**=======================================================================DICTIN**

**DICTIN**

**PROGRAM DICTIN (Renamed from DICTION to eliminate conflict with DICTIN**

**UNIX diction command - 12/22/02) DICTIN**

**============== DICTIN**

**VERSION 81-1 (SEPTEMBER 1981) DICTIN**

**VERSION 82-1 (JANUARY 1982) DICTIN**

**VERSION 83-1 (JANUARY 1983) \*KEEP ORIGINAL MOD. NUMBER DICTIN**

**\*NEW, MORE COMPATIBLE I/O UNITS. DICTIN**

**VERSION 84-1 (SEPTEMBER 1984)\*UPDATED TO HANDLE ENDF/B-VI FORMAT. DICTIN**

**(PROGRAM WILL NOW WORK ON ALL DICTIN**

**VERSIONS OF THE ENDF/B FORMAT). DICTIN**

**VERSION 85-1 (AUGUST 1985) \*FORTRAN-77/H VERSION DICTIN**

**VERSION 86-1 (JANUARY 1986) \*MAT ORDER CHECK. DICTIN**

**\*IF NO HOLLERITH SECTION COPY MAT. DICTIN**

**VERSION 88-1 (JULY 1988) \*OPTION...INTERNALLY DEFINE ALL I/O DICTIN**

**FILE NAMES (SEE, SUBROUTINE FILEIO DICTIN**

**FOR DETAILS). DICTIN**

**\*IMPROVED BASED ON USER COMMENTS. DICTIN**

**VERSION 89-1 (JANUARY 1989) \*PSYCHOANALYZED BY PROGRAM FREUD TO DICTIN**

**INSURE PROGRAM WILL NOT DO ANYTHING DICTIN**

**CRAZY. DICTIN**

**\*IMPROVED BASED ON USER COMMENTS. DICTIN**

**\*ADDED LIVERMORE CIVIC COMPILER DICTIN**

**CONVENTIONS. DICTIN**

**\*UPDATED TO USE NEW PROGRAM CONVERT DICTIN**

**KEYWORDS. DICTIN**

**VERSION 92-1 (JANUARY 1992) \*UPDATED BASED ON USER COMMENTS. DICTIN**

**\*UP TO 6000 SECTIONS PER TAPE. DICTIN**

**\*CHANGED DEFAULT MOD NUMBER FOR NEW DICTIN**

**SECTIONS FROM 0 TO 1 DICTIN**

**VERSION 94-1 (JANUARY 1994) \*VARIABLE ENDF/B DATA FILENAMES DICTIN**

**TO ALLOW ACCESS TO FILE STRUCTURES DICTIN**

**(WARNING - INPUT PARAMETER FORMAT DICTIN**

**HAS BEEN CHANGED) DICTIN**

**\*CLOSE ALL FILES BEFORE TERMINATING DICTIN**

**(SEE, SUBROUTINE ENDIT) DICTIN**

**\*ADDED FORTRAN SAVE OPTION DICTIN**

**VERSION 96-1 (JANUARY 1996) \*COMPLETE RE-WRITE DICTIN**

**\*IMPROVED COMPUTER INDEPENDENCE DICTIN**

**\*ALL DOUBLE PRECISION DICTIN**

**\*ON SCREEN OUTPUT DICTIN**

**\*UNIFORM TREATMENT OF ENDF/B I/O DICTIN**

**\*IMPROVED OUTPUT PRECISION DICTIN**

**VERSION 99-1 (MARCH 1999) \*CORRECTED CHARACTER TO FLOATING DICTIN**

**POINT READ FOR MORE DIGITS DICTIN**

**\*UPDATED TEST FOR ENDF/B FORMAT DICTIN**

**VERSION BASED ON RECENT FORMAT CHANGEDICTIN**

**\*GENERAL IMPROVEMENTS BASED ON DICTIN**

**USER FEEDBACK DICTIN**

**VERS. 2000-1 (FEBRUARY 2000)\*GENERAL IMPROVEMENTS BASED ON DICTIN**

**USER FEEDBACK DICTIN**

**VERS. 2002-1 (MAY 2002) \*OPTIONAL INPUT PARAMETERS DICTIN**

**\*RENAMED dictin TO ELIMINATE CONFLICT DICTIN**

**WITH UNIX diction COMMAND. DICTIN**

**\*ADDED DOCUMENTATION LINE TO COMMENTS.DICTIN**

**VERS. 2004-1 (JAN. 2004) \*GENERAL UPDATE BASED ON USER FEEDBACKDICTIN**

**\*UP TO 100,000 SECTIONS PER TAPE. DICTIN**

**VERS. 2007-1 (JAN. 2007) \*CHECKED AGAINST ALL ENDF/B-VII. DICTIN**

**\*UP TO 500,000 SECTIONS PER TAPE. DICTIN**

