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Summary Report of the Technical Meeting on **International Network of Nuclear Reaction Data Centres**

IAEA Headquarters, Vienna, Austria

21 – 23 April 2015

Prepared by

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June 2015

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Abstract

This report summarizes the IAEA Technical Meeting on the International Network of Nuclear Reaction Data Centres held at the IAEA Headquarters in Vienna, Austria from 21 to 23 April 2015. The meeting was attended by 22 participants representing 12 cooperating Centres from 8 Member States (China, Hungary, India, Japan, Korea, Russia, Ukraine and USA) and 2 International Organisations (NEA, IAEA) as well as a participant from Kazakhstan. A summary of the meeting is given in this report along with the conclusions and actions.

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THE INTERNATIONAL NETWORK OF NUCLEAR REACTION DATA CENTRES

National, regional and specialized nuclear reaction data centres, coordinated by the International Atomic Energy Agency, cooperate in the compilation, exchange and dissemination of nuclear reaction data in order to meet the requirements of nuclear data users in all countries. At present, the following data centres participate in the network:

NNDC	US National Nuclear Data Center, Brookhaven National Laboratory, Upton, USA
NEA DB	OECD NEA Data Bank, Issy-les-Moulineaux, France
NDS	IAEA Nuclear Data Section, Vienna, Austria
CJD	Russian Nuclear Data Centre, Institute of Physics and Power Engineering, Obninsk, Russia
CNDC	China Nuclear Data Centre, China Institute of Atomic Energy, Beijing, China
ATOMKI	Charged-Particle Nuclear Reaction Data Group, Institute for Nuclear Research (ATOMKI), Debrecen, Hungary
NDPCI	Nuclear Data Physics Centre of India, Bhabha Atomic Research Centre, Trombay, Mumbai, India
JAEA/NDC	Nuclear Data Center, Japan Atomic Energy Agency, Tokai-mura, Japan
JCPRG	Nuclear Reaction Data Centre, Hokkaido University, Sapporo, Japan
KNDC	Nuclear Data Center, Korea Atomic Energy Research Institute, Daejeon, Republic of Korea
CDFE	Centre for Photonuclear Experiments Data, Moscow State University, Moscow, Russia
CNPD	Centre of Nuclear Physics Data, Institute of Nuclear and Radiation Physics, Russian Federal Nuclear Center –All-Russia Research Institute of Experimental Physics, Sarov, Russia
UkrNDC	Ukrainian Nuclear Data Centre, Institute for Nuclear Research, Kyiv, Ukraine

A detailed description of the objectives of the network and the contributions of each Centre to these activities are given in INDC(NDS)-401 (Rev.6), "International Network of Nuclear Reaction Data Centres".

PREVIOUS NRDC MEETINGS

Vienna, 21-23 April 2015	Technical	INDC(NDS)-0686
Smolenice, 6-9 May 2014	Centre Heads+ Technical	INDC(NDS)-0661
Vienna, 23-25 April 2013	Technical	INDC(NDS)-0633
Paris, 16-19 April 2012	Centre Heads + Technical	INDC(NDS)-0618
Vienna, 23-24 May 2011	Technical	INDC(NDS)-0593
Sapporo, 20-23 April 2010	Centre Heads + Technical	INDC(NDS)-0573
Vienna, 25-26 May 2009	Technical	INDC(NDS)-0558
Obninsk+Moscow 22-25 Sept. 2008	Centre Heads + Technical	INDC(NDS)-0536
Vienna, 8-10 October 2007	Technical	INDC(NDS)-0519
Vienna, 25-28 September 2006	Centre Heads + Technical	INDC(NDS)-0503
Vienna, 12-14 October 2005	Technical	INDC(NDS)-0480
Brookhaven, 4-7 October 2004	Centre Heads + Technical	INDC(NDS)-464
Vienna, 17-19 June 2003	Technical	INDC(NDS)-446
Paris, 27-30 May 2002	Centre Heads + Technical	INDC(NDS)-434
Vienna, 28-30 May 2001	Technical	INDC(NDS)-427
Obninsk, 15-19 May 2000	Centre Heads + Technical	INDC(NDS)-418
Vienna, 18-20 May 1999	Technical	INDC(NDS)-407
Vienna, 11-15 May 1998	Centre Heads + Technical	INDC(NDS)-383
Vienna, 26-28 May 1997	Technical	INDC(NDS)-374
Brookhaven, 3-7 June 1996	Center Heads + Technical	INDC(NDS)-360
Vienna, 2-4 May 1995	Technical	INDC(NDS)-343
Paris, 25-27 April 1994	Center Heads + Technical	INDC(NDS)-308
Vienna, 1-3 Sept 1992	Technical	INDC(NDS)-279
Obninsk, 7-11 Oct 1991	Center Heads + Technical	INDC(NDS)-0262
Vienna, 13-15 Nov 1990	Technical	Memo CP-D/210
Vienna, 2-4 Oct 1989	Centre Heads + Technical	Memo CP-D/200
Vienna, 4-6 Oct 1988	Technical	Memo CP-D/190
Brookhaven, 27-29 Oct 1987	Center Heads + Technical	INDC(NDS)-204
Vienna, 7-9 Oct 1986	Technical	Memo CP-D/159
Saclay, 9-11 Oct 1985	Center Heads + Technical = 8 th NRDC Meeting	INDC(NDS)-178
Vienna, 19-21 Sept 1984	Technical	Memo CP-D/131
Obninsk+Moscow, 17-21 Oct 1983	7 th NRDC Meeting	INDC(NDS)-154
Vienna, 3-7 May 1982	6 th NRDC Meeting	INDC(NDS)-141
Brookhaven, 29.9 - 2.10.1980	5 th NRDC Meeting	INDC(NDS)-125
Karlsruhe, 8-13 Oct 1979	4 th NRDC Meeting	INDC(NDS)-110
Paris, 19-23 June 1978	3 rd NRDC Meeting	INDC(NDS)-99
Kiev, 11-16 April 1977	2 nd NRDC Meeting = 3 rd CPND + 13th 4-C	INDC(NDS)-90
Vienna, 28-30 April 1976	2 nd CPND Meeting	INDC(NDS)-77
Vienna, 26-27 April 1976	12 th 4C-Meeting	INDC(NDS)-78
Vienna, 8-12 Sept 1975	CPND Meeting	INDC(NDS)-69+71
Brookhaven, 10-14 March 1975	11 th 4C-Meeting	INDC(NDS)-68
Paris, 6-10 May 1974	10 th 4C Meeting	INDC(NDS)-58
Vienna, 24-26 April 1974	CPND + PhotoND	INDC(NDS)-59+61
Moscow/Obninsk, 4-8 June 1973	9 th 4C Meeting	INDC(NDS)-54
Vienna, 16-20 Oct 1972	8 th 4C Meeting	INDC(NDS)-51
Brookhaven, 25-29 Oct 1971	7 th 4C Meeting	INDC(NDS)-41
Paris, 5-9 Oct 1970	6 th 4C Meeting	INDC(NDS)-28
Moscow, 17-21 Nov 1969	5 th 4C Meeting	INDC(NDS)-16

