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====================================================================== Merger
                                                                       Merger
     PROGRAM MERGER                                                     Merger
     VERSION 80-1 (JANUARY 1980)                                       Merger
     VERSION 80-2 (DECEMBER 1980)                                      Merger
     VERSION 82-1 (JANUARY 1982)                                       Merger
     VERSION 83-1 (JANUARY 1983)*NEW, MORE COMPATIBLE I/O UNIT NUMBERS. Merger
     VERSION 85-1 (AUGUST 1985) *FORTRAN-77/H VERSION                  Merger
     VERSION 86-1 (JANUARY 1986)*ENDF/B-VI FORMATS                     Merger
     VERSION 88-1 (JULY 1988)   *OPTION...INTERNALLY DEFINE ALL I/O     Merger
                                 FILE NAMES (SEE, SUBROUTINES FILIO1    Merger
                                 AND FILIO2 FOR DETAILS).              Merger
                                *IMPROVED BASED ON USER COMMENTS.       Merger
     VERSION 89-1 (JANUARY 1989)*PSYCHOANALYZED BY PROGRAM FREUD TO     Merger
                                 INSURE PROGRAM WILL NOT DO ANYTHING    Merger
                                 CRAZY.                                Merger
                                *UPDATED TO USE NEW PROGRAM CONVERT     Merger
                                 KEYWORDS.                             Merger
                                *ADDED LIVERMORE CIVIC COMPILER         Merger
                                 CONVENTIONS.                          Merger
     VERSION 92-1 (JANUARY 1992)*UPDATED BASED ON USER COMMENTS         Merger
                                *ADDED FORTRAN SAVE OPTION              Merger
     VERSION 92-2 (JULY 1992)   *ALLOW UP TO 99 ENDF/B DATA FILES.      Merger
                                 (TO ALLOW MANAGEMENT OF THE ENTIRE     Merger
                                  ENDF/B SYSTEM).                      Merger
     VERSION 94-1 (JANUARY 1994)*VARIABLE ENDF/B DATA FILENAMES         Merger
                                 TO ALLOW ACCESS TO FILE STRUCTURES     Merger
                                 (WARNING - INPUT PARAMETER FORMAT      Merger
                                 HAS BEEN CHANGED)                     Merger
                                *ONLY SPECIFY FILENAMES - NO UNIT       Merger
                                 NUMBERS ON INPUT (WARNING - INPUT      Merger
                                 PARAMETERS FORMAT HAS BEEN CHANGED)    Merger
                                *CLOSE ALL FILES BEFORE TERMINATING     Merger
                                 (SEE, SUBROUTINE ENDIT)               Merger
                                *REQUEST LOG DELETED                    Merger
     VERSION 96-1 (JANUARY 1996) *COMPLETE RE-WRITE                     Merger
                                 *IMPROVED COMPUTER INDEPENDENCE        Merger
                                 *ALL DOUBLE PRECISION                  Merger
                                 *ON SCREEN OUTPUT                      Merger
                                 *UNIFORM TREATMENT OF ENDF/B I/O       Merger
                                 *IMPROVED OUTPUT PRECISION             Merger
     VERSION 99-1 (MARCH 1999)   *GENERAL IMPROVEMENTS BASED ON         Merger
                                  USER FEEDBACK                        Merger
     VERS. 2000-1 (FEBRUARY 2000)*GENERAL IMPROVEMENTS BASED ON         Merger
                                  USER FEEDBACK                        Merger
     VERS. 2002-1 (MAY 2002)     *OPTIONAL INPUT PARAMETERS             Merger
     VERS. 2004-1 (MARCH 2004)   *ADDED INCLUDE TO DEFINE COMMON        Merger
                                 *ADDED TEND LINE IF NO DATA RETRIEVED  Merger
     VERS. 2007-1 (JAN.  2007)   *CHECKED AGAINST ALL ENDF/B-VII.       Merger
                                                                       Merger
     OWNED, MAINTAINED AND DISTRIBUTED BY                              Merger
     -----------------------------------                               Merger
     THE NUCLEAR DATA SECTION                                          Merger
     INTERNATIONAL ATOMIC ENERGY AGENCY                                Merger
     P.O. BOX 100                                                      Merger
     A-1400, VIENNA, AUSTRIA                                           Merger
     EUROPE                                                            Merger
                                                                       Merger
     ORIGINALLY WRITTEN BY                                             Merger
     -----------------------------------                               Merger
