

EXFOR/CINDA dictionaries used by JANIS

N. Soppera, M. Bossant, E. Dupont
OECD NEA Data Bank

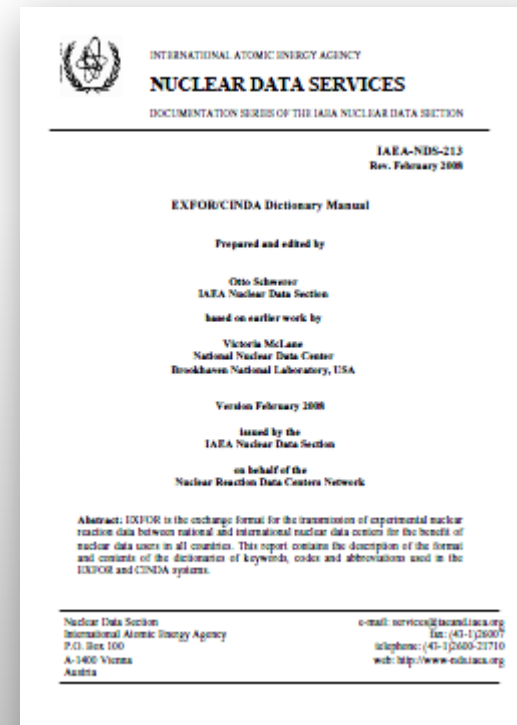
NRDC 2012

April 16-19, 2012, NEA, Paris, France

1. Dictionaries formats
2. List of dictionaries
3. Distribution of dictionaries
 - a) Dictionaries and Master files
 - b) Dictionaries and PRELIM files

1. Dictionaries formats

- 3 formats described in *EXFOR/CINDA Dictionary Manual* (IAEA-NDS-213 rev. 2008)
 - Archive
 - EXFOR transmission
 - DANIEL backup
- Several derived formats and files
 - ZVView dictionaries
 - change.xxxx files
 - exchange.xxxx files
 - Others?



1. Dictionary formats

Archive format:

dict_arc_new.213

IRA 198502 L	AMP	L	5		Length or amplitude
OBS 200509 L P	AMP	L	5	3	Partial length or amplitude
OBS 199008 LC	LMC	COR	20		Linear momentum correlation
OBS 199802 LCP	LMC	COR	20	3	Partial linear momentum correlation
TRA 200509 LP	AMP	L	5	3	Partial length or amplitude
TRA 201112 MAP	MLT	MLT	4*	34	Partial multiplicity d/dA
OBS 199008 MC	EMC	COR	20		Effective mass correlation
TRA 200406 MLT	MLT	MLT	4*		Multiplicity
TRA 200406 MTA	MLT	MLT	4*	4	Multiplicity d/dA
TRA 200406 MTE	MLT	MLT	4*	3	Multiplicity, partial or d/dE
TRA 200510 MTP	MLT	MLT	4*1		Multiplicity at resonance

Contains all codes, comments and change flags

1. Dictionary formats

EXFOR transmission format:

trans.9103

DICTION	213	201112	Reaction Type with CINDA quant	3000021300001
*	MFQ		Special quantity (nu, alpha, etc.)	30000213000010
ALF	ALF	CS	Alpha (capture-to-fission cs ratio)	3000021300002
ALR	ALF	CS	Alpha at resonance	3000021300003
...				
L	AMP	L	Length or amplitude	3000021300080
L P	AMP	L	Partial length or amplitude	30000213000810
LC	LMC	COR	Linear momentum correlation	30000213000820
LCP	LMC	COR	Partial linear momentum correlation	30000213000830
LP	AMP	L	Partial length or amplitude	3000021300084
MAP	MLT	MLT	Partial multiplicity d/dA	3000021300085I
MC	EMC	COR	Effective mass correlation	30000213000860
MLT	MLT	MLT	Multiplicity	3000021300087
MTA	MLT	MLT	Multiplicity d/dA	3000021300088
MTE	MLT	MLT	Multiplicity, partial or d/dE	3000021300089
MTR	MLT	MLT	Multiplicity at resonance	3000021300090
NO	NO	NO	Nuclear quantity	3000021300091

