```
======================================================================= 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
```

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                              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
                              *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
```

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                            REGIONS.                                    Complot
VERS. 2007-1 (JAN.  2007)   *CHECKED AGAINST ALL ENDF/B-VII.            Complot
                            *INCREASED MAXLOAD TO 600,000 FROM          Complot
                             12,000                                     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
TELEPHONE  925-423-7359                                                 Complot
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
```

FOR SPECIAL CONSIDERATIONS SEE THE SECTIONS BELOW ON,
(1) COMPUTER DEPENDENT CODING
(2) PLOTTER/GRAPHICS TERMINAL INTERFACE

GRAPHICS INTERFACE

THIS PROGRAM USES A SIMPLE CALCOMP LIKE GRAPHICS INTERFACE WHICH REQUIRES ONLY 3 SUBROUTINES...PLOTS, PLOT AND PEN (DESCRIBED IN DETAIL BELOW). ALL CHARACTERS AND SYMBOLS ARE DRAWN USING TABLES OF PEN STROKES (SUPPLIED WITH THIS PROGRAM). USING THIS METHOD THE PROGRAM SHOULD BE SIMPLE TO INTERFACE TO VIRTUALLY ANY PLOTTER OR GRAPHICS TERMINAL AND THE APPEARANCE AND LAYOUT OF THE PLOTS SHOULD BE INDEPENDENT OF WHICH PLOTTER IS USED.

ON WHAT PLOTTERS WILL THE PROGRAM RUN

THE PLOTTER MAY USE UNITS OF INCHES, CENTIMETERS, MILLIMETERS, VIRTUALLY ANYTHING. INTERNALLY THE PROGRAM WILL DEFINE PLOTS IN APPROXIMATELY A4 OR 8-1/2 BY 11 INCH FORMAT. AS PART OF THE INPUT THE USER DEFINES THE ACTUAL SIZE OF THE PLOT IN THE UNITS (I.E., INCHES, CENTIMETERS, MILLIMETERS, WHATEVER) OF THE REAL PLOT. THE PLOT IS TRANSFORMED TO THE SIZE OF THE LOCAL PLOTTER AND OUTPUT. USING THIS CONVENTION THIS PROGRAM SHOULD BE EASY TO INTERFACE TO VIRTUALLY ANY PLOTTER OR GRAPHICS TERMINAL.

PROGRAM IDENTIFICATION

AS DISTRIBUTED THE FIRST FRAME OF PLOTTED OUTPUT WILL DOCUMENT THE PROGRAM NAME, VERSION AND INSTALLATION. THIS INFORMATION IS

STORED AS DATA IN THE ARRAY VERSES NEAR THE BEGINNING OF SUBROUTINE FRAME1. IF YOU WISH TO CUSTOMIZE THE OUTPUT TO IDENTIFY YOUR INSTALLATION CHANGE THE LAST TWO LINES OF THE ARRAY (VERSES).

ENDF/B FORMAT

THIS PROGRAM ONLY USES THE ENDF/B BCD OR CARD IMAGE FORMAT (AS OPPOSED TO THE BINARY FORMAT) AND CAN HANDLE DATA IN ANY VERSION OF THE ENDF/B FORMAT (I.E., ENDF/B-I, II,III, IV, V OR VI FORMAT).

BOTH SETS OF EVALUATED DATA MUST BE IN THE ENDF/B FORMAT. ONLY SECTIONS OF FILE 2 (RESONANCE PARAMETERS) AND FILES 3, 23 AND 27 (TABULATED DATA) WILL BE READ AND ALL OTHER SECTIONS WILL BE SKIPPED. IN FILE 2 THE ONLY IMPORTANT INFORMATION IS THE ENERGY LIMITS OF THE RESOLVED AND UNRESOLVED RESONANCE REGION WHICH IS LOCATED IN THE SAME FIELDS IN ALL VERSIONS OF THE ENDF/B FORMAT. SIMILARLY THE FORMAT OF FILES 3, 23 AND 27 IS THE SAME IN ALL VERSIONS OF ENDF/B. THEREFORE THIS PROGRAM CAN BE USED WITH DATA IN ANY ENDF/B FORMAT (I.E. ENDF/B-I, II, III, IV, V OR VI).

CROSS SECTION INTERPOLATION

CROSS SECTIONS MUST BE IN EITHER HISTOGRAM (I.E., INTERPOLATION LAW 1) OR LINEARLY INTERPOLABLE (I.E. INTERPOLATION LAW 2) FORM. IF THEY ARE NOT A WARNING MESSAGE WILL BE PRINTED AND EXECUTION WILL BE TERMINATED. SEE INSTRUCTIONS BELOW ON HOW TO CONVERT DATA TO HISTOGRAM OR LINEARLY INTERPOLABLE FORM.

REACTION INDEX

THIS PROGRAM DOES NOT USE THE REACTION INDEX WHICH IS GIVEN IN SECTION MF=1, MT=451 OF EACH EVALUATION.