     DERMOTT E. CULLEN                                                 Merger
     UNIVERSITY OF CALIFORNIA                                          Merger
     LAWRENCE LIVERMORE NATIONAL LABORATORY                            Merger
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L-159                                                        Merger
P.O. BOX 808                                                 Merger
LIVERMORE, CA 94550                                          Merger
U.S.A.                                                       Merger
TELEPHONE  925-423-7359                                      Merger
E. MAIL    CULLEN1@LLNL.GOV                                  Merger
WEBSITE    HTTP://WWW.LLNL.GOV/CULLEN1                        Merger
                                                             Merger
AUTHORS MESSAGE                                              Merger
--------------                                               Merger
THE COMMENTS BELOW SHOULD BE CONSIDERED THE LATEST DOCUMENTATION  Merger
FOR THIS PROGRAM INCLUDING ALL RECENT IMPROVEMENTS. PLEASE READ   Merger
ALL OF THESE COMMENTS BEFORE IMPLEMENTATION, PARTICULARLY THE     Merger
COMMENTS CONCERNING MACHINE DEPENDENT CODING.                Merger
                                                             Merger
AT THE PRESENT TIME WE ARE ATTEMPTING TO DEVELOP A SET OF COMPUTER Merger
INDEPENDENT PROGRAMS THAT CAN EASILY BE IMPLEMENTED ON ANY ONE   Merger
OF A WIDE VARIETY OF COMPUTERS. IN ORDER TO ASSIST IN THIS PROJECT Merger
IT WOULD BE APPECIATED IF YOU WOULD NOTIFY THE AUTHOR OF ANY     Merger
COMPILER DIAGNOSTICS, OPERATING PROBLEMS OR SUGGESTIONS ON HOW TO Merger
IMPROVE THIS PROGRAM. HOPEFULLY, IN THIS WAY FUTURE VERSIONS OF  Merger
THIS PROGRAM WILL BE COMPLETELY COMPATIBLE FOR USE ON YOUR       Merger
COMPUTER.                                                    Merger
                                                             Merger
PURPOSE                                                      Merger
-------                                                      Merger
THIS PROGRAM IS DESIGNED TO SELECTIVELY RETRIEVE DATA OFF OF FROM Merger
1 TO 10 ENDF/B DATA TAPES AND TO MERGE THE SELECTED DATA INTO A   Merger
SINGLE MAT/MF/MT ORDERED FINAL OUTPUT FILE.                  Merger
                                                             Merger
IN THE DISCUSSION THAT FOLLOWS FOR SIMPLICITY THE ENDF/B     Merger
TERMINOLOGY---ENDF/B TAPE---WILL BE USED. IN FACT THE ACTUAL Merger
MEDIUM USED MAY BE TAPE, CARD, DISK OR ANY OTHER MEDIUM.     Merger
                                                             Merger
ENDF/B FORMAT                                                Merger
------------                                                 Merger
THIS PROGRAM ONLY USES THE ENDF/B BCD OR CARD IMAGE FORMAT (AS    Merger
OPPOSED TO THE BINARY FORMAT) AND CAN HANDLE DATA IN ANY VERSION  Merger
OF THE ENDF/B FORMAT (I.E., ENDF/B-I, II,III, IV OR V FORMAT).    Merger
                                                             Merger
THE ONLY NUMERICAL DATA THAT THIS PROGRAM READS IS THE ZA FROM THE Merger
FIRST CARD OF EACH SECTION AND THE MAT/MF/MT FROM EACH CARD. Merger
SEQUENCE NUMBERS ARE IGNORED ON INPUT AND ALL OTHER FIELDS ARE   Merger
READ AS HOLLERITH. AS SUCH THIS PROGRAM NEED NOT DISTINGUISH Merger
BETWEEN DIFFERENT VERSIONS OF THE ENDF/B FORMAT.            Merger
                                                             Merger
IT IS ASSUMED THAT THE DATA IS CORRECTLY CODED IN THE ENDF/B Merger
FORMAT AND NO ERROR CHECKING IS PERFORMED. IN PARTICULAR IT IS   Merger
ASSUMED THAT THE MAT, MF AND MT ON EACH CARD IS CORRECT. SEQUENCE Merger
NUMBERS (COLUMNS 76-80) ARE IGNORED ON INPUT, BUT WILL BE   Merger
CORRECTLY OUTPUT ON ALL CARDS.                               Merger
                                                             Merger
SECTION SIZE                                                 Merger
------------                                                 Merger
SINCE THIS PROGRAM ONLY READS THE DATA ONE CARD AT A TIME THERE   Merger
IS NO LIMIT TO THE SIZE OF ANY GIVEN SECTION, E.G. THE TOTAL Merger
CROSS SECTION MAY BE DESCRIBED BY 200,000 DATA POINTS.      Merger
                                                             Merger
SELECTION OF DATA                                            Merger
-----------------                                            Merger
THE USER MAY CHOOSE TO MERGE ALL DATA OR THE USER MAY SPECIFY    Merger
THAT ONLY CERTAIN DATA SHOULD BE SELECTED. THE DATA TO BE   Merger
SELECTED IS DEFINED BY SPECIFYING UP TO 100 MAT/MF/MT OR    Merger
```

ZA/MF/MT RANGES. EACH RANGE IS DEFINED BY LOWER AND UPPER LIMITS
OF MAT/MF/MT OR ZA/MF/MT.