LIST OF ACRONYMS

ATOMKI	Nuclear Research Institute, Debrecen, Hungary
BARC	Bhabha Atomic Research Centre, Trombay, Mumbai, India
BNL	Brookhaven National Laboratory, Upton, New York, USA
BROND	Russian Evaluated Neutron Reaction Data Library
C4	Computational format for EXFOR data
CAJaD	Centre for Nuclear Structure and Reaction Data, Kurchatov Institute, Moscow, Russia
CDFE	Centr Dannykh Fotojad. Eksp., Moscow State University, Russia
CENDL	Chinese Evaluated Neutron reaction Data Library
CHEX	EXFOR check program (originating from NNDC)
CIAE	Chinese Institute of Atomic Energy, Beijing, China
CINDA	A specialized bibliography and data index on nuclear reaction data operated by NRDC
CJD	Russian Nuclear Data Centre, IPPE, Obninsk, Russia
CNDC	China Nuclear Data Centre, CIAE, Beijing, China
CNPD	Centre of Nuclear Physics Data at RFNC-VNIIEF, Sarov, Russia
CP...	Numbering code for memos exchanged within the NRDC
CPND	Charged-particle nuclear reaction data
CRP	Coordinated Research Project (of the IAEA Nuclear Data Section)
CSEWG	US Cross Section Evaluation Working Group
DOI	Digital Object Identifier, <i>e.g.</i> for bibliographic references
EFF	European Fusion File, coordinated by NEA-DB
EMPIRE	A code system for nuclear reaction model calculations
ENDF-6	International format for evaluated data exchange, version 6
ENDF/B	US Evaluated Nuclear Data File/B
ENSDF	Evaluated Nuclear Structure Data File
EXFOR	Format for the international exchange of nuclear reaction data
GSYS	Data digitizing system by JCPRG
IAEA	International Atomic Energy Agency, Vienna, Austria
IBANDL	Ion Beam Analysis Nuclear Data Library, maintained at IAEA
INDC	International Nuclear Data Committee
IPPE	Institute of Physics and Power Engineering, Obninsk, Russia
IRDF	International Reactor Dosimetry and Fusion File, maintained by the IAEA-NDS

JAEA	Japan Atomic Energy Agency
JANIS	Java Nuclear Information System of NEA-DB
JCPRG	Nuclear Reaction Data Centre, Hokkaido University, Sapporo, Japan
JEFF	Joint Evaluated Fission and Fusion File, coordinated by NEA-DB
JENDL	Japanese Evaluated Nuclear Data Library
KAERI	Korea Atomic Energy Research Institute, Daejeon, Korea
KNDC	Nuclear Data Center, KAERI, Daejeon, Korea
KINR	Kyiv Institute of Nuclear Research
LEXFOR	Part of the EXFOR manual containing physics information for compilers
NDS	IAEA Nuclear Data Section, Vienna, Austria
NEA	OECD Nuclear Energy Agency, Issy-les-Moulineaux, France
NEA-DB	OECD/NEA Data Bank, Issy-les-Moulineaux, France
NEANDC	OECD/NEA Nuclear Data Committee
NNDC	National Nuclear Data Center, Brookhaven National Laboratory, USA
NRDC	International Network of Nuclear Reaction Data Centres
NRDF	Japanese Nuclear Reaction Data File
NSDD	International Network of Nuclear Structure and Decay Data Evaluators
NSC	OECD/NEA Nuclear Science Committee
NSR	Nuclear Science References, a bibliographic system
OECD	Organization for Economic Cooperation and Development, Paris, France
ORDER	EXFOR program for addition of record identification
PhND	Photonuclear data
RIKEN	Institute of Physics and Chemistry Research, Wako-Shi, Saitama, Japan
TRANS	Name of transmission tapes for data exchange in the EXFOR system
UKRNDC	Ukraine Nuclear Data Centre at KINR, Kyiv, Ukraine
VNIIEF	Russian Federal Nuclear Centre, Sarov, Russia
WPEC	Working Party on International Nuclear Data Evaluation Co-operation
XTRACT	EXFOR indexing program
X4TOC4	Conversion program from EXFOR to computational format "C4"
ZCHEX	Current version of CHEX, updated and maintained by NDS
4C...	Numbering code of memos exchanged among the four Neutron Data Centres

MEETING SUMMARY

1. Introduction

The IAEA Technical Meeting on the International Network of Nuclear Reaction Data Centres was held at the IAEA Headquarters in Vienna, Austria from 21 to 23 April 2015. The meeting was attended by 22 participants representing 12 cooperating Centres from 8 Member States (China, Hungary, India, Japan, Korea, Russia, Ukraine and USA) and 2 International Organisations (NEA, IAEA) as well as a participant from Kazakhstan (see **Appendix A**). Meetings of this network are held annually, with full meetings involving Centre Heads and technical staff every two years. (The last full meeting was held in May 2014 in the Congress Centre of Slovak Academy of Sciences in Smolenice, Slovakia.)

Main topics of the present meeting were transmission statistics, manuals and dictionaries, compilation needs, quality control, coding rules as well as tools for compilation and dissemination (see **Appendix B**). The results of the discussions were summarized in 18 conclusions and 87 actions (see **Appendix C**).

2. Brief Summary

2.1 Opening

S. Simakov, Head of the Nuclear Data Service Unit of the IAEA Nuclear Data Section (NDS) welcomed the participants, and the participants introduced themselves. **S. Taova** was elected as the chairperson, and the agenda was adopted without change.

