

Memo CP-D/339

14 June 2002

From: O. Schwerer, M. Kellett and V. Pronyaev

Subject: Actions and Conclusions of the 2002 NRDC Meeting

Please find attached the Actions and Conclusions of the NRDC Meeting held in Paris from 27 to 30 May 2002 for your final review. Please send any corrections or additions to NDS as soon as possible, but not later than **15 July 2002**.

The actions and conclusions were renumbered and the following items were added:

- C21, C22, A39 - A43 (were not yet typed from Thursday session)
- C2, C7, A6 - A9, A13, A29, A30 (added from our notes, had not been labeled as formal conclusions/actions).

Since NDS has been given the task of assigning compilation responsibilities, a list reflecting the consensus at the meeting is attached. It is expected that some clarifications or changes will come up after the new procedures have been used for a while.

For easy reference, the papers on the new Network Protocol and on the Center Heads' session, and WP 2002-28 on the future co-operation on CINDA, are attached as well.

As usual, the meeting report, which will include also the status reports and part of the working papers, will be published as an INDC(NDS)- report.

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Conclusions and Actions

Conclusions

General

- C1:** The proposed security measures as outlined in WP-2002-19 regarding the NDS Open area were agreed. Hence a username NDSX4 must be entered (no password is required as yet) and this user can only put and get files. This user, along with all others, cannot modify, delete or overwrite existing files. The file management will be carried out by the holder of the XMAN token, currently allocated to user SCHWERER.
- C2:** The next Technical NRDC Meeting will be held in Vienna in late May or early June 2003. The next full meeting will be held in Brookhaven in spring 2004 (date to be decided).

CINDA

- C3:** The CINDA coverage was reviewed and it was felt that all major journals are adequately covered. Future coverage of progress reports may not necessarily be important nor continued.
- C4:** For new data (1980-1998) the comparison between CINDA and EXFOR (WP-2002-27) showed that about 75% of all possible EXFOR data is compiled. This is assumed to be approximately the maximum amount possible due to the availability of data. As expected the coverage for pre-1980 data is lower.
- C5:** All centers, except ATOMKI, volunteered to contribute CINDA input to the new system (neutron and/or charged particle data).
- C6:** The future NRDC cooperation on CINDA, as proposed in WP 2002-28, was adopted.
- C7:** CINDA 2002 will be published as Supplement. At the same time the CD will be produced again by NEA-DB. NDS will consider publishing a final CINDA archival book, spread out over 2 years in 2004/5, based on the new CINDA2001, i.e. including also CPND and photonuclear data.

Dictionaries

- C8:** Proposal of Memo CP-C 287, is accepted, i.e. will have only one particle dictionary.
- C9:** Dictionaries must still be transmitted in the TRANS format.

C10: A new Nuclides dictionary (as a replacement to dictionary 27) will be produced, which will be extracted from the Nuclear Data Wallet cards database.

EXFOR dictionary codes and coding rules

C11: Following from WP-2002-3 (Units for particle and product yields, Dict.25) it was agreed that:

PRT be used for the outgoing particle, i.e. SF3, or SF7

PRD be used for reaction product, i.e. SF4

INC used for incident projectile, i.e. SF2

REAC used for reaction (with FIS used for fission), in general SF2-3

PC for percent or per 100 incident particles

Hence consequently the unit PRD/FIS should be allowed.

C12: Page number format as presented in WP-2002-4 has been adopted, i.e. to allow alphanumeric characters in the page number field in REFERENCE.

C13: The proposed new heading EN-CM-TOT is NOT needed, but the definition of EN-CM needs to be clarified (WP-2002-8).

C14: The units MUB/SRGEVC and the new particle code AP (anti-proton) are adopted (WP-2002-10)

C15: The proposed code NSF is not needed nor the other new quantities of CP-E/004 (WP-2002-10).

C16: (WP-2002-12) It is agreed that UND and DEF (in REACTION SF5) should not be used, but that (DEF) can be used if the compiler is not sure.

C17: A committee will be formed in order to investigate the way in which high energy physics data can be coded in EXFOR, including the coding of fundamental particles. The following participants agreed to sit on the committee: Chukreev, McLane, Kato, Otuka, Tarkanyi. *See also Action A36.*

C18: The proposed code 2XL as a modifier (REACTION SF8) as proposed in CP-C/305 (WP-2002-15) is not necessary and therefore not accepted.

