Revised NRDC Protocol

(N. Otsuka, 2014-04-24, Memo CP-D/840)

There have been the following two actions from the NRDC 2013 Meeting:

> *A13 Otsuka (Continuing action) Update the NRDC Protocol Appendix B (Scanning Responsibility) following the new scanning responsibilities of NNDC and CJD (Conclusion 4 and 5 of NRDC 2012).*
>
> *A17 Otsuka (Continuing action) Revise the NRDC Protocol according to the Conclusion 20 of NRDC 2012 (exchange of software and co-operation in software development) and Conclusion 7 of NRDC 2013 (compilation of data in recent conference proceedings).*

I revised the NRDC Protocol. This working paper gives an extraction from the revised draft. The full version will be circulated during this meeting for review by Centre Heads.

Modification to Conclusion 7 of NRDC 2013 is proposed:

> Original: When authors are reluctant to provide numerical data reported in conference proceedings published within 5 years, an EXFOR entry should not be created for this experimental work.
>
> New: When the authors are reluctant to provide numerical data reported in conference proceedings <u>in the 5 years period following publication then</u> an EXFOR entry should not be created. <u>After a 5 year period then the data appearing in the conference proceeding should be compiled following the standard procedures.</u>

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NRDC Protocol (DRAFT 2014-04-24)

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Abstract

EXFOR and CINDA are the exchange formats for the transmission of experimental nuclear reaction data and bibliography between national and international nuclear data centres for the benefit of nuclear data users in all countries. This report contains the protocol for cooperation in compilation of EXFOR and CINDA.

INTRODUCTION

The general scope of the International Network of Nuclear Reaction Data Centres (NRDC) exchange is all experimental microscopic nuclear reaction data. Modifications to the general scope of the data exchange can be adopted only as a result of an agreement between the "Core" Centres of the NRDC after discussion among all Centres.

The Core Centres will be defined by NDS based on contributions to Network and user service capabilities. The currently defined Core Centres and their respective service areas are:

- The National Nuclear Data Center (NNDC) services the U.S.A. and Canada.
- The OECD Nuclear Energy Agency Data Bank (NEA DB) services its member countries.
- The Russian Nuclear Data Centre (CJD), services the countries of the former U.S.S.R.
- The IAEA Nuclear Data Section (NDS) services IAEA Member States not included in the service areas of the above three Centres.

The working language of the Network is English.

The Nuclear Data Section (NDS) will be responsible for ensuring that data compilations and exchanges are done in an efficient, productive and timely manner. The role of NDS will be to:

- assign clear responsibilities for the creation and correction of data compilations,

and drive these activities forward,

- ensure implementation of compilation rules,
- decide on all issues relating to dictionary codes,
- be responsible for EXFOR and CINDA distribution to the other data Centres,
- be responsible for central EXFOR Web Service and EXFOR Master file central storage.
- be responsible for CINDA Master file central storage.

EXFOR PROTOCOL

Data files are exchanged regularly between the Nuclear Reaction Data Centres (NRDC) in the EXFOR format in accordance with the conventions laid down in the EXFOR Formats Manual.

NDS will maintain and distribute the EXFOR Master file.

All matters that affect EXFOR, in general, must be agreed to by the Nuclear Reaction Data Centres. Final decisions on proposals concerning compilation rules and new quantities can be made with Core Centres agreement after discussions among all Centres. NDS will be the final arbiter in case the Core Centres are unable to reach a decision.

All free text comments within all EXFOR entries shall be in English.

Scope of Compilation

(*No alteration from the current version IAEA-NDS-215 Rev.2010/11*)

Journal Scanning Responsibility

(*No alteration from the current version IAEA-NDS-215 Rev.2010/11*)

Data Compilation Responsibility

NDS will assign areas of responsibility for data compilation (areas of compilation). If a Centre, assigned to a particular area of compilation (*e.g.*, neutron-induced nuclear reaction data from a country or countries), is not carrying out their responsibilities, *i.e.*, compiling all new data for that area in a timely manner, the NDS coordinator will reassign all or part of those responsibilities to another volunteer Centre[1].