Contains all codes but no comments

1. Dictionary formats

DANIEL backup:

dan_back_new.9103

213	TRA	200406	NEK	NEK	DQ	4*		Kerma factor
213	TRA	198502	L	AMP	L	5		Length or amplitude
213	OBS	200509	L P	AMP	L	5	3	Partial length or amplitude
213	OBS	199008	LC	LMC	COR	20		Linear momentum correlation
213	OBS	199802	LCP	LMC	COR	20	3	Partial linear momentum correlation
213	TRA	200509	LP	AMP	L	5	3	Partial length or amplitude
213	TRA	201112	MAP	MLT	MLT	4*	34	Partial multiplicity d/dA
213	OBS	199008	MC	EMC	COR	20		Effective mass correlation
213	TRA	200406	MLT	MLT	MLT	4*		Multiplicity
213	TRA	200406	MTA	MLT	MLT	4*	4	Multiplicity d/dA
213	TRA	200406	MTE	MLT	MLT	4*	3	Multiplicity, partial or d/dE
213	TRA	200510	MTR	MLT	MLT	4*1		Multiplicity at resonance
213	TRA	198502	NQ	NQ	NQ	19		Nuclear quantity
213	TRA	200406	NU	NU	MEQ	4*		Neutron yield (nu-bar)

Contains all codes and change flags but no comments

1. Dictionary formats

ZVView dictionary:

DICT_ZVV.213

TRA200406KEK	KEK	SQ	4*		kerma factor
TRA198502L	AMP	L	5		Length or amplitude
OBS200509L P	AMP	L	5	3	Partial length or amplitude
OBS199008LC	LMC	COR	20		Linear momentum correlation
OBS199802LCP	LMC	COR	20	3	Partial linear momentum correlation
TRA200509LP	AMP	L	5	3	Partial length or amplitude
TRA201112MAP	MLT	MLT	4*	34	Partial multiplicity d/dA
OBS199008MC	EMC	COR	20		Effective mass correlation
TRA200406MLT	MLT	MLT	4*		Multiplicity
TRA200406MTA	MLT	MLT	4*	4	Multiplicity d/dA
TRA200406MTE	MLT	MLT	4*	3	Multiplicity, partial or d/dE
TRA200510MTR	MLT	MLT	4*1		Multiplicity at resonance
TRA198502NO	NO	NO	19		Nuclear quantity

*Contains all codes and change flags but no comments
Text file without 'line returns' (list of fixed width fields)*

1. Dictionary formats

Change file:

change.9103

```

UD1:[SAPPORO.DICTION.ARCHIVE_9103]DICT_ARC_NEW.207;1
MTRA 201112 PR.NUC.EN.                Progress in Nuclear Energy Ser.1 Phys. & Mathematics 2UK      PR.NUC.EN
*****
UD1:[SAPPORO.DICTION.ARCHIVE_9103]DICT_ARC_NEW.213;1
MTRA 201112 MAP                        MLT MLT 4* 34          Partial multiplicity d/dA
*****
UD1:[SAPPORO.DICTION.ARCHIVE_9103]DICT_ARC_NEW.236;1
MTRA 201112 ,DA,*,COS                  FC DA   Coeff. of cosine expansion for particle specif.
MTRA 201112 ,DA,*,LEG/RSD              FL NO   Leg.coef. d/dA=1+Sum(a(L))rel.90deg f.spec.part.
MTRA 201112 ,DA,*,LEG/RSL              FL NO   Leg.coef.4pi/Sig d/dA=1+Sum((2L+1)a(L)p(L))
SOBS 201112 ,INT,*,RES                  ITR B*E Cross-section integral over inc. energy at res.
MTRA 201112 ,KE LF+HF                   F  F    Tot kin. energ of light/heavy frag pair specified