REQUEST LIMITS

IN ORDER TO SIMPLIFY THE INPUT OF SELECTION REQUESTS THE FOLLOWING
CONVENTIONS HAVE BEEN INTRODUCED IN ORDER TO DEFINE THE UPPER
LIMITS OF REQUESTS IF THEY ARE NOT DEFINED BY INPUT (I.E., IF THEY
ARE ZERO).

(1) MAT OR ZA - IF THE UPPER LIMIT IS ZERO IT IS SET EQUAL TO THE
              LOWER LIMIT.
(2) MF OR MT - IF THE UPPER LIMIT IS ZERO IT IS SET EQUAL TO THE
              MAXIMUM POSSIBLE VALUE, 99 OR 999 RESPECTIVELY.

WITH THESE CONVENTIONS AN ENTIRE EVALUATION MAY BE SELECTED BY
MERELY SPECIFYING THE LOWER LIMIT OF MAT OR ZA. THE UPPER MAT OR
ZA LIMIT WILL BE SET EQUAL TO THE LOWER LIMIT, THE LOWER LIMITS OF
MF/MT WILL BE 0/0 AND THE UPPER LIMITS OF MF/MT WILL BE SET TO
99/999. THIS WILL CAUSE ALL SECTIONS OF A SINGLE EVALUATION TO BE
SELECTED.

SATISFYING SELECTION CRITERIA

IN ORDER FOR A SECTION TO MEET THE SELECTION CRITERIA SPECIFIED
BY ONE OF THE RETRIEVAL REQUESTS, EACH OF THE THREE FIELDS (
MAT/MF/MT OR ZA/MF/MT) MUST INDIVIDUALLY SATISFY THE CORRESPONDING
LIMITS OF THE REQUEST. IT IS NOT SUFFICIENT THAT THE MAT OF A
SECTION LIE BETWEEN THE MINIMUM AND MAXIMUM MATS OF A REQUEST. THE
MF AND MT WILL ALSO BE INDIVIDUALLY COMPARED TO THE MF AND MT
LIMITS OF THE REQUEST. FOR EXAMPLE, A SECTION WITH MAT/MF/MT=
2500/3/2 DOES NOT SATISFY A REQUEST THAT SPECIFIES A REQUEST USING
THE RANGE 2000/3/1 THROUGH 3000/3/1. THIS REQUEST SPECIFIES ALL
MATERIALS WITH MAT BETWEEN 2000 AND 3000, BUT ONLY THOSE SECTIONS
WITH MF/MT=3/1. SIMILARLY A REQUEST FOR 2000/3/1 THROUGH 3000/99/
999 WILL NOT SELECT ANY SECTIONS WITH MF=1 OR 2, SINCE THE
REQUEST SPECIFIES ALL MATERIALS WITH MAT BETWEEN 2000 AND 3000,
BUT ONLY THOSE SECTIONS WITH MF= 3, OR MORE.

DUPLICATE SECTIONS

IF TWO OR MORE SECTIONS WITH THE SAME MAT/MF/MT ARE FOUND EITHER
ON THE SAME OR DIFFERENT TAPES, THE SECTION FROM THE TAPE DEFINED
EARLIEST IN THE INPUT CARDS WILL BE COPIED TO THE FINAL TAPE AND
ALL OTHER SECTIONS WITH THE SAME MAT/MF/MT WILL BE SKIPPED. THE
OUTPUT REPORT WILL INDICATE WHICH SECTIONS WERE COPIED FROM WHICH
TAPES, AS WELL AS WHICH SECTIONS ARE DUPLICATE AND WERE SKIPPED.

REACTION INDEX

THIS PROGRAM DOES NOT UPDATE THE REACTION INDEX IN MF=1, MT=451.