2.2 Progress Reports

Progress reports from all thirteen attending Centres were presented by **S. Takács**, **A. Saxena**, **S. Taova**, **S. Ebata**, **V. Varlamov**, **O. Grizay**, **M. Mikhailiukova**, **S.C. Yang**, **O Cabellos**, **Ge Zhigang**, **S. Simakov** and **B. Pritychenko**, who highlighted the staffing, compilation, dissemination and other nuclear data related activities of interest to the network. See also progress reports P2015-01 to P2015-11 (**Appendix D**) for further details.

2.3 EXFOR General

V. Semkova presented the statistics of transmissions, journal scanning and preliminary tape checking. She reported that 398 new entries and 954 revised entries have been newly finalized since the last NRDC meeting. She also mentioned that NDS regularly scans about 63 journals since the last NRDC meeting. Finally she reported that both NEA DB and NDS submit comments on almost all preliminary tapes, and CJD also does the same for neutron-induced reaction data.

N. Otsuka presented his analysis of compilation time (= time of transmission – time of publication) for eight selected journals (covering 67% of all registered articles) published in 2014. His analysis showed that the compilation time is 5.5 months on average, which is slightly better than that reported in the last NRDC meeting for articles published in 2013 (6.3 months). He also reported progress in corrections of the entries registered in the EXFOR Feedback List. He noted that there are still hundreds of pending items for corrections by NNDC, NEA DB and CJD.

2.4 Manuals and Dictionaries

N. Otsuka proposed a revised LEXFOR “Thick- and thin-target yields” based on his new publication discussing EXFOR compilation of these quantities (N. Otsuka, S. Takács, Radiochim. Acta 103(2015)1, and it was accepted. He also proposed to treat data obtained with an extrapolation which contributes a significant correction as “derived data”, and it was also accepted.

O. Schwerer proposed revisions of LEXFOR "Corrections", "Data type" and "Status" which are based on our conclusions on data corrected or derived by other than authors discussed in the last meeting, and they were approved. In the last meeting, the participants concluded that compilation of data sets renormalized by other than the author is *not recommended*. However the participants agreed that such data sets *should not be compiled* at all.

M. Mikhailiukova proposed transliteration of Cyrillic names as they are given in an English translation of the source article and revisions of LEXFOR "Author", and it was approved.

2.5 CINDA

V. Zerkin reported that the CINDA Master File was updated twice since the last NRDC meeting (July and December 2014) including imports from the EXFOR and NSR databases. He also reported that a MySQL dump of the complete CINDA database was sent to NNDC, BARC and CNDC.

2.6 EXFOR Compilation Needs

V. Semkova presented progress in compilation of data related to various applications (*e.g.*, neutron sources, radioisotope production, ion beam analysis, neutron dosimetry). The participants confirmed that there are still many articles for compilation, mainly for charged-particle induced reaction data.

S. Simakov summarized his interaction with the participants of NEA WPEC Subgroup 40 “Collaborative International Evaluated Library Organisation (CIELO) Pilot Project”. He reported that he obtained several original data sets (*e.g.*, $^{13}\text{C}(\alpha,n)^{16}\text{O}$ by J.K. Bair et al., $^{16}\text{O}(n,\alpha)^{13}\text{C}$ data by G. Georginis) for addition to EXFOR. Simakov also reported his assessment on compilation of spectrum averaged cross sections measured in various neutron fields. He concluded that (1) compilation is desirable for spectrum averaged data for “simple and clean” benchmarks (*e.g.*, $^{252}\text{Cf}(\text{sf})$ prompt fission neutron spectrum averaged cross sections), however (2) compilation should be left to existing benchmark databases (*e.g.*, SINBAD, ICSBEP) for data measured in more complex neutron fields. His conclusions were accepted by the participants.

N. Otsuka presented the result of EXFOR completeness checking against Holden’s reports on compilation and recommendation of prompt fission neutron multiplicities and their distributions. It is related with safeguards application, and participants agreed to compile those still missing in EXFOR with priority.

2.7 EXFOR Quality Control

N. Otsuka summarized the situation of various duplication of data sets in EXFOR. He reported that systematic duplications for intermediate energy proton-induced activation cross sections measured by A.R. Balabekyan et al. and R. Michel et al. discussed in the last meeting were resolved for

almost all cases by CNPD and NEA DB.

N. Otsuka reported that listing of English translation articles was completed for articles published in major Russian journals (*Atomnaya Energiya*, *Yadernaya Fizika*, *Zhurnal Eksp. Toeret. Fiziki*, *Dolady A.N.*, *Izvestiya A.N. Ser. Fiz.*). He also reported that addition of English translation bibliographies to the relevant EXFOR entries were completed except for entries maintained by CJD as well as entries compiled from articles in *Izvestiya A.N. Ser. Fiz.*

O. Cabellos introduced two approaches for statistical verification and validation of EXFOR coordinated by the NEA Data Bank (1) In-depth review of all threshold reaction cross-sections by comparison of EXFOR data sets with major libraries, and (2) cross checking of evaluated and experimental data developed with Société de Calcul Mathématique (SCM). He reported the first approach confirmed that the most of the experimental data were compiled correctly in EXFOR while a few compilation mistakes were detected. See A. Koning, NEA/DB/DOC(2014)3 and O. Zeydina et al., *Nucl. Data Sheets* 120 (2014) 277 for more details about these two approaches.

2.8 EXFOR Coding Rule

N. Otsuka proposed to enter the year of publication in the volume number field for *Pribory i Tekhnika Eksperimenta* (PTE) because currently the volume number field is a mandatory field, and we have agreed the same convention for other journals which do not have volume numbers (e.g., *Yad. Konst.*), and the centres performed retroactive corrections for better consistency.

M. Mikhailiukova proposed to keep the volume number field blank because the volume number does not exist. The participants decided to postpone the decision.

M. Mikhailiukova pointed out that the energy differential probability (e.g., ratio of the prompt fission neutron spectrum to the prompt fission neutron multiplicity) should have a unit like 1/MeV rather than 1/fission/MeV (for prompt fission neutron spectrum) or 1/incident particle/MeV (for thick target neutron spectrum), and the proposal was accepted.

N. Otsuka proposed addition of the isomeric flag $-G$ to nuclide codes under the keyword `DECAY-DATA` whenever the nuclide has a metastable state and the authors measured the activity of the ground state because it may draw more attention of compilers to existence of a metastable state and may improve assignment of the REACTION code (e.g., partial production for the ground state excluding metastable state production). **O. Schwerer** mentioned that $-G$ must be given whenever the existence of a metastable state has significance for the experiment and/or the compiled result, but the rule could be less strict than Otsuka's proposal. Finally the participants agreed to keep the isomeric flag $-G$ as an optional under the keyword `DECAY-DATA`.