```

Derived file, useful for understanding and checking the changes

1. Dictionary formats

Exchange file:

exchange.9103

A 7TRA201112Z01UKRAKOW	o workshop neutron meas., Eval.& Appl., Krakow, 2010 SPOL	Z01UKRAKOW
A 16TRA201112PENTZ	30Data converted from GMA input file of W.P.Poenitz	
A 17TRA2011120	Reference to related data compiled in another entry	
A 25TRA201112PD/FIS/MEV	products per fission per MeV FYDE 1.E+2DP	
A 32TRA201112TKE	29Total kinetic energy	
M207TRA201112PR.NUC.EN.	Progress in Nuclear Energy Ser.1 Phys. & Mathematics 2UK	PR.NUC.EN
A213TRA201112MAP	MLT MLT 34 Partial multiplicity d/dA	
M236TRA201112,DA,*,COS	FC DA Coeff. of cosine expansion for particle specif.	
M236TRA201112,DA,*,LEG/RSD	FL NO Leg.coef. d/dA=1+Sum(a(L))rel.90deg f.spec.part.	
M236TRA201112,DA,*,LEG/RSL	FL NO Leg.coef.4pi/Sig d/dA=1+Sum((2L+1)a(L)p(L))	
S236OBS201112,INT,,RES	ITR B*E Cross-section integral over inc. energy at res.	
M236TRA201112,KE,LF+HF	E E Tot.kin. energ.of light/heavy frag.pair specified	
M236TRA201112,MLT,,TT	MLT YLD Multiplicity for thick target,no.part./inc.	
A236TRA201112,MLT/DA	MTA 1/A Particle multiplicity d/dA	
A236TRA201112,MLT/DE,PRF	DE DEPT Diff. fiss. neutron mult. rel. to square root(E)	

Again the changes, but in a more computer oriented format

1. Dictionaries formats

- “Delta files” uses can be adapted to “full files”
- Should be possible to use a single format

- Archive format
 - is the most complete one
 - allows creation of other formats
 - was chosen in JANIS for these reasons

- → **Proposal 1:**
 - Assess the current use of various formats/files
 - If possible maintain only one

2. List of dictionaries

- Archive format : 51 dictionaries
- 10 dictionaries not used in JANIS:

Dict.	Dict. name	Remark
12	CINDA Quantities	Obsolete?
13	Reaction Type (DICT.36)	Superseded by Dict. 213
27	Nuclides, Compounds	Superseded by Dict. 227
36	Quantities (REACTION SF 5-8)	Superseded by Dict. 236
43	NLIB for evaluated libraries	ENDF
44	Data Libraries	Obsolete? All codes INT or EXT
124	Data Headings (for plotting)	Said to be “presently not used”
125	Data unit (for plotting)	Said to be “presently not used”
136	Quantities (for plotting)	Said to be “presently not used”
227	Natural isotopic mixtures and Nuclides	Up-to-date? Format? Purpose?

2. List of dictionaries

- Obsolete dictionaries
 - adds unneeded complexity to the system (documentation, conversion tools)
 - can be kept separately for archival if wanted
- → **Proposal 2:**
 - Assess the current use of dictionaries
 - Remove the obsolete/unused ones

3. a) Dictionaries and Master files

- If Dictionaries are not synchronized with Master files
 - Software and external users see
 - One database...
 - One set of dictionaries...
 - ...but the database content do not follow all the rules associated with dictionaries
 - External users may cope with this
 - Software can only provide limited functionalities
- → **Proposal 3:**
 - Try to keep Master and dictionaries synchronized

Another reason for simplifying the system

3. b) Dictionaries and PRELIM files

- Implementation of EXFOR format in JANIS has allowed NEA DB to provide a additional checking tool :
JANIS TRANS Checker
- But...
 - PRELIM are allowed to contains proposed codes
 - No dictionary contains these codes
- Many false errors/warnings are reported
- Errors cause other problems to be hidden
 - This could be improved (“bullet proof” checking)
 - Maybe more useful to have access to dictionaries containing proposed codes?