**VERS. 2007-2 (DEC. 2007) \*72 CHARACTER FILE NAMES. DICTIN**

**VERS. 2010-1 (Apr. 2010) \*General update based on user feedbackDICTIN**

**VERS. 2012-1 (Aug. 2012) \*Added CODENAME DICTIN**

**\*32 and 64 bit Compatible DICTIN**

**\*Added ERROR stops DICTIN**

**VERS. 2015-1 (Jan. 2015) \*Corrected END = it was saying ERROR. DICTIN**

**\*Replaced ALL 3 way IF Statements. DICTIN**

**VERS. 2015-2 (Mar. 2015) \*Corrected Seqence Numbers DICTIN**

**1) Restart at 1 for each MAT/MF/MT. DICTIN**

**2) 99999 on section end, MT=0 DICTIN**

**3) 0 on MF = 0 DICTIN**

**VERS. 2017-1 (May 2017) \*Updated based on user feedback. DICTIN**

**VERS. 2018-1 (Jan. 2018) \*Added on-line output for ALL ENDERRORDICTIN**

**VERS. 2020-1 (Feb. 2020) \*Identical to 2018-1. DICTIN**

**DICTIN**

**2015-2 Acknowledgment DICTIN**

**===================== DICTIN**

**I thank Jean-Christophe Sublet (UKAEA) for contributing MAC DICTIN**

**executables and Bojan Zefran (IJS, Slovenia) for contributing DICTIN**

**LINUX (32 or 64 bit) executables. And most of all I must thank DICTIN**

**Andrej Trkov (NDS, IAEA) for overseeing the entire PREPRO project DICTIN**

**at IAEA, Vienna. This was a truly International team who worked DICTIN**

**together to produce PREPRO 2015-2. DICTIN**

**DICTIN**

**OWNED, MAINTAINED AND DISTRIBUTED BY DICTIN**

**------------------------------------ DICTIN**

**THE NUCLEAR DATA SECTION DICTIN**

**INTERNATIONAL ATOMIC ENERGY AGENCY DICTIN**

**P.O. BOX 100 DICTIN**

**A-1400, VIENNA, AUSTRIA DICTIN**

**EUROPE DICTIN**

**DICTIN**

**ORIGINALLY WRITTEN BY DICTIN**

**------------------------------------ DICTIN**

**Dermott E. Cullen DICTIN**

**DICTIN**

**PRESENT CONTACT INFORMATION DICTIN**

**--------------------------- DICTIN**

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**DICTIN**

**AUTHORS MESSAGE DICTIN**

**--------------- DICTIN**

**THE COMMENTS BELOW SHOULD BE CONSIDERED THE LATEST DOCUMENATION DICTIN**

**FOR THIS PROGRAM INCLUDING ALL RECENT IMPROVEMENTS. PLEASE READ DICTIN**

**ALL OF THESE COMMENTS BEFORE IMPLEMENTATION. DICTIN**

**DICTIN**

**AT THE PRESENT TIME WE ARE ATTEMPTING TO DEVELOP A SET OF COMPUTERDICTIN**

**INDEPENDENT PROGRAMS THAT CAN EASILY BE IMPLEMENTED ON ANY ONE DICTIN**

**OF A WIDE VARIETY OF COMPUTERS. IN ORDER TO ASSIST IN THIS PROJECTDICTIN**

**IT WOULD BE APPECIATED IF YOU WOULD NOTIFY THE AUTHOR OF ANY DICTIN**

**COMPILER DIAGNOSTICS, OPERATING PROBLEMS OR SUGGESTIONS ON HOW TO DICTIN**

**IMPROVE THIS PROGRAM. HOPEFULLY, IN THIS WAY FUTURE VERSIONS OF DICTIN**

**THIS PROGRAM WILL BE COMPLETELY COMPATIBLE FOR USE ON YOUR DICTIN**

**COMPUTER. DICTIN**

**DICTIN**

**PURPOSE DICTIN**

**------- DICTIN**

**THIS PROGRAM IS DESIGNED TO CREATE A REACTION INDEX FOR EACH DICTIN**

**MATERIAL ON AN ENDF/B FORMATTED TAPE AND TO INSERT THIS REACTION DICTIN**

**INDEX IN FILE 1, SECTION 451 OF