2.9 Tools for Compilation and Dissemination

G. Pikulina reported the recent development of the digitizer InpGraph. She explained that she is trying to reduce the number of steps for digitization to simplify operation. She also reminded that two types of digitization error were discussed in the last meeting: 1) standard deviation of the digitized value and true value on ticks δ , and (2) quantization error corresponding to the size of a pixel Δ . She reported that InpGraph currently outputs $\max(\delta, \Delta)$ as the digitization error.

V. Zerkin presented new features of various systems developed by him: (1) experts' EXFOR data corrections, (2) EXFOR statistics by year of main publications, (3) additional EXFOR output format, (4) access to common EXFOR-NSR PDF database, (5) GND (XML) output from web-ENDF, (6) running GRUCON via web, (7) text search in EXFOR and (8) inverse reactions in

EXFOR and inverse kinematics in IBANDL web interface. His presentation was followed by a list of some open questions to the participants to define directions of his further developments.

R. Forrest encouraged the participants to provide suggestions to improve accessibility of a specific type of data on EXFOR retrieval systems.

2.10 Other Business

B. Pritychenko discussed the missing data in EXFOR. He introduced the fraction of neutron induced reaction data, charged-particle induced reaction data and photonuclear data in EXFOR (48.8% for neutron, 19.8% for charged-particles and 5.7% for photon), and mentioned that there should be still many articles reporting charged-particle and photon and photonuclear reaction data and still missing in EXFOR. He also introduced his recent successful collaboration with K. Guber (ORNL) for extraction of time-of-flight spectra measured at the ORELA facility for EXFOR compilation.

N. Otsuka reported that EXFOR was utilised for review of low-energy α -induced reaction like (α,γ) , (α,n) and (α,p) reactions by P. Mohr (Germany), and the manuscript with appropriate comments on EXFOR was submitted to European Physical Journal A.

2.7 Closing

N. Otsuka proposed the dates and places for the next full technical NRDC meeting (Beijing, China, 26 to 29 April 2016), and it was approved.

The participants reviewed the conclusions and actions.

R. Forrest and **S. Simakov** closing addresses in connection with their retirement planned this year.

N. Otsuka acknowledged their supports and contributions to the NRDC activity as well as S. Taova's chairing, and the meeting was closed.

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AGENDA

Tuesday, 21 April 2015

9:30 – 13:00

1. Opening Items

1.1	Opening address	10 min		S. Simakov
1.2	Announcement	5 min		A. Oechs
1.3	Self-introduction	10 min		All
1.4	Election of chairperson, adoption of the agenda, announcements	5 min		N. Otsuka

2. Progress Reports

2.1	ATOMKI (Debrecen, Hungary)	10 min	P2015-01	S. Takács
2.2	NDPCI (Mumbai, India)	10 min	P2015-02	A. Saxena
2.3	CNPD (Sarov, Russia)	10 min	P2015-03	S. Taova
2.4	JCPRG (Sapporo, Japan)	10 min	P2015-04	S. Ebata
2.5	CDFE (Moscow, Russia)	10 min	P2015-05	V. Varlamov
2.6	UkrNDC (Kyiv, Ukraine)	10 min	P2015-06	O. Gritzay
2.7	CJD (Obninsk, Russia)	10 min	P2015-07	M. Mikhailiukova
2.8	KNDC (Daejeon, Korea)	10 min	P2015-08	S.C. Yang
2.9	NEA DB (Paris, France)	10 min	P2015-09	O. Cabellos
2.10	CNDC (Beijing, China)	10 min	P2015-10	Zhigang Ge
2.11	NDS (Vienna, Austria)	10 min	P2015-11	S. Simakov
2.12	NNDC (Upton, USA)	10 min	P2015-0	B. Pritychenko

150 min

14:00 – 18:00

3. EXFOR General

3.1	Transmission statistics	10 min	WP2015-02	V. Semkova
3.2	Scanning of new publications by NDS	10 min	WP2015-03	V. Semkova
3.3	Preliminary tape checking statistics	10 min	WP2015-04	V. Semkova
3.4	Compilation duration statistics (A1)	10 min	WP2015-05	N. Otsuka
3.5	Correction statistics (A4)	10 min	WP2015-06	N. Otsuka
3.6	NRDC distribution lists	10 min	WP2015-07	N. Otsuka
3.7	Other actions (A2-A3,A5)	10 min	WP2015-01	Chairperson

4 Manuals and Dictionary

4.1	LEXFOR “Thick- and thin-target yields” (CP-D/850)	10 min	WP2015-08	N. Otsuka
4.2	LEXFOR “Data type” - Data derived with extrapolation (CP-D/866)	10 min	WP2015-09	N. Otsuka

4.3	Thickness as independent variable (A14; CP-D/873)	10 min	WP2015-10	N. Otsuka
4.4	LEXFOR “Institute” (CP-D/865)	10 min	WP2015-11	O. Schwerer
4.5	LEXFOR “Corrections”, “Data type” and “Status” (A8; CP-D/869)	20 min	WP2015-12	O. Schwerer
4.6	LEXFOR “Author” - Transliteration of Cyrillic names (CP-D/870)	10 min	WP2015-13	M. Mikhailiukova
4.7	Other actions (A9-A13, A15-A16)	10 min	WP2015-01	Chairperson
5	CINDA			
5.1	Status of CINDA database in the IAEA-NDS	10 min	WP2015-14	V. Zerkin
5.2	Other actions (A17-A19)	10 min	WP2015-01	Chairperson
		<i>170 min</i>		

Social event: 19:00 –

“[Bodega Marques](#)” (Parisergasse 1, about 5 min from U1 Stephanplatz)

Wednesday, 22 April 2015

9:00 – 13:00

6	EXFOR Compilation Needs			
6.1	Compilation of articles with priority (A20-A28)	10 min	WP2015-15	V. Semkova
6.2	Compilation related to the CIELO project (A37)	10 min	WP2015-16	S. Simakov
6.3	Compilation of spectrum averaged data in SINBAD and ICSBEP (A38)	10 min	WP2015-17	S. Simakov
6.4	EXFOR completeness checking (FCY/L Memo CP-D/858)	10 min	WP2015-18	N. Otsuka
6.5	Data tabulated in LIJAF-531 (CP-D/860)	10 min	WP2015-19	N. Otsuka
6.6	EXFOR completeness for fission neutron multiplicity distribution (CP-D/867)	10 min	WP2015-20	N. Otsuka
6.7	EXFOR completeness for prompt fission neutron multiplicities (CP-D/871)	10 min	WP2015-21	N. Otsuka
6.8	Other actions (A29-A36)	10 min	WP2015-01	Chairperson
7	EXFOR Quality Control			
7.1	Pending duplications (A39-A43)	10 min	WP2015-22	N. Otsuka
7.2	Pending corrections (A45-A49, A52- A54, A57-A58)	10 min	WP2015-23	N. Otsuka