An area of compilation may be for a given projectile or set of projectiles, for a given country or group of countries, for a given data type or data types, or for any combination of these.

A Centre responsible for an area of compilation may agree with another Centre to share the compilation work for that area on a regular basis. However, the

[1] As a consequence, the obligatory link between the geographical area of the Institute and the accession number, which has been in force for neutron data, may now be lifted for all data.

responsibility for coverage and quality of the compilation remains with the responsible Centre. The currently assigned EXFOR compilation responsibilities are given in Appendix C of this Protocol.

A first priority is given to compile recently published data.

When the authors are reluctant to provide numerical data reported in conference proceedings in the 5 years period following publication then an EXFOR entry should not be created. After a 5 year period then the data appearing in the conference proceeding should be compiled following the standard procedures.

If a Centre has a need for a particular data set to be compiled immediately, the Centre should send a request to the responsible Centre with a copy to NDS. If the responsible Centre cannot compile the data in the time needed to meet the requirements of the Centre making the request, the Centre making the request can compile the data after informing both the coordinating Centre and responsible Centre.

For corrections to entries of another Centre in agreement with responsible Centre, entries of different accession number areas may be transmitted on the same exchange file.

Neutron-induced nuclear reaction data (neutron data), charged-particle induced nuclear reaction data (charged-particle data), and photon-induced nuclear reaction data (photo-nuclear data) must be compiled in separate entries, with appropriate identification, even if they are reported in the same publication.

All corrections to entries must start from the EXFOR Master file central storage (rather than from local versions).

Recompilations or improvements of existing entries should result in an update of the old Entry (rather than deletion of the old Entry and creation of a new Entry).

NDS shall keep an archival copy of the latest version of each of the EXFOR entries and shall be ready to provide the data to any Centre should it be required.

If two Institutes from different areas of compilation are involved, the primary Institute defines the Centre responsible (see **LEXFOR, Institutes**, for definition of primary Institute).

If several institutes of different areas of compilation are involved, the following rules determine the compilation responsibility:

1. The institute of the facility used, if at least one author is from this institute.

2. If an itinerant group used the facility, the main investigator of this group determines the Centre responsible.

3. If facilities of different laboratories from different areas of compilation are used, the Institute from which it is most likely to obtain further information on the experiment should determine the Centre responsible. This will normally be the corresponding author, or, in case of doubt, the first author of the publication.

4. If separate experiments from different areas of compilation with clearly separated results are reported in the same paper, the results should be compiled in separate entries. This separation is obligatory for different projectile types (neutron, charged particle, photon). In all such cases cross references to the other Entry must be given.

A Centre wishing to compile recently published data (C1) will contact the Centre in whose area of compilation the data were produced (C2), with copy to NDS, with a list of the data sets to be compiled. C2 will inform C1, as quickly as possible, with copy to NDS, whether the data either have been compiled or are in the process of being compiled by another Centre. If the data are not compiled or being compiled, C2 will either agree to compile them with priority, or ask C1 to compile the data and include it in the next regular C1 exchange file.

A Centre wishing to compile old data should:

1 Notify NDS of the data sets that they intend to compile;

2 NDS will check that the data set has not been compiled, and is not being compiled by another Centre, and will let the originating Centre know if they may go ahead with the compilation. All Centres are responsible for checking that the data sets transmitted by them do not duplicate existing data.

Neutron Data Compilation

The responsibility for the ~~collection,~~ compilation and transmission ~~and dissemination~~ of neutron data is shared among the ~~four neutron data~~ compilation Centres, each being responsible for a defined area of compilation (see Appendix C).

Within the scope of this protocol each Centre is expected to compile the data measured in its area of compilation as fast and as thoroughly as possible.

Where the primary institute is not clear, the Centres concerned should consult each other before compiling the data in order to avoid duplicate Entry of the same data.

