Note: Unless indicated otherwise, the quoted data, documents or codes are available cost-free upon request. When requesting data on magnetic tape, kindly specify the acceptable density (1500 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).

Personal item
Dr. J.J. Schmidt has retired. He was the head of the IAEA Nuclear Data Section for more than 22 years from 1969 to 1992. More than anyone else he promoted international cooperation in the field of nuclear data. The IAEA Nuclear Data Committee, data centre networks, specialist meetings to assess data needs, training courses, and research contracts are some of the keywords of his activities, which were notably successful due to his broad knowledge, initiative, and exceptionally friendly personality. The staff of the IAEA Nuclear Data Section wishes to express its deep gratitude for his guidance throughout the years.

NDIS - on-line access
We are happy to announce that some of the major nuclear data libraries can now be accessed on-line via the INTERNET computer network. "NDIS", the IAEA Nuclear Data Information System includes presently the following data libraries: ENDF/B-V, BROND-2, CENDL-2, JENDL-3.1; EXFOR (CSISRS); ENDF, HUDAT; GAM-ATOM (photo-atomic interactions); and the bibliographic files CINDA and NER. See the earlier issues of the Nuclear Data Newsletter for more detailed information on these acronyms.

How to access "NDIS" via INTERNET:
1. enter "TRILNET d5100.IAEA.or.at" - this is the TCP/IP address of the IAEA's gateway.
2. at the "login:" prompt, enter "M433001:".
3. at the "username:" prompt, enter "IADANS.
4. when prompted "Enter NDIS assigned authorization code":
   - either enter "GUEST"; you will have 30 seconds of CPU time allocated
   - or enter your assigned authorization code if you have one (see below)

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

E-mail: RNDS@IAEA1.BITNET
cable: INATOM VIENNA
telephone: (43-1)2360-1709
5. specify the appropriate type of your CRT terminal—whether ANSI standard or not.

Then you should see the NDIS-Menu which should be self explanatory. After loggin out from NDIS you can
6. - either exit (at the prompt "Telnet command") enter "QUIT" or
- register for an authorization code if you do not have one yet; this code still needs to be activated by the NDIS manager before you can use it for future on-line access.

In the initial phase technical difficulties cannot be excluded. Kindly send us your comments on any difficulty encountered to our e-mail address.

Notes: On a non-ANSI terminal (e.g. IBM computer) NDIS will be available in text mode only which is less comfortable than the full-screen mode obtained on ANSI terminals. When in text mode, the message "Loading" will appear at the bottom-right corner of your screen, press ENTER (or PAUSE if PC keyboard) to scroll. If your screen becomes corrupted, press F4 to exit.

Data indexes and bibliographies

CINDA-92, the 1992 edition of the bibliography and data index for microscopic neutron data is now available for a sales price of 240.- Austrian Schillings. It covers the period from 1986 to 1992 and supplements the issue CINDA-91, which was announced in the previous issue of this newsletter.

BROND-2, CENDL-2, ENDF/B-6, JEFF-1, JENDL-3.1
A compact joint index to these recently released neutron reaction data libraries is available as a document IAEA-NDS-107 Rev. 6. It also includes a joint index to the available fission-product yield data libraries.

IAEA-NDS-7 (Rev. 92/1): Index of nuclear data libraries available on magnetic tape or PC disks from the IAEA Nuclear Data Section. H.D. Lemmel (ed.).

IAEA-NDS-9 (Rev. 92/1): Index to the IAEA-NDS-Documentation Series for available nuclear data libraries.

Nuclear data processing computer codes

A new version of the ENDF Pro-Processing Codes by D.E. Cullen has been released. This 1992 version is documented in the report IAEA-NDS-39 Rev. 7. These codes are required for processing evaluated nuclear data coded in the format ENDF-6, ENDF-5, or ENDF-4. Included are the codes CONVERT, MRGSEQ, LINES, RESEQ, SIGNAL, LEGEND, FIXDUMP, GROUPIE, DICTON, MIXER, VIRGIN, COMPLOT, EVALPLOT, RELABLE. These "pro-processing codes" supplement the "utility codes" that were announced in the previous issue of this newsletter.

For the ENDF Utility Codes Version 6.7 by C.L. Dunford, NNDC, which were announced in the previous issue of this newsletter, the documentation by P.K. McLaughlin (ed.) is now available as IAEA-NDS-29 Rev. 4.

New data libraries received

ENDF/B-6. For the neutron data sublibrary of ENDF/B-6 (the U.S. Evaluated Nuclear Data Library) revisions have been received
- for the following light elements: 1-H-1, 2-D-2, 3-Li-6, 5-B-10, 6-C, 11-Na-23;
- for the isotopic files of the structural materials Cr, Fe, Ni;
- for the medium element files 40-Zr-nat, 41-Rb-93, 50-Sm-112, 114, 57-La-139, 60-Nd-147, 61-Pm-147, 62-Sm-151, 63-Eu-155, 72-Hf-180, 74-W-nat, 79-Hu-197, 82-Pb-207;

The revisions are partly small (such as updating a Q value) and partly extensive (such as revised resonance parameters for U-235).

Available upon request are the following data files:
- the 40 materials revised in 1991, basic file with resonance parameters (200.000 records);
- the entire ENDF/B-6 library
  - basic file with resonance parameters (600.000 records)
  - point data where resonance parameters have been converted to cross-sections;
  - or selective retrievals for specified materials.
The "ENDF/B-VI Summary Documentation" edited by P.F. Rose has been issued as report ENDF-201 4th ed. (Oct. 1991) [same as report BNL-NCI-17541 4th ed.].

BROND-2, the Russian Evaluated Nuclear Data Library for neutron reaction data. This data library containing evaluations for 121 elements or isotopes from 1−1 to 96−Cf−249 was released in 1992. It has a size of 246,000 records in ENDF-6. It is available on magnetic tape. A brief summary documentation is available as document IAEA-NDS-90 Rev. 5. A more detailed documentation has been published in "Communication of Nuclear Data Progress No. 6 (1991)" (same as report CIC-596; CIND-8; INDGFC-25; limited number of copies available).

CENDL-2, the Chinese Evaluated Nuclear Data Library for neutron reaction data. This data library containing evaluations for 49 elements or isotopes from 1−H to 98−Be−249 was released in 1991/1992. It has a size of 270,000 records. The format is partly ENDF-5, partly ENDF-6. Available on magnetic tape. A brief summary documentation is available as document IAEA-NDS-61 Rev. 1. A more detailed summary documentation has been published in "Communication of Nuclear Data Progress No. 6 (1991)" (same as report CIC-596; CIND-8; INDGFC-25; limited number of copies available.)

ENDF/B-6 charged-particle sublibraries for hydrogen and helium isotopes, 4100 records in ENDF-6 format. It includes complete (double differential) evaluations for the interaction of protons with H−1 and He−3, and evaluated cross-sections for five fusion reactions between d, t, and He3 particles. Summary documentation: IAEA-NDS-105.

ENDF/B-6 decay data library, by the U.S. National Nuclear Data Center. It includes all pertinent decay data for all fission-product nuclides, radionuclides resulting from neutron activation, and actinides, that occur in the ENDF/B-6 main library. 64,000 records in ENDF-6 format.

ENDF/B-6 sublibrary for fission-product yield data, consisting of two parts, one for neutron induced-fission, another for spontaneous fission, together 84,000 records. A table of contents is given in the document IAEA-NDS-106.


Note: Above two fission-product yield data libraries supplement each other and overlap only partly. The authors advise that in the areas of overlap the ENDF/B-6 data should be preferable although no serious discrepancies are expected.

JENDL-3 dosimetry library, evaluated data for selected reactions used for neutron dosimetry by foil activation. Most but not all of the data were taken from JENDL-3 supplemented with covariance data. Brief documentation see IAEA-NDS-146.


Strong gamma-rays emitted from radionuclides. A tabulation of 100 pages by T. Narita and K. Kita, JAERI, Japan, published in the report JABRI-H-92-051 (1992). The tabulation includes the columns: energy, intensity, parent nuclide, decay mode, half-life, no. of g, energies and intensities of two other intense gamma-rays. The data were taken from the ENDF database as of Feb. 1991. The list has also been prepared on a floppy diskette "Narita Gamma" which is available upon request.

Multigroup nuclear data

The WIMS code and its data libraries have been widely used for thermal reactor application calculations. Attention is drawn to a recent paper by M.J. Halsall, reviewing briefly the considerations that led to the structure
and content of the original MIMS library, looking at some of the deficiencies in the current library and at the steps that are being taken to overcome them. Reference: Nucl. Energy 30 (1991), no. 5, Oct. 1991, 285-290.

FENDL Multigroup Libraries by S. Ganesan and D.W. Huir. Coupled neutron-gamma multigroup data files in MATMRS multigroup format have been generated for a large number of elements and isotopes selected from the libraries ENDF/B-V, JENDL-3.1, or BROND-2. The data was selected according to the International Thermonuclear Experimental Reactor (ITER) project. The files are in V20 format and include 276 energy groups and 80 Legendre order for describing neutron interaction cross-sections, and 42 energy groups for describing photon production and photon-atomic interaction (P-8 Legendre order) cross-sections. For a list of files presently available including specification of weight functions, temperatures, background dilutions, and other parameters, kindly request the document IAEA-NDK-129 from which the requestor may wish to select the multigroup data files of his interest.

Selected new publications on nuclear data

Handbooks

The Nuclear Fission Process, a comprehensive monograph with contributions from eleven leading experts, by C. Wagemans (ed.). Following the series of conferences in 1988/89 on the occasion of the 50th anniversary of the discovery of nuclear fission, this book gives a thorough survey on the present knowledge and understanding of the fission process. The twelve chapters include: Historical introduction. Fission barriers. Spontaneous fission. Neutron-induced fission. Photon- and electron-induced fission. Charged-particle induced fission. Theoretical models of mass distribution, mass, charge, and kinetic energy of fission fragments. Fission fragment angular momentum and angular distributions. Neutron and gamma emission in fission. Fission yields. The book was written at a level to introduce graduate students to the physics of nuclear fission, so that also advanced scientists, and members of the physics community, can enjoy reading and discussing the contents of this book with pleasure. Each chapter is followed by a carefully selected list of references (up to 1990) for in-depth studies. The book is published by CRC Press Inc., 200 Corporate Drive, N. X., Boca Raton, Florida 33431, USA. The sales price is 230.- US$ plus 10.- for shipping.

Nuclear Radiation Detectors, a monograph by S.K. Kapoor and V.S. Ramamurthy of the Bhabha Atomic Research Centre, Trombay, India. The book of 240 pages gives a clear and compact survey of the large variety of modern nuclear radiation detectors used in pure and applied nuclear sciences. It is organized in eight chapters which include: General introduction. Basic physical processes in radiation detection. Gas-filled ionization detectors. Scintillation detectors. Neutron detection and spectrometry. Electronics for detector signal processing. Track etch detectors. The book has been written for post-graduate students and those beginning to work with radiation detectors. Lists of references (up to 1983) that follow each chapter, make the book useful also for advanced studies. The book can be ordered from S.K. Gupta, Indian Physics Association, BARC, Bombay 400 085, India. Scientists from outside India may obtain it at a reduced rate of 20.- US$.

Conference proceedings

Nuclear Data for Science and Technology, international conference in Jülich, Germany, 13-17 May 1991. Proceedings, S.H. Qin (ed.). The book of more than 1000 pages contains 285 papers grouped under the following headings: Nuclear Data Relevant to Fusion Reactors and some Fundamental Studies with Slow Neutrons; Data Testing and Validation for Reactors; Nuclear Data for Fusion Reactor Technology; Experimental Facilities and Techniques; Nuclear Data Relevant to Standards; Nuclear Structure and Decay Data; Nuclear Data for Medical Applications; Nuclear Data Relevant to Astrophysics, Geology, Neutron Dosimetry and some other Applications; Medium Energy Data; Nuclear Models and Evaluation Methodology. It is thus a most complete and up-to-date interdisciplinary handbook on theory, experiment, and application of nuclear data. The book can be ordered from: Springer-Verlag, Heidelberger Platz 3, D-1 Berlin 33, Germany, at a sales price of 296.- DM. Payment by credit card is possible.

This is the continuation of the previous "All-Union Conference" of which the last and 41st was in Hinsk in 1991. The 1992 Conference was organized by the Russian and the Kazakhian Academies of Sciences.

Nuclear Reaction Mechanism, proceedings of an International Conference on this topic which was held at the Saha Institute of Nuclear Physics, Variable Energy Cyclotron Centre, Calcutta, India, 3-9 Jan. 1989. The book, which was edited by Suprokash Mukherjee, contains 60 invited papers, 14 countries reviewing the latest situation in the theoretical and experimental advance made towards the understanding of different mechanisms of nuclear reactions. A Supplementary Volume contains 10 contributed papers. The proceedings can be ordered from the World Scientific Publishing Co, P.O. Box 128, Farrer Road, Singapore 9128. USA office: 687 Hartwell Street, Teaneck, NJ 07666. UK office: 73 Lynton Mead, Totteridge, London N20 8DM. - Not available from IAEA.

Fast Neutron Physics, proceedings of an international symposium in Beijing, China, 9-13 Sept. 1991, Sun Zuxun et al. (ed.). The book contains 35 invited papers (20 by Chinese authors, 15 by foreign authors) reviewing the current status of the following topics: 1. Scattering and energy spectrum; 2. nuclear fission; 3. y-ray spectroscopy and (n,y) reaction mechanism; 4. nuclear theory; 5. activation cross-sections; 6. nuclear reactions; 7. intermediate energy. The book can be ordered from the World Scientific Publishing Co (see the preceding item for the address).


Second Asian Symposium on Research Reactors, Jakarta, 23-25 May 1989. 69 papers on various uses of research reactors were presented. Proceedings in 2 vols. issued by the Indonesian National Atomic Energy Agency. (Not available from IAEA Nuclear Data Section.)


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 105, A-1400 Vienna, Austria).

Data center networks

- INDC(NDS)-250. Co-ordination of the international network of nuclear structure and decay data evaluation. Summary of a meeting in Kuwait, 10-14 March 1990. H.D. Lemmel (ed.)
Progress reports


Neutron cross-sections

- INDC(CUB)-5. Accuracy of neutron cross-section calculation at low energies. R. Cabezas et al.
- JAERI-1325. JENDL dosimetry file. (Based on JENDL-3). H. Nakazawa et al.
- JAERI-M-92-052. Double-differential neutron-emission cross-sections calculated from evaluated nuclear data libraries, compared with experimental data. T. Fukahori et al.
- JAERI-M-92-020. Measurement of formation cross-sections short-lived nuclei by 14 MeV neutrons (F, Mg, Si, Ti, Cr, Ni, Ga, Rb, Sr, Ag). R. Kawade et al.

Actinides fission yields


Charged-particle reactions

- JAERI-M-92-029. Polarized proton induced breakup of C-12 at 16 MeV. N. Koori et al.

Decay data

- AEA-BS-5219. Heavy element and actinide decay data: USNEDD-2 Data Files. A.L. Nicholls.
Electron interaction and atomic data


Yadernye Konstanty

- Yadernye Konstanty 1991 (issues 2+3), in English: Documentation of the BNMD-2 library. Compare on p. 3 of this Newsletter.

- Yadernye Konstanty 1991(4), in Russian with abstracts in English. Constants from 14 MeV neutrons on structural materials (Saukov). Measurement and analysis of the resonance structure and the total and radiative capture cross-sections of U-238 for neutrons from 0.4 to 200 keV (Grigorev). Absolute measurement of the neutron capture cross-section of Cr for neutrons from 1 to 20 keV (Yoskanjan). Multichannel coupling method for Ti-48 neutron cross-sections (Kabasev). Evaluated neutron cross-sections of U-234 in the thermal energy region (Mirogovski, Minsk). Co-60 production in power reactor (Sulubev). Testing of some actinide neutron data in integral experiments (Bedorjakov; many figures including comparisons with ENDF/B-5 and JENDL-3). U-238 and Pu Doppler effect in critical assemblies (Tambovets). The cross-section library "BISERM" for calculation of gas production and damage rate in structural materials irradiated with nuclides at energies up to 500 MeV (Konobeev). Analytical representation of (γ,2n) reaction cross-sections for the γ-activation analysis (Davydov, Rostov Univ.).


The network of nuclear data service centers

New address

The NDA Data Bank has moved closer to the center of Paris. The new address is: OECD Nuclear Energy Agency, Le Seine Saint-Germain, 12 Blvd des Italiens, F-92130 Issy-les-Moulineaux, France. Tel. +33 (1) 45 24 50, ext. 2102. Telex OCDE 020160 F. BITNET/EARN (name)OFRN/1. INTERNET (name)FRN/1. The NDA Data Bank continues to offer nuclear data services to OECD countries (C. Nordborg, ext. 1092), and computer programs to all countries (E. Sartori, ext. 1072; there may be release restrictions).

The other nuclear data service centers remain unchanged.

For services to customers in USA and Canada:

US National Nuclear Data Center, Bldg. 197D, Brookhaven National Laboratory, Upton, NY 11973, USA. Tel. 516-282-2902. Fax 516-282-2906. INTERNET nndc@bnl.gov; HYPNET nndc@bnl.gov. For information on online services and requests contact V. McLean.

For services to the countries of the former USSR:

Neutron data: Russian Nuclear Data Center, Cenr po Yadernym Dannym (CJD), Pulkovo-Energetichekn Institute, Pleshad Komarentsova, 249020 Obninsk, Kaluga Region, Russia. Fax 095-255-2209. Telex 411509 naf su. INTERNET PONECUD.FEI.OBINSK.SU

Charged-particle data: Institut Atomnoi Energi (I.V. Kurchatov, CJD), Pleshad Kurchatova, Moscow D-182, 123182, Russia. Fax 095-9430073. Telex 411594 shu su.

For services to customers in China:
Chinese Nuclear Data Center, Institute of Atomic Energy, P.O. Box 275(41),
Beijing, China. Telex 222373 iae cn.

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. (There may be charges and 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.

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