7.3	English translation of IZV (A51; CP-D/847)	10 min	WP2015-24	N. Otsuka
7.4	Review of entries coded with ,PN (A60)	10 min	WP2015-25	V. Semkova
7.4	Other actions (A44, A50, A55-A56, A59, A62-A66)	10 min		
8	EXFOR Coding Rule			
8.1	Coding rule for volume number of PTE (CP-D/868, 4C-4/209)	20 min	WP2015-26	M. Mikhailiukova N. Otsuka
8.2	Unit codes for differential probabilities (4C-4/210)	10 min	WP2015-27	M. Mikhailiukova
8.3	Isomeric flag -G for DECAY-DATA (CP-D/872, CP-C/440)	20 min	WP2015-28	N. Otsuka O. Schwerer
8.4	Best practices in EXFOR compilations (CP-C/437)	20 min	WP2015-29	B. Pritychenko
8.5	Other actions (A67-A68)	10 min	WP2015-01	Chairperson
		<i>210 min</i>		

14:00 – 18:00

9 Software and Dissemination

9.1	Usages of compilation tools (A6-A7)	10 min	WP2015-30	N. Otsuka
9.2	Statistical verification and validation of the EXFOR database (A61, A69; CP-N/124)	20 min	WP2015-31	O. Cabellos
9.3	Program InpGraph on graphic data processing for the Exfor library	20 min	WP2015-32	G. Pikulina
9.4	Digitization from deformed scale	10 min		N. Otsuka
9.5	New features of NDS Web systems: - experts' EXFOR data corrections - text search in EXFOR - common EXFOR-NSR PDF database - inverse reactions (A73), inverse kinematics (IBANDL) - GND (XML) output from web-ENDF - running Grucon via web	90 min	WP2015-33	V. Zerkin
9.6	Other actions (A70-A72, A74-A89)	10 min	WP2015-01	Chairperson
		<i>160 min</i>		

Thursday, 23 April 2015

9:00 – 13:00

10 Other business

- | | | | | |
|------|---|--------|-----------|----------------|
| 10.1 | Area #1 missing data effort | 30 min | | B. Pritychenko |
| 10.2 | Recent activity of Central Asian
Nuclear Reaction Database | 10 min | WP2015-34 | A. Zhunisbek |

11. Closing

- | | | | | |
|------|-----------------------------------|--------|--|-------------|
| 11.1 | Dates and places of next meetings | 10 min | | N. Otsuka |
| 11.2 | Review of actions and conclusions | 1 hour | | Chairperson |
| 11.3 | Closing address | 10 min | | R. Forrest |
- 120 min*

CONCLUSIONS AND ACTIONS

Conclusions

General

- C1 The next full NRDC meeting will be held in Beijing, China from 26 to 29 April 2016.
- C2 The next technical NRDC meeting will be held in Vienna, Austria in the 2nd quarter of 2017.
- C3 Two distribution lists are maintained at NDS (c.f. WP2015-07). Centres are recommended to use the “memo distribution list” for memo distribution while the “technical distribution list” for notification of new tapes, database update etc.

EXFOR General

- C4 Collaborative effort by Boris Pritychenko and Klaus Guber on extraction of time-of-flight spectra measured at ORELA for EXFOR compilation is notable. The participants urge similar collaboration between centres and facilities (*e.g.*, GELINA, n_TOF).
- C5 Centres are encouraged to identify experimental works still missing in EXFOR (*e.g.*, by scanning of citation lists of review articles).

Manuals and Dictionaries

- C6 Revision of LEXFOR “Thick- and thin-target yields” (WP2015-08) was approved.
- C7 Revision of LEXFOR “Data type” (WP2015-09) was approved.
- C8 The new procedure to treat the sample thickness as an independent variable (WP2015-10) was approved.
- C9 Revision to LEXFOR “Institute” (WP2015-11) was approved.
- C10 Revisions to LEXFOR “Corrections”, “Data type” and “Status” (WP2015-12) were approved. N.B. “or renormalized” must be deleted from the expansion of the proposed code CRCTD.
- C11 Revision to LEXFOR “Author” (WP2015-13) was approved.

CINDA

- C12 The CINDA Master File is updated from the EXFOR and NSR database in an automatic way by NDS, and regularly transmitted to other centres.

EXFOR Compilation Needs

C13 Compilation of integral data is desirable for simple or clean benchmarks, namely integral experiments performed under well-characterized neutron fields (*e.g.*, ^{252}Cf (s.f.) prompt fission neutron field), that allow validation of nuclear reaction quantities such as cross sections, neutron spectra. However it is not necessary for complex benchmarks (*e.g.*, benchmarks characterizing devices rather than nuclear data) because they are compiled in existing integral benchmark databases (*e.g.*, ICSBEP, SINBAD).

EXFOR Coding Rule

C14 Proposed changes on unit codes for differential probabilities (WP2015-27) were approved.

C15 The isomeric flag is optional for the ground state (-G) under the keyword DECAY-DATA.

Tools for Compilation and Dissemination

C16 The largest bases must be chosen for both x- and y-axis to minimize fractional error when digitization is performed.

C17 Centres are encouraged to provide suggestions to improve accessibility of a specific type of data on EXFOR retrieval systems.

C18 Centres should consider EXFOR knowledge distribution strategy.

Actions

EXFOR General

A1 All (Standing action) Give the highest priority to compilation of new articles.

A2 All (Continuing action) Correct erroneous entries listed on the EXFOR Feedback List according to the indicated priorities. All urgent corrections must be done by the next meeting.

A3 Otsuka Consider a method to summarize retransmission efforts exceeding an important alteration recorded by the history code A.

A4 Zerkin Coordinate a working group to discuss the opportunity to use XML as a new exchange format.

