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**Memo CP-C/203**

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**TO:** Distribution  
**FROM:** V. McLane  
**SUBJECT:** NNDC Dictionary System

Attached is a description of the NNDC Dictionary data base. I have included a description of the system and format, as well as the contents of the individual dictionaries.

  
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## DANIEL Dictionary Data Base

DANIEL, the computerized CSISRS/CINDA Dictionary Library, consists of an index to the dictionaries and a set of dictionary files, one for each dictionary. These dictionaries are based on the EXFOR dictionaries, but contain additional information input for use by NNDC codes.

### Data Base Format

The dictionary index records are contained on an indexed file DICT\_LIB.TOP. The primary key is the dictionary number. Records are 80-characters fixed-length and contain:

<u>Columns</u>	<u>Format</u>	<u>Contents</u>
1	I1	dictionary lock: used by update programs to lock dictionaries
2-4	I3	dictionary number
5-34	A30	dictionary name
35	I1	# of keys
36-37	I2	# of fields
38-77	A40	field formats: format of key, followed by formats for dictionary line fields (maximum of 10)
78-81	I4	# of records in dictionary

The dictionary records are contained on indexed files with the file name DICT\_LIB.nnn, where nnn is the dictionary number. Each record contains:

<u>Columns</u>	<u>Format</u>	<u>Contents</u>
1-3	A3	status code
4-9	I6	date of entry or last update (yymmdd)
10-29	A20	primary key
30-109	A80	dictionary line: contains fields defined in index

## Status Codes

A list of legal status codes (for all dictionaries) follows.

CIN	CINDA use
EXT	extinct
INT	internal
OBS	obsolete
PRE	preliminary
PRO	proposed
TRA	transmitted

## Contents of Dictionaries

On the following pages, the contents of the operating dictionaries are given. For each dictionary, the primary key is given first with the actual length of the key. (Note, however, that all primary keys are stored as 20-character strings.)

Following the primary key, the secondary key, if it exists, and the contents of the dictionary line fields are given. Note that the secondary key is also the first dictionary line field. The dictionary line is stored as an 80-character string.

### Dictionary 1: SYSTEM IDENTIFIERS

KEY: EXFOR CODE (A10)

field 1: INTERNAL NUMERICAL EQUIVALENT (I11)

### Dictionary 2: INFORMATION IDENTIFIERS

KEY: EXFOR CODE (A10)

field 1: EXPANSION (A25)

field 2: FLAG (A1)

field 3: INTERNAL NUMERICAL EQUIVALENT (I2)

field 4: CODE REQUIRED OR OPTIONAL (A1)

### Dictionary 3: INSTITUTE CODES

KEY1: EXFOR CODE (A7)

KEY2: field 1: 3-character CINDA CODE (A3)

field 2: AREA CODE (A1)

field 3: COUNTRY CODE (A3)

field 4: EXPANSION (A55)

Dictionary 4: REFERENCE TYPE

KEY: EXFOR CODE (A1)

field 1: SHORT EXPANSION (A4)

field 2: POINTER TO RELATED DICTIONARY (A3)

field 3: LONG EXPANSION (A45)

Dictionary 5: JOURNAL CODES

KEY1: EXFOR CODE (A6)

KEY2: field 1: CINDA CODE (A4)

field 2: COUNTRY OF ORIGIN (A5)

field 3: EXPANSION (A50)

Dictionary 6: REPORT CODES

KEY: EXFOR CODE (A11) (CINDA key is 8-character truncation of code)\*

field 1: INSTITUTE CODE (A7)

field 2: EXPANSION (A48)

\* This dictionary contains CINDA codes flagged with the status code CIN, which are not simply truncations of the 10-character EXFOR code.

