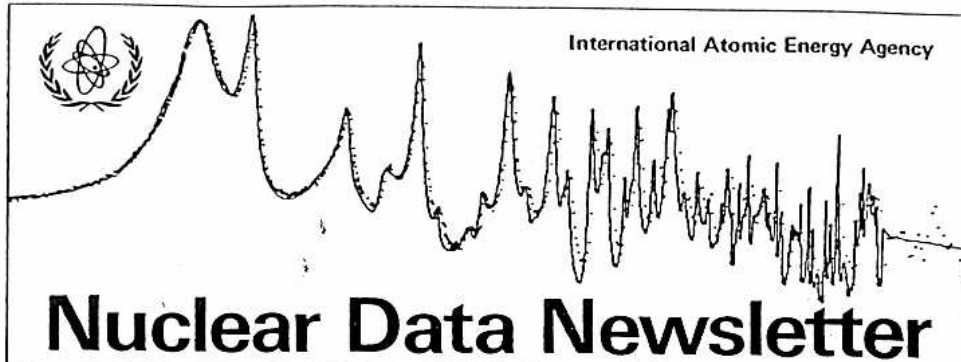




International Atomic Energy Agency



# Nuclear Data Newsletter

ISSUE No. 21  
ISSN 0257-6376

July 1995

**Note:** Unless indicated otherwise, the quoted data, documents or codes are available costfree upon request. - When requesting data on magnetic tape, kindly specify the acceptable density (1600 or 6250 bpi), maximum block size, and whether the data should be in EBCDIC or ASCII code. Only 9 track tapes are used. Data files or computer codes that are not too large can also be sent on DOS standard diskettes (either 5.25 inch, 1.2 Mb or 3.5 inch, 1.44 Mb). - The major databases are also available online within NDIS, the Nuclear Data Information System.

## Personal item

Dr. Charles L. Dunford, Head of the IAEA Nuclear Data Section, has returned to the U.S. National Nuclear Data Center at the Brookhaven National Laboratory. The staff of the Section wishes to thank him for his efforts, specifically for the significant progress in the online nuclear data services. Dr. Pavel Obložinský is now the Acting Section Head.

## Online nuclear data service

How to access the online nuclear data service, see the last page of this newsletter. A more detailed description is available as document **IAEA-NDS-150 Rev. 95/6** by C.L. Dunford and T.W. Burrows, which is available as hard copy or online in "PostScript". Most of the nuclear data libraries that can be accessed online, are frequently updated.

## Nuclear data libraries recently received

**ENDF/B-6 update.** The neutron data sublibrary of the U.S. evaluated nuclear data library by the U.S. National Nuclear Data Center was updated in May 1995, including the following revised materials: 1-H-2, 7-N-14, 13-Al-27, 48-Cd isotopes, 56-Ba isotopes, 62-Sm-144, 83-Bi-209, 92-U-235, 94-Pu-241, 95-Am-241. Available on tape, or from the interactive online system.

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online: TELNET or FTP: IAEAND.IAEA.ORG.AT  
username: IAEANDS for interactive Nuclear Data Information System  
username: NDSOPEN for FTP file transfer

**ENDF/B-6 TSL2.** A new data library for thermal neutron scattering law data has been issued as "ENDF/B-6 Thermal Neutron Scattering Sublibrary Release 2" giving data for 12 neutron moderator materials at 8 temperatures between 296 and 1000K. The new "release 2" which was evaluated by R.E. MacFarlane, LANL, supersedes the old "release 1" of 1990 by J.U. Koppel, GA. Available on tape. Summary documentation: IAEA-NDS-197.

**FENDL/E.** Evaluated nuclear data library for neutron reactions, photon production, and photo-atomic interactions for coupled neutron-photon transport calculations in fusion applications. Version 1.0 of May 1994. By S. Ganesan and P.K. McLaughlin. Documentation: IAEA-NDS-128 Rev. 1 of May 1995. The data library contains 55 materials from 1-H-1 to 83-Bi-209 for which the data have been selected from ENDF/B-6 Release 2 of 1993 (USA), JENDL-3.1 of 1990 (Japan), and BROND-2 (Russia). Available on tape or online.

**FENDL/E processed data.** FENDL/E was processed by R.E. MacFarlane. a) as multigroup cross-sections in GENDF format and MATXS format; size 257 Megabytes; documentation see IAEA-NDS-129 Rev. 2, April 1995; b) in the format needed for input to the Monte Carlo code MCNP4A, documentation see IAEA-NDS-169 Rev. 2, March 1995. Available online through Internet FTP, or on DAT tape.

**EFF-2,** the "European Fusion File". Evaluated neutron nuclear data for 80 elements or isotopes from 1-H-1 to 83-Bi-209 selected for the European Fusion Programme, maintained by H. Gruppelaar. It contains new evaluations for 3-Li-7, 4-Be-9, 13-Al-27, 14-Si-28, isotopes of 24-Cr, 26-Fe and 28-Ni, and 82-Pb. The other evaluations were taken over from JEF-2, JENDL-3, or ENDF/B-6, with or without further modifications. Several of the files include covariance data. - Available on tape. Summary documentation IAEA-NDS-170.

**MENDL-2.** Evaluated neutron reaction data library for nuclear activation and transmutation at neutron energies up to 100 MeV. 505 stable and unstable target nuclides from 13-Al-26 to 84-Po-210, 57.500 reactions. Report INDC(CCP)-385 by Yu.N. Shubin et al, Obninsk, Russia. Summary documentation: IAEA-NDS-136. Data library available on tape.

**WIND.** Evaluated neutron reaction data library for nuclear fission, activation and transmutation at neutron energies up to 100 MeV for isotopes of U-232 to 238, Np-237, 239, Pu-236 to 244, plus a file for protons on U-238. Report IAEA-NDS-143 by A.Yu. Konobeyev et al., Obninsk, Russia. Data library available on tape. A complete listing of the data library is contained in the report INDC(CCP)-384 (203 pp.), of which a limited number of copies is available.

**NUCHART.** A PC package which displays nuclear decay data (taken from ENSDF/NUDAT as of March 1994), including a search routine for assigning gamma-ray energies to radionuclides. The database contains 132.000 gamma lines. NUCHART for Windows, version 1.2 of Feb. 1995, by V. Osorio and H. Peraza, IAEA Physics Section. Documentation: IAEA-NDS-161. Available on three diskettes from the IAEA Nuclear Data Section, or through the INTERNET FTP file transfer.

**PCNUDAT.** A PC package which displays the data contained in the online system NUDAT, by Robert R. Kinsey. To be ordered from R.R. Kinsey, National Nuclear Data Center, Brookhaven National Laboratory, P.O. Box 5000, Upton, N.Y. 11973, U.S.A.; e-mail Kinsey1@BNL.GOV.

## Handbooks

**Atomic and molecular data for radiotherapy and radiation research.** IAEA-TECDOC-799 (750 pages), N. Kocherov (ed.). Final report of Coordinated Research Project. Contents: Particle therapy in cancer management; heavy ion therapy. Ionization by fast charged particles. Electron collision cross-sections. Low energy electron interaction with condensed matter. Photoabsorption, photoionization, photodissociation cross-sections. Collision processes between ions and molecules. Stopping powers, ranges, and straggling. Yields of ionization and excitation in irradiate matter. Track structure quantities. ESTAR, PSTAR, ASTAR; computer programs for calculating stopping powers and ranges for electrons, protons, and helium ions - Limited number of copies available costfree upon request.

Atlas of energy-angular distributions of photons produced in neutron interactions. Report Yad. Konst. 1993(2) by A.I. Blokhin et al. Contents: Brief introduction in Russian. Index to available experimental data. Bibliography. 255 figures of double differential cross-sections for 52 elements. 100 figures of gamma production cross-sections. Limited number of copies available costfree upon request.

#### Publications on nuclear data libraries

JEF-2.2 radioactive decay data. JEF-Report 13, OECD Nuclear Energy Agency, August 1994. This report of 328 pages contains tabulations retrieved from the radioactive decay data library and the fission yield data library of JEF-2.2, the Joint Evaluated nuclear data File, version 2.2, of the NEA Data Bank. It also contains an intercomparison of the main decay parameters (half-life, Q-value and average gamma, beta and alpha energies) in the data libraries JEF-2.2, ENDF/B-6, and JNDC-2. While many of the decay data are in agreement, because they originate from a common source (i.e. ENSDF), there are significant discrepancies between the three data libraries for many nuclides. - A limited number of copies of this report is available, costfree, from the IAEA Nuclear Data Section.

ADL-3, nuclear data library for activation and transmutation calculations. Report INDC(CCP)-386 by O.T. Grudzevich, A.V. Zeleneckij, A.V. Ignatjuk, A.B. Pashchenko. The ADL-3 data library, which is available on tape, had been announced in issue no. 19 of this newsletter.

IAEA-NDS-107 Rev. 10: Joint index to the data libraries BROND-2, CENDL-2, ENDF/B-6, JEF-2, JENDL-3.2, IRDF, EFF-2.4, FENDL/E.

IAEA-NDS-7 Rev. 95/7: Index of nuclear data libraries available from the IAEA Nuclear Data Section.

IAEA-NDS-0 Rev. 95/7: Index to the IAEA-NDS-Documentation series for available nuclear data libraries.

#### Conference Announcements

Nuclear Data Workshop: A workshop on nuclear reaction data and nuclear reactors, considering physics, design and safety, will be held at the International Centre for Theoretical Physics, Trieste, Italy, 15 April to 17 May 1996. There are limited funds available to support the attendance of selected participants from developing countries. For further information contact: ICTP, P.O. Box 586, I-34100 Trieste, Italy. Tel. (0)40-2240111, Fax: (0)40-224163. Closing date: 15 October 1995.

CGS9. The 9th International Symposium on Capture Gamma-Ray Spectroscopy and Related Topics will take place in Budapest, Hungary, 8-12 October 1996. The main topics will include nuclear structure; capture reactions; statistical nuclear properties; nuclear data; nuclear astrophysics; practical applications; new techniques and facilities. - Contact: G. Molnar, Institute of Isotopes, P.O. Box 77, H-1525 Budapest, Hungary. E-mail, Internet: CGS9@ALPHAO.IKI.KFKI.HU.

Transmutation. Second International Conference on Accelerator-Driven Transmutation Technologies and Applications, Kalmar, Sweden, 3-7 June 1996. Contact: H. Condé, Dept. of Radiation Sciences, Uppsala University, Box 535, S-75121 Uppsala, Sweden. E-mail: Inger.Ericson@TSL.UU.SE.

#### Conference Proceedings

Nuclear Data for Science and Technology, International Conference in Gatlingburg, Tennessee, U.S.A., 9-13 May 1994; Proceedings edited by J.K. Dickens, published in two volumes by the American Nuclear Society, 1994. 295 papers, 1146 pages. Contents: International cooperation; Nuclear data standards; Experimental facilities, equipment, techniques; Experimental determination of neutron reaction data, charged particle reaction data, data at intermediate energies; Development and applications of nuclear theory and nuclear models; Nuclear data evaluation, data libraries, data validation and

testing; Nuclear data for specific applications such as fission energy, fusion energy, nuclear transmutation, medical therapy, and others. - Not available from IAEA.

1994 Symposium on Nuclear Data, 17-18 November 1994 at JAERI, Tokai, Japan. Proceedings edited by M. Kawai and T. Fukahori, Report **JAERI-Conf-95-008** March 1995. 50 papers, 262 pages. Contents: Nuclear data activities in Bangladesh, Belarus and Russia; nuclear data calculations 1 MeV to 2 GeV (Konshin); testing of JENDL-3.2; various Japanese nuclear data measurements; and others. - Limited number of free copies available on request.

Journées de Spectrométrie Gamma et X, 12-14 October 1993 in Saint-Rémy, France. Report CEA-N-2756 (1994). In French. Edited by CEA/DAMRI, Saclay, Gif-sur-Yvette, France. - Not available from IAEA.

#### Award

Dr. Syed M. Qaim of the Institute of Nuclear Chemistry of the Jülich Research Center, Germany, received the honorary membership ("Civis Universitatis honoris causa") of the Kossuth University in Debrecen, Hungary, in recognition of many years of fruitful scientific collaboration. Among many other results, we wish to emphasize the precise cross-section measurements of many important nuclear reactions which were included in the international nuclear data files.

#### Selected reports and documents on nuclear data

- \* = documents available costfree from IAEA/NDS upon request.
- = available from originator or from the INIS Microfiche Service (IAEA, P.O. Box 100, A-1400 Vienna, Austria)

#### Meeting reports: fusion applications

- \* INDC(NDS)-306. Charged-particle and photonuclear data evaluations for FENDL. IAEA meeting hosted by the Inst. of Physics, Bratislava, Slovakia, held at Smolenice, 18-21 April 1994. A.B. Pashchenko (ed.).
- \* INDC(NDS)-319. Comparison of activation cross-section measurements and experimental techniques for fusion reactor technology, IAEA meeting, hosted by the Khlopin Radium Institute, St. Petersburg, Russia, 7-9 Sept. 1994. Summary report. A.B. Pashchenko.
- \* INDC(NDS)-312. Improved evaluations and integral data testing for FENDL. IAEA meeting hosted by the Max-Planck-Institut für Plasmaphysik, Garching, Germany, 12-16 Sept. 1994. Summary report, S. Ganesan.

#### Meeting reports: miscellaneous

- \* INDC(NDS)-335. Development of reference input parameter library for nuclear model calculations of nuclear data. IAEA meeting hosted by ENEA Bologna, Cervia 19-23 Sept. 1994. Texts of papers. P. Obložinský (ed.).
- \* INDC(NDS)-321. Summary report of the same meeting at Cervia. P. Obložinský.
- \* INDC(NDS)-320. Establishment of an international reference data library of nuclear activation cross-sections. IAEA meeting, hosted by and held at the Institute of Experimental Physics, Debrecen, Hungary, 4-7 Oct. 1994. Summary report, A.B. Pashchenko.
- \* INDC(NDS)-328. Development of an international nuclear decay data and cross-section database. Summary report of an IAEA meeting, Vienna, 24-28 Oct. 1994. H.D. Lemmel (ed.).
- \* INDC(NDS)-329. Text of papers presented at the same meeting.
- \* INDC(NDS)-323. Improvement of measurements, theoretical computations and evaluations of neutron induced helium production cross-sections. IAEA meeting hosted by and held at the China Institute of Atomic Energy, Beijing, 1-4 Nov. 1994. Summary report, A.B. Pashchenko.
- \* INDC(NDS)-334. Measurement, calculation and evaluation of photon production data. IAEA meeting hosted by ENEA Bologna, held at Bologna 14-17 Nov. 1994. Texts of papers. P. Obložinský (ed.).

- \* INDC(NDS)-330. Summary report of the same meeting at Bologna. P. Obložinský (ed.).

#### Nuclear data center networks

- \* INDC(NDS)-307. Coordination of the International Network of Nuclear Structure and Decay Data Evaluators. Summary report of an IAEA meeting hosted by the Lawrence Berkeley Laboratory on behalf of the U.S. Government, 16-20 May 1994. C.L. Dunford, H.D. Lemmel.
- \* INDC(NDS)-308. Coordination of the Nuclear Reaction Data Centers. Report of an IAEA meeting hosted by the NEA Data Bank, Paris, 25-27 April 1994. O. Schwerer, C.L. Dunford, H.D. Lemmel.
- \* INDC(NDS)-324. The Nuclear Data Centers Network. H.D. Lemmel (ed.)

#### Progress-reports

- \* INDC(NDS)-336. Report of the IAEA Nuclear Data Section to the International Nuclear Data Committee for the period 1993/1994. C.L. Dunford.
- \* INDC(CPR)-33. China Nuclear Data Center: Communication of nuclear data progress No. 12 (1994). Contents: primarily theoretical calculations, evaluation and processing of nuclear data.
- \* INDC(JPN)-172. Progress report Japanese Nuclear Data Committee. Y. Nakajima (ed.).
- \* INDC(CCP)-383. The Nuclear Data Commission and the Radionuclide Data Centre in Russia. A.I. Abramov, V.P. Chechev.
- PTB Annual Report 1994. Physikalisch Technische Bundesanstalt, Braunschweig, Germany, Division 7, Neutron Physics. R. Jahr, O. Hecker (eds).
- IRK-PR-93/94. Institut für Radiumforschung und Kernphysik, Universität Wien, Progress Report 1993/94, B. Strohmaier (ed.).
- \* ANSTO/ANP-PR 94. Australian progress report of applications of nuclear physics, 1993/94.
- JAERI Tandem & VDG Annual Report 1993. Y. Suzuki et al (eds).

#### Actinides

- JAERI-Research 95-010. Consistent calculations of fast neutron induced fission, (n,2n) and (n,3n) cross-sections for 71 isotopes of Th, Pa, U, Np, Pu, Am, Cm, Bk, Cf. V.A. Konshin.
- \* INDC(CCP)-382. Properties of standard-I mass channel in fission of Z-odd nuclei. A.A. Goverdovsky, V.F. Mitrofanov, V.A. Khryachkov.
- NEANDC-313. Summary of the work of the NEANDC task force on U-238. M.G. Sowerby.

#### Intermediate energy

- JAERI-Research 95-x. Calculations of neutron and proton induced reaction cross-sections for actinides in the energy region from 10 MeV to 1 GeV. V.A. Konshin.

#### Fusion applications

- \* INDC(NDS)-311. On the development of the Fusion Evaluated Nuclear Data Library (FENDL). Three papers by S. Ganesan, D.W. Muir, A.B. Pashchenko.
- \* INDC(NDS)-313. FENDL neutronics benchmark: Neutron leakage spectra from Be, Fe, Pb, PbLi shells with 14 MeV neutron source. S.P. Simakov, B.V. Devkin, M.G. Kobozev, V.A. Talalaev.
- \* INDC(NDS)-314. FENDL neutronics benchmark: Neutron multiplication measurements in Be, BeO, Pb with 14 MeV neutrons. T.K. Basu.
- \* INDC(NDS)-315. FENDL neutronics benchmark: Stainless steel bulk shield experiment performed at Frascati neutron generator. M. Martone, M. Angelone, P. Batistoni, M. Pillon, V. Rado.

- \* INDC(NDS)-316. FENDL neutronics benchmark: Specifications for the calculational neutronics and shielding benchmark. M.E. Sawan.
- \* INDC(NDS)-318. FENDL activation benchmark: Specifications for the calculational activation benchmark. M.E. Sawan.
- \* INDC(CFR)-35. Analyses of neutron multiplication integral experiments on beryllium. Liu Li'anyan, Zhang Yuqan.
- \* INDC(USA)-106. A survey of selected neutron-activation reactions with short-lived products of importance to fusion reactor technology. R.C. Ward, I.C. Gomes, D.L. Smith.
- ECN-C-94-16. European Fusion File EFF-2.4. Final report on basic data file. H. Kopecky et al.
- ECN-C-90-34. Sensitivity and uncertainty analysis of the nuclear heating in the coils of a fusion reactor. A. Hogenbirk.

#### Nuclear data processing

- \* INDC(NDS)-337. A study into the reliability of collapsing SAND-II multigroup data into VITAMIN-J 175 multigroup cross-sections. H. Wienke.
- \* INDC(SLN)-1. Sensitivity of the B-1 Leakage Edit in WIMS-D/4 on the P-1 scattering matrix. A. Trkov.
- \* INDC(CCP)-370. NESSY, a relational PC database for nuclear structure and decay data. I.N. Boboshin, V.V. Varlamov, S.K. Trukhanov.

#### Nuclear models

- \* INDC(PAK)-9. Systematics of (n,p) and (n,  $\alpha$ ) cross-sections for 14 MeV neutrons on the basis of statistical model. K. Gul.
- \* INDC(PAK)-10. A computer code for nuclear optical model calculations. K. Gul.
- \* INDC(PAK)-11. A computer code based on Hauser-Feshbach and Moldauer theory for nuclear cross-section calculations. K. Gul.
- NEA/NSC/DOC(93)4. Blind intercomparison of nuclear models for predicting charged-particle emission. S. Cierjacks (†).
- UCRL-JC-118254 Rev. 1. A simple model of photon transport. D.E. Cullen.

#### Decay data

- \* JAERI-M-94-59. List of strong gamma-rays emitted from radionuclides (version 2). T. Narita, T. Ichimiya, K. Kitao. - Note: This gamma-ray database is used in the PC code IDGAM that was announced in issue 19 of this newsletter.

Yadernye Konstanty ("Nuclear Constants"), Moscow, Russia. This series appears in Russian with abstracts in English. Copies are available, costfree, from the IAEA Nuclear Data Section. Tables of contents are given in the following. Subject to available funds, selected articles are translated by IAEA and published as INDC(CCP)-reports.

- \* Yad. Konst. 1994(2). Cu( $\gamma$ ,np) reaction cross-sections in the giant dipole resonance region (Varlamov). Kinetics in samples with strong neutron absorption (Roshchin). Neutron inelastic scattering on Ba-138 and Pr-141 (Pobedonoscev). Evaluation of (n,2n) on In-115 and In-113 (Manokhin). Integral test of BROND-2 files for Si, Zr, Nb (Blokhin). Evaluation of Pr-141(n,2n) (Zolotarev, Manokhin, Pashchenko). Polynomial approximation of fission-neutron spectra (Fomushkin). Neutron scattering correction in activation experiments (Navletshin). Ternary nuclear decays (Shigin). Energy spectra of fission fragments (Nikitin). Thermodynamic model of neutron emission in fission (Grashin). Total kinetic energy of fission fragments (Efimenko, in English). Fission in complex reactions (Andreev). Delayed neutrons from charged-particle induced fission (Ignatjev).
- \* Yad. Konst. 1994(1). Neutron leakage from Be spheres (Devkin, in English). Neutron spectra from (n,xn) and (n, $\gamma$ ) at 12 MeV (Simakov, in English). Scattering of 134 keV neutrons by Au-197 (Litvinskij). Systematics of (n,2n) and (n,3n) (Manokhin). Evaluation of Sc(n,2n)



(Manokhin). Gamma-ray production cross-sections for various nuclei (Lashuk), with 50 pages of cross-section tables. Average cross-sections and self-shielding factors in reactor materials (Grigoriev). Calculation of p induced reaction cross-sections for Zr isotopes up to 25 GeV (Konobeev).

- \* **Yad. Konst. 1993(2).** Atlas of energy-angular distributions of photons produced in neutron interactions with 52 elements (Blokhin).

#### Nuclear Data Standards for Nuclear Measurements

There is a database of internationally recommended values and uncertainties of selected neutron cross-sections and other nuclear data that are used as reference standards for nuclear measurements. The last issue was published by H. Condé (ed.) in the report NEANDC-311 (1992), of which copies are still available, costfree, on request.

#### The addresses 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. 516-282-2902; Fax 516-282-2806; INTERNET [nndc@bnl.gov](mailto:nndc@bnl.gov); World Wide Web: <http://datwww.dne.bnl.gov/html/nndc.html>. For information on online services and requests contact: V. McLane

##### For services to customers in OECD countries in West 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; Telex OCDE 620160 F; BITNET/EARN (name)@FRNEAB51; INTERNET (name)@NEA.FR; World Wide Web: <http://www.nea.fr> username: NEADB. Contact: C. Nordborg, ext. 1092

##### For services to the countries of the former USSR:

Neutron data: Russia Nuclear Data Center, Centr Jadernykh Dannyykh (CJD), Ploshchad Bondarenko, 249020 Obninsk, Kaluga Region, Russia.

Tel. 084-399-8982; Fax 0958833112 or 0952302326; Telex 411509 naf su; INTERNET [POA@CJD.OBNINSK.SU](mailto:POA@CJD.OBNINSK.SU). Contact: V. Manokhin

Charged-particle data: Russia Nuclear Structure and Reaction Data Center (CAJad), Kurchatov Institute, 46 Ulitsa Kurchatova, 123182 Moscow, Russia.

Tel. 095-196-1612; Fax 0959430073; Telex 411594 shu su. INTERNET [CHUKREEV@CAJAD.KIAE.SU](mailto:CHUKREEV@CAJAD.KIAE.SU). Contact: F.E. Chukreev

Photonuclear data: Centr Dannyykh Fotojad. Eksp. (CDFE), Institute of Nuclear Physics, Moscow State University, Vorob'evy Gory, 119899 Moscow, Russia. Tel. 095-939-3483; Fax 0959390896; Telex 411483 mgu su. INTERNET [VARLAMOV@CDFE.NPI.MSU.SU](mailto:VARLAMOV@CDFE.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. 1-935-7275; Fax 19357008; Telex 222373 iae cn. INTERNET [CIAEDNP@BEPC2.IHEP.AC.CN](mailto:CIAEDNP@BEPC2.IHEP.AC.CN). Contact: Zhang Jingshang

##### Computer codes of US origin to all countries:

Radiation Shielding Information Center (RSIC), Oak Ridge National Laboratory, P.O. Box 2008, Oak Ridge, TN 37831-6362, USA.

Tel. 615-574-6176; Fax 6155746182; BITNET [PDC@ORNLSIC](mailto:PDC@ORNLSIC); INTERNET [PDC@EPIC.EPM.ORNLSIC](mailto:PDC@EPIC.EPM.ORNLSIC). (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, certain 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 last page of this newsletter.

**Access to NDIS**  
(interactive online Nuclear Data Information System)  
via INTERNET (TCP/IP):

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**Sample login:**

TELNET        IAEAND.IAEA.or.at  
              (or 161.5.2.2)

IAEA VAX-VMS V5.4-3

Username:    IAEANDS

             Welcome to VAX/VMS version V5.4-3 on node M4300

             .....  
             .....

Enter NDS assigned authorization code (or GUEST): GUEST  
(or your authorization code if you have one)

Enter your last name (or DEFAULT or?) \_ \_ \_ \_ \_

**Authorization:**

As a "GUEST", you will have 30 seconds of CPU time allocated. At the end of a GUEST session, you may sign up directly for an authorization code for full access service. (This code still needs to be activated by the NDIS manager before you can use it for future access.) Or, you may contact the IAEA Nuclear Data Section for assignment of an authorization code.

**Retrieval system:**

A user-friendly system provides ample help to the user who specifies the retrieval criteria in response to step-by-step prompts by the system. It also provides interactive assistance through HELP files. More detailed documentation on the system may be obtained by contacting the IAEA Nuclear Data Section.

**Access to open areas for FTP file transfer:**

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**Sample login:**

FTP    IAEAND.IAEA.or.at

Username:    FENDL (if FENDL files are wanted)  
             NDSOPEN (for retrieving other available files or for  
             sending files to IAEA)

No password required.

Then choose one of the available subdirectories, where you may find  
AAREADME.TXT files for further information.

Printed by the IAEA in Austria

July 1995

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telephone: (43-1) 2060-21710

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online:    TELNET or FTP: IAEAND.IAEA.OR.AT  
           username: IAEANDS for interactive Nuclear Data Information System  
           username: NDSOPEN for FTP file transfer

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## Attachment to IAEA Nuclear Data Newsletter 21

### Single spare copies of reports

to be distributed on a first-come-first-serve basis

- ANL/NDM-46 (1979) Fast-neutron and scattering cross sections of Ag-107 in the MeV region. A. Smith et al.
- ANL/NDM-51 (1980) Measured and evaluated neutron cross sections of elemental bismuth. A. Smith et al.
- ANL/NDM-78 (1982) Fast-neutron total and elastic-scattering cross sections of elemental indium. A. Smith et al.
- ANL/NDM-81 (1983) Covariances for neutron cross sections calculated using a regional model based on local-model fits to experimental data. D.L. Smith and P.T. Guenther.
- ANL/NDM-84 (1983) Pu-235 and Pu-239 sample-mass determinations and intercomparisons. W.P. Poenitz and J.W. Meadows.
- ANL/NDM-85 (1984) Measurement of the V-51(n,p)Ti-51 reaction cross section from threshold to 9.3 MeV by the activation method. D.L. Smith et al.
- ANL/NDM-88 (1985) An evaluated nuclear-data file for niobium. A.B. Smith et al.
- ANL/NDM-90 (1985) Fast-neutron-spectrum measurements for the thick-target Be-9(d,n)B-10 reaction at  $E_d = 7$  MeV. D.L. Smith et al.
- ANL/NDM-91 (1985) On the energy dependence of the optical model of neutron scattering from niobium. A.B. Smith et al.
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