Manuals and Dictionaries

- A5 Otsuka (Continuing action) Revise the EXFOR Formats Manual for (a) short nuclide codes in REACTION SF7 (WP2011-28); (b) the keyword ERR-ANALYS (Conclusion 15 of NRDC 2012); (c) the keyword SAMPLE (Conclusion 17 of NRDC 2012); (d) reaction products (WP2013-24); (e) covariance (WP2014-13).
- A6 Otsuka (Continuing action) Delete the following footnote in the LEXFOR entry “History”: Compilers are urged to document all changes under HISTORY.
- A7 Otsuka (Continuing action) Revise LEXFOR for (a) TOF covariance (WP2011-27); (b) new branch code ISP (WP2011-29); (c) specific temperatures for prompt fission neutron spectrum averaged quantities (WP2011-30); (d) compilation of prompt fission neutron quantities (WP2011-31); (e) nuclear resonance fluorescence (WP2012-11); (f) additional reference compiled in another entry (WP2012-12); (g) probability for N particle emission (WP2013-20); (h) heading of energy range for unresolved resonance parameters (WP2013-21); (i) resonance parameters for light-nuclei reaction (WP2013-24); (j) partial reaction, reaction product, isomeric state (WP2013-25=CP-D/781rev + CP-C/417 item 3); (k) independent and cumulative data (WP2013-26); (l) irradiation time (WP2013-27); (m) thick target production yield (WP2013-28); (n) digitization (WP2014-12); Covariance (WP2014-13); (o) delayed fission neutron spectrum (WP2014-23); (p) sample (WP2014-34); (q) neutron yields (WP2014-36); (r) fission yields (WP2014-37 and 44); (s) thermonuclear reaction rate (WP2014-38); (t) production and emission cross sections (WP2014-39); (u) delayed fission neutrons (WP2014-41); (v) history (WP2014-42); (w) partial reactions (WP2014-43); (x) thick-and thin-target yields (WP2015-08); (y) data type (WP2015-09); (z) institute (WP2015-11); (aa) corrections, data type and status (WP2015-12); (bb) author (WP2015-13).
- A8 Otsuka (Continuing action) Update Dictionaries every four months.
- A9 Otsuka Update dictionary 24, 213 and 236 according to WP2015-10 to treat the sample thickness coded under THICKNESS as an independent variable.
- A10 Otsuka List data sets which require addition of the sample thickness.
- A11 Otsuka Update dictionary 25, 26 and 236 for the differential probabilities (c.f. 4C-4/210).
- A12 Zerkin Summarize the role of family flags (also known as family codes, c.f. EXFOR Formats Manual Chapter 6) in systems.

CINDA

A13 Zerkin (Continuing action) Export EXFOR and NSR to CINDA, and distribute it to other Centres every 6 months.

EXFOR Compilation Needs

(Underlined items are registered in the Article Allocation List.)

A14 Aikawa (Continuing action) Compile with priority the neutron source
Chen spectra listed in CP-D/700 (Rev.3).
Pritychenko

A15 Aikawa (Continuing action) Compile with priority the proton-induced
Cabellos isotope production cross sections listed in CP-D/725 Rev.
Pritychenko (~WP2012-19). Notify Semkova if the assigned centre does not
Takács compile the high energy ($E > 1$ GeV) data in the list.
Taova

A16 Aikawa (Continuing action) Compile with priority the light charged-particle
Cabellos induced isotope production cross sections listed in CP-D/757.
Otsuka Notify Semkova if the assigned centre does not compile the high
Pritychenko energy ($E > 1$ GeV) data in the list.
Taova

A17 Chen (Continuing action) Compile with priority the articles cited in the
Cabellos NACRE II (an update and extension of European Compilation of
Pritychenko Reaction Rates for Astrophysics) listed in Tables 1 and 2 of CP-
Varlamov D/833.
Yang

A18 Chen (Continuing action) Compile with priority the articles related to ion
Cabellos beam analysis application listed in CP-D/832 Rev.
Gritzay
Pritychenko
Taova

A19 Cabellos (Continuing action) Compile with priority the β -delayed neutron
Pritychenko spectra published in the articles listed in the table of CP-D/837.

A20 Pritychenko (Continuing action) Compile with priority articles related to the
neutron dosimetry cross sections listed in the second table of CP-
D/838.

A21 Cabellos (Continuing action) Assess the articles reporting keV neutron
Pritychenko capture cross section entries listed in CP-D/740, and add these
articles with necessary revisions with priority.

- A22 Mikhailiukova (Continuing action) Compile the articles listed in the last page of
Otsuka WP2014-33 (articles compiled in CINDA but missing in EXFOR).
Pritychenko
N.B. The CINDA record for EXFOR 13906 is corresponding to the EXFOR entry 14016, and additional compilation is not necessary.
- A23 Cabellos (Continuing action) Compile the thermal neutron-induced reaction
Mikhailiukova data cited in Mughabghab's "Atlas of Neutron Resonances" and
Pritychenko listed in 4C-3/395.
Semkova
- A24 Pritychenko (Continuing action) Assess neutron cross section data useful for
standard evaluation listed in CP-D/699, and compile them if
appropriate. N.B. Renner's thesis on ${}^6\text{Li}(n,\alpha)$ is for addition to
10841.
- A25 Cabellos (Continuing action) Perform EXFOR completeness checking for
Mikhailiukova the list of articles received from NDS (articles cited in S.
Pritychenko Mughabghab's "Atlas of Neutron Resonances") to identify articles
missing in EXFOR, and assign responsibility of compilation of the
identified articles to centres for by a memo.
- A26 Otsuka (Continuing action) Perform EXFOR completeness checking for
the articles published in the conference proceedings in the past
Symposia on Reactor Dosimetry (c.f. CP-D/838).
- A27 Kenzebayev (Continuing action) Scan domestic publications (*e.g.*, journals,
laboratory reports) to identify articles for EXFOR compilation.
- A28 Gritzay (Continuing action) Consider compilation of neutron spectra for
filtered neutrons published in the last 10 years.
- A29 Cabellos (Continuing action) Monitor CIELO mailing lists, and try to
Simakov receive tabulated experimental data from evaluators who have their
own internal database.
- A30 Chen Compile with priority prompt fission neutron multiplicity
Pritychenko distributions listed in CP-D/867.
- A31 Chen Compile with priority prompt fission neutron multiplicities listed in
Cabellos CP-D/871.
Mikhailiukova
Pritychenko
- A32 Pritychenko Compile time-of-flight spectra on DVDs newly received from
ORELA in 2015.