3. b) Dictionaries and PRELIM files

- Provision in EXFOR system for this?
Status codes:
 - PRO : *proposed, are not yet approved*
 - PRE : *preliminary, do not need approval or are approved*
- → **Proposal 4:**
 - Consider maintaining “preliminary” dictionaries

Would really require a simplification of the system first

3. b) Dictionaries and PRELIM files

Current

JANIS - Import Logs Summary

TRANS name	Exception(s)	Warning(s)	Timestamp
prelim.1378	1	1	2012-04-12T22:30:05.742+0200
prelim.2227	3	0	2012-04-12T22:30:06.614+0200
prelim.2228	0	3	2012-04-12T22:30:07.541+0200
prelim.2229	2	0	2012-04-12T22:30:08.979+0200
prelim.2230	1	1	2012-04-12T22:30:09.448+0200
prelim.3154	0	3	2012-04-12T22:30:10.630+0200
prelim.4155	6	0	2012-04-12T22:30:11.012+0200
prelim.4156	2	9	2012-04-12T22:30:11.865+0200
prelim.a077	0	0	2012-04-12T22:30:12.560+0200
prelim.c115	6	5	2012-04-12T22:30:13.403+0200
prelim.d082	9	3	2012-04-12T22:30:13.717+0200
prelim.e068	0	0	2012-04-12T22:30:14.227+0200
prelim.f045	1	3	2012-04-12T22:30:14.508+0200
prelim.g024	0	1	2012-04-12T22:30:15.196+0200
prelim.k011	0	0	2012-04-12T22:30:16.302+0200
prelim.l017	0	0	2012-04-12T22:30:17.380+0200
prelim.l018	8	3	2012-04-12T22:30:17.431+0200
prelim.m062	0	1	2012-04-12T22:30:17.460+0200
prelim.s015	0	0	2012-04-12T22:30:17.731+0200
prelim.t022	2	3	2012-04-12T22:30:17.760+0200
PRELIM.Y008	1	0	2012-04-12T22:30:04.647+0200
Total	42	36	

Exact?

JANIS - Import Logs Summary

TRANS name	Exception(s)	Warning(s)	Timestamp
prelim.1378	0	1	2012-04-12T22:30:05.742+0200
prelim.2227	0	0	2012-04-12T22:30:06.614+0200
prelim.2228	0	0	2012-04-12T22:30:07.541+0200
prelim.2229	0	0	2012-04-12T22:30:08.979+0200
prelim.2230	0	0	2012-04-12T22:30:09.448+0200
prelim.3154	0	2	2012-04-12T22:30:10.630+0200
prelim.4155	5	0	2012-04-12T22:30:11.012+0200
prelim.4156	0	9	2012-04-12T22:30:11.865+0200
prelim.a077	0	0	2012-04-12T22:30:12.560+0200
prelim.c115	4	3	2012-04-12T22:30:13.403+0200
prelim.d082	0	3	2012-04-12T22:30:13.717+0200
prelim.e068	0	0	2012-04-12T22:30:14.227+0200
prelim.f045	1	3	2012-04-12T22:30:14.508+0200
prelim.g024	0	1	2012-04-12T22:30:15.196+0200
prelim.k011	0	0	2012-04-12T22:30:16.302+0200
prelim.l017	0	0	2012-04-12T22:30:17.380+0200
prelim.l018	0	0	2012-04-12T22:30:17.431+0200
prelim.m062	0	1	2012-04-12T22:30:17.460+0200
prelim.s015	0	0	2012-04-12T22:30:17.731+0200
prelim.t022	2	3	2012-04-12T22:30:17.760+0200
PRELIM.Y008	1	0	2012-04-12T22:30:04.647+0200
Total	13	26	

Summary

- **Proposal 1:**
 - Assess the current use of various formats/files
 - If possible maintain only one
- **Proposal 2:**
 - Assess the current use of dictionaries
 - Remove the obsolete/unused ones

After some progress on these first proposals:

- **Proposal 3:**
 - Try to keep Master and dictionaries synchronized
- **Proposal 4:**
 - Consider maintaining “preliminary” dictionaries

THANK YOU!