C19: The use of a zero value in the DATA-ERR field is allowed (CP-C/306 = WP-2002-16) except when the data is digitized. Required for large datasets sent by the author when the accuracy representation of the field is not sufficient to have a finite value. The DATA-ERR column cannot contain only zeroes, in this case the column should not be included at all and a comment included under ERR-ANALYS.

C20: The proposed use of 4-momentum transfer and momentum distribution data is agreed as in CP-C/295 = WP-2002-6

C21: (WP 2002-11) Nuclide codes are from now on allowed in REACTION SF7 (Particle considered). If the resulting REACTION string should no longer fit in cols. 12-66, continuation onto the next record will follow the same rules as for DECAY-DATA (i.e., line breaks are allowed only following one of the commas which separate subfields)

C22: (WP 2002-12) The new headings PART-OUT and ELEM-MAX will be introduced in dictionary 24.

Actions

General

A1: Lammer (Continuing) Include the PC program package for calculation of Fission Yield distributions by A. C. Wahl in the NDS data collection

A2: All (Continuing) To support the joint project of Russia, Ukraine (UkrNDC) and Belarus (Minsk-Sosny) on development of Internet site structure and web pages for nuclear databases and related software. This support would include establishment of contacts of project initiators with European, US and other centers and organisations interested in collaboration, cooperation or partnership in this project.

A3: Dunaeva (Continuing) Keep other centers informed on the status of the proposed project.

A4: All All recognized policy papers for consideration by the NRDC members need to be prepared and distributed four weeks before the Annual NRDC meeting. This will ensure adequate thought and discussion prior to the meeting.

A5: NDS Assist the Slavutych Laboratory, Ukraine, in upgrading their NDIS (Telnet-based nuclear data system), which was not upgraded since 1999.

A6: NDS Consider organizing an EXFOR compilers' workshop, either separately or adjacent to next years' Technical NRDC Meeting.

A7: All Test V. Zerkin's experimental new "EXFOR relational" web interface <http://zlinux.iaea.or.at/~zerkin/x4s/indx.htm> and send feedback to NDS

A8: All Check the "Citation Guidelines" document (available from NNDC and NDS websites) and send updates to NDS who is taking over its maintenance.

A9: NDS Distribute new copies of the "Relational EXFOR" CD-ROM to the participants of this meeting.

CINDA

A10: NEA-DB Submit the area 2 CINDA neutron master file in the new format to NDS and NNDC.

A11: NEA-DB Send to NNDC the area 2 CINDA master file in exchange format for conversion to the new format.

A12: NNDC Compare the 2 versions of area 2 master file as outlined above.

A13: CNDC (Continuing) Compile all Chinese experimental works (journals and conference proceedings) for CINDA and send to NDS in Reader format, and consider the possibility of including in the "Communication of Nuclear Data Progress" journal abstracts/brief publications of all works done in China in the nuclear data field.

Dictionary system

A14: McLane: To produce a format for the new Nuclides dictionary (see *Conclusion C10*) and provide a program for the production and updating of this dictionary from the Nuclear Data Wallet cards database.

A15: All (Continuing) To ensure that they can use the "wild cards" for REACTION SF7 (Particle considered) in Dictionary 36 .

A16: NDS (Continuing) To remove the restrictions "for photonuclear data (only)" from all dictionaries at their earliest convenience.

General EXFOR matters

A17: All (Continuing) To check/retransmit all entries included in the list of pending retransmissions by McLane distributed at the 2001 NRDC meeting.

A18: Dunaeva (Continuing) To make a benchmark test of Chukreev's code TEST-EXF vs. CHEX

A19: CPND centers (Continuing) To go through the list of references missing in EXFOR obtained in the framework of the CRP on Medical Radioisotope Production, distributed earlier by Tarkanyi, and communicate to Tarkanyi and NDS which works from their area of responsibility they will compile. Works not covered this way will then be free to be compiled by others.

A20: NEA-DB,NDS (Continuing) To convert remaining 60000 and 70000 series entries to proper EXFOR entries of area 2 and 3.