- A33 Aikawa Compile articles published in JINR Rapid Communication (KSO) and Phys. Part. Nucl. Lett. (PPN/L) and listed in CP-D/858.
Cabellos
Taova
Varlamov
- A34 Taova Compile data sets in Tables 1, 15, 16 and 19 of the Leningrad Institute of Nuclear Physics Report LIJAF-531 (c.f. CP-D/860).
- A35 Simakov Monitor availability of (1) revised $^{235}\text{U}(n,f)$ prompt fission neutron spectra measured at LANL (EXFOR 13982) and (2) $^{238}\text{U}(n,2n)^{237}\text{U}$ cross sections measured at TUNL described in WP2015-16.

EXFOR Quality Control

(Underlined items are registered in the EXFOR Feedback List.)

- A36 Cabellos (Continuing action) Resolve inter-centre duplication C0846/F0160, C0968/A0320, C0998/O0452 and T0297/O0338 (c.f. CP-D/762), and inform Otsuka the conclusion.
Pritychenko
Taova
- A37 Otsuka (Continuing action) Summarize the duplication pairs in the EXFOR entries listed in the item 3b of WP2013-17 (D-T neutron activation cross sections from OKTAVIAN, Osaka Univ.).
- A38 Mikhailiukova (Continuing action) Add English translation information of Atomnaya Energiya under the keyword REFERENCE as listed in WP2011-26.
- A39 Mikhailiukova (Continuing action) Add English translation information of Yadernaya Fizika under the keyword REFERENCE as listed in WP2012-24.
- A40 Mikhailiukova (Continuing action) Add English translation information of Yadernye Konstanty under the keyword REFERENCE as listed in Tables 1 and 2 of CP-D/777.
- A41 Mikhailiukova (Continuing action) Add English translation information of Zhurnal Eksp. Teoret. Fiziki (incl. Pis'ma v Redaktsiyu) under the keyword REFERENCE as listed in CP-D/809.
- A42 Mikhailiukova (Continuing action) Add English translation information of Doklady Akademii Nauk under the keyword REFERENCE as listed in CP-D/842.
- A43 Mikhailiukova (Continuing action) Add English translation information of Izvestiya Rossiiskoi Akademii Nauk, Seriya Fizicheskaya under the keyword REFERENCE as listed in CP-D/847.
Pritychenko
Taova

- A44 Taova Varlamov (Continuing action) Identify the bibliographies of the original Russian article published in Doklady for EXFOR 41257 and 41258, and notify them to Mikhailiukova and Otsuka.
- A45 Pritychenko (Continuing action) Look for the original data for the four data sets flagged by 1 in the table of CP-D/841(Rev.). If the original data are no longer available, consider using free text instead of *RNORM*.
- A46 Cabellos Mikhailiukova Otsuka Taova (Continuing action) Assess the entries listed in Appendix C of WP2014-32. Re-compile the article based on the entry in the “EXFOR updates and archive” maintained by NDS when appropriate. If not, create only a common subentry with minimum keywords (*i.e.*, TITLE, AUTHOR, REFERENCE, FACILITY, HISTORY) as time permits.
- A47 Cabellos Mikhailiukova (Continuing action) Try to add numerical data which are not superseded (*SPSDD*) but still unobtainable (*UNOBT*) for neutron-induced reaction data published in old literature for ^1H , ^{16}O , ^{56}Fe , ^{235}U , ^{238}U and ^{239}Pu .
- A48 Taova (Continuing action) Correct F0004.002 and 003 which are partial for secondary energies (c.f. CP-D/841).
- A49 Cabellos (Continuing action) Assess if REACTION of 22077.014, 029 and 044 can be improved as proposed in the table of CP-D/813 (Rev.2).
- A50 Aikawa Consider to use 6-C-12(PIP,KP)6-C-12,PAR,IPA,,MSC for the $^{12}_{\Delta}\text{C}$ hyper-nucleus production cross sections compiled in J1601.003.
- A51 Cabellos Soppera (Continuing action) Provide a list of erroneous and suspicious outliers by using various statistical approaches (c.f. WP2011-17, WP2013-19).
- A52 Cabellos (Continuing action) Provide JANIS–TRANS Checker Log list on every preliminary TRANS-file.
- A53 Soppera (Continuing action) Provide JANIS Import Log created from the EXFOR Master File to Otsuka on a regular basis.
- A54 Otsuka (Continuing action) Assess the JANIS Import Log provided by Soppera as above, and register important errors to the EXFOR Feedback System.
- A55 Taova Valramov (Continuing action) Search TRANS tapes missing in the NDS open area, and provide them to NDS.
- A56 Cabellos Delete 22711.003 which is duplication of 13918.002 (c.f. CP-D/762).

- A57 Taova Delete A0669.002-004 and 006-007 and also delete (or supersede) A0669.005 and 008 without deletion of A0820.002-050 (c.f. CP-D/797).
- A58 Cabellos Supersede five data sets in O0281 by those in O0277 as summarized in CP-D/805.
- A59 Aikawa Resolve duplication between E2049, E2125 and E2430 (WP2015-18).
- A60 Cabellos
Mikhailiukova
Otsuka Revise the unit codes of energy differential probability distributions listed in WP2015-27.
- A61 Cabellos
Pritychenko
Semkova Revise data β -delayed neutron emission probabilities listed in WP2015-25.
- A62 Cabellos
Taova Revise data sets tabulated in the Leningrad Institute of Nuclear Physics Report LIJAF-531 and listed in CP-D/860.
- A63 Cabellos
Otsuka
Pritychenko Explain availability of the neutron spectra of ISNF, Sig-Sig, CFRMF and YAYOI facility compiled in the IRDF-2002 library under the keyword COMMENT of entries summarized in WP2015-17 as compiler's comments.
- A64 Otsuka Assess the difference of RIKEN neutron spectra compiled in EXFOR E2298 and SINBAD NEA-1552/14 summarized in WP2015-17.

EXFOR Coding Rule

- A65 Lee (Continuing action) Assess the articles received from Otsuka and check if the new definition of the η value proposed in WP2014-36 requires modifications.
- A66 Mikhailiukova
Otsuka Formulate the coding rule for the volume number field of Pribory i Tekhnika Eksperimenta (PTE) (c.f. WP2015-26).

Tools for Compilation and Dissemination

- A67 Otsuka (Continuing action) Provide EXFOR News for every EXFOR Master File.
- A68 Soppera (Continuing action) Continue development and testing of the JANIS –TRANS Checker in cooperation with NDS and the other centres.

