWAY    = 0 - NO INPUT                  COMPLOT
                                  = 1 - LEFT BUTTON               COMPLOT
                                  = 2 - MIDDLE BUTTON             COMPLOT
                                  = 3 - RIGHT BUTTON              COMPLOT
                                  = 4 - KEYBOARD INPUT            COMPLOT
                          XI      = real*4 X POSITION IN LOCAL UNITSCOMPLOT
                          YI      = real*4 Y POSITION IN LOCAL UNITSCOMPLOT
                          IWAY1   = MINIMUM ALLOWABLE IWAY        COMPLOT
                          IWAY2   = MAXIMUM ALLOWABLE IWAY        COMPLOT
                                                                  COMPLOT
AS USED BY THIS PROGRAM IWAY1   = 1                               COMPLOT
                          IWAY2   = 4                             COMPLOT
KEYBOARD INPUT (IWAY=4) MEANS NO ZOOMED PLOT REQUESTED.           COMPLOT
MOUSE INPUT (IWAY=1 TO 3) MEANS A ZOOMED PLOT IS REQUESTED.       COMPLOT
MOUSEY WILL BE CALLED ONCE TO SEE IF A ZOOMED PLOT IS REQUESTED.  COMPLOT
IF IT IS XI WILL BE USED TO DEFINE ONE X (E.G., ENERGY) LIMIT OF  COMPLOT
THE ZOOMED PLOT. MOUSEY WILL THEN BE CALLED A SECOND TIME TO      COMPLOT
DEFINE A SECOND XI TO DEFINE THE OTHER X LIMIT OF THE ZOOMED      COMPLOT
PLOT.                                                             COMPLOT
                                                                  COMPLOT
IF YOU DO NOT WANT INTERACTION YOU SHOULD INCLUDE THE FOLLOWING   COMPLOT
SUBROUTINES IN YOUR GRAPHIC INTERFACE,                            COMPLOT
                                                                  COMPLOT
SUBROUTINE INTERACT(MYACTION)                                     COMPLOT
MYACTION=0                                                        COMPLOT
RETURN                                                            COMPLOT
END                                                               COMPLOT
SUBROUTINE MOUSEY(IWAY,XI,YI,IWAY1,IWAY2)                         COMPLOT
IWAY=4                                                            COMPLOT
XI=0.0                                                            COMPLOT
YI=0.0                                                            COMPLOT
RETURN                                                            COMPLOT
END                                                               COMPLOT
                                                                  COMPLOT
ALTERNATIVE INTERACTIVE                                           COMPLOT
------------------------------------------------------------------COMPLOT
IF YOU DO NOT HAVE A MOUSE BUT WOULD STILL LIKE TO INTERACTIVE    COMPLOT
INPUT YOU CAN REPLACE SUBROUTINE ACTION IN THIS PROGRAM.          COMPLOT
                                                                  COMPLOT
AS DISTRIBUTED SUBROUTINE ACTION USES A MOUSE TO DEFINE LOWER     COMPLOT
AND UPPER ENERGY (OR X) LIMITS WHICH ARE USED TO PRODUCE THE      COMPLOT
NEXT PLOT. A CALL TO ACTION IS OF THE FORM,                       COMPLOT
                                                                  COMPLOT
CALL ACTION(KACTV,XACT1,XACT2)                                    COMPLOT
                                                                  COMPLOT
            KACTV   = 0 - NO INTERACTIVE INPUT                    COMPLOT
                    = 1 - INTERACTIVE INPUT                       COMPLOT
            XACT1   = LOWER ENERGY LIMIT                          COMPLOT
            XACT2   = UPPER ENERGY LIMIT                          COMPLOT
                                                                  COMPLOT
IF THERE IS NO INTERACTIVE INPUT THE PROGRAM WILL PROCEED TO THE  COMPLOT
NEXT PLOT REQUESTED BY NON-INTERACTIVE INPUT.                     COMPLOT
                                                                  COMPLOT
IF THERE IS INTERACTIVE INPUT THE PROGRAM WILL USE XACT1 AND      COMPLOT
XACT2 TO DEFINE THE ENERGY LIMITS OF THE NEXT PLOT USING THE      COMPLOT
SAME DATA AS APPEARED ON THE LAST PLOT. AS WITH NON-INTERACTIVE   COMPLOT
INPUT, IF YOU SELECT AN ENERGY RANGE WHERE THE MAXIMUM DIFFERENCE COMPLOT
IS LESS THAN THAT SPECIFIED BY INPUT NO PLOT WILL BE PRODUCED     COMPLOT
AND THE CODE WILL PROCEED TO THE NEXT PLOT REQUESTED BY           COMPLOT
NON-INTERACTIVE INPUT.                                            COMPLOT
                                                                  COMPLOT
YOU CAN REPLACE SUBROUTINE ACTION FOLLOWING THE ABOVE CONVENTIONS COMPLOT
TO ALLOW INTERACTION VIA DIRECT READ OF X LIMITS, LIGHTPEN OR     COMPLOT
WHATEVER FACILITIES YOU HAVE AVAILABLE.                           COMPLOT
                                                                  COMPLOT
INTERFACING                                                       COMPLOT
```

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------------------------------------------------------------------COMPLOT
IN ORDER TO INTERFACE THIS PROGRAM FOR USE ON ANY PLOTTER WHICH   COMPLOT
DOES NOT USE THE ABOVE CONVENTIONS IT IS MERELY NECESSARY FOR THE COMPLOT
THE USER TO WRITE 5 SUBROUTINES DESCRIBED ABOVE AND TO THEN CALL  COMPLOT
THE LOCAL EQUIVALENT ROUTINES.                                    COMPLOT
                                                                  COMPLOT
COLOR PLOTS                                                       COMPLOT
------------------------------------------------------------------COMPLOT
TO SELECT PLOTTING COLORS SUBROUTINE PEN (DESCRIBED ABOVE) IS USEDCOMPLOT
TO SELECT ONE OF THE AVAILABLE COLORS. WHEN RUNNING ON A MAINFRAMECOMPLOT
USING AN IBM GRAPHICS TERMINAL OR ON AN IBM-PC USING A HEWLETT-   COMPLOT
PACKARD PLOTTER THE GRAPHICS INTERFACE (DESCRIBED ABOVE) WILL     COMPLOT
PRODUCE COLOR PLOTS.                                              COMPLOT
                                                                  COMPLOT
BLACK AND WHITE PLOTS                                             COMPLOT
------------------------------------------------------------------COMPLOT
WHEN PRODUCING BLACK AND WHITE HARDCOPY ON A MAINFRAME THE USER   COMPLOT
SHOULD ADD A DUMMY SUBROUTINE PEN TO THE END OF THE PROGRAM TO    COMPLOT
IGNORE ATTEMPTS TO CHANGE COLOR. ADD THE FOLLOWING SUBROUTINE,    COMPLOT
                                                                  COMPLOT
SUBROUTINE PEN(IPEN)                                              COMPLOT
RETURN                                                            COMPLOT
END                                                               COMPLOT
                                                                  COMPLOT
CHARACTER SET                                                     COMPLOT
------------------------------------------------------------------COMPLOT
THIS PROGRAM USES COMPUTER AND PLOTTER DEVICE INDEPENDENT SOFTWARECOMPLOT
CHARACTERS. THIS PROGRAM COMES WITH A FILE THAT DEFINES THE PEN   COMPLOT
STROKES REQUIRED TO DRAW ALL CHARACTERS ON AN IBM KEYBOARD (UPPER COMPLOT
AND LOWER CASE CHARACTERS, NUMBERS, ETC.) PLUS AN ALTERNATE SET OFCOMPLOT
ALL UPPER AND LOWER CASE GREEK CHARACTERS AND ADDITIONAL SPECIAL  COMPLOT
SYMBOLS.                                                          COMPLOT
                                                                  COMPLOT
THE SOFTWARE CHARACTER TABLE CONTAINS X AND Y AND PEN POSITIONS TOCOMPLOT
DRAW EACH CHARACTER. IF YOU WISH TO DRAW ANY ADDITIONAL CHARACTERSCOMPLOT
OR TO MODIFY THE FONT OF THE EXISTING CHARACTERS YOU NEED ONLY    COMPLOT
MODIFY THIS TABLE.                                                COMPLOT
                                                                  COMPLOT
CONTROL CHARACTERS                                                COMPLOT
------------------------------------------------------------------COMPLOT
IN THE SOFTWARE CHARACTER TABLE ALL CHARACTERS TO BE PLOTTED WILL COMPLOT
HAVE PEN POSITION = 2 (DRAW) OR = 3 (MOVE). IN ADDITION THE TABLE COMPLOT
CURRENTLY CONTAINS 4 CONTROL CHARACTERS,                          COMPLOT
                                                                  COMPLOT
PEN POSITION = 0                                                  COMPLOT
----------------                                                  COMPLOT
SHIFT THE NEXT PRINTED CHARACTER BY X AND Y. 3 CONTROL CHARACTERS COMPLOT
ARE PRESENTLY INCLUDED IN THE SOFTWARE CHARACTER TABLE TO ALLOW   COMPLOT
SHIFTING.                                                         COMPLOT
                                                                  COMPLOT
{   = SHIFT UP (FOR SUPERSCRIPTS.............X= 0.0, Y= 0.5)      COMPLOT
}   = SHIFT DOWN (FOR SUBSCRIPTS.............X= 0.0, Y=-0.5)     COMPLOT
\   = SHIFT LEFT 1 CHARACTER (FOR BACKSPACE...X=-1.0, Y= 0.0)     COMPLOT
                                                                  COMPLOT
PEN POSITION =-1                                                  COMPLOT
----------------                                                  COMPLOT
SELECT THE NEXT PRINTED CHARACTER FROM THE ALTERNATE CHARACTER    COMPLOT
SET. AT PRESENT THIS CONTROL CHARACTER IS,                        COMPLOT
                                                                  COMPLOT
]   = SWITCH TO ALTERNATE CHARACTER SET                           COMPLOT
                                                                  COMPLOT
THESE 4 CONTROL CHARACTERS ARE ONLY DEFINED BY THE VALUE OF THE   COMPLOT
PEN POSITION IN THE SOFTWARE CHARACTER TABLE (I.E., THEY ARE NOT  COMPLOT
HARD WIRED INTO THIS PROGRAM). AS SUCH BY MODIFYING THE SOFTWARE  COMPLOT
CHARACTER TABLE THE USER HAS THE OPTION OF DEFINING ANY CONTROL   COMPLOT
CHARACTERS TO MEET SPECIFIC NEEDS.                                COMPLOT
                                                                  COMPLOT
THESE CHARACTERS MAY BE USED IN CHARACTER STRINGS TO PRODUCE      COMPLOT
SPECIAL EFFECTS. FOR EXAMPLE, TO PLOT SUBSCRIPT 5, B, SUPERSCRIPT COMPLOT
10 USE THE STRING,                                                COMPLOT
                                                                  COMPLOT
```

```
     }5B{1{0                                                                COMPLOT
                                                                            COMPLOT
     TO PLOT B, SUBSCRIPT 5 AND SUPERSCRIPT 10 WITH THE 5 DIRECTLY          COMPLOT
     BELOW THE 1 OF THE 10 WE CAN USE THE BACKSPACE CHARACTER TO            COMPLOT
     POSITION THE 1 DIRECTLY ABOVE THE 5 USING THE STRING,                  COMPLOT
                                                                            COMPLOT
     B}5\{1{0                                                               COMPLOT
                                                                            COMPLOT
     TO PLOT UPPER CASE GREEK GAMMA FOLLOWED BY THE WORD TOTAL (I.E.,       COMPLOT
     RESONANCE TOTAL WIDTH) USE THE STRING.                                 COMPLOT
                                                                            COMPLOT
     ]G TOTAL                                                               COMPLOT
                                                                            COMPLOT
     NOTE, WHEN THESE CONTROL CHARACTERS ARE USED THEY ONLY EFFECT THE      COMPLOT
     NEXT 1 PRINTED CHARACTER (SEE, ABOVE EXAMPLE OF PLOTTING SUPER-        COMPLOT
     SCRIPT 10 WHERE THE SHIFT UP CONTROL CHARACTER WAS USED BEFORE THE     COMPLOT
     1 AND THEN AGAIN BEFORE THE 0 AND THE BACKSPACE AND SHIFT UP           COMPLOT
     CONTROL CHARACTERS WERE USED IN COMBINATION).                          COMPLOT
                                                                            COMPLOT
     IF THESE 4 CONTROL CHARACTERS ARE NOT AVAILABLE ON YOUR COMPUTER       COMPLOT
     YOU CAN MODIFY THE SOFTWARE CHARACTER TABLE TO USE ANY OTHER 4         COMPLOT
     CHARACTERS THAT YOU DO NOT NORMALLY USE IN CHARACTER STRINGS (FOR      COMPLOT
     DETAILS SEE THE SOFTWARE CHARACTER TABLE).                             COMPLOT
                                                                            COMPLOT
     STANDARD/ALTERNATE CHARACTER SETS                                      COMPLOT
     ----------------------------------------------------------------------COMPLOT
     THE SOFTWARE CHARACTER TABLE CONTAINS 2 SETS OF CHARACTERS WHICH       COMPLOT
     ARE A STANDARD SET (ALL CHARACTERS ON AN IBM KEYBOARD) AND AN          COMPLOT
     ALTERNATE SET (UPPER AND LOWER CASE GREEK CHARACTERS AND SPECIAL       COMPLOT
     CHARACTERS). TO DRAW A CHARACTER FROM THE ALTERNATE CHARACTER SET      COMPLOT
     PUT A RIGHT BRACKET CHARACTER (]) BEFORE A CHARACTER (SEE THE          COMPLOT
     ABOVE EXAMPLE AND THE SOFTWARE CHARACTER TABLE FOR DETAILS). THIS      COMPLOT
     CONTROL CHARACTER WILL ONLY EFFECT THE NEXT 1 PLOTTED CHARACTER.       COMPLOT
                                                                            COMPLOT
     SUB AND SUPER SCRIPTS                                                  COMPLOT
     ----------------------------------------------------------------------COMPLOT
     TO DRAW SUBSCRIPT PRECEED A CHARACTER BY }. TO DRAW SUPERSCRIPT        COMPLOT
     PRECEED A CHARACTER BY { (SEE THE ABOVE EXAMPLE AND THE SOFTWARE       COMPLOT
     CHARACTER TABLE FOR DETAILS). THESE CONTROL CHARACTER WILL ONLY        COMPLOT
     EFFECT THE NEXT 1 PLOTTED CHARACTER.                                   COMPLOT
                                                                            COMPLOT
     BACKSPACING                                                            COMPLOT
     ----------------------------------------------------------------------COMPLOT
     TO BACKSPACE ONE CHARACTER PRECEED A CHARACTER BY \ (SEE, THE          COMPLOT
     ABOVE EXAMPLE AND THE SOFTWARE CHARACTER TABLE FOR DETAILS). THIS      COMPLOT
     CONTROL CHARACTER WILL PERFORM A TRUE BACKSPACE AND WILL EFFECT        COMPLOT
     ALL FOLLOWING CHARACTERS IN THE SAME CHARACTER STRING.                 COMPLOT
                                                                            COMPLOT
     PLOT DIMENSIONS                                                        COMPLOT
     ---------------                                                        COMPLOT
     ARE DEFINED BY USER INPUT. INTERNALLY THE PROGRAM WILL CREATE A        COMPLOT
     PLOT IN APPROXIMATELY A4 OR 8-1/2 BY 11 INCH FORMAT. DURING            COMPLOT
     OUTPUT THE PLOT IS TRANSFORMED TO THE UNITS (INCHES, CENTIMETERS,      COMPLOT
     MILLIMETERS, WHATEVER) OF THE PLOTTER BEING USED AND OUTPUT.           COMPLOT
                                                                            COMPLOT
===== PLOTTER/GRAPHICS TERMINAL INTERFACE ============================COMPLOT
======================================================================COMPLOT
```