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Memo CP-D/405

Date: 7 July 2004
To: Distribution
From: O. Schwerer

Subject: **New dictionaries for EXFOR / CINDA2001**

1. As decided at the last NRDC meeting, a number of new and revised dictionaries were prepared by NDS, based on earlier discussions and NRDC decisions. These dictionaries are distributed herewith in draft form, in archive format and as a DANIEL backup file (which is an ASCII file containing all dictionaries), with the exception of the new nuclides dictionary 227 which will be included once it is provided by NNDC. Your feedback will be appreciated.

2. An "ordinary" dictionary transmission, containing many additions but still without the new dictionaries and keeping all old formats, was distributed on 2 July for immediate use, giving the dictionaries as usual in archive, TRANS, and backup format. The "trial" version of the new dictionaries has the number 9185; it also contains the additions and modifications introduced for 9085.

3. The format and contents of the new / modified dictionaries follows the decisions of the last NRDC meeting, with one exception concerning the correspondence between "EXFOR quantities" (dictionary 36 / 236) and the "new CINDA quantities" (new dictionary 45), for which we propose a new dictionary 213 (which will eventually replace current dictionary 13.) (Here and in all following explanations, the dictionary numbers refer always to the archive dictionaries, unless indicated otherwise.) The reasons for this proposal are given below.

4. Those new dictionaries dealing with CINDA and EXFOR quantities and their relations are meant not only for internal use but also to help improving the usability and user-friendliness of data retrievals in our new systems. Therefore, I tried to streamline the hierarchy of quantities and quantity categories used for EXFOR and CINDA compilation and web retrieval. Currently, we have EXFOR quantities (dictionary 36 with more than 900 entries), Reaction types (dictionary 13 with more than 90 entries), old/new CINDA quantities (more than 40 entries) and Web retrieval quantities (23 categories). Though this looks like a hierarchy with decreasing detail, it is rather confusing because in general there are "many-to-many" relations. E.g., the CINDA quantity "Fission fragment spectra" corresponds to several Web quantities although there are less web quantities than CINDA quantities. Since we want to offer various levels of detailed retrievals (already now we use 3 of these 4 categories for this purpose), I find such complicated relations confusing and unsatisfactory.

5. Therefore I made an attempt to streamline this hierarchy such that every "Reaction Type" (dictionary 13) belongs to only one new CINDA quantity, and every new CINDA quantity belongs to only one Web quantity. As before, every EXFOR quantity from dictionary 36 belongs to only one Reaction Type from dictionary 13. This way, there is a clear hierarchy without any many-to-many relations:

EXFOR quantity	**-> Reaction Type**	**-> New CINDA quantity**	**-> Web quantity**
(~900)	(~100)	(~45)	(~26)
(Dict. 36/236)	(Dict. 13/213)	(Dict. 45)	(Dict. 113)

6. To achieve this, 3 additional web quantities and a number of new Reaction types must be introduced. (I also propose 2 additional CINDA quantities but these are not mandatory to maintain consistency.) The additional Reaction Types are needed because dictionary 13 serves also to indicate to the check program which independent variables (such as angles or secondary energies) are required for a particular quantity; therefore some quantity groups which often need not be distinguished for a retrieval, must appear as different Reaction Types. However the number of entries in dictionary 13 is increasing only moderately (from around 90 to around 110) which in my opinion should not be disturbing.

7. As a consequence of the above, it is not necessary to add an extra column to dictionary 36/ 236 for the corresponding new CINDA quantity (this was foreseen in Conclusion C7 of last year's NRDC meeting, replacing the earlier idea of introducing a separate dictionary 46 for this correspondence list). Instead, it is sufficient to add a column to the much smaller dictionary 13 (Reaction types). This is much easier to understand and at the same time easier to maintain. This modified version of dictionary 13 is called dictionary 213.

8. A remark on the new CINDA quantities (given in dictionary 45): These were essentially agreed long ago and I made no attempt to redesign this list from scratch. They were introduced with the purpose of being as compatible as possible with the old CINDA quantities while allowing the compilation of non-neutron data. They were not optimized for usage in EXFOR retrievals. If we want to do this, and if we don't mind making more changes to this list, several exotic new CINDA quantities (some of which correspond to only a handful of EXFOR entries) could be combined into one CINDA quantity (in particular: D3A, D3E, D4A, DAA could be combined into one; CST could be combined with CS; EMC and LMC could be combined with COR; see correspondence tables on the following pages and dictionary 45). These possible additional changes are not included in the draft set of dictionaries now submitted. Concerning additional retrieval possibilities, I am not in favor of introducing them by adding more CINDA quantities; I think they can more effectively be realized on the EXFOR level (extended / advanced request with appropriate help).

9. Below I give

- a table of all modified or new dictionaries;
- to illustrate the above ideas, two easy-to-read correspondence lists: Web quantity - CINDA quantity and CINDA quantity - Reaction Type;
- an update of Vicki McLane's description of the Archive Dictionaries including the proposed changes and additions.

10. All new or modified dictionaries are available in archive and DANIEL backup format from the NDS open area, subdirectory TRANS.DICTS.NEWDICTS_2004. Although I consider them as drafts, they should be (hopefully) in a stage ready for use. Any feedback is welcome. Please separate comments on the "ordinary contents" (i.e. applicable also to the "ordinary" dictionary transmission 9085) from feedback on the new dictionaries.

Please send your feedback before 15 August. The EXFOR dictionaries (TRANS format) will be produced for the final version when all feedback has been received.

New and revised Archive Dictionaries

Dictionary	New / Modified	Contents	Format	Remarks
7	Modified	Only conference codes	Unchanged	
45	New	New CINDA quantities		
47	New	Correspondence old / new CINDA quantities		
48	New	Energy values for spectrum averages		I included also other alpha-betical energy codes; to be decided
52	New	CINDA reader codes		
113	New	Web retrieval quantities		
144	New	Eval.lib. codes for CINDA, revised	Similar to Dict. 44	Will replace dictionary 44
207	New	Books (moved from Dict. 7)	Same as Dict. 7	
209	New	Compounds (moved from Dict. 27)	Same as Dict. 27	Kept format of old Dict. 27 for convenience
213	New (new proposal)	Dict. 13 plus new CINDA quantity	Similar to Dict.13	Will replace dictionary 13
235	New	Work types		
236	New	Quantities. As Dict. 36, with new Reaction types included	Numerical equivalents removed, more space for expansions (as foreseen in Concl. C5 of 2003 NRDC)	Will replace Dictionary 36

Correspondence Web quantity - CINDA quantity

New codes are given in ***bold italic***

Web Quantity (D.113)	Corresponding CINDA quantities (Dict.45)	Expansion of Web quantity
COR	EMC,LMC,EC,COR	Secondary particle correlations
CS	TSL,CS,POT	Cross section data
CSP	CSN,CSP	Partial cross section data
CST	CST	Temperature dependent cross section data
DA	DA,DAT,DAA,***DT***	Differential data with respect to angle
DAE	D3E,DAE,D3A,D4A	Differential data with respect to angle and energy
DAP	DAP	Partial differential data with respect to angle
DE	DE,***DP***	Differential data with respect to energy
DEP	DEP	Partial differential data with respect to energy
E	KE	Kinetic energies
FY	FY,FRS	Fission product yields
INT	INT	Cross section integral over incident energy
L	AMP	Scattering amplitudes
MFQ	NU,ALF,NUD,ETA	Miscellaneous fission quantities
MLT	MLT	Outgoing particle multiplicities
NQ	NQ	Nuclear quantities
POL	POD,POL	Polarization data
PY	PY	Product yields
RI	RI	Resonance integrals
RP	RP	Resonance parameters
RR	RR	Reaction rates
SP	***SPC***	Gamma spectra
SQ	KER,SIF	Special quantities
TT	TT	Thick target yields
TTD	TTD	Differential thick target yields
TTP	TTP	Partial thick target yields

Correspondence CINDA quantity - Reaction Type

New codes are given in ***bold italic***

New CINDA Quantity (Dict.45)	Reaction Type (Dict.13)	Reaction Type Expansion
ALF	***ALF***	Alpha (capture-to-fission cs ratio)
	ALR	Alpha at resonance
AMP	L P	Partial length or amplitude
	L	Length or amplitude
COR	CO	Angular correlation
	COD	Angular correlation d/dE'
	COP	Partial angular correlation
CS	CS	Cross section
	CS+	Cross section (nonstandard)
	CS 4	Differential d/dAngle * 4pi
CSN	DN	Diff. by no. of outgoing neutrons
CSP	CSP	Partial cross section
	CSP4	Partial differential d/dAngle * 4pi
CST	CST	Temperature dependent cross section
D3A	D3A	Triple differential dAngle1/dAngle2/dE'
D3E	D3E	Triple differential dAngle/dE1'/dE2'
D4A	D4A	Quadruple diff. dAng1/dAng2/dE1'/dE2'
DA	FL	Legendre coefficient
	FS2	Sine**2 coefficient
	FS	Sine coefficient
	FC	Cosine coefficient
	DA	Differential d/dAngle
DAA	D2P	Partial double diff. dAngle1/dAngle2
	DAA	Double differential dAngle1/dAngle2
DAE	DAE	Double differential dAngle/dE'
DAP	DAP	Partial differential d/dAngle
	FLP	Partial Legendre coefficient
	FCP	Partial cosine coefficient
DAT	FLT	Temperature-dependent Legendre coefficient
DE	DE 4	Differential d/dAngle/dE' * 4pi
	DE	Differential d/dE'
DEP	DEP	Energy spectrum for specific group
DP	DP	Diff.by linear momentum of outg.part.
DT	DT	Diff.by 4-momentum transfer squared
EC	EC	Energy correlation
EMC	MC	Effective mass correlation
ETA	***ETR***	Neutron yield (Eta) at resonance
	ETA	Neutron yield (Eta)
FRS	***FFA***	Fission fragment angular distribution d/dA
	FFE	Fission fragment spectrum d/dE'
	FFL	Fiss. fragment ang.distr.,Legendrecoeff.
	FAT	Fiss.fragm.ang.dist.,Temp.-dep.Leg.coeff.
	FFS	Fission fragment ang.distr.,Sine**2 coeff.
	FFC	Fission fragment ang.distr.,Cosine coeff.
FY	ZPA	Most prob. mass/charge as a fn. of angle
	ZPP	Most prob.mass/charge for given fragm.en.
	FYA	Fission product yield as fn. of angle
	FYZ	Fission mass yield
	FYP	Fiss.prod.yield as fn.of sec.part.energy
	FYE	Fission product yield, differental, d/dE
	ZP	Most probable mass/charge
	FY	Fission product yield
INT	IAP	Cross sect.integral over inc.en for partl.angle
	IDA	Cross section integral over inc.en., d/dAngle

	INP	Cross sect.integral over inc.en. for given E' or level
	INT	Cross section integral over incident energy
	INT4	Cross section integral over inc.en., d/dAngle * 4pi
KE	E P	Kinetic energy for specific groups
	RPE	Resonance kinetic energy
	E A	Kinetic energy as a fn. of angle
	EDA	Kinetic energy, differential, d/dAngle
	E	Kinetic energy
KER	***KER***	Kerma factor
LMC	LC	Linear momentum correlation
	LCP	Partial linear momentum correlation
MLT	***MTA***	Multiplicity d/dA
	MLT	Multiplicity
	YAE	Double-diff. mutiplicity for thick target
	MTE	Multiplicity, partial or d/dE
NQ	NQ	Nuclear quantity
NU	***NUR***	Neutron yield at resonance
	NUE	Neutron yield dep.on sec.particle energy
	NU	Neutron yield (nu-bar)
NUD	***NUD***	Delayed neutron yield (nu-bar delayed)
	PN	Delayed neutron emission probability
	G *	Yield of half-life group
POD	PDT	Differential polarization, d/d(-t)
	PPD	Partial differential polarization, d/dAngle
	PDE	Differential polarization, d/dAngle/dE'
	PTP	Partial differential polarization, d/dAngle, tensor
	POD	Differential polarization, d/dAngle
	PTD	Differential polarization, d/dAngle, tensor
	P3A	Analyzing power dA1/dA2/dE1 for 2 particles
POL	POF	Polarization fitting coefficient
	PPO	Partial polarization
	PO	Polarization
POT	***POT***	Potential scattering cross section
PY	PY	Product yield (other than fission)
	PY+	Product yield (other than fission, nonstandard)
	PYP	Partial product yield
	PY2	Double-diff. Product yield d/dAngle/dEnergy
	PYA	Product yield d/dAngle
RI	RIL	Resonance integral over limited energy range
	RI	Resonance integral
RP	RE	Resonance energy
	RPP	Partial resonance parameter
	RP	Resonance parameter
RR	RR	Reaction rate
SIF	***SIF***	Self-indication function
SPC	SPA	Secondary energy spectrum as a function of angle
	SP	Secondary energy spectrum
	SPR	Spectrum at resonance
	SPP	Partial secondary energy spectrum (for given level)
TSL	***TSL***	Thermal-neutron scattering cross section
TT	TT	Thick target yield
	TT+	Thick target yield (nonstandard)
TTD	TDA	Differential thick target yield, d/dAngle
	TDP	Partial differential thick target yield, d/dAngle
	TD2	Differential thick target yield, d/dAngle/dE'
	TDE	Differential thick target yield, d/dE'
TTP	TTP	Partial thick target yield

ARCHIVE DICTIONARIES

Victoria McLane, July 2003
Update by O. Schwerer, June 2004 (Draft)

The NRDC Dictionary Archive consists of a dictionary index file and a set of dictionary files, one for each dictionary, and contains all information necessary for the production of the DANIEL database, and the EXFOR and CINDA dictionaries.

The format and contents of the Archive Dictionary files are described on the following pages.

General Format

Dictionary Index

The dictionary index contains a list of all of the dictionary files stored, along with supplemental information.

The format of dictionary index line is:

Column(s)	1-3:	Dictionary number
	5-34:	Dictionary name
	36-37:	# of DANIEL keys
	39-78:	DANIEL record format

Dictionary Files

The dictionary files consist of two types of records: MASTER records and COMMENT records.

The general format of a MASTER record is:

Column(s)	1:	Alter flag
	2-4:	Status Code
	6-11:	Data of entry or last update
	13-42:	Key
	44-118:	Codes, expansions, *etc.* Format and contents are given under each dictionary.

The general format of a COMMENT record is (exceptions are noted under each dictionary):

Columns	1-33:	blank
	44-88:	comment

Alteration Flags

Dictionary updates are recorded on the Master Archive files by adding an alteration flag and the date of alteration. When a new transmission is run the flags are used to process the records for the output files, and are deleted from the Master Archive files.

The following flags are used to indicate an alteration to a dictionary record.

A The record has been added
D The record is marked for deletion
M A modification has been made to the Code-expansion field
S The status has been changed

Status Codes

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

CIN	CINDA	used only by CINDA
EXT	extinct	no longer applies, but valid for older data sets
INT	internal	used only by DANIEL System
OBS	obsolete	not to be used on EXFOR exchange files
PRE	preliminary	do not need approval or are approved
PRO	proposed	are not yet approved
TRA	transmitted	sent to all centers on Dictionary transmission file

Contents of Dictionaries

The contents of the archive dictionaries are given on the following pages, along with the format of the MASTER records and any exceptions to the format of the COMMENT records.

For each MASTER record, 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 (for the DANIEL database), 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

MASTER RECORD:

KEY: EXFOR CODE (A10)

field 1: INTERNAL NUMERICAL EQUIVALENT (I9)

field 2: EXPANSION (A55)

Dictionary 2: INFORMATION IDENTIFIERS

MASTER RECORD:

KEY: EXFOR CODE (A10)

field 1: EXPANSION (A25)

field 2: KEYWORD REQUIRED (A1)

R - required

B - one required

X - required when relevant

field 3: INTERNAL NUMERICAL EQUIVALENT (I2)

field 4: CODE REQUIRED OR OPTIONAL (A1)

R - required code

O - optional code

field 5: blank (A1)

field 6: EXFOR REQUIREMENT CODES (A22)

field 7: EXFOR dictionary (A11)

Dictionary 3: INSTITUTE CODES

MASTER RECORD:

KEY1: EXFOR CODE (A7)

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

field 2: AREA, COUNTRY CODE (A4)

field 3: EXPANSION (A53)

field 4: COUNTRY, ORG. CODE FOR CINDA (A15)

COMMENTS:

Column 44: comment flag

= CINDA comment

Columns 45-88: comment

Dictionary 4: REFERENCE TYPE

MASTER RECORD:

KEY: EXFOR CODE (A1)

field 1: SHORT EXPANSION (A4)

field 2: POINTER TO RELATED DICTIONARY (A3)

field 3: LONG EXPANSION (A35)

Dictionary 5: JOURNAL CODES

MASTER RECORD

KEY1: EXFOR CODE (A6)

KEY2: field 1: CINDA CODE (A4)

field 2: AREA-COUNTRY CODE (A4)

field 3: ADDITIONAL AREA-COUNTRY OR ORGANIZATION CODE (A4)

1st character area code: 2nd country of origin

T: country of original publication

blank: organization code (1st code = *n*ZZZ)

field 4: SHORT EXPANSION (A20)

field 5: EXPANSION (A48)

COMMENTS:

Column 44: comment flag

\+ addition to title

* full title

. translation of title

= CINDA comment

Columns 45-88: comment

Dictionary 6: REPORT CODES

MASTER RECORD:

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

field 1: INSTITUTE CODE (A7)

field 2: EXPANSION (A48)

field 3: CINDA FLAG (A1)

* Expansion not entered in CINDA book dictionary

COMMENTS:

Column 44: comment flag

= CINDA comment

Columns 45-88: comment

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

Dictionary 7: CONFERENCE CODES

MASTER RECORD:

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

field 1: EXPANSION (A53)

field 2: AREA-COUNTRY CODE (A4)

field 3: 2ND AREA-COUNTRY OR ORGANIZATION CODE (A4)

1st character area code: 2nd country of origin

T: country of original publication

blank: organization code (1st code = *n*ZZZ)

field 4: CINDA SHORT CODE (A10)

COMMENTS:

Column 44: comment flag

(EXFOR long expansion

= CINDA comment

Columns 45-88: comment

Dictionary 8: ELEMENTS
MASTER RECORD:
KEY1: Z-NUMBER OF ELEMENT (I3)
KEY2: field 1: ELEMENT SYMBOL (A2)
field 2: ELEMENT NAME (A20)

Dictionary 10: STANDARD REACTIONS (CSISRS)
MASTER RECORD:
KEY: CSISRS CODE line format output (A2)
field 1: EXPANSION (A24)
field 2: INTERNAL NUMERICAL EQUIVALENT (A56)

Dictionary 11: FORBIDDEN REACTIONS (CINDA)
MASTER RECORD:
KEY: EXFOR CODE (A8)
field 1: EXFOR CODE (A50)

Dictionary 12: CINDA QUANTITIES
MASTER RECORD:
KEY: CINDA CODE (A3)
field 1: FISSION FLAG (A1)
field 2: INTERNAL NUMERICAL EQUIVALENT (I4)
field 3: CINDA SHORT EXPANSION (A14)
field 3: EXPANSION (A50)

Dictionary 13: REACTION TYPE (for Dictionary 36)
MASTER RECORD:
KEY: EXFOR CODE (A3)
field 1: COMPUTATION FORMAT (A5)
field 2: ONLINE SYSTEM CODE (A4)
field 3: INDEPENDENT VARIABLE FAMILY CODE (I10)
field 4: EXPANSION (A65)

Dictionary 14: REACTION DIMENSIONS (for Dictionary 36)
MASTER RECORD:
KEY: EXFOR CODE (A1)
field 1: EXPANSION (A55)

Dictionary 15: HISTORY CODES
MASTER RECORD:
KEY: EXFOR CODE (A1)
field 1: SHORT EXPANSION (A15)
field 2: LONG EXPANSION (A45)

Dictionary 16: STATUS CODES
MASTER RECORD:
KEY: EXFOR CODE (A5)
field 1: INTERNAL NUMERICAL EQUIVALENT (I5)
field 2: EXPANSION (A55)
field 3: SUBACCESSION # FIELD FLAG (A1):

Dictionary 17: RELATED REFERENCE CODES
MASTER RECORD:
KEY: EXFOR CODE (A1)
field 1: EXPANSION (A53)

Dictionary 18: FACILITY
MASTER RECORD:
KEY: EXFOR CODE (A5)
field 1: EXPANSION (A53)
field 2: SPECIAL USE CODE (A4)
NEUT, PHOT

Dictionary 19: INCIDENT SOURCE
MASTER RECORD:
KEY: EXFOR CODE (A5)
field 1: EXPANSION (A53)
field 2: SPECIAL USE CODE (A4)
NEUT, PHOT
field 3: DELIMITER CODE (A1)

Dictionary 20: ADDITIONAL INFORMATION
MASTER RECORD:
KEY: EXFOR CODE (A5)
field 1: EXPANSION (A53)

Dictionary 21: METHOD
MASTER RECORD:
KEY: EXFOR CODE (A5)
field 1: EXPANSION (A53)
field 2: SPECIAL USE CODE (A4)
FY, NEUT, PHOT

Dictionary 22: DETECTOR
MASTER RECORD:
KEY: EXFOR CODE (A5)
field 1: EXPANSION (A53)
field 2: SPECIAL USE CODE (A3)
FY, NEU, GAM

Dictionary 23: ANALYSIS

MASTER RECORD:

KEY: EXFOR CODE (A5)

field 1: EXPANSION (A53)

field 2: SPECIAL USE CODE (A4)

PHOT, RP

Dictionary 24: DATA HEADINGS

MASTER RECORD:

KEY: EXFOR CODE (A10)

field 1: DATA TYPE (2I1)

1st integer 0: flags, *etc.*

2nd integer 1:flag
2: decay flag
3:level flag
4: miscellaneous data

1: assumed values

2nd integer 1: monitor
5:assumed

2: data

2nd integer 1:data
3: ratio

3: resonance parameter

2nd integer 1: quantum number
2: energy

4: incident energy

2nd integer 1: energy
2: momentum
3: spectrum energy
4: spectrum temperature

5: secondary energy

2nd integer 1: particle energy
2: level energy
3: excitation energy
4: Q value
5: energy degradation
6: energy gain
7: level number
8:linear momentum
9:polarity

6: angle

2nd integer 1: angle
2: cosine
7: q (momentum transfer)
8: wave number

7: number

2nd integer 5: coefficient number
6: kq

Dictionary 24: DATA HEADINGS (continued)

8: other variable
- 2nd integer
  - 2: sample temperature
  - 3: sample thickness
  - 4: polarization
  - 5: half-life
  - 6: group number
  - 7: decay constant

9: isotope/particle identification
- 2nd integer
  - 1: element
  - 2: mass
  - 3: isomer
  - 4: monitor element
  - 5: monitor mass
  - 9: emitted nucleons

field 2: FAMILY CODE (A1)

field 3: PLOTTING FLAGS (I7)

col 1-3 - independent variable

col 4-6 - dependent variable

col 1 & 4: variable
- 1 - value
- 2 - minimum
- 3 - maximum
- 4 - approximate
- 5 - one of multiple variables
- 9 - uncertainty or resolution

if col 1 = 1-5:

col 2:
- 1 - numerator
- 2 - denominator

if col 1 or 4 = 9:

col 2 & 5: +error; col 3 & 6: -error
- 1 - error
- 2 - resolution
- 3 - half resolution
- 4 - statistical error
- 5 - partial error

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

field 4: UNIT CODE (A4)

field 5: SPECIAL USE FLAG (A1)

H = for relativistic heavy-ion data

field 6: EXPANSION (A55)

Dictionary 25: DATA UNITS
MASTER RECORD:
KEY: EXFOR CODE (A10)
field 1: EXPANSION (A35)
field 2: FAMILY CODE (A4)
field 3: CONVERSION FACTOR (E11)
field 4: SORTING CODE (A3)

Dictionary 26: UNIT FAMILY CODES
MASTER RECORD
KEY: UNIT FAMILY CODE (A4)
field 1: DICTIONARY 24 USE (I2)
field 2: DICTIONARY 25 USE (I2)
field 3: DICTIONARY 36 USE (I2)
field 4: EXPLANATION (A50)

Dictionary 27: NATURAL ISOTOPIC MIXTURES, NUCLIDES AND COMPOUNDS
MASTER RECORD:
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)
filed 7: COMPOUND FLAG (A1) = '*'
COMMENT RECORD
Columns 44-45: OUTPUT DICTIONARY NUMBER FOR DANIEL (I2)
(blank after 1st MASTER Record).
Columns 46-98: COMMENT

Dictionary 30: PROCESS CODES
MASTER RECORD:
KEY: EXFOR CODE (A3)
field 1: INTERNAL NUMERICAL EQUIVALENT (I10)
field 2: EXPANSION (A55)

Dictionary 31: BRANCH CODES
MASTER RECORD:
KEY: EXFOR CODE (A3)
field 1: INTERNAL NUMERICAL EQUIVALENT (I10)
field 2: EXPANSION (A55)

Dictionary 32: PARAMETER CODES
MASTER RECORD:
KEY: EXFOR CODE (A3)
field 1: INTERNAL NUMERICAL EQUIVALENT (I10)
field 2: EXPANSION (A55)
field 3: SPECIAL USE CODE (A4)

Dictionary 33: PARTICLES
MASTER RECORD:
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)
field 4: EXPANSION (A40)
COMMENT RECORD
Columns 44-45: OUTPUT DICTIONARY NUMBER FOR DANIEL (I2)
Columns 46-98: COMMENT

Dictionary 34: MODIFIERS
MASTER RECORD:
KEY: EXFOR CODE (A3)
field 1: INTERNAL NUMERICAL EQUIVALENT (I10)
field 2: GENERAL QUANTITY MODIFIER FLAG (A5)
field 3: EXPANSION (A55)
COMMENT RECORD
Column 1: Flag
* replaces EXFOR expansion
Columns 45-99: Comment

Dictionary 35: DATA TYPE
MASTER RECORD:
KEY: EXFOR CODE (A5)
field 1: INTERNAL NUMERICAL EQUIVALENT (I10)
field 2: EXPANSION (A40)

Dictionary 36: QUANTITIES
MASTER RECORD:
KEY: EXFOR CODE (A30)
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 DIMENSION (A1)
field 7: FAMILY CODE (A4)
field 8: EXPANSION (A48)
COMMENT RECORD
Columns 44-87: COMMENT

Dictionary 37: RESULT
MASTER RECORD:
KEY: EXFOR CODE (A5)
field 1: EXPANSION (A53)

Dictionary 43: NLIB for Evaluated Libraries
MASTER RECORD:
KEY: NLIB NUMBER (A2)
field 1: LIBRARY NAME (A40)

Dictionary 44: Data Libraries
MASTER RECORD:
KEY: LIBRARY NAME (A20)
field 1: AREA-COUNTRY CODE (A4)
field 2: AREA-COUNTRY, ORGANIZATION CODE (A4)
1st character: area code; 2nd country of origin
blank; organization code (1st code = *n*zzz)
field 3: EXPANSION (A55)

Dictionary 45: New CINDA Quantities *(new)*
MASTER RECORD:
KEY: NEW CINDA QUANTITY (A15)
field 1: WEB QUANTITY (A7)
field 2: EXPANSION (A53)

Dictionary 47: Old / New CINDA Quantities *(new)*
MASTER RECORD:
KEY: OLD CINDA QUANTITY (A15)
field 1: REACTION (A10)
field 2: NEW CINDA QUANTITY (A4)

Dictionary 48: Alphabetic energy values for CINDA *(new)*
MASTER RECORD:
KEY: ENERGY CODE (A15)
field 1: BOOK EXPANSION(A10)
field 2: DESCRIPTION (A58)

Dictionary 52: CINDA Reader Codes *(new)*
MASTER RECORD:
KEY: READER CODE (A15)
field 1: CINDA READER(A60)
field 2: COUNTRY (A15)

Dictionary 113: Web Quantities *(new)*
MASTER RECORD:
KEY: WEB QUANTITY (A15)
field 1: EXPANSION (A53)

Dictionary 144: Data Libraries for new CINDA *(new)*
MASTER RECORD:
KEY: REF-TYPE, LIBRARY NAME (A20)
field 1: AREA-COUNTRY CODE (A4)
field 2: AREA-COUNTRY, ORGANIZATION CODE (A4)
1st character: area code; 2nd country of origin
blank; organization code (1st code = *n*ZZZ)
field 3: EXPANSION (A55)

Dictionary 207: BOOK CODES *(new)*
MASTER RECORD:
KEY: EXFOR CODE (A10) (CINDA key is 8-character truncation of code)
field 1: EXPANSION (A53)
field 2: AREA-COUNTRY CODE (A4)
field 3: 2ND AREA-COUNTRY OR ORGANIZATION CODE (A4)
1st character area code: 2nd country of origin
T: country of original publication
blank: organization code (1st code = *n*ZZZ)
field 4: CINDA SHORT CODE (A10)

Dictionary 209: COMPOUNDS *(new)*
MASTER RECORD:
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)] not used
[field 5: for isotopes, ISOTOPIC ABUNDANCE (E11)
for natural element, ATOMIC WEIGHT (E11)] not used
field 6: EXPANSION (A25)
[field 7: COMPOUND FLAG (A1) = ''] not needed*
COMMENT RECORD
Columns 44-35: OUTPUT DICTIONARY NUMBER FOR DANIEL (I2)
(blank after 1st MASTER Record).
Columns 46-98: COMMENT

Dictionary 213: REACTION TYPE WITH NEW CINDA QUANTITY *(new)*
MASTER RECORD:
KEY: EXFOR CODE (A3)
field 1: NEW CINDA QUANTITY (A5)
field 2: WEB QUANTITY (A4)
field 3: INDEPENDENT VARIABLE FAMILY CODE (I13)
field 4: EXPANSION (A65)

Dictionary 235: WORK TYPE *(new)*
MASTER RECORD:
KEY: CINDA CODE (A1)

field 1: SHORT EXPANSION (A6)
field 2: LONG EXPANSION (A20)

Dictionary 236: QUANTITIES *(new)*
MASTER RECORD:
KEY: EXFOR CODE (A30)
field 1: REACTION TYPE (A3)
field 2: REACTION DIMENSION (A1)
field 3: FAMILY CODE (A4)
field 4: EXPANSION (A72)
COMMENT RECORD
Columns 44-87: COMMENT (LONG EXPANSION)

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