

To: Distribution

5 June 1998

From: V.G. Pronyaev and O. Schwerer

Subject: Draft Summary of the 1998 NRDC Meeting

Please find below the draft of the meeting summary, conclusions and actions of the Nuclear Reaction Data Centers' Meeting in Vienna, 11-15 May 1998. As requested, the conclusions are listed separately from the actions, and explanatory comments were added in several cases.

Please notify NDS as soon as possible, but not later than 6 July 1998, of any corrections or additions (or additional explanatory comments) you wish to suggest, by e-mail or fax. The full meeting report, including all status reports and some of the working papers, will be published later this year as an INDC report.

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AGM on the Co-ordination of the Nuclear Reaction Data Centres  
IAEA Headquarters, Vienna, 11 - 15 May 1998

#### Meeting Summary

##### I Introduction

The IAEA Advisory Group Meeting on the Coordination of the Nuclear Reaction Data Centres (NRDC) was held in the IAEA Headquarters on 11 - 15 May 1998. 21 participants have presented 13 Data Centres from China, Hungary, Japan, Russia, Ukraine, USA, NEA and IAEA. Practically all NDS staff took part or contributed to the meeting.

This meeting was one in a series of biennial Data Centres Coordination Meetings with a main task to evaluate the results of the data centres cooperation in the maintaining and updating of the common nuclear databases and providing full-scale and user friendly access to these databases, to outline the priorities for future work taking into account the interest of each centre and to consider the technical matters of data compilation, exchange and dissemination.

##### II Brief Minutes

The Meeting was opened by D. Muir (NDS).

R. Iyer, Head of the Division of Physical and Chemical Sciences welcomed the participants on behalf of the IAEA. In his address, Dr. Iyer emphasized, that the user service have to be considered as a first priority in the nuclear data centres work. A wide use of new computer technologies will simplify substantially the user's access to the nuclear databases.

C.L. Dunford (NNDC) and C. Nordborg (OECD/NEA) were elected as co-chairmen of the Meeting.

The meeting agenda and schedule were adopted with minor changes. The status reports of the centres were presented by the centres' heads.

New directions in the centres work were discussed.

C.L. Dunford informed the participants about the process of reorganizing the activities of the U.S. Nuclear Data Program. The main priority of the Program at present is the maintaining and updating of the nuclear data bases with more attention to the integrity and the reliability of the nuclear data. The compilation and evaluation activity will be focused on data obtained or needed for fundamental research (astrophysics, exotic nuclei, high-spin and super-deformed states). User-friendly modern and efficient access to the databases (including archives) is essential.

C. Nordborg (OECD/NEA) informed participants about continuing efforts of development of databases on PC CD-ROM platform. This will include evaluated data library JEFF-3.0 and experimental data library EXFOR integrated into one package and CINDA. Data for nuclear safety and nuclear waste transmutation programs have the highest priority for compilation, evaluation and dissemination.

V. Pronyaev (IAEA-NDS) informed participants that the NDS will continue to work on providing the full-scale services to the users having different levels of access to the nuclear databases through computer networks. NDS is going to put more efforts in the programming of the online Web access to the databases and offline access to the all major databases on PC platforms.

A quick review of the general actions of the last Technical Meeting was done. A few new general actions were proposed and included in the list.

Customer services were discussed.

V. McLane informed that NNDC will continue to use the CD-ROMs only as media for data distribution. Today's priorities and loading of the staff of the NNDC do not allow to do any programme development work for nuclear databases on PC platform (CD-ROM or Hard Disk). Part of the information for online user services was moved to a WindowsNT Server. New BNL-325 online electronic book with plots of evaluated nuclear cross sections in comparison with the experimental data from EXFOR library will be published. Very recently WWW overtook Telnet in the retrieval statistics.

C. Nordborg informed participants that all NEA-DB databases are in the Oracle DB with online access through Web with registration of users. Telnet is no longer used for data retrieval. The problems of consistency of updating of common databases were discussed, and actions to keep this consistency were formulated. The means of communication with users to get feedback from them on online service performance were discussed

V. Pronyaev presented the NDS point of view on elements and definitions of user's retrieval statistics. Different media and forms of accesses to the databases are used at present to fulfill the user's request. It was decided to develop common standards on reporting of statistics of retrievals.

The general situation with manpower in the cooperating data centres is stable, with a relatively small decline mainly due to reduction of typing work in a computer era. A new contractual system which is now under discussion in the NEA-DB will probably bring more stability. Due to retirements a few new staff members will come to the NNDC. It is expected that more programme development work will be done in the NDS in the future.