Complot

SECTION SIZE

SINCE THIS PROGRAM USES A LOGICAL PAGING SYSTEM THERE IS NO LIMIT TO THE NUMBER OF POINTS IN ANY SECTION, E.G., THE TOTAL CROSS SECTION MAY BE REPRESENTED BY 200,000 DATA POINTS.

DATA SELECTION

THE USER MAY SPECIFYING THE DATA TO BE COMPARED BY INPUTTING UP TO 100 MAT/MT/ENERGY OR ZA/MT/ENERGY RANGES. IF THE UPPER LIMIT OF THE MAT OR ZA RANGE IS LESS THAN THE LOWER LIMIT IT WILL BE SET EQUAL TO THE LOWER LIMIT (I.E. THIS INDICATE ONLY COMPARE ONE MAT OR ZA). IF THE UPPER LIMIT IS STILL ZERO IT WILL BE SET TO 9999 (NO LIMIT). IF THE UPPER MF OR MT LIMIT IS ZERO IT WILL BE SET TO 99 OR 999, RESPECTIVELY (NO LIMIT). IF THE UPPER ENERGY LIMIT IS ZERO IT WILL BE SET TO A LARGE NUMBER (NO LIMIT).

THE LIST OF RANGES MUST BE TERMINATED BY A BLANK LINE (I.E. ZERO LOWER AND UPPER MAT/MF/MT OR ZA/MF/MT LIMITS).

IF THE FIRST RANGE LINE IS BLANK THIS LINE WILL TERMINATE THE LIST OF REQUESTS (I.E. A SECOND BLANK LINE NEED NOT BE INPUT) AND ALL PHYSICALLY COMPARABLE DATA WILL BE PLOTTED.

WHICH REACTIONS WILL BE PLOTTED

THOSE REACTIONS WITH THE SAME (ZA, MF, MT) WILL BE COMPARED, BUT ONLY THOSE DATA WHICH DIFFER BY A USER SPECIFIED ALLOWABLE DIFFERENCE WILL BE PLOTTED. IN ORDER TO FORCE ALL COMPARABLE REACTIONS TO BE PLOTTED THE USER NEED ONLY SPECIFY AN ALLOWABLE DIFFERENCE OF ZERO.

EQUIVALENT REACTIONS

IN ORDER TO COMPARE REACTIONS WHICH HAVE DIFFERENT ZA, MF OR MT THE USER IS ALLOWED TO SPECIFY AN EQUIVALENCE LIST OF UP TO 100 (ZA,MF,MT) COMBINATIONS ON THE MASTER FILE WHICH ARE TO BE EQUATED TO DIFFERENT (ZA,MF,MT) ON THE SECOND FILE. THIS OPTION MAY BE USED TO COMPARE SIMILAR REACTIONS FROM DIFFERENT MATERIALS (E.G. IRON AND NICKEL INELASTIC SCATTERING) OR DIFFERENT REACTIONS FROM THE SAME OR DIFFERENT MATERIALS (E.G. U-235 CAPTURE AND FISSION - IN WHICH CASE THE RATIO WILL BE THE CAPTURE TO FISSION RATIO) OR THE SAME REACTION IN DIFFERENT VERSIONS OF THE ENDF/B FORMAT WHICH MAY BE ASSIGNED DIFFERENT MT NUMBERS, E.G., THE PHOTOELECTRIC CROSS SECTION IS MT=602 IN ENDF/B-V AND EARLIER VERSIONS OF ENDF/B, BUT IS MT=522 IN ENDF/B-VI.

IN THESE EQUIVALENCE LISTS A ZERO FIELD IMPLIES ALL. FOR EXAMPLE, TO EQUATE MT=522 FROM ONE FILE TO MT=602 ON THE OTHER, FOR ALL MATERIALS, ONE NEED ONLY SPECIFY ZA=0, MF=23, MT=522 EQUIVALENT TO ZA=0, MF=23 AND MT=602.