- A69 Zerkin (Continuing action) Update ZCHEX based on comments from compilers (*e.g.*, WP2011-36).
- A70 All (Continuing action) Provide feedback to NDS on the existing ZCHEX version (on bugs as well as desired additions.). Bugs must be reported with sample entries which are checked and not checked properly by ZCHEX.
- A71 Zerkin (Continuing Action) Prepare coding of covariance data for all EXFOR Entries having authors' covariances, and offer them to Data Centres according to Areas for finalizing and submitting to the database.
- A72 All Finalize and submit EXFOR entries including covariance data provided by Zerkin.
- A73 Zerkin (Continuing action) Continue development of the EXFOR upload web tool.
- A74 Zerkin (Continuing action) Every four months produce an EXFOR distribution with (a) full Dictionary distribution; (b) EXFOR in C4 and XC4 format; (c) Dictionaries in MS Access; (d) X4Map.
- A75 Zerkin (Continuing action) Continue development of X4+ (interpreted / extended EXFOR format), and distribute the program package including a standalone platform independent program to generate X4+ from a standalone EXFOR entry.
- A76 All (Continuing action) Consider to use the X4+ format for author approval, and also send feedback to Zerkin.
- A77 Zerkin (Continuing action) Continue development of a new database encompassing correction factors and relevant comments for suspect/erroneous data (X4-evaluated) presented in WP2010-19; keep NRDC informed about conclusions of discussions on new database.
- A78 Zerkin
Pritychenko (Continuing action) Continue translation from EXFOR to NSR.
- A79 All (Continuing action) Provide Zerkin a list of name aliases to improve the search of EXFOR entries by the author name (WP2014-53).
- A80 Zerkin
Simakov Continue development of the function to calculate cross sections for inverted reactions based on the detailed-balance principle.
- A81 Zerkin Introduce flags to indicate articles published in conference proceedings and the data are not available from the authors on the EXFOR Compilation Control System web page

- A82 Zerkin Develop a web page to provide numbers of new entries and retransmitted entries for each year and centre.
- A83 JCPRG (Continuing Action) Continue development and testing of GSYS in cooperation with NDS and other centres, taking into account compilers' remarks.
- A84 All (Continuing Action) Provide JCPRG feedback on GSYS.
- A85 Otsuka (Continuing Action) Support update of the Japanese editor (HENDEL) as time permits.
- A86 CNPD (Continuing Action) Continue development and testing of the EXFOR-Editor and InpGraph in cooperation with NDS and other data Centres, taking into account compilers' remarks.
- A87 All (Continuing Action) Provide CNPD feedback on EXFOR-Editor and InpGraph.

LIST OF PROGRESS REPORTS

Number	Title	Presented by
P2015-01	Progress report 2014-2015	S. Takács
P2015-02	A brief status update on the activities of Nuclear Data Physics Centre of India (NDPCI) during 2014-2015	A. Saxena
P2015-03	Center of Nuclear Physics Data (CNPd), RFNC-VNIIEF	S. Taova
P2015-04	Hokkaido University Nuclear Reaction Data Centre (JCPRG) progress report	S. Ebata
P2015-05	The CDFE 2014 – 2015 period activities in photonuclear data compilations and evaluations	V. Varlmaov
P2015-06	Ukrainian Nuclear Data Centre Progress Report, 2014/15	O. Gritzay
P2015-07	CJD progress report for NRDC Technical Meeting	M. Mikhailiukova
P2015-08	Nuclear Data Center (NDC) of Korea Atomic Energy Research Institute (KAERI)	S.C. Yang
P2015-09	NEA Data Bank progress report 2013-2014	O. Cabellos
P2015-10	2014/15 status report of China Nuclear Data Center	Ge. Zhigang
P2015-11	IAEA Nuclear Data Section: Progress report for period 2014/15	S. Simakov

Note: These progress reports are available online: http://www-nds.iaea.org/nrdc/nrdc_2015/.

LIST OF WORKING PAPERS

Number	Title	From
WP2015-01	Conclusions and action of the 2014 NRDC Meeting	
WP2015-02	New and revised entries / subentries since the 2014 NRDC meeting	V.Semkova
WP2015-03	Scanning of new publications by NDS	V.Semkova
WP2015-04	Statistics of checking the preliminary files	V.Semkova
WP2015-05	Compilation duration statistics (A1)	N.Otsuka
WP2015-06	Correction statistics (A4)	N.Otsuka
WP2015-07	NRDC distribution lists	N.Otsuka
WP2015-08	LEXFOR "Thick- and thin-target yields" (CP-D/850)	N.Otsuka
WP2015-09	LEXFOR "Data type" - Data derived with extrapolation (CP-D/866)	N.Otsuka
WP2015-10	Thickness as independent variable (A14; CP-D/873)	N.Otsuka
WP2015-11	LEXFOR "Institute" (CP-D/865)	O.Schwerer
WP2015-12	LEXFOR "Corrections", "Data type" and "Status" (A8; CP-D/869)	O.Schwerer
WP2015-13	LEXFOR "Author" - Transliteration of Cyrillic names (CP-D/870)	M.Mikhailiukova
WP2015-14	Status of CINDA database	V.Zerkin
WP2015-15	Compilation of articles with priority	V.Semkova
WP2015-16	Monitor CIELO mailing lists, and try to receive tabulated experimental data from evaluators who have their own internal database (A37)	S.Simakov
WP2015-17	Assess whether the experimental spectrum averaged cross sections available in the SINBAD and ICSBEP databases are suitable for inclusion in EXFOR (A38)	S.Simakov
WP2015-18	EXFOR completeness checking (FCY/L CP-D/858)	N.Otsuka

WP2015-19	Data tabulated in LIJAF-531 (CP-D/860)	N.Otsuka
WP2015-20	EXFOR completeness for fission neutron multiplicity distribution (CP-D/867)	N.Otsuka
WP2015-21	EXFOR completeness for fission neutron multiplicities (CP-D/871)	N.Otsuka
WP2015-22	Pending duplications (A39-A42)	N.Otsuka
WP2015-23	Pending corrections (A45-A49,A52-A54,A57-A58)	N.Otsuka
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Update of activities of Nuclear Data Physics Centre of India 2014-2015	A.Saxena
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NEA Data Bank (DB) progress report 2014-2015	O.Cabellos
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EXFOR for stellar evolution study through α -induced reaction	N.Otsuka

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