Dictionary 7: BOOK AND CONFERENCE CODES

KEY: EXFOR CODE (A10) (CINDA key is 8-character truncation of code)

field 1: EXPANSION (A55)

Dictionary 8: ELEMENTS

KEY1: Z-NUMBER OF ELEMENT (I3)

KEY2: field 1: ELEMENT SYMBOL (A2)

field 2: ELEMENT NAME (A20)

Dictionary 10: STANDARD REACTIONS (CSISRS)

KEY: CSISRS CODE line format output (A2)

field 1: EXPANSION (A24)

field 2: INTERNAL NUMERICAL EQUIVALENT (A56)

Dictionary 11: FORBIDDEN REACTIONS (CINDA)

KEY: EXFOR CODE (A8)

field 1: EXFOR CODE (A50)

Dictionary 12: CINDA QUANTITIES

KEY: CINDA CODE (A3)

field 1: FISSION FLAG (A1)

field 2: INTERNAL NUMERICAL EQUIVALENT (I4)

field 3: EXPANSION (A50)

Dictionary 13: REACTION TYPE (for Dictionary 36)

KEY: EXFOR CODE (A3)

field 1: COMPUTATION FORMAT (A5)

field 2: ONLINE SYSTEM CODE (A4)

field 3: EXPANSION (A65)

Dictionary 14: REACTION DIMENSIONS (for Dictionary 36)

KEY: EXFOR CODE (A1)

field 1: EXPANSION (A55)

Dictionary 15: HISTORY CODES

KEY: EXFOR CODE (A1)

field 1: SHORT EXPANSION (A15)

field 2: LONG EXPANSION (A45)

Dictionary 16: STATUS CODES

KEY: EXFOR CODE (A5)

field 1: INTERNAL NUMERICAL EQUIVALENT (I5)

field 2: EXPANSION (A55)

field 3: SUBACCESSION # FIELD FLAG (A1):

R - code must be followed by subaccession #

S - code may be followed by subaccession #

Dictionary 17: RELATED REFERENCE CODES

KEY: EXFOR CODE (A1)

field 1: EXPANSION (A55)

Dictionary 18: FACILITY

KEY: EXFOR CODE (A5)

field 1: EXPANSION (A55)

Dictionary 19: INCIDENT SOURCE

KEY: EXFOR CODE (A5)

field 1: EXPANSION (A55)

Dictionary 20: ADDITIONAL INFORMATION

KEY: EXFOR CODE (A5)

field 1: EXPANSION (A55)

Dictionary 21: METHOD

KEY: EXFOR CODE (A5)

field 1: EXPANSION (A55)

Dictionary 22: DETECTOR

KEY: EXFOR CODE (A5)

field 1: EXPANSION (A55)

Dictionary 23: ANALYSIS

KEY: EXFOR CODE (A5)

field 1: EXPANSION (A55)

Dictionary 24: DATA HEADINGS

KEY: EXFOR CODE (A10)

field 1: DATA TYPE (I1)

- 1 - assumed value
- 2 - data
- 3 - resonance parameter
- 4 - incident energy
- 5 - secondary energy
- 6 - angle
- 8 - fission product
- 9 - monitor value

field 2: VARIABLE TYPE (I1)

- for secondary energy:
- 1 - particle energy
  - 2 - level energy
  - 3 - excitation energy
  - 4 - Q value
  - 5 - energy degradation
  - 6 - energy gain
  - 7 - level number
  - 8 - polarity

- for angle:
- 1 - angle
  - 2 - cosine

- for fission products:
- 1 - element
  - 2 - mass
  - 3 - isomer
  - 4 - monitor element
  - 5 - monitor mass

field 3: FAMILY CODE (A1)

Dictionary 24: DATA HEADINGS (continued)

field 4: PLOTTING FLAGS (I7)

col 1-3 - independent variable

col 1: 1 - value  
2 - minimum  
3 - maximum  
4 - approximate  
9 - uncertainty or resolution

col 2: 6 - numerator  
7 - denominator

col 2: +error; col 3: -error  
1 - error  
2 - resolution  
3 - half resolution

col 4-6 - dependent variable

col 4: 1 - value  
2 - minimum  
3 - maximum  
4 - approximate  
9 - uncertainty or resolution

col 5: +error; col 6: -error  
1 - error  
4 - statistical error  
5 - partial error

col 7 - reference frame flag  
1 - c.m. system

field 5: EXPANSION (A55)

Dictionary 25: DATA UNITS

KEY: EXFOR CODE (A10)

field 1: EXPANSION (A35)

field 2: FAMILY CODE (A4)

field 3: CONVERSION FACTOR (E11)

Dictionary 27: NUCLIDES AND COMPOUNDS

KEY1: EXFOR CODE (A10)

KEY2: field 1: CINDA CODE (A5)

field 2: INTERNAL NUMERICAL EQUIVALENT (I6)

field 3: NUCLIDE USES (A13)