A21: All (Continuing) In view of the poor statistics for EXFOR compilation of recent works, all centers should give higher priority to new works.

A22: McLane (Continuing) Send a memorandum of understanding about the compilation responsibilities resulting from the agreement with Phys.Rev.C (on archiving in EXFOR experimental data published in Phys.Rev.C) to all participating centers.

A23: Dunaeva, Chukreev (Continuing) Once the agreement between NNDC and the publishers of Phys.Rev.C has been put into operation, try to establish a similar agreement with the publisher of Yadernaya Fizika.

A24: NEA To transmit the corrected EXFOR entries containing correlation data sent earlier by McLane.

A25: All: Send their area's EXFOR master file to NDS for comparison.

A26: All: Send list of known errors in other centers' entries to NDS.

A27: NDS: Compare all received master files with the NDS file and as far as possible correct them (with help of other centers).

A28: NDS Make available the "final" EXFOR master file, together with a matching set of dictionaries, to all centers.

A29: All concerned Transmit with highest priority all preliminary EXFOR TRANS files which are held back because of pending corrections. Problematic entries should be excluded temporarily from transmission (until agreement on the correction is reached) to speed up the procedure.

A30: JCPRG After upgrading HENDEL (Web-based EXFOR editor) send it to the other centres for testing and comments.

EXFOR dictionary codes and coding rules

A31: All (Continuing) To consider and propose methods for coding fundamental particles in SF4, in particular negatively charged ones, e.g. negative pions.

- A32: Tarkanyi:** To produce a list of quantities related to Product Yields and Thick Target Yields with a detailed explanation and including a reference to an appropriate paper as an example.
- A33: McLane/Schwerer:** To produce new LEXFOR entries relating to the various quantities discussed in WP-2002-13.
- A34: Schwerer:** Modify the definition of EN-CM in dictionary 24 to be energy of the projectile relative to the target.
- A35: Chukreev** The REAC in WP-2002-12 (Memo CP/A-122) should be recoded from 79-AU-197(AP,ABS),,SIG/DN,,,EXP as 79-AU-197(AP,X)ELEM/MASS,,SIG/DN,,,EXP
In the COMMON section the range of ELEM and MASS will be defined using ELEM-MIN, MASS-MIN, ELEM-MAX and MASS-MAX. These codes will need to be added to the dictionary.
Then under PART-OUT the data as shown can be kept the same.
- A36: Committee** (*On coding of high energy data in EXFOR, see Conclusion C17*)
To investigate the coding of high energy physics data and fundamental particles and provide a report to the next meeting for discussion.
- A37: McLane** To correct the LEXFOR entry for the proposed coding of 4-momentum transfer (WP-2002-6).
- A38: McLane** To check whether there is a LEXFOR entry on the new process code FUS for total fusion and provide if it does not exist as yet.
- A39: Schwerer** (WP 2002-14) Check whether the quantities
LS/SEQ,POL/DA,,D
PAR,POL/DA,,TAP
SL/SEQ,POL/DA,,D
exist in the file and delete them if this is not the case.
- A40: Schwerer** (WP 2002-14) For the codes 20/PAR,POL/DA,,TAP and PAR/20,POL/DA,,TAP: Pick one of these options, maintaining consistency with other similar quantity codes, and update dictionary 36 (and any affected entries) accordingly.
- A41: Schwerer** (WP 2002-14) Correct the expansion of NN,POL/DA,,ANA to "Spin correlation parameter".
- A42: McLane** Try to resolve the problems to consistently define the various polarization quantities for LEXFOR and dictionary 36.
- A43: Schwerer** Delete RCL from dictionary 33.

