

=====			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 CHANGE		Dictin
	*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 FEEDBACK		Dictin
	*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 feedback		Dictin
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 Sequence 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 ENDERROR Dictin  
VERS. 2019-1 (June 2019) \*Identical to 2018-1. Dictin

#### 2015-2 Acknowledgment

===== 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

#### OWNED, MAINTAINED AND DISTRIBUTED BY

----- Dictin  
THE NUCLEAR DATA SECTION Dictin  
INTERNATIONAL ATOMIC ENERGY AGENCY Dictin  
P.O. BOX 100 Dictin  
A-1400, VIENNA, AUSTRIA Dictin  
EUROPE Dictin

#### ORIGINALLY WRITTEN BY

----- Dictin  
Dermott E. Cullen Dictin

#### PRESENT CONTACT INFORMATION

----- Dictin  
Dermott E. Cullen Dictin  
1466 Hudson Way Dictin  
Livermore, CA 94550 Dictin  
U.S.A. Dictin  
Telephone 925-443-1911 Dictin  
E. Mail RedCullen1@Comcast.net Dictin  
Website RedCullen1.net/HOMEPAGE.NEW Dictin

#### AUTHORS MESSAGE

----- Dictin  
THE COMMENTS BELOW SHOULD BE CONSIDERED THE LATEST DOCUMENTATION 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 COMPUTER Dictin  
INDEPENDENT PROGRAMS THAT CAN EASILY BE IMPLEMENTED ON ANY ONE Dictin  
OF A WIDE VARIETY OF COMPUTERS. IN ORDER TO ASSIST IN THIS PROJECT Dictin  
IT WOULD BE APPRECIATED 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

#### PURPOSE

----- 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

#### ENDF/B FORMAT

----- 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  
FORMAT AND NO ERROR CHECKING IS PERFORMED. IN PARTICULAR IT IS  
ASSUMED THAT THE MAT, MF AND MT ON EACH LINE IS CORRECT. SEQUENCE  
NUMBERS (COLUMNS 76-80) NEED NOT BE PRESENT ON INPUT, BUT WILL BE  
CORRECTLY OUTPUT ON ALL LINES.

ENDF/B FORMAT VERSION

THE ENDF/B FORMAT CAN BE DETERMINED FROM THE SECOND LINE OF  
THE HOLLERITH SECTION (MF=1, MT=451).

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

ENDFB/-V = N1 = N2 =0

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

## SECTION SIZE

SINCE THIS PROGRAM ONLY READS THE DATA ONE LINE AT A TIME THERE IS NO LIMIT TO THE SIZE OF ANY GIVEN SECTION, E.G. THE TOTAL CROSS SECTION MAY BE DESCRIBED BY 200.000 DATA POINTS.

## NUMBER OF SECTIONS PER TAPE

IT IS ASSUMED THAT THE ENDF/B TAPE CONTAINS 100,000 OR FEWER SECTIONS = 100,000 OR FEWER MAT,MF,MT COMBINATIONS. IF THIS LIMIT IS EXCEEDED THIS PROGRAM WILL TERMINATE EXECUTION. IF NEED BE THIS LIMIT CAN EASILY BE CHANGED BY CHANGING THE DIMENSION STATEMENT BELOW AND RE-DEFINING THE VARIABLE MAXTAB IN THE BELOW DATA STATEMENT. ALTERNATIVELY THE ENDF/B TAPE MAY BE DIVIDED INTO A NUMBER SMALLER TAPES EACH CONTAINING 100,000 OR FEWER SECTIONS. EACH ENDF/B TAPE CAN THEN RUN THROUGH THIS PROGRAM AND THE OUTPUT FOR EACH ENDF/B TAPE CAN THEN BE RE-COMBINED (I.E., MERGED BACK TOGETHER).

## HOLLERITH SECTION

IF ANY MATERIAL DOES NOT INITIALLY CONTAIN A SECTION MF=1, MT=451  
A WARNING MESSAGE WILL BE PRINTED AND THE MATERIAL WILL BE COPIED.

IF ANY MATERIAL INITIALLY CONTAINS A SECTION MF=1, MT=451 A NEW REACTION INDEX WILL BE CREATED AND INSERTED. THE INITIAL SECTION MF=1, MT=451 MAY OR MAY NOT CONTAIN A REACTION INDEX.

IF THE MATERIAL INITIALLY CONTAINS A REACTION INDEX IT WILL BE USED TO DEFINE THE MOD NUMBER FOR CORRESPONDING SECTIONS IN THE NEW REACTION INDEX (I.E. IF A SECTION FROM THE ORIGINAL REACTION INDEX HAS THE SAME MF/MT NUMBERS AS A SECTION IN THE NEW REACTION INDEX THE MOD NUMBER FROM THE ORIGINAL REACTION INDEX WILL BE USED IN THE NEW REACTION INDEX). OTHERWISE THE MOD NUMBER IN THE NEW REACTION INDEX WILL BE SET EQUAL TO ZERO.

## PROGRAM OPERATION

THE ENTIRE ENDF/B TAPE IS FIRST READ AND A DICTIONARY ENTRY IS CREATED FOR EACH SECTION OF THE TAPE. THE ENDF/B TAPE IS THEN REWOUND AND READ A SECOND TIME. DURING THIS SECOND PASS THE DICTIONARY OF EACH MAT IS REPLACED. THIS VERSION OF DICTIN DOES NOT USE SCRATCH FILES AND IS MORE EFFICIENT THAN EARLIER VERSIONS OF DICTIN.

## INPUT LINES

LINE	COLS.	DESCRIPTION
1	1-60	ENDF/B INPUT DATA FILENAME (STANDARD OPTION = ENDFB.IN)
2	1-60	ENDF/B OUTPUT DATA FILENAME (STANDARD OPTION = ENDFB.OUT)

EXAMPLE INPUT NO. 1

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

FOLLOWING 2 INPUT LINES ARE REQUIRED,	Dictin
\ENDFB6\K300\ENDFB.IN	Dictin
\ENDFB6\K300\ENDFB.OUT	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
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
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
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