(See EXFOR Chapter 7 for field contents)

field 4: SPIN (E5)

field 5: for isotopes, ISOTOPIC ABUNDANCE (E11)

for natural element, ATOMIC WEIGHT (E11)

field 6: EXPANSION (A25)

Dictionary 30: PROCESS CODE

KEY: EXFOR CODE (A3)

field 1: INTERNAL NUMERICAL EQUIVALENT (I10)

field 2: EXPANSION (A55)

Dictionary 31: BRANCH CODES

KEY: EXFOR CODE (A3)

field 1: INTERNAL NUMERICAL EQUIVALENT (I10)

field 2: EXPANSION (A55)

Dictionary 32: PARAMETER CODES

KEY: EXFOR CODE (A3)

field 1: INTERNAL NUMERICAL EQUIVALENT (I10)

field 2: EXPANSION (A55)

Dictionary 33: PARTICLES

KEY: EXFOR CODE (A3)

field 1: INTERNAL NUMERICAL EQUIV: Reaction SF2,3 (I6)

field 2: INTERNAL NUMERICAL EQUIV: Reaction SF7 (I5)

field 3: ALLOWED SUBFIELD FLAG (A4)

D - BIB keyword other than REACTION

1 - REACTION SF1

2 - REACTION SF2

7 - REACTION SF7

field 4: EXPANSION (A40)

Dictionary 34: MODIFIERS

KEY: EXFOR CODE (A3)

field 1: INTERNAL NUMERICAL EQUIVALENT (I10)

field 2: GENERAL QUANTITY MODIFIER FLAG (A5)

field 3: EXPANSION (A50)

Dictionary 35: DATA TYPE

KEY: EXFOR CODE (A5)

field 1: INTERNAL NUMERICAL EQUIVALENT (I10)

field 2: EXPANSION (A40)



Dictionary 36: QUANTITIES

KEY: EXFOR CODE (A18)

field 1: INTERNAL NUMERICAL EQUIV. Reaction SF5 (I6)

field 2: INTERNAL NUMERICAL EQUIV. Reaction SF6 (I6)

field 3: INTERNAL NUMERICAL EQUIV. Reaction SF7 (I6)

field 4: INTERNAL NUMERICAL EQUIV. Reaction SF8 (I6)

field 5: REACTION TYPE (A3)

field 6: REACTION MODIFIER (A1)

field 7: FAMILY CODE (A4)

field 8: EXPANSION (A48)

Dictionary 37: RESULT

KEY: EXFOR CODE (A5)

field 1: EXPANSION (A50)

## **Redefining the data base**

Since the format of the records for each dictionary is contained in the dictionary index, fields may be re-defined, added, and/or eliminated without changing the programs. New dictionaries may be added and old ones eliminated by updating the index records.

### **ADDING A DICTIONARY**

Create a file containing the Dictionary Index from the backup file. Edit into the file an index record for the new dictionary. The number of records may be set to 0.

Add the records for the new dictionary to the end of this file.

Run Program DANLOD (see Dictionary System Operating Memo #9). In case of errors in reloading, check and correct the sequential file and rerun DANLOD.

*Note to systems manager:* The following programs should be modified to reflect the format changes made: DANNEW and UPDATE.

### **ELIMINATING A DICTIONARY**

Create a file containing the Dictionary Index from the backup file. Delete the index record for the unwanted dictionary from this file.

Delete the unwanted dictionary from the data base (DICT\_LIB.nnn; where nnn = dictionary number).

Run program DANLOD (see Dictionary System Operating Memo #9). In case of errors in reloading, recheck and correct the sequential file and rerun DANLOD.

*Note to systems manager:* The following programs should be modified to reflect the format changes made: DANNEW and UPDATE.

### **REDEFINING THE FORMAT OF A DICTIONARY**

Create a file containing the Dictionary Index and the dictionary to be reformatted from the backup file. Edit the index record for the affected dictionary to reflect the format change.

Edit the data in the dictionary section for all records belonging to the re-formatted dictionary.

Run program DANLOD (see Dictionary System Operating Memo #9). In case of errors in reloading, check and correct the sequential file and rerun DANLOD.

*Note to systems manager:* The following programs should be modified to reflect the format changes made: DANNEW and UPDATE.