FOR EACH MATERIAL THE PROGRAM WILL FOLLOW THE CONVENTIONS
DEFINED ABOVE AND ONLY COPY ONE SECTION MF=1, MT=451 AND SKIP
ALL OTHERS (IF MORE THAN ONE). THIS CONVENTION HAS BEEN ADOPTED
BECAUSE MOST USERS DO NOT REQUIRE A CORRECT REACTION INDEX FOR
THERE APPLICATIONS AND IT WAS NOT CONSIDERED WORTHWHILE TO INCLUDE
THE OVERHEAD OF CONSTRUCTING A CORRECT REACTION INDEX IN THIS
PROGRAM. HOWEVER, IF YOU REQUIRE A REACTION INDEX FOR YOUR
APPLICATION AFTER RUNNING THIS PROGRAM YOU MAY USE PROGRAM
DICTIN TO CREATE ONE.

RETRIEVAL STATISTICS

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THERE WILL ALWAYS BE AN OUTPUT REPORT LISTING INDICATING WHICH
SECTIONS WHERE SELECTED, WHICH DUPLICATE SECTIONS WERE SKIPPED,
WHICH TAPE THE SECTION WAS ON, WHICH REQUEST (MAT/MF/MT OR
ZA/MF/MT RANGE) CAUSED THE SECTION TO BE SELECTED AND HOW MANY
CARDS WERE IN THE SECTION. IN ADDITION THE USER MAY OPTIONALLY
OBTAIN A FILE CONTAINING THE SAME INFORMATION. THIS FILE MAY BE
COMBINED WITH OTHER SIMILAR FILES OUTPUT BY THIS PROGRAM IN ORDER
TO ACCUMULATE RETRIEVAL STATISTICS OVER A PERIOD OF TIME. IF
SPECIFIED THIS FILE WILL CONTAIN THE FOLLOWING INFORMATION IN
6I7 FORMAT.

(1) ZA
(2) MAT
(3) MF
(4) MT
(5) NUMBER OF CARDS IN SECTION
(6) REQUEST NUMBER THAT CAUSED SECTION TO BE SELECTED

INPUT FILES

UNIT DESCRIPTION
---- -----------
  2   INPUT CARDS (BCD - 80 CHARACTERS/RECORD)
VARY FROM 1 TO 99 ENDF/B DATA FILES (BCD - 80 CHARACTERS/RECORD)

OUTPUT FILES

UNIT DESCRIPTION
---- -----------
  3   OUTPUT REPORT LISTING (BCD - 120 CHARACTERS/RECORD)

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

OPTIONAL STANDARD FILE NAMES (SEE SUBROUTINES FILIO1 AND FILIO2)

UNIT   FILE NAME   DESCRIPTION
----   ---------   -----------
  2   MERGER.INP INPUT PARAMETERS
  3   MERGER.LST OUTPUT LISTING
 11   ENDFB.OUT   RETRIEVED ENDF/B DATA
 12   ENDFB.IN1   ENDF/B DATA TO READ...FILENAMES WILL BE DEFINED
 13   ENDFB.IN2   IN THE ORDER ENDFB.IN1, ENDFB.IN2,...ENDFB.I99
 14   ENDFB.IN3   CORRESPONDING TO THE FIRST, SECOND,...99-TH
 15   ENDFB.IN4   ENDF/B DATA FILE TO READ.
 16   ENDFB.IN5
 17   ENDFB.IN6
 18   ENDFB.IN7
         .
         .
110   ENDFB.I99

 INPUT CARDS

 CARD COLUMNS FORMAT DESCRIPTION
 ---- ------- ------ -----------
   1   1-60   A60   FILENAME FOR MERGED OUTPUT.
                        (LEAVE BLANK FOR STANDARD = ENDFB.OUT)
   2   1-66   16A4,A2 MERGED FILE LABEL
                        IF BLANK - LABEL FROM FIRST FILE READ WILL
                        BE OUTPUT
        67-70   I4   MERGED FILE ENDF/B NUMBER
                        IF ZERO - NUMBER OF FIRST FILE READ WILL
                        BE OUTPUT.

