

INDC International Nuclear Data Committee

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

China Hall of Science and Technology, Beijing, China

7 – 10 June 2016

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July 2016

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Produced by the IAEA in Austria
July 2016

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Abstract

This report summarizes the IAEA Technical Meeting on the International Network of Nuclear Reaction Data Centres held at the China Hall of Science and Technology in Beijing, China from 7 to 10 June 2016. The meeting was attended by 23 participants representing 13 cooperative Centres from 8 Member States (China, Hungary, India, Japan, Korea, Russia, Ukraine and USA) and 2 International Organisations (NEA, IAEA) as well as two participants 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, Boulogne-Billancourt, 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

Beijing, 7-10 June 2016	Centre Heads + Technical	INDC(NDS)-0718
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
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
MBDAV	Management Board for the Development, Application and Validation of Nuclear Data and Codes
NDS	IAEA Nuclear Data Section, Vienna, Austria
NEA	OECD Nuclear Energy Agency, Boulogne-Billancourt, France
NEA-DB	OECD/NEA Data Bank, Boulogne-Billancourt, 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
TALYS	A code system for prediction of nuclear reactions and generation of nuclear data
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 China Hall of Science and Technology in Beijing, China from 7 to 10 June 2016. The meeting was attended by 23 participants representing 13 cooperative Centres from 8 Member States (China, Hungary, India, Japan, Korea, Russia, Ukraine and USA) and 2 International Organisations (NEA, IAEA) as well as two participants 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 various statistics, manuals and dictionaries, compilation needs, quality control, coding rules as well as software and dissemination (see **Appendix B**). The results of the discussions were summarized in 25 conclusions and 88 actions (see **Appendix C**).

2. Brief Summary

2.1 Opening

Ge Zhigang, Head of the China Nuclear Data Centre (CNDC) of the China Institute of Atomic Energy (CIAE) welcomed the participants, and **A. Koning**, Head of the IAEA Nuclear Data Section (NDS) introduced the background and the objects of the meeting. The participants introduced themselves. **M. Herman** was elected as the chairperson, and the agenda was adopted without change.

2.2 Progress Reports

Progress reports from all 13 attending Centres were presented by **S. Taova**, **S. Takács**, **S. Ebata**, **D. Raj**, **O. Grizay**, **V. Varlamov**, **S.C. Yang**, **D. Voitenkov**, **O. Iwamoto**, **K. Matsumoto**, **O. Cabellos**, **A. Koning**, **Ge Zhigang** and **M. Herman**, who highlighted the staffing, compilation, dissemination and other nuclear data related activities of interest to the network. See also progress reports P2016-01 to P2016-12 (**Appendix D**) for further details.

2.3 EXFOR General

N. Otsuka (on behalf of V. Semkova) presented the statistics of transmissions, journal scanning and preliminary tape checking. He reported that 550 new entries and 977 revised entries have been newly finalized since the last NRDC meeting. He also mentioned that NDS regularly scans 61 journals since the last NRDC meeting. Finally he 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 62% of all registered articles) published in 2015. His analysis showed that the compilation time is 6.3 months on average, which is slightly worse than that reported in the last NRDC meeting for articles published in 2014 (5.5 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 entry “Thermal Neutron Scattering” reviewed in the Consultant Meeting on the “EXFOR Compilation of Thermal Neutron Scattering Data” (2-4 November 2015, Vienna), and it was accepted. He also proposed a revised definition of R-value in LEXFOR to extend the quantity to the ratio where the fissioning systems of the neutron field of interest and reference field is different (*e.g.*, ^{239}Pu fission yield in a prompt fission neutron field relative to ^{235}U fission yield in a thermal neutron field), and it was also accepted.

N. Otsuka proposed to treat two modifier DAM (divided by atomic mass) and RAB (times natural isotopic abundance, divided by isotopic abundance of target of first term of REACTION sum) as general quantity modifiers, but it was not approved.

M. Mikhailiukova proposed a new heading code VEL for the primarily measured velocity of incident particles, when the energy of the incident particle is not provided by authors of experiment, but it was not approved.

2.5 CINDA

N. Otsuka (on behalf of V. Zerkin) reported that the CINDA Master File was updated six times since the last NRDC meeting (June and December 2015, March, April, May and June 2016) 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

N. Otsuka (on behalf of V. Semkova) presented progress in compilation of data related to various applications (*e.g.*, neutron sources, radioisotope production, ion beam analysis, β -delayed neutron spectra, neutron dosimetry, thermal cross sections, prompt fission neutron multiplicities and its distributions). The participants confirmed that there are still many articles for compilation, mainly for charged-particle induced reaction data.

M. Mikhailiukova reported articles published in area 4 countries and cited in Mughabghab’s Atlas of Neutron Resonances, but missing in EXFOR. She reported there are 37 articles for compilation (2 for NNDC, 1 for NDS, 34 for CJD).

N. Otsuka presented the status of experimental data adopted by Axton’s 1986 evaluation of thermal constants in EXFOR in the relation with the IAEA Neutron Cross-Section Standard project where the thermal constants evaluated by Axton are treated as “quasi-experimental data”. He reported 17 data points are missing in EXFOR, and asked NNDC and NEA DB to assess whether they must be compiled.

N. Otsuka (on behalf of V. Semkova) presented main conclusions from the Consultant Meeting on the “EXFOR Compilation of Thermal Neutron Scattering Data” (2-4 November 2015, Vienna, see also INDC(NDS)-0697). He reported that the meeting recommended to compile total and differential cross sections in EXFOR while to compile the raw, derived and complimentary data in a separate database for thermal scattering law evaluations. He also presented a template for submission of experimental data prepared by the meeting and also a list of thermal neutron

scattering data (cross sections, angular differential cross sections and double differential cross sections) missing in EXFOR.