An effort must be made to compile all neutron reaction data published after 1 July, 1970. Earlier data will be compiled as time permits.

All matters concerning the exchange of neutron data must be agreed to by the four neutron data compilation Centres.

Charged-Particle Data Compilation

The responsibility for the ~~collection,~~ compilation and transmission ~~and dissemination~~ of charge-particle data is shared among the compilation Centres, each being responsible for a defined area of compilation (see Appendix C).

- ~~National Nuclear Data Center (NNDC): for the United States and Canada,~~
- ~~Hokkaido University Nuclear Reaction Data Centre (JCPRG): for Japan,~~

- ~~Russian Nuclear Structure and Reaction Data Centre (CAJaD): for countries of the former Soviet Union, except Ukraine, and for compilation of entries from countries not covered by other Centres after coordination with NDS;~~
- ~~IAEA Nuclear Data Section (NDS): for all countries not covered by other Centres.~~

Photonuclear Data Compilation

The responsibility for the ~~collection,~~ compilation and transmission ~~and dissemination~~ of photonuclear data is shared among the compilation Centres, each being responsible for a defined area of compilation (see Appendix C).

- ~~National Nuclear Data Center (NNDC): for the United States and Canada,~~
- ~~Hokkaido University Nuclear Reaction Data Centre (JCPRG): for Japan,~~
- ~~The Centre for Photonuclear Experiments Data (CDFE): for countries of the former Soviet Union, except Ukraine, and for compilation of entries from countries not covered by other Centres after coordination with NDS;~~
- ~~IAEA Nuclear Data Section (NDS): for all countries not covered by other Centres.~~

For photonuclear data there is no requirement for completeness except for photoneutron and photofission data.

EXFOR Transmissions

Assignment of Accession Numbers

The methods of assigning accession numbers may be different at each Centre. That is to say, a Centre may assign them manually or automatically (by computer). A Centre may assign legal EXFOR accession numbers only to works within its agreed area of compilation. Where the responsibility for compiling a given data set is not clear, the Centres concerned should consult each other before compiling the data in order to avoid duplication of the same data. (See **LEXFOR, Institute**).

Procedure for Transmitting New Exchange Files

The originating Centre deposits new exchange files on the NDS open area, subdirectory TRANS.PRELIM,[2] and notifies the other Centres. The other Centres will have one month to suggest modifications to the file.

As soon as possible after the month has passed, the originating Centre should:

1. Either make any suggested modifications to the file, or notify the other Centres why the modifications have not been made.

2. Deposit the corrected file in the NDS open area, subdirectory TRANS,[3] and notify the other Centres.

3. Request NDS to delete the preliminary version from the NDS open area.

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[2] Suggested naming convention: ~~PRELIM~~prelim.*nnnn*, where *nnnn* is the file identification number.
[3] Suggested naming convention: ~~TRANS~~trans.*nnnn*, where *nnnn* is the file identification number.

NDS may correct or assign volunteers to correct preliminary transmissions that are not corrected and resubmitted as final transmissions in a timely manner, and will be responsible for distributing all final transmissions.

In general, it is the responsibility of the individual Centres to transfer the files from the NDS open area.

Procedure for Files Received with Errors

(*No alteration from the current version IAEA-NDS-215 Rev.2010/11*)

Alterations to EXFOR Entries ("Retransmissions")

(*No alteration from the current version IAEA-NDS-215 Rev.2010/11*)

CINDA PROTOCOL

(*No alteration from the current version IAEA-NDS-215 Rev.2010/11*)

CHANGES TO SCOPE, FORMAT AND CODING RULES OF EXFOR OR CINDA

(*No alteration from the current version IAEA-NDS-215 Rev.2010/11*)

DICTIONARY PROTOCOL

(*No alteration from the current version IAEA-NDS-215 Rev.2010/11*)

COMMUNICATION BETWEEN CENTRES

(*No alteration from the current version IAEA-NDS-215 Rev.2010/11*)

MANUALS

(*No alteration from the current version IAEA-NDS-215 Rev.2010/11*)

EXFOR PROCESSING AND RETRIEVAL CODES

Some EXFOR Processing and Retrieval programs are used by more than one data Centre. Each Centre using one of these programs is invited to contribute suggestions for updates to the program. The originating Centre will inform other Centres about codes being used or developed, and also coordinate all program updates.