PLOT FORMATS

THE TWO CROSS SECTIONS ARE CONSIDERED TO BE A STANDARD (THE FIRST CROSS SECTION) AND A CROSS SECTION TO BE COMPARED TO THE STANDARD (THE SECOND CROSS SECTION). THE OUTPUT FROM THIS PROGRAM IS A SERIES OF PLOTS. EACH PLOT WILL CONTAIN THE STANDARD CROSS SECTION AND IN ADDITION THE USER MAY SPECIFY THAT EACH PLOT ALSO CONTAIN THE SECOND CROSS SECTION AND/OR THE RATIO OF THE SECOND CROSS SECTION TO THE FIRST CROSS SECTION.

```
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.

IF THE EVALUATED DATA IS NOT IN EITHER HISTOGRAM OR LINRARLY INTERPOLABLE FORM THE RATIO MAY NOT EVEN FIND ALL EXTREMA. FOR EXAMPLE, IF ONE EVALUATION IS LINEARLY INTERPOLABLE AND THE OTHER NON-LINEAR, BUT BOTH AGREE AT ALL TABULATED ENERGIES THE RATIO WILL APPEAR TO BE EQUAL TO UNITY AT ALL ENERGIES, BUT IN FACT THE CROSS SECTION BETWEEN TABULATED ENERGIES MAY BE QUITE DIFFERENT USING LINEAR VS. NON-LINEAR INTERPOLATION. FOR THIS REASON ONLY LINEARLY INTERPOLABLE OR HISTOGRAM DATA IS ALLOWED AS INPUT TO THIS PROGRAM.

LINEAR INTERPOLABLE

ALL CROSS SECTIONS MAY BE CONVERTED TO LINEARLY INTERPOLABLE FORM BE USING PROGRAM LINEAR (UCRL-50400, VOL. 17, PART A).

HISTOGRAM

ALL LINEARLY INTERPOLABLE CROSS SECTION MAY BE CONVERTED TO HISTOGRAM (I.E. MULTIGROUP) FORM BY USING PROGRAM GROUPIE (UCRL-50400, VOL. 17, PART D).

INPUT UNITS

UNIT	DESCRIPTION
2	INPUT LINE
9	MT DEFINITIONS.
10	FIRST ENDF/B FORMATTED EVALUATION (STANDARD).
11	SECOND ENDF/B FORMATTED EVALUATION.
17	SOFTWARE CHARACTERS.
18	SOFTWARE SYMBOLS AND LINE TYPES

OUTPUT UNITS

UNIT	DESCRIPTION
3	NORMAL OUTPUT REPORT.
16	PLOTTER UNIT

SCRATCH UNITS

UNIT	DESCRIPTION
12	SCRATCH UNIT FOR FIRST EVALUATION
13	SCRATCH UNIT FOR SECOND EVALUATION
14	SCRATCH UNIT FOR RATIO (ONLY USED IF RATIOS REQUESTED).

OPTIONAL STANDARD FILE NAMES (SEE SUBROUTINE FILIO1 AND FILIO2)

UNIT	FILE NAME
2	COMPLOT.INP
3	COMPLOT.LST
9	MT.DAT
10	ENDFB.IN1 (OR AS READ FROM INPUT)
11	ENDFB.IN2 (OR AS READ FROM INPUT)
12-14	(SCRATCH)
15	PLOT.CHR
16	(PLOTTER UNIT...USUALLY A DUMMY)

INPUT PARAMETERS

LINE	COLUMNS	FORMAT	DESCRIPTION	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 FACTOR	Complot
				Complot
			PLOT ORIENTATION IS BASED ON THE UPPER X LIMIT	Complot
			= .GT.0 - X HORIZONTAL/Y VERTICAL	Complot
			= .LT.0 - Y HORIZONTAL/X VERTICAL	Complot
			AFTER TESTING THE UPPER X LIMIT WILL BE SET TO ITS ABSOLUTE VALUE.	Complot
2	1-72	A60	FILENAME FOR FIRST ENDF/B DATA FILE (LEAVE BLANK FOR ENDFB.IN1)	Complot
3	1-72	A60	FILENAME FOR SECOND ENDF/B DATA FILE (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 RATIO.	Complot
			= 4 - TWO CROSS SECTIONS ON SAME PLOT OVER RATIO.	Complot
	56-66	I11	STARTING PLOT NUMBER	Complot
			= 0 - DO NOT NUMBER PLOTS	Complot
			= .GT.0 - NUMBER PLOTS IN LOWER LEFT HAND 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 PLOTTING RATIOS. ANY REACTION WHERE THE TWO EVALUATIONS DIFFER BY MORE THAN THE ALLOWABLE DIFFERENCE WILL BE PLOTTED. IF ZERO IS INPUT THE STANDARD ALLOWABLE DIFFERENCE OF 0.001 (0.1 PER-CENT) WILL BE 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
			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, MT DATA WILL BE MULTIPLIED BY THIS FACTOR.	Complot
		*THIS OPTION MAY BE USED TO RE-NORMALIZE THE SECOND CROSS SECTION OR IF COMPARING ONE CONSTITUENT OF A MIXTURE TO THE MIXED CROSS SECTION THIS MAY BE USED TO CONVERT THE SECOND CROSS SECTION TO BARNS PER MIXED ATOM BY USING A MULTIPLICATION FACTOR WHICH IS EQUAL TO THE NUMBER OF ATOMS OF THE ONE CONSTITUENT PER ATOM OF THE MIXTURE.	Complot
		= 0.0 - ON INPUT WILL BE INTERPRETED AS 1.0 (WITH THIS CONVENTION THE USER NEED ONLY INPUT MULTIPLICATION FACTORS IF THEY ARE NOT 1.0).	Complot
		*UP TO 100 MAT OR ZA EQUIVALENCES ARE ALLOWED.	Complot
		*THE LIST IS TERMINATED BY A BLANK LINE.	Complot
		*A ZERO INPUT FIELD IMPLIES ALL. TO EQUATE A GIVEN MT NUMBER TO ANOTHER MT NUMBER YOU NEED MERELY SPECIFY ZA=0 ON INPUT.	Complot
		*NOTE, IN ALL CASES THE TITLE AT TOP OF PLOT WILL ONLY INDENTIFY MASTER (ZA,MF,MT). THE USER INPUT TITLES MUST BE USED TO IDENTIFY THE SECOND REACTION (SEE, EXAMPLE INPUT 4 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
   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
```

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
```