2.7 EXFOR Quality Control

A. Koning reported that he has compared EXFOR with CENDL-3.1, EAF-2001, ENDF/B-VII.1, IRDFF-1.0, JEFF-3.2, JENDL-4.0 and TENDL-2015, and to a large extent reviewed all neutron-induced cross sections except for (n,tot), (n,el), (n,non) and (n,f). He mentioned the subentry scoring table obtained from this work is useful, and should be available for EXFOR users.

N. Otsuka presented duplication for D-T neutron activation cross sections measured at the OKTAVIAN facility of Osaka University by the Nagoya University group. He mentioned both preliminary and final data sets of more than 100 reactions were active in EXFOR, and some EXFOR users plot them in their publications as if they are independent each other (e.g., Figs. 4-7 of Junhua Luo et al., Phys. Rev. C89(2014)014604). He presented the complete list of duplication pairs and solution (e.g., subentry to be superseded by another subentry), and also noted that all necessary corrections have been already done by NEA DB.

O. Cabellos introduced various statistical approaches providing a list of erroneous and suspicious outliers. NEA DB checked resonance integrals in EXFOR against those obtained by integration of cross sections in the evaluated libraries, and summarized various mistakes in EXFOR (e.g., wrong boundary for integration). He plans to prepare a final report by the end of 2016.

N. Otsuka reported that he checked half-lives coded under DECAY-DATA and DECAY-MON. He found 1180 half-lives deviating more than 50% from those in the Nuclear Wallet Cards, and checked them against their source articles with S. Babykina (Kurchatov Institute). He categorized them into various cases (e.g., compilation mistake in the nuclide code, isomeric flag or half-life, typographical mistake in the article).

2.8 EXFOR Coding Rule

N. Otsuka proposed to not to compile resonance parameters of the reaction product because the current REACTION formalism cannot accommodate it, and they are usually compiled in the XUNDL (experimental unevaluated nuclear data list) database. **M. Herman** expressed his wish to keep such resonance parameters in EXFOR, and Otsuka agreed to look for its technical solution.

N. Otsuka proposed revisions of the EXFOR Formats Manual for two keywords DECA-DATA and RAD-DET. He proposed to (1) permit use of RAD-DET without DECAY-DATA when decay data (half-life, radiation energy, intensity) are unknown, and (2) treat one of half-life, radiation energy or intensity as mandatory information under DECAY-DATA, and they were approved.

S. Takács expressed that the idea of the quantity “production thick target yield per 1 MeV of target thickness” introduced in LEXFOR “Thick- and thin-target yields” is not clear. He demonstrated that the actual meaning of this quantity is the “differential of the physical thick target yield with respect to the incident energy”. He proposed a new quantity code , TTY/DEN, , PHY instead of , TTY, , TM for this quantity, and it was approved.

N. Otsuka proposed the following two additions to LEXFOR “Isomeric flag”: (1) Assignment of an isomeric flag (e.g., G, M, M1, M2) based on the latest knowledge of decay and structure data (e.g., ENSDF) rather than author’s assignment; (2) ordering of isomeric flags in REACTION SF4, e.g., 63-EU-152-G+M2 rather than 63-EU-152-M2+G. These proposals were approved.

B. Pritychenko proposed to introduce a new status code LOST to indicate the data sets for which

unavailability of the data set was confirmed by the originating institute. The participants did not see a reason to differentiate it from unobtainable data sets indicated by the status code UNOBT, and the proposal was not approved.

N. Otsuka and **M. Mikhailiukova** proposed to leave the volume field empty under the keyword REFERENCE, REL-REF and MONIT-REF when the volume number of the journal does not exist, and it was approved.

2.9 Tools for Compilation and Dissemination

S. Taova presented a draft of the “EXFOR Booklet” (a leaflet to be distributed in scientific events to promote EXFOR), and the idea was supported by the participants.

G. Pikulina reported recent development of compilation tools (EXFOR Editor and EXFOR Digitizer). Following comments on the Data Table Mode of the EXFOR Editor from compilers (e.g., cannot handle more than 1 MB data file), she replaced the EXCEL5-compatible component with a newly developed component, and now there is no limitation on the size of the numerical data array in the EXFOR editor. She also informed that the new version (EXFOR Editor Ver.3.0) does not require installation.

N. Otsuka (on behalf of V. Zerkin) introduced the following new EXFOR related contents and tools on the NDS web site: (1) a summary of numbers of new and modified entries as well as newly added data points by each centre by each year, (2) tool for uploading experimental data not in the EXFOR format to the web server for using them in the EXFOR web retrieval system, and (3) a light EXFOR and NSR web editor as an extension of the interactive tree representation of the EXFOR files (X4±).

2.10 Other Business

B. Pritychenko presented his analysis of evolution of nuclear physics publications using the NSR, EXFOR and ENSDF databases. He extracted and analysed historic publication trends and averages. He observed that (1) significant fractional contributions of reports, private communications and conference proceedings in the EXFOR and ENSDF databases in the 1970's reflect extensive experimental campaigns and an insufficient number of journals; (2) This trend has been reversed in recent years because the number of measurements decreases, while number of journals increases.

B. Pritychenko expressed his observation on NRDC's performance after his 5-year experience of EXFOR compilation. He mentioned that NRDC was a productive operation with large number of good new compilations previously, but now the output of NRDC is declining in spite of hard work. He understands that the situation is perhaps affected by the current operation model that has to be changed. He also mentioned that we should not be in a situation when we feel ignored, treated unfair or disrespected.