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     71-72   I2    RETRIEVAL CRITERIA                           Merger
                   = 0 - MAT/MF/MT RANGES                       Merger
                   = 1 - ZA/MF/MT RANGES                        Merger
3-N    1-60   A60   FILENAME FOR FILE TO RETRIEVE DATA FROM      Merger
                   (LEAVE BLANK FOR STANDARD..ENDFB.IN1,ETC.)   Merger
                   TERMINATE LIST OF FILES WITH A LINE THAT     Merger
                   SAYS END OR end                              Merger
VARY   1- 6   I6    LOWER PRIMARY LIMIT (MAT OR ZA)              Merger
       7- 8   I2    LOWER MF LIMIT                               Merger
       9-11   I3    LOWER MT LIMIT                               Merger
      12-17   I6    UPPER PRIMARY LIMIT (MAT OR ZA)              Merger
      18-19   I2    UPPER MF LIMIT                               Merger
      20-22   I3    UPPER MT LIMIT                               Merger
                   RANGES OF MAT/MF/MT OR ZA/MF/MT TO BE        Merger
                   RETRIEVED ARE SPECIFIED BY DEFINING          Merger
                   ONE RANGE (LOWER AND UPPER LIMITS) PER       Merger
                   CARD. THE USER MAY SPECIFY 0 TO 100          Merger
                   RANGES AND THE LIST OF REQUEST RANGES        Merger
                   IS TERMINATED BY A BLANK CARD. IF            Merger
                   THE FIRST CARD IS BLANK (0 REQUESTS)         Merger
                   ALL DATA WILL BE RETRIEVED. IF THE UPPER     Merger
                   PRIMARY CRITERIA (MAT OR ZA) IS LESS THAN    Merger
                   THE LOWER PRIMARY CRITERIA, THE UPPER        Merger
                   PRIMARY CRITERIA WILL BE SET EQUAL TO        Merger
                   THE LOWER PRIMARY CRITERIA. IF THE UPPER     Merger
                   MF OR MT LIMIT IS ZERO, OR BLANK, IT         Merger
                   WILL BE SET TO THE MAXIMUM POSSIBLE          Merger
                   VALUE, I.E. MF=99 OR MT=999 (SEE             Merger
                   EXAMPLE INPUT).                              Merger
                                                                Merger
   EXAMPLE INPUT NO. 1                                          Merger
   -------------------                                          Merger
   MERGE ENDF/B DATA ONTO UNIT 10 FROM UNITS 11, 12, 13 AND 14. Merger
   RETRIEVE DATA BY MAT NUMBER. RETRIEVE MATS 1103, 1106, ALL MATS Merger
   BETWEEN 1204 AND 1215, MF=1, 3, 4 AND 5 OF MAT 1219 AND MF=3, Merger
   MT=1 OF MAT 1304. USE STANDARD FILENAMES.                    Merger
                                                                Merger
   THE FOLLOWING 13 INPUT CARDS ARE REQUIRED.                   Merger
                                                                Merger
ENDFB.OUT                                                       Merger
EXAMPLE FILE LABEL FOR MERGER                            0 0 Merger
ENDFB.IN1                                                       Merger
ENDFB.IN2                                                       Merger
ENDFB.IN3                                                       Merger
ENDFB.IN4                                                       Merger
END                                                             Merger
  1103                    4317  (UPPER LIMIT SET TO 1103/99/999) Merger
  1106                    4317  (UPPER LIMIT SET TO 1106/99/999) Merger
  1204       1215         4317  (UPPER LIMIT SET TO 1215/99/999) Merger
  1219 1    1219 1        4317  (UPPER LIMIT SET TO 1219/ 1/999) Merger
  1219 3    1219 5        4317  (UPPER LIMIT SET TO 1219/ 5/999) Merger
  1304 3  1 1304 3  1     4317  (UPPER LIMIT COMPLETELY DEFINED) Merger
                               (BLANK CARD TERMINATES REQUESTS) Merger
                                                                Merger
   EXAMPLE INPUT NO. 2                                          Merger
   -------------------                                          Merger
   THE SAME AS EXAMPLE 1, EXCEPT SPECIFY FILENAMES              Merger
                                                                Merger
\ENDFB6\MERGED.LIB                                              Merger
EXAMPLE FILE LABEL FOR MERGER                            0 0 Merger
ENDFB6.PART1                                                    Merger
ENDFB6.PART2                                                    Merger
ENDFB6.PART3                                                    Merger
```

```
ENDFB6.PART4                                                Merger
END                                                         Merger
  1103                       4317  (UPPER LIMIT SET TO 1103/99/999) Merger
  1106                       4317  (UPPER LIMIT SET TO 1106/99/999) Merger
  1204        1215           4317  (UPPER LIMIT SET TO 1215/99/999) Merger
  1219 1      1219 1         4317  (UPPER LIMIT SET TO 1219/ 1/999) Merger
  1219 3      1219 5         4317  (UPPER LIMIT SET TO 1219/ 5/999) Merger
  1304 3  1  1304 3  1       4317  (UPPER LIMIT COMPLETELY DEFINED) Merger
                                   (BLANK CARD TERMINATES REQUESTS) Merger
                                                            Merger
======================================================================= Merger
```