A few proposals on tighter cooperation in the common programme development work were considered. It will include regular exchange of information between the centres at the stages of planning, designing and writing of the programmes supporting common databases. The centres agreed that the distribution of the work between centres in database programmes developing fields is determined mainly by the interests of each center. But tighter cooperation in this field and use of new programming tools may lead to the creation of common, platform independent, computer programmes for maintaining and updating of nuclear data bases and

providing user's retrievals

A few new computer programme packages, data files, libraries and databases which have relation to the common database programme development were presented and distributed among participants.

CD-CINDA (CD-ROM database on WindowsNT PC platform programmed in Oracle/SQL\*Plus) was demonstrated by M. Kellet (NEA-DB). A Test version with 20 Mb source data file had shown good performance. Work on decreasing of the access time will be continued.

CD-ROM version of JENDL-3.2 Plots & Data prepared at JAERI was distributed. EXFOR PC CD-ROM (Hard Disk) database on the WindowsNT platform programmed by J. Vamosi in CodeBase/C was demonstrated by V. Pronyaev (NDS). The January 1998 version was distributed to meeting participants for test and comments.

The outcome of Technical Sessions which considered mainly technical problems of maintaining and updating the CINDA and EXFOR databases is summarized in the List of Actions and Conclusions of the Meeting.

The problems of discrepancies between different evaluated reaction cross section data and use of the cross section shape systematics for threshold reactions was raised up by V. Manokhin (CJD). The conclusion was to find the most appropriate form to collect and present this information (possibly in a discrepancies file).

V. McLane (NNDC) informed participants on the development of the Astrophysical Database in the U.S. and NNDC participation in this project.

The general problems of computer network performance for online access to the centres data bases were discussed. V. Pronyaev (NDS) presented an analysis of the NDS database server performance, based on real time transfer of the files from NDS Web server to different users and a WAN monitoring system based on ping-ing several remote hosts and accumulating statistics. It was shown that after upgrading of the shared line connecting IAEA with a WAN (to 1 Mbit/sec band width) the own user's connection with a WAN limits the transfer rate for many of our users. But the fast growth of traffic through the IAEA gates may lead again to the saturation of the line.

C.L. Dunford informed participants about approach to the maintaining and updating of the evaluated nuclear structure data library. ENSDF will continue to be a main source for preparing of specialized libraries on nuclear structure and decay data for most applications. The mechanisms for more frequent updates of some components of the library without revision of all data for a full mass-chain are under discussion at the meetings of the Nuclear Structure and Decay Data Network.

It was agreed that the next Technical Meeting on the Coordination of the Nuclear Reaction Data Centres will be held in Vienna in the May 1999 and the next AGM on the Coordination of the NRDC can be held in June 2000 in Obninsk (Russia), still be coordinated with host laboratory. The national and specialized centres can be also considered as host centres for these meetings in the future.

### III Meeting Conclusions, Actions and Recommendations.

#### III.1 Priorities in the NRDC network coordination

Recognizing that International, National and Specialized Data Centres have their own tasks, priorities and current involvements, and that they use

different hardware platforms and computer software, the Meeting came to the conclusion that the following priorities in the Centres cooperative work can be formulated at present:

1. To continue the maintenance of the existing nuclear data bases, their updating through the input of new data, improvement of existing information.

2. To improve customer service through the continuing development of online access to nuclear databases and related information using the increased opportunities of the World Wide Web.

3. To continue the development of databases resident on the user's PC and their updating from one of the Nuclear Reaction Data Centers via computer networks.

4. To improve efficiency in computer programme development by timely exchange of information on plans and progress among the Centers.

### III.2. List of Conclusions, Actions and Recommendations

#### III.2.1 Conclusions

##### Conclusions on the EXFOR/CINDA dictionary system

Because of the increasing number of measurements involving radioactive targets and beams and reaction products far from stability, the usefulness of nuclide checking using the flags in dictionary 27, needing all-too-frequent dictionary updates, was discussed.

- C1 The CINDA flag in dictionary 27 is dropped. The flag for SF1 can be used instead.
- C2 Dict.27 flags 13 and 14 are kept until a specific proposal is submitted. (compare Action A21 below)

##### General conclusions on EXFOR

- C3 The proposal of CP-C/239 (on Dates for the Year 2000) is modified. It is provisionally adopted to introduce 4-digit years and 8-digit date fields, with padding by zeros if month and/or day are not known, throughout EXFOR; where only the year is foreseen (EXP-YEAR), 4 digits will be given.
- C4 All TRANS tapes transmitted after 1 August 1998 must have all dates in the new format. (See also Actions A51 through A53 below)
- C5 The "provisional" tapes 1267, C022, C025 (containing new polarization quantities) are now considered official transmissions.
- C6 Retrieving EXFOR by reference date: such a feature has very low priority for NNDC, therefore need will be addressed by NDS. (The "cut-off-date" offered in the NNDC and NDS online services, though sometimes misinterpreted in this way, does not offer this capability.)

##### Conclusions on proposed new dictionary codes

- C7 It is agreed to keep the code 'SS' both in dict.31 and 34.  
(Some concern had been expressed that using the same code, SS, in two different contexts but both for polarization quantities, might create confusion among compilers and users. However, since this reflects the abbreviations commonly used in the literature, the above decision was taken.)
- C8 JET and MASSP are approved for Dict.21
- C9 Data units B\*KEV are approved for Dict.25.  
(These units had been rejected earlier because of equivalence with MB\*MEV. Since other cases of equivalent units exist in the dictionary, and generally the units as given by the authors should be used wherever possible, the above decision was taken.)
- C10 PAR,COR,G/N is not approved. Instead, PAR,DA/CRL,G/N is introduced (Dictionary 36). (Compare Action A68 below)
- C11 D-N14 is approved for Dict.19
- C12 MSK/A is agreed for the journal 'Memoirs of the Faculty of Science, Kyoto Univ., Series A'. (Dictionary 5)

#### Conclusions on CINDA

- C13 The participants agree that general theoretical papers are covered in NSR and that coverage in CINDA should be restricted to those theoretical papers associated with producing data files
- C14 The text pages of the CINDA supplement book are reduced by omitting the handbook section (which was increasingly difficult to keep up-to-date) and restricting the annex to the reference and lab tables.

### III.2.2 Actions and Recommendations

#### General Actions

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|----|-----|---|
| A1 | NDS | Investigate whether KAERI is interested in joining the network and, if so, invite them to submit an entry to the Network document |
| A2 | NDS | Update the Network document to include the Sarov and Ukraine centres and any corrections to the other centres' entries            |
| A3 | NDS | Send (now and in future) CINDA DBMS backups to VNIIEF, and the same for ENDF (DBMS backup and Text libraries).                    |
| A4 | CJD | Forward all future ENSDF, NSR and NUDAT update tapes (received from NNDC through NDS) to VNIIEF                                   |

- A5 Pronyaev Submit proposal on standards for retrieval statistics
- A6 All Comment on this proposal within one month after the meeting
- A7 NDS Distribute final Standard on Reporting Nuclear Data Retrieval Statistics within 2 months after the meeting
- A8 All Comment on implementation of this Standard at your centre within one month after receiving it
- A9 Dunford Provide NDS with text for NUDAT document
- A10 NDS Publish this as INDC report
- A11 NDS Update the CP memo distribution to include the Ukrainian Nuclear Data Center (UkrNDC) and the corrections as received at this meeting
- A12 NDS Make sure that all NDS documents have the correct full name of CNDC (now: CHINA NUCLEAR DATA CENTER)
- A13 NDS Plan next technical meeting for May 1999 (3 days) in Vienna and propose specific date in a CP memo
- A14 Recomm. Rotation of meeting sites beyond the four neutron centers is recommended for future meetings.

#### Actions and Recommendations on Online Services and WWW

- A15 Recomm. All centres maintaining Web pages are recommended to introduce a complaint/suggestion button for users to give feedback on retrieval problems or inconveniences
- A16 Recomm. Include the Citation Guidelines in Web and Telnet services
- A17 NDS Put IAEA-NDS-0 (index of IAEA-NDS documents) on the Web with high priority and inform centers by e-mail when completed

#### Actions on the EXFOR/CINDA Dictionary System

- A18 McLane Send new dictionaries to NDS including all flags and numerical equivalents
- A19 Schwerer Check old Actions 7-13 (of 1997 meeting) after receiving the new dictionaries and programs from NNDC.
- A20 NDS Keep the 'particle considered' (SF7) entries in dictionary 36 until all centers can use the dictionary wildcards.

A21     McLane            Submit proposal for modification of Dict.27 use flags before the next meeting.

A22     Schwerer   When adding new dictionary codes, take care of flags and numerical equivalents in consultation with V. McLane.

#### Actions on CINDA

A23     Neutron centers and all interested: within one month after the meeting, send feedback on the proposal for CINDA 2000 to V. McLane (see memo CP-C/234 of May 1997, also reproduced in the 1997 meeting report)

A24     NNDC                Propose implementation plan and schedule for CINDA 2000

A25     Lammer             Inform NNDC within one month on any CINDA programs unique to NDS

A26     NNDC                Provide NEA-DB with translation capability from CINDA to CINDA-2000 format

A27     NNDC  
NEA-DB                Complete the CINDA 2000 programs within a year after this meeting.

A28     Lammer             Investigate which specific theoretical quantities Pronyaev should be added for CINDA-2000

A29     Lammer             Send introductory pages of CINDA (if possible in electronic form) to NEA-DB for inclusion in CD-CINDA

A30     NEA-DB             Send test version of CD-CINDA to other centres

A31     All                 Send feedback on the test version of CD-CINDA to NEA-DB within one month after receiving it and inform NEA-DB of the number of final copies needed

A32     NEA-DB             Distribute final version of CD-CINDA to centres

A33     Lammer             (old #69 continuing) Distribute the list of "who is covering what for CINDA" to other centers

A34     Neutron centers    Give feedback on the CINDA coverage list (WP11) to Lammer

A35     Dunford             Introduce a COPY option for CINDUP

A36     NEA-DB             (old #85 modified) Send ORACLE design specification developed at NEA for CINDA and EXFOR to NNDC, NDS and CDFE

A37     McLane             Submit the necessary changes for the CINDA field in Dictionary 27 to use the old CINDA codes for elements > 100 as long as this is needed

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| A38 | Kellett<br>CJD | Specify to NDS the number of copies needed for CINDA-99 by 1 October 1998   |
| A39 | CJD            | Send addresses of recipients of CINDA books to NDS (so that part of the books can be mailed directly from Vienna) |

General Actions on EXFOR

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|-----|--------|---|
| A40 | McLane | Make the EXFOR Basics Manual available online in PostScript   |
| A41 | All    | (Old #14 continuing) Send comments and corrections on the "EXFOR Basics" manual to McLane   |
| A42 | McLane | (Old #15 modified) Add example entries (or one brief complete entry) to the "EXFOR Basics" manual   |
| A43 | McLane | Add a one-page dictionary to Basics Manual, listing the most commonly used quantities   |
| A44 | McLane | Complete Exfor Manual update and poste it for the other centres   |
| A45 | McLane | Send EXFOR check program and DANIEL dictionaries to NEA-DB  |
| A46 | NNDC   | Send all EXFOR programs and the complete library to CNDC  |
| A47 | NDS    | From now on send incremental EXFOR updates (TRANS) to CNDC  |
| A48 | McLane | (Old #24 continuing) Make a benchmark test of TEST-EXF  |
| A49 | McLane | (Old #44 modified) If time becomes available, investigate the possibility of including separate index lines for the ELEM/MASS formalism in the indexing program.  |
| A50 | McLane | Correct EXFOR processing codes to properly treat cases where KT is given in place of an average incident particle energy (factor 3/2)   |
| A51 | McLane | Send the revised EXFOR retrieval code (introducing 4-digit years) to NDS  |
| A52 | NDS    | Retrieve the complete EXFOR library using NNDC's new retrieval code and distribute on CD-ROM so that all centers will have the complete library with 4-digit years. Inform the centers by e-mail which were the latest TRANS files included. The CD-ROM will contain separate files for each area (1,2,3,4,A,B,C, etc.) |



- A53 All Send all TRANS tapes to be included on this CD-ROM to NDS before 1 October 1998.
- A54 McLane Distribute the new EXFOR and dictionary programs by 1 August 1998.
- A55 All Correct entries requested in CP-D/297 (or send information on which TRANS correction was transmitted if done already), or explanation in case of disagreement with memo CP-D/297.
- A56 McLane Retrieve all occurrences of He-5 (and other illegal reactions) in EXFOR and request retransmission

Actions on EXFOR coding rules and dictionary codes

- A57 McLane Varlamov (Old #19 continuing) Provide LEXFOR entry for energy spectra of particle pairs and PAR,SIG,P/T
- A58 McLane Update Lexfor page on thick target yields taking into account the conclusion (#29) of the 1997 NRDC meeting (Memos CP-C/224 and CP-C/233 with the modification that "thick target yield per unit time" is coded TTY,,DT instead of TTT).
- A59 Lammer (Old #37 continuing) Check existing codes for fission quantities for possible overlap with the case of memo CP-C/209 and existing EXFOR entries for necessary revisions.
- A60 Lammer (Old #38 modified) Reply to intems 1 and 2 of memo 4C-4/57 (codes PR,NU,FF and PRE,FY/DE for dictionary 36) and propose solutions for the remaining questions on entry 40420 in a CP memo.
- A61 CJD Lammer (Old #39 modified) Agree on modifications for entry 40420 and retransmit
- A62 Lammer (Old #49 continuing) Revise the LEXFOR entry on fission-product yields and submit a proposal on the coding of mass yields as a CP memo with information on corresponding measurements.
- A63 CAJaD Submit proposal on redundant coding in EXFOR for discussion at the 1999 meeting
- A64 McLane Provide expansion for lab codes 1USATTU, 1USACBF
- A65 McLane Clarify questions on dictionary 27 changes raised in memo CP-D/291
- A66 McLane Submit LEXFOR entry on use of RCL and RSD in SF7

- A67     Chukreev     Provide examples supporting the proposal in memo CP-A/79 (item 1) (see also related memo CP-A/89) for decision at the next meeting
- A68     NEA-DB            Retransmit subentry 20220.007 using the new REACTION introduced at this meeting (PAR,DA/CRL,G/N) and check whether correction of DATA headings is necessary.
- A69     McLane             Provide more information on the proposal containing 'PN' (prompt neutrons) in REACTION SF7 (memo CP-C/235)
- A70     NEA-DB            Check the incorrect report code mentioned in 4C-3/389 and retransmit entry 22357
- A71     McLane             Propose clarification of the definition of gamma-ray abundance in LEXFOR.
- A72     Maev             Submit proposal (including Lexfor entry) for self-indication ratios.
- A73     McLane             Check code AXX for REACTION SF8 (submit dictionary addition or retransmit entry C0138)
- A74     McLane             Change LEXFOR to allow both units PC/FIS and NO-DIM for total delayed nu-bar.

#### Actions on Neutron Data

- A75     CJD             Complete conversion of EXFOR 8000 series by end of 1998
- A76     NEA-DB            Look into status of EXFOR 6000 series

#### Actions on CPND

- A77     NDS             (Old #59 modified) On the comparison of the Landolt-Bornstein CPND compilation with EXFOR: include this topic on the agenda of the 1999 NRDC meeting (comparison to be done once the CPND bibliographic data are included in CINDA-2000)
- A78     CAJaD            Investigate whether the Landolt-Bornstein CPND compilation can be made available to the CPND centers in computerized form.
- A79     CAJaD            (old #61 modified) Complete correction of EXFOR area B file by the time of the 1999 NRDC meeting.
- A80     NDS             (old #62 continuing) Distribute the corrected area B file after the corrections by CAJaD are completed.
- A81     CPND centers     Go through Chukreev's list of duplications (WP 12) and agree with the respective other centres on which entry

to delete.

#### Actions on Photonuclear Data

- A82 Varlamov (replacing old #52) Check main reference and EXFOR coding of the entry originally transmitted as 22242 (containing photonuclear data and possibly a new polarization quantity)
- A83 Varlamov The photonuclear bibliography and other CDFE files are now available from the CDFE web site; CDFE to investigate including search options in the bibliography.

#### Actions on Evaluated Data Libraries

- A84 Manokhin Send Russian Dosimetry File (RRDF-96) to NDS
- A85 All centers concerned (Old #75 continuing) Compile and maintain a list of known errors in the evaluated libraries for which they are responsible and make this list available to the users of the online service.
- A86 All centers concerned (Old #76 modified) Document the parameters being used for producing pointwise cross sections including the code name, version number and input deck.
- A87 Recomm. All (Old #77 continuing) All centers responsible for evaluated data libraries should try to make the documentation available online.

#### Post-meeting secretaries notes.

These notes are outside of the meeting Agenda and prepared by the Scientific Secretary. The aim of these notes is to keep proposals which may help in better preparation to the next coordination meeting.

2 hours for computer demonstration session have to be reserved. The centres have to be approached before the meeting on possible contribution in this session. New big screen demonstration equipment has to be used.

2 hours for session of the bilateral contacts has to be reserved advance in a meeting shedule. All the problems of bilateral relations may be discussed in free contacts between centres representatives during this session.

2 hour session on physics issues staying behind new priorities in data compilation and evaluation has to be reserved. Regular contacts with meeting participants at the stage of preparation of Agenda will allow the Scientific Secretary to have better understanding of the interests of each center in presentation on each topic. Each topic of Agenda has to have at least one presentation with an overview of of the problem and proposals for solution.