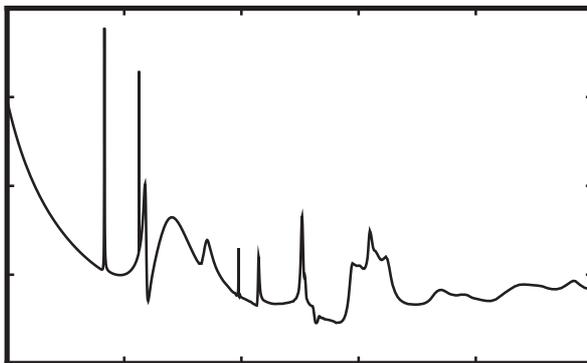




NUCLEAR DATA

NEWSLETTER



Nuclear Data Section (NDS)

International Atomic Energy Agency
Vienna

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Issue No. 25

June 1998

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All services provided to users by the Nuclear Data Section of the IAEA are free of charge.

Please contact us on the following addresses:

| | |
|------------------------------------|--|
| Nuclear Data Section | e-mail: services@iaeand.iaea.or.at |
| International Atomic Energy Agency | fax: (43-1) 20607 |
| P.O. Box 100 | cable: INATOM VIENNA |
| A-1400 Vienna | telex: 1-12645 |
| Austria | telephone: (43-1) 2060-21710 |

| | |
|------------------------|---|
| Online: TELNET or FTP: | iaeand.iaea.or.at |
| username: | IAEANDS for interactive Nuclear Data Information System |
| usernames: | ANONYMOUS for FTP file transfer; FENDL2 for FTP file transfer of FENDL-2.0; RIPL for FTP file transfer of RIPL. |

Web: <http://www-nds.iaea.or.at>

Editorial Note:

The style of the cover and text of the newsletter has been modified to conform more closely with the style of other newsletters published by the IAEA.

Open Vacancy

A vacancy has been advertised for the position of Nuclear Physicist/Programmer (P-2) in the Nuclear Data Centre Unit of the Nuclear Data Section of the IAEA. The main duties are data compilation in the EXFOR and CINDA databases and computer program development of user-friendly online (Worldwide Web) and offline (CD-ROM) access to IAEA nuclear databases. Vacancy Notices are posted at http://www.iaea.or.at/worldatom/vacancies/cur_vacancies.html under Department of Research and Isotopes. Please note that government sponsorship is no longer required for professional appointments. The closing date for applications is 6 August 1998.

Online News

Based partly on NDS initiatives in February 1998 the IAEA upgraded the bandwidth of the data line to the Internet from 256 kilobits/sec to 1 Megabit/sec. A remaining bottleneck for some users is the limitation on their own access to the global networks. On request, the NDS can carry out an analysis of the network performance between the NDS Web server and the user. For this please provide us with the following information: user IP and/or host addresses and the date and time of any sessions where difficulties were experienced.

New Web access:

- **EXFOR** (Library of Experimental Nuclear Reaction Data)
- **CINDA** (bibliography of microscopic neutron data)
- **RIPL** (Reference Input Parameter Library, more details given below)
- **FENDL-2.0/E**, **FENDL-2.0/MC**, and
- **FENDL-2.0/MG** (Fusion Evaluated Nuclear Data Library, General Purpose Files more details below).

Offline News

The **EXFOR** database (380 Mb) is available now on **CD-ROM** (or Hard Disk). It was developed in the NDS by J. Vamosi. It runs in the Windows environment. The CD contains the full database (experimental nuclear reaction data induced by neutrons, photons and charge particles) as of 1 January 1998. The functionality of the retrieval software is similar to the Telnet and WWW versions.

A package of ENDF-6 format libraries and related codes is also available on **CD-ROM**. It contains recent comprehensive evaluated data libraries (**ENDF/B-VI** (including **Revision 4**), **JENDL-3.2**, **JEF-2.2**, **BROND-2** and **CENDL-2**) an information retrieval and merger system, ENDF-6 Format Manual and ENDF/B-VI Summary Documentation in PostScript format, ENDF-6 Utility (version 6.11) and 1996 Pre-processing Codes and documentation.

A preliminary **CD-ROM** version (March 1998) of the **RIPL** (Reference Input Parameter Library: Starter File) is available now. This library contains nuclear model parameters for nuclear reaction cross section calculations.

A **CD-ROM** version of **JENDL-3.2 Plots&Data** prepared at JAERI Nuclear Data Centre is available now. It contains compressed files of original and pointwise neutron cross-section data at 0 K and 300 K from JENDL-3 Library in ENDF-6 format and integral neutron cross-section plots in GIF, PostScript and PDF formats.

Computer Codes Development

The new release (**6.11**) of the **ENDF Utility Codes** is available. Use Telnet to NDIS or the Web site for downloading.

New Data Files and Libraries

“**Maslov**” update **98/01**. Evaluated neutron reaction data for Np-238 were added to Pu, Am and Cm isotopes already contained in the file. Summary documentation: IAEA-NDS-164 Rev. 3 (1998).

Major Outcome of the NDS Data Development Activity

The **Reference Input Parameter Library (RIPL)** contains input parameters for model calculations of nuclear reaction cross sections. The library is targeted at users of nuclear reaction codes for use in low-energy nuclear applications at energies below about 100 MeV. Incident and outgoing particles include n, p, d, t, ^3He , ^4He and γ -rays. The RIPL Starter File is available through the Web (<http://www-nds.iaea.or.at/ripl/>), FTP (host address: iaeand.iaea.or.at, username: ripl, no password) or on **CD-ROM**. The library contains information on: atomic masses and deformations, discrete level schemes, average neutron resonance parameters, optical model parameters, level densities (partial, total and fission channel), gamma-ray strength functions and continuum angular distributions.

Fusion Evaluated Nuclear Data Library, General Purpose Files (FENDL/E-2.0, FENDL/MC-2.0 and FENDL/MG-2.0) are released. They are available through the Web (<http://iaeand.iaea.or.at/fendl2/>) or FTP (host address: iaeand.iaea.or.at, user name FENDL2, no password). FENDL/E-2.0 contains selected original evaluations, FENDL/MC-2.0 contains files processed by NJOY91 or NJOY94 for neutron/gamma transport calculations with the MCNP code, and FENDL/MG-2.0 contains a multigroup library prepared with NJOY91 or NJOY94 for neutron/gamma transport calculations using the discrete ordinates method.

Selected Reports and Documents on Nuclear Data

INDC(BLR)-011. Evaluation of Neutron Data for Neptunium-238. By V.M. Maslov et al. (1998). See reference on data under **New Data Files and Libraries**.

INDC(CCP)-411. Discrepancies in (n,2n) Reaction Excitation Functions of Rear Earth Isotopes. Recommendations for Selection of the Reliable Data. By A.I. Blokhin et al. (1998).

Progress Reports

INDC(CPR)-043. Communication of Nuclear Data Progress No. 18 (1997). China Nuclear Information Center.

INDC(JPN)-181. Progress Report by Japanese Nuclear Data Committee (January 1997 to December 1997 inclusive), JAERI (1998).

Nuclear Model Calculations

INDC(CCP)-410. New Advanced Version of Computer Code ALICE-IPPE. A.I. Dityuk et al. (1998).

JAERI-Data/Code 97-053. Evaluation Data File (EVLDF) Storing Model Parameters for Nuclear Data Calculation. T Nakagawa (1998).

Nuclear Data for Safeguards

INDC(NDS)-376. Handbook of Nuclear Data for Safeguards. N. Kocherov et al. (1997). It is a hard copy of electronic version SGNucDat Version 2 available on PC diskette. Included are A: actinide nuclear data (decay data, selected neutron cross section data, fission-neutron data); B: fission-product nuclear data (decay data and selected neutron cross section data); C: fission-product yield data.

Nuclear Data for Neutron Therapy

IAEA-TECDOC-992 (1997) Nuclear Data for Neutron Therapy: Status and Future Needs Report summarises the results of the CRP on Nuclear Data Need for Neutron Therapy (1987-1993). Report was prepared by the CRP participants in 1995 and published after a final review by a group of consultants. It is concentrated on the problems of microdosimetry and protocols for the determination of absorbed doses, neutron source properties for the Be(p,n) reaction up to 100 MeV, beam collimation and shielding, measurements of kerma factors for biologically important elements, and a comparative characterisation of radiation quality (i.e. biological effect per unit dose) of neutron beams used in various therapy centres.

Yadernye Konstanty ("Nuclear Constants")

Moscow, Russia. This series of Voprosy Atomnoj Nauki i Tekhniki ("Problems of Atomic Science and Technique") appears in Russian with abstracts in English. Copies are available, free of charge, from the IAEA Nuclear Data Section. Content are listed below. Subject to available funds, selected articles are translated by IAEA and published as INDC(CCP) reports.

Yad. Konst. 1997 (2)

Photofission cross section of Pu-238, Pu-240 and Pu-242 in the energy range from 5 to 10 MeV (A.S. Soldatov). The measurement of

gamma-ray multiplicity spectra and alpha-value of Pu-239 in energy range 2-2150 eV (Yu.V. Grigor'ev et al.). Modernization of spectrometer for measurements of leakage neutron spectra in the energy region 3 to 15 MeV for spherical samples with the 14 MeV central source (Yu.N. Onishchenko et al.).

Status of the nuclear data for the thorium cycle (B.D. Kuz'minov et al.). Analysis of discrepancies in evaluated data for Np-237 and development of improved evaluation (A.V. Ignatyuk et al., in English). Neutron radiative capture for Am-241 in the energy range 1 keV to 20 MeV (K.I. Zolotarev et al.).

Structure of the gamma-spectra in neutron radiative capture (O.T. Grudzevich).

Contamination of the environment with radionuclides released from specific nuclear industry of Russian Federation Ministry of Atomic Energy in 1996 and ways to mitigate this (T.V. Golashvili et al., in English).

Investigations of spectra of secondary neutrons and photons leaking from iron and lead barriers irradiated by 14 MeV neutrons (L.A. Trykov et al.).

Chart of Nuclides

The **Knolls Chart of the Nuclides (wall chart, 15th edition, 1996)**, with booklet, and the **Karlsruhe Chart of the Nuclides (wall chart, 6th edition, 1995)** are available from the IAEA cost-free for scientists in developing countries.

Conference Proceedings

Proceedings of the International Conference on Nuclear Data for Science and Technology, Trieste, Italy, 19-24 May 1997, ed. by G. Reffo, A. Ventura and C. Grandi, Conference Proceedings, Vol. 59, Part 1 and 2, Societa Italiana di Fisica, 1997. The proceedings include 460 papers covering the following topics: nuclear reaction mechanisms; facilities and experiments; nuclear structure and decay; evaluations and data center activities; reactor technology, safety and fuel cycle; standards and dosimetry; fission product transmutation and actinide recycling; environment, safeguards and non-proliferation; accelerator technology and space science; astrophysics; medical applications; industrial applications. The proceedings are distributed between 433

participants from 47 countries. (A limited number of copies is available on request).

Proceedings of the 1997 Symposium on Nuclear Data, JAERI, Tokai, Japan, 27-28 November 1997, ed. by T. Yoshida and T. Fukahori, INDC(JPN)-180, 1998. The proceedings include 58 papers on nuclear fuel cycle and nuclear data, status of JENDL, international collaboration, applying JENDL-3.2 to fission reactors, delayed neutrons, neutron experimental facilities, nuclear data needs, results of experimental and evaluation work, benchmark tests and on-line nuclear databases.

Conferences and Meetings Announcement

Fourteenth International Workshop on Nuclear Fission Physics, 12-15 October, 1998, Obninsk (105 km from Moscow), **Russia**, will be held at the Institute of Physics and Power Engineering. The following topics will be discussed: static properties of fission process; fission induced by different particles, mass, charge and energy distributions of fission products; cold and hot fission; ternary fission; high-energy fission and fusion-fission reactions; fission dynamics, phenomenological and microscopic description of nuclear dissipation; new experimental instruments and methods; nuclear data associated with fission. More information on e-mail: gaa@ippe.rssi.ru or on the WWW <http://fdl.ippe.rssi.ru>.

Tenth International Conference on Modern Trends in Activation Analysis (MTAA-10), 19-23 April, 1999, Bethesda (near Washington DC), **Maryland, USA** will be convened by the National Institute of Standards and Technology. Major topics are: instrumental and radiochemical activation analysis; methods, facilities, instrumentation, nuclear data, data processing and interpretation; accuracy, standards, sampling, blanks and backgrounds; existing and new applications; methodological and technical aspects of activation analysis; education, training and the future of activation analysis. Up-to-date news are available through e-mail: MTAA10@nist.gov or on the Worldwide Web (WWW) at <http://www.cstl.nist.gov/nist839/839.05/nuclear.html>.

The Tenth International Symposium on Reactor Dosimetry, 12-17 September, 1999,

Osaka, Japan is organised by ASTM Committee E10 on Nuclear Technology and Applications and EWGRD. The symposium theme is dosimetry for the assessment of irradiated reactor materials and reactor experiments, featuring radiation metrology techniques, data bases and standardization. Information can be obtained from the Symposium Web Page at <http://www.sandia.gov/events/isrd99>

ICRS-9. Ninth International Conference on Radiation Shielding, 17-22 October, 1999, Tsukuba, Ibaraki, Japan is organized by JAERI in collaboration with OECD/NEANSC, AESJ and ORNL/RSICC. Main topics are radiation shielding of different installations, shielding experiments, calculations and design, nuclear data for shielding, radiation detection, measurements and dosimetry, activation, decontamination and decommissioning, impact of radiation and radioactivity to environment. More information is available on WWW at <http://icrs9.tokai.jaeri.go.jp>. Contacts via e-mail: ikeda@fnshp.tokai.jaeri.go.jp

Forthcoming Meetings Held by the NDS

Workshop on Processing of Nuclear Data for Use in Power Reactor Pressure Vessel Lifetime Assessment, 19-23 October, 1998, IAEA Headquarters, Vienna. The objective of the workshop is to acquaint the participants with updated nuclear data libraries and associated processing codes for safety aspects of power reactors. The main emphasis will be on demonstration and exercises on subjects related to the evaluation of pressure vessel lifetimes employing the latest available data libraries and computer codes.
E-mail: workshop@iaeand.iaea.org

Advisory Group Meeting on the Co-ordination of the International Network of Nuclear Structure and Decay Data Evaluation, 14-17 December 1998, IAEA Headquarters, Vienna. Main topics: problems of the quality and continuity of the data compilation in the nuclear structure data bases; evaluated data files and libraries for special applications; publications and customer services.

Technical Co-operation Programme for 2001-2002

Proposals in the framework of the IAEA Technical Co-operation (TC) Programme for the year 1999-2000 are already being evaluated. The next cycle of this Programme will be implemented during the years 2001-2002, and proposals for the projects should be submitted to the IAEA during the second half of 1999. More information about the forms and procedures for TC programme application can be obtained through official channels of Member States. The NDS may be able, in the framework of the TC Programme, to support nuclear project(s) in your country through (for example) installation of a local PC platform hosting the most important nuclear databases. Such a facility would provide data users with a fast local access to the nuclear data for all major applications.

Specifications

Magnetic tapes: specify acceptable density (1600 or 6250 bpi), maximum block size, and whether the data should be coded in EBCDIC, ASCII, or VAX-backup coding. Only 9-track tapes are used.

DAT tapes: 4mm only, either in TAR format, IBM format or VMS format, uncompressed or compressed. Preferable for very large data libraries (up to several Gigabytes).

PC diskettes: DOS standard diskettes, 3.5 inch. Preferable for not too large files (if compressed up to several Megabytes).

CD-ROM: Recording format ISO 9660. Please specify maximum file-name length on your system.

Note: Unless indicated otherwise, the quoted data files, printed materials, or computer codes are available cost-free upon request. When requesting data files or codes on magnetic tapes or diskettes, kindly give us your acceptable specifications.

The address of the co-operating nuclear data service centers**For services to customers in USA and Canada:**

US National Nuclear Data Center, Bldg. 197D, Brookhaven National Laboratory, P.O. Box 5000, Upton, NY 11973-5000, USA. Tel. +1 516-344-2902; Fax +1 516-344-2806; e-mail: nndc@bnl.gov; Worldwide Web: <http://www.nndc.bnl.gov/>. For information on online services and requests contact: V. McLane

For services to customers in OECD countries in Western Europe and Japan:

NEA Data Bank: OECD Nuclear Energy Agency, Le Seine Saint-Germain, 12 blvd des Iles, F-92130 Issy-les-Moulineaux, France. Tel. +33 (1) 4524 (plus extension); Fax +33 (1) 45241110; e-mail: (name)[@nea.fr](mailto:) or nea@nea.fr; Worldwide Web: <http://www.nea.fr>, username: NEADB. Contact: C. Nordborg, ext. 1090

For services to the countries of the former USSR:

Neutron data: Russia Nuclear Data Center, Centr Jadernykh Dannykh (CJD), Fiziko-Energeticheskij Institut, Ploschad Bondarenko, 249020 Obninsk, Kaluga Region, Russia. Tel. +7 08439-9-8982; Fax +7 095-230-2326; e-mail: manokhin@ippe.rssi.ru. Contact: V.N. Manokhin

Charged-particle data: Russia Nuclear Structure and Reaction Data Center (CAJAD), Kurchatov Institute, 46 Ulitsa Kurchatova, 123 182 Moscow, Russia. Tel. +7 095-196-1612, 9968; Fax +7 095-882-5804; e-mail: chukreev@polyn.kiae.su or feliks@polyn.kiae.su. Contact: F.E. Chukreev

Photonuclear data: Centre for Photonuclear Experiments Data, Centr Dannykh Fotoyadernykh Eksperimentov (CDFE), Moscow State University, Vorob'evy Gory, 119 899 Moscow, Russia. Tel. +7 095-939-1483; Fax +7 095-939-0896; e-mail: varlamov@cdfe.npi.msu.su or varlamov@depni.npi.msu.su Contact: V.V. Varlamov

For services to customers in China:

China Nuclear Data Center, China Institute of Atomic Energy, P.O. Box 275(41), Beijing 102413, China. Tel. +86 10-6935-7830; Fax +86 10-6935-7008; e-mail: tong@mipsa.ciae.ac.cn. Contact: Liu Tong

Computer codes of US origin to all countries:

Radiation Safety Information Computational Center (RSICC), Oak Ridge National Laboratory, P.O. Box 2008, Oak Ridge, TN 37831-6362, USA. Tel. +1 615-574-6176; Fax +1 615-574-6182; e-mail: pdcc@ornl.gov. (There may be charges and release restrictions.)

Computer codes of non-US origin to all countries:

NEA Data Bank, see above, contact: E. Sartori, ext. 1072. (There may be release restrictions.)

The IAEA Nuclear Data Section offers data center services primarily to non-OECD countries (except Russia and China, see above). However, most products advertised in this Newsletter, specifically INDC reports, IAEA-NDS-documents, etc., are provided, upon request to customers in all countries. For online services see the first page of this Newsletter.