EXFOR Compilation Responsibilities

Center	Basic responsibility	Additional compilation
NNDC	Neutron data and CPND from USA and Canada	
NEA-DB	Neutron data from "Area 2"	CPND (O-series) (co-ordinated by NDS)
NDS	Neutron data and CPND from "Rest of the world" (areas not covered otherwise)	
CJD	Neutron data from former Soviet Union (except Ukraine)	
CAJAD	CPND from former Soviet Union (except Ukraine)	CPND from "Rest of the world" (co-ordinated by NDS)
CDFE	Photonuclear data	
CNDC	Neutron data and CPND from China (Entries submitted through NDS)	
JCPRG	CPND from Japan (entries submitted through NDS)	
ATOMKI	CPND from Juelich and ATOMKI (entries submitted through NDS)	
UkrNDC	Neutron data and CPND from Ukraine (entries submitted through NDS)	
CNPD-VNIIEF	CPND on light nuclei, co-ordinated with other centres	

Proposal for new Nuclear Reaction Data Center Protocol

O. Schwerer and V. McLane

modified - 28 May 2002

The Nuclear Data Section (NDS) will assume a more active role co-ordinating all Nuclear Reaction Data Centers (NRDC). In this extended role, NDS will be responsible for ensuring that data compilations are done in an efficient, productive and timely manner. The role of NDS will be to:

- (a) assign clear responsibilities for the creation and correction of data compilations, and drive these activities forward,
- (b) ensure implementation of compilation rules,
- (c) decide on all issues relating to dictionary codes,
- (d) be responsible for CINDA and EXFOR distribution to the other data centers.

1. Compilation Responsibilities

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

A center responsible for an area of compilation may agree with another network center to share the compilation work for that area on a regular basis. However, the responsibility for coverage and quality of the compilation remains with the responsible center.

2. Decisions concerning compilation rules and new quantities

Final decisions on proposals concerning compilation rules and new quantities can be made with Core Center² agreement after discussions among all centers. NDS will be the final arbiter in case the "Core Centers" are unable to reach a decision.

3. Decisions concerning dictionary codes

NDS will be the final arbiter for all decisions concerning dictionary codes (see also 2).

4. EXFOR/CINDA Transmissions

All preliminary and final EXFOR and all CINDA transmission will be sent to NDS. NDS will be responsible for distributing all final transmissions.

5. Corrections to EXFOR/CINDA entries

NDS may correct or assign volunteers to correct preliminary transmissions, which are not corrected and resubmitted as final transmissions in a timely manner.

6. Urgent compilation needs

If a center has a need for a particular data set to be compiled immediately, the center should send a request to the responsible center with a copy to NDS. If the originating center cannot compile the data in time needed to meet the requirements of the center making the request, that center may compile the data as an area Z entry. The entry will then be sent to both the originating center and NDS. If the originating center does not intend to enter the data in a timely fashion, the NDS may then transmit the Z entry to all centers. The originating center would then be responsible for deleting the Z entry, if they replace it with an entry for their area.

¹ An area 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.

² Core centers will be defined by NDS based on contributions to network and user service capabilities.

7. Corrections to entries compiled at another center

Notification of errors found in entries originating at another center should be communicated to all centers. The NDS should make sure these corrections are done in a timely manner. If they are not, the co-ordinator will ask one of the other centers to submit the corrected entries.

8. Maintenance of the Masterfile.

NDS will maintain and distribute the EXFOR (and CINDA) Masterfile.

Notes

As a consequence of the above, the obligatory link between the geographical area of the Institute and the accession number, which is in force for neutron data, will now be lifted for all data. Similarly, for corrections to entries of another center according to item 7 above, it will be allowed to transmit entries of different accession number areas on the same TRANS file.

This protocol will be reviewed at the next NRDC meeting.

Meeting of Nuclear Reaction Data Centres Network (NRDC), held at NEA Data Bank, Paris, 27-30 May 2002

Comments and Recommendations of Centre Heads' Meeting:

The NRDC network was originally established to ensure simple, efficient and timely compilation of measurements of neutron reaction cross sections. Efforts are also being made to include charged-particle and photonuclear reaction cross sections, although greater priority will continue to be given to neutron cross-section compilations. The network must respond rapidly to user needs (particularly requests from cross-section evaluators).