If another Centre wishes to update a code, that Centre should communicate their intention to the originating Centre before any updates are done. Any updates can be done after discussion with the originating Centre and upon mutual agreement. The updated code should be transmitted immediately to the originating Centre.

The originating Centre retains responsibility for the official version of the code and is free to reject unsanctioned updates. Only the originating Centre will transmit updated versions to the other Centres.

The Network encourages free exchange of software and co-operation in software development between Centres.

Appendix A: COMPILATION SCOPE

General categories

Category	Data type
A - Compulsory compilation	All experimental data for incident projectile energy ≤ 1 GeV and projectiles with A ≤ 12, unless listed in Cat. B or C; or data measured in inverse kinematics, which fulfil these criteria when target and projectile are exchanged.
B - Voluntary compilation	Neutron- or charged-particle data for incident projectile energy > 1 GeV; or charged-particle data for incident projectiles with A>12; or photonuclear data except photo-neutron and photo-fission data; or polarization data involving particles with spin S ≥1; or Kerma factors (integral data only)
C - Separate transmission	Other data types, as specified in the table below

Separate Transmission Series

CIC[4]	Centre	Data type
J	JCPRG	Charged-particle nuclear data for projectiles with non-positive baryon number from all parts of the world.
V ~~(extinct)~~	NDS	Evaluated neutron data

Appendix B: SCANNING RESPONSIBILITY

Centre	Responsibility
NNDC	AJ, AJ/L, NSE, PR/C, PRL,
NEA DB	ANE, RCA
NDS	ARI, NP/A, NIM/A, NIM/B, PL/B
CJD	AE, FCY, FCY/L, PTE, YK, ZEP, ZET
CDFE	
CNDC	ASI, CNDP, CNST, CPH/B, CPH/C, CPL, CST, HFH, NTC
JCPRG	JNRS, JPJ, NST, PTP, JAEA-C (CPND, PhND)
JAEA	JNRS, JPJ, NST, PTP, JAEA-C (Neutron data)
ATOMKI	AHP/N, JRN
UkrNDC	UFZ, VAT/I
CNPD	IZV
KNDC	
NDPCI	IPA

[4] Centre Identification Character

Appendix C: COMPILATION RESPONSIBILITY

Centre	Basic responsibility	Additional compilation
NNDC	Neutron data, CPND and PhND from USA and Canada	
NEA DB	Neutron data from NEA Data Bank member countries (not covered by other centres)	CPND ($A_{proj} \leq 12$) from NEA Data Bank member countries (not covered by other centres)
NDS	Neutron data and CPND from "rest of the world" (areas not covered otherwise)	PhND from "rest of the world"
CJD	Neutron data from former Soviet Union (except Ukraine)	
CDFE	Photonuclear data	
CNDC	Neutron data and CPND from China (entries submitted through NDS)	
JCPRG	CPND and PhND from Japan	CPND for projectiles with non-positive baryon number from all parts of the world.
JAEA	(Dissemination of Japanese Evaluated Data Libraries)	
ATOMKI	CPND from ATOMKI and data measured in cooperation with Jülich or with Free Univ. Brussels (entries submitted through NDS)	
UkrNDC	Neutron data, CPND and PhND from Ukraine (entries submitted through NDS)	
CNPD	CPND from former Soviet Union countries (except Ukraine)	CPND from the world (coordinated with other centres)
KNDC	Neutron data, CPND and PhND data from Korea (entries submitted through NDS)	
NDPCI ~~Indian compilation activity~~	Neutron data, CPND and PhND from India, coordinated and assisted by NDS	