RSIC Newsletter

RADIATION SHIELDING INFORMATION CENTER

OAK RIDGE NATIONAL LABORATORY

OPERATED BY UNION CARBIDE CORPORATION • FOR THE U.S. ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION

POST OFFICE BOX X •
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Where there is no vision the people perish. ....Weizman

WHAT VALUE RSIC?

A mailing is being prepared in which we ask you to become an evaluator of the products and services of the Radiation Shielding Information Center (RSIC). We ask several specific questions and are using a numeric rating scale which should require only a few minutes of your time. Since we plan to utilize your response, or failure to do so, as the annual query from which we purge the RSIC Newsletter distribution of names of persons no longer interested in receiving it, your cooperation is important to you and to RSIC.

Why evaluate RSIC?

The director of the Oak Ridge National Laboratory requires a periodic review by selected outside experts of each segment of the Laboratory research and development programs. Since RSIC is embedded within a programmatic division, these reviewers must also look at our operations and services. A conclusion reached by the most recent review was that only you, the user community, could truly evaluate the information products and services. They suggested that the objectives of such a review should be to assure that: (1) RSIC is supplying the information that is needed in a timely manner; (2) RSIC is keeping its sources of information up-to-date; (3) the commitment of manpower and money to this effort is consistent with the realistic magnitude of the job; (4) the manpower that is available is utilized in the most efficient manner in terms of conveying information to the users; and (5) that there is sufficient feedback from the information users to assure that RSIC is devoting its effort to providing the needed information.

RSIC-TECHNOLOGY TRANSFER-AND YOU

In the important area of technology transfer, we utilize an efficient technique developed in the early days of the Radiation Shielding Information Center (RSIC). This unique contribution is to effect exchange of radiation transport computing technology among the widest spectrum of users, including reactor vendors, utilities, architectural-engineering firms, research and development, regulatory, and educational institutions. The crucial aspect of this activity is its interactive nature, which includes the necessary followup by RSIC to ensure implementation and operation of the complex computer codes and data libraries in the user's environment and the eventual feedback of results from their use and any useful improvements made to the technology by the user. RSIC incorporates these improvements into the master version maintained by the Center ensuring that state-of-the-art technology is available to industry and that it continues to advance.

YOU are the essential ingredient in the interactive process and we are pleased to be your partner.

RSIC shipped more than 1200 code and data packages in FY 1976 and received more than 100 shipments of computing technology contributed by the industry for sharing. Speaking conservatively, computing technology represented in these packages costs in the neighborhood of $100,000/package for development. As against each requester 're-inventing the wheel', a potential cost savings of more than $120 million is realized. As an indication of the magnitude of the RSIC-industry interaction, more than 4000 letters of request were processed through the Center in FY 1976. The industry, in turn, cooperates and collaborates with RSIC in 'stocking the information store'. It is only with your cooperation and collaboration that RSIC is able to give a viable service.

NEW PUBLICATION ON NUCLEAR STANDARDS

ASTM announces the availability of the *1976 Annual Book of ASTM Standards, Part 45* (1,068 Pages - 128 Standards - 6X9 - Hard Cover) in November 1976. The Publication, Code Number 01-045076-35, is priced at $36.00. It may be ordered from the American Society for Testing and Materials (ASTM), 1916 Race Street, Philadelphia, PA 19103.

The book contains all ASTM standards dealing with nuclear materials and materials related to nuclear reactors. Of the 128 standards in the book, 24% are new, revised or changed in status since 1975. One hundred-two have also been approved by ANSI and a number of others by organizations. Among the new standards are: Specifications for Nuclear-Grade Boron Carbide Pellets; Specifications for Sintered Uranium Dioxide Pellets; Specifications for Aluminum Oxide-Boron Carbide Composite Pellets; Specifications for Nuclear-Grade Aluminum Oxide Pellets; Specifications for Uranium Hexafluoride for Enrichment; Specifications for Nuclear-Grade Uranyl Nitrate Solution; Chemical, Mass Spectrometric, and Spectrochemical Analysis of Nuclear-Grade Aluminum Oxide and Aluminum Oxide-Boron Carbide Composite Pellets; Specifications for Sintered (Uranium-Plutonium) Dioxide Pellets; Recommended Practice for Neutron Dosimetry for Reactor Pressure Vessel Surveillance; Recommended Practice for Neutron Radiation Damage Simulation by Charged-Particle Irradiation; Measuring Fast-Neutron Flux Density by Radioactivation of Copper; Measuring Fast-Neutron Flux by Radioactivation of Titanium; Recommended Practice for Surveillance Testing of High-Temperature Nuclear Component Materials.

The standards cover: Concrete Products for Nuclear Applications; Graphite Products for Nuclear Applications; Metal Products for Nuclear Applications (Hafnium, Nickel and Nickel Alloys, Steel, Tantalum, Titanium and Titanium Alloys, Zirconium and Zirconium Alloys); Nuclear Grade Materials; Radiation Effects in Organic Materials; Radioactivity, Inorganic Materials in Water; Analysis, Dosimetry and Radiation Effects in Metals; and Temperature Measurement. A complete listing of nuclear related ASTM standards is included.

OSRD ACCEPTS ROLE OF COORDINATOR IN COMPILING ENERGY STORAGE DATA

The Lawrence Livermore Laboratory (LLL) has reached a contractual arrangement with the NBS Office of Standard Reference Data (OSRD) in which the Office will act for LLL in compiling and evaluating physical property data on materials of importance for use in energy storage systems. Under this arrangement the LLL will specify the materials and properties for which data are required. These requirements will be presented to OSRD, who will arrange for the work to be carried out through its system of data centers or other centers of expertise as required. The final product, prepared with the guidance and oversight of the OSRD, will be submitted to LLL for incorporation into an automated data storage and retrieval file residing at the Livermore Laboratory. The automated file, which is under the direction of Victor Hampel and his associate, Eugene Henry, will be made accessible to ERDA contractors and others requiring the stored data. Where appropriate, the OSRD will also publish the data through its established outlets, namely the *Journal of Physical and Chemical Reference Data* and the NSRDS-NBS series.

NEW NCRP REPORTS

The publication of two new reports has been announced by the National Council on Radiation Protection and Measurements (NCRP). They are NCRP Report No. 49, *Structural Shielding Design and Evaluation for Medical Use of X-Rays and Gamma-Rays of Energies up to 10 MeV* and NCRP Report No. 50, *Environmental Radiation Measurements.*

NCRP Report No. 49 supersedes NCRP No. 34, *Medical X-Ray and Gamma-Ray Protection for Energies up to 10 MeV–Structural Shielding Design and Evaluation*, which was published in 1970. The new Report contains recommendations and technical information as well as discussion of the various factors which must be considered in the selection of appropriate shielding materials and in the calculation of barrier thickness. In preparation of the report, recently available new data pertinent to the calculation of shielding requirements was employed, resulting in revision of some of the shielding requirement tables previously set out in NCRP Report No. 34. The new report also differs from its predecessor in that specific values of the parameters used in formulation of tables are explicitly given. Also, the calculational procedures employed are presented in such a way as to facilitate their use in deriving customized shielding requirements not to be found in the tables included in the Report. The Report includes curves giving attenuation in, or transmission

through, various shielding materials for radiation of various energies. In the belief that shielding designers will wish to employ these curves in their work and would find the small size of the figures set out in the Report a disadvantage, the NCRP is publishing an adjunct to NCRP Report No. 49 which presents full size reproductions of the barrier requirement curves. This separate publication will be identified as Adjunct to NCRP Report No. 49.

NCRP Report No. 50, *Environmental Radiation Measurement*, was prepared in response to the steadily increasing need for accurate, reliable, and interpretable measurements of environmental radiation and radioactivity. It presents a unified and systematic consideration of environmental radiation measurements. The role of measurements in the realistic assessment of dose to man through critical pathways is emphasized, serving as an introduction to the detailed discussions on sampling and sample analysis for radioactivity. NCRP Report No. 50 presents information on the properties of widely distributed radionuclides and of typical radiation fields in the environment. The Report then treats methods for the measurement of these radionuclides and radiation fields. Techniques applicable to routine monitoring programs during normal operation of nuclear facilities are described, and evaluations of available and developing measurement methods are included. The report also identifies areas where present knowledge is limited due to the lack of adequate measurement capabilities or systematic data collection and appraisal. TheReport does not consider the special requirements for monitoring abnormal occurrences such as large releases of radionuclides nor does it cover radiation measurements for occupational radiation protection. Since the measurement of tritium in the environment is covered in NCRP Report No. 47, *Tritium Measurement Techniques*, the new report excludes consideration of this topic.

Individuals and organizations already on the NCRP Standing Order List will receive copies of the new reports automatically and be invoiced for their order. Others may purchase copies of the new reports or place their name on the Standing Order List by directing their order to: NCRP Publications, P.O. Box 30175, Washington, D. C. 20014. Report No. 49 costs $3.50/single copy; No. 50, $5.00.

VISITORS TO RSIC

In efficient communication between two human beings there is no substitute for face-to-face discussions. We have always welcomed visitors to RSIC for effective information exchange. In FY 1976, 237 visitors (194, USA; 43, foreign) came for an orientation visit and/or to use the Center's facilities.

The following persons visited at the end of September and/or during the month of October: Gopi Gopinath (RRC, India), Chris Devillers (CEA/Saclay, France), Gary Vivian (Ontario Hydro, Canada), Sig Gerstl (LASL), Gerald Lahti (Sargent and Lundy), Gil Stone (TVA), David R. Lide, Jr. (NBS), Warren Nechodom (Exxon, Richland, WA), Darrell Paul (ORNL Eng. and Tech. Div.), Dan Ingersoll (U. of Ill.), Vic Cain (SAI, Oak Ridge), and Gary Doolen (LASL).

PERSONAL ITEMS

Nolan Olson, formerly with Gilbert Commonwealth Associates, is now working for Allied Chemical in Idaho Falls, Idaho.

Kenneth Preiss, an Associate Professor and Mechanical Engineering Department Chairman at Ben Gurion University of the Negev, Israel will spend his 1977-1978 Sabbatical at the Stanford Research Institute (SRI) in California.

Betty L. McGill, RSIC research staff member, has been selected editor of the *SIG Newsletter*, a communication channel of the Special Interest Group (SIG) on Information Analysis Centers (IAC) of the American Society for Information Science. In the interest of effective handling/processing of scientific information, RSIC staff members must keep current in all phases of the important field of information science. *Bonnie Talmi, on loan to ERDA from ORNL*, is the current SIG/IAC Chairperson of ASIS.

A change of address has been received from RSIC participants who were formerly employed by Aerojet (ANC) at Idaho Falls. **EG and G Idaho, Inc.** is the new manager of what used to be ANC. The new

Laboratory name is **Idaho Nuclear Engineering Laboratory (INEL)** and EG and G is said to manage about 90% of the Laboratory facilities. New address: for EG and G Idaho, Inc. employees is: P.O. Box 1625, Idaho Falls, Idaho 83401.

The following changes of address have been noted: **S. L. Bhatia**, from Nuclear Fuel Services, Inc., Rockville, Maryland to Allied Chemical Corp., Idaho Falls, Idaho; **John-Paul Renier** of Nuclear Assurance Corporation from Executive Park to 3372 Rockhaven Circle, Atlanta, GA; and **Henry W. Morton** from Nuclear Fuel Services, Inc. to Nuclear Safety Associates, Bethesda, Maryland.

Don Dudziak, LASL, and **Edward Oblow** and **Francis Perey**, ORNL, represented the US shielding community at the IAEA-sponsored Shielding Specialists Meeting held in Vienna, Austria October 13-15.

PUBLICATION SPECTRA UNFOLDING PROCEEDINGS AVAILABLE

"A Review of Radiation Energy Spectra Unfolding (Proceedings of a Seminar-Workshop, April 12-13, 1976)", ORNL/RSIC-40, has been published and is now being distributed. More than 20 papers describe theoretical approaches and practical experiences in determining neutron and gamma-ray spectra from response detectors, such as Ne-213 and NaI scintillators, and neutron activation detectors. Sixty specialists from six nations came together to discuss common problems in several widely separated applications, and this publication is a result.

A limited number of copies is available from RSIC. The publication is available from National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, VA 22151 (Printed Copy $9.00, Microfiche $2.25).

CHANGES TO THE RSIC COMPUTER CODE COLLECTION (CCC AND PSR)

The following changes were made to the code collection during the month of October.

CCC-60/SDC

The IBM 360 version (C) of the kernel integration shield design code package for radioactive fuel handling facilities was updated to reflect an improvement suggested by Professor Tony Foderaro of Penn State University. The change applies to situations (cylindrical source types 6 and 12) in which SDC did not account for buildup in the source and clad. SDC is an ORNL contribution to the collection. FORTRAN IV. Reference: ORNL-3041.

CCC-204/SWANLAKE

This code package, which utilizes ANISN radiation transport calculations for cross section sensitivity analysis, was extended to include a fission option contributed by the originators at ORNL. Reference: ORNL-TM-3809. FORTRAN IV; IBM 360.

CCC-209/DOT III

The IBM 360 version (A) of the two-dimensional discrete ordinates radiation transport code package was updated to include SORREL, an auxiliary routine which generates a 2-D power distribution for DOT x-y, r-θ, and r-z calculations. SORREL was contributed by Babcock and Wilcox Co., Lynchburg, Virginia. Reference: Informal notes by J. T. West. FORTRAN IV.

CCC-255/ANISN-W

The package containing the multigroup one-dimensional discrete ordinates code with anisotropic scattering (a WANL contribution) was updated to correct errors called to RSIC attention by Te-Chang Chan, Fluor Pioneer, Inc. and Sally Vogtman, WARD. Details of the update are available from RSIC. FORTRAN IV; CDC 6600.

CCC-248/SWAN

A new Subroutine ANISN-PPL was contributed by the Princeton Plasma Physics Laboratory to replace the original Subroutine, said by the originator (W. Price) to contain errors. The SWAN code package, a code system for analysis and optimization of fusion reactor nucleonic characteristics, was updated to reflect the change. The entire code package, or the new Subroutine alone, may be requested. References: MATT-981, -1008, -1034, -1035, -1036. FORTRAN IV; IBM 360.

CCC-285/SHREDI

A multigroup two-dimensional (x-y, r-θ geometry) neutron removal-diffusion (Spinney Method) shielding code system was contributed by CNEN/Bologna, Italy through the OECD Nuclear Energy Agency Computer Programme Library, Ispra, Italy. Reference: Informal. FORTRAN IV; IBM 360.

PSR-62/MORN

This ORNL-contributed calculation of the response of sodium iodide crystals gamma rays was extended to include a random number generator and an error routine. Reference: ORNL-TM-2579. FORTRAN IV; IBM 360.

PSR-68/MANYFILE

This utility routine for manipulation of data sets between various I-0 devices was updated to include improvements which were submitted by the code originators at Oak Ridge National Laboratory. Reference: ORNL-TM-4377. FORTRAN IV; IBM 360.

PSR-75/AXMIX

The code package used for cross section mixing and library arrangements in ANISN and DOT was updated to correct errors discovered in the code's use in the RSIC CTR Cross Section Validation program by the Argonne National Laboratory participant. Subroutine TAPE, called by Subroutine GIP in AXM1X, was replaced by a newer version provided by the ORNL contributors. A statement of the errors, a copy of TAPE, or the entire code package may be requested. Informal documentation. FORTRAN IV; IBM 360.

PSR-101/HYPERMET

A code package for the automatic analysis of gamma-ray spectra from germanium detectors was contributed by the Radiation Technology Division of the Naval Research Laboratory, Washington, D. C. Reference: NRL-MR-3198 (January 1976). FORTRAN IV; CDC 3800.

PSR-102/FERDO

A spectrum unfolding code package, latest in the unfolding code development series of W. Ross Burrus (PSR-17/FERDOR-COOLC), was contributed by Mini-Max Services, Inc., Lenoir City, Tennessee and the Oak Ridge National Laboratory. Reference to be published; described in a paper in ORNL/RSIC-40. IBM 360; FORTRAN IV.

NOVEMBER ACCESSION OF LITERATURE

The following literature cited has been ordered for review, and that selected as suitable will be placed in the RSIC Information Storage and Retrieval Information System (SARIS). This early announcement is made as a service to the shielding community. Copies of the literature are not distributed by RSIC. They may generally be obtained from the author or from a documentation center such as the National Technical Information Service (NTIS), Department of Commerce, Springfield, Virginia 22151.

RSIC maintains a microfiche file of the literature entered into SARIS, and duplicate copies of out-of-print reports may be available on request. Naturally, we cannot fill requests for literature which is copyrighted (such as books or journal articles) or whose distribution is restricted.

Special bibliographies and selected computer-printed abstracts of the literature in the RSIC system are available upon request. The Selective Dissemination of Information (SDI) Service is available by submitting a list of subject categories defining the recipient's interests.

THIS LITERATURE IS ON ORDER. IT IS NOT IN OUR SYSTEM. PLEASE ORDER FROM NTIS OR OTHER AVAILABLE SOURCE AS INDICATED.

REACTOR AND WEAPONS RADIATION SHIELDING LITERATURE

AECL-5507
Estimation, Recording, and Reporting of Whole Body Doses from Tritium Oxide Exposure at CRNL.
Johnson, J.R.
June 1976
NTIS (U.S. Sales Only)

AECL-5538
Plan for a Continuing Follow-Up of Persons Exposed to Radiation in the Canadian Nuclear Power Industry.
Newcombe, H.B.
May 1976
NTIS

ANU-P-599
Radiation and Man.
Titterton, E.W.
July 1974
Dep., NTIS (U.S. Sales Only) $4.00

ANL-8144; ENDF-239
MC^2-2: A Code to Calculate Fast Neutron Spectra and Multigroup Cross Sections.
Henryson, H.,II; Toppel, B.J.; Stenberg, C.G.
June 1976
NTIS $12.00

BARC/I-336
Health Physics Aspects of ^{252}Cf.
Bhagwat, A.M.
1974
NTIS (U.S. Sales Only)

BAW-10113
THOR - Thermal Cross Section Generation Code Using ENDF/B Data.
Andrews, J.B.,II; Hassan, N.M.; Wittkopf, W.A.
December 1975
Babcock and Wilcox, Power Generation Group, Nuclear Power Generation Division, P.O. Box 1260, Lynchburg, Va. 24505

BAW-10114
PROLIB - Code to Create Production Library of Nuclear Data for Design Calculations.
Wittkopf, W.A.; Tilford, J.M.; Furtney, M.
January 1976
Babcock and Wilcox, Power Generation Group, Nuclear Power Generation Division, P.O. Box 1260, Lynchburg, Va. 24505

BAW-10115

NULIF: Neutron Spectrum Generator, Few-Group Constant Calculator, and Fuel Depletion Code.

Wittkopf, W.A.; Tilford, J.M.; Andrews, J.B.,II; Kirschner, G.; Hassan, N.M.; Colpo, P.N.

June 1976

Babcock and Wilcox, Power Generation Group, Nuclear Power Generation Division, P.O. Box 1260, Lynchburg, Va. 24505

BNL-21158

Review BNL Graphite Blanket Design Concepts.

Fillo, J.A.; Powell, J.R.

March 1976

NTIS

BNL-50,540

Estimating ISABELLE Shielding Requirements.

Stevens, A.J.; Thorndike, A.M.

April 1976

NTIS

BNWL-1934, pp.54-57

Response of Savannah River Thermoluminescent Neutron Dosimeter to Monoenergetic Neutrons.

Hoy, J.E.; Hall, R.M.

1975

NTIS

CONF-760622-10

Analysis of the GCFR Pin Streaming Experiment Performed at the TSF.

Slater, C.O.; Bartine, D.E.

1976

NTIS

CONF-760622-28

^{238}U Subthreshold Neutron Induced Fission Cross Section.

Difilippo, F.C.; Perez, R.B.; de Saussure, G.; Olsen, D.K.; Ingle, R. W.

1976

NTIS

CONF-760631-3

Neutronics Calculations for the Oak Ridge National Laboratory Tokamak Reactor Studies.

Santoro, R.T.; Baker, V.C.; Barnes, J.M.

1976

Dep., NTIS $3.50

CONF-760811-2

Radiological Safety Considerations in the Design and Operation of the ORNL Transuranium Research Laboratory (TRL).

Haynes, C.E.

1976

Dep., NTIS $3.50

CONF-760912-1

Radiation Exposure and the Woman Worker: Biological and Legal Parameters.

Carver, J.S.

1976

Dep., NTIS $3.50

COO-2280-26

Computational Complexity in Multidimensional Neutron Transport Theory Calculations. Progress Report, September 1, 1975 - August 31, 1976.

Bareiss, E.H.

May 1976

Dep., NTIS $4.00

DP-MS-75-87; IAEA-186, Vol.II, pp.1-70

Status of Measured Neutron Cross Sections of Transactinium Isotopes for Thermal Reactors.

Benjamin, R.W.

1976

NTIS

EPRI-NP-152

Study of Radiation Dosage to Structural Components in Nuclear Reactors. Final Report (Research Project 304-1).

Miller, L.B.; Jarka, R.E.; Kaul, D.C.

January 1976

Science Applications, Inc.

EPRI-NP-161

Conversion of ^{238}Pu and ^{252}Cf Production Chain Cross Section Data to ENDF/B-IV Format (EPRI Project 451).

December 1975

E. I. du Pont de Nemours and Co., Savannah River Lab.

EPRI-NP-163

A Monte Carlo Analysis of Chalk River Experiment on Cross Sections of Fissile Nuclides. Final Report.

December 1975

Mathematical Applications Group, Inc.

ERDA-76-107
Advanced Nuclear Reactors: An Introduction.
ERDA, Div. of Reactor Development and Demonstration
May 1976
Dep., NTIS $4.00

ERDA-76/117/1; CONF-760343,Vol.I
Proceedings of the Magnetic Fusion Energy Blanket and Shield Workshop. A Technical Assessment. Held at Brookhaven National Laboratory - March 29 - April 2, 1976.
Powell, J.R.; Fillo, J.A.; Twining, B.G.; Dorning, J.J. (Eds.)
August 1976
NTIS $6.75

ERDA-76/117/2; CONF-760343,Vol.II
Proceedings of the Magnetic Fusion Energy Blanket and Shield Workshop. A Technical Assessment. Held at Brookhaven National Laboratory - March 29 - April 2, 1976.
Powell, J.R.; Fillo, J.A.; Twining, B.G.; Dorning, J.J. (Eds.)
August 1976
NTIS $21.25

EURFNR-1336
Graphical Representation of the Herman Nuclear Data Library KEDAK. Part 1. Nonfissile Materials.
Goel, B.
December 1975
Dep., NTIS $12.50

IAEA-R-1236-F
New Methods in Linear Transport Theory. Part of a Coordinated Programme on Methods in Neutron Transport Theory. Final Report for the Period 1 August 1972 - 31 July 1974.
Mika, J.
September 1975
INIS

INDC(NDS)-70/G+P
Progress in Fission Product Nuclear Data. Information About Activities in the Field of Measurements and Compilations/ Evaluations of Fission Product Data (FPND). No. 1.
Lammer, G.
1975
INIS

JEN-325
Neutron Transport Calculations of Some Fast Critical Assemblies.
Martinez, J.M.; Penalosa, V.
1976
NTIS

JINR-P16-9621 (In Russian)
Statistical Regularization Method Applied to Reconstruction of the Fast Neutron Energy Spectra According to Indications of Activation Threshold Detectors.
Aleinikov, V.E.; Bamblevsky, V.P.; Komochkov, M.M.
1976
Joint Institute for Nuclear Research, Dubna

LIU-RAD-R-028 (In Swedish)
Analysis of Monte Carlo Methods for the Simulation of Photon Transport.
Carlsson, G.A.; Kusoffsky, L.
September 2, 1975
INIS

IAEA-186
Transactinium Isotope Nuclear Data (TND). Vol.I.
Proceedings of an Advisory Group Meeting on Transactinium Isotope Nuclear Data Organized by the IAEA Nuclear Data Section in Co-Operation with the OECD Nuclear Energy Agency Held at the Kernforschungszentrum, Karlsruhe, 3-7 November 1975.
IAEA
1976
INIS Microfiche Clearinghouse, IAEA, P.O. Box 590, A-1011 Vienna, Austria

IAEA-186, Vol.I, pp.39-112
General Survey of Applications Which Require Actinide Nuclear Data. (Review Paper A1)
Raman, S.
1976
INIS Microfiche Clearinghouse, IAEA, P.O. Box 590, A-1011 Vienna, Austria

IAEA-186, Vol.I, pp.113-137
Importance of Transactinide Nuclear Data for the Physics of Fast and Thermal Reactor Cores. (Review Paper A2)
Barre, J.Y.; Bouchard, J.
1976
INIS Microfiche Clearinghouse, IAEA, P.O. Box 590, A-1011 Vienna, Austria

IAEA-186, Vol.I, pp.139-166
Transactinium Isotope Build-Up and Decay in Reactor Fuel and Related Sensitivities to Cross Section Changes. (Review Paper A3)
Kuesters, H.; Lalovic, M.
1976
INIS Microfiche Clearinghouse, IAEA, P.O. Box 590, A-1011 Vienna, Austria

IAEA-186, Vol.I, pp.167-174
The Requirements for Transactinium Nuclear Data for the Design and Operation of Nuclear Power Plants. (Review Paper A4)
Nunn, R.M.
1976
INIS Microfiche Clearinghouse, IAEA, P.O. Box 590, A-1011 Vienna, Austria

IAEA-186, Vol.I, pp.175-190
Importance of Transactinium Nuclear Data for Fuel Handling. (Review Paper A5)
Burstall, R.F.
1976
INIS Microfiche Clearinghouse, IAEA, P.O. Box 590, A-1011 Vienna, Austria

IAEA-186, Vol.I, pp.191-200
European Programmes in Waste Management (Incineration) of Actinides. (Review Paper A6)
Koch, L.
1976
INIS Microfiche Clearinghouse, IAEA, P.O. Box 590, A-1011 Vienna, Austria

IAEA-186, Vol.I, pp.201-214
Some Activities in the United States Concerning the Physics Aspects of Actinide Waste Recycling. (Review Paper A7)
Raman, S.
1976
INIS Microfiche Clearinghouse, IAEA, P.O. Box 590, A-1011 Vienna, Austria

IAEA-186, Vol.II
Transactinium Isotope Nuclear Data (TND). Vol.II.
Proceedings of an Advisory Group Meeting on Transactinium Isotope Nuclear Data Organized by the IAEA Nuclear Data Section in Co-Operation with the OECD Nuclear Energy Agency Held at the Kernforschungszentrum, Karlsruhe, 3-7 November 1975.
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1976
INIS Microfiche Clearinghouse, IAEA, P.O. Box 590, A-1011 Vienna, Austria

IAEA-186, Vol.II, pp.71-113
Status of Neutron Cross Sections of Transactinium Isotopes in the Resonance Region - Linear Accelerator Measurements. (Review Paper B2)
James, G.D.
1976
INIS Microfiche Clearinghouse, IAEA, P.O. Box 590, A-1011 Vienna, Austria

IAEA-186, Vol.III
Transactinium Isotope Nuclear Data (TND). Vol.III.
Proceedings of an Advisory Group Meeting on Transactinium Isotope Nuclear Data Organized by the IAEA Nuclear Data Section in Co-Operation with the OECD Nuclear Energy Agency Held at the Kernforschungszentrum, Karlsruhe, 3-7 November 1975.
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INIS Microfiche Clearinghouse, IAEA, P.O. Box 590, A-1011 Vienna, Austria

IAEA-186, Vol.III, pp.1-163
Status of Measured Neutron Cross Sections of Transactinium Isotopes in the Fast Region. (Review Paper B4)
Igarasi, S.
1976
INIS Microfiche Clearinghouse, IAEA, P.O. Box 590, A-1011 Vienna, Austria

IAEA-186, Vol.III, pp.165-194
Status of Transactinium Isotope Evaluated Neutron Data in the Energy Range 10^{-13} eV to 15 MeV. (Review Paper B5A)
Yiftah, S.; Gur, Y.; Caner, M.
1976
INIS Microfiche Clearinghouse, IAEA, P.O. Box 590, A-1011 Vienna, Austria

IAEA-186, Vol.III, pp.195-200
The Transactinides in the Main Evaluated Neutron Data Files.
Contribution from the NEA Neutron Data Compilation Centre
1976
INIS Microfiche Clearinghouse, IAEA, P.O. Box 590, A-1011 Vienna, Austria

IAEA-186, Vol.III, pp.237-248
A Survey of Cross Section Evaluation Methods for Heavy Isotopes.
Caner, M.; Yiftah, S.
1976
INIS Microfiche Clearinghouse, IAEA, P.O. Box 590, A-1011 Vienna, Austria

IAEA-186, Vol.III, pp.265-308
Status of Beta- and Gamma-Decay and Spontaneous-Fission Data from Transactinium Isotopes.
Reich, C.W.
1976
INIS Microfiche Clearinghouse, IAEA, P.O. Box 590, A-1011 Vienna, Austria

KFK-2283
Review on Transactinium Isotope Build-Up and Decay in Reactor Fuel and Related Sensitivities to Cross Section Changes and Results and Main Conclusions of the IAEA-Advisory Group Meeting on Transactinium Nuclear Data, Held at Karlsruhe, November 1975.
Kusters, H.; Lalovic, M.
April 1976
NTIS

LA-6239-MS
Fission Cross Section of 243 Cm from the Underground Nuclear Explosion, Physics-8. Table of Values.
Silbert, M.G.
March 1976
NTIS $4.00

LA-6479-MS
Report on the Application of Statistical Techniques to the Analysis of Computer Codes.
McKay, M.D.; Conover, W.J.; Whiteman, D.W.
September 1976
NTIS $3.50

LA-6483-MS
The Calculation of Isotopic Mass and Energy Production by a Matrix Operator Method.
Lee, C.E.
September 1976
NTIS $3.50

LA-NUREG-6365-MS; NRC-7
Neutronic Rebalance Algorithms for SIMMER.
Soran, P.D.
May 1976
Dep., NTIS $3.50

NASA-TM-X-3388; N76-27161
Computer Subroutines for the Estimation of Nuclear Reaction Effects in Proton Tissue Dose Calculations.
Wilson, J.W.; Khandelwal, G.S.
June 1976
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