EACH MATERIAL. DICTIN**

**DICTIN**

**IN THE DESCRIPTION THAT FOLLOWS FOR SIMPLICITY THE ENDF/B DICTIN**

**TERMINOLOGY---ENDF/B TAPE---WILL BE USED. IN FACT THE ACTUAL DICTIN**

**MEDIUM MAY BE TAPE, CARDS, DISK, OR ANY OTHER MEDIUM. DICTIN**

**DICTIN**

**ENDF/B FORMAT DICTIN**

**------------- DICTIN**

**THIS PROGRAM ONLY USES THE ENDF/B BCD OR CARD IMAGE FORMAT (AS DICTIN**

**OPPOSED TO THE BINARY FORMAT) AND CAN HANDLE DATA IN ANY VERSION DICTIN**

**OF THE ENDF/B FORMAT (I.E., ENDF/B-I, II,III, IV, V OR VI FORMAT).DICTIN**

**DICTIN**

**THIS PROGRAM WILL AUTOMATICALLY DETERMINE WHICH VERSION OF THE DICTIN**

**ENDF/B FORMAT EACH MAT IS IN AND WILL THEN PROPERLY REPLACE THE DICTIN**

**REACTION INDEX FOR EACH MAT. DIFFERENT MATS ON THE SAME TAPE MAY DICTIN**

**EVEN BE IN DIFFERENT VERSIONS OF THE ENDF/B FORMAT. DICTIN**

**DICTIN**

**IT IS ASSUMED THAT THE DATA IS CORRECTLY CODED IN THE ENDF/B DICTIN**

**FORMAT AND NO ERROR CHECKING IS PERFORMED. IN PARTICULAR IT IS DICTIN**

**ASSUMED THAT THE MAT, MF AND MT ON EACH LINE IS CORRECT. SEQUENCE DICTIN**

**NUMBERS (COLUMNS 76-80) NEED NOT BE PRESENT ON INPUT, BUT WILL BE DICTIN**

**CORRECTLY OUTPUT ON ALL LINES. DICTIN**

**DICTIN**

**ENDF/B FORMAT VERSION DICTIN**

**--------------------- DICTIN**

**THE ENDF/B FORMAT CAN BE DETERMINED FROM THE SECOND LINE OF DICTIN**

**THE HOLLERITH SECTION (MF=1, MT=451). DICTIN**

**ENDF/B-IV = N1 - LINE COUNT (POSITIVE) DICTIN**

**ENDFB/-V = N1 = N2 =0 DICTIN**

**ENDF/B-VI = N1 =0, N2= VERSION NUMBER (6 OR MORE) DICTIN**

**DICTIN**

**SECTION SIZE DICTIN**

**------------ DICTIN**

**SINCE THIS PROGRAM ONLY READS THE DATA ONE LINE AT A TIME THERE DICTIN**

**IS NO LIMIT TO THE SIZE OF ANY GIVEN SECTION, E.G. THE TOTAL DICTIN**

**CROSS SECTION MAY BE DESCRIBED BY 200,000 DATA POINTS. DICTIN**

**DICTIN**

**NUMBER OF SECTIONS PER TAPE DICTIN**

**--------------------------- DICTIN**

**IT IS ASSUMED THAT THE ENDF/B TAPE CONTAINS 100,000 OR FEWER DICTIN**

**SECTIONS = 100,000 OR FEWER MAT,MF,MT COMBINATIONS. IF THIS LIMIT DICTIN**

**IS EXCEEDED THIS PROGRAM WILL TERMINATE EXECUTION. IF NEED BE THISDICTIN**

**LIMIT CAN EASILY BE CHANGED BY CHANGING THE DIMENSION STATEMENT DICTIN**

**BELOW AND RE-DEFINING THE VARIABLE MAXTAB IN THE BELOW DATA DICTIN**

**STATEMENT. ALTERNATIVELY THE ENDF/B TAPE MAY BE DIVIDED INTO A DICTIN**

**NUMBER SMALLER TAPES EACH CONTAINING 100,000 OR FEWER SECTIONS. DICTIN**

**EACH ENDF/B TAPE CAN THEN RUN THROUGH THIS PROGRAM AND THE OUTPUT DICTIN**

**FOR EACH ENDF/B TAPE CAN THEN BE RE-COMBINED (I.E., MERGED BACK DICTIN**

**TOGETHER). DICTIN**

**DICTIN**

**HOLLERITH SECTION DICTIN**

**----------------- DICTIN**

**IF ANY MATERIAL DOES NOT INITIALLY CONATIN A SECTION MF=1, MT=451 DICTIN**

**A WARNING MESSAGE WILL BE PRINTED AND THE MATERIAL WILL BE COPIED.DICTIN**

**DICTIN**

**IF ANY MATERIAL INITIALLY CONTAINS A SECTION MF=1, MT=451 A NEW DICTIN**

**REACTION INDEX WILL BE CREATED AND INSERTED. THE INITIAL SECTION DICTIN**

**MF=1, MT=451 MAY OR MAY NOT CONTAIN A REACTION INDEX. DICTIN**

**DICTIN**

**IF THE MATERIAL INITIALLY CONTAINS A REACTION INDEX IT WILL BE DICTIN**

**USED TO DEFINE THE MOD NUMBER FOR CORRESPONDING SECTIONS IN THE DICTIN**

**NEW REACTION INDEX (I.E. IF A SECTION FROM THE ORIGINAL REACTION DICTIN**

**INDEX HAS THE SAME MF/MT NUMBERS AS A SECTION IN THE NEW REACTION DICTIN**

**INDEX THE MOD NUMBER FROM THE ORIGINAL REACTION INDEX WILL BE USEDDICTIN**

**IN THE NEW REACTION INDEX). OTHERWISE THE MOD NUMBER IN THE NEW DICTIN**

**REACTION INDEX WILL BE SET EQUAL TO ZERO. DICTIN**

**DICTIN**

**PROGRAM OPERATION DICTIN**

**----------------- DICTIN**

**THE ENTIRE ENDF/B TAPE IS FIRST READ AND A DICTIONARY ENTRY IS DICTIN**

**CREATED FOR EACH SECTION OF THE TAPE. THE ENDF/B TAPE IS THEN DICTIN**

**REWOUND AND READ A SECOND TIME. DURING THIS SECOND PASS THE DICTIN**

**DICTIONARY OF EACH MAT IS REPLACED. THIS VERSION OF DICTIN DICTIN**

**DOES NOT USE SCRATCH FILES AND IS MORE EFFICIENT THAN EARLIER DICTIN**

**VERSIONS OF DICTIN. DICTIN**

**DICTIN**

**INPUT LINES DICTIN**

**----------- DICTIN**

**LINE COLS. DESCRIPTION DICTIN**

**---- ----- ------------------------------ DICTIN**

**1 1-60 ENDF/B INPUT DATA FILENAME DICTIN**

**(STANDARD OPTION = ENDFB.IN) DICTIN**

**2 1-60 ENDF/B OUTPUT DATA FILENAME DICTIN**

**(STANDARD OPTION = ENDFB.OUT) DICTIN**

**DICTIN**

**EXAMPLE INPUT NO. 1 DICTIN**

**------------------- DICTIN**

**READ \ENDFB6\K300\ENDFB.IN AND WRITE \ENDFB\K300\ENDFB.OUT. THE DICTIN**

**FOLLOWING 2 INPUT LINES ARE REQUIRED, DICTIN**

**DICTIN**

**\ENDFB6\K300\ENDFB.IN DICTIN**

**\ENDFB6\K300\ENDFB.OUT DICTIN**

**DICTIN**

**EXAMPLE INPUT NO. 2 DICTIN**

**------------------- DICTIN**

**USE THE DEFAULT FILENAMES TO READ ENDFB.IN AND WRITE ENDFB.OUT. DICTIN**

**2 BLANK INPUT LINES ARE REQUIRED DICTIN**

**DICTIN**

**INPUT FILES DICTIN**

**----------- DICTIN**

**UNIT DESCRIPTION DICTIN**

**---- ----------- DICTIN**

**2 INPUT PARAMETERS (BCD - 80 CHARACTERS/RECORD) DICTIN**

**10 ORIGINAL TAPE OF ENDF/B DATA (BCD - 80 CHARACTERS/RECORD) DICTIN**

**DICTIN**

**OUTPUT FILES DICTIN**

**------------ DICTIN**

**UNIT DESCRIPTION DICTIN**

**---- ----------- DICTIN**

**3 OUTPUT REPORT (BCD - 120 CHARACTERS/RECORD) DICTIN**

**11 FINAL TAPE OF ENDF/B DATA (BCD - 80 CHARACTERS/RECORD) DICTIN**

**DICTIN**

**OPTIONAL STANDARD FILE NAMES (SEE SUBROUTINE FILIO1 AND FILIO2) DICTIN**

**--------------------------------------------------------------- DICTIN**

**UNIT FILE NAME DICTIN**

**---- ---------- DICTIN**

**2 DICTIN.INP DICTIN**

**3 DICTIN.LST DICTIN**

**10 ENDFB.IN DICTIN**

**11 ENDFB.OUT DICTIN**

**DICTIN**

**=======================================================================DICTIN**