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=====MERGER
PROGRAM MERGER
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VERSION 80-1 (JANUARY 1980)
VERSION 80-2 (DECEMBER 1980)
VERSION 82-1 (JANUARY 1982)
VERSION 83-1 (JANUARY 1983)*NEW, MORE COMPATIBLE I/O UNIT NUMBERS.
VERSION 85-1 (AUGUST 1985) *FORTRAN-77/H VERSION
VERSION 86-1 (JANUARY 1986)*ENDF/B-VI FORMATS
VERSION 88-1 (JULY 1988) *OPTION...INTERNALLY DEFINE ALL I/O
FILE NAMES (SEE, SUBROUTINES FILIO1
AND FILIO2 FOR DETAILS).
*IMPROVED BASED ON USER COMMENTS.
VERSION 89-1 (JANUARY 1989)*PSYCHOANALYZED BY PROGRAM FREUD TO
INSURE PROGRAM WILL NOT DO ANYTHING
CRAZY.
*UPDATED TO USE NEW PROGRAM CONVERT
KEYWORDS.
*ADDED LIVERMORE CIVIC COMPILER
CONVENTIONS.
VERSION 92-1 (JANUARY 1992)*UPDATED BASED ON USER COMMENTS
*ADDED FORTRAN SAVE OPTION
VERSION 92-2 (JULY 1992) *ALLOW UP TO 99 ENDF/B DATA FILES.
(TO ALLOW MANAGEMENT OF THE ENTIRE
ENDF/B SYSTEM).
VERSION 94-1 (JANUARY 1994)*VARIABLE ENDF/B DATA FILENAMES
TO ALLOW ACCESS TO FILE STRUCTURES
(WARNING - INPUT PARAMETER FORMAT
HAS BEEN CHANGED)
*ONLY SPECIFY FILENAMES - NO UNIT
NUMBERS ON INPUT (WARNING - INPUT
PARAMETERS FORMAT HAS BEEN CHANGED)
*CLOSE ALL FILES BEFORE TERMINATING
(SEE, SUBROUTINE ENDIT)
*REQUEST LOG DELETED
VERSION 96-1 (JANUARY 1996) *COMPLETE RE-WRITE
*IMPROVED COMPUTER INDEPENDENCE
*ALL DOUBLE PRECISION
*ON SCREEN OUTPUT
*UNIFORM TREATMENT OF ENDF/B I/O
*IMPROVED OUTPUT PRECISION
VERSION 99-1 (MARCH 1999) *GENERAL IMPROVEMENTS BASED ON
USER FEEDBACK
VERS. 2000-1 (FEBRUARY 2000)*GENERAL IMPROVEMENTS BASED ON
USER FEEDBACK
VERS. 2002-1 (MAY 2002) *OPTIONAL INPUT PARAMETERS
VERS. 2004-1 (MARCH 2004) *ADDED INCLUDE TO DEFINE COMMON
*ADDED TEND LINE IF NO DATA RETRIEVED
VERS. 2007-1 (JAN. 2007) *CHECKED AGAINST ALL ENDF/B-VII.
VERS. 2007-2 (JUNE 2007) *UP, TO 1,000 ENDF/B FILES.
*72 CHARACTER FILE NAMES.
VERS. 2010-1 (Apr. 2010) *General update based on user feedback
VERS. 2012-1 (Aug. 2012) *Added CODENAME
*32 and 64 bit Compatible
*Added ERROR stop
VERS. 2015-1 (Jan. 2015) *Replaced ALL 3 way IF Statements.
VERS. 2017-1 (May 2017) *Updated based on user feedback.
VERS. 2018-1 (Jan. 2018) *Added on-line output for ALL ENDERRORMERGER
VERS. 2019-1 (June 2019) *Identical to 2018-1
VERS. 2020-1 (Feb. 2020) *Allow EMPTY files = file exists, but
0 length = EOF at first read try.
VERS. 2021-1 (Apr. 2021) *Updated for FORTRAN 2018
*Updated SEND/FEND/MEND/TEND Sequence
number definition.
VERS. 2023-1 (Feb. 2023) *Identical to 2021-1.

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THE NUCLEAR DATA SECTION
INTERNATIONAL ATOMIC ENERGY AGENCY

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THAT ONLY CERTAIN DATA SHOULD BE SELECTED. THE DATA TO BE
SELECTED IS DEFINED BY SPECIFYING UP TO 100 MAT/MF/MT OR
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
THEIR 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

THERE WILL ALWAYS BE AN OUTPUT REPORT LISTING INDICATING WHICH
SECTIONS WERE 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 617 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 1-72 A72 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.
 71-72 I2 RETRIEVAL CRITERIA
 = 0 - MAT/MF/MT RANGES
 = 1 - ZA/MF/MT RANGES
 3-N 1-72 A72 FILENAME FOR FILE TO RETRIEVE DATA FROM
 (LEAVE BLANK FOR STANDARD.. ENDFB.IN1, ETC.)
 TERMINATE LIST OF FILES WITH A LINE THAT
 SAYS END OR end
 VARY 1- 6 I6 LOWER PRIMARY LIMIT (MAT OR ZA)
 7- 8 I2 LOWER MF LIMIT
 9-11 I3 LOWER MT LIMIT
 12-17 I6 UPPER PRIMARY LIMIT (MAT OR ZA)
 18-19 I2 UPPER MF LIMIT
 20-22 I3 UPPER MT LIMIT
 RANGES OF MAT/MF/MT OR ZA/MF/MT TO BE
 RETRIEVED ARE SPECIFIED BY DEFINING

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

EXAMPLE INPUT NO. 1

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

THE FOLLOWING 13 INPUT CARDS ARE REQUIRED. MERGER

ENDFB.OUT MERGER
EXAMPLE FILE LABEL FOR MERGER 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

EXAMPLE INPUT NO. 2

THE SAME AS EXAMPLE 1, EXCEPT SPECIFY FILENAMES MERGER

\ENDFB6\MERGED.LIB MERGER
EXAMPLE FILE LABEL FOR MERGER 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