Z. Zholdybayev introduced the current activity of the Institute of Nuclear Physics in Almaty, and mentioned that the institute can contribute to EXFOR by providing (1) the experimental numerical data newly published in scientific journals in timely manner, and (2) providing access to reports published by the institute. For example, he has recently provided numerical data in three articles published in 1980, 2000 and 2011 for EXFOR compilation. He found that the numerical data sets for the 1980 article did not reproduce the article figures at a first glance, but the discrepancy was understood after discussion with N. Otsuka and M. Saito (JCPRG). He also checked articles published by the institute in journals registered in Thompson Reuter's database in 2011-2016, and found that there are 18 articles of which 8 articles have not been compiled yet.

N. Kenzhebayev reported progress in compilation of experimental data from Central Asia. He reported currently compilation of data measured in Kazakhstan and Uzbekistan is performed in collaboration with T. Zholdybayev (INP, Almaty) and F. Ergashev (INP, Tashkent) under coordination of N. Otsuka. He reported seven articles were newly compiled since the last meeting and one in compilation.

N. Otsuka reported progress in compilation of data measured at the n_TOF facility. He mentioned that the completeness of energy dependent data sets measured by n_TOF has been improved since June 2015 thanks to the new dissemination coordinator (E. Dupont, CEA Saclay), and the EXFOR coverage was improved to (1) 38% (capture) + 100% (fission) for the Phase I experiment (2001-2004), and (2) 25% (capture) + 100% (fission) + 100% (light charged particle emission) for the Phase II experiment (2009-2012) as of 8 June 2016.

2.11 Closing

N. Otsuka proposed the dates and places for the next technical NRDC meeting (Vienna, Austria, 23 to 26 May 2017) and next full NRDC meeting (2nd quarter of 2018), and they were approved.

M. Herman presented a draft of conclusions and actions of the meeting, and necessary revisions were introduced.

A. Koning and **M. Herman** made closing addresses. **N. Otsuka** acknowledged China Nuclear Data Centre for hosting the meeting, and also M. Herman for chairing the meeting.

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AGENDA

Tuesday, 7 June 2016

9:30 – 13:00

1. Opening Items

1.1	Welcome address	10 min		Ge.Zhigang
1.2	Introduction from NDS	10 min		A. Koning
1.3	Announcement	5 min		Chen Guochang
1.4	Self-introduction	10 min		All
1.5	Election of chairperson, adoption of the agenda, announcements	5 min		N. Otsuka

2. Progress Reports

2.1	CNPD (Sarov, Russia)	10 min	P2016-01	S. Taova
2.2	ATOMKI (Debrecen, Hungary)	10 min	P2016-02	S. Takács
2.3	JCPRG (Sapporo, Japan)	10 min	P2016-03	S. Ebata
2.4	NDPCI (Mumbai, India)	10 min	P2016-04	D. Raj
2.5	UkrNDC (Kyiv, Ukraine)	10 min	P2016-05	O. Gritzay
2.6	CDFE (Moscow, Russia)	10 min	P2016-06	V. Varlamov
2.7	KNDC (Daejeon, Korea)	10 min	P2016-07	Y.O. Lee
2.8	CJD (Obninsk, Russia)	10 min	P2016-08	D. Voitenkov
2.9	JAEA (Tokai, Japan)	10 min	P2016-09	O. Iwamoto
2.10	NEA DB (Paris, France)	10 min	P2016-10	K. Matsumoto
2.11	NDS (Vienna, Austria)	10 min	P2016-11	A. Koning
2.12	CNDC (Beijing, China)	10 min	P2016-12	Ge Zhigang
2.13	NNDC (Upton, USA)	10 min		M. Herman

170 min

14:00 – 18:00

3. EXFOR General

3.1	Transmission statistics	10 min	WP2016-02	V. Semkova
3.2	Scanning of new publications	10 min	WP2016-03	V. Semkova
3.3	Preliminary tape checking statistics	10 min	WP2016-04	V. Semkova
3.4	Compilation duration statistics (A1)	10 min	WP2016-05	N. Otsuka
3.5	Correction statistics (A2)	10 min	WP2016-06	N. Otsuka
3.6	Other actions (A3-A4)	10 min	WP2016-01	Chairperson

4. Manuals and Dictionary

4.1	Time-of-flight spectra coded without THICKNESS (A10; CP-D/878)	10 min	WP2016-07	N. Otsuka
4.2	LEXFOR "Thermal Neutron Scattering" (4C/3-403)	10 min	WP2016-08	N. Otsuka

4.3	Definition of R-value in LEXFOR (CP-D/895)	10 min	WP2016-09	N. Otsuka
4.4	DAM and RAB as general quantity modifiers (CP-D/905)	10 min	WP2016-10	N. Otsuka
4.5	New heading “VEL” for velocity of incident particle (CP-D/906)	10 min	WP2016-11	M. Mikhailiukova
4.6	Other actions (A5-A9, A11-A12)	10 min	WP2016-01	Chairperson
5	CINDA			
5.1	Status of CINDA database (A13)	10 min	WP2016-12	V. Zerkina

130 min

19:00 –

Social dinner (a restaurant near the hotel)

Wednesday, 8 June 2016

9:00 – 13:00

6 EXFOR Compilation Needs

6.1	Compilation of articles with priority (A14-A21, A23, A30-A31, A33)	10 min	WP2016-13	V. Semkova
6.2	Entries absent in EXFOR Master but in CINDA (A22; CP-D/907)	10 min	WP2016-14	N. Otsuka
6.3	Area 4 articles cited in Mughabghab’s atlas and missing in EXFOR (A25; 4C-4/212)	10 min	WP2016-15	M. Mikhailiukova
6.4	Reactor Dosimetry Symposium papers (A26; 4C-3/400)	10 min	WP2016-16	N. Otsuka
6.5	Availability of data discussed in CIELO mailing list (A35)	10 min	WP2016-17	S. Simakov
6.6	Experimental thermal constants adopted by Axton (4C-3/402)	10 min	WP2016-18	N. Otsuka
6.7	Thermal neutron scattering data (4C-3/404)	10 min	WP2016-19	V. Semkova
6.8	Other actions (A24-A25, A27-A29, A32, A34)	10 min	WP2016-01	Chairperson

