



ISSUE No. 2

October 1980

IAEA Nuclear Data Section (NDS)
P.O. Box 100, A-1400 Vienna, Austria

The first issue of this Newsletter had found a very positive response. We therefore regret that, due to the move of the IAEA to the new Vienna International Centre, this second issue was delayed.

Note that for neutron nuclear data a geographical distribution of responsibility exists by which

- the National Nuclear Data Center, Brookhaven National Laboratory, Upton, NY 11973, USA, services USA and Canada,
- the OECD NEA Data Bank, B.P. No. 9, Bâtiment 45, F-91190 Gif sur Yvette, France, services OECD countries in Western Europe and Japan,
- the Centr po Jadernym Dannym, Fiziko-Energeticheskij Institut, Obninsk, Kaluga Region, USSR, services the USSR,
- the IAEA Nuclear Data Section (NDS) services countries in Eastern Europe (except the USSR), Africa, Asia (except Japan), South and Central America, Australia and New Zealand.

If you wish to receive any nuclear data information please address yourself to the data centre in your area.

Bibliographic Data

Neutron data: CINDA

CINDA is a bibliography to neutron nuclear data and serves at the same time as an index to the EXFOR neutron data library. It is published annually by the IAEA on behalf of the above four neutron data centres.

CINDA-80 was published in May 1980. It covers the neutron data literature for the period 1977-1980 and thus represents a supplement to the

earlier issue CINDA-A which covers the period from 1935 up to the end of 1976.

CINDA-A, 2000 pages in 2 volumes, IAEA Vienna, 1979. The price is 1050.- Austrian Schillings.

CINDA-80, 440 pages. The price 450.- Austrian Schillings also includes a supplement volume to be published in December 1980.

As in the case of other priced Agency publications, CINDA can be ordered at half price through the Permanent Mission of your country to the IAEA in Vienna.

In addition to the published books up-to-date selective computer retrievals from the CINDA file can be made available, costfree, upon request.

Charged-particle reaction data

The 1979 issue of "The Bibliography of Integral Charged Particle Nuclear Data" [BNL-NCS-50640, 3rd ed.] is available costfree either as a book or on magnetic tape [21374 records].

The 1980 issue is in preparation at the US National Nuclear Data Center.

"Recent References"

The Nuclear Structure Reference (NSR) File, a comprehensive compilation of keyworded bibliographic nuclear structure data references is used for the periodic publication of Recent References in the Nuclear Data Sheets journal, for the preparation of special collections of bibliographic citations for special topics (including all reference lists for the mass-chain evaluations published in Nuclear Data Sheets), and for the preparation of responses to inquiries for specific nuclear information. The NSR file has keyworded information back to 1960. The following sections of this file are available on magnetic tape:

RECREFB0A:	Covering 1910-1968	- 309308 records
RECREFB0B:	Covering 1969-1973	- 369196 records
RECREFB0C:	Covering 1974-1978	- 310276 records
RECREFB0D:	Covering Jan-Dec 1979	- 63026 records

EXFOR: Experimental nuclear reaction data

The following data centers provide regular input to the EXFOR computer library of nuclear reaction data:

NNDC	- US National Nuclear Data Center, Brookhaven, USA
NEA-DB	- OECD/NEA Data Bank, Saclay, France
NDS	- IAEA Nuclear Data Section, Vienna, Austria
CJD	- USSR Centr po Jadernym Dannym, Obninsk, USSR
KACHAPAG	- Karlsruhe Charged Particle Group, Karlsruhe, Fed. Rep. of Germany
CAJaD	- USSR Center for Nuclear Structure and Reaction Data, Moscow, USSR

CDFE - Centr Dannyykh Fotojad. Eksp. (Photonuclear Data Centre),
Moscow State University, USSR

The recent creation of the Photonuclear Data Centre in the USSR and its cooperation in the EXFOR data exchange network is another essential step towards the goal of EXFOR to include a universal and comprehensive compilation of all nuclear reaction data, i.e.

- experimental neutron nuclear reaction data (in this category a very high degree of completeness has been reached by the joint compilation efforts of NNDC, NEA-DB, NDS and CJD); this part of the EXFOR library includes also related nuclear quantities such as spontaneous fission neutron yields and spectra, nuclear temperatures, level densities, etc.;
- charged particle nuclear reaction data (in this category the library so far concentrates on integral cross-sections $\sigma(E)$ [compiled primarily by KACHAPAG], neutron source reactions [NNDC and NDS] and integral as well as differential data measured in the USSR [CAJaD]);
- photonuclear reaction data (the present emphasis on photonuclear data provided by NNDC [Berman Library] was expanded to include various (γ, p) and (γ, f) data as compiled by CDFE).

Costfree retrievals from the EXFOR library are available upon request, either as printed listings or on magnetic tapes. Recipients of EXFOR retrievals receive a brief user's guide (document "IAEA-NDS-1") about the formats of the EXFOR data.

It should be noted that the well-known neutron data libraries "CSISRS" from NNDC and "NEUDADA" from the NEA Data Bank are now fully included in the EXFOR library. CSISRS and NEUDADA continue to exist, at the respective data centers, as special output formats of the EXFOR data exchanged between the cooperating data centers.

The integral charged-particle reaction data contained in EXFOR are published in the form of a handbook as "Physik Daten/Physics Data Nr. 15" by Fachinformationszentrum Energie/Physik/Mathematik GmbH Karlsruhe from where it can be purchased. [Address: D-7514 Eggenstein-Leopoldshafen 2, Fed. Rep. of Germany]. Two volumes and an index, together 1618 pages, containing data compiled by KACHAPAG, cost 149.- DM. A third volume is in preparation.

Evaluated Nuclear Data

ENDF/B (issued by NNDC)

The following ENDF/B libraries are available from NDS:

- ENDF/B-III Scattering Law File (still valid as there exist no recent updates in ENDF/B-IV or ENDF/B-V), 101483 records.
- ENDF/B-IV General Purpose File: 90 nuclides, 216885 records. Documented in Report IAEA-NDS-23
- ENDF/B-IV Photon Interaction File, 13497 records.

- ENDF/B-V Dosimetry Files: 35 neutron reactions, 25 nuclides.
Point data file: 9191 records. Group data file: 9407 records.
Documented in Report IAEA-NDS-24
 - ENDF/B-V Standards File.
Documented in IAEA-NDS-15
 - ENDF/B-V Actinides File.
Documented in IAEA-NDS-13
 - ENDF/B-V Fission-products File.
Documented in IAEA-NDS-25
- } already announced in Issue No. 1
of this Newsletter

References:

- R. Kinsey, ENDF/B-V Summary Documentation, ("Contents Manual"), report BNL-NCS-17541 (ENDF-201) 3rd edition, July 1979.
- R. Kinsey, Data formats and procedures for ENDF/B-V ("Formats Manual"), report ENL-NCS-50496 (ENDF-102) 2nd edition, dated Oct. 1979, issued Oct. 1980.

It should be noted that ENDF/B-V contains some new format definitions as compared to ENDF/B-IV. See further below for ENDF/B-V processing codes.

Note: In the resolved resonance region ENDF/B data are usually given in the form of resonance parameters. If so requested the same data are also available in the form of cross-section point data.

Other ENDF/B formatted libraries received since the Issue no. 1 of this Newsletter

BOSPOR-78: Evaluated data for eight threshold neutron reactions were received from FEI Obninsk, USSR, and converted by IAEA into ENDF/B format. The content is summarized in reports IAEA-NDS-31 and INDC(CCP)-147. The latter report also contains graphic comparison with ENDF/B-IV and UKNDL.

SOKRATOR: New USSR evaluations will be issued in ENDF/B format. Other evaluations that are available in SOKRATOR format are being converted to ENDF/B format by NDS.

INDL/A: The IAEA Nuclear Data Library for Actinides (as announced in Issue no. 1 of this Newsletter) was updated. It is documented in IAEA-NDS-12. Some evaluations included are in KEDAK or UKNDL format.

Libraries in other formats recently received

Australian Fission Product Library (1979 version): Fission product cross sections, 192 nuclides, 89750 data records.

DAMSIC-77 Library: Damage cross-section library. The data are presented in the 620-group structure used in SAND-II. See report IAEA-NDS-26.

DOSCROS-77 Library: This library is based on the ENDF/B-IV dosimetry file, supplemented with some other evaluations. The library contains 49 detector cross-section sets plus data for 3 cover materials (Cd, B, Au) in the SAND-II format. See report IAEA-NDS-27.

JUELGAM-79 Library: Jülich Decay-Gamma Data File. This library contains the half-life, generating reactions, parents and daughter nuclides, the energies and intensities of the gamma and x-rays of 2055 radionuclides, 52015 records. It supersedes JUELGAM-78. See report IAEA-NDS-19 (Rev.2).

The GSI Gamma-ray Library (GSIGAM-79): The GSIGAM-79 library is a compilation of gamma-rays originating from radioactive decay. The library, which is available on tape, is presented in two sorts, 1.) by increasing gamma-ray energies, 2.) by mass and atomic number (ZA) of the isotopes. The library originates from the Gesellschaft für Schwerionenforschung, Postfach 110 541, D-6100 Darmstadt, Fed. Rep. of Germany. Description of the library and a listing of the data is contained in a voluminous report "Gamma-Ray Catalog" GSI-79-2.

KEDAK-3 Library: (Version Feb. 1979), 49 nuclides, 186826 logical records. This version supersedes the older ones (see CINDU-11 Supplement 1).

PNESD Library: A Proton-Nucleus Elastic Scattering Data File by Dr. Leeb, Vienna, contains numerical data and the related bibliography for differential elastic cross-sections, polarization and integral non-elastic cross-sections for protons of 3 to 1000 MeV incident on natural elements and their isotopes. See report IAEA-NDS-22.

RESPARS3 and RESPAR3ED Libraries: The libraries contain resonance parameters from BNL-325 (3rd ed., 1973) in standard and edited format respectively. See report IAEA-NDS-28.

UKNDL-80 Library: 1980 version of UKNDL library, 80 nuclides, 138945 logical records. See report IAEA-NDS-30.

EXFOR-VIEN File: Recent additions to this collection of Various International Evaluated Nuclear data are:

- EXFOR-VIEN-V0012: Revision of "Neutron Nuclear Data Evaluations for Ba-134 to 138" by B. Strohmaier et al., superseding partly the publication in Nucl. Sci. and Eng. 65 (1978) 368.
- EXFOR-VIEN-V0014: Evaluations of the Cross-Sections for the Reactions Mg-24(n,p), Zn-64(n,p), Cu-63(n,2n), Zr-90(n,2n) by S. Tagesen et al., Physik-Daten/Physics Data 13-1 (1979) published by the Fachinformationszentrum Karlsruhe, Fed. Rep. of Germany.
- EXFOR-VIEN-V0015: $\bar{\nu}$ Evaluation for Heavy Isotopes ($Z > 90$) by F. Manero and V.A. Konshin, Atomic Energy Review 10 (1972) 637.
- EXFOR-VIEN-V0016: Neutron Nuclear Data Evaluation for P-31 Using Statistical Model and Coupled Channel Optical Model Calculations by B. Strohmaier et al., Priv. Comm. (1980).
- EXFOR-VIEN-V0017: Delayed Neutron Spectra by D. Saphier et al., Nucl. Sci. Eng. 62 (1977) 660.
- EXFOR-VIEN-V0018-V0022: Fission neutron yields $\bar{\nu}$ and fission cross-sections of U-235 and Pu-239 by Liu Chi-tze, HSJ-75005 (1976), HSJ-77061 (1978); Liu Tsu-hua, HSJ-75007 (1976); Chang Huan-qiao, HSJ-76041 (1978).

EXFOR-VIEN-VOO21: (n,2n) and (n,3n) cross-section of U-238 by Chou You-pu, HSI-77091 (1978).

ENSDF-Library: The Evaluated Nuclear Structure Data File (ENSDF) is the computer-based file for all nuclear structure and decay data compiled, evaluated, exchanged, published and disseminated by the international Nuclear Structure and Decay Data (NSDD) network. ENSDF is made up from a collection of "data sets", each of which describes the results of a single experiment or the combined evaluated results of a number of experiments of the same type. It is designed to be used as a storage file for compiled and evaluated data, as a source file for specialized output and publications (e.g. Nuclear Data Sheets), and as a vehicle for the exchange of data among the members of the NSDD network.

The latest version of ENSDF, currently containing 6741 data sets, is available from NDS costfree, on request.

Recommended Transactinium Isotope Decay Data

The Nuclear Data Section is coordinating an international effort aiming at improving the quality and accuracy of nuclear decay data of the heavy (transactinium) isotopes. As part of this effort, NDS releases list of recommended transactinium isotope decay data:

The first proposed list of recommended values of transactinium isotope half-lives and branching fraction was published in INDC(NDS)-108/N. This will be superseded by a second, extended issue to be released in the Fall of 1980.

MULTIGROUP cross section data libraries for general applications

A summary description and documentation of the multigroup cross section data libraries which exist at the IAEA Nuclear Data Section are given in the report IAEA-NDS-32. Multigroup libraries of general interest and application are:

ENDF/B-IV Universal Supergroup (thermal) 460-group scheme: for 90 nuclides. 60220 logical records. Westinghouse El. Corp., DP-1345, 1974.

EURLIB-4: 100-neutron, 20-gamma-rays groups coupled multigroup set for transport calculations, particularly for reactor shielding on fusion. 21936 logical records. ESIS Newsletter No. 4.

LIB-IV: A library of multigroup constants (50 group, 101 isotopes) generated from ENDF/B-4 at LASL. Utility codes LINX, BINX and CINX are also available. 192283 logical records. LA-6260-M, 1976.

VITAMIN-C: 171 neutrons, 36 gamma-ray group cross sections in AMPX and CCCC interface formats for fusion and LMFBR neutronics-utility programs are also available. 283713 logical records. ORNL (RSIC-37 (ENDF-296)).

Handling and Processing Codes

ENDF/B-V handling codes: CHECKER, CRECT, STNDRD, FIZCON, PSYCHE, RESEND, INTER, INTEND, SUMRIZ, PLOTEF, LSTFCV, RIGEL in CDC version. 34300 records + 462 filler. See report IAEA-NDS-29.

NJOY: The NJOY Nuclear Data Processing System is a comprehensive computer code package for producing cross sections for neutron and photon transport calculations from ENDF/B-IV and V evaluated nuclear data. CDC version.

Note: Requests for nuclear calculation computer codes and associated specialized multigroup cross section libraries should be addressed to

Dr. E. Sartori
IAEA Liaison Officer to the
Computer Program Library of the
NEA Data Bank
B.P. No. 9 (Bâtiment 45)
F-91190 Gif sur Yvette, France

The tapes kept at NDS are restricted to such data libraries that are of general interest and application and to related basic data file handling codes.

Selected new documents of interest

- ** = document available from NDS
- * = limited number of copies available from NDS
- = for other documents listed, contact your Institute Library, the originator, or the INIS Microfiche Service (IAEA, P.O. Box 100, A-1400 Vienna, Austria)

- ** IAEA Bulletin Vol.22, No.2, pp. 65-85, April 1980, J.J. Schmidt, A. Lorenz; The IAEA Nuclear Data Programme. Its role in the nuclear community and its services to developing countries.
- * IAEA-SMR-43; Nuclear Theory for Applications, Proc. of the Course on Nuclear Theory for Applications held at Trieste, 17 Jan-11 Feb 1978
- * IAEA-TECDOC-232; Transactinium Isotope Nuclear Data 1979, Proc. of the Second Advisory Group Meeting on Transactinium Isotope Nuclear Data, Cadarache, 2-5 May 1979
- ** INDC(CCP)-146, July 1980, V.M. Bychkov et al.; Cross Sections for the (n,p) , (n,α) and $(n,2n)$ Threshold Reaction
- ** INDC(CCP)-148, June 1980, V.A. Konshin et al.; Evaluation of the U-235 Fission Cross Section in the Energy Range 0.1 keV - 20 MeV. (translated by the IAEA)
- ** INDC(IND)-25, Oct. 1979, S.B. Garg; ENDF/B based 27-Group Cross Sections for Some Rare-Earth and Concrete Elements
- ** INDC(NDS)-113, June 1980, G. Lammer, M. Lammer; Progress in Fission Product Nuclear Data - Information about activities in the field of measurements and compilations/evaluations of fission product nuclear data (FPND), No.6
- ** INDC(NDS)-114, June 1980, K. Okamoto; Proc. of the IAEA Consultants' Meeting on Neutron Source Properties, Debrecen, Hungary, 17-21 March 1980

- ** INDC(RUM)-10, April 1980, G. Vasiliu et al.; Nuclear Data Evaluation for Th-232
- ** INDC(ROM)-12, May 1980, G. Vasiliu et al.; Nuclear Data Evaluation for Pa-233
- ** INDC(SEC)-73, Oct. 1979, D.W. Muir; WRENDA 79/80, World Request List for Nuclear Data
- ** INDC(NDS)-115, October 1980, A. Lorenz; Summary Report of the Advisory Group Meeting on Nuclear Structure and Decay Data, Vienna, 21-25 April 1980
- ** INDC(NDS)-118, October 1980, A. Lorenz; Summary Report of Third Coordinated Research Meeting on the Measurement and Evaluation of Transactinium Isotope Nuclear Decay Data, Vienna, 12-13 June 1980
- ** INDC(NDS)-119, September 1980, H.D. Lemmel; Summary Report on the Third Meeting of the Coordinated Research Project on the Inter-comparison of Evaluations of Actinide Neutron Nuclear Data, Vienna, 12-13 June 1980
- * INDC(SWD)-13 (KDK-35), 1979, Swedish Nuclear Data Committee Actinide Nuclear Data Working Group; Compilation of Actinide Neutron Nuclear Data
- * INDC(UK)-33 (NEANDC-124A), May 1980, M.G. Sowerby; Review of Important Nuclear Data Discrepancies: an NEANDC Contribution to the INDC/NEANDC Discrepancy File
- ** INDC(YUG)-6, December 1979, M. Budnar et al.; Prompt Gamma-Ray Spectra and Integrated Cross Section for the Radiative Capture of 14 MeV Neutrons for 28 Natural Targets in the Mass Region from 12 to 208
- I. Ribánsky, E. Betak (Eds); Neutron Induced Reactions, Proc. of the Second International Symposium, June 25-29, 1979, Smolenice, published by Slovak Academy of Sciences
- * BNL-NCS-51123 (ENDF-300), December 1979, National Nuclear Data Center; Standard Reference and Other Important Nuclear Data by the Cross Section Evaluations Working Group

For a complete list of INDC documents issued by NDS see

- ** INDC(SEC)-76, June 1980, List of documents received by the INDC Secretariat

Nuclear Data Section
International Atomic Energy Agency
P.O. Box 100
A-1400 Vienna, Austria

Printed by the IAEA in Austria
October 1980

80-05672