Managerial and technical sessions were held in parallel, and the following actions/comments arose from the Centre Heads' meeting:

- (a) Changes were agreed involving "co-ordination" procedures for NRDC (see memo entitled "Proposals for New Nuclear Reaction Data Centre Protocols" by Schwerer and McLane (28 May 2002)), which will result in an increased workload for NDS. One member of NDS staff will be co-ordinator of the EXFOR work throughout the network to ensure more rapid compilations of reaction cross-section data. The co-ordinator will assign areas of responsibility for such data compilations – re-assignments will be made by this co-ordinator if progress is not being made in particular areas.
- (b) Proposals for co-operation in CINDA compilations were approved (see WP2002-28), but the eventual hope is to integrate this work with NSR and EXFOR activities.
- (c) NRDC members endorsed and supported current work to establish a more cost-effective relational database system (particularly developments at NDS and NNDC, Brookhaven).
- (d) International collaboration in both compilation and software development is of crucial importance to all members of the NRDC network, and greater efforts are required to capture real funding for some data centres (eg., in Russian Federation and Ukraine through possible ISTC funding).
- (e) Emerging manpower problems throughout the NRDC were noted and discussed - loss of expertise and replacement of these staff will be a major priority in 2003/2004.

Future NRDC Cooperation on CINDA

Prepared for the Nuclear Reaction Data Center Meeting
May 2002

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General

This document contains several proposals, which are meant as a starting point for further discussions. The three main points addressed are: 1) the transmitting of CINDA entries needs to be reorganised, 2) transmission of CINDA entries in the new formats should be initiated before the end of the year, and 3) the new CINDA database should be considered as an index to the experimental and evaluated data files. Detailed proposals follow.

CINDA Transmission

A subset of the original “core” centers will be responsible for all CINDA transmissions. That is, the NNDC will be responsible for the US and Canada, the NEA Data Bank will be responsible for the NEA member countries, and the NDS will be responsible for the rest of the world. All other centers compiling new references will transmit the data through one of these three centers.

Creation of a CINDA database in the new format

In order to allow time for the centers to work on the creation of their new CINDA databases, there will be a moratorium on new transmissions for some period of time before the changeover. (A time schedule should be completed before the end of the 2002 NRDC Meeting). The database creation project consists of four parts: 1) the conversion of the existing library, 2) the production of a starter library for charged particle and photonuclear data, 3) the addition of new entries, and 4) the addition of entries from other existing bibliographies, and the merging of these entries with the existing database.

1. Conversion of the existing CINDA library:

Each neutron center, or its designated center, will:

- Either convert its CINDA master file to the new format,
- Or will retrieve the data for their area in the exchange format and send it to NNDC to be converted.

These files will be distributed by NDS to those centers that want them.

Completion: October 2002 (moratorium initiated).

2. Production of a starter library for charged particle and photonuclear data

A starter library of charged-particle and photonuclear data references will be produced by NDS/NNDC from the existing EXFOR database after the EXFOR master file comparison is completed and the libraries are updated.

This library will then be distributed to those centers who want it.

Completion: December 2002

3. Addition of new entries

For new CINDA entries, an agreement will be reached with the center responsible for co-ordination of coverage as to who will compile which references. After the entries are compiled, they will be sent through the co-ordinating center to NDS. NDS will check and distribute the entries.

Implementation: January 2003 (moratorium lifted).

4. Addition of entries from other existing bibliographies

There exist several other bibliographies that contain nuclear reaction references in a form useful for conversion and entry into the CINDA database. Among these are the CPBIB at NNDC and Photonuclear Data at CDFE. The conversion of these files to the CINDA format will greatly add to the coverage of the literature in the database. However, each reference must be checked against the contents of the CINDA database a) to see if it already exists in the database, and b) if it does not exist, to see if it should be loaded into an already existing block. This checking and blocking may take a considerable amount of time to complete.

Completion: to be decided for each database to be converted.

Contents of CINDA

From 2002 forward, CINDA will be considered to be an index to the experimental and evaluated data, that is, entries for theory (except those given in EXFOR entries), compilations, and reviews will not be entered in CINDA. Such references are now entered in Nuclear Science References (NSR), and present coverage seems to be complete; 98% of all new theory references given in CINDA are already in NSR; a comparison of CINDA theory entries for 2000-2002 to NSR found only 4 missing references in NSR: 3 from laboratory reports and one from a conference. The savings in duplicated effort will allow more time to be devoted to data compilation. Existing CINDA entries will remain in the database until such time as they are documented to exist in the NSR database.

For older references, the coverage in NSR is not as good. The NNDC will provide a program to be used in checking which CINDA theory entries exist in NSR and will ask for help in entering those which are not in NSR.

Those documents which exist or are entered in NSR will then be deleted from the CINDA database.