7 EXFOR Quality Control

7.1	Global validation of the EXFOR database vs. the world’s nuclear data libraries	30 min		A. Koning
7.2	Pending duplications (A36,A56-A59)	10 min	WP2016-20	N. Otsuka
7.3	Pending corrections (A38-A43, A50, A60-A63)	10 min	WP2016-21	N. Otsuka

7.4	OKTAVIAN activation cross sections in EXFOR (A37; 4C-3/398)	10 min	WP2016-22	N. Otsuka
7.5	Entries absent in EXFOR Master but in archives (A46; CP/D-907)	10 min	WP2016-23	N. Otsuka
7.6	Provide a list of erroneous and suspicious outliers by using various statistical approaches (A51)	30 min		O. Cabellos

180 min

14:00 – 18:00

7 EXFOR Quality Control (cont)

7.7	EXFOR E2298 and SINBAD NEA-1552/14 (A64; CP-D/883)	10 min	WP2016-24	N. Otsuka
7.8	Checking of half-lives under DECAY-DATA and DECAY-MON (CP-D/888)	10 min	WP2016-25	N. Otsuka
7.9	Erroneous incident energy unit for capture reactions (CP-D/901)	10 min	WP2016-26	N. Otsuka
7.10	Other actions (A44-A45, A47-A49, A52-A55)	10 min	WP2016-01	Chairperson

8 EXFOR Coding Rule

8.1	Resonance parameters in CPND entries (CP-D/632, WP2010-17)	10 min	WP2016-27	N. Otsuka
8.2	Formats Manual “DECAY-DATA” and “RAD-DET” (CP-D/874)	10 min	WP2016-28	N. Otsuka
8.3	REACTION SF2=0 and nuclear quantities (NQ) (CP-D/880 Rev.)	10 min	WP2016-29	N. Otsuka
8.4	Field identifier of LEVEL-PROP (CP-D/882)	10 min	WP2016-30	N. Otsuka
8.5	Incident Energy differential physical thick target yield (SF8=TM) (CP-N/129, CP-D/893)	10 min	WP2016-31	S. Takács
8.6	Non-informative descriptions under ERR-ANALYS (CP-D/894 Rev.)	20 min	WP2016-32	N. Otsuka S. Taova
8.7	Two additions to LEXFOR “Isomeric flag” (CP-D/896)	10 min	WP2016-33	N. Otsuka
8.8	EXFOR Formats Manual “Facility” (CP-D/899)	10 min	WP2016-34	N. Otsuka
8.9	Indication of "outliers" by coded information (CP-D/904)	10 min	WP2016-35	N. Otsuka
8.10	Status code LOST (CP-C/443)	10 min	WP2016-36	B. Pritychenko
8.11	Other actions (A65-A66)	10 min	WP2016-01	Chairperson

160 min

Thursday, 9 June 2016

9:00 – 13:00

9 Software and Dissemination

- | | | | | |
|-----|---|--------|-----------|-------------|
| 9.1 | EXFOR knowledge distribution strategy (C18) | 10 min | | S. Taova |
| 9.2 | Statistics of input to EXFOR library from nuclear data centers (A82) | 10 min | WP2016-Z3 | V. Zerkin |
| 9.3 | Development of compilation tools for the EXFOR Library (A86) | 20 min | WP2016-37 | G. Pikulina |
| 9.4 | Web tool for uploading experimental data to the Web server for using them in EXFOR Web system | 10 min | WP2016-Z1 | V. Zerkin |
| 9.5 | Light EXFOR and NSR Web Editors: concept and status of development | 10 min | WP2016-Z2 | V. Zerkin |
| 9.6 | Other actions (A67-A81, A83-A85, A87) | 10 min | WP2016-01 | Chairperson |

10 Other items

- | | | | | |
|------|--|--------|-----------|----------------|
| 10.1 | Possible contribution of Institute of Nuclear Physics to EXFOR compilation | 30 min | WP2016-38 | T. Zholdybayev |
| 10.2 | Progress in compilation of experimental data from Central Asia | 10 min | WP2016-39 | N. Kenzhebayev |
| 10.3 | Technical issues with EXFOR compilations in area #1 | 30 min | | B. Pritychenko |
| 10.4 | Evolving landscape of nuclear physics publications | 30 min | | B. Pritychenko |
| 10.5 | Progress in compilation of data measured by the n_TOF collaboration | 10 min | | N. Otsuka |

170 min

14:00 –

Social event (Forbidden City)

Friday, 10 June 2016

9:00 – 13:00

11. Closing

- | | | | | |
|------|-----------------------------------|--------|--|-------------|
| 11.1 | Dates and places of next meetings | 10 min | | N. Otsuka |
| 11.2 | Review of actions and conclusions | 60 min | | Chairperson |
| 11.3 | Closing address | 10 min | | A. Koning |

80 min

CONCLUSIONS AND ACTIONS

Conclusions

General

- C1 The next NRDC meeting will be held in Vienna, Austria from 23 to 26 May 2017. (N.B. the 2017 WPEC meeting will be from 15 to 19 May).
- C2 The next full NRDC meeting will be held in the 2nd quarter of 2018.
- C3 The next EXFOR compilation workshop will be held in Vienna, Austria from 24 to 28 October 2016.

EXFOR General

- C4 Progress in dissemination of n_{TOF} energy dependent data through EXFOR (coordinated by Emmeric Dupont) is notable.

Manuals and Dictionaries

- C5 Revision of LEXFOR “Thermal Neutron Scattering” (4C-3/403=WP2016-08) was approved.
- C6 Revision of the definition of the R-value in LEXFOR “Fission Yields” (CP-D/895=WP2016-09) was approved.
- C7 Two modifiers DAM and RAB were not approved as general quantity modifiers (CP-D/905=WP2016-10).
- C8 The new heading code VEL was not approved (CP-D/906=WP2016-11).

EXFOR Quality Control

- C9 EXFOR has been compared with CENDL-3.1, EAF-2001, ENDF/B-VII.1, IRDFF-1.0, JEFF-3.2, JENDL-4.0 and TENDL-2015, and to a large extent reviewed by Arjan Koning, for all neutron-induced cross sections except for (n,tot) , (n,el) , (n,non) , (n,f) . The subentry scoring table obtained from this work is useful, and should be available for EXFOR users.
- C10 The entry number D2001 and area characters H and Q are free.
- C11 Resonance integrals in EXFOR were checked against those obtained by integration of cross sections in the evaluated libraries by NEA Data Bank. Various mistakes in EXFOR (*e.g.*, wrong boundary for integration) were summarized. A final report will be prepared by the end of 2016.

EXFOR Coding Rule

- C12 Revision of the EXFOR Formats Manual “DECAY-DATA” and “RAD-DET” proposed in CP-D/874=WP2016-28 was approved.
- C13 Revision of the EXFOR Formats Manual Chapter 6 in CP-D/880 (Rev.) =WP2016-29 was approved.
- C14 The reaction type of the scattering radius (r_{RAD}) will be changed from NQ (nuclear quantity) to L (amplitude or length).
- C15 Revision of the EXFOR Formats Manual “LEVEL-PROP” proposed in CP-D/882 =WP2016-30 was approved.
- C16 Revision of LEXFOR “Thick- and thin-target yields” proposed in CP-D/893 =WP2016-31 was approved.
- C17 Revision of the EXFOR Formats Manual “ERR-ANALYS” proposed in CP-D/894 Rev.=WP2016-32 was approved.
- C18 Free text providing expansion of the data heading (*e.g.*, “Angle error” for ANG-ERR) is not recommended under the keyword ERR-ANALYS. (CP-D/894(Rev.) =WP2016-32)
- C19 Addition to LEXFOR “Isomeric flag” proposed in CP-D/896=WP2016-33 was approved.
- C20 Revision of the EXFOR Formats Manual “FACILITY” proposed in CP-D/899 =WP2016-34 was approved.
- C21 The new status code `LOST` for the lost data sets proposed in CP-C/443=WP2016-36 was not approved. The status code `UNOBT` will be kept for this purpose.
- C22 The volume field will be absent under the keyword REFERENCE when the volume number of the journal does not exist. The absence of the field must be indicated by including the separating comma.

Tools for Compilation and Dissemination

- C23 “EXFOR Booklet” prepared by CNPD is useful for promotion of the EXFOR format, library and system. It is available from CNPD.
- C24 EXFOR users can upload their data to the NDS EXFOR web retrieval system for various operation, for example comparing with EXFOR and ENDF data, plotting, constructing covariance matrix, calculating inverse reaction data (WP2016-Z1).
- C25 Centres are encouraged to promote NRDC's effort on EXFOR compilation by various means (*e.g.*, conferences, posters, leaflets)

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 Zerkin (Continuing action) Coordinate a working group to discuss the opportunity to use XML as a new exchange format.
- A4 Otsuka Prepare an initial draft of the table of content for an EXFOR reference paper.
- A5 All Send ideas of contents of the EXFOR reference paper to Otsuka by the end of 2016. (N.B. April 2018 is the deadline if the paper is published in the next issue of Nuclear Data Sheets available for the paper.)

Manuals and Dictionaries

- A6 Otsuka Revise the EXFOR Formats Manual for (1) "DECAY-DATA" and "RAD-DET" (CP-D/874=WP2016-28), (2) "Reaction specification" (CP-D/880 Rev.=WP2016-29, CP-D/896=WP2016-33), (3) "LEVEL-PROP" (CP-D/882=WP2016-30), (4) "ERR-ANALYS" (CP-D/894 Rev.=WP2016-32), (5) "FACILITY" (CP-D/899=WP2016-34).
- A7 Otsuka Revise LEXFOR for (1) "Thermal Neutron Scattering" (4C-3/403=WP2016-08), (2) "Fission Yields" (CP-D/895=WP2016-09), (3) "Thick- and thin-target yields" (CP-D/893=WP2016-31), (4) "Isomeric flags" (CP-D/896=WP2016-33), (5) "Status" (CP-D/904=WP2016-35, CP-C/443=WP2016-36).
- A8 Otsuka Change the reaction type of r_{RAD} (scattering radius) from N_Q (nuclear quantity) to L (amplitude or length) in dictionary 236. (CP-D/880 Rev.=WP2016-29).
- A9 Otsuka Update dictionaries 32, 34 and 236 for the physical thick target yields differential with respect to incident energy as summarized in CP-D/893=WP2016-31.
- A10 Otsuka (Continuing action) Update Dictionaries every four months.

A11 Zerkin (Continuing action) Summarize the role of family flags (also known as family codes, c.f. EXFOR Formats Manual Chapter 6) in systems.

CINDA

A12 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.)

A13 Chen (Continuing action) Compile with priority the neutron source
Ebata spectra listed in CP-D/700 (Rev.3).
Pritychenko

A14 Ebata (Continuing action) Compile with priority the proton-induced
Pritychenko isotope production cross sections listed in CP-D/725 Rev.
Taova (~WP2012-19). Notify Semkova if the assigned centre does not
compile the high energy ($E > 1$ GeV) data in the list.

A15 Ebata (Continuing action) Compile with priority the light charged-particle
Pritychenko induced isotope production cross sections listed in CP-D/757.
Taova Notify Semkova if the assigned centre does not compile the high
energy ($E > 1$ GeV) data in the list.

A16 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

A17 Chen (Continuing action) Compile with priority the articles related to ion
Cabellos beam analysis application listed in CP-D/832 Rev.
Gritzay
Pritychenko
Taova

A18 Cabellos (Continuing action) Compile with priority the β -delayed neutron
spectra published in the articles listed in the table of CP-D/837.

A19 Pritychenko (Continuing action) Compile with priority articles related to the
neutron dosimetry cross sections listed in the second table of CP-
D/838.

A20 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.

- A21 Pritychenko (Continuing action) Compile articles compiled in CINDA but missing in EXFOR listed in CP-D/907=WP2016-14.
- A22 Cabellos (Continuing action) Compile the thermal neutron-induced reaction data cited in Mughabghab's "Atlas of Neutron Resonances" and listed in 4C-3/395.
Mikhailiukova
Pritychenko
- A23 Cabellos Compile the thermal neutron-induced reaction data cited in Mughabghab's "Atlas of Neutron Resonances" and listed in 4C-4/212=WP2016-15.
Mikhailiukova
Pritychenko
Semkova
- A24 Chen (Continuing action) Compile with priority prompt fission neutron multiplicity distributions listed in CP-D/867.
Pritychenko
- A25 Cabellos (Continuing action) Compile with priority prompt fission neutron multiplicities listed in CP-D/871.
Mikhailiukova
Pritychenko
- A26 Cabellos Compile articles presented in Reactor Dosimetry Symposia listed in 4C-3/400=WP2016-16.
Ebata
Gritzay
Pritychenko
- A27 Cabellos Compile thermal neutron data cited by Axton and listed in 4C-3/402 =WP2016-18.
Pritychenko
- A28 Cabellos Compile thermal neutron scattering data listed in 4C-3/404=WP2016-19.
Mikhailiukova
Pritychenko
- A29 Cabellos (Continuing action) Compile articles published in JINR Rapid Communication (KSO) and Phys. Part. Nucl. Lett. (PPN/L) and listed in CP-D/858.
Ebata
Taova
Varlamov
- A30 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.
- A31 Cabellos (Continuing action) Perform EXFOR completeness checking for the list of articles (4C-3/401, articles cited in S. 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.
Pritychenko

- A32 Cabellos Mikhailiukova Pritychenko Summarize typographical mistakes of bibliography in Mughabghab's atlas, and send it to S. Mughabghab.
- A33 Kenzebayev (Continuing action) Scan domestic publications (e.g., journals, laboratory reports) to identify articles for EXFOR compilation.
- A34 Gritzay (Continuing action) Consider compilation of neutron spectra for filtered neutrons published in the last 10 years.
- A35 Pritychenko Monitor availability of P.E. Koehler's time-of-flight spectra on DVDs received from ORELA in 2015 for EXFOR compilation.
- A36 Cabellos (Continuing action) Monitor CIELO mailing lists, and try to receive tabulated experimental data from evaluators who have their own internal database.
- A37 Simakov (1) Check the p-n scattering data set in EXFOR 22207.002 (G. Fink) against G.Fink's thesis (e.g., reference frame – lab or c.m.); (2) Monitor availability of the $^{235}\text{U}(n,f)$ prompt fission neutron spectra in EXFOR 13982.002 (P. Staples) corrected for the sample size effect.

EXFOR Quality Control

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

- 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 Pritychenko Taova (Continuing action) Add English translation information of Izvestiya Rossiiskoi Akademii Nauk, Seriya Fizicheskaya under the keyword REFERENCE as listed in CP-D/847.
- A43 Ebata (Continuing action) Consider to use 6-C-12 (PIP, KP) 6-C-12, PAR, IPA, , MSC for the $^{12}_{\Lambda}\text{C}$ hyper-nucleus production cross sections compiled in J1601.003.

- 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 Taova (Continuing action) Assess the entries listed in CP-D/907=WP2016-23. 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 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).
- A49 Pritychenko (Continuing action) 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.
- A50 Cabellos Mikhailiukova Otsuka Pritychenko Add target thickness as coded information in the data sets listed in CP-D/878=WP2016-07.
- A51 Cabellos Pritychenko Taova Delete EXFOR 14382.017, 40296.002, 40296.003, A0320 (all), F0055 (all), F0160 (all), F0341 (all), O0452 (all), C1221.002-011, T0010.013 (duplicated entries summarized in WP2016-20).
- A52 Otsuka Check V1001.532, V1002.082, V1002.126, V1002.173 and V1002.572 against Mughabghab’s Atlas (c.f. slide #23 of Cabellos’s presentation “Provide a list of erroneous and suspicious outliers by using various statistical approaches”).
- A53 Cabellos Ebata Mikhailiukova Pritychenko Semkova Taova Correct half-lives and isomeric flags listed in Memo CP-D/888=WP2016-25.

- A54 Cabellos Semkova Taova Correct isomeric flags of the entries summarized in CP-D/896=WP2016-33.
- A55 Cabellos Mikhailiukova Pritychenko Taova Correct the unit of incident energy in entries summarized in CP-D/901=WP2016-26.
- A56 Cabellos Soppera (Continuing action) Provide a list of erroneous and suspicious outliers by using various statistical approaches (c.f. WP2011-17, WP2013-19).
- A57 Cabellos (Continuing action) Provide JANIS–TRANS Checker Log list on every preliminary TRANS-file.
- A58 Soppera (Continuing action) Provide JANIS Import Log created from the EXFOR Master File to Otsuka on a regular basis.
- A59 Otsuka (Continuing action) Assess the JANIS Import Log provided by Soppera as above, and register important errors to the EXFOR Feedback System.
- A60 Ebata (Continuing action) Resolve duplication between E2049, E2125 and E2430 (WP2015-18).
- A61 Otsuka Check the situation of duplication of double differential cross sections measured at OKTAVIAN by Takahashi.
- A62 Cabellos Inform Division of Nuclear Science of NEA the mistake in SINBAD NEA-1552/14 (CP-D/883=WP2016-24).

EXFOR Coding Rule

- A63 Cabellos Mikhailiukova Check whether the current description of the eta value in LEXFOR defines the quantities compiled in entries listed in CP-D/789 (Rev.) (e.g., whether the denominator is absorption cross section or non-elastic scattering cross section) in cooperation with Lee and Otsuka.
- A64 Mikhailiukova Submit a memo summarizing entries where the year of publication coded in the volume field must be deleted due to absence of the volume number in the journal.
- A65 Otsuka Submit a memo summarizing revision of the EXFOR Formats Manual “REFERENCE” to indicate possible absence of the volume field of the journal article explicitly.
- A66 Otsuka Assess if coding rule of resonance parameters of reaction product is technically possible (CP-D/632=WP2016-27).

A67 Cabellos Assess the entries listed in CP-D/880 Rev.=WP2016-29, and
Mikhailiukova inform Otsuka by the end of 2016 if the quantity code ,_{RAD} cannot
Pritychenko be replaced with _{POT},_{RAD}.

Tools for Compilation and Dissemination

A68 Otsuka (Continuing action) Provide EXFOR News for every EXFOR
Master File.

A69 Soppera (Continuing action) Continue development and testing of the
JANIS –TRANS Checker in cooperation with NDS and the other
centres.

A70 Zerkin (Continuing action) Update ZCHEX based on comments from
compilers (*e.g.*, WP2011-36).

A71 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.

A72 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.

A73 All (Continuing action) Finalize and submit EXFOR entries including
covariance data provided by Zerkin.

A74 Zerkin (Continuing action) Continue development of the EXFOR upload
web tool.

A75 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.

A76 Zerkin (Continuing action) Distribute the program package including a
standalone platform independent program to generate X4+ from a
standalone EXFOR entry.

A77 All (Continuing action) Consider to use the X4+ format for author
approval, and also send feedback to Zerkin.

A78 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.

- A79 Zerkin Pritychenko (Continuing action) Continue translation from EXFOR to NSR.
- A80 All (Continuing action) Provide Zerkin a list of name aliases to improve the search of EXFOR entries by the author name (WP2014-53).
- A81 Zerkin (Continuing action) 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 JCPRG (Continuing Action) Continue development and testing of GSYS in cooperation with NDS and other centres, taking into account compilers' remarks.
- A83 All (Continuing Action) Provide JCPRG feedback on GSYS.
- A84 Otsuka (Continuing Action) Support update of the Japanese editor (HENDEL) as time permits.
- A85 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.
- A86 All (Continuing Action) Provide CNPD feedback on EXFOR-Editor and InpGraph.
- A87 Zerkin Consider demonstration of the "Light EXFOR and NSR Web Editors" (WP2016-Z2) in the 2016 EXFOR Compilation Workshop.
- A88 All Provide feedback on the "EXFOR booklet" prepared by CNPD.

LIST OF PROGRESS REPORTS

Number	Title	Presented by
P2016-01	Center of Nuclear Physics Data (CNPD), RFNC-VNIIEF	S. Taova
P2016-02	Progress report 2015-2016	S. Takács
P2016-03	Hokkaido University Nuclear Reaction Data Centre (JCPRG) progress report	S. Ebata
P2016-04	A brief status update on the activities of Nuclear Data Physics Centre of India (NDPCI) during 2015-2016	D. Raj
P2016-05	Ukrainian Nuclear Data Centre Progress Report, 2015/16	O. Gritzay
P2016-06	The CDFE photonuclear data compilations and evaluations in 2015-2016	V. Varlmaov
P2016-07	Nuclear Data Center (NDC) of KAERI	S.C. Yang
P2016-08	CJD progress report for NRDC 2016 Technical Meeting	D. Voitenkov
P2016-09	Progress report of Nuclear Data Center of Japan Atomic Energy Agency for April 2015-March 2016	O. Iwamoto
P2016-10	NEA Data Bank progress report 2015-2016	K. Matsumoto O. Cabellos
P2016-11	IAEA Nuclear Data Section: Progress report for period 2015/16	A. Koning
P2016-12	2015/16 status report of China Nuclear Data Center	Ge. Zhigang

Note: These progress reports are available online: http://www-nds.iaea.org/nrdc/nrdc_2016/.

LIST OF WORKING PAPERS

Number	Title	From
WP2016-01	Conclusions and action of the 2015 NRDC Meeting	
WP2016-02	Transmission statistics	V.Semkova
WP2016-03	Scanning of new publications	V.Semkova
WP2016-04	Preliminary tape checking statistics	V.Semkova
WP2016-05	Compilation duration statistics (A1)	N.Otsuka
WP2016-06	Correction statistics (A2)	N.Otsuka
WP2016-07	Time-of-flight spectra coded without THICKNESS (A10;CP-D/878)	N.Otsuka
WP2016-08	LEXFOR "Thermal Neutron Scattering"	N.Otsuka
WP2016-09	Definition of R-value in LEXFOR	N.Otsuka
WP2016-10	DAM and RAB as general quantity modifiers	N.Otsuka
WP2016-11	New heading "VEL" for velocity of incident particle (CP-D/906)	M.Mikhailiukova
WP2016-12	Status of CINDA database (A13)	V.Zerkin
WP2016-13	Compilation of articles with priority (A14-A21,A23,A30-A31,A33)	V.Semkova
WP2016-14	Entries absent in EXFOR Master but in CINDA (A22;CP-D/907)	N.Otsuka
WP2016-15	Area 4 articles cited in Mughabghab's atlas and missing in EXFOR (A25;4C-4/212)	M.Mikhailiukova
WP2016-16	Reactor Dosimetry Symposium papers (A26;4C-3/400)	N.Otsuka
WP2016-17	Availability of data discussed in CIELO mailing list (A35)	S.Simakov
WP2016-18	Experimental thermal constants adopted by Axton (4C-3/402)	N.Otsuka
WP2016-19	Thermal neutron scattering data (4C-3/404)	V.Semkova

WP2016-20	Pending duplications (A36,A56-A57-A59)	N.Otsuka
WP2016-21	Pending corrections (A38-A43,A50,A60-A63)	N.Otsuka
WP2016-22	OKTAVIAN activation cross sections in EXFOR (A37;4C-3/398)	N.Otsuka
WP2016-23	Entries absent in EXFOR Master but in archives (A46;CP/D-907)	N.Otsuka
WP2016-24	EXFOR E2298 and SINBAD NEA-1552/14 (A64;CP-D/883)	N.Otsuka
WP2016-25	Checking of half-lives under DECAY-DATA and DECAY-MON (CP-D/888)	N.Otsuka
WP2016-26	Erroneous incident energy unit for capture reactions (CP-D/901)	N.Otsuka
WP2016-27	Resonance parameters in CPND entries (CP-D/632)	N.Otsuka
WP2016-28	EXFOR Formats DECAY-DATA and RAD-DET (CP-D/874)	N.Otsuka
WP2016-29	REACTION SF2=0 and nuclear quantities (NQ) (CP-D/880 Rev.)	N.Otsuka
WP2016-30	Field identifier of LEVEL-PROP	N.Otsuka
WP2016-31	Incident Energy differential physical thick target yield (SF8=TM) (CP-D/893)	S.Takacs
WP2016-32	Non-Informative Descriptions under ERR-ANALYS	N.Otsuka
WP2016-33	Two additions to LEXFOR "Isomeric flag" (CP-D/896)	N.Otsuka
WP2016-34	EXFOR Formats Manual "Facility" (CP-D/899)	N.Otsuka
WP2016-35	Indication of "outliers" by coded information (CP-D/904)	N.Otsuka
WP2016-36	Addition to dictionary 16 (Status):LOST (CP-C/443)	B.Priyuchenko
WP2016-37	Development of compilation tools for the EXFOR Library	G.Pikulina
WP2016-38	Possible contribution of Institute of Nuclear Physics to EXFOR compilation	T.K.Zholdybayev
WP2016-39	Progress in compilation of experimental data from Central Asia	N.Kenzhebayev
WP2016-Z1	Web tool for uploading experimental data to the Web server for using them in EXFOR Web system	V.Zerkin
WP2016-Z2	Light EXFOR and NSR Web Editors: concept and status of development	V.Zerkin
WP2016-Z3	Statistics of input to EXFOR library from nuclear data centers (A82)	V.Zerkin

Note: These working papers are available online: http://www-nds.iaea.org/nrdc/nrdc_2016/

LIST OF PRESENTATIONS

TITLE	Presented by
NRDC-2016: Welcome to Beijing	
Center of Nuclear Physics Data	S.Taova
Progress Report of Nuclear Reaction Data Group at ATOMKI 2016	S.Takacs
JCPRG progress report	S.Ebata
Update of activities of nuclear Data Physics Centre of India 2015-2016	D.Raj
Progress Report, 2015/16	O.Gritzay
The CDFE photonuclear data Compilations and evaluations in 2015-2016	V.Varlamov
KNDC progress report	S.C.Yang
Russian Nuclear Data Center	D.Voitenkov
Progress report of Nuclear Data Center of Japan Atomic Energy Agency for April 2015-March 2016	O.Iwamoto
NEA Data Bank (DB) Progress report 2015-2016	K.Matsumoto, O.Cabellos
IAEA Nuclear Data Section: Progress Report for period 2015/16	A.J.Koning
2015/16 Status Report of China Nuclear Data Center	Ge Zhigang
NNDC report to NRDC	M.Herman
Global validation of the EXFOR database with the world nuclear data libraries	A.Koning
Provide a list of erroneous and suspicious outliers by using various statistical approaches (A51)	O.Cabellos
Incident energy differential physical thick target yield	S.Takacs
What can we consider as Non-informative description? Non-informative for whom?	S.Taova
EXFOR Booklet	S.Taova
Development of compilation tools for the EXFOR library	G.Pikulina

Possible contribution of Institute of Nuclear Physics to EXFOR compilation	Z.Zholdybayev
Progress in compilation of experimental data from Central Asia	N.Kenzhebayev
Evolving landscape of nuclear physics publications	B.Pritychenko
Technical issues with EXFOR compilations in area #1	B.Pritychenko
Progress in n_TOF data compilation	N.Otsuka

Note: These presentations are available online: http://www-nds.iaea.org/nrdc/nrdc_2016/.

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