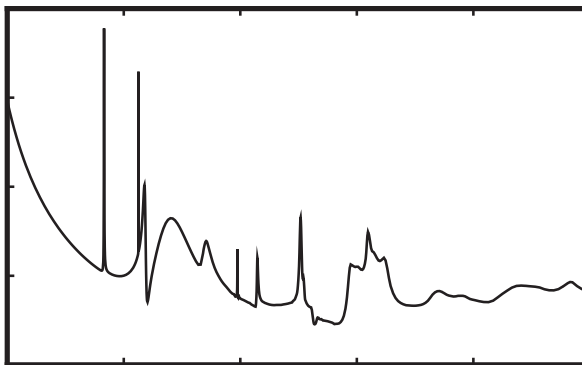




# NUCLEAR DATA

# NEWSLETTER



Nuclear Data Section (NDS)

International Atomic Energy Agency  
Vienna

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**Issue No. 31**

**March 2001**

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All services provided to users are free of charge.

Please contact us on the following addresses:

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

e-mail: [services@iaeand.iaea.org](mailto:services@iaeand.iaea.org)  
fax: (43-1) 26007  
cable: INATOM VIENNA  
telex: 1-12645  
telephone: (43-1) 2600-21710

Online: TELNET or FTP: [iaeand.iaea.org](http://iaeand.iaea.org)  
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;  
NDSONL for files saved in NDIS Telnet session

Web: <http://www-nds.iaea.org>



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## Announcement

Due to a change of IAEA Internet service providers we recommend replacing the string *or.at* with *org* in all our Web, host and e-mail addresses (e.g. use <http://www-nds.iaea.org> for the NDS Web page instead of <http://www-nds.iaea.or.at>).

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## Staff Items

Ms. Rebecca Anglim left the NDS and Ms. Rozanna Bojdo took over duties as secretary of the Nuclear Data Development Unit.

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## Online News

The following INDC Reports are available at: [http://www-nds.iaea.org/indc\\_sel.html](http://www-nds.iaea.org/indc_sel.html):  
 INDC(CCP)-426, INDC(CPR)-051,  
 INDC(HUN)-035 and INDC(NDS)-419, 421,  
 422.

The following IAEA-NDS reports, which describe the contents and the format of the nuclear data libraries, files and computer packages, available from the IAEA Nuclear Data Section, are placed at:  
<http://www-nds.iaea.org/nds-0.html>:  
 IAEA-NDS-29, 51, 61, 90, 91, 100, 107, 110,  
 120, 121, 122, 123, 138, 139, 140, 198, 204.

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## Offline News

**Updated databases and libraries are now available on CD-ROM:**

**CD-CINDA 2000.** CD-ROM searchable index to literature and computer files on microscopic neutron data, version January 2000, is available on request. Prepared by NEA Data Bank, Paris.

**IAEA-NDS-CD-07,** EXFOR, database of experimental nuclear reaction cross sections (Version January 2001). Updated and revised version of the IAEA-NDS-CD-05 from January 2000.

**IAEA-NDS-CD-09,** EXFOR/ACCESS, database of experimental nuclear reaction cross sections (Version 1.07, January 2001). A run-time version of relational database under MS ACCESS with enhanced search and retrieval

capabilities and built-in interactive graphic tools.

The catalogue of CD-ROMs with updated databases, libraries, files and computer packages freely available to the users on request includes:

CD serial #	Product
IAEA-NDS-CD-02	RIPL
IAEA-NDS-CD-04	WINENDF
IAEA-NDS-CD-06	FENDL-2
IAEA-NDS-CD-07	EXFOR
IAEA-NDS-CD-08	RNAL
IAEA-NDS-CD-09	EXFOR/Access
-	EPDL97
-	EPICSHOW98
-	FENDL/2A in pictures
-	PREPRO-2000
-	POINT2000
-	CINDA-2000
-	DROSG-2000
-	PCNuDat
-	JENDL-3.2 Data&Plots
-	JENDL Dosimetry File 99
-	IAEA Photonuclear Library
-	Charge Particle Cross Sections for Medical Radioisotope Production

Information about these products can be found at the NDS Web site: <http://www-nds.iaea.org/>, in the Nuclear Data Newsletters available on request in hardcopy or online at <http://www-nds.iaea.org/newslett.html> and at the IAEA-NDS documentation series in hardcopy format or online at <http://www-nds.iaea.org/nds-0.html>.

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## New Data Libraries

**Reference Neutron Activation Library (RNAL),** November 2000. RNAL is a library of evaluated cross sections for neutron induced reactions leading to radioactive products. The evaluations have been selected from various national and regional projects and assembled at IAEA Nuclear Data Section. The library is restricted to the 255 most important reactions. The relatively small number of reactions allowed for a detailed assessment of the library providing the user with the information on the quality of the data. The evaluations are compared with experimental data in the EXFOR database. This graphical validation includes 260 figures. RNAL is available online at <http://www-nds.iaea.org/ndspub/rnal/www/>. It is also available on CD-ROM for local data retrievals using Web browsers.

**POINT2000: A Temperature Dependent ENDF/B-VI, Release 7 Cross Section Library**, prepared by D.E. Cullen. The library contains point-wise data for linearly interpolable in energy cross sections at 8 temperatures between 0 and 2100 Kelvin, in steps of 300 Kelvin. The data package is available on 3 CD's. A summary report, **IAEA-NDS-198**, Revision 0, February 2001, by P.K. McLaughlin is available as hard copy or online at: <http://www-nds.iaea.org/reports/nds-198.pdf>.

**DROSG-2000: Neutron Source Reactions**, Version 2.0, prepared by M. Drogg (January 2001). Data files with computer codes for calculation of characteristics of monoenergetic neutron source reactions. Version 2.0 includes the following updates:

- New reaction Be-9(d,n)B-10 was added.
- New target type (LiF) was added for the Li-7(p,n) reaction.
- Executables for LINUX and DEC-UNIX were added.

The package is available online at: <http://www-nds.iaea.org/drosg2000.html>. Revised report **IAEA-NDS-87, Rev. 6** (January 2001), with summary of content is available on request as hardcopy or online at: <http://www-nds.iaea.org/reports/nds-87.pdf>.

## Selected Reports and Documents

**IAEA-TECDOC-1168. Compilation and evaluation of fission yield nuclear data.** Final report of a co-ordinated research project 1991-1996, December 2000, IAEA, Vienna. Individual sections represent CRP tasks and were prepared by the participants doing the research, some of which comprise significant new scientific developments. The appendices to this book contain voluminous tables and are therefore enclosed as a CD-ROM. It also includes a computer program YCALC for calculating fission yields. A limited number of copies is available free of charge to the scientists from developing countries upon request.

**IAEA-TECDOC-1178. Handbook on photonuclear data for application: Cross-sections and spectra.** Final report of a co-ordinated research project 1996-1999, October 2000, IAEA, Vienna. It contains the following chapters:

- Introduction;
- Definitions and notations;
- Nuclear models;
- Evaluations;

- IAEA Photonuclear Data Library;
- Recommendations to users and evaluators.

Appendices include a compilation of parameters of giant dipole resonance in nuclei from  $^1\text{H}$  to  $^{243}\text{Am}$  and detailed graphical presentation of evaluated photoabsorption, photoproduction and partial cross sections in comparison with experimental data. The draft of the report with plots and data from the IAEA Photonuclear Data Library is available as a CD-ROM upon request or online at:

<http://www-nds.iaea.org/at/photonuclear/>. A limited number of copies of the IAEA-TECDOC-1178 is available free of charge to the scientists from developing countries upon request.

**INDC(CCP)-426. Articles Translated from Journal Yadernye Konstanty (Series: Nuclear Constants, Issue No. 2, 1999), February 2000.** This report contains the full English version of the journal issue Yadernye Konstanty 1999, No. 2. It includes 11 papers which were translated from Russian to English and 4 originally published English papers:

- *Study of delayed neutron decay curves for  $^{235}\text{U}$  and  $^{239}\text{Pu}$  fission due to thermal neutrons* by S.B. Borzakov et al.

- *Differential cross sections for the  $U(n,xn)$  reaction at a neutron energy 14.3 MeV* by B.V. Devkin et al.

- *Evaluation of the gamma-ray production cross sections for nonelastic interaction of fast neutrons with Al nuclei* by A.G. Zvenigorodskij et al.

- *Evaluation of the gamma-ray production cross sections for nonelastic interaction of fast neutrons with lead nuclei* by A.G. Zvenigorodskij et al.

- *Evaluation of neutron cross sections for  $^{242}\text{Cm}$ ,  $^{243}\text{Cm}$  and  $^{244}\text{Cm}$*  by A.I. Blokhin et al.

- *Evaluation of the total gamma-ray production cross sections for nonelastic interaction of fast neutrons with iron nuclei* by M.V. Savin et al.

- *Evaluation of angular distributions and production cross sections for discrete gamma-lines in iron* by M.V. Savin et al.

- *Resolved resonance parameters for  $^{232}\text{Pa}$*  by L.A. Bakhovich et al.

- *BOFOD-99: present status of the evaluated photonuclear data file* by A.I. Blokhin et al.

- *Web server of the Centre for Photonuclear Experiments Data of the Scientific Research Institute for Nuclear Physics, Moscow State*

*University: hypertext version of the nuclear physics database*

by I.N. Boboshin et al.

- *Library of neutron reaction cross sections in the ABBN-93 constant system*

by S.V. Zabrodskaia et al.

- *A library of production cross sections for displacements and hydrogen, helium and tritium in the ABBN-93 constant system*

by S.V. Zabrodskaia et al.

- *Discrete processes modelling and geometry description in RTS&T code*

by I.I. Degtyarev et al.

- *Verification benchmark calculations in low and medium energy regions using RTS&T code*

by I.I. Degtyarev et al.

- *Notes on the CONSYST code*

by G.N. Manturov et al.

The report is available online at:

[http://www-nds.iaea.org/indc\\_sel.html](http://www-nds.iaea.org/indc_sel.html).

**INDC(CCP)-427.** *Annual Report 1999, January - December 1999.* Ed. B.D. Kuzminov, Nuclear Physics Department, IPPE, Obninsk, Russia. Annual review of the activity in the nuclear data field in the Institute of Physics and Power Engineering, Obninsk, Russia.

**INDC(CPR)-050.** *Communication of Nuclear Data Progress, No. 23 (2000).*

China Nuclear Data Center. Ed. by Liu Tingjin and Zhuang Youxiang.

**INDC(CPR)-051.** *Thermal Neutron Capture Data for A=1-25.* Zhou Chunmei. (July 2000).

A new evaluation of level properties, prompt gamma-rays and decay schemes properties of thermal neutron capture for nuclides A=1-25 is given. Available on-line at:

[http://www-nds.iaea.org/indc\\_sel.html](http://www-nds.iaea.org/indc_sel.html).

**INDC(HUN)-035.** *Test calculations with IAEA Photonuclear Library.* P. Vertes. (January 2001). The formal and practical quality of files for 164 isotopes were examined in the calculations of photoneutron production cross sections. Available online at:

[http://www-nds.iaea.org/indc\\_sel.html](http://www-nds.iaea.org/indc_sel.html).

**INDC(NDS)-416.** *Nuclear Model parameter testing for Nuclear Data evaluation.* Summary Report of the Second Research Co-ordination Meeting, Varenna, Italy, June 2000. Prepared by M. Herman, IAEA, Vienna, Austria (September 2000).

**INDC(NDS)-419.** *Workshop on advanced Nuclear Data online services.* Summary Report. IAEA Headquarters, Vienna, Austria,

29 November - 3 December 1999. Ed. by O. Schwerer (September 2000). Available online at:

[http://www-nds.iaea.org/indc\\_sel.html](http://www-nds.iaea.org/indc_sel.html).

**INDC(NDS)-421.** *Nuclear Structure and Decay Data (NSDD) Network.* Prepared by V.G. Pronyaev, IAEA, Vienna, Austria (February 2001). Brief description of the Nuclear Structure and Decay Data Network co-ordinated by the Nuclear Data Section of the IAEA is given. Available online at:

[http://www-nds.iaea.org/indc\\_sel.html](http://www-nds.iaea.org/indc_sel.html).

**INDC(NDS)-422.** *Co-ordination of the International Network of Nuclear Structure and Decay Data Evaluators.* Summary Report of an IAEA Advisory Group Meeting. IAEA Headquarters, Vienna, Austria, 4-7 December 2000. Prepared by V.G. Pronyaev, IAEA, Vienna, Austria (February 2001). Available online at:

[http://www-nds.iaea.org/indc\\_sel.html](http://www-nds.iaea.org/indc_sel.html).

**NEA/WPEC-14,** *Processing and Validation of Intermediate Energy Evaluated Data Files.* Co-ordinator/Monitor: A.J. Koning.

**JEFF Report 18,** *Evaluation and Analysis of Nuclear Resonance Data.* F.H. Froehner, NEA, Paris (2000).

**JAERI-Review-2000-018,** *JAERI Tandem&V.D.G. Annual Report (April 1, 1999 - March 31, 2000).* Ed. by Suehiro Takeuchi et al. (November 2000).

**Yadernye Konstanty (Nuclear Constants), 2000 (1).** *Investigation of neutron cross-sections and alpha value for U-235 in energy range 1 meV-2 eV (Grigor'ev Yu.V., Sinitsa V.V., Borzakov C.B. et al., in Russian). The experimental results of the Gamma-Ray production cross sections and spectra at the nonelastic interaction of 14 MeV neutrons with nuclei (Nefedov Yu. Ya., Nagornyj V.I., Zhitnik A.K. et al., in Russian). Evaluated resonance parameters of <sup>234</sup>U (Morogovskij G.B., Bakhanovich L.A., in Russian). On determination of potential scattering parameter and parameterization of neutron cross sections in the low-energy region (Novoselov G.M., Litvinskij L.L., in Russian). Neutron and  $\gamma$ -emission from fission fragments (Grudzevich O.T., in Russian). Semimicroscopic treatment of nuclear fission barriers (Yavshits S.G., Pachomov S.A., Grudzevich O.T. et al., in English). Multiconfiguration fission cross-sections at transitional energy region 20-200*

*MeV* (Yavshits S., Boykov G., Ippolitov V. et al., in English). *Information offering system on nuclear-physical properties of nuclides and radioactive chains* (Plyaskin V.I., Kosilov R.A., Manturov G.N., in Russian). *Assessment of the influence of temperature-coefficient accuracy on the safety of fast reactors in ULOF type*

*accidents*. (Danilychev A.V., Elistratov D.G., Rinejskij A.A. et al., in Russian).

Booklet with **Nuclear Wallet Cards**, Sixth Edition, January 2000, by J.K. Tuli, is available on request. It presents selected properties of all known nuclides and their isomeric states.

**Please note: Unless indicated otherwise, the quoted data files, printed materials, or computer codes are available cost-free upon request.**

#### 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. +1 631-344-2902; Fax +1 516-344-2806; E-mail: [nndc@bnl.gov](mailto:nndc@bnl.gov); Worldwide Web: <http://www.nndc.bnl.gov/>. For information on online services and requests contact: Ms. 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 or [nea@nea.fr](mailto: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 1, 249020 Obninsk, Kaluga Region, Russia. Tel. +7 08439-9-8982; Fax +7 095-230-2326; E-mail: [manokhin@ippe.obninsk.ru](mailto:manokhin@ippe.obninsk.ru). Worldwide Web <http://nndc.ippe.obninsk.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. +7 095-196-9968; Fax +7 095-882-5804; E-mail: [chukreev@polyn.kiae.su](mailto:chukreev@polyn.kiae.su) or [feliks@polyn.kiae.su](mailto: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. +7 095-939-3483; Fax +7 095-939-0896; E-mail: [varlamov@cdfe.npi.msu.su](mailto:varlamov@cdfe.npi.msu.su) or [varlamov@depni.npi.msu.su](mailto:varlamov@depni.npi.msu.su). Worldwide Web <http://depni.npi.msu.su/cdfe/>. 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: [yxzhuang@iris.ciae.ac.cn](mailto:yxzhuang@iris.ciae.ac.cn). Contact: zhuang Youxiang.

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. +1 865-574-6176; Fax +1 865-574-6182; E-mail: [pdc@ornl.gov](mailto:pdc@ornl.gov). Worldwide Web <http://epicws.epm.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. Users of countries Latin America and Caribbean may use IAEA-NDS mirror at Worldwide Web <http://www-nds.ipen.br>.

Dear Colleague,

Your name is in the address list of the Nuclear Data Section (NDS) of the IAEA. The aim of this list is to provide addresses for communication with professionals who wish to be informed about IAEA/NDS programmes and for the distribution of nuclear data and NDS publications (Nuclear Data Newsletters, INDC reports and CD-ROMs). *All services provided by the NDS are free of charge.* To improve the communication and documents distribution, including through the Internet, we need a regular update of this list.

We would like to ask you to return to us your answers to the questions given on the reverse side. A list of topics presently covered by the NDS activity with assigned documents distribution codes is given in the Attachment below. You may also forward this questionnaire to other colleagues who might also be interested in our services.

Yours sincerely,  
Nuclear Data Services  
Nuclear Data Section, IAEA

### **Attachment**

#### **NDS Documents Distribution Code List (Topics of NDS Activity)**

<b>Code</b>	<b>Topic</b>
CC	COMPUTER CODES DEVELOPMENT FOR DATA RETRIEVAL AND PROCESSING
NM	NUCLEAR MODEL PARAMETERS AND NUCLEAR MODEL CALCULATIONS
RE	NUCLEAR REACTION DATA EVALUATION
DP	EVALUATED DATA PROCESSING, MULTIGROUP LIBRARIES AND DATA LIBRARIES FOR MONTE CARLO CALCULATIONS
TR	PARTICLE TRANSPORT CALCULATIONS
IN	NUCLEAR DATA TESTING IN INTEGRAL AND BENCHMARK EXPERIMENTS
TU	NUCLEAR DATA FOR THORIUM FUEL CYCLE
AD	NUCLEAR DATA FOR ADVANCED FUEL CYCLES
ST	NUCLEAR REACTION CROSS SECTION STANDARDS
DS	NUCLEAR DECAY AND RADIATION DATA STANDARDS
F	NUCLEAR DATA FOR FUSION
CI	NUCLEAR DATA FOR SAFEGUARDS
MR	NUCLEAR DATA FOR MEDICAL RADIOISOTOPE PRODUCTION
DO	NUCLEAR DATA FOR REACTOR DOSIMETRY
DM	NUCLEAR DATA FOR RADIATION DAMAGE
HE	NUCLEAR DATA FOR HELIUM PRODUCTION
AA	NUCLEAR DATA FOR ACTIVATION ANALYSIS
DN	DELAYED NEUTRON YIELD DATA
AL	FISSION PRODUCT YIELD DATA
FN	FISSION PRODUCT NUCLEAR DATA NEWSLETTER
FP	NUCLEAR DATA FOR FISSION PRODUCTS
IE	NUCLEAR DATA FOR INTERMEDIATE ENERGY ( $E > 20$ MEV)
AD	NUCLEAR DATA FOR ACTINIDES
GN	PHOTONUCLEAR DATA
PG	NUCLEAR DATA FOR PROMPT GAMMA-RAY ACTIVATION ANALYSIS
CP	CHARGED PARTICLE INTERACTION DATA
GA	PHOTOATOMIC DATA
SD	NUCLEAR STRUCTURE AND DECAY DATA EVALUATION
RS	NUCLEAR REACTION DATA STANDARDS

0. Please write your First Name, Family Name

1.  Yes, I wish to be included in the NDS address list.
2.  My postal address given on the envelope is correct.
3.  My postal address given on the envelope is incorrect, please use the one given below:

4. My Phone (international number(s)):
5. My FAX (international number(s)):
6. My E-mail address(es):

- 
7.  Yes, I have online access to the NDS Web site: <http://www-nds.iaea.org/>.  
The rate of transmission is usually:  
7.a.  - good,      7.b.  - satisfactory,      7.c.  - poor.

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The NDS publishes and distributes biannually the Nuclear Data Newsletters informing users about our new publications and nuclear data services. The Newsletters are available as hardcopy or electronically. Would you like to receive the NDS Nuclear Data Newsletter?

- 8.a.  - No.
- 8.b.  - No, I will use Web access for downloading.
- 8.c.  - No, I will use Web access for downloading; I would like to be notified via e-mail when new issue is available.
- 8.d.  - Yes, as an E-mail attachment (in PDF format, 50 to 200 KB).
- 8.e.  - Yes, as a hardcopy document.

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If one of our reports is available not only as hardcopy but also in electronic form, how would you like to receive this report?

- 9.a.  - by personally downloading through the Web.
- 9.b.  - by personally downloading through the Web; I would like to be notified via e-mail when a new report on the topic from my "wish list" (see 10 below) is available.
- 9.c.  - as an attachment (in PDF format, maximum size 1 MB) to E-mail sent to me by NDS according to my "wish list" (see 10. below).
- 9.d.  - as a hardcopy via ordinary mail according to my "wish list" (please note that only a limited number of copies are printed).

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10. If you would like to receive our reports, please list here the distribution code(s) related to the topics of your interest ("wish list", see list of topics given in the **Attachment**).

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**Kindly send this sheet:**

- either by mail to: Nuclear Data Section, IAEA, P.O. Box 100, Wagramer Strasse 5, A-1140 Vienna, Austria;
- or by FAX: +43-1-26007, Nuclear Data Section, IAEA;
- or send your answers by E-mail to: [services@iaeand.iaea.org](mailto:services@iaeand.iaea.org) (please use question numbers for brevity, like: 1- Yes, 2-Yes, ..., 9.c – Yes, ...);
- or download the form for our Web site <http://www-nds.iaea.org/servform.txt>, fill it in and send it to [services@iaeand.iaea.org](mailto:services@iaeand.iaea.org) as an attachment to your E-mail.