```
====================================================================== 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 INTERFACE Complot
                                    (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 PLOTTER Complot
                                   *WARNING..INPUT PARAMETERS FROM BEEN Complot
                                    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 ANYTHING Complot
                                    CRAZY.                             Complot
                                   *FORTRAN-77/FORTRAN-H COMPATIBLE     Complot
                                   *SPECIAL ENDF/B MATERIAL DEFINITIONS Complot
                                    (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 DETERMINE Complot
                                    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 INPUT Complot
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 CHANGE Complot
                           *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
                                                                 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
UNIVERSITY OF CALIFORNIA                                         Complot
LAWRENCE LIVERMORE NATIONAL LABORATORY                           Complot
L-159                                                            Complot
```

P.O. BOX 808 Complot
LIVERMORE, CA 94550 Complot
U.S.A. Complot
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E. MAIL CULLEN1@LLNL.GOV Complot
WEBSITE HTTP://WWW.LLNL.GOV/CULLEN1 Complot
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 COMPUTER Complot
INDEPENDENT PROGRAMS THAT CAN EASILY BE IMPLEMENTED ON ANY ONE Complot
OF A WIDE VARIETY OF COMPUTERS. IN ORDER TO ASSIST IN THIS PROJECT Complot
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 PLOTTER Complot
OR GRAPHICS TERMINAL AND THE APPEARANCE AND LAYOUT OF THE PLOTS Complot
SHOULD BE INDEPENDENT OF WHICH PLOTTER IS USED. Complot
Complot
ON WHAT PLOTTERS WILL THE PROGRAM RUN Complot
--- Complot
THE PLOTTER MAY USE UNITS OF INCHES, CENTIMETERS, MILLIMETERS, Complot
VIRTUALLY ANYTHING. INTERNALLY THE PROGRAM WILL DEFINE PLOTS IN Complot
APPROXIMATELY A4 OR 8-1/2 BY 11 INCH FORMAT. AS PART OF THE Complot
INPUT THE USER DEFINES THE ACTUAL SIZE OF THE PLOT IN THE UNITS Complot
(I.E., INCHES, CENTIMETERS, MILLIMETERS, WHATEVER) OF THE REAL Complot
PLOT. THE PLOT IS TRANSFORMED TO THE SIZE OF THE LOCAL PLOTTER Complot
AND OUTPUT. USING THIS CONVENTION THIS PROGRAM SHOULD BE EASY Complot
TO INTERFACE TO VIRTUALLY ANY PLOTTER OR GRAPHICS TERMINAL. Complot
Complot
PROGRAM IDENTIFICATION Complot

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---------------------                                                  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 IDENTIFY     Complot
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
                                                                       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 SET     Complot
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
```

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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 REACTIONS Complot
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 SECTION Complot
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 SELECTOR Complot
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-PLOTS Complot
    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
    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     A60   FILENAME FOR FIRST ENDF/B DATA FILE            Complot
                        (LEAVE BLANK FOR ENDFB.IN1)                    Complot
   3     1-72     A60   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
                        = 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 OVER    Complot
                              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 NUMBER    Complot
        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 PLOTTED THEY WILL BE IN THE RANGE RATMAX TO 1/RATMAX. IF 0.0 IS INPUT THERE WILL BE NO LIMIT ON THE RANGE OF THE RATIOS. THIS OPTION MAY BE USED TO IGNORE LARGE DIFFERENCES OVER VERY NARROW ENERGY RANGES (WHICH MAY BE UNIMPORTANT) AND ALLOW ONE TO SEE IMPORTANT, BUT SMALLER DIFFERENCES, OVER EXTENDED ENERGY RANGES.	Complot
6	1-40	40A1	IDENTIFICATION FOR UPPER EVALUATIONS	Complot
7	1-40	40A1	IDENTIFICATION FOR LOWER EVALUATIONS (IDENTIFICATIONS SHOULD BE LEFT ADJUSTED TO START IN COLUMN 1).	Complot
8-N	1- 6	I6	LOWER MAT OR ZA LIMIT (SEE SELECTION MODE, 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, 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. = 0 - DO NOT IDENTIFY DATA POINTS. = 1 - IDENTIFY DATA POINTS (BY DRAWING A SMALL BOX AROUND EACH POINT).	Complot
	56-66	I11	INTERACTIVE INPUT FLAG = 0 - NO INTERACTIVE INPUT ALLOWED = 1 - INTERACTIVE INPUT ALLOWED *SETTING THIS OPTION =1 WILL TURN ON THE MOUSE AFTER EACH PLOT AND ALLOW YOU TO INTERACTIVELY SPECIFY PLOT LIMITS. *IF YOU DO NOT WISH TO INTERACT WITH A PLOT OR IF YOU HAVE NO INTERACTIVE CAPABILITY THIS OPTION SHOULD BE SET = 0. *WARNING...DATA POINTS IDENTIFIED OPTION IS NOT RECOMMENDED FOR PLOTS CONTAINING MANY (I.E. THOUSANDS) OF DATA POINTS SINCE IT WILL MERELY INCREASE THE RUNNING TIME OF THE PROGRAM AND STILL NOT ALLOW ONE TO ACCURATELY SEE DATA POINTS. *UP TO 100 MAT OR ZA RANGES ARE ALLOWED. THE LIST IS TERMINATED BY A BLANK LINE. IF THE UPPER LIMIT IS LESS THAN THE LOWER LIMIT IT WILL BE SET EQUAL TO THE LOWER LIMIT. IF THE FIRST RANGE LINE IS BLANK ALL DATA WILL BE RETRIEVED. IF THE UPPER MT LIMIT IS ZERO IT WILL BE SET EQUAL TO 999 (NO LIMIT). IF THE UPPER ENERGY LIMIT IS ZERO IT WILL BE INTREPRETED TO MEAN NO LIMIT. IF THE FIRST RANGE LINE SPECIFIES ZERO LOWER AND UPPER MAT OR ZA RANGE IT WILL TERMINATE THE LIST BE RANGE LINES (A SECOND BLANK LINE NEED NOT BE INPUT) AND THE ENTIRE RANGE OF MATS WILL BE COMPARED FOR THE SPECIFIED MT AND ENERGY RANGES.	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, 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 MIXED Complot
                         ATOM BY USING A MULTIPLICATION FACTOR WHICH Complot
                         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 1.0 Complot
                         (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 PLOT Complot
                         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
                                                                     Complot
EXAMPLE DEFINITION OF PLOTTER                                        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
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
```

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   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
   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 FOLLOWING Complot
    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
     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      = X POSITION IN LOCAL UNITS     Complot
                             YI      = Y POSITION IN LOCAL UNITS     Complot
                             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
------------------------------------------------------------------ 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 USED Complot
TO SELECT ONE OF THE AVAILABLE COLORS. WHEN RUNNING ON A MAINFRAME Complot
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 SOFTWARE Complot
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 OF Complot
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 TO Complot
DRAW EACH CHARACTER. IF YOU WISH TO DRAW ANY ADDITIONAL